Since 1954
Depuis 1954

KAR Industrial/Industriel Inc.

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Buy from the Tooling Specialist…

KAR Industrial Inc. is pleased to present the 17th edition of its tooling catalog. With nearly 600 colour pages and a new layout, this version of our catalog encompasses all of our new tools, features six-digit part numbers and includes a comprehensive easy to follow index.

Serving the Canadian Metalworking Industry since 1954, KAR recognizes the need to provide regional service across Canada with three warehouse locations and by stocking over 30,000 product SKU's. We are proud to partner with over 150 manufacturers and offer tools and name brands that are most requested by machine shops and manufacturing facilities.

Our Team is dedicated to meeting your expectations for products and service with each and every order.

Call the Tooling Specialist Today!

Faites vos achats auprès du spécialiste de l'outillage…

C'est avec plaisir que KAR Industriel Inc. vous présente la 17e édition de son catalogue d'outillage. Cette version de notre catalogue de plus de 600 pages en couleurs offre une nouvelle disposition et regroupe la totalité de nos nouveaux outils, affiche des numéros de pièces à six caractères et comprend un index complet facile à consulter.

Au service de l'industrie canadienne du travail des métaux depuis 1954, KAR reconnaît la nécessité d'offrir un service régional partout au Canada grâce à trois entrepôts différents approvisionnés de plus de 30 000 articles. Nous sommes fiers de notre partenariat avec plus de 150 fabricants ainsi que d'offrir les outils et les marques les plus demandés par les ateliers de mécanique et les usines de production.

Notre équipe s'efforce de satisfaire vos attentes en matière de produits et de service lors de chacune de vos commandes.

Communiquez avec le spécialiste de l'outillage dès aujourd'hui !

Since 1954
Depuis 1954

CUTTING TOOLS 3-204

Drills, Reamers, Counterbores & Countersinks, Taps, Dies & Threading, End Mills & Roughers, Milling Cutters & Saws, Boring Bars, Broaches, Deburring Tools & Burrs, Tool Bits & Knurling Tools, Hole Cutters

INDEXABLE CUTTING TOOLS 206-292

Turning, Grooving, Parting, Threading, Milling, Thread Milling

ABRASIVES, FILES & SHARPENING 294-300

Mounted Flap Wheels, Mounted Points, Needle Files, Sharpening Stones

TURNING, MILLING & WORK HOLDING 302-466

Live & Dead Centers, Lathe Chucks & Accessories, Turning, Milling, Machine Accessories, Vises & Accessories, Dividing Heads & Indexing Spacers, Clamping Components, Drilling, Tapping, Boring, Fluid Accessories

HAND, MARKING & AIR TOOLS 468-478

Wrenches, Marking Equipment & Supplies, Air Tapping, Punch Formers, Punches & Scribers, Inside/Outside Calipers & Dividers

MEASURING TOOLS & INSPECTION INSTRUMENTS 480-555

Calipers, Micrometers, Indicators & Depth Gages, Magnetic Stands, Height Gages, Bore Gages, Thickness Gages, Gage Blocks, Levels & Protractors, Rules, Straight Edges & Squares, Gages, Edge & Center Finders, Zero Setting, Surface Roughness, Measuring Tool Sets, Hardness Testers, Durometers, Microscopes & Videoscopes, Surface Plates, Loupes & Magnifiers

SET-UP TOOLS & THREAD REPAIR 558-573

Angle Plates, Blocks & Parallels, Set-Up Tools, Straight Edges, Key Stock & Shim Stock, Drill Rods, Magnets

REFERENCE 576-581

Black Book Reference Guides, Tap Drill Sizes, Decimal Equivalents, Cutting Speed Conversions, Speeds & Feeds for High Speed Steel Drills, Tap Drill Sizes for Forming Taps, Technical Information for Standard Carbide Drills

INDEX

Since 1954
Depuis 1954

Proudly serving the Metalworking Industry since 1954!

Buy from KAR, buy with confidence! With over 60 years of tooling experience, we use our knowledge to offer you the value that you want, quality you need and superior service you expect while saving you time and money.

With three conveniently located warehouses stocking over 30,000 SKU's, KAR has the ability to offer you:

- Inventory ready for immediate delivery
- Inventory sourced from over 150 manufacturer partners
- Opportunities to consolidate your orders with one supplier

We recognize and understand today's business demands and know that your time is valuable. We make doing business with KAR simple and efficient:

- Three order desks for customer service
- Open Monday to Friday from 8 am to 5 pm local time
- Toll free numbers: TORONTO 1-800-387-3127
  MONTRÉAL.....1-800-363-7862
  EDMONTON.....1-866-440-4326
- All orders received by 4 pm local time are shipped the same day
- Orders for pick-ups are ready within one hour

Please give us a call if you can't find a product or require a size not listed in our catalog. One of our experienced customer service representatives will be pleased to help you find it.

KAR is your One Stop Shop for Cutting Tools and Machine Shop Accessories!

Au service de l'industrie du travail des métaux depuis 1954 !

Pour des achats en toute confiance, c'est à KAR qu'il faut penser ! Grâce à son expérience acquise au fil des 60 dernières années, KAR est en mesure d'offrir à ses clients des produits à la hauteur de leurs attentes ainsi qu'un service de qualité supérieure tout en leur faisant économiser temps et argent.

Grâce à ses trois entrepôts bien situés et approvisionnés de plus de 30 000 articles, KAR peut vous offrir :

- Un fond de stock prêt pour livraison immédiate
- Une importante quantité d'articles provenant de plus de 150 partenaires fournisseurs
- La possibilité de regrouper vos commandes auprès d'un seul et unique fournisseur

KAR sait parfaitement que votre temps est précieux et s'efforce de traiter avec sa clientèle de manière simple et efficace. Par conséquent, KAR offre à ses clients :

- Trois bureaux de commande pour assurer son service à la clientèle
- Heures d'ouverture du lundi au vendredi, de 8 h à 17 h (heure locale)
- Des numéros d'appels sans frais : TORONTO 1-800-387-3127
  MONTRÉAL.....1-800-363-7862
  EDMONTON.....1-866-440-4326
- Toutes les commandes reçues avant 16 h (heure locale) sont expédiées le jour même
- Les commandes à ramasser sont prêtes à cueillir à l'intérieur d'un délai de une (1) heure

Si vous ne trouvez pas un produit ou que la dimension d'un article ne figure pas dans notre catalogue, n'hésitez pas à communiquer avec nous. L'un de nos représentants du Service à la clientèle sera heureux de vous aider dans vos recherches.

KAR … pour trouver tout d'un seul coup en matière d'outils de coupe et d'accessoires pour ateliers de mécanique !

Since 1954
Depuis 1954

Drills
4-65



Reamers
66-81



Counterbores & Countersinks
82-91



Taps, Dies & Threading
93-108



End Mills & Roughers
109-141



Milling Cutters & Saws
142-151



Boring Bars
152-159



Broaches
160-168



Deburring Tools & Burrs
169-193



Tool Bits & Knurling Tools
194-202



Hole Cutters
203-204



For Tap Drill Sizes, Decimal Equivalents, Cutting Speed Conversions, Speeds & Feeds and other Cutting Tool Technical Information see REFERENCE Section

Jobber Length Drills

High Speed Steel & Cobalt

General Purpose
High Speed Steel – Black Oxide



- 118° point
- Oxide finish creates a porous layer that holds cutting oil which provides abrasion resistance and improved chip flow
- Sets supplied in metal indexed storage case

Heavy Duty
Super Cobalt



- 135° split point
- Type J

High Speed Steel
Gold-P Coated



Tolerance of D	
up to 1/8(.1250)	0~ -.0005
over 1/8(.1250) ~ up to 1/4(.2500)	0~ -.0007
over 1/4(.2500) ~ up to 1/2(.5000)	0~ -.0010

- Straight shank
- Flute Geometry: right hand spiral with wider flutes
- Point Angle: 135° split point on sizes 0.059" diameter and over
- Surface treatment: bright body with TiN coating on working part
- Application: drilling in steel, cast steel (alloyed and non-alloyed), grey cast iron, graphite, and malleable cast iron

Fractional Sizes

Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	High Speed Steel Black Oxide	Super Cobalt	High Speed Steel Gold-P Coated
				Code	Code	Code
1/64	0.0156	3/16	3/4	752002	606755	–
1/32	0.0312	1/2	1-3/8	752003	606756	–
3/64	0.0469	3/4	1-3/4	752004	751006	883020
1/16	0.0625	7/8	1-7/8	752005	751010	883021
5/64	0.0781	1	2	752006	751016	883022
3/32	0.0938	1-1/4	2-1/4	752007	751023	883023
7/64	0.1094	1-1/2	2-5/8	752008	751030	883024
1/8	0.1250	1-5/8	2-3/4	752009	751036	883025
9/64	0.1406	1-3/4	2-7/8	752010	751040	883026
5/32	0.1562	2	3-1/8	752011	751046	883027
11/64	0.1719	2-1/8	3-1/4	752012	751052	883028
3/16	0.1875	2-5/16	3-1/2	752013	751058	883029
13/64	0.2031	2-7/16	3-5/8	752014	751065	883030
7/32	0.2188	2-1/2	3-3/4	752015	751070	883031
15/64	0.2344	2-5/8	3-7/8	752017	751074	883032
1/4	0.2500	2-3/4	4	752020	751078	883033
17/64	0.2656	2-7/8	4-1/8	752023	751081	883034
9/32	0.2812	2-15/16	4-1/4	752028	751086	883035
19/64	0.2969	3-1/16	4-3/8	752031	751089	883036
5/16	0.3125	3-3/16	4-1/2	752033	751091	883037
21/64	0.3281	3-5/16	4-5/8	752036	751094	883038
11/32	0.3438	3-7/16	4-3/4	752039	751097	883039
23/64	0.3594	3-1/2	4-7/8	752042	751100	883040
3/8	0.3750	3-5/8	5	752044	751102	883041
25/64	0.3906	3-3/4	5-1/8	752047	751105	883042
13/32	0.4062	3-7/8	5-1/4	752050	751108	883043
27/64	0.4219	3-15/16	5-3/8	752052	751110	883044
7/16	0.4375	4-1/16	5-1/2	752053	751111	883045
29/64	0.4531	4-3/16	5-5/8	752054	751112	883046
15/32	0.4688	4-5/16	5-3/4	752055	751113	883047
31/64	0.4844	4-3/8	5-7/8	752056	751114	883048
1/2	0.5000	4-1/2	6	752057	751115	883049
33/64	0.5156	4-13/16	6-5/8	752058	606787	–
17/32	0.5312	4-13/16	6-5/8	752059	606788	–
35/64	0.5469	4-13/16	6-5/8	752060	606789	–

Jobber Length Drills

High Speed Steel & Cobalt





Fractional Sizes *(continued)*

Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	High Speed Steel Black Oxide	Super Cobalt	High Speed Steel Gold-P Coated
				Code	Code	Code
9/16	0.5625	4-13/16	6-5/8	752061	606790	–
37/64	0.5781	4-13/16	6-5/8	752062	606791	–
19/32	0.5938	5-3/16	7-1/8	752063	606792	–
39/64	0.6094	5-3/16	7-1/8	752064	606793	–
5/8	0.6250	5-3/16	7-1/8	752065	606794	–
41/64	0.6406	5-3/16	7-1/8	752066	606795	–
21/32	0.6562	5-3/16	7-1/8	752067	606796	–
43/64	0.6719	5-5/8	7-5/8	752068	606797	–
11/16	0.6875	5-5/8	7-5/8	752069	606798	–
23/32	0.7188	5-5/8	7-5/8	606583	–	–
3/4	0.7500	5-5/8	7-5/8	606584	–	–

Letter Sizes

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	High Speed Steel Black Oxide	Super Cobalt	High Speed Steel Gold-P Coated
				Code	Code	Code
A	0.2340	2-5/8	3-7/8	752016	751073	883108
B	0.2380	2-3/4	4	752018	751075	883109
C	0.2420	2-3/4	4	606587	751076	883110
D	0.2460	2-3/4	4	752019	751077	883111
E	0.2500	2-3/4	4	752020	751078	883112
F	0.2570	2-7/8	4-1/8	752021	751079	883113
G	0.2610	2-7/8	4-1/8	752022	751080	883114
H	0.2660	2-7/8	4-1/8	752024	751082	883115
I	0.2720	2-7/8	4-1/8	752025	751083	883116
J	0.2770	2-7/8	4-1/8	752026	751084	883117
K	0.2810	2-15/16	4-1/4	752027	751085	883118
L	0.2900	2-15/16	4-1/4	752029	751087	883119
M	0.2950	3-1/16	4-3/8	752030	751088	883120
N	0.3020	3-1/16	4-3/8	752032	751090	883121
O	0.3160	3-3/16	4-1/2	752034	751092	883122
P	0.3230	3-5/16	4-5/8	752035	751093	883123
Q	0.3320	3-7/16	4-3/4	752037	751095	883124
R	0.3390	3-7/16	4-3/4	752038	751096	883125
S	0.3480	3-1/2	4-7/8	752040	751098	883126
T	0.3580	3-1/2	4-7/8	752041	751099	883127
U	0.3680	3-5/8	5	752043	751101	883128
V	0.3770	3-5/8	5	752045	751103	883129
W	0.3860	3-3/4	5-1/8	752046	751104	883130
X	0.3970	3-3/4	5-1/8	752048	751106	883131
Y	0.4040	3-7/8	5-1/4	752049	751107	883132
Z	0.4130	3-7/8	5-1/4	752051	751109	883133

Jobber Length Drills

High Speed Steel & Cobalt





Wire Gage Sizes

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Black Oxide Code	Super Cobalt Code	HSS Gold-P Coated Code
1	0.2280	2-5/8	3-7/8	754684	751072	883241
2	0.2210	2-5/8	3-7/8	754683	751071	883240
3	0.2130	2-1/2	3-3/4	754682	751069	883239
4	0.2090	2-1/2	3-3/4	754681	751068	883238
5	0.2055	2-1/2	3-3/4	754680	751067	883237
6	0.2040	2-1/2	3-3/4	754679	751066	883236
7	0.2010	2-7/16	3-5/8	754678	751064	883235
8	0.1990	2-7/16	3-5/8	754677	751063	883234
9	0.1960	2-7/16	3-5/8	754676	751062	883233
10	0.1935	2-7/16	3-5/8	754675	751061	883232
11	0.1910	2-5/16	3-1/2	754674	751060	883231
12	0.1890	2-5/16	3-1/2	754673	751059	883230
13	0.1850	2-5/16	3-1/2	754672	751057	883229
14	0.1820	2-3/16	3-3/8	754671	751056	883228
15	0.1800	2-3/16	3-3/8	754670	751055	883227
16	0.1770	2-3/16	3-3/8	754669	751054	883226
17	0.1730	2-3/16	3-3/8	754668	751053	883225
18	0.1695	2-1/8	3-1/4	754667	751051	883224
19	0.1660	2-1/8	3-1/4	754666	751050	883223
20	0.1610	2-1/8	3-1/4	754665	751049	883222
21	0.1590	2-1/8	3-1/4	754664	751048	883221
22	0.1570	2	3-1/8	754663	751047	883220
23	0.1540	2	3-1/8	754662	751045	883219
24	0.1520	2	3-1/8	754661	751044	883218
25	0.1495	1-7/8	3	754660	751043	883217
26	0.1470	1-7/8	3	754659	751042	883216
27	0.1440	1-7/8	3	754658	751041	883215
28	0.1405	1-3/4	2-7/8	754657	751039	883214
29	0.1360	1-3/4	2-7/8	754656	751038	883213
30	0.1285	1-5/8	2-3/4	754655	751037	883212
31	0.1200	1-5/8	2-3/4	754654	751035	883211
32	0.1160	1-5/8	2-3/4	754653	751034	883210
33	0.1130	1-1/2	2-5/8	754652	751033	883209
34	0.1110	1-1/2	2-5/8	754651	751032	883208
35	0.1100	1-1/2	2-5/8	754650	751031	883207
36	0.1065	1-7/16	2-1/2	754649	751029	883206
37	0.1040	1-7/16	2-1/2	754648	751028	883205
38	0.1015	1-7/16	2-1/2	754647	751027	883204
39	0.0995	1-3/8	2-3/8	754646	751026	883203
40	0.0980	1-3/8	2-3/8	754645	751025	883202
41	0.0960	1-3/8	2-3/8	754644	751024	883201
42	0.0935	1-1/4	2-1/4	754643	751022	883200
43	0.0890	1-1/4	2-1/4	754642	751021	883199
44	0.0860	1-1/8	2-1/8	754641	751020	883198
45	0.0820	1-1/8	2-1/8	754640	751019	883197
46	0.0810	1-1/8	2-1/8	754639	751018	883196
47	0.0785	1	2	754638	751017	883195
48	0.0760	1	2	754637	751015	883194
49	0.0730	1	2	754636	751014	883193
50	0.0700	1	2	754635	751013	883192
51	0.0670	1	2	754634	751012	883191
52	0.0635	7/8	1-7/8	754633	751011	883190
53	0.0595	7/8	1-7/8	754632	751009	883189
54	0.0550	7/8	1-7/8	754631	751008	883188
55	0.0520	7/8	1-7/8	754630	751007	883187
56	0.0465	3/4	1-3/4	754629	751005	883186
57	0.0430	3/4	1-3/4	754628	751004	–
58	0.0420	11/16	1-5/8	754627	751003	–
59	0.0410	11/16	1-5/8	754626	751002	–
60	0.0400	11/16	1-5/8	754625	751001	–
61	0.0390	11/16	1-5/8	754624	606884	–
62	0.0380	5/8	1-1/2	754623	606885	–
63	0.0370	5/8	1-1/2	754622	606886	–
64	0.0360	5/8	1-1/2	754621	606887	–
65	0.0350	5/8	1-1/2	754620	606888	–
66	0.0330	1/2	1-3/8	754619	606889	–
67	0.0320	1/2	1-3/8	754618	606890	–
68	0.0310	1/2	1-3/8	754617	606891	–
69	0.0292	1/2	1-3/8	754616	606892	–
70	0.0280	3/8	1-1/4	754615	606893	–
71	0.0260	3/8	1-1/4	754614	606894	–
72	0.0250	5/16	1-1/8	754613	606895	–
73	0.0240	5/16	1-1/8	754612	606896	–
74	0.0225	1/4	1	754611	606897	–
75	0.0210	1/4	1	754610	606898	–
76	0.0200	3/16	7/8	754609	606899	–
77	0.0180	3/16	7/8	754608	606900	–
78	0.0160	3/16	7/8	754607	606901	–
79	0.0145	1/8	3/4	754606	606902	–
80	0.0135	1/8	3/4	754605	606903	–

Metric Jobber Length Drills

General Purpose – High Speed Steel – Black Oxide



- 118° point

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.15	0.0059	3/64	3/4	*615400
0.16	0.0063	3/64	3/4	*615401
0.17	0.0067	1/16	3/4	*615402
0.18	0.0071	1/16	3/4	*615403
0.19	0.0075	1/16	3/4	*615404
0.20	0.0079	1/16	3/4	*615405
0.21	0.0083	3/32	3/4	*615406
0.22	0.0087	1/16	3/4	*615407
0.23	0.0091	3/32	3/4	*615408
0.24	0.0094	3/32	3/4	*615409
0.25	0.0098	5/64	3/4	*615410
0.26	0.0102	5/64	3/4	*615411
0.27	0.0106	5/64	3/4	*615412
0.28	0.0110	5/64	3/4	*615413
0.29	0.0114	5/64	3/4	*615414
0.30	0.0118	3/32	3/4	*615415
0.32	0.0126	3/32	3/4	*615416
0.34	0.0134	5/32	3/4	*615417
0.35	0.0138	1/8	3/4	*615418
0.36	0.0142	5/32	3/4	*615419
0.38	0.0150	3/16	3/4	*615420
0.40	0.0158	3/16	7/8	*615421
0.42	0.0165	3/16	7/8	*615422
0.44	0.0173	3/16	7/8	*615423
0.45	0.0177	3/16	7/8	*615424
0.46	0.0181	3/16	7/8	*615425
0.48	0.0189	3/16	7/8	*615426
0.50	0.0197	3/16	7/8	*615427
0.55	0.0217	1/4	1	*615428
0.60	0.0236	5/16	1-1/8	*615429
0.65	0.0256	3/8	1-1/4	*615430
0.70	0.0276	3/8	1-1/4	*615431
0.75	0.0295	1/2	1-3/8	*615432
0.80	0.0315	1/2	1-3/8	*615433
0.85	0.0335	5/8	1-1/2	*615434
0.90	0.0355	5/8	1-1/2	*615435
0.95	0.0374	5/8	1-1/2	*615436
1.00	0.0394	11/16	1-5/8	*615437
1.05	0.0413	11/16	1-5/8	*615438
1.10	0.0433	3/4	1-3/4	*615439
1.15	0.0453	3/4	1-3/4	*615440
1.20	0.0472	7/8	1-7/8	*615441
1.25	0.0492	7/8	1-7/8	*615442
1.30	0.0512	7/8	1-7/8	*615443
1.35	0.0531	7/8	1-7/8	*615444
1.40	0.0551	7/8	1-7/8	*615445
1.45	0.0571	7/8	1-7/8	*615446
1.50	0.0591	7/8	1-7/8	*615447
1.55	0.0610	7/8	1-7/8	*615448
1.60	0.0630	7/8	1-7/8	*615449
1.65	0.0650	1	2	*615450
1.70	0.0669	1	2	615451
1.75	0.0689	1	2	615452
1.80	0.0709	1	2	615453
1.85	0.0728	1	2	615454
1.90	0.0748	1	2	615455
1.95	0.0768	1	2	615456
2.00	0.0787	1	2-1/8	615457
2.05	0.0807	1-1/8	2-1/8	615458
2.10	0.0827	1-1/8	2-1/8	615459
2.15	0.0846	1-1/8	2-1/8	615460
2.20	0.0866	1-1/4	2-1/4	615461
2.25	0.0886	1-1/4	2-1/4	615462
2.30	0.0906	1-1/4	2-1/4	615463
2.35	0.0925	1-1/4	2-1/4	615464
2.40	0.0945	1-3/8	2-3/8	615465
2.45	0.0965	1-3/8	2-3/8	615466
2.50	0.0984	1-3/8	2-3/8	615467
2.60	0.1024	1-7/16	2-1/2	615468
2.70	0.1063	1-7/16	2-1/2	615469
2.75	0.1083	1-1/2	2-5/8	615470
2.80	0.1102	1-1/2	2-5/8	615471
2.90	0.1142	1-5/8	2-3/4	615472
3.00	0.1181	1-5/8	2-3/4	615473
3.10	0.1220	1-5/8	2-3/4	615474
3.20	0.1260	1-5/8	2-3/4	615475
3.25	0.1280	1-5/8	2-3/4	615476
3.30	0.1299	1-3/4	2-7/8	615477
3.40	0.1339	1-3/4	2-7/8	615478
3.50	0.1378	1-3/4	2-7/8	615479
3.60	0.1417	1-7/8	3	615480
3.70	0.1457	1-7/8	3	615481
3.75	0.1476	1-7/8	3	615482
3.80	0.1496	1-7/8	3	615483
3.90	0.1535	2	3-1/8	615484
4.00	0.1575	2-1/8	3-1/4	615485
4.10	0.1614	2-1/8	3-1/4	615486
4.20	0.1654	2-1/8	3-1/4	615487
4.25	0.1673	2-1/8	3-1/4	615488
4.30	0.1693	2-1/8	3-1/4	615489
4.40	0.1732	2-3/16	3-3/8	615490
4.50	0.1772	2-3/16	3-3/8	615491
4.60	0.1811	2-3/16	3-3/8	615492
4.70	0.1850	2-5/16	3-1/2	615493
4.75	0.1870	2-5/16	3-1/2	615494
4.80	0.1890	2-5/16	3-1/2	615495
4.90	0.1929	2-7/16	3-5/8	615496
5.00	0.1968	2-7/16	3-5/8	615497
5.10	0.2008	2-7/16	3-5/8	615498
5.20	0.2047	2-1/2	3-3/4	615499
5.25	0.2067	2-1/2	3-3/4	615500
5.30	0.2087	2-1/2	3-3/4	615501
5.40	0.2126	2-1/2	3-3/4	615502
5.50	0.2165	2-1/2	3-3/4	615503
5.60	0.2205	2-5/8	3-7/8	615504
5.70	0.2244	2-5/8	3-7/8	615505
5.75	0.2264	2-5/8	3-7/8	615506
5.80	0.2283	2-5/8	3-7/8	615507
5.90	0.2323	2-5/8	3-7/8	615508
6.00	0.2362	2-3/4	4	615509
6.10	0.2402	2-3/4	4	615510
6.20	0.2441	2-3/4	4	615511
6.25	0.2461	2-3/4	4	615512
6.30	0.2480	2-3/4	4	615513
6.40	0.2520	2-7/8	4-1/8	615514
6.50	0.2559	2-7/8	4-1/8	615515
6.60	0.2598	2-7/8	4-1/8	615516
6.70	0.2638	2-7/8	4-1/8	615517
6.75	0.2657	2-7/8	4-1/8	615518
6.80	0.2677	2-7/8	4-1/8	615519
6.90	0.2717	2-7/8	4-1/8	615520
7.00	0.2756	2-7/8	4-1/8	615521
7.10	0.2795	2-15/16	4-1/4	615522
7.20	0.2835	2-15/16	4-1/4	615523
7.25	0.2854	2-15/16	4-1/4	615524
7.30	0.2874	2-15/16	4-1/4	615525
7.40	0.2913	3-1/16	4-3/8	615526
7.50	0.2953	3-1/16	4-3/8	615527
7.60	0.2992	3-1/16	4-3/8	615528
7.70	0.3031	3-3/16	4-1/2	615529
7.75	0.3051	3-3/16	4-1/2	615530
7.80	0.3071	3-3/16	4-1/2	615531
7.85	0.3091	3-3/16	4-1/2	615532
7.90	0.3110	3-3/16	4-1/2	615533
8.00	0.3150	3-3/16	4-1/2	615534
8.10	0.3189	3-5/16	4-5/8	615535
8.20	0.3228	3-5/16	4-5/8	615536
8.25	0.3248	3-5/16	4-5/8	615537
8.30	0.3268	3-5/16	4-5/8	615538
8.40	0.3307	3-7/16	4-3/4	615539
8.50	0.3346	3-7/16	4-3/4	615540
8.60	0.3386	3-7/16	4-3/4	615541
8.70	0.3425	3-7/16	4-3/4	615542
8.75	0.3445	3-1/2	4-7/8	615543
8.80	0.3465	3-1/2	4-7/8	615544
8.90	0.3504	3-1/2	4-7/8	615545
9.00	0.3543	3-1/2	4-7/8	615546
9.10	0.3583	3-1/2	4-7/8	615547
9.20	0.3622	3-5/8	5	615548
9.25	0.3642	3-5/8	5	615549
9.30	0.3661	3-5/8	5	615550
9.40	0.3701	3-5/8	5	615551
9.50	0.3740	3-5/8	5	615552
9.60	0.3780	3-3/4	5-1/8	615553
9.70	0.3819	3-3/4	5-1/8	615554
9.75	0.3839	3-3/4	5-1/8	615555
9.80	0.3858	3-3/4	5-1/8	615556
9.90	0.3898	3-3/4	5-1/8	615557
10.00	0.3937	3-3/4	5-1/8	615558
10.10	0.3976	3-3/4	5-1/4	615559
10.20	0.4016	3-7/8	5-1/4	615560
10.30	0.4055	3-7/8	5-1/4	615561
10.40	0.4094	3-7/8	5-1/4	615562
10.50	0.4134	3-15/16	5-3/8	615563
10.70	0.4213	3-15/16	5-3/8	615564
10.80	0.4252	4-1/16	5-1/2	615565
10.90	0.4291	4-1/16	5-1/2	615566
11.00	0.4331	4-1/16	5-1/2	615567
11.10	0.4370	4-1/16	5-1/2	615568
11.20	0.4409	4-3/16	5-5/8	615569
11.25	0.4429	4-3/16	5-5/8	615570
11.30	0.4449	4-3/16	5-5/8	615571
11.40	0.4488	4-3/16	5-5/8	615572
11.50	0.4528	4-3/16	5-5/8	615573

*Cobalt sizes smaller than 1.70 mm are ***not*** split point*

Metric Jobber Length Drills

General Purpose – High Speed Steel – Black Oxide *(continued)*



- 118° point

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
11.60	0.4567	4-3/16	5-5/8	615574
11.70	0.4606	4-3/16	5-5/8	615575
11.80	0.4646	4-3/16	5-5/8	615576
11.90	0.4685	4-3/16	5-5/8	615577
12.00	0.4724	4-3/8	5-7/8	615578
12.10	0.4764	4-3/8	5-7/8	615579
12.20	0.4803	4-3/8	5-7/8	615580
12.25	0.4823	4-3/8	5-7/8	615581
12.30	0.4843	4-3/8	5-7/8	615582
12.40	0.4882	4-3/8	5-7/8	615583
12.50	0.4921	4-1/2	6	615584
12.60	0.4961	4-1/2	6	615585

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
12.70	0.5000	4-1/2	6	615586
12.75	0.5020	4-1/2	6	615587
12.80	0.5039	4-1/2	6	615588
12.90	0.5079	4-1/2	6	615589
13.00	0.5118	4-1/2	6	615590
13.50	0.5315	4-13/16	6-5/8	615591
13.80	0.5433	4-13/16	6-5/8	615592
14.00	0.5512	4-13/16	6-5/8	615593
14.50	0.5709	4-13/16	6-5/8	615594
15.00	0.5906	5-3/16	7-1/8	615595

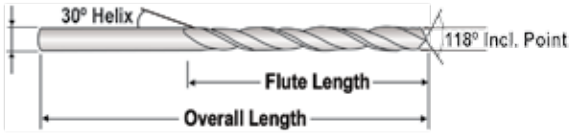
Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
15.25	0.6004	5-3/16	7-1/8	615596
15.50	0.6102	5-3/16	7-1/8	615597
16.00	0.6299	5-3/16	7-1/8	615598
16.50	0.6490	5-3/16	7-1/8	615599
17.00	0.6693	5-5/8	7-5/8	615600
17.50	0.6890	5-5/8	7-5/8	615601
18.00	0.7087	5-5/8	7-5/8	615602
19.00	0.7480	5-5/8	7-5/8	615603
19.50	0.7677	5-5/8	7-5/8	615604
20.00	0.7874	5-5/8	7-5/8	615605

Jobber Length Drills

Inch, Metric, Wire Gage & Letter Sizes – Solid Carbide – 118° Point

- For use on carbon steel, alloy steel, cast iron, aluminum, and mild steel



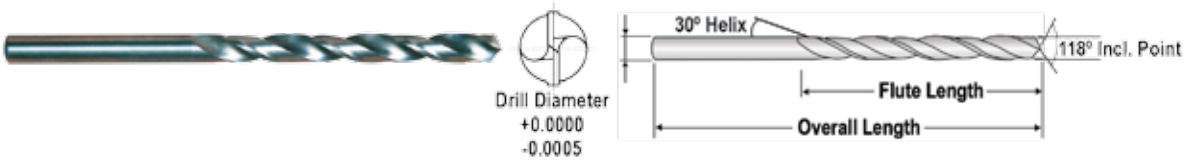


Size	Decimal Equivalent (Inch)	Flute Length	Overall Length	Code
1/32	0.0312	5/16	1-1/4	952088
1 mm	0.0394	15.9 mm	38.1 mm	952640
60	0.0400	3/4	1-1/2	952336
59	0.0410	3/4	1-1/2	952334
58	0.0420	3/4	1-1/2	952332
57	0.0430	3/4	1-1/2	952330
56	0.0465	3/4	1-1/2	952328
3/64	0.0469	3/4	1-1/2	952090
55	0.0520	3/4	1-1/2	952326
54	0.0550	3/4	1-1/2	952324
1.5 mm	0.0591	19.1 mm	38.1 mm	952642
53	0.0595	3/4	1-1/2	952322
1/16	0.0625	3/4	1-1/2	952092
52	0.0635	3/4	1-1/2	952320
51	0.0670	3/4	1-1/2	952318
50	0.0700	7/8	1-3/4	952316
49	0.0730	7/8	1-3/4	952314
48	0.0760	7/8	1-3/4	952312
5/64	0.0781	7/8	1-3/4	952094
47	0.0785	7/8	1-3/4	952310
2 mm	0.0787	22.2 mm	44.5 mm	952644
46	0.0810	7/8	1-3/4	952308
45	0.0820	1	1-3/4	952306
44	0.0860	1	2	952304
43	0.0890	1	2	952302
42	0.0935	1	2	952300
3/32	0.0938	1	2	952096
41	0.0960	1	2	952298

Size	Decimal Equivalent (Inch)	Flute Length	Overall Length	Code
40	0.0980	1	2	952296
2.5 mm	0.0984	25.4 mm	50.8 mm	952646
39	0.0995	1-1/4	2-1/4	952294
38	0.1015	1-1/4	2-1/4	952292
37	0.1040	1-1/4	2-1/4	952290
36	0.1065	1-1/4	2-1/4	952288
7/64	0.1094	1-1/4	2-1/4	952098
35	0.1100	1-1/4	2-1/4	952286
34	0.1110	1-1/4	2-1/4	952284
33	0.1130	1-1/4	2-1/4	952282
32	0.1160	1-1/4	2-1/4	952280
3 mm	0.1181	31.8 mm	57.2 mm	952648
31	0.1200	1-1/4	2-1/4	952278
1/8	0.1250	1-1/4	2-1/4	952100
30	0.1285	1-1/4	2-1/4	952276
29	0.1360	1-3/8	2-1/2	952274
3.5 mm	0.1378	34.9 mm	63.5 mm	952650
28	0.1405	1-3/8	2-1/2	952272
9/64	0.1406	1-3/8	2-1/2	952102
27	0.1440	1-3/8	2-1/2	952270
26	0.1470	1-3/8	2-1/2	952268
25	0.1495	1-3/8	2-1/2	952266
24	0.1520	1-3/8	2-1/2	952264
23	0.1540	1-3/8	2-1/2	952262
5/32	0.1563	1-3/8	2-1/2	952104
22	0.1570	1-3/8	2-1/2	952260
4 mm	0.1575	34.9 mm	63.5 mm	952652
21	0.1590	1-3/8	2-1/2	952258

Jobber Length Drills

Inch, Metric & Wire Gage Sizes – Solid Carbide – 118° Point *(continued)*



Size	Decimal Equivalent (Inch)	Flute Length	Overall Length	Code
20	0.1610	1-3/8	2-1/2	952256
19	0.1660	1-5/8	2-3/4	952254
18	0.1695	1-5/8	2-3/4	952252
11/64	0.1719	1-5/8	2-3/4	952106
17	0.1730	1-5/8	2-3/4	952250
16	0.1770	1-5/8	2-3/4	952248
4.5 mm	0.1772	41.3 mm	69.9 mm	952654
15	0.1800	1-5/8	2-3/4	952246
14	0.1820	1-5/8	2-3/4	952244
13	0.1850	1-5/8	2-3/4	952242
3/16	0.1875	1-5/8	2-3/4	952108
12	0.1890	1-5/8	2-3/4	952240
11	0.1910	1-5/8	2-3/4	952238
10	0.1935	1-5/8	2-3/4	952236
9	0.1960	1-3/4	3	952234
5 mm	0.1969	44.5 mm	76.2 mm	952656
8	0.1990	1-3/4	3	952232
7	0.2010	1-3/4	3	952230
13/64	0.2031	1-3/4	3	952110
6	0.2040	1-3/4	3	952228
5	0.2055	1-3/4	3	952226
4	0.2090	1-3/4	3	952224
3	0.2130	1-3/4	3	952222
5.5 mm	0.2165	44.5 mm	76.2 mm	952658
7/32	0.2188	1-3/4	3	952112
2	0.2210	1-3/4	3	952220
1	0.2280	1-3/4	3	952218
A	0.2340	2	3-1/4	952158
15/64	0.2344	2	3-1/4	952114
6 mm	0.2362	50.8 mm	82.6 mm	952660
B	0.2380	2	3-1/4	952160
C	0.2420	2	3-1/4	952162
D	0.2460	2	3-1/4	952164
1/4 (E)	0.2500	2	3-1/4	952116
E	0.2500	2	3-1/4	952166
6.5 mm	0.2559	50.8 mm	82.6 mm	952662
F	0.2570	2	3-1/4	952168
G	0.2610	2-1/8	3-1/2	952170
17/64	0.2656	2-1/8	3-1/2	952118
H	0.2660	2-1/8	3-1/2	952172
I	0.2720	2-1/8	3-1/2	952174
7 mm	0.2756	54.0 mm	88.9 mm	952664

Size	Decimal Equivalent (Inch)	Flute Length	Overall Length	Code
J	0.2770	2-1/8	3-1/2	952176
K	0.2810	2-1/8	3-1/2	952178
9/32	0.2812	2-1/8	3-1/2	952120
L	0.2900	2-1/8	3-1/2	952180
M	0.2950	2-3/8	3-3/4	952182
7.5 mm	0.2953	60.3 mm	101.6 mm	952666
19/64	0.2969	2-3/8	3-3/4	952122
N	0.3020	2-3/8	3-3/4	952184
5/16	0.3125	2-3/8	3-3/4	952124
8 mm	0.3150	60.3 mm	101.6 mm	952668
O	0.3160	2-3/8	3-3/4	952186
P	0.3230	2-3/8	3-3/4	952188
21/64	0.3281	2-1/2	4	952126
Q	0.3320	2-1/2	4	952190
8.5 mm	0.3346	63.5 mm	101.6 mm	952670
R	0.3390	2-1/2	4	952192
11/32	0.3438	2-1/2	4	952128
S	0.3480	2-1/2	4	952194
9 mm	0.3543	69.9 mm	108 mm	952672
T	0.3580	2-3/4	4-1/4	952196
23/64	0.3594	2-3/4	4-1/4	952130
U	0.3680	2-3/4	4-1/4	952198
9.5 mm	0.3740	69.9 mm	108 mm	952674
3/8	0.3750	2-3/4	4-1/4	952132
V	0.3770	2-3/4	4-1/4	952200
W	0.3860	2-7/8	4-1/2	952202
25/64	0.3906	2-7/8	4-1/2	952134
10 mm	0.3937	73.0 mm	114.3 mm	952676
X	0.3970	2-7/8	4-1/2	952204
Y	0.4040	2-7/8	4-1/2	952206
13/32	0.4062	2-7/8	4-1/2	952136
Z	0.4130	2-7/8	4-1/2	952208
10.5 mm	0.4134	73.0 mm	114.3 mm	952678
27/64	0.4219	2-7/8	4-1/2	952138
11 mm	0.4331	73.0 mm	114.3 mm	952680
7/16	0.4375	2-7/8	4-1/2	952140
11.5 mm	0.4528	76.2 mm	120.7 mm	952682
29/64	0.4531	3	4-3/4	952142
15/32	0.4688	3	4-3/4	952144
12 mm	0.4724	76.2 mm	120.7 mm	952684
31/64	0.4844	3	4-3/4	952146
1/2	0.5000	3	4-3/4	952148

NOTE: See Reference section for recommended cutting conditions for standard carbide drills

Jobber Length Drills

Inch, Metric & Wire Gage Sizes – Carbide Tipped – 118° Point



- Designed for production drilling of cast iron, non-ferrous metals, composites, plastics, and non-metals (Not normally recommended for drilling steels)
- Carbide tips are high temperature brazed to hardened high speed steel bodies
- Choose carbide tipped design when setup rigidity is difficult to maintain and where cost control is indicated and regrind life is not a significant factor

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
32	0.1160	1-5/8	2-3/4	555101
31	0.1200	1-5/8	2-3/4	555102
1/8	0.1250	1-5/8	2-3/4	555103
30	0.1285	1-5/8	2-3/4	555104
29	0.1360	2	3-1/8	555105
28	0.1405	2	3-1/8	555106
9/64	0.1406	2	3-1/8	555107
27	0.1440	2	3-1/8	555108
26	0.1470	2	3-1/8	555109
25	0.1495	2	3-1/8	555110
24	0.1520	2	3-1/8	555111
23	0.1540	2	3-1/8	555112
5/32	0.1562	2	3-1/8	555113
22	0.1570	2	3-1/8	555114
21	0.1590	2	3-1/8	555115
20	0.1610	2-5/16	3-1/2	555116
19	0.1660	2-5/16	3-1/2	555117
18	0.1695	2-5/16	3-1/2	555118
11/64	0.1719	2-5/16	3-1/2	555119
17	0.1730	2-5/16	3-1/2	555120
16	0.1770	2-5/16	3-1/2	555121
15	0.1800	2-5/16	3-1/2	555122
14	0.1820	2-5/16	3-1/2	555123
13	0.1850	2-5/16	3-1/2	555124
3/16	0.1875	2-5/16	3-1/2	555125
12	0.1890	2-5/16	3-1/2	555126
11	0.1910	2-5/16	3-1/2	555127
10	0.1935	2-1/2	3-3/4	555128
9	0.1960	2-1/2	3-3/4	555129
8	0.1990	2-1/2	3-3/4	555130
7	0.2010	2-1/2	3-3/4	555131
13/64	0.2031	2-1/2	3-3/4	555132
6	0.2040	2-1/2	3-3/4	555133
5	0.2055	2-1/2	3-3/4	555134
4	0.2090	2-1/2	3-3/4	555135
3	0.2130	2-1/2	3-3/4	555136
7/32	0.2188	2-1/2	3-3/4	555137
2	0.2210	2-1/2	3-3/4	555138
1	0.2280	2-3/4	4	555139
A	0.2340	2-3/4	4	555140

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
15/64	0.2344	2-3/4	4	555141
B	0.2380	2-3/4	4	555142
C	0.2420	2-3/4	4	555143
D	0.2460	2-3/4	4	555144
1/4 & E	0.2500	2-3/4	4	555146
F	0.2570	2-15/16	4-1/4	555147
G	0.2610	2-15/16	4-1/4	555148
17/64	0.2656	2-15/16	4-1/4	555149
H	0.2660	2-15/16	4-1/4	555150
I	0.2720	2-15/16	4-1/4	555151
J	0.2770	2-15/16	4-1/4	555152
K	0.2810	2-15/16	4-1/4	555153
9/32	0.2812	2-15/16	4-1/4	555154
L	0.2900	3-3/16	4-1/2	555155
M	0.2950	3-3/16	4-1/2	555156
19/64	0.2969	3-3/16	4-1/2	555157
N	0.3020	3-3/16	4-1/2	555158
5/16	0.3125	3-3/16	4-1/2	555159
O	0.3160	3-3/16	4-1/2	555160
P	0.3230	3-7/16	4-3/4	555161
21/64	0.3281	3-7/16	4-3/4	555162
R	0.3390	3-7/16	4-3/4	555164
11/32	0.3438	3-7/16	4-3/4	555165
S	0.3480	3-5/8	5	555166
T	0.3580	3-5/8	5	555167
23/64	0.3594	3-5/8	5	555168
U	0.3680	3-5/8	5	555169
3/8	0.3750	3-5/8	5	555170
V	0.3770	3-5/8	5	555171
W	0.3860	3-7/8	5-1/4	555172
25/64	0.3906	3-7/8	5-1/4	555173
X	0.3970	3-7/8	5-1/4	555174
Y	0.4040	3-7/8	5-1/4	555175
13/32	0.4062	3-7/8	5-1/4	555176
Z	0.4130	4-1/16	5-1/2	555177
27/64	0.4219	4-1/16	5-1/2	555178
7/16	0.4375	4-1/16	5-1/2	555179
29/64	0.4531	4-5/16	5-3/4	555180
15/32	0.4688	4-5/16	5-3/4	555181
31/64	0.4844	4-1/2	6	555182
1/2	0.5000	4-1/2	6	555183

Left Hand Jobber Length Drills

High Speed Steel



- 118° point
- For use in left hand spindle rotation on screw machines and drill heads
- May be used as screw extractor for drilling out broken studs or fasteners
- Sets supplied in metal indexed storage case

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
1/64	0.0156	3/16	3/4	607600
1/32	0.0312	1/2	1-3/8	607601

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
3/64	0.0469	3/4	1-3/4	607602
1/16	0.0625	7/8	1-7/8	751201

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
5/64	0.0781	1	2	751202
3/32	0.0938	1-1/4	2-1/4	751203

Left Hand Jobber Length Drills

High Speed Steel *(continued)*

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
7/64	0.1094	1-1/2	2-5/8	751204
1/8	0.1250	1-5/8	2-3/4	751205
9/64	0.1406	1-3/4	2-7/8	751206
5/32	0.1562	2	3-1/8	751207
11/64	0.1719	2-1/8	3-1/4	607610
3/16	0.1875	2-5/16	3-1/2	751208
13/64	0.2031	2-7/16	3-5/8	751209
7/32	0.2188	2-1/2	3-3/4	751210
15/64	0.2344	2-5/8	3-7/8	751211
1/4	0.2500	2-3/4	4	607615

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
17/64	0.2656	2-7/8	4-1/8	751212
9/32	0.2812	2-15/16	4-1/4	751213
19/64	0.2969	3-1/16	4-3/8	751214
5/16	0.3125	3-3/16	4-1/2	751215
21/64	0.3281	3-5/16	4-5/8	751216
11/32	0.3438	3-7/16	4-3/4	751217
23/64	0.3594	3-1/2	4-7/8	751218
3/8	0.3750	3-5/8	5	751219

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
25/64	0.3906	3-3/4	5-1/8	751220
13/32	0.4062	3-7/8	5-1/4	751221
27/64	0.4219	3-15/16	5-3/8	751222
7/16	0.4375	4-1/16	5-1/2	751223
29/64	0.4531	4-3/16	5-5/8	751224
15/32	0.4688	4-5/16	5-3/4	751225
31/64	0.4844	4-3/8	5-7/8	751226
1/2	0.5000	4-1/2	6	751227

Screw Machine Length Drills

High Speed Steel & Cobalt

General Purpose
High Speed Steel – Bright Finish



Drill Size	Shank Diameter
Up to 1”	Same as drill diameter
Over 1” to 1-1/4”	1”
Over 1-1/4” to 1-1/2”	1-1/4”
Over 1-1/2” to 2-1/2”	1-1/2”

- 118° standard point
- Popular drills in the automotive and construction industries
- Short flute and overall length provides maximum rigidity
- Often used in screw machine set-ups where spindle clearance is limited

Heavy Duty
Cobalt



- 135° split point
- Short flute length and overall length provides maximum rigidity drilling in stainless and other tough alloys, castings and forgings
- Sets supplied in metal indexed storage case

Fractional Sizes

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Bright Finish Code	Cobalt Code
3/64	0.0469	1/2	1-3/8	607900	*752771
1/16	0.0625	5/8	1-5/8	752308	752708
5/64	0.0781	11/16	1-11/16	752314	752714
3/32	0.0938	3/4	1-3/4	752321	752721
7/64	0.1094	13/16	1-13/16	752328	752728
1/8	0.1250	7/8	1-7/8	752334	752734
9/64	0.1406	15/16	1-15/16	752338	752738
5/32	0.1562	1	2-1/16	752344	752744
11/64	0.1719	1-1/16	2-1/8	752350	752750
3/16	0.1875	1-1/8	2-3/16	752356	752756
13/64	0.2031	1-3/16	2-1/4	752363	752763
7/32	0.2188	1-1/4	2-3/8	752368	752768
15/64	0.2344	1-5/16	2-7/16	752372	752771
1/4	0.2500	1-3/8	2-1/2	752376	752772
17/64	0.2656	1-7/16	2-5/8	752379	752773
9/32	0.2812	1-1/2	2-11/16	752384	752774
19/64	0.2969	1-9/16	2-3/4	752387	752775
5/16	0.3125	1-5/8	2-13/16	752389	752776
21/64	0.3281	1-11/16	2-15/16	752392	752777
11/32	0.3438	1-11/16	3	752395	752778
23/64	0.3594	1-3/4	3-1/16	752398	752779
3/8	0.3750	1-13/16	3-1/8	752400	752780
25/64	0.3906	1-7/8	3-1/4	752403	752781
13/32	0.4062	1-15/16	3-5/16	752406	752782

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Bright Finish Code	Cobalt Code
27/64	0.4219	2	3-3/8	752408	752783
7/16	0.4375	2-1/16	3-7/16	752409	752784
29/64	0.4531	2-1/8	3-9/16	752410	752785
15/32	0.4688	2-1/8	3-5/8	752411	752786
31/64	0.4844	2-3/16	3-11/16	752412	752787
1/2	0.5000	2-1/4	3-3/4	752413	752788
33/64	0.5156	2-3/8	3-7/8	607930	608480
17/32	0.5312	2-3/8	3-7/8	607931	608481
35/64	0.5469	2-1/2	4	607932	608482
9/16	0.5625	2-1/2	4	607933	608483
37/64	0.5781	2-5/8	4-1/8	607934	608484
19/32	0.5938	2-5/8	4-1/8	607935	608485
39/64	0.6094	2-3/4	4-1/4	607936	608486
5/8	0.6250	2-3/4	4-1/4	607937	608487
41/64	0.6406	2-7/8	4-1/2	607938	608488
21/32	0.6562	2-7/8	4-1/2	607939	608489
43/64	0.6719	2-7/8	4-5/8	607940	608490
11/16	0.6875	2-7/8	4-5/8	607941	608491
45/64	0.7031	3	4-3/4	607942	608492
23/32	0.7188	3	4-3/4	607943	608493
47/64	0.7344	3-1/8	5	607944	608494
3/4	0.7500	3-1/8	5	607945	608495
49/64	0.7656	3-1/4	5-1/8	607946	608496
25/32	0.7812	3-1/4	5-1/8	607947	608497

Cobalt sizes under 1/16” are **not split point*

Screw Machine Length Drills

High Speed Steel & Cobalt



Fractional Sizes *(continued)*

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Bright Finish	Cobalt
				Code	Code
51/64	0.7969	3-3/8	5-1/4	607948	608498
13/16	0.8125	3-3/8	5-1/4	607949	608499
53/64	0.8281	3-1/2	5-3/8	607950	608500
27/32	0.8438	3-1/2	5-3/8	607951	608501
55/64	0.8594	3-1/2	5-1/2	607952	608502
7/8	0.8750	3-1/2	5-1/2	607953	608503
57/64	0.8906	3-5/8	5-5/8	607954	608504
29/32	0.9062	3-5/8	5-5/8	607955	608505
59/64	0.9219	3-3/4	5-3/4	607956	608506
15/16	0.9375	3-3/4	5-3/4	607957	608507
61/64	0.9531	3-7/8	5-7/8	607958	608508
31/32	0.9688	3-7/8	5-7/8	607959	608509
63/64	0.9844	4	6	607960	608510
1	1.0000	4	6	607961	608016
1-3/8	1.3750	4-1/2	7-1/8	–	608017

NOTE: Sizes over 1/2" furnished with notched point

Letter Sizes

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Bright Finish	Cobalt
				Code	Code
A	0.2340	2-5/8	3-7/8	752371	608511
B	0.2380	2-3/4	4	752373	608512
C	0.2420	2-3/4	4	752374	608513
D	0.2460	2-3/4	4	752375	608514
E	0.2500	2-3/4	4	752376	752772
F	0.2570	2-7/8	4-1/8	752377	608515
G	0.2610	2-7/8	4-1/8	752378	608516
H	0.2660	2-7/8	4-1/8	752380	608517
I	0.2720	2-7/8	4-1/8	752381	608518
J	0.2770	2-7/8	4-1/8	752382	608519
K	0.2810	2-15/16	4-1/4	752383	608520
L	0.2900	2-15/16	4-1/4	752385	608521
M	0.2950	3-1/16	4-3/8	752386	608522
N	0.3020	3-1/16	4-3/8	752388	608523
O	0.3160	3-3/16	4-1/2	752390	608524
P	0.3230	3-5/16	4-5/8	752391	608525
Q	0.3320	3-7/16	4-3/4	752393	608526
R	0.3390	3-7/16	4-3/4	752394	608527
S	0.3480	3-1/2	4-7/8	752396	608528
T	0.3580	3-1/2	4-7/8	752397	608529
U	0.3680	3-5/8	5	752399	608530
V	0.3770	3-5/8	5	752401	608531
W	0.3860	3-3/4	5-1/8	752402	608532
X	0.3970	3-3/4	5-1/8	752404	608533
Y	0.4040	3-7/8	5-1/4	752405	608534
Z	0.4130	3-7/8	5-1/4	752407	608535

Wire Gage Sizes

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Bright Finish	Cobalt
				Code	Code
1	0.2280	1-5/16	2-7/16	752370	752770
2	0.2210	1-5/16	2-7/16	752369	752769
3	0.2130	1-1/4	2-3/8	752367	752767
4	0.2090	1-1/4	2-3/8	752366	752766
5	0.2055	1-1/4	2-3/8	752365	752765
6	0.2040	1-1/4	2-3/8	752364	752764
7	0.2010	1-3/16	2-1/4	752362	752762
8	0.1990	1-3/16	2-1/4	752361	752761
9	0.1960	1-3/16	2-1/4	752360	752760
10	0.1935	1-3/16	2-1/4	752359	752759
11	0.1910	1-3/16	2-1/4	752358	752758
12	0.1890	1-3/16	2-1/4	752357	752757
13	0.1850	1-1/8	2-3/16	752355	752755
14	0.1820	1-1/8	2-3/16	752354	752754
15	0.1800	1-1/8	2-3/16	752353	752753
16	0.1770	1-1/8	2-3/16	752352	752752
17	0.1730	1-1/8	2-3/16	752351	752751
18	0.1695	1-1/16	2-1/8	752349	752749
19	0.1660	1-1/16	2-1/8	752348	752748
20	0.1610	1-1/16	2-1/8	752347	752747
21	0.1590	1-1/16	2-1/8	752346	752746
22	0.1570	1-1/16	2-1/8	752345	752745
23	0.1540	1	2-1/16	752343	752743
24	0.1520	1	2-1/16	752342	752742
25	0.1495	1	2-1/16	752341	752741
26	0.1470	1	2-1/16	752340	752740
27	0.1440	1	2-1/16	752339	752737
28	0.1405	15/16	1-15/16	752337	752737
29	0.1360	15/16	1-15/16	752336	752736
30	0.1285	15/16	1-15/16	752335	752735
31	0.1200	7/8	1-7/8	752333	752733
32	0.1160	7/8	1-7/8	752332	752732

Screw Machine Length Drills

High Speed Steel & Cobalt



Wire Gage Sizes *(continued)*

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Bright Finish	Cobalt
				Code	Code
33	0.1130	7/8	1-7/8	752331	752731
34	0.1110	7/8	1-7/8	752330	752730
35	0.1100	7/8	1-7/8	752329	752729
36	0.1065	13/16	1-13/16	752327	752727
37	0.1040	13/16	1-13/16	752326	752726
38	0.1015	13/16	1-13/16	752325	752725
39	0.0995	13/16	1-13/16	752324	752724
40	0.0980	13/16	1-13/16	752323	752723
41	0.0960	13/16	1-13/16	752322	752722
42	0.0935	3/4	1-3/4	752320	752720
43	0.0890	3/4	1-3/4	752319	752719
44	0.0860	3/4	1-3/4	752318	752718
45	0.0820	3/4	1-3/4	752317	752717
46	0.0810	3/4	1-3/4	752316	752716

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Bright Finish	Cobalt
				Code	Code
47	0.0785	3/4	1-3/4	752315	752715
48	0.0760	11/16	1-11/16	752313	752713
49	0.0730	11/16	1-11/16	752312	752712
50	0.0700	11/16	1-11/16	752311	752711
51	0.0670	11/16	1-11/16	752310	752710
52	0.0635	11/16	1-11/16	752309	752709
53	0.0595	5/8	1-5/8	752307	* 752707
54	0.0550	5/8	1-5/8	752306	* 752706
55	0.0520	5/8	1-5/8	752305	* 752705
56	0.0465	1/2	1-3/8	752304	* 752704
57	0.0430	1/2	1-3/8	752303	* 752703
58	0.0420	1/2	1-3/8	752302	* 752702
59	0.0410	1/2	1-3/8	752301	* 752701
60	0.0400	1/2	1-3/8	752300	* 752700

Cobalt sizes 53 to 60 are **not split point*

Metric Screw Machine Length Drills

Heavy Duty – Cobalt



- 135° split point

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
1.00	0.0394	1/2	1-3/8	*608596
1.40	0.0551	1/2	1-3/8	*608597
1.50	0.0591	1/2	1-3/8	*608598
1.70	0.0669	7/16	1-3/8	608599
1.75	0.0689	7/16	1-7/16	608600
2.00	0.0787	15/32	1-1/2	608601
2.05	0.0807	15/32	1-1/2	608602
2.50	0.0984	1/2	1-9/16	608603
2.70	0.1063	5/8	1-13/16	608604
2.80	0.1102	5/8	1-13/16	608605
3.00	0.1181	5/8	1-13/16	608606
3.20	0.1260	23/32	1-13/16	608607
3.50	0.1378	25/32	2-1/16	608608
4.00	0.1575	7/8	2-5/32	608609

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
4.20	0.1654	7/8	2-5/32	608610
4.30	0.1693	15/16	2-9/32	608611
4.40	0.1732	15/16	2-9/32	608612
4.50	0.1772	15/16	2-9/32	608613
5.00	0.1969	1-1/32	2-7/16	608614
5.40	0.2126	1-3/32	2-19/32	608615
5.80	0.2283	1-3/32	2-19/32	608616
6.00	0.2362	1-3/32	2-19/32	608617
6.50	0.2559	1-7/32	2-3/4	608618
7.00	0.2756	1-11/32	2-29/32	608619
7.10	0.2795	1-11/32	2-29/32	608620
7.40	0.2913	1-11/32	2-29/32	608621
7.50	0.2953	1-11/32	2-29/32	608622
7.60	0.2992	1-15/32	3-1/8	608623

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
7.90	0.3110	1-15/32	3-1/8	608624
8.00	0.3150	1-15/32	3-1/8	608625
8.20	0.3228	1-15/32	3-1/8	608626
8.40	0.3307	1-15/32	3-1/8	608627
8.50	0.3346	1-15/32	3-1/8	608628
9.00	0.3543	1-9/16	3-5/16	608629
9.10	0.3583	1-9/16	3-5/16	608630
9.90	0.3898	1-11/16	3-1/2	608631
10.00	0.3937	1-11/16	3-1/2	608632
10.50	0.4134	1-11/16	3-1/2	608633
11.50	0.4528	1-7/8	3-3/4	608634
11.80	0.4646	1-7/8	3-3/4	608635
12.20	0.4803	2-1/64	4-1/64	608636
12.50	0.4921	2-1/64	4-1/64	608637

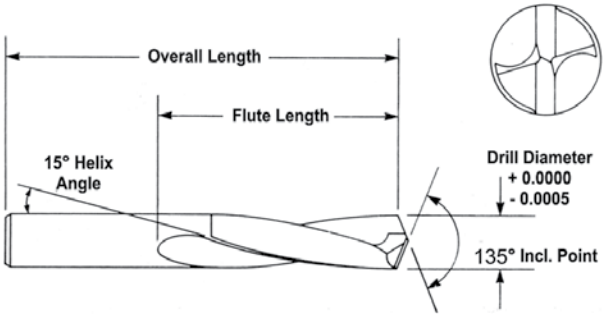
Cobalt sizes 1.00mm to 1.50mm are **not split point*

Screw Machine Length Drills

Inch, Metric, Wire Gage & Letter Sizes – Solid Carbide – 135° Split Point



- For use on work hardening and gummy materials, titanium, inconel, cast iron, and stainless steel



Size	Decimal Equivalent (Inch)	Flute Length	Overall Length	Code
60	0.0400	3/8	1-1/2	952630
59	0.0410	3/8	1-1/2	952628
58	0.0420	3/8	1-1/2	952626
57	0.0430	3/8	1-1/2	952624
56	0.0465	3/8	1-1/2	952622
55	0.0520	3/8	1-1/2	952620
54	0.0550	3/8	1-1/2	952618
1.5 mm	0.0591	9.5 mm	38.1 mm	952702
53	0.0595	3/8	1-1/2	952616
1/16	0.0625	3/8	1-1/2	952386
52	0.0635	3/8	1-1/2	952614
51	0.0670	3/8	1-1/2	952612
50	0.0700	3/8	1-1/2	952610
49	0.0730	3/8	1-1/2	952608
48	0.0760	1/2	1-1/2	952606
5/64	0.0781	1/2	1-1/2	952388
47	0.0785	1/2	1-1/2	952604
2 mm	0.0787	12.7 mm	38.1 mm	952704
46	0.0810	1/2	1-1/2	952602
45	0.0820	1/2	1-1/2	952600
44	0.0860	1/2	2	952598
43	0.0890	1/2	2	952596
42	0.0935	1/2	2	952594
3/32	0.0938	1/2	2	952390
41	0.0960	1/2	2	952592
40	0.0980	5/8	2	952590
2.5 mm	0.0984	15.9 mm	50.8 mm	952706
39	0.0995	5/8	2	952588
38	0.1015	5/8	2	952586
37	0.1040	5/8	2	952584
36	0.1065	5/8	2	952582
7/64	0.1094	5/8	2	952392
35	0.1100	5/8	2	952580
34	0.1110	5/8	2	952578
33	0.1130	5/8	2	952576
32	0.1160	5/8	2	952574
3 mm	0.1181	15.9 mm	50.8 mm	952708
31	0.1200	5/8	2	952572
1/8	0.1250	5/8	2	952394
30	0.1285	5/8	2	952570
29	0.1360	5/8	2	952568
3.5 mm	0.1378	15.9 mm	50.8 mm	952710
28	0.1405	5/8	2	952566
9/64	0.1406	5/8	2	952396
27	0.1440	5/8	2	952564
26	0.1470	5/8	2	952562
25	0.1495	5/8	2	952560
24	0.1520	5/8	2	952558

Size	Decimal Equivalent (Inch)	Flute Length	Overall Length	Code
23	0.1540	5/8	2	952556
5/32	0.1563	3/4	2	952398
22	0.1570	3/4	2	952554
4 mm	0.1575	19.1 mm	50.8 mm	952712
21	0.1590	3/4	2	952552
20	0.1610	3/4	2	952550
19	0.1660	3/4	2-1/8	952548
18	0.1695	3/4	2-1/8	952546
11/64	0.1719	3/4	2-1/8	952400
17	0.1730	3/4	2-1/8	952544
16	0.1770	3/4	2-1/8	952542
4.5 mm	0.1772	19.1 mm	54 mm	952714
15	0.1800	3/4	2-3/16	952540
14	0.1820	3/4	2-3/16	952538
13	0.1850	3/4	2-3/16	952536
3/16	0.1875	3/4	2-3/16	952402
12	0.1890	3/4	2-3/16	952534
11	0.1910	3/4	2-3/16	952532
10	0.1935	3/4	2-3/16	952530
9	0.1960	3/4	2-1/4	952528
5 mm	0.1969	19.1 mm	57.2 mm	952716
8	0.1990	3/4	2-1/4	952526
7	0.2010	3/4	2-1/4	952524
13/64	0.2031	3/4	2-1/4	952404
6	0.2040	3/4	2-1/4	952522
5	0.2055	3/4	2-1/4	952520
4	0.2090	3/4	2-1/4	952518
3	0.2130	1	2-1/2	952516
5.5 mm	0.2165	25.4 mm	63.5 mm	952718
7/32	0.2188	1	2-1/2	952406
2	0.2210	1	2-1/2	952514
1	0.2280	1	2-1/2	952512
A	0.2340	1	2-1/2	952452
15/64	0.2344	1	2-1/2	952408
6 mm	0.2362	5.4 mm	63.5 mm	952720
B	0.2380	1	2-1/2	952454
C	0.2420	1	2-1/2	952456
D	0.2460	1	2-1/2	952458
1/4 (E)	0.2500	1	2-1/2	952410
E	0.2500	1	2-1/2	952460
6.5 mm	0.2559	25.4 mm	63.5 mm	952722
F	0.2570	1	2-1/2	952462
G	0.2610	1	2-1/2	952464
17/64	0.2656	1	2-1/2	952412
H	0.2660	1	2-1/2	952466
I	0.2720	1	2-1/2	952468
7 mm	0.2756	25.4 mm	63.5 mm	952724
J	0.2770	1	2-1/2	952470

Screw Machine Length Drills

Inch, Metric, Wire Gage & Letter Sizes – Solid Carbide – 135° Split Point *(continued)*

Size	Decimal Equivalent (Inch)	Flute Length	Overall Length	Code
K	0.2810	1	2-1/2	952472
9/32	0.2813	1	2-1/2	952414
L	0.2900	1	2-1/2	952474
M	0.2950	1-1/4	2-1/2	952476
7.5 mm	0.2953	31.8 mm	63.5 mm	952726
19/64	0.2969	1-1/4	2-1/2	952416
N	0.3020	1-1/4	2-1/2	952478
5/16	0.3125	1-1/4	2-1/2	952418
8 mm	0.3150	31.8 mm	63.5 mm	952728
O	0.3160	1-1/4	2-1/2	952480
P	0.3230	1-1/4	2-1/2	952482
21/64	0.3281	1-1/4	2-1/2	952420
Q	0.3320	1-1/4	2-1/2	952484
8.5 mm	0.3346	31.8 mm	63.5 mm	952730
R	0.3390	1-1/4	2-1/2	952486
11/32	0.3438	1-1/4	2-1/2	952422
S	0.3480	1-1/4	2-1/2	952488
9 mm	0.3543	31.8 mm	63.5 mm	952732
T	0.3580	1-1/4	2-1/2	952490
23/64	0.3594	1-1/4	2-1/2	952424

Size	Decimal Equivalent (Inch)	Flute Length	Overall Length	Code
U	0.3680	1-1/4	2-1/2	952492
9.5 mm	0.3740	31.8 mm	63.5 mm	952734
3/8	0.3750	1-1/4	2-1/2	952426
V	0.3770	1-1/4	2-1/2	952494
W	0.3860	1-1/4	2-3/4	952496
25/64	0.3906	1-1/4	2-3/4	952428
10 mm	0.3937	31.8 mm	69.9 mm	952736
X	0.3970	1-1/4	2-3/4	952498
Y	0.4040	1-1/4	2-3/4	952500
13/32	0.4063	1-1/4	2-3/4	952430
Z	0.4130	1-1/4	2-3/4	952502
10.5 mm	0.4134	31.8 mm	69.9 mm	952738
27/64	0.4219	1-1/4	2-3/4	952432
11 mm	0.4331	31.8 mm	69.9 mm	952740
7/16	0.4375	1-1/4	2-3/4	952434
11.5 mm	0.4528	31.8 mm	76.2 mm	952742
29/64	0.4531	1-1/4	3	952436
15/32	0.4688	1-1/4	3	952438
12 mm	0.4724	31.8 mm	76.2 mm	952744
31/64	0.4844	1-1/4	3	952440
1/2	0.5000	1-1/4	3	952442

Taper Length Drills

High Speed Steel & Cobalt

General Purpose
High Speed Steel – Black Oxide



- 118° point for general purpose applications
- Used where a longer overall length and flute length are required
- Used in production drilling, they have the same flute length as taper shank drills
- Sets supplied in metal indexed storage case

Heavy Duty
Super Cobalt – Bronze Finish



- 135° split point, super cobalt, heavy duty for stainless steel and other tough alloy steels, castings, and forgings
- Used where a longer overall length and flute length are required
- Used in production drilling, they have the same flute length as taper shank drills
- Sets supplied in metal indexed storage case

Fractional Sizes

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Black Oxide	Super Cobalt
				Code	Code
1/64	0.0156	5/16	1-1/2	609100	609500
1/32	0.0312	3/4	2	609101	609501
3/64	0.0469	1-1/8	2-1/4	752805	609502
1/16	0.0625	1-3/4	3	752809	609503
5/64	0.0781	2	3-3/4	752815	609504
3/32	0.0938	2-1/4	4-1/4	752822	609505
7/64	0.1094	2-1/2	4-5/8	752829	609506
1/8	0.1250	2-3/4	5-1/8	752835	609507
9/64	0.1406	3	5-3/8	752839	609508
5/32	0.1562	3	5-3/8	752845	609509
11/64	0.1719	3-3/8	5-3/4	752851	609510
3/16	0.1875	3-3/8	5-3/4	752857	609511

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Black Oxide	Super Cobalt
				Code	Code
13/64	0.2031	3-5/8	6	752864	609512
7/32	0.2188	3-5/8	6	752869	609513
15/64	0.2344	3-3/4	6-1/8	752873	609514
1/4	0.2500	3-3/4	6-1/8	752877	609515
17/64	0.2656	3-7/8	6-1/4	752880	609516
9/32	0.2812	3-7/8	6-1/4	752885	609517
19/64	0.2969	4	6-3/8	752888	609518
5/16	0.3125	4	6-3/8	752890	609519
21/64	0.3281	4-1/8	6-1/2	752893	609520
11/32	0.3438	4-1/8	6-1/2	752896	609521
23/64	0.3594	4-1/4	6-3/4	752899	609522
3/8	0.3750	4-1/4	6-3/4	752901	609523

Taper Length Drills

High Speed Steel & Cobalt



Fractional Sizes *(continued)*

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS Black Oxide Code	Super Cobalt Code
25/64	0.3906	4-3/8	7	752904	609524
13/32	0.4062	4-3/8	7	752907	609525
27/64	0.4219	4-5/8	7-1/4	752909	609526
7/16	0.4375	4-5/8	7-1/4	752910	609527
29/64	0.4531	4-3/4	7-1/2	752911	609528
15/32	0.4688	4-3/4	7-1/2	752912	609529
31/64	0.4844	4-3/4	7-3/4	752913	609530
1/2	0.5000	4-3/4	7-3/4	752914	609531
33/64	0.5156	4-3/4	8	752915	609532
17/32	0.5312	4-3/4	8	752916	609533
35/64	0.5469	4-7/8	8-1/4	752917	609534
9/16	0.5625	4-7/8	8-1/4	752918	609535
37/64	0.5781	4-7/8	8-3/4	752919	609536
19/32	0.5938	4-7/8	8-3/4	752920	609537
39/64	0.6094	4-7/8	8-3/4	752921	609538
5/8	0.6250	4-7/8	8-3/4	752922	609539
41/64	0.6406	5-1/8	9	752923	609540
21/32	0.6562	5-1/8	9	752924	609541
43/64	0.6719	5-3/8	9-1/4	752924	609542
11/16	0.6875	5-3/8	9-1/4	752926	609543
45/64	0.7031	5-5/8	9-1/2	752927	609544
23/32	0.7188	5-5/8	9-1/2	752928	609545
47/64	0.7344	5-7/8	9-3/4	752929	609546
3/4	0.7500	5-7/8	9-3/4	752930	609547
49/64	0.7656	6	9-7/8	752931	609548
25/32	0.7812	6	9-7/8	752932	609549
51/64	0.7969	6-1/8	10	752933	609550
13/16	0.8125	6-1/8	10	752934	609551
53/64	0.8281	6-1/8	10	752935	609552
27/32	0.8438	6-1/8	10	752936	609553
55/64	0.8594	6-1/8	10	752937	609554
7/8	0.8750	6-1/8	10	752938	609555
57/64	0.8906	6-1/8	10	752939	609556
29/32	0.9062	6-1/8	10	752940	609557
59/64	0.9219	6-1/8	10-3/4	752941	609558
15/16	0.9375	6-1/8	10-3/4	752942	609559
61/64	0.9531	6-3/8	11	752943	609560
31/32	0.9688	6-3/8	11	752944	609561
63/64	0.9844	6-3/8	11	752945	609562
1	1.0000	6-3/8	11	752946	609563
1-1/64	1.0156	6-1/2	11-1/8	752947	–
1-1/32	1.0312	6-1/2	11-1/8	752948	–
1-3/64	1.0469	6-5/8	11-1/4	752949	–
1-1/16	1.0625	6-5/8	11-1/4	752950	–
1-5/64	1.0781	6-7/8	11-1/2	752951	–
1-3/32	1.0938	6-7/8	11-1/2	752952	–
1-7/64	1.1094	7-1/8	11-3/4	752953	–
1-1/8	1.1250	7-1/8	11-3/4	752954	–
1-9/64	1.1406	7-1/4	11-7/8	752955	–
1-5/32	1.1562	7-1/4	11-7/8	752956	–
1-11/64	1.1719	7-3/8	12	752957	–
1-3/16	1.1875	7-3/8	12	752958	–
1-13/64	1.2031	7-1/2	12-1/8	752959	–
1-7/32	1.2188	7-1/2	12-1/8	752960	–
1-15/64	1.2344	7-7/8	12-1/2	752961	–
1-1/4	1.2500	7-7/8	12-1/2	752962	–
1-9/32	1.2812	8-1/2	14-1/8	752963	–
1-5/16	1.3125	8-5/8	14-1/4	752964	–
1-11/32	1.3438	8-3/4	14-3/8	752965	–
1-3/8	1.3750	8-7/8	14-1/2	752966	–
1-13/32	1.4062	9	14-5/8	752967	–
1-7/16	1.4375	9-1/8	14-3/4	752968	–
1-15/32	1.4688	9-1/4	14-7/8	752969	–
1-1/2	1.5000	9-3/8	15	752970	–
1-9/16	1.5625	9-5/8	15-1/4	752971	–
1-5/8	1.6250	9-7/8	15-5/8	752972	–
1-11/16	1.6875	10-1/8	16	609190	–
1-3/4	1.7500	10-1/2	16-1/4	752973	–
1-13/16	1.8125	10-1/2	16-1/4	609192	–
1-7/8	1.8700	10-5/8	16-1/4	609193	–
1-15/16	1.9375	10-3/4	16-5/8	609194	–
2	2.0000	10-3/4	17-1/4	609195	–

NOTE: Sizes over 1/2" furnished with notched point

Wire Gage Sizes

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	High Speed Steel Bright Finish Code
1	0.2280	3-3/4	6-1/8	752871
2	0.2210	3-3/4	6-1/8	752870
3	0.2130	3-5/8	6	752868
4	0.2090	3-5/8	6	752867
5	0.2055	3-5/8	6	752866
6	0.2040	3-5/8	6	752865
7	0.2010	3-5/8	6	752863
8	0.1990	3-5/8	6	752862
9	0.1960	3-5/8	6	752861
10	0.1935	3-5/8	6	752860
11	0.1910	3-5/8	6	752859
12	0.1890	3-5/8	6	752858
13	0.1850	3-3/8	5-3/4	752858
14	0.1820	3-3/8	5-3/4	752855
15	0.1800	3-3/8	5-3/4	752854
16	0.1770	3-3/8	5-3/4	752853
17	0.1730	3-3/8	5-3/4	752852
18	0.1695	3-3/8	5-3/4	752850
19	0.1660	3-3/8	5-3/4	752849
20	0.1610	3-3/8	5-3/4	752848
21	0.1590	3-3/8	5-3/4	752847
22	0.1570	3-3/8	5-3/4	752846
23	0.1540	3	5-3/8	752844
24	0.1520	2	5-3/8	752843

Taper Length Drills

High Speed Steel & Cobalt



Wire Gage Sizes *(continued)*

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	High Speed Steel Bright Finish Code
25	0.1495	2	5-3/8	752842
26	0.1470	2	5-3/8	752841
27	0.1440	2	5-3/8	752840
28	0.1405	2	5-3/8	752838
29	0.1360	2	5-3/8	752837
30	0.1285	2	5-3/8	752836
31	0.1200	2-3/4	5-1/8	752834
32	0.1160	2-3/4	5-1/8	752833
33	0.1130	2-3/4	5-1/8	752832
34	0.1110	2-3/4	5-1/8	752831
35	0.1100	2-3/4	5-1/8	752830
36	0.1065	2-1/2	4-5/8	752828
37	0.1040	2-1/2	4-5/8	752827
38	0.1015	2-1/2	4-5/8	752826
39	0.0995	2-1/2	4-5/8	752825
40	0.0980	2-1/2	4-5/8	752824
41	0.0960	2-1/2	4-5/8	752823
42	0.0935	2-1/4	4-1/4	752821
43	0.0890	2-1/4	4-1/4	752820
44	0.0860	2-1/4	4-1/4	752819
45	0.0820	2-1/4	4-1/4	752818
46	0.0810	2-1/4	4-1/4	752817
47	0.0785	2-1/4	4-1/4	752816
48	0.0760	2	3-3/4	752814
49	0.0730	2	3-3/4	752813
50	0.0700	2	3-3/4	752812
51	0.0670	2	3-3/4	752811
52	0.0635	2	3-3/4	752810

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	High Speed Steel Bright Finish Code
53	0.0595	1-3/4	3	752808
54	0.0550	1-3/4	3	752807
55	0.0520	1-3/4	3	752806
56	0.0465	1-1/8	2-1/4	752804
57	0.0430	1-1/8	2-1/4	752803
58	0.0420	1-1/8	2-1/4	752802
59	0.0410	1-1/8	2-1/4	752801
60	0.0400	1-1/8	2-1/4	752800
61	0.0390	1-1/8	2-1/4	609256
62	0.0380	3/4	2	609257
63	0.0370	3/4	2	609258
64	0.0360	3/4	2	609259
65	0.0350	3/4	2	609260
66	0.0330	3/4	2	609261
67	0.0320	3/4	2	609262
68	0.0310	3/4	2	609263
69	0.0292	3/4	2	609264
70	0.0280	3/4	2	609265
71	0.0260	3/4	2	609266
72	0.0250	5/16	1-1/2	609267
73	0.0240	5/16	1-1/2	609268
74	0.0225	5/16	1-1/2	609269
75	0.0210	5/16	1-1/2	609270
76	0.0200	5/16	1-1/2	609271
77	0.0180	5/16	1-1/2	609272
78	0.0160	5/16	1-1/2	609273
79	0.0145	5/16	1-1/2	609274
80	0.0135	5/16	1-1/2	609275

Metric Taper Length Drills

General Purpose – High Speed Steel



- 118° point
- Longer flute and overall length than jobber length drills

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
1.00	0.0394	1-1/8	2-1/4	609301
1.05	0.0413	1-1/8	2-1/4	609302
1.10	0.0433	1-1/8	2-1/4	609303
1.15	0.0453	1-1/8	2-1/4	609304
1.20	0.0472	1-3/4	3	609305
1.25	0.0492	1-3/4	3	609306
1.30	0.0512	1-3/4	3	609307
1.35	0.0531	1-3/4	3	609308
1.40	0.0551	1-3/4	3	609309
1.45	0.0571	1-3/4	3	609310
1.50	0.0591	1-3/4	3	609311
1.55	0.0610	1-3/4	3	609312

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
1.60	0.0630	2	3-3/4	609313
1.65	0.0650	2	3-3/4	609314
1.70	0.0669	2	3-3/4	609315
1.75	0.0689	2	3-3/4	609316
1.80	0.0709	2	3-3/4	609317
1.85	0.0728	2	3-3/4	609318
1.90	0.0748	2	3-3/4	609319
1.95	0.0768	2	3-3/4	609320
2.00	0.0787	2-1/4	4-1/4	609321
2.05	0.0807	2-1/4	4-1/4	609322
2.10	0.0827	2-1/4	4-1/4	609323
2.15	0.0846	2-1/4	4-1/4	609324

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
2.20	0.0866	2-1/4	4-1/4	609325
2.25	0.0886	2-1/4	4-1/4	609326
2.30	0.0906	2-1/4	4-1/4	609327
2.35	0.0925	2-1/4	4-1/4	609328
2.40	0.0945	2-1/2	4-5/8	609329
2.45	0.0965	2-1/2	4-5/8	609330
2.50	0.0984	2-1/2	4-5/8	609331
2.60	0.1024	2-1/2	4-5/8	609332
2.70	0.1063	2-1/2	4-5/8	609333
2.80	0.1102	2-3/4	5-1/8	609334
2.90	0.1142	2-3/4	5-1/8	609335
3.00	0.1181	2-3/4	5-1/8	609336

Metric Taper Length Drills

General Purpose – High Speed Steel *(continued)*



Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
3.10	0.1220	2-3/4	5-1/8	609337
3.20	0.1260	3	5-3/8	609338
3.30	0.1299	3	5-3/8	609339
3.40	0.1339	3	5-3/8	609340
3.50	0.1378	3	5-3/8	609341
3.60	0.1417	3	5-3/8	609342
3.70	0.1457	3	5-3/8	609343
3.80	0.1496	3	5-3/8	609344
3.90	0.1535	3	5-3/8	609345
4.00	0.1575	3-3/8	5-3/4	609346
4.10	0.1614	3-3/8	5-3/4	609347
4.20	0.1654	3-3/8	5-3/4	609348
4.30	0.1693	3-3/8	5-3/4	609349
4.40	0.1732	3-3/8	5-3/4	609350
4.50	0.1772	3-3/8	5-3/4	609351
4.60	0.1811	3-3/8	5-3/4	609352
4.70	0.1850	3-3/8	5-3/4	609353
4.80	0.1890	3-5/8	6	609354
4.90	0.1929	3-5/8	6	609355
5.00	0.1968	3-5/8	6	609356
5.10	0.2008	3-5/8	6	609357
5.20	0.2047	3-5/8	6	609358
5.30	0.2087	3-5/8	6	609359
5.40	0.2126	3-5/8	6	609360
5.50	0.2165	3-5/8	6	609361
5.70	0.2244	3-3/4	6-1/8	609363
5.80	0.2283	3-3/4	6-1/8	609364
5.90	0.2323	3-3/4	6-1/8	609365
6.00	0.2362	3-3/4	6-1/8	609366
6.10	0.2402	3-3/4	6-1/8	609367
6.20	0.2441	3-3/4	6-1/8	609368
6.30	0.2480	3-3/4	6-1/8	609369
6.40	0.2520	3-7/8	6-1/4	609370
6.50	0.2559	3-7/8	6-1/4	609371
6.80	0.2677	3-7/8	6-1/4	609372
7.00	0.2756	3-7/8	6-1/4	609373
7.20	0.2835	4	6-3/8	609374
7.50	0.2953	4	6-3/8	609375
7.80	0.3071	4	6-3/8	609376
8.00	0.3150	4-1/8	6-1/2	609377
8.20	0.3228	4-1/8	6-1/2	609378
8.50	0.3346	4-1/8	6-1/2	609379
8.80	0.3465	4-1/4	6-3/4	609380
9.00	0.3543	4-1/4	6-3/4	609381
9.20	0.3622	4-1/4	6-3/4	609382
9.50	0.3740	4-1/4	6-3/4	609383
9.80	0.3858	4-3/8	7	609384
10.00	0.3937	4-3/8	7	609385
10.20	0.4016	4-3/8	7	609386
10.50	0.4134	4-5/8	7-1/4	609387
10.80	0.4252	4-5/8	7-1/4	609388
11.00	0.4331	4-5/8	7-1/4	609389
11.20	0.4409	4-3/4	7-1/2	609390
11.50	0.4528	4-3/4	7-1/2	609391
11.80	0.4646	4-3/4	7-1/2	609392
12.00	0.4724	4-3/4	7-3/4	609393
12.20	0.4803	4-3/4	7-3/4	609394
12.50	0.4921	4-3/4	7-3/4	609395
12.80	0.5039	4-3/4	8	609396
13.00	0.5118	4-3/4	8	609397
13.20	0.5197	4-3/4	8	609398
13.50	0.5315	4-3/4	8	609399
13.80	0.5433	4-7/8	8-1/4	609400
14.00	0.5512	4-7/8	8-1/4	609401
14.25	0.5610	4-7/8	8-1/4	609402
14.50	0.5709	4-7/8	8-3/4	609403
14.75	0.5807	4-7/8	8-3/4	609404
15.00	0.5906	4-7/8	8-3/4	609405
15.25	0.6004	4-7/8	8-3/4	609406
15.50	0.6102	4-7/8	8-3/4	609407
15.75	0.6201	4-7/8	8-3/4	609408
16.00	0.6299	5-1/8	9	609409
16.25	0.6398	5-1/8	9	609410
16.50	0.6496	5-1/8	9	609411
16.75	0.6594	5-3/8	9-1/4	609412
17.00	0.6693	5-3/8	9-1/4	609413
17.25	0.6791	5-3/8	9-1/4	609414
17.50	0.6890	5-5/8	9-1/2	609415
17.75	0.6988	5-5/8	9-1/2	609416
18.00	0.7087	5-5/8	9-1/2	609417
18.50	0.7283	5-7/8	9-3/4	609418
19.00	0.7480	5-7/8	9-3/4	609419
19.50	0.7677	6	9-7/8	609420
20.00	0.7874	6-1/8	10	609421
20.50	0.8071	6-1/8	10	609422
21.00	0.8268	6-1/8	10	609423
21.50	0.8465	6-1/8	10	609424
22.00	0.8661	6-1/8	10	609425
22.50	0.8858	6-1/8	10	609426
23.00	0.9055	6-1/8	10	609427
23.50	0.9252	6-1/8	10-3/4	609428
24.00	0.9449	6-3/8	11	609429
24.50	0.9646	6-3/8	11	609430
25.00	0.9843	6-3/8	11	609431
25.50	1.0039	6-1/2	11-1/8	609457
26.00	1.0236	6-1/2	11-1/8	609432
26.50	1.0433	6-5/8	11-1/4	609433
27.00	1.0630	6-5/8	11-1/4	609434
27.50	1.0827	6-7/8	11-1/2	609435
28.00	1.1024	7-1/8	11-3/4	609436
28.50	1.1220	7-1/8	11-3/4	609437
29.00	1.1417	7-1/4	11-7/8	609438
29.50	1.1614	7-3/8	12	609439
30.00	1.1811	7-3/8	12	609440
30.50	1.2008	7-1/2	12-1/8	609441
31.00	1.2205	7-7/8	12-1/2	609442
31.50	1.2402	7-7/8	12-1/2	609443
32.00	1.2598	8-1/2	14-1/8	609444
32.50	1.2795	8-1/2	14-1/8	609445
33.00	1.2992	8-5/8	14-1/4	609446
33.50	1.3189	8-3/4	14-3/8	609447
34.00	1.3386	8-3/4	14-3/8	609448
34.50	1.3583	8-7/8	14-1/2	609449
35.00	1.3780	9	14-5/8	609450
35.50	1.3976	9	14-5/8	609451
36.00	1.4173	9-1/8	14-3/4	609452
36.50	1.4370	9-1/8	14-3/4	609453
37.00	1.4567	9-1/4	14-7/8	609454
37.50	1.4764	9-3/8	15	609455
38.00	1.4961	9-3/8	15	609456

Taper Length Drills

Carbide Tipped



- The extra length of these drills increases their reach through drill bushings

Decimal Size (Inch)	Drill Size (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.1250	1/8	2-3/4	5-1/8	555201
0.1406	9/64	3	5-3/8	555226
0.1562	5/32	3	5-3/8	555202
0.1719	11/64	3-3/8	5-3/4	555227
0.1875	3/16	3-3/8	5-3/4	555203
0.2031	13/64	3-5/8	6	555228
0.2188	7/32	3-5/8	6	555204
0.2344	15/64	3-3/4	6-1/8	555229
0.2500	1/4	3-3/4	6-1/8	555205
0.2656	17/64	3-7/8	6-1/4	555230
0.2812	9/32	3-7/8	6-1/4	555206
0.2969	19/64	4	6-3/8	555231
0.3125	5/16	4	6-3/8	555207
0.3281	21/64	4-1/8	6-1/2	555232
0.3438	11/32	4-1/8	6-1/2	555208
0.3750	3/8	4-1/4	6-3/4	555209
0.4062	13/32	4-3/8	7	555210
0.4219	27/64	4-5/8	7-1/4	555235

Decimal Size (Inch)	Drill Size (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.4375	7/16	4-5/8	7-1/4	555211
0.4688	15/32	4-3/4	7-1/2	555212
0.5000	1/2	4-3/4	7-3/4	555213
0.5156	33/64	4-3/4	8	555238
0.5312	17/32	4-3/4	8	555214
0.5469	35/64	4-7/8	8-1/4	555239
0.5625	9/16	4-7/8	8-1/4	555215
0.5781	37/64	4-7/8	8-3/4	555240
0.5938	19/32	4-7/8	8-3/4	555216
0.6094	39/64	4-7/8	8-3/4	555241
0.6250	5/8	4-7/8	8-3/4	555217
0.6406	41/64	5-1/8	9	555242
0.6562	21/32	5-1/8	9	555218
0.6719	43/64	5-3/8	9-1/4	555243
0.6875	11/16	5-3/8	9-1/4	555219
0.7031	45/64	5-5/8	9-1/2	555244
0.7188	23/32	5-5/8	9-1/2	555220
0.7344	47/64	5-7/8	9-3/4	555245
0.7500	3/4	5-7/8	9-3/4	555221

Taper Shank Drills

High Speed Steel & Super Cobalt – Standard Shank



- High speed steel
- 118° point for general purpose applications

- Super cobalt
- 135° split point for heavy duty applications
- Premium cobalt drills exhibit greater toughness, abrasion resistance and higher hardness than the standard high speed drills
- Recommended for use on hard to machine materials where longer tool life is desired

Size (Inch)	Decimal Equiv. (Inch)	High Speed Steel				Super Cobalt			
		Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
1/16	0.0625	1-1/4	4-5/8	1	612650	–	–	–	–
5/64	0.0781	1-3/8	4-3/4	1	612651	–	–	–	–
1/8	0.1250	1-7/8	5-1/8	1	751450	–	–	–	–
9/64	0.1406	2-1/8	5-3/8	1	751451	–	–	–	–
5/32	0.1562	2-1/8	5-3/8	1	751452	–	–	–	–
11/64	0.1719	2-1/2	5-3/4	1	751453	–	–	–	–
3/16	0.1875	2-1/2	5-3/4	1	751454	–	–	–	–
13/64	0.2031	2-3/4	6	1	612652	–	–	–	–
7/32	0.2188	2-3/4	6	1	751455	–	–	–	–
15/64	0.2344	2-7/8	6-1/8	1	751456	–	–	–	–
1/4	0.2500	2-7/8	6-1/8	1	751457	2-7/8	6-1/8	1	613900
17/64	0.2656	3	6-1/4	1	751458	3	6-1/4	1	613901
9/32	0.2812	3	6-1/4	1	751459	3	6-1/4	1	613902
19/64	0.2969	3-1/8	6-3/8	1	751460	3-1/8	6-3/8	1	613903
5/16	0.3125	3-1/8	6-3/8	1	751461	3-1/8	6-3/8	1	613904
21/64	0.3281	3-1/4	6-1/2	1	751462	3-1/4	6-1/2	1	613905
11/32	0.3438	3-1/4	6-1/2	1	751463	3-1/4	6-1/2	1	613906
23/64	0.3594	3-1/2	6-3/4	1	751464	3-1/2	6-3/4	1	613907
3/8	0.3750	3-1/2	6-3/4	1	751465	3-1/2	7-3/8	2	613908

Taper Shank Drills

High Speed Steel & Super Cobalt – Standard Shank *(continued)*



Size (Inch)	Decimal Equiv. (Inch)	High Speed Steel				Super Cobalt			
		Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
25/64	0.3906	3-5/8	7	1	751466	3-5/8	7-1/2	2	613909
13/32	0.4062	3-5/8	7	1	751467	3-5/8	7-1/2	2	613910
27/64	0.4219	3-7/8	7-1/4	1	751468	3-7/8	7-3/4	2	613911
7/16	0.4375	3-7/8	7-1/4	1	751469	3-7/8	7-3/4	2	613912
29/64	0.4531	4-1/8	7-1/2	1	751470	4-1/8	8	2	613913
15/32	0.4688	4-1/8	7-1/2	1	751471	4-1/8	8	2	613914
31/64	0.4844	4-3/8	8-1/4	2	751472	4-3/8	8-1/4	2	613915
1/2	0.5000	4-3/8	8-1/4	2	751473	4-3/8	8-1/4	2	613916
33/64	0.5156	4-5/8	8-1/2	2	751474	4-5/8	8-1/2	2	613917
17/32	0.5312	4-5/8	8-1/2	2	751475	4-5/8	8-1/2	2	613918
35/64	0.5469	4-7/8	8-3/4	2	751476	4-7/8	8-3/4	2	613919
9/16	0.5625	4-7/8	8-3/4	2	751477	4-7/8	8-3/4	2	613920
37/64	0.5781	4-7/8	8-3/4	2	751478	4-7/8	8-3/4	2	613921
19/32	0.5938	4-7/8	8-3/4	2	751479	4-7/8	8-3/4	2	613922
39/64	0.6094	4-7/8	8-3/4	2	751480	4-7/8	8-3/4	2	613923
5/8	0.6250	4-7/8	8-3/4	2	751481	4-7/8	8-3/4	2	613924
41/64	0.6406	5-1/8	9	2	751482	5-1/8	9-3/4	3	613925
21/32	0.6562	5-1/8	9	2	751483	5-1/8	9-3/4	3	613926
43/64	0.6719	5-3/8	9-1/4	2	751484	5-3/8	10	3	613927
11/16	0.6875	5-3/8	9-1/4	2	751485	5-3/8	10	3	613928
45/64	0.7031	5-5/8	9-1/2	2	751486	5-5/8	10-1/4	3	613929
23/32	0.7188	5-5/8	9-1/2	2	751487	5-5/8	10-1/4	3	613930
47/64	0.7344	5-7/8	9-3/4	2	751488	5-7/8	10-1/2	3	613931
3/4	0.7500	5-7/8	9-3/4	2	751489	5-7/8	10-1/2	3	613932
49/64	0.7656	6	9-7/8	2	751490	6	10-5/8	3	613933
25/32	0.7812	6	9-7/8	2	751491	6	10-5/8	3	613934
51/64	0.7969	6-1/8	10-3/4	3	751492	6-1/8	10-3/4	3	613935
13/16	0.8125	6-1/8	10-3/4	3	751493	6-1/8	10-3/4	3	613936
53/64	0.8281	6-1/8	10-3/4	3	751494	6-1/8	10-3/4	3	613937
27/32	0.8438	6-1/8	10-3/4	3	751495	6-1/8	10-3/4	3	613938
55/64	0.8594	6-1/8	10-3/4	3	751496	6-1/8	10-3/4	3	613939
7/8	0.8750	6-1/8	10-3/4	3	751497	6-1/8	10-3/4	3	613940
57/64	0.8906	6-1/8	10-3/4	3	751498	6-1/8	10-3/4	3	613941
29/32	0.9062	6-1/8	10-3/4	3	751499	6-1/8	10-3/4	3	613942
59/64	0.9219	6-1/8	10-3/4	3	751500	6-1/8	10-3/4	3	613943
15/16	0.9375	6-1/8	10-3/4	3	751501	6-1/8	10-3/4	3	613944
61/64	0.9531	6-3/8	11	3	751502	6-3/8	11	3	613945
31/32	0.9688	6-3/8	11	3	751503	6-3/8	11	3	613946
63/64	0.9844	6-3/8	11	3	751504	6-3/8	11	3	613947
1	1.0000	6-3/8	11	3	751505	6-3/8	11	3	613948
1-1/64	1.0156	6-1/2	11-1/8	3	751506	6-1/2	12-1/8	4	613949
1-1/32	1.0312	6-1/2	11-1/8	3	751507	6-1/2	12-1/8	4	613950
1-3/64	1.0469	6-5/8	11-1/4	3	751508	6-5/8	12-1/4	4	613951
1-1/16	1.0625	6-5/8	11-1/4	3	751509	6-5/8	12-1/4	4	613952
1-5/64	1.0781	6-7/8	12-1/2	4	751510	6-7/8	12-1/2	4	613953
1-3/32	1.0938	6-7/8	12-1/2	4	751511	6-7/8	12-1/2	4	613954
1-7/64	1.1094	7-1/8	12-3/4	4	751512	7-1/8	12-3/4	4	613955
1-1/8	1.1250	7-1/8	12-3/4	4	751513	7-1/8	12-3/4	4	613956
1-9/64	1.1406	7-1/4	12-7/8	4	751514	7-1/4	12-7/8	4	613957
1-5/32	1.1562	7-1/4	12-7/8	4	612653	7-1/4	12-7/8	4	613958
1-11/64	1.1719	7-3/8	13	4	751515	7-3/8	13	4	613959
1-3/16	1.1875	7-3/8	13	4	751516	7-3/8	13	4	613960
1-13/64	1.2031	7-1/2	13-1/8	4	751517	7-1/2	13-1/8	4	613961
1-7/32	1.2188	7-1/2	13-1/8	4	751518	7-1/2	13-1/8	4	613962
1-15/64	1.2344	7-7/8	13-1/2	4	751519	7-7/8	13-1/2	4	613963
1-1/4	1.2500	7-7/8	13-1/2	4	751520	7-7/8	13-1/2	4	613964

Taper Shank Drills

High Speed Steel & Super Cobalt – Standard Shank *(continued)*



Size (Inch)	Decimal Equiv. (Inch)	High Speed Steel				Super Cobalt			
		Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
1-17/64	1.2656	8-1/2	14-1/8	4	751521	8-1/2	14-1/8	4	613965
1-9/32	1.2812	8-1/2	14-1/8	4	751522	8-1/2	14-1/8	4	613966
1-19/64	1.2969	8-5/8	14-1/4	4	751523	8-5/8	14-1/4	4	613967
1-5/16	1.3125	8-5/8	14-1/4	4	751524	8-5/8	15-7/8	5	613968
1-21/64	1.3281	8-3/4	14-3/8	4	751525	8-3/4	14-3/8	4	613969
1-11/32	1.3438	8-3/4	14-3/8	4	751526	8-3/4	14-3/8	4	613970
1-23/64	1.3594	8-7/8	14-1/2	4	751527	8-7/8	14-1/2	4	613971
1-3/8	1.3750	8-7/8	14-1/2	4	751528	8-7/8	15-7/8	5	613972
1-25/64	1.3906	9	14-5/8	4	751529	9	14-5/8	4	613973
1-13/32	1.4062	9	14-5/8	4	751530	9	14-5/8	4	613974
1-27/64	1.4219	9-1/8	14-3/4	4	751531	9-1/8	14-3/4	4	613975
1-7/16	1.4375	9-1/8	14-3/4	4	751532	9-1/8	16-1/8	5	613976
1-29/64	1.4531	9-1/4	14-7/8	4	751533	9-1/4	14-7/8	4	613977
1-15/32	1.4688	9-1/4	14-7/8	4	751534	9-1/4	14-7/8	4	613978
1-31/64	1.4844	9-3/8	15	4	751535	9-3/8	15	4	613979
1-1/2	1.5000	9-3/8	15	4	751536	9-3/8	16-3/8	5	613980
1-33/64	1.5156	9-3/8	16-3/8	5	612654	–	–	–	–
1-17/32	1.5312	9-3/8	16-3/8	5	751537	–	–	–	–
1-35/64	1.5469	9-5/8	16-5/8	5	612655	–	–	–	–
1-9/16	1.5625	9-5/8	16-5/8	5	751538	–	–	–	–
1-37/64	1.5781	9-7/8	16-7/8	5	612656	–	–	–	–
1-19/32	1.5938	9-7/8	16-7/8	5	751539	–	–	–	–
1-39/64	1.6094	10	17	5	612657	–	–	–	–
1-5/8	1.6250	10	17	5	751540	10	17	5	613981
1-41/64	1.6406	10-1/8	17-1/8	5	612658	–	–	–	–
1-21/32	1.6562	10-1/8	17-1/8	5	612659	–	–	–	–
1-43/64	1.6719	10-1/8	17-1/8	5	612660	–	–	–	–
1-11/16	1.6875	10-1/8	17-1/8	5	751541	–	–	–	–
1-45/64	1.7031	10-1/8	17-1/8	5	612661	–	–	–	–
1-23/32	1.7188	10-1/8	17-1/8	5	751542	–	–	–	–
1-47/64	1.7344	10-1/8	17-1/8	5	612662	–	–	–	–
1-3/4	1.7500	10-1/8	17-1/8	5	751543	10-1/8	17-1/8	5	613982
1-49/64	1.7656	10-1/8	17-1/8	5	612663	–	–	–	–
1-25/32	1.7812	10-1/8	17-1/8	5	751544	–	–	–	–
1-51/64	1.7969	10-1/8	17-1/8	5	612664	–	–	–	–
1-13/16	1.8125	10-1/8	17-1/8	5	751545	10-1/8	17-1/8	5	613983
1-53/64	1.8281	10-1/8	17-1/8	5	612665	–	–	–	–
1-27/32	1.8438	10-1/8	17-1/8	5	751546	–	–	–	–
1-55/64	1.8594	10-3/8	17-3/8	5	612666	–	–	–	–
1-7/8	1.8750	10-3/8	17-3/8	5	751547	–	–	–	–
1-57/64	1.8906	10-3/8	17-3/8	5	612667	–	–	–	–
1-29/32	1.9062	10-3/8	17-3/8	5	751548	–	–	–	–
1-59/64	1.9219	10-3/8	17-3/8	5	612668	–	–	–	–
1-15/16	1.9375	10-3/8	17-3/8	5	751549	–	–	–	–
1-61/64	1.9531	10-3/8	17-3/8	5	612669	–	–	–	–
1-31/32	1.9688	10-3/8	17-3/8	5	751550	–	–	–	–
1-63/64	1.9844	10-3/8	17-3/8	5	612670	–	–	–	–
2	2.0000	10-3/8	17-3/8	5	751551	–	–	–	–
2-1/64	2.0156	10-3/8	17-3/8	5	612671	–	–	–	–
2-1/32	2.0312	10-3/8	17-3/8	5	751552	–	–	–	–
2-3/64	2.0469	10-1/4	17-3/8	5	612672	–	–	–	–
2-1/16	2.0625	10-1/4	17-3/8	5	751553	–	–	–	–
2-3/32	2.0938	10-1/4	17-3/8	5	751554	–	–	–	–
2-1/8	2.1250	10-1/4	17-3/8	5	751555	–	–	–	–
2-5/32	2.1562	10-1/4	17-3/8	5	751556	–	–	–	–
2-3/16	2.1875	10-1/4	17-3/8	5	751557	–	–	–	–

Taper Shank Drills

High Speed Steel & Super Cobalt – Standard Shank *(continued)*



Size (Inch)	Decimal Equiv. (Inch)	High Speed Steel				Super Cobalt			
		Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
2-7/32	2.2188	10-1/8	17-3/8	5	751558	–	–	–	–
2-1/4	2.2500	10-1/8	17-3/8	5	751559	–	–	–	–
2-9/32	2.2812	10-1/8	17-3/8	5	612673	–	–	–	–
2-5/16	2.3125	10-1/8	17-3/8	5	751560	–	–	–	–
2-11/32	2.3438	10-1/8	17-3/8	5	612674	–	–	–	–
2-3/8	2.3750	10-1/8	17-3/8	5	751561	–	–	–	–
2-13/32	2.4062	11-1/4	18-3/4	5	612675	–	–	–	–
2-7/16	2.4375	11-1/4	18-3/4	5	751562	–	–	–	–
2-15/32	2.4688	11-1/4	18-3/4	5	612676	–	–	–	–
2-1/2	2.5000	11-1/4	18-3/4	5	751563	–	–	–	–
2-17/32	2.5312	11-7/8	19-1/2	5	612677	–	–	–	–
2-9/16	2.5625	11-7/8	19-1/2	5	751564	–	–	–	–
2-19/32	2.5938	11-7/8	19-1/2	5	612678	–	–	–	–
2-5/8	2.6250	11-7/8	19-1/2	5	751565	–	–	–	–
2-21/32	2.6562	12-3/4	20-3/8	5	612679	–	–	–	–
2-11/16	2.6875	12-3/4	20-3/8	5	751566	–	–	–	–
2-23/32	2.7188	12-3/4	20-3/8	5	612680	–	–	–	–
2-3/4	2.7500	12-3/4	20-3/8	5	751567	–	–	–	–
2-25/32	2.7812	13-3/8	21-1/8	5	612681	–	–	–	–
2-13/16	2.8125	13-3/8	21-1/8	5	751568	–	–	–	–
2-27/32	2.8438	13-3/8	21-1/8	5	612682	–	–	–	–
2-7/8	2.8750	13-3/8	21-1/8	5	751569	–	–	–	–
2-29/32	2.9062	13-3/8	21-1/8	5	612683	–	–	–	–
2-15/16	2.9375	14	21-3/4	5	751570	–	–	–	–
2-31/32	2.9688	14	21-3/4	5	612684	–	–	–	–
3	3.0000	14	21-3/4	5	751571	–	–	–	–
3-1/16	3.0625	14-5/8	24-1/2	6	612685	–	–	–	–
3-1/8	3.1250	14-5/8	24-1/2	6	751572	–	–	–	–
3-3/16	3.1875	14-5/8	24-1/2	6	612686	–	–	–	–
3-1/4	3.2500	15-1/2	25-1/2	6	751573	–	–	–	–
3-5/16	3.3125	15-1/2	25-1/2	6	612687	–	–	–	–
3-3/8	3.3750	15-1/2	25-1/2	6	612688	–	–	–	–
3-7/16	3.4375	15-1/2	25-1/2	6	612689	–	–	–	–
3-1/2	3.5000	16-3/8	26-1/2	6	612690	–	–	–	–
3-5/8	3.6250	16-3/8	26-1/2	6	612691	–	–	–	–
3-3/4	3.7500	16-3/8	26-1/2	6	612692	–	–	–	–
3-7/8	3.8750	16-3/8	26-1/2	6	612693	–	–	–	–
4	4.0000	17-1/2	27-1/2	6	612694	–	–	–	–

High Speed Steel – Larger than Standard Shank



- High speed steel
- 118° point for general purpose applications

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
21/64	0.3281	3-1/2	7-3/8	2	612848
23/64	0.3594	3-1/2	7-3/8	2	612849
3/8	0.3750	3-1/2	7-3/8	2	751626
25/64	0.3906	3-5/8	7-1/2	2	751627
13/32	0.4062	3-5/8	7-1/2	2	751628
27/64	0.4219	3-7/8	7-3/4	2	751629
7/16	0.4375	3-7/8	7-3/4	2	751630
29/64	0.4531	4-1/8	8	2	751631
15/32	0.4688	4-1/8	8	2	751632
41/64	0.6406	5-1/8	9-3/4	3	751633

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
21/32	0.6562	5-1/8	9-3/4	3	751634
43/64	0.6719	5-3/8	10	3	751635
11/16	0.6875	5-3/8	10	3	751636
45/64	0.7031	5-5/8	10-1/4	3	751637
23/32	0.7188	5-5/8	10-1/4	3	751638
47/64	0.7344	5-7/8	10-1/2	3	751639
3/4	0.7500	5-7/8	10-1/2	3	751640
49/64	0.7656	6	10-5/8	3	751641
25/32	0.7812	6	10-5/8	3	751642
1	1.0000	6-3/8	12	4	751575
1-1/32	1.0312	6-1/2	12-1/8	4	751576
1-1/16	1.0625	6-5/8	12-1/4	4	751577

Taper Shank Drills

High Speed Steel & Super Cobalt – Smaller than Standard Shank



- High speed steel
- 118° point for general purpose applications
- Super cobalt
- 135° split point for heavy duty applications
- Premium cobalt drills exhibit greater toughness, abrasion resistance and higher hardness than the standard high speed drills
- Recommended for use on hard to machine materials where longer tool life is desired

Size (Inch)	Decimal Equiv. (Inch)	High Speed Steel				Super Cobalt			
		Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
3/8	0.3750	–	–	–	–	3-1/2	6-3/4	1	613984
31/64	0.4844	4-3/8	7-3/4	1	612850	–	–	–	–
1/2	0.5000	4-3/8	7-3/4	1	612851	–	–	–	–
33/64	0.5156	4-5/8	8	1	612852	–	–	–	–
17/32	0.5312	4-5/8	8	1	612853	–	–	–	–
35/64	0.5469	4-7/8	8-1/4	1	612854	–	–	–	–
9/16	0.5625	4-7/8	8-1/4	1	612855	–	–	–	–
37/64	0.5781	4-7/8	8-1/4	1	612856	–	–	–	–
21/32	0.6562	5-1/8	9-3/4	1	612857	–	–	–	–
25/32	0.7812	–	–	–	–	6	9-7/8	2	613985
51/64	0.7969	6-1/8	10	2	612858	–	–	–	–
13/16	0.8125	6-1/8	10	2	612859	6-1/8	10	2	613986
53/64	0.8281	6-1/8	10	2	612860	–	–	–	–
27/32	0.8438	6-1/8	10	2	612861	–	–	–	–
55/64	0.8594	6-1/8	10	2	612862	–	–	–	–
7/8	0.8750	6-1/8	10	2	612863	–	–	–	–
57/64	0.8906	6-1/8	10	2	612864	–	–	–	–
29/32	0.9062	6-1/8	10	2	612865	–	–	–	–
1	1.0000	6-1/4	10-1/8	2	612866	–	–	–	–
1-5/64	1.0781	6-7/8	11-1/2	3	612867	–	–	–	–
1-3/32	1.0938	6-7/8	11-1/2	3	612868	–	–	–	–
1-7/64	1.1094	7-1/8	11-3/4	3	612869	–	–	–	–
1-1/8	1.1250	7-1/8	11-3/4	3	612870	–	–	–	–
1-9/64	1.1406	7-1/4	11-7/8	3	612871	–	–	–	–
1-5/32	1.1562	7-1/4	11-7/8	3	612872	–	–	–	–
1-11/64	1.1719	7-3/8	12	3	612873	–	–	–	–
1-3/16	1.1875	7-3/8	12	3	612874	7-3/8	12	3	613987
1-13/64	1.2031	7-1/2	12-1/8	3	612875	–	–	–	–
1-7/32	1.2188	7-1/2	12-1/8	3	612876	–	–	–	–
1-15/64	1.2344	7-7/8	12-1/2	3	612877	–	–	–	–
1-1/4	1.2500	7-7/8	12-1/2	3	612878	–	–	–	–
1-9/32	1.2812	8-1/2	13-1/8	3	612879	–	–	–	–
1-5/16	1.3125	8-5/8	13-1/4	3	612880	8-5/8	14-1/4	4	613988
1-11/32	1.3438	8-3/4	13-3/8	3	612881	–	–	–	–
1-3/8	1.3750	8-7/8	13-1/2	3	612882	8-7/8	14-1/2	4	613989
1-13/32	1.4062	9	13-5/8	3	612883	–	–	–	–
1-7/16	1.4375	9-1/8	13-3/4	3	612884	9-1/8	14-3/4	4	613990
1-15/32	1.4688	9-1/4	13-7/8	3	612885	–	–	–	–
1-1/2	1.5000	9-3/8	14	3	612886	9-3/8	15	4	613991
1-33/64	1.5156	9-3/8	15	4	612887	–	–	–	–
1-17/32	1.5312	9-3/8	16	4	612888	–	–	–	–
1-35/64	1.5469	9-5/8	15-1/4	4	612889	–	–	–	–
1-9/16	1.5625	9-5/8	15-1/4	4	612890	–	–	–	–
1-37/64	1.5781	9-7/8	15-1/2	4	612891	–	–	–	–
1-19/32	1.5938	9-7/8	15-1/2	4	612892	–	–	–	–
1-39/64	1.6094	10	15-5/8	4	612893	–	–	–	–
1-5/8	1.6250	10	15-5/8	4	612894	–	–	–	–
1-41/64	1.6406	10-1/8	15-3/4	4	612895	–	–	–	–
1-21/32	1.6562	10-1/8	15-3/4	4	612896	–	–	–	–
1-43/64	1.6719	10-1/8	15-3/4	4	612897	–	–	–	–
1-11/16	1.6875	10-1/8	15-3/4	4	612898	–	–	–	–

Taper Shank Drills

High Speed Steel & Super Cobalt – Smaller than Standard Shank *(continued)*



Size (Inch)	Decimal Equiv. (Inch)	High Speed Steel				Super Cobalt			
		Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
1-45/64	1.7031	10-1/8	15-3/4	4	612899	–	–	–	–
1-23/32	1.7188	10-1/8	15-3/4	4	612900	–	–	–	–
1-47/64	1.7344	10-3/8	16-1/4	4	612901	–	–	–	–
1-3/4	1.7500	10-3/8	16-1/4	4	612902	–	–	–	–
1-49/64	1.7656	10-3/8	16-1/4	4	612903	–	–	–	–
1-25/32	1.7812	10-3/8	16-1/4	4	612904	–	–	–	–
1-51/64	1.7969	10-3/8	16-1/4	4	612905	–	–	–	–
1-13/16	1.8125	10-3/8	16-1/4	4	612906	–	–	–	–
1-53/64	1.8281	10-3/8	16-1/4	4	612907	–	–	–	–
1-27/32	1.8438	10-3/8	16-1/4	4	612908	–	–	–	–
1-55/64	1.8594	10-1/2	16-1/2	4	612909	–	–	–	–
1-7/8	1.8750	10-1/2	16-1/2	4	612910	–	–	–	–
1-57/64	1.8906	10-1/2	16-1/2	4	612911	–	–	–	–
1-29/32	1.9062	10-1/2	16-1/2	4	612912	–	–	–	–
1-59/64	1.9219	10-5/8	15-5/8	4	612913	–	–	–	–
1-15/16	1.9375	10-5/8	16-5/8	4	612914	–	–	–	–
1-61/64	1.9531	10-5/8	16-5/8	4	612915	–	–	–	–
1-31/32	1.9688	10-5/8	16-5/8	4	612916	–	–	–	–
1-63/64	1.9844	10-5/8	16-5/8	4	612917	–	–	–	–
2	2.0000	10-5/8	16-5/8	4	612918	–	–	–	–
2-1/32	2.0312	10-3/8	16-1/4	4	612919	–	–	–	–
2-1/16	2.0625	10-1/4	16-1/4	4	612920	–	–	–	–
2-3/32	2.0938	10-1/4	16-1/4	4	612921	–	–	–	–
2-1/8	2.1250	10-1/4	16-1/4	4	612922	–	–	–	–
2-5/32	2.1562	10-1/4	16-1/4	4	612923	–	–	–	–
2-3/16	2.1875	10-1/4	16-1/4	4	612924	–	–	–	–
2-7/32	2.2188	10-1/8	16-1/8	4	612925	–	–	–	–
2-1/4	2.2500	10-1/8	16-1/8	4	612926	–	–	–	–
2-9/32	2.2812	10-1/8	16-1/8	4	612927	–	–	–	–
2-5/16	2.3125	10-1/8	16-1/8	4	612928	–	–	–	–
2-11/32	2.3438	10-1/8	16-1/8	4	612929	–	–	–	–
2-3/8	2.3750	10-1/8	16-1/8	4	612930	–	–	–	–
2-13/32	2.4062	11-1/4	17-1/4	4	612931	–	–	–	–
2-7/16	2.4375	11-1/4	17-1/4	4	612932	–	–	–	–
2-15/32	2.4688	11-1/4	17-1/4	4	612933	–	–	–	–
2-1/2	2.5000	11-1/4	17-1/4	4	612934	–	–	–	–
2-5/8	2.6250	11-7/8	18	4	612935	–	–	–	–
2-3/4	2.7500	12-3/4	19-1/8	4	612936	–	–	–	–
3-1/16	3.0625	14-1/4	22	5	612937	–	–	–	–
3-1/8	3.1250	14-1/4	22	5	612938	–	–	–	–
3-3/16	3.1875	14-1/4	22	5	612939	–	–	–	–
3-1/4	3.2500	15-1/4	23	5	612940	–	–	–	–
3-5/16	3.3125	15-1/4	23	5	612941	–	–	–	–
3-3/8	3.3750	15-1/4	23	5	612942	–	–	–	–
3-7/16	3.4375	15-1/4	23	5	612943	–	–	–	–
3-1/2	3.5000	16-1/4	24	5	612944	–	–	–	–
3-5/8	3.6250	16-1/4	24	5	612945	–	–	–	–
3-3/4	3.7500	16-1/4	24	5	612946	–	–	–	–
3-7/8	3.8750	16-1/4	24	5	612947	–	–	–	–

Metric Taper Shank Drills

High Speed Steel – General Purpose – 118° Point



- Designed for high production drilling on a wide range of materials and will perform well under various operating conditions
- Supplied with a black nitrate finish for increased abrasion resistance and extra long life
- Manufactured to ISO standards

Size (mm)	Morse Taper	Flute Length (mm)	Overall Length (mm)	Code
8.0	1	75	156	612997
8.5	1	75	156	612998
9.0	1	81	162	612999
9.5	1	81	162	613000
10.0	1	87	168	613001
10.5	1	87	168	613002
11.0	1	87	168	613003
11.5	1	87	168	751643
12.0	1	94	175	751644
12.5	1	94	175	613004
13.0	1	101	182	613005
13.5	1	101	182	613006
14.0	1	108	189	613007
14.5	2	114	212	613008
15.0	2	114	212	613009
15.5	2	120	218	613010
16.0	2	120	218	613011
16.5	2	125	223	613012
17.0	2	125	223	613013
17.5	2	130	228	613014
18.0	2	130	228	613015
18.5	2	135	233	613016
19.0	2	135	233	613017
19.5	2	140	238	613018
20.0	2	140	238	613019
20.5	2	145	243	613020
21.0	2	145	243	613021
22.0	2	150	248	613022
22.5	2	155	253	613023
23.0	2	155	253	613024
21.5	3	150	248	613025
22.0	3	150	248	613026
22.5	3	155	253	613027
23.0	3	155	253	613028
23.5	3	155	276	613029
24.0	3	155	276	613030
24.5	3	155	276	613031
25.0	3	160	281	613032
25.5	3	160	281	613033
26.0	3	165	286	613034
26.5	3	165	286	613035
27.0	3	165	286	613036
27.5	3	170	291	613037
28.0	3	170	291	613038
28.5	3	170	291	613039
29.0	3	175	296	613040
29.5	3	175	296	613041
30.0	3	175	296	613042
30.5	3	175	296	613043
31.0	3	180	301	613044
31.5	3	180	301	613045
32.0	4	185	334	613046
32.5	4	185	334	613047
33.0	4	185	334	613048
33.5	4	185	334	613049
34.0	4	190	339	613050
34.5	4	190	339	613051
35.0	4	190	339	613052
35.5	4	190	339	613053
36.0	4	195	344	613054
36.5	4	195	344	613055
37.0	4	195	344	613056
37.5	4	195	344	613057
38.0	4	200	349	613058
38.5	4	200	349	613059
39.0	4	200	349	613060
39.5	4	200	349	613061
40.0	4	200	349	613062

Aircraft Extension Drills

High Speed Steel – 135° Split Point



Size	Decimal Equivalent (Inch)	Flute Length (Inch)	6" Overall Length	12" Overall Length
			Code	Code
65	0.0350	5/8	610450	–
60	0.0400	11/16	610451	610542
59	0.0410	11/16	610452	610543
58	0.0420	11/16	610453	610544
57	0.0430	3/4	610454	610545
56	0.0465	3/4	610455	610546
3/64	0.0469	3/4	610456	610547
55	0.0520	7/8	610457	610548
54	0.0550	7/8	610458	610549
53	0.0595	7/8	610459	610550
1/16	0.0625	7/8	610460	610551
52	0.0635	7/8	610461	610552
51	0.0670	1	610462	610553
50	0.0700	1	610463	610554
49	0.0730	1	610464	610555
48	0.0760	1	610465	610556
5/64	0.0781	1	610466	610557
47	0.0785	1	610467	610558
46	0.0810	1-1/8	610468	610559
45	0.0820	1-1/8	610469	610560
44	0.0860	1-1/8	610470	610561
43	0.0890	1-1/4	610471	610562
42	0.0935	1-1/4	610472	610563
3/32	0.0938	1-1/4	753000	610564
41	0.0960	1-3/8	610473	610565
40	0.0980	1-3/8	753001	753024
39	0.0995	1-3/8	610474	610566
38	0.1015	1-7/16	610475	610567
37	0.1040	1-7/16	610476	610568
36	0.1065	1-7/16	610477	610569
7/64	0.1094	1-1/2	753002	610570
35	0.1100	1-1/2	610478	610571

Aircraft Extension Drills

High Speed Steel – 135° Split Point *(continued)*



Size	Decimal Equivalent (Inch)	Flute Length (Inch)	6" Overall Length Code	12" Overall Length Code
34	0.1110	1-1/2	610479	610572
33	0.1130	1-1/2	610480	610573
32	0.1160	1-5/8	610481	610574
31	0.1200	1-5/8	610482	610575
1/8	0.1250	1-5/8	753003	753025
30	0.1285	1-5/8	753004	753026
29	0.1360	1-3/4	753005	753027
28	0.1405	1-3/4	610483	610576
9/64	0.1406	1-3/4	753006	753028
27	0.1440	1-7/8	610484	610577
26	0.1470	1-7/8	610485	610578
25	0.1495	1-7/8	610486	610579
24	0.1520	2	610487	610580
23	0.1540	2	610488	610581
5/32	0.1562	2	753007	753029
22	0.1570	2	610489	610582
21	0.1590	2-1/8	753008	753030
20	0.1610	2-1/8	753009	753031
19	0.1660	2-1/8	610490	610583
18	0.1695	2-1/8	610491	610584
11/64	0.1719	2-1/8	753010	610585
17	0.1730	2-3/16	610492	610586
16	0.1770	2-3/16	610493	610587
15	0.1800	2-3/16	610494	610588
14	0.1820	2-3/16	610495	610589
13	0.1850	2-5/16	610496	610590
3/16	0.1875	2-5/16	753011	753032
12	0.1890	2-5/16	610497	610591
11	0.1910	2-5/16	753012	753033
10	0.1935	2-7/16	753013	753034
9	0.1960	2-7/16	610498	610592
8	0.1990	2-7/16	610499	610593
7	0.2010	2-7/16	610500	610594
13/64	0.2031	2-7/16	753014	753035
6	0.2040	2-1/2	610501	610595
5	0.2055	2-1/2	610502	610596
4	0.2090	2-1/2	610503	610597
3	0.2130	2-1/2	610504	610598
7/32	0.2188	2-1/2	753015	753036
2	0.2210	2-5/8	753016	610599
1	0.2280	2-5/8	753017	753037
A	0.2340	2-5/8	610505	610600
15/64	0.2344	2-5/8	753018	753038
B	0.2380	2-3/4	610506	610601
C	0.2420	2-3/4	610507	610602
D	0.2460	2-3/4	610508	610603
1/4	0.2500	2-3/4	753019	753039
F	0.2570	2-7/8	610509	610604
G	0.2610	2-7/8	610510	610605
17/64	0.2656	2-7/8	610511	753040
H	0.2660	2-7/8	610512	610606
I	0.2720	2-7/8	610513	610607
J	0.2770	2-7/8	610514	610608
K	0.2810	2-15/16	610515	610609
9/32	0.2812	2-15/16	610516	753041
L	0.2900	2-15/16	610517	610610
M	0.2950	3-1/16	610518	610611
19/64	0.2969	3-1/16	610519	753042
N	0.3020	3-1/16	610520	610612
5/16	0.3125	3-3/16	753020	753043
O	0.3160	3-3/16	610521	610613
P	0.3230	3-5/16	610522	610614
21/64	0.3281	3-5/16	610523	753044
Q	0.3320	3-7/16	610524	610615
R	0.3390	3-7/16	610525	610616
11/32	0.3438	3-7/16	610526	753045
S	0.3480	3-1/2	610527	610617
T	0.3580	3-1/2	610528	610618
23/64	0.3594	3-1/2	610529	753046
U	0.3680	3-5/8	610530	610619
3/8	0.3750	3-5/8	753021	753047
V	0.3770	3-5/8	610531	610620
W	0.3860	3-3/4	610532	610621
25/64	0.3906	3-3/4	610533	753048
X	0.3970	3-3/4	610534	610622
Y	0.4040	3-7/8	610535	610623
13/32	0.4062	3-7/8	610536	753049
Z	0.4130	3-7/8	610537	610624
27/64	0.4219	3-15/16	610538	753050
7/16	0.4375	4-1/16	753022	753051
29/64	0.4531	4-3/16	610539	753052
15/32	0.4688	4-5/16	610540	753053
31/64	0.4844	4-3/8	610541	753054
1/2	0.5000	4-1/2	753023	753055

Extra Length Drills

Inch, Metric & Letter Sizes – Straight Shank – High Speed Steel



- 118° point, for deep hole or long reach drilling in a wide variety of materials
- Hand held or fixed spindle use

Size	Decimal Equivalent (Inch)	6" OAL 4" Flute Length	8" OAL 5-1/2" Flute Length	9" OAL 6-1/2" Flute Length	10" OAL 7-1/2" Flute Length	12" OAL 9" Flute Length	15" OAL 11" Flute Length	18" OAL 12" Flute Length	24" OAL 18" Flute Length	48" OAL 5-1/2" Flute Length
		Code	Code	Code	Code	Code	Code	Code	Code	Code
1/16	0.0625	610000	–	–	–	–	–	–	–	–
5/64	0.0781	610001	–	–	–	–	–	–	–	–
3/32	0.0938	610002	610009	–	–	–	–	–	–	–
7/64	0.1094	610003	610010	–	–	610072	–	–	–	–
3 mm	0.1181	–	–	–	–	610130	–	–	–	–
1/8	0.1250	610004	610011	–	610044	751400	–	610208	–	–
9/64	0.1406	610005	610012	–	610045	751401	–	–	–	–
5/32	0.1562	610006	610013	–	610046	751402	–	610209	–	–
4 mm	0.1575	–	–	–	–	610131	–	–	–	–
11/64	0.1719	610007	610014	–	610047	751403	–	–	–	–
3/16	0.1875	610008	610015	–	610048	751404	610150	610210	–	–
5 mm	0.1968	–	–	–	–	610132	–	–	–	–
13/64	0.2031	–	610016	–	610049	751405	–	610211	–	–
7/32	0.2188	–	610017	–	610050	751406	610151	610212	–	–
15/64	0.2344	–	610018	–	610051	751407	–	610213	–	–
6 mm	0.2362	–	–	–	–	610133	–	–	–	–
1/4	0.2500	–	610019	–	610052	751408	610152	610214	610299	610317
F	0.2570	–	610020	–	–	–	–	–	–	–
17/64	0.2656	–	610021	–	610053	751409	–	610215	–	–
7 mm	0.2756	–	–	–	–	610134	–	–	–	–
9/32	0.2812	–	610022	–	610054	751410	610153	610216	–	–
19/64	0.2969	–	610023	–	610055	751411	–	610217	–	–
5/16	0.3125	–	610024	–	610056	751412	610154	610218	610300	610318
8 mm	0.3150	–	–	–	–	610135	–	–	–	–
21/64	0.3281	–	610025	–	610057	751413	–	610219	–	–
11/32	0.3438	–	610026	–	610058	751414	610155	610220	–	–
9 mm	0.3543	–	–	–	–	610136	–	–	–	–
23/64	0.3594	–	610027	–	610059	751415	–	610221	–	–
3/8	0.3750	–	610028	–	610060	751416	610156	610222	610301	610319
25/64	0.3906	–	610029	–	610061	751417	–	610223	–	–
10 mm	0.3937	–	–	–	–	610137	–	–	–	–
13/32	0.4062	–	610030	–	610062	751418	610157	610224	–	–
10.5 mm	0.4134	–	–	–	–	610138	–	–	–	–
27/64	0.4219	–	610031	610037	610063	751419	–	610225	–	–
11 mm	0.4331	–	–	–	610064	610139	610158	610226	–	–
7/16	0.4375	–	610032	610038	610065	751420	610159	610227	610302	610320
29/64	0.4531	–	610033	610039	610066	751421	610160	610228	–	–
15/32	0.4688	–	610034	610040	610067	751422	610161	610229	–	–
12 mm	0.4724	–	–	–	–	610140	–	–	–	–
31/64	0.4844	–	610035	610041	610068	751423	–	610230	–	–
1/2	0.5000	–	610036	610042	610069	751424	610162	610231	610303	610321
13 mm	0.5118	–	–	–	–	610141	–	–	–	–
33/64	0.5156	–	–	–	–	610098	–	610232	–	–
17/32	0.5312	–	–	610043	610070	610099	610163	610233	–	–
13.8 mm	0.5433	–	–	–	–	610142	–	–	–	–
35/64	0.5469	–	–	–	–	610100	–	610234	–	–
14 mm	0.5512	–	–	–	–	610143	–	–	–	–
9/16	0.5625	–	–	–	610071	610101	610164	610235	610304	–
37/64	0.5781	–	–	–	–	610102	–	610236	–	–
15 mm	0.5906	–	–	–	–	610144	–	–	–	–
19/32	0.5938	–	–	–	–	610103	610165	610237	–	–
39/64	0.6094	–	–	–	–	610104	–	610238	–	–
5/8	0.6250	–	–	–	–	610105	610166	610239	610305	610322

Extra Length Drills

Inch, Metric & Letter Sizes – Straight Shank – High Speed Steel *(continued)*



Size	Decimal Equivalent (Inch)	6" OAL 4" Flute Length Code	8" OAL 5-1/2" Flute Length Code	9" OAL 6-1/2" Flute Length Code	10" OAL 7-1/2" Flute Length Code	12" OAL 9" Flute Length Code	15" OAL 11" Flute Length Code	18" OAL 12" Flute Length Code	24" OAL 18" Flute Length Code	48" OAL 5-1/2" Flute Length Code
16 mm	0.6299	–	–	–	–	610145	–	–	–	–
41/64	0.6406	–	–	–	–	610106	–	610240	–	–
21/32	0.6562	–	–	–	–	610107	610167	610241	–	–
17 mm	0.6693	–	–	–	–	610146	–	–	–	–
43/64	0.6719	–	–	–	–	610108	–	610242	–	–
11/16	0.6875	–	–	–	–	610109	610168	610243	610306	–
17.5 mm	0.6890	–	–	–	–	610147	–	–	–	–
45/64	0.7031	–	–	–	–	610110	–	610244	–	–
23/32	0.7188	–	–	–	–	610111	610169	610245	–	–
47/64	0.7344	–	–	–	–	610112	–	610246	–	–
3/4	0.7344	–	–	–	–	610113	610170	610247	610307	610323
49/64	0.7656	–	–	–	–	610114	–	610248	–	–
25/32	0.7812	–	–	–	–	610115	610171	610249	610308	–
20 mm	0.7874	–	–	–	–	610148	–	–	–	–
51/64	0.7969	–	–	–	–	610116	–	610250	–	–
13/16	0.8125	–	–	–	–	610117	610172	610251	610309	–
53/64	0.8281	–	–	–	–	610118	–	610252	–	–
27/32	0.8438	–	–	–	–	610119	–	610253	610310	–
55/64	0.8594	–	–	–	–	610120	–	610254	–	–
7/8	0.8750	–	–	–	–	610121	610173	610255	610311	–
22.5 mm	0.8858	–	–	–	–	610149	–	–	–	–
57/64	0.8906	–	–	–	–	610122	–	610256	–	–
29/32	0.9062	–	–	–	–	610123	–	610257	–	–
59/64	0.9219	–	–	–	–	610124	–	610258	–	–
15/16	0.9375	–	–	–	–	610125	610174	610259	610312	–
61/64	0.9531	–	–	–	–	610126	–	610260	–	–
31/32	0.9688	–	–	–	–	610127	–	610261	–	–
63/64	0.9844	–	–	–	–	610128	–	610262	–	–
1	1.0000	–	–	–	–	610129	610175	610263	610313	–
1-1/8	1.1250	–	–	–	–	–	–	610264	610314	–
1-3/16	1.1875	–	–	–	–	–	–	610265	610315	–
1-1/4	1.2500	–	–	–	–	–	–	610266	610316	–

1/2" Reduced Shank – Straight Shank – High Speed Steel – 118° Point



Size	Decimal Equivalent (Inch)	12" OAL 9" Flute Length Code	18" OAL 12" Flute Length Code	Size	Decimal Equivalent (Inch)	12" OAL 9" Flute Length Code	18" OAL 12" Flute Length Code
33/64	0.5156	610176	610267	49/64	0.7656	610192	610283
17/32	0.5312	610177	610268	25/32	0.7812	610193	610284
35/64	0.5469	610178	610269	51/64	0.7969	610194	610285
9/16	0.5625	610179	610270	13/16	0.8125	610195	610286
37/64	0.5781	610180	610271	53/64	0.8281	610196	610287
19/32	0.5938	610181	610272	27/32	0.8438	610197	610288
39/64	0.6094	610182	610273	55/64	0.8594	610198	610289
5/8	0.6250	610183	610274	7/8	0.8750	610199	610290
41/64	0.6406	610184	610275	57/64	0.8906	610200	610291
21/32	0.6562	610185	610276	29/32	0.9062	610201	610292
43/64	0.6719	610186	610277	59/64	0.9219	610202	610293
11/16	0.6875	610187	610278	15/16	0.9375	610203	610294
45/64	0.7031	610188	610279	61/64	0.9531	610204	610295
23/32	0.7188	610189	610280	31/32	0.9688	610205	610296
47/64	0.7344	610190	610281	63/64	0.9844	610206	610297
3/4	0.7500	610191	610282	1	1.0000	610207	610298

Taper Shank Extra Length Drills

High Speed Steel – 118° Point



- Used in deep hole or long reach drilling applications and are suitable for many types of materials

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
1/8	0.1250	5	8	1	613300
9/64	0.1406	5	8	1	613301
5/32	0.1562	5	8	1	613302
11/64	0.1719	5	8	1	613303
3/16	0.1875	5	8	1	613304
13/64	0.2031	5	8	1	613305
7/32	0.2188	5	8	1	613306
15/64	0.2344	5	8	1	613307
1/4	0.2500	5	8	1	613308
17/64	0.2656	5	8	1	613309
9/32	0.2812	5	8	1	613310
19/64	0.2969	5	8	1	613311
5/16	0.3125	5	8	1	613312
5/16	0.3125	4	8	2	613730
21/64	0.3281	5	8	1	613313
11/32	0.3438	5	8	1	613314
23/64	0.3594	5	8	1	613315
3/8	0.3750	5	8	1	613316
29/64	0.4531	5	8	1	613317
15/32	0.4688	5	8	1	613318
5/32	0.1562	7	10	1	613319
11/64	0.1719	7	10	1	613320
13/64	0.2031	7	10	1	613321
7/32	0.2188	7	10	1	613322
15/64	0.2344	7	10	1	613323
1/4	0.2500	7	10	1	613324
9/32	0.2812	7	10	1	613325
19/64	0.2969	7	10	1	613326
21/64	0.3281	7	10	1	613327
23/64	0.3594	7	10	1	613328
3/8	0.3750	7	10	1	613329
7/16	0.4375	7	10	1	613330
29/64	0.4531	7	10	1	613331
15/32	0.4688	7	10	1	613332
31/64	0.4844	6	10	2	613333
1/2	0.5000	6	10	2	613334
33/64	0.5156	6	10	2	613335
17/32	0.5312	6	10	2	613336
9/16	0.5625	6	10	2	613337
37/64	0.5781	6	10	2	613338
19/32	0.5938	6	10	2	613339
5/8	0.6250	6	10	2	613340
1/8	0.1250	9	12	1	613341
11/64	0.1719	9	12	1	613342
3/16	0.1875	9	12	1	613343
13/64	0.2031	9	12	1	613344
7/32	0.2188	9	12	1	613345
15/64	0.2344	9	12	1	613346
1/4	0.2500	9	12	1	613347
17/64	0.2656	9	12	1	613348
9/32	0.2812	9	12	1	613349
19/64	0.2969	9	12	1	613350
5/16	0.3125	9	12	1	613351
21/64	0.3281	9	12	1	613352
11/32	0.3438	9	12	1	613353
23/64	0.3594	9	12	1	613354
3/8	0.3750	9	12	1	613355
25/64	0.3906	9	12	1	613356

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
13/32	0.4062	9	12	1	613357
27/64	0.4219	9	12	1	613358
7/16	0.4375	9	12	1	613359
29/64	0.4531	9	12	1	613360
15/32	0.4688	9	12	1	613361
31/64	0.4844	8	12	2	613362
1/2	0.5000	8	12	2	613363
33/64	0.5156	8	12	2	613364
17/32	0.5312	8	12	2	613365
35/64	0.5469	8	12	2	613366
9/16	0.5625	8	12	2	613367
37/64	0.5781	8	12	2	613368
19/32	0.5938	8	12	2	613369
39/64	0.6094	8	12	2	613370
5/8	0.6250	8	12	2	613371
41/64	0.6406	8	12	2	613372
21/32	0.6562	8	12	2	613373
43/64	0.6719	8	12	2	613374
11/16	0.6875	8	12	2	613375
45/64	0.7031	8	12	2	613376
23/32	0.7188	8	12	2	613377
47/64	0.7344	8	12	2	613378
3/4	0.7500	8	12	2	613379
49/64	0.7656	8	12	2	613380
49/64	0.7656	7	12	3	613731
25/32	0.7812	8	12	2	613381
25/32	0.7812	7	12	3	613732
51/64	0.7969	7	12	3	613382
13/16	0.8125	7	12	3	613383
53/64	0.8281	7	12	3	613384
27/32	0.8438	7	12	3	613385
55/64	0.8594	7	12	3	613386
7/8	0.8750	7	12	3	613387
57/64	0.8906	7	12	3	613388
29/32	0.9062	7	12	3	613389
59/64	0.9219	7	12	3	613390
15/16	0.9375	7	12	3	613391
31/32	0.9688	7	12	3	613392
1	1.0000	7	12	3	613393
5/16	0.3125	10	14	2	613394
7/16	0.4375	11	14	1	613395
15/32	0.4688	11	14	1	613396
15/32	0.4688	10	14	2	613733
31/64	0.4844	10	14	2	613397
1/2	0.5000	10	14	2	613398
33/64	0.5156	10	14	2	613399
17/32	0.5312	10	14	2	613400
37/64	0.5781	10	14	2	613401
19/32	0.5938	10	14	2	613402
39/64	0.6094	10	14	2	613403
5/8	0.6250	10	14	2	613404
21/32	0.6562	10	14	2	613405
11/16	0.6875	10	14	2	613406
45/64	0.7031	10	14	2	613407
23/32	0.7188	10	14	2	613408
47/64	0.7344	10	14	2	613409
3/4	0.7500	10	14	2	613410
49/64	0.7656	10	14	2	613411

Taper Shank Extra Length Drills

High Speed Steel – 118° Point *(continued)*



Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
25/32	0.7812	10	14	2	613412
27/32	0.8438	9	14	3	613413
57/64	0.8906	9	14	3	613414
31/32	0.9688	9	14	3	613415
63/64	0.9844	9	14	3	613416
3/16	0.1875	12	15	1	613417
13/64	0.2031	12	15	1	613418
7/32	0.2188	12	15	1	613419
15/64	0.2344	12	15	1	613420
1/4	0.2500	12	15	1	613421
17/64	0.2656	12	15	1	613422
9/32	0.2812	12	15	1	613423
19/64	0.2969	12	15	1	613424
5/16	0.3125	12	15	1	613425
21/64	0.3281	12	15	1	613426
11/32	0.3438	12	15	1	613427
23/64	0.3594	12	15	1	613428
3/8	0.3750	12	15	1	613429
25/64	0.3906	12	15	1	613430
13/32	0.4062	12	15	1	613431
27/64	0.4219	12	15	1	613432
7/16	0.4375	12	15	1	613433
29/64	0.4531	12	15	1	613434
15/32	0.4688	12	15	1	613435
31/64	0.4844	11	15	2	613436
1/2	0.5000	11	15	2	613437
33/64	0.5156	11	15	2	613438
17/32	0.5312	11	15	2	613439
35/64	0.5469	12	15	1	613440
35/64	0.5469	11	15	2	613734
9/16	0.5625	11	15	2	613441
37/64	0.5781	11	15	2	613442
19/32	0.5938	11	15	2	613443
39/64	0.6094	11	15	2	613444
5/8	0.6250	11	15	2	613445
41/64	0.6406	11	15	2	613446
21/32	0.6562	11	15	2	613447
43/64	0.6719	11	15	2	613448
11/16	0.6875	11	15	2	613449
45/64	0.7031	11	15	2	613450
23/32	0.7188	11	15	2	613451
47/64	0.7344	11	15	2	613452
3/4	0.7500	11	15	2	613453
49/64	0.7656	11	15	2	613454
25/32	0.7812	11	15	2	613455
51/64	0.7969	10	15	3	613456
13/16	0.8125	10	15	3	613457
53/64	0.8281	10	15	3	613458
27/32	0.8438	10	15	3	613459
55/64	0.8594	10	15	3	613460
7/8	0.8750	10	15	3	613461
57/64	0.8906	10	15	3	613462
29/32	0.9062	10	15	3	613463
59/64	0.9219	10	15	3	613464
15/16	0.9375	10	15	3	613465
61/64	0.9531	10	15	3	613466
31/32	0.9688	10	15	3	613467
63/64	0.9844	10	15	3	613468
1	1.0000	10	15	3	613469
1-1/64	1.0156	10	15	3	613470

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
1-1/32	1.0312	10	15	3	613471
1-3/64	1.0469	10	15	3	613472
1-1/16	1.0625	10	15	3	613473
1-5/64	1.0781	9	15	4	613474
1-3/32	1.0938	9	15	4	613475
1-7/64	1.1094	9	15	4	613476
1-1/8	1.1250	9	15	4	613477
1-9/64	1.1406	9	15	4	613478
1-5/32	1.1562	9	15	4	613479
1-11/64	1.1719	9	15	4	613480
1-3/16	1.1875	10	15	3	613481
1-3/16	1.1875	9	15	4	613735
1-7/32	1.2188	9	15	4	613482
1-15/64	1.2344	9	15	4	613483
1-1/4	1.2500	9	15	4	613484
1/4	0.2500	15	18	1	613485
17/64	0.2656	15	18	1	613486
9/32	0.2812	15	18	1	613487
19/64	0.2969	15	18	1	613488
5/16	0.3125	15	18	1	613489
21/64	0.3281	15	18	1	613490
11/32	0.3438	15	18	1	613491
23/64	0.3594	15	18	1	613492
3/8	0.3750	15	18	1	613493
25/64	0.3906	15	18	1	613494
13/32	0.4062	15	18	1	613495
27/64	0.4219	15	18	1	613496
7/16	0.4375	15	18	1	613497
29/64	0.4531	15	18	1	613498
15/32	0.4688	15	18	1	613499
31/64	0.4844	14	18	2	613500
1/2	0.5000	14	18	2	613501
33/64	0.5156	14	18	2	613502
17/32	0.5312	14	18	2	613503
35/64	0.5469	14	18	2	613504
9/16	0.5625	14	18	2	613505
37/64	0.5781	14	18	2	613506
19/32	0.5938	14	18	2	613507
39/64	0.6094	14	18	2	613508
5/8	0.6250	14	18	2	613509
41/64	0.6406	14	18	2	613510
21/32	0.6562	14	18	2	613511
43/64	0.6719	14	18	2	613512
11/16	0.6875	14	18	2	613513
45/64	0.7031	14	18	2	613514
23/32	0.7188	14	18	2	613515
47/64	0.7344	14	18	2	613516
3/4	0.7500	14	18	2	613517
49/64	0.7656	14	18	2	613518
25/32	0.7812	14	18	2	613519
51/64	0.7969	13	18	3	613520
13/16	0.8125	13	18	3	613521
53/64	0.8281	13	18	3	613522
27/32	0.8438	13	18	3	613523
55/64	0.8594	13	18	3	613524
7/8	0.8750	13	18	3	613525
57/64	0.8906	13	18	3	613526
29/32	0.9062	13	18	3	613527
59/64	0.9219	13	18	3	613528
15/16	0.9375	13	18	3	613529

Taper Shank Extra Length Drills

High Speed Steel – 118° Point *(continued)*



Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
61/64	0.9531	13	18	3	613530
31/32	0.9688	13	18	3	613531
63/64	0.9844	13	18	3	613532
1	1.0000	13	18	3	613533
1-1/64	1.0156	13	18	3	613534
1-1/32	1.0312	13	18	3	613535
1-3/64	1.0469	13	18	3	613536
1-1/16	1.0625	13	18	3	613537
1-5/64	1.0781	12	18	4	613538
1-3/32	1.0938	12	18	4	613539
1-7/64	1.1094	12	18	4	613540
1-1/8	1.1250	12	18	4	613541
1-9/64	1.1406	12	18	4	613542
1-5/32	1.1562	12	18	4	613543
1-11/64	1.1719	12	18	4	613544
1-3/16	1.1875	12	18	4	613545
1-7/32	1.2188	12	18	4	613546
1-15/64	1.2344	12	18	4	613547
1-1/4	1.2500	12	18	4	613548
1-17/64	1.2656	12	18	4	613549
1-9/32	1.2813	12	18	4	613550
1-5/16	1.3125	12	18	4	613551
1-11/32	1.3438	12	18	4	613552
1-23/64	1.3594	12	18	4	613553
1-3/8	1.3750	12	18	4	613554
1-13/32	1.4062	12	18	4	613555
1-7/16	1.4375	12	18	4	613556
1-15/32	1.4688	12	18	4	613557
1-1/2	1.5000	12	18	4	613558
1-9/16	1.5625	10	18	5	613559
1-5/8	1.6250	10	18	5	613560
1-11/16	1.6875	10	18	5	613561
1-3/4	1.7500	10	18	5	613562
1-13/16	1.8125	10	18	5	613563
1-7/8	1.8750	10	18	5	613564
33/64	0.5156	16	20	2	613565
9/16	0.5625	16	20	2	613566
19/32	0.5938	16	20	2	613567
47/64	0.7344	16	20	2	613568
13/16	0.8125	15	20	3	613569
27/32	0.8438	15	20	3	613570
7/8	0.8750	15	20	3	613571
15/16	0.9375	15	20	3	613572
31/32	0.9688	15	20	3	613573
1-1/16	1.0625	15	20	3	613574
1-3/32	1.0938	14	20	4	613575
1-1/8	1.1250	14	20	4	613576
1-3/16	1.1875	14	20	4	613577
1-13/64	1.2031	14	20	4	613578
1-7/32	1.2188	14	20	4	613579
1-1/4	1.2500	14	20	4	613580
1-11/32	1.3438	14	20	4	613581
1-13/32	1.4062	14	20	4	613582
1-7/16	1.4375	14	20	4	613583
1-15/32	1.4688	14	20	4	613584
1-3/4	1.7500	13	20	5	613585
2-7/32	2.2188	13	20	5	613586
3/8	0.3750	21	24	1	613587
25/64	0.3906	21	24	1	613588
13/32	0.4062	21	24	1	613589

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
27/64	0.4219	21	24	1	613590
7/16	0.4375	21	24	1	613591
29/64	0.4531	21	24	1	613592
15/32	0.4688	21	24	1	613593
31/64	0.4844	20	24	2	613594
1/2	0.5000	20	24	2	613595
33/64	0.5156	20	24	2	613596
17/32	0.5312	20	24	2	613597
35/64	0.5469	20	24	2	613598
9/16	0.5625	20	24	2	613599
37/64	0.5781	20	24	2	613600
19/32	0.5938	20	24	2	613601
39/64	0.6094	20	24	2	613602
5/8	0.6250	20	24	2	613603
41/64	0.6406	20	24	2	613604
21/32	0.6562	20	24	2	613605
43/64	0.6719	20	24	2	613606
11/16	0.6875	20	24	2	613607
45/64	0.7031	20	24	2	613608
23/32	0.7188	20	24	2	613609
47/64	0.7344	20	24	2	613610
3/4	0.7500	20	24	2	613611
49/64	0.7656	20	24	2	613612
25/32	0.7812	20	24	2	613613
51/64	0.7969	19	24	3	613614
13/16	0.8125	19	24	3	613615
53/64	0.8281	19	24	3	613616
27/32	0.8438	19	24	3	613617
55/64	0.8594	19	24	3	613618
7/8	0.8750	19	24	3	613619
57/64	0.8906	19	24	3	613620
29/32	0.9062	19	24	3	613621
59/64	0.9219	19	24	3	613622
15/16	0.9375	19	24	3	613623
61/64	0.9531	19	24	3	613624
31/32	0.9688	19	24	3	613625
63/64	0.9844	19	24	3	613626
1	1.0000	19	24	3	613627
1-1/64	1.0156	19	24	3	613628
1-1/32	1.0312	19	24	3	613629
1-3/64	1.0469	19	24	3	613630
1-1/16	1.0625	19	24	3	613631
1-5/64	1.0781	18	24	4	613632
1-3/32	1.0938	18	24	4	613633
1-1/8	1.1250	18	24	4	613634
1-9/64	1.1406	18	24	4	613635
1-5/32	1.1562	18	24	4	613636
1-11/64	1.1719	18	24	4	613637
1-3/16	1.1875	18	24	4	613638
1-13/64	1.2031	18	24	4	613639
1-7/32	1.2188	18	24	4	613640
1-15/64	1.2344	18	24	4	613641
1-1/4	1.2500	18	24	4	613642
1-17/64	1.2656	18	24	4	613643
1-9/32	1.2812	18	24	4	613644
1-5/16	1.3125	18	24	4	613645
1-11/32	1.3438	18	24	4	613646
1-23/64	1.3594	18	24	4	613647
1-3/8	1.3750	18	24	4	613648
1-13/32	1.4062	18	24	4	613649

Taper Shank Extra Length Drills

High Speed Steel – 118° Point *(continued)*



Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
1-7/16	1.4375	18	24	4	613650
1-15/32	1.4688	18	24	4	613651
1-1/2	1.5000	18	24	4	613652
1-9/16	1.5625	17	24	5	613653
1-5/8	1.6250	17	24	5	613654
1-11/16	1.6875	17	24	5	613655
1-3/4	1.7500	17	24	5	613656
1-25/32	1.7812	17	24	5	613657
1-13/16	1.8125	17	24	5	613658
1-7/8	1.8750	18	24	4	613659
1-7/8	1.8750	17	24	5	613736
1-15/16	1.9375	17	24	5	613660
2	2.0000	18	24	4	613661
2	2.0000	17	24	5	613737
2-1/16	2.0625	17	24	5	613662
2-1/8	2.1250	17	24	5	613663
2-3/16	2.1875	17	24	5	613664
2-7/32	2.2188	17	24	5	613665
2-1/4	2.2500	17	24	5	613666
2-5/16	2.3125	17	24	5	613667
2-3/8	2.3750	17	24	5	613668
2-7/16	2.4375	17	24	5	613669
2-1/2	2.5000	17	24	5	613670
2-9/16	2.5625	17	24	5	613671
2-5/8	2.6250	17	24	5	613672
2-11/16	2.6875	17	24	5	613673
2-3/4	2.7500	17	24	5	613674
2-13/16	2.8125	17	24	5	613675
2-7/8	2.8750	17	24	5	613676
2-15/16	2.9375	17	24	5	613677
3	3.0000	17	24	5	613678
3/4	0.7500	26	30	2	613679
13/16	0.8125	25	30	3	613680
7/8	0.8750	25	30	3	613681
15/16	0.9375	25	30	3	613682
1	1.0000	25	30	3	613683
1-1/16	1.0625	25	30	3	613684
1-1/8	1.1250	24	30	4	613685
1-3/16	1.1875	24	30	4	613686
1-1/4	1.2500	24	30	4	613687
1-5/16	1.3125	24	30	4	613688
1-3/8	1.3750	24	30	4	613689

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
1-7/16	1.4375	24	30	4	613690
1-1/2	1.5000	24	30	4	613691
1-9/16	1.5625	23	30	5	613692
1-5/8	1.6250	23	30	5	613693
1-11/16	1.6875	23	30	5	613694
1-3/4	1.7500	23	30	5	613695
1-13/16	1.8125	23	30	5	613696
1-7/8	1.8750	23	30	5	613697
1-15/16	1.9375	23	30	5	613698
2	2.0000	23	30	5	613699
2-1/16	2.0625	23	30	5	613700
2-1/8	2.1250	23	30	5	613701
2-3/16	2.1875	23	30	5	613702
2-1/4	2.2500	23	30	5	613703
2-5/16	2.3125	23	30	5	613704
2-3/8	2.3750	23	30	5	613705
2-7/16	2.4375	23	30	5	613706
2-1/2	2.5000	23	30	5	613707
2-5/8	2.6250	23	30	5	613708
2-3/4	2.7500	23	30	5	613709
2-7/8	2.8750	23	30	5	613710
3	3.0000	23	30	5	613711
3-1/8	3.1250	23	30	5	613712
3-1/4	3.2500	23	30	5	613713
3-3/8	3.3750	23	30	5	613714
3-1/2	3.5000	23	30	5	613715
1-1/2	1.5000	30	36	4	613716
1-3/4	1.7500	29	36	5	613717
2	2.0000	29	36	5	613718
2-1/8	2.1250	29	36	5	613719
2-1/4	2.2500	29	36	5	613720
2-3/8	2.3750	29	36	5	613721
2-1/2	2.5000	29	36	5	613722
2-5/8	2.6250	29	36	5	613723
2-3/4	2.7500	29	36	5	613724
3	3.0000	29	36	5	613725
3-1/8	3.1250	29	36	5	613726
3-1/4	3.2500	29	36	5	613727
3-3/8	3.3750	29	36	5	613728
3-1/2	3.5000	29	36	5	613729

Reduced Shank Drills

Silver & Deming



- 1/2" diameter shank
- 118° split point
- Milled flutes, ground lands
- Sets supplied in wooden block

Fractional Sizes – Cobalt (Gold)

Size (Inch)	Decimal Equivalent (Inch)	Code
17/32	0.5312	608900
9/16	0.5625	608901
19/32	0.5938	608902
5/8	0.6250	608903
21/32	0.6562	608904
11/16	0.6875	608905

Size (Inch)	Decimal Equivalent (Inch)	Code
23/32	0.7188	608906
3/4	0.7500	608907
25/32	0.7812	608908
13/16	0.8125	608909
27/32	0.8438	608910
7/8	0.8750	608911

Size (Inch)	Decimal Equivalent (Inch)	Code
29/32	0.9062	608912
15/16	0.9375	608913
31/32	0.9688	608914
1	1.0000	608915

High Speed Steel & Cobalt – 1/2" Shank – Silver & Deming



- Heavy web 8% cobalt content permits use at higher speeds in hardened stainless, heat treated and high temperature alloys
- All sizes 6" overall with 3" flute length

Size	Decimal Equiv. (Inch)	1/2" Standard Shank		1/2" Shank with Flats	
		HSS 118°	Cobalt 135° Split Point	HSS 118°	Cobalt 135° Split Point
		Code	Code	Code	Code
1/2	0.5000	608670	608916	608734	608966
33/64	0.5156	751250	608917	751288	608967
17/32	0.5312	751251	608918	751289	608968
35/64	0.5469	751252	608919	751290	608969
9/16	0.5625	751253	751351	751291	608970
37/64	0.5781	751254	608921	751292	608971
19/32	0.5938	751255	608922	751293	–
39/64	0.6094	751256	608923	751294	608972
5/8	0.6250	751257	751352	751295	608973
41/64	0.6406	751258	608925	751296	608974
21/32	0.6562	751259	608926	751297	608975
43/64	0.6719	751260	608927	751298	608976
11/16	0.6875	751261	751353	751299	608977
45/64	0.7031	751262	608929	751300	608978
23/32	0.7188	751263	608930	751301	608979
47/64	0.7344	751264	608931	751302	608980
3/4	0.7500	751265	751354	751303	608981
49/64	0.7656	751266	608933	751304	608982
25/32	0.7812	751267	608934	751305	608983
51/64	0.7969	751268	608935	751306	608984
13/16	0.8125	751269	751355	751307	608985
53/64	0.8281	751270	608937	751308	608986
27/32	0.8438	751271	608938	751318	608987
55/64	0.8594	751272	608939	751309	608988
7/8	0.8750	751273	751356	751310	608989
57/64	0.8906	751274	608941	751311	608990
29/32	0.9062	751275	608942	751312	608991
59/64	0.9219	751276	608943	751313	608992
15/16	0.9375	751277	751357	751314	608993
61/64	0.9531	751278	608945	751315	608994
31/32	0.9688	751279	608946	751316	608995
63/64	0.9844	751280	608947	751317	608996

Size	Decimal Equiv. (Inch)	1/2" Standard Shank		1/2" Shank with Flats	
		HSS 118°	Cobalt 135° Split Point	HSS 118°	Cobalt 135° Split Point
		Code	Code	Code	Code
1	1.0000	751281	751350	751287	608997
1-1/64	1.0156	608702	–	608767	–
1-1/32	1.0312	608703	608949	608768	–
1-3/64	1.0469	608704	–	608769	–
1-1/16	1.0625	751282	608950	608770	–
1-5/64	1.0781	608706	–	608771	–
1-3/32	1.0938	608707	608951	608772	–
1-7/64	1.1094	608708	–	608773	–
1-1/8	1.1250	751283	608952	608774	–
1-9/64	1.1406	608710	608953	608775	–
1-5/32	1.1562	751284	608954	608776	–
1-11/64	1.1719	608712	–	608777	–
1-3/16	1.1875	751285	608955	608778	–
1-13/64	1.2031	608714	–	608779	–
1-7/32	1.2188	608715	608956	608780	–
1-15/64	1.2344	608716	–	608781	–
1-1/4	1.2500	751286	608957	608782	–
1-17/64	1.2656	608718	–	608783	–
1-9/32	1.2812	608719	608958	608784	–
1-19/64	1.2969	608720	–	608785	–
1-5/16	1.3125	608721	608959	608786	–
1-21/64	1.3281	608722	–	608787	–
1-11/32	1.3438	608723	608960	608788	–
1-23/64	1.3594	608724	–	608789	–
1-3/8	1.3750	608725	608961	608790	–
1-25/64	1.3906	608726	–	608791	–
1-13/32	1.4062	608727	608962	608792	–
1-27/64	1.4219	608728	–	608793	–
1-7/16	1.4375	608729	608963	608794	608998
1-29/64	1.4531	608730	–	608795	–
1-15/32	1.4688	608731	608964	608796	608999
1-31/64	1.4844	608732	–	608797	–
1-1/2	1.5000	608733	608965	608798	609000

Reduced Shank Drills

Metric – High Speed Steel – 1/2 Shank – Silver & Deming – 118° Point



Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
13.00	0.5118	3	6	608799
13.50	0.5315	3	6	608800
14.00	0.5512	3	6	751320
14.50	0.5709	3	6	608802
15.00	0.5906	3	6	751321
15.50	0.6102	3	6	608804
16.00	0.6299	3	6	751322
16.50	0.6496	3	6	608806
17.00	0.6693	3	6	751323
17.50	0.6890	3	6	608808
18.00	0.7087	3	6	751324
18.50	0.7283	3	6	608810

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
19.00	0.7480	3	6	751325
19.50	0.7677	3	6	608812
20.00	0.7874	3	6	751326
20.50	0.8071	3	6	608814
21.00	0.8268	3	6	751327
21.50	0.8465	3	6	608816
22.00	0.8661	3	6	751328
22.50	0.8858	3	6	608818
23.00	0.9055	3	6	751329
23.50	0.9252	3	6	608820
24.00	0.9449	3	6	751330
24.50	0.9646	3	6	608822

Size (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
25.00	0.9843	3	6	751331
25.50	1.0039	3	6	608824
26.00	1.0236	3	6	608825
26.50	1.0433	3	6	608826
27.00	1.0630	3	6	608827
27.50	1.0827	3	6	608828
28.00	1.1024	3	6	608829
28.50	1.1220	3	6	608830
29.00	1.1417	3	6	608831
30.00	1.1811	3	6	608832
30.50	1.2008	3	6	608833
31.00	1.2205	3	6	608834

High Speed Steel – 3/4" Shank – Boring Mill & Screw Machine – 118° Point



Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
25/32	0.7812	3	6	610900
13/16	0.8125	3	6	610901
27/32	0.8438	3	6	610902
7/8	0.8750	3	6	610903
29/32	0.9062	3	6	610904
15/16	0.9375	3	6	610905
31/32	0.9688	3	6	610906
1	1.0000	3	6	610907
1-1/32	1.0312	3	6	610908
1-1/16	1.0625	3	6	610909
1-3/32	1.0938	3	6	610910
1-1/8	1.1250	3	6	610911
1-5/32	1.1562	3	6	610912
1-3/16	1.1875	3	6	610913

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
1-7/32	1.2188	3	6	610914
1-1/4	1.2500	3	6	610915
1-9/32	1.2812	3	6	610916
1-5/16	1.3125	3	6	610917
1-11/32	1.3438	3	6	610918
1-3/8	1.3750	3	6	610919
1-13/32	1.4062	3	6	610920
1-7/16	1.4375	3	6	610921
1-15/32	1.4688	3	6	610922
1-1/2	1.5000	3	6	610923
1-17/32	1.5312	3	6	610924
1-9/16	1.5625	3	6	610925
1-19/32	1.5938	3	6	610926
1-5/8	1.6250	3	6	610927

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
1-21/32	1.6562	3	6	610928
1-11/16	1.6875	3	6	610929
1-23/32	1.7188	3	6	610930
1-3/4	1.7500	3	6	610931
1-25/32	1.7812	3	6	610932
1-13/16	1.8125	3	6	610933
1-27/32	1.8438	3	6	610934
1-7/8	1.8750	3	6	610935
1-29/32	1.9062	3	6	610936
1-15/16	1.9375	3	6	610937
1-31/32	1.9688	3	6	610938
2	2.0000	3	6	610939

High Speed Steel – 3/8" Shank Metal Working Drills – 118° Point



Size (Inch)	Decimal Equivalent (Inch)	Code
25/64	0.3906	753117
13/32	0.4062	753118
27/64	0.4219	753119
7/16	0.4375	753120
29/64	0.4531	753121
15/32	0.4688	753122
31/64	0.4844	753123
1/2	0.5000	753124

Size (Inch)	Decimal Equivalent (Inch)	Code
33/64	0.5156	610940
17/32	0.5312	753125
35/64	0.5469	610941
9/16	0.5625	753126
37/64	0.5781	610942
19/32	0.5938	753127
39/64	0.6094	610943
5/8	0.6250	753128

Size (Inch)	Decimal Equivalent (Inch)	Code
41/64	0.6406	610944
21/32	0.6562	610945
43/64	0.6719	610946
11/16	0.6875	610947
45/64	0.7031	610948
23/32	0.7188	610949
47/64	0.7344	610950
3/4	0.7500	610951

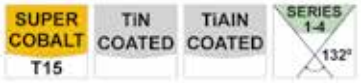
Spade Drill Inserts

Super Cobalt (T15) – TiN Coated & TiAlN Coated


TiN Coated


TiAlN Coated

- For use with high nickel alloys and materials with hardness over 29HRC
- Custom sizes available upon request



TiN COATED: Titanium Nitride reinforces the wear resistance, hardness and toughness of the tool

TiAlN COATED: Titanium Aluminum Nitride has a higher hardness than TiN which greatly increases the tool life and can withstand higher temperatures when machining cast irons and tough steels

Series Min. to Max.	Thickness	Diameter	Decimal Equivalent (Inch)	Super Cobalt (T15) TiN Coated	Super Cobalt (T15) TiAlN Coated
				Code	Code
Y 0.374" to 0.436" 9.50 mm to 11.07 mm	3/32" 2.4 mm	9.50 mm	0.3740	548345	548616
		3/8"	0.3750	548346	548617
		9.80 mm	0.3858	548347	548618
		25/64"	0.3906	548348	548619
		10 mm	0.3937	548349	548620
		10.20 mm	0.4016	548350	548621
		13/32"	0.4062	548351	548622
		10.50 mm	0.4134	548352	548623
		27/64"	0.4219	548353	548624
		10.80 mm	0.4252	548354	548625
		11 mm	0.4331	548355	548626
Z 0.437" to 0.510" 11.10 mm to 12.95 mm	3/32" 2.4 mm	7/16"	0.4375	548356	548627
		11.50 mm	0.4528	548357	548628
		29/64"	0.4531	548358	548629
		15/32"	0.4688	548359	548630
		12 mm	0.4724	548360	548631
		31/64"	0.4844	548361	548632
		12.50 mm	0.4921	548362	548633
		1/2"	0.5000	548363	548634
0 0.511" to 0.695" 12.98 mm to 17.65 mm	1/8" 3.2 mm	13 mm	0.5118	548364	548490
		33/64"	0.5156	548365	548491
		17/32"	0.5312	548366	548492
		13.50 mm	0.5315	548367	548493
		35/64"	0.5469	548382	548508
		14 mm	0.5512	548368	548494
		9/16"	0.5625	548369	548495
		14.50 mm	0.5709	548370	548496
		37/64"	0.5781	548371	548497
		15 mm	0.5906	548372	548498
		19/32"	0.5938	548373	548499
		39/64"	0.6094	548383	548509
		15.50 mm	0.6102	548374	548500
		5/8"	0.6250	548375	548501
		16 mm	0.6299	548376	548502
		41/64"	0.6406	548384	548510
		16.50 mm	0.6496	548377	548503
		21/32"	0.6562	548378	548504
		17 mm	0.6693	548379	548505
		43/64"	0.6719	548385	548511
		11/16"	0.6875	548380	548506
		17.50 mm	0.6890	548381	548507
1 0.690" to 0.960" 17.53 mm to 24.38 mm *(continued on next page)*	5/32" 4.0 mm	45/64"	0.7031	548386	548512
		18 mm	0.7087	548387	548513
		23/32"	0.7188	548388	548514
		18.50 mm	0.7283	548389	548515
		47/64"	0.7344	548390	548516
		19 mm	0.7480	548391	548517
		3/4"	0.7500	548392	548518
		49/64"	0.7656	548393	548519
		19.50 mm	0.7677	548394	548520



Spade Drill Inserts

Super Cobalt (T15) – TiN Coated & TiAlN Coated *(continued)*

Series Min. to Max.	Thickness	Diameter	Decimal Equivalent (Inch)	Super Cobalt (T15) TiN Coated	Super Cobalt (T15) TiAlN Coated
				Code	Code
(continued) **1** 0.690" to 0.960" 17.53 mm to 24.38 mm	5/32" 4.0 mm	25/32"	0.7812	548395	548521
		20 mm	0.7874	548396	548522
		51/64"	0.7969	548408	548534
		20.50 mm	0.8071	548397	548523
		13/16"	0.8125	548398	548524
		21 mm	0.8268	548399	548525
		27/32"	0.8438	548400	548526
		55/64"	0.8594	548409	548535
		22 mm	0.8661	548401	548527
		7/8"	0.8750	548402	548528
		57/64"	0.8906	548410	548536
		23 mm	0.9055	548403	548529
		29/32"	0.9062	548404	548530
		59/64"	0.9219	548405	548531
		15/16"	0.9375	548406	548532
		24 mm	0.9449	548407	548533
2 0.961" to 1.380" 24.41 mm to 35.05 mm	3/16" 4.8 mm	31/32"	0.9688	548411	548537
		63/64"	0.9843	548412	548538
		1"	1.0000	548413	548539
		1-1/64"	1.0156	548414	548540
		26 mm	1.0236	548415	548541
		1-1/32"	1.0312	548416	548542
		1-3/64"	1.0469	548437	548563
		1-1/16"	1.0625	548417	548543
		27 mm	1.0630	548418	548544
		1-3/32"	1.0938	548419	548545
		28 mm	1.1024	548420	548546
		1-7/64"	1.1094	548438	548564
		1-1/8"	1.1250	548421	548547
		29 mm	1.1417	548422	548548
		1-5/32"	1.1562	548423	548549
		30 mm	1.1811	548424	548550
		1-3/16"	1.1875	548425	548551
		1-7/32"	1.2188	548426	548552
		31 mm	1.2205	548427	548553
		1-1/4"	1.2500	548428	548554
		32 mm	1.2598	548429	548555
		1-9/32"	1.2812	548430	548556
		33 mm	1.2992	548431	548557
		1-5/16"	1.3125	548432	548558
		34 mm	1.3386	548433	548559
		1-11/32"	1-3438	548434	548560
		1-3/8"	1.3750	548435	548561
		35 mm	1.3780	548436	548562
3 1.353" to 1.882" 34.36 mm to 47.80 mm ***(continued on next page)***	1/4" 6.4 mm	1-13/32"	1.4062	548439	548565
		36 mm	1.4173	548440	548566
		1-7/16"	1.4375	548441	548567
		37 mm	1.4567	548442	548568
		1-15/32"	1.4688	548443	548569
		38 mm	1.4961	548444	548570
		1-1/2"	1.5000	548445	548571
		1-17/32"	1.5312	548446	548572
		39 mm	1.5354	548447	548573
		1-9/16"	1.5625	548448	548574
		40 mm	1.5748	548449	548575
		1-19/32"	1.5938	548450	548576
		41 mm	1.6142	548451	548577
		1-5/8"	1.6250	548452	548578
		42 mm	1.6535	548453	548579
		1-21/32"	1.6562	548454	548580



Spade Drill Inserts

Super Cobalt (T15) – TiN Coated & TiAlN Coated *(continued)*

Series Min. to Max.	Thickness	Diameter	Decimal Equivalent (Inch)	Super Cobalt (T15) TiN Coated	Super Cobalt (T15) TiAlN Coated
				Code	Code
(continued) **3** 1.353" to 1.882" 34.36 mm to 47.80 mm	1/4" 6.4 mm	1-11/16"	1.6875	548455	548581
		43 mm	1.6929	548456	548582
		1-23/32"	1.7188	548457	548583
		44 mm	1.7323	548458	548584
		1-3/4"	1.7500	548459	548585
		45 mm	1.7717	548460	548586
		1-25/32"	1.7812	548461	548587
		46 mm	1.8110	548462	548588
		1-13/16"	1.8125	548463	548589
		1-27/32"	1.8438	548464	548590
		47 mm	1.8504	548465	548591
		1-7/8	1.8750	548466	548592
4 1.850" to 2.570" 46.99 mm to 65.28 mm	5/16" 8.0 mm	1-29/32"	1.9062	548467	548593
		1-15/16"	1.9375	548468	548594
		1-31/32"	1.9688	548469	548595
		2"	2.0000	548470	548596
		2-1/32"	2.0312	548471	548597
		2-3/64"	2.0472	548472	548598
		2-1/16"	2.0625	548473	548599
		2-3/32"	2.0938	548474	548600
		2-1/8"	2.1250	548475	548601
		2-5/32"	2.1562	548476	548602
		2-3/16"	2.1875	548477	548603
		2-7/32"	2.2188	548478	548604
		2-1/4"	2.2500	548479	548605
		2-9/32"	2.2812	548480	548606
		2-5/16"	2.3125	548481	548607
		2-11/32"	2.3438	548482	548608
		2-3/8"	2.3750	548483	548609
		2-13/32"	2.4062	548484	548610
		2-7/16"	2.4375	548485	548611
		2-15/32"	2.4688	548486	548612
		2-1/2"	2.5000	548487	548613
		2-17/32"	2.5312	548488	548614
		2-9/16"	2.5625	548489	548615

High Speed Steel (M4) – TiN Coated & TiAlN Coated



TiN Coated *TiAlN Coated*

- For use with steels and cast irons
- Custom sizes available upon request



TiN COATED: Titanium Nitride reinforces the wear resistance, hardness and toughness of the tool

TiAlN COATED: Titanium Aluminum Nitride has a higher hardness than TiN which greatly increases the tool life and can withstand higher temperatures when machining cast irons and tough steels

Series Min. to Max.	Thickness	Diameter	Decimal Equivalent (Inch)	HSS (M4) TiN Coated	HSS (M4) TiAlN Coated
				Code	Code
1 0.690" to 0.960" 17.53 mm to 24.38 mm ***(continued on next page)***	5/32" 4.0 mm	45/64"	0.7031	548000	548134
		18 mm	0.7087	548001	548135
		23/32"	0.7188	548002	548136
		18.50 mm	0.7283	548003	548137
		47/64"	0.7344	548004	548138
		19 mm	0.7480	548005	548139
		3/4"	0.7500	548006	548140

Spade Drill Inserts



High Speed Steel (M4) – TiN Coated & TiAlN Coated *(continued)*

Series Min. to Max.	Thickness	Diameter	Decimal Equivalent (Inch)	HSS (M4) TiN Coated Code	HSS (M4) TiAlN Coated Code
(continued) **1** 0.690" to 0.960" 17.53 mm to 24.38 mm	5/32" 4.0 mm	49/64"	0.7656	548007	548141
		19.50 mm	0.7677	548008	548142
		25/32"	0.7812	548009	548143
		20 mm	0.7874	548010	548144
		51/64"	0.7969	548022	548156
		20.50 mm	0.8071	548011	548145
		13/16"	0.8125	548012	548146
		21 mm	0.8268	548013	548147
		27/32"	0.8438	548014	548148
		55/64"	0.8594	548023	548159
		22 mm	0.8661	548015	548149
		7/8"	0.8750	548016	548150
		57/64"	0.8906	548024	548158
		23 mm	0.9055	548017	548151
		29/32"	0.9062	548018	548152
		59/64"	0.9219	548019	548153
		15/16"	0.9375	548020	548154
		24 mm	0.9449	548021	548155
2 0.961" to 1.380" 24.41 mm to 35.05 mm	3/16" 4.8 mm	31/32"	0.9688	548025	548159
		63/64"	0.9843	548026	548160
		1"	1.0000	548027	548161
		1-1/64"	1.0156	548028	548162
		26 mm	1.0236	548029	548163
		1-1/32"	1.0312	548030	548164
		1-3/64"	1.0469	548051	548185
		1-1/16"	1.0625	548031	548165
		27 mm	1.0630	548032	548166
		1-3/32"	1.0938	548033	548167
		28 mm	1.1024	548034	548168
		1-7/64"	1.1094	548052	548186
		1-1/8"	1.1250	548035	548169
		29 mm	1.1417	548036	548170
		1-5/32"	1.1562	548037	548171
		30 mm	1.1811	548038	548172
		1-3/16"	1.1875	548039	548173
		1-7/32"	1.2188	548040	548174
		31 mm	1.2205	548041	548175
		1-1/4"	1.2500	548042	548176
		32 mm	1.2598	548043	548177
		1-9/32"	1.2812	548044	548178
		33 mm	1.2992	548045	548179
		1-5/16"	1.3125	548046	548180
		34 mm	1.3386	548047	548181
		1-11/32"	1.3438	548048	548182
		1-3/8"	1.3750	548049	548183
		35 mm	1.3780	548050	548184
3 1.353" to 1.882" 34.36 mm to 47.80 mm *(continued on next page)*	1/4" 6.4 mm	1-13/32"	1.4062	548053	548187
		36 mm	1.4173	548054	548188
		1-7/16"	1.4375	548055	548189
		37 mm	1.4567	548056	548190
		1-15/32"	1.4688	548057	548191
		38 mm	1.4961	548058	548192
		1-1/2"	1.5000	548059	548193
		1-17/32"	1.5312	548060	548194
		39 mm	1.5354	548061	548195
		1-9/16"	1.5625	548062	548196
		40 mm	1.5748	548063	548197
		1-19/32"	1.5938	548064	548198
		41 mm	1.6142	548065	548199
		1-5/8"	1.6250	548066	548200

Spade Drill Inserts



High Speed Steel (M4) – TiN Coated & TiAlN Coated *(continued)*

Series Min. to Max.	Thickness	Diameter	Decimal Equivalent (Inch)	HSS (M4) TiN Coated Code	HSS (M4) TiAlN Coated Code
(continued) **3** 1.353" to 1.882" 34.36 mm to 47.80 mm	1/4" 6.4 mm	42 mm	1.6535	548067	548201
		1-21/32"	1.6563	548068	548202
		1-11/16"	1.6875	548069	548203
		43 mm	1.6929	548070	548204
		1-23/32"	1.7188	548071	548205
		44 mm	1.7323	548072	548206
		1-3/4"	1.7500	548073	548207
		45 mm	1.7717	548074	548208
		1-25/32"	1.7812	548075	548209
		46 mm	1.8110	548076	548210
		1-13/16"	1.8125	548077	548211
		1-27/32"	1.8438	548078	548212
		47 mm	1.8504	548079	548213
		1-7/8"	1.8750	548080	548214
4 1.850" to 2.570" 46.99 mm to 65.28 mm	5/16" 8.0 mm	1-29/32"	1.9063	548081	548215
		1-15/16"	1.9375	548082	548216
		1-31/32"	1.9688	548083	548217
		2"	2.0000	548084	548218
		2-1/32"	2.0313	548085	548219
		2-3/64"	2.0472	548086	548220
		2-1/16"	2.0625	548087	548221
		2-3/32"	2.0938	548088	548222
		2-1/8"	2.1250	548089	548223
		2-5/32"	2.1563	548090	548224
		2-3/16"	2.1875	548091	548225
		2-7/32"	2.2188	548092	548226
		2-1/4"	2.2500	548093	548227
		2-9/32"	2.2813	548094	548228
		2-5/16"	2.3125	548095	548229
		2-11/32"	2.3438	548096	548230
		2-3/8"	2.3750	548097	548231
		2-13/32"	2.4063	548098	548232
		2-7/16"	2.4375	548099	548233
		2-15/32"	2.4688	548100	548234
		2-1/2"	2.5000	548101	548235
		2-17/32"	2.5313	548102	548236
		2-9/16"	2.5625	548103	548237
5 2.456" to 3.000" 62.38 mm to 76.20 mm	7/16" 11.1 mm	2-1/2"	2.5000	548104	**TiAlN** Available Upon Request
		2-5/8"	2.6250	548105	
		2-3/4"	2.7500	548106	
		2-25/32"	2.7813	548107	
		2-13/16"	2.8125	548108	
		2-27/32"	2.8438	548109	
		2-7/8"	2.8750	548110	
		2-29/32"	2.9063	548111	
		2-15/16"	2.9375	548112	
		2-31/32"	2.9688	548113	
		3"	3.0000	548114	
6 3.001" to 3.507" 76.23 mm to 89.08 mm	7/16" 11.1 mm	3-1/32"	3.0313	548115	**TiAlN** Available Upon Request
		3-1/16"	3.0625	548116	
		3-3/32"	3.0938	548117	
		3-1/8"	3.1250	548118	
		3-1/4"	3.2500	548119	
		3-3/8"	3.3750	548120	
		3-7/16"	3.4375	548121	
		3-1/2"	3.5000	548122	
7 3.455" to 4.000" 87.76 mm to 101.60 mm ***(continued on next page)***	7/16" 11.1 mm	3-9/16"	3.5625	548123	**TiAlN** Available Upon Request
		3-5/8"	3.6250	548124	
		3-3/4"	3.7500	548125	
		3-7/8"	3.8750	548126	

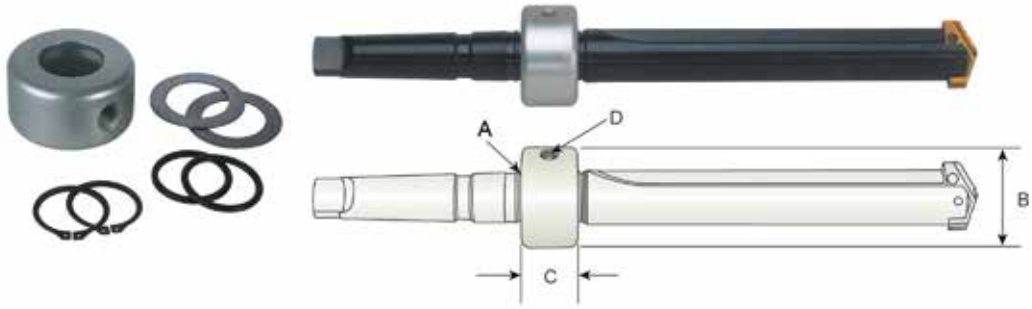
Spade Drill Inserts



High Speed Steel (M4) – TiN Coated & TiAlN Coated *(continued)*

Series Min. to Max.	Thickness	Diameter	Decimal Equivalent (Inch)	HSS (M4) TiN Coated Code	HSS (M4) TiAlN Coated Code
***(continued)* 7** 3.455" to 4.000", 87.76 to 101.60 mm	7/16" 11.1 mm	3-15/16"	3.9375	548127	**TiAlN** Available Upon Request
		4"	4.0000	548128	
8 4.001" to 4.507" 101.63 mm to 114.48 mm	7/16" 11.1 mm	4-1/16"	4.0625	548129	**TiAlN** Available Upon Request
		4-1/8"	4.1250	548130	
		4-1/4"	4.2500	548131	
		4-3/8"	4.3750	548132	
		4-1/2"	4.5000	548133	

Rotary Coolant Inducers (RCI) & Accessories

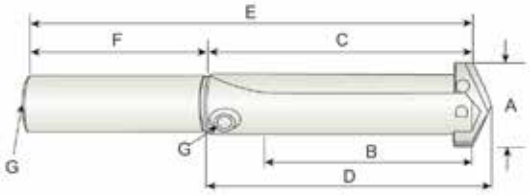


A Inside Diameter (Inch)	B Outside Diameter (Inch)	C Height (Inch)	D Coolant Hole Thread Size (NPT)	Thread for Driving Rod	Code
3/4	1-3/4	7/8	1/8	5/16-18 – NC	549625
1	2-1/8	1-1/8	1/8	5/16-18 – NC	549626
1-1/4	2-1/2	1-3/8	1/4	3/8-16 – NC	549627
1-3/4	3	1-3/8	1/4	3/8-16 – NC	549628
2-1/4	3-3/4	1-3/4	1/2	1/2-13 – NC	549629

Spade Drill Holders

Short Length – Straight Shank – Straight Flute





Series	Shank Diameter (Inch)	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	D Reference Length (Inch)	E Overall Length (Inch)	F Shank Length (Inch)	G Coolant Hole Thread Size (NPT)	Code
Y	3/4	3/8 – 27/64	1-1/4	2-1/32	2-1/8	4-13/32	2-3/8	1/8	549580
Z	3/4	7/16 – 1/2	1-1/4	2-1/32	2-1/8	4-13/32	2-3/8	1/8	549581
0	3/4	33/64 – 11/16	1-3/8	2-3/16	2-19/64	4-9/16	2-3/8	1/8	549564
0.5	3/4	39/64 – 11/16	1-3/8	2-3/16	2-19/64	4-9/16	2-3/8	1/8	549565
1	3/4	45/64 – 15/16	2-5/8	3-7/8	4-1/64	6-7/8	3	1/8	549566
1	1	45/64 – 15/16	2-5/8	3-7/8	4-1/64	6-7/8	3	1/8	549567
1.5	3/4	55/64 – 15/16	2-5/8	3-7/8	4-1/64	6-7/8	3	1/8	549568
1.5	1	55/64 – 15/16	2-5/8	3-7/8	4-1/64	6-7/8	3	1/8	549569
2	1	31/32 – 1-3/8	3-3/8	4-1/2	4-41/64	8	3-1/2	1/8	549570
2	1-1/4	31/32 – 1-3/8	3-3/8	4-1/2	4-41/64	8	3-1/2	1/8	549571

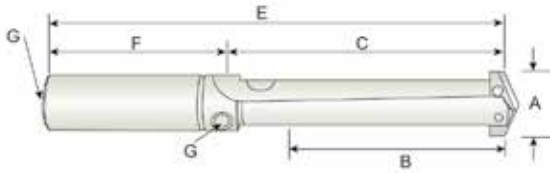
Spade Drill Holders

Short Length – Straight Shank – Straight Flute *(continued)*

Series	Shank Diameter (Inch)	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	D Reference Length (Inch)	E Overall Length (Inch)	F Shank Length (Inch)	G Coolant Hole Thread Size (NPT)	Code
2.5	1	1-3/16 – 1-3/8	3-3/8	4-1/2	4-41/64	8	3-1/2	1/8	549572
2.5	1-1/4	1-3/16 – 1-3/8	3-3/8	4-1/2	4-41/64	8	3-1/2	1/8	549573
3	1-1/4	1-13/32 – 1-7/8	4-3/4	6	6-3/16	10	4	1/4	549574
3	1-1/2	1-13/32 – 1-7/8	4-3/4	6	6-3/16	10	4	1/4	549575
4	1-1/2	1-29/32 – 2-9/16	5-1/8	6-1/2	6-11/16	10-1/2	4	1/4	549576
4	1-3/4	1-29/32 – 2-9/16	5-1/8	6-1/2	6-11/16	10-1/2	4	1/4	549577
5-6	2	2-1/2 – 3-1/2	6-3/4	8-1/2	8-3/4	12-1/2	4	1/2	549578
7-8	3	3-17/32 – 4-1/2	6-3/4	8-7/8	9-1/8	13-7/8	5	1/2	549579

Intermediate Length – Straight Shank – Straight Flute

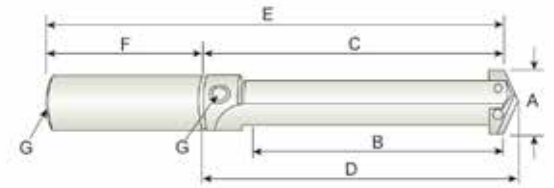




Series	Shank Diameter (Inch)	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	E Overall Length (Inch)	F Shank Length (Inch)	G Coolant Hole Thread Size (NPT)	Code
1	1	45/64 – 15/16	4-5/8	5-7/8	8-7/8	3	1/8	549582
1.5	1	55/64 – 15/16	4-5/8	5-7/8	8-7/8	3	1/8	549583
2	1-1/4	31/32 – 1-3/8	5-3/8	6-1/2	10	3-1/2	1/8	549584
2.5	1-1/4	1-3/16 – 1-3/8	5-3/8	6-1/2	10	3-1/2	1/8	549585
3	1-1/2	1-13/32 – 1-7/8	6-1/2	7-3/4	11-3/4	4	1/4	549586

Standard Length – Straight Shank – Straight Flute



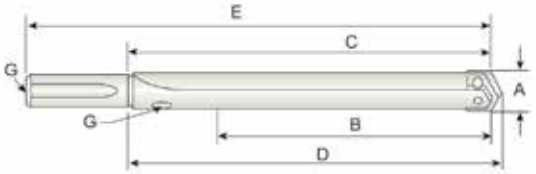


Series	Shank Diameter (Inch)	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	D Reference Length (Inch)	E Overall Length (Inch)	F Shank Length (Inch)	G Coolant Hole Thread Size (NPT)	Code
Y	3/4	3/8 – 27/64	2-3/8	3-5/32	3-1/4	5-17/32	2-3/8	1/8	549603
Z	3/4	7/16 – 1/2	2-3/8	3-5/32	3-1/4	5-17/32	2-3/8	1/8	549604
0	3/4	33/64 – 11/16	2-1/2	3-5/16	3-27/64	5-11/16	2-3/8	1/8	549587
0.5	3/4	39/64 – 11/16	2-1/2	3-5/16	3-27/64	5-11/16	2-3/8	1/8	549588
1	3/4	45/64 – 15/16	6-5/8	7-7/8	8-1/64	10-7/8	3	1/8	549589
1	1	45/64 – 15/16	6-5/8	7-7/8	8-1/64	10-7/8	3	1/8	549590
1.5	3/4	55/64 – 15/16	6-5/8	7-7/8	8-1/64	10-7/8	3	1/8	549591
1.5	1	55/64 – 15/16	6-5/8	7-7/8	8-1/64	10-7/8	3	1/8	549592
2	1	31/32 – 1-3/8	7-3/8	8-1/2	8-41/64	12	3-1/2	1/8	549593
2	1-1/4	31/32 – 1-3/8	7-3/8	8-1/2	8-41/64	12	3-1/2	1/8	549594
2.5	1	1-3/16 – 1-3/8	7-3/8	8-1/2	8-41/64	12	3-1/2	1/8	549595
2.5	1-1/4	1-3/16 – 1-3/8	7-3/8	8-1/2	8-41/64	12	3-1/2	1/8	549596
3	1-1/4	1-13/32 – 1-7/8	8-1/4	9-1/2	9-11/16	13-1/2	4	1/4	549597
3	1-1/2	1-13/32 – 1-7/8	8-1/4	9-1/2	9-11/16	13-1/2	4	1/4	549598
4	1-1/2	1-29/32 – 2-9/16	9-1/8	10-1/2	10-11/16	14-1/2	4	1/4	549599
4	1-3/4	1-29/32 – 2-9/16	9-1/8	10-1/2	10-11/16	14-1/2	4	1/4	549600
5-6	2	2-1/2 – 3-1/2	10-3/4	12-1/2	12-3/4	16-1/2	4	1/2	549601
7-8	3	3-17/32 – 4-1/2	10-3/4	12-7/8	13-1/8	17-7/8	5	1/2	549602

Spade Drill Holders

Extended Length – Straight Shank – Straight Flute

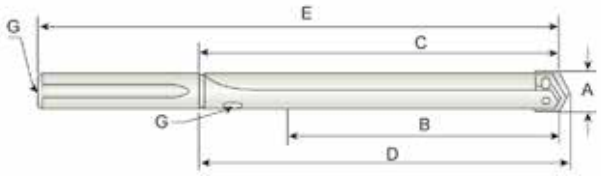




Series	Shank Diameter (Inch)	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	D Reference Length (Inch)	E Overall Length (Inch)	F Shank Length (Inch)	G Coolant Hole Thread Size (NPT)	Code
Y	3/4	3/8 – 27/64	4-3/8	5-5/32	5-1/4	7-17/32	2-3/8	1/8	549615
Z	3/4	7/16 – 1/2	4-3/8	5-5/32	5-1/4	7-17/32	2-3/8	1/8	549616
0	3/4	33/64 – 11/16	4-1/2	5-5/16	5-27/64	7-11/16	2-3/8	1/8	549605
0.5	3/4	39/64 – 11/16	4-1/2	5-5/16	5-27/64	7-11/16	2-3/8	1/8	549606
1	1	45/64 – 15/16	10-5/8	11-7/8	12-1/64	14-7/8	3	1/8	549607
1.5	1	55/64 – 15/16	10-5/8	11-7/8	12-1/64	14-7/8	3	1/8	549608
2	1-1/4	31/32 – 1-3/8	11-3/8	12-1/2	12-41/64	16	3-1/2	1/8	549609
2.5	1-1/4	1-3/16 – 1-3/8	11-3/8	12-1/2	12-41/64	16	3-1/2	1/8	549610
3	1-1/4	1-13/32 – 1-7/8	13-3/4	15	15-3/16	19	4	1/4	549611
4	1-1/2	1-29/32 – 2-9/16	16-5/8	18	18-3/16	22	4	1/4	549612
5	2	2-1/2 – 3-1/2	18-1/4	20	20-1/4	24	4	1/2	549613
7	3	3-17/32 – 4-1/2	21-7/8	24	24-1/4	29	5	1/2	549614

Long Length – Straight Shank – Straight Flute

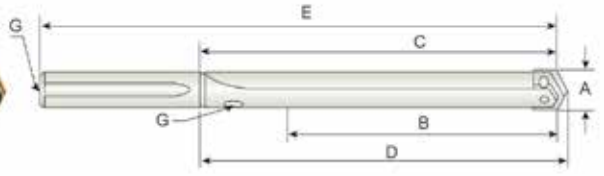




Series	Shank Diameter (Inch)	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	D Reference Length (Inch)	E Overall Length (Inch)	F Shank Length (Inch)	G Coolant Hole Thread Size (NPT)	Code
0	3/4	33/64 – 11/16	7	7-13/16	7-59/64	10-3/16	2-3/8	1/8	549617
0.5	3/4	39/64 – 11/16	7	7-13/16	7-59/64	10-3/16	2-3/8	1/8	549618

Extra Long Length – Straight Shank – Straight Flute



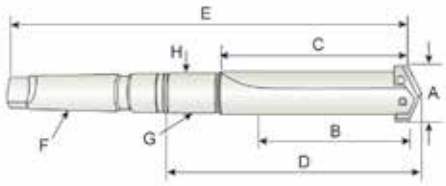


Series	Shank Diameter (Inch)	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	D Reference Length (Inch)	E Overall Length (Inch)	F Shank Length (Inch)	G Coolant Hole Thread Size (NPT)	Code
1	1	45/64 – 15/16	18	19-1/4	19-25/64	22-1/4	3	1/8	549619
2	1-1/4	31/32 – 1-3/8	20-1/8	21-1/4	21-25/64	24-3/4	3-1/2	1/8	549620
3	1-1/2	1-13/32 – 1-7/8	22	23-1/4	23-7/16	27-1/4	4	1/4	549621
4	1-1/2	1-29/32 – 2-9/16	24-5/8	26	26-3/16	30	4	1/4	549622
5	2	2-1/2 – 3-1/2	26	27-3/4	28	31-3/4	4	1/2	549623
7	3	3-17/32 – 4-1/2	27	29-1/8	29-3/8	34-1/8	5	1/2	549624

Spade Drill Holders

Short Length – Taper Shank – Straight Flute

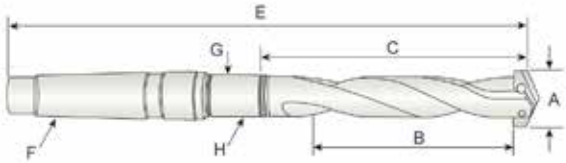




Series	F Morse Taper	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	D Reference Length (Inch)	E Overall Length (Inch)	G Coolant Hole Thread Size (NPT)	H Rotary Coolant Inducer Reference	Code
Y	2	3/8 – 27/64	1-1/4	2-1/32	3-15/32	6-5/16	1/16	549625	549540
Z	2	7/16 – 1/2	1-1/4	2-1/32	3-15/32	6-5/16	1/16	549625	549541
0	2	33/64 – 11/16	1-3/8	2-3/16	3-41/64	6-15/32	1/16	549625	549524
0.5	2	39/64 – 11/16	1-3/8	2-3/16	3-41/64	6-15/32	1/16	549625	549525
1	3	45/64 – 15/16	2-3/4	3-7/8	5-39/64	9-5/32	1/8	549626	549526
1	4	45/64 – 15/16	2-3/4	3-7/8	5-43/64	10-5/32	1/8	549626	549527
1.5	3	55/64 – 15/16	2-3/4	3-7/8	5-39/64	9-5/32	1/8	549626	549528
1.5	4	55/64 – 15/16	2-3/4	3-7/8	5-43/64	10-5/32	1/8	549626	549529
2	3	31/32 – 1-3/8	3-3/8	4-1/2	6-15/64	9-25/32	1/8	549626	549530
2	4	31/32 – 1-3/8	3-3/8	4-1/2	6-19/64	10-25/32	1/8	549626	549531
2.5	3	1-3/16 – 1-3/8	3-3/8	4-1/2	6-15/64	9-25/32	1/8	549626	549532
2.5	4	1-3/16 – 1-3/8	3-3/8	4-1/2	6-37/64	11-1/16	1/4	549627	549533
3	4	1-13/32 – 1-7/8	4-3/4	6	8-1/8	12-9/16	1/4	549627	549534
3	5	1-13/32 – 1-7/8	4-3/4	6	8-1/8	13-13/16	1/4	549628	549535
4	4	1-29/32 – 2-9/16	5-1/8	6-1/2	8-5/8	13-1/16	1/4	549627	549536
4	5	1-29/32 – 2-9/16	5-1/8	6-1/2	8-5/8	14-5/16	1/4	549628	549537
5 – 6	5	2-1/2 – 3-1/2	6-3/4	8-1/2	11-5/16	16-15/16	1/2	549629	549538
7 – 8	5	3-17/32 – 4-1/2	6-3/4	8-7/8	11-11/16	17-5/16	1/2	549629	549539

Intermediate Length – Taper Shank – Helical Flute



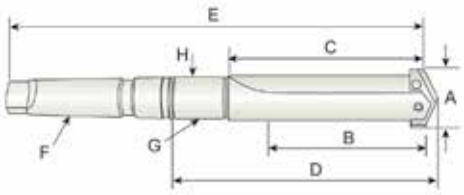


Series	F Morse Taper	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	E Overall Length (Inch)	G Coolant Hole Thread Size (NPT)	H Rotary Coolant Inducer Reference	Code
1	3	45/64 – 15/16	4-3/4	5-7/8	11-5/32	1/8	549626	549560
1.5	3	55/64 – 15/16	4-3/4	5-7/8	11-5/32	1/8	549626	549561
2	4	31/32 – 1-3/8	5-3/8	6-1/2	12-25/32	1/8	549626	549562
2.5	4	1-3/16 – 1-3/8	5-3/8	6-1/2	13-1/16	1/4	549627	549563

Spade Drill Holders

Standard Length – Taper Shank – Straight Flute





Series	F Morse Taper	A Drill Insert Range (Inch)	B Maximum Drill Depth (Inch)	C Flute Length (Inch)	D Reference Length (Inch)	E Overall Length (Inch)	G Coolant Hole Thread Size (NPT)	H Rotary Coolant Inducer Reference	Code
Y	2	3/8 – 27/64	2-3/8	3-5/32	4-19/32	7-7/16	1/16	549625	549558
Z	2	7/16 – 1/2	2-3/8	3-5/32	4-19/32	7-7/16	1/16	549625	549559
0	2	33/64 – 11/16	2-1/2	3-5/16	4-49/64	7-19/32	1/16	549625	549542
0.5	2	39/64 – 11/16	2-1/2	3-5/16	4-49/64	7-19/32	1/16	549625	549543
1	3	45/64 – 15/16	6-3/4	7-7/8	9-39/64	13-5/32	1/8	549626	549544
1	4	45/64 – 15/16	6-3/4	7-7/8	9-43/64	14-5/32	1/8	549626	549545
1.5	3	55/64 – 15/16	6-3/4	7-7/8	9-39/64	13-5/32	1/8	549626	549546
1.5	4	55/64 – 15/16	6-3/4	7-7/8	9-43/64	14-5/32	1/8	549626	549547
2	3	31/32 – 1-3/8	7-3/8	8-1/2	10-15/64	13-25/32	1/8	549626	549548
2	4	31/32 – 1-3/8	7-3/8	8-1/2	10-19/64	14-25/32	1/8	549626	549549
2.5	3	1-3/16 – 1-3/8	7-3/8	8-1/2	10-15/64	13-25/32	1/8	549626	549550
2.5	4	1-3/16 – 1-3/8	7-3/8	8-1/2	10-37/64	15-1/16	1/4	549627	549551
3	4	1-13/32 – 1-7/8	8-1/4	9-1/2	11-5/8	16-1/16	1/4	549627	549552
3	5	1-13/32 – 1-7/8	8-1/4	9-1/2	11-5/8	17-5/16	1/4	549628	549553
4	4	1-29/32 – 2-9/16	9-1/8	10-1/2	12-5/8	17-1/16	1/4	549627	549554
4	5	1-29/32 – 2-9/16	9-1/8	10-1/2	12-5/8	18-5/16	1/4	549628	549555
5 – 6	5	2-1/2 – 3-1/2	10-3/4	12-1/2	15-5/16	20-15/16	1/2	549629	549556
7 – 8	5	3-17/32 – 4-1/2	10-3/4	12-7/8	15-11/16	21-5/16	1/2	549629	549557

Replacement Screws

Torx® Screws

Series	Torx® Size	Torque (lbs)	Code
Y	T7	5.5	549506
Z	T7	5.5	549508
0	T8	11.0	549510
0.5	T8	11.0	549512
1	T9	20.0	549514
1.5	T9	20.0	549516
2-2.5	T15	45.0	549518
3 – 4	T20	90.0	549520
5 – 8	T25	155.0	549522

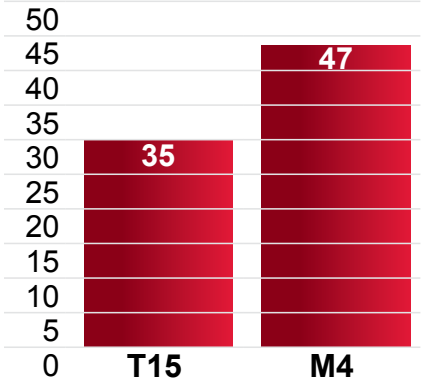
Nylon Locking Torx® Screws

Series	Torx® Size	Torque (lbs)	Code
Y	T7	5.5	549507
Z	T7	5.5	549509
0	T8	11.0	549511
0.5	T8	11.0	549513
1	T9	20.0	549515
1.5	T9	20.0	549517
2-2.5	T15	45.0	549519
3 – 4	T20	90.0	549521
5 – 8	T25	155.0	549523

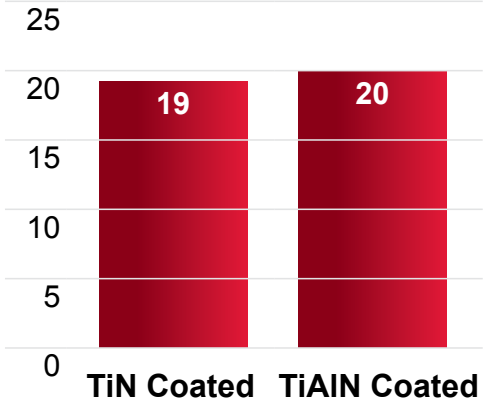
Spade Drill Insert Technical Information

High Speed Steel

Toughness Values



Wear Values



WHEN TO USE M4

- Worn machines
- Manual machines
- If T-15 breaks
- Cross hole drilling

WHEN TO USE T15

- On CNC machines
- When M-4 life needs to be extended
- Abrasive drilling

Speeds & Feeds Recommendations

Material	Material Hardness (HRC)	SFM Surface Footage	Feed (Inch per Revolution)						
			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 1118, 1215, 12L14, etc.	–	280	0.007	0.010	0.013	0.016	0.020	0.023	0.028
	<12	260	0.007	0.010	0.013	0.016	0.020	0.023	0.028
	12-25	240	0.007	0.010	0.013	0.016	0.020	0.023	0.028
Low and Medium Carbon Steel 1018, 1040, 1140, etc.	<7	240	0.006	0.009	0.012	0.015	0.019	0.023	0.027
	7-20	225	0.005	0.008	0.010	0.014	0.018	0.021	0.024
	20-29	210	0.005	0.008	0.010	0.014	0.018	0.021	0.024
	29-35	195	0.004	0.007	0.009	0.012	0.016	0.019	0.022
Alloy Steel 4140, 5140, 8640, etc.	<7	210	0.006	0.008	0.010	0.014	0.017	0.019	0.220
	7-20	195	0.005	0.008	0.010	0.014	0.017	0.019	0.220
	20-29	180	0.005	0.007	0.010	0.014	0.017	0.019	0.220
	29-35	170	0.004	0.006	0.009	0.012	0.015	0.017	0.200
	35-40	155	0.003	0.006	0.009	0.012	0.015	0.017	0.200
High Strength Alloy Steel 4340, 4330V, 300M, etc.	20-32	110	0.005	0.007	0.009	0.010	0.014	0.017	0.020
	32-37	85	0.004	0.007	0.009	0.010	0.014	0.017	0.020
	37-43	70	0.003	0.006	0.008	0.009	0.012	0.015	0.018
Structural Steel A36, A285, A516, etc.	–	200	0.006	0.010	0.012	0.014	0.018	0.021	0.026
	12-25	170	0.005	0.009	0.010	0.012	0.016	0.019	0.024
	37-43	140	0.004	0.008	0.009	0.010	0.014	0.017	0.020
High Temperature Alloy	<18	40	0.003	0.006	0.007	0.008	0.010	0.012	0.015
Hastelloy B, Inconel 600, etc.	18-32	35	0.003	0.006	0.007	0.008	0.010	0.012	0.015
Stainless Steel	<7	105	0.006	0.008	0.009	0.011	0.014	0.016	0.020
303, 416, 420, 17-4 PH, etc.	7-29	90	0.005	0.007	0.008	0.010	0.012	0.014	0.018
Tool Steel	<12	110	0.004	0.006	0.008	0.010	0.012	0.015	0.017
H-13, H021, A04, 0-2, S-3, etc.	12-25	90	0.004	0.006	0.008	0.010	0.012	0.015	0.017
Aluminum	<6	850	0.008	0.013	0.016	0.020	0.022	0.025	0.025
	–	450	0.008	0.013	0.016	0.018	0.022	0.025	0.025
Cast Iron Gray, Ductile, Nodular	–	250	0.007	0.012	0.016	0.020	0.024	0.027	0.030
	<12	225	0.006	0.011	0.014	0.018	0.022	0.025	0.028
	12-18	195	0.006	0.009	0.012	0.016	0.018	0.021	0.024
	18-26	165	0.005	0.007	0.009	0.012	0.014	0.017	0.020
	26-32	135	0.004	0.006	0.007	0.009	0.012	0.014	0.016

Formulas:
IPM = RPM x IPR
SFM = RPM x 0.262 x DIA
RPM = SFM x 3.82 ÷ DIA

IPM = Inch per Minute (feed rate)
SFM = Surface Feet per Minute
RPM = Revolutions per Minute
DIA = Drill Diameter (inch)
IPR = Inch per Revolution (feed rate)

Core Drills

High Speed Steel – Taper Shank – 4 Flute



- Used to enlarge and straighten cored or drilled holes
- Because of their rigidity, these drills generate closer tolerance holes and better finish than standard drills
- Used to enlarge holes up to 40% smaller than the drill diameter

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
9/32	0.2812	3	6-1/4	1	612511
3/8	0.3750	3-1/2	6-3/4	1	612512
13/32	0.4062	3-5/8	7	1	612513
7/16	0.4375	3-7/8	7-1/4	1	612514
15/32	0.4688	4-1/8	7-1/2	1	612515
31/64	0.4844	4-3/8	8-1/4	2	612516
1/2	0.5000	4-3/8	8-1/4	2	612517
33/64	0.5156	4-5/8	8-1/2	2	612518
17/32	0.5312	4-5/8	8-1/2	2	612519
35/64	0.5469	4-7/8	8-3/4	2	612520
9/16	0.5625	4-7/8	8-3/4	2	612521
37/64	0.5781	4-7/8	8-3/4	2	612522
19/32	0.5938	4-7/8	8-3/4	2	612523
5/8	0.6250	4-7/8	8-3/4	2	612524
41/64	0.6406	5-1/8	9	2	612525
21/32	0.6562	5-1/8	9	2	612526
11/16	0.6875	5-3/8	9-1/4	2	612527
45/64	0.7031	5-5/8	9-1/2	2	612528
23/32	0.7188	5-5/8	9-1/2	2	612529
47/64	0.7344	5-5/8	9-1/2	2	612530
3/4	0.7500	5-7/8	9-3/4	2	612531
49/64	0.7656	6	9-7/8	2	612532
25/32	0.7812	6	9-7/8	2	612533
51/64	0.7969	6-1/8	10-3/4	3	612534
13/16	0.8125	6-1/8	10-3/4	3	612535
27/32	0.8438	6-1/8	10-3/4	3	612536
55/64	0.8594	6-1/8	10-3/4	3	612537
7/8	0.8750	6-1/8	10-3/4	3	612538
29/32	0.9062	6-1/8	10-3/4	3	612539
59/64	0.9219	6-1/8	10-3/4	3	612540
15/16	0.9375	6-1/8	10-3/4	3	612541
61/64	0.9531	6-3/8	11	3	612542
31/32	0.9688	6-3/8	11	3	612543
63/64	0.9844	6-3/8	11	3	612544
1	1.0000	6-3/8	11	3	612545
1-1/64	1.0156	6-1/2	11-1/8	3	612546
1-1/32	1.0312	6-1/2	11-1/8	3	612547
1-3/64	1.0469	6-5/8	11-1/4	3	612548
1-1/16	1.0625	6-5/8	11-1/4	3	612549
1-5/64	1.0781	6-7/8	11-1/2	3	612550
1-3/32	1.0938	6-7/8	12-1/2	4	612551
1-1/8	1.1250	7-1/8	12-3/4	4	612552
1-5/32	1.1562	7-1/4	12-7/8	4	612553
1-3/16	1.1875	7-3/8	13	4	612554
1-13/64	1.2031	7-1/2	13-1/8	4	612555
1-7/32	1.2188	7-1/2	13-1/8	4	612556
1-15/64	1.2344	7-7/8	13-1/2	4	612557

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	Code
1-1/4	1.2500	7-7/8	13-1/2	4	612558
1-17/64	1.2656	8-1/2	14-1/8	4	612559
1-9/32	1.2812	8-1/2	14-1/8	4	612560
1-5/16	1.3125	8-5/8	14-1/4	4	612561
1-11/32	1.3438	8-3/4	14-3/8	4	612562
1-3/8	1.3750	8-7/8	14-1/2	4	612563
1-13/32	1.4062	9	14-5/8	4	612564
1-7/16	1.4375	9-1/8	14-3/4	4	612565
1-15/32	1.4688	9-1/4	14-7/8	4	612566
1-1/2	1.5000	9-3/8	15	4	612567
1-17/32	1.5312	9-3/8	16-3/8	5	612568
1-35/64	1.5469	9-5/8	16-5/8	5	612569
1-9/16	1.5625	9-5/8	16-5/8	5	612570
1-37/64	1.5781	9-7/8	16-7/8	5	612571
1-19/32	1.5938	9-7/8	16-7/8	5	612572
1-39/64	1.6094	10	17	5	612573
1-5/8	1.6250	10	17	5	612574
1-21/32	1.6562	10-1/8	17-1/8	5	612575
1-11/16	1.6875	10-1/8	17-1/8	5	612576
1-23/32	1.7188	10-1/8	17-1/8	5	612577
1-3/4	1.7500	10-1/8	17-1/8	5	612578
1-25/32	1.7812	10-1/8	17-1/8	5	612579
1-13/16	1.8125	10-1/8	17-1/8	5	612580
1-27/32	1.8438	10-1/8	17-1/8	5	612581
1-7/8	1.8750	10-3/8	17-3/8	5	612582
1-29/32	1.9062	10-3/8	17-3/8	5	612583
1-15/16	1.9375	10-3/8	17-3/8	5	612584
1-31/32	1.9688	10-3/8	17-3/8	5	612585
2	2.0000	10-3/8	17-3/8	5	612586
2-1/32	2.0312	10-3/8	17-3/8	5	612587
2-1/16	2.0625	10-1/4	17-3/8	5	612588
2-1/8	2.1250	10-1/4	17-3/8	5	612589
2-5/32	2.1562	10-1/4	17-3/8	5	612590
2-3/16	2.1875	10-1/4	17-3/8	5	612591
2-1/4	2.2500	10-1/8	17-3/8	5	612592
2-5/16	2.3125	10-1/8	17-3/8	5	612593
2-3/8	2.3750	10-1/8	17-3/8	5	612594
2-7/16	2.4375	11-1/4	18-3/4	5	612595
2-1/2	2.5000	11-1/4	18-3/4	5	612596
2-9/16	2.5625	11-7/8	19-1/2	5	612597
2-5/8	2.6250	11-7/8	19-1/2	5	612598
2-11/16	2.6875	12-3/4	20-3/8	5	612599
2-3/4	2.7500	12-3/4	20-3/8	5	612600
2-13/16	2.8125	13-3/8	21-1/8	5	612601
2-7/8	2.8750	13-3/8	21-1/8	5	612602
2-15/16	2.9375	14	21-3/4	5	612603
3	3.0000	14	21-3/4	5	612604

Oil Hole Drills

High Speed Steel – Straight Shank – 118° Point



- Designed with oil holes throughout the length of the land section of the drill to deliver a high pressure oil flow to the cutting edges
- 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 by 30% or more over standard drill styles

Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
15/64	0.2344	3-3/8	5-3/4	615000
1/4	0.2500	3-3/4	6-1/8	615001
9/32	0.2812	4	6-3/8	615002
19/64	0.2969	4	6-3/8	615003
5/16	0.3125	4	6-3/8	615004
21/64	0.3281	4-1/8	6-1/2	615005
11/32	0.3438	4-1/8	6-1/2	615006
23/64	0.3594	4-1/4	6-3/4	615007
3/8	0.3750	4-1/4	6-3/4	615008
25/64	0.3906	4-3/8	7	615009
13/32	0.4062	4-3/8	7	615010
27/64	0.4219	4-5/8	7-1/4	615011
7/16	0.4375	4-5/8	7-1/4	615012
29/64	0.4531	4-7/8	7-1/2	615013
15/32	0.4688	4-7/8	7-1/2	615014
31/64	0.4844	5	7-3/4	615015
1/2	0.5000	5	7-3/4	615016
33/64	0.5156	5-1/4	8	615017
17/32	0.5312	5-1/4	8	615018
35/64	0.5469	5-3/8	8-1/4	615019
9/16	0.5625	5-3/8	8-1/4	615020
37/64	0.5781	5-5/8	8-1/2	615021
19/32	0.5938	5-5/8	8-1/2	615022
39/64	0.6094	5-3/4	8-3/4	615023

Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
5/8	0.6250	5-3/4	8-3/4	615024
41/64	0.6406	5-7/8	9	615025
21/32	0.6562	5-7/8	9	615026
43/64	0.6719	6	9-1/4	615027
11/16	0.6875	6	9-1/4	615028
45/64	0.7031	6-3/16	9-1/2	615029
23/32	0.7188	6-3/16	9-1/2	615030
47/64	0.7344	6-3/8	9-3/4	615031
3/4	0.7500	6-3/8	9-3/4	615032
49/64	0.7656	6-1/2	9-7/8	615033
25/32	0.7812	6-1/2	9-7/8	615034
51/64	0.7969	6-5/8	10	615035
13/16	0.8125	6-5/8	10	615036
53/64	0.8281	6-3/4	10-1/4	615037
27/32	0.8438	6-3/4	10-1/4	615038
55/64	0.8594	7	10-1/2	615039
7/8	0.8750	7	10-1/2	615040
57/64	0.8906	7	10-5/8	615041
29/32	0.9062	7	10-5/8	615042
59/64	0.9219	7	10-3/4	615043
15/16	0.9375	7	10-3/4	615044
61/64	0.9531	7-1/8	10-7/8	615045
31/32	0.9688	7-1/8	10-7/8	615046
63/64	0.9844	7-3/16	11	615047
1	1.0000	7-3/16	11	615048

Die Drills

Carbide Tipped – Straight Flute/Straight Shank – 118° Point



- For hard materials primarily in the range of 48-65 HRC

Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
3/16	0.1875	1-1/2	3-1/2	555301
13/64	0.2031	1-3/4	3-3/4	555325
7/32	0.2188	1-3/4	3-3/4	555302
15/64	0.2344	2	4	555326
1/4	0.2500	2	4	555303
17/64	0.2656	2-1/4	4-1/4	555327
9/32	0.2812	2-1/4	4-1/4	555304
19/64	0.2969	2-1/2	4-1/2	555328
5/16	0.3125	2-1/2	4-1/2	555305
21/64	0.3281	2-3/4	4-3/4	555329
11/32	0.3438	2-3/4	4-3/4	555306
23/64	0.3594	3	5	555330
3/8	0.3750	3	5	555307
25/64	0.3906	3	5-1/4	555331
13/32	0.4062	3	5-1/4	555308
27/64	0.4219	3	5-1/2	555332

Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
7/16	0.4375	3	5-1/2	555309
29/64	0.4531	3-1/4	5-3/4	555333
15/32	0.4688	3-1/4	5-3/4	555310
31/64	0.4844	3-1/2	6	555334
1/2	0.5000	3-1/2	6	555311
17/32	0.5312	3-1/2	6	555312
9/16	0.5625	3-1/2	6	555313
19/32	0.5938	4	7	555314
5/8	0.6250	4	7	555315
21/32	0.6562	4-1/2	7-1/2	555316
11/16	0.6875	4-1/2	7-1/2	555317
23/32	0.7188	4-3/4	8	555318
3/4	0.7500	4-3/4	8	555319
13/16	0.8125	4-3/4	8	555320
7/8	0.8750	4-3/4	8	555321
15/16	0.9375	4-3/4	8	555322
1	1.0000	4-3/4	8	555323

Standard Step Drills – Jobber Length

High Speed Steel – For Drilling and Counterboring Cap Screw Clearance Holes



Screw Size	Minor Dia.	Major Dia.	Step Length (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
#6	0.150"	1/4"	1/2	2-3/4	4	311291
#8	0.178"	L	1/2	2-15/16	4-1/4	311292
#10	0.204"	Q	5/8	3-7/16	4-3/4	311293
1/4"	9/32"	13/32"	11/16	3-7/8	5-1/4	311294

Screw Size	Minor Dia.	Major Dia.	Step Length (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
5/16"	11/32"	1/2"	3/4	4-1/2	6	311295
3/8"	13/32"	19/32"	7/8	5-3/16	7-1/8	311296
1/2"	17/32"	25/32"	1	3-1/4	*5-1/8	311297

**Shorter than jobber length*

High Speed Steel – For Drilling and Countersinking 82 Degree Flat Head Machine Screws



Screw Size	Minor Dia.	Major Dia.	Step Length (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
#6	0.142"	9/32"	1/2	2-15/16	4-1/4	311306
#8	0.169"	Q	1/2	3-7/16	4-3/4	311307
#10	0.196"	W	5/8	3-3/4	5-1/8	311308
1/4"	0.257"	1/2"	11/16	4-13/16	6	311309

Screw Size	Minor Dia.	Major Dia.	Step Length (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
5/16"	0.320"	5/8"	3/4	5-3/16	7-1/8	311310
3/8"	0.383"	3/4"	7/8	5-5/8	7-5/8	311311
1/2"	0.510"	7/8"	1	3-1/2	*5-1/8	311312

**Shorter than jobber length*

High Speed Steel – For Drilling 45 Degree Chamfered Holes to be Tapped



Screw Size	Minor Dia.	Major Dia.	Step Length (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
5-40	0.101	9/64	1/2	1-3/4	2-7/8	311313
6-32	0.109	5/32	1/2	2	3-1/8	311314
8-32	0.136	3/16	1/2	2-5/16	3-1/2	311315
8-36	0.136	3/16	1/2	2-5/16	3-1/2	311316
10-24	0.152	1/4	5/8	2-3/4	4	311317
10-32	0.161	1/4	5/8	2-3/4	4	311318
1/4-20	0.204	21/64	13/16	3-5/16	4-5/8	311319
1/4-28	0.218	21/64	13/16	3-5/16	4-5/8	311320

Screw Size	Minor Dia.	Major Dia.	Step Length (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
5/16-18	0.261	13/32	15/16	3-7/8	5-1/4	311321
5/16-24	0.272	13/32	15/16	3-7/8	5-1/4	311322
3/8-16	0.316	31/64	1	4-3/8	5-7/8	311323
3/8-24	0.339	31/64	1	4-3/8	5-7/8	311324
7/16-14	0.375	17/32	1-1/16	4-13/16	6-5/8	311325
7/16-20	0.390	17/32	1-1/16	4-13/16	6-5/8	311326
1/2-13	0.437	5/8	1-1/16	5-3/16	7-1/8	311327
1/2-20	0.452	5/8	1-1/16	5-3/16	7-1/8	311328

Self Starting Step Drills

High Speed Steel



Series	Number of Steps	Included Diameters	Code
SSD1	13	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16,11/32, 3/8, 13/32, 7/16, 15/32, 1/2	754700
SSD2	6	3/16, 1/4, 5/16, 3/8, 7/16, 1/2	754701
SSD3	9	1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8,11/16, 3/4	754702
SSD4	12	3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16,5/8, 11/16, 3/4, 13/16, 7/8	754703



Multi-Diameter Step Drills

High Speed Steel & TiN Coated





Diameter (mm)	Capacity (mm)	L (mm)	H (mm)	d (mm)	HSS	TiN Coated
					Code	Code
12	4, 5, 6, 7, 8, 9, 10, 11, 12	79	5	6	754704	754710
20	4, 6, 8, 10, 12, 14, 16, 18, 20	67	3	8	754705	754711
30	4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30	100	4	10	754706	754712
32.5	5, 7.5, 9.7, 12.7, 15.2, 16.2, 18.6, 20.4, 22.5, 25.4, 28.3, 30.5, 32.5	78	4	10	754707	754713
38	6, 9, 13, 16, 19, 21, 23, 26, 29, 32, 35, 38	100	4	10	754708	754714
	SETS – 3 Pieces – 12, 20 & 30 mm Diameters				754709	754715

Spade Drills

Solid Carbide



- For use on thin sheet applications and shallow hole drilling

Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
1/32	0.0313	3/16	1-1/2	952000
1/16	0.0625	5/16	1-1/2	952002
3/32	0.0939	7/16	1-1/2	952004
1/8	0.1250	7/16	1-1/2	952006
5/32	0.1526	15/32	2	952008
3/16	0.1875	9/16	2	952010
7/32	0.2188	19/32	2	952012
1/4	0.2500	11/16	2	952014

Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
9/32	0.2812	3/4	2-1/2	952016
5/16	0.3125	7/8	2-1/2	952018
11/32	0.3438	15/16	2-1/2	952020
3/8	0.3750	1	2-1/2	952022
13/32	0.4062	1	2-1/2	952024
7/16	0.4375	1-1/16	2-1/2	952026
15/32	0.4688	1-1/8	2-1/2	952028
1/2	0.5000	1-1/8	2-1/2	952030

Drill Blanks



- Made from high speed steel
- Hardened (63-65 HRC) and ground
- Can be used as punches, gages, pins or ground for special tools

#80 to Letter H – 12 pieces per package
Letter "I" to 1/2" – 6 pieces per package
33/64 to 1" – 1 piece per package
Please order in package quantity

Tolerance	
Up to 1/2"	1/2" to 1"
+0.0000"/-0 .0003"	+0.0000"/-0.0005"

High Speed Steel – Fractional Sizes

Size (Inch)	Decimal Equivalent (Inch)	Overall Length (Inch)	Code
1/64	0.0156	3/4	219300
1/32	0.0312	1-3/8	219301
3/64	0.0469	1-3/4	219302
1/16	0.0625	1-7/8	219303
5/64	0.0781	2	219304
3/32	0.0938	2-1/4	219305

Size (Inch)	Decimal Equivalent (Inch)	Overall Length (Inch)	Code
7/64	0.1094	2-5/8	219306
1/8	0.1250	2-3/4	219307
9/64	0.1406	2-7/8	219308
5/32	0.1562	3-1/8	219309
11/64	0.1719	3-1/4	219310
3/16	0.1875	3-1/2	219311

Size (Inch)	Decimal Equivalent (Inch)	Overall Length (Inch)	Code
13/64	0.2031	3-5/8	219312
7/32	0.2188	3-3/4	219313
15/64	0.2344	3-7/8	219314
1/4	0.2500	4	219315
17/64	0.2656	4-1/8	219316
9/32	0.2812	4-1/4	219317

Drill Blanks

High Speed Steel – Fractional Sizes *(continued)*



Size (Inch)	Decimal Equivalent (Inch)	Overall Length (Inch)	Code
19/64	0.2969	4-3/8	219318
5/16	0.3125	4-1/2	219319
21/64	0.3281	4-5/8	219320
11/32	0.3438	4-3/4	219321
23/64	0.3594	4-7/8	219322
3/8	0.3750	5	219323
25/64	0.3906	5-1/8	219324
13/32	0.4062	5-1/4	219325
27/64	0.4219	5-3/8	219326
7/16	0.4375	5-1/2	219327
29/64	0.4531	5-5/8	219328
15/32	0.4688	5-3/4	219329
31/64	0.4844	5-7/8	219330
1/2	0.5000	6	219331
33/64	0.5156	6	219332
17/32	0.5312	6	219333
35/64	0.5469	6	219334
9/16	0.5625	6	219335
37/64	0.5781	6	219336
19/32	0.5938	6	219337
39/64	0.6094	6	219338
5/8	0.6250	6	219339
41/64	0.6406	6	219340
21/32	0.6562	6	219341
43/64	0.6719	6	219342
11/16	0.6875	6	219343
45/64	0.7031	6	219344
23/32	0.7188	6	219345
47/64	0.7344	6	219346
3/4	0.7500	6	219347
49/64	0.7656	6	219348
25/32	0.7812	6	219349
51/64	0.7969	6	219350
13/16	0.8125	6	219351
53/64	0.8281	6	219352
27/32	0.8438	6	219353
55/64	0.8594	6	219354
7/8	0.8750	6	219355
57/64	0.8906	6	219356
29/32	0.9062	6	219357
59/64	0.9219	6	219358
15/16	0.9375	6	219359
61/64	0.9531	6	219360
31/32	0.9688	6	219361
63/64	0.9844	6	219362
1	1.0000	6	219363

Precision Ground Rods

Micrograin Solid Carbide



- Cut to length sizes
- All ground rods are made of premium high strength micrograin carbide
- Ground Rod Tolerances:
  Diameter: +0.0000”/-0.0005”; Splits: +0.001”/-0.000” above center

Rod Diameter (Inch)	Rod Length (Inch)	Length Tolerance (Inch)	Code
1/16	1-1/2	+ 0.063	970000
3/32	2	+ 0.063	970002
3/32	2-1/2	+ 0.063	970004
1/8	1-1/2	+ 0.063	970006
1/8	2	+ 0.063	970008
1/8	2-1/4	+ 0.063	970010
1/8	2-1/2	+ 0.063	970012
1/8	3	+ 0.063	970014
1/8	12	+ 0.125	970016
5/32	1-1/2	+ 0.063	970018
5/32	2	+ 0.063	970020
3/16	2	+ 0.063	970022
3/16	2-1/2	+ 0.063	970024
3/16	3	+ 0.063	970026
3/16	4	+ 0.063	970028
3/16	6	+ 0.125	970030
3/16	12	+ 0.125	970032
1/4	2	+ 0.063	970034
1/4	2-1/2	+ 0.063	970036
1/4	3	+ 0.063	970038
1/4	4	+ 0.080	970040
1/4	6	+ 0.125	970042
1/4	12	+ 0.125	970044
5/16	2	+ 0.063	970046
5/16	2-1/2	+ 0.063	970048
5/16	3	+ 0.063	970050
5/16	4	+ 0.080	970052
5/16	6	+ 0.125	970054
5/16	12	+ 0.125	970056
3/8	2	+ 0.063	970058
3/8	2-1/2	+ 0.063	970060
3/8	3	+ 0.063	970062
3/8	3-1/2	+ 0.063	970064
3/8	4	+ 0.080	970066
3/8	6	+ 0.125	970068
3/8	12	+ 0.125	970070
7/16	2-1/2	+ 0.063	970072
7/16	3	+ 0.063	970074
1/2	2	+ 0.063	970076
1/2	2-1/2	+ 0.063	970078
1/2	3	+ 0.063	970080
1/2	3-1/2	+ 0.063	970082
1/2	4	+ 0.080	970084
1/2	6	+ 0.125	970086
1/2	12	+ 0.125	970088
9/16	3-1/2	+ 0.063	970090
5/8	3-1/2	+ 0.063	970092
5/8	6	+ 0.125	970094
3/4	4	+ 0.080	970096
3/4	6	+ 0.125	970098
1	4	+ 0.080	970100
1	6	+ 0.125	970102

Drill Indexes

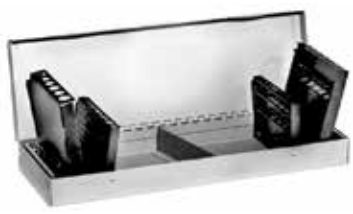
Drills Sold Separately

Jobber Length Indexes



Description	No. of Indexes	Model No.	Code
1/16 to 1/2 by 64ths	29	CZ29	311076
Letter - A to Z	26	CZ26	311078
Wire Gage - 1 to 60	60	CZ60	311079
Metric - 1 to 7 mm by 0.5 mm	13	CZM13	311105
Metric - 1 to 10 mm by 0.5 mm	19	CZM19	311086
Metric - 1 to 13 mm by 0.5 mm	25	CZM25	311087
Metric - 6 to 10 mm by 0.1 mm	41	CZM41	311106

Combination Jobber Length Indexes



Description	No. of Indexes	Model No.	Code
1/16 to 1/2 by 64ths, Letter - A to Z, Wire Gage - 1 to 60	115	CZ115	311081
1/16 to 1/2 by 64ths, Letter - A to Z, Wire Gage - 1 to 80	135	CZ135	311088
1/16 to 1/2 by 64ths, Wire Gage - 1 to 80, Metric - 1 to 13 mm by 0.5mm, Inch/Metric	134	CZ134	311089
Metric - 1 to 13 mm Various Sizes	118	CZM118	311115

Drill Sets

Jobber Length

13 Pieces



Size	Description	Code
1/16 to 1/4 by 64ths Metal Index	HSS, Left Hand, 118° Point	752071
	Cobalt, Bronze, 135° Split Point	751128

15 Pieces



Size	Description	Code
1/16 to 1/2 by 32nds Metal Index	HSS, Left Hand, 118° Point	606613
	Cobalt, Bronze, 135° Split Point	751126

21 Pieces



Size	Description	Code
1/16 to 3/8 by 64ths Metal Index	HSS, Left Hand, 118° Point	606615

Metric – 25 Pieces



Size	Description	Code
1 to 13 mm by 0.5 mm Metal Index	HSS, 118° Point	311138
	Cobalt, 135° Split Point	754717

Drill Sets

Jobber Length *(continued)*

Premium Metric – 25 Pieces



- Made of special Hi-Molybdenum tool steel, with precision ground points, flutes, body, clearance, and drill diameter for the ultimate in accuracy and performance
- Body and clearance are gold surface treated for maximum lubricity
- Specially designed for hand held drills
- Recommended for use in work hardening grades of stainless steel and other hard metal drilling applications

Size	Description	Code
1 to 13 mm by 0.5 mm Metal Index	Black and Gold Finish, 135° Split Point	750017

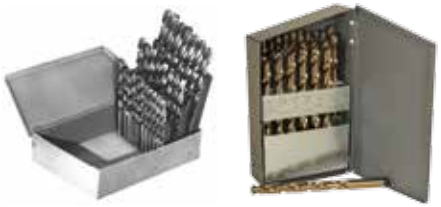
29 Pieces



- 135° split point
- Straight shank
- Right hand spiral wide flutes

Size	Description	Code
1/16” to 1/2” by 64ths Metal Index	HSS TiN Coated Gold-P	883345

26 Pieces



Size	Description	Code
Letter Sizes A to Z Metal Index	HSS, Oxide Finish, 118° Point	752001
	Cobalt	313205

29 Pieces



Size	Description	Code
1/16 to 1/2 by 64ths Metal Index	HSS	313201
	Cobalt	313202

29 Pieces



Size	Description	Code
1/16 to 1/2 by 64ths Metal Index	HSS, Oxide Finish, 118° Point	752000
	HSS, *Reduced 3/8 Shank, 118° Point	311164
	HSS, Left Hand,	751200

**Maximum shank diameter in set*

60 Pieces



Size	Description	Code
Wire Gage Sizes 1 to 60 Metal Index	HSS	313203
	Cobalt	313204

60 Pieces



Size	Description	Code
Wire Gage Sizes 1 to 60 Metal Index	HSS, Left Hand, 118° Point	311151

Drill Sets

Jobber Length *(continued)*

115 Pieces



Size	Description	Code
1/16 to 1/2 by 64ths, Letter Sizes A to Z, and Wire Gage Sizes 1 to 60 Metal Index	HSS, Oxide Finish, 118° Point	754603
	HSS, Bright Finish, 118° Point	753360
	Cobalt, Heavy Duty, 135° Split Point	752075

Metric – 134 Pieces

Size	Description	Code
1 to 13 mm by 0.5 mm, 1/16 to 1/2 by 64ths, Wire Gage Sizes 1 to 60 Metal Index	HSS, 118° Point	311141

135 Pieces

Size	Description	Code
1/16 to 1/2 by 64ths, Letter Sizes A to Z, and Wire Gage Sizes 1 to 60 Metal Index	HSS, Oxide Finish, 118° Point	311140

Screw Machine, Taper Length, Taper Shank & Aircraft Extension

Screw Machine Length – 115 Pieces



Size	Description	Code
1/16 to 1/2 by 64ths, Letter Sizes A to Z, and Wire Gage Sizes 1 to 60 Metal Index	HSS, Bright Finish, 118° Point	753361
	HSS, Oxide Finish, 135° Split Point	311179

Taper Length – 29 Pieces



Size	Description	Code
1/2 to 1 by 64ths Metal Index	HSS, Oxide Finish, 118º Point	311187
	Cobalt, Bronze Finish, 135º Split Point	311192

Aircraft Extension – 29 Pieces



Size	Description	Code
1/16 to 1/2 by 64ths Metal Index	HSS, 6” Overall Length	311118
	HSS, 12” Overall Length	311119

Taper Shank – 16 Pieces



Size	Description	Code
49/64 to 1 by 64ths Metal Index	HSS, 118º Point	311194

Drill Sets

Reduced Shank

1/2" Reduced Shank – 8 Pieces



Size	Description	Code
9/16 to 1 by 16ths Metal Index	Cobalt, Round Shank	311171

1/2" Reduced Shank – 8 & 10 Pieces



Size	Description	Code
9/16 to 1 by 16ths Wooden Block	Cobalt, 8 Pieces	313207

1/2" Reduced Shank – 8 Pieces

Size	Description	Code
1-1/16 to 1-1/2 by 16ths Wooden Block	Cobalt, 135° Split Point	609001

1/2" Reduced Shank – 33 Pieces

Size	Description	Code
1/2 to 1 by 64ths Metal Index	HSS, Round Shank	311168
	HSS, Flatted Shank	607115

1/2" Reduced Shank – 10 Pieces

Size	Description	Code
9/16 to 1 by 16ths and 1-1/4 Wooden Block	HSS, Flatted Shank	607112

3/8" Reduced Shank – 8 Pieces

Size	Description	Code
3/8 to 17/32 by 32nds, 9/16, and 5/8 Wooden Block	HSS	311165

Step Drills

Standard Step Drill – 6 Pieces



Size	Description	Code
Jobber Length #6 - 3/8 NC Screw Sizes Wooden Block	For Flat Head Screws	311184
	For Cap Screws	311182
	For Tap Drills	311185
Metric Jobber Length 3 to 10 mm Screw Sizes Wooden Block	For Cap Screws	615276

Self Starting Step Drill Multi-Diameter – 3 Pieces



Size	Description	Code
1/8 to 1/2, 3/16 to 1/2, & 9/16 to 1 Metal Index	3 flats on shank	750010

Combined Drills & Countersinks

High Speed Steel, TiN Coated & Cobalt – 60º Plain Type



60° Angle (Series 115)



60° Angle TiN Coated (Series 08115)



60° Angle Cobalt (Series 1055)

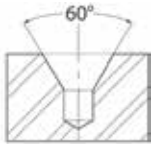
Size	Body Diameter (Inch)	Point Diameter (Inch)	Point Length (Inch)	Overall Length (Inch)	60° Angle (Series 115) HSS M2	60° Angle (Series 08115) HSS M2 – TiN	60° Angle (Series 1055) Cobalt M42
					Code	Code	Code
000	1/8	0.020	1/32	1-1/4	540599	–	–
00	1/8	0.025	1/32	1-1/4	540600	–	–
0	1/8	1/32	3/64	1-1/4	540610	–	–
1	1/8	3/64	1/16	1-1/4	540611	601000	540531
2	3/16	5/64	7/64	1-7/8	540612	601001	540532
3	1/4	7/64	9/64	2	540613	601002	540533
4	5/16	1/8	5/32	2-1/8	540614	601003	540534
4-1/2	3/8	9/64	3/16	2-1/2	540604	–	–
5	7/16	3/16	1/4	2-3/4	540615	601004	540535
6	1/2	7/32	19/64	3	540616	601005	540536
7	5/8	1/4	5/16	3-1/4	540617	601006	540537
8	3/4	5/16	13/32	3-1/2	540618	601007	540538
9	7/8	11/32	7/16	3-5/8	540619	–	–
10	1	3/8	1/2	3-3/4	540598	–	–

Combined Drills & Countersinks

High Speed Steel, Cobalt & Carbide – 60º Plain Type

- 60º included angle





High Speed Steel & Cobalt

Size	Overall Length (Inch)	Drill Length (Inch)	Body Dia. (Inch)	Drill Dia. (Inch)	60° Angle HSS	60° Angle Cobalt
					Code	Code
00	1-1/4	0.025	1/8	0.025	521002	–
0	1-1/4	1/32	1/8	1/32	521003	–
1	1-1/4	3/64	1/8	3/64	521011	521031
2	1-7/8	5/64	3/16	5/64	521012	521032
3	2	7/64	1/4	7/64	521013	521033
4	2-1/8	1/8	5/16	1/8	521014	521034
5	2-3/4	3/16	7/16	3/16	521015	521035
6	3	7/32	1/2	7/32	521016	521036
7	3-1/4	1/4	5/8	1/4	521017	521037
8	3-1/2	5/16	3/4	5/16	521018	521038

Carbide

Size	Overall Length (Inch)	Body Diameter (Inch)	Drill Diameter (Inch)	60° Angle Carbide
				Code
1	1-1/2	1/8	3/64	952040
2	1-7/8	3/16	5/64	952042
3	2	1/4	7/64	952044
4	2-1/8	5/16	1/8	952046
5	2-3/4	7/16	3/16	952048
6	3	1/2	7/32	952050
7	3	5/8	1/4	952052
8	3	3/4	5/16	952054

Combined Drills & Countersinks

High Speed Steel – 60º Plain Long Type



60° Angle (Series 185)

Size	Body Diameter (Inch)	Point Length (Inch)	Point Diameter (Inch)	Overall Length (Inch)	60° Angle (Series 185) HSS M2 Code
1	1/8	1/16	3/64	3	540561
*1	1/8	1/16	3/64	4	540562
1	1/8	1/16	3/64	5	540563
1	1/8	1/16	3/64	6	540564
2	3/16	7/64	5/64	3	540567
*2	3/16	7/64	5/64	4	540568
2	3/16	7/64	5/64	5	540569
2	3/16	7/64	5/64	6	540570
3	1/4	9/64	7/64	3	540571
*3	1/4	9/64	7/64	4	540572
3	1/4	9/64	7/64	5	540573
3	1/4	9/64	7/64	6	540574
4	5/16	5/32	1/8	3	540575
*4	5/16	5/32	1/8	4	540576

Size	Body Diameter (Inch)	Point Length (Inch)	Point Diameter (Inch)	Overall Length (Inch)	60° Angle (Series 185) HSS M2 Code
4	5/16	5/32	1/8	5	540577
4	5/16	5/32	1/8	6	540578
4-1/2	3/8	3/16	9/64	4	540579
4-1/2	3/8	3/16	9/64	5	540580
4-1/2	3/8	3/16	9/64	6	540581
*5	7/16	1/4	3/16	4	540582
5	7/16	1/4	3/16	5	540583
5	7/16	1/4	3/16	6	540584
6	1/2	19/64	7/32	4	540585
6	1/2	19/64	7/32	5	540586
6	1/2	19/64	7/32	6	540587
7	5/8	5/16	1/4	5	540588
7	5/8	5/16	1/4	6	540589
8	3/4	13/32	5/16	6	540590
SETS – 5 Pieces – Sizes *1 to *5 – 4" Overall Length					540560

Combined Drills & Countersinks

High Speed Steel & Solid Carbide – 60º Plain Long Type



Size	Overall Length (Inch)	Body Dia. (Inch)	Drill Length (Inch)	Drill Dia. (Inch)	60° Angle HSS Code	60° Angle Carbide Code
1	3	1/8	3/64	3/64	540631	–
1	4	1/8	3/64	3/64	540632	952064
1	5	1/8	3/64	3/64	540633	–
1	6	1/8	3/64	3/64	540634	–
2	4	3/16	5/64	5/64	540635	952066
2	5	3/16	5/64	5/64	540636	–
2	6	3/16	5/64	5/64	540637	–
3	4	1/4	7/64	7/64	540638	952068
3	5	1/4	7/64	7/64	540639	–
3	6	1/4	7/64	7/64	540640	–
4	4	5/16	1/8	1/8	540641	952070
4	5	5/16	1/8	1/8	540642	–

Size	Overall Length (Inch)	Body Dia. (Inch)	Drill Length (Inch)	Drill Dia. (Inch)	60° Angle HSS Code	60° Angle Carbide Code
4	6	5/16	1/8	1/8	540643	–
4-1/2	4	3/8	9/64	9/64	540644	–
4-1/2	5	3/8	9/64	9/64	540645	–
4-1/2	6	3/8	9/64	9/64	540646	–
5	4	7/16	3/16	3/16	540647	–
5	5	7/16	3/16	3/16	540648	–
5	6	7/16	3/16	3/16	540649	952072
6	5	1/2	7/32	7/32	540650	–
6	6	1/2	7/32	7/32	540651	952074
7	6	5/8	1/4	1/4	540652	952076
8	6	3/4	5/16	5/16	540653	952078

Combined Drills & Countersinks

High Speed Steel – 82º & 90º Plain Type



Size	Body Diameter (Inch)	Point Diameter (Inch)	Point Length (Inch)	Overall Length (Inch)	82° Angle (Series 154) HSS M2 Code	90° Angle (Series 155) HSS M2 Code
1	1/8	3/64	1/16	1-1/4	540511	540521
2	3/16	5/64	7/64	1-7/8	540512	540522
3	1/4	7/64	9/64	2	540513	540523
4	5/16	1/8	5/32	2-1/8	540514	540524
5	7/16	3/16	1/4	2-3/4	540515	540525
6	1/2	7/32	19/64	3	540516	540526
7	5/8	1/4	5/16	3-1/4	540517	540527
8	3/4	5/16	13/32	3-1/2	540518	540528

High Speed Steel – Radius Type



Magafor center drills with the special radius profile provide the following benefits:

- Reduces tip breakage
- Serves as a protective chamfer
- Provides an exact bearing

Size	Body Diameter (Inch)	Point Diameter (Inch)	Point Length (Inch)	Overall Length (Inch)	Radius (Inch)	(Series 125) HSS M2 Code
1	1/8	3/64	1/8	1-1/4	5/32	540541
2	3/16	5/64	7/32	1-7/8	7/32	540542
3	1/4	7/64	9/32	2	5/16	540543
4	5/16	1/8	3/8	2	3/8	540544
5	7/16	3/16	1/2	2-3/4	1/2	540545
6	1/2	7/32	9/16	3	17/32	540546
7	5/8	1/4	11/16	3-1/4	11/16	540547
8	3/4	5/16	13/16	3-1/2	13/16	540548
SETS – 5 Pieces – Sizes 1 to 5						540540

High Speed Steel – 60º & 120º Bell Type



The Bell type design has included angles of 60º and 120º to form protected centers.

Size	Body Diameter (Inch)	Point Diameter (Inch)	Point Length (Inch)	Overall Length (Inch)	Bell Diameter (Inch)	(Series 135) HSS M2 Code
11	1/8	3/64	1/16	1-1/4	0.100	540620
12	3/16	1/16	3/32	1-7/8	0.150	540621
13	1/4	3/32	1/8	2	0.200	540622
14	5/16	7/64	5/32	2-1/8	0.250	540623
15	7/16	5/32	7/32	2-3/4	0.350	540624
16	1/2	3/16	1/4	3	0.400	540625
17	5/8	7/32	5/16	3-1/4	0.500	540626
18	3/4	1/4	11/32	3-1/2	0.600	540627
19	7/8	5/16	7/16	3-5/8	0.700	540628
20	1	3/8	1/2	3-3/4	0.800	540629
SETS – 5 Pieces – Sizes 11 to 15						540630

Indexable Combined Drill & Countersinks

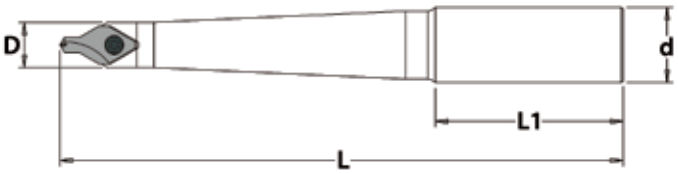
Carbide Inserts

- Secure insert pocket allows for quick and repeatable indexes
- Easy change over from one size to another – same body holds #2, #3, #4 and #5 inserts
- Carbide inserts for extended tool life
- One grade handles all applications
- Multiple bodies available for the same indexable insert (5/16”, 3/8”, 1/2”, 5/8”, 3/4”, 1”, and 1-1/4”)
- Convenient, low-cost and economical

Individual Holders



5/8” holder body style shown



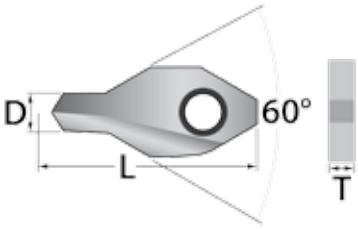
Dimensions (Inch)	Screw Reference	Key Reference	d Shank Diameter (Inch)	D Diameter (Inch)	L1 Length (Inch)	L Overall Length (Inch)	Code
5/16 x 4	TSB-0307	Torx® 9	5/16	0.393	1-13/32	4	530660
3/8 x 4	TSB-0307	Torx® 9	3/8	0.393	1-9/16	4	530661
1/2 x 4	TSB-0307	Torx® 9	1/2	0.393	1-23/32	4	530662
5/8 x 5	TSB-0307	Torx® 9	5/8	0.393	1-7/8	5	530663
3/4 x 6	TSB-0307	Torx® 9	3/4	0.393	1-7/8	6	530664
1 x 7	TSB-0307	Torx® 9	1	0.393	2-3/16	7	530665
1-1/4 x 8	TSB-0307	Torx® 9	1-1/4	0.393	2-11/32	8	530666

Indexable Combined Drill & Countersink Sets



Description	Code
5/8” x 5” Holder, 4 Carbide Inserts #2, #3, #4, and #5, and a Torx® 9 Key	530671
1/2” x 4” Holder, 4 Carbide Inserts #2, #3, #4, and #5, and a Torx® 9 Key	530672

Replacement Inserts



Insert	Material	D (Inch)	L Length (Inch)	T Thickness (Inch)	Code
#2	Carbide	5/64	0.811	0.157	530667
#3	Carbide	7/64	0.811	0.157	530668
#4	Carbide	1/8	0.811	0.157	530669
#5	Carbide	3/16	0.811	0.157	530670

Spare Screw



Description	Code
TSB-0307 (Torx® 9)	530673

Recommended Cutting Data

Material	Cutting Speed		Feed/Revolution							
			#2 (5/64”)		#3 (7/64”)		#4 (1/8”)		#5 (3/16”)	
	ft./min.	m/min.	inch/rev.	mm/rev.	inch/rev.	mm/rev.	inch/rev.	mm/rev.	inch/rev.	mm/rev.
Mild Steel	160-230	50-70	0.001-0.002	0.03-0.05	0.0025-0.004	0.06-0.10	0.003-0.0047	0.08-0.12	0.003-0.0055	0.08-0.14
Alloy Steel	150-210	45-65	0.0008-0.002	0.02-0.05	0.0015-0.003	0.04-0.08	0.0025-0.004	0.06-0.10	0.0025-0.004	0.06-0.10
Tool Steel	130-200	40-60	0.0004-0.0015	0.01-0.04	0.0008-0.0025	0.02-0.06	0.0015-0.003	0.04-0.08	0.0015-0.003	0.04-0.08
Stainless Steel	20-65	5-20	0.0004-0.0008	0.01-0.02	0.0004-0.001	0.01-0.03	0.0008-0.002	0.02-0.05	0.0008-0.0025	0.02-0.06
Cast Iron	160-230	50-70	0.0008-0.0025	0.02-0.06	0.0015-0.003	0.04-0.08	0.0025-0.004	0.06-0.10	0.0025-0.004	0.06-0.10
Aluminum	330-660	100-200	0.0004-0.0015	0.01-0.04	0.0008-0.002	0.02-0.05	0.0008-0.0025	0.02-0.06	0.0008-0.0025	0.02-0.06

Spotweld Drills

HSS-E Cobalt

- Centering point allows drilling without deviation
- Special sharpening allows the first sheet to be bored without damage to the second
- Design allows excellent penetration, a high wear resistance, and many regrinds



D (mm)	d2 (mm)	Flute Length (mm)	Overall Length (mm)	Series 201 Code
6	6	28	66	615370
7	7	34	74	615371
8	8	37	79	615372
10	10	43	89	615373

Spotweld Drills

For Pneumatic Tools

HSS-E Cobalt

- Short drills designed to be used with pneumatic disconnectors
- Shanks have flats with 60º taper



D (mm)	d2 (mm)	Flute Length (mm)	Overall Length (mm)	Series 202 Code
8	8	15	38	615374

Spotting & Centering Drills

High Speed Steel

Short Length – Right Hand Cut

- 118° point
- Short flute and overall lengths provides greater rigidity



Size (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
3/8	0.3750	1	2	615300
7/16	0.4375	1	2	615301
1/2	0.5000	1	2	615302
5/8	0.6250	1-1/8	2-1/4	615303
3/4	0.7500	1-1/8	2-1/4	615304
7/8	0.8750	1-1/4	2-1/2	615305
1	1.0000	1-1/4	2-1/2	615306
1-1/4	1.2500	2	4	615307
1-1/2	1.5000	2-1/2	5	615308
1-3/4	1.7500	2-3/4	5-1/2	615309

CNC Spotting Drills

High Speed Steel – 90° & 120° Points

Standard Length – Right Hand Cut

- Used to establish perfect alignment of the follow-up tool



Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	90º Point	120º Point
				Code	Code
1/4	0.2500	3/4	2-1/2	601020	601026
3/8	0.3750	1-1/8	3-1/8	601021	601027
1/2	0.5000	1-3/8	3-3/4	601022	601028
5/8	0.6250	1-5/8	4-3/8	601023	601029
3/4	0.7500	1-7/8	5	601024	601030
1	1.0000	2-1/4	6	601025	601031

CNC Spotting Drills

Cobalt & TiN Coated – Inch & Metric – 90° & 120° Angles – Standard Length



Cobalt



TiN Coated

Inch

Body Diameter (Inch)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	90° Angle (Series 195) Cobalt	120° Angle (Series 196) Cobalt	90° Angle (Series 0895) TiN Coated	120° Angle (Series 0896) TiN Coated
				Code	Code	Code	Code
1/8	0.125	3/8	2	540658	540668	601032	601041
3/16	0.188	5/8	2-3/8	540659	540669	601033	601042
1/4	0.250	7/8	2-5/8	540660	540670	601034	601043
3/8	0.375	1	3-1/2	540661	540671	601035	601044
1/2	0.500	1-3/8	4	540662	540672	601036	601045
5/8	0.625	1-3/8	4-1/2	540663	540673	601037	601046
3/4	0.750	1-5/8	5-1/8	540664	540674	601038	601047
1	1.000	1-3/4	5-1/2	540665	540675	601039	601048
SETS – 4 Pieces – Sizes 1/4, 3/8, 1/2, and 5/8”				540666	540676	601040	601049

Metric

Body Diameter (mm)	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	90° Angle (Series 195) Cobalt	120° Angle (Series 196) Cobalt	90° Angle (Series 0895) TiN Coated	120° Angle (Series 0896) TiN Coated
				Code	Code	Code	Code
2	0.079	5/16	2	540001	540014	601050	601063
3	0.118	3/8	2	540002	540015	601051	601064
4	0.157	1/2	2	540003	540016	601052	601065
5	0.197	5/8	2-3/8	540004	540017	601053	601066
6	0.236	3/4	2-5/8	540005	540018	601054	601067
8	0.315	1	3-1/8	540006	540019	601055	601068
10	0.394	1	3-1/2	540007	540020	601056	601069
12	0.472	1-1/4	4	540008	540021	601057	601070
14	0.551	1-3/8	4-1/2	540009	540022	601058	601071
16	0.630	1-3/8	4-1/2	540010	540023	601059	601072
18	0.709	1-5/8	5-1/8	540011	540024	601060	601073
20	0.787	1-5/8	5-1/8	540012	540025	601061	601074
25	0.984	1-3/4	5-1/2	540013	540026	601062	601075

Cobalt – Inch & Metric – 90° & 120° Angles – Long Length



Inch

Body Diameter (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	90° Angle (Series 197)	120° Angle (Series 199)
				Code	Code
1/4	0.250	7/8	5-1/2	540680	540690
3/8	0.375	1	6-3/4	540681	540691
1/2	0.500	1-3/8	6-3/4	540682	540692
5/8	0.625	1-3/8	7-7/8	540683	540693
3/4	0.750	1-5/8	7-7/8	540684	540694
1	1.000	1-3/4	7-7/8	540685	540695
SETS – 4 Pieces Sizes 1/4, 3/8,1/2, and 5/8”				540686	540697

Metric

Body Diameter (mm)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	90° Angle (Series 197)
				Code
4	0.157	1/2	4	540027
5	0.197	9/16	4-3/4	540028
6	0.236	3/4	5-1/2	540029
8	0.315	1	5-1/2	540030
10	0.394	1	6-3/4	540031
12	0.472	1-3/16	6-3/4	540032
16	0.630	1-3/8	7-7/8	540033
20	0.787	1-9/16	7-7/8	540034

CNC Spotting Drills

Micrograin Solid Carbide

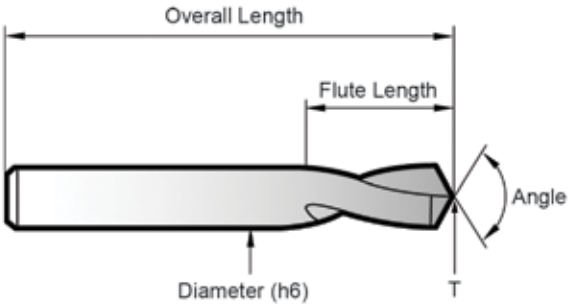
Stub Length



CARBIDE



Hard'X Up to 67 HRC

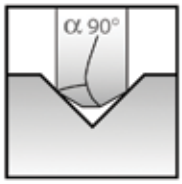


Web thickness: T=0.1 x D

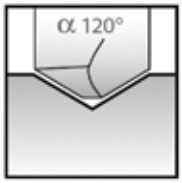
Hard'X: AlTiN carbide tool coating with a high hardness of 3500 HV. This coating shows high thermic stability and excellent protection against heat and wear. Ideal for dry machining - high speed cut - in treated steels and dies up to 67 HRC.

Tolerances

Diameters	Tolerance D	Angle	L
0.078-0.118	0 + 0.0002"	±1°	±0.0395
1/8-0.236	0 + 0.0003"	±1°	±0.0395
1/4-0.394	0 + 0.0004"	±1°	±0.0395
0.472-1	0 + 0.0005"	±1°	±0.0395



90 degree angle:
By using the Magafor NC drill of diameter over the drilling tool, centering and chamfering are obtained in a single operation



120 degree angle:
The preliminary hole obtained with the Magafor NC drill corresponds to the angle at the end of the tool used in drilling and prevents it from deviating

90° Angle (Series 8195), Hard'X 90° Angle (Series 8195-H) & 120° Angle (Series 8196)

Diameter Inch (mm)	Overall Length (Inch)	Flute Length (Inch)	Web Thickness of Split Point (Inch)	90° Angle (Series 8195)	90° Angle (Series 8195-H)	120° Angle (Series 8196)
				Code	Hard'X Code	Code
0.078 (2)	1-9/16	0.315	0.008	540050	314267	540070
0.118 (3)	1-3/4	0.4	0.012	540051	314270	540071
0.157 (4)	2	0.475	0.016	540052	314273	540072
0.197 (5)	2	0.6	0.02	540053	314276	540073
0.236 (6)	2	0.7	0.023	540054	314279	540074
1/4 (6.35)	2	0.7	0.023	540055	314282	540075
5/16 (7.93)	2-3/8	0.9	0.031	314264	314285	–
0.315 (8)	2-3/8	0.9	0.031	540056	314288	540076
3/8 (9.52)	2-3/4	0.95	0.039	540057	314291	540077
0.394 (10)	2-3/4	0.95	0.039	540058	314294	540078
0.472 (12)	2-3/4	0.95	0.047	540059	314297	540079
1/2 (12.70)	2-3/4	0.95	0.051	540060	314300	540080
0.551 (14)	3	0.95	0.055	540061	314303	540081
5/8 (15.87)	3-1/8	1	0.063	540062	314306	540082
0.63 (16)	3-1/8	1	0.063	540063	314309	540083
0.787 (20)	4	1-3/8	0.079	540064	314312	540084

Long Length – 90° Angle (Series 8197)



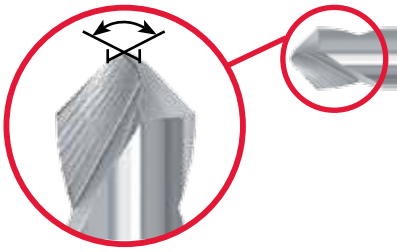
Diameter Inch (mm)	Overall Length (Inch)	Flute Length (Inch)	Web Thickness of Split Point (Inch)	90° Angle (Series 8197)
				Code
0.157 (4)	4	0.475	0.016	314318
0.197 (5)	4-3/4	0.6	0.02	314321
0.236 (6)	5-1/2	0.8	0.023	314324
1/4 (6.35)	5-1/2	0.87	0.025	314327
0.315 (8)	5-1/2	1	0.031	314330
3/8 (9.52)	6-3/4	1	0.039	314333
0.394 (10)	6-3/4	1	0.039	314336
0.472 (12)	6-3/4	1-3/16	0.047	314339

Diameter Inch (mm)	Overall Length (Inch)	Flute Length (Inch)	Web Thickness of Split Point (Inch)	90° Angle (Series 8197)
				Code
1/2 (12.70)	6-3/4	1-3/8	0.051	314342
5/8 (15.87)	8	1-3/8	0.063	314345
0.63 (16)	8	1-3/8	0.063	314348
3/4 (19.05)	8	1-5/8	0.075	314351
0.787 (20)	8	1-5/8	0.079	314354

Spotting Drills

HSS-E Cobalt – 90° Angle – 118° Point Geometry – Uncoated & RED-X Coated

- 118° point geometry offers improved penetration rates while reinforcing the point
- Double ended for cost savings
- Available in 4-Piece sets or sold individually
- RED-X coating provides increased speeds and feeds and allows machining up to 55 HRC

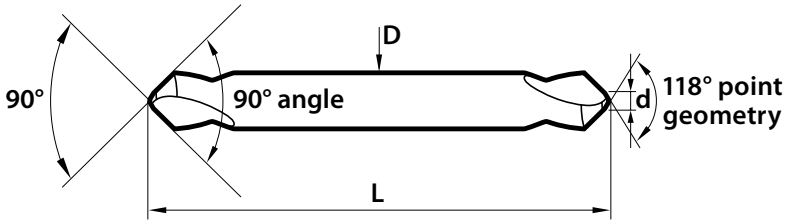




HSS-E Cobalt



RED-X Coated





D (Inch)	d (Inch)	L (Inch)	90° Uncoated (Series 019)	90° RED-X Coated (Series 0919)
			Code	Code
3/16	1/16	2	540091	540096
1/4	3/32	2	540092	540097
3/8	9/64	3	540093	540098
1/2	3/16	4	540094	540099
SETS – 4 Pieces – 3/16", 1/4", 3/8", 1/2"			540090	540095

Drill Mills

Cobalt and Carbide – 90° Point



Diameter (Inch)	Shank Diameter (Inch)	Flute Length (Inch)	Overall Length (Inch)	Cobalt	Carbide
				Code	Code
1/4	1/4	1/2	2	313805	313811
5/16	5/16	5/8	2	313806	313812
3/8	3/8	3/4	2-1/2	313807	313813
1/2	1/2	1	3	313808	313815
5/8	5/8	1-1/4	3-1/2	313809	313816
3/4	3/4	1-1/2	4	313810	313817

Indexable Spotting Drills

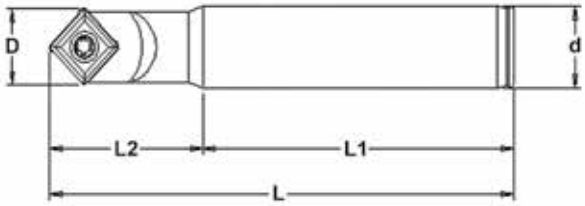
Carbide Inserts

- One combination tool that does four applications, giving extra efficiency and reduced cycle times
- For spotting, engraving, chamfering and grooving on CNC and conventional milling machines
- For spotting on CNC lathes
- Indexable carbide insert with 4 cutting edges provides great cost per edge and long tool life
- Insert fits both 1/2" and 5/8" diameter tools
- Extended reach tools: 5/8" x 6" and 5/8" x 9"

Individual Holders

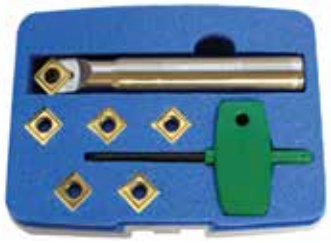


Inserts sold separately



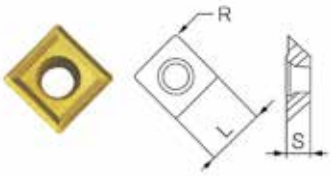
Dimensions (Inch)	Insert Reference	Screw Reference	Key Reference	D (Inch)	d (Inch)	L (Inch)	L1 (Inch)	L2 (Inch)	Code
5/8 x 4	XDBP11T308	TSB-3508	Torx® 15	0.551	0.625	4.00	2.75	1.25	530651
5/8 x 6	XDBP11T308	TSB-3508	Torx® 15	0.551	0.625	6.00	4.75	1.25	530652
5/8 x 9	XDBP11T308	TSB-3508	Torx® 15	0.551	0.625	9.00	7.75	1.25	530653

Indexable Spotting Drill Sets



Description	Grade	Code
5/8" x 4" holder, 6 carbide inserts and a Torx® 15 key	Steel	530656
5/8" x 4" holder, 6 carbide inserts and a Torx® 15 key	Stainless Steel	530657

Replacement Inserts



Description	Material/Grade	L (Inch)	S (Inch)	R (Inch)	Code
XDBP11T308-P	Carbide for Steel	0.433	0.156	0.031	530654
XDBP11T308-S	Carbide for Stainless Steel	0.433	0.156	0.031	530655

Spare Screw



Description	Code
TSB-3508 (Torx® 15)	530658

Recommended Cutting Data

α = Point angle 90°
H = Centering depth
D = Effective diameter
Vc = Cutting speed: ft./min. or m/min.
S = Spindle speed
F = Feed rate
f = Feed/Rev.: inch/rev. or mm/rev.
Ff = Feed rate factor

Maximum H

Centering .... 0.28" (7mm)
Grooving ..... 0.20" (5mm)
Chamfering . 0.28" (7mm)

Inch

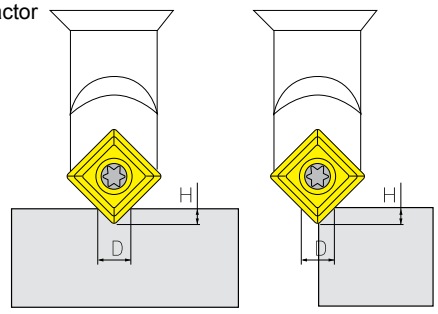
$$RPM = \frac{SFM \times 3.82}{D}$$

F = RPM x Inch/Rev x # of Flutes

Metric

$$RPM = \frac{1000 \times SFM}{\pi \times D}$$

F = RPM x mm/Rev x # of Flutes

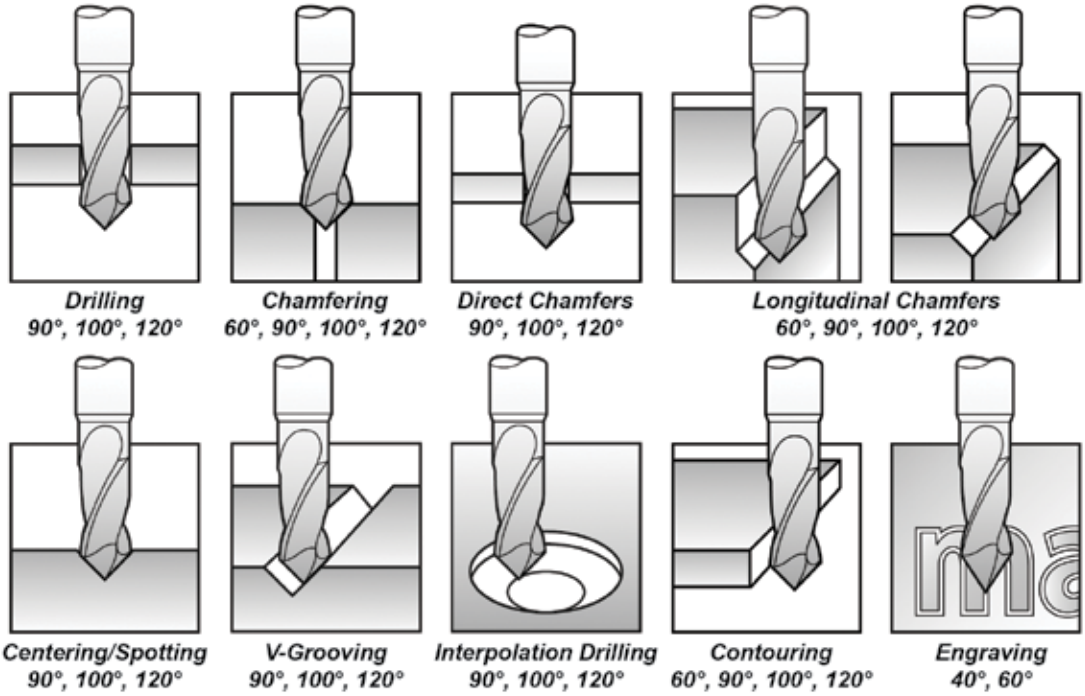


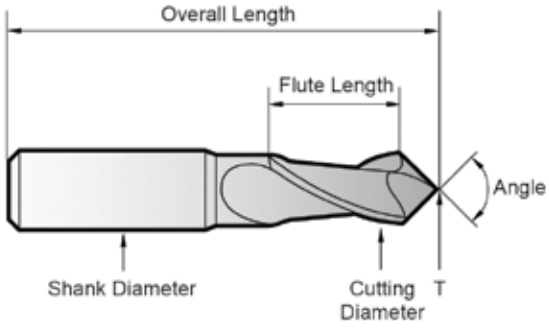
Material	Cutting Speed		Feed/Revolution	
	ft./min.	m/min.	inch/rev.	mm/rev.
Carbon Steel	400-500	120-150	0.002	0.05
Alloy Steel	330-400	100-120	0.0015	0.04
High Alloy Steel	200-260	60-80	0.001	0.03
Hard Steel < HRC40	200-260	60-80	0.001	0.03
Hard Steel, 40	165-200	50-60	0.001	0.03
Stainless Steel	165-200	50-60	0.001	0.03
Gray Cast Iron	260-332	80-102	0.002	0.05

MULTI-V Drill Mill Multi-Function Tool

Micrograin Solid Carbide – 90° Angle







Web thickness: T=0.1 x D

Tolerances

Diameters			Angle	Shank Diameter	
0.020-0.118	-0	-0.0010	±1°	0.118	0-0.00020
0.157-0.236	-0	-0.0012	±1°	0.157-0.197	0-0.00030
0.250-0.394	-0	-0.0014	±1°	0.197-0.394	0-0.00035
0.472-0.630	-0.0018	-0.0036	±1°	0.500-0.630	0-0.00045
0.787	-0.0025	-0.0045	±1°	0.787	0-0.00050

Cutting Diameter (Inch)	Cutting Diameter (mm)	Overall Length (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	(Series 8090) Code
0.020	0.50	1-1/2	0.040	0.118	540401
0.024	0.60	1-1/2	0.047	0.118	540402
0.028	0.70	1-1/2	0.055	0.118	540403
0.031	0.80	1-1/2	0.063	0.118	540404
0.035	0.90	1-1/2	0.071	0.118	540405
0.039	1.00	1-1/2	0.080	0.118	540406
0.047	1.20	1-1/2	0.095	0.118	540407
0.055	1.40	1-1/2	0.110	0.118	540408
0.059	1.50	1-1/2	0.120	0.118	540409
0.063	1.60	1-1/2	0.125	0.118	314000
0.071	1.80	1-1/2	0.140	0.118	540410
0.078	2.00	1-1/2	0.160	0.118	540411
0.098	2.50	1-1/2	0.195	0.118	540412
0.118	3.00	2	0.240	0.157	540413

Cutting Diameter (Inch)	Cutting Diameter (mm)	Overall Length (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	(Series 8090) Code
0.157	4.00	2	0.315	0.197	540414
3/16	4.76	2	0.375	1/4	540415
0.197	5.00	2	0.395	0.236	540416
0.236	6.00	2-3/8	0.475	0.315	540417
1/4	6.35	2-3/8	0.475	5/16	540418
5/16	7.93	2-3/4	0.630	3/8	540419
0.315	8.00	2-3/4	0.630	0.394	540420
3/8	9.52	2-3/4	0.710	1/2	540421
0.394	10.00	2-3/4	0.710	0.472	540422
0.472	12.00	2-3/4	0.790	0.472	540423
1/2	12.70	2-3/4	0.790	1/2	540424
5/8	15.07	3-1/8	1.000	5/8	540425
0.630	16.00	3-1/8	1.025	0.630	540426
0.787	20.00	4	1.260	0.787	540427

Chamfering Biconical Cutters

K15 Carbide – Front & Back

- Special design equals positive cut plus relieving profile
- Unequalled surface finish
- Impressive performance
- Extended tools profile life



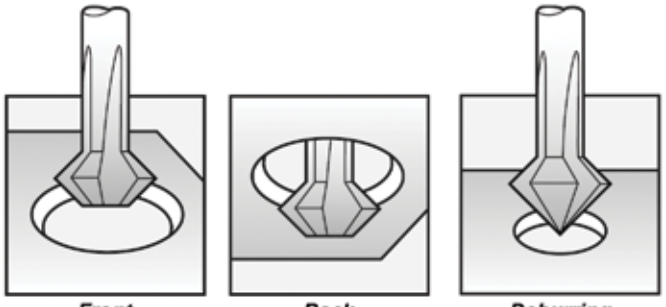
BI-FACE

Bi-Face: For superior finish operations, Bi-Face has a constant relieved profile. Longitudinal or interpolated work for front and back chamfering of edges and holes.

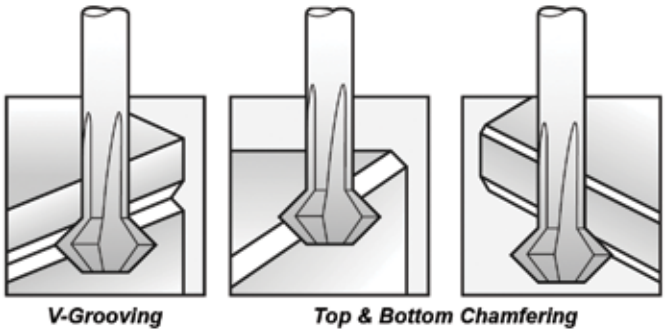


Hard'X Up to 67HRC

Hard'X: AlTiN carbide tool coating with a high hardness of 3500 HV. This coating shows high thermic stability and excellent protection against heat and wear. Ideal for dry machining - high speed cut - in treated steels and dies up to 67 HRC.

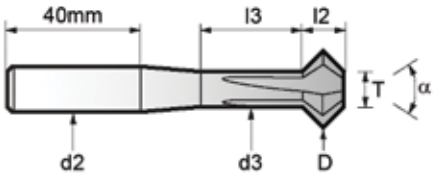


Front Back Deburring



V-Grooving Top & Bottom Chamfering

Tolerances			
D	Tolerance	L	Angle
0.04 - 0.197	0 - 0.002	± 0.04	±1°
0.236 - 0.63	0 - 0.004	± 0.04	±1°



Standard 4 Flute Bi-Face 90° Angle (Series 8490) & Hard'X 90° Angle (Series 8490-H)

Diameter Inch (mm)	d2 (Inch)	d3 Max. (Inch)	T Max. (Inch)	L Min. (Inch)	l2 (Inch)	l3 (Inch)	90° Angle (Series 8490)	90° Angle (Series 8490-H)
							Bi-Face Code	Hard'X Code
0.118 (3)	0.236	0.087	0.047	4	0.051	0.394	314198	314222
0.157 (4)	0.236	0.114	0.063	4	0.069	0.472	314201	314225
0.197 (5)	0.236	0.134	0.079	4	0.091	0.591	314204	314228
0.236 (6)	0.236	0.154	0.094	4	0.114	0.709	314207	314231
0.315 (8)	0.236	0.193	0.193	4	0.118	1.339	314210	314234
0.394 (10)	0.236	0.232	0.232	4	0.157	1.339	314213	314237
0.472 (12)	0.236	0.232	0.232	4	0.236	1.339	314216	314240
0.630 (16)	0.394	0.311	0.311	4	0.315	1.339	314219	314243

Chucking Reamers

High Speed Steel & Cobalt – Straight Shank – Straight & Spiral Flutes



Fractional Sizes

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS		Cobalt
				Straight Flute	Spiral Flute	Straight Flute
				Code	Code	Code
3/64	0.0469	1/2	2-1/2	–	600079	–
1/16	0.0625	1/2	2-1/2	600000	600080	–
5/64	0.0781	3/4	3	600001	600081	–
3/32	0.0938	3/4	3	600002	600082	–
7/64	0.1094	7/8	3-1/2	600003	600083	–
1/8	0.1250	7/8	3-1/2	600004	600084	600133
9/64	0.1406	1	4	600005	600085	600134
5/32	0.1562	1	4	600006	600086	600135
11/64	0.1719	1-1/8	4-1/2	600007	600087	600136
3/16	0.1875	1-1/8	4-1/2	600008	600088	600137
13/64	0.2031	1-1/4	5	600009	600089	600138
7/32	0.2188	1-1/4	5	600010	600090	600139
15/64	0.2344	1-1/2	6	600011	600091	600140
1/4	0.2500	1-1/2	6	600012	600092	600141
17/64	0.2656	1-1/2	6	600013	600093	600142
9/32	0.2812	1-1/2	6	600014	600094	600143
19/64	0.2969	1-1/2	6	600015	600095	600144
5/16	0.3125	1-1/2	6	600016	600096	600145
21/64	0.3281	1-1/2	6	600017	600097	600146
11/32	0.3438	1-1/2	6	600018	600098	600147
23/64	0.3594	1-3/4	7	600019	600099	600148
3/8	0.3750	1-3/4	7	600020	600100	600149
25/64	0.3906	1-3/4	7	600021	600101	600150
13/32	0.4062	1-3/4	7	600022	600102	600151
27/64	0.4219	1-3/4	7	600023	600103	600152
7/16	0.4375	1-3/4	7	600024	600104	600153
29/64	0.4531	1-3/4	7	600025	600105	600154
15/32	0.4688	1-3/4	7	600026	600106	600155
31/64	0.4844	2	8	600027	600107	600156
1/2	0.5000	2	8	600028	600108	600157
33/64	0.5156	2	8	600029	–	–
17/32	0.5312	2	8	600030	600109	600158
35/64	0.5469	2	8	600031	–	–
9/16	0.5625	2	8	600032	600110	600159
37/64	0.5781	2	8	600033	–	–
19/32	0.5938	2	8	600034	600111	600160
39/64	0.6094	2-1/4	9	600035	–	–
5/8	0.6250	2-1/4	9	600036	600112	600161
41/64	0.6406	2-1/4	9	600037	–	–
21/32	0.6562	2-1/4	9	600038	600113	600162
43/64	0.6719	2-1/4	9	600039	–	–
11/16	0.6875	2-1/4	9	600040	600114	600163
45/64	0.7031	2-1/4	9	600041	–	–
23/32	0.7188	2-1/4	9	600042	600115	600164
47/64	0.7344	2-1/2	9-1/2	600043	–	–
3/4	0.7500	2-1/2	9-1/2	600044	600116	600165
49/64	0.7656	2-1/2	9-1/2	600045	–	–
25/32	0.7812	2-1/2	9-1/2	600046	600117	600166
51/64	0.7969	2-1/2	9-1/2	600047	–	–
13/16	0.8125	2-1/2	9-1/2	600048	600118	600167
53/64	0.8281	2-1/2	9-1/2	600049	–	–
27/32	0.8438	2-1/2	9-1/2	600050	600119	600168
55/64	0.8594	2-5/8	10	600051	–	–
7/8	0.8750	2-5/8	10	600052	600120	600169
57/64	0.8906	2-5/8	10	600053	–	–
29/32	0.9062	2-5/8	10	600054	600121	600170
59/64	0.9219	2-5/8	10	600055	–	–
15/16	0.9375	2-5/8	10	600056	600122	600171
61/64	0.9531	2-5/8	10	600057	–	–
31/32	0.9688	2-5/8	10	600058	600123	600172
63/64	0.9844	2-5/5	10	600059	–	–
1	1.0000	2-3/4	10-1/2	600060	600124	600173
1-1/32	1.0312	2-3/4	10-1/2	600061	–	–
1-1/16	1.0625	2-3/4	10-1/2	600062	600125	–
1-3/32	1.0938	2-3/4	10-1/2	600063	–	–
1-1/8	1.1250	2-7/8	10-1/2	600064	600126	–
1-5/32	1.1562	2-7/8	10-1/2	600065	–	–
1-3/16	1.1875	2-7/8	10-1/2	600066	600127	–
1-7/32	1.2187	2-7/8	10-1/2	600067	–	–
1-1/4	1.2500	3	11-1/2	600068	600128	–
1-5/16	1.3125	3	11-1/2	600069	600129	–
1-3/8	1.3750	3-1/4	12	600070	600130	–
1-7/16	1.4375	3-1/4	12	600071	600131	–
1-1/2	1.5000	3-1/2	12-1/2	600072	600132	–
1-9/16	1.5625	3-1/2	12-1/2	600073	–	–
1-5/8	1.6250	3-1/2	12-1/2	600074	–	–
1-11/16	1.6875	3-1/2	12-1/2	600075	–	–
1-3/4	1.7500	4	13-1/2	600076	–	–
1-7/8	1.8750	4	14	600077	–	–
2	2.0000	4	14	600078	–	–

Chucking Reamers

High Speed Steel – Straight Shank – Straight Flute



Letter Sizes

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
A	0.2340	1-1/2	6	600174
B	0.2380	1-1/2	6	600175
C	0.2420	1-1/2	6	600176
D	0.2460	1-1/2	6	600177
E	0.2500	1-1/2	6	600012
F	0.2570	1-1/2	6	600178
G	0.2610	1-1/2	6	600179
H	0.2660	1-1/2	6	600180
I	0.2720	1-1/2	6	600181
J	0.2770	1-1/2	6	600182
K	0.2810	1-1/2	6	600183
L	0.2900	1-1/2	6	600184
M	0.2950	1-1/2	6	600185
N	0.3020	1-1/2	6	600186
O	0.3160	1-1/2	6	600187
P	0.3230	1-1/2	6	600188
Q	0.3320	1-1/2	6	600189
R	0.3390	1-1/2	6	600190
S	0.3480	1-3/4	7	600191
T	0.3580	1-3/4	7	600192
U	0.3680	1-3/4	7	600193
V	0.3770	1-3/4	7	600194
W	0.3860	1-3/4	7	600195
X	0.3970	1-3/4	7	600196
Y	0.4040	1-3/4	7	600197
Z	0.4130	1-3/4	7	600198

Wire Gage Sizes

Size	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
1	0.2280	1-1/2	6	600199
2	0.2210	1-1/2	6	600200
3	0.2130	1-1/4	5	600201
4	0.2090	1-1/4	5	600202
5	0.2055	1-1/4	5	600203
6	0.2040	1-1/4	5	600204
7	0.2010	1-1/4	5	600205
8	0.1990	1-1/4	5	600206
9	0.1960	1-1/4	5	600207
10	0.1935	1-1/4	5	600208
11	0.1910	1-1/4	5	600209
12	0.1890	1-1/8	4-1/2	600210
13	0.1850	1-1/8	4-1/2	600211
14	0.1820	1-1/8	4-1/2	600212
15	0.1800	1-1/8	4-1/2	600213
16	0.1770	1-1/8	4-1/2	600214
17	0.1730	1-1/8	4-1/2	600215
18	0.1695	1-1/8	4-1/2	600216
19	0.1660	1-1/8	4-1/2	600217
20	0.1610	1-1/8	4-1/2	600218
21	0.1590	1-1/8	4-1/2	600219
22	0.1570	1	4	600220
23	0.1540	1	4	600221
24	0.1520	1	4	600222
25	0.1495	1	4	600223
26	0.1470	1	4	600224
27	0.1440	1	4	600225
28	0.1405	1	4	600226
29	0.1360	1	4	600227
30	0.1285	7/8	3-1/2	600228
31	0.1200	7/8	3-1/2	600229
32	0.1160	7/8	3-1/2	600230

Over & Under Sizes

Size (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.1240	7/8	3-1/2	600231
0.1260	7/8	3-1/2	600232
0.1865	1-1/8	4-1/2	600233
0.1885	1-1/8	4-1/2	600234
0.2490	1-1/2	6	600235
0.2510	1-1/2	6	600236
0.3115	1-1/2	6	600237
0.3135	1-1/2	6	600238
0.3740	1-3/4	7	600239
0.3760	1-3/4	7	600240
0.4365	1-3/4	7	600241
0.4385	1-3/4	7	600242
0.4990	2	8	600243
0.5010	2	8	600244

Dowel Pin Sizes

Size (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.1230	7/8	3-1/2	600245
0.1247	7/8	3-1/2	600246
0.1855	1-1/8	4-1/2	600247
0.1870	1-1/8	4-1/2	600248
0.2480	1-1/2	6	600249
0.2495	1-1/2	6	600250
0.3105	1-1/2	6	600251
0.3120	1-1/2	6	600252
0.3730	1-3/4	7	600253
0.3745	1-3/4	7	600254
0.4355	1-3/4	7	600255
0.4370	1-3/4	7	600256
0.4980	2	8	600257
0.4995	2	8	600258

Chucking Reamers

High Speed Steel – Straight Shank – Straight Flute

Sets



Size		Code
Fractional Sizes - 1/16" to 1/2" by 64ths in Metal Index	29	311435
Letter Sizes - A to Z in Metal Index	26	311436
Wire Gage Sizes - 1 to 60 in Plastic Pouch	60	311437
Over and Under Sizes - 0.124" to 0.501" in Metal Index	14	311438
Dowel Pin Sizes - 0.123" to 0.4995" in Metal Index	14	311439

Decimal Reamers – Right Hand Cut



TOLERANCE UP TO 0.250: +0.0001"/+0.0004"
0.250 TO 0.750: +0.0001"/+0.0005"

Decimal Equivalent (Inch)	Code	Decimal Equivalent (Inch)	Code	Decimal Equivalent (Inch)	Code	Decimal Equivalent (Inch)	Code	Decimal Equivalent (Inch)	Code
0.1230	600245	0.1930	600297	0.2475	600343	0.3130	600382	0.4420	600419
0.1240	600231	0.1940	600298	0.2480	600249	0.3135	600238	0.4430	600420
0.1245	600259	0.1950	600299	0.2485	600344	0.3140	600383	0.4440	600421
0.1247	600246	0.1960	600300	0.2490	600235	0.3145	600384	0.4480	600422
0.1255	600260	0.1970	600301	0.2495	600250	0.3150	600385	0.4490	600423
0.1260	600232	0.1980	600302	0.2505	600345	0.3160	600386	0.4550	600424
0.1265	600261	0.1990	600303	0.2510	600236	0.3165	600387	0.4560	600425
0.1270	600262	0.2000	600304	0.2515	600346	0.3170	600388	0.4820	600426
0.1280	600263	0.2020	600305	0.2520	600347	0.3180	600389	0.4900	600427
0.1290	600264	0.2024	600306	0.2530	600348	0.3190	600390	0.4970	600428
0.1295	600265	0.2030	600307	0.2540	600349	0.3200	600391	0.4980	600257
0.1300	600266	0.2050	600308	0.2550	600350	0.3220	600392	0.4990	600243
0.1370	600267	0.2060	600309	0.2560	600351	0.3240	600393	0.4995	600258
0.1375	600268	0.2070	600310	0.2570	600352	0.3250	600394	0.5010	600244
0.1380	600269	0.2080	600311	0.2580	600353	0.3270	600395	0.5015	600429
0.1400	600270	0.2090	600312	0.2590	600354	0.3280	600396	0.5020	600430
0.1410	600271	0.2100	600313	0.2600	600355	0.3290	600397	0.5030	600431
0.1415	600272	0.2110	600314	0.2650	600356	0.3300	600398	0.5040	600432
0.1420	600273	0.2120	600315	0.2690	600357	0.3360	600399	0.5050	600433
0.1520	600274	0.2140	600316	0.2710	600358	0.3370	600400	0.5240	600434
0.1560	600275	0.2150	600317	0.2760	600359	0.3440	600401	0.5250	600435
0.1580	600276	0.2155	600318	0.2770	600360	0.3490	600402	0.5260	600436
0.1670	600277	0.2160	600319	0.2800	600361	0.3550	600403	0.5300	600437
0.1720	600278	0.2170	600320	0.2820	600362	0.3590	600404	0.5500	600438
0.1740	600279	0.2180	600321	0.2830	600363	0.3690	600405	0.5580	600439
0.1750	600280	0.2190	600322	0.2840	600364	0.3730	600253	0.5590	600440
0.1760	600281	0.2200	600323	0.2860	600365	0.3740	600239	0.5615	600441
0.1770	600282	0.2211	600324	0.2870	600366	0.3745	600254	0.5690	600442
0.1810	600283	0.2270	600325	0.2890	600367	0.3755	600406	0.5740	600443
0.1820	600284	0.2300	600326	0.2900	600368	0.3760	600240	0.5840	600444
0.1840	600285	0.2310	600327	0.2920	600369	0.3765	600407	0.5850	600445
0.1845	600286	0.2320	600328	0.2930	600370	0.3770	600408	0.5860	600446
0.1850	600287	0.2340	600329	0.2940	600371	0.3790	600409	0.5880	600447
0.1855	600247	0.2350	600330	0.2960	600372	0.3800	600410	0.6050	600448
0.1860	600288	0.2360	600331	0.2980	600373	0.3860	600411	0.6220	600449
0.1865	600233	0.2370	600332	0.2990	600374	0.3880	600412	0.6240	600450
0.1870	600248	0.2380	600333	0.3030	600375	0.4000	600413	0.6250	600451
0.1875	600289	0.2390	600334	0.3050	600376	0.4070	600414	0.6255	600452
0.1880	600290	0.2400	600335	0.3060	600377	0.4300	600415	0.6260	600453
0.1885	600234	0.2410	600336	0.3070	600378	0.4320	600416	0.6300	600454
0.1895	600291	0.2420	600337	0.3090	600379	0.4355	600255	0.7480	600455
0.1900	600292	0.2430	600338	0.3100	600380	0.4365	600241	0.7490	600456
0.1905	600293	0.2440	600339	0.3105	600251	0.4370	600256	0.7510	600457
0.1910	600294	0.2450	600340	0.3110	600381	0.4385	600242	0.7580	600458
0.1915	600295	0.2460	600341	0.3115	600237	0.4390	600417		
0.1920	600296	0.2470	600342	0.3120	600252	0.4410	600418		

Metric Chucking Reamers

High Speed Steel – Straight & Taper Shanks – Straight Flutes





Size (mm)	Decimal Equivalent (Inch)	Shank Diameter (mm)	Straight Flutes		
			Straight Shank	Taper Shank	
			Code	Morse Taper	Code
2.5	0.0984	2.5	535831	–	–
3.0	0.1181	3.0	535832	–	–
3.5	0.1375	3.5	535833	–	–
4.0	0.1575	4.0	535834	–	–
4.5	0.1772	4.5	535835	–	–
5.0	0.1968	5.0	535836	1	600459
5.5	0.2165	5.6	535837	–	–
6.0	0.2362	5.6	535838	1	600460
6.5	0.2559	6.3	535839	–	–
7.0	0.2756	7.1	535840	1	600461
7.5	0.2953	7.1	535841	–	–
8.0	0.3150	8.0	535842	1	600462
8.5	0.3346	8.0	535843	–	–
9.0	0.3543	9.0	535844	1	600463
9.5	0.3740	9.0	535845	–	–
10.0	0.3937	10.0	535846	1	600464
10.5	0.4143	10.0	535847	–	–
11.0	0.4331	10.0	535848	1	600465
11.5	0.4528	10.0	535849	–	–
12.0	0.4724	10.0	535850	1	600466
12.5	0.4921	10.0	535851	–	–
13.0	0.5118	10.0	535852	1	600467
13.5	0.5315	12.5	535853	–	–
14.0	0.5512	12.5	535854	1	600468
14.5	0.5709	12.5	535855	–	–
15.0	0.5906	12.5	535856	2	600469
15.5	0.6102	12.5	535857	–	–
16.0	0.6299	12.5	535858	2	600470
16.5	0.6496	14.0	535859	–	–
17.0	0.6693	14.0	535860	2	600471

Size (mm)	Decimal Equivalent (Inch)	Shank Diameter (mm)	Straight Flutes		
			Straight Shank	Taper Shank	
			Code	Morse Taper	Code
17.5	0.6890	14.0	535861	–	–
18.0	0.7087	14.0	535862	2	600472
18.5	0.7283	16.0	535863	–	–
19.0	0.7480	16.0	535864	2	600473
19.5	0.7877	16.0	535865	–	–
20.0	0.7874	16.0	535866	2	600474
20.5	0.8071	18.0	535867	–	–
21.0	0.8268	18.0	535868	2	600475
21.5	0.8465	18.0	535869	–	–
22.0	0.8661	18.0	535870	2	600476
22.5	0.8858	18.0	535871	–	–
23.0	0.9055	18.0	535872	2	600477
23.5	0.9252	20.0	535873	–	–
24.0	0.9449	20.0	535874	3	600478
24.5	0.9646	20.0	535875	–	–
25.0	0.9843	20.0	535876	3	600479
26.0	1.0236	–	–	3	600480
27.0	1.0623	–	–	3	600481
28.0	1.1024	–	–	3	600482
29.0	1.1417	–	–	3	600483
30.0	1.1811	–	–	3	600484
31.0	1.2205	–	–	3	600485
32.0	1.2598	–	–	4	600486
33.0	1.2992	–	–	4	600487
34.0	1.3386	–	–	4	600488
35.0	1.3780	–	–	4	600489
36.0	1.4173	–	–	4	600490
37.0	1.4567	–	–	4	600491
38.0	1.4961	–	–	4	600492
40.0	1.5748	–	–	4	600493

Chucking Reamers

High Speed Steel – Taper Shank – Straight & Spiral Flutes





Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	HSS	
					Straight Flute	Spiral Flute
					Code	Code
1/4	0.2500	1-1/2	6	1	535001	535051
9/32	0.2812	1-1/2	6	1	535003	535053
5/16	0.3125	1-1/2	6	1	535004	535054
11/32	0.3438	1-1/2	6	1	535006	535056
3/8	0.3750	1-3/4	7	1	535008	535058
13/32	0.4062	1-3/4	7	1	535009	535059
7/16	0.4375	1-3/4	7	1	535010	535060
15/32	0.4688	1-3/4	7	1	535011	535061
1/2	0.5000	2	8	1	535013	535063
17/32	0.5312	2	8	1	535015	535065
9/16	0.5625	2	8	1	535017	535067
19/32	0.5938	2	8	1	535019	535069
5/8	0.6250	2-1/4	9	2	535020	535070
21/32	0.6562	2-1/4	9	2	535021	535071

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	HSS	
					Straight Flute	Spiral Flute
					Code	Code
11/16	0.6875	2-1/4	9	2	535022	535072
23/32	0.7188	2-1/4	9	2	535023	535073
3/4	0.7500	2-1/2	9-1/2	2	535025	535075
25/32	0.7812	2-1/2	9-1/2	2	535026	535076
13/16	0.8125	2-1/2	9-1/2	2	535027	535077
27/32	0.8438	2-1/2	9-1/2	2	535028	535078
7/8	0.8750	2-5/8	10	2	535029	535079
29/32	0.9062	2-5/8	10	2	535030	535080
15/16	0.9375	2-5/8	10	3	535031	535081
31/32	0.9688	2-5/8	10	3	535032	535082
1	1.0000	2-3/4	10-1/2	3	535033	535083
1-1/16	1.0625	2-3/4	10-1/2	3	535034	535084
1-1/8	1.1250	2-7/8	11	3	535035	535085
1-5/32	1.1562	2-7/8	11	3	–	535086

Chucking Reamers

High Speed Steel – Taper Shank – Straight & Spiral Flutes *(continued)*





Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	HSS	
					Straight Flute	Spiral Flute
					Code	Code
1-3/16	1.1875	2-7/8	11	3	535037	535087
1-1/4	1.2500	3	11-1/2	4	535038	535088
1-5/16	1.3125	3	11-1/2	4	535039	535089
1-3/8	1.3750	3-1/4	12	4	535040	535090
1-7/16	1.4375	3-1/4	12	4	535041	535091
1-1/2	1.5000	3-1/2	12-1/2	4	535042	535092

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	Morse Taper	HSS	
					Straight Flute	Spiral Flute
					Code	Code
1-9/16	1.5625	3-1/2	12-1/2	4	–	535093
1-5/8	1.6250	3-1/2	13	4	–	535094
1-11/16	1.6875	4	13-1/2	4	–	535095
1-3/4	1.7500	4	13-1/2	4	–	535096
2	2.0000	4	14-1/2	4	–	535097

Taper Reamer Set – Fast Spiral

4 Pieces



- Made from special Hi-Tungsten tool steel, gold surface treated body and clearance for maximum lubricity
- Specially designed for reaming structural steel plate commonly found in truck frames, rail cars, bridges and pressure vessels
- The fast spiral is more aggressive than the standard spiral type

Size	Description	Code
3/8", 1/2", 5/8", and 3/4" Fitted Case	3 Flats on Shank Gold Finish	750011

Chucking Reamers

Carbide Tipped – Straight & Taper Shanks – Straight Flutes





Size (Inch)	No. of Flutes	Flute Length (Inch)	OAL (Inch)	Carbide Tipped			
				Straight Shank		Taper Shank	
				Shank Dia. (Inch)	Code	Morse Taper	Code
3/16	4	1-1/8	4-1/2	11/64	555601	–	–
7/32	4	1-1/4	5	13/64	555602	–	–
1/4	4	1-1/2	6	15/64	555603	1	555633
9/32	4	1-1/2	6	15/64	555604	1	555634
5/16	4	1-1/2	6	9/32	555605	1	555635
11/32	4	1-1/2	6	9/32	555606	1	555636
3/8	4	1-3/4	7	5/16	555607	1	555637
13/32	4	1-3/4	7	5/16	555608	1	555638
7/16	4	1-3/4	7	3/8	555609	1	555639
15/32	4	1-3/4	7	3/8	555610	1	555640
1/2	6	2	8	7/16	555611	1	555641
9/16	6	2	8	7/16	555612	1	555642
5/8	6	2-1/4	9	9/16	555613	2	555643
11/16	6	2-1/4	9	9/16	555614	2	555644

Size (Inch)	No. of Flutes	Flute Length (Inch)	OAL (Inch)	Carbide Tipped			
				Straight Shank		Taper Shank	
				Shank Dia. (Inch)	Code	Morse Taper	Code
3/4	6	2-1/2	9-1/2	5/8	555615	2	555645
13/16	6	2-1/2	9-1/2	5/8	555616	2	555646
7/8	6	2-5/8	10	3/4	555617	2	555647
15/16	8	2-5/8	10	3/4	555618	3	555648
1	8	2-3/4	10-1/2	7/8	555619	3	555649
1-1/16	8	2-3/4	10-1/2	7/8	555620	3	555650
1-1/8	8	2-7/8	11	7/8	555621	3	555651
1-3/16	8	2-7/8	11	1	555622	3	555652
1-1/4	8	3	11-1/2	1	555623	–	–
1-5/16	8	3	11-1/2	–	–	4	555654
1-3/8	8	3-1/4	12	–	–	4	555655
1-7/16	8	3-1/4	12	–	–	4	555656
1-1/2	8	3-1/2	12-1/2	1-1/4	555627	4	555657

Chucking Reamers

Micrograin Solid Carbide – Straight Shank – 4 & 6 Straight Flutes



Diameter	Diameter Tolerances
0.0280” to 0.2500”	+0.0000/+0.0002”
0.2501” to 0.5000”	+0.0000/+0.0003”

- Decimal, fractional, wire, letter and metric sizes
- C2 micrograin solid carbide with 10% cobalt
- Suitable for reaming tough and abrasive materials
- Shank same size as cutting diameter
- Sizes include oversize, undersize and dowel pin size
- 4 flute reamers up to 0.255” diameter, 6 flute reamers on all other sizes
- Sizes from #70 to 1/4” are in increments of 0.0005” and sizes from 0.2505” to 0.5000” are in increments of 0.001”

D/P = DOWEL PIN SIZE, O/S = OVERSIZE, U/S = UNDERSIZE

High Speed Steel and Cobalt reamers also available – Please inquire

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
70	0.0280	1/4	1-1/2	940000
69	0.0292	1/4	1-1/2	940002
0.0300	0.0300	1/4	1-1/2	940310
68	0.0310	1/4	1-1/2	940004
1/32	0.0312	1/4	1-1/2	940006
0.0315	0.0315	1/4	1-1/2	940312
67	0.0320	1/4	1-1/2	940008
0.0325	0.0325	1/4	1-1/2	940314
66	0.0330	1/4	1-1/2	940010
0.0335	0.0335	1/4	1-1/2	940316
0.0340	0.0340	1/4	1-1/2	940318
0.0345	0.0345	1/4	1-1/2	940320
65	0.0350	1/4	1-1/2	940012
0.0355	0.0355	1/4	1-1/2	940322
64	0.0360	1/4	1-1/2	940014
0.0365	0.0365	1/4	1-1/2	940324
63	0.0370	1/4	1-1/2	940016
0.0375	0.0375	1/4	1-1/2	940326
62	0.0380	1/4	1-1/2	940018
0.0385	0.0385	1/4	1-1/2	940328
61	0.0390	1/4	1-1/2	940020
1 mm	0.0394	1/4	1-1/2	940022
0.0395	0.0395	1/4	1-1/2	940330
60	0.0400	1/4	1-1/2	940024
0.0405	0.0405	1/4	1-1/2	940332
59	0.0410	1/4	1-1/2	940026
0.0415	0.0415	1/4	1-1/2	940334
58	0.0420	3/8	1-1/2	940028
0.0425	0.0425	3/8	1-1/2	940336
57	0.0430	3/8	1-1/2	940030
0.0435	0.0435	3/8	1-1/2	940338
0.0440	0.0440	3/8	1-1/2	940340
0.0445	0.0445	3/8	1-1/2	940342
0.0450	0.0450	3/8	1-1/2	940344
0.0455	0.0455	3/8	1-1/2	940346
0.0460	0.0460	3/8	1-1/2	940348
56	0.0465	3/8	1-1/2	940032
3/64	0.0469	3/8	1-1/2	940034
0.0470	0.0470	3/8	1-1/2	940350
0.0475	0.0475	3/8	1-1/2	940352
0.0480	0.0480	3/8	1-1/2	940354
0.0485	0.0485	3/8	1-1/2	940356
0.0490	0.0490	3/8	1-1/2	940358
0.0495	0.0495	3/8	1-1/2	940360

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.0500	0.0500	3/8	1-1/2	940362
0.0505	0.0505	3/8	1-1/2	940364
0.0510	0.0510	3/8	1-1/2	940366
0.0515	0.0515	3/8	1-1/2	940368
55	0.0520	3/8	1-1/2	940036
0.0525	0.0525	3/8	1-1/2	940370
0.0530	0.0530	3/8	1-1/2	940372
0.0535	0.0535	3/8	1-1/2	940374
0.0540	0.0540	3/8	1-1/2	940376
0.0545	0.0545	3/8	1-1/2	940378
54	0.0550	3/8	1-1/2	940038
0.0555	0.0555	3/8	1-1/2	940380
0.0560	0.0560	3/8	1-1/2	940382
0.0565	0.0565	3/8	1-1/2	940384
0.0570	0.0570	3/8	1-1/2	940386
0.0575	0.0575	3/8	1-1/2	940388
0.0580	0.0580	3/8	1-1/2	940390
0.0585	0.0585	3/8	1-1/2	940392
0.0590	0.0590	3/8	1-1/2	940394
1.5 mm	0.0591	3/8	1-1/2	940040
53	0.0595	3/8	1-1/2	940042
0.0600	0.0600	3/8	1-1/2	940396
0.0605	0.0605	3/8	1-1/2	940398
0.0610	0.0610	3/8	1-1/2	940400
0.0615	0.0615	3/8	1-1/2	940402
0.0620	0.0620	3/8	1-1/2	940404
1/16	0.0625	3/8	1-1/2	940044
0.0630	0.0630	3/8	1-1/2	940406
52	0.0635	3/8	1-1/2	940046
0.0640	0.0640	3/8	1-1/2	940408
0.0645	0.0645	3/8	1-1/2	940410
0.0650	0.0650	3/8	1-1/2	940412
0.0655	0.0655	1/2	1-3/4	940414
0.0660	0.0660	1/2	1-3/4	940416
0.0665	0.0665	1/2	1-3/4	940418
51	0.0670	1/2	1-3/4	940048
0.0675	0.0675	1/2	1-3/4	940420
0.0680	0.0680	1/2	1-3/4	940422
0.0685	0.0685	1/2	1-3/4	940424
0.0690	0.0690	1/2	1-3/4	940426
0.0695	0.0695	1/2	1-3/4	940428
50	0.0700	1/2	1-3/4	940050
0.0705	0.0705	1/2	1-3/4	940430
0.0710	0.0710	1/2	1-3/4	940432

Chucking Reamers

Micrograin Solid Carbide – Straight Shank – 4 & 6 Straight Flutes *(continued)*



Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.0715	0.0715	1/2	1-3/4	940434
0.0720	0.0720	1/2	1-3/4	940436
0.0725	0.0725	1/2	1-3/4	940438
49	0.0730	1/2	1-3/4	940052
0.0735	0.0735	1/2	1-3/4	940440
0.0740	0.0740	1/2	1-3/4	940442
0.0745	0.0745	1/2	1-3/4	940444
0.0750	0.0750	1/2	1-3/4	940446
0.0755	0.0755	1/2	1-3/4	940448
48	0.0760	1/2	1-3/4	940054
0.0765	0.0765	1/2	1-3/4	940450
0.0770	0.0770	1/2	1-3/4	940452
0.0775	0.0775	1/2	1-3/4	940454
0.0780	0.0780	1/2	1-3/4	940456
5/64	0.0781	1/2	1-3/4	940056
47	0.0785	1/2	1-3/4	940058
2 mm	0.0787	1/2	1-3/4	940060
0.0790	0.0790	1/2	1-3/4	940458
0.0795	0.0795	1/2	1-3/4	940460
0.0800	0.0800	1/2	1-3/4	940462
0.0805	0.0805	1/2	1-3/4	940464
46	0.0810	1/2	1-3/4	940062
0.0815	0.0815	1/2	2	940466
45	0.0820	1/2	2	940064
0.0825	0.0825	1/2	2	940468
0.0830	0.0830	1/2	2	940470
0.0835	0.0835	1/2	2	940472
0.0840	0.0840	1/2	2	940474
0.0845	0.0845	1/2	2	940476
0.0850	0.0850	1/2	2	940478
0.0855	0.0855	1/2	2	940480
44	0.0860	1/2	2	940066
0.0865	0.0865	1/2	2	940482
0.0870	0.0870	1/2	2	940484
0.0875	0.0875	1/2	2	940486
0.0880	0.0880	1/2	2	940488
0.0885	0.0885	1/2	2	940490
43	0.0890	1/2	2	940068
0.0895	0.0895	1/2	2	940492
0.0900	0.0900	1/2	2	940494
0.0905	0.0905	1/2	2	940496
0.0910	0.0910	1/2	2	940498
0.0915	0.0915	1/2	2	940500
0.0920	0.0920	1/2	2	940502
0.0925	0.0925	1/2	2	940504
0.0930	0.0930	1/2	2	940506
42	0.0935	1/2	2	940070
3/32	0.0938	1/2	2	940072
0.0940	0.0940	1/2	2	940508
0.0945	0.0945	1/2	2	940510
0.0950	0.0950	1/2	2	940512
0.0955	0.0955	1/2	2	940514
41	0.0960	1/2	2	940074
0.0965	0.0965	1/2	2	940516
0.0970	0.0970	5/8	2-1/4	940518
0.0975	0.0975	5/8	2-1/4	940520
40	0.0980	5/8	2-1/4	940076
2.5 mm	0.0984	5/8	2-1/4	940078
0.0985	0.0985	5/8	2-1/4	940522
0.0990	0.0990	5/8	2-1/4	940524

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
39	0.0995	5/8	2-1/4	940080
0.1000	0.1000	5/8	2-1/4	940526
0.1005	0.1005	5/8	2-1/4	940528
0.1010	0.1010	5/8	2-1/4	940530
38	0.1015	5/8	2-1/4	940082
0.1020	0.1020	5/8	2-1/4	940532
0.1025	0.1025	5/8	2-1/4	940534
0.1030	0.1030	5/8	2-1/4	940536
0.1035	0.1035	5/8	2-1/4	940538
37	0.1040	5/8	2-1/4	940084
0.1045	0.1045	5/8	2-1/4	940540
0.1050	0.1050	5/8	2-1/4	940542
0.1055	0.1055	5/8	2-1/4	940544
0.1060	0.1060	5/8	2-1/4	940546
36	0.1065	5/8	2-1/4	940086
0.1070	0.1070	5/8	2-1/4	940548
0.1075	0.1075	5/8	2-1/4	940550
0.1080	0.1080	5/8	2-1/4	940552
0.1085	0.1085	5/8	2-1/4	940554
0.1090	0.1090	5/8	2-1/4	940556
7/64	0.1094	5/8	2-1/4	940088
0.1095	0.1095	5/8	2-1/4	940558
35	0.1100	5/8	2-1/4	940090
0.1105	0.1105	5/8	2-1/4	940560
34	0.1110	5/8	2-1/4	940092
0.1115	0.1115	5/8	2-1/4	940562
0.1120	0.1120	5/8	2-1/4	940564
0.1125	0.1125	5/8	2-1/4	940566
33	0.1130	5/8	2-1/4	940094
0.1135	0.1135	5/8	2-1/4	940568
0.1140	0.1140	5/8	2-1/4	940570
0.1145	0.1145	5/8	2-1/4	940572
0.1150	0.1150	5/8	2-1/4	940574
0.1155	0.1155	5/8	2-1/4	940576
32	0.1160	5/8	2-1/4	940096
0.1165	0.1165	5/8	2-1/4	940578
0.1170	0.1170	5/8	2-1/4	940580
0.1175	0.1175	5/8	2-1/4	940582
0.1180	0.1180	5/8	2-1/4	940584
3 mm	0.1181	5/8	2-1/4	940098
0.1185	0.1185	5/8	2-1/4	940586
0.1190	0.1190	5/8	2-1/4	940588
0.1195	0.1195	5/8	2-1/4	940590
31	0.1200	5/8	2-1/4	940100
0.1205	0.1205	5/8	2-1/4	940592
0.1210	0.1210	5/8	2-1/4	940594
0.1215	0.1215	5/8	2-1/4	940596
0.1220	0.1220	5/8	2-1/4	940598
0.1225	0.1225	5/8	2-1/4	940600
D/P	0.1230	5/8	2-1/4	940602
0.1235	0.1235	5/8	2-1/4	940604
U/S	0.1240	5/8	2-1/4	940606
0.1245	0.1245	5/8	2-1/4	940608
D/P	0.1247	5/8	2-1/4	940610
1/8	0.1250	5/8	2-1/4	940102
0.1255	0.1255	5/8	2-1/4	940612
O/S	0.1260	5/8	2-1/4	940614
0.1265	0.1265	5/8	2-1/4	940616
0.1270	0.1270	5/8	2-1/4	940618
0.1275	0.1275	5/8	2-1/4	940620

Chucking Reamers

Micrograin Solid Carbide – Straight Shank – 4 & 6 Straight Flutes *(continued)*



Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.1280	0.1280	5/8	2-1/4	940622
30	0.1285	5/8	2-1/4	940104
0.1290	0.1290	5/8	2-1/4	940624
0.1295	0.1295	5/8	2-1/4	940626
0.1300	0.1300	5/8	2-1/4	940628
0.1305	0.1305	3/4	2-1/2	940630
0.1310	0.1310	3/4	2-1/2	940632
0.1315	0.1315	3/4	2-1/2	940634
0.1320	0.1320	3/4	2-1/2	940636
0.1325	0.1325	3/4	2-1/2	940638
0.1330	0.1330	3/4	2-1/2	940640
0.1335	0.1335	3/4	2-1/2	940642
0.1340	0.1340	3/4	2-1/2	940644
0.1345	0.1345	3/4	2-1/2	940646
0.1350	0.1350	3/4	2-1/2	940648
0.1355	0.1355	3/4	2-1/2	940650
29	0.1360	3/4	2-1/2	940106
0.1365	0.1365	3/4	2-1/2	940652
0.1370	0.1370	3/4	2-1/2	940654
0.1375	0.1375	3/4	2-1/2	940656
3.5 mm	0.1378	3/4	2-1/2	940108
0.1380	0.1380	3/4	2-1/2	940658
0.1385	0.1385	3/4	2-1/2	940660
0.1390	0.1390	3/4	2-1/2	940662
0.1395	0.1395	3/4	2-1/2	940664
0.1400	0.1400	3/4	2-1/2	940666
28	0.1405	3/4	2-1/2	940110
9/64	0.1406	3/4	2-1/2	940112
0.1410	0.1410	3/4	2-1/2	940668
0.1415	0.1415	3/4	2-1/2	940670
0.1420	0.1420	3/4	2-1/2	940672
0.1425	0.1425	3/4	2-1/2	940674
0.1430	0.1430	3/4	2-1/2	940676
0.1435	0.1435	3/4	2-1/2	940678
27	0.1440	3/4	2-1/2	940114
0.1445	0.1445	3/4	2-1/2	940680
0.1450	0.1450	3/4	2-1/2	940682
0.1455	0.1455	3/4	2-1/2	940684
0.1460	0.1460	3/4	2-1/2	940686
0.1465	0.1465	3/4	2-1/2	940688
26	0.1470	3/4	2-1/2	940116
0.1475	0.1475	3/4	2-1/2	940690
0.1480	0.1480	3/4	2-1/2	940692
0.1485	0.1485	3/4	2-1/2	940694
0.1490	0.1490	3/4	2-1/2	940696
25	0.1495	3/4	2-1/2	940120
0.1500	0.1500	3/4	2-1/2	940698
0.1505	0.1505	3/4	2-1/2	940700
0.1507	0.1507	3/4	2-1/2	940702
0.1510	0.1510	3/4	2-1/2	940704
0.1515	0.1515	3/4	2-1/2	940706
24	0.1520	3/4	2-1/2	940122
0.1525	0.1525	3/4	2-1/2	940708
0.1530	0.1530	3/4	2-1/2	940710
0.1535	0.1535	3/4	2-1/2	940712
23	0.1540	3/4	2-1/2	940124
0.1541	0.1541	3/4	2-1/2	940714
0.1545	0.1545	3/4	2-1/2	940716
0.1550	0.1550	3/4	2-1/2	940718
0.1555	0.1555	3/4	2-1/2	940720

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.1560	0.1560	3/4	2-1/2	940722
5/32	0.1562	3/4	2-1/2	940126
0.1565	0.1565	3/4	2-1/2	940724
22	0.1570	3/4	2-1/2	940128
4 mm	0.1575	3/4	2-1/2	940130
0.1580	0.1580	3/4	2-1/2	940726
0.1585	0.1585	3/4	2-1/2	940728
21	0.1590	3/4	2-1/2	940132
0.1595	0.1595	3/4	2-1/2	940730
0.1600	0.1600	3/4	2-1/2	940732
0.1605	0.1605	3/4	2-1/2	940734
20	0.1610	7/8	2-3/4	940134
0.1615	0.1615	7/8	2-3/4	940736
0.1620	0.1620	7/8	2-3/4	940738
0.1625	0.1625	7/8	2-3/4	940740
0.1630	0.1630	7/8	2-3/4	940742
0.1635	0.1635	7/8	2-3/4	940744
0.1640	0.1640	7/8	2-3/4	940746
0.1645	0.1645	7/8	2-3/4	940748
0.1650	0.1650	7/8	2-3/4	940750
0.1655	0.1655	7/8	2-3/4	940752
19	0.1660	7/8	2-3/4	940136
0.1665	0.1665	7/8	2-3/4	940754
0.1670	0.1670	7/8	2-3/4	940756
0.1675	0.1675	7/8	2-3/4	940758
0.1680	0.1680	7/8	2-3/4	940760
0.1685	0.1685	7/8	2-3/4	940762
0.1690	0.1690	7/8	2-3/4	940764
18	0.1695	7/8	2-3/4	940138
0.1700	0.1700	7/8	2-3/4	940766
0.1705	0.1705	7/8	2-3/4	940768
0.1710	0.1710	7/8	2-3/4	940770
0.1715	0.1715	7/8	2-3/4	940772
11/64	0.1719	7/8	2-3/4	940140
0.1720	0.1720	7/8	2-3/4	940774
0.1725	0.1725	7/8	2-3/4	940776
17	0.1730	7/8	2-3/4	940142
0.1735	0.1735	7/8	2-3/4	940778
0.1740	0.1740	7/8	2-3/4	940780
0.1745	0.1745	7/8	2-3/4	940782
0.1750	0.1750	7/8	2-3/4	940784
0.1755	0.1755	7/8	2-3/4	940786
0.1760	0.1760	7/8	2-3/4	940788
0.1765	0.1765	7/8	2-3/4	940790
16	0.1770	7/8	2-3/4	940144
4.5 mm	0.1772	7/8	2-3/4	940146
0.1775	0.1775	7/8	2-3/4	940792
0.1780	0.1780	7/8	2-3/4	940794
0.1785	0.1785	7/8	2-3/4	940796
0.1790	0.1790	7/8	2-3/4	940798
0.1795	0.1795	7/8	2-3/4	940800
15	0.1800	7/8	2-3/4	940148
0.1805	0.1805	7/8	2-3/4	940802
0.1810	0.1810	7/8	2-3/4	940804
0.1814	0.1814	7/8	2-3/4	940806
0.1815	0.1815	7/8	2-3/4	940808
14	0.1820	7/8	2-3/4	940150
0.1825	0.1825	7/8	2-3/4	940810
0.1830	0.1830	7/8	2-3/4	940812
0.1835	0.1835	7/8	2-3/4	940814

Chucking Reamers

Micrograin Solid Carbide – Straight Shank – 4 & 6 Straight Flutes *(continued)*



Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.1840	0.1840	7/8	2-3/4	940816
0.1845	0.1845	7/8	2-3/4	940818
13	0.1850	7/8	2-3/4	940152
D/P	0.1855	7/8	2-3/4	940820
0.1860	0.1860	7/8	2-3/4	940822
U/S	0.1865	7/8	2-3/4	940824
D/P	0.1870	7/8	2-3/4	940826
0.1872	0.1872	7/8	2-3/4	940828
3/16	0.1875	7/8	2-3/4	940154
0.1880	0.1880	7/8	2-3/4	940830
O/S	0.1885	7/8	2-3/4	940832
12	0.1890	7/8	2-3/4	940156
0.1895	0.1895	7/8	2-3/4	940834
0.1900	0.1900	7/8	2-3/4	940836
0.1905	0.1905	7/8	2-3/4	940838
11	0.1910	7/8	2-3/4	940158
0.1915	0.1915	7/8	2-3/4	940840
0.1920	0.1920	1	3	940842
0.1925	0.1925	1	3	940844
0.1930	0.1930	1	3	940846
10	0.1935	1	3	940160
0.1940	0.1940	1	3	940848
0.1945	0.1945	1	3	940850
0.1950	0.1950	1	3	940852
0.1955	0.1955	1	3	940854
9	0.1960	1	3	940162
0.1965	0.1965	1	3	940856
5 mm	0.1969	1	3	940164
0.1970	0.1970	1	3	940858
0.1975	0.1975	1	3	940860
0.1980	0.1980	1	3	940862
0.1985	0.1985	1	3	940864
8	0.1990	1	3	940166
0.1995	0.1995	1	3	940866
0.2000	0.2000	1	3	940868
0.2005	0.2005	1	3	940870
7	0.2010	1	3	940168
0.2015	0.2015	1	3	940872
0.2020	0.2020	1	3	940874
0.2025	0.2025	1	3	940876
0.2030	0.2030	1	3	940878
13/64	0.2031	1	3	940170
0.2035	0.2035	1	3	940880
6	0.2040	1	3	940172
0.2045	0.2045	1	3	940882
0.2050	0.2050	1	3	940884
5	0.2055	1	3	940174
0.2060	0.2060	1	3	940886
0.2065	0.2065	1	3	940888
0.2070	0.2070	1	3	940890
0.2075	0.2075	1	3	940892
0.2080	0.2080	1	3	940894
0.2085	0.2085	1	3	940896
4	0.2090	1	3	940176
0.2095	0.2095	1	3	940898
0.2100	0.2100	1	3	940900
0.2105	0.2105	1	3	940902
0.2110	0.2110	1	3	940904
0.2115	0.2115	1	3	940906
0.2120	0.2120	1	3	940908

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.2125	0.2125	1	3	940910
3	0.2130	1	3	940178
0.2135	0.2135	1	3	940912
0.2140	0.2140	1	3	940914
0.2145	0.2145	1	3	940916
0.2150	0.2150	1	3	940918
0.2155	0.2155	1	3	940920
0.2160	0.2160	1	3	940922
5.5 mm	0.2165	1	3	940180
0.2170	0.2170	1	3	940924
0.2175	0.2175	1	3	940926
0.2177	0.2177	1	3	940928
0.2180	0.2180	1	3	940930
0.2185	0.2185	1	3	940932
7/32	0.2188	1	3	940182
0.2190	0.2190	1	3	940934
0.2195	0.2195	1	3	940936
0.2200	0.2200	1	3	940938
0.2205	0.2205	1	3	940940
2	0.2210	1	3	940184
0.2215	0.2215	1	3	940942
0.2220	0.2220	1	3	940944
0.2225	0.2225	1	3	940946
0.2230	0.2230	1	3	940948
0.2235	0.2235	1	3	940950
0.2240	0.2240	1	3	940952
0.2245	0.2245	1	3	940954
0.2250	0.2250	1	3	940956
0.2255	0.2255	1	3	940958
0.2260	0.2260	1	3	940960
0.2265	0.2265	1	3	940962
0.2270	0.2270	1	3	940964
0.2275	0.2275	1	3	940966
1	0.2280	1	3	940186
0.2285	0.2285	1	3	940968
0.2290	0.2290	1	3	940970
0.2295	0.2295	1	3	940972
0.2300	0.2300	1	3	940974
0.2305	0.2305	1	3	940976
0.2310	0.2310	1	3	940978
0.2315	0.2315	1	3	940980
0.2320	0.2320	1	3	940982
0.2325	0.2325	1	3	940984
0.2330	0.2330	1	3	940986
0.2335	0.2335	1	3	940988
A	0.2340	1	3	940188
15/64	0.2344	1	3	940190
0.2345	0.2345	1	3	940990
0.2350	0.2350	1	3	940992
0.2355	0.2355	1	3	940994
0.2360	0.2360	1	3	940996
6 mm	0.2362	1	3	940192
0.2365	0.2365	1	3	940998
0.2370	0.2370	1	3	941000
0.2375	0.2375	1	3	941002
B	0.2380	1	3	940194
0.2385	0.2385	1	3	941004
0.2390	0.2390	1	3	941006
0.2395	0.2395	1	3	941008
0.2400	0.2400	1	3	941010

Chucking Reamers

Micrograin Solid Carbide – Straight Shank – 4 & 6 Straight Flutes *(continued)*



Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.2405	0.2405	1	3	941012
0.2410	0.2410	1	3	941014
0.2415	0.2415	1	3	941016
C	0.2420	1	3	940196
0.2425	0.2425	1	3	941018
0.2430	0.2430	1	3	941020
0.2435	0.2435	1	3	941022
0.2440	0.2440	1	3	941024
0.2445	0.2445	1	3	941026
0.2450	0.2450	1	3	941028
0.2455	0.2455	1	3	941030
D	0.2460	1	3	940198
0.2465	0.2465	1	3	941032
0.2470	0.2470	1	3	941034
0.2475	0.2475	1	3	941036
D/P	0.2480	1	3	941038
0.2485	0.2485	1	3	941040
U/S	0.2490	1	3	941042
D/P	0.2495	1	3	941044
1/4	0.2500	1	3	940200
0.2505	0.2505	1	3	941046
O/S	0.2510	1	3	941048
0.2515	0.2515	1	3	941050
0.2520	0.2520	1	3	941052
0.2525	0.2525	1	3	941054
0.2530	0.2530	1	3	941056
0.2535	0.2535	1	3	941058
0.2540	0.2540	1	3	941060
0.2545	0.2545	1	3	941062
0.2550	0.2550	1	3	941064
6.5 mm	0.2559	1-1/8	3-1/4	940202
0.2560	0.2560	1-1/8	3-1/4	941066
0.2565	0.2565	1-1/8	3-1/4	941068
F	0.2570	1-1/8	3-1/4	940204
0.2575	0.2575	1-1/8	3-1/4	941070
0.2580	0.2580	1-1/8	3-1/4	941072
0.2590	0.2590	1-1/8	3-1/4	941074
0.2600	0.2600	1-1/8	3-1/4	941076
G	0.2610	1-1/8	3-1/4	940206
0.2620	0.2620	1-1/8	3-1/4	941078
0.2630	0.2630	1-1/8	3-1/4	941080
0.2635	0.2635	1-1/8	3-1/4	941082
0.2640	0.2640	1-1/8	3-1/4	941084
0.2650	0.2650	1-1/8	3-1/4	941086
17/64	0.2656	1-1/8	3-1/4	940208
H	0.2660	1-1/8	3-1/4	940210
0.2670	0.2670	1-1/8	3-1/4	941088
0.2680	0.2680	1-1/8	3-1/4	941090
0.2690	0.2690	1-1/8	3-1/4	941092
0.2700	0.2700	1-1/8	3-1/4	941094
0.2710	0.2710	1-1/8	3-1/4	941096
I	0.2720	1-1/8	3-1/4	940212
0.2730	0.2730	1-1/8	3-1/4	941098
0.2740	0.2740	1-1/8	3-1/4	941100
0.2750	0.2750	1-1/8	3-1/4	941102
7 mm	0.2756	1-1/8	3-1/4	940214
0.2760	0.2760	1-1/8	3-1/4	941104
J	0.2770	1-1/8	3-1/4	940216
0.2780	0.2780	1-1/8	3-1/4	941106
0.2790	0.2790	1-1/8	3-1/4	941108

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.2800	0.2800	1-1/8	3-1/4	941110
K	0.2810	1-1/8	3-1/4	940218
9/32	0.2812	1-1/8	3-1/4	940220
0.2818	0.2818	1-1/8	3-1/4	941112
0.2820	0.2820	1-1/8	3-1/4	941114
0.2830	0.2830	1-1/8	3-1/4	941116
0.2840	0.2840	1-1/8	3-1/4	941118
0.2850	0.2850	1-1/8	3-1/4	941120
0.2860	0.2860	1-1/8	3-1/4	941122
0.2870	0.2870	1-1/8	3-1/4	941124
0.2880	0.2880	1-1/8	3-1/4	941126
0.2890	0.2890	1-1/8	3-1/4	941128
L	0.2900	1-1/8	3-1/4	940222
0.2910	0.2910	1-1/8	3-1/4	941130
0.2920	0.2920	1-1/8	3-1/4	941132
0.2930	0.2930	1-1/8	3-1/4	941134
0.2940	0.2940	1-1/8	3-1/4	941136
M	0.2950	1-1/8	3-1/4	940224
7.5 mm	0.2953	1-1/8	3-1/4	940226
0.2960	0.2960	1-1/8	3-1/4	941138
19/64	0.2964	1-1/8	3-1/4	940228
0.2970	0.2970	1-1/8	3-1/4	941140
0.2980	0.2980	1-1/8	3-1/4	941142
0.2990	0.2990	1-1/8	3-1/4	941144
0.3000	0.3000	1-1/8	3-1/4	941146
0.3010	0.3010	1-1/8	3-1/4	941148
N	0.3020	1-1/8	3-1/4	940230
0.3030	0.3030	1-1/8	3-1/4	941150
0.3040	0.3040	1-1/8	3-1/4	941152
0.3050	0.3050	1-1/8	3-1/4	941154
0.3060	0.3060	1-1/8	3-1/4	941156
0.3070	0.3070	1-1/8	3-1/4	941158
0.3080	0.3080	1-1/8	3-1/4	941160
0.3090	0.3090	1-1/8	3-1/4	941162
0.3100	0.3100	1-1/8	3-1/4	941164
D/P	0.3105	1-1/8	3-1/4	941166
0.3110	0.3110	1-1/8	3-1/4	941168
U/S	0.3115	1-1/8	3-1/4	941170
D/P	0.3120	1-1/8	3-1/4	941172
5/16	0.3125	1-1/8	3-1/4	940232
0.3130	0.3130	1-1/8	3-1/4	941174
O/S	0.3135	1-1/8	3-1/4	941176
0.3140	0.3140	1-1/8	3-1/4	941178
8 mm	0.3150	1-1/8	3-1/4	940234
O	0.3160	1-1/8	3-1/4	940236
0.3170	0.3170	1-1/4	3-1/2	941180
0.3180	0.3180	1-1/4	3-1/2	941182
0.3190	0.3190	1-1/4	3-1/2	941184
0.3200	0.3200	1-1/4	3-1/2	941186
0.3210	0.3210	1-1/4	3-1/2	941188
0.3220	0.3220	1-1/4	3-1/2	941190
P	0.3230	1-1/4	3-1/2	940238
0.3240	0.3240	1-1/4	3-1/2	941192
0.3250	0.3250	1-1/4	3-1/2	941194
0.3260	0.3260	1-1/4	3-1/2	941196
0.3270	0.3270	1-1/4	3-1/2	941198
0.3280	0.3280	1-1/4	3-1/2	941200
21/64	0.3281	1-1/4	3-1/2	940240
0.3290	0.3290	1-1/4	3-1/2	941202
0.3300	0.3300	1-1/4	3-1/2	941204

Chucking Reamers

Micrograin Solid Carbide – Straight Shank – 4 & 6 Straight Flutes *(continued)*



Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.3310	0.3310	1-1/4	3-1/2	941206
Q	0.3320	1-1/4	3-1/2	940242
0.3330	0.3330	1-1/4	3-1/2	941208
0.3340	0.3340	1-1/4	3-1/2	941210
8.5 mm	0.3346	1-1/4	3-1/2	940244
0.3350	0.3350	1-1/4	3-1/2	941212
0.3360	0.3360	1-1/4	3-1/2	941214
0.3370	0.3370	1-1/4	3-1/2	941216
0.3380	0.3380	1-1/4	3-1/2	941218
R	0.3390	1-1/4	3-1/2	940246
0.3400	0.3400	1-1/4	3-1/2	941220
0.3410	0.3410	1-1/4	3-1/2	941222
0.3420	0.3420	1-1/4	3-1/2	941224
0.3430	0.3430	1-1/4	3-1/2	941226
11/32	0.3438	1-1/4	3-1/2	940248
0.3440	0.3440	1-1/4	3-1/2	941228
0.3450	0.3450	1-1/4	3-1/2	941230
0.3460	0.3460	1-1/4	3-1/2	941232
0.3470	0.3470	1-1/4	3-1/2	941234
S	0.3480	1-1/4	3-1/2	940250
0.3490	0.3490	1-1/4	3-1/2	941236
0.3500	0.3500	1-1/4	3-1/2	941238
0.3510	0.3510	1-1/4	3-1/2	941240
0.3520	0.3520	1-1/4	3-1/2	941242
0.3530	0.3530	1-1/4	3-1/2	941244
0.3540	0.3540	1-1/4	3-1/2	941246
9 mm	0.3543	1-1/4	3-1/2	940252
0.3550	0.3550	1-1/4	3-1/2	941248
0.3560	0.3560	1-1/4	3-1/2	941250
0.3570	0.3570	1-1/4	3-1/2	941252
T	0.3580	1-1/4	3-1/2	940254
0.3590	0.3590	1-1/4	3-1/2	941254
23/64	0.3594	1-1/4	3-1/2	940256
0.3600	0.3600	1-1/4	3-1/2	941256
0.3610	0.3610	1-1/4	3-1/2	941258
0.3620	0.3620	1-1/4	3-1/2	941260
0.3630	0.3630	1-1/4	3-1/2	941262
0.3640	0.3640	1-1/4	3-1/2	941264
0.3650	0.3650	1-1/4	3-1/2	941266
0.3660	0.3660	1-1/4	3-1/2	941268
0.3670	0.3670	1-1/4	3-1/2	941270
U	0.3680	1-1/4	3-1/2	940258
0.3690	0.3690	1-1/4	3-1/2	941272
0.3700	0.3700	1-1/4	3-1/2	941274
0.3710	0.3710	1-1/4	3-1/2	941276
0.3720	0.3720	1-1/4	3-1/2	941278
D/P	0.3730	1-1/4	3-1/2	941280
9.5 mm	0.3740	1-1/4	3-1/2	940260
D/P	0.3745	1-1/4	3-1/2	941282
3/8	0.3750	1-1/4	3-1/2	940262
0.3755	0.3755	1-1/4	3-1/2	941284
O/S	0.3760	1-1/4	3-1/2	941286
0.3765	0.3765	1-1/4	3-1/2	941288
V	0.3770	1-1/4	3-1/2	940264
0.3780	0.3780	1-1/4	3-1/2	941290
0.3790	0.3790	1-1/4	3-1/2	941292
0.3800	0.3800	1-1/4	3-1/2	941294
0.3810	0.3810	1-1/4	3-1/2	941296
0.3820	0.3820	1-1/4	3-1/2	941298
0.3830	0.3830	1-1/4	3-1/2	941300

Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
0.3840	0.3840	1-1/4	3-1/2	941302
0.3850	0.3850	1-1/4	3-1/2	941304
W	0.3860	1-1/4	3-1/2	940266
0.3870	0.3870	1-1/4	3-1/2	941306
0.3880	0.3880	1-1/4	3-1/2	941308
0.3890	0.3890	1-1/4	3-1/2	941310
0.3900	0.3900	1-1/4	3-1/2	941312
25/64	0.3906	1-1/4	3-1/2	940268
0.3910	0.3910	1-1/4	3-1/2	941314
0.3920	0.3920	1-1/4	3-1/2	941316
0.3930	0.3930	1-1/4	3-1/2	941318
10 mm	0.3937	1-1/4	3-1/2	940270
0.3940	0.3940	1-1/4	3-1/2	941320
0.3950	0.3950	1-1/4	3-1/2	941322
0.3960	0.3960	1-1/4	3-1/2	941324
X	0.3970	1-1/4	3-1/2	940272
0.3980	0.3980	1-1/4	3-1/2	941326
0.3990	0.3990	1-1/4	3-1/2	941328
0.4000	0.4000	1-1/4	3-1/2	941330
0.4010	0.4010	1-1/4	3-1/2	941332
0.4020	0.4020	1-1/4	3-1/2	941334
0.4030	0.4030	1-1/4	3-1/2	941336
Y	0.4040	1-1/4	3-1/2	940274
0.4050	0.4050	1-1/4	3-1/2	941338
0.4060	0.4060	1-1/4	3-1/2	941340
13/32	0.4062	1-1/4	3-1/2	940276
0.4070	0.4070	1-1/4	3-1/2	941342
0.4080	0.4080	1-1/4	3-1/2	941344
0.4090	0.4090	1-1/4	3-1/2	941346
0.4100	0.4100	1-1/4	3-1/2	941348
0.4110	0.4110	1-1/4	3-1/2	941350
0.4120	0.4120	1-1/4	3-1/2	941352
Z	0.4130	1-1/4	3-1/2	940278
10.5 mm	0.4134	1-1/4	3-1/2	940280
0.4140	0.4140	1-1/4	3-1/2	941354
0.4150	0.4150	1-1/4	3-1/2	941356
0.4160	0.4160	1-1/4	3-1/2	941358
0.4170	0.4170	1-3/8	4	941360
0.4180	0.4180	1-3/8	4	941362
0.4190	0.4190	1-3/8	4	941364
0.4200	0.4200	1-3/8	4	941366
0.4210	0.4210	1-3/8	4	941368
27/64	0.4219	1-3/8	4	940282
0.4230	0.4230	1-3/8	4	941370
0.4240	0.4240	1-3/8	4	941372
0.4250	0.4250	1-3/8	4	941374
0.4260	0.4260	1-3/8	4	941376
0.4270	0.4270	1-3/8	4	941378
0.4280	0.4280	1-3/8	4	941380
0.4290	0.4290	1-3/8	4	941382
0.4300	0.4300	1-3/8	4	941384
0.4310	0.4310	1-3/8	4	941386
0.4320	0.4320	1-3/8	4	941388
0.4330	0.4330	1-3/8	4	941390
11 mm	0.4331	1-3/8	4	940284
0.4340	0.4340	1-3/8	4	941392
0.4350	0.4350	1-3/8	4	941394
D/P	0.4355	1-3/8	4	941396
0.4360	0.4360	1-3/8	4	941398
U/S	0.4365	1-3/8	4	941400

Chucking Reamers

Micrograin Solid Carbide – Straight Shank – 4 & 6 Straight Flutes *(continued)*



Size	Decimal Equivalent (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
D/P	0.4370	1-3/8	4	941402
7/16	0.4375	1-3/8	4	940286
0.4380	0.4380	1-3/8	4	941404
O/S	0.4385	1-3/8	4	941406
0.4390	0.4390	1-3/8	4	941408
0.4400	0.4400	1-3/8	4	941410
0.4410	0.4410	1-3/8	4	941412
0.4420	0.4420	1-3/8	4	941414
0.4430	0.4430	1-3/8	4	941416
0.4440	0.4440	1-3/8	4	941418
0.4450	0.4450	1-3/8	4	941420
0.4460	0.4460	1-3/8	4	941422
0.4470	0.4470	1-3/8	4	941424
0.4480	0.4480	1-3/8	4	941426
0.4490	0.4490	1-3/8	4	941428
0.4500	0.4500	1-3/8	4	941430
0.4510	0.4510	1-3/8	4	941432
0.4520	0.4520	1-3/8	4	941434
11.5 mm	0.4528	1-3/8	4	940288
0.4530	0.4530	1-3/8	4	941436
29/64	0.4531	1-3/8	4	940290
0.4540	0.4540	1-3/8	4	941438
0.4550	0.4550	1-3/8	4	941440
0.4560	0.4560	1-3/8	4	941442
0.4570	0.4570	1-3/8	4	941444
0.4580	0.4580	1-3/8	4	941446
0.4590	0.4590	1-3/8	4	941448
0.4600	0.4600	1-3/8	4	941450
0.4610	0.4610	1-3/8	4	941452
0.4620	0.4620	1-3/8	4	941454
0.4630	0.4630	1-3/8	4	941456
0.4640	0.4640	1-3/8	4	941458
0.4650	0.4650	1-3/8	4	941460
0.4660	0.4660	1-3/8	4	941462
0.4670	0.4670	1-3/8	4	941464
0.4680	0.4680	1-3/8	4	941466
15/32	0.4688	1-3/8	4	940292
0.4690	0.4690	1-3/8	4	941468
0.4700	0.4700	1-3/8	4	941470
0.4710	0.4710	1-3/8	4	941472
0.4720	0.4720	1-3/8	4	941474
12 mm	0.4724	1-3/8	4	940294
0.4730	0.4730	1-3/8	4	941476
0.4740	0.4740	1-3/8	4	941478
0.4750	0.4750	1-3/8	4	941480
0.4760	0.4760	1-3/8	4	941482
0.4770	0.4770	1-3/8	4	941484
0.4780	0.4780	1-3/8	4	941486
0.4790	0.4790	1-1/2	4	941488
0.4800	0.4800	1-1/2	4	941490
0.4805	0.4805	1-1/2	4	941492
0.4810	0.4810	1-1/2	4	941494
0.4820	0.4820	1-1/2	4	941496
0.4830	0.4830	1-1/2	4	941498
0.4840	0.4840	1-1/2	4	941500
31/64	0.4844	1-1/2	4	940296
0.4850	0.4850	1-1/2	4	941502
0.4860	0.4860	1-1/2	4	941504
0.4870	0.4870	1-1/2	4	941506
0.4880	0.4880	1-1/2	4	941508
0.4890	0.4890	1-1/2	4	941510
0.4900	0.4900	1-1/2	4	941512
0.4910	0.4910	1-1/2	4	941514
12.5 mm	0.4921	1-1/2	4	940298
0.4930	0.4930	1-1/2	4	941516
0.4940	0.4940	1-1/2	4	941518
0.4950	0.4950	1-1/2	4	941520
0.4960	0.4960	1-1/2	4	941522
0.4970	0.4970	1-1/2	4	941524
D/P	0.4980	1-1/2	4	941526
U/S	0.4990	1-1/2	4	941528
D/P	0.4995	1-1/2	4	941530
1/2	0.5000	1-1/2	4	940300
0.5005	0.5005	1-1/2	4	940118
O/S	0.5010	1-1/2	4	941532
0.5015	0.5015	1-1/2	4	941534
0.5020	0.5020	1-1/2	4	941536
0.5030	0.5030	1-1/2	4	941538
0.5040	0.5040	1-1/2	4	941540
0.5050	0.5050	1-1/2	4	941542

Expansion Chucking Reamers

High Speed Steel – Straight & Taper Shanks – Straight Flutes





- The expansion feature allows the reamer to be sharpened to maintain the original size

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS		
				Straight Shank	Taper Shank	
				Code	Morse Taper	Code
1	1.0000	1-5/8	10-1/2	525611	3	525630
1-1/32	1.0312	1-5/8	10-1/2	525612	3	525631
1-1/16	1.0625	1-5/8	10-1/2	525613	3	525632
1-1/8	1.1250	1-3/4	11	525614	3	525633
1-5/32	1.1562	1-5/8	10-1/2	525615	3	525634
1-3/16	1.1875	1-3/4	11	525616	3	525635
1-7/32	1.2188	1-3/4	11	525617	4	525636
1-1/4	1.2500	1-7/8	11-1/2	525618	4	525637
1-5/16	1.3125	1-7/8	11-1/2	525619	4	525638
1-3/8	1.3750	2	12	525711	4	525639

Size (Inch)	Decimal Equiv. (Inch)	Flute Length (Inch)	Overall Length (Inch)	HSS		
				Straight Shank	Taper Shank	
				Code	Morse Taper	Code
1-7/16	1.4375	2	12	525712	4	525640
1-1/2	1.5000	2-1/8	12-1/2	525713	4	525641
1-9/16	1.5625	2-1/8	12-1/2	525714	4	525642
1-5/8	1.6250	2-1/4	13	525715	4	525643
1-11/16	1.6875	2-1/4	13	525716	4	525644
1-3/4	1.7500	2-3/8	13-1/2	525717	5	525645
1-13/16	1.8125	2-3/8	13-1/2	525718	5	525646
1-7/8	1.8750	2-1/2	14	525719	5	525647
1-15/16	1.9375	2-1/2	14	525730	5	525648
2	2.0000	2-1/2	14	525731	5	525649

Maximum Expansion to 1/2 = 0.006", to 1 = 0.010", to 1-1/2 = 0.012", 1-1/2 and over = 0.015"

Taper Bridge Reamers

High Speed Steel – Taper Shanks – Spiral & Straight Flutes





Full Diameter (Inch)	Approx. Point Diameter (Inch)	Flute Length (Inch)	Overall Length (Inch)	Taper	Taper Shank	
					Straight Flute	Spiral Flute
					Code	Code
5/16	11/64	4-3/8	8-1/4	2	–	600522
13/32	7/32	4-3/8	8-1/4	2	–	600523
7/16	17/64	4-3/8	8-1/4	2	600553	600524
15/32	9/32	5-1/8	9	2	600554	600525
1/2	5/16	5-1/8	9	2	600555	600526
17/32	11/32	5-1/8	9	2	600556	600527
9/16	3/8	5-1/8	9	2	600557	600528
5/8	25/64	6-1/8	10	3	600558	600529
11/16	13/32	7-1/8	11-3/4	3	600559	600530
3/4	15/32	7-3/8	12	3	600560	600531
13/16	35/64	7-3/8	12	3	600561	600532
7/8	39/64	7-3/8	12	3	600562	600533
15/16	43/64	7-3/8	12	3	600563	600534
1	47/64	7-3/8	12	3	600564	600535
1-1/16	13/16	7-3/8	12	3	600565	600536
1-1/8	55/64	7-3/8	12	3	600566	600537

Full Diameter (Inch)	Approx. Point Diameter (Inch)	Flute Length (Inch)	Overall Length (Inch)	Taper	Taper Shank	
					Straight Flute	Spiral Flute
					Code	Code
1-3/16	59/64	7-3/8	12	4	600567	600538
1-1/4	63/64	7-3/8	13	4	600568	600539
1-5/16	1-1/64	7-3/8	13	4	600569	600540
1-3/8	1-1/8	7-3/8	13	4	600570	600541
1-7/16	1-1/8	7-3/8	13	4	600571	600542
1-1/2	1-1/4	7-3/8	13	4	600572	600543
1-9/16	1-1/4	7-3/8	13	4	600573	600544
1-5/8	1-1/4	7-3/8	13	4	600574	600545
1-11/16	1-3/8	7-3/8	13	4	–	600546
1-3/4	1-7/16	7-3/8	13	4	–	600547
1-13/16	1-7/16	7-3/8	13	4	–	600548
1-7/8	1-1/2	7-3/8	13	4	–	600549
1-15/16	1-1/2	7-3/8	13	4	–	600550
2	1-3/4	7-3/8	13	4	–	600551

Taper Finishing Reamers

High Speed Steel – Straight & Taper Shanks – Straight Flutes





Morse Taper Finish	Small End Dia. (Inch)	Large End Dia. (Inch)	Flute Length (Inch)	Straight Flutes			
				Straight Shank		Taper Shank	
				Shank Dia. (Inch)	Code	Morse Taper Shank	Code
0	0.2503	0.3674	2-1/4	5/16	311440	0	311447
1	0.3674	0.5170	3	7/16	311441	1	311448

Morse Taper Finish	Small End Dia. (Inch)	Large End Dia. (Inch)	Flute Length (Inch)	Straight Flutes			
				Straight Shank		Taper Shank	
				Shank Dia. (Inch)	Code	Morse Taper Shank	Code
2	0.5696	0.7444	3-1/2	5/8	311442	2	311449
3	0.7748	0.9881	4-1/4	7/8	311443	3	311450
4	1.0167	1.2893	5-1/4	1-1/4	311444	4	311451
5	1.4717	1.8005	6-1/4	1-1/2	311445	5	311452
6	2.1120	2.5550	8-1/2	2	311446	6	311453

Taper Car Reamers

High Speed Steel – Hex Shanks – Spiral Flutes



Reamer Diameter (Inch)	Shank Diameter (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
13/16	1-1/4	5	7	600494
15/16	1-7/16	5	7	600495
1-1/16	1-5/8	5	7	600496

High Speed Steel – Taper Shanks – 5 Flute Left Hand Spiral – Right Hand Cut



Reamer Diameter (Incn)	Morse Taper	Flute Length (Inch)	Overall Length (Inch)	Code
5/16	1	2-3/4	5-11/16	600497
3/8	1	2-3/4	5-11/16	600498
7/16	2	3-1/2	6-15/16	600499
1/2	2	4	7-9/16	600500
9/16	2	4	7-9/16	600501
11/16	3	4-1/2	8-13/16	600503

Reamer Diameter (Incn)	Morse Taper	Flute Length (Inch)	Overall Length (Inch)	Code
3/4	3	5	9-1/2	600504
13/16	3	5	9-1/2	600505
15/16	3	5	9-1/2	600506
1	3	5	9-1/2	600507
1-1/16	3	5	9-1/2	600508

High Speed Steel – Straight Shanks with 3 Equal Flats – Spiral Flute



Reamer Diameter (Incn)	Shank Diameter (Inch)	Shank Length (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
5/16	5/16	1-1/2	2-3/4	4-5/8	600509
3/8	3/8	1-1/2	2-3/4	4-5/8	600510
7/16	7/16	1-1/2	3-1/2	5-3/8	600511
1/2	1/2	1-1/2	4	5-7/8	600512
9/16	1/2	1-1/2	4	5-7/8	600513
5/8	1/2	1-1/2	4-1/2	6-3/8	600514

Reamer Diameter (Incn)	Shank Diameter (Inch)	Shank Length (Inch)	Flute Length (Inch)	Overall Length (Inch)	Code
11/16	1/2	1-1/2	4-1/2	6-3/8	600515
3/4	1/2	1-1/2	5	6-7/8	600516
13/16	1/2	1-1/2	5	6-7/8	600517
7/8	1/2	1-1/2	5	6-7/8	600518
15/16	1/2	1-1/2	5	6-7/8	600519
1	1/2	1-1/2	5	6-7/8	600520
1-1/16	1/2	1-1/2	5	6-7/8	600521

Taper Pin Reamers

High Speed Steel – Straight & Spiral Flutes





Size	Small End Diameter (Inch)	Large End Diameter (Inch)	No. of Flutes	Flute Length (Inch)	Overall Length (Inch)	Shank Size (Inch)	Straight Flute Code	Spiral Flute Code
5/0	0.0719	0.0966	2	1-3/16	2-3/16	7/64	525122	525152
4/0	0.0869	0.1142	2	1-5/16	5-5/16	1/8	525123	525153
3/0	0.1029	0.1302	2	1-5/16	2-5/16	9/64	525124	525154
2/0	0.1137	0.1462	3	1-9/16	2-9/16	5/32	525125	525155
0	0.1287	0.1638	3	1-11/16	2-15/16	11/64	525126	525156
1	0.1447	0.1798	3	1-11/16	2-15/16	3/16	525127	525157
2	0.1605	0.2008	3	1-15/16	3-3/16	13/64	525128	525158
3	0.1813	0.2294	3	2-15/16	3-11/16	15/64	525129	525159
4	0.2071	0.2604	3	2-9/16	4-1/16	17/64	525130	525160
5	0.2409	0.2994	3	2-13/16	4-5/16	5/16	525131	525161
6	0.2773	0.3540	3	3-11/16	5-7/16	23/64	525132	525162
7	0.3297	0.4220	3	4-7/16	6-5/16	13/32	525133	525163
8	0.3971	0.5050	3	5-3/16	7-3/16	7/16	525134	525164
9	0.4805	0.6066	4	6-1/16	8-5/16	9/16	525135	525165
10	0.5799	0.7216	4	6-13/16	9-5/16	5/8	525136	525166

Taper Pipe Reamers

High Speed Steel – Spiral Flute



Size (Inch)	Small End Dia. (Inch)	Large End Dia. (Inch)	No. of Flutes	Flute Length (Inch)	Overall Length (Inch)	Shank Size (Inch)	Code
1/16	0.2450	0.2910	6	3/4	2	–	525100
1/8	0.3160	0.3620	6	3/4	2-1/8	0.4375	525101
1/4	0.4060	0.4620	6	1-1/16	2-7/16	0.5625	525102
3/8	0.5400	0.6060	8	1-1/16	2-9/16	0.7000	525103
1/2	0.6650	0.7510	8	1-3/8	3-1/8	0.6875	525104
3/4	0.8760	0.9620	10	1-3/8	3-1/4	0.9063	525105

Size (Inch)	Small End Dia. (Inch)	Large End Dia. (Inch)	No. of Flutes	Flute Length (Inch)	Overall Length (Inch)	Shank Size (Inch)	Code
1	1.1030	1.2120	10	1-3/4	3-3/4	1.1250	525106
1-1/4	1.4440	1.5530	10	1-3/4	4	1.3125	525107
1-1/2	1.6840	1.7930	10	1-3/4	4-1/4	1.5000	525108
2	2.1590	2.2680	12	1-3/4	4-1/2	1.8750	525109

Adjustable Hand Reamers

High Speed Steel



- Blades are adjusted by loosening one nut and tightening the other
- Each reamer expands to the next minimal size
- Sets supplied in fitted case

Size	Adjustment Range (Inch)	Blade Length (Inch)	Overall Length (Inch)	Code
8/A	1/4 – 9/32	1-11/32	3-1/4	535100
7/A	9/32 – 5/16	1-11/32	3-1/2	535101
6/A	5/16 – 11/32	1-1/2	4-1/8	535102
5/A	11/32 – 3/8	1-1/2	4-3/8	535103
4/A	3/8 – 13/32	1-1/2	4-3/4	535104
3/A	13/32 – 7/16	1-1/2	5	535105
2/A	7/16 – 15/32	1-5/8	5-1/4	535106
A	15/32 – 17/32	1-5/8	5-1/2	535107
B	17/32 – 19/32	1-13/16	5-3/4	535108
C	19/32 – 21/32	2-1/16	6-1/2	535109
D	21/32 – 23/32	2-3/16	6-3/4	535110
E	23/32 – 25/32	2-1/2	7	535111

Size	Adjustment Range (Inch)	Blade Length (Inch)	Overall Length (Inch)	Code
F	25/32 – 27/32	2-5/8	7-3/8	535112
G	27/32 – 15/16	3	8	535113
H	15/16 – 1-1/16	3-1/4	9	535114
I	1-1/16 – 1-3/16	3-3/8	10	535115
J	1-3/16 – 1-11/32	3-7/8	11	535116
K	1-11/32 – 1-1/2	4-1/4	12	535117
L	1-1/2 – 1-13/16	4-7/16	14	535118
M	1-13/16 – 2-7/32	5	16	535119
N	2-7/32 – 2-3/4	4-13/16	18	535120
O	2-3/4 – 3-11/32	5-3/16	20	535121
	SETS – 11 Pieces – Sizes A to K			535125

Shell Reamers

High Speed Steel – Straight & Spiral Flutes



O.D. TOLERANCE: 3/4 to 1" +0.0005", -0.0000"
Over 1" +0.0006", -0.0002"

Size (Inch)	Overall Length (Inch)	Hole Diameter (Inch)	Straight Flute Code	Spiral Flute Code
3/4	2-1/4	3/8	535210	535270
13/16	2-1/2	1/2	535211	535271
7/8	2-1/2	1/2	535212	535272
15/16	2-1/2	1/2	535213	535273
1	2-1/2	1/2	535214	535274
1-1/16	2-3/4	5/8	535215	535275
1-1/8	2-3/4	5/8	535216	535276
1-3/16	2-3/4	5/8	535217	535277
1-1/4	2-3/4	5/8	535218	535278
1-5/16	3	3/4	535220	535280
1-3/8	3	3/4	535222	535282
1-7/16	3	3/4	535224	535284
1-1/2	3	3/4	535226	535286
1-9/16	3	3/4	535228	535288
1-5/8	3	3/4	535229	535289
1-11/16	3-1/2	1	535231	535291
1-3/4	3-1/2	1	535232	535292
1-13/16	3-1/2	1	535233	535293
1-7/8	3-1/2	1	535235	535295
1-15/16	3-1/2	1	535237	535297
2	3-1/2	1	535239	535299
2-1/16	3-3/4	1-1/4	535240	535300
2-1/8	3-3/4	1-1/4	535241	535301
2-3/16	3-3/4	1-1/4	535242	535302
2-1/4	3-3/4	1-1/4	535243	535303
2-5/16	3-3/4	1-1/4	535244	535304

Size (Inch)	Overall Length (Inch)	Hole Diameter (Inch)	Straight Flute Code	Spiral Flute Code
2-3/8	3-3/4	1-1/4	535245	535305
2-7/16	3-3/4	1-1/4	535246	535306
2-1/2	3-3/4	1-1/4	535247	535307
2-9/16	4	1-1/2	535248	535308
2-5/8	4	1-1/2	535249	535309
2-11/16	4	1-1/2	535250	535310
2-3/4	4	1-1/2	535251	535311
2-13/16	4	1-1/2	535252	535312
2-7/8	4	1-1/2	535253	535313
2-15/16	4	1-1/2	535254	535314
3	4	1-1/2	535255	535315
3-1/16	4-1/2	1-3/4	535200	535324
3-1/8	4-1/2	1-3/4	535256	535316
3-3/16	4-1/2	1-3/4	535201	535325
3-1/4	4-1/2	1-3/4	535257	535317
3-5/16	4-1/2	1-3/4	535202	535326
3-3/8	4-1/2	1-3/4	535258	535318
3-7/16	4-1/2	1-3/4	535203	535327
3-1/2	4-1/2	1-3/4	535259	535319
3-9/16	5	2	535204	535328
3-5/8	5	2	535260	535320
3-11/16	5	2	535205	535329
3-3/4	5	2	535261	535321
3-13/16	5	2	535206	535330
3-7/8	5	2	535262	535322
3-15/16	5	2	535207	535331
4	5	2	535263	535323

Shell Reamer Arbors

Straight & Taper Shanks



Size (Inch)	Reference Location Diameter (Inch)	Fits Smallest Reamer Size (Inch)	Fits Largest Reamer Size (Inch)	Overall Length (Inch)	Straight Shank		Taper Shank	
					Shank Diameter (Inch)	Code	Morse Taper	Code
4	3/8	21/32	25/32	9	1/2	535340	2	535350
5	1/2	13/16	1-1/32	9-1/2	5/8	535341	2	535351
6	5/8	1-1/16	1-9/32	10	3/4	535342	3	535352
7	3/4	1-5/16	1-21/32	11	7/8	535343	3	535353
8	1	1-11/16	2	12	1-1/8	535344	4	535354
9	1-1/4	2-1/16	2-1/2	13	1-3/8	535345	4	535355
10	1-1/2	2-9/16	3	14	1-5/8	535346	5	535356
11	1-3/4	3-1/16	3-1/2	15	2	535347	5	535357
12	2	3-9/16	4	16	2-1/8	535348	–	–

Counterbores

High Speed Steel – Solid Pilot – 3 Flute – Straight & Taper Shanks





Screw Size	Cutter Diameter	Pilot Diameter	Overall Length (Inch)	Straight Shank		Taper Shank	
				Shank Diameter (Inch)	Code	Morse Taper	Code
No. 5	7/32”	9/64”	3	3/16	545771	–	–
No. 6	1/4”	5/32”	3	7/32	545772	–	–
No. 8	19/64”	11/64”	3	1/4	545772	–	–
No. 10	21/64”	13/64”	3	5/16	545774	–	–
1/4	13/32”	9/32”	3-1/2	3/8	545775	2	545785
5/16	1/2”	11/32”	5	7/16	545776	2	545786
3/8	19/32”	13/32”	5	1/2	545777	2	545787
7/16	11/16”	15/32”	6	1/2	545778	2	545788
1/2	25/32”	17/32”	7	1/2	545779	2	545789
5/8	31/32”	21/32”	7-1/2	3/4	545780	2	545790
3/4	1-3/16”	13/16”	8	1	545781	3	545791
7/8	1-3/8”	15/16”	8	1	545782	3	545792
1	1-9/16”	1-1/16”	10	1	545784	3	545794
M3	6 mm	3.4 mm	–	7/32	545803	–	–
M4	8 mm	4.5 mm	–	5/16	545804	–	–
M5	10 mm	5.5 mm	–	3/8	545805	–	–
M6	11 mm	6.6 mm	–	7/16	545806	–	–
M8	15 mm	9 mm	–	1/2	545808	–	–
M10	18 mm	11 mm	–	1/2	545810	–	–
M12	20 mm	14 mm	–	1/2	545812	–	–
M14	24 mm	15 mm	–	–	–	2	545814
M16	26 mm	17 mm	–	–	–	2	545816
M20	33 mm	21 mm	–	–	–	2	545820

Counterbores

High Speed Steel – With Interchangeable Pilot Holes – Straight & Taper Shanks





Diameter (Inch)	Overall Length (Inch)	Shank Length (Inch)	No. of Flutes	Hole Diameter (Inch)	Straight Shank		Taper Shank	
					Shank Diameter (Inch)	Code	Morse Taper	Code
1/4	3-13/16	3-1/16	3	3/32	15/64	525650	–	–
9/32	3-13/16	3-1/16	3	3/32	17/64	525651	1	525751
5/16	3-13/16	3-1/16	3	3/32	19/64	525652	1	525752
11/32	3-13/16	3-1/16	3	3/32	5/16	525653	1	525753
3/8	4-1/16	3-1/16	3	5/32	5/16	525654	1	525754
13/32	4-1/16	3-1/16	3	5/32	3/8	525655	1	525755
7/16	4-1/16	3-1/16	3	5/32	3/8	525656	1	525756
15/32	4-5/16	3-1/16	3	3/16	7/16	525657	1	525757
1/2	4-5/16	3-1/16	3	3/16	7/16	525658	1	525758
17/32	4-5/16	3-1/16	3	3/16	1/2	525659	1	525759
9/16	4-5/16	3-1/16	3	3/16	1/2	525660	1	525760
19/32	5-1/8	3-7/8	3	3/16	1/2	525661	2	525761
5/8	5-1/8	3-7/8	3	3/16	1/2	525662	2	525762
21/32	5-1/8	3-7/8	3	3/16	1/2	525663	2	525763
11/16	5-1/8	3-7/8	3	3/16	1/2	525664	2	525764
23/32	5-3/8	3-7/8	3	1/4	1/2	525665	2	525765
3/4	5-3/8	3-7/8	3	1/4	1/2	525666	2	525766

Counterbores

High Speed Steel – With Interchangeable Pilot Holes – Straight & Taper Shanks *(continued)*



Diameter (Inch)	Overall Length (Inch)	Shank Length (Inch)	No. of Flutes	Hole Diameter (Inch)	Straight Shank		Taper Shank	
					Shank Diameter (Inch)	Code	Morse Taper	Code
25/32	5-3/8	3-7/8	3	1/4	5/8	525667	2	525767
13/16	5-3/8	3-7/8	3	1/4	5/8	525668	2	525768
27/32	5-3/8	3-7/8	3	1/4	3/4	525669	–	–
7/8	5-3/8	3-7/8	3	1/4	3/4	525670	2	525769
29/32	6-1/8	4-5/8	3	1/4	3/4	525671	–	–
15/16	6-1/8	4-5/8	3	1/4	3/4	525672	3	525770
31/32	6-3/8	4-5/8	3	5/16	3/4	525673	–	–
1	6-3/8	4-5/8	3	5/16	3/4	525674	3	525771
1-1/16	6-3/8	4-5/8	3	5/16	3/4	525675	3	525772
1-1/8	6-3/8	4-5/8	3	5/16	1	525676	3	525773
1-3/16	6-3/8	4-5/8	3	5/16	1	525677	3	525774
1-1/4	6-5/8	4-5/8	5	3/8	1	525678	3	525775
1-5/16	6-5/8	4-5/8	5	3/8	1	525685	3	525776
1-3/8	6-5/8	4-5/8	5	3/8	1	525679	3	525777
1-7/16	7-7/8	5-7/8	5	3/8	1-1/4	525686	4	525790
1-1/2	7-7/8	5-7/8	5	3/8	1-1/4	525680	4	525778
1-5/8	8-1/8	5-7/8	5	7/16	1-1/4	525681	4	525779
1-11/16	8-1/8	5-7/8	5	7/16	1-1/4	525688	4	525792
1-3/4	8-1/8	5-7/8	5	7/16	1-1/4	525682	4	525780
1-13/16	8-1/8	5-7/8	5	7/16	–	–	4	525793
1-7/8	8-1/8	5-7/8	5	7/16	1-1/2	525683	4	525781
2	8-3/8	5-7/8	5	1/2	1-1/2	525684	4	525782
2-1/8	9-7/8	5-7/8	5	1/2	–	–	5	525783
2-1/4	9-7/8	5-7/8	5	1/2	–	–	5	525784
2-3/8	9-7/8	7-3/8	5	1/2	–	–	5	525785
2-1/2	9-7/8	7-3/8	5	1/2	–	–	5	525786

Counterbore Pilots

Precision Ground



- Pilots of different diameters can be used with each counterbore
- Used in spot facing and counterboring operations with same pilot
- A wide range of pilots can be used with each tool *(The shank diameter must be the same as the pilot hole size in the counterbore)*

Pilot Diameter (Inch)	Shank Diameter (Inch)							
	3/32	5/32	3/16	1/4	5/16	3/8	7/16	1/2
	Code	Code	Code	Code	Code	Code	Code	Code
1/8	311586	–	–	–	–	–	–	–
5/32	311587	–	–	–	–	–	–	–
3/16	311588	311593	–	–	–	–	–	–
7/32	311589	311594	311600	–	–	–	–	–
1/4	311590	311595	311601	–	–	–	–	–
9/32	311591	311596	311602	311615	–	–	–	–
5/16	311592	311597	311603	311616	–	–	–	–
11/32	–	311598	311604	311617	–	–	–	–
3/8	–	311599	311605	311618	311634	–	–	–
13/32	–	–	311606	311619	311635	311656	–	–
7/16	–	–	311607	311620	311636	311657	–	–
15/32	–	–	311608	311621	311637	311658	–	–
1/2	–	–	311609	311622	311638	311659	311682	–
17/32	–	–	311610	311623	311639	311660	311683	–
9/16	–	–	311611	311624	311640	311661	311684	311712
19/32	–	–	311612	311625	311641	311662	311685	–
5/8	–	–	311613	311626	311642	311663	–	311713
21/32	–	–	311614	311627	311643	311664	311687	–



Counterbore Pilots

Precision Ground *(continued)*

Pilot Diameter (Inch)	Shank Diameter (Inch)							
	3/32	5/32	3/16	1/4	5/16	3/8	7/16	1/2
	Code	Code	Code	Code	Code	Code	Code	Code
11/16	–	–	–	311628	311644	311665	311688	311714
23/32	–	–	–	311629	311645	311666	311689	–
3/4	–	–	–	311630	311646	311667	311690	311715
25/32	–	–	–	311631	311647	311668	311691	311716
13/16	–	–	–	311632	311648	311669	311692	311717
7/8	–	–	–	311633	311649	311670	311693	311718
29/32	–	–	–	–	311650	311671	311694	311719
15/16	–	–	–	–	311651	311672	311695	311720
31/32	–	–	–	–	311652	311673	311696	311721
1	–	–	–	–	311653	311674	311697	311722
1-1/16	–	–	–	–	311654	311675	311698	311723
1-1/8	–	–	–	–	311655	311676	311699	311724
1-3/16	–	–	–	–	–	311677	311700	311725
1-1/4	–	–	–	–	–	311678	311701	311726
1-5/16	–	–	–	–	–	311679	311702	311727
1-3/8	–	–	–	–	–	311680	311703	311728
1-7/16	–	–	–	–	–	311681	311704	–
1-1/2	–	–	–	–	–	–	311705	311730
1-9/16	–	–	–	–	–	–	311706	311731
1-5/8	–	–	–	–	–	–	311707	311732
1-11/16	–	–	–	–	–	–	311708	311733
1-3/4	–	–	–	–	–	–	311709	311734
1-13/16	–	–	–	–	–	–	–	311735
1-7/8	–	–	–	–	–	–	–	311736
1-15/16	–	–	–	–	–	–	–	311737
2	–	–	–	–	–	–	–	311738

Indexable Counterbores

Carbide – For Sockethead Cap Screw Holes

- Significant increase in cutting speeds over high speed steel
- No regrinding
- One carbide insert fits all size holders
- Outlasts high speed on abrasive materials
- No clamps to impede chip flow
- C5/C6 carbide insert and Torx® wrench included with each tool

Holders & Sets

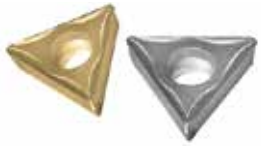




Cap Screw Size (Inch)	Pilot Diameter (Inch)	Outer Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	No. of Flutes	Code
3/8	13/32	19/32	1/2	4-3/8	1	311032
7/16	15/32	11/16	1/2	4-7/16	1	311033
1/2	17/32	25/32	5/8	4-1/2	1	311034
5/8	21/32	31/32	5/8	4-5/8	2	311035
3/4	13/16	1-3/16	3/4	4-3/4	3	311036
7/8	15/16	1-3/8	3/4	4-7/8	3	311038
1	1-1/16	1-9/16	3/4	5	3	311038
SETS – 4 Pieces – 3/8", 7/16", 1/2", 5/8", Torx® wrench Supplied in wooden block						311039
SETS – 3 Pieces – 3/4", 7/8", 1", Torx® wrench Supplied in wooden block						311040

Carbide TPGH Inserts

- Triangle – positive rake
- Ground all over
- Chip groove on one side



Type	Radius (Inch)	I.C. (Inch)	Thickness (Inch)	Code
C2 Carbide	1/64	1/4	3/32	577459
C5 Carbide	1/64	1/4	3/32	577461
TiN Coated	0.008	1/4	3/32	210357
TiN Coated	1/64	1/4	3/32	577463

Replacement Screw

Description	Code
Torx® 6 screw for 1/4 inserts	577457

Cap Screw Counterbores Multil-Tool System

Forward Counterbore Set

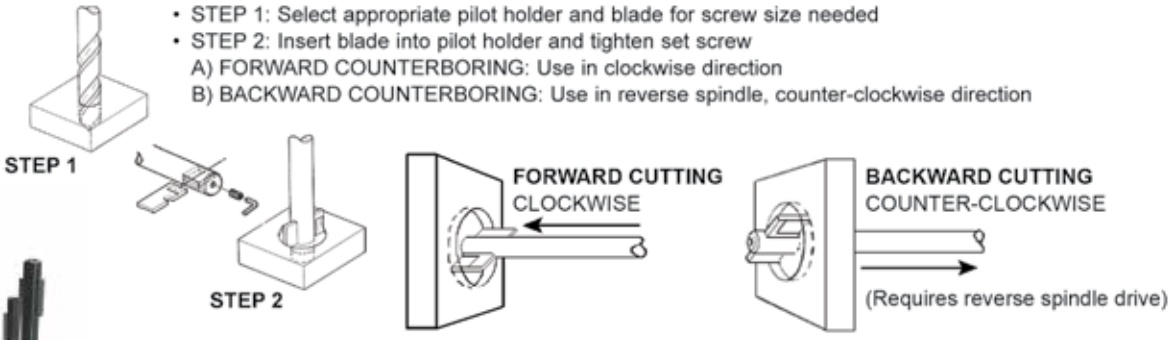


OPERATION FOR FORWARD AND BACKWARD APPLICATIONS

- STEP 1: Select appropriate pilot holder and blade for screw size needed
- STEP 2: Insert blade into pilot holder and tighten set screw

A) FORWARD COUNTERBORING: Use in clockwise direction

B) BACKWARD COUNTERBORING: Use in reverse spindle, counter-clockwise direction



- Simple design for standard cap screws
- More chip clearance
- Used in confined areas
- Using the same pilot holder you can forward counterbore or backward counterbore and spotface

Description	Code
SETS – 10 Pieces – One blade and one pilot holder for screw sizes No. 10, 1/4", 5/16", 3/8", and 1/2"	311031

Countersinks – 3 Flute

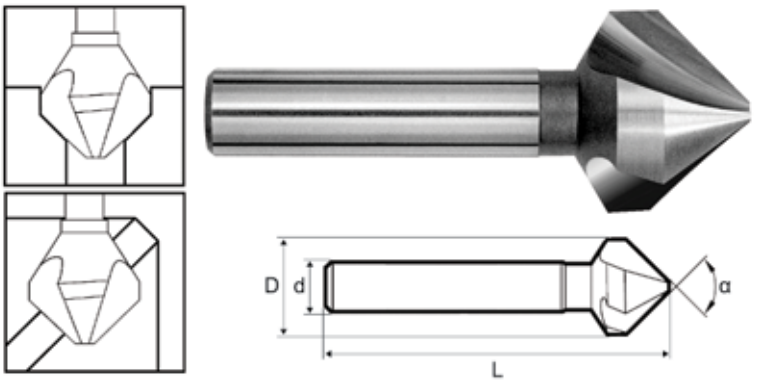
Metric – Cobalt M35, TiN Coated & Carbide

This highly productive countersinking cutter is a much improved version of the traditional multiflute milling cutter:

- 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

Dimensions are adapted so as to sink 90 degree screw caps up to M12. We recommend lubricating.

Carbide:
Diameter 12.4 to 31 = 3 flatted shanks
Diameter 4.3 to 8.3 = cylindrical shank
Diameter 10.4 to 31 = brazed carbide head



Metric – Cobalt M35 & TiN Coated – 60°, 82°, 90°, 100°, & 120° Angles

D Overall Diameter (mm)	d Shank Diameter (mm)	Chamfer Range Min/Max (mm)	L Overall Length (Inch)	60° Angle Series 432	82° Angle Series 434	82° Angle Series 4834 - TiN	90° Angle Series 431	90° Angle Series 4831 - TiN	100° Angle Series 435	120° Angle Series 433
				Code	Code	Code	Code	Code	Code	Code
10.4	6	2.5-10.4	2	540301	540311	540361	540321	540371	540331	540341
16.5	10	3.2-16.5	2-1/4	540302	540312	540362	540322	540372	540332	540342
20.5	10	3.5-20.5	2-1/2	540303	540313	540363	540323	540373	540333	540343
25.0	10	3.8-25	2-5/8	540304	540314	540364	540324	540374	540334	540344
31.0	12	4.2-31	2-3/4	540305	540315	540365	540325	540375	540335	540345
40.0	16	8-40	4-1/2	–	–	–	*540326	–	–	–
50.0	16	10-50	5	–	–	–	*540327	–	–	–
63.0	16	10-63	5-1/2	–	–	–	*540328	–	–	–
80.0	16	14-80	6-1/2	–	–	–	*540329	–	–	–

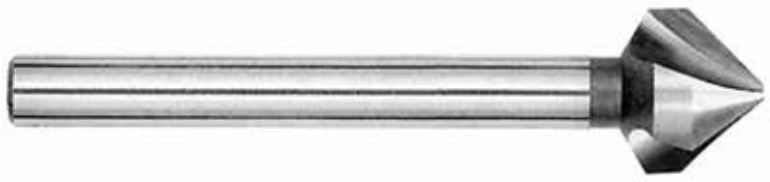
**Three gripping flats on shank*

FLAT HEAD SCREWS	82° = SAE (UNF, UNC)	90° = Metric	100° = Aviation

Countersinks – 3 Flute

Metric – Cobalt M35, TiN Coated & Carbide *(continued)*

Metric – Cobalt – 90° Angle – Extra-Long



D Overall Diameter (mm)	d Shank Diameter (mm)	Chamfer Range Min/Max (mm)	L Overall Length (mm)	Series 4303 Code
6.3	6	1.3-6.3	3.3	540500
8.3	8	1.8-8.3	3.3	540501
10.4	10	2.2-10.4	3.42	540502
12.4	10	2.5-12.4	4.25	540503

D Overall Diameter (mm)	d Shank Diameter (mm)	Chamfer Range Min/Max (mm)	L Overall Length (mm)	Series 4303 Code
16.5	16	2.8-16.5	4.4	540504
20.5	16	3-20.5	4.52	540505
25	20	3.2-25	4.64	540506

Metric – Carbide – 90° Angle

Hard'X: AlTiN carbide tool coating with a high hardness of 3500 HV. This coating shows high thermic stability and excellent protection against heat and wear. Ideal for dry machining – high speed cut – in treated steels and dies up to 67 HRC

D Overall Diameter (mm)	d Shank Diameter (mm)	Chamfer Range Min/Max (mm)	L Overall Length (mm)	Series 8431 Code	Hard'X Series 8431-H Code
4.3	4	1.3-4.3	40	314357	314387
5.3	4	1.3-5.3	40	314360	314390
6.3	5	1.3-6.3	45	314363	314393
8.3	6	1.8-8.3	50	314366	314396
10.4	6	2.2-10.4	50	314369	314399
12.4	8	2.5-12.4	56	314372	314402

D Overall Diameter (mm)	d Shank Diameter (mm)	Chamfer Range Min/Max (mm)	L Overall Length (mm)	Series 8431 Code	Hard'X Series 8431-H Code
16.5	10	2.8-16.5	60	314375	314405
20.5	10	3-20.5	63	314378	314408
25	10	3.2-25	67	314381	314411
31	12	3.5-31	71	314384	314414

Metric – Carbide – 90° Angle – Extra-Long

D Overall Diameter (mm)	d Shank Diameter (mm)	Chamfer Range Min/Max (mm)	L Overall Length (mm)	Series 8431-L Code
6.3	6	1.3-6.3	84	314417
8.3	8	1.8-8.3	85	314420
10.4	10	2.2-10.4	87	314423
12.4	10	2.5-12.4	108	314426

D Overall Diameter (mm)	d Shank Diameter (mm)	Chamfer Range Min/Max (mm)	L Overall Length (mm)	Series 8431-L Code
16.5	16	2.8-16.5	112	314429
20.5	16	3-20.5	115	314432

Metric – Cobalt M35 & TiN Coated – 5-Piece Sets

- Sizes included: 10.4, 16.5, 20.5, 25 and 31mm (for other dimension see above "Cobalt M35 – 60º, 82º, 90º, 100º, and 120º Angles")
- Supplied in fitted storage case



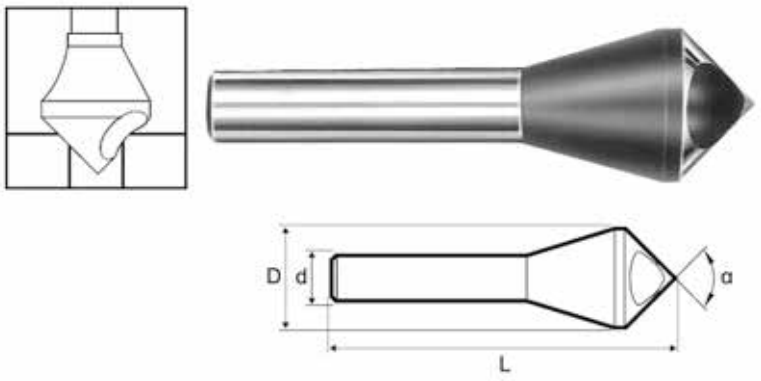
Included Angle	Cobalt M35 Code	TiN Coated Code
60°	540351	541351
82°	540352	541352
90°	540353	541353
100°	540354	541354
120°	540355	541355

FLAT HEAD SCREWS | **82º = SAE (UNF, UNC)** | **90º = Metric** | **100º = Aviation**

Countersinks – Chatterless with Hole

Cobalt M35 & TiN Coated

- The hole-style deburring tool is designed to countersink and chamfer light metals and plastics
- The finish is smooth and free of burrs
- Lubrication is recommended



Inch & Metric – Cobalt M35 & TiN Coated – 60º, 82º, 90º, 100º, & 120º Angles

D Overall Diameter (Inch)	D Overall Diameter (mm)	d Shank Diameter	Chamfer Range Min/Max	L Overall Length (Inch)	60º Angle Series 412	82º Angle Series 414	82º Angle Series 4814 - TiN	90º Angle Series 411	90º Angle Series 4811	100º Angle Series 415	120º Angle Series 413
					Code	Code	Code	Code	Code	Code	Code
1/4	–	1/4”	0.08”-0.20”	1-3/4	♦601076	♦601081	601281	♦601086	601286	–	–
–	10	6 mm	4 mm-9 mm	1-3/4	540101	540111	541111	540121	541121	540131	540141
7/16	–	1/4”	0.20”-0.39”	1-3/4	601077	601082	601282	601087	601287	–	–
9/16	–	1/4”	0.24”-0.51”	2	601078	601083	601283	601088	601288	–	–
–	15	8 mm	6 mm-14 mm	2	540102	540112	541112	540122	541122	540132	540142
–	20	10 mm	8 mm-18 mm	2-1/2	540103	540113	541113	540123	541123	540133	540143
13/16	–	1/2”	0.31”-0.70”	2-5/8	601079	601084	601284	601089	601289	–	–
–	25	12 mm	10 mm-23 mm	3	540104	540114	541114	540124	541124	540134	540144
–	30	12 mm	12 mm-28 mm	3-1/2	540105	540115	541115	540125	541125	540135	540145
1-3/16	–	1/2”	0.47”-1.10”	3-1/2	601080	601085	601285	601090	601290	–	–
–	35	16 mm	14 mm-33 mm	4	*540106	*540116	541136	*540126	541126	*540136	*540146
–	40	16 mm	16 mm-38 mm	4-1/2	–	–	–	540127	–	–	–
–	50	16 mm	20 mm-48 mm	5	–	–	–	540128	–	–	–

♦ *Double Ended*
* *Three gripping flats on shank*

Inch & Metric – Cobalt M35 & TiN Coated – 5-Piece Sets

- Sizes included: Inch – 1/4”, 7/16”, 9/16”, 13/16” and 1-3/16”
  Metric – 10 mm, 15 mm, 20 mm, 25 mm and 30 mm
  (for other dimension see above “Cobalt M35 – 60º, 82º, 90º, 100º, and 120º Angles”)
- Supplied in fitted storage case



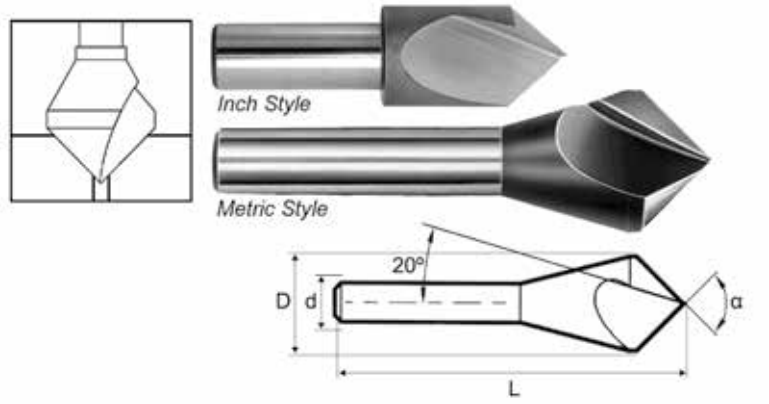
Included Angle	Inch Cobalt 35	Inch TiN Coated	Metric Cobalt 35	Metric TiN Coated
	Code	Code	Code	Code
60°	601091	601291	540151	541151
82°	601092	601292	540152	541152
90°	601093	601293	540153	541153
100°	–	–	540154	541154
120°	–	–	540155	541155

FLAT HEAD SCREWS	82º = SAE (UNF, UNC)	90º = Metric	100º = Aviation

Countersinks – Single Flute

Cobalt M35 & TiN Coated

- Chamfers to outside diameter
- Up sharp cutting edge for smooth finish
- Lubrication is recommended
- Can be reground



Inch & Metric – Cobalt M35 & TiN Coated – 60°, 82°, 90°, 100°, & 120° Angles

D Overall Diameter (Inch)	D Overall Diameter (mm)	d Shank Diameter	Chamfer Range Min/Max	L Overall Length (Inch)	60° Angle Series 422	82° Angle Series 424	82° Angle Series 4824 TiN	90° Angle Series 421	90° Angle Series 4821 TiN	100° Angle Series 425	120° Angle Series 423
					Code	Code	Code	Code	Code	Code	Code
1/8	–	1/8”	0”-1/8”	1-1/4	601094	601105	601305	601116	601416	–	–
3/16	–	3/16”	1/64”-3/16”	1-3/8	601095	601106	601306	601117	601417	–	–
1/4	–	1/4”	1/32”-1/4”	1-1/2	601096	601107	601307	601118	601418	–	–
5/16	–	1/4”	1/32”-5/16”	1-3/4	601097	601108	601308	601119	601419	–	–
3/8	–	1/4”	1/32”-3/8”	1-3/4	601098	601109	601309	601120	601420	–	–
–	10	6 mm	1 mm-10 mm	1-3/4	540201	540211	541211	540221	541221	540231	540241
1/2	–	1/4”	1/16”-1/2”	2	601099	601110	601310	601121	601421	–	–
–	15	8 mm	2 mm-15 mm	2-1/8	540202	540212	541212	540222	541222	540232	540242
5/8	–	3/8”	1/16”-5/8”	2-1/4	601100	601111	601311	601122	601422	–	–
3/4	–	1/2”	1/16”-3/4”	2-9/16	601101	601112	601312	601123	601423	–	–
–	20	10 mm	2 mm-20 mm	2-9/16	540203	540213	541213	540223	541223	540233	540243
7/8	–	1/2”	1/16”-7/8”	2-3/4	601102	601113	601313	601124	601424	–	–
–	25	12 mm	3 mm-25 mm	3	540204	540214	541214	540224	541224	540234	540244
1	–	1/2”	1/8”-1”	3	601103	601114	601314	601125	601425	–	–
–	30	12 mm	3 mm-30 mm	3-1/2	540205	540215	541215	540225	541225	540235	540245
1-1/4	–	1/2”	1/8”-1-1/4”	2-3/4	601104	601115	601315	601126	601426	–	–
–	35	16 mm	4 mm-35 mm	4	–	–	–	*540226	541226	–	–
–	40	16 mm	5 mm-40 mm	4-1/2	–	–	–	*540227	541227	–	–
–	50	16 mm	12 mm-50 mm	5	–	–	–	*540228	541228	–	–
–	63	MT3	12 mm-63 mm	7-5/32	–	–	–	540229	–	–	–

**Three gripping flats on shank*

Inch & Metric – Cobalt M35 & TiN Coated – 5 & 6-Piece Sets

- Sizes included: Inch – 1/4”, 5/16”, 3/8”, 1/2”, 5/8” and 3/4”
  Metric – 10mm, 15mm, 20mm, 25mm and 30mm
  (for other dimension see above “Cobalt M35 – 60°, 82°, 90°, 100°, and 120° Angles”)
- Supplied in fitted storage case



Included Angle	Inch 6-Piece Set Cobalt 35	Inch 6-Piece Set TiN Coated	Metric 5-Piece Set Cobalt 35	Metric 5-Piece Set TiN Coated
	Code	Code	Code	Code
60°	601127	601227	540251	541251
82°	601128	601228	540252	541252
90°	601129	601229	540253	541253
100°	–	–	540254	541254
120°	–	–	540255	541255

FLAT HEAD SCREWS	82° = SAE (UNF, UNC)	90° = Metric	100° = Aviation

Countersinks – Chatterless – 6 Flute

High Speed Steel & Cobalt



- Designed for fast shearing cut

Inch – High Speed Steel & Cobalt – 60°, 82°, & 90° Angles

Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	HSS			Cobalt		
			60° Angle	82° Angle	90° Angle	60° Angle	82° Angle	90° Angle
			Code	Code	Code	Code	Code	Code
1/4	1/4	2	601130	601142	601154	601166	601178	601190
5/16	1/4	2	601131	601143	601155	601167	601179	601191
3/8	1/4	2	601132	601144	601156	601168	601180	601192
1/2	1/4	2	601133	601145	601157	601169	601181	601193
5/8	1/2	2-3/4	601134	601146	601158	601170	601182	601194
3/4	1/2	2-3/4	601135	601147	601159	601171	601183	601195
7/8	1/2	2-3/4	601136	601148	601160	601172	601184	601196
1	1/2	2-3/4	601137	601149	601161	601173	601185	601197
1-1/4	3/4	3-3/8	601138	601150	601162	601174	601186	601198
1-1/2	3/4	3-1/2	601139	601151	601163	601175	601187	601199
1-3/4	1	4-1/4	601140	601152	601164	601176	601188	601200
2	1	4-3/8	601141	601153	601165	601177	601189	601201

Countersinks – Single Flute

Carbide – Steel Shanks



- For mild steels

Inch – 82°, 90° Angles

Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	82° Included Angle	90° Included Angle
			Code	Code
1/8	1/8	1-1/2	950024	950048
3/16	3/16	1-1/2	950026	950050
1/4	1/4	2	950028	950052
3/8	1/4	2-7/16	950030	950054

Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	82° Included Angle	90° Included Angle
			Code	Code
1/2	1/4	2-1/2	950032	950056
5/8	1/4	2-5/8	950034	950058
3/4	3/8	2-7/8	950036	950060
1	1/2	3	950038	950062

FLAT HEAD SCREWS | **82° = SAE (UNF, UNC)** **90° = Metric** **100° = Aviation**

Countersinks – 3 Flute

Carbide – Steel Shanks



Inch – 60°, 82°, 90° Angles

Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	60° Included Angle Code	82° Included Angle Code	90° Included Angle Code
3/16	3/16	1-1/2	950074	950098	950122
1/4	1/4	2	950076	950100	950124
3/8	1/4	2-1/2	950078	950102	950126
1/2	1/4	2-1/2	950080	950104	950128
5/8	3/8	2-1/2	950082	950106	950130
3/4	3/8	2-3/4	950084	950108	950132
1	1/2	2-3/4	950086	950110	950134

Countersinks – 6 Flute

Carbide – Steel Shanks



Inch – 60°, 82°, & 90° Angles

Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	60° Included Angle Code	82° Included Angle Code	90° Included Angle Code
1/4	1/4	2	950144	950166	950186
3/8	1/4	2-13/16	950146	950168	950188
1/2	1/4	2-7/8	950148	950170	950190
5/8	3/8	3	950150	950172	950192
3/4	1/2	3	950152	950174	950194
1	1/2	3-1/4	950154	950176	950196
1-1/2	3/4	3-1/2	950156	–	–

Countersinks – Multi Flute

Carbide – Steel Shanks



- For hardened steel up to 60 HRC

Inch – 82°, & 90° Angles

Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	90° Included Angle Code
1/4	1/4	2	938762
3/8	1/4	2-1/16	938764
1/2	1/4	2-1/8	938766
5/8	1/4	2-7/32	938768
3/4	1/4	2-9/32	938770
1	1/4	2-3/8	938772

FLAT HEAD SCREWS | **82° = SAE (UNF, UNC)** **90° = Metric** **100° = Aviation**

Machine Countersink Sets – 6 Flute

High Speed Steel



Included Angle	Description	Code
60°	**SET** – 5 Pieces – 1/4”, 3/8”, 1/2”, 3/4”, 1”	601202
60°	**SET** – 8 Pieces – 1/4”, 5/16”, 3/8”, 1/2”, 5/8”, 3/4”, 7/8”, 1”	601203
82°	**SET** – 5 Pieces – 1/4”, 3/8”, 1/2”, 3/4”, 1”	601206
82°	**SET** – 8 Pieces – 1/4”, 5/16”, 3/8”, 1/2”, 5/8”, 3/4”, 7/8”, 1”	601207
82°	**SET** – 11 Pieces – 3/16”, 1/4”, 5/16”, 3/8”, 1/2”, 5/8”, 3/4”, 7/8”, 1”, 1-1/4”, 1-1/2”	601209
90°	**SET** – 5 Pieces – 1/4”, 3/8”, 1/2”, 3/4”, 1”	601210
90°	**SET** – 8 Pieces – 1/4”, 5/16”, 3/8”, 1/2”, 5/8”, 3/4”, 7/8”, 1”	601211
90°	**SET** – 10 Pieces – 1/4”, 5/16”, 3/8”, 1/2”, 5/8”, 3/4”, 7/8”, 1”, 1/1/4”, 1-1/2”	601212

Center Reamers – 3 Flute

High Speed Steel



Included Angle	Description	Code
60°	**SET** – 5 Pieces – 1/4”, 3/8”, 1/2”, 3/4”, 1”	601214
82°	**SET** – 5 Pieces – 1/4”, 3/8”, 1/2”, 3/4”, 1”	601216
82°	**SET** – 6 Pieces – 1/4”, 3/8”, 1/2”, 5/8”, 3/4”, 1”	601217

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Taper, Plug & Bottoming Style Taps



HSS-V | UNC UNF | M | 60° P | BRIGHT FINISH

Inch Sizes

Size	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Taper Style Code	Plug Style Code	Bottoming Style Code
6–32	2	3	0.688	GH3	915600	915628	915656
8–32	2-1/8	4	0.750	GH3	915601	915629	915657
10–24	2-3/8	4	0.875	GH3	915602	915630	915658
10–32	2-3/8	4	0.875	GH3	915615	915643	915671
12–24	2-3/8	4	0.938	GH3	915603	915631	915659
1/4–20	2-1/2	4	1.000	GH3	915604	915632	915660
1/4–28	2-1/2	4	1.000	GH3	915616	915644	915672
5/16–18	2-23/32	4	1.125	GH3	915605	915633	915661
5/16–24	2-23/32	4	1.125	GH3	915617	915645	915673
3/8–16	2-15/16	4	1.250	GH3	915606	915634	915662
3/8–24	2-15/16	4	1.250	GH3	915618	915646	915674
7/16–14	3-5/32	4	1.438	GH3	915607	915635	915663
7/16–20	3-5/32	4	1.438	GH3	915619	915647	915675
1/2–13	3-3/8	4	1.656	GH3	915608	915636	915664
1/2–20	3-3/8	4	1.656	GH3	915620	915648	915676
9/16–12	3-19/32	4	1.656	GH3	915609	915637	915665
9/16–18	3-19/32	4	1.656	GH3	915621	915649	915677
5/8–11	3-13/16	4	1.813	GH3	915610	915638	915666
5/8–18	3-13/16	4	1.813	GH3	915622	915650	915678
3/4–10	4-1/4	4	2.000	GH3	915611	915639	915667
3/4–16	4-1/4	4	2.000	GH3	915623	915651	915679
7/8–9	4-11/16	4	2.219	GH3	915612	915640	915668
7/8–14	4-11/16	4	2.219	GH4	915624	915652	915680
1–8	5-1/8	4	2.500	GH3	915613	915641	915669
1–12	5-1/8	4	2.500	GH4	915625	915653	915681
1–14	5-1/8	4	2.500	GH4	915626	915654	915682
1-1/8–7	5-7/16	4	2.562	GH3	915614	915642	915670
1-1/8–12	5-7/16	4	2.562	GH4	915627	915655	915683

Metric Sizes

Size & Pitch	Thread Limit	Overall Length (Inch)	Thread Length (Inch)	Plug Style Code	Bottoming Style Code
M3 x 0.5	D3	1-15/16	0.675	915684	915692
M4 x 0.7	D4	2-1/8	0.750	915685	915693
M5 x 0.8	D5	2-3/8	0.675	915686	915694
M6 x 1.0	D5	2-1/2	1.000	915687	915695
M8 x 1.25	D5	2-23/32	1.125	915688	915696
M10 x 1.25	D5	2-15/16	1.250	915689	915697
M10 x 1.5	D6	2-15/16	1.250	915690	915698
M12 x 1.75	D6	3-3/8	1.656	915691	915699

Hand Taps – Value

Taper, Plug & Bottoming Style Taps



- For general use in production tapping or hand operations
- Taper, plug and bottoming styles provide great versatility in tough materials, blind and through-holes
- Sets include 1 taper tap, 1 plug tap and 1 bottoming tap

Inch Sizes

Size	No. of Flutes	Thread Limit	Taper Style	Plug Style	Bottoming Style	3-Piece Set
			Code	Code	Code	Code
1–64	2	1	828099	828100	828101	828350
1–72	2	1	828103	828104	828105	828349
2–56	3	2	828107	828108	828109	828110
2–64	3	2	828112	828113	828114	828351
3–48	3	2	828117	828118	828119	828120
3–56	3	2	828122	828123	828124	828125
4–40	3	2	828128	828129	828130	828131
4–48	3	2	828133	828134	828135	828136
5–40	3	2	828140	828141	828142	828143
5–44	3	2	828145	828146	828147	828148
6-32	3	3	830000	830001	830002	828155
6–40	3	2	828157	828158	828159	828160
8–32	4	3	830003	830004	830005	828168
8–36	4	2	828170	828171	828172	828173
10–24	4	3	830006	830007	830008	828180
10–32	4	3	830009	828185	828186	828187
12–24	4	3	830010	828192	828193	828194
12–28	4	3	828196	828197	828198	828199
1/4–20	4	3	830011	830012	830013	828206
1/4–28	4	3	830014	830015	830016	828213
5/16–18	4	3	830017	830018	830019	828220
5/16–24	4	3	830020	830021	830022	828227
3/8–16	4	3	830023	830024	830025	828234
3/8–24	4	3	830026	830027	830028	828240
7/16–14	4	3	830029	830030	830031	828248
7/16–20	4	3	830032	830033	830034	828255
1/2–13	4	3	830035	830036	830037	828262
1/2–20	4	3	830038	830039	830040	828269
9/16–12	4	3	830041	830042	830043	828273
9/16–18	4	3	830044	830045	830046	828277
5/8–11	4	3	830047	830048	830049	828282
5/8–18	4	3	830050	830051	830052	828286
11/16–11	4	3	828287	828288	828289	828352
11/16–16	4	3	828290	828291	828292	828293
3/4–10	4	3	830053	830054	830055	828298
3/4–16	4	3	830056	830057	830058	828302
7/8–9	4	4	830059	830060	830061	828306
7/8–14	4	4	830062	830063	830064	828310
1–8	4	4	830065	830066	830067	830068
1–12	4	4	830069	830070	830071	828318
1–14	4	4	830072	830073	830074	828322
1-1/8–7	4	4	830075	830076	830077	828353
1-1/8–12	6	4	830078	830079	830080	828354
1-1/4–7	4	4	828329	828330	828331	828355
1-1/4–12	6	4	828332	828333	828334	828356
1-3/8–6	4	4	828335	828336	828337	828357
1-3/8–12	4	4	828338	828339	828340	–
1-1/2–6	4	4	828341	828342	828343	–
1-1/2–12	6	4	828344	828345	828346	–

Blue Colour Band Taps

Spiral Point Plug & Spiral Flute Bottoming Styles







CUTTING CONDITIONS

Material	Material Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Low Carbon Steel	1018, 1010, 1035	normalized	<25	20-50
Medium Carbon Steel	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

Inch Sizes

Size	Spiral Point					Spiral Flute				
	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code
4–40	1-7/8	2	0.313	GH2	915170	1-7/8	2	0.313	GH2	915126
6–32	2	2	0.375	GH3	915172	2	3	0.375	GH3	915128
6–40	2	2	0.375	GH2	915174	2	–	0.375	GH2	–
8–32	2-1/8	2	0.375	GH3	915176	2-1/8	3	0.375	GH3	915130
10–24	2-3/8	2	0.500	GH3	915178	2-3/8	3	0.500	GH3	915132
10–32	2-3/8	2	0.500	GH3	915180	2-3/8	3	0.500	GH3	915134
12–24	2-3/8	2	0.500	GH3	915182	2-3/8	–	0.500	GH3	–
1/4–20	2-1/2	2	0.625	GH3	915184	2-1/2	3	0.625	GH3	915136
1/4–28	2-1/2	3	0.625	GH3	915186	2-1/2	3	0.625	GH3	915138
5/16–18	2-23/32	2	0.688	GH3	915188	2-23/32	3	0.688	GH3	915140
5/16–24	2-23/32	3	0.688	GH3	915190	2-23/32	3	0.688	GH3	915142
3/8–16	2-15/16	3	0.750	GH3	915192	2-15/16	3	0.750	GH3	915144
3/8–24	2-15/16	3	0.750	GH3	915194	2-15/16	3	0.750	GH3	915146
7/16–14	3-5/32	3	0.875	GH3	915196	3-5/32	3	0.875	GH3	915148
7/16–20	3-5/32	3	0.875	GH3	915198	3-5/32	3	0.875	GH3	–
1/2–13	3-3/8	3	0.938	GH3	915200	3-3/8	3	0.938	GH3	915150
1/2–20	3-3/8	3	0.938	GH3	915202	3-3/8	3	0.938	GH3	915152
5/8–11	3-13/16	3	1.094	GH3	915204	3-13/16	3	1.094	GH3	915154
5/8–18	3-13/16	3	1.094	GH3	915206	3-13/16	4	1.094	GH3	915156
3/4–10	4-1/4	3	1.219	GH3	915208	4-1/4	3	1.219	GH3	915158
3/4–16	4-1/4	3	1.219	GH3	915210	4-1/4	4	1.219	GH3	915160
7/8–9	4-11/16	3	1.344	GH4	915212	4-11/16	3	1.344	GH4	915162
7/8–14	4-11/16	3	1.344	GH4	915214	4-11/16	4	1.344	GH4	915164
1–8	5-1/8	3	1.500	GH4	915216	5-1/8	3	1.500	GH4	915166
1–12	5-1/8	3	1.500	GH4	915218	5-1/8	4	1.500	GH4	915168

Metric Sizes

Size & Pitch	Thread Limit	Overall Length (Inch)	Thread Length (Inch)	Spiral Point		Spiral Flute	
				No. of Flutes	Code	No. of Flutes	Code
M2 x 0.4	D3	1-15/16	0.313	2	915463	–	–
M2.5 x 0.45	D3	1-15/16	0.313	2	915465	–	–
M3 x 0.5	D3	1-15/16	0.313	2	915467	2	915419
M3.5 x 0.6	D4	2	0.375	2	915469	2	915421
M4 x 0.7	D4	2-1/8	0.375	2	915471	3	915423
M4.5 x 0.75	D4	2-3/8	0.500	2	915473	–	–
M5 x 0.8	D4	2-3/8	0.500	2	915475	3	915425
M6 x 1	D5	2-1/2	0.625	3	915477	3	915427
M7 x 1	D5	2-23/32	0.688	3	915479	3	915429
M8 x 1	D5	2-23/32	0.688	3	915483	3	915433

Blue Colour Band Taps

Spiral Point Plug & Spiral Flute Bottoming Styles



Metric Sizes *(continued)*

Size & Pitch	Thread Limit	Overall Length (Inch)	Thread Length (Inch)	Spiral Point		Spiral Flute	
				No. of Flutes	Code	No. of Flutes	Code
M8 x 1.25	D5	2-23/32	0.688	3	915481	3	915431
M10 x 1.25	D5	2-15/16	0.750	3	915487	3	915437
M10 x 1.5	D6	2-15/16	0.750	3	915485	3	915435
M12 x 1.25	D5	3-3/8	0.938	3	915491	3	915441
M12 x 1.75	D6	3-3/8	0.938	3	915489	3	915439
M14 x 1.5	D6	3-19/32	1.000	3	915495	3	915445
M14 x 2	D7	3-19/32	1.000	3	915493	3	915443
M16 x 1.5	D6	3-13/16	1.094	3	915499	4	915449
M16 x 2	D7	3-13/16	1.094	3	915497	3	915447
M18 x 1.5	D6	4-1/32	1.094	3	915503	4	915453
M18 x 2.5	D7	4-1/32	1.094	3	915501	4	915451
M20 x 1.5	D5	4-15/32	1.219	3	915507	4	915457
M20 x 2.5	D6	4-15/32	1.219	3	915505	4	915455
M22 x 1.5	D6	4-11/16	1.344	3	915511	4	915461
M22 x 2.5	D6	4-11/16	1.344	3	915509	4	915459
M24 x 1.5	D5	4-29/32	1.344	3	915515	–	–
M24 x 3	D7	4-29/32	1.344	3	915513	–	–

Yellow Colour Band Taps

Spiral Point Plug & Spiral Flute Bottoming Styles







Cutting Conditions

Material	Material Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Stainless Steel	200 Series	annealed	<28	20-35
	300 Series		<28	20-35
	17-4, 15-5		<25	15-25
	AM286		<25	15-25
	400 Series		<29	20-35
Tool Steel	01, A-2, D-2, H-13, P-20	annealed	<35	15-25
Medium Carbon Steel	1030, 1035, 1038, 1040, 1045, 1050	normalized	<28	20-40
Alloyed High Carbon Steel	1065, 1070, 1080, 1090, 1095, 1561, 1572	normalized	<32	20-30
High Strength Steel	4140, 4340	normalized	<32	20-30
Titanium	commercially pure	annealed	<32	15-30
Aluminum	cast, wrought		–	30-90

Inch Sizes

Size	Spiral Point					Spiral Flute				
	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code
4–40	1-7/8	2	0.335	GH2	915060	1-7/8	2	0.236	GH2	915000
6–32	2	3	0.413	GH3	915062	2	3	0.276	GH2	915002
6–40	2	3	0.413	GH3	915064	2	3	–	–	–
8–32	2-1/8	3	0.453	GH3	915066	2-1/8	3	0.276	GH2	915004

Yellow Colour Band Taps

Spiral Point Plug & Spiral Flute Bottoming Styles



Inch Sizes *(continued)*

Size	Spiral Point					Spiral Flute				
	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code
10–24	2-3/8	3	0.531	GH3	915068	2-3/8	3	0.354	GH2	915006
10–32	2-3/8	3	0.531	GH3	915070	2-3/8	3	0.276	GH3	915008
12–24	2-3/8	3	0.531	GH3	915072	2-3/8	3	–	–	–
1/4–20	2-1/2	3	0.591	GH3	915074	2-1/2	3	0.433	GH3	915010
1/4–28	2-1/2	3	0.591	GH3	915076	2-1/2	3	0.433	GH3	915012
5/16–18	2-23/32	3	0.669	GH3	915078	2-23/32	3	0.472	GH3	915014
5/16–24	2-23/32	3	0.669	GH3	915080	2-23/32	3	0.472	GH3	915016
3/8–16	2-15/16	3	0.748	GH3	915082	2-15/16	3	0.551	GH3	915018
3/8–24	2-15/16	3	0.748	GH3	915084	2-15/16	3	0.551	GH3	915020
7/16–14	3-5/32	3	0.866	GH3	915086	3-5/32	3	0.591	GH3	915022
7/16–20	3-5/32	3	0.866	GH3	915088	–	–	–	–	–
1/2–13	3-3/8	3	0.984	GH3	915090	3-3/8	3	0.630	GH3	915024
1/2–20	3-3/8	3	0.984	GH3	915092	3-3/8	3	0.630	GH3	915026
5/8–11	3-13/16	3	1.083	GH3	915094	3-13/16	4	0.478	GH3	915028
5/8–18	3-13/16	3	1.083	GH3	915096	3-13/16	3	0.572	GH3	915030
3/4–10	4-1/4	3	1.201	GH3	915098	4-1/4	4	0.827	GH3	915032
3/4–16	4-1/4	3	1.201	GH3	915100	4-1/4	4	0.591	GH3	915034
7/8–9	4-11/16	3	1.339	GH4	915102	4-11/16	4	0.827	GH4	915036
7/8–14	4-11/16	3	1.339	GH4	915104	4-11/16	4	0.709	GH4	915038
1–8	5-1/8	3	1.496	GH4	915106	5-1/8	4	0.764	GH4	915040
1–12	5-1/8	3	1.496	GH4	915108	5-1/8	4	0.984	GH4	915042
1-1/8–7	5-7/16	4	1.610	GH4	915110	5-7/16	4	1.115	GH4	915044
1-1/8–12	5-7/16	4	1.610	GH4	915112	5-7/16	4	0.984	GH4	915046
1-1/4–7	5-3/4	4	1.610	GH4	915114	5-3/4	4	1.115	GH4	915048
1-1/4–12	5-3/4	4	1.610	GH4	915116	5-3/4	4	0.984	GH4	915050
1-3/8–6	6-1/16	4	1.900	GH4	915118	5-3/4	4	1.115	GH4	915052
1-3/8–12	6-1/16	4	1.900	GH4	915120	5-3/4	4	1.115	GH4	915054
1-1/2–6	6-3/8	4	2.000	GH4	915122	6-3/8	4	1.350	GH4	915056
1-1/2–12	6-3/8	4	2.000	GH4	915124	6-3/8	4	1.350	GH4	915058

Metric Sizes

Size & Pitch	Spiral Point					Spiral Flute				
	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code
M2 x 0.4	1-15/16	2	0.375	D3	915357	–	–	–	–	–
M2.5 x 0.45	1-15/16	2	0.375	D3	915359	–	–	–	–	–
M3 x 0.5	1-15/16	2	0.375	D3	915361	1-15/16	3	0.197	D3	915301
M3.5 x 0.6	2	2	0.375	D4	915363	2	3	0.276	D4	915303
M4 x 0.7	2-1/8	2	0.375	D4	915365	2-1/8	3	0.276	D4	915305
M4.5 x 0.75	2-3/8	2	0.500	D4	915367	–	–	–	–	–
M5 x 0.8	2-3/8	2	0.500	D4	915369	2-3/8	3	0.354	D4	915307
M6 x 1	2-1/2	2	0.625	D5	915371	2-1/2	3	0.433	D5	915309
M7 x 1	2-23/32	3	0.687	D5	915373	2-23/32	3	0.433	D5	915311
M8 x 1	2-23/32	3	0.687	D5	915377	2-23/32	3	0.472	D5	915315
M8 x 1.25	2-23/32	3	0.687	D5	915375	2-23/32	3	0.472	D5	915313
M10 x 1.25	2-15/16	3	0.750	D5	915381	2-15/16	3	0.472	D5	915319
M10 x 1.5	2-15/16	3	0.750	D6	915379	2-15/16	3	0.512	D6	915317
M12 x 1.25	3-3/8	3	0.937	D5	915385	3-3/8	3	0.551	D5	915323
M12 x 1.75	3-3/8	3	0.937	D6	915383	3-3/8	3	0.591	D6	915321
M14 x 1.5	3-19/32	3	1.000	D6	915389	3-19/32	3	0.709	D6	915327

Yellow Colour Band Taps

Spiral Point Plug & Spiral Flute Bottoming Styles



Metric Sizes *(continued)*

Size & Pitch	Spiral Point					Spiral Flute				
	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code
M14 x 2	3-19/32	3	1.000	D7	915387	3-19/32	3	0.709	D7	915325
M16 x 1.5	3-13/16	3	1.093	D6	915393	3-13/16	3	0.551	D6	915331
M16 x 2	3-13/16	3	1.093	D7	915391	3-13/16	3	0.709	D7	915329
M18 x 1.5	4-1/32	3	1.093	D6	915397	4-1/32	4	0.551	D6	915335
M18 x 2.5	4-1/32	3	1.093	D7	915395	4-1/32	4	0.787	D7	915333
M20 x 1.5	4-1/4	3	1.201	D5	915401	4-1/32	4	0.551	D5	915339
M20 x 2.5	4-1/4	3	1.201	D6	915399	4-1/32	4	0.701	D6	915337
M22 x 1.5	4-11/16	3	1.343	D6	915405	4-11/16	4	0.551	D6	915343
M22 x 2.5	4-11/16	3	1.343	D6	915403	4-11/16	4	0.787	D6	915341
M24 x 1.5	4-29/32	3	1.496	D5	915409	4-11/16	4	0.551	D5	915347
M24 x 3	4-29/32	3	1.496	D7	915407	4-11/16	4	0.787	D7	915345
M27 x 1.5	5-1/8	3	1.540	D7	915413	5-1/8	4	0.690	D7	915351
M27 x 3	5-1/8	3	1.540	D7	915411	5-1/8	4	1.105	D7	915349
M30 x 1.5	5-1/8	3	1.540	D7	915417	5-7/16	4	0.690	D7	915355
M30 x 3.5	5-1/8	3	1.540	D7	915415	5-7/16	4	1.250	D7	915353

Red Colour Band Taps

Spiral Point Plug & Spiral Flute Bottoming Styles







Cutting Conditions

Material	Material Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Stainless Steel	17-4PH, 15-5, 17-7PH, AM350	hardened	<48	12-20
Tool Steel	01, A-2, D-2, H-13, P-20	hardened	<48	10-20
High Strength Steel	4140, 4340, 50100	hardened	<48	15-20
Nickel Alloys	inconel, hastaloy, waspaloy, astraloy, rene, monel	annealed or hardened	<42	5-20
Titanium	6 AL 4	annealed or hardened	<42	8-15

Inch Sizes

Size	Spiral Point					Spiral Flute				
	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code
4–40	1-7/8	2	0.335	H2	915258	1-7/8	2	0.236	H2	915220
5–40	1-15/16	3	0.374	H2	915260	1-15/16	3	–	–	–
6–32	2	3	0.413	H3	915262	2	3	0.276	H3	915222
8–32	2-1/8	3	0.453	H3	915264	2-1/8	3	0.276	H3	915224
10–24	2-3/8	3	0.531	H3	915266	2-3/8	3	0.354	H3	915226
10–32	2-3/8	3	0.531	H3	915268	2-3/8	3	0.276	H3	915228
1/4–20	2-1/2	3	0.591	H3	915270	2-1/2	3	0.433	H3	915230
1/4–28	2-1/2	3	0.591	H3	915272	2-1/2	3	0.354	H3	915232
5/16–18	2-23/32	3	0.669	H3	915274	2-23/32	3	0.472	H3	915234
5/16–24	2-23/32	3	0.669	H3	915276	2-23/32	3	0.394	H3	915236

Red Colour Band Taps

Spiral Point Plug & Spiral Flute Bottoming Styles



Inch Sizes *(continued)*

Size	Spiral Point					Spiral Flute				
	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code	Overall Length (Inch)	No. of Flutes	Thread Length (Inch)	Thread Limit	Code
3/8–16	2-15/16	3	0.748	H3	915278	2-15/16	3	0.551	H3	915238
3/8–24	2-15/16	3	0.748	H3	915280	2-15/16	3	0.394	H3	915240
7/16–14	3-5/32	3	0.866	H3	915282	3-5/32	3	0.591	H3	915242
7/16–20	3-5/32	3	0.866	H3	915284	3-5/32	3	0.472	H3	915244
1/2–13	3-3/8	3	0.984	H3	915286	3-3/8	3	0.630	H3	915246
1/2–20	3-3/8	3	0.984	H3	915288	3-3/8	3	0.472	H3	915248
5/8–11	3-13/16	3	1.083	H3	915290	3-13/16	4	0.748	H3	915250
5/8–18	3-13/16	3	1.083	H3	915292	3-13/16	4	0.512	H3	915252
3/4–10	4-1/4	3	1.201	H3	915294	4-1/4	4	0.827	H3	915254
3/4–16	4-1/4	3	1.201	H3	915296	4-1/4	4	0.591	H3	915256

Metric Sizes

Size & Pitch	Overall Length (Inch)	Thread Limit	Spiral Point Plug Style			Spiral Flute Bottoming Style		
			No. of Flutes	Thread Length (Inch)	Code	No. of Flutes	Thread Length (Inch)	Code
M3 x 0.5	1-15/16	D3	3	0.374	915533	3	0.197	915517
M4 x 0.7	2-1/8	D4	3	0.453	915535	3	0.276	915519
M5 x 0.8	2-3/8	D4	3	0.531	915537	3	0.354	915521
M6 x 1.0	2-1/2	D5	3	0.591	915539	3	0.433	915523
M8 x 1.25	2-23/32	D5	3	0.669	915541	3	0.472	915525
M10 x 1.25	2-15/16	D5	3	0.748	915545	3	0.472	915529
M10 x 1.5	2-15/16	D6	3	0.748	915543	3	0.512	915527
M12 x 1.75	3-3/8	D6	3	0.984	915547	3	0.591	915531

Taper Pipe Taps

High Speed Steel – Straight Flute – Ground Flute



Size	Threads per Inch	Code	Size	Threads per Inch	Code	Size	Threads per Inch	Code
1/16	27	313131	1/2	14	313135	1-1/2	11-1/2	313139
1/8	27	313132	3/4	14	313136	2	11-1/2	313140
1/4	18	313133	1	11-1/2	313137			
3/8	18	313134	1-1/4	11-1/2	313138			

Pipe Taps

High Speed Steel – Straight Flute, Spiral Flute & Interrupted Thread



HSS – Straight Flute



- For cast iron and steel applications
- NPT and NPTF standards

HSSE-V3 – Spiral Flute



- For cast iron, steel and stainless steel applications
- NPT and NPTF standards
- High speed steel substrate with cobalt and 3% vanadium content for cutting stainless steels up to 29 HRC and tool steels up to 35 HRC

HSS – Interrupted Thread



- For cast iron and steel applications
- Reduces cutting pressure
- NPTF standards

Size (Inch)	Thread per Inch	No. of Flutes	Overall Length (Inch)	Thread Length (Inch)	Straight Flute Code	Spiral Flute Code	Interrupted Thread Code
1/16	27	4	2-1/8	0.688	915700	915716	–
1/8	27	4	2-1/8	0.750	915701	915717	915710
1/4	18	4	2-7/16	1.063	915702	915718	915711
3/8	18	4	2-9/16	1.063	915703	915719	915712
1/2	14	4	3-1/8	1.375	915704	915720	915713
3/4	14	5	3-1/4	1.375	915705	915721	915714
1	11-1/2	5	3-3/4	1.750	915706	915722	915715
1-1/4	11-1/2	5	4	1.750	915707	915723	–
1-1/2	11-1/2	7	4-1/4	1.750	915708	915724	–
2	11-1/2	7	4-1/2	1.750	915709	915725	–

Long Pipe Taps

High Speed Steel

Taper Pipe



Tap Size	No. of Flutes	6" Overall Length Code	12" Overall Length Code
1/8 - 27	4	828900	–
1/4 - 18	4	828901	828905
3/8 - 18	4	828902	828906
1/2 - 14	4	828903	828907
3/4 - 14	5	828904	311522

Pulley Taps

High Speed Steel – Ground Thread



These taps have the same major and pitch diameters as standard fractional size taps, but with extended shanks for reaching locations inaccessible with regular hand taps.

Tap Size	Thread Length (Inch)	6" Overall Length Code	8" Overall Length Code	10" Overall Length Code
1/4 - 20	1	828077	828083	–
5/16 - 18	1-1/2	828078	828084	–
3/8 - 16	1-1/4	828079	828085	828089
7/16 - 14	1-7/16	828080	828086	828090
1/2 - 13	1-21/32	828081	828087	828091
5/8 - 11	1-13/16	828082	828088	828092
3/4 - 10	2	–	–	828093

Extension Taps

High Speed Steel – Ground Thread



- Plug chamfer
- Hand taps
- Spiral pointed
- Similar to a pulley tap but has a smaller shank diameter for long reach applications

Tap Size	Threads per Inch	6" Ovverall Length	
		Hand Tap Code	Spiral Point Tap Code
#10	24	311775	311781
#10	32	311776	311782
1/4	20	311777	311783
5/16	18	311778	311784
3/8	16	311779	311785
1/2	13	311780	311786



Tapping Lubricant

- This proven tapping lubricant is made from a unique blend of synthetic additives for use on all metals
- Water-based formula for easy clean-up
- Safe for all materials
- Does not contain 1,1,1 trichloroethane
- No mineral oils or solvents
- No oily residue
- 100% safe

Description	Code
16 oz. bottle	219002

Combined Taps & Drills

High Speed Steel – 2 Flute – Ground Thread



- Designed to drill and tap through-holes in a single pass up to depths that are two times the tap diameter
- May be used on multiple spindle heads with reversing mechanisms

Machine Screw Sizes

Nominal Size	Drill Size (Inch)	Thread Length (Inch)	Overall Length (Inch)	Code
4-40	0.0910	3/8	1-7/8	311537
4-48	0.0945	11/32	1-7/8	311538
5-40	0.1040	13/32	1-15/16	311540
6-32	0.1115	15/32	2	311541
6-40	0.1170	7/16	2	311543
8-32	0.1375	33/64	2-1/8	311544

Nominal Size	Drill Size (Inch)	Thread Length (Inch)	Overall Length (Inch)	Code
10-24	0.1545	5/8	2-3/8	311545
10-32	0.1635	9/16	2-3/8	311546
12-24	0.1805	11/16	2-3/8	311547
12-28	0.1860	21/32	2-3/8	311548

Fractional Sizes

Nominal Size	Drill Size (Inch)	Thread Length (Inch)	Overall Length (Inch)	Code
1/4-20	0.2080	13/16	2-1/2	311549
1/4-28	0.2200	23/22	2-1/2	311550
5/16-18	0.2660	31/32	2-27/32	311551
5/16-24	0.2770	7/8	2-27/32	311552
3/8-16	0.3225	1-1/8	3-3/8	311553
3/8-24	0.3395	1	3-3/8	311554

Nominal Size	Drill Size (Inch)	Thread Length (Inch)	Overall Length (Inch)	Code
7/16-14	0.3770	1-5/16	3-3/4	311555
7/16-20	0.3955	1-3/16	4-3/4	311556
1/2-13	0.4350	1-15/32	4-1/16	311557
1/2-20	0.4580	1-15/16	4-1/16	311558

Metric Sizes

Nominal Size	Drill Size (Inch)	Thread Length (Inch)	Overall Length (Inch)	Code
M3 x 0.50	M2.50	13/32	1-15/16	311559
M4 x 0.70	M3.30	1/2	2-1/8	311560
M5 x 0.80	M4.20	5/8	2-3/8	311561
M6 x 1.00	M5.00	25/32	2-1/2	311562

Nominal Size	Drill Size (Inch)	Thread Length (Inch)	Overall Length (Inch)	Code
M8 x 1.25	M6.75	15/16	2-27/32	311563
M10 x 1.50	M8.50	1-1/16	3-3/8	311564
M12 x 1.75	M10.25	1-3/8	4-1/16	311565

ACME Tandem Taps

High Speed Steel



- Tandem style tap eliminates the excessive cost of producing ACME threads
- Produces threads from 10° to 30° included angle in a single pass without a lead-screw
- The last few threads on the roughing section function as a guide for the short finishing section, which corrects the angles and brings the threads to size

Size (Inch)	Threads per Inch	Thread Length (Inch)	Overall Length (Inch)	Code
3/8	12	2-1/2	5	311566
1/2	10	2-9/16	5	311567
5/8	8	3-3/16	6-1/4	311568
3/4	6	4-5/16	7-15/16	311569
7/8	6	4-3/8	8-5/8	311570
1	5	5-1/4	10-1/8	311571
1-1/8	5	5-1/4	10-3/4	311572
1-1/4	5	5-1/4	11-1/8	311573
1-3/8	4	5-7/8	12-1/4	311574
1-1/2	4	5-7/8	12-5/8	311575

Tap Chucks

SJ Style – For Machine Screw, Hand & Pipe Tap Sizes



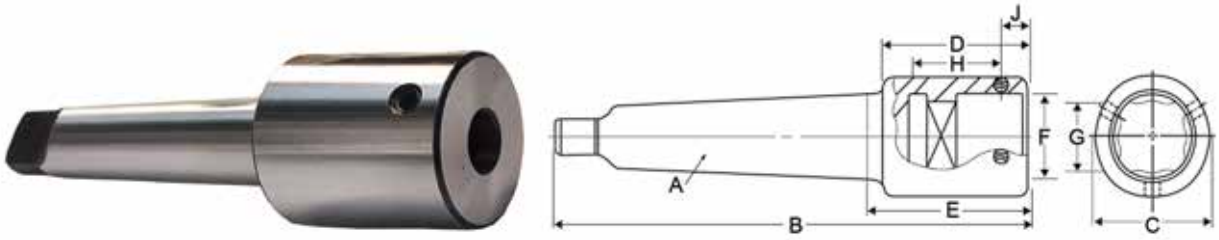
Tap Size	Morse Taper	Diameter of Tap Shank (Inch)	Dimension Across Flats of Square (Inch)	Depth Tap Enters Chuck (Inch)	Machine Screw Tap Sizes	Hand Tap Sizes	Pipe Tap Sizes
					Code	Code	Code
#0 to #6	1	0.1410	0.110	0.7125	826000	–	–
#8	1	0.1680	0.131	0.8250	826001	–	–
#10	1	0.1940	0.152	0.8875	826002	–	–
#12	1	0.2200	0.165	0.9125	826003	–	–
1/4	1	0.2550	0.191	0.9750	–	826004	–
1/4	2	0.2550	0.191	0.9750	–	826005	–
5/16	1	0.3180	0.238	1.0000	–	826006	–
5/16	2	0.3180	0.238	1.0000	–	826007	–
*3/8	1	0.2750	0.206	1.0500	–	826008	–
*3/8	2	0.2750	0.206	1.0500	–	826009	–
**3/8	2	0.3810	0.286	1.0500	–	826010	–
7/16	2	0.3230	0.242	1.0750	–	826011	–
1/2	2	0.3670	0.275	1.1000	–	826012	–
1/2	3	0.3670	0.275	1.1000	–	826013	–
9/16	2	0.4290	0.322	1.2750	–	826014	–
5/8	2	0.4800	0.360	1.4500	–	826015	–
5/8	3	0.4800	0.360	1.4500	–	826016	–
3/4	3	0.5900	0.442	1.8000	–	826017	–
3/4	4	0.5900	0.442	1.8000	–	826018	–
7/8	3	0.6970	0.523	1.9125	–	826019	–
7/8	4	0.6970	0.523	1.9125	–	826020	–
1	4	0.8000	0.600	2.0250	–	826021	–
1-1/8	5	0.8960	0.672	2.1375	–	826022	–
1-1/4	5	1.0210	0.766	2.3000	–	826023	–
1-3/8	5	1.1080	0.831	2.3500	–	826024	–
1-1/2	5	1.2330	0.925	2.4000	–	826025	–
1-3/4	5	1.4300	1.072	2.3750	–	826026	–
*1/16, 1/8	2	0.3125	0.234	1.0000	–	–	826027
**1/8	2	0.4375	0.328	1.0000	–	–	826028
1/4	3	0.5625	0.421	1.1250	–	–	826029
3/8	4	0.7000	0.531	1.3750	–	–	826030
1/2	4	0.6875	0.515	1.5000	–	–	826031
3/4	4	0.9063	0.679	1.6875	–	–	826032
3/4	5	0.9063	0.679	1.6875	–	–	826033
1	5	1.1250	0.843	1.8750	–	–	826034
1-1/4	5	1.3125	0.984	2.1250	–	–	826035
1-1/2	5	1.5000	1.125	2.2500	–	–	826036

*Small Shank **Large Shank 3/8 hand tap with small shank is not standard

Tap Drivers

Heavy Duty – For Hand & Pipe Tap Sizes

Broached square in holder is approximately 0.030" larger than tap square dimension "G"



For Hand Tap Sizes

Tap Size (Inch)	A Morse Taper Shank	B Overall Length (Inch)	C Body Diameter (Inch)	D Body Length (Inch)	E Projection (Inch)	F Tap Shank (Inch)	G Tap Square (Inch)	H Depth Tap Enters Holder (Inch)	J Location of Set Screw (Inch)	Code
3/4	3	6	1-23/32	2-1/8	2-5/16	0.590	0.442	1-3/8	7/16	826037
3/4	4	7	1-23/32	2-1/8	2-3/8	0.590	0.442	1-3/8	7/16	826038
7/8	3	6	1-23/32	2-1/8	2-5/16	0.697	0.523	1-1/2	7/16	826039
7/8	4	7	1-23/32	2-1/8	2-3/8	0.697	0.523	1-1/2	7/16	826040
1	3	6	1-23/32	2-1/8	2-5/16	0.800	0.600	1-5/8	7/16	826041
1	4	7	1-23/32	2-1/8	2-3/8	0.800	0.600	1-5/8	7/16	826042
1-1/16 – 1-1/8	3	6	1-23/32	2-1/8	2-5/16	0.896	0.672	1-3/4	7/16	826043
1-1/16 – 1-1/8	4	7	1-23/32	2-1/8	2-3/8	0.896	0.672	1-3/4	7/16	826044
1-3/16 – 1-1/4	3	6-5/8	1-27/32	2-3/4	2-15/16	1.021	0.766	2-3/16	5/8	826045
1-3/16 – 1-1/4	4	7-5/8	1-27/32	2-3/4	3	1.021	0.766	2-3/16	5/8	826046
1-5/16 – 1-3/8	3	7-5/8	1-27/32	2-3/4	2-15/16	1.108	0.831	2-1/4	5/8	826047
1-5/16 – 1-3/8	4	9-1/8	1-27/32	2-3/4	3	1.108	0.831	2-1/4	5/8	826048
1-7/16 – 1-1/2	4	7-7/8	1-27/32	2-3/4	3	1.233	0.925	2-5/16	5/8	826049
1-7/16 – 1-1/2	5	9-1/8	2-19/32	3	3-1/4	1.233	0.925	2-5/16	5/8	826050
1-5/8	4	7-7/8	2-19/32	3	3-1/4	1.305	0.979	2-3/8	5/8	826051
1-5/8	5	9-1/8	2-19/32	3	3-1/4	1.305	0.979	2-3/8	5/8	826052
1-3/4	4	7-7/8	2-19/32	3	3-1/4	1.430	1.072	2-3/8	5/8	826053
1-3/4	5	9-1/8	2-19/32	3	3-1/4	1.430	1.072	2-3/8	5/8	826054
1-7/8	4	7-7/8	2-19/32	3	3-1/4	1.519	1.139	2-1/2	5/8	826055
1-7/8	5	9-1/8	2-19/32	3	3-1/4	1.519	1.139	2-1/2	5/8	826056
2	4	8	2-19/32	3-1/8	3-3/8	1.644	1.233	2-5/8	5/8	826057
2	5	9-5/8	2-23/32	3-1/2	3-3/4	1.644	1.233	2-5/8	3/4	826058
2-1/8	5	9-5/8	2-23/32	3-1/2	3-3/4	1.769	1.327	3	3/4	826059
2-1/4	5	10-3/16	2-31/32	4-1/16	4-5/16	1.894	1.420	3-1/8	7/8	826060
2-3/8	5	10-3/16	2-31/32	4-1/16	4-5/16	2.019	1.514	3-3/8	7/8	826061
2-1/2	5	10-1/2	3-11/32	4-3/8	4-5/8	2.100	1.575	3-1/2	1	826062
2-5/8	5	10-1/2	3-11/32	4-3/8	4-5/8	2.225	1.669	3-1/2	1	826063
2-3/4	5	10-1/2	3-11/32	4-3/8	4-5/8	2.350	1.762	3-5/8	1	826064
2-7/8	5	10-11/16	3-17/32	4-9/16	4-13/16	2.475	1.856	3-5/8	1	826065
3	5	10-11/16	3-17/32	4-9/16	4-13/16	2.543	1.907	3-3/4	1	826066

For Pipe Tap Sizes

Tap Size (Inch)	A Morse Taper Shank	B Overall Length (Inch)	C Body Diameter (Inch)	D Body Length (Inch)	E Projection (Inch)	F Tap Shank (Inch)	G Tap Square (Inch)	H Depth Tap Enters Holder (Inch)	J Location of Set Screw (Inch)	Code
3/4	3	6	1-23/32	2-1/8	2-5/16	0.9063	0.679	1-5/8	1/2	826067
3/4	4	7	1-23/32	2-1/8	2-3/8	0.9063	0.679	1-5/8	1/2	826068
1	3	6	1-23/32	2-1/8	2-5/16	1.1250	0.843	1-3/4	1/2	826069
1	4	7	1-23/32	2-1/8	2-3/8	1.1250	0.843	1-3/4	1/2	826070
1-1/4	4	7-9/16	2-7/32	2-11/16	2-15/16	1.3125	0.984	2	5/8	826071
1-1/4	5	8-13/16	2-7/32	2-11/16	2-15/16	1.3125	0.984	2	5/8	826072
1-1/2	4	7-9/16	2-7/32	2-11/16	2-15/16	1.5000	1.125	2-1/4	5/8	826073
1-1/2	5	8-13/16	2-7/32	2-11/16	2-15/16	1.5000	1.125	2-1/4	5/8	826074
1-3/4	4	7-7/8	2-19/32	3	3-1/4	1.6250	1.218	2-3/8	3/4	826075
1-3/4	5	9-1/8	2-19/32	3	3-1/4	1.6250	1.218	2-3/8	3/4	826076
2	5	9-1/2	3-3/16	3-3/8	3-5/8	1.8750	1.406	2-1/2	3/4	826077

Tap Drivers

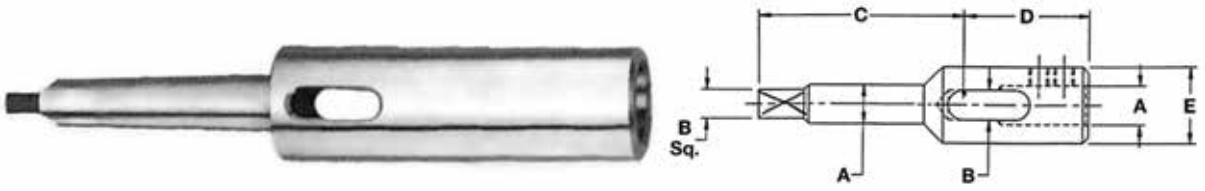
Heavy Duty – For Hand & Pipe Tap Sizes *(continued)*

For Pipe Tap Sizes *(continued)*

Tap Size (Inch)	A Morse Taper Shank	B Overall Length (Inch)	C Body Diameter (Inch)	D Body Length (Inch)	E Projection (Inch)	F Tap Shank (Inch)	G Tap Square (Inch)	H Depth Tap Enters Holder (Inch)	J Location of Set Screw (Inch)	Code
2-1/4	5	9-1/2	3-3/16	3-3/8	3-5/8	2.0000	1.500	2-5/8	3/4	826078
2-1/2	5	9-1/2	3-3/16	3-3/8	3-5/8	2.2500	1.687	2-3/4	3/4	826079
2-3/4	5	9-15/16	3-19/32	3-13/16	4-1/16	2.3750	1.781	2-7/8	3/4	826080
3	5	9-15/16	3-19/32	3-13/16	4-1/16	2.6250	1.968	3	3/4	826081

Tap Extensions

ANSI Standard



Tap Size	A Diameter (Inch)	B Square (Inch)	C Extension (Inch)	D	E Diameter (Inch)	Code
#0 – #6	0.141	0.110	2.000	1.000	0.440	685001
#8	0.168	0.131	2.000	1.000	0.440	685002
#10	0.194	0.152	2.000	1.000	0.440	685003
#12	0.220	0.165	2.000	1.000	0.440	685004
1/4	0.255	0.191	2.000	1.120	0.620	685005
5/16	0.318	0.238	2.000	1.120	0.620	685006
3/8	0.381	0.286	2.000	1.250	0.750	685007
7/16	0.323	0.242	2.000	1.250	0.750	685008
1/2	0.367	0.275	2.000	1.250	0.750	685009
9/16	0.429	0.322	3.000	1.380	0.750	685010

Tap Size	A Diameter (Inch)	B Square (Inch)	C Extension (Inch)	D	E Diameter (Inch)	Code
5/8	0.480	0.360	3.000	1.620	0.880	685011
3/4	0.590	0.442	3.000	1.750	1.000	685012
7/8	0.697	0.523	3.000	2.000	1.120	685013
1/8 P SS	0.312	0.234	2.000	1.250	0.620	685020
1/8 P LS	0.437	0.328	2.000	1.250	0.750	685021
1/4 P	0.562	0.421	2.000	1.250	0.880	685022
3/8 P	0.700	0.531	3.000	1.500	1.120	685023
1/2 P	0.687	0.515	3.000	1.500	1.120	685024

Tap Wrenches



T-Handle



Ratchet
For drill presses or lathes. Used for threading a drilled hole manually at one machine location without moving the workpiece. Better than a hand-held tap wrench.



Piloted Spindle



Adjustable Tap and Reamer

Description	Range	Range (mm)	Length (Inch)	Code
T-Handle	#0 – #12	1.5 – 5.0	–	318001
	#10 – 1/4	4.0 – 6.0	–	318002
	#12 – 5/16	5.0 – 8.0	–	318003
	1/4 – 1/2	6.0 – 12.0	–	318004
Ratchet	#0 – 1/4	1.5 – 6.0	–	318006
	1/4 – 1/2	6.0 – 12.0	–	318007

Description	Range	Range (mm)	Length (Inch)	Code
Piloted Spindle	#0 – 1/4	1.5 – 6	–	318009
	1/4 – 1/2	6 – 12	–	318010
Adjustable Tap and Reamer	#0 – 1/4	1.5 – 6	7	318012
	#12 – 1/2	5 – 12	11	318013
	1/4 – 3/4	6 – 20	15	318014
	3/8 – 1	10 – 25	19	318015
	3/8 – 1-3/4	9.2 – 36	29	318017



Round Dies

High Speed Steel – Adjustable – Split

Machine Screw, Fractional, NPT Pipe & Metric Sizes

Machine Screw & Fractional Sizes

Size	Threads per Inch	Die Diameter (Inch)	Code
0	80	13/16	601500
1	64	13/16	601501
1	72	13/16	601502
2	56	13/16	601503
2	64	13/16	601504
3	48	13/16	601505
3	56	13/16	601506
4	48	13/16	601507
4	40	13/16	601508
4	36	13/16	601509
5	40	13/16	601510
5	44	13/16	601511
6	32	13/16	601512
6	40	13/16	601513
8	32	13/16	601514
8	36	13/16	601515
10	24	13/16	601516
10	32	13/16	601517
12	24	13/16	601518
12	28	13/16	601519
1/4	20	13/16	601520
1/4	28	13/16	601521
5/16	18	13/16	601522
5/16	24	13/16	601523
4	48	1	601524
4	40	1	601525
5	40	1	601526
6	32	1	601527
6	40	1	601528
8	32	1	601529
8	36	1	601530
10	24	1	601531
10	32	1	601532
12	24	1	601533
12	28	1	601534
1/4	20	1	601535
1/4	28	1	601536
5/16	18	1	601537
5/16	24	1	601538
3/8	16	1	601539
3/8	24	1	601540
7/16	14	1	601541
7/16	20	1	601542
1/2	13	1	601543
1/2	20	1	601544
1/4	20	1-1/2	601545
1/4	28	1-1/2	601546
5/16	18	1-1/2	601547
5/16	24	1-1/2	601548
3/8	16	1-1/2	601549
3/8	24	1-1/2	601550
7/16	14	1-1/2	601551
7/16	20	1-1/2	601552
1/2	13	1-1/2	601553
1/2	20	1-1/2	601554
9/16	12	1-1/2	601555
9/16	18	1-1/2	601556
5/8	11	1-1/2	601557
5/8	18	1-1/2	601558
11/16	11	1-1/2	601559
11/16	16	1-1/2	601560
3/4	10	1-1/2	601561
3/4	16	1-1/2	601562
1/4	20	2	601563
1/4	28	2	601564
5/16	18	2	601565
5/16	24	2	601566
3/8	16	2	601567
3/8	24	2	601568
7/16	14	2	601569
7/16	20	2	601570
1/2	13	2	601571
1/2	20	2	601572
9/16	12	2	601573
9/16	18	2	601574
5/8	11	2	601575
5/8	18	2	601576
3/4	10	2	601577
3/4	16	2	601578
7/8	9	2	601579
7/8	14	2	601580
1	8	2	601581
1	12	2	601582
1	14	2	601583
1-1/8	7	2-1/2	601584
1-1/8	12	2-1/2	601585
1-1/4	7	2-1/2	601586
1-1/4	12	2-1/2	601587
1-3/8	6	2-1/2	601588
1-3/8	12	2-1/2	601589
1-1/2	6	2-1/2	601590
1-1/2	12	2-1/2	601591

NPT Pipe Sizes

Size	Threads per Inch	Die Diameter (Inch)	Code
1/8	27	1	601592
1/8	27	1-1/2	601593
1/4	18	1-1/2	601594
3/8	18	1-1/2	601595
1/2	14	2	601596
3/4	14	2	601597
1	11-1/2	2-1/2	601598

Metric Sizes

Size (mm)	Pitch (mm)	Die Diameter (Inch)	Code
2	0.40	1	601599
2.2	0.45	1	601600
2.3	0.40	1	601601
2.5	0.45	1	601602
2.6	0.45	1	601603
3	0.50	1	601604
3.5	0.60	1	601605
4	0.50	1	601606
4	0.70	1	601607
4.5	0.50	1	601608
4.5	0.75	1	601609
5	0.50	1	601610
5	0.80	1	601611
6	0.50	1	601612
6	0.75	1	601613
6	1.00	1	601614
7	0.75	1	601615
7	1.00	1	601616
8	0.75	1	601617
8	1.00	1	601618
8	1.25	1	601619
9	1.25	1	601620
10	0.75	1	601621
10	1.00	1	601622



Round Dies

High Speed Steel – Adjustable – Split

Machine Screw, Fractional, NPT Pipe & Metric Sizes

Metric Sizes *(continued)*

Size (mm)	Pitch (mm)	Die Diameter (Inch)	Code
10	1.25	1	601623
10	1.50	1	601624
11	1.50	1	601625
12	1.00	1	601626
9	1.00	1-1/2	601627
9	1.25	1-1/2	601628
10	0.75	1-1/2	601629
10	1.00	1-1/2	601630
10	1.25	1-1/2	601631
10	1.50	1-1/2	601632
11	1.00	1-1/2	601633
11	1.50	1-1/2	601634
12	1.00	1-1/2	601635
12	1.25	1-1/2	601636
12	1.50	1-1/2	601637
12	1.75	1-1/2	601638
14	1.00	1-1/2	601639
14	1.25	1-1/2	601640
14	1.50	1-1/2	601641
14	2.00	1-1/2	601642
15	1.50	1-1/2	601643
16	1.00	1-1/2	601644
16	1.50	1-1/2	601645
16	2.00	1-1/2	601646
17	1.50	1-1/2	601647
18	1.50	1-1/2	601648
18	2.00	1-1/2	601649
18	2.50	1-1/2	601650
20	1.50	1-1/2	601651
20	2.50	1-1/2	601652
20	1.50	2	601653
20	2.00	2	601654
20	2.50	2	601655
22	1.00	2	601656
22	1.50	2	601657
22	2.00	2	601658
22	2.50	2	601659
24	1.50	2	601660
24	2.00	2	601661
24	3.00	2	601662
27	2.00	2	601663
27	3.00	2	601664
28	1.50	2	601665
30	1.50	2	601666
30	2.00	2	601667
30	3.50	2	601668



Hexagonal Dies

Carbon Steel – Rethreading

Machine Screw, Fractional, NPT Pipe & Metric Sizes

Machine Screw & Fractional Sizes

Size	Threads per Inch	Code
2	56	311787
4	40	311788
4	48	311789
5	40	311790
5	44	311791
6	32	311792
6	40	311793
8	32	311794
8	36	311795
10	24	311796
10	32	311797
12	24	311798
12	28	311799
1/4	20	311800
1/4	28	311801
5/16	18	311802
5/16	24	311803
3/8	16	311804
3/8	24	311805
7/16	14	311806
7/16	20	311807
1/2	13	311808
1/2	20	311809
9/16	12	311810
9/16	18	311811
5/8	11	311812
5/8	18	311813
11/16	11	311814
11/16	16	311815
3/4	10	311816
3/4	16	311817
7/8	9	311818
7/8	14	311819
1	8	311820
1	12	311821
1	14	311822
1-1/8	7	311823
1-1/8	12	311824
1-1/4	7	311825
1-1/4	12	311826
1-3/8	6	311827
1-3/8	12	311828
1-1/2	6	311829
1-1/2	12	311830
1-3/4	5	311831
2	4-1/2	311832
2-1/4	4-1/2	311833
2-1/2	4	311834

NPT Pipe Sizes

Size (Inch)	Threads per Inch	Code
1/8	27	311874
1/4	18	311875
3/8	18	311876
1/2	14	311877
3/4	14	311878
1	11-1/2	311879

Hexagonal Dies



Carbon Steel – Rethreading

Machine Screw, Fractional, NPT Pipe & Metric Sizes *(continued)*

Metric Sizes

Size (mm)	Pitch (mm)	Code	Size (mm)	Pitch (mm)	Code	Size (mm)	Pitch (mm)	Code	Size (mm)	Pitch (mm)	Code
3	0.50	311835	8	1.25	311845	14	2.00	311855	24	3.00	311865
3	0.60	311836	9	1.00	311846	16	1.50	311856	27	2.00	311866
4	0.70	311837	9	1.25	311847	16	2.00	311857	27	3.00	311867
4	0.75	311838	10	1.25	311848	18	1.50	311858	30	2.00	311868
5	0.80	311839	10	1.50	311849	18	2.50	311859	30	3.50	311869
5	0.90	311840	11	1.50	311850	20	1.50	311860	33	2.00	311870
6	1.00	311841	12	1.25	311851	20	2.50	311861	33	3.50	311871
6.3	1.00	311842	12	1.50	311852	22	1.50	311862	36	3.00	311872
7	1.00	311843	12	1.75	311853	22	2.50	311863	36	4.00	311873
8	1.00	311844	14	1.50	311854	24	2.00	311864			

Round Die Holders



Hand Type - Die Stock



Piloted Spindle



Floating

Description	Ø Die (Inch)	Ø Body (Inch)	Ø Shank (Inch)	Overall Length (Inch)	Code
Hand Type Die Stock	13/16	–	–	–	318020
	1	–	–	–	318021
	1-5/16	–	–	–	318022
	1-1/2	–	–	–	318023
	2	–	–	–	318024
	2-1/2	–	–	–	318025

Description	Ø Die (Inch)	Ø Body (Inch)	Ø Shank (Inch)	Overall Length (Inch)	Code
Piloted Spindle	13/16	1-1/2	–	3	318030
	1	1-1/2	–	3	318031
Floating	13/16	–	1/2	–	318027
	1	–	1/2	–	318028
	1-1/2	–	3/4	–	318029

Screw Extractors



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



Size	Sizes for Screws & Bolts (Inch)	Pipe Size (Inch)	Code
1	3/16 – 1/4	–	311496
2	1/4 – 5/16	–	311497
3	5/16 – 7/16	–	311498
4	7/16 – 9/16	1/8	311499
5	9/16 – 3/4	1/4	311500
6	3/4 – 1	3/8	311501

Size	Sizes for Screws & Bolts (Inch)	Pipe Size (Inch)	Code
7	1 – 1-3/8	1/2	311502
8	1-3/8 – 1-3/4	3/4	311503
9	1-3/4 – 2-1/8	1	311504
10	2-1/8 – 2-1/2	1-1/4	311505
11	2-1/2 – 3	1-1/2	311506
12	3 – 3-1/2	2	311507

Size	Sizes for Screws & Bolts (Inch)	Pipe Size (Inch)	Code
SETS – 5 Pieces – Sizes 1 to 5 Supplied in Vinyl Pouch			311508

Premium Bolt & Screw Extrator Sets

Spiral & Square – Left Hand – Gold Finish



Spiral – 10 Pieces

Description	Code
5 left hand drill sizes: 3/32", 1/8", 3/16", 1/4" and 5/16", and 5 spiral extrators Supplied in Metal Index	750008



Square – 8 Pieces

Description	Code
4 left hand drill sizes: 1/8", 3/16", 1/4" and 5/16", and 4 square extrators Supplied in Metal Index	750009

Tap & Drill Sets

- Larger drill diameters which reduce tap breakage
- Supplied in vinyl storage case

Fractional & Machine Screw



Taps (Plug)	Tap Drill
6 - 32	7/64
8 - 32	#29
10 - 24	#23
10 - 32	#20
1/4 - 20	13/64
5/16 - 18	17/64
3/8 - 16	P
1/2 - 13	7/16

Description	Code
16-Piece Set (8 taps and 8 drills) Supplied in Vinyl Pouch	311526

Metric



Taps (Plug)	Tap Drill (mm)
M3 x 0.50	2.50
M3.5 x 0.60	2.90
M4 x 0.70	3.30
M5 x 0.80	4.20
M6 x 1.00	5.00
M8 x 1.25	6.75
M10 x 1.50	8.50
M12 x 1.75	10.25

Description	Code
16-Piece Set (8 taps and 8 drills) Supplied in Vinyl Pouch	311527

Premium Tap & Drill Sets

Black & Gold – 18 Pieces



- These premium heavy duty drills have gold treatment for maximum lubricity and torsional strength

Description	Code
135º Split Point Drills: 5/16", 27/64", #7, #21, #25, #29, #36, F and U, and Spiral Point Taps: 6-32, 8-32, 10-24, 10-32, 1/4-20, 5/16-18, 3/8-16, 7/16-14 and 1/2-13 Supplied in Metal Index	750007

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN Coated – 4 Flute – Center Cut

Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated Code	TiAlN Coated Code
1/32	1/8	3/32	1-1/2	932957	933186
3/64	1/8	1/8	1-1/2	932960	933189
1/16	1/8	3/16	1-1/2	932963	933192
5/64	1/8	3/16	1-1/2	932966	933195
3/32	1/8	3/8	1-1/2	932969	933198
7/64	1/8	3/8	1-1/2	932972	933201
1/8	1/8	1/2	1-1/2	932975	933204
9/64	3/16	9/16	2	932978	933207
5/32	3/16	9/16	2	932981	933210
11/64	3/16	5/8	2	932984	933213
3/16	3/16	5/8	2	932987	933216
13/64	1/4	5/8	2-1/2	932990	933219
7/32	1/4	5/8	2-1/2	932993	933222
15/64	1/4	3/4	2-1/2	932996	933225
1/4	1/4	3/4	2-1/2	932999	933228
17/64	5/16	3/4	2-1/2	933002	933231
9/32	5/16	3/4	2-1/2	933005	933234
19/64	5/16	13/16	2-1/2	933008	933237
5/16	5/16	13/16	2-1/2	933011	933240
21/64	3/8	7/8	2-1/2	933014	933243
11/32	3/8	7/8	2-1/2	933017	933246
23/64	3/8	7/8	2-1/2	933020	933249
3/8	3/8	7/8	2-1/2	933023	933252
25/64	7/16	1	2-3/4	933026	933255
13/32	7/16	1	2-3/4	933029	933258
27/64	7/16	1	2-3/4	933032	933261
7/16	7/16	1	2-3/4	933035	933264
29/64	1/2	1	3	933038	933267
15/32	1/2	1	3	933041	933270
31/64	1/2	1	3	933044	933273
1/2	1/2	1	3	933047	933276
9/16	9/16	1-1/4	3	933050	933279
5/8	5/8	1-1/4	3-1/2	933053	933282
11/16	3/4	1-1/2	4	933056	933285
3/4	3/4	1-1/2	4	933059	933288
7/8	7/8	1-1/2	4	933062	933291
1	1	1-1/2	4	933065	933294

Metric – Regular Length



Cutter Diameter (mm)	Shank Diameter (mm)	Length of Cut (mm)	Overall Length (mm)	Uncoated Code
1.0	3.0	4.0	38.0	934373
1.5	3.0	4.5	38.0	934376
2.0	3.0	6.0	38.0	934379
2.5	3.0	8.0	38.0	934382
3.0	3.0	10.0	38.0	934385
3.5	4.0	12.0	50.0	934388
4.0	4.0	12.0	50.0	934391
4.5	5.0	14.0	50.0	934394
5.0	5.0	15.0	50.0	934397
6.0	6.0	18.0	63.0	934400
7.0	8.0	20.0	63.0	934403
8.0	8.0	20.0	63.0	934406
9.0	10.0	22.0	63.0	934409
10.0	10.0	22.0	63.0	934412
11.0	12.0	25.0	75.0	934415
12.0	12.0	25.0	75.0	934418
14.0	14.0	25.0	75.0	934421
16.0	16.0	32.0	90.0	934424
18.0	18.0	32.0	100.0	934427
20.0	20.0	38.0	100.0	934430
22.0	22.0	38.0	102.0	934433
25.0	25.0	38.0	100.0	934436

Stub Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated Code
1/32	1/8	5/64	1-1/2	932070
3/64	1/8	3/32	1-1/2	932073
1/16	1/8	1/8	1-1/2	932076
5/64	1/8	5/32	1-1/2	932079
3/32	1/8	3/16	1-1/2	932082
7/64	1/8	7/32	1-1/2	932085
1/8	1/8	1/4	1-1/2	932088
9/64	3/16	9/32	2	932091
5/32	3/16	5/16	2	932094
11/64	3/16	5/16	2	932097
3/16	3/16	3/8	2	932100
13/64	1/4	3/8	2	932103
7/32	1/4	7/16	2	932106
15/64	1/4	7/16	2	932109
1/4	1/4	1/2	2	932112
5/16	5/16	1/2	2	932115
3/8	3/8	5/8	2	932118
7/16	7/16	5/8	2-1/2	932121
1/2	1/2	5/8	2-1/2	932124
5/8	5/8	3/4	3	932127
3/4	3/4	1	3	932130

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN-Futura Coated – 4 Flute – Center Cut



- Suitable for cutting hardened and high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics

Tolerance: 0/-0.0012

Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN-Futura Coated
				Code	Code
1/8	1/8	3/4	2-1/4	932892	934580
3/16	3/16	3/4	2-1/4	932895	934900
1/4	1/4	1-1/8	3	932898	934582
5/16	5/16	1-1/8	3	932901	934583
3/8	3/8	1-1/8	3	932904	934901
7/16	7/16	2	4	932907	934585
1/2	1/2	2	4	932910	934586
5/8	5/8	2-1/4	5	932913	934902
3/4	3/4	2-1/4	5	932916	934588
1	1	2-1/4	5	932919	934589

Extra Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN-Futura Coated
				Code	Code
1/8	1/8	1	3	932744	934620
3/16	3/16	1-1/8	3	932747	934911
1/4	1/4	1-1/2	4	932750	934622
5/16	5/16	1-5/8	4	932753	934623
3/8	3/8	1-3/4	4	932756	934912
7/16	7/16	3	6	932759	934625
1/2	1/2	3	6	932762	934626
5/8	5/8	3	6	932765	934913
3/4	3/4	3	6	932768	934628
1	1	3	6	932771	934629

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN Coated – 4 Flute – Ball Nose

Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN Coated
				Code	Code
1/32	1/8	3/32	1-1/2	933422	933658
3/64	1/8	1/8	1-1/2	933425	933661
1/16	1/8	3/16	1-1/2	933428	933664
5/64	1/8	3/16	1-1/2	933431	933667
3/32	1/8	3/8	1-1/2	933434	933670
7/64	1/8	3/8	1-1/2	933437	933673
1/8	1/8	1/2	1-1/2	933440	933676
9/64	3/16	9/16	2	933443	933679
5/32	3/16	9/16	2	933446	933682
11/64	3/16	5/8	2	933449	933685
3/16	3/16	5/8	2	933452	933688
13/64	1/4	5/8	2-1/2	933455	933691
7/32	1/4	5/8	2-1/2	933458	933694
15/64	1/4	3/4	2-1/2	933461	933697
1/4	1/4	3/4	2-1/2	933464	933700
17/64	5/16	3/4	2-1/2	933467	933703
9/32	5/16	3/4	2-1/2	933470	933706
19/64	5/16	13/16	2-1/2	933473	933709
5/16	5/16	13/16	2-1/2	933476	933712
21/64	3/8	7/8	2-1/2	933479	933715

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN Coated
				Code	Code
11/32	3/8	7/8	2-1/2	933482	933718
23/64	3/8	7/8	2-1/2	933485	933721
3/8	3/8	7/8	2-1/2	933488	933724
25/64	7/16	1	2-3/4	933491	933727
13/32	7/16	1	2-3/4	933494	933730
27/64	7/16	1	2-3/4	933497	933733
7/16	7/16	1	2-3/4	933500	933736
29/64	1/2	1	3	933503	933739
15/32	1/2	1	3	933506	933742
31/64	1/2	1	3	933509	933745
1/2	1/2	1	3	933512	933748
9/16	9/16	1-1/4	3	933515	933751
5/8	5/8	1-1/4	3-1/2	933518	933754
11/16	3/4	1-1/2	4	933521	933757
3/4	3/4	1-1/2	4	933524	933760
7/8	7/8	1-1/2	4	933527	933763
1	1	1-1/2	4	933530	933766

End Mills

Micrograin Solid Carbide – Uncoated – 4 Flute – Ball Nose *(continued)*

Metric – Regular Length



Cutter Diameter (mm)	Shank Diameter (mm)	Length of Cut (mm)	Overall Length (mm)	Uncoated Code
1.0	3.0	4.0	38.0	934519
1.5	3.0	4.5	38.0	934521
2.0	3.0	6.0	38.0	934523
2.5	3.0	8.0	38.0	934525
3.0	3.0	10.0	38.0	934527
3.5	4.0	12.0	50.0	934529
4.0	4.0	12.0	50.0	934531
4.5	5.0	14.0	50.0	934533
5.0	5.0	15.0	50.0	934535
6.0	6.0	18.0	63.0	934537
7.0	8.0	20.0	63.0	934539
8.0	8.0	20.0	63.0	934541
9.0	10.0	22.0	63.0	934543
10.0	10.0	22.0	63.0	934545
11.0	12.0	25.0	75.0	934547
12.0	12.0	25.0	75.0	934549
14.0	14.0	25.0	75.0	934551
16.0	16.0	32.0	90.0	934553
18.0	18.0	32.0	100.0	934555
20.0	20.0	38.0	100.0	934557
25.0	25.0	38.0	100.0	934561

Stub Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated Code
1/32	1/8	5/64	1-1/2	932210
3/64	1/8	3/32	1-1/2	932213
1/16	1/8	1/8	1-1/2	932216
5/64	1/8	5/32	1-1/2	932219
3/32	1/8	3/16	1-1/2	932222
7/64	1/8	7/32	1-1/2	932225
1/8	1/8	1/4	1-1/2	932228
9/64	3/16	9/32	2	932231
5/32	3/16	5/16	2	932234
11/64	3/16	5/16	2	932237
3/16	3/16	3/8	2	932240
13/64	1/4	3/8	2	932243
7/32	1/4	7/16	2	932246
15/64	1/4	7/16	2	932249
1/4	1/4	1/2	2	932252
5/16	5/16	1/2	2	932255
3/8	3/8	5/8	2	932258
7/16	7/16	5/8	2-1/2	932261
1/2	1/2	5/8	2-1/2	932264
5/8	5/8	3/4	3	932267
3/4	3/4	1	3	932270

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN-Futura Coated – 4 Flute – Ball Nose



- Suitable for cutting hardened and high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics

Tolerance: 0/-0.0012

Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated Code	TiAlN-Futura Coated Code
1/8	1/8	3/4	2-1/4	932670	934600
3/16	3/16	3/4	2-1/4	932673	934601
1/4	1/4	1-1/8	3	932676	934907
5/16	5/16	1-1/8	3	932679	934603
3/8	3/8	1-1/8	3	932682	934604
7/16	7/16	2	4	932685	934605
1/2	1/2	2	4	932688	934606
5/8	5/8	2-1/4	5	932691	934607
3/4	3/4	2-1/4	5	932694	934608
1	1	2-1/4	5	932697	934609

Extra Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated Code
1/8	1/8	1	3	932818
3/16	3/16	1-1/8	3	932821
1/4	1/4	1-1/2	4	932824
5/16	5/16	1-5/8	4	932827
3/8	3/8	1-3/4	4	932830
7/16	7/16	3	6	932833
1/2	1/2	3	6	932836
5/8	5/8	3	6	932839
3/4	3/4	3	6	932842
1	1	3	6	932845

Roughers

Solid Carbide – Uncoated & TiAlN Coated – 4 Flute – Center Cut





Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN Coated
				Code	Code
1/4	1/4	3/4	2-1/2	934584	934615
5/16	5/16	3/4	2-1/2	934587	934618
3/8	3/8	7/8	2-1/2	934590	934621
1/2	1/2	1	3	934593	934624

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN Coated
				Code	Code
5/8	5/8	1-1/4	3-1/2	934596	934627
3/4	3/4	1-1/2	4	934599	934630
1	1	1-3/4	4	934602	934633

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN Coated – 2 Flute – Center Cut

TITANIUM ALUMINUM NITRIDE (TiAlN): A titanium based PVD coating having a high content of aluminum. About 30% harder than TiN, this coating provides a unique ability to work well in extremely high temperatures as it has the highest oxidation threshold temperature of any coating available today for solid round tools. TiAlN coated tools run extremely well in dry milling applications, potentially saving the user significant dollars from reduced coolant costs and related environmental issues.

TiAlN coated end mills produce excellent results in:

- Stainless steels
- Hardened materials
- Titanium alloys
- Cast irons
- Dry milling applications
- Applications with interrupted cutting
- High speed machining applications (HSM)

Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN Coated
				Code	Code
1/32	1/8	3/32	1-1/2	932920	933075
3/64	1/8	1/8	1-1/2	932921	933078
1/16	1/8	3/16	1-1/2	932922	933081
5/64	1/8	3/16	1-1/2	932923	933084
3/32	1/8	3/8	1-1/2	932924	933087
7/64	1/8	3/8	1-1/2	932925	933090
1/8	1/8	1/2	1-1/2	932926	933093
9/64	3/16	9/16	2	932927	933096
5/32	3/16	9/16	2	932928	933099
11/64	3/16	5/8	2	932929	933102
3/16	3/16	5/8	2	932930	933105
13/64	1/4	5/8	2-1/2	932931	933108
7/32	1/4	5/8	2-1/2	932932	933111
15/64	1/4	3/4	2-1/2	932933	933114
1/4	1/4	3/4	2-1/2	932934	933117
17/64	5/16	3/4	2-1/2	932935	933120
9/32	5/16	3/4	2-1/2	932936	933123
19/64	5/16	13/16	2-1/2	932937	933126

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN Coated
				Code	Code
5/16	5/16	13/16	2-1/2	932938	933129
21/64	3/8	7/8	2-1/2	932939	933132
11/32	3/8	7/8	2-1/2	932940	933135
23/64	3/8	7/8	2-1/2	932941	933138
3/8	3/8	7/8	2-1/2	932942	933141
25/64	7/16	1	2-3/4	932943	933144
13/32	7/16	1	2-3/4	932944	933147
27/64	7/16	1	2-3/4	932945	933150
7/16	7/16	1	2-3/4	932946	933153
29/64	1/2	1	3	932947	933156
15/32	1/2	1	3	932948	933159
31/64	1/2	1	3	932949	933162
1/2	1/2	1	3	932950	933165
9/16	9/16	1-1/4	3	932951	933168
5/8	5/8	1-1/4	3-1/2	932952	933171
11/16	3/4	1-1/2	4	932953	933174
3/4	3/4	1-1/2	4	932954	933177
7/8	7/8	1-1/2	4	932955	933180
1	1	1-1/2	4	932956	933183

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN Coated – 2 Flute – Center Cut *(continued)*

Metric – Regular Length



Cutter Diameter (mm)	Shank Diameter (mm)	Length of Cut (mm)	Overall Length (mm)	Uncoated Code
1.0	3.0	4.0	38.0	934300
1.5	3.0	4.5	38.0	934303
2.0	3.0	6.0	38.0	934306
2.5	3.0	8.0	38.0	934309
3.0	3.0	10.0	38.0	934312
3.5	4.0	12.0	50.0	934315
4.0	4.0	12.0	50.0	934318
4.5	5.0	14.0	50.0	934321
5.0	5.0	15.0	50.0	934324
6.0	6.0	18.0	63.0	934327
7.0	8.0	20.0	63.0	934330
8.0	8.0	20.0	63.0	934333
9.0	10.0	22.0	63.0	934336
10.0	10.0	22.0	63.0	934339
11.0	12.0	25.0	75.0	934342
12.0	12.0	25.0	75.0	934345
14.0	14.0	25.0	75.0	934348
16.0	16.0	32.0	90.0	934351
18.0	18.0	32.0	100.0	934354
20.0	20.0	38.0	100.0	934357
22.0	22.0	38.0	102.0	934360
25.0	25.0	38.0	100.0	934363

Stub Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated Code
1/32	1/8	5/64	1-1/2	932000
3/64	1/8	3/32	1-1/2	932003
1/16	1/8	1/8	1-1/2	932006
5/64	1/8	5/32	1-1/2	932009
3/32	1/8	3/16	1-1/2	932012
7/64	1/8	7/32	1-1/2	932015
1/8	1/8	1/4	1-1/2	932018
9/64	3/16	9/32	2	932021
5/32	3/16	5/16	2	932024
11/64	3/16	5/16	2	932027
3/16	3/16	3/8	2	932030
13/64	1/4	3/8	2	932033
7/32	1/4	7/16	2	932036
15/64	1/4	7/16	2	932039
1/4	1/4	1/2	2	932042
5/16	5/16	1/2	2	932045
3/8	3/8	5/8	2	932048
7/16	7/16	5/8	2-1/2	932051
1/2	1/2	5/8	2-1/2	932054
5/8	5/8	3/4	3	932057
3/4	3/4	1	3	932060

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN-Futura Coated – 2 Flute – Center Cut



- Suitable for cutting hardened and high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics

Tolerance: 0/-0.0012

Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated Code	TiAlN-Futura Coated Code
1/8	1/8	3/4	2-1/4	932855	934570
3/16	3/16	3/4	2-1/4	932858	934571
1/4	1/4	1-1/8	3	932861	934572
5/16	5/16	1-1/8	3	932864	934573
3/8	3/8	1-1/8	3	932867	934574
7/16	7/16	2	4	932870	934575
1/2	1/2	2	4	932873	934576
5/8	5/8	2-1/4	5	932876	934577
3/4	3/4	2-1/4	5	932879	934578
1	1	2-1/4	5	932882	934579

Extra Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated Code	TiAlN-Futura Coated Code
1/8	1/8	1	3	932707	934610
3/16	3/16	1-1/8	3	932710	934611
1/4	1/4	1-1/2	4	932713	934908
5/16	5/16	1-5/8	4	932716	934613
3/8	3/8	1-3/4	4	932719	934614
7/16	7/16	3	6	932722	934909
1/2	1/2	3	6	932725	934616
5/8	5/8	3	6	932728	934617
3/4	3/4	3	6	932731	934910
1	1	3	6	932734	934619

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN Coated – 2 Flute – Ball Nose

Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN Coated
				Code	Code
1/32	1/8	3/32	1-1/2	933304	933540
3/64	1/8	1/8	1-1/2	933307	933543
1/16	1/8	3/16	1-1/2	933310	933546
5/64	1/8	3/16	1-1/2	933313	933549
3/32	1/8	3/8	1-1/2	933316	933552
7/64	1/8	3/8	1-1/2	933319	933555
1/8	1/8	1/2	1-1/2	933322	933558
9/64	3/16	9/16	2	933325	933561
5/32	3/16	9/16	2	933328	933564
11/64	3/16	5/8	2	933331	933567
3/16	3/16	5/8	2	933334	933570
13/64	1/4	5/8	2-1/2	933337	933573
7/32	1/4	5/8	2-1/2	933340	933576
15/64	1/4	3/4	2-1/2	933343	933579
1/4	1/4	3/4	2-1/2	933346	933582
17/64	5/16	3/4	2-1/2	933349	933585
9/32	5/16	3/4	2-1/2	933352	933588
19/64	5/16	13/16	2-1/2	933355	933591
5/16	5/16	13/16	2-1/2	933358	933594
21/64	3/8	7/8	2-1/2	933361	933597
11/32	3/8	7/8	2-1/2	933364	933600
23/64	3/8	7/8	2-1/2	933367	933603
3/8	3/8	7/8	2-1/2	933370	933606
25/64	7/16	1	2-3/4	933373	933609
13/32	7/16	1	2-3/4	933376	933612
27/64	7/16	1	2-3/4	933379	933615
7/16	7/16	1	2-3/4	933382	933618
29/64	1/2	1	3	933385	933621
15/32	1/2	1	3	933388	933624
31/64	1/2	1	3	933391	933627
1/2	1/2	1	3	933394	933630
9/16	9/16	1-1/4	3	933397	933633
5/8	5/8	1-1/4	3-1/2	933400	933636
11/16	3/4	1-1/2	4	933403	933639
3/4	3/4	1-1/2	4	933406	933642
7/8	7/8	1-1/2	4	933409	933645
1	1	1-1/2	4	933412	933648

Metric – Regular Length



Cutter Diameter (mm)	Shank Diameter (mm)	Length of Cut (mm)	Overall Length (mm)	Uncoated
				Code
1.0	3.0	4.0	38.0	934446
1.5	3.0	4.5	38.0	934449
2.0	3.0	6.0	38.0	934452
2.5	3.0	8.0	38.0	934455
3.0	3.0	10.0	38.0	934458
3.5	4.0	12.0	50.0	934461
4.0	4.0	12.0	50.0	934464
4.5	5.0	14.0	50.0	934467
5.0	5.0	15.0	50.0	934470
6.0	6.0	18.0	63.0	934473
7.0	8.0	20.0	63.0	934476
8.0	8.0	20.0	63.0	934479
9.0	10.0	22.0	63.0	934482
10.0	10.0	22.0	63.0	934485
11.0	12.0	25.0	75.0	934488
12.0	12.0	25.0	75.0	934491
14.0	14.0	25.0	75.0	934494
16.0	16.0	32.0	90.0	934497
18.0	18.0	32.0	100.0	934500
20.0	20.0	38.0	100.0	934503
22.0	22.0	38.0	102.0	934506
25.0	25.0	38.0	100.0	934509

Stub Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated
				Code
1/32	1/8	5/64	1-1/2	932140
3/64	1/8	3/32	1-1/2	932143
1/16	1/8	1/8	1-1/2	932146
5/64	1/8	5/32	1-1/2	932149
3/32	1/8	3/16	1-1/2	932152
7/64	1/8	7/32	1-1/2	932155
1/8	1/8	1/4	1-1/2	932158
9/64	3/16	9/32	2	932161
5/32	3/16	5/16	2	932164
11/64	3/16	5/16	2	932167
3/16	3/16	3/8	2	932170
13/64	1/4	3/8	2	932173
7/32	1/4	7/16	2	932176
15/64	1/4	7/16	2	932179
1/4	1/4	1/2	2	932182
5/16	5/16	1/2	2	932185
3/8	3/8	5/8	2	932188
7/16	7/16	5/8	2-1/2	932191
1/2	1/2	5/8	2-1/2	932194
5/8	5/8	3/4	3	932197
3/4	3/4	1	3	932200

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN-Futura Coated – 2 Flute – Ball Nose



- Suitable for cutting hardened and high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics

Tolerance: 0/-0.0012

Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN-Futura Coated
				Code	Code
1/8	1/8	3/4	2-1/4	932633	934903
3/16	3/16	3/4	2-1/4	932636	934591
1/4	1/4	1-1/8	3	932639	934592
5/16	5/16	1-1/8	3	932642	–
3/8	3/8	1-1/8	3	932645	934594
7/16	7/16	2	4	932648	934595
1/2	1/2	2	4	932651	934905
5/8	5/8	2-1/4	5	932654	934597
3/4	3/4	2-1/4	5	932657	934598
1	1	2-1/4	5	932660	934906

Extra Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN-Futura Coated
				Code	Code
1/8	1/8	1	3	932781	934914
3/16	3/16	1-1/8	3	932784	934631
3/16	3/16	1	4	–	935426
1/4	1/4	1-1/2	4	932787	934632
1/4	1/4	1-1/2	6	–	935417
5/16	5/16	1-5/8	4	932790	934915
3/8	3/8	1-3/4	4	932793	934634
3/8	3/8	1-1/2	6	–	935420
7/16	7/16	3	6	932796	934635
1/2	1/2	1-1/2	6	–	935423
1/2	1/2	3	6	932799	934636
5/8	5/8	3	6	932802	934637
3/4	3/4	3	6	932805	934638
1	1	3	6	932808	934639

End Mills

Micrograin Solid Carbide – Uncoated & TiAlN-Futura Coated – 3 & 5 Flute – 45° Helix



Tolerance: 0/-0.0012

3 Flute – Regular Length



- Designed to machine stainless steel, inconel, titanium and other hard to machine materials
- The 3 flute design gives high stability and allows good chip removal in plunging and slotting operations
- The normal rake angle and 45° medium helix allows an extremely wide range of application

Cutter Diameter (Inch)	Shank Diameter (Inch)	Shank Style	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN-Futura Coated
					Code	Code
1/8	1/8	Plain	3/8	1-1/2	935237	935864
3/16	3/16	Plain	9/16	2	935240	935867
1/4	1/4	Plain	3/4	2-1/2	935243	935870
5/16	5/16	Plain	13/16	2-1/2	935246	935873
3/8	3/8	Weldon	7/8	2-1/2	935249	935876
1/2	1/2	Weldon	1	3	935252	935879
9/16	9/16	Weldon	1-1/4	3-1/2	935255	935882
5/8	5/8	Weldon	1-1/4	3-1/2	935258	935885
3/4	3/4	Weldon	1-1/2	4	935261	935888
1	1	Weldon	1-1/2	4	935264	935891

5 Flute – Regular Length



- Designed to machine stainless steels, inconels, and other alloys
- 5 flute and 45° medium helix allow harmonic balance and smooth cutting

Cutter Diameter (Inch)	Shank Diameter (Inch)	Shank Style	Length of Cut (Inch)	Overall Length (Inch)	Uncoated	TiAlN-Futura Coated
					Code	Code
1/8	1/8	Plain	1/2	1-1/2	935081	935708
5/32	3/16	Plain	9/16	2	935084	935711
3/16	3/16	Plain	9/16	2	935087	935714
7/32	1/4	Plain	3/4	2-1/2	935090	935717
1/4	1/4	Plain	3/4	2-1/2	935093	935720
5/16	5/16	Plain	13/16	2-1/2	935096	935723
3/8	3/8	Plain	1	2-1/2	935099	935726
7/16	7/16	Plain	1	2-3/4	935102	935729
1/2	1/2	Plain	1-1/4	3	935105	935732
5/8	5/8	Plain	1-5/8	3-1/2	935108	935735
3/4	3/4	Plain	1-5/8	4	935111	935738
7/8	7/8	Plain	2	4	935114	935741
1	1	Plain	2	4	935117	935744

Carbide End Mills – General Purpose

Speeds, Feeds & Technical Information – Uncoated & TiAlN Coated

Speeds & Feeds

Material	Inch							Metric						
	Speed (SFM)		Feed (Inches per Tooth)					Speed (SFM)		Feed (Inches per Tooth)				
	Uncoated	TiAlN	1/8	1/4	1/2	3/4	1	Uncoated	TiAlN	3.0	6.0	12.0	19.0	25.0
Aluminum	300-400	500-600	.0007	.0020	.0040	.0060	.0080	91-122	152-183	.0178	.0508	.1016	.1524	.2032
Aluminum Alloys	300-400	500-600	.0007	.0020	.0040	.0060	.0080	91-122	152-183	.0178	.0508	.1016	.1524	.2032
Brass and Bronze	225-275	400-600	.0010	.0020	.0030	.0040	.0050	69-84	122-183	.0254	.0508	.0762	.1016	.1270
Copper	275-350	350-450	.0010	.0010	.0020	.0040	.0060	84-107	107-137	.0254	.0254	.0508	.1016	.1524
Copper Alloys	275-350	350-450	.0010	.0010	.0020	.0040	.0060	84-107	107-137	.0254	.0254	.0508	.1016	.1524
Graphite	350-500	600-1000	.0015	.0025	.0035	.0050	.0070	107-152	183-305	.0381	.0635	.0889	.1270	.1778
Plastics	400-500	600-900	.0015	.0030	.0060	.0100	.0150	122-152	183-274	.0381	.0762	.1524	.2540	.3810
Magnesium	350-500	600-1000	.0010	.0020	.0040	.0060	.0100	107-152	183-305	.0254	.0508	.1016	.1524	.2540
Magnesium Alloys	350-500	600-1000	.0010	.0020	.0040	.0060	.0100	107-152	183-305	.0254	.0508	.1016	.1524	.2540
Cast Iron Grey	200-200	400-500	.0010	.0020	.0030	.0045	.0060	61-91	122-152	.0254	.0508	.0762	.1143	.1524
Cast Iron Ductile	200-250	275-400	.0004	.0008	.0020	.0035	.0045	61-76	84-122	.0102	.0203	.0508	.0889	.1143
Cast Iron Malleable	150-225	275-350	.0003	.0005	.0015	.0025	.0035	46-69	84-107	.0076	.0127	.0381	.0635	.0889
Steel-Low Carbon	225-275	275-400	.0010	.0020	.0030	.0045	.0060	69-84	84-122	.0254	.0508	.0762	.1143	.1524
Steel-Medium Carbon	175-225	250-325	.0006	.0012	.0025	.0040	.0050	53-69	76-99	.0152	.0305	.0635	.1016	.1270
Tool Steels (<38 RC)	175-225	250-325	.0006	.0012	.0025	.0040	.0050	53-69	76-99	.0152	.0305	.0635	.1016	.1270
Tool Steels (38-50 RC)	100-150	200-300	.0004	.0008	.0020	.0030	.0040	30-46	61-99	.0102	.0203	.0508	.0762	.1016
Tool Steels (>50 RC)	25-50	35-70	.0003	.0006	.0015	.0020	.0030	7-15	11-21	.0076	.0152	.0381	.0508	.0762
Stainless Steel 300 series	150-250	225-325	.0003	.0010	.0020	.0035	.0045	46-76	69-99	.0076	.0254	.0508	.0889	.1143
Stainless Steel 400 series	125-225	225-300	.0004	.0008	.0015	.0025	.0030	38-69	69-91	.0102	.0203	.0381	.0635	.0762
Stainless Steel PH series	60-90	100-225	.0003	.0007	.0015	.0025	.0030	18-27	30-69	.0076	.0178	.0381	.0635	.0762
Titanium	50-90	150-200	.0003	.0007	.0015	.0020	.0030	15-27	46-61	.0076	.0178	.0381	.0508	.0762
High Temp Alloys	25-50	50-80	.0002	.0005	.0008	.0013	.0016	7-15	15-24	.0051	.0127	.0203	.0330	.0406
NOTE: *Speeds listed are starting parameters*														

General Recommendations for Speeds & Feeds

Lower Speeds are used for...	Higher Speeds are used for...	Less Feed is used for...	More Feed is used for...
Hard Materials	Soft Materials	Frail cutters	Lighter cuts
Abrasive Materials	Better Finishes	Better finishes	Abrasive materials
Sandy Castings	Small diameter cutters	Deep slotting cuts	Scaly surface conditions
Heavy Cuts	lighter cuts	Long chip materials	Excessive land wear
High Nickel Content	frail setups	Cutting edge chipping	Chatter problems
Excessive land wear	excessive chipping		Easy to machine materials

Troubleshooting

Condition	Causes	Solution
Tool deflection or uneven widths of cut	Tool size	Always select the largest diameter possible for the cut to be made
Poor surface finish	Number of flutes on tool Rigidity of setup Depth of cut	Increase the number of flutes Make a secure and rigid setup Take a lighter cut at a higher speed
Tool breakage	Setup Loose or worn toolholders Tool extension	End Mills should be mounted as true to the spindle as possible Replace loose or worn toolholders Keep overhang to a minimum
Tool Life	Heat End mill style Improper speeds and feeds	Use a coated tool Use tooling designed for specific materials and applications Increase the number of flutes Lighten the chip load Use proper speeds and feeds for tool style and material

End Mills

Cobalt M42 – 4 Flute – Center Cut – Weldon Shanks





Tolerance: +0.0010/0

Regular Length – Inch

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/8	3/8	3/8	2-5/16	930260
5/32	3/8	1/2	2-3/8	930265
3/16	3/8	1/2	2-3/8	930270
7/32	3/8	5/8	2-7/16	930275
1/4	3/8	5/8	2-7/16	930280
9/32	3/8	3/4	2-1/2	930285
5/16	3/8	3/4	2-1/2	930290
11/32	3/8	3/4	2-1/2	930295
3/8	3/8	3/4	2-1/2	930300
13/32	3/8	1	2-11/16	930305
7/16	3/8	1	2-11/16	930310
15/32	3/8	1	2-11/16	930311
1/2	1/2	1-1/4	3-1/4	930315
9/16	1/2	1-3/8	3-3/8	930320
5/8	5/8	1-5/8	3-3/4	930325
11/16	5/8	1-5/8	3-3/4	930326
3/4	3/4	1-5/8	3-7/8	930330
13/16	3/4	1-7/8	4-1/8	930331
7/8	3/4	1-7/8	4-1/8	930335
7/8	7/8	1-7/8	4-1/8	930340
15/16	3/4	1-7/8	4-1/8	930341
1	3/4	1-7/8	4-1/8	930345
1	1	2	4-1/2	930350
1-1/8	1	2	4-1/2	930355

Long Length – Inch



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	1-1/4	3-1/16	930375
5/16	3/8	1-3/8	3-1/8	930380
3/8	3/8	1-1/2	3-1/4	930385
7/16	1/2	1-3/4	3-3/4	930386
1/2	1/2	2	4	930390
5/8	5/8	2-1/2	4-5/8	930395
3/4	3/4	3	5-1/4	930400
7/8	7/8	3-1/2	5-3/4	930405
1	1	4	6-1/2	930410

Extra Long Length – Inch



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	1-3/4	3-9/16	930420
3/8	3/8	2-1/2	4-1/4	930425
1/2	1/2	3	5	930430
5/8	5/8	4	6-1/8	930435
3/4	3/4	4	6-1/4	930440
1	1	6	8-1/2	930445
1-1/4	1-1/4	6	8-1/2	930450

Regular Length – Metric

- Standard regular length in metric diameter
- End mills with center cutting are recommended for a wide range of cutting jobs, including slotting, shallow pocketing and tracer milling

Cutter Diameter (mm)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
12.5	1/2	1-1/4	3-1/4	931826
36	1	2	4-1/2	931828
40	1-1/4	2	4-1/2	931830
45	1-1/4	2	4-1/2	931832

Tolerance: k10

Cutter Diameter (mm)	Shank Diameter (mm)	Length of Cut (mm)	Overall Length (mm)	Code
2.0	6.0	7.0	51.0	931300
2.5	6.0	8.0	52.0	931301
3.0	6.0	8.0	52.0	931302
3.5	6.0	10.0	54.0	931303
4.0	6.0	11.0	55.0	931304
4.5	6.0	11.0	55.0	931305
5.0	6.0	13.0	57.0	931306
5.5	6.0	13.0	57.0	931307
6.0	6.0	13.0	57.0	931308
6.5	10.0	16.0	66.0	931309
7.0	10.0	16.0	66.0	931310
7.5	10.0	16.0	69.0	931311
8.0	10.0	19.0	69.0	931312
8.5	10.0	19.0	69.0	931313
9.0	10.0	19.0	69.0	931314
9.5	10.0	19.0	69.0	931315
10.0	10.0	22.0	72.0	931316
11.0	12.0	22.0	79.0	931317
12.0	12.0	26.0	83.0	931318
13.0	12.0	26.0	83.0	931319
14.0	12.0	26.0	83.0	931320
15.0	12.0	26.0	83.0	931321
16.0	16.0	32.0	92.0	931322
17.0	16.0	32.0	92.0	931323
18.0	16.0	32.0	92.0	931324
19.0	16.0	32.0	92.0	931325
20.0	20.0	38.0	104.0	931326

End Mills

Cobalt M42 – Ball Nose – Weldon Shanks

4 Flute – Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/8	3/8	3/8	2-5/16	930455
3/16	3/8	1/2	2-3/8	930460
1/4	3/8	5/8	2-7/16	930465
5/16	3/8	3/4	2-1/2	930470
3/8	3/8	3/4	2-1/2	930475
1/2	1/2	1-1/4	3-1/4	930480
5/8	5/8	1-5/8	3-3/4	930485
3/4	3/4	1-5/8	3-7/8	930490
1	1	2	4-1/2	930495

4 Flute – Long Length



Tolerance: +0.0010/0

- Longer flute length suitable for high efficient copying process and deep cutting of die mold corner radius

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	1-1/4	3-1/16	931600
5/16	3/8	1-3/8	3-1/8	931602
3/8	3/8	1-1/2	3-1/4	931604
1/2	1/2	2	4	931606
5/8	5/8	2-1/2	4-5/8	931608
3/4	3/4	3	5-1/4	931610
7/8	7/8	3-1/2	5-3/4	931612
1	1	4	6-1/2	931614

2 Flute – Regular Length



Tolerance: +0.0010/0

- Designed for milling of radius bottom slots, fillets and special contours
- The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut
- 2 flute design provides good chip removal ability in slotting

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/8	3/8	3/8	2-5/16	930180
3/16	3/8	1/2	2-3/8	930185
1/4	3/8	5/8	2-7/16	930190
5/16	3/8	3/4	2-1/2	930195
3/8	3/8	3/4	2-1/2	930200
7/16	1/2	1	3	931668
1/2	1/2	1	3	930205
9/16	1/2	1-1/8	3-1/8	931670
5/8	1/2	1-1/8	3-1/8	931684
5/8	5/8	1-3/8	3-3/8	930210
3/4	1/2	1-5/16	3-5/16	931686
3/4	3/4	1-5/8	3-7/8	930215
7/8	3/4	2	4-1/4	931696
7/8	7/8	2	4-1/4	931672
1	3/4	2-1/4	4-1/2	931698
1	1	2-1/4	4-3/4	930220
1-1/8	3/4	1-5/8	3-7/8	931688
1-1/8	1	2-1/4	4-3/4	931674
1-1/4	3/4	1-5/8	3-7/8	931690
1-1/4	1-1/4	2-1/2	5	931676
1-3/8	3/4	1-5/8	4-1/8	931692
1-3/8	1-1/4	2-1/2	5	931678
1-1/2	3/4	1-5/8	4-1/8	931694
1-1/2	1-1/4	2-1/2	5	931680
2	1-1/4	2-1/2	5	931682

End Mills

Cobalt M42 – 2 Flute – 3 Inch Cutting Length – Center Cut – Weldon Shanks



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/2	1/2	3	5	930155
5/8	5/8	3	5-1/8	930160
3/4	3/4	3	5-1/4	930165
1	1	3	5-1/2	930170
1-1/4	1-1/4	3	5-1/2	930175
1-3/8	1	3	5-1/2	930176

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1-1/2	1-1/4	3	5-1/2	930177
1-5/8	1-1/4	3	5-1/2	930178
1-3/4	1-1/4	3	5-1/2	930179
1-7/8	1-1/4	3	5-1/2	930173
2	1-1/4	3	5-1/2	930174

End Mills

Cobalt M42 – 2 Flute – Center Cut – Weldon Shanks



Regular Length – Inch

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/8	3/8	3/8	2-5/16	930000
5/32	3/8	7/16	2-5/16	930005
3/16	3/8	7/16	2-5/16	930010
7/32	3/8	1/2	2-5/16	930015
1/4	3/8	1/2	2-5/16	930020
9/32	3/8	9/16	2-5/16	930025
5/16	3/8	9/16	2-5/16	930030
11/32	3/8	9/16	2-5/16	930035
3/8	3/8	9/16	2-5/16	930040
13/32	3/8	13/16	2-1/2	930045
7/16	3/8	13/16	2-1/2	930050
15/32	3/8	13/16	2-1/2	930051
1/2	1/2	1	3	930055
9/16	1/2	1-1/8	3-1/8	930060
5/8	5/8	1-5/16	3-7/16	930065
11/16	5/8	1-5/16	3-7/16	930070
3/4	3/4	1-5/16	3-9/16	930075
13/16	3/4	1-1/2	3-3/4	930080
7/8	3/4	1-1/2	3-3/4	930085
7/8	7/8	1-1/2	3-3/4	930090
15/16	3/4	1-1/2	3-3/4	930091
1	3/4	1-1/2	3-3/4	930095
1	1	1-5/8	4-1/8	930100
1-1/16	3/4	1-5/8	3-7/8	930101
1-1/8	1	1-5/8	4-1/8	930102
1-3/16	3/4	1-5/8	3-7/8	930103
1-1/4	1-1/4	1-5/8	4-1/8	930105
1-5/16	3/4	1-5/8	3-7/8	930106
1-3/8	1	1-5/8	4-1/8	930107
1-1/2	1-1/4	1-5/8	4-1/8	930110
1-5/8	1-1/4	1-5/8	4-1/8	930111
1-3/4	1-1/4	1-5/8	4-1/8	930112
1-7/8	1-1/4	1-5/8	4-1/8	930113
2	1-1/4	1-5/8	4-1/8	930115

Regular Length – Metric

Cutting Tolerance: e8

Cutter Diameter (mm)	Shank Diameter (mm)	Length of Cut (mm)	Overall Length (mm)	Code
2.0	6.0	4.0	48.0	931250
2.5	6.0	5.0	49.0	931251
3.0	6.0	5.0	49.0	931252
3.5	6.0	6.0	50.0	931253
4.0	6.0	7.0	51.0	931254
4.5	6.0	7.0	51.0	931255
5.0	6.0	8.0	52.0	931256
5.5	6.0	8.0	52.0	931257
6.0	6.0	8.0	52.0	931258
6.5	10.0	10.0	60.0	931259
7.0	10.0	10.0	60.0	931260
7.5	10.0	10.0	60.0	931261
8.0	10.0	11.0	61.0	931262
8.5	10.0	11.0	61.0	931263
9.0	10.0	11.0	61.0	931264
9.5	10.0	11.0	61.0	931265
10.0	10.0	13.0	63.0	931266
11.0	12.0	13.0	70.0	931267
12.0	12.0	16.0	73.0	931268
13.0	12.0	16.0	73.0	931269
14.0	12.0	16.0	73.0	931270
15.0	12.0	16.0	73.0	931271
16.0	16.0	19.0	79.0	931272
17.0	16.0	19.0	79.0	931273
18.0	16.0	19.0	79.0	931274
19.0	16.0	19.0	79.0	931275
20.0	20.0	22.0	88.0	931276
22.0	20.0	22.0	88.0	931277
24.0	25.0	26.0	102.0	931278
25.0	25.0	26.0	102.0	931279
28.0	25.0	26.0	102.0	931280
30.0	25.0	26.0	102.0	931281
32.0	32.0	32.0	112.0	931282
*36.0	1”	50.0	112.0	931820
*40.0	1-1/4”	50.0	112.0	931822
*45.0	1-1/4”	32.0	112.0	931824

**Inch shank*

Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	1	3-1/16	930120
5/16	3/8	1-1/2	3-1/4	930125
3/8	3/8	1-1/2	3-1/4	930130
1/2	1/2	2	4	930135
5/8	5/8	2	4-1/8	930140
3/4	3/4	2-1/4	4-1/2	930145

Extended Length



Tolerance: +0.0010/0

- Provided with the longest flute length and suitable for high accuracy machining of deep step

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	5/8	3-1/16	931700
5/16	3/8	3/4	3-5/16	931702
3/8	3/8	3/4	3-5/16	931704
1/2	1/2	1	4	931706
5/8	5/8	1-3/8	4-5/8	931708
3/4	3/4	1-5/8	5-3/8	931710

Throw Away Cutters

Cobalt M42 – 3 Flute – Center Cut – Weldon Shanks



Stub Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/16	1/4	3/32	31/32	313164
3/32	1/4	5/32	1-1/64	313165
1/8	1/4	3/16	1-3/32	313166
5/32	1/4	1/4	1-9/32	313167
3/16	1/4	9/32	1-11/32	313168
7/32	1/4	5/16	1-13/32	313169
1/4	1/4	3/8	1-13/32	313170

Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/16	1/4	5/32	1-3/32	313171
3/32	1/4	1/4	1-1/4	313172
1/8	1/4	5/16	1-11/32	313173
5/32	1/4	3/8	1-17/32	313174
3/16	1/4	7/16	1-21/32	313175
7/32	1/4	1/2	1-3/4	313176
1/4	1/4	5/8	1-3/4	313177

Throw Away Cutters

Metric – Cobalt M42 – 3 Flute – Center Cut – Weldon Shanks

Regular Length

Cutter Diameter (mm)	Shank Diameter (Inch)	Length of Cut (mm)	Overall Length (mm)	Code
1.5	1/4	2.5	24.5	313178
2.0	1/4	3.0	25.5	313179
2.5	1/4	4.0	26.0	313180
3.0	1/4	4.5	28.0	313181
3.5	1/4	5.5	30.0	313182
4.0	1/4	6.5	32.5	313183
5.0	1/4	7.5	36.0	313184
6.0	1/4	9.5	36.0	313185

Long Length

Cutter Diameter (mm)	Shank Diameter (Inch)	Length of Cut (mm)	Overall Length (mm)	Code
1.5	1/4	4.0	28.0	313186
2.0	1/4	4.5	29.0	313187
2.5	1/4	6.5	32.0	313188
3.0	1/4	7.5	34.0	313189
3.5	1/4	8.5	36.5	313190
4.0	1/4	9.5	39.0	313191
5.0	1/4	12.5	44.5	313192
6.0	1/4	16.0	44.5	313193

End Mills

Cobalt M42 – 6 Flute – Center Cut – Weldon Shanks

Regular Length – Inch

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1-1/16	3/4	1-1/2	3-7/8	930351
1-3/16	3/4	2	4-1/4	930356
1-1/4	1-1/4	2	4-1/2	930360
1-5/16	3/4	2	4-3/8	930361
1-3/8	1	2	4-1/2	930362
1-1/2	1-1/4	2	4-1/2	930365
1-5/8	1-1/4	2	4-1/2	930366
1-3/4	1-1/4	2	4-1/2	930367
1-7/8	1-1/4	2	4-3/8	930368
2	1-1/4	2	4-1/2	930370

Long Length – Inch

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1-1/16	3/4	2	4-1/4	930411
1-1/8	1	4	6-1/2	930412
1-1/4	1-1/4	4	6-1/2	930415
1-1/2	1-1/4	4	6-1/2	930416
1-3/4	1-1/4	4	6-1/2	930417

End Mills

Cobalt M42 – 6 Flute – Center Cut – Weldon Shanks



Regular Length – Metric

Cutting Tolerance: k10

Cutter Diameter (mm)	Shank Diameter (mm)	Length of Cut (mm)	Overall Length (mm)	Code
22.0	20.0	38.0	104.0	931327
24.0	25.0	45.0	121.0	931328
25.0	25.0	45.0	121.0	931329
28.0	25.0	45.0	121.0	931331
30.0	25.0	45.0	121.0	931332
32.0	32.0	53.0	133.0	931333

Long Length – Inch



Tolerance: +0.0010/0

- Longer flute length allows deeper cutting

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/2	1/2	2	4	931740
5/8	5/8	2-1/2	4-5/8	931742
3/4	3/4	3	5-1/4	931744
7/8	7/8	3-1/2	5-3/4	931746
1	1	4	6-1/2	931748
1-1/4	1-1/4	4	6-1/2	930415
1-1/2	1-1/4	4	6-1/2	930416
2	1-1/4	4	6-1/2	931756
2	2	4	7-3/4	931754
2	2	6	9-3/4	931758

Extra Long Length – Inch



Tolerance: +0.0010/0

- Longest flute length suitable for high accuracy machining of deep step

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/2	1/2	3	5	931782
5/8	5/8	4	6-1/8	931784
3/4	3/4	4	6-1/4	931786
7/8	7/8	5	7-1/4	931788
1	1	6	8-1/2	931790
1-1/2	1-1/4	8	10-1/2	931792
2	2	8	11-3/4	931794

Roughers

Cobalt M42 – Coarse Pitch – Non-Center Cut – Weldon Shanks

Regular Length – Uncoated & TiAlN Futura Coated



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Cobalt	TiAlN-Futura Coated
					Code	Code
1/4	3/8	5/8	2-7/16	3	930530	930531
5/16	3/8	3/4	2-1/2	3	930535	930536
3/8	3/8	3/4	2-1/2	4	930540	930541
7/16	3/8	1	2-11/16	4	930545	930546
1/2	1/2	1-1/4	3-1/4	4	930550	930551
9/16	1/2	1-3/8	3-3/8	4	930555	930556
5/8	5/8	1-5/8	3-3/4	4	930560	930561
11/16	5/8	1-5/8	3-3/4	4	930565	930566
3/4	3/4	1-5/8	3-3/4	4	930570	930571
7/8	3/4	1-7/8	4-1/8	5	930575	930576
1	1	2	4-1/2	5	930580	930581
1-1/8	1	2	4-1/2	6	930585	930586
1-1/4	1-1/4	2	4-1/2	6	930590	930591
1-1/2	1-1/4	2	4-1/2	6	930595	930596
1-3/4	1-1/4	2	4-1/2	6	930597	–
2	1-1/4	2	4-1/2	8	930600	930601
2	2	2	5-3/4	8	930605	930606
2	2	3	6-3/4	8	930610	930611
2	2	4	7-3/4	8	930615	930616

Cobalt M42 – Fine Pitch – Non-Center Cut – Weldon Shanks

Regular Length – Uncoated & TiAlN Futura Coated



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Cobalt	TiAlN-Futura Coated
					Code	Code
1/4	3/8	5/8	2-7/16	3	930620	930621
5/16	3/8	3/4	2-1/2	3	930625	930626
3/8	3/8	3/4	2-1/2	4	930630	930631
7/16	3/8	1	2-11/16	4	930635	930636
1/2	1/2	1-1/4	3-1/4	4	930640	930641
5/8	5/8	1-5/8	3-3/4	4	930645	930646
3/4	3/4	1-5/8	3-3/4	4	930650	930651
7/8	3/4	1-7/8	4-1/8	5	930653	–
1	1	2	4-1/2	5	930655	930656
1-1/8	1	2	4-1/2	6	930658	–
1-1/4	1-1/4	2	4-1/2	6	930660	930661
1-1/2	1-1/4	2	4-1/2	6	930665	930666
2	1-1/4	2	4-1/2	8	930670	930671

Roughers

Cobalt M42 – Coarse Pitch – Non-Center Cut – Weldon Shanks

Long & Extra Long Length – Uncoated & TiAlN Coated



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Cobalt	TiAlN Coated
					Code	Code
1/4	3/8	1-3/8	3-1/8	3	930687	–
5/16	3/8	1-3/8	3-1/8	3	930688	–
3/8	3/8	1-5/8	3-3/16	4	930689	–
1/2	1/2	2	4	4	930690	930691
1/2	1/2	3	5	4	930695	930696
5/8	5/8	2-1/2	4-5/8	4	930700	930701
5/8	5/8	3-1/8	5-1/4	4	930705	930706
3/4	3/4	3	5-1/4	4	930710	930711
7/8	7/8	3-1/2	5-5/8	5	930715	930716
1	1	4	6-1/2	5	930720	930721
1	1	6	8-1/2	5	930725	930726
1-1/4	1-1/4	4	6-1/2	6	930735	930731
1-1/4	1-1/4	6	8-1/2	6	–	930736
1-1/2	1-1/4	4	6-1/2	6	930740	930741
1-3/4	1-1/4	4	6-1/2	6	930742	–
2	1-1/4	4	6-1/2	8	930745	930746
2	2	8	11-3/4	8	930750	930751

Cobalt M42 – Fine Pitch – Non-Center Cut – Weldon Shanks

Long & Extra Long Length – Uncoated & TiAlN Coated



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Cobalt	TiAlN-Futura Coated
					Code	Code
5/16	3/8	1-3/8	3-1/8	3	930753	–
3/8	3/8	1-5/8	3-3/16	4	930754	–
1/2	1/2	2	4	4	930755	930756
5/8	5/8	2-1/2	4-5/8	4	930780	930781
3/4	3/4	3	5-1/4	4	930805	930806
7/8	7/8	3-1/2	5-5/8	5	930830	930831
1	1	4	6-1/2	5	930835	930836
1-1/4	1-1/4	4	6-1/2	6	930840	930841
1-1/2	1-1/4	4	6-1/2	6	930845	930846

Roughers

Cobalt M42 – For Aluminum – Coarse Pitch – Center Cut – 37° Helix – Weldon Shanks

3 Flute – Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	5/8	2-7/16	930955
5/16	3/8	3/4	2-1/2	930960
3/8	3/8	3/4	2-1/2	930965
1/2	1/2	1-1/4	3-1/4	930970
5/8	5/8	1-5/8	3-3/4	930975
3/4	3/4	1-5/8	3-7/8	930980
1	1	2	4-1/2	930985
1-1/4	1-1/4	2	4-1/2	930990

3 Flute – Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/2	1/2	2	4	930995
5/8	5/8	2-1/2	4-5/8	931000
3/4	3/4	3	5-1/4	931005
1	1	4	6-1/2	931010
1-1/4	1-1/4	4	6-1/2	931015
1-1/2	1-1/4	4	6-1/2	931020

Finishers

Cobalt M42 – For Aluminum – Center Cut – 45° Hi-Helix – Weldon Shanks

3 Flute – Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	5/8	2-7/16	931145
5/16	3/8	3/4	2-1/2	931150
3/8	3/8	3/4	2-1/2	931155
1/2	1/2	1-1/4	3-1/4	931160
5/8	5/8	1-5/8	3-3/4	931165
3/4	3/4	1-5/8	3-7/8	931170
1	1	2	4-1/2	931180

Roughers

Cobalt M42 – Coarse Pitch – Center Cut – Weldon Shanks

Regular Length – Uncoated & TiAlN-Futura Coated



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Cobalt	TiAlN-Futura Coated
					Code	Code
1/2	1/2	1-1/4	3-1/4	4	930850	930851
5/8	5/8	1-5/8	3-3/4	4	930855	930856
3/4	3/4	1-5/8	3-3/4	4	930860	930861
1	1	2	4-1/2	5	930865	930866
1-1/4	1-1/4	2	4-1/2	6	930870	930871
1-1/2	1-1/4	2	4-1/2	6	930875	930876

Roughers

Cobalt M42 – Coarse Pitch – Center Cut – Weldon Shanks

Long Length – Uncoated & TiAlN Coated



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Cobalt	TiAlN Coated
					Code	Code
1/2	1/2	2	4	4	930880	930881
5/8	5/8	2-1/2	4-5/8	4	930885	930886
3/4	3/4	3	5-1/4	4	930890	930892
7/8	3/4	3-1/2	5-5/8	4	930891	930893
1	1	4	6-1/2	5	930895	930896

Regular Length – Fine & Coarse Pitch – Center Cut – Weldon Shanks – PMX-TiAlN Coated





Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	PMX-TiAlN Coarse Pitch	PMX-TiAlN Fine Pitch
					Code	Code
1/4	3/8	5/8	2-7/16	3	931065	931025
5/16	3/8	3/4	2-1/2	3	931070	931030
3/8	3/8	3/4	2-1/2	4	931075	931035
1/2	1/2	1-1/4	3-1/4	4	931080	931040
5/8	5/8	1-5/8	3-3/4	4	931085	931045
3/4	3/4	1-5/8	3-3/4	4	931090	931050
1	1	2	4-1/2	5	931095	931055
1-1/4	1-1/4	2	4-1/2	6	931100	931060

Finishers

Coarse Pitch – 4 Flute – 30° Helix – Center Cut – Weldon Shanks – PMX-TiAlN Coated



Tolerance: +0.0015”
-0.0000”

- PMX - TiAlN is a powdered metal substrate coated with TiAlN
- The result is an extremely abrasive cutting edge that will allow you to increase speeds and ultimately reduce production time

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	PMX-TiAlN Coarse Pitch
					Code
1/4	3/8	5/8	2-7/16	4	931105
5/16	3/8	3/4	2-1/2	4	931110
3/8	3/8	3/4	2-1/2	4	931115
7/16	3/8	1	2-11/16	4	931120
1/2	1/2	1-1/4	3-1/4	4	931125
5/8	5/8	1-5/8	3-3/4	4	931130
1	1	2	4-1/2	4	931140

PMX = Powdered Metal

PMX-TiAlN End Mills

Work Conditions for Longer End Mill Life

Machining Material			Application Group			Conditions		
Denomination	Tensile Strength N/mm²		N 7600 N Flutes	NR-F 7644 N Flutes	NR 7640 N Flutes	V_C +TiAlN (SFM)	Feed material group	Cooling E = Emulsion O = Oil D = Dry
	From	To						
Easy Machining Steel	370	660	●	○	●	180/279	1	E
	550	1000	●	●	○	148/246	2/3	E
General Construction Steel	-	600	●	○	●	180/246	2	E
	500	900	●	○	●	148/213	3	E
Unalloyed Case Hardening Steel	-	600	●	○	●	180/246	2	E
Alloyed Case Hardening Steel	500	800	●	○	●	148/213	3	E
Martensitic Stainless Steel	450	950	●	●	●	98/148	5	O
Austenitic Stainless Steel	450	800	○	●	●	98/148	5	O
Heat-Resistant Steel	800	-	○	●	●	49/66	5	O
Nitriding Steel	700	900	●	○	●	115/180	3	E
Tempering Steel	800	1250	●	●	○	66/115	5	O
Soft or Normalized Heat-Treatable Steel	500	750	●	○	●	148/213	2	E
Unalloyed Heat-Treated Heat-Treatable Steel	700	1000	●	●	○	98/148	4	E
Alloyed Heat-Treated Heat-Treatable Steel	700	1000	●	●	○	98/148	4	E
	900	1250	●	●	○	66/115	5	O
Alloyed - Heat Treated Tool Steel	900	1250	●	●	○	66/115	5	O
Unalloyed or Alloyed	Brinell Hardness (HB)							
Dead Annealed Tool Steel	180	240	●	○	●	98/148	4	E
High Carbon and/or High-Alloy	Brinell Hardness (HB)							
Dead Annealed Tool Steel	220	300	●	●	○	66/115	5	O

Machining Material			Application Group			Conditions		
Denomination	Brinell Hardness HB		N 7600 N Flutes	NR-F 7644 N Flutes	NR 7640 N Flutes	V_C +TiAlN (SFM)	Feed Material Group	Cooling E = Emulsion O = Oil D = Dry
	From	To						
Cast Iron with Lamellar Graphite	100	240	●	○	●	115/213	2	E/D
	230	320	●	○	●	82/148	4	E/D
Cast Iron with Spheroidal Graphite	100	240	●	○	●	115/213	2	E/D
	230	320	●	○	●	82/148	4	E/D
Malleable Cast Iron	100	270	●	○	●	82/148	2	E/D

Machining Material			Application Group			Conditions		
Denomination	Tensile Strength N/mm²		N 7600 N Flutes	NR-F 7644 N Flutes	NR 7640 N Flutes	V_C +TiAlN (SFM)	Feed Material Group	Cooling E = Emulsion O = Oil D = Dry
	From	To						
Wroght and Cast Aluminum Alloys Silicon Contents up to 10%	–	180	○	–	○	951/1378	8	E
Cast Aluminum Alloys Silicon Contents up to 10%	150	250	●	–	●	295/558	1	E
Copper	200	400	○	–	○	361/689	1/8	E
Short Chips Brass up to 650	200	550	●	–	○	295/623	2	E
Short Chips Bronze up to 850	250	850	●	–	○	295/623	2	E/O
Long Chips Bronze up to 850	250	500	●	–	○	295/623	2	O
Wroght and Cast Magnesium Alloys	150	300	○	–	○	951/1378	2	D
Medium Strength Titanium Alloys	–	700	●	○	●	98/148	9	O
High Strength Titanium Alloys	600	1100	○	●	○	49/115	10	O

On Long Length End Mills it is recommend to reduce the feed by 50%
When an End Mill is Drilling, a reduction on the feed of 1/2 - 1/3 is recommended

● **POSSIBLE APPLICATION** ○ **VERY SUITABLE**

KAR QUALITY, VALUE AND SERVICE - CALL YOUR KAR DISTRIBUTOR TODAY!

PMX-TiAlN End Mills

Feed per Tooth

MATERIAL GROUP	5/32”	1/4”	5/16”	3/8”	1/2”	5/8”	3/4”	1”	1-1/4”	1-1/2”	2”	2-1/2”
1	0, 0008	0, 0012	0, 0014	0, 0023	0, 0027	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045
2	0, 0008	0, 0012	0, 0014	0, 0023	0, 0027	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045
3	0, 0008	0, 0012	0, 0014	0, 0023	0, 0027	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045
4	0, 0006	0, 0012	0, 0014	0, 0023	0, 0027	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045	0, 0045
5	0, 0005	0, 0010	0, 0012	0, 0020	0, 0020	0, 0030	0, 0030	0, 0030	0, 0030	0, 0030	0, 0030	0, 0030
6	0, 0010	0, 0024	0, 0031	0, 0036	0, 0045	0, 0068	0, 0068	0, 0068	0, 0068	0, 0068	0, 0068	0, 0068
7	0, 0006	0, 0008	0, 0011	0, 0017	0, 0021	0, 0032	0, 0041	0, 0041	0, 0041	0, 0041	0, 0041	0, 0041
8	0, 0010	0, 0017	0, 0024	0, 0030	0, 0036	0, 0050	0, 0059	0, 0059	0, 0059	0, 0059	0, 0059	0, 0059
9	0, 0010	0, 0017	0, 0024	0, 0030	0, 0036	0, 0050	0, 0059	0, 0059	0, 0059	0, 0059	0, 0059	0, 0059
10	0, 0006	0, 0008	0, 0011	0, 0017	0, 0021	0, 0032	0, 0041	0, 0041	0, 0041	0, 0041	0, 0041	0, 0041

★For LONG SERIES End Mills fz = fz/2

Vc = 0.262 x d x RPM

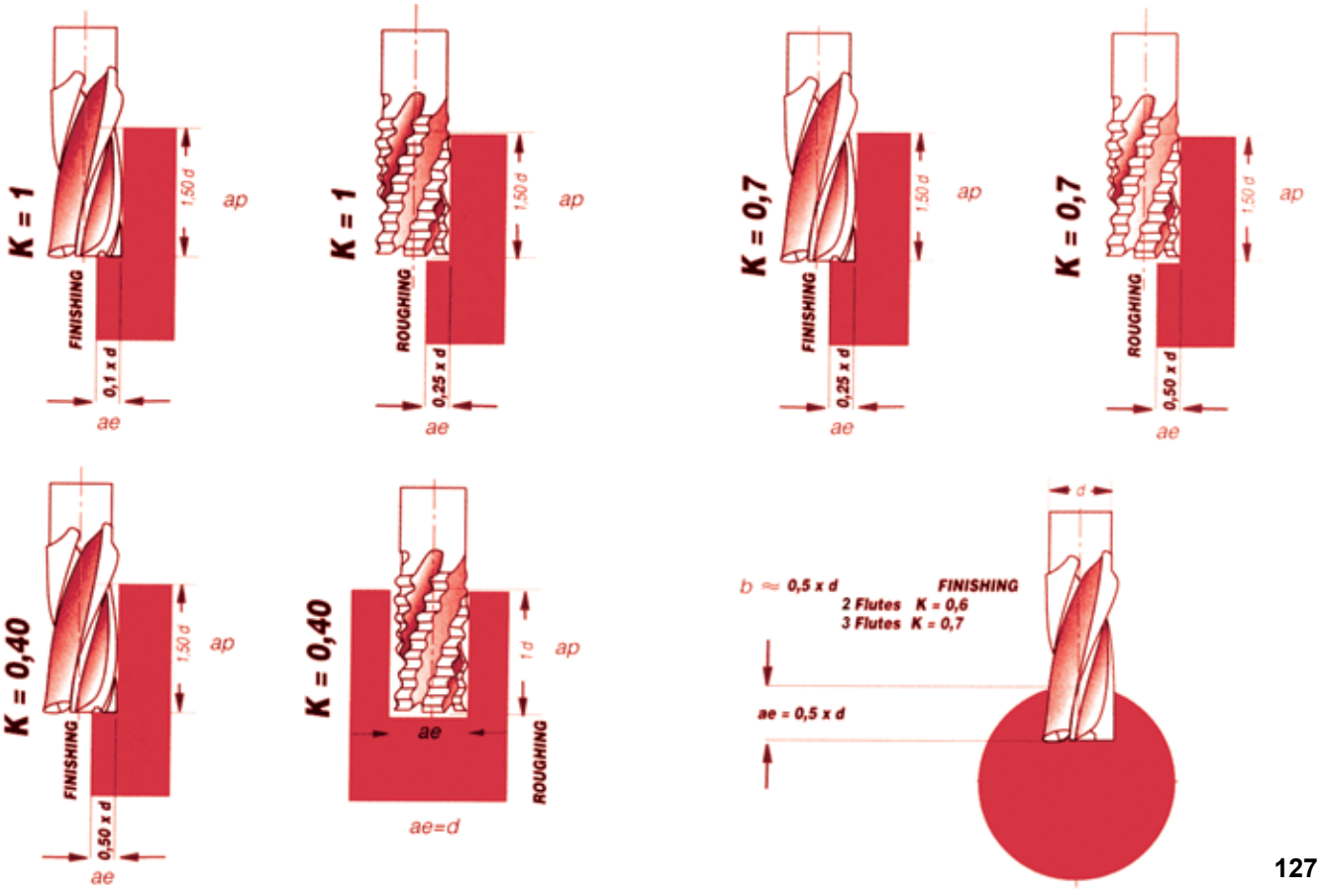
$$RPM = \frac{Vc}{d \times 0.262}$$

Vf = RPM x z x fz x k

Vc = Cutting Speed
d = Diameter of End Mill
z = Number of Teeth
fz = Feed per Tooth
K = Constant to multiply depending on the work conditions
ae = Axis Cut Depth
vf = Feed in inch per minute

Constant (K) Chart

Multiply by K depending on conditions shown



End Mills

High Speed Steel – Multi Flute – Non-Center Cut

Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Code
1/8	3/8	3/8	2-5/16	4	704000
5/32	3/8	7/16	2-5/16	4	704001
3/16	3/8	1/2	2-3/8	4	704002
7/32	3/8	5/8	2-1/4	4	704003
1/4	3/8	5/8	2-1/2	4	704004
9/32	3/8	11/16	2-1/2	4	704005
5/16	3/8	3/4	2-1/2	4	704006
11/32	3/8	3/4	2-1/2	4	704007
3/8	3/8	3/4	2-1/2	4	704008
13/32	3/8	1	2-11/16	4	704009
7/16	3/8	1	2-11/16	4	704010
15/32	3/8	1	2-11/16	4	704011
1/2	3/8	1	2-11/16	4	704012
1/2	1/2	1-1/4	3-1/4	4	704013
9/16	1/2	1-3/8	3-3/8	4	704014
5/8	1/2	1-3/8	3-3/8	4	704015
5/8	5/8	1-5/8	3-3/4	4	704016
11/16	1/2	1-5/8	3-5/8	4	704017
11/16	5/8	1-5/8	3-3/4	4	704018
3/4	1/2	1-5/8	3-5/8	4	704019
3/4	5/8	1-5/8	3-3/4	4	704020
3/4	3/4	1-5/8	3-7/8	4	704021
13/16	5/8	1-7/8	4	4	704022
13/16	3/4	1-7/8	4-1/8	4	704023

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Code
7/8	5/8	1-7/8	4	6	704024
7/8	3/4	1-7/8	4-1/8	4	704025
7/8	7/8	1-7/8	4-1/8	4	704026
15/16	5/8	1-7/8	4	4	704027
15/16	3/4	1-7/8	4-1/8	4	704028
1	1/2	1-7/8	3-7/8	4	704029
1	5/8	1-7/8	4	4	704030
1	3/4	1-7/8	4-1/8	4	704031
1	1	2	4-1/2	4	704032
1-1/8	1	2	4-1/2	6	704033
1-1/4	1-1/4	2	4-1/2	4	704034
1-1/4	1	2	4-1/2	6	704035
1-1/4	1-1/4	2	4-1/2	6	704036
1-3/8	1	2	4-1/2	6	704037
1-1/2	1	2	4-1/2	6	704038
1-1/2	1-1/4	2	4-1/2	4	704039
1-1/2	1-1/4	2	4-1/2	6	704040
1-5/8	1-1/4	2	4-1/2	6	704041
1-3/4	1-1/4	2	4-1/2	6	704042
1-7/8	1-1/4	2	4-1/2	6	704043
2	1-1/4	2	4-1/2	6	704044
2	1-1/4	2	4-1/2	8	704045

Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Code
1/4	3/8	1-1/4	3-1/16	4	704046
5/16	3/8	1-3/8	3-1/8	4	704047
3/8	3/8	1-1/2	3-1/4	4	704048
7/16	1/2	1-3/4	3-3/4	4	704049
1/2	1/2	2	4	4	704050
5/8	5/8	2-1/2	4-5/8	4	704051
3/4	3/4	3	5-1/4	4	704052
7/8	7/8	3-1/2	5-3/4	4	704053

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Code
1	1	4	6-1/2	4	704054
1-1/8	1	4	6-1/2	6	704055
1-1/4	1	4	6-1/2	6	704056
1-1/4	1-1/4	4	6-1/2	6	704057
1-1/2	1	4	6-1/2	6	704058
1-1/2	1-1/4	4	6-1/2	6	704059
1-3/4	1-1/4	4	6-1/2	6	704060
2	1-1/4	4	6-1/2	6	704061

Extra Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Code
1/4	3/8	1-3/4	3-9/16	4	704062
5/16	3/8	2	3-3/4	4	704063
3/8	3/8	2-1/2	4-1/4	4	704064
1/2	1/2	3	5	4	704065

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	No. of Flutes	Code
5/8	5/8	4	6-1/8	4	704066
3/4	3/4	4	6-1/4	4	704067
7/8	7/8	5	7-1/4	4	704068
1	1	6	8-1/2	4	704069
1-1/4	1-1/4	6	8-1/2	4	704070
1-1/2	1-1/4	8	10-1/2	4	704071

End Mills

High Speed Steel

Heavy Duty – Non-Center Cut – Combination Shank

4 Flute



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
2	2	2	5-3/4	704077
2	2	4	7-3/4	704078
2	2	6	9-3/4	704079
2	2	8	11-3/4	704080

6 Flute



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
2	2	4	7-3/4	704072
2	2	6	9-3/4	704073
2	2	8	11-3/4	704074
2	2	10	13-3/4	704075
2	2	12	15-3/4	704076

2 Flute – Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
3/32	3/8	5/16	2-1/4	704081
1/8	3/8	3/8	2-5/16	704082
5/32	3/8	7/16	2-5/16	704083
3/16	3/8	7/16	2-5/16	704084
7/32	3/8	1/2	2-5/16	704085
1/4	3/8	1/2	2-5/16	704086
9/32	3/8	9/16	2-5/16	704087
5/16	3/8	9/16	2-5/16	704088
11/32	3/8	9/16	2-5/16	704089
3/8	3/8	9/16	2-5/16	704090
13/32	3/8	13/16	2-1/2	704091
7/16	3/8	13/16	2-1/2	704092
15/32	3/8	13/16	2-1/2	704093
1/2	3/8	13/16	2-1/2	704094
1/2	1/2	1	3	704095
9/16	1/2	1-1/8	3-1/8	704096
5/8	1/2	1-1/8	3-1/8	704097
5/8	5/8	1-5/16	3-7/16	704098
11/16	1/2	1-5/16	3-5/16	704099
11/16	5/8	1-5/16	3-7/16	704100
3/4	1/2	1-5/16	3-5/16	704101
3/4	5/8	1-5/16	3-7/16	704102
3/4	3/4	1-5/16	3-9/16	704103
13/16	5/8	1-5/16	3-5/8	704104

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
13/16	3/4	1-5/16	3-3/4	704105
7/8	5/8	1-5/16	3-5/8	704106
7/8	3/4	1-5/16	3-3/4	704107
7/8	7/8	1-1/2	3-3/4	704108
15/16	5/8	1-1/2	3-5/8	704109
15/16	3/4	1-1/2	3-3/4	704110
1	1/2	1-1/2	3-1/2	704111
1	5/8	1-1/2	3-5/8	704112
1	3/4	1-1/2	3-3/4	704113
1	7/8	1-5/8	3-3/4	704114
1	1	1-5/8	4-1/8	704115
1-1/8	1	1-5/8	4-1/8	704116
1-1/4	7/8	1-5/8	3-7/8	704117
1-1/4	1	1-5/8	4-1/8	704118
1-1/4	1-1/4	1-5/8	4-1/8	704119
1-3/8	1	1-5/8	4-1/8	704120
1-1/2	1	1-5/8	4-1/8	704121
1-1/2	1-1/4	1-5/8	4-1/8	704122
1-5/8	1-1/4	1-5/8	4-1/8	704123
1-3/4	1-1/4	1-5/8	4-1/8	704124
1-7/8	1-1/4	1-5/8	4-1/8	704125
2	1-1/4	1-5/8	4-1/8	704126

2 Flute – Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	1-1/4	3-1/16	704127
5/16	3/8	1-3/8	3-1/8	704128
3/8	3/8	1-1/2	3-1/4	704129
1/2	1/2	2	4	704130
5/8	5/8	2	4-1/8	704131
3/4	3/4	2-1/4	4-1/2	704132

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
7/8	7/8	2-1/2	4-3/4	704133
1	1	3	5-1/2	704134
1-1/4	1	3	5-1/2	704135
1-1/4	1-1/4	3	5-1/2	704136
1-1/2	1-1/4	3	5-1/2	704137
2	1-1/4	3	5-1/2	704138

End Mills

High Speed Steel

4 Flute – Regular Length – Ball Nose



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/8	3/8	3/8	2-5/16	704162
3/16	3/8	1/2	2-3/8	704163
1/4	3/8	5/8	2-7/16	704164
5/16	3/8	3/4	2-1/2	704165
3/8	3/8	3/4	2-1/2	704166
1/2	1/2	1-1/4	3-1/4	704167
5/8	5/8	1-5/8	3-3/4	704168
3/4	3/4	1-5/8	3-7/8	704169
7/8	7/8	1-7/8	4-1/2	704170
1	1	2	4-1/2	704171
1-1/4	1-1/4	2	4-1/2	704172
1-1/2	1-1/4	2	4-1/2	704173

2 Flute – Regular Length – Ball Nose



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/8	3/8	1/2	2-3/8	704148
3/16	3/8	1/2	2-3/8	704149
1/4	3/8	5/8	2-7/16	704150
5/16	3/8	3/4	2-1/2	704151
3/8	3/8	3/4	2-1/2	704152
7/16	1/2	1	3	704153
1/2	1/2	1	3	704154
9/16	1/2	1-1/8	3-1/8	704155
5/8	5/8	1-1/8	3-1/2	704156
3/4	3/4	1-1/8	3-7/8	704157
7/8	7/8	2	4-1/4	704158
1	1	2-1/4	4-3/4	704159
1-1/4	1-1/4	2-1/2	5	704160
1-1/2	1-1/4	2-1/2	5	704161

2 Flute – Extended Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	5/8	3-1/16	704139
5/16	3/8	3/4	3-5/16	704140
3/8	3/8	3/4	3-5/16	704141
1/2	1/2	1	4	704142

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
5/8	5/8	1-3/8	4-5/8	704143
3/4	3/4	1-5/8	5-3/8	704144
7/8	7/8	2	6	704145
1	1	2-1/2	7-1/4	704146
1-1/4	1-1/4	3	7-1/4	704147

Metric – 2 Flute – Regular Length – Center Cut – Inch Weldon Shanks



Cutter Diameter (mm)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
3.0	3/8	5/16	2-5/16	704223
4.0	3/8	7/16	2-5/16	704224
5.0	3/8	1/2	2-5/16	704225
6.0	3/8	1/2	2-5/16	704226
7.0	3/8	9/16	2-5/16	704227
8.0	3/8	9/16	2-5/16	704228
9.0	3/8	9/16	2-5/16	704229
10.0	3/8	13/16	2-1/2	704230
11.0	3/8	13/16	2-1/2	704231
12.0	3/8	13/16	2-1/2	704232
13.0	1/2	1-1/8	3-1/8	704233
14.0	1/2	1-1/8	3-1/8	704234

Cutter Diameter (mm)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
16.0	1/2	1-5/16	3-7/16	704235
18.0	1/2	1-5/16	3-7/16	704236
20.0	3/4	1-1/2	3	704237
22.0	3/4	1-1/2	3-3/4	704238
24.0	3/4	2	4-1/2	704239
25.0	3/4	2	4-1/2	704240
26.0	3/4	1-5/8	3-7/8	704241
30.0	1	1-5/8	4-1/8	704242
32.0	1	1-5/8	4-1/8	704243
36.0	1	1-5/8	4-1/8	704244

High Helix Cutters

High Speed Steel – 2 Flute – For Machining Aluminum

Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	5/8	2-7/16	704264
5/16	3/8	3/4	2-1/2	704265
3/8	3/8	3/4	2-1/2	704266
7/16	3/8	1	2-11/16	704267
1/2	1/2	1-1/4	3-1/4	704268
5/8	5/8	1-5/8	3-3/4	704269

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
3/4	3/4	1-5/8	3-7/8	704270
7/8	7/8	1-7/8	4-1/8	704271
1	1	2	4-1/2	704272
1-1/4	1-1/4	2	4-1/2	704273
1-1/2	1-1/4	2	4-1/2	704274
1-3/4	1-1/4	2	4-1/2	704275
2	1-1/4	2	4-1/2	704276

Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	1-1/4	3-1/8	704277
5/16	3/8	1-3/8	3-1/8	704278
3/8	3/8	1-1/2	3-1/4	704279
7/16	1/2	1-3/4	3-3/4	704280
1/2	1/2	2	4	704281
5/8	5/8	2-1/2	4-5/8	704282

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
3/4	3/4	3	5-1/4	704283
1	1	4	6-1/2	704284
1-1/4	1-1/4	4	6-1/2	704285
1-1/2	1-1/4	4	6-1/2	704286
2	1-1/4	4	6-1/2	704287

Extra Long Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	3/8	1-3/4	3-9/16	704288
5/16	3/8	2	3-3/4	704289
3/8	3/8	2-1/2	4-1/4	704290
1/2	1/2	3	5	704291

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
5/8	5/8	4	6-1/8	704292
3/4	3/4	4	6-1/4	704293
1	1	6	8-1/2	704294
1-1/4	1-1/4	6	8-1/2	704295
1-1/2	1-1/4	8	10-1/2	704296

End Mills – High Performance V7 INOX

Micrograin Solid Carbide – NANO AlTiN Coated – 4 Flute – Square End & Corner Radius



- Minimizes tool deflection
- Low amplitude – eliminates vibration
- Allows deeper cuts and faster speeds
- Increases metal removal rates
- Supreme surface finish
- For machining of most materials under 40HRC



Regular Length

Tolerance of Cutting Diameter: 0/-0.0012
Tolerance of Shank Diameter: h6

Cutter Diameter (Inch)	Shank Diameter (Inch)	Shank Style	Length of Cut (Inch)	Overall Length (Inch)	Square End	Corner Radius	
					Code	*Radius (Inch)	Code
1/8	1/8	Plain	3/8	1-1/2	888000	0.015	888034
5/32	3/16	Plain	7/16	2	888002	0.015	–
3/16	3/16	Plain	7/16	2	888004	0.015	888036
7/32	1/4	Plain	7/16	2-1/2	888006	–	–
1/4	1/4	Plain	1/2	2-1/2	888008	0.020	888038
5/16	5/16	Plain	13/16	2-1/2	888012	0.020	888040
3/8	3/8	Flat	7/8	2-1/2	888016	0.020	888042
7/16	7/16	Flat	1	2-3/4	888020	0.020	888044
1/2	1/2	Flat	1	3	888024	0.030	888046
9/16	9/16	Flat	1-1/8	3-1/2	888026	0.030	888048
5/8	5/8	Flat	1-1/4	3-1/2	888028	0.040	888050
3/4	3/4	Flat	1-1/2	4	888030	0.040	888052
1	1	Flat	1-1/2	4	888032	0.040	888054

**Radius +0 -0.005"*

Metric – Regular Length

Tolerance of Cutting Diameter: 0/-0.03
Tolerance of Shank Diameter: h6

Cutter Diameter (mm)	Shank Diameter (mm)	Shank Style	Length of Cut (mm)	Overall Length (mm)	Square End	Corner Radius	
					Code	*Radius (mm)	Code
3	6	Plain	8	57	888056	0.38	888080
4	6	Plain	11	57	888058	0.38	888082
5	6	Plain	13	57	888060	0.38	888084
6	6	Plain	13	57	888062	0.51	888086
8	8	Plain	19	63	888064	0.51	888088
10	10	Plain	22	72	888066	0.51	888090
12	12	Flat	26	83	888068	0.76	888092
14	14	Flat	26	83	888070	0.76	888094
16	16	Flat	32	92	888072	1.02	888096
18	18	Flat	32	92	888074	1.02	888098
20	20	Flat	38	104	888076	1.02	888100
25	25	Flat	38	104	888078	1.02	888102

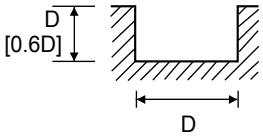
**Radius +0 -0.13"*

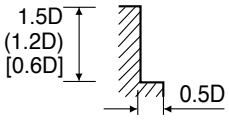
Technical Information – High Performance V7 INOX

Micrograin Solid Carbide – NANO AlTiN Coated – 4 Flute – Square End & Corner Radius

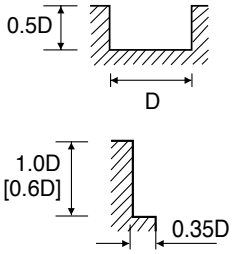
Square End & Corner Radius V7 End Mills

Material	Alloy Steels Cast Iron		Stainless Steel 300 Series		Stainless Steel 400 Series		Titanium		Inconel	
Hardness	HRC 20									
Strength	1000N/mm²									
Cutting Diameter (Inch)	RPM	Feed (Inch/Min.)	RPM	Feed (Inch/Min.)	RPM	Feed (Inch/Min.)	RPM	Feed (Inch/Min.)	RPM	Feed (Inch/Min.)
1/8	12,735	10.23	9,625	7.25	13,475	7.63	8,320	7.63	2,565	2.05
3/16	8,490	10.91	6,385	8.27	12,000	8.43	5,550	8.43	1,685	1.82
1/4	6,370	11.46	4,810	9.60	6,815	9.60	4,160	9.61	1,285	2.48
5/16	5,100	12.95	3,850	10.71	5,390	10.71	3,330	10.71	1,025	2.83
3/8	4,245	18.35	3,210	15.38	4,490	15.38	2,770	15.38	855	4.13
7/16	4,010	24.45	2,750	20.90	3,850	20.90	2,380	20.73	735	5.49
1/2	3,500	25.85	2,400	21.02	3,370	21.02	2,080	21.02	640	5.58
9/16	3,110	26.01	2,140	21.16	2,990	21.16	1,850	21.16	570	5.73
5/8	2,800	26.11	1,925	21.20	2,700	21.20	1,660	21.20	510	5.58
3/4	2,340	23.96	1,600	19.43	2,250	19.43	1,390	19.43	425	5.17
1	1,755	17.44	1,200	14.73	1,685	15.11	1,040	15.11	315	4.26





∗( ) : Short length Type
∗[ ] : Stub length Type



∗1.2 x D Axial cutting depth should be applied for Short length series – diameter over 5/16”
∗0.6 x D Axial cutting depth should be applied for Stub length series

TITANIUM MACHINING: *On full slot cuts reduce RPM and FEED by 35%. Speeds and feeds subject to coolant quality, quantity and pressure.*

End Mills – ALU-POWER

Micrograin Solid Carbide – 2 & 3 Flute – 42° & 45° Helix

- For high velocity milling of aluminum and other non-ferrous materials
- Provides improved surface roughness
- Tightly controlled cylindrical margin

2 Flute – 42° Helix – Regular Length – "Banshee"

- Excellent plunging capabilities
- Excellent chip removal due to higher rake angle, higher helix angle (42°) and bigger chip pocket



Tolerance: 0/-0.0012

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/16	1/8	1/8	1-1/2	888310
1/8	1/4	5/16	1-3/4	888312
3/16	1/4	7/16	2	888313
1/4	3/8	3/4	2-1/2	888314
5/16	3/8	13/16	2-1/2	888315
3/8	3/8	1	2-1/2	888316
7/16	7/16	1	2-3/4	888317
1/2	1/2	1	3	888318

Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/2	1/2	2	4	888319
5/8	5/8	1-1/4	3-1/2	888320
3/4	3/4	1-1/2	4	888321
3/4	3/4	3	5-1/2	888322
1	1	1-1/2	4	888323
1	1	3	5-1/2	888324

3 Flute – 45° Helix

- 3 flute and 45° helix allow harmonic balance at high speed conditions and smooth cutting
- Maximum material removal, chip evacuation, and stability



Tolerance: 0/-0.0005

Regular Length



Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/8	1/8	3/8	1-1/2	888409
3/16	3/16	9/16	2	888410
1/4	1/4	5/8	2-1/2	888411
5/16	5/16	5/8	2-1/2	888412
3/8	3/8	1	2-1/2	888413
7/16	7/16	1-1/4	2-3/4	888414
1/2	1/2	1-1/4	3	888415
5/8	5/8	1-5/8	3-1/2	888416
3/4	3/4	1-5/8	4	888417
1	1	2	5	888418

Long Length



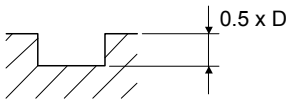
Cutter Diameter (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
1/4	1/4	1-1/4	3-1/4	888419
5/16	5/16	1-1/4	3-1/2	888420
3/8	3/8	1-1/2	3-1/2	888421
7/16	7/16	2	4	888422
1/2	1/2	2	4	888423
5/8	5/8	2-1/2	5	888424
3/4	3/4	3-1/4	6	888425
1	1	3-1/4	6	888426

Technical Information – ALU-POWER

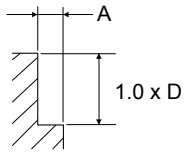
Micrograin Solid Carbide – 2 & 3 Flute – 42° & 45° Helix

2 Flute – 42° Helix – "Banshee"

Slotting		
Material	Aluminum Non-Ferrous Metals	
Cutting Diameter (Inch)	RPM	Feed (Inch/Minute)
1/8	10,000	27.56
5/32	10,000	35.43
3/16	10,000	39.37
1/4	10,000	47.24
5/16	8,000	55.12
3/8	8,000	66.93
1/2	8,000	82.68
9/16	6,000	70.87
5/8	6,000	74.80
11/16	4,000	55.12
13/16	4,000	62.99



Side Cutting		
Material	Aluminum Non-Ferrous Metals	
Cutting Diameter (Inch)	RPM	Feed (Inch/Minute)
1/8	10,000	35.43
5/32	10,000	43.31
3/16	10,000	51.18
1/4	10,000	59.06
5/16	8,000	70387
3/8	8,000	82.68
1/2	8,000	102.40
9/16	6,000	86.61
5/8	6,000	94.49
11/16	4,000	70.87
13/16	4,000	74.80

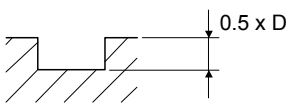


A: Ø1/8 - Ø3/8 = 0.25 x D
Ø1/2 - Ø13/16 = 0.5 x D

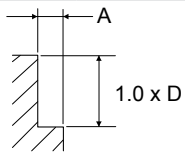
FEED: *In long and extra-long types the feed should be reduced by approximately 50%*

3 Flute – 45° Helix – Finish

Slotting		
Material	Aluminum Non-Ferrous Metals	
Cutting Diameter (Inch)	RPM	Feed (Inch/Minute)
1/8	10,000	33.05
5/32	10,000	42.50
3/16	10,000	47.25
1/4	10,000	56.70
5/16	8,000	66.15
3/8	8,000	80.30
1/2	8,000	99.15
9/16	6,000	85.05
5/8	6,000	89.75
11/16	4,000	66.15
13/16	4,000	75.60



Side Cutting		
Material	Aluminum Non-Ferrous Metals	
Cutting Diameter (Inch)	RPM	Feed (Inch/Minute)
1/8	10,000	42.50
5/32	10,000	52.00
3/16	10,000	61.40
1/4	10,000	70.90
5/16	8,000	85.05
3/8	8,000	99.20
1/2	8,000	122.90
9/16	6,000	103.95
5/8	6,000	113.40
11/16	4,000	85.05
13/16	4,000	89.75



A: Ø1/8 - Ø3/8 = 0.25 x D
Ø1/2 - Ø13/16 = 0.5 x D

FEED: *In long and extra-long types the feed should be reduced by approximately 50%*

Tapered End Mills

Micrograin Solid Carbide – 3 Flute



- Center cut

Ball End available
Please inquire

1/2° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	3/4	1/8	2-1/2	313707
1/8	3/4	1/4	2-1/2	313708

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1	1/4	3	313709
3/16	3/4	1/4	2-1/2	313710

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/16	1-1/4	1/4	3	313711
1/4	3/4	3/8	2-1/2	313712
1/4	1-1/4	3/8	3	313713

1° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1/2	1/8	2-1/2	313714
3/32	1	1/4	3	313715
1/8	3/4	1/4	2-1/2	313716
1/8	1	1/4	3	313717

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1-1/2	1/4	3	313718
3/16	3/4	1/4	2-1/2	313719
3/16	1-1/4	1/4	3	313720
3/16	1-3/4	1/4	3-1/2	313721

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/4	3/4	3/8	2-1/2	313722
1/4	1-1/4	3/8	3	313723
1/4	2	3/8	4	313724

1-1/2° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1	1/4	3	313725
1/8	3/4	1/4	2-1/2	313726

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1-1/2	1/4	3	313727
3/16	1-1/4	3/8	3	313728

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/16	1-3/4	3/8	3-1/2	313729
1/4	3/4	3/8	2-1/2	313730
1/4	1-1/4	3/8	3	313731

2° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	3/4	1/4	2-1/2	313732
3/32	1	1/4	3	313733
1/8	3/4	1/4	2-1/2	313734
1/8	1-1/4	1/4	3	313735

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/16	3/4	1/4	2-1/2	313736
3/16	1-1/4	3/8	3	313737
3/16	1-3/4	3/8	3-1/2	313738
1/4	3/4	3/8	2-1/2	313739

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/4	1-1/4	3/8	3	313740
1/4	2	1/2	4	313741

3° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1	1/4	3	313742
3/32	1-1/2	1/4	3	313743
1/8	3/4	1/4	2-1/2	313744
1/8	1	1/4	3	313745

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1-1/2	3/8	3-1/2	313746
1/8	2	3/8	3-1/2	313747
5/32	1-1/4	3/8	3	313748
5/32	1-3/4	3/8	3-1/2	313749

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/16	3/4	3/8	2-1/2	313750
3/16	1-1/4	3/8	3	313751
1/4	3/4	3/8	2-1/2	313752
1/4	1-1/4	3/8	3	313753
1/4	2	1/2	4	313754

4° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1	1/4	3	313755
1/8	3/4	1/4	2-1/2	313756

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1	3/8	3	313757
3/16	3/4	3/8	2-1/2	313758

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/16	1-1/4	3/8	3	313759
1/4	3/4	1/2	2-1/2	313760
1/4	1-1/4	1/2	3-1/2	313761

Tapered End Mills

Micrograin Solid Carbide – 3 Flute *(continued)*

5° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	3/4	1/4	2-1/2	313762
3/32	1	3/8	3	313763
3/32	1-1/2	3/8	3-1/2	313764
1/8	3/4	1/4	2-1/2	313765

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1	3/8	3	313766
1/8	1-1/2	3/8	3-1/2	313767
3/16	3/4	3/8	2-1/2	313768
3/16	1-1/4	1/2	3	313769

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/4	3/4	1/2	2-1/2	313770
1/4	1	1/2	3	313771
1/4	1-1/4	1/2	3-1/2	313772
1/4	2	5/8	4	313773

7° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1	3/8	3	313774
1/8	1/2	3/8	2-1/2	313775
1/8	3/4	3/8	2-1/2	313776
1/8	1	3/8	3	313777

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1-1/2	1/2	3-1/2	313778
5/32	3/4	3/8	2-1/2	313779
3/16	1-1/4	1/2	3-1/2	313780
1/4	3/4	1/2	2-1/2	313781

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/4	1-1/4	5/8	3-1/2	313782

10° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1/2	3/8	2-1/2	313784
3/32	1-1/2	5/8	3-1/2	313785
1/8	3/4	3/8	2-1/2	313786
1/8	1	1/2	3	313787

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1-1/4	5/8	3-1/2	313788
3/16	1-1/4	5/8	3-1/2	313789

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/4	3/4	5/8	2-1/2	313790
1/4	1	5/8	3	313791

Tapered End Mills

High Speed Steel



- For extrusion dies, die cast dies and molds
- Center cut
- Shanks within 0.0005”
- Hollow ground
- Polished flutes

1/2° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1/2	3/8	2-1/2	313377
3/32	3/4	3/8	2-1/2	313378
3/32	1-1/4	3/8	3-1/8	313379
1/8	1/4	3/8	2-1/2	313380
1/8	1/2	3/8	2-1/2	313381
1/8	3/4	3/8	2-1/2	313382
1/8	1	3/8	2-7/8	313383
1/8	1-1/4	3/8	3-1/8	313384
3/16	3/4	3/8	2-1/2	313385
3/16	1-1/4	3/8	3-1/8	313386

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/4	3/4	3/8	2-1/2	313384
1/4	1-1/4	3/8	3-1/8	313388
1/4	2-1/4	1/2	4-1/4	313389
1/4	3-1/4	1/2	5-1/2	313390
3/8	1-1/4	1/2	3-1/8	313391
3/8	2-1/4	1/2	4-1/4	313392
3/8	3-1/4	1/2	5-1/2	313393
1/2	1-1/4	1/2	3-1/8	313394
1/2	2-1/4	1/2	4-1/4	313395
1/2	3-1/4	1/2	5-1/2	313396

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
5/8	2-1/4	5/8	4-1/2	313397
5/8	3-1/4	5/8	5-1/2	313398
5/8	4-1/4	5/8	6-1/2	313399
3/4	2-1/4	3/4	4-1/2	313400
3/4	3-1/4	3/4	5-3/4	313401
3/4	4-1/4	3/4	7-3/4	313402
3/4	5-1/4	3/4	7-3/4	313403

Tapered End Mills

High Speed Steel *(continued)*



1° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1/2	3/8	2-1/2	313404
3/32	3/4	3/8	2-1/2	313405
3/32	1-1/4	3/8	3-1/8	313406
1/8	1/4	3/8	2-1/2	313407
1/8	1/2	3/8	2-1/2	313408
1/8	3/4	3/8	2-1/2	313409
1/8	1	3/8	2-7/8	313410
1/8	1-1/4	3/8	3-1/8	313411
3/16	3/4	3/8	2-1/2	313412
3/16	1-1/4	3/8	3-1/8	313413

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/4	3/4	3/8	2-1/2	313414
1/4	1-1/4	3/8	3-1/8	313415
1/4	2-1/4	1/2	4-1/4	313416
1/4	3-1/4	1/2	5-1/2	313417
3/8	1-1/4	1/2	3-1/8	313418
3/8	2-1/4	1/2	4-1/4	313419
3/8	3-1/4	1/2	5-1/2	313420
1/2	1-1/4	1/2	3-1/8	313421
1/2	2-1/4	1/2	4-1/4	313422
1/2	3-1/4	1/2	5-1/2	313423

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
5/8	2-1/4	5/8	4-1/2	313424
5/8	3-1/4	5/8	5-1/2	313425
5/8	4-1/4	5/8	6-1/2	313426
3/4	2-1/4	3/4	4-1/2	313427
3/4	3-1/4	3/4	5-3/4	313428
3/4	4-1/4	3/4	7-3/4	313429
3/4	5-1/4	3/4	7-3/4	313430

1-1/2° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1/2	3/8	2-1/2	313431
3/32	1	3/8	2-7/8	313432
3/32	1-1/4	3/8	3-1/8	313433
3/32	1-1/2	3/8	3-1/4	313434
7/64	1	3/8	2-7/8	313435
7/64	1-1/2	3/8	3-1/4	313436
7/64	2	3/8	3-7/8	313437
1/8	1/2	3/8	2-1/2	313438
1/8	3/4	3/8	2-1/2	313439
1/8	1	3/8	2-7/8	313440
1/8	1-1/4	3/8	3-1/8	313441
1/8	1-1/2	3/8	3-1/4	313442

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	2	3/8	3-7/8	313443
5/32	1	3/8	2-7/8	313444
5/32	1-1/2	3/8	3-1/4	313445
3/16	3/4	3/8	2-1/2	313446
3/16	1-1/4	3/8	3-1/8	313447
3/16	2-1/4	3/8	4-1/4	313448
1/4	3/4	3/8	2-1/2	313449
1/4	1-1/4	3/8	3-1/8	313450
1/4	2-1/4	1/2	4-1/4	313451
1/4	3-1/4	1/2	5-1/2	313452

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/8	1-1/4	1/2	3-1/8	313453
3/8	2-1/4	1/2	4-1/4	313454
3/8	3-1/4	5/8	5-1/2	313455
1/2	1-1/4	1/2	3-1/8	313456
1/2	2-1/4	5/8	4-1/4	313457
1/2	3-1/4	5/8	5-1/2	313458
5/8	2-1/4	3/4	5-1/2	313460
5/8	3-1/4	3/4	6-1/2	313461
3/4	2-1/4	3/4	4-3/4	313462
3/4	5-1/4	1	7-3/4	313463

2° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1/2	3/8	2-1/2	313464
3/32	3/4	3/8	2-1/2	313465
1/8	1/2	3/8	2-1/2	313466
1/8	3/4	3/8	2-1/2	313467
1/8	1	3/8	2-7/8	313468
1/8	1-1/4	3/8	3-1/8	313469
1/8	1-1/2	3/8	3-1/4	313470
3/16	3/4	3/8	2-1/2	313471

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/16	1-1/4	3/8	3-1/8	313472
1/4	3/4	3/8	2-1/2	313473
1/4	1-1/4	3/8	3-1/8	313474
1/4	2-1/4	1/2	4-1/4	313475
1/4	3-1/4	1/2	5-1/2	313476
3/8	1-1/4	1/2	3-1/8	313477
3/8	2-1/4	1/2	4-1/4	313478
3/8	3-1/4	5/8	5-1/2	313479

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/2	1-1/4	1/2	3-1/8	313480
1/2	2-1/4	1/2	4-1/4	313481
1/2	3-1/4	5/8	5-1/2	313482
5/8	2-1/4	3/4	4-1/2	313483
5/8	3-1/4	3/4	5-1/2	313484
5/8	4-1/4	3/4	6-1/2	313485
3/4	3-1/4	1	5-3/4	313486
3/4	5-1/4	1	7-3/4	313487

Tapered End Mills

High Speed Steel *(continued)*

3° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
0.062	1	3/8	2-7/8	313488
0.070	1-1/2	3/8	3-1/4	313489
3/32	1	3/8	2-7/8	313490
3/32	1-1/4	3/8	3-1/8	313491
3/32	1-1/2	3/8	3-1/4	313492
3/32	2	3/8	3-5/8	313493
3/32	2-1/2	3/8	4-1/2	313494
7/64	1	3/8	2-7/8	313495
7/64	1-1/2	3/8	3-1/4	313496
7/64	2	3/8	3-5/8	313497
1/8	3/4	3/8	2-1/2	313498
1/8	1	3/8	2-7/8	313499
1/8	1-1/4	3/8	3-1/8	313500
1/8	1-1/2	3/8	3-1/4	313501
1/8	2	3/8	3-5/8	313502
1/8	2-1/2	3/8	4-1/2	313503
1/8	3	3/8	5	313504
1/8	1-1/8	3/8	2-3/4	313505
5/32	1	3/8	2-7/8	313506
5/32	1-1/4	3/8	3-1/8	313507
5/32	1-1/2	3/8	3-1/4	313508
5/32	2	3/8	3-5/8	313509
3/16	3/4	3/8	2-1/2	313510
3/16	1-1/4	3/8	3-1/8	313511
3/16	1-1/2	3/8	3-1/8	313512
3/16	2-1/2	1/2	4-1/2	313513
3/16	3	1/2	5	313514
3/16	3-1/4	5/8	5-1/2	313515
3/16	4	5/8	6-1/2	313516
3/16	5	3/4	7-1/4	313517
1/4	3/4	3/8	2-1/2	313518
1/4	1	3/8	2-3/4	313519
1/4	1-1/4	3/8	3-1/8	313520
1/4	2-1/4	1/2	4-1/4	313521
1/4	3-1/4	5/8	5-1/2	313522
1/4	4	5/8	6-1/2	313523
1/4	5	3/4	7-3/8	313524
3/8	1-1/4	1/2	3-1/8	313525
3/8	2-1/4	5/8	4-1/4	313526
3/8	3-1/4	3/4	5-1/2	313527
3/8	4	3/4	6-1/2	313528
3/8	5	3/4	7-1/2	313529
1/2	1-1/4	1/2	3-1/8	313530
1/2	2-1/4	5/8	4-1/4	313531
1/2	2-1/4	1/2	4-1/8	313532
1/2	2-1/4	3/4	5-1/2	313533
1/2	4	3/4	6-1/2	313534
1/2	5	1	7-1/2	313535
5/8	2-1/4	3/4	4-1/2	313536
5/8	3-1/4	3/4	5-1/2	313537
5/8	4	1	6-1/2	313538
5/8	5	1	7-1/2	313539
3/4	2-1/4	1	4-3/4	313540
3/4	3-1/4	1	5-3/4	313541
3/4	4	1	6-1/2	313542
3/4	5	1	7-1/2	313543

4° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	3/4	3/8	2-1/2	313544
1/8	1	3/8	2-7/8	313545
1/8	1-1/2	3/8	3-1/4	313546
1/8	2	1/2	3-7/8	313547
1/8	2-1/2	1/2	4-1/2	313548
3/16	3/4	3/8	2-1/2	313549
3/16	1-1/4	3/8	3-1/8	313550
3/16	2-1/2	1/2	4-1/2	313551
3/16	3-1/4	5/8	5-1/2	313552
3/16	4	3/4	6-1/2	313553
1/4	3/4	3/8	2-1/2	313554
1/4	1-1/4	1/2	3-1/8	313555
1/4	2-1/4	5/8	4-1/4	313556
1/4	3-1/4	3/4	5-1/2	313557
1/4	4	3/4	6-1/2	313558
3/8	1-1/4	1/2	3-1/8	313559
3/8	2-1/4	5/8	4-1/4	313560
3/8	3-1/4	3/4	5-1/2	313561
3/8	4	3/4	6-1/2	313562
1/2	1-1/4	1/2	3-1/8	313563
1/2	2-1/4	3/4	4-1/2	313564
1/2	3-1/4	3/4	5-1/2	313565
1/2	4	1	6-1/2	313566

5° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
0.062	1-1/2	3/8	3-1/4	313567
0.070	1-1/2	3/8	3-1/4	313568
3/32	3/4	3/8	2-1/2	313569
3/32	1	3/8	2-7/8	313570
3/32	1-1/4	3/8	3-1/8	313571
3/32	1-1/2	3/8	3-1/4	313572
3/32	1-3/4	1/2	3-7/8	313573
3/32	2	1/2	3-7/8	313574
3/32	2-1/2	1/2	4-1/2	313575
7/64	1	3/8	2-7/8	313576
7/64	1-1/2	3/8	3-1/4	313577
7/64	2	1/2	3-7/8	313578
1/8	3/4	3/8	2-1/2	313579
1/8	1	3/8	2-7/8	313580
1/8	1-1/8	3/8	3	313581
1/8	1-1/4	3/8	3-1/8	313582
1/8	1-1/2	3/8	3-1/4	313583
1/8	2	1/2	3-7/8	313584
1/8	2	3/4	3-7/8	313585
1/8	2-1/2	1/2	4-1/2	313586
1/8	3	3/4	5-1/2	313587
1/8	3	1/2	5-1/2	313588
5/32	1	3/8	2-7/8	313589
5/32	1-1/2	1/2	3-3/4	313590
3/16	3/4	3/8	2-1/2	313591
3/16	1-1/4	1/2	3-1/8	313592
3/16	1-1/2	1/2	3-1/8	313593
3/16	2-1/2	1/2	4-1/2	313594
3/16	3	1/2	5	313595
3/16	3	3/4	5-1/2	313596
3/16	3-1/4	3/4	5-1/2	313597
3/16	4	3/4	6-1/2	313598
3/16	5	1	7-1/2	313599
1/4	3/4	3/8	2-1/2	313600
1/4	1	1/2	2-7/8	313601
1/4	1-1/4	1/2	3-1/8	313602
1/4	2-1/4	5/8	4-1/4	313603
1/4	3-1/4	3/4	5-1/2	313604
1/4	4	3/4	6-1/2	313605
3/8	1-1/4	1/2	3-1/8	313606
3/8	2-1/4	3/4	4-1/4	313607
3/8	3-1/4	3/4	5-1/2	313608
3/8	4	1	6-1/2	313609
1/2	1-1/4	1/2	3-1/8	313610
1/2	2-1/4	3/4	4-1/4	313611
1/2	3-1/4	3/4	5-3/4	313612
1/2	4	1	6-1/2	313613
3/4	4	1-1/4	6-1/2	313614

Tapered End Mills

High Speed Steel *(continued)*



7° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
0.062	1	3/8	2-7/8	313615
0.070	1	3/8	2-3/4	313616
3/32	1	3/8	2-7/8	313617
3/32	1-1/4	1/2	3-1/8	313618
3/32	1-1/2	1/2	3-1/4	313619
1/8	3/4	3/8	2-1/2	313621
1/8	1	3/8	2-7/8	313622
1/8	1-1/4	1/2	3-1/4	313623
1/8	2	5/8	4-1/8	313624
1/8	3	3/4	5-1/4	313625
3/16	1-1/4	1/2	3-1/8	313626
3/16	3	3/4	5-1/4	313627
1/4	3/4	1/2	2-1/2	313628
1/4	1-1/4	1/2	3-1/8	313629
1/4	2-1/4	3/4	4-1/2	313630
1/4	3-1/4	1	5-3/4	313631
1/4	4	1	6-1/2	313632
5/16	3-1/4	1	5-3/4	313633
3/8	2-1/4	3/4	4-1/4	313634
3/8	3-1/4	1	5-3/4	313635
3/8	4	1-1/4	6-1/2	313636
1/2	1-1/4	3/4	3-1/2	313637
1/2	2-1/4	1	4-3/4	313638
1/2	3-1/4	1-1/4	5-3/4	313639
1/2	4	1-1/4	6-1/2	313640
5/8	4	1-1/4	6-1/2	313641
3/4	4	1-1/4	5-3/4	313642
3/4	4	1-1/4	6-1/2	313643

10° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	1/2	3/8	2-1/2	313644
3/32	1-1/2	1/2	3-3/8	313645
1/8	3/4	3/8	2-1/2	313646
1/8	1-1/4	1/2	3-1/8	313647
3/16	1-1/4	1/2	2-1/8	313648
1/4	3/4	1/2	2-1/2	313649
1/4	1-1/4	1/2	3-1/8	313650
1/4	2-1/4	3/4	4-1/4	313651
3/8	1-1/4	5/8	3-1/4	313652
3/8	2-1/4	1	4-5/8	313653
3/8	3-1/4	1-1/4	4-3/4	313654
1/2	1-1/4	3/4	3-3/8	313655
1/2	2-1/4	1	4-5/8	313656
1/2	3-1/4	1-1/4	4-3/4	313657

15° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/32	3/4	1/2	2-3/4	313658
3/32	1	1/2	2-7/8	313659
3/32	1-1/2	1/2	3-7/16	313660
1/8	1/2	3/8	2-1/2	313661
1/8	3/4	1/2	2-1/2	313662
1/8	1	1/2	3	313663
1/8	1-1/4	1/2	3-1/8	313664
3/16	1	1/2	3	313665
3/16	1-1/4	3/4	3-1/2	313666
3/16	1-1/4	1/2	3-1/4	313667
1/4	1	1/2	3	313668
1/4	1-1/4	3/4	3-1/2	313669
1/4	1-1/4	1/2	3-1/4	313670
1/4	1-1/2	3/4	3-3/4	313671
1/4	2-1/4	1	4-3/8	313672
5/16	1	3/4	3-1/4	313673
3/8	1-1/4	3/4	3-1/2	313674
3/8	2-1/4	1-1/4	4-3/4	313675
1/2	1	3/4	3-1/4	313676
1/2	1-1/4	3/4	3-1/2	313677
1/2	1-3/4	1	4-1/4	313678
1/2	2-1/4	1-1/4	4-3/4	313679

20° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1/2	3/8	2-1/2	313680
1/8	1	1/2	3	313681
3/16	1	1/2	3	313682
1/4	1	1/2	3	313683
1/4	1-1/2	3/4	3-3/4	313684
5/16	1	3/4	3-1/4	313685
5/16	1-1/2	3/4	3-3/4	313686
3/8	1-1/2	3/4	3-3/4	313687
3/8	2	1	4-1/2	313688

Tapered End Mills

High Speed Steel *(continued)*

25° per Side

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1/2	1/2	2-1/2	313689
1/8	1	1/2	3	313690
1/4	1	5/8	3-1/4	313691
1/4	1-1/2	3/4	3-3/4	313692

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
5/16	3/4	5/8	3	313693
5/16	1	3/4	3-1/4	313694
5/16	1-1/2	1	4	313695
3/8	3/4	5/8	3	313696

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/8	1	3/4	3-1/4	313697
3/8	1-1/2	1	4	313698
1/2	1-1/4	1	3-3/4	313699

30° per Side

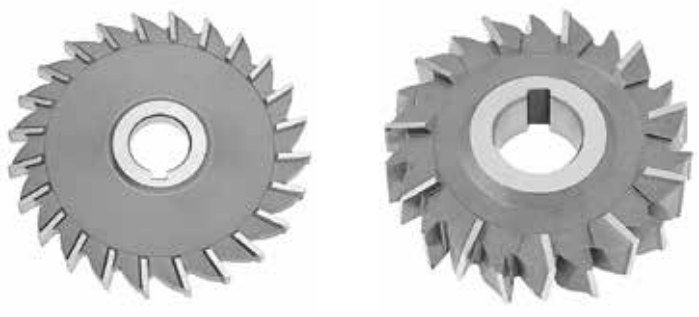
Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/8	1/2	1/2	2-1/2	313700
1/8	1	1/2	3	313701

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
1/4	1	3/4	3-1/4	313702
1/4	1-1/2	1	4	313703

Tip Diameter (Inch)	Flute Length (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Code
3/8	1-1/4	1	3-3/4	313704
3/8	1-1/2	1	4	313705
1/2	1-1/4	1	3-3/4	313706

Side Milling Cutters

High Speed Steel – Plain & Staggered Tooth



Diameter (Inch)	Hole Size (Inch)	Face Width (Inch)	Plain		Staggered	
			No. of Teeth	Code	No. of Teeth	Code
2	1/2	3/16	14	603220	–	–
2	1/2	1/4	14	603221	–	–
2	1/2	5/16	14	603222	–	–
2	1/2	3/8	14	603223	–	–
2	5/8	3/16	14	603224	–	–
2	5/8	1/4	14	603225	–	–
2	5/8	5/16	14	603226	–	–
2	5/8	3/8	14	603227	–	–
2	7/8	1/4	14	603228	–	–
2	7/8	5/16	14	603229	–	–
2	7/8	3/8	14	603230	–	–
2	7/8	7/16	14	603231	–	–
2-1/2	7/8	3/16	16	603232	16	603000
2-1/2	7/8	1/4	16	603233	16	603001
2-1/2	7/8	5/16	16	603234	16	603002
2-1/2	7/8	3/8	16	603235	16	603003
2-1/2	7/8	7/16	16	603236	–	–
2-1/2	7/8	1/2	16	603237	16	603004
2-1/2	7/8	9/16	16	603238	–	–
2-1/2	7/8	5/8	16	603239	–	–
2-1/2	1	3/16	16	603240	–	–
2-1/2	1	1/4	16	603241	16	603005
2-1/2	1	5/16	16	603242	–	–
2-1/2	1	3/8	16	603243	–	–
2-1/2	1	7/16	16	603244	16	603006
2-1/2	1	1/2	16	603245	16	603007
2-1/2	1	9/16	16	603246	–	–
2-1/2	1	5/8	16	603247	–	–
3	1	3/16	18	603248	16	603008
3	1	7/32	18	603249	16	603009
3	1	1/4	18	603250	16	603010
3	1	9/32	18	603251	16	603011
3	1	5/16	18	603252	16	603012
3	1	11/32	18	603253	–	–
3	1	3/8	18	603254	16	603014
3	1	13/32	18	603255	–	–
3	1	7/16	18	603256	16	603015
3	1	1/2	18	603257	16	603016
3	1	9/16	18	603258	16	603017
3	1	5/8	18	603259	16	603018
3	1	11/16	18	603260	16	603019
3	1	3/4	18	603261	16	603020
3	1	13/16	18	603262	16	603021
3	1	7/8	18	603263	16	603022
3	1	15/16	18	603264	–	–
3	1	1	18	603265	16	

Diameter (Inch)	Hole Size (Inch)	Face Width (Inch)	Plain		Staggered	
			No. of Teeth	Code	No. of Teeth	Code
3	1-1/4	3/16	18	603266	16	603025
3	1-1/4	7/32	18	603267	–	–
3	1-1/4	1/4	18	603268	16	603026
3	1-1/4	9/32	18	603269	–	–
3	1-1/4	5/16	18	603270	16	603027
3	1-1/4	3/8	18	603272	16	603028
3	1-1/4	13/32	18	603273	–	–
3	1-1/4	7/16	18	603274	16	603029
3	1-1/4	1/2	18	603275	16	603030
3	1-1/4	9/16	18	603276	–	–
3	1-1/4	5/8	18	603277	16	603032
3	1-1/4	11/16	18	603278	16	603033
3	1-1/4	3/4	18	603279	16	603034
3	1-1/4	13/16	18	603280	16	603035
3	1-1/4	7/8	18	603281	16	603036
3	1-1/4	15/16	18	603282	16	603037
3	1-1/4	1	18	603283	16	603038
3-1/2	1	3/16	20	603284	–	–
3-1/2	1	1/4	20	603285	18	603039
3-1/2	1	5/16	20	603286	–	–
3-1/2	1	3/8	20	603287	18	603040
3-1/2	1	7/16	20	603288	–	–
3-1/2	1	1/2	20	603289	18	603401
3-1/2	1	5/8	20	603290	18	603042
3-1/2	1-1/4	1/2	20	603292	–	–
4	1	3/16	22	603293	18	603044
4	1	7/32	22	603294	18	603045
4	1	1/4	22	603295	18	603046
4	1	9/32	22	603296	18	603047
4	1	5/16	22	603297	18	603048
4	1	11/32	22	603298	18	603049
4	1	3/8	22	603299	18	603050
4	1	7/16	22	603300	18	603051
4	1	13/32	22	603301	–	–
4	1	1/2	22	603302	18	603052
4	1	9/16	22	603303	18	603053
4	1	5/8	22	603304	18	603054
4	1	11/16	22	603305	–	–
4	1	3/4	22	603306	18	603055
4	1	13/16	22	603307	18	603056
4	1	7/8	22	603308	18	603057
4	1	15/16	22	603309	18	603058
4	1	1	22	603310	18	603059
4	1	1-1/8	22	603311	–	–
4	1	1-1/2	22	603313	–	–
4	1-1/4	3/16	22	603314	18	603060

STUB ARBOR ADAPTERS ON PAGE 398

Side Milling Cutters

High Speed Steel – Staggered & Plain Tooth *(continued)*





Diameter (Inch)	Hole Size (Inch)	Face Width (Inch)	Plain		Staggered	
			No. of Teeth	Code	No. of Teeth	Code
4	1-1/4	7/32	22	603315	18	603061
4	1-1/4	1/4	22	603316	18	603062
4	1-1/4	9/32	22	603317	18	603063
4	1-1/4	5/16	22	603318	18	603064
4	1-1/4	11/32	22	603319	18	603065
4	1-1/4	3/8	22	603320	18	603066
4	1-1/4	7/16	22	603321	18	603067
4	1-1/4	13/32	22	603322	–	–
4	1-1/4	1/2	22	603323	18	603068
4	1-1/4	9/16	22	603324	18	603069
4	1-1/4	5/8	22	603325	18	603070
4	1-1/4	11/16	22	603326	–	–
4	1-1/4	3/4	22	603327	18	603072
4	1-1/4	13/16	22	603328	18	603073
4	1-1/4	7/8	22	603329	18	603074
4	1-1/4	15/16	22	603330	18	603075
4	1-1/4	1	22	603331	18	603076
4	1-1/4	1-1/8	22	603332	–	–
4	1-1/4	1-3/16	–	–	18	603078
4	1-1/4	1-1/4	22	603333	18	603079
4	1-1/4	1-1/2	22	603334	18	603080
4-1/2	1	1/2	–	–	20	603081
4-1/2	1-1/4	3/8	24	603335	–	–
4-1/2	1-1/4	1/2	24	603336	20	603082
5	1	1/4	24	603337	22	603083
5	1	9/32	24	603338	–	–
5	1	5/16	24	603339	22	603084
5	1	11/32	24	603340	–	–
5	1	3/8	24	603341	22	603085
5	1	13/32	24	603342	–	–
5	1	7/16	24	603343	22	603086
5	1	1/2	24	603344	22	603087
5	1	9/16	24	603345	–	–
5	1	5/8	24	603346	22	603089
5	1	11/16	24	603347	–	–
5	1	3/4	24	603348	22	603091
5	1	13/16	24	603349	–	–
5	1	7/8	24	603350	22	603093
5	1	15/16	24	603351	–	–
5	1	1	24	603352	–	–
5	1-1/4	1/4	24	603353	22	603094
5	1-1/4	9/32	24	603354	–	–
5	1-1/4	5/16	24	603355	22	603095
5	1-1/4	11/32	24	603356	–	–
5	1-1/4	3/8	24	603357	22	603096
5	1-1/4	13/32	24	603358	–	–

Diameter (Inch)	Hole Size (Inch)	Face Width (Inch)	Plain		Staggered	
			No. of Teeth	Code	No. of Teeth	Code
5	1-1/4	7/16	24	603359	22	603097
5	1-1/4	1/2	24	603360	22	603098
5	1-1/4	9/16	24	603361	–	–
5	1-1/4	5/8	24	603362	22	603100
5	1-1/4	11/16	24	603363	22	603101
5	1-1/4	3/4	24	603364	22	603102
5	1-1/4	13/16	24	603365	–	–
5	1-1/4	7/8	24	603366	22	603103
5	1-1/4	15/16	24	603367	–	–
5	1-1/4	1	24	603368	22	603105
5	1-1/4	1-1/4	24	603369	–	–
6	1	1/4	26	603370	24	603106
6	1	5/16	26	603371	24	603108
6	1	3/8	26	603372	24	603109
6	1	7/16	26	603373	24	603110
6	1	1/2	26	603374	24	603111
6	1	9/16	26	603375	24	603112
6	1	5/8	26	603376	24	603113
6	1	11/16	26	603377	24	603114
6	1	3/4	26	603378	24	603115
6	1	13/16	26	603379	–	–
6	1	7/8	26	603380	24	603117
6	1	15/16	26	603381	24	603118
6	1	1	26	603382	24	603119
6	1	1-1/4	26	603383	–	–
6	1-1/4	1/4	26	603384	24	603120
6	1-1/4	9/32	26	603385	24	603121
6	1-1/4	5/16	26	603386	24	603122
6	1-1/4	11/32	26	603387	–	–
6	1-1/4	3/8	26	603388	24	603123
6	1-1/4	13/32	26	603389	–	–
6	1-1/4	7/16	26	603390	24	603124
6	1-1/4	1/2	26	603391	24	603125
6	1-1/4	9/16	26	603392	24	603126
6	1-1/4	5/8	26	603393	24	603127
6	1-1/4	11/16	26	603394	24	603128
6	1-1/4	3/4	26	603395	24	603129
6	1-1/4	13/16	26	603396	–	–
6	1-1/4	7/8	26	603397	24	603131
6	1-1/4	15/16	26	603398	24	603132
6	1-1/4	1	26	603399	24	603133
6	1-1/4	1-1/8	26	603400	–	–
6	1-1/4	1-1/4	26	603401	24	603136
6	1-1/4	1-1/2	–	–	24	603137

STUB ARBOR ADAPTERS ON PAGE 398



Metal Slitting Saws

High Speed Steel

With Side Chip Clearance

Plain & Staggered Tooth



Diameter (Inch)	Thickness (Inch)	Bore Diameter (Inch)	Plain		Staggered	
			No. of Teeth	Code	No. of Teeth	Code
2-1/2	3/32	7/8	28	602000	–	–
2-1/2	1/8	7/8	28	602001	–	–
3	5/64	1	32	602002	–	–
3	3/32	1	32	602003	–	–
3	7/64	1	32	602004	–	–
3	1/8	1	32	602005	32	602032
3	9/64	1	32	602006	–	–
3	5/32	1	32	602007	32	602033
3	3/16	1	32	602008	32	602034
3	1/4	1	–	–	32	602035
3	7/32	1	32	602009	–	–
4	3/32	1	36	602010	–	–
4	7/64	1	36	602011	–	–
4	1/8	1	36	602012	–	–
4	9/64	1	36	602013	34	602036
4	5/32	1	36	602014	34	602037
4	3/16	1	36	602015	34	602038
4	3/16	1-1/4	36	602016	–	–
4	1/4	1	–	–	34	602039
4	1/4	1-1/4	–	–	34	602040

Diameter (Inch)	Thickness (Inch)	Bore Diameter (Inch)	Plain		Staggered	
			No. of Teeth	Code	No. of Teeth	Code
5	3/32	1	40	602017	–	–
5	3/32	1-1/4	40	602018	–	–
5	1/8	1	40	602019	–	–
5	1/8	1-1/4	40	602020	38	602041
5	5/32	1	40	602021	–	–
5	5/32	1-1/4	40	602022	–	–
5	3/16	1	40	602023	38	602042
5	3/16	1-1/4	40	602024	38	602043
5	1/4	1	–	–	38	602044
6	1/8	1	42	602025	–	–
6	1/8	1-1/4	42	602026	42	602045
6	5/32	1-1/4	–	–	42	602046
6	3/16	1	42	602027	42	602047
6	3/16	1-1/4	42	602028	42	602048
6	1/4	1	–	–	42	602049
6	1/4	1-1/4	–	–	42	602050
8	1/8	1-1/4	48	602029	–	–
8	3/16	1-1/4	48	602030	50	602051
8	1/4	1-1/4	48	602031	50	602052
10	1/4	1-1/4	–	–	50	602053

Plain Metal Slitting Saws

High Speed Steel



Diameter (Inch)	Width of Face (Inch)	Bore Diameter (Inch)	No. of Teeth	Code
2	1/16	1/2	28	602054
2	1/8	1/2	28	602055
2-1/2	3/64	3/8	28	602056
2-1/2	1/32	7/8	28	602057
2-1/2	3/64	7/8	28	602058
2-1/2	1/16	7/8	28	602059
2-1/2	3/32	7/8	28	602060
2-1/2	1/8	7/8	28	602061
2-1/2	1/16	1	28	602062
3	1/64	1	30	602063

Diameter (Inch)	Width of Face (Inch)	Bore Diameter (Inch)	No. of Teeth	Code
3	1/32	1	30	602064
3	3/64	1	30	602065
3	1/16	1	30	602066
3	5/64	1	30	602067
3	3/32	1	30	602068
3	7/64	1	30	602069
3	1/8	1	30	602070
3	9/64	1	30	602071
3	5/32	1	30	602072
3	3/16	1	30	602073

Diameter (Inch)	Width of Face (Inch)	Bore Diameter (Inch)	No. of Teeth	Code
3-1/2	1/32	1	30	602074
3-1/2	3/64	1	30	602075
3-1/2	1/16	1	30	602076
3-1/2	3/32	1	30	602077
3-1/2	1/8	1	30	602078
3-1/2	3/16	1	30	602079
4	1/64	1	36	602080
4	1/32	1	36	602081
4	3/64	1	36	602082
4	1/16	1	36	602083

STUB ARBOR ADAPTERS ON PAGE 398

Plain Metal Slitting Saws

High Speed Steel *(continued)*

Diameter (Inch)	Width of Face (Inch)	Bore Diameter (Inch)	No. of Teeth	Code
4	5/64	1	36	602084
4	3/32	1	36	602085
4	7/64	1	36	602086
4	1/8	1	36	602087
4	9/64	1	36	602088
4	5/32	1	36	602089
4	3/16	1	36	602090
4-1/2	1/32	1	36	602091
4-1/2	3/64	1	36	602092
4-1/2	1/16	1	36	602093
4-1/2	3/32	1	36	602094
4-1/2	1/8	1	36	602095
5	3/64	1	40	602096
5	1/16	1	40	602097
5	5/64	1	40	602098
5	3/32	1	40	602099
5	7/64	1	40	602100
5	1/8	1	40	602101
5	9/64	1	40	602102
5	5/32	1	40	602103
5	3/16	1	40	602104
5	1/16	1-1/4	40	602105
5	3/32	1-1/4	40	602106
5	1/8	1-1/4	40	602107
5	5/32	1-1/4	40	602108
5	3/16	1-1/4	40	602109
6	3/64	1	42	602110
6	1/16	1	42	602111
6	5/64	1	42	602112
6	3/32	1	42	602113
6	7/64	1	42	602114
6	1/8	1	42	602115
6	9/64	1	42	602116
6	5/32	1	42	602117
6	3/16	1	42	602118
6	1/16	1-1/4	42	602119
6	3/32	1-1/4	42	602120
6	1/8	1-1/4	42	602121
6	5/32	1-1/4	42	602122
6	3/16	1-1/4	42	602123
8	1/8	1	48	602124
8	3/16	1	48	602125
8	3/32	1-1/4	48	602126
8	1/8	1-1/4	48	602127
8	3/16	1-1/4	48	602128
10	1/8	1-1/4	56	602129
10	3/16	1-1/4	56	602130
10	3/32	1-1/4	56	602131
10	1/4	1-1/4	56	602132

Slotting Saws

High Speed Steel – Jeweler's Type – Ground Teeth & Sides



- For slotting very thin material, or cutting wire, thin tubing, extrusions, etc.

Diameter (Inch)	Width of Face (Inch)	Hole Size (Inch)	No. of Teeth	Code
1	0.032	3/8	76	602133
1	0.025	3/8	76	602134
1	0.020	3/8	76	602135
1	0.018	3/8	76	602136
1	0.014	3/8	76	602137
1	0.012	3/8	98	602138
1	0.010	3/8	98	602139
1	0.008	3/8	98	602140
1-1/4	0.032	3/8	98	602141
1-1/4	0.025	3/8	98	602142
1-1/4	0.020	3/8	98	602143
1-1/4	0.016	3/8	98	602144
1-1/4	0.014	3/8	98	602145
1-1/4	0.012	3/8	120	602146
1-1/4	0.010	3/8	120	602147
1-1/4	0.008	3/8	120	602148
1-1/2	0.032	1/2	110	602149
1-1/2	0.025	1/2	110	602150
1-1/2	0.023	1/2	110	602151
1-1/2	0.020	1/2	110	602152
1-1/2	0.016	1/2	110	602153
1-1/2	0.012	1/2	140	602154
1-1/2	0.010	1/2	140	602155
1-1/2	0.008	1/2	140	602156
1-3/4	0.032	1/2	132	602157
1-3/4	0.025	1/2	132	602158
1-3/4	0.020	1/2	132	602159
1-3/4	0.016	1/2	132	602160
1-3/4	0.014	1/2	132	602161
1-3/4	0.012	1/2	160	602162
1-3/4	0.010	1/2	160	602163
1-3/4	0.008	1/2	160	602164
2	0.057	1/2	110	602165
2	0.051	1/2	110	602166
2	0.045	1/2	110	602167
2	0.032	1/2	110	602168
2	0.025	1/2	152	602169
2	0.020	1/2	152	602170
2	0.018	1/2	152	602171
2	0.014	1/2	152	602172
2	0.012	1/2	190	602173
2	0.010	1/2	190	602174
2	0.008	1/2	190	602175
2-1/2	0.051	1/2	140	602176
2-1/2	0.045	1/2	140	602177
2-1/2	0.040	1/2	140	602178
2-1/2	0.032	1/2	140	602179
2-1/2	0.025	1/2	190	602180
2-1/2	0.020	1/2	190	602181
2-1/2	0.016	1/2	190	602182
2-1/2	0.012	1/2	240	602183
2-1/2	0.010	1/2	240	602184
3	0.057	1/2	168	602185
3	0.057	1	168	602186
3	0.045	1/2	168	602187
3	0.045	1	168	602188
3	0.040	1/2	168	602189
3	0.040	1	168	602190
3	0.032	1/2	168	602191
3	0.032	1	168	602192

STUB ARBOR ADAPTERS ON PAGE 398

Slotting Saws

High Speed Steel – Jeweler's Type – Ground Teeth & Sides *(continued)*

Diameter (Inch)	Width of Face (Inch)	Hole Size (Inch)	No. of Teeth	Code
3	0.025	1/2	230	602193
3	0.025	1	230	602194
3	0.023	1/2	230	602195
3	0.023	1	230	602196
3	0.020	1/2	230	602197
3	0.020	1	230	602198
3	0.018	1/2	230	602199
3	0.016	1/2	230	602201
3	0.012	1/2	280	602205
3	0.010	1/2	280	602207
4	0.051	1/2	220	602211
4	0.045	1	220	602213
4	0.040	1	220	602215
4	0.020	1/2	310	602218
4	0.018	1/2	310	602220
4	0.018	1	310	602221
4	0.016	1/2	310	602222
4	0.016	1	310	602223
5	0.064	1	280	602224
5	0.057	1	280	602225
5	0.051	1	280	602226
5	0.045	1	280	602227
5	0.040	1	280	602228
5	0.032	1/2	280	602229
5	0.032	1	280	602230
5	0.025	1/2	380	602231
5	0.025	1	380	602232
6	0.102	1	232	602233
6	0.091	1	232	602234
6	0.081	1	232	602235
6	0.072	1	232	602236
6	0.064	1	232	602237
6	0.057	1	232	602238
6	0.051	1/2	232	602239
6	0.051	1	232	602240
6	0.045	1	340	602241
6	0.040	1	340	602242
6	0.035	1	340	602243

Screw Slotting Saws

High Speed Steel – 56, 60, 72 & 90 Teeth



TOLERANCES:

Outside diameter	±0.015"
Hole diameter	±0.001"
Width	±0.001"

Diameter (Inch)	Width of Face (Inch)	Hole Size (Inch)	No. of Teeth	Code
1-3/4	0.010	1/2	90	602244
1-3/4	0.013	1/2	90	602245
1-3/4	0.020	1/2	90	602246
1-3/4	0.008	5/8	90	602247
1-3/4	0.010	5/8	90	602248
1-3/4	0.012	5/8	90	602249
1-3/4	0.014	5/8	90	602250
1-3/4	0.016	5/8	90	602251
1-3/4	0.018	5/8	90	602252
1-3/4	0.020	5/8	90	602253
1-3/4	0.023	5/8	90	602254
1-3/4	0.025	5/8	90	602255
1-3/4	0.028	5/8	90	602256
1-3/4	0.032	5/8	90	602257
1-3/4	0.036	5/8	90	602258
1-3/4	0.040	5/8	90	602259
1-3/4	0.045	5/8	90	602260
1-3/4	0.051	5/8	90	602261
1-3/4	0.057	5/8	90	602262
1-3/4	0.064	5/8	90	602263
1-3/4	0.072	5/8	90	602264
2-1/4	0.008	5/8	60	602265
2-1/4	0.010	5/8	60	602266
2-1/4	0.012	5/8	60	602267
2-1/4	0.014	5/8	60	602268
2-1/4	0.016	5/8	60	602269
2-1/4	0.018	5/8	60	602270
2-1/4	0.020	5/8	60	602271
2-1/4	0.023	5/8	60	602272
2-1/4	0.025	5/8	60	602273
2-1/4	0.028	5/8	60	602274
2-1/4	0.032	5/8	60	602275
2-1/4	0.036	5/8	60	602276
2-1/4	0.040	5/8	60	602277
2-1/4	0.045	5/8	60	602278
2-1/4	0.051	5/8	60	602279
2-1/4	0.057	5/8	60	602280
2-1/4	0.064	5/8	60	602281
2-1/4	0.072	5/8	60	602282
2-1/4	0.081	5/8	60	602283
2-1/4	0.091	5/8	60	602284
2-1/4	0.102	5/8	60	602285
2-3/4	0.010	3/4	72	602286
2-3/4	0.012	3/4	72	602287
2-3/4	0.016	3/4	72	602288
2-3/4	0.018	3/4	72	602289
2-3/4	0.020	3/4	72	602290
2-3/4	0.023	3/4	72	602291
2-3/4	0.025	3/4	72	602292
2-3/4	0.028	3/4	72	602293
2-3/4	0.032	3/4	72	602294
2-3/4	0.036	3/4	72	602295
2-3/4	0.040	3/4	72	602296
2-3/4	0.045	3/4	72	602297
2-3/4	0.051	3/4	72	602298
2-3/4	0.057	3/4	72	602299
2-3/4	0.064	3/4	72	602300
2-3/4	0.072	3/4	72	602301
2-3/4	0.081	3/4	72	602302
2-3/4	0.091	3/4	72	602303
2-3/4	0.102	3/4	72	602304
2-3/4	0.114	3/4	72	602305
2-3/4	0.128	3/4	72	602306
2-3/4	0.162	3/4	72	602307
2-3/4	0.182	3/4	72	602308
2-3/4	0.010	1	72	602309
2-3/4	0.012	1	72	602310
2-3/4	0.013	1	72	602311
2-3/4	0.014	1	72	602312
2-3/4	0.016	1	72	602313
2-3/4	0.018	1	72	602314
2-3/4	0.020	1	72	602315
2-3/4	0.023	1	72	602316
2-3/4	0.025	1	72	602317
2-3/4	0.028	1	72	602318
2-3/4	0.032	1	72	602319
2-3/4	0.035	1	72	602320
2-3/4	0.036	1	72	602321

STUB ARBOR ADAPTERS ON PAGE 398

Screw Slotting Saws

High Speed Steel – 56, 60, 72 & 90 Teeth *(continued)*

Diameter (Inch)	Width of Face (Inch)	Hole Size (Inch)	No. of Teeth	Code
2-3/4	0.040	1	72	602322
2-3/4	0.045	1	72	602323
2-3/4	0.051	1	72	602324
2-3/4	0.057	1	72	602325
2-3/4	0.064	1	72	602326
2-3/4	0.072	1	72	602327
2-3/4	0.081	1	72	602328
2-3/4	0.091	1	72	602329
2-3/4	0.102	1	72	602330
2-3/4	0.114	1	72	602331
2-3/4	0.128	1	72	602332
2-3/4	0.144	1	72	602333
2-3/4	0.162	1	72	602334
2-3/4	0.182	1	72	602335

Diameter (Inch)	Width of Face (Inch)	Hole Size (Inch)	No. of Teeth	Code
2-3/4	0.010	1	56	602336
2-3/4	0.012	1	56	602337
2-3/4	0.013	1	56	602338
2-3/4	0.014	1	56	602339
2-3/4	0.016	1	56	602340
2-3/4	0.018	1	56	602341
2-3/4	0.020	1	56	602342
2-3/4	0.023	1	56	602343
2-3/4	0.025	1	56	602344
2-3/4	0.028	1	56	602345
2-3/4	0.032	1	56	602346
2-3/4	0.036	1	56	602347
2-3/4	0.040	1	56	602348
2-3/4	0.045	1	56	602349

Diameter (Inch)	Width of Face (Inch)	Hole Size (Inch)	No. of Teeth	Code
2-3/4	0.051	1	56	602350
2-3/4	0.057	1	56	602351
2-3/4	0.064	1	56	602352
2-3/4	0.072	1	56	602353
2-3/4	0.081	1	56	602354
2-3/4	0.091	1	56	602355
2-3/4	0.102	1	56	602356
2-3/4	0.114	1	56	602357
2-3/4	0.128	1	56	602358
2-3/4	0.144	1	56	602359
2-3/4	0.162	1	56	602360

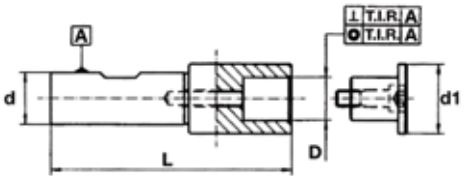
Saw Arbors

Slitting & Slotting Saws





- Hardened and precisely ground
- Rigid arbors with extended length can reach areas that standard short arbors cannot
- Each arbor is ground for precision within 0.002” on diameter
- Super low profile cup allows cutter to get closer to working area
- Plug style cup gives extra support and rigidity when working with larger diameter saws



0.002” T.I.R.

d Shank Diameter (Inch)	D Hole Size (Inch)	d1 (Inch)	L (Inch)	Code
0.500	0.250	0.500	2.700	602362
0.500	0.375	0.625	2.880	602363
0.500	0.500	0.750	3.070	602364
SETS – 3 Pieces – Sizes 0.250”, 0.375” and 0.500”				602365

d Shank Diameter (Inch)	D Hole Size (Inch)	d1 (Inch)	L (Inch)	Code
0.750	0.625	1.000	3.530	602366
0.750	1.000	1.500	3.780	602367
0.750	1.250	1.750	4.030	602368
SETS – 3 Pieces – Sizes 0.625”, 0.375” and 1.250”				602369

Weldon & R8 Shanks



R8 Shank



Weldon Shank

- Rigid and precision design
- This versatile arbor offers flexibility in sawing operations
- The spring loaded mechanism accepts saw blades with hole diameters from 1/2” to 1”
- The saw blades are firmly secured in position with a hex socket screw
- Rust resistant, black oxide finish
- Arbors are provided with one hex wrench and one screw

Shank Size	Inside Hole Diameters (Inch)	Overall Length (Inch)	Code
1/2” Weldon	1/2, 5/8, 3/4, 7/8, 1	2-9/16	417170
R8	1/2, 5/8, 3/4, 7/8, 1	5-3/32	602378

STUB ARBOR ADAPTERS ON PAGE 398



Woodruff Keyseat Cutters

High Speed Steel

1/2" Shanks

Straight & Staggered Tooth



American Standard	Diameter (Inch)	Face Width (Inch)	Straight Tooth Code	Staggered Tooth Code
202	1/4	1/16	603529	603570
202-1/2	5/16	1/16	603530	603571
302-1/2	5/16	3/32	603531	603572
203	3/8	1/16	603532	603573
303	3/8	3/32	603533	603574
403	3/8	1/8	603534	603575
204	1/2	1/16	603535	603576
304	1/2	3/32	603536	603577
305	5/8	3/32	603537	603578
404	1/2	1/8	603538	603579
405	5/8	1/8	603539	603580
406	3/4	1/8	603540	603581
505	5/8	5/32	603541	603582
605	5/8	3/16	603542	603583
506	3/4	5/32	603543	603584
806	3/4	1/4	603544	603585
507	7/8	5/32	603545	603586
606	3/4	3/16	603546	603587
607	7/8	3/16	603547	603588
707	7/8	7/32	603548	603589

American Standard	Diameter (Inch)	Face Width (Inch)	Straight Tooth Code	Staggered Tooth Code
608	1	3/16	603549	603590
708	1	7/32	603550	603591
1208	1	3/8	603551	603592
609	1-1/8	3/16	603552	603593
807	7/8	1/4	603553	603594
808	1	1/4	603554	603595
709	1-1/8	7/32	603555	603596
809	1-1/8	1/4	603556	603597
610	1-1/4	3/16	603557	603598
710	1-1/4	7/32	603558	603599
810	1-1/4	1/4	603559	603600
811	1-3/8	1/4	603560	603601
812	1-1/2	1/4	603561	603602
1008	1	5/16	603562	603603
1009	1-1/8	5/16	603563	603604
1010	1-1/4	5/16	603564	603605
1011	1-3/8	5/16	603565	603606
1012	1-1/2	5/16	603566	603607
1210	1-1/4	3/8	603567	603608
1211	1-3/8	3/8	603568	603609
1212	1-1/2	3/8	603569	603610

Slotting Cutters

Cobalt M42 – Staggered Tooth – Weldon Shank



- Used for a wide variety of slotting and milling operations in both ferrous and nonferrous materials
- For use on manual and CNC machines
- M42 cobalt for difficult-to-machine materials

Cutter Diameter (Inch)	Cutter Width (Inch)	Shank Diameter (Inch)	No. of Teeth	Overall Length (Inch)	Code
1	1/8	5/8	8	4-15/16	546101
1	3/16	5/8	8	4-15/16	546102
1	1/4	5/8	8	4-15/16	546103
1	5/16	5/8	8	4-15/16	546104
1	3/8	5/8	8	4-15/16	546105
1	1/2	5/8	8	4-15/16	546106
1	5/8	5/8	8	4-15/16	546107
1-1/2	1/8	1	8	5-5/16	546108
1-1/2	3/16	1	8	5-5/16	546109
1-1/2	1/4	1	8	5-5/16	546110
1-1/2	5/16	1	8	5-5/16	546111
1-1/2	3/8	1	8	5-5/16	546112
1-1/2	1/2	1	8	5-5/16	546113
1-1/2	5/8	1	8	5-5/16	546114

Cutter Diameter (Inch)	Cutter Width (Inch)	Shank Diameter (Inch)	No. of Teeth	Overall Length (Inch)	Code
2	3/16	1	10	5-11/16	546115
2	1/4	1	10	5-11/16	546116
2	5/16	1	10	5-11/16	546117
2	3/8	1	10	5-11/16	546118
2	1/2	1	10	5-11/16	546119
2	5/8	1	10	5-11/16	546120
2	3/4	1	10	5-11/16	546121
2-1/2	1/4	1	12	6-5/8	546122
2-1/2	5/16	1	12	6-5/8	546123
2-1/2	3/8	1	12	6-5/8	546124
2-1/2	1/2	1	12	6-5/8	546125
2-1/2	5/8	1	12	6-5/8	546126
2-1/2	3/4	1	12	6-5/8	546127
2-1/2	7/8	1	12	6-5/8	546128
2-1/2	1	1	12	6-5/8	546129



T-Slot Cutters

Cobalt – Staggered Tooth & Roughers

- Right hand cut
- Regular length
- Weldon shank



Bolt Size (Inch)	Cutter Diameter (Inch)	Cutter Thickness (Inch)	Neck Diameter (Inch)	Overall Length (Inch)	Shank Diameter (Inch)	Staggered Tooth	Rougher
						Code	Code
1/4	9/16	15/64	17/64	2-19/32	1/2	603836	–
5/16	21/32	17/64	21/64	2-11/16	1/2	603837	–
3/8	25/32	21/64	13/32	3-1/4	3/4	603838	–
1/2	31/32	25/64	17/32	3-7/16	3/4	603839	603845
5/8	1-1/4	31/64	21/32	3-15/16	1	603840	603846
3/4	1-15/32	5/8	25/32	4-7/16	1	603841	603847
1	1-27/32	53/64	1-1/32	4-13/16	1-1/4	603842	603848
1-1/4	2-7/32	1-3/32	1-9/32	5-3/8	1-1/4	603843	603849
1-1/2	2-21/32	1-11/32	1-17/32	5-29/32	1-1/4	603844	603850

Corner Rounding End Mills

High Speed Steel & Cobalt – 4 Flute



- Right hand cut
- Regular length
- Weldon shank

Radius (Inch)	Shank Diameter (Inch)	HSS	Cobalt
		Code	Code
1/32	3/8	513201	–
*1/16	3/8	513203	516503
*3/32	3/8	513205	516505
*1/8	1/2	513207	516507
*5/32	1/2	513209	516509
*3/16	1/2	513211	516511
3/16	3/4	513213	516513
7/32	1/2	513215	–

Radius (Inch)	Shank Diameter (Inch)	HSS	Cobalt
		Code	Code
*1/4	1/2	513217	516517
1/4	3/4	513219	516519
*5/16	1/2	513221	516521
5/16	3/4	513223	516523
*3/8	1/2	513225	516525
3/8	3/4	513227	516527
7/16	3/4	513229	516529
1/2	3/4	513231	516531

Radius (Inch)	Shank Diameter (Inch)	HSS	Cobalt
		Code	Code
1/2	1	513233	516533
5/8	3/4	513235	516535
5/8	1	513237	516537
3/4	1	513239	516539
7/8	1	513241	–
1	1	513243	–
SETS – *8 Pieces Wooden Block		513245	516545

Rounding Cutters

High Speed Steel

Concave



Radius (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Cutter Diameter (Inch)	No. of Flutes	Code
1/32	1/2	3	3/4	6	603851
1/16	1/2	3	3/4	6	603852
3/32	1/2	3	3/4	6	603853
1/8	3/4	3-1/2	1	6	603854
5/32	3/4	3-1/2	1	6	603855
3/16	3/4	3-1/2	1	6	603856
1/4	3/4	4	1-1/4	4	603857
5/16	3/4	4	1-1/4	4	603858
3/8	3/4	4-3/16	1-1/2	4	603859

Convex



Radius (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Cutter Diameter (Inch)	No. of Flutes	Code
1/32	1/2	3	3/4	6	603860
1/16	1/2	3	3/4	6	603861
3/32	1/2	3	7/8	6	603862
1/8	3/4	3-1/2	1-1/4	6	603863
5/32	3/4	3-1/2	1-5/16	6	603864
3/16	3/4	3-1/2	1-3/8	6	603865
1/4	3/4	4	1-1/2	6	603866
5/16	3/4	4	1-5/8	6	603867
3/8	3/4	4	1-3/4	6	603868

Angle Cutters – Chamfering

High Speed Steel – Multi Flute – 45° & 60° Angles



Cutter Diameter (Inch)	Cutter Width (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Angle	Code
1/2	1/8	3/8	2-1/8	45°	603711
3/4	3/16	3/8	2-1/8	45°	603712
1	5/16	1/2	2-1/2	45°	603713
1-1/2	1/2	3/4	2-3/4	45°	603714

Cutter Diameter (Inch)	Cutter Width (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Angle	Code
1/2	7/32	3/8	2-1/8	60°	603715
3/4	5/16	3/8	2-1/8	60°	603716
1	7/16	1/2	2-1/2	60°	603717
1-1/2	5/8	3/4	2-3/4	60°	603718

Angle Cutters – Dovetail

High Speed Steel & Cobalt – 45° & 60° Angles



Cutter Diameter (Inch)	Shank Diameter (Inch)	Angle	HSS	Cobalt
			Code	Code
3/8	3/8	45°	525200	525220
1/2	3/8	45°	525201	525221
3/4	3/8	45°	525202	525222
1-3/8	5/8	45°	525203	525223
1-7/8	7/8	45°	525204	525224
2-1/4	1	45°	525205	525225

Cutter Diameter (Inch)	Shank Diameter (Inch)	Angle	HSS	Cobalt
			Code	Code
3/8	3/8	60°	525190	525210
1/2	3/8	60°	525191	525211
3/4	3/8	60°	525192	525212
1-3/8	5/8	60°	525193	525213
1-7/8	7/8	60°	525194	525214
2-1/4	1	60°	525195	525215

Angle Cutters – Double Angle

High Speed Steel – Right Hand Cut – 60° & 90° Included Angles



Cutter Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Cutter Thickness (Inch)	Included Angle	Code
3/4	3/8	2-3/8	3/16	60°	603869
1	1/2	2-27/32	5/16	60°	603870
1-3/8	5/8	3-7/32	7/16	60°	603871
1-1/2	5/8	3-3/8	1/2	60°	603872
1-7/8	3/4	3-25/32	5/8	60°	603873
2-1/4	7/8	4-5/32	3/4	60°	603874

Cutter Diameter (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Cutter Thickness (Inch)	Included Angle	Code
2-1/4	3/4	3-1/8	1/2	60°	603875
3/4	3/8	2-7/16	1/4	90°	603876
1	1/2	2-29/32	3/8	90°	603877
1-3/8	5/8	3-9/32	1/2	90°	603878
1-1/2	5/8	3-7/16	9/16	90°	603879
1-7/8	3/4	3-25/32	5/8	90°	603880
2-1/4	7/8	4-5/32	3/4	90°	603881
2-1/4	3/4	3-1/8	1/2	90°	603882



Angle Cutters

High Speed Steel

Single Right Hand Cut & Double

45°. 60° & 90° Included Angles



Diameter (Inch)	Face Width (Inch)	Hole Diameter (Inch)	Included Angle	No. of Teeth	Single Cutter Code	Double Cutter Code
2-1/2	1/2	7/8	45°	18	603611	–
2-1/2	1/2	7/8	60°	18	603612	–
2-3/4	1/2	1	45°	18	603613	603677
2-3/4	1/2	1	60°	18	603614	603678
2-3/4	1/2	1	90°	18	–	603679
3	1/2	1	45°	22	603615	–
3	1/2	1	60°	22	603616	–
3	1/2	1-1/4	45°	22	603617	–
3	1/2	1-1/4	60°	22	603618	–
3	5/8	1	45°	22	603619	603680
3	5/8	1	60°	22	603620	603681
3	5/8	1	90°	22	–	603682
3	5/8	1-1/4	45°	22	603621	–
3	5/8	1-1/4	60°	22	603622	–
3	3/4	1	45°	22	603623	–
3	3/4	1	60°	22	603624	603683
3	3/4	1	90°	22	–	603684
3	3/4	1-1/4	60°	22	603625	–
4	1/2	1	45°	26	603626	–
4	1/2	1	60°	26	603627	–

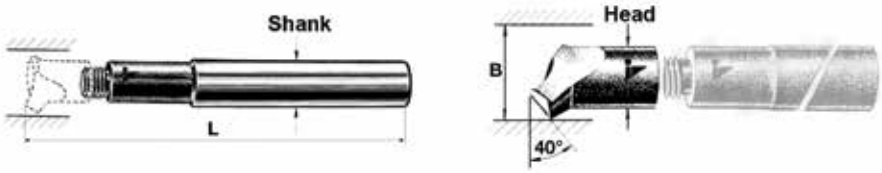
Diameter (Inch)	Face Width (Inch)	Hole Diameter (Inch)	Included Angle	No. of Teeth	Single Cutter Code	Double Cutter Code
4	1/2	1-1/4	45°	26	603628	603685
4	1/2	1-1/4	60°	26	603629	603686
4	1/2	1-1/4	90°	26	–	603687
4	3/4	1	45°	26	603630	603688
4	3/4	1	60°	26	603631	603689
4	3/4	1	90°	26	–	603690
4	3/4	1-1/4	45°	26	603632	603691
4	3/4	1-1/4	60°	26	603633	603692
4	3/4	1-1/4	90°	26	–	603693
4	1	1-1/4	45°	26	603634	–
4	1	1-1/4	60°	26	603635	603694
4	1	1-1/4	90°	26	–	603695
5	3/4	1-1/4	45°	28	603636	603696
5	3/4	1-1/4	60°	28	603637	603697
5	3/4	1-1/4	90°	28	–	603698
5	1	1-1/4	45°	28	603638	603699
5	1	1-1/4	60°	28	603639	603700
6	3/4	1-1/4	45°	30	603640	603702
6	3/4	1-1/4	60°	30	603641	–
6	1	1-1/4	45°	30	603642	–
6	1	1-1/4	60°	30	603643	–

Boring Bars – Boring & Chamfering

IFANGER

High Speed Steel & Carbide

2 Piece Style ASB



Head and shank sold separately

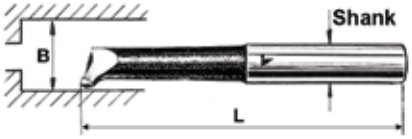
Tool No.	B Minimum Bore (mm)	S Shank Diameter (mm)	HSS Head		Carbide Head		Shank
			L Length (mm)	Code	L Length (mm)	Code	Code
3	17	10	–	–	–	–	500202
3	17	12	200	500007	200	500034	500203
4	21	13	230	500008	230	500035	500204
5	24	15	260	500009	260	500036	500205
6	28	17	280	500010	280	500037	500206
7	31	19	310	500011	310	500038	500207
8	34	20	330	500012	330	500039	500208
9	37	22	360	500013	360	500040	500209
10	42	25	390	500014	390	500041	500210
11	50	30	430	500015	430	500042	500211
12	60	35	500	500016	500	500043	500212

Boring Bars – Boring & Facing

IFANGER

High Speed Steel & Carbide

Single Piece Style ECS



Tool No.	B Minimum Bore (mm)	S Shank Diameter (mm)	HSS Regular Length		HSS Long Length		Carbide	
			L Length (mm)	Code	L Length (mm)	Code	L Length (mm)	Code
0000	3.5	8	45	500051	52	500070	45	500078
000	4.5	8	49	500052	58	500071	49	500079
00	5.5	8	52	500053	64	500072	64	500080
0	7	8	56	500054	69	500073	69	500081
1	11	8	65	500055	82	500074	82	500082
2	13	8	72	500056	100	500075	72	500083

Boring Bars – Boring & Facing *(continued)*

IFANGER

High Speed Steel & Carbide

2 Piece Style ECS



Head and shank sold separately

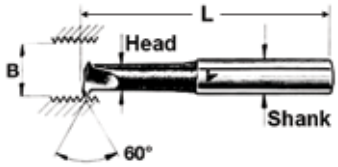
Tool No.	B Minimum Bore (mm)	S Shank Diameter (mm)	HSS Head		Carbide Head		Shank
			L Length (mm)	Code	L Length (mm)	Code	Code
3	17	10	–	–	–	–	500202
3	17	12	–	–	–	–	500203
4	21	13	230	500058	230	500085	500204
5	24	15	260	500059	260	500086	500205
6	28	17	280	500060	280	500087	500206
7	31	19	310	500061	310	500088	500207
8	34	20	330	500062	330	500089	500208
9	37	22	360	500063	360	500090	500209
10	42	25	390	500064	390	500091	500210
11	50	30	430	500065	430	500092	500211
12	60	35	500	500066	500	500093	500212

Threading Bars – 60° Threading

IFANGER

High Speed Steel & Carbide

Single Piece Style GWS



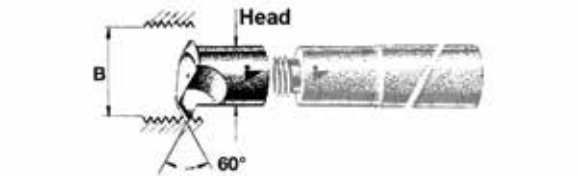
Tool No.	B Minimum Bore (mm)	S Shank Diameter (mm)	HSS Regular Length		HSS Long Length		Carbide	
			L Length (mm)	Code	L Length (mm)	Code	L Length (mm)	Code
000	5	8	46	500102	59	500122	46	500129
00	6.5	8	50	500103	64	500123	50	500130
0	9	8	52	500104	–	–	64	500131
1	11	8	56	500105	70	500124	70	500132
2	13	8	64	500106	80	500125	80	500133

Threading Bars – 60° Threading *(continued)*

IFANGER

High Speed Steel & Carbide

2 Piece Style GWS



Head and shank sold separately

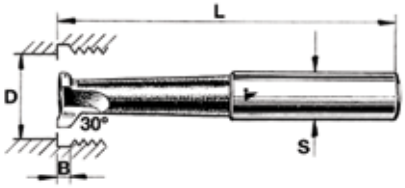
Tool No.	B Minimum Bore (mm)	S Shank Diameter (mm)	HSS Head		Carbide Head		Shank
			L Length (mm)	Code	L Length (mm)	Code	Code
3	17	10	–	–	–	–	500202
3	17	12	–	–	–	–	500203
4	21	13	230	500108	230	500135	500204
5	24	15	260	500109	260	500136	500205
6	28	17	280	500110	280	500137	500206
7	31	19	310	500111	310	500138	500207
8	34	20	330	500112	330	500139	500208
9	37	22	360	500113	360	500140	500209
10	42	25	390	500114	390	500141	500210
11	50	30	430	500115	430	500142	500211

Grooving Bars – Thread Relieving Tools

IFANGER

High Speed Steel

Single Piece Style GRS



Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	S Shank Diameter (mm)	L Length (mm)	Code
00	6	1.5	8	50	500173
0	8	1.8	8	50	500174

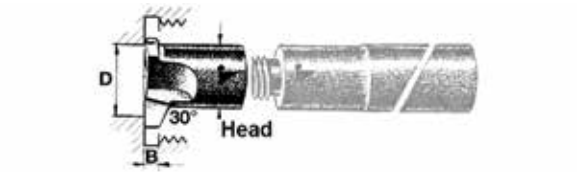
Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	S Shank Diameter (mm)	L Length (mm)	Code
1	11	2	8	55	500175
2	14	2	8	64	500176

Grooving Bars – Thread Relieving Tools *(continued)*

IFANGER

High Speed Steel

2 Piece Style GRS



Head and shank sold separately

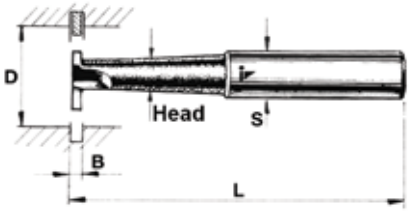
Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	S Shank Diameter (mm)	L Length (mm)	Head	Shank
					Code	Code
3	17	2.5	10	100	500177	500202
4	21	2.7	13	230	500178	500204
5	24	3	15	260	500179	500205
6	28	3.5	17	280	500180	500206
7	31	4	19	310	500181	500207
8	34	4.5	20	330	500182	500208
10	42	5	25	390	500184	500210
11	50	5.5	30	430	500185	500211

Grooving Bars – Circlip Grooving Tools

IFANGER

High Speed Steel

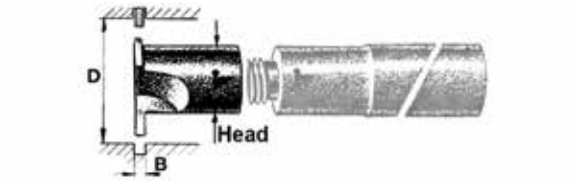
Single Piece Style SEN



Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	S Shank Diameter (mm)	L Length (mm)	Code
0	8	0.9	8	52	500197

Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	S Shank Diameter (mm)	L Length (mm)	Code
1	10	1.1	8	55	500192

2 Piece Style SEN



Head and shank sold separately

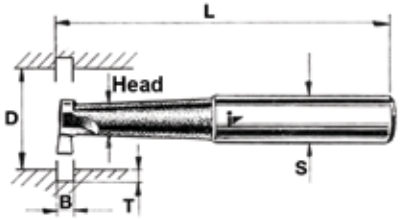
Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	S Shank Diameter (mm)	L Length (mm)	Head	Shank
					Code	Code
3	17	1	10	100	500193	500202
4	23	1.2	13	230	500194	500204
6	34	1.5	17	280	500195	500206
8	50	2	20	330	500196	500208

Grooving Bars – Groove Finishing Tools

IFANGER

High Speed Steel

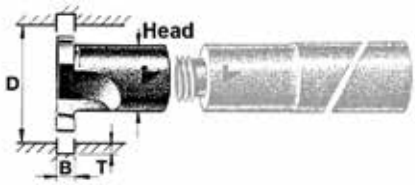
Single Piece Style HAS



Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	T Groove Depth (mm)	S Shank Diameter (mm)	L Length (mm)	Code
2	17	3.0	4	10	80	500186

Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	T Groove Depth (mm)	S Shank Diameter (mm)	L Length (mm)	Code
3	21	3.5	6	10	80	500187

2 Piece Style HAS



Head and shank sold separately

Tool No.	D Minimum Bore (mm)	B Groove Width (mm)	T Groove Depth (mm)	S Shank Diameter (mm)	L Length (mm)	Head	Shank
						Code	Code
4	25	4	7	13	230	500188	500204
6	34	5	10	17	280	500189	500206
8	40	6.5	11.5	20	330	500190	500208
10	48	8	13	25	390	500191	500210

Boring Bar Holders

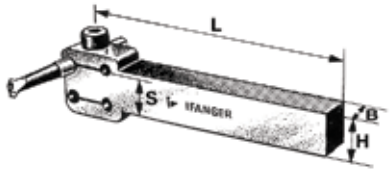
IFANGER

Series KG1



Model	Shank Size (mm)	Bore Size (mm)	Code
KG1	16 x 16 x 125	8/10	500230
KG1-A	12 x 12 x 100	8	500231
KG1-B	14 x 10 x 100	8	500232

Series IDH



Model	Shank Size H x B x L (mm)	S (mm)	Bore Size (mm)	Code
IDH-A	13.2 x 21 x 150	13	8/10	500233
IDH-B	25.0 x 22 x 175	23	8/10	500234

Boring Bar Holders *(continued)*

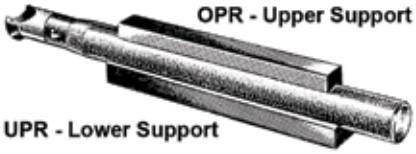
IFANGER

Series IDH



Model	Shank Size H x B x L (mm)	Bore Size (mm)	Code
IDH-C	20 x 10 x 100	8	500235

Upper/Lower Support



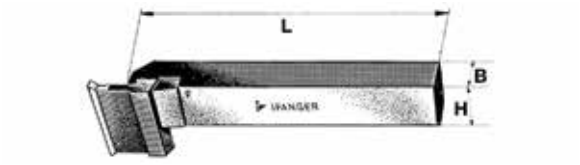
For B Bar Shank Diameter (mm)	OPR – Upper Support		UPR – Lower Support	
	Size (mm)	Code	Size (mm)	Code
8	8 x 10 x 50	500236	8 x 10 x 50	500239
10 - 20	8 x 14 x 100	500237	12 x 22 x130	500240
20 - 30	8 x 14 x 150	500238	20 x 25 x 180	500241

Grooving Tools & Blades

IFANGER

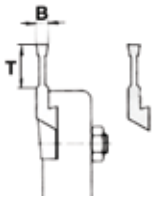
High Speed Steel

Shanks



Tool No.	Size H x B x L (mm)	Code
1	16 x 12 x 110	500351
2	20 x 15 x 140	500352
3	25 x 18 x 160	500353
4	30 x 21 x 180	500354
5	36 x 25 x 200	500355

Blades



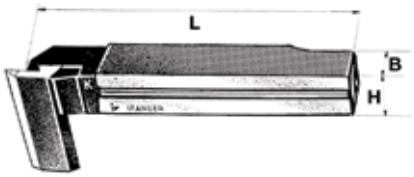
For Tool No.	B (mm)	Regular Length		Long Length	
		T (mm)	Code	T (mm)	Code
1	3	11	500361	16	500371
2	3.5	14	500362	19	500372
3	4	17	500363	24	500373
4	4.5	23.5	500364	33.5	500374
5	5.5	30	500365	40	500375

Threading Tools & Blades

IFANGER

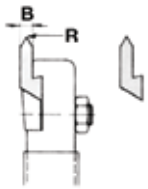
High Speed Steel & Carbide

Shanks – Thread at 60°



Tool No.	Size H x B x L (mm)	Code
0	16 x 12 x 100	500300
1	18 x 15 x 110	500301
2	20 x 18 x 140	500302
3	25 x 22 x 160	500303
4	32 x 25 x 180	500304
5	36 x 28 x 200	500305

Blades



For Tool No.	HSS Regular Width			Carbide Regular Width		HSS Extra Width		
	B (mm)	R (mm)	Code	B (mm)	Code	B (mm)	R (mm)	Code
1	2.5	0.07	500310	–	–	3.5	0.3	500320
2	3	0.1	500312	3.5	500332	4.5	0.35	500322
3	3.5	0.12	500313	4.5	500333	5.5	0.45	500323
4	4.5	0.2	500314	5.5	500334	6.5	0.6	500324
5	5.5	0.2	500315	6.5	500335	8.5	0.75	500325



Boring Bar Sets

Cobalt

Shank Diameter (Inch)	No. of Bars	Minimum Bore (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
3/8	8	3/16 – 3/8	9/16 – 1-7/8	1-13/16 – 3-1/8	513137
1/2	10	1/4 – 1/2	3/4 – 2-1/2	2-1/8 – 3-7/8	513150
5/8	10	3/8 – 5/8	1-1/8 – 3-1/8	2-5/8 – 4-5/8	513162
3/4	14	3/8 – 3/4	1-1/8 – 3-3/4	2-7/8 – 5-1/2	513175

Boring Bars with Precision Ground Shanks

Alloy Steel – Carbide Tipped



- High quality alloy steel for greater rigidity
- Offset taper to provide greater rigidity at cutting point

3/8" Shank – C6 for Steel

Min. Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
5/16	3/4	2	617025
5/16	1-1/8	2-3/8	617026
5/16	1-1/2	2-3/4	617027
3/8	1-15/16	2-3/16	617028

Min. Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
3/8	1-13/32	2-21/32	617029
3/8	1-7/8	3-1/8	617030
7/16	1-1/8	2-3/8	617031
7/16	1-11/16	3-15/16	617032
7/16	2-1/4	3-1/2	617033

1/2" Shank – C6 for Steel

Min. Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
5/16	3/4	2-1/4	617043
5/16	1-1/8	2-5/8	617044
5/16	1-1/2	3	617045
7/16	1-1/8	2-5/8	617046

Min. Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Code
7/16	1-11/16	3-3/16	617047
7/16	2-1/4	3-3/4	617048
9/16	1-1/2	3	617049
9/16	2-1/4	3-3/4	617050
9/16	3	4-1/2	617051

5/8" Shank

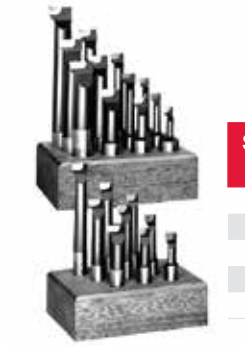
C2 for Non-Ferrous – C6 for Steel

Minimum Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	C2	C6
			Code	Code
5/16	3/4	2-1/4	617052	617064
5/16	1-1/8	2-5/8	617053	617065
5/16	1-1/2	3	617054	617066
7/16	1-1/8	2-5/8	617055	617067
7/16	1-11/16	3-3/16	617056	617068
7/16	2-1/4	3-3/4	617057	617069
9/16	1-1/2	3	617058	617070
9/16	2-1/4	3-3/4	617059	617071
9/16	3	4-1/2	617060	617072
11/16	1-7/8	3-3/8	617061	617073
11/16	2-13/16	4-3/16	617062	617074
11/16	3-3/4	5-1/4	617063	617075

3/4" Shank

C2 for Non-Ferrous – C6 for Steel

Minimum Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	C2	C6
			Code	Code
7/16	1-1/8	3-1/8	617076	617088
7/16	1-11/16	3-11/16	617077	617089
7/16	2-1/4	4-1/4	617078	617090
9/16	1-1/2	3-1/2	617079	617091
9/16	2-1/4	4-1/4	617080	617092
9/16	3	5	617081	617093
11/16	1-7/8	3-7/8	617082	617094
11/16	2-13/16	4-13/16	617083	617095
11/16	3-3/4	5-3/4	617084	617096
13/16	2-1/4	4-1/4	617085	617097
13/16	3-3/8	5-3/8	617086	617098
13/16	4-1/2	6-1/2	617087	617099



Boring Bar Sets

Carbide Tipped

Shank Diameter (Inch)	No. of Pieces	Overall Length (Inch)	Minimum Bore (Inch)	Bore Depth (Inch)	Code
3/8	9	2 – 3-1/2	5/16 – 7/16	3/4 – 2-1/4	510405
1/2	9	2-1/4 – 4-1/2	5/16 – 9/16	3/4 – 3	510406
5/8	12	2-1/4 – 5-1/4	5/16 – 11/16	3/4 – 3-3/4	510407
3/4	12	3-1/8 – 6-1/2	7/16 – 13-16	1-1/8 – 4-1/2	510408
1	5	4 – 9-1/2	9/16 – 1-5/8	1-3/4 – 7-1/2	510409

Miniature Bores

Solid Carbide Stems with Steel Shanks



3/8″ Shank

Minimum Bore (Inch)	Bore Depth (Inch)	Overall Length (Inch)	Code
1/16	5/16	1-9/16	606250
3/32	15/32	1-23/32	606251
1/8	5/8	1-7/8	606252
5/32	25/32	2-1/32	606253
3/16	15/16	2-3/16	606254
1/4	1-1/4	2-1/2	606255

1/2″ Shank

Minimum Bore (Inch)	Bore Depth (Inch)	Overall Length (Inch)	Code
1/16	5/16	1-13/16	606256
3/32	15/32	1-15/16	606257
1/8	5/8	2-1/8	606258
5/32	25/32	2-1/4	606259
3/16	15/16	2-7/16	606260
1/4	1-1/4	2-13/16	606261

Boring Bars – Tool Bit Mounted

Single & Double Ended – 45° & 90°

- The tool bits are firmly held in place by a set screw
- These popular boring bars have precision broached holes that accept standard high speed, carbide, or stellite tool bits

Single End – 45°



Bar Diameter (Inch)	Overall Length (Inch)	Tool Bit (Inch)	Code
3/8	3	3/16 sq.	513270
1/2	4	3/16 sq.	513271
5/8	5	1/4 sq.	513272
3/4	5	1/4 sq.	513273
3/4	7	1/4 sq.	513274
1	8	5/16 sq.	513275

Single End – 90°



Bar Diameter (Inch)	Overall Length (Inch)	Tool Bit (Inch)	Code
3/8	3	1/8 sq.	513280
1/2	4	3/16 sq.	513281
5/8	5	1/4 sq.	513282
3/4	5	1/4 sq.	513283
3/4	7	1/4 sq.	513284
1	8	5/16 sq.	513285

Double End – 45° & 90°



Bar Diameter (Inch)	Overall Length (Inch)	Tool Bit (Inch)	Code
3/8	6	3/16 sq.	513260
1/2	8	3/16 sq.	513261
5/8	10	1/4 sq.	513262
3/4	12	1/4 sq.	513263
1	16	5/16 sq.	513264
1-1/2	18	1/2 sq.	513266

Double End – 45° & 90° – 5 Piece Set



Set Includes...	Code
513260 513261 513262 513263 513264	513268

Keyway Broaches

High Speed Steel & TiN Coated

The duMONT Company



Broach Size	Broach Dimensions (Inch)	No. of Shims Required	Tooth Pitch (Inch)	No. of Teeth	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	HSS	TiN Coated
							Code	Code
1/16 A	1/8 x 5	0	3/16	18	13/64	1-1/8	605515	605536
3/32 A	1/8 x 5	0	3/16	18	13/64	1-1/8	605516	605537
1/8 A	1/8 x 5	1	3/16	18	13/64	1-1/8	605517	605538
3/32 B	3/16 x 6-3/4	0	9/32	16	19/64	1-11/16	605518	605539
1/8 B	3/16 x 6-3/4	1	9/32	16	19/64	1-11/16	605519	605540
5/32 B	3/16 x 6-3/4	1	9/32	16	19/64	1-11/16	605520	605541
3/16 B	3/16 x 6-3/4	1	9/32	16	19/64	1-11/16	605521	605542
3/16 C	3/8 x 11-3/4	1	3/8	20	25/64	2-1/2	605522	605543
1/4 C	3/8 x 11-3/4	1	3/8	20	25/64	2-1/2	605523	605544
5/16 C	3/8 x 11-3/4	2	3/8	20	25/64	2-1/2	605524	605545
3/8 C	3/8 x 11-3/4	2	3/8	20	25/64	2-1/2	605525	605546
5/16 D	9/16 x 13-7/8	2	5/8	17	1	6	605526	605547
3/8 D	9/16 x 13-7/8	2	5/8	17	1	6	605527	605548
7/16 D	9/16 x 13-7/8	3	5/8	17	1	6	605528	605549
1/2 D	9/16 x 13-7/8	3	5/8	17	1	6	605529	605550
5/8 E	3/4 x 15-1/2	4	5/8	20	1	6	605530	605551
3/4 E	3/4 x 15-1/2	5	5/8	20	1	6	605531	605552
7/8 F	1 x 20-1/4	6	5/8	26	1	6	605532	605553
1 F	1 x 20-1/4	7	5/8	26	1	6	605533	605554
1-1/8	1-1/8 x 20-1/4	8	5/8	26	1	6	605534	–
1-1/4	1-1/4 x 20-1/4	9	3/4	22	1-1/2	8	605535	–

Broach Shims

The duMONT Company



Broach Size	Shim Thickness (Inch)	Code	Broach Size	Shim Thickness (Inch)	Code	Broach Size	Shim Thickness (Inch)	Code
1/8 A	0.0310	605555	5/16 C	0.0550	605561	5/8 E	0.0625	605567
1/8 B	0.0310	605556	3/8 C	0.0625	605562	3/4 E	0.0625	605568
5/32 B	0.0420	605557	5/16 D	0.0560	605563	7/8 F	0.0625	605569
3/16 B	0.0500	605558	3/8 D	0.0625	605564	1 F	0.0625	605570
3/16 C	0.0500	605559	7/16 D	0.0560	605565	1-1/8	0.0625	605571
1/4 C	0.0625	605560	1/2 D	0.0625	605566	1-1/4	0.0625	605572

Broach Bushings

Collared & Plain Types

The duMONT Company



Diameter (Inch)	Collared Bushings						Plain Bushings			
	A Bushings for A Broaches		B Bushings for B Broaches		C Bushings for C Broaches		D Bushings for D Broaches		E Bushings for E Broaches	
	Length (Inch)	Code	Length (Inch)	Code	Length (Inch)	Code	Length (Inch)	Code	Length (Inch)	Code
1/4	1-1/8	605573	–	–	–	–	–	–	–	–
5/16	1-1/8	605574	–	–	–	–	–	–	–	–
3/8	1-1/8	605575	–	–	–	–	–	–	–	–
7/16	1-1/8	605576	–	–	–	–	–	–	–	–
1/2	1-1/8	605577	1-11/16	605578	–	–	–	–	–	–
9/16	–	–	1-11/16	605579	–	–	–	–	–	–
5/8	–	–	1-11/16	605580	–	–	–	–	–	–
11/16	–	–	1-11/16	605581	–	–	–	–	–	–
3/4	–	–	1-11/16	605582	2-1/2	605585	–	–	–	–
13/16	–	–	1-11/16	605583	2-1/2	605586	–	–	–	–
7/8	–	–	1-11/16	605584	2-1/2	605587	–	–	–	–
15/16	–	–	–	–	2-1/2	605588	–	–	–	–
1	–	–	–	–	2-1/2	605589	–	–	–	–
1-1/16	–	–	–	–	2-1/2	605590	–	–	–	–
1-1/8	–	–	–	–	2-1/2	605591	–	–	–	–
1-3/16	–	–	–	–	2-1/2	605592	–	–	–	–
1-1/4	–	–	–	–	2-1/2	605593	–	–	–	–
1-5/16	–	–	–	–	2-1/2	605594	–	–	–	–
1-3/8	–	–	–	–	2-1/2	605595	–	–	–	–
1-7/16	–	–	–	–	2-1/2	605596	4	605599	–	–
1-1/2	–	–	–	–	2-1/2	605597	4	605600	–	–
1-9/16	–	–	–	–	2-1/2	605598	4	605601	–	–
1-5/8	–	–	–	–	–	–	4	605602	–	–
1-11/16	–	–	–	–	–	–	4	605603	–	–
1-3/4	–	–	–	–	–	–	4	605604	–	–
1-13/16	–	–	–	–	–	–	5	605605	–	–
1-7/8	–	–	–	–	–	–	5	605606	–	–
1-15/16	–	–	–	–	–	–	5	605607	–	–
2	–	–	–	–	–	–	5	605608	–	–
2-1/16	–	–	–	–	–	–	5	605609	–	–
2-1/8	–	–	–	–	–	–	5	605610	–	–
2-3/16	–	–	–	–	–	–	5	605611	–	–
2-1/4	–	–	–	–	–	–	5	605612	–	–
2-5/16	–	–	–	–	–	–	5	605613	6	605625
2-3/8	–	–	–	–	–	–	6	605614	6	605626
2-7/16	–	–	–	–	–	–	6	605615	6	605627
2-1/2	–	–	–	–	–	–	6	605616	6	605628
2-9/16	–	–	–	–	–	–	6	605617	6	605629
2-5/8	–	–	–	–	–	–	6	605618	6	605630
2-11/16	–	–	–	–	–	–	6	605619	6	605631
2-3/4	–	–	–	–	–	–	6	605620	6	605632
2-13/16	–	–	–	–	–	–	6	605621	6	605633
2-7/8	–	–	–	–	–	–	6	605622	6	605634
2-15/16	–	–	–	–	–	–	6	605623	6	605635
3	–	–	–	–	–	–	6	605624	6	605636

Metric Keyway Broaches

High Speed Steel & TiN Coated



Keyway Width (mm)	Broach Dimensions (Inch)	Standard Keys (mm)	No. of Shims Required	Tooth Pitch (Inch)	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	HSS	TiN Coated
							Code	Code
2 A	1/8 x 5	2 x 2	0	3/16	13/64	1-1/8	605637	605653
3 A	1/8 x 5	3 x 3	1	3/16	13/64	1-1/8	605638	605654
4 B1	1/4 x 6-3/4	4 x 4	1	9/32	19/64	1-11/16	605639	605655
5 B1	1/4 x 6-3/4	5 x 5	1	9/32	19/64	1-11/16	605640	605656
5 C	3/8 x 11-3/4	5 x 5	1	3/8	25/64	2-1/2	605641	605567
6 C	3/8 x 11-3/4	6 x 6	1	3/8	25/64	2-1/2	605642	605568
8 C	3/8 x 11-3/4	8 x 7	2	3/8	25/64	2-1/2	605643	605569
10 D	9/16 x 13-7/8	10 x 8	2	5/8	1	6	605644	605660
12 D	9/16 x 13-7/8	12 x 8	2	5/8	1	6	605645	605661
14 D	9/16 x 13-7/8	14 x 9	2	5/8	1	6	605646	605662
16 E	3/4 x 15-1/2	16 x 10	3	5/8	1	6	605647	605663
18 E	3/4 x 15-1/2	18 x 11	3	5/8	1	6	605648	605664
20 F	1 x 20-1/4	20 x 12	3	5/8	1	6	605649	605665
22 F	1 x 20-1/4	22 x 14	4	5/8	1	6	605650	605666
24 F	1 x 20-1/4	24 x 14	5	5/8	1	6	605651	–
25 F	1 x 20-1/4	25 x 14	4	5/8	1	6	605652	–

Metric Broach Shims



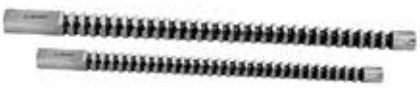
Broach Size	Shim Thickness (Inch)	Code
3 A	0.0310	605667
4 B1	0.0380	605668
5 B1	0.0500	605669
5 C	0.0470	605670
6 C	0.0625	605671
8 C	0.0500	605672

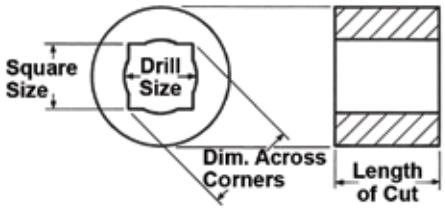
Broach Size	Shim Thickness (Inch)	Code
10 D	0.0560	605673
12 D	0.0560	605674
14 D	0.0625	605675
16 E	0.0560	605676
18 E	0.0560	605677
20 F	0.0625	605678

Broach Size	Shim Thickness (Inch)	Code
22 F	0.0560	605679
24 F	0.0625	605680
25 F	0.0560	605681

Metric Square Broaches

High Speed Steel





Square Size (mm)	Tolerances Dec. Equiv. (Inch)	Broach Length (Inch)	Pilot Diameter (Inch)	Drill Size (mm)	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	Code
4	0.1575 - 0.1580	5-1/8	0.1614	4.10	1/4	1/2	605682
5	0.1968 - 0.1973	6-1/2	0.2047	5.20	1/4	1/2	605683
6	0.2362 - 0.2367	6-11/16	0.2510	6.40	1/4	3/4	605684
7	0.2756 - 0.2764	8	0.2913	7.40	3/8	1	605685
8	0.3150 - 0.3156	7-1/8	0.3307	8.40	3/8	1	605686
10	0.3937 - 0.3943	10-1/8	0.4094	10.40	3/8	1-1/4	605687
12	0.4724 - 0.4731	12	0.5039	12.80	1/2	1-3/8	605688
14	0.5512 - 0.5519	14-3/4	0.5826	14.80	1/2	1-1/2	605689

Metric Broach Bushings

Collared & Plain Types



Diameter (mm)	Collared Bushings			Plain Bushings	
	A Bushings for A Broaches	B1 Bushings for B1 Broaches	C Bushings for C Broaches	D Bushings for D Broaches	E Bushings for E Broaches
6	605690	–	–	–	–
8	605691	–	–	–	–
10	605692	–	–	–	–
12	605693	605695	–	–	–
14	–	605696	–	–	–
15	605694	605697	–	–	–
16	–	605698	–	–	–
17	–	605699	–	–	–
18	–	605700	605702	–	–
19	–	605701	605703	–	–
20	–	–	605704	–	–
22	–	–	605705	–	–
24	–	–	605706	–	–
25	–	–	605707	–	–
26	–	–	605708	–	–
28	–	–	605709	–	–
30	–	–	605710	–	–
32	–	–	605711	605715	–
34	–	–	605712	605716	–
35	–	–	605713	605717	–
36	–	–	605714	605718	–
38	–	–	–	605719	–

Diameter (mm)	Collared Bushings			Plain Bushings	
	A Bushings for A Broaches	B1 Bushings for B1 Broaches	C Bushings for C Broaches	D Bushings for D Broaches	E Bushings for E Broaches
40	–	–	–	605720	–
42	–	–	–	605721	–
44	–	–	–	605722	–
45	–	–	–	605723	–
46	–	–	–	605724	–
48	–	–	–	605725	–
50	–	–	–	605726	–
52	–	–	–	605727	605730
54	–	–	–	605728	605731
55	–	–	–	–	605732
56	–	–	–	605729	605733
58	–	–	–	–	605734
60	–	–	–	–	605735
62	–	–	–	–	605736
63	–	–	–	–	605737
64	–	–	–	–	605738
65	–	–	–	–	605739
66	–	–	–	–	605740
68	–	–	–	–	605741
70	–	–	–	–	605742
72	–	–	–	–	605743

Square Broaches

High Speed Steel



Square Size (Inch)	Broach Length (Inch)	Pilot Diameter (Inch)	Drill Size	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	Code
1/8	4-1/8	0.1285	No. 30	3/16	1/2	605744
5/32	5-1/8	0.1590	No. 21	1/4	1/2	605745
3/16	5-9/16	0.1935	No. 10	1/4	5/8	605746
7/32	6-1/2	0.2280	No. 1	1/4	3/4	605747
1/4	6-1/2	0.2656	17/64	1/4	3/4	605748
9/32	7-3/4	0.2969	19/64	5/16	1	605749
5/16	7-7/8	0.3281	21/64	3/8	1	605750
11/32	9-3/8	0.3594	23/64	3/8	1-1/4	605751
3/8	9-3/8	0.3906	25/64	3/8	1-1/4	605752
13/32	10-5/8	0.4219	27/64	1/2	1-3/8	605753
7/16	10-7/8	0.4531	29/64	1/2	1-3/8	605754
15/32	12	0.5000	1/2	1/2	1-3/8	605755
1/2	12	0.5312	17/32	1/2	1-3/8	605756
9/16	14-3/4	0.5938	19/32	1/2	1-1/2	605757
5/8	16-5/16	0.6562	21/32	5/8	1-5/8	605758
11/16	17-3/4	0.7500	3/4	5/8	1-5/8	605759
3/4	17-3/4	0.8125	13/16	5/8	1-5/8	605760
7/8	22-3/4	0.9375	15/16	5/8	2	605761
1	24-1/8	1.0938	1-3/32	5/8	2	605762

Round Broaches

High Speed Steel

The duMONT Company



Diameter (Inch)	Broach Length (Inch)	Pilot Diameter (Inch)	Drill Size (Inch)	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	Code
1/4	5-7/8	15/64	15/64	5/16	3/4	605763
5/16	5-7/8	19/64	19/64	5/16	3/4	605764
3/8	6-7/8	23/64	23/64	3/8	1	605765
7/16	6-7/8	27/64	27/64	3/8	1	605766
1/2	8	31/64	31/64	1/2	1-1/4	605767
5/8	8-1/2	39/64	39/64	1/2	1-1/4	605769
3/4	9-1/8	47/64	47/64	5/8	1-1/2	605771
7/8	9-1/4	55/64	55/64	5/8	1-1/2	605773
1	10-1/4	63/64	63/64	5/8	1-3/4	605775

Hexagonal Broaches

High Speed Steel

The duMONT Company



Hex Size (Inch)	Broach Length (Inch)	Pilot Diameter (Inch)	Drill Size (Inch)	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	Code
1/8	4-1/8	1/8	1/8	3/16	3/8	605776
5/32	4-15/16	5/32	5/32	1/4	1/2	605777
3/16	5-1/16	3/16	3/16	1/4	5/8	605778
7/32	5-3/8	7/32	7/32	1/4	3/4	605779
1/4	6	1/4	1/4	1/4	3/4	605780
9/32	7-1/4	9/32	9/32	5/16	1	605781
5/16	7-3/4	5/16	5/16	3/8	1	605782
11/32	7-3/4	11/32	11/32	3/8	1-1/4	605783
3/8	8-1/2	3/8	3/8	3/8	1-1/4	605784
13/32	9-5/8	13/32	13/32	1/2	1-3/8	605785
7/16	10-5/8	7/16	7/16	1/2	1-3/8	605786
15/32	11-7/8	15/32	15/32	1/2	1-3/8	605787
1/2	11-7/8	1/2	1/2	1/2	1-3/8	605788
9/16	13-3/4	9/16	9/16	1/2	1-5/8	605789
5/8	16-1/4	5/8	5/8	5/8	2	605790
11/16	16-3/4	11/16	11/16	5/8	2	605791
3/4	17-1/4	3/4	3/4	5/8	2	605792
7/8	18-1/2	7/8	7/8	5/8	2	605793
1	19-3/4	1	1	5/8	2	605794

Keyseating Broaches

High Speed Steel



Keyway Width (Inch)	Broach Length (Inch)	Tooth Pitch (Inch)	Height at Teeth (Inch)	Body Width (Inch)	Code
1/16	16	3/8	3/8	3/16	605795
3/32	16	3/8	3/8	3/16	605796
1/8	16	3/8	7/16	3/16	605797
5/32	16	3/8	1/2	5/32	605798
3/16	16	3/8	5/8	3/16	605799
1/4	16	3/8	3/4	1/4	605800
1/4	20	3/8	1	1/4	605801
5/16	16	3/8	7/8	5/16	605802
5/16	20	3/8	1	5/16	605803
3/8	16	17/32	7/8	3/8	605804
3/8	20	17/32	1	3/8	605805
7/16	20	17/32	1	7/16	605806
1/2	20	17/32	1	1/2	605807
9/16	20	17/32	1	9/16	605808
5/8	20	17/32	1	5/8	605809
3/4	20	17/32	1	3/4	605810
7/8	20	17/32	1	7/8	605811
1	20	17/32	1	1	605812

Production Broaches

High Speed Steel



Shims or bushing not required

Broach Size (Inch)	Body Diameter (Inch)	Dimension (Inch)	Broach Length (Inch)	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	Code
1/16	3/16	0.224	5-5/8	13/64	1	605813
1/16	1/4	0.287	6-3/16	13/64	1	605814
1/8	3/8	0.437	8-1/2	17/64	1-1/4	605815
1/8	1/2	0.565	11-3/4	25/64	2-1/2	605816
1/8	9/16	0.630	11-3/4	25/64	2-1/2	605817
1/8	5/8	0.693	11-3/4	25/64	2-1/2	605818
3/16	5/8	0.716	14-3/4	25/64	2-1/2	605819
3/16	3/4	0.844	14-3/4	25/64	2-1/2	605820
3/16	7/8	0.970	14-3/4	25/64	2-1/2	605821
1/4	1	1.121	18	25/64	2-1/2	605822

One-Pass Broaches

High Speed Steel



Style C bushings required

Broach Size (Inch)	Broach Dimensions (Inch)	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	Code
1/8 C	3/8 x 14-1/8	19/64	2	605823
5/32 C	3/8 x 14-1/8	19/64	2	605824
3/16 C	3/8 x 17	19/64	2	605825
1/4 C	3/8 x 17	19/64	2	605826
5/16 C	3/8 x 18-1/2	19/64	2	605827
3/8 C	3/8 x 18-1/2	19/64	2	605828

Metric Keyseating Broaches

High Speed Steel



Broach Size (mm)	Keyway Width Tolerance (Inch)	Body Dimensions W x H x L	Minimum Length of Cut (Inch)	Maximum Length of Cut (Inch)	Code
2	0.0787 - 0.0792	3/16 x 3/8 x 16	5/8	1-7/8	605829
3	0.1181 - 0.1186	3/16 x 7/16 x 16	5/8	1-7/8	605830
4	0.1575 - 0.1580	3/16 x 1/2 x 16	5/8	1-7/8	605831
5	0.1968 - 0.1973	5 mm x 9/16 x 16	5/8	1-7/8	605832
6	0.2362 - 0.2367	6 mm x 3/4 x 16	5/8	1-7/8	605833
6	0.2362 - 0.2367	6 mm x 3/4 x 20	5/8	3-1/8	605834
8	0.3150 - 0.3155	8 mm x 7/8 x 16	1-1/16	3-3/16	605835
8	0.3150 - 0.3155	8 mm x 7/8 x 20	1-1/16	5-5/16	605836
10	0.3937 - 0.3942	10 mm x 7/8 x 20	1-1/16	5-5/16	605837
12	0.4724 - 0.4730	12 mm x 1 x 20	1-1/16	5-5/16	605838
13	0.5118 - 0.5125	13 mm x 1 x 20	1-1/16	5-5/16	605836
14	0.5612 - 0.5519	14 mm x 1 x 20	1-1/16	5-5/16	605840
16	0.8299 - 0.6306	16 mm x 1 x 20	1-1/16	5-5/16	605841
18	0.7087 - 0.7093	18 mm x 1 x 20	1-1/16	5-5/16	605842
20	0.7874 - 0.7883	20 mm x 1 x 20	1-1/16	5-5/16	605843
22	0.8661 - 0.8669	22 mm x 1 x 20	1-1/16	5-5/16	605844
24	0.9449 - 0.9458	24 mm x 1 x 20	1-1/16	5-5/16	605845
25	0.9843 - 0.9853	25 mm x 1 x20	1-1/16	5-5/16	605846

NOW AVAILABLE

The duMONT Company

CNC Broaching System

MADE IN USA

- A patented solution for effective and efficient broaching and shaping operations
- For use with CNC lathes and machining centers, as well as conventional slotting and shaping machines
- Carbide inserts, tool holders and accessories designed for flexibility while delivery the rigidity and performance required

• Inch & Metric size Inserts & Tool Holders for Keyways & Slotting • Eccentric Bushings • Square Adapters • Alignment Tools • Sharpening Stems • Insert Mounting Screws • Torx Drivers • Swivel Ball-Bearing Point Set Screws • Square Tool Holders & Inserts • Spline & External Spline Tool Holders • Hexagon Tool Holders & Inserts • Mini Tool Holders

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Arbor Presses

The duMONT Company

- Easy to operate manual broaching machines
- Model 2R Arbor Press - Suitable for use with all standard broaches up to and including C series (3/8” or 10 mm)
- Model 3R Arbor Press - Suitable for use with all standard broaches up to and including D series (1/2” or 12 mm)

Model	Diameter Maximum (Inch)	Height Over Plate (Inch)	Leverage	Overall Height (Inch)	Pressure (Ton)	Weight (lbs)	Code
2R	12	17-1/4	45:1	32	3	220	218000
3R	21	20-1/2	55:1	35	5	517	218001

Broach Sets

The duMONT Company



- All Minute Man® Broach Sets are supplied in storage boxes, and come complete with precision broaches, slotted bushings, and necessary shims
- Collared bushings are recommended are supplied unless plain bushings are specified on your order

TiN coated sets available on request

No. 00 Precision Set

The most common keyway combinations
for small keyways and bores.
3 broaches and 5 bushings = 15 keyway combinations

Collared bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
1/16 3/32 1/8	A	1/4, 5/16, 3/8, 7/16, 1/2	605500

No. 10 Standard Set

Our best selling broach set.
4 broaches and 9 bushings = 18 keyway combinations

Collared bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
1/8 3/16	B	1/2, 5/8, 3/4, 7/8	605501
1/4 3/8	C	1, 1-1/8, 1-1/4, 1-3/8, 1-1/2	

No. 10A Standard Set

Same as No. 10 Set, but for sixteenth-sized bores.
4 broaches and 9 bushings = 18 keyway combinations

Collared bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
1/8 3/16	B	9/16, 11/16, 13/16	605502
1/4 3/8	C	15/16, 1-1/16, 1-3/16, 1-5/16, 1-7/16, 1-9/16	

No. 10-10A Combination Set

Combines 10 and 10A sets features all bore sizes in
1/16 inch increments for keyways 1/8 to 3/8 inches.
4 broaches and 18 bushings = 36 keyway combinations

Collared bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
1/8 3/16	B	1/2, 9/16, 5/8, 11/16, 3/4, 13/16, 7/8	605503
1/4 3/8	C	15/16, 1, 1-1/16, 1-1/8, 1-3/16, 1-1/4, 1-5/16, 1-3/8, 1-7/16, 1-1/2, 1-9/16	

No. 20 Combination Set

Same as No. 10-10A combination set plus
a 5/16" keyway for 11 extra combinations
5 broaches and 18 bushings = 47 keyway combinations

Collared bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
1/8 3/16	B	1/2, 9/16, 5/8, 11/16, 3/4, 13/16, 7/8	605504
1/4 5/16 3/8	C	15/16, 1, 1-1/16, 1-1/8, 1-3/16, 1-1/4, 1-5/16, 1-3/8, 1-7/16, 1-1/2, 1-9/16	

No. 40A Set

The most common keyway combinations
for medium sized keyways and bores.
4 broaches and 8 bushings = 32 keyway combinations

Plain bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
5/16 3/8 7/16 1/2	D	1-1/2, 1-5/8, 1-3/4, 1-7/8, 2, 2-1/8, 2-1/4, 2-1/2	605505

No. 40 Set

Same as No. 40A, but for sixteenth sized bores.
4 broaches and 8 bushings = 32 keyway combinations

Plain bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
5/16 3/8 7/16 1/2	D	1-7/16, 1-9/16, 1-11/16, 1-13/16, 1-15/16, 2-3/16, 2-7/16, 2-15/16	605506

No. 40-1/2A Heavy Duty Set

The most common keyway combinations for large keyways and bores.
2 broaches and 6 bushings = 12 keyway combinations

Plain bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
5/8 3/4	E	2-3/8, 2-1/2, 2-5/8, 2-3/4, 2-7/8, 3	605507

Broach Sets *(continued)*

The duMONT Company



No. 40-1/2 Heavy Duty Set

Same as No. 40-1/2A
but for sixteenth sized bores.
2 broaches and 6 bushings = 12 keyway combinations

Plain bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
5/8 3/4	E	2-5/16, 2-7/16, 2-9/16, 2-11/16, 2-13/16, 2-15/16	605508

No. 50 Heavy Duty Set

Includes the most common keyway
combinationsfor medium and large keyways.
3 broaches and 17 bushings = 29 keyway combinations

Plain bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
1/2	D	2, 2-1/16, 2-1/8, 2-3/16, 2-1/4	605509
5/8 3/4	E	2-5/16, 2-3/8, 2-7/16, 2-1/2, 2-9/16, 2-5/8, 2-11/16, 2-3/4, 2-13/16, 2-7/8, 2-15/16, 3	

No. 60 Metric Set

The most common metric keyway
combination for small keyways and bores.
2 broaches and 3 bushings = 6 keyway combinations

Collared bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
2 mm 3 mm	A	6, 8, 10 mm	605510

No. 70 Metric Set

Our most popular metric broach set.
4 broaches and 13 bushings = 26 keyway combinations

Collared bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
4 mm 5 mm	B-1	12, 14, 15, 16 mm	605511
6 mm 8 mm	C	18, 19, 20, 22, 24, 25, 26, 28, 30 mm	

No. 80 Metric Set

The most common metric keyway combination
for medium-sized keyways and bores.
3 broaches and 12 bushings = 36 keyway combinations

Plain bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
10 mm 12 mm 14 mm	D	32, 34, 35, 36, 38, 40, 42, 44, 45, 46, 48, 50 mm	605512

No. 90 Metric Set

The most common metric keyway
combination for large keyways and bores.
2 broaches and 8 bushings = 16 keyway combinations

Plain bushings only

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
16 mm 18 mm	E	52, 54, 55, 56, 58, 60, 62, 65	605513

No. 100 Heavy Duty Combination Set

The most complete Minute Man® Broach Set
available including all popular combinations
without duplication. This set is supplied in three wood
boxes for convenient handling and storage, and comes
with broaches, slotted bushings, and necessary shims.
9 broaches and 44 bushings = 102 keyway combinations

Collared bushings B & C
Plain bushings D & E

Keyway Sizes	Broach Style	Bushing Diameters (Bore Sizes)	Code
1/8 3/16	B	1/2, 9/16 5/8, 11/16, 3/4, 13/16, 7/8	605514
1/4 5/16	C	15/16, 1, 1-1/16, 1-1/8, 1-3/16, 1-1/4 1-5/16, 1-3/8, 1-7/16, 1-1/2, 1-9/16	
3/8 7/16 1/2	D	1-7/16, 1-1/2, 1-9/16, 1-5/8 1-11/16, 1-3/4 1-13/16, 1-7/8, 1-15/16, 2, 2-1/16, 2-1/8, 2-3/16, 2-1/4	
5/8 3/4	E	2-5/16, 2-3/8, 2-7/16, 2-1/2, 2-9/16, 2-5/8, 2-11/16, 2-3/4 2-13/16, 2-7/8, 2-15/16, 3	

Set B – The Workhorse

- Popular set for holes, slots and edges
- Supports all B blades
- Blades can be inserted axially or perpendicular to holder
- Mango II handle provides maximum comfort
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango II – B Blades







Set Name	Handle	Holder	Blades	Code
Mango II Set B	Mango II	B	B10 B20	550600

Classic – B Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set B	Classic A	B	B10 B20	550801

Aluminum – B Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set B Aluminum	Aluminum	B	B10 B20	550807

Set E – Heavy Deburr

- Rugged deburring set for heavy-duty deburring of holes, slots and edges
- Supports all E blades
- Mango II handle provides maximum comfort
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango II – E Blades







Set Name	Handle	Holder	Blades	Code
Mango II Set E	Mango II	E	E100 E200 E300	550601

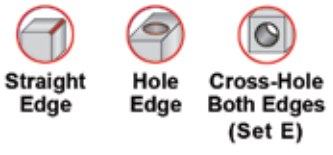
Classic – E Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set E	Classic A	E	E100 E200 E300	550804

Mango II Extra Close Sets

- Sets for extra close jobs and applications when you need to get up tight to the workpiece
- Popular for deburring holes, slots and edges on most types of materials
- Mango IIB + 2 set contains two high speed steel standard duty B blades and the Mango IIB quality ergonomic handle
- Mango IIE + 3 set contains three high speed steel heavy duty blades and the Mango IIE quality ergonomic handle
- Mango IIB and Mango IIE handles are designed for extra-close and heavy duty applications with a safety lock that prevents losing blades while working






Mango IIB

Set Name	Handle	Blades	Code
Mango IIB+2	Mango IIB	B10 B20	550602
Mango IIE+3	Mango IIE	E100 E200 E300	550603

Mango II Extra Close Bonus Pack Sets



- Sets for extra close jobs and applications when you need to get up tight to the workpiece
- Popular for deburring holes, slots and edges on most types of materials
- Includes 10 high speed steel blades and a Mango IIB or MangoIIE handle
- Mango IIB and Mango IIE handles are designed for extra-close and heavy duty applications with a safety lock that prevents losing blades while working

Set Name	Handle	Blades	Code
Mango IIB Bonus Pack	Mango IIB	10 x B10	550992
Mango IIE Bonus Pack	Mango IIE	10 x E100	550993

Mango II Long Reach Bonus Pack Sets



- Telescopic holder B or E for long reach applications
- Popular for deburring holes, slots and edges on most types of materials
- Includes 10 high speed steel blades and a Mango II handle

Set Name	Handle	Holder	Blades	Code
Mango II Set B Bonus Pack	Mango II	B	10 x B10	550996
Mango II Set E Bonus Pack	Mango II	B	10 x E100	550997

Golden Flex Sets

TiN Coated Blades



- Set B for standard deburring with five different pair of TiN coated multi-purpose B blades
- Set E for heavy duty deburring with five different pair of TiN coated multi-purpose E blades

Set Name	Handle	Holder	Blades	Code
Shaviv Golden Flex Set B	Aluminum	B	2 x B10P 2 x B11P 2 x B12P 2 x B20P 2 x B30P	551002
Shaviv Golden Flex Set E	Aluminum	E	2 x E100P 2 x E110P 2 x E111P 2 x E200P 2 x E300P	551003

Mango II AeroBurr Sets

TiN Coated Blades



- For aviation, aerospace, and medical industries
- Deburrs curves and small holes down to 1/16” in aluminum, steel, copper, stainless steel and plastics
- Set B for standard deburring with five B11P TiN coated blades
- Set E for heavy duty deburring with five E111P TiN coated blades

Set Name	Handle	Holder	Blades	Code
AeroBurr Set B	Mango II	B	5 x B11P	551004
AeroBurr Set E	Mango II	E	5 x E111P	551005

Set M – The 2 in 1

- Deburrs holes, slots and edges
- Mango II handle provides maximum comfort
- Holder M supports both B and E blades
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel, and plastics

Mango II – B & E Blades



Set Name	Handle	Holder	Blades	Code
Mango II Set M	Mango II	M	B10 B20 B30 E100 E200 E111	550605

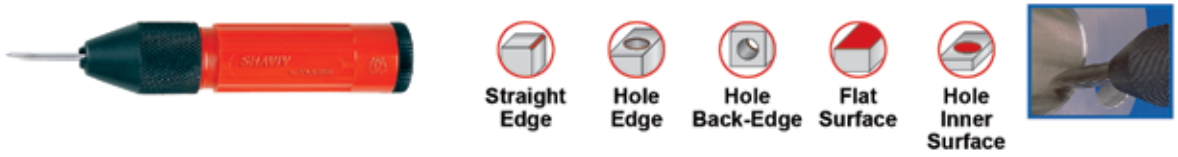
Classic – B & E Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set M	Classic A	M	B10 B20 B30 E100 E200 E111	550809

Set HC – Handy Chuck

- Delivers pin vise versatility for finishing & scraping applications
- Also used for gripping miniature files, drills, reamers, taps, wires, countersinks and other small objects - 0.04” to 0.32” (1 to 8mm) in diameter
- Handy for assembling electronic components and watch repair
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics



Set Name	Handle	Blades	Code
Shaviv Set HC5	Handy Chuck Pin Vise	C50	550937

Set U – Finishing Scraper

- Precision scraper contains three mini scraper blades and a specially designed holder for extra precision work for linear movement
- Ideal for die makers
- Mango II handle provides maximum comfort
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango II - U (BUS) Blades



Set Name	Handle	Holder	Blades	Code
Mango II Set U	Mango II	U	U1 (BUS1) U31 (BUS31) U4 (BUS4)	550606

Classic – U (BUS) Blades



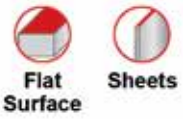
Set Name	Handle	Holder	Blades	Code
Shaviv Set U	Classic A	U	U1 (BUS1) U31 (BUS31) U4 (BUS4)	550941

Set D – The Sheet Cleaner

- Perfect for sheet metal up to 0.12” thick (3mm)
- Blade deburrs both sides of sheet in one pass
- Blade also functions as a surface cleaner
- Mango II handle provides maximum comfort
- For added safety use with handguard (Code 550815)
- Deburrs steel, aluminum, copper, brass, cast iron, hardened steel and plastics

Mango II – D Blades







Set Name	Handle	Holder	Blades	Code
Mango II Set D	Mango II	D	D80C	550607

Classic – D Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set D	Classic A	D	D80C	550803

Set C – The Scraper

- Features triangular blades with 3 cutting edges (C42) for high quality finishing and scraping
- Telescopic blade holder enables getting in to difficult-to-reach areas
- Includes key for safely removing blades
- Mango II handle provides maximum comfort
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango II – C Blades







Set Name	Handle	Holder	Blades	Code
Mango II Set C	Mango II	C	C42	550609
Mango II Set C40	Mango II	C	C40	550610

Classic – C Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set C	Classic A	C	C42	550802

Set Burr-Bi – Heavy Duty Sheet Cleaner

- For heavy-duty deburring of materials with single or double straight edges up to 0.56” (14mm) thick
- Holder can take two R10, R20 or R30 blades for arc shape finishes on workpieces up to 0.63” (16mm) thick
- Handguard attached for worker safety
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel, and plastics

Mango II – R Blades









Set Name	Handle	Holder	Blades	Code
Mango II Set Burr-Bi	Mango II	BR	R10 x 2	550611

Classic – R Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set Burr-Bi	Classic A	BR	R10 x 2	550931

Set F – The Countersink

- Powerful tool, excellent for chamfering and countersinking
- Used for hole edge applications with up to 0.79” (20mm) diameter
- Get the Mango II handle for maximum comfort
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel, and plastics

Mango II – F Blades







Set Name	Handle	Holder	Blades	Code
Mango II Set F	Mango II	F	F20	550612

Classic – F Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set F	Classic A	F	F20	550805

Set FR – Ratchet-Burr for ID

- Features FR ratchet holder, ideal for rotational chamfering, even when workspace is limited
- Inside diameter (ID) up to 0.79” (20mm)
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango – F Blades







Set Name	Handle	Holder	Blades	Code
Mango Set FR	Mango	FR	F20	550613

Classic – F Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set FR	Classic A	FR	F20	550806

Set Burr-Ex – Ratchet-Burr for OD

- Features FR ratchet holder, ideal for rotational chamfering, even when workspace is limited
- Outside diameter (OD) up to 1” (26mm)
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango II – F Blades







Set Name	Handle	Holder	Blades	Code
Mango II Set Burr-Ex	Mango II	FR	F26X	550614

Classic – F Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set Burr-Ex	Classic A	FR	F26X	550710

Set G – Slot Edge Cleaner

- Ideal for deburring and cleaning edges of internal and external keyways and slots up to 0.6” (15mm) wide
- Blade features 8 cutting edges
- Get the Mango II handle for maximum comfort
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango II – G Blades



Set Name	Handle	Holder	Blades	Code
Mango II Set G	Mango II	G	G10	550619

Classic – G Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set G	Classic A	G	G10	550888

Set G3 – Triple Corner Cleaner

- Cleans corners and removes unwanted radii after machining to ensure smooth flush mating of adjoining faces
- Special angled blade holder enables easy access to work area
- Blades feature 3 cutting corners
- Get the Mango handle for maximum comfort
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango – G Blades



Set Name	Handle	Holder	Blades	Code
Mango Set G3	Mango	G3	G30	550616

Classic – G Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set G3	Classic A	G3	G30	550915

Set L – External Pipe Edge Cleaner

- External curved edge cleaner for pipes and tubes
- Deburrs steel, aluminum, copper, brass, cast iron, stainless steel and plastics

Mango II – L Blades



Set Name	Handle	Holder	Blades	Code
Mango II Set L	Mango II	L	L10	550617

Classic – L Blades



Set Name	Handle	Holder	Blades	Code
Shaviv Set L	Classic A	L	L10	550920

Glo-Burrs

SHAVIV Leading Deburring Solutions

The Rainbow Series – B & E Blades



- Popular, easy-to-grip deburring tools
- Strong, yet lightweight
- Features convenient pocket clip and blade storage
- Deburrs steel, aluminum, copper, and plastics



Glo-Burr B

- Supplied with a B10 blade, and holds other popular B blades

Color	Code	Color	Code
Yellow	550961	Green	550962
Red	550960	Blue	550963

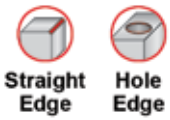
Glo-Burr E

- Supplied with a heavy-duty E100 blade, and holds other popular E blades

Color	Code	Color	Code
Yellow	550966	Green	550967
Red	550965	Blue	550968

Uniburrs

SHAVIV Leading Deburring Solutions



- Popular, slim-grip deburring tools
- Strong, yet lightweight
- Features convenient pocket clip
- Deburrs steel, aluminum, copper and plastics



UB1 DisposaBurr
Disposable. Heavy-duty E100 blade

UB2000
B10 blade inserted axially or perpendicular to handle

UB2 DisposaBurr
Disposable. B10 blade

MB2000
Strong hexagon-shaped handle. E100 blade

Description	Code	Description	Code
UB1 DisposaBurr	550884	UB2000	550883
UB2 DisposaBurr	550885	MB2000	550882

Scrape-Burrs

Scrape-Burr 42 – The Heavy Duty Scraper

- Durable and secure
- Permanent heavy duty triangular blade with three cutting edges for high quality finishing and scraping







Set Name	Handle	Blades	Code
Scrape-Burr 42	Glo-Burr	C42	550975

Scrape-Burr 40 – The All-Purpose Scraper

- Useful and convenient all-purpose standard scraper
- Permanent heavy duty triangular blade with three cutting edges for high quality finishing and scraping







Set Name	Handle	Blades	Code
Scrape-Burr 40	Glo-Burr	C40	550974

Scrape-Burr 400 – The Fine Finish Scraper

- Miniature tool for a fine finish on precision work pieces
- Extra thin, heavy duty triangular blade with three cutting edges for high quality and accurate finishing and scraping







Set Name	Handle	Blades	Code
Scrape-Burr E400	Glo-Burr	E400	550976

Cera-Burrs

Ceramic Blade Tools

- For deflashing plastics and deburring soft metals
- Curved blades to reach arched and angled areas
- High quality ceramic blade affixed on strong, lightweight handle
- Ideal for removing unwanted mold gate trim on plastic work pieces
- Avoid accidents commonly occurring with utility blades







Set Name	Handle	Blades	Code
Cera-Burr	Glo-Burr	Permanent	550720
Cera-Burr Curve Q11	Glo-Burr	Permanent	550727

Set Ceramix Q10

Heavy Duty Handle with Ceramic Q10 Blade

- Adjust cutting angle between the blade and the material for best results and to prevent scratches
- Blade can be flipped for two types of jobs



Set Name	Handle	Blades	Code
Set Ceramix Q10	Ceramic	Q10	550722

Set Ceramix Q12

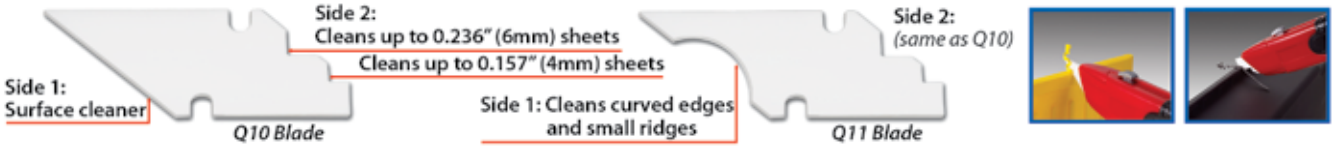
Heavy Duty Handle with Curved Ceramic Q11 Blade

- Adjust cutting angle between the blade and the material for best results and to prevent scratches
- Blade can be flipped for two types of jobs



Set Name	Handle	Blades	Code
Set Ceramix Q12	Ceramic	Q11	550726

Ceramix Blades

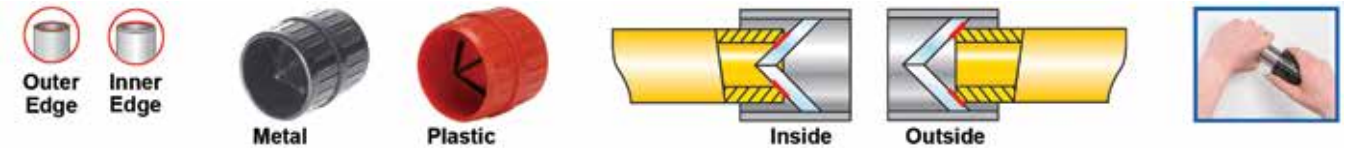


Description	Blades	Code
Ceramix Blade Q10	Q10	550723
Ceramix Curved Blade Q11	Q11	550728

Plum-Burrs

Heavy Duty & Standard Pipe Cleaners

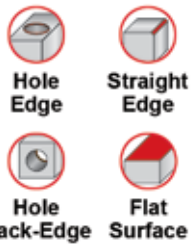
- For deburring aluminum, copper and brass tubing on both inner and outer edges
- Used by plumbers, installers, electricians, etc.



Description	Tubing Range Inch (mm)	Code
Plum-Burr Metal	1/4 to 1-5/8 (6 to 41)	550999
Plum-Burr Plastic	3/16 to 1-1/2 (4.8 to 38)	550998

Set TD – Tool & Die Maker's Set





Professional, miniature deburring and scraping tools for providing a quality finish to dies and molds

Contains:
- UF1 - Flat diamond coated file
- US1 - Triangular scraper
- US2 - Flat scraper
- US3 - Round scraper
- US4 - Hooked corner scraper
- US38 - Miniature rotational deburring tool for minimum hole diameter of 0.08" (2mm)

Set Name	Code
Set TD	550813

Individual Tools

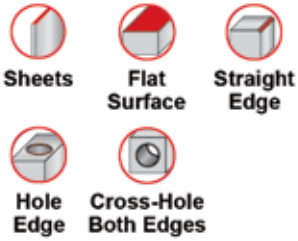
Tool Name	Code
UF1	550901
US1	550903

Tool Name	Code
US2	550905
US3	550907

Tool Name	Code
US4	550909
UB38	550911

Universal Sheet Cleaner Set





- Perfect for a wide variety of deburring applications including deburring sheets made of practically any material: metal, plastic, acrylic, etc.
- Removes ragged edges from one side at a time or both sides at once
- **Set Contains:**
  Mango II handle
  Holders - B, BR, D, D5 and E
  Blades - B10, B20, B30, B70, E100, E200, E300, D80C, D82C, D85, 2 x R10 and 2 x R30
  Handguard

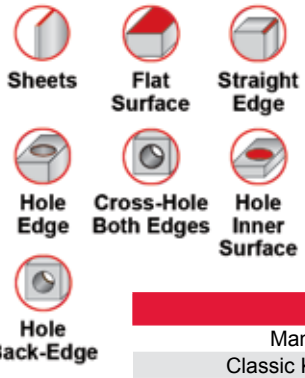
Set Name	Code
Sheet Cleaner Set	550622

Set KWC – The Universal Box





Classic Handle A

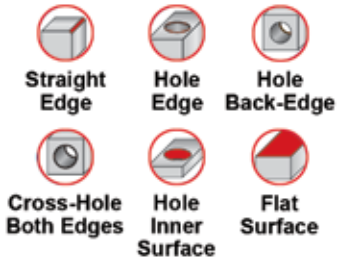


- Excellent all-around deburring set for your workshop
- You get all the tools you need for 1000+ applications
- **Set Contains:**
  Handle
  Holders - B, C, D, E and F
  Blades - B10, B20, B30, B50C, B60, B70, C40, C42, D80C, E100, E200, E300, E350, E600 and F20

Set Name	Code
Mango II Set KWC	550623
Classic KWC in plastic case	550810
Classic KWC in wood case	550812

Set U – Ultra-Fine Finish



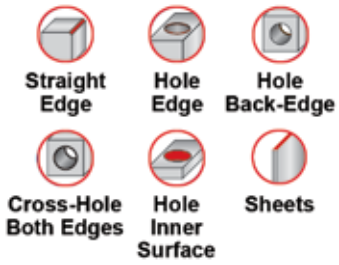


- Ultra-fine finish kit for precision workpieces
- **Set Contains:**
  Aluminum handle
  Non-rotating U holder
  Rotating B holder
  Four B blades for rotational deburring - B10, B11, B20 and B30
  Four interchangeable U scrapers - BUS1, BUS2, BUS31 and BUS4
  E500C scriber

Set Name	Code
Set U	550940

Set KPC2 – The Favourite 5





- Five extremely popular sets with the Classic A handle, provided in one handy kit
- **Set Contains:**
  Set B: The Workhorse
  Set C: The Scraper
  Set D: The Sheet Cleaner
  Set E: The Heavy Deburr Set
  Set F: The Countersink

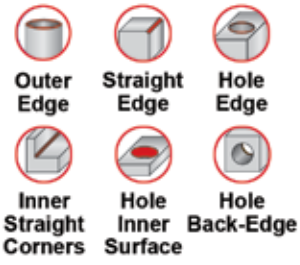
Set Name	Code
Classic KPC2	550811

Set KPA – Plastics Deflashing





Classic Handle A



- The complete kit for deflashing plastics
- **Set Contains:**
  Mango II handle
  UB38 deburring tool
  Holders - B, E, G3 and LP
  Blades - B12, B25, E110, E700, G30C and L10

Set Name	Code
Mango KPA	550626
Classic KPA	550814

Handles

SHAVIV Leading Deburring Solutions

Mango II Handle - Long Reach



- The most recommended handle for comfort and control in deburring
- Works with all Shaviv blade holders
- Simple holder mechanism
- Comfortable ergonomic handle for standard size hands

Code
550621

Classic Handle A



- Classic universal handle
- Accepts all Shaviv blade holders
- To store spare blades inside handle simply unscrew the back cap

Code
550821

Handle 1



- Non-telescopic handle, excellent for heavy-duty deburring tasks
- All E blades fit directly into handle

Code
550879

Handle A (Aluminum)



- Classic universal handle made of heavy-duty aluminum
- Accepts all Shaviv blade holders

Code
550880

Handy Chuck Pin Vise



- Holds small files, drills, reamers, taps, mold polishing stones, wires, countersinks, etc.
- Grips objects with 0.04” (1mm) to 0.32” (8mm) diameter
- May be used with C50 and C60 scrapers
- Useful for repairing and assembling watches, electrical appliances and miniature electronic equipment

Code
550887

Holders

SHAVIV Leading Deburring Solutions

Holder B



- Holds all B blades
- Use axially or perpendicular to holder

Code
550822

Holder E



- Holds all E blades

Code
550825

Holder M



- Holds all B or E blades

Code
550808

Holder C



- Holds C40 and C42 blades

Code
550823

Holder D



- Holds D80C and D82C blades

Code
550824

Holder D5



- Holds D85 blade

Code
550629

Holders *(continued)*

Holder F



- Holds all F blades

Code
550826

Holder FR



- Ratchet holder for all F blades

Code
550827

Holder U



- Holds all U (BUS) blades

Code
550942

Holder L



- Holds L10 blade

Code
550921

Holder G



- Holds G10, G20 and G40C blades

Code
550890

Holder G4



- Holds G10, G20 and G40C blades
- Angled to offer easy access to the work area

Code
550892

Holder G3



- Holds G30C blade
- Angled to offer easy access to the work area

Code
550916

Holder BURR-BI BR



Code
550932

Multi-Purpose Blade Sets

TiN Coated B & E Blades

Set B



- Multi-Purpose Blade Set B for standard deburring
- Includes five pair of blades: 2 x B10P, 2 x B11P, 2 x B12P, 2 x B20P and 2 x B30P

	Code
Multi-Purpose Blade Set B	551001

Set E



- Multi-Purpose Blade Set E for heavy duty deburring
- Includes five pair of blades: 2 x E100P, 2 x E110P, 2 x E111P, 2 x E200P and 2 x E300P

	Code
Multi-Purpose Blade Set E	551000

Blade Index

SHAVIV Leading Deburring Solutions

Blade Name	Description	Blade *Work direction shown*	Applications										Materials								
			Straight Edge	Hole Edge	Outer Edge	Cross Hole Both Edges	Hole Back Edge	Hole Inner Surface	Flat Surface	Sheet	Slot/Keyway	Inner Straight Corners	Steel	Aluminum	Copper	Brass	Cast Iron	Stainless Steel	Hardened Steel	Plastics	Carbide and Glass
B1	Tough, long lift cobalt blade. N1 geometry.	 550631	●	●									●	●	●			●		●	
B-N1	High speed steel. N1 geometry.	 550831	●	●									●	●	●					●	
B10	High speed steel. Deburrs materials with spiral chips.	 550832	●	●									●	●	●					●	
B10C	Solid carbide. B10 geometry.	 550833	●	●									●	●	●				●	●	
B10D	Diamond coated. B10 geometry.	 550835	●	●																	●
B10L	B10 for left-handed users.	 550644	●	●									●	●	●					●	
B10P	PVD TiN coated for high wear resistance. B10 geometry.	 550633	●	●									●	●	●			●		●	
B10PL	B10 coated with PVD TiN for left-handed users.	 550647	●	●									●	●	●			●		●	
B10S	Long lasting, cobalt enriched. B10 geometry.	 550632	●	●									●	●	●			●		●	
B11	Extra thin, high speed steel. Deburrs holes with minimum diameter of 0.08” (2mm).	 550834	●	●									●	●	●					●	
B11P	PVD TiN coated for high wear resistance. B11 geometry.	 550729	●	●									●	●	●			●		●	
B12	Short nose, high speed steel.	 550836	●	●									●	●	●					●	
B12P	Short nose, PVD TiN coated for high wear resistance.	 550630	●	●									●	●	●			●		●	
B20	High speed steel. Rotates clockwise and counterclockwise.	 550838	●	●												●	●			●	

Blade Index *(continued)*

SHAVIV Leading Deburring Solutions

Blade Name	Description	Blade *Work direction shown*	Applications										Materials								
			Straight Edge	Hole Edge	Outer Edge	Cross Hole Both Edges	Hole Back Edge	Hole Inner Surface	Flat Surface	Sheet	Slot/Keyway	Inner Straight Corners	Steel	Aluminum	Copper	Brass	Cast Iron	Stainless Steel	Hardened Steel	Plastics	Carbide and Glass
B20C	Solid carbide. Rotates clockwise and counterclockwise.	 550839	●	●												●	●	●		●	
B20P	PVD TiN coated for high wear resistance. Rotates clockwise and counterclockwise.	 550634	●	●												●	●	●		●	
B25	Thin nose. Special design for plastics.	 550841	●	●									●	●	●					●	
B25C	Solid carbide, thin nose. Special design for abrasive plastics.	 550843	●	●									●	●	●					●	
B30	Simultaneously deburrs inside and outside holes up to 0.16" (4mm) thick.	 550840				●							●	●	●					●	
B30P	PVD TiN coated for high wear resistance. B30 geometry.	 550845				●							●	●				●		●	
B32	Rotates clockwise and counterclockwise. B30 geometry.	 550635				●										●	●			●	
B50C	Carbide tipped scriber. May be reground.	 550842							●				●	●	●	●	●	●	●	●	
B60	High speed steel. Removes burrs from back edge of holes up to 0.78" (20mm) thick.	 550844					●						●	●	●					●	
B70	Carbide tipped. Deburrs sheet metal up to 0.14" (3.5mm) thick.	 550846								●			●	●	●	●	●	●	●	●	
C40	Small, 0.16" (4mm), triangular high speed steel scraper for precision work.	 550848					●	●	●				●	●	●	●	●	●		●	
C42	Standard size, 0.31" (8mm), triangular high speed steel scraper.	 550850					●	●	●				●	●	●	●	●	●		●	
C50	Double-sided, 0.30" (7.8mm), triangular scraper.	 550938					●	●	●				●	●	●	●	●	●		●	
C60	Double-sided, 0.19" (4.8mm), triangular scraper.	 550939					●	●	●				●	●	●	●	●	●		●	

Blade Index *(continued)*

SHAVIV Leading Deburring Solutions

Blade Name	Description	Blade *Work direction shown*	Applications										Materials								
			Straight Edge	Hole Edge	Outer Edge	Cross Hole Both Edges	Hole Back Edge	Hole Inner Surface	Flat Surface	Sheet	Slot/Keyway	Inner Straight Corners	Steel	Aluminum	Copper	Brass	Cast Iron	Stainless Steel	Hardened Steel	Plastics	Carbide and Glass
D80C	Solid carbide, six cutting edges. Scrapes surfaces and deburrs sheet metal up to 0.12" (3mm) thick.	 550852							●	●			●	●	●	●	●	●	●	●	
D82C	Heavy duty, double edged carbide blade. Deburrs sheet metal up to 0.35" (9mm) thick.	 550856								●			●	●	●	●	●	●	●	●	
D85	Tough high speed steel with chipbreaker and six cutting edges. Deburrs sheet metal up to 0.24" (6mm) thick.	 550854								●			●	●	●	●				●	
E100	Heavy duty high speed steel. Deburrs materials with spiral chips.	 550858	●	●									●	●	●					●	
E100C	Wear resistant carbide. E100 geometry.	 550859	●	●															●	●	
E100D	Diamond coated. E100 geometry.	 550639	●	●																	●
E100L	E100 for left handers.	 550645	●	●									●	●	●					●	
E100P	PVD TiN coated for high wear resistance. E100 geometry.	 550638	●	●									●	●				●		●	
E100S	Long lasting, cobalt enriched. E100 geometry.	 550637	●	●									●	●	●			●		●	
E110	E shaft, B10 cutting edge for materials with spiral chips. Deburrs holes with minimum diameter of 0.08" (2mm).	 550863	●	●									●	●	●			●		●	
E110P	PVD TiN coated for high wear resistance. E110 geometry.	 550643	●	●									●	●				●		●	
E111	Thin nose, high speed steel. Deburrs holes with minimum diameter of 0.06" (1.5mm).	 550869	●	●									●	●	●					●	
E111P	PVD TiN coated for high wear resistance. E111 geometry.	 550730	●	●									●	●	●					●	
E120	E shaft, B20 cutting edge for materials with powdery chips. Rotates clockwise and counterclockwise	 550875	●	●												●	●			●	

Blade Index *(continued)*

Blade Name	Description	Blade *Work direction shown*	Applications										Materials								
			Straight Edge	Hole Edge	Outer Edge	Cross Hole Both Edges	Hole Back Edge	Hole Inner Surface	Flat Surface	Sheet	Slot/Keyway	Inner Straight Corners	Steel	Aluminum	Copper	Brass	Cast Iron	Stainless Steel	Hardened Steel	Plastics	Carbide and Glass
E200	High speed steel for materials with powdery chips. Rotates clockwise and counterclockwise.	 550860	●	●												●	●			●	
E200P	PVD TiN coated for high wear resistance. E200 geometry.	 550640	●	●												●	●			●	
E200C	Wear resistant carbide. E200 geometry.	 550861	●	●												●	●		●	●	
E250	Special design for plastics. Very thin, heavy duty.	 550867	●	●									●	●	●					●	
E300	High speed steel for materials with spiral chips. Simultaneous deburring of inside and outside holes up to 0.24" (6mm) thick.	 550862				●							●	●	●						
E300P	PVD TiN coated for high wear resistance. E300 geometry.	 550641				●							●	●	●			●		●	
E320	HSS for materials with powdery chips. Simultaneous deburring of inside and outside holes up to 0.24" (6mm) thick. Rotates clockwise and counterclockwise.	 550642				●										●	●			●	
E350	High speed steel for materials with powdery chips. Rotates clockwise and counterclockwise	 550864	●													●	●			●	
E500C	Carbide tipped scriber. May be reground.	 550865							●				●	●	●	●	●	●	●	●	●
E600	High speed steel. Removes burrs from back edges of holes up to 0.78" (20mm) thick.	 550866					●						●	●	●					●	
E601	Extra long high speed steel. Removes burrs from back edges of holes up to 1.57" (40mm) thick.	 550868					●						●	●	●					●	
E700	High speed steel for materials with spiral chips. Excellent for deburring and scraping inside thick-walled holes and cross-holes.	 550876					●	●					●	●	●					●	
E720	HSS for materials with powdery chips. For deburring and scraping inside thick-walled holes and cross-holes.Rotates clockwise and counterclockwise.	 550877					●	●								●	●			●	
E750	High speed steel. Special design for deburring rubber and soft plastics without poking or sticking into workpiece.	 550878	●	●																●	

Blade Index *(continued)*

SHAVIV Leading Deburring Solutions

Blade Name	Description	Blade *Work direction shown*	Applications										Materials							
			Straight Edge	Hole Edge	Outer Edge	Cross Hole Both Edges	Hole Back Edge	Hole Inner Surface	Flat Surface	Sheet	Slot/Keyway	Inner Straight Corners	Steel	Aluminum	Copper	Brass	Cast Iron	Stainless Steel	Hardened Steel	Plastics	Carbide and Glass
E755	High speed steel for deburring corner edges of 0.04" (1mm) high steps.	 550970	●										●	●	●	●	●	●		●	
E800	High speed steel for materials with spiral chips. Removes burrs from corner edges of shallow steps.	 550971	●	●									●	●	●			●		●	
E10	Long lasting, cobalt enriched for materials with spiral chips. Ideal for heavy duty jobs.	 550636	●	●									●	●	●			●		●	
ES10	High speed steel durable blade. S10 geometry.	 550857	●	●									●	●	●					●	
F12	Countersink for hole edges with up to 0.47" (12mm) diameter.	 550870		●									●	●	●	●	●	●		●	
F20	Countersink for hole edges with up to 0.78" (20mm) diameter.	 550872		●									●	●	●	●	●	●		●	
F30	Countersink for hole edges with up to 1.18" (30mm) diameter.	 550874		●									●	●	●	●	●	●		●	
F26X	For external chamfering of pipes, tubes and other items with up to 1.02" (26mm) diameter.	 550973			●								●	●	●	●	●	●		●	
G10	High speed steel. Deburrs slots up to 0.6" (15mm) wide.	 550889									●		●	●	●	●	●	●		●	
G20	High speed steel, four cutting corners. For slots up to 0.4" (10mm) wide.	 550891									●		●	●	●	●	●	●		●	
G30C	Solid carbide, three cutting corners. Cleans corners and removes radii after machining for smooth flush mating of adjoining faces.	 550914										●	●	●	●	●	●	●	●	●	
G40C	Carbide, four cutting corners. For slots up to 0.4" (10mm) wide.	 550893									●		●	●	●	●	●	●	●	●	
K10C	Double-edged, carbide. Deburrs surfaces up to 1.91" (50mm) wide.	 550899							●				●	●	●	●	●	●		●	
L10	HSS, four cutting edges. Removes burrs from external edges, OD 0.78" (20mm) and up. A-side - sprial chips, B-side - powdery chips.	A B  550922			●								A ●	A ●	A ●	B ●	B ●	A ●		A ● B	

Blade Index *(continued)*

Blade Name	Description	Blade *Work direction shown*	Applications									Materials								
			Straight Edge	Hole Edge	Outer Edge	Cross Hole Both Edges	Hole Back Edge	Hole Inner Surface	Flat Surface	Sheet	Slot/Keyway	Inner Straight Corners	Steel	Aluminum	Copper	Brass	Cast Iron	Stainless Steel	Hardened Steel	Plastics	Carbide and Glass
R10	Double-sided, round high speed steel blade. A-side for sprial chips and B-side for powdery chips.	A B 550933	●							●			A ●	A ●	A ●	B ●	B ●	A ●		A ● B	
R20	Double-edged, round high speed steel blade for massive deburring tasks on materials with spiral chips.	550934	●							●			●	●	●			●		●	
R30	Produces arc-shaped finish on materials up to 0.63" (16mm) thick. Use 1xR30 for one straight edge or two at once to deburr both edges simultaneously.	550935	●							●			●	●	●			●		●	
BUS1 (US1)	Fine finishing triangular scraper.	550943					●	●	●				●	●	●	●	●	●		●	
BUS2 (US2)	Fine finishing flat scraper.	550944							●			●	●	●	●	●	●	●		●	
BUS4 (US4)	Fine finishing hooked corner scraper.	550946							●			●	●	●	●	●	●	●		●	
Q10	Double sided deburring ceramic blade.	550723	●						●											●	
Q11	Double sided deburring. Curved ceramic blade for curved edges and small ridges.	550728	●																	●	

Blade Name	Code	Blade Name	Code	Blade Name	Code	Blade Name	Code
B1	550631	B32	550635	E111P	550730	F12	550870
B-N1	550831	B50C	550842	E120	550875	F20	550872
B10	550832	B60	550844	E200	550860	F30	550874
B10C	550833	B70	550846	E200P	550640	F26X	550973
B10D	550835	C40	550848	E200C	550861	G10	550889
B10L	550644	C42	550850	E250	550867	G20	550891
B10P	550633	C50	550938	E300	550862	G30C	550914
B10PL	550647	C60	550939	E300P	550641	G40C	550893
B10S	550632	D80C	550852	E320	550642	K10C	550899
B11	550834	D82C	550856	E350	550864	L10	550922
B11P	550729	D85	550854	E500C	550865	R10	550933
B12	550836	E100	550858	E600	550866	R20	550934
B12P	550630	E100C	550859	E601	550868	R30	550935
B20	550838	E100D	550639	E700	550876	BUS1 (US1)	550943
B20C	550839	E100L	550645	E720	550877	BUS2 (US2)	550944
B20P	550634	E100P	550638	E750	550878	BUS4 (US4)	550946
B25	550841	E100S	550637	E755	550970	Q10	550723
B25C	550843	E110	550863	E800	550971	Q11	550728
B30	550840	E110P	550643	E10	550636		
B30P	550845	E111	550869	ES10	550857		

Burrs

Carbide

Fluting Styles

Double Cut

Most popular fluting style. Has both right and left hand flutes which combine to produce a chisel type cutting edge. The chisel edge permits faster penetration and stock removal while the reduced pull of the tool allows better control and reduces operator fatigue. Chips produced by the double cut are smaller than spiral cut which allows the tool to be run at slower speeds if necessary.

Spiral Cut

Second most popular fluting style. Has only right hand spiral flutes and is intended for general purpose use on cast iron, steel, copper and brass alloys, and other ferrous materials. Offers good stock removal and excellent surface finishes

Aluminum Cut

Outstanding for rapid stock removal on soft or non-ferrous type materials. The wide flute design permits easy chip disposal. Aluminum cut burrs have special flute relief design for added strength and longer tool life. Use the aluminum cut design on aluminum, magnesium, brass, zinc alloys, lead, hard rubber and most plastics.

Style SA Cylindrical



Head Size (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Style SA Cylindrical					
				Double Cut		Spiral Cut		Aluminum Cut	
				IND Code	Code	IND Code	Code	IND Code	Code
1/16	1/8	1/4	1-1/2	SA41	938118	SA41	938056	–	–
3/32	1/8	7/16	1-1/2	SA42	938122	SA42	938058	–	–
1/8	1/8	9/16	1-1/2	SA43	938126	SA43	938062	–	–
1/8	1/8	9/16	2	SA43L2	938125	SA43L2	938061	–	–
1/8	1/8	9/16	3	SA43L3	938127	SA43L3	938063	–	–
1/8	1/4	1/2	2	SA11	938124	SA11	938060	–	–
5/32	1/8	1/2	1-1/2	SA52	938130	SA52	938066	–	–
3/16	1/8	1/2	1-1/2	SA53	938134	SA53	938070	–	–
3/16	1/4	5/8	2	SA14	938138	SA14	938074	–	–
1/4	1/8	3/16	1-7/16	SA50	938140	SA50	938076	–	–
1/4	1/8	1/2	1-3/4	SA51	938144	SA51	938080	–	–
1/4	1/4	5/8	2	SA1	938148	SA1	938084	–	–
1/4	1/4	3/4	2	–	–	–	–	SA1NF	938000
1/4	1/4	5/8	6	SA1L6	938151	SA1L6	938087	–	–
5/16	1/4	3/4	2-1/2	SA2	938152	SA2	938088	–	–
3/8	1/4	3/4	2-1/2	SA3	938154	SA3	938090	SA3NF	938002
3/8	1/4	3/4	6	SA3L6	938155	SA3L6	938093	–	–
7/16	1/4	1	2-3/4	SA4	938158	SA4	938094	–	–
1/2	1/4	1	2-3/4	SA5	938160	SA5	938096	SA5NF	938004
1/2	1/4	1	6	SA5L6	938161	SA5L6	938097	–	–
5/8	1/4	1	2-3/4	SA6	938162	SA6	938098	SA6NF	938006
3/4	1/4	1	2-3/4	SA7	938168	SA7	938104	SA7NF	938008
1	1/4	1	2-3/4	SA9	938170	SA9	938106	–	–

Burrs *(continued)*

Carbide

Style SB with End Cut



Head Size (Inch)	Shank Diameter (Inch)	IND Code	Length of Cut (Inch)	Overall Length (Inch)	Style SB with End Cut	
					Double Cut	Spiral Cut
					Code	Code
1/16	1/8	SB41	1/4	1-1/2	938242	938180
3/32	1/8	SB42	7/16	1-1/2	938246	938184
1/8	1/8	SB43	9/16	1-1/2	938250	938188
1/8	1/4	SB11	1/2	2	938248	938186
3/16	1/4	SB14	5/8	2	938262	938200
1/4	1/8	SB50	3/16	1-3/4	938264	938202
1/4	1/8	SB51	1/2	1-3/4	938268	938206
1/4	1/4	SB1	5/8	2	938272	938210
5/16	1/4	SB2	3/4	2-1/2	938276	938214
3/8	1/4	SB3	3/4	2-1/2	938278	938216
7/16	1/4	SB4	1	2-3/4	938282	938220
1/2	1/4	SB5	1	2-3/4	938284	938222
5/8	1/4	SB6	1	2-3/4	938286	938224
3/4	1/4	SB7	1	2-3/4	938292	938230

Style SC Radius Cylindrical



Head Size (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Style SC Radius Cylindrical					
				Double Cut		Spiral Cut		Aluminum Cut	
				IND Code	Code	IND Code	Code	IND Code	Code
3/32	1/8	7/16	1-1/2	SC41	938350	SC41	938304	–	–
1/8	1/8	9/16	1-1/2	SC42	938354	SC42	938308	–	–
1/8	1/8	9/16	2	SC42L2	938353	SC42L2	938307	–	–
1/8	1/8	9/16	3	SC42L3	938355	SC42L3	938309	–	–
1/8	1/4	1/2	2	SC11	938352	SC11	938306	–	–
5/32	1/8	1/2	1-1/2	SC52	938368	SC52	938322	–	–
3/16	1/8	1/2	1-1/2	SC53	938360	SC53	938314	–	–
3/16	1/4	5/8	2	SC14	938364	SC14	938318	–	–
1/4	1/8	1/2	1-3/4	SC51	938366	SC51	938320	–	–
1/4	1/4	5/8	2	SC1	938370	SC1	938324	–	–
1/4	1/4	3/4	2	–	–	–	–	SC1NF	938010
1/4	1/4	5/8	6	SC1L6	938371	SC1L6	938325	–	–
5/16	1/4	3/4	2-1/2	SC2	938374	SC2	938328	–	–
3/8	1/4	3/4	2-1/2	SC3	938376	SC3	938330	SC3NF	938012
3/8	1/4	3/4	6	SC3L6	938379	SC3L6	938331	–	–
7/16	1/4	1	2-3/4	SC4	938380	SC4	938334	–	–
1/2	1/4	1	2-3/4	SC5	938382	SC5	938336	SC5NF	938014
1/2	1/4	1	6	SC5L6	938383	SC5L6	938337	–	–
5/8	1/4	1	2-3/4	SC6	938384	SC6	938338	SC6NF	938016
3/4	1/4	1	2-3/4	SC7	938386	SC7	938340	SC7NF	938018

Burrs *(continued)*

Carbide

Style SD Ball



Head Size (Inch)	Shank Diameter (Inch)	Overall Length (Inch)	Style SD Ball						
			Double Cut		Spiral Cut		Aluminum Cut		
			IND Code	Code	IND Code	Code	Length of Cut (Inch)	IND Code	Code
3/32	1/8	1-1/2	SD41	938436	SD41	938396	–	–	–
1/8	1/8	1-1/2	SD42	938438	SD42	938398	–	–	–
1/8	1/8	2	SD42L2	938437	SD42L2	938397	–	–	–
1/8	1/8	3	SD42L3	938439	SD42L3	938399	–	–	–
1/8	1/4	2	SD11	938440	SD11	938400	–	–	–
3/16	1/8	1-1/2	SD53	938442	SD53	938402	–	–	–
3/16	1/4	2	SD14	938446	SD14	938406	–	–	–
1/4	1/8	1-1/2	SD51	938448	SD51	938408	–	–	–
1/4	1/4	2	SD1	938452	SD1	938412	3/16	SD1NF	938020
1/4	1/4	6	SD1L6	938453	SD1L6	938413	–	–	–
5/16	1/4	2-1/32	SD2	938454	SD2	938414	–	–	–
3/8	1/4	2-5/64	SD3	938456	SD3	938416	5/16	SD3NF	938022
3/8	1/4	6	SD3L6	938457	SD3L6	938417	–	–	–
7/16	1/4	2-9/64	SD4	938458	SD4	938418	–	–	–
1/2	1/4	2-13/64	SD5	938460	SD5	938420	–	–	–
1/2	1/4	2-1/4	–	–	–	–	7/16	SD5NF	938024
1/2	1/4	6	SD5L6	938461	SD5L6	938421	–	–	–
5/8	1/4	2-5/16	SD6	938462	SD6	938422	9/16	SD6NF	938026
3/4	1/4	2-7/16	SD7	938464	SD7	938424	11/16	SD7NF	938028
1	1/4	2-11/16	SD9	938466	SD9	938426	–	–	–

Style SE Oval/Egg Shape



Head Size (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Style SE Oval/Egg Shape					
				Double Cut		Spiral Cut		Aluminum Cut	
				IND Code	Code	IND Code	Code	IND Code	Code
1/8	1/8	7/32	1-1/2	SE41	938504	SE41	938476	–	–
3/16	1/8	9/32	1-1/2	SE53	938506	SE53	938478	–	–
1/4	1/8	3/8	1-5/8	SE51	938510	SE51	938482	–	–
1/4	1/4	3/8	2	SE1	938514	SE1	938486	–	–
3/8	1/4	5/8	2-3/8	SE3	938516	SE3	938488	SE3NF	938030
1/2	1/4	7/8	2-5/8	SE5	938518	SE5	938490	–	–
1/2	1/4	7/8	2-3/4	–	–	–	–	SE5NF	938032
5/8	1/4	1	2-3/4	SE6	938520	SE6	938492	SE6NF	938034
3/4	1/4	1	2-1/4	SE7	938522	SE7	938494	–	–
3/4	1/4	1	2-3/4	–	–	–	–	SE7NF	938036

Burrs *(continued)*

Carbide

Style SG Pointed Tree



Head Size (Inch)	Shank Diameter (Inch)	IND Code	Length of Cut (Inch)	Overall Length (Inch)	Style SG Pointed Tree	
					Double Cut	Spiral Cut
					Code	Code
1/8	1/8	SG41	1/4	1-1/2	938654	938614
1/8	1/8	SG42	5/16	1-1/2	938656	938616
1/8	1/8	SG43	3/8	1-1/2	938658	938618
1/8	1/8	SG44	1/2	1-1/2	938660	938620
3/16	1/8	SG53	1/2	1-1/2	938662	938622
1/4	1/8	SG51	1/2	1-3/4	938666	938626
1/4	1/4	SG1	5/8	2	938670	938630
5/16	1/4	SG2	3/4	2-1/2	938672	938632
3/8	1/4	SG3	3/4	2-1/2	938674	938634
1/2	1/4	SG13	3/4	2-1/2	938676	938636
1/2	1/4	SG5	1	2-3/4	938678	938638
5/8	1/4	SG6	1	2-3/4	938680	938640
3/4	1/4	SG7	1	2-3/4	938682	938642

Style SF Radius Tree



Head Size (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Style SF Radius Tree					
				Double Cut		Spiral Cut		Aluminum Cut	
				IND Code	Code	IND Code	Code	IND Code	Code
1/8	1/8	1/4	1-1/2	SF41	938572	SF41	938532	–	–
1/8	1/8	1/2	1-1/2	SF42	938574	SF42	938534	–	–
3/16	1/8	1/2	1-1/2	SF53	938578	SF53	938538	–	–
1/4	1/8	1/2	1-3/4	SF51	938582	SF51	938542	–	–
1/4	1/4	5/8	2	SF1	938586	SF1	938546	–	–
1/4	1/4	3/4	2	–	–	–	–	SF1NF	938038
1/4	1/4	5/8	6	SF1L6	938587	SF1L6	938547	–	–
3/8	1/4	3/4	2-1/2	SF3	938588	SF3	938548	SF3NF	938040
3/8	1/4	3/4	6	SF3L6	938589	SF3L6	938549	–	–
7/16	1/4	1	2-3/4	SF4	938590	SF4	938550	–	–
1/2	1/4	3/4	2-1/2	SF13	938592	SF13	938552	–	–
1/2	1/4	1	2-3/4	SF5	938594	SF5	938554	SF5NF	938042
1/2	1/4	1	6	SF5L6	938595	SF5L6	938555	–	–
5/8	1/4	1	2-3/4	SF6	938596	SF6	938556	SF6NF	938044
3/4	1/4	1	2-3/4	SF7	938598	SF7	938558	–	–
3/4	1/4	1-1/4	3	SF14	938600	SF14	938560	SF7NF	938046
3/4	1/4	1-1/2	3-3/4	SF15	938602	SF15	938562	–	–

Burrs *(continued)*

Carbide

Style SH Flame



Head Size (Inch)	Shank Diameter (Inch)	IND Code	Length of Cut (Inch)	Overall Length (Inch)	Style SH Flame	
					Double Cut	Spiral Cut
					Code	Code
1/8	1/8	SH41	1/4	1-1/2	938718	938694
3/16	1/8	SH53	3/8	1-1/2	938720	938696
1/4	1/4	SH1	3/8	1-1/2	938724	938700
5/16	1/4	SH2	3/4	2-1/2	938726	938702
1/2	1/4	SH5	1-1/4	3	938728	938704
5/8	1/4	SH6	1-7/16	3-3/16	938730	938706
3/4	1/4	SH7	1-5/8	3-3/8	938732	938708

Style SL 8°/14° Included Angles



Head Size (Inch)	Shank Diameter (Inch)	Length of Cut (Inch)	Overall Length (Inch)	Included Angle	Style SL 8°/14° Included Angles					
					Double Cut		Spiral Cut		Aluminum Cut	
					IND Code	Code	IND Code	Code	IND Code	Code
1/8	1/8	3/8	1-1/2	8°	SL41	938808	SL41	938782	–	–
1/8	1/8	1/2	1-1/2	8°	SL42	938810	SL42	938784	–	–
3/16	1/8	1/2	1-1/2	14°	SL53	938812	SL53	938786	–	–
1/4	1/4	5/8	2	14°	SL1	938814	SL1	938788	–	–
1/4	1/4	5/8	6	14°	SL1L6	938815	SL1L6	938789	–	–
5/16	1/4	7/8	2-3/4	14°	SL2	938816	SL2	938790	–	–
3/8	1/4	1-1/16	2-15/16	14°	SL3	938818	SL3	938792	SL3NF	938050
3/8	1/4	1-1/16	6	14°	SL3L6	938819	SL3L6	938793	–	–
1/2	1/4	1-1/8	3	14°	SL4	938820	SL4	938794	SL4NF	938051
1/2	1/4	1-1/8	6	14°	SL4L6	938821	SL4L6	938795	–	–
5/8	1/4	1-5/16	3-3/16	14°	SL6	938822	SL6	938796	SL6NF	938053
3/4	1/4	1-1/2	3-3/8	14°	SL7	938824	SL7	938798	SL7NF	938054

Style SM Cone



Head Size (Inch)	Shank Diameter (Inch)	IND Code	Length of Cut (Inch)	Overall Length (Inch)	Included Angle	Style SM Cone	
						Double Cut	Spiral Cut
						Code	Code
1/8	1/8	SM41	3/8	1-1/2	12°	938864	938834
1/8	1/8	SM42	7/16	1-1/2	14°	938866	938836
1/8	1/8	SM43	5/8	1-1/2	7°	938868	938838
3/16	1/8	SM53	1/2	1-1/2	16°	938870	938840
1/4	1/8	SM51	1/2	1-7/8	22°	938872	938842
1/4	1/4	SM1	1/2	2	22°	938874	938844
1/4	1/4	SM2	3/4	2	14°	938876	938846
1/4	1/4	SM3	1	2	10°	938878	938848
3/8	1/4	SM4	5/8	2-1/2	28°	938880	938850
1/2	1/4	SM5	7/8	2-3/4	28°	938882	938852
5/8	1/4	SM6	1	2-7/8	31°	938884	938854

Burrs *(continued)*

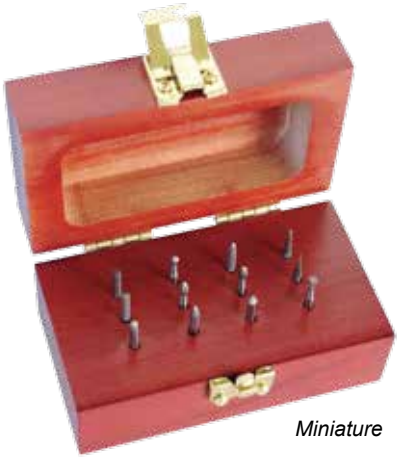
Carbide

Style SN Inverted Taper



Head Size (Inch)	Shank Diameter (Inch)	IND Code	Length of Cut (Inch)	Overall Length (Inch)	Included Angle	Style SN Inverted Taper	
						Double Cut	Spiral Cut
						Code	Code
3/32	1/8	SN41	1/8	1-1/2	10°	938916	938894
1/8	1/8	SN42	3/16	1-1/2	10°	938918	938896
3/16	1/8	SN53	1/4	1-1/2	10°	938920	938898
1/4	1/8	SN51	1/4	1-1/2	10°	938922	938900
1/4	1/4	SN1	5/16	2	10°	938924	938902
1/2	1/4	SN4	1/2	2-1/4	28°	938926	938904

Burr Sets – Double Cut



Miniature



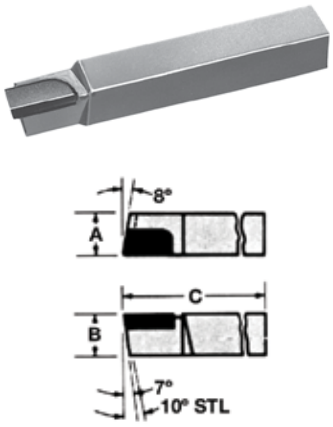
Regular

Shank Diameter (Inch)	Set Style	Burrs Included	No. of Pieces	Code
1/8	Miniature	SA42; SA43; SC42; SD42; SE41; SF41; SF42; SG41; SH41; SL41; SM43; SN42	12	938928
1/4	Regular	SA14; SA1; SC14; SC1; SD14; SD1; SE1; SF1; SG1; SM1; SM2; SN1	12	938930
1/4	Regular	SB1; SB3; SB5; SD1; SD3; SD5; SE1; SE3; SE5	9	938931
1/4	Regular	SB3; SC3; SD3; SE3; SF3; SG3; SK3; SL3; SM3	9	939032

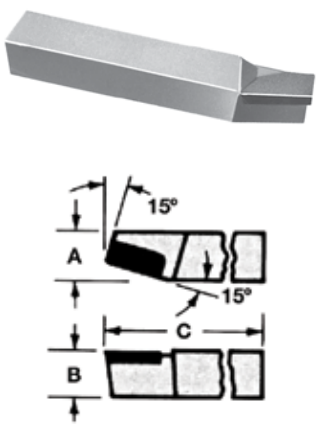
Brazed Tools

For Cast Iron/Non-Ferrous (C2) and Steel (C5/C6)

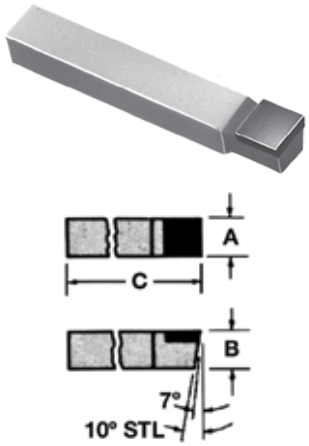
STYLE A



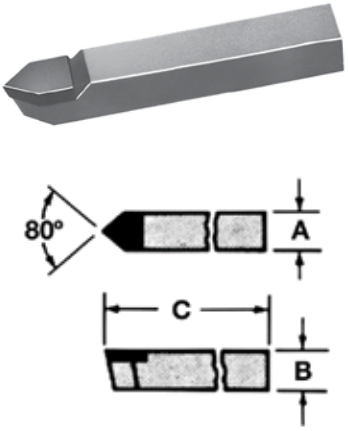
SYLE B



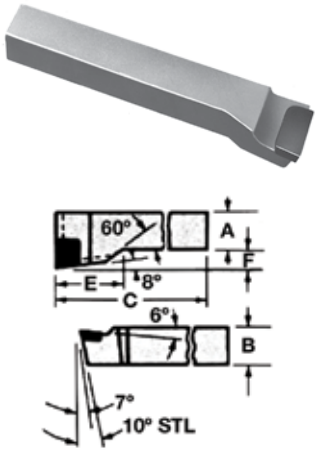
STYLE C



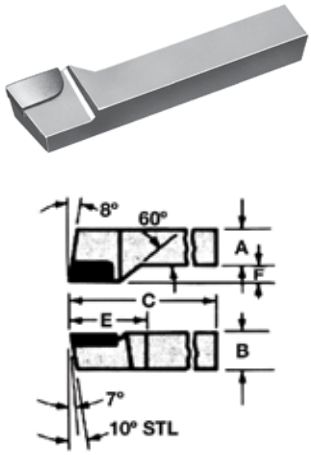
STYLE D



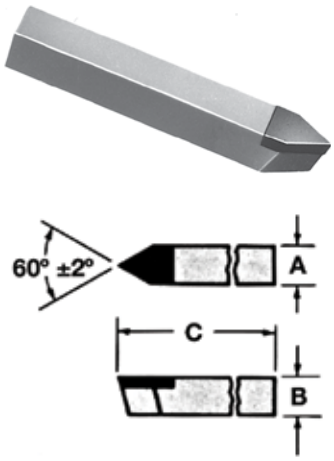
STYLE F



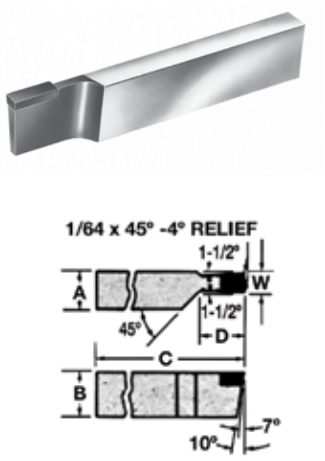
STYLE G



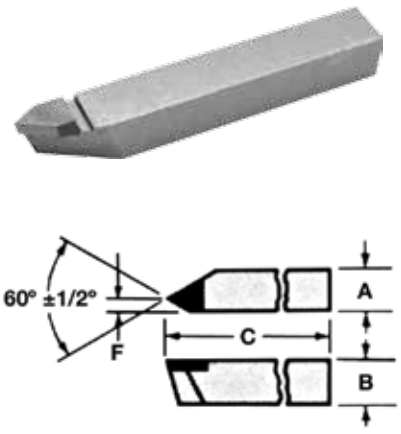
STYLE E



STYLE CT



STYLE ER
60° Offset V-Threading



Brazed Tools *(continued)*

For Cast Iron/Non-Ferrous (C2) and Steel (C5/C6)

A (Inch)	B (Inch)	C (Inch)	W (Inch)	Right Hand			Left Hand		
				Type	C5/C6 Code	C2 Code	Type	C5/C6 Code	C2 Code
1/4	1/4	2	–	AR4	313208	313215	AL4	313222	313229
5/16	5/16	2-1/4	–	AR5	313209	313216	AL5	313223	313230
3/8	3/8	2-1/2	–	AR6	313210	313217	AL6	313224	313231
7/16	7/16	3	–	AR7	313211	313218	AL7	313225	313232
1/2	1/2	3-1/2	–	AR8	313212	313219	AL8	313226	313233
5/8	5/8	4	–	AR10	313213	313220	AL10	313227	313234
3/4	3/4	4-1/2	–	AR12	313214	313221	AL12	313228	313235
1/4	1/4	2	–	BR4	313236	313243	BL4	313250	313257
5/16	5/16	2-1/4	–	BR5	313237	313244	BL5	313251	313258
3/8	3/8	2-1/2	–	BR6	313238	313245	BL6	313252	313259
7/16	7/16	3	–	BR7	313239	313246	BL7	313253	313260
1/2	1/2	3-1/2	–	BR8	313240	313247	BL8	313254	313261
5/8	5/8	4	–	BR10	313241	313248	BL10	313255	313262
3/4	3/4	4-1/2	–	BR12	313242	313249	BL12	313256	313263
1/4	1/4	2	–	C4	313278	313285	C4	313278	313285
5/16	5/16	2-1/4	–	C5	313279	313286	C5	313279	313286
3/8	3/8	2-1/2	–	C6	313280	313287	C6	313280	313287
7/16	7/16	3	–	C7	313281	313288	C7	313281	313288
1/2	1/2	3-1/2	–	C8	313282	313289	C8	313282	313289
5/8	5/8	4	–	C10	313283	313290	C10	313283	313290
3/4	3/4	4-1/2	–	C12	313284	313291	C12	313284	313291
1/4	1/4	2	–	D4	313292	313299	D4	313292	313299
5/16	5/16	2-1/4	–	D5	313293	313300	D5	313293	313300
3/8	3/8	2-1/2	–	D6	313294	313301	D6	313294	313301
7/16	7/16	3	–	D7	313295	313302	D7	313295	313302
1/2	1/2	3-1/2	–	D8	313296	313303	D8	313296	313303
5/8	5/8	4	–	D10	313297	313304	D10	313297	313304
3/4	3/4	4-1/2	–	D12	313298	313305	D12	313298	313305
1/2	1/2	3-1/2	–	FR8	313322	313326	FL8	313330	313334
5/8	5/8	4	–	FR10	313323	313327	FL10	313331	313335
3/4	3/4	4-1/2	–	FR12	313324	313328	FL12	313332	313336
1	1	7	–	FR16	313325	313329	FL16	313333	313337
1/2	1/2	3-1/2	–	GR8	313338	313342	GL8	313346	313350
5/8	5/8	4	–	GR10	313339	313343	GL10	313347	313351
3/4	3/4	4-1/2	–	GR12	313340	313344	GL12	313348	313352
1	1	7	–	GR16	313341	313345	GL16	313349	313353
1/4	1/4	2	–	E4	313264	313271	E4	313264	313271
5/16	5/16	2-1/4	–	E5	313265	313272	E5	313265	313272
3/8	3/8	2-1/2	–	E6	313266	313273	E6	313266	313273
7/16	7/16	3	–	E7	313267	313274	E7	313267	313274
1/2	1/2	3-1/2	–	E8	313268	313275	E8	313268	313275
5/8	5/8	4	–	E10	313269	313276	E10	313269	313276
3/4	3/4	4-1/2	–	E12	313270	313277	E12	313270	313277
1/2	1	5	1/8	CTR11	313306	313307	CTL11	313308	313309
1/2	1	5	3/16	CTR22	313310	313311	CTL22	313312	313313
1/2	1	5	1/4	CTR33	313314	313315	CTL33	313316	313317
1/2	1	5	5/16	CTR44	313318	313319	CTL44	313320	313321
1/4	1/4	2	–	ER4	313354	313360	EL4	021824	313371
5/16	5/16	2-1/4	–	ER5	313355	313361	EL5	313366	313372
3/8	3/8	2-1/2	–	ER6	313356	313362	EL6	313367	313373
1/2	1/2	3-1/2	–	ER8	313357	313363	EL8	313368	313374
5/8	5/8	4	–	ER10	313358	313364	EL10	313369	313375
3/4	3/4	4-1/2	–	ER12	313359	313365	EL12	313370	313376



Fly Cutter Sets

Hardened Steel

- No need for expensive end mills and end mill sharpening
- Counterbalanced for smoother finishes and faster feeds
- 3 sizes per set
- Machines up to a 6” wide surface with a standard tool bit

Shank Diameter (Inch)	Head Diameter (Inch)	Tool Bit Size (Inch)	Code
1/2	3/4; 1-1/8; 1-1/2	3/16; 1/4; 5/16	505400
3/4	1-1/2; 2; 2-1/2	5/16; 5/16; 5/16	505401

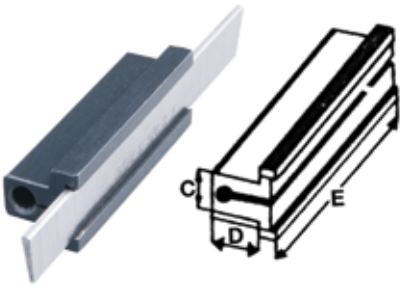


Turning Tool Holders

For High Speed Steel Toolbits

Model	Holder Size (Inch)	Square Tool (Inch)	Approx. Swing	Right Hand	Left Hand	Straight
				Code	Code	Code
TH/3	3/16 x 3/4 x 4-1/2	3/16	7-10	577470	577486	577484
TH/4	3/8 x 7/8 x 5	1/4	10-12	577471	577485	577486
TH/5	1/2 x 1-1/8 x 6	5/16	14-16	577472	577487	577488
TH/6	5/8 x 1-3/8 x 7	3/8	16-18	577473	577489	577490
TH/7	3/4 x 1-5/8 x 8	7/16	18-20	577474	577491	577492
TH/8	7/8 x 1-3/4 x 9	1/2	24-36	577475	577493	577494

Part-Off Tool Holders



Model	Blade Size (Inch)	Blade Reference	C (Inch)	D (Inch)	E (Inch)	Code
PT/1	3/32 x 1/2 x 4	180274	1/2	1/2	2-3/4	180271
PT/2	3/32 x 5/8 x 5	180275	1/2	9/16	2-3/4	180272
PT/3	1/8 x 3/4 x 6	180276	11/16	3/4	3-3/8	180273

Replacement Blades

Model	Blade Size (Inch)	Code
COB/0-2	3/32 x 1/2 x 4	180274
COB/0-3	3/32 x 5/8 x 5	180275
COB/0-4	1/8 x 3/4 x 6	180276

Part-Off Tool Holders



Model	Shank Size (Inch)	Blade Size (Inch)	Blade Reference	Right Hand	Left Hand	Straight
				Code	Code	Code
CT/0	5/16 x 9/16 x 3-11/16	1/16 x 5/16	–	577476	577495	577496
CT/1	5/16 x 3/4 x 4-1/2	3/32 x 1/2	516120	577477	577497	577498
CT/2	3/8 x 7/8 x 5	3/32 x 5/8	516121	577478	577499	577500
CT/3	1/2 x 1-1/8 x 6	1/8 x 3/4	516122	577479	577501	577502
CT/4	5/8 x 1-3/8 x 7	1/8 x 7/8	516123	577480	577503	577504
CT/5	3/4 x 1-5/8 x 8	3/16 x 1	516124	577481	577505	577506
CT/6	7/8 x 1-3/4 x 9	3/16 x 1-1/8	516125	577482	577507	577508

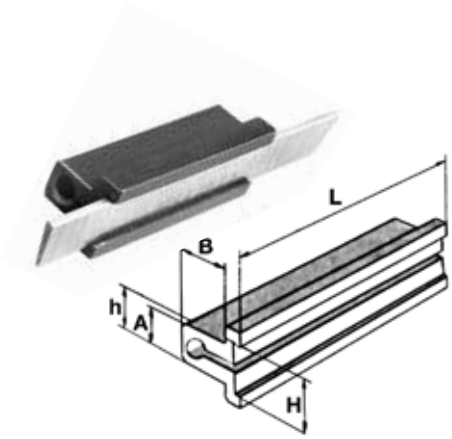
Boring Bar Holders



Square

Model	Holder Size (Inch)	Bar Size (Inch)	Code
BH/3-8	9/16 x 9/16 x 2-1/4	3/8	180281
BH/1-2	3/4 x 3/4 x 3	1/2	180282
BH/5-8	7/8 x 7/8 x 3-1/4	5/8	180283
BH/3-4	1 x 1 x 3-1/4	3/4	180284

Part-Off Tools

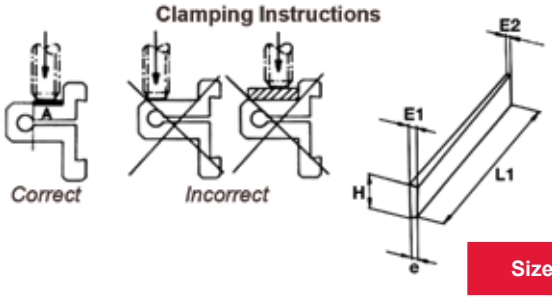


Holders & Blades

Holders – Model 259

Size	H (Inch)	h (Inch)	A (Inch)	B (Inch)	L (Inch)	Code
1	1/2	1/2	1/2	9/16	2-3/4	515411
2	11/16	1/2	1/2	1/2	2-3/4	515412
3	1	7/8	13/16	3/4	3-1/8	515413

Blades – for Model 259



- Made of a special high speed steel with 5% cobalt
- Extremely wear resistant
- Side clearance and back tapered from front to back for minimum friction on deep cuts

Size	H (Inch)	L1 (Inch)	E1 (Inch)	E2 (Inch)	e (Inch)	Code
1	1/2	4	0.118	0.087	0.085	515421
2	11/16	5-1/2	0.157	0.110	0.107	515422
3	1	6	0.177	0.125	0.108	515423

Blade size 3 will fit holder size 3

Part-Off Blades

High Speed Steel

- T-shaped
- Ground



Not compatible with holders above

Style	Size W x H (Inch)	Length (Inch)	Code
P1	1/16 x 1/2	4-1/2	516101
P2	3/32 x 1/2	4-1/2	516102
P3N	3/32 x 11/16	5	516103
P3S	1/8 x 1/2	4-1/2	516104
P3	1/8 x 11/16	5	516105
P3W	1/8 x 3/4	5	516106
P5X	1/8 x 7/8	6	516107
P8X	1/8 x 1-1/8	6-1/2	516108
P4	5/32 x 11/16	5	516109
P4W	5/32 x 3/4	5	516110

Style	Size W x H (Inch)	Length (Inch)	Code
P5N	5/32 x 7/8	6	516111
P4X	5/32 x 1-1/8	6-1/2	516112
P5S	3/16 x 11/16	5	516113
P5W	3/16 x 3/4	5	516114
P5	3/16 x 7/8	6	516115
P8	3/16 x 1-1/8	6-1/2	516116
P6	1/4 x 7/8	6	516117
P9	1/4 x 1-1/8	6-1/2	516118

Part-Off Blades

Cobalt

- Ground



Size W x H (Inch)	Length (Inch)	Code
3/32 x 1/2	4	516120
3/32 x 5/8	5	516121
1/8 x 3/4	5	516122
1/8 x 7/8	6	516123
3/16 x 1	6	516124
3/16 x 1-1/8	6	516125

Tool Bits

High Speed Steel M2 & Cobalt

- Ground

Square



Size Square x Length (Inch)	HSS Code	Cobalt Code
1/8 x 2-1/2	516130	516230
3/16 x 2-1/2	516131	516231
1/4 x 2-1/2	516132	516232
5/16 x 2-1/2	516133	516233
3/8 x 3	516134	516234
7/16 x 3-1/2	516135	516235
1/2 x 4	516136	516236
5/8 x 4-1/2	516137	516237
3/4 x 5	516138	516238
3/4 x 6	516139	516239
7/8 x 6	516140	516240
1 x 6	516141	516241
1 x 7	516142	516242
1 x 8	–	516243

Rectangular



Size W x H x L (Inch)	HSS Code
1/4 x 3/8 x 2-1/2	516350
1/4 x 1/2 x 4	516351
1/4 x 3/4 x 5	516352
1/4 x 1 x 6	516353
5/16 x 1/2 x 4	516354
5/16 x 3/4 x 5	516355
3/8 x 1/2 x 4	516356
3/8 x 3/4 x 5	516357
3/8 x 1 x 6	516358
1/2 x 3/4 x 5	516359
1/2 x 1 x 7	516360
5/8 x 1 x 7	516361
3/4 x 1 x 7	516362

Round



Size Diameter x Length (Inch)	HSS Code	Cobalt Code
1/8 x 2-3/4	516370	516390
3/16 x 3-1/2	516371	516391
1/4 x 2-1/2	516372	516392
1/4 x 4	516373	516393
5/16 x 2	516374	516394
5/16 x 4	516375	516395
3/8 x 3	516376	516396
3/8 x 5	516377	516397
1/2 x 4	516378	516398
1/2 x 6	516379	516399
5/8 x 3	516380	516400
5/8 x 6	516381	516401
3/4 x 6	516382	516402
1 x 6	516383	–

Knurling Tools

Knurling Tool Holders



- KT2/KT6 requires RH and LH knurls to produce diamond pattern
- KTO produces diamond pattern with D knurls

Model	Shank Size (Inch)	Knurl Dimensions (Inch)	Code
KT/0-1	4 x 1/2 x 1/2	3/4 x 1/4 x 1/4	606100
KT/2-2	6-1/2 x 1-1/8 x 1/2	3/4 x 1/4 x 3/8	606101
KT/2-3	5-1/2 x 7/8 x 3/8	5/8 x 7/32 x 5/16	606102
KT/2-4	5 x 3/4 x 5/16	5/8 x 7/32 x 5/16	606103
KT/2-5	4-1/2 x 1/2 x 1/2	3/4 x 1/4 x 3/8	606104
KT/6-1	7-1/2 x 1-3/8 x 5/8	3/4 x 1/4 x 3/8	606105

Model	Shank Size (Inch)	Knurl Dimensions (Inch)	Code
KT/6-2	6-1/2 x 1-1/8 x 1/2	3/4 x 1/4 x 3/8	606106
KT/6-3	5-1/2 x 7/8 x 3/8	5/8 x 7/32 x 5/16	606107
KT/6-4	5 x 3/4 x 5/16	5/8 x 7/32 x 5/16	606108
KT/6-5M	20 x 27 x 18	20 x 6 x 8	606109

High Speed Steel – Cutters



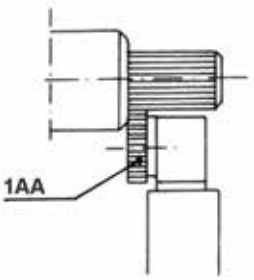
Type	Diameter	Hole Diameter	Width	TPI	Code
Right Hand	5/8”	7/32”	5/16”	Fine	606143
Right Hand	5/8”	7/32”	5/16”	Medium	606146
Right Hand	5/8”	7/32”	5/16”	Coarse	606149
Right Hand	3/4”	1/4”	3/8”	Fine	606152
Right Hand	3/4”	1/4”	3/8”	Medium	606155
Right Hand	3/4”	1/4”	3/8”	Coarse	606158
Right Hand	1”	5/16”	3/8”	Fine	606161
Right Hand	1”	5/16”	3/8”	Medium	606164
Right Hand	1”	5/16”	3/8”	Coarse	606167
Right Hand	20 mm	6 mm	8 mm	Fine	606170
Right Hand	20 mm	6 mm	8 mm	Medium	606173
Right Hand	20 mm	6 mm	8 mm	Coarse	606176
Left Hand	5/8”	7/32”	5/16”	Fine	606142
Left Hand	5/8”	7/32”	5/16”	Medium	606145
Left Hand	5/8”	7/32”	5/16”	Coarse	606148
Left Hand	3/4”	1/4”	3/8”	Fine	606151
Left Hand	3/4”	1/4”	3/8”	Medium	606154
Left Hand	3/4”	1/4”	3/8”	Coarse	606157
Left Hand	1”	5/16”	3/8”	Fine	606160
Left Hand	1”	5/16”	3/8”	Medium	606163
Left Hand	1”	5/16”	3/8”	Coarse	606166
Left Hand	20 mm	6 mm	8 mm	Fine	606169
Left Hand	20 mm	6 mm	8 mm	Medium	606172
Left Hand	20 mm	6 mm	8 mm	Coarse	606175
Diamond	3/4”	1/4”	1/4”	Fine	606110
Diamond	3/4”	1/4”	1/4”	Medium	606111
Diamond	3/4”	1/4”	1/4”	Coarse	606112
Diamond	5/8”	7/32”	5/16”	Fine	606113

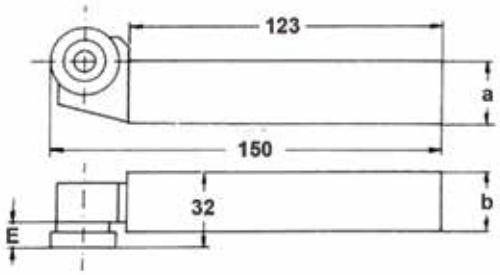
Type	Diameter	Hole Diameter	Width	TPI	Code
Diamond	5/8”	7/32”	5/16”	Medium	606114
Diamond	5/8”	7/32”	5/16”	Coarse	606115
Diamond	3/4”	1/4”	3/8”	Fine	606116
Diamond	3/4”	1/4”	3/8”	Medium	606117
Diamond	3/4”	1/4”	3/8”	Coarse	606118
Diamond	1”	5/16”	3/8”	Fine	606119
Diamond	1”	5/16”	3/8”	Medium	606120
Diamond	1”	5/16”	3/8”	Coarse	606121
Diamond	20 mm	6 mm	8 mm	Fine	606122
Diamond	20 mm	6 mm	8 mm	Medium	606123
Diamond	20 mm	6 mm	8 mm	Coarse	606124
Straight	3/4”	1/4”	1/4”	Fine	606137
Straight	3/4”	1/4”	1/4”	Medium	606140
Straight	3/4”	1/4”	1/4”	Coarse	606141
Straight	5/8”	7/32”	5/16”	Fine	606144
Straight	5/8”	7/32”	5/16”	Medium	606147
Straight	5/8”	7/32”	5/16”	Coarse	606150
Straight	3/4”	1/4”	3/8”	Fine	606153
Straight	3/4”	1/4”	3/8”	Medium	606156
Straight	3/4”	1/4”	3/8”	Coarse	606159
Straight	1”	5/16”	3/8”	Fine	606162
Straight	1”	5/16”	3/8”	Medium	606165
Straight	1”	5/16”	3/8”	Coarse	606168
Straight	20 mm	6 mm	8 mm	Fine	606171
Straight	20 mm	6 mm	8 mm	Medium	606174
Straight	20 mm	6 mm	8 mm	Coarse	606177

Knurling Tools

Plain – Straight Knurl up to Face – Forming Style







Model	a (mm)	b (mm)	E (mm)	Code
M1025.10.20	20	25	10	180305

Model	a (mm)	b (mm)	E (mm)	Code
M1025.10.25	25	25	10	180307

Knurling Wheels for Plain Model Knurling Tools

Pitch (mm)	Code
0.4	180310
0.5	180312
0.6	180314
0.7	180316

Pitch (mm)	Code
0.8	180318
1.0	180320
1.2	180322
1.4	180324

Pitch (mm)	Code
1.5	180326
1.6	180328

Pitch (mm)	Code
1.8	180330
2.0	180332

Model M2 – Balanced Forming Style

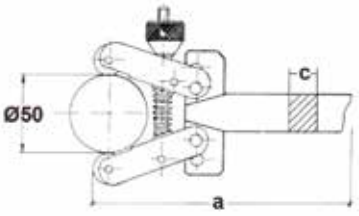


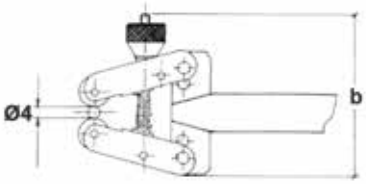
- Revolving head carries three pairs of knurls – fine, medium, and course – any of which can be turned into the operating position
- The two models are identical, except for the pattern of knurls employed

Model	Holder Size (Inch)	Cutter	Knurling Type	Net Weight	Code
M2-D	0.98 x 0.98 x 6-1/2	Spiral	Diamond	1 lb/10 oz	180165
M2-S	0.98 x 0.98 x 6-1/2	Straight	Straight	1 lb/10 oz	180170

Model M3 – Balanced Forming Style







- Adjustment to suit workpiece diameter
- Knurl small diameters without risk of deflection

Model	a (Inch)	b (Inch)	c (Inch)	Code
M3	9	4-1/4	3/4	180177

Knurling Tools *(continued)*

Knurling Wheels for Models M2 & M3

Diamond Pattern



Diameter (mm)	Thickness (mm)	Bore (mm)	Pitch	Code
19.5	8	6	Coarse (18 TPI)	180166
19.5	8	6	Medium (32 TPI)	180167
19.5	8	6	Fine (45 TPI)	180168

Straight Line Pattern

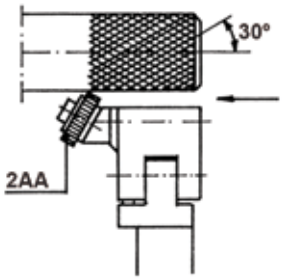


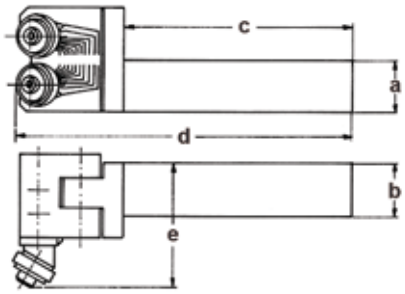
Diameter (mm)	Thickness (mm)	Bore (mm)	Pitch	Code
19.5	8	6	Coarse (18 TPI)	180171
19.5	8	6	Medium (32 TPI)	180172
19.5	8	6	Fine (45 TPI)	180173

NC Diamond Knurling Tools

- Double knurling tool with adjustable knurl holder head
- For 30° crossed knurlings with scale indicator of knurling diameter
- For use on CNC, conventional, and automatic lathes





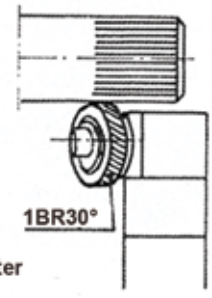


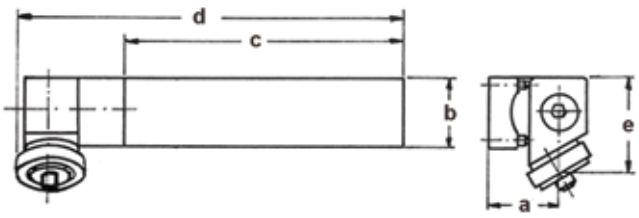
Model MFCNC/	a (Inch)	b (Inch)	c (Inch)	d (Inch)	e (Inch)	Knurling Diameter Range (Inch)	Cutter Diameter mm (Inch)	Cutter Pitch (mm)	Code
145316LH	5/8	5/8	3	4-3/4	1-3/4	5/32 - 2	14.5 (9/16) x 90°	0.4 - 1.2	180179
215520RH	3/4	3/4	3-1/2	5-1/2	2-1/4	1/4 - 10	21.5 (13/16) x 90°	0.4 - 2.0	180180
215525RH	1	1	4-1/2	6-1/2	2-1/4	1/4 - 10	21.5 (13/16) x 90°	0.4 - 2.0	180182

Straight Right Hand Knurling Tools

- Simple knurling tool with reverse and adjustable knurl holder head
- For straight and helical knurling
- For use on CNC, conventional, and automatic lathes







Model MFCNC/	a (Inch)	b (Inch)	c (Inch)	d (Inch)	e (Inch)	Knurling Diameter Range (Inch)	Cutter Diameter mm (Inch)	Cutter Pitch (mm)	Code
010902	5/8	5/8	3	4	7/8	5/32 - 2	14.5 (9/16) x 30°	0.4 - 1.2	180184
215525	1	1	4-1/2	6	1-1/4	1/4 - 10	21.5 (13/16) x 30°	0.4 - 2.0	180187

Diameter of part being knurled should be turned to size for sake of concentricity and quality of knurl.

CUTTERS SOLD SEPARATELY

Knurling Tools *(continued)*

High Speed Steel – Cutters

Helical Cutters – 30°



TIN coated available upon request

Approximate TPI	Pitch (Inch)	Pitch (mm)	High Speed Steel	
			14.5 Diameter	21.5 Diameter
			Code	Code
85	0.012	0.3	–	175433
64	0.016	0.4	175295	175434
51	0.020	0.5	175296	175435
42	0.024	0.6	175297	175436
32	0.032	0.8	175298	175438
25	0.040	1.0	175299	175440
21	0.047	1.2	175300	175442
18	0.060	1.5	–	175445
16	0.063	1.6	–	175446
13	0.080	2.0	–	175450

Straight Cutters – 90°



TIN coated available upon request

Approximate TPI	Pitch (Inch)	Pitch (mm)	High Speed Steel	
			14.5 Diameter	21.5 Diameter
			Code	Code
64	0.016	0.4	175304	175404
51	0.020	0.5	175305	175405
42	0.024	0.6	175306	175406
32	0.032	0.8	175308	175408
25	0.040	1.0	175310	175410
21	0.047	1.2	175312	175412
18	0.060	1.5	–	175415
16	0.063	1.6	–	175416
13	0.080	2.0	–	175420

Spare Bushings, Washers & Screws



Part	Size	Code
Bushing	14.5	175391
Bushing	21.5	175491

Part	Size	Code
Washer	14.5	175392
Washer	21.5	175492

Part	Size	Code
Screw	14.5	175393
Screw	21.5	175493

Annular Cutters

High Speed Steel

- Eliminates multi-step drilling
- Lower cost per hole
- Better finish
- More accurate and cleaner holes
- Longer tool life
- 3/4” shank diameter with two flats
- Cutters are interchangeable with other standard hole cutting systems



Size (Inch)	Depth		
	1 Inch	2 Inch	3 Inch
	Code	Code	Code
7/16	606336	606359	–
1/2	606333	606360	–
9/16	606334	606361	–
5/8	606335	606362	–
11/16	606336	606363	–
3/4	606337	606364	–
13/16	606338	606365	–
7/8	606339	606366	606386
15/16	606340	606367	606384
1	606341	606368	606388
1-1/16	606342	606369	606389
1-1/8	606343	606370	606390
1-3/16	606344	606371	606391
1-1/4	606345	606372	606392

Size (Inch)	Depth		
	1 Inch	2 Inch	3 Inch
	Code	Code	Code
1-5/16	606346	606373	606393
1-3/8	606347	606374	606394
1-7/16	606348	606375	606395
1-1/2	606349	606376	606396
1-9/16	606350	606377	606397
1-5/8	606351	606378	606398
1-11/16	606352	606379	–
1-3/4	606353	606380	606400
1-13/16	606354	606381	–
1-7/8	606355	606382	–
1-15/16	606356	606383	–
2	606357	606384	606403
2-1/16	606358	606385	–

Ejectors

Description	Code
Ejector - Pilot, Short 1/4” x 3” (For all 1” cutter depths except 7/16” diameter)	606406
Ejector - Pilot, Long 1/4” x 4” (For all 2” cutter depths except 7/16” diameter)	606407
Ejector - Pilot, Extra Long 5/16” x 5” (For all 3” cutter depths)	606408
Ejector - Pilot, Short 7/16” x 1”	606409
Ejector - Pilot, Short 7/16” x 2”	606410

Annular Cutter Holders

Straight, Morse Taper & R8 Shanks

- Holder shanks allow different machines drive cutters
- Easily reach difficult places
- Selected adapter lengths reduce the number of machine set ups









Straight Shank – 3 Flats – Series 7980

Type	Shank Size (Inch)	Cutter Shank Size (Inch)	Gage Length (Inch)	Code
HEN-1	1/2	3/4	2-1/8	606300
HEN-2	3/4	3/4	2	606301
HEN-2-6	3/4	3/4	6	606302
HEN-2-12	3/4	3/4	12	606303

Straight Shank – 2 Flats – Series 7983

Type	Shank Size (Inch)	Cutter Shank Size (Inch)	Gage Length (Inch)	Code
HEN-9-6	3/4	3/4	6	606307

CUTTERS SOLD SEPARATELY

Annular Cutter Holders

Straight, Morse Taper & R8 Shanks *(continued)*

Morse Taper Shank – Series 7981

Type	Shank Size (Inch)	Cutter Shank Size (Inch)	Gage Length (Inch)	Code
HEN-3	MT2	3/4	2	606309
HEN-3-6	MT2	3/4	6	606310
HEN-3-12	MT2	3/4	12	606311
HEN-4	MT3	3/4	2	606312
HEN-4-6	MT3	3/4	6	606313
HEN-4-12	MT3	3/4	12	606314

R8 Shank – Series 7982

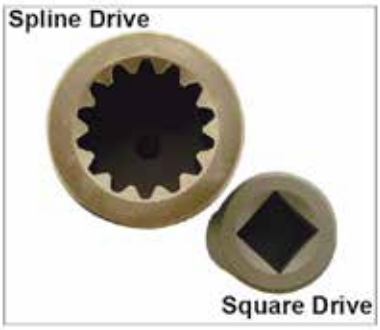
Type	Shank Size (Inch)	Cutter Shank Size (Inch)	Gage Length (Inch)	Code
HEN-5	R8	3/4	1-3/4	606318
HEN-5-12	R8	3/4	12	606320

Bridge Reamer Holders

Square & Spline Drives

- No need to weld a nut to the back of bridge reamers
- Tools last longer by keeping reamer straight and rigid in the bridge reamer adapter
- Reamer is securely held in the bridge reamer holder until removed





Square Drive

Type	Drive Size (Inch)	Reamer Shank	Overall Length (Inch)	Code
HEN-2BRA	3/4	MT3	6	606325
HEN-3BRA	3/4	MT4	7	606326
HEN-4BRA	1	MT2	5-1/2	606327
HEN-5BRA	1	MT3	6-1/2	606328
HEN-6BRA	1	MT4	7-1/2	606329

Spline Drive

Type	Drive Size (Inch)	Reamer Shank	Overall Length (Inch)	Code
HEN-7BRA	#5	MT3	7-1/4	606330
HEN-8BRA	#5	MT4	8-1/2	606331

Hole Cutters

High Speed Steel

- Pilot drill supplied with each cutter
- Recommended for use in hand-held air or electric drill motors, as well as light drill press applications in sheet metal, thin wall tubing, steel plate, or any other large diameter shallow hole cutting
- Centers quickly and is held securely in position after the pilot drill has entered the work piece - cutter body then cuts a clean, burr-free hole
- With normal care tool life is significantly longer than other hole cutting tools
- Inexpensive resharpening will allow repeat use



Size (Inch)	No. of Flutes	3/8" Shank/ 3/16" Pilot	1/2" Shank/ 1/4" Pilot
		Code	Code
1/2	4	311041	311044
9/16	4	311042	311045
5/8	4	311043	311046
11/16	4	–	311047
3/4	4	–	311048
13/16	4	–	311049
7/8	4	–	311050
29/32	4	–	311051

Size (Inch)	No. of Flutes	3/8" Shank/ 3/16" Pilot	1/2" Shank/ 1/4" Pilot
		Code	Code
15/16	5	–	311052
1	5	–	311053
1-1/16	5	–	311054
1-1/8	5	–	311055
1-3/16	5	–	311056
1-1/4	5	–	311057
1-5/16	5	–	311058
1-3/8	5	–	311059

Size (Inch)	No. of Flutes	3/8" Shank/ 3/16" Pilot	1/2" Shank/ 1/4" Pilot
		Code	Code
1-1/2	5	–	311060
1-5/8	6	–	311061
1-3/4	6	–	311062
1-7/8	6	–	311063
2	6	–	311064

32nd, 64th and Metric sizes available

Turning
206-244



Grooving
245-249



Parting
250-251



Threading
252-258



Milling
259-276



Thread Milling
277-288



For Indexable Cutting Tool Technical Information see pages 289-292

External Tool Holder Identification Guide

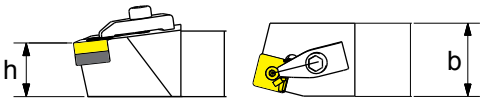
Insert Mounting Method	Insert Shape		Insert Clearance Angle	Hand of Tool
C - Clamp Lock	80° C	55° D	5° B	L - Left Hand
M - Multi Lock	55° K	R	7° C	N - Neutral
P - Lever Lock	S	T	15° D	
S - Screw Lock	35° V	80° W	20° E	R - Right Hand
			0° N	
			11° P	

M C L N R

Tool Holder Style							
A	B	C	D	E	F	G	H
90°	75°	90°	45°	60°	90°	90°	107° 30'
J	K	L	M	N	O	P	Q
93°	75°	95° 95°	50°	63°	117° 30'	62° 30'	107° 30'
R	S	T	U	V	W	X	
75°	45°	60°	93°	72° 30'	60°	120°	

External Tool Holder Identification Guide

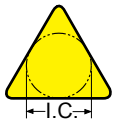
Tool Holder Size



ANSI

No.	b Width	h Height	No.	b Width	h Height
05	0.3125	0.3125	**24**	1.50	1.50
06	0.375	0.375	**32**	2.00	2.00
08	0.50	0.50	**64**	0.75	1.00
10	0.625	0.625	**66**	0.75	1.50
12	0.75	0.75	**85**	1.00	1.25
16	1.00	1.00	**86**	1.00	1.50
20	1.25	1.25	**91**	1.25	1.50

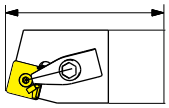
Insert I.C. Size



Number of 1/8" of inscribed circle

2 =0.250"
3 =0.375"
4 =0.500"
5 =0.625"
6 =0.750"
7 =0.875"
8 =1.000"

Qualified Tool Length



ANSI (Inch)
J = 3-1/2
A = 4
B = 4-1/2
C = 5
D = 6
E = 7
F = 8

1 6 – 4 D

ANSI (American National Standards Institute)

Cutting Edge Length

Number of 1/8" of I.C.	I.C. Inch	C	D	R	S	T	V	W
						09		
2	1/4	06	07			11	11	
3	3/8	09	11	09	09	16	16	06
4	1/2	12	15	12	12	22	22	08
5	5/8	16	19	15	15	27		
6	3/4	19		19	19	33		
8	1	25		25	25	44		

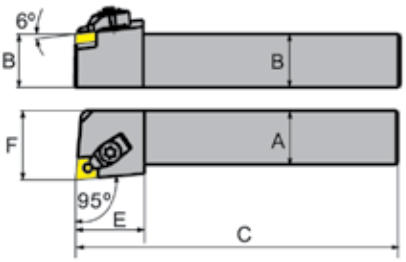
External Tool Holders

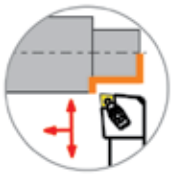
MCLNR/L for Negative 80° Rhombic CN_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

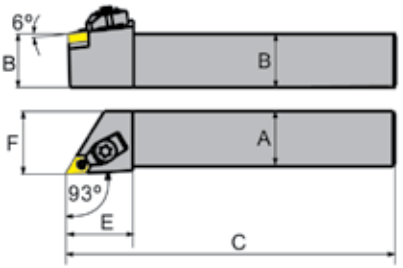
MCLNR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
								Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
12-4B	0.75	0.75	4.50	1.25	1.00	534101	534111	CN_ _43_	534240	534250	534230	534260
16-4D	1.00	1.00	6.00	1.25	1.25	534102	534112	CN_ _43_	534240	534250	534230	534260
20-4D	1.25	1.25	6.00	1.25	1.50	534103	534113	CN_ _43_	534240	534251	534230	534260
16-5D	1.00	1.00	6.00	1.38	1.25	534104	534114	CN_ _54_	534241	534251	534231	534261
20-5D	1.25	1.25	6.00	1.38	1.50	534105	534115	CN_ _54_	534241	534251	534231	534261
20-6D	1.25	1.25	6.00	1.50	1.50	534106	534116	CN_ _64_	534241	534251	534232	534262
24-6D	1.50	1.50	6.00	1.50	2.00	534107	534117	CN_ _64_	534241	534251	534232	534262

MDJNR/L for Negative 55° Rhombic DN_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

MDJNR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
								Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
12-4B	0.75	0.75	4.50	1.25	1.00	534121	534131	DN_ _43_	534241	534251	534230	534267
16-4D	1.00	1.00	6.00	1.25	1.25	534122	534132	DN_ _43_	534241	534251	534230	534267
20-4D	1.25	1.25	6.00	1.25	1.50	534123	534133	DN_ _43_	534241	534251	534230	534267
20-5D	1.25	1.25	6.00	1.50	1.50	-	534134	DN_ _54_	534241	534251	534231	534268
24-6D	1.50	1.50	6.00	1.50	2.00	534125	534135	DN_ _54_	534241	534251	534231	534268

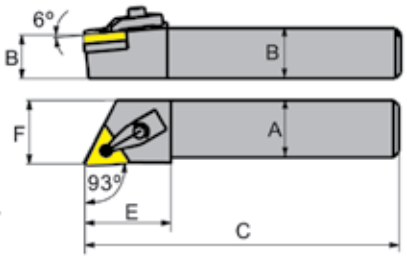
External Tool Holders

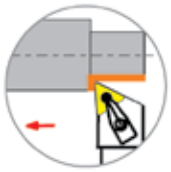
MTJNR/L for Negative Triangle TN_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

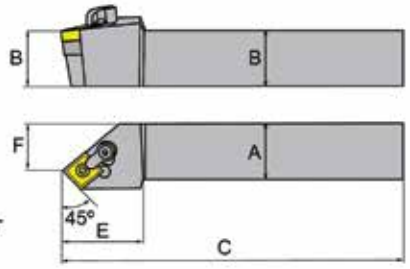
MTJNR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
								Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
10-3B	0.62	0.62	4.50	1.00	0.675	534145	534155	TN_ _33_	534244	534253	534233	534270
12-3B	0.75	0.75	4.50	1.00	1.000	534146	534156	TN_ _33_	534244	534253	534233	534270
16-3D	1.00	1.00	6.00	1.00	1.250	534140	534157	TN_ _33_	534244	534253	534233	534270
16-4D	1.00	1.00	6.00	1.25	1.250	534141	534151	TN_ _43_	534240	534250	534230	534271
20-4D	1.25	1.25	6.00	1.25	1.500	534142	534152	TN_ _43_	534240	534250	534230	534271
20-5D	1.25	1.25	6.00	1.50	1.500	534143	534153	TN_ _54_	534240	534250	534231	534272
24-5D	1.50	1.50	6.00	1.50	2.000	534144	534154	TN_ _54_	534240	534250	534231	534272

MSSNR/L for Negative Square SN_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

MSSNR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
								Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
12-4B	0.75	0.75	4.50	1.25	0.63	534161	534171	SN_ _43_	534240	534250	534230	534273
16-4D	1.00	1.00	6.00	1.25	0.93	534162	534172	SN_ _43_	534240	534250	534230	534273
20-5D	1.25	1.25	6.00	1.38	1.09	534163	-	SN_ _54_	534241	534251	534231	534274

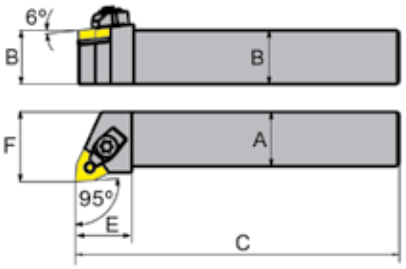
External Tool Holders

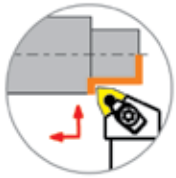
MWLNR/L for Negative Trigon WN_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

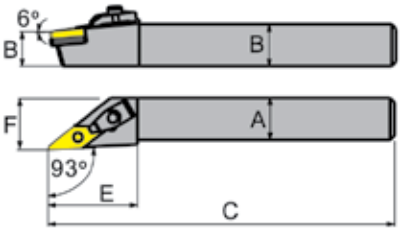
MWLNR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
								Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
12-3B	0.75	0.75	4.50	1.00	1.00	534180	–	WN_ _33_	534244	534253	534233	534277
12-4B	0.75	0.75	4.50	1.25	1.00	534181	534191	WN_ _43_	534240	534250	534230	534275
16-4D	1.00	1.00	6.00	1.25	1.25	534182	534192	WN_ _43_	534240	534250	534230	534275
20-4D	1.25	1.25	6.00	1.25	1.50	534183	534193	WN_ _43_	534240	534250	534230	534275

MVJNR/L for Negative 35° Rhombic VN_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

MVJNR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
								Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
12-3B	0.75	0.75	4.50	1.69	1.00	534201	534211	VN_ _33_	534243	534251	534233	534280
16-3D	1.00	1.00	6.00	1.69	1.25	534202	534212	VN_ _33_	534243	534251	534233	534280
20-3D	1.25	1.25	6.00	1.69	1.50	534203	534213	VN_ _33_	534243	534251	534233	534280

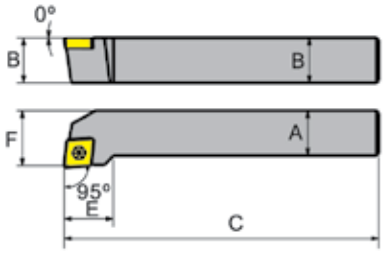
External Tool Holders

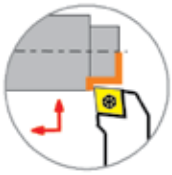
SCLCR/L for 7° Positive 80° Rhombic CC_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

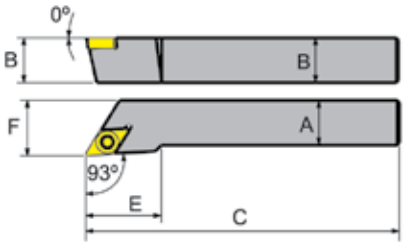
SCLCR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories		
								Applicable Insert	Screw Code	Torx® Key Code
06-2J	0.375	0.375	3.50	0.49	0.500	534001	534011	CC_ _21.5_	210350	549505
08-3A	0.500	0.500	4.00	0.69	0.625	534002	534012	CC_ _32.5_	210351	302319
10-3B	0.625	0.625	4.50	0.69	0.750	534003	534013	CC_ _32.5_	210351	302319
12-3B	0.750	0.750	4.50	0.69	1.000	534004	534014	CC_ _32.5_	210351	302319
16-3D	1.000	1.000	6.00	0.69	1.250	534005	534015	CC_ _32.5_	210351	302319
12-4B	0.750	0.750	4.50	0.83	1.000	534006	534016	CC_ _43_	210352	718401
16-4D	1.000	1.000	6.00	0.83	1.250	534007	534017	CC_ _43_	210352	718401

SDJCR/L for 7° Positive 55° Rhombic DC_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

SDJCR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories		
								Applicable Insert	Screw Code	Torx® Key Code
06-2J	0.375	0.375	3.50	0.68	0.500	534031	534041	DC_ _21.5_	210350	549505
08-2A	0.500	0.500	4.00	0.68	0.625	534032	534042	DC_ _21.5_	210350	549505
08-3A	0.500	0.500	4.00	1.00	0.625	534033	534043	DC_ _32.5_	210351	302319
10-3B	0.625	0.625	4.50	1.00	0.750	534034	534044	DC_ _32.5_	210351	302319
12-3B	0.750	0.750	4.50	1.00	1.000	534035	534045	DC_ _32.5_	210351	302319
16-3D	1.000	1.000	6.00	1.00	1.250	534036	534046	DC_ _32.5_	210351	302319
12-4B	0.750	0.750	4.50	1.25	1.000	534037	534047	DC_ _43_	210352	718401
16-4D	1.000	1.000	6.00	1.25	1.250	534038	534048	DC_ _43_	210352	718401

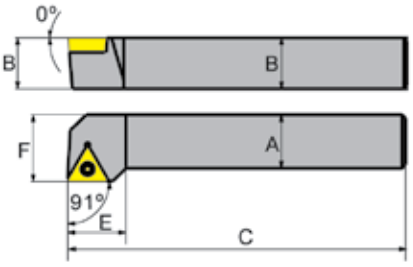
External Tool Holders

STGCR for Positive Triangular TC_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

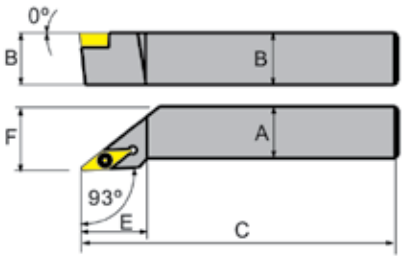
STGCR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Accessories		
							Applicable Insert	Screw Code	Torx® Key Code
06-2J	0.375	0.375	2.50	0.50	0.500	534051	TC_ _21.5_	210350	549505
08-2J	0.500	0.500	3.50	0.50	0.625	534052	TC_ _21.5_	210350	549505
10-2A	0.625	0.625	4.00	0.50	0.750	534053	TC_ _21.5_	210350	549505
10-3B	0.625	0.625	4.50	0.83	0.750	534054	TC_ _32.5_	210351	302319
12-3B	0.750	0.750	4.50	0.83	0.875	534055	TC_ _32.5_	210351	302319
16-3D	1.000	1.000	6.00	0.83	1.125	534056	TC_ _32.5_	210351	302319

SVJCR for 7° Positive 35° Rhombic VC_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

SVJCR/L	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	Right Hand Code	Accessories		
							Applicable Insert	Screw Code	Torx® Key Code
06-2J	0.375	0.375	3.50	1.00	0.500	534081	VC_ _22_	210350	549505
08-2A	0.500	0.500	4.00	1.00	0.625	534082	VC_ _22_	210350	549505
10-2B	0.625	0.625	4.50	1.00	0.750	534083	VC_ _22_	210350	549505
12-3B	0.750	0.750	4.50	1.25	1.000	534084	VC_ _33_	210353	302319
16-3C	1.000	1.000	5.00	1.25	1.250	534085	VC_ _33_	210353	302319
16-3D	1.000	1.000	6.00	1.25	1.250	534086	VC_ _33_	210353	302319

NOW AVAILABLE

CNC Broaching System

- A patented solution for effective and efficient broaching and shaping operations
- For use with CNC lathes and machining centers, as well as conventional slotting and shaping machines
- Carbide inserts, tool holders and accessories designed for flexibility while delivery the rigidity and performance required

MOST POPULAR FOR KEYWAYS & SLOTTING

INSERTS

Metric Inserts		Inch Inserts	
Size	For Tool Holder Size...	Size	For Tool Holder Size...
2 mm	2 mm	3/32	2 mm
3 mm	3 mm	1/8	3 mm
4 mm	4 mm	5/32	4 mm
5 mm	5 mm	3/16	5 mm
6 mm	6 mm	1/4	6 mm
8 mm	8 mm	9/32	8 mm
10 mm	10 mm	5/16	8 mm
12 mm	12 mm	3/8	10 mm
14 mm	14/16"	7/16	12 mm
16 mm	14/16"	1/2	12 mm
18 mm	18/26"	9/16	14/16"
20 mm	18/26"	5/8	14/16"
22 mm	18/26"	3/4	18/26"
25 mm	18/26"		

TOOL HOLDERS

25 mm Shank		32 mm Shank	
Size	For Insert Size...	Size	For Insert Size...
2-25-S	3/32", 2 mm	2-32-S	3/32", 2 mm
2-25-L	3/32", 2 mm	2-32-L	3/32", 2 mm
3-25-S	1/8", 3 mm	3-32-S	1/8", 3 mm
3-25-L	1/8", 3 mm	3-32-L	1/8", 3 mm
4-25-S	5/32", 4 mm	4-32-S	5/32", 4 mm
4-25-L	5/32", 4 mm	4-32-L	5/32", 4 mm
5-25-S	3/16", 5 mm	5-32-S	3/16", 5 mm
5-25-L	3/16", 5 mm	5-32-L	3/16", 5 mm
6-25-S	1/4", 6 mm	6-32-S	1/4", 6 mm
6-25-L	1/4", 6 mm	6-32-L	1/4", 6 mm
8-25-S	9/32", 5/16", 8 mm	8-32-S	9/32", 5/16", 8 mm
8-25-L	9/32", 5/16", 8 mm	8-32-L	9/32", 5/16", 8 mm
10-25-S	3/8", 10 mm	10-32-S	3/8", 10 mm
10-25-L	3/8", 10 mm	10-32-L	3/8", 10 mm
12-25-S	7/16", 1/2", 12 mm	12-32-S	7/16", 1/2", 12 mm
12-25-L	7/16", 1/2", 12 mm	12-32-L	7/16", 1/2", 12 mm
		14/16-32-S	9/16", 5/8", 14 mm, 16 mm
		14/16-32-L	9/16", 5/8", 14 mm, 16 mm
		18/26-32-S	3/4", 18-25 mm
		18/26-32-L	3/4", 18-25 mm

• Inch & Metric size Inserts & Tool Holders for Keyways & Slotting • Eccentric Bushings • Square Adapters • Alignment Tools • Sharpening Stems • Insert Mounting Screws • Torx Drivers • Swivel Ball-Bearing Point Set Screws • Square Tool Holders & Inserts • Spline & External Spline Tool Holders • Hexagon Tool Holders & Inserts • Mini Tool Holders

ASK YOUR KAR DISTRIBUTOR FOR MORE DETAILS

Boring Bar Identification Guide

Bar Type	
Steel with Coolant-Thru	**A**
Carbide	**C**
Carbide with Coolant-Thru	**E**
Steel	**S**

Bar Diameter

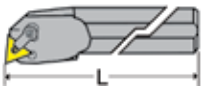
Round Shanks:
(D) shown in 1/16" increments



ANSI

04 = 0.250"
05 = 0.3125"
06 = 0.375"
08 = 0.500"
10 = 0.625"
12 = 0.750"
16 = 1.000"
20 = 1.250"
24 = 1.500"
32 = 2.000"
40 = 2.500"

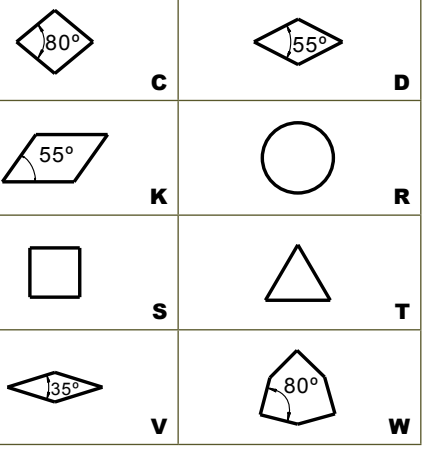
Bar Length



ANSI

H = 4"
J = 4-1/2"
K = 5"
M = 6"
R = 8"
S = 10"
T = 12"
U = 14"
V = 16"
Y = 18"

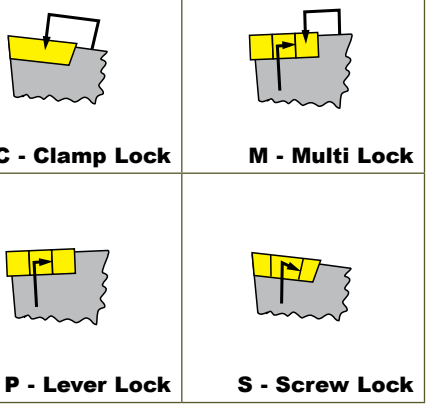
Insert Shape



S 16 T - M T

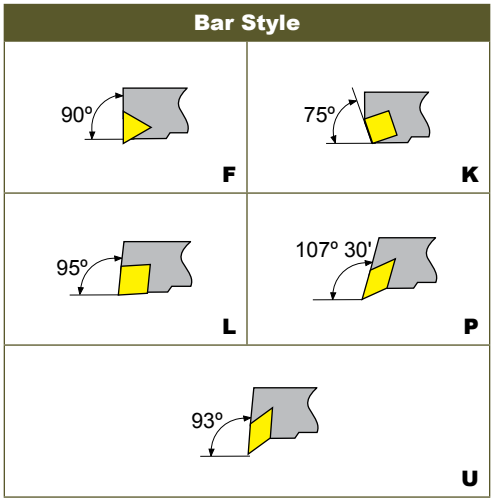
ANSI (American National Standards Institute)

Insert Mounting Method

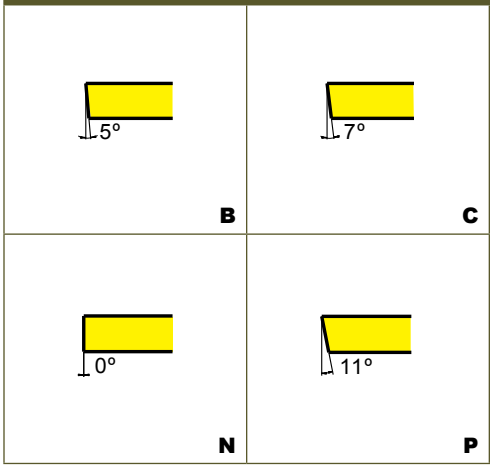


Boring Bar Identification Guide

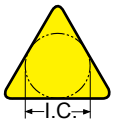
Bar Style



Insert Clearance Angle



Insert I.C. Size



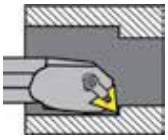
Number of 1/8" of inscribed circle

2 =0.250"
3 =0.375"
4 =0.500"
5 =0.625"
6 =0.750"
7 =0.875"
8 =1.000"

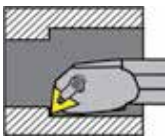
U N R – 3

ANSI (American National Standards Institute)

Hand of Tool



L - Left Hand



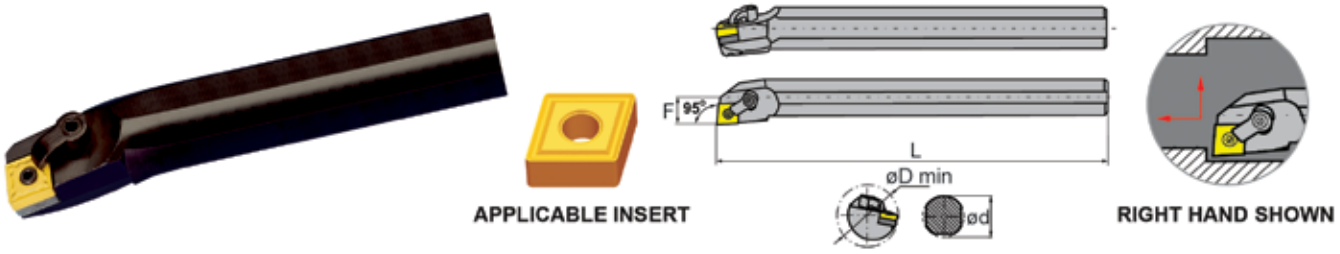
R - Right Hand

Cutting Edge Length

No. of 1/8" of I.C.	I.C. Inch	C 80°	D 55°	R	S	T 60°	V 35°	W 80°
						09		
2	1/4	06	07			11	11	
3	3/8	09	11	09	09	16	16	06
4	1/2	12	15	12	12	22	22	08
5	5/8	16	19	15	15	27		
6	3/4	19		19	19	33		
8	1	25		25	25	44		

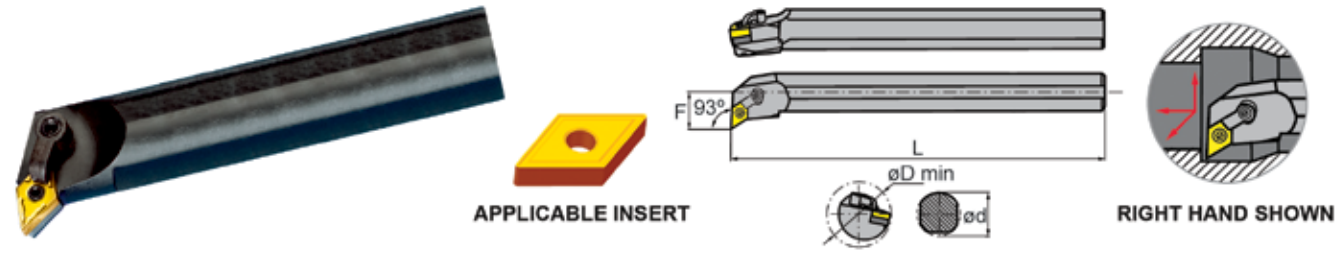
Boring Bars

S-MCLNR/L for Negative 80° Rhombic CN_ _ Inserts



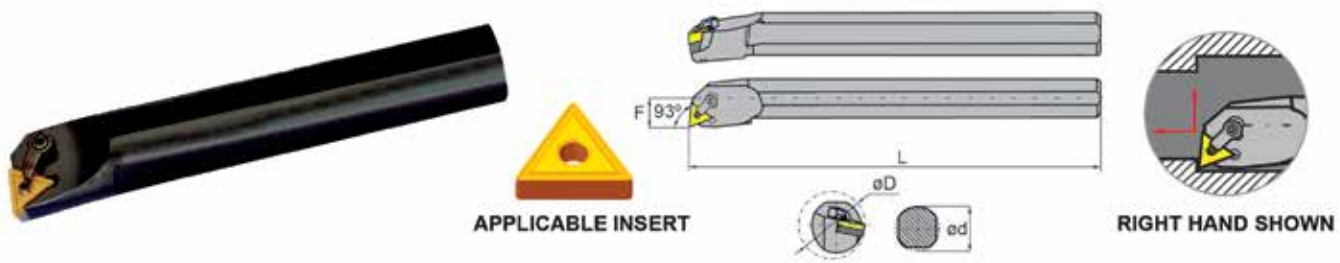
S-MCLNR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
							Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
16-4	1.00	12	1.28	0.640	534401	534411	CN_ _43_	534240	534250	534230	534260
20-4	1.25	14	1.53	0.765	534402	534412	CN_ _43_	534240	534250	534230	534260
24-4	1.50	14	1.78	0.890	534403	534413	CN_ _43_	534240	534250	534230	534260

S-MDUNR/L for Negative 55° Rhombic DN_ _ Inserts



S-MDUNR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
							Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
20-4	1.25	14	2.00	1.00	534421	534431	DN_ _43_	534241	534251	534230	534267
24-4	1.50	14	2.25	1.25	534422	534432	DN_ _43_	534241	534251	534230	534267

S-MTUNR/L for Negative Triangular TN_ _ Inserts



S-MTUNR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
							Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
16-3	1.00	12	1.28	0.640	534442	534452	TN_ _33_	534244	534253	534233	534270
20-4	1.25	14	1.53	0.765	534443	534453	TN_ _43_	534240	534250	534230	534271
24-4	1.50	14	2.06	0.890	534444	534454	TN_ _43_	534240	534250	534230	534271

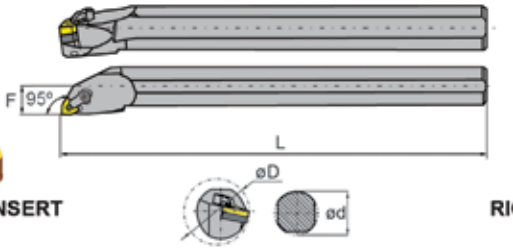
Boring Bars

S-MWLNR/L for Negative Trigon WN_ _ Inserts





APPLICABLE INSERT

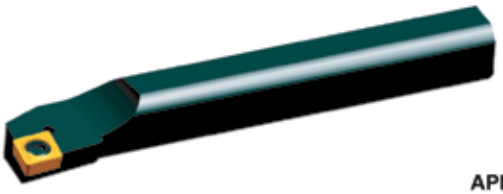




RIGHT HAND SHOWN

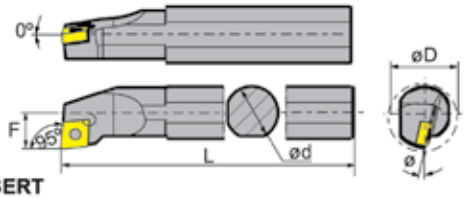
S-MWLNR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories				
							Applicable Insert	Clamp Code	Clamp Screw Code	Lock Pin Code	Shim Code
12-3	0.75	10	0.93	0.500	534459	534469	WN_ _33_	534234	–	534244	534252
12-4	0.75	10	0.93	0.500	534460	534470	WN_ _43_	534235	–	534240	534254
16-4	1.00	12	1.28	0.640	534461	534471	WN_ _43_	534235	–	534240	534254
20-4	1.25	14	1.53	0.785	534462	534472	WN_ _43_	534230	534275	534240	534250
24-4	1.50	14	1.78	0.890	534463	534473	WN_ _43_	534230	534275	534240	534250

S-SCLCR/L for 7° Positive 80° Rhombic CC_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

S-SCLCR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Left Hand Code	Accessories		
							Applicable Insert	Screw Code	Torx® Key Code
4-2	0.315	4	0.354	0.188	534301	534311	CC_ _21.5_	210354	549505
6-2	0.375	6	0.468	0.250	534302	534312	CC_ _21.5_	210350	549505
8-2	0.500	7	0.560	0.290	534303	534313	CC_ _21.5_	210350	549505
8-3	0.500	7	0.600	0.312	534304	534314	CC_ _32.5_	210351	302319
10-3	0.625	8	0.866	0.406	534305	534315	CC_ _32.5_	210351	302319
12-3	0.750	10	0.920	0.500	534306	534316	CC_ _32.5_	210351	302319
16-3	1.000	12	1.120	0.609	534307	534317	CC_ _32.5_	210351	302319

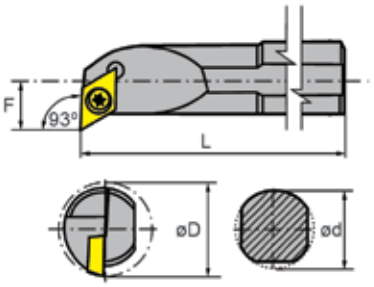
Boring Bars

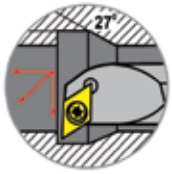
S-SDUCR for 7° Positive 55° Rhombic DC_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

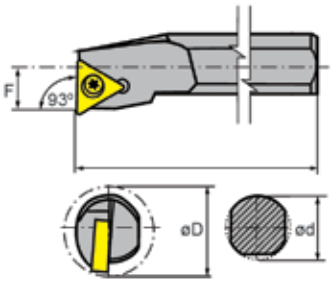
S-SDUCR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Accessories		
						Applicable Insert	Screw Code	Torx® Key Code
6-2	0.375	6	0.625	0.375	534331	DC_ _21.5_	210350	549505
8-2	0.500	6	0.780	0.437	534332	DC_ _21.5_	210350	549505
10-2	0.625	8	0.840	0.500	534333	DC_ _21.5_	210350	549505
12-3	0.750	10	1.125	0.562	534334	DC_ _32.5_	210351	302319
16-3	1.000	12	1.500	0.750	534335	DC_ _32.5_	210351	302319

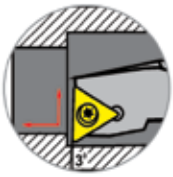
S-STUCR for 7° Positive Triangular TC_ _ Inserts





APPLICABLE INSERT

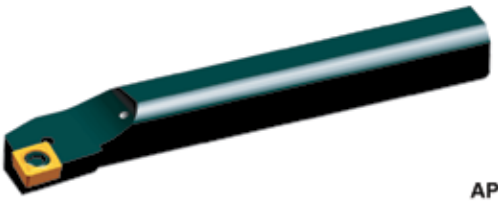




RIGHT HAND SHOWN

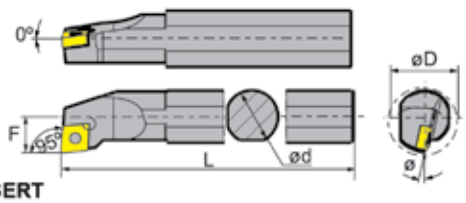
S-STUCR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Accessories		
						Applicable Insert	Screw Code	Torx® Key Code
8-2	0.500	6	0.590	0.287	534351	TC_ _21.5_	210350	549505
10-2	0.625	8	0.750	0.350	534352	TC_ _21.5_	210350	549505
12-3	0.750	10	0.845	0.422	534353	TC_ _32.5_	210351	302319
16-3	1.000	12	1.115	0.555	534354	TC_ _32.5_	210351	302319

S-SCLCR for 80° Rhombic CC_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

SCLCR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Accessories		
						Applicable Insert	Screw Code	Torx® Key Code
A06F-06	0.250	3.15	0.375	0.177	533001	CC_ _21.5_	–	210354
A10J-06	0.375	4.30	0.600	0.275	533002	CC_ _21.5_	–	210354
A12K-06	0.500	5.00	0.750	0.354	533003	CC_ _21.5_	–	210354
A16M-06	0.625	6.00	0.875	0.433	533004	CC_ _21.5_	–	210354
A12K-09	0.500	5.00	0.750	0.354	533006	CC_ _32.5_	302319	210351
A16M-09	0.625	6.00	0.875	0.433	533007	CC_ _32.5_	302319	210351

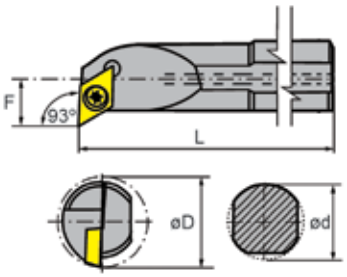
Boring Bars

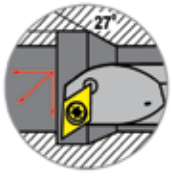
S-SDUCR for 55° Rhombic DC_ _ Inserts





APPLICABLE INSERT

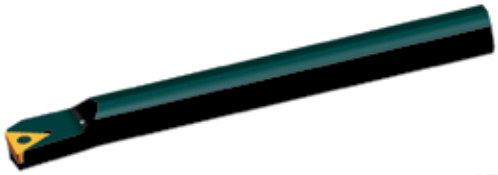




RIGHT HAND SHOWN

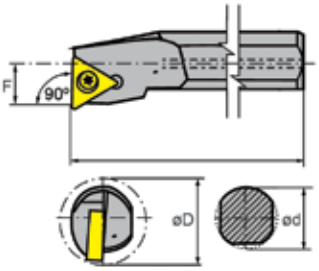
SDUCR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Accessories		
						Applicable Insert	Screw Code	Torx® Key Code
A12K-07	0.500	5	0.750	0.354	533021	DC_ _21.5_	210354	–
A16M-07	0.625	6	0.875	0.433	533022	DC_ _21.5_	210354	–

S-STFCR for Triangular TC_ _ Inserts





APPLICABLE INSERT





RIGHT HAND SHOWN

STFCR/L	Ød (Inch)	L (Inch)	ØD (Inch)	F (Inch)	Right Hand Code	Accessories		
						Applicable Insert	Screw Code	Torx® Key Code
A10J-11	0.375	4.30	0.625	0.275	533041	TC_ _21.5_	210354	–
A12K-11	0.500	5.00	0.750	0.354	533042	TC_ _21.5_	210354	–
A16M-11	0.625	6.00	0.875	0.433	533043	TC_ _21.5_	210354	–

Boring Bar Sets



534319



534320



534321



534322

Description	Boring Bars Included (Inch)	TiN Inserts Included	No. of Torx® Keys Included	No. of Spare Screws Included	Code
3pc. Right Hand	0.315, 3/8, 1/2	CCMT21.51 (6pcs)	1	1	534319
3pc. Right Hand	3/8, 1/2, 5/8	CCMT21.51 (2pcs) and CCMT32.52 (4pcs)	2	2	534320
3pc. Right Hand	1/2, 5/8, 3/4	CCMT32.52 (6pcs)	1	1	534321
5pc. Right Hand	0.315, 3/8, 1/2, 5/8, 3/4	CCMT21.51 (4pcs) and CCMT32.52 (6pcs)	2	2	534322

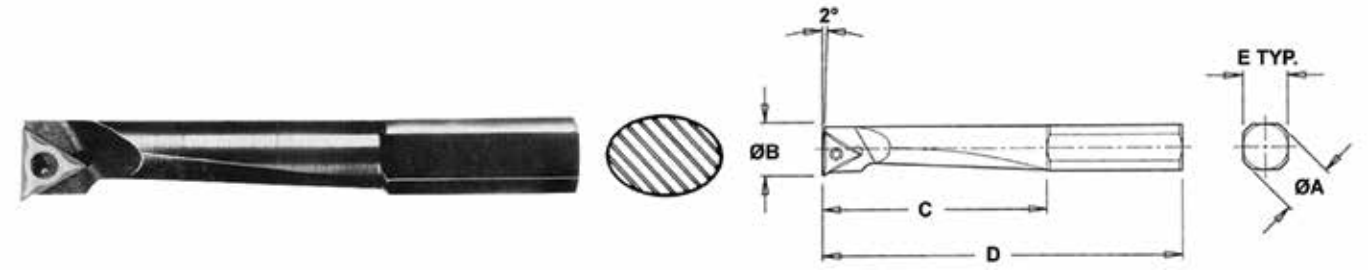
Boring Bars

CRITERION

Indexable Insert Boring Bars for Boring Heads

For added strength and rigidity, the quill portion of the shank is oval shaped. In addition to providing greater chip clearance, this design helps eliminate tool deflection, resulting in better cutting performance.

- Minimum bore ranges from 1/4" to 1-1/4"
- Standard length for greater bore depths
- 4 parallel flats designed to place the cutting edge on the centerline
- TA boring bars work equally well in machining centers and turning centers
- Use industry standard inserts



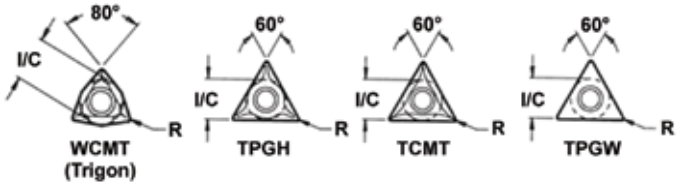
Insert I/C (Inch)	A Shank Diameter (Inch)	B Min. Bore Diameter (Inch)	C (Inch)	D (Inch)	E (Inch)	Code	Accessories	
							Insert Screw	Torx® Wrench
WCMT 1.2 (1) 0.5	1/2	1/4	1-1/16	2-7/16	7/16	250320	250340	718405
TCMT 1.2 (1.2) 1 UF	1/2	3/8	1-3/4	3-1/16	7/16	250322	250340	718405
TPGT/W 2 (1.5)	1/2	7/16	2-1/16	3-3/8	7/16	250323	–	549505
TPGT/W 2 (1.5)	1/2	1/2	2-3/16	3-1/2	7/16	250324	–	549505
TPGT/W 2 (1.5)	3/4	1/2	2-1/2	4-1/4	41/64	250325	–	549505
TPGT/W 321	3/4	3/4	3	4-11/16	41/64	250326	250342	718401
TPGT/W 321	3/4	1	3-1/2	5-1/8	41/64	250327	250342	718401
TPGT/W 321	3/4	1-1/4	4	5-9/16	41/64	250328	250342	718401
TPGT/W 2 (1.5)	1	1/2	2-3/8	4-1/4	55/64	250329	–	549505
TPGT/W 321	1	3/4	2-7/8	4-11/16	55/64	250330	250342	718401
TPGT/W 321	1	1	3-1/2	5-1/8	55/64	250331	250342	718401
TPGT/W 321	1	1-1/4	3-7/8	5-9/16	55/64	250332	250342	718401

Indexable Insert Boring Bar Sets



Size (Inch)	No. of Pieces	Code
1/2	5	250350
3/4	4	250351
1	4	250352

Applicable Inserts



Insert I/C (Inch)	Insert	Radius (Inch)	Grade C2 Code	Grade C6 Code
0.156	WCMT 1.2 (1) 0.5	0.008	250360	250370
0.156	TCMT 1.2 (1.2) 1 UF	0.015	250362	250372
0.250	TPMT 2 (1.5) 1.2 C	0.015	250363	250373
0.375	TPGH 321	0.015	577433	577435
0.375	TPGW 321	0.015	250366	250376

Boring Bars

Indexable Insert Boring Bars for Boring Heads



- Supplied with grade C5 inserts



Shank Size (Inch)	Minimum Bore (Inch)	Bore Depth (Inch)	Overall Length (Inch)	Tool Reference	Code
1/2	7/16	1-1/4	2-3/4	NB7S	210365
1/2	7/16	1-7/8	3-3/8	NB7M	210366
1/2	7/16	2-1/2	4	NB7L	210367
1/2	1/2	1-1/2	3	NB8S	210368
1/2	1/2	2-1/8	3-5/8	NB8M	210369
1/2	1/2	2-3/4	4-1/4	NB8L	210370
1/2	9/16	1-3/4	3-1/4	NB9S	210371
1/2	9/16	2-3/8	3-7/8	NB9M	210372
1/2	9/16	3	4-1/2	NB9L	210373
5/8	7/16	1-1/4	3	NC7S	210374
5/8	7/16	1-7/8	3-5/8	NC7M	210375
5/8	7/16	2-1/2	4-1/4	NC7L	210376
5/8	1/2	1-1/2	3-1/4	NC8S	210377
5/8	1/2	2-1/8	3-7/8	NC8M	210378
5/8	1/2	2-3/4	4-1/2	NC8L	210379
5/8	9/16	1-3/4	3-1/2	NC9S	210380
5/8	9/16	2-3/8	4-1/8	NC9M	210381
5/8	9/16	3	4-3/4	NC9L	210382
5/8	5/8	2	3-3/4	NC10S	210383
5/8	5/8	2-5/8	4-3/8	NC10M	210384
5/8	5/8	3-1/4	5	NC10L	210385
5/8	11/16	2-1/4	4	NC11S	210386
5/8	11/16	2-7/8	4-5/8	NC11M	210387
5/8	11/16	3-1/2	5-1/4	NC11L	210388
3/4	7/16	1-1/4	3-1/4	ND7S	210389
3/4	7/16	1-7/8	3-7/8	ND7M	210390
3/4	7/16	2-1/2	4-1/2	ND7L	210391
3/4	1/2	1-1/2	3-1/2	ND8S	210392
3/4	1/2	2-1/8	4-1/8	ND8M	210393
3/4	1/2	2-3/4	4-3/4	ND8L	210394
3/4	9/16	1-3/4	3-3/4	ND9S	210395
3/4	9/16	2-3/8	4-3/8	ND9M	210396
3/4	9/16	3	5	ND9L	210397
3/4	5/8	2	4	ND10S	210398
3/4	5/8	2-5/8	4-5/8	ND10M	210399
3/4	5/8	3-1/4	5-1/4	ND10L	210400
3/4	11/16	2-1/4	4-1/4	ND11S	210401
3/4	11/16	2-7/8	4-7/8	ND11M	210402
3/4	11/16	3-1/2	5-1/2	ND11L	210403
3/4	3/4	2-1/2	4-1/2	ND12S	210404
3/4	3/4	3-1/4	5-1/4	ND12M	210405
3/4	3/4	4	6	ND12L	210406
3/4	13/16	2-3/4	4-3/4	ND13S	210407
3/4	13/16	4	6	ND13M	210408
3/4	13/16	4-1/2	6-1/2	ND13L	210409
5/8 – 12pc Set		Included Sizes: 1/2 to 11/16 Inch			210411



Applicable Carbide Inserts

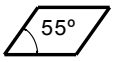
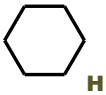
- Triangle - Positive rake
- Ground all over with chip groove on one side
- 3/32” thick

Insert I/C (Inch)	Insert	Radius (Inch)	Grade C2 Code	TiN Coated Code
1/4	TPGH 21.50	0.008	–	210357
1/4	TPGH 21.51	1/64	–	577463
1/4	TPGH 21.52	1/32	210355	–

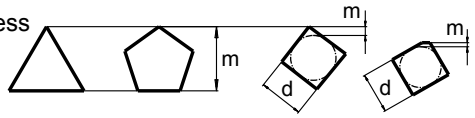
Replacement Parts

Description	Code
Torx® drive flat head screw for 1/4” I/C	577457

Turning Inserts Identification Guide – ANSI vs. ISO

Insert Shape			
 A	 B	 C	 D
 E	 K	 L	 M
 H	 O	 P	 R
 S	 T	 V	 W

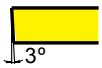
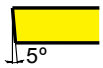
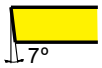
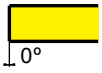
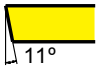
- d: Theoretical diameter of inscribed circle
- t: Insert thickness
- m: See diagram

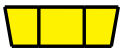
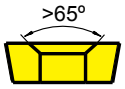
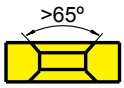
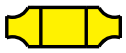
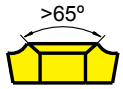
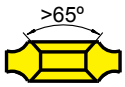
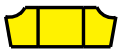
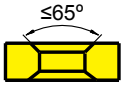
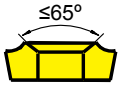
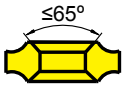
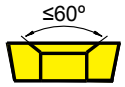


Tolerances in Inch			
Class	d	m	t
A	±0.0010	±0.0002	±0.0010
C	±0.0010	±0.0005	±0.0010
H	±0.0005	±0.0005	±0.0010
E	±0.0010	±0.0010	±0.0010
G	±0.0010	±0.0010	±0.005
J	±0.002 – ±0.006	±0.0002	±0.001
K	±0.002 – ±0.006	±0.0005	±0.001
L	±0.002 – ±0.006	±0.0010	±0.001
★ M	±0.002 – ±0.006	±0.003 – ±0.008	±0.005
★ U	±0.003 – ±0.01	±0.005 – ±0.015	±0.005

★ *Exact tolerance is determined by the shape and size of the insert. For a complete listing of tolerances, please refer to ANSI (B212.4-1995)*

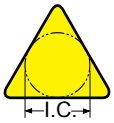
T N M G

Insert Clearance Angle	
 A	 B
 C	 D
 E	 F
 G	 N
 P	SPECIAL O

Geometry and Clamping Type	
 A	 B
 C	 F
 G	 H
 J	 M
 N	 Q
 R	 T
 U	 W

Turning Inserts Identification Guide – ANSI vs. ISO

Insert I.C. Size



(I.C.) shown in 1/32" increments on inserts less than 1/4" I.C.

(I.C.) shown in 1/8" increments on inserts 1/4" and over

(5)	= 5/32	**5**	= 5/8
2	= 1/4	**6**	= 3/4
3	= 3/8	**8**	= 1
4	= 1/2		

Insert Thickness

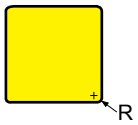


(T) shown in 1/32" increments on inserts less than 1/4" I.C.

(T) shown in 1/16" increments on inserts 1/4" and over

1	= 1/16	**3**	= 3/16
(1.2)	= 5/64	**4**	= 1/4
(1.5)	= 3/32	**5**	= 5/16
2	= 1/8	**6**	= 3/8
(2.5)	= 5/32		

Insert Radius



(R) shown in 1/64" increments

0	= 1/128	**4**	= 1/16
1	= 1/64	**5**	= 5/64
2	= 1/32	**6**	= 3/32
3	= 3/64	**8**	= 1/8

Chipbreaker Style (Negative)



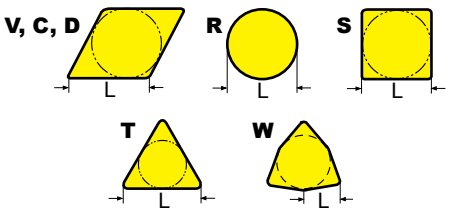
4 3 3 PM

ANSI (American National Standards Institute)

ISO (International Standards Organization)

22 04 12

Insert Cutting Edge Length



I.C.		Cutting Edge Length by Shape (mm) Designated using insert shape symbol						
mm	Inch	C	D	R	S	T	V	W
3.97	5/32	-	-	-	-	06	-	-
6.35	1/4	06	07	-	-	11	11	04
9.53	3/8	09	11	09	09	16	16	06
12.70	1/2	12	15	12	12	22	22	08
15.88	5/8	16	19	15	15	27	-	-
19.05	3/4	-	-	19	19	33	-	-
25.40	1	-	-	-	25	-	-	-

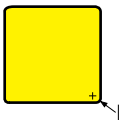
Insert Thickness



(T) shown in 1 mm increments, single integers are to be preceded by a "0"

	mm	Ref. Inch
01 =	1.59	1/16
T1 =	1.98	5/64
02 =	2.38	3/32
03 =	3.18	1/8
T3 =	3.97	5/32
04 =	4.76	3/16
06 =	6.34	1/4
07 =	7.94	5/16
09 =	9.52	3/8

Insert Radius



(R) shown in 1/10 mm increments

	mm	Ref. Inch
00 =	Sharp Point	
02 =	0.2	1/128
04 =	0.4	1/64
08 =	0.8	1/32
12 =	1.2	3/64
16 =	1.6	1/16
24 =	2.4	3/32
32 =	3.2	1/8
00 =	Round insert inch	
M0 =	Round insert metric	

Chipbreaker Style (Positive)



Turning Inserts Main Grades & Applications

YBC151
CVD COATED

P05-P25

An optimal combination of MT-TiCN, thick layers of Al_2O_3, and a TiN coating on a very hard substrate provides excellent wear resistance. It is an ideal grade for finishing steel, cast steel and stainless steel under high speed and dry machining.

YBC251
CVD COATED

P10-P35
M05-M20

An optimal combination of MT-TiCN, thick layers of Al_2O_3, and a TiN coating on a hard substrate provides a cutting edge with superior strength and toughness. It is suitable for a wide range of applications such as finishing, semi-finishing and light roughing of steel, cast steel and stainless steel.

YBC351
CVD COATED

P20-P45
M15-M30

An optimal combination of MT-TiCN, thick layers of Al_2O_3, and a TiN coating on an extremely hard substrate provides superior strength. It is well suited for light to medium roughing of steel, cast steel and stainless steel.

YBM151
CVD COATED

P20-P30
M05-M25

A combination of TiCN, thin layers Al_2O_3, and a TiN coating on a tough substrate provides excellent resistance against flank wear and plastic deformation. It is well suited for finishing and semi-finishing (turning as well as boring) of stainless steel.

YBM251
CVD COATED

P25-P40
M15-M35

An optimal combination of TiCN, thin layers Al_2O_3, and a TiN coating on a very fine substrate provides superb strength and toughness. It is a premium grade for semi-finishing to light roughing (turning and boring) of stainless steel at continuous and intermittent machining conditions.

YBM351
CVD COATED

P15-P35
M25-M40

A combination of TiN and TiAlN coated carbide provides this grade with excellent strength and impact resistance. It is well suited for rough turning and milling of stainless steels at low to moderate cutting speeds with interrupted cuts. Also suitable for high cutting speeds and heavy cutting in P30 range.

YBD102
CVD COATED

K01-K20

A combination of thick Al_2O_3, thick TiCN coating on a very hard substrate provides an optimized balance in wear resistance and flaking resistance when machining nodular cast iron at high speeds.

YBD151
CVD COATED

K10-K20

An optimal combination of MT-TiCN, thick layers of Al_2O_3, TiN coating on a tough substrate provides superb wear resistance. It is a premiere choice for medium to rough machining of cast iron and nodular cast iron under high cutting speeds.

YBD152
CVD COATED

K10-K25

A combination of medium thick Al_2O_3 and medium thick TiCN coatings provide excellent flake resistance. This general grade is suitable for turning in cast iron from moderate to high cutting speeds, and capable of demanding interrupted cutting conditions at moderate cutting speeds. It can also be used for milling cast iron.

YD101
UNCOATED

K10-K20
N05-N25

Uncoated carbide grade with fine size grain. Good for fine and semi-finishing machining of cast iron and non-ferrous materials. Ideal for machining aluminum.

YD201
UNCOATED

K10-K30
N05-N25

Uncoated carbide grade with good wear resistance and toughness. Suitable for roughing and semi-finishing of cast iron and heat-resistant alloys, as well as plastic and wood. Ideal for the aviation industry. Medium cutting speeds and a large feed rate is recommended.

Turning Inserts Main Grades & Applications

YBG102
PVD COATED

K01-K10
S10-S20

A combination of 2-4µ nc-TiAlN coating and fine carbide substrate is ideal for cast iron from light to medium load and turning of high-temperature alloys from finishing to semi-finishing.

YBG202
PVD COATED

P01-P20
M10-M20
K10-K20
S20-S30

A combination of 2-4µ nc-TiAlN coating on an ultra-fine carbide substrate of high tensile strength and toughness is suitable for milling from light to medium load and bore machining of many materials, turning of stainless steel from finishing to semi-finishing and rough turning of high-temperature alloys.

YBG302
PVD COATED

P10-P40
M10-M30
K20-K40
S20-S30

A combination of 2-4µ nc-TiAlN coating and a tough substrate. It is suitable for medium load milling, bore machining, parting and grooving in a wide range of materials. It is also suitable for turning of stainless steel from semi-finishing to roughing.

YNG151
CERMET

P05-P15
M05-M15
K10-K30

TiCN based cermet, with superb resistance to thermoplastic transmutation and resistant built-up-edge is suitable for semi-finishing and finishing steel, stainless steel and cast iron.

YCB011
PCBN

K01-K10
H01-H10

PCBN tipped inserts provide high wear resistance and high tensile strength. They are suitable for high speed and high precision machining of cast iron, heat resistant alloys, Fe-based P/M materials.

YCB012
PCBN

K01-K10
H05-H15

PCBN tipped inserts provide very high tensile hardness and heat stability. They are most suitable for the continuous and slightly intermittent finishing of hardened steel (HRC 45-65) and cast iron.

YCD011
PCD

K01-K10
N01-N10

PCD tipped inserts exhibit high tensile hardness, good wear resistance, low friction and heat conductivity. They are suitable for machining non-ferrous metals (e.g. Cu, Al, Mg, Ti, Al-alloys with high silicon), and non-metallic materials (e.g. fiberglass, ceramics, reinforced plastic).

Turning Inserts Application Guide

ISO-P	ISO-M	ISO-K	ISO-N	ISO-S	ISO-H
YNG151 Cermet		YNG151 Cermet			
YBC151 CVD Coated		YBD151 CVD Coated			
YBC251 CVD Coated	YBC251 CVD Coated	YBC151 CVD Coated			
YBM151 CVD Coated	YBM151 CVD Coated	YD101 Uncoated	YCD011 PCD	YD201 Uncoated	YCB011 PCBN
YBC351 CVD Coated	YBC351 CVD Coated	YD201 Uncoated	YD101 Uncoated	YBG202 PVD Coated	YCB012 PCBN
YBM251 CVD Coated	YBM251 CVD Coated	YBD152 CVD Coated	YD201 Uncoated	YBG302 PVD Coated	YBC151 CVD Coated
YBG202 PVD Coated	YBM351 CVD Coated	YBD102 CVD Coated			YD201 Uncoated
YBG302 PVD Coated	YBG203 PVD Coated	YBG202 PVD Coated			
	YBG202 PVD Coated	YBG302 PVD Coated			
	YBG302 PVD Coated				

Wear Resistance

Toughness

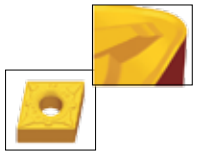


P	M	K	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Materials	High-Temperature Alloys & Titanium	Hard Materials

Negative Insert Chipbreaker Identification Guide

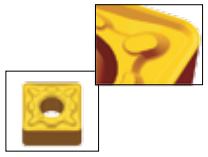
DF — Finishing

Unique super-finishing chipbreaker enables optimum chip flow in axial and radial cutting operations at very low feeds and cutting depths. Low cutting forces provide superb surface finish.



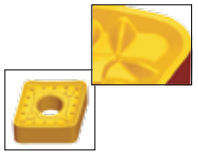
DM — Medium Machining

A premiere choice for turning applications of steel and stainless steel. It is ideal for semi-finishing to light roughing applications. Delivers high productivity and trouble-free machining. Provides good surface finish.



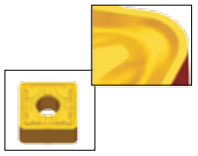
DR — Roughing

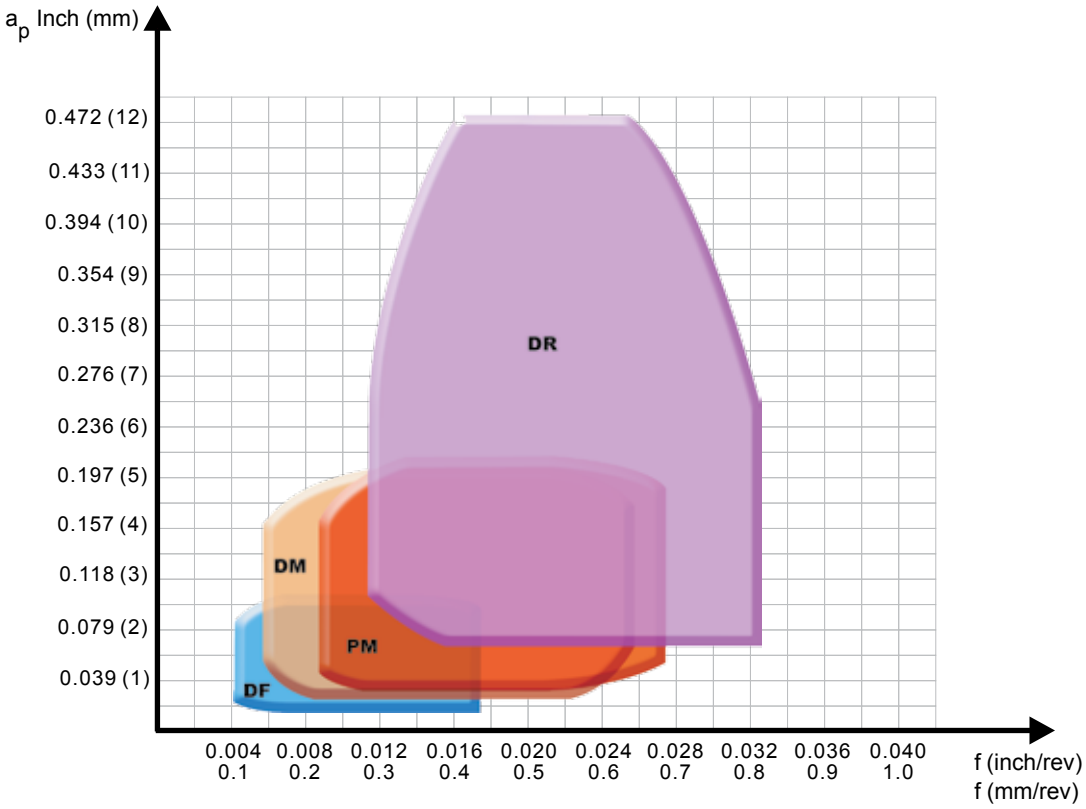
All purpose chipbreaker for roughing applications. Provides excellent value and high productivity, great chip flow control and the best combination of edge strength and low cutting force.



PM — Intermittent Cutting

All purpose chipbreaker with the broadest working area for intermittent cuts. The stronger cutting edge enables intermittent cutting.





Application Guide for Various Negative Chipbreakers

FOR FINISHING: ▶ **ap** = Depth of Cut ▶ **fn** = Feed per Revolution

Recommended Data	Workpiece Material	Recommended Geometry Inserts with Negative Angle						
a p=0.1-2.0 mm ap=0.004-0.080 inch fn=0.05-0.35 mm/rev. fn=0.002-0.014 inch/rev.	P	-DF	 CNMG	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG
ap=0.1-2.0 mm ap=0.004-0.080 inch fn=0.1-0.3 mm/rev. fn=0.004-0.012 inch/rev.	M	-DF	 CNMG	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG
ap=0.5-2.0 mm ap=0.020-0.080 inch fn=0.075-0.4 mm/rev. fn=0.003-0.016 inch/rev.	K	-DF	 CNMG	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG
		RCMX	 RCMX	 RNMG				
ap=0.1-2.0 mm ap=0.004-0.080 inch fn=0.05-0.35 mm/rev. fn=0.002-0.014 inch/rev.	N	RCMX	 RCMX					
ap=0.1-2.0 mm ap=0.004-0.080 inch fn=0.1-0.3 mm/rev. fn=0.004-0.012 inch/rev.	S	-DF	 CNMG	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG
		RCMX	 RCMX					
ap=0.1-1.5 mm ap=0.004-0.060 inch fn=0.1-0.2 mm/rev. fn=0.004-0.008 inch/rev.	H	_NGA	 CNGA	 SNGA	 DNGA	 TNGA	 RNGA	
		PCBN/ PCD	 CCGW	 CNGA	 DCGW	 TCGW	 DNGA	 SNGA

Application Guide for Various Negative Chipbreakers

FOR FINISHING: ▶ **ap** = Depth of Cut ▶ **fn** = Feed per Revolution

Recommended Data	Workpiece Material	Recommended Geometry Inserts with Negative Angle						
ap=1.5-5.0 mm ap=0.060-0.200 inch fn=0.2-0.5 mm/rev. fn=0.008-0.020 inch/rev.	P	-DM	 CNMG	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG
		-PM	 CNMG	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG
		RCMX	 RCMX	 RNMG				
ap=1.5-4.0 mm ap=0.060-0.160 inch fn=0.2-0.4 mm/rev. fn=0.008-0.016 inch/rev.	M	-DM	 CNMG	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG
ap=1.5-4.0 mm ap=0.060-0.160 inch fn=0.2-0.4 mm/rev. fn=0.008-0.016 inch/rev.	K	NGA	 CNGA	 SNGA	 DNGA	 TNGA	 RNGA	
		-PM	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG	
		RCMX	 RCMX					
ap=1.5-5.0 mm ap=0.060-0.200 inch fn=0.2-0.5 mm/rev. fn=0.008-0.020 inch/rev.	N	RCMX	 RCMX					
ap=1.5-4.0 mm ap=0.060-0.160 inch fn=0.2-0.5 mm/rev. fn=0.008-0.020 inch/rev.	S	-DM	 CNMG	 DNMG	 SNMG	 TNMG	 VNMG	 WNMG
		-PM	 DNMG	 SNMG	TNMG	VNMG	WNMG	
ap=0.5-3.5 mm ap=0.020-0.140 inch fn=0.2-0.4 mm/rev. fn=0.008-0.020 inch/rev.	H	_NGA	CNGA	SNGA	DNGA	TNGA	RNGA	
		PCBN/ PCD	CCGW	CNGA	DCGW	TCGW	DNGA	SNGA

Application Guide for Various Negative Chipbreakers

FOR FINISHING: ▶ **ap** = Depth of Cut ▶ **fn** = Feed per Revolution

Recommended Data	Workpiece Material	Recommended Geometry Inserts with Negative Angle	
ap=3.0-12.0 mm ap=0.125-0.500 inch fn=0.3-0.8 mm/rev. fn=0.012-0.032 inch/rev.	P	-DR	 CNMM  DNMM  SNMM
		RCMX	 RCMX
ap=3.0-10.0 mm ap=0.125-0.375 inch fn=0.4-0.7 mm/rev. fn=0.16-0.280 inch/rev.	M	-DR	 CNMM  DNMM  SNMM  TNMM
ap=3.0-9.0 mm ap=0.125-0.360 inch fn=0.4-0.7 mm/rev. fn=0.012-0.028 inch/rev.	K	_NGA	 CNGA  SNGA  DNGA  TNGA  RNMG
ap=2.0-12.0 mm ap=0.080-0.500 inch fn=0.3-0.7 mm/rev. fn=0.012-0.028 inch/rev.	N	RCMX	 RCMX
ap=2.0-7.0 mm ap=0.080-0.28 inch fn=0.3-0.7 mm/rev. fn=0.012-0.028 inch/rev.	S	RCMX	 RCMX
ap=2.0-7.0 mm ap=0.080-0.028 inch fn=0.3-0.6 mm/rev. fn=0.012-0.024 inch/rev.	H	_NGA	 CNGA  SNGA  DNGA  TNGA  RNGA

Turning Inserts

Carbide – Negative Chipbreakers – CVD Coated

CNMG – Negative 80° Rhombic



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
CNMG432DF	YBC251	DF	0.500	0.187	0.031	573614
CNMG432DF	YBC351	DF	0.500	0.187	0.031	573616
CNMG432DF	YBM251	DF	0.500	0.187	0.031	573624
CNMG432DM	YBC151	DM	0.500	0.187	0.031	573632
CNMG432DM	YBC251	DM	0.500	0.187	0.031	573634
CNMG433DM	YBC251	DM	0.500	0.187	0.047	573674
CNMG643DM	YBC251	DM	0.750	0.250	0.047	573744
CNMG643PM	YBD102	PM	0.750	0.250	0.047	573758

DNMG – Negative 55° Rhombic



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
DNMG331DF	YBM251	DF	0.375	0.187	0.016	574040
DNMG432DF	YBC251	DF	0.500	0.187	0.031	574088
DNMG432DM	YBC251	DM	0.500	0.187	0.031	574096
DNMG431PM	YBC151	PM	0.500	0.187	0.016	574082
DNMG431PM	YBC251	PM	0.500	0.187	0.016	574084
DNMG432PM	YBC251	PM	0.500	0.187	0.031	574108

TNMG – Negative Triangular



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
TNMG433DM	YBC351	DM	0.500	0.187	0.047	575520
TNMG432PM	YBC251	PM	0.500	0.187	0.031	575490
TNMG432GP	YBC251	GP	0.500	0.187	0.031	575458

VNMG – Negative 35° Rhombic



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
VNMG331DF	YBC151	DF	0.375	0.187	0.016	575752
VNMG331DF	YBC251	DF	0.375	0.187	0.016	575754
VNMG332DF	YBC251	DF	0.375	0.187	0.031	575784
VNMG332DM	YBC251	DM	0.375	0.187	0.031	575794
VNMG-331PM	YBC251	PM	0.375	0.187	0.016	575764

WNMG – Negative 80° Trigon



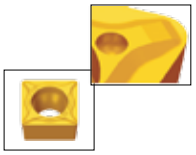
ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
WNMG432DF	YBC251	DF	0.500	0.187	0.031	575968
WNMG432DM	YBC251	DM	0.500	0.187	0.031	575980
WNMG432DM	YBC351	DM	0.500	0.187	0.031	575982
WNMG433DM	YBC251	DM	0.500	0.187	0.047	575703
WNMG432PM	YBC251	PM	0.500	0.187	0.031	575717
WNMG432PM	YBC351	PM	0.500	0.187	0.031	575719
WNMG433PM	YBC251	PM	0.500	0.187	0.047	575729

Positive Insert Chipbreaker Identification Guide

KCT

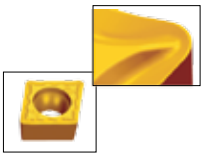
HF Finishing

Optimized chipbreaker for precision finishing applications with sharp cutting edge. Provides excellent chip control and surface finish at small depths of cut and small feed rates.



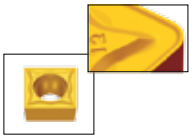
HM Medium Machining

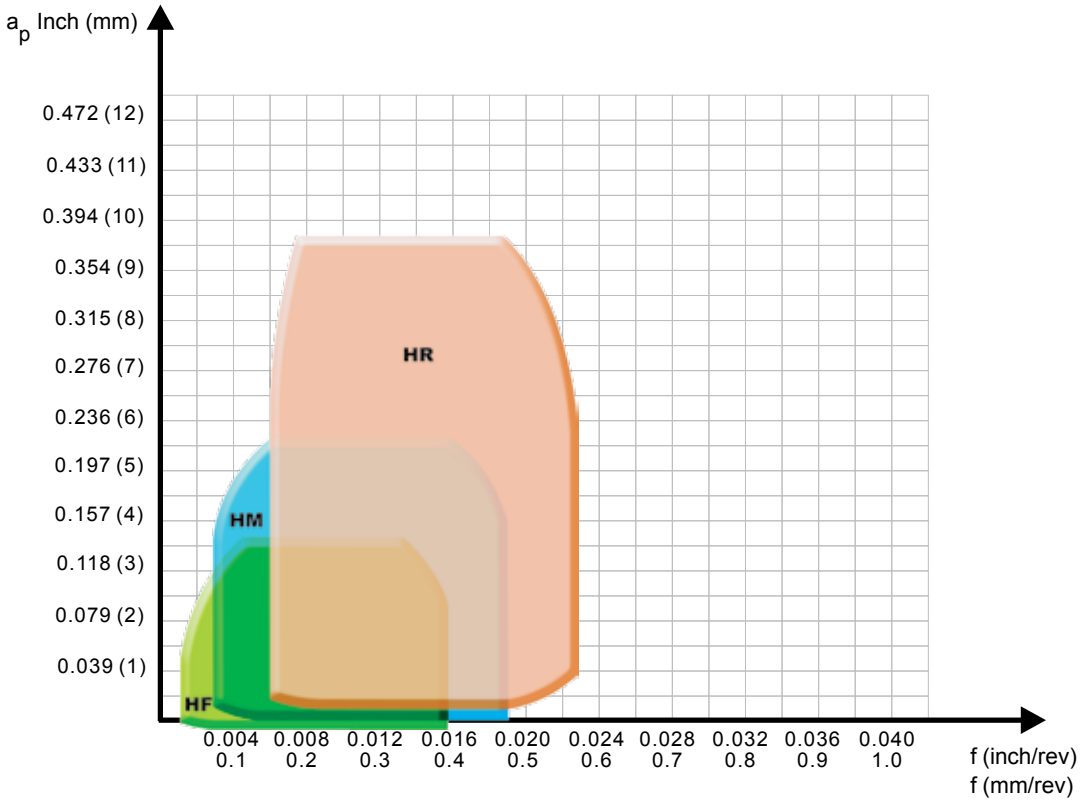
Premiere choice for semi-finishing bores. Unique chipbreaker enables the chips to flow smoothly.



HR Roughing

Chipbreaker with a strong cutting edge, for tough operations like interrupted cuts and castings.





Application Guide for Various Positive Chipbreakers

FOR FINISHING: ▶ **ap** = Depth of Cut ▶ **fn** = Feed per Revolution

Recommended Data	Workpiece Material	Recommended Geometry Inserts with Positive Angle						
ap=0.1-2.0 mm ap=0.004-0.080 inch fn=0.05-0.30 mm/rev. fn=0.002-0.012 inch/rev.	P	-HF	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT	
ap=0.1-2.0 mm ap=0.004-0.080 inch fn=0.1-0.3 mm/rev. fn=0.004-0.012 inch/rev.	M	-HF	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT	
ap=0.1-1.5 mm ap=0.004-0.060 inch fn=0.1-0.3 mm/rev. fn=0.004-0.012 inch/rev.	K	-HF	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT	
ap=0.1-2.0 mm ap=0.004-0.080 inch fn=0.05-0.4 mm/rev. fn=0.002-0.016 inch/rev.	N	-LH	 CCGX	 DCGX	 TCGX	 VCGX		
ap=0.1-1.5 mm ap=0.004-0.060 inch fn=0.1-0.3 mm/rev. fn=0.004-0.012 inch/rev.	S	-HF	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT	
ap=0.1-1.5 mm ap=0.004-0.060 inch fn=0.05-0.25 mm/rev. fn=0.002-0.010 inch/rev.	H	-HF	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT	
		PCBN/ PCD	 CCGW	 DCGW	 TCGW	 TPGN	 SPGN	 VCGW

Application Guide for Various Positive Chipbreakers

FOR FINISHING: ▶ **ap** = Depth of Cut ▶ **fn** = Feed per Revolution

Recommended Data	Workpiece Material	Recommended Geometry Inserts with Positive Angle					
ap=1.0-4.0 mm ap=0.040-0.160 inch fn=0.2-0.5 mm/rev. fn=0.008-0.020 inch/rev.	**P**	**-HM**	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
ap=1.0-3.5 mm ap=0.040-0.140 inch fn=0.2-0.4 mm/rev. fn=0.008-0.016 inch/rev.	**M**	**-HM**	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
ap=1.0-3.0 mm ap=0.040-0.120 inch fn=0.2-0.4 mm/rev. fn=0.008-0.016 inch/rev.	**K**	**-HM**	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
ap=1.0-4.0 mm ap=0.040-0.160 inch fn=0.2-0.4 mm/rev. fn=0.008-0.016 inch/rev.	**N**	**-LH**	 CCGX	 DCGX	 TCGX	 VCGX	
ap=1.0-3.5 mm ap=0.040-0.140 inch fn=0.2-0.4 mm/rev. fn=0.008-0.016 inch/rev.	**S**	**-HM**	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
ap=1.0-3.0 mm ap=0.040-0.120 inch fn=0.2-0.4 mm/rev. fn=0.008-0.016 inch/rev.	**H**	**-HM**	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
		PCBN/ PCD	 CCGW	 DCGW	 TCGW	 TPGN	 SPGN	 VCGW

Application Guide for Various Positive Chipbreakers

FOR FINISHING: ▶ **ap** = Depth of Cut ▶ **fn** = Feed per Revolution

Recommended Data	Workpiece Material	Recommended Geometry Inserts with Positive Angle				
ap=3.0-7.0 mm ap=0.120-0.280 inch fn=0.3-0.7 mm/rev. fn=0.012-0.028 inch/rev.	P	-HR	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
ap=2.0-5.0 mm ap=0.080-0.200 inch fn=0.3-0.6 mm/rev. fn=0.012-0.024 inch/rev.	M	-HR	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
ap=3.0-6.0 mm ap=0.120-0.240 inch fn=0.3-0.6 mm/rev. fn=0.012-0.024 inch/rev.	K	-HR	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
ap=0.5-5.0 mm ap=0.020-0.200 inch fn=0.2-0.6 mm/rev. fn=0.008-0.024 inch/rev.	N	-LH	 CCGX	 DCGX	 TCGX	 VCGX	
ap=2.0-6.0 mm ap=0.080-0.240 inch fn=0.3-0.6 mm/rev. fn=0.012-0.024 inch/rev.	S	-HR	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT
ap=2.0-5.0 mm ap=0.080-0.200 inch fn=0.3-0.5 mm/rev. fn=0.012-0.020 inch/rev.	H	-HR	 CCMT	 DCMT	 SCMT	 TCMT	 VBMT

Turning Inserts

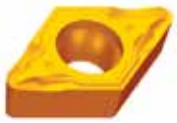
Carbide – Positive Chipbreakers – CVD Coated

CCMT & CCMW – Positive 80° Rhombic



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
CCMT2(1.5)1HF	YBC151	HF	0.250	0.094	0.016	573166
CCMT2(1.5)1HM	YBC151	HM	0.250	0.094	0.016	573182
CCMT2(1.5)2HM	YBC151	HM	0.250	0.094	0.031	573212
CCMT3(2.5)2HM	YBC251	HM	0.375	0.156	0.031	573290
CCMT432HR	YBD152	HR	0.500	0.187	0.031	573384
CCMW2(1.5)1	YBD151	–	0.250	0.094	0.016	573394

DCMT – Positive 55° Rhombic



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
DCMT2(1.5)1HM	YBC251	HM	0.250	0.094	0.016	573840

SCMT – Positive Square



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
SCMT3(2.5)1HM	YBC251	HM	0.375	0.156	0.016	574560

TCMT – Positive Triangular



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
TCMT2(1.5)1HF	YBC251	HF	0.250	0.094	0.016	575150
TCMT2(1.5)1HM	YBC251	HM	0.250	0.094	0.016	575160

VBMT – Positive 35° Rhombic



ANSI	CVD Coated Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
VBMT331HM	YBC251	HM	0.375	0.187	0.016	575656
VBMT332HM	YBC251	HM	0.375	0.187	0.031	575678

Turning Inserts

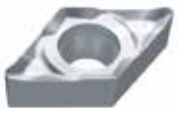
For Machining Aluminum – Uncoated

CCGX – Positive 80° Rhombic



ANSI	Uncoated Grade	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
CCGX2(1.5)0	YD101	0.250	0.094	0.008	573144
CCGX2(1.5)1	YD101	0.250	0.094	0.016	573146
CCGX2(1.5)2	YD101	0.250	0.094	0.031	573148
CCGX3(2.5)0	YD101	0.375	0.156	0.008	573150
CCGX3(2.5)1	YD101	0.375	0.156	0.016	573152
CCGX3(2.5)2	YD101	0.375	0.156	0.031	573154
CCGX432	YD101	0.500	0.187	0.031	573156

DCGX – Positive 55° Rhombic



ANSI	Uncoated Grade	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
DCGX2(1.5)0	YD101	0.250	0.094	0.008	573802
DCGX2(1.5)1	YD101	0.250	0.094	0.016	573804
DCGX3(2.5)0	YD101	0.375	0.156	0.008	573806
DCGX3(2.5)1	YD101	0.375	0.156	0.016	573808
DCGX3(2.5)2	YD101	0.375	0.156	0.031	573810

TCGX – Positive Triangular



ANSI	Uncoated Grade	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
TCGX2(1.5)1	YD101	0.250	0.094	0.016	575096
TCGX3(2.5)1	YD101	0.375	0.156	0.016	575098
TCGX3(2.5)2	YD101	0.375	0.156	0.031	575100

VCGX – Positive 35° Rhombic

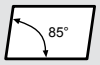


ANSI	Uncoated Grade	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
VCGX2(1.5)1	YD101	0.250	0.094	0.016	575732
VCGX331	YD101	0.375	0.187	0.016	575734
VCGX332	YD101	0.375	0.187	0.031	575751
VCGX333	YD101	0.375	0.187	0.047	575753

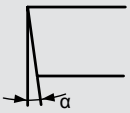
Turning Inserts Identification Guide

C	N	M	G
1	2	3	4

1 Insert Shape

							
A	B	C	D	E	H	K	L
							Special
O	P	R	S	T	V	W	X

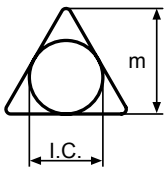
2 Clearance Angle

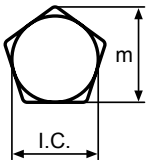


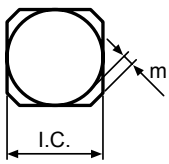
5°	7°	15°	20°	25°	30°	0°	11°
B	C	D	E	F	G	N	P

3 Tolerance

	Tolerance			I.C. Size					
	m	t	I.C.	.250	.375	.500	.625	.750	1
A	± .0002	± .0001	± .0001	•	•	•	•	•	•
C	± .0005	± .0010	± .0010	•	•	•	•	•	•
E	± .0010	± .0010	± .0010	•	•	•	•	•	•
F	± .0020	± .0010	± .0010	•	•	•	•	•	•
G	± .0010	± .0005	± .0010	•	•	•	•	•	•
H	± .0005	± .0010	± .0010	•	•	•	•	•	•
K	± .0005	± .0010	± .0020	•	•				
			± .0030			•			
			± .0040				•	•	
			± .0050						•
M	± .0030	± .0050	± .0020	•	•				
	± .0050		± .0030			•			
	± .0060		± .0040				•	•	
	± .0070		± .0050						•









4 Cross Section Shape

						 C'Sink40°~60°	 C'Sink40°~60°	Special
A	F	G	M	N	R	T	W	X

Turning Inserts Identification Guide

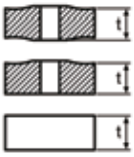
4	3	2	CHIP BREAKER
5	6	7	8

5 Cutting Edge Length

I.C. Size	Symbol	C	D	S	R	T	V	W	H
Inch		Metric							
5/32	1.2(5)	03	04	03	03	06		02	
3/16	1.5(6)	04	05	04	04	08	08		
7/32	1.8(7)	05	06	05	05	09	09	03	
1/4	2	06	07	06	06	11	11	04	
5/16	2.5	08	09	07	07	13	13	05	
3/8	3	09	11	09	09	16	16	06	
1/2	4	12	15	12	12	22	22	08	05
5/8	5	16	19	15	15	27	27	10	09
3/4	6	19	23	19	19	33	33	13	10
1	8	25	31	25	25	44	44	17	

*( ) symbol for small size insert

6 Thickness



Symbol(t)	Inch
1.5(3)	3/32
2	1/8
2.5	5/32
3	3/16
4	1/4
5	5/16
6	3/8

7 Nose Radius

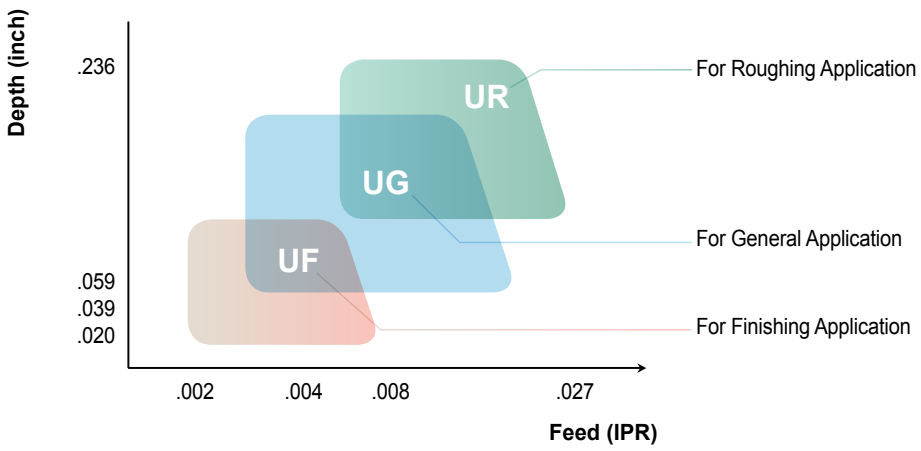


Symbol(t)	Inch
0.5	.008
1	1/64
2	1/32
3	3/64
4	1/16
5	5/64
6	3/32
00	Round insert

8 Chip Breaker

For Application

YG Turn Chip Breakers Application area



Turning Inserts

Carbide

CCMT



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
CCMT2(1.5)1UF	YG801	UF	0.254	0.094	0.016	577510
CCMT2(1.5)2UG	YG801	UG	0.254	0.094	0.031	577511
CCMT3(2.5)1UR	YG801	UR	0.381	0.156	0.016	577512
CCMT3(2.5)2UG	YG801	UG	0.381	0.156	0.031	577513
CCMT432UG	YG801	UG	0.508	0.187	0.031	577514

DCMT



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
DCMT2(1.5)1UF	YG801	UF	0.305	0.094	0.016	577515
DCMT3(2.5)1UF	YG801	UF	0.458	0.156	0.016	577516
DCMT3(2.5)2UG	YG801	UG	0.458	0.156	0.031	577517

RCMT



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
RCMT0602M0	YG801	–	–	0.094	–	577518
RCMT0803M0	YG801	–	–	0.125	–	577519
RCMT10T3M0	YG801	–	–	3.970	–	577520
RCMT1204M0	YG801	–	–	0.187	–	577521

SCMT



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
SCMT3(2.5)1UF	YG801	UF	0.375	0.156	0.016	577522
SCMT3(2.5)2UG	YG801	UG	0.375	0.156	0.031	577523

TCMT



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
TCMT2(1.5)1UF	YG801	UF	0.433	0.094	0.016	577524
TCMT3(2.5)1UF	YG801	UF	0.650	0.156	0.016	577525
TCMT3(2.5)2UG	YG801	UG	0.650	0.156	0.031	577526

VBMT



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
VBMT331UF	YG801	UF	0.654	0.187	0.016	577527
VBMT332UG	YG801	UG	0.654	0.187	0.031	577528

Turning Inserts

Carbide

CNMA & CNMG



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
CNMA432UC	YG1001	UC	0.508	0.187	0.031	577529
CNMA433UC	YG1001	UC	0.508	0.187	0.047	577530
CNMA543UC	YG1001	UC	0.635	0.250	0.047	577531
CNMG431UF	YG801	UF	0.508	0.187	0.016	577532
CNMG432UG	YG801	UG	0.508	0.187	0.031	577533
CNMG433UR	YG801	UR	0.508	0.187	0.047	577534

DNMG



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
DNMG431UF	YG801	UF	0.610	0.187	0.016	577535
DNMG432UG	YG801	UG	0.610	0.187	0.031	577536
DNMG441UF	YG801	UF	0.610	0.250	0.016	577537
DNMG442UG	YG801	UG	0.610	0.250	0.031	577538
DNMG443UR	YG801	UR	0.610	0.250	0.047	577539

SNMA & SNMG



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
SNMA432UC	YG1001	UC	0.500	0.187	0.031	577540
SNMA433UC	YG1001	UC	0.500	0.187	0.047	577541
SNMG431UF	YG801	UF	0.500	0.187	0.016	577542
SNMG432UG	YG801	UG	0.500	0.187	0.031	577543
SNMG433UR	YG801	UR	0.500	0.187	0.047	577544

TNMA, TNMG & TNUX



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
TNMA332UC	YG1001	UC	0.650	0.187	0.031	577545
TNMA333UC	YG1001	UC	0.650	0.187	0.047	577546
TNMG331UF	YG801	UF	0.650	0.187	0.016	577547
TNMG332UG	YG801	UG	0.650	0.187	0.031	577548
TNMG333UR	YG801	UR	0.650	0.187	0.047	577549
TNMG431UF	YG801	UF	0.866	0.187	0.016	577550
TNMG432UG	YG801	UG	0.866	0.187	0.031	577551
TNMG433UR	YG801	UR	0.866	0.187	0.047	577552
TNUX331L	YG801	–	0.650	0.187	0.016	577553
TNUX332L	YG801	–	0.650	0.187	0.031	577554
TNUX331R	YG801	–	0.650	0.187	0.016	577555
TNUX332R	YG801	–	0.650	0.187	0.031	577556

VNMG

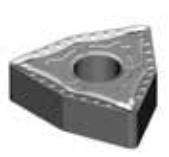


ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
VNMG331UF	YG801	UF	0.650	0.375	0.016	577557
VNMG332UG	YG801	UG	0.654	0.375	0.031	577558
VNMG333UR	YG801	UR	0.650	0.375	0.047	577559

Turning Inserts

Carbide

WNMA & WNMG



ANSI	Grade	Chipbreaker	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
WNMA431UC	YG1001	UC	0.342	0.187	0.016	577560
WNMA432UC	YG1001	UC	0.342	0.187	0.031	577561
WNMA433UC	YG1001	UC	0.342	0.187	0.047	577562
WNMG331UF	YG801	UF	0.254	0.187	0.016	577563
WNMG332UG	YG801	UG	0.254	0.187	0.031	577564
WNMG431UF	YG801	UF	0.342	0.187	0.016	577565
WNMG432UG	YG801	UG	0.342	0.187	0.031	577566
WNMG433UR	YG801	UR	0.320	0.187	0.047	577567

Turning Inserts

MULTI-MAT® Turning Inserts

LAMINA TECHNOLOGIES

Revolutionary Technology! Only one grade required to cut multiple materials!





Coated Grades – PVD – LT10

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	Code
KNUX 160405 R 11	KNUX 160405 R11	0.630	0.187	0.020	530046
RCMT 0602 MO	RCMT 0602 MO	0.236	0.094	0.118	530054
RCMT 0803 MO	RCMT 0803 MO	0.315	0.125	0.157	530055
RCMT 10T3 MO	RCMT 10T3 MO	0.394	0.156	0.197	530056
RCMT 1204 MO	RCMT 1204 MO	0.472	0.187	0.236	530057
TNUX 331 R	TNUX 160404 R	0.375	0.188	0.016	530096

NN: All Purpose Chipbreaker – Coated Grades – PVD – LT10

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	Code
CCMT 2(1.5)1 NN	CCMT 060204 NN	0.250	0.094	0.016	530010
CCMT 3(2.5)1 NN	CCMT 09T304 NN	0.375	0.156	0.016	530011
CCMT 3(2.5)2 NN	CCMT 09T308 NN	0.375	0.156	0.031	530012
CCMT 432 NN	CCMT 120408 NN	0.500	0.188	0.031	530140
CNMG 431 NN	CNMG 120404 NN	0.500	0.188	0.016	530015
CNMG 432 NN	CNMG 120408 NN	0.500	0.188	0.031	530017
CNMG 433 NN	CNMG 120412 NN	0.500	0.188	0.047	530020
CNMM 432 NR	CNMM 120408 NR	0.500	0.188	0.031	530025
CNMM 433 NR	CNMM 120412 NR	0.500	0.188	0.047	530027
CNMP 432 NN	CNMP 120408 NN	0.472	0.187	0.031	530030
CNMP 433 NN	CNMP 120412 NN	0.472	0.187	0.047	530031
DCMT 2(1.5)1 NN	DCMT 070204 NN	0.250	0.094	0.016	530032
DCMT 3(2.5)1 NN	DCMT 11T304 NN	0.375	0.156	0.016	530033
DCMT 3(2.5)2 NN	DCMT 11T308 NN	0.375	0.156	0.031	530034
DNMG 331 NN	DNMG 110404 NN	0.375	0.188	0.016	530037
DNMG 332 NN	DNMG 110408 NN	0.375	0.188	0.031	530038
DNMG 431 NN	DNMG 150404 NN	0.500	0.188	0.016	530039
DNMG 432 NN	DNMG 150408 NN	0.500	0.188	0.031	530040
DNMG 441 NN	DNMG 150604 NN	0.500	0.250	0.016	530041
DNMG 442 NN	DNMG 150608 NN	0.500	0.250	0.031	530042
DNMG 443 NN	DNMG 150612 NN	0.500	0.250	0.047	530044
SNMG 432 NN	SNMG 120408 NN	0.500	0.188	0.031	530071
SNMG 433 NN	SNMG 120412 NN	0.500	0.188	0.047	530072
TCMT 2(1.5)1 NN	TCMT 110204 NN	0.250	0.094	0.016	530085
TCMT 2(1.5)2 NN	TCMT 110208 NN	0.250	0.094	0.031	530086
TCMT 3(2.5)1 NN	TCMT 16T304 NN	0.375	0.156	0.016	530087
TCMT 3(2.5)2 NN	TCMT 16T308 NN	0.375	0.156	0.031	530088
TNMG 331 NN	TNMG 160404 NN	0.375	0.188	0.016	530090
TNMG 332 NN	TNMG 160408 NN	0.375	0.188	0.031	530091
TNMG 432 NN	TNMG 220408 NN	0.500	0.188	0.047	530093
TNMG 433 NN	TNMG 220412 NN	0.500	0.188	0.047	530144
TNMP 332 NN	TNMP 160408 NN	0.375	0.188	0.031	530095

Turning Inserts

MULTI-MAT® Turning Inserts *(continued)*

NN: All Purpose Chipbreaker – Coated Grades – PVD – LT10 *(continued)*

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	Code
TNUX 332 R	TNUX 160408 R	0.375	0.188	0.031	530097
VBMT 331 NN	VBMT 160404 NN	0.375	0.188	0.016	530103
VBMT 332 NN	VBMT 160408 NN	0.375	0.188	0.031	530104
VCMT 331 NN	VCMT 160404 NN	0.375	0.188	0.016	530105
VCMT 332 NN	VCMT 160408 NN	0.375	0.188	0.031	530106
VNMG 331 NN	VNMG 160404 NN	0.375	0.188	0.016	530109
VNMG 332 NN	VNMG 160408 NN	0.375	0.188	0.031	530110
WNMG 331 NN	WNMG 060404 NN	0.375	0.188	0.016	530115
WNMG 332 NN	WNMG 060408 NN	0.375	0.188	0.031	530117
WNMG 431 NN	WNMG 080404 NN	0.500	0.188	0.016	530118
WNMG 432 NN	WNMG 080408 NN	0.500	0.188	0.031	530119
WNMG 433 NN	WNMG 080412 NN	0.500	0.188	0.047	530122
WNMP 331 NN	WNMP 060404 NN	0.375	0.188	0.016	530124
WNMP 332 NN	WNMP 060408 NN	0.375	0.188	0.031	530125
WNMP 432 NN	WNMP 080408 NN	0.500	0.188	0.031	530126

WM: Wiper Medium Chipbreaker – Coated Grades – PVD – LT10

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	Code
CCMT 3(2.5)2 WM	CCMT 09T308 WM	0.375	0.156	0.031	530013
CNMG 432 WM	CNMG 120408 WM	0.500	0.188	0.031	530019
WNMG 432 WM	WNMG 080408 WM	0.500	0.188	0.031	530121

Large Size Turning Inserts – Coated Grades – PVD – LT35/45

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	Code
CNMG 543 NR	CNMG 160612 NR	0.634	0.250	0.047	530022
CNMG 643 NR	CNMG 190612 NR	0.760	0.250	0.047	530023
CNMG 644 NR	CNMG 190616 NR	0.760	0.250	0.063	530024
CNMM 644 NR	CNMM 190616 NR	0.760	0.250	0.063	530029
SNMG 643 NR	SNMG 190612 NR	0.750	0.250	0.047	530073
SNMG 644 NR	SNMG 190616 NR	0.750	0.250	0.047	530074
SNMM 856 NR	SNMM 250724 NR	1.000	0.313	0.094	530075

STAR - NN: All Purpose Chipbreaker – Coated Grades – PVD – LT10

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	Code
ST-CBMT 232L NN	ST-CBMT 060408L NN	0.375	0.188	0.031	530081
ST-DBMT 231L NN	ST-DBMT 060404L NN	0.375	0.188	0.016	530082
ST-TBMT 231L NN	ST-TBMT 060404L NN	0.375	0.188	0.016	530083
ST-VBMT 231L NN	ST-VBMT 060404L NN	0.375	0.188	0.016	530084

To be used with holders: ST-SXJBL/R

ALU: Aluminum Chipbreaker – Coated Grades – PVD – LT05

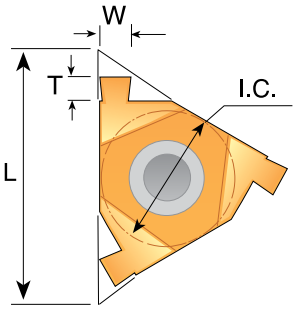
ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	Code
CNGG 432 ALU	CNGG 120408 ALU	0.500	0.188	0.031	530014
DNGG 331 ALU	DNGG 110404 ALU	0.375	0.188	0.016	530035
DNGG 332 ALU	DNGG 110408 ALU	0.375	0.188	0.031	530036
TNGG 331 ALU	TNGG 160404 ALU	0.375	0.188	0.016	530089
VNGG 331 ALU	VNGG 160404 ALU	0.375	0.188	0.016	530107
VNGG 332 ALU	VNGG 160408 ALU	0.375	0.188	0.031	530108

Grooving Inserts

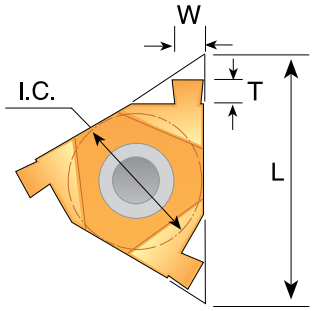
Carbide – Internal & External



CARBIDE GRADE BXC: P30-P50
K25-K40



External Right Hand
or Internal Left Hand



Internal Right Hand
or External Left Hand

- PVD TiN coated grade for low cutting speed
- Works well with a wide range of steel and stainless steel

NOTE: Shim must be changed to AE 16-0 or AI 16-0
Change shim from threading to grooving and use the same threading toolholder

Internal IR/EL

Description	I.C. (Inch)	W ±0.001" (Inch)	T (Inch)	L (mm)	Code
16 IR/EL 0.039	3/8	0.039	0.055	16	570685
16 IR/EL 0.047	3/8	0.047	0.063	16	570686
16 IR/EL 0.055	3/8	0.055	0.071	16	570687
16 IR/EL 0.067	3/8	0.067	0.079	16	570688
16 IR/EL 0.077	3/8	0.077	0.079	16	570689
16 IR/EL 0.089	3/8	0.089	0.089	16	570690
SHIM -- AI 16-0	–	–	–	–	570691

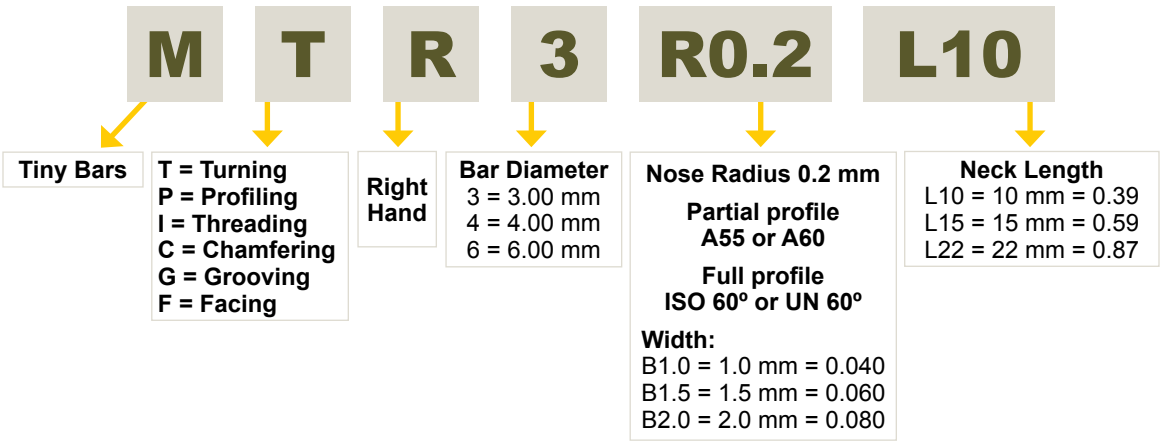
External ER/IL

Description	I.C. (Inch)	W ±0.001" (Inch)	T (Inch)	L (mm)	Code
16 ER/IL 0.039	3/8	0.039	0.055	16	570675
16 ER/IL 0.047	3/8	0.047	0.063	16	570676
16 ER/IL 0.055	3/8	0.055	0.071	16	570677
16 ER/IL 0.067	3/8	0.067	0.079	16	570678
16 ER/IL 0.077	3/8	0.077	0.079	16	570679
16 ER/IL 0.089	3/8	0.089	0.089	16	570680
SHIM -- AE 16-0	–	–	–	–	570681

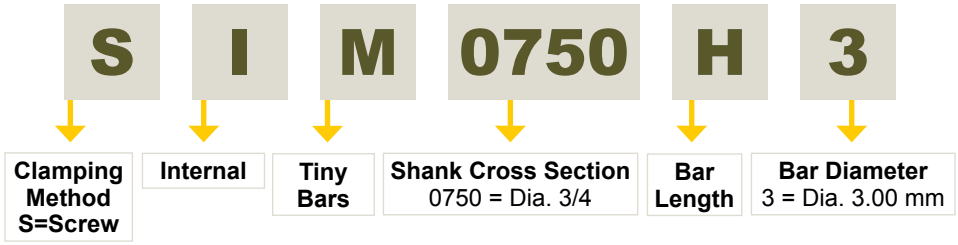
Recommended Cutting Speeds

ISO	Materials	Cutting Speed m/min (ft/min)
P	Low and medium carbon steels	20-100 (66-330)
	High carbon steels	30-80 (100-265)
	Alloy steels, treated steels	40-90 (132-300)
M	Stainless steels	30-80 (100-265)
	Cast steels	30-90 (100-300)
K	Cast Iron	30-90 (100-300)
N	Non-ferrous and Aluminum	20-200 (66-660)

Tiny Tools Identification Guide



Tiny Bar Holders Identification Guide



Recommended Cutting Speeds

ISO	Materials	Cutting Speed ft/min
P	Low and medium carbon steels	65-460
	High carbon steels	100-330
	Alloy steels, treated steels	130-300
M	Stainless steels	65-300
	Cast steels	130-300
K	Cast iron	130-390
N	Non-ferrous and aluminum	160-390
H	Hardened materials	40-100
S	Super alloy and titanium	50-100

Threading Passes

Pitch		Number of Passes
mm	TPI	
0.50	48	6-12
0.70	36	7-14
0.80	32	7-16
1.00	24	8-18
1.25	20	8-20
1.50	16	10-22

RECOMMENDED FEED RATE:
0.0005-0.001 inch/rev

Tiny Tools

Solid Carbide – For Working on Small Bores



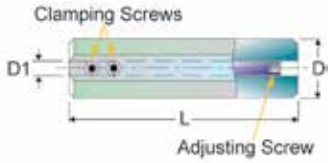
CARBIDE GRADE BXC: P30-P50
K25-K40

- Bar diameter: 4mm
- PVD TiN coated grade for low cutting speed
- Works well with a wide range of steel and stainless steel

Complete Set Includes: Boring bar 570094, profiling bar 570072, threading bar 570078, chamfering bar 570084, grooving bar 570088, face grooving bar 570089, bar holder 570104, and a Torx®15 key

Description	Code
Tiny Tools Complete Set	570110
Boring Bar	570094
Profiling Bar	570072
Threading Bar	570078
Chamfering Bar	570084
Grooving Bar	570088
Face Grooving Bar	570089
Bar Holder	570104





Bar Holders

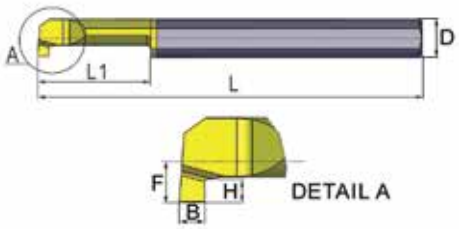
D1 (mm)	L Inch (mm)	D Inch (mm)	Reference Key	Code
3.0	3.5 (89)	0.75 (19.05)	Torx®15	570102
4.0	3.5 (89)	0.75 (19.05)	Torx®15	570104
6.0	3.5 (89)	0.75 (19.05)	Torx®15	570106

Screws

Description	Reference Key	Code
Clamping Screw for Bar Holders	Torx®15	570S25
Adjusting Screw for Bar Holders	Torx®15	570S35

Grooving Bars – Coolant Through





D (mm)	L Inch (mm)	L1 Inch (mm)	B Inch (mm)	H Inch (mm)	F Inch (mm)	Minimum Bore Diameter Inch (mm)	Reference Holders	Code
4.0	2.0 (50)	0.39 (10)	0.06 (1.5)	0.04 (1.0)	0.07 (1.7)	0.16 (4.1)	570104	570088
6.0	2.0 (50)	0.59 (15)	0.08 (2.0)	0.06 (1.5)	0.11 (2.8)	0.24 (6.1)	570106	570090

Tiny Tools

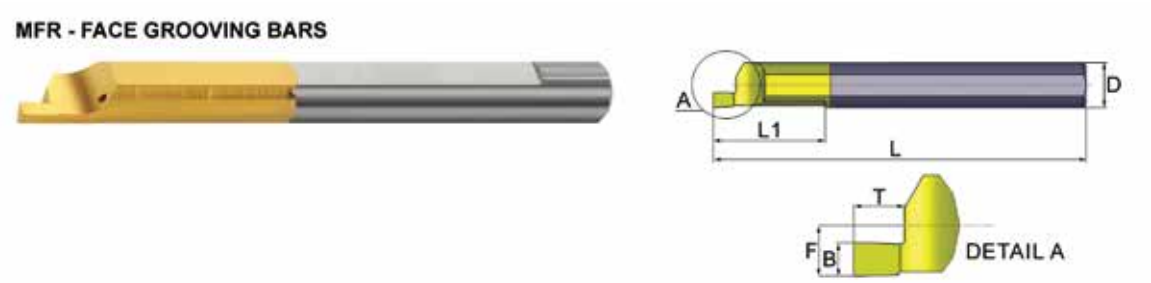
Solid Carbide – For Working on Small Bores *(continued)*

Boring Bars – Coolant Through



D (mm)	L Inch (mm)	L1 Inch (mm)	R Inch (mm)	F Inch (mm)	Minimum Bore Diameter Inch (mm)	Reference Holders	Code
3.0	1.5 (39)	0.39 (10)	0.006 (0.15)	0.03 (0.8)	0.08 (2.1)	570102	570092
4.0	2.0 (50)	0.59 (15)	0.008 (0.20)	0.07 (1.7)	0.16 (4.1)	570104	570094
6.0	2.0 (50)	0.87 (22)	0.008 (0.20)	0.11 (2.8)	0.24 (6.1)	570106	570096

Face Grooving Bars – Coolant Through



D (mm)	L Inch (mm)	L1 Inch (mm)	B Inch (mm)	T Inch (mm)	F Inch (mm)	Minimum Bore Diameter Inch (mm)	Reference Holders	Code
4.0	2.0 (50)	0.59 (15)	0.03 (0.75)	0.05 (1.2)	0.08 (2.1)	0.20 (5.0)	570104	570089
6.0	2.0 (50)	0.87 (22)	0.04 (1.00)	0.06 (1.5)	0.12 (3.0)	0.31 (8.0)	570106	570101

Profiling Boring Bars – Coolant Through



D (mm)	L Inch (mm)	L1 Inch (mm)	R Inch (mm)	H Inch (mm)	F Inch (mm)	Minimum Bore Diameter Inch (mm)	Reference Holders	Code
3.0	1.5 (39)	0.39 (10)	0.006 (0.15)	0.02 (0.5)	0.03 (0.8)	0.08 (2.1)	570102	570070
4.0	2.0 (50)	0.59 (15)	0.008 (0.20)	0.03 (1.0)	0.07 (1.7)	0.16 (4.1)	570104	570072
6.0	2.0 (50)	0.87 (22)	0.008 (0.20)	0.06 (1.5)	0.11 (2.8)	0.24 (6.1)	570106	570074

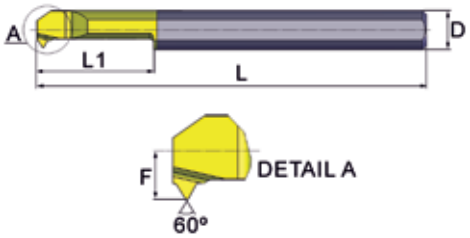
Tiny Tools

Solid Carbide – For Working on Small Bores *(continued)*

Threading Bars – Partial Profile 60° – Coolant Through

MIR - THREADING BARS - PARTIAL PROFILE 60°



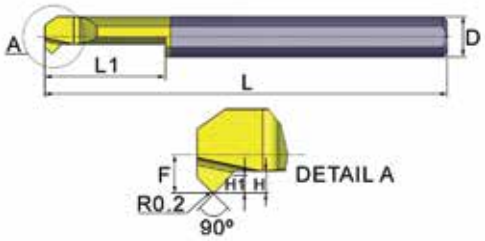


D (mm)	L Inch (mm)	L1 Inch (mm)	Pitch Range (TPI)	Pitch Range (mm)	F Inch (mm)	Minimum Bore Diameter Inch (mm)	Reference Holders	Code
3.0	1.5 (39)	0.59 (15)	32-24	0.8-1.0	0.06 (1.4)	0.13 (3.2)	570102	570076
4.0	2.0 (50)	0.59 (15)	32-24	0.8-1.0	0.07 (1.7)	0.16 (4.1)	570104	570078
6.0	2.0 (50)	0.59 (15)	24-16	1.0-1.5	0.09 (2.2)	0.24 (6.1)	570106	570080

Chamfering Boring Bars – Coolant Through

MCR - CHAMFERING BORING BARS



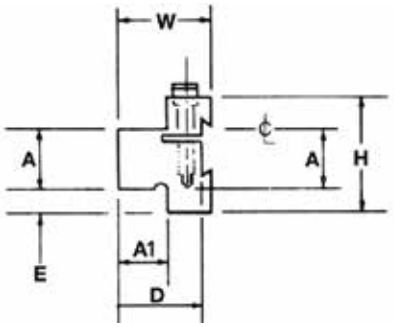


D (mm)	L Inch (mm)	L1 Inch (mm)	R Inch (mm)	H Inch (mm)	H1 Inch (mm)	F Inch (mm)	Minimum Bore Diameter Inch (mm)	Reference Holders	Code
3.0	1.5 (39)	0.39 (10)	0.008 (0.20)	0.03 (0.8)	0.01 (0.3)	0.05 (1.3)	0.12 (3.1)	570102	570082
4.0	2.0 (50)	0.59 (15)	0.008 (0.20)	0.03 (0.8)	0.02 (0.4)	0.07 (1.7)	0.16 (4.1)	570104	570084
6.0	2.0 (50)	0.59 (15)	0.008 (0.20)	0.06 (1.5)	0.03 (0.7)	0.11 (2.8)	0.24 (6.1)	570106	570086

Blade Holders



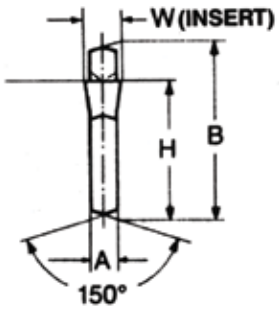
Interchangeable with most popular brands

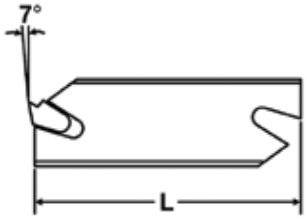


A (Inch)	A1 (Inch)	D (Inch)	E (Inch)	H (Inch)	W (Inch)	Overall Length (Inch)	Reference Blade	Reference Blade Height Inch (mm)	Code
5/8	5/8	31/32	11/64	1-3/16	1-1/16	3	577049	0.787 (20)	577001
5/8	5/8	1-1/32	7/16	1-1/2	1-3/16	3	577051, 577053, 577055, 577057, 577059	1.020 (26)	577003
3/4	3/4	1-1/8	21/64	1-17/32	1-5/16	3-3/8	577051, 577053, 577055, 577057, 577059	1.020 (26)	577005
3/4	3/4	1-1/8	1/2	1-7/8	1-3/8	4	577061, 577063, 577066, 577067, 577069	1.260 (32)	577011
1	1	1-13/32	5/16	1-7/8	1-5/8	4-3/8	577061, 577063, 577066, 577067, 577069	1.260 (32)	577007
1-1/4	1-1/4	1-11/16	1/8	1-7/8	1-5/8	4-11/16	577061, 577063, 577066, 577067, 577069	1.260 (32)	577009

Blades







A (Inch)	L (Inch)	H (Inch)	B Inch (mm)	Max Ø (Inch)	Insert Width Reference (Inch)	Model	Code
1/16	3-3/8	39/64	0.787 (20)	1-1/2	0.087 + 0.094	GIH19-2	577049
1/16	4-5/16	53/64	1.020 (26)	2	0.087 + 0.094	GIH26-2	577051
3/32	4-5/16	53/64	1.020 (26)	3	0.120	GIH26-3	577053
1/8	4-5/16	53/64	1.020 (26)	3	0.160	GIH26-4	577055
5/32	4-5/16	53/64	1.020 (26)	4	0.187 + 0.200	GIH26-5	577057
13/64	4-5/16	53/64	1.020 (26)	4	0.250	GIH26-6	577059
3/32	5-7/8	63/64	1.260 (32)	4	0.120	GIH32-3	577061
1/8	5-7/8	63/64	1.260 (32)	4	0.160	GIH32-4	577063
5/32	5-7/8	63/64	1.260 (32)	5	0.187 + 0.200	GIH32-5	577065
13/64	5-7/8	63/64	1.260 (32)	5	0.250	GIH32-6	577067
5/16	5-7/8	63/64	1.260 (32)	5-1/2	0.375	GIH32-9	577069

Inserts



Neutral shown



NEUTRAL

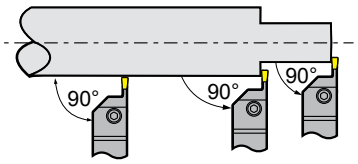
CARBIDE GRADES:
C2 - Uncoated for non-ferrous materials
C5 - Uncoated for steel
TiN - TiN coated for steel

Insert Width (Inch)	C2 Code	C5 Code	TiN Code
0.087	577071	577073	577075
0.094	577077	577079	577081
0.120	577083	577085	577087
0.160	577089	577091	577093
0.187	577095	577097	577099
0.200	577101	577103	577105
0.250	577107	577109	577111
0.375	577113	577115	577117

Parting Information Guide

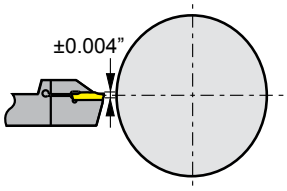
90° Mounting

It is very important that the insert is mounted at 90º to the center line of the workpiece in order to obtain perpendicular surfaces and reduce the risk of vibration.



Correct Center Height Setting

Height tolerance between cutting edge of an insert and the center of the workpiece should be kept to ±0.004”, especially for the parting of rods and grooving of materials with small diameters. It also provides longer tool life and reduces cutting resistance and burrs.



Parting

1. To minimize risk of vibration and deflection, always choose a toolholder with the smallest possible overhang.
2. When parting to center, reduce the feed rate by up to 75%, 0.08”-0.12” (2 mm-3 mm) prior to the part dropping off.

External Grooving, Turning & Profiling

MACHINING BETWEEN WALLS

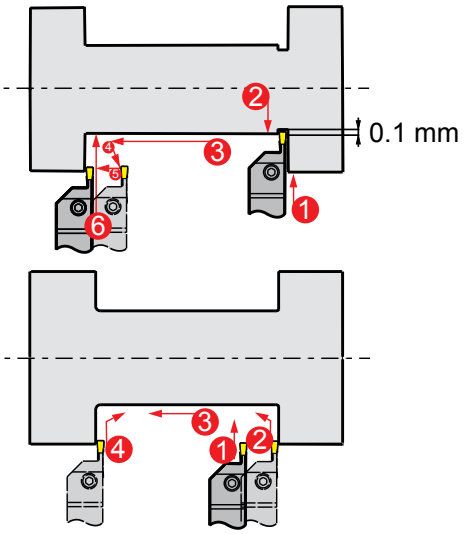
To achieve the best results, the following sequence is recommended:

1. Plunge to required depth of cut (ap max 0.75 x insert width)
2. Pull back 0.004” radially
3. Turn longitudinally to opposite shoulder position
4. Retract at the end of the cut diagonally 0.020”
5. Feed axially to finish position
6. Plunge again to required depth of cut and retract radially 0.004”

Continue sequence for subsequent roughing passes. Axial turn in both directions to use both corners of the insert and to maximize tool life.

MACHINING INTO A RADIUS OR CHAMFER

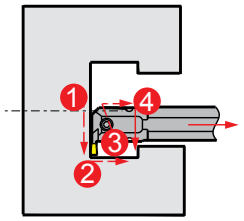
To reduce vibration follow the machining sequence 1 to 4 above.



Internal Grooving & Turning

CUTTING AS SHOWN

The swarf will always flow in the same direction as the feed. It is therefore recommended to feed out towards the opening of the hole.

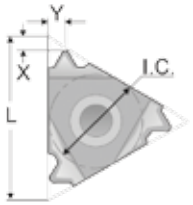


Threading & Anvil Sets

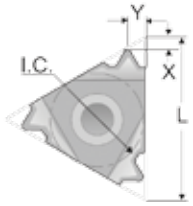
Threading sets are a versatile solution for those who cut a variety of thread types in limited quantity and do not want to sacrifice thread quality.

METRIC AND OTHER SIZES AVAILABLE UPON REQUEST





External Right Hand
Internal Left Hand



External Left Hand
Internal Right Hand



Anvil Set

Set Contents	
External UN Inserts	**Internal UN Inserts**
16ER A60 BMA	16IR A60 BMA
16ER G60 BMA	16IR G60 BMA
16ER AG60 BMA	16IR AG60 BMA
16ER 8UN BMA	16IR 8UN BMA
16ER 12UN BMA	16IR 12UN BMA
16ER 14UN BMA	16IR 14UN BMA
16ER 16UN BMA	16IR 16UN BMA
16ER 18UN BMA	16IR 18UN BMA
16ER 20UN BMA	16IR 20UN BMA
16ER 24UN BMA	16IR 24UN BMA
Tool Holder	
0.75 or 1.00” square	0.75 or 1.00” diameter

Sets

Reference	Shank Size	External/ Internal	Code
KEU	0.75” square	External	570001
KEU10	1.00” square	External	570002
KIU	0.75” diameter	Internal	570003
KIU10	1.00” diameter	Internal	570004

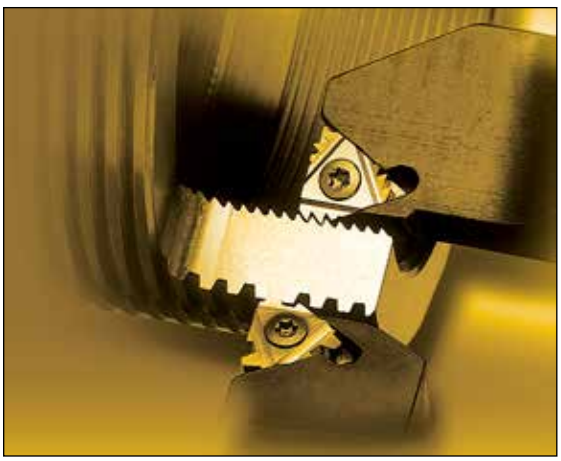
Conversion Sets & Anvil Set

Reference	Description	Code
*KAE S16N	External Conversion Set	570220
*KAI S16N	Internal Conversion Set	570221
KA 16	Anvil Set	570222

***Sandvik Conversion Set:** To convert your Sandvik tool holder to take Carmex inserts – 3/8 I.C.

Carbide Threading Insert Grades

Interchangeable with VARDEX, ISCAR, KENNAMETAL, SECO, ★SANDVIK and many other laydown style threading inserts



CARBIDE INSERT GRADES:

MXC P10-P25 K10-K20 — PVD TiN coated micrograin for free cutting untreated alloy steels (below 30 HRc), for stainless steels, cast iron and aluminum.

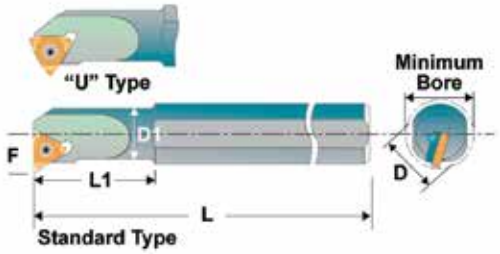
BMA P20-P40 K20-K30 — PVD TiAlN coated sub-micrograin grade for stainless steels and exotic materials at medium to high cutting speeds

P25C P15-P35 — PVD TiN coated grade for treated and hard alloy steels (25 HRc and up) at medium to low cutting speeds

Tool Holders & Accessories

Internal Tool Holders

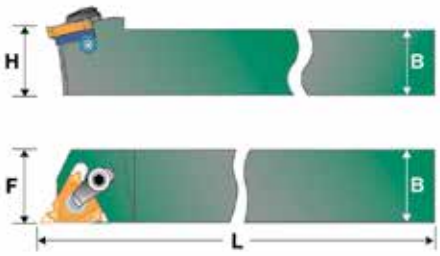




Style Right Hand	Insert I/C Reference Inch (mm)	D (Inch)	D1 (Inch)	L (Inch)	L1 (Inch)	Minimum Bore (Inch)	F (Inch)	Code
*SIR 0375 H11	0.250 (11)	0.38	0.38	4.0	-	0.47	0.28	570360
*SIR 0375 K11	0.250 (11)	0.62	0.38	5.0	1.00	0.47	0.28	570361
*SIR 0500 L11	0.250 (11)	0.62	0.50	5.5	1.25	0.58	0.34	570362
*SIR 0500 M16	0.375 (16)	0.62	0.50	6.0	1.25	0.64	0.39	570363
*SIR 0625 P16	0.375 (16)	0.75	0.62	7.0	1.57	0.75	0.45	570364
SIR 0750 P16	0.375 (16)	0.75	0.75	7.0	-	0.90	0.51	570365
SIR 1000 R16	0.375 (16)	1.00	1.00	8.0	-	1.16	0.65	570366
SIR 1250 S16	0.375 (16)	1.25	1.25	10.0	-	1.40	0.77	570367
SIR 1500 T16	0.375 (16)	1.50	1.50	12.0	-	1.65	0.90	570368
*SIR 0750 P22	0.500 (22)	0.75	0.75	7.0	-	0.90	0.59	570369
SIR 1000 R22	0.500 (22)	1.00	1.00	8.0	-	1.16	0.71	570370
SIR 1250 S22	0.500 (22)	1.25	1.25	10.0	-	1.50	0.85	570371
SIR 1500 T22	0.500 (22)	1.50	1.50	12.0	-	1.75	0.98	570372

External Tool Holders





Style Right Hand	Insert I/C Reference Inch (mm)	B=H (Inch)	L (Inch)	F (Inch)	Code
*SER 0310 H11	0.250 (11)	0.31	4.00	0.43	570373
*SER 0375 H11	0.250 (11)	0.38	4.00	0.43	570374
SER 0375 D16	0.375 (16)	0.38	2.50	0.63	570375
SER 0500 F16	0.375 (16)	0.50	3.25	0.63	570376
SER 0625 H16	0.375 (16)	0.63	4.00	0.63	570377
SER 0750 K16	0.375 (16)	0.75	5.00	0.75	570378
SER 1000 M16	0.375 (16)	1.00	6.00	1.00	570379
SER 1250 P16	0.375 (16)	1.25	7.00	1.25	570380
SER 1000 M22	0.500 (22)	1.00	6.00	1.00	570381
SER 1250 P22	0.500 (22)	1.25	7.00	1.25	570382
SER 1500 R22	0.500 (22)	1.50	8.00	1.50	570383

NOTE: *TOOL HOLDERS WITHOUT SHIMS. *All tool holders are made with 1.5°* Helix angle.
For other Helix angles, please inquire. Left hand tool holders also available.

Tool Holders & Accessories

Carmex Precision Tools Ltd.

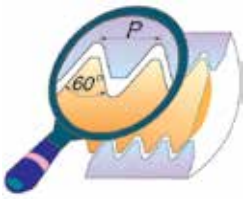
Accessories

Type	External /Internal	Insert Size L I/C	Insert Screw		Torx® Key		Shim Screw	
								
			Style	Code	Style	Code	Style	Code
Threading	–	11 (0.250”)	S11	570385	K11	549500	–	–
Threading	External Intenal	16 (0.375”)	S16	570386	K16	549501	A16	570388
Threading	External Intenal	22 (0.500”)	S22	570387	K22	570392	A22	570389
Grooving	External Intenal	16 (0.375”)	S16	570386	K16	549501	A16	570388

Type	External /Internal	Insert Size L I/C	Right Hand Shim		Left Hand Shim	
						
			Style	Code	Style	Code
Threading	External	16 (0.375”)	AE16	570393	AI16	570394
Threading	Internal	16 (0.375”)	AI16	570394	AE16	570393
Threading	External	22 (0.500”)	AE22	570395	AI22	570396
Threading	Internal	22 (0.500”)	AI22	570396	AE22	570395
Grooving	External	16 (0.375”)	AE16-0	570397	AE16-0	570397

Threading Inserts

Carbide – Partial Profile 60°



External

L mm I.C. (Inch)	Pitch TPI	External RH	Grade	Code
11 (1/4)	48-16	11 ER A60	BMA	578000
16 (3/8)	48-16	16 ER A60	BMA	578006
16 (3/8)	14-8	16 ER G60	BMA	578012
16 (3/8)	48-8	16 ER AG60	BMA	578018
22 (1/2)	7-5	22 ER N60	BMA	578024

Internal

L mm I.C. (Inch)	Pitch TPI	Internal RH	Grade	Code
11 (1/4)	48-16	11 IR A60	BMA	578030
16 (3/8)	48-16	16 IR A60	BMA	578038
16 (3/8)	14-8	16 IR G60	BMA	578044
16 (3/8)	48-8	16 IR AG60	BMA	578050
22 (1/2)	7-5	22 IR N60	BMA	578056

Type B

External and Internal Peripherally Ground with Sintered Chipbreaker

- These inserts combine sintered chipbreaker with precision ground profile. This combination ensures consistently high quality thread with precise shape and dimensions
- Two different unique styles of chipbreakers were designed. Both tailored to suit the different specific requirements of internal and external threading
- Type B inserts are made of grade BMA, a PVD TiAlN coated sub-micrograin carbide for alloy steels, stainless steels and exotic materials at medium to high cutting speeds

Advantages:

- High profile accuracy
- Unique chipbreaker that allows excellent performance
- Extends insert tool life

External Right Hand – Type B Inserts



L mm I.C. (Inch)	Pitch TPI	Right Hand	Grade	Code
16 (3/8)	48 - 16	16 ER B A60	BMA	578062
16 (3/8)	14 - 8	16 ER B G60	BMA	578064
16 (3/8)	48 - 8	16 ER B AG60	BMA	578066

Internal Right Hand – Type B Inserts



L mm I.C. (Inch)	Pitch TPI	Right Hand	Grade	Code
16 (3/8)	48 - 16	16 IR B A60	BMA	578068
16 (3/8)	14 - 8	16 IR B G60	BMA	578070
16 (3/8)	48 - 8	16 IR B AG60	BMA	578072

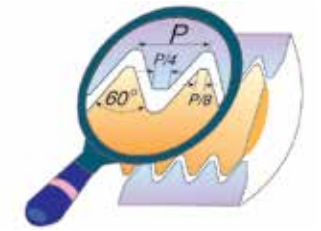
Threading Inserts

Carbide – Full Profile

UN, ISO Metric, NPT Pipe, Stub ACME & ACME

Other forms, multi tooth and left hand also available upon request

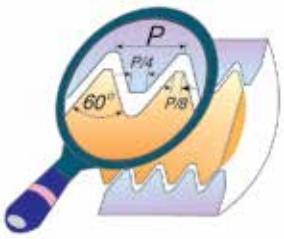
UN – Grade BMA



L mm I.C. (Inch)	Pitch TPI	Right Hand	External Code	Internal Code
11 (1/4)	72	11ER/11IR	578074	578314
11 (1/4)	64	11ER/11IR	578080	578320
11 (1/4)	56	11ER/11IR	578086	578326
11 (1/4)	48	11ER/11IR	578092	578332
11 (1/4)	44	11ER/11IR	578098	578338
11 (1/4)	40	11ER/11IR	578104	578344
11 (1/4)	36	11ER/11IR	578110	578350
11 (1/4)	32	11ER/11IR	578116	578356
11 (1/4)	28	11ER/11IR	578122	578362
11 (1/4)	27	11ER/11IR	578128	578368
11 (1/4)	24	11ER/11IR	578134	578374
11 (1/4)	20	11ER/11IR	578140	578380
11 (1/4)	18	11ER/11IR	578146	578386
11 (1/4)	16	11ER/11IR	578152	578392
11 (1/4)	14	11ER/11IR	578158	578398
16 (3/8)	72	16ER/16IR	578164	578404
16 (3/8)	64	16ER/16IR	578170	578410
16 (3/8)	56	16ER/16IR	578176	578416
16 (3/8)	48	16ER/16IR	578182	578422
16 (3/8)	44	16ER/16IR	578188	578428

L mm I.C. (Inch)	Pitch TPI	Right Hand	External Code	Internal Code
16 (3/8)	40	16ER/16IR	578194	578434
16 (3/8)	36	16ER/16IR	578200	578440
16 (3/8)	32	16ER/16IR	578206	578446
16 (3/8)	28	16ER/16IR	578212	578452
16 (3/8)	27	16ER/16IR	578218	578458
16 (3/8)	24	16ER/16IR	578224	578464
16 (3/8)	20	16ER/16IR	578230	578470
16 (3/8)	18	16ER/16IR	578236	578476
16 (3/8)	16	16ER/16IR	578242	578482
16 (3/8)	14	16ER/16IR	578248	578488
16 (3/8)	13	16ER/16IR	578254	578494
16 (3/8)	12	16ER/16IR	578260	578500
16 (3/8)	11.5	16ER/16IR	578266	578506
16 (3/8)	11	16ER/16IR	578272	578512
16 (3/8)	10	16ER/16IR	578278	578518
16 (3/8)	9	16ER/16IR	578284	578524
16 (3/8)	8	16ER/16IR	578290	578530
22 (1/2)	7	22ER/22IR	578296	578536
22 (1/2)	6	22ER/22IR	578302	578542
22 (1/2)	5	22ER/22IR	578308	578548

ISO Metric – Grade BMA



L mm I.C. (Inch)	Pitch mm	Right Hand	External Code	Internal Code
16 (3/8)	0.35	16ER/16IR	578558	578666
16 (3/8)	0.4	16ER/16IR	578564	578672
16 (3/8)	0.45	16ER/16IR	578570	578678
16 (3/8)	0.5	16ER/16IR	578576	578684
16 (3/8)	0.6	16ER/16IR	578582	578690
16 (3/8)	0.75	16ER/16IR	578588	578696
16 (3/8)	0.8	16ER/16IR	578594	578702
16 (3/8)	1.0	16ER/16IR	578600	578708
16 (3/8)	1.25	16ER/16IR	578606	578714
16 (3/8)	1.5	16ER/16IR	578612	578720

L mm I.C. (Inch)	Pitch mm	Right Hand	External Code	Internal Code
16 (3/8)	1.75	16ER/16IR	578618	578726
16 (3/8)	2.0	16ER/16IR	578624	578732
16 (3/8)	2.5	16ER/16IR	578630	578738
16 (3/8)	3.0	16ER/16IR	578636	578744
22 (1/2)	3.5	22ER/22IR	578642	578750
22 (1/2)	4.0	22ER/22IR	578648	578756
22 (1/2)	4.5	22ER/22IR	578654	578762
22 (1/2)	5.0	22ER/22IR	578660	578768

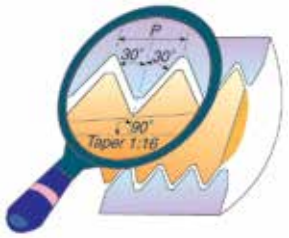
Threading Inserts

Carbide – Full Profile *(continued)*

UN, ISO Metric, NPT Pipe, Stub ACME & ACME

Other forms, multi tooth and left hand also available upon request

NPT Pipe – Grade BMA



L mm I.C. (Inch)	Pitch TPI	Right Hand	External Code	Internal Code
16 (3/8)	27	16ER/16IR	578774	578804
16 (3/8)	18	16ER/16IR	578780	578810

L mm I.C. (Inch)	Pitch TPI	Right Hand	External Code	Internal Code
16 (3/8)	14	16ER/16IR	578786	578816
16 (3/8)	11.5	16ER/16IR	578792	578822
16 (3/8)	8	16ER/16IR	578798	578828

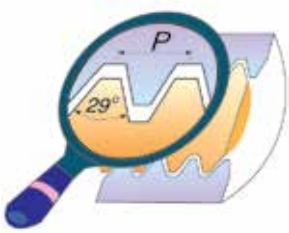
Stub ACME – Grade BMA



L mm I.C. (Inch)	Pitch TPI	Right Hand	External Code	Internal Code
11 (1/4)	16	11ER/11IR	578919	–
16 (3/8)	16	16ER/16IR	578918	–
16 (3/8)	14	16ER/16IR	578924	578964
16 (3/8)	12	16ER/16IR	578930	578970

L mm I.C. (Inch)	Pitch TPI	Right Hand	External Code	Internal Code
16 (3/8)	10	16ER/16IR	578936	578976
16 (3/8)	8	16ER/16IR	578942	578982
16 (3/8)	6	16ER/16IR	578948	578988
22 (1/2)	5	22ER/22IR	578954	578994

ACME – Grade BMA



L mm I.C. (Inch)	Pitch TPI	Right Hand	External Code	Internal Code
16 (3/8)	16	16ER/16IR	578834	578876
16 (3/8)	14	16ER/16IR	578840	578882
16 (3/8)	12	16ER/16IR	578846	578888
16 (3/8)	10	16ER/16IR	578852	578894

L mm I.C. (Inch)	Pitch TPI	Right Hand	External Code	Internal Code
16 (3/8)	8	16ER/16IR	578858	578900
22(1/2)	6	16ER/16IR	578864	578906
22(1/2)	5	16ER/16IR	578870	578912

Tool Holder Identification Guide

S	E	R	0750	K	16	

Clamping Method
S=Screw

E=External
I=Internal

R=Right Hand
L=Left Hand

Shank Cross Section:

External tool holders, square shank
0750=3/4"x3/4"



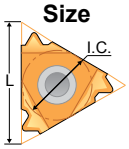
Internal tool holders and boring bars, round shank
0750=Dia. of 3/4"



Length of Tool Holder (Inch)

H = 4
K = 5
L = 5.5
M = 6
P = 7
R = 8
S = 10
T = 12

Insert's Pocket Size



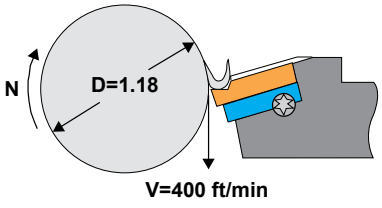
L	I.C.
11	1/4
16	3/8
22	1/2

B - with coolant bore
C - carbide shank
V - vertical (on edge)
O - offset style

Recommended Cutting Speeds

Thread Turning Inserts				
ISO	Materials	Cutting Speed ft/min		
		MXC	BMA	P25C
P	Steel: low and medium carbon steels	330-590	295-520	260-520
	High carbon steels	260-520	260-490	260-390
	Alloy steels, treated steels	260-390	260-390	160-330
	Cast steel	390-520	330-460	260-460
M	Stainless steel: cast steels stainless austenitic and austenitic ferritic steel and cast steel	295-390	230-430	
K	Cast iron: grey cast iron, cast iron with spherical graphite, malleable cast iron	260-490	260-430	
N	Non-ferrous metal: aluminum and other non-ferrous metals, copper alloys non-metallic	980-1970	980-2620	
H	Hard materials: hardened steel, hardened cast iron materials, chilled cast iron	65-130	65-160	
S	Super-alloys and titanium: heat resistant special alloys based on iron, nickel and cobalt, titanium and titanium alloys	130-260	130-330	

Conversion of Cutting Speed to Rotational Speed



Conversion of selected cutting speed to rotational speed is calculated by the following formula:

$$N = \frac{V \times 12}{\pi \times D} = \frac{400 \times 12}{3.14 \times 1.18} = 1{,}294 \text{ RPM}$$

Milling Cutter Identification Guide

FMA01-100-B1.25-SE12-07L

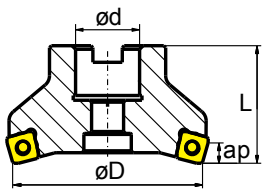
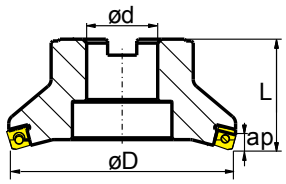
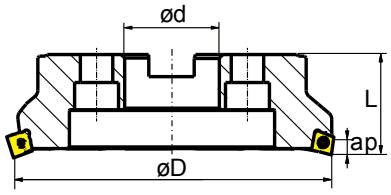
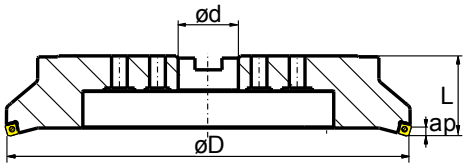
Cutter Style	Tool Machining Direction (R Omit)
Lead Angle	Number of Inserts (Z)
Sort Number	Cutting Edge Length (of insert)
Tool Diameter	Insert Clearance Angle
Mounting Style	Insert Shape

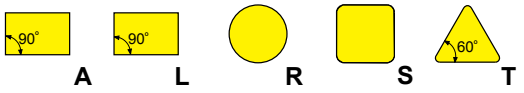
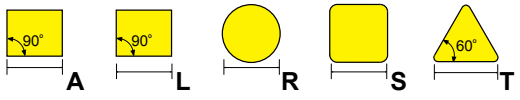
Cutter Style	
FM	Face Milling Tools
EM	Shoulder Face Milling Tools
HM	Helix End Milling Tools
SM	Side and Face Milling Tools
BM	Profile Milling Tools
CM	Chamfering End Milling Tools
XM	Special Milling Tools

Lead Angle		
P	90°	
E	75°	
D	60°	
A	45°	
R		

Insert Clearance Angle	
N	0°
B	5°
P	11°
D	15°
E	20°

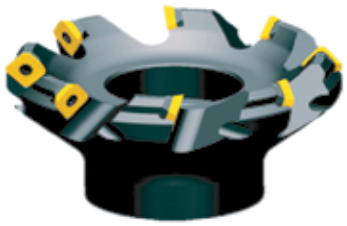
Mounting Style

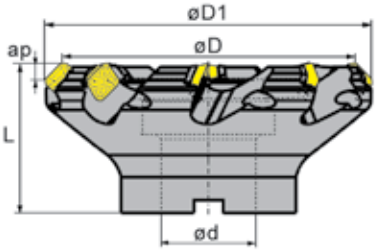
Style	Structure	Style	Structure
A	Cutter ø1.97 (50) - ø3.15 (80) 	B	Cutter ø3.15 (80) - ø6.30 (160) 
C	Cutter ø6.30 (160) - ø9.84 (250) 	D	Cutter ≥ø12.40 (315) 
BT	BT	JT	JT
G	Cylindrical	XP	Weldon
MW	Morse		

Insert Shape	Cutting Edge Length of Insert
	

Face Mills

FMA01 Milling Cutters Lead Angle 45°

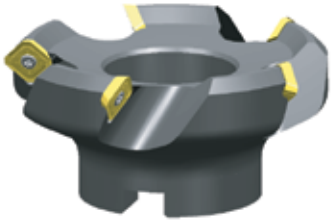


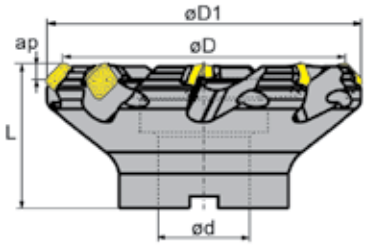


First choice for general purpose milling and mixed production

Type FMA01 Fine Pitch	ØD Inch (mm)	ØD1 Inch (mm)	Ød (Inch)	L (Inch)	ap Max. (Inch)	No. of Inserts	Insert Ref.	Code	Accessories			
									Shim Code	Shim Screw Code	Shim Key Code	Insert Screw Code
050-A0.75"-SE12-04	1.97 (50)	2.48 (63)	0.75	1.57	0.236	4	SEET12	574256	–	–	–	576304
063-A0.75"-SE12-05	2.48 (63)	2.99 (76)	0.75	1.57	0.236	5	SEET12	574258	–	–	–	576304
080-A1.00"-SE12-06	3.15 (80)	3.66 (93)	1.00	1.97	0.236	6	SEET12	574260	–	–	–	576304
100-B1.25"-SE12-07	3.94 (100)	4.45 (113)	1.25	1.97	0.236	7	SEET12	574262	–	–	–	576304
125-B1.50"-SE12-08	4.92 (125)	5.43 (138)	1.50	2.48	0.236	8	SEET12	574264	576300	576302	576310	576306
160-C2.00"-SE12-10	6.30 (160)	6.81 (173)	2.00	2.48	0.236	10	SEET12	574266	576300	576302	576310	576306
200-C2.50"-SE12-12	7.87 (200)	8.38 (213)	2.50	2.48	0.236	12	SEET12	574268	576300	576302	576310	576306

FMA02 Milling Cutters Lead Angle 45°



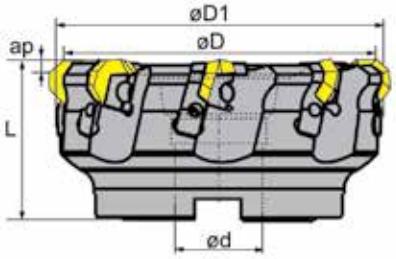


Reduced number of inserts with a differential pitch for best productivity when stability and power are limited (Long overhang/small machines)

Type FMA02 Differential Coarse Pitch	ØD Inch (mm)	ØD1 Inch (mm)	Ød (Inch)	L (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories
									Insert Screw Code
050-A0.75"-SE12-03	1.97 (50)	2.48 (63)	0.75	1.57	0.236	3	SEET12	574270	576304
080-A1.00"-SE12-04	3.15 (80)	3.66 (93)	1.00	1.97	0.236	4	SEET12	574274	576304
100-B1.25"-SE12-05	3.94 (100)	4.45 (113)	1.25	1.97	0.236	5	SEET12	574276	576304
125-B1.50"-SE12-06	4.92 (125)	5.43 (138)	1.50	2.48	0.236	6	SEET12	574278	576350

FMA04 Milling Cutters Lead Angle 45°



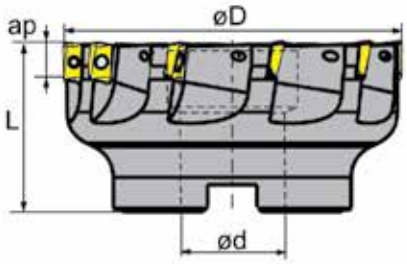


Type FMA04	ØD Inch (mm)	ØD1 Inch (mm)	Ød (Inch)	L (Inch)	ap Max. (Inch)	No. of Inserts	Insert Ref.	Code	Accessories					
									Locator Code	Locator Screw Code	Locator Key Code	Wedge Code	Wedge Screw Code	Wedge Key Code
125-B1.50"-OF07-08	4.92 (125)	5.34 (135.52)	1.50	2.48	0.200	8	OFMT07	574290	576324	576318	576316	576326	576322	576320
160-B2.00"-OF07-10	6.30 (160)	6.73 (171.11)	2.00	2.48	0.200	10	OFMT07	574292	576324	576318	576316	576326	576322	576320
200-C2.50"-OF07-12	7.87 (200)	8.31 (211.10)	2.50	2.48	0.200	12	OFMT07	574294	576324	576318	576316	576326	576322	576320

Face Mills

EMP02 Milling Cutters Lead Angle 90°

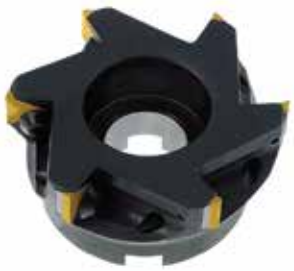


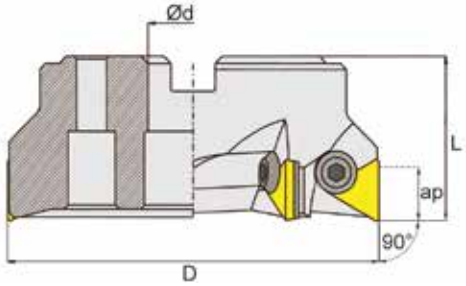


Type EMP02	ØD Inch (mm)	Ød (Inch)	L (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories
								Insert Screw Code
063-A1.00"-AP11-08	2.48 (63)	1.00	1.57	0.43	8	APKT11/APKT16	574234	576356
080-A1.00"-AP11-08	3.15 (80)	1.00	1.97	0.43	8	APKT11/APKT16	574236	576356
100-B1.25"-AP11-10	3.94 (100)	1.25	1.97	0.43	10	APKT11/APKT16	574240	576356
050-A0.75"-AP16-05	1.97 (50)	0.75	1.57	0.63	5	APKT11/APKT16	574230	576346
063-A1.00"-AP16-06	2.48 (63)	1.00	1.57	0.63	6	APKT11/APKT16	574232	576346
080-A1.00"-AP16-07	3.15 (80)	1.00	1.97	0.63	7	APKT11/APKT16	574238	576346
100-B1.25"-AP16-08	3.94 (100)	1.25	1.97	0.63	8	APKT11/APKT16	574242	576346
125-B1.50"-AP16-09	4.92 (150)	1.50	2.48	0.63	9	APKT11/APKT16	574244	576346

Face Mills

TP90SM Milling Cutters Lead Angle 90°



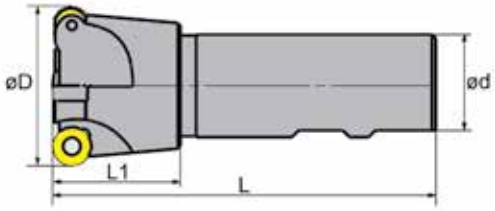


Type TP90SM	ØD (Inch)	Ød (Inch)	L (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories		
								Locator Screw Code	Shim Code	Shim Screw Code
1.5"-0.50"-0.37-03	1.50	0.50	1.58	0.375	3	TP_32	535712	535731	–	–
2.0"-0.75"-0.37-03	2.00	0.75	1.66	0.375	3	TP_32	535713	535731	–	–
2.5"-1.00"-0.50-03	2.50	1.00	1.85	0.500	3	TP_32	535714	535732	–	–
3.0"-1.00"-0.50-04	3.00	1.00	1.96	0.500	4	TP_43	535715	535732	535735	535736
4.0"-1.50"-0.50-05	4.00	1.50	1.96	0.500	5	TP_43	535716	535732	535735	535736
5.0"-1.50"-0.50-06	5.00	1.50	2.84	0.500	6	TP_43	535717	535732	535735	535736
6.0"-2.00"-0.50-07	6.00	2.00	2.84	0.500	7	TP_43	535718	535732	535735	535736

Face Mills

FMR01 Milling Cutters

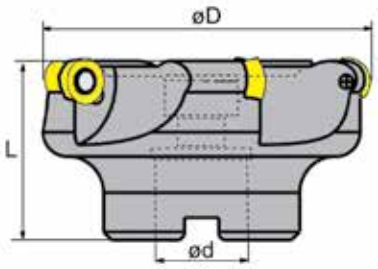




Type FMR01	ØD Inch (mm)	Ød (Inch)	L (Inch)	L1 (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories
									Insert Screw Code
1.00"-XP0.75"-RC10-02	1.00 (25.4)	0.75	4.75	1.50	0.196	2	RCMT	574302	576336
1.25"-XP1.00"-RC10-02	1.25 (31.75)	1.00	4.75	1.50	0.196	2	RCMT	574306	576336
1.50"-XP1.25"-RC12-03	1.50 (38.1)	1.25	4.75	1.50	0.236	3	RCMT	574304	576304
2.00"-XP1.25"-RC12-03	2.00 (50.8)	1.25	4.75	1.50	0.236	3	RCMT	574308	576304

FMR02 Milling Cutters

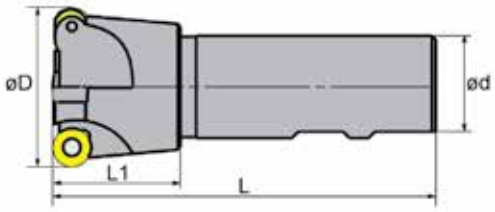




Type FMR02	ØD Inch (mm)	Ød (Inch)	L (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories
								Insert Screw Code
2.50"-A0.75"-RC12-04	2.50 (63.50)	0.75	1.97	0.236	4	RCMT	574310	576304
3.00"-A1.00"-RC12-05	3.00 (76.20)	1.00	1.97	0.236	5	RCMT	574312	576304
4.00"-B1.25"-RC12-06	4.00 (101.60)	1.25	2.48	0.236	6	RCMT	574314	576304
5.00"-B1.50"-RC12-07	5.00 (127.00)	1.50	2.48	0.236	7	RCMT	574316	576304
6.00"-C2.00"-RC12-08	6.00 (152.40)	2.00	2.48	0.236	8	RCMT	574318	576304

FMR03 Milling Cutters



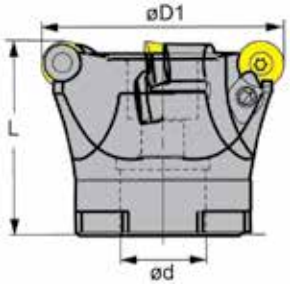


Type FMR03	ØD Inch (mm)	Ød (Inch)	L (Inch)	L1 (Inch)	ap Max. (Inch)	No. of Inserts	Insert Ref.	Code	Accessories	
									Insert Screw Code	Insert Key Code
1.00"-XP1.00"-RD08-02	1.00 (25.40)	1.00	4.00	1.50	0.157	2	RDMT	574320	576344	718407
1.25"-XP1.25"-RD10-02	1.25 (31.75)	1.25	4.75	1.50	0.197	2	RDMT	574324	576336	–
1.50"-XP1.25"-RD12-03	1.50 (38.10)	1.25	4.75	1.50	0.236	3	RDMT	574322	576336	–
2.00"-XP1.25"-RD12-04	2.00 (50.80)	1.25	4.75	1.50	0.236	4	RDMT	574326	576336	–

Face Mills

FMR04 Milling Cutters





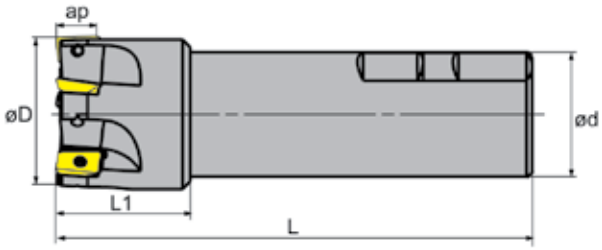
Type FMR04	ØD1 Inch (mm)	Ød (Inch)	L (Inch)	ap Max. (Inch)	No. of Inserts	Insert Ref.	Code	Accessories				
								Clamp Code	Clamp Screw Code	Clamp Key Code	Insert Screw Code	Insert Key Code
2.00”-A0.75”-RD12-03	2.00 (50.80)	0.75	1.77	0.236	3	RDMT	574328	576352	576354	718401	576350	–
2.50”-A0.75”-RD12-04	2.50 (63.50)	0.75	1.96	0.236	4	RDMT	574330	576352	576338	718401	576304	–
3.00”-A1.00”-RD16-05	3.00 (76.20)	1.00	1.96	0.315	5	RDMT	574332	–	–	–	576338	718401
4.00”-B1.25”-RD16-06	4.00 (101.60)	1.25	1.96	0.315	6	RDMT	574334	–	–	–	576338	718401
5.00”-B1.50”-RD20-06	5.00 (127.00)	1.50	2.48	0.394	6	RDMT	574336	–	–	–	576340	718401
6.00”-C2.00”-RD20-07	6.00 (152.40)	2.00	2.48	0.394	7	RDMT	574338	–	–	–	576340	718401

End Mills

EMP01 Milling Cutters Lead Angle 90º - Weldon & R8 Shanks



APKT 11T3... Inserts



XP - Regular Length
XPL - Long Length

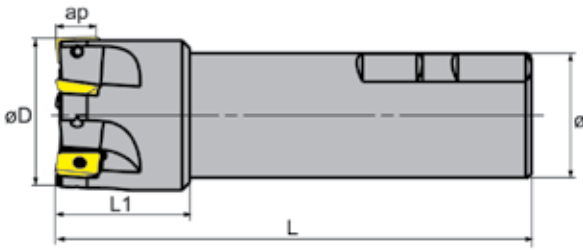
Type EMP01 APKT 11T3... Inserts	ØD Inch (mm)	Ød (Inch)	L (Inch)	L1 (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories
									Insert Screw Code
0.50”-XP0.62”-AP11-01	0.50 (12.70)	0.625	3.50	1.00	0.400	1	APKT11/APKT16	574194	576356
0.62”-XP0.62”-AP11-02	0.625 (15.875)	0.625	3.50	1.00	0.400	2	APKT11/APKT16	574226	576356
0.75”-XP0.75”-AP11-02	0.75 (19.05)	0.750	4.00	1.18	0.400	2	APKT11/APKT16	574222	576356
0.75”-XPL0.75”-AP11-02	0.75 (19.05)	0.750	6.50	1.18	0.400	2	APKT11/APKT16	574224	576356
1.00”-XP1.00”-AP11-03	1.00 (25.40)	1.000	4.50	1.38	0.400	3	APKT11/APKT16	574180	576356
1.00”-XPL1.00”-AP11-03	1.00 (25.40)	1.000	6.50	1.38	0.400	3	APKT11/APKT16	574186	576356
1.00”-XPR8-AP11-03	1.00 (25.40)	R8	5.50	1.38	0.400	3	APKT11/APKT16	574190	576356
1.25”-XPR8-AP11-03	1.25 (31.75)	R8	5.50	1.75	0.400	3	APKT11/APKT16	574208	576356
1.50”-XP1.25”-AP11-05	1.50 (38.10)	1.250	5.00	1.50	0.400	5	APKT11/APKT16	574196	576356
2.00”-XP1.25”-AP11-06	2.00 (50.80)	1.250	5.50	1.77	0.400	6	APKT11/APKT16	574218	576356

End Mills

EMP01 Milling Cutters Lead Angle 90º - Weldon Shank



APKT 160408 Inserts



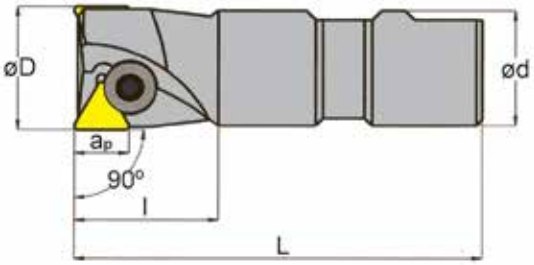
XP - Regular Length
XPL - Long Length
XPXL - Extra Long Length

Type EMP01 APKT 160408 Inserts	ØD Inch (mm)	Ød (Inch)	L (Inch)	L1 (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories Insert Screw Code
1.00"-XP0.75"-AP16-02	1.00 (25.40)	0.750	4.00	1.38	0.600	2	APKT16	574184	576336
1.00"-XP1.00"-AP16-02	1.00 (25.40)	1.000	4.50	1.38	0.600	2	APKT16	574182	576336
1.00"-XPXL1.00"-AP16-02	1.00 (25.40)	1.000	8.00	1.38	0.600	2	APKT16	574192	576336
1.25"-XP0.75"-AP16-03	1.25 (31.75)	0.750	5.00	1.58	0.600	3	APKT16	574214	576336
1.25"-XP1.00"-AP16-03	1.25 (31.75)	1.000	5.00	1.58	0.600	3	APKT16	574212	576336
1.25"-XP1.25"-AP16-03	1.25 (31.75)	1.250	5.00	1.57	0.600	3	APKT16	574204	576336
1.25"-XPL1.25"-AP16-03	1.25 (31.75)	1.250	6.50	1.57	0.600	3	APKT16	574206	576336
1.25"-XPXL1.25"-AP16-03	1.25 (31.75)	1.250	8.50	1.58	0.600	3	APKT16	574210	576336
1.50"-XP1.00"-AP16-04	1.50 (38.10)	1.000	5.00	1.65	0.600	4	APKT16	574200	576336
1.50"-XP1.25"-AP16-04	1.50 (38.10)	1.250	5.00	1.65	0.600	4	APKT16	574198	576336
2.00"-XP1.25"-AP16-05	2.00 (50.80)	1.250	5.50	1.77	0.600	5	APKT16	574220	576336

End Mills

TP90EM Milling Cutters Lead Angle 90º - Weldon Shank







TPU Inserts

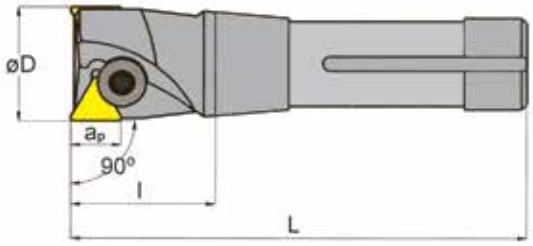
Type TP90EM Weldon Shank	ØD (Inch)	Ød (Inch)	L (Inch)	l (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories Clamp Screw Code
1.00"-0.75-0.18"-02	1.00	0.75	2.78	1.22	0.18	2	TPU22	535702	535730
1.25"-0.75-0.37"-02	1.25	0.75	3.25	1.22	0.37	2	TPU32	535703	535731
1.50"-0.75-0.37"-03	1.50	0.75	3.25	1.22	0.37	3	TPU32	535720	535733
2.00"-0.75-0.37"-03	2.00	0.75	3.25	1.22	0.37	3	TPU32	535722	535731
1.50"-1.00-0.37"-03	1.50	1.00	3.25	1.40	0.37	3	TPU32	535704	535733
2.00"-1.00-0.37"-03	2.00	1.00	3.25	1.40	0.37	3	TPU32	535706	535731

End Mills

TOOLMEX Industrial Solutions

TP90EM Milling Cutters Lead Angle 90° - R8 Shank







Type TP90EM R8 Shank	ØD (Inch)	Ød (Inch)	L (Inch)	l (Inch)	ap Max. (Inch)	No. of Inserts	Insert Reference	Code	Accessories
									Clamp Screw Code
1.00"-R8-0.18"-02	1.00	R8	3.48	1.33	0.18	2	TPU22	535726	535730
1.00"-R8-0.18"-02	1.25	R8	3.69	1.52	0.37	2	TPU32	535727	535730
1.50"-R8-0.37"-03	1.50	R8	3.69	1.52	0.37	3	TPU32	535705	535733
1.75"-R8-0.37"-03	1.75	R8	3.69	1.52	0.37	3	TPU32	535728	535731
2.00"-R8-0.37"-03	2.00	R8	3.69	1.52	0.37	3	TPU32	535707	535731
2.50"-R8-0.37"-04	2.50	R8	3.69	1.52	0.37	4	TPU32	535709	535731
3.00"-R8-0.37"-05	3.00	R8	3.69	1.52	0.37	5	TPU32	535711	535731

Milling Cutter Sets – 3 Pieces – Lead Angle 90°



R8 set shown

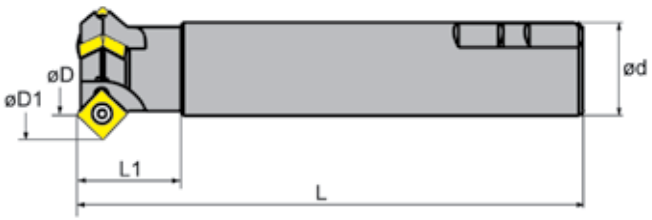
Type TP90EM (Inch)	Shank Diameter (Inch)	Cutting Diameters (Inch)	Code
0.75 Set	0.75	1.25, 1.50, 2.00	535771
1.25-2.00 Set	R8	1.25, 1.50, 2.00	535773
2.00-3.00 Set	R8	2.00, 2.50, 3.00	535774

These end mills take TPU inserts

Chamfer Tools

CMA01 Chamfer Cutters Lead Angle 45° - Weldon Shank





Type CMA01	ØD Inch (mm)	ØD1 Inch (mm)	Ød (Inch)	L (Inch)	L1 (Inch)	No. of Inserts	Insert Reference	Code	Accessories	
									Insert Screw Insert	Torx® Key Code
0.50"-XP0.75"-SP12-01	0.50 (12.7)	1.206 (30.60)	0.75	4.00	1.57	1	SPMT	573444	576360	718401
1.00"-XP1.00"-SP12-02	1.00 (25.4)	1.706 (43.33)	1.00	5.00	1.57	2	SPMT	573448	576360	718401
1.25"-XP1.00"-SP12-03	1.25 (31.75)	1.956 (49.68)	1.25	7.00	1.57	3	SPMT	573446	576360	718401

Chamfer Tools

Indexable Countersinks & Chamfer Cutters – Positive Rake – 60°, 82°, 90° & 100°

- Uncoated C5 carbide insert and Torx® wrench included with each tool
- Positive rake for smooth cutting without chatter
- Carbide indexable - no tool resharpening needed
- Uses standard triangular and square inserts



"S" Style *For 0.500 (12.75) to 2.50 (63.50) diameters, using SPGH insert*



"T" Style *For 0.125 (3.18) to 0.750 (19.05) diameters, using TPGH insert*

Individual Chamfer Cutters

Angle	Chamfer Range Minimum Inch (mm)	Chamfer Range Maximum Inch (mm)	Shank Diameter (Inch)	Insert Reference	Code
60º	0.125 (3.18)	0.500 (12.70)	0.375	TPGH2151	577401
60º	0.250 (6.35)	0.750 (19.05)	0.500	TPGH321	577415
60º	0.500 (12.70)	1.750 (44.45)	0.500	SPGH433	577417
60º	1.250 (31.75)	2.500 (63.50)	0.750	SPGH433	577419
82º	0.125 (3.18)	0.500 (12.70)	0.375	TPGH2151	577403
82º	0.250 (6.35)	0.750 (19.05)	0.500	TPGH321	577421
82º	0.500 (12.70)	1.750 (44.45)	0.500	SPGH433	577423
82º	1.250 (31.75)	2.500 (63.50)	0.750	SPGH433	577425
90º	0.125 (3.18)	0.500 (12.70)	0.375	TPGH2151	577405
90º	0.250 (6.35)	0.750 (19.05)	0.500	TPGH321	577427
90º	0.500 (12.70)	1.750 (44.45)	0.500	SPGH433	577429
90º	1.250 (31.75)	2.500 (63.50)	0.750	SPGH433	577431

3 Piece Sets



Angle	Contents of Set	Code
82º	One of each: 0.25", 0.50", and 1.25" (min.)	577447
90º	One of each: 0.25", 0.50", and 1.25" (min.)	577449

Also included: Inserts, Torx® wrench, wooden block

4 Piece Set



Contents of Set	Code
One of each: 1/8" (min.) 60º, 82º, 90º, 100º	577453

Also included: Inserts, Torx® wrench, wooden block

Carbide Inserts



TPGH



SPGH

Type	Grade/ Coating	ØI.C. (Inch)	Radius (Inch)	Code
SPGH433	C5	0.500	0.047	577439
TPGH321	TiN	0.375	0.016	577437
SPGH433	TiN	0.500	0.047	577441

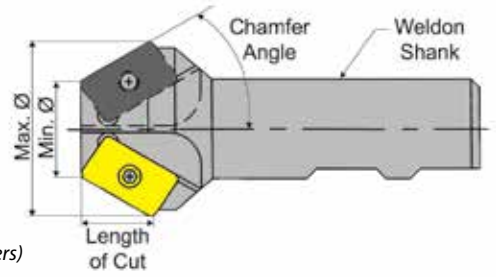
Chamfer Tools

Indexable Insert Chamfer Cutters - Weldon Shank

- Versatile tool that can be used for countersinking, chamfer milling and face milling
- Extra length of cut with parallelogram inserts
- All holders use the same insert – APLT-347-CV6
- Sets include three holders, 10 coated inserts and a wrench



Takes APLT-347 inserts
(Sold seperately for individual cutters)



Individual Chamfer Cutters

Chamfer Angle	Minimum Diameter (Inch)	Maximum Diameter (Inch)	Shank Diameter (Inch)	No. of Flutes	Length of Cut (Inch)	Insert Reference	Code
30°	0.750	1.303	3/4	2	0.479	APLT-347	543001
41°	0.688	1.414	3/4	2	0.418		543002
45°	0.688	1.471	3/4	2	0.391		543003
60°	0.500	1.458	3/4	2	0.277		543004
30°	1.000	1.553	1	3	0.479		543010
41°	0.938	1.664	1	3	0.418		543011
45°	0.938	1.721	1	3	0.391		543012
60°	0.750	1.708	1	3	0.277		543013
30°	1.250	1.803	1-1/4	3	0.479		543020
41°	1.188	1.914	1-1/4	3	0.418		543021
45°	1.188	1.971	1-1/4	3	0.391		543022
60°	1.000	1.958	1-1/4	3	0.277		543023
30°	1.500	2.053	1-1/2	3	0.479		543030
41°	1.438	2.164	1-1/2	3	0.418		543031
45°	1.438	2.221	1-1/2	3	0.391		543032
60°	1.250	2.208	1-1/2	3	0.277		543033

Replacement Insert

Type	Grade	Length (Inch)	I.C. (Inch)	Thickness (Inch)	Ø Hole (Inch)	Radius (Inch)	Code
APLT-347	CV6	0.591	0.375	0.187	0.173	0.015	543048

3 Piece Sets



Sets include:
3 holders
10 APLT-347 inserts
1 wrench

Chamfer Angle	Minimum Diameter (Inch)	Maximum Diameter (Inch)	Shank Diameter (Inch)	No. of Flutes	Code
30°	0.750	1.303	0.750	2	
CHM-30	1.000	1.553	1.000	3	543040
(60° Incuded angle)	1.250	1.803	1.250	3	
41°	0.688	1.414	0.750	2	
CHM-41	0.938	1.664	1.000	3	543042
(82° Incuded angle)	1.188	1.914	1.250	3	
45°	0.688	1.471	0.750	2	
CHM-45	0.938	1.721	1.000	3	543045
(90° Incuded angle)	1.188	1.971	1.250	3	
60°	0.500	1.458	0.750	2	
CHM-60	0.750	1.708	1.000	3	543047
(120° Incuded angle)	1.000	1.958	1.250	3	

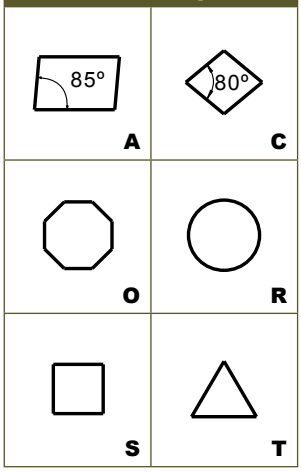
Replacement Screw

Code
576336

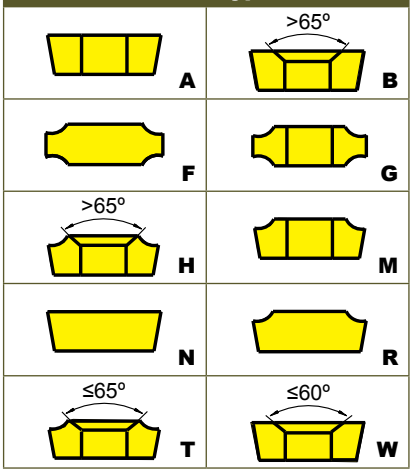
Milling Inserts ANSI vs. ISO Identification Guide



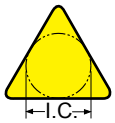
Insert Shape



Insert Type



Insert I.C. Size



(I.C.) shown in 1/32" increments on inserts less than 1/4" I.C.

(I.C.) shown in 1/8" increments on inserts 1/4" and over

5	= 5/32	**5**	= 5/8
2	= 1/4	**6**	= 3/4
3	= 3/8	**8**	= 1
4	= 1/2		

Insert Thickness



(T) shown in 1/32" increments on inserts less than 1/4" I.C.

(T) shown in 1/16" increments on inserts 1/4" and over

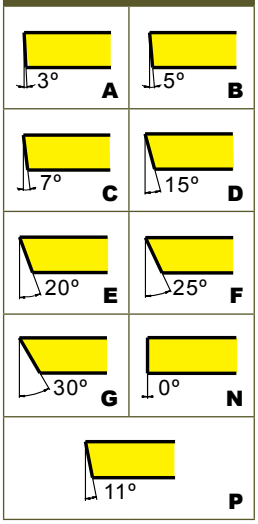
2	= 1/16	**3**	= 3/16
(1.5)	= 3/32	**4**	= 1/4
2	= 1/8	**5**	= 5/16
(2.5)	= 5/32	**6**	= 3/8

S E E T 4 3 – 22 04

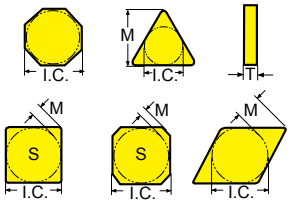
ANSI (American National Standards Institute)

ISO (International Standards Organization)

Insert Clearance Angle



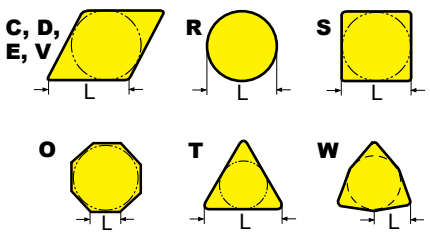
Insert Tolerance



	I.C.	M	T
A	0.0010	0.0002	0.0010
C	0.0010	0.0005	0.0010
E	0.0010	0.0010	0.0010
F	0.0005	0.0002	0.0010
G	0.0010	0.0010	0.0050
H	0.0005	0.0005	0.0001
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	0.0050
N	0.002-0.006	0.003-0.008	0.0010
U	0.003-0.010	0.005-0.015	0.0050

Exact tolerance is determined by the shape and size of the insert

Insert Cutting Edge Length



I.C.		Cutting Edge Length by Shape (mm) Designated using insert shape symbol							
mm	Inch	C	D	O	R	S	T	V	W
3.97	5/32	-	-	-	-	-	06	-	-
6.35	1/4	06	07	-	-	-	11	11	04
9.53	3/8	09	11	-	09	09	16	16	06
12.70	1/2	12	15	05	12	12	22	22	08
15.88	5/8	16	19	-	15	15	27	-	-
19.05	3/4	-	-	-	19	19	33	-	-
25.40	1	-	-	-	-	25	-	-	-

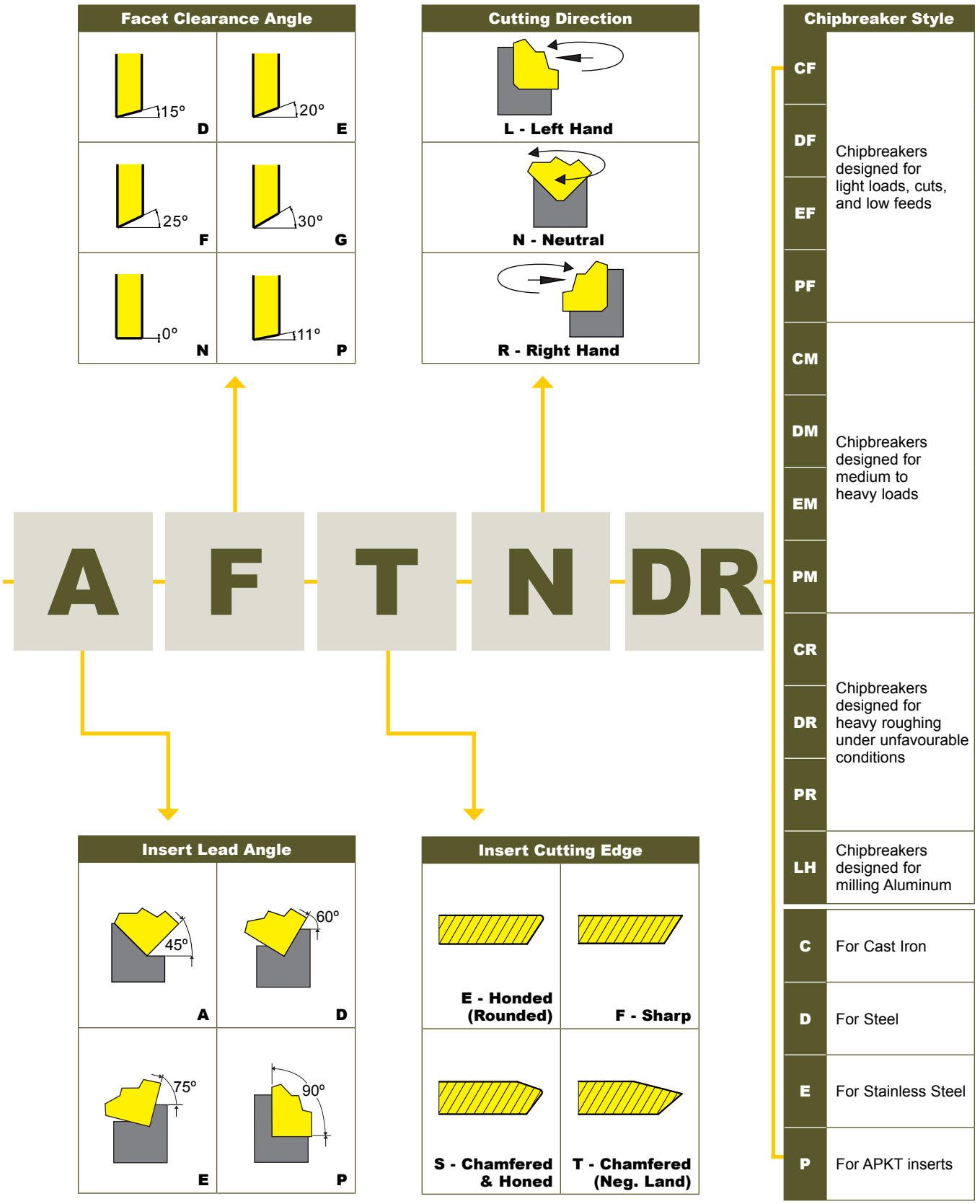
Insert Thickness



(T) shown in 1 mm increments, single integers are to be preceded by a "0"

	mm	Inch
01 =	1.59	1/16
T1 =	1.98	5/64
02 =	2.38	3/32
03 =	3.18	1/8
T3 =	3.97	5/32
04 =	4.76	3/16
06 =	6.34	1/4
07 =	7.94	5/16
09 =	9.52	3/8

Milling Inserts ANSI vs. ISO Identification Guide



Milling Inserts Main Grades & Applications

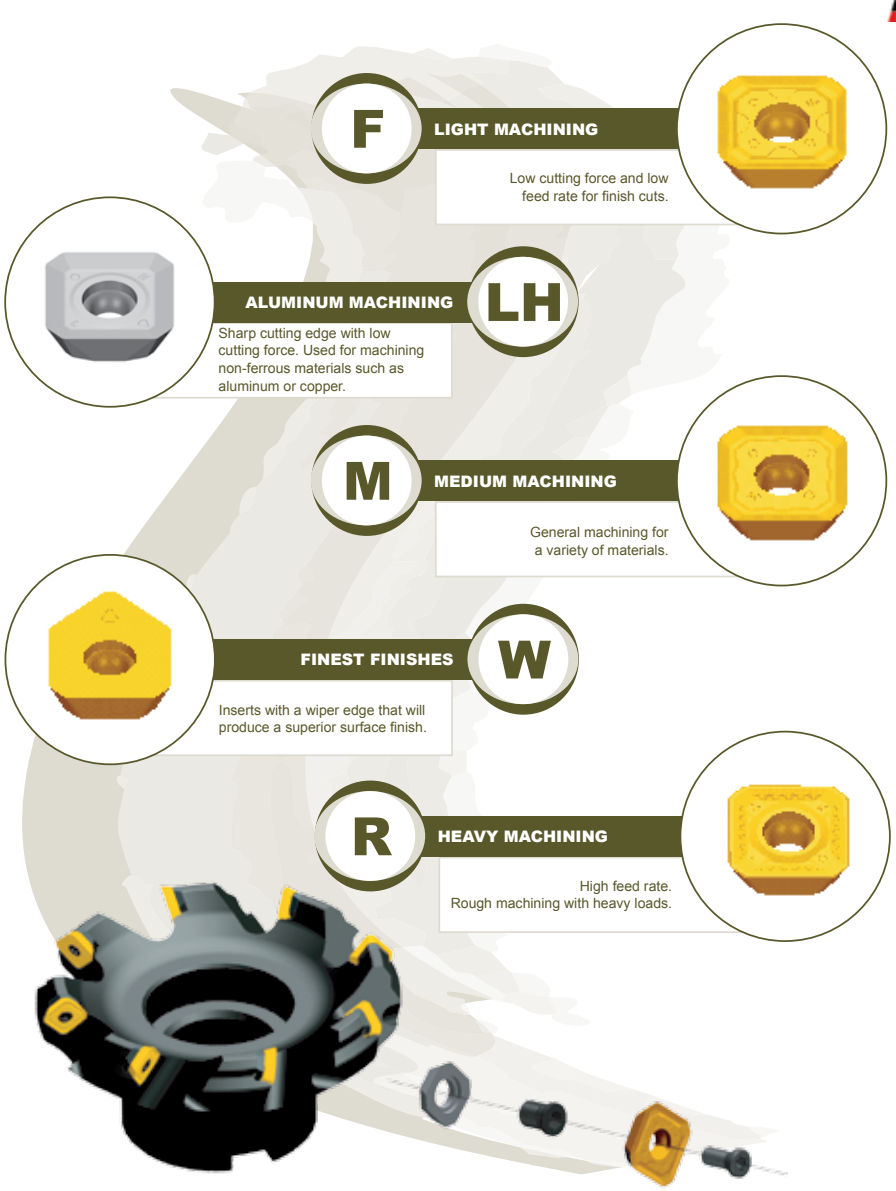
YBC301
CVD COATED
P10-P40
M15-M35
A combination of TiCN, thin layer of Al_2O_3, and a TiN coating on a substrate with high strength is suitable for light to heavy milling (both wet and dry) in unalloyed and low alloyed steels with hardness up to 300 HB at medium to high speeds. Also for martensitic stainless steels.

YBM251
CVD COATED
P10-P20
M10-M20
An optimal combination of TiCN, thin layers of Al_2O_3, and a TiN coating on a substrate provides a cutting edge with superior strength and toughness. It is a premium grade for semi-finishing to light roughing of stainless steel at continuous and intermittent machining conditions.

YBM351
CVD COATED
M20-M40
S25-S40
A combination of TiN and TiAlN coated carbide provides this grade with good strength and impact resistance. It is well suited in medium to rough milling stainless steel, heat resistant alloys and low carbon steel at low speeds.

YD201
UNCOATED
K15-K30
N10-N20
S15-S25
Uncoated carbide grade with good wear resistance and toughness for light to medium milling at moderate cutting speeds. Ideal choice for milling of ferritic nodular cast iron. Works well in non-metallic materials such as plactic, wood, etc. Ideal in the aerospace industry on aluminum with sharp edged inserts. Capable of wet or dry machining.

Milling Inserts Chipbreaker Identification Guide



Milling Inserts

APKT



Type	Grade	Length (Inch)	Width (Inch)	Thickness (Inch)	Ø Hole (Inch)	Radius (Inch)	Code
APKT11T304PM	YBC301	0.482	0.256	0.142	0.262	0.016	573008
APKT11T308PF	YBM251	0.482	0.256	0.142	0.262	0.031	573035
APKT11T308PM	YBM251	0.482	0.256	0.142	0.262	0.031	573028
APKT160408PF	YBC301	0.704	0.367	0.226	0.173	0.031	573040
APKT160408PF	YBM251	0.704	0.367	0.226	0.173	0.031	573044
APKT160408PM	YBM251	0.704	0.367	0.226	0.173	0.031	573054

OFKR



Type	Grade	Length (Inch)	ØI.C. (Inch)	Thickness (Inch)	Radius (Inch)	Code
OFKR0704DM	YBM251	0.293	0.706	0.187	0.031	574348
OFKR0704DM	YBM351	0.293	0.706	0.187	0.031	574350

RCKT & RDKW



Type	Grade	ØI.C. (Inch)	Thickness (Inch)	Ø Hole (Inch)	Code
RCKT1204M0DM	YBM251	0.472	0.187	0.157	574456
RCKT1204M0DM	YBM351	0.472	0.187	0.157	574458
RDKW0803M0	YBC301	0.315	0.125	0.134	574512
RDKW10T3M0	YBC301	0.394	0.156	0.173	574518

SEET, SEKN & SPKN



Type	Grade	ØI.C. (Inch)	Width (Inch)	Thickness (Inch)	Code
SEET12T3DM	YBM251	0.527	0.527	0.156	574678
SEET12T3LH	YD201	0.527	0.527	0.156	574692
SEKN1203AFN	YBC301	0.500	0.500	0.125	574696
SEKN1203AFTN	YBC301	0.500	0.500	0.125	574710
SEKN1203AFTN	YBM251	0.500	0.500	0.125	574714
SPKN1203EDR	YBC301	0.500	0.500	0.125	574982

TPU



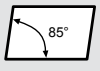
Type	Grade	ØI.C. (Inch)	Width (Inch)	Thickness (Inch)	Radius (Inch)	Code
TPU322	YBM251	0.375	0.650	0.125	0.031	576186
TPU322	YC30S	0.375	0.650	0.125	0.031	576184
TPU323	YC30S	0.375	0.650	0.125	0.047	576188
TPU432	YBM251	0.500	0.866	0.187	0.031	576194
TPU432	YC30S	0.500	0.866	0.187	0.031	576192
TPU433	YC30S	0.500	0.866	0.187	0.047	576196

All YBC251 and YC30S inserts have 0.002" hone

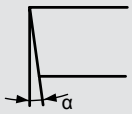
Milling Inserts Identification Guide

S	P	K	N
1	2	3	4

1 Insert Shape

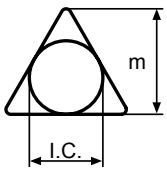
							
A	B	C	D	E	H	K	L
						Special	
O	P	R	S	T	W	X	

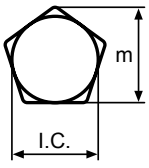
2 Clearance Angle

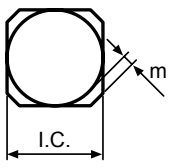
	5°	7°	15°	20°	25°	30°	0°	11°
	B	C	D	E	F	G	N	P

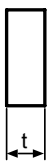
3 Tolerance

	Tolerance			I.C. Size					
	m	t	I.C.	.250	.375	.500	.625	.750	1
A	± .0002	± .0001	± .0001	•	•	•	•	•	•
C	± .0005	± .0010	± .0010	•	•	•	•	•	•
E	± .0010	± .0010	± .0010	•	•	•	•	•	•
F	± .0020	± .0010	± .0010	•	•	•	•	•	•
G	± .0010	± .0005	± .0010	•	•	•	•	•	•
H	± .0005	± .0010	± .0010	•	•	•	•	•	•
K	± .0005	± .0010	± .0020	•	•				
			± .0030			•			
			± .0040				•	•	
			± .0050						•
M	± .0030	± .0050	± .0020	•	•				
	± .0050		± .0030			•			
	± .0060		± .0040				•	•	
	± .0070		± .0050						•









4 Cross Section Shape

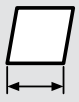
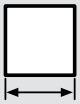
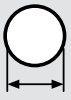
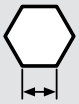
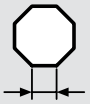
								Special
						C'Sink40°~60°	C'Sink40°~60°	
A	F	G	M	N	R	T	W	X

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Milling Inserts Identification Guide

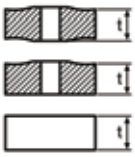
4	3	ED	T	R	CHIP BREAKER
5	6	7	8	9	10

5 Cutting Edge Length

I.C. Size	Symbol	C	S	R	T	H	O
							
Inch		Metric					
7/32	1.8(7)	05	05	05	09		
1/4	2	06	06	06	11		
5/16	2.5	08	07	07	13		
3/8	3	09	09	09	16		
1/2	4	12	12	12	22	05	05
5/8	5	16	15	15	27	09	06
3/4	6	19	19	19	33	10	
1	8	25	25	25	44		

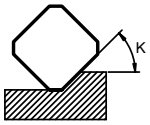
*( ) symbol for small size insert

6 Thickness

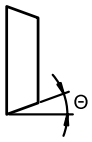


Symbol(t)	Inch
1.5(3)	3/32
2	1/8
2.5	5/32
3	3/16
4	1/4
5	5/16
6	3/8

7 Lead Angle & Relief Angle of Minor Cutting Edge

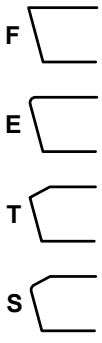


Lead Angle	
A	45º
D	60º
E	75º
F	85º
P	90º
Z	Special

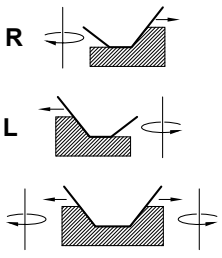


Relief Angle of minor cutting edge	
B	5º
C	7º
D	15º
E	20º
F	25º
G	30º
N	0º
P	11º
Z	Special

8 Edge Preparation



9 Cutting Direction

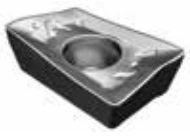


10 Chip Breaker

For Application

Milling Inserts

APKT & APMT



Type	Grade	ØI.C. (Inch)	Width (Inch)	Thickness (Inch)	Radius (Inch)	Code
APKT100305PDTR	YG602	0.525	0.264	0.143	0.020	577570
APKT100308PDTR	YG602	0.525	0.264	0.143	0.031	577571
APKT160404PDTR	YG602	0.672	0.370	0.207	0.016	577572
APKT160408PDTR	YG602	0.672	0.370	0.207	0.031	577573
APKT160412PDTR	YG602	0.672	0.370	0.207	0.472	577574
APKT160416PDTR	YG602	0.672	0.370	0.207	0.063	577575
APMT113504PDTR	YG602	0.440	0.244	0.138	0.157	577576
APMT113508PDTR	YG602	0.440	0.244	0.138	0.031	577577
APMT160408PDTR	YG602	0.670	0.363	0.187	0.031	577578

ODMT, ODMW & OFMT



Type	Grade	ØI.C. (Inch)	Width (Inch)	Thickness (Inch)	Radius (Inch)	Code
ODMT060508	YG602	–	0.626	0.217	–	577579
ODMW060508	YG602	–	0.626	0.217	–	577580
OFMT05T305TN	YG602	–	0.500	0.157	–	577581

RDKT, RDKW, RPMT & RPMW



Type	Grade	ØI.C. (Inch)	Width (Inch)	Thickness (Inch)	Radius (Inch)	Code
RDKT0802M0	YG602	–	0.315	0.094	–	577582
RDKT10T3M0	YG602	–	0.394	0.156	–	577583
RDKT1204M0	YG602	–	0.472	0.187	–	577584
RDKW0802M0	YG602	–	0.315	0.094	–	577585
RDKW10T3M0	YG602	–	0.394	0.156	–	577586
RDKW1204M0	YG602	–	0.472	0.187	–	577587
RPMT08T2M0	YG602	–	0.315	0.109	–	577588
RPMT10T3M0	YG602	–	0.394	0.156	–	577589
RPMT1204M0	YG602	–	0.472	0.187	–	577590
RPMW1204M0	YG602	–	0.472	0.187	–	577591

SDKN, SEKN, SEKR, SEKT. SPKN & SPKR



Type	Grade	ØI.C. (Inch)	Width (Inch)	Thickness (Inch)	Radius (Inch)	Code
SDKN42AETN	YG602	–	0.500	0.125	–	577592
SDKN56AETN	YG602	–	0.625	0.187	–	577593
SEKN42AFTN	YG602	–	0.500	0.125	–	577594
SEKR42AFTN	YG602	–	0.500	0.125	–	577595
SEKT1204AFTN	YG602	–	0.509	0.199	–	577596
SEKT12T3AGTN	YG602	–	0.528	0.157	–	577597
SPKN42EDTR	YG602	–	0.500	0.125	–	577598
SPKN53EDTR	YG602	–	0.625	0.187	–	577599
SPKR42EDTR	YG602	–	0.500	0.125	–	577600

TPKN & TPKR



Type	Grade	ØI.C. (Inch)	Width (Inch)	Thickness (Inch)	Radius (Inch)	Code
TPKN32PDTR	YG602	0.568	0.375	0.125	–	577601
TPKN43PDTR	YG602	0.789	0.500	0.187	–	577602
TPKR32PDTR	YG602	0.569	0.375	0.125	–	577603
TPKR43PDTR	YG602	0.789	0.500	0.187	–	577604

Milling Inserts

MULTI-MAT® Milling Inserts

Revolutionary Technology! Only one grade required to cut multiple materials!





Coated Grades – PVD – LT30

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	P (Degrees)	D (Degrees)	Code
ADKT 1505 PDTR	ADKT 1505 PDTR	0.600	0.220	-	90	15	530145
AOMT 123608 PETR	AOMT 123608 PETR	0.472	0.142	0.031	-	15	530142
APKT 1604 PDTR	APKT 1604 PDTR	0.625	0.188	-	90	15	530003
APKT 160424 ER	APKT 160424 ER	0.625	0.188	0.094	90	15	530004
APKT 1705 PETR	APKT 1705 PETR	0.669	0.220	0.094	-	15	530141
APLX 1003 PDTR	APLX 1003 PDTR	0.370	0.125	-	90	15	530005
APLX 100308 PDTR	APLX 100308 PDTR	0.370	0.125	0.031	-	15	530006
APMT 1135 PDTR	APMT 1135 PDTR	0.430	0.142	-	90	15	530008
APMT 32 PDTR	APMT 0903 PDTR	0.375	0.125	-	90	15	530007
APMT 53 PDTR	APMT 1604 PDTR	0.625	0.188	-	90	15	530009
ODMT 0504 ZZTR	ODMT 0504 ZZTR	0.200	0.188	0.031	-	-	530047
ODMT 2(3.5)2 TN	ODMT 060508 TN	0.236	0.220	0.031	-	-	530048
OFER 070405 TN	OFER 070405 TN	0.270	0.188	0.031	-	-	530050
OFMT 050405 TR	OFMT 050405 TR	0.200	0.188	0.031	-	-	530051
OFMT 05T305 TN	OFMT 05T305 TN	0.200	0.156	0.031	-	-	530052
OFMT 070405 TN	OFMT 070405 TN	0.270	0.188	0.031	-	-	530053
RDMT 0602 MO	RDMT 0602 MO	0.236	0.094	0.118	-	-	530058
RDMT 0803 MO	RDMT 0803 MO	0.314	0.125	0.157	-	-	530059
RDMT 1003 MO	RDMT 1003 MO	0.393	0.125	0.197	-	-	530146
RDMT 10T3 MO	RDMT 10T3 MO	0.393	0.156	0.197	-	-	530060
RDMT 1204 MO	RDMT 1204 MO	0.472	0.188	0.236	-	-	530061
RDMT 12T3 MO	RDMT 12T3 MO	0.472	0.156	0.236	-	-	530147
RDMW 10T3 MO	RDMW 10T3 MO	0.393	0.156	0.197	-	-	530143
SDKT 43 AETN	SDKT 1204 AETN	0.500	0.188	-	45	20	530062
SEKN 42 AFTN	SEKN 1203 AFTN	0.500	0.094	-	45	25	530064
SEKN 43 AFTN	SEKN 1204 AFTN	0.500	0.188	-	45	25	530065
SEKN 53 AFTN	SEKN 1504 AFTN	0.625	0.188	-	45	25	530066
SEKR 42 AFTN	SEKR 1203 AFTN	0.500	0.094	-	45	25	530067
SEKR 43 AFTN	SEKR 1204 AFTN	0.500	0.188	-	45	25	530068
SEKT 4(2.5) AGSN	SEKT 12T3 AGSN	0.500	0.156	-	45	32	530070
SEKT 43 AFTN	SEKT 1204 AFTN	0.500	0.188	-	45	25	530069
SPG 422	SPUN 120308	0.500	0.125	0.031	-	-	530080
SPKN 42 EDTR	SPKN 1203 EDTR	0.500	0.094	-	75	15	530076
SPKN 43 EDTR	SPKN 1204 EDTR	0.500	0.188	-	75	15	530077
SPKR 42 EDTR	SPKR 1203 EDTR	0.500	0.094	-	75	15	530078
SPKR 43 EDTR	SPKR 1204 EDTR	0.500	0.188	-	75	15	530079
TPKN 32 PDTR	TPKN 1603 PDTR	0.375	0.125	-	90	15	530098
TPKN 43 PDTR	TPKN 2204 PDTR	0.500	0.188	-	90	15	530099
TPKR 323 PDTR	TPKR 1603 PDTR	0.375	0.125	-	90	15	530100
TPKR 43 PDTR	TPKR 2204 PDTR	0.500	0.188	-	90	15	530101
TPUN 322	TPUN 160308	0.375	0.125	0.031	90	15	530102

Milling Inserts

MULTI-MAT® Milling Inserts *(continued)*

ALU: Aluminum Chipbreaker – Coated Grades – PVD – LT05

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	P (Deg.)	D (Deg.)	Direction	Code
APGT 1003 PDER-ALU	APGT 1003 PDER-ALU	0.236	0.125	0.016	-	-	Neutral	530001
APGT 53 PDER-ALU	APGT 1604 PDER-ALU	0.236	0.188	0.016	-	-	Neutral	530002
SEGT 43 ALU	SEGT 1204 AFEN-ALU	0.236	0.188	-	45	25	Neutral	530063

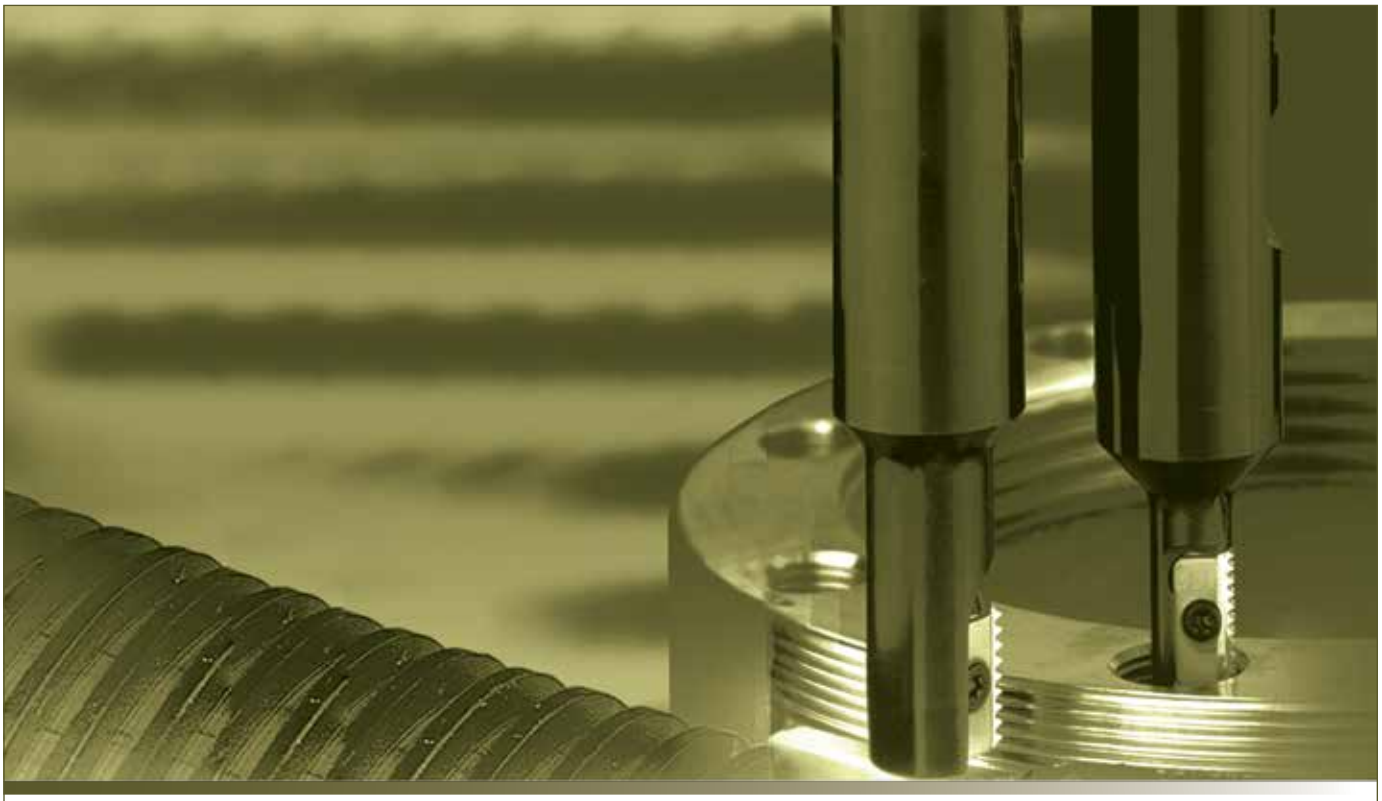
Drilling Inserts

MULTI-MAT® Drilling Inserts

NN: All Purpose Chipbreaker – Coated Grades – PVD – LT30

ANSI	ISO	L (Inch)	S (Inch)	R (Inch)	Direction	Code
WCMX 2(1.5)2 NN	WCMX 040208 NN	0.157	0.094	0.031	Neutral	530111
WCMX 2.5(2)2 NN	WCMX 050308 NN	0.196	0.125	0.031	Neutral	530112
WCMX 3(2.5)2 NN	WCMX 06T308 NN	0.236	0.156	0.031	Neutral	530113
WCMX 433 NN	WCMX 080412 NN	0.314	0.188	0.047	Neutral	530114

Thread Milling Identification Guide



FOR THREADING ON CNC MILLING MACHINES BY USING HELICAL INTERPOLATION PROGRAMS

ADVANTAGES:

- Thread is produced in one tool pass
- Same tool holder and insert can produce both right hand and left hand threads
- A single insert and tool holder can produce a given thread on many diameters (External and Internal)
- Prismatic shape ensures exact and reliable clamping in the tool holder
- Most inserts are double sided, having two cutting edges
- Longer tool life due to a special multi-layer coating process
- Capable of producing tapered threads
- Improved productivity due to increased cutting speeds and multitooth type carbide inserts
- Threading to within one pitch of the bottom in a blind hole
- Considerably less expensive than using taps and dies, lowering tooling costs
- Since lower machine power is required, a smaller machine can produce larger threads in a single operation with less idle time and tool changes

Product Identification

Inserts

	E	12	UN	
Insert Size A	E = External I = Internal - = EXT. + INT.	Thread Pitch	Thread Profile	Carbide Grades
12 14 21 30 40			ISO UN WHIT NPT NPTF BSPT	MT5 MT7

Cutters

S	R	1180	J	21	C	2
R = Right Hand L = Left Hand		Cutting Diameter Inch: 1180 = 1.18"	Length of Tool Holder	Insert Size A 12 14 21 30 40	Carbide Shank	No. of Inserts

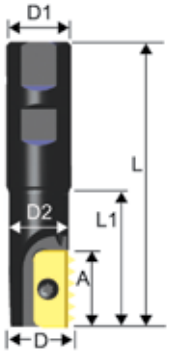
Indexable Thread Milling Cutters

Carmex Precision Tools Ltd.

Single, Double & Multi-Insert

- Minimum bore should be one-third greater than D

Single Insert Coolant-Thru



Single Insert Cutters

Type	Insert Size A=mm	D (Inch)	D1 (Inch)	D2 (Inch)	L (Inch)	L1 (Inch)	Code
SR0500F14	14	0.50	0.75	0.37	2.95	0.70	570900
SR0540F14	14	0.54	0.75	0.38	2.98	0.77	570901
SR0570H14	14	0.57	0.75	0.41	3.20	1.00	570902
SR0670H14	14	0.67	0.75	0.53	3.35	1.18	570903
SR0790H21	21	0.79	0.75	0.61	3.66	1.57	570904
SR1140J30	30	1.14	1.00	0.91	4.25	1.85	570905
SR1730M40	40	1.73	1.50	1.38	6.02	3.19	570906

Single Insert Coolant-Thru
Long Carbide Shank

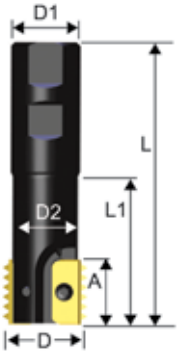


Single Insert Cutters (Carbide Shank/Long Length)

For holders with long overhang reduce cutting speed and feed rate between 20% to 40%

Type	Insert Size A=mm	D (Inch)	D1 (Inch)	D2 (Inch)	L (Inch)	Code
SR0500J14C	14	0.50	0.375	0.375	6.0	570920
SR0620K14C	14	0.62	0.500	0.500	7.0	570921
SR0820M21C	21	0.82	0.625	0.625	8.0	570922

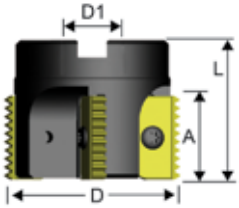
Double Insert Coolant-Thru



Double Insert Cutters (2 Inserts)

Type	Insert Size A=mm	D (Inch)	D1 (Inch)	D2 (Inch)	L (Inch)	L1 (Inch)	Code
SR0790H14-2	14	0.79	0.75	0.63	3.66	1.57	570910
SR1180J21-2	21	1.18	1.00	0.94	4.25	1.97	570911
SR1580L30-2	30	1.57	1.25	1.18	5.12	2.80	570912
SR1970M40-2	40	1.97	1.50	1.49	6.02	3.35	570913

Multi-Insert



Multi-Insert Shell Mill Cutters

Type	Insert Size A=mm	D (Inch)	D1 (Inch)	L (Inch)	No. of Inserts	Code
SR2480C21-5	21	2.48	0.75	1.97	5	570914
SR2480C30-4	30	2.48	0.75	1.97	4	570915
SR3150D30-4	30	3.15	1.00	2.16	4	570916
SR3940D30-4	30	3.94	1.25	2.36	4	570917
SR3150D40-4	40	3.15	1.00	2.56	4	570918
SR3940E40-4	40	3.94	1.25	2.76	4	570919

Indexable Thread Milling Cutters

Indexable Thread Milling Cutter Accessories

Insert Screws

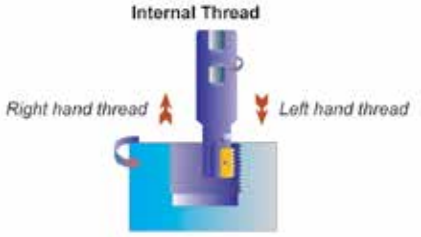
Insert Size A=mm	Insert Screw	Code
14	S14	570890
21	S21	570891
30	S30	570892
40	S40	570893

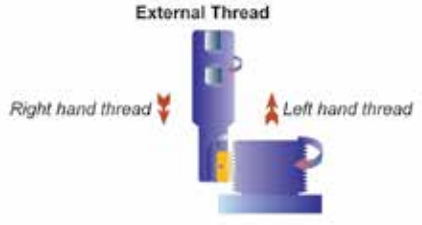
Torx® Keys

Insert Size A=mm	Torx® Key	Code
14	K14	570895
21	K21	570896
30	K30	570897
40	K40	570898

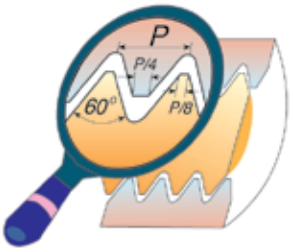
Indexable Thread Milling Inserts

UN, ISO & NPT – Internal & External





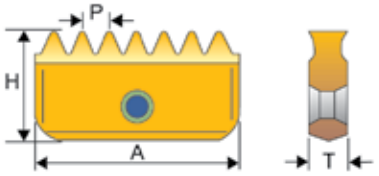
CARMEX series inserts also fit STELLRAM, ISCAR, GREENFIELD, STS, and XACTFORM/DURAMET

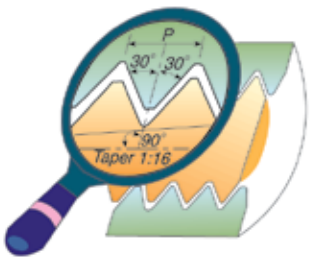


UN and ISO: *Thread milling operation is applicable for thread cutting in non-symmetrical parts, utilizing the advantage of helical interpolation programs of modern machining centers*

Insert Dimensions

Insert Size A		H		T	
Inch	mm	Inch	mm	Inch	mm
0.551	14	0.295	7.5	0.122	3.1
0.827	21	0.472	12.0	0.185	4.7
1.181	30	0.630	16.0	0.217	5.5
1.575	40	0.787	20.0	0.248	6.3

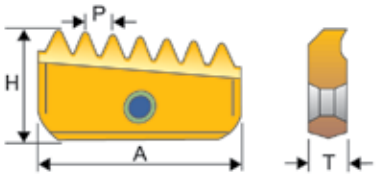




NPT: *Conical pipe thread inserts are single-sided and may be used for both external and internal threading. Thread milling operation is applicable for thread cutting in non-symmetrical parts, utilizing the advantage of helical interpolation programs of modern machining centers.*

Insert Dimensions

Insert Size A		H		T	
Inch	mm	Inch	mm	Inch	mm
0.551	14	0.295	7.5	0.122	3.1
0.827	21	0.472	12.0	0.185	4.7
1.181	30	0.630	16.0	0.217	5.5
1.575	40	0.787	20.0	0.248	6.3



UN

Pitch (TPI)	A Insert Size	Internal		External	
		Insert Reference	Code	Insert Reference	Code
32	14 mm (0.551")	14I 32 UN	570750	14E 32 UN	570700
28	14 mm (0.551")	14I 28 UN	570751	14E 28 UN	570701
24	14 mm (0.551")	14I 24 UN	570752	14E 24 UN	570702
20	14 mm (0.551")	14I 20 UN	570753	14E 20 UN	570703
18	14 mm (0.551")	14I 18 UN	570754	14E 18 UN	570704
16	14 mm (0.551")	14I 16 UN	570755	14E 16 UN	570705
14	14 mm (0.551")	14I 14 UN	570756	14E 14 UN	570706
12	14 mm (0.551")	14I 12 UN	570757	14E 12 UN	570707
24	21 mm (0.827")	21I 24 UN	570762	21E 24 UN	570712
20	21 mm (0.827")	21I 20 UN	570763	21E 20 UN	570713

Indexable Thread Milling Inserts

UN, ISO & NPT – Internal & External *(continued)*

UN *(continued)*

Pitch (TPI)	A Insert Size	Internal		External	
		Insert Reference	Code	Insert Reference	Code
18	21 mm (0.827”)	21I 18 UN	570764	21E 18 UN	570714
16	21 mm (0.827”)	21I 16 UN	570765	21E 16 UN	570715
14	21 mm (0.827”)	21I 14 UN	570766	21E 14 UN	570716
12	21 mm (0.827”)	21I 12 UN	570767	21E 12 UN	570717
10	21 mm (0.827”)	21I 10 UN	570768	21E 10 UN	570718
8	21 mm (0.827”)	21I 8 UN	570769	–	–
20	30 mm (1.181”)	30I 20 UN	570773	30E 20 UN	570723
18	30 mm (1.181”)	30I 18 UN	570774	30E 18 UN	570724
16	30 mm (1.181”)	30I 16 UN	570775	30E 16 UN	570725
14	30 mm (1.181”)	30I 14 UN	570776	30E 14 UN	570726
12	30 mm (1.181”)	30I 12 UN	570777	30E 12 UN	570727
10	30 mm (1.181”)	30I 10 UN	570778	30E 10 UN	570728
8	30 mm (1.181”)	30I 8 UN	570779	30E 8 UN	570729
6	30 mm (1.181”)	30I 6 UN	570780	30E 6 UN	570730
16	40 mm (1.575”)	40I 16 UN	570785	40E 16 UN	570735
14	40 mm (1.575”)	40I 14 UN	570786	40E 14 UN	570736
12	40 mm (1.575”)	40I 12 UN	570787	40E 12 UN	570737
10	40 mm (1.575”)	40I 10 UN	570788	40E 10 UN	570738
8	40 mm (1.575”)	40I 8 UN	570789	40E 8 UN	570739
6	40 mm (1.575”)	40I 6 UN	570790	40E 6 UN	570740

ISO

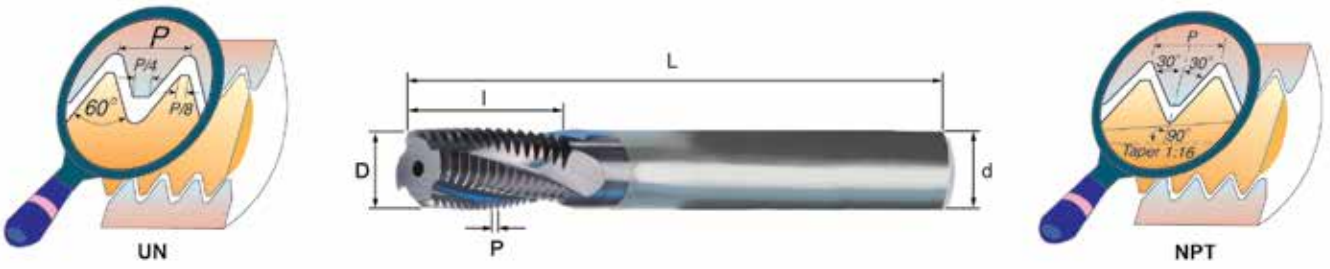
Pitch (TPI)	A Insert Size	Internal		External	
		Insert Reference	Code	Insert Reference	Code
0.5	14 mm (0.551”)	14I 0.5 ISO	570850	–	–
0.75	14 mm (0.551”)	14I 0.75 ISO	570851	14E 0.75 ISO	570801
1.0	14 mm (0.551”)	14I 1.0 ISO	570852	14E 1.0 ISO	570802
1.25	14 mm (0.551”)	14I 1.25 ISO	570853	14E 1.25 ISO	570803
1.5	14 mm (0.551”)	14I 1.5 ISO	570854	14E 1.5 ISO	570804
2.0	14 mm (0.551”)	14I 2.0 ISO	570855	14E 2.0 ISO	570805
2.5	14 mm (0.551”)	14I 2.5 ISO	570856	14E 2.5 ISO	570806
1.0	21 mm (0.827”)	21I 1.0 ISO	570862	21E 1.0 ISO	570812
1.5	21 mm (0.827”)	21I 1.5 ISO	570864	21E 1.5 ISO	570814
2.0	21 mm (0.827”)	21I 2.0 ISO	570865	21E 2.0 ISO	570815
2.5	21 mm (0.827”)	21I 2.5 ISO	570866	21E 2.5 ISO	570816
3.0	21 mm (0.827”)	21I 3.0 ISO	570867	21E 3.0 ISO	570817
1.5	30 mm (1.181”)	30I 1.5 ISO	570874	30E 1.5 ISO	570824
2.0	30 mm (1.181”)	30I 2.0 ISO	570875	30E 2.0 ISO	570825
3.0	30 mm (1.181”)	30I 3.0 ISO	570877	30E 3.0 ISO	570827
4.0	30 mm (1.181”)	30I 4.0 ISO	570878	30E 4.0 ISO	570828
1.5	40 mm (1.575”)	40I 1.5 ISO	570884	40E 1.5 ISO	570834
2.0	40 mm (1.575”)	40I 2.0 ISO	570885	40E 2.0 ISO	570835
3.0	40 mm (1.575”)	40I 3.0 ISO	570887	40E 3.0 ISO	570837
4.0	40 mm (1.575”)	40I 4.0 ISO	570888	40E 4.0 ISO	570838

NPT

Pitch (TPI)	A Insert Size	Insert Reference	Code
18	14 mm (0.551”)	14-18 NPT	570791
14	14 mm (0.551”)	14-14 NPT	570792
14	21 mm (0.8927”)	21-14 NPT	570793
11.5	21 mm (0.8927”)	21-11.5 NPT	570794
11.5	30 mm (1.181”)	30-11.5 NPT	570795
8	30 mm (1.181”)	30-8 NPT	570796
11.5	40 mm (1.575”)	40-11.5 NPT	570797
8	40 mm (1.575”)	40-8 NPT	570798

Thread Milling Cutters

Solid Carbide – Helical – UN & NPT



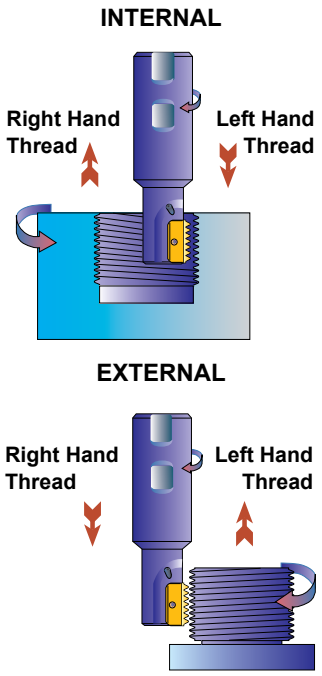
UN with Coolant-Thru

Pitch (TPI)	Standard Tap Size UNC	Standard Tap Size UNF	Standard Tap Size UNEF	Ød (Inch)	ØD (Inch)	No. of Flutes	l (Inch)	L (Inch)	Description	Code
32	8	10	12	1/4	0.126	3	0.27	2.50	MTB0250C02 32 UN	570120
28	-	1/4	-	1/4	0.197	3	0.44	2.50	MTB0250C04 28 UN	570122
28	-	-	7/16 - 1/2	1/4	0.250	3	0.56	2.50	MTB0250C05 28 UN	570124
24	-	5/16	-	5/16	0.260	3	0.56	2.50	MTB0312C05 24 UN	570126
24	-	3/8	9/16 - 5/8	5/16	0.312	4	0.81	2.50	MTB0312D08 24 UN	570128
20	1/4	-	-	1/4	0.185	3	0.48	2.50	MTB0250C04 20 UN	570130
20	-	7/16	-	5/16	0.312	3	0.83	2.50	MTB0312C08 20 UN	570132
20	-	1/2	-	3/8	0.375	4	0.88	3.00	MTB0375D08 20 UN	570134
20	-	-	3/4 - 1	1/2	0.500	5	1.07	4.00	MTB0500E10 20 UN	570136
18	5/16	-	-	1/4	0.220	3	0.58	2.50	MTB0250C05 18 UN	570138
18	-	9/16 - 5/8	1-1/8 - 1-5/8	1/2	0.445	4	1.03	4.00	MTB0500D10 18 UN	570140
16	3/8	-	-	5/16	0.264	3	0.66	2.50	MTB0312C06 16 UN	570142
16	-	3/4	-	1/2	0.500	4	1.22	4.00	MTB0500D12 16 UN	570144
14	7/16	-	-	5/16	0.303	3	0.82	2.50	MTB0312C08 14 UN	570146
14	2-1/2	7/8	-	5/8	0.625	5	1.46	4.00	MTB0625E14 14 UN	570148
13	1/2	-	-	3/8	0.362	3	0.89	3.00	MTB0375C08 13 UN	570150
12	9/16	-	-	1/2	0.413	3	1.04	4.00	MTB0500C10 12 UN	570152
12	-	1 - 1-1/2	-	5/8	0.625	5	1.63	4.00	MTB0625E16 12 UN	570154
11	5/8	-	-	1/2	0.449	3	1.14	4.00	MTB0500C11 11 UN	570156
10	3/4	-	-	5/8	0.567	4	1.35	4.00	MTB0625D13 10 UN	570158
9	7/8	-	-	5/8	0.625	3	1.50	4.00	MTB0625C15 9 UN	570160

NPT with Coolant-Thru

Pitch (TPI)	Standard Tap Size (Inch)	Ød (Inch)	ØD (Inch)	No. of Flutes	l (Inch)	L (Inch)	Description	Code
27	1/8	5/16	0.299	3	0.43	2.50	MTB0312C04 27 NPT	570060
18	1/4 - 3/8	3/8	0.375	4	0.64	3.00	MTB0375D06 18 NPT	570061
14	1/2 - 3/4	5/8	0.610	4	0.89	4.00	MTB0625D08 14 NPT	570062
11.5	1 - 2	3/4	0.750	4	1.17	4.00	MTB0750D11 11.5 NPT	570063
8	2-1/2 and larger	3/4	0.750	4	1.56	4.00	MTB0750D15 8 NPT	570064

Thread Milling Information Guide

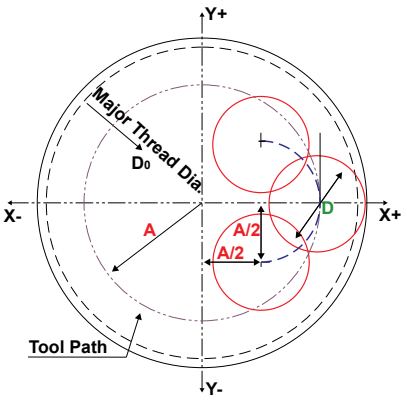


- Carbide grade MT7 (Sub-micron grade with Titanium Aluminum Nitride multi-layer coating - ISO K10-K20)
- Thread milling is good for thread cutting in asymmetrical parts, utilizing the advantages of helical interpolation programs of modern machining centers

NOTE	***RECOMMENDED FEED RATE: 0.002" - 0.006" (0.05 - 0.15 mm)*** *Cutting speed is shown in range terms. In most standard cases choosing a speed in the middle of the range would be a good choice for a start.* ***For hard metals reduce cutting speed.***

Speed Selection

ISO	Materials	Grade MT7 ft/min
P	Low and Medium Carbon Steels	380-920
	High Carbon Steels	430-660
	Alloy Steels, Treated Steels	340-590
M	Stainless Steels	430-620
	Cast Steels	490-620
K	Cast Iron	260-560
N	Non-ferrous and Aluminum	590-1120
	Synthetics, Duroplastics, Thermoplastics	380-1500
S	Nickel Alloys, Titanium Alloys	80-300



General Program

```
G90   G00 G54 G43 H1X0 Y0 Z10 S- - -
G00   Z- (to thread depth)
G01   G91 G41 D1 X(A/2) Y-(A/2) Z0 F- - -
G03   X(A/2) Y(A/2) R(A/2) Z(1/8 pitch)
G03   X0 Y0 I-(A) J0 Z(pitch)
G03   X-(A/2) Y(A/2) R(A/2) Z(1/8 pitch)
G01   G40 X-(A/2) Y-(A/2) Z0
G90   X0 Y0 Z0
```

EXAMPLE: Internal Thread

INTERNAL: 1-1/4 - 12UN x 0.71 depth
TOOL HOLDER: 570-904
CUTTING DIAMETER: 0.79
INSERT: 21 I 12 UN (570-767)
PITCH = 1/12 = 0.0833"

$\frac{\text{PITCH}}{8}$ = 0.0104"

DEPTH: 0.71
A= (1.25 - 0.79)/2=0.23"

$\frac{A}{2}$ = 0.1150"

```
G90   G00 G54 G43 H1X0 Y0 Z 0.39 S2800
G00   Z- 0.71
G01   G91 G41X 0.1150 Y-0.1150 Z0 F3.35 D1
G03   X0.1150 Y0.1150 R0.1150 Z0.0104
G03   X0 Y0 I-0.23 J0 Z0.0833
G03   X-0.1150 Y0.1150 R0.1150 Z0.0104
G01   G40 X-0.1150 Y-0.1150 Z0
G90   G0 X0 Y0 Z0
```

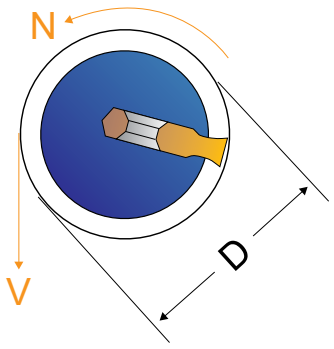
Thread Milling CNC Program for Internal Thread

Right hand thread (climb milling) from bottom up. Program is based on tool center. This method of programming needs no tool radius compensation value, other than an offset for wear.

$$A = \frac{D_0 - D}{2}$$

A = Radius of tool path
D_0 = Major thread diameter
D = Cutting diameter

Conversion of Cutting Speed to Rotational Speed



EXAMPLE: V=120 m/min (394 ft/min)
D=30 mm (1.18")
D=Cutting Diameter

Conversion of selected cutting speed to rotational speed is calculated by the following formula:

ISO

$$N = \frac{Vx1000}{\pi \times D} = \frac{120x1000}{3.14x1.25} = 1{,}274 \text{ RPM}$$

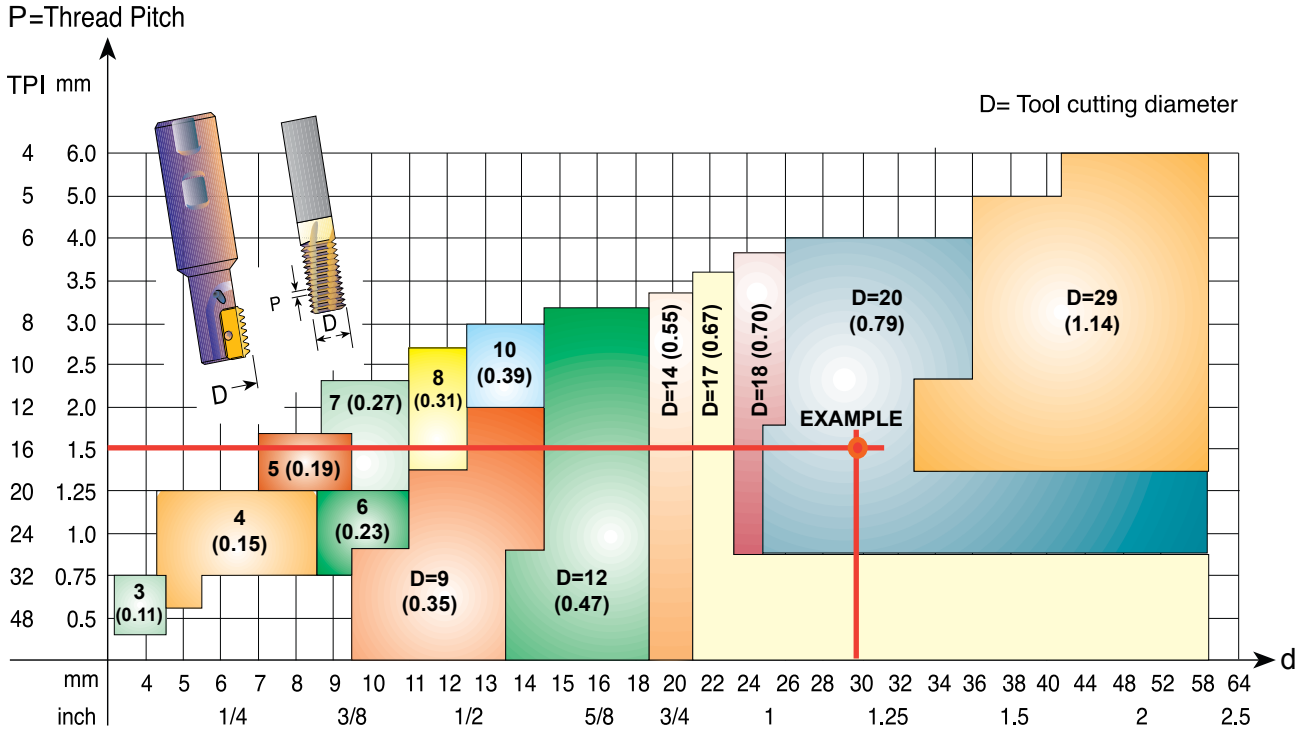
ANSI

$$N = \frac{V}{0.262xD} = \frac{394}{0.262x1.18} = 1{,}274 \text{ RPM}$$

Thread Milling Cutter Tool Selection

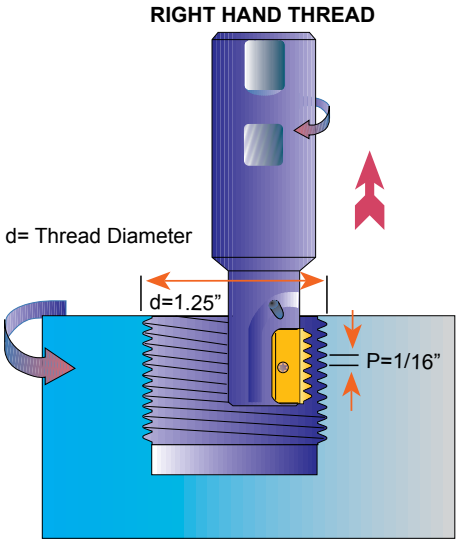
For Indexable and Solid Carbide Thread Milling Cutters

- ▶ The following chart is meant to provide a fairly accurate visual selection tool for internal threading
- ▶ This chart is suitable for the following thread forms: ISO, UN, WHIT, NPT, NPTF, BSPT



Any tool having a small cutting diameter can produce large diameter threads.
EXAMPLE: Internal thread 1-1/4 x 16UN

- ▶ Find a milling tool to produce d=1.25” internal right hand UN thread having thread pitch P=1/16”
- ▶ As can be seen from the chart above, the two red lines intersect at selected tool having cutting diameter of D=0.79”
- ▶ CHOSEN: Holder SR0790H21 (570-904)
  Insert 21I16UNMT7 (570-765)



NOTE	***TO ASSIST YOU,*** *a CD-ROM is available on request. This will help guide you to tool selection, machining recommendations, and a CNC program generator for most thread milling tools.*

Thread Milling Information Guide



Recommended Cutting Parameters

ISO	Materials	Cutting Speed ft/min	Feed inch/tooth										
			Cutting ØD										
			Ø3/32	Ø1/8	Ø5/32	Ø1/4	Ø5/16	Ø3/8	Ø1/2	Ø5/8	Ø3/4	Ø1	Ø1.25
P	Low and medium carbon steels	330-820	0.0012	0.0014	0.0020	0.002	0.003	0.003	0.004	0.005	0.005	0.007	0.009
	High carbon steels	360-590	0.0009	0.0011	0.0010	0.002	0.002	0.003	0.003	0.004	0.005	0.006	0.007
	Alloy steels, treated steels	300-520	0.0008	0.0009	0.0010	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.005
M	Stainless steels	360-560	0.0008	0.0009	0.0010	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.005
	Cast steels	430-560	0.0008	0.0009	0.0010	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.005
K	Cast iron	230-500	0.0012	0.0014	0.0020	0.002	0.003	0.003	0.004	0.005	0.005	0.007	0.009
N	Aluminum	520-980	0.0012	0.0014	0.0020	0.002	0.003	0.003	0.004	0.005	0.005	0.007	0.009
	Synthetics, duroplastics, thermoplastics	330-1300	0.0020	0.0024	0.0030	0.004	0.004	0.004	0.005	0.006	0.007	0.009	0.010
S	Nickel alloys, titanium alloys	70-760	0.0008	0.0008	0.0008	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002

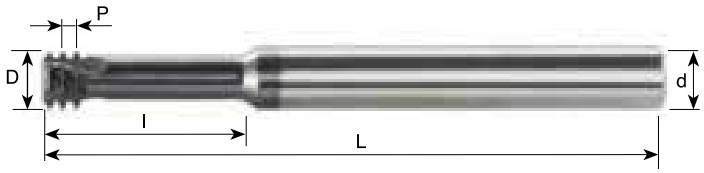
Product Identification

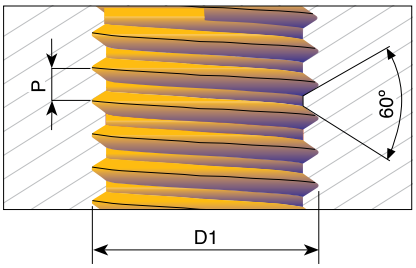
MT		0250	C	04	1.0	ISO
Mill Thread	**B** with internal coolant	**Shank Diameter** 0250 = 1/4 0312 = 5/16 0375 = 3/8	**No. of Flutes** C = 3 D = 4 E = 5 F = 6	**Approx. Cutting Length**	**Thread Pitch**	**Thread Profile** UN NPT NPTF ISO

Miniature Thread Milling Cutters

Carmex Precision Tools Ltd.

UN & Metric/ISO





UN for Thread Depth up to 2xD1

Pitch (TPI)	Standard Tap Size UNC	Standard Tap Size UNF	Ød (Inch)	ØD (Inch)	No. of Flutes	l (Inch)	L (Inch)	Description	Code
72	-	1	1/4	0.057	3	0.15	2.5	MTS0250C15 72 UN	570165
64	1	2	1/4	0.055	3	0.15	2.5	MTS0250C15 64 UN	570166
56	2	3	1/4	0.065	3	0.17	2.5	MTS0250C17 56 UN	570167
48	3	4	1/4	0.075	3	0.20	2.5	MTS0250C20 48 UN	570168
40	4	-	1/4	0.083	3	0.25	2.5	MTS0250C25 40 UN	570169
40	5	6	1/4	0.096	3	0.28	2.5	MTS0250C28 40 UN	570170
36	-	8	1/4	0.130	3	0.35	2.5	MTS0250C35 36 UN	570171
32	6	-	1/4	0.100	3	0.28	2.5	MTS0250C28 32 UN	570172
32	8	-	1/4	0.126	3	0.37	2.5	MTS0250C37 32 UN	570173
28	-	1/4	1/4	0.197	3	0.57	2.5	MTS0250C57 28 UN	570174
24	10, 12	-	1/4	0.138	3	0.42	2.5	MTS0250C42 24 UN	570175
24	-	5/16	5/16	0.260	3	0.67	2.5	MTS0312C67 24 UN	570176
20	1/4	-	1/4	0.187	3	0.55	2.5	MTS0250C55 20 UN	570177

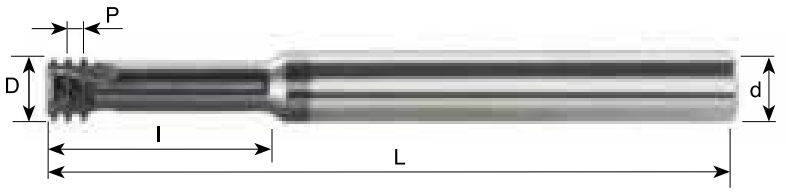
UN for Thread Depth up to 3xD1

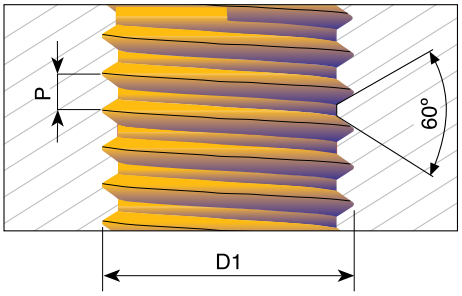
Pitch (TPI)	Standard Tap Size UNC	Standard Tap Size UNF	Ød (Inch)	ØD (Inch)	No. of Flutes	l (Inch)	L (Inch)	Description	Code
40	5	6	1/4	0.096	3	0.38	2.5	MTS0250C38 40 UN	570180
32	8	-	1/4	0.126	3	0.49	2.5	MTS0250C49 32 UN	570181
28	-	1/4	1/4	0.197	3	0.75	2.5	MTS0250C75 28 UN	570182
24	-	5/16	5/16	0.260	3	0.94	2.5	MTS0312C94 24 UN	570183
20	1/4	-	1/4	0.187	3	0.75	2.5	MTS0250C75 20 UN	570184

Miniature Thread Milling Cutters

Carmex Precision Tools Ltd.

UN & Metric/ISO *(continued)*





Metric/ISO for Thread Depth up to 2xD1

Pitch (TPI)	D1	Ød (Inch)	ØD (Inch)	No. of Flutes	l (Inch)	L (Inch)	Description	Code
0.4	M2	1/4	0.061	3	0.18	2.5	MTS0250C18 0.4 ISO	570185
0.45	M2.2	1/4	0.065	3	0.20	2.5	MTS0250C20 0.45 ISO	570186
0.45	M2.5	1/4	0.077	3	0.22	2.5	MTS0250C22 0.45 ISO	570187
0.5	M3	1/4	0.093	3	0.26	2.5	MTS0250C26 0.5 ISO	570188
0.6	M3.5	1/4	0.108	3	0.30	2.5	MTS0250C30 0.6 ISO	570189
0.7	M4	1/4	0.122	3	0.35	2.5	MTS0250C35 0.7 ISO	570190
0.8	M5	1/4	0.150	3	0.49	2.5	MTS0250C49 0.8 ISO	570191
1.0	M6	1/4	0.183	3	0.55	2.5	MTS0250C55 1.0 ISO	570192
1.25	M8	1/4	0.234	3	0.71	2.5	MTS0250C71 1.25 ISO	570193

Metric/ISO for Thread Depth up to 3xD1

Pitch (TPI)	D1	Ød (Inch)	ØD (Inch)	No. of Flutes	l (Inch)	L (Inch)	Description	Code
0.45	M2.5	1/4	0.077	3	0.30	2.5	MTS0250C30 0.45 ISO	570194
0.5	M3	1/4	0.093	3	0.37	2.5	MTS0250C37 0.5 ISO	570195
0.7	M4	1/4	0.122	3	0.49	2.5	MTS0250C49 0.7 ISO	570196
0.8	M5	1/4	0.150	3	0.63	2.5	MTS0250C63 0.8 ISO	570197
1.0	M6	1/4	0.183	3	0.79	2.5	MTS0250C79 1.0 ISO	570198
1.25	M8	1/4	0.234	3	0.94	2.5	MTS0250C94 1.25 ISO	570199

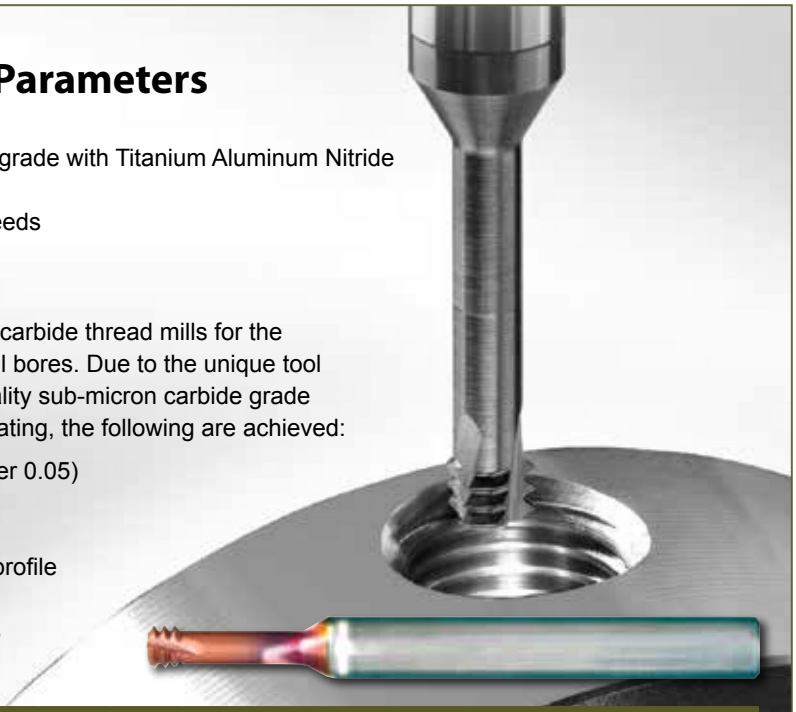
Miniature Thread Milling Information Guide

Recommended Cutting Parameters

- Solid Carbide Grade MT7 (Sub-micron grade with Titanium Aluminum Nitride multi-layer coating - ISO K10-K20)
- To be run at medium to high cutting speeds
- General purpose for all materials

ADVANTAGES: Specially designed solid carbide thread mills for the production of internal threads in very small bores. Due to the unique tool design, accurate geometries and high quality sub-micron carbide grade with Titanium Aluminum Nitride (TiAlN) coating, the following are achieved:

- Threading from 0-80UNF (bore diameter 0.05)
- Working in high cutting speed
- Short machine time
- Low cutting forces thanks to the short profile
- No broken taps
- Threading up to shoulder in blind holes
- Machining of hardened materials



ISO	Materials	Cutting Speed ft/min	Feed inch/tooth												
			Cutting ØD												
			Ø0.06	Ø0.08	Ø0.12	Ø0.16	Ø0.20	Ø0.24	Ø0.28	Ø0.31	Ø0.35	Ø0.39	Ø0.47	Ø0.55	Ø0.59
P	Low and medium carbon steels	200-390	0.0018	0.0021	0.0028	0.0035	0.0043	0.0050	0.0057	0.0060	0.0062	0.0064	0.0067	0.0070	0.0071
	High carbon steels	200-300	0.0016	0.0019	0.0024	0.0030	0.0035	0.0041	0.0046	0.0050	0.0054	0.0057	0.0062	0.0067	0.0069
	Alloy steels, treated steels	160-260	0.0015	0.0017	0.0019	0.0021	0.0024	0.0026	0.0028	0.0033	0.0037	0.0041	0.0047	0.0052	0.0055
M	Stainless steels	200-300	0.0011	0.0013	0.0016	0.0019	0.0022	0.0025	0.0026	0.0031	0.0035	0.0038	0.0044	0.0049	0.0051
	Cast steels	230-300	0.0015	0.0017	0.0019	0.0021	0.0024	0.0026	0.0028	0.0033	0.0037	0.0041	0.0047	0.0052	0.0055
K	Cast iron	130-260	0.0018	0.0021	0.0028	0.0035	0.0043	0.0050	0.0057	0.0060	0.0062	0.0064	0.0067	0.0070	0.0071
N	Aluminum	260-490	0.0018	0.0021	0.0028	0.0035	0.0043	0.0050	0.0057	0.0060	0.0062	0.0064	0.0067	0.0070	0.0071
	Synthetics, duroplastics, thermoplastics	160-660	0.0038	0.0042	0.0049	0.0056	0.0063	0.0070	0.0073	0.0074	0.0075	0.0075	0.0077	0.0078	0.0078
S	Nickel alloys, titanium alloys	70-130	0.0011	0.0013	0.0015	0.0017	0.0020	0.0022	0.0024	0.0025	0.0026	0.0027	0.0029	0.0031	0.0031

Product Identification

MTS	0250	C	18	0.4	ISO
Miniature Thread Milling Cutter	**Shank Diameter** 0250 = 1/4 0312 = 5/16	**No. of Flutes** C = 3 D = 4 E = 5	**l Dimension** 18 = 0.18”	**Thread Pitch**	**Thread Profile** UN ISO

Thread Milling Information Guide



Thread Milling Inserts and Tool Holders

- Threading on CNC milling machines by using helical interpolation programs
- Prismatic shape of insert's tail ensures exact and reliable clamping in the tool holder
- Most inserts are double sided with two cutting eges
- Longer tool life due to a special multi-layer coating process

Solid Carbide Thread Mill

- Sub-micron grade with Titanium Aluminum Nitride multi-layer coating (ISO K10-K20)
- Ideal at medium to high cutting speeds
- Suitable for general purpose applications and for all materials
- Spiral flutes allow smooth cutting action
- Shorter machining time due to multi spiral flutes (three to six)
- 2.2 mm and larger cutting diameters
- Longer tool life due to special multi-layer coating

Thread Mills with Coolant-Thru

- Coolant fluid washes the chips out of hole
- Increased tool life

Insert Trouble Shooting

Common Problems & Corrective Actions

TURNING									
Common Problems	Corrective Action								
	Reduce Speed (SFM)	Increase Speed (SFM)	Reduce Feed Rate	Increase Feed Rate	Reduce Depth of Cut (DOC)	Increase Depth of Cut (DOC)	Use Higher Wear Resistant (Harder) Grade	Use Tougher Grade	Check Rigidity of System
★Flank and notch wear	■			■			■		■
Cratering	■		■		■		■		
Chipping		■	■		■			■	■
Plastic deformation	■		■		■		■		
Built-up-edge (BUE)		■		■					
Thermal cracking	■		■		■			■	
Insert breakage			■		■			■	■
Curling of long chips	■			■		■			
Chattering (Vibration)	■			■	■				■
Poor surface finish		■	■		■				

MILLING										
Common Problems	Corrective Action									
	Reduce Speed (SFM)	Increase Speed (SFM)	Reduce Feed/Tooth	Increase Feed/Tooth	Reduce Depth of Cut (DOC)	Use Higher Wear Resistant (Harder) Grade	Use Tougher Grade	Use Coarse Pitch Cutter	Change the Cutter Position	Do Not Use Coolant
★Flank and notch wear	■			■		■				
Cratering	■		■		■	■				
Chipping		■	■				■			
Built-up-edge (BUE)		■		■	■	■				■
Insert breakage			■				■		■	
Chattering (Vibration)				■	■			■	■	
Poor surface finish	■		■		■	■				

NOTE	★*A uniform flank wear is the optimum type of insert wear. Generally, inserts should be indexed when 0.030" (0.7 mm) flank wear is reached. For finishing operations, index at 0.016" (0.4 mm) flank wear or sooner.*

PVD Grade Application

TURNING				
ISO	Grade			
	YBG102	YBG202	YBG203	YBG302
	SFM ft/min			
K01-K10	984-**1148**-1476			
S10-S20	98-**197**-295			
P01-P20		656-**918**-1181		
M10-M20		492-**722**-918		
K10-K20		820-**984**-1148		
S20-S30		148-**197**-246		
M10-M30			590-**853**-1050	
P10-P40				590-**787**-984
M10-M30				459-**656**-853
K20-K40				787-**918**-1050
S20-S30				82-**131**-180

MILLING				
ISO	Grade			
	YBG102	YBG202	YBG203	YBG302
	SFM ft/min			
K01-K20	787-**918**-1050			
H01-H10	131-**164**-197			
P01-P30		558-**722**-886		
M10-M30		590-**754**-918		
K20-K30		656-**787**-918		
S10-S20		164-**197**-230		
H10-H20		131-**148**-164		
M10-M30			590-**787**-918	
S10-S20			164-**197**-230	
H10-H20			131-**148**-164	
P20-P40				492-**656**-820
M20-M30				525-**689**-853
K20-K40				590-**722**-853
S20-S30				115-**131**-148

P M K S H



CVD Grade Application

P M K S H

TURNING						
ISO	CVD Grade					
	YBC151	YBC251	YBC351	YBM151	YBM251	YBM351
	SFM ft/min					
P05-P35	900-**1200**-1500					
P10-P35		850-**1100**-1300				
M20-M40		390-**600**-850				
P15-P35			720-**900**-1100			
M20-M40			390-**500**-780			
P20-P30				820-**1000**-1150		
M10-M25				520-**720**-900		
P25-P40					720-**900**-1050	
M15-M35					390-**600**-780	
M25-M40						520-**750**-900

TURNING								
ISO	CVD Grade					Cermet	PCBN	PCD
	YBD102	YBD151	YBD152	YD101	YD201	YNG151	YCB011/2	YCD011
	SFM ft/min							
K10-K25	650-**1000**-1300							
K05-K25		520-**750**-900						
K10-K30			590-**800**-980		650-**1300**-2600			
K05-K20				490-**3300**-6500				
P05-P15						1050-**1300**-1500		
M10-M20						520-**720**-900		
K05-K15						520-**700**-850		
K01-K10							650-**1300**-2600	2000-**6000**-8200

MILLING						
ISO	CVD Grade				Uncoated	Cermet
	YBC301	YBC401	YBM251	YBD151	YD201	YNG151
	SFM ft/min					
P25-P45	520-**750**-980					
M25-M40	390-**520**-780					
P25-P50		520-**650**-780				
K30-K40		500-**600**-750				
P25-P40			720-**900**-1050			
M15-M40			390-**600**-780			
K02-K15				300-**600**-900		
K20-K30					150-**210**-280	
P05-P15						1050-**1300**-1500
M10-M20						520-**720**-900
K05-K15						520-**700**-850

Basic Turning & Milling Formulas

Parameters	Units	Description
d	in	Workpiece diameter or cutter diameter in inches
D.O.C. or ap	in	Depth of Cut in inches
W.O.C.	in	Width of Cut in inches
L	in	Machined length in inches
t	min	Cutting time
N		Number of effective inserts
IPM or Feed Rate	ipm = in/min	Feed rate in inches per minute
IPR or apr	ipr = in/rev	Inches of cutter advance every revolution
IPT or apt	ipt = in/tooth	Inches of cutter advance for each effective insert every revolution
RPM	rev/min	Revolutions per minute
SFM	ft/min	Cutting speed in surface feet per minute
Q	in3/min	Metal removal rate in cubic inches per minute
HP_S	HP_S	Horsepower required at the machine spindle
k★		k★ factors are available from reference books

TURNING			
	Find	Units	Given
Cutting Speed	SFM = 0.262 x d x RPM	ft/min	d, RPM
Spindle Speed	RPM = 3.82 x (SFM/d)	rev/min	d, SFM
Feed Rate	IPM = IPR x RPM	in/min	IPR, RPM
Metal Removal Rate	Q = 12 x ap x IPR x SFM	in3/min	SFM, ap, IPR
Cutting Time	t = L/(IPR x RPM)	min	
Power Requirement	HP_S = Q x k★	HP_S	

MILLING			
	Find	Units	Given
Cutting Speed	SFM = 0.262 x d x RPM	ft/min	d, RPM
Spindle Speed	RPM = 3.82 x (SFM/d)	rev/min	d, SFM
Feed Rate	IPM = IPR x RPM	in/min	IPR, RPM
	IPM = IPT x N x RPM	in/min	RPM, N, IPT
Inches per Revolution	IPR = IPM/RPM	in/rev	IPM, RPM
Spindle Speed	RPM = IPM/IPR	rev/min	IPM, IPR
Spindle Speed	RPM = IPM/(N x IPT)	rev/min	IPM, N, IPT
Number of Effective Inserts	N = IPM/(RPM x IPT)		IPM, RPM, IPT
Inches per Tooth	IPT = IPM/(RPM x N)	in/tooth	IPM, N, RPM
Metal Removal Rate	Q = D.O.C. x W.O.C. x IPM		
Horsepower	HP = Q x k★	HP	Q, k★

Abrasives

294-299



Files

300



Sharpening

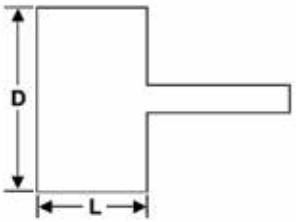
300



Mounted Flap Wheels

1/4" Shank





Size D x L (Inch)	Grit	RPM	Code
3/4 x 3/4	40	-	705180
3/4 x 3/4	60	-	705181
3/4 x 3/4	80	-	705182
3/4 x 3/4	120	-	705183
3/4 x 3/4	150	-	705184
3/4 x 3/4	180	-	705185
3/4 x 3/4	240	-	705186
3/4 x 3/4	320	-	705187
1 x 1	40	-	705190
1 x 1	60	-	705191
1 x 1	80	-	705192
1 x 1	120	-	705193
1 x 1	150	-	705194
1 x 1	180	-	705195
1 x 1	240	-	705196
1 x 1	320	-	705197
1-3/16 x 3/16	40	25000	705200
1-3/16 x 3/16	60	25000	705201
1-3/16 x 3/16	80	25000	705202
1-3/16 x 3/16	120	25000	705203
1-3/16 x 3/16	150	25000	705204
1-3/16 x 3/16	180	25000	705205
1-3/16 x 3/16	240	25000	705206
1-3/16 x 3/16	320	25000	705207
1-3/16 x 3/8	40	25000	705210
1-3/16 x 3/8	60	25000	705211
1-3/16 x 3/8	80	25000	705212
1-3/16 x 3/8	120	25000	705213
1-3/16 x 3/8	150	25000	705214
1-3/16 x 3/8	180	25000	705215
1-3/16 x 3/8	240	25000	705216
1-3/16 x 3/8	320	25000	705217
1-1/2 x 1/2	40	18000	705220
1-1/2 x 1/2	60	18000	705221
1-1/2 x 1/2	80	18000	705222
1-1/2 x 1/2	120	18000	705223
1-1/2 x 1/2	150	18000	705224
1-1/2 x 1/2	180	18000	705225
1-1/2 x 1/2	240	18000	705226
1-1/2 x 1/2	320	18000	705227
1-1/2 x 5/8	60	18000	705231
1-1/2 x 5/8	80	18000	705232
1-1/2 x 5/8	120	18000	705233
1-1/2 x 5/8	150	18000	705234
1-1/2 x 5/8	180	18000	705235
1-1/2 x 3/4	40	18000	705240
1-1/2 x 3/4	60	18000	705241
1-1/2 x 3/4	80	18000	705242
1-1/2 x 3/4	120	18000	705243
1-1/2 x 3/4	150	18000	705244
1-1/2 x 3/4	180	18000	705245
1-1/2 x 3/4	240	18000	705246
1-1/2 x 3/4	320	18000	705247
1-1/2 x 1	40	18000	705260
1-1/2 x 1	60	18000	705261
1-1/2 x 1	80	18000	705262
1-1/2 x 1	120	18000	705263
1-1/2 x 1	150	18000	705264
1-1/2 x 1	180	18000	705265
1-1/2 x 1	240	18000	705266
1-1/2 x 1	320	18000	705267
2 x 3/8	40	17000	705270
2 x 3/8	60	17000	705271
2 x 3/8	80	17000	705272
2 x 3/8	120	17000	705273
2 x 3/8	150	17000	705274
2 x 3/8	180	17000	705275
2 x 3/8	240	17000	705276
2 x 3/8	320	17000	705277
2 x 1/2	40	17000	705280
2 x 1/2	60	17000	705281
2 x 1/2	80	17000	705282
2 x 1/2	120	17000	705283
2 x 1/2	150	17000	705284
2 x 1/2	180	17000	705285
2 x 1/2	240	17000	705286
2 x 1/2	320	17000	705287
2 x 5/8	40	17000	705290
2 x 5/8	60	17000	705291
2 x 5/8	80	17000	705292
2 x 5/8	120	17000	705293
2 x 5/8	150	17000	705294
2 x 5/8	180	17000	705295
2 x 5/8	240	17000	705296
2 x 5/8	320	17000	705297
2 x 3/4	40	17000	705300
2 x 3/4	60	17000	705301
2 x 3/4	80	17000	705302
2 x 3/4	120	17000	705303
2 x 3/4	150	17000	705304
2 x 3/4	180	17000	705305
2 x 3/4	240	17000	705306
2 x 3/4	320	17000	705307
2 x 1	40	17000	705310
2 x 1	60	17000	705311
2 x 1	80	17000	705312
2 x 1	120	17000	705313
2 x 1	150	17000	705314
2 x 1	180	17000	705315
2 x 1	240	17000	705316
2 x 1	320	17000	705317
2 x 1-1/2	40	17000	705320
2 x 1-1/2	60	17000	705321
2 x 1-1/2	80	17000	705322
2 x 1-1/2	120	17000	705323
2 x 1-1/2	150	17000	705324
2 x 1-1/2	180	17000	705325
2 x 1-1/2	240	17000	705326
2 x 1-1/2	320	17000	705327
2-1/2 x 1/2	40	15000	705330
2-1/2 x 1/2	60	15000	705331
2-1/2 x 1/2	80	15000	705332
2-1/2 x 1/2	120	15000	705333
2-1/2 x 1/2	150	15000	705334
2-1/2 x 1/2	180	15000	705335
2-1/2 x 1/2	240	15000	705336
2-1/2 x 1/2	320	15000	705337
2-1/2 x 3/4	40	15000	705340
2-1/2 x 3/4	60	15000	705341
2-1/2 x 3/4	80	15000	705342
2-1/2 x 3/4	120	15000	705343
2-1/2 x 3/4	150	15000	705344
2-1/2 x 3/4	180	15000	705345
2-1/2 x 3/4	240	15000	705346
2-1/2 x 3/4	320	15000	705347
2-1/2 x 1	40	15000	705350
2-1/2 x 1	60	15000	705351
2-1/2 x 1	80	15000	705352
2-1/2 x 1	120	15000	705353
2-1/2 x 1	150	15000	705354
2-1/2 x 1	180	15000	705355
2-1/2 x 1	240	15000	705356
2-1/2 x 1	320	15000	705357
2-1/2 x 1-1/2	40	15000	705360
2-1/2 x 1-1/2	60	15000	705361
2-1/2 x 1-1/2	80	15000	705362
2-1/2 x 1-1/2	120	15000	705363
2-1/2 x 1-1/2	150	15000	705364
2-1/2 x 1-1/2	180	15000	705365
2-1/2 x 1-1/2	240	15000	705366
2-1/2 x 1-1/2	320	15000	705367
3 x 1/2	40	14000	705370
3 x 1/2	60	14000	705371
3 x 1/2	80	14000	705372
3 x 1/2	120	14000	705373
3 x 1/2	150	14000	705374
3 x 1/2	180	14000	705375
3 x 1/2	240	14000	705376
3 x 1/2	320	14000	705377
3 x 3/4	40	14000	705390
3 x 3/4	60	14000	705391
3 x 3/4	80	14000	705392
3 x 3/4	120	14000	705393

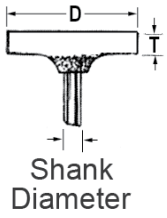
Mounted Flap Wheels

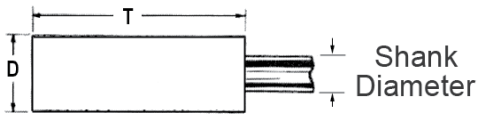
1/4" Shank *(continued)*

Size D x L (Inch)	Grit	RPM	Code
3 x 3/4	150	14000	705394
3 x 3/4	180	14000	705395
3 x 3/4	240	14000	705396
3 x 3/4	320	14000	705397
3 x 1	40	14000	705400
3 x 1	60	14000	705401
3 x 1	80	14000	705402
3 x 1	120	14000	705403
3 x 1	150	14000	705404
3 x 1	180	14000	705405
3 x 1	240	14000	705406
3 x 1	320	14000	705407
3 x 1-1/2	40	9000	705410
3 x 1-1/2	60	9000	705411
3 x 1-1/2	80	9000	705412
3 x 1-1/2	120	9000	705413
3 x 1-1/2	150	9000	705414
3 x 1-1/2	180	9000	705415
3 x 1-1/2	240	9000	705416
3 x 1-1/2	320	9000	705417
3 x 2	40	8000	705420
3 x 2	60	8000	705421
3 x 2	80	8000	705422
3 x 2	120	8000	705423
3 x 2	150	8000	705424
3 x 2	180	8000	705425
3 x 2	240	8000	705426
3 x 2	320	8000	705427

Mounted Points

General Purpose – W Shapes – 1/8", 1/4" & 3/8" Shanks



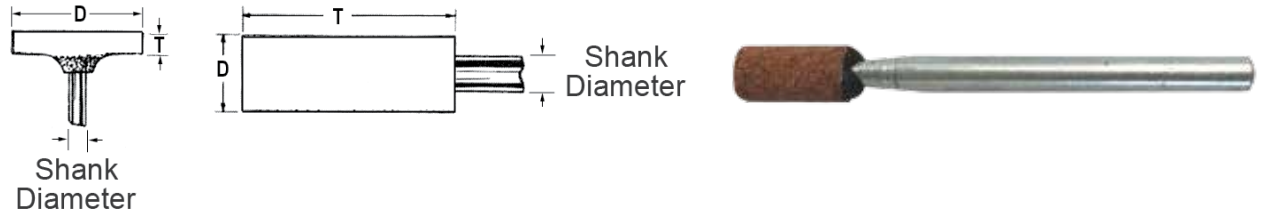




Style	Shank (Inch)	ØD (Inch)	T (Inch)	Code
W141	1/8	3/32	5/32	725241
W142	1/8	3/32	1/4	725242
W143	1/8	1/8	1/8	725243
W144	1/8	1/8	1/4	725244
W145	1/8	1/8	3/8	725245
W145	1/4	1/8	3/8	718700
W146	1/8	1/8	1/2	725246
W147	1/8	5/32	1/32	725247
W148	1/8	5/32	1/16	725248
W149	1/8	5/32	1/4	725249
W149	1/4	5/32	1/4	718701
W150	1/8	3/16	1/16	725250
W151	1/8	3/16	1/8	725251
W152	1/8	3/16	1/4	725252
W152	1/4	3/16	1/4	718702
W153	1/8	3/16	3/8	725253
W153	1/4	3/16	3/8	718703
W154	1/8	3/16	1/2	725254
W154	1/4	3/16	1/2	718704
W155	1/8	13/64	1/4	725255
W155	1/4	13/64	1/4	718705
W156	1/8	1/4	1/32	725256
W157	1/8	1/4	1/16	725257
W157	1/4	1/4	1/16	718706
W158	1/8	1/4	1/8	725258
W159	1/8	1/4	3/16	725259
W160	1/8	1/4	1/4	725260
W160	1/4	1/4	1/4	718707
W161	1/8	1/4	5/16	725261
W161	1/4	1/4	5/16	718708
W162	1/8	1/4	3/8	725262
W162	1/4	1/4	3/8	718709
W163	1/8	1/4	1/2	725263
W163	1/4	1/4	1/2	718710
W164	1/8	1/4	3/4	725264
W164	1/4	1/4	3/4	718711
W165	1/8	5/16	1/16	725265
W165	1/4	5/16	1/16	718712
W166	1/8	5/16	1/8	725266
W167	1/8	5/16	1/4	725267
W168	1/8	5/16	5/16	725268
W169	1/8	5/16	3/8	725269
W169	1/4	5/16	3/8	718713
W170	1/8	5/16	1/2	725270
W170	1/4	5/16	1/2	718714
W171	1/8	5/16	3/4	725271
W172	1/8	3/8	1/16	725272
W173	1/8	3/8	1/8	725273
W173	1/4	3/8	1/8	718715
W174	1/8	3/8	1/4	725274
W174	1/4	3/8	1/4	718716
W175	1/8	3/8	3/8	725275
W175	1/4	3/8	3/8	718717
W176	1/8	3/8	1/2	725276
W176	1/4	3/8	1/2	718718
W177	1/8	3/8	3/4	725277
W177	1/4	3/8	3/4	718719
W178	1/8	3/8	1	725278
W178	1/4	3/8	1	718720
W180	1/8	1/2	1/32	725280
W181	1/8	1/2	1/16	725281
W181	1/4	1/2	1/16	718721

Mounted Points

General Purpose – W Shapes – 1/8", 1/4" & 3/8" Shanks *(continued)*



Style	Shank (Inch)	ØD (Inch)	T (Inch)	Code
W182	1/8	1/2	1/8	725282
W182	1/4	1/2	1/8	718722
W183	1/8	1/2	1/4	725283
W183	1/4	1/2	1/4	718723
W184	1/8	1/2	3/8	725284
W184	1/4	1/2	3/8	718724
W185	1/8	1/2	1/2	725285
W185	1/4	1/2	1/2	718725
W186	1/8	1/2	3/4	725286
W186	1/4	1/2	3/4	718726
W187	1/8	1/2	1	725287
W187	1/4	1/2	1	718727
W190	1/8	5/8	1/16	725290
W191	1/8	5/8	1/8	725291
W191	1/4	5/8	1/8	718728
W192	1/8	5/8	1/4	725292
W192	1/4	5/8	1/4	718729
W193	1/8	5/8	3/8	725293
W193	1/4	5/8	3/8	718730
W194	1/8	5/8	1/2	725294
W194	1/4	5/8	1/2	718731
W195	1/8	5/8	3/4	725295
W195	1/4	5/8	3/4	718732
W196	1/8	5/8	1	725296
W198	1/4	5/8	2-1/2	718733
W199	1/8	3/4	1/16	725299
W199	1/4	3/4	1/16	718734
W200	1/8	3/4	1/8	725300
W200	1/4	3/4	1/8	718735
W201	1/8	3/4	1/4	725301
W201	1/4	3/4	1/4	718736
W202	1/8	3/4	3/8	725302
W202	1/4	3/4	3/8	718737
W203	1/8	3/4	1/2	725303
W203	1/4	3/4	1/2	718738
W204	1/8	3/4	3/4	725304
W204	1/4	3/4	3/4	718739
W205	1/8	3/4	1	725305
W205	1/4	3/4	1	718740
W210	1/8	7/8	1/16	725310

Style	Shank (Inch)	ØD (Inch)	T (Inch)	Code
W210	1/4	7/8	1/16	718742
W211	1/8	7/8	1/8	725311
W211	1/4	7/8	1/8	718743
W212	1/8	7/8	1/4	725312
W212	1/4	7/8	1/4	718744
W213	1/8	7/8	3/8	725313
W213	1/4	7/8	3/8	718745
W214	1/8	15/16	1/4	725314
W214	1/4	15/16	1/4	718746
W215	1/8	1	1/8	725315
W215	1/4	1	1/8	718747
W216	1/8	1	1/4	725316
W216	1/4	1	1/4	718748
W218	1/4	1	1/2	725318
W219	1/4	1	3/4	725319
W220	1/4	1	1	725320
W221	1/4	1	1-1/2	725321
W222	1/4	1	2	725322
W223	1/4	1	2-1/2	725323
W224	1/4	1	3	725324
W224	3/8	1	3	718771
W225	1/4	1-1/4	1/4	725325
W226	1/4	1-1/4	3/8	725326
W227	1/4	1-1/4	1/2	725327
W228	1/4	1-1/4	3/4	725328
W229	1/4	1-1/4	1	725329
W230	1/4	1-1/4	1-1/4	725330
W231	1/4	1-1/4	1-1/2	725331
W232	1/4	1-1/4	2	718764
W233	3/8	1-1/4	2-1/2	718772
W234	3/8	1-1/4	3	718773
W235	1/4	1-1/2	1/4	725335
W236	1/4	1-1/2	1/2	725336
W237	1/4	1-1/2	1	725337
W238	1/4	1-1/2	1-1/2	718768
W239	1/4	1-1/2	2	718769
W239	3/8	1-1/2	2	718774
W240	3/8	1-1/2	2-1/2	718775
W241	1/4	1-1/2	3	725341
W241	3/8	1-1/2	3	718776

Mounted Points

General Purpose – A Shapes – 1/4" Shank



Shape	Shank (Inch)	ØD (Inch)	Length (Inch)	Code
A1	1/4	3/4	2-1/2	725101
A2	1/4	1	1-1/4	725102
A3	1/4	1	2-3/4	725103
A4	1/4	1-1/4	1-1/4	725104
A5	1/4	3/4	1-1/8	725105
A6	1/4	3/4	1-1/8	725106
A11	1/4	7/8	2	725111
A12	1/4	11/16	1-1/4	725112
A13	1/4	1-1/8	1-1/8	725113
A14	1/4	11/16	7/8	725114
A15	1/4	1/4	1-1/16	725115
A21	1/4	1	1	725121
A22	1/4	3/4	5/8	725122
A23	1/4	3/4	1	725123

Shape	Shank (Inch)	ØD (Inch)	Length (Inch)	Code
A24	1/4	1/4	3/4	725124
A25	1/4	1	-	725125
A26	1/4	5/8	-	725126
A31	1/4	1-3/8	1	725131
A32	1/4	1	5/8	725132
A33	1/4	1	1/2	725133
A34	1/4	1-1/2	3/8	725134
A35	1/4	1	3/8	725135
A36	1/4	1-5/8	3/8	725136
A37	1/4	1-1/4	1/4	725137
A38	1/4	1	1	725138
A39	1/4	3/4	3/4	725139
A40	1/4	3/4	-	725140

Mounted Points

General Purpose – B Shapes – 1/8" & 1/4" Shanks



Shape	Shank (Inch)	ØD (Inch)	Length (Inch)	Code
B41	1/8	5/8	5/8	725141
B41	1/4	5/8	5/8	718777
B42	1/8	1/2	3/4	725142
B42	1/4	1/2	3/4	718778
B43	1/8	1/4	5/16	725143
B43	1/4	1/4	5/16	718779
B44	1/8	7/32	3/8	725144
B44	1/4	7/32	3/8	718780
B45	1/8	3/16	5/16	725145
B45	1/4	3/16	5/16	718781
B46	1/8	1/8	5/16	725146
B47	1/8	1/8	5/32	725147
B51	1/8	7/16	3/4	725151

Shape	Shank (Inch)	ØD (Inch)	Length (Inch)	Code
B51	1/4	7/16	3/4	718782
B52	1/8	3/8	3/4	725152
B52	1/4	3/8	3/4	718783
B53	1/8	1/4	5/8	725153
B53	1/4	1/4	5/8	718784
B54	1/8	1/4	1/2	725154
B54	1/4	1/4	1/2	718785
B55	1/8	1/8	1/4	725155
B61	1/8	3/4	5/16	725161
B61	1/4	3/4	5/16	718786
B62	1/8	1/2	3/8	725162
B62	1/4	1/2	3/8	718787
B63	1/8	1/4	3/16	725163

Mounted Points

General Purpose – B Shapes – 1/8" & 1/4" Shanks *(continued)*

Shape	Shank (Inch)	ØD (Inch)	Length (Inch)	Code
B63	1/4	1/4	3/16	718788
B64	1/8	1/4	1/16	725164
B65	1/8	1/8	1/8	725165
B71	1/8	5/8	1/8	725171
B71	1/4	5/8	1/8	718789
B72	1/8	1/2	1/8	725172
B72	1/4	1/2	1/8	718790
B73	1/8	1/2	1/8	725173
B73	1/4	1/2	1/8	718791
B74	1/8	7/32	3/32	725174
B81	1/8	3/4	3/16	725181
B81	1/4	3/4	3/16	718792
B82	1/8	1/2	1/4	725182
B82	1/4	1/2	1/4	718793
B83	1/8	3/8	3/16	725183
B84	1/8	5/16	3/16	725184
B84	1/4	5/16	3/16	718794
B90	1/8	1/2	1/2	725190
B90	1/4	1/2	1/2	718795
B91	1/8	1/2	5/8	725191
B91	1/4	1/2	5/8	718796
B92	1/8	1/4	1/4	725192
B92	1/4	1/4	1/4	718797
B93	1/8	3/16	3/16	725193
B93	1/4	3/16	3/16	718798
B94	1/8	11/64	3/32	725194
B95	1/8	1/8	3/16	725195
B96	1/8	1/8	1/4	725196
B97	1/8	1/8	3/8	725197
B98	1/8	3/32	1/4	725198
B101	1/8	5/8	11/16	725201
B101	1/4	5/8	11/16	718799
B102	1/8	5/8	1/2	725202
B102	1/4	5/8	1/2	718800
B103	1/8	5/8	1/4	725203
B103	1/4	5/8	1/4	718801
B104	1/8	5/16	3/8	725204
B104	1/4	5/16	3/8	718802
B105	1/8	1/4	1/4	725205
B105	1/4	1/4	1/4	718803
B106	1/8	1/8	7/64	725206
B111	1/8	7/16	11/16	725211
B111	1/4	7/16	11/16	718804
B112	1/8	3/8	1/2	725212
B112	1/4	3/8	1/2	718805
B113	1/8	1/4	1/4	725213
B113	1/4	1/4	1/4	718806
B114	1/8	7/32	3/8	725214
B114	1/4	7/32	3/8	718807
B115	1/8	1/8	3/32	725215
B121	1/8	1/2	-	725221
B121	1/4	1/2	-	718808
B122	1/8	3/8	-	725222
B122	1/4	3/8	-	718809
B123	1/8	3/16	-	725223
B123	1/4	3/16	-	718810
B124	1/8	1/8	-	725224
B125	1/8	1/4	-	725225
B131	1/8	1/2	1/2	725231
B131	1/4	1/2	1/2	718811
B132	1/8	3/8	1/2	725232
B132	1/4	3/8	1/2	718812
B133	1/8	3/8	3/8	725233
B133	1/4	3/8	3/8	718813
B134	1/8	5/16	3/8	725234
B134	1/4	5/16	3/8	718814
B135	1/8	1/4	1/2	725235
B135	1/4	1/4	1/2	718815
B136	1/8	1/4	5/16	725236
B136	1/4	1/4	5/16	718816

Swiss Pattern Needle Files



Diamond Needle Files

Description	Code
Round – Medium D126	604201
5 Piece Set – Medium D126	604205
10 Piece Set – Medium D126	604210
5 Piece Set – Value	604215
10 Piece Set – Value	604220

5 Piece Set: *Equalling, Round, Square, Three Square, Half Round*

10 Piece Set: *Equalling, Round, Square, Three Square, Half Round, Flat, Crossing, Barette, Marking, Slitting*

Steel Needle Files

Description	Code
6 Piece Set – #2 Cut	718275
12 Piece Set – #0 Cut	718277

Sharpening Stones

Coarse and fine grit combined into one stone - 120 and 150 grit



Material	Size (Inch)	Code
Aluminum Oxide	1 x 2 x 6	604230
Silicon Carbide	1 x 2 x 6	604231

Live & Dead Centers
302-313



Lathe Chucks & Accessories
314-356



Turning
357-366



Milling
367-402



Machine Accessories
403-410



Vises & Accessories
411-415



Dividing Heads & Indexing Spacers
416-420



Clamping Components
421-443



Drilling
444-452



Tapping
453-457



Boring
458-459



Fluid Accessories
460-466

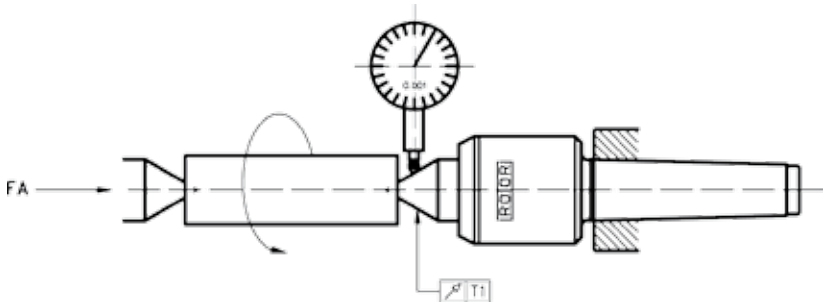


Live Centers

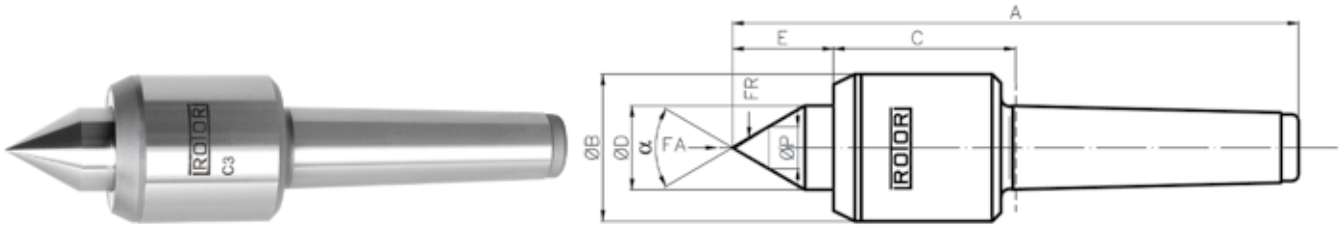
High Speed Steel – Main Line

MAIN-LINE: Reliable top of the range live center for CNC and conventional lathes, and grinding machines

- With over-pressure security through disc springs
- Body and spindle models: SM – Small body for light pieces and higher turning rate
  ST – Standard for normal loads
  SU – Super for heavy duty loads and low turning rates



Type N – Standard 60°



Accuracy of Mainline - Type N

Morse Taper	Type	FA daN min.	T1 mm max.	T1 inch max.
1-6 STD	N, V, L, A, K	20-50	0.005	0.0002
6 SUP, 7 SUP	N, A	100	0.008	0.0003

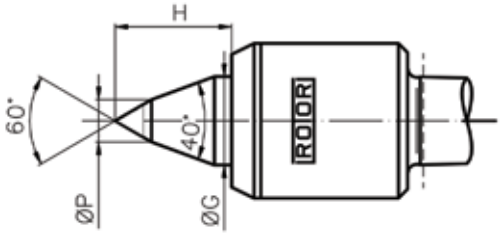
Morse Taper	Model	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	ØP (Inch) C/T Only	Workpiece Maximum (lbs)	Maximum RPM	Code
1	1 STD.	4.41	1.10	1.54	0.47	0.63	0.28	220	8000	100101
2	2 STD.	5.16	1.34	1.57	0.63	0.87	0.28	484	7000	100102
2	2 SUP.	5.79	1.65	1.93	0.95	1.14	0.43	704	5800	100112
3	3 SM.	5.83	1.34	1.57	0.63	0.87	0.28	880	7000	100133
3	3 STD.	6.56	1.65	1.93	0.95	1.14	0.43	1120	5800	100103
3	3 SUP.	6.93	2.05	2.13	1.18	1.42	0.55	1540	4800	100113
4	4 SM.	7.32	1.65	1.93	0.95	1.14	0.43	1540	5800	100134
4	4 STD.	7.80	2.05	2.13	1.18	1.42	0.55	2420	4800	100104
4	4 SUP.	8.35	2.52	2.32	1.58	1.77	0.71	3960	4000	100114
5	5 SM.	8.94	2.13	2.13	1.18	1.42	0.55	3124	4500	100135
5	5 STD.	9.53	2.60	2.36	1.58	1.77	0.71	4620	4000	100105
5	5 SUP.	10.55	3.35	3.03	1.97	2.17	0.95	6600	2800	100115
6	6 STD.	12.67	3.39	3.07	1.97	2.17	0.71	8800	2800	100106
6	6 SUP.	14.88	4.96	4.92	2.36	2.56	0.95	13200	1500	100116
7	7 SUP.	19.06	5.67	5.51	3.15	3.11	1.20	31000	1200	100117

Live Centers

High Speed Steel – Main Line

Type V – Extended Point 60°

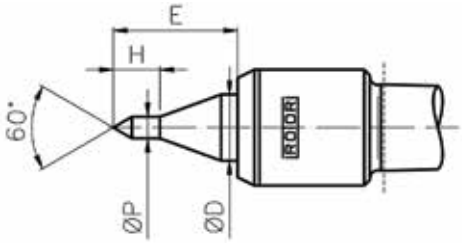




Morse Taper	Model	ØG (Inch)	H (Inch)	ØP (Inch)	Workpiece Maximum (lbs)	Maximum RPM	Code
1	1 STD.	0.47	0.79	0.26	190	8000	100151
2	2 STD.	0.63	1.02	0.35	390	7000	100152
2	2 SUP.	0.94	1.50	0.39	460	5800	100162
3	3 SM.	0.63	1.02	0.35	680	7000	100173
3	3 STD.	0.94	1.50	0.39	970	5800	100153
3	3 SUP.	1.18	1.89	0.55	1450	4800	100163
4	4 SM.	0.94	1.50	0.39	1150	5800	100174
4	4 STD.	1.18	1.89	0.55	1900	4800	100154
4	4 SUP.	1.57	2.52	0.59	2400	4000	100164
5	5 SM.	1.18	1.89	0.55	2300	4500	100175
5	5 STD.	1.57	2.52	0.59	3200	4000	100155
5	5 SUP.	1.97	3.15	0.71	5300	2800	100165
6	6 STD.	1.97	3.23	0.71	6800	2800	100156

Type L – Slim Extended Point 60°





Morse Taper	Model	ØD (Inch)	E (Inch)	H (Inch)	ØP (Inch)	Code
2	2 STD.	0.63	1.14	0.47	0.23	100180
3	3 SM	0.63	1.14	0.47	0.23	100181
3	3 STD.	0.94	1.65	0.63	0.31	100182
4	4 SM	0.94	1.65	0.63	0.31	100183
4	4 STD.	1.18	2.01	0.75	0.39	100184
5	5 SM	1.18	2.01	0.75	0.39	100185
5	5 STD.	1.57	2.56	0.87	0.46	100186

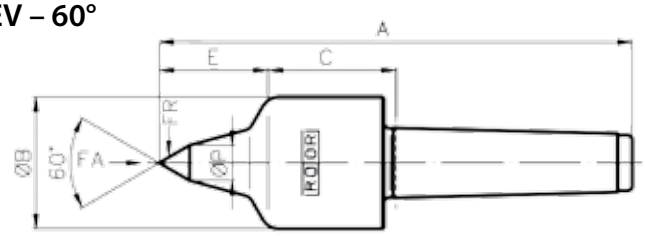
Live Centers

High Speed Steel – Speed-Line

SPEED-LINE: Precise live centers for high turning rates
- Suitable for CNC/manual turning and grinding machines
- Optimal protection against splash and dirt
- Ground tapers conform to DIN 228 AT3
- Through-hardened 60° point
- Mounted with an angular contact ball bearing and deep grovved ball bearing

Type EV – 60°





Accuracy of Speed-Line - Type EV

Morse Taper	T1 mm Maximum	T1 inch Maximum
2 ST, 2 SU, 3 ST	0.002	0.0001
3 SU, 4 ST, 4 SU, 5 ST	0.002	0.0001
5 SU, 6 ST	0.004	0.0002

Morse Taper	Model	A (mm)	ØB (mm)	C (mm)	E (mm)	ØP (mm)	Workpiece Maximum (kgs)	FR Maximum daN	FA Maximum daN	Maximum RPM	Code
2	2 ST	134	38	38	31	8	180	90	90	13,500	826213
2	2 SU	147	45	44	37	12	260	130	115	11,000	826214
3	3 ST	164	45	45	37	12	260	130	115	11,000	826215
3	3 SU	183	55	61	39	16	440	220	260	8,500	826216
4	4 ST	206	55	62	39	16	440	220	260	8,500	826217
4	4 SU	233	70	68	50	20	670	335	440	6,700	826218
5	5 ST	250	70	70	50	20	670	335	440	6,700	826219
5	5 SU	268	82	84	53	20	950	475	925	5,300	826220
6	6 ST	322	82	84	53	20	950	475	925	5,300	826221

Live Centers

High Speed Steel – Main Line

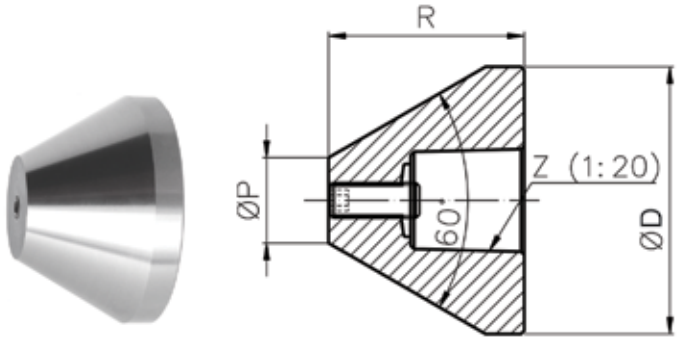
Type A – Point Nose Taper for Mounting Cones



Morse Taper	Model	ØI (Inch)	L1 (Inch)	L2 (Inch)	Code
1	1 STD.	0.44	0.59	0.75	100201
2	2 SUP.	0.88	1.18	1.38	100212
3	3 STD.	0.88	1.18	1.38	100203
3	3 SUP.	0.88	1.18	1.42	100213
4	4 STD.	0.88	1.18	1.42	100204
4	4 SUP.	1.35	1.38	1.57	100214

Morse Taper	Model	ØI (Inch)	L1 (Inch)	L2 (Inch)	Code
5	5 STD.	1.35	1.38	1.57	100205
5	5 SUP.	1.35	1.38	1.65	100215
6	6 STD.	1.35	1.38	1.65	100206
6	6 SUP.	1.87	1.89	2.13	100216
7	7 SUP.	1.87	1.89	2.16	100217

Model D – Cones for Type A Point Nose Tapers



ØD (Inch)	ØP (Inch)	R (Inch)	S (Inch)	Code
2.00	0.63	1.58	M6	100421
3.00	0.90	2.16	M10	100432
4.00	1.77	2.36	M10	100441
6.00	2.75	3.15	M10	100452
4.00	1.77	2.36	M12	100442
6.00	2.76	3.15	M12	100461

ØD (Inch)	ØP (Inch)	R (Inch)	S (Inch)	Code
8.00	4.33	3.54	M12	100481
4.75	1.77	2.95	M12	100451
6.00	2.76	3.15	M12	100462
8.00	4.33	3.54	M12	100482

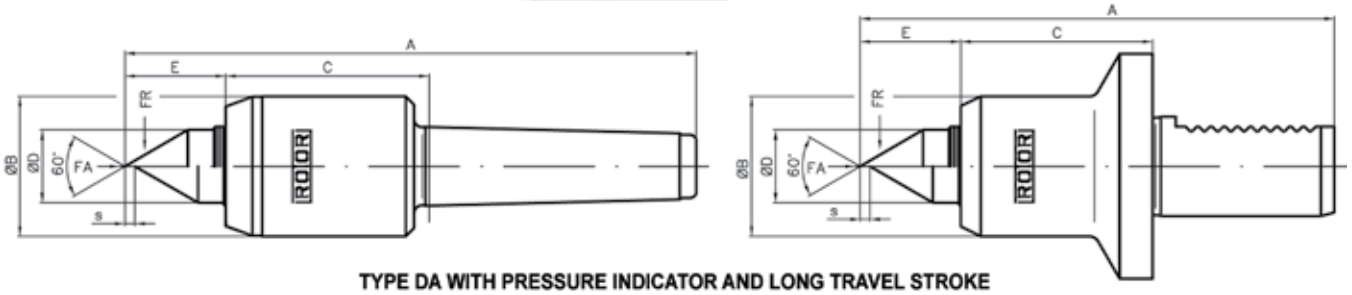
Live Centers

High Speed Steel – Main Line

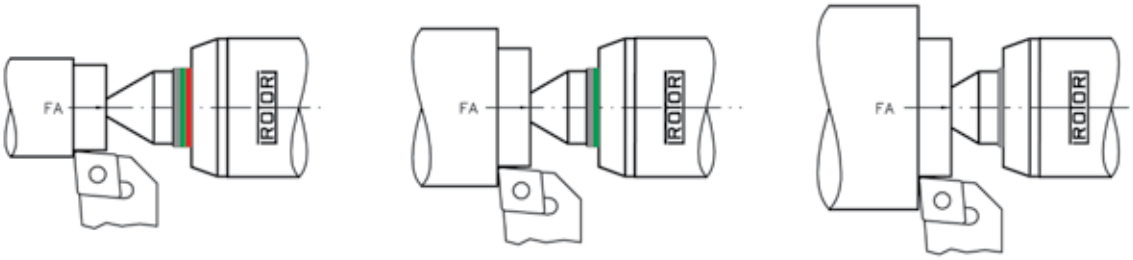
Type DA-N – Standard 60° with Pressure Indicator

APPLICATION: A pressure indicator with different colour bands permits rapid setting and monitoring of the optimum pressure. Length tolerances and different centre bores are compensated through a travel stroke at fixed positions. Correspondingly light work pieces can be clamped very finely.





TYPE DA WITH PRESSURE INDICATOR AND LONG TRAVEL STROKE



Light workpiece and low stock removal = low pressure

Medium workpiece and moderate stock removal = medium pressure

Heavy workpiece and heavy stock removal = high pressure

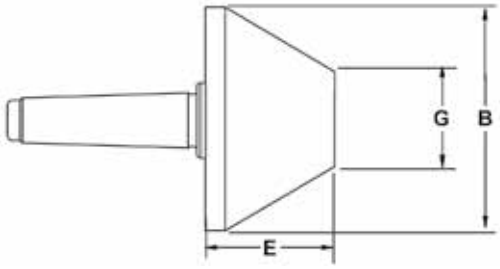
Morse Taper	Model	A (Inch)	ØB (Inch)	C (Inch)	ØD (Inch)	E (Inch)	S (Inch)	Workpiece Maximum (kgs)	Maximum RPM	Code
2	2 STD.	136	34	53	14	19	2.7	190	7000	100090
3	3 STD.	173	42	62	22	31	3.0	440	5800	100091
4	4 STD.	209	53	72	28	33	4.3	900	4800	100092
5	5 STD.	259	64	88	38	42	5.2	1850	4000	100093
-	cyl. Ø20x40	108	34	48	14	19	2.7	190	7000	826375
-	cyl. Ø25x50	139	42	58	22	31	3.0	190	5800	826376
-	cyl. Ø1x2	139	42	58	22	31	3.0	440	5800	826377
-	cyl. Ø32x63	165	53	68	28	33	4.3	900	4800	826378
-	VDI20	108	34	48	14	19	2.7	190	7000	826379
-	VDI30	144	42	58	22	31	3.0	440	5800	826380
-	VDI40	165	53	68	28	34	4.3	900	4800	826381
-	VDI50	201	64	81	38	42	5.2	1850	4000	826382

Live Centers

Bull Nose

- Designed for turning pipes, tubes, and parts with extra-large center holes
- ±0.00005" total indicator runout guaranteed
- Two matched angular contact bearings provide good thrust and radial load ratings
- Head diameter Is 1/8" over nominal size, enabling these centers to cover a wider range of work pieces
- Head and shank are hardened for strength and durability
- Pipe head models also available





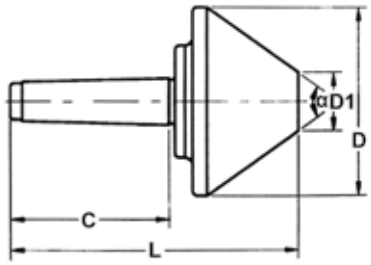
Morse Taper	B (Inch)	E (Inch)	G (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
3	3-1/8	2-1/2	1	5000	615	1780	826341
3	4-1/8	3	1-1/4	4500	860	2550	826342
4	4-1/8	3	1-1/4	4500	860	2550	826343
5	4-1/8	3	1-1/4	4500	860	2550	826344
4	5-1/8	3-3/16	2	4000	1145	3450	826345
5	5-1/8	3-3/16	2	4000	1145	3450	826346
5	6-1/8	3-5/8	2-1/2	3500	1450	4500	826347
6	6-1/8	3-5/8	2-1/2	3500	1450	4500	826348

Live Centers

Bull Nose

- Bull Nose - CR-MO steel hardened to RC60
- Combination of roller and ball bearings





Morse Taper	D Large Diameter (Inch)	D1 Small Diameter (Inch)	L (Inch)	C (Inch)	Included Angle	Load Weight (lbs)	Maximum RPM	Weight (lbs)	Code
2	2.50	0.50	5.50	3.30	60°	450	4000	2	120132
2	3.00	0.75	5.79	3.30	60°	450	4000	2	826359
3	3.00	0.75	6.30	3.78	60°	450	4000	2	826360
3	4.00	1.25	6.30	3.78	70°	800	3300	3	120133
3	5.00	1.38	7.00	3.78	70°	1100	3000	6	826361
4	4.00	1.25	7.08	4.52	70°	1100	3000	7	826362
4	5.00	1.38	7.75	4.52	70°	1400	2000	10	826363
4	6.00	2.00	8.00	4.52	70°	1760	1900	17	120134
5	5.00	1.38	9.00	5.86	70°	1430	2000	13	826364
5	6.00	2.00	9.25	5.86	70°	1760	1900	19	826365
5	8.00	2.00	10.35	5.86	75°	3520	1500	40	120135

Live Centers

ROYAL PRODUCTS

Value-Turn

- A sturdy low-cost center designed for general medium-duty turning applications
- ±0.00005" total indicator runout guaranteed
- Precision three-bearing design enables the Royal Value-Turn to achieve both high RPM's and solid load ratings
- Head is hardened for strength and durability



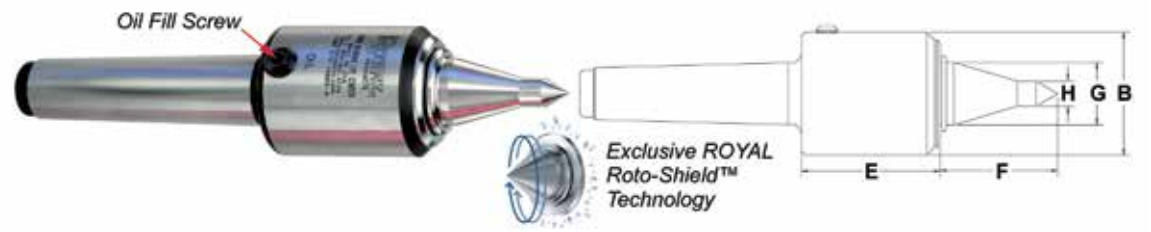
Also available with straight shanks

Morse Taper	B (Inch)	E (Inch)	F (Inch)	G (Inch)	*Maximum Suggested RPM	Weight of Workpiece (lbs)	Thrust Load (lbs)	Code
2	1-11/16	1-9/16	7/8	3/4	5000	390	3730	826258
3	1-11/16	1-9/16	7/8	3/4	5000	390	3730	826259
4	2-7/16	2-1/32	1-3/16	1-1/8	4500	750	4990	826260
5	2-7/16	2-1/32	1-3/16	1-1/8	4500	750	4990	826261

**Maximum recommended operating limit. Operating above the speed could result in heat build-up and accelerated bearing wear.*

High Speed Precision

- A true high-speed live center — up to 12,000 rpm
- Lubricated with lightweight spindle oil instead of grease for reduced turning resistance and lower operating temperatures
- ±0.00005" total indicator runout guaranteed
- Three precision angular contact bearings are secured to the point with a locknut to form a rigid, preloaded assembly
- The point extends into the body where it is supported by a needle roller bearing, which further increases rigidity, reduces point deflection, and dampens vibration
- Low profile head provides excellent tool clearance
- Body and point are hardened for strength and durability



Morse Taper	B (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
3	1-3/4	2-3/64	1-3/4	7/8	3/8	12000	180	650	826262
4	2-1/2	2-11/16	2-11/32	1-1/4	1/2	12000	525	1380	826263
5	2-1/2	2-11/16	2-11/32	1-1/4	1/2	12000	525	1380	826264

Live Centers

Super Quad Extra Heavy-Duty

- Designed for very large, heavy parts — up to 12,000 lbs
- ±0.00005" total indicator runout guaranteed
- Three huge angular contact bearings and a beefy needle roller bearing combine to form a very strong, rigid assembly
- Large, sturdy point and thick-walled head ensure minimal deflection under load
- Body and point are hardened for strength and durability



Morse Taper	B (Inch)	E (Inch)	F (Inch)	G (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
4	3-11/16	3-5/16	1-3/4	1-5/8	4000	3325	4800	826265
5	4-15/16	4-5/16	2-7/16	2-3/8	3000	10650	13220	826266
6	4-15/16	4-5/16	2-7/16	2-3/8	3000	10650	13220	826267
6	6-15/16	5-11/16	3-7/32	3-1/8	2500	12130	25920	826268

Heavy-Duty Spindle Type – Standard Point & CNC Point

- An excellent heavy-duty live center designed to handle most turning applications
- ±0.00005" total indicator runout guaranteed
- Heavy-duty precision bearings provide exceptional thrust and radial load capacities
- The substantial point extends into the shank where it is supported by a large needle bearing for increased strength and rigidity
- Body and point are hardened for strength and durability
- On the CNC model, the extended point provides great tool clearance

Standard Point



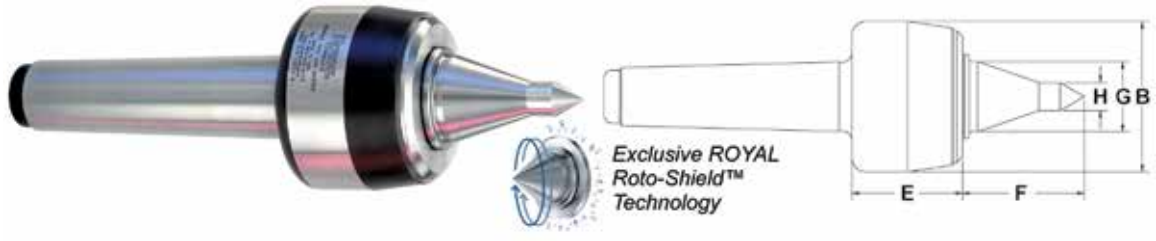
Morse Taper	B (Inch)	E (Inch)	F (Inch)	G (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
2	1-3/4	1-7/16	1-1/32	7/8	6000	725	2360	826270
3	2-3/8	1-3/4	1-1/4	1	5000	970	3900	826271
4	2-11/16	1-31/32	1-1/2	1-1/4	4500	1720	4050	826272
5	3-1/2	2-13/16	1-7/8	1-1/2	3500	3260	5700	826273
6	4	3-5/32	2-5/16	2	3500	4080	6000	826274

Live Centers

ROYAL PRODUCTS

Heavy-Duty Spindle Type – Standard Point & CNC Point *(continued)*

CNC Point for Extra Tool Clearance



Morse Taper	B (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
2	1-3/4	1-7/16	1-3/8	7/8	3/8	6000	375	2360	826275
3	2-3/8	1-3/4	1-7/8	1	3/8	5000	740	3900	826276
4	2-11/16	1-31/32	2-7/32	1-1/4	1/2	4500	1120	4050	826277
5	3-1/2	2-13/16	2-5/8	1-1/2	1/2	3500	1930	5700	826278

High Precision Quad-Bearing – Standard Point & CNC Point

- Great for grinding and tight tolerance turning
- ±0.00005" total indicator runout guaranteed
- Three precision angular contact bearings are secured to the point with a locknut to form a rigid, preloaded assembly
- The point extends into the body where it is supported by a needle roller bearing, which further increases rigidity, reduces point deflection, and dampens vibration
- Low profile head provides excellent tool clearance
- Body and point are hardened for strength and durability

Standard Point



Morse Taper	B (Inch)	E (Inch)	F (Inch)	G (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
3	1-3/4	2-1/8	1-1/16	7/8	6000	885	1270	826279
4	2-1/2	2-3/4	1-1/2	1-1/4	5000	2240	2150	826280
5	2-1/2	2-3/4	1-1/2	1-1/4	5000	2240	2150	826281
* 5 HD	3-7/8	3-7/8	2-5/16	2	3000	5240	5300	826282
* 6 HD	3-7/8	3-7/8	2-5/16	2	3000	5240	5300	826283

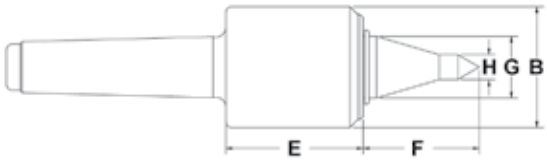
**Heavy Duty*

Live Centers

High Precision Quad-Bearing – Standard Point & CNC Point *(continued)*

CNC Point for Extra Tool Clearance



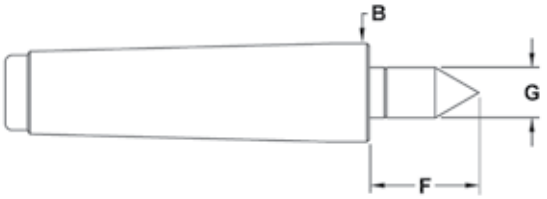


Morse Taper	B (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
3	1-3/4	2-1/8	1-3/4	7/8	3/8	6000	465	1270	826284
4	2-1/2	2-25/32	2-11/32	1-1/4	1/2	5000	1230	2150	826285
5	2-1/2	2-25/32	2-11/32	1-1/4	1/2	5000	1230	2150	826286

Spring Type – Standard Point

- Unique spring-loaded point compensates for work piece thermal expansion
- ±0.00005" total indicator runout guaranteed
- Low-profile design provides outstanding tool clearance
- Heavy disc springs ensure that the point remains seated in the work piece
- Point and shank are hardened for strength and durability



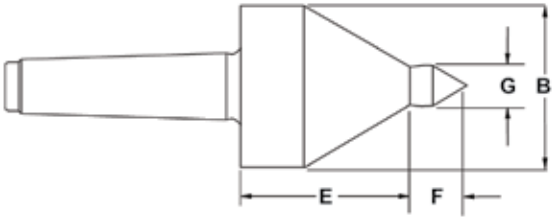


Morse Taper	B (Inch)	F (Inch)	G (Inch)	Spring Travel (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
2	0.700	7/8	3/8	0.11	5000	540	150	826349
3	0.938	1-5/32	9/16	0.14	5000	940	315	826350
4	1.231	1-3/8	5/8	0.18	4500	1400	435	826351
5	1.748	2	1-3/32	0.19	4500	2340	785	826352

Versa-Turn

- A great multi-purpose live center designed to handle most common turning jobs
  - Extended point provides good tool clearance
  - Bull head is great for tubes and parts with large center holes
- ±0.00005" total indicator runout guaranteed on both sections of rotating point
- The Royal Versa-Turn is extremely free turning excellent for thin parts that cannot take high thrust loads
- Head and shank are hardened for strength and durability





Morse Taper	B (Inch)	E (Inch)	F (Inch)	G (Inch)	Maximum RPM	Weight (lbs)	Thrust Load	Code
2	2-1/8	2-7/32	3/4	1/2	5000	330	2160	826353
3	2-1/8	2-7/32	3/4	1/2	5000	330	2160	826354
* 3 HD	2-1/2	2-5/8	15/16	5/8	4000	685	5000	826355
4	2-1/2	2-5/8	15/16	5/8	4000	685	5000	826356
* 4 HD	3-3/8	3-1/8	1-1/8	3/4	3500	1165	5700	826357
5	3-3/8	3-1/8	1-1/8	3/4	3500	1165	5700	826358

*****Heavy Duty*

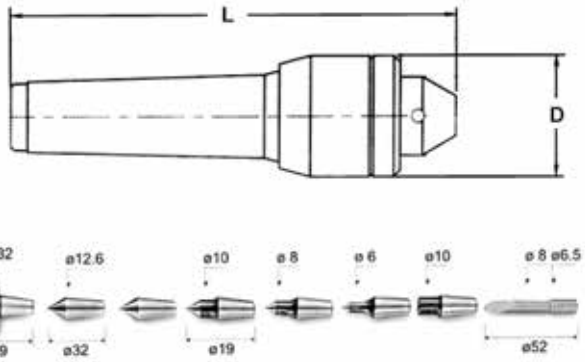
Live Center Sets

7 Interchangeable Points

- Construction consists of double rows of ball bearings and thrust bearings
- Ground for higher accuracy
- 60° point

SET INCLUDES:
- 5 male centers
- 1 female center
- 1 bull center
- 1 extractor
- Supplied In fitted storage case





Morse Taper	D Outside Diameter (Inch)	L Length (Inch)	Code
2	1.57	5.20	120122
3	1.81	6.22	120123
4	1.81	7.08	120124
5	2.50	9.21	120125

Dead Centers

High Speed Steel & Carbide Tipped



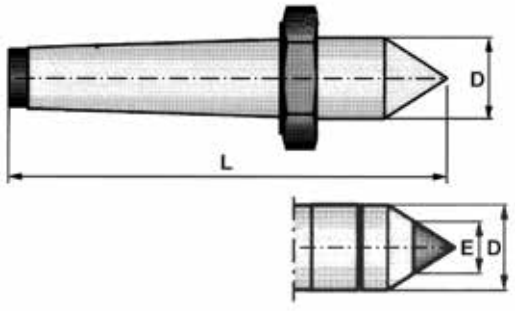
Morse Taper	HSS	Carbide Tipped
	Code	Code
1	125101	125111
2	125102	125112
3	125103	125113
4	125104	125114
5	125105	125115
6	125106	125116

Dead Centers with Nut

Alloy Steel & Carbide Tipped

- +/-0.0001" total indicator runout
- These dead centers are designed for use wherever high accuracies are required
- Case hardened to 61-63 RC
- Centers supplied with nuts





Morse Taper	L (Inch)	D (Inch)	E (Inch)	Weight (lbs)	Alloy Steel	Carbide Tipped
					Code	Code
1	3.54	0.48	0.28	0.22	826323	826329
2	4.41	0.71	0.28	0.55	826324	826330
3	5.43	0.95	0.43	1.10	826325	826331
4	6.89	1.24	0.55	2.43	826326	826332
5	8.54	1.76	0.71	5.73	826327	826333
6	11.42	2.51	0.71	14.55	826328	826334

Dead Centers with Nut

Alloy Steel & Carbide Tipped *(continued)*

Spare Nuts



Thread Reference	For Alloy Steel Model	For Carbide Tipped Model	Code
M16 x 1.5	826323	826329	826335
M22 x 1.5	826324	826330	826336
M27 x 1.5	826325	826331	826337
M36 x 1.5	826326	826332	826338
M68 x 1.5	826328	826334	826340

Lathe Chuck Technical Information

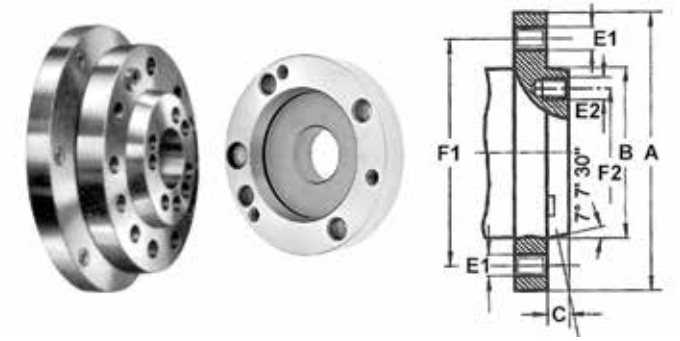
Determining Proper Spindle Nose Type & Size

NOTE: Bison chucks meet all requirements of ASA Standard B5.9-1960. For spindle nose accuracy (T.I.R.)

Selecting the Chuck Mount

- Choose from the types shown below
- For the short taper spindle noses Type A, D and C (DIN) measure the pilot diameter and length (sizes B and C), bolt circle diameter (size F1 and F2) and diameter of the holes (size E1 and E2). In the case of Type A mount check the number of bolt circles (one for A2 mount or two for A1 mount). All chucks with A1 mount can be installed on A1 spindle nose only. All chucks with A2 mount can be installed on A1 or A2 spindle noses.
- For the long taper spindle noses Type L, check pilot diameter, length and thread size (size A, C and B)
- For the threaded spindle noses, check the thread diameter, number of threads per inch and length (sizes A and E), pilot diameter and length (sizes B and D), plus overall length (size F1)

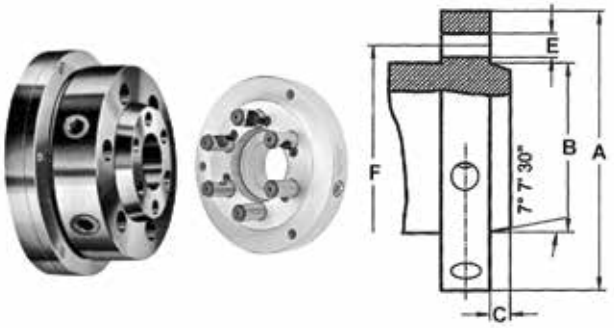
Spindle Type A1 & A2



Spindle Nose	F1	F2	B	C Maximum	Thread E1=E2 UNC-3B
A4	3.250	-	2.5005 + 0.0005	0.4375	7/16 - 14
A5	4.125	2.4374	3.2505 + 0.0005	0.5625	7/16 - 14
A6	5.250	3.2500	4.1880 + 0.0005	0.6250	1/2 - 13
A8	6.750	4.3750	5.5007 + 0.0005	0.6875	5/8 - 11
A11	9.250	6.5000	7.7507 + 0.0005	0.7500	3/4 - 10
A15	13.000	9.7500	11.2510 + 0.0010	0.8125	7/8 - 9
A20	18.250	14.5000	16.2510 + 0.0010	0.8750	1 - 6

TYPE A1 is exactly as shown with tapped holes in both inner and outer bolt circles.
TYPE A2 is same as shown except omit holes in inner bolt circle.

Spindle Type D1 – Camlock



Spindle Nose	A	F	B	C Maximum	E	No. of Holes
D1-3	3.622	2.7820	2.1250 + 0.00025	7/16	0.5938	3
D1-4	4.606	3.2500	2.5005 + 0.00050	7/16	0.6562	3
D1-5	5.748	4.1250	3.2505 + 0.00050	1/2	0.8750	6
D1-6	7.126	5.2500	4.1880 + 0.00050	9/16	1.0000	6
D1-8	8.858	6.7500	5.5007 + 0.00050	5/8	1.1250	6
D1-11	11.732	9.2520	7.7507 + 0.00050	11/16	1.2500	6
D1-15	15.866	13.0000	11.2510 + 0.0010	3/4	1.3750	6

NOTE: Camlock stud length is adjustable to suit spindle cam

Lathe Chuck Technical Information

Determining Proper Spindle Nose Type & Size *(continued)*

Threaded Spindle



A Spindle Nose	B	F1	D	E
1 - 10 UNS-2B	1.0150	1.5000	0.4375	1.0000
1-1/2 - 8 UN-2B	1.5150	1.5000	0.4375	1.0000
2-3/16 - 10 UN-2B	2.2025	1.7500	0.5625	1.1250
2-1/4 - 8 UN-2B	2.2600	1.7500	0.5625	1.1250
2-3/16 - 6 UN-2B	2.2025	1.7500	0.5625	1.1250
2-3/4 - 8 UN-2B	2.7600	2.0625	0.6875	1.3125

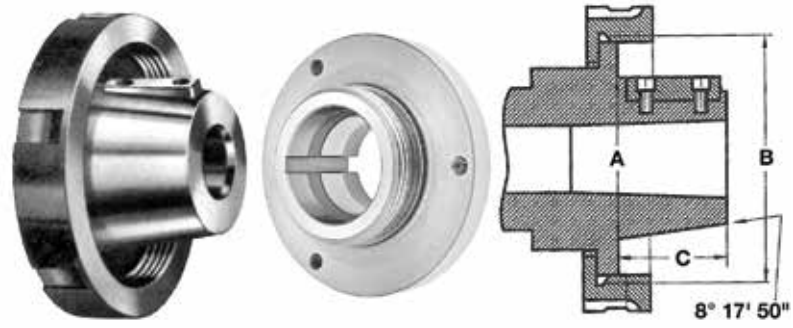
Spindle Type C – DIN Standard 55027



Spindle Nose	F	B	C Maximum	E	No. of Holes
C4	3.2500	2.50050	0.4331	0.83	3
C5	4.1250	3.25050	0.5118	0.83	4
C6	5.2500	4.18800	0.5512	0.91	4
C8	6.7500	5.50075	0.6299	1.14	4
C11	9.2520	7.75075	0.7087	1.42	6

This spindle nose is provided with a short tapered flange like the American spindle noses A and D.
Spindle flange has a number of mounting holes (3, 4 or 6) into which the lock studs of the chuck can be inserted and locked.

Spindle Type L – Long Taper Key Drive



Spindle Nose	B Thread	C	A	Key
L00	3-3/4 - 6	2	2.750	3/8 x 3/8 x 1-1/2
L0	4-1/2 - 6	2-3/8	3.250	3/8 x 3/8 x 1-3/4
L1	6 - 6	2-7/8	4.125	5/8 x 5/8 x 2-3/8
L2	7-3/4 - 5	3-3/8	5.250	3/4 x 3/4 x 2-7/8
L3	10-3/8 - 4	3-7/8	6.500	1 x 1 x 3-1/4



Lathe Chuck Grease

- 16 oz. can
- For manual and power chucks, fasteners, press fits, wear-in guides and ways

Code
355326

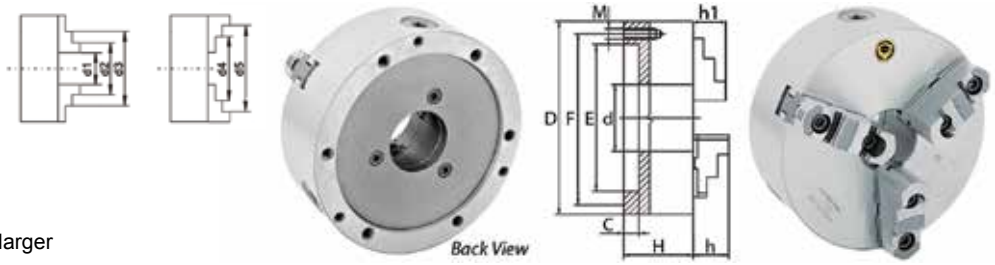
Universal Lathe Chucks

Semi-Steel Body – 3-Jaw Self-Centering

2 Pc. Hard Reversible Jaws

- Semi-steel body
- 3 pinion design
- Plain back
- Backplates required

Standard Accessories:
- 1 set of hard master jaws
- 1 set of hard top reversible jaws
- 1 wrench
- 1 set of mounting bolts
- 2 hex keys
- Eye bolts for chuck sizes 15.75" and larger



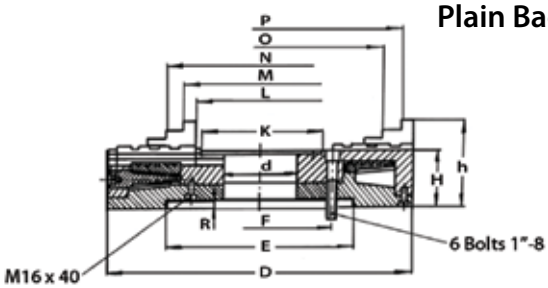
Series 3205 - Plain Back Mounting Specifications

Chuck Diameter (Inch)	RPM Max	Weight (lbs.)	d1 Min-Max (Inch)	d2 Min-Max (Inch)	d3 Min-Max (Inch)	d4 Min-Max (Inch)	d5 Min-Max (Inch)	M Thread	L (Inch)	No. of Bolts
5.00	3200	11	0.19 - 1.97	2.05 - 3.78	3.74 - 4.92	1.34 - 2.99	2.95 - 4.65	M8 x 1.25	0.98	3
6.25	3000	22	0.19 - 2.52	2.44 - 4.76	4.53 - 6.30	1.65 - 3.81	3.46 - 5.75	M10 x 1.5	0.98	3
8.00	2500	39	0.16 - 3.54	2.83 - 6.14	5.24 - 7.87	1.97 - 5.12	4.13 - 7.48	M10 x 1.5	0.98	6
10.00	2000	55	0.20 - 4.65	3.39 - 7.76	6.30 - 9.84	2.28 - 6.50	4.92 - 9.25	M12 x 1.75	1.18	6
12.50	1500	110	0.39 - 5.16	4.06 - 8.90	7.48 - 12.40	2.56 - 7.17	5.71 - 10.43	M16 x 2	1.18	6
15.75	1000	187	0.39 - 7.09	5.00 - 11.57	9.06 - 15.75	2.84 - 8.98	6.50 - 12.95	M16 x 2	1.57	6
20.00	700	320	0.79 - 9.25	4.33 - 15.75	7.48 - 19.69	4.72 - 16.14	7.87 - 19.09	M16 x 2	1.57	6
25.00	500	551	1.18 - 13.19	4.72 - 22.44	7.87 - 24.80	5.51 - 23.23	8.27 - 26.18	M16 x 2	1.57	6

Plain Back – Series 3205

Chuck Diameter (Inch)	d Hole Diameter (Inch)	Max. Hole Enlargement (Inch)	F (Inch)	E (Inch)	C (Inch)	H (Inch)	h (Inch)	h1 (Inch)	Code
5.00	1.26	1.26	4.25	3.74	0.16	2.20	1.57	0.79	355000
6.25	1.65	1.81	5.51	4.92	0.16	2.54	1.69	1.26	355001
8.00	2.17	2.56	6.93	6.30	0.16	2.95	1.77	1.14	355002
10.00	2.99	3.46	8.82	7.87	0.20	3.35	2.09	1.34	355003
12.50	4.06	4.33	11.26	10.24	0.20	3.70	2.24	1.69	355004
15.75	5.35	5.59	14.25	12.99	0.20	4.13	2.64	2.16	355005
20.00	7.48	8.23	18.03	16.54	0.20	4.72	3.15	2.36	355006
25.00	9.92	11.93	23.07	21.46	0.28	5.31	3.42	2.76	355007

Plain Back – Series 3205 – 32 Inch





Series 3205 - Plain Back Mounting Specifications

Chuck Dia.	RPM Max	Weight (lbs)	Maximum Weight of Workpiece without Support (lbs)	Maximum Weight of Workpiece with Support (lbs)	L Min-Max (Inch)	M Min-Max (Inch)	N Min-Max (Inch)	O Min-Max (Inch)	P Min-Max (Inch)	Screw Thread	Bolt Thread	No. of Bolts
32.00	600	849	882	17637	5.91 - 18.98	9.92 - 28.98	12.91 - 31.50	9.45 - 28.50	12.44 - 31.50	M16 x 40	1-8	6

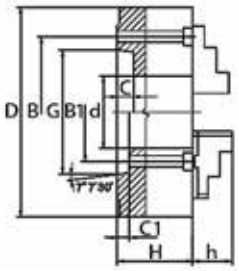
Chuck Diameter (Inch)	d Hole Diameter (Inch)	Max. Hole Enlargement (Inch)	F (Inch)	E (Inch)	K (Inch)	H (Inch)	h (Inch)	R (Inch)	Code
32.00	10.51	12.60	13.00	14.96	-	5.51	8.94	0.47	355008

Universal Lathe Chucks

Semi-Steel Body – 3-Jaw Direct Mount Chucks
2 Pc. Hard Reversible Jaws


Type A1/A2

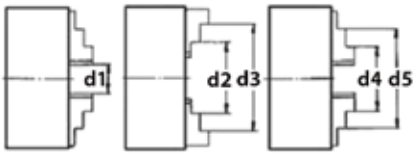

Back view
Type A1 Bolt hole pattern





- Semi-steel body
- Type A1 spindle has a two-bolt hole pattern, inside and outside the taper - either A1 or A2 chuck will fit
- Type A2 spindle has a one-bolt hole pattern outside the taper - only an A2 chuck will fit

Standard Accessories:
- 1 set of hard master jaws
- 1 set of hard top reversible jaws
- 1 wrench
- 1 set of mounting bolts
- 2 hex keys
- Eye bolts for chuck sizes 15.75" and larger



Series 3215 - Type A Direct Mounting Specifications

Chuck Diameter (Inch)	RPM Max	Weight (lbs.)	d1 Min-Max (Inch)	d2 Min-Max (Inch)	d3 Min-Max (Inch)	d4 Min-Max (Inch)	d5 Min-Max (Inch)	M Thread	L (Inch)	No. of Bolts
6.25	3000	22	0.19 - 2.52	2.44 - 4.76	4.53 - 6.30	1.65 - 3.81	3.46 - 5.75	7/16–14	2.75	3
8.00	2500	42	0.16 - 3.54	2.83 - 6.14	5.24 - 7.87	1.97 - 5.12	4.13 - 7.48	7/16–14	3.12	3
8.00	2500	42	0.16 - 3.54	2.83 - 6.14	5.24 - 7.87	1.97 - 5.12	4.13 - 7.48	1/2–13	3.12	3
10.00	2000	71	0.20 - 4.65	3.39 - 7.76	6.30 - 9.84	2.28 - 6.50	4.92 - 9.25	7/16–14	4.12	6
10.00	2000	71	0.20 - 4.65	3.39 - 7.76	6.30 - 9.84	2.28 - 6.50	4.92 - 9.25	5/8–11	3.50	6
12.50	1500	121	0.39 - 5.16	4.06 - 8.90	7.48 - 12.40	2.56 - 7.17	5.71 - 10.43	1/2–13	4.75	6
12.50	1500	121	0.39 - 5.16	4.06 - 8.90	7.48 - 12.40	2.56 - 7.17	5.71 - 10.43	5/8–11	4.19	6
15.75	1000	203	0.39 - 7.09	5.00 - 11.57	9.06 - 15.75	2.84 - 8.98	6.50 - 12.95	1/2–13	5.00	6
15.75	1000	203	0.39 - 7.09	5.00 - 11.57	9.06 - 15.75	2.84 - 8.98	6.50 - 12.95	3/4–10	4.25	6
20.00	700	353	0.79 - 9.25	4.33 - 15.75	7.48 - 19.69	4.72 - 16.14	7.87 - 19.09	3/4–10	5.87	6
25.00	500	628	1.18 - 13.19	4.72 - 22.44	7.87 - 24.80	5.51 - 23.23	8.27 - 26.18	3/4–10	7.09	6
25.00	500	628	1.18 - 13.19	4.72 - 22.44	7.87 - 24.80	5.51 - 23.23	8.27 - 26.18	7/8–9	6.00	6

A Mount Chucks – Series 3215

Chuck Diameter (Inch)	Mount	d Hole Diameter (Inch)	Max. Hole Enlargement (Inch)	B1 (A1)	B (A2)	G (Inch)	C/C1 (Inch)	H (Inch)	h (Inch)	Code
6.00	A1-5	1.65	1.81	2.44	-	3.25	0.56	3.21	1.69	355010
8.00	A1-5	1.65	2.56	2.44	-	3.25	0.56	3.58	1.77	355011
8.00	A1-6	2.17	2.56	3.25	-	4.19	0.62	3.58	1.77	355012
10.00	A1-8	2.99	3.46	4.37	-	5.50	0.69	4.07	2.09	355014
12.50	A2-6	4.06	4.06	-	5.25	4.19	0.63	4.63	2.24	355015
12.50	A1-8	3.15	4.33	4.37	-	5.50	0.69	4.63	2.24	355016
15.75	A2-6	4.06	4.06	-	5.25	4.19	0.63	5.06	2.64	355017
15.75	A1-11	5.19	5.59	6.50	-	7.75	0.75	5.06	2.64	355018
20.00	A2-11	7.59	7.59	-	9.25	7.75	0.79	5.75	3.09	355019
25.00	A2-11	7.48	7.59	-	9.25	7.75	0.75	6.50	3.42	355020
25.00	A2-15	7.48	11.00	-	13.00	11.25	0.81	6.50	3.42	355021

Universal Lathe Chucks

Semi-Steel Body – 3-Jaw Direct Mount Chucks

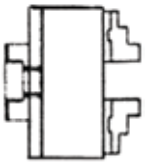
2 Pc. Jaws

Camlock D1 Chucks – Series 3245

Chuck Diameter (Inch)	Mount	d Hole Diameter (Inch)	B (Inch)	G (Inch)	C (Inch)	H (Inch)	h (Inch)	Code
5.00	D1-4	1.26	3.25	2.50	0.51	2.76	1.57	355023
6.25	D1-3	1.65	2.78	2.12	0.51	3.21	1.69	355024
6.25	D1-4	1.65	3.25	2.50	0.51	3.21	1.69	355025
8.00	D1-3	2.03	2.78	2.12	0.51	3.58	1.77	355026
8.00	D1-4	2.17	3.25	2.50	0.51	3.58	1.77	355027
8.00	D1-5	2.17	4.13	3.25	0.56	3.58	1.77	355028
8.00	D1-6	2.17	5.25	4.19	0.56	3.58	1.77	355029
10.00	D1-5	2.99	4.13	3.25	0.56	4.07	2.09	355030
10.00	D1-6	2.99	5.25	4.19	0.63	4.07	2.09	355031
10.00	D1-8	2.99	6.75	5.50	0.71	4.07	2.09	355032
12.50	D1-6	4.06	5.25	4.19	0.63	4.63	2.24	355033
12.50	D1-8	4.06	6.75	5.50	0.71	4.63	2.24	355034
12.50	D1-11	4.06	9.25	7.75	0.79	5.51	2.24	355035
15.75	D1-6	4.06	5.25	4.19	0.63	5.06	2.64	355036
15.75	D1-8	5.35	6.75	5.50	0.71	5.06	2.64	355037
15.75	D1-11	5.35	9.25	7.75	0.79	5.06	2.64	355038
20.00	D1-8	5.35	6.75	5.50	0.71	5.75	3.15	355039
20.00	D1-11	7.60	9.25	7.75	0.79	5.75	3.15	355040
25.00	D1-11	7.60	9.25	7.75	0.79	6.50	3.42	355041

Semi-Steel Body – 3-Jaw Self-Centering Chucks

Threaded Chucks – Series 3285



Series 3285
Threaded

Chuck Diameter (Inch)	Hole Diameter (Inch)	Thread	Approximate Weight (lbs)	Code
5	1.2598	1 - 10	10.0	355055
5	1.2598	1-1/2 - 8	10.0	355056
6	1.6535	1-1/2 - 8	18.1	355057
6	1.6535	2-1/4 - 8	18.1	355058
8	2.1654	1-1/2 - 8	33.7	355059
8	2.1654	2-1/4 - 8	33.7	355060
8	2.1654	2-3/8 - 6	33.7	355061
10	2.9925	2-1/4 - 8	55.3	355062
12	4.0551	2-3/8 - 6	90.4	355063
12	4.0551	2-3/8 - 6	90.4	355064

Universal Lathe Chucks

Semi-Steel Body – 3-Jaw Self-Centering Chucks

Extra Large Through Hole Chucks

- Series 3295 designed for the pipe industry
- Supplied with base jaws only
- Hard top and soft top jaws sold separately



Chuck Diameter (Inch)	Hole Diameter (Inch)	Jaw Stroke Minimum (Inch)	Jaw Stroke Maximum (Inch)	Weight (lbs)	Maximum RPM	Code
16	8.66	6.61	11.34	127	500	355065
20	12.60	9.87	14.96	167	350	355066
26	15.98	14.80	19.57	300	250	355067

Hard & Soft Top Jaws for Extra Large Through Hole Chucks

For Chuck Diameter (Inch)	Hard Top Jaws		Soft Top Jaws	
	Description	Code	Description	Code
16	1 pc.	355303	3 pcs.	355306
20	1 pc.	355304	3 pcs.	355307
26	1 pc.	355305	3 pcs.	355308

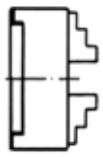
Plain Back – Series 3204

- Semi-steel body
- Two sets of hard solid jaws
- Scroll and jaws hardened and ground

Standard Accessories:
- 2 sets of hard solid jaws (inside and outside)
- 1 wrench
- 1 set of mounting screws

Optional Accessories:
Soft top jaws





Series 3204
Plain Back

Chuck Diameter (Inch)	Hole Diameter (Inch)	Approximate Weight (lbs)	Code
3	0.62	3.1	355068
4	0.78	5.3	355069
5	1.25	9.3	355070
6	1.65	17.0	355071
8	2.16	34.0	355072
10	2.99	52.0	355073
12	4.05	87.1	355074
16	5.35	163.4	355075
20	7.48	271.2	355076
25	9.92	469.0	355077

Precision Lathe Chucks

Forged Steel Body – 3-Jaw Self-Centering Chucks

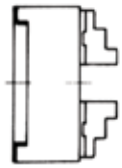
- Forged steel body
- Two-piece hard reversible jaws
- Scroll and jaws hardened and precision ground
- Balanced scroll



Standard Accessories:
- 1 set of two-piece reversible jaws (hard top and hard master jaws)
- 1 wrench
- 1 set of mounting bolts

Optional Accessories:
Soft top jaws

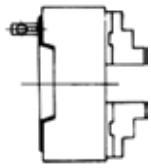
Plain Back - Series 3505



Series 3505
Plain Back

Chuck Diameter (Inch)	Hole Diameter (Inch)	Approximate Weight (lbs)	Code
5	1.25	10	355089
6	1.65	21	355090
8	2.16	36	355091
10	2.99	75	355092
12	4.05	123	355093
16	5.35	198	355094
20	7.48	276	355095
25	7.48	485	355096

Camlock - Series 3545



Series 3545
Camlock

Chuck Diameter (Inch)	Hole Diameter (Inch)	Spindle Type	Approximate Weight (lbs)	Code
6	1.65	D1-3	20	355097
6	1.65	D1-4	20	355098
6	1.65	D1-5	20	355099
8	2.16	D1-5	42	355100
8	2.16	D1-6	42	355101
10	2.99	D1-6	71	355102
10	2.99	D1-8	71	355103
12	4.05	D1-6	112	355104
12	4.05	D1-8	112	355105
12	4.05	D1-11	112	355106
16	5.35	D1-8	223	355107
16	5.35	D1-11	223	355108
20	5.35	D1-8	331	355109
20	7.48	D1-11	331	355110
25	5.35	D1-8	604	355111
25	7.48	D1-11	604	355112

Precision Lathe Chucks

Forged Steel – 3-Jaw & 6-Jaw Set-Tru Self-Centering Chucks

Outstanding accuracy, versatility and long life make our “SET-TRU” self-centering chucks invaluable in the workshop and indispensable in the tool room

- Forged steel
- With fine adjustment
- Scroll and jaws hardened and ground
- Three hardened and ground pinions
- Four micro adjustment screws provide 0.0005” TIR repeatability
- Solid inside and outside jaws also available

NOTE: Set-Tru chucks only accept Set-Tru back plates

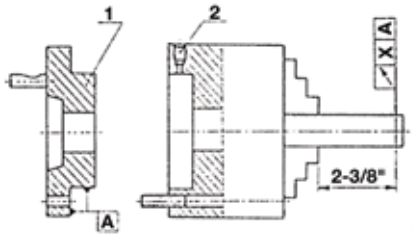


3-Jaw – Series 3565 & 6-Jaw – Series 3865

Chuck Diameter (Inch)	Hole Diameter (Inch)	3-Jaw			6-Jaw		
		Approximate Weight (lbs)	Maximum RPM	Code	Approximate Weight (lbs)	Maximum RPM	Code
6	1.65	20.5	3500	355120	25.2	3400	355113
8	2.16	34.5	3000	355121	41.5	3100	355114
10	2.99	59.0	2500	355122	78.9	2700	355115
12	4.05	105.0	2000	355123	128.5	2200	355116
16	5.34	201.0	1800	355124	250.0	1300	355117
20	7.48	374.0	1200	355125	365.0	800	355118
25	9.92	630.0	1000	355126	647.0	700	355119

Back Plates for 3-Jaw & 6-Jaw Set-Tru Precision Chucks

Set-Tru chucks can be used for many machining operations for which ordinary geared scroll chucks are unsuitable and to all the operations for which ordinary chucks are normally used. A unique micro-adjustment feature, micro adjustment screws No. 2, enables concentricity to be adjusted to 0.0005mm/0.0002” of full indicator movement.



Camlock

Spindle Type	For Chuck Diameter (Inch)	Code	Spindle Type	For Chuck Diameter (Inch)	Code	Spindle Type	For Chuck Diameter (Inch)	Code
D1-3	6	355127	D1-5	10	355134	D1-11	16	355141
D1-4	6	355128	D1-6	10	355135	D1-8	20	355142
D1-5	6	355129	D1-8	10	355136	D1-11	20	355143
D1-3	8	355130	D1-6	12	355137	D1-15	20	355144
D1-4	8	355131	D1-8	12	355138	D1-8	25	355145
D1-5	8	355132	D1-11	12	355139	D1-11	25	355146
D1-6	8	355133	D1-8	16	355140			

A Type

Spindle Type	For Chuck Diameter (Inch)	Code	Spindle Type	For Chuck Diameter (Inch)	Code	Spindle Type	For Chuck Diameter (Inch)	Code
A-5	6	355147	A-6	12	355153	A-11	20	355159
A-5	8	355148	A-8	12	355154	A-15	20	355160
A-6	8	355149	A-11	12	355155	A-8	25	355161
A-5	10	355150	A-8	16	355156	A-11	25	355162
A-6	10	355151	A-11	16	355157	A-15	25	355163
A-8	10	355152	A-8	20	355158			

Universal Lathe Chucks

Steel/Semi-Steel – 4-Jaw Self-Centering Chucks

- Two-piece hard reversible jaws
- Scroll and jaws hardened and ground

Standard Accessories:
- 1 set of two-piece reversible jaws (hard top and hard master jaws)
- 1 wrench
- 1 set of mounting bolts

Optional Accessories:
Soft top jaws



Semi-Steel – Series 3605

Chuck Diameter (Inch)	Hole Diameter (Inch)	Weight (lbs)	Code
5	1.25	11	355164
6	1.65	22	355165
8	2.17	39	355166
10	2.99	55	355167
12	4.06	110	355168
16	5.35	187	355169
20	7.48	320	355170
25	9.92	551	355171

Steel – Series 3605

Chuck Diameter (Inch)	Hole Diameter (Inch)	Weight (lbs)	Code
6	1.65	21	355172
8	2.17	36	355173
10	2.99	75	355174
12	4.06	123	355175
16	5.35	246	355176
20	7.48	331	355177
25	9.92	560	355178

Semi-Steel – Series 3604

- Two sets of hard solid jaws
- Scroll and jaws hardened and ground

Standard Accessories:
- 2 sets of hard solid jaws (inside and outside),
- 1 wrench
- 1 set of mounting bolts

Optional Accessories:
Soft solid jaws



Chuck Diameter (Inch)	Hole Diameter (Inch)	Weight (lbs)	Code
5	1.2548	9.3	355179
6	1.6535	17.9	355180
8	2.1654	31.1	355181
10	2.9921	52.7	355182
12	4.0551	88.8	355183
16	5.3543	165.3	355184
20	7.4803	246.3	355185

Combination Universal/Independent Lathe Chucks

Steel/Semi-Steel – 4-Jaw Chucks



Semi-Steel – Plain Back – Series 4605

Chuck Diameter (Inch)	Hole Diameter (Inch)	Weight (lbs)	Code
8	2.17	41.4	355190
10	2.99	65.0	355191
12	4.05	120.0	355192
16	5.35	194.0	355193
20	7.48	330.0	355194
25	9.92	551.0	355195

Steel – Plain Back – Series 4805

Chuck Diameter (Inch)	Hole Diameter (Inch)	Weight (lbs)	Code
8	2.17	43.0	355196
10	2.99	68.3	355197
12	4.05	124.0	355198
16	5.35	198.0	355199
20	7.48	342.0	355200
25	9.92	573.0	355201

Independent Lathe Chucks

Steel/Semi-Steel – 4-Jaw Chucks

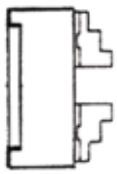
- Semi-steel/steel body
- Solid reversible jaws individually adjustable (Steel plain back chuck has two-piece jaws)
- Scroll and jaws hardened and ground

Standard Accessories:
- 1 set of solid reversible jaws
- 1 wrench
- 1 set of mounting screws

Optional Accessories:
Set of two-piece reversible jaws
Soft top jaws



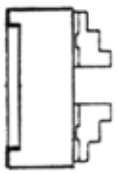
Semi-Steel – Plain Back – Series 4304



Series 4304
Plain Back

Chuck Diameter (Inch)	Bore Diameter (Inch)	Weight (lbs)	Code
3-1/2	1.00	3.4	355206
5	1.02	8	355207
6	1.65	9	355208
8	1.97	32	355209
10	2.56	55	355210
12	3.15	88	355211
16	3.93	139	355212
20	4.93	231	355213
25	6.30	364	355214
32	7.87	700	355215
32T	10.50	672	355216
36	7.48	800	355217

Steel – Plain Back – Series 4303



Series 4303
Plain Back

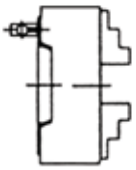
Chuck Diameter (Inch)	Bore Diameter (Inch)	Weight (lbs)	Code
8	1.97	35	355218
10	2.56	59	355219
12	3.15	95	355220
16	3.93	150	355221
20	4.93	250	355222
25	6.30	390	355223
32	7.87	750	355224
36	7.48	856	355225
40	7.48	1367	355226
49	7.48	2138	355227

Steel plain back chucks have two-piece jaws

Independent Lathe Chucks

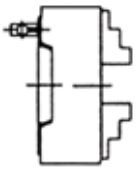
Steel/Semi-Steel – 4-Jaw Chucks *(continued)*

Semi-Steel – Camlock – Series 4344



Chuck Diameter (Inch)	Spindle Type	Bore Diameter (Inch)	Weight (lbs)	Code
8	D1-3	1.97	37	355228
8	D1-4	1.97	37	355229
8	D1-5	1.97	37	355230
10	D1-4	2.36	61	355231
10	D1-5	2.56	61	355232
10	D1-6	2.56	61	355233
12	D1-6	3.15	87	355234
12	D1-8	3.15	87	355235
16	D1-6	3.94	132	355236
16	D1-8	3.94	132	355237
16	D1-11	3.94	132	355238
20	D1-8	4.92	211	355239
20	D1-11	4.92	211	355240
25	D1-11	6.30	364	355241

Semi-Steel – Camlock – Series 4343

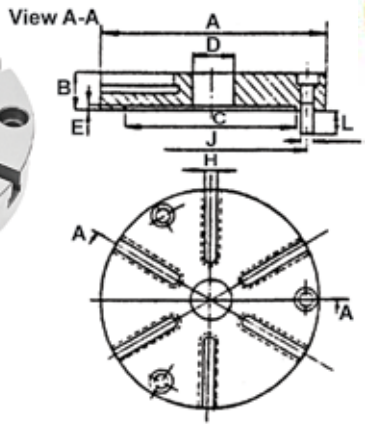


Chuck Diameter (Inch)	Spindle Type	Bore Diameter (Inch)	Weight (lbs)	Code
8	D1-4	3.15	40	355242
8	D1-5	3.15	40	355243
8	D1-6	3.15	40	*355244
10	D1-5	3.35	65	355245
10	D1-6	3.35	65	355246
10	D1-8	3.35	65	355247
12	D1-6	3.74	93	*355248
12	D1-8	3.74	93	355249
16	D1-6	4.13	141	355250
16	D1-8	4.13	141	355251
16	D1-11	4.13	141	355252
20	D1-8	4.72	226	355253
20	D1-11	4.72	226	355254
20	D1-15	4.72	226	355255
25	D1-8	5.51	389	355256
25	D1-11	5.51	389	355257
25	D1-15	5.51	389	355258
32	D1-11	6.20	703	355259
32	D1-15	6.20	703	355260

* *Steel*

Face Plates





- Face plates are designed for use with BISON adapters
- May also be mounted on any lathe spindle nose
- Includes 3 mounting bolts (M)

A (Inch)	B (Inch)	C (Inch)	D (Inch)	E +0.008 (Inch)	M Mounting Bolts	L (Inch)	H (Inch)	J +0.008 (Inch)	Weight (lbs)	Code
6-1/4	1.18	4.921	1.18	0.157	M10 x 1.5	0.59	3/8	5.512	7.5	355272
8	1.38	6.299	1.57	0.197	M10 x 1.5	0.59	1/2	6.929	12.0	355273
12-1/2	1.97	10.236	1.97	0.197	M16 x 2	1.02	5/8	11.260	39.0	355274

Universal Lathe Chucks

Semi-Steel Body – 3-Jaw & 4-Jaw Front Mount Self-Centering Chucks


3-Jaw
Solid Jaws


3-Jaw
2-Piece Jaws


4-Jaw
2-Piece Jaws

3 and 4-Jaw Universal Scroll Chucks are designed for use with rotary tables and other devices where back mounting chucks cannot be used. They can be mounted directly on 3-slot rotary table or on base plate when rotary table has 4 or 8 T-slots.

Plain Back – 3-Jaw – Solid Jaws

Chuck Diameter (Inch)	Weight (lbs)	Code
4	5.3	355275
8	32.0	355276
10	52.0	355277
12	96.0	355278

Plain Back – 4-Jaw – 2-Piece Jaws

Chuck Diameter (Inch)	Weight (lbs)	Code
5	10.0	355284
6	18.0	355285
8	32.0	355286
10	52.0	355287
12	96.0	355288

Plain Back – 3-Jaw – 2-Piece Jaws

Chuck Diameter (Inch)	Weight (lbs)	Code
5	10.0	355279
6	18.0	355280
8	32.0	355281
10	52.0	355282
12	96.0	355283

Back Plates

- Fully machined for fixturing and mounting 2, 3 or 4-jaw lathe chucks onto rotary tables, etc.
- High carbon steel
- Precision ground for accuracy

For Chuck Diameter (Inch)	Code
6	355550
8	355551
10	355552
12	355553



Quick Clamping Lathe Chucks

Steel Body – 3-Jaw & 6-Jaw Self-Centering Chucks

- RPM 100
- TIR 0.00059”
- For drilling and end mill sharpening as well as for fixtures with 5C and MT sockets
- BISON 3 and 6-jaw lever operated, super accurate, low profile chucks are designed to solve tool grinding problems
- Keyless and pinion-less gripping system allows the reduction of clamping and unclamping time to a minimum
- 6-jaw chucks provide a uniform distortion free clamping of workpieces
- Chucks can be mounted on the spindle noses of tool grinders, on rotary tables, indexing fixtures and measuring devices



Standard Accessories for 3-Jaw Chucks:
- 1 set of inside jaws
- 1 set of outside jaws
- 1 wrench

Standard Accessories for 6-Jaw Chucks:
- 1 set of jaws
- 1 wrench

3-Jaw – Series 3266

Chuck Diameter (Inch)	Hole Diameter (Inch)	RPM Maximum	Weight (lbs)	Code
3	0.95	100	2.4	355289
4	1.26	100	7.1	355290
5	1.50	100	8.8	355291
6-1/4	2.05	100	16.1	355292

6-Jaw – Series 3866

Chuck Diameter (Inch)	Hole Diameter (Inch)	RPM Maximum	Weight (lbs)	Code
3	0.95	100	2.8	355293
4	1.26	100	6.2	355294
5	1.50	100	8.8	355295
6-1/4	2.05	100	15.4	355296

Quick Clamping Lathe Chuck Adapters

Fully Machined



Morse Taper

Chuck Diameter (Inch)	Morse Taper	Code
4	3	355554
4	4	355555
5	3	355556
5	4	355557
6	5	355558

5C

Chuck Diameter (Inch)	Code
4	355559
5	355560
6	355561

5C Blank

Chuck Diameter (Inch)	Code
4	355562
5	355563
6	355564

Universal Lathe Chucks

Semi-Steel Body – 2-Jaw Self-Centering Chucks

- Semi-steel body
- Two-piece soft top reversible jaws are shaped by user to fit the workpiece
- Scroll and master jaws hardened and ground

Standard Accessories:
- 1 set of two-piece reversible soft top jaws and hard master jaws
- 1 wrench
- 1 set of mounting bolts



Series 3100

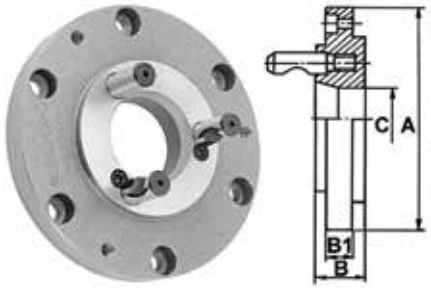
Chuck Diameter (Inch)	Hole Diameter (Inch)	Weight (lbs)	Code
6	1.6535	20.3	355297
8	2.1654	34.5	355298
10	2.9921	56.7	355299
12	4.0551	93.9	355300
16	5.3543	172.8	355301

Lathe Chuck Accessories

For Bison Lathe Chucks

Back Plates – Fully Machined Cast Iron

Series 8240 - Fully machined adapters for BISON plain back, self-centering chucks – designed for direct mounting on camlock spindle noses



Camlock – Series 8240

For Chuck Diameter (Inch)	Taper Size	Stud Diameter (Inch)	No. of Studs	C Diameter (Inch)	A Diameter (Inch)	B (Inch)	B1 (Inch)	Weight (lbs)	Code
5	D1-3	9/16	3	2.02	4.94	1.02	0.57	5.3	355565
5	D1-4	5/8	3	2.40	4.94	1.02	0.87	5.3	355566
6-1/4	D1-3	9/16	3	2.02	6.32	1.06	0.71	9.5	355567
6-1/4	D1-4	5/8	3	2.40	6.32	1.06	0.71	9.5	355568
6-1/4	D1-5	3/4	6	3.13	6.32	1.18	1.00	9.5	355569
6-1/4	D1-6	7/8	6	4.06	6.32	1.44	1.32	9.5	355570
8	D1-3	9/16	3	2.02	7.89	1.06	0.71	15.4	355571
8	D1-4	5/8	3	2.40	7.89	1.06	0.71	15.4	355572
8	D1-5	3/4	6	3.13	7.89	1.18	0.71	15.4	355573
8	D1-6	7/8	6	4.06	7.89	1.44	1.26	15.4	355574
10	D1-5	3/4	6	3.13	9.86	1.18	0.87	24.3	355575
10	D1-6	7/8	6	4.06	9.86	1.44	0.87	24.3	355576
10	D1-8	1	6	5.35	9.86	1.54	1.36	39.7	355577
12-1/2	D1-6	7/8	6	4.06	12.42	1.56	0.94	39.7	355578
12-1/2	D1-8	1	6	5.35	12.42	1.65	0.94	39.7	355579
12-1/2	D1-11	1-3/16	6	7.59	12.42	1.85	1.36	39.7	355580
15-3/4	D1-6	7/8	6	4.06	15.77	1.44	1.10	79.0	355581
15-3/4	D1-8	1	6	5.35	15.77	1.54	1.10	79.0	355582
15-3/4	D1-11	1-3/16	6	7.59	15.77	1.85	1.10	79.0	355583
20	D1-8	1	6	5.35	19.70	1.54	1.14	132.0	355584
20	D1-11	1-3/16	6	7.59	19.70	1.85	1.14	132.0	355585
25	D1-8	1	6	5.35	24.82	1.54	1.14	232.0	355586
25	D1-11	1-3/16	6	7.59	24.82	1.85	1.14	232.0	355587

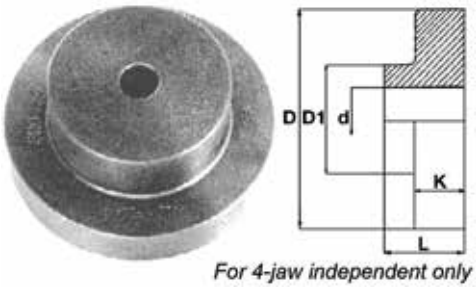
Number of camlock studs depends on spindle size

Lathe Chuck Accessories

For Bison Lathe Chucks

Spindle Back Plates – Cast Iron

Adapters for threaded spindles 3-jaw and 4-jaw universal



For 4-jaw independent only

Series 8205

For Chuck Diameter (Inch)	D (Inch)	d (Inch)	D1 (Inch)	K (Inch)	L (Inch)	Weight (lbs)	Code
3, 4, 5	5.20	0.71	3.46	0.98	2.20	4.4	355663
6-1/4	6.70	0.98	3.46	0.98	2.20	12.0	355664
8	8.30	0.98	4.02	1.18	2.83	22.0	355665
10	10.24	1.57	4.53	1.26	3.54	34.0	355666
12-1/2	12.30	1.97	6.77	1.26	4.02	66.0	355667
15-3/4	16.34	2.76	9.06	2.17	4.92	154.0	355668
20	20.28	3.15	9.84	2.56	5.98	267.0	355669
25	25.20	4.72	11.81	3.35	7.09	496.0	355670

Series 8262

For Chuck Diameter (Inch)	D (Inch)	d (Inch)	D1 (Inch)	K (Inch)	L (Inch)	Weight (lbs)	Code
6-1/4	3.94	0.79	2.95	1.18	2.17	8	355671
5	5.12	1.18	3.74	1.38	2.56	11	355672
10	7.09	1.57	4.72	1.97	3.35	25	355673
12-1/2	8.66	2.17	5.51	2.36	3.74	49	355674
15-3/4	10.63	2.95	7.48	2.36	5.51	95	355675
20, 25	11.02	3.54	7.87	2.36	5.51	99	355676
32	15.75	3.54	8.66	2.36	5.51	177	355677

A Type

Semi machined adapters for plain back chucks, with spotted holes for A1 and A2 spindle noses



For Chuck Diameter (Inch)	Taper Size	Code
5	A-6	355650
5	A-8	355651
6	A-5	355652
8	A-5	355653
8	A-6	355654
10	A-6	355655
10	A-8	355656
1	A-6	355657

For Chuck Diameter (Inch)	Taper Size	Code
12	A-8	355658
16	A-8	355659
16	A-11	355660
20	A-11	355661
25	A-11	355662

Studs

Camlock Studs – D1 Style – Metric



Sold individually

Taper Size	Diameter (Inch)	No. of Studs Required	Thread	Code
D1-3	9/16	3	M10 x 1	355678
D1-4	5/8	3	M10 x 1	355679
D1-5	3/4	6	M12 x 1	355680
D1-6	7/8	6	M16 x 1.5	355681
D1-8	1	6	M20 x 1.5	355682
D1-11	1-3/16	6	M22 x 1.5	355683
D1-15	1-3/8	6	M24 x 1.5	355684

DIN Standard Studs – DIN 55027



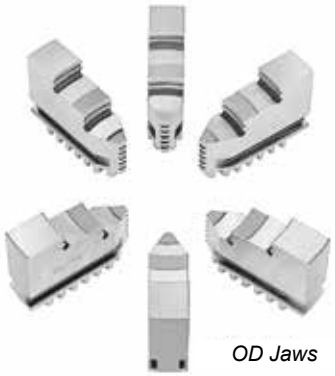
Sold individually

Taper Size	Diameter (Inch)	No. of Studs Required	Thread	Code
C4	0.768	3	M10	355691
C5	0.770	4	M10	355692
C6	0.845	4	M12	355693
C8	1.065	4	M16	355694
C11	1.337	6	M20	355695

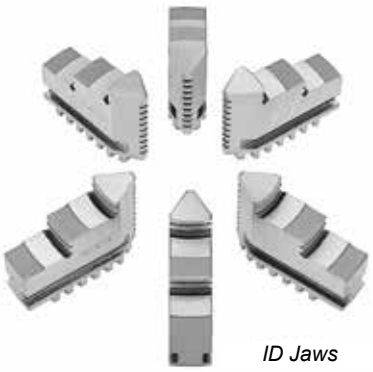
Lathe Chuck Accessories

For Bison Self-Centering Lathe Chucks

Hard Solid Outside & Inside Jaws



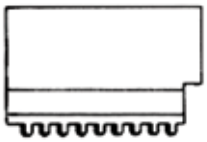
OD Jaws



ID Jaws

For Chuck Diameter (Inch)	Hard Solid Outside Jaws			Hard Solid Inside Jaws		
	For Series 3200 3-Piece Sets	For Series 3600 4-Piece Sets	For Series 3800 6-Piece Sets	For Series 3200 3-Piece Sets	For Series 3600 4-Piece Sets	For Series 3800 6-Piece Sets
	Code	Code	Code	Code	Code	Code
3	–	–	–	355716	–	–
4	355697	–	–	355717	–	–
5	355698	355704	–	355991	355724	–
6	355989	355705	355712	355992	355725	355732
8	355990	355706	355713	355718	355726	355733
10	355699	355707	355714	355719	355727	–
12	355700	355708	355715	355720	355728	355735
16	355701	–	–	355721	355729	–
20	355702	355710	–	355722	355730	–
25	–	355711	–	–	355731	–

Soft Solid Jaws



Hard Top Jaws



For Chuck Diameter (Inch)	For Series 3200 & 3500 3-Piece Sets	For Series 3600 4-Piece Sets
	Code	Code
3	355736	–
4	355737	–
5	355738	355745
6	355993	355746
8	355739	–
10	355740	355748
12	355741	355749
16	355742	355750
20	–	355751
25	355744	355752

For Chuck Diameter (Inch)	For Series 3200 & 3500 3-Piece Sets	For Series 3600 4-Piece Sets	For Series 3800 6-Piece Sets
	Code	Code	Code
5	355753	355759	–
6	355754	355760	355767
8	355755	355761	355768
10	355756	355762	355769
12	355757	355763	355770
16	355303	–	355771
20	355304	355765	355772
25	355305	355766	355773

Lathe Chuck Accessories

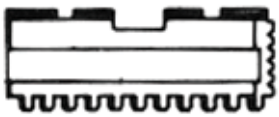
For Bison Self-Centering Lathe Chucks

Soft Top Jaws



For Chuck Diameter (Inch)	For Series 3100 1-Piece	For Series 3200, 3500, 3600 & 3800 1-Piece
	Code	Code
5	–	355779
6	355774	355780
8	355775	355781
10	355776	355782
12	355777	355783
16	355778	355306
20	–	355307
25	–	355308
32	–	355784

Hard Master Jaws



For Chuck Diameter (Inch)	For Series 3100 2-Piece Sets	For Series 3200 & 3500 3-Piece Sets	For Series 3600 4-Piece Sets	For Series 3800 6-Piece Sets
	Code	Code	Code	Code
5	–	355790	355798	
6	355785	355791	355799	355806
8	355786	355792	355800	355807
10	355787	355793	355801	355808
12	355788	355794	355802	355809
16	355789	355795	355803	355810
20	–	355796	355804	355811
25	–	355797	355805	355812

Pinions



For Chuck Diameter (Inch)	For Series 3100, 3200 & 3600 1-Piece	For Series 3500 1-Piece
	Code	Code
3	355813	–
4	355814	–
5	355815	355824
6	355816	355825
8	355817	355826
10	355818	355827
12	355819	355828
16	355820	355829
20	355821	–
25	355822	–
32	355823	–

Scroll Plates



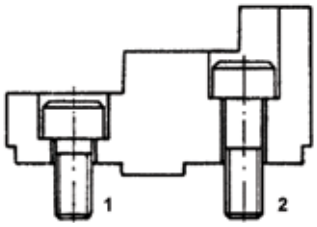
For Chuck Diameter (Inch)	For Series 3100, 3200 & 3600 1-Piece	For Series 3500 1-Piece
	Code	Code
3	355830	–
4	355831	355841
5	355832	355842
6	355833	355843
8	355834	355844
10	355835	355845
12	355836	355846
16	355837	355847
20	355838	–
25	355839	–
32	355840	–

Lathe Chuck Accessories

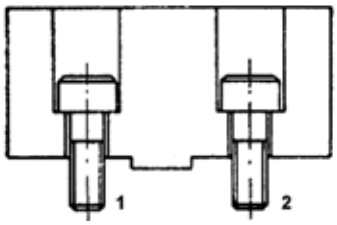
For Bison Self-Centering & Independent Lathe Chucks

Jaw Mounting Bolts 1 & 2





Hard Top Jaws



Soft Top Jaws

Bolt 1

For Chuck Diameter (Inch)	Bolt Size (Inch)	Code
5	5/16 - 18 x 3/4	355848
6	3/8 - 16 x 7/8	355849
8	3/8 - 16 x 1	355850
10	1/2 - 13 x 1-1/8	355851
12	1/2 - 13 x 1-1/8	355851
16	5/8 - 11 x 1-3/8	355852
20	3/4 - 10 x 1-5/8	355853
25	3/4 - 10 x 1-5/8	355853
32	3/4 - 10 x 1-5/8	355853

Bolt 2

For Chuck Diameter (Inch)	Bolt Size (Inch)	Code
5	5/16 - 18 x 1	355854
6	3/8 - 16 x 1-1/4	355855
8	3/8 - 16 x 1-3/8	355856
10	1/2 - 13 x 1-5/8	355857
12	1/2 - 13 x 1-5/8	355857
16	5/8 - 11 x 2	355858
20	3/4 - 10 x 3	355859
25	3/4 - 10 x 3-1/8	355860
32	3/4 - 10 x 3-1/8	355860

Keys for 3-Jaw & 4 Jaw Chucks & 4-Jaw Independent Chucks



For 3-Jaw & 4-Jaw Chucks – 1 Piece

For Chuck Diameter (Inch)	Square (Inch)	Code
3	15/64	355861
4, 5	3/8	355862
10, 12	9/16	355864
16	11/16	355865
20, 25	3/4	355866
32	3/4	355867

For 4-Jaw Independent Chucks – 1 Piece

For Chuck Diameter (Inch)	Square (Inch)	Code
5, 6	9/32	355868
8, 10	7/16	355869
12, 16	9/16	355870
20, 25	11/16	355871
32	3/4	355872

Lathe Chuck Accessories

For Bison Independent Lathe Chucks

Hard Top Jaws – 1 Piece



For Chuck Diameter (Inch)	Code	For Chuck Diameter (Inch)	Code
8	355873	20	355877
10	355874	25	355878
12	355875	32	355879
16	355876		

Hard Master Jaws – 1 Piece



For Chuck Diameter (Inch)	Code	For Chuck Diameter (Inch)	Code
8	355880	20	355884
10	355881	25	355885
12	355882	32	355886
16	355883		

Hard Solid Reversible Jaws – 1 Piece



For Chuck Diameter (Inch)	Code	For Chuck Diameter (Inch)	Code
3	355896	12	355900
6	355897	16	355901
8	355898	20	355902
10	355899	25	355903
		32	355904

Operating Screws – 1 Piece



For Chuck Diameter (Inch)	Code	For Chuck Diameter (Inch)	Code
3	355887	20	355893
5, 6	355888	25	355894
8	355889	32	355895
10	355890	32	355988
12	355891		
16	355892		

For chucks with 10-1/2" bore

Adapter Mounting Bolts

For Series 4304 – 4-Piece Sets



For Chuck Diameter (Inch)	Bolt Size	Code
6	3/8 - 16 x 1-3/4	355915
8	7/16 - 14 x 2-3/4	355916
10	1/2 - 13 x 3-1/8	355917
12, 16	5/8 - 11 x 3-1/2	355918
20	3/4 - 10 x 4	355919
25	3/4 - 10 x 4-3/4	355920
32	7/8 - 9 x 5-7/8	355921

Thrust Bearings – 1 Piece



For Chuck Diameter (Inch)	Code	For Chuck Diameter (Inch)	Code
3	355905	12	355909
5, 6	355906	16	355910
8	355907	20	355911
10	355908	25	355912
		32	355913

Lathe Chuck Accessories

Steel Serrated Soft Jaws – 3-Piece Sets

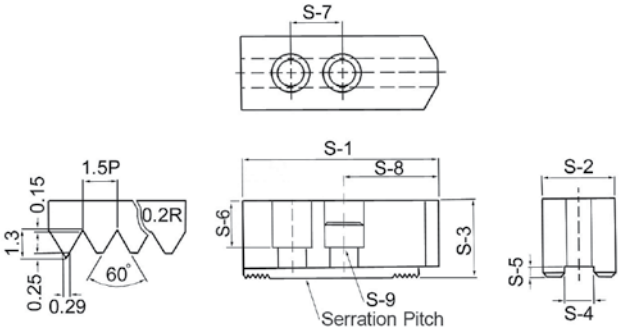
For Kitagawa Style & Other Power Chucks



* Standard height



Extra height



For Chuck Diameter (Inch)	S1 (mm)	S2 (mm)	S3 (mm)	S4 (mm)	S5 (mm)	S6 (mm)	S7 (mm)	S8 (mm)	S9 (mm)	S10 (mm)	S11 (mm)	S12 (mm)	S13 (mm)	S14 Thread	Nose	Code
6	73	31	*31	12	5	15	20	38	17	11	23	–	14	M10	B	302200
6	73	31	50	12	5	15	20	38	17	11	23	–	14	M10	B	302323
6	73	31	80	12	5	15	20	38	17	11	23	–	14	M10	B	302324
8	95	35	*37	14	5	24	25	46	19	13	20	–	16	M12	B	302201
8	95	35	50	14	5	24	25	46	19	13	20	–	16	M12	B	302325
8	95	35	80	14	5	24	25	46	19	13	20	–	16	M12	B	302326
10	110	40	42	16	5	30	30	50	19	13	26	20	18	M12	B	302202
10	110	40	60	16	5	30	30	50	19	13	26	20	18	M12	B	302327
10	110	40	90	16	5	30	30	50	19	13	26	20	18	M12	B	302328
10	110	40	120	16	5	30	30	50	19	13	26	20	18	M12	B	302329
12	129	48	*48	18	6	39	30	60	23	16	30	30	20	M16	B	302203
12	129	48	80	18	6	39	30	60	23	16	30	30	20	M16	B	302331
12	129	48	100	18	6	39	30	60	23	16	30	30	20	M16	B	302333
12	129	48	120	18	6	39	30	60	23	16	30	30	20	M16	B	302335
12	129	48	*48	21	6	39	30	60	23	16	30	30	20	M16	B	302320
12	129	48	80	21	6	39	30	60	23	16	30	30	20	M16	B	302330
12	129	48	100	21	6	39	30	60	23	16	30	30	20	M16	B	302332
12	129	48	120	21	6	39	30	60	23	16	30	30	20	M16	B	302334
15	165	62	*62	22	8	37	43	85	32	21	38	50	–	M20	A	302204
15	165	62	80	22	8	37	43	85	32	21	38	50	–	M20	A	302336
15	165	62	130	22	8	37	43	85	32	21	38	50	–	M20	A	302338
15	165	62	*62	25.5	8	37	43	85	32	21	38	50	–	M20	A	302321
15	165	62	80	25.5	8	37	43	85	32	21	38	50	–	M20	A	302337
15	165	62	130	25.5	8	37	43	85	32	21	38	50	–	M20	A	302339
18	165	62	*62	22	8	37	43	85	32	21	38	50	–	M20	A	302204
18	165	62	150	22	8	37	43	85	32	21	38	50	–	M20	A	302340
18	165	62	*62	25.5	8	37	43	85	32	21	38	50	–	M20	A	302321
18	165	62	150	25.5	8	37	43	85	32	21	38	50	–	M20	A	302322

Steel Serrated Soft Jaws Reference Chart

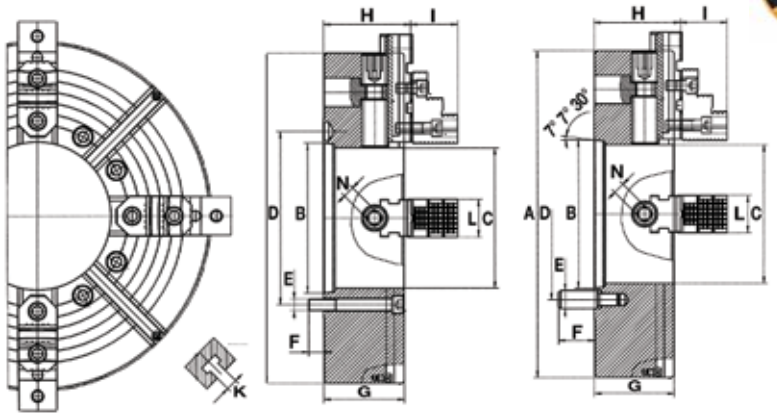
Major Brand Crossover

For Chuck Diameter (Inch)	KAR Code	Kitigawa	Samchully	Howa	SMW	MMK	Strong
6	302200 302323 302324	BB-06, B-06, B-206, BT-06, BT206	HS-06	HO15M6, HO22M6, HO24M6, HO27M6	170BBM-CC	YA5-6-46	N206
8	302201 302325 302326	B-08, B208, BB-208, BB208	–	H3KT8, HO15M8, HO7M8	BHM-210, BBM-210, KT8MH	ZA6-9, HA6-8	–
10	302202 302327 302328 302329	B-10, B-210, BL-210, BLT-210, BB210	HS10, HC10, HCH10, HCH210	H3KT10	ANM250, BHM-250, BBM-250	HA6-10, HA8-10, HA8-11, PC-10-78-A6, PC-10-78-A8	V210, NIT210, NB210, N210
12	302203 302331 302333 302335	B-12, BT-12, HO-12, HOB-12, HOH-12	–	HO12M12, HO22M10, HO24M10, HO27M10	–	H-12, HA8-12, ZA8-12, ZJA8-12	–
	302320 302330 302332 302334	B-212, BB-212, BL-212, BLT-212, BL212, BT-212	–	H3KT12	BBM-305, BBM-315, BHM-305, BHM-315	ZA8-12-93B	–
15	302204 302336 302338	B15, BT-15, B-18, HOH-15K, B-380, B-450, HOB-15, HOB-18, HOH-15, HOH-18, HOH-380	–	–	–	–	–
	302321 302337 302339	B-215, N15, N18	–	–	–	–	–
18	302204 302340	B15, BT-15, B-18, HOH-15K, B-380, B-450, HOB-15, HOB-18, HOH-15, HOH-18, HOH-380	–	–	–	–	–
	302321 302322	B-215, N15, N18	–	–	–	–	–

Oil Country Lathe Chucks

4-Jaw Independent Chuck & Accessories





- Extra heavy-duty forged steel body

Standard Accessories:
- 1 set of two-piece reversible jaws (hard top and hard master jaws)
- 1 wrench
- 1 set of mounting bolts
- 2 Allen keys
- 2 eye bolts

Optional Accessories:
- Soft top jaws

Chuck Diameter (Inches)	Hole Diameter (Inches)	Gripping Force (lbs)	Clamping Capacity (Inches)	
			Minimum	Maximum
15-3/4	5.3	7060	1.77	15.75
15-3/4	6.5	7060	1.77	15.75
20	5.3	7060	1.77	19.68
20	6.5	7060	1.77	19.68
20	8.0	7060	1.77	19.68
25	10.5	8160	1.97	24.80
25	12.5	8160	3.94	24.80
28	10.5	9040	2.95	27.95
28	12.5	9040	3.94	27.95
32	10.5	9040	2.95	31.50
32	12.5	9040	4.53	31.50

A Type Spindle

D Chuck Diameter (Inch)	Mounting Type	C Hole Diameter (Inch)	B +001" (Inch)	D (Inch)	G (Inch)	H (Inch)	I (Inch)	K (Inch)	L (Inch)	N (Inch)	Maximum RPM	Weight (lbs)	Code
20	A2-15	8.0	11.251	13.000	5.71	6.067	2.981	0.866	2.362	0.748	1000	414	355309
25	A2-15	10.5	11.251	13.000	6.10	6.579	3.571	0.866	2.953	0.866	850	684	355310
25	A2-20	12.5	16.251	18.252	6.10	6.579	3.571	0.866	2.953	0.866	850	662	355311
28	A2-15	10.5	11.251	13.000	6.10	6.579	3.571	0.866	2.953	0.866	750	915	355312
28	A2-20	12.5	16.251	18.252	6.10	6.579	3.571	0.866	2.953	0.866	750	871	355313
32	A2-15	10.5	11.251	13.000	6.50	6.972	3.571	0.866	2.953	0.866	600	1290	355314
32	A2-20	12.5	16.251	18.252	6.50	6.972	3.571	0.866	2.953	0.866	600	1246	355315

D1 Type Spindle

D Chuck Diameter (Inch)	Mounting Type	C Hole Diameter (Inch)	B +001" (Inch)	D (Inch)	G (Inch)	H (Inch)	I (Inch)	K (Inch)	L (Inch)	N (Inch)	Maximum RPM	Weight (lbs)	Code
15-3/4	D1-8	5.3	5.500	6.750	5.71	6.067	2.981	0.709	2.362	0.748	1200	300	355316
15-3/4	D1-11	6.5	7.750	9.252	5.71	6.067	2.981	0.709	2.362	0.748	1200	282	355317
20	D1-8	5.3	5.500	6.750	5.71	6.067	2.981	0.866	2.362	0.748	1000	468	355318
20	D1-11	6.5	7.750	9.252	5.71	6.067	2.981	0.866	2.362	0.748	1000	452	355319
28	D1-11	7.5	7.750	9.252	6.10	6.579	3.570	0.866	2.953	0.866	750	993	355320

Oil Country Lathe Chucks

4-Jaw Independent Chuck & Accessories *(continued)*

Hard Top Reversible Jaws – 1 Piece



For Chuck Diameter (Inch)	Code
15-3/4, 20	355922

For Chuck Diameter (Inch)	Code
25, 28, 32	355923

Hard Master Jaws – 4-Piece Sets



For Chuck Diameter (Inch)	Code
15-3/4	355924
20	355925

For Chuck Diameter (Inch)	Code
25, 28, 32	355926

Thrust Bearings – 1 Piece



For Chuck Diameter (Inch)	Code
15-3/4	355927
20	355928

For Chuck Diameter (Inch)	Code
25, 28	355929
32	355930

Keys – 1 Piece



For Chuck Diameter (Inch)	Code
15-3/4, 20	355931

For Chuck Diameter (Inch)	Code
25, 28, 32	355932

Operating Screws – 1 Piece



For Chuck Diameter (Inch)	Hole Diameter (Inch)	Code
15-3/4	5.3	355933
15-3/4	6.5	355934
20	5.3	355935
20	6.5	355936

For Chuck Diameter (Inch)	Hole Diameter (Inch)	Code
20	8.0	355937
25	10.5	355938
25	12.5	355939
28	10.5	355940

For Chuck Diameter (Inch)	Hole Diameter (Inch)	Code
28	12.5	355941
32	10.5	355942
32	12.5	355943

Precision Lathe Chucks & Accessories

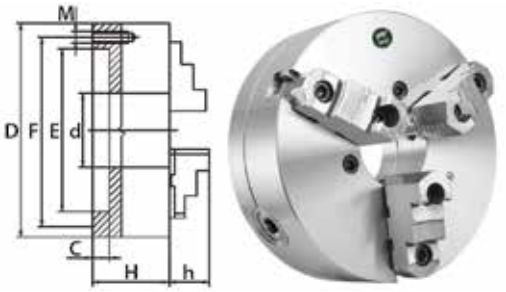
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PO Series – Forged Steel Body – 3-Jaw Self-Centering Chucks

2 Pc. Hard Reversible Jaws

- Forged steel body, medium duty
- 3 pinion design

Each chuck is provided with:
- 1 set of hard master jaws
- 1 set of hard top reversible jaws
- 1 chuck wrench
- 1 set of mounting bolts
- 2 hex keys
- Eye bolts for chuck sizes larger than 10”

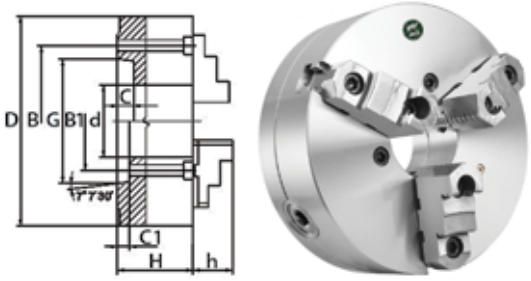


Plain Back Mounting

Chuck Diameter (Inch)	d Hole Diameter (Inch)	RPM Maximum	Model	C (Inch)	E (Inch)	F (Inch)	H (Inch)	h (Inch)	M Thread	Bolt Length (Inch)	No. of Bolts	Code
6	1.65	4500	PO3-6”A	0.16	4.92	5.51	2.76	1.69	M10 x 1.5	0.98	6	410048
8	2.17	4000	PO3-8”A	0.16	6.30	6.93	3.15	1.77	M10 x 1.5	0.98	6	410049
10	2.99	3500	PO3-10”A	0.20	7.87	8.82	3.54	2.09	M12 x 1.75	1.18	6	410050
12	4.06	2800	PO3-12”A	0.20	10.24	11.26	3.94	2.24	M16 x 2	1.18	6	410051
16	5.35	2000	PO3-16”A	0.20	12.99	14.25	4.33	2.69	M16 x 2	1.57	6	410052
20	7.48	1200	PO3-20”A	0.20	16.54	18.03	4.68	3.15	M16 x 2	1.57	6	410053
25	9.92	1000	PO3-25”A	0.28	21.46	23.07	5.08	3.42	M16 x 2	1.57	6	410054

Type A Mounting





Chuck Diameter (Inch)	d Hole Diameter (Inch)	RPM Maximum	Model	B1 Type A1 (Inch)	B Type A2 (Inch)	*C/C1 (Inch)	G (Inch)	H (Inch)	h (Inch)	M Thread	Bolt Length (Inch)	No. of Bolts	Code
8	2.17	4000	PO3-8”A/A1-6	3.25	-	0.62	4.19	3.07	1.77	1-2/13	2.75	3	410059
10	2.17	3500	PO3-10”A/A1-6	3.25	-	0.62	4.19	3.50	2.09	1-2/13	3.12	6	410060
10	2.99	3500	PO3-10”A/A1-8	4.37	-	0.69	5.50	3.50	2.09	5/8-11	2.75	6	410061
12	4.06	2800	PO3-12”A/A2-6	-	5.25	0.63	4.19	3.79	2.24	1-2/13	4.00	6	410062
12	3.15	2800	PO3-12”A/A1-8	4.37	-	0.69	5.50	3.79	2.24	5/8-11	3.12	6	410063
16	5.12	2000	PO3-16”A/A1-11	6.5	-	0.75	7.75	4.25	2.64	3/4-10	4.50	6	410064
20	7.48	1200	PO3-20”/A2-11	-	9.25	0.79	7.75	4.68	3.09	3/4-10	4.75	6	410065

* *C-C1 = depth of counterbore*

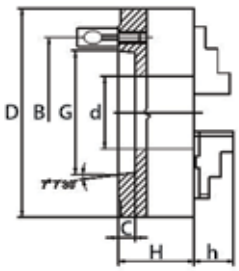
Precision Lathe Chucks & Accessories

PO Series – Forged Steel Body – 3-Jaw Self-Centering Chucks

2 Pc. Hard Reversible Jaws *(continued)*

Camlock Mounting





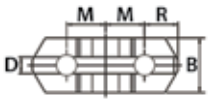


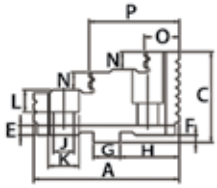
Chuck Diameter (Inch)	d Hole Diameter (Inch)	RPM Maximum	Model	B (Inch)	C (Inch)	G (Inch)	H (Inch)	h (Inch)	Camlock Stud Diameter (Inch)	Camlock Stud Thread	No. of Bolts	Code
6	1.65	4500	PO3-6"A/D1-3	2.75	0.51	2.12	2.68	1.69	0.56	M10 x 1.0	3	356361
6	1.65	4500	PO3-6"A/D1-4	3.25	0.51	2.50	2.68	1.69	0.62	M10 x 1.0	3	356362
6	1.65	4500	PO3-6"A/D1-5	4.13	0.56	3.75	2.68	1.69	0.75	M12 x 1.0	6	356363
8	2.17	4000	PO3-8"A/D1-5	4.13	0.56	3.25	3.07	1.77	0.75	M12 x 1.0	6	356364
8	2.17	4000	PO3-8"A/D1-6	5.25	0.63	4.19	3.07	1.77	0.87	M16 x 1.5	6	356365
10	2.99	3500	PO3-10"A/D1-6	5.25	0.63	4.19	3.50	2.09	0.87	M16 x 1.5	6	410055
10	2.99	3500	PO3-10"A/D1-8	6.75	0.71	5.50	3.50	2.09	1.00	M20 x 1.5	6	410056
12	4.06	2800	PO3-12"A/D1-6	5.25	0.63	4.19	3.79	2.24	0.87	M16 x 1.5	6	410057
12	4.06	2800	PO3-12"A/D1-8	6.75	0.71	5.50	3.79	2.24	1.00	M20 x 1.5	6	410058
12	4.06	2800	PO3-12"A/D1-11	9.25	0.79	7.75	4.40	2.24	1.19	M22 x 1.5	6	356366
16	5.35	2000	PO3-16"A/D1-8	6.75	0.71	5.50	4.26	2.64	1.00	M20 x 1.5	6	356367
16	5.35	2000	PO3-16"A/D1-11	9.25	0.79	7.75	4.26	2.64	1.19	M22 x 1.5	6	356368
20	7.60	1200	PO3-20"A/D1-11	9.25	0.79	7.75	4.68	3.15	1.19	M22 x 1.5	6	356369
25	7.48	1000	PO3-25"A/D1-11	9.25	0.79	7.75	5.08	3.42	1.19	M22 x 1.5	6	356370

Spare Jaws for PO Series

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

Hard Top Jaws – 3-Piece Sets







For Chuck Diameter (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	M (Inch)	N (Inch)	A OAL (Inch)	O (Inch)	P (Inch)	Weight (lbs)	Code
6	0.98	1.63	0.31	0.16	0.13	0.50	1.12	0.43	0.71	0.75	0.33	2.64	0.81	1.69	1.20	410140
8	1.18	1.77	0.31	0.16	0.13	0.50	1.37	0.43	0.71	0.87	0.41	3.35	0.98	2.09	2.10	410141
10	1.42	2.09	0.50	0.16	0.13	0.75	1.56	0.55	0.78	1.06	0.53	3.74	1.14	2.52	3.20	410142
12	1.65	2.28	0.50	0.16	0.13	0.75	1.87	0.55	0.78	1.25	0.69	4.25	1.22	3.01	5.10	410143
16	1.77	2.76	0.50	0.16	0.25	0.75	2.25	0.71	1.00	1.50	0.69	5.00	1.85	3.46	7.30	410144
20	1.98	3.42	0.50	0.16	0.25	0.75	2.25	0.87	1.30	1.50	0.79	5.16	2.05	3.23	14.40	410145
25	2.05	3.42	0.50	0.16	0.25	0.75	2.25	0.87	1.30	1.50	0.79	5.16	2.05	3.23	27.10	356302

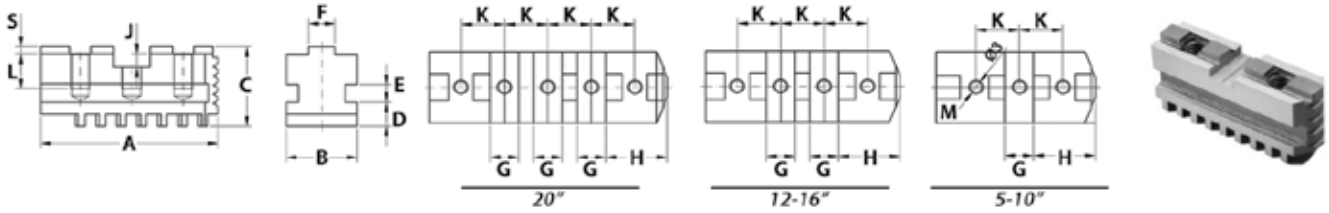
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Spare Jaws for PO Series *(continued)*

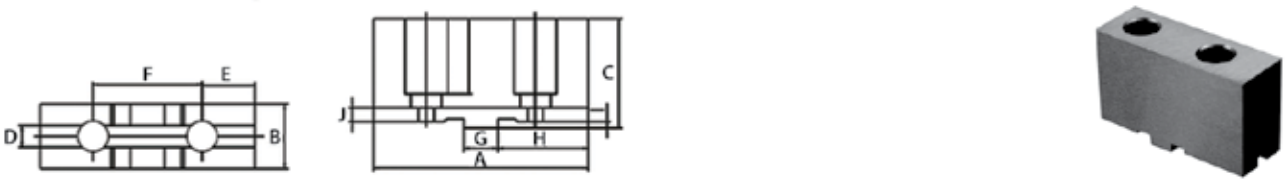
Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

Hard Master Jaws – 3-Piece Sets



For Chuck Diameter (Inch)	B (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	L (Inch)	A OAL (Inch)	S (Inch)	M Thread	Weight (lbs)	Code
6	0.79	0.31	0.31	0.31	0.50	1.12	0.16	0.75	0.55	2.56	0.13	3/8-16	1.20	410152
8	0.98	0.35	0.39	0.31	0.50	1.37	0.16	0.87	0.55	3.11	0.13	3/8-16	2.10	410153
10	1.10	0.43	0.47	0.50	0.75	1.56	0.16	1.06	0.63	3.62	0.13	1/2-13	3.20	410154
12	1.26	0.50	0.47	0.50	0.75	1.87	0.16	1.25	0.63	4.33	0.13	1/2-13	5.10	410155
16	1.42	0.59	0.55	0.50	0.75	2.25	0.28	1.50	0.87	5.12	0.25	5/8-11	7.30	410156
20	1.57	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.26	6.54	0.25	3/4-10	14.40	410157
25	1.97	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.26	8.27	0.25	3/4-10	27.10	356312

Soft Top Jaws – 1 Piece



For Chuck Diameter (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	I (Inch)	J (Inch)	M Thread	Weight (lbs)	Code
6	3.07	1.00	1.63	0.31	0.84	1.50	0.50	1.34	0.13	0.16	3/8-16	1.01	410146
8	3.54	1.06	1.71	0.31	0.95	1.75	0.50	1.57	0.13	0.16	3/8-16	1.43	410147
10	4.17	1.28	2.03	0.50	1.08	2.12	0.75	1.77	0.13	0.16	1/2-13	2.54	410148
12	4.72	1.57	2.16	0.50	1.21	2.50	0.75	2.09	0.13	0.16	1/2-13	3.53	410149
16	5.51	1.65	2.54	0.50	1.35	3.00	0.75	2.48	0.25	0.16	5/8-11	4.85	410150
20	5.51	1.97	2.93	0.50	1.35	3.00	0.75	2.48	0.25	0.16	3/4-10	5.29	410151
25	6.30	2.05	3.29	0.50	1.35	3.00	0.75	2.48	0.25	0.16	3/4-10	9.26	411044

Precision Lathe Chucks & Accessories

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Spare Parts for PO Series

Scroll Plates – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	410116
8.00	410117
10.00	410118
12.50	410119
15.75	410120
20.00	410121

Keys – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	410129
8.00	410129
10.00	410130
12.50	410131
15.75	410132
20.00	410133

Pinions – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	411000
8.00	410104
10.00	410105
12.50	410106
15.75	410107
20.00	411002

Pinion Sleeves – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	411004
8.00	410108
10.00	410109
12.50	410110
15.75	410111
20.00	411006

Half Rings – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	411008
8.00	410112
10.00	410113
12.50	410114
15.75	410115
20.00	411010

Universal Lathe Chucks & Accessories

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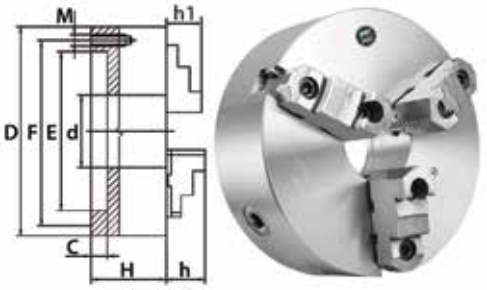
PS Series – Semi-Steel Body – 3-Jaw & 4-Jaw Self-Centering Chucks

2 Pc. Hard Reversible Jaws

- Semi-steel body, medium duty
- 3 pinion design

Each chuck is provided with:

- 1 set of hard master jaws
- 1 set of hard top reversible jaws
- 1 chuck wrench
- 1 set of mounting bolts
- 2 hex keys
- Eye bolts with 10-32" chucks
- Adapters required for plain back mounting



PS Series - Plain Back Mounting Specifications

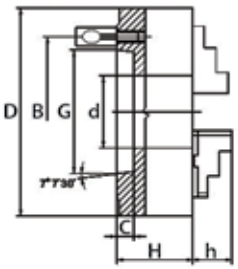
Chuck Diameter (Inch)	RPM Max	M Thread	L (Inch)	No. of Bolts
5	3200	M8 x 1.25	0.98	3
6	3000	M10 x 1.5	0.98	6
8	2500	M10 x 1.5	0.98	6
10	2000	M12 x 1.75	1.18	6
12	1500	M16 x 2	1.18	6
16	1000	M16 x 2	1.57	6
20	700	M16 x 2	1.57	6
25	500	M16 x 2	1.97	6
32	300	1-8	5.96	6

Plain Back Mounting – 3-Jaw Chucks

Chuck Diameter (Inch)	d Hole (Inch)	Maximum Hole Enlargements (Inch)	Model	C (Inch)	E (Inch)	F (Inch)	H (Inch)	h (Inch)	h1 (Inch)	Code
5	1.26	1.35	PS3-5"A	0.16	3.74	4.25	2.20	1.57	0.79	356373
6	1.65	1.93	PS3-6"A	0.16	4.92	5.51	2.54	1.69	1.26	410009
8	2.17	2.82	PS3-8"A	0.16	6.30	6.93	2.95	1.77	1.14	410010
10	2.99	3.58	PS3-10"A	0.20	7.87	8.82	3.35	2.09	1.34	410003
12	4.06	4.33	PS3-12"A	0.20	10.24	11.26	3.70	2.24	1.69	410007
16	5.35	5.75	PS3-16"A	0.20	12.99	14.25	4.13	2.69	2.16	410008
20	7.48	8.35	PS3-20"A	0.24	16.54	18.03	4.53	3.50	2.20	356374
25	9.92	12.05	PS3-25"A	0.28	21.46	23.07	5.16	3.46	2.76	356375
32	12.60	-	PS3-32"A	0.79	17.72	14.50	6.26	3.46	2.76	356376

Camlock Mounting – 3-Jaw Chucks







PS Series - Camlock Mounting Specifications

Chuck Diameter (Inch)	RPM Max	Weight (lbs)	Taper Size	Camlock Stud Diameter (Inch)	Camlock Stud Thread	No. of Studs
5	3200	11	D1-4	0.62	M10 x 1.0	3
6	3000	20	D1-3	0.56	M10 x 1.0	3
6	3000	20	D1-4	0.62	M10 x 1.0	3
8	2500	42	D1-3	0.56	M10 x 1.0	3
8	2500	42	D1-4	0.62	M10 x 1.0	3
8	2500	42	D1-5	0.75	M12 x 1.0	6
8	2500	42	D1-6	0.87	M16 x 1.5	6
10	2000	71	D1-5	0.75	M12 x 1.0	6
10	2000	71	D1-6	0.87	M16 x 1.5	6
10	2000	71	D1-8	1.00	M20 x 1.5	6
12	1500	112	D1-6	0.87	M16 x 1.5	6
12	1500	112	D1-8	1.00	M20 x 1.5	6
12	1500	112	D1-11	1.19	M22 x 1.5	6
16	1000	223	D1-6	0.87	M16 x 1.5	6
16	1000	223	D1-8	1.00	M20 x 1.5	6
16	1000	223	D1-11	1.19	M22 x 1.5	6
20	700	331	D1-8	1.00	M20 x 1.5	6
20	700	331	D1-11	1.19	M22 x 1.5	6
25	500	604	D1-11	1.19	M22 x 1.5	6

Universal Lathe Chucks & Accessories

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PS Series – Semi-Steel Body – 3-Jaw & 4-Jaw Self-Centering Chucks

2 Pc. Hard Reversible Jaws *(continued)*

Camlock Mounting – 3-Jaw Chucks *(continued)*

Chuck Diameter (Inch)	d Hole Diameter (Inch)	Maximum Hole Enlargements (Inch)	Model	B (Inch)	C (Inch)	G (Inch)	H (Inch)	h (Inch)	Code
5	1.26	1.26	PS3-5"A/D1-4	3.25	0.51	2.50	2.76	1.57	356350
6	1.65	1.97	PS3-6"A/D1-3	2.78	0.51	2.12	3.21	1.69	356351
6	1.65	1.97	PS3-6"A/D1-4	3.25	0.51	2.50	3.21	1.69	410011
8	2.03	2.03	PS3-8"A/D1-3	2.78	0.51	2.12	3.58	1.77	356352
8	2.17	2.36	PS3-8"A/D1-4	3.25	0.51	2.50	3.58	1.77	356353
8	2.17	2.64	PS3-8"A/D1-5	4.13	0.56	3.25	3.58	1.77	356354
8	2.17	2.64	PS3-8"A/D1-6	5.25	0.56	4.19	3.58	1.77	410012
10	2.99	2.99	PS3-10"A/D1-5	4.13	0.56	3.25	4.07	2.09	356355
10	2.99	3.74	PS3-10"A/D1-6	5.25	0.63	4.19	4.07	2.09	410013
10	2.99	3.74	PS3-10"A/D1-8	6.75	0.71	5.50	4.07	2.09	410014
12	4.06	4.06	PS3-12"A/D1-6	5.25	0.63	4.19	4.63	2.24	410015
12	4.06	4.53	PS3-12"A/D1-8	6.75	0.71	5.50	4.63	2.24	410006
12	4.06	4.50	PS3-12"A/D1-11	9.25	0.79	7.75	5.51	2.24	410016
16	4.06	4.06	PS3-16"A/D1-6	5.25	0.63	4.19	5.06	2.64	356356
16	5.35	5.35	PS3-16"A/D1-8	6.75	0.71	5.50	5.06	2.64	410017
16	5.35	5.91	PS3-16"A/D1-11	9.25	0.79	7.75	5.06	2.64	410018
20	5.35	5.35	PS3-20"A/D1-8	6.75	0.71	5.50	5.67	3.50	356357
20	7.59	7.60	PS3-20"A/D1-11	9.25	0.79	7.75	5.67	3.50	410019
25	7.59	7.60	PS3-25"A/D1-11	9.25	0.79	7.75	6.50	3.46	356358

Front Mounting – 3-Jaw & 4-Jaw Chucks

- Semi-steel body, medium duty
- 3-jaw chuck has 3 pinion design, 4-jaw chuck has 2 pinion design
- Designed for use on grinders, lathes, rotary tables, indexers and a variety of turning and milling applications where back mounting chucks cannot be used

Each chuck is provided with:

- 1 set of hard master jaws
- 1 set of hard top reversible jaws
- 1 chuck wrench
- 1 set of mounting bolts
- 2 hex keys
- Eye bolts with 10-32" chucks



Chuck Diameter (Inch)	d Hole Diameter (Inch)	C (Inch)	E (H7) (Inch)	F (Inch)	H (Inch)	h (Inch)	h1 (Inch)	G Screw Thread	M Bolt Thread	3-Jaw Chucks		4-Jaw Chucks	
										Model	Code	Model	Code
6	1.65	0.16	4.92	5.51	2.56	1.69	1.26	3/8-16 x 2.76	M10	PS3-6"A(F)	410000	PS4-6"A(F)	410020
8	2.17	0.16	6.30	6.93	2.95	1.77	1.14	3/8-16 x 3.15	M10	PS3-8"A(F)	410001	PS4-8"A(F)	410021
10	2.99	0.20	7.87	8.82	3.35	2.09	1.34	1/2-13 x 3.54	M12	PS3-10"A(F)	410002	PS4-10"A(F)	410022
12	4.06	0.20	10.24	11.26	3.70	2.24	1.69	5/8-11 x 3.94	M16	PS3-12"A(F)	410004	PS4-12"A(F)	410023
16	5.35	0.20	12.99	14.25	4.13	2.64	2.16	5/8-11 x 4.53	M16	PS3-16"A(F)	410005	PS4-16"A(F)	410024

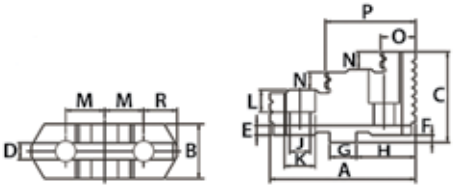
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Spare Jaws for PS Series Universal

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

Hard Top Jaws – 3-Piece Sets



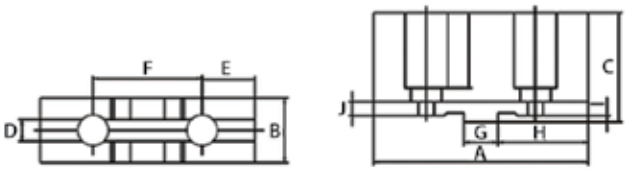


For Chuck Diameter (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	M (Inch)	N (Inch)	A OAL (Inch)	O (Inch)	P (Inch)	Weight (lbs)	Code
5	0.87	1.52	0.31	0.16	0.13	0.50	0.89	0.35	0.55	0.62	0.31	2.20	0.57	1.38	0.93	356300
6	0.98	1.63	0.31	0.16	0.13	0.50	1.12	0.43	0.67	0.75	0.33	2.64	0.81	1.69	1.20	410140
8	1.18	1.77	0.31	0.16	0.13	0.50	1.37	0.43	0.67	0.87	0.41	3.15	0.98	2.09	2.10	410141
10	1.42	2.09	0.50	0.16	0.13	0.75	1.56	0.55	0.79	1.06	0.53	3.74	1.14	2.52	3.20	410142
12	1.65	2.40	0.50	0.16	0.13	0.75	1.87	0.55	0.79	1.25	0.69	4.25	1.22	3.01	5.10	410143
16	1.77	2.76	0.50	0.16	0.25	0.75	2.25	0.71	1.00	1.50	0.69	5.00	1.85	3.46	7.30	410144
20	1.98	3.42	0.50	0.16	0.25	0.75	2.25	0.87	1.30	1.50	0.79	5.16	2.05	3.23	14.40	410145
25 & 32	2.05	3.42	0.50	0.16	0.25	0.75	2.25	0.87	1.30	1.50	0.79	5.16	2.05	3.23	27.10	356301

Hard Top Jaws – 4-Piece Sets

For Chuck Diameter (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	M (Inch)	N (Inch)	A OAL (Inch)	O (Inch)	P (Inch)	Weight (lbs)	Code
5	0.87	1.52	0.31	0.16	0.13	0.50	0.89	0.35	0.55	0.62	0.31	2.20	0.57	1.38	1.25	356303
6	0.98	1.63	0.31	0.16	0.13	0.50	1.12	0.43	0.67	0.75	0.33	2.64	0.81	1.69	1.60	356304
8	1.18	1.77	0.31	0.16	0.13	0.50	1.37	0.43	0.67	0.87	0.41	3.15	0.98	2.09	2.80	356305
10	1.42	2.09	0.50	0.16	0.13	0.75	1.56	0.55	0.79	1.06	0.53	3.74	1.14	2.52	4.27	356306
12	1.65	2.40	0.50	0.16	0.13	0.75	1.87	0.55	0.79	1.25	0.69	4.25	1.22	3.01	6.80	356307
16	1.77	2.76	0.50	0.16	0.25	0.75	2.25	0.71	1.00	1.50	0.69	5.00	1.85	3.46	9.74	356308
20	1.98	3.42	0.50	0.16	0.25	0.75	2.25	0.87	1.30	1.50	0.79	5.16	2.05	3.23	19.20	356309
25	2.05	3.42	0.50	0.16	0.25	0.75	2.25	0.87	1.30	1.50	0.79	5.16	2.05	3.23	36.20	356310

Soft Top Jaws – 1 Piece





For Chuck Diameter (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	I (Inch)	J (Inch)	M Thread	Weight (lbs)	Code
5	2.52	0.87	1.52	0.31	0.59	1.25	0.50	1.00	0.13	0.16	5/16-18	0.66	356314
6	3.07	1.00	1.63	0.31	0.84	1.50	0.50	1.34	0.13	0.16	3/8-16	1.01	410146
8	3.54	1.06	1.71	0.31	0.95	1.75	0.50	1.57	0.13	0.16	3/8-16	1.43	410147
10	4.17	1.28	2.03	0.50	1.08	2.12	0.75	1.77	0.13	0.16	1/2-13	2.54	410148
12	4.72	1.57	2.16	0.50	1.21	2.50	0.75	2.09	0.13	0.16	1/2-13	3.53	410149
16	5.51	1.65	2.54	0.50	1.35	3.00	0.75	2.48	0.25	0.16	5/8-11	4.85	410150
20	5.51	1.97	2.93	0.50	1.35	3.00	0.75	2.48	0.25	0.16	3/4-10	5.29	410151
25 & 32	6.30	2.05	3.29	0.50	1.35	3.00	0.75	2.48	0.25	0.16	3/4-10	9.26	411044

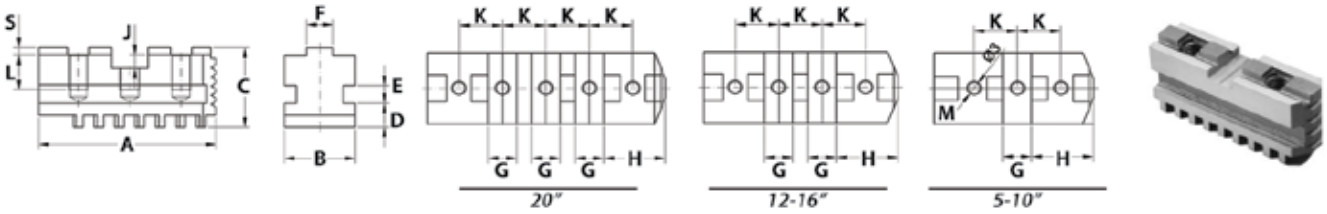
Universal Lathe Chucks & Accessories

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Spare Jaws for PS Series Universal *(continued)*

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

Hard Master Jaws – 3-Piece Sets



For Chuck Diameter (Inch)	B (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	L (Inch)	A OAL (Inch)	S (Inch)	M Thread	Weight (lbs)	Code
5	0.79	0.31	0.31	0.31	0.50	0.89	0.16	0.62	0.53	2.13	0.13	5/16-8	0.93	356311
6	0.79	0.31	0.31	0.31	0.50	1.12	0.16	0.75	0.55	2.56	0.13	3/8-16	1.20	410152
8	0.98	0.35	0.39	0.31	0.50	1.37	0.16	0.87	0.55	3.11	0.13	3/8-16	2.10	410153
10	1.10	0.43	0.47	0.50	0.75	1.56	0.16	1.06	0.63	3.62	0.13	1/2-13	3.20	410154
12	1.26	0.50	0.47	0.50	0.75	1.87	0.16	1.25	0.63	4.33	0.13	1/2-13	5.10	410155
16	1.42	0.59	0.55	0.50	0.75	2.25	0.28	1.50	0.87	5.12	0.13	5/8-11	7.30	410156
20	1.57	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.26	6.54	0.13	3/4-10	14.40	410157
25 & 32	1.97	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.26	8.27	0.13	3/4-10	27.10	356312

Hard Master Jaws – 4-Piece Sets

For Chuck Diameter (Inch)	B (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	L (Inch)	A OAL (Inch)	S (Inch)	M Thread	Weight (lbs)	Code
5	0.79	0.31	0.31	0.31	0.50	0.89	0.16	0.62	0.53	2.13	0.13	5/16-8	1.25	356315
6	0.79	0.31	0.31	0.31	0.50	1.12	0.16	0.75	0.55	2.56	0.13	3/8-16	1.60	356316
8	0.98	0.35	0.39	0.31	0.50	1.37	0.16	0.87	0.55	3.11	0.13	3/8-16	2.80	356317
10	1.10	0.43	0.47	0.50	0.75	1.56	0.16	1.06	0.63	3.62	0.13	1/2-13	4.27	356318
12	1.26	0.50	0.47	0.50	0.75	1.87	0.16	1.25	0.63	4.33	0.13	1/2-13	6.80	356319
16	1.42	0.59	0.55	0.50	0.75	2.25	0.28	1.50	0.87	5.12	0.13	5/8-11	9.74	356320
20	1.57	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.26	6.54	0.13	3/4-10	19.20	356321
25	1.97	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.26	8.27	0.13	3/4-10	36.20	356322

Universal Lathe Chucks & Accessories

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Spare Parts for PS Series

Scroll Plates – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	410116
8.00	410117
10.00	410118
12.50	410119
15.75	410120
20.00	410121

Keys – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	410129
8.00	410129
10.00	410130
12.50	410131
15.75	410132
20.00	410133

Pinions – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	410122
8.00	410123
10.00	410124
12.50	410125
15.75	410126
20.00	410127

Pinion Screws – 1 Piece



For Chuck Diameter (Inch)	Code
6.25	410134
8.00	410135
10.00	410136
12.50	410137
15.75	410138
20.00	410139

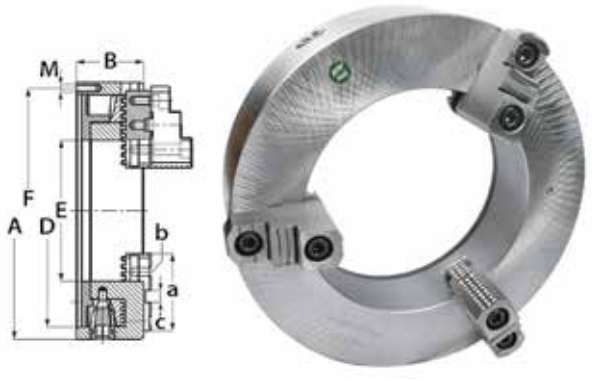
Precision Lathe Chucks & Accessories

gator chucks™ BY FUERDA

PSL Series – Steel Body – Large Through Hole – 3-Jaw Self-Centering Chucks

2 Pc. Hard Reversible Jaws

- Forged steel body, plain back, medium duty
- 2-piece reversible American Standard tongue and groove jaws
- Designed for pipe machining or pipe welding cut-off operations
- Can be used on grinders, lathes, rotary tables, indexers and welding devices
- Jaws, scroll plate and three pinions are made of fine alloy steel, carefully heat-treated and ground
- Balanced scroll



Each chuck is provide with:

- 1 set of master jaws
- 1 set of hard top jaws
- 1 chuck wrench
- 1 set of mounting screws
- 2 hex keys
- 2 lifting eye bolts

Optional spare parts:

- Soft top jaws

Plain Back Mounting

PSL Series - Plain Back Mounting Specifications

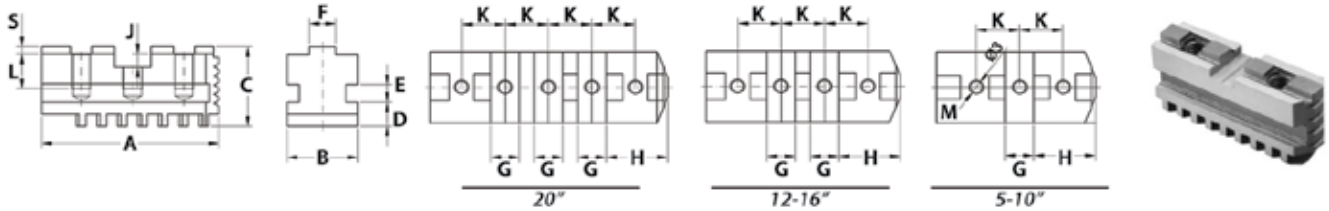
Chuck Diameter (Inch)	RPM Max	Weight (lbs)	d1 Min-Max (Inch)	d2 Min-Max (Inch)	d3 Min-Max (Inch)	M Thread	Jaw Stroke Min-Max (Inch)	Weight of Workpiece without Support (lbs)	Weight of Workpiece with Support (lbs)
16	650	128	5.12 - 10.63	9.06 - 13.78	11.81 - 15.75	M12 x 40	6.61 - 11.34	110	3301
20	460	168	9.84 - 14.96	12.99 - 17.72	15.16 - 19.69	M16 x 40	9.87 - 14.96	177	5512
26	325	258	14.80 - 18.50	17.91 - 22.64	20.28 - 25.00	M16 x 40	14.80 - 19.57	265	7716
32	260	468	10.24 - 22.28	14.17 - 29.53	16.54 - 31.50	M24 x 160	7.40 - 22.28	441	8820

Chuck Diameter (Inch)	Model	a (Inch)	B (Inch)	b (Inch)	c (Inch)	D H7 (Inch)	F (Inch)	E Through Hole (Inch)	Code
16	PSL3-16”	4.72	4.13	5/8-11	0.75	14.25	15.00	8.66	410025
20	PSL3-20”	4.72	4.72	3/4-10	0.75	18.19	18.96	12.60	410026
26	PSL3-26”	5.00	5.32	3/4-10	0.75	22.83	24.41	15.98	356359
32	PSL3-32”	8.86	5.95	3/4-10	0.75	27.95	18.11	16.14	356360

Spare Jaws for PSL Series

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

Hard Master Jaws – 3-Piece Set



For Chuck Diameter (Inch)	B (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	L (Inch)	A OAL (Inch)	S (Inch)	Weight (lbs)	M Thread	Code
16	1.42	0.59	0.55	0.50	0.75	2.25	0.28	1.50	0.87	4.72	0.13	9.00	5/8-11	410166
20	1.57	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.28	4.72	0.13	10.10	3/4-10	410167
26	1.97	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.28	5.00	0.13	16.00	3/4-10	356371
32	1.97	0.63	0.55	0.50	0.75	2.25	0.28	1.50	1.28	8.86	0.13	28.00	3/4-10	356372

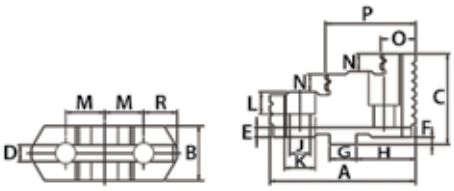
Precision Lathe Chucks & Accessories

gator chucks™ BY FUERDA

Spare Jaws for PSL Series *(continued)*

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

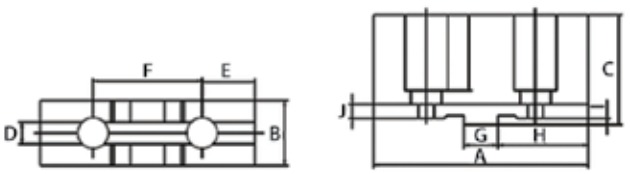
Hard Top Jaws – 3-Piece Sets





For Chuck Diameter (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	M (Inch)	N (Inch)	A OAL (Inch)	O (Inch)	P (Inch)	Weight (lbs)	Code
16	1.77	2.76	0.50	0.16	0.25	0.75	2.25	0.71	1.00	1.50	0.69	5.00	1.85	3.46	7.30	410144
20	1.98	3.42	0.50	0.16	0.25	0.75	2.25	0.87	1.30	1.50	0.79	5.16	2.05	3.23	14.40	410145
26 & 32	2.05	3.42	0.50	0.16	0.25	0.75	2.25	0.87	1.30	1.50	0.79	5.16	2.05	3.23	27.10	356302

Soft Top Jaws – 1-Piece





For Chuck Diameter (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	I (Inch)	J (Inch)	Weight (lbs)	M Thread	Code
16	5.51	1.65	2.54	0.50	1.35	3.00	0.75	2.48	0.25	0.16	4.85	5/8-11	410150
20	5.51	1.97	2.93	0.50	1.35	3.00	0.75	2.48	0.25	0.16	5.29	3/4-10	410151
26 & 32	6.30	2.05	3.29	0.50	1.35	3.00	0.75	2.48	0.25	0.16	9.26	3/4-10	411044

Spare Parts for PSL Series

Scroll Plates – 1 Piece



For Chuck Diameter (Inch)	Code
15.75	410172
20.00	410173

Keys – 1 Piece



For Chuck Diameter (Inch)	Code
15.75	411012
20.00	411014

Pinions – 1 Piece



For Chuck Diameter (Inch)	Code
15.75	410174
20.00	410175

Pinion Screw – 1 Piece



For Chuck Diameter (Inch)	Code
20.00	411016

Mounting Bolts – 1 Piece



For Chuck Diameter (Inch)	Code
15.75	410179
20.00	410180

Independent Lathe Chucks & Accessories

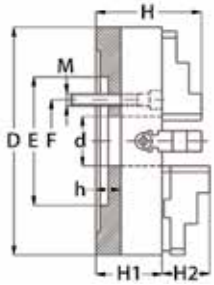
gator chucks™ BY FUERDA

PI Series – Semi-Steel Body – 4-Jaw Independent Chucks

Solid Reversible Jaws

- Semi-steel body, medium duty
- Designed to grip round or odd shaped workpieces
- Hard solid reversible jaws
- Chucks larger than 10” with T-slots

Each chuck is provided with:
- 1 set of hard solid reversible jaws
- 1 T- wrench
- 2 hex keys
- 1 set of mounting bolts
- 2 eye bolts for chucks larger than 10”





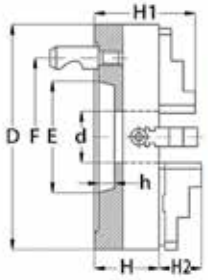


Plain Back Mounting

Chuck Diameter (Inch)	d Hole Diameter (Inch)	RPM Maximum	Model	E (Inch)	F (Inch)	H1 (Inch)	H2 (Inch)	H (Inch)	h	Code
8	2.20	2500	PI4-8”	2.95	3.74	2.95	0.24	4.33	0.24	410027
10	2.56	2000	PI4-10”	5.91	4.13	3.35	0.28	4.70	0.28	410028
12	3.15	1500	PI4-12”	6.89	5.25	3.74	0.28	5.70	0.28	410029
16	3.94	1000	PI4-16”	7.87	6.75	4.13	0.39	6.09	0.39	410031
20	4.92	700	PI4-20”	10.63	9.25	4.72	0.47	7.07	0.47	410032
25	6.30	500	PI4-25”	10.63	9.25	5.51	0.47	7.87	0.47	410033
32	8.27	300	PI4-32”	9.84	11.81	5.71	0.47	8.27	0.47	410034

Camlock Mounting







Chuck Diameter (Inch)	d Hole Diameter (Inch)	RPM Maximum	Model	E (Inch)	F (Inch)	H (Inch)	h (Inch)	H1 (Inch)	Taper Size	Code
8	2.20	2500	PI4-8”/D1-4	2.50	3.25	2.95	0.51	4.33	D1-4	410035
8	2.20	2500	PI4-8”/D1-5	3.25	4.13	2.95	0.59	4.33	D1-5	410036
10	2.36	2000	PI4-10”/D1-4	2.50	3.25	3.35	0.51	4.70	D1-4	410037
10	2.56	2000	PI4-10”/D1-5	3.25	4.13	3.35	0.59	4.70	D1-5	410038
10	2.56	2000	PI4-10”/D1-6	4.19	5.25	3.35	0.63	4.70	D1-6	410039
12	3.15	1500	PI4-12”/D1-6	4.19	5.25	3.74	0.63	5.70	D1-6	410040
12	3.15	1500	PI4-12”/D1-8	5.50	6.75	3.74	0.71	5.70	D1-8	410041
16	3.94	1000	PI4-15”/D1-6	4.19	5.25	4.13	0.63	6.09	D1-6	410042
16	3.94	1000	PI4-15”/D1-8	5.50	6.75	4.13	0.71	6.09	D1-8	410043
16	3.94	1000	PI4-15”/D1-11	7.75	9.25	4.13	0.79	6.09	D1-11	410044
20	4.92	700	PI4-20”/D1-8	5.50	6.75	4.72	0.71	7.07	D1-8	410045
20	4.92	700	PI4-20”/D1-11	7.75	9.25	4.72	0.79	7.07	D1-11	410046
25	6.30	500	PI4-25”/D1-11	7.75	9.25	5.51	0.79	7.87	D1-11	410047

Independent Lathe Chucks & Accessories

gator chucks™ BY FUERDA

PI Series – Semi-Steel Body – 4-Jaw Independent Chucks (continued)

2 Pc. Hard Reversible Jaws

- Semi-steel body, medium duty
- Designed to grip round or odd shaped workpieces
- 2-piece reversible ANSI tongue and groove jaws
- Chucks larger than 10” with T-slots

Each chuck is provided with:

- 1 set of 2-piece hard reversible jaws
- 1 T- wrench
- 2 hex keys
- 1 set of mounting bolts
- 2 eye bolts for chucks larger than 10”



Plain Back Mounting

Chuck Diameter (Inch)	d Hole Diameter (Inch)	RPM Maximum	Model	E (Inch)	F (Inch)	Hole Enlargement (Inch)	H (Inch)	H1 (Inch)	H2 (Inch)	h (Inch)	Code
8	2.20	2500	PI4-8”A	2.95	3.74	2.28	2.95	1.83	1.83	0.24	410214
10	2.56	2000	PI4-10”A	5.91	4.13	2.65	3.35	2.38	2.38	0.28	410215
12	3.15	1500	PI4-12”A	6.89	5.25	3.86	3.74	2.40	2.40	0.28	410216
16	3.94	1000	PI4-16”A	7.87	6.75	4.62	4.13	2.85	2.85	0.39	410217
20	4.92	700	PI4-20”A	10.63	9.25	6.27	4.72	3.56	3.56	0.47	410218
25	6.30	500	PI4-25”A	10.63	9.25	7.09	5.51	3.85	3.85	0.47	410219

Camlock Mounting

Chuck Diameter (Inch)	d Hole Diameter (Inch)	RPM Maximum	Model	E (Inch)	F (Inch)	H2 (Inch)	H (Inch)	H1 (Inch)	h (Inch)	Bolt Thread	L Bolt	Code
8	2.20	1800	PI4-8”A/D1-4	2.50	3.25	1.83	2.95	0.51	0.62	M10 x 1.0	3	410200
8	2.20	1800	PI4-8”A/D1-5	3.25	4.13	1.83	2.95	0.59	0.75	M12 x 1.0	6	410201
10	2.36	1500	PI4-10”A/D1-4	2.50	3.25	2.38	3.35	0.51	0.62	M10 x 1.0	3	410202
10	2.56	1500	PI4-10”A/D1-5	3.25	4.13	2.38	3.35	0.59	0.75	M12 x 1.0	6	410203
10	2.56	1500	PI4-10”A/D1-6	4.19	5.25	2.38	3.35	0.63	0.87	M16 x 1.5	6	410204
12	3.15	1200	PI4-12”A/D1-6	4.19	5.25	2.40	3.74	0.63	0.87	M16 x 1.5	6	410205
12	3.15	1200	PI4-12”A/D1-8	5.50	6.75	2.40	3.74	0.71	1.00	M20 x 1.5	6	410206
16	3.94	800	PI4-15”A/D1-6	4.19	5.25	2.85	4.13	0.63	0.87	M16 x 1.5	6	410207
16	3.94	800	PI4-16”A/D1-8	5.50	6.75	2.85	4.13	0.71	1.00	M20 x 1.5	6	410208
16	3.94	800	PI4-16”A/D1-11	7.75	9.25	2.85	4.13	0.79	1.19	M22 x 1.5	6	410209
20	4.92	500	PI4-20”A/D1-8	5.50	6.75	3.56	4.72	0.71	1.00	M20 x 1.5	6	410210
20	4.92	500	PI4-20”A/D1-11	7.75	9.25	3.56	4.72	0.79	1.19	M22 x 1.5	6	410211
25	6.30	400	PI4-25”A/D1-11	7.75	9.25	3.85	5.51	0.79	1.19	M22 x 1.5	6	410212

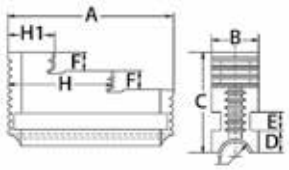
Independent Lathe Chucks & Accessories

gator chucks™ BY FUERDA

Spare Jaws for PI Series

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

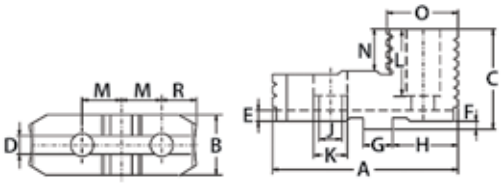
Hard Solid Reversible Jaws – 4-Piece Sets





For Chuck Diameter (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	H (Inch)	H1 (Inch)	Thread	Weight (lbs)	Code
8	3.35	1.06	2.42	0.45	0.39	0.47	2.28	1.20	24 x 4 sq.	1.54	411020
10	3.62	1.06	2.42	0.45	0.39	0.47	2.58	1.20	24 x 4 sq.	1.65	411022
12	4.37	1.57	3.01	0.38	0.47	0.71	2.64	1.06	Tr32 x 6	3.31	411024
16	5.08	1.57	3.01	0.38	0.47	0.71	3.09	1.28	Tr32 x 6	3.97	411026
20	6.00	2.05	3.68	0.46	0.59	0.87	3.66	1.39	Tr36 x 6	7.50	411028
25	6.97	2.05	3.96	0.62	0.71	0.98	4.29	1.77	Tr40 x 6	8.80	411030
32	7.95	2.76	4.51	0.62	0.79	0.98	4.80	1.73	Tr40 x 8	18.00	411032

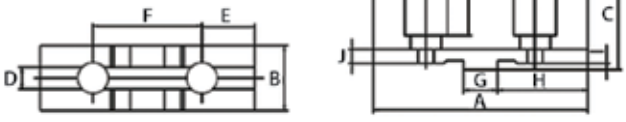
Hard Top Jaws – 4-Piece Sets

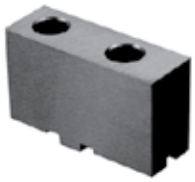




For Chuck Diameter (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	M (Inch)	N (Inch)	A OAL (Inch)	O (Inch)	P (Inch)	Weight (lbs)	Code
8	1.34	1.71	0.31	0.16	0.13	0.50	1.39	0.43	0.71	0.88	0.37	3.23	0.87	2.09	1.65	411048
10	1.34	2.03	0.50	0.16	0.13	0.75	1.57	0.55	0.79	1.03	0.47	3.80	0.98	2.44	2.25	411050
12	1.65	2.17	0.50	0.16	0.13	0.75	1.89	0.55	0.79	1.25	0.51	4.43	1.06	2.78	3.40	411052
16	1.65	2.54	0.50	0.16	0.25	0.75	2.26	0.71	1.02	1.50	0.53	5.08	1.04	3.11	4.50	411054
20	2.13	2.93	0.50	0.16	0.25	0.75	2.28	0.89	1.30	1.50	0.71	5.35	1.48	3.43	7.00	411056
25	2.13	3.23	0.50	0.16	0.25	0.75	2.28	0.89	1.30	1.50	0.83	5.35	1.48	3.43	7.60	411058
32	2.83	3.46	0.50	0.16	0.25	0.75	2.28	0.89	1.30	1.50	0.94	5.35	1.57	3.50	11.00	411060

Soft Top Jaws – 1-Piece





For Chuck Diameter (Inch)	A (Inch)	B (2) (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	I (Inch)	J (Inch)	M Thread	Weight (lbs)	Code
8	3.54	1.06	1.71	0.31	0.95	1.75	0.50	1.57	0.13	0.28	3/8-16	1.43	411034
12	4.72	1.57	2.16	0.50	1.21	2.50	0.75	2.09	0.25	0.28	1/2-13	3.53	411038
25 & 32	6.30	2.05	3.29	0.50	1.35	3.00	0.75	2.48	0.25	0.41	3/4-10	9.26	411044

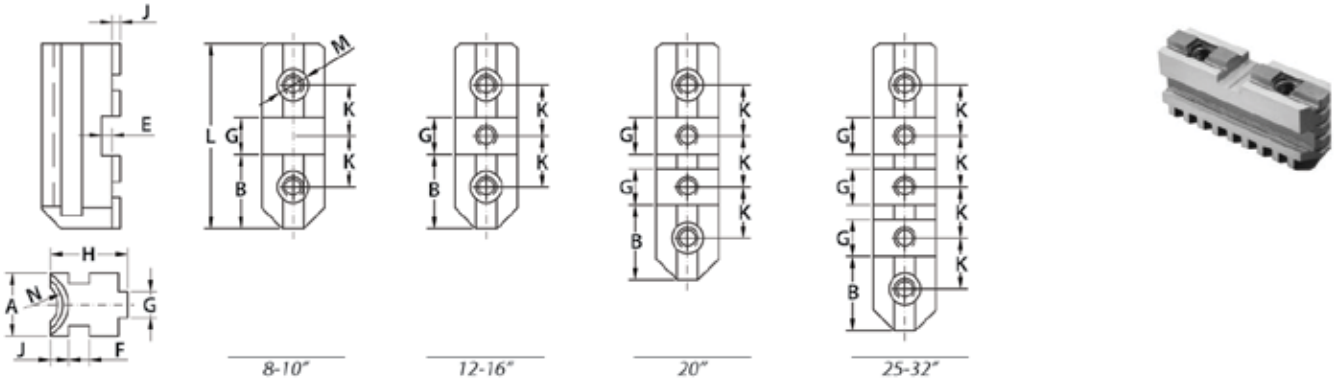
Independent Lathe Chucks & Accessories

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Spare Jaws for PI Series

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

Hard Master Jaws – 4-Piece Sets



For Chuck Diameter (Inch)	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	L (Inch)	N Thread	Weight (lbs)	M Thread	Code
8	1.06	1.31	0.50	0.16	0.39	0.31	1.26	0.45	0.88	3.11	24 x 4 sq.	1.00	3/8-16	411062
10	1.06	1.48	0.75	0.16	0.39	0.50	1.50	0.45	1.06	3.70	24 x 4 sq.	1.45	1/2-13	411064
12	1.57	1.79	0.75	0.16	0.47	0.50	1.54	0.38	1.25	4.33	Tr32 x 6	2.45	1/2-13	411066
16	1.57	5.16	0.75	0.28	0.47	0.50	1.73	0.38	1.50	5.08	Tr32 x 6	3.30	5/8-11	411068
20	2.05	2.18	0.75	0.28	0.59	0.50	2.32	0.46	1.50	6.61	Tr36 x 6	7.90	3/4-10	411070
25	2.05	2.18	0.75	0.28	0.71	0.50	2.32	0.62	1.50	8.11	Tr40 x 6	9.50	3/4-10	411072
32	2.76	2.18	0.75	0.28	0.79	0.50	2.32	0.62	1.50	8.11	Tr44 x 8	13.00	3/4-10	411074

Spare Parts for PI Series

Operating Screws – 1 Piece



For Chuck Diameter (Inch)	Code
8.00	411076
10.00	411078
12.50	411080
15.75	411082
20.00	411084
25.00	411086
32.00	411088

Keys – 1 Piece



For Chuck Diameter (Inch)	Code
8.00	411104
10.00	411106
12.50	411108
15.75	411110
20.00	411112
25.00	411114
32.00	411116

Thrust Bearings – 1 Piece



For Chuck Diameter (Inch)	Code
8.00	411090
10.00	411092
12.50	411094
15.75	411096
20.00	411098
25.00	411100
32.00	411102

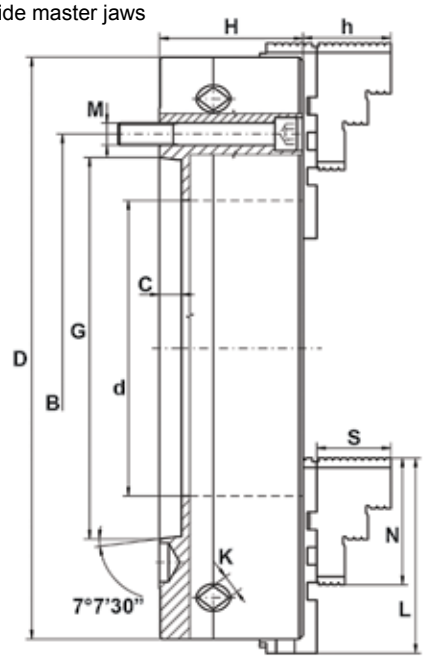
Oil Country Lathe Chucks & Accessories

gator chucks™ BY FUERDA

PEO Series – Forged Steel Body – Large Through Hole – 3-Jaw Self-Centering Chucks

Heavy Duty Serrated Jaws

- Extra heavy duty
- ANSI standard tongue and groove jaws
- Master and top jaws provided with heavy duty serration for safe and superior gripping power
- Critical chuck surfaces precision ground and heat treated
- A2 mounts supplied
- Extra wide master jaws





Heavy Duty Serrated Jaws



Specifications

Chuck Dia. (Inch)	Spindle Nose	Hard Top Jaw Width (Inch)	Hard Master Jaw Width (Inch)	Spindle Mounting Bolts	Top Jaw Mounting Bolts	*Load Capacity (lbs)	Clamping Capacity Min - Max (Inch)
20	A2-11	2.36	2.36	M20 x 2.5	3/4-10	5200	1.77 - 19.68
20	A2-15	2.36	2.36	M24 x 3.0	3/4-10	5200	1.77 - 19.68
25	A2-15	3.54	3.15	M24 x 3.0	7/8-9	7800	3.15 - 24.80
25	A2-20	3.54	3.15	M24 x 3.0	7/8-9	7800	6.30 - 24.80
32	A2-15	3.54	3.15	M24 x 3.0	7/8-9	10400	5.12 - 31.50
32	A2-20	3.54	3.15	M24 x 3.0	7/8-9	10400	7.09 - 31.50

**For supported workpieces only*

Type A2 Mounting

Chuck Diameter (Inch)	d Hole Diameter (Inch)	Spindle Nose Size	B (Inch)	G (Inch)	H (Inch)	h (Inch)	C (Inch)	S (Inch)	N (Inch)	K (Inch)	L (Inch)	RPM Maximum	Weight (lbs)	Code
20	7.48	A2-11	9.25	7.75	4.68	3.42	0.75	2.98	5.31	0.75	6.54	1000	560	410080
20	8.00	A2-15	13.00	11.25	4.68	3.42	0.81	2.98	5.31	0.78	6.54	1000	530	410081
25	10.75	A2-15	13.00	11.25	6.06	3.64	0.81	3.29	5.31	0.87	8.86	850	650	410082
25	12.55	A2-20	18.25	16.25	6.06	3.64	0.87	3.29	5.31	0.87	8.86	850	620	410083
32	10.75	A2-15	13.00	11.25	6.30	3.64	0.81	3.29	5.31	0.87	8.86	600	1200	410084
32	12.55	A2-20	18.25	16.25	6.30	3.64	0.94	3.29	5.31	0.87	8.86	600	1170	410085

Oil Country Lathe Chucks & Accessories

gator chucks™ BY FUERDA

Spare Jaws for PEO Series

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

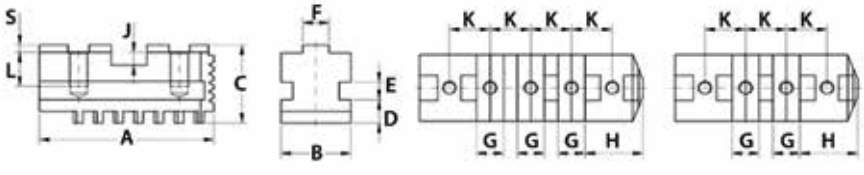
Heavy Duty Serrated Hard Top Jaws – 1-Piece





For Chuck Diameter (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	N (Inch)	O (Inch)	P (Inch)	Code
20	5.34	2.56	3.23	0.87	1.30	0.50	0.75	2.25	0.25	1.50	0.83	2.05	3.37	356325
25 & 32	5.34	2.56	3.82	0.94	1.38	0.50	0.75	2.25	0.25	1.50	1.10	2.05	3.37	356326

Heavy Duty Serrated Hard Master Jaws – 1-Piece





For Chuck Diameter (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	L (Inch)	S (Inch)	M Thread	Code
20	6.54	2.36	2.56	0.79	0.79	0.49	0.75	2.25	0.28	1.50	1.42	0.13	3/4-10	356327
25 & 32	8.86	3.15	2.56	0.98	0.98	0.49	0.75	2.25	0.28	1.50	1.30	0.13	7/8-9	356328

Oil Country Lathe Chucks & Accessories

PEI Series – Forged Steel Body – Large Through Hole – 4-Jaw Independent Chucks

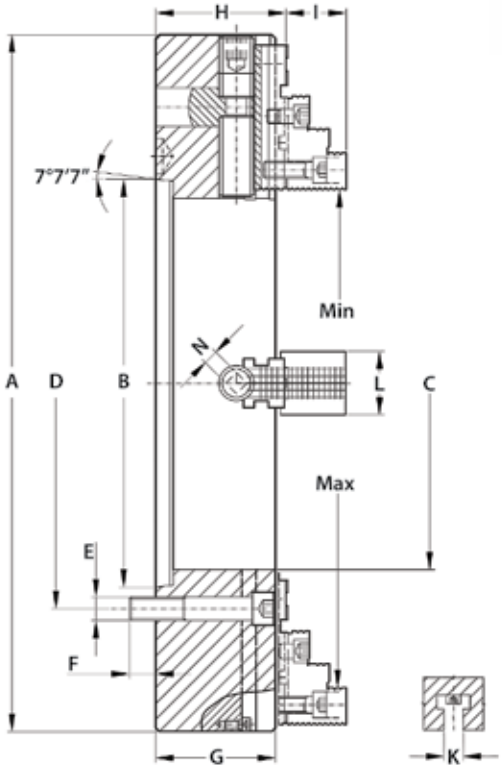
Heavy Duty Serrated Jaws

- Extra heavy duty
- ANSI standard tongue and groove jaws
- Critical chuck surfaces are precision ground and heat treated
- Extra heavy duty master jaws and top jaws provided with heavy duty serration for safe and superior gripping power
- Extra heavy duty operating screws and thrust bearings
- A2 mounts supplied
- Induction hardened guide ways and through hole
- High accuracy



Heavy Duty Serrated Jaws





Specifications

Chuck Dia. (Inch)	Spindle Nose	Top Jaw Mounting Bolts	Operating Screw Thread	Clamping Capacity Min-Max
20	A2-11	3/4-10	Tr 44x8 LH	1.77 - 19.68
20	A2-15	3/4-10	Tr 44x8 LH	1.77 - 19.68
25	A2-15	7/8-9	Tr 50x8 LH	1.97 - 24.80
25	A2-20	7/8-9	Tr 50x8 LH	7.09 - 24.80
28	A2-15	7/8-9	Tr 50x8 LH	2.95 - 27.95
28	A2-20	7/8-9	Tr 50x8 LH	7.09 - 24.80
32	A2-15	7/8-9	Tr 50x8 LH	5.12 - 31.50
32	A2-20	7/8-9	Tr 50x8 LH	7.09 - 31.50
40	A2-28	7/8-9	Tr 50x8 LH	13.73 - 39.40

Type A2 Mounting

Chuck Dia. (Inch)	C Through Hole (Inch)	Spindle Nose Size	B (Inch)	D (Inch)	G (Inch)	H (Inch)	I (Inch)	K (Inch)	L (Inch)	N (Inch)	E	F (Inch)	RPM Maximum	Weight (lbs)	Code
20	6.50	A2-11	7.75	9.25	5.71	6.07	2.98	0.87	2.36	0.75	M20 x 2.5	1.12	1000	450	410086
20	8.00	A2-15	11.25	13.00	5.71	6.07	2.98	0.87	2.36	0.75	M24 x 3.0	1.34	1000	414	410087
25	10.50	A2-15	11.25	13.00	6.10	6.07	3.57	0.87	2.96	0.87	M24 x 3.0	1.34	850	682	410088
25	12.55	A2-20	16.25	18.25	6.10	6.58	3.57	0.87	2.95	0.87	M24 x 3.0	1.50	850	649	410089
28	10.50	A2-15	11.25	13.00	6.10	6.58	3.57	0.87	2.95	0.87	M24 x 3.0	1.34	750	913	410090
28	12.55	A2-20	16.25	18.25	6.10	6.58	3.57	0.87	2.95	0.87	M24 x 3.0	1.50	750	869	410091
32	10.50	A2-15	11.25	13.00	6.50	6.97	3.57	0.87	2.95	0.87	M24 x 3.0	1.34	600	1287	410092
32	12.55	A2-20	16.25	18.25	6.50	6.97	3.57	0.87	2.95	0.87	M24 x 3.0	1.50	600	1243	410093
40	20.86	A2-28	23.00	25.50	6.89	7.37	3.57	1.10	2.95	0.87	M30 x 3.5	1.53	430	1683	410094

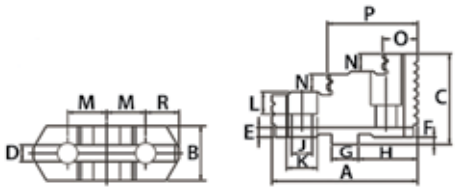
Oil Country Lathe Chucks & Accessories

gator chucks™ BY FUERDA

Spare Jaws for PEI Series

Hard jaws, supplied as supplement or as spares, must be ground on the chuck, otherwise centering accuracy does not conform the limits

Heavy Duty Serrated Hard Top Jaws – 1-Piece

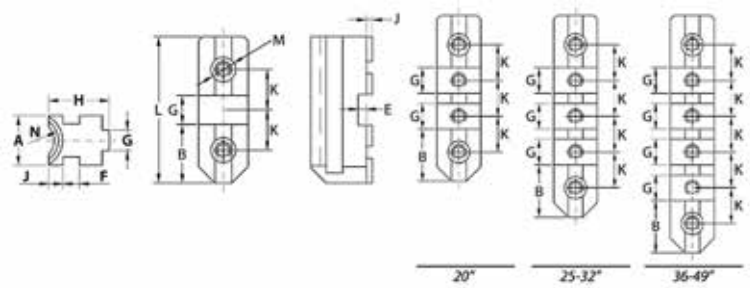




For Chuck Diameter (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	M (Inch)	N (Inch)	A OAL (Inch)	O (Inch)	P (Inch)	Weight (lbs)	Code
*25, 28 & 32	2.95	3.82	0.50	0.16	0.24	0.75	2.25	0.95	1.38	1.50	1.10	5.34	2.05	3.37	12.50	356334
20	2.36	3.23	0.50	0.16	0.24	0.75	2.25	0.87	1.30	1.50	0.83	5.38	2.05	3.37	9.00	356329
40	3.35	4.21	0.50	0.16	0.24	0.75	2.25	0.95	1.38	1.50	1.18	6.30	2.36	3.74	18.50	356330

* *Except 25" chuck with A2-15 spindle*

Heavy Duty Serrated Hard Master Jaws – 1-Piece





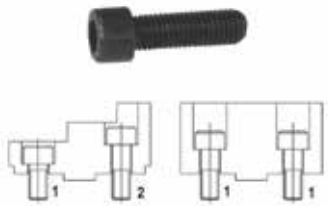
For Chuck Diameter (Inch)	A (Inch)	B (Inch)	C (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	J (Inch)	K (Inch)	N (Inch)	L OAL (Inch)	M Thread	Weight (lbs)	Code
20	2.05	2.25	0.75	0.28	0.79	0.50	2.32	0.62	1.50	Tr44 x 8	6.69	3/4-10	8.50	356331
25, 28 & 32	2.76	2.25	0.75	0.28	0.79	0.50	2.47	0.62	1.50	Tr50 x 8	8.19	7/8-9	13.50	356332
40	3.15	2.25	0.75	0.28	0.98	0.50	3.04	0.98	1.50	Tr55 x 8	11.81	7/8-9	30.00	356333

Lathe Chuck Accessories

gator chucks™ BY FUERDA

Chuck Mounting Bolts

For Hard & Soft Top Jaws

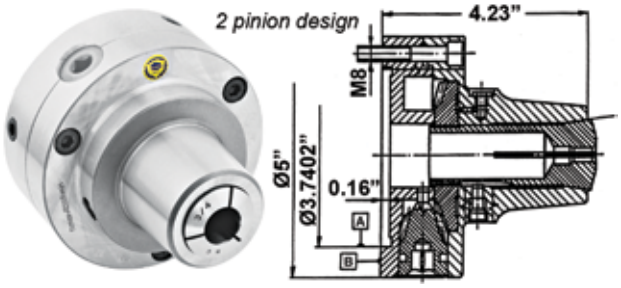


Specifications		
Chuck Diameter	Bolt 1 Short	Bolt 2 Long
200	3/8" – 16 x 30mm	3/8" – 16 x 20mm
250	1/2" – 13 x 40mm	1/2" – 13 x 25mm
315	1/2" – 13 x 40mm	1/2" – 13 x 25mm
400	5/8" – 11 x 45mm	5/8" – 11 x 30mm
500	3/4" – 10 x 55mm	3/4" – 10 x 40mm
630	3/4" – 10 x 60mm	3/4" – 10 x 40mm
800	3/4" – 10 x 65mm	3/4" – 10 x 40mm

For Chuck Diameter (mm)	Thread	Bolt 1 Short – 1-Piece		Bolt 2 Long – 1-Piece	
		Length (mm)	Code	Length (mm)	Code
125	M8	20	411118	25	411120
160	M10	20	410158	30	411162
200	M10	20	410158	30	411162
250	M12	25	410159	40	411163
315	M12	25	410159	40	411163
400	M16	30	410160	45	411164
500	M20	40	410161	75	411165
630	M20	40	410161	80	411165

5C Collet Chucks

For Mounting with Back Plate



Plain Back

Chuck Size	5C Collet Holding (Inch)	Weight (lbs)	Code
5	1/16 – 1-1/8	13.0	358031

Direct Mount

Chuck Size	Mount	Weight (lbs)	Code
5	D1-4	15	358033
5	D1-5	15	358034

Machined Back Plates

Taper Size	Code
D1-3	355565
D1-4	355566
D1-6	358038
L00	358039

Other back plates available

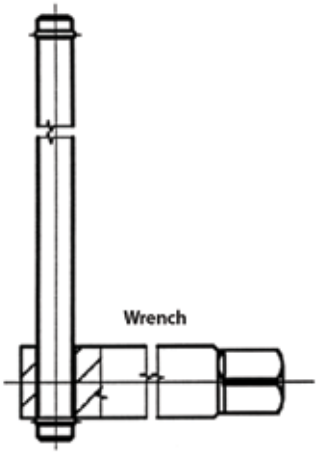
Face Plate Jaws

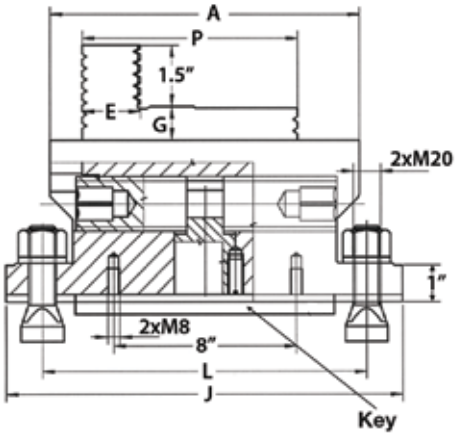
For Radial T-Slot Tables

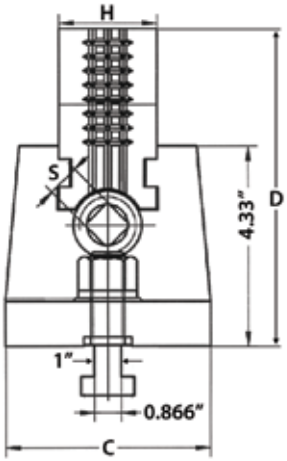




- Heavy semi-steel body
- Hard solid reversible jaws
- Each set of jaws furnished with mounting bolts (M18) and wrench
- Sold in 4-piece sets







Jaw Size (Inch)	A (Inch)	C (Inch)	D (Inch)	E (Inch)	G (Inch)	H (Inch)	J (Inch)	L (Inch)	P (Inch)	S (Inch)	Weight (lbs)	Code
6	6	5.12	6.5	1.34	0.5	1.575	10.25	8	5	0.5551	149	355983
8	8	5.5	7	1.5	0.85	2.047	12.2	10	6	0.669	205	355984

Chuck Stop Sets

Standard & Deluxe

- The Royal Chuck Stop provides a simple, consistent method for locating short parts in a 3-jaw lathe chuck
- Captive, web-shaped design eliminates the danger of using spacers or parallels that could come loose and be thrown from a spinning chuck
- Three strong magnets further secure the stop to the chuck face
- Stop allows short parts to project past the chuck jaws, providing clearance for facing operations
- Setup time is greatly reduced - no need to bore soft jaws
- Very accurate - front and back locating surfaces are parallel within ±0.0004”
- Slot width can be easily enlarged to accommodate wider chuck jaws
- Anodized finish provides good wear-resistance



Description	Code
3-Piece Standard Set - 15, 20 and 25mm stops	355985
5-Piece Deluxe Set - 15, 20, 25, 30 and 35mm stops	355986



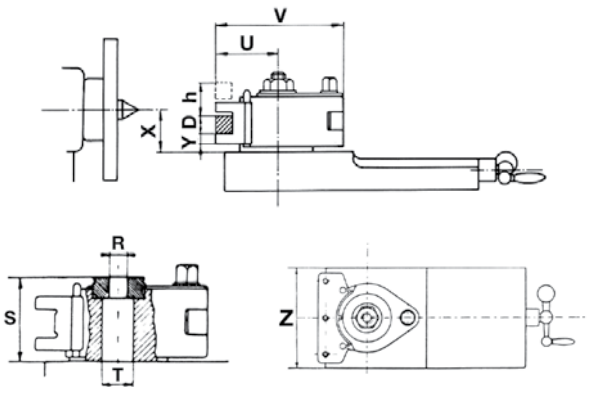
Tool Posts, Turrets, Holders & Bushings

40-Position Tool Posts

REPEATABILITY: Guaranteed repeatability of index accuracy is 0.01mm and remains unchanged even after innumerable tool changes

TECHNICAL DATA: When determining the size, the following is important:
1. Driving motor power
2. Center height from carriage “X”
3. Length of tool holder “lg” should possibly correspond to width “z” of top slide
4. Height of tool “D”, which together with height “y” and the space that remains underneath makes up the necessary size “X” (See table)

Example for choice of size: Driving power of machine – 6 KW. Width of carriage “Z”, 145 mm, then use tool holder turret “B” and tool holders BD 25120. BD 25140,
BD 32140 with BH 32130 and BJ 40120



Minimum dimension “X” required for height of tool “D”

Type GS-	Aa	A		E			B		C			D1			D2	
Toolholder D	12	16	20	16	20	25	25	32	32	40	45	40	50	63	50	65
Tool Height D	X Minimum															
6	12															
8	14	17														
10	16	19	19	19	19	22										
12	18	21	21	21	21	24	25	26								
14		23	23	23	23	26	27	28	29							
16		25	25	25	25	28	29	30	31	31						
20					29	32	33	34	35	35	38					
25						37	38	39	40	40	43	45				
30								44	45	45	48	50	51	52	50	55
32									47	47	50	52	53	54	52	57
40										55	58	60	61	62	60	65
50													71	72	70	75
63														85		88

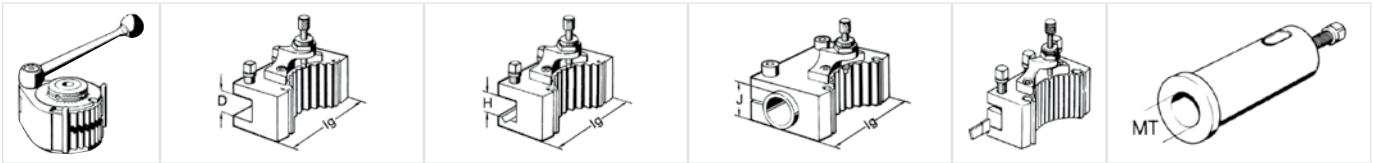
Hole “R” in the centring disc must be enlarged up to the size of the clamping screw

Original Wechselfix		Aa	A		E			B		C			D1			D2	
Driving Power	KW	1	2	2	4.5	4.5	4.5	7	7	13	13	13	20	20	20	28	28
Change Toolholder Size	D	12	16	20	16	20	25	25	32	32	40	45	40	50	63	50	65
Width of Carriage Max.	Z mm	80	100	100	120	120	120	150	150	180	180	180	200	200	200	250	250
Center Height from Carriage Max.	X mm	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D	Y+D
Center Height from Carriage Max.	X mm	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h	X+h
Change Toolholder Size	h mm	8	11	11	16	11	6	20	11	40	35	30	35	30	20	20	30
Tool Repose	Y mm	6	8.5	8.5	8.5	8.5	12	12	13.5	15	15	18	20	20	20	20	25
Maximum Height of Tool	D mm	12	16	20	16	20	25	25	32	32	40	45	40	50	63	50	65
Total Width	V mm	70	100	100	125	125	125	150	150	200	200	200	230	234	242	275	282
Total Height	S mm	37	56	56	68	68	68	79	79	110	110	110	122	122	122	135	135
Maximum Throat	U mm	30	48	48	60	60	60	71	71	190	190	190	112	116	124	140	147
Boring Diameter	T mm	13	19.5	19.5	19.5	19.5	19.5	31.5	31.5	39.5	39.5	39.5	40	40	40	79	79

Tool Posts, Turrets, Holders & Bushings

40-Position Tool Posts *(continued)*

Turrets, Holders & Bushings



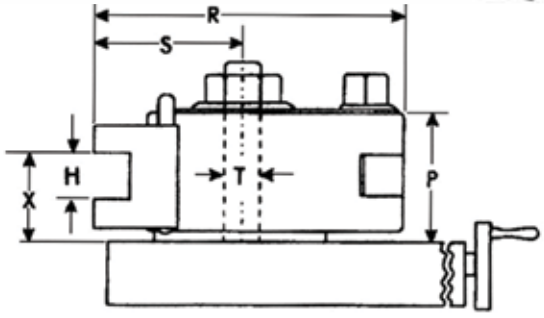
Turret		Tool Holder D				Round Bar Holder H				Bush Holder J				*Part-Off Tool Holder A		Morse Taper Bushing L			
Type GS	Code	Type	D (mm)	lg (mm)	Code	Type	H (mm)	lg (mm)	Code	Type	J (mm)	lg (mm)	Code	Type	Code	Type	MT	lg (mm)	Code
0-Aa	137001	AaD	12	50	137011	AaH	12	50	137101	AaJ	15	50	137201	AaT	137301	–	–	–	–
1-A	137002	–	–	–	–	AH	20	85	137102	AJ	30	80	137202	AT	137302	AL	1	30	137902
		AD	16	90	137022	–	–	–	–	–	–	–	–	–	–	AL	2	40	137912
		AD	20	75	137032	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		AD	20	90	137042	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1-E	137003	–	–	–	–	EH	16	100	137103	EJ	30	100	137203	ET	137303	AL	2	30	137913
		ED	20	100	137023	EH	25	100	137113	EJ	40	100	137213	–	–	BL	3	40	137924
		ED	25	100	137033	–	–	–	–	–	–	–	–	–	–	–	–	–	–
2-B	137004	BD	25	120	137014	BH	32	130	137104	BJ	40	120	137204	BT	137304	BL	1	40	137904
		BD	25	140	137024	–	–	–	–	–	–	–	–	–	–	BL	2	40	137914
		BD	32	120	137034	–	–	–	–	–	–	–	–	–	–	BL	3	40	137924
		BD	32	140	137044	–	–	–	–	–	–	–	–	–	–	BL	4	40	137934
3-C	137005	CD	32	150	137015	CH	40	160	137105	CJ	40	160	137205	CT	137305	–	–	–	–
		CD	32	170	137025	CH	50	160	137115	CJ	50	160	137215	–	–	–	–	–	–
		CD	40	150	137035	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		CD	40	170	137045	–	–	–	–	–	–	–	–	–	–	CL	3	50	137925
		CD	45	170	137055	–	–	–	–	–	–	–	–	–	–	CL	4	50	137933
4-D1	137006	D1D	40	180	137016	D1H	63	180	137106	D1J	63	180	137206	–	–	–	–	–	–
		D1D	50	180	137026	–	–	–	–	–	–	–	–	–	–	DL1	5	63	137906
		D1D	63	180	137036	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5-D2	137007	D2D	50	220	137017	D2H	70	220	137107	D2J	63	220	137207	–	–	DL2	5	63	137907
		D2D	65	220	137027	–	–	–	–	–	–	–	–	–	–	–	–	–	–

**Blades not included with Part-Off Tool Holder A*

Quick Change 40-Position Tool Posts



- Adjust tool to 40 different positions indicated by a marked position dial (index every 9°)
- Fully interchangeable with other brands of 40-position quick change tool posts and holders
- Heat-treated and precision-ground for very accurate repeatability
- Change tools in seconds
- Allows adjustment of height of cutting edge easily and accurately

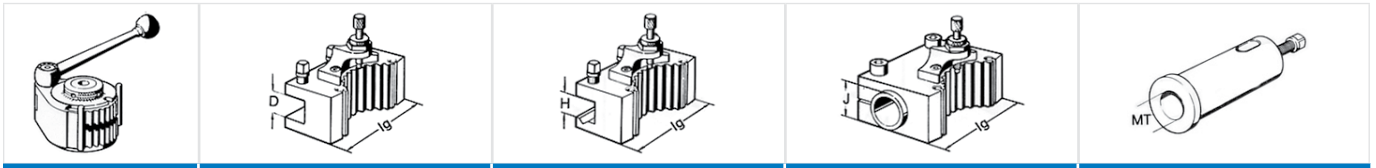


Tool Post Size	A	E	B	C	D
Lathe Swing	6 - 13	10 - 18	13 - 20	18 - 30	25 - 36
Max. Driving Power (hp)	3	6	9	18	30
R Max.	4.13	5.14	6.00	7.90	9.52
S Max.	2.07	2.57	2.95	3.62	4.88
P	1.83	2.30	2.68	3.90	4.80
T	0.79	0.79	1.26	1.57	1.57
H	0.83	0.75	1.00	1.25	1.50
X Minimum	1.18	1.37	1.46	1.86	2.36
X Maximum	1.61	2.04	2.25	3.43	3.74

Tool Posts, Turrets, Holders & Bushings

Quick Change 40-Position Tool Posts *(continued)*

Turrets, Holders & Bushings



Turret		Turn & Face Holder D			Boring Bar Holder B			Bushing Holder S			Morse Taper Bushing L		
Type	Code	D (mm)	lg (mm)	Code	H Max (mm)	lg	Code	J Bore (mm)	lg	Code	Outside Diameter (mm)	Inside Diameter MT	Code
A	*302900	20	90	*302901	20	90	*302902	30	80	302904	30	1	302905
E	*302910	20	100	302914	30	100	*302912	30	100	302915	30	2	302917
		25	100	*302911	–	–	–	40	100	302916	40	3	302918
B	*302920	25	120	*302921	32	130	*302922	40	120	302925	40	3	302926
		32	120	302924	–	–	–	–	–	–	40	4	302927
C	*302930	32	150	*302931	32	160	*302932	40	150	302937	40	3	302939
		40	150	302934	40	160	302936	50	150	302938	40	4	302898
		40	170	302935	–	–	–	–	–	–	50	4	302899
D	*302890	40	180	*302891	50	180	*302894	–	–	–	–	–	–
		50	180	302892	63	180	302895	63	180	302896	63	5	302897
		63	180	302893	–	–	–	–	–	–	–	–	–

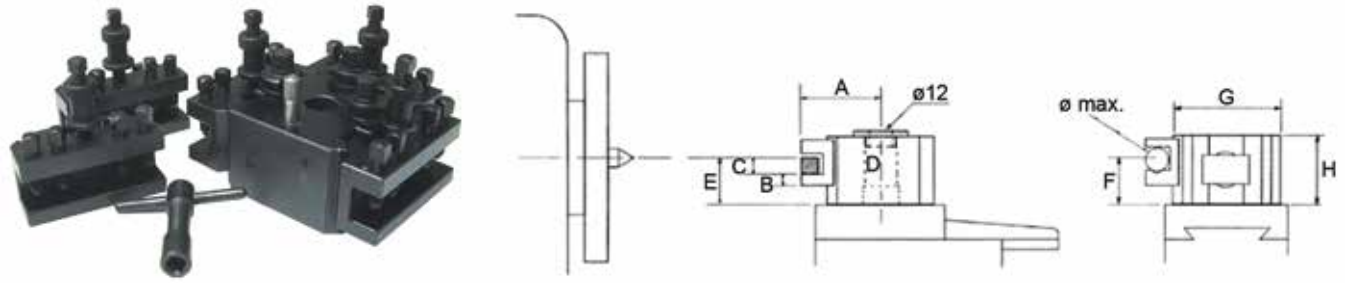
**Items included in sets below*

Quick Change 40-Position Tool Post Sets

Sets Include: 1 turret, 3 turn and face holders, 1 boring bar holder, 1 'T' wrench and 1 lock wrench

Type	Description	Weight (kg)	Code
A	Turret – 302900, Turn and Face Holder – 302901, Boring Bar Holder – 302902	4	302903
E	Turret – 302910, Turn and Face Holder – 302911, Boring Bar Holder – 302912	10	302913
B	Turret – 302920, Turn and Face Holder – 302921, Boring Bar Holder – 302922	13	302923
C	Turret – 302930, Turn and Face Holder – 302931, Boring Bar Holder – 302932	25	302933
D	Turret – 302890, Turn and Face Holder – 302891, Boring Bar Holder – 302894	44	302889

Quick Change Tool Post Sets



Sets include: 1 turret, 4 flat section tool holders, 1 V-slotted tool holder, 1 elbow wrench, 1 cross-pin spanner

Model	Swing of Lathe (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E Min-Max (Inch)	F Min-Max (Inch)	Bar Maximum Diameter (Inch)	Morse Taper	H (Inch)	I (Inch)	A Cut-Off Blade Min-Max (Inch)	B Cut-Off Blade Min-Max (Inch)	Code
M-O	10	4.40	0.31	0.63	0.551	0.95-1.30	0.79-1.18	0.59	1	1.77	2.75	0.08-0.16	0.39-0.59	145001
A-O	14	6.00	0.47	0.83	0.787	1.26-1.65	1.00-1.38	0.75	2	2.36	4.00	0.08-0.20	0.47-0.79	145003
B-O	18	8.00	0.59	1.30	0.984	1.89-260	1.50-2.20	1.00	3	3.35	5.00	0.08-0.20	0.59-1.00	145005
C-O	24	8.50	0.71	1.42	1.259	2.20-3.07	1.57-2.44	1.00	4	3.75	5.75	0.12-0.25	0.70-1.18	145006
D-O	Over 24	11.00	0.83	1.65	1.654	2.50-3.66	1.77-2.95	1.34	5	4.72	7.00	0.15-0.31	0.70-1.38	145007
E-O	Over 24	12.25	0.87	2.00	1.654	3.00-4.12	2.28-3.54	1.34	5	5.12	8.00	0.19-0.39	1.00-1.50	145008

Tool Posts, Turrets, Holders & Bushings

Quick Change Tool Posts *(continued)*

Accessories

QUICK CHANGE TOOL HOLDER ACCESSORIES *For Models* *M-O, A-O, B-O, C-O, D-O, E-O*			
 201 Tool Holders	 202 V-Slot Tool Holders	 203 Morse Cone Tool Holders	
 217 Part-Off Holders	 204 Excentric Pins	 205 Tenons	 206 Height Adjustment Reels
 207 Extractors	 208 Long Screws	 209 Short Screws	 210 Set Screws
 211 Extractor Screws	 212 Springs	 213 Pins	 214 Elbow Wrenches
 215 Cross-Pin Spanners	 218 Screws	 219 Clamps for Part-Off Blades	 220 Clamp Screws

Model	For Model	Code	Model	For Model	Code	Model	For Model	Code	Model	For Model	Code	Model	For Model	Code
Turret	M-O	145100	203	D-O	145703	206	B-O	145506	210	C-O	145610	214	C-O	145614
Turret	A-O	145300	203	E-O	145803	206	C-O	145606	210	D-O	145710	214	D-O	145714
Turret	B-O	145500	217	M-O	145117	206	D-O	145706	210	E-O	145810	214	E-O	145814
Turret	C-O	145600	217	A-O	145317	206	E-O	145806	211	M-O	145111	215	M-O	145115
Turret	D-O	145700	217	B-O	145517	207	M-O	145107	211	A-O	145311	215	A-O	145315
Turret	E-O	145800	217	C-O	145617	207	A-O	145307	211	B-O	145511	215	B-O	145515
201	M-O	145101	217	D-O	145717	207	B-O	145507	211	C-O	145611	215	C-O	145615
201	A-O	145301	217	E-O	145817	207	C-O	145607	212	M-O	145112	215	D-O	145715
201	B-O	145501	204	M-O	145104	208	M-O	145108	212	A-O	145312	215	E-O	145815
201	C-O	145601	204	A-O	145304	208	A-O	145308	212	B-O	145512	218	D-O	145718
201	D-O	145701	204	B-O	145504	208	B-O	145508	212	C-O	145612	219	M-O	145119
201	E-O	145801	204	C-O	145604	208	C-O	145608	212	D-O	145712	219	A-O	145319
202	M-O	145102	204	D-O	145704	208	D-O	145708	212	E-O	145812	219	B-O	145519
202	A-O	145302	204	E-O	145804	208	E-O	145808	213	M-O	145113	219	C-O	145619
202	B-O	145502	205	M-O	145105	209	M-O	145109	213	A-O	145313	219	D-O	145719
202	C-O	145602	205	A-O	145305	209	A-O	145309	213	B-O	145513	219	E-O	145819
202	D-O	145702	205	B-O	145505	209	B-O	145509	213	C-O	145613	220	M-O	145120
202	E-O	145802	205	C-O	145605	209	C-O	145609	213	D-O	145713	220	A-O	145320
203	M-O	145103	205	D-O	145705	209	D-O	145709	213	E-O	145813	220	B-O	145520
203	A-O	145303	205	E-O	145805	210	M-O	145110	214	M-O	145114	220	C-O	145620
203	B-O	145503	206	M-O	145106	210	A-O	145310	214	A-O	145314	220	D-O	145720
203	C-O	145603	206	A-O	145306	210	B-O	145510	214	B-O	145514	220	E-O	145820

Tool Posts & Holders

Piston Type

Turrets



- All working parts hardened and ground
- Maximum rigidity for chatter-free performance
- No time wasted with shims - A knurled nut on each tool holder provides for exact height adjustment, entirely eliminating the use of shims
- Speed up your lathe operations by 90%
- Completely sealed for maintenance-free operation
- Cuts set-up time - Instant changing from one operation to another. You simply flip the handle and slide out the tool holder, then slide in the next holder with the locked-in tool bit in the exact pre-set position, ready to run. Set-ups can be made on a bench or surface plate, avoiding costly down-time
- Fits Aloris and Yuasa

Turning: The unequalled rigidity of this tool post and tool holders ensures smoother turning without chatter or vibration
Drilling: Enables you to drill by power feed with your carriage instead of hand operation of tail stock and easily centered

Turning & Facing Holder
No. 1 – Turning



Takes various sizes of bits. Turning and facing tools can be locked in together. Saves time and labor when changing operations.

Boring, Turning & Facing Holder
No. 2 – with V-Groove



"V" groove holds round shank boring bars and tools as well as square tool bits

Heavy Duty Boring Bar Holders
No. 4 & 41 *(Larger Capacity)*



For smaller diameter boring bars. Equipped with a split bushing to accommodate a boring bar of small diameter. It grips the bar with extreme rigidity, cuts smoothly without chatter.

Morse Taper Tool Holders
MT No. 2, 3, 4 & 5



Drills with carriage by using power feed, instead of tail stock. Easily centered. For No. 2, 3 and 4 Morse Taper Drills.

Universal Parting Blade Holders
No. 7



For bevel as well as T-cut blades. Enables you to cut-off close to chuck. Reduces vibration and prevents breaking blades.

Knurling, Facing & Turning Holders
No. 10

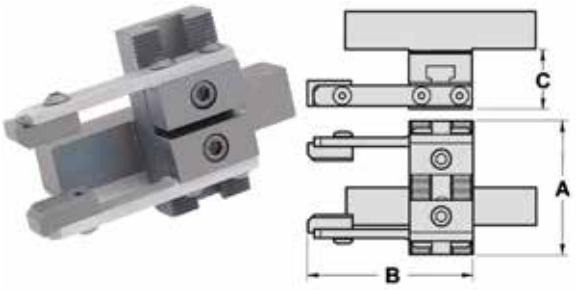


For turning and facing as well as knurling. Supplied with a set of high speed precision ground and tapped medium diamond knurls. Easily replaceable.

Description	12" Swing		10"-15" Swing		13"-18" Swing		14"-20" Swing	
	Tool Capacity	Code	Tool Capacity	Code	Tool Capacity	Code	Tool Capacity	Code
Turret	–	303100	–	303200	–	303300	–	303400
No. 1 Turning	1/2" square	303101	5/8" square	303201	3/4" square	303301	1" square	303401
No. 2 Boring "V"	7/16" diameter	303102	5/8" diameter	303202	3/4" diameter	303302	1" diameter	303402
No. 4 Boring (Bush)	5/8" diameter	303104	3/4" diameter	303204	3/4" diameter	303304	1" diameter	303404
No. 41 Boring (Bush)	3/4" diameter	303141	1" diameter	303241	1" diameter	303341	1-1/4" diameter	303441
MT 2 & 3 Morse Taper	MT2	303105	MT2	303205	MT3	303305	MT3	303405
MT 4 & 5 Morse Taper	MT3	303153	MT3	303253	MT4	303353	MT4	303453
No. 7 Part-Off	1/2"	303107	11/16"	303207	3/4"	303307	7/8"	303407
No. 10 Knurl	–	303110	–	303210	–	303310	–	303410

CNC Bar Pullers

Compact CNC Bar Pullers

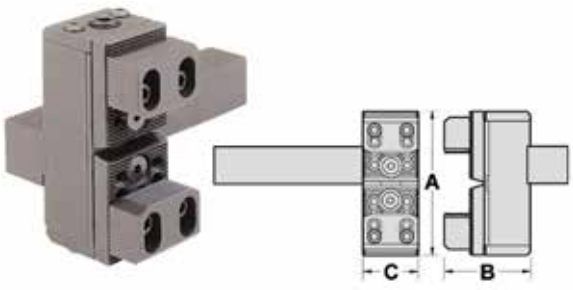


- Great for use with small CNC lathes - compact design minimizes tool interference
- Very easy to setup and use
- Unit can pull round, square, and hex stock
- Flexible heat-treated steel fingers provide strong gripping force
- Each compact bar puller includes one set of serrated jaws and one blank spindle bushing

Order insert holder and insert separately. Additional sizes and shank styles are available. Please contact your KAR distributor for information.

Shank Size (Inch)	Gripping Range (Inch)	A (Inch)	B (Inch)	C (Inch)	Code
1/2 sq.	1/8 – 1-5/8	2-1/8	3-1/4	1-3/16	217050
3/4 sq.	1/8 – 2-1/4	2-5/8	3-1/4	1-3/16	217051
1 sq.	1/8 – 2-1/4	2-5/8	3-1/4	1-3/16	217052
1 sq.	1/8 – 3	3-5/8	3-1/4	1-3/16	217053

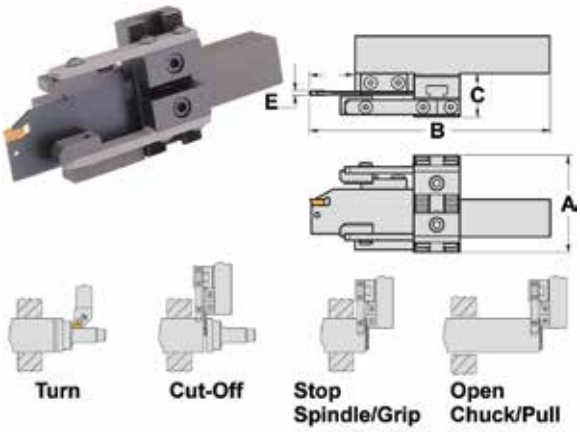
Heavy Duty CNC Bar Pullers



- Gripping range from 1/8” to 6-1/2” (extra capacity jaws sold separately)
- Gripping force is easily adjusted by altering spring pressure
- Jaws have two gripping surfaces: one side is serrated for increased gripping power, the other side is smooth to help prevent marking
- Smooth side is also used when pulling small diameter stock
- Very easy to set up and use
- Each unit comes with one set of standard jaws and one blank spindle bushing

Shank Size (Inch)	Gripping Range		A (Inch)	B (Inch)	C (Inch)	Code
	Standard Jaws (Inch)	Extra Capacity Jaws (Inch)				
3/4 sq.	1/8 – 2-1/4	1-7/8 – 3-3/4	3-7/8	2-9/16	1-1/2	217058
1 sq.	1/8 – 2-1/4	1-7/8 – 3-3/4	3-7/8	2-9/16	1-1/2	217059
1 sq.	1/8 – 3-1/2	1-7/8 – 5-3/8	4-3/4	2-9/16	1-1/2	217060
1 sq.	1/8 – 3-5/8	1-7/8 – 5-1/2	5	2-3/4	1-3/4	217061
1 sq.	1/8 – 4-7/8	1-7/8 – 6-1/2	6-3/4	2-3/4	1-3/4	217062

Combination CNC Cut-Off/Bar Pullers



- Combination bar puller/cut-off tool saves a turret station by combining two tools into one
- Benefits include reduced indexing, reduced set-up time, and reduced cycle time
- Compact design - good for all CNC machines where tool interference is a problem
- Gripping range from 1/8” to 2-1/4”
- Flexible heat-treated steel fingers provide strong gripping force
- Unit easily handles round, square, and hex stock
- Very easy to set up and use
- Includes bar puller, one set of standard jaws and one blank spindle busing

Order holder and insert separately

Shank Size (Inch)	Gripping Range (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	Code
3/4 sq.	1/8 – 2-1/4	2-5/8	4-3/4	1-3/16	7/8	0.125	217054
1 sq.	1/8 – 2-1/4	2-5/8	6-3/8	1-3/16	1-1/4	0.125	217055

Part-Off Blade & Insert



Bar puller accepts many popular brands of holders – must be slightly modified

Bar Puller Shank Size (Inch)	Code
1/2 or 3/4	217056
1	217057

Expanding Mandrels



Model	Range (mm)	Range (Inch)	Length (mm)	Length (Inch)	Diameter (mm)	Diameter (Inch)	l (mm)	l (Inch)	Complete Code	Sleeve Only Code
LM-1	13 – 19	0.51 – 0.75	165	6.5	11	0.43	40	1.57	165101	165201
LM-2	19 – 25	0.75 – 1.00	196	7.7	13	0.50	60	2.36	165102	165202
LM-3	25 – 33	1.00 – 1.30	257	10.0	17	0.67	90	3.54	165103	165203
LM-4	33 – 42	1.30 – 1.66	297	11.7	23	0.91	120	4.72	165104	165204
LM-5	42 – 52	1.66 – 2.05	338	13.3	30	1.18	130	5.12	165105	165205
LM-6	52 – 65	2.05 – 2.56	392	15.4	38	1.50	150	5.90	165106	165206
LM-7	65 – 78	2.56 – 3.07	392	15.4	38	1.50	150	5.90	165107	165207
LM-8	78 – 90	3.07 – 3.55	392	15.4	38	1.50	150	5.90	165108	165208

Model	Set Range (Inch)	Code
SET: LM-16	0.51 – 2.56 (Model LM-1 to LM-6)	165116



Revolving Tail Stock Turrets

- Compact, accurate and well-made, these revolving tailstock turrets convert your engine or bench lathe into a screw machine
- Available in two sizes, have six holes each for holding six tools
- Trigger type handle is conveniently located which enables instant changing from one tool to another
- Supplied with Morse taper shank as indicated below

Turret Diameter (Inch)	Hole Size (Inch)	Morse Taper	Weight (lbs)	Code
2-1/2	5/8	2	4	303500
5	1	3	12	303501
5	1	4	12	303502
5	1	1" SS	12	303503

Tool Holder Bushings

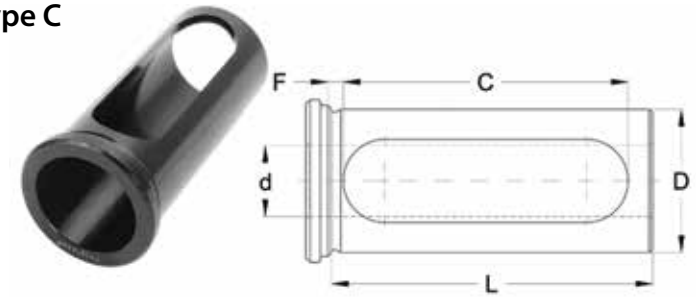
TALON PRECISION TOOLING

CNC Bushings – Black Oxide Finish – Types C, CV, B, DD, J & Z

- For use on all NC and CNC turning machines to adapt a wide variety of boring bars, drills, reamers and other round shank type tools
- Heat treated and precision ground

Type C

- C bushings have long slots for clamping directly on the tool for positive alignment of the cutting edge of the tool



D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	C Slot Length (Inch)	F (Inch)	Code
3/4	3/8	2	1-1/2	0.1693	310732
3/4	1/2	2	1-1/2	0.1693	310733
2 Piece Set – 3/8" to 1/2"					**300850**
1	3/8	2-3/4	2-3/8	0.1319	310534
1	1/2	2-3/4	2-3/8	0.1319	310536
1	5/8	2-3/4	2-3/8	0.1319	310538

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	C Slot Length (Inch)	F (Inch)	Code
1	3/4	2-3/4	2-3/8	0.1319	310540
4 Piece Set – 3/8" to 3/4"					**300851**
1-1/4	3/8	3-1/4	2-3/4	0.1496	310544
1-1/4	1/2	3-1/4	2-3/4	0.1496	310545
1-1/4	5/8	3-1/4	2-3/4	0.1496	310547
1-1/4	3/4	3-1/4	2-3/4	0.1496	310549

Tool Holder Bushings

CNC Bushings – Black Oxide Finish – Types C, CV, B, DD, J & Z *(continued)*

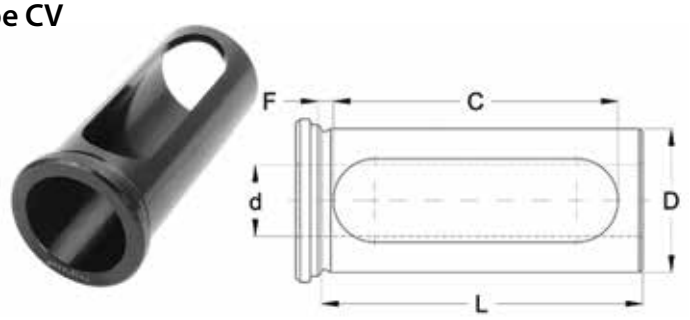
Type C *(continued)*

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	C Slot Length (Inch)	F (Inch)	Code
1-1/4	7/8	3-1/4	2-3/4	0.1496	310734
1-1/4	1	3-1/4	2-3/4	0.1496	310553
6 Piece Set – 3/8" to 1"					**300852**
1-1/2	3/8	3-3/8	3	0.1260	310735
1-1/2	1/2	3-3/8	3	0.1260	310559
1-1/2	5/8	3-3/8	3	0.1260	310561
1-1/2	3/4	3-3/8	3	0.1260	310563
1-1/2	7/8	3-3/8	3	0.1260	310736
1-1/2	1	3-3/8	3	0.1260	310567
1-1/2	1-1/4	3-3/8	3	0.1260	310571
7 Piece Set – 3/8" to 1-1/4"					**300853**
1-3/4	1/2	3-1/2	3-1/8	0.1260	310575
1-3/4	5/8	3-1/2	3-1/8	0.1260	310577
1-3/4	3/4	3-1/2	3-1/8	0.1260	310579
1-3/4	7/8	3-1/2	3-1/8	0.1260	310737
1-3/4	1	3-1/2	3-1/8	0.1260	310583
1-3/4	1-1/4	3-1/2	3-1/8	0.1260	310587
1-3/4	1-1/2	3-1/2	3-1/8	0.1260	310591
7 Piece Set – 1/2" to 1-1/2"					**300854**
2	1/2	4	3-5/8	0.1319	310595

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	C Slot Length (Inch)	F (Inch)	Code
2	5/8	4	3-5/8	0.1319	310596
2	3/4	4	3-5/8	0.1319	310597
2	7/8	4	3-5/8	0.1319	310738
2	1	4	3-5/8	0.1319	310599
2	1-1/4	4	3-5/8	0.1319	310601
2	1-1/2	4	3-5/8	0.1319	310603
2	1-3/4	4	3-5/8	0.1319	310605
8 Piece Set – 1/2" to 1-3/4"					**300855**
2-1/2	1/2	4-1/2	4-1/8	0.1457	310739
2-1/2	5/8	4-1/2	4-1/8	0.1457	310740
2-1/2	3/4	4-1/2	4-1/8	0.1457	310741
2-1/2	7/8	4-1/2	4-1/8	0.1457	310742
2-1/2	1	4-1/2	4-1/8	0.1457	310743
2-1/2	1-1/4	4-1/2	4-1/8	0.1457	310744
2-1/2	1-1/2	4-1/2	4-1/8	0.1457	310745
2-1/2	1-3/4	4-1/2	4-1/8	0.1457	310746
2-1/2	2	4-1/2	4-1/8	0.1457	310747
2-1/2	2-1/4	4-1/2	4-1/8	0.1457	310748
10 Piece Set – 1/2" to 2-1/4"					**300856**

Type CV

- CV bushings have long slots for clamping directly on the tool for positive alignment of the cutting edge of the tool



D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head Inch (mm)	C Slot Length Inch (mm)	F (Inch)	Code
1-1/4	1/4	2.36 (60)	1.97 (50)	0.1535	310749
1-1/4	3/8	2.36 (60)	1.97 (50)	0.1535	310750
1-1/4	1/2	2.36 (60)	1.97 (50)	0.1535	310751
1-1/4	5/8	2.36 (60)	1.97 (50)	0.1535	310752
1-1/4	3/4	2.36 (60)	1.97 (50)	0.1535	310753
1-1/4	7/8	2.36 (60)	1.97 (50)	0.1535	310754
1-1/4	1	2.36 (60)	1.97 (50)	0.1535	310755
7 Piece Set – 1/4" to 1"					**300857**

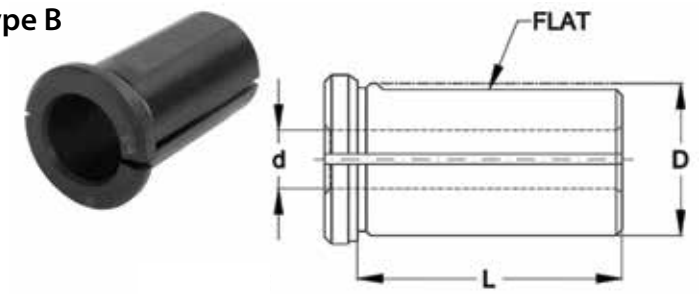
D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head Inch (mm)	C Slot Length Inch (mm)	F (Inch)	Code
1-1/2	1/4	2.76 (70)	2.36 (60)	0.1575	310756
1-1/2	3/8	2.76 (70)	2.36 (60)	0.1575	310757
1-1/2	1/2	2.76 (70)	2.36 (60)	0.1575	310758
1-1/2	5/8	2.76 (70)	2.36 (60)	0.1575	310759
1-1/2	3/4	2.76 (70)	2.36 (60)	0.1575	310760
1-1/2	7/8	2.76 (70)	2.36 (60)	0.1575	310761
1-1/2	1	2.76 (70)	2.36 (60)	0.1575	310762
1-1/2	1-1/4	70	60	0.1575	310763
8 Piece Set – 1/4" to 1-1/4"					**300858**

Tool Holder Bushings

CNC Bushings – Black Oxide Finish – Types C, CV, B, DD, J & Z *(continued)*

Type B

- B bushings have splits and flats providing strong gripping of the tool shanks

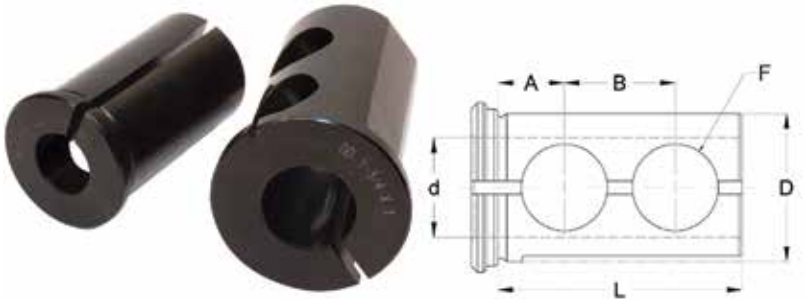


D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	Code
1	1/2	1-3/4	310832
1	5/8	1-3/4	310833
1	3/4	1-3/4	310834
3 Piece Set – 1/2" to 3/4"			**300844**
1-1/4	3/8	2-1/8	310700
1-1/4	1/2	2-1/8	310835
1-1/4	5/8	2-1/8	310701
1-1/4	3/4	2-1/8	310836
1-1/4	7/8	2-1/8	310702
1-1/4	1	2-1/8	310837
6 Piece Set – 3/8" to 1"			**300845**
1-1/2	3/8	2-1/2	310703
1-1/2	1/2	2-1/2	310838
1-1/2	5/8	2-1/2	310704
1-1/2	3/4	2-1/2	310839
1-1/2	7/8	2-1/2	310705
1-1/2	1	2-1/2	310840
1-1/2	1-1/4	2-1/2	310706
7 Piece Set – 3/8" to 1-1/4"			**300846**
1-3/4	1/2	3	310707
1-3/4	5/8	3	310708
1-3/4	3/4	3	310709
1-3/4	7/8	3	310710
1-3/4	1	3	310711

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	Code
1-3/4	1-1/4	3	310712
1-3/4	1-1/2	3	310713
7 Piece Set – 1/2" to 1-1/2"			**300847**
2	1/2	3-1/2	310714
2	5/8	3-1/2	310715
2	3/4	3-1/2	310716
2	7/8	3-1/2	310717
2	1	3-1/2	310718
2	1-1/4	3-1/2	310719
2	1-1/2	3-1/2	310720
2	1-3/4	3-1/2	310721
8 Piece Set – 1/2" to 1-3/4"			**300848**
2-1/2	1/2	4	310722
2-1/2	5/8	4	310723
2-1/2	3/4	4	310724
2-1/2	7/8	4	310725
2-1/2	1	4	310726
2-1/2	1-1/4	4	310727
2-1/2	1-1/2	4	310728
2-1/2	1-3/4	4	310729
2-1/2	2	4	310730
2-1/2	2-1/4	4	310731
10 Piece Set – 1/2" to 2-1/4"			**300849**

Type DD

- DD bushings combine Type B split bushings and Type J with the set screw holes allowing this bushing to be used as either Type B or Type J
- Each bushing has a split, two or four holes and a flat



D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	A (Inch)	B (Inch)	F (Inch)	Code
1-1/2	3/8	2-1/2	11/16	1-1/8	7/8	310779
1-1/2	1/2	2-1/2	11/16	1-1/8	7/8	310780

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	A (Inch)	B (Inch)	F (Inch)	Code
1-1/2	5/8	2-1/2	11/16	1-1/8	7/8	310781
1-1/2	3/4	2-1/2	11/16	1-1/8	7/8	310782

Tool Holder Bushings

CNC Bushings – Black Oxide Finish – Types C, CV, B, DD, J & Z *(continued)*

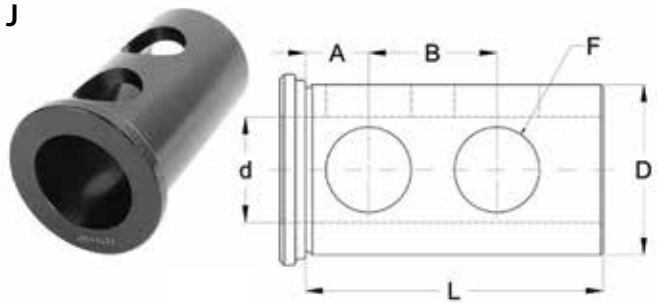
Type DD *(continued)*

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	A (Inch)	B (Inch)	F (Inch)	Code
1-1/2	7/8	2-1/2	11/16	1-1/8	7/8	310783
1-1/2	1	2-1/2	11/16	1-1/8	7/8	310784
1-1/2	1-1/4	2-1/2	11/16	1-1/8	7/8	310785
7 Piece Set – 3/8" to 1-1/4"						**300859**
1-3/4	1/2	3	3/4	1-1/4	7/8	310786
1-3/4	5/8	3	3/4	1-1/4	7/8	310787
1-3/4	3/4	3	3/4	1-1/4	7/8	310788
1-3/4	7/8	3	3/4	1-1/4	7/8	310789
1-3/4	1	3	3/4	1-1/4	7/8	310790
1-3/4	1-1/4	3	3/4	1-1/4	7/8	310791
1-3/4	1-1/2	3	3/4	1-1/4	7/8	310792
7 Piece Set – 1/2" to 1-1/2"						**300860**
2	1/2	3-1/2	3/4	1-1/2	1	310793
2	5/8	3-1/2	3/4	1-1/2	1	310794
2	3/4	3-1/2	3/4	1-1/2	1	310795
2	7/8	3-1/2	3/4	1-1/2	1	310796
2	1	3-1/2	3/4	1-1/2	1	310797
2	1-1/4	3-1/2	3/4	1-1/2	1	310798
2	1-1/2	3-1/2	3/4	1-1/2	1	310799
2	1-3/4	3-1/2	3/4	1-1/2	1	310800
8 Piece Set – 1/2" to 1-3/4"						**300861**
2-1/2	3/4	4	7/8	1-3/4	1-1/4	310801

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	A (Inch)	B (Inch)	F (Inch)	Code
2-1/2	7/8	4	7/8	1-3/4	1-1/4	310802
2-1/2	1	4	7/8	1-3/4	1-1/4	310803
2-1/2	1-1/4	4	7/8	1-3/4	1-1/4	310804
2-1/2	1-1/2	4	7/8	1-3/4	1-1/4	310805
2-1/2	1-3/4	4	7/8	1-3/4	1-1/4	310806
2-1/2	2	4	7/8	1-3/4	1-1/4	310807
2-1/2	2-1/4	4	7/8	1-3/4	1-1/4	300862
8 Piece Set – 3/4" to 2-1/4"						**300863**
3	1	4-1/2	1	2	1-1/4	300864
3	1-1/4	4-1/2	1	2	1-1/4	300865
3	1-1/2	4-1/2	1	2	1-1/4	300866
3	1-3/4	4-1/2	1	2	1-1/4	300867
3	2	4-1/2	1	2	1-1/4	300868
3	2-1/4	4-1/2	1	2	1-1/4	300869
6 Piece Set – 1" to 2-1/4"						**300670**
3-1/2	1-1/2	5-1/4	1-1/4	2-1/2	1-1/4	300671
3-1/2	1-3/4	5-1/4	1-1/4	2-1/2	1-1/4	300672
3-1/2	2	5-1/4	1-1/4	2-1/2	1-1/4	300873
3-1/2	2-1/4	5-1/4	1-1/4	2-1/2	1-1/4	300874
3-1/2	2-1/2	5-1/4	1-1/4	2-1/2	1-1/4	300875
3-1/2	3	5-1/4	1-1/4	2-1/2	1-1/4	300876
6 Piece Set – 1-1/2" to 3"						**300877**

Type J

- J bushings have a long solid body with two holes for clamping directly on the tool with set screws for positive alignment of the cutting edge of the tool



D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	A (Inch)	B (Inch)	F Hole Diameter (Inch)	Code
1	1/2	1-3/4	7/16	7/8	5/8	310418
1	5/8	1-3/4	7/16	7/8	5/8	310420
1	3/4	1-3/4	7/16	7/8	5/8	310422
3 Piece Set – 1/2" to 3/4"						**300878**
1-1/4	3/8	2-1/8	5/8	1	3/4	310436
1-1/4	1/2	2-1/8	5/8	1	3/4	310437
1-1/4	5/8	2-1/8	5/8	1	3/4	310440
1-1/4	3/4	2-1/8	5/8	1	3/4	310441
1-1/4	7/8	2-1/8	5/8	1	3/4	310764
1-1/4	1	2-1/8	5/8	1	3/4	310445
6 Piece Set – 3/8" to 1"						**300879**
1-1/2	3/8	2-1/2	11/16	1-1/8	7/8	310765
1-1/2	1/2	2-1/2	11/16	1-1/8	7/8	310451
1-1/2	5/8	2-1/2	11/16	1-1/8	7/8	310453

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	A (Inch)	B (Inch)	F Hole Diameter (Inch)	Code
1-1/2	3/4	2-1/2	11/16	1-1/8	7/8	310455
1-1/2	7/8	2-1/2	11/16	1-1/8	7/8	310766
1-1/2	1	2-1/2	11/16	1-1/8	7/8	310459
1-1/2	1-1/4	2-1/2	11/16	1-1/8	7/8	310463
7 Piece Set – 3/8" to 1-1/4"						**300880**
1-3/4	1/2	3	3/4	1-1/4	7/8	310470
1-3/4	5/8	3	3/4	1-1/4	7/8	310472
1-3/4	3/4	3	3/4	1-1/4	7/8	310474
1-3/4	7/8	3	3/4	1-1/4	7/8	310767
1-3/4	1	3	3/4	1-1/4	7/8	310478
1-3/4	1-1/4	3	3/4	1-1/4	7/8	310482
1-3/4	1-1/2	3	3/4	1-1/4	7/8	310486
7 Piece Set – 1/2" to 1-1/2"						**300881**
2	1/2	3-1/2	3/4	1-1/2	1	310490

Tool Holder Bushings

CNC Bushings – Black Oxide Finish – Types C, CV, B, DD, J & Z *(continued)*

Type J *(continued)*

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	A (Inch)	B (Inch)	F Hole Diameter (Inch)	Code
2	5/8	3-1/2	3/4	1-1/2	1	310491
2	3/4	3-1/2	3/4	1-1/2	1	310492
2	7/8	3-1/2	3/4	1-1/2	1	310768
2	1	3-1/2	3/4	1-1/2	1	310494
2	1-1/4	3-1/2	3/4	1-1/2	1	310496
2	1-1/2	3-1/2	3/4	1-1/2	1	310498
2	1-3/4	3-1/2	3/4	1-1/2	1	310500
8 Piece Set – 1/2" to 1-3/4"						**300882**
2-1/2	1/2	4	7/8	1-3/4	1-1/4	310769
2-1/2	5/8	4	7/8	1-3/4	1-1/4	310770

D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	A (Inch)	B (Inch)	F Hole Diameter (Inch)	Code
2-1/2	3/4	4	7/8	1-3/4	1-1/4	310771
2-1/2	7/8	4	7/8	1-3/4	1-1/4	310772
2-1/2	1	4	7/8	1-3/4	1-1/4	310773
2-1/2	1-1/4	4	7/8	1-3/4	1-1/4	310774
2-1/2	1-1/2	4	7/8	1-3/4	1-1/4	310775
2-1/2	1-3/4	4	7/8	1-3/4	1-1/4	310776
2-1/2	2	4	7/8	1-3/4	1-1/4	310777
2-1/2	2-1/4	4	7/8	1-3/4	1-1/4	310778
10 Piece Set – 1/2" to 2-1/4"						**300883**

Type Z

- Z bushings have a long slot and two set screws in the bushing head
- Provides improved rigidity and reduced chatter



D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	C Slot Length (Inch)	E (Inch)	Code
1-1/4	3/8	3	2-5/8	5/8	310808
1-1/4	1/2	3	2-5/8	5/8	310809
1-1/4	5/8	3	2-5/8	5/8	310810
1-1/4	3/4	3	2-5/8	5/8	310811
1-1/4	7/8	3	2-5/8	5/8	310812
1-1/4	1	3	2-5/8	5/8	310813
6 Piece Set – 3/8" to 1"					**300887**
1-1/2	3/8	3-1/4	2-7/8	3/4	310814
1-1/2	1/2	3-1/4	2-7/8	3/4	310815
1-1/2	5/8	3-1/4	2-7/8	3/4	310816
1-1/2	3/4	3-1/4	2-7/8	3/4	310817
1-1/2	7/8	3-1/4	2-7/8	3/4	310818
1-1/2	1	3-1/4	2-7/8	3/4	310819
1-1/2	1-1/4	3-1/4	2-7/8	3/4	310820

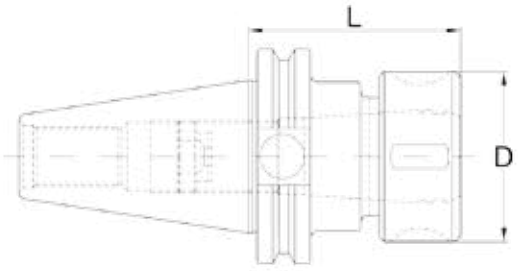
D Outside Diameter (Inch)	d Inside Diameter (Inch)	L Length Under Head (Inch)	C Slot Length (Inch)	E (Inch)	Code
7 Piece Set – 3/8" to 1-1/4"					**300888**
1-3/4	1/2	3-1/4	3-1/8	3/4	310821
1-3/4	5/8	3-1/4	3-1/8	3/4	310822
1-3/4	3/4	3-1/4	3-1/8	3/4	310823
1-3/4	1	3-1/4	3-1/8	3/4	310824
1-3/4	1-1/4	3-1/4	3-1/8	3/4	310825
5 Piece Set – 1/2" to 1-1/4"					**300889**
2	1/2	3-3/4	3-1/2	3/4	310826
2	3/4	3-3/4	3-1/2	3/4	310827
2	7/8	3-3/4	3-1/2	3/4	310828
2	1	3-3/4	3-1/2	3/4	310829
2	1-1/4	3-3/4	3-1/2	3/4	310830
2	1-1/2	3-3/4	3-1/2	3/4	310831
6 Piece Set – 1/2" to 1-1/2"					**300890**

TG Collet Chucks & Accessories

TG Collet Chucks – CAT40 & CAT50

- Taper to taper runout: <0.0002”
- Coolant through spindle
- CAT40 balanced G2.5@20,000 RPM
- CAT50 balanced G6.3@15,000 RPM
- Taper shank ground to AT3 accuracy or better
- CAT40 draw bar threads: 5/8”-11
- CAT50 draw bar threads: 1”-8





NOTE: Collet wrench sold separately

Collet Series	Collet Cap Min-Max (Inch)	Nut	D (Inch)	L (Inch)	Locknut Reference	Wrench Reference	Stop Screw Reference	CAT40		CAT50	
								Weight (lbs)	Code	Weight (lbs)	Code
TG75	3/64 – 3/4	Round	1.97	2.54	301713	301708	301748	2.50	310998	7.30	312089
TG75	3/64 – 3/4	Hex	2.09	2.75	301733	300614	301748	2.41	310999	7.30	312090
TG75	3/64 – 3/4	Round	1.97	5.79	301713	301708	301748	4.40	312000	9.70	312091
TG75	3/64 – 3/4	Hex	2.09	6.00	301733	300614	301748	4.40	312001	9.70	312092
TG75	3/64 – 3/4	Round	1.97	6.00	301713	301708	301748	5.54	312002	–	–
TG75	3/64 – 3/4	Round	1.97	8.00	301713	301708	301748	–	–	11.50	300697
TG75	3/64 – 3/4	Round	1.97	10.00	301713	301708	301748	–	–	13.60	312088
TG100	5/64 – 1	Round	2.36	2.76	301714	301709	301749	2.69	312003	–	–
TG100	5/64 – 1	Round	2.36	3.26	301714	301709	301749	–	–	7.61	301767
TG100	5/64 – 1	Round	2.36	3.76	301714	301709	301749	3.23	312005	–	–
TG100	5/64 – 1	Hex	2.44	3.00	301734	300615	301749	2.77	312004	7.16	301768
TG100	5/64 – 1	Hex	2.44	4.00	301734	300615	301749	3.28	312006	8.00	312096
TG100	5/64 – 1	Round	2.36	5.76	301714	301709	301749	5.52	312007	–	–
TG100	5/64 – 1	Hex	2.44	6.00	301734	300615	301749	5.40	312008	9.76	312097
TG150	23/64 – 1-1/2	Round	3.50	4.88	301735	301712	301750	5.72	312009	10.10	312098

Spare Wrenches & Nuts for TG Collet Chucks



TG Style 1



TG “Hook” Style 1

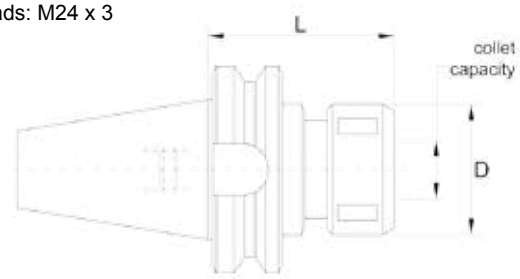
Nut Size	Hex		Round	
	Hex Nut	Wrench (Style 1)	Round Nut	Wrench Hook Style (Style 2)
	Code	Code	Code	Code
TG75	301733	300614	301713	301708
TG100	301734	300615	301714	301709
TG150	–	–	301717	301712

TG Collet Chucks & Accessories

TG Collet Chucks – BT40 & BT50

- Taper to taper runout: <0.0002”
- Coolant through spindle
- Balanced G6.3@15,000 RPM
- Taper shank ground to AT3 accuracy or better
- BT40 draw bar threads: M16 x 2
- BT50 draw bar threads: M24 x 3



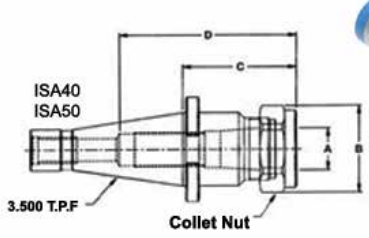


NOTE: Collet wrench sold separately

Collet Series	Collet Cap Min-Max (Inch)	D (Inch)	L (Inch)	Locknut Reference	Wrench Reference	Stop Screw Reference	BT40		BT50	
							Weight (lbs)	Code	Weight (lbs)	Code
TG75	7/64 – 25/32	1.969	2.756	301713	301708	301748	3.09	310899	–	–
TG100	7/64 – 1	2.362	3.150	301714	301709	301749	3.09	310900	–	–
TG100	7/64 – 1	2.362	3.543	301714	301709	301749	–	–	8.60	310930
TG100	7/64 – 1	2.362	3.937	301714	301709	301749	3.97	310901	–	–
TG100	7/64 – 1	2.362	5.906	301714	301709	301749	5.51	310902	11.46	310931
TG150	29/64 – 1-37/64	3.346	3.937	301717	301712	301751	–	–	9.48	310932

TG Collet Chucks

ISA

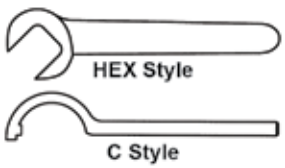




Taper	Collet	A Range (Inch)	B (Inch)	C (Inch)	D (Inch)	Code
ISA40	100	3/32 - 1	2.44	3.00	3.68	827322
ISA50	100	3/32 - 1	2.44	3.00	3.68	827323

Spare Parts

Wrenches

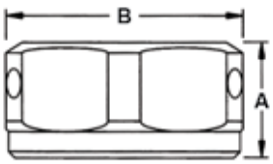


Collet	Style	Code
TG100	Hex	200619
TG150	C	201770



Collet	Code
TG100	827317
TG150	827318

Collet Nuts



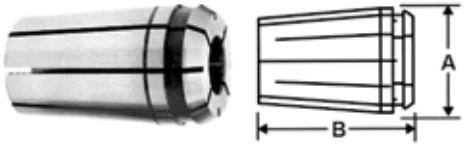
Collet	Style	A (Inch)	B (Inch)	Code
TG100	Hex	1.10	2.44	827333
TG150	C	1.25	3.25	827334



Collet	Thread	Code
TG150	ACME 2-5/8-12	827321

TG Collets

TG100 & TG150 Series – Inch

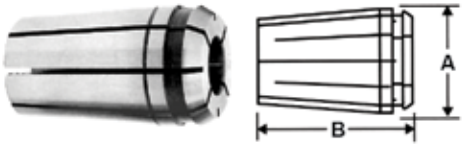


Collet	A (Inch)	B (Inch)
TG100	1.379	2.375
TG150	2.000	3.000

Size (Inch)	TG100 Code	TG150 Code	Size (Inch)	TG100 Code	TG150 Code	Size (Inch)	TG100 Code	TG150 Code	Size (Inch)	TG100 Code	TG150 Code
3/32	218201	–	15/32	218225	–	27/32	218249	218323	1-7/32	–	218347
7/64	218202	–	31/64	218226	–	55/64	218250	218324	1-15/64	–	218348
1/8	218203	–	1/2	218227	218301	7/8	218251	218325	1-1/4	–	218349
9/64	218204	–	33/64	218228	218302	57/64	218252	218326	1-17/64	–	218350
5/32	218205	–	17/32	218229	218303	29/32	218253	218327	1-9/32	–	218351
11/64	218206	–	35/64	218230	218304	59/64	218254	218328	1-19/64	–	218352
3/16	218207	–	9/16	218231	218305	15/16	218255	218329	1-5/16	–	218353
13/64	218208	–	37/64	218232	218306	61/64	218256	218330	1-21/64	–	218354
7/32	218209	–	19/32	218233	218307	31/32	218257	218331	1-11/32	–	218355
15/64	218210	–	39/64	218234	218308	63/64	218258	218332	1-23/64	–	218356
1/4	218211	–	5/8	218235	218309	1	–	218333	1-3/8	–	218357
17/64	218212	–	41/64	218236	218310	1-1/64	–	218334	1-25/64	–	218358
9/32	218213	–	21/32	218237	218311	1-1/32	–	218335	1-13/32	–	218359
19/64	218214	–	43/64	218238	218312	1-3/64	–	218336	1-27/64	–	218360
5/16	218215	–	11/16	218239	218313	1-1/16	–	218337	1-7/16	–	218361
21/64	218216	–	45/64	218240	218314	1-5/64	–	218338	1-29/64	–	218362
11/32	218217	–	23/32	218241	218315	1-3/32	–	218339	1-15/32	–	218363
23/64	218218	–	47/64	218242	218316	1-7/64	–	218340	1-31/64	–	218364
3/8	218219	–	3/4	218243	218317	1-1/8	–	218341	1-1/2	–	218365
25/64	218220	–	49/64	218244	218318	1-9/64	–	218342			
13/32	218221	–	25/32	218245	218319	1-5/32	–	218343			
27/64	218222	–	51/64	218246	218320	1-11/64	–	218344			
7/16	218223	–	13/16	218247	218321	1-3/16	–	218345			
29/64	218224	–	53/64	218248	218322	1-13/64	–	218346			

TG Collets

TG100 Series – Metric



Collet	A (Inch/mm)	B (Inch/mm)
TG100	1.379/35	2.375/60

Size (mm)	TG100 Code	Size (mm)	TG100 Code	Size (mm)	TG100 Code	Size (mm)	TG100 Code	Size (mm)	TG100 Code	Size (mm)	TG100 Code
3	218103	7	218107	11	218111	15	218115	19	218119	23	218123
4	218104	8	218108	12	218112	16	218116	20	218120	24	218124
5	218105	9	218109	13	218113	17	218117	21	218121	25	218125
6	218106	10	218110	14	218114	18	218118	22	218122		

TG Rigid Tapping Collets

TG100 with Square Drive



- Manufactured to ANSI tap standards
- For synchronous tapping operations using any TG collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity

ANSI Tap Size	Shank Diameter (Inch)	Drive Square (Inch)	Code
0-6	0.141	0.110	826500
#8	0.168	0.131	826501
#10	0.194	0.152	826502
#12	0.220	0.165	826503
1/4”	0.255	0.191	826504
5/16”	0.318	0.238	826505
3/8”	0.381	0.286	826506
7/16”	0.323	0.242	826507

ANSI Tap Size	Shank Diameter (Inch)	Drive Square (Inch)	Code
1/2”	0.367	0.275	826508
9/16”	0.429	0.322	826509
5/8”	0.480	0.360	826510
11/16”	0.542	0.406	826511
3/4”	0.590	0.442	826512
7/8”	0.697	0.523	826513

ANSI Tap Size	Shank Diameter (Inch)	Drive Square (Inch)	Code
1”	0.800	0.600	826514
1/8” PS	0.312	0.234	826515
1/8” PL	0.437	0.328	826516
1/4” P	0.562	0.421	826517
3/8” P	0.700	0.531	826518
1/2” P	0.687	0.515	826519

Collet Storage Tray

TG100 – Wooden – 30 Holes



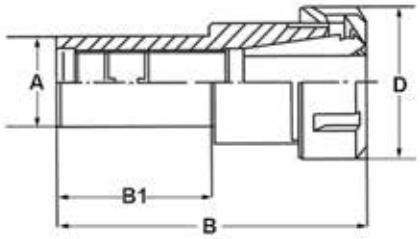
Allows you to build and store your own collet set

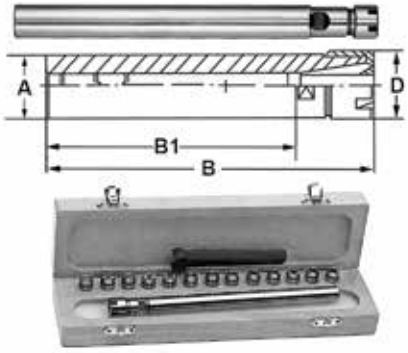
Code
218260

ER Collet Chucks

Straight Shank







Sets include: wrench, chuck and collets (inch) and supplied in a fitted storage case

A (Inch)	B (Inch)	B1 (Inch)	D Diameter (Inch)	Nut Style	ER16		ER20	ER25	ER32		ER40
					Chuck Onlu	Set	Chuck Onlu	Chuck Only	Chuck Onlu	Set	Chuck Onlu
					Code	Code	Code	Code	Code	Code	Code
3/8	2-3/4	1-3/4	0.87	Mini	356900	–	–	–	–	–	–
1/2	6-1/2	6	0.87	Mini	356901	–	–	–	–	–	–
5/8	4	3	1.10	Hex	356902	–	–	–	–	–	–
3/4	3	2	1.10	Hex	356904	–	–	–	–	–	–
3/4	5	4	1.10	Hex	356905	–	–	–	–	–	–
1-1/4	3-1/4	2-1/4	1.10	Hex	356908	356945	–	–	–	–	–
5/8	6-1/4	5-1/2	1.10	Hex	356903	–	–	–	–	–	–
3/4	6-1/2	5-1/4	0.87	Mini	356906	–	–	–	–	–	–
1	6-1/4	5-1/2	1.10	Hex	356907	–	–	–	–	–	–
5/8	5-1/2	4	1.10	Mini	–	–	356925	–	–	–	–
3/4	5-1/2	4	1.10	Mini	–	–	356934	–	–	–	–
1	6-1/4	5-1/4	1.10	Mini	–	–	356926	–	–	–	–
5/8	3-1/4	2	1.65	E25	–	–	–	356935	–	–	–
3/4	5-1/4	2	1.65	E25	–	–	–	356936	–	–	–
1	5-1/4	4	1.38	Mini	–	–	–	356937	–	–	–
1	5-1/4	4	1.65	E25	–	–	–	356941	–	–	–
1	3-3/4	2	1.97	E32	–	–	–	–	356917	356919	–
1-1/4	4-1/4	2-1/4	1.97	E32	–	–	–	–	356918	–	–
1	3-3/4	2	2.48	E40	–	–	–	–	–	–	356922
1-1/4	4-1/4	2-1/4	2.48	E40	–	–	–	–	–	–	356923

Collet Storage Boxes

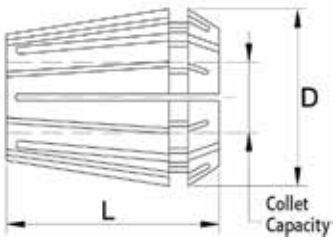
ER16		ER20		ER25		ER32		ER40	
Collet Capacity	Code	Collet Capacity	Code	Collet Capacity	Code	Collet Capacity	Code	Collet Capacity	Code
10	356929	12	356930	15	356933	18	356931	23	356932

ER Collets

Inch & Metric

- Precision collets
- Collet accuracy: 0.0003” to 0.0004” T.I.R.
- Wide clamping ranges: 0.02” to 0.039” collapsibility
- Made of high quality spring steel





Collet Dimensions

Style	D (Inch)	L (Inch)
ER11	0.453	0.709
ER16	0.669	1.062
ER20	0.826	1.220
ER25	1.024	1.378
ER32	1.299	1.574
ER40	1.614	1.811

Inch

Nominal Diameter (Inch)	ER11	ER16	ER20	ER25	ER32	ER40
	Code	Code	Code	Code	Code	Code
1/32	–	826520	–	–	–	–
1/16	300641	826521	826532	826547	–	–
3/32	300642	826522	826533	826548	826566	–
1/8	300643	826523	826534	826549	826567	826588
5/32	300644	826524	826535	826550	826568	826589
3/16	300645	826525	826536	826551	826569	826590
7/32	300646	826526	826537	826552	826570	826591
1/4	300647	826527	826538	826553	826571	826592
9/32	–	826528	826539	826554	826572	826593
5/16	–	826529	826540	826555	826573	826594
11/32	–	826530	826541	826556	826574	826595
3/8	–	826531	826542	826557	826575	826596
13/32	–	–	826543	826558	826576	826597
7/16	–	–	826544	826559	826577	826598
15/32	–	–	826545	826560	826578	826599
1/2	–	–	826546	826561	826579	826600
17/32	–	–	–	826562	826580	826601
9/16	–	–	–	826563	826581	826602
19/32	–	–	–	826564	826582	826603
5/8	–	–	–	826565	826583	826604
21/32	–	–	–	–	826584	826605
11/16	–	–	–	–	826585	826606
23/32	–	–	–	–	826586	826607
3/4	–	–	–	–	826587	826608
25/32	–	–	–	–	–	826609
13/16	–	–	–	–	–	826610
27/32	–	–	–	–	–	826611
7/8	–	–	–	–	–	826612
29/32	–	–	–	–	–	826613
15/16	–	–	–	–	–	826614
31/32	–	–	–	–	–	826615
1	–	–	–	–	–	826616

Metric – Collapsible 1 mm

Decimal Range (mm)	Size (mm)	ER16	ER20	ER25	ER32	ER40
		Code	Code	Code	Code	Code
0.04 – 0.08	1 – 2	–	–	302081	–	–
0.08 – 0.12	2 – 3	302001	302011	302082	302031	–
0.12 – 0.16	3 – 4	302002	302012	302083	302032	302052
0.16 – 0.20	4 – 5	302003	302013	302084	302033	302053

ER Collets

Inch & Metric

Metric – Collapsible 1 mm *(continued)*

Decimal Range (mm)	Size (mm)	ER16	ER20	ER25	ER32	ER40
		Code	Code	Code	Code	Code
0.20 – 0.24	5 – 6	302008	302014	302085	302034	302054
0.24 – 0.28	6 – 7	302004	302015	302086	302035	302055
0.28 – 0.32	7 – 8	302005	302016	302087	302036	302056
0.32 – 0.35	8 – 9	302006	302017	302088	302037	302057
0.35 – 0.39	9 – 10	302007	302018	302089	302038	302058
0.39 – 0.43	10 – 11	–	302019	302090	302039	302059
0.43 – 0.47	11 – 12	–	302020	302091	302040	302060
0.47 – 0.51	12 – 13	–	302021	302092	302041	302061
0.51 – 0.55	13 – 14	–	–	302093	302042	302062
0.55 – 0.59	14 – 15	–	–	302094	302043	302063
0.59 – 0.63	15 – 16	–	–	302095	302044	302064
0.63 – 0.67	16 – 17	–	–	–	302045	302065
0.67 – 0.71	17 – 18	–	–	–	302046	302066
0.71 – 0.75	18 – 19	–	–	–	302047	302067
0.75 – 0.79	19 – 20	–	–	–	302048	302068
0.79 – 0.83	20 – 21	–	–	–	–	302069
0.83 – 0.87	21 – 22	–	–	–	–	302070
0.87 – 0.91	22 – 23	–	–	–	–	302071
0.91 – 0.95	23 – 24	–	–	–	–	302072
0.95 – 0.98	24 – 25	–	–	–	–	302073
0.98 – 1.02	25 – 26	–	–	–	–	302074

ER Rigid Tapping Collets

With Square Drive



- For taps with ANSI shanks
- For synchronous tapping operations using any ER collet chuck
- Collet bore is exact tool diameter, with square drive, for accuracy and rigidity

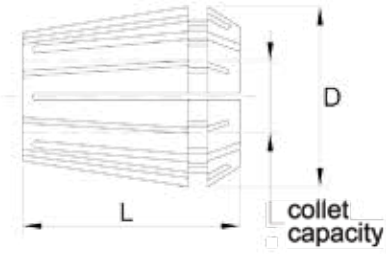
Tap Size	Tap Shank Diameter (Inch)	Tap Shank Square (Inch)	ER16	ER20	ER25	ER32	ER40
			Code	Code	Code	Code	Code
0 – 6”	0.141	0.110	356200	356210	356220	356240	356270
#8	0.168	0.131	356201	356211	356221	356241	356271
#10	0.194	0.152	356202	356212	356222	356242	356272
#12	0.220	0.165	356203	356213	356223	356243	356273
1/4”	0.255	0.191	356204	356214	356224	356244	356274
5/16”	0.318	0.238	356205	356215	356225	356245	356275
3/8”	0.381	0.286	–	356216	356226	356246	356276
7/16”	0.323	0.242	–	356217	356227	356247	356277
1/2”	0.367	0.275	–	356218	356228	356248	356278
9/16”	0.429	0.322	–	–	356229	356249	356279
5/8”	0.480	0.360	–	–	356230	356250	356280
3/4”	0.590	0.442	–	–	–	356251	356281
7/8”	0.697	0.523	–	–	–	–	356282
1”	0.800	0.600	–	–	–	–	356283
1/8” Pipe SS	0.312	0.234	–	–	356231	356261	356291
1/8” Pipe LS	0.438	0.328	–	–	356232	356262	356292
1/4” Pipe	0.562	0.421	–	–	–	356263	356293
3/8” Pipe	0.700	0.531	–	–	–	–	356294
1/2” Pipe	0.687	0.515	–	–	–	–	356295

ER Collets – Steel Sealed

Inch & Metric



- Collet accuracy: 0.0003" to 0.0004" T.I.R. (0.008 mm to 0.010 mm)
- For optimal collet performance use tools with shank diameter equal to the collet nominal size
- Coolant allowable pressure: 1,500 PSI
- Made from high quality spring steel



Inch

Nominal Diameter (Inch)	ER16 D = 0.669"/L = 1.083"	ER20 D = 0.827"/L = 1.240"	ER25 D = 1.024"/L = 1.339"	ER32 D = 1.299"/L = 1.575"	ER40 D = 1.614"/L = 1.811"
	Code	Code	Code	Code	Code
1/8	312211	312236	312259	312290	312331
5/32	312212	312236	312260	312291	312332
3/16	312213	312237	312261	312292	312333
7/32	312214	312238	312262	312293	312334
1/4	312215	312239	312263	312294	312335
9/32	312216	312240	312264	312295	312336
5/16	312217	312241	312265	312296	312337
11/32	312218	312242	312266	312297	312338
3/8	312219	312243	312267	312298	312339
13/32	312220	312244	312268	312299	312340
7/16	–	312245	312269	312300	312341
15/32	–	312246	312270	312301	312342
1/2	–	312247	312271	312302	312343
17/32	–	–	312272	312303	312344
9/16	–	–	312273	312304	312345
19/32	–	–	312274	312305	312346
5/8	–	–	312275	312306	312347
21/32	–	–	–	312307	312348
11/16	–	–	–	312308	312349
23/32	–	–	–	312309	312350
3/4	–	–	–	312310	312351
25/32	–	–	–	312311	312352
13/16	–	–	–	312312	312353
27/32	–	–	–	–	312354
7/8	–	–	–	–	312355
25/32	–	–	–	–	312356
15/16	–	–	–	–	312357
31/32	–	–	–	–	312358
1	–	–	–	–	312359

Metric

Nominal Diameter (mm)	ER16 D = 17mm/L = 27.5mm	ER20 D = 21mm/L = 31.5mm	ER25 D = 26mm/L = 34mm	ER32 D = 33mm/L = 40mm	ER40 D = 41mm/L = 46mm
	Code	Code	Code	Code	Code
3.0	312221	312248	312276	312313	–
3.5	300841	–	–	–	–
4.0	312222	312249	312277	312314	312360
4.5	312223	–	–	–	–
5.0	312224	312250	312278	312315	312361
5.5	312225	–	–	–	–
6.0	312226	312251	312279	312316	312362
6.5	312227	–	–	–	–
7.0	312228	312252	312280	312317	312363
7.5	312229	–	–	–	–
8.0	312230	312253	312281	312318	312364
8.5	312231	–	–	–	–

ER Collets – Steel Sealed

Inch & Metric

Metric *(continued)*

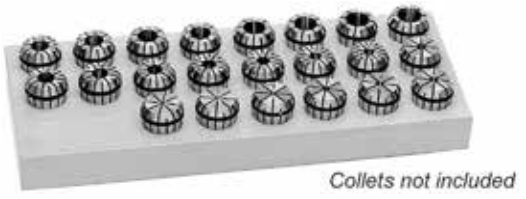
Nominal Diameter (mm)	ER16 D = 17mm/L = 27.5mm	ER20 D = 21mm/L = 31.5mm	ER25 D = 26mm/L = 34mm	ER32 D = 33mm/L = 40mm	ER40 D = 41mm/L = 46mm
	Code	Code	Code	Code	Code
9.0	312232	312254	312282	312319	312365
9.5	312233	–	–	–	–
10.0	312234	312255	312283	312320	312366
11.0	–	312256	312284	312321	312367
12.0	–	312257	312285	312322	312368
13.0	–	312258	312286	312323	312369
14.0	–	–	312287	312324	312370
15.0	–	–	312288	312325	312371
16.0	–	–	312289	312326	312372
17.0	–	–	–	312327	312373
18.0	–	–	–	312328	312374
19.0	–	–	–	312329	312375
20.0	–	–	–	312330	312376
21.0	–	–	–	–	312377
22.0	–	–	–	–	312378
23.0	–	–	–	–	312379
24.0	–	–	–	–	312380
25.0	–	–	–	–	312381
26.0	–	–	–	–	312382

Sets – Inch & Metric

Collet	Inch		Metric	
	Nominal Diameter Range (Inch)	Code	Diameter Range (mm)	Code
ER16	1/8 – 13/32 by 32nds (10-pc)	312200	3.0 – 10.0 (8-pc)	312206
ER20	1/8 –1/2 by 16ths (7-pc)	312201	3.0 –13.0 (11-pc)	312207
ER25	1/8 – 5/8 by 16ths (9-pc)	312202	3.0 –16.0 (14-pc)	312208
ER32	1/8 – 13/16 by 16ths (12-pc)	312203	3.0 –20.0 (18-pc)	312209
ER32	7/32 – 3/4 by 32nds (18-pc)	312204	–	–
ER40	1/8 – 1 by 16ths (15-pc)	312205	3.0 –26.0 (23-pc)	312210

Collet Storage Tray

Allows you to build and store your own collet set



Collets not included

ER16		ER20		ER25		ER32		ER40	
Collet Capacity	Code	Collet Capacity	Code	Collet Capacity	Code	Collet Capacity	Code	Collet Capacity	Code
10	302009	12	302022	15	302097	18	302049	24	302075

ER Collet Sets

Inch & Metric

- Accuracy: 0.00039”



ER20 Inch Collet Set shown

Inch Sets

ER16		ER20		ER25		ER32		ER40	
Quantity per Set	Code	Quantity per Set	Code	Quantity per Set	Code	Quantity per Set	Code	Quantity per Set	Code
7	826617	10	826618	12	826619	11	826620	15	826621

Metric Sets

ER16		ER20		ER25		ER32		ER40	
Quantity per Set	Code	Quantity per Set	Code	Quantity per Set	Code	Quantity per Set	Code	Quantity per Set	Code
8	302685	10	302686	15	302689	18	302687	23	302688

ER Collet Chucks, Sets & Accessories

ER Chucks – R8, ISA & Morse Taper Shanks



R8



ISA



MT



Sets include: Shank, collets, wrench, supplied in storage case

TANGS FOR MORSE TAPER COLLET CHUCKS SOLD SEPARATELY

Shank	Collet Style	Collet Range (Inch)	Collet Chuck Only		Collet Chuck Sets	
			Collet Range (mm)	Code	Quantity per Set	Code
R8	ER32	0.08-0.79	2-20	302600	18	302610
ISA40	ER32	0.08-0.79	2-20	302601	18	302611
MT3	ER32	0.08-0.79	2-20	302605	–	–
MT4	ER32	0.08-0.79	2-20	302606	–	–
R8	ER40	0.12-1	3-25	302604	15	302614
ISA40	ER40	0.12-1	3-25	302602	15	302612
ISA50	ER40	0.12-1	3-25	302603	15	302612
MT3	ER40	0.12-1	3-25	302607	–	–
MT4	ER40	0.12-1	3-25	302608	–	–

ER Collet Chucks, Sets & Accessories

ER Clamping Nuts



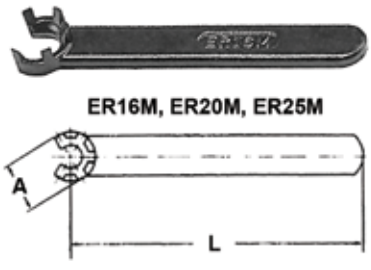


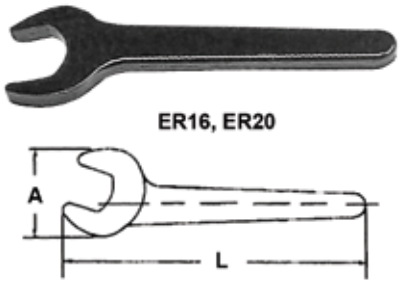


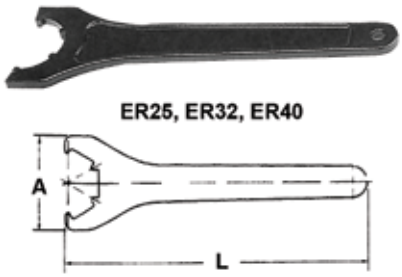
Type	D (mm)	H (mm)	G	Code
ER16M	22	22	M19 x 1.0	827000
ER16	28	17	M22 x 1.5	827001
ER20M	28	19	M24 x 1.0	827002
ER20	34	19	M25 x 1.5	827003

Type	D (mm)	H (mm)	G	Code
ER25M	35	20	M30 x 1.0	827004
ER25	42	20	M32 x 1.5	827005
ER32	50	22	M40 x 1.5	827006
ER40	63	25	M50 x 1.5	827007

ER Collet Wrenches







Type	A (mm)	L (mm)	Code
ER16M	22.5	110	827008
ER16	42.0	140	827009
ER20M	29.0	120	827010

Type	A (mm)	L (mm)	Code
ER20	60.0	135	827011
ER25M	36.0	150	827012
ER25	75.0	250	827013

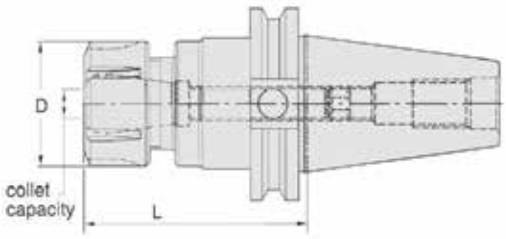
Type	A (mm)	L (mm)	Code
ER32	75.0	250	827014
ER40	90.0	290	827015

ER Collet Chucks & Accessories

ER Collet Chucks – CAT40 & CAT50



- Constructed of high quality alloy steel - SAE8620/20MnCR5
- Taper to taper runout: <0.0002”
- Coolant through spindle
- CAT40 balanced G2.5@20,000 RPM
- CAT50 balanced G6.3@15,000 RPM
- Balanced tools supplied with QA certificates
- Supplied with depth set screws
- Supplied with high torque hard coat power nuts
- Taper shank ground to AT3 accuracy or better
- DIN AD+B flange coolant



NOTE: Collet wrench sold separately

Collet Series	Collet Cap Min-Max (Inch)	Nut	D (Inch)	L (Inch)	Locknut Reference	Wrench Reference	Stop Screw Reference	CAT40		CAT50	
								Weight (lbs)	Code	Weight (lbs)	Code
ER11	0.02-0.28	Hex	0.79	2.50	301731	301731	301790	2.0	300681	–	–
ER11	0.02-0.28	Hex	0.79	4.00	301731	301731	301790	2.2	300682	–	–
ER11	0.02-0.28	Hex	0.79	6.00	301731	301731	301790	2.4	300683	–	–
ER16	0.02-0.41	Hex	1.10	2.50	312182	312174	312184	2.4	310965	–	–
ER16	0.02-0.41	Hex	1.10	4.00	312182	312174	312184	3.2	310966	7.3	312054
ER16	0.02-0.41	Hex	1.10	5.00	312182	312174	312184	3.2	310967	–	–
ER16	0.02-0.41	Hex	1.10	6.00	312182	312174	312184	–	–	7.9	312055
ER16	0.02-0.41	Hex	1.10	8.00	312182	312174	312184	3.6	300685	8.5	300691
ER16	0.02-0.41	Hex	1.10	12.00	312182	312174	312184	–	–	9.5	300690
ER20	0.02-0.50	Hex	1.34	2.50	312183	312175	312185	2.4	310968	–	–
ER20	0.02-0.50	Hex	1.34	4.00	312183	312175	312185	3.5	310969	7.4	312056
ER20	0.02-0.50	Hex	1.34	6.00	312183	312175	312185	3.7	310970	8.1	312057
ER20	0.02-0.50	Hex	1.34	8.00	312183	312175	312185	4.1	300686	8.8	300692
ER25	0.04-0.63	Round	1.65	2.50	312179	312171	312186	2.6	310971	–	–
ER25	0.04-0.63	Round	1.65	4.00	312179	312171	312186	4.5	310972	7.8	312058
ER25	0.04-0.63	Round	1.65	6.00	312179	312171	312186	4.4	310973	8.8	312059
ER25	0.04-0.63	Round	1.65	8.00	312179	312171	312186	4.7	300687	9.5	300693
ER32	0.04-0.81	Round	1.97	2.75	312180	312172	312187	2.6	310974	–	–
ER32	0.04-0.81	Round	1.97	4.00	312180	312172	312187	6.8	310975	8.1	312060
ER32	0.04-0.81	Round	1.97	6.00	312180	312172	312187	4.4	310976	9.5	312061
ER32	0.04-0.81	Round	1.97	8.00	312180	312172	312187	5.0	300688	10.1	300695
ER32	0.04-0.81	Round	1.97	12.00	312180	312172	312187	–	–	10.9	300694
ER40	0.12-1.00	Round	2.48	3.00	312181	312173	312188	3.0	310977	–	–
ER40	0.12-1.00	Round	2.48	4.00	312181	312173	312188	–	–	8.9	312062
ER40	0.12-1.00	Round	2.48	6.00	312181	312173	312188	3.0	310978	11.8	312063
ER40	0.12-1.00	Round	2.48	8.00	312181	312173	312188	5.2	300689	12.5	300696

Spare Wrenches & Nuts for ER Collet Chucks



ER Style 1



ER “Hook” Style 2



ER “U” Style 3

Nut Size	Hex		Round		
	Hex Nut	Wrench (Style 1)	Round Nut	Wrench Hook Style (Style 2)	Wrench U-Style (Style 3)
	Code	Code	Code	Code	Code
ER11	301731	301790	–	–	–
ER16	312182	312174	301725	–	301705
ER20	312183	312175	301726	–	301706
ER25	–	–	301727	301707	312171
ER32	301732	312176	301728	301708	312172
ER40	–	–	301729	301709	312173

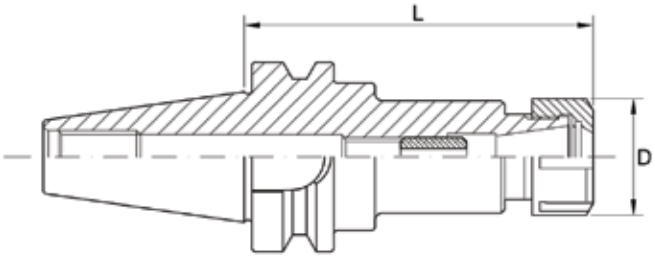
ER Collet Chucks & Accessories

ER Collet Chucks – BT40 & BT50



BT30 ER COLLET CHUCKS ALSO AVAILABLE

- Taper to taper runout: <0.0002”
- Coolant through spindle
- Balanced G6.3@15,000 RPM
- Taper shank ground to AT3 accuracy or better
- BT30 draw bar threads: M12 x 1.75
- BT40 draw bar threads: M16 x 2
- BT50 draw bar threads: M24 x 3



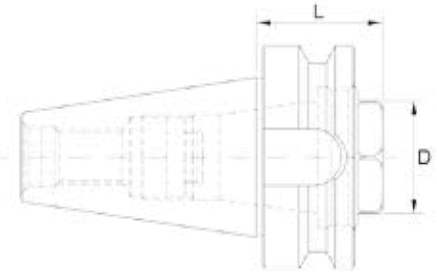
NOTE: Collet wrench sold separately

Collet Series	Collet Cap Min-Max (Inch)	Nut	D (Inch)	L (Inch)	Locknut Reference	Wrench Reference	Stop Screw Reference	BT40		BT50	
								Weight (lbs)	Code	Weight (lbs)	Code
ER16	1/64 – 25/64	Hex	1.102	3.937	312182	312174	301752	–	–	7.05	310912
ER16	1/64 – 25/64	Hex	1.102	4.724	312182	312174	301752	3.53	310877	–	–
ER16	1/64 – 25/64	Hex	1.102	5.906	312182	312174	301752	–	–	7.94	310913
ER20	1/64 – 33/64	Hex	1.338	3.937	312183	312175	301753	3.50	300731	–	–
ER25	3/64 – 5/8	Round	1.654	2.756	312179	301707	301754	2.87	310878	–	–
ER25	3/64 – 5/8	Round	1.654	4.724	312179	301707	301754	3.53	310879	–	–
ER32	5/64 – 25/32	Round	1.969	2.756	312180	301708	301704	3.09	310880	7.50	310914
ER32	5/64 – 25/32	Round	1.969	4.724	312180	301708	301704	3.75	310881	–	–
ER40	1/8 – 1-1/32	Round	2.480	3.150	312181	301709	301749	3.31	310882	7.94	310915
ER40	1/8 – 1-1/32	Round	2.480	4.724	312181	301709	301749	3.97	310883	–	–

ER Stub Collet Chucks – BT40

- Taper to taper runout: <0.0002”
- Coolant through spindle
- Balanced G6.3@15,000 RPM
- Taper shank ground to AT3 accuracy or better
- BT40 draw bar threads: M16 x 2





NOTE: Collet wrench sold separately

Collet Series	Collet Cap Min-Max (Inch)	Nut	D (Inch)	L (Inch)	Locknut Reference	Wrench Reference	Stop Screw Reference	BT40	
								Weight (lbs)	Code
ER32	0 – 25/32	Hex	1.417	1.378	312177	312176	301752	1.65	310893

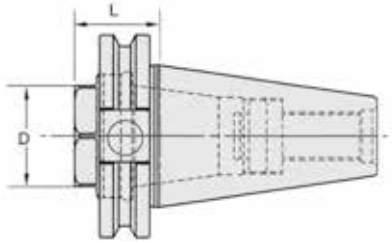
ER Collet Chucks & Accessories

ER Stub Collet Chucks – CAT40 & CAT50



- Taper to taper runout: <0.0002”
- Coolant through spindle
- Balanced G6.3@15,000 RPM
- Balanced tools supplied with QA certificates
- Supplied with depth set screws
- Supplied with high torque hard coat power nuts
- Taper shank ground to AT3 accuracy or better
- DIN AD+B flange coolant

NOTE: Collet wrench sold separately



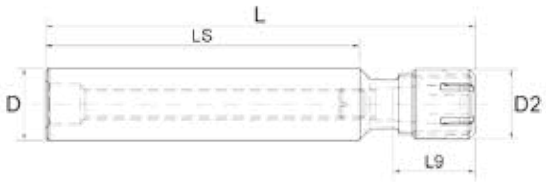
Collet Series	Collet Cap Min-Max (Inch)	Nut	D (Inch)	L (Inch)	Locknut Reference	Wrench Reference	Stop Screw Reference	CAT40		CAT50	
								Weight (lbs)	Code	Weight (lbs)	Code
ER32	0.08-0.81	Hex	1.41	1.69	312177	312176	312187	1.7	310988	6.3	312073

ER Straight Shank Collet Chucks



- Shank to taper runout: 0.0002”
- Coolant stop screw included

NOTE: Collet wrench sold separately



Collet Series	Collet Cap Min-Max (Inch)	D (Inch)	D2 (Inch)	L (Inch)	LS (Inch)	L9 (Inch)	Weight (lbs)	Locknut Type	Locknut Reference	Wrench Reference	Code
ER11	0.020-0.276	1/2	0.63	7.00	5.51	1.27	0.40	*Round Slim	301724	301746	312128
ER16	0.020-0.406	3/4	0.87	7.00	5.51	1.24	0.90	*Round Slim	301725	301747	312130
ER20	0.020-0.512	1	1.38	7.00	5.51	1.42	1.60	Hex	312183	312175	312133
ER25	0.040-0.630	1	1.65	7.50	5.69	1.57	1.70	Round	312179	301707	312134
ER32	0.040-0.810	3/4	1.97	6.00	4.65	1.34	1.10	Round	312180	301708	312131
ER32	0.040-0.810	1	1.97	7.50	5.69	1.93	1.83	Round	312180	301708	312135
ER32	0.040-0.810	1-1/4	1.97	4.50	2.75	1.72	1.60	Round	312180	301708	312139
ER32	0.040-0.810	1-1/4	1.97	6.00	3.10	1.72	2.10	Round	312180	301708	312140
ER40	0.120-1.000	1	2.47	4.50	2.38	2.17	2.30	Round	312181	301709	312136
ER40	0.120-1.000	1	2.47	7.00	4.87	1.77	2.70	Round	312181	301709	312137
ER40	0.120-1.000	1-1/4	2.47	4.50	2.38	2.17	1.90	Round	312181	301709	312141
ER40	0.120-1.000	1-1/4	2.47	6.50	4.87	2.17	3.10	Round	312181	301709	312142

**Round slim nut for close center work*

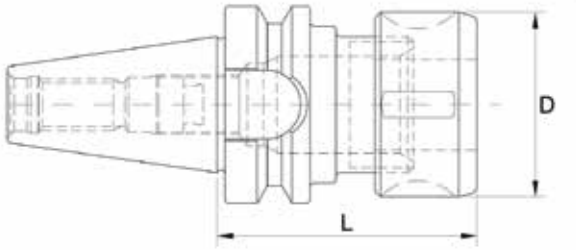
DA Collet Chucks & Accessories

DA Collet Chucks – CAT40 & CAT50



- Taper to taper runout: <0.0002”
- Coolant through spindle
- Balanced G6.3@15,000 RPM
- Taper shank ground to AT3 accura or better
- CAT40 draw bar threads: 5/8”-11
- CAT50 draw bar threads: 1”-8

NOTE: Collet wrench sold separatel



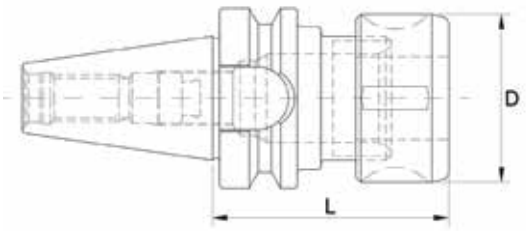
Collet Series	Collet Cap Min-Max (Inch)	D (Inch)	L (Inch)	Locknut Reference	Wrench Reference	Stop Screw Reference	CAT40		CAT50	
							Weight (lbs)	Code	Weight (lbs)	Code
DA200	1/64 – 25/64	1.15	3.00	301721	300612	301752	2.41	310937	–	–
DA200	1/64 – 25/64	1.15	5.00	301721	300612	301752	3.05	310938	–	–
DA180	1/64 – 3/4	1.73	3.00	301716	300613	301748	2.42	310935	7.03	312026
DA180	1/64 – 3/4	1.73	6.00	301716	300613	301748	3.60	310936	8.21	312027

DA Collet Chucks – BT40



- Taper to taper runout: <0.0002”
- Coolant through spindle
- Balanced G6.3@15,000 RPM
- Taper shank ground to AT3 accuracy or better
- BT40 draw bar threads: M16 x 2

NOTE: Collet wrench sold separately



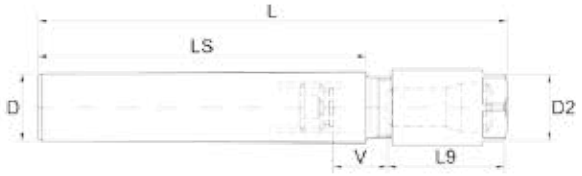
Collet Series	Collet Cap Min-Max (Inch)	D (Inch)	L (Inch)	Locknut Reference	Wrench Reference	Stop Screw Reference	BT40	
							Weight (lbs)	Code
DA180	3/32 – 25/32	1.693	2.756	301719	301707	301748	2.65	310860
DA180	3/32 – 25/32	1.693	3.937	301719	301707	301748	3.09	310861

DA Straight Shank Collet Chucks

- Shank to taper runout: 0.0004”
- Coolant stop screw included

NOTE: Collet wrench sold separately





Collet Series	Collet Cap Min-Max (Inch)	D (Inch)	D2 (Inch)	L (Inch)	LS (Inch)	L9 (Inch)	V (Inch)	Weight (lbs)	Locknut Reference	Wrench Reference	Code
DA300	1/64 – 1/4	1/2	0.56	6.81	5.42	1.50	2.75	0.37	301722	301736	312127
DA200	1/64 – 25/64	3/4	0.84	7.12	5.50	1.56	3.19	0.89	301720	301737	312129
DA100	1/64 –9/16	1	1.06	7.31	5.40	1.94	4.68	1.62	301715	301738	312132
DA180	1/64 – 3/4	1-1/4	1.44	7.38	5.41	1.88	4.74	2.56	301718	301739	312138

Spare Wrenches & Nuts for DA Collet Chucks



DA Style 1

Nut Size	Hex		Round
	Hex Nut Code	Wrench Size (Inch)	Wrench (Style 1) Code
DA180	301716	1-1/4	300613
DA200	301721	1	300612

Full Grip Collet Chucks

OZ25 & OZ32







Sets include: chuck, wrench, collets (10 with OZ25, 15 with OZ32) and supplied in storage case

Chuck Size	Capacity	Taper Shanks	Collets for Cylindrical Shanks		Collets for Threaded End Mills
			Inch	Metric (mm)	
OZ25	1/8 – 1	ISA 30, 40, 50 MT 3, 4, R8	1/8, 3/16, 1/4, 5/16 3/8, 1/2, 5/8, 3/4, 7/8, 1	2-25 x 1	1/4, 3/8, 1/2, 5/8, 3/4
OZ32	1/4 – 1-1/4	ISA 40, 50	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	6-32 x 1	1/4, 3/8, 1/2, 5/8, 3/4, 1

Shank	OZ25		OZ32	
	Chuck Only	Sets	Chuck Only	Sets
	Code	Code	Code	Code
ISA30	215010	215110	–	–
ISA40	215011	215111	215411	215421
ISA50	215012	215112	215412	215422
MT3	215013	215113	–	–
MT4	215014	215114	–	–
R8	215019	215119	–	–
Wrench	215320	–	–	–

Full Grip Collets

For Cylindrical Shanks – Inch & Metric



a Collet Size	
OZ25	1.36”/34.5 mm
OZ32	1.71”/43.4 mm

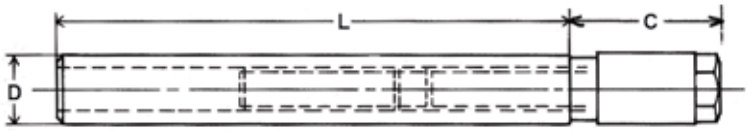
OZ25		OZ32	
Diameter (Inch)	Code	Diameter (Inch)	Code
1/8	215201	–	–
3/16	215202	–	–
1/4	215203	1/4	215503
5/16	215204	5/16	215504
3/8	215205	3/8	215505
7/16	215206	7/16	215506
1/2	215207	1/2	215507
9/16	215208	9/16	215508

OZ25		OZ32	
Diameter (Inch)	Code	Diameter (Inch)	Code
5/8	215209	5/8	215509
11/16	215210	11/16	215510
3/4	215211	3/4	215511
13/16	215212	13/16	215512
7/8	215213	7/8	215513
15/16	215214	15/16	215514
1	215215	1	215515
–	–	1-1/8	215516
–	–	1-1/4	215517

Double Angle Collet Extensions

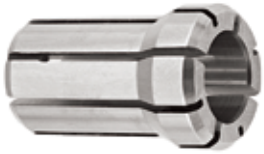
Collets & Nuts

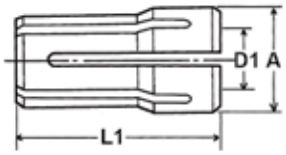




Collet Style	Range (Inch)	D (Inch)	L (Inch)	C (Inch)	Extension Code	Nut Code
300 DA	0.031 – 0.250	1/2	5-1/2	1-5/16	304001	304011
200 DA	0.047 – 0.375	3/4	5-1/2	1-5/8	304002	304012
100 DA	0.047 – 0.562	1	5-1/2	1-13/16	304003	304013
180 DA	0.047 – 0.750	1-1/4	5-1/2	1-13/16	304004	304014

Double Angle Collets

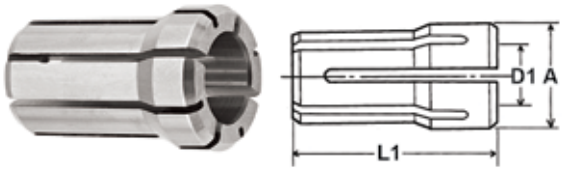




D1 (Inch)	300DA L1 = 1.000" A Max. Diameter = 0.375" Code	200DA L1 = 1.188" A Max. Diameter = 0.531" Code	100DA L1 = 1.438" A Max. Diameter = 0.769" Code	180DA L1 = 1.625" A Max. Diameter = 1.035" Code
1/32	826622	–	–	–
3/64	826623	826637	826659	826693
1/16	826624	826638	826660	826694
5/64	826625	826639	826661	826695
3/32	826626	826640	826662	826696
7/64	826627	826641	826663	826697
1/8	826628	826642	826664	826698
9/64	826629	826643	826665	826699
5/32	826630	826644	826666	826700
11/64	826631	826645	826667	826701
3/16	826632	826646	826668	826702
13/64	826633	826647	826669	826703
7/32	826634	826648	826670	826704
15/64	826635	826649	826671	826705
1/4	826636	826650	826672	826706
17/64	–	826651	826673	826707
9/32	–	826652	826674	826708
19/64	–	826653	826675	826709
5/16	–	826654	826676	826710
21/64	–	826655	826677	826711
11/32	–	826656	826678	826712
23/64	–	826657	826679	826713
3/8	–	826658	826680	826714
25/64	–	–	826681	826715
13/32	–	–	826682	826716
27/64	–	–	826683	826717
7/16	–	–	826684	826718
29/64	–	–	826685	826719
15/32	–	–	826686	826720
31/64	–	–	826687	826721
1/2	–	–	826688	826722
33/64	–	–	826689	826723
17/32	–	–	826690	826724
35/64	–	–	826691	826725

Double Angle Collets

(continued)



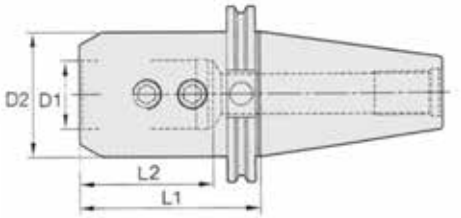
D1 (Inch)	300DA L1 = 1.000" A Max. Diameter = 0.375"	200DA L1 = 1.188" A Max. Diameter = 0.531"	100DA L1 = 1.438" A Max. Diameter = 0.769"	180DA L1 = 1.625" A Max. Diameter = 1.035"
	Code	Code	Code	Code
9/16	–	–	826692	826726
37/64	–	–	–	826727
19/32	–	–	–	826728
39/64	–	–	–	826729
5/8	–	–	–	826730
41/64	–	–	–	826731
21/32	–	–	–	826732
43/64	–	–	–	826733
11/16	–	–	–	826734
45/64	–	–	–	826735
23/32	–	–	–	826736
47/64	–	–	–	826737
3/4	–	–	–	826738

End Mill Holders

CAT40 & CAT50



- Taper to bore runout: <0.0002”
- H5 bore tolerance
- Coolant through spindle
- CAT40 balanced G2.5@20,000 RPM
- CAT50 balanced G6.3@15,000 RPM
- Balanced tools supplied with QA certificates
- Taper shank ground to AT3 accuracy or better
- DIN AD+B flange coolant



D1 (Inch)	D2 (Inch)	L1 Gage Length (Inch)	Clamping Screw Reference	No. of Clamp Screws	Wrench Size (Allen Key)	CAT40			CAT50		
						L2 (Inch)	Weight (lbs)	Code	L2 (Inch)	Weight (lbs)	Code
1/8	0.69	1.38	312143	1	3/32	2.89	1.79	312010	–	–	–
1/8	0.69	4.50	312143	1	3/32	6.01	2.41	310940	–	–	–
3/16	0.69	1.38	312143	1	3/32	2.89	1.79	312011	–	–	–
3/16	0.69	2.50	312143	1	3/32	4.01	2.22	310941	4.69	6.55	312029
3/16	0.69	4.50	312143	1	3/32	6.01	2.41	310942	6.69	6.84	312030
3/16	0.69	6.00	312143	1	3/32	7.50	3.00	300698	–	–	–
1/4	0.78	1.38	312144	1	1/8	2.89	1.82	312012	–	–	–
1/4	0.78	2.50	312144	1	1/8	–	–	–	4.69	6.55	312031
1/4	1.00	2.50	312144	1	1/8	4.01	2.35	310943	–	–	–
1/4	0.78	4.50	312144	1	1/8	6.01	2.51	310944	6.69	7.17	312032
1/4	0.78	6.00	312144	1	1/8	7.50	3.10	300699	8.25	8.80	300708
1/4	0.78	8.00	312144	1	1/8	8.00	3.80	301769	–	–	–
5/16	1.00	1.38	312145	1	5/32	2.89	1.85	312013	–	–	–
5/16	1.00	4.50	312145	1	5/32	6.01	2.76	310945	6.69	7.15	312033
5/16	1.00	6.00	312145	1	5/32	7.50	3.20	300700	–	–	–
3/8	1.00	1.38	312146	1	3/8	2.89	1.85	312014	–	–	–
3/8	1.00	2.50	312146	1	3/16	4.01	2.32	310946	4.69	6.63	312034
3/8	1.00	4.50	312146	1	3/16	6.01	2.69	310947	6.69	7.07	312035
3/8	1.00	6.50	312146	1	3/16	8.01	3.17	310948	8.69	7.45	312036
3/8	1.00	8.00	312146	1	3/16	8.01	3.90	300701	10.25	9.00	300709
7/16	1.25	1.75	312147	1	7/32	3.26	2.00	312015	–	–	–
7/16	1.25	4.50	312147	1	7/32	6.01	3.04	310949	4.69	6.78	312037
1/2	1.75	1.75	312147	1	7/32	3.26	2.27	312016	–	–	–
1/2	1.38	2.62	312147	1	7/32	4.13	2.52	310950	4.81	6.82	312038
1/2	1.38	4.62	312147	1	7/32	–	–	–	6.81	7.52	312039
1/2	1.38	6.62	312147	1	7/32	–	–	–	8.81	8.21	312040
1/2	1.38	8.00	312147	1	7/32	–	–	–	10.25	9.30	300710
1/2	1.25	4.62	312147	1	7/32	6.13	3.05	310951	–	–	–
1/2	1.25	6.62	312147	1	7/32	8.13	3.83	310952	–	–	–
1/2	1.25	8.00	312147	1	7/32	8.13	4.30	300702	–	–	–
5/8	1.75	1.75	312149	1	1/4	3.56	2.19	312017	–	–	–
5/8	1.50	3.75	312149	1	1/4	3.56	2.96	310953	–	–	–
5/8	1.63	3.75	312149	1	1/4	–	–	–	5.94	7.53	312041
5/8	1.63	5.75	312149	1	1/4	3.56	4.21	310954	7.94	8.63	312042
5/8	1.63	8.00	312149	1	1/4	3.56	5.00	300703	–	–	–
3/4	1.75	1.75	312150	1	5/16	2.40	2.09	312018	–	–	–
3/4	1.75	3.75	312150	1	5/16	3.94	3.21	310955	5.94	7.65	312043
3/4	1.75	5.75	312150	1	5/16	3.94	4.44	310956	7.94	8.67	312044
3/4	1.75	8.00	312150	1	5/16	3.94	5.20	300704	7.94	10.00	300711
7/8	1.88	1.75	312150	1	5/16	2.27	2.31	312019	–	–	–
7/8	2.00	4.00	312150	1	5/16	4.19	3.65	310957	4.19	8.00	312045
7/8	1.88	6.00	312150	1	5/16	4.19	4.86	310958	–	–	–
7/8	2.00	6.00	312150	1	5/16	–	–	–	4.31	9.44	312046

End Mill Holders

CAT40 & CAT50 *(continued)*

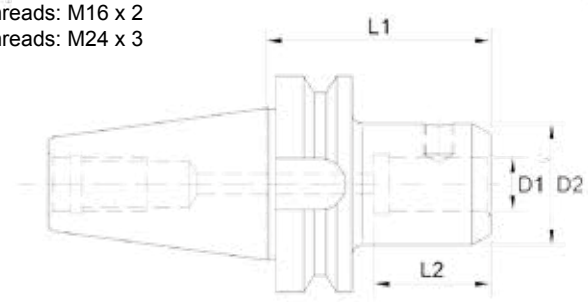
D1 (Inch)	D2 (Inch)	L1 Gage Length (Inch)	Clamping Screw Reference	No. of Clamp Screws	Wrench Size (Allen Key)	CAT40			CAT50		
						L2 (Inch)	Weight (lbs)	Code	L2 (Inch)	Weight (lbs)	Code
1	1.75	1.75	312151	2	3/8	2.64	1.78	312020	–	–	–
1	2.00	4.00	312153	2	3/8	4.43	3.39	310959	4.43	7.95	312047
1	2.00	6.00	312153	2	3/8	4.43	5.04	310960	4.43	9.39	312048
1	2.00	8.00	312153	2	3/8	4.43	6.10	300705	4.43	11.10	300712
1-1/4	2.25	2.00	312152	2	3/8	2.35	2.25	312021	–	–	–
1-1/4	2.50	4.25	312154	2	3/8	2.39	4.96	310961	2.39	8.98	312049
1-1/4	2.50	6.25	312154	2	3/8	2.39	7.47	310962	2.39	11.42	312050
1-1/4	2.50	8.00	312154	2	3/8	3.54	8.90	300706	3.35	13.00	300713
1-1/2	2.75	4.62	312155	2	3/8	2.82	5.80	310963	2.82	9.19	312051
1-1/2	2.75	6.62	312155	2	3/8	2.82	8.76	310964	2.82	12.21	312052
1-1/2	2.75	8.00	300707	2	3/8	3.15	10.50	300707	7.20	13.00	300714
2	3.94	5.62	312155	2	1/2	–	–	–	4.86	17.70	312053
2	3.94	8.00	312155	2	1/2	–	–	–	7.24	19.00	300715

BT40 & BT50

BT30 END MILL HOLDERS ALSO AVAILABLE

- Taper to bore runout: <0.0002”
- H5 bore tolerance
- Coolant through spindle
- Balanced G6.3@15,000 RPM
- Taper shank ground to AT3 accuracy or better
- BT40 draw bar threads: M16 x 2
- BT50 draw bar threads: M24 x 3





D1 (Inch)	D2 (Inch)	L1 Gage Length (Inch)	Clamping Screw Reference	No. of Clamp Screws	Wrench Size (Allen Key)	BT40			BT50		
						L2 (Inch)	Weight (lbs)	Code	L2 (Inch)	Weight (lbs)	Code
1/4	1.00	2.55	312144	1	1/8	3.93	2.36	310863	–	–	–
5/16	1.00	2.55	312145	1	5/32	3.93	2.36	310864	–	–	–
3/8	1.00	2.55	312146	1	3/16	3.93	2.51	310865	–	–	–
1/2	1.38	2.55	312147	1	7/32	3.93	2.51	310866	5.16	8.14	310904
1/2	1.38	4.00	312147	1	7/32	5.38	3.02	310867	–	–	–
5/8	1.63	2.55	301755	1	1/4	2.09	2.69	310868	–	–	–
3/4	1.68	1.50	301756	1	5/16	2.22	2.09	310869	–	–	–
3/4	1.75	2.36	301756	1	5/16	2.22	2.50	310870	–	–	–
3/4	1.75	2.55	312150	1	5/16	2.22	2.73	310871	–	–	–
3/4	1.75	2.95	312150	1	5/16	–	–	–	5.16	8.36	310905
7/8	2.00	3.35	312150	1	5/16	2.22	3.57	310872	–	–	–
1	2.00	1.63	312153	2	3/8	2.46	2.01	310873	–	–	–
1	2.00	3.74	301757	2	3/8	2.56	3.75	310874	–	–	–
1	2.00	4.13	301758	2	3/8	–	–	–	2.56	9.30	310906
1	2.00	5.00	301757	2	3/8	4.49	4.54	310875	–	–	–
1	2.00	6.00	301758	2	3/8	–	–	–	4.30	10.54	310907
1-1/4	2.40	3.35	301758	2	3/8	2.51	3.95	310876	–	–	–
1-1/4	2.50	4.13	301758	2	3/8	–	–	–	2.51	10.23	310908
1-1/4	2.50	6.00	301758	2	3/8	–	–	–	2.51	12.54	310909
1-1/2	2.75	4.13	301759	2	3/8	–	–	–	2.93	10.41	310910
2	3.75	5.31	301760	2	1/2	–	–	–	3.53	16.00	310911

End Mill Holders

- Produced according to AT3 specifications and made of alloy forged steel for long, durable service life
- Hardened to 56-60 HRC and ground to ensure maximum accuracy
- End mill socket total indicator runout <0.0004”

R8, ISA (NMTB) 30, 40, 50 Shanks



Draw Bar Threads
- ISA30 1/2”-13 UNC
- ISA40 5/8”-11 UNC
- ISA50 1”-8 UNC

R8 DRAW BAR THREAD
- 7/16”-20 UNF



Hole Diameter (Inch)	Set Screw Thread Reference	Set Screw Code Reference	ISA30	ISA40	ISA50	R8
			Code	Code	Code	Code
3/16	1/4-28 x 5/16	827105	827016	827024	827034	827044
1/4	1/4-28 x 1/4	827106	827017	827025	–	–
3/8	3/8-24 x 25/64	827107	827018	827026	827035	827045
1/2	7/16-20 x 15/32	827108	827019	827027	827036	827046
5/8	9/16-18 x 15/32	827109	827020	827028	827037	827047
3/4	5/8-18 x 33/64	827110	827021	827029	827038	827048
7/8	5/8-18 x 33/64	827110	827022	827030	827039	827049
1	3/4-16 x 19/32	827112	827023	827031	827040	827050
1-1/4	3/4-16 x 5/8	827113	–	827032	827041	827051
1-1/2	3/4-16 x 45/64	827114	–	827033	827042	827052
2	1-14 x 15/16	827118	–	–	827043	–

Morse Taper Shanks – Style A Tanged & Style B Threaded



Draw Bar Threads
- MT2 3/8” – 16 UNC
- MT3 1/2” – 13 UNC
- MT4 5/8” – 11 UNC
- MT5 1” – 8 UNC



NOTE: 5/8” holders with MT2 shank are for single end mills only

Shank	Hole Diameter (Inch)	Set Screw Thread Reference	Set Screw Code Reference	Style A Tanged	Style B Threaded
				Code	Code
MT2	3/16	1/4-28 x 5/16	827105	827053	827079
MT2	1/4	1/4-28 x 1/4	827106	–	827080
MT2	3/8	3/8-24 x 25/64	827107	827055	827081
MT2	1/2	7/16-20 x 15/32	827108	827056	827082
MT2	5/8	9/16-18 x 15/32	827109	827057	827083
MT3	3/16	1/4-28 x 5/16	827105	827058	827084
MT3	1/4	1/4-28 x 1/4	827106	827059	827085
MT3	3/8	3/8-24 x 25/64	827107	827060	827086
MT3	1/2	7/16-20 x 15/32	827108	827061	827087
MT3	5/8	9/16-18 x 15/32	827109	827062	827088
MT3	3/4	5/8-18 x 33/64	827110	827063	827089
MT4	3/8	3/8-24 x 25/64	827105	827064	827090
MT4	1/2	7/16-20 x 15/32	827107	827065	827091
MT4	5/8	9/16-18 x 15/32	827108	827066	827092

Shank	Hole Diameter (Inch)	Set Screw Thread Reference	Set Screw Code Reference	Style A Tanged	Style B Threaded
				Code	Code
MT4	3/4	5/8-18 x 33/64	827110	827067	827093
MT4	7/8	5/8-18 x 33/64	827110	827068	827094
MT4	1	3/4-16 x 19/32	827112	827069	827095
MT5	3/8	3/8-24 x 25/64	827105	827070	827096
MT5	1/2	7/16-20 x 15/32	827107	827071	–
MT5	5/8	9/16-18 x 15/32	827108	827072	827098
MT5	3/4	5/8-18 x 33/64	827110	827073	827099
MT5	7/8	5/8-18 x 33/64	827110	827074	827100
MT5	1	3/4-16 x 19/32	827112	827075	827101
MT5	1-1/4	3/4-16 x 5/8	827113	827076	827102
MT5	1-1/2	3/4-16 x 45/64	827114	827077	827103
MT5	2	1-14 x 15/16	827118	827078	827104

Set Screws



NOTE: Holders 7/8” diameter and above furnished with 2 set screws

Thread	Code
1/4-28 x 5/16	827105
1/4-28 x 1/4	827106
3/8-24 x 25/64	827107
7/16-20 x 15/32	827108

Thread	Code
9/16-18 x 15/32	827109
5/8-18 x 33/64	827110

Thread	Code
3/4-16 x 19/32	827112
3/4-16 x 5/8	827113

Thread	Code
3/4-16 x 45/64	827114
3/4-16 x 1-3/16	827115

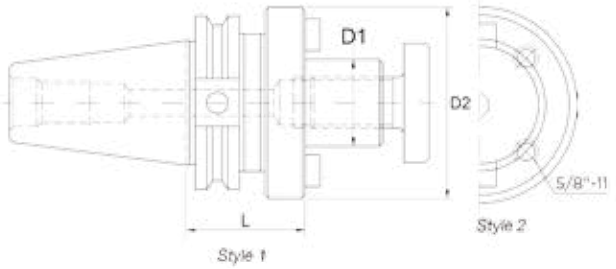
Thread	Code
3/4-16 x 1-1/4	827116
3/4-16 x 1-13/32	827117
1-14 x 15/16	827118

Shell Mill Adapters

- Taper to pilot runout: <0.0002”
- Taper shank ground to AT3 accuracy or better
- H6 pilot tolerance
- AD+B coolant through spindle and flange
- Balanced by design
- Provided with a non-coolant arbor screw (coolant arbor screws sold separately)

CAT40 & CAT50





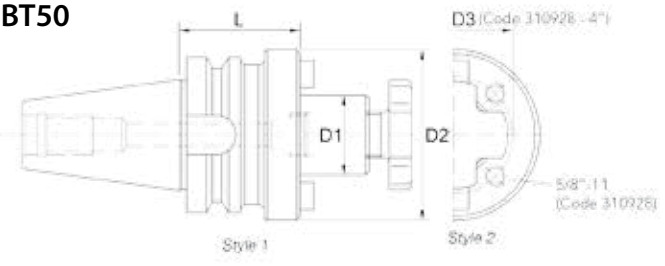
- CAT40 draw bar threads: 5/8”-11
- CAT50 draw bar threads: 1”-8

D1 (Inch)	D2 (Inch)	L (Inch)	Clamp Screw Reference	Wrench Size (Allen Key)	Drive Key Size (Inch)	CAT40		CAT50	
						Weight (lbs)	Code	Weight (lbs)	Code
1/2	1.75	1.38	301761	3/16	1/4	2.27	310989	–	–
1/2	2.75	1.38	301761	3/16	1/4	–	–	6.82	312074
1/2	1.44	3.50	301761	3/16	1/4	–	–	7.54	312075
3/4	2.75	1.38	301741	1/4	5/16	–	–	6.88	312076
3/4	1.75	1.38	301741	1/4	5/16	2.21	310990	–	–
3/4	1.75	3.50	301741	1/4	5/16	3.80	310991	8.34	312077
3/4	1.75	6.00	301741	1/4	5/16	–	–	9.70	312078
1	2.19	2.06	301742	5/16	3/8	3.10	310992	7.37	312079
1	2.19	4.00	301742	5/16	3/8	4.30	310993	–	–
1	2.40	4.00	301742	5/16	3/8	–	–	9.97	312080
1	2.40	6.00	301742	5/16	3/8	–	–	12.46	312081
1-1/4	2.75	2.12	301743	5/16	1/2	4.00	310994	7.18	312082
1-1/4	2.75	4.00	301743	5/16	1/2	5.00	310995	10.31	312083
1-1/4	2.75	6.00	301743	5/16	1/2	–	–	11.35	312084
1-1/2	3.38	2.41	301762	3/8	5/8	5.01	310996	9.71	312085
1-1/2	3.38	4.00	301762	3/8	5/8	5.01	310997	12.27	312086
1-1/2	3.38	6.00	301762	3/8	5/8	–	–	13.40	312087
2	4.37	2.40	301763	3/8	3/4	–	–	12.50	301770
2-1/2	4.88	2.40	–	–	1	–	–	19.00	* 301771

**Non-coolant through*

BT40 & BT50





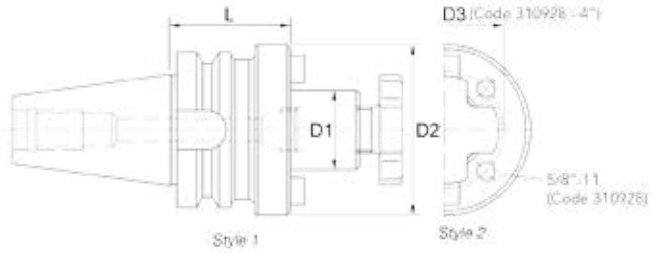
- BT40 draw bar threads: M16 x 2
- BT50 draw bar threads: M24 x 3

D1 (Inch)	D2 (Inch)	L (Inch)	Clamp Screw Reference	Wrench Size (Allen Key)	Drive Key Size (Inch)	BT40		BT50	
						Weight (lbs)	Code	Weight (lbs)	Code
1/2	1.44	1.77	301761	3/16	1/4	2.47	310894	–	–
3/4	1.75	1.77	301741	1/4	5/16	2.90	310895	8.08	310920
3/4	1.75	4.00	301741	1/4	5/16	–	–	9.56	310921
1	2.19	1.77	301742	5/16	3/8	3.04	310896	8.30	310922
1	2.40	4.00	301742	5/16	3/8	–	–	11.06	310923
1-1/4	2.88	2.36	301743	5/16	1/2	4.82	310897	–	–

Shell Mill Adapters

BT40 & BT50 *(continued)*





- BT40 draw bar threads: M16 x 2
- BT50 draw bar threads: M24 x 3

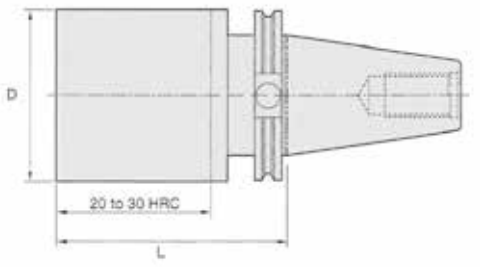
D1 (Inch)	D2 (Inch)	L (Inch)	Clamp Screw Reference	Wrench Size (Allen Key)	Drive Key Size (Inch)	BT40		BT50	
						Weight (lbs)	Code	Weight (lbs)	Code
1-1/4	2.88	4.00	301743	5/16	1/2	–	–	12.80	310924
1-1/2	3.81	1.77	301762	3/8	5/8	–	–	9.40	310925
1-1/2	3.82	2.36	301762	3/8	5/8	4.69	310898	–	–
1-1/2	3.81	4.00	301762	3/8	5/8	–	–	16.60	310926
2	4.13	2.36	301745	9/16	3/4	–	–	14.07	310927
2	4.88	4.00	301745	9/16	3/4	–	–	19.32	310928

Boring Bar Blanks

CAT V-Flange Shanks

- Constructed of high quality alloy steel - SAE8620/20MnCR5
- 58+/-2 HRC shank
- 20-30 HRC blank part
- Taper shank ground to AT3 accuracy or better





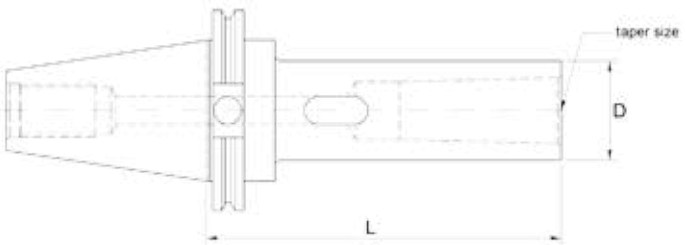
CAT40				CAT50			
D (Inch)	L (Inch)	Weight (lbs)	Code	D (Inch)	L (Inch)	Weight (lbs)	Code
4.00	12.00	39.89	310933	4.00	12.00	44.56	312023
4.00	6.00	18.55	310934	4.00	6.00	23.23	312024
–	–	–	–	6.00	6.00	43.50	312025

Morse Taper Adapters

- Coolant through spindle
- Taper shank ground to AT3 accuracy or better

CAT40 & CAT50



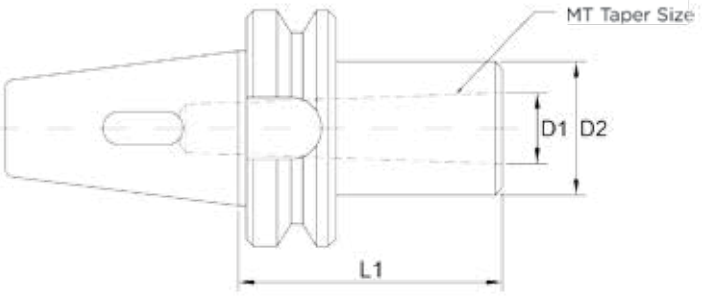


- MT - CAT Form A
- CAT40 draw bar threads: 5/8”-11
- CAT50 draw bar threads: 1”-8

Taper Size	CAT40				CAT50			
	D (Inch)	L (Inch)	Weight (lbs)	Code	D (Inch)	L (Inch)	Weight (lbs)	Code
MT1	0.98	1.75	2.21	310984	2.75	1.75	6.90	312068
MT2	1.26	2.44	2.30	310985	2.75	2.00	7.43	312069
MT3	1.57	3.00	2.49	310986	1.57	2.50	6.73	312070
MT4	1.89	3.88	2.86	310987	1.89	3.38	6.90	312071
MT5	–	–	–	–	2.75	3.75	7.55	312072

BT40 & BT50





- BT40 draw bar threads: M16 x 2
- BT50 draw bar threads: M24 x 3

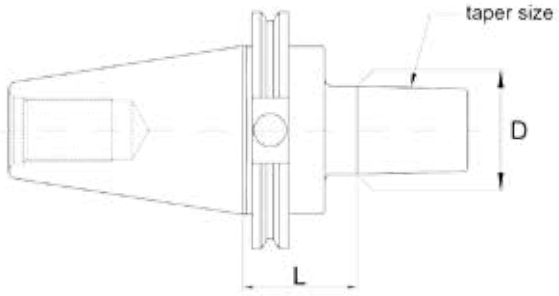
Taper Size	BT40					BT50				
	D1 (Inch)	D2 (Inch)	L1 (Inch)	Weight (lbs)	Code	D1 (Inch)	D2 (Inch)	L1 (Inch)	Weight (lbs)	Code
MT1	0.476	0.984	1.772	2.23	310889	0.476	0.984	1.772	3.97	310916
MT2	0.701	1.260	1.772	2.34	310890	–	–	–	–	–
MT3	0.937	1.575	2.953	2.49	310891	0.937	1.575	2.559	7.05	310917
MT4	1.232	1.890	3.740	2.93	310892	1.232	1.890	3.740	7.72	310918
MT5	–	–	–	–	–	1.748	2.756	4.134	9.92	310919

Jacobs Taper Adapters

- Designed to use with keyless Jacobs chucks
- Non-coolant through
- Taper shank ground to AT3 accuracy or better

CAT40 & CAT50



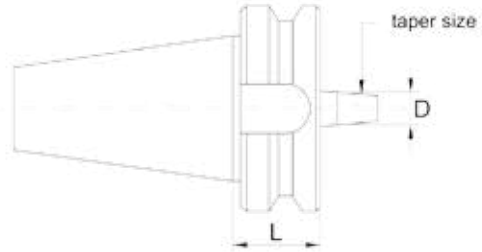


- CAT40 draw bar threads: 5/8”-11
- CAT50 draw bar threads: 1”-8

Taper Size	D (Inch)	L (Inch)	CAT40		CAT50	
			Weight (lbs)	Code	Weight (lbs)	Code
JT2	0.560	1.57	2.10	300719	2.65	300724
JT2	0.560	2.44	2.33	310979	2.93	312064
JT3	0.812	1.57	2.30	300720	2.90	300725
JT3	0.812	2.78	2.45	310980	3.06	312065
JT33	0.625	1.57	2.20	300721	2.81	300726
JT33	0.625	2.56	2.32	310981	2.96	312066
JT4	1.124	1.57	2.18	300722	6.45	300727
JT4	1.124	2.44	2.45	310982	–	–
JT4	1.124	3.25	–	–	6.97	312067
JT5	1.413	1.57	–	–	6.92	300728
JT5	1.413	3.25	–	–	7.25	300729
JT6	0.676	1.57	2.50	300723	6.95	300730
JT6	0.676	2.44	2.78	310983	–	–

BT40





- BT40 draw bar threads: M16 x 2
- BT50 draw bar threads: M24 x 3

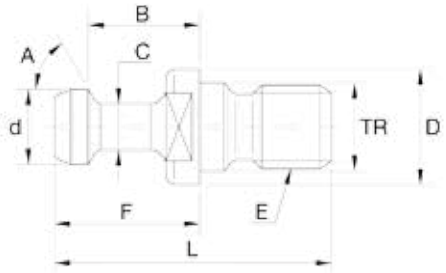
Taper Size	D (Inch)	L (Inch)	Weight (lbs)	Code
JT33	0.624	1.77	2.47	310885
JT2	0.559	2.44	5.14	310884

Taper Size	D (Inch)	L (Inch)	Weight (lbs)	Code
JT3	0.811	3.18	5.51	310886
JT4	1.124	1.18	5.62	310887
JT6	0.676	1.18	6.13	310888

Pull Studs

Retention Knobs – RK Style



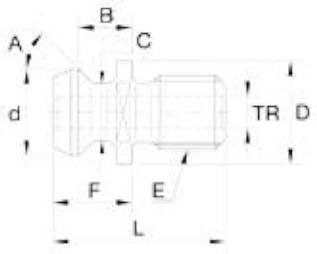


RK BT – MAS – 403

Taper Size	TR (Inch)	A	B (Inch)	C (Inch)	D (Inch)	d (Inch)	E	F (Inch)	L (Inch)	Code
40	0.669	45°	1.100	0.392	0.902	0.589	M16-2	1.376	2.362	312119
40	0.669	60°	1.100	0.392	0.902	0.589	M16-2	1.376	2.362	312120
40	0.669	90°	1.100	0.392	0.902	0.589	M16-2	1.376	2.362	312121
50	0.984	45°	1.376	0.667	1.492	0.904	M24-3	1.769	3.346	312123
50	0.984	60°	1.376	0.667	1.492	0.904	M24-3	1.769	3.346	312124
50	0.984	90°	1.376	0.667	1.492	0.904	M24-3	1.769	3.346	312125

RK CT – ANSI – With Pilot – Inch

Taper Size	TR (Inch)	Coolant Through Hole Dia. (Inch)	A	B (Inch)	C (Inch)	D (Inch)	d (Inch)	E	F (Inch)	L (Inch)	Code
40	0.636	–	45°	0.988	0.392	0.938	0.589	5/8”-11	1.264	2.250	301765
40	0.636	–	60°	0.988	0.392	0.938	0.589	5/8”-11	1.264	2.250	300891
40	0.636	–	90°	0.988	0.392	0.938	0.589	5/8”-11	1.264	2.250	312116
40	0.636	0.158	45°	0.988	0.392	0.938	0.589	5/8”-11	1.264	2.250	300892
50	1.026	–	45°	1.384	0.668	1.438	0.903	1”-8	1.778	3.355	301766
50	1.026	–	90°	1.384	0.668	1.438	0.903	1”-8	1.778	3.355	312118
50	1.026	0.315	45°	1.384	0.668	1.438	0.903	1”-8	1.778	3.355	300893



RK CT – ANSI – Inch

Taper Size	TR (Inch)	A	B (Inch)	C (Inch)	D (Inch)	d (Inch)	E	F (Inch)	L (Inch)	Code
40	0.281	45°	0.440	0.490	0.938	0.740	5/8”-11	0.640	1.500	312122
50	0.500	45°	0.700	0.820	1.400	1.140	1”-8	1.000	2.300	312126

Tightening Fixtures

Universal H/V CNC Tool Tightening Fixtures





Mount in vertical and horizontal positions

- Multiple usage on tool holder shank CAT, BT, NMTB and ISO
- Enables strong gripping power of tool holder
- Access both ends of tool holders simultaneously
- Provides maximum protection of tool holder
- Tools may be mounted in vertical and horizontal positions
- High quality compact and rigid design for mounting on work table or tool cart
- Body is constructed of strong, high quality aluminum alloy

Taper Size	Overall Height (Inch)	Overall Length (Inch)	Width (Inch)	Weight (lbs)	Code
30	4.84	7.09	3.23	3.8	310841
40	5.12	7.09	3.23	4.2	310842
50	7.24	9.84	4.72	8.4	310843

Shell Mill Arbors

ISA (NMTB) Shanks



- Made of alloy forged steel for long, durable service life
- Hardened to 56-60 HRC and ground to ensure maximum accuracy
- Shell end mill pilot total indicator runout <0.0004”

Draw Bar Threads:
- ISA30 1/2”-13 UNC
- ISA40 5/8”-11 UNC
- ISA50 1”-8 UNC

Shank	Arbor Diameter (Inch)	For Shell End Mills (Inch)	Weight (lbs)	Code
ISA30	1/2	1-1/4 – 1-1/2	0.82	827119
ISA30	3/4	1-3/4 – 2	0.95	827120
ISA30	1	2-1/4 – 2-3/4	1.26	827121
ISA30	1-1/4	3 – 3-1/2	1.32	827122
ISA40	1/2	1-1/4 – 1-1/2	1.85	827123
ISA40	3/4	1-3/4 – 2	1.96	827124
ISA40	1	2-1/4 – 2-3/4	2.25	827125
ISA40	1-1/4	3 – 3-1/2	2.45	827126

Shank	Arbor Diameter (Inch)	For Shell End Mills (Inch)	Weight (lbs)	Code
ISA40	1-1/2	4 – 5	2.76	827127
ISA40	2	5-1/2 – 6	3.44	827128
ISA50	1/2	1-1/4 – 1-1/2	6.00	827129
ISA50	3/4	1-3/4 – 2	6.10	827130
ISA50	1	2-1/4 – 2-3/4	6.40	827131
ISA50	1-1/4	3 – 3-1/2	6.50	827132
ISA50	1-1/2	4 – 5	6.90	827133
ISA50	2	5-1/2 – 6	7.40	827134

ISA (NMTB) Shanks – 4” Extension Type



Draw Bar Threads:
- ISA40 5/8”-11 UNC
- ISA50 1”-8 UNC

Shank	Arbor Diameter (Inch)	For Shell End Mills (Inch)	Weight (lbs)	Code
ISA40	3/4	1-3/4 – 2	3.50	827135
ISA40	1	2-1/2 – 2-3/4	3.90	827136
ISA50	1	2-1/4 – 2-3/4	8.60	827137
ISA50	1-1/4	3 – 3-1/2	10.6	827138

R8 Shanks



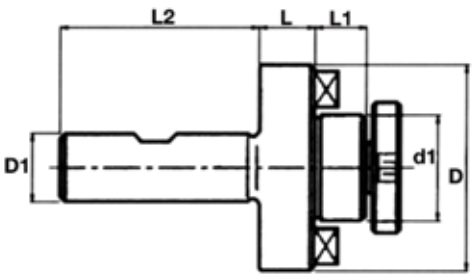
- Made of alloy forged steel for long, durable service life
- Hardened to 56-60 HRC and ground to ensure maximum accuracy
- Shell end mill pilot total indicator runout <0.0004”

Shank	Arbor Diameter (Inch)	For Shell End Mills (Inch)	Code
R8	1/2	1-1/4 – 1-1/2	827140
R8	3/4	1-3/4 – 2	827141
R8	1	2-1/4 – 2-3/4	827142
R8	1-1/4	3 – 3-1/2	827143
R8	1-1/2	4 – 5	827144

Shell Mill Arbors

Straight Shanks





Shank Diameter (Inch)	d1 (Inch)	D (Inch)	L (Inch)	L1 (Inch)	L2 (Inch)	Code
3/4	0.75	1.75	0.703	0.67	1.75	827145
1	1.00	2.12	0.714	0.67	2.25	827146
1	1.25	2.50	0.845	0.67	2.25	827147

Morse Taper Shanks – Tanged



- Made of alloy forged steel for long, durable service life
- Hardened to 56-60 HRC and ground to ensure maximum accuracy
- Shell end mill pilot total indicator runout <0.0004”

Shank	Arbor Diameter (Inch)	For Shell End Mills (Inch)	Code
MT4	3/4	1-3/4 – 2	827149
MT4	1	2-1/4 – 2-3/4	827150
MT4	1-1/4	3 – 3-1/2	827151
MT4	1-1/2	4 – 5	827152

Shank	Arbor Diameter (Inch)	For Shell End Mills (Inch)	Code
MT5	1	2-1/4 – 2-3/4	827153
MT5	1-1/4	3 – 3-1/2	827154
MT5	1-1/2	4 – 5	827155

Screws

For Shell Mill Arbors

- Socket head arbor screws are designed for all shell end mill arbors
- Made of alloy forged steel for long, durable service life



Thread	Arbor Diameter (Inch)	Code	Thread	Arbor Diameter (Inch)	Code	Thread	Arbor Diameter (Inch)	Code
1/4-28	1/2	827156	1/2-20	1	827158	3/4-16	1-1/2	827160
3/8-24	3/4	827157	5/8-18	1-1/4	827159	1-14	2	827161

Face Mill Holders

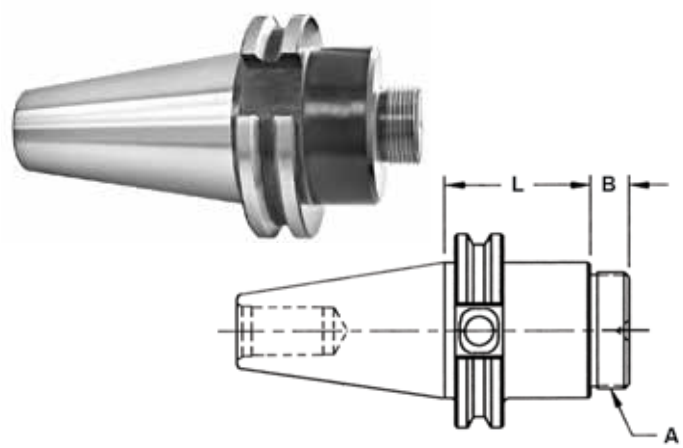


- Holders have four mounting holes with 5/8-11 thread on a 4" bolt circle to hold 8" or larger face milling cutters
- Holders have 1" drive keys

Taper	Arbor Diameter (Inch)	Arbor Length (Inch)	Weight (lbs)	Code
ISA40	2	6.20	7.5	827162
ISA40	2-1/2	6.20	8.0	827163
ISA50	2	7.56	11.5	827164
ISA50	2-1/2	7.56	11.8	827165

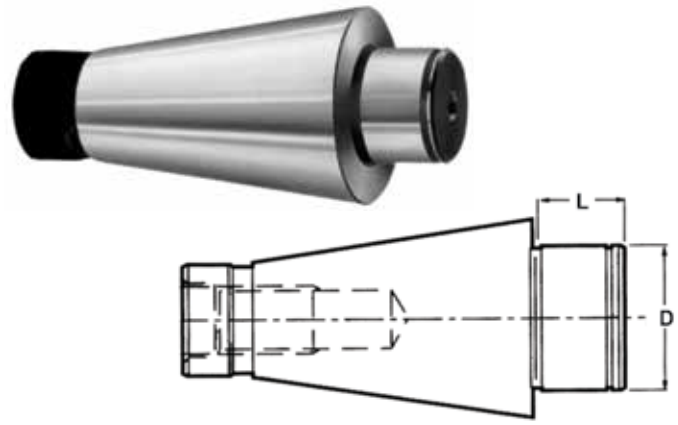
Boring Head Adapters

For Boring Heads with Threaded Bores – CAT V-Flange Shanks



Taper	A Thread	B (Inch)	L (Inch)	Code
CAT40	7/8–20	0.44	1.50	827170
CAT40	1-1/2–18	0.50	2.00	302431
CAT50	1-1/2–18	0.44	1.75	302432

Centering Plug Arbors



Taper	D (Inch)	L (Inch)	Code
ISA50	2	1-1/4	213530
ISA50	2-1/2	1-1/4	213532

Milling Machine Adapters

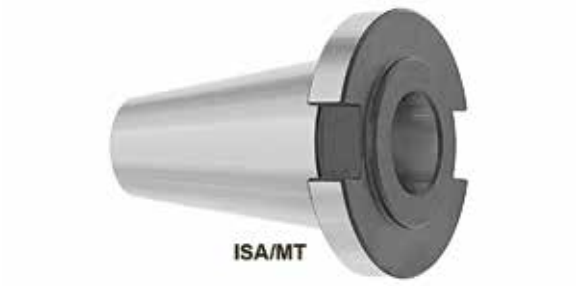
- Shanks are produced according to AT3 specifications
- Made of alloy forged steel for long, durable service life
- Hardened to 56-60 HRC and ground to ensure maximum accuracy
- Taper seat T.I.R. <0.0004”

For Changing from ISA (NMTB) Shank to a Smaller ISA (NMTB)



Shank	ISA Hole	Weight (lbs)	Code
ISA50	ISA30	4.52	827172
ISA50	ISA40	3.86	827173

For Changing from ISA (NMTB) Shank to MT Socket



- Open end type for threaded shank tools

Shank	Morse Taper Hole	Weight (lbs)	Code
ISA40	MT2	1.30	827186
ISA40	MT3	1.15	827187
ISA40	MT4	1.26	827188
ISA50	MT3	5.29	827189
ISA50	MT4	4.74	827190
ISA50	MT5	5.84	827191

For Changing from ISA (NMTB) Shank to MT Socket



Shank	Morse Taper Hole	Weight (lbs)	Draw Bar Thread	Code
ISA40	MT2	1.98	5/8 – 11	827176
ISA40	MT3	2.20	5/8 – 11	827177
ISA40	MT4	3.09	5/8 – 11	827178
ISA40	MT5	7.06	5/8 – 11	827179
ISA50	MT2	9.26	1 – 8	827180
ISA50	MT3	9.26	1 – 8	827181
ISA50	MT4	8.16	1 – 8	827182
ISA50	MT5	6.61	1 – 8	827183

For Changing from ISA (NMTB) Shank to R8 Socket



- Adapters are provided with the screw (Inside) to hold tools with 7/16–20 R8 shank
- To hold adapter in the spindle use draw bar with standard thread

Shank	Hole	Weight (lbs)	Draw Bar Thread	Code
ISA40	R8	3.26	5/8–11	827184

For Changing from R8 Shank to MT Socket



Shank	Morse Taper Hole	Weight (lbs)	Draw Bar Thread	Code
R8	MT2	0.71	7/16 – 20	827174
R8	MT3	0.86	7/16 – 20	827175

Quick Change Tooling Systems

Collet Chuck Quick Change Adapters No. 30 & 40 Tapers



Capacity (Inch)	No. 30 Taper Code	No. 40 Taper Code
1/8 – 1	302195	302196

Morse Taper Quick Change Adapters No. 30 & 40 Tapers



Morse Taper	No. 30 Taper Code	No. 40 Taper Code
MT1	302136	–
MT2	302137	302147
MT3	302138	302148
MT4	302139	302149

NOTE: ISA30 ad ISA40 Quick-Change Adapters can be used on regular machine spindles. Standard ISA30 and ISA40 adapters cannot be used on these master shanks

Shell Mill Quick Change Adapters No. 30 & 40 Tapers



Spigot Diameter (Inch)	No. 30 Taper Code	No. 40 Taper Code
1/2	302180	302190
3/4	302181	302191
1	302182	302192
1-1/4	302183	302193
1-1/2	302184	302194

End Mill Quick Change Adapters No. 30 & 40 Tapers



Bore Diameter (Inch)	No. 30 Taper Code	No. 40 Taper Code
3/8	301110	302120
1/2	301111	301121
5/8	301112	301122
3/4	301113	301123
7/8	301114	301124
1	301115	301125
1-1/4	301116	301126

NOTE: ISA30 ad ISA40 Quick-Change Adapters can be used on regular machine spindles. Standard ISA30 and ISA40 adapters cannot be used on these master shanks

Jacobs Taper Quick Change Adapters No. 30 & 40 Tapers



Jacobs Taper	No. 30 Taper Code	No. 40 Taper Code
J2	302161	302171
J3	302162	302172
J33	302163	302173
J4	302164	302174
J6	302165	302175

Quick Change Adapter Set 21 Pieces



Set includes:

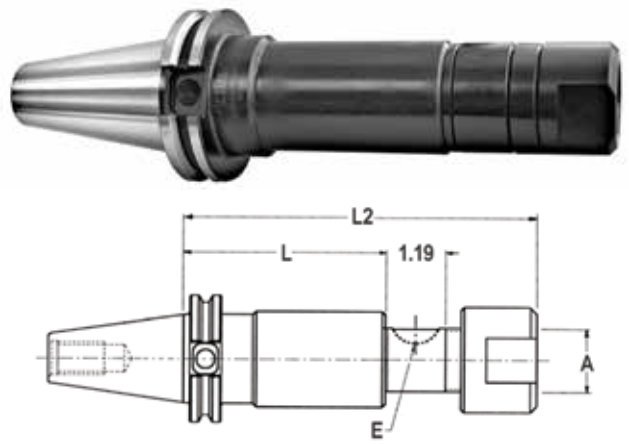
- Master holder
- Collet holder
- 1" Shell
- J6 Jacobs
- MT3 Morse
- 15 Collets 1/8-1"
- Wrench

Master Shank	Code
40/40	302106

Stub Arbor Adapters

For Side Milling Cutters

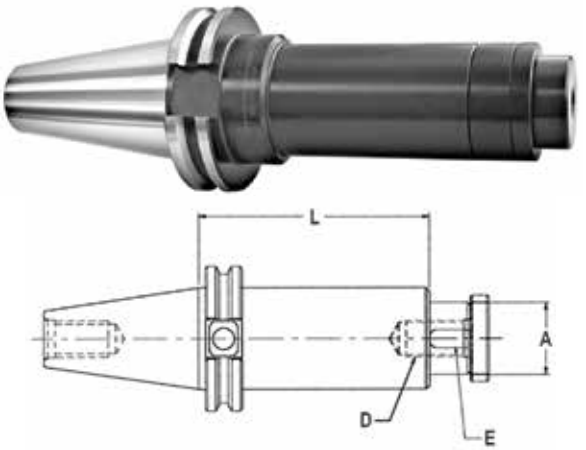
Nut Type



Taper	A Diameter (Inch)	L (Inch)	L2 (Inch)	E Key (Inch)	Code
CAT40	1.00	4.00	6.19	0.250	827685
CAT40	1.25	4.00	6.44	0.312	827686
CAT50	1.25	4.00	6.44	0.312	827688
CAT50	1.50	4.00	6.69	0.375	827689

Includes three spacers (1/8, 3/8, 3/4), key and nut.
Additional spacers available.

Screw Type

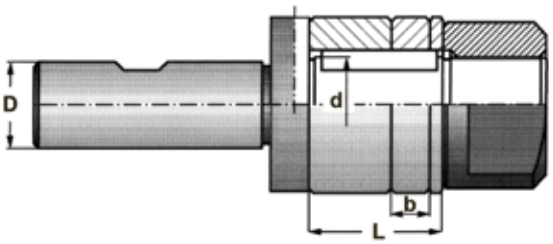


Taper	A Diameter (Inch)	L (Inch)	D Thread	E Key (Inch)	Code
CAT40	1.00	4.00	1/2-20	0.250	827690
CAT40	1.25	4.00	5/8-18	0.312	827691
CAT40	1.50	4.00	3/4-16	0.375	827692
CAT50	1.25	4.00	5/8-18	0.312	827693
CAT50	1.50	4.00	3/4-16	0.375	827694

Includes two spacers (1/4, 1/2), key and standard shell screw.

Weldon Shank





- Made of alloy forged steel for long, durable service life
- Hardened to 56-60 HRC and ground to ensure maximum accuracy
- Face is held perpendicular to center line within 0.0004”
- Pilot diameter is sized for precision fit with cutter and is keyed for positive drive
- Heavy duty locking LH nut and three arbor spacers are included

D Shank Diameter (Inch)	d Arbor Diameter (Inch)	L (Inch)	Code
3/4	3/4	1	827192
3/4	7/8	1	827193
3/4	1	1	827194
3/4	1-1/4	1	827195

Milling Machine Arbors

R8, ISA (NMTB) Styles A & B



Complete with assorted spacers and running bushings as indicated

R8 Style

Taper	Diameter of Arbor (Inch)	Style	L Length (Inch)	D x L1 Running Bushings (Inch)	Running Bushing Quantity	Code
R8	1	B	2	-	-	203101
R8	1-1/4	B	2	-	-	203103

ISA (NMTB) - Style A (End Pilot 23/32" Dia. x 1-3/4" Long)

Taper	Diameter of Arbor (Inch)	Style	L Length (Inch)	D x L1 Running Bushings (Inch)	Running Bushing Quantity	Code
ISA30	7/8	A	10	1-5/8 x 2-5/8	1	203105
ISA30	1	A	10	1-5/8 x 2-5/8	1	203107
ISA40	7/8	A	10	-	-	203109
ISA40	7/8	A	16	1-7/8 x 3-1/8	1	203111
ISA40	1	A	12	-	-	203113
ISA40	1	A	16	1-7/8 x 3-1/8	1	203115
ISA40	1-1/4	A	12	-	-	203117
ISA40	1-1/4	A	16	1-7/8 x 3-1/8	1	203119
ISA50	1	A	12	-	-	203121
ISA50	1	A	18	2-1/8 x 3-3/4	1	203123
ISA50	1-1/4	A	12	-	-	203125
ISA50	1-1/4	A	18	2-1/8 x 3-3/4	1	203127

Milling Machine Arbors

R8, ISA (NMTB) Styles A & B *(continued)*

ISA (NMTB) - Style B

Taper	Diameter of Arbor (Inch)	Style	L Length (Inch)	D x L1 Running Bushings (Inch)	Running Bushing Quantity	Code
ISA40	1	B	3	-	-	203129
ISA40	1	B	14	1-7/8 x 3-1/8	1	203131
ISA40	1	B	20	1-7/8 x 3-1/8	1	203133
ISA40	1-1/4	B	3	-	-	203135
ISA40	1-1/4	B	14	1-7/8 x 3-1/8	1	203137
ISA40	1-1/4	B	20	1-7/8 x 3-1/8	1	203141
ISA40	1-1/2	B	20	2-1/8 x 3-3/4	1	203145
ISA50	1	B	3-1/2	-	-	203147
ISA50	1	B	15	2-1/8 x 3-3/4	1	203149
ISA50	1	B	18	2-1/8 x 3-3/4	2	203151
ISA50	1	B	24	2-1/8 x 3-3/4	2	203153
ISA50	1-1/4	B	3-1/2	-	-	203155
ISA50	1-1/4	B	15	2-1/8 x 3-3/4	1	203157
ISA50	1-1/4	B	18	2-1/8 x 3-3/4	2	203159
ISA50	1-1/4	B	24	2-1/8 x 3-3/4	2	203161
ISA50	1-1/4	B	30	2-1/8 x 3-3/4	2	203163
ISA50	1-1/2	B	3-1/2	-	-	203165
ISA50	1-1/2	B	18	2-1/8 x 3-3/4	2	203167
ISA50	1-1/2	B	24	2-3/4 x 4-1/4	2	203169
ISA50	1-1/2	B	30	2-3/4 x 4-1/4	2	203171
ISA50	1-1/2	B	36	2-3/4 x 4-1/4	2	203173
ISA50	2	B	24	-	-	203175
ISA50	2	B	30	2-3/4 x 4-1/4	2	203177
ISA50	2	B	36	-	-	203179
ISA50	2-1/2	B	36	3-3/8 x 4-1/2	2	203181

Nuts

- Hardened
- Ground left-hand thread and shoulder



For Arbor Diameter (Inch)	Thread Size	Code
7/8	7/8 – 14RH	203211
1	1 – 14RH	203213
1-1/4	1-1/4 – 12RH	203215
1-1/2	1-1/2 – 12RH	203217
2	2 – 12RH	203219
2-1/2	2-1/2 – 12RH	203220

Arbor Spacers

With Keyway



0.001" to 0.125" Thickness – 10 Piece Sets

Thickness (Inch)	Inside Diameter 7/8"	Inside Diameter 1"	Inside Diameter 1-1/4"	Inside Diameter 1-1/2"	Inside Diameter 2"
	Code	Code	Code	Code	Code
0.001	206400	206420	206440	206460	206480
0.0015	206401	206421	206441	206461	206481
0.002	206402	206422	206442	206462	206482
0.003	206403	206423	206443	206463	206483
0.004	206404	206424	206444	206464	206484
0.005	206405	206425	206445	206465	206485
0.006	206406	206426	206446	206466	206486
0.007	206407	206427	206447	206467	206487
0.008	206408	206428	206448	206468	206488
0.010	206409	206429	206449	206469	206489
0.012	206410	206430	206450	206470	206490
0.015	206411	206431	206451	206471	206491
0.020	206412	206432	206452	206472	206492
0.025	206413	206433	206453	206473	206493
0.031	206414	206434	206454	206474	206494
0.047	206415	206435	206455	206475	206495
0.062	206416	206436	206456	206476	206496
0.093	206417	206437	206457	206477	206497
0.125	206418	206438	206458	206478	206498
Assorted 19 pcs.	206419	206439	206459	206479	206499

Tool Clamping Fixtures

Multiple Use for Tool Shank ISO – DIN 69871 – CAT & BT-MAS

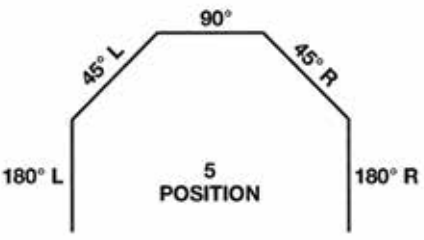
- Easy access for combined assembly of cutting tool and pull stud
- Head fixture can be set in five positions: vertical, horizontal and 45° (left and right)
- Efficiently designed for maximum protection of tool holder
- Enables strong gripping power of cutting tools
- Compact design - can be mounted on work table or tool cart



Fixed Vise Head



Rotary



Taper	Code
Tool clamp #40 rotary	827695
Tool clamp #50 rotary	827696
Tool clamp #40 fixed	827697
Tool clamp #50 fixed	827698

Tool Trolleys & Accessories

Heavy Duty

Tool Trolley



Tray (without Inserts)



Code
214200

Inserts





Description	Code
With #40 inserts (28 pcs.)	214140
With #50 inserts (20 pcs.)	214150

Insert	Code
#40	214240
#50	214250
HSK50	214260
HSK63	214261

Taper Socket Cleaning Tools

Heavy Duty



Morse Taper



ISA, CAT or BT Taper

Spindle chatter or vibration?
It could be lint, dirt, or oil trapped inside the spindle cavity.
Only SPIN-L-MATE ® gives you solid, concentric,repeatable tool-to-spindle connections.
No amount of time, solvent, rags, compressed air, or technique will do what SPIN-L-MATE® will do in 2-3 seconds!

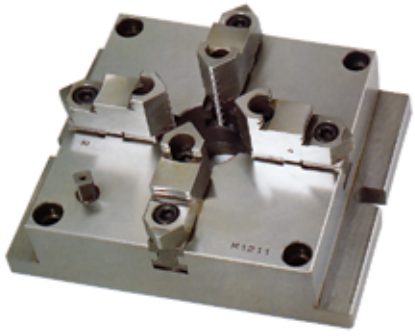
Tool Including Blades

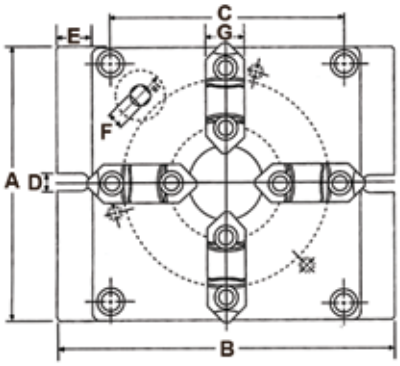
Taper	Code	Taper	Code	Taper	Code
MT1	211001	MT5	211005	#40	211040
MT2	211002	TG100	211010	#45	211045
MT3	211003	#30	211030	#50	211050
MT4	211004	#35	211035	R8	211008

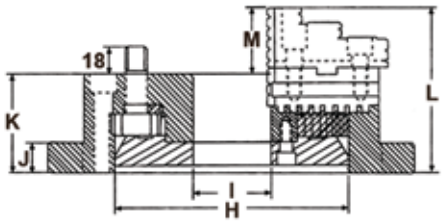
Universal Machining Chucks

4-Jaw – Vertical

- Parts are gripped firmly by the formed jaws, ensuring high precision (deviation within 0.03mm)
- Large workpieces can be held tight with the low profile vise body
- Handle is set on the face and does not interfere with the table. A number of chucks can be used together
- Soft jaws available



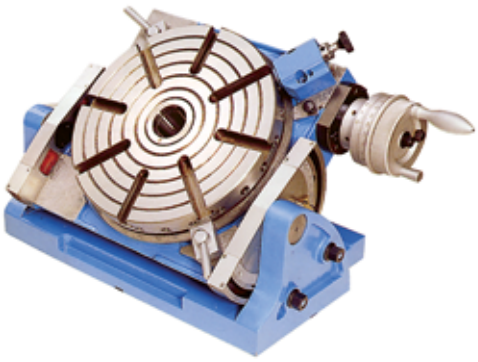


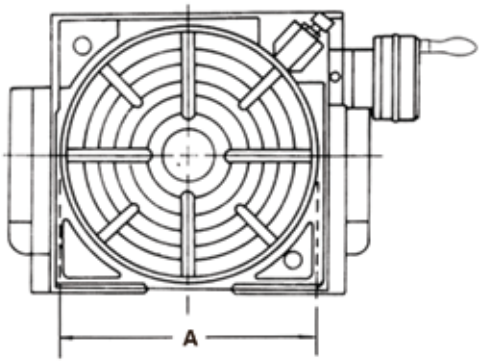


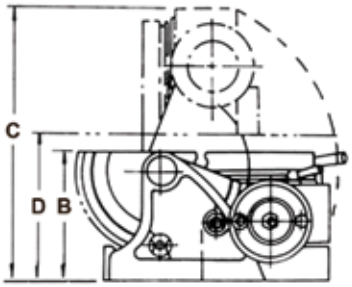
A| (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (mm)	Code
165	215	143	13	25	12	26	130	40	18	57	97	40	302706
200	250	174	15	25	12	28	160	55	20	65	109	44	302708

Universal Tilting Rotary Table

- Accurate and solidly designed table for use on milling, boring and other machine tools
- Allows indexing, facing and other work to be carried out rapidly with extreme precision
- Tilting range 90º from horizontal to vertical position, one rotation of handle equals 3°, five minutes tilting reading
- 10 second Vernier scale
- Table dial one minute graduations
- Fast indexing: location pin in 24 holes (15° ensures accurate spacing)
- Minimum set-up time
- Rugged construction







A Table Diameter (mm)	B Table Height (Horizontal) (mm)	C Overall Table Height (Vertical) (mm)	Center Hole	D Center Height (Vertical) (mm)	Direct Indexing	Gear Ratio	Approximate Weight (kg)	Code
300	185	370	MT3	208	24-div.	90:1	102	242130

Accessories sold separately

Tail Stock

Code
242127

Dividing Plates

Code
242132

5C Fixtures & Indexes

5C Collet Index – Horizontal/Vertical



- Index plate has screws in all 24 index holes for easy masking of holes not needed for a specific job
- Ratchet device on front of spindle permits fast rotation of spindle nose
- Collet closer lever has a leverage ratio of 100 to 1
- Hardened and ground index plate is designed for long life and extreme accuracy
- Index pin has a spring for quick positive location in index plate holes
- Spindle has taper seat in body frame

Base Dimensions (Inch)	Height (Inch)	Code
4 x 5	7	251215

5C Angle Collet Fixture



- All moving parts hardened, ground and honed
- Cam lever opens and closes collets
- Collets can be changed easily and quickly
- For drilling, milling, grinding, tapping assembly, etc.
- Can be mounted and used horizontally and vertically
- Collet retains positive relation to base - can be adjusted without disturbing set-up
- Does not move up or down

Base Dimensions (Inch)	Height (Inch)	Code
5 x 3-5/8	3-3/4	245203

5C Spin Index



- Single indexing from 0º to 360º by increments of ten degrees using the indexing plate only
- Indexing from 0º to 360º by increments of one degree using the indexing plate in conjunction with the vermier holes
- Dividing into 2, 3, 4, 6, 9, 12, 18 and 36 parts using the indexing plate only
- Used for grinding flutes on cutting tools
- If disengaged the spindle rotates freely and it has a linear travel up to 2-1/16”

Code
245205

5C Expanding Collets



- Body is precision ground and hardened
- Soft head can be machined to accommodate work piece

Machining Range (Inch)	Code
0.250 – 0.468	302455
0.437 – 0.800	302456
0.570 – 1.437	302457
0.750 – 1.937	302458
0.250 – 1.937 (Set of 4)	302459

Expanding Arbor Set

8-Piece Set – Straight Shank



Diameter (Inch)	Length (Inch)	Expansion (Inch)	Code
1-1/4	4	0.005	302460
1	4	0.005	
7/8	4	0.005	
3/4	4	0.005	
5/8	3	0.005	
1/2	3	0.005	
3/8	3	0.005	
1/4	3	0.005	



5C Collet Blocks

Description	Outside Dimensions (Inch)	Code
Square Block	1-3/4 x 1-3/4 x 2-3/4	302481
Hexagonal Block	1-3/4 HEX x 2-3/4	302482
Quick-Action Lever	-	302483
Complete Set	-	302484

Morse Taper Collets

Morse Taper Outside – Fractional Inside



Draw Bar Threads
- 3/8" – 16

Size (Inch)	MT2 Code	MT3 Code
1/8	221300	221307
3/16	221301	221308
1/4	221302	221309
5/16	221303	221310
3/8	221304	221311
7/16	221305	221312

Size (Inch)	MT2 Code	MT3 Code
1/2	221306	221313
9/16	–	221314
5/8	–	221315
11/16	–	221316
3/4	–	221317

Round Collets

5C, R8, Brown & Sharp 21 – Inch & Metric







Inch

Diameter (Inch)	5C Code	R8 Code	B&S 21 Code
1/32	221101	221201	170311
1/16	221102	221202	170313
3/32	221103	221203	170315
1/8	221104	221204	170317
5/32	221105	221205	170319
3/16	221106	221206	170321
7/32	221107	221207	170323
1/4	221108	221208	170325
9/32	221109	221209	170327
5/16	221110	221210	170329
11/32	221111	221211	170331
3/8	221112	221212	170333
13/32	221113	221213	170335
7/16	221114	221214	170337
15/32	221115	221215	170339
1/2	221116	221216	170341
17/32	221117	221217	170343
9/16	221118	221218	170345

Diameter (Inch)	5C Code	R8 Code	B&S 21 Code
19/32	221119	221219	170347
5/8	221120	221220	170349
21/32	221121	221221	170351
11/16	221122	221222	170353
23/32	221123	221223	170355
3/4	221124	221224	170357
25/32	221125	221225	170359
13/16	221126	221226	170361
27/32	221127	221227	170363
7/8	221128	221228	170365
29/32	221129	–	170367
15/16	221130	–	170369
31/32	221131	–	170371
1	221132	–	170373
1-1/16	221133	–	170375
1-1/32	221134	–	–

Metric

Diameter (mm)	5C Code	R8 Code
1	–	221251
2	–	221252
3	221273	221253
4	221274	221254
5	221275	221255
6	221276	221256
7	221277	221257
8	221278	221258
9	221279	221259
10	221280	221260

Diameter (mm)	5C Code	R8 Code
11	221281	221261
12	221282	221262
13	221283	221263
14	221284	221264
15	221285	221265
16	221286	221266
17	221287	221267
18	221288	221268

Diameter (mm)	5C Code	R8 Code
19	221289	221269
20	221290	221270
21	221291	221271
22	221292	221272
23	221293	–
24	221294	–
25	221295	–

Square & Hexagonal Collets

5C – Inch



Diameter (Inch)	5C Square Code	5C Hexagonal Code
3/32	221401	221431
1/8	221402	221432
5/32	221403	221433
3/16	221404	221434
7/32	221405	221435
1/4	221406	221436
9/32	221407	221437
5/16	221408	221438
11/32	221409	221439
3/8	221410	221440

Diameter (Inch)	5C Square Code	5C Hexagonal Code
13/32	221411	221441
7/16	221412	221442
15/32	221413	221443
1/2	221414	221444
17/32	221415	221445
9/16	221416	221446
19/32	221417	221447
5/8	221418	221448

Diameter (Inch)	5C Square Code	5C Hexagonal Code
21/32	221419	221449
11/16	221420	221450
23/32	221421	221451
3/4	221422	221452
25/32	–	221453
13/16	–	221454
27/32	–	221455
7/8	–	221456

Emergency Collets



5C Emergency Collet shown

- Emergency collets are soft to accomodate boring of special diameters within the collet range

Style	Code
5C	221140
R8	221240

5C Step Collets



- 5C step collets are soft to accomodate boring of special diameters above the collet range

Diameter (Inch)	Code
2	221142
3	221143
4	221144
5	221145

5C Adjustable Collet Stop



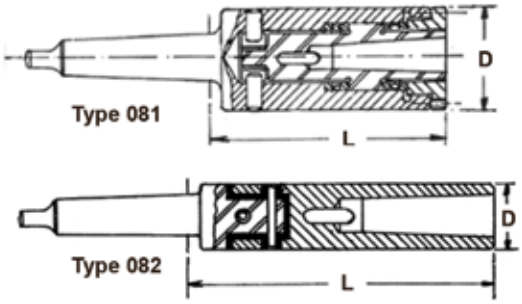
Code
826739

Floating Holders



- Used to compensate for misalignment between tool and work piece, both being held rigidly in machinery operations
- Recommended for both reaming and tapping

TYPE 081 with a parallel float of 0.014" to 0.016" and with an angular float
TYPE 082 where due to the vulcanized rubber joint, an angular flexibility is achieved



Morse Taper Shank	Morse Taper Bore	D (Inch)	L (Inch)	Type 081 Code	Type 082 Code
1	1	1.603	3.18	185111	185211
1	2	1.730	4.72	185112	–
2	1	1.570	4.10	185121	185221
2	2	1.730	4.72	185122	185222
2	3	2.000	5.43	185123	185223
3	2	1.730	4.72	185132	185232
3	3	2.000	5.43	185133	185233
3	4	1.730	6.46	185134	185234
4	3	2.000	5.43	185143	185243
4	4	2.250	6.46	185144	185244
4	5	2.720	8.00	185145	–
5	4	2.250	6.46	185154	–
5	5	2.720	8.00	185155	–

Horizontal Milling Attachments

R8 & ISA40



Available only as a set

Spindle	Code
R8	264101
*ISA40	264103

**Please specify quill diameter and dovetail width*

Right Angle Head

Taper	Suitable Milling Head Quill Diameter
R8	85.725 mm – 86 mm = 3.38”
NT40	85.725 mm – 115 mm = 3.38” – 4.53”

Horizontal Milling Arbor Support

Taper	Suitable Milling Head Quill Diameter
R8	85.725 mm – 86 mm = 3.38”
NT40	85.725 mm – 115 mm = 3.38” – 4.53”

Right Angle Heads

R8 & ISA40



- For horizontal cutting on vertical machines
- Rigid construction

Spindle Taper	Tool Taper	Quill Diameter (Inch)	Code
R8	R8	3.375/3.385	264105
*ISA40	R8	*3.375/4.520	264107

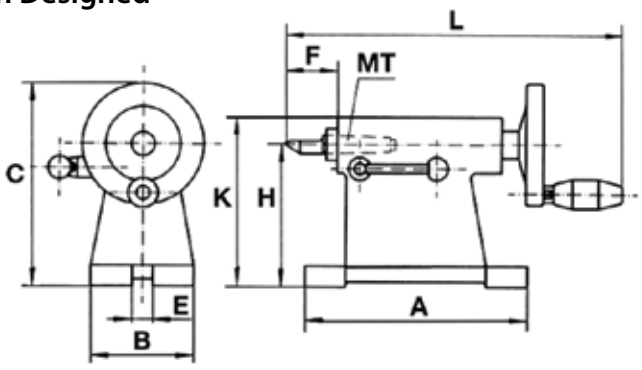
**Please specify quill diameter and dovetail width*

Tail Stock

Rigid & Precision Designed



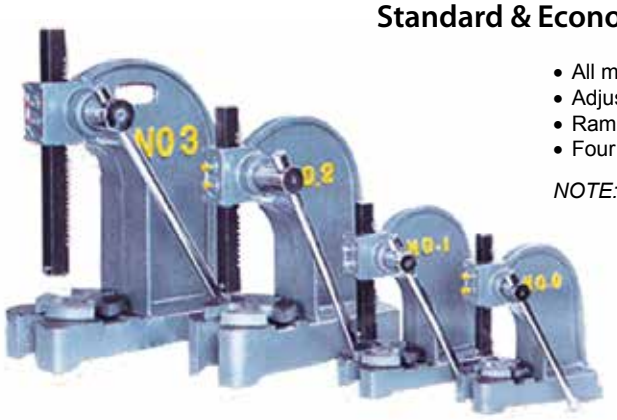
Set includes:
- Precision dead center with 0.0002” T.I.R.
- 2 locating keys
- 2 mounting bolts with T-nuts



H + 0002” (Inch)	K (Inch)	B (Inch)	A (Inch)	F Minimum (Inch)	F Maximum (Inch)	E Key Size (Inch)	Morse Taper	Weight (lbs)	Code
3.937	5.51	3.15	7.68	1.30	2.48	0.55	MT2	14	277111
4.921	7.01	3.54	7.68	1.54	2.72	0.55	MT2	16	277112
6.299	8.39	4.53	9.84	1.89	3.35	0.71	MT3	28	277113
9.843	11.93	5.91	11.02	2.34	3.92	0.71	MT4	51	277114

Arbor Presses

Standard & Economy



- All main parts made of ductile cast iron
- Adjustable handle for convenient positioning
- Ram finite control with smooth gears
- Four 90 degree equally divided slotted round table

NOTE: Not recommended for broaching

Standard

Base Dimensions (Inch)	Press Height (Inch)	Press Tons	Maximum Work Height (Inch)	Swing (Inch)	Table Diameter (Inch)	Ram Dimensions (Inch)	Code
9.25 x 4.02	10	0.5	4.5	3.3	3.5	0.75 x 0.75	680105
10.63 x 5	12.6	1	5.5	4.1	4.3	1 x 1	680110
15.75 x 6.69	17.5	2	8.5	5.3	6.7	1.25 x 1.25	680115
18.5 x 7.87	22.4	3	12.5	5.3	6.7	1.5 x 1.5	680120
26.77 x 9.84	31.5	5	18.5	9.6	9.8	2 x 2	680130

Economy

Base Dimensions (Inch)	Press Height (Inch)	Press Tons	Maximum Work Height (Inch)	Largest Arbor (Inch)	Table Diameter (Inch)	Ram Dimensions (Inch)	Ram Length (Inch)	Press Distance Ram/Column (Inch)	Code
4 x 9.5	10	0.5	4.5	1.12	3.35	0.75 x 0.75	7.5	3.37	218002
5 x 11	12	1	5.25	1.37	3.54	1 x 1	9.5	4.25	218003
6.75 x 17	17	2	8.5	1.75	6.5	1.25 x 1.25	14	6	218004
8 x 8	21.5	3	12.62	2.5	7.48	1.5 x 1.5	18	6	218005

Universal Tilting Tables



- Made from heavy duty close grained cast iron
- Accurately indexed
- Machined T-slots
- Table surface accurately ground
- 360º rotary graduations
- 0-45º tilting graduations
- Three axis movement allows workpiece to be clamped at any angle

Table Dimensions (Inch)	Height (Inch)	Weight (lbs)	Code
4 x 5 x 1	4-9/16	12	810597
8-1/4 x 6 x 1-3/16	6	30	810598
10 x 8 x 1-3/16	5-9/16	59	810599

Universal Machine Lamps

Waterproof



- 50W halogen lamp
- Waterproof
- 120V connection (6ft cord)
- Handle on head allows easy positioning
- 24V

With Transformer (in base)

Model	Reach (Inch)	Code
JW 55RTS	Short	302961
JW 55RTM	18 (9+9)	302966
JW 55RTL	32 (16+16)	302967

Without Transformer (for connection to machines))

Model	Reach (Inch)	Code
JW 55RS	Short	302942
JW 55RM	18 (9+9)	302943
JW 55RL	32 (16+16)	302944

Halogen Machine Lamps



- 20W halogen lamp
- Vibration resistant
- 120V connection (6 ft. cord)
- Articulating arm

With Transformer (in base)

Model	Reach (Inch)	Code
JH 20RTS	Short	302962
JH 20RTM	18 (9+9)	302963
JH 20RTL	32 (16+16)	302964

Without Transformer (for connection to machines)

Model	Reach (Inch)	Code
JH 20RS	Short	302945
JH 20RM	18 (9+9)	302946
JH 20RL	32 (16+16)	302947

Transformers

May not be exactly as illustrated



Voltage	Code
120V/12V	302950
120V/24V	302951



Power Table Feed

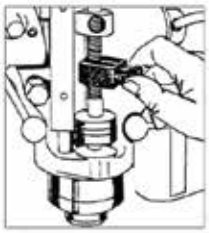
- Smooth running with high torque of 150 lbs/inch
- Special electrical relay protects against damage caused by power failure
- New and stronger design assures long trouble-free life
- Electrical and mechanical parts are designed for easy maintenance

Specifications:
Input Voltage .....110V, 50/60 Hz., 1PH
Driving..... Variable Speed
Torque ..... 150 lbs/in.
Speed Range ..... 0-200 RPM
Rapid Speed..... 250 RPM + 10%

Code
302235

Replacement Circuit Board

Code
302236





Quill Stop

For Bridgeport Type Mills

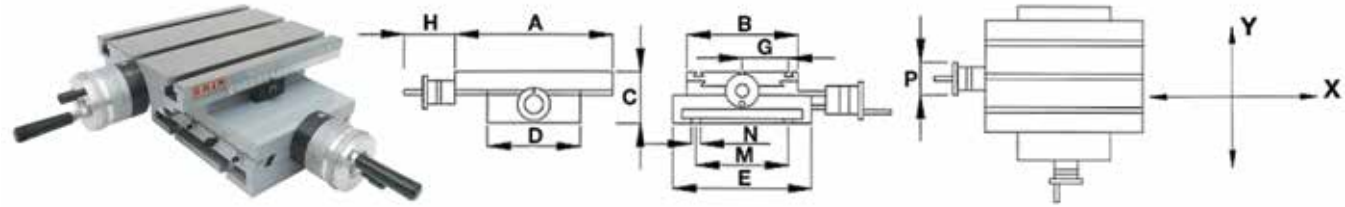
- Quick action clip
- Clips on quill easily for rapid depth setting
- Top or bottom positioning
- 0.020" fine adjustment
- Easily removable when not being used

Code
302233

Cross-Slide Tables

Inch – Double Axis – Fixed Base

- General tolerance ±0.03"



Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	M (mm)	N (mm)	G (mm)	F (mm)	H (mm)	P (mm)	No. of Slots	Stroke X Axis (mm)	Stroke Y Axis (mm)	Weight (lbs)	Code
240 XY	240	190	108	155	195	100	9	72	12	127	62	3	60 + 60	70 + 70	37	266522
340 XY	340	190	108	155	195	100	9	72	12	127	62	3	100 + 100	70 + 70	60	266524
430 XY	430	240	120	190	260	140	11	72	12	127	70	3	140 + 140	90 + 90	100	266526
600 XY	600	240	120	190	260	140	11	72	12	127	70	3	200 + 200	90 + 90	132	266528
800 XY	800	280	144	240	290	184	14	72	12	127	80	3	250 + 250	125 + 125	200	266530

Precision Milling Machine Vises



277064

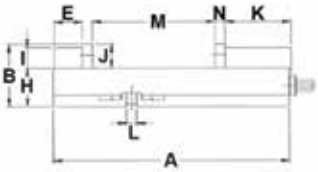


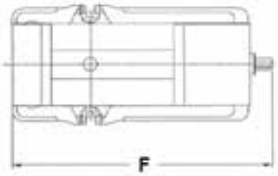
277065



277066







Bed Height (from machine table)	Clamping Force (lbs)	Code
2.875" ±0.0005"	6,700	277064
2.875" ±0.0005"	7,900	277065
3.310" ±0.0005"	11,600	277066

A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	H (Inch)	I (Inch)	J (Inch)	K (Inch)	L (Inch)	M (Inch)	N (Inch)	Weight (lbs)	Code
17.01	4.63	9.25	6	2.05	18.74	3.87	2.87	1.50	1.75	4.84	0.69	7.5	0.71	79	277064
17.20	4.63	8.75	6	2.05	18.94	3.87	2.87	1.50	1.75	4.84	0.69	8.9	0.71	80	277065
21.85	5.51	11.61	8	2.28	23.03	4.72	3.31	1.97	2.20	6.18	0.81	10.4	0.95	150	277066

Toolmaker's Vises



321482 and 321483



321486

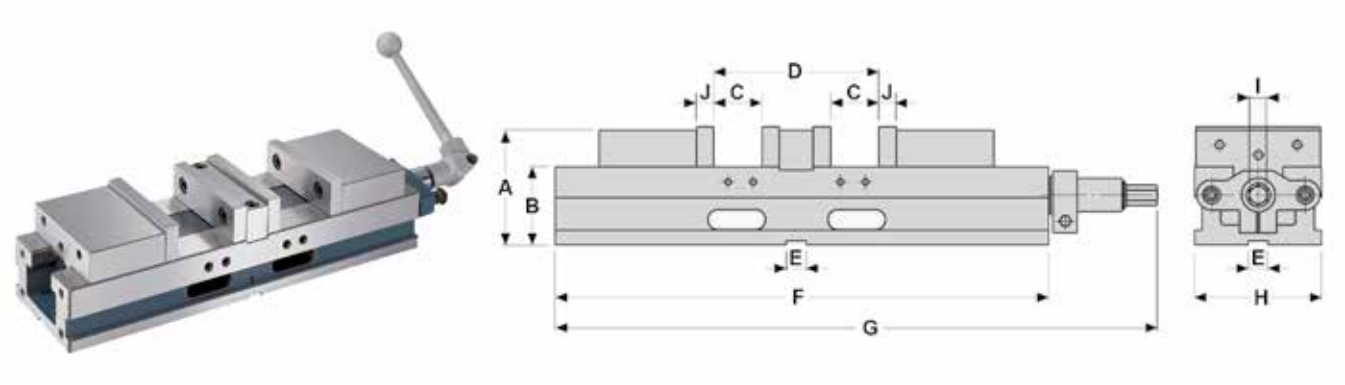
- Squareness and parallelism guaranteed within 0.0002" on sides and bottom
- Made of hardened steel and precision ground
- Horizontal and vertical v-grooves in movable jaw
- The "no rise" jaw construction exerts continual downward pressure on the jaw, preventing the jaw from rising which is a common problem on most vises

Jaw Width (Inch)	Jaw Opening (Inch)	Jaw Depth (Inch)	Overall Length (Inch)	Overall Height (Inch)	Code
2	3-1/8	1	5-1/2	2	321482
3	3-3/4	1-3/8	7	2-1/2	321483
3	4	1-3/8	7-1/4	2-1/2	321486



Jaw Width (Inch)	Jaw Opening (Inch)	Jaw Depth (Inch)	Vise Length (Inch)	Code
2	2-1/2	1	6	321488
2-1/2	3-1/2	1-1/4	7-1/2	321489
3	3-1/2	1-1/4	8-1/2	321490

Double CNC Precision Vises

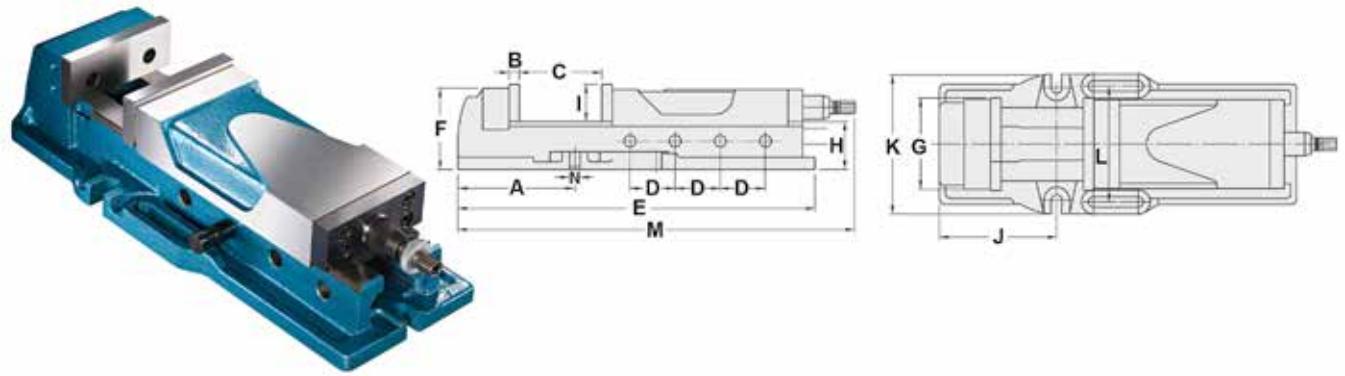


- Material: FCD 55 ductile iron; Hardness: 50 HRC
- Increases the workholding capacity of CNC machining centers by holding two pieces of different sizes (max. opening difference 70mm)
- Compact design allows several vises to be fitted to the machine table
- Center jaw may be removed to hold larger workpieces
- When center jaw is removed the vise is self-centering
- Special spring device allows an extra range of up to 5mm in workpiece size, enabling quick positioning and clamping

STANDARD ACCESSORIES: 2 alignment wedges, 4 clamps

Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	Weight (kg)	Code
HDL-4	92	63 ±0.01	74	200	18	395	480	104	14	14	20	277008
HDL-6	118	80 ±0.01	100	270	18	517	615	154	19	18	46	277010

Super Open Quick Action Vise

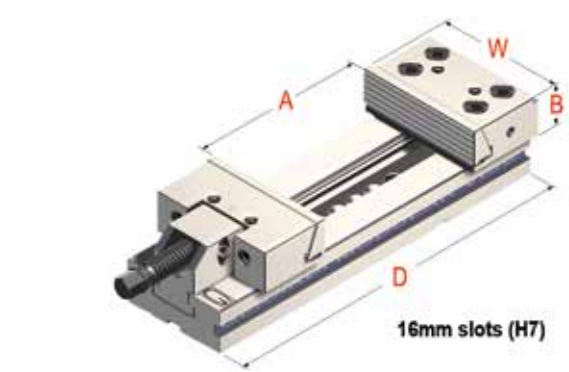


- Material: FCD 60 ductile iron; Hardness: 50 HRC
- Patented Multi-Power System provides extremely high clamping force of 0-4500 kg
- Consistent clamping pressure
- Eliminates all leakage and maintenance problems associated with hydraulic vises
- More compact than hydraulic vises
- Body has one-piece construction for high rigidity and precision
- Angle lock mechanism provides downward pressure on jaw to ensure parallel clamping force
- Both surfaces of slideways are heat treated for durability
- Large opening capacity up to 300mm

Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (mm)	N (mm)	Weight (kg)	Code
HSAC-160	200	15	300	77	610	139	158	82	63	200	240	190	915	18	58	277011

Modular System Vises

Standard Series





- Modular design for easy interchangeability
- Hardened and ground steel
- Manufactured under rigid quality control
- Fixed vise with guided movable jaw
- High alloyed quality resistance steel, case hardened (HRC 60 ±2)
- Unlimited clamping range
- Supplied with one workstop, one pair of positioning key nuts, two pair of clamps, one box wrench and one “T” wrench

Type	W Jaw Width (Inch)	A Jaw Opening (Inch)	B Jaw Height (Inch)	D Base Length (Inch)	Approximate Weight (kg/lbs)	Code
2	5	5.9	1.5	13.5	13/28	278002
3	6	7.8	1.9	16.5	26/56	278004
3	6	11.1	1.9	20.7	29/64	278006

Drill Press Vises

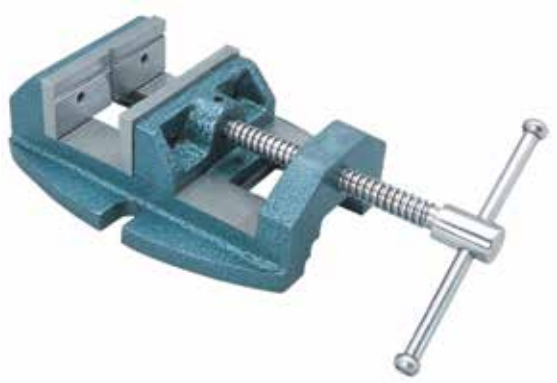




Jaw Width (Inch)	Jaw Opening (Inch)	Jaw Depth (Inch)	Weight (lbs)	Code
2-1/2	2-1/4	1-1/4	12	302276
3-1/2	3	1-5/16	18	302277

Jaw Width (Inch)	Jaw Opening (Inch)	Jaw Depth (Inch)	Weight (kg/lbs)	Code
3-1/8	2-3/4	1-1/16	3/6.61	327490
4-1/8	3-3/4	1-3/16	4/8.82	327491
5	4-5/8	1-3/8	6/13.23	327492
6	5-5/8	1-3/8	8/17.64	327493

Precision Drill Press Vises



- Close grained cast iron construction
- Ground vise bed
- Hardened v-grooved tool steel jaws
- Knurled nut type grip makes it convenient to close and open the vise on the drill table

Jaw Width (Inch)	Jaw Opening (Inch)	Weight (lbs)	Code
3	3	6	416263
4	4	12	416264
5	5	23	416265



- Body made from special cast iron
- Hardened and ground jaws
- Hardness of jaws: 55 to 60 HRC
- Grooves in the jaws for holding round work pieces both horizontally and vertically

Jaw Width (Inch)	Jaw Opening (Inch)	Weight (lbs)	Code
4	4-5/16	17	416260

KR Precision Vise



- Stationary front jaw
- Back jaw moves along with the slide reducing the tendency of deflection and prevents the work piece from lifting
- Cast body, steel jaws
- Hardened throughout and ground on all sliding and contacting surfaces
- Ideal for CNC applications

Vise

Jaw Width (Inch)	Jaw Opening (Inch)	Jaw Depth (Inch)	Code
6	8	1-7/8	301436

Base Only

Code
301437

Fixed Base Bench Vises



- Graded cast iron body
- Hardened and ground alloy steel jaws
- Perfectly aligned vise for smooth functioning

Jaw Width (Inch)	Jaw Opening (Inch)	Weight (lbs)	Code
3	3-3/8	11	416250
4	4	19	416251
5	5	28	416252
6	6	43	416253

Angle Vise



- Ideal for drilling, tapping or reaming applications
- 3 inch vise securely mounted on an angle base permitting quick 0-90º vertical angle adjustments
- Graduated settings for easy vertical angle readings
- Movable jaw plate is smooth, stationary jaw plate is grooved with a cross – patterned 90º V

Jaw Width (Inch)	Code
3	302275

U-Type Angle Vises



Jaw Width (Inch)	Code
3	318481
4	318482

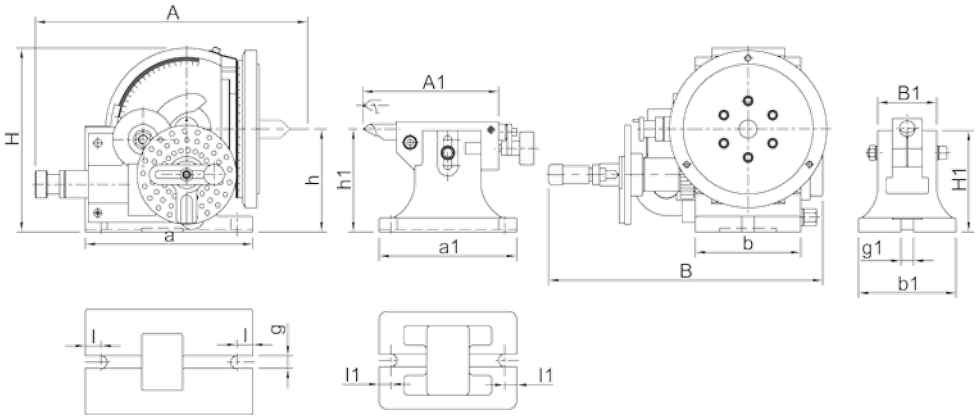
Quick Action Vises



Jaw Width (Inch)	Jaw Opening (Inch)	Weight (lbs)	Code
3	2-3/4	10	312436
4	4-1/4	18	312437
6	6	29	312438
8	8	44	312439

Universal Dividing Head





Tail Stock

Model	A1 (mm)	B1 (mm)	H1 (mm)	l1 (mm)	a1 (mm)	b1 (mm)	h1 (mm)	g1	Weight (kg)
BS-2	135-175	75	130	15	175	125	120-145	16	10

Standard Accessories: Dividing Plate A, B, C. Number of Holes of Dividing Plate (Worm Gear Reduction Ratio 40:1)

Number of Holes	**Plate A**	15	16	17	18	19	20
	Plate B	21	23	27	29	31	33
	Plate C	37	39	41	43	47	49

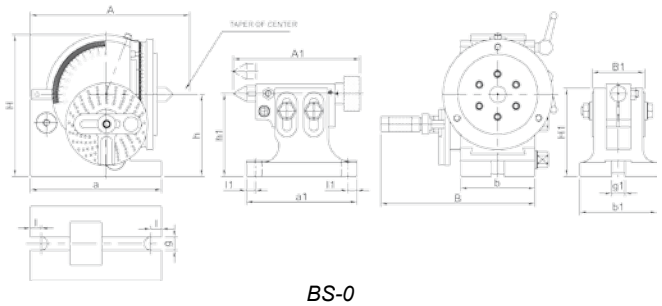
- Can be used for either direct or indirect dividing
- Three additional indexing plates included to provide the ability of indirect dividing of all divisions from 2 to 50 and also most common divisions up to 380
- Hardened and ground spindle is rigidly held in a taper roller bearing
- Hardened and ground worm
- Swivel head can be locked on any angle from 10º below horizontal to 90º vertical - precision fitting to base allows smooth rotation
- Threaded spindle nose and 24 hole dividing plate with easy conversion to fast direct indexing on numbers 2, 3, 4, 6, 8, 12 and 24

A (mm)	B (mm)	H (mm)	l (mm)	a (mm)	b (mm)	g (mm)	h (mm)	Center Taper (mm)	Spindle Through Hole (mm)	Code
359	340	235	20	212	135	16	134	MT4	25	277075

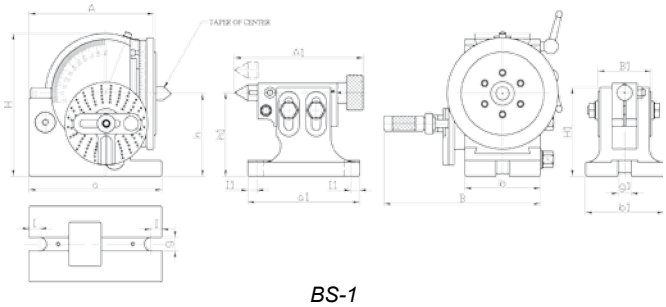
Semi-Universal Dividing Heads







BS-0



BS-1

Tail Stock

Model	A1 (mm)	B1 (mm)	H1 (mm)	l1 (mm)	a1 (mm)	b1 (mm)	h1 (mm)	g1	Weight (kg)
BS-0	155-180	64	107	11	134	94	80-108	16	4
BS-1	170-195	64	150	11	155	110	150-115	16	5.3

Standard Accessories: Dividing Plate A, B, C. Number of Holes of Dividing Plate (Worm Gear Reduction Ratio 40:1)

Number of Holes							
	Plate A	15	16	17	18	19	20
	Plate B	21	23	27	29	31	33
	Plate C	37	39	41	43	47	49

- A simplified type of universal index center
- Can be used for either direct or indirect dividing
- Three additional indexing plates included to provide the ability of indirect dividing of all divisions from 2 to 50 and also most common divisions up to 380
- Hardened and ground spindle is rigidly held in a taper roller bearing
- Hardened and ground worm
- Swivel head can be locked on any angle from 10º below horizontal to 90º vertical - precision fitting to base allows smooth rotation
- Threaded spindle nose and 24 hole dividing plate with easy conversion to fast direct indexing on numbers 2, 3, 4, 6, 8, 12 and 24

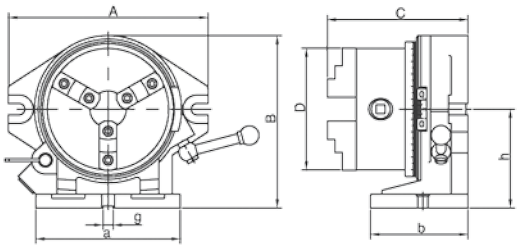
A (mm)	B (mm)	H (mm)	l (mm)	a (mm)	b (mm)	g (mm)	h (mm)	Center Taper (mm)	Spindle Through Hole (mm)	Code
177	188	173	13	160	91	16	100	MT2	18	277070
245	230	220	19	205	114	16	128	MT3	20	277072

Simple Indexing Spacer

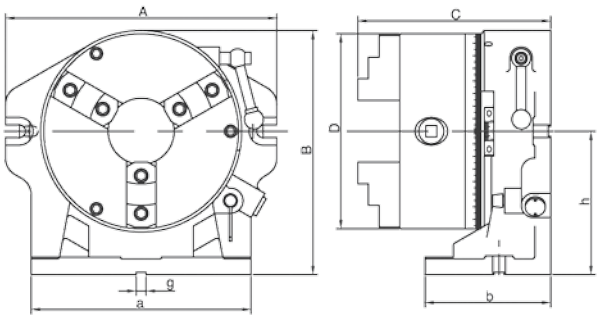




Masking Plates



CC-6

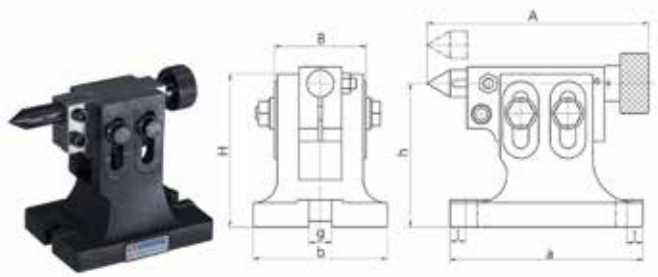


CC-8

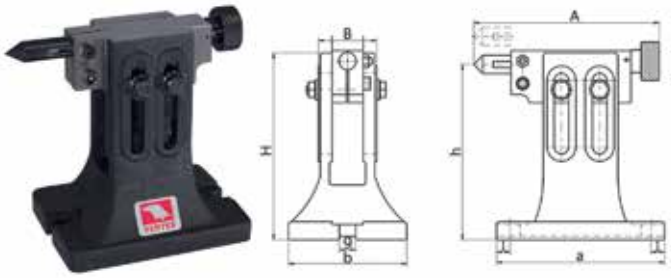
- Mount on milling machines, drilling machines and other machine tools where an indexing facility is required
- Designed for use in horizontal or vertical positions
- Large center through hole suitable for large and long workpieces
- May be used with 3-jaw chuck
- Rapid indexing and easy operation, sharp for mass production
- Simple index includes 3-jaw chuck, masking plates 2, 3, 4, 6, 8 and 12
- Using the key guide block the center can be corrected quickly and accurately

Model	Dividable Number	A (mm)	B (mm)	C (mm)	D (mm)	a (mm)	b (mm)	h (mm)	Ø Inner Jaw (mm)	g Guide Block (mm)	Ø Outer Jaw (mm)	Ø Turret Hole (mm)	Ø Chuck Hole (mm)	Weight (kg)	Code
CC-6	2, 3, 4, 6, 8, 12, 24	253	225	179	160	187	115	130	55-145	16	3-160	44	44	29.5	277080
CC-8	2, 3, 4, 6, 8, 12, 24	318	274	209	200	230	155	157	65-200	16	4-200	63	58	51.5	277082

Tail Stock for Indexing Spacers



TS-1

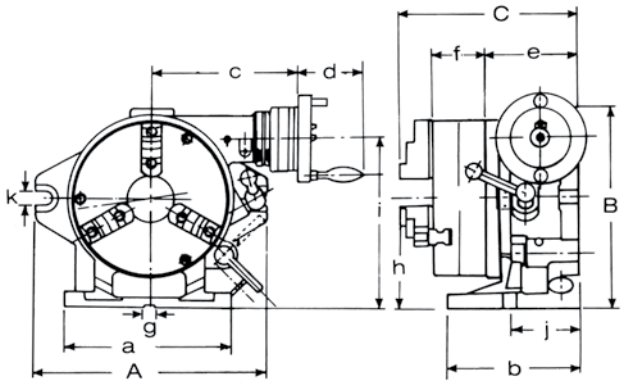


TS-2, TS-3, TS-4

Model	Suitable for…..	Adjustable High-Low	A (mm)	B (mm)	H (mm)	I (mm)	a (mm)	b (mm)	g (mm)	Weight (kg)	Code
TS-1	HV-4, HV-6, VSI-4, VSI-5, BS-0, VUT-6, VU-100, VU-150	108-80	155-180	64	107	11	134	94	16	3.9	277092
TS-2	BS-1, CC-6, CS-6, HV-8	150-115	170-195	64	150	11	155	110	16	5.5	277094
TS-3	CS-8, HV-10, HV-12, CC-8, VUT-10, VUT-12, VU-200	205-130	210-235	64	205	13	185	138	16	8.1	277096
TS-4	HV-14, CC-12, HV-16	260-182	210-235	75	260	17	205	144	16	11.9	277084

Super Indexing Spacers







Masking Plates

Model	Chuck				Face Plate	
	Outer Diameter (mm)	Inner Jaw (mm)	Outer Jaw (mm)	Inner Diameter (mm)	Outer Diameter (mm)	Thickness (mm)
CS-6	160	4-42	10-156	44	203	50
CS-8	210	4-62	10-180	63	254	58

- 3-jaw chuck mounted
- In addition to all of the features of the simple indexing spacer, the super indexing spacer incorporates a worm gear and is supplied with a face plate. With the further addition of the optional dividing plate set, it can also be used as a dividing head.
- The worm gear is hardened and precision ground to minimize wear

Dividable Number	A (mm)	B (mm)	C (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)	h (mm)	I (mm)	j (mm)	k (mm)	Weight (kg)	Code
2, 3, 4, 6, 8, 12, 24	250	235	221	220	150	184	82	112	66	16	123	186	80	18	43.6	277088
2, 3, 4, 6, 8, 12, 24	310	285	243	225	160	201	82	125	75	16	155	232	90	18	78.3	277090

Dividing Plate Sets

- Set includes: indexing plate, crank handle, screws (3), sector and a “U” washer



DP-1



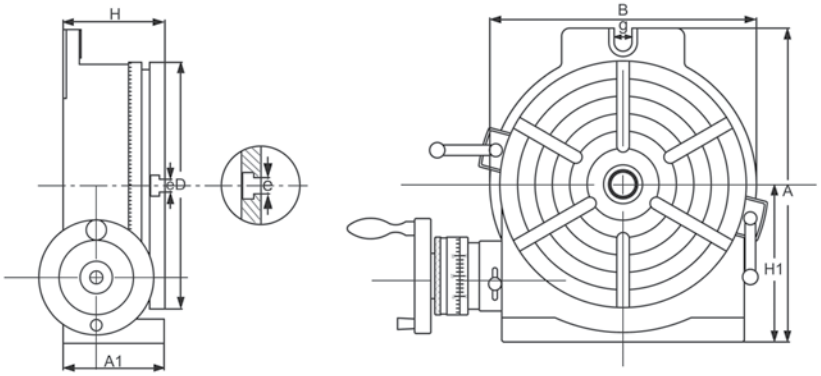
DP-2, DP-3, DP-4, DP-5

Number of Holes	
Model	Holes
DP-1	A Plate: 15, 16, 17, 18, 19, 20 B Plate: 21, 23, 27, 29, 31, 33 C Plate: 37, 39, 41, 43, 47, 49
DP-2, DP-3, DP-4, DP-5	A Plate: 26, 28, 30, 32, 34, 37, 38, 39, 41, 43, 44, 46, 47, 49, 51, 53, 57, 59 B Plate: 61, 63, 67, 69, 71, 73, 77, 79, 81, 83, 87, 89, 91, 93, 97, 99

Model	Suitable for…..	Weight (kg)	Code
DP-1	HV-4, HV-6, VUT-6, VU-100, VU-150	1.4	277100
DP-2	HV-8, VU-200	4.5	277102
DP-3	HV-10, HV-12, HV-14, HV-16, VUT-10, VUT-12	4.6	277104
DP-4	CS-6, CS-8	4.6	277101
DP-5	VU-300	4.6	277103

Horizontal/Vertical Rotary Table





The work table is graduated 360 degrees around it's circumference and is driven by a precision worm and gear providing a 90:1 reduction ratio. One turn of the handle moves the table through four degrees. The dial is graduated in divisions of 1 minute and the vernier scale allows readings down to 10 seconds.

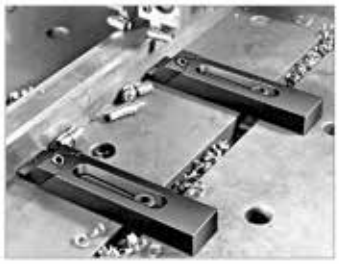
- The worm is hardened and precision ground to minimize wear of the worm gear
- Both the upper and lower surface of the rotary plates are precision ground
- Operation and service manual included

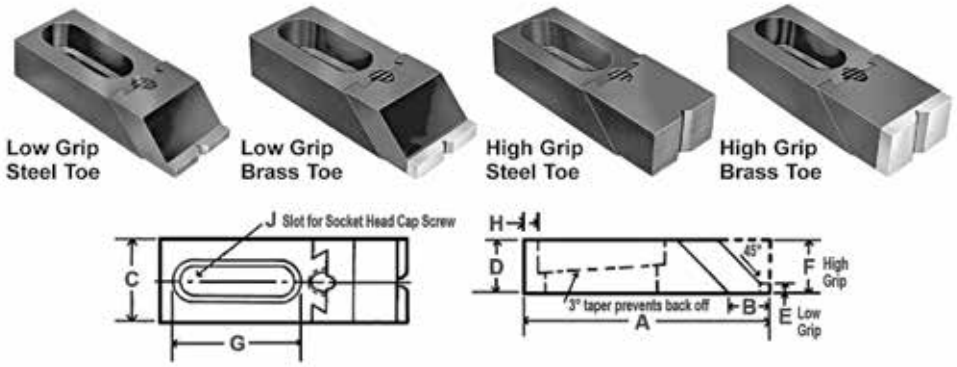
OPTIONAL ACCESSORIES:
- Tail Stock
- Dividing Plate Set
- 3-Jaw Chuck

Model	Table			Base Dimensions			Width of T-Slot	Bolt Slots	Load Capacity of Table (kg)		Center Taper	Weight (kg)		Code
	Outer Diameter		Height											
	A1 (mm)	D (mm)	H (mm)	H1 (mm)	A (mm)	B (mm)	e (mm)	g	Horizontal	Vertical		Net	Gross	
HV-6	78	150	80	102	205	163	11	17	40	20	MT2	12.1	12.7	277106
HV-8	100	205	102	135	265	219	14	17	80	40	MT3	24.7	26.2	277107
HV-10	106	254	109	163	321	276	14	17	90	50	MT3	35.5	37.3	277108
HV-12	123	305	125	194	388	330	16	18	120	60	MT4	58.7	69.8	277109
HV-16	128	406	130	258	503	435	16	18	140	70	MT4	106.4	123.1	277110

Standard Toe Clamps

Low & High Grip – Steel & Brass Toes





- Powerful clamps that grip on the side of the work leaving the top surface open
- Hardened for maximum wear
- Black oxide finish
- Each clamp is supplied with a protective washer
- Conforms to TCMAI/NIJFCM standards

NOTE:
- Clamps slotted for ½" SHCS will accept M12 SHCS and with bushing #42552, 3/8" or M10 SHCS can be used
- Clamps slotted for 5/8" SHCS will accept M16 SHCS
- Small toe clamps can be anchored with 5/16" or M8 SHCS

Low Grip Steel & Brass Toes

A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	G (Inch)	H (Inch)	J (Inch)	Low Grip Steel Toes		Low Grip Brass Toes	
								Slotted for 1/2" SHCS	Slotted for 5/8" SHCS	Slotted for 1/2" SHCS	Slotted for 5/8" SHC
								Code	Code	Code	Code
4-1/16	13/16	1-1/2	7/8	1/4	2	1/8	1/2 or 5/8	217250	217253	217256	217259
5-1/2	13/16	1-1/2	7/8	1/4	2-3/4	1/2	1/2 or 5/8	217251	217254	217257	217260
7-7/16	13/16	1-1/2	7/8	1/4	3-3/4	1	1/2 or 5/8	217252	217255	217258	217261

High Grip Steel & Brass Toes

A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)	G (Inch)	H (Inch)	J (Inch)	High Grip Steel Toes		High Grip Brass Toes	
								Slotted for 1/2" SHCS	Slotted for 5/8" SHCS	Slotted for 1/2" SHCS	Slotted for 5/8" SHC
								Code	Code	Code	Code
4-1/16	13/16	1-1/2	7/8	1/4	2	1/8	1/2 or 5/8	217262	217265	217268	217271
5-1/2	13/16	1-1/2	7/8	1/4	2-3/4	1/2	1/2 or 5/8	217263	217266	217269	217272
7-7/16	13/16	1-1/2	7/8	1/4	3-3/4	1	1/2 or 5/8	217264	217267	217270	217273

Machinist's Clamp Sets

Inch & Metric

Inch Set



Set includes:
- 4 coupling nuts
- 4 flanged nuts
- 6 T-slot nuts
- 1 T-slot cleaner
- 24 studs with flats – 4 each of 3", 4", 5", 6", 7" and 8" long
- 6 stepped blocks
- 6 serrated end clamps
- 1 metal holder

Table Slot (Inch)	Stud Size	Weight (lbs)	Code
7/16	3/8 - 16	19	217330
1/2	3/8 - 16	19	217331
9/16	3/8 - 16	19	217332
9/16	1/2 - 13	24	217333
11/16	1/2 - 13	24	217334
5/8	1/2 - 13	24	217335
11/16	5/8 - 11	29	217336
3/4	5/8 - 11	29	217337
13/16	5/8 - 11	29	217338

Metric Set

- Standard 1" wide blocks

Table Slot (mm)	Stud Size	Net Weight (lbs)	Code
12	M10	19	217569
14	M12	24	217570

Table Slot (mm)	Stud Size	Net Weight (lbs)	Code
16	M12	24	217571
18	M16	31	217572
20	M16	31	217573



Clamping Sets

Table & Wall Mount

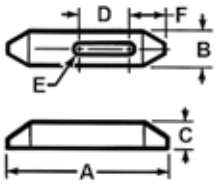


Table Slot (Inch)	Stud Size	Block Width (Inch)	Table Mount		Wall Mount	
			Model	Code	Model	Code
1/2	3/8–16	1	500CK	400005	500CKM	400010
5/8	1/2–13	1	625CK	400015	625CKM	400020
3/4	5/8–11	1	750CK	400025	750CKM	400030
13/16	3/4–10	1-1/2	812CK	400035	–	–
7/8	3/4–10	1-1/2	875CK	400040	–	–
1	7/8–9	2	12982CK	400045	–	–

Plain Clamps



- Black oxide finish
- Case hardened



A (Inch)	B (Inch)	C (Inch)	D (Inch)	E Stud Size (Inch)	F (Inch)	Code
2-1/2	1	1/2	13/16	5/16 or 3/8	27/32	217358
4	1	5/8	1-7/16	5/16 or 3/8	1-1/32	217359
6	1-1/8	3/4	2-3/16	5/16 or 3/8	1-5/32	217360
2-1/2	1-1/8	1/2	11/16	1/2	29/32	217361
4	1-1/4	3/4	1-5/16	1/2	1-5/32	217362
6	1-1/4	7/8	2-1/16	1/2	1-9/32	217363
2-1/2	1-1/4	5/8	9/16	5/8	31-32	217364
4	1-1/2	3/4	1-3/16	5/8	1-9/32	217365
6	1-1/2	7/8	1-15/16	5/8	1-13/32	217366
4	1-1/2	3/4	1-1/16	3/4	1-11/32	217367
6	1-1/2	1	1-15/16	3/4	1-15/32	217368
8	1-3/4	1-1/8	2-3/16	3/4	1-29/32	217369
6	2	1-1/4	1-11/16	7/8 or 1	1-27/32	217370
8	2	1-3/8	1-15/16	7/8 or 1	2-1/32	217371
10	2	1-1/2	2-15/16	7/8 or 1	2-1/32	217372

Plain Clamps



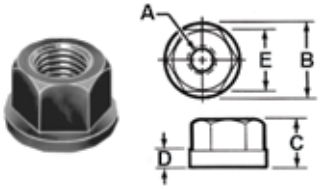
Bolt Size (Inch)	Length (Inch)	Width (Inch)	Thickness (Inch)	Code
3/8	2-1/2	1	1/2	400302
3/8	4	1	5/8	400304
3/8	6	1-1/8	3/4	400306
1/2	2-1/2	1-1/8	1/2	400312
1/2	4	1-1/4	3/4	400314
1/2	6	1-1/4	7/8	400316
5/8	2-1/2	1-1/4	5/8	400322
5/8	4	1-1/2	3/4	400324

Bolt Size (Inch)	Length (Inch)	Width (Inch)	Thickness (Inch)	Code
5/8	6	1-1/2	7/8	400326
3/4	4	1-1/2	3/4	400334
3/4	6	1-1/2	1	400336
3/4	8	1-3/4	1-1/8	400338
1	6	2	1-1/4	400346
1	8	2	1-3/8	400348
1	10	2	1-1/2	400350

Flanged Nuts

Northwestern

Inch & Metric



- UNC
- Heat treated steel with black oxide finish for long life under repeated usage
- Flange provides large bearing surface and reduces chance of possible damage to part being clamped

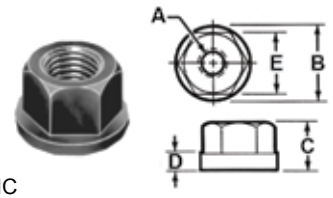
Inch

A Thread Size	B (Inch)	C (Inch)	D (Inch)	E (Inch)	Code
1/4–20	5/8	5/16	3/32	1/2	217339
5/16–18	3/4	3/8	1/8	9/16	217340
3/8–16	7/8	1/2	1/8	11/16	217341
7/16–14	1	9/16	5/32	3/4	217342
1/2–13	1-1/8	11/16	3/16	7/8	217343
5/8–11	1-3/8	13/16	3/16	1-1/16	217344
3/4–10	1-5/8	1	1/4	1-1/4	217345
7/8–9	1-3/4	1-1/8	1/4	1-7/16	217346
1–8	2	1-1/4	1/4	1-5/8	217347
1-1/4–7	2-1/2	1-1/4	1/4	1-13/16	217348

Metric

A Thread Size	B (mm)	C (mm)	D (mm)	E (mm)	Code
M8 x 1.25	19.0	9.5	2.4	14.3	217607
M10 x 1.50	22.2	12.7	3.2	17.4	217608
M12 x 1.75	28.5	17.4	4.0	22.2	217609
M16 x 2.00	35.0	20.6	4.7	27.0	217610

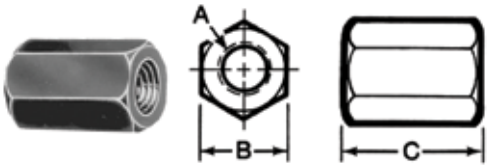
Flanged Nuts



- UNC
- Heat treated steel with black oxide finish for long life under repeated usage

A Thread Size	B (Inch)	C (Inch)	D (Inch)	E (Inch)	Code
5/16 – 18	3/4	3/8	3/32	9/16	400800
3/8 – 16	7/8	1/2	1/8	11/16	400802
1/2 – 13	1-5/16	11/16	1/8	13/16	400804
5/8 – 11	1-3/8	13/16	3/16	1-1/16	400806
3/4 – 10	1-1/2	1	1/4	1-1/4	400808
7/8 – 9	1-3/4	1-1/8	1/4	1-7/16	400810
1 – 8	2	1-1/4	1/4	1-5/8	400812

Coupling Nuts

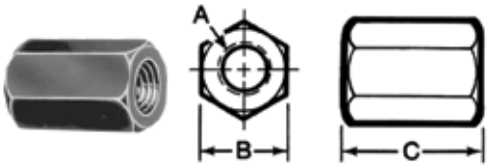


- Heat treated steel with black oxide finish

A Thread Size	B Hex Size (Inch)	C Length (Inch)	Code
5/16 – 18	9/16	7/8	400601
3/8 – 16	11/16	1	400602
1/2 – 13	7/8	1-1/4	400604
5/8 – 11	1-1/16	1-5/8	400606
3/4 – 10	1-1/4	1-7/8	400608
7/8 – 9	1-7/16	2-1/4	400610
1 – 8	1-5/8	2-1/2	400612

Coupling Nuts

Inch & Metric



- Heat treated steel with black oxide finish for long life under repeated usage
- Coupling nut allows studs to be joined together to create desired length

Inch

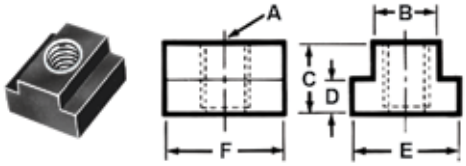
A Thread Size	B (Inch)	C (Inch)	Code
1/4 - 20	1/2	5/8	217349
5/16 - 18	9/16	7/8	217350
3/8 - 16	11/16	1	217351
7/16 - 14	3/4	1-1/4	217352
1/2 - 13	7/8	1-1/4	217353
5/8 - 11	1-1/16	1-5/8	217354
3/4 - 10	1-1/4	1-7/8	217355
7/8 - 9	1-7/16	2-1/4	217356
1 - 8	1-5/8	2-1/2	217357

Metric

A Thread Size	B (mm)	C (Inch)	Code
M8 x 1.25	14.3	22	217611
M10 x 1.50	17.4	25	217612
M12 x 1.75	22.2	32	217613
M16 x 2.00	27.0	41	217614

T-Slot Nuts

Inch & Metric



- Black oxide finish
- Case hardened
- Many sizes conform to TCMA standards
- The last thread is incomplete on T-Slot nuts to prevent the stud from turning through bottom of nut into machine table

To keep from damaging the T-Nut, the mating thread must be threaded as far as possible into the T-Nut.Standard T-Slot Nuts have an incomplete thread in the base to eliminate any danger of screwing the stud through the nut and damaging the machine table.

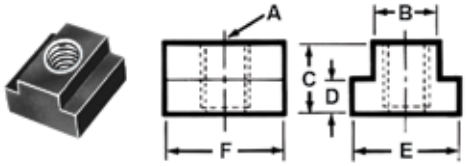
Inch

B Table Slot (Inch)	A Thread Size	E (Inch)	D (Inch)	C (Inch)	F Length (Inch)	Code
3/8	5/16 - 18	5/8	3/16	1/2	7/8	217373
7/16	3/8 - 16	11/16	7/32	1/2	7/8	217374
1/2	3/8 - 16	7/8	9/32	1/2	7/8	217375
9/16	3/8 - 16	7/8	11/32	5/8	1-1/8	217376
9/16	1/2 - 13	7/8	11/32	5/8	1-1/8	217377
5/8	1/2 - 13	1	11/32	5/8	1-1/8	217378
11/16	1/2 - 13	1-1/8	7/16	3/4	1-1/4	217379
11/16	5/8 - 11	1-1/8	7/16	3/4	1-1/4	217380
3/4	5/8 - 11	1-1/4	15/32	3/4	1-1/4	217381
13/16	5/8 - 11	1-1/4	9/16	1	1-1/2	217382
13/16	3/4 - 10	1-1/4	9/16	1	1-1/2	217383
7/8	3/4 - 10	1-1/2	9/16	1	1-1/2	217384
1	3/4 - 10	1-5/8	5/8	1	1-3/4	217385
1	7/8 - 9	1-5/8	5/8	1	1-3/4	217387
1-1/16	3/4 - 10	1-5/8	11/16	1-1/8	2	217386
1-1/16	1 - 8	1-5/8	11/16	1-1/8	2	217388

Metric

B Table Slot (mm)	A Thread Size	E (mm)	D (mm)	C (mm)	F Length (mm)	Code
10	M8 x 1.25	16.0	6	12.7	22	217601
12	M10 x 1.50	22.0	7	12.7	22	217602
14	M12 x 1.75	22.0	8	16.0	29	217603
16	M12 x 1.75	25.4	9	16.0	29	217604
18	M16 x 2.00	31.7	11	19.0	32	217605
20	M16 x 2.00	31.7	12	25.4	38	217606

T-Slot Nuts



- Black oxide finish
- Case hardened
- Many sizes conform to TCMA standards
- The last thread is incomplete on T-Slot nuts to prevent the stud from turning through bottom of nut into machine table

B Table Slot (Inch)	A Thread Size	E (Inch)	D (Inch)	C (Inch)	F Length (Inch)	Code
3/8	5/16 – 18	5/8	3/16	1/2	7/8	400701
7/16	3/8 – 16	11/16	7/32	1/2	7/8	400702
1/2	3/8 – 16	7/8	9/32	1/2	7/8	400704
9/16	3/8 – 16	7/8	11/32	5/8	1-1/8	400706
9/16	1/2 – 13	7/8	11/32	5/8	1-1/8	400708
5/8	1/2 – 13	1	11/32	5/8	1-1/8	400710
11/16	1/2 – 13	1-1/8	7/16	3/4	1-1/4	400712
11/16	5/8 – 11	1-1/8	7/16	3/4	1-1/4	400714
3/4	5/8 – 11	1-1/4	15/32	3/4	1-1/4	400716
13/16	5/8 – 11	1-1/4	9/16	1	1-1/2	400718
13/16	3/4 – 10	1-1/4	9/16	1	1-1/2	400720
7/8	3/4 – 10	1-1/2	9/16	1	1-1/2	400722
1	3/4 – 10	1-5/8	5/8	1	1-3/4	400724
1-1/16	3/4 – 10	1-5/8	11/16	1-1/8	2	400726
1	7/8 – 9	1-5/8	5/8	1	1-3/4	400728
1-1/16	1 – 8	1-5/8	11/16	1-1/8	2	400730

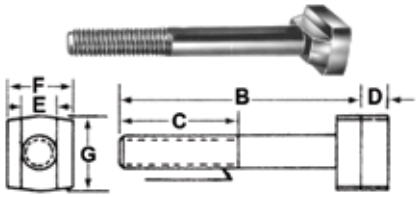
T-Slot Cleaner



- Heat treated steel
- Black oxide finish
- Eliminates the danger of removing chips with air
- Saves time

Length (Inch)	Code
6	217389

T-Slot Bolts



- Black oxide finish
- Medium carbon steel
- Diameters offered include 3/8”, 1/2”, 5/8”, 3/4”, 7/8” and 1”
- T-Slot bolt head thickness “D” is undersized to fit machine table slot
- Thread class 2A UNC
- Sizes functionally interchange with forged T-Slot bolts

3/8–16

B Length (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	Code
1-1/2	1	13/64	3/8	5/8	3/4	217390
2	1-1/4	13/64	3/8	5/8	3/4	217391
2-1/2	1-1/2	13/64	3/8	5/8	3/4	217392
3	1-1/2	13/64	3/8	5/8	3/4	217393

B Length (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	Code
3-1/2	1-1/2	13/64	3/8	5/8	3/4	217394
4	1-1/2	13/64	3/8	5/8	3/4	217395

5/8–11

B Length (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	Code
1-1/2	1	5/16	5/8	1-1/64	1-1/8	217404
2	1-1/4	5/16	5/8	1-1/64	1-1/8	217405
2-1/2	1-1/2	5/16	5/8	1-1/64	1-1/8	217406
3	1-1/2	5/16	5/8	1-1/64	1-1/8	217407

B Length (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	Code
3-1/2	1-1/2	5/16	5/8	1-1/64	1-1/8	217408
4	1-1/2	5/16	5/8	1-1/64	1-1/8	217409
5	1-1/2	5/16	5/8	1-1/64	1-1/8	217410
6	2	5/16	5/8	1-1/64	1-1/8	217411
8	3	5/16	5/8	1-1/64	1-1/8	217412

T-Slot Bolts

(continued)

3/4–10

B Length (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	Code
3	1-1/2	3/8	3/4	1-1/4	1-3/8	217413
3-1/2	1-1/2	3/8	3/4	1-1/4	1-3/8	217414
4	1-1/2	3/8	3/4	1-1/4	1-3/8	217415
5	1-1/2	3/8	3/4	1-1/4	1-3/8	217416
6	2	3/8	3/4	1-1/4	1-3/8	217417
8	3	3/8	3/4	1-1/4	1-3/8	217418

1–8

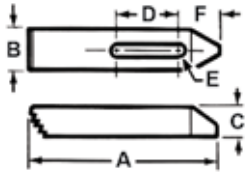
B Length (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	Code
4	2	1/2	1	1-21/32	1-7/8	217419
5	2	1/2	1	1-21/32	1-7/8	217420
6	2	1/2	1	1-21/32	1-7/8	217421
8	3	1/2	1	1-21/32	1-7/8	217422
10	3	1/2	1	1-21/32	1-7/8	217423

1/2–13

B Length (Inch)	C (Inch)	D (Inch)	E (Inch)	F (Inch)	G (Inch)	Code
1-1/2	1	1/4	1/2	13/16	1	217396
2	1-1/4	1/4	1/2	13/16	1	217397
2-1/2	1-1/2	1/4	1/2	13/16	1	217398
3	1-1/2	1/4	1/2	13/16	1	217399
3-1/2	1-1/2	1/4	1/2	13/16	1	217400
4	1-1/2	1/4	1/2	13/16	1	217401
5	1-1/2	1/4	1/2	13/16	1	217402
6	2	1/4	1/2	13/16	1	217403

Serrated Step Clamps





- Black oxide finish
- Case hardened
- Teeth match all stepped blocks

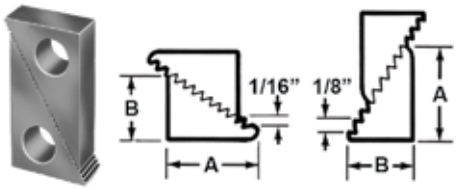
A (Inch)	B (Inch)	C (Inch)	D (Inch)	E Stud Size (Inch)	F (Inch)	Code
2-1/2	1	1/2	13/16	5/16 or 3/8	27/32	217424
4	1	5/8	1-7/16	5/16 or 3/8	1-1/32	217425
6	1-1/8	3/4	2-3/16	5/16 or 3/8	1-5/32	217426
2-1/2	1-1/8	1/2	11/16	1/2	29/32	217427
4	1-1/4	3/4	1-5/16	1/2	1-5/32	217428
6	1-1/4	7/8	2-1/16	1/2	1-9/32	217429
2-1/2	1-1/4	5/8	9/16	5/8	31/32	217430
4	1-1/2	3/4	1-3/16	5/8	1-9/32	217431
6	1-1/2	7/8	1-15/16	5/8	1-13/32	217432
4	1-1/2	3/4	1-1/16	3/4	1-11/32	217433
6	1-1/2	1	1-15/16	3/4	1-15/32	217434
8	1-3/4	1-1/8	2-3/16	3/4	1-29/32	217435
6	2	1-1/4	1-11/16	7/8 or 1	1-27/32	217436
8	2	1-3/8	1-15/16	7/8 or 1	2-1/32	217437
10	2	1-1/2	2-15/16	7/8 or 1	2-1/32	217438

Serrated Step Clamps



Thickness (Inch)	Length (Inch)	Width (Inch)	Bolt Size (Inch)	Code
1/2	2-1/2	1	3/8	400202
5/8	4	1	3/8	400204
3/4	6	1-1/8	3/8	400206
1/2	2-1/2	1-1/8	1/2	400212
3/4	4	1-1/4	1/2	400214
7/8	6	1-1/4	1/2	400216
5/8	2-1/2	1-1/4	5/8	400222
3/4	4	1-1/2	5/8	400224
7/8	6	1-1/2	5/8	400226
3/4	4	1-1/2	3/4	400234
1	6	1-1/2	3/4	400236
1-1/8	8	1-3/4	3/4	400238
1-1/4	6	2	1	400246
1-3/8	8	2	1	400248
1-1/2	10	2	1	400250

Stepped Blocks



- Chamfered holes in larger sizes for ease of use
- Steel stepped blocks have black oxide finish
- Two halves = one block – order by block
- Teeth match serrated stepped clamps

Width (Inch)	Height Adjustment Range (Inch)	A (Inch)	B (Inch)	Code
1	3/4 – 1-5/8	1-1/16	11/16	217439
1	1-1/8 – 2-1/2	1-39/64	1-1/16	217440
1	2-1/2 – 6	3-3/4	2-15/32	217441
1-1/2	1-3/4 – 4	2-17/32	1-43/64	217442
1-1/2	2-1/2 – 6	3-3/4	2-15/32	217443
1-1/2	3-1/2 – 9	5-21/64	3-7/16	217444
2	1-3/4 – 4	2-17/32	1-43/64	217445
2	2-1/2 – 6	3-3/4	2-15/32	217446
2	3-1/2 – 9	5-21/64	3-7/16	217447

Stepped Blocks



Height Adjustability (Inch)	Stud Width (Inch)	Code
3/4 – 1-1/2	1	400101
1-1/8 – 2-1/2	1	400102
2-1/2 – 6	1	400103
1-1/2 – 3-3/4	1-1/2	400114
2-1/2 – 6	1-1/2	400115
3-1/2 – 9	1-1/2	400116
1-1/2 – 3-3/4	2	400127
2-1/2 – 6	2	400128
3-1/2 – 9	2	400129

T-Nut & Stud Sets



Table Slot (Inch)	Stud Size	Code
5/8	1/2 - 13	400055
3/4	5/8 - 11	400060
7/8	3/4 - 10	400065

Step Block & Clamps

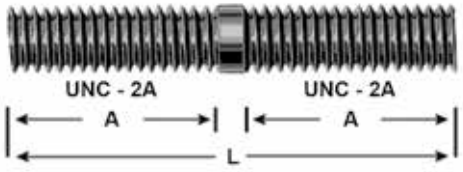
12-Piece Sets



Block Width (Inch)	Stud Size (Inch)	Code
1	3/8	400075
1	1/2	400080

Clamping Studs

Inch & Metric – Material TO ASTM A 311 Class B



Inch

L Length (Inch)	1/4–20		5/16–18		3/8–16		1/2–13		5/8–11		3/4–10		7/8–9		1–8	
	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code
1-1/2	1	217448	1-1/8	217454	1-1/4	217465	1-1/2	217479	1-3/4	217497	–	–	–	–	–	–
2	1	217449	1-1/8	217455	1-1/4	217466	1-1/2	217480	1-3/4	217498	–	–	–	–	–	–
2-1/2	1	217450	1-1/8	217456	1-1/4	217467	1-1/2	217481	1-3/4	217499	–	–	–	–	–	–
3	1	217451	1-1/8	217457	1-1/4	217468	1-1/2	217482	1-3/4	217500	2	217515	2-1/4	217533	2-1/2	217546
3-1/2	1	217452	1-1/8	217458	1-1/4	217469	1-1/2	217483	1-3/4	217501	2	217516	–	–	–	–
4	1	217453	1-1/8	217459	1-1/4	217470	1-1/2	217484	1-3/4	217502	2	217517	2-1/4	217534	2-1/2	217547
4-1/2	–	–	1-1/8	217460	1-1/4	217471	1-1/2	217485	1-3/4	217503	2	217518	–	–	–	–
5	–	–	1-1/8	217461	1-1/4	217472	1-1/2	217486	1-3/4	217504	2	217519	2-1/4	217535	2-1/2	217548
5-1/2	–	–	–	–	1-1/4	217473	1-1/2	217487	1-3/4	217505	2	217520	–	–	–	–
6	–	–	1-1/8	217462	1-1/4	217474	1-1/2	217488	1-3/4	217506	2	217521	2-1/4	217536	2-1/2	217549
6-1/2	–	–	–	–	1-1/4	217475	1-1/2	217489	1-3/4	217507	2	217522	–	–	–	–
7	–	–	1-1/8	217463	1-1/4	217476	1-1/2	217490	1-3/4	217508	2	217523	2-1/4	217537	2-1/2	217550
7-1/2	–	–	–	–	1-1/4	217477	1-1/2	217491	1-3/4	217509	2	217524	–	–	–	–
8	–	–	1-1/8	217464	1-1/4	217478	1-1/2	217492	1-3/4	217510	2	217525	2-1/4	217538	2-1/2	217551
9	–	–	–	–	–	–	2	217493	2	217511	2	217526	2-1/4	217539	2-1/2	217552
10	–	–	–	–	–	–	2	217494	2	217512	2	217527	2-1/4	217540	2-1/2	217553
12	–	–	–	–	–	–	2	217495	2	217513	2	217528	2-1/4	217541	2-1/2	217554
14	–	–	–	–	–	–	2	217496	2	217514	2	217529	2-1/4	217542	2-1/2	217555
16	–	–	–	–	–	–	–	–	–	–	2	217530	2-1/4	217543	2-1/2	217556
18	–	–	–	–	–	–	–	–	–	–	2	217531	2-1/4	217544	2-1/2	217557
20	–	–	–	–	–	–	–	–	–	–	2	217532	2-1/4	217545	2-1/2	217558

Metric

L Length (mm)	M8 x 1.25		M10 x 1.5		M12 x 1.75		M16 x 2.0	
	A (mm)	Code	A (mm)	Code	A (mm)	Code	A (mm)	Code
50	33	217577	–	–	–	–	–	–
65	33	217578	35	217583	–	–	–	–
80	33	217579	35	217584	39	217589	47	217595
95	33	217580	35	217585	39	217590	–	–
110	33	217581	35	217586	39	217591	47	217596
125	33	217582	35	217587	39	217592	47	217597
150	–	–	35	217588	39	217593	47	217598
175	–	–	–	–	39	217594	47	217599
200	–	–	–	–	–	–	47	217600

Clamping Studs

Inch



L Length (Inch)	5/16–18		3/8–16		1/2–13		5/8–11		3/4–10		7/8–9		1–8	
	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code	A (Inch)	Code
3	3/4	400393	1-1/4	400403	1-1/2	400423	1-3/4	400443	2	400463	2-1/4	400482	2-1/2	400501
4	3/4	400394	1-1/4	400405	1-1/2	400425	1-3/4	400445	2	400465	2-1/4	400484	2-1/2	400503
5	3/4	400395	1-1/4	400407	1-1/2	400427	1-3/4	400447	2	400467	2-1/4	400486	2-1/2	400505
6	3/4	400396	1-1/4	400409	1-1/2	400429	1-3/4	400449	2	400469	2-1/4	400488	2-1/2	400507
7	3/4	400397	1-1/4	400411	1-1/2	400431	1-3/4	400451	2	400471	2-1/4	400490	2-1/2	400509
8	3/4	400398	1-1/4	400413	1-1/2	400433	1-3/4	400453	2	400473	2-1/4	400492	2-1/2	400511
10	–	–	–	–	–	–	1-3/4	400455	2	400475	2-1/4	400494	2-1/2	400513
12	–	–	–	–	–	–	1-3/4	400457	2	400476	2-1/4	400495	2-1/2	400514
14	–	–	–	–	–	–	–	–	2	400477	2-1/4	400496	2-1/2	400515
16	–	–	–	–	–	–	–	–	2	400478	2-1/4	400497	2-1/2	400516
18	–	–	–	–	–	–	–	–	2	400479	2-1/4	400498	2-1/2	400517
20	–	–	–	–	–	–	–	–	2	400480	2-1/4	400499	2-1/2	400518

Screw Jacks & Pads

No. 6400



- For clamping and setting
- Screw jack flat top with center hole 12mm diameter
- Acme thread, self-locking, spindle with end stops
- Material: carbon steel

Size (mm)	Hi-Low (mm)	Top Diameter (mm)	Base Diameter (mm)	Load (kg)	Code
50	40-50	32	32	15	405902
52	42-52	50	50	60	405904
70	50-70	50	50	60	405906
100	70-100	50	50	60	405908
140	100-140	65	70-2	100	405910
210	140-210	70	80-2	170	405912
300	190-300	80	100-2	350	405914
200	140-200	80	100-2	350	405916
280	190-280	110	140-2	600	405918

No. 6401



- For clamping and setting
- Screw jack with aluminum base
- Locating hole: 12mm diameter
- Spindle: superior quality steel brown finish treated trapeze thread with end stop

Size (mm)	Hi-Low (mm)	Top Diameter (mm)	Base Diameter (mm)	Load (kg)	Code
52	42-52	50	50	30	405920
70	50-70	50	50	30	405922
100	70-100	50	50	30	405924

No. 6430



- For clamping and setting
- Atlas screw jack center hole 12mm diameter
- Spindle: Acme thread TR 30 x 6
- Material: carbon steel

Size (mm)	Hi-Low (mm)	Top Diameter (mm)	Base Diameter (mm)	Load (kg)	Code
140	100-140	50	50	60	405926
200	140-200	50	50	60	405928
320	200-320	50	50	40	405930
550	320-550	50	50	25	405932

Screw Jack Pads



No. 6440 Ball-Pad | No. 6441 V-Pad | No. 6442 Centering-Pad | No. 6443 Locating-Pad

Pad No.	For Clamping and Setting Screw Jacks		
	6400	6401	6430
6440	●	●	●
6441	●	●	●
6442	●	●	●
6443	●	—	●

Pad No.	Code
6440	405940
6441	405942
6442	405944
6443	405948

Hi-Rise Clamps & Accessories

Standard Hi-Rise Clamps – 34-Piece Sets





- A 1/4 turn of the clamp disengages the tangs from the slots in the rack allowing the clamp to move up and down
- Adding extensions to the rack gives an unlimited clamping range
- Racks and clamps are hardened to provide better wear resistance

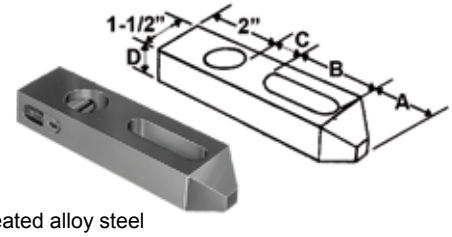
Sets include:

2 Studs of each length: 3", 4", 5", 6", 7" and 8"
2 T-Slot Nuts to fit your machine
2 Toggle Flanged Nuts
4 Coupling Nuts
2 Standard length Hi-Rise Clamps
2 Slotted Racks 6" long
2 Extensions, 4" long
2 Extensions, 6-1/2" long
2 Aluminum Bases
2 Clamp Supports
1 "T" Slot Cleaner
1 Handy Holder

Stud Size	Table Slot (Inch)	Net Weight per Set (lbs)	Code
3/8 - 16	7/16	16	217615
3/8 - 16	1/2	16	217616
3/8 - 16	9/16	16	217617
1/2 - 13	9/16	18	217618
1/2 - 13	5/8	18	217619
1/2 - 13	11/16	18	217620
5/8 - 11	11/16	20	217621

Stud Size	Table Slot (Inch)	Net Weight per Set (lbs)	Code
5/8 - 11	3/4	20	217622
5/8 - 11	13/16	21	217623
3/4 - 10	13/16	24	217624
3/4 - 10	7/8	24	217625
3/4 - 10	1	24	217626
3/4 - 10	1-1/16	25	217627

Hi-Rise Clamps



- Heat treated alloy steel
- Black oxide finish
- Clamp slides up or down the slotted rack for fast height adjustment

Style	Stud Size (Inch)	A (Inch)	B (Inch)	C (Inch)	D (Inch)	Code
Standard	3/8	3/4	2	3/4	7/8	217641
Long Reach	3/8	1-1/8	3	1-3/8	7/8	217642
Standard	1/2	3/4	2	3/4	7/8	217643
Long Reach	1/2	1-1/8	3	1-3/8	7/8	217644
Standard	5/8	3/4	2	3/4	7/8	217645
Long Reach	5/8	1-1/8	3-1/2	1-7/8	1-1/8	217646
Standard	3/4	3/4	2	3/4	7/8	217647
Long Reach	3/4	1-1/8	3-1/2	1-7/8	1-1/8	217648

Solid Extensions



- Extends the slotted rack for larger height requirements
- Black oxide finish

Length (Inch)	Diameter (Inch)	Code
4	1	217649
6-1/2	1	217650

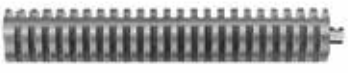
Aluminum Base



- Provides solid support
- Protects tables

Height (Inch)	Diameter (Inch)	Code
5/8	2-1/2	217651

Slotted Rack



- Slots let clamps adjust within 1/16" of work height
- Heat treated alloy steel
- Black oxide finish

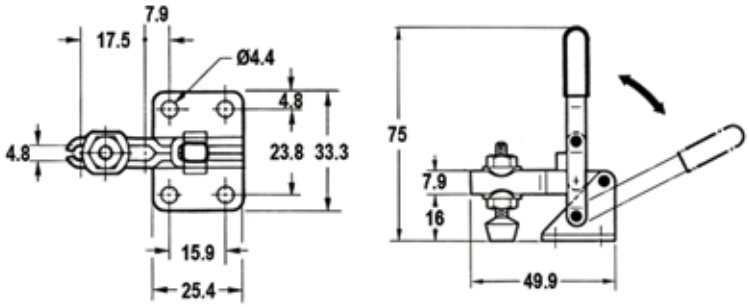
Length (Inch)	Diameter (Inch)	Code
6	1	217652

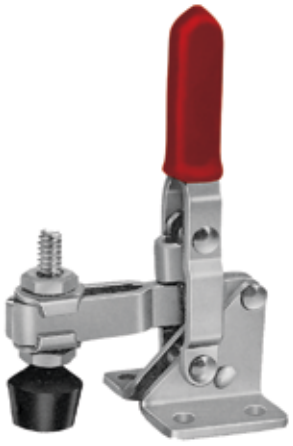
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Toggle Clamps & Accessories

Vertical Handle Toggle Clamp

- Miniature size
- Holding capacity: 50 kg (100 lbs) maximum
- Weight: 60 g (2 oz)
- Handle moves 56°, bar 100°
- Neoprene tipped
- Vinyl hand grip

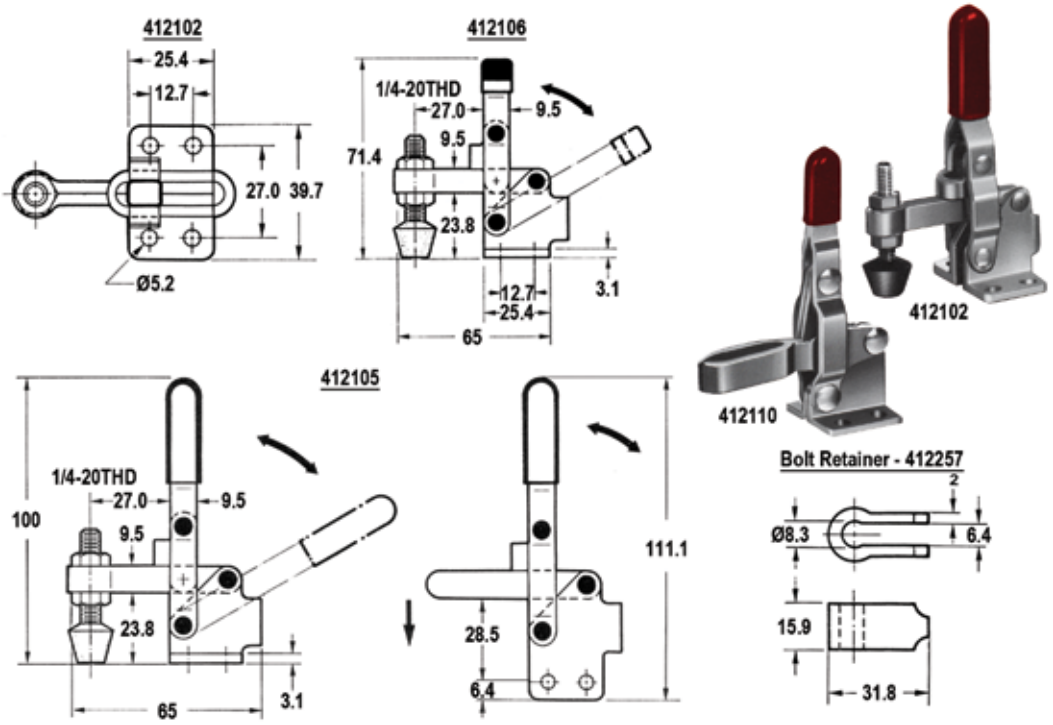




Model	Description	Code
SH-101-A	U-bar, flanged base, straight handle	412101

Vertical Handle Toggle Clamps

- Holding capacity: 91 kg (200 lbs) maximum
- Weight: 170 g (6 oz)
- Handle moves 60°, bar 100°
- Neoprene tipped
- Solid bar
- Vinyl hand grip



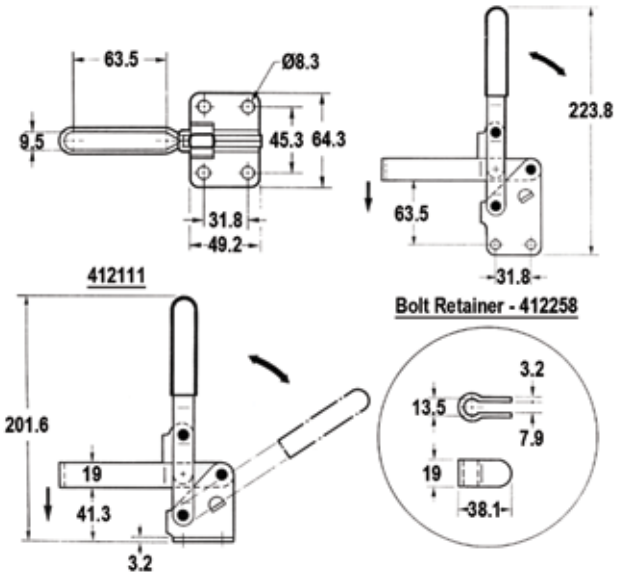
Model	Description	Code
SH-12050	Fixed spindle, flanged base, straight handle	412102
SH-12055	Fixed spindle, straight base, straight handle	412103
SH-12060	Solid bar, flanged base, straight handle	412104
SH-12065	Solid bar, straight base, straight handle	412105
SH-12070	Fixed spindle, flanged base, T-handle	412106
SH-12075	Fixed spindle, straight base, T-handle	412107
SH-12080	Solid bar, flanged base, T-handle	412108
SH-12050-U	U-bar, flanged base, straight handle	412110

Toggle Clamps & Accessories

(continued)

Vertical Handle Toggle Clamps

- Holding capacity: 340 kg (750 lbs) maximum
- Weight: 624 g (1 lb, 6 oz)
- Handle moves 58º, bar 105º
- Accepts all 3/8-16 diameter spindles
- U-Bar supplied with two flanged washers
- Solid bar supplied (spindle not included)
- Vinyl hand grip

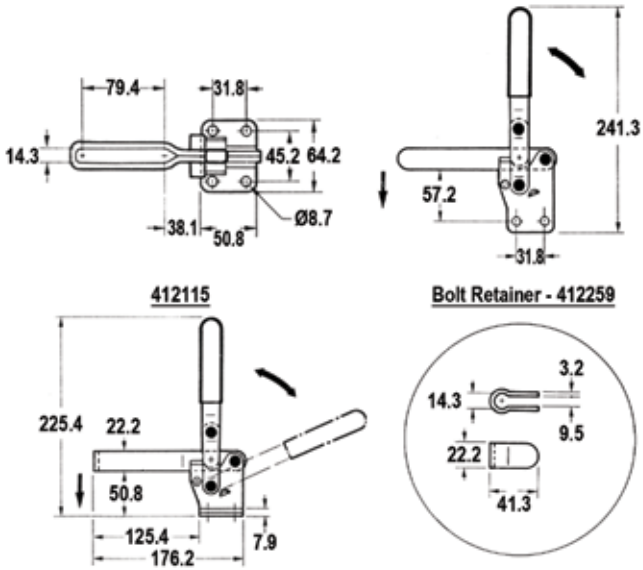




Model	Description	Code
12265	U-bar, flanged base, straight handle	412111
12275	Solid bar, flanged base, straight handle	412113
12280	Solid bar, straight base, straight handle	412114

Vertical Handle Toggle Clamps

- Heavy duty
- Compact size
- Two stops provide user with a choice of handle and bar movement
- Holding capacity: 450 kg (1000 lbs) maximum
- Weight: 1250 g (44 oz)
- Handle moves 58º, bar 100º (with roll pin)
- Handle moves 70º, bar 135º (without roll pin)
- Accepts all 1/2 - 13 diameter spindles
- U-Bar supplied with two flanged washers
- Solid bar (spindle not included)
- Vinyl hand grip
- Hardened bushings
- Removable ground pins





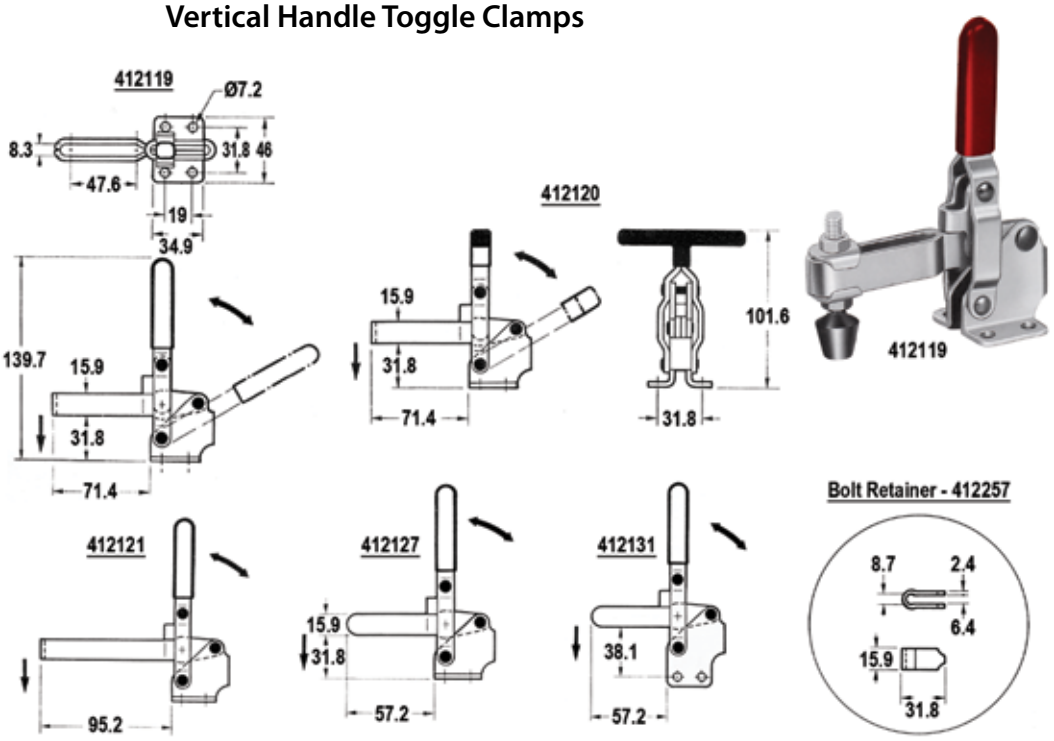
Model	Description	Code
10247	U-bar, flanged base, straight handle	412115
10249	Solid bar, flanged base, straight handle	412117
10250	Solid bar, straight base, straight handle	412118

Toggle Clamps & Accessories

(continued)

Vertical Handle Toggle Clamps

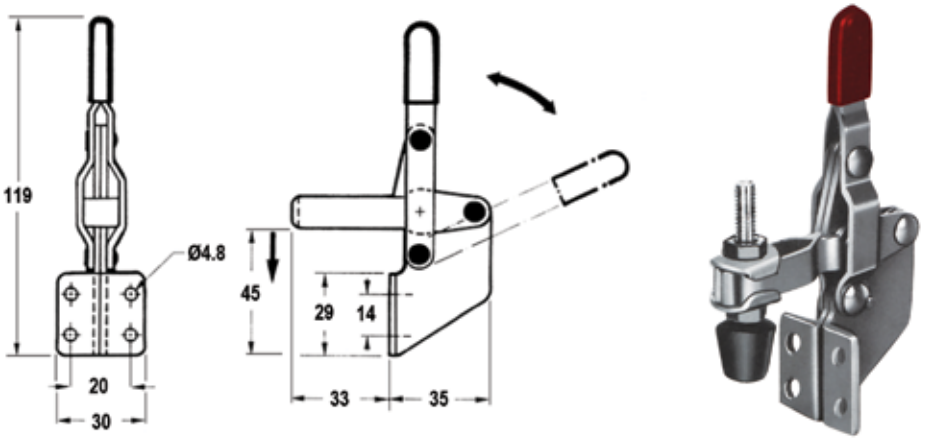
- Holding capacity: 227 kg (500 lbs) maximum
- Handle moves 60º, bar 100º
- Accepts all 5/16-18 diameter spindles
- U-Bar supplied with two flanged washers
- Vinyl hand grip



Model	Description	Weight g (oz)	Code
12130	Short U-bar, flanged base, straight handle	355 (12.5)	412119
12131	Short U-bar, flanged base, T-handle	370 (13)	412120
12132	Long U-bar, flanged base, straight handle	370 (13)	412121
12137	Long U-bar, straight base, straight handle	370 (13)	412125
12138	Long U-bar, straight base, T-handle	400 (12.5)	412126
12140	Short solid bar, flanged base, straight handle	340 (12)	412127
12143	Long solid bar, flanged base, T-handle	375 (13)	412130
12145	Short solid bar, straight base, straight handle	340 (12)	412131

Vertical Handle Toggle Clamp with Vertical Mount

- Holding capacity: 90 kg (200 lbs)
- Weight: 115 g (4 oz)
- U-bar
- Vertical mounting straight base
- Vertical handle
- Neoprene tipped
- Vinyl hand grip



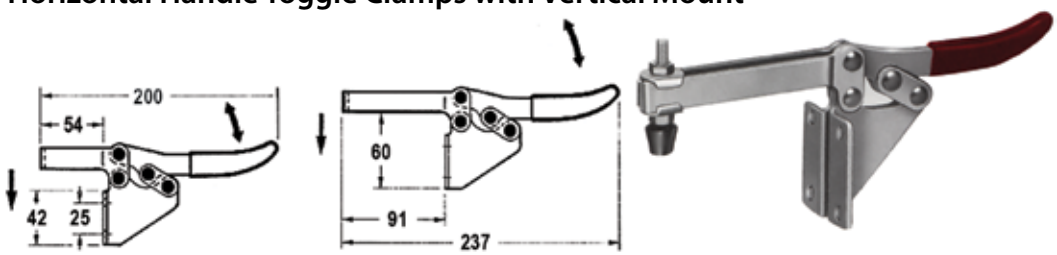
Model	Description	Code
101B	U-bar, vertical mount, straight handle	412175

Toggle Clamps & Accessories

(continued)

Horizontal Handle Toggle Clamps with Vertical Mount

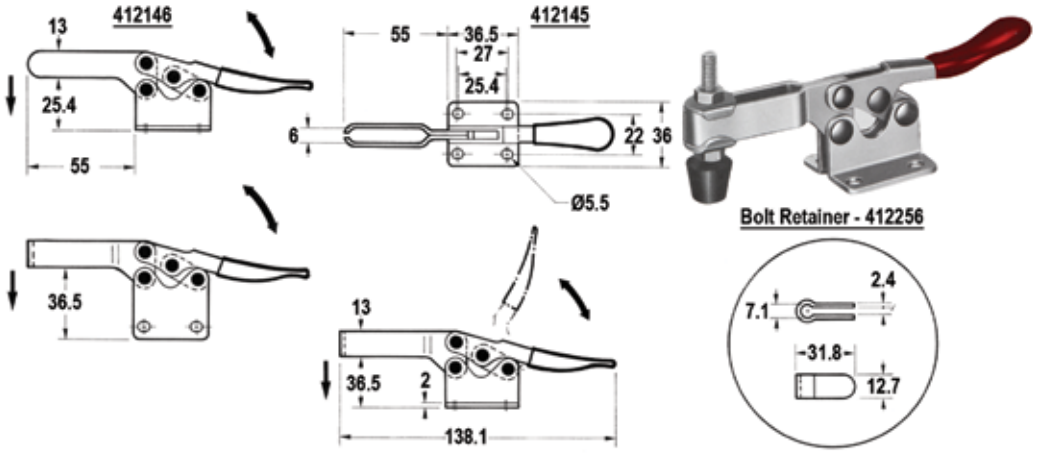
- Holding capacity: 217 kg (480 lbs)
- Weight: 315 g (11 oz)
- U-bar
- Straight base, vertical mounting
- Horizontal handle
- Neoprene tipped
- Vinyl hand grip



Model	Description	Code
202F	U-bar, vertical mount, straight handle	412180
202FL	Long U-bar, vertical mount, straight handle	412181

Horizontal Handle Toggle Clamps

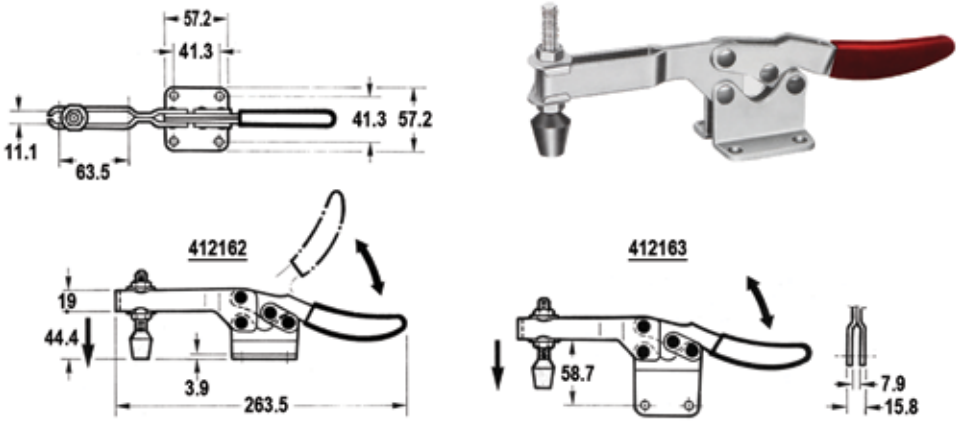
- Low Profile
- Holding capacity: 90 kg (200 lbs) maximum
- Weight: 130 g (4.6 oz.)
- Handle moves 60°, bar 85°
- Neoprene tipped
- Solid bar
- Vinyl hand grip



Model	Description	Code
201B	U-bar, flanged base	412145
201BI	U-bar, straight base	412146
201BS	Solid bar, flanged base	412147

Horizontal Handle Toggle Clamps

- Low Profile
- Holding capacity: 340 kg (750 lbs) maximum
- Weight: 640 g (22.6 oz)
- Handle moves 50°, bar 85°
- Neoprene tipped
- Vinyl hand grip



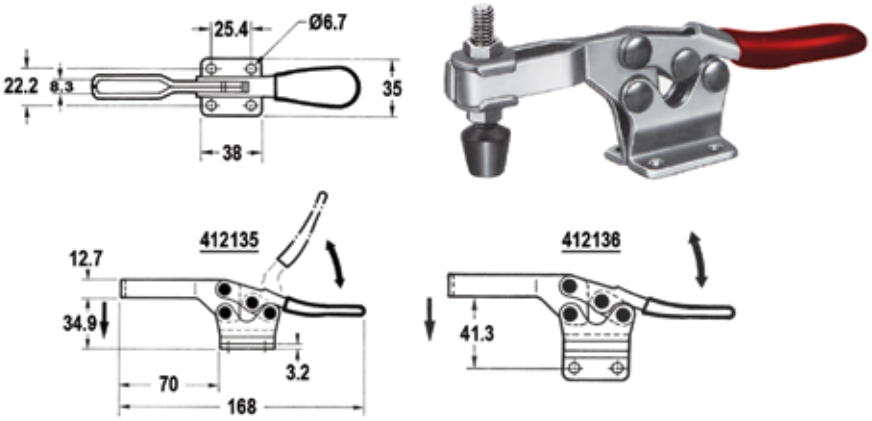
Model	Description	Code
20235	U-bar, flanged base	412162
20236	U-bar, straight base	412163

Toggle Clamps & Accessories

(continued)

Horizontal Handle Toggle Clamps

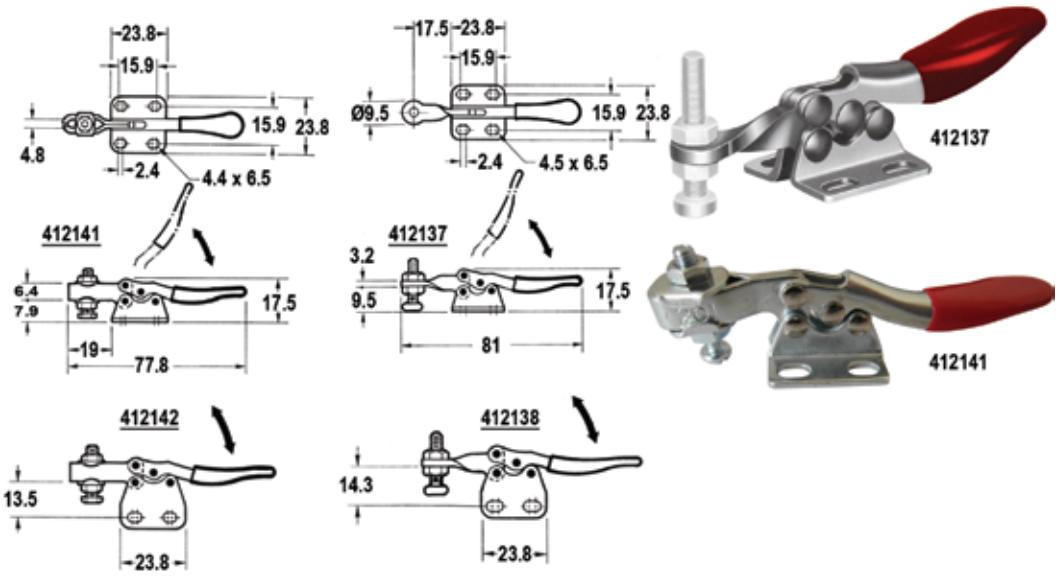
- Compact size
- Low profile
- Holding capacity: 227 kg (500 lbs) maximum
- Weight: 265 g (9.4 oz)
- Handle moves 65°, bar 90°
- Neoprene tipped
- Vinyl hand grip



Model	Description	Code
225D	U-bar, flanged base	412135
225DI	U-bar, straight base	412136

Horizontal Handle Toggle Clamps

- Miniature size
- Low profile
- Holding capacity: 27 kg (60 lbs) maximum
- Weight: 43 g (1-1/2 oz)
- Handle moves 80°, bar 90°
- Nylon spindle
- Vinyl hand grip



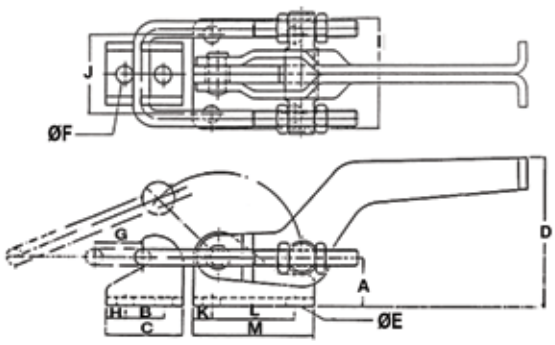
Model	Description	Code
201A	Solid bar, flanged base	412137
201A-1	Solid bar, straight base	412138
201AL	Solid bar, left hand flanged base	412139
201AR	Solid bar, right hand flanged base	412140
201	U-bar, flanged base	412141
201-1	U-bar, straight base	412142

Toggle Clamps & Accessories

(continued)

Horizontal Handle Toggle Clamps – Latch Style

- Holding capacity: Model 40323 – 163.6 kg (360 lbs) maximum; Model 431 – 318 kg (700 lbs) maximum; Model 40341 – 900 kg (2000 lbs) maximum
- Weight: Model 40323 – 70.9 g (2.5 oz); Model 431 – 225 g (8 oz); Model 40341 – 680 g (1 lb, 8 oz)
- Latch plate
- Vinyl hand grip

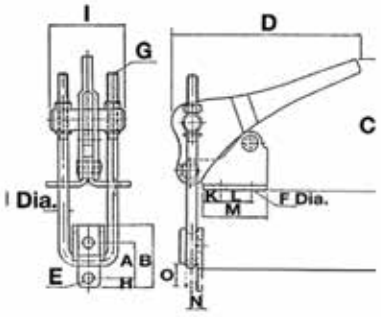




Model	A Inch (mm)	B Inch (mm)	C Inch (mm)	D Inch (mm)	E Inch (mm)	F Inch (mm)	G Inch (mm)	H Inch (mm)	I Inch (mm)	J Inch (mm)	K Inch (mm)	L Inch (mm)	M Inch (mm)	Code
40323	15/32 (12)	25/64 (9.9)	25/32 (19.8)	1-5/32 (29.3)	11/64 (4.4)	11/64 (4.4)	25/64 (9.9)	15/64 (6)	1-7/64 (28.2)	3/4 (19)	13/64 (5.2)	5/8 (15.9)	1-1/32 (26.2)	412157
431	21/32 (16.7)	29/64 (11.5)	1 (25.4)	1-5/8 (41.3)	17/64 (6.7)	1/4 (6.3)	3/8 (9.6)	17/64 (6.8)	1-3/4 (44.5)	1-1/4 (31.8)	1/4 (6.4)	3/4 (19)	1-9/16 (39.7)	412158
40341	59/64 (23.4)	3/4 (19.1)	1-1/2 (38.1)	2-29/32 (74)	11/32 (8.6)	21/64 (8.5)	15/16 (23.8)	3/8 (9.5)	2-1/8 (54)	1-1/2 (38.1)	3/8 (9.5)	1-5/8 (41.3)	2-3/8 (60.3)	412159

Vertical Handle Toggle Clamps – Latch Style

- Holding capacity: Model 40334 – 205 kg (450 lbs) maximum; Model 40344 – 409 kg (900 lbs) maximum
- Weight: Model 40334 – 250 g (9 oz); Model 40344 – 900 g (2 lbs)
- Latch plate
- Vinyl hand grip





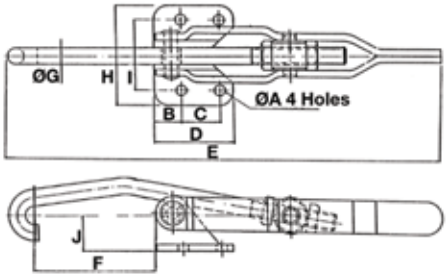
Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (mm)	N (mm)	O (mm)	P (mm)	Code
40334	20.6	38.1	61.9	120	5.6	7.1	M6 x 1	7.1	41.3	6.35	7.1	19.1	33.3	8.7	17.5	102	412186
40344	27	54	84.1	130.2	8.7	8.7	M8 x 1.25	9.5	60.3	7.9	7.9	31.8	47.6	12.7	28.6	150	412187

Toggle Clamps & Accessories

(continued)

Latch Toggle Clamps – Hook Style

- Holding capacity: Model 451 – 170 kg (374 lbs) maximum; Model 40371 – 340 kg (750 lbs) maximum
- Weight: Model 451 – 270 g (10 oz); Model 40371 – 624 g (1 lb, 6 oz)
- Vinyl hand grip

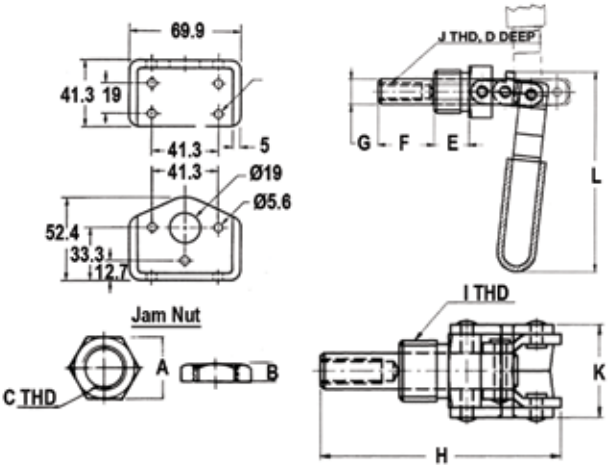




Model	A Inch (mm)	B Inch (mm)	C Inch (mm)	D Inch (mm)	E Inch (mm)	F Inch (mm)	G Inch (mm)	H Inch (mm)	I Inch (mm)	J Inch (mm)	Code
451	7/32 (5.6)	1/2 (12.7)	3/4 (19)	1-1/2 (38.1)	8-5/16 (211.1)	2-5/16 (58.7)	5/16 (8)	1-15/16 (49.2)	1-3/8 (34.9)	3/4 (19)	412160
40371	11/32 (8.7)	5/16 (7.9)	1-1/4 (31.8)	1-7/8 (47.6)	11-1/4 (285.8)	3-1/8 (79.4)	3/8 (9.5)	2-19/32 (65.7)	1-15/16 (49.2)	1-25/64 (35.32)	412161

Push/Pull Toggle Clamps

- Holding capacity: Model 36202 – 91 kg; Model 36204 – 136 kg; Model 36206 – 318 kg
- Weight: Model 36202 – 113 g; Model 36204 – 270 g; Model 36206 – 690 g
- Plunger clamp with threaded collar for mounting through panels or plates
- Plunger locks in extended or retracted position
- Vinyl hand grip and jam nut





Bracket

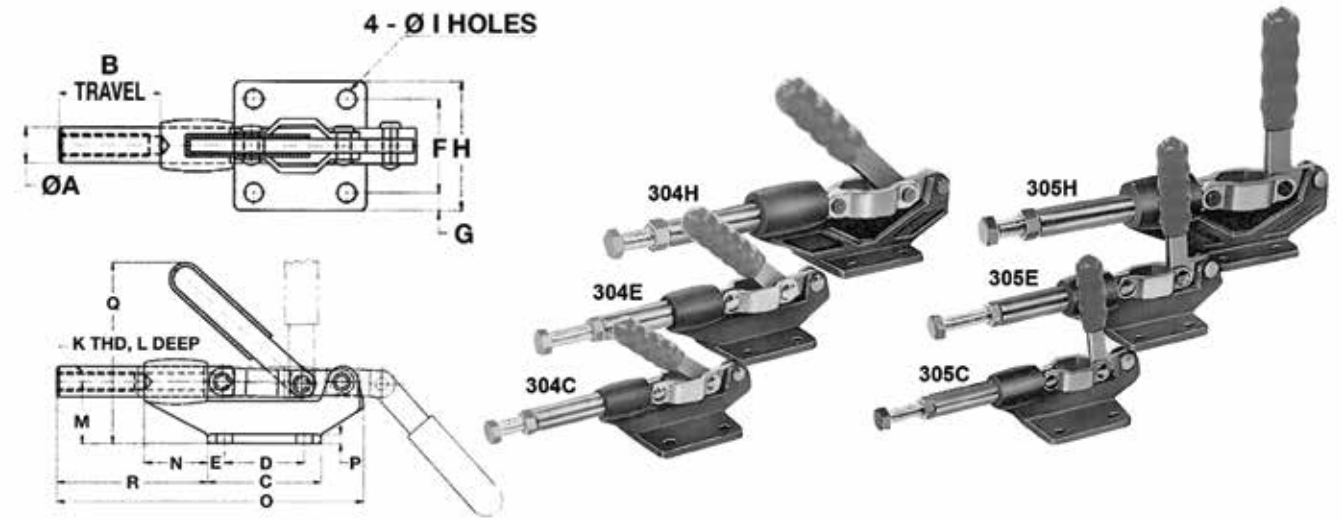
Bracket not included

Code
412170

Toggle Clamps & Accessories

(continued)

Push/Pull Toggle Clamps



- Available for light, medium, or heavy duty operations
- Supplied with a ductile iron base which is precision machined for flatness
- Close tolerances between the base and plunger allow clamps to be used for pin location gages as well as clamping devices
- Plunger locks in extended or retracted position
- Light and medium duty clamps are supplied with heavy duty rivets
- Heavy duty clamps are supplied with bushings and removable hardened ground pins
- Vinyl hand grip (spindles not included)

Model	A mm Inch	B mm Inch	C mm Inch	D mm Inch	E mm Inch	F mm Inch	G mm Inch	H mm Inch	I mm Inch	J mm Inch	K Thread	L mm Inch	M mm Inch	N mm Inch	O mm Inch	P mm Inch	Q mm Inch	R mm Inch
304C	12.7 1/2	30.2 1-3/16	52.4 2-1/16	35 1-3/8	8.7 11/32	41.4 1-5/8	8 5/16	57.2 2-1/4	6.7 17/64	6.4 1/4	5/16 - 18	30.2 1-3/16	25.4 1	20.6 13/16	125.4 4-15/16	4.8 3/16	74.6 2-15/16	52.4 2-1/16
305C	12.7 1/2	30.2 1-3/16	52.4 2-1/16	35 1-3/8	8.7 11/32	41.4 1-5/8	8 5/16	57.2 2-1/4	6.7 17/64	6.4 1/4	5/16 - 18	30.2 1-3/16	25.4 1	20.6 13/16	125.4 4-15/16	4.8 3/16	90.5 3-9/16	52.4 2-1/16
304E	16 5/8	41.4 1-5/8	58.8 2-5/16	41.4 1-5/8	8.7 11/32	41.4 1-5/8	8 5/16	57.2 2-1/4	8.3 21/64	8 5/16	3/8 - 16	39.7 1-9/16	31.8 1-1/4	31.8 1-1/4	158.8 6-1/4	4.8 3/16	98.4 3-7/8	81 3-3/16
305E	16 5/8	41.4 1-5/8	58.8 2-5/16	41.4 1-5/8	8.7 11/32	41.4 1-5/8	8 5/16	57.2 2-1/4	8.3 21/64	8 5/16	3/8 - 16	39.7 1-9/16	31.8 1-1/4	31.8 1-1/4	158.8 6-1/4	4.8 3/16	122.2 4-13/16	81 3-3/16
304H	19 3/4	60.4 2-3/8	73.2 2-7/8	50.8 2	11.1 7/16	50.8 2	10.3 13/32	71.4 2-11/16	8.3 21/64	8 5/16	1/2 - 13	49.2 1-15/16	50.8 2	50.8 2	238.2 9-3/8	6.4 1/4	133.4 5-1/4	120.8 4-3/4
305H	19 3/4	60.4 2-3/8	73.2 2-7/8	50.8 2	11.1 7/16	50.8 2	10.3 13/32	71.4 2-11/16	8.3 21/64	8 5/16	1/2 - 13	49.2 1-15/16	50.8 2	50.8 2	238.2 9-3/8	6.4 1/4	171.6 6-3/4	120.5 4-3/4

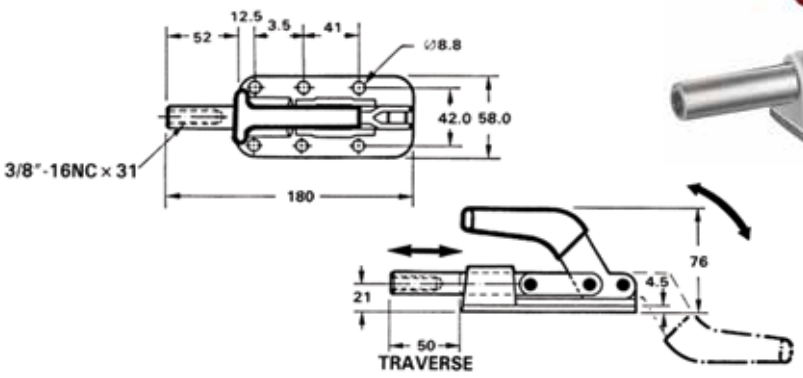
Model	Holding Capacity kg (lbs)	Weight g (oz)	Handle Angle	Code
304C	227 (500)	340 (12)	45°	412151
305C	227 (500)	340 (12)	90°	412152
304E	386 (850)	580 (20.5)	45°	412153
305E	386 (850)	580 (20.5)	90°	412154
304H	680 (1500)	1480 (52.2)	45°	412155
305H	680 (1500)	1480 (52.2)	90°	412156

Toggle Clamps & Accessories

(continued)

Push/Pull Toggle Clamp

- Heavy duty
- Low profile
- Plunger locks in extended or retracted position
- Forged alloy steel base
- Accepts all 3/8" - 16 spindl (spindle not included)
- Vinyl hand grip

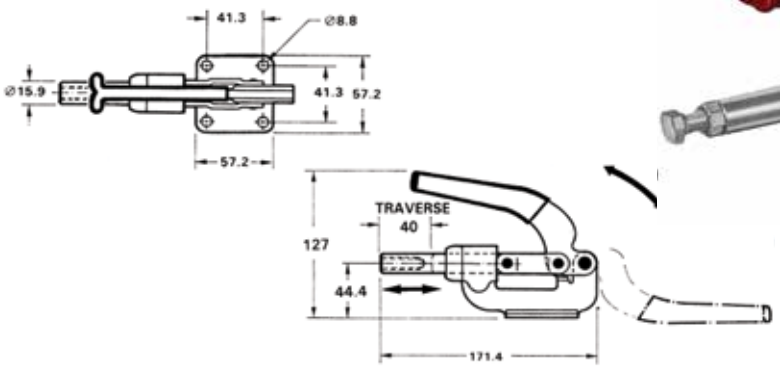


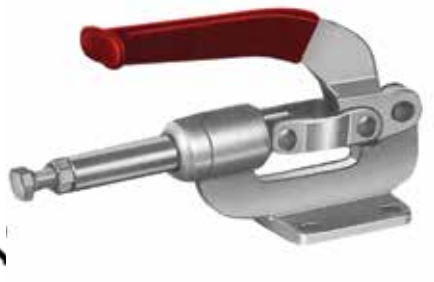


Model	Holding Capacity Maximum kgs (lbs)	Weight g (oz)	Plunger Travel mm (Inch)	Code
36330	1136 (2500)	935 (33)	50.8 (2)	412149

Push/Pull Toggle Clamp – Flanged

- Heavy duty
- Plunger locks in extended or retracted position
- Accepts 1/2" - 13 spindles (spindle not included)
- Vinyl hand grip





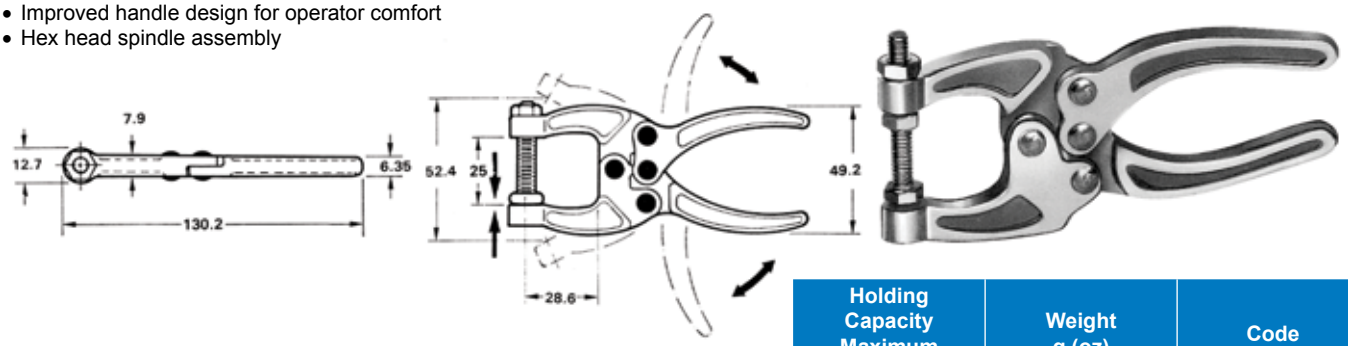
Holding Capacity Maximum kgs (lbs)	Weight g (oz)	Plunger Travel mm (Inch)	Code
364 (800)	800 (28.2)	41.4 (1-5/8)	412150

Toggle Clamps & Accessories

(continued)

Toggle Pliers

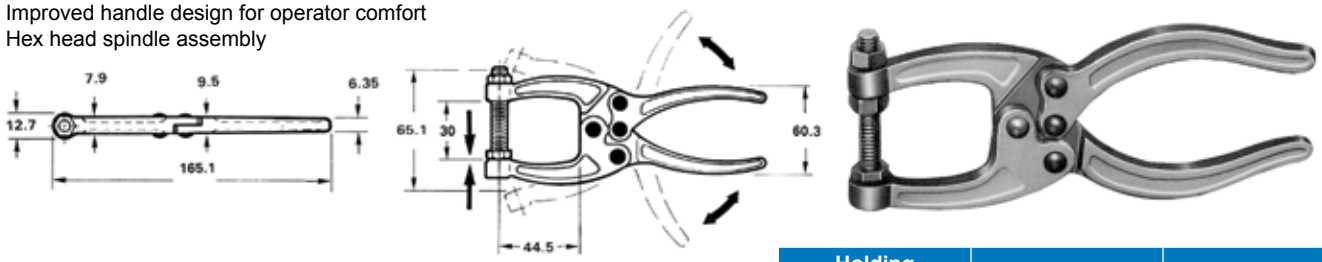
- Improved handle design for operator comfort
- Hex head spindle assembly



Holding Capacity Maximum kgs (lbs)	Weight g (oz)	Code
90 (200)	185 (6.5)	412165

Toggle Pliers

- Improved handle design for operator comfort
- Hex head spindle assembly



Holding Capacity Maximum kgs (lbs)	Weight g (oz)	Code
159 (350)	290 (10.2)	412166

Adjustable Spindle Assembly
Flat Cushion Top Bonded Neoprene Cap



Model	Description	Code
FC-10138	10-24 x 1-3/8	412200
FC-14134	1/4-20 x 1-3/4	412201
FC-14218	1/4-20 x 2-1/8	412202
FC-56212	5/16-18 x 2-1/2	412203
FC-56300	5/16-18 x 3	412204
FC-38312	3/8-16 x 3-1/2	412205
FC-38412	3/8-16 x 4-1/2	412206
FC-12334	1/2-13 x 3-3/4	412207

Adjustable Spindle Assembly
Standard Adjustable



Model	Description	Code
SA-08034	8-32 x 3/4 (Nylon)	412210
SA-10118	10-24 x 1-1/8	412211
SA-14112	1/4-20 x 1-1/2	412212
SA-14134	1/4-20 x 1-3/4	412213
SA-56200	5/16-18 x 2	412214
SA-56212	5/16-18 x 2-1/2	412215
SA-38300	3/8-16 x 3	412216
SA-38400	3/8-16 x 4	412217
SA-12300	1/2-13 x 3	412218
SA-12412	1/2-13 x 4-1/2	412219
SA-58500	5/8-11 x 5	412220

Toggle Clamps & Accessories

(continued)

Adjustable Spindle Assembly
Pointed Tip Bonded Neoprene Cap



Model	Description	Code
CC-10138	10-24 x 1-3/8	412221
CC-14134	1/4-20 x 1-3/4	412222
CC-14218	1/4-20 x 2-1/8	412223
CC-56212	5/16-18 x 2-1/2	412224
CC-38312	3/8-16 x 3-1/2	412225

Adjustable Spindle Assembly
Model SF



Model	Description	Code
SF-14214	1/4-20 x 2-1/4	412230
SF-56234	5/16-18 x 2-3/4	412231
SF-38300	3/8-16 x 3	412232
SF-12400	1/2-13 x 4	412233

Toggle Clamp Reference Chart

Major Brand Crossover

Description	KAR Code	Kakuta	Destaco	Carr Lane	Jergens
101A Toggle Clamp	412101	HV150	201-U	CL-150-VTC	70310
12050 Toggle Clamp	412102	HV250	202	CL-250-VTC	70330
12055 Toggle Clamp	412103	HV251-B	202-B	CL-251-VTC	70335
12060 Toggle Clamp	412104	–	–	–	–
12065 Toggle Clamp	412105	–	–	–	–
12070 Toggle Clamp	412106	HV252-T	202-T	CL-252-VTC	70340
12075 Toggle Clamp	412107	HV251-BT	202-TB	–	71016
12080 Toggle Clamp	412108	–	–	–	–
SH-12050-U Toggle Clamp	412110	HV250-U	202-U	–	70342
SH-12265 Toggle Clamp	412111	HV650	210-U	CL-650-VTC	70440
12270 Toggle Clamp	412112	HV651-B	210-UB	CL-651-VTC	70445
12275 Toggle Clamp	412113	HV550	210-S	CL-550-VTC	70420
12280 Toggle Clamp	412114	HV551-B	210-SB	CL-551-VTC	70425
10247 Toggle Clamp	412115	HV850	247-U	CL-850-VTC	70470
10249 Toggle Clamp	412117	HV750	247-S	CL-750-VTC	70460
10250 Toggle Clamp	412118	HV751-B	247-SB	CL-751-VTC	71030
12130 Toggle Clamp	412119	HV450	207-U	CL-450-VTC	70380
12131 Toggle Clamp	412120	HV452-T	207-TU	CL-452-VTC	70390
12132 Toggle Clamp	412121	HV453-L	207-UL	CL-453-VTC	70395
12137 Toggle Clamp	412125	HV451-BL	207-ULB	–	71025
12138 Toggle Clamp	412126	HV451-BTL	207-TULB	–	71026
12140 Toggle Clamp	412127	HV350	207-S	CL-350-VTC	70350
12142 Toggle Clamp	412129	HV353-L	207-L	CL-353-VTC	70365
12143 Toggle Clamp	412130	HV352-TL	207-TL	–	71023
12145 Toggle Clamp	412131	HV351-B	207-SB	CL-351-VTC	70355
225D Toggle Clamp	412135	HH450	225-U	CL-450-HTC	70250
GH-225-DI Toggle Clamp	412136	HH451-B	225-UB	CL-451-HTC	70255
GH201-A Toggle Clamp	412137	HH150	205-S	CL-150-HTC	70210
201AI Toggle Clamp	412138	HH151-B	205-SB	CL-151-HTC	70215
201AL Toggle Clamp	412139	HH154-LE	205-SL	CL-153-HTC	70211
201AR Toggle Clamp	412140	HH155-R	205-SR	CL-152-HTC	71001
201 Toggle Clamp	412141	HH250	205-U	CL-250-HTC	70230
201-I Toggle Clamp	412142	HH250-B	205-UB	CL-251-HTC	70235
201-R Toggle Clamp	412144	HH255-R	205-UR	CL-252-HTC	71003
GH-201 B Toggle Clamp	412145	HH350	215-U	CL-350-HTC	70240
201BI Toggle Clamp	412146	HH351-B	215-UB	CL-351-HTC	70245

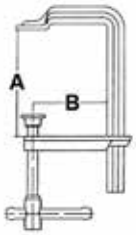
Toggle Clamp Reference Chart

Major Brand Crossover *(continued)*

Description	KAR Code	Kakuta	Destaco	Carr Lane	Jergens
GH-201-BS Toggle Clamp	412147	HH350-S	215-S	CL-300-HTC	71008
201-BSI Toggle Clamp	412148	HH351-SB	215-SB	–	71009
36330 Push/Pull Clamp	412149	SL350	630	CL-350-SPC	70860
36010 Push/Pull Clamp	412150	SL250	610	CL-250-SPC	70840
304C Push/Pull Clamp	412151	SL100	603	CP-100-PC	70810
305C Push/Pull Clamp	412152	–	–	–	–
304E Push/Pull Clamp	412153	SL200	608	CL-200-PC	70830
305E Push/Pull Clamp	412154	–	–	–	–
304H Push/Pull Clamp	412155	SL300	–	CL-300-PC	70850
305H Push/Pull Clamp	412156	–	–	–	–
GH-40323 Latch Clamp	412157	FA100	323	CL-100-PA	70558
GH-431 Latch Clamp	412158	FA200	331	CL-200-PA	70560
GH-40341 Latch Clamp	412159	FA300	341	CL-300-PA	70562
451 Latch Clamp	412160	PA250	351	CL-250-PA	70570
GH-40371 Latch Clamp	412161	PA270	371	–	–
GH-20235 U-Bar Flanged Base	412162	HH550	235-U	CL-550-HTC	–
20236 Toggle Clamp	412163	HH551-BN	235-UB	–	–
50350 Toggle Clamp	412165	SA150	424	CL-50-PL	70710
50360 Toggle Clamp	412166	SA250	441	CL-150-PL	70720
36202 Toggle Clamp	412167	FM50	602	CL-150-TPC	70118
36204 Toggle Clamp	412168	FM150	604	CL-250-TPC	70120
36206 Toggle Clamp	412169	FM250	624	CL-350-TPC	70140
101B Toggle Clamp	412175	–	–	–	–
202F Toggle Clamp	412180	–	–	–	–
202FL Toggle Clamp	412181	–	–	–	–
40334 Toggle Clamp	412186	FA230	334	CL-210-PA	71042
40344 Toggle Clamp	412187	FA330	344	CL-310-PA	70565

F-Clamps





- Material: ANSI 1045 medium carbon steel, chrome plated
- Hardness: HRC 36°±2
- T-handle
- P-type pad

Medium Duty 2400

A Span (Inch)	B Span (Inch)	Rail Thickness (Inch)	Weight (lbs)	Code
10	4.75	1.06 x 0.51	4.6	412330
12	4.75	1.06 x 0.51	4.9	412331
16	4.75	1.06 x 0.51	5.4	412332
20	4.75	1.06 x 0.51	6.0	412333
24	4.75	1.06 x 0.51	6.1	412334

Heavy Duty 4600

A Span (Inch)	B Span (Inch)	Rail Thickness (Inch)	Weight (lbs)	Code
12	5.50	1.18 x 0.59	6.7	412340
16	4.75	1.18 x 0.59	7.1	412341
20	5.50	1.18 x 0.59	8.1	412342
24	4.75	1.18 x 0.59	9.1	412343

Extra Heavy Duty

A Span (Inch)	B Span (Inch)	Rail Thickness (Inch)	Weight (lbs)	Code
12	7.00	1.57 x 0.79	12	412350

Clamping Pads

Three types of replacement clamping pads:
- P: For general purpose
- R: For cold work purpose
- V: For clamping round pipes or round bars







Type	Medium Duty	Heavy Duty
	Code	Code
P	412360	412364
R	412361	412365
V	412362	412366

C-Clamps

Standard & Heavy Duty



- Steel forged



- Steel forged
- Heat-treated

Capacity (Inch)	Throat Depth (Inch)	Minimum Proof Test (lbs)	Weight (lbs)	Standard Duty	Heavy Duty
				Code	Code
0-1	0.945	2860	0.5	416161	–
0-2	1.220	4400	0.9	416162	416172
0-3	1.575	6160	1.8	416163	416173
0-4	2.008	6600	2.8	416164	416174
0-5	2.441	7260	4.2	416165	–
0-6	2.756	7920	7.1	416166	416176
0-8	3.701	13200	10.0	416167	416177
0-10	4.724	15400	13.8	416168	416178
0-12	4.921	17600	20.7	416169	416179

Industrial Drill Chucks & Key

LLAMBRICH

For Stationary & Portable Drilling Machines



- Specifically designed for stationary drilling, turning, milling and wood working machines
- The one-piece gear ring and sleeve eliminate the possibility of tooth breakage
- The jaws, gear ring and body are all totally hardened to avoid wear and lengthen the life of the drill chuck
- Fits tools of up to 19mm (3/4") in diameter
- Machine fitting via DIN238 of JACOBS tapers and UNF screw fittings
- Wide range of accessories

Model	Capacity (mm)	Capacity (Inch)	Mount	Diameter (mm)	Length Closed (mm)	Length Open (mm)	Weight (g)	Code
CY-04 J0	0.8-4	1/32-5/32	J-0	22	29	36	100	827812
CY-04 R-5/16	0.8-4	1/32-5/32	5/16" x 24	22	38	44	130	827826
CY-06 J-1	0.8-6.5	1/32-1/4	J-1	32	40	49	200	827813
CY-06 R-3/8	0.8-6.5	1/32-1/4	3/8" x 24	32	42	52	220	827821
*CY-06 R-3/8 SP	0.8-6.5	1/32-1/4	3/8" x 24	37	51	63	340	827827
CY-10 J-1	1-10	1/32-3/8	J-1	37	51	60	310	827815
CY-10 J-2	1-10	1/32-3/8	J-2	37	51	60	300	827816
*CY-10 J-2 SP	1-10	1/32-3/8	J-2	43	55	68	420	827814
CY-10 R-3/8	1-10	1/32-3/8	3/8" x 24	37	51	60	300	827829
*CY-10 R-3/8 SP	1-10	1/32-3/8	3/8" x 24	43	53	68	420	827828
CY-10 R-1/2	1-10	1/32-3/8	1/2" x 20	37	51	60	300	827822
*CY-10 R-1/2 SP	1-10	1/32-3/8	1/2" x 20	43	53	68	420	827831
CY-13 J-6	1-13	1/32-1/2	J-6	46	62	77	480	827806
CY-13 J-33	1-13	1/32-1/2	J-33	46	62	77	480	827817
CY-13 J-33 KD (1)	1-13	1/32-1/2	33JT	46	71	86	500	827819
CY-13 R-3/8	1-13	1/32-1/2	3/8" x 24	46	62	77	500	827833
CY-13 R-1/2	1-13	1/32-1/2	1/2" x 20	46	62	77	480	827832
CY-13 R-5/8	1-13	1/32-1/2	5/8" x 16	46	62	77	490	827834
*CYX-13 J-2	1-13	1/32-1/2	J-2	53	69	89	760	827805
*CYX-13 J-33	1-13	1/32-1/2	J-33	53	69	89	750	827807
CYX-13 J-33C (3)	1-13	1/32-1/2	33JT	53	86	106	820	827808
CY-16 J-33	1-16	1/32-5/8	J-33	57	77	95	980	348126
CY-16 J-3	1-16	1/32-5/8	J-3	57	77	95	940	348118
CY-16 J-3 KD (1)	1-16	1/32-5/8	3JT	57	85	102	980	827803
CY-16 J-3 PD (2)	1-16	1/32-5/8	3JT	57	85	102	980	827804
CY-16 R-1/2	1-16	1/32-5/8	1/2" x 20	57	77	95	990	827823
CY-16 R-5/8	1-16	1/32-5/8	5/8" x 16	57	77	95	1,000	827820
CY-19 J-3	3-19	13/64-3/4	J-3	65	85	110	1,440	827809
CY-19 J-3 KD (1)	3-19	13/64-3/4	3JT	65	89	116	1,400	827810
CY-19 J-3 PD (2)	3-19	13/64-3/4	3JT	65	89	116	1,360	827811
CY-19 J-4	3-19	13/64-3/4	J-4	68	97	120	1,500	348132
CY-19 R-3/4	3-19	13/64-3/4	3/4" x 16	65	85	110	1,500	348130

* Extra heavy duty model

(1) Equipped with positive drive slot

(2) Equipped with pin type positive drive

(3) Equipped with locking collar

Ball-Bearing Drill Chucks & Key

LLAMBRICH

For Production Drilling Equipment

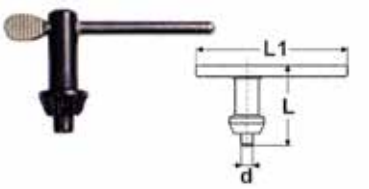


- Drill chuck with key for industrial applications that require the toughest machining conditions
- Equipped with ball bearings to reduce friction in the tightening mechanism and provide a better grip on the drill shaft
- All the pieces are hardened and ground
- The one-piece gear ring and sleeve eliminate the possibility of tooth breakage
- Fits tools up to 25mm (1")
- Machine fitting via JACOBS taper

Model	Capacity (mm)	Capacity (Inch)	Mount	Diameter (mm)	Length Closed (mm)	Length Open (mm)	Weight (g)	Code
CBB-08 J2	1-8	1/32-5/16	J-2	47	55	70	500	348141
CBB-10 J2	1-10	1/32-3/8	J-2	47	55	70	500	348142
CBB-13 J3	1-13	1/32-1/2	J-3	62	75	94	1,115	348144
CBB-16 J3	1-16	1/32-5/8	J-3	67	81	102	1,470	348145
CBB-19 J4	1-19	1/32-3/4	J-4	75	99	125	2,145	348146
CBB-25 J5	5-25	13/64-1	J-5	93	112	147	3,645	348147

Chuck Keys

LLAMBRICH



Key	Jacobs Key Reference	d (mm)	L (mm)	L1 (mm)	Code
S8	K30	6.00	41	80	348148
S9	K32	6.35	45	83	348149
S10	K3	8.00	48	100	348150
S13	K4	9.50	70	110	348208

Chuck Keys

Jacobs CHUCK



Model	Code
K0	350K0
K1	350K1
K2	350K2
K3	350K3

Model	Code
K4	350K4
K5	350K5
K7	350K7
K30	350K30
K32	350K32

Keyless Drill Chucks

ALBRECHT

Classic



- Keyless operation
- Self-tightening design
- Balanced

Capacity (Inch)	Capacity (mm)	Mount	Maximum RPM	Weight (lbs)	Code
0 - 1/16	0 - 1.5	J0	50000	0.1	827901
0 - 1/8	0 - 3	J0	35000	0.2	827902
0 - 1/8	0 - 3	J1	35000	0.2	827903
0 - 1/4	0 - 6.5	J1	20000	0.7	827904
0 - 3/8	0 - 10	J33	12000	1.4	827905
0 - 3/8	0 - 10	J2	12000	1.4	827906
1/32 - 1/2	1 - 13	J33	7000	2.1	827907
1/32 - 1/2	1 - 13	J2	7000	2.1	827908
1/32 - 1/2	1 - 13	J6	7000	2.1	827909
1/8 - 5/8	3 - 16	J6	4000	2.8	827910

Keyless Drill Chucks

LLAMBRICH

For Portable Drilling Machines



- Ideal for portable electric or battery operated drilling machines
- Does not require a chuck key for tightening or loosening, enabling production increase
- Ergonomic design, using materials which eliminate the possibility of oxidation
- Fits any type of drill, via UNF thread, male and female
- Wide range of accessories

Model	Capacity (mm)	Capacity (Inch)	Mount	Diameter (mm)	Length Closed (mm)	Length Open (mm)	Weight (g)	Code
CPL-10 R-3/8	1-10	1/32-3/8	3/8” x 24 UNF	41	57	65	180	348134
CPL-10 R-1/2	1-10	1/32-3/8	1/2” x 20 UNF	41	57	65	180	348136

Threaded Mount for Portable Drilling Machines & Taper Mount for Stationary Machines



- Standard screw thread mount for portable drilling machines
- Standard tapered mount for stationary drilling machines
- Self-tightening mechanism automatically increases the clamping forces in proportion to the increase in torque during the drilling operation. This prevents tool slippage in clockwise rotation.
- Tool capacity of up to 3/4” in diameter

Threaded Mount

Model	Capacity (Inch)	Mount	Diameter (Inch)	Length Closed (Inch)	Length Open (Inch)	Code
L40165B	1/32 - 3/8	3/8 - 24	1.457	2.835	3.071	348209
L40166B	1/32 - 3/8	1/2 - 20	1.457	2.835	3.071	348210
L40171B	1/16 - 1/2	3/8 - 24	1.575	2.992	3.268	348211
L40172B	1/16 - 1/2	1/2 - 20	1.575	2.992	3.268	348212

Taper Mount

Model	Capacity (Inch)	Jacobs Mount	Diameter (Inch)	Length Closed (Inch)	Length Open (Inch)	Code
L40159B	1/64 - 1/4	JT1	1.339	2.480	2.756	348213
L40163B	1/32 - 5/16	JT1	1.457	2.835	3.071	348214
L40164B	1/32 - 5/16	JT2	1.457	2.835	3.071	348215
L40167B	1/32 - 3/8	JT2	1.575	3.110	3.386	348216
L40221B	1/32 - 3/8	JT33	1.575	3.110	3.386	348217
L40168B	1/32 - 1/2	JT2	1.850	3.661	4.055	348218
L40169B	1/32 - 1/2	JT33	1.850	3.661	4.055	348219
L40170B	1/32 - 1/2	JT6	1.850	3.661	4.055	348220
L40173B	1/8 - 5/8	JT33	2.047	3.740	4.134	348221
L40174B	1/8 - 5/8	JT6	2.047	3.740	4.134	348222
L40177B	3/16 - 3/4	JT3	2.520	4.764	5.157	348223

Keyless Drill Chucks with Locking Mechanism

LLAMBRICH

Plastic Body & Carbide Jaw Inserts



- With a locking mechanism, no key is required for closing or opening, for hammer drilling and also screwdriver operations
- Carbide jaw inserts (for 13mm capacity) reduce bit slippage and enhance wear resistance
- Ergonomic design, using materials that eliminate the possibility of rust
- With through hole for clockwise and counter-clockwise rotation
- Supplied with screw M5 (R-3/8") or M6 (R-1/2") to fix chuck to drilling machine
- Fits any type of drill (up to 1000W) via UNF thread, male and female
- Wide range of accessories

Model	Capacity (mm)	Capacity (Inch)	Mount	Diameter (mm)	Length Closed (mm)	Length Open (mm)	Weight (g)	Code
CPX-13 R-3/8	2-13	1/16-1/2	3/8" x 24 UNF	42	65	75	280	348138
CPX-13 R-1/2	2-13	1/16-1/2	1/2" x 20 UNF	42	65	75	280	348140

Precision Keyless Drill Chucks



Capacity (Inch)	Mount	Code
0 - 1/4	J1	354100
0 - 1/4	3/8-24	354102
0 - 3/8	J2	354106
0 - 3/8	3/8-24	354108
1/32 - 1/2	J6	354112
1/32 - 1/2	J33	354114
1/32 - 1/2	1/2-20	354116
1/8 - 5/8	J6	354120
1/8 - 5/8	5/8-16	354122

Super Precision Keyless Drill Chucks

LLAMBRICH



- Maximum total integrated run-out of 0.04mm
- Self-tightening feature automatically increases gripping force in proportion to increased torque to prevent tool shank slippage (for right-hand rotation applications only)
- Permits use on high accuracy drill presses, jig borers, milling machines and production drilling equipment
- All components exposed to wear are completely hardened to maintain accuracy and extend chuck life
- Also available with through hole for EDM machines upon request

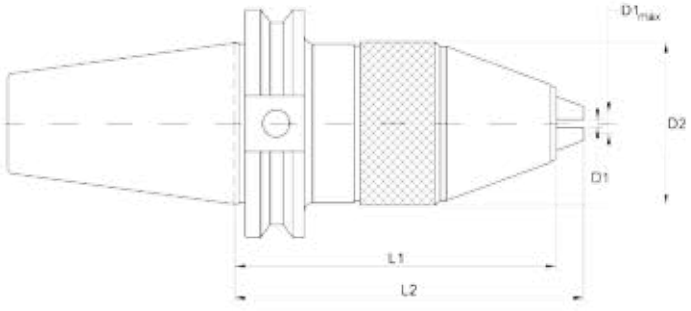
Model	Capacity (mm)	Capacity (Inch)	Mount	Diameter (mm)	Length Closed (mm)	Length Open (mm)	Weight (g)	Code
SP-1.5 J-0	0.2-1.5	0.0008-1/16	J-0	19.4	35	37.3	80	827841
SP-03 J-0	0.3-3	1/64-1/8	J-0	24.5	44	47.5	200	827842
SP-03 J-1	0.3-3	1/64-1/8	J-1	24.5	44	47.5	200	827843
SP-06 J-1	0.3-6.5	1/64-1/4	J-1	33	62	70	360	351099
SP-08 J-1	0.3-8	1/64-5/16	J-1	38	67	74	460	351100
SP-08 J-25	0.3-8	1/64-5/16	J-25	38	67	74	460	351102
SP-10 J-2	0.5-10	1/32-3/8	J-2	43	81	89	720	351104
SP-10 J-33	0.5-10	1/32-3/8	J-33	43	81	89	720	351106
SP-13 J-2	1-13	1/32-1/2	J-2	49	91	103	1,000	351108
SP-13 J-33	1-13	1/32-1/2	J-33	49	91	103	1,000	351110
SP-13 J-6	1-13	1/32-1/2	J-6	49	91	103	1,000	351112
SP-16 J-6	3-16	1/8-5/8	J-6	55	95	107	1,320	351114

Integral Shank Drill Chucks

- Rigid heavy duty design
- High accuracy and high RPM
- Wide gripping capacity
- Self tightening keyless operations
- Provided with wrenches
- Non-coolant through
- Taper shank ground to AT3 accuracy or better

CAT40 & CAT50



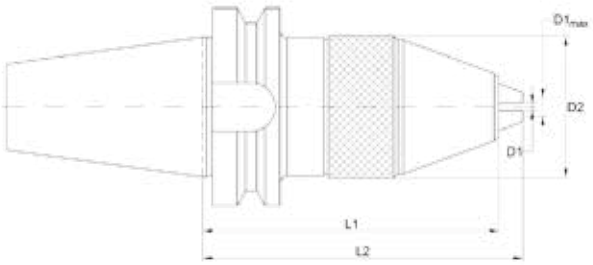


- CAT40 draw bar threads: 5/8”-11
- CAT50 draw bar threads: 1”-8
- Max. T.I.R. 0.0004”

Chuck Size (Inch)	D1 Min-Max (Inch)	L1 (Inch)	L2 (Inch)	Wrench Reference	CAT40			CAT50		
					D2 (Inch)	Weight (lbs)	Code	D2 (Inch)	Weight (lbs)	Code
1/2	0.039-0.512	4.04	4.50	312189	1.89	3.84	310939	1.98	7.85	312028

BT40 & BT50





- BT40 draw bar threads: M16 x 2
- BT50 draw bar threads: M24 x 3

Chuck Size (Inch)	D1 Min-Max (Inch)	L1 (Inch)	L2 (Inch)	Wrench Reference	BT40			BT50		
					D2 (Inch)	Weight (lbs)	Code	D2 (Inch)	Weight (lbs)	Code
1/2	0.039-0.512	3.795	4.272	312189	1.988	3.97	310862	–	–	–
1/2	0.039-0.512	4.346	4.823	312189	–	–	–	1.988	9.70	310903

Keyless Drill Chucks with Integral Shanks

ALBRECHT

Classic-Plus



- Integral shank design is more compact than a combined drill chuck and arbor, resulting in greater accuracy, greater rigidity and a larger work envelope
- Integral shank eliminates the possibility of a chuck slipping on its arbor
- Keyless operation
- Self-tightening
- Balanced

Model	Capacity (mm)	Capacity (Inch)	Mount	Diameter (Inch)	Length Closed (Inch)	Length Open (Inch)	Weight (lbs)	Code
CP130-2MT	1 - 13	1/32 - 1/2	MT2	2	3-3/8	3-7/8	2.3	827911
CP130-3MT	1 - 13	1/32 - 1/2	MT3	2	3-3/8	3-7/8	2.6	827912
CP130-4MT	1 - 13	1/32 - 1/2	MT4	2	3-7/16	3-15/16	3.3	827913
CP130-R8	1 - 13	1/32 - 1/2	R8	2	3-5/16	3-13/16	2.6	827914
CP130-5/8	1 - 13	1/32 - 1/2	5/8” SS	2	3-1/8	3-5/8	2.2	827915
CP160-2MT	3 - 16	1/8 - 5/8	MT2	2-1/4	3-1/2	4-1/16	2.9	827916
CP160-3MT	3 - 16	1/8 - 5/8	MT3	2-1/4	3-1/2	4-1/16	3.3	827917
CP160-4MT	3 - 16	1/8 - 5/8	MT4	2-1/4	3-9/16	4-1/16	4.0	827918
CP160-R8	3 - 16	1/8 - 5/8	R8	2-1/4	3-7/16	3-15/16	4.2	827919

Micro-Sensitive Drill Feed Adapter



- Micro-sensitive drill adapter only - chuck and drill sold separately
- 3/4" travel
- Simple to use: - Grasp free-turning knurled ring and feed with gentle finger pressure
  - Spring-loaded - when ring is released, chuck retracts automatically
- Sensitive drill feeds makes drilling of small holes easy by giving you fingertip feed control independent of coarser quill feed
- Makes drilling of small holes easy by giving you fingertip feed control
- Eliminates the need for special machines to drill small holes
- Reduces breakage and deflection of small drills

Shank Diameter (Inch)	Jacobs Taper	Code
1/2	JT0	820383

Micro Drill Chuck & Key

LLAMBRICH

- Very accurate and sensitive for precise drilling
- To be used in mills, lathes, drill presses, jig bore and Swiss machines
- Eliminates the need of secondary operations to drill small holes
- Spindle speeds up to 50,000 RPM
- Feed with gentle finger pressure
- Free turning knurled ring with spring return upon release
- 3/4" total travel
- Standard 1/2" diameter straight shank or MT1 to go directly into the spindle of the machine

Model	Capacity (Inch)	Jacobs Mount	Diameter (Inch)	Length Closed (Inch)	Length Open (Inch)	Code
L40129B	1/64 - 5/32	JT0	0.866	1.102	1.378	827812

Drill Chuck Arbors

Hardened & Ground



Shank	Jacobs Taper	Code
MT1	J0	357200
MT2	J0	357210
1/2"	J0	360250
R8	J0	363330
MT1	J1	357201
MT2	J1	357211
MT3	J1	357221
1/2"	J1	360251
5/8"	J1	360261
ISA30	J1	363301
ISA40	J1	363311
R8	J1	363331
MT1	J2	357202
MT2	J2	357212
MT3	J2	357222
MT4	J2	357232
MT5	J2	360242
1/2"	J2	360252
5/8"	J2	360262
3/4"	J2	360272

Shank	Jacobs Taper	Code
1"	J2	360282
ISA30	J2	363302
ISA40	J2	363312
ISA50	J2	363322
R8	J2	363332
MT1	J3	357203
MT2	J3	357213
MT3	J3	357223
MT4	J3	357233
MT5	J3	360243
1/2"	J3	360253
5/8"	J3	360263
3/4"	J3	360273
1"	J3	360283
ISA30	J3	363303
ISA40	J3	363313
ISA50	J4	363323
R8	J4	363333
MT1	J4	357204
MT2	J4	357214
MT3	J4	357224
MT4	J4	357234

Shank	Jacobs Taper	Code
MT5	J4	360244
1/2"	J4	360254
5/8"	J4	360264
3/4"	J4	360274
1"	J4	360284
ISA30	J4	363304
ISA40	J4	363314
ISA50	J4	363324
R8	J4	363334
MT1	J5	357205
MT2	J5	357215
MT3	J5	357225
MT4	J5	357235
MT5	J5	360245
ISA50	J5	363325
R8	J5	363335
MT1	J6	357206
MT2	J6	357216
MT3	J6	357226
MT4	J6	357236
MT5	J6	360246
1/2"	J6	360256

Shank	Jacobs Taper	Code
5/8"	J6	360266
3/4"	J6	360276
1"	J6	360286
ISA30	J6	363306
ISA40	J6	363316
ISA50	J6	363326
R8	J6	363336
MT1	J33	357207
MT2	J33	357217
MT3	J33	357227
MT4	J33	357237
1/2"	J33	360257
5/8"	J33	360267
3/4"	J33	360277
1"	J33	360287
ISA30	J33	363307
ISA40	J33	363317
ISA50	J33	363327
R8	J33	363337

Fitted Sockets

- Hardened and ground



Size	Description	Overall Length (Inch)	Code
1 - 2	1 bore, 2 shank	6-3/16	125212
1 - 3	1 bore, 3 shank	8-15/16	125213
1 - 4	1 bore, 4 shank	7-15/18	125214
1 - 5	1 bore, 5 shank	9-3/16	125215
2 - 1	2 bore, 1 shank	6-3/8	125221
2 - 2	2 bore, 2 shank	6-13/16	125222
2 - 3	2 bore, 3 shank	7-9/16	125223
2 - 4	2 bore, 4 shank	8-9/16	125224
2 - 5	2 bore, 5 shank	9-13/16	125225
3 - 1	3 bore, 1 shank	7-1/8	125231
3 - 2	3 bore, 2 shank	7-3/4	125232
3 - 3	3 bore, 3 shank	8-1/2	125233
3 - 4	3 bore, 4 shank	9-1/2	125234
3 - 5	3 bore, 5 shank	10-3/4	125235
4 - 2	4 bore, 2 shank	8-5/8	125242
4 - 3	4 bore, 3 shank	9-7/16	125243
4 - 4	4 bore, 4 shank	10-7/16	125244
4 - 5	4 bore, 5 shank	11-11/16	125245
4 - 6	4 bore, 6 shank	14-7/16	125246
5 - 3	5 bore, 3 shank	11	125253
5 - 4	5 bore, 4 shank	11-13/16	125254
5 - 5	5 bore, 5 shank	13-1/16	125255
5 - 6	5 bore, 6 shank	16	125256
6 - 5	6 bore, 5 shank	15-3/4	125265

Machine Sockets



Size	Morse Taper Bore	Overall Dimensions (Inch)	Overall Length (Inch)	Code
A	MT1	1	3-1/2	125501
B	MT1	1-1/4	3-1/2	125502
C	MT1	1-1/2	3-1/2	125503
D	MT2	1	4	125504
E	MT2	1-1/4	4	125505
F	MT2	1-1/2	4	125506
G	MT2	1-3/4	4	125507
H	MT2	2	4	125508
J	MT3	1-1/4	4-3/4	125509
K	MT3	1-1/2	4-3/4	125510
L	MT3	1-3/4	4-3/4	125511
M	MT3	2	4-3/4	125512
N	MT4	1-1/2	6	125513
P	MT4	1-3/4	6	125514
Q	MT4	2	6	125515
R	MT5	2-1/4	7-3/8	125516
S	MT5	2-1/2	7-3/8	125517

Automatic Drill Drifts



Decription	Code
Suitable for MT shanks 1-3	375502
Suitable for MT shanks 4-6	375503

Sleeves

- Hardened and ground



Size	Description	Code
1 - 2	1 bore & outside fitting 2 socket	125412
1 - 3	1 bore & outside fitting 3 socket	125413
1 - 4	1 bore & outside fitting 4 socket	125414
1 - 5	1 bore & outside fitting 5 socket	125415
2 - 3	2 bore & outside fitting 3 socket	125423
2 - 4	2 bore & outside fitting 4 socket	125424
2 - 5	2 bore & outside fitting 5 socket	125425
3 - 4	3 bore & outside fitting 4 socket	125434
3 - 5	3 bore & outside fitting 5 socket	125435
4 - 5	4 bore & outside fitting 5 socket	125445
4 - 6	4 bore & outside fitting 6 socket	125446
5 - 6	5 bore & outside fitting 6 socket	125456

Drill Drifts



Size	Description	Code
1	Fitting 1 or 2 sockets and sleeves	130101
3	Fitting 3 sockets and sleeves	130103
4	Fitting 4 sockets and sleeves	130104
5	Fitting 5 and 6 sockets and sleeves	130105

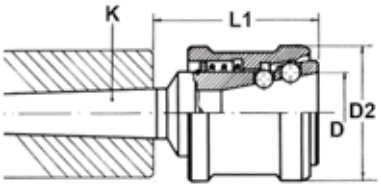


Quick Change Tooling

For Morse Taper Spindles

- For use on radial drills, boring mills, or any machine with Morse taper spindles
- Interchangeable with Jahrl

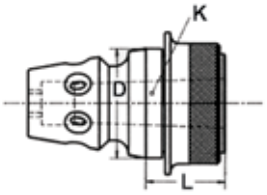
Master Shanks – 060201



Size	D (Inch)	D (mm)	D2 (Inch)	D2 (mm)	L1 (Inch)	Shank	Part No. Reference	Code
2	1.57	40	2.63	67	3.03	MT3	0402	369400
2	1.57	40	2.63	67	3.07	MT4	0502	369401
3	2.26	57.5	3.26	83	3.74	MT4	0503	369402
4	2.70	68.7	3.97	101	4.56	MT5	0604	369403

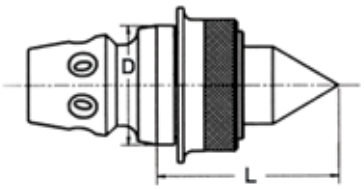
Morse Taper Adapters – 069901

- For tools with Morse taper and tang



Size	Morse Taper	L (Inch)	Part No. Reference	Code
2	MT1	1.14	0202	369411
2	MT2	1.14	0203	369412
2	MT3	1.73	0204	369413
3	MT1	1.34	0302	369421
3	MT2	1.34	0303	369422
3	MT3	1.34	0304	369423
3	MT4	2.16	0305	369424
4	MT1	1.34	0402	369431
4	MT2	1.34	0403	369432
4	MT3	1.34	0404	369433
4	MT4	1.73	0405	369434
4	MT5	2.75	0406	369435

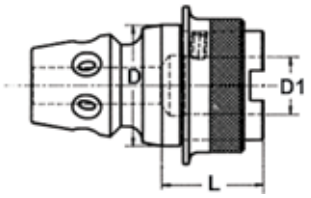
Centering Points 60° – 069903



Size	L (Inch)	Part No. Reference	Code
2	2.40	0201	369417
3	2.60	0301	369427
4	2.60	0401	369437

Tapping Chucks – 069905

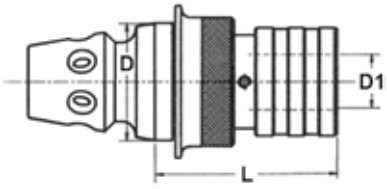
- To use with “BILZ” adapters



Size	BILZ No.	Capacity (Inch)	L (Inch)	Part No. Reference	Code
2	1	0 - 9/16	1.14	0202	369450
3	1	0 - 9/16	1.61	0302	369451
3	2	5/16 - 7/8	1.61	0303	369452
4	2	5/16 - 7/8	1.61	0403	369453
4	3	13/16 - 1-3/8	2.75	0404	369454

Tapping Chucks – 06991952

- To use with “BILZ” adapters
- Tension/compression



Size	BILZ No.	Capacity (Inch)	L (Inch)	Part No. Reference	Code
2	1	0 - 9/16	1.77	0222	369460
2	2	5/16 - 7/8	2.71	0223	369461
3	1	0 - 9/16	1.77	0332	369462
3	2	5/16 - 7/8	2.71	0333	369463
4	2	5/16 - 7/8	2.71	0443	369464
4	3	13/16 - 1-5/8	4.33	0444	369465

Tapping Heads

Self Reversing



- Radial floating, self-centering to compensate for hole center misalignment
- Unique double spring mechanism produces automatic feed and cushions the drive. There are two springs for reverse operation. Each set gives you added smoothness for ultra accurate tapping
- Pre-set torque control (reduces tap breakage)

Jacobs Taper	Tap Capacity	D Diameter (Inch)	D1 Diameter (Inch)	L (Inch)	L1 (Inch)	Code
J6	0 - 1/4 M2-M7	2.25	0.90	5.00	3.72	242140
J6	#10 - 1/2 M5-M12	3.50	1.10	6.65	4.80	242141
*M20	3/8 - 3/4 M8-M20	3.58	1.58	8.03	5.80	242142

* *M20 is metric taper*

Shanks

Shanks for 242142 M20 metric taper

Type	Code
MT3	242143
MT4	242144
R8	242145

Rubber-Flex Collets



For Holder	Tap Capacity	Code
242140	#0-#10	242146
242140	#10-1/4	242147
242141	#10-1/4	242148
242141	1/4-1/2	242149
242142	3/8-5/8	242163
242142	9/16-3/4	242164

Modular Tap Holders

Straight Shank

- Available in rigid or tension-compression styles
- Ideally suited to lathes and turning centers

Rigid Tap Holders



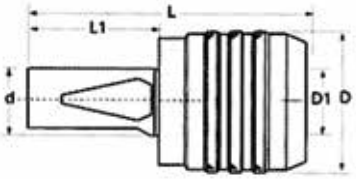
Type	d (Inch)	D (Inch)	Capacity (Inch)	L (Inch)	L1 (Inch)	Code
MRT#1 - 3/4	0.75	1.42	0 - 9/16	3.15	1.57	356720
MRT#1 - 1	1.00	1.42	0 - 9/16	3.58	2.01	356722
MRT#2 - 1	1.00	2.05	5/16 - 7/8	4.17	2.01	356723
MRT#3 - 1-1/2	1.50	3.07	13/16 - 1-3/8	6.25	3.00	356724

Modular Tap Holders

Straight Shank *(continued)*

Tension/Compression Tap Holders



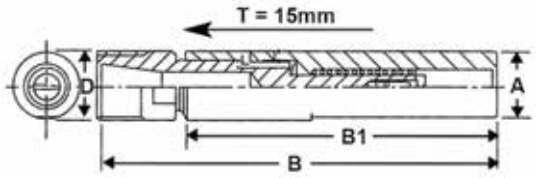


Type	d (Inch)	D (Inch)	Capacity (Inch)	L (Inch)	L1 (Inch)	T Compensation (Inch)	C Compensation (Inch)	Code
MTC#1 - 3/4	0.75	1.42	0 - 9/16	3.15	1.57	0.30	0.30	356730
MTC#1 - 1	1.00	1.42	0 - 9/16	3.58	2.01	0.30	0.30	356732
MTC#2 - 1	1.00	2.16	5/16 - 7/8	4.49	2.01	0.49	0.49	356733
MTC#3 - 1-1/2	1.50	3.07	13/16 - 1-3/8	6.50	3.00	0.79	0.79	356734

Floating Holder Shanks

- Allows tapping using ER16 collet systems



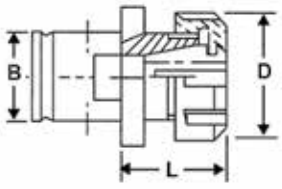


Shank Diameter (Inch)	B (Inch)	B1 (Inch)	D (Inch)	Tap Range	Wrench Reference	Code
3/4	5.31	2.36	1.10	#0-1/2	827009	242072
3/4	3.94	2.56	0.86	#0-1/2	827008	242074

BF Adapter

For ER16 Collet





- Quick-change adapters are interchangeable with Bilz and other popular tapping systems
- Collets hold ANSI and metric sizes
- May be used for tapping and drilling

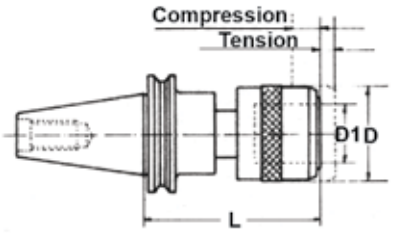
Collet Size	Tap Range	Bilz Style	B (Inch)	L (Inch)	D (Inch)	Code
ER16	#0-1/2 M3-M12	#1	0.75	0.98	1.10	356890

Quick Change Tap Holders

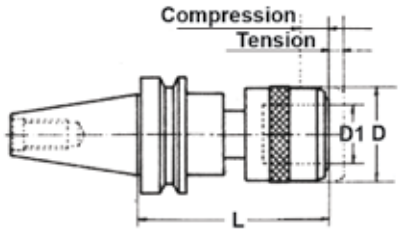
Using BILZ Style Tap Holders

Tension/Compression Tap Holders





CATERPILLER V-FLANGE

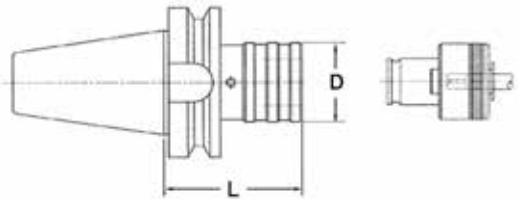


BT FLANGE

Taper	L (Inch)	D (Inch)	Tap Range	D1 (Inch)	Tension (Inch)	Compression (Inch)	Approximate Weight (lbs)	Code
CAT40	3	1.18	0-9/16 hand 1/8 pipe	0.748	13/64	9/32	5	356040
CAT40	3-3/4	1.89	5/16-7/8 hand 1/4-3/8-1/2 pipe	1.220	5/16	19/32	9	356041
CAT50	4	1.18	0-9/16 hand 1/8 pipe	0.748	13/64	9/32	6	356049
CAT50	4	1.89	5/16-7/8 hand 1/4-3/8-1/2 pipe	1.220	5/16	19/32	10	356050
BT40	3	1.18	0-9/16 hand 1/8 pipe	0.748	13/64	9/32	5	356140
BT40	3-3/4	1.89	5/16-7/8 hand 1/4-3/8-1/2 pipe	1.220	5/16	19/32	9	356141
BT50	4	1.18	0-9/16 hand 1/8 pipe	0.748	13/64	9/32	6	356149

Rigid/Synchronized Tap Holders



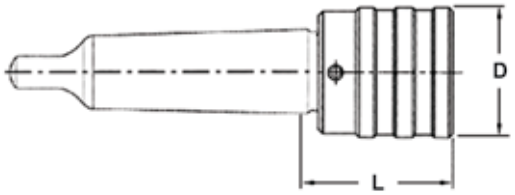


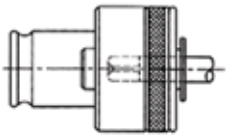
This unit does not have Tension/Compression

Taper	Chuck Size	Tap Range	D (Inch)	L (Inch)	Code
CAT40	1	0 – 9/16; 1/8P	1-1/2	3	242150
CAT40	2	5/16 – 7/8; 1/4P, 3/8P, 1/2P	2	3-3/4	242151
CAT40	3	13/16 – 1-3/8	2	5-3/4	242152
CAT50	1	0 – 9/16; 1/8P	1-1/2	3	242153
CAT50	2	5/16 – 7/8; 1/4P, 3/8P, 1/2P	2	3-3/4	242154
CAT50	3	13/16 – 1-3/8	2	5-3/4	242155
BT40	1	0 – 9/16; 1/8P	1-1/2	3	242156
BT40	2	5/16 – 7/8; 1/4P, 3/8P, 1/2P	2	3-3/4	242158
BT50	1	0 – 9/16; 1/8P	1-1/2	3	242160
BT50	2	5/16 – 7/8; 1/4P, 3/8P, 1/2P	2	3-3/4	242161

Quick Change Tap Adapters

Morse Taper Shank – Tension/Compression





- For use on drills, lathes, etc.
- Takes Bilz style adapters #1, #2, and #3

Shank Size	Adapter	D (Inch)	L (Inch)	Code
MT2	CWE 1	1.42	1.85	242200
MT3	CWE 1	1.42	1.85	242201

Shank Size	Adapter	D (Inch)	L (Inch)	Code
MT3	CWE 2	2.08	2.83	242205
MT4	CWE 2	2.08	2.83	242206

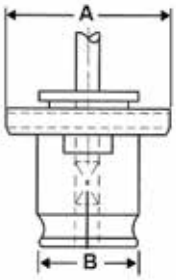
BILZ Style Tap Adapters

Positive Drive & Torque Control Tap Adapters – Inch & Metric

- Made to ANSI standards


Standard Posi-Drive (PD)


Torque Control (TC)



Model	A (Inch)	B (Inch)
CWE 1	1.18	0.75
CWE 2	1.89	1.22
CWE 3	2.75	1.89

Standard Positive Drive (PD) – Inch

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWE 1	0-6	0.141	356500
CWE 1	#8	0.168	356502
CWE 1	#10	0.194	356504
CWE 1	#12	0.220	356506
CWE 1	1/4	0.255	356508
CWE 1	5/16	0.318	356510
CWE 1	3/8	0.381	356512
CWE 1	7/16	0.323	356514
CWE 1	1/2	0.367	356516
CWE 1	9/16	0.429	356518
CWE 2	0-6	0.141	356540
CWE 2	#8	0.168	356542
CWE 2	#10	0.194	356544
CWE 2	#12	0.220	356546
CWE 2	1/4	0.255	356548
CWE 2	5/16	0.318	356550

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWE 2	3/8	0.381	356552
CWE 2	7/16	0.323	356554
CWE 2	1/2	0.367	356556
CWE 2	9/16	0.429	356558
CWE 2	5/8	0.480	356560
CWE 2	11/16	0.542	356562
CWE 2	3/4	0.590	356564
CWE 2	13/16	0.652	356566
CWE 2	7/8	0.697	356568
CWE 3	13/16	0.652	356580
CWE 3	7/8	0.697	356582
CWE 3	15/16	0.760	356584
CWE 3	1	0.800	356586
CWE 3	1-1/8	0.896	356588
CWE 3	1-1/4	1.021	356590
CWE 3	1-3/8	1.108	356592

Torque Control (TC) – Inch

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWES 1	0-6	0.141	356800
CWES 1	#8	0.168	356802
CWES 1	#10	0.194	356804
CWES 1	#12	0.220	356806
CWES 1	1/4	0.255	356808

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWES 1	5/16	0.318	356810
CWES 1	3/8	0.381	356812
CWES 1	7/16	0.323	356814
CWES 1	1/2	0.367	356816
CWES 1	9/16	0.429	356818

BILZ Style Tap Adapters

Positive Drive & Torque Control Tap Adapters – Inch & Metric *(continued)*

Torque Control (TC) – Inch *(continued)*

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWES 2	1/4	0.255	356849
CWES 2	5/16	0.318	356850
CWES 2	3/8	0.381	356852
CWES 2	7/16	0.323	356854
CWES 2	1/2	0.367	356856
CWES 2	9/16	0.429	356858

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWES 2	5/8	0.480	356860
CWES 2	11/16	0.542	356862
CWES 2	3/4	0.590	356864
CWES 2	13/16	0.652	356866
CWES 2	7/8	0.697	356868

Torque Control (TC) – Metric (ISO)

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWES 1	M6	6.3	356825
CWES 1	M8	8.0	356828
CWES 1	M10	10.0	356830
CWES 1	M12	9.0	356832

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWES 2	M6	6.3	356875
CWES 2	M8	8.0	356878
CWES 2	M10	10.0	356880
CWES 2	M12	9.0	356882

Pipe – Positive Drive (PD) – Inch

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWE 1	1/8 SS	0.313	356520
CWE 1	1/8 LS	0.437	356522
CWE 2	1/4	0.562	356570
CWE 2	3/8	0.700	356572

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWE 2	1/2	0.687	356574
CWE 3	3/4	0.906	356596
CWE 3	1	1.125	356598

Pipe – Torque Control (TC) – Inch

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWES 1	1/8 SS	0.313	356820
CWES 1	1/8 LS	0.437	356822
CWES 2	1/4	0.562	356870

Model	Tap Size	Tap Shank Diameter (Inch)	Code
CWES 2	3/8	0.700	356872
CWES 2	1/2	0.687	356874

Boring Heads & Detachable Shanks



- Round style – double bar
- Detachable shank
- Delivers the optimum in precision performance
- Rugged construction and maximum bearing-surface between the sliding gib and the body
- Superior rigidity for chatter-free boring and precise hole-size accuracy
- Bar holder moves freely and smoothly and when locked in place holds firmly against the body
- Micrometer leadscrew provides 0.001” direct-reading accuracy and adjusts easily and quickly to accomodate size change or tool wear

Boring Heads

Model	Actual Size	Overall Length (Inch)	Hole Size (Inch)	Offset (Inch)	Thread Back	Code
DBL-202	2 Rd.	2-5/16	1/2	1/2	1-1/2 - 18	254140
DBL-203	3 Rd.	3-1/4	3/4	3/4	1-1/2 - 18	254142
DBL-204	4 Rd.	3-3/4	1	1	1-1/2 - 18	254144

Detachable Shanks

Shank Size (Inch)	Code	Shank Size (Inch)	Code	Shank Size (Inch)	Code	Shank Size (Inch)	Code
3/4	254146	MT3	254152	ISA40	254158	CAT40	302431
1	254148	R8	254154	ISA50	254159	CAT50	302432
MT2	254150	ISA30	254156				



Boring Head Sets

Set includes:
- Wrenches
- Variety of boring bars
- Supplied in fitted case

Model	Shank	Capacity (Inch)	Bore Size (Inch)	Code
DBL2	3/4 SS	0 - 4	1/2	302425
DBL3	R8	0 - 6	3/4	302430



Boring Heads

Integral Shanks

- Boring capacity 4” diameter
- 3/4” travel (1-1/2” on diameter)

Shank	Boring Bar Diameter (Inch)	Dial Reading (Inch)	Body Diameter (Inch)	Body Length (Inch)	Code
R8	1/2	0.001	2-1/2	3-7/16	311576
3/4	1/2	0.001	2-1/2	3-7/16	311577

Boring & Facing Head



Code
302300

Specifications:

Operating accuracy	±0.0002”
Boring & Facing range	0 - 9”
Maximum adjustability of slide	1.375”
Maximum diameter of slide	2.750”
Various automatic slide-feeds per revolution	
	0.0016”
	0.0032”
	0.0048”
One graduation of fine adjustment on diameter	0.0005”
One revolution of fine adjustment	0.016”
Quick return per revolution	0.030”
Diameter of tool holes in slide	5/8”
Height of head without shank	3.125”
Width of head	2.875”
Weight of head without shank	4 lbs

Standard equipment supplied with the master head (in fitted case):

Boring bars	3/8 (2)
Boring bars	5/8 (2)
Extension holder	5/8 - 3-7/8
Set reinforcing rings	5/8
Carbide round toolbits	5/8 (4)
Reducing sleeve	5/8 - 3/8

Shanks

Shank	Code	Shank	Code	Shank	Code
MT3	302312	ISA30	302314	R8	302317
MT4	302313	ISA40	302315	Straight 1”	302318

Oil Cans

- Compact and robust
- Metal body
- Brass pump
- Supplied with rigid and flex spouts

Pump Style



Capacity	Code
300 ml	416300
500 ml	416301
700 ml	416302

Piston Style



Capacity	Code
125 ml	416315

Replacement Spouts



Type	Length (Inch)	Code
Rigid	7	416305
Flexible	8	416306

Grease Guns

Heavy Duty



- Robust construction
- Develops up to 10,000 PSI
- Short stroke feature pumps grease with limited action
- Complete with bulk loader and air bleeder fittings
- Versatile loading: cartridge or bulk
- Comfortable non-slip grip

Capacity	Code
500 g	416320

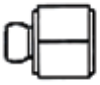
Push Type



- Pump action grease gun for use with soft medium grease
- Complete with nipple connector
- Develops up to 3000 PSI

Capacity	Code
125 mg	416325
200 mg	416326

Snap Coolant Systems

Description		1/4" System		1/2" System	
		Includes	Code	Includes	Code
Complete Hose Assembly		Hose assembly (approx. 13") 1/16", 1/8", 1/4" nozzles and 1/8", 1/4" connectors	217700	Hose assembly (approx. 13") 1/4" 3/8", 1/2" nozzles and 3/8", 1/2" NPT connectors	217701
Hose Assemblies		Body hose segment: 12"	217702	Body hose segment: 12"	217705
		Body hose segment: 25' bulk	217703	Body hose segment: 25' bulk	217706
		Body hose segment: 50' bulk	217704	–	–
		–	–	1/2" to 1/4" I.D. hose reducer (2)	217707
Male Hose to Male Pipe Thread Connectors		Male Hose to NPT: 1/8" NPT (4)	217708	Male Hose to NPT: 3/8" NPT (4)	217710
		Male Hose to NPT: 1/4" NPT (4)	217709	Male Hose to NPT: 1/2" NPT (4)	217711
Female Hose to Male Pipe Thread Connectors		Female Hose to NPT: 1/8" NPT (2)	217712	Female Hose to NPT: 3/8" NPT (4)	217714
		Female Hose to NPT: 1/4" NPT (2)	217713	Female Hose to NPT: 1/2" NPT (4)	217715
Male Hose to Female Pipe Thread Connectors		Male Hose to F/NPT: 1/8" NPT (4)	217716	Male Hose to F/NPT: 1/2" NPT (4)	217719
		Male Hose to F/NPT: 1/4" NPT (4)	217717	–	–
SAE Flare Nut Adapters		SAE Flare Nut: 3/8" SAE flare (4)	217721	SAE Flare Nut: 3/8" SAE flare (4)	217722
Nozzles (Light Gray)		Nozzle assortment: 1/16", 1/8", 1/4" round, 1" flare (1 ea,)	217723	Nozzle assortment: 1/4", 3/8" 1/2" round, 2" flare (1 ea,)	217727
		Round: 1/16" (4)	217724	Round: 1/4" (4)	217728
		Round: 1/8" (4)	217725	Round: 3/8" (4)	217729
		Round: 1/4" (4)	217726	Round: 1/2" (4)	217730
		Flare: 3/4" (2)	217731	Flare: 2" (2)	217733
		Flare: 1" (2)	217732	–	–
Male Hose to NPT Y		1/8" NPT (2)	217734	3/4" NPT (2)	217738
		1/4" NPT (2)	217735	1/2" NPT (2)	217739
		3/8" NPT reducer Y (2)	217736	–	–
		1/2" NPT reducer Y (2)	217737	–	–
Hose to Hose Y's (Dark Gray)		Hose to Hose Y: 1/4" (2)	217740	–	–
Hose to Hose RDCR Y's (Dark Gray)		–	–	Hose to Hose RDCR Y: 1/2" (2)	217741
		–	–	Hose Reducers (2)	217742
Hose to Hose (Female) Double Socket		1/4" Double Socket (2)	217744	1/2" Double Socket (2)	217745
Close Nipple		1/4" NPT Close Nipple (4)	–	1/2" NPT Close Nipple (4)	217748
		3/8" NPT Close Nipple (4)	–	–	–

Snap Coolant Systems *(continued)*

Description		1/4" System		1/2" System	
		Includes	Code	Includes	Code
Plugs		3/8" NPT (4)	217749	1/2" NPT (4)	217750
Ball Valves		1/4" NPT (1)	217751	1/2" NPT (1)	217752
		–	–	1/2" NPT (6)	217755
Universal Assembly Pliers		For 1/4" I.D. hose systems	217756	For 1/2" I.D. hose systems	217757

Lamp Assembly with Magnetic Base



Description	Code
115V work light pac	217758
Dual voltage (12/115V), high intensity universal halogen light pac	217761

Adjustable Arm



Description	Code
Approximate length - 12", 1/2" adjustable, black, plastic clip, magnetic base	217763

Snap Coolant Systems

With Magnetic Base

- Efficient flow control to deliver air/liquid coolant where it is required
- Control valve allows convenient adjustment of air/coolant near work
- Barbed connection easily adapts to regulated shop air or machine coolant pump
- Magnetic base (38 lbs pull) holds unit firmly in position
- Made from high quality non-corrosive materials
- Flexible hose can be easily directed and stays in position



Single

Description	Code
Single 9" length of 1/4" I.D. hose and 1/8" I.D. nozzle	217766



Double

Description	Code
Two 9" lengths of 1/4" I.D hose and 1/8" I.D. nozzle	217767



Misting System

- Reliable mist flow with precision control
- Get the right mist mixture with separate air and fluid controls
- Fully assembled, ready to use
- Special tank not required
- Magnetic base can be easily repositioned
- Made from high quality non-corrosive material

Description	Code
Set includes: 1/4" NPT ball valve, 1/4" NPT quick dissconnect, 1/4" regulator, aspirator, pressure gage, foot strainer, 3/8" O.D. tubing, magnetic base, 12" hose assembly with 1/8" nozzle	217768

Universal Manifold Set

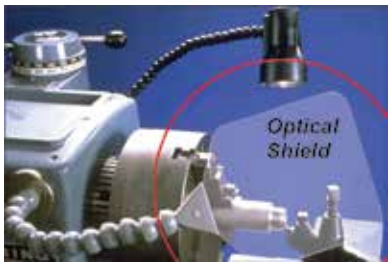


Set includes:
- Manifold block
- Mounting bracket
- 1/2” female x 1/2” NPT male connector
- 1/2” NPT ball valve
- 1/2” NPT close nipples (2)
- 1/2” NPT plug
- 3/8” NPT tee (3)
- 3/8” NPT close nipples (3)
- 1/4”-20 hex head screws (2)
- 1/4”-20 hex head nuts (2)
- 3/8” NPT plug
- 3/8” NPT x 1/4” NPT reducer bushings (6)

NOTE: Hose and nozzles sold separately

Code
217769

Optical Shields



Size (Inch)	Code
6 x 6	217770
9 x 9	217771
12 x 12	217772

Coolant Hose Segments & Fittings

1/4" System – Interchangeable with Loc-Line

Style		Description
A		• 1/4" hose kit • 13" length with fittings • 2 x 6" segments • 1/16", 1/8", 1/4" nozzles • 1/4" and 1/8" male NPT connectors
B		• 1/4" extended element kit with element clamps, including 4 elements and 4 element clamps
C D		• 1/4" segment pack (2 x 6" pcs.) • 1/4" x 50 ft. coil
E		• 1/4" circle flow nozzle kit, assembled with 15 side flow nozzles 1/4" and 1 end cap 1/4"
F		• 1/4" extended elements (pkg. of 4)
G		• 1/4" element clamps (pkg. of 4)
H		• 1/4" 90° nozzle kit • 1 each: 1/16", 1/8", 1/4", and spray bar nozzles
I J		• 1/16" round nozzles (pkg. of 4) • 1/16" round nozzles (pkg. of 50)
K L		• 1/8" round nozzles (pkg. of 4) • 1/8" round nozzles (pkg. of 50)
M N		• 1/4" round nozzles (pkg. of 4) • 1/4" round nozzles (pkg. of 50)

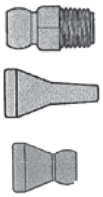
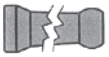
Style		Description
O		• 1/16" 90° nozzles (pkg. of 4)
P		• 1/8" 90° nozzles (pkg. of 4)
Q		• 1/4" 90° nozzles (pkg. of 4)
R		• 1/4" 90° spray bar nozzles (pkg. of 2)
S		• 1" flare nozzles (pkg. of 2)
T		• 1/8" NPT connectors (pkg. of 4)
U		• 1/4" NPT connectors (pkg. of 4)
V		• 1/4" fitting (pkg. of 2)
W X		• 1/4" double sockets (pkg. of 4) • 1/4" double sockets (pkg. of 20)
Y		• 1/4" socket to 1/8" NPT (pkg. of 4)

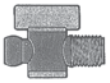
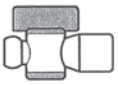
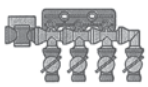
Style		Description
Z		• 1/4" elbow fittings (pkg. of 2)
AA		• 1/4" T fitting (pkg. of 2)
BB		• 1/4" side flow nozzles (pkg. of 4)
CC		• 1/4" end caps (pkg. of 4)
DD		• 1/4" NPT male hose nipple valves (pkg. of 2)
EE		• 1/4" connection valves (pkg. of 2)
FF		• 1/4" male NPT valves (pkg. of 2)
GG		• 1/4" female NPT valves (pkg. of 2)
HH		• 1/4" connection check valves (pkg. of 2)
II		• Modular manifold system 1/4" • 1/4" elbow fitting (1 pc.) • 1/4" manifold bracket (1 pc.) • 1/4" T fittings (3 pcs.) • 1/4" mounting screw (3 pcs.)
JJ		• 1/4" main flow control manifold system • 1/4" modular manifold (1 pc.) • 1/4" connection valves (5 pcs.)
KK		• 1/4" manifold brackets (pkg. of 2)

Style	Code	Style	Code	Style	Code	Style	Code
A	217773	K	217783	T	217792	CC	217801
B	217774	L	217784	U	217793	DD	217802
C	217775	M	217785	V	217794	EE	217803
D	217776	N	217786	W	217795	FF	217804
E	217777	O	217787	X	217796	GG	217805
F	217778	P	217788	Y	217797	HH	217806
G	217779	Q	217789	Z	217798	II	217807
H	217780	R	217790	AA	217799	JJ	217808
I	217781	S	217791	BB	217800	KK	217809
J	217782						

Coolant Hose Segments & Fittings

1/2" System – Interchangeable with Loc-Line

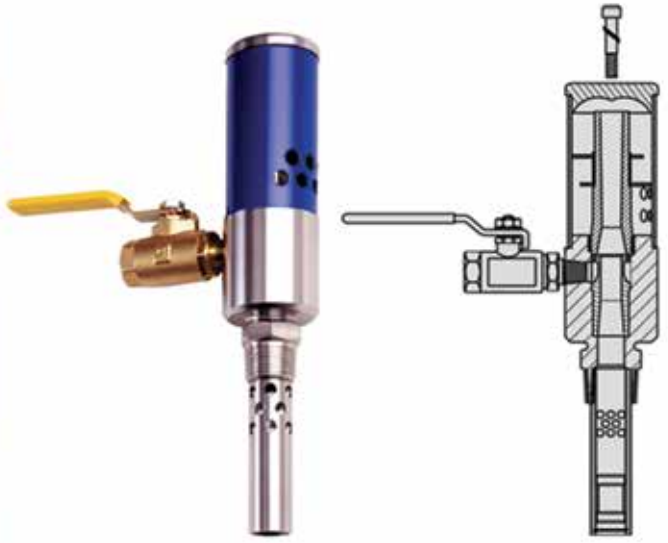
	Style	Description
A		• 1/2" Hose Kit • 13" length with fittings: - 2 x 6" segments - 1/4", 3/8", 1/2" nozzles - 3/8" and 1/2" male NPT connectors
B		• 1/2" Extended Element Kit with Element Clamps • Includes 4 of each: - 1/2" extended elements - 1/2" element clamps
C D		• Segment pack (2 x 6" pcs.) • 1/2" x 50 ft. coil
E		• 1/2" Circle Flow Nozzle Kit • Assembled with 15 side flow nozzles 1/2" and one end cap 1/2"
F		• 1/2" Extended Elements (pkg. of 4)
G		• 1/4" Round Nozzles (pkg. of 4)
H		• 3/8" Round Nozzles (pkg. of 4)
I		• 1/2" Round Nozzles (pkg. of 4)
J		• 1-1/4" Flare Nozzles (pkg. of 2)
K L		• 3/8" NPT Connectors (pkg. of 4) • 1/2" NPT Connectors (pkg. of 4)
M		• 1/2" Elbow Fittings (pkg. of 2)

	Style	Description
N O		• 1/2" to 1/4" Reducers (pkg. of 2) • 1/2" to 1/4" Y Reducers (pkg. of 20)
P Q		• 1/2" Y Fittings (pkg. of 2) • 1/2" Y Fittings (pkg. of 20)
R		• 1/2" to 1/4" Adapters (pkg. of 2)
S		• 1/2" T Fittings (pkg. of 2)
T U		• 1/2" Side Flow Nozzles (pkg. of 4) • 1/2" Side Flow Nozzles (pkg. of 20)
V W		• 1/2" End Caps (pkg. of 4) • 1/2" End Caps (pkg. of 20)
X Y		• 1/2" Connection Valves (pkg. of 2) • 1/2" Connection Valves (pkg. of 10)
Z AA		• 1/2" Female NPT Valves (pkg. of 2) • 1/2" Female NPT Valves (pkg. of 10)
BB CC		• 1/2" Male NPT Valves (pkg. of 2) • 1/2" Male NPT Valves (pkg. of 10)
DD		• Modular Manifold System 1/2" includes: - 1/2" elbow fitting (1 pc.) - 1/2" manifold bracket (1 pc.) - 1/2" T fittings (3 pcs.) - 1/2" mounting screws (3 pcs.)
EE		• Main Flow Control Manifold System 1/2" includes: - modular manifold 1/2" - 5 connection valves 1/2"
FF		• 1/2" Manifold Brackets (pkg. of 2)

Style	Code	Style	Code	Style	Code	Style	Code
A	217810	I	217818	Q	217826	Y	217834
B	217811	J	217819	R	217827	Z	217835
C	217812	K	217820	S	217828	AA	217836
D	217813	L	217821	T	217829	BB	217837
E	217814	M	217822	U	217830	CC	217838
F	217815	N	217823	V	217831	DD	217839
G	217816	O	217824	W	217832	EE	217840
H	217817	P	217825	X	217833	FF	217841

Pneuvac Pump





The Royal Pneuvac pump is a simple, low-cost device that generates a strong vacuum when compressed air flows through its internal venturi.

All you have to do to operate the unit is:
- Connect the pump and hose to a standard 55-gallon steel drum
- Hook up a compressed air supply to the pump
- Drop the free end of hose into the coolant
- Open the air valve
- Coolant and sludge is drawn through the hose and deposited into the drum – quick, clean, and hassle-free

Removing old, rancid coolant from machine tool coolant sumps has always been a dirty, time-consuming job – but now it doesn't have to be. The Royal Pneuvac Pump allows you to clean your sumps quickly, safely, and easily!

Pneuvac Pump Sets

Set includes:
- 1/4" ball valve
- Automatic shut-off valve
- 10 ft. of smooth-bore hose
- Quick-disconnect drum fittings
- 18" aluminum wand



CAUTION:
1. Do not use the Pneuvac pump with flammable or volatile liquids such as gasoline, alcohol, kerosene, aviation fuel, mineral spirits or any similar liquid with a low flash point
2. Do not modify this product to pressurize drum to pump liquids out. Pressurizing drum could cause an explosion that may result in serious injuries.

Description	Code
Stainless Steel	217843
Aluminum	217844

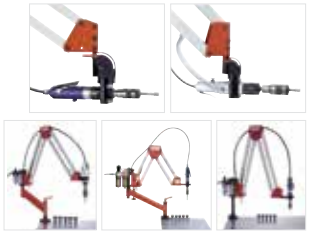
Wrenches
468



Marking Equipment & Supplies
469



Air Tapping
470



Punch Formers, Punches & Scribers
471-477



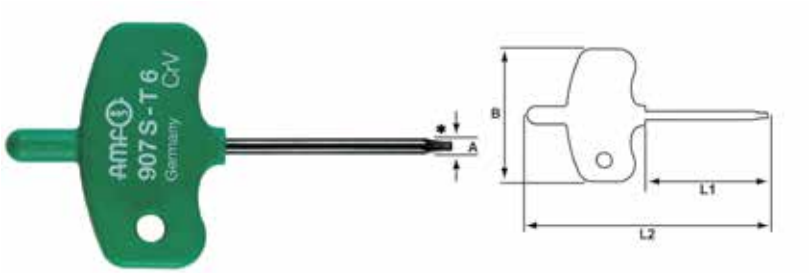
Inside/Outside Calipers & Dividers
478



TORX® Wrenches

- Made from chrome vanadium
- Hardened and polished
- Handle is cadmium-free impact resistant plastic

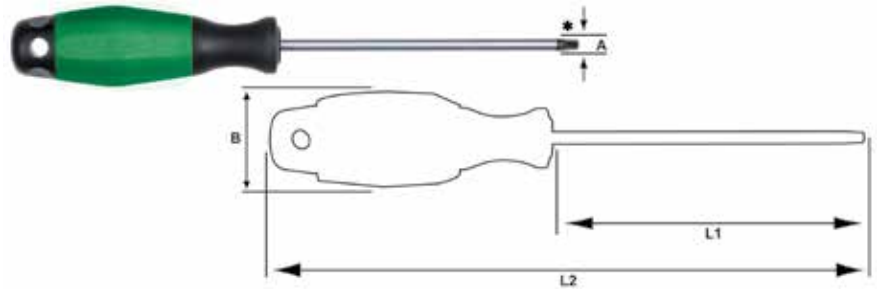
Small Handle



Size	A (Inch)	L1 (Inch)	L2 (Inch)	B (Inch)	Weight (g)	Code
T6	1.70	50	85	40	14	718405
T7	1.99	50	85	40	14	549505
T8	2.31	50	85	40	14	549500

Size	A (Inch)	L1 (Inch)	L2 (Inch)	B (Inch)	Weight (g)	Code
T9	2.50	50	85	40	15	549501
T10	2.74	50	85	40	15	718406

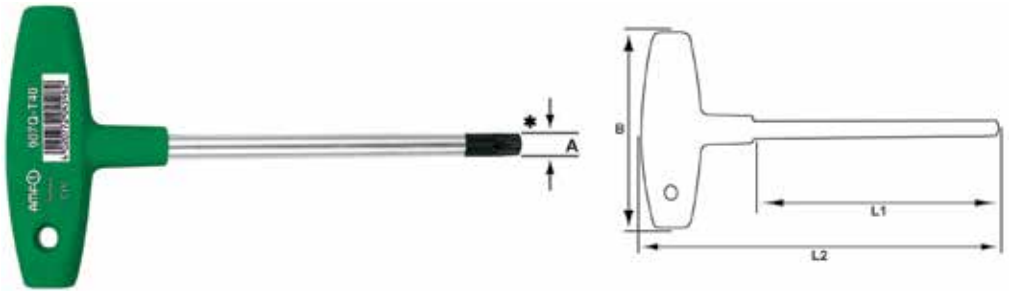
Long Handle



Size	A (Inch)	L1 (Inch)	L2 (Inch)	B (Inch)	Weight (g)	Code
T9	2.50	60	145	18	39	718407
T15	3.27	80	175	21	55	576532

Size	A (Inch)	L1 (Inch)	L2 (Inch)	B (Inch)	Weight (g)	Code
T20	3.86	100	205	24	76	718401

T-Handle



Size	A (Inch)	L1 (Inch)	L2 (Inch)	B (Inch)	Weight (g)	Code
T20	3.86	100	100	125	60	549503
T25	4.43	100	100	125	60	549504
T9	2.50	100	80	125	35	718408
T10	2.74	100	80	125	35	718409
T15	3.27	100	80	125	36	302319

Size	A (Inch)	L1 (Inch)	L2 (Inch)	B (Inch)	Weight (g)	Code
T27	4.99	100	100	131	70	718411
T30	5.52	100	100	131	75	718412
T40	6.65	100	100	131	80	718413
T50	8.83	150	120	188	160	718414

Layout Fluids



DYKEM is one of the world's best known and most trusted line of metal marking fluids. DYKEM has expanded its technology to offer a complete line of metal marking products, many of which have been formulated for a wide range of marking devices for virtually any application. Additional colours provide you with the layout fluid that is most effective for your application.

- Provides a thin translucent blue film without cracking or chipping
- Prevents glare with a uniform, deep colour
- Dries in two to four minutes
- Lets you scribe sharp, clear precise lines
- Reduces eyestrain
- Toluene free

Colour	Description	Code
Steel Blue	12 oz. aerosol	219026
Black	12 oz. aerosol	219028
Steel Blue	8 oz. B-I-C (Brush-in-Cap) bottle	219034

Marking Pens



DYKEM has expanded its line of marking pens to offer a complete range of sizes and types to accommodate virtually any marking application. All Dykem pens are designed with a patented valve-action feature. Even when the cap is left off for a period of time, the tip can be recharged simply by pressing it against a surface, allowing the ink to flow from the reservoir.

Colour	Description	Code
Black	General Purpose (12 cc)	219077
White	General Purpose (12 cc)	219078
Yellow	General Purpose (12 cc)	219079
Red	General Purpose (12 cc)	219080
Blue	General Purpose (12 cc)	219081
Orange	General Purpose (12 cc)	219082
Green	General Purpose (12 cc)	219083
Black	Ball Point Tex-Pens (26.8 cc)	219091
White	Ball Point Tex-Pens (26.8 cc)	219092
Red	Ball Point Tex-Pens (26.8 cc)	219094
Blue	Ball Point Tex-Pens (26.8 cc)	219095
Orange	Ball Point Tex-Pens (26.8 cc)	219096
Green	Ball Point Tex-Pens (26.8 cc)	219097

Hi-Spot



The ideal way to identify high spots on bearings and gear surfaces

- Non-drying
- Transfers from one surface to another

Colour	Description	Code
Blue	0.55 oz. tube	219071
Blue	14 oz. can	219072

Remover & Thinner



Ideal for surface preparation, as well as removing layout fluids and staining colours. May also be used to dilute staining colours.

- Thoroughly cleans and prepares metal surfaces
- Removes dirt, grease and oil from metals, most plastics and glass
- Does not contain 1,1,1-trichloroethane

Description	Code
16 oz. aerosol	219073
930 ml (1 quart)	219074
1 gallon	219075

Tint Etching Marker



Creates black colour etchings on the surface of various types of metals such as stainless, iron, copper, brass alloys, etc., and does not fade away. This special fiber pen never drips and easily draws letters, figures and markings.

- The work surface remains even and the metal is not harmed by deep grooves or scratches
- The depth of the etching is approximately 20 microns
- Completely remove all grease and film from metal surface before use
- After marking you should prevent rust by protecting the surface with a proper rust inhibitor
- Marking can be polished (erased) with fine sandpaper
- You should avoid skin contact with the marking liquid. As a precaution, wash skin with soap and water at once contact has been made

Code
820382

Air Tapping Units

A tapping machine for all general purpose tapping, from small sensitive non-ferrous products to heavy tapping in mild steel. Virtually eliminates the danger of tap breakage, even in blind holes by using tap clutch adapters.

- For safe, rapid and accurate tapping
- Parallel arm ensures tap alignment
- Easy operation, no experience or strength required
- Lower machining cost due to easy set-up and fast tapping

ALL MACHINES INCLUDE:
- Parallel arm
- Air preparation unit with mist lubricator, filter and regulator
- Vertical motor mount
- Stationary bench bracket
- Air driven motor
- Quick change tooling adapter that accepts Bilz style tap adapters
- Each model includes six torque tap adapters with clutch

Heavy Duty

Arm includes Bilz style clutch tap adapters:
CWE #2 Sizes: 5/16, 3/8, 7/16, 1/2, 5/8, and 3/4



Tap Capacity Mild Steel	Maximum Reach (Inch)	Minimum Reach (Inch)	Variable RPM	Torque at 90 PSI	Code
0 - 3/4	57	8	150-400	29 ft. lbs.	302801

Medium Duty

Arm includes Bilz style clutch tap adapters:
CWE #1 Sizes: #8, #10, 1/4, 5/16, 3/8, and 1/2





Tap Capacity Mild Steel	Maximum Reach (Inch)	Minimum Reach (Inch)	RPM	Torque at 90 PSI	Code
0 - 1/2	36	6	400	29 ft. lbs.	302799
0 - 1/2	57	6	400	29 ft. lbs.	302800



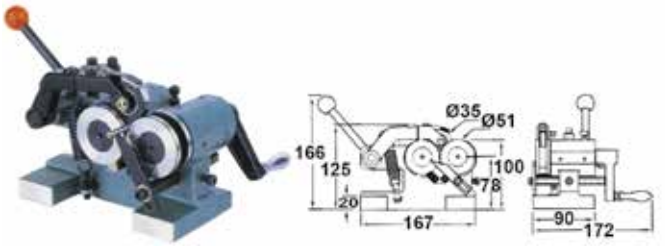
Universal Tapping Attachments

Enables tapping at any angle

Range	For Use on Tapping Unit	Code
12-90°	302799; 302800	302803
20-90°	302801	302804



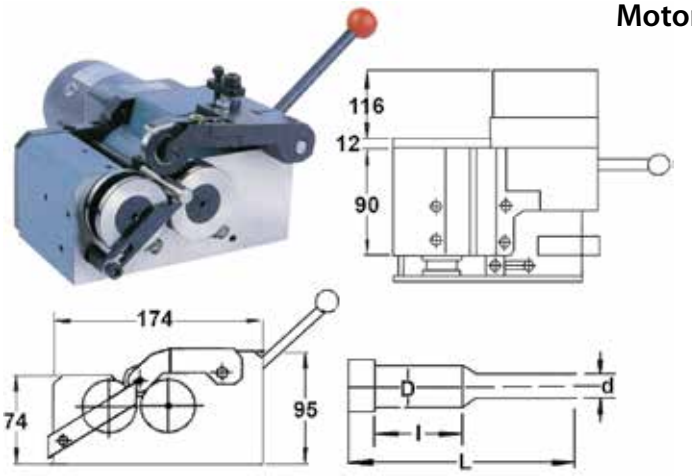
Centerless Punch Grinders



- High accuracy
- Centerless - no alignment necessary
- Rollers accept 0.06” – 1” diameters

Model	Weight	Code
PGA	5.5 kg	302470

Motorized



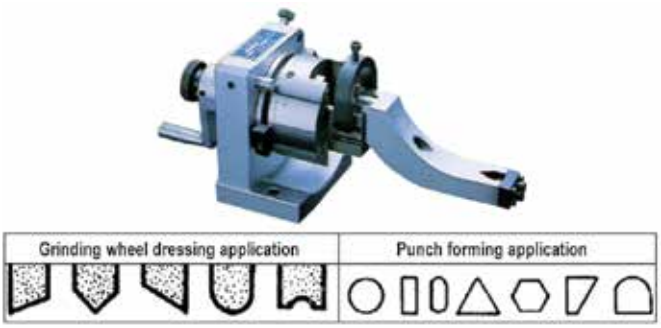
- Motor 110V, 25 watts
- Roller speed: 130 RPM
- D: 1.5-25mm
- d: 0.5-25mm
- L: maximum 120mm
- l: minimum 22mm

Model	Weight	Code
PGAM	11.5 kg	302471

Punch Formers

Tangential Style

Double Offset



- Maximum diameter of workpiece: 32mm (1-1/4”)
- V-Block: 30mm (1-3/16”)
- Tangential travel: 20mm (25/32”) either side of center
- V-Block adjusting system: rack and pinion
- Center height at 80mm (or 3-1/2”)
- Indexing div: 24 (every 15º) ±10 seconds
- Angle setting: by sine system - gage blocks
- Roundness: 0.002mm (0.0001”)
- Parallelism: within 0.005mm/50mm (0.0002 in 2”)
- Squareness: within 0.005mm/50mm (0.0002 in 2”)
- Construction: hardened tool steel throughout for long and accurate life
- Weight: 10 kgs (22 lbs.)

Code
875440

Single Offset



- Concentricity: within 0.003mm (0.0001”)
- 24 index divisions (increments DF15º) within ±10 seconds
- Capacity: 32mm (1-1/4”), 90º V-blocks
- 30mm (1-1/8”) through center hole
- Squareness and parallelism to within ±0.003 mm (±0.0001”)
- Weight: 7.7 kg (17 lbs)

Code
865415

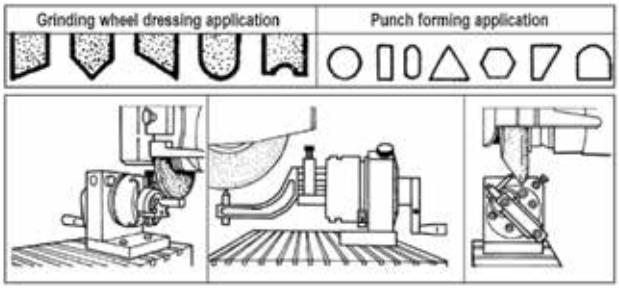
High Precision Punch Formers

Tangential Style – 1-1/4" Capacity





- Maximum diameter of workpiece: 1-1/4"
- Indexing ±10 seconds: 24 (15°)
- Parallelism: 0.0001"
- Squareness: 0.0001"



Model	Type	Center Height	Weight (lbs)	Code
HWG-A80	General	3.15	18	875510
HWG-AS80	Sine	4.49	25	875511

ER Collet Style Punch Formers

ER32 – 1/8" to 3/4" Capacity

NOTE: Collets not included

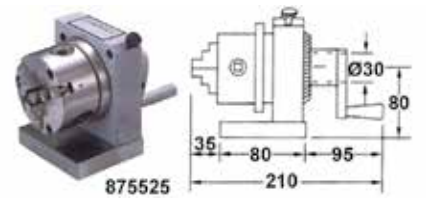


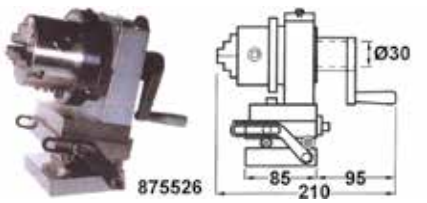
- Indexing ±10 seconds: 24 (15°)
- Through hole: 3/4"
- Parallelism: 0.0001"
- Squareness: 0.0001"

Diameter Range (Inch)	Center Height (Inch)	Weight (lbs)	Code
0.04 - 0.78	3.15	15	875520
0.04 - 0.78	4.49	21	875521

Chuck Style Punch Formers

2" Capacity





- Maximum diameter of workpiece: 2"
- Indexing ±10 seconds: 24 (15°)
- Through hole: 3/4"
- Parallelism: 0.0001"
- Squareness: 0.0001"

Center Height (Inch)	Weight (lbs)	Code
3.15	18	875525
4.49	25	875526

Drive Pin Punches



- Made from tool steel
- Uniformly heat treated
- Knurled body for easy gripping
- Ground point

Set of 4 consists of:
1/8", 5/32", 3/16" and 1/4"
Other sets include all sizes in series

Size (Inch)	4" Long Code	6" Long Code	8" Long Code
1/16	460001	460011	–
3/32	460002	460012	–
1/8	460003	460013	–
5/32	460004	460014	–
3/16	460005	460015	460025
7/32	460006	460016	460026
1/4	460007	460017	460027
5/16	460008	460018	460028
3/8	–	–	460029
Sets	460010 (4)	460020 (8)	460030 (5)

Long Drive Pin Punch Set



- Tool steel with black oxide finish and hardened on both ends
- Knurled finger grip
- Length: 8" (drive pin section: 3-1/2")

Sizes Included (Inch)	INSIZE No.	Code
5 Pieces Point Sizes 1/8, 3/6, 1/4, 5/16, and 3/8	7253	283975

Drive Pin Punch Set



- Tool steel with black oxide finish and hardened on both ends
- Knurled finger grip
- Length: 4"

Sizes Included (Inch)	INSIZE No.	Code
8 Pieces Point Sizes 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, and 5/16	7252	283976

Center Punches



- Center punches are made of hardened and tempered tool steel
- Round shank, knurled grip

Size (Inch)	Body Diameter (Inch)	Length (Inch)	Code
1/16	1/4	3	460031
5/64	5/16	4	460032
3/32	5/16	4	460033
9/64	3/8	4	460034
5/32	7/16	4	460035
Set (5)	-	-	460040

Automatic Center Punches

Light Duty



- Pressure can be varied from 5 lbs. to approximately 30 lbs. simply by rotating knurled head
- Used for marking light dotting to heavy punching

Length (Inch)	Code
5	460051

Heavy Duty



- Fully automatic single hand operation
- Adjustable from very light to extra heavy markings
- Used for marking, punching, staking and riveting
- Replaceable point is made from hardened alloy steel
- Individually packed in vinyl pouch

Length (Inch)	Diameter (Inch)	Code
5-1/2	5/8	460050

Pin Punch & Center Punch Sets



- Eight pieces per set
- 4” length
- Well proportioned for comfort
- Hardened and tempered
- Knurled finger grip for ease of use

Pin Punch Set

Sizes Included Inch (mm)	Code
1/16 (1.5), 3/32 (2.5), 1/8 (3), 5/32 (4), 3/16 (5), 7/32 (5.5), 1/4 (6), and 5/16 (8)	460041

Center Punch Set

Sizes Included Inch (mm)	Code
1/16 (1.5), 5/64 (2), 3/32 (2.5), 1/8 (3), 9/64 (3.5), 5/32 (4), 3/16 (5), and 7/32 (5.5)	460042

Surface Scriber Blocks



- Hardened steel base is ground and polished
- V-groove in base for cylindrical work
- Fine adjustment of spindle to any angle above or below base

Base (Inch)	Rod Length (Inch)	Code
2-3/16 x 1-5/8 x 3/4	7	460081
3-1/8 x 2-1/2 x 1	12	460082

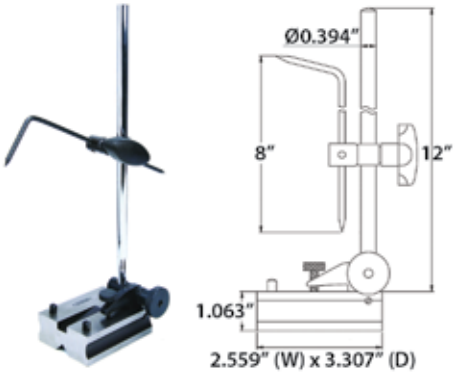
Pocket Scriber

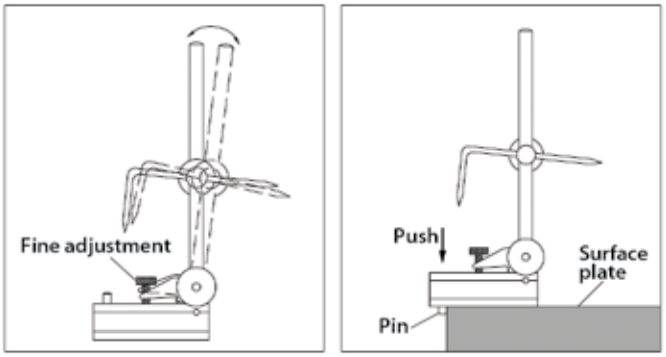


- Hardened steel point is reversible for protection when not in use
- Overall length: 89mm – 3-1/2”

Code
460070

Surface Scriber Block



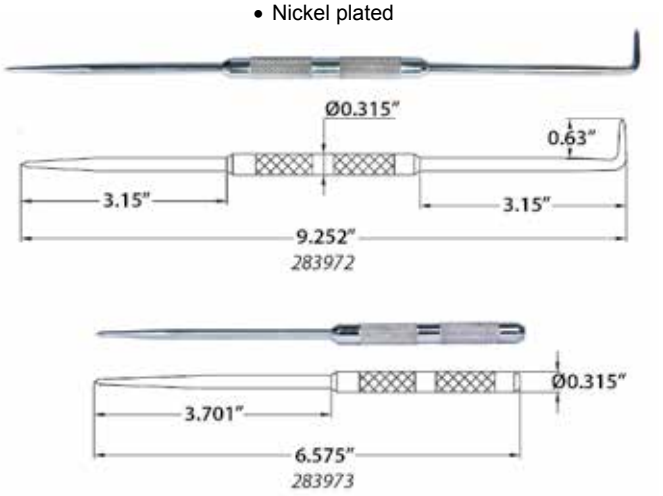


- Grooved bottom for cylinder
- Two pins to be set against the edge of the surface plate

Base (Inch)	INSIZE No.	Code
1.063 x 2.559 x 3.307	6990-300A	283971

Machinist's Scribers

- Nickel plated



Tip Style	INSIZE No.	Code
Hardened tips	7230	283972
Hardened tip	7231	283973

Machinist's Scribers



Tip Style	Code
4-1/2	460061
7-1/2	460062
7-1/2	460063
7-1/2	460064
7	460065
4	460066
6-3/4	460067
10	460068

Machinist's Tool Set



Description	Individual	3-Piece Set
	Code	Code
Scriber	455501	455505
Center punch	455502	
Magnetic pick-up	455503	

Transfer Punch Sets

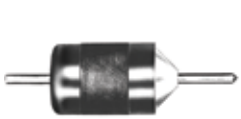


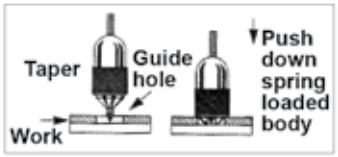
- Overall length: 4-7/8”
- Inch sizes: 3/32” to 1/2” (plus 17/32”) and 1/2” to 1” by 64ths
- Letter sizes: A to Z
- Wire Gage sizes: 1 to 60
- Metric sizes: 1mm to 13mm by 0.5mm
- All sets in metal indexed storage case

Individual punches also available

Description	Code
28 punches - 3/32” to 1/2” by 64ths, plus 17/32”	415090
26 punches - Letter Sizes A-Z	415093
60 punches - Wire Gage Sizes 1-60	415096
33 punches - 1/2” to 1” by 64ths	415099
25 punches - 1mm to 13mm by 0.5mm	415100

Universal Transfer Punches & Aligners





- Precision ground and spring loaded
- All parts made from steel and hardened
- Replaces different size transfer punches
- Centers top of 1/4” to 3/4” holes
- Perfect hole center alignment assured

Description	Weight (lbs)	Code
3/16” diameter, 3-1/8” long for 1/4” – 3/4” hole	0.26	604130
3/16” diameter, 4-1/8” long for 1/4” – 1-1/16” hole	0.46	604131

Steel Stamps

Letters & Numbers



Size (Inch)	Letter Stamps				Number Stamps			
	Straight Stamps		Reverse Stamps		Straight Stamps		Reverse Stamps	
	Stamp	Code	Stamp	Code	Stamp	Code	Stamp	Code
1/16	LP/1-16	416101	LP/R 1-16	416111	NP/1-16	416121	NP/R 1-16	416131
3/32	LP/3-32	416102	LP/R 3-32	416112	NP/3-32	416122	NP/R 3-32	416132
1/8	LP/1-8	416103	LP/R 1-8	416113	NP/1-8	416123	NP/R 1-8	416133
5/32	LP/5-32	416104	LP/R 5-32	416114	NP/5-32	416124	NP/R 5-32	416134
3/16	LP/3-16	416105	LP/R 3-16	416115	NP/3-16	416125	NP/R 3-16	416135
1/4	LP/1-4	416106	LP/R 1-4	416116	NP/1-4	416126	NP/R 1-4	416136

Interchangeable Steel Stamp Sets

112 Pieces

- For hand or machine use
- Made from special tool steel
- A fast easy solution for multi-character marking - in a simple stroke you can indent a series of letters and numbers on a product or nameplate
- Each character is hardened and tempered to 59-61 Rockwell C and nickel finished to resist rust
- Set includes a type holder with a complete selection of letters, numbers, dash, slash, amok, period, comma, ampersand and spacers
- Supplied in storage case



112-PIECE SET INCLUDES THESE STAMPS:

A	A	A	B	B	C	C	D	D	E
E	E	E	F	F	G	G	H	H	I
I	I	J	J	K	K	L	L	L	M
M	N	N	N	O	O	O	P	P	Q
R	R	R	S	S	S	T	T	U	U
U	V	W	W	X	X	Y	Z	&	/
/	-	-	.	.	.	1	1	1	1
1	2	2	2	2	3	3	3	4	4
4	4	5	5	5	6	6	6	7	7
7	8	8	8	9	9	9	0	0	0

Size (Inch)	Code
1/16	604140
3/32	604141
1/8	604142
3/16	604143
1/4	604144
3/8	604145

Machinist's Jack



- For use on drill presses, shapers, milling machines, planers, or any place where leveling is necessary
- Has a lifting capacity of approximately 1000 lbs
- Base is made of a heavy casting with adjustable steel screw and tilting swivel head, with lock nut for permanent positioning
- 3" high when closed and 4" high when fully extended

Code
416160

Punch & Die Set

- Cuts rubber, plastic, brass or steel up to 0.025" thick
- Clear plexiglas top lets you see where you are punching for greater accuracy
- Heat treated tool steel base
- Compact in size: 3-9/16" x 3-1/16"
- Weighs 2 lbs., 4 oz.



Sizes Included (Inch)	Code
1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", and 3/4"	455500

Pin Hand Chucks



Length (Inch)	Capacity (Inch)	Code
3	0 - 0.040	460181
3-1/2	0.030 - 0.062	460182
3-3/4	0.050 - 0.125	460183
4-1/8	0.115 - 0.187	460184
SET: 4 Pieces: 0 - 0.187" capacity		460185

Pin Chucks



- Designed to hold small drills in drill presses
- Supplied with three interchangeable hardened collets

Length (Inch)	Capacity (Inch)	Code
2-1/2	0 - 3/32	460188

Double End Pin Chuck



- Each end with a double end collet which can be reversed to desired size
- Nickel plated body made of tube to permit use of long wire or rods

Length (Inch)	Capacity (Inch)	Code
2-1/2	0 - 3/32	460186

Master Pin Chuck



- Hand drill and pin vise with swivel head
- With two double end collets
- Capacity: 0 to 0.125"

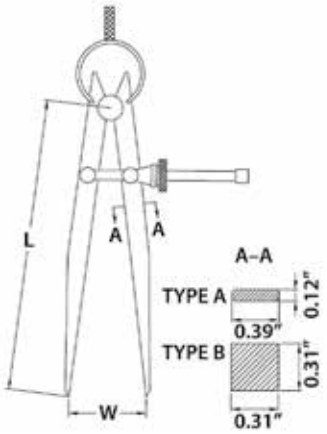
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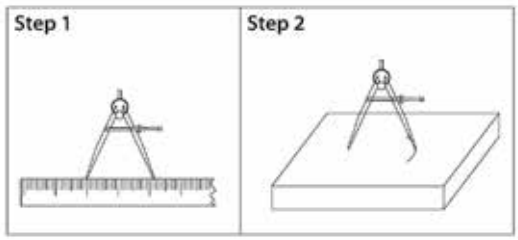
Spring Dividers

INSIZE

Carbon Steel with Hardened Points







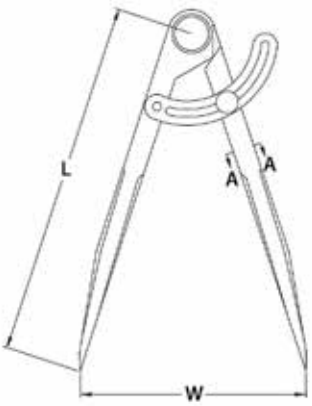
L Size (Inch)	W Range (Inch)	INSIZE No.	Code
6	0-5.91	7260-150	283897
8	0-8.27	7260-200	816417
10	0-10.24	7260-250	816418
12	0-12.60	7260-300	816419

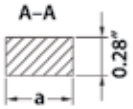
Dividers

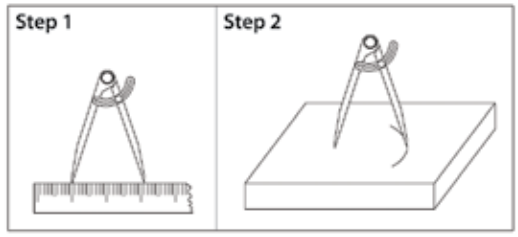
INSIZE

Carbon Steel with Hardened Points









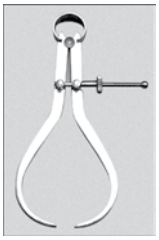
L Size (Inch)	W Range (Inch)	a (Inch)	INSIZE No.	Code
6	0-5.51	0.33	7247-150	283917
8	0-7.48	0.39	7247-200	283919
12	0-11.42	0.47	7247-300	283921

Inside Spring Caliper



Size (Inch)	Code
3	810163
4	810164
6	810166
8	810168
10	810170
12	810172

Outside Spring Caliper



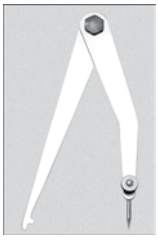
Size (Inch)	Code
3	810173
4	810174
6	810176
8	810178
10	810180
12	810182

Spring Divider



Size (Inch)	Code
3	810183
4	810184
6	810186
8	810188
10	810190
12	810192

Jenny Hermaphrodite Divider



Size (Inch)	Code
6	810194

Calipers
480-492



Micrometers
493-503



Indicators & Depth Gages
504-516



Magnetic Stands
518-520



Height Gages
521-522



Bore Gages
523



Thickness Gages
524



Gage Blocks
525



Levels & Protractors, Rules, Straight Edges & Squares
526-532



Gages
533-543



Edge & Center Finders, Zero Setting
544-545



Surface Roughness
546



Measuring Tool Sets
547



Hardness Testers
548



Durometers
549



Microscopes & Videoscope
550-552



Surface Plates
553

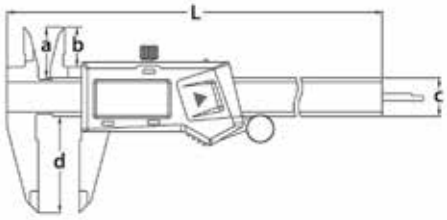


Loupes & Magnifiers
554-555



Electronic Calipers





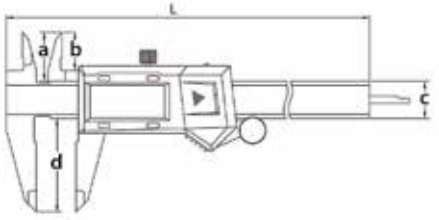
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, inch/mm
- Auto power off, move the digital unit to turn on power
- Battery CR2032
- Data output
- Stainless steel construction
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.291	0.827	0.630	0.630	1.575	1108-150	817000
0-8/0-200	±0.0012	11.260	0.945	0.748	0.630	1.969	1108-200	817001
0-12/0-300	±0.0012	15.748	0.984	0.807	0.669	2.362	1108-300	817002

Fractional Reading Electronic Calipers



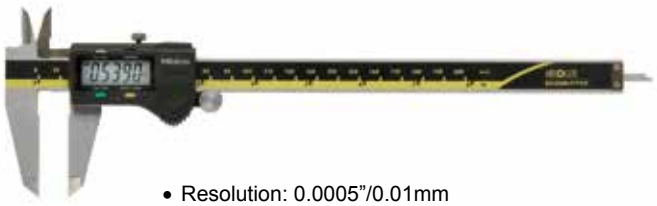


- Resolution: 0.0005”, 1/128” (fractional), 0.01mm
- Buttons: zero, unit (mm/inch/fraction), ABS (absolute and incremental measurement), on/off
- Auto power off
- Battery CR2032
- Data output
- Stainless steeel construction
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.213	0.827	0.650	0.630	1.575	1102-150	280003
0-8/0-200	±0.0012	11.260	0.945	0.748	0.630	1.969	1102-200	280004
0-12/0-300	±0.0012	15.354	1.024	0.846	0.630	2.362	1102-300	280005

Digimatic Calipers



- Resolution: 0.0005”/0.01mm
- Absolute function
- Battery SR44
- Has the ability to measure steps
- Data output via USB

Range (Inch/mm)	Accuracy (Inch)	SPC	Code
0-12/0-300	+0.001	Without SPC	500-193
0-12/0-300	+0.001	With SPC	500-173

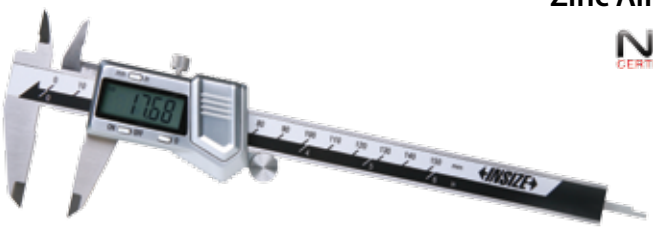


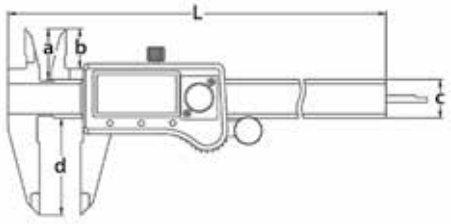
- Resolution: 0.0005”/0.01mm
- Inch/metric
- Coolant proof, IP67 Ingress protection level
- Absolute function
- Automatic on/off
- Dust and chip proof
- Data output

Range (Inch/mm)	Accuracy (Inch)	SPC	Code
0-6/0-150	±0.001	Without SPC	500-752-20
0-12/0-300	±0.0015	Without SPC	500-754-10
0-6/0-150	±0.001	With SPC	500-762-10
0-8/0-200	±0.001	With SPC	500-763-10

Electronic Calipers

Zinc Alloy Casing





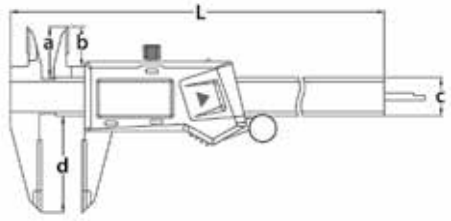
- Resolution: 0.0005”/0.01mm
- Die cast zinc alloy casing
- Buttons: zero, on/off, inch/mm
- Auto power off, move unit to turn power on
- Battery CR2032
- Supplied in fitted storage case

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.291	0.827	0.630	0.630	1.575	1114-150	816012
0-8/0-200	±0.0012	11.260	0.945	0.748	0.630	1.969	1114-200	816014
0-12/0-300	±0.0012	15.748	0.984	0.807	0.669	2.362	1114-300	816016

Electronic Calipers

Carbide Tipped Jaws





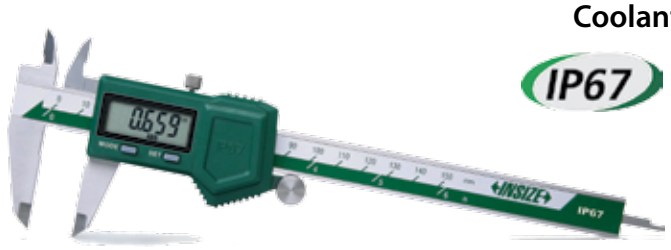
- Resolution: 0.0005”/0.01mm
- Wear resistant carbide tipped jaws for inside and outside measurements
- Buttons: zero, on/off, inch/mm
- Auto power off, move the unit to turn power on
- Battery CR2032
- Stainless steel
- Data output
- Supplied in fitted storage case

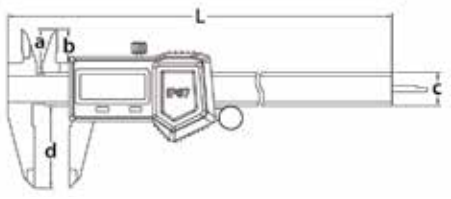
OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.291	0.827	0.630	0.630	1.575	1110-150A	280021
0-8/0-200	±0.0012	11.260	0.945	0.748	0.630	1.969	1110-200A	280022
0-12/0-300	±0.0012	15.748	0.984	0.807	0.669	2.362	1110-300A	280023

Electronic Calipers

Coolant Proof



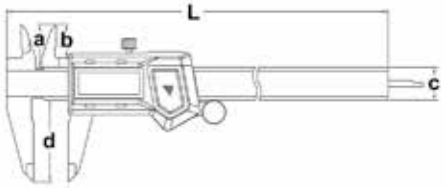


- Resolution: 0.0005”/0.01mm
- Coolant proof, IP67 Ingress protection level
- Button functions: zero, on/off, inch/mm, ABS/REL, hold
- Battery CR2032
- Stainless steel
- Supplied in fitted storage case

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.291	0.827	0.630	0.630	1.575	1118-150B	816018
0-8/0-200	±0.0012	11.260	0.945	0.748	0.630	1.969	1118-200B	280014
0-12/0-300	±0.0012	15.748	0.984	0.807	0.669	2.362	1118-300B	280015

Absolute Electronic Calipers



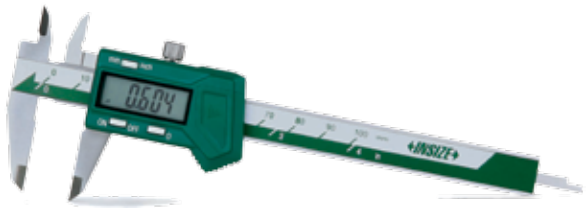


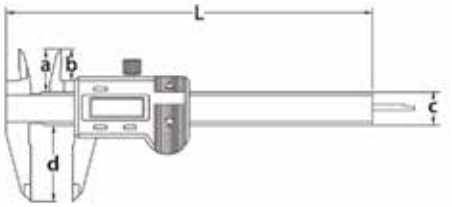
- Absolute system
- Resolution: 0.0005”/0.01mm
- Buttons: Inch/mm, ABS/REL, on/off, origin set
- Battery CR2032
- Auto power off, move unit to turn power on
- Data output
- Stainless steel
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0008	9.213	0.787	0.591	0.630	1.575	1103-150	285127
0-8/0-200	±0.0008	11.260	0.945	0.748	0.630	1.969	1103-200	285128
0-12/0-300	±0.0012	15.354	1.024	0.845	0.630	2.362	1103-300	285129

Miniature Electronic Calipers

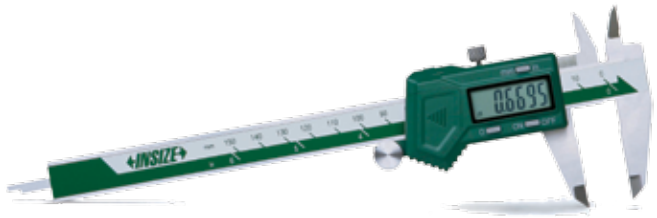


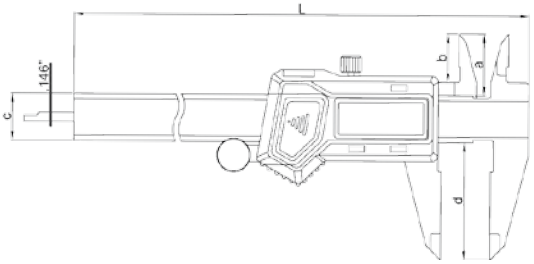


- Resolution: 0.0005”/0.01mm
- Buttons: zero set, power on/off, inch/mm conversion
- Auto power off
- Battery SR44 or LR44
- Meets DIN862, stainless steel construction
- Supplied in fitted storage case

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-3/0-75	±0.0008	5.669	0.669	0.492	0.512	1.181	1111-75A	280019
0-4/0-100	±0.0008	6.693	0.669	0.492	0.512	1.181	1111-100A	280020

Left Hand Electronic Calipers





- Designed for left-handed users
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, Inch/mm
- Battery CR2032
- Auto power off, move unit to turn power on
- Data output
- Stainless steel
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.291	0.827	0.630	0.630	1.575	1130-150	816615
0-8/0-200	±0.0012	11.260	0.945	0.748	0.630	1.969	1130-200	816616
0-12/0-300	±0.0012	15.748	0.984	0.807	0.669	2.362	1130-300	816617

Electronic Caliper

12 Inch/300mm



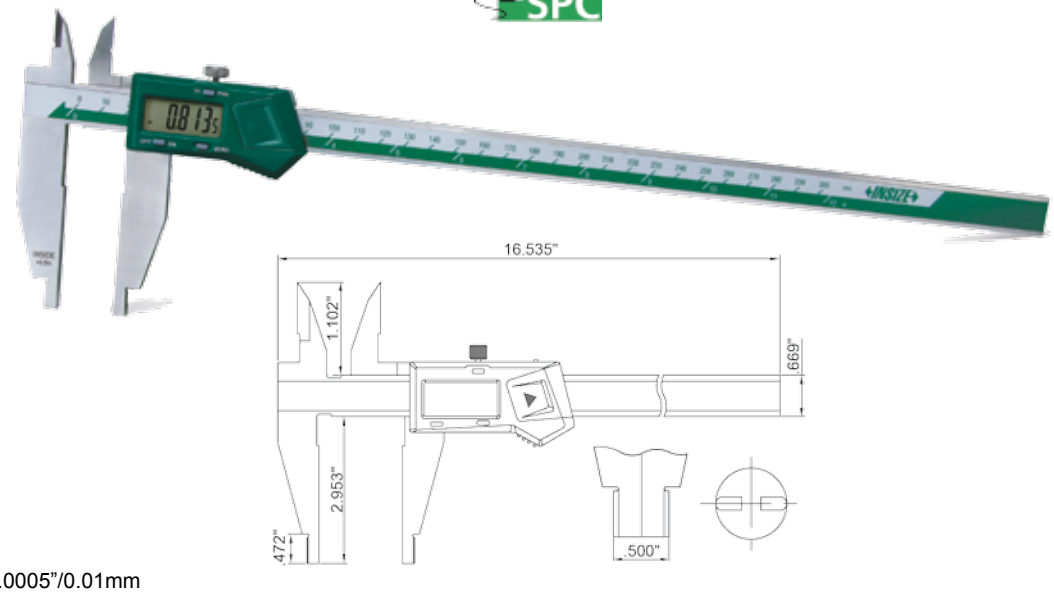
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, Inch/mm
- Battery CR2032
- Auto power off, move unit to turn power on
- Data output
- Stainless steel
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	INSIZE No.	Code
0-12/0-300	±0.0016	1522-127	816686

Electronic Caliper

12 Inch/300mm



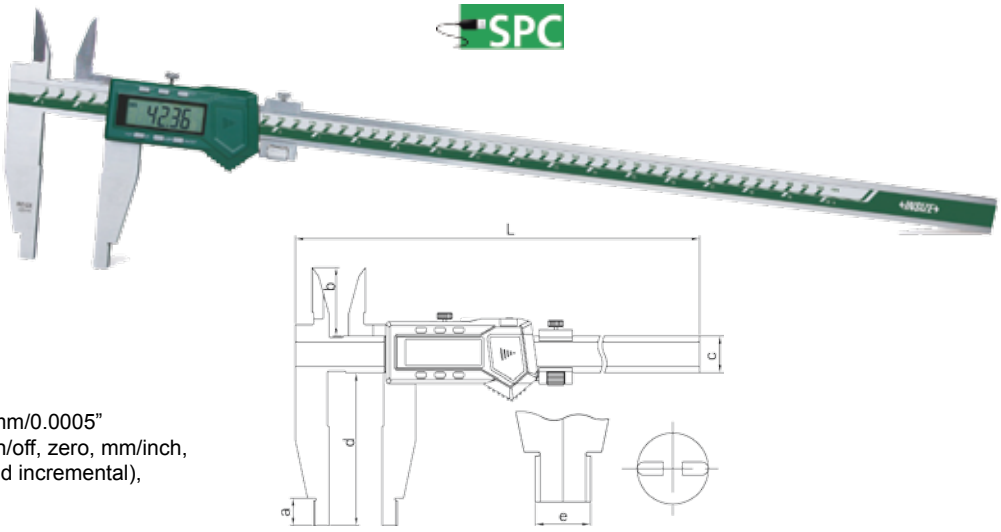
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, Inch/mm
- Battery CR2032
- Auto power off, move unit to turn power on
- Data output
- Stainless steel
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	INSIZE No.	Code
0-12/0-300	±0.0016	1523-127	816687

Long Range Electronic Caliper

20 Inch/500mm



- Resolution: 0.01mm/0.0005”
- Button funcion: on/off, zero, mm/inch, ABS (absolute and incremental), data preset
- Battery CR2032
- Data output
- Stainless steel
- Supplied in fitted storage case

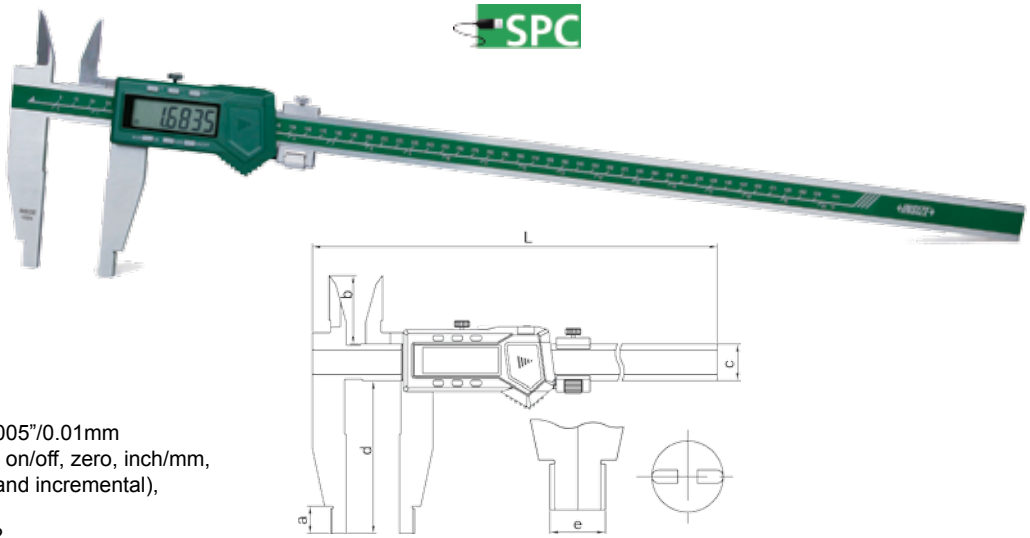
OPTIONAL ACCESSORY: SPC cable

Range (mm/Inch)	Accuracy (mm)	L (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	INSIZE No.	Code
0-500/0-20	±0.05	675	18	45	24	100	20	1136-501	280117

Sizes available up to 2000mm/80”

Long Range Electronic Calipers

24 & 40 Inch/600 & 1000 mm



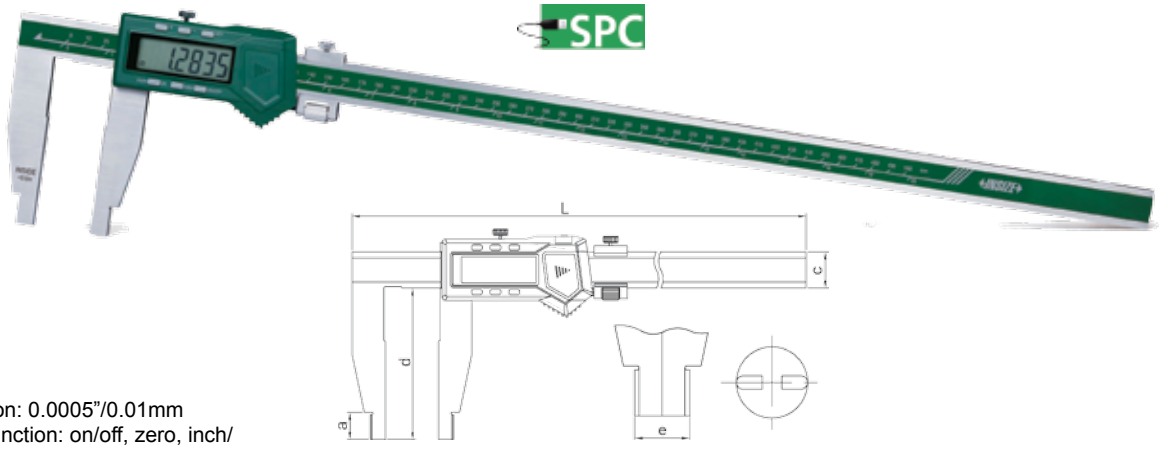
- Resolution: 0.0005”/0.01mm
- Button function: on/off, zero, inch/mm, ABS (absolute and incremental), data preset
- Battery CR2032
- Stainless steel
- Data output
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	e (Inch)	INSIZE No.	Code
0-24/0-600	±0.0020	30.315	0.709	1.772	0.945	3.937	0.800	1133-24	285061
0-40/0-1000	±0.0031	48.031	0.945	2.362	1.220	5.906	0.800	1133-40	285062

Long Range Electronic Calipers

24 to 80 Inch/600 to 2000mm

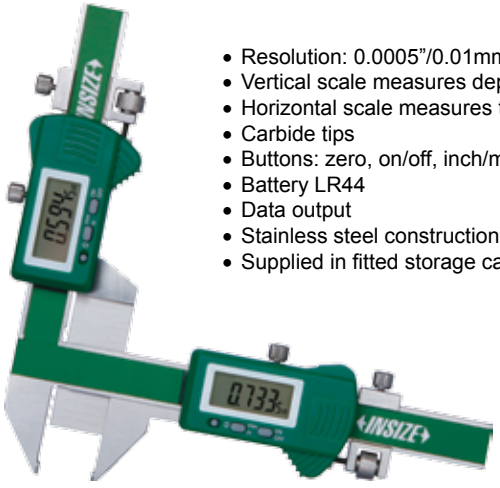


- Resolution: 0.0005”/0.01mm
- Button function: on/off, zero, inch/mm, ABS (absolute and incremental measurement), data preset
- Battery CR2032
- Stainless steel
- Data output
- Supplied in fitted storage case

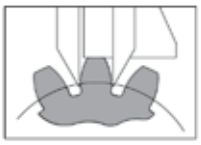
OPTIONAL ACCESSORY: SPC cable

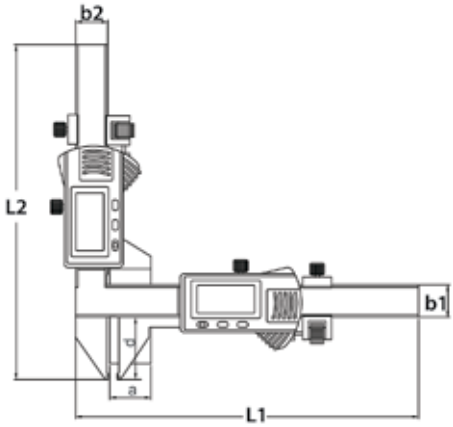
Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	c (Inch)	d (Inch)	e (Inch)	INSIZE No.	Code
0-24/0-600	±0.0020	30.315	0.709	0.945	3.937	0.800	1131-24	876221
0-40/0-1000	±0.0031	48.031	0.945	1.220	5.906	0.800	1131-40	876222
0-60/0-1500	±0.0043	70.079	0.945	1.654	5.906	0.800	1131-60	816618
0-80/0-2000	±0.0055	90.157	0.945	1.654	5.906	0.800	1131-80	280063

Electronic Gear Tooth Calipers



- Resolution: 0.0005”/0.01mm
- Vertical scale measures depth of teeth from the top to the pitch line
- Horizontal scale measures thickness of teeth in the pitch line
- Carbide tips
- Buttons: zero, on/off, inch/mm
- Battery LR44
- Data output
- Stainless steel construction
- Supplied in fitted storage case





Range	Accuracy (Inch)	L1 (Inch)	L2 (Inch)	a (Inch)	b1 (Inch)	b2 (Inch)	d (Inch)	INSIZE No.	Code
P1-P24	±0.0016	6.693	6.516	0.827	0.630	0.630	1.201	1181-M25A	280658
P1/2-P5	±0.0016	8.661	7.480	1.988	0.630	0.630	2.165	1181-M50A	280659

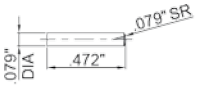
Electronic Caliper

Interchangeable Points

SPC



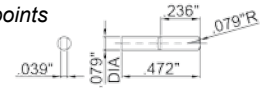
Short spherical/flat points



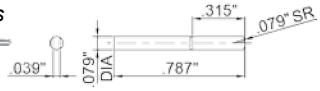
Long spherical/flat points

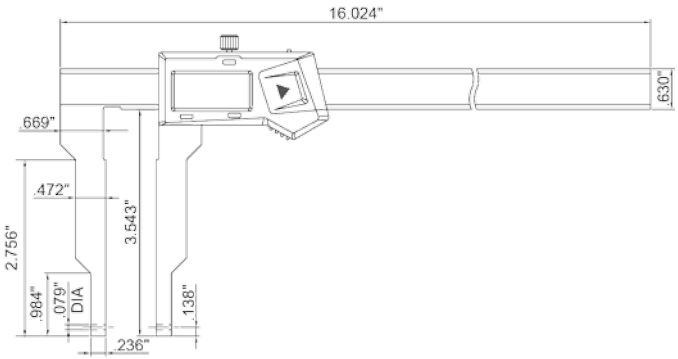


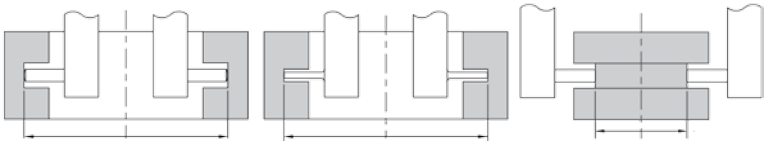
Short spherical blade points



Long spherical blade points







Spherical points for groove (inside hole) measurement

Spherical blade points for narrow groove (inside hole) measurement

Flat points for external groove measurement

- Supplied with 4 pair of points and a zero setting block for external measurement
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, set, inch/mm, preset (+, -)
- Auto power off, move unit to turn on
- Battery CR2032
- Stainless steel
- Data output
- Supplied in fitted storage case

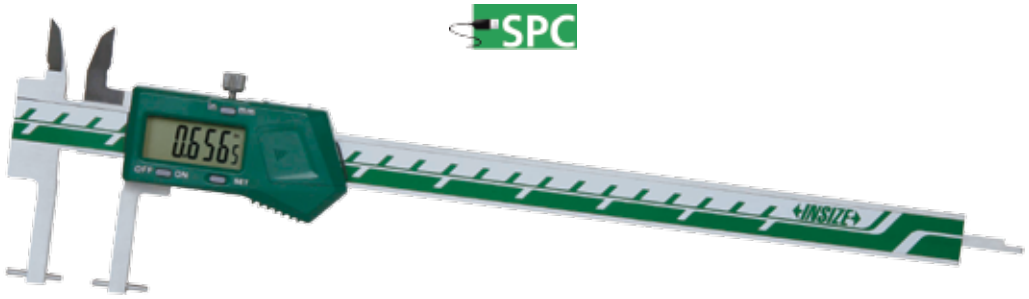
OPTIONAL ACCESSORIES: SPC cable, Points, and Depth Stops

Range (Inch/mm)	Accuracy (Inch)	Points	Application	INSIZE No.	Code
1-12.7/24-32 (Internal) 0-11.3/0-288 (External)	±0.0016	Short spherical/flat	Spherical points for grooves inside small holes, flat points for external grooves	1124-300A	816619
1.5-13.3/40-340 (Internal) 0-10.7/0-272 (External)	±0.0016	Long spherical/flat	Spherical points for grooves inside larger holes, flat points for external grooves		
1-12.7/24-32 (Internal) 0-11.3/0-288 (External)	±0.0016	Short spherical/blade	For narrow grooves inside small holes		
1.5-13.3/40-340 (Internal) 0-10.7/0-272 (External)	±0.0016	Long spherical/blade	For narrow grooves inside large holes		

Electronic Caliper

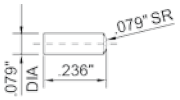
Interchangeable Points

SPC



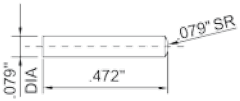
Short spherical points





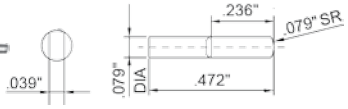
Long spherical/flat points

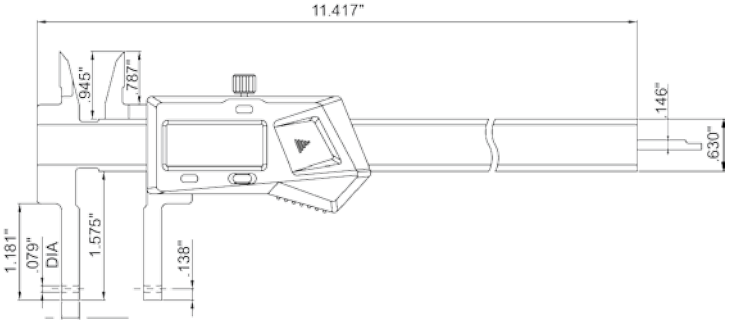


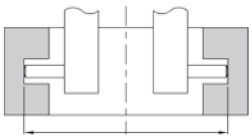


Spherical blade points

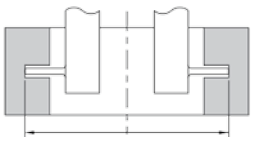




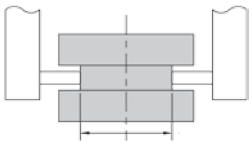




Spherical points for groove (inside hole) measurement



Spherical blade points for narrow groove (inside hole) measurement



Flat points for external groove measurement

- Supplied with 3 pair of points and a zero setting block for external measurement
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, set, inch/mm, preset (+, -)
- Auto power off, move unit to turn on
- Battery CR2032
- Stainless steel
- Data output
- Supplied in fitted storage case

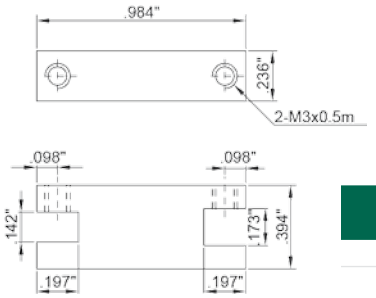
OPTIONAL ACCESSORIES: SPC cable, Points, and Depth Stops

Range (Inch/mm)	Accuracy (Inch)	Points	Application	INSIZE No.	Code
0.5-8.5/12-212 (Internal)	±0.0012	Short spherical	Spherical points for grooves inside small holes	1526-200	816620
1-8.8/24-224 (Internal) 0-7.5/0-187 (External)	±0.0012	Long spherical/flat	Spherical points for grooves inside large holes, flat points for external grooves		
1-8.8/24-224 (Internal) 0-7.5/0-187 (External)	±0.0012	Spherical blade	For narrow grooves inside small holes		

Depth Stops for Calipers

- Supplied in pairs
- Suitable for INSIZE caliper series no.: 1124, 1526, 1520, 1176, 1178, 1120, 1121, 1187, and 1185
- Stainless steel

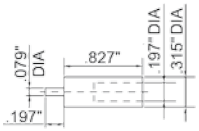


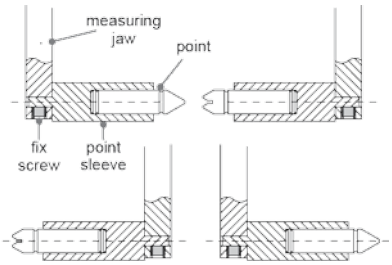


INSIZE No.	Code
6143	816408

Point Sleeves



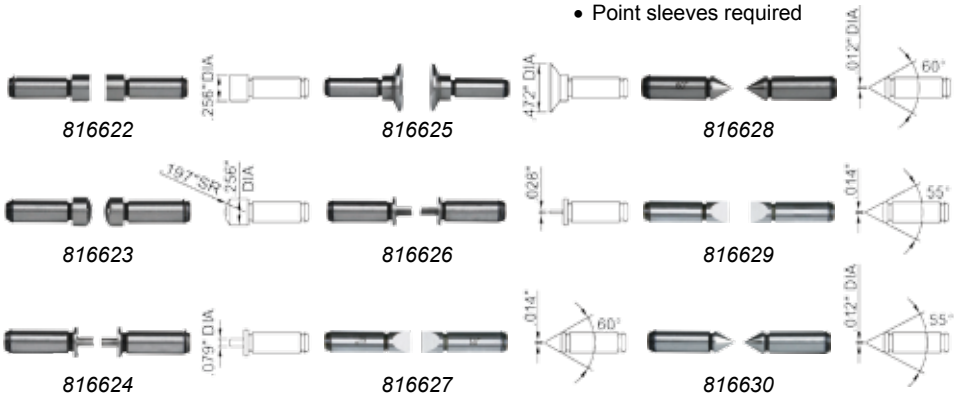




INSIZE No.	Code
1526-T101	816621

Multifunctional Points

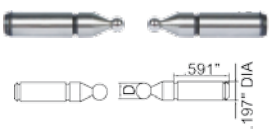
- Point sleeves required



Type	INSIZE No.	Code
Flat	7392-T1	816622
Spherical	7392-T2	816623
Spline	7392-T3	816624
Disk	7392-T4	816625
Blade	7392-T5	816626
Knife Edge	7392-T6	816627
Point	7392-T7	816628
Knife Edge	7392-T8	816629
Point	7392-T9	816630

Ball Points

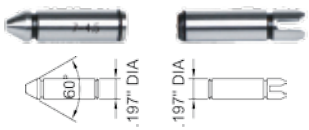
- Point sleeves required

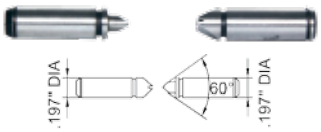


ØD (Inch)	INSIZE No.	Code
0.079	7391-T3	282169
0.098	7391-T4	282170
0.118	7391-T5	282171
0.138	7391-T6	282172
0.157	7391-T7	282173
0.177	7391-T8	282174
0.197	7391-T9	282175
0.236	7391-T10	282176

Screw Thread Points

- Point sleeves required





Internal Thread – 60º Thread Angle

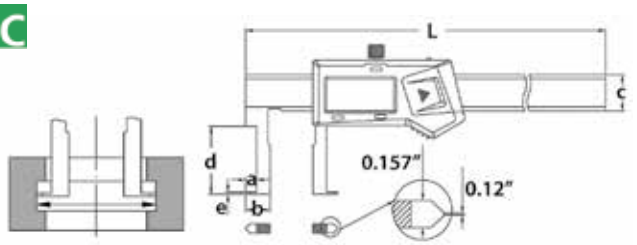
Pitch (TPI/mm)	INSIZE No.	Code
64-48/0.4-0.5	7321-T11	282160
44-28/0.6-0.9	7321-T12	282161
24-14/1-1.75	7321-T13	282162
13-9/2-3	7321-T14	282163
8-5/3.5-5	7321-T15	282164
4.5-3.5/5.5-7	7321-T16	282165
SET - 6 Pair (above)	7321-T1S	282159

External Thread – 60º Thread Angle

Pitch (TPI/mm)	INSIZE No.	Code
64-48/0.4-0.5	7381-T11	281671
44-28/0.6-0.9	7381-T12	281672
24-14/1-1.75	7381-T13	281673
13-9/2-3	7381-T14	281674
8-5/3.5-5	7381-T15	281675
4.5-3.5/5.5-7	7381-T16	281676
SET - 6 Pair (above)	7381-TS	281670

Electronic Inside Groove Caliper





- Measures groove diameter
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, set, inch/mm, preset (+,-)
- Auto power off - move unit to turn on
- Battery CR2032
- Data output
- Stainless steel
- Supplied in fitted storage case

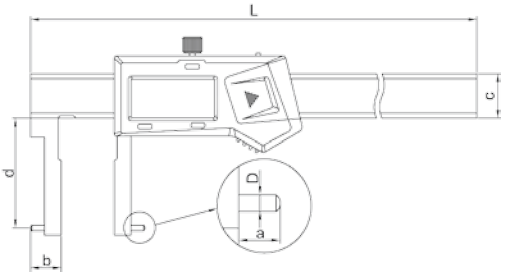
OPTIONAL ACCESSORY: SPC cable, Depth stops

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	e (Inch)	INSIZE No.	Code
1-6/25.4-150	±0.0016	9.843	0.197	0.5	0.630	1.181	0.039	1120-150AE	280523

Sizes available up to 12”/300mm

Electronic Inside Groove Caliper





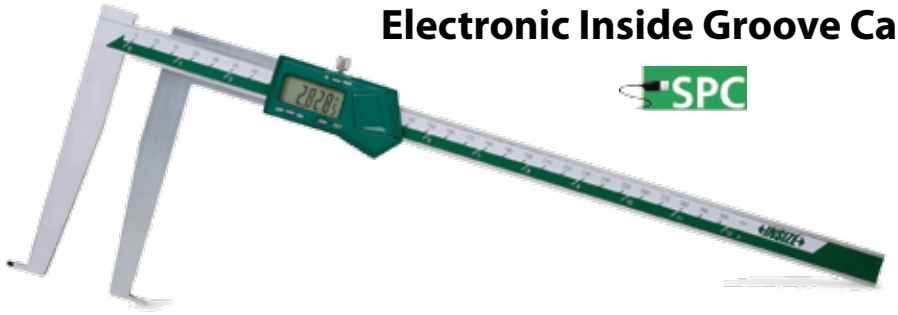
- For narrow grooves and small recesses
- Resolution: 0.0005”/ 0.01mm
- Pin dimensions: 0.079” diameter x 0.197” deep
- Buttons: on/off, set, inch/mm, preset (+,-)
- Auto power off - move unit to turn on
- Battery CR2032
- Data output
- Stainless steel
- Supplied in fitted storage case

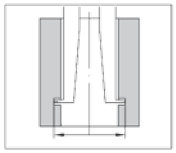
OPTIONAL ACCESSORY: SPC cable, Depth stops

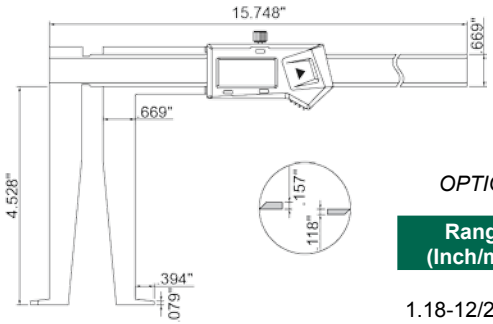
Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	D (Inch)	INSIZE No.	Code
0.9-6/24-150	±0.0016	9.843	0.197	0.4724	0.630	1.181	0.079	1121-150A	280541

Sizes available up to 12”/300mm

Electronic Inside Groove Caliper







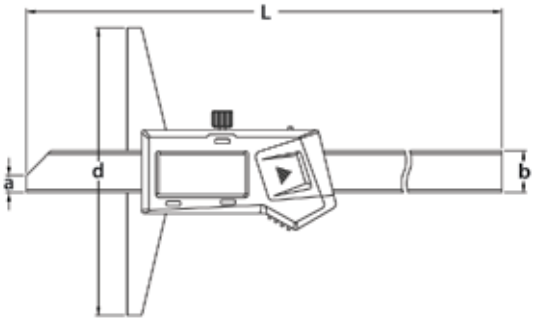
- Measures diameter of grooves inside bores
- Resolution: 0.0005”/ 0.01mm
- Buttons: on/off, set, inch/mm, preset (+,-)
- Auto power off - move unit to turn on
- Battery CR2032
- Data output
- Stainless steel
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable, Depth stops

Range (Inch/mm)	Accuracy (Inch)	ØD1 (Inch)	L1 (Inch)	INSIZE No.	Code
1.18-12/25-300	±0.0020	0.984 1.024 1.063-12	<1.969 <2.362 <4.331	1178-300	816633

Electronic Depth Calipers





- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, inch/mm
- Battery CR2032
- Data output
- Stainless steel construction
- Supplied in fitted storage case

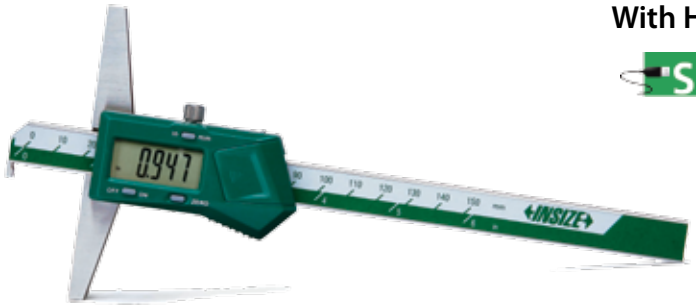
OPTIONAL ACCESSORY: SPC cable

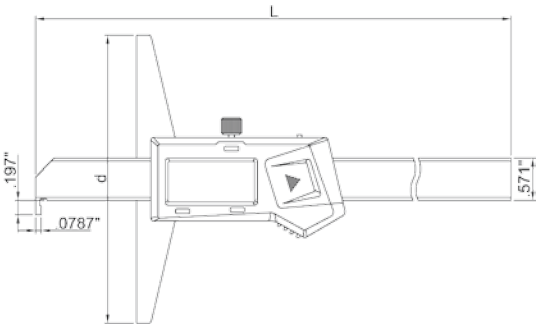
Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.055	0.236	0.571	3.937	1141-150A	816040
0-8/0-200	±0.0012	11.024	0.236	0.571	3.937	1141-200A	816042
0-12/0-300	±0.0012	14.961	0.236	0.571	5.906	1141-300A	816044

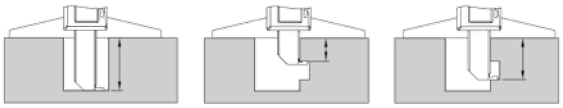
Sizes available up to 20”

Electronic Depth Calipers

With Hook







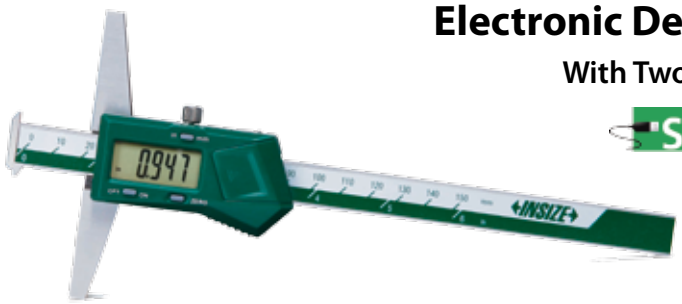
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, inch/mm
- Auto power off - move unit to turn on
- Battery CR2032
- Data output
- Stainless steel construction
- Supplied in fitted storage case

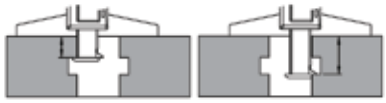
OPTIONAL ACCESSORY: SPC cable

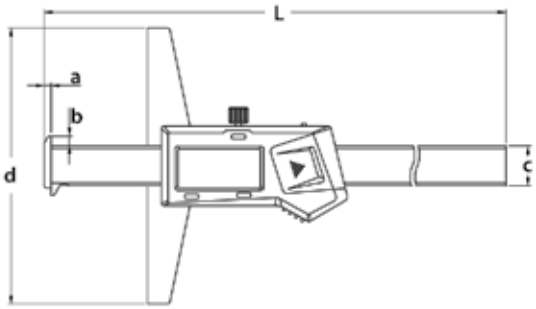
Range (Inch/mm)	Accuracy (Inch)	L Length (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.055	3.937	1142-150A	280677
0-8/0-200	±0.0012	11.024	3.937	1142-200A	280678
0-12/0-300	±0.0016	14.961	5.906	1142-300A	280679

Electronic Depth Calipers

With Two Hooks







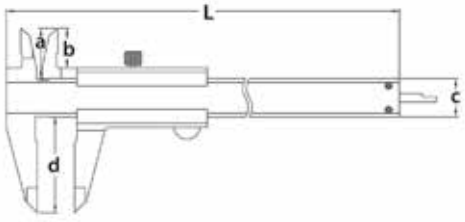
OPTIONAL ACCESSORY: SPC cable

- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, inch/mm
- Auto power off - move unit to turn on
- Battery CR2032
- Data output
- Stainless steel construction
- Supplied in fitted storage case

Range (Inch/mm)	Accuracy (Inch)	L Length (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	±0.0012	9.173	3.937	1144-150A	280681
0-8/0-200	±0.0012	11.142	3.937	1144-200A	280682
0-12/0-300	±0.0012	15.079	5.906	1144-300A	280683

Vernier Calipers





- Stainless steel with satin chrome plated reading surface
- Supplied in fitted storage case

Graduations: 0.001”/0.02mm – Accuracy: ±0.0012”

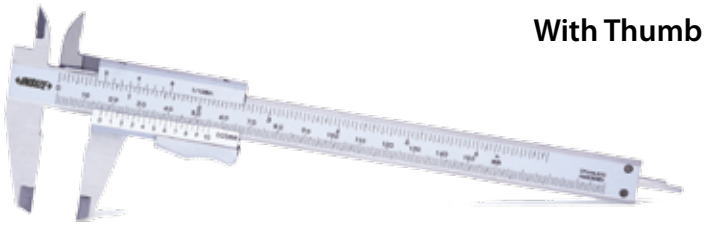
Range (Inch/mm)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	INSIZE No.	Code
0-6/0-150	9.252	0.807	0.610	0.630	1.575	1205-1502E	876750
0-8/0-200	11.417	0.925	0.748	0.630	1.969	1205-2002E	876225
0-12/0-300	16.299	1.083	0.866	0.787	2.52	1205-3002E	876232

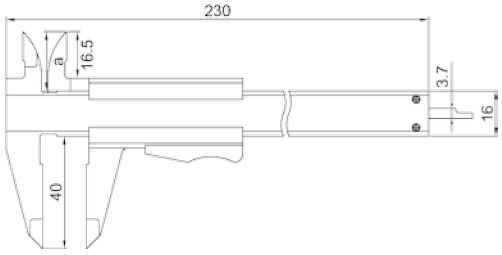
Graduations: 0.05mm/1/128” – Accuracy: ±0.05mm

Range (mm/Inch)	L (mm)	a (mm)	b (mm)	c (mm)	d (mm)	INSIZE No.	Code
0-150/0-6	235	20.5	15.5	16	40	1205-150S	876224

Vernier Caliper

With Thumb Clamp





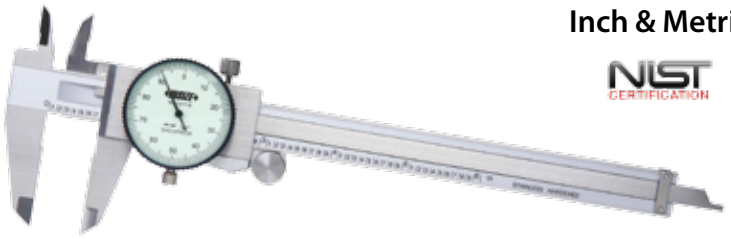
- Meets DIN862 standards
- With thumb clamp
- Stainless steel with satin chrome plated reading surface
- Supplied in fitted storage case

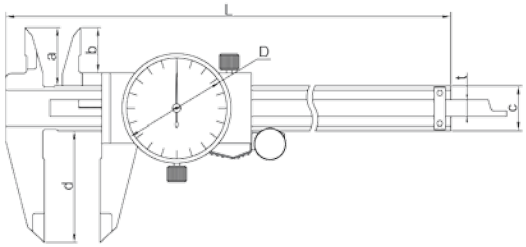
Graduations: 0.05mm/1/128” – Accuracy: ±0.05mm

Range (mm/Inch)	a (mm)	INSIZE No.	Code
0-150/0-6	20.5	1223-150	280184

Dial Calipers

Inch & Metric





- Graduations: Inch 0.001”, Metric 0.01mm
- One revolution equals: Inch 0.1”, Metric 1mm
- Shock proof dial indicator
- Supplied in fitted storage case

Inch

Range (Inch)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	ØD (Inch)	t (Inch)	INSIZE No.	Code
0-4	±0.0012	6.496	0.709	0.472	0.512	1.181	1.260	0.228	1311-4	280462
0-6	±0.0015	9.252	0.827	0.650	0.630	1.575	1.535	0.256	1311-6	816028
0-8	±0.0020	11.339	0.945	0.748	0.630	1.890	1.535	0.256	1311-8	816030
0-12	±0.0020	16.142	1.102	0.866	0.787	2.441	1.1.752	0.295	1311-12	816032

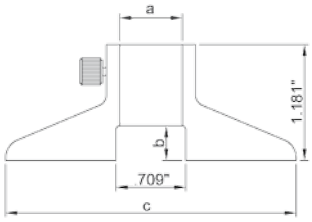
Metric

Range (mm)	Accuracy (mm)	L (mm)	a (mm)	b (mm)	c (mm)	d (mm)	ØD (mm)	t (mm)	INSIZE No.	Code
0-150	±0.03	235	21	16.5	16	40	39.0	6.5	1311-150A	816034
0-200	±0.03	288	24	19.0	16	48	39.0	6.5	1311-200A	816036
0-300	±0.03	410	28	22.0	20	62	44.5	7.5	1311-300A	816038

Depth Base Attachment for Calipers







- Increases stability when measuring depths with a caliper
- Suitable for 0-6” and 0-8” Vernier calipers, electronic calipers and dial calipers with a beam width of (w) 0.63 ”
- Stainless steel

a (Inch)	b (Inch)	c (Inch)	INSIZE No.	Code
0.650	0.354	2.953	6140	816046

Caliper Accessory Set



Caliper not included

- Set includes jaws, wrench and the following points: small cylindrical, large cylindrical, spherical, and pointed
- Components are hardened, ground and lapped
- Fits many brands
- For sizes 4”, 6”, and 8” calipers
- Used to measure slots, grooves, webs, shoulders, etc.

Code
805785

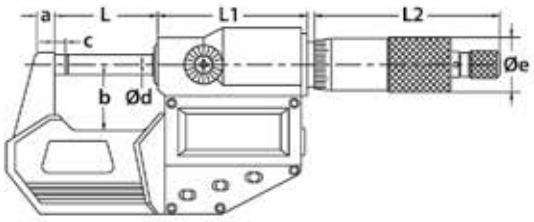
Electronic Outside Micrometers

INSIZE

Coolant Proof







OPTIONAL ACCESSORY: SPC cable

- Resolution: 0.00005”/0.001mm [exceptions: 280848 (3101-275E) and 280849 (3101-300E) - resolution 0.0001”/0.001mm]
- Coolant/dust proof, IP65 Ingress protection level
- Button function: on/off, set, inch/mm, ABS/INC (absolute and incremental measurements), data output
- Data output
- Auto power off
- Battery LR44
- Ratchet stop
- Carbide tips
- Supplied with spherical anvil
- Setting standards are included (exception: micrometers 0-1”/0-25mm)
- Supplied in fitted storage case

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	L1 (Inch)	L2 (Inch)	a (Inch)	b (Inch)	c (Inch)	Ød (Inch)	Øe (Inch)	INSIZE No.	Code
0-1/0-25	±0.00008	1.280	1.850	2.598	0.236	0.945	0.118	0.256	0.709	* 3101-25E	280838
1-2/25-50	±0.00008	2.264	1.850	2.598	0.315	1.260	0.118	0.256	0.709	* 3101-50E	280839
2-3/50-75	±0.00012	3.248	1.850	2.598	0.315	1.752	0.118	0.256	0.709	* 3101-75E	280840
3-4/75-100	±0.00012	4.232	1.850	2.598	0.315	2.244	0.118	0.256	0.709	* 3101-100E	280841
4-5/100-125	±0.00012	5.236	1.850	2.598	0.394	2.756	0.118	0.256	0.709	3101-125E	280842
5-6/125-150	±0.00012	6.240	1.850	2.598	0.394	3.228	0.118	0.256	0.709	3101-150E	280843
6-7/150-175	±0.00016	7.244	1.850	2.598	0.472	3.720	0.217	0.256	0.709	3101-175E	280829
7-8/175-200	±0.00016	8.248	1.850	2.598	0.472	4.213	0.217	0.256	0.709	3101-200E	280830
9-10/225-250	±0.00016	10.217	1.850	2.598	0.764	5.610	0.217	0.256	0.709	3101-250E	280847
10-11/250-275	±0.0002	11.220	1.850	2.598	0.764	6.102	0.217	0.256	0.709	3101-275E	280848
11-12/275-300	±0.0002	12.224	1.850	2.598	0.764	6.594	0.217	0.256	0.709	3101-300E	280849

* *NIST Certification*

Digimatic Micrometer

Mitutoyo

Coolant Proof IP65



- Resolution: 0.00005”/0.001mm
- Accuracy: ±0.00005”
- Coolant proof, IP65 Ingress protection level
- Faster measurement with 2mm per revolution instead of the standard 0.5mm
- A patented ratchet thimble mechanism helps ensure repeatability
- A function lock helps prevent error
- Certificate of inspection provided
- Supplied in fitted storage case

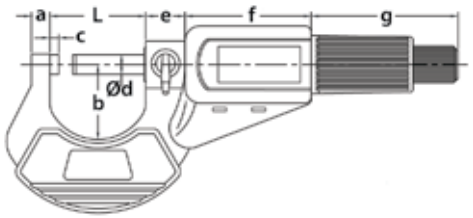
Range (Inch)	Code
0-1	293-180

Electronic Outside Micrometers





Spherical Anvil to measure tube thickness



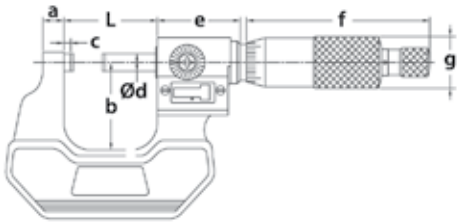
- Resolution: 0.00005”/0.001mm
- Button functions: on/off, set, inch/mm, ABS/INC (absolute and incremental measurement)
- Auto power off
- Battery LR44
- Carbide tips
- Ratchet thimble
- Spherical anvil included allows tube thickness measurements
- Micrometers over 0-1”/0-25mm are supplied with a setting standard
- Supplied in fitted storage case

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	Ød (Inch)	e (Inch)	f (Inch)	g (Inch)	INSIZE No.	Code
0-1/0-25	±0.00010	1.260	0.236	1.083	0.118	0.256	0.551	1.811	1.890	3109-25E	816500
1-2/25-50	±0.00015	2.244	0.315	1.457	0.118	0.256	0.551	1.811	1.890	3109-50E	816502
2-3/50-75	±0.00015	3.228	0.315	1.969	0.118	0.256	0.551	1.811	1.890	3109-75E	816504
3-4/75-100	±0.00015	4.213	0.394	2.402	0.118	0.256	0.551	1.811	1.890	3109-100E	816506

Outside Micrometers

With Counter





- Counter resolution: 0.001”
- Thimble graduation: 0.0001”
- Ratchet stop and carbide tips
- Micrometers over 1”/25mm are supplied with a setting standard
- Supplied in fitted storage case

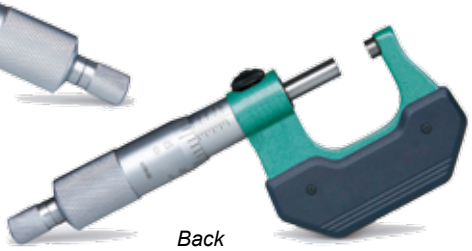
Range (Inch)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	Ød (Inch)	e (Inch)	f (Inch)	Øg (Inch)	INSIZE No.	Code
0-1	±0.00016	1.260	0.236	1.024	0.138	0.256	1.181	2.598	0.709	3400-1	280933
1-2	±0.00016	2.244	0.315	1.260	0.138	0.256	1.181	2.598	0.709	3400-2	280934
2-3	±0.00020	3.228	0.315	1.752	0.138	0.256	1.181	2.598	0.709	3400-3	280935
3-4	±0.00020	4.213	0.315	2.244	0.138	0.256	1.181	2.598	0.709	3400-4	280936

Outside Micrometers

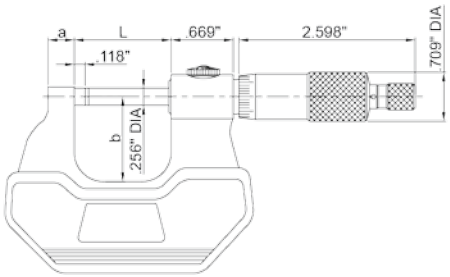
For Left or Right Hand



Front



Back



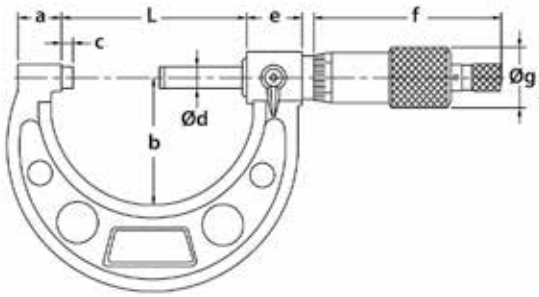
- Graduation: 0.001”
- Graduations on both sides
- Carbide measuring tips
- Ratchet stop
- Micrometers over 1” are supplied with a setting standard
- Supplied in fitted storage case

Range (Inch)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	INSIZE No.	Code
0-1	±0.00016	1.260	0.236	0.945	3236-1B	816636
1-2	±0.00016	2.244	0.315	1.260	3236-2B	816637

Outside Micrometers

Inch & Metric





- Graduation: Inch 0.0001"; Metric 0.01mm
- Ratchet stop
- Carbide tips
- Micrometers over 1"/25mm are supplied with a setting standard
- Supplied in fitted storage case

Inch

Range (Inch)	Accuracy (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	Ød (Inch)	e (Inch)	f (Inch)	Øg (Inch)	INSIZE No.	Code
0-1	±0.00016	1.260	0.354	1.102	0.118	0.256	0.669	2.598	0.709	* 3203-1A	816564
1-2	±0.00016	2.244	0.551	1.496	0.118	0.256	0.669	2.598	0.709	* 3203-2A	816566
2-3	±0.00020	3.228	0.591	1.929	0.118	0.256	0.669	2.598	0.709	* 3203-3A	816568
3-4	±0.00020	4.213	0.591	2.362	0.118	0.256	0.669	2.598	0.709	* 3203-4A	816570
4-5	±0.00024	5.236	0.650	2.874	0.118	0.256	0.669	2.598	0.709	* 3203-5A	816572
5-6	±0.00024	6.220	0.650	3.346	0.118	0.256	0.669	2.598	0.709	* 3203-6A	816574
6-7	±0.00028	7.205	0.764	4.094	0.118	0.256	0.669	2.598	0.709	3203-7A	816576
7-8	±0.00028	8.228	0.764	4.606	0.118	0.256	0.669	2.598	0.709	3203-8A	816578
8-9	±0.00031	9.213	0.764	5.118	0.118	0.256	0.669	2.598	0.709	3203-9A	816580
9-10	±0.00031	10.236	0.764	5.591	0.118	0.256	0.669	2.598	0.709	3203-10A	816582
10-11	±0.00035	11.220	0.764	6.102	0.118	0.256	0.669	2.598	0.709	3203-11A	816584
11-12	±0.00035	12.205	0.764	6.614	0.118	0.256	0.669	2.598	0.709	3203-12A	816586

* *NIST Certification*

Metric

Range (mm)	Accuracy (µm)	L (mm)	a (mm)	b (mm)	c (Inch)	Ød (Inch)	e (Inch)	f (Inch)	Øg (Inch)	INSIZE No.	Code
0-25	4	32	9	28	0.118	0.256	0.669	2.598	0.709	* 3203-25A	816530
25-50	4	57	14	38	0.118	0.256	0.669	2.598	0.709	* 3203-50A	816532
50-75	5	82	15	49	0.118	0.256	0.669	2.598	0.709	* 3203-75A	816534
75-100	5	107	15	60	0.118	0.256	0.669	2.598	0.709	* 3203-100A	816536
100-125	6	133	16.5	73	0.118	0.256	0.669	2.598	0.709	3203-125A	816538
125-150	6	158	16.5	85	0.118	0.256	0.669	2.598	0.709	3203-150A	816540
150-175	7	183	19.4	104	0.118	0.256	0.669	2.598	0.709	3203-175A	816542
175-200	7	209	19.4	117	0.118	0.256	0.669	2.598	0.709	3203-200A	816544
200-225	8	234	19.4	130	0.118	0.256	0.669	2.598	0.709	3203-225A	816546
225-250	8	260	19.4	142	0.118	0.256	0.669	2.598	0.709	3203-250A	816548
250-275	8	285	19.4	155	0.118	0.256	0.669	2.598	0.709	3203-275A	816550
275-300	8	310	19.4	168	0.118	0.256	0.669	2.598	0.709	3203-300A	816552

* *NIST Certification*

Outside Micrometers

Inch & Metric – Sets

*NIST CERTIFICATION

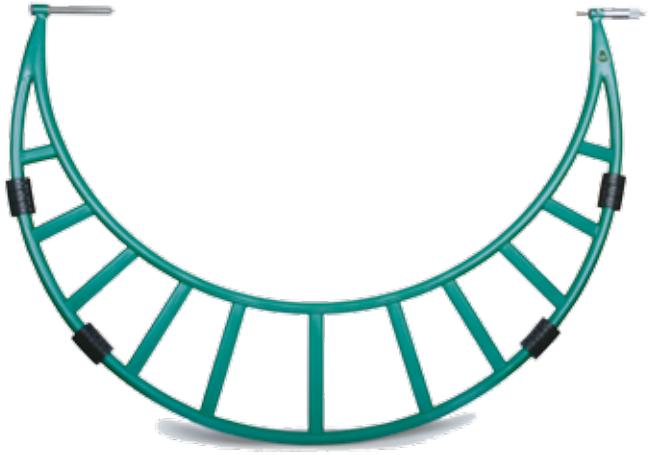


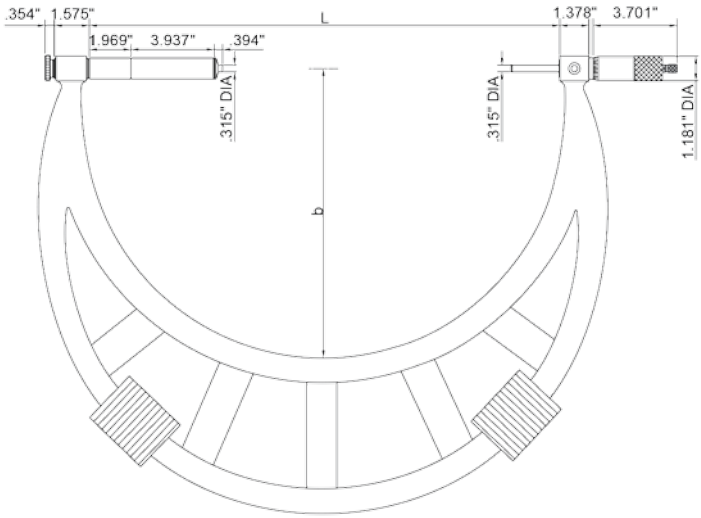
Range	Micrometers Included	INSIZE No.	Code
0-3" (3 pcs)	816564, 816566, 816568	* 3203-33A	816588
0-4" (4 pcs)	816564, 816566, 816568, 816570	* 3203-44A	816590
0-6" (6 pcs)	816564, 816566, 816568, 816570, 816572, 816574	* 3203-66A	816592
6-12" (6 pcs)	816576, 816578, 816580, 816582, 816584, 816586	3203-126A	816594
0-12" (12 pcs)	816564, 816566, 816568, 816570, 816572, 816574, 816576, 816578, 816580, 816582, 816584, 816586	*3203-1212A	816596
0-75 mm (3 pcs)	816530, 816532, 816534	* 3203-753A	816554
0-100 mm (4 pcs)	816530, 816532, 816534, 816536	3203-1004A	816556
0-150 mm (6 pcs)	816530, 816532, 816534, 816536, 816538, 816540	3203-1506A	816558
150-300 mm (6 pcs)	816542, 816544, 816546, 816548, 816550, 816552	3203-3006A	816560
0-300 mm (12 pcs)	816530, 816532, 816534, 816536, 816538, 816540, 816542, 816544, 816546, 816548, 816550, 816552	3203-3012A	816562

* *NIST Certification*

Outside Micrometers

With Extension Anvil Collars





- Graduations: 0.0005"
- Adjust collars for different measuring ranges
- Ratchet stop
- Carbide tips
- Supplied with setting standards
- Supplied in fitted storage case

Range (Inch)	Accuracy (Inch)	L (Inch)	b (Inch)	Setting Standard (Inch)	INSIZE No.	Code
40-48	±0.00087	47.638	25.394	42, 46	3205-48	281160
48-56	±0.00094	55.512	29.331	50, 54	3205-56	281161
56-64	±0.00110	63.386	33.268	58, 62	3205-64	281162
64-72	±0.00122	71.260	37.205	66, 70	3205-72	281163
72-80	±0.00134	79.134	41.142	74, 78	3205-80	281164

Outside Micrometers

With Interchangeable Anvils



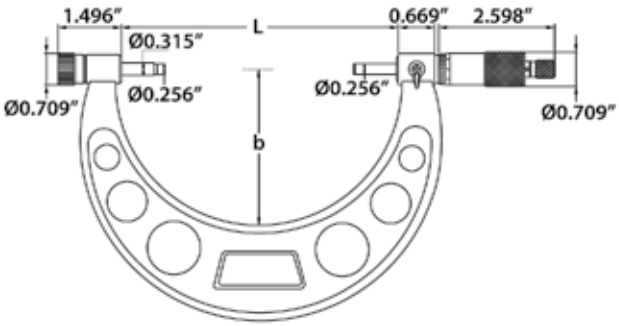
281182



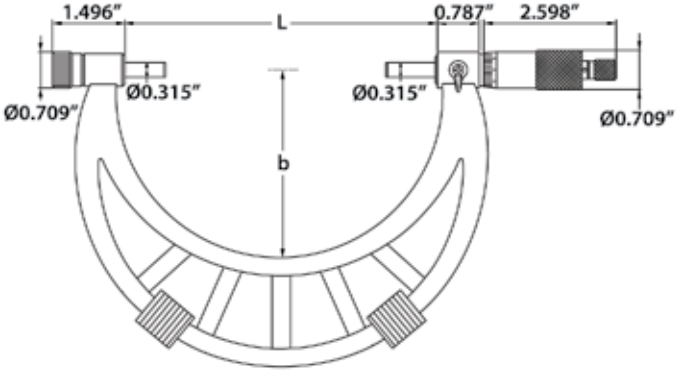
281188

- Graduations: 0.0001” (up to 12”), 0.001” (over 12”)
- Micrometers up to 12” have casting frame, over 12” have pipe frame
- Ratchet stop
- Carbide tips
- Supplied with setting standards
- Supplied in fitted storage case

TYPE A



TYPE B



Range (Inch)	Type	Accuracy (Inch)	L (Inch)	b (Inch)	INSIZE No.	Code
0-2	A	±0.00016	2.283	1.378	3206-2	281180
0-4	A	±0.00020	4.252	2.244	3206-4	281181
0-6	A	±0.00024	6.220	3.228	3206-6	281182
2-6	A	±0.00024	6.220	3.228	3206-61	816406
4-8	A	±0.00028	8.189	4.488	3206-8	281185
6-12	A	±0.00035	12.126	6.496	3206-12	281186
8-12	A	±0.00035	12.126	6.496	3206-121	281187
12-16	B	±0.00043	16.102	8.819	3206-16	281188
16-20	B	±0.00051	20.039	10.827	3206-20	281189
20-24	B	±0.00055	23.976	12.638	3206-24	281190
24-28	B	±0.00063	27.913	14.606	3206-28	281191
28-32	B	±0.00071	31.850	16.772	3206-32	281192
32-36	B	±0.00079	35.787	18.740	3206-36	281193
36-40	B	±0.00087	39.724	22.677	3206-40	281194

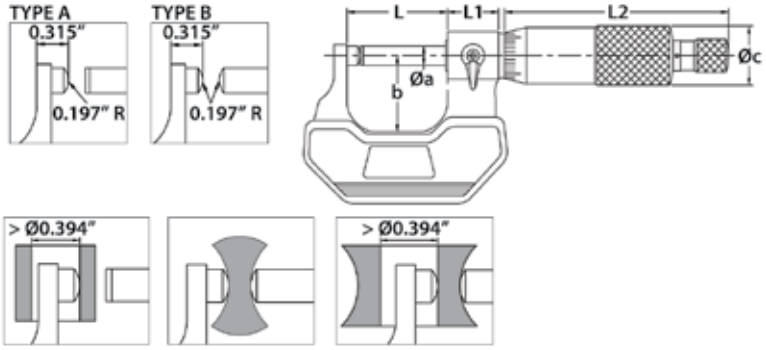
Outside Micrometer Set



Range (Inch)	Graduation (Inch)	Included in Set	Code
0-3	0.0001	0-1”, 1-2”, 2-3”	103-922

Spherical Anvil Tube Micrometers



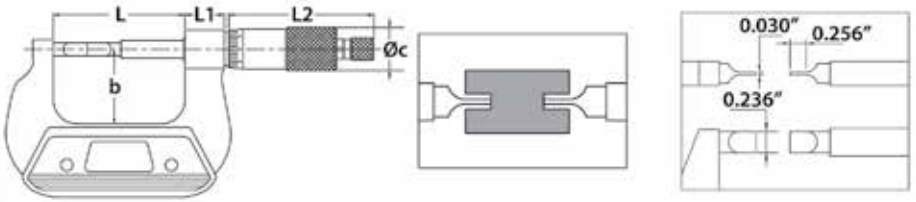


- For measuring wall thickness of tubes
- Graduation: 0.0001”
- Ratchet stop
- Carbide tips
- Micrometers over 1” are supplied with a setting standard
- Supplied in fitted storage case

Range (Inch)	Type	Accuracy (Inch)	L (Inch)	L1 (Inch)	L2 (Inch)	Øa (Inch)	b (Inch)	Øc (Inch)	INSIZE No.	Code
0-1	A	0.00016	1.260	0.669	2.598	0.256	0.945	0.709	3260-1	281457
0-1	B	0.00016	1.260	0.669	2.598	0.256	0.945	0.709	3260-1S	281461
1-2	A	0.00016	2.244	0.669	2.598	0.256	1.260	0.709	3260-2	281458
2-3	A	0.00020	3.228	0.669	2.598	0.256	1.752	0.709	3260-3	281459

Blade Micrometers



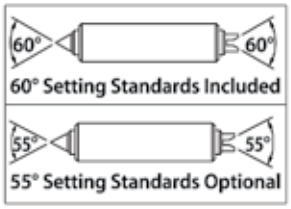


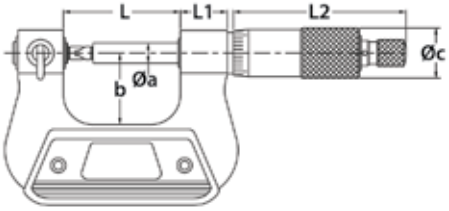
- Measures the groove diameters of shafts and keyways
- Graduation: 0.0001”
- Non-rotating spindle
- Ratchet stop
- Micrometers over 1” are supplied with a setting standard
- Supplied in fitted storage case

Range (Inch)	Accuracy (Inch)	L (Inch)	L1 (Inch)	L2 (Inch)	b (Inch)	Øc (Inch)	INSIZE No.	Code
0-1	±0.00016	2.244	0.669	2.598	1.260	0.709	3232-1	281320
1-2	±0.00016	3.228	0.669	2.598	1.752	0.709	3232-2	281321
2-3	±0.00020	4.213	0.669	2.598	2.244	0.709	3232-3	281322
3-4	±0.00020	5.220	0.669	2.598	2.736	0.709	3232-4	281323
4-5	±0.00024	6.220	0.669	2.598	3.228	0.709	3232-5	281324
5-6	±0.00024	7.220	0.669	2.598	3.720	0.709	3232-6	281325
6-7	±0.00028	8.220	0.669	2.598	4.213	0.709	3232-7	281326

Screw Thread Micrometers







OPTIONAL ACCESSORY: 55" SETTING STANDARDS

- Measures pitch diameter of screw threads
- Graduation: 0.001"
- Non-rotating spindle
- Ratchet stop
- Micrometers over 1" supplied with 60º setting standards (55º setting standards sold separately)
- Supplied in fitted storage case

Accuracy of Micrometers with Tips

Pitch (TPI)	Range (Inch)					
	0-1	1-2	2-3	3-4	4-5	5-8
64-48	±0.016	–	–	–	–	–
44-32	±0.016	±0.020	–	–	–	–
28-20	±0.019	±0.023	±0.026	±0.026	–	–
19-13	±0.022	±0.026	±0.029	±0.029	±0.031	±0.036
12-7	±0.025	±0.029	±0.033	±0.033	±0.036	±0.039
6-3	–	±0.033	±0.036	±0.036	±0.039	±0.043

Range (Inch)	L (Inch)	L1 (Inch)	L2 (Inch)	Øa (Inch)	b (Inch)	Øc (Inch)	INSIZE No.	Code
0-1	1.654	0.669	2.598	0.315	1.024	0.709	3281-1	281696
1-2	2.638	0.669	2.598	0.315	1.496	0.709	3281-2	281697
2-3	3.622	0.669	2.598	0.315	1.969	0.709	3281-3	281698
3-4	4.630	0.669	2.598	0.315	2.441	0.709	3281-4	281699
4-5	5.630	0.669	2.598	0.315	2.756	0.709	3281-5	281700
5-6	6.622	0.669	2.598	0.315	3.228	0.709	3281-6	281701

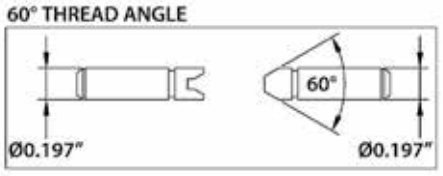
Sizes available up to 8"

Screw Thread Micrometer Measuring Tips

Metric & Unified Screw for 60º Threads

- Supplied in pairs
- Suitable for INSIZE micrometers - series 3281 and 3581





Pitch (TPI/mm)	INSIZE No.	Code
64-48/0.4-0.5	7381-T11	281671
44-28/0.6-0.9	7381-T12	281672
24-14/1-1.75	7381-T13	281673
13-9/2-3	7381-T14	281674
8-5/3.5-5	7381-T15	281675
4.5-3.5/5.5-7	7381-T16	281676
6-Pair Set includes above	7381-TS	281670

Electronic Three Point Inside Micrometers

Coolant Proof

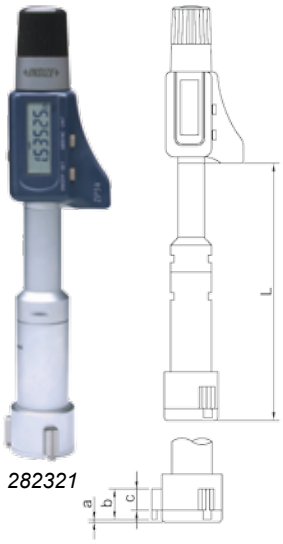
- Resolution: 0.00005”/0.001mm
- Coolant/dust proof, IP54 Ingress protection level
- Buttons: on/off, set, inch/mm, ABS/INC
- Interchangeable jaws
- Data output
- Battery LR44
- Auto power off
- Ratchet stop
- Supplied with setting rings and extension rods
- Supplied in fitted storage case

OPTIONAL ACCESSORY: SPC cable



282305

Type A
Steel Points

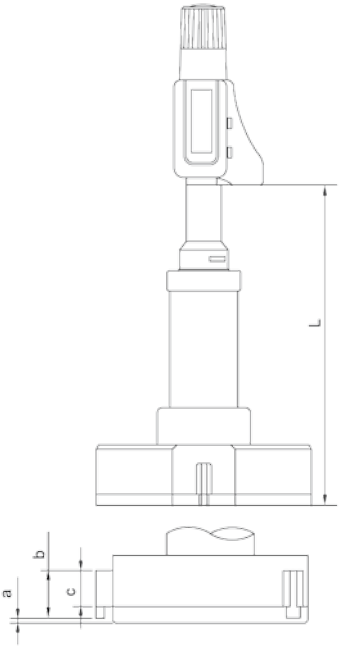


282321

Type B
Carbide Points



282367



Type C
Carbide Points



Set
282331

Individual

Range (Inch/mm)	Accuracy (Inch)	Type	Ø Setting Ring (Inch)	Extension Rod (Inch)	L (Inch)	a (Inch)	b (Inch)	c (Inch)	INSIZE No.	Code
0.35-0.425/9-11	0.00016	A	0.35	4	2.18	0.059	0.098	–	3127-E0425	816638
0.425-0.5/11-13	0.00016	A	0.50	4	2.18	0.059	0.098	–	3127-E05	282305
0.5-0.65/13-17	0.00016	B	0.65	6	3.20	0.020	0.236	0.177	3127-E065	282317
0.65-0.8/17-20	0.00016	B	0.65	6	3.20	0.020	0.236	0.177	3127-E08	282318
0.8-1/20-25	0.00016	B	1.00	6	3.60	0.020	0.315	0.236	3127-E1	282319
1-1.2/25-30	0.00016	B	1.00	6	3.60	0.020	0.315	0.236	3127-E112	282320
1.2-1.6/30-40	0.00016	B	1.60	6	3.88	0.020	0.551	0.472	3127-E16	282321
1.6-2/40-51	0.00020	B	1.60	6	3.88	0.020	0.551	0.472	3127-E2	282322
2-2.5/51-63	0.00020	C	2.50	6	4.56	0.020	0.689	0.571	3127-E25	282323
2.5-3/63-76	0.00020	C	2.50	6	4.56	0.020	0.689	0.571	3127-E3	282324
3-3.5/76-89	0.00020	C	3.50	6	4.56	0.020	0.689	0.571	3127-E35	282325
3.5-4/89-101	0.00020	C	3.50	6	4.56	0.020	0.689	0.571	3127-E4	282326
4-5/101-127	0.00020	C	4.50	6	6.00	0.020	0.768	0.571	3127-E5	282367
5-6/127-152	0.00020	C	5.50	6	6.00	0.020	0.768	0.571	3127-E6	282368

Supplied with a Manufacturer Inspection Certificate

Sets

Range (Inch/mm)	Micrometers Included (Inch/mm Range)	Ø Setting Ring (Inch)	Extension Rod (Inch)	INSIZE No.	Code
0.275-0.5/7-13	0.275-0.35/7-9, 0.35-0.425/9-11, 0.425-0.5/11-13	0.275, 0.35, 0.5	4	3127-E053	282306
0.5-0.8/13-20	0.5-0.65/13-17, 0.65-0.8/17-20	0.65	6	3127-E082	282330
0.8-2/20-51	0.8-1/20-25, 1-1.2/25-30, 1.2-1.6/30-40, 1.6-2/40-51	1, 1.6	6	3127-E24	282331
2-4/51-101	2-2.5/51-63, 2.5-3/63.76, 3-3.5/76-89, 3.5-4/89-101	2.5, 3.5	6	3127-E44	282332

Supplied with a Manufacturer Inspection Certificate

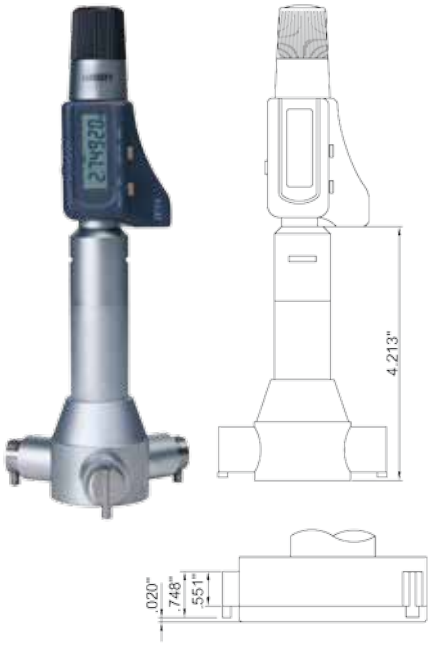
Electronic Three Point Inside Micrometers

Wide Range – Coolant Proof

- Resolution: 0.00005”/0.001mm
- Coolant/dust proof, IP54 Ingress protection level
- Buttons: on/off, set, inch/mm, ABS/INC
- Data output
- Battery LR44
- Auto power off
- Carbide measuring tips
- Ratchet stop
- Supplied with setting rings and extension rods
- Supplied in fitted storage case

IP54 SPC

OPTIONAL ACCESSORY: SPC cable



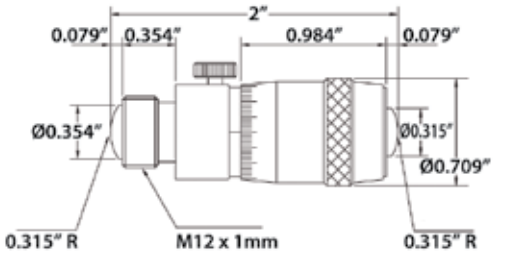
Range (Inch/mm)	Accuracy (Inch)	Ø Setting Ring (Inch)	Extension Rod (Inch)	INSIZE No.	Code
2-2.8/1-71	0.00020	2	6	3128-28	816640
2.8-4/71-101	0.00020	2.8	6	3128-4	816641
4-6/101-152	0.00024	4	6	3128-6	816642
6-10/152-254	0.00032	6	6	3128-10	816643
8-12/203-305	0.00036	8	6	3128-12	816644

Supplied with a Manufacturer Inspection Certificate

Inside Micrometers



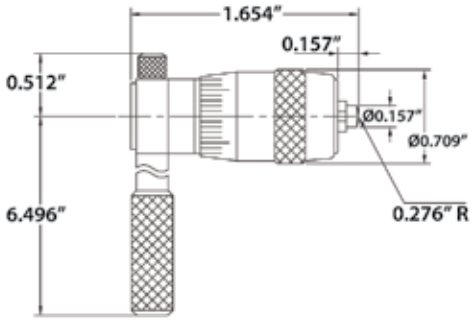
- Graduation: 0.001”
- Micrometer head travel: 0.5”
- Supplied with a setting block standar
- Carbide tips
- Supplied in fitted storage case



Range (Inch)	Accuracy (Inch)	Extension Rods (Inch)	INSIZE No.	Code
2-6	±[(L÷2)+n+3]x0.00005 n=Number of Rods L=Max. Measuring Length	0.5, 1, 2	3222-6	281999
2-12		0.5, 1, 2 (2pcs), 4	3222-12	282000
2-20		0.5, 1, 2 (2pcs), 4, 8	3222-20	282001
2-40		0.5, 1, 2, 4 (2pcs), 6, 8 (2pcs), 12	3222-40	282002
2-60		0.5, 1, 2 (2pcs) , 4, 8 (3pcs), 12 (2pcs)	3222-60	282003



- Graduation: 0.001”
- Supplied in fitted storage case



Range (Inch)	Accuracy (Inch)	Micrometer Head Travel (Inch)	No. of Extension Rods	INSIZE No.	Code
2-8	±[(L÷2)x0.00005]+0.0003 L=Max. Measuring Length	0.5	6	3221-8	282039
2-12		0.5	10	3221-12	282040
8-20		1	3	3221-20	282042
8-40		1	8	3221-40	282043

Inside Micrometer

Mitutoyo



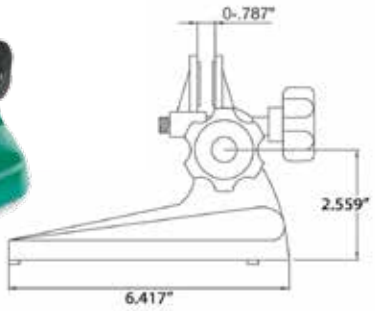
- Micrometer travel: 0.5”
- 5 rods
- Wide range I.D. measurements with interchangeable rods
- Each interchangeable rod is marked with its measuring range
- Sizes of interchangeable rods can be adjusted with spacing collars

Range (Inch)	Graduation (Inch)	Code
2-12	0.001	141-233

Micrometer Stand

INSIZE





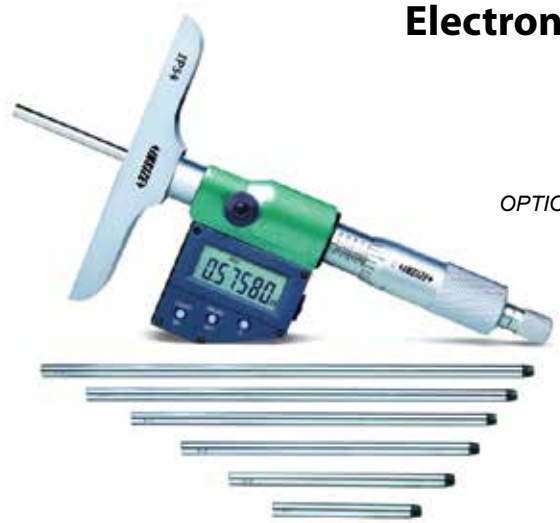
- For micrometers up to 4”

Description	INSIZE No.	Code
Cast stand with 2 separate locking handles	6301	282456

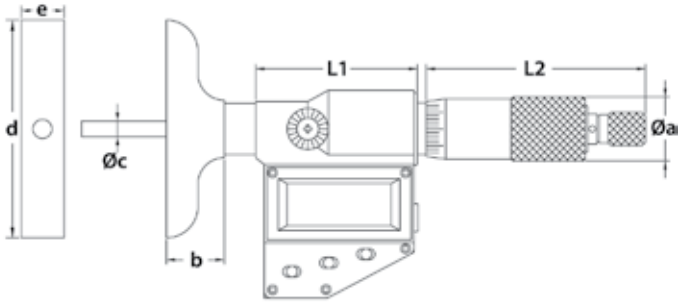
Electronic Depth Micrometer

INSIZE

IP54 SPC



OPTIONAL ACCESSORY: SPC cable

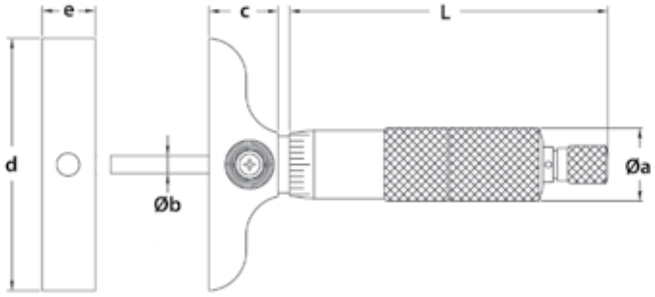


- Resolution: 0.00005”/0.001mm
- Micrometer head accuracy: ±0.00012”
- Rod accuracy: ± [0.001 + 0.0005 (L/3)] (L = measuring range in inch)
- Button function: on/off, set, inch/mm, ABS/INC (absolute and incremental measurements), data output
- IP54 Ingress protection level (dust/coolant proof)
- Automatic power off
- Battery LR44
- Auto power off
- Data output
- Rods with flat end
- Ratchet stop
- Supplied in fitted storage case

Range (Inch/mm)	L1 (Inch)	L2 (Inch)	Øa (Inch)	b (Inch)	Øc (Inch)	d (Inch)	e (Inch)	No. of Rods	INSIZE No.	Code
0-6/0-150	1.850	2.598	0.709	0.669	0.177	3.996	0.669	6	3540-150E	281945
0-12/0-300	1.850	2.598	0.709	0.669	0.177	3.996	0.669	12	3540-300E	281947

Depth Micrometers

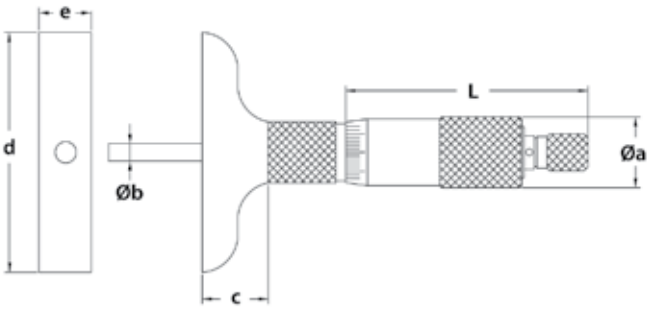




- Graduation: 0.001”
- Micrometer head accuracy: ±0.00012”
- Rod accuracy: ±[0.001 + 0.0005(L/3)] (L = measuring range in inch)
- Rods with flat ends
- Ratchet stop
- Supplied in fitted storage case

Range (Inch)	L (Inch)	Øa (Inch)	Øb (Inch)	c (Inch)	d (Inch)	e (Inch)	No. of Rods	INSIZE No.	Code
0-1	3.228	0.709	0.177	0.669	2.480	0.669	1	3241-B1	281927
0-4	3.228	0.709	0.177	0.669	2.480	0.669	4	3241-B4	281929
0-1	3.228	0.709	0.177	0.669	3.996	0.669	1	3241-1	281921
0-4	3.228	0.709	0.177	0.669	3.996	0.669	4	3241-4	281923
0-6	3.228	0.709	0.177	0.669	3.996	0.669	6	3241-6	281924
0-12	3.228	0.709	0.177	0.669	3.996	0.669	12	3241-12	281926



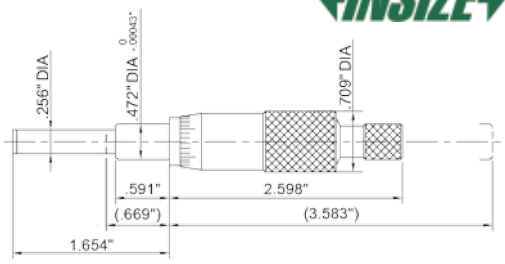


- Graduation: 0.001”
- Micrometer head accuracy: ±0.00012
- Rod accuracy: ±[0.001 + 0.0005(L/3)]
  (L= measuring range in inch)
- Rods with flat end
- Ratchet stop
- Supplied in fitted storage case

Range (Inch)	L (Inch)	Øa (Inch)	Øb (Inch)	c (Inch)	d (Inch)	e (Inch)	INSIZE No.	Code
0-6	2.598	0.709	0.177	0.669	3.996	0.669	3240-6	281939

Micrometer Head





- Graduation: 0.001”
- Flat carbide tip
- Ratchet stop

Range (Inch)	Accuracy (Inch)	INSIZE No.	Code
0-1	0.001	6381-1W	816688

Electronic Indicators

Advanced Model

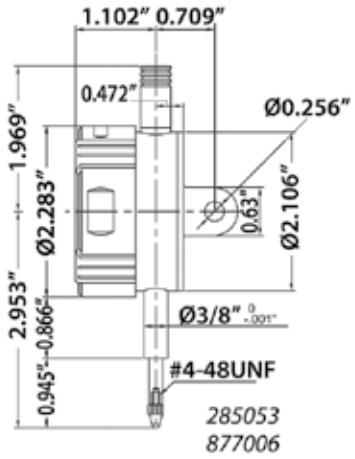
- Meets ASME B89.1.10M-2001 standards
- 320 degree rotating display – digital/analog
- Stem diameter: 3/8”
- Button functions: tolerance GO and NOGO display, data preset, measuring direction change, max/min/TIR measurement, inch/metric conversion, absolute/incremental measurement
- Battery CR2032 – auto power off
- Data output
- Lug back
- Contact point thread #4-48UNF
- Supplied in fitted storage case

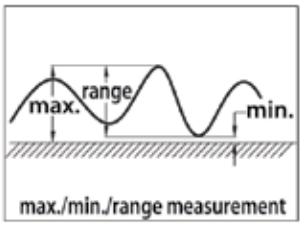
OPTIONAL ACCESSORIES:
SPC cable
Contact points
Flat back

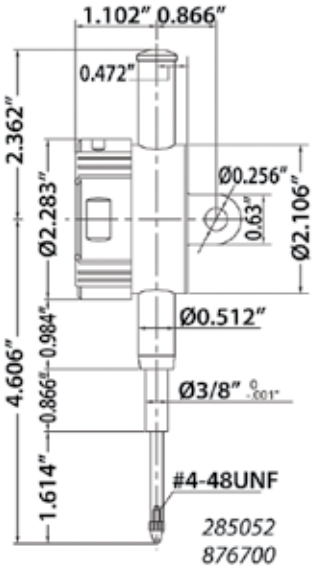


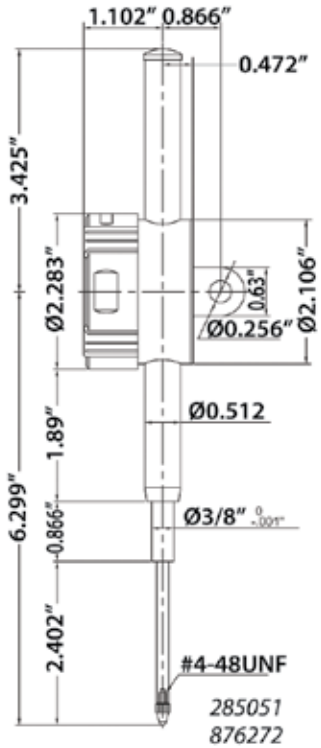












Range (Inch/mm)	Resolution (Inch/mm)	Accuracy (Inch)	INSIZE No.	Code
0.5/12.7	0.00005/0.001	±0.0002	2103-10E	285053
1/25.4	0.00005/0.001	±0.0002	2103-25E	285052
2/50.8	0.00005/0.001	±0.00024	2103-50E	285051
0.5/12.7	0.0005/0.01	±0.0008	2104-10E	877006
1/25.4	0.0005/0.01	±0.0008	2104-25E	876700
2/50.8	0.0005/0.01	±0.0012	2104-50E	876272

Electronic Indicators

- Meets ASME B89.1.10M-2001 standards
- Accuracy: ±0.00015”
- Hysteresis: 0.00005”
- Button function: on/off, inch/mm, zero
- Auto power off
- Battery CR2032
- Data output
- Lug back
- Contact point thread #4-48UNF
- Supplied in fitted storage case

OPTIONAL ACCESSORIES:
SPC cable
Contact points
Flat back



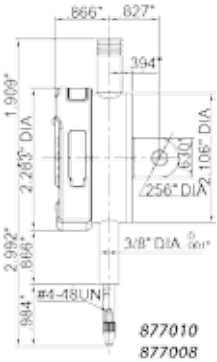
877010



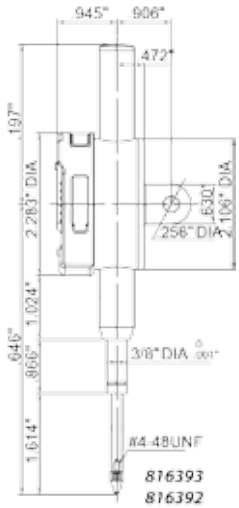
816392



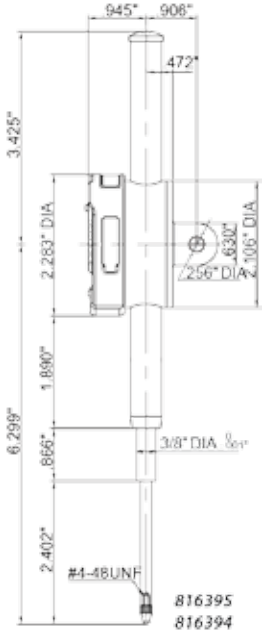
816394



877010
877008



816393
816392



816395
816394

Resolution: 0.00005”/0.001mm

Range (Inch/mm)	INSIZE No.	Code
0.5/12.7	2112-101E	877008
1/25.4	2112-251E	816392
2/50.8	2112-501E	816394

Resolution: 0.0005”/0.01mm

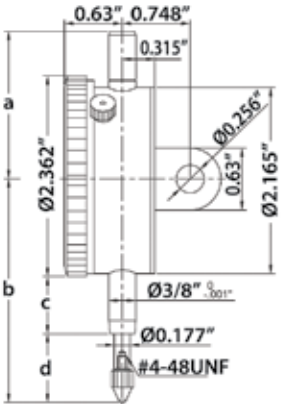
Range (Inch/mm)	INSIZE No.	Code
0.5/12.7	2112-10E	877010
1/25.4	2112-25E	816393
2/50.8	2112-50E	816395

Dial Indicators

Inch



OPTIONAL ACCESSORIES: Contact points, Flat back



- Meets ASME B89.1.10M-2001 standards
- Lug back
- Bezel locking clamp and tolerance index
- Contact point thread: #4-48UNF
- Supplied in fitted storage case

Specifications

Range (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)
0.25	1.811	2.953	0.787	0.984
0.5	1.811	2.953	0.787	0.984
1	1.811	3.346	0.787	1.375
2	4.370	5.472	1.969	2.323

Range (Inch)	Graduation (Inch)	First 2.5 Rev Accuracy (Inch)	Overall Accuracy (Inch)	Range per Rev (Inch)	Dial Reading	INSIZE No.	Code
0.25	0.001	±0.001	±0.001	0.1	0-100	2307-025	282705
0.5	0.001	±0.001	±0.002	0.1	0-100	2307-05	816156
1	0.001	±0.001	±0.002	0.1	0-100	2307-1	816158
2	0.001	±0.001	±0.004	0.1	0-100	2307-2	816160
0.25	0.0005	±0.0005	±0.0015	0.05	0-50	2307-0255	282707
0.5	0.0005	±0.0005	±0.0015	0.05	0-50	2307-055	282708
1	0.0005	±0.0005	±0.002	0.05	0-50	2307-105	282709
2	0.0005	±0.0005	±0.002	0.05	0-50	2307-205	282710

Dial Indicator



- Lug back

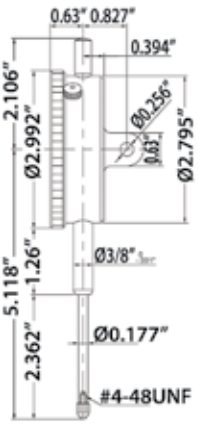
Range (Inch)	Graduation (Inch)	Bezel Diameter (Inch)	Reading	Code
0-1	0.001	2-3/16	0-100-0	841021

Large Face Dial Indicator



OPTIONAL ACCESSORIES: Contact points

- Meets ASME B89.1.10M-2001 standards
- Lug back
- Bezel locking clamp and tolerance index
- Contact point thread: #4-48UNF
- Supplied in fitted storage case

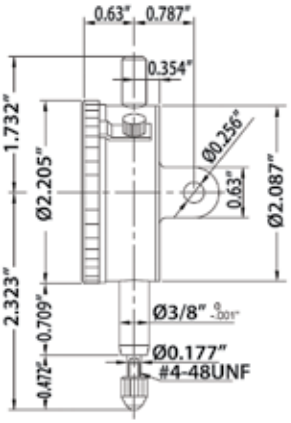


Range (Inch)	Graduation (Inch)	First 2.5 Rev Accuracy (Inch)	Overall Accuracy (Inch)	Range per Rev (Inch)	Dial Reading	INSIZE No.	Code
1.5	0.001	±0.001	±0.004	0.1	0-100	2312-15	282711
2	0.001	±0.001	±0.004	0.1	0-100	2312-2	282712

Precision Dial Indicator



- Meets ASME B89.1.10M-2001 standards
- Shock proof
- Jeweled bearing
- Lug back
- Bezel locking clamp and tolerance index
- Contact point thread #4-48UNF
- Supplied in fitted storage case



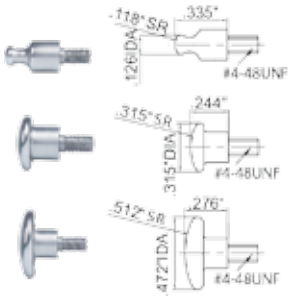
OPTIONAL ACCESSORIES: Contact points, Flat back

Range (Inch)	Graduation (Inch)	First 2.5 Rev Accuracy (Inch)	Overall Accuracy (Inch)	Range per Rev (Inch)	Dial Reading	INSIZE No.	Code
0.05	0.0001	±0.0001	±0.0003	0.01	0-100	2315-05	282719

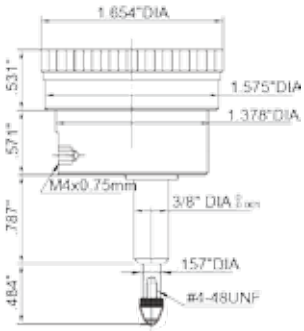
Back Plunger Dial Indicator



- Supplied with handle
- Contact point thread #4-48UNF
- Supplied in fitted storage case







OPTIONAL ACCESSORIES: Contact points

Range (Inch)	Graduation (Inch)	Accuracy (Inch)	Hysteresis (Inch)	Range per Rev (Inch)	Dial Reading	INSIZE No.	Code
0.2	0.001	±0.001	±0.00033	0.1	0-100	2320-02	816371

Dial Indicators

Metric



- Lug back on 282665, flat back on 282664
- Bezel locking clamp and tolerance index
- Contact point thread: M2.5 x 0.45
- Supplied in fitted storage case



OPTIONAL ACCESSORIES: Contact points, Flat back or Lug back

Range (mm)	Graduation (mm)	Accuracy (mm)	Range per Rev (mm)	Dial Reading	INSIZE No.	Code
30	0.01	0.035	1	0-100	2310-30A	282665
30	0.01	0.035	1	0-100	2310-30FA	282664

Dial Indicator

Metric



- Lug back
- Bezel locking clamp and tolerance index
- Contact point thread: M2.5 x 0.45
- Supplied in fitted storage case



OPTIONAL ACCESSORIES: Contact points, Flat back

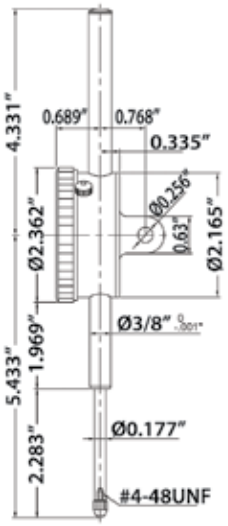
Range (mm)	Graduation (mm)	Accuracy (mm)	Range per Rev (mm)	Dial Reading	INSIZE No.	Code
25	0.1	0.06	10	0-10	2318-25	816164

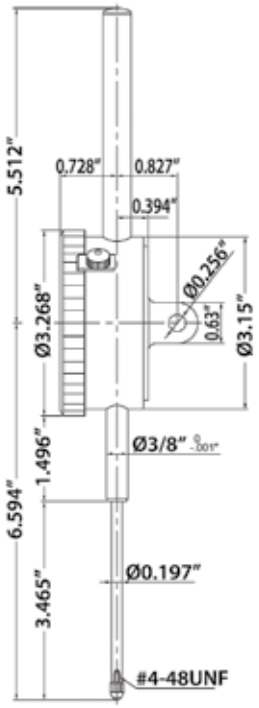
Long Stroke Dial Indicators

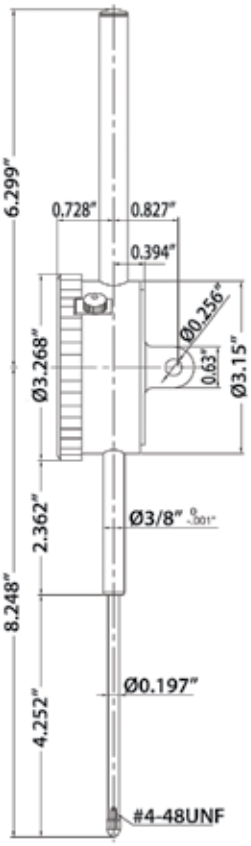


- Lug back
- Bezel locking clamp and tolerance index
- Contact point thread: #4-48UNF
- Supplied in fitted storage case

OPTIONAL ACCESSORIES: Contact points
Flat back





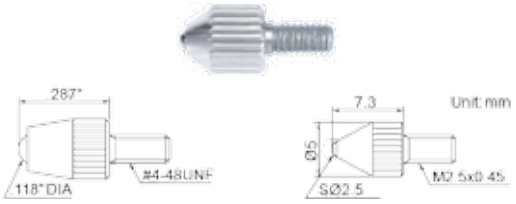


Range (Inch)	Graduation (Inch)	First 2.5 Rev Accuracy (Inch)	Overall Accuracy (Inch)	Range per Rev (Inch)	Dial Reading	INSIZE No.	Code
2	0.001	±0.001	±0.004	0.1	0-100	2326-2	282715
3	0.001	±0.001	±0.005	0.1	0-100	2326-3	282717
4	0.001	±0.001	±0.005	0.1	0-100	2326-4	282718

NOTE: 282717 and 282718 can only be used vertically

Indicator Points

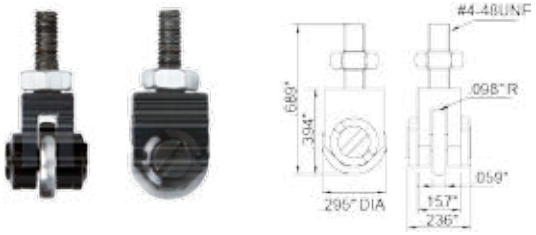
Ball Points
Carbide



282737 *282769*

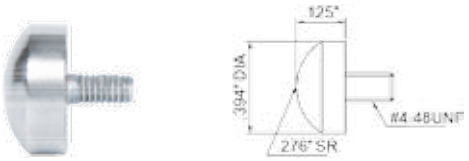
INSIZE No.	Code
6282-0102	282737
6282-0304	282769

Roller Points
Steel



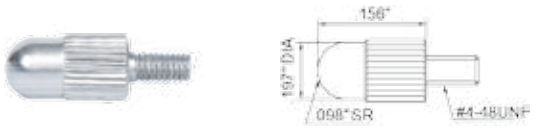
INSIZE No.	Code
6282-1902	282827

Spherical Points
Steel



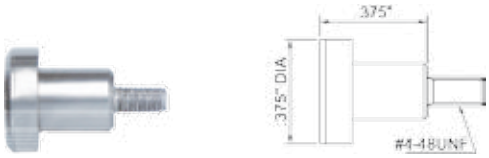
INSIZE No.	Code
6282-0402	282764

Shell Points
Steel



INSIZE No.	Code
6282-0201	282753

Flat Points
Steel



INSIZE No.	Code
6282-1207	282795

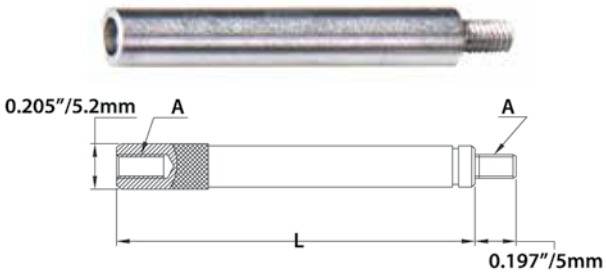
Conical Points
Steel



INSIZE No.	Code
6282-0702	282778

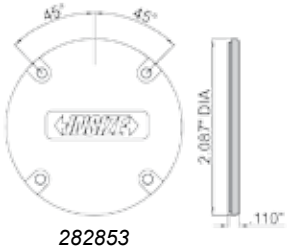
Indicator Extension Rods

Steel

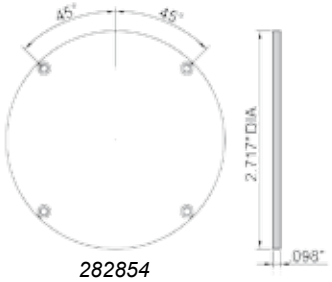


L (Inch)	A Thread	INSIZE No.	Code
1	#4-48UNF	6282-2018	282823
2	#4-48UNF	6282-2019	282824
4	#4-48UNF	6282-2020	282825

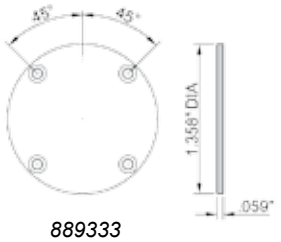
Indicator Flat Backs



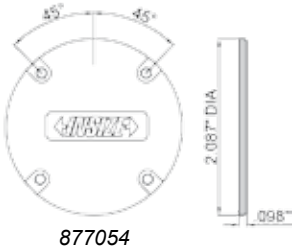
282853



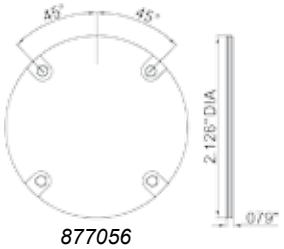
282854



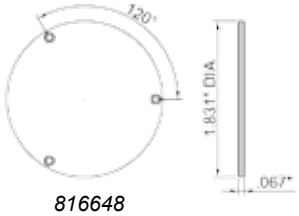
889333



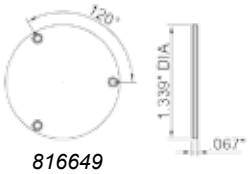
877054



877056



816648



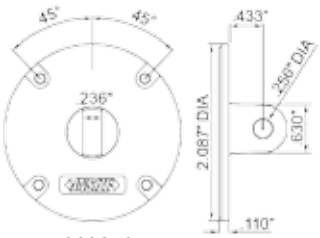
816649


282853

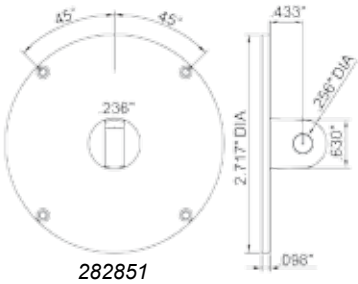

816649

For use with Electronic/Dial Indicators	INSIZE No.	Code
INSIZE series 2315	7330-F2	282853
INSIZE No. 2326-3 and 2326-4	7330-F3	282854
INSIZE series 2304	7330-F4	889333
INSIZE series 2103, 2104, 2112, 2113, and 2115	7330-F5	877054
INSIZE series 2307 and No. 2326-2	7330-F6	877056
INSIZE series 2837	7330-F7	816648
INSIZE series 2832	7330-F8	816649

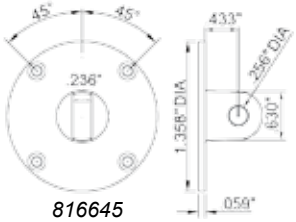
Indicator Lug Backs



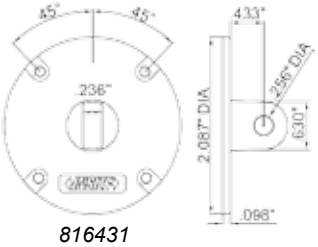
282850



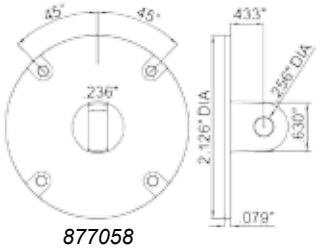
282851



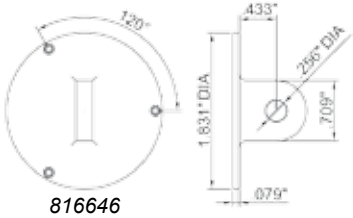
816645



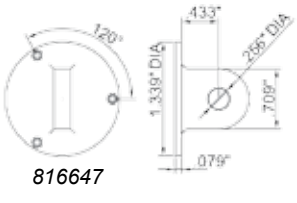
816431



877058



816646



816647


282850


816647

For use with Electronic/Dial Indicators	INSIZE No.	Code
INSIZE series 2315	7330-L2	282850
INSIZE No. 2326-3 and 2326-4	7330-L3	282851
INSIZE series 2304	7330-L4	816645
INSIZE series 2103, 2104, 2112, 2113, and 2115	7330-L5	816431
INSIZE series 2307 and No. 2326-2	7330-L6	877058
INSIZE series 2837	7330-L7	816646
INSIZE series 2832	7330-L8	816647

Indicator Point Set

Inch



- A 22-piece assortment which includes all popular indicator contact points
- Standard 4-48 thread
- Supplied in plastic case

Code
805784

Indicator Holder

Zero Set



- The Zero Set 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
- Significantly speeds the set-up operation
- Equipped with a spindle post with 1/4”, 3/8”, and 1/2” diameters and has an effective measuring range of 3/8” to 9”

Code
425498

Universal Indicator Holder

Indicol Type

- Ideal for Bridgeports
- 1-7/8” spindle diameter
- 12” reach



Code
302269

Indicator Holder

Zero Set Universal



- A unique attachment for our standard Zero Set indicator accessory
- Allows the placement of any test indicator with dovetails in a multitude of positions
- Angles up to 90º either side
- Bends both forward and backward
- Allows for an infinite range of measurements over an extensive area
- Attaches in seconds to 425498 Zero Set

NOTE: UNIVERSAL UNIT CIRCLED

Code
425497

Half Round Indicator Holder

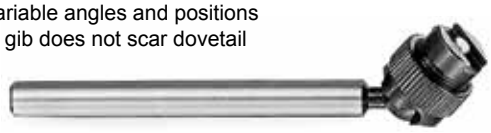
- Two-point adjustment
- 1/4” shank
- For dovetail and 5/32” stem indicators



Code
302268

Universal Indicator Holder

- Allows user expanded ability to hold dovetail test indicators at infinitely variable angles and positions
- Brass lock gib does not scar dovetail



Code
840620

Dovetail Clamp

- Fits all indicators and clamps all standard dovetails
- Clamps all diameters from 1/8” to 1/4”



Code
840622

Magnetic Indicator Holder

- A universal magnetic base that will save time and improve accuracy
- Strong magnet with 45 lbs. of holding power
- Zinc diecast 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”



Code
425560

Granite Dial Comparator Stand

- Microscrew fingertip control
- Black granite surface plate, 2” thick
- 0.00005” granite flatness
- Full 6” square
- 10” overall height
- Weight: 14lbs/6kg
- Accepts all AGD indicators



Code
840349

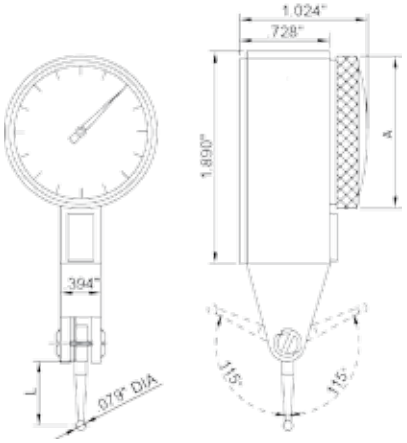
Dial Test Indicators



282858



Supplied with two clamps



- Jeweled bearing
- Carbide contact point
- Two measuring directions
- Anti-magnetic body
- Supplied with two clamps: 5/32" and 3/8" diameters
- Supplied in fitted storage case

OPTIONAL ACCESSORY: Stylus

Range (Inch)	Graduation (Inch)	Accuracy (Inch)	Dial Reading	ØA (Inch)	L (Inch)	INSIZE No.	Code
0.03	0.001	±0.001	0-15-0	1.181	0.500	2380-31	282858
0.03	0.0005	±0.0005	0-15-0	1.181	0.500	2380-35	816170
0.008	0.0001	±0.0001	0-40-0	1.181	0.563	2380-301	816172
0.03	0.001	±0.001	0-15-0	1.457	0.500	2381-31	282859
0.03	0.0005	±0.0005	0-15-0	1.457	0.500	2381-35	282860

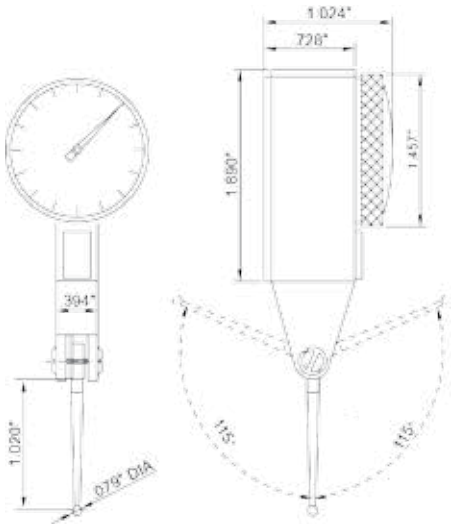
Dial Test Indicator

With Long Stylus





Supplied with two clamps



- Jeweled bearing
- Carbide contact point
- Two measuring directions
- Anti-magnetic body
- Supplied with two clamps: 5/32" and 3/8" diameters
- Supplied in fitted storage case

OPTIONAL ACCESSORY: Stylus

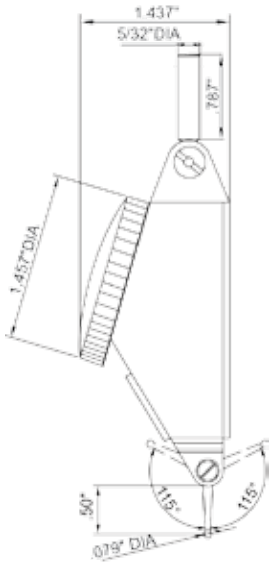
Range (Inch)	Graduation (Inch)	Accuracy (Inch)	Dial Reading	INSIZE No.	Code
0.03	0.0005	±0.0005	0-15-0	2383-35A	816372

Long Range Dial Test Indicator





Supplied with two clamps



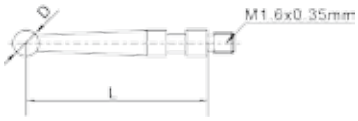
- Jeweled bearing
- Carbide contact point
- Two measuring directions
- Anti-magnetic body
- Supplied with two clamps: 5/32” and 3/8” diameters
- Supplied in fitted storage case

OPTIONAL ACCESSORY: Stylus

Range (Inch)	Graduation (Inch)	Accuracy (Inch)	Dial Reading	INSIZE No.	Code
0.06	0.0005	±0.0008	0-15-0	2386-006A	816174

Styli for Dial Test Indicators





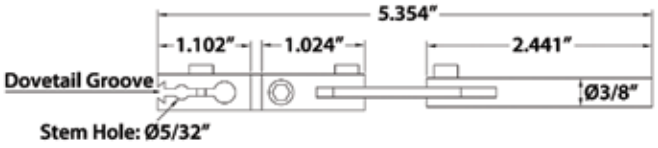
For use with Dial Test Indicators	Contact Point Material	L (Inch)	ØD (Inch)	INSIZE No.	Code
INSIZE No. 2380-31, 2380-35, 2381-31, and 2381-35	Steel	0.5	0.039	6284-9	876268
INSIZE No. 2380-31, 2380-35, 2381-31, and 2381-35	Carbide	0.5	0.079	6284-10	285265
INSIZE No. 2380-31, 2380-35, 2381-31, and 2381-35	Ruby	0.5	0.079	6284-11	816409
INSIZE No. 2380-31, 2380-35, 2381-31, and 2381-35	Carbide	0.5	0.118	6284-12	816410
INSIZE No. 2380-301	Steel	0.563	0.039	6284-13	816411
INSIZE No. 2380-301	Carbide	0.563	0.079	6284-14	816412
INSIZE No. 2380-301	Ruby	0.563	0.079	6284-15	816413
INSIZE No. 2380-301	Carbide	0.563	0.118	6284-16	816414
INSIZE No. 2383-35A	Steel	1.02	0.039	6284-17	816373
INSIZE No. 2383-35A	Carbide	1.02	0.079	6284-18	816374
INSIZE No. 2383-35A	Ruby	1.02	0.079	6284-19	816375
INSIZE No. 2383-35A	Carbide	1.02	0.118	6284-20	816376
INSIZE No. 2386-006A	Steel	0.5	0.039	6284-65	816377
INSIZE No. 2386-006A	Carbide	0.5	0.079	6284-66	816378
INSIZE No. 2386-006A	Ruby	0.5	0.079	6284-67	816379
INSIZE No. 2386-006A	Carbide	0.5	0.118	6284-68	816380
INSIZE No. 2380-02 and 2381-02	Carbide	12.5 mm	2 mm	6284-22	282870

Dial Test Indicator Holders

INSIZE



- Supplied with wrench

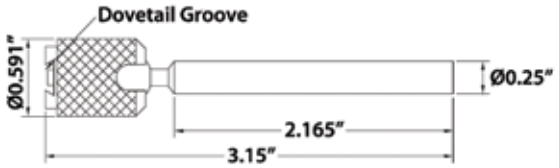


INSIZE No.	Code
6296-2	877030

Universal

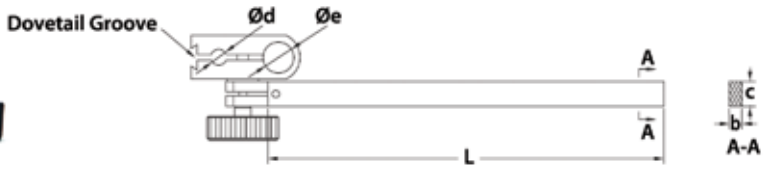


- Set the indicator at a desired position



INSIZE No.	Code
6293-5	282880



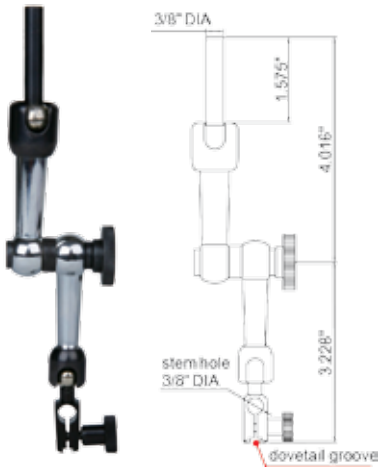


L Stem Length (Inch)	b (Inch)	c (Inch)	Ød Stem Hole (Inch)	Øe Stem Hole (Inch)	INSIZE No.	Code
2	0.354	0.354	5/32	3/8	6293-7	816416

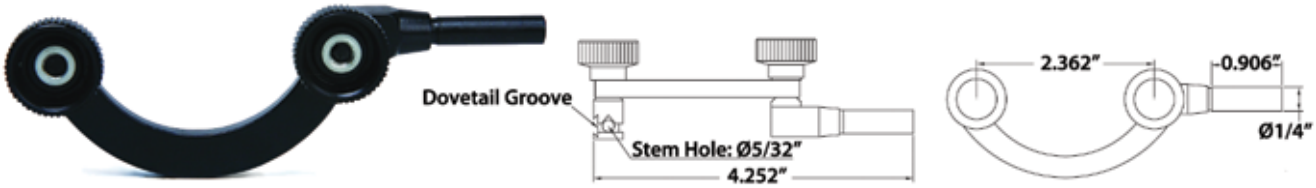
Dial Test Indicator Centering Holders

INSIZE

- Center cylinders or holes on machine tools



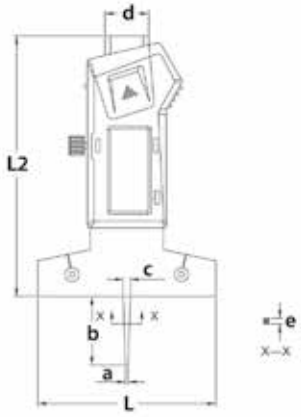
INSIZE No.	Code
6295-1AE	284452



INSIZE No.	Code
6291-2	282875

Electronic Depth Gage





- Measures depth of small grooves, holes, and tire treads
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, inch/mm
- Supplied with zero set surface
- Auto power off, move unit to turn on
- Battery CR2032
- Data output
- Stainless steel construction
- Supplied in fitted storage case

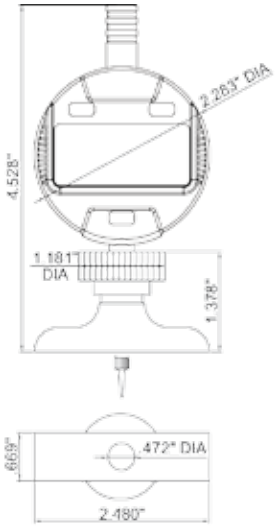
OPTIONAL ACCESSORY: SPC cable

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	L2 (Inch)	a (Inch)	b (Inch)	c (Inch)	d (Inch)	e (Inch)	INSIZE No.	Code
0-1/0-25	±0.0012	2.559	3.543	0.039	0.984	0.118	0.630	0.079	1145-25A	284550

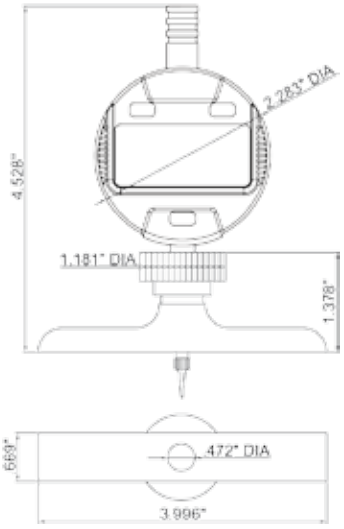
Electronic Depth Gage

With Extension Rods





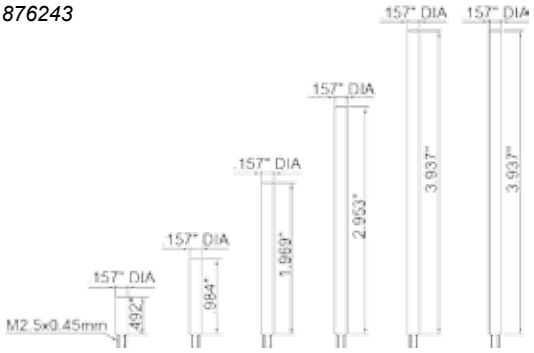
876242



876243



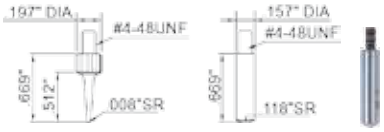
- Indicator resolution: 0.0005”/0.01mm
- Indicator stroke: 0.5”/12.7mm
- Button function: on/off, zero, inch/mm, ABS, data preset, change measuring direction
- Auto power off
- Battery CR2032
- Data output
- Stainless steel base
- Extension rods: 1” (1pc.), 2” (1pc.) 3” (1pc.), 4” (2pcs.)
- Supplied with pointed tip and ball tip
- Supplied in fitted storage case

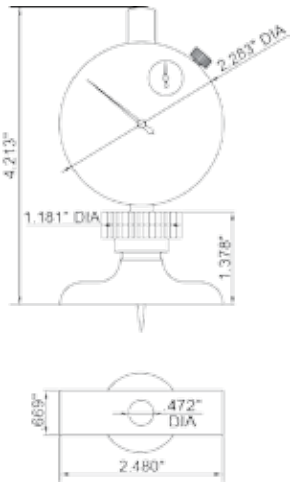


Range (Inch/mm)	Accuracy (Inch)	L (Inch)	a (Inch)	Øb (Inch)	c (Inch)	d (Inch)	Øe (Inch)	INSIZE No.	Code
0-12/0-300	±0.0008	4.528	1.378	1.181	2.480	0.669	0.472	2141-201A	876242
0-12/0-300	±0.0008	4.528	1.378	1.181	3.996	0.669	0.472	2141-202A	876243

Dial Depth Gage





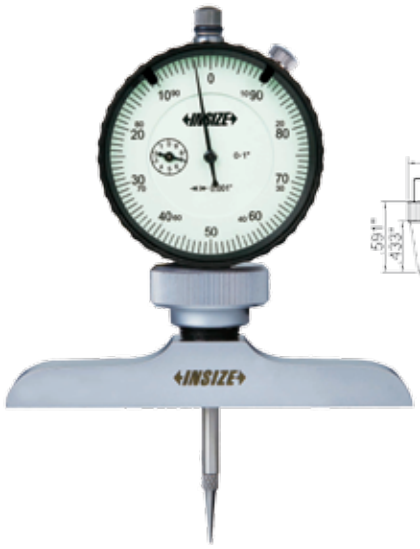


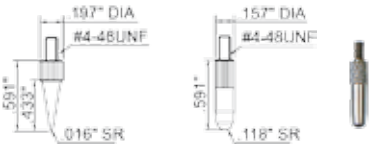
- Indicator graduation: 0.001”
- Indicator stroke: 0.5”
- Indicator range: 0-1.2”
- Stainless steel base
- Supplied with pointed tip and ball tip
- Supplied in fitted storage case

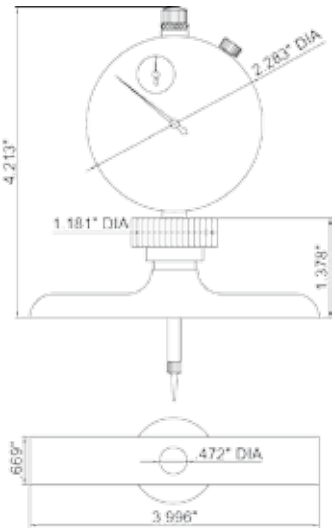
Range (Inch)	Accuracy (Inch)	Base (Inch)	INSIZE No.	Code
0-1.2	±0.002	2.480 x 0.669	2341-E1	283207

Dial Depth Gage

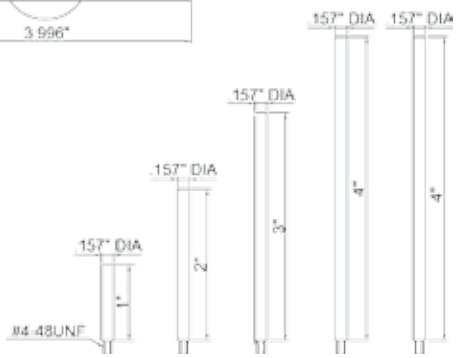
With Extension Rods











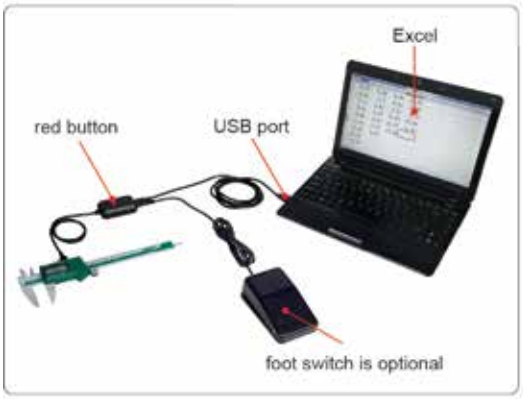
- Indicator graduation: 0.001”
- Indicator stroke: 1”
- Indicator range: 0-12”
- Stainless steel base
- Extension rods: 1” (1pc.), 2” (1pc.) 3” (1pc.), 4” (2pcs.)
- Supplied with pointed tip and ball tip
- Supplied in fitted storage case

Range (Inch)	Accuracy (Inch)	L (Inch)	a (Inch)	Øb (Inch)	Øc (Inch)	d (Inch)	Øe (Inch)	f (Inch)	INSIZE No.	Code
0-12	±0.002	4.213	1.378	1.181	2.283	0.669	0.472	3.996	2341-2E2	876241

SPC Cables

- Without special software, data may be exported to Microsoft Excel, Microsoft Word, CAD, Skype, etc.
- Press red button or the foot switch (optional) to input data







For use with...	Description	INSIZE No.	Code
 For electronic calipers and electronic depth gages (except 1103 series)	Cable 100” length	7302-SPC5A	816385
 For electronic callipers and electronic depth gages (except 1103 series)	Cable 100” length	7302-SPC5B	816386
 For electronic micrometers (except for 3631, 3632, 3109, and 3109 series)	Cable 100” length	7302-SPC2A	877040
 For electronic indicators and electronic protractors	Cable 100” length	7302-SPC3A	877042
 For electronic calipers 1103 series only	Cable 100” length	7302-SPC4	285067
 Optional	Foot switch with cable 60” length	7304-2	877046

Magnetic Stands

With Dual Stems

- For electronic/dial indicators and dial test indicators



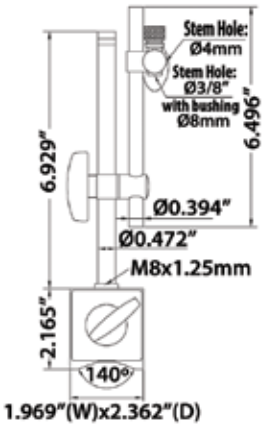
816250

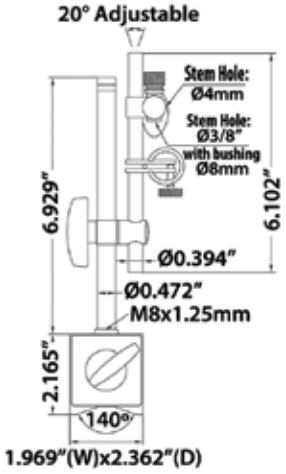


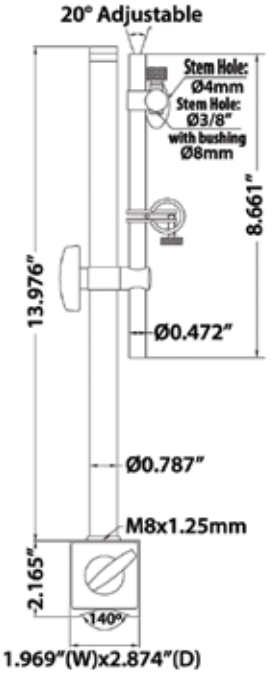
816252



816254







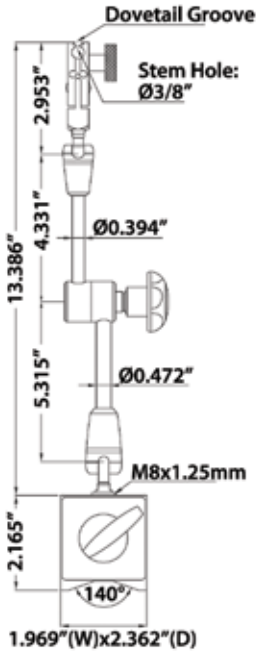
Magnetic Force (lbf/kgf)	Applicable Holding Stem Diameters	Fine Adjustment	INSIZE No.	Code
132/60	3/8", 8mm, 4mm	No	6200-60	816250
132/60	3/8", 8mm, 4mm	Yes	6201-60	816252
220/100	3/8", 8mm, 4mm	Yes	6202-100	816254

Universal Magnetic Stands

- For electronic/dial indicators and dial test indicators
- With fine adjustment and dovetail groove

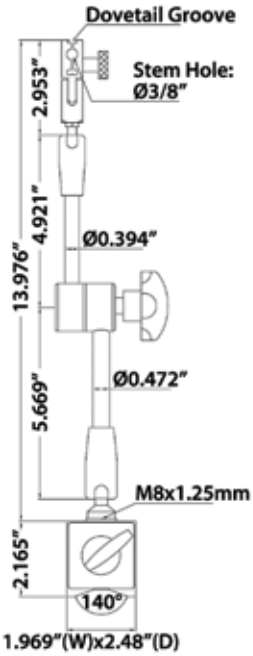
Heavy Duty





Magnetic Force (lbf/kgf)	Applicable Holding Stem Diameter	Fine Adjustment	INSIZE No.	Code
176/80	3/8"	Yes	6210-80E	877028





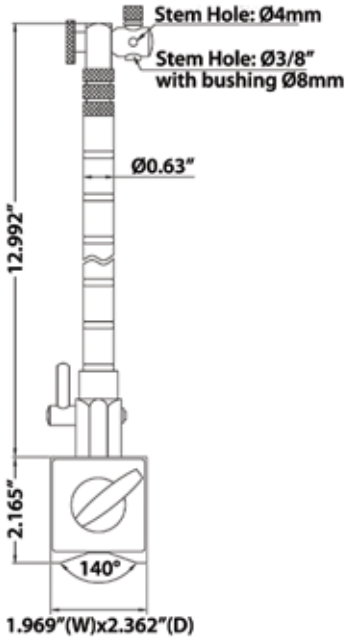
Magnetic Force (lbf/kgf)	Applicable Holding Stem Diameter	Fine Adjustment	INSIZE No.	Code
176/80	3/8"	Yes	6208-80E	816256

Magnetic Stand

With Flex Arm

- For dial test indicators



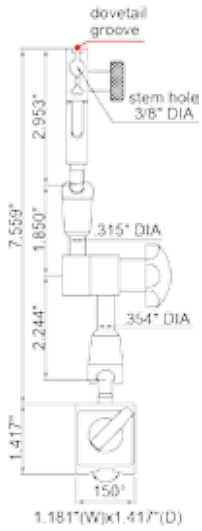


Magnetic Force (lbf/kgf)	Applicable Holding Stem Diameter	INSIZE No.	Code
176/80	3/8", 8mm, 4mm	6207-80A	282892

Miniature Magnetic Stand

- For dial test indicators
- With fine adjustment and dovetail groove





Magnetic Force (lbf/kgf)	Applicable Holding Stem Diameter	Fine Adjustment	INSIZE No.	Code
88/	3/8"	Yes	6224-40E	816650

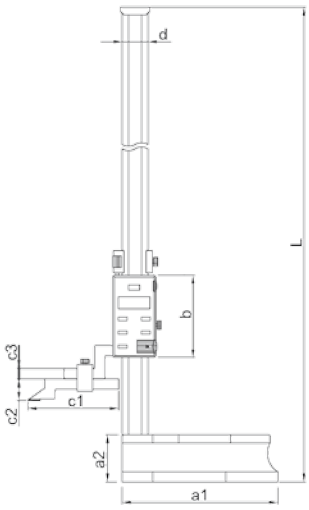
Electronic Height Gages



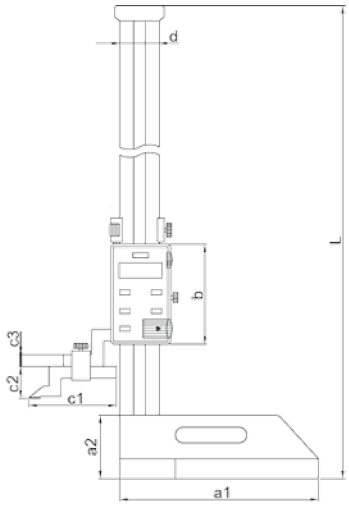
280759



280757



Type A



Type B

- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, inch/mm, ABS/INC (absolute and incremental measurements), data hold, TOL (tolerance measurement), set
- Carbide-tipped scriber, stainless steel beam
- Battery LR44
- Data output
- Supplied with dial test indicator holder
- Supplied with vinyl dust cover

OPTIONAL ACCESSORY: SPC cable 7301-SPC5 (Code 280795)

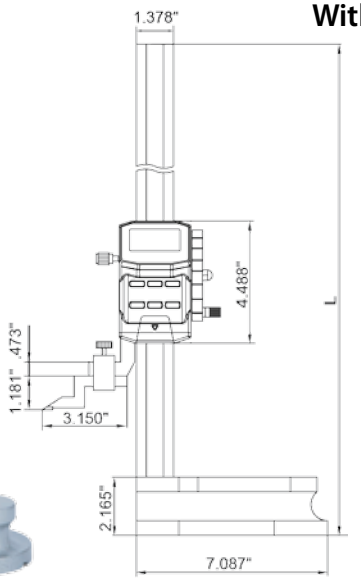
Range (Inch/mm)	Type	Accuracy (Inch)	L (Inch)	a1 (Inch)	a2 (Inch)	b (Inch)	c1 (Inch)	c2 (Inch)	c3 (Inch)	d (Inch)	e (Inch)	f (Inch)	INSIZE No.	Code
0-12/0-300	A	±0.0016	18.504	5.315	1.772	3.150	2.992	0.984	0.394	0.906	0.236	0.315	1150-300E	280756
0-20/0-500	A	±0.0020	28.346	7.087	2.165	3.740	4.055	0.984	0.472	1.181	0.394	0.472	1150-500E	280757
0-24/0-600	A	±0.0020	32.283	7.087	2.165	3.740	4.055	0.984	0.472	1.181	0.394	0.472	1150-600E	280758
0-40/0-1000	B	±0.0028	50.197	9.843	3.150	4.921	4.331	1.535	0.591	1.969	0.394	0.591	1150-1000E	280759

Sizes available up to 80”

Electronic Height Gages

With Drive Wheel





- Resolution: 0.0005”/0.01mm
- Buttons: on/off, zero, inch/mm, preset +, preset -, hold
- Auto power off - move unit to turn power on
- Carbide-tipped scriber, stainless steel beam
- Battery CR2032
- Data output
- Supplied with vinyl dust cover

OPTIONAL ACCESSORIES: SPC cable, Dial Test Indicator Holder

Range (Inch/mm)	Accuracy (Inch)	L (Inch)	INSIZE No.	Code
0-12/0-300	±0.0012	20.276	1156-300	816634
0-24/0-600	±0.0020	32.867	1156-600	816635

Digimatic Height Gages

Mitutoyo

Standard Type

- Resolution: 0.0005”/0.01mm (0.0002”/0.005mm switchable)
- Easy-to-use standard type
- Carbide-tipped scriber is provided
- Double-column structure ensures high measuring accuracy
- Coarse/fine feed switching
- Switchable resolution
- Two preset reference heights

Multi-Function Type with SPC Data Output

- Resolution: 0.0005”/0.01mm (0.0002”/0.005mm switchable)
- Highly versatile multi-function type
- Carbide-tipped long scriber is provided
- Rigid construction ensures repeatable measurement
- Switchable resolution
- Coarse/fine feed switching
- SPC data output
- Two preset reference heights

Bi-directional touch-signal probe is an optional accessory. It can quickly and accurately measure steps, and inside and outside widths.



Standard

Multi-Function

Standard

Range (Inch/mm)	Accuracy (Inch)	Weight (kg)	Code
0-12/0-300	±001	4.7	192-630-10
0-18/0-450	±002	7.5	192-631-10

Multi-Function

Range (Inch/mm)	Accuracy (Inch)	Weight (kg)	Code
0-12/0-300	±001	5.7	192-670-10
0-18/0-450	±0015	7.5	192-671-10
0-24/0-600	±0015	8.3	192-672-10

KAR QUALITY, VALUE AND SERVICE - CALL YOUR KAR DISTRIBUTOR TODAY!

Bore Gages

For Small Holes

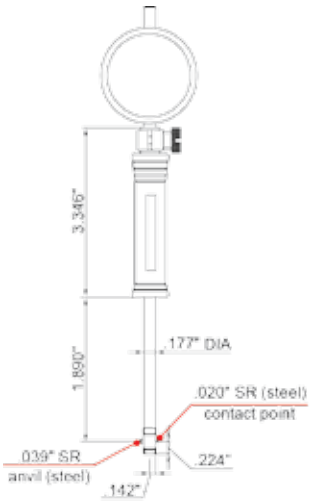
- Indicator graduation: 0.0005”
- Indicator range: 0.25”
- Stainless steel base
- Supplied in fitted storage case

OPTIONAL ACCESSORY: Setting Ring

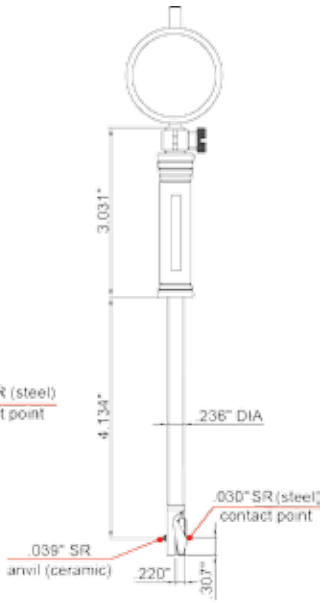


282928





282928



282929

Range (Inch)	Accuracy (Inch)	Repeatability (Inch)	INSIZE No.	Code
0.24-0.4	±0.00075	0.00015	2323-04	282928
0.4-0.7	±0.00075	0.00015	2323-07	282929

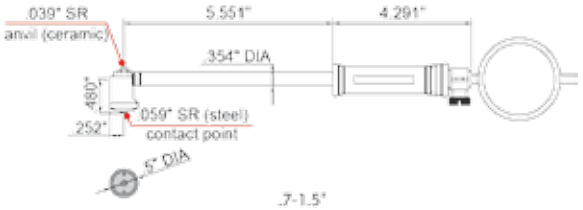
816192



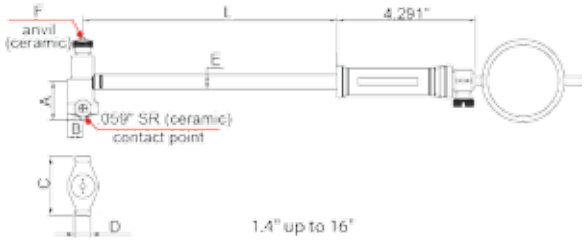
Bore Gages

- Indicator graduation: 0.0005”
- Indicator range: 0.25”
- Stainless steel base
- Supplied in fitted storage case

OPTIONAL ACCESSORIES: Setting Ring
Long Handle







Range (Inch)	Accuracy (Inch)	Reapeatability (Inch)	L (Inch)	A (Inch)	B (Inch)	C (Inch)	ØD (Inch)	E (Inch)	F (Inch)	INSIZE No.	Code
0.7-1.5	±0.00075	0.00015	5.551	0.480	0.252	0.480	0.252	0.354	0.039	2323-15	282930
1.4-2.4	±0.00090	0.00015	5.551	0.866	0.354	1.063	0.512	0.504	0.079	2323-24	816188
2-6	±0.00090	0.00015	5.551	1.024	0.354	1.378	0.512	0.504	0.079	2323-6	816192
6-10	±0.00090	0.00015	9.488	2.224	0.512	2.933	0.591	0.571	0.079	2323-10	816184
10-16	±0.00090	0.00015	9.488	3.406	0.591	3.996	0.591	0.571	0.098	2323-16	816186

Ultrasonic Thickness Gage

- Measures the thickness from one side of object
- Suitable for pipes, tanks, etc.
- Supplied with transducer, bottle of couplant and 2 x AAA batteries
- Supplied with manufacturer inspection certificate
- Supplied in fitted storage case



Measuring Range (Inch)		0.03 - 11.81
Resolution (Inch)		0.001 (range <10”)
		0.01 (range ≥10”)
Accuracy (Inch)		±0.002 (range <0.4”) ±(0.002+H/1000) (range 0.4-4”) ±H/333 (range ≥4”) H is the thickness to be measured in inch
Transducer	**Frequency**	5MHz
	Diameter	0.43”
Minimum size of pipe for measurement (Inch)		0.79 x 0.05 (diameter x wall thickness)
Applicable Temperature		<140ºF
Velocity		0.039-0.394”/µs
Power Supply		2 x AAA batteries (included)
Dimensions (Inch)		4.49 x 2.52 x 1.1
Weight (lbs)		49
INSIZE No.		ISU-100D
Code		816694

Gage Block Set

Steel



- Alloy steel
- Grade 0
- Meets ASME B89.1.9 standards
- Supplied with inspection certificate
- Supplied in fitted storage case

No. of Blocks	Blocks Included...			INSIZE No.	Code
	Size (Inch)	Step (Inch)	Quantity		
81	0.1001-0.1009	0.0001	9	4102-81	283260
	0.101-0.149	0.001	49		
	0.05-0.95	0.05	19		
	1-4	1	4		

Gage Block Sets

Inch & Metric – Steel & Carbide



- Grade 2 (A+) and Grade 3 (A and B) accuracy meets or exceeds federal specifications GGG-G-15C
- Grade B shop accuracy approximately ±0.00005”
- CARBIDE SET: Tungsten carbide blocks in all sizes through 1” for superior wear life
- Standard steel blocks in 2”, 3” and 4”

Inch

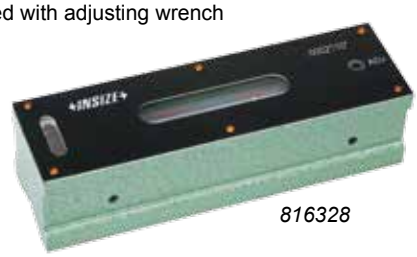
No. of Blocks per Set	Block Combination	Material	Grade	Code
81	9 blocks - 0.1001-0.1009 (0.0001 step); 49 blocks - 0.101-0.159 (0.001 step); 19 blocks 0.050-0.950 (0.050 step); 4 blocks 1.000-4.000 (1.000 step)	Steel	2	845112
81	9 blocks - 0.1001-0.1009 (0.0001 step); 49 blocks - 0.101-0.159 (0.001 step); 19 blocks 0.050-0.950 (0.050 step); 4 blocks 1.000-4.000 (1.000 step)	Steel	3	845113
81	9 blocks - 0.1001-0.1009 (0.0001 step); 49 blocks - 0.101-0.159 (0.001 step); 19 blocks 0.050-0.950 (0.050 step); 4 blocks 1.000-4.000 (1.000 step)	Steel	B	845115
81	9 blocks - 0.1001-0.1009 (0.0001 step); 49 blocks - 0.101-0.159 (0.001 step); 19 blocks 0.050-0.950 (0.050 step); 4 blocks 1.000-4.000 (1.000 step)	Carbide	B	845121
36	9 blocks - 0.1001-0.1009 (0.0001 step); 9 blocks - 0.101-0.109 (0.001 step); 9 blocks - 0.110-0.190 (0.010 step); 4 blocks - 0.200, 0.300, 0.400, 0.500; 3 blocks - 1.000, 2.000, 4.000; 2 blocks - 0.50, 0.100	Steel	2	845122
36	9 blocks - 0.1001-0.1009 (0.0001 step); 9 blocks - 0.101-0.109 (0.001 step); 9 blocks - 0.110-0.190 (0.010 step); 4 blocks - 0.200, 0.300, 0.400, 0.500; 3 blocks - 1.000, 2.000, 4.000; 2 blocks - 0.50, 0.100	Steel	3	845123
36	9 blocks - 0.1001-0.1009 (0.0001 step); 9 blocks - 0.101-0.109 (0.001 step); 9 blocks - 0.110-0.190 (0.010 step); 4 blocks - 0.200, 0.300, 0.400, 0.500; 3 blocks - 1.000, 2.000, 4.000; 2 blocks - 0.50, 0.100	Steel	B	845125

Metric

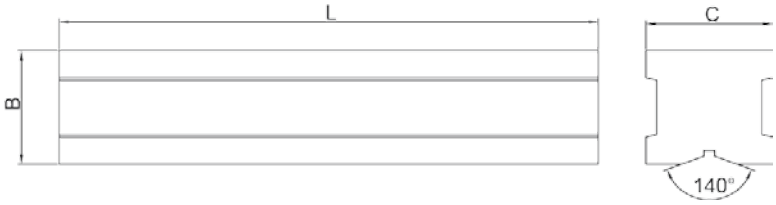
No. of Blocks per Set	Block Combination	Grade	Code
87	9 blocks - 1.001-1.009 (0.001 step); 49 blocks - 1.01-1.49 (0.01 step); 19 blocks 0.5-9.5 (0.5 step); 10 blocks - 10-100 (10.0 step)	1	845131
47	1 block - 1.005; 9 blocks 1.01-1.09 (0.01 step); 9 blocks - 1.5-1.9 (0.1 step); 24 blocks 1-24 (1.0 step); 4 blocks - 25-100 (25.0 step)	2	845139

Block Levels

- V-groove on bottom for shafts (shaft diameter 0.63 to 2.76")
- With transverse vial
- Supplied with adjusting wrench



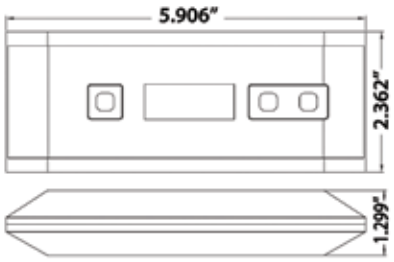
816328

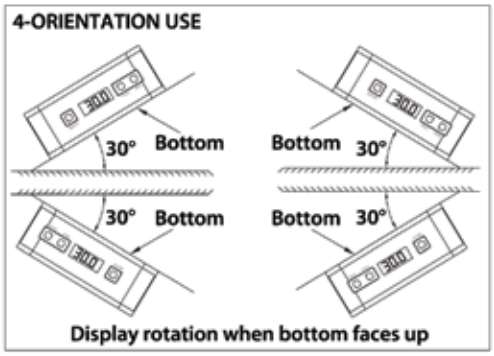


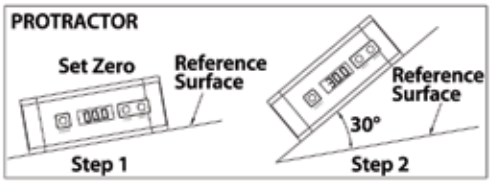
L (Inch)	Sensitivity (Inch)	INSIZE No.	Code
6	0.0002/10	4901-6	816326
8	0.0002/10	4901-8	816328
12	0.0002/10	4901-12	816330

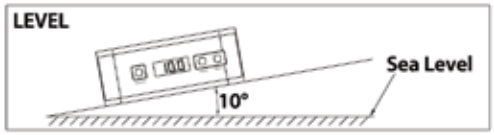
Electronic Level & Protractor







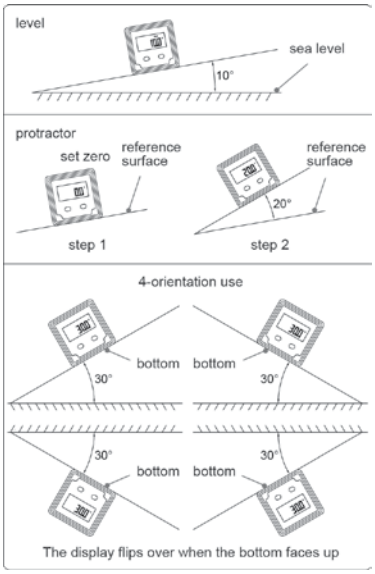




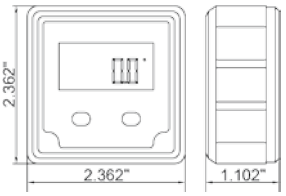
- Resolution: 0.1º (=0.021 in/ft)
- Accuracy: 0º and 90º: ±0.1º; others: ±0.2º
- Used as level and protractor
- Aluminum frame
- Magnetic bottom with v-groove for shafts
- Zero setting may be used at any angle on plain surfaces
- Buttons: on/off, zero, hold
- Display rotates when gage is upside down
- Battery CR2032
- Auto power off
- Supplied in leather pouch

Range	INSIZE No.	Code
0-360º (4 x 90º)	2173-360	816340

Electronic Level & Protractor



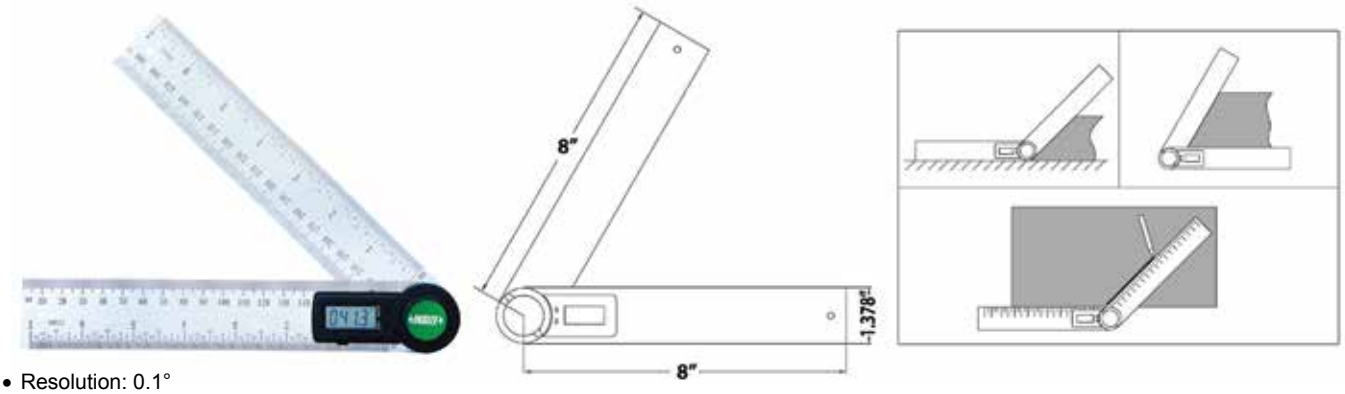




- Resolution: 0.1º (=0.021 in/ft)
- Accuracy: 0º and 90º: ±0.1º; others: ±0.2º
- Used as level and protractor
- Aluminum frame
- Magnetic bottom
- Display rotates when gage is upside down
- Backlight on automatically when in use - auto off 15 minutes after use
- Sea level is permanently set inside the chip - zero setting not required when battery is replaced
- Buttons: on/off, zero, absolute and incremental measurement
- Battery 1 x AAA
- Auto power off
- Supplied in leather pouch

Range	INSIZE No.	Code
4 x 90º	2170-1	816396

Electronic Protractor



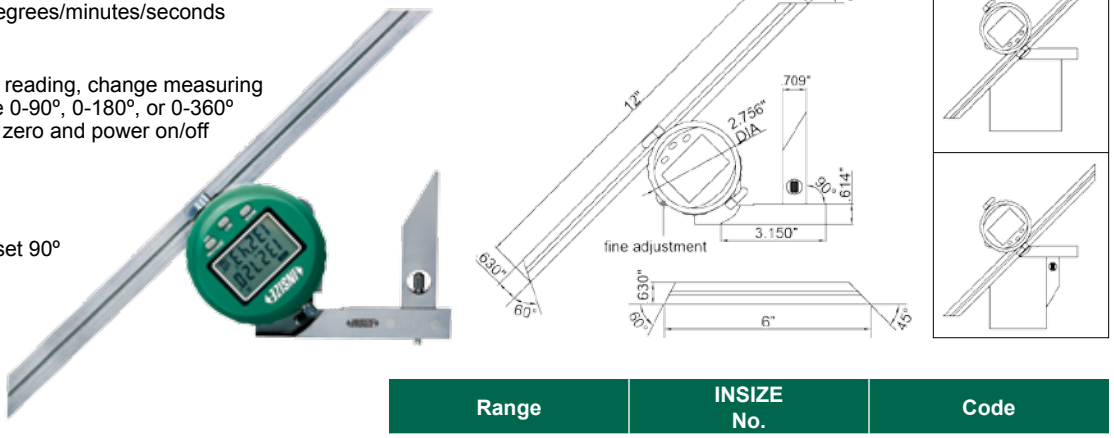
- Resolution: 0.1°
- Accuracy: ±0.3º
- Buttons: on/off, zero
- With locking screw
- Graduation of blade: 1/32” and 1mm
- Stainless steel
- Battery CR2032
- Auto power off

Range	INSIZE No.	Code
0-360º	2176-200	877018

Electronic Protractor

SPC

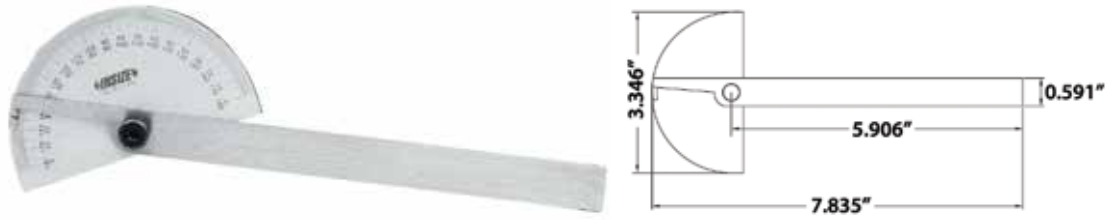
- Display in degrees and degrees/minutes/seconds
- Resolution: 10”/0.005°
- Accuracy: ±5’
- Buttons: SET - preset the reading, change measuring direction; MODE - choose 0-90º, 0-180º, or 0-360º display; ZERO/ON/OFF - zero and power on/off
- Stainless steel
- Battery CR2032
- Auto power off
- Two blades: 6” and 12”
- Supplied with square for set 90º
- Supplied in storage case



Range	INSIZE No.	Code
0-360º	2172-360A	283343

Protractor

- Graduations: 1º
- Accuracy: ±0.3º
- Stainless steel with satin chrome plated scale
- With locking screw
- Supplied in storage case

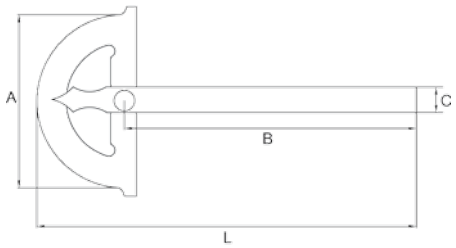


Range	INSIZE No.	Code
0-180º	4780-85	283328

Protractor

- Graduations: 1°
- Accuracy: ±0.3°
- Stainless steel with satin chrome plated scale
- With locking screw
- Supplied in storage case





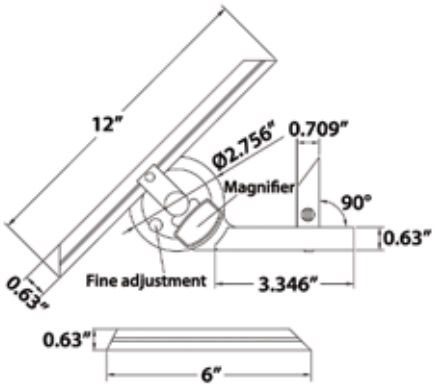
Range	L (Inch)	A (Inch)	B (Inch)	C (Inch)	INSIZE No.	Code
0-180°	8.661	4.7	5.9	0.551	4799-1120	283330

Universal Protractor

- Graduation: 5'
- Accuracy: ±5'
- Parallax-free reading
- Two blades: 6" and 12"
- With magnifier lens and small angle attachment
- Stainless steel
- Supplied in fitted storage case

OPTIONAL ACCESSORY:
Clamp 284912 (2372-CLAMP)
for Height Gages – INSIZE series
1151, 1156, 1250 and 1351







Clamp for Height Gages sold separately

Protractor

Range	INSIZE No.	Code
0-360°	2372-360	283341

Clamp for Height Gage

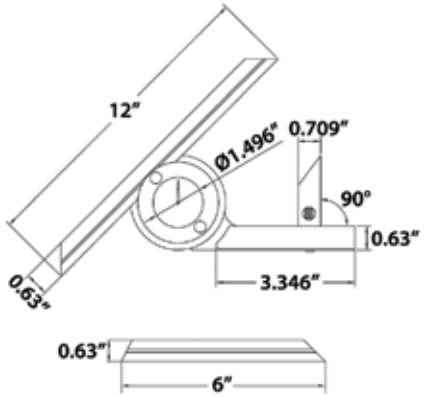
INSIZE No.	Code
2372-CLAMP	284912

Dial Protractor

- Graduation: 5'
- Accuracy: ±5'
- Two blades: 6" and 12"
- With small angle attachment
- Stainless steel
- Supplied in fitted storage case

OPTIONAL ACCESSORY:
Clamp 284912 (2372-CLAMP)
for Height Gages – INSIZE series
1151, 1156, 1250 and 1351







Clamp for Height Gages sold separately

Protractor

Range	INSIZE No.	Code
0-360°	2373-360	283342

Clamp for Height Gage

INSIZE No.	Code
2372-CLAMP	284912

Rules

Steel – Semi-Flexible

- Graduations: 1/64”, 1/32”, 1/16”, 0.5mm and 1mm
- Semi-flexible
- Stainless steel with non-glare surface
- Supplied in storage pouch



Range (Inch/mm)	Accuracy (Inch)	Length (Inch)	Width (Inch)	Thickness (Inch)	Graduation	INSIZE No.	Code
6/150	±0.006	6.693	0.709	0.039	Graduation on front and back	7110-150	283596
8/200	±0.006	8.661	0.709	0.039	Graduation on front and back	7110-200	283597
12/300	±0.006	12.992	0.984	0.039	Graduation on front and back	7110-300	283598
12/300	±0.006	12.795	1.181	0.039	Graduation on front and back	7110-3001	816384
20/500	±0.006	20.866	1.181	0.047	Graduation on front and back	7110-500	283599
24/600	±0.006	24.803	1.181	0.047	Graduation on front and back	7110-600	283600
40/1000	±0.008	40.945	1.260	0.059	Graduation on front and back	7110-1000	283601
48/1200	±0.009	48.819	1.378	0.071	Graduation on front	7110-1200	283603
60/1500	±0.010	61.024	1.496	0.071	Graduation on front	7110-1500	283604
80/2000	±0.012	81.299	1.575	0.079	Graduation on front	7110-2000	283605

Rules

Rigid

- Groove on back suitable for combination square sets 816324 and 283344)
- Satin chrome plated
- Supplied in storage pouch





Range (Inch/mm)	Accuracy (Inch)	Length (Inch)	Width (Inch)	Thickness (Inch)	Groove (Inch)	Graduation	INSIZE No.	Code
12/300	±0.006	12	0.984	0.087	0.079	1/32” and 0.5mm (front) 1/64” and 1mm (back)	7113-300A	283606

Rules

Steel – Flexible & Rigid



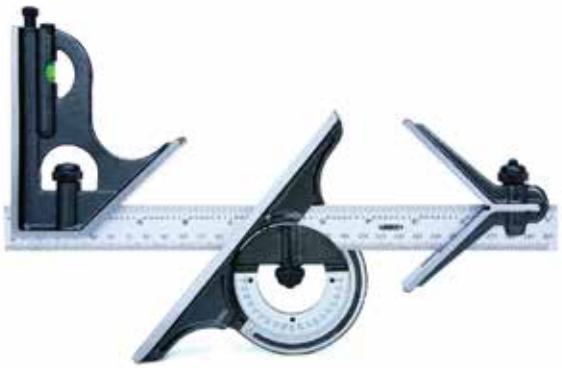
Flexible

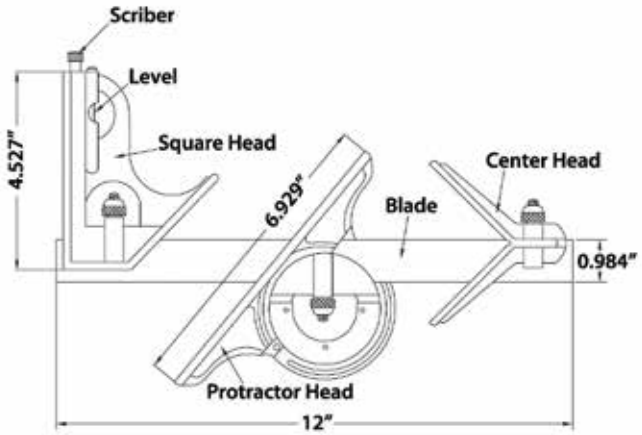
Dimensions (Inch)	Style	Graduations	Code
18 x 3/4 x 0.02	4R	8ths, 16ths, 32nds, 64ths	820358

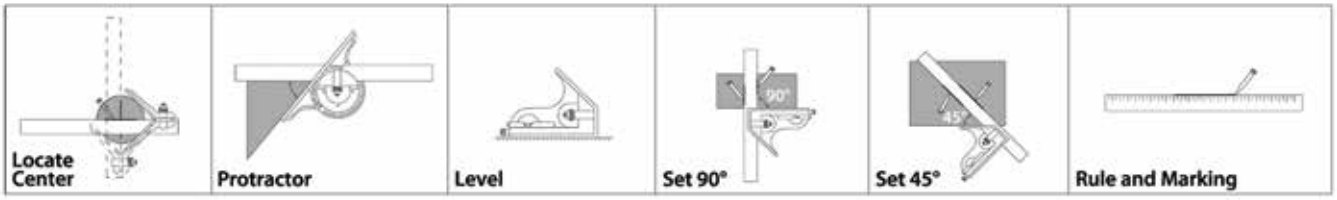
Rigid

Dimensions (Inch)	Style	Graduations	Code
6 x 3/4 x 0.03	3R	32nds, 64ths, 10ths, 50ths	820370
6 x 3/4 x 0.03	4R	8ths, 16ths, 32nds, 64ths	820371
6 x 3/4 x 0.03	Inch/ Metric	32nds, 64ths, 1mm, 0.5mm	820372
12 x 1-1/8 x 0.04	4R	8ths, 16ths, 32nds, 64ths	820376
18 x 1-1/8 x 0.04	4R	8ths, 16ths, 32nds, 64ths	820378
24 x 1-1/8 x 0.04	Inch/ Metric	32nds, 64ths, 1mm, 0.5mm	820381

Combination Squares







- Used as square, level, marking gage, scriber, center gage, protractor and 12” steel rule
- Center Head: to locate center of round workpieces - Accuracy: ±0.006”
- Protractor Head: to set the blade at desired angle to an edge of a workpiece, and may be used to measure angles - Range: 0-180 º; Accuracy: ±7min.
- Square Head: to set the blade at 90º or 45º to an edge of a workpiece - Accuracy: ±8min. for 90º square and ±10min. for 45º square
- Supplied in fitted storage case

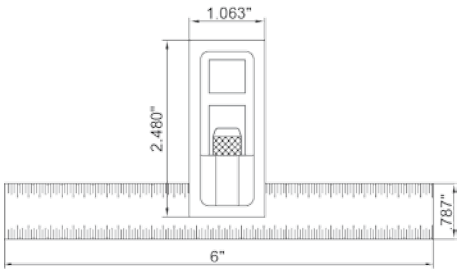
OPTIONAL ACCESSORY:
Rigid Rule 283006 (7113-300A)

Blade Length	Blade Graduation	INSIZE No.	Code
12”/300mm	1/32” and 0.5mm on one side, 1/64” and 1mm on reverse side	2278-180	816324
12”	1/8” and 1/16” on one side, 1/32” and 1/64” on reverse side	2278-180E	283344

Double Square

- Accuracy: ±2min for 90º square
- Hardened and chrome plated blade





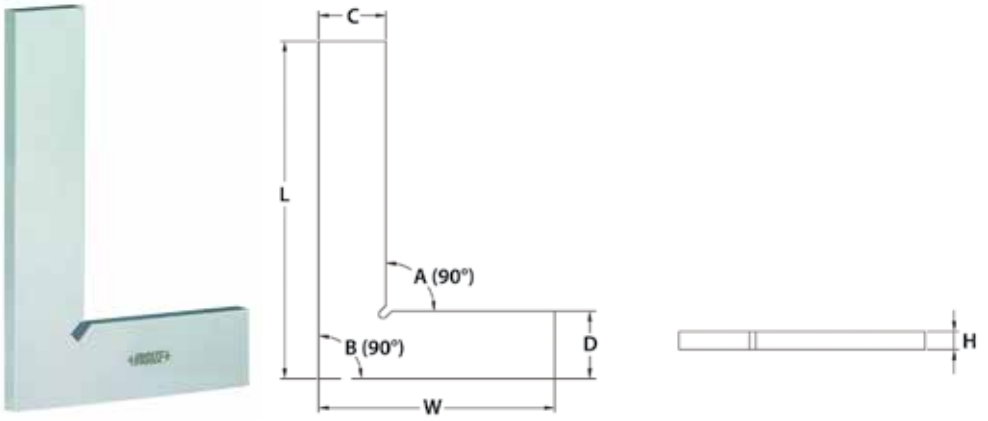
Blade Length	Blade Graduation	INSIZE No.	Code
6”	1/8”, 1/16”, 1/32”, 1/64”	2277-2	283348

Flat Edge Squares

INSIZE

90°

- Meets DIN875 standards, grade 0
- Hardened stainless steel
- Supplied in fitted storage case



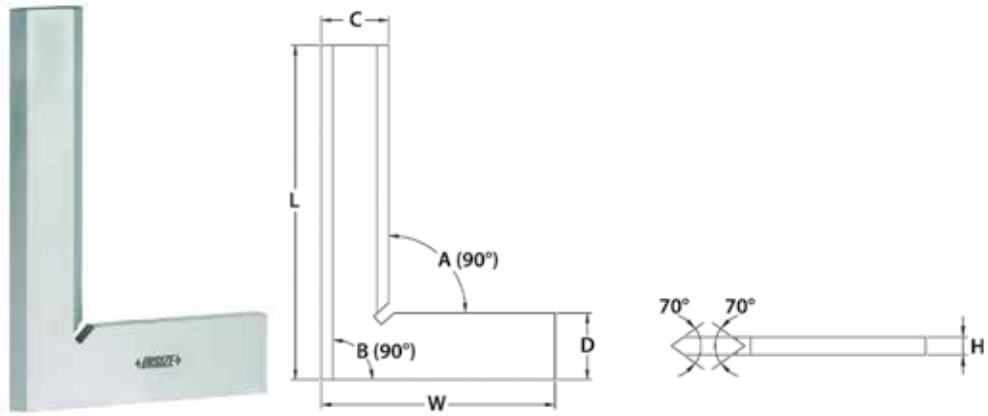
L x W Dimensions (Inch)	A Inside Squareness (Inch)	B Outside Squareness (Inch)	C (Inch)	D (Inch)	H (Inch)	INSIZE No.	Code
3.9 x 2.8	0.000276	0.000276	0.787	0.787	0.197	4791-100	816316
5.9 x 3.9	0.000276	0.000315	1.181	1.181	0.236	4791-150	816318

Beveled Edge Squares

INSIZE

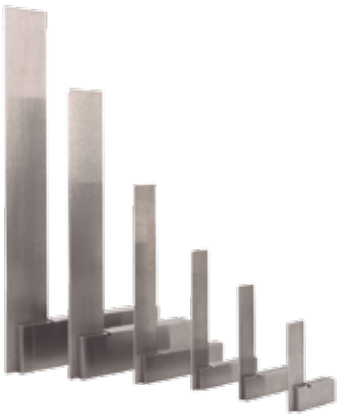
90°

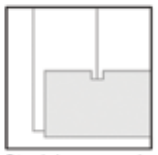
- Two beveled edges on upright blade for inside and outside measurements
- Hardened stainless steel
- Supplied in fitted storage case



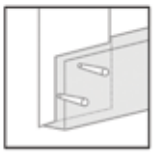
L x W Dimensions (Inch)	A Inside Squareness (Inch)	B Outside Squareness (Inch)	C (Inch)	D (Inch)	H (Inch)	INSIZE No.	Code
2.0 x 1.6	0.000094	0.000098	0.512	0.512	0.157	4790-050	816300
3.0 x 2.0	0.000102	0.000110	0.591	0.591	0.157	4790-075	816302
3.9 x 2.8	0.000110	0.000118	0.787	0.787	0.197	4790-0100	816304
5.9 x 3.9	0.000126	0.000138	1.181	1.181	0.236	4790-0150	816306
7.9 x 5.1	0.000146	0.000137	1.339	1.339	0.276	4790-0200	816308
11.8 x 7.9	0.000181	0.000197	1.575	1.575	0.315	4790-0300	816310

Engineer's Precision Squares

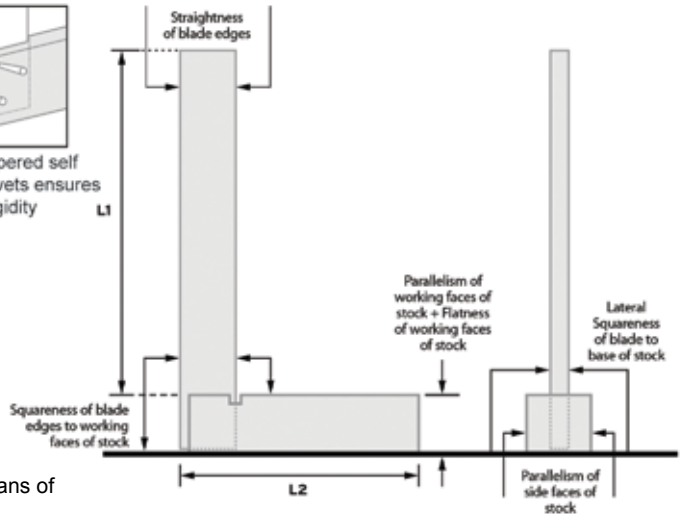




Stock is grooved at inner corner for clearance for burr or dirt so that there is no interference with measuring accuracies



Use of tapered self locking rivets ensures perfect rigidity



- Internal and external squareness as per BS 939 Grade B
- For setting up and checking jobs where extreme accuracy is required
- Hardened spring steel blades are permanently fixed to the stock by means of tapered self locking rivets which ensure complete rigidity
- Both blade and stock are precisely ground to ensure straightness and parallelism
- Working edges of blades are lapped which further enhance accuracy
- Groove on inner corner of stock aids in the clearance of burrs and dirt

L1 Blade Length (Inch)	L2 Stock Length (Inch)	Code
2	2	840562
3	2-3/8	840563
4	3	840564
6	4	840566
8	5	840568
12	8-9/32	840572



Sets

Contents	Code
One each of 2", 3", 4" and 6" squares	840573
One each of 2", 4" and 6" squares	840574

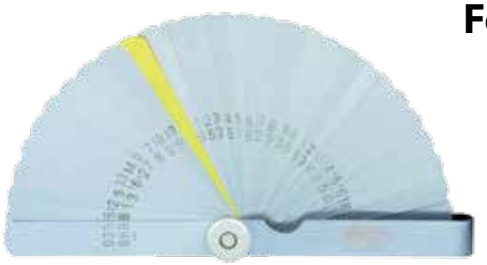
Center Squares

- Made from tool quality alloy steel
- Blade hardened and tempered
- Designed for fast and accurate location of the center of the face of a round bar or disc within the sizes listed
- A useful tool for machinists and toolmakers



Maximum Work Diameter (Inch)	Code
1-1/2	840580
3	840581

Feeler Gages



- Hardened alloy steel (except 0.01" gage - brass)
- Blades individually marked with inch/metric measurements
- Supplied in storage pouch

Range (Inch)	Thickness of Leaves (Inch)	Accuracy (Inch)	No. of Leaves	INSIZE No.	Code
0.0015-0.035	0.010 (brass)	±0.00039	32	4608-31	283543
	0.0015, 0.002	±0.00020			
	0.0025, 0.003, 0.004, 0.005, 0.006, 0.007	±0.00028			
	0.008, 0.009	±0.00035			
	0.010, 0.011	±0.00039			
	0.012, 0.013	±0.00047			
	0.014, 0.015	±0.00051			
	0.016, 0.017	±0.00055			
	0.018, 0.019	±0.00059			
	0.020, 0.021	±0.00067			
	0.022, 0.023	±0.00071			
	0.024, 0.025, 0.026	±0.00075			
	0.028	±0.00091			
	0.030	±0.00094			
	0.032, 0.035	±0.00102			

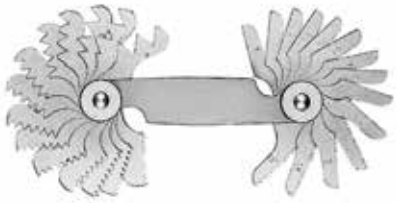
Feeler Gages



Range (Inch)	No. of Leaves	Code
0.008-0.026	12	840391
0.002-0.025	15	840392
0.0015-0.025	26	840393
0.0015-0.035	32	840394

Screw Pitch Gages

- Compact leaf style gage is used to measure the screw pitch of threads
- Pitch size marked on each leaf
- Leafs can be locked in position
- 60° threads

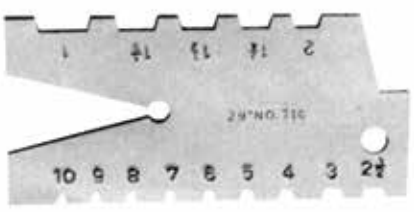


Range of Pitch	No. of Leaves	Code
4-30	24	820231
32-82	26	820232
4-42	30	820233
2-1/4 - 28	27	820234
0.25-2.5mm	28	820235
0.4-7mm	18	820236
0.5-7mm	17	820237
1-11.5mm	22	820238

Range of Pitch	No. of Leaves	Code
0.25-6mm	24	820239
0.25-6mm	48	820240
6-30	20	820241
0.25-7mm	24	820242
0.4-7mm	51	820243
4-84	51	820244
6-60	30	820245
4-80	28	820246
3-1/2 - 32	26	820247

ACME Screw Thread Cutting Gages

- Used to measure the edges of Acme thread cutting tools



Range, Pitch	Code
1-10TPI, 29°	820262
3-10mm, 30°	820263
3-10 mm, 30° Round	820264

Pitch Gages

- For measuring the pitch of screw threads
- Blades individually marked with pitch
- Supplied in storage pouch



Range	Accuracy (Inch)	Thread Type	Blade Pitch	No. of Blades	INSIZE No.	Code
1-12 TPI	±0.0028	ACME 29°	1, 1-1/3, 1-1/2, 1-3/4, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, 7, 8, 9, 10, 12 TPI	16	4824-16	283549
2-20 mm	±0.0028	Tr 30°	2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 16, 20 mm	12	4824-12	283548

Pitch Gages

Metric & Unified

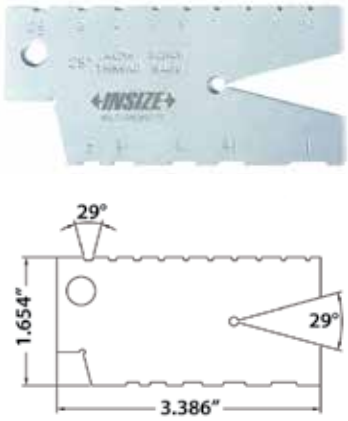
- For measuring the pitch of screw threads
- Blades individually marked with pitch
- Medium carbon steel
- Supplied in storage pouch

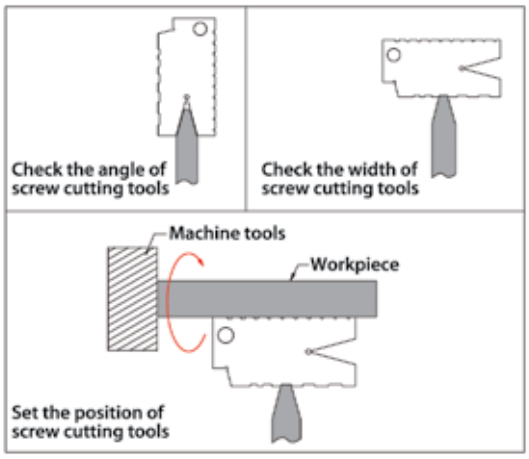


Range	Accuracy (Inch)	Thread Type	Blade Pitch	No. of Blades	INSIZE No.	Code
4-42TPI	±0.0028	Unified 60°	4, 4-1/2, 5, 5-1/2, 6, 7, 8, 9, 10, 11, 11-1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI	30	4820-230	283552
0.25-7mm	±0.0028	Metric 60°	0.25, 0.3, 0.35, 0.4, 0.5, 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, 7 mm	24	4820-124	283551
0.4-7mm	±0.0028	Metric 60°	0.4, 0.5, 0.6, 0.7, 0.75, 0.8, 0.9, 1, 1.29, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7 mm	52	4820-552	816695
4-42TPI		Unified 60°	4, 4-1/2, 5, 5-1/2, 6, 7, 8, 9, 10, 11, 11-1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI			

Thread Gage

- Standard for grinding and setting tools when cutting ACME threads
- Supplied in storage pouch

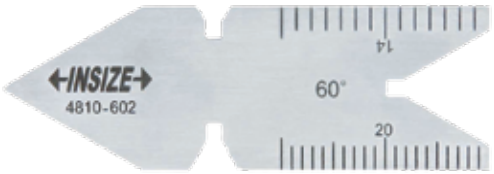


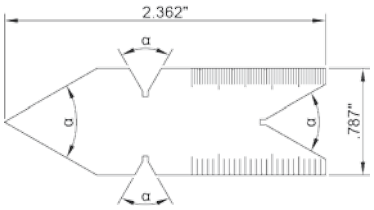


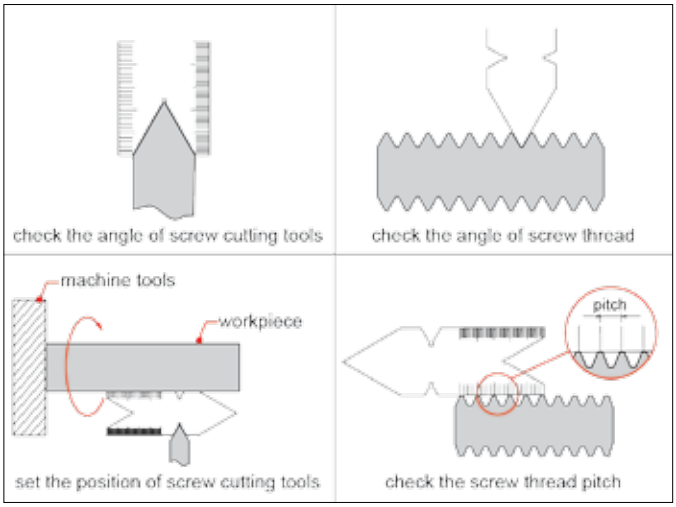
Range	Accuracy	Thread Type	Pitch	INSIZE No.	Code
1-10TPI	±10min.	ACME 29°	1, 1-1/3, 1-1/2, 1-3/4, 2, 2-1/2, 3, 4, 5, 6, 7, 8, 9, 10 TPI	4812-E	283557

Center Gage

- To check and set screw cutting tools, and to check the angle and pitch of the screw thread
- Angle accuracy: ±30min.
- Stainless steel



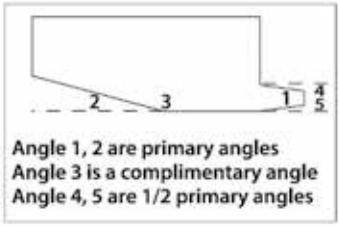


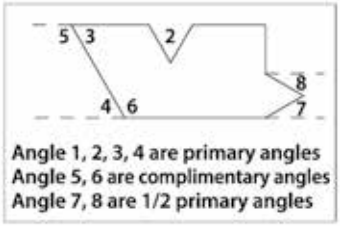


Thread	Angle	Graduations	INSIZE No.	Code
Unified 60°	60°	14ths and 20ths on one side, 24ths and 32nds on opposite side	4810-602	283560

Angle Gage Set







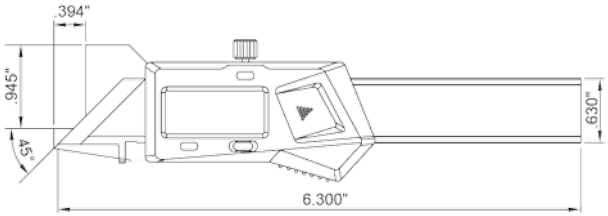
- Each blade checks primary, 1/2 primary and complimentary angles
- Blades individually marked with angles
- Medium carbon steel
- Supplied in storage pouch

Accuracy	Primary Angle	1/2 Primary Angle	Complimentary Angle	Type	No. of Blades	INSIZE No.	Code
±10min.	5°	2°30'	175°	A	18	4807	816602
	10°	5°	170°	A			
	15°	7°30'	165°	A			
	20°	10°	160°	B			
	25°	12°30'	155°	B			
	30°	15°	150°	B			
	35°	17°30'	145°	B			
	40°	20°	140°	B			
	45°	22°30'	135°	B			
	50°	25°	130°	B			
	55°	27°30'	125°	B			
	60°	30°	120°	B			
	65°	32°30'	115°	B			
	70°	35°	110°	B			
	75°	37°30'	105°	B			
	80°	40°	100°	B			
	85°	42°30'	95°	B			
	90°	45°	90°	B			

Electronic Chamfer Gage

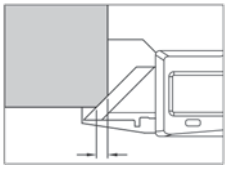
SPC





- Measure 45º chamfer dimension
- Resolution: 0.0005”/0.01mm
- Buttons: on/off, set, inch/mm, preset (+, -)
- Auto power off - move unit to turn power on
- Battery CR2032
- Data output
- Stainless steel

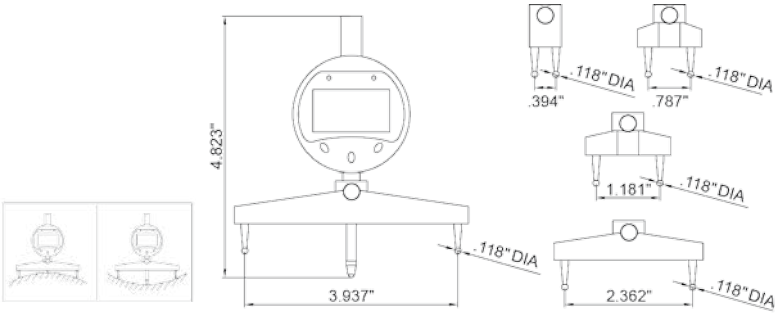
OPTIONAL ACCESSORY: SPC cable



Accuracy (Inch)	INSIZE No.	Code
±0.0025	1180-6	816370

Electronic Radius Gage





- For measuring the radius of internal and external arcs
- Resolution: 0.00005”/0.005mm
- Supplied with 5 separate jaws for multiple arc sizes
- Battery CR2032
- Supplied in fitted storage case

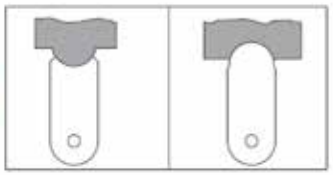
R Range of Radius (Inch/mm)	Accuracy (Inch)	INSIZE No.	Code
0.2-27.5/5-700	*±0.01R	2183	283213

**R is the radius to be measured (Inch)*

Radius Gages

- Supplied in storage pouch

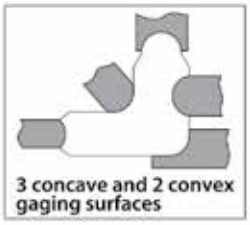




Range	Accuracy	Blade Size	Blade Quantity Internal + External	INSIZE No.	Code
1/32”-1/4”	±0.0012”	1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, 1/4”	15 + 15	4801-15E	283567
17/64”-1/2”	±0.0014”	17/64, 9/32, 19/64, 5/16, 21/64, 11/32, 23/64, 3/8, 25/64, 13/32, 27/64, 7/16, 29/64, 15/32, 31/64, 1/2”	16 + 16	4801-16E	283568

Radius Gage Sets


816196



- Each piece has three concave and two convex gaging surfaces
- Medium carbon steel

Range	Accuracy	Blade Size	Blade Quantity	Handle	Storage Pouch	INSIZE No.	Code
1/64”-1/2”	±0.002”	1/64, 1/32, 3/64, 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, 9/32, 5/16, 11/32, 3/8, 13/32, 7/16, 15/32, 1/2”	25	Included	Included	4804-25E	816198
9/16”-1”	±0.0025”	9/16, 5/8, 11/16, 3/4, 13/16, 7/8, 15/16, 1”	8	-	-	4804-8E	816200
0.5mm-13mm	±0.05mm	0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13	26	Included	Included	4804-26	816196

Edge & Corner Radii Gages



- Used to measure the radii of edges and corners *(Both sides of the leaf can be used)*
- 60° point

Range	No. of Leaves	Code
1/32” to 17/64” by 64ths	16	820218
9/32” to 33/64” by 64ths	16	820219
0.75 to 5mm by 0.25mm increments	18	820220
5.5 to 13mm by 0.5mm increments	16	820221

Sheet Metal Gage



- US standard for gaging sheet metal, plate iron and steel
- Hardened steel with satin chrome finish
- Supplied in storage pouch

Range	Accuracy	INSIZE No.	Code
0-36 (0.3125-0.007”)	+0.002/-0.0015”	4809	283575

No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)
0	0.3125	5	0.2187	10	0.140	15	0.070	20	0.0375	25	0.0218	29	0.014	33	0.0093
1	0.281	6	0.203	11	0.125	16	0.0625	21	0.0343	26	0.0187	30	0.0125	34	0.0085
2	0.265	7	0.1875	12	0.109	17	0.056	22	0.0312	27	0.017	31	0.0109	35	0.0076
3	0.250	8	0.172	13	0.0937	18	0.050	23	0.028	28	0.0156	32	0.010	36	0.007
4	0.234	9	0.156	14	0.078	19	0.0437	24	0.025						

Wire Gage



- US standard for gaging non-ferrous wire and materials such as copper, brass and aluminum
- Hardened steel with satin chrome finish
- Supplied in storage pouch

Range	Accuracy	INSIZE No.	Code
0-36 (0.3125-0.007”)	+0.002/-0.0015”	4808	283574

No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)	No.	Width (Inch)
0	0.325	5	0.182	10	0.102	15	0.057	20	0.032	25	0.018	29	0.011	33	0.007
1	0.289	6	0.162	11	0.091	16	0.051	21	0.028	26	0.016	30	0.010	34	0.0063
2	0.257	7	0.144	12	0.081	17	0.045	22	0.025	27	0.014	31	0.009	35	0.0056
3	0.229	8	0.128	13	0.072	18	0.040	23	0.022	28	0.012	32	0.008	36	0.005
4	0.204	9	0.114	14	0.064	19	0.036	24	0.020						

Drill Angle Gage



- For checking drills with 60º, 70º , 90º, 118º, 125º, 150º, or 160º angles
- Stainless steel
- Supplied in storage pouch

Accuracy	INSIZE No.	Code
±0.5º	4842-1	816683

Drill Gages



No. of Holes	Code
29	840605
60	840606

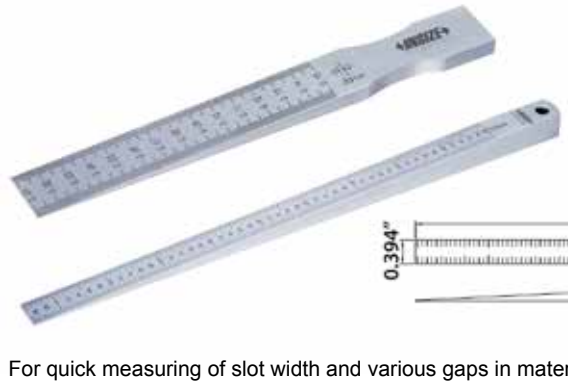
Twist Drill Gage

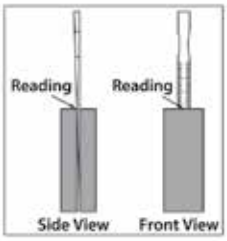
- Used to check the angles or twist drills with a 118° point and up to 2” in diameter
- Also used for checking the angle profile of drills after regrinding to ensure that the center of the tip is concentric with the drill body
- Stainless steel
- Polished finish
- All gaging surfaces are ground



Code
820257

Taper Gages





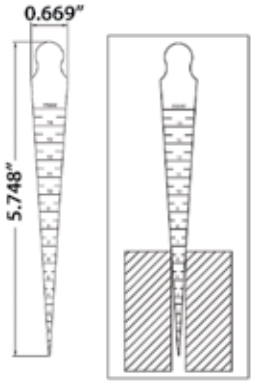
- For quick measuring of slot width and various gaps in material and work pieces
- Stainless steel with satin chrome plated reading surface
- Supplied in storage pouch

Range	Accuracy	Graduation	INSIZE No.	Code
0.01”-0.15”	±0.003”	0.001”	4630-1E	283577
0.5mm-10mm	±0.07mm	0.05mm	4630-1	283576

Taper Gage

- Graduation: 1/64”
- Accuracy: ±0.0039”
- For quick measuring of slot width and various gaps in material and work pieces
- Diameter correction table on back
- Stainless steel
- Supplied in storage pouch





Range (Inch)	INSIZE No.	Code
1/32-5/8	4833-1E	285112

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Gear Tooth Gages

With Ring Holder

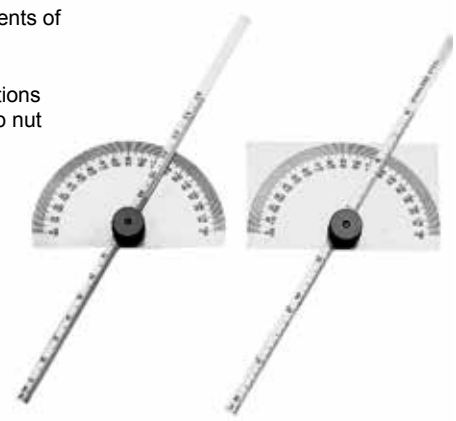


- Easy to determine diametral pitch of involute gears

Range of Pitch	No. of Leaves	Code
6, 7, 8, 9, 10, 11, 12,14, 16, 18, 20, 22, 24,26, 28, 30, 32, 36, 40,48, 64, 80 per inch	14	820281
2, 2-1/2, 3, 3-1/2, 4,4-1/2, 5 per inch	7	820282

Depth Gages with Protractors

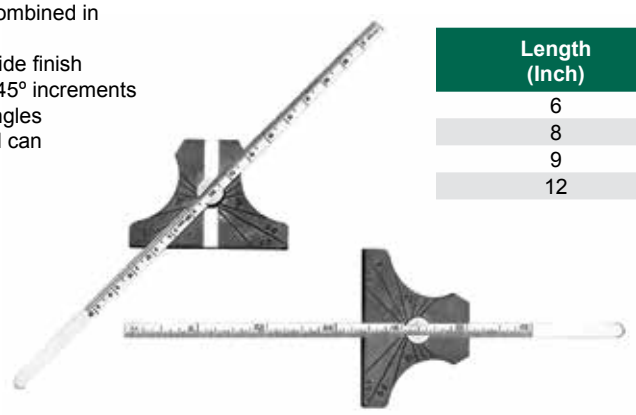
- A versatile tool which allows measurements of both angles and depths
- Stainless steel
- Graduated from 0º to 180º in both directions
- Adjustable rule locks with knurled thumb nut
- 6”/150mm rule
- Rule graduated in inches on one side and mm on the other
- Polished finish



Type	Code
Round	840579
Rectangular	840578

Depth & Angle Gages

- The ability to measure depths and angles is combined in this versatile tool
- The head is made of tool steel with a black oxide finish
- Graduated both left and right in 15º, 30º, and 45º increments
- Rule can be quickly set to any of the above angles
- A 6”/150mm steel rule is fitted to the head and can be locked in position for depth or angular measurements by a knurled nut



Length (Inch)	Code
6	840585
8	840586
9	840587
12	840588

Planer & Shaper Gage

- Beveled base and slide provide accurate alignment and parallelism
- Hardened base and slide
- Supplied with 1” and 3” extension posts
- Maximum Height 6-1/4”
- Precision level ensures accuracy
- Extra tapped holes in platform allow mounting of dial indicator posts and other accessories



Range (Inch)	Base Size (Inch)	Extension (Inch)	Code
1/4 - 6-1/4	9/16 x 5	1 and 3	820290

Thread Measuring Wire Set



- 48 wires to measure all 60º threads from 3 to 48 threads per inch (0.5 to 6mm)
- Supplied in storage pouch with wire sizes marked on pockets

Code
835315

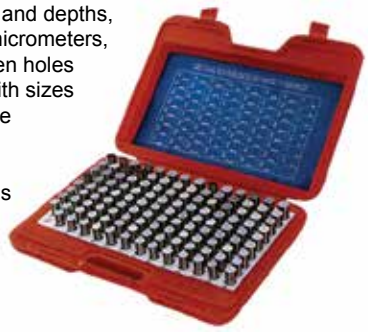
Thread Triangles



- Thread triangles quickly measure pitch diameter of all 60º threads from 4 to 80 pitch, standard and special
- Instantly classifies thread as 2, 2a, 3a
- No complicated formulas to figure. For any standard thread refer directly to chart (chart included). For special threads just add two numbers
- Convenient neoprene holders, fit any brand of micrometer spindle
- Thread triangles nest well into the “V” of the thread instead of just making point contact

Code
805776

Pin/Plug Gage Sets



- Used for measuring hole sizes and depths, go and no-go gaging, setting micrometers, and checking distances between holes
- Box and gages both marked with sizes
- Size laser etched on each piece (0.011” - 0.060” not etched)
- Centerless lapped
- Each gage is inspected and has a 10 micron finish or better
- Heat treated to 60 – 62 Rockwell C hardness
- All gages within 0.0002” limit
- Accuracy: -0.0002” +0.0000”
- Material: 52100 bearing steel
- Pieces 2” overall length
- Supplied in fitted case

Minus Sets

Range (Inch)	No. of Pieces	Code
0.011-0.06	50	845150
0.061-0.25	190	845151
0.251-0.5	250	845152
0.501-0.625	125	845153
0.626-0.75	125	845154
0.751-0.832	82	845155
0.833-0.916	84	845156
0.917-1	84	845157

Plus Sets

Range (Inch)	No. of Pieces	Code
0.011-0.06	50	845140
0.061-0.25	190	845141
0.251-0.5	250	845142
0.501-0.625	125	845143
0.626-0.75	125	845144
0.833-0.916	84	845146
0.917-1	84	845147

Space Block Set



- 3/4” body diameter, 1/4 - 28 internal thread
- Accuracy: ±0.0005”
- Each block clearly marked for size
- Hardened and lapped
- Four connecting screws included to make up desired length
- Supplied in fitted case

Inch

Blocks Included	Code
0.05, 0.06, 0.062, 0.07, 0.08, 0.09, 0.1, 0.101, 0.102, 0.103, 0.104, 0.105, 0.106, 0.107, 0.108, 0.109, 0.11, 0.12, 0.125, 0.13, 0.14, 0.15, 0.16, 0.17, 0.18, 0.19, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1, 1	845210

Thread Plug Gages

American Standard

- Supplied with GO and NO-GO end
- Class 2B
- ANSI B1.2 standard
- Supplied with manufacturer inspection certificate



Size	INSIZE No.	Code
4-40UNC	4131-41	816651
6-32UNC	4131-61	816652
8-32UNC	4131-81	816653
10-32UNF	4131-102	816654
1/4-20UNC	4131-1B1	816655
1/4-28UNF	4131-1B2	816656

Size	INSIZE No.	Code
5/16-18UNC	4131-5D1	816657
5/16-24UNF	4131-5D2	816658
3/8-16UNC	4131-3C1	816659
3/8-24UNF	4131-3C2	816660
7/16-20UNF	4131-7D2	816661
1/2-13UNC	4131-1A1	816662

Size	INSIZE No.	Code
1/2-20UNF	4131-1A2	816663
9/16-18UNF	4131-9D2	816664
5/8-11UNC	4131-5C1	816665
5/8-18UNF	4131-5C2	816666
3/4-10UNC	4131-3B1	816667
3/4-16UNF	4131-3B2	816668

NPT

- American tapered pipe thread for threads with sealant
- ANSI/ASME B1.20.1 standard
- Taper 1:16
- Material: OHNS (oil hardened non-shrinking steel)
- Stable dimension and wear reisistance
- Hardness: 60-62 HRC
- Supplied with manufacturer inspection certificate



Size (NPT)	INSIZE No.	Code
1/16 x 27	4644-1D27	816669
1/8 x 27	4644-1C27	816670
1/4 x 18	4644-1B18	816671
3/8 x 18	4644-3C18	816672

Size (NPT)	INSIZE No.	Code
1/2 x 14	4644-1A14	816673
3/4 x 14	4644-3B14	816674
1 x 11	4644-112	816675
1/1/4 x 11.5	4644-1G12	816676

Size (NPT)	INSIZE No.	Code
1-1/2 x 11.5	4644-1H12	816677
2 x 11.5	4644-212	816678
2-1/2 x 8	4644-1J8	816679

Metric

- Supplied with GO and NO-GO end
- Class 6H
- ISO1502 standard
- Supplied with manufacturer inspection certificate



Size (mm)	INSIZE No.	Code
M2 x 0.4	4130-2	284053
M2.2 x 0.45	4130-2D2	284054
M2.5 x 0.45	4130-2D5	284055
M3 x 0.5	4130-3	284056
M3.5 x 0.6	4130-3D5	284057
M4 x 0.7	4130-4	284058
M5 x 0.8	4130-5	284059
M6 x 1	4130-6	284060
M7 x 1	4130-7	816680
M8 x 1.25	4130-8	284061

Size (mm)	INSIZE No.	Code
M9 x 1.25	4130-9	816681
M10 x 1.5	4130-10	284062
M11 x 1.5	4130-11	816682
M12 x 1.75	4130-12	284063
M14 x 2	4130-14	284064
M16 x 2	4130-16	284065
M18 x 2.5	4130-18	284066
M20 x 2.5	4130-20	284067
M22 x 2.5	4130-22	284068
M24 x 3	4130-24	284069

Size (mm)	INSIZE No.	Code
M27 x 3	4130-27	284070
M30 x 3.5	4130-30	284071
M33 x 3.5	4130-33	284072
M36 x 4	4130-36	284073
M39 x 4	4130-39	284074
M42 x 4.5	4130-42	284075
M45 x 4.5	4130-45	284076
M48 x 5	4130-48	284077
M52 x 5	4130-52	284078
M56 x 5.5	4130-56	284079
M60 x 5.5	4130-60	284080

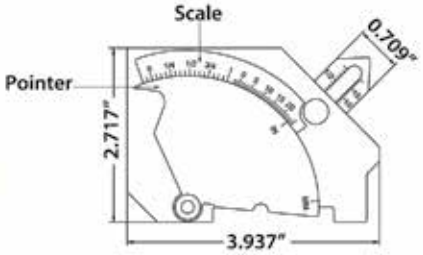
Welding Gage

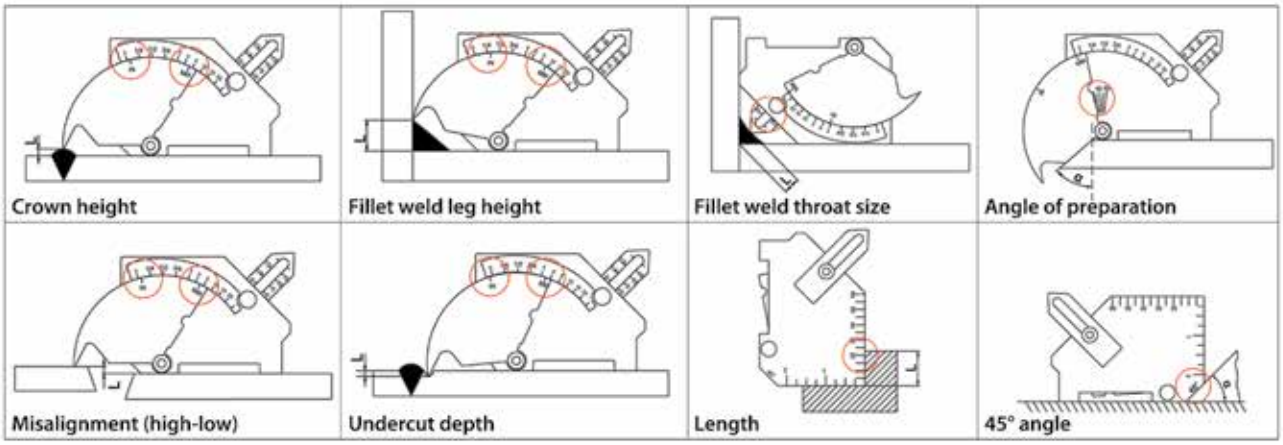
Adjustable Scale

- Adjustable scale to compensate for pointer wear
- Stainless steel
- Supplied in storage pouch





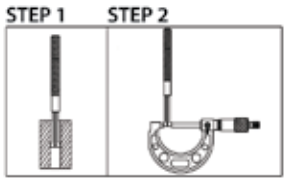




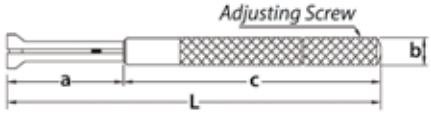
Measurement	Range	Accuracy	Graduation	INSIZE No.	Code
Crown height	0-1" (0-25mm)	±0.02"	1/16" (1mm)	4835-1	877031
Fillet weld leg height	0-1" (0-25mm)	±0.02"	1/16" (1mm)		
Misalignment (high-low)	0-1" (0-25mm)	±0.02"	1/16" (1mm)		
Undercut depth	0-1/8" (0-2mm)	±0.02"	1/16" (1mm)		
Fillet weld throat size	0-3/4" (0-20mm)	±0.02"	1/16" (1mm)		
Angle of preparation	0-60°	±1°	5°		
Length	0-2" (0-60mm)	±0.02"	1/16" (1mm)		
45° angle	-	±1°	-		

Small Hole Gage Set

- For small holes, slots, grooves, etc.
- Ideal for blind holes
- Satin chrome finish
- Supplied in storage pouch





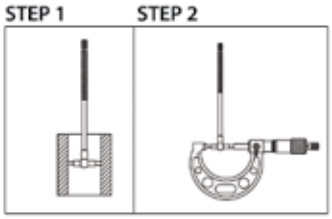


4 Gages per Set				
Range (Inch)	L (Inch)	a (Inch)	Øb (Inch)	c (Inch)
0.125-0.2	3.543	0.886	0.217	2.638
0.2-0.3	3.843	1.181	0.217	2.638
0.3-0.4	4.047	1.378	0.335	2.638
0.4-0.5	4.252	1.575	0.335	2.638

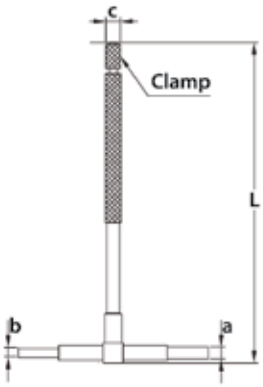
Range (Inch)	INSIZE No.	Code
0.125 to 0.5 (4pcs)	4208-1	816204

Telescoping Gage Set

- For quick measurement of inside diameter of holes and width of slots
- Satin chrome finish
- Supplied in storage pouch







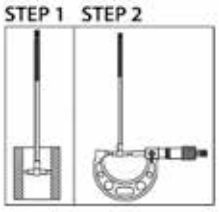
6 Gages per Set				
Range (Inch)	L (Inch)	Øa (Inch)	Øb (Inch)	Øc (Inch)
5/16 to 1/2	4.528	0.154	0.114	0.244
1/2 to 3/4	4.528	0.209	0.150	0.244
3/4 to 1-1/4	4.528	0.209	0.150	0.244
1-1/4 to 2-1/8	5.394	0.299	0.240	0.283
2-1/8 to 3-1/2	5.394	0.299	0.240	0.283
3-1/2 to 6	5.394	0.299	0.240	0.283

Range (Inch)	INSIZE No.	Code
5/16 to 6 (6pcs)	4206-1	816202

Long Handle Telescoping Gages

- For quick measurement of inside diameter of deep holes and width of slots
- Satin chrome finish
- Supplied in storage pouch







Range (Inch)	L (Inch)	Øa (Inch)	Øb (Inch)	Øc (Inch)	INSIZE No.	Code
5/16 to 1/2	9.843	0.154	0.114	0.244	4209-1	283589
1/2 to 3/4	9.843	0.209	0.150	0.244	4209-2	283590
3/4 to 1-1/4	9.843	0.209	0.150	0.244	4209-3	283591
1-1/4 to 2-1/8	11.811	0.299	0.240	0.283	4209-4	283592
2-1/8 to 3-1/2	11.811	0.299	0.240	0.283	4209-5	283593
3-1/2 to 6	11.811	0.299	0.240	0.283	4209-6	283594

Electronic Edge Finder

- Shank electronically conducted to the metal workpiece through the chuck and table – LED illuminates and beeper sounds (model 6566-3E only) when ball touches the workpiece
- Not suitable for rotary use
- Hardened shank and contact ball



816381



816382

Shank Diameter (Inch)	Contact Ball Diameter (Inch)	Accuracy (Inch)	Beeper	INSIZE No.	Code
3/4	0.4	0.0002	No	6566-2E	816381
3/4	0.4	0.0002	Yes	6566-3E	816382

Edge Finder

- Hardened shank and contact point



Shank Diameter (Inch)	Contact Point Diameter (Inch)	Accuracy (Inch)	INSIZE No.	Code
3/8	0.2	0.0003	6567-1E	816383

Edge & Center Finders

- For accurate location of the starting point for all types of machine work and jig boring



Size	Model	Shank Diameter (Inch)	Code
A	Edge finder	3/8	450430
B	Edge finder	1/2	450432
C	Center finder	3/8	450434
D	Center finder	1/2	450436
E	Combo A&C	3/8	450438
F	Combo B&D	1/2	450440

Wiggler Set

- Versatile center and edge finder with four interchangeable attachments which snap conveniently into the chucking adapter
- Ball swivel joint allows adjustments to angular positions
- Set includes offset indicator holder, ball contact attachment 0.250” diameter, disc contact attachment 0.100” diameter and needle point attachment
- Supplied in storage case



Code
450445

KAR QUALITY, VALUE AND SERVICE - CALL YOUR KAR DISTRIBUTOR TODAY!

Dial Zero Setters

- 50mm setting height
- 0.01mm dial setting



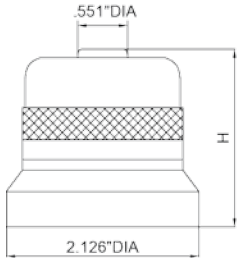


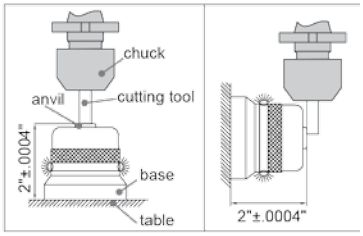
Model	Style	Code
HP50A	Standard	242210
HP50B	Standard	242211
HP50AM	With magnetic base	242212
HP50BM	With magnetic base	242213

Electronic Zero Setters

- Base is electrically conducted to the cutting tools through the table and chuck, and LEDs illuminate when the cutting tool touches the anvil
- Magnetic base
- Battery LR44







Height x Width	Accuracy	Test Force	INSIZE No.	Code
2 x 2.128”	±0.0004”	6.075 lbf (at 2”)	6550-2A	816684
50 x 54mm	±0.01mm	27N (at 49mm)	6550-50A	876730

Surface Roughness Comparator

- Comparative standards for identifying the surface roughness of machined parts
- Supplied in pouch



Code
445421

Measuring Tool Sets

2 Piece Set



- **Set Includes:**
  1) Electronic caliper (817000) SPC, range 0-6”/0-150mm, resolution 0.0005”/0.01mm
  2) Electronic outside micrometer (289005 - without SPC), range 0-1”/0-25mm, resolution 0.00005”/0.001mm
- Supplied in fitted storage case

INSIZE No.	Code
5022	816345

2 Piece Set



- **Set Includes:**
  1) Dial indicator (816158), range 0-1”, graduation 0.001”
  2) Magnetic stand with magnetic force 132lbf/60kgf (816252)
- Supplied in fitted storage case

INSIZE No.	Code
5002-4E	284505

13 Piece Set

- **Set Includes:**
  1) Electronic caliper (817000) SPC, range 0-6”/0-150mm, resolution 0.0005”/0.01mm
  2) Outside micrometer (281005), range 0-1”, graduation 0.0001”
  3) Dial indicator (816158), range 1”, graduation 0.001”
  4) Magnetic stand (816252)
  5) Protractor (INSIZE no. 4799-180), range 0-180º, graduation 1º
  6) Pitch gage (INSIZE no. 4820-230), range 4-42TPI, 30pcs, unified 60º thread
  7) Radius gage (INSIZE no. 4801-15E), range 1/32”-1/4”
  8) Feeler gage (INSIZE no. 4608-31), range 0.0015”-0.035”, 31pcs
  9) 90º beveled edge square (INSIZE no. 4790-1000), 3.937” x 2.756”, grade 0
  10) Scriber (INSIZE no. 7230)
  11) Steel rule (INSIZE no. 7110-150), 6”/150mm
  12) Depth base attachment (INSIZE no. 6140)
  13) Zero setting bar
- Supplied in fitted storage case



INSIZE No.	Code
5013-E	816407

Portable Hardness Tester



Minimum reading	1HLD, 1HV, 1HB, 0.1HRC, 0.1HRB, 1MPa	
Accuracy	±6HLD (when HLD = 800)	
Display	Leeb (HLD), converted hardness, material, impact direction, test times, average value, date	
Output	Bluetooth	
Applicable workpiece	minimum weight	11.02 lbs
		4.41 lbs (on solid support)
		0.22 lbs (coupled on plate)
	minimum thickness: 0.20”	
	minimum radius of curved surface: 1.18”	
	maximum roughness (Ra): 63µin	
Power supply	3 x AAA batteries	
Dimensions (Inch)	5.91 x 3.31 x 1.10	
Weight (lbs)	0.44	
INSIZE No.	ISH-PHB	
Code	816432	

- Based on Leeb (HLD), converted to Vickers (HV), Brinell (HB), Rockwell (HRC and HRB), Short (HS) and tensile strength (MPa)
- Memory of 99 measurement values for browsing
- Set measurement times (1-9) to have average value
- Connects to printer via bluetooth
- Automatic power off
- ASTM A956 standards
- Supplied with manufacturer inspection certificate

Includes one of each:
Hardness tester
Impact device D
Hardness test block D
Small support ring
Cleaning brush

OPTIONAL ACCESSORIES: *Wireless printer*
Couplant
Support rings
Hardness test block D



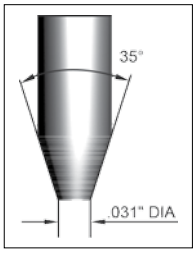
Applicable Material and Harness Range for Impact Device D

Material	HLD	HV	HB	HRC	HRB	HS	Tensile Strength (MPa)
Steel and Cast steel	300-900	81-955	81-654	20-68	38-100	32-100	375-2639
Tool steel	300-840	80-898	–	20-67	–	–	–
Stainless steel	300-800	85-802	85-655	–	46-101	–	–
Cast iron	360-650	–	93-334	–	–	–	–
Cast aluminum alloy	170-570	–	19-164	–	23-84	–	–
Brass	200-550	–	40-173	–	13-95	–	–
Bronze	300-700	–	60-290	–	–	–	–
Copper	200-690	–	45-315	–	–	–	–

Shore Durometer

- ISO868, ISO7819 and ASTM D 2240 standards
- With peak value indicator

OPTIONAL ACCESSORY: Testing stand

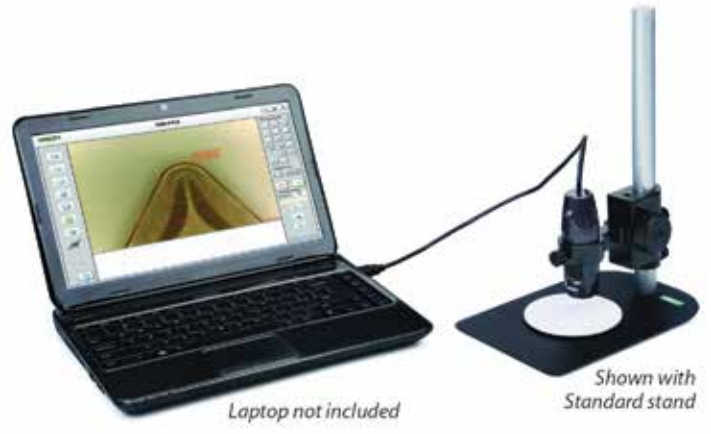


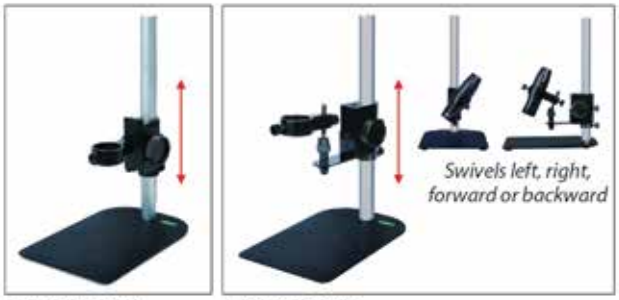


Scale	Shore A
Application	Natural rubber, soft elastomer, etc.
Measuring range	10-90HA
Graduation	1HA
Indenter protrusion	10”
Dimensions (Inch)	4.53 x 2.36 x 0.98
Weight (lbs)	0.35
INSIZE No.	ISH-SAM
Code	816696

Electronic Microscopes

With Stand





Standard stand Universal stand



Screencapture of ISM-PRO software

Magnification, Focus Distance, View Field and Accuracy			
Magnification (Inch)	**Focus Distance (Inch)**	**View Field (Inch)**	**Accuracy (Inch)**
50x	0.83	0.32 x 0.25	0.0012
100x	0.51	0.15 x 0.12	0.0006
150x	0.63	0.10 x 0.08	0.0004
200x	0.75	0.07 x 0.06	0.0003

- Records photos and video
- Supplied with measuring software (requires Windows XP SP2, Vista, Windows 7 or 8 operating system)
- Standard or Universal stand
- Magnification: 10x to 200x
- Pixels: 2M (resolution: 1800x1200)
- Built-in adjustable LED
- Power supply: USB 2.0 cable (voltage required: 5±0.1V)

Includes one of each:
Microscope
Stand
White/Black plate
Focus support ring 80x/150x
Focus support ring 60x/200x
Calibration rule (graduation 0.1mm)
Calibration rule (graduation 1mm)
ISM-PRO software CD

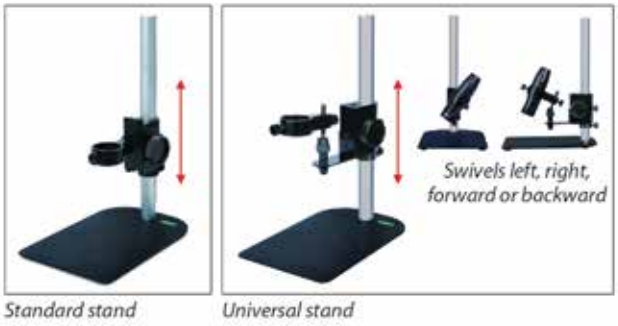
Type	INSIZE No.	Code
Standard	ISM-PM200SA	285000
Universal	ISM-PM200SB	285007

WiFi Electronic Microscope



Magnification, Focus Distance, View Field and Accuracy			
Magnification	**Focus Distance (Inch)**	**View Field (Inch)**	**Accuracy (Inch)**
50x	0.83	0.32 x 0.25	0.0012
100x	0.51	0.15 x 0.12	0.0006
150x	0.63	0.10 x 0.08	0.0008
200x	0.75	0.07 x 0.06	0.0006

Optional Stands



Standard stand *Universal stand*

- Maximum working distance is 200” under WiFi mode
- May be connected to multiple iPads, Android devices or computers at the same time under WiFi mode
- Records photos and video
- Supplied with measuring software
- Magnification: 10X to 200X
- Pixels: 1.3M (resolution: 1280x1024)
- Built-in adjustable LED
- Power supply: built-in rechargeable battery

Includes one of each:
Microscope
Base support
Focus support ring 80X/150X
Focus support ring 60X/200X
Calibration rule (graduation 0.1mm)
Calibration rule (graduation 1mm)
USB cable and software
AC/DC adaptor

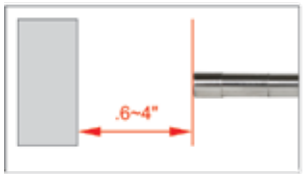
OPTIONAL ACCESSORIES: *Standard or Universal stand*
Green, Yellow or Blue filters

INSIZE No.	Code
ISM-WF200	816685

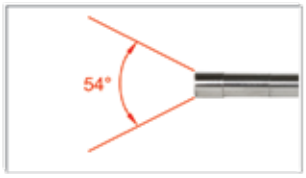
Videoscope

IP65

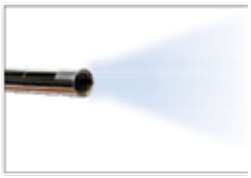


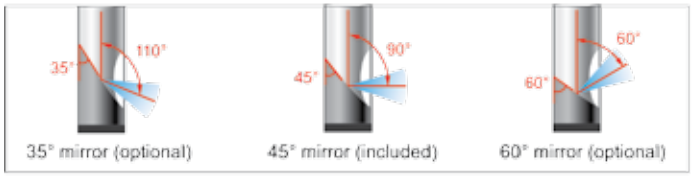


focus distance

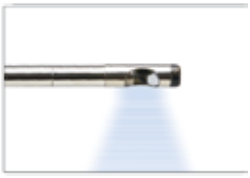


angle of view


front view



35° mirror (optional) 45° mirror (included) 60° mirror (optional)


side view (with mirror)

Includes one of each:
Videoscope
Cable with lens
2G SD card
45º mirror
AC/DC adapter
Video output cable
USB cable
Lens cleaning set

OPTIONAL ACCESSORIES: 35º mirror
60º mirror

Lens	**Diameter**	0.22”
	Pixel	0.3M
	Resolution	640 x 480
	Frame rate	30 f/s
Cable	**Length**	40”
	Type	Steel wire weaved cable
Main unit	**Function**	Capture pictures & video
	File format	Picture: JPG, Video: AVI
	Image process	Brightness, contract colour saturation
	Memory	2G SD card
	Output	TV, USB
	Power supply	Rechargeable battery (3 hours working)
Weight		0.99 lbs
INSIZE No.		ISV-E10
Code		816397

Granite Surface Plates



Tool Room Grade Black Granite

Size (Inch)	Thickness (Inch)	Overall Accuracy (Inch)	Weight (lbs/kgs)	Code
12 x 12	2	± 0.0001	34/15	847104
12 x 18	4	± 0.0001	98/44	847106
18 x 18	4	± 0.0001	146/66	847108
18 x 24	4	± 0.00015	195/88	847110
24 x 24	3	± 0.00015	195/88	847114
24 x 36	4	± 0.0002	389/176	847116
30 x 48	4	± 0.0003	646/293	847120
36 x 36	4	± 0.0002	580/263	847122
36 x 48	6	± 0.0004	1162/527	847124
48 x 72	8	± 0.0007	3098/1405	847136

Inspection Grade Black Granite

Size (Inch)	Thickness (Inch)	Overall Accuracy (Inch)	Weight (lbs/kgs)	Code
18 x 24	4	± 0.000075	195/88	847160
24 x 36	4	± 0.0001	389/176	847166
36 x 48	6	± 0.0002	1162/527	847174

Surface Plate Cleaner



Description	Code
Pint	604190
Pint spray pump	604191
Quart	604192
1/2 gallon	604193
Gallon	604194

Steel Stands

For Granite Surface Plates

- Supplied with levelling screws
- Casters available upon request



Size (Inch)	Code
18 x 18	844008
18 x 24	844010
20 x 30	844012
24 x 24	844014
24 x 36	844016
24 x 48	844018
30 x 48	844020
36 x 36	844022
36 x 48	844024
36 x 60	844026
36 x 72	844028
48 x 48	844032
48 x 60	844034

NOTE: Please indicate required height when ordering

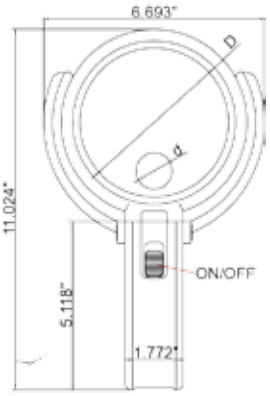
Three Way Magnifier

With Illumination









three ways



- Plastic lens
- Powered by 2 x AA batteries (included) or power adapter (110-240V, 50-60Hz)

Magnification	D Ø Lens (Inch)	d Ø Lens (Inch)	INSIZE No.	Code
2X/4X	4.724	1.102	7512-1	816387

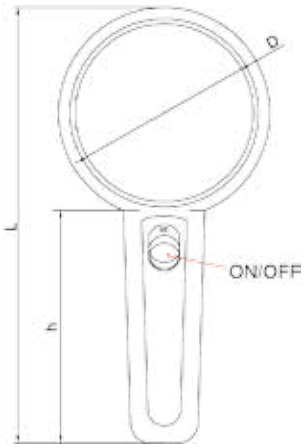
Magnifier

With Illumination



816388 816389





- Glass lens
- Powered by 3 x AAA batteries (included)

Magnification	D Ø Lens (Inch)	L (Inch)	h (Inch)	INSIZE No.	Code
2X	2.953	6.693	3.543	7513-2	816388
4X	1.969	5.709	3.543	7513-4	816389

Loupes



1962 Loupe 15x | 1966 Light Loupe 10x | 1975 Scale Loupe 7x | 1976 Scale Loupe 7x Set | 1983 Scale Loupe 10x | 2004 Scale Loupe Set 10x

Loupe 15x

Model	Description	Code
1962	High resolution achromat 3-element, 2-piece construction. The acrylic skirt of this high-power universal type loupe brightly illuminates work.	730101

Scale Loupe 10x

Model	Description	Code
1983	A scale loupe 10x with five most popular scales in a plastic case.	730109

Light Loupe 10x

Model	Description	Code
1966	Keliner type with 3-element, 2-piece construction. Accurate measurements can be made by turning the focusing ring so both object and scale can be seen.	730103

Scale Loupe 10x Set

Model	Description	Code
2004	A scale loupe 7x with five most popular scales in a plastic case.	730113

Scale Loupe 7x Set

Model	Description	Code
1976	4-element, 2-piece, coated. High resolution and wide field of view makes scale reading easy.	730107

Scale Loupe 7x

Model	Description	Code
1975	Inspection convenience is improved by adding a removable light to this 7x loupe.	730105

Magnifier Light

- 32” reach (16” + 16”)
- 22w fluorescent tube
- 120 volt
- 6 ft. Cord
- Electronic ballast



Description	Code
Magnifier light	302940
Fluorescent tube	302941

TALON™
PRECISION TOOLING



KAR

EXCLUSIVELY AVAILABLE AT KAR IN CANADA

Angle Plates
558



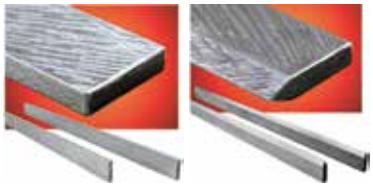
Blocks & Parallels
559-565



Set-Up Tools
566



Straight Edges
567



Key Stock & Shim Stock
568-569



Drill Rods
570-571



Magnets
572-573



Slotted Angle Plates

Webbed & Open Ends – Ground & Machined

- These slotted angle plates have convenient clamping slots for mounting and are widely used for machining, layout and inspection
- TYPE A – Webbed End - have side webs and are accurately machined square and parallel on outside faces and ends
- TYPE B – Open End - accurately machines square and parallel on all faces
- Made of high quality close-grained grey iron, stress relieved against distortion after heat treatment
- Modifications may be required to meet specific requirements as tolerances on angle plates range widely

Type A – Webbed End



Length Inch (mm)	First Angle Inch (mm)	Second Angle Inch (mm)	Approximate Weight lbs (kg)	Ground Code	Machined Code
3-1/2 (89)	3 (76)	2-1/2 (57)	1.8 (0.8)	217653	272212
4-1/2 (114)	3-1/2 (89)	3 (76)	3 (1.4)	217654	272213
6 (152)	5-1/2 (127)	4-1/2 (114)	8 (4)	217655	272214
7 (178)	5 (140)	4-1/2 (114)	11 (5)	217656	272216
8 (203)	6 (152)	5 (127)	13 (6)	217657	272216
9 (229)	7 (178)	6 (152)	20 (9)	217658	272217
10 (254)	8 (203)	6 (152)	24 (11)	217659	272218
12 (305)	9 (229)	8 (203)	46 (21)	217660	272219

Type B – Open End



Length Inch (mm)	First Angle Inch (mm)	Second Angle Inch (mm)	Approximate Weight lbs (kg)	Ground Code	Machined Code
4-1/2 (114)	3-1/2 (89)	3 (76)	3 (1.3)	217661	272221
6 (152)	5-1/2 (127)	4-1/2 (114)	7 (3)	217662	272222
7 (178)	5 (140)	4-1/2 (114)	11 (5)	217663	272223
8 (203)	6 (152)	5 (127)	12 (5)	217664	272224
9 (229)	7 (178)	6 (152)	18 (8)	217665	272225
10 (254)	8 (203)	6 (152)	22 (10)	217666	272226
12 (305)	9 (229)	8 (203)	44 (20)	217667	272227

Non-Slotted Angle Plates

Precision Machined

- High quality closed-grained cast iron, stress relieved against distortion after heat treatment



Size Inch (mm)	No. of Ribs	Approximate Weight lbs (kg)	Code
2 x 2 x 2 (50 x 50 x 50)	1	1.1 (0.5)	272231
3 x 3 x 3 (75 x 75 x 75)	1	3 (1.3)	272232
4 x 4 x 4 (100 x 100 x 100)	1	7 (3)	272233
5 x 5 x 5 (125 x 125 x 125)	1	11 (5)	272234
6 x 6 x 6 (150 x 150 x 150)	1	17 (8)	272235
8 x 8 x 8 (200 x 200 x 200)	2	37 (17)	272236
10 x 10 x 10 (250 x 250 x 250)	2	64 (29)	272237
12 x 12 x 12 (300 x 300 x 300)	2	104 (47)	272238

Giant Slotted Angle Plates



Length Inch (mm)	First Angle Inch (mm)	Second Angle Inch (mm)	Approximate Weight lbs (kg)	Code
16 (400)	12 (300)	9 (225)	68 (31)	272241
20 (500)	16 (400)	12 (300)	135 (61)	272242
24 (600)	24 (600)	18 (450)	355 (161)	272243

Positioning Blocks



- Matched pairs
- Tapped holes are provided for clamping operations
- Precision ground and hardened on all 6 sides
- Versatile for precision grinding layout work, etc.
- Squareness of all sides is within 0.0001”

Size (Inch)	Tapped Hole	Code
1-2-3	3/8-16	440415
2-4-6	5/8-11	460170

Toolmaker’s V-Block & Clamp Sets



Chrome Steel

- Made from finely selected tool steel fully hardened to 55-60 HRC
- Manufactured and numbered in matched pairs - each pair has two 90 degree V’s of different capacities which are identical to the V’s of its matching block
- V’s are ground central, parallel and square with the ends and sides
- Used for holding work securely during drilling, milling and grinding applications and also in layout and inspection work
- Each pair supplied with rigid and robust clamps

Height (Inch)	Width (Inch)	Length (Inch)	V1 Width of Small “V” (Inch)	V2 Width of Large “V” (Inch)	Capacity (Inch)	Code
1-1/4	1-1/4	1-19/32	7/16	13/16	1	384801
1-1/2	1-1/2	2	1/2	1-3/32	1-1/4	384802
1-7/16	1-3/4	2-3/4	11/16	1-5/16	1-1/2	384803
3	3	4	1-3/16	2-5/32	3	384804

V-Blocks



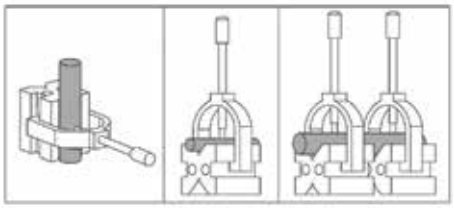
- All V-blocks are parallel, square and centered within 0.0002”
- Each block comes with one clamp
- Sold in pairs

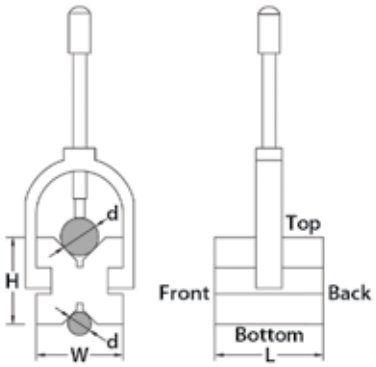
Height (Inch)	Width (Inch)	Length (Inch)	Minimum V-Block Capacity (Inch)	Maximum V-Block Capacity (Inch)	Code
1-3/16	1-3/8	1-3/8	1/8	19/32	302242
2	2-3/8	2-3/8	13/64	1-3/16	302243
3-1/16	4-1/8	3-1/8	9/32	2-9/16	302244

V-Blocks



- Hold cylindrical work pieces for inspection and machining
- Hardened to HRC 60±2
- Parallelism of both v-grooves to top and bottom: 0.0002”
- Squareness of both v-grooves to front and back: 0.0002”
- Height difference of a matched pair: 0.0002”
- V-groove on top for large shafts
- V-groove on bottom for small shafts





Description	Length x Width x Height (Inch)	d Range of Shafts (Inch)	INSIZE No.	Code
Matched pair	1.97 x 1.57 x 1.57	Ø0.2 to 1.18	6896-11	889455
Matched pair	3.15 x 2.48 x 2.48	Ø0.28 to 2.48	6896-12	889456
Matched pair	3.94 x 3.15 x 3.15	Ø0.28 to 3.15	6896-13	889457

V-Blocks

Machined Faces



- Matched and numbered pairs
- V-Blocks provide a useful means of holding cylindrical work for layout, inspection, drilling and machining
- Each pair is accurately machined with 90° V which is centered in true and square and parallel with the base to within .001” (0.03mm)

Width Inch (mm)	Height Inch (mm)	Thickness/Pair Inch (mm)	Capacity Inch	Weight (kg)	Code
2 (51)	1-1/4 (32)	1-7/8 (48)	1-1/4	0.9	390822
3 (76)	2-3/8 (60)	2-5/8 (67)	2-1/2	2.5	390823
4 (102)	2-5/8 (67)	3-1/4 (82)	3	5.0	390824
5 (127)	3-1/8 (79)	4 (102)	3-1/2	8.0	390825
6 (152)	3-1/2 (89)	5 (127)	4	15.0	390826
7 (178)	4-1/2 (114)	6 (152)	5	28.0	390827
8 (203)	5-1/2 (140)	8 (203)	6	44.0	390828
10 (254)	6-1/2 (165)	10 (254)	6-1/2	69.0	390830
12 (305)	8 (203)	12 (305)	7	127.0	390832

Magnetic V-Blocks

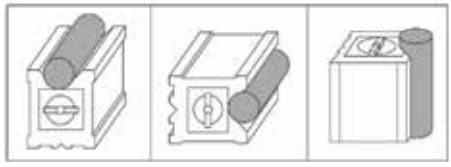


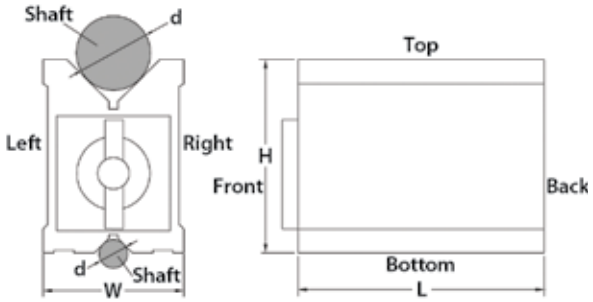
Description	Length x Width x Height (Inch)	Code
Single	4 x 3 x 3-3/4	435541
Matched pair	4 x 3 x 3-3/4	435542

Magnetic V-Blocks

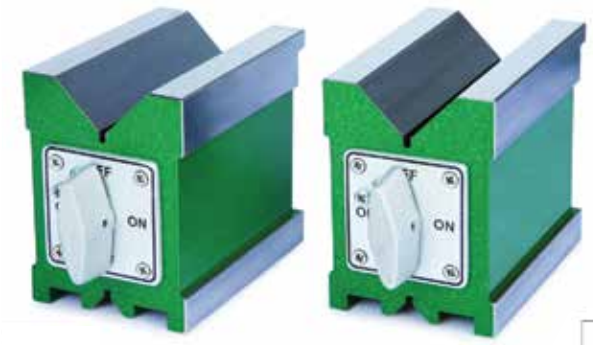


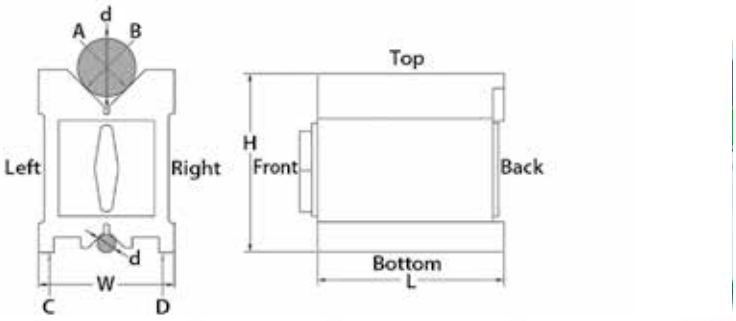
- Hold cylindrical workpieces for inspection and machining
- Not hardened
- Parallelism of both v-grooves to top, bottom, left, and right side: 0.00039”
- Squareness of both v-grooves to back side: 0.00039”
- V-groove on top for large shafts
- V-groove on bottom for small shafts
- Not suitable for cast iron surface plates

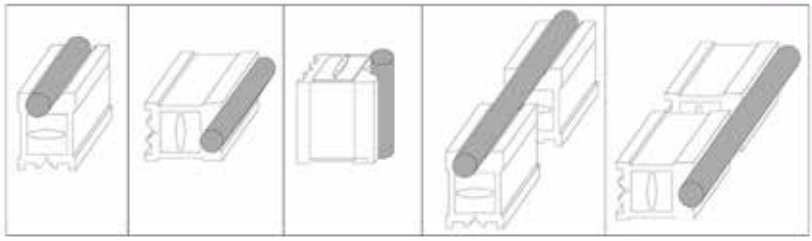




Description	Length x Width x Height (Inch)	d Range of Shafts (Inch)	Magnetic Force	INSIZE No.	Code
Single block	3.15 x 2.76 x 3.74	Ø0.24 to 2.64	627N	6801-1201	877035







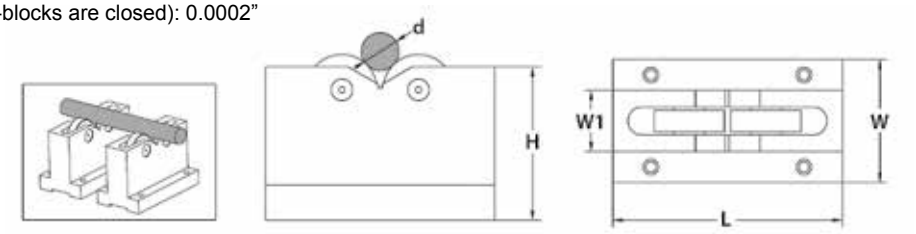
- Hold cylindrical work pieces for inspection and machining
- Surface A, B, C, D are hardened to HRC60±2
- Magnetic force on top, bottom and two v-grooves
- Parallelism of both v-grooves to top, bottom, left, and right side: 0.0002”
- Squareness of both v-grooves to back side: 0.0002”
- Height difference of a matched pair: 0.0002”
- V-groove on top for large shafts
- V-groove on bottom for small shafts
- Suitable for cast iron and granite surface plates

Description	Length x Width x Height (Inch)	d Range of Shafts (Inch)	Magnetic Force	INSIZE No.	Code
Matched pair	2.95 x 2.2 x 2.95	Ø0.2 to 1.57	735N	6889-1	877036

Roller Bearing V-Blocks

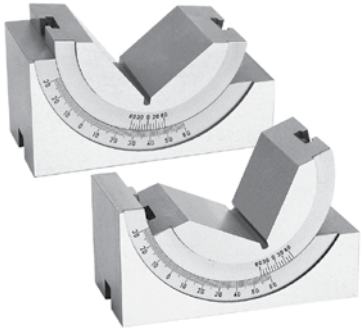
- Bearings prevent damage to the work piece
- Suitable for heavy work pieces (load capacity: 1100 lbs)
- Parallelism of bearings to bottom (when two v-blocks are closed): 0.0002”

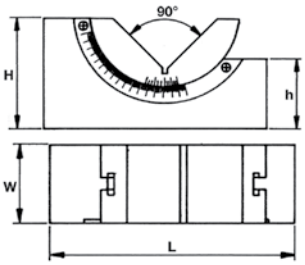




Description	Length x Width x Height (Inch)	d Range of Shafts (Inch)	W1 (Inch)	INSIZE No.	Code
Matched pair	5.91 x 2.36 x 3.94	Ø0.98 to 2.76	0.87	6888-1	877034

Adjustable V-Blocks





- Hardness: 50-54 RC
- Squareness: within 0.005mm
- Tolerance of angle: ±10”
- Adjustable: 0° to 60°

Model	H Height (mm)	W Width (mm)	L Length (mm)	h Height (mm)	Weight (kg)	Code
AP1	47	46	102	28	1.5	547601
AP2	47	30	102	28	1.0	547602
AP3	32	25	75	22	0.5	547603

Ultimate V-Block & Clamp



- An improved v-block and clamp with extra features
- Overall Length: 3-1/2” (89mm)
- Length of V-Block Surface: 2” (50mm)
- Overall Width: 1-7/8” (48mm)
- Height of V-Block: 1-7/8” (48mm)
- Height of V-Block with Clamp: 4-1/4” (107mm)
- Maximum Capacity: 1-5/16” (33mm)

Code
180300

Parallels

Ground Steel – 4-Way – In Pairs



Tolerances			
Length	Width & Height Ground to Size Within	Total Parallelism & Straightness Over Entire Length	Total Size Tolerance Between a Pair
6”	0.0002”	0.0001”	0.0001”
8”	0.0002”	0.0001”	0.0001”
12”	0.0002”	0.0002”	0.0002”

Dimensions (Inch)	Code	Dimensions (Inch)	Code	Dimensions (Inch)	Code
1/4 x 3/8 x 6	420101	1/2 x 1-1/4 x 6	420117	5/8 x 1-1/4 x 8	420133
1/4 x 1/2 x 6	420102	9/16 x 13/16 x 6	420119	5/8 x 1-1/2 x 8	420134
1/4 x 5/8 x 6	420103	9/16 x 1-1/16 x 6	420121	11/16 x 1-1/4 x 8	420135
1/4 x 3/4 x 6	420104	5/8 x 7/8 x 6	420122	3/4 x 1 x 8	420136
1/4 x 7/8 x 6	420105	5/8 x 1 x 6	420123	3/4 x 1-1/4 x 8	420137
1/4 x 1 x 6	420106	5/8 x 1-1/8 x 6	420124	3/4 x 1-5/8 x 8	420138
3/8 x 1/2 x 6	420107	3/4 x 1 x 6	420125	1/2 x 1 x 12	420139
3/8 x 5/8 x 6	420108	3/4 x 1-1/8 x 6	420126	11/16 x 1-1/8 x 12	420140
3/8 x 3/4 x 6	420109	3/4 x 1-3/8 x 6	420127	3/4 x 1 x 12	420141
3/8 x 7/8 x 6	420110	3/4 x 1-1/2 x 6	420128	7/8 x 1-3/4 x 12	420142
3/8 x 1 x 6	420111	1/2 x 7/8 x 8	420129	1 x 1-1/2 x 12	420143
1/2 x 5/8 x 6	420112	1/2 x 1 x 8	420130	1 x 2 x 12	420144
1/2 x 3/4 x 6	420113	1/2 x 1-1/8 x 8	420131	1-1/2 x 2 x 12	420145
1/2 x 7/8 x 6	420114	1/2 x 1-3/8 x 8	420132	1-1/2 x 3 x 12	420146
1/2 x 1 x 6	420115				
1/2 x 1-1/8 x 6	420116				

Sets – 1/8”, 1/4” & 1/2”



1/8” Thick - 10 Pair Parallel Set	
Dimensions (Inch)	Hole Size (Inch)
1/8 x 1/2 x 6	13/64
1/8 x 5/8 x 6	1/4
1/8 x 3/4 x 6	5/16
1/8 x 7/8 x 6	5/16
1/8 x 1 x 6	5/16
1/8 x 1-1/8 x 6	3/8
1/8 x 1-1/4 x 6	3/8
1/8 x 1-3/8 x 6	7/16
1/8 x 1-1/2 x 6	1/2
1/8 x 1-5/8 x 6	1/2

1/4” Thick - 9 Pair Parallel Set	
Dimensions (Inch)	Hole Size (Inch)
1/4 x 3/4 x 6	5/16
1/4 x 7/8 x 6	5/16
1/4 x 1 x 6	5/16
1/4 x 1-1/8 x 6	3/8
1/4 x 1-1/4 x 6	3/8
1/4 x 1-3/8 x 6	7/16
1/4 x 1-1/2 x 6	7/16
1/4 x 1-5/8 x 6	1/2
1/4 x 1-3/4 x 6	1/2

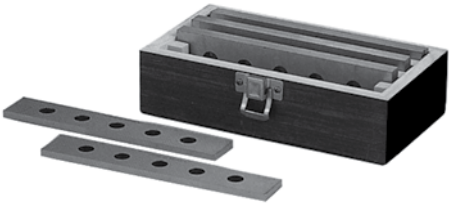
1/2” Thick - 8 Pair Parallel Set	
Dimensions (Inch)	Hole Size (Inch)
1/2 x 7/8 x 6	5/16
1/2 x 1 x 6	5/16
1/2 x 1-1/8 x 6	3/8
1/2 x 1-1/4 x 6	3/8
1/2 x 1-3/8 x 6	7/16
1/2 x 1-1/2 x 6	7/16
1/2 x 1-5/8 x 6	1/2
1/2 x 1-3/4 x 6	1/2

Description	Code
1/8” Thick - 10 Pairs	427007
1/4” Thick - 9 Pairs	427009
1/2” Thick - 8 Pairs	427010

Parallels

Utility, Ultra Thin & Value Parallel Sets

Utility Parallel Sets



3/16" Thick - 4 Pairs	
Dimensions (Inch)	Hole Size (Inch)
3/16 x 1 x 6	5/16
3/16 x 1-1/4 x 6	3/8
3/16 x 1-1/2 x 6	7/16
3/16 x 1-3/4 x 6	1/2

1/2" Thick - 4 Pairs	
Dimensions (Inch)	Hole Size (Inch)
1/2 x 1 x 6	5/16
1/2 x 1-1/4 x 6	3/8
1/2 x 1-1/2 x 6	7/16
1/2 x 1-3/4 x 6	1/2

Description	Code
3/16" Thick 4 Pairs	427003
1/2" Thick 4 Pairs	427005

Ultra Thin Parallel Set



- Ultra thin parallels are 1/32" thick, 6" long, and range in height from 1/2" to 1-11/16" (in 1/16" increments)
- ±0.0001" in parallelism
- Paired in height to ±0.0001"
- Height matched to within ±0.001"

Description	Code
1/32" Thick 20 Pair Set	425490

Value Set



- Hardened steel, 6" in length by 1/8" thick.
- Heights: 1/2", 5/8", 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1-1/2", 1-5/8"
- Parallel within 0.0008" each pair (±0.0004")
- Height matched within ±0.001" each pair

Description	Code
1/8" Thick 10 Pair Set	425491

Set



- Set in custom fitted plastic box with carrying handle
- Hardened steel, 6" in length by 1/4" thick
- Heights: 3/4", 7/8", 1", 1-1/8", 1-1/4", 1-3/8", 1- 1/2", 1-5/8", 1-3/4"
- Parallel within 0.0005" each pair. Height matched within ±0.001" each pair

Description	Code
1/4" Thick 9 Pair Set	425492

Laminated Parallels

Aluminum – Steel



- Made of steel and aluminum strips
- Can be machined
- Supplied in matched pairs
- Used in conjunction with a magnetic plate to transfer the magnetism when machining or grinding awkward shaped parts

Size (Inch)	Code
1 x 2 x 4	430380

Adjustable Parallels



- Set of six adjustable parallel sizes: 3/8” to 1/2”; 1/2” to 11/16”; 11/16” to 15/16”; 15/16” to 1-5/16”; 1-5/16” to 1-3/4”; 1-3/4” to 2-1/4”
- Use in layout, gauging, inspection work and for setup on various machine tools
- Can be quickly inserted in openings and then expanded to size
- Each parallel consists of two dovetail mated pieces
- Can be used in pairs as regular parallels

Code
840530

Angle Block Sets



- No sine vise, sine plate, angle vise or gauge blocks are needed
- Set includes: V-Block - 10º, 15º, 30º Angle Plate - 1º, 2º, 3º, 4º, 5º
- All hardened to 56 to 58 RC
- Precision ground
- Tolerance ±1º

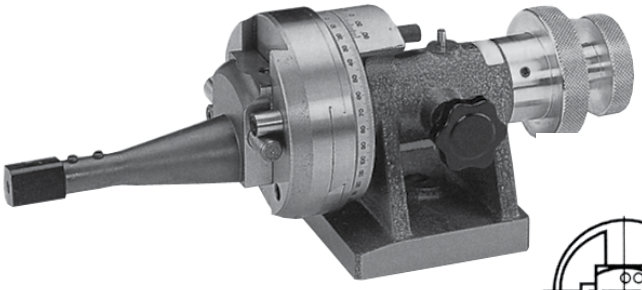
Code
820301



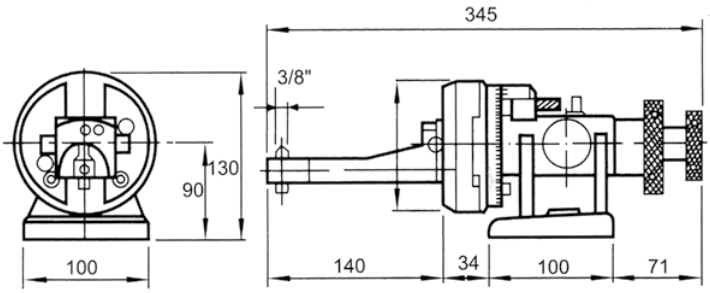
- Hardened and precision ground
- Simple, quick angle set-up
- Lightly magnetized for better holding
- Eliminates calculation and avoids making errors
- Dimensions: 3” length x 1/4” thick
- Accuracy: 0.0001”

Description	Code
8 Piece Set	820301
10 Piece Set	820305
12 Piece Set	820303

Radius & Angle Dresser







Maximum Diameter of Wheel (Inch)	Convex Radius (Inch)	Concave Radius (Inch)	Tangent Travel Either Side of Center (Inch/mm)	Range of Angle Dressing	Code
10	0-1.18	0.02-1.18	1.18/30	95°-0°-95°	395912

Wheel Dresser & Replacement Cutters



- Used for reconditioning grinding wheels and removing embedded metal particles which stick to the wheel during grinding operations
- Cutters are made of alloy steel
- Heat treated and tempered

Complete Tool

No. of Cutters	Cutter Size Diameter x Bore x Width (Inch)	For Wheel Diameters up to… (Inch)	Code
4	1-3/16 x 1/4 x 7/16	20	425551
4	1-1/2 x 1/2 x 15/32	30	425552
6	2-3/8 x 9/16 x 7/8	>30	425553

Cutter Set

No. of Cutters	Cutter Size Diameter x Bore x Width (Inch)	For Wheel Diameters up to… (Inch)	Code
4	1-3/16 x 1/4 x 7/16	20	425555
4	1-1/2 x 1/2 x 15/32	30	425556
6	2-3/8 x 9/16 x 7/8	>30	425557

Straight Edges

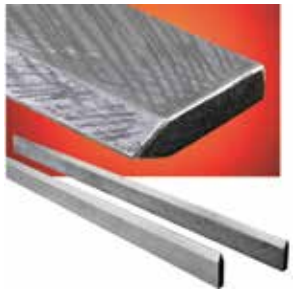
Flat & Bevelled Edges



Steel straight edges are manufactured from selected spring steel, fully ground and then hand scraped to ensure a perfectly flat surface. Hand scraping removes all the high points which are left from grinding, thus making it an extremely accurate tool. The thickness and design of these tools allow for shape and accuracy retention. These tools are portable and easy to handle.

- Used for drawing and scribing lines, checking various surfaces for straightness, for the set-up of machines such as planers, jointers and machine beds for alignment of tables, work surfaces and other positioning functions
- Two styles available in lengths from 12” (300mm) to 120” (3,000mm): FLAT EDGE: These have flat edges on both sides; BEVELLED EDGE: These are flat on one side and have a bevelled edge on the other side
- Each unit is identified numerically facilitating traceability if calibration is required





Length Inch (mm)	Width Inch	Thickness Inch	Flatness of Edge Inch	Parallelism of Faces Inch	Flat Edge Code	Bevelled Edge Code
12 (300)	1-13/32	5/16	0.00047	0.00094	840630	840639
18 (450)	1-13/32	5/16	0.00047	0.00094	840631	840640
24 (600)	1-13/32	5/16	0.00067	0.0013	840632	840641
36 (900)	2-13/32	3/8	0.00083	0.0016	840633	840642
48 (1200)	2-13/32	3/8	0.0011	0.002	840634	840643
60 (1500)	3-5/32	3/8	0.0011	0.002	840635	840644
72 (1800)	3-5/32	3/8	0.0015	0.0029	840636	840645
96 (2400)	3-5/32	19/32	0.0018	0.0036	840637	840646
120 (3000)	3-1/4	19/32	0.0021	0.0043	840638	840647

Key Stock



- Cold drawn oversize zinc plated - steel
  Tolerances for both dimensions: up to 3/4" inc. 0.000" to +0.002"
  over 3/4" to 1-1/2" inc. 0.000" to +0.003"
  over 1-1/2" to 2-1/2" inc. 0.000" to +0.004"

Square Key Stock

Size (Inch)	Code	Size (Inch)	Code	Size (Inch)	Code	Size (Inch)	Code	Size (Inch)	Code
3/32	455510	9/32	455516	5/8	455522	7/8	455526	1-1/4	455530
1/8	455511	5/16	455517	11/16	455523	1	455527	1-3/8	455531
5/32	455512	3/8	455518	3/4	455524	1-1/8	455528	1-1/2	455532
3/16	455513	7/16	455519	13/16	455525	1-3/16	455529	1-3/4	455533
7/32	455514	1/2	455520					2	455534
1/4	455515	9/16	455521						

Square Key Stock Assortment

- 12" lengths of 6 popular sizes: 6 each of 3/16", 1/4", 5/16", 3/8"; 4 each of 7/16" and 1/2"

Code
455535

Rectangular Key Stock

Size (Inch)	Code	Size (Inch)	Code	Size (Inch)	Code	Size (Inch)	Code
1/8 x 3/16	455540	3/16 x 1/2	455546	5/16 x 5/8	455552	1/2 x 3/4	455558
1/8 x 1/4	455541	1/4 x 5/16	455547	3/8 x 1/2	455553	5/8 x 3/4	455559
1/8 x 3/8	455542	1/4 x 3/8	455548	3/8 x 5/8	455554	5/8 x 1	455560
3/16 x 1/4	455543	1/4 x 1/2	455549	3/8 x 3/4	455555	3/4 x 1	455561
3/16 x 5/16	455544	5/16 x 3/8	455550	7/16 x 1/2	455556		
3/16 x 3/8	455545	5/16 x 1/2	455551	1/2 x 5/8	455557		

Shim Stock

Steel & Brass – Single Rolls



Steel

Thickness (Inch)	Model	6 x 100"	12 x 120"	Thickness (Inch)	Model	6 x 100"	12 x 120"	Thickness (Inch)	Model	6 x 100"	12 x 120"
		Code	Code			Code	Code			Code	Code
0.0010	16A-1	455651	455673	0.0060	16A-6	455659	455679	0.0150	16A-15	455666	455685
0.0020	16A-2	455653	455675	0.0070	16A-7	455660	455680	0.0180	16A-18	455668	455686
0.0025	16A-2X	455654	–	0.0080	16A-8	455661	455681	0.0200	16A-20	455669	455687
0.0030	16A-3	455655	455676	0.0090	16A-9	455662	455682	0.0250	16A-25	455671	455688
0.0040	16A-4	455657	455677	0.0100	16A-10	455663	455683	0.0310	16A-31	455672	455689
0.0050	16A-5	455658	455678	0.0120	16A-12	455664	455684				

Shim Stock *(continued)*

Brass

Thickness (Inch)	Model	6 x 100" Code	12 x 120" Code
0.0010	17S-1	455601	455620
0.0015	17S-1X	455602	–
0.0020	17S-2	455603	455621
0.0030	17S-3	455604	455622
0.0040	17S-4	455605	455623
0.0050	17S-5	455606	455624

Thickness (Inch)	Model	6 x 100" Code	12 x 120" Code
0.0060	17S-6	455607	455625
0.0070	17S-7	455608	–
0.0080	17S-8	455609	455626
0.0090	17S-9	455610	–
0.0100	17S-10	455611	455627
0.0120	17S-12	455612	–

Thickness (Inch)	Model	6 x 100" Code	12 x 120" Code
0.0150	17S-15	455613	–
0.0200	17S-20	455614	–
0.0250	17S-25	455615	–
0.0310	17S-31	455616	–

Drill Rods

0 – 1



- Oil hardening
- 36" length
- Ground and polished

HEAT TREATMENT

Preheat: 1200ºF until thoroughly soaked. Harden at 1475ºF. Hold 20 minutes per inch of greatest cross-section after tool reaches furnace temperature (minimum holding time – 20 minutes). Quench in warm oil to 150ºF. Temper immediately 2 hours per inch of greatest cross-section at temperatures shown to achieve the desired hardness.

NOTE: Water hardened or air hardened available upon request

STANDARD TOLERANCES

SIZE RANGE (inches)

2.000 to 0.500 .....±0.001
0.499 to 0.125 .....±0.0005
0.124 and smaller.....±0.0003

PRODUCT

ANSI 01 ground and polished drill rod

TYPICAL ANALYSIS

C .95, MN 1.20, Si .35, Cr .50, W .50

TEMPERING

Tempering Temp. ºF	Hardness Rockwell C
None	65
300	63
350	61
400	60.5
450	59
500	58
600	56
800	48-49

Inch

Size	Decimal Equivalent (Inch)	Weight per 36" (lbs)	Code
2	2.000	32.04	219597
1-15/16	1.937	30.06	219598
1-7/8	1.875	28.14	219599
1-13/16	1.812	26.31	219600
1-3/4	1.750	24.51	219601
1-11/16	1.687	22.80	219602
1-5/8	1.625	21.15	219603
1-9/16	1.562	19.56	219783
1-1/2	1.500	18.00	219604
1-15/32	1.468	17.25	219605
1-7/16	1.437	16.53	219606
1-13/32	1.406	15.82	219607
1-3/8	1.375	15.14	219608
1-11/32	1.343	14.44	219609
1-5/16	1.312	13.80	219610
1-9/32	1.281	13.12	219611
1-1/4	1.250	12.50	219612
1-7/32	1.218	11.89	219613
1-3/16	1.187	11.31	219614
1-5/32	1.156	10.69	219615
1-1/8	1.125	10.12	219616
1-3/32	1.093	9.58	219617
1-1/16	1.062	9.03	219618
1-1/32	1.013	8.49	219619
1-1/64	1.015	8.26	219620
1	1.000	7.99	219621
63/64	0.984	7.74	219622
31/32	0.968	7.59	219623
61/64	0.953	7.24	219624
15/16	0.937	6.99	219625
59/64	0.921	6.78	219626
29/32	0.906	6.56	219627
57/64	0.890	6.35	219628
7/8	0.875	6.12	219629
55/64	0.859	5.91	219630
27/32	0.843	5.68	219631
53/64	0.828	5.48	219632
13/16	0.812	5.25	219633
51/64	0.796	5.12	219634
25/32	0.781	4.87	219635
49/64	0.765	4.68	219636
3/4	0.750	4.50	219637
47/64	0.734	4.31	219638
23/32	0.718	4.12	219639
45/64	0.703	3.93	219640
11/16	0.687	3.75	219641
43/64	0.671	3.56	219642
21/32	0.656	3.43	219643
41/64	0.640	3.31	219644
5/8	0.625	3.12	219645
39/64	0.609	3.00	219646
19/32	0.593	2.81	219647
37/64	0.578	2.67	219648
9/16	0.562	2.53	219649
35/64	0.546	2.39	219650
17/32	0.531	2.25	219651
33/64	0.515	2.12	219652
1/2	0.500	2.000	219653
31/64	0.484	1.870	219654
15/32	0.468	1.740	219655
29/64	0.453	1.620	219656
7/16	0.437	1.530	219657
27/64	0.421	1.410	219658
Z	0.413	1.370	219659
13/32	0.406	1.310	219660
Y	0.404	1.280	219661
X	0.397	1.260	219662
25/64	0.390	1.220	219663
W	0.386	1.200	219664
V	0.377	1.140	219665
3/8	0.375	1.120	219666
U	0.368	1.060	219667
23/64	0.359	1.030	219668
T	0.358	1.020	219669
S	0.348	0.975	219670
11/32	0.343	0.939	219671
R	0.339	0.924	219672
Q	0.332	0.882	219673
21/64	0.328	0.861	219674
P	0.323	0.831	219675
O	0.316	0.813	219676
5/16	0.312	0.780	219677
N	0.302	0.726	219678
19/64	0.296	0.702	219679
M	0.295	0.699	219680
L	0.290	0.675	219681
9/32	0.282	0.639	219682
K	0.281	0.636	219683
J	0.277	0.615	219684
I	0.272	0.594	219685
H	0.266	0.564	219686
17/64	0.265	0.561	219687
G	0.261	0.543	219688
F	0.257	0.522	219689
E	0.250	0.501	219690
1/4	0.250	0.501	219690
D	0.246	0.483	219691
C	0.242	0.462	219692
B	0.238	0.450	219693
15/64	0.235	0.441	219694
A	0.234	0.441	219695
1	0.227	0.414	219696
2	0.221	0.387	219697
7/32	0.218	0.387	219698
3	0.212	0.363	219699
4	0.207	0.345	219700
5	0.204	0.327	219701
13/64	0.203	0.327	219702
6	0.201	0.321	219703
7	0.199	0.318	219704
8	0.197	0.312	219705
9	0.194	0.297	219706
10	0.191	0.288	219707
11	0.188	0.282	219708
3/16	0.187	0.282	219709
12	0.185	0.276	219710
13	0.182	0.267	219711
14	0.180	0.261	219712
15	0.178	0.255	219713
16	0.175	0.246	219714
17	0.172	0.237	219715
11/64	0.171	0.234	219716
18	0.168	0.228	219717
19	0.164	0.216	219718
20	0.161	0.207	219719
21	0.157	0.198	219720

Drill Rods *(continued)*

0 – 1

Inch *(continued)*

Size	Decimal Equivalent (Inch)	Weight per 36" (lbs)	Code
5/32	0.156	0.198	219721
22	0.155	0.195	219722
23	0.153	0.189	219723
24	0.151	0.183	219724
25	0.148	0.177	219725
26	0.146	0.171	219726
27	0.143	0.165	219727
9/64	0.140	0.156	219728
28	0.139	0.156	219729
29	0.134	0.144	219730
30	0.127	0.129	219731
1/8	0.125	0.126	219732
31	0.120	0.117	219733
32	0.115	0.108	219734
33	0.112	0.102	219735
34	0.110	0.096	219736
7/64	0.109	0.093	219737
35	0.108	0.093	219738
36	0.106	0.090	219739
37	0.103	0.087	219740
38	0.101	0.084	219741
39	0.099	0.078	219742
40	0.097	0.075	219743
41	0.095	0.072	219744
3/32	0.093	0.069	219745
42	0.092	0.069	219746
43	0.088	0.063	219747
44	0.085	0.057	219748
45	0.081	0.054	219749
46	0.079	0.051	219750
5/64	0.078	0.051	219751
47	0.077	0.048	219752
48	0.075	0.045	219753
49	0.072	0.042	219754
50	0.069	0.039	219755
51	0.066	0.036	219756
52	0.063	0.033	219757
1/16	0.062	0.033	219758

Metric

Size (mm)	Decimal Equivalent (Inch)	Weight per 36" (lbs)	Code
2	0.078	0.50	219759
3	0.118	0.11	219760
4	0.157	0.20	219761
5	0.197	0.31	219762
6	0.236	0.45	219763
7	0.275	0.60	219764
8	0.315	0.80	219765
9	0.354	1.00	219766
10	0.394	1.25	219767
11	0.433	1.50	219768
12	0.472	1.80	219769
13	0.512	2.00	219770
14	0.551	2.50	219771
15	0.590	2.80	219772
16	0.630	3.00	219773
17	0.669	3.50	219774
18	0.708	4.00	219775
19	0.748	4.50	219776
20	0.787	5.00	219777
21	0.827	5.50	219778
22	0.866	6.00	219779
23	0.905	6.50	219780
24	0.945	7.20	219781
25	0.948	7.70	219782

Permanent Magnets

ECLIPSE MAGNETICS



Insulated Pot Magnets

- Material: Alcomax III
- Can be used in temperatures up to 428ºF
- Commonly used in gripping/lifting, positioning jigs, inserting into jigs/fixtures, in catches/latches

Diameter (Inch)	Height (Inch)	Pull (lbs)	Thread Size	Code
1/4	1/2	0.25	6-32	381110
3/8	1/2	1.43	6-32	381111
1/2	1/2	2.50	6-32	381112
3/4	3/4	9.13	10-24	381113
1	1	16.00	1/4-20	381114



Magnetic Foot

- Material: Alcomax III (magnet), mild steel (pot)
- Can be used in temperatures up to 428ºF
- Rectangular block containing two pot type magnets set into one mild steel housing

Length (Inch)	Height (Inch)	Width (Inch)	Weight (lbs)	Max. Pull (lbs)	Code
2-23/64	1	1	0.7	26	381117



Deep Pot Magnets

- Material: Alcomax III (magnet), mild steel (body), aluminium (spacer)
- Can be used in temperatures up to 428ºF
- Shallow flux field, best suited for gripping on smooth, thin surfaces

Diameter (Inch)	Height (Inch)	Max. Pull (lbs)	Thread Size	Code
3/8	19/32	2	M3	381120
1/2	5/8	4	M4	381121
11/16	5/8	6	10-32	381122
13/16	3/4	9	10-32	381123
11/16	1	14	10-32	381124
13/16	1-3/16	44	10-32	381125



Shallow Pot Magnets

- Material: Alcomax III (magnet), mild steel (body)
- Can be used in temperatures up to 1022ºF (except 3/4 Dia. 212ºF)
- Uses are similar to standard pot magnets use where height is a restriction
- Shallow flux fields best suited for gripping on smooth surfaces

Diameter (Inch)	Height (Inch)	Screw Head (Inch)	Max. Pull (lbs)	Code
3/4	5/16	5/32	7-1/2	381130
1-1/8	11/32	13/64	11	381131
1-1/2	13/32	16/64	28-1/2	381132



Button Magnets

- Material: Alnico
- Can be used in temperatures up to 1022ºF
- Ideal for use on rough surfaces because of their deeper flux field

Diameter (Inch)	Height (Inch)	Slot Size Min.-Max. (Inch)	Max. Pull (lbs)	Code
1/2	3/8	5/32-9/32	1-1/2	381135
3/4	1/2	7/32-11/32	4	381136
1	5/8	7/32-11/32	8	381137
1-1/4	1	5/16-1/2	11	381138
7/8	3/4	3/16-3/16	8	381139



Pocket Magnets

- Material: Alnico
- Can be used in temperatures up to 1022ºF
- Useful where air gaps are present due to deep flux field

Length (Inch)	Height (Inch)	Width (Inch)	Max. Pull (lbs)	Code
7/8	1	1-1/8	5	381141
1-1/16	1-3/8	5/8	8	381142

Neodymium Iron Boron Discs – Rare Earth



- Pressure-formed (sintered) magnets have ten times the strength of alnico magnets
- Nickel-plated magnets offer corrosion resistance
- Temperature range -40ºF to +300ºF, unless noted otherwise

Diameter (Inch)	Thickness (Inch)	Code
0.250	0.250	381191
0.250	0.500	381192
0.375	0.250	381193
0.375	0.500	381194

Diameter (Inch)	Thickness (Inch)	Code
0.500	0.250	381195
0.500	0.500	381196
0.750	0.375	381197
1.000	0.500	381199

Permanent Magnets



Power Pot Magnets

- Extremely powerful holding strength
- Provided with push-off screw to remove work from magnetic hold

Diameter (Inch)	Height (Inch)	Max. Pull (lbs)	Code
2-1/8	2-1/8	70	425564



Pot Magnets

- Unique combination of strong magnet with insulating ring gives this magnet the superior holding power of larger ones
- 1/4-20 threaded hole for attaching to fixtures and machines

Diameter (Inch)	Height (Inch)	Magnetic Pull (lbs)	Code
11/16	5/8	6	425534
13/16	3/4	10	425535
1-1/16	1	18	425536
1-3/8	1-3/4	35	425537



Button Magnets

- Many applications including magnetic fastening, displays, bulletin boards, etc
- Center hole for easy fastening
- Supplied with fastener

Diameter (Inch)	Height (Inch)	Magnetic Pull (lbs)	Code
3/4	1/2	4	425577
1	5/8	6-1/2	425578
1-1/4	3/4	14	425579
1-1/2	7/8	18-1/2	425580



Magnetic Quick Clamp

- Designed to enable fast and accurate holding of ferrous metals for welding and assembly jobs
- The quick clamp will hold sheet and tube at angles of 180°, 75°, 60°, 45°, and 30°
- The through-body hole enables this new magnetic tool to be built into jigs or to be hung up when not in use

Base (Inch)	Height (Inch)	Length (Inch)	Code
3-1/2	2-1/2	4	425581

Welding Links



- For holding steel plates in position for welding, brazing, and soldering
- Eliminates need for clamps or temporary fastening
- Constructed from two heavy duty Alnico magnetic blocks linked together with strong steel bars and wing nuts

Block Dimensions (Inch)	Weight (oz)	Code
2 x 1 x 1	1-1/2	425562

Magnetic Quick Clamps

ECLIPSE MAGNETICS



- The Eclipse magnetic quick clamp is designed to facilitate fast and accurate holding of ferrous metals
- Quick clamps are also suitable for retrieval applications
- Maximum operating temperature up to 176ºF

Length (Inch)	Height (Inch)	Width (Inch)	Weight (lbs)	Pull (lbs)	Code
4	2-9/16	1/2	0.66	22	381165
4	2-9/16	13/16	0.88	33	381166

If you can't find a product, or require a size not listed in our catalog contact us... One of our experienced Customer Service Representatives will be pleased to help you find it!



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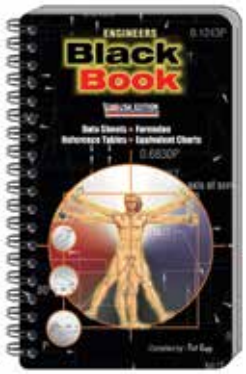
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Black Book Reference Guides 576 	***Tap Drill Sizes*** 576	***Decimal Equivalents*** 577
Cutting Speed Conversions 578	***Speeds & Feeds for High Speed Steel Drills*** 579	***Tap Drill Sizes for Forming Taps*** 580
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Black Books

Engineer's Black Book



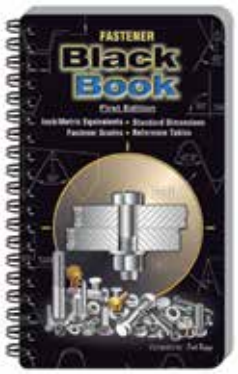
A complete reference guide including:
- Data sheets
- Reference tables
- Formulae
- Equivalency charts

Includes a Drill Point Sharpening Gage



Code
284998

Fastener Black Book



A complete reference guide including:
- Inch/Metric equivalencies
- Fastener grades
- Standard dimensions
- Reference tables

Includes a Thread Pitch Identification Gage



Code
284999

Tap Drill Sizes

Machine Screw Sizes – NC & NF

Nominal Size Tap	Recommended Tap Drill		Probable Hole Size	Actual % Threaded
	Drill	Decimal		
0 – 80	3/64	0.0469	0.0484	71
1 – 64	53	0.0595	0.0610	59
1 – 72	53	0.0595	0.0610	67
2 – 56	50	0.0700	0.0717	62
2 – 64	50	0.0700	0.0717	70
3 – 48	47	0.0785	0.0804	69
3 – 56	46	0.0810	0.0829	69
4 – 40	43	0.0890	0.0910	65
4 – 48	3/32	0.0938	0.0958	60
5 – 40	38	0.1015	0.1038	65
5 – 44	37	0.1040	0.1063	63
6 – 32	36	0.1065	0.1091	71
6 – 40	33	0.1130	0.1156	69
8 – 32	29	0.1360	0.1389	62
8 – 36	29	0.1360	0.1389	70
10 – 24	26	0.1470	0.1502	74
10 – 32	21	0.1590	0.1622	68
12 – 24	16	0.1770	0.1805	66
12 – 28	15	0.1800	0.1835	70

Fractional Sizes – NC & NF

Nominal Size Tap	Recommended Tap Drill		Probable Hole Size	Actual % Threaded
	Drill	Decimal		
1/4 – 20	7	0.2010	0.2048	70
1/4 – 28	3	0.2130	0.2168	72
5/16 – 18	F	0.2570	0.2608	72
5/16 – 24	I	0.2720	0.2761	67
3/8 – 16	5/16	0.3125	0.3169	72
3/8 – 24	Q	0.3320	0.3364	71
7/16 – 14	U	0.3680	0.3726	70
7/16 – 20	25/64	0.3906	0.3952	65
1/2 – 13	27/64	0.4219	0.4266	73
1/2 – 20	29/64	0.4531	0.4578	65
9/16 – 12	31/64	0.4844	0.4892	68
9/16 – 18	33/64	0.5156	0.5204	58
5/8 – 11	17/32	0.5313	0.5362	75
5/8 – 18	37/64	0.5781	0.5831	58
3/4 – 10	21/32	0.6563	0.6613	68
3/4 – 16	11/16	0.6875	0.6925	71
7/8 – 9	49/64	0.7656	0.7708	72
7/8 – 14	13/16	0.8125	0.8177	62
1 – 8	7/8	0.8750	0.8809	73
1 – 12	59/64	0.9219	0.9279	67

Pipe Tap Sizes – NPT, NPTF & NPS

Tap Size	Drill Size NPT & NPTF	Decimal Equivalent	Drill Size NPS Straight	Decimal Equivalent
1/8 – 27	R	0.3390	11/32	0.3438
1/4 – 18	7/16	0.4375	7/16	0.4375
3/8 – 18	37/64	0.5781	37/64	0.5781
1/2 – 14	45/64	0.7031	23/32	0.7188
3/4 – 14	59/64	0.9219	59/64	0.9219
1 – 11-1/2	1-5/32	1.1562	1-5/32	1.1562
1-1/4 – 11-1/2	1-1/2	1.5000	1-1/2	1.5000
1-1/2 – 11-1/2	1-47/64	1.7344	1-3/4	1.7500
2 – 11-1/2	2-7/32	2.2188	2-7/32	2.2188
2-1/2 – 8	2-5/8	2.6250	2-21/32	2.6562
3 – 8	3-1/4	3.2500	–	–

Metric Sizes

Metric Nominal Size/Pitch mm	Tap Limit No.	Inch Series		Metric Series	
		Nominal Size	Inch Diameter	Size (mm)	Inch Diameter
M1.6 x 0.35	D3	–	–	1.25	0.0492
M2 x 0.04	D3	52	0.0635	1.60	0.0630
M2.5 x 0.45	D3	45	0.0820	2.05	0.0807
M3 x 0.5	D3	39	0.0995	2.50	0.0984
M3.5 x 0.6	D4	32	0.1160	2.90	0.1142
M4 x 0.7	D4	30	0.1285	2.30	0.1299
M5 x 0.8	D4	19	0.1660	4.20	0.1654
M6 x 1	D5	8	0.1990	5.00	0.1968
M8 x 1.25	D5	H	0.2660	6.80	0.2677
M10 x 1.5	D6	Q	0.3320	8.50	0.3346
M12 x 1.75	D6	13/32	0.4062	10.25	0.4035
M14 x 2	D7	15/32	0.4688	12.00	0.4724
M16 x 2	D7	35/64	0.5469	14.00	0.5512
M20 x 2.5	D7	11/16	0.6875	17.50	0.6890
M24 x 3	D8	53/64	0.8281	21.00	0.8268
M30 x 3.5	D9	1-3/64	1.0469	26.50	1.0433
M36 x 4	D9	1-1/4	1.2500	32.00	1.2598

Decimal Equivalents

Inch, Metric & Wire Sizes

mm Inch Wire	Decimal	mm Inch Wire	Decimal	mm Inch Wire	Decimal	mm Inch Wire	Decimal
0.1mm	0.0039	45	0.0820	5	0.2055	29/64	0.4531
0. 2mm	0.0079	44	0.0860	4	0.2090	15/32	0.4687
0.3mm	0.0118	43	0.0890	3	0.2130	12.0mm	0.4724
80	0.0135	42	0.0935	7/32	0.2187	31/64	0.4844
79	0.0145	3/32	0.0937	2	0.2210	1/2	0.5000
1/64	0.0156	41	0.0960	1	0.2280	13.0mm	0.5118
0.4mm	0.0157	40	0.0980	A	0.2340	33/64	0.5156
78	0.0160	39	0.0995	15/64	0.2344	17/32	0.5312
77	0.0180	38	0.1015	6.0mm	0.2362	35/64	0.5469
0.5mm	0.0197	37	0.1040	B	0.2380	14.0mm	0.5512
76	0.0200	36	0.1065	C	0.2420	9/16	0.5625
75	0.0210	7/64	0.1094	D	0.2460	37/64	0.5781
74	0.0225	35	0.1100	1/4	0.2500	15.0mm	0.5906
0.6mm	0.0236	34	0.1110	F	0.2570	19/32	0.5937
73	0.0240	33	0.1130	G	0.2610	39/64	0.6094
72	0.0250	32	0.1160	17/64	0.2656	5/8	0.6250
71	0.0260	3.0mm	0.1181	H	0.2660	16.0mm	0.6299
0.7mm	0.0276	31	0.1200	I	0.2720	41/64	0.6406
70	0.0280	1/8	0.1250	7.0mm	0.2756	21/32	0.6562
69	0.0292	30	0.1285	J	0.2770	17.0mm	0.6693
68	0.0310	29	0.1360	K	0.2810	43/64	0.6719
1/32	0.0312	28	0.1405	9/32	0.2812	11/16	0.6875
0.8mm	0.0315	9/64	0.1406	L	0.2900	45/64	0.7031
67	0.0320	27	0.1440	M	0.2950	18.0mm	0.7087
66	0.0330	26	0.1470	19/64	0.2969	23/32	0.7187
65	0.0350	25	0.1495	N	0.3020	47/64	0.7344
0.9mm	0.0354	24	0.1520	5/16	0.3125	19.0mm	0.7480
64	0.0360	23	0.1540	8.0mm	0.3150	3/4	0.7500
63	0.0370	5/32	0.1562	O	0.3160	49/64	0.7656
62	0.0380	22	0.1570	P	0.3230	25/32	0.7812
61	0.0390	4.0mm	0.1575	21/64	0.3281	20.0mm	0.7874
1.0mm	0.0394	21	0.1590	Q	0.3320	51/64	0.7969
60	0.0400	20	0.1610	R	0.3390	13/16	0.8125
59	0.0410	19	0.1660	11/32	0.3437	21.0mm	0.8268
58	0.0420	18	0.1695	S	0.3480	53/64	0.8281
57	0.0430	11/64	0.1719	9.0mm	0.3543	27/32	0.8437
56	0.0465	17	0.1730	T	0.3580	55/64	0.8594
3/64	0.0469	16	0.1770	23/64	0.3594	22.0mm	0.8661
55	0.0520	15	0.1800	U	0.3680	7/8	0.8750
54	0.0550	14	0.1820	3/8	0.3750	57/64	0.8906
53	0.0595	13	0.1850	V	0.3770	23.0mm	0.9055
1/16	0.0625	3/16	0.1875	W	0.3860	29/32	0.9062
52	0.0365	12	0.1890	25/64	0.3906	59/64	0.9219
51	0.0670	11	0.1910	10.0mm	0.3937	15/16	0.9375
50	0.0700	10	0.1935	X	0.3970	24.0mm	0.9449
49	0.0730	9	0.1960	Y	0.4040	51/64	0.9531
48	0.0760	5.0mm	0.1968	13/32	0.4062	31/32	0.9687
5/64	0.0781	8	0.1990	Z	0.4130	25.0mm	0.9842
47	0.0785	7	0.2010	27/64	0.4219	63/64	0.9844
2.0mm	0.0787	13/64	0.2031	11.0mm	0.4332	1	1.0000
46	0.0810	6	0.2040	7/16	0.4375	-	-

Cutting Speed Conversions

Feet/Minute to Revolutions/Minute

Diameter (Inch)	Cutting Speed – Feet/Minute												
	5	10	25	50	75	100	150	200	250	300	350	400	500
	Revolutions/Minute (RPM)												
1/16	306	611	1528	3056	4584	6112	9167	12223	15279	18335	21390	24446	30557
1/8	153	306	764	1528	2292	3056	4584	6112	7639	9167	10696	12223	15279
3/16	102	204	509	1019	1528	2037	3056	4074	5093	6112	7130	8149	10186
1/4	76	153	382	764	1146	1529	2292	3056	3820	4584	5348	6112	7639
5/16	61	122	306	611	917	1222	1833	2445	3056	3667	4278	4889	6112
3/8	51	102	255	509	764	1019	1528	2037	2546	3056	3565	4074	5093
7/16	44	87	281	437	655	873	1310	1746	2183	2619	3056	3492	4365
1/2	38	76	191	382	573	764	1146	1528	1910	2291	2674	3056	3820
5/8	31	61	153	306	458	611	917	1222	1528	1833	2139	2445	3056
3/4	26	51	127	255	382	509	764	1019	1273	1528	1783	2037	2546
7/8	22	44	109	218	327	437	655	873	1091	1310	1528	1746	2183
1	19	38	95	191	286	382	573	764	955	1146	1337	1528	1910
1-1/8	17	34	85	170	255	340	509	679	849	1019	1188	1358	1698
1-1/4	15	31	76	153	229	306	458	611	764	917	1070	1222	1528
1-3/8	14	28	70	139	208	278	417	556	694	833	972	1111	1389
1-1/2	13	26	64	127	191	255	382	509	637	764	891	1019	1273
1-5/8	12	24	59	118	176	235	353	470	588	705	823	940	1175
1-3/4	11	22	55	109	164	218	327	437	546	655	764	873	1091
1-7/8	10	20	51	102	153	204	306	407	509	611	713	815	1019
2	9	19	48	95	143	191	286	382	477	573	668	764	955
2-1/4	8	17	42	85	127	170	255	340	424	509	594	679	849
2-1/2	7	15	38	76	115	153	229	306	382	458	535	611	764
2-3/4	7	14	35	69	104	139	208	278	347	417	486	556	694
3	6	13	32	64	96	127	191	255	318	382	446	509	637
3-1/4	6	12	29	59	88	118	176	235	294	353	411	470	588
3-1/2	5	11	27	55	82	109	164	218	273	327	382	437	546
3-3/4	5	10	25	51	76	102	153	204	255	306	357	407	509
4	4	9	24	48	72	96	143	191	239	286	334	382	477

Formula

Unknown Units	Known Units	Formula Required (Inch)	Formula Required (Metric)
Vc (Surface Speed)	D & RPM	0.262 x D x RPM	0.0031 x D x RPM
RPM (Revolutions/Minute)	D & Vc	$\frac{Vc}{D \times 0.262}$	$\frac{318 \times Vc}{D}$
Fr (Feed/Revolution)	RPM & Fm	$\frac{Fm}{RPM}$	$\frac{Fm}{RPM}$
Fm (Feed/Minute)	RPM & Fr	RPM x Fr	RPM x Fr

Legend

Symbol	Description
Vc	Surface speed in feet or meters per minute
RPM	Revolutions per minute
Fr	Feed per revolution in inch or millimeter
Fm	Feed per minute in inch or millimeter
D	Diameter in inch or millimeter

Speeds & Feeds for High Speed Steel Drills

Recommended Speeds & Coolants

Materials to be Drilled	Speed		Coolant
	Feet/Minute	Metres/Minute	
Aluminum & Aluminum Alloys	200 to 300	61 to 92	Soluble Oil. Paraffin.
Bakelite - Vulcanite	100 to 150	30 to 46	Dry. If possible, keep the drill cool with air jet.
Brass	150 to 200	46 to 76	Dry. Soluble Oil.
Brass - Leaded	200 to 300	61 to 92	Dry. Soluble Oil.
Bronze - Ordinary	100 to 200	30 to 61	Soluble Oil.
Bronze - High Tensile	70 to 100	22 to 30	Soluble Oil.
Cast Iron - Soft	100 to 150	30 to 46	Dry. If possible, keep the drill cool with air jet.
Cast Iron - Medium	80 to 90	24 to 27	Soluble Oil.
Cast Iron - Hard	50 to 70	15 to 22	Dry. If possible, keep the drill cool with air jet.
Cast Iron - Chilled	25 to 35	8 to 11	Soluble Oil.
Copper	100 to 200	30 to 61	Soluble Oil.
Duralumin	100 to 200	30 to 61	Dry. Soluble Oil.
Magnesium & Magnesium Alloys	250 to 400	76 to 122	Dry. If possible, keep the drill cool with air jet.
Malleable Iron	70 to 80	22 to 24	Soluble Oil.
Mazak	200 to 300	61 to 91	Soluble Oil.
Monel Metal	40 to 50	12 to 15	Soluble Oil. Sulphurized Oil.
Slate, Stone, Marble	15 to 20	5 to 6	Dry. If possible, keep the drill cool with air jet.
Steel - Free Cutting Mild	100 to 150	30 to 46	Soluble Oil. Sulphurized Oil.
Steel - Up to 40 Tons Tensile	80 to 110	24 to 33	Soluble Oil. Sulphurized Oil.
Steel - 40 to 60 Tons Tensile	45 to 70	14 to 22	Soluble Oil. Sulphurized Oil.
Steel - 60 to 80 Tons Tensile	30 to 45	9 to 14	Soluble Oil. Sulphurized Oil.
Steel - Over 80 Tons Tensile	15 to 25	5 to 8	Soluble Oil. Sulphurized Oil.
Steel - Manganese 12%/14%	10 to 15	3 to 5	Dry.
Stainless Steels - Martensitic & Ferritic	30 to 50	9 to 15	Sulphurized Oil.
Stainless Steels - Austensitic & Heat Resisting	20 to 45	6 to 14	Sulphurized Oil.
Stainless Steels - Free Cutting (Ferritic)	50 to 60	15 to 18	Sulphurized Oil.
Stainless Steels - Free Cutting (Austenitic)	40 to 50	12 to 15	Sulphurized Oil.
Wood	300 to 400	92 to 122	Sulphurized Oil.

When selecting a suitable cutting lubricant remember that soluble oil and water emulsions have good cooling properties and are therefore applicable to high speed working. The sulphurised cutting lubricants have good anti-weld properties and are therefore applicable where cutting pressures are high. It may be advantageous to dilute the suphurised oils with paraffin or light mineral oils in order to reduce excessive drill wear at high speeds.

Recommended Feeds

Drill Diameter		Feed/Revolution	
mm	Inches	mm	Inches
1.59 to 2.38	1/16 to 3/32	0.04 to 0.06	0.0015 to 0.0025
3.18 to 3.97	1/8 to 5/32	0.05 to 0.10	0.002 to 0.004
4.76 to 5.56	3/16 to 7/32	0.08 to 0.15	0.003 to 0.006
6.35 to 7.94	1/4 to 5/16	0.10 to 0.20	0.004 to 0.008
9.52 to 11.11	3/8 to 7/16	0.15 to 0.25	0.006 to 0.010
12.70 to 14.29	1/2 to 9/16	0.20 to 0.30	0.008 to 0.012
15.88 to 17.46	5/8 to 11/16	0.23 to 0.33	0.009 to 0.013
19.05 to 20.64	3/4 to 13/16	0.25 to0.36	0.010 to 0.014
22.22 to 23.81	7/8 to 15/16	0.28 to 0.38	0.011 to 0.015
25.40 to 28.58	1 to 1-1/8	0.30 to 0.41	0.012 to 0.016
31.75 to 38.10	1-1/4 to 1-1/2	0.36 to 0.46	0.014 to 0.018
Over 38.1	Over 1-1/2	0.46 to 0.50	*0.016 to 0.020

**Or greater according to diameter and local conditions*

The speeds quoted are only a basic guide. If conditions permit it may be possible to increase the above values. When commencing to drill new work the slowest speed and lightest feed should be used and these should gradually be increased until optimum output per grind is obtained.

Tap Drill Sizes for Forming Taps

Inch

Tap Size	Drill Size	Decimal Equivalent	Percentage of Thread
0 – 80	1.35mm	0.0531	75
1 – 64	1.65mm	0.0650	75
1 – 72	1.65mm	0.0650	75
1 – 72	1.70mm	0.0669	65
1 – 72	51	0.0670	60
2 – 56	1.95mm	0.0768	75
2 – 56	5/64	0.0781	65
2 – 56	47	0.0785	60
2 – 64	5/64	0.0781	75
2 – 64	47	0.0785	70
2 – 64	2.00mm	0.0787	65
3 – 48	2.25mm	0.0886	75
3 – 48	43	0.0890	70
3 – 48	2.30mm	0.0906	60
3 – 56	43	0.0890	75
3 – 56	2.30mm	0.0906	65
4 – 40	2.50mm	0.0984	75
4 – 40	39	0.0995	70
4 – 40	38	0.1015	60
4 – 48	38	0.1015	70
4 – 48	2.60mm	0.1024	65
5 – 40	34	0.1110	75
5 – 40	33	0.1130	70
5 – 40	2.90mm	0.1142	60
5 – 44	33	0.1130	75
5 – 44	2.90mm	0.1142	70
6 – 32	3.10mm	0.1220	75
6 – 32	1/8	0.1250	60
6 – 40	1/8	0.1250	75
6 – 40	3.20mm	0.1260	70
8 – 32	25	0.1495	75
8 – 32	3.75mm	0.1476	70
8 – 32	3.80mm	0.1496	65
8 – 36	25	0.1495	75
8 – 36	3.80mm	0.1496	70
8 – 36	24	0.1520	60
10 – 24	4.25mm	0.1673	75
10 – 24	18	0.1695	70
10 – 24	11/64	0.1719	65
10 – 32	17	0.1730	75
10 – 32	16	0.1770	60
12 – 24	10	0.1935	75
12 – 24	9	0.1960	70
12 – 24	5.00mm	0.1968	65
12 – 24	8	0.1990	60
12 – 28	5.00mm	0.1968	75
12 – 28	8	0.1990	70
12 – 28	7	0.2010	60
1/4 – 20	5.70mm	0.2244	75
1/4 – 20	1	0.2280	65
1/4 – 28	5.90mm	0.2323	75
1/4 – 28	A	0.2340	65
1/4 – 28	15/64	0.2344	60
5/16 – 18	7.20mm	0.2835	75
5/16 – 18	7.25mm	0.2854	70
5/16 – 18	7.30mm	0.2874	65
5/16 – 18	L	0.2900	60
5/16 – 24	7.40mm	0.2913	75
5/16 – 24	7.50mm	0.2953	60
3/8 – 16	8.75mm	0.3445	70
3/8 – 16	8.80mm	0.3465	65
3/8 – 24	9.00mm	0.3443	70
3/8 – 24	T	0.3580	60
7/16 – 14	Y	0.4040	65
7/16 – 20	10.50mm	0.4134	70
1/2 – 13	11.80mm	0.4646	65
1/2 – 20	12.00mm	0.4724	75
9/16 – 12	13.20mm	0.5197	75
9/16 – 18	13.50mm	0.5315	75
5/8 – 11	37/64	0.5781	75
5/8 – 11	14.75mm	0.5807	70
5/8 – 18	19/32	0.5937	75
5/8 – 18	15.25mm	0.6004	65
3/4 – 10	45/64	0.7031	65
3/4 – 16	23/32	0.7187	70

Metric

Tap Size	Drill Size	Decimal Equivalent	Percentage of Thread
M3 x 0.5	7/64	0.1094	65
M3.5 x 0.6	3.20mm	0.1260	75
M4 x 0.7	27	0.1440	70
M4.5 x 0.75	4.10mm	0.1614	80
M5 x 0.8	4.60mm	0.1811	75
M6 x 1	5.50mm	0.2165	75
M7 x 1	6.50mm	0.2559	75
M8 x 1.25	L	0.2900	75
M8 x 1	7.50mm	0.2953	75
M10 x 1.5	9.20mm	0.3622	75
M10 x 1.25	U	0.3680	75
M12 x 1.75	7/16	0.4375	75
M12 x 1.25	*0.447	0.4470	75
M14 x 2	13.00mm	0.5118	75
M14 x 1.5	13.20mm	0.5197	75
M16 x 2	15.00mm	0.5906	75
M16 x 1.5	15.25mm	0.6004	75
M18 x 2.5	16.75mm	0.6594	75
M18 x 1.5	17.25mm	0.6791	75
M20 x 2.5	47/64	0.7344	80
M20 x 1.5	*0.757	0.7570	75

**Non-standard drill sizes – reaming of the hole may be necessary*

Practical Formula – Inch Sizes

To Establish Tap Drill Sizes for Inch Size Roll Forming Taps

$$\text{Tap Drill Size} = \text{Basic Tap O.D.} - \frac{(0.0068 \times \%\ \text{of Thread Desired})}{\text{Threads Per Inch}}$$

$$\text{(EXAMPLE 1/4-20 Tap with 65\% Thread)} = 0.250 - \frac{(0.0068 \times 65)}{20} = 0.228\ \text{Dia.}$$

Practical Formula – Metric Sizes

To Establish Tap Drill Sizes for Metric Size Roll Forming Taps

$$\text{Tap Drill Size} = \text{Basic Tap O.D. (mm)} - \frac{(\%\ \text{of Thread Desired} \times \text{mm Pitch})}{147.06}$$

$$\text{(EXAMPLE M8 x 1.25 Tap with 65\% Thread)} = 8 - \frac{(65 \times 1.25)}{147.06} = 7.45\text{mm Dia.}$$

APPLICATION

Forming Taps cold form threads in ductile materials such as brass, copper, aluminum and leaded steels as well as series 301 to 347 stainless steels. Thread size can be maintained closely since taps have no cutting edges. Unusually smooth threads can be formed throughout the full depth of the holes.

Technical Information for Standard Carbide Drills

Recommended Cutting Conditions – Solid Carbide – 118º Point

WORK MATERIAL	NON-ALLOY STEELS		ALLOY STEELS		SOFT GRAY CAST IRON		HARD GRAY CAST IRON	
Diameter	RPM	Inch/Rev.	RPM	Inch/Rev.	RPM	Inch/Rev.	RPM	Inch/Rev.
3/64	23,000	0.0012	17,200	0.0012	32,000	0.0016	23,000	0.0016
5/64	11,500	0.0016	8,600	0.0016	16,000	0.0020	11,500	0.0020
1/8	7,800	0.0020	5,750	0.0020	10,500	0.0024	7,600	0.0024
5/32	5,800	0.0024	4,300	0.0024	7,800	0.0028	5,700	0.0028
13/64	4,700	0.0028	3,450	0.0028	6,200	0.0031	4,550	0.0031
15/64	3,900	0.0031	2,850	0.0031	5,200	0.0035	3,800	0.0035
9/32	3,350	0.0035	2,450	0.0035	4,500	0.0039	3,250	0.0039
5/16	2,900	0.0039	2,150	0.0039	3,900	0.0047	2,850	0.0047
23/64	2,600	0.0043	1,900	0.0043	3,450	0.0055	2,550	0.0055
25/64	2,350	0.0047	1,700	0.0047	3,100	0.0063	2,300	0.0063
7/16	2,150	0.0051	1,500	0.0051	2,850	0.0071	2,100	0.0071
15/32	1,950	0.0055	1,450	0.0055	2,600	0.0079	1,900	0.0079
33/64	1,800	0.0063	1,350	0.0063	2,400	0.0079	1,750	0.0079

WORK MATERIAL	STAINLESS STEELS		Al-Si ALLOY Si<10%		Al-Si ALLOY Si>10%		Ti, Ni ALLOY STEELS	
Diameter	RPM	Inch/Rev.	RPM	Inch/Rev.	RPM	Inch/Rev.	RPM	Inch/Rev.
3/64	12,000	0.0016	54,000	0.0020	42,000	0.0020	11,800	0.0008
5/64	6,000	0.0012	27,000	0.0024	21,000	0.0024	5,900	0.0012
1/8	4,000	0.0016	18,000	0.0028	14,000	0.0028	3,900	0.0016
5/32	3,000	0.0020	13,000	0.0031	10,500	0.0031	2,950	0.0020
13/64	2,400	0.0024	10,500	0.0035	8,500	0.0035	2,350	0.0024
15/64	2,000	0.0028	8,800	0.0043	7,100	0.0043	1,950	0.0028
9/32	1,700	0.0031	7,600	0.0051	6,100	0.0051	1,700	0.0031
5/16	1,500	0.0035	6,600	0.0059	5,350	0.0059	1,450	0.0035
23/64	1,350	0.0039	5,900	0.0067	4,750	0.0067	1.300	0.0039
25/64	1,200	0.0043	5,300	0.0075	4,250	0.0075	1,200	0.0043
7/16	1,100	0.0047	4,850	0.0083	3,900	0.0083	1,050	0.0047
15/32	1,000	0.0051	4,450	0.0091	3,550	0.0091	980	0.0051
33/64	950	0.0051	4,100	0.0098	3,300	0.0098	905	0.0051

Carbon Steel	Alloy Steel	Cast Iron	Aluminum	Stainless Steel	Titanium	Mild Steel
HB225	HB225-325					
●	●	○	○	○	○	●

● Excellent ○ Good

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#

1-2-3 Blocks...559
2-4-6 Blocks...559
5C Collet Blocks...405
5C Fixtures & Indexes...404

A

Abrasives
- Mounted Flap Wheels...294-295
- Mounted Points...295-299
- Needle Files...300
- Sharpening Stones...300

ACME
- Screw Thread Cutting Gages...533
- Tandem Taps...102

Adapters
- BF...454
- Boring Head...395
- Centering Plug...395
- Centering Point...452
- Collet Chuck...367-368, 371, 376, 378-382
- Drill Chuck...450
- End Mill...385-387
- Face Mill...395
- Jacobs Taper...391
- Milling Machine...396, 399-400
- Morse Taper...390, 452
- Plate...325
- Quick Change...397
- Round Die...107
- Shell Mill...388-389, 393-394
- Sleeve...451
- Spindle...327
- Stub Arbor...398
- Tap...452, 454-457

Adjustable
- Collet Stop...406
- Dies...105-106
- Parallels...565
- Reamers...80
- Tap & Reamer Wrenches...104
- V-Blocks...562

Air Tapping Attachments...470
Air Tapping Units...470

Aligners
- Transfer...476

Angle
- Blocks...565
- Cutters...150-151
- Dresser...566
- Gages...535, 539
- Heads...407
- Plates...558
- Vises...415

Angle Blocks...565

Angle Cutters
- Chamfering...150
- Double...151
- Double Angle...150
- Dovetail...150
- Single...151

Angle Gages...535, 539
Angle Plates...558
Annular Cutter Holders...203-204
Annular Cutters...203

Arbor
- Adapters...398
- Presses...166, 408
- Spacers...401

Arbor Presses...166, 408

Arbors
- Boring Head...395
- Centering Plug...395
- Drill Chuck...450
- Expanding...404
- Face Mill...395
- Milling Machine...399-400
- Quick Change...397
- Saw...147
- Shell Mill...388-389, 393-394
- Shell Reamer...81
- Stub...398

Arbor Spacers...401

B

Back Plates...320, 324, 326-327, 355
Bar Pullers...361

Bars
- Boring...158-159, 389
- Boring & Chamfering...152
- Boring & Facing...152-153
- Grooving...154-156
- Threading...153-154

BF Adapter...454
Biconical Cutters...65
Black Books...576

Blades
- Deburring...177, 181-187
- Grooving...157
- Parting...250
- Part-Off...196-198
- Spade Drill...35-40
- Threading...157

Blanks
- Boring Bar...389
- Drill...49-50

Blocks
- 1-2-3...559
- 2-4-6...559
- 5C Collet...405
- Angle...565
- Gage...525
- Positioning...559
- Space...540
- Stepped...427
- Steppped...427
- "V"...559-562

Bolt Extractors...108
Bore Gages...523
Boring Bar Blanks...389
Boring Bar Holders...156-157, 197

Boring Bars...158-159, 220-221
- Boring & Chamfering...152
- Boring & Facing...152-153
- Identification Guide...214-215
- Sets...219-221
- S-MCLNR/L...216
- S-MDUNR/L...216
- S-MTUNR/L...216
- S-MWLNR/L...217
- S-SCLCR...218
- S-SCLCR/L...217
- S-SDUCR...218-219
- S-STFCR...219
- S-STUCR...218

Boring Bar Sets...158-159
Boring & Facing Head...459
Boring Head Adapters...395
Boring Heads...458
Brazed Tools...194-195
Bridge Reamer Holders...204
Broach Bushings...161, 163

Broaches
- Hexagonal...164
- Keyseating...165-166
- Keyway...160, 162
- One-Pass...165
- Production...165
- Round...164
- Square...162-163

Broach Sets...167-168
Broach Shims...160, 162
BT Tooling...368, 379, 381, 386, 388-391, 401, 448, 455
Burrs...188-193

Bushings
- Broach...161, 163
- Tool Holder...357-358, 362-366

C

Calipers
- Accessory Set...492
- Coolant Proof...481
- Depth...490-491
- Depth Base Attachment...492
- Depth Stops...488
- Dial...492
- Electronic...480-487, 489-491
- Gear Tooth...485
- Inside Groove...489
- Inside Spring...478
- Interchangeable Points...486-487
- Left Hand...482
- Long Range...484-485
- Miniature...482
- Multifunctional Points...488
- Outside Spring...478
- Point Sleeves...488
- Vernier...491

Carts
- Tool...402

CAT Tooling...367, 378, 380-381, 385-386, 388-391, 395, 398, 401, 448, 455, 458

Center
- Drills...59
- Finders...544
- Punches...473
- Reamers...91
- Squares...532

Center Gages...535

Centering Plug Arbors...395

Centerless Punch Grinder...471

Center Reamers...91

Centers
- Dead...312-313
- Live...302-312

Chamfer Gages...536

Chamfering Biconical Cutters...65

Chamfer Tools...265-267

Chucks
- Collet...355, 367-368, 371, 376, 378-382
- Drill...444-450
- Grease...314
- Lathe...315-326, 334, 336-337, 340-341, 345, 347-348, 351, 353
- Machining...403
- Pin...477
- Tap...102
- Tapping...452

Clamping Sets...422

Clamping Studs...428-429

Clamps
- C-Clamps...443
- Clamping Pads...442
- Dovetail...511
- F-Clamps...442
- Height Gage...528
- Hi-Rise...430
- Machinist's...422
- Magnetic...573
- Plain...422-423
- Step...426-427
- Toe...421
- Toggle...431-441

CNC Bar Pullers...361

CNC Spotting Drills...59-61

Collet Chucks
- 5C...355
- DA...381
- ER...371, 376, 378-379
- ER Clamping Nuts...377
- ER Collet Wrenches...377
- ER Stub...379-380
- Full Grip...382
- TG...367-368

Collet Extensions
- Double Angle...383

Collets
- 5C Adjustable Collet Stop...406
- 5C Emergency...406
- 5C Expanding...404
- 5C Hexagonal...406
- 5C Square...406
- 5C Step...406
- Double Angle...383-384
- ER...372-373
- ER Rigid Tapping...373
- ER Sets...376
- ER - Steel Sealed...374-375
- Full Grip...382
- Morse Taper...405
- Round...405
- Rubber-Flex...453
- Storage Trays...370, 375
- TG...369
- TG Rigid Tapping...370

Combination Squares...530

Combined Drills & Countersinks...55-58

Combined Taps & Drills...101

Comparator Stand...511

Coolant Hose...464-465

Counterbore Pilots...83-84

Counterbores...82-85

Countersinks
- 3 Flute...85-86, 90
- 6 Flute...90-91
- Chatterless - 6 Flute...89
- Chatterless with Hole...87
- Metric...85-88
- Multi-Flute...90
- Single Flute...88-89

Coupling Nuts...423-424

Cross-Slide Tables...410

D

Dead Centers...312-313

Deburring
- Blade Holders...180-181
- Blades...182-187
- Blade Sets...181
- Cera-Burrs...176
- Ceramix Blades...177
- Glo-Burrs...175
- Handles...180
- Plum-Burrs...177
- Scrape-Burrs...176
- Uniburrs...175

Deburring Sets
- Golden Flex...170
- Mango II AeroBurr...170
- Mango II Extra Close...169-170
- Mango II Long Reach...170
- Set B - The Workhorse...169
- Set Burr-Bi - Heavy Duty Sheet Cleaner...172
- Set Burr-Ex - Ratchet-Burr for OD...173
- Set Ceramix Q10...177
- Set Ceramix Q12...177
- Set C - The Scraper...172
- Set D - The Sheet Cleaner...172
- Set E - Heavy Deburr...169
- Set FR - Ratchet-Burr for ID...173
- Set F - The Countersink...173
- Set G3 - Triple Corner Cleaner...174
- Set G - Slot Edge Cleaner...174
- Set HC - Handy Chuck...171
- Set KPA - Plastics Deflashing...179
- Set KPC2 - The Favourite 5...179
- Set KWC - The Universal Box...178
- Set L - External Pipe Edge Cleaner...174
- Set M - The 2 in 1...171
- Set TD - Tool & Die Maker's Set...178
- Set U - Finishing Scraper...171
- Set U - Ultra-Fine Finish...179
- Universal Sheet Cleaner...178

Depth & Angle Gages...539
Depth Gages...515-516, 539
Die Holders...107
Dies
Hexagonal...106-107
Round...105-106
Dividers...478
Dividing Heads...416-417
Dividing Plate Sets...419
Drill Angle Gages...538
Drill Chuck Arbors...450
Drill Chucks
Chuck Keys...445
Integral Shank...448-449
Keyless...446-447
Keyless Precision...447
Keyless Super Precision...447
With Key...444-445
With Key - Micro...450
Drill Drifts...451
Drill Feed Adapter...450
Drill Gages...538
Drill Mills...62, 64
Drill Rods...570-571
Drills
Aircraft Extension
High Speed Steel...25-26
Blanks
High Speed Steel...49-50
Carbide
Chamfering Biconical Cutters...65
Carbide Tipped
Die...47
Jobber Length...10
Taper Length...19
Chamfering Biconical Cutters
Carbide...65
CNC Spotting Drills
Cobalt...60
High Speed Steel...59
Solid Carbide...61
TiN Coated...60
Cobalt
CNC Spotting Drills...60
Combined Drills & Countersinks...55
Drill Mills...62
Jobber Length...4-6
Reduced Shank...33
Screw Machine Length...11-13
Spade Drill Inserts...35-37
Spotting Drills...62
Spotweld Drills...59
Taper Length...15-17
Taper Shank...19-23
Combined Drill & Countersinks - Indexable...58
Combined Drills & Countersinks
Cobalt...55
High Speed Steel...55-57
Solid Carbide...56
Core
High Speed Steel...46
Die
Carbide Tipped...47
Drill Indexes...51
Drill Mills
Cobalt...62
Solid Carbide...62, 64
Drill Sets
Jobber Length...51-53
Step Drill...54
Taper Length...53
Taper Shank...53
Extra Length
High Speed Steel...27-28
High Speed Steel
Aircraft Extension...25-26
CNC Spotting Drills...59
Combined Drills & Countersinks...55-57
Core Drills...46
Drill Blanks...49-50
Extra Length...27-28
Jobber Length...4-8
Jobber Length - Left Hand...10-11
Oil Hole...47
Reduced Shank...33-34
Screw Machine Length...11-13
Self Starting Step...48
Spade Drill Inserts...37-40
Spotting & Centering Drills...59
Standard Step...48
Step Drills - Multi-Diameter...49
Taper Length...15-18
Taper Shank...19-25
Taper Shank Extra Length...29-32
Indexable Combined Drill & Countersinks...58
Indexable Spotting Drills...63
Indexes...51
Jobber Length
Carbide Tipped...10
Cobalt...4, 5, 6
High Speed Steel...4-8
Solid Carbide...8-9
Jobber Length - Left Hand
High Speed Steel...10-11
Jobber Length Sets...51-53
Jobber Length - Standard Step
High Speed Steel...48
Metric CNC Spotting Drills...60
Metric Extra Length...27-28
Metric Jobber Length...7-10
Metric Reduced Shank...34
Metric Screw Machine...13-15
Metric Spade Drill Inserts...35-40
Metric Taper Length...17-18
Metric Taper Shank...25
Oil Hole
High Speed Steel...47
Reduced Shank
Cobalt...33
High Speed Steel...33-34
Rods
Solid Carbide...50
Rotary Coolant Inducers...40
Screw Machine Length
Cobalt...11-13
High Speed Steel...11-13
Solid Carbide...14-15
Screw Machine Length Sets...53
Self Starting Step
High Speed Steel...48
Solid Carbide
CNC Spotting Drills...61
Combined Drills & Countersinks...55-56
Drill Mills...62, 64
Jobber Length...8-9
Rods...50
Screw Machine Length...14-15
Spade...49
Spade
Solid Carbide...49
Spade Drill Holders...40-44
Replacement Screws...44
Spade Drill Inserts
Cobalt...35-37
High Speed Steel...37-40
Technical Information...45
Spade Drill Insert Technical Information...45
Spotting
HSS-E Cobalt...62
Spotting & Centering
High Speed Steel...59
Spotting - Indexable...63
Spotweld...59
Standard Step - Jobber Length
High Speed Steel...48
Step Drill Sets...54
Step - Multi-Diameter...49
Taper Length
Carbide Tipped...19
Cobalt...15, 16, 17
High Speed Steel...15-18
Taper Length Sets...53
Taper Shank
Cobalt...19-24

High Speed Steel...19-25, 32
Taper Shank - Extra Length
High Speed Steel...29-31
Taper Shank Sets...53
TiN Coated
CNC Spotting Drills...60

E

Edge & Center Finders...544
Edge & Corner Radii Gages...537
Edge Finders...544
End Mill Holders
BT40...386
BT50...386
CAT40...385-386
CAT50...385-386
ISA...387
Morse Taper...387
R8...387
End Mills
Carbide
2 Flute...112-115
3 Flute...115
4 Flute...109-111
5 Flute...115
Alu-Power...134
Tapered...136-137
Technical Information...116, 133, 135
V7 INOX...132
Cobalt
2 Flute...118-119
4 Flute...117-118
6 Flute...120-121
Corner Rounding...149
Finishers...124-125
High Speed Steel
2 Flute...130
4 Flute...130
Heavy Duty...129
Multi-Flute...128
Tapered...137-141
Roughers...112, 122-125
Technical Information...126-127
End Mills - Milling...263-265
Engineer's Black Book...576
Expanding Arbors...404
Expanding Mandrels...362
External Tool Holders
Identification Guide...206-207
MCLNR/L...208
MDJNR/L...208
MSSNR/L...209
MTJNR/L...209
MVJNR/L...210
SCLCR/L...211
SDJCR/L...211
STGCR...212
SVJCR...212

F

Face Mill Holders...395
Face Mills...260-263
Face Plate Jaws...355
Face Plates...323
Fastener Black Book...576
Feeler Gages...533
Files...300
Finishers - End Mill...124-125
Fitted Sockets...451
Flanged Nuts...423
Flap Wheels...294-295
Floating Holders...406
Floating Holder Shanks...454
Fly Cutters...196

G

Gage Blocks...525
Gear Tooth Gages...539
Granite Surface Plates...553
Grease Guns...460
Grooving Bars...154-156
Grooving Tools & Blades...157

H

Hardness Testers...548
Height Gages...521-522
Hexagonal Broaches...164
High Helix Cutters...131
Hole Cutters...204

I

Indexable Cutting Tools
Basic Turning & Milling Formulas...292
CVD Grade Application...291
Insert Trouble Shooting...289
PVD Grade Aplication...290
Indexing Spacers...418-419
Indicators
Dial...506-508
Dial Test...512-513
Styli...513
Dovetail Clamp...511
Electronic...504-505
Extension Rods...509
Flat Backs...510
Holders...511, 514
Lug Backs...510
Magnetic Stands...518-520
Points...509, 511
Inserts
Drilling Inserts
MULTI-MAT®...276
Grooving Inserts...245
Milling Inserts
A---... 267, 271, 274
MULTI-MAT®...275-276
O---...271, 274
R---...271, 274
S---...266, 271, 274
T---...266, 274
TPU...271
Parting Inserts...250
Threading Inserts...255-257
Thread Milling Inserts...279-280
Turning Inserts
C---...231, 236-237, 240-241
D---...231, 236-237, 240-241
MULTI-MAT®...243-244
R---...240
S---...236, 240-241
T---...220-221, 231, 236-237, 240-241
V---...231, 236-237, 240-241
W---...220, 231, 242

J

Jacobs Taper Adapters...391
Jaws... See Lathe Chucks - Accessories

K

Keyseating Broaches...165-166
Key Stock...568
Keyway Broaches...160
Knurling Tools...199-202

L

Lamps...409
Lathe Chucks
2-Jaw Universal...326
3-Jaw Large Through Hole
- PSL Series...345
3-Jaw Oil Country - PEO Series...351
3-Jaw Precision...319-320
3-Jaw Precision - PO Series...336-337
3-Jaw Quick Clamping...325
3-Jaw Universal...315-318, 324, 341

3-Jaw Universal - PS Series...340
4-Jaw Combination Universal/Independent...322
4-Jaw Independent...322-323
4-Jaw Independent Oil Country...334-335
4-Jaw Independent Oil Country - PEI Series...353
4-Jaw Independent - PI Series...347-348
4-Jaw Precision...340
4-Jaw Universal...321, 324
4-Jaw Universal - PS Series...341
6-Jaw Precision...320
6-Jaw Quick Clamping...325
Accessories
Steel Serrated Soft Jaws...332
Accessories for BISON
Adapter Mounting Bolts...331
Back Plates...326
Hard Master Jaws...329, 331
Hard Solid Inside Jaws...328
Hard Solid Outside Jaws...328
Hard Solid Reversible Jaws...331
Hard Top Jaws...328, 331
Jaw Mounting Bolts...330
Keys...330
Operating Screws...331
Pinions...329
Scroll Plates...329
Soft Solid Jaws...328
Soft Top Jaws...329
Spindle Back Plates...327
Studs...327
Thrust Bearings...331
Accessories for GATOR
Chuck Mounting Bolts...354
Spare Jaws - PEI Series...354
Spare Jaws - PEO Series...352
Spare Jaws - PI Series...349-350
Spare Jaws - PO Series...338
Spare Jaws - PSL Series...345-346
Spare Jaws - PS Series...342-343
Spare Parts - PI Series...350
Spare Parts - PO Series...339
Spare Parts - PSL Series...346
Spare Parts - PS Series...344
Chuck Stops...356
Grease...314
Quick Clamping Adapters...325
Technical Information...313-314

Layout Fluids...469

Levels...526

Live Centers
Bull Nose...307
Heavy-Duty Spindle Type
CNC Point...310
Standard Point...309
High Precision Quad-Bearing
CNC Point...311
Standard Point...310
High Speed Precision...308
Model D - Cones for Type A...305
Sets...312
Spring Type – Standard Point...311
Super Quad Extra Heavy-Duty...309
Type A - Point Nose Taper...305
Type DA-N - Standard 60º Pressure Indicator...306
Type EV - 60º...304
Type L - Slim Extended Point 60º...303
Type N - Standard 60º...302
Type V - Extended Point 60º...303
Value-Turn...308
Versa-Turn...311

Loupes...555

M

Machine Lamps...409

Machine Sockets...451

Machining Chucks...403

Machinist's Jack...477

Machinist's Tool Set...475

Magnetic Stands...518-520

Magnets...572-573

Magnifier Light...555

Magnifiers...554

Manifold...463

Marker - Tint Etching...469

Marking
Hi-Spot...469
Remover & Thinner...469

Marking Pens...469

Measuring Tool Sets...547

Metal Slitting Saws...144-145

Micrometers
Blade...498
Coolant Proof...493, 500, 502
Depth...502-503
Electronic...493-494, 500, 502
Head...503
Inside...500-502
Outside...493-497
Screw Thread...499
Screw Thread Measuring Tips...499
Spherical Anvil Tube...498
Stands...502

Microscopes...550-551

Milling
Face Mill Holders...395

Milling Attachments...407

Milling Cutters
Chamfer Cutters...265-267
End Mills...263-265
Face Mills...260-263
Identification Guide...259

Milling Machine Adapters...396

Milling Machine Arbors...399-400

Miniature Bores...159

Misting System...462

Morse Taper Adapters...390

Mounted Flap Wheels...294-295

Mounted Points...295-299

N

Needle Files...300

O

Oil Cans...460

One-Pass Broaches...165

Optical Shields...463

P

Parallels...563-565

Parting
Blade Holders...250
Blades...250
Information Guide...251
Inserts...250

Part-Off Blades...197-198

Part-Off Tool Holders...196

Part-Off Tools...197

Pin Chucks...477

Pin/Plug Gage Sets...540

Pitch Gages...534

Planer & Shaper Gage...539

Pneuvac Pump...466

Positioning Blocks...559

Power Table Feed...410

Production Broaches...165

Protractors...526-528

Pull Studs...392

Punch & Die Set...477

Punches...473-474, 476

Punch Formers...471-472
Punch Grinders...471

Q

Quick Change Tooling...397, 452
Quill Stop...410

R

Radius & Angle Dresser...566
Radius Gages...536-537
Reamers
Adjustable Hand...80
Chucking
Straight Shank...66-77
Taper Shank...69-70
Expansion Chucking
Straight Shank...78
Taper Shank...78
Metric Chucking Reamers...69
Shell...81
Shell Reamer Arbors...81
Taper Bridge
Taper Shank...78
Taper Car...79
Taper - Fast Spiral...70
Taper Finishing
Straight Shank...78
Taper Shank...78
Taper Pin...79
Taper Pipe...80
Reference
Black Books...576
Cutting Speed Conversions...578
Decimal Equivalents...577
Speeds & Feeds for High Speed Steel Drills...579
Standard Carbide Drills...581
Tap Drill Sizes...576
Tap Drill Sizes for Forming Taps...580
Right Angle Heads...407
Rotary Coolant Inducers...40
Rotary Tables...403, 420
Roughers - End Mill...122-125
4 Flute...112
Round Broaches...164
Rounding Cutters...149
Rules...529

S

Saw Arbors...147
Screw Extractors...107-108
Screw Jacks...429
Screw Pitch Gages...533
Screw Slotting Saws...146-147
Screw Thread Cutting Gages...533
Scribers...474-475
Sharpening Stones...300
Sheet Metal Gage...537
Shell Mill Adapters...388-389
Shell Mill Arbors...393-394
Shim Stock...568-569
Shore Durometers...549
Side Milling Cutters...142-143
Sleeves...451
Slitting Saws...144-145
Slotting Cutters...148
Slotting Saws...145-146
Small Hole Gage Set...542
Snap Coolant Systems...461-462
Space Blocks...540
Spade Drill Holders...40-44
SPC Cables...517
Spotting & Centering Drills...59
Spotting Drills...62-63
Square Broaches...162-163
Squares
Beveled Edge...531
Center...532
Combination...530
Double...530
Engineer's Precision...532
Flat Edge...531
Stamps...476-477
Stepped Blocks...427
Straight Edges...567
Stub Arbor Adapters...398
Surface Plate Cleaner...553
Surface Plates...553
Surface Plate Steel Stands...553
Surface Roughness Comparators...546

T

Tail Stock...407, 418
Tap Adapters...456-457
Tap Chucks...102
Tap & Drill Sets...108
Tap Drivers...103-104
Tapered End Mills...136-141
Taper Gages...538
Taper Socket Cleaning...402
Tap Extensions...104
Tap Holders
Quick Change...455
Rigid...453
Rigid/Synchronized...455
Tension/Compression...454-455
Tapping Attachments...470
Tapping Heads...453
Tapping Lubricant...101
Tapping Units...470
Taps
ACME Tandem...102
Blue Colour Band...95-96
Extension...100
Hand...93-94
Pipe...100
Pulley...100
Red Colour Band...98-99
Taper Pipe...99
Yellow Colour Band...96-98
Tap Wrenches...104
Telescoping Gages...543
Telescoping Gage Set...543
Test Indicators...512-513
Thickness Gages...524
Thread Gages...534
Threading
Accessories...254
Inserts...255-257
Sets...252
Tool Holders...253
Threading Bars...153-154
Threading Tools & Blades...157
Thread Measuring Wire Set...540
Thread Milling
Identification Guide...277
Thread Milling Cutters...278-279, 281
Miniature...285-286
Thread Plug Gages...541
Thread Triangles...540
Throw Away Cutters...120
Tightening Fixtures...393

Tilting Rotary Table...403
Tilting Tables...408
Tiny Tools...246-249
Toe Clamps...421
Toggle Clamps...431-441
Reference Chart...441-442
Tool Bits...198
Tool Clamping Fixtures...401
Tool Holder Bushings
Type B...364
Type C...362-363
Type CV...363
Type DD...364-365
Type J...365-366
Type Z...366
Tool Posts...356-358, 360
Accessories...359
Tool Trolleys...402
TORX Wrenches...468
Transfer Punches...476
Transfer Punch Sets...476
T-Slot Bolts...425-426
T-Slot Cleaner...425
T-Slot Cutters...149
T-Slot Nuts...424-425
Turning Tool Holders...196
Turrets...356, 358, 362

V

V-Blocks...559-562
Videoscopes...552
Vises
Angle...415
Double CNC Precision...412
Drill Press...413
Drill Press Precision...414
Fixed Base Bench...414
KR Precision...414
Modular Standard...413
Precision Milling Machine...411
Quick Action...415
Super Open Quick Action...412
Toolmaker's...411
U-Type Angle...415

W

Welding Gages...542
Wheel Dressers...566
Wiggler Set...544
Wire Gage...537
Woodruff Keyseat Cutters...148

Z

Zero Setters...545

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PRICING

Please refer to KAR's Price List for current list pricing. Prices are subject to change without notice. All prices are subject to applicable sales taxes.

PAYMENT TERMS

Payment terms for authorized distributors are net 30 days; otherwise payment is due upon receipt of order. Interest on overdue accounts is calculated at a rate of 1.5% per month. The distributor agrees to bear all costs incurred in collecting any unpaid amounts including but not limited to collection agencies, legal fees and court costs. All payments will be in Canadian Dollars. Payment terms may be revised or withdrawn in our sole discretion. All outstanding orders in whole or in part may be cancelled without liability or penalty if failure of due payment occurs. Title to the goods remains with KAR Industrial Inc. until payment in full has been received.

FREIGHT ALLOWANCES

Freight is FOB shipping point; Mississauga, Montreal or Edmonton. Orders are prepaid at a value of $75 net up to a maximum of $15 shipping cost for ground transportation. A flat rate of $7 per shipment will be prepaid and charged for handling and freight for orders below the prepaid threshold amount. KAR Industrial Inc. reserves the right to ship via its carrier of choice.

DROP SHIPMENTS

Direct end-user drop shipments are available at no additional cost under the stated freight allowance conditions above.

FREIGHT CLAIMS

Loss or damage to goods during shipment is the carrier's responsibility. If a package is received damaged, please note this on the carrier's delivery slip and contact the carrier for instructions regarding making a claim.

CLAIMS FOR SHIPPING ERRORS OR SHORTAGES

Shipping errors or shortages must be reported to Customer Service within 10 days of receipt of goods.

RETURNS

Returns for merchandise credit must be submitted within 90 days from invoice date. A Return Authorization Form must be completed and submitted for approval. All approved returns are valid for 30 days. Only undamaged goods in their original, unmarked packages will be accepted. A 20% (minimum $25) restocking charge will apply. Returns to KAR Industrial Inc. Must be sent prepaid by distributor.

CUSTOM ORDERS

Orders for products deemed to be non-stock items or products specifically built and/or modified to customer specifications may not be cancelled or returned. This includes items purchased or procured in large volume quantities.

CANCELLATION OF ORDERS

KAR Industrial Inc. must receive order cancellations in writing prior to shipment.

INDEMNIFICATION

You will defend, indemnify and hold harmless KAR Industrial Inc. and its affiliates, directors, officers, employees and agents from all liabilities, costs, damages, expenses, judgements and other losses incurred as a result of:

1. Any claim by a customer or other third party arising out of your (or your employee's or other representative's) acts or omissions or your breach of any representation, warranty or other obligation contained in their terms and conditions
2. Any claim by KAR Industrial Inc. arising out of an unauthorised disclosure of any Confidential Information

WARRANTY – LIMITATION OF LIABILITY

KAR's liability is limited to the replacement of the defective goods or, at its option, the refund of the purchase price. This warranty is in lieu of all other warranties. Please refer to return policy above. Product specifications are subject to change without notice. Images shown may not be exact.

PRIX

Veuillez consulter la liste des prix de KAR pour connaître les prix en vigueur. Les prix peuvent être modifiés sans préavis. Les taxes de vente applicables sont en sus.

CONDITIONS DE PAIEMENT

Les conditions de paiement pour les distributeurs autorisés sont net 30 jours; dans tous les autres cas, le paiement est exigé sur réception de la commande. Un taux d'intérêt de 1,5 % par mois s'applique à tout solde dont le paiement est en retard. Le distributeur s'engage à supporter tous les coûts afférents au recouvrement de toute somme impayée y compris, sans restriction, ceux des agences de recouvrement, honoraires de services juridiques et frais de justice. Tous les paiements sont effectués en dollars canadiens. Les conditions de paiement sont assujetties à une révision ou à un retrait et ce, à notre entière discrétion. Toutes les commandes en attente, totales ou partielles, peuvent être annulées sans responsabilité ou sanction en cas de défaut de paiement. Les marchandises demeurent la propriété de KAR Industriel Inc. jusqu'à réception du paiement en totalité.

ALLOCATIONS DE TRANSPORT

Les articles sont livrés FAB de Mississauga, Montréal ou Edmonton. Les commandes dont la valeur nette est de 75 $ et plus sont payées à l'avance et ce, jusqu'à concurrence d'un maximum de coût de transport terrestre de 15 $. Un taux fixe de 7$ par livraison sera prépayé et facturé pour la manutention et le transport de commandes d'une valeur inférieure au montant minimum imposé. KAR Industriel Inc. se réserve le droit d'effectuer ses livraisons via le transporteur de son choix.

LIVRAISONS DIRECTES

Les livraisons directes chez le client sont offertes sans frais additionnels conformément aux conditions d'allocations de transport mentionnées ci-dessus.

RÉCLAMATIONS DE COÛTS DE TRANSPORT

Le transporteur porte l'entière responsabilité en cas de pertes ou de dommages occasionnés à la marchandise. Si un emballage arrive endommagé à destination, veuillez l'indiquer sur le bordereau de livraison du transporteur et communiquer avec celui-ci pour obtenir les directives à suivre pour fins de réclamation.

RÉCLAMATIONS EN CAS D'ERREURS DE LIVRAISON OU DE RUPTURE DE STOCK

Il faut signaler à un représentant du Service à la clientèle les erreurs de livraison ou un manque de marchandise dans les 10 jours qui suivent la réception des articles.

RETOURS

Les retours d'articles en échange d'un crédit d'achat doivent avoir lieu à l'intérieur d'un délai de 90 jours calculé à partir de la date d'achat. Il est nécessaire de remplir et de faire parvenir le formulaire "Autorisation de retour" pour fins d'approbation. L'autorisation de retour est valide pendant une période de 30 jours. Seules les marchandises n'ayant subi aucun dommage et retournées dans leurs emballages originaux non estampillés seront acceptées. Des frais de réapprovisionnement de 20 % (minimum 25 $) seront exigés. Les retours adressés à KAR Industriel Inc. doivent être payés à l'avance par le distributeur.

COMMANDES SPÉCIALES

Il est impossible d'annuler ou de retourner des commandes ou des produits non stockés et/ou spécialement modifiés pour répondre aux spécifications du client. Cela est aussi valable pour les articles achetés ou fournis en grande quantité.

ANNULATION DE COMMANDES

KAR Industriel Inc. doit recevoir toute demande d'annulation de commandes par écrit avant la livraison.

INDEMNITÉ

Vous opposerez défense, dédommagerez et tiendrez franc de tout préjudice KAR Industriel Inc. et ses affiliés, directeurs, représentants officiels, employés et agents contre toutes responsabilités, coûts, dommages, dépenses, jugements et autres pertes encourues suite à :

1. Toute réclamation de la part d'un client ou tierce partie résultant de vos (ou ceux de vos employés ou autre représentant) actes, omissions ou infractions de toute nature, garanties ou autres obligations énumérés dans leurs conditions de vente
2. Toute réclamation de la part de KAR Industriel Inc. résultant de la divulgation non autorisée de toute information de nature confidentielle

GARANTIE – RESPONSABILITÉ LIMITÉE

La responsabilité de KAR se limite au remplacement de la marchandise défectueuse ou, à son choix, au remboursement du prix d'achat. Cette garantie remplace toutes les autres garanties. Veuillez prendre connaissance de la politique de retour figurant ci-dessus. Les spécifications des produits peuvent être modifiées sans préavis. Les illustrations présentées peuvent être inexactes.

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