



TOOL SUPPLY, INC.

www.toolsupply.com



a **DXP** Company

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Eugene, OR 97402

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(541) 484-4413

9340-A 7th Street
Rancho Cucamonga, CA 91730

Fax 980-0629
(909) 987-0200

— Toll Free Nationwide — 800-440-8665 —

ProTool™ Inspection Vise

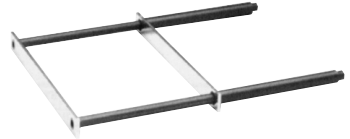
- Features vertical and horizontal v-grooves.
- All surfaces are hardened and precision ground
- Square and parallel +/- .0002"
- Jaw width 2-1/2". Jaw Depth 1.25"
- Maximum opening 3.30"
- Body 38 HRC, one piece design.



Order No. **SHA-VIST-2.5**
Sale **\$183.46**

Parallel Separator

Place your parallels in the vise against the jaws. Squeeze the parallel separator together & place them inside the parallels. Release gently, the separator will push them against the hard jaws of the vise. Simple!!



Order Number **PS-200**
fits 8" Wide Vise
SALE **\$85.00ea**



Order Number **PS-100**
fits 6" Wide Vise
SALE **\$54.20ea**

Milling Vise Work Stops

Use for production set ups on milling vises. Bolts on the vise with no modifications. Works with right or left hand locations and any jaw height. Quick adjusting.



6" Vise Work Stop
Order No. **SHA-VWS6**
Sale **\$29.95**

6" Vise Speed Handle

(Standard 3/4" Hex Drive)



Order No. **SHA-6SH**
Sale **\$30.80**

Production Work Stop

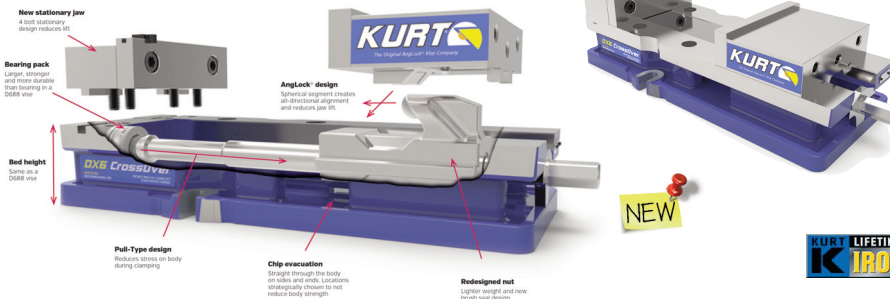
Use on your table for vertical or horizontal set ups. Heavy duty solid steel stop has 1/2" clamping hole in base to allow secure anchoring with T-slot Nut and Stud. 7" overall height, with 3/8" diameter stop rod.



Production Work Stop
fits 6" Vise
Order No. **SHA-PS6**
Sale **\$23.95**

All New Kurt DX6™ CrossOver™ Vise

6" Jaw Width and a 9" opening



New Updated body style:

- Hardened vise bed/jaw plates
- New wider four bolt design on stationary jaw reduces vise deflection and alleviates body stress.
- Limited warranty direct from Kurt
- Body height matched to +/- .0005"
- 80,000 psi ductile iron body, nut and movable jaw.
- Legendary AngLock® design reduces stress on body during clamping.
- 6" Jaw width with a 9" opening.
- Ship Weight 65 lbs
- Includes GrooveLock® jaw plate and workstop.

Order Number **KUR-DX6**
Sale **\$699.99**



3pc Mini Indexable Endmill Set

- Fitted Storage Case
- Uses Standard TPG-22 Carbide Inserts
- 1/2" Shanks
- Set Includes: 1/2", 9/16", 5/8" Cut Diameter
- Inserts Included

Order No. **SHA-EMI-3**
 Regular Price **\$203.00**
 Sale **\$61.22**



NEW

Replacement Carbide inserts to fit above

Order No.	Description	I.C.	thick	rad	Price
185-TPG221TIN	TPG-221 C5-TIN	1/4	1/8	1/64	\$6.30
185-TPG222TIN	TPG-222 C5-TIN	1/4	1/8	1/32	6.30



5pc Indexable Internal Threading Kit

Includes 5 Internal Threading Bars and 5 Inserts

- SIR0312H08 5/16" Bar 08IRA60 Insert 4" OAL 48-16 TPI
- SIR0375K11 3/8" Bar 11IRAG60 Insert 5" OAL 48-16 TPI
- SIR0500M11 1/2" Bar 11IRAG60 Insert 6" OAL 48-16 TPI
- SIR0625P16 5/8" Bar 16IRAG60 Insert 7" OAL 8-48 TPI
- SIR0750S16 3/4" Bar 16IRAG60 Insert 10" OAL 8-48 TPI

ProTool Order No. **SHA-5PC-INT**
 Sale **\$267.53**

3pc Indexable 90° Countersink and Chamfering Set

- Positive Rake for Smooth Cutting and less chatter.
- Set Includes: 1/4" x 3/4" x 1/2" Shank 90° Angle, 1/2" x 1-3/4" x 1/2" Shank 90° Angle, 1-1/4" x 2-1/2" x 3/4" Shank 90° Angle
- Inserts Included



Replacement Carbide inserts to fit above

Order No. **SHA-ICC-3**
 Regular Price **\$391.00**
 Sale **\$117.13**

NEW

Order No.	Description	I.C.	thick	rad	Price
185-TPGH321TIN	TPGH-321 C5-TIN	3/8	1/8	1/64	\$9.93
185-SPGH433TIN	SPGH-433 C5-TIN	1/2	3/16	3/64	11.95

External Threading Kit

Includes 3/4x3/4" Shank External Toolholder **SER750K16** 5" Overall Length and 10ea 16ERAG60 External Coated Inserts
 Order No. **SHA-750EXT**
 Sale **\$182.82**



8-48 TPI Range



Internal Threading Kit

Includes 3/4" Shank Internal Bar **SIR0750P16 .900" Min Bore** 7" Overall Length 10ea 16IRAG60 Internal Coated Inserts
 Order No. **SHA-750-INT**
 Sale **\$223.76**



8-48 TPI Range



ProTool Precision Tooling **Threading Kit**
 Includes Internal and External Threading Tools and Replacement Inserts
 8-48 TPI Range



- Includes 3/4" Shank Internal Bar **SIR-0750P16 .900" Min Bore** 7" Overall Length
- and 3/4x3/4" Shank External Toolholder **SER-750K16** 5" Overall Length
- and 3ea 16IRAG60 Internal Coated Inserts
- and 4ea 16ERAG60 External Coated Inserts

Order No. **SHA-750-IE**
 Sale **\$194.06**



Cut-Off Kits

All Kits Include Block, Blade, Insert Extractor and Inserts!

Order No. **SHA-2532-3**
 Includes 1" Tool Block **SLTBN25.4-6**
NCIH32-3 1.25" Tall Blade
 10ea .118" Wide Coated Inserts
 Sale **\$167.22**

Great Deal

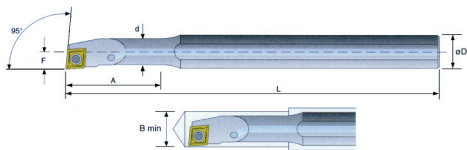


Order No. **SHA-1219-2**
 Includes 1/2" Tool Block **NCIH19-2** 3/4" Tall Blade
 10ea .087" Wide Coated Inserts
 Sale **\$199.00**



Coolant Fed Steel Boring Bars

Order No.	D	L	Min. Bore	A	Insert	Price
134-S05 SCLCR 06W	5/16	4.00	0.315	0.985	CC-06	\$40.00
134-S06 SCLCR 06W	3/8	4.33	0.472	1.260	CC-06	42.00
134-S08 SCLCR 06W	1/2	5.00	0.552	1.500	CC-06	44.00
134-S10 SCLCR 06W	5/8	5.90	0.708	1.968	CC-06	49.00



Carbide Inserts For Bars Above - Order Separately

Radius	IC	Grade	Order No.	Sale
.015	1/4	TIN	185-6CCM215L	\$6.50 ea

4 Pc. Boring Bar Set order inserts separately
 Order No. **134-SET-S-SCLCR 06W**
 Sale Price **\$189.00**

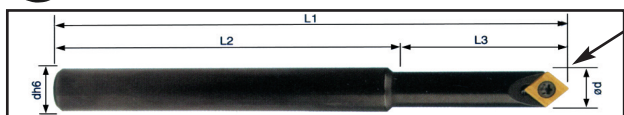
Kit includes All Bars shown above.



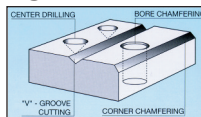


Indexable Countersink Tool

Use for center drilling, chamfering & v-grooving.



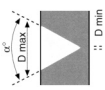
Insert with 2 cutting edges



Tool	Degree	L1	L2	L3	dh6	d	D min.	D max.	Insert	Screw	Key	Price
134-PC 0845A	90°	4.133	2.795	1.338	5/16	0.314	0.0236	0.299	CGX0622	1001P	2008	\$87.75
134-PC 1030A	118°	4.133	3.818	0.314	3/8	0.393	0.0236	0.334	M20 TiN	1001P	2008	90.00
134-PC 1245A	90°	4.330	2.992	1.338	5/8	0.492	0.0236	0.472	CGX0932	1004	2015	114.45
134-PC 1530A	118°	4.330	3.228	1.102	5/8	0.649	0.0236	0.551	M20 TiN	1004	2015	125.50
134-PC 1645A	90°	5.314	3.543	1.771	3/4	0.649	0.0275	0.629	CGX1242	1005	2020	134.45
134-PC 2030A	118°	5.314	3.818	1.496	3/4	0.866	0.0275	0.787	M20 TiN	1005	2020	152.25



Tin Coated Insert	Price
134-CGX 0622 M20 TiN	\$28.35
134-CGX 0932 M20 TiN	30.00
134-CGX 1242 M20 TiN	36.45



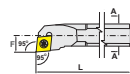
Insert for Non-Ferrous Materials	Price
134-CGX 0622 HT10	\$30.50
134-CGX 0932 HT10	32.25
134-CGX 1242 HT10	38.70

these inserts can be purchased individually

Individual Steel Shank Indexable Insert Boring Bars

Order No.	Shank Size	Min. Bore	Length L	Inserts	Sale Price
185-6870042	.315	.354	4	CC T-21.5	\$60.71
185-6870062	.375	.468	6	CC T-21.5	60.71
185-6870093	.500	.600	7	CC T-32.5	61.12
185-6870103	.625	.866	8	CC T-32.5	71.25
185-6870123	.750	.920	10	CC T-32.5	76.61
185-6870163	1.000	1.120	12	CC T-32.5	97.40

Uses Positive 80° diamond CCMT or CCGT inserts



Indexable Carbide inserts to above fit boring Bars !

Order No.	Insert Style and Grade	d I.C.	t	r	l	Sale Price
185-6CCM215L	CCMT-21.51 C5-TiN	1/4	3/32	1/64	.256	\$6.50
185-6CCM325L	CCMT-32.52 C5-TiN	3/8	5/32	1/32	.382	6.75
185-6CCG2102	CCGT-21.50.5 HO1	1/4	3/32	.008	.256	7.95
185-6CCG2112	CCGT-21.51 HO1	1/4	3/32	.016	.256	7.95
185-6CCG2122	CCGT-21.52 HO1	1/4	3/32	.031	.256	7.95
185-6CCG3202	CCGT-32.50.5 HO1	3/8	5/32	.008	.382	8.25
185-6CCG3212	CCGT-32.51 HO1	3/8	5/32	.016	.382	8.25
185-6CCG3222	CCGT-32.52 HO1	3/8	5/32	.031	.382	8.25

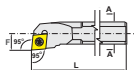


CCMT For All Steel Applications



CCGT For All Aluminum Applications

Inserts Sold in 10 Packs Only!



Carbide Indexable Insert Boring Bar Set

Order No. **SHA-BBS4**

- Includes 3/8, 1/2, 5/8 & 3/4" Shank Boring Bars SCLCR Style
- Uses Standard CCMT style inserts (not included)

Sale \$199.43



Replacement Carbide inserts to fit boring Bars



Order No.	Insert Style and Grade	d I.C.	t	r	l	Sale Price
185-6CCM215L	CCMT-21.51 C5-TiN	1/4	3/32	1/64	.256	\$6.50
185-6CCM325L	CCMT-32.52 C5-TiN	3/8	5/32	1/32	.382	6.75



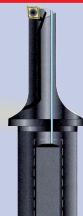
Mini Drills .400" thru 5/8"



Drill Dia.	Drill Depth	OAL	Order No.	List Price	Sale Price	Insert Used
.400	1.0"	3.62	134-OD 3/8-1.0	\$115.00	\$95.50	CCMT 2-1
1/2	1.2"	3.82	134-OD 1/2-1.2	115.00	97.80	CCMT 2-1
5/8	2.0"	4.60	134-OD 5/8-2.0	125.00	108.90	CCMT 3-1

Coolant Fed, Thru Shank.

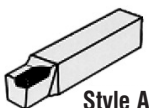
Order Inserts Separately



Style AL



C-6 Grade= All Steels and steel alloys, general purpose.



Style AR

American Made Brazed Tools

Size	Size Shank	Carbide Grade	Left Hand Order No.	Right Hand Order No.	1-11pcs Price	12+ Price
AR/L-4	1/4"	C-6	AL4C5	AR4C5	9.46	6.75
AR/L-5	5/16"	C-6	AL5C5	AR5C5	10.79	7.71
AR/L-6	3/8"	C-6	AL6C5	AR6C5	11.05	7.89
AR/L-8	1/2"	C-6	AL8C5	AR8C5	14.58	10.42
AR/L-10	5/8"	C-6	AL10C5	AR10C5	20.61	14.72
AR/L-12	3/4"	C-6	AL12C5	AR12C5	25.98	18.55

OSG PHOENIX®



Robust 2 Sided triangle insert has 3 cutting edges per side (6 edges total) and a .472" axial depth of Cut.

Balanced cutter rigidity and cutting edge sharpness enable efficient milling, even with long overhangs

Large wide flutes designed for heavy machining enable good chip evacuation

FREE Milling Cutter Bodies !!

Here is the Simple Deal !

Order 10 inserts per cutter body flute (insert pocket) and the cutter is free!

Facemill Model	Dia. Cut	Arbor Hole	Insert Length	No. of Flutes	Number of Inserts Needed for Free Cutter	Regular
OSG53100000	2	¾	.472	3	30	\$395.05
OSG53100001	2½	¾	.472	3	30	413.99
OSG53100002	3	1	.472	5	50	544.12
OSG53100003	4	1¼	.472	5	50	663.94
OSG53100004	5	1½	.472	7	70	800.87
OSG53100010	6	1½	.472	8	80	1027.00
OSG53100005	2	¾	.472	4	40	460.86
OSG53100006	2½	¾	.472	5	50	545.80
OSG53100007	3	1	.472	6	60	760.45
OSG53100008	4	1¼	.472	7	70	760.77
OSG53100009	5	1½	.472	9	90	940.14
OSG53100011	6	1½	.472	10	100	1192.00



- **GRADE CK010** For Machining Non-Ferrous Materials
Composed of a non-coated carbide with anti-chipping and wear resistant properties
- **GRADE XP3035** For Machining Steel, Stainless Steel and Cast Iron a grade for general purpose machining.
Composed of a tough, high strength carbide material with a chip resistant and wear resistant coating.
- **GRADE XP2040** For Machining Stainless Steel and Steel. Ideal for general purpose milling. Composed of a tough, high strength carbide material with an anti-chipping and wear resistant coating.
- **GRADE XC5040** For machining heat resistant alloy and stainless steels. Can be used for wet machining.
Composed of a tough carbide material with an oxidation-resistant and high lubricity coating.



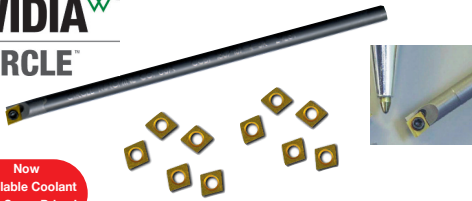
Designation	Order Number	LOC	thickness	Radius	Grade	MSRP Price	10-30pcs	40+
TNKU120608ERNM	OSG7811087	.472"	.257"	0.031"	CK010	34.97	31.47ea	27.98ea
TNKU120608ERGM	OSG7814088	.472"	.257"	0.031"	XP3035	31.04	27.93ea	24.83ea
TNKU120612ERGM	OSG7814094	.472"	.257"	0.047"	XP3035	31.04	27.93ea	24.83ea
TNKU120620ERGM	OSG7814096	.472"	.257"	0.078"	XP3035	31.04	27.93ea	24.83ea
TNKU120608ERSM	OSG7816091	.472"	.257"	0.031"	XC5040	37.41	33.67ea	29.28ea
TNKU120608ERGM	OSG7813088	.472"	.257"	0.031"	XP2040	31.04	27.93ea	24.83ea
TNKU120612ERGM	OSG7813094	.472"	.257"	0.047"	XP2040	31.04	27.93ea	24.83ea
TNKU120616ERGM	OSG7813095	.472"	.257"	0.063"	XP2040	31.04	27.93ea	24.83ea
TNKU120620ERGM	OSG7813096	.472"	.257"	0.078"	XP2040	31.04	27.93ea	24.83ea

Your cost per edge is only \$4.65 for 30 inserts, and the 2" cutter body with 3 flutes is FREE

Solid Carbide Coolant Fed 3/16" Shank Boring Bar (CDBI 180/187-4-5R)

The Kit includes 10 pcs. of Circle's .007" Radius-CG5 Inserts

WIDIA
CIRCLE



Now Available Coolant Fed, Same Price!

Minimum Bore .208", OAL =4"
5° lead angle solid carbide shank
CG5 Grade=general purpose, steel cutting grade PVD, TIN coated-thin film, .007" Radius

CLOSE-OUT
• WHILE SUPPLIES LAST •

Order No. CIR99999
Kit Price \$325.00

1/2" Carbide Coolant Fed Boring Bar Kit

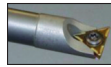
Includes 10pcs Grade CG5 Coated Inserts

The Kit includes 1 (one) 1/2" Carbide Boring Bar with Alloy Steel Head (QDBI-500-8-5R) and 10 ea. of Circle's TPHH-2150S-CG5 .007 radius Inserts

8" OVERALL
5° LEAD ANGLE
SOLID CARBIDE SHANK



WIDIA
CIRCLE



Now Available Coolant Fed, Same Price!

Kit Order No. CIR62007
Kit Price \$387.00

CLOSE-OUT
• WHILE SUPPLIES LAST •



Replacement Inserts for Above bar (sold in full packs only)

WIDIA
CIRCLE

	Order Number	I.C.	thickness	radius	Price
CDCD 500 CG5	WID3884731	.156	.040	.002	\$14.79
CDCD 505 CG5	WID3884732	.156	.040	.007	13.93
CDCD 51 CG5	WID2830788	.156	.040	.015	13.93
CDCT 505 CG5	WID2830632	.156	.040	.007	15.45
CDCT 51 CG5	WID2830619	.156	.040	.015	15.45

3/4" Steel Shank Boring Bar Kit

The Kit includes 10 pcs. of Circle's TPGT-3251HP CG5 Inserts



CLOSE-OUT
• WHILE SUPPLIES LAST •



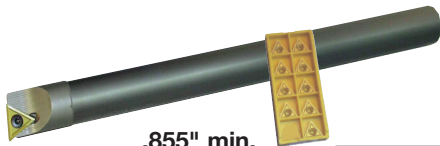
SSBI-750-8-5R Bar, Minimum Bore .855", OAL=8", 5° lead angle steel shank, CG5 Grade = ,Tin-PVD Coated Micrograin Carbide for all steels. .015" Radius.

WIDIA
CIRCLE

Order No. CIR75060K
Kit Price \$249.00

3/4" Shank Carbide Boring Bar Kit

The Kit includes 10 pcs. of Circle's TPGT-3251HP CG5 Inserts



.855" min. bore

CLOSE-OUT
• WHILE SUPPLIES LAST •

Coolant Fed, OAL =6", 5° lead angle solid carbide shank, CG5 Grade = TinPVD coated Micrograin carbide, for all steels. Radius = .015".

Order No. CIR75050K
Kit Price \$455.00

WIDIA
CIRCLE



WIDIA
CIRCLE

Replacement Inserts for 3/4" Bar Kits (sold in full packs only)

	Order Number	I.C.	Top Style	radius	Price
TD-6P-00 CG5	WID2821402	.375	Flat	.002	\$17.23
TD-6P-05 CG5	WID2821397	.375	Flat	.007	16.53
TD-6P-1 CG5	WID2821392	.375	Flat	.015	16.53
TPMT 321GP CG5	WID2821577	.375	Chipbreaker	.015	8.85
TPMT 322GP CG5	WID2821566	.375	Chipbreaker	.031	8.85



Trigon Carbide Bar Kits

Includes Solid Carbide Bar and 10 coated inserts

CLOSE-OUT
• WHILE SUPPLIES LAST •



NEW, Includes Precision Ground Locating Flat

- New Insert and Pocket design.
- Greater insert strength and thickness.
- All Kits come complete with 10 pcs. CG55 Tin Coated inserts, .007" Radius
- Trigon insert has stronger 80 degree entering angle



Tool Information:
Positive Cutting Rake Angle.
Bars come with ground flat.
3 degree lead angle allows boring facing and bottoming.
11 degree positive clearance inserts
Solid Carbide Bar with alloy steel heads

WIDIA
CIRCLE

Shank Diam.	Min. Bore	Overall Length	Type of Inserts Included	Order Number	Price
.187	.260	6.00	WPGT 605	CIR52081	\$377.95
.250	.285	6.00	WPGT 605	CIR52083	377.95



Flute Dia.	Shank Dia.	Length of Cut	Overall Length	Corner Radius	Order No.	Price	
						1-5pc	6+
1/4"	1/4"	3/8"	2"	-	GAR50007	\$21.62	20.66
1/4"	1/4"	3/4"	2-1/2"	-	GAR50011	24.50	23.42
1/4"	1/4"	1"	3"	-	GAR50015	37.43	35.77
5/16"	5/16"	13/16"	2-1/2"	-	GAR50018	34.95	33.40
3/8"	3/8"	1/2"	2"	-	GAR50029	35.29	33.73
3/8"	3/8"	1/2"	2"	.015"	GAR50031	40.41	38.62
3/8"	3/8"	1/2"	2"	.030"	GAR50033	40.41	38.62
3/8"	3/8"	1"	2-1/2"	-	GAR50034	41.23	39.41
3/8"	3/8"	1"	2-1/2"	.015"	GAR50035	43.93	41.99
3/8"	3/8"	1"	2-1/2"	.030"	GAR50037	43.93	41.99
3/8"	3/8"	1"	2-1/2"	.060"	GAR50038	43.93	41.99
3/8"	3/8"	2"	4"	-	GAR50039	59.51	56.87
3/8"	3/8"	2"	4"	.030"	GAR50041	65.07	62.19
1/2"	1/2"	5/8"	2-1/2"	-	GAR50054	57.72	55.17
1/2"	1/2"	5/8"	2-1/2"	.010"	GAR50106	67.14	64.17
1/2"	1/2"	5/8"	2-1/2"	.020"	GAR50055	67.14	64.17
1/2"	1/2"	5/8"	2-1/2"	.030"	GAR50107	67.14	64.17
1/2"	1/2"	1"	3"	-	GAR50056	61.68	58.95
1/2"	1/2"	1"	3"	.010"	GAR50108	74.94	71.63
1/2"	1/2"	1"	3"	.020"	GAR50057	74.94	71.63
1/2"	1/2"	1"	3"	.030"	GAR50109	74.94	71.63
1/2"	1/2"	1-1/4"	3"	-	GAR50058	61.68	58.95
1/2"	1/2"	1-1/4"	3"	.010"	GAR50111	74.94	71.63
1/2"	1/2"	1-1/4"	3"	.015"	GAR50059	74.94	71.63
1/2"	1/2"	1-1/4"	3"	.020"	GAR50061	74.94	71.63
1/2"	1/2"	1-1/4"	3"	.030"	GAR50062	74.94	71.63
1/2"	1/2"	1-1/4"	3"	.045"	GAR50063	74.94	71.63
1/2"	1/2"	1-1/4"	3"	.060"	GAR50064	74.94	71.63
1/2"	1/2"	1-1/4"	3"	.090"	GAR50065	74.94	71.63
1/2"	1/2"	2-1/8"	4"	-	GAR50067	83.45	79.76
1/2"	1/2"	2-1/8"	4"	.030"	GAR50068	88.56	84.64
5/8"	5/8"	1-1/4"	3-1/2"	-	GAR50069	113.79	108.76
3/4"	3/4"	7/8"	3"	-	GAR50079	158.79	151.76
3/4"	3/4"	1-1/2"	4"	-	GAR50082	162.44	155.25
3/4"	3/4"	1-1/2"	4"	.030"	GAR50083	171.09	163.52
3/4"	3/4"	1-1/2"	4"	.060"	GAR50084	171.09	163.52
3/4"	3/4"	2-1/8"	5"	-	GAR50086	218.02	208.38
1"	1"	1-1/4"	4"	-	GAR50094	242.67	231.93
1"	1"	1-3/4"	4"	-	GAR50097	242.67	231.93
1"	1"	1-3/4"	4"	.030"	GAR50098	292.11	279.18
1"	1"	3-1/4"	6"	-	GAR50104	423.14	404.42

Variable Helix 5 Flute-ALCRONA Coated Carbide Endmills

Recommended for Titanium, Inconel, and Stainless Steels
PCT, Polished Carbide Treatment, enhances tool life by 20%

Minimizes burr on part

Helix geometry varies over length of flutes. Variable flute design aids in chip evacuation in slots and pockets.

Variable rake to help chip formation
Many other sizes and radius combinations available.



Flute Dia.	Shank Dia.	Length of Cut	Overall Length	Radius	TiAlN Order No.	Price	
						1-5pc	6+
3/16"	3/16"	5/16"	2"	.010"	GAR27500	\$17.70	16.91
3/16"	3/16"	9/16"	2"	.010"	GAR27520	17.70	16.91
1/4"	1/4"	3/8"	2"	.015"	GAR27560	21.79	20.82
1/4"	1/4"	3/4"	2-1/2"	.015"	GAR27580	24.14	23.07
5/16"	5/16"	7/16"	2"	.020"	GAR27600	29.76	28.45
5/16"	5/16"	13/16"	2-1/2"	.020"	GAR27620	32.71	31.27
3/8"	3/8"	1/2"	2"	.020"	GAR27660	35.13	33.58
3/8"	3/8"	7/8"	2-1/2"	.020"	GAR27680	38.21	36.51
1/2"	1/2"	5/8"	2-1/2"	.020"	GAR27740	58.39	55.80
1/2"	1/2"	1-1/4"	3"	.020"	GAR27760	65.17	62.28
5/8"	5/8"	3/4"	3"	.025"	GAR27780	100.94	96.48
5/8"	5/8"	1-1/4"	3-1/2"	.025"	GAR27800	103.75	99.15
3/4"	3/4"	7/8"	3"	.030"	GAR27840	145.61	139.17
3/4"	3/4"	1-5/8"	4"	.030"	GAR27860	148.78	142.19
1"	1"	1"	4"	.035"	GAR27961	254.00	242.76
1"	1"	1-1/2"	4"	.035"	GAR27971	254.00	242.76

4 Flute Carbide - With Corner Radius

4 Flute Carbide VRX Series - Rougher / Finisher - Ball End

Flute Dia.	Shank Dia.	Length of Cut	Overall Length	Radius	TiAlN Order No.	Price	
						1-5pc	6+
3/16"	3/16"	9/16"	2"	Full Ball	GAR28500	17.70	16.91
1/4"	1/4"	3/4"	2-1/2"	Full Ball	GAR28580	24.14	23.07
5/16"	5/16"	13/16"	2-1/2"	Full Ball	GAR28620	32.71	31.27
3/8"	3/8"	7/8"	2-1/2"	Full Ball	GAR28680	38.21	36.51
1/2"	1/2"	1-1/4"	3"	Full Ball	GAR28760	65.17	62.28
5/8"	5/8"	1-5/8"	3-1/2"	Full Ball	GAR28800	103.75	99.15
3/4"	3/4"	1-5/8"	4"	Full Ball	GAR28860	148.78	142.19
1"	1"	1-1/2"	4"	Full Ball	GAR28916	254.00	242.76

VRX Series 4 Flute Variable Flute Geometry Carbide Endmill

Reduces Vibration for more Aggressive Machining
Rougher / Finisher

For Stainless Steel, Inconel, PH materials, cold rolled steel, Titanium, cast iron and tool steels, Single-End, Center-Cutting

ALTiN Coated



VRX Series 4 Flute Ball End Variable Flute Geometry Carbide Endmill

For Stainless Steel, Inconel, PH materials, cold rolled steel, Titanium, cast iron and tool steels, Single-End, Center-Cutting

ALTiN Coated



Balinit® HARDLUBE Coated Solid Carbide Drills.

135° 4 Facet self-Centering Point

Solid Submicron carbide, 3x Flute Length (stub)

Excellent Heat Resistance and Lubricity

For Stainless Steel alloys, mild steels and Titanium alloys



Cut Dia.	Shank Dia.	Flute Length	Overall Length	Order No.	Price		Cut Dia.	Shank Dia.	Flute Length	Overall Length	Order No.	Price	
					1-5pc	6+						1-5pc	6+
1/16	1/16	5/8	1-5/8	GAR77166	\$ 9.35	8.93	9/32	9/32	1-1/2	2-11/16	GAR77601	35.84	34.26
5/64	5/64	11/16	1-11/16	GAR77196	10.51	10.04	19/64	19/64	1-9/16	2-3/4	GAR77621	39.26	37.52
3/32	3/32	3/4	1-3/4	GAR77236	12.29	11.75	5/16	5/16	1-5/8	2-13/16	GAR77631	41.17	39.34
7/64	7/64	13/16	1-13/16	GAR77276	12.94	12.37	21/64	21/64	1-11/16	2-15/16	GAR77651	44.25	42.29
1/8	1/8	7/8	1-7/8	GAR77311	13.64	13.04	11/32	11/32	1-11/16	3	GAR77671	48.38	46.23
9/64	9/64	15/16	1-15/16	GAR77336	14.96	14.30	23/64	23/64	1-3/4	3-13/16	GAR77691	51.91	49.62
5/32	5/32	1	2-1/16	GAR77366	16.63	15.90	3/8	3/8	1-13/16	3-1/8	GAR77706	56.83	54.31
11/64	11/64	1-1/16	1	GAR77401	19.23	18.38	25/64	25/64	1-7/8	3-1/4	GAR77721	60.79	58.10
3/16	3/16	1-1/8	2-3/16	GAR77436	20.46	19.56	13/32	13/32	1-15/16	3-5/16	GAR77741	66.61	63.67
13/64	13/64	1-3/16	2-1/4	GAR77476	25.23	24.12	27/64	27/64	2	3-3/8	GAR77756	67.85	64.84
7/32	7/32	1-1/4	2-3/8	GAR77506	27.29	26.08	7/16	7/16	2-1/16	3-7/16	GAR77766	72.83	69.61
15/64	15/64	1-5/16	2-7/16	GAR77526	28.13	26.88	29/64	29/64	2-1/8	3-9/16	GAR77776	78.17	74.71
1/4	1/4	1-3/8	2-1/2	GAR77551	28.84	27.56	15/32	15/32	2-1/8	3-5/8	GAR77781	82.14	78.51
17/64	17/64	1-7/16	2-5/8	GAR77571	33.83	32.34	31/64	31/64	2-3/16	3-11/16	GAR77791	82.94	79.27
							1/2	1/2	2-1/4	3-3/4	GAR77801	84.30	80.57





Order No.	Flute Dia.	Flute Length	Shank Dia.	Overall Length	Price
4 Flute					
GAR06010	1/32	1/16	1/8	1-1/2	\$18.84
GAR06020	3/64	3/32	1/8	1-1/2	19.76
GAR06030	1/16	1/8	1/8	1-1/2	19.76
GAR06040	3/32	3/16	1/8	1-1/2	19.76
GAR06050	1/8	1/4	1/8	1-1/2	12.25
GAR06060	5/32	5/16	3/16	2	21.75
GAR06070	3/16	3/8	3/16	2	17.75
GAR06080	7/32	1/2	1/4	2-1/2	25.37
GAR06090	1/4	1/2	1/4	2-1/2	23.11
GAR06100	5/16	1/2	5/16	2-1/2	28.76
GAR06110	3/8	1/2	3/8	2-1/2	30.58
GAR06120	7/16	9/16	7/16	2-3/4	41.72
GAR06130	1/2	5/8	1/2	3	51.97

Solid Carbide End Mills

Stub Length, Double End

Shorter flute length for rigidity and economy. 30° helix - rhs/rhc. Made from premium micro grain carbide.

Dia. Tol. +0.0, -0.002. Center Cutting



Call For Large Quantity Discounts!



Solid Carbide End Mills

Ball Nose Stub, Double End

Shorter flute length for rigidity and economy. 30° helix - rhs/rhc. Made from premium micro grain carbide.

Dia. Tol. +0.0, -0.002. Center Cutting



Call For Large Quantity Discounts!



Order No.	Flute Dia.	Flute Length	Shank Dia.	Overall Length	Price
4 Flute Ball					
GAR08010	1/32	1/16	1/8	1-1/2	\$23.21
GAR08020	3/64	3/32	1/8	1-1/2	23.21
GAR08030	1/16	1/8	1/8	1-1/2	23.21
GAR08040	3/32	3/16	1/8	1-1/2	23.21
GAR08050	1/8	1/4	1/8	1-1/2	14.40
GAR08060	5/32	5/16	3/16	2	25.57
GAR08070	3/16	3/8	3/16	2	20.91
GAR08080	7/32	1/2	1/4	2-1/2	29.87
GAR08090	1/4	1/2	1/4	2-1/2	27.19
GAR08100	5/16	1/2	5/16	2-1/2	32.24
GAR08110	3/8	1/2	3/8	2-1/2	35.98
GAR08120	7/16	9/16	7/16	2-3/4	51.49
GAR08130	1/2	5/8	1/2	3	58.27

Solid Carbide End Mills

Standard Length, Single End

General purpose. For applications in steel and high-temperature alloys. Extremely versatile. 30° helix - rhs/rhc. Made from premium micro grain carbide.

Dia. Tol. +0.0, -0.002. Center Cutting.



Order No.			Flute Dia.	Flute Length	Shank Dia.	OAL	1-5pc	6+
2 Flute	3 Flute	4 Flute						
GAR11010	GAR12010	GAR13010	1/32	3/32	1/8	1-1/2	\$10.99	10.51
GAR11020	GAR12020	GAR13020	3/64	1/8	1/8	1-1/2	10.99	10.51
GAR11030	GAR12030	GAR13030	1/16	1/4	1/8	1-1/2	10.20	9.75
GAR11040	GAR12040	GAR13040	5/64	1/4	1/8	1-1/2	10.20	9.75
GAR11050	GAR12050	GAR13050	3/32	3/8	1/8	1-1/2	9.65	9.22
GAR11060	GAR12060	GAR13060	7/64	3/8	1/8	1-1/2	9.65	9.22
GAR11070	GAR12070	GAR13070	1/8	1/2	1/8	1-1/2	8.90	8.51
GAR11080	GAR12080	GAR13080	9/64	9/16	3/16	2	13.16	12.58
GAR11090	GAR12090	GAR13090	5/32	9/16	3/16	2	13.16	12.58
GAR11100	GAR12100	GAR13100	11/64	9/16	3/16	2	13.16	12.58
GAR11110	GAR12110	GAR13110	3/16	5/8	3/16	2	12.50	11.94
GAR11120	GAR12120	GAR13120	13/64	5/8	1/4	2-1/2	16.54	15.81
GAR11130	GAR12130	GAR13130	7/32	5/8	1/4	2-1/2	16.54	15.81
GAR11140	GAR12140	GAR13140	15/64	3/4	1/4	2-1/2	16.54	15.81
GAR11150	GAR12150	GAR13150	1/4	3/4	1/4	2-1/2	15.05	14.39
GAR11160	GAR12160	GAR13160	17/64	7/8	5/16	2-1/2	26.41	25.24
GAR11170	GAR12170	GAR13170	9/32	7/8	5/16	2-1/2	26.41	25.24
GAR11180	GAR12180	GAR13180	19/64	7/8	5/16	2-1/2	26.41	25.24
GAR11190	GAR12190	GAR13190	5/16	7/8	5/16	2-1/2	21.12	20.19
GAR11200	GAR12200	GAR13200	21/64	7/8	3/8	2-1/2	31.28	29.89
GAR11210	GAR12210	GAR13210	11/32	7/8	3/8	2-1/2	31.28	29.89
GAR11220	GAR12220	GAR13220	23/64	7/8	3/8	2-1/2	31.28	29.89
GAR11230	GAR12230	GAR13230	3/8	7/8	3/8	2-1/2	26.32	25.15
GAR11240	GAR12240	GAR13240	25/64	7/8	7/16	2-1/2	37.40	35.75
GAR11250	GAR12250	GAR13250	13/32	7/8	7/16	2-1/2	37.40	35.75
GAR11260	GAR12260	GAR13260	27/64	7/8	7/16	2-1/2	37.40	35.75
GAR11270	GAR12270	GAR13270	7/16	1	7/16	2-1/2	32.09	30.67
GAR11280	GAR12280	GAR13280	29/64	1	1/2	3	50.38	48.15
GAR11290	GAR12290	GAR13290	15/32	1	1/2	3	50.38	48.15
GAR11300	GAR12300	GAR13300	31/64	1	1/2	3	50.38	48.15
GAR11310	GAR12310	GAR13310	1/2	1	1/2	3	42.13	40.26
GAR11320	GAR12320	GAR13320	9/16	1-1/4	9/16	3-1/2	71.97	68.79
GAR11330	GAR12330	GAR13330	5/8	1-1/4	5/8	3-1/2	81.25	77.65
GAR11340	GAR12340	GAR13340	11/16	1-1/2	3/4	4	135.31	129.32
GAR11350	GAR12350	GAR13350	3/4	1-1/2	3/4	4	119.11	113.64
GAR11360	GAR12360	GAR13360	7/8	1-1/2	7/8	4	171.42	163.84
GAR11370	GAR12370	GAR13370	1	1-1/2	1	4	178.21	170.33
-	-	GAR13390	1-1/4	2	1-1/4	4-1/2	520.29	497.26

4 Flute Carbide With Standard 45° Lead Chamfer



Flute Dia.	Shank Dia.	Length of Cut	Overall Length	Chamfer Length	TIAIN Order No.	1-5pc	6+
1/4"	1/4"	3/8"	2"	.020"	GAR49520	\$35.45	33.88
1/4"	1/4"	3/4"	2-1/2"	.020"	GAR49540	40.43	38.64
5/16"	5/16"	7/16"	2"	.020"	GAR49580	43.08	41.17
5/16"	5/16"	13/16"	2-1/2"	.020"	GAR49600	46.42	44.37
3/8"	3/8"	1/2"	2"	.025"	GAR49640	49.40	47.22
3/8"	3/8"	7/8"	2-1/2"	.025"	GAR49660	56.23	53.74
1/2"	1/2"	5/8"	2-1/2"	.030"	GAR49740*	68.04	65.03
1/2"	1/2"	1-1/4"	3"	.030"	GAR49760*	76.03	72.66
5/8"	5/8"	3/4"	3"	.035"	GAR49780*	118.01	112.78
5/8"	5/8"	1-1/4"	3-1/2"	.035"	GAR49800*	121.12	115.77
5/8"	5/8"	1-5/8"	4"	.035"	GAR49820*	127.63	121.98
3/4"	3/4"	7/8"	3"	.040"	GAR49860*	170.39	162.85
3/4"	3/4"	1-5/8"	4"	.040"	GAR49880*	173.92	166.22
1"	1"	1"	4"	.040"	GAR49925*	292.12	279.19
1"	1"	1-1/2"	4"	.040"	GAR49930*	292.12	279.19
1"	1"	2"	5"	.040"	GAR49940*	359.67	343.75

* Tools with weldon shank



ALTIN Coated
VHM Series
4 Flute Solid Carbide Staggered Flute Hog Mill
 Reduces Tool Pressure for more Aggressive Machining
 State of the Art Rougher / Finisher

For Stainless Steel Inconel, PH materials, cold rolled steel, Titanium, cast iron and tool steels, Single-End, Center-Cutting



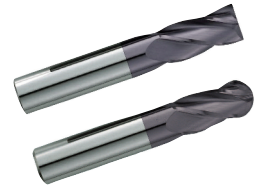


Standard Length, 4 flute



Solid Carbide End Mills

TIALN Coating



Newest generation Titanium Aluminum Nitride PVD Coating. For greatly improved lubricity and extreme abrasion resistance. High transverse rupture strength. 30° helix - rhs/rhc. Made from premium micro grain carbide.
Dia. Tol. +0.0, -0.002. Center Cutting.



Flute Dia.	Flute Length	Shank Dia.	OAL	Square end 4 Flute			Ball End 4 Flute		
				Order No.	1-5pc	6+	Order No.	1-5pc	6+
1/32	3/32	1/8	1-1/2	GAR13017	\$13.64	13.04	GAR18017	\$ 16.08	15.84
3/64	1/8	1/8	1-1/2	GAR13027	13.64	13.04	GAR18027	16.58	15.84
1/16	1/4	1/8	1-1/2	GAR13037	12.86	12.29	GAR18037	15.81	15.11
5/64	1/4	1/8	1-1/2	GAR13047	12.86	12.29	GAR18047	15.81	15.11
3/32	3/8	1/8	1-1/2	GAR13057	12.29	11.75	GAR18057	15.23	14.56
7/64	3/8	1/8	1-1/2	GAR13067	12.29	11.75	GAR18067	15.23	14.56
1/8	1/2	1/8	1-1/2	GAR13077	11.55	11.04	GAR18077	14.07	13.45
9/64	9/16	3/16	2	GAR13087	15.81	15.11	GAR18087	19.42	18.57
5/32	9/16	3/16	2	GAR13097	15.81	15.11	GAR18097	19.42	18.57
11/64	9/16	3/16	2	GAR13107	15.81	15.11	GAR18107	19.42	18.57
3/16	5/8	3/16	2	GAR13117	15.12	14.45	GAR18117	17.70	16.91
13/64	5/8	1/4	2-1/2	GAR13127	22.02	21.05	GAR18127	24.96	23.86
7/32	5/8	1/4	2-1/2	GAR13137	22.02	21.05	GAR18137	24.96	23.86
15/64	3/4	1/4	2-1/2	GAR13147	22.02	21.05	GAR18147	24.96	23.86
1/4	3/4	1/4	2-1/2	GAR13157	20.52	19.61	GAR18157	24.14	23.07
17/64	7/8	5/16	2-1/2	GAR13167	34.59	33.06	GAR18167	37.44	35.78
9/32	7/8	5/16	2-1/2	GAR13177	34.59	33.06	GAR18177	37.44	35.78
19/64	7/8	5/16	2-1/2	GAR13187	34.59	33.06	GAR18187	37.44	35.78
5/16	7/8	5/16	2-1/2	GAR13197	29.30	28.00	GAR18197	32.71	31.27
21/64	7/8	3/8	2-1/2	GAR13207	39.45	37.70	GAR18207	43.21	41.30
11/32	7/8	3/8	2-1/2	GAR13217	39.45	37.70	GAR18217	43.21	41.30
23/64	7/8	3/8	2-1/2	GAR13227	39.45	37.70	GAR18227	43.21	41.30
3/8	7/8	3/8	2-1/2	GAR13237	34.47	32.94	GAR18237	38.21	36.51
25/64	7/8	7/16	2-1/2	GAR13247	46.70	44.64	GAR18247	52.38	50.06
13/32	7/8	7/16	2-1/2	GAR13257	46.70	44.64	GAR18257	52.38	50.06
27/64	7/8	7/16	2-1/2	GAR13267	46.70	44.64	GAR18267	52.38	50.06
7/16	1	7/16	2-1/2	GAR13277	41.40	39.57	GAR18277	46.19	44.15
29/64	1	1/2	3	GAR13287	59.68	57.03	GAR18287	71.05	67.91
15/32	1	1/2	3	GAR13297	59.68	57.03	GAR18297	71.05	67.91
31/64	1	1/2	3	GAR13307	59.68	57.03	GAR18307	71.05	67.91
1/2	1	1/2	3	GAR13317	51.43	49.15	GAR18317	65.17	62.28
9/16	1-1/4	9/16	3-1/2	GAR13327	85.39	81.62	GAR18327	94.76	90.57
5/8	1-1/4	5/8	3-1/2	GAR13337	94.69	90.50	GAR18337	103.75	99.15
11/16	1-1/2	3/4	4	GAR13347	151.17	144.48	GAR18347	166.20	158.85
3/4	1-1/2	3/4	4	GAR13357	134.98	129.01	GAR18357	148.78	142.19
7/8	1-1/2	7/8	4	GAR13367	194.85	186.22	GAR18367	236.88	225.93
1	1-1/2	1	4	GAR13377	201.61	192.69	GAR18377	254.00	242.76

Order No.

2 Flute Ball 3 Flute Ball 4 Flute Ball

Order No.	Flute Dia.	Flute Length	Shank Dia.	OAL	1-5pc	6+
GAR16010	1/32	3/32	1/8	1-1/2	\$13.94	13.33
GAR16020	3/64	1/8	1/8	1-1/2	13.94	13.33
GAR16030	1/16	1/4	1/8	1-1/2	13.16	12.58
GAR16040	5/64	1/4	1/8	1-1/2	13.16	12.58
GAR16050	3/32	3/8	1/8	1-1/2	12.59	12.03
GAR16060	7/64	3/8	1/8	1-1/2	12.59	12.03
GAR16070	1/8	1/2	1/8	1-1/2	11.42	10.92
GAR16080	9/64	9/16	3/16	2	16.76	16.02
GAR16090	5/32	9/16	3/16	2	16.76	16.02
GAR16100	11/64	9/16	3/16	2	16.76	16.02
GAR16110	3/16	5/8	3/16	2	15.05	14.39
GAR16120	13/64	5/8	1/4	2-1/2	19.49	18.63
GAR16130	7/32	5/8	1/4	2-1/2	19.49	18.63
GAR16140	15/64	3/4	1/4	2-1/2	19.49	18.63
GAR16150	1/4	3/4	1/4	2-1/2	18.70	17.87
GAR16160	17/64	7/8	5/16	2-1/2	29.27	27.97
GAR16170	9/32	7/8	5/16	2-1/2	29.27	27.97
GAR16180	19/64	7/8	5/16	2-1/2	29.27	27.97
GAR16190	5/16	7/8	5/16	2-1/2	24.51	23.43
GAR16200	21/64	7/8	3/8	2-1/2	35.03	33.48
GAR16210	11/32	7/8	3/8	2-1/2	35.03	33.48
GAR16220	23/64	7/8	3/8	2-1/2	35.03	33.48
GAR16230	3/8	7/8	3/8	2-1/2	30.00	28.67
GAR16240	25/64	7/8	7/16	2-1/2	43.11	41.20
GAR16250	13/32	7/8	7/16	2-1/2	43.11	41.20
GAR16260	27/64	7/8	7/16	2-1/2	43.11	41.20
GAR16270	7/16	1	7/16	2-1/2	36.93	35.29
GAR16280	29/64	1	1/2	3	61.74	59.01
GAR16290	15/32	1	1/2	3	61.74	59.01
GAR16300	31/64	1	1/2	3	61.74	59.01
GAR16310	1/2	1	1/2	3	55.84	53.37
GAR16320	9/16	1-1/4	9/16	3-1/2	81.34	77.54
GAR16330	5/8	1-1/4	5/8	3-1/2	90.32	86.32
GAR16340	11/16	1-1/2	3/4	4	150.36	143.70
GAR16350	3/4	1-1/2	3/4	4	132.92	127.04
GAR16360	7/8	1-1/2	7/8	4	212.95	203.53
GAR16370	1	1-1/2	1	4	230.57	220.36

Solid Carbide End Mills Ball Nose Std. Length, Single End

General purpose. For applications in steel and high-temperature alloys. Extremely versatile. High transverse rupture strength. 30° helix - rhs/rhc. Radius tolerance ±.001". Made from premium micro grain carbide.
Dia. Tol. +0.0, -0.002. Center Cutting.



Miniature Micro Grain Carbide Endmills

Center Cutting, Premium Solid Micro Grain Carbide. 1/8" Shank. 1-1/2" Overall. Diameter Tolerance: +/- .0005". Shank Tolerance +.0000" to -.0004"

As small as .010"



Cut Dia.	Flute Length	2 Flute Order No.	4 flute Order No.	Price	Cut Dia.	Flute Length	2 Flute Order No.	4 flute Order No.	Price
.010	.030	PT-72010	PT-73010	19.20	.065	.195	PT-72065	PT-73065	11.10
.015	.045	PT-72015	PT-73015	17.00	.070	.210	PT-72070	PT-73070	11.10
.020	.060	PT-72020	PT-73020	19.80	.075	.225	PT-72075	PT-73075	11.10
.025	.075	PT-72025	PT-73025	14.90	.078	.234	PT-72078	PT-73078	11.10
.030	.090	PT-72030	PT-73030	14.90	.080	.240	PT-72080	PT-73080	11.10
.031	.093	PT-72031	PT-73031	14.90	.085	.255	PT-72085	PT-73085	11.10
.035	.105	PT-72035	PT-73035	14.90	.090	.270	PT-72090	PT-73090	11.10
.040	.120	PT-72040	PT-73040	12.50	.093	.279	PT-72093	PT-73093	11.10
.045	.135	PT-72045	PT-73045	12.50	.095	.285	PT-72095	PT-73095	11.10
.047	.141	PT-72047	PT-73047	12.50	.100	.300	PT-72100	PT-73100	11.10
.050	.150	PT-72050	PT-73050	12.50	.105	.315	PT-72105	PT-73105	11.10
.055	.165	PT-72055	PT-73055	12.50	.110	.330	PT-72110	PT-73110	11.10
.060	.180	PT-72060	PT-73060	11.10	.115	.345	PT-72115	PT-73115	11.10
.062	.187	PT-72062	PT-73062	11.10	.120	.360	PT-72120	PT-73120	11.10
					.125	.375	PT-72125	PT-73125	11.10





Corner Radius Carbide End Mills

Standard Length, Single End, Tialn Coated



GARR TOOL



Get maximum production rates in a wide range of materials. Offers the optimum in heat and abrasion resistance with Tialn Coating. Made from premium micro grain carbide.
Dia. Tol. +0.0, -0.002, Center Cutting. Radius Tol. +.000/-0.01"

Corner Radius	Order Number		Flute Dia.	Flute Length	Shank Dia.	OAL	Prices	
	4 Flute	2 Flute					1-5pc	6+
.010	GAR80607	GAR79607	3/32	3/8	1/8	1-1/2	\$15.23	14.56
.015	GAR80617	GAR79617	3/32	3/8	1/8	1-1/2	15.23	14.56
.020	GAR80627	GAR79627	3/32	3/8	1/8	1-1/2	15.23	14.56
.010	GAR80007	GAR79007	1/8	1/2	1/8	1-1/2	14.07	13.45
.015	GAR80017	GAR79017	1/8	1/2	1/8	1-1/2	14.07	13.45
.020	GAR80027	GAR79027	1/8	1/2	1/8	1-1/2	14.07	13.45
.030	GAR80037	GAR79037	1/8	1/2	1/8	1-1/2	14.07	13.45
.010	GAR80047	GAR79047	3/16	5/8	3/16	2	17.70	16.91
.015	GAR80057	GAR79057	3/16	5/8	3/16	2	17.70	16.91
.020	GAR80067	GAR79067	3/16	5/8	3/16	2	17.70	16.91
.030	GAR80077	GAR79077	3/16	5/8	3/16	2	17.70	16.91
.015	GAR80107	GAR79107	1/4	3/4	1/4	2-1/2	24.14	23.07
.020	GAR80117	GAR79117	1/4	3/4	1/4	2-1/2	24.14	23.07
.030	GAR80127	GAR79127	1/4	3/4	1/4	2-1/2	24.14	23.07
.045	GAR80137	GAR79137	1/4	3/4	1/4	2-1/2	24.14	23.07
.060	GAR80147	GAR79147	1/4	3/4	1/4	2-1/2	24.14	23.07
.015	GAR80167	GAR79167	5/16	7/8	5/16	2-1/2	32.71	31.27
.020	GAR80177	GAR79177	5/16	7/8	5/16	2-1/2	32.71	31.27
.030	GAR80187	GAR79187	5/16	7/8	5/16	2-1/2	32.71	31.27
.045	GAR80197	GAR79197	5/16	7/8	5/16	2-1/2	32.71	31.27
.060	GAR80207	GAR79207	5/16	7/8	5/16	2-1/2	32.71	31.27
.015	GAR80237	GAR79237	3/8	7/8	3/8	2-1/2	38.21	36.51
.020	GAR80247	GAR79247	3/8	7/8	3/8	2-1/2	38.21	36.51
.030	GAR80257	GAR79257	3/8	7/8	3/8	2-1/2	38.21	36.51
.045	GAR80267	GAR79267	3/8	7/8	3/8	2-1/2	38.21	36.51
.060	GAR80277	GAR79277	3/8	7/8	3/8	2-1/2	38.21	36.51
.015	GAR80307	GAR79307	1/2	1	1/2	3	65.17	62.28
.020	GAR80317	GAR79317	1/2	1	1/2	3	65.17	62.28
.030	GAR80327	GAR79327	1/2	1	1/2	3	65.17	62.28
.045	GAR80337	GAR79337	1/2	1	1/2	3	65.17	62.28
.060	GAR80347	GAR79347	1/2	1	1/2	3	65.17	62.28
.090	GAR80357	GAR79357	1/2	1	1/2	3	65.17	62.28
.125	GAR80367	GAR79367	1/2	1	1/2	3	65.17	62.28
.015	GAR80377	GAR79377	5/8	1-1/4	5/8	3-1/2	103.75	99.15
.020	GAR80387	GAR79387	5/8	1-1/4	5/8	3-1/2	103.75	99.15
.030	GAR80397	GAR79397	5/8	1-1/4	5/8	3-1/2	103.75	99.15
.045	GAR80407	GAR79407	5/8	1-1/4	5/8	3-1/2	103.75	99.15
.060	GAR80417	GAR79417	5/8	1-1/4	5/8	3-1/2	103.75	99.15
.090	GAR80427	GAR79427	5/8	1-1/4	5/8	3-1/2	103.75	99.15
.015	GAR80447	GAR79447	3/4	1-1/2	3/4	4	148.78	142.19
.020	GAR80457	GAR79457	3/4	1-1/2	3/4	4	148.78	142.19
.030	GAR80467	GAR79467	3/4	1-1/2	3/4	4	148.78	142.19
.045	GAR80477	GAR79477	3/4	1-1/2	3/4	4	148.78	142.19
.060	GAR80487	GAR79487	3/4	1-1/2	3/4	4	148.78	142.19
.090	GAR80497	GAR79497	3/4	1-1/2	3/4	4	148.78	142.19
.125	GAR80507	GAR79507	3/4	1-1/2	3/4	4	148.78	142.19
.015	GAR80517	GAR79517	1	1-1/2	1	4	254.00	242.76
.020	GAR80527	GAR79527	1	1-1/2	1	4	254.00	242.76
.030	GAR80537	GAR79537	1	1-1/2	1	4	254.00	242.76
.045	GAR80547	GAR79547	1	1-1/2	1	4	254.00	242.76
.060	GAR80557	GAR79557	1	1-1/2	1	4	254.00	242.76
.090	GAR80567	GAR79567	1	1-1/2	1	4	254.00	242.76
.125	GAR80577	GAR79577	1	1-1/2	1	4	254.00	242.76

Extra Long Solid Carbide Mills



2 Flute Order No.	4 Flute Order No.	Flute Dia.	Flute Length	Shank Dia.	OAL	Prices	
						1-5pc	6+
GAR41010	GAR42010	1/8	5/8	1/8	2	\$13.06	12.48
GAR41020	GAR42020	1/8	3/4	1/8	3	20.17	19.28
GAR41030	GAR42030	1/8	1	1/8	3	20.17	19.28
GAR41040	GAR42040	3/16	1	3/16	3	22.25	21.27
GAR41050	GAR42050	3/16	1-1/8	3/16	3	22.25	21.27
GAR41060	GAR42060	3/16	1	3/16	4	24.58	23.49
GAR41070	GAR42070	1/4	1	1/4	3	25.76	24.62
GAR41080	GAR42080	1/4	1	1/4	4	27.21	26.01
GAR41090	GAR42090	1/4	1-1/2	1/4	4	27.21	26.01
GAR41100	GAR42100	1/4	1-1/2	1/4	6	36.79	35.16
GAR41110	GAR42110	5/16	1	5/16	3	31.80	30.39
GAR41120	GAR42120	5/16	1	5/16	4	35.50	33.93
GAR41130	GAR42130	5/16	1-5/8	5/16	4	35.50	33.93
GAR41140	GAR42140	5/16	1-1/2	5/16	6	52.65	50.32
GAR41150	GAR42150	3/8	1	3/8	3	35.78	34.19
GAR41160	GAR42160	3/8	1	3/8	4	39.28	37.54
GAR41170	GAR42170	3/8	2	3/8	4	39.28	37.54
GAR41180	GAR42180	3/8	1-1/2	3/8	6	57.25	54.71
GAR41190	GAR42190	3/8	3	3/8	6	57.25	54.71
GAR41200	GAR42200	7/16	1	7/16	4	54.07	51.68
GAR41210	GAR42210	7/16	2	7/16	4	54.07	51.68
GAR41220	GAR42220	7/16	1-1/2	7/16	6	71.88	68.70
GAR41230	GAR42230	7/16	3	7/16	6	71.88	68.70
GAR41240	GAR42240	1/2	1	1/2	4	57.52	54.97
GAR41250	GAR42250	1/2	2	1/2	4	57.52	54.97
GAR41260	GAR42260	1/2	1-1/2	1/2	6	83.16	79.48
GAR41270	GAR42270	1/2	3	1/2	6	83.16	79.48
GAR41280	GAR42280	9/16	2	9/16	6	109.17	104.34
GAR41290	GAR42290	9/16	3	9/16	6	109.17	104.34
GAR41300	GAR42300	5/8	2	5/8	6	118.53	113.28
GAR41310	GAR42310	5/8	3	5/8	6	118.53	113.28
GAR41320	GAR42320	3/4	2	3/4	6	188.52	180.47
GAR41330	GAR42330	3/4	3	3/4	6	188.52	180.47
GAR41340	GAR42340	1	2	1	6	321.01	306.81
GAR41350	GAR42350	1	3	1	6	321.01	306.81
-	GAR42360	1	4	1	6	327.89	322.94
-	GAR42390	1-1/4	3	1-1/4	6	687.05	650.92



GARR TOOL

For extended reach and extended lengths of cut in deep pocket milling. Made from premium micro grain carbide.

Dia. Tol. +0/- .002", Center Cutting

GARR TOOL





2 Flute Order No.	4 Flute Order No.	Flute Dia.	Flute Length	Shank Dia.	OAL	Prices	
						1-5pc	6+
GAR41017	GAR42017	1/8	5/8	1/8	2	\$15.73	15.03
GAR41027	GAR42027	1/8	3/4	1/8	3	23.40	22.37
GAR41037	GAR42037	1/8	1	1/8	3	23.40	22.37
GAR41047	GAR42047	3/16	1	3/16	3	26.37	25.21
GAR41057	GAR42057	3/16	1-1/8	3/16	3	26.37	25.21
GAR41067	GAR42067	3/16	1	3/16	4	29.38	28.08
GAR41077	GAR42077	1/4	1	1/4	3	31.23	29.85
GAR41087	GAR42087	1/4	1	1/4	4	33.59	32.11
GAR41097	GAR42097	1/4	1-1/2	1/4	4	33.59	32.11
GAR41107	GAR42107	1/4	1-1/2	1/4	6	45.82	43.79
GAR41117	GAR42117	5/16	1	5/16	3	39.98	38.21
GAR41127	GAR42127	5/16	1	5/16	4	45.87	43.84
GAR41137	GAR42137	5/16	1-5/8	5/16	4	45.87	43.84
GAR41147	GAR42147	5/16	1-1/2	5/16	6	66.86	63.90
GAR41157	GAR42157	3/8	1	3/8	3	43.97	42.02
GAR41167	GAR42167	3/8	1	3/8	4	49.67	47.48
GAR41177	GAR42177	3/8	2	3/8	4	49.67	47.48
GAR41187	GAR42187	3/8	1-1/2	3/8	6	71.46	68.30
GAR41197	GAR42197	3/8	3	3/8	6	71.46	68.30
GAR41207	GAR42207	7/16	1	7/16	4	66.09	63.17
GAR41217	GAR42217	7/16	2	7/16	4	66.09	63.17
GAR41227	GAR42227	7/16	1-1/2	7/16	6	88.80	84.87
GAR41237	GAR42237	7/16	3	7/16	6	88.80	84.87
GAR41247	GAR42247	1/2	1	1/2	4	69.54	66.46
GAR41257	GAR42257	1/2	2	1/2	4	69.54	66.46
GAR41267	GAR42267	1/2	1-1/2	1/2	6	100.06	95.63
GAR41277	GAR42277	1/2	3	1/2	6	100.06	95.63
GAR41287	GAR42287	9/16	2	9/16	6	129.10	123.39
GAR41297	GAR42297	9/16	3	9/16	6	129.10	123.39
GAR41307	GAR42307	5/8	2	5/8	6	138.48	132.45
GAR41317	GAR42317	5/8	3	5/8	6	138.48	132.45
GAR41327	GAR42327	3/4	2	3/4	6	211.92	202.54
GAR41337	GAR42337	3/4	3	3/4	6	211.92	202.54
GAR41347	GAR42347	1	2	1	6	350.99	335.46
GAR41357	GAR42357	1	3	1	6	350.99	335.46
-	GAR42367	1	4	1	6	367.88	351.60
-	GAR42397	1-1/4	3	1-1/4	6	719.48	687.65

Extra Long Solid Carbide Mills



TIALN Coating



For extended reach and extended lengths of cut in deep pocket milling. Made from premium micro grain carbide, coated with Tialn. For superior abrasion resistance
Dia. Tol. +0/- .002", Center Cutting

2 Flute Ball Order No.	4 Flute Ball Order No.	Flute Dia.	Flute Length	Shank Dia.	OAL	Prices	
						1-5pc	6+
GAR43017	GAR44017	1/8	5/8	1/8	2	\$18.00	17.20
GAR43027	GAR44027	1/8	3/4	1/8	3	26.96	25.77
GAR43037	GAR44037	1/8	1	1/8	3	26.96	25.77
GAR43047	GAR44047	3/16	1	3/16	3	30.28	28.94
GAR43057	GAR44057	3/16	1-1/8	3/16	3	30.28	28.94
GAR43067	GAR44067	3/16	1	3/16	4	32.96	31.50
GAR43077	GAR44077	1/4	1	1/4	3	35.76	34.18
GAR43087	GAR44087	1/4	1	1/4	4	38.28	36.59
GAR43097	GAR44097	1/4	1-1/2	1/4	4	38.28	36.59
GAR43107	GAR44107	1/4	1-1/2	1/4	6	50.45	48.22
GAR43117	GAR44117	5/16	1	5/16	3	45.61	43.59
GAR43127	GAR44127	5/16	1	5/16	4	52.14	49.83
GAR43137	GAR44137	5/16	1-5/8	5/16	4	52.14	49.83
GAR43147	GAR44147	5/16	1-1/2	5/16	6	76.15	72.78
GAR43157	GAR44157	3/8	1	3/8	3	50.27	48.05
GAR43167	GAR44167	3/8	1	3/8	4	56.58	54.08
GAR43177	GAR44177	3/8	2	3/8	4	56.58	54.08
GAR43187	GAR44187	3/8	1-1/2	3/8	6	78.33	74.87
GAR43197	GAR44197	3/8	3	3/8	6	78.33	74.87
GAR43207	GAR44207	7/16	1	7/16	4	75.66	72.32
GAR43217	GAR44217	7/16	2	7/16	4	75.66	72.32
GAR43227	GAR44227	7/16	1-1/2	7/16	6	99.59	95.18
GAR43237	GAR44237	7/16	3	7/16	6	99.59	95.18
GAR43247	GAR44247	1/2	1	1/2	4	77.01	73.60
GAR43257	GAR44257	1/2	2	1/2	4	77.01	73.60
GAR43267	GAR44267	1/2	1-1/2	1/2	6	108.91	104.09
GAR43277	GAR44277	1/2	3	1/2	6	108.91	104.09
GAR43287	GAR44287	9/16	2	9/16	6	148.35	141.78
GAR43297	GAR44297	9/16	3	9/16	6	148.35	141.78
GAR43307	GAR44307	5/8	2	5/8	6	155.24	148.37
GAR43317	GAR44317	5/8	3	5/8	6	155.24	148.37
GAR43327	GAR44327	3/4	2	3/4	6	245.13	234.28
GAR43337	GAR44337	3/4	3	3/4	6	245.13	234.28
GAR43347	GAR44347	1	2	1	6	407.59	389.56
GAR43357	GAR44357	1	3	1	6	407.59	389.56

Extra Long Solid Carbide Ball Mills



TIALN Coating



For extended reach and extended lengths of cut in deep pocket milling. Made from premium micro grain carbide, coated with Tialn Coating. For superior abrasion resistance
Dia. Tol. +0/- .002", Center Cutting

Order No.		Dia.	Flute Length	Shank Dia.	Overall Length	Prices	
2 Flute	4 Flute					1-5pc	6+
GAR57200	GAR58200	1/8	1/2	1/8	1-1/2	\$11.42	10.92
GAR57210	GAR58210	3/16	5/8	3/16	2	15.05	14.39
GAR57220	GAR58220	1/4	3/4	1/4	2-1/2	18.70	17.87
GAR57230	GAR58230	5/16	7/8	5/16	2-1/2	24.51	23.43
GAR57240	GAR58240	3/8	7/8	3/8	2-1/2	30.00	28.67
GAR57250	GAR58250	7/16	1	7/16	2-3/4	36.93	35.29
GAR57260	GAR58260	1/2	1	1/2	3	55.84	53.37
GAR57270	GAR58270	5/8	1-1/4	5/8	3-1/2	90.32	86.32
GAR57280	GAR58280	3/4	1-1/2	3/4	4	132.92	121.16

Tialn Coated Order No.		Dia.	Flute Length	Shank Dia.	Overall Length	Prices	
2 Flute	4 Flute					1-5pc	6+
GAR57207	GAR58207	1/8	1/2	1/8	1-1/2	\$14.07	13.45
GAR57217	GAR58217	3/16	5/8	3/16	2	17.70	16.91
GAR57227	GAR58227	1/4	3/4	1/4	2-1/2	24.14	23.07
GAR57237	GAR58237	5/16	7/8	5/16	2-1/2	32.71	31.27
GAR57247	GAR58247	3/8	7/8	3/8	2-1/2	38.21	36.51
GAR57257	GAR58257	7/16	1	7/16	2-3/4	46.19	44.15
GAR57267	GAR58267	1/2	1	1/2	3	65.17	62.28
GAR57277	GAR58277	5/8	1-1/4	5/8	3-1/2	103.75	99.15
GAR57287	GAR58287	3/4	1-1/2	3/4	4	148.78	142.19

Solid Carbide Drill Mills



90° Angle



- Solid submicrograin carbide
- 90° Included angle to a point-center cutting



Tialn Coated Carbide Drill Mills



90° Angle





2 Flute Order No.	4 Flute Order No.	Flute Dia.	Flute Length	Shank Dia.	OAL	Price	
						1-5pc	6+
GAR43010	GAR44010	1/8	5/8	1/8	2	\$ 15.38	14.70
GAR43020	GAR44020	1/8	3/4	1/8	3	23.73	22.68
GAR43030	GAR44030	1/8	1	1/8	3	23.73	22.68
GAR43040	GAR44040	3/16	1	3/16	3	26.17	25.01
GAR43050	GAR44050	3/16	1-1/8	3/16	3	26.17	25.01
GAR43060	GAR44060	3/16	1	3/16	4	28.17	26.92
GAR43070	GAR44070	1/4	1	1/4	3	30.30	28.95
GAR43080	GAR44080	1/4	1	1/4	4	31.87	30.46
GAR43090	GAR44090	1/4	1-1/2	1/4	4	31.87	30.46
GAR43100	GAR44100	1/4	1-1/2	1/4	6	41.44	39.60
GAR43110	GAR44110	5/16	1	5/16	3	37.43	35.77
GAR43120	GAR44120	5/16	1	5/16	4	41.75	39.91
GAR43130	GAR44130	5/16	1-5/8	5/16	4	41.75	39.91
GAR43140	GAR44140	5/16	1-1/2	5/16	6	61.96	59.22
GAR43150	GAR44150	3/8	1	3/8	3	42.10	40.24
GAR43160	GAR44160	3/8	1	3/8	4	46.19	44.15
GAR43170	GAR44170	3/8	2	3/8	4	46.19	44.15
GAR43180	GAR44180	3/8	1-1/2	3/8	6	64.13	61.29
GAR43190	GAR44190	3/8	3	3/8	6	64.13	61.29
GAR43200	GAR44200	7/16	1	7/16	4	63.60	60.78
GAR43210	GAR44210	7/16	2	7/16	4	63.60	60.78
GAR43220	GAR44220	7/16	1-1/2	7/16	6	82.67	79.01
GAR43230	GAR44230	7/16	3	7/16	6	82.67	79.01
GAR43240	GAR44240	1/2	1	1/2	4	64.96	62.09
GAR43250	GAR44250	1/2	2	1/2	4	64.96	62.09
GAR43260	GAR44260	1/2	1-1/2	1/2	6	92.02	87.94
GAR43270	GAR44270	1/2	3	1/2	6	92.02	87.94
GAR43280	GAR44280	9/16	2	9/16	6	128.39	122.71
GAR43290	GAR44290	9/16	3	9/16	6	128.39	122.71
GAR43300	GAR44300	5/8	2	5/8	6	135.31	129.32
GAR43310	GAR44310	5/8	3	5/8	6	135.31	129.32
GAR43320	GAR44320	3/4	2	3/4	6	222.05	212.22
GAR43330	GAR44330	3/4	3	3/4	6	222.05	212.22
GAR43340	GAR44340	1	2	1	6	377.58	360.87
GAR43350	GAR44350	1	3	1	6	377.58	360.87

Extra Long Solid Carbide Ball Mills

For extended reach and extended lengths of cut in deep pocket milling. Made from premium micro grain carbide. Dia. Tol. +0/-0.002", Center Cutting



GARR TOOL



3 flute Solid Carbide Endmills Alumastar® Coated

- EXTREME High Speed Aluminum Carbide Endmill
- Alumastar® coating specifically designed to REPEL aluminum.
- Engineered and designed to run at 750-2500 SFM
- High Velocity, high metal removal rates
- Holds perpendicularity very well.

Flute Dia.	Shank Dia.	Overall Length	Flute Length	Reach Length	Neck Diam	Order Number	Price	
							1-5pc	6+
3/16"	3/16"	2"	9/16"			GAR41283	\$ 19.98	19.09
3/16"	3/16"	3"	7/32"	3/4"	.170	GAR41303	37.50	35.85
3/16"	3/16"	3"	1"			GAR41313	32.24	30.81
1/4"	1/4"	2-1/2"	3/4"			GAR41463	25.15	24.04
1/4"	1/4"	4"	3/8"	1 1/8"	.235	GAR41493	45.47	43.46
1/4"	1/4"	4"	3/8"	2 1/8"	.235	GAR41503	50.75	48.50
1/4"	1/4"	4"	1 5/8"			GAR41513	40.21	38.43
5/16"	5/16"	2 1/2"	3/4"			GAR41603	34.94	33.39
5/16"	5/16"	4"	7/16"	1 1/8"	.297	GAR41623	59.66	57.02
3/8"	3/8"	2 1/2"	7/8"			GAR41723	41.04	39.23
3/8"	3/8"	4"	1/2"	2 1/8"	.355	GAR41763	69.36	66.29
3/8"	3/8"	4"	1 5/8"			GAR41773	58.82	56.21
3/8"	3/8"	6"	1/2"	4"	.355	GAR41783	105.09	100.44
1/2"	1/2"	3"	1 1/4"			GAR41943	65.63	62.73
1/2"	1/2"	2"	4"			GAR41973	85.87	82.02
1/2"	1/2"	4"	5/8"	2 1/8"	.475	GAR41983	96.36	92.09
1/2"	1/2"	6"	5/8"	4 1/8"	.475	GAR41993	147.32	140.80
1/2"	1/2"	6"	3 1/8"			GAR42003	126.24	120.66
5/8"	5/8"	4"	1 5/8"			GAR42023	130.81	125.02
5/8"	5/8"	6"	3/4"	2 3/8"	.590	GAR42033	182.57	174.50
5/8"	5/8"	6"	3/8"	4 3/8"	.590	GAR42043	193.12	184.57
5/8"	5/8"	6"	3 1/8"			GAR42053	172.03	164.42
3/4"	3/4"	4"	1 5/8"			GAR42143	167.38	159.97
3/4"	3/4"	5"	2"			GAR42153	221.01	211.23
3/4"	3/4"	6"	1"	2 1/2"	.715	GAR42163	240.42	229.78
3/4"	3/4"	6"	1"	4 3/8"	.715	GAR42173	247.87	236.90
1"	1"	4"	1 5/8"			GAR42303	251.55	240.42
1"	1"	6"	1 1/4"	3 3/8"	.960	GAR42343	402.33	384.52
1"	1"	6"	3 1/8"			GAR42353	386.54	369.44



GARR TOOL



2 flute Solid Carbide Ball End Alumastar® Coated

GARR TOOL

Order No.	Flute Dia.	Flute Length	Shank Dia.	OAL	Price	
					1-5pc	6+
GAR42582	3/16	9/16	3/16	2	\$23.00	21.98
GAR42762	1/4	3/4	1/4	2-1/2	29.43	28.12
GAR42902	5/16	3/4	5/16	2-1/2	38.95	37.23
GAR43022	3/8	7/8	3/8	2-1/2	45.38	43.37
GAR43242	1/2	1-1/4	1/2	3	81.79	78.17
GAR43322	5/8	1-5/8	5/8	4	141.49	135.23
GAR43442	3/4	1-5/8	3/4	4	183.63	175.50
GAR43602	1	1-5/8	1	4	313.16	299.30

- EXTREME High Speed Aluminum Carbide Ball Endmill
- Alumastar® coating specifically designed to REPEL aluminum.
- Engineered and designed to run at 750-2500 SFM
- High Velocity, high metal removal rates
- Holds perpendicularity very well.








Solid Micrograin Carbide Double End Stub Mill




- Stub Length/Center Cutting
- 100% Precision CNC Ground
- Double End – Solid Micrograin
- 30° right-hand spiral

Cut Dia.	Shank Dia.	Flute Length	Overall Length	2 Flute Order No.	4 Flute Order No.	Price
1/8	1/8	1/4	1-1/2	971-125	970-125	\$ 10.04
3/16	3/16	3/8	2	971-187	970-187	14.07
1/4	1/4	1/2	2-1/2	971-250	970-250	16.43
5/16	5/16	1/2	2-1/2	971-312	970-312	21.69
3/8	3/8	9/16	2 1/2	971-375	970-375	25.86
7/16	7/16	9/16	2 3/4	971-437	970-437	36.34
1/2	1/2	5/8	3	971-500	970-500	41.00




4 Flute Solid Micrograin Carbide Single End Mill

- Regular Length/Center Cutting
- 4 Flute – 100% Precision CNC Ground
- Single End – Solid Micrograin
- 30° right-hand spiral

Cut Dia.	Shank Dia.	Flute Length	Overall Length	Uncoated		Tialn Coated	
				Order No.	Price	Order No.	Price
1/8	1/8	1/2	1-1/2	900-125	\$ 6.53	902-125	\$ 7.51
3/16	3/16	5/8	2	900-187	9.65	902-187	11.11
1/4	1/4	3/4	2-1/2	900-250	12.16	902-250	13.99
5/16	5/16	13/16	2-1/2	900-312	14.74	902-312	16.96
3/8	3/8	1	2 1/2	900-375	20.38	902-375	23.43
7/16	7/16	1	2 3/4	900-437	27.76	902-437	31.93
1/2	1/2	1	3	900-500	33.58	902-500	38.61
5/8	5/8	1 1/4	3 1/2	900-625	63.86	902-625	73.45
3/4	3/4	1 1/2	4	900-750	94.30	902-750	108.44
1"	1"	1 1/2	4	900-100	167.03	902-100	192.10




2 Flute Solid Micrograin Carbide Single End Mill

- Regular Length/Center Cutting
- 2 Flute – 100% Precision CNC Ground
- Single End – Solid Micrograin
- 30° right-hand spiral

Cut Dia.	Shank Dia.	Flute Length	Overall Length	Uncoated		Tialn Coated	
				Order No.	Price	Order No.	Price
1/8	1/8	1/2	1-1/2	950-125	\$ 6.53	952-125	\$ 7.51
3/16	3/16	5/8	2	950-187	9.65	952-187	11.11
1/4	1/4	3/4	2-1/2	950-250	12.16	952-250	13.99
5/16	5/16	13/16	2-1/2	950-312	14.74	952-312	16.96
3/8	3/8	1	2 1/2	950-375	20.38	952-375	23.43
7/16	7/16	1	2 3/4	950-437	27.76	952-437	31.93
1/2	1/2	1	3	950-500	33.58	952-500	38.61
5/8	5/8	1 1/4	3 1/2	950-625	63.86	952-625	73.45
3/4	3/4	1 1/2	4	950-750	94.30	952-750	108.44
1"	1"	1 1/2	4	950-100	167.03	952-100	192.10


4 Flute Solid Micrograin Carbide Ball Nose Single End Mill


- Regular Length/Center Cutting
- 4 Flute Ball Nose – 100% Precision CNC Ground
- Single End – Solid Micrograin
- 30° right-hand spiral

Cut Dia.	Shank Dia.	Flute Length	Overall Length	Uncoated		Tialn Coated	
				Order No.	Price	Order No.	Price
1/8	1/8	1/2	1-1/2	901-125	\$10.32	903-125	\$11.87
3/16	3/16	5/8	2	901-187	14.59	903-187	16.78
1/4	1/4	3/4	2-1/2	901-250	18.68	903-250	21.50
5/16	5/16	13/16	2-1/2	901-312	21.05	903-312	24.21
3/8	3/8	1	2 1/2	901-375	26.63	903-375	30.63
7/16	7/16	1	2 3/4	901-437	39.16	903-437	45.03
1/2	1/2	1	3	901-500	45.44	903-500	52.27

Long Solid Carbide Endmills




- Center Cutting
- 100% Precision CNC Ground
- Single End – Solid Micrograin
- 30° right-hand spiral




Flute Dia.	Flute Length	Shank Dia.	OAL	Uncoated		Sale Price	Tialn Coated		Sale Price
				2 flute order no.	4 flute order no.		2 flute order no.	4 flute order no.	
1/8	3/4	1/8	2-1/4	912-125	914-125	\$10.45	910-125	915-125	\$12.00
3/16	3/4	3/16	2-1/2	912-187	914-187	11.86	910-187	915-187	13.65
1/4	1-1/8	1/4	3	912-250	914-250	14.72	910-250	915-250	16.90
5/16	1-1/8	5/16	3	912-312	914-312	21.59	910-312	915-312	24.82
3/8	1-1/8	3/8	3	912-375	914-375	27.28	910-375	915-375	31.36
7/16	2	7/16	4	912-437	914-437	43.27	910-437	915-437	49.75
1/2	2	1/2	4	912-500	914-500	45.59	910-500	915-500	52.42
5/8	2-1/4	5/8	5	912-625	914-625	91.56	910-625	915-625	105.30
3/4	2-1/4	3/4	5	912-750	914-750	118.61	910-750	915-750	136.41
1	2-1/4	1	5	912-100	914-100	237.76	910-100	915-100	273.43

Extra Long Solid Carbide Endmills



- Center Cutting
- 100% Precision CNC Ground
- Single End – Solid Micrograin
- 30° right-hand spiral



Flute Dia.	Flute Length	Shank Dia.	OAL	Uncoated		Sale Price	Tialn Coated		Sale Price
				2 flute order no.	4 flute order no.		2 flute order no.	4 flute order no.	
1/8	1	1/8	3	920-125	922-125	\$14.44	930-125	932-125	\$16.61
3/16	1-1/8	3/16	3	920-187	922-187	16.18	930-187	932-187	18.59
1/4	1-1/2	1/4	4	920-250	922-250	22.47	930-250	932-250	25.98
5/16	1-5/8	5/16	4	920-312	922-312	28.52	930-312	932-312	32.79
3/8	1-3/4	3/8	4	920-375	922-375	33.06	930-375	932-375	38.02
7/16	3	7/16	6	920-437	922-437	60.50	930-437	932-437	69.57
1/2	3	1/2	6	920-500	922-500	77.78	930-500	932-500	89.45
5/8	3	5/8	6	920-625	922-625	110.87	930-625	932-625	127.50
3/4	3	3/4	6	920-750	922-750	171.74	930-750	932-750	197.49
1	3	1	6	920-100	922-100	291.98	930-100	932-100	335.77





Thredfloers Cold Forming Taps

Series BXB ANSI Bottom Chamfer Thredfloers for blind hole tapping

Available with TIN coatings



Thredfloers Size	H Limit	Order No.	1-11pc Price ea	12+ Price ea	Thredfloer Size	H Limit	Order No.	1-11pc Price ea	12+ Price ea
0-80	H3	BAL10003	21.09	18.01	1/4-20	H4	BAL12644	16.93	13.60
1-64	H3	BAL10123	21.09	18.01	1/4-28	H4	BAL12864	16.93	13.60
1-72	H3	BAL10243	21.09	18.01	5/16-18	H4	BAL13084	19.33	15.61
2-56	H3	BAL10283	20.81	17.38	5/16-18	H5	BAL13085	19.33	15.61
4-40	H3	BAL10723	19.89	16.42	5/16-24	H4	BAL13264	19.33	15.61
6-32	H3	BAL11283	16.36	13.33	3/8-16	H6	BAL13446	21.64	18.12
8-32	H3	BAL11623	16.36	13.33	3/8-24	H6	BAL13626	21.64	18.12
10-24	H4	BAL11964	16.36	13.33	7/16-14	H8	BAL13808	33.90	28.42
10-32	H3	BAL12183	16.36	13.33	7/16-20	H8	BAL13928	33.90	28.42
10-32	H4	BAL12184	16.36	13.33	1/2-13	H8	BAL14048	39.54	32.87

Flute Dia.	Shank Dia.	Length of Cut	Overall Length	# Flute	TICN Order No.	List Price	Sale Price
1/8"	1/8"	3/8"	1-1/2"	2	NIA61443	\$23.70	\$20.15
3/16"	3/16"	9/16"	2"	3	NIA61447	33.00	28.05
1/4"	1/4"	3/4"	2-1/2"	2	NIA61451	44.40	37.74
1/4"	1/4"	1-1/4"	4"	2	NIA61452	69.30	58.91
5/16"	5/16"	13/16"	2-1/2"	2	NIA61456	49.00	41.65
3/8"	3/8"	1"	2-1/2"	2	NIA61462	56.00	47.60
3/8"	3/8"	1-1/2"	4"	2	NIA61463	107.00	90.95
1/2"	1/2"	1-1/4"	3"	2	NIA61471	90.30	76.76
1/2"	1/2"	2"	4"	2	NIA61472	142.00	120.70
1/2"	1/2"	3-1/8"	6"	2	NIA61473	235.00	199.75
5/8"	5/8"	1-5/8"	3-1/2"	2	NIA61475	172.00	146.20
3/4"	3/4"	1-5/8"	4"	2	NIA61479	236.00	200.60
3/4"	3/4"	2-1/4"	5"	2	NIA61480	309.00	262.65
3/4"	3/4"	3-1/4"	6"	2	NIA61481	364.00	309.40

Flute Dia.	Shank Dia.	Length of Cut	Overall Length	# Flute	TICN Order No.	List Price	Sale Price
1/8"	1/8"	3/8"	1-1/2"	3	NIA61627	\$23.70	\$20.15
3/16"	3/16"	9/16"	2"	3	NIA61631	42.70	36.30
1/4"	1/4"	3/4"	2-1/2"	3	NIA61635	44.40	37.74
1/4"	1/4"	1-1/4"	4"	3	NIA61636	69.30	58.91
5/16"	5/16"	13/16"	2-1/2"	3	NIA61640	53.00	45.05
3/8"	3/8"	1"	2-1/2"	3	NIA61646	65.30	55.51
3/8"	3/8"	1-1/2"	4"	3	NIA61647	101.00	85.85
7/16"	7/16"	1"	2-3/4"	3	NIA61651	81.00	68.85
1/2"	1/2"	1-1/4"	3"	3	NIA61655	100.00	85.00
1/2"	1/2"	2"	4"	3	NIA61656	142.00	120.70
5/8"	5/8"	1-5/8"	3-1/2"	3	NIA61659	218.00	185.30
3/4"	3/4"	1-5/8"	4"	3	NIA61663	258.00	219.30
3/4"	3/4"	2-1/4"	5"	3	NIA61664	309.00	262.65

ELITE

- Full Form Ground Flute Shape
- Eccentric Primary Relief
- Ultra High Transverse Rupture Strength
- Cylindrical Land
- Extra Fine Grade Carbide



TICN COATED

Niagara 2 Flute Carbide End Mills

For Aluminum and Non-Ferrous Materials, Single-End, Center-Cutting, 45° Helix



TICN COATED

Niagara 3 Flute Carbide End Mills

For Aluminum and Non-Ferrous Materials, Single-End, Center-Cutting, 45° Helix

3 & 5 Flute Carbide End Mill
For Steel, Stainless Steel & High Temp. Alloys,
Single-End, Center-Cutting

Niagara HIGH PERFORMANCE CARBIDE END MILLS

CLOSE-OUT
• WHILE SUPPLIES LAST •

3 Flute Carbide – 35° Helix, Standard With Corner Radius

Flute Dia.	Shank Dia.	Length of Cut	Overall Length	Standard Radius	TiAIN Order No.	List Price	Sale Price
3/16"	3/16"	9/16"	2"	.008-.010	NIA61807	36.10	30.69
5/16"	5/16"	13/16"	2-1/2"	.015-.020	NIA61815	48.70	41.40
3/8"	3/8"	1/2"	2"	.015-.020	NIA61818	54.20	46.07
1/2"	1/2"	5/8"	2-1/2"	.015-.020	NIA61822	83.50	70.98
5/8"	5/8"	1-5/8"	3-1/2"	.030-.035	NIA61825	197.00	167.45
3/4"	3/4"	1"	3"	.030-.035	NIA61826	227.00	192.95
3/4"	3/4"	1-5/8"	4"	.030-.035	NIA61827	254.00	215.90

5 Flute Carbide – 45° Helix, Eccentric Primary Relief

Flute Dia.	Shank Dia.	Length of Cut	Overall Length	No. of Flutes	TiAIN Order No.	List Price	Sale Price
1/4"	1/4"	3/4"	2-1/2"	5	NIA61992	38.80	32.98
1/4"	1/4"	1-1/4"	4"	5	NIA61993	66.70	56.70
5/16"	5/16"	13/16"	2-1/2"	5	NIA61997	48.70	41.40



T-Handle Tap Wrenches



Starrett



- For holding taps, drills, reamers and small tools to be turned by hand.
- Body is centered for use on lathe centers or drilling machines to start tap straight.
- Wrenches have sliding handle for positioning and leverage convenience.
- Jaws conform to the tool being held, and are heat treated to withstand heavy use.

Capacity Tap Size	Square Shank	Body Length	Order No.	Regular Price
1/16-3/16"	1/16-5/32"	2"	STA50427	\$49.00
7/32-7/16"	5/32-1/4"	2-1/2"	STA50428	52.00
1/4-1/2"	3/16-5/16"	3-1/2"	STA50429	67.00
1/16-3/16"	1/16-5/32"	6"	STA50430	74.00
7/32-7/16"	5/32-1/4"	10"	STA50431	96.00
1/4-1/2"	3/16-5/16"	13"	STA50432	106.00

Starrett Tap Wrenches



- Strong and well-proportioned
- Nicely finished and the gripping surfaces are properly tempered
- Will firmly hold square or round shanks
- Plunger, operated by the knurled sleeve, will back off the instant that pressure is removed by the sleeve

Capacity Tap Size	Square Shank	Body Length	Order No.	Price
1/16 - 1/4"	3/32 - 5/32"	6"	STA50419	\$69.00
3/16 - 1/2"	5/32 - 9/32"	9"	STA50420	98.00
1/4 - 5/8"	5/32 - 3/8"	12"	STA50421	159.00
5/16 - 3/4"	13/64 - 7/16"	16"	STA50422	215.00



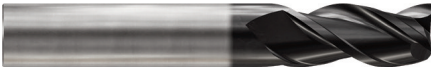


ALU-POWER HPC

For Aluminum, Aluminum die cast, non-ferrous alloys and plastic

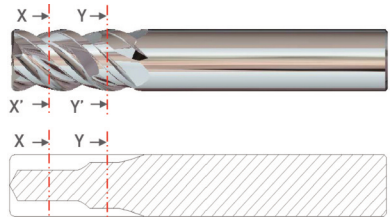


- DLC- Diamond Like Carbon Coating
- Extreme edge strength and unsurpassed tool life
- Available with Chip Breaker to Aid Chip Evacuation
- 37 Degree Helix - Plain Round Shank H6 Tolerance
- Balanced Cutting - Less Vibration
- Ability to counteract extreme radial forces
- Ability to run at higher speeds with less heat in aluminum



Diam	Shank	Length Cut	Length Overall	Square End	Radius .010	Radius .030	Radius .060	Radius .090	Radius .120	Radius .190	Radius .250
1/8"	1/8"	1/4"	1-1/2"	YGJAG95008 \$21.76ea	YGJAG97008 \$26.12ea	YGJAG97901 \$26.12ea					
1/8"	1/8"	3/8"	1-1/2"	YGJAG95901 \$23.90ea	YGJAG97902 \$28.67	YGJAG97903 \$28.67					
3/16"	3/16"	5/16"	2"	YGJAG95012 \$22.40	YGJAG97012 \$29.12	YGJAG97904 \$29.12					
3/16"	3/16"	9/16"	2"	YGJAG95902 \$25.66	YGJAG97905 \$30.52	YGJAG97906 \$30.52					
1/4"	1/4"	3/8"	2"	YGJAG95016 \$28.33	YGJAG97016 \$31.76	YGJAG97907 \$31.76	YGJAG97908 \$31.76				
1/4"	1/4"	5/8"	2-1/2"	YGJAG95903 \$31.64	YGJAG97909 \$33.43	YGJAG97910 \$33.43	YGJAG97911 \$33.43				
1/4"	1/4"	7/8"	3"	YGJAG95929 \$42.57							
1/4"	1/4"	1-1/4"	3-1/4"	YGJAG95904 \$37.02	YGJAG97912 \$50.72	YGJAG97913 \$50.72	YGJAG97914 \$50.72				
5/16"	5/16"	7/16"	2"	YGJAG95020 \$32.22	YGJAG97020 \$35.97	YGJAG97915 \$35.97	YGJAG97916 \$35.97	YGJAG97917 \$35.97			
5/16"	5/16"	5/8"	2-1/2"	YGJAG95905 \$37.34	YGJAG97918 \$41.55	YGJAG97919 \$41.55	YGJAG97920 \$41.55	YGJAG97921 \$41.55			
5/16"	5/16"	1-1/4"	3-1/2"	YGJAG95906 \$49.40	YGJAG97922 \$56.57	YGJAG97923 \$56.57	YGJAG97924 \$56.57	YGJAG97925 \$56.57			
3/8"	3/8"	1/2"	2"	YGJAG95024 \$40.21	YGJAG97024 \$41.83	YGJAG97926 \$41.83	YGJAG97927 \$41.83	YGJAG97928 \$41.83	YGJAG97929 \$41.83		
3/8"	3/8"	1"	2-1/2"	YGJAG95907 \$46.72	YGJAG97930 \$49.97	YGJAG97931 \$49.97	YGJAG97932 \$49.97	YGJAG97933 \$49.97	YGJAG97934 \$49.97		
3/8"	3/8"	1-1/2"	3-1/2"	YGJAG95908 \$56.60	YGJAG97935 \$62.48	YGJAG97936 \$62.48	YGJAG97937 \$62.48	YGJAG97938 \$62.48	YGJAG97939 \$62.48		
3/8"	3/8"	2"	4"	YGJAG95909 \$72.91	YGJAG97940 \$79.52	YGJAG97941 \$79.52	YGJAG97942 \$79.52	YGJAG97943 \$79.52	YGJAG97944 \$79.52		
7/16"	7/16"	1-1/4"	2-3/4"	YGJAG95910 \$72.10	YGJAG97949 \$79.52	YGJAG97950 \$79.52	YGJAG97951 \$79.52	YGJAG97952 \$79.52	YGJAG97953 \$79.52		
1/2"	1/2"	5/8"	2-1/2"	YGJAG95032 \$62.57	YGJAG97032 \$69.02	YGJAG97959 \$69.02	YGJAG97960 \$69.02	YGJAG97961 \$69.02	YGJAG97962 \$69.02	YGJAG97963 \$69.02	
1/2"	1/2"	1"	3"	YGJAG95927 \$71.33	YGJAG97879 \$76.60	YGJAG97880 \$76.60	YGJAG97881 \$76.60	YGJAG97882 \$76.60	YGJAG97883 \$76.60	YGJAG97884 \$76.60	
1/2"	1/2"	1-1/4"	3"	YGJAG95912 \$72.76	YGJAG97964 \$77.90	YGJAG97965 \$77.90	YGJAG97966 \$77.90	YGJAG97967 \$77.90	YGJAG97968 \$77.90	YGJAG97969 \$77.90	
1/2"	1/2"	1-5/8"	4"	YGJAG95913 \$101.16	YGJAG97970 \$106.19	YGJAG97971 \$106.19	YGJAG97972 \$106.19	YGJAG97973 \$106.19	YGJAG97974 \$106.19	YGJAG97975 \$106.19	
1/2"	1/2"	2"	4"	YGJAG95914 \$102.69	YGJAG97976 \$107.98	YGJAG97977 \$107.98	YGJAG97978 \$107.98	YGJAG97979 \$107.98	YGJAG97980 \$107.98	YGJAG97981 \$107.98	
1/2"	1/2"	2-1/2"	5"	YGJAG95915 \$122.29	YGJAG97982 \$136.33	YGJAG97983 \$136.33	YGJAG97984 \$136.33	YGJAG97985 \$136.33	YGJAG97986 \$136.33	YGJAG97987 \$136.33	
1/2"	1/2"	3"	5"	YGJAG95916 \$123.48	YGJAG97988 \$138.36	YGJAG97989 \$138.36	YGJAG97990 \$138.36	YGJAG97991 \$138.36	YGJAG97992 \$138.36	YGJAG97993 \$138.36	
5/8"	5/8"	3/4"	3"	YGJAG95040 \$134.67	YGJAG97040 \$145.28	YGJAG97994 \$145.28	YGJAG97995 \$145.28	YGJAG97996 \$145.28	YGJAG97997 \$145.28	YGJAG97998 \$145.28	
5/8"	5/8"	1-5/8"	3-1/2"	YGJAG95917 \$152.97	YGJAG97999 \$161.60	YGJAG97801 \$161.60	YGJAG97802 \$161.60	YGJAG97803 \$161.60	YGJAG97804 \$161.60	YGJAG97805 \$161.60	
5/8"	5/8"	2-1/2"	5"	YGJAG95918 \$212.50	YGJAG97806 \$222.19	YGJAG97807 \$222.19	YGJAG97808 \$222.19	YGJAG97809 \$222.19	YGJAG97810 \$222.19	YGJAG97811 \$222.19	
5/8"	5/8"	3"	5-1/4"	YGJAG95919 \$237.26	YGJAG97812 \$248.45	YGJAG97813 \$248.45	YGJAG97814 \$248.45	YGJAG97815 \$248.45	YGJAG97816 \$248.45	YGJAG97817 \$248.45	
3/4"	3/4"	1"	3"	YGJAG95048 \$178.62	YGJAG97048 \$189.33	YGJAG97818 \$189.33	YGJAG97819 \$189.33	YGJAG97820 \$189.33	YGJAG97821 \$189.33	YGJAG97822 \$189.33	
3/4"	3/4"	1-5/8"	4"	YGJAG95920 \$229.31	YGJAG97824 \$236.05	YGJAG97825 \$236.05	YGJAG97826 \$236.05	YGJAG97827 \$236.05	YGJAG97828 \$236.05	YGJAG97829 \$236.05	
3/4"	3/4"	2-1/4"	5"	YGJAG95921 \$267.31	YGJAG97831 \$278.41	YGJAG97832 \$278.41	YGJAG97833 \$278.41	YGJAG97834 \$278.41	YGJAG97835 \$278.41	YGJAG97836 \$278.41	
3/4"	3/4"	3-1/4"	6"	YGJAG95922 \$301.38	YGJAG97838 \$317.83	YGJAG97839 \$317.83	YGJAG97840 \$317.83	YGJAG97841 \$317.83	YGJAG97842 \$317.83	YGJAG97843 \$317.83	
3/4"	3/4"	4"	6-1/4"	YGJAG95923 \$310.83	YGJAG97845 \$328.40	YGJAG97846 \$328.40	YGJAG97847 \$328.40	YGJAG97848 \$328.40	YGJAG97849 \$328.40	YGJAG97850 \$328.40	
1"	1"	1-1/4"	3"	YGJAG95064 \$300.00	YGJAG97064 \$347.83	YGJAG97852 \$347.83	YGJAG97853 \$347.83	YGJAG97854 \$347.83	YGJAG97855 \$347.83	YGJAG97856 \$347.83	
1"	1"	1-1/4"	4"	YGJAG95928 \$334.47	YGJAG97885 \$352.08	YGJAG97886 \$352.08	YGJAG97887 \$352.08	YGJAG97888 \$352.08	YGJAG97889 \$352.08	YGJAG97890 \$352.08	
1"	1"	2"	5"	YGJAG95924 \$343.29	YGJAG97858 \$372.62	YGJAG97859 \$372.62	YGJAG97860 \$372.62	YGJAG97861 \$372.62	YGJAG97862 \$372.62	YGJAG97863 \$372.62	
1"	1"	3-1/4"	6"	YGJAG95925 \$382.19	YGJAG97865 \$438.91	YGJAG97866 \$438.91	YGJAG97867 \$438.91	YGJAG97868 \$438.91	YGJAG97869 \$438.91	YGJAG97870 \$438.91	
1"	1"	4"	7"	YGJAG95926 \$464.26	YGJAG97872 \$535.59	YGJAG97873 \$535.59	YGJAG97874 \$535.59	YGJAG97875 \$535.59	YGJAG97876 \$535.59	YGJAG97877 \$535.59	





Y-Coated Solid Carbide End Mills New Double Core Design

- New Double Core Geometry reduces tool deflection and improves dimensional stability. Also adds stability and aids chip flow.
- Optimized edge preparation protects chipping problems in high speed machining for Titanium, Inconel & Stainless Steels
- Variable flute design brings out excellent performance in slotting operations.

<SECTION X-X'>
Excellent chip evacuation



<SECTION Y-Y'>
Higher rigidity



Flute Dia.	Shank Dia.	Length of Cut	Overall Length	Radius	TitaNox Coated Order No.	Price
1/4"	1/4"	9/16"	2-1/2"	.015"	YGUGMG42016	\$32.31
1/4"	1/4"	9/16"	2-1/2"	.030"	YGUGMG42901	32.31
1/4"	1/4"	9/16"	2-1/2"	.060"	YGUGMG42902	32.31
5/16"	5/16"	11/16"	2-1/2"	.015"	YGUGMG42020	43.81
5/16"	5/16"	11/16"	2-1/2"	.030"	YGUGMG42903	43.81
5/16"	5/16"	11/16"	2-1/2"	.060"	YGUGMG42904	43.81
3/8"	3/8"	13/16"	2-1/2"	.020"	YGUGMG42024	45.60
3/8"	3/8"	13/16"	2-1/2"	.030"	YGUGMG42905	45.60
3/8"	3/8"	13/16"	2-1/2"	.060"	YGUGMG42906	45.60
3/8"	3/8"	13/16"	2-1/2"	.090"	YGUGMG42907	45.60
1/2"	1/2"	1"	3"	.020"	YGUGMG42032	78.76
1/2"	1/2"	1"	3"	.030"	YGUGMG42908	78.76
1/2"	1/2"	1"	3"	.060"	YGUGMG42909	78.76
1/2"	1/2"	1"	3"	.090"	YGUGMG42910	78.76
1/2"	1/2"	1"	3"	.125"	YGUGMG42911	78.76
1/2"	1/2"	1"	3"	.190"	YGUGMG42912	100.03
5/8"	5/8"	1-1/4"	3-1/2"	.030"	YGUGMG42040	159.14
5/8"	5/8"	1-1/4"	3-1/2"	.060"	YGUGMG42913	159.14
5/8"	5/8"	1-1/4"	3-1/2"	.090"	YGUGMG42914	159.14
5/8"	5/8"	1-1/4"	3-1/2"	.125"	YGUGMG42915	159.14
3/4"	3/4"	1-1/2"	4"	.030"	YGUGMG42048	235.97
3/4"	3/4"	1-1/2"	4"	.060"	YGUGMG42916	235.97
3/4"	3/4"	1-1/2"	4"	.090"	YGUGMG42917	235.97
3/4"	3/4"	1-1/2"	4"	.125"	YGUGMG42918	235.97
3/4"	3/4"	1-1/2"	4"	.190"	YGUGMG42919	235.97
1"	1"	2"	5"	.030"	YGUGMG42064	504.57
1"	1"	2"	5"	.060"	YGUGMG42920	504.57
1"	1"	2"	5"	.090"	YGUGMG42921	504.57
1"	1"	2"	5"	.125"	YGUGMG42922	504.57
1"	1"	2"	5"	.190"	YGUGMG42923	504.57



6 & 8 Flute Carbide Endmills 45° Helix



X-Power TIG

- High Speed Cutting and Finish Milling with High Feed Rates.
- Superior Workpiece finishes.
- Superior wear resistance.
- Suitable for machining high hardened materials.
- Suitable for dry machining



Flute Dia.	Shank Dia.	Length of Cut	Overall Length	Flutes	Order Number	Sale
1/4"	1/4"	1/2"	2-1/4"	6	YG93119	\$45.07
1/4"	1/4"	1"	2-1/4"	6	YG99666	60.60
5/16"	5/16"	3/4"	2-1/2"	6	YG93120	57.03
5/16"	5/16"	1-1/2"	3-5/8"	6	YG99667	82.55
3/8"	3/8"	7/8"	2-7/8"	6	YG93121	85.43
3/8"	3/8"	1-3/4"	4"	6	YG99668	123.59
1/2"	1/2"	1"	3-1/4"	6	YG93122	116.10
1/2"	1/2"	2-3/16"	4-3/8"	6	YG99669	171.33
5/8"	5/8"	1-1/4"	3-5/8"	6	YG93123	188.71
5/8"	5/8"	2-5/8"	5-1/8"	6	YG99670	297.91
3/4"	3/4"	1-1/2"	4-1/8"	8	YG93124	277.29
3/4"	3/4"	2-1/4"	5"	8	YG99588	378.48
3/4"	3/4"	3-1/4"	6"	8	YG99589	417.55
3/4"	3/4"	4-1/8"	7"	8	YG99590	478.64
1"	1"	1-3/4"	4-1/4"	8	YG93171	446.29
1"	1"	5-1/8"	7"	8	YG99591	738.81

Suitable for Carbon Steels, Pre-Hardened Steels and Hardened Steels up to 45 HRC



Flute Dia.		Flute Length		Shank Dia.		OAL		Uncoated Price		TICN Coated Price	
1/8	1/4	1/8	1-1/2	1/8	1-1/2	1/8	1-1/2	YG25558	\$15.28	YG25558TC	\$17.43
1/8	3/8	1/8	1-2	1/8	1-2	1/8	1-2	YG28558	18.40	YG28558TC	20.48
3/16	5/16	3/16	2	3/16	2	3/16	2	YG25565	16.78	YG25565TC	19.57
3/16	9/16	3/16	2	3/16	2	3/16	2	YG28565	19.88	YG28565TC	22.62
1/4	3/8	1/4	2	1/4	2	1/4	2	YG25573	18.40	YG25573TC	22.88
1/4	5/8	1/4	2-1/2	1/4	2-1/2	1/4	2-1/2	YG28573	22.38	YG28573TC	28.33
1/4	1-1/4	1/4	3 1/4	1/4	3 1/4	1/4	3 1/4	YG36573	31.48	YG36573TC	38.38
5/16	7/16	5/16	2	5/16	2	5/16	2	YG25579	22.67	YG25579TC	28.02
5/16	5/8	5/16	2-1/2	5/16	2-1/2	5/16	2-1/2	YG28579	24.91	YG28579TC	32.09
5/16	1-1/4	5/16	4	5/16	4	5/16	4	YG36579	36.45	YG36579TC	44.81
3/8	1/2	3/8	2	3/8	2	3/8	2	YG25584	24.00	YG25584TC	30.43
3/8	1	3/8	2-1/2	3/8	2-1/2	3/8	2-1/2	YG28584	29.12	YG28584TC	38.09
3/8	1-1/2	3/8	3-1/2	3/8	3-1/2	3/8	3-1/2	YG36584	43.22	YG36584TC	54.53
7/16	9/16	7/16	2-1/2	7/16	2-1/2	7/16	2-1/2	YG25588	40.16	YG25588TC	47.64
7/16	1 1/4	7/16	2-3/4	7/16	2-3/4	7/16	2-3/4	YG28588	49.43	YG28588TC	59.97
7/16	2	7/16	4	7/16	4	7/16	4	YG36588	66.40	YG36588TC	79.67
1/2	5/8	1/2	2-1/2	1/2	2-1/2	1/2	2-1/2	YG25593	42.41	YG25593TC	53.36
1/2	1-1/4	1/2	3	1/2	3	1/2	3	YG28593	52.33	YG28593TC	63.09
1/2	2	1/2	4	1/2	4	1/2	4	YG36593	70.55	YG36593TC	84.41
5/8	3/4	5/8	3	5/8	3	5/8	3	YG25595	88.86	YG25595TC	100.81
5/8	1-5/8	5/8	3-1/2	5/8	3-1/2	5/8	3-1/2	YG28595	112.79	YG28595TC	127.64
5/8	2-1/2	5/8	5	5/8	5	5/8	5	YG36595	161.47	YG36595TC	179.66
3/4	1	3/4	3	3/4	3	3/4	3	YG25598	105.83	YG25598TC	120.12
3/4	1-5/8	3/4	4	3/4	4	3/4	4	YG28598	134.90	YG28598TC	152.41
3/4	3-1/4	3/4	6	3/4	6	3/4	6	YG36598	201.90	YG36598TC	227.29
1	1-1/4	1	3	1	3	1	3	YG25600	230.21	YG25600TC	249.38
1	2	1	5	1	5	1	5	YG28600	320.10	YG28600TC	348.02
1	3-1/4	1	6	1	6	1	6	YG36600	373.76	YG36600TC	404.64

Call For Large Quantity Discounts!

Alu-Power 45 Degree Helix, 3 Flute Solid Carbide, Center Cutting
High Performance Endmills for Aluminum



Short, Medium and Long Length.
Special Geometry with very rigid cutting edge
Cylindrical margin precision ground for improved surface finish.
Maximum chip removal, 45 degree rake angle for bigger chip pocket



Alu-Power 45 Degree Helix, with Corner Radius

Radius



Flute Dia.	Shank Dia.	Overall Length	Flute Length	Radius Size	Order		Order	
					Uncoated	Price	TICN Coated	Price
1/2"	1/2"	3"	1-1/4"	.060	YGEA50321	\$ 61.17	YGEA50321C	\$ 67.78
1/2"	1/2"	4"	2"	.060	YGEA60321	70.07	YGEA60321C	76.66
1/2"	1/2"	3"	1-1/4"	.120	YGEA20321	61.17	YGEA20321C	67.78
1/2"	1/2"	4"	2"	.120	YGEA30321	70.07	YGEA30321C	76.66
5/8"	5/8"	3-1/2"	1-5/8"	.060	YGEA50401	132.22	YGEA50401C	141.72
5/8"	5/8"	5"	2-1/2"	.060	YGEA60401	160.26	YGEA60401C	169.71
5/8"	5/8"	3-1/2"	1-5/8"	.120	YGEA20401	132.22	YGEA20401C	141.72
5/8"	5/8"	5"	2-1/2"	.120	YGEA30401	160.26	YGEA30401C	169.71
3/4"	3/4"	4"	1-5/8"	.060	YGEA50481	161.97	YGEA50481C	173.19
3/4"	3/4"	6"	3-1/4"	.060	YGEA60481	200.34	YGEA60481C	211.50
3/4"	3/4"	4"	1-5/8"	.120	YGEA20481	161.97	YGEA20481C	173.19
3/4"	3/4"	6"	3-1/4"	.120	YGEA30481	200.34	YGEA30481C	211.50
1"	1"	5"	2"	.060	YGEA50641	379.47	YGEA50641C	399.79
1"	1"	6"	3-1/4"	.060	YGEA60641	384.64	YGEA60641C	404.91
1"	1"	5"	2"	.120	YGEA20641	379.47	YGEA20641C	399.79
1"	1"	6"	3-1/4"	.120	YGEA30641	384.64	YGEA30641C	404.91

Regular and Long Length.
Special Geometry with very rigid cutting edge
Cylindrical margin precision ground for improved surface finish.
Maximum chip removal, 45 degree rake angle for bigger chip pocket
Choose from .060 or .120" Radius

3 Flute Solid Carbide, Center Cutting
High Performance Endmills for Aluminum

Call For Large Quantity Discounts!

Alu-Power 37 Degree Helix, with Extended Neck

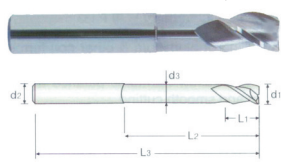
3 Flute Solid Carbide, Center Cutting
High Performance Endmills for Non-Ferrous Materials

Call For Large Quantity Discounts!



ALSO AVAILABLE TICN COATED, JUST ASK!

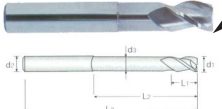
Flute Dia.	Shank Dia.	Overall Length	Flute Length	Reach Lgth(L2)	Neck Diam(D3)	Order Number	Price
1/4"	1/4"	4"	3/8"	2-1/4"	.220	YG40573	\$ 34.95
3/8"	3/8"	4"	1/2"	2-1/4"	.345	YG40584	62.33
1/2"	1/2"	5"	5/8"	2 1/4"	.470	YG40593	98.41
1/2"	1/2"	6"	5/8"	3 1/4"	.470	YG40901	110.71
1/2"	1/2"	6"	5/8"	4"	.470	YG40902	112.90
5/8"	5/8"	5"	3/4"	2-1/4"	.585	YG40595	141.64
5/8"	5/8"	6"	3/4"	3-1/4"	.585	YG40903	159.97
5/8"	5/8"	7"	3/4"	4-1/4"	.585	YG40904	175.83
3/4"	3/4"	5"	1"	2-1/4"	.710	YG40598	177.05
3/4"	3/4"	6"	1"	3-1/4"	.710	YG40905	201.33
3/4"	3/4"	7"	1"	4 1/4"	.710	YG40906	220.59
1"	1"	5"	1-1/8"	2-1/4"	.960	YG40600	370.93
1"	1"	6"	1-1/8"	3-1/4"	.960	YG40907	421.14
1"	1"	7"	1-1/8"	4-1/4"	.960	YG40908	456.07



Special Geometry with very rigid cutting edge
Cylindrical margin precision ground for improved surface finish.
Maximum chip removal, 37 degree rake angle for bigger chip pocket

Alu-Power 37 Degree Helix, with Extended Neck, Corner Radius

Radius



3 Flute Solid Carbide, Center Cutting
High Performance Endmills for Non-Ferrous Materials

Flute Dia.	Shank Dia.	Overall Length	Flute Length	Reach Lgth(L2)	Neck Diam(D3)	Radius	Order Number	Price
1/2"	1/2"	6"	5/8"	3-1/4"	.470	.060	YGEA40321	\$ 98.09
1/2"	1/2"	6"	5/8"	4"	.470	.060	YGEA40322	100.26
1/2"	1/2"	6"	5/8"	3-1/4"	.470	.120	YGEA10321	98.09
1/2"	1/2"	6"	5/8"	4"	.470	.120	YGEA10322	100.26
5/8"	5/8"	5"	3/4"	2-1/4"	.585	.060	YGEA40401	133.26
5/8"	5/8"	6"	3/4"	3-1/4"	.585	.060	YGEA40402	149.98
5/8"	5/8"	7"	3/4"	4-1/4"	.585	.060	YGEA40403	164.09
5/8"	5/8"	5"	3/4"	2-1/4"	.585	.120	YGEA10401	133.26
5/8"	5/8"	6"	3/4"	3-1/4"	.585	.120	YGEA10402	149.98
5/8"	5/8"	7"	3/4"	4-1/4"	.585	.120	YGEA10403	164.09
3/4"	3/4"	5"	1"	2-1/4"	.710	.060	YGEA40481	165.97
3/4"	3/4"	6"	1"	3-1/4"	.710	.060	YGEA40482	188.64
3/4"	3/4"	7"	1"	4 1/4"	.710	.060	YGEA40483	206.34
3/4"	3/4"	5"	1"	2-1/4"	.710	.120	YGEA10481	165.97
3/4"	3/4"	6"	1"	3-1/4"	.710	.120	YGEA10482	188.64
3/4"	3/4"	7"	1"	4 1/4"	.710	.120	YGEA10483	206.34
1"	1"	5"	1-1/8"	2-1/4"	.960	.060	YGEA40641	370.28
1"	1"	6"	1-1/8"	3-1/4"	.960	.060	YGEA40642	420.72
1"	1"	7"	1-1/8"	4-1/4"	.960	.060	YGEA40643	456.31
1"	1"	5"	1-1/8"	2-1/4"	.960	.120	YGEA10641	370.28
1"	1"	6"	1-1/8"	3-1/4"	.960	.120	YGEA10642	420.72
1"	1"	7"	1-1/8"	4-1/4"	.960	.120	YGEA10643	456.31

ALSO AVAILABLE TICN COATED, JUST ASK!

Call For Large Quantity Discounts!



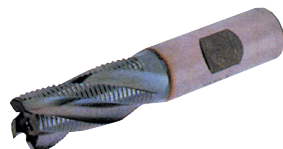


Fine Pitch 8% Cobalt Roughing End Mills TiCN Coated



Niagara Cutter

Mill Diam x Shank	No. of Flutes	L.O.C.	YG-1 TiCN Coated 8% Cobalt Fine Pitch		Niagara TiCN Coated 8% Cobalt Fine Pitch	
			Order No.	Price	Order No.	Price
1/4 x 3/8"	3&4*	5/8"	YG70297CC	\$ 35.55	NIA88389	\$ 39.04
5/16 x 3/8"	3&4*	3/4"	YG70301CC	35.55	NIA88391	39.04
3/8 x 3/8"	4	3/4"	YG70305CC	35.55	NIA88393	39.04
1/2 x 1/2"	4	1-1/4"	YG70321CC	51.17	NIA88396	51.29
1/2 x 1/2"	4	2	YG71321CC	61.45	NIA88397	68.15
5/8 x 5/8"	4	1-5/8"	YG70337CC	61.38	NIA88399	62.16
5/8 x 5/8"	4	2-1/2"	YG71337CC	84.72	NIA88400	80.01
3/4" x 3/4"	4	1-5/8"	YG70359CC	74.98	NIA88401	71.20
3/4" x 3/4"	4	3"	YG71359CC	98.24	NIA88402	92.80
7/8 x 3/4"	5	1-7/8"	YG70391CC	94.95	---	---
1 x 1"	5	2"	YG70426CC	113.97	NIA88409	106.40
1 x 1"	5	3"	---	---	NIA88410	136.80
1 x 1"	5	4"	YG71426CC	149.60	NIA88411	144.80
1 x 3/4"	5	2"	YG70422CC	113.97	---	---
1-1/4" x 1-1/4"	6	2"	YG70445CC	163.02	NIA88416	142.40
1-1/4" x 1-1/4"	6	4"	YG71445CC	215.62	NIA88418	211.20
1-1/2" x 1-1/4"	6	2"	YG70461CC	229.53	---	---
1-1/2" x 1-1/4"	6	4"	YG71461CC	279.03	---	---
2 x 1-1/4"	6* & 8	2"	YG70477CC	279.55	NIA88433	286.40
2 x 1-1/4"	6* & 8	4"	YG71477CC	379.97	---	---



The fine pitch knuckle tooth design of this roughing end mill is recommended for production milling of tough-hard materials, up to 40Rc, that are difficult to machine. Materials like Inconel, Hastalloy, Titanium alloys and other space age composites are applications where the fine pitch design can be used.

The fine pitch design also produces a smoother finish on the work piece compared to the coarse pitch rougher and can eliminate the need for a second finishing cut in many cases.

*YG-1 brand is 3 flute in 1/4 & 5/16" Tools & 6 flute in 2" diameter

Size	Stub Length		Reg. Length			Long Length			Size	
	Length of Cut	2 Flute Order No.	4 Flute Order No.	Length of Cut	2 Flute Order No.	4 Flute Order No.	Length of Cut	2 Flute Order No.		4 Flute Order No.
1/32"	3/64"	EM80000	-	3/32"	EM80200	-	-	-	-	1/32"
3/64"	1/16"	EM80010	-	3/64"	EM80210	-	-	-	-	3/64"
1/16"	3/32"	EM80020	EM84020	3/16"	EM80220	EM84220	7/32"	EM80420	EM84420	1/16"
5/64"	1/8"	EM80030	EM84030	9/32"	EM80230	EM84230	-	-	-	5/64"
3/32"	9/64"	EM80040	EM84040	9/32"	EM80240	EM84240	9/32"	EM80440	EM84440	3/32"
7/64"	11/64"	EM80050	EM84050	21/64"	EM80250	EM84250	-	-	-	7/64"
1/8"	3/16"	EM80060	EM84060	3/8"	EM80260	EM84260	3/4"	EM80460	EM84460	1/8"
9/64"	7/32"	EM80070	EM84070	27/64"	EM80270	EM84270	-	-	-	9/64"
5/32"	15/64"	EM80080	EM84080	7/16"	EM80280	EM84280	7/8"	EM80480	EM84480	5/32"
11/64"	17/64"	EM80090	EM84090	1/2"	EM80290	EM84290	-	-	-	11/64"
3/16"	9/32"	EM80100	EM84100	1/2"	EM80300	EM84300	1"	EM80500	EM84500	3/16"

**Premium Cobalt
Miniature
Endmills
3/16" Shank
any size
shown
\$17.00ea**



APLT-347 CV6 Coated Insert :
1-9 pcs \$21.60ea
10+ 14.60ea
Same inserts fits all sizes. Order Separately

Indexable Insert Chamfermills

Min. Diameter	Max. Diameter	Weldon Shank	Chamfer Angle	Number Flutes	Length of Cut	Overall Length	Order No.	Price
.750"	1.303"	3/4	30°	2	.479	3.00	EVECHM750-30	\$ 153.36
.688	1.414	3/4	41°	2	.418	3.00	EVECHM688-41	153.36
.688	1.471	3/4	45°	2	.391	3.00	EVECHM688-45	153.36
.500	1.458	3/4	60°	2	.277	3.00	EVECHM500-60	153.36
1.000	1.553	1	30°	3	.479	3.20	EVECHM1.00-30	167.48
.938	1.664	1	41°	3	.418	3.20	EVECHM938-41	167.48
.938	1.721	1	45°	3	.391	3.20	EVECHM938-45	167.48
.750	1.708	1	60°	3	.277	3.20	EVECHM750-60	167.48
1.250	1.803	1 1/4	30°	3	.479	3.20	EVECHM1.250-30	205.03
1.188	1.914	1 1/4	41°	3	.418	3.20	EVECHM1.188-41	205.03
1.188	1.971	1 1/4	45°	3	.391	3.20	EVECHM1.188-45	205.03
1.000	1.958	1 1/4	60°	3	.277	3.20	EVECHM1.00-60	205.03
1.500	2.053	1 1/2	30°	3	.479	3.60	EVECHM1.500-30	262.86
1.438	2.164	1 1/2	41°	3	.418	3.60	EVECHM1.438-41	262.86
1.438	2.221	1 1/2	45°	3	.391	3.60	EVECHM1.438-45	262.86
1.250	2.208	1 1/2	60°	3	.277	3.60	EVECHM1.250-60	262.86

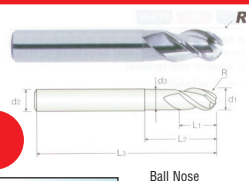


**MADE IN
USA**

Alu-Power 40 Degree Helix, Ball Mill with Extended Neck

**3 Flute Solid Carbide, Center Cutting
High Performance Endmills for Non-Ferrous Materials**
Special Geometry with very rigid cutting edge
Cylindrical margin precision ground for improved surface finish.
Maximum chip removal, 40 degree rake angle for bigger chip pocket

**Call For Large
Quantity Discounts !**



Ball Nose

Flute Dia.	Shank Dia.	Overall Length	Flute Length	Neck Diam.	Reach Lngth(L2)	Order Uncoated	Price	Order TiCN Coated	Price
3/32"	1/4"	2-3/8"	1/8"	.090	3/16"	YG38602	\$ 18.98	YG38602TC	\$ 25.28
1/8"	1/4"	2-3/8"	3/16"	.117	1/4"	YG38601	18.34	YG38601TC	24.69
3/16"	1/4"	2-1/2"	1/4"	.172	3/8"	YG38566	21.81	YG38566TC	28.12
1/4"	1/4"	3"	3/8"	.235	1/2"	YG38573	24.40	YG38573TC	30.69
5/16"	5/16"	3"	1/2"	.289	1"	YG38579	28.48	YG38579TC	36.07
3/8"	3/8"	3-1/8"	5/8"	.351	1-1/4"	YG38584	36.09	YG38584TC	48.12
1/2"	1/2"	3-1/2"	3/4"	.476	1-3/8"	YG38593	57.10	YG38593TC	72.16
5/8"	5/8"	4"	1"	.601	1-1/2"	YG38595	91.03	YG38595TC	107.86





880-G3 Laser Torpedo Laser Level is a patented level combining the best of everything in one package for the professional that demands accuracy and convenience on the job.

- Upgraded Class IIIa laser system is 3 axis aligned.
- CNC milled 6061-T6 billet aluminum alloy
- Four vials (0°, 30°, 45°, 90°) Oversized 0° Vial with viewports on every side.
- 1/4" at 100'
- Uses 3x AAA Batteries
- 4 Neodymium magnets, and V-Groove system for versatility.
- Please inquire about accessories

Order No. **CHK880-0327R Red**
Sale \$119.99



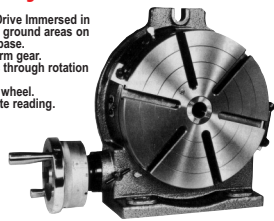
Order No. **CHK880-0327PL Platinum**
Sale \$119.99



Order No. **CHK880-0327B Blue**
Sale \$119.99

Horizontal/Vertical Precision Rotary Tables

10 Second Vernier Reading, Gear Drive Immersed in oil. Table is made of Mehanite with ground areas on the table surface and base.
Hardened and ground worm gear.
Accuracy within 40 seconds of arc through rotation of table.
Adjustable dial on hand wheel.
Vervier plate permits accurate reading.
90 : 1 gear ratio



10" Model
#3 MT Center Hole
Order No. SHA-LG10
Regular Price \$592.50
Sale \$902.35

LTL (Truck) Shipment Only

Cobalt Roughers - 3 Flute - 37° Helix - High Production

HSS-8% Cobalt M42 Designed for high volume metal removal. Recommended for Aluminum and many non-ferrous materials. Center Cutting.

Mill Diam x Shank	No. of Flutes	Length of Cut	YG-1 TiCN Coated 8% Cobalt		YG-1 Uncoated 8% Cobalt	
			Order No.	Price	Order No.	Price
1/4 x 3/8"	3	5/8"	YG66297CC	\$ 42.26	YG66297	\$ 31.45
5/16 x 3/8"	3	3/4"	YG66301CC	42.26	YG66301	31.45
3/8 x 3/8"	3	3/4"	YG66305CC	42.26	YG66305	31.45
1/2 x 1/2"	3	1-1/4"	YG66321CC	60.38	YG66321	43.22
1/2 x 1/2"	3	2	YG67321CC	73.47	YG67321	56.34
5/8 x 5/8"	3	1-5/8"	YG66337CC	72.83	YG66337	53.43
5/8 x 5/8"	3	2-1/2"	YG67337CC	101.21	YG67337	77.14
3/4" x 3/4"	3	1-5/8"	YG66359CC	89.14	YG66359	66.45
3/4" x 3/4"	3	3"	YG67359CC	116.03	YG67359	83.07
7/8 x 3/4"	3	1-7/8"	YG66391CC	113.22	YG66391	85.45
1 x 1"	3	2"	YG66426CC	138.47	YG66426	100.07
1 x 1"	3	3"	YG66901CC	168.26	YG66901	118.16
1 x 1"	3	4"	YG67426CC	177.26	YG67426	129.36
1-1/4" x 1-1/4"	3	2"	YG66445CC	198.33	YG66445	150.81
1-1/4" x 1-1/4"	3	3"	YG66902CC	230.21	YG66902	167.81
1-1/4" x 1-1/4"	3	4"	YG67445CC	257.98	YG67445	198.22
1-1/2" x 1-1/4"	3	2"	YG66461CC	271.60	YG66461	196.78
1-1/2" x 1-1/4"	3	4"	YG67461CC	329.29	YG67461	235.26

Call For Large Quantity Discounts!



Call For Large Quantity Discounts!

45° Helix Fine Pitch Coated Solid Carbide Roughers



- Designed to machine materials under 45Hrc, Alloy Steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic and similar materials.
- Fine Pitch Roughing Design, Jet Power Coating, 45° helix - rhs/rhc. Made from premium micro grain carbide.
- High chip removal rate and minimum breakage of edges. Corner protection against chipping.
- Fast chip ejection.



Flute Diam.	Flute Length	Shank Dia.	Overall Length	LBS	Neck Diam	No. Of Flutes	Order Number	Price
3/16	1/2	1/4	2-1/4	-	-	3	YG95107	\$32.43
1/4	3/4	1/4	2-1/2	-	-	4	YG95108	32.43
1/4	3/4	1/4	2-1/2	7/8	.230	4	YG95101	36.72
5/16	3/4	5/16	2-1/2	-	-	4	YG95109	45.17
5/16	3/4	5/16	2-1/2	1	.292	4	YG95102	50.60
3/8	7/8	3/8	2-1/2	-	-	4	YG95110	56.59
3/8	7/8	3/8	2-1/2	1-1/4	.355	4	YG95103	62.88
1/2	1	1/2	3	-	-	4	YG95111	90.41
1/2	1	1/2	3	1-1/2	.480	4	YG95104	99.97
5/8	1-1/4	5/8	3-1/2	-	-	5	YG95112	146.57
5/8	1-1/4	5/8	4	2	.605	5	YG95105	162.53
3/4	1-5/8	3/4	4	-	-	6	YG95113	212.03
3/4	1-5/8	3/4	4-3/8	2-3/8	.719	6	YG95106	250.12
1	1-3/4	1	4	-	-	6	YG95114	325.43

LBS=Length Below Shank

30° Helix Jet-Power Fine Pitch Coated Solid Carbide Roughers



Order Number	No. Flutes	Flute Dia.	Flute Length	Shank Dia.	Overall Length	Price
YG95072	3	1/4	5/16	1/4	2-1/8	\$27.36
YG95079	3	1/4	3/4	1/4	2-1/2	37.21
YG95073	3	5/16	3/8	5/16	2-1/4	38.12
YG95080	3	5/16	3/4	5/16	2-1/2	50.00
YG95074	3	3/8	9/16	3/8	2-1/2	45.12
YG95081	3	3/8	7/8	3/8	2-1/2	58.26
YG95075	4	1/2	5/8	1/2	3	71.95
YG95082	4	1/2	1	1/2	3	90.03
YG95076	4	5/8	7/8	5/8	3-1/4	126.76
YG95083	4	5/8	1-1/4	5/8	3-1/2	160.17
YG95077	4	3/4	1	3/4	3-3/4	179.31
YG95084	4	3/4	1-5/8	3/4	4	203.53
YG95078	5	1	1	1	4	278.22
YG95085	5	1	1-3/4	1	4	313.41



- Designed to machine low hardness materials (under 45Hrc).
- Fine Pitch, Jet Power Coating, 30° helix - rhs/rhc. Made from premium micro grain carbide.
- High velocity machining operation
- Fast chip ejection.

Call For Large Quantity Discounts!



Throw-Away Drill Inserts Super T15 Tialn or M4 Tin Coated

Will interchange with many makes.
NEW- Now available in solid carbide insert

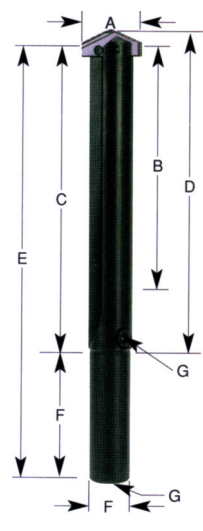
Call For Large
 Quantity Discounts !

Drill Diam.	T-15 Tialn Order #	Coated Price	Drill Diam.	T-15 Tialn Order #	Coated Price	Drill Diam.	T-15 Tialn Order #	Coated Price
3/8"	.3750	YGS08Y02 30.33	7/8"	.8750	YGS08117 36.33	1-21/32"	1.6563	YGS08316 54.95
25/64"	.3906	YGS08Y04 30.33	57/64"	.8906	YGS08162 36.33	1-11/16"	1.6875	YGS08317 54.95
13/32"	.4063	YGS08Y07 30.33	29/32"	.9063	YGS08119 36.33	1-23/32"	1.7187	YGS08319 54.95
27/64"	.4219	YGS08Y09 30.33	59/64"	.9219	YGS08120 36.33	1-3/4"	1.7500	YGS08321 54.95
7/16"	.4375	YGS08Z01 30.33	15/16"	.9375	YGS08121 36.33	1-25/32"	1.7813	YGS08323 54.95
29/64"	.4531	YGS08Z03 30.33	31/32"	.9688	YGS08201 42.84	1-13/16"	1.8125	YGS08325 54.95
15/32"	.4688	YGS08Z04 30.33	63/64"	.9643	YGS08202 42.84	1-27/32"	1.8438	YGS08326 54.95
31/64"	.4844	YGS08Z06 30.33	1"	1.000	YGS08203 42.84	1-7/8"	1.8750	YGS08328 54.95
1/2"	.5000	YGS08Z08 30.33	1-1/64"	1.0156	YGS08204 42.84	1-29/32"	1.9063	YGS08402 69.45
33/64"	.5156	YGS08002 32.69	1-1/32"	1.0313	YGS08206 42.84	1-15/16"	1.9375	YGS08404 69.45
17/32"	.5313	YGS08003 32.69	1-3/64"	1.0469	YGS08260 42.84	1-31/32"	1.9688	YGS08406 69.45
35/64"	.5469	YGS08060 32.69	1-1/16"	1.0625	YGS08207 42.84	2"	2.0000	YGS08407 69.45
9/16"	.5625	YGS08006 32.69	1-3/32"	1.0938	YGS08209 42.84	2-1/32"	2.0313	YGS08409 69.45
37/64"	.5781	YGS08008 32.69	1-7/64"	1.1094	YGS08261 42.84	2-3/64"	2.0472	YGS08410 69.45
19/32"	.5938	YGS08010 32.69	1-1/8"	1.1250	YGS08211 42.84	2-1/16"	2.0625	YGS08411 69.45
39/64"	.6094	YGS08061 32.69	1-5/32"	1.1563	YGS08213 42.84	2-3/32"	2.0938	YGS08413 69.45
5/8"	.6250	YGS08012 32.69	1-3/16"	1.1875	YGS08215 42.84	2-1/8"	2.1250	YGS08414 69.45
41/64"	.6406	YGS08062 32.69	1-7/32"	1.2188	YGS08216 42.84	2-5/32"	2.1563	YGS08416 69.45
21/32"	.6563	YGS08015 32.69	1-1/4"	1.2500	YGS08218 42.84	2-3/16"	2.1875	YGS08418 69.45
43/64"	.6719	YGS08063 32.69	1-9/32"	1.2813	YGS08220 42.84	2-7/32"	2.2188	YGS08420 69.45
11/16"	.6875	YGS08017 32.69	1-5/16"	1.3125	YGS08222 42.84	2-1/4"	2.2500	YGS08422 69.45
45/64"	.7031	YGS08011 36.33	1-11/32"	1.3438	YGS08224 42.84	2-9/32"	2.2813	YGS08423 69.45
23/32"	.7188	YGS08103 36.33	1-3/8"	1.3750	YGS08225 42.84	2-5/16"	2.3125	YGS08425 69.45
47/64"	.7344	YGS08105 36.33	1-13/32"	1.4063	YGS08301 54.95	2-11/32"	2.3438	YGS08427 69.45
3/4"	.7500	YGS08107 36.33	1-7/16"	1.4375	YGS08303 54.95	2-3/8"	2.3750	YGS08429 69.45
49/64"	.7656	YGS08108 36.33	1-15/32"	1.4688	YGS08305 54.95	2-13/32"	2.4063	YGS08431 69.45
25/32"	.7813	YGS08110 36.33	1-1/2"	1.5000	YGS08307 54.95	2-7/16"	2.4375	YGS08432 69.45
51/64"	.7969	YGS08160 36.33	1-17/32"	1.5313	YGS08308 54.95	2-15/32"	2.4688	YGS08434 69.45
13/16"	.8125	YGS08113 36.33	1-9/16"	1.5625	YGS08309 54.95	2-1/2"	2.5000	YGS08436 69.45
27/32"	.8438	YGS08115 36.33	1-19/32"	1.5938	YGS08310 54.95	2-17/32"	2.5313	YGS08438 69.45
55/64"	.8594	YGS08161 36.33	1-5/8"	1.6250	YGS08312 54.95	2-9/16"	2.5625	YGS08440 69.45
					YGS08314 54.95			

Drill Diam.	M-4 TIN Coated Order #	Price	2-7/8"	2.8750	YGS01518	68.53	3-3/8"	3.3750	YGS01616	79.26
2-5/8"	2.6250	YGS01507 \$68.53	2-29/32"	2.9063	YGS01519 68.53	3-7/16"	3.4375	YGS01619 79.26		
2-3/4"	2.7500	YGS01512 68.53	2-15/16"	2.9375	YGS01521 68.53	3-1/2"	3.5000	YGS01622 79.26		
2-25/32"	2.7813	YGS01514 68.53	2-31/32"	2.9688	YGS01522 68.53	3-3/4"	3.7500	YGS01711 94.86		
2-13/16"	2.8125	YGS01515 68.53	3"	3.0000	YGS01524 68.53	3-7/8"	3.8750	YGS01717 94.86		
2-27/32"	2.8438	YGS01517 68.53	3-1/16"	3.0625	YGS01602 79.26	4"	4.0000	YGS01722 94.86		
			3-1/8"	3.1250	YGS01605 79.26	4-1/2"	4.5000	YGS01815 110.12		
			3-1/4"	3.2500	YGS01611 79.26					

Coolant Fed Holders-Regular or Short Length (Straight Shank or Morse Taper)

A	B	C	D	E	F	F	G			
Drill Insert Range	Drill Series	Max Drill Depth	Flute Length	Ref. Length	Overall Length	Shank	Shank Length	Pipe Tap	Order Number	Sale Price
374-27/64"	Y	1-1/4	2-1/32	2-1/8	4-13/32	3/4"	2-3/8	1/8	YGP13Y01	\$215.79
374-27/64"	Y	2-3/8	3-5/32	3-1/4	5-17/32	3/4"	2-3/8	1/8	YGP13Y01	220.69
3/8-27/64"	Y	1 1/4	2 1/32	3 15/32	6 5/16	2mt		1/16	YGP01Y02	228.45
3/8-27/64"	Y	2 3/8	3 5/32	4 19/32	7 7/16	2mt		1/16	YGP03Y02	233.67
7/16-1/2"	Z	1-1/4	2-1/32	2-1/8	4-13/32	3/4"	2-3/8	1/8	YGP13Z01	215.79
7/16-1/2"	Z	2-3/8	3-5/32	3-1/4	5-17/32	3/4"	2-3/8	1/8	YGP15Z01	220.69
7/16-1/2"	Z	1 1/4	2 1/32	3 15/32	6 5/16	2mt		1/16	YGP01Z02	228.45
7/16-1/2"	Z	2 3/8	3-5/32	4-19/32	7-7/16	2mt		1/16	YGP03Z02	233.67
33/64-11/16"	0	1-3/8	2-3/16	2-19/64	4-9/16	3/4"	2-3/8	1/8	YGP13001	215.79
33/64-11/16"	0	2-1/2	3-5/16	3-27/64	5-11/16	3/4"	2-3/8	1/8	YGP15001	220.69
33/64-11/16"	0	1-3/8	2-3/16	3-41/64	6-15/32	2mt		1/16	YGP01002	228.45
33/64-11/16"	0	2-1/2	3-5/16	4-49/64	7-19/32	2mt		1/16	YGP03002	233.67
45/64-15/16"	1	2-5/8	3-7/8	4-1/64	6-7/8	3/4"	3	1/8	YGP13101	224.02
45/64-15/16"	1	2-5/8	3-7/8	4-1/64	6-7/8	1"	3	1/8	YGP13102	224.02
45/64-15/16"	1	6-5/8	7-7/8	8-1/64	10-7/8	3/4"	3	1/8	YGP15101	242.14
45/64-15/16"	1	6-5/8	7-7/8	8-1/64	10-7/8	1"	3	1/8	YGP15102	242.14
45/64-15/16"	1	2-3/4	3-7/8	5-39/64	9-5/32	3mt	1/8	1/8	YGP01103	249.38
45/64-15/16"	1	6-3/4	7-7/8	9-39/64	13-5/32	3mt	1/8	1/8	YGP03103	266.83
45/64-15/16"	1	2-3/4	3-7/8	5-43/64	10-5/32	4mt	1/8	1/8	YGP01104	256.36
45/64-15/16"	1	6-3/4	7-7/8	9-43/64	14-5/32	4mt	1/8	1/8	YGP03104	275.55
31/32-1-3/8"	2	3-3/8	4-1/2	4-41/64	8	1"	3-1/2	1/8	YGP13202	242.14
31/32-1-3/8"	2	3-3/8	4-1/2	4-41/64	8	1-1/4"	3-1/2	1/8	YGP13203	242.14
31/32-1-3/8"	2	7-3/8	8-1/2	8-41/64	12	1"	3-1/2	1/8	YGP15202	260.26
31/32-1-3/8"	2	7-3/8	8-1/2	8-41/64	12	1-1/4"	3-1/2	1/8	YGP15203	260.26
31/32-1-3/8"	2	3-3/8	4-1/2	6-15/64	9-25/32	3mt	1/8	1/8	YGP01203	277.31
31/32-1-3/8"	2	7-3/8	8-1/2	10-15/64	13-25/32	3mt	1/8	1/8	YGP03203	294.74
31/32-1-3/8"	2	3-3/8	4-1/2	6-19/64	10-25/32	4mt	1/8	1/8	YGP01204	287.78
31/32-1-3/8"	2	7-3/8	8-1/2	10-19/64	14-25/32	4mt	1/8	1/8	YGP03204	303.43
1-13/32-1-7/8"	3	4-3/4	6	6-3/16	10	1-1/4"	4	1/4	YGP13303	275.07
1-13/32-1-7/8"	3	4-3/4	6	6-3/16	10	1-1/2"	4	1/4	YGP13304	275.07
1-13/32-1-7/8"	3	8-1/4	9-1/2	9-11/16	13-1/2	1-1/4"	4	1/4	YGP15303	291.55
1-13/32-1-7/8"	3	8-1/4	9-1/2	9-11/16	13-1/2	1-1/2"	4	1/4	YGP15304	291.55
1-13/32-1-7/8"	3	4-3/4	6	8-1/8	12-9/16	4mt	1/4	1/4	YGP01304	308.71
1-13/32-1-7/8"	3	8-1/4	9-1/2	11-5/8	16-1/16	4mt	1/4	1/4	YGP03304	336.57
1-13/32-1-7/8"	3	4-3/4	6	8-1/8	13-13/16	5mt	1/4	1/4	YGP01305	326.12
1-13/32-1-7/8"	3	8-1/4	9-1/2	11-5/8	17-5/16	5mt	1/4	1/4	YGP03305	364.74
1-29/32-2-9/16"	4	5-1/8	6-1/2	6-3/16	10-1/2	1-1/2"	4	1/4	YGP13404	316.22
1-29/32-2-9/16"	4	5-1/8	6-1/2	6-3/16	10-1/2	1-3/4"	4	1/4	YGP13405	334.38
1-29/32-2-9/16"	4	9-1/8	10-1/2	10-11/16	14-1/2	1-1/2"	4	1/4	YGP15404	365.67
1-29/32-2-9/16"	4	9-1/8	10-1/2	10-11/16	14-1/2	1-3/4"	4	1/4	YGP15405	393.66
1-29/32-2-9/16"	4	5-1/8	6-1/2	8-5/8	13-1/16	4mt	1/4	1/4	YGP01404	334.86
1-29/32-2-9/16"	4	9-1/8	10-1/2	12-5/8	17-1/16	4mt	1/4	1/4	YGP03404	387.19
1-29/32-2-9/16"	4	5-1/8	6-1/2	8-5/8	14-5/16	5mt	1/4	1/4	YGP01405	366.24
1-29/32-2-9/16"	4	9-1/8	10-1/2	12-5/8	18-5/16	5mt	1/4	1/4	YGP03405	416.83
2-1/2-3-1/2"	5.6	6-3/4	8-1/2	8-3/4	12-1/2	2"	4	1/2	YGP13506	502.34
2-1/2-3-1/2"	5.6	10-3/4	12-1/2	12-3/4	16-1/2	2"	4	1/2	YGP15506	551.79
3-17/32-4-1/2"	7.8	6-3/4	8-7/8	9-1/8	13-7/8	3"	5	1/2	YGP13708	683.55
3-17/32-4-1/2"	7.8	10-3/4	12-7/8	13-1/8	17-7/8	3"	5	1/2	YGP15708	815.31



Call For Large
 Quantity Discounts !



External Threading Bars and Inserts

Order No.	Shank Width x Height	OAL	List	Sale
CAR-SER 0310 H11	5/16 x 5/16	4.0	\$112.50	\$92.00
CAR-SER 0375 H11	3/8 x 3/8	4.0	112.50	92.00



Inserts for Above Bar - 11 mm Insert, 1/4" I.C.

UN-UNIFIED INSERTS CREATE FULL FORM THREADS				
Order No.	Pitch TPI	Grade	1-9 pcs	10+
CAR-11 ER 32UN	32	BMA	\$19.00	\$15.20
CAR-11 ER 28UN	28	BMA	19.00	15.20
CAR-11 ER 24UN	24	BMA	19.00	15.20
CAR-11 ER 20UN	20	BMA	19.00	15.20
CAR-11 ER 18UN	18	BMA	19.00	15.20
CAR-11 ER 16UN	16	BMA	19.00	15.20
CAR-11 ER 14UN	14	BMA	19.00	15.20



PARTIAL PROFILES 60° INSERTS - BMA GRADE FOR A RANGE OF THREADS

Order No.	PITCH RANGE		1-9 pcs	10+
	mm	TPI	Price	Price
CAR-11 ER A60	0.5-1.5	48-16	\$19.00	\$15.20

NPT INSERTS - NATIONAL PIPE THREAD				
Order No.	Pitch TPI	Grade	1-9 pcs	10+
CAR-11 ER 14NPT	14	BMA	\$19.00	\$15.20
CAR-11 ER 18NPT	18	BMA	19.00	15.20



The Toolholder Pocket has a 1-1/2° Positive Helix Angle

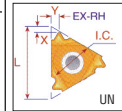
External Right Hand Threading Bars and Inserts

Order No.	Shank Width x Height	OAL	List	Sale
CAR-SER 0375 D16	3/8 x 3/8	2.50	112.50	\$92.00
CAR-SER 0500 F16	1/2 x 1/2	3.25	112.50	104.00
CAR-SER 0625 H16	5/8 x 5/8	4.00	112.50	104.00
CAR-SER 0750 K16	3/4 x 3/4	5.00	112.50	104.00
CAR-SER 1000 M16	1 x 1	6.00	112.50	107.00



Inserts for Above Bar- 16 mm Insert, 3/8" I.C.

UN-UNIFIED INSERTS CREATE FULL FORM THREADS				
Order No.	Pitch TPI	Grade	1-9 pcs	10 +
CAR-16 ER 72UN	72	BMA	\$23.00	\$18.40
CAR-16 ER 64UN	64	BMA	23.00	18.40
CAR-16 ER 56UN	56	BMA	23.00	18.40
CAR-16 ER 48UN	48	BMA	23.00	18.40
CAR-16 ER 32UN	32	BMA	19.00	15.20
CAR-16 ER 28UN	28	BMA	19.00	15.20
CAR-16 ER 24UN	24	BMA	19.00	15.20
CAR-16 ER 20UN	20	BMA	19.00	15.20
CAR-16 ER 18UN	18	BMA	19.00	15.20
CAR-16 ER 16UN	16	BMA	19.00	15.20
CAR-16 ER 14UN	14	BMA	19.00	15.20
CAR-16 ER 12UN	12	BMA	19.00	15.20
CAR-16 ER 09UN	09	BMA	19.00	15.20
CAR-16 ER 08UN	08	BMA	19.00	15.20



External Insert Threading Kits

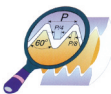
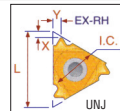
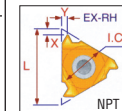


Includes:
 • 1 Steel External Threading Bar
 • 10 TiAlN Coated inserts
 1ea. 8, 12, 14, 16, 18, 20, 24 TPI Full Profile.
 1ea. A60, AG60, G60 Partial Profile inserts.
 All 60 degree UN Standard, covers entire range: 8-48 pitch
 • Hex key, spare screw & fitted case.

3/4" Shank Threading Kit
 Order No. CAR-KEU-3/4
 Regular \$310.00
Sale \$264.00

1" Shank Threading Kit
 Order No. CAR-KEU-1
 Regular \$310.00
Sale \$264.00

NPT INSERTS - NATIONAL PIPE THREAD				
Order No.	Pitch TPI	Grade	1-9 pcs	10 +
CAR-16 ER 27NPT	27	BMA	\$19.00	\$15.20
CAR-16 ER 18NPT	18	BMA	19.00	15.20
CAR-16 ER 14NPT	14	BMA	19.00	15.20
CAR-16 ER 11.5NPT	11.5	BMA	19.00	15.20
CAR-16 ER 08NPT	08	BMA	19.00	15.20



Partial Profiles 60°

PARTIAL PROFILES 60° INSERTS - GRADE BMA FOR A RANGE OF THREADS

Order No.	PITCH RANGE		1-9 pcs	10+
	mm	TPI	Price	Price
CAR-16 ER AG60	0.5-3.0	48-8	\$19.00	\$15.20
CAR-16 ER G60	1.75-3.0	14-8	19.00	15.20

UNJ INSERTS - CONTROLLED ROOT RADIUS

Order No.	Pitch TPI	Grade	1-9 pcs	10 +
CAR-16 ER 32UNJ	32	BMA	\$19.00	\$15.20
CAR-16 ER 28UNJ	28	BMA	19.00	15.20
CAR-16 ER 24UNJ	24	BMA	19.00	15.20
CAR-16 ER 20UNJ	20	BMA	19.00	15.20
CAR-16 ER 18UNJ	18	BMA	19.00	15.20
CAR-16 ER 16UNJ	16	BMA	19.00	15.20
CAR-16 ER 14UNJ	14	BMA	19.00	15.20
CAR-16 ER 12UNJ	12	BMA	19.00	15.20

Order No.	Shank Width x Height	OAL	Sale
CAR-SER 1000 M22	1" x 1"	6"	\$121.00
CAR-SER 1250 P22	1.25" x 1.25"	7"	124.00
CAR-SER 1500 R22	1.50" x 1.50"	8"	204.00



Inserts for Above Bar- 22 mm Insert, 1/2" I.C.



External Right Hand Threading Bars and Inserts

PARTIAL PROFILES 60° INSERTS - GRADE BMA FOR A RANGE OF THREADS

Order No.	PITCH RANGE		1-9 pcs	10+
	mm	TPI	Price	Price
CAR-22 ER N60	3.0-5.0	7-5	\$24.00	\$19.20

UN-UNIFIED INSERTS CREATE FULL FORM THREADS

Order No.	Pitch TPI	Grade	1-9 pcs	10 +
CAR-22 ER 7UN	7	BMA	\$26.00	\$20.80
CAR-22 ER 6UN	6	BMA	26.00	20.80
CAR-22 ER 5UN	5	BMA	26.00	20.80

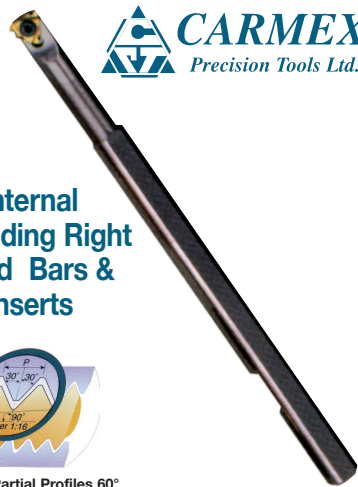
ACME INSERTS

Order No.	Pitch TPI	Grade	1-9 pcs	10 +
CAR-22 ER 6ACME	6 acme	BMA	\$26.00	\$20.80
CAR-22 ER 5ACME	5 acme	BMA	26.00	20.80
CAR-22 ER 4ACME	4 acme	BMA	26.00	20.80





Toolholder Order No.	Shank Dia.	Neck Dia.	Neck Length	Min. Bore Dia.	OAL	List Price	Sale Price
CAR-SIR 0205 H06	0.50	0.20	0.47	0.24	4.0	\$125.00	\$89.00

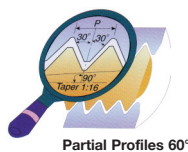


Inserts For Above Bar - 6mm Insert, 5/32" I.C.

UN-UNIFIED INSERTS CREATE FULL FORM THREADS				
Order No.	Pitch TPI	Grade	1-9 pcs	10+
CAR-06 IR 32UN	32	BXC	\$19.00	\$15.20
CAR-06 IR 28UN	28	BXC	19.00	15.20
CAR-06 IR 24UN	24	BXC	19.00	15.20
CAR-06 IR 20UN	20	BXC	19.00	15.20
CAR-06 IR 18UN	18	BXC	19.00	15.20



Internal Threading Right Hand Bars & Inserts



NPT INSERTS - NATIONAL PIPE THREAD				
Order No.	Pitch TPI	Grade	1-9 pcs	10+
CAR-06 IR 27NPT	27	BMA	\$19.00	\$15.20

PARTIAL PROFILES 60° INSERTS - FOR A RANGE OF THREADS					
Partial Profile 60° Order No.	PITCH RANGE		Grade	1-9 pcs Price	10+ Price
	mm	TPI			
CAR-06 IR A60	0.5-1.25	48-20	BXC	\$19.00	\$15.20

Toolholder Order No.	Shank Dia.	Neck Dia.	Neck Length	Min. Bore Dia.	OAL	List Price	Sale Price
CAR-SIR 0265 K08	0.62	0.26	0.70	0.31	5.0	\$125.00	\$89.00

Inserts for Above Bar - 8 mm Insert, 3/16" I.C.

UN-UNIFIED INSERTS CREATE FULL FORM THREADS				
Order No.	Pitch TPI	Grade	1-9 pcs	10+
CAR-08 IR 32UN	32	BXC	\$19.00	\$15.20
CAR-08 IR 28UN	28	BXC	19.00	15.20
CAR-08 IR 24UN	24	BXC	19.00	15.20
CAR-08 IR 20UN	20	BXC	19.00	15.20
CAR-08 IR 18UN	18	BXC	19.00	15.20
CAR-08 IR 16UN	16	BXC	19.00	15.20
CAR-08 IR 14UN	14	BXC	19.00	15.20

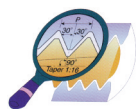


Internal Threading Right Hand Bars & Inserts



NPT INSERTS - NATIONAL PIPE THREAD				
Order No.	Pitch TPI	Grade	1-9 pcs	10+
CAR-08 IR 18NPT	18	BMA	\$19.00	\$15.20

PARTIAL PROFILES 60° INSERTS - FOR A RANGE OF THREADS					
Partial Profile 60° Order No.	PITCH RANGE		Grade	1-9pcs Price	10+ Price
	mm	TPI			
CAR-08 IR A60	0.5-1.5	48-16	BXC	\$19.00	\$15.20



Partial Profiles 60°

Toolholder Order No.	Shank Dia.	Neck Dia.	Neck Length	Min. Bore Dia.	OAL	List Price	Sale Price
CAR-SIR 0375 H11	0.38	0.38	-	0.47	4.0	\$112.50	\$92.00
CAR-SIR 0375 K11	0.62	0.38	1.00	0.47	5.0	112.50	101.00
CAR-SIR 0500 L11	0.62	0.50	1.25	0.58	5.5	112.50	101.00

Inserts For Above Bar - 11 mm Insert, 1/4" I.C.

UN-UNIFIED INSERTS CREATE FULL FORM THREADS				
Order No.	Pitch TPI	Grade	1-9 pcs	10+
CAR-11 IR 72UN	72	BMA	\$23.00	\$18.40
CAR-11 IR 64UN	64	BMA	23.00	18.40
CAR-11 IR 56UN	56	BMA	23.00	18.40
CAR-11 IR 48UN	48	BMA	23.00	18.40
CAR-11 IR 32UN	32	BMA	19.00	15.20
CAR-11 IR 28UN	28	BMA	19.00	15.20
CAR-11 IR 24UN	24	BMA	19.00	15.20
CAR-11 IR 20UN	20	BMA	19.00	15.20
CAR-11 IR 18UN	18	BMA	19.00	15.20
CAR-11 IR 16UN	16	BMA	19.00	15.20
CAR-11 IR 14UN	14	BMA	19.00	15.20
CAR-11 IR 12UN	12	BMA	19.00	15.20
CAR-11 IR 11UN	11	BMA	19.00	15.20

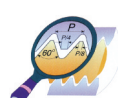


Internal Threading Right Hand Bars & Inserts



NPT INSERTS - NATIONAL PIPE THREAD				
Order No.	Pitch TPI	Grade	1-9 pcs	10+
CAR-11 IR 14NPT	14	BMA	\$19.00	\$15.20
CAR-11 IR 18NPT	18	BMA	19.00	15.20

Partial Profiles 60°



PARTIAL PROFILES 60° INSERTS - GRADE BXC FOR A RANGE OF THREADS				
Partial Profile 60° Order No.	PITCH RANGE		1-9 pcs Price	10+ Price
	mm	TPI		
CAR-11 IR A60	0.5-1.5	48-16	\$19.00	\$15.20



Toolholder Order No.	Shank Dia.	Neck Dia.	Neck Length	Min. Bore Dia.	OAL	List Price	Sale Price
CAR-SIR 0500 M16	0.62	0.50	1.25	0.64	6.0	\$125.00	\$101.00
CAR-SIR 0625 P16	0.75	0.62	1.57	0.75	7.0	125.00	101.00
CAR-SIR 0750 P16	0.75	0.75	-	0.90	7.0	125.00	111.00
CAR-SIR 1000 R16	1.00	1.00	-	1.16	8.0	175.00	144.00

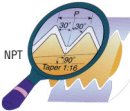
Inserts For Above Bar - 16 mm Insert, 3/8" I.C.

UN- INSERTS GRADE BMA CREATE FULL FORM THREADS				
Order No.	Pitch TPI	1-9 pcs	10+	
CAR-16 IR 72UN	72	\$23.00	\$18.40	
CAR-16 IR 64UN	64	23.00	18.40	
CAR-16 IR 56UN	56	23.00	18.40	
CAR-16 IR 48UN	48	23.00	18.40	
CAR-16 IR 32UN	32	19.00	15.20	
CAR-16 IR 28UN	28	19.00	15.20	
CAR-16 IR 24UN	24	19.00	15.20	
CAR-16 IR 20UN	20	19.00	15.20	
CAR-16 IR 18UN	18	19.00	15.20	
CAR-16 IR 16UN	16	19.00	15.20	
CAR-16 IR 14UN	14	19.00	15.20	
CAR-16 IR 12UN	12	19.00	15.20	
CAR-16 IR 09UN	09	19.00	15.20	
CAR-16 IR 08UN	08	19.00	15.20	

NPT INSERTS GRADE BMA - NATIONAL PIPE THREAD				
Order No.	Pitch TPI	1-9 pcs	10+	
CAR-16 IR 18NPT	18	\$19.00	\$15.20	
CAR-16 IR 14NPT	14	19.00	15.20	
CAR-16 IR 11.5NPT	11.5	19.00	15.20	
CAR-16 IR 08NPT	08	19.00	15.20	



Internal Threading Right Hand Bars & Inserts



Partial Profile Inserts will Create a Range of Threads. See table Below for Range.

Partial Profiles 60°

Partial Profiles 60° Inserts - Grade BMA For A Range of Threads

Partial Profile 60° Order No.	Pitch Range		1-9 pcs Price	10+ Price
	mm	TPI		
CAR-16 IR AG60	0.5-3.0	48-8	\$19.00	\$15.20
CAR-16 IR G60	1.75-3.0	14-8	19.00	15.20

3/4" Shank Threading Kit
Order No. CAR-KIU-3/4
Regular \$310.00
Sale \$311.00

1" Shank Threading Kit
Order No. CAR-KIU-1
Regular \$310.00
Sale \$311.00

Internal Insert Threading Kits



Includes:
• 1 Steel Internal Threading Bar
• 10 TiN Coated Inserts
• 1ea. 8, 12, 14, 16, 18, 20, 24 TPI Full Profile.
• 1ea. AG60, AG60, G60 Partial Profile inserts.
All 60 degree UN Standard, covers entire range: 8-48 pitch
• Hex key, spare screw & fitted case.

Toolholder Order No.	Shank Dia.	Neck Dia.	Neck Length	Min. Bore Dia.	OAL	List Price	Sale Price
CAR-SIR 0750 P22	0.75	0.75	-	0.90	7.0	\$125.00	\$107.00
CAR-SIR 1000 R22	1.00	1.00	-	1.16	8.0	183.76	151.00
CAR-SIR 1250 S22	1.25	1.25	-	1.50	10.0	183.75	157.00
CAR-SIR 1500 T22	1.50	1.50	-	1.75	12.0	225.00	221.00



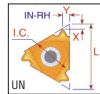
Partial Profiles 60° Inserts - Grade BMA For A Range of Threads

Partial Profile 60° Order No.	Pitch Range		1-9 pcs Price	10+ Price
	mm	TPI		
CAR-22 IR N60	5-3.5	7-5	\$24.00	\$19.20



UN-UNIFIED INSERTS CREATE FULL FORM THREADS				
Order No.	Pitch TPI	Grade	1-9 pcs	10 +
CAR-22 IR 7UN	7	BMA	\$24.00	\$19.20
CAR-22 IR 6UN	6	BMA	24.00	19.20
CAR-22 IR 5UN	5	BMA	24.00	19.20

ACME INSERTS				
Order No.	Pitch TPI	Grade	1-9 pcs	10 +
CAR-22 IR 6ACME	6 acme	BMA	\$26.00	\$20.80
CAR-22 IR 5ACME	5 acme	BMA	26.00	20.80
CAR-22 IR 4ACME	4 acme	BMA	26.00	20.80



Internal Threading Right Hand Bars & Inserts

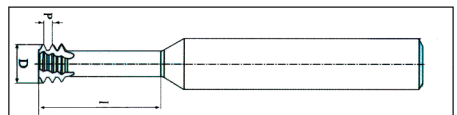
HARDCUT



UN Threadmilling Tools for Internal Thread (Inch)

- For Hardened Steels and Cast Iron up to 62 HRC
- High Temperature Alloys
- Super Alloys (Hastelloy, Inconel & Nickel Based Alloys)

NEW



FSH 6038 E10 32 UN

Grade MT3:
Ultra Fine Grade with PVD Multi-Layer Coating

UNC	UNF	Thrd Pitch	Thrd Depth	"D" Diam	No of Flutes	"l" Length	Shank mm	Order No.	Price
4		40	2xD1	.083"	4	.25"	6	CAR40300527	\$162.00
4		40	3xD1	.083"	4	.36"	6	CAR40300528	162.00
5	6	40	2xD1	.096"	4	.28"	6	CAR40300529	162.00
5	6	40	3xD1	.096"	4	.40"	6	CAR40300530	162.00
6		32	2xD1	.100"	4	.31"	6	CAR40300531	162.00
6		32	3xD1	.100"	4	.44"	6	CAR40300532	162.00
8		32	2xD1	.126"	4	.36"	6	CAR40300533	162.00
8		32	3xD1	.126"	4	.52"	6	CAR40300534	162.00
	10	32	2xD1	.150"	5	.41"	6	CAR40300535	162.00
	10	32	3xD1	.150"	5	.60"	6	CAR40300536	162.00
	1/4	28	2xD1	.205"	6	.54"	6	CAR40300537	162.00
	1/4	28	3xD1	.205"	6	.79"	6	CAR40300538	162.00
	5/16, 3/8	24	2xD1	.260"	6	.67"	8	CAR40300539	207.00
	5/16, 3/8	24	3xD1	.260"	6	.88"	8	CAR40300540	207.00
1/4		20	2xD1	.189"	5	.55"	6	CAR40300541	162.00
1/4		20	3xD1	.189"	5	.80"	6	CAR40300542	162.00



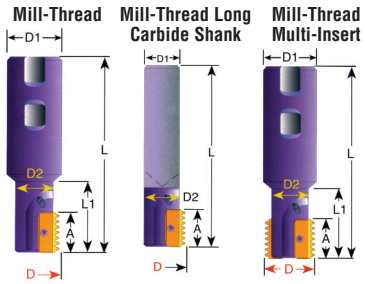
Left Hand Cutting-Use Code M04 For CNC



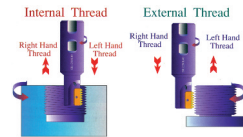
CARMEX Mill-Thread Indexable

Advantages of Mill-Thread

- The SAME Toolholder and insert can produce right and left-hand.
- A single insert & toolholder can produce a given thread on many diameters (external & internal).
- Prismatic shape of insert's tail, ensures exact & reliable clamping in the toolholder.
- Thread is produced in one tool pass.
- Capable of producing taper threads.
- Improved productivity—Increased cutting speeds and multi-tooth type carbide inserts.
- Threading to one pitch of a shoulder in a blind hole.
- Less expensive than using taps and dies.



Thread Milling operation is applicable for threading cutting in non symmetrical parts, utilizing the advantage of Helical Interpolation programs of modern machining-centers.



Through Coolant Bore in All Toolholders

Mill-Thread Toolholders (Inch)

Order No.	Insert Size A=mm	D	D1	D2	L	L1	Price
CAR-SR 0375 H12	12mm	0.37	0.75	0.30	3.35	0.51	\$184.00
CAR-SR 0390 H12	12mm	0.39	0.75	0.30	3.35	0.51	207.00
CAR-SR 0500 F14	14mm	0.50	0.75	0.37	2.95	0.70	161.00
CAR-SR 0540 F14	14mm	0.54	0.75	0.38	2.98	0.77	181.00
CAR-SR 0570 H14	14mm	0.57	0.75	0.41	3.20	1.00	181.00
CAR-SR 0670 H14	14mm	0.67	0.75	0.53	3.35	1.18	197.00

Mill-Thread Long Carbide Shank Toolholders (Inch)

Order No.	Insert Size A=mm	D	D1	D2	L	Price
CAR-SR 0390 K12C	12mm	0.39	0.312	0.312	5.0	\$444.00
CAR-SR 0500 J14C	14mm	0.50	0.375	0.375	6.0	388.00
CAR-SR 0620 K14C	14mm	0.50	0.500	0.500	7.0	485.00

Multi-Inserts Mill-Thread Toolholder (Inch)

Order No.	Insert Size A=mm	D	D1	D2	L	L1	No. Insert	Price
CAR-SR 0790 H14-2	14mm	0.79	0.75	0.63	3.66	1.57	2	\$384.00

12MM UN-UNIFIED INSERTS — INTERNAL INSERTS

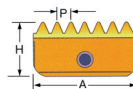
Order No.	Pitch TPI (P)	Insert Size (A)	(H) Height	1-9 pcs	10 +
CAR-12 I 32UN	32	0.472	0.248	\$50.29	\$ 39.22
CAR-12 I 28UN	28	0.472	0.248	50.29	39.22
CAR-12 I 24UN	24	0.472	0.248	50.29	39.22
CAR-12 I 20UN	20	0.472	0.248	50.29	39.22
CAR-12 I 18UN	18	0.472	0.248	50.29	39.22
CAR-12 I 16UN	16	0.472	0.248	50.29	39.22

14MM UN-UNIFIED INSERTS — INTERNAL INSERTS

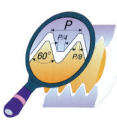
CAR-14 I 32UN	32	0.551	0.295	\$50.29	\$ 39.22
CAR-14 I 28UN	28	0.551	0.295	50.29	39.22
CAR-14 I 24UN	24	0.551	0.295	50.29	39.22
CAR-14 I 20UN	20	0.551	0.295	50.29	39.22
CAR-14 I 18UN	18	0.551	0.295	50.29	39.22
CAR-14 I 16UN	16	0.551	0.295	50.29	39.22
CAR-14 I 14UN	14	0.551	0.295	50.29	39.22
CAR-14 I 12UN	12	0.551	0.295	50.29	39.22



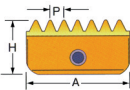
UN - Unified



Inserts for Mill - Thread Toolholders



UN - Unified



14MM UN-UNIFIED INSERTS — EXTERNAL INSERTS

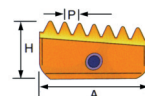
Order No.	Pitch TPI (P)	Insert Size (A)	(H) Height	1-9 pcs	10 +
CAR-14 E 32UN	32	0.551	0.295	\$50.29	\$ 39.22
CAR-14 E 28UN	28	0.551	0.295	50.29	39.22
CAR-14 E 24UN	24	0.551	0.295	50.29	39.22
CAR-14 E 20UN	20	0.551	0.295	50.29	39.22
CAR-14 E 18UN	18	0.551	0.295	50.29	39.22
CAR-14 E 16UN	16	0.551	0.295	50.29	39.22
CAR-14 E 14UN	14	0.551	0.295	50.29	39.22
CAR-14 E 12UN	12	0.551	0.295	50.29	39.22

NPT -NATIONAL PIPE THREAD

Order No.	Pitch TPI (P)	Insert Size (A)	1-9 pcs	10 +
CAR-12-18NPT	18	0.475	\$56.00	\$ 39.20
CAR-12-18NPTF	18	0.472	56.00	39.20
CAR-14-18NPT	18	0.551	56.00	39.20
CAR-14-18NPTF	18	0.551	56.00	39.20
CAR-14-14NPT	14	0.551	56.00	39.20
CAR-14-14NPTF	14	0.551	56.00	39.20



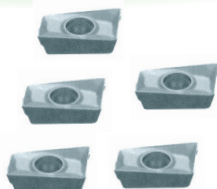
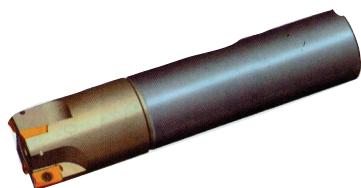
NPT





Choose an Endmill Kit Below

You Get 1 Milling Cutter & 10 Inserts



As Low As
\$109.61

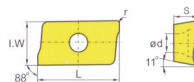
- Improved reinforced and harder cutter body design, nickel plated.
- High 90° shoulder accuracy.
- No mismatch, leave a clean mirror like side wall.
- Soft, clean cut due to increased helical cutting edge and larger axial rake angle.
- Includes grade YGB202 tough substrate with TiAlN Coating for general stainless and all steel applications.

360-1000SFM .004-.008 Chip Load Per Tooth.

Uses Industry Standard Size Inserts
APKT 11T304 .016" Radius, .433 Length of Cut.
APKT 160408 .031" Radius, .630 Length of Cut.

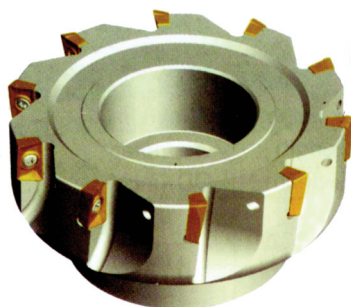
Replacement Inserts:
(order 10 per pack)

APKT 11T304 Grade
 YGB202 for Steel \$8.84ea
 APKT 11T304 Grade
 YD101 for Alum \$8.84ea



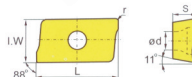
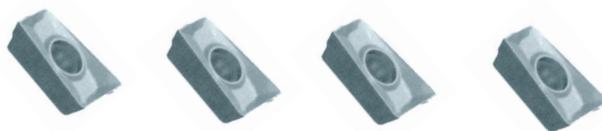
APKT160408 Grade
 YGB202 for Steel \$10.46ea
 APKT 160408 Grade
 YD101 for Alum \$10.46ea

Endmill Model	Dia. Cut	Dia. Shank	Insert Length	No. of Flutes	Order No.	Sale
EMP01 0.50-.62-AP11-1	1/2	5/8	.482	1	K99-300	\$109.61
EMP01 0.62-.62-AP11-2	5/8	5/8	.482	2	K99-302	125.24
EMP01 0.75-.75-AP11-2	3/4	3/4	.482	2	K99-304	126.97
EMP01 0.75-.75-AP11-3	3/4	3/4	.482	3	K99-305	136.32
EMP01 1.00-1.00-AP11-3	1	1	.482	3	K99-306	140.87
EMP01 1.25-1.25-AP11-4	1 1/4	1 1/4	.482	4	K99-308	167.19
EMP01 1.00-1.00-AP16-2	1	1	.704	2	K99-330	142.87
EMP01 1.25-1.25-AP16-3	1 1/4	1 1/4	.704	3	K99-331	167.54
EMP01 1.50-1.25-AP16-4	1 1/2	1 1/4	.704	4	K99-332	188.08
EMP01 2.00-1.25-AP16-4	2	1 1/4	.704	5	K99-333	207.85
EMP01 2.50-1.25-AP16-4	2 1/2	1 1/4	.704	6	K99-334	233.34



Choose an Facemill Kit Below

You Get 1 Milling Cutter & 10 Inserts



- Improved reinforced and harder cutter body design, nickel plated.
- High 90° shoulder accuracy.
- No mismatch, leave a clean mirror like side wall.
- Soft, clean cut due to increased helical cutting edge and larger axial rake angle.
- Includes grade YGB202 tough substrate with TiAlN Coating for general stainless and all steel applications.

360-1000SFM .004-.008 Chip Load Per Tooth.
Uses Industry Standard Size inserts
APKT 11T304 .016" Radius, .433 Length of Cut.
APKT 160408 .031" Radius, .630 Length of Cut.



Facemill Model	Dia. Cut	Arbor Hole	Insert Length	No. of Flutes	Order No.	Sale
EMPO2 2.0-A.75-AP11-6	2	3/4	.482	6	K99-400	\$205.00
EMPO2 2.5-A.75-AP11-8	2 1/2	3/4	.482	8	K99-402	235.48
EMPO2 3.0-A1.00-AP11-8	3	1	.482	8	K99-404	247.78
EMPO2 4.0-B1.25-AP11-10	4	1 1/4	.482	10	K99-405	288.09
EMPO2 2.0-A.75-AP16-5	2	3/4	.704	5	K99-430	197.97
EMPO2 2.5-A.75-AP16-6	2 1/2	3/4	.704	6	K99-431	222.64
EMPO2 3.0-A1.00-AP16-7	3	1	.704	7	K99-432	250.63
EMPO2 4.0-B1.25-AP16-8	4	1 1/4	.704	8	K99-433	266.23

Replacement Inserts:
(order 10 per pack)

APKT 11T304 Grade
 YGB202 for Steel \$8.84ea
 APKT 11T304 Grade
 YD101 for Alum \$8.84ea

APKT160408 Grade
 YGB202 for Steel \$10.46ea
 APKT 160408 Grade
 YD101 for Alum \$10.46ea





Only \$75.00 per inch Diameter with purchase of 10 inserts per inch of body size*.

All cutters use all insert types shown below.

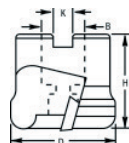
Freedom Cutter ® Shell Mills					
Order #	D	B	H	# Inserts	List
FC-2-3	2"	.75"	1.725	3	325.00
FC-2.5-4	2.5"	1.25"	1.725	4	345.00
FC-3-4	3"	1.25"	1.875	4	360.00
FC-3.5-5	3.5"	1.25"	1.875	5	410.00
FC-4-6	4"	1.50"	1.875	6	490.00
FC-4.5-6	4.5"	1.50"	1.875	6	525.00
FC-5-6	5"	1.50"	1.950	6	560.00
FC-6-8	6"	1.50"	1.950	8	620.00



All Mil-Tec Freedom Cutters and inserts are made here in the USA !!
They will use your choice of an Octagon, Round, Square insert.
All inserts are precision ground.

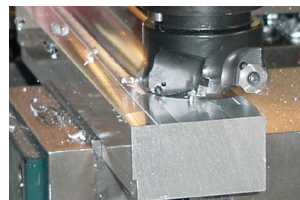
Super Shear For Aluminum

Insert Order Number	Shape	Edge Type	Grade	SS	Price Ea
SS45-MTC20	Octagon	Sharp	C2	2	\$16.00
SS45-MTC21	Octagon	Edge Prep	C2		16.00
SS032-MTC21	Square	Edge Prep	C2		16.00
SA90032-MTC20	Square 90°	Sharp	C2		16.00



Power Shear / All Materials

Insert Order Number	Shape	Edge Type	Grade	PS	Price Ea
PS45L-MTC357	Octagon	Edge Prep	Tialn C5	2	\$17.00
PS45L-MTC357A2	Octagon	A2 Hone	Tialn C5		17.00
PS45L-MTC317A2	Octagon	A2 Hone	Tialn C1		17.00
PS90032-MTC357	Square 90°	Edge Prep	Tialn C5		17.00
PS45L-MTC51	Octagon	Edge Prep	C5		17.00



Negative Positive Roughing

Insert Order Number	Shape	Edge Type	Grade	NP	Price Ea
NP45L-MTC357	Octagon	Edge Prep	Tialn C5	2	\$17.00
NP45L-MTC357A2	Octagon	A2 Hone	Tialn C5		17.00
NP45L-MTC317A2	Octagon	A2 Hone	Tialn C1		17.00
NPU-45L-MTC357A2	Octagon	A2 Hone	Tialn C5		17.00

Mag-Na-Shear / Exotics / Titanium / Inconel

Insert Order Number	Shape	Edge Type	Grade	MS	Price Ea
MSU45L-MTC317A2	Octagon	A2 Hone	Tialn C1	2	\$17.00

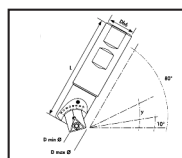


*Simple Amazing Deal: Order 10 inserts as shown above per inch of cutter diameter and get the cutter for just \$75.00 per inch. Any 1/2" size cutters are rounded up to next size for both sale price and insert order. Inserts sold only in 10 packs.
Example: 2" Diam Cutter and 20 inserts only \$470.00



Adjustable Countersink and Chamfering Tool

Shank	OAL "L"	"Y" Range	Order No.	Reg. Price	Sale Price	Insert Used
.750	4.0	10-80	134-610W750	\$228.00	\$154.50	TCMT 2-1
1.00	4.0	10-80	134-620W100	242.00	155.50	TCMT 3-2



Radius	IC Size	TIN Grade	Order No.	Sale
.015	1/4	185-TCMT2-1TIN		\$5.75
.030	3/8	185-TCMT3-2TIN		7.55

Inserts for Above Fleximills...
Order Separately



Fleximill Quadro Countersink & Chamfering Tool

Shank	OAL	Angle Range	Order No.	Sale Price	Insert Used
1.00	4.0	10-80	134-630W1000	\$175.50	SCMT 432 TIN

Inserts for Above Fleximills...Order Separately



Radius	IC Size	Grade	Order No.	Sale
.031	1/2	TIN	185-SCMT432 TIN	\$9.75

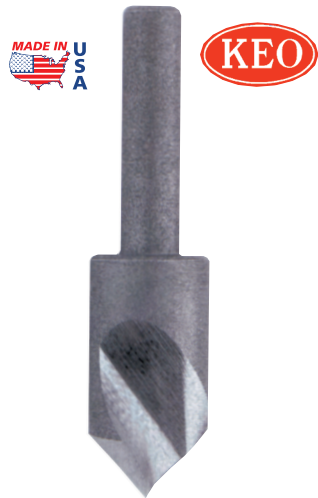




Body Dia.	Point Angle	Order #	Price	Body Dia.	Point Angle	Order #	Price
1/8	60	KE53186	\$ 9.71	3/4	60	KE53346	28.22
	82	KE53188	9.71		82	KE53348	28.22
	90	KE53189	9.71		90	KE53349	28.22
	100	KE53180	9.71		100	KE53340	28.22
	110	KE53181	9.71		110	KE53341	28.22
	120	KE53182	9.71	120	KE53342	28.22	
3/16	60	KE53176	9.96	1	60	KE53106	48.41
	82	KE53178	9.96		82	KE53108	48.41
	90	KE53179	9.96		90	KE53109	48.41
	100	KE53170	9.96		100	KE53100	48.41
	110	KE53171	9.96		110	KE53101	48.41
	120	KE53172	9.96	120	KE53102	48.41	
1/4	60	KE53146	10.36	1-1/4	60	KE53246	94.77
	82	KE53148	10.36		82	KE53248	94.77
	90	KE53149	10.36		90	KE53249	94.77
	100	KE53140	10.36		100	KE53240	94.77
	110	KE53141	10.36		110	KE53241	94.77
	120	KE53142	10.36	120	KE53242	94.77	
3/8	60	KE53386	11.81	1-1/2	60	KE53226	128.32
	82	KE53388	11.81		82	KE53228	128.32
	90	KE53389	11.81		90	KE53229	128.32
	100	KE53380	11.81		100	KE53220	128.32
	110	KE53381	11.81		110	KE53221	128.32
	120	KE53382	11.81	120	KE53222	128.32	
1/2	60	KE53126	14.45	1-3/4	60	KE53446	163.81
	82	KE53128	14.45		82	KE53448	163.81
	90	KE53129	14.45		90	KE53449	163.81
	100	KE53120	14.45		100	KE53440	163.81
	110	KE53121	14.45		110	KE53441	163.81
	120	KE53122	14.45	120	KE53442	163.81	
5/8	60	KE53586	19.34	2	60	KE53206	229.28
	82	KE53588	19.34		82	KE53208	229.28
	90	KE53589	19.34		90	KE53209	229.28
	100	KE53580	19.34		100	KE53200	229.28
	110	KE53581	19.34		110	KE53201	229.28
	120	KE53582	19.34	120	KE53202	229.28	

Single Flute High Speed Steel Countersinks

High Speed Steel Single flute countersinks are ideal for chamfering, deburring and countersinking. The large positive rake and single flute construction provides a smooth surface finish on a wide variety of materials.



COMBINED DRILLS & COUNTERSINKS

Used to produce centerholes in workpieces which require machining between centers. All tools are HSS with a RH cut. Countersink angle is 60 degrees.



Size	Order No.	Body Dia.	Point Dia.	1-11 Price	12+ Price
5-0	KE10010	1/8"	0.010"	\$12.70	\$10.16
4-0	KE10015	1/8"	0.015"	11.65	9.32
3-0	KE10020	1/8"	0.020"	11.04	8.83
2-0	KE10025	1/8"	0.025"	11.04	8.83
0	KE10032	1/8"	1/32"	11.04	8.83
#1	KE10100	1/8"	3/64"	7.70	7.39
#2	KE10200	3/16"	5/64"	8.04	7.72
#3	KE10300	1/4"	7/64"	8.38	8.04
#4	KE10400	5/16"	1/8"	8.64	8.29
#4-1/2	KE14500	3/8"	9/64"	11.91	9.53
#5	KE10500	7/16"	3/16"	13.71	13.16
#6	KE10600	1/2"	7/32"	20.61	19.79
#7	KE10700	5/8"	1/4"	31.25	30.00
#8	KE10800	3/4"	5/16"	42.93	34.35
#9	KE10900	7/8"	11/32"	77.90	62.32
#10	KE11000	1"	3/8"	102.26	81.81



Long Series Combined Drills & Countersinks



Used to produce center holes in workpieces where the extra length of the tool allows access to difficult to reach areas. All drills are HSS with a 60 degree countersink angle.

Size	Order #	Body Dia.	1-11 Price	12+ Price
#1 x 3	KE21030	1/8"	\$18.62	\$14.89
#1 x 4	KE21040	1/8"	19.43	15.54
#1 x 5	KE21050	1/8"	26.97	21.58
#1 x 6	KE21060	1/8"	35.33	28.26
#2 x 3	KE22030	3/16"	18.83	15.06
#2 x 4	KE22040	3/16"	21.29	17.03
#2 x 5	KE22050	3/16"	27.28	21.82
#2 x 6	KE22060	3/16"	35.47	28.37
#3 x 3	KE23030	1/4"	19.66	15.73
#3 x 4	KE23040	1/4"	22.43	17.94
#3 x 5	KE23050	1/4"	29.50	23.61
#3 x 6	KE23060	1/4"	35.79	28.63
#4 x 3	KE24030	5/16"	23.08	18.46
#4 x 4	KE24040	5/16"	24.84	19.87
#4 x 5	KE24050	5/16"	31.76	25.40
#4 x 6	KE24060	5/16"	36.67	29.33
#4-1/2 x 4	KE24540	3/8"	27.92	22.34
#4-1/2 x 5	KE24550	3/8"	33.00	26.40
#4-1/2 x 6	KE24560	3/8"	39.84	31.87
#5 x 4	KE25040	7/16"	32.65	26.12
#5 x 5	KE25050	7/16"	37.81	30.24
#5 x 6	KE25060	7/16"	42.44	33.95
#6 x 4	KE26040	1/2"	35.43	28.34
#6 x 5	KE26050	1/2"	40.62	32.49
#6 x 6	KE26060	1/2"	49.09	39.27
#7 x 6	KE27060	5/8"	91.49	73.19
#8 x 6	KE28060	3/4"	98.79	79.03

Spotting and Centering Drills High Speed Steel, 90 Degree

These tools prevent misalignment caused by using regular drills for centering. The short overall length allows the drills to be chucked close to the point ensuring accuracy and true starts. All drills have a 90 degree point angle and a RH cut.

Body Dia.	Order No.	1-11 Price	12+ Price
1/8	KE30151	\$7.62	\$6.09
3/16	KE30181	8.25	6.60
1/4	KE30251	9.11	7.29
5/16	KE30311	10.36	8.28
3/8	KE30381	11.73	9.38
7/16	KE30761	15.80	12.64
1/2	KE30121	19.36	15.48
9/16	KE30961	27.86	23.05
5/8	KE30581	32.00	25.60
3/4	KE30341	44.59	35.59
7/8	KE30781	54.52	43.62
1	KE31001	69.71	55.76
1-1/4	KE31141	136.52	109.22
1-1/2	KE31121	212.92	170.34
1-3/4	KE31341	321.12	256.89



Combined Drill & Countersink Set

This 5-piece set includes one piece each of the following plain type combined drills with a standard 60 degree included countersink angle. Sizes included are #1, #2, #3, #4, and #5.

Order #	Price
KE10000	\$55.79

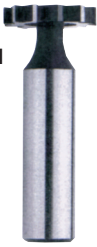


Woodruff Keyseat Cutters



1/2" Shank- 2" OAL High Speed Steel

American Standard #	Head Dia.	Head Width	Straight Tooth Order #	Price Per Piece
202	1/4"	1/16"	KE62010	\$31.51
202 1/2	5/16"	1/16"	KE62020	31.51
302 1/2	5/16"	3/32"	KE63020	31.51
203	3/8"	1/16"	KE62030	31.51
303	3/8"	3/32"	KE63030	31.51
403	3/8"	1/8"	KE64030	31.51
204	1/2"	1/16"	KE62040	31.51
304	1/2"	3/32"	KE63040	31.51
404	1/2"	1/8"	KE64040	31.51
305	5/8"	3/32"	KE63050	31.83
405	5/8"	1/8"	KE64050	31.83
505	5/8"	5/32"	KE65050	31.83
605	5/8"	3/16"	KE66050	31.83
406	3/4"	1/8"	KE64060	33.35
506	3/4"	5/32"	KE65060	33.35
606	3/4"	3/16"	KE66060	33.35
806	3/4"	1/4"	KE68060	33.35
507	7/8"	5/32"	KE65070	36.39
607	7/8"	3/16"	KE66070	36.39
707	7/8"	7/32"	KE67070	37.04
807	7/8"	1/4"	KE68070	37.04
608	1"	3/16"	KE66080	39.84
708	1"	7/32"	KE67080	40.20
808	1"	1/4"	KE68080	40.20
1008	1"	5/16"	KE60080	41.31
1208	1"	3/8"	KE62080	41.31
609	1-1/8"	3/16"	KE66090	44.77
709	1-1/8"	7/32"	KE67090	44.77
809	1-1/8"	1/4"	KE68090	45.63
1009	1-1/8"	5/16"	KE60090	47.84
610	1-1/4"	3/16"	KE66100	49.97
710	1-1/4"	7/32"	KE67100	49.97
810	1-1/4"	1/4"	KE68100	51.63
1010	1-1/4"	5/16"	KE60010	53.71
1210	1-1/4"	3/8"	KE62100	53.71
811	1-3/8"	1/4"	KE68110	57.87
1011	1-3/8"	5/16"	KE60110	57.87
1211	1-3/8"	3/8"	KE62110	58.91
812	1-1/2"	1/4"	KE68120	59.90
1012	1-1/2"	5/16"	KE60120	61.99
1212	1-1/2"	3/8"	KE62120	64.05



Call For Large Quantity Discounts!

- HSS (M2) Silver and Deming Drills
- 1/8" Split Point
- 3 Flats on shank for superior holding power.
- 1/2" Shank, HSS (M2 Steel)
- 3" Flute Length
- 6" Overall Length

Dia	Order No.	List Price	Sale Price
1/2"	YGD1191032	\$34.60	\$21.09
33/64"	YGD1191033	34.60	21.09
17/32"	YGD1191034	34.60	21.09
35/64"	YGD1191035	36.98	22.53
9/16"	YGD1191036	36.98	22.53
37/64"	YGD1191037	39.57	24.10
19/32"	YGD1191038	39.57	24.10
39/64"	YGD1191039	41.37	25.21
5/8"	YGD1191040	41.37	25.21
41/64"	YGD1191041	44.07	26.86
21/32"	YGD1191042	44.07	26.86
43/64"	YGD1191043	45.81	27.91
11/16"	YGD1191044	45.81	27.91
45/64"	YGD1191045	46.10	28.09
23/32"	YGD1191046	46.10	28.09
47/64"	YGD1191047	50.33	30.67
3/4"	YGD1191048	50.33	30.67
49/64"	YGD1191049	53.65	32.69
25/32"	YGD1191050	53.65	32.69
51/64"	YGD1191051	56.39	34.34
13/16"	YGD1191052	56.39	34.34
53/64"	YGD1191053	60.83	37.07
27/32"	YGD1191054	60.83	37.07
55/64"	YGD1191055	62.91	38.33
7/8"	YGD1191056	62.91	38.33
57/64"	YGD1191057	65.60	39.98
29/32"	YGD1191058	65.60	39.98
59/64"	YGD1191059	67.16	40.93
15/16"	YGD1191060	67.16	40.93
61/64"	YGD1191061	71.00	43.26
31/32"	YGD1191062	71.00	43.26
63/64"	YGD1191063	79.10	48.21
1"	YGD1191064	79.10	48.21
1-1/64"	YGD1191101	105.78	64.45
1-1/32"	YGD1191102	105.78	64.45
1-3/64"	YGD1191103	108.94	66.38
1-1/16"	YGD1191104	108.94	66.38
1-5/64"	YGD1191105	112.53	68.57
1-3/32"	YGD1191106	112.76	68.71
1-7/64"	YGD1191107	114.81	69.97
1-1/8"	YGD1191108	115.73	70.52
1-9/64"	YGD1191109	123.59	75.31
1-5/32"	YGD1191110	123.59	75.31
1-11/64"	YGD1191111	135.58	82.62
1-3/16"	YGD1191112	135.58	82.62
1-13/64"	YGD1191113	143.25	87.29
1-7/32"	YGD1191114	143.25	87.29
1-15/64"	YGD1191115	146.18	89.07
1-1/4"	YGD1191116	146.18	89.07
1-9/32"	YGD1191118	164.67	100.33
1-5/16"	YGD1191120	164.67	100.33
1-11/32"	YGD1191122	189.72	115.60
1-3/8"	YGD1191124	201.22	122.62
1-13/32"	YGD1191126	234.97	143.17
1-7/16"	YGD1191128	234.97	143.17
1-15/32"	YGD1191130	250.27	152.50
1-1/2"	YGD1191132	250.27	152.50

NC Spotting Drills-Premium 8% Cobalt



Diam	Flute Length	Overall Length	120 Degree Order No.	Price
1/8	0.472	1.93	YG2081L	\$5.43
3/16	0.590	2.44	YG2121L	6.05
1/4	0.669	2.76	YG2161L	6.36
5/16	0.984	3.11	YG2201L	7.31
3/8	0.827	3.50	YG2241L	9.16
1/2	0.984	4.02	YG2321L	14.66
5/8	1.575	4.53	YG2401L	23.52
3/4	1.968	5.16	YG2481L	32.55
1	1.968	6.14	YG2541L	50.66

Diam	Flute Length	Overall Length	90 Degree Order No.	Price
1/8	0.472	1.93	YG0081L	\$5.43
3/16	0.590	2.44	YG0121L	6.05
1/4	0.669	2.76	YG0161L	6.36
5/16	0.984	3.11	YG0201L	7.31
3/8	0.827	3.50	YG0241L	9.16
1/2	0.984	4.02	YG0321L	14.66
5/8	1.575	4.53	YG0401L	23.52
3/4	1.968	5.16	YG0481L	32.55
1	1.968	6.14	YG0541L	50.66

High Speed Steel NC Spotting Drills



Designed with a narrow chisel edge for quick starting. A constant web allows resharpening without the need for web thinning. All drills are RH cut with a 90 degree point angle.

Body Dia.	Overall Length	Order No.	Price
1/4	2-1/2	KE32140	\$29.57
3/8	3-1/8	KE32380	31.93
1/2	3-3/4	KE32120	40.93
5/8	4-3/8	KE32580	53.29
3/4	5	KE32340	72.90
1	6	KE32100	125.41



Micrometer Depth Gages with Non-Rotating Blades

Features non-rotating, blade-type rods. By holding the base in one hand, the blade can be turned with the fingers and positioned at any angle relative to the base. In operation, the blade does not turn, but moves perpendicularly only, permitting depth measurement of narrow shoulders without the blade rolling off.

- Tool comes with the combination ratchet and speeder for uniform pressure and quicker adjustment
- Ideal for slots and recesses as narrow as .045"



CLOSE-OUT WHILE SUPPLIES LAST

- Rod Size .045 x 1/8"
- Base Length 2-1/2"
- .001" Graduations



Range	No. Rods	Order No.	MSRP Price	SALE
0-3"	3	STA52318	\$407.00	257.00
0-6"	6	STA52320	507.00	263.00



Micrometer

- Starrett® satin chrome finish – no glare – resists rust
- Rigid one-piece frame of drop forged steel
- Spindle and anvil are sized at .235" to reach places most micrometers cannot reach



CLOSE-OUT WHILE SUPPLIES LAST

0-1" Range, .0001" Graduation Friction Lock, Carbide Faces

Order No. STA50947

MSRP 304.00

Sale \$208.00





NEW

Solid Carbide, Dream Drills

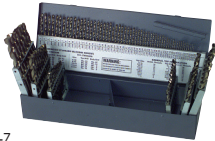


TiAlN Coated 3X Drill Depth

- Special point geometry, no center drilling required.
- Excellent positioning, bushing not needed. Reaming is not required. Good Chip removal, powerful drilling.
- 140° Point Geometry h6 Tolerance shank
- Ideal in Carbon Steels, Alloy Steels under 45HRC, Cast Iron and Stainless Steels

Also available with coolant holes, just inquire

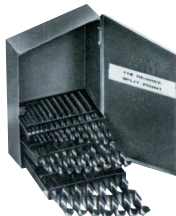
Fraction Size	Dec. Equiv.	Flute Length	Overall Length	Shank Diameter	Order Number	Each
1/8	0.1250	45/64	1-59/64	1/8	YG0081ATF	17.34
9/64	0.1406	25/32	2-3/64	9/64	YG0091ATF	19.24
5/32	0.1562	7/8	2-3/16	5/32	YG0101ATF	20.14
11/64	0.1719	15/16	2-9/32	11/64	YG0111ATF	21.78
3/16	0.1875	1	2-7/16	3/16	YG0121ATF	22.84
13/64	0.2031	1	2-7/16	13/64	YG0131ATF	27.47
7/32	0.2188	1-1/8	2-5/8	7/32	YG0141ATF	28.67
15/64	0.2344	1-1/8	2-5/8	15/64	YG0151ATF	28.67
1/4	0.2500	1-5/8	3-3/16	1/4	YG0161ATF	38.26
17/64	0.2656	1-11/16	3-17/64	17/64	YG0171ATF	51.78
9/32	0.2812	1-3/4	3-7/16	9/32	YG0181ATF	61.67
19/64	0.2969	1-7/8	3-9/16	19/64	YG0191ATF	64.76
5/16	0.3125	1-7/8	3-9/16	5/16	YG0201ATF	65.81
21/64	0.3281	2-1/16	3-3/4	21/64	YG0211ATF	78.60
11/32	0.3438	2-3/16	3-7/8	11/32	YG0221ATF	80.09
23/64	0.3594	2-9/32	4	23/64	YG0231ATF	86.28
3/8	0.3750	2-3/8	4-1/8	3/8	YG0241ATF	88.41
25/64	0.3906	2-3/8	4-1/8	25/64	YG0251ATF	93.91
13/32	0.4062	2-5/8	4-13/32	13/32	YG0261ATF	115.10
27/64	0.4219	2-11/16	4-1/2	27/64	YG0271ATF	116.69
7/16	0.4375	2-13/16	4-5/8	7/16	YG0281ATF	128.05
29/64	0.4531	2-7/8	4-3/4	29/64	YG0291ATF	145.40
15/32	0.4688	2-7/8	4-3/4	15/32	YG0301ATF	142.41
31/64	0.4844	3	5-5/16	31/64	YG0311ATF	148.64
1/2	0.5000	3-1/16	5-3/8	1/2	YG0321ATF	169.21



- 115 piece set
- 1/16-1/2 by 64th, 1-60, and A-Z
- Choose either HSS or Premium Cobalt for your toughest jobs
- Includes folding metal index case.

Chicago-Latrobe®

Jobber Length Sets	Chicago-Latrobe
# Pcs.	Order No. Price
High Speed Steel 115 pcs.	GI49928 \$457.34
Premium Cobalt 115 pcs.	GI46650 864.84



High Speed Steel 118° Point Sets

Drill Sets



Chicago-Latrobe® Made in USA

Jobber Length Sets	Chicago-Latrobe	Made in USA
Set Range	# Pcs. Order No. Price	Order No. Price
1/16 — 1/4" by 64ths	13 pcs. GI49911 \$33.40	—
1/16 — 1/2" by 32nds	15 pcs. GI49913 83.69	969-1017 \$63.59
1/16 — 1/2" by 64ths	29 pcs. GI49914 153.82	969-1011 94.10
A — Z	26 pcs. GI49918 152.95	969-1012 92.82
1 — 60*	60 pcs. GI49916 125.29	—

* Sizes under 1/16" — NOT Split.

Silver & Deming 3/4" Shank HSS Drills

- Features:**
- 3" Flute Length
 - 6" Overall Length



Dia	Order No.	Length	Sale Price
7/8"	TMX5168056	6"	\$31.33
1"	TMX5168072	6"	37.40
1-1/8"	TMX5168088	6"	43.60
1-1/4"	TMX5168104	6"	55.09
1-3/8"	TMX5168120	6"	67.73
1-1/2"	TMX5168136	6"	83.02
1-5/8"	TMX5168152	6"	88.43
1-3/4"	TMX5168168	6"	150.42
2"	TMX5168200	6"	196.96

Cobalt - 135° Split Point Sets

Jobber Length Sets	Chicago-Latrobe	Made in USA
Set Range	# Pcs. Order No. Price	Order No. Price
1/16 — 1/4" by 64ths	13 pcs. GI57851 \$59.09	—
1/16 — 1/2" by 32nds	15 pcs. GI57852 156.04	—
1/16 — 1/2" by 64ths	29 pcs. GI57850 285.92	—
A — Z	26 pcs. GI69886 252.86	969-1015 199.00
1 — 60*	60 pcs. GI57853 230.36	—

* Sizes under 1/16" — NOT Split.



Fraction Size	Dec. Equiv.	Flute Length	Overall Length	HSS 135°-TIN	Price Each	COBALT HSS-C08 135°-TIN	Price Each
3/64	0.0469	3/4	1-3/4	YGD1GP113003	\$1.16	YGD2GP185003	\$1.48
1/16	0.0625	7/8	1-7/8	YGD1GP182004	1.21	YGD2GP185004	1.48
5/64	0.0781	1	2	YGD1GP182005	1.21	YGD2GP185005	1.48
3/32	0.0938	1-1/4	2-1/4	YGD1GP182006	1.21	YGD2GP185006	1.48
7/64	0.1094	1-1/2	2-5/8	YGD1GP182007	1.21	YGD2GP185007	1.55
1/8	0.1250	1-5/8	2-3/4	YGD1GP182008	1.21	YGD2GP185008	1.84
9/64	0.1406	1-3/4	2-7/8	YGD1GP182009	1.31	YGD2GP185009	1.84
5/32	0.1562	2	3-1/8	YGD1GP182010	1.34	YGD2GP185010	2.14
11/64	0.1719	2-1/8	3-1/4	YGD1GP182011	1.45	YGD2GP185011	2.24
3/16	0.1875	2-5/16	3-1/2	YGD1GP182012	1.60	YGD2GP185012	2.43
13/64	0.2031	2-7/16	3-5/8	YGD1GP182013	1.95	YGD2GP185013	3.02
7/32	0.2188	2-1/2	3-3/4	YGD1GP182014	2.03	YGD2GP185014	3.28
15/64	0.2344	2-5/8	3-7/8	YGD1GP182015	2.28	YGD2GP185015	3.53
1/4	0.2500	2-3/4	4	YGD1GP182016	2.38	YGD2GP185016	3.72
17/64	0.2656	2-7/8	4-1/8	YGD1GP182017	2.74	YGD2GP185017	4.17
9/32	0.2812	2-15/16	4-1/4	YGD1GP182018	3.02	YGD2GP185018	4.47
19/64	0.2969	3-1/16	4-3/8	YGD1GP182019	3.38	YGD2GP185019	5.28
5/16	0.3125	3-1/8	4-1/2	YGD1GP182020	3.62	YGD2GP185020	5.60
21/64	0.3281	3-5/16	4-5/8	YGD1GP182021	4.12	YGD2GP185021	6.28
11/32	0.3438	3-7/16	4-3/4	YGD1GP182022	4.52	YGD2GP185022	6.72
23/64	0.3594	3-1/2	4-7/8	YGD1GP182023	5.02	YGD2GP185023	7.66
3/8	0.3750	3-5/8	5	YGD1GP182024	5.07	YGD2GP185024	7.66
25/64	0.3906	3-3/4	5-1/8	YGD1GP182025	5.76	YGD2GP185025	8.62
13/32	0.4062	3-7/8	5-1/4	YGD1GP182026	6.07	YGD2GP185026	9.07
27/64	0.4219	3-15/16	5-3/8	YGD1GP182027	6.53	YGD2GP185027	9.98
7/16	0.4375	4-1/16	5-1/2	YGD1GP182028	7.10	YGD2GP185028	10.45
29/64	0.4531	4-3/16	5-5/8	YGD1GP182029	7.81	YGD2GP185029	12.29
15/32	0.4688	4-5/16	5-3/4	YGD1GP182030	8.19	YGD2GP185030	12.48
31/64	0.4844	4-3/8	5-7/8	YGD1GP182031	8.86	YGD2GP185031	12.98
1/2	0.5000	4-1/2	6	YGD1GP182032	9.19	YGD2GP185032	13.40



Right Hand Spiral. Wider Flutes. 135° Split Point. Bright Body with TIN Coating on working part of Drill

Must be Purchased in Full Packages only.

10 PER PACKAGE 3/64-5/16"

5 PER PACKAGE 21/64-1/2"

NEW



Also Available in Sizes 1-60 and A-Z, just ask. 135° Split Point over .059" Diam.





Fraction Size	Dec. Equiv.	Flute Length	Overall Length	Solid Carbide Jobbers	Price Each
3/64	0.0469	3/4	1-1/2	YGD5417003	9.98
1/16	0.0625	3/4	1-1/2	YGD5417004	10.05
5/64	0.0781	7/8	1-3/4	YGD5417005	10.67
3/32	0.0938	1	2	YGD5417006	12.02
7/64	0.1094	1-1/4	2-1/4	YGD5417007	13.12
1/8	0.1250	1-1/4	2-1/4	YGD5417008	13.76
9/64	0.1406	1-3/8	2-1/2	YGD5417009	16.07
5/32	0.1562	1-3/8	2-1/2	YGD5417010	16.98
11/64	0.1719	1-5/8	2-3/4	YGD5417011	19.93
3/16	0.1875	1-5/8	2-3/4	YGD5417012	20.16
13/64	0.2031	1-3/4	3	YGD5417013	24.31
7/32	0.2188	1-3/4	3	YGD5417014	24.97
15/64	0.2344	2	3-1/4	YGD5417015	24.19
1/4	0.2500	2	3-1/4	YGD5417016	26.62
17/64	0.2656	2-1/8	3-1/2	YGD5417017	27.95
9/32	0.2812	2-1/8	3-1/2	YGD5417018	30.19
19/64	0.2969	2-3/8	3-3/4	YGD5417019	33.43
5/16	0.3125	2-3/8	3-3/4	YGD5417020	35.40
21/64	0.3281	2-1/2	4	YGD5417021	38.60
11/32	0.3438	2-1/2	4	YGD5417022	42.81
23/64	0.3594	2-3/4	4-1/4	YGD5417023	46.76
3/8	0.3750	2-3/4	4-1/4	YGD5417024	50.72
25/64	0.3906	2-7/8	4-1/2	YGD5417025	57.28
13/32	0.4062	2-7/8	4-1/2	YGD5417026	63.57
27/64	0.4219	2-7/8	4-1/2	YGD5417027	69.66
7/16	0.4375	2-7/8	4-1/2	YGD5417028	69.66
29/64	0.4531	3	4-3/4	YGD5417029	75.40
15/32	0.4688	3	4-3/4	YGD5417030	75.40
31/64	0.4844	3	4-3/4	YGD5417031	77.59
1/2	0.5000	3	4-3/4	YGD5417032	77.59

Solid Carbide Jobbers Length Twist Drill

Recommended for all materials, alloy and non alloy steels, cast iron, stainless steels, al-si alloys, ti-ni alloys.

Also Available in Sizes 1-60 and A-Z, just ask.

- 118° Drill Point Angle
- h6 Tolerance on Shank
- suitable for shrinkin applications
- Premium Micrograin Carbide
- 30° Helix Angle on Drill Flutes



Call For Large Quantity Discounts !



Fraction Size	Dec. Equiv.	Flute Length	Overall Length	COBALT HSS-C05 130°-TIN	Price Each
5/64	0.0781	1	2	YGDLP511005	\$1.45
3/32	0.0938	1-1/4	2-1/4	YGDLP511006	1.45
7/64	0.1094	1-1/2	2-5/8	YGDLP511007	1.62
1/8	0.1250	1-5/8	2-3/4	YGDLP511008	1.62
9/64	0.1406	1-3/4	2-7/8	YGDLP511009	1.64
5/32	0.1562	2	3-1/8	YGDLP511010	1.76
11/64	0.1719	2-1/8	3-1/4	YGDLP511011	1.83
3/16	0.1875	2-5/16	3-1/2	YGDLP511012	2.03
13/64	0.2031	2-7/16	3-5/8	YGDLP511013	2.34
7/32	0.2188	2-1/2	3-3/4	YGDLP511014	2.69
15/64	0.2344	2-5/8	3-7/8	YGDLP511015	2.91
1/4	0.2500	2-3/4	4	YGDLP511016	3.03
17/64	0.2656	2-7/8	4-1/8	YGDLP511017	3.40
9/32	0.2812	2-15/16	4-1/4	YGDLP511018	3.66
19/64	0.2969	3-1/16	4-3/8	YGDLP511019	4.17
5/16	0.3125	3-3/16	4-1/2	YGDLP511020	4.59
21/64	0.3281	3-5/16	4-5/8	YGDLP511021	5.26
11/32	0.3438	3-7/16	4-3/4	YGDLP511022	5.62
23/64	0.3594	3-1/2	4-7/8	YGDLP511023	6.24
3/8	0.3750	3-5/8	5	YGDLP511024	6.48
25/64	0.3906	3-3/4	5-1/8	YGDLP511025	7.14
13/32	0.4062	3-7/8	5-1/4	YGDLP511026	7.52
27/64	0.4219	3-15/16	5-3/8	YGDLP511027	8.43
7/16	0.4375	4-1/16	5-1/2	YGDLP511028	8.74
29/64	0.4531	4-3/16	5-5/8	YGDLP511029	9.71
15/32	0.4688	4-5/16	5-3/4	YGDLP511030	10.17
31/64	0.4844	4-3/8	5-7/8	YGDLP511031	10.76
1/2	0.5000	4-1/2	6	YGDLP511032	11.33

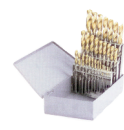
New Cobalt-Tin-Parabolic Flute Design Right Hand Spiral, 38° Helix, 130° Split Point. Bright Body with TIN Coating on working part of Drill Improved chip removal in most materials, especially deep drilling applications.

Only Sold in Full Package Quantities
10 PER PACKAGE 5/64-5/16"
5 PER PACKAGE 21/64-1/2"

Also Available in Sizes 1-60 and A-Z, just ask.



5/64-1/2" x 64th Set
 Order No. YGDLP511SET
 Sale \$98.93ea



Solid Carbide Combined Drill and Countersinks

60° Included Angle



Size No.	Body Dia.	Drill Dia.	OAL	Order No.	Prices	
					1-11pc	12+
1	1/8"	3/64"	1 1/2"	GAR58030	\$15.15	13.87
2	3/16"	5/64"	2"	GAR58040	23.85	21.74
3	1/4"	7/64"	2"	GAR58050	27.17	24.76
4	5/16"	1/8"	2 1/8"	GAR58060	38.02	34.66
5	7/16"	3/16"	2 3/4"	GAR58070	54.32	49.51
6	1/2"	7/32"	3"	GAR58080	72.31	65.91
7	5/8"	1/4"	3 1/8"	GAR58090	92.23	84.00
8	3/4"	5/16"	3 3/8"	GAR58100	123.07	112.18



Solid Carbide NC Spotting Drills

Right Hand Cut, 90°, 120°, 140° Point Angle
 No OD Clearance, for locating on true position



Order No.	Body		Flute Length	Degree	1-11pc		12+
	Dia.	Length					
GAR91000	1/8	2	3/8	90°	\$13.50	12.31	
GAR91100	1/8	2	3/8	120°	13.50	12.31	
GAR91260	1/8	2	3/8	140°	13.50	12.31	
GAR91010	3/16	3	3/4	90°	17.66	16.10	
GAR91110	3/16	3	3/4	120°	18.51	16.87	
GAR91280	3/16	3	3/4	140°	17.66	16.10	
GAR91020	1/4	3	3/4	90°	20.96	19.11	
GAR91120	1/4	3	3/4	120°	20.96	19.11	
GAR91310	1/4	3	3/4	140°	20.96	19.11	
GAR91030	3/8	3	1	90°	27.50	25.07	
GAR91130	3/8	3	1	120°	27.50	25.07	
GAR91330	3/8	3	1	140°	27.50	25.07	
GAR91040	1/2	4	1	90°	47.43	43.23	
GAR91140	1/2	4	1	120°	47.43	43.23	
GAR91360	1/2	4	1	140°	47.43	43.23	
GAR91060	9/16	4	1	90°	89.12	81.24	
GAR91180	9/16	4	1	120°	89.12	81.24	
GAR91380	9/16	4	1	140°	89.12	81.24	
GAR91070	5/8	5	1	90°	109.35	99.67	
GAR91190	5/8	5	1	120°	154.02	140.39	
GAR91390	5/8	5	1	140°	109.35	99.67	
GAR91150	3/4	5	1	90°	158.20	144.20	
GAR91220	3/4	5	1	120°	158.20	144.20	
GAR91420	3/4	5	1	140°	158.20	144.20	



Jobbers Length Drills HSS or Cobalt

Chicago-Latrobe®

Sold in Mfg. Package Qty ONLY Most Broken Packs available at a slightly higher price



General Purpose
HSS - 118° - Bright



General Purpose
HSS - 118° - Black Oxide



Cobalt Heavy Duty
M42- 135° Split Point
Straw Finish

Mfg. Package Qty
1/64-9/32", 12 per pkg.
19/64-1/2", 6 per pkg.
over 1/2", 1 per pkg.

A-L, 12 per Pkg.,
M-Z, 6 per Pkg.

Fraction Size	Dec. Equiv.	Flute Length	Overall Length	Gen. Purp. HSS-118° Black Oxide	Price Each
33/64	0.5156	4-13/16	6-5/8	GI44033	\$30.95
17/32	0.5312	4-13/16	6-5/8	GI44034	31.94
35/64	0.5469	4-13/16	6-5/8	GI44035	34.43
9/16	0.5625	4-13/16	6-5/8	GI44036	35.05
37/64	0.5781	4-13/16	6-5/8	GI44037	35.91
19/32	0.5938	5-3/16	7-1/8	GI44038	37.70
39/64	0.6094	5-3/16	7-1/8	GI44039	38.82
5/8	0.6250	5-3/16	7-1/8	GI44040	39.68
41/64	0.6406	5-3/16	7-1/8	GI44041	41.30
21/32	0.6562	5-3/16	7-1/8	GI44042	42.22
43/64	0.6719	5-5/8	7-5/8	GI44043	50.25
11/16	0.6875	5-5/8	7-5/8	GI44044	51.57

Fraction Size	Dec. Equiv.	Flute Length	Overall Length	Gen. Purp. HSS-118° Bright	Price Each	Gen. Purp. HSS-118° Black Oxide	Price Each	COBALT 135° Split Point M-42	Price Each
1/64	0.0156	3/16	3/4	GI44201	\$ 4.48	—	—	GI46601*	\$5.70
1/32	0.0312	1/2	1-3/8	GI44202	1.63	—	—	GI46602*	3.06
3/64	0.0469	3/4	1-3/4	GI44203	1.53	GI44003	\$ 1.53	GI46603*	2.42
1/16	0.0625	7/8	1-7/8	GI44204	1.48	GI44004	1.48	GI46604*	2.24
5/64	0.0781	1	2	GI44205	1.54	GI44005	1.54	GI46605	2.26
3/32	0.0938	1-1/4	2-1/4	GI44206	1.55	GI44006	1.55	GI46606	2.30
7/64	0.1094	1-1/2	2-5/8	GI44207	1.56	GI44007	1.56	GI46607	2.57
1/8	0.1250	1-5/8	2-3/4	GI44208	1.60	GI44008	1.60	GI46608	2.87
9/64	0.1406	1-3/4	2-7/8	GI44209	1.71	GI44009	1.71	GI46609	3.02
5/32	0.1562	2	3-1/8	GI44210	1.99	GI44010	1.99	GI46610	3.47
11/64	0.1719	2-1/8	3-1/4	GI44211	2.05	GI44011	2.05	GI46611	3.72
3/16	0.1875	2-5/16	3-1/2	GI44212	2.30	GI44012	2.30	GI46612	4.19
13/64	0.2031	2-7/16	3-5/8	GI44213	2.53	GI44013	2.53	GI46613	4.61
7/32	0.2188	2-1/2	3-3/4	GI44214	2.62	GI44014	2.62	GI46614	4.96
15/64	0.2344	2-5/8	3-7/8	GI44215	2.89	GI44015	2.89	GI46615	5.35
1/4	0.2500	2-3/4	4	GI44216	3.07	GI44016	3.07	GI46616	5.80
17/64	0.2656	2-7/8	4-1/8	GI44217	3.48	GI44017	3.48	GI46617	6.61
9/32	0.2812	2-15/16	4-1/4	GI44218	3.73	GI44018	3.73	GI46618	7.39
19/64	0.2969	3-1/16	4-3/8	GI44219	4.33	GI44019	4.33	GI46619	8.60
5/16	0.3125	3-3/16	4-1/2	GI44220	4.64	GI44020	4.64	GI46620	9.08
21/64	0.3281	3-5/16	4-5/8	GI44221	5.21	GI44021	5.21	GI46621	10.33
11/32	0.3438	3-7/16	4-3/4	GI44222	5.83	GI44022	5.83	GI46622	11.19
23/64	0.3594	3-1/2	4-7/8	GI44223	6.46	GI44023	6.46	GI46623	12.64
3/8	0.3750	3-5/8	5	GI44224	6.82	GI44024	6.82	GI46624	13.52
25/64	0.3906	3-3/4	5-1/8	GI44225	7.74	GI44025	7.74	GI46625	14.87
13/32	0.4062	3-7/8	5-1/4	GI44226	8.05	GI44026	8.05	GI46626	15.63
27/64	0.4219	3-15/16	5-3/8	GI44227	8.90	GI44027	8.90	GI46627	17.11
7/16	0.4375	4-1/16	5-1/2	GI44228	9.25	GI44028	9.25	GI46628	18.22
29/64	0.4531	4-3/16	5-5/8	GI44229	10.48	GI44029	10.48	GI46629	20.74
15/32	0.4688	4-5/16	5-3/4	GI44230	11.36	GI44030	11.36	GI46630	21.43
31/64	0.4844	4-3/8	5-7/8	GI44231	11.77	GI44031	11.77	GI46631	23.22
1/2	0.5000	4-1/2	6	GI44232	12.24	GI44032	12.24	GI46632	24.40

*smaller than 1/16" not split point

Letter Size	Dec. Equiv.	Flute Length	Overall Length	Gen. Purp. HSS-118° Bright	Price Each	Gen. Purp. HSS-118° Black Oxide	Price Each	Cobalt M-42-135° Split Point	Price Each
A	0.2340	2-5/8	3-7/8	GI44371	\$ 3.35	GI44171	\$ 3.35	GI46771	\$ 6.13
B	0.2380	2-3/4	4	GI44372	3.35	GI44172	3.35	GI46772	6.52
C	0.2420	2-3/4	4	GI44373	3.35	GI44173	3.35	GI46773	6.52
D	0.2460	2-3/4	4	GI44374	3.45	GI44174	3.45	GI46774	6.62
E	0.2500	2-3/4	4	GI44216	3.07	GI44016	3.07	GI46616	5.80
F	0.2570	2-7/8	4-1/8	GI44376	3.55	GI44176	3.55	GI46776	6.80
G	0.2610	2-7/8	4-1/8	GI44377	4.03	GI44177	4.03	GI46777	7.24
H	0.2660	2-7/8	4-1/8	GI44378	4.03	GI44178	4.03	GI46778	7.44
I	0.2720	2-7/8	4-1/8	GI44379	4.03	GI44179	4.03	GI46779	7.64
J	0.2770	2-7/8	4-1/8	GI44380	4.32	GI44180	4.32	GI46780	8.11
K	0.2810	2-15/16	4-1/4	GI44381	4.65	GI44181	4.65	GI46781	8.32
L	0.2900	2-15/16	4-1/4	GI44382	4.66	GI44182	4.66	GI46782	9.09
M	0.2950	3-1/16	4-3/8	GI44383	4.99	GI44183	4.99	GI46783	9.87
N	0.3020	3-1/16	4-3/8	GI44384	5.03	GI44184	5.03	GI46784	10.08
O	0.3160	3-3/16	4-1/2	GI44385	5.12	GI44185	5.12	GI46785	10.96
P	0.3230	3-5/16	4-5/8	GI44386	5.55	GI44186	5.55	GI46786	11.47
Q	0.3320	3-7/16	4-3/4	GI44387	5.69	GI44187	5.69	GI46787	11.56
R	0.3390	3-7/16	4-3/4	GI44388	6.02	GI44188	6.02	GI46788	11.77
S	0.3480	3-1/2	4-7/8	GI44389	6.52	GI44189	6.52	GI46789	13.85
T	0.3580	3-1/2	4-7/8	GI44390	7.28	GI44190	7.28	GI46790	14.18
U	0.3680	3-5/8	5	GI44391	7.34	GI44191	7.34	GI46791	14.67
V	0.3770	3-5/8	5	GI44392	7.66	GI44192	7.66	GI46792	15.34
W	0.3860	3-3/4	5-1/8	GI44393	8.09	GI44193	8.09	GI46793	15.50
X	0.3970	3-3/4	5-1/8	GI44394	9.77	GI44194	9.77	GI46794	16.42
Y	0.4040	3-7/8	5-1/4	GI44395	11.15	GI44195	11.15	GI46795	16.80
Z	0.4130	3-7/8	5-1/4	GI44396	11.71	GI44196	11.71	GI46796	17.80



Jobber Length Drills HSS or Cobalt

Chicago-Latrobe®



General Purpose
HSS - 118° - Bright



General Purpose
HSS - 118°
Black Oxide



Cobalt Heavy Duty
M42- 135° Split Point
Straw Finish

Sold in Mfg. Package Qty ONLY
Most Broken Packs available at
a slightly higher price

12 per pkg.

Wire Gage Size	Dec. Equiv.	Flute Length	Overall Length	Gen. Purp. HSS-118° Bright	Price Each	Gen. Purp. HSS-118° Black Oxide	Price Each	Cobalt M-42-135° Split Point	Price Each
80	0.0135	1/8	3/4	GI44350	\$5.37	GI44150	\$ 5.37	GI46750*	\$ 7.67
79	0.0145	1/8	3/4	GI44349	5.37	GI44149	5.37	GI46749*	7.67
78	0.0160	3/16	7/8	GI44348	5.17	GI44148	5.17	GI46748*	7.53
77	0.0180	3/16	7/8	GI44347	5.17	GI44147	5.17	GI46747*	7.53
76	0.0200	3/16	7/8	GI44346	2.99	GI44146	2.99	GI46746*	5.75
75	0.0210	1/4	1	GI44345	2.53	GI44145	2.53	GI46745*	4.89
74	0.0225	1/4	1	GI44344	2.20	GI44144	2.20	GI46744*	3.87
73	0.0240	5/16	1-1/8	GI44343	2.20	GI44143	2.20	GI46743*	3.87
72	0.0250	5/16	1-1/8	GI44342	2.20	GI44142	2.20	GI46742*	3.87
71	0.0260	3/8	1-1/4	GI44341	2.20	GI44141	2.20	GI46741*	3.67
70	0.0280	3/8	1-1/4	GI44340	1.85	GI44140	1.85	GI46740*	3.47
69	0.0292	1/2	1-3/8	GI44339	1.85	GI44139	1.85	GI46739*	3.47
68	0.0310	1/2	1-3/8	GI44338	1.80	GI44138	1.80	GI46738*	3.32
67	0.0320	1/2	1-3/8	GI44337	1.80	GI44137	1.80	GI46737*	3.32
66	0.0330	1/2	1-3/8	GI44336	1.80	GI44136	1.80	GI46736*	3.32
65	0.0350	5/8	1-1/2	GI44335	1.80	GI44135	1.80	GI46735*	3.09
64	0.0360	5/8	1-1/2	GI44334	1.80	GI44134	1.80	GI46734*	3.09
63	0.0370	5/8	1-1/2	GI44333	1.80	GI44133	1.80	GI46733*	3.09
62	0.0380	5/8	1-1/2	GI44332	1.80	GI44132	1.80	GI46732*	3.09
61	0.0390	11/16	1-5/8	GI44331	1.80	GI44131	1.80	GI46731*	3.09
60	0.0400	11/16	1-5/8	GI44330	1.54	GI44130	1.54	GI46730*	2.59
59	0.0410	11/16	1-5/8	GI44329	1.54	GI44129	1.54	GI46729*	2.59
58	0.0420	11/16	1-5/8	GI44328	1.54	GI44128	1.54	GI46728*	2.59
57	0.0430	3/4	1-3/4	GI44327	1.54	GI44127	1.54	GI46727*	2.59
56	0.0465	3/4	1-3/4	GI44326	1.54	GI44126	1.54	GI46726*	2.59
55	0.0520	7/8	1-7/8	GI44325	1.54	GI44125	1.54	GI46725*	2.47
54	0.0550	7/8	1-7/8	GI44324	1.54	GI44124	1.54	GI46724*	2.47
53	0.0595	7/8	1-7/8	GI44323	1.54	GI44123	1.54	GI46723*	2.47
52	0.0635	7/8	1-7/8	GI44322	1.52	GI44122	1.52	GI46722	2.47
51	0.0670	1	2	GI44321	1.52	GI44121	1.52	GI46721	2.47
50	0.0700	1	2	GI44320	1.52	GI44120	1.52	GI46720	2.47
49	0.0730	1	2	GI44319	1.52	GI44119	1.52	GI46719	2.47
48	0.0760	1	2	GI44318	1.52	GI44118	1.52	GI46718	2.47
47	0.0785	1	2	GI44317	1.52	GI44117	1.52	GI46717	2.47
46	0.0810	1-1/8	2-1/8	GI44316	1.52	GI44116	1.52	GI46716	2.47
45	0.0820	1-1/8	2-1/8	GI44315	1.52	GI44115	1.52	GI46715	2.47
44	0.0860	1-1/8	2-1/8	GI44314	1.52	GI44114	1.52	GI46714	2.47
43	0.0890	1-1/4	2-1/4	GI44313	1.53	GI44113	1.53	GI46713	2.47
42	0.0935	1-1/4	2-1/4	GI44312	1.54	GI44112	1.54	GI46712	2.56
41	0.0960	1-3/8	2-3/8	GI44311	1.54	GI44111	1.54	GI46711	2.56
40	0.0980	1-3/8	2-3/8	GI44310	1.54	GI44110	1.54	GI46710	2.56
39	0.0995	1-3/8	2-3/8	GI44309	1.56	GI44109	1.56	GI46709	2.62
38	0.1015	1-7/16	2-1/2	GI44308	1.56	GI44108	1.56	GI46708	2.67
37	0.1040	1-7/16	2-1/2	GI44307	1.61	GI44107	1.61	GI46707	2.77
36	0.1065	1-7/16	2-1/2	GI44306	1.61	GI44106	1.61	GI46706	2.77
35	0.1100	1-1/2	2-5/8	GI44305	1.65	GI44105	1.65	GI46705	2.83
34	0.1110	1-1/2	2-5/8	GI44304	1.65	GI44104	1.65	GI46704	2.83
33	0.1130	1-1/2	2-5/8	GI44303	1.65	GI44103	1.65	GI46703	2.83
32	0.1160	1-5/8	2-3/4	GI44302	1.65	GI44102	1.65	GI46702	2.93
31	0.1200	1-5/8	2-3/4	GI44301	1.67	GI44101	1.67	GI46701	2.93
30	0.1285	1-5/8	2-3/4	GI44300	1.73	GI44100	1.73	GI46700	2.93
29	0.1360	1-3/4	2-7/8	GI44299	1.78	GI44099	1.78	GI46699	3.24
28	0.1405	1-3/4	2-7/8	GI44298	1.78	GI44098	1.78	GI46698	3.24
27	0.1440	1-7/8	3	GI44297	2.00	GI44097	2.00	GI46697	3.39
26	0.1470	1-7/8	3	GI44296	2.00	GI44096	2.00	GI46696	3.41
25	0.1495	1-7/8	3	GI44295	1.98	GI44095	1.98	GI46695	3.39
24	0.1520	2	3-1/8	GI44294	2.02	GI44094	2.02	GI46694	3.68
23	0.1540	2	3-1/8	GI44293	2.02	GI44093	2.02	GI46693	3.72
22	0.1570	2	3-1/8	GI44292	2.02	GI44092	2.02	GI46692	3.72
21	0.1590	2-1/8	3-1/4	GI44291	2.02	GI44091	2.02	GI46691	3.66
20	0.1610	2-1/8	3-1/4	GI44290	2.24	GI44090	2.24	GI46690	3.74
19	0.1660	2-1/8	3-1/4	GI44289	2.24	GI44089	2.24	GI46689	3.92
18	0.1695	2-1/8	3-1/4	GI44288	2.24	GI44088	2.24	GI46688	4.04
17	0.1730	2-3/16	3-3/8	GI44287	2.41	GI44087	2.41	GI46687	4.22
16	0.1770	2-3/16	3-3/8	GI44286	2.41	GI44086	2.41	GI46686	4.17
15	0.1800	2-3/16	3-3/8	GI44285	2.50	GI44085	2.50	GI46685	4.37
14	0.1820	2-3/16	3-3/8	GI44284	2.50	GI44084	2.50	GI46684	4.37
13	0.1850	2-5/16	3-1/2	GI44283	2.50	GI44083	2.50	GI46683	4.37
12	0.1890	2-5/16	3-1/2	GI44282	2.50	GI44082	2.50	GI46682	4.63
11	0.1910	2-5/16	3-1/2	GI44281	2.50	GI44081	2.50	GI46681	4.63
10	0.1935	2-7/16	3-5/8	GI44280	2.59	GI44080	2.59	GI46680	4.63
9	0.1960	2-7/16	3-5/8	GI44279	2.59	GI44079	2.59	GI46679	4.87
8	0.1990	2-7/16	3-5/8	GI44278	2.59	GI44078	2.59	GI46678	4.87
7	0.2010	2-7/16	3-5/8	GI44277	2.57	GI44077	2.57	GI46677	4.84
6	0.2040	2-1/2	3-3/4	GI44276	2.77	GI44076	2.77	GI46676	5.66
5	0.2055	2-1/2	3-3/4	GI44275	2.77	GI44075	2.77	GI46675	5.66
4	0.2090	2-1/2	3-3/4	GI44274	2.77	GI44074	2.77	GI46674	5.66
3	0.2130	2-1/2	3-3/4	GI44273	2.77	GI44073	2.77	GI46673	5.66
2	0.2210	2-5/8	3-7/8	GI44272	2.97	GI44072	2.97	GI46672	5.95
1	0.2280	2-5/8	3-7/8	GI44271	2.97	GI44071	2.97	GI46671	6.09

*smaller than #53 not split point



Stub Length Fraction Size Drills

HSS or Cobalt

General Purpose
HSS
118° - Bright



Cobalt Heavy Duty
M42 - 135° Split Point
Straw Finish

Package Qty: 3/64-9/32, 12 per Pkg. / 19/64-1/2, 6 per Pkg. / Over 1/2, 1 per Pkg.

Frac. Size	Dec. Equiv.	Flute Length	Overall Length	Gen. Purp. HSS-118° Bright	Price Each	Cobalt M42-135° Split Point	Price Each
3/64	0.0469	1/2	1-3/8	GI48503	\$ 1.77	—	—
1/16	0.0625	5/8	1-5/8	GI48504	1.63	GI50801	2.13
5/64	0.0781	11/16	1-11/16	GI48505	1.67	GI50802	2.17
3/32	0.0938	3/4	1-3/4	GI48506	1.67	GI50803	2.26
7/64	0.1094	13/16	1-13/16	GI48507	1.67	GI50804	2.42
1/8	0.1250	7/8	1-7/8	GI48508	1.67	GI50805	2.86
9/64	0.1406	15/16	1-15/16	GI48509	1.73	GI50806	2.92
5/32	0.1562	1	2-1/16	GI48510	1.81	GI50807	3.09
11/64	0.1719	1-1/16	2-1/8	GI48511	1.96	GI50808	3.38
3/16	0.1875	1-1/8	2-3/16	GI48512	1.98	GI50809	3.83
13/64	0.2031	1-3/16	2-1/4	GI48513	2.25	GI50810	4.46
7/32	0.2188	1-1/4	2-3/8	GI48514	2.44	GI50811	4.64
15/64	0.2344	1-5/16	2-7/16	GI48515	2.62	GI50812	5.11
1/4	0.2500	1-3/8	2-1/2	GI48516	2.82	GI50813	5.47
17/64	0.2656	1-7/16	2-5/8	GI48517	3.16	GI50814	6.04
9/32	0.2812	1-1/2	2-11/16	GI48518	3.35	GI50815	6.47
19/64	0.2969	1-9/16	2-3/4	GI48519	3.80	GI50816	7.78
5/16	0.3125	1-5/8	2-13/16	GI48520	3.92	GI50817	8.02
21/64	0.3281	1-11/16	2-15/16	GI48521	4.27	GI50818	9.29
11/32	0.3438	1-11/16	3	GI48522	4.75	GI50819	9.68
23/64	0.3594	1-3/4	3-1/16	GI48523	5.42	GI50820	11.27
3/8	0.3750	1-13/16	3-1/8	GI48524	5.74	GI50821	11.27
25/64	0.3906	1-7/8	3-1/4	GI48525	6.56	GI50822	12.95
13/32	0.4062	1-15/16	3-5/16	GI48526	6.88	GI50823	13.13
27/64	0.4219	2	3-3/8	GI48527	7.46	GI50824	14.59
7/16	0.4375	2-1/16	3-7/16	GI48528	7.55	GI50825	14.87
29/64	0.4531	2-1/8	3-9/16	GI48529	8.82	GI50826	16.43
15/32	0.4688	2-1/8	3-5/8	GI48530	9.49	GI50827	16.97
31/64	0.4844	2-3/16	3-11/16	GI48531	9.98	GI50828	18.40
1/2	0.5000	2-1/4	3-3/4	GI48532	10.16	GI50829	18.62
33/64	0.5156	2-3/8	3-7/8	GI48533	28.51	—	—
17/32	0.5312	2-3/8	3-7/8	GI48534	29.25	—	—
35/64	0.5469	2-1/2	4	GI48535	30.88	—	—
9/16	0.5625	2-1/2	4	GI48536	30.96	—	—
37/64	0.5781	2-5/8	4-1/8	GI48537	32.35	—	—
19/32	0.5938	2-5/8	4-1/8	GI48538	33.46	—	—
39/64	0.6094	2-3/4	4-1/4	GI48539	34.78	—	—
5/8	0.6250	2-3/4	4-1/4	GI48540	35.07	—	—
41/64	0.6406	2-7/8	4-1/2	GI48541	37.52	—	—

Chicago-Latrobe®

Sold in Mfg. Package Qty ONLY
Most Broken Packs available at a slightly higher price



Frac. Size	Dec. Equiv.	Flute Length	Gen. Purp. Overall Length	HSS-118° Bright	Price Each
21/32	0.6562	2-7/8	4-1/2	GI48542	\$38.93
43/64	0.6719	2-7/8	4-5/8	GI48543	40.69
11/16	0.6875	2-7/8	4-5/8	GI48544	41.40
45/64	0.7031	3	4-3/4	GI48545	44.48
23/32	0.7188	3	4-3/4	GI48546	46.32
47/64	0.7344	3-1/8	5	GI48547	46.96
3/4	0.7500	3-1/8	5	GI48548	49.43
49/64	0.7656	3-1/4	5-1/8	GI48549	53.56
25/32	0.7812	3-1/4	5-1/8	GI48550	53.25
51/64	0.7969	3-3/8	5-1/4	GI48551	57.29
13/16	0.8125	3-3/8	5-1/4	GI48552	57.57
53/64	0.8281	3-1/2	5-3/8	GI48553	59.92
27/32	0.8438	3-1/2	5-3/8	GI48554	60.93
55/64	0.8594	3-1/2	5-1/2	GI48555	63.91
7/8	0.8750	3-1/2	5-1/2	GI48556	66.45
57/64	0.8906	3-5/8	5-5/8	GI48557	68.33
29/32	0.9062	3-5/8	5-5/8	GI48558	67.36
59/64	0.9219	3-3/4	5-3/4	GI48559	71.42
15/16	0.9375	3-3/4	5-3/4	GI48560	76.13
61/64	0.9531	3-7/8	5-7/8	GI48561	76.63
31/32	0.9688	3-7/8	5-7/8	GI48562	79.75
63/64	0.9844	4	6	GI48563	82.93
1	1.0000	4	6	GI48564	85.84
1-1/16	1.0625	4	6-1/4	GI48568	99.88
1-1/8	1.1250	4	6-3/8	GI48572	109.37
1-3/16	1.1875	4-1/4	6-5/8	GI48576	121.33
1-1/4	1.2500	4-3/8	6-3/4	GI48580	134.47
1-5/16	1.3125	4-3/8	7	GI48584	132.97
1-3/8	1.3750	4-1/2	7-1/8	GI48588	141.14
1-7/16	1.4375	4-3/4	7-3/8	GI48592	155.72
1-1/2	1.5000	4-7/8	7-1/2	GI48596	156.36
1-9/16	1.5625	4-7/8	7-3/4	GI48600	178.08
1-5/8	1.6250	4-7/8	7-3/4	GI48604	219.63
1-11/16	1.6875	5-1/8	8	GI48608	192.17
1-3/4	1.7500	5-1/8	8	GI48612	233.00
1-13/16	1.8125	5-3/8	8-1/4	GI48616	252.90
1-7/8	1.8750	5-3/8	8-1/4	GI48620	269.70
1-15/16	1.9375	5-5/8	8-1/2	GI48624	247.25
2	2.0000	5-5/8	8-1/2	GI48628	302.65

Stub Length Letter Size Drills

HSS or Cobalt



A-L, 12 per Pkg.,
M-Z, 6 per Pkg.

Letter Size	Dec. Equiv.	Flute Length	Overall Length	Gen. Purp. HSS-118° Bright	Price Each	Cobalt M42-135° Split Point	Price Each
A	0.2340	1-5/16	2-7/16	GI48801	\$3.14	GI50830	\$5.83
B	0.2380	1-3/8	2-1/2	GI48802	3.14	GI50831	5.90
C	0.2420	1-3/8	2-1/2	GI48803	3.14	GI50832	5.97
D	0.2460	1-3/8	2-1/2	GI48804	3.14	GI50833	6.07
E	0.2500	1-3/8	2-1/2	GI48816	2.84	GI50813	5.47
F	0.2570	1-7/16	2-5/8	GI48806	3.32	GI50835	6.33
G	0.2610	1-7/16	2-5/8	GI48807	3.55	GI50836	6.55
H	0.2660	1-1/2	2-11/16	GI48808	3.62	GI50837	6.83
I	0.2720	1-1/2	2-11/16	GI48809	3.62	GI50838	6.93
J	0.2770	1-1/2	2-11/16	GI48810	3.96	GI50839	7.01
K	0.2810	1-1/2	2-11/16	GI48811	4.18	GI50840	7.25
L	0.2900	1-9/16	2-3/4	GI48812	4.23	GI50841	8.18
M	0.2950	1-9/16	2-3/4	GI48813	4.60	GI50842	8.36
N	0.3020	1-5/8	2-13/16	GI48814	4.64	GI50843	8.98
O	0.3160	1-11/16	2-15/16	GI48815	4.73	GI50844	9.79
P	0.3230	1-11/16	2-15/16	GI48816	5.06	GI50845	9.97
Q	0.3320	1-11/16	3	GI48817	5.11	GI50846	10.49
R	0.3390	1-11/16	3	GI48818	5.11	GI50847	10.67
S	0.3480	1-3/4	3-1/16	GI48819	5.92	GI50848	12.61
T	0.3580	1-3/4	3-1/16	GI48820	6.74	GI50849	12.79
U	0.3680	1-13/16	3-1/8	GI48821	6.88	GI50850	12.86
V	0.3770	1-7/8	3-1/4	GI48822	7.33	GI50851	13.94
W	0.3860	1-7/8	3-1/4	GI48823	7.54	GI50852	14.84
X	0.3970	1-15/16	3-5/16	GI48824	8.75	GI50853	15.52
Y	0.4040	1-15/16	3-5/16	GI48825	10.43	GI50854	15.53
Z	0.4130	2	3-3/8	GI48826	11.51	GI50855	16.76



Stub Length Number Size Drills HSS or Cobalt

General Purpose
HSS
118 degree point



Chicago-Latrobe®

12 per Pkg.

Sold in Mfg. Package Qty ONLY
Most Broken Packs available at a slightly higher price



Cobalt Heavy Duty
M42 - 135° Split Point
Straw Finish

*smaller than #53 not split point



Wire Gage Size	Dec. Equiv.	Flute Length	Overall Length	Gen. Purp. HSS-118° Bright	Price Each	Cobalt M42-135° Split Point	Price Each	Wire Gage Size	Dec. Equiv.	Flute Length	Overall Length	Gen. Purp. HSS-118° Bright	Price Each	Cobalt M42-135° Split Point	Price Each
60	0.0400	1/2	1-3/8	GI48760	\$1.55	GI50915*	\$2.65	30	0.1285	15/16	1-15/16	GI48730	\$ 1.76	GI50885	\$2.75
59	0.0410	1/2	1-3/8	GI48759	1.65	GI50914*	2.65	29	0.1360	15/16	1-15/16	GI48729	1.76	GI50884	3.02
58	0.0420	1/2	1-3/8	GI48758	1.65	GI50913*	2.65	28	0.1405	15/16	1-15/16	GI48728	1.76	GI50883	3.02
57	0.0430	1/2	1-3/8	GI48757	1.65	GI50912*	2.59	27	0.1440	1	2-1/16	GI48727	1.82	GI50882	3.15
56	0.0465	1/2	1-3/8	GI48756	1.66	GI50911*	2.44	26	0.1470	1	2-1/16	GI48726	1.82	GI50881	3.24
55	0.0520	5/8	1-5/8	GI48755	1.66	GI50910*	2.34	25	0.1495	1	2-1/16	GI48725	1.82	GI50880	3.20
54	0.0550	5/8	1-5/8	GI48754	1.66	GI50909*	2.34	24	0.1520	1	2-1/16	GI48724	1.87	GI50879	3.43
53	0.0595	5/8	1-5/8	GI48753	1.66	GI50908*	2.34	23	0.1540	1	2-1/16	GI48723	1.87	GI50878	3.43
52	0.0635	11/16	1-11/16	GI48752	1.68	GI50907	2.30	22	0.1570	1-1/16	2-1/8	GI48722	1.89	GI50877	3.43
51	0.0670	11/16	1-11/16	GI48751	1.68	GI50906	2.30	21	0.1590	1-1/16	2-1/8	GI48721	1.89	GI50876	3.43
50	0.0700	11/16	1-11/16	GI48750	1.68	GI50905	2.30	20	0.1610	1-1/16	2-1/8	GI48720	1.89	GI50875	3.35
49	0.0730	11/16	1-11/16	GI48749	1.68	GI50904	2.32	19	0.1660	1-1/16	2-1/8	GI48719	1.89	GI50874	3.46
48	0.0760	11/16	1-11/16	GI48748	1.68	GI50903	2.32	18	0.1695	1-1/16	2-1/8	GI48718	2.00	GI50873	3.62
47	0.0785	3/4	1-3/4	GI48747	1.68	GI50902	2.32	17	0.1730	1-1/8	2-3/16	GI48717	2.18	GI50872	4.01
46	0.0810	3/4	1-3/4	GI48746	1.68	GI50901	2.32	16	0.1770	1-1/8	2-3/16	GI48716	2.18	GI50871	4.19
45	0.0820	3/4	1-3/4	GI48745	1.68	GI50900	2.32	15	0.1800	1-1/8	2-3/16	GI48715	2.18	GI50870	4.19
44	0.0860	3/4	1-3/4	GI48744	1.68	GI50899	2.32	14	0.1820	1-1/8	2-3/16	GI48714	2.18	GI50869	4.19
43	0.0890	3/4	1-3/4	GI48743	1.68	GI50898	2.32	13	0.1850	1-1/8	2-3/16	GI48713	2.18	GI50868	4.19
42	0.0935	3/4	1-3/4	GI48742	1.68	GI50897	2.32	12	0.1890	1-3/16	2-1/4	GI48712	2.18	GI50867	4.23
41	0.0960	13/16	1-13/16	GI48741	1.76	GI50896	2.40	11	0.1910	1-3/16	2-1/4	GI48711	2.18	GI50866	4.19
40	0.0980	13/16	1-13/16	GI48740	1.76	GI50895	2.35	10	0.1935	1-3/16	2-1/4	GI48710	2.18	GI50865	4.29
39	0.0995	13/16	1-13/16	GI48739	1.76	GI50894	2.42	9	0.1960	1-3/16	2-1/4	GI48709	2.18	GI50864	4.37
38	0.1015	13/16	1-13/16	GI48738	1.76	GI50893	2.42	8	0.1990	1-3/16	2-1/4	GI48708	2.20	GI50863	4.37
37	0.1040	13/16	1-13/16	GI48737	1.76	GI50892	2.57	7	0.2010	1-3/16	2-1/4	GI48707	2.15	GI50862	4.29
36	0.1065	13/16	1-13/16	GI48736	1.76	GI50891	2.57	6	0.2040	1-1/4	2-3/8	GI48706	2.53	GI50861	5.22
35	0.1100	7/8	1-7/8	GI48735	1.76	GI50890	2.60	5	0.2055	1-1/4	2-3/8	GI48705	2.53	GI50860	5.22
34	0.1110	7/8	1-7/8	GI48734	1.76	GI50889	2.60	4	0.2090	1-1/4	2-3/8	GI48704	2.53	GI50859	5.22
33	0.1130	7/8	1-7/8	GI48733	1.76	GI50888	2.60	3	0.2130	1-1/4	2-3/8	GI48703	2.53	GI50858	5.64
32	0.1160	7/8	1-7/8	GI48732	1.76	GI50887	2.79	2	0.2210	1-5/16	2-7/16	GI48702	2.71	GI50857	5.64
31	0.1200	7/8	1-7/8	GI48731	1.76	GI50886	2.79	1	0.2280	1-5/16	2-7/16	GI48701	2.71	GI50856	5.68

Dead Blow Hammers

- Unicast construction has no exposed metal
- Metal core is fully encased in highly impact resistant polyurethane
- Shot filled to produce intensive impact with less striking force



Set of all 4 Sizes shown:
Order No. SHA-CHO-3SET

Reg. Price \$98.00

Sale Price \$78.00

*Included in set



Head Dia.	Weight	OAL	Order No.	Sale Price
* 1 1/2"	1/2 lbs.	10-1 1/2"	SHA-CHO	\$18.00
* 1 3/4"	1 lbs.	12"	SHA-CH1	16.53
* 2"	2 lbs.	13 1/2"	SHA-CH2	18.00
* 2 1/4"	3 lbs.	15"	SHA-CH3	23.69
3 1/2"	4 lbs.	15"	SHA-CH4	29.58



- The Original Split-Head Hammer by Garland. Split Head design is easier to change hammer faces than press-fit styles. Just loosen the nut under the head, remove hammer face and replace with new one. Body is two piece malleable iron hammerhead and replaceable hickory handle.

Split-Head Hammer - Hickory Handles



MADE IN THE USA



Split Head Hammer (comes with rawhide faces)				Replacement Faces							
Face Dia.	Wt. Lbs.	Order No. Rawhide	Price Each	Rawhide	Price Each	Nylon	Price Each	Urethane	Price Each	Gar-Dur Plastic	Price Each
1 1/4"	1.5	467-31001	\$66.00	467-21001	\$8.35	467-22001	\$14.00	467-23001	\$14.00	467-24001	\$9.90
1 1/2"	2	467-31002	70.50	467-21002	10.35	467-22002	15.90	467-23002	15.90	467-24002	11.25
1 3/4"	2.75	467-31003	84.80	467-21003	14.70	467-22003	21.90	467-23003	21.90	467-24003	15.50
2"	4	467-31004	96.90	467-21004	17.65	467-22004	32.30	467-23004	32.30	467-24004	32.30
2 3/4"	6.5	467-31005	146.50	467-21005	32.30	467-22005	47.55	467-23005	47.55	467-24005	33.55

Rawhide Mallets Selected Hickory Handles



Diameter	Length Head	Weight	Order No.	Price Each
1"	2"	2 oz.	467-11000	\$23.60
1 1/4"	2 1/2"	4 oz.	467-11001	26.50
1 1/2"	3"	6 oz.	467-11002	31.10
1 3/4"	3 1/8"	9 oz.	467-11003	39.70
2"	3 1/2"	11 oz.	467-11004	45.40
2 3/4"	4 1/4"	22 oz.	467-11005	80.60
2 3/4"	4 3/4"	24 oz.	467-11006	87.80



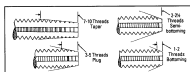
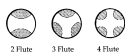
GTD® High Speed Steel Production Taps

Hand Taps, HSS – Machine Screw Sizes

Tap Size	TPI	# FL	H Limit	Plug	Bottom	1-11 Pcs.	12+ Pcs.
0	80NF	2	H1	GI15103	GI15104	\$19.29	14.47
1	64NC	2	H1	GI15115	GI15116	17.88	13.41
1	72NF	2	H1	GI15121	GI15122	17.88	13.41
2	56NC	3	H2	GI15135	GI15136	15.41	11.56
2	64NF	3	H2	GI15145	GI15146	16.61	12.46
3	48NC	3	H2	GI15157	GI15158	11.84	8.88
3	56NF	3	H2	GI15167	GI15168	13.23	9.92
4	40NC	3	H2	GI15185	GI15186	9.71	7.28
4	48NF	3	H2	GI15197	GI15198	10.45	7.84
5	40NC	3	H2	GI15210	GI15211	9.71	7.28
5	44NF	3	H2	GI15221	GI15222	10.45	7.84
6	32NC	3	H3	GI15238	GI15239	7.38	5.54
6	40NF	3	H2	GI15258	GI15259	7.85	5.89
8	32NC	4	H3	GI15284	GI15285	7.66	5.74
8	36NF	4	H2	GI15302	GI15303	7.85	5.89
10	24NC	4	H3	GI15328	GI15329	7.85	5.89
10	32NF	4	H3	GI15361	GI15362	7.85	5.89
12	24NC	4	H3	GI15384	GI15385	8.31	6.23
12	28NF	4	H3	GI15391	GI15392	9.12	6.84

Chamfer: Plug (3-5 pitches), Bottoming (1-2 pitches)

*Top View of a Hand Tap



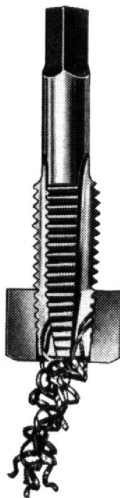
Hand Taps, HSS – Fractional Sizes

Tap Size	TPI	# FL	H Limit	Plug	Bottom	1-11 Pcs.	12+ Pcs.
1/4	20NC	4	H3	GI14023	GI14024	8.47	6.35
1/4	28NF	4	H3	GI14056	GI14057	8.47	6.35
5/16	18NC	4	H3	GI14093	GI14094	10.45	7.84
5/16	24NF	4	H3	GI14123	GI14124	10.45	7.84
3/8	16NC	4	H3	GI14158	GI14159	11.79	8.84
3/8	24NF	4	H3	GI14191	GI14192	11.79	8.84
7/16	14NC	4	H3	GI14222	GI14223	20.11	15.08
7/16	20NF	4	H3	GI14247	GI14248	20.11	15.08
1/2	13NC	4	H3	GI14282	GI14283	21.40	16.05
1/2	20NF	4	H3	GI14309	GI14310	23.91	17.94
9/16	12NC	4	H3	GI14339	GI14340	36.34	27.26
9/16	18NF	4	H3	GI14357	GI14358	36.34	27.26
5/8	11NC	4	H3	GI14380	GI14381	43.46	32.60
5/8	18NF	4	H3	GI14403	GI14404	43.46	32.60
3/4	10NC	4	H3	GI14449	GI14450	60.72	45.54*
3/4	16NF	4	H3	GI14472	GI14473	60.72	45.54*
7/8	9NC	4	H4	GI14500	GI14501	84.80	63.60
7/8	14NF	4	H4	GI14517	GI14518	84.80	63.60
1	8NC	4	H4	GI14545	GI14546	112.89	84.67
1	12NF	4	H4	GI14558	GI14559	116.45	87.33
1	14NS	4	H4	GI14569	GI14570	112.89	84.67
1-1/8	7NC	4	H4	GI14595	GI14596	182.51	136.88
1-1/8	12NF	4	H4	GI14604	GI14605	193.85	145.39
1-1/4	7NC	4	H4	GI14613	GI14614	239.05	179.29
1-1/4	12NF	6	H4	GI14621	GI14622	243.89	182.92
1-3/8	6NC	4	H4	GI14633	GI14634	258.25	226.54
1-3/8	12NF	6	H4	GI14641	GI14642	303.66	227.74
1-1/2	6NC	4	H4	GI14646	GI14647	347.28	260.46
1-1/2	12NF	6	H4	GI14654	GI14655	353.71	265.28

GTD Gun® Taps, High Speed Steel

Machine Screw Sizes, 2 Flute Taps, Bright Finish, Spiral Point, Plug Style, Ground Thread, HSS

Size	TPI	H Limit	Order No.	1-11 Price	12+ Price
0	80NF	H1	GI13201	\$18.16	\$15.57
1	64NC	H1	GI13203	16.31	13.98
1	72NF	H1	GI13205	16.55	14.19
2	56NC	H2	GI13208	18.07	13.55
2	64NF	H2	GI13211	20.57	15.43
3	48NC	H2	GI13213	14.61	10.96
3	56NF	H2	GI13215	16.18	12.14
4	40NC	H2	GI13219	11.68	8.76
4	48NF	H2	GI13223	13.51	10.13
5	40NC	H2	GI13225	11.68	8.76
5	44NF	H2	GI13229	13.51	10.13
6	32NC	H3	GI13232	9.85	7.38
6	40NF	H2	GI13237	11.20	8.40
8	32NC	H3	GI13242	9.85	6.95
8	36NF	H2	GI13246	11.20	8.40
10	24NC	H3	GI13251	9.85	7.38
10	32NF	H3	GI13257	9.85	7.38
12	24NC	H3	GI13262	11.20	8.40
12	28NF	H3	GI13264	11.20	8.40



Fractional Sizes Bright Finish, Spiral Point, Plug Style, Ground Thread, HSS

Size	TPI	# FL	H Limit	Order No.	1-11 Price	12+ Price
1/4	20NC	3	H3	GI13272	12.20	9.15
1/4	20NC	2	H3	GI13270	9.85	7.38
1/4	28NF	2	H3	GI13280	9.85	7.38
1/4	28NF	3	H2	GI13279	12.20	9.15
5/16	18NC	2	H3	GI13291	10.58	7.94
5/16	18NC	3	H3	GI13293	14.00	10.50
5/16	24NF	2	H3	GI13300	10.58	7.94
3/8	16NC	3	H3	GI13307	12.60	9.45
3/8	24NF	3	H3	GI13313	13.51	10.13
7/16	14NC	3	H3	GI13319	21.53	16.15
7/16	20NF	3	H3	GI13324	21.53	16.15
1/2	13NC	3	H3	GI13328	21.85	16.38
1/2	20NF	3	H3	GI13334	25.52	19.14
5/8	11NC	3	H3	GI13339	49.58	37.18*
5/8	18NF	3	H3	GI13342	49.58	37.18*
3/4	10NC	3	H3	GI13343	70.26	52.69*

Chamfer: Plug (3-5 thread lead) *6pcs Per Pack

Extension Tap, Spiral Point Style

OnePiece HSS, Ground Thread Plug Chamfer



Tap Size	TPI	Shank Diam	OAL	Order Number	1-2 Pcs.	3+ Pcs.
#4	40	.080	4"	RN38302	\$62.06	\$49.65
#6	32	.097	6"	RN38326	54.41	43.53
#8	32	.123	6"	RN38330	53.65	42.92
#10	24	.136	6"	RN38343	51.13	40.90
#10	32	.136	6"	RN39012	51.13	40.90
1/4	20	.185	6"	RN45732	68.43	54.74
1/4	28	.185	6"	RN45722	68.43	54.74
5/16	18	.240	6"	RN45737	71.87	57.50
5/16	24	.240	6"	RN45723	71.87	57.50
3/8	16	.275	6"	RN45742	75.16	60.13
3/8	24	.275	6"	RN45743	75.16	60.13
7/16	14	.323	6"	RN45792	83.29	66.63
7/16	20	.323	6"	RN45745	83.29	66.63
1/2	13	.367	6"	RN45747	86.05	68.84
1/2	20	.367	6"	RN45749	86.05	68.84
5/8	11	.480	6"	RN45752	106.81	85.45
5/8	18	.480	6"	RN45922	106.81	85.45
3/4	10	.590	6"	RN45756	133.99	107.19
3/4	16	.590	6"	RN45784	133.99	107.19



Screw Thread Insert (STI) Taps

Machine Screw & Fraction Sizes
Spiral Point Style
For Helicoil® Style Inserts



Call For Large Quantity Discounts !

Size	# FL	"H" Limit	Order #	1-11pcs	12+Pcs
4	40NC	2	H2	RN56022	\$17.00
6	32NC	2	H3	RN56232	17.00
8	32NC	2	H3	RN56432	17.00
10	32NC	2	H3	RN56632	17.43
1/4	20NC	2	H3	RN56832	18.41
5/16	18NC	3	H3	RN57032	20.72
3/8	16NC	3	H3	RN57232	26.01
1/2	13NC	3	H3	RN57632	39.82



Gun® Taps for Through Holes — TiN Coated EM-SS-VariTap™

Size	Pitch	Thread Series	No. of Flutes	TiN Coated		1-11 Pcs.	12+ Pcs.
				H2	H3		
4	40	UNC	2	GI82901-5357261	—	\$24.30	\$ 18.22
6	32	UNC	3	—	GI82905-5357287	20.36	15.27
8	32	UNC	3	—	GI82907-5357307	20.36	15.27
10	24	UNC	3	—	GI82909-5365778	20.36	15.27
10	32	UNF	3	—	GI82910-5365766	20.36	15.27
1/4	20	UNC	3	—	GI82913-5365808	22.55	16.91
1/4	28	UNF	3	—	GI82914-5365841	22.55	16.91
5/16	18	UNC	3	—	GI82915-5365933	25.19	18.89
5/16	24	UNF	3	—	GI82916-5365947	25.19	18.89
3/8	16	UNC	3	—	GI82917-5365976	28.68	21.51
3/8	24	UNF	3	—	GI82918-5366948	28.68	21.51
7/16	14	UNC	3	—	GI82919-5366967	37.05	27.79
7/16	20	UNF	3	—	GI82920-5366980	37.05	27.79
1/2	13	UNC	3	—	GI82921-5366076	42.70	32.03
1/2	20	UNF	3	—	GI82922-5366110	42.70	32.03
9/16	12	UNC	3	—	GI82953-5366134	66.18	49.63*
9/16	18	UNF	3	—	GI82954-5366138	66.18	49.63*
5/8	11	UNC	3	—	GI82925-5366142	77.58	58.19*
3/4	10	UNC	3	—	GI82927-5367036	121.88	91.41*
3/4	16	UNF	3	—	GI82928-5367063	121.88	91.41*

WIDIA
GTD™



Style Features:

- TiN Coated.
- Special High Vanadium Steel
- Unique Gun Flute Geometry for Lower Tapping Torque
- Neck Design for CNC Equipment Plug Chamfer

Recommended Application

- Stainless Steels < 275 Bhn
- Steel and Steel Alloys < 275 Bhn
- Wrought and Cast Aluminum (TiN and Bright only)
- Copper and Copper Alloys, also Plastic (TiN and Bright only)

WIDIA
GTD™



Style Features:

- Special High Vanadium Steel
- Unique Gun Flute Geometry for Lower Tapping Torque
- Neck Design for CNC Equipment Plug Chamfer



Metric Gun® Taps for Through Holes — EM-SS-VariTap™

WIDIA
GTD™

Size & Pitch	No. of Flutes	Class of Fit		1-11 Pcs.	12+ Pcs.
M3 x 0.5	3	D3	GI72615-5362589	\$ 30.14	\$22.61
M3.5 x 0.6	3	D4	GI72616-5362676	26.85	20.14
M4 x 0.7	3	D4	GI72617-5362691	26.85	20.14
M5 x 0.8	3	D4	GI72619-5362697	26.85	20.14
M6 x 1	3	D5	GI72620-5362703	26.85	18.95
M7 x 1	3	D5	GI72621-5362709	30.14	22.61
M8 x 1	3	D5	GI72622-5362714	30.14	22.61
M8 x 1.25	3	D5	GI72623-5362720	30.14	22.61
M10 x 1.25	3	D5	GI72624-5367304	41.89	31.42
M10 x 1.5	3	D6	GI72625-5367309	41.89	31.42
M12 x 1.25	3	D5	GI72626-5367345	50.19	37.64
M12 x 1.75	3	D6	GI72627-5367355	50.19	37.64
M14 x 1.5	3	D6	GI72628-5367361	69.44	52.08
M14 x 2	3	D7	GI72629-5367364	69.44	52.08
M16 x 1.5	3	D6	GI72630-5366475	90.50	67.87
M16 x 2	3	D7	GI72631-5366479	90.50	67.87
M18 x 1.5	3	D6	GI72632-5366483	127.04	95.28
M18 x 2.5	3	D7	GI72633-5366487	127.04	95.28

Call For Large Quantity Discounts!

Spiral Fluted TiN Coated Taps for Blind Holes EM-SS-VariTap™ TiN Series Series for Stainless, Aluminum and Steels

WIDIA
GTD™

Call For Large Quantity Discounts!

Modified Bottoming Chamfer 2-1/2 to 3-1/2 Pitches

Size	Pitch	Thread Series	No. of Flutes	TiN Coated		1-11 Pcs.	12+ Pcs.
				H Limit	Order Number		
4	40	UNC	3	H2	GI84901-5356735	\$ 37.05	\$ 27.79
5	40	UNC	3	H2	GI84903-5356752	24.23	20.76
6	32	UNC	3	H3	GI84905-5356759	29.47	22.10
8	32	UNC	3	H3	GI84907-5357307	29.47	22.10
10	24	UNC	3	H3	GI84909-5357384	30.16	22.62
10	32	UNF	3	H3	GI84910-5357399	30.16	22.62
1/4	20	UNC	3	H3	GI84913-5364452	33.25	24.94
1/4	28	UNF	3	H3	GI84914-5364485	33.25	24.94
5/16	18	UNC	3	H3	GI84915-5364503	37.05	27.79
5/16	24	UNF	3	H3	GI84916-5364516	37.05	27.79
3/8	16	UNC	3	H3	GI84917-5364545	41.29	30.97
3/8	24	UNF	3	H3	GI84918-5364560	27.39	23.47
7/16	14	UNC	3	H3	GI84919-5364578	60.28	45.21
7/16	20	UNF	3	H3	GI84920-5364611	60.28	45.21
1/2	13	UNC	3	H3	GI84921-5364625	73.44	55.08
1/2	20	UNF	3	H3	GI84922-5364638	73.44	55.08
9/16	12	UNC	3	H3	GI84953-5364672	73.89	63.33*
9/16	18	UNF	3	H3	GI84954-5364678	111.36	83.52*
5/8	11	UNC	3	H3	GI84925-5364684	81.16	69.57*
5/8	18	UNF	3	H3	GI84926-5364692	122.34	91.76*
3/4	10	UNC	4	H3	GI84927-5364700	104.85	89.87*
3/4	16	UNF	4	H3	GI84928-5364707	158.05	118.54*
7/8	9	UNC	4	H4	GI84995-5364715	234.37	175.77*
7/8	14	UNF	4	H4	GI84996-5364722	234.37	175.77*



Style Features:

- Special High Vanadium Steel
- Spiral Flute for Better Chip Removal
- Modified Bottoming Chamfer
- Neck Design for CNC Equipment

Recommended Application

- Stainless Steels < 275 Bhn
- Steel and Steel Alloys < 275 Bhn
- Wrought and Cast Aluminum (TiN and Bright only)
- Copper and Copper Alloys (TiN and Bright)
- Plastic (TiN and Bright)

WIDIA
GTD™

EM Taps are suitable for UNJ Aerospace internal threading applications

*6pcs





Size	Pitch	Overall Length	No. of Flutes	H3	Price
6	32	6"	2	YGM1243	30.31
8	32	6"	3	YGM1283	30.31
10	24	6"	3	YGM1323	30.31
10	32	6"	3	YGM1343	30.31
1/4	20	6"	3	YGM1403	34.76
1/4	28	6"	3	YGM1423	34.76
5/16	18	6"	3	YGM1443	36.90
5/16	24	6"	3	YGM1463	36.90
3/8	16	6"	3	YGM1483	41.79
3/8	24	6"	3	YGM1503	41.79
7/16	14	6"	3	YGM1523	49.41
7/16	20	6"	3	YGM1543	49.41
1/2	13	6"	3	YGM1563	56.28
1/2	20	6"	3	YGM1583	56.28

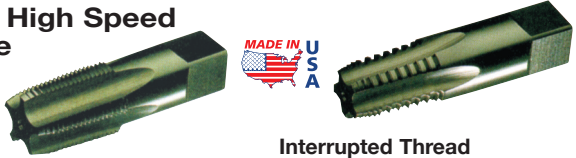
Extended Pointed Plug Taps
TIN COATED
6" Lengths —
for steels up to HRC28
H3 Class of Fit

- Style Features:**
- Super High Speed Steel
 - Unique Flute Geometry for Lower Tapping Torque
 - Neck Design for CNC Equipment



Taper Pipe Taps Ground Thread High Speed Steel NPT or NPTF (dryseal) style

NPT taps are suitable for ANPT applications



Regular Thread

- Ground thread pipe taps are made in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Thread (NPTF)

Interrupted Thread

- Interrupted threads reduce drag while taper pipe threading.
- Use where chip disposal is a concern.

Size and Pitch	Thread Length	OAL	No. of Flutes	Regular Thread			Interrupted Thread			
				NPT	NPTF	Net Price	No. of Flutes	NPT	NPTF	Net Price
				Order No.				Order No.		
1/16-27	11/16	2-1/8	4	G116201	G116203	\$ 35.62	—	—	—	
1/8-27 (Sm. Sh.)	3/4	2-1/8	4	G116204	G116209	35.62	5	G116101	G116103	\$ 55.28
1/8-27 (Lg. Sh.)	3/4	2-1/8	4	G116205	G116210	35.62	5	G116102	G116104	55.28
1/4-18	1-1/16	2-7/16	4	G116212	G116215	39.27	5	G116105	G116106	61.28
3/8-18	1-1/16	2-9/16	4	G116217	G116220	51.91	5	G116107	G116108	77.26
1/2-14	1-3/8	3-1/8	4	G116222	G116225	82.21	5	G116109	G116110	123.18
3/4-14	1-3/8	3-1/4	5	G116227	G116230	115.10	5	G116111	G116112	174.21
1-11-1/2	1-3/4	3-3/4	5	G116232	G116235	174.21	5	G116113	G116114	269.19
1-1/4-11-1/2	1-3/4	4	5	G116237	G116239	250.20	5	G116115	—	378.48
1-1/2-11-1/2	1-3/4	4-1/4	7	G116240	G116242	335.72	7	G116117	—	508.32
2-11-1/2	1-3/4	4-1/2	7	G116243	G116245	454.47	7	G116118	—	684.09

Size	Pitch	Overall Length	No. of Flutes	2B Class of Fit	Sale Price
4	40	1.88"	2	OSG28850	6.90
6	32	2"	2	OSG28852	5.80
8	32	2.13"	2	OSG28853	5.80
10	24	2.38"	2	OSG28854	5.80
10	32	2.38"	2	OSG28855	5.80
1/4	20	2.50"	2	OSG28856	5.80
1/4	28	2.50"	3	OSG28857	5.80
5/16	18	2.72"	2	OSG28858	6.27
5/16	24	2.72"	3	OSG28859	6.27
3/8	16	2.94"	3	OSG28860	7.44
3/8	24	2.94"	3	OSG28861	7.99
7/16	14	3.16"	3	OSG28869	12.70
7/16	20	3.16"	3	OSG28870	12.70
1/2	13	3.38"	3	OSG28862	15.09
1/2	20	3.38"	3	OSG28863	15.09



SEVEN



Style Features:

- High Performance HSS Spiral Point Plug Style.
- Unique Flute Geometry for Lower Tapping Torque
- Reinforced Neck Design for CNC Equipment

Specify Surface Treatment at time of order: 00=Bright, 01=Steam Oxide

Size	Pitch	Overall Length	No. of Flutes	2B Class of Fit	Sale Price
4	40	1.88"	2	OSG29850	12.05
6	32	2"	2	OSG29852	9.78
8	32	2.13"	3	OSG29853	9.78
10	24	2.38"	3	OSG29854	9.78
10	32	2.38"	3	OSG29855	9.78
1/4	20	2.50"	3	OSG29856	10.60
1/4	28	2.50"	3	OSG29857	10.60
5/16	18	2.72"	3	OSG29858	13.08
5/16	24	2.72"	3	OSG29859	13.08
3/8	16	2.94"	3	OSG29860	15.16
3/8	24	2.94"	3	OSG29861	15.16
7/16	14	3.16"	3	OSG29869	22.66
7/16	20	3.16"	3	OSG29870	22.66
1/2	13	3.38"	3	OSG29862	26.71
1/2	20	3.38"	3	OSG29863	26.71



SEVEN



Style Features:

- High Performance HSS Bottom Style. (1.5P-2P)
- Unique Flute Geometry for Lower Tapping Torque
- Reinforced Neck Design for CNC Equipment

Specify Surface Treatment at time of order: 00=Bright, 01=Steam Oxide



Size	Pitch	Thread Series	No. of Flutes	Steam Oxide Treat				Price Ea.
				H2	H3	H4	H5	
2	56	UNC	2	OSG17346	—	—	—	\$31.96
4	40	UNC	2	OSG17300	—	—	—	20.22
5	40	UNC	2	OSG17301	—	—	—	20.22
6	32	UNC	2	—	OSG17302	—	—	17.04
8	32	UNC	3	—	OSG17303	—	—	17.04
10	24	UNC	3	—	OSG17304	—	—	17.33
10	32	UNF	3	—	OSG17305	—	—	17.33
1/4	20	UNC	3	—	OSG17306	—	—	18.88
1/4	28	UNF	3	—	OSG17307	—	—	18.88
5/16	18	UNC	3	—	—	—	OSG17383	20.49
5/16	24	UNF	3	—	—	OSG17369	—	20.49
3/8	16	UNC	3	—	—	—	OSG17384	23.13
3/8	24	UNF	3	—	—	OSG17370	—	23.13
7/16	14	UNC	3	—	—	—	OSG17385	29.81
7/16	20	UNF	3	—	—	—	OSG17386	29.81
1/2	13	UNC	3	—	—	—	OSG17387	34.85
1/2	20	UNF	3	—	—	—	OSG17388	34.85
9/16	12	UNC	3	—	OSG17250	—	—	55.86
9/16	18	UNF	3	—	OSG17251	—	—	55.86
5/8	11	UNC	3	—	—	—	OSG17389	63.91
5/8	18	UNF	3	—	—	—	OSG17297	72.96
3/4	10	UNC	3	—	OSG17318	—	—	101.14
3/4	16	UNF	3	—	OSG17319	—	—	101.14



EXOTAP®
VA-3®



Supplied with Steam Oxide Surface Treatment
Standard, TIN or V Available

List 300
Ideal for Stainless
Steels and
Carbon Steels

Spiral Point Plug
(3.5-4.5p)

Size	Pitch	Thread Series	No. of Flutes	Steam Oxide Treat				Price Ea.
				H2	H3	H4	H5	
2	56	UNC	2	YGBB082	—	—	—	\$39.33
4	40	UNC	2	YGBB162	—	—	—	19.03
5	40	UNC	3	YGBB202	—	—	—	19.03
6	32	UNC	3	—	YGBB243	—	—	15.86
8	32	UNC	3	—	YGBB283	—	—	15.86
10	24	UNC	3	—	YGBB323	—	—	15.86
10	32	UNF	3	—	YGBB343	—	—	15.86
1/4	20	UNC	3	—	YGBB403	—	—	18.81
1/4	28	UNF	3	—	YGBB423	—	—	18.81
5/16	18	UNC	3	—	—	—	YGBB445	20.90
5/16	24	UNF	3	—	—	YGBB464	—	20.90
3/8	16	UNC	3	—	—	—	YGBB485	23.93
3/8	24	UNF	3	—	—	YGBB504	—	23.93
7/16	14	UNC	3	—	—	—	YGBB525	31.66
7/16	20	UNF	3	—	—	—	YGBB545	31.66
1/2	13	UNC	3	—	—	—	YGBB565	37.47
1/2	20	UNF	3	—	—	—	YGBB585	37.47
9/16	12	UNC	3	—	—	—	YGBB605	73.41
9/16	18	UNF	3	—	—	—	YGBB625	73.41
5/8	11	UNC	4	—	—	—	YGBB645	86.38
5/8	18	UNF	4	—	—	—	YGBB665	86.38
3/4	10	UNC	4	—	—	—	YGBB705	111.24
3/4	16	UNF	4	—	—	—	YGBB725	111.24



Call For Large
Quantity Discounts !



**High Performance
Taps**
Modified Bottoming for
Stainless Steels and Steels
up to 35Hrc

- Style Features:
- Super High Speed Steel
 - Unique Flute Geometry for Lower Tapping Torque
 - Neck Design for CNC Equipment

Size	Pitch	Overall Length	No. of Flutes	H3	Price
6	32	6"	3	YGG8243	34.74
8	32	6"	3	YGG8283	34.74
10	24	6"	3	YGG8323	34.74
10	32	6"	3	YGG8343	34.74
1/4	20	6"	3	YGG8403	39.79
1/4	28	6"	3	YGG8423	39.79
5/16	18	6"	3	YGG8443	42.26
5/16	24	6"	3	YGG8463	42.26
3/8	16	6"	3	YGG8483	47.88
3/8	24	6"	3	YGG8503	47.88
7/16	14	6"	3	YGG8523	56.59
7/16	20	6"	3	YGG8543	56.59
1/2	13	6"	3	YGG8563	64.48
1/2	20	6"	3	YGG8583	64.48



Call For Large
Quantity Discounts !

**Extended Spiral
Fluted Bottom Taps**
TIN COATED
**6" Lengths — for
stainless steels up to
Hrc28**



High Performance Taps
Spiral Pointed Plug Style for Stainless Steels and Steels
up to 35Hrc

Size	Pitch	Thread Series	No. of Flutes	Steam Oxide Treat				Price Ea.
				H2	H3	H4	H5	
2	56	UNC	2	YGM9082	—	—	—	\$34.33
4	40	UNC	2	YGM9162	—	—	—	16.60
5	40	UNC	3	YGM9202	—	—	—	16.60
6	32	UNC	3	—	YGM9243	—	—	13.86
8	32	UNC	3	—	YGM9283	—	—	13.86
10	24	UNC	3	—	YGM9323	—	—	13.86
10	32	UNF	3	—	YGM9343	—	—	13.86
1/4	20	UNC	3	—	YGM9403	—	—	16.41
1/4	28	UNF	3	—	YGM9423	—	—	16.41
5/16	18	UNC	3	—	—	—	YGM9445	18.26
5/16	24	UNF	3	—	—	YGM9464	—	18.26
3/8	16	UNC	3	—	—	—	YGM9485	20.88
3/8	24	UNF	3	—	—	YGM9504	—	20.88
7/16	14	UNC	3	—	—	—	YGM9525	27.62
7/16	20	UNF	3	—	—	—	YGM9545	27.62
1/2	13	UNC	3	—	—	—	YGM9565	32.71
1/2	20	UNF	3	—	—	—	YGM9585	32.71
9/16	12	UNC	3	—	—	—	YGM9605	64.09
9/16	18	UNF	3	—	—	—	YGM9625	64.09
5/8	11	UNC	3	—	—	—	YGM9645	75.40
5/8	18	UNF	3	—	—	—	YGM9665	75.40
3/4	10	UNC	3	—	—	—	YGM9705	97.10
3/4	16	UNF	3	—	—	—	YGM9725	97.10



- Style Features:
- Super High Speed Steel
 - Unique Flute Geometry for Lower Tapping Torque
 - Neck Design for CNC Equipment



Call For Large
Quantity Discounts !





Gun® Taps for Through Holes

EM-SS-VariTap™ Series for Stainless, Aluminum and Steels



Call For Large Quantity Discounts !

Size	Pitch	Thread Series	No. of Flutes	H Limit		1-11		12+
						Pcs.	Pcs.	Pcs.
2	56	UNC	2	H2	GI82623-5357241	\$33.55	\$25.16	
3	48	UNC	2	H2	GI82600-5357246	26.85	20.14	
4	40	UNC	2	H2	GI82601-5357249	22.01	16.51	
4	48	UNF	2	H2	GI82683-5357275	22.01	16.51	
5	40	UNC	3	H2	GI82603-5357279	22.01	16.51	
6	32	UNC	3	H3	GI82605-5357285	18.45	13.84	
6	40	UNF	3	H3	GI82642-5365709	18.45	13.84	
8	32	UNC	3	H3	GI82607-5365743	18.45	13.84	
8	36	UNF	3	H2	GI82686-5365769	18.45	13.84	
10	24	UNC	3	H3	GI82609-5365774	18.45	13.84	
10	32	UNF	3	H3	GI82610-5365763	18.45	13.84	
12	24	UNC	3	H3	GI82688-5365800	20.45	15.34	
12	28	UNF	3	H3	GI82689-5365803	20.45	15.34	
1/4	20	UNC	3	H3	GI82613-5365806	15.99	13.71	
1/4	28	UNF	3	H3	GI82614-5365829	20.45	15.34	
5/16	18	UNC	3	H3	GI82615-5365931	22.86	17.14	
5/16	24	UNF	3	H3	GI82616-5365945	17.57	13.18	
3/8	16	UNC	3	H3	GI82617-5365974	25.99	19.49	
3/8	24	UNF	3	H3	GI82618-5366946	25.99	19.49	
7/16	14	UNC	3	H3	GI82619-5366965	33.55	25.16	
7/16	20	UNF	3	H3	GI82620-5366978	33.55	25.16	
1/2	13	UNC	3	H3	GI82621-5366074	38.69	29.02	
1/2	20	UNF	3	H3	GI82622-5366088	38.69	29.02	
9/16	12	UNC	3	H3	GI82653-5366132	59.98	44.99*	
9/16	18	UNF	3	H3	GI82654-5366136	59.98	44.99*	
5/8	11	UNC	3	H3	GI82625-5366140	70.26	52.69*	
5/8	18	UNF	3	H3	GI82626-5367004	70.26	52.69*	
3/4	10	UNC	3	H3	GI82627-5367034	110.37	82.78*	
3/4	16	UNF	3	H3	GI82628-5367061	110.37	82.78*	
7/8	9	UNC	3	H4	GI82695-5367068	143.31	107.48*	
7/8	14	UNF	3	H4	GI82696-5367075	143.31	107.48*	
1	8	UNC	3	H4	GI82697	131.42	112.64*	
1	12	UNF	3	H4	GI82679-5366409	195.32	146.49*	

* 6 PCS

Plug Chamfer 4 to 5 Pitches
EM Taps are suitable for UNJ Aerospace internal threading applications



Spiral Fluted Taps for Blind Holes — EM-SS-VariTap™ Series

EM-SS-VariTap™ Series for Stainless, and all Steels

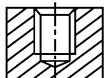
**Modified Bottoming Chamfer
2-1/2 to 3-1/2 Pitch**

Call For Large Quantity Discounts !



Size	Pitch	Thread Series	No. of Flutes	H Limit	Order Number	1-11		12+
						Pcs.	Pcs.	Pcs.
2	56	UNC	2	H2	GI84671-5356668	\$50.19	\$37.64	
3	48	UNC	2	H2	GI84672-5356731	43.48	32.61	
4	40	UNC	3	H2	GI84601-5356734	32.96	24.72	
4	48	UNF	3	H2	GI84683-5356748	32.96	24.72	
5	40	UNC	3	H2	GI84603-5356751	32.96	24.72	
6	32	UNC	3	H3	GI84605-5356758	26.20	19.65	
6	40	UNF	3	H3	GI84685-5356775	26.20	19.65	
8	32	UNC	3	H3	GI84607-5357306	26.20	19.65	
10	24	UNC	3	H3	GI84609-5357383	26.85	20.14	
10	32	UNF	3	H3	GI84610-5357398	26.85	20.14	
12	24	UNC	3	H3	GI84688-5364105	29.60	22.20	
12	28	UNF	3	H3	GI84689-5364108	29.60	22.20	
1/4	20	UNC	3	H3	GI84613-5364451	29.60	22.20	
1/4	28	UNF	3	H3	GI84614-5364484	29.60	22.20	
5/16	18	UNC	3	H3	GI84615-5364502	32.96	24.72	
5/16	24	UNF	3	H3	GI84616-5364515	32.96	24.72	
3/8	16	UNC	3	H3	GI84617-5364544	36.72	27.54	
3/8	24	UNF	3	H3	GI84618-5364559	36.72	27.54	
7/16	14	UNC	3	H3	GI84619-5364577	53.63	40.22	
7/16	20	UNF	3	H3	GI84620-5364610	53.63	40.22	
1/2	13	UNC	3	H3	GI84621-5364624	65.31	48.98	
1/2	20	UNF	3	H3	GI84622-5364637	65.31	48.98	
9/16	12	UNC	3	H3	GI84653-5364671	99.06	74.29*	
9/16	18	UNF	3	H3	GI84654-5364677	99.06	74.29*	
5/8	11	UNC	3	H3	GI84625-5364683	108.76	81.57*	
5/8	18	UNF	3	H3	GI84626-5364691	108.76	81.57*	
3/4	10	UNC	4	H3	GI84627-5364699	140.51	105.39*	
3/4	16	UNF	4	H3	GI84628-5364706	140.51	105.39*	
7/8	9	UNC	4	H4	GI84695-5364714	208.44	156.33*	
7/8	14	UNF	4	H4	GI84696-5364721	208.44	156.33*	
1	8	UNC	4	H4	GI84697-5364726	273.50	205.13*	
1	12	UNF	4	H4	GI84668-5364729	273.50	205.13*	

* 6PCS



EM Taps are suitable for UNJ Aerospace internal threading applications

- Style Features:**
- Special High Vanadium Steel
 - Spiral Flute for Better Chip Removal
 - Surface Treatment Options: TiN, SH-50 Black Oxide, Bright
 - Bottoming or Modified Bottoming Chamfer
 - Neck Design for CNC Equipment

Recommended Application

- Stainless Steels < 275 Bhn
- Steel and Steel Alloys < 275 Bhn
- Wrought and Cast Aluminum (TiN and Bright only)
- Copper and Copper Alloys (TiN and Bright)
- Plastic (TiN and Bright)



High Performance Taps

Tin Coated Spiral Point Plug for multi purpose thru holes

Style Features:

- TIN Coated HSS-V Vanadium Alloy High Speed Steel
- For All Steels, Stainless Steels, and cast iron.
- Unique Flute Geometry for Lower Tapping Torque
- Neck Design for CNC Equipment



Size	Pitch	Thread Series	No. of Flutes	Steam Oxide Treat		Price Ea.
				H2	H3	
2	56	UNC	2	YGL0082	—	\$13.97
4	40	UNC	2	YGL0162	—	10.36
5	40	UNC	2	YGL0202	—	10.36
6	32	UNC	2	—	YGL0243	9.50
8	32	UNC	3	—	YGL0283	9.50
10	24	UNC	3	—	YGL0323	9.50
10	32	UNF	3	—	YGL0343	9.50
1/4	20	UNC	3	—	YGL0403	10.16
1/4	28	UNF	3	—	YGL0423	10.16
5/16	18	UNC	3	—	YGL0443	11.62
5/16	24	UNF	3	—	YGL0463	11.62
3/8	16	UNC	3	—	YGL0483	13.16
3/8	24	UNF	3	—	YGL0503	13.16
7/16	14	UNC	3	—	YGL0523	16.76
7/16	20	UNF	3	—	YGL0543	16.76
1/2	13	UNC	3	—	YGL0563	18.76
1/2	20	UNF	3	—	YGL0583	18.76
9/16	12	UNC	3	—	YGL0603	27.38
9/16	18	UNF	3	—	YGL0623	27.38
5/8	11	UNC	3	—	YGL0643	31.57
5/8	18	UNF	3	—	YGL0663	31.57
3/4	10	UNC	3	—	YGL0703	45.38
3/4	16	UNF	3	—	YGL0723	45.38

High Performance Taps

Modified Bottoming for multi purpose blind holes, steam oxide

Style Features:

- HSS-V Vanadium Alloy High Speed Steel
- For All Steels, Stainless Steels, and cast iron.
- Unique Flute Geometry for Lower Tapping Torque
- Neck Design for CNC Equipment



Size	Pitch	Thread Series	No. of Flutes	Steam Oxide Treat		Price Ea.
				H2	H3	
2	56	UNC	2	YGF4082	—	\$11.90
4	40	UNC	2	YGF4162	—	7.83
5	40	UNC	2	YGF4202	—	7.83
6	32	UNC	2	—	YGF4243	6.53
8	32	UNC	3	—	YGF4283	6.53
10	24	UNC	3	—	YGF4323	6.53
10	32	UNF	3	—	YGF4343	6.53
1/4	20	UNC	3	—	YGF4403	7.26
1/4	28	UNF	3	—	YGF4423	7.26
5/16	18	UNC	3	—	YGF4443	8.16
5/16	24	UNF	3	—	YGF4463	8.16
3/8	16	UNC	3	—	YGF4483	9.19
3/8	24	UNF	3	—	YGF4503	9.19
7/16	14	UNC	3	—	YGF4523	11.90
7/16	20	UNF	3	—	YGF4543	11.90
1/2	13	UNC	3	—	YGF4563	13.81
1/2	20	UNF	3	—	YGF4583	13.81
9/16	12	UNC	3	—	YGF4603	22.78
9/16	18	UNF	3	—	YGF4623	22.78
5/8	11	UNC	3	—	YGF4643	26.71
5/8	18	UNF	3	—	YGF4663	26.71
3/4	10	UNC	3	—	YGF4703	41.97
3/4	16	UNF	3	—	YGF4723	41.97



Style Features:

- High Performance Spiral Point Plug Style.
- Unique Flute Geometry for Lower Tapping Torque
- Reinforced Neck Design for CNC Equipment



NEW

Specify Surface Treatment at time of order: 00=Bright, 01=Steam Oxide

Size	Pitch	Thread Series	No. of Flutes	Steam Oxide Treat				Price Ea.
				H2	H3	H4	H5	
2	56	UNC	2	OSG28056	—	—	—	\$24.50
4	40	UNC	2	OSG28064	—	—	—	16.16
5	40	UNC	2	OSG28070	—	—	—	16.16
6	32	UNC	2	—	OSG28124	—	—	13.43
8	32	UNC	3	—	OSG28128	—	—	13.43
10	24	UNC	3	—	OSG28134	—	—	13.43
10	32	UNF	3	—	OSG28138	—	—	13.43
1/4	20	UNC	3	—	OSG28300	—	—	14.90
1/4	28	UNF	3	—	OSG28304	—	—	14.90
5/16	18	UNC	3	—	—	—	OSG28408	16.72
5/16	24	UNF	3	—	—	OSG28362	—	16.72
3/8	16	UNC	3	—	—	—	OSG28416	18.87
3/8	24	UNF	3	—	—	OSG28368	—	18.87
7/16	14	UNC	3	—	—	—	OSG28420	24.50
7/16	20	UNF	3	—	—	—	OSG28422	24.50
1/2	13	UNC	3	—	—	—	OSG28424	28.34
1/2	20	UNF	3	—	—	—	OSG28426	28.34
9/16	12	UNC	3	—	OSG28576	—	—	39.13
9/16	18	UNF	3	—	OSG28578	—	—	39.13
5/8	11	UNC	3	—	—	—	OSG28432	51.39
5/8	18	UNF	3	—	—	—	OSG28434	51.39
3/4	10	UNC	3	—	—	—	OSG28436	80.62
3/4	16	UNF	3	—	—	—	OSG28438	80.62

Style Features:

- High Performance Modified Bottom Style. (2.5P-3P)
- Unique Flute Geometry for Lower Tapping Torque
- Reinforced Neck Design for CNC Equipment



NEW

Specify Surface Treatment at time of order: 00=Bright, 01=Steam Oxide

Size	Pitch	Thread Series	No. of Flutes	Steam Oxide Treat				Price Ea.
				H2	H3	H4	H5	
2	56	UNC	2	OSG29056	—	—	—	\$36.69
4	40	UNC	2	OSG29064	—	—	—	24.23
5	40	UNC	3	OSG29070	—	—	—	24.23
6	32	UNC	3	—	OSG29124	—	—	19.67
8	32	UNC	3	—	OSG29128	—	—	19.67
10	24	UNC	3	—	OSG29134	—	—	19.67
10	32	UNF	3	—	OSG29138	—	—	19.67
1/4	20	UNC	3	—	OSG29300	—	—	21.35
1/4	28	UNF	3	—	OSG29304	—	—	21.35
5/16	18	UNC	3	—	—	—	OSG29408	26.24
5/16	24	UNF	3	—	—	OSG29362	—	26.24
3/8	16	UNC	3	—	—	—	OSG29416	30.50
3/8	24	UNF	3	—	—	OSG29368	—	30.50
7/16	14	UNC	3	—	—	—	OSG29420	45.56
7/16	20	UNF	3	—	—	—	OSG29422	45.56
1/2	13	UNC	3	—	—	—	OSG29424	53.69
1/2	20	UNF	3	—	—	—	OSG29426	53.69
9/16	12	UNC	4	—	OSG29486	—	—	74.13
9/16	18	UNF	4	—	OSG29488	—	—	74.13
5/8	11	UNC	4	—	—	—	OSG29432	94.55
5/8	18	UNF	4	—	OSG29334	—	—	94.55
3/4	10	UNC	4	—	—	—	OSG29436	121.60
3/4	16	UNF	4	—	—	—	OSG29438	121.60

TIN Coated Premium Deburring Kit for exotic materials.

VARGUS



Includes:

- Aluminum Knurled Handle
- "B" & "E" Extension Holders.
- B10P, B11P, B20P, B30P, E100P, E111P, E200P, E300P TIN Coated Deburring Blades.

Order No. VAR29272

Sale \$47.12

Starrett®

30' Pro-Site Tape Measure



Order No. STA67672

Impact resistant high visibility case. Reliable Tru-Lok® gives positive locking. 1" Wide Nylon Coated Blade with shock absorber for extended tip life.

Sale Price \$19.99



The new Starrett 796 Electronic Micrometer provides IP67 level of protection against coolant, water, chips, dirt, dust, and other contaminants in hostile shop environments. Includes plastic case.

Starrett

Order No. STA-01116
 0-1" /0-25mm Electronic Micrometer
Sale \$289.00

Features and Specifications

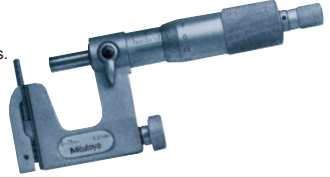
- Large, easy-to-read (.275"/7mm), high-contrast LCD digital readout
- Extremely hard, stable and smooth operating ratcheting thimble
- Micro-lapped carbide measuring faces
- Automatic OFF after 20 minutes of non-use
- Instant inch/millimeter conversion
- Measurement HOLD button. Resolution .0005". Accuracy +/- .0001"
- Ability to zero tool at any position as well as retain and return to the true zero reading of the micrometer
- Two 3-volt batteries included for more than one year of normal usage. Limited Quantities



Mitutoyo

Uni-Mike Interchangeable Anvil Type

- Measures tube thickness, shoulder-edge distance, rivet head height etc. with interchangeable anvils.
- Flatness of measuring face 0.000024", base 0.00008"
- Parallelism: 0.00012"



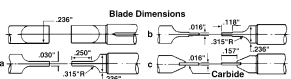
Part No.	Range	Resolution	Accuracy	Remarks	Price
MTI117-107	0-1"	0.0001"	±0.0002"	w/flat and rod anvils	\$199.75
MTI117-108	1-2"	0.0001"	±0.0002"	w/flat and rod anvils + Std.	234.60

Blade Micrometers-Non-Rotating Spindle Type



- The anvil and the spindle have a blade for measuring the groove diameter of shafts, key-ways and other hard-to-reach portions.
- Parallelism: 0.00012" up to 2"

Mitutoyo



Part No.	Range	Resolution	Accuracy	Remarks	Price
MTI122-125	0-1"	0.0001"	±0.00015"	Blade Dimension: A	\$263.50
MTI122-126	1-2"	0.0001"	±0.00015"	Blade Dimension: A	275.40
MTI122-127	2-3"	0.0001"	±0.00015"	Blade Dimension: A	341.00
MTI122-128	3-4"	0.0001"	±0.0002"	Blade Dimension: A	364.00
MTI122-135	0-1"	0.0001"	±0.00015"	Blade Dimension: B	357.00
MTI122-151	0-1"	0.0001"	±0.00015"	Blade Dimension: C	365.00

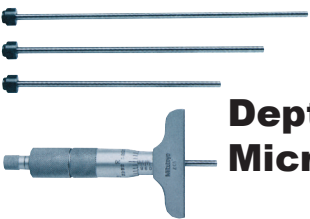
Mitutoyo

Dial Indicators

AGD Series 2 - Inch Dial Face
 RPR = Range Per Revolution



Lug Back Order No.	Grad.	RPR	Dial Range	Reading	Accuracy	Price
MTI2416S	.001	0.1"	1.0"	0-100	±0.002"	123.00
MTI2424S-19	.001	0.1"	2.0"	0-100	±0.003"	227.00



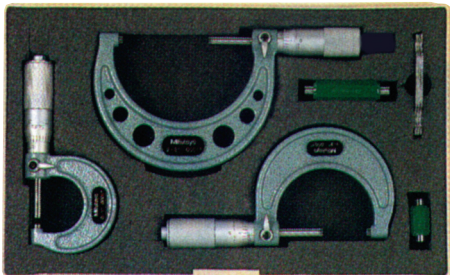
Depth Micrometers

- Ratchet stop for consistent and repetitive measurements.
- .157" interchangeable rods, calibrated and tested.
- Fitted carrying case.
- Flatness of base: 0.00005", face 0.0001".
- Instrument accuracy: ± 0.00015"

Mitutoyo

Order No.	Range	Res.	Remarks	Price
MTI129-127	0-4"	0.001"	Base Length 2.5", 4 Interchangeable Rods	\$181.05
MTI129-128	0-6"	0.001"	Base Length 2.5", 6 Interchangeable Rods	218.45
MTI129-149	0-12"	0.001"	Base Length 2.5", 12 Interchangeable Rods	452.00
MTI129-131	0-4"	0.001"	Base Length 4.0", 4 Interchangeable Rods	198.90
MTI129-132	0-6"	0.001"	Base Length 4.0", 6 Interchangeable Rods	232.90
MTI129-150	0-12"	0.001"	Base Length 4.0", 12 Interchangeable Rods	472.00

Mitutoyo



0"-3" Set
 Sizes 0-1" & 1-2" are Friction Thimble,
 Size 2-3" is Ratchet Stop
 includes two micrometer standards.

Order No. MTI 103-922

Sale \$391.20

Features - Both Sets

- .0001" Resolution
- Setting standards
- Adjustment wrenches
- Supplied in Fitted case

Mitutoyo



0"-6" Set
 Sizes 0-1" & 1-2" are Friction Thimble,
 Sizes 2-3", 3-4", 4-5" & 5-6" are Ratchet Stop
 includes five micrometer standards.

Order No. MTI 103-907-40

Sale \$793.21



Bore Gage Setting Master Kit Inch and Metric

Fowler's new Bore Gage Setting Master Kit is used for accurately setting any bore gage up to 6" in diameter to an accuracy of .0001"

Each Set Includes:

- Base Anvil: 2.750 x .90"
- Adjustable Anvil: 2.375" x .375" (two each)
- Internal Capacity: 6" / 150mm
- Depth Capacity: 1" / 25mm
- Centralizer Capacity width: 2.625" / 66.7mm
- Quick-release holder for fast adjustment.

- Also Included:
- 36pc Gage Block Set
- Tolerance to .00005"
- Certificate of Calibration to N.I.S.T
- Custom Fitted aluminum case.



Complete Kit Order No.
FW5364600
Sale \$445.27

Fowler **INDI-X**blue

Now available in .5" /
12.5mm or 1" /
25mm Ranges!



- Direct Inch/Metric Conversion
- Auto Off feature
- 2-1/4" dial face
- Lugback and 3/8" stem mountings.
- Resolution .0005" / .01mm
- Absolute/incremental reading
- Floating zero
- Carbide tipped point.

Order Number	Description	Price
FW54520250	1"/25mm Indi-X Blue Indicator	\$133.36
FW54520260	1"/25mm/64ths Indi-X Blue Indicator	135.38
FW54520255	.5"/12.5mm Indi-X Blue Indicator	123.96

Extender 1.4"-6" or 35-160mm Dial Bore Gage Set with Carbide Anvils!

XTENDER

- Easy to read.
- Economical
- Graduation: .0005" or .01mm
- Insulated grip.
- 1.4" to 6" range or 35 to 160mm
- Chrome plated handle
- Includes extension holder and fitted case.
- Carbide anvils.



Order Number	Description	Price
FW52646400	1.4"-6" Inch X-Tender Bore Gage Set	\$236.50
FW52646220	35-160mm Metric X-Tender Bore Gage Set	269.32



XTENDER

1.4"-6" Electronic Bore Gage Set

Bore Gage Features:

- Range: 1.4-6" / 35-160mm
- Carbide Anvils
- Easily Adjustable and Self-centering
- Includes extension holder
- Shop Hardened case.

Indicator Features:

- Dual reading inch/metric electronic indicator
- Bar graph and numeric digital display
- Resolution: .00005" / .001mm
- Preset with recall
- ABS/INC measurement. Min/Max/TIR



Complete Kit Order No.
FW5464601
Sale \$408.53

Part No.	Range	Resolution	Accuracy	Remarks	Price
MTI103-135	0-1"	0.0001"	±0.0001"	Friction Thimble Type	114.75
MTI103-136	1-2"	0.0001"	±0.0001"	Friction Thimble Type w/Std.	135.15
MTI103-259	0-1"	0.001"	±0.0001"	Ratchet Stop Type	124.00
MTI103-132	1-2"	0.0001"	±0.0001"	Ratchet Stop Type w/Std.	139.00
MTI103-260	0-1"	0.0001"	±0.0001"	Ratchet Stop Type	134.00
MTI103-262	1-2"	0.0001"	±0.0001"	Ratchet Stop Type w/Std.	157.00
MTI103-217	2-3"	0.0001"	±0.0001"	Ratchet Stop Type w/Std.	148.75
MTI103-218	3-4"	0.0001"	±0.00015"	Ratchet Stop Type w/Std.	170.45
MTI103-219	4-5"	0.0001"	±0.00015"	Ratchet Stop Type w/Std.	185.30
MTI103-220	5-6"	0.0001"	±0.00015"	Ratchet Stop Type w/Std.	204.85
MTI103-221	6-7"	0.0001"	±0.0002"	Ratchet Stop Type w/Std.	273.00
MTI103-222	7-8"	0.0001"	±0.0002"	Ratchet Stop Type w/Std.	289.00
MTI103-223	8-9"	0.0001"	±0.0002"	Ratchet Stop Type w/Std.	319.00
MTI103-224	9-10"	0.0001"	±0.00025"	Ratchet Stop Type w/Std.	330.25
MTI103-225	10-11"	0.0001"	±0.00025"	Ratchet Stop Type w/Std.	347.00
MTI103-226	11-12"	0.0001"	±0.00025"	Ratchet Stop Type w/Std.	362.00



Outside Micrometers

- Carbide faces. Positive locking clamp.
- Ratchet stop or Friction Thimble for exact repetitive readings.
- Baked enamel finished frame.
- Fitted carrying case.

Part No.	Range	Resolution	Accuracy	Remarks	Price
MTI293-330-30	0-1"	0.00005"	±0.00005"	With SPC output, Ratchet Stop **	\$272.00
MTI293-331-30	1-2"	0.00005"	±0.00005"	With SPC output & Std., Ratchet Stop**	320.00
MTI293-332-30	2-3"	0.00005"	±0.00005"	With SPC output & Std., Ratchet Stop**	359.00
MTI293-333-30	3-4"	0.00005"	±0.0001"	With SPC output & Std., Ratchet Stop**	427.00
MTI293-350-30	4-5"	0.0001"	±0.0001"	With SPC output & Std., Ratchet Stop**	525.00
MTI293-351-30	5-6"	0.0001"	±0.0001"	With SPC output & Std., Ratchet Stop**	546.00
MTI293-352-30	6-7"	0.0001"	±0.00015"	With SPC output & Std., Ratchet Stop**	548.00
MTI293-353-30	7-8"	0.0001"	±0.00015"	With SPC output & Std., Ratchet Stop**	599.00
MTI293-354-30	8-9"	0.0001"	±0.00015"	With SPC output & Std., Ratchet Stop**	620.00
MTI293-355-30	9-10"	0.0001"	±0.0002"	With SPC output & Std., Ratchet Stop**	648.00
MTI293-356-30	10-11"	0.0001"	±0.0002"	With SPC output & Std., Ratchet Stop**	653.00
MTI293-357-30	11-12"	0.0001"	±0.0002"	With SPC output & Std., Ratchet Stop**	672.00
MTI293-782	12-13"	0.0001"	±0.00025"	With SPC output & Std., Ratchet Stop	901.00
MTI293-783	13-14"	0.0001"	±0.00025"	With SPC output & Std., Ratchet Stop	922.00
MTI293-784	14-15"	0.0001"	±0.00025"	With SPC output & Std., Ratchet Stop	940.00
MTI293-785	15-16"	0.0001"	±0.0003"	With SPC output & Std., Ratchet Stop	950.00
MTI293-786	16-17"	0.0001"	±0.0003"	With SPC output & Std., Ratchet Stop	965.00
MTI293-787	17-18"	0.0001"	±0.0003"	With SPC output & Std., Ratchet Stop	987.00
MTI293-788	18-19"	0.0001"	±0.00035"	With SPC output & Std., Ratchet Stop	1000.00
MTI293-789	19-20"	0.0001"	±0.00035"	With SPC output & Std., Ratchet Stop	1020.00
MTI293-335-30	0-1"	0.00005"	±0.00005"	With SPC output Friction Thimble**	272.00
MTI293-336-30	1-2"	0.00005"	±0.00005"	With SPC output & Std., Frict. Thimble**	320.00
MTI293-340-30	0-1"	0.00005"	±0.00005"	Without SPC output, Ratchet Stop**	226.00
MTI293-348-30	0-1"	0.00005"	±0.00005"	Without SPC output, Friction Thimble**	226.00
MTI293-344-30	0-1"	0.00005"	±0.00005"	Without SPC output, Friction Thimble**	193.00
MTI293-349-30	0-1"	0.0001"	±0.0001"	Without SPC output, Friction Thimble**	226.00

Mitutoyo **Digimatic** Micrometers

- Flatness: 0.000012"/0.3µm - Parallelism: 0.00004" up to 2", 0.00008" up to 4"
- Extra Large LCD Readout. Preset Capability.
- Functions available: Origin setting, inch/mm, Zero-setting, Error alarm, Auto-sleep, Data Output.
- Carbide tipped measuring faces.



New Ratchet-Friction Thimble (internal 'clicking' mechanism) MTI293-344



Ratchet Stop MTI293-340



Std. Friction Thimble MTI293-348

****Now IP65 Water/Dust Resistant**

Mitutoyo

Tubular Inside Micrometers

- Wide range of ID measurements by combining extension pipes and anvils with the micrometer head. In Fitted Case.

Order No.	Graduation	Measuring Range	List Price	Sale Price
MTI139-201	.001"	1.5 - 12"	\$296.00	\$251.60
MTI139-202	.001"	4 - 40"	\$448.00	\$380.80



Precision Angle Gage Set

5° to 90° in 5° increments



- 18 Individual gages
- 8 Gaging surfaces per gage
- Each gage checks primary, 1/2 primary & complementary angles
- Quick & accurate inspection of angles & I.D. or O.D. chamfers

Order No. SHA-L300AG
Sale Price \$46.46

Digital Protractor

- 6" Stainless Steel protractor arm with knurled locking nut.
- Large easy to read LCD Display
- Absolute and Relative measurements
- Accuracy 0.1°
- Range 0.00° to 180.00°
- Resolution 0.05°
- Display can be inverted for easy reading
- Hold Function
- 1-CR2032 Battery (included)



GENERAL

Order No. GEN-1702
Digital Protractor
Sale \$34.10

Radius Gage Sets

- Stainless steel, hardened, satin chrome finish
- Each blade marked with size
- Plastic case included



25-Piece Set
(with holder)
1/64" thru 17/64" by 64ths
9/32" thru 1/2" by 32nds
Order No. SHA-L300CX

Sale \$46.46

8-Piece Set
(no holder) Not Pictured
9/16" thru 1" by 16ths
Order No. SHA-L300E

Sale \$83.16

8-Piece Set
(no holder) Not Pictured
1-1/16" thru 1-1/2" by 16ths
Order No. SHA-L300XX

Sale \$122.50



Precision Matched 1-2-3 Blocks

Includes fitted aluminum case Total of 11 holes on three faces. 5 holes tapped 5/16-18, arranged for holding down and conversion into angle plates. 6 holes drilled through with deep recess for easy clamping. Supplied .0001-.0003" Oversize for nominal lapping



Order No. SHA-123PW
\$42.00 per set



- Case Hardened 55 to 62 HRC
- 1" x 2" x 3"
- tol +/- .0001" squareness per inch

Mitutoyo Rectangular Steel Gage Block Set

Order No. MTI-516-902-26

Sale Price \$1,832.00

81 Piece Set Includes:

- 9 blocks—.001" thru .1009" steps of .0001"
- 49 Blocks—.101" thru .149" step of .001"
- 19 Blocks—.150" thru .950" step of .050"
- 4 Blocks—.1.000" thru 4.000" step of 1.000"
- Complete with Wooden Case
- A Certificate of Accuracy, traceable to the NIST, is furnished for each Mitutoyo gage block set and individual block.
- Grade "0" Is used within an inspection area to verify the accuracy of plug and snap gages as well as for setting electronic gages.



TIN Coated

1" x 2" x 3"
squareness .0003"
RC 55-60 Case Hard

Order No. SHA-TIN123
23 holes 5—3/8-16 tapped holes
\$48.00 per pair



Matched Setup Blocks

Economy 1" x 2" x 3"
+/- .0003" Squareness Per Inch
Case Hard 55-62 Rc

Order No. SHA-123ECO
23 holes 5—3/8-16 tapped holes

\$23.06 per pair



Precision 1" x 2" x 3"
+/- .0001" Squareness per Inch,
Case Hard 55-62 Rc

Order No. SHA-123P
23 holes 5—3/8-16 tapped holes

\$39.83 per pair



Precision 2" x 4" x 6"
+/- .0003" Squareness per Inch,
Case Hard 55-62 Rc

Order No. SHA-E246
23 holes 5—5/8-11 tapped holes

\$140.93 per pair



Precision 4" x 6" x 8"
+/- .0003" Squareness per Inch,
Case Hard 55-62 Rc

Order No. SHA-E468
23 holes 5—5/8-11 tapped holes

\$600.00 per pair



Steel Rectangle



Gage Block Sets Steel Rectangle

Grade B = +/- .000050 Tolerance
Grade 2 = +.000004" - .000002"
Grade 3 (A & B) = +.000008" - .000004"

36 Piece Set Includes:

- 10 Blocks .1000 thru .1009 step of .0001"
- 9 Blocks .101 thru .109 step of .001"
- 9 Blocks .110 thru .190 step of .01"
- 4 Blocks .200, .300, .400 and .500"
- 3 Blocks 1.00, 2.00 and 4.00"
- 1 Block .0500"
- Complete with Wooden Case

81 Piece Set Includes:

- 9 blocks—.1001" thru .1009" step of .0001"
- 49 Blocks—.101" thru .149" step of .001"
- 19 Blocks—.150" thru .950" step of .050"
- 4 Blocks—.1.000" thru 4.000" step of 1.000"
- Complete with Wooden Case

Order No.	Description	Grade	Sale
SHA81BPC	81 Piece Set/Rectangle	B	\$255.00
SHA812PC	81 Piece Set/Rectangle	2	650.09
SHA813PC	81 Piece Set/Rectangle	3	343.68
SHA36BPC	36 Piece Set/Rectangle	B	119.68
SHA362PC	36 Piece Set/Rectangle	2	353.83
SHA363PC	36 Piece Set/Rectangle	3	225.00

Large Gage Block Sets Steel Rectangle



Specifications:

- 8pc set includes: 5", 6", 7", 8", 10", 12" 16", 20"
- Certificate of Inspection Included

8 pc set Spec GGG Grade B
Order No. SHAGBL1
Sale \$699.00

8 pc set ASME Grade AS2
Order No. SHAGBL2
Sale \$1,100.00



• Case Hardened 55 to 62 HRC



1" x 2" x 3"
tol +/- .0001" squareness per inch
Order No. SHA-630-4005
1 hole

\$37.81 per set

1" x 2" x 3"
tol +/- .0001" squareness per inch
Order No. SHA-630-4000
Includes Plastic case
23 holes 5—3/8-16 tapped holes

\$41.00 per set



Inch, Fractional and Metric Electronic Digital Calipers

Converts with just a push of a button !!

- with ABS and Zero Function Keys also.
- Includes fitted case.
- ID, OD and depth measurement
- Hardened, Stainless Frame



Order No. **SHA-DC4F**

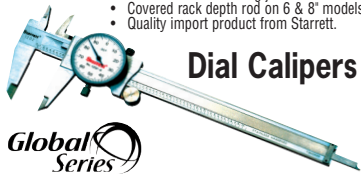
0-6" Fractional/Inch/MM Digital

Sale \$29.00



Starrett®

- Hardened stainless steel bar, measuring surfaces, rack, gears and depth rod.
- Adjustable bezel.
- Thumb-operated fine adjust roll.
- Lock Screws for sliding jaw and dial bezel.
- Covered rack depth rod on 6 & 8" models.
- Quality import product from Starrett.



Dial Calipers



Order No.	Range	Price
STA66964-61467	0-6"	\$145.00
STA66979-61468	0-8"	207.00
STA66980-61466	0-12"	304.00

Dial Calipers **←INSIZE→**



- .001" dial graduation/.100" per revolution.
- Covered rack for longer caliper life
- Supplied in fitted storage case.
- Meets DIN862 Standard. Hardened Stainless construction, satin chrome clamp and thumb wheel.
- For inside, outside, depth and step measurements
- Satin chrome finish; no glare.

Order No.	Range	Sale Price
INS13116	0-6" .100 per rev	\$71.40
INS13118	0-8" .100 per rev	\$94.80
INS13112	0-12" .100 per rev	\$159.00

Dual Reading

Inch/MM Dial Caliper

- .001"/0.01mm dial graduation/.100" per revolution.
- Covered rack for longer caliper life - in fitted case.
- Made of hardened stainless steel.
- Measuring faces hardened, ground & lapped.
- Satin chrome finish; no glare.



0-6"/0-150mm
Order No. **SHA-CDC6M2**
Regular Price \$49.00

Sale \$39.00

0-8"/0-200mm
Order No. **SHA-CDC8M2**
Regular Price \$59.00

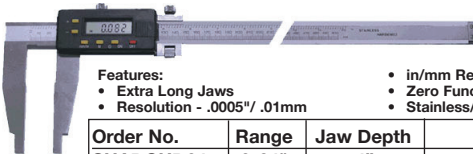
Sale \$45.00

0-12"/0-300mm
Order No. **SHA-CDC12M2**
Regular Price \$129.00

Sale \$98.50



Heavy Duty Electronic Digital Calipers

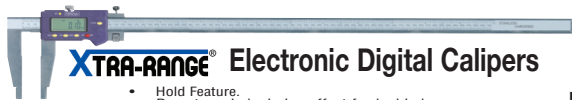


Features:

- Extra Long Jaws
- Resolution - .0005"/.01mm

- in/mm Read at a push of a button
- Zero Function/ Display Hold
- Stainless/Hardened

Order No.	Range	Jaw Depth	Price
SHADCHD24	0-24"	4"	\$399.00
SHACEH40	0-40"	5"	\$550.00



XTRA-RANGE® Electronic Digital Calipers

- Hold Feature.
- Preset mode includes offset for inside jaws.
- Fine Adjustment screw. Wooden case.
- Direct Inch/Metric conversion
- Resolution: .01mm / .0005"
- Includes wooden case.



Order No.	Range	Jaw Depth	Accuracy	Price
FOW54100312	0-12"/300mm	3.5"	.002"	\$280.71
FOW541000241	0-24/600mm"	4"	.003"	\$412.94
FOW541000421	0-40"/1000mm	4.9"	.004"	\$1383.55



6" & 12" Dial Caliper Set

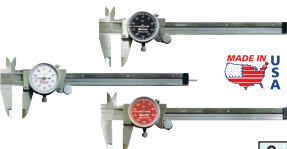
.100" Per Revolution Dial
In Custom Fitted Case
Stainless, Shockproof
Black Dial Face /Red Hands
Order No. **SHA-612B**
\$125.00



.100" Per Revolution Dial
In Custom Fitted Case
Stainless, Shockproof
White Dial Face / Black Hands
Order No. **SHA-612W**
\$125.00



Starrett® USA Made Dial Calipers



- Hardened stainless steel bar, measuring surfaces, rack & gears.
- Knife-edge contacts for inside & outside measurements.
- Sharp black bar graduations on a no-glare satin finish.
- Rack teeth point down to shed foreign matter more easily.
- Positive split gear anti-backlash control.
- Thumb-operated fine adjust nut.
- Furnished in fitted plastic case.

Not the imported one !!



Order No.	Range	Grad.	Rev.	Dial Color	SALE
STA64514	0-6"	.001"	.001"	White	\$271.00
STA64515	0-6"	.001"	.001"	Black	276.00
STA64516	0-6"	.001"	.001"	Red	276.00
STA66295	0-150mm	2mm		Yellow	287.00



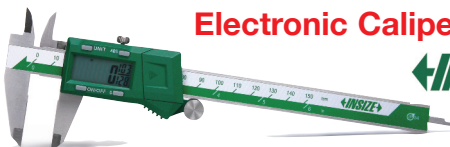
Dial Calipers



Extra-Smooth Movement.
White or black dial face
.100 per revolution (big numbers)
hardened stainless steel satin finish
3 way measuring, ID, OD, Depth.

	Order #	Sale Price
6" white face	SHA-600W	\$45.24ea
6" black face	SHA-600B	45.24ea
8" white face	SHA-800W	54.34ea
8" black face	SHA-800B	48.00ea
12" white face	SHA-120W	98.83ea
12" black face	SHA-120B	98.83ea

Electronic Calipers



- Resolution: 0.0005", 1/128" Fraction, 0.01mm
- Buttons: zero set, mm/inch/fraction conversion, ABS/INC, Power on/off
- Auto Power off. Battery: CR2032
- DIN862, Hardened Stainless steel construction, with locking clamp and thumb wheel, for outside, inside, depth and step measurements.
- Data output via USB with optional cable.
- Supplied in fitted storage case.
- Limited One Year Warranty direct from manufacturer.

Range	Order Number	Price
0-6"/0-150mm	INS1102150	\$ 106.00
0-8"/0-200mm	INS1102200	149.00
0-12"/0-300mm	INS1102300	193.00



Screw Thread Micrometers

Inch Measurement With Anvil Set

Part No.	Range	Resolution	Accuracy	Remarks	Price
MTI126-901	0-1"	0.001"	±0.0002"	With anvil set (126-800)	\$1,040.00
MTI126-902	1-2"	0.001"	±0.0002"	With anvil set (126-800) w/Std.	1,150.00
MTI126-903	2-3"	0.001"	±0.0002"	With anvil set (126-800) w/Std.	1,230.00
MTI126-904	3-4"	0.001"	±0.00025"	With anvil set (126-800) w/Std.	1,330.00
MTI126-905	4-5"	0.001"	±0.00025"	With anvil set (126-800) w/Std.	1,410.00
MTI126-906	5-6"	0.001"	±0.00025"	With anvil set (126-800) w/Std.	1,450.00

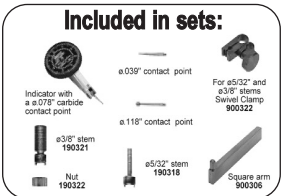


- Interchangeable tips for measuring various screw threads.
- Ratchet stop for constant force.
- Standard bar for zero point adjustment.
- Accuracy - Spindle feed error 0.00012"
- Anvil Set = 3.5 - 64TPI

Truetest Test Indicators Sets



The most direct gear train design ever applied to Test Indicators means— higher levels of sensitivity, reliability, repeatability and accuracy throughout tool life.



- Smooth spindle movement for increase measuring accuracy
- 20° tilted dial face for easy reading
- Anti-magnetic characteristics

Order No.	Range	Grad.	Accuracy	Set Price
MTI513-442T	.060"	.0005"	±0.0005"	\$192.10
MTI513-443T	.016"	.0001"	±0.0002"	242.25
MTI513-446T	.060"	.0005"	±0.0005"	301.00

- 442T has 19.9 mm long point, 0-15-0 Dial Reading
- 443T has 15 mm long point, 0-4-0 Dial Reading
- 446T has 33.9 mm long point (Extra Long), 0-15-0 Dial Reading



"Quick-Set" Test Indicators



- Anti-magnetic*
- Jeweled bearings
- No-clutch structure
- Water and dust resistant
- Glare-free crystal with scratch-resistant coating
- Measuring force 0.3N or less

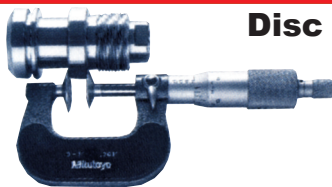
Sale Price:
\$191.25
Order Number: MTI513-403T

Order No.	Range	Graduation	Accuracy	Sale Price
MTI513-402T	.03"	.0005"	±0.0005"	\$148.75
MTI513-403T	.008"	.0001"	±0.0001"	\$191.25



Radius Gage Sets

Order No.	Pieces	Sizes	Price
MTI186-901	25 Gages	1/64"-17/64" by 64ths and 9/32"-1/2" by 32nds	\$ 184.00
MTI186-905	8 Gages	9/16"-1" by 16ths.	463.00



Disc Micrometers

Rotating Spindle Type

- Measures root tangent length of spur and helical gears.
- 0.03" edge thickness to enter narrow recesses.
- Heat insulated grip on frame. • Fitted carrying case.

Part No.	Range	Graduation	Accuracy	Remarks	Price
MTI123-125	0-1"	0.001"	±0.0002"	Disc Diameter: 0.79"	\$234.60
MTI123-126	1-2"	0.001"	±0.0002"	Disc Diameter: 0.79" w/Std.	259.25
MTI123-127	2-3"	0.001"	±0.0003"	Disc Diameter: 0.79" w/Std.	324.00
MTI123-128	3-4"	0.001"	±0.0003"	Disc Diameter: 0.79" w/Std.	353.00



Dial Height Gage

- Hardened Stainless Steel Frame.
- Includes Carbide tipped Scriber
- Fine Adjustment. .001" Graduation

Order No. SHA-HGD-6
0-6" Range

Sale \$ 100.38

Order No. SHA-HGD-12
0-12" Range

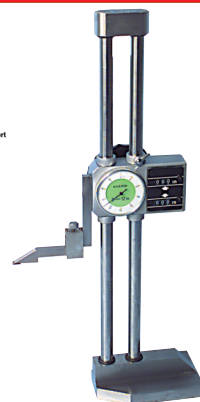
Sale \$ 140.93



Twin Column Digital Count Dial Height Gages

12" Gage
Order No. SHA-TC12HG
Sale \$249.00

18" Gage
Order No. SHA-TC18HG
Sale \$320.00



- Includes:
- Carbide scriber
 - Fine adjustment
 - Large dial indicator and digital counter
 - .001" Graduation
 - .100" (Dual Reading)

24" Gage
Order No. SHA-TC24HG
Sale \$345.00

All New Model SurfTest SJ-210

Features:

- 2.4" color LCD (TFT 320 x 240 pixels) display includes backlighting and oversized fonts. Display direction can be changed to read vertically or horizontally.
- The detector/drive unit can be detached from the display unit for effortless measurement of awkwardly oriented workpieces.
- Wide 14200µm (-7900µin to +6300µin) measurement range.
- Evaluation parameters compatible with Ra, Rq, Rz, Ry, R3z, Rsk, Rku, Rc, RPC, RSm, Rmax*1 Rz1max, HSC and many more
- 19 analysis parameters are provided, including the basic Ra, Rq, Rz, and Ry parameters.
- Max Value, / 16% / Standard Deviation GO / No Go Judgement.
- Auto-sleep function 10-600 Second
- Input/Output: USB, SPC, Printer output, RS232C, Footswitch, Micro SD Card.
- 2-way power system (AC adapter/rechargeable built-in battery). Approx 4 hour full charge run time.
- 16 display languages available.

\$2,489⁹⁹

Order Number: MTI178561

Mitutoyo




20x & 40x Stereo Microscope

- Optical Glass Lens
- Stereo Body Rotatable 360°
- Includes Microscope Illuminator 10W
- Eyepiece rubber protectors and dust cover included.
- Includes 10x Eyepiece
- Power Supply 115v

Order No. SHA-STMIC
Sale \$ 190.67




Interapid
SWITZERLAND

Interapid Indicator #312b-1

Range .060"	Grads .0005"
Dial 1.5" dia.	Marking 0 - 15 - 0
Stylus Lg. .687"	Interapid No. 74.111370

Order No. **BS74111370**
PRICE \$288.00

SWISS MADE



Fowler
XTEST
Indicator-TWICE the range of most indicators

- Range .060"
- Dial Reading 0-15-0
- Jeweled movement.
- Easy to read tilted dial.
- Automatic reversal
- 210° Swivel arc
- Carbide point .080"
- .0005" Graduation.
- 1.50" Dial Diameter

Order No. **FOW52562001**
Sale \$159.05



mini-MAG Protractor


- Embedded magnets with 35lbs pull on both sides and the bottom
- Large easy to read LCD Display
- Measuring range: 360° (4 x 90°)
- Accuracy: +/- .2°
- Battery: 9v (250hrs)
- Display inverts, Hold Feature

Resolution / Repeatability: .05°
Size: L: 2.375" x W: 1.375" H: 2.375"

Mini-Mag protractor provides instant 360° inclination display of any angle.

Order No. **FOW54422450**
Sale \$127.05

BARCOR Internal Chamfer Gages



precision instrument designed to measure the top diameter of a chamfer, countersink, center hole or tapered hole. Just press the spring loaded 3 blade plunger into the chamfer and instantly read the dial in .001" increments.

Guaranteed Accuracy: within .001" 0-90 Degree Models

Larger sizes available, Please inquire.

Range	Order No.	List	Sale
0-3/8"	BAR0090	\$345.00	\$310.50
0-1/2"	BAR5090	295.00	265.50
0-1"	BAR1090	250.00	225.00
1-2"	BAR2090	400.00	360.00



Mitutoyo

New Series 570 with output for SPC

Great DEAL

Digimatic Height Gages

- Now have the ease and speed of digital for a great price.
- New design with extra rigidity, stability and reliability.
- Resolution and repeatability : .0005" / 0.01mm.
- Response speed: No limit. Functions: On/Off, Origin, Zero/ABS, IN/MM, Data Hold.
- Provided with a data output port for SPC output.

Range	Order No.	Sale
0-12"/0-300mm	MTI570312	\$661.00
0-18"/0-450mm	MTI570313	943.00
0-24"/0-600mm	MTI570314	1032.00

XTRA-VALUE Fowler

Internal and External Electronic Caliper Gages



Order No. **FOW54554730**
Inside Caliper Gage .5-6"/150mm Range
Sale \$62.93

- Robust housing
- Large easy to read LCD Display
- Resolution: .01"/.1mm/1/64"
- Accuracy: .01"/.1mm/1/64"
- Battery CR2032
- Spring loaded with locking nut.

Order No. **FOW54554630**
Outside Caliper Gage 0-6"/150mm
Sale \$62.93

Full Flow Blow Guns



SWISS MADE

- Unique valve design provides variable flow
- Powerful blowing force
- Ergonomically designed for comfortable handling
- Durable, lightweight construction
- Max. Working Pressure: 232 PSI
- Air Consumption: 13 CFM @ 6 bar (87psi)
- Temp Range: -40° to +140° F • Air Inlet: 1/4" NPT

Hot Dogs

WARNING: When using the full flow blow gun for cleaning purposes with compressed air over 30 PSI inlet pressure, a safety by-pass nozzle must be installed to comply with OSHA requirements. (Safety glasses or chip guard may also be required)

Full Flow Blow Gun Accessories

Order No.	Item	Price
CEJ11-208-0150	Safety by-pass	\$11.30
CEJ11-208-0380	Venturi by-pass	13.65
CEJ11-208-0550	Air curtain by-pass	17.40

Starrett Basic Precision Measuring Tool Set



- Sets include three of the most commonly used tools for a wide variety of precision measuring.
- Furnished in attractive, protective case.

CLOSE-OUT
• WHILE SUPPLIES LAST •

Basic Set includes Starrett:
No. 436RL-1 1" Outside Micrometer.
No. 120A-6 6" Dial Caliper.
No. C604RE-6 6" Spring Tempered Precision Rule.

Order No. **STA65122**
MSRP Price \$558.00
Sale Price \$390.00

3 Pc. Machinist Tool Kit

Kit Includes:

- One 0-1" micrometer (.0001" grad.)
- One 6" dial caliper (.100" rev.)
- One 6" 4R ruler
- In fitted hard plastic case




Order No. **SHA-3PC**
Sale Price \$59.00

ProTool
PRECISION TOOLING

Thread Measuring Triangles


Checks all standard 60 degree threads for Class of Thread Fit. Attach the triangles to your micrometer with the rubber holders. Insert into thread, and mike the distance over the thread. Each set includes a pair of triangles, 2 rubber holders, and reference chart.



Order Number **AAZ9035** **\$76.00**

Dial Indicator Depth Base

Precision ground and hardened depth base accepts any standard AGD dial indicator with 3/8" stem. Manufactured from hardened steel, ground for flatness and Black Oxide plated.



2 1/2" Long Base	AAZ9228	\$91.40
4" Long Base	AAZ9229	105.97





Fowler FLEX MAG SET

Chrome Flex-Mag Set Includes:

- Corrosion resistant chrome plated flex arm mag base with 85 lb pull magnet. V-Base for versatility.
- AGD Group 2 Dial Indicator Black Face, 2-1/4" Dial Face, 1" Travel, .001" Reading, Carbide tipped point.
- "Flat Back" Style magnetic base included also.
- All in a shop hardened case.

Order No. FOW-52585500

Sale 219.64

Magnetic Base

- Accepts all AGD dial indicators with lug backs & test indicators with stems or dovetail adapters 1/4 & 5/32" diameter
- On/Off switch in base
- 170 lbs. Magnet Holding Power



Fine Adjust Model
Order No. SHA-MBF

Sale \$33.97

Standard Model
Order No. SHA-MB

Sale \$31.50

Hydraulic Magnetic Base

- Will hold most style dial and test indicators
- 80kg magnetic force
- Fine adjustment screw
- Single locking knob locks all 3 joints for faster set ups.
- Anodized Blue Aluminum Rods, Superior Quality.



Order No. SHA-WCE-E

Sale \$69.89



.0005" 7 Jewel Test Indicator with Magnetic Base Kit

Indicator Specs:
1.5" Face / 0.0005" Grad.
0-15-0 Reading / .030" Range
Horizontal Model / Auto Reverse
.700 Long Contact Point x .078" Diam.

Magnetic Base
Dovetail Mounts directly to Test Indicator.

150lb Magnetic Pull
Fine Adjustment
on/off switch on base

Order No. SHA-TCOMBO

Sale \$89.00

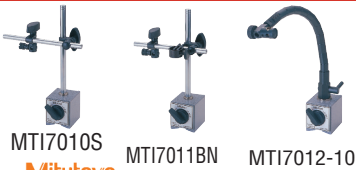
Heavy Duty Magnetic Base Holder

- Fits dovetail & 3/8" stem indicators
- Fine adjustment.
- On-Off switch on base, 170 lb pull.



ORDER NO.
SHA-MBH80

Sale \$125.40



MTI7010S
Mitutoyo

MTI7011BN

MTI7012-10

Mitutoyo Magnetic Stands accept all AGD-type dial indicators, test indicators and probes having .375", 6mm or 8mm diameter shanks and/or lug back with 1/4" diameter mounting hole. Mitutoyo Magnetic Stands have 132 Lbf of magnetic force to help prevent damage to indicators and probes due to accidental base fall-over.

Order No.	Description	Sale Price
MTI7010S	Magnetic Stand w/6" Rod & Universal Clamp	\$148.00
MTI7011S10	Magnetic Stand w/6" Adj Rod & Universal Clamp	\$169.00
MTI7012-10	Flexible Magnetic Stand	\$229.00

Indicator/Mag Base Set

with 22 pc. Contact Point Kit



- Universal magnetic base
- 0-1" range dial indicator, .001" graduation
- 22pc Indicator Point Set

Order No.
SHA-MAGCOMBO

Sale \$29.95



Standard Mighty Mag
Order No. WES-400-1
Sale \$26.50



FEATURES:

- 45 lbs holding power
- 6 mounting locations.
- three-1/4-20 tapped holes, one-10/32 tapped hole
- one-3/8" reamer hole, one-1/8-5/16" v-shaped hole in back



Mighty Mag w/quick release
Order No. WES-400-3
Sale \$39.00

Super Flex Mag Base



- Holds Test Indicators with dovetail mount.
- Fine Adjust. Single cam lever locks cable.
- On/Off Switch on Base



Order No. SHAFLEXBASE

Sale Price \$51.90

5/16"-6" Telescope Gage Set



Order No. SHA-290300

6PC COMPLETE SET

Sale \$41.76





INSIZE Dial Test Indicators

- Meets DIN2270 or BS2795 Standard
- Satin chrome finish, brass body, anti-magnetic.
- Jeweled bearing, shock-proof.
- Interchangeable carbide contact point, .0787" Diameter ball, supplied with wrench.
- Probe Length, .530"
- Supplied with two holding stems, 5/32" and 3/8" and a fitted storage case.
- Limited one year warranty direct from manufacturer.



Range	Graduation	Bezel Diameter	Order Number	Sale
0-0.03"	0.001"	1.18"	INS2380-31	89.40
0-0.03"	0.001"	1.48"	INS2381-31	101.00
0-0.03"	0.0005"	1.18"	INS2380-35	108.00
0-0.03"	0.0005"	1.48"	INS2381-35	114.00
0-0.8mm	0.01mm	30mm	INS2380-08	84.00



Original Indicol USA Made Model

- Universal Indicator Holder.
- 1 7/8" Clamp Capacity
- Holds Dovetail or 5/32" Shank Indicators
- Ideal for Bridgeports !!
- Patent #3442478



Order No. NP-178

Sale \$99.95ea



Dial Indicators



- 0-100 Reading, 2" Dial Face
- Lug Back
- Rev. counter
- Satin chrome finish
- Interchangeable point (4-48 thread)



Range	Grad.	Face Color	Order No.	Sale
1/4"	.001"	White	SHA-ND14	\$59.10
1/2"	.001"	White	SHA-ND12	59.10
1"	.001"	White	SHA-ND1	26.45
1"	.001"	Black	SHA-ND1B	26.45
2"	.001"	White	SHA-ND13	48.91



.0005" 7 Jewel Test Indicator

1.5" Face
.0005" Grad.
0-15-0 Reading
.030" Range

includes 5/32 & 3/8" posts

- Horizontal Model
- Automatic Reversing
- Meets Federal Specs for Accuracy
- .700" Long Contact Point .078" Diam.

White Dial Face

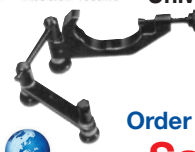
Order No. SHA-T1030

Price \$57.04

Black face model Available
Order No. SHA-T1030B \$57.04ea



Universal Indicator Holder



fits all popular indicators, 5/32" shank or dovetail mounting. 1 7/8" Mounting diam.

Order No. SHA-MQA178

Sale \$26.00



6pc Diemaker's Precision Deburring Set

Set consists of flat diamond coated file, triangular scraper, round scraper, flat scraper, swivel blade tool, rotating deburring tool and pouch.



Order No. SHADBTS-6
Sale \$81.00

.0005" 7 Jewel Test Indicator with Half Round Holder Kit



Indicator Specs:
1.5" Face / 0.0005" Grad.
0-15-0 Reading / .030" Range
Horizontal Model / Auto Reverse
.700 Long Contact Point x .078" Diam.

Holder Specs:
Versatile two point adjustment
1/4 x 2" Long Holding Bar
Accepts 5/32" Stem or Dovetail 3" Reach



Order No. SHA-T1030SET

Sale \$68.00



.0001" Graduation Test Indicators

- .0001" Graduation / .008" Travel
- Dovetail mounts / Horizontal Model
- Includes 3/8" and 1/8" clamping stems
- Fitted Plastic case.



Order No. SHA-23111

White Face Model
Sale \$74.00

Order No. SHA-2311B
Black Face Model
Sale \$74.00

Vertical 7 Jewel Test Indicator

.0005" Grad. 0-15-0 Reading
White Face, .030" Travel
includes 5/16 & 3/8" Posts



Order No. SHA-TV1030

Price \$70.75



Swivel Support
3/8" diameter x 3-5/8" long shank
AAZ9636 \$55.75



Angle Attachment
3/8" Dia. shank with 3/8" mounting hole for dial indicators.
AAZ9640 \$39.81



Dovetail Stems
AAZ7500 5/32" \$17.43
AAZ7501 7/32" 17.43
AAZ7502 1/4" 17.43
AAZ7503 5/16" 17.43

USA Made Indicator Accessories



Double Jointed Holder
3/8" dia. shank with 4-1/2" reach.
AAZ9665 \$39.50

Single Jointed Holder
1/4" diameter x 2-3/4" OAL.
AAZ9660 \$43.81



Swivel Clamps
3/8" and 7/32" dia. holes
AAZ9600 \$28.23
3/8" and 1/4" dia. holes
AAZ9601 \$35.83



Universal Dovetail Clamp
Accepts rods and shafts 1/8" and 1/4" diameter, plus dovetails. Perfect for use on mag bases, and set ups.
AAZ9618 \$18.07



Depth Micrometer Sets

Specifications:

- Hardened and Ground
- .001" Graduations
- Satin Chrome finish
- Fitted Storage Box



Order No.	Base	Range	Sale Price
SHA-DM-6	4.0" Base	0-6"	\$114.82
SHA-DM-6-2.5	2.5" Base	0-6"	65.00
SHA-DM-4-4	4.0" Base	0-4"	91.34
SHA-DM-4-2.5	2.5" Base	0-4"	78.25

Electronic Outside Micrometers



- Resolution: 0.0005"/0.001mm
- Buttons: power on/off, inch/mm conversion, ABS/INC Measurement, data set.
- SR44 battery, Fitted Storage Case
- DIN863, painted and insulated frame, ratchet friction thimble, spindle lock, carbide tips.
- Sizes over 1" supplied with setting standard.
- Limited One Year Warranty direct from manufacturer.

Range	Order Number	Price
0-1"/0-25mm	INS310925E	\$125.00
1-2"/25-50mm	INS310950E	151.00
2-3"/50-75mm	INS310975E	185.00



Indicating Micrometer

- Features
- Jeweled Bearings, Hardened pinion & gear
 - Push button retractable anvil, .040" travel
 - Indicator range +/- .003", Reading .000050"
 - Satin chrome frame w/plastic heatshield
 - .255" diam anvil

Order No.	Range	Sale
SHA-IND1	0-1"	\$ 299.00
SHA-IND2	1-2"	297.18



Screw Thread Micrometer Sets



Anvils and Spindles Included:

- 5-8 TPI
- 9-13 TPI
- 14-24 TPI
- 28-44 TPI
- 48-64 TPI
- all 60°

- Direct Reading of pitch Diameter in threads.
- Ratchet Stop, Fitted Case
- Kit Includes: Micrometer and five pairs of anvils and spindles
- Anvils and spindles hardened and ground tool steel.



Order Number	Range	Reading	Sale
SHA-MICST-1	0-1"	.001"	\$131.10
SHA-MICST-2	1-2"	.001"	135.00
SHA-MICST-3	2-3"	.001"	162.11

0-1" Outside Micrometer

- Graduation: 0.0001" / 0.01mm
- Solid Mitutoyo C Shape painted frame, ratchet stop, spindle lock, carbide tips and adjusting wrench.
- Supplied in fitted storage case.



Order No. SHAMICCS01
Sale \$32.40



Blade Micrometer



- .0001" graduations
- Non-Rotating Spindle.
- Ratchet Stop.
- .030" Blade Thickness

Range	Order Number	Sale
0-1"	SHABM1	\$138.04
1-2"	SHABM2	159.25
2-3"	SHABM3	166.65

Co-Ax Indicator Kit

For Quick Centering on Milling and Boring Set-Ups



- Operates at any angle, When spindle rotates, the indicator always faces the operator.
- Internal or external diameters, Horizontal or vertical
- Set includes (3) internal feelers, (3) external feelers, restraining rod, center point feeler & fitted case.
- .0005" Graduation
- Capacity: I.D. 5/32 to 4-1/4" Dia., O.D. 0 to 4-1/4" Dia.



Order No. SHA-C1250
Complete 9pc Kit
Sale \$142.45



Fowler XTRA-VALUE 0-22" Digital Depth Gage



- Spring-loaded and hold measurement for ease-of-use.
- Super Large Display
- Indicator Travel 0-1"/25mm
- Range: 0-22" / 550mm
- Resolution .0005" / .01mm Fractions 1/64"
- Display in inch/metric/fractions
- Supplied in shop hardened case

Order No. FOW5422555
Sale \$81.93

Blake Co-Axial Indicator Kit Precision Inch Model

For Quick Centering on Milling and Boring Set-Ups



- Operates at any angle
- Internal or external dia.
- Positional Accuracy .0002"
- Dial Graduation .0005"
- Kit includes internal feeler, external feeler, retaining arm and wood case.
- Capacity: I.D. 5/32 to 4-1/4" Dia. O.D. 0 to 4-1/4" Dia.

Kit Order No. BLA-801
Sale \$408.00

— Available Accessories —

Item	Inside Dia.		Outside Dia.	
	Order No	Price	Order No.	Price
Carbide Feeler, Range 4-1/4" Dia.	BLA851-C2	\$53.84	BLA852-C2	\$53.62
Feeler, Range 4-1/4" Dia.	BLA851	24.85	BLA852	26.16
Feeler, Range 6" Dia.	BLA851-3	29.15	BLA852-3	33.00
Feeler, Range 8" Dia.	BLA851-4	31.00	BLA852-4	44.47
Feeler, Range 10" Dia.	BLA851-5	32.00		
Feeler, Range 12" Dia.	BLA851-6	35.25	BLA852-6	41.30

Precision Sine Bars

10" long x 1" Wide
Order No. SHA-SB10
Sale \$119.00

Precision Ground Top Surface accurate to .00003" per inch
Parallelism is .00004"

5" Long x 1" Wide
Order No. SHA-SBE25
List Price \$39.00
Sale \$69.35

2 1/2" Long x 1" Wide
Order No. SHA-SBE212
List Price \$29.00
Sale \$56.48

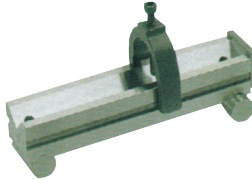
5" Long x 2" Wide
Order No. SHA-SB52
Sale \$89.00

lengths shown are between center roll distance

V-Sine Bar with clamp

Accurate to +/- .0003"
5" Sine Bar, 1 1/4" wide
Includes clamp.
1" Round Capacity

Order No. SHA-S13VS
Sale \$119.00



Long Range Dial Test Indicators



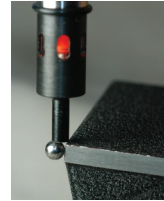
- Satin chrome finish, brass body, anti-magnetic.
- Jeweled bearing, shock-proof.
- Interchangeable steel contact point, .0787" Diameter ball.
- Probe Length .625"
- Supplied with 5/32" holding stems and a fitted storage case.
- Limited One Year Warranty direct from manufacturer.



Range	Graduation	Bezel Diameter	Order Number	Sale
+/-0.06"	0.0005"	1.51"	INS2386-006	192.00

LED Electronic Edge Finders

Crash Tested
Break-Away stylus prevents crash damage.



- Six Red Lights activate when stylus touches conductive metal.
- Locate edge quickly, at almost any angle.
- No Bulbs, LED lights last for years.
- Easy to change 12v battery included.
- +/- .0002" Repeatability.
- All Surfaces precision ground.

Order No. PEC4200B40
3/4" Shank, .400" Stylus, 6 Lights, Audible "BEEP"
Sale \$119.00

Order No. PEC4200B20
1/2" Shank, .200" Stylus, 6 Lights
Sale \$119.00

Electronic Locating Gages

- Precision made in USA
- Ultra-sensitive solid state circuit for fast and accurate positioning
- Indicator lights up at the slightest touch of the metal workpiece with great visibility
- Spring loaded, hardened and precision ground • Long life battery incl. (LR44)



Height Offset
Presetting Gage
Order No. NIK-HGT
Sale \$175.00



3 Axis Locator 3/4" Shank
Order No. NIK-3WAY
Sale \$250.00

18 Pc Sine Bar Set

Eliminates constant tables to calculate angles, and gage blocks to set angles.

- Includes one 6" overall sine bar, 5 between rolls, 1" Square
- Sine bar parallel top to bottom of rolls +/- .0002"
- 18 Risers, range 1/2-15 degrees resulting angle, including 2 risers 1/4 & 1/2 taper per foot
- Constant within .0002"
- Fitted plastic case



Sine Bar Set
Order No. SHASBS-5
Sale \$159.00



Genuine Donegan Brand Opti-Visor Inspection Magnifier



Power	Working Distance	Order No.	Price
1-1/2	20"	DON-DA2	\$66.00
1-3/4	14"	DON-DA3	66.00
2	10"	DON-DA4	66.00
2-1/2	8"	DON-DA5	55.00
2-3/4	6"	DON-DA7	66.00
3-1/2	4"	DON-DA10	72.00

- Genuine leather comfort band
- Unique dial adjustment fits anyone
- Optically correct precision glass prismatic lenses
- Wear over regular or safety glasses
- Tilts upward when not in use (No tunnel vision)
- Shown with optional Optiloupe DON-OP1 \$19.85ea

Vision Protection

- Cushioned non-slip rubber temple pads.
- Soft rubber nosepiece.
- Polycarbonate lens.
- Lenses provide 99.9% UVA and UVB Protection

NEW
New! C-2®
Bi-Focal Design !!



Lens/Magnification	Order No.	Reg. Price	Sale Price
Clear/1.5	RAC2115	\$11.00	\$7.35
Clear/2.5	RAC2125	11.00	7.35



- Gel nosepiece allows for greater comfort.
- 4-position telescopic temples for great fit
- All lenses are hard coated for scratch resistance
- All lenses provide 99.9% UVA and UVB Protection
- Meets or exceeds all ANSI Z87.1 Standards
- Super Stylish black frames.

Lens Color	Order No.	Reg. Price	Sale Price
Clear	RAJR1101	\$7.95	\$3.47
Light Blue	RAJR1102	8.95	4.11
Grey	RAJR1103	8.95	3.90



- Soft rubber nosepiece with self-adjusting fingers prevents slipping
- Extended browguard molded into top of lens gives a near perfect orbital seal against debris
- Temple pieces extend for a precise fit.
- Durable polycarbonate lenses are hard coated
- All lenses provide 99.9% UVA and UVB Protection
- Meets or exceeds all ANSI Z87.1 Standards
- Super Stylish crystal grey frames.

Lens Color	Order No.	Reg. Price	Sale Price
Clear	RANT1101	\$13.95	\$7.90
Silver Mirror	RANT1102	13.95	8.95
Grey	RANT1103	13.95	8.95

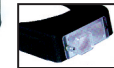


Economy Donegan Brand Opti-Visor Inspection Magnifier



- Donegan Accursite® Binocular Magnifier.
- Includes Extra Lens Plate and 2.5x Loupe.
- 8" Focal Point and 2.5x Magnify Power

AccurSITE®
Order No. DON-AL5SET
Sale \$49.00



Includes FREE 2.5x Loupe and extra lens plate

5pc set 4" Overall Length
1/32, 1/16, 3/32, 1/8, 5/32"
Punch Diameter

Starrett®

Order No. STA64131
Sale \$86.00

Square Head Nail Sets



Starrett® Combination Punch Set

5pc set, includes two center punches 1/16 & 3/32 Tapered Point and 5/64, 1/8, 5/32" Tapered point prick punches

Order No. STA57078
Sale \$47.50





Outside Micrometer Sets

- Graduation: 0.0001"
- DIN863, painted frame, ratchet stop, spindle lock, carbide tips and adjusting wrench.
- Supplied in fitted storage case. Setting Standards Included for over 1" Micrometer.

0-3" Set

Order No. SHAMICCS03

Sale \$113.00

0-6" Set

Order No. SHAMICCS06

Sale \$297.36

6-12" Set

Order No. SHAMICCS612

Sale \$598.95



1.4-6.0" Range Digital Electronic Bore Gage Set

- Resolution: .00005" / .001mm Dual Reading Inch/MM
- Bar graph and numerical digital display.
- ABS / ING Measurement. Preset with recall. Min / Max / TIR
- Shop hardened case. Includes extension holder.
- Easily adjustable and self-centering.



Order No. SHA-EBBS-6 **Sale \$249.00**



Universal Magnetic Indicator Holder and Test Indicator Set

two universal sockets enable adjustment to any angle
Fine Adjustment included
Dovetail Clamp for Test indicators
1/4" Hole for stem indicators



Test Indicator Specs:
.0005" Grad.
0-15-0 Reading
.030" Range
includes 5/32 & 3/8" posts

Order No. SHA-MBRSET

Sale \$65.00

Extended Range .060" Range Dial Test Indicator

Features:

- 9 Jewel Movement
- 0-15-0 Dial Face
- .060" Range
- .0005" Reading
- 1.5" Dial Face
- .078 x .625" Point
- Hard Case
- 3/8" & 5/32" Stems

Order No. SHA-INDTL-5

Sale Price \$86.42



Starrett Machinist Level Ground and Graduated Main Vial



*Ground vials are approximately four times more sensitive to movement than plain vials;

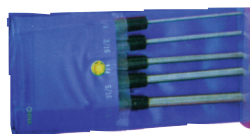
Furnished without case unless otherwise ordered. Packed one in a box.

All levels have cross test vial, except 4" size.
12" size of both series has in addition a plumb vial, and 18" size a double plumb vial.
Plumb vials on No. 98-12" and 18" levels are ground.
Main vials are adjustable for positive setting and housed in brass tube with friction fit cover to prevent breakage.

Size	Order No.	Price
4"	STA50440	\$147.00
6"	STA50441	177.00
8"	STA50442	218.00
12"	STA50443	302.00
12" w/case	STA50444	410.00
18"	STA50445	508.00
18" w/case	STA50446	646.00

Extra Long Drive Pin Punch Sets

- 8" Overall Length
- Includes: 1/8, 3/16, 1/4, 5/16, 3/8"
- Fitted vinyl pouch

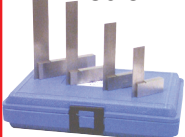


5pc Set

Order No. SHA0240

Sale \$15.68

Solid Square Sets 2, 3, 4, 6" Blade Length



- Made from high quality tool steel
- Have true right angles inside and outside
- Beams and blades are precision ground
- Blade is hardened. Length shown is measured from inner edge of beam to end of blade.
- Fitted Case Included

Order No. PEC7000S4

Sale \$75.00



Half Round Indicator Holder



Features:

- Versatile two point adjustment.
- 1/4 x 2" Long Holding Bar
- Accepts 5/32" stem or dovetail.
- 3" Measuring Range



Order No. SHAHRH

Sale Price \$16.00

12 Piece Needle File Sets



6 1/4" Long #2 Cut

Order No. SHA-NFS622

Regular Low Price \$18.00

Sale \$8.50

6 1/4" Long #0 Cut

Order No. SHA-NFS620

Regular Low Price \$18.00

Sale \$7.62

Heavy Duty Diamond Plated File Set



5pc Set Includes:
Round, half round, square, flat and triangle shape files.
Medium Grit Diamond Plated.
Protective plastic handles.

7" Length.

2.75" Diamond Plate Area
1/4" Rd Handle.

Order No. SHA-MDS-57

Regular Price \$49.90

Sale \$32.00

Maxi Diamond Plated File Set



5pc Set Includes:
Round, half round, square, flat and triangle shape files.
Medium Grit Diamond Plated.
Protective plastic handles.

5 1/2" Length

Order No. SHA-MDS-5

Regular Price \$39.90

Sale \$28.00



10pc Set Includes:
2ea Round, triangle, half round, square, flat shaped files.
Medium Grit Diamond Plated.
Protective plastic handles.

5 1/2" Length

Order No. SHA-MDS-10

Regular Price \$59.90

Sale \$22.66





Premium Outside Micrometer Sets



ProTool™
PRECISION TOOLING



- .0001" reading
- Setting standards
- Solid Carbide Measuring Faces
- Fitted case
- Ratchet Thimble / Lock nut
- Satin chrome finish



Order No.	Range	Sale Price
SHA-3CRMS	0-3"	\$110.00
SHA-6CRMS	0-6"	249.00
SHA-12CRMS	0-12"	550.00

60° V-Anvil Micrometer



V-Anvil Micrometer can be used for measuring a variety of items from machined parts to threaded rod. Graduations in .001". Includes Standard Quick and easy reading complete with ratchet thimble and lock.

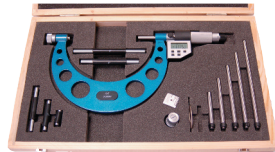
.04-.60" Range
Order No. SHA-V01
Sale \$169.00

.20-.80" Range
Order No. SHA-V015
Sale \$169.00

.80-1.30" Range
Order No. SHA-V02
Sale \$169.00



0-6" Range Digital Electronic Micrometer Set



- Resolution: .00005" / .001mm
- Carbide Measuring Faces
- ABS/INC, Ratchet Thimble
- Includes five setting standards
- Includes six replaceable anvils
- IP-54 compliant

ProTool™
PRECISION TOOLING

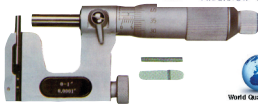


Order No. SHA-MICEW6
Sale \$250.00

Multi-Anvil Micrometer

Each Micrometer Set contains:

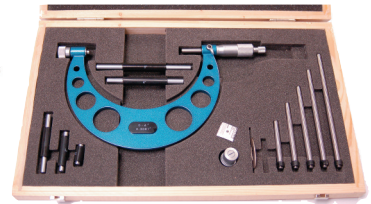
- Carbide tipped spindle face
- Friction thimble
- .0001" Graduations
- 2 anvils furnished, flat & rod style.
- Measures many different locations.
- 2" Model includes setting standard



0-1" Range UNI-Micrometer
Order No. SHA-MAM-1
Sale \$175.00

1-2" Range UNI-Micrometer
Order No. SHA-MAM-2
Sale \$180.00

Interchangeable Anvil Micrometer Sets



ProTool™
PRECISION TOOLING

0-6" Range
Order No. SHA-MICIC06
Sale \$200.00

- Resolution: .0001"
- Carbide Measuring Faces, Ratchet Thimble.
- Fitted Wooden Case
- Includes five setting standards
- Includes six replaceable anvils

6-12" Range
Order No. SHA-MICIC612
Sale \$380.00

ProTool™
PRECISION TOOLING



FEATURES:

- Graduation .001"
- Satin chrome finish.
- Hardened and ground faces.
- Ratchet stop, locking clamp.
- Easily adjusted for side movement of jaw. Includes setting ring



.2"-1"
Order No. SHA-ISM1

Sale \$81.68

Micrometer Stand

Made of cast iron. Can be adjusted to any position. It provides a desirable measuring position and angle for inside and outside micrometers and many other instruments.

Order No. SHA-247000
Sale \$24.00



Disc Micrometer



ProTool™
PRECISION TOOLING



Specifications

- Disc OD = .787"
- .0001" graduation
- Measures narrow grooves, slots & recesses, useful for measurements of parts with ribs, lands, fins, cutting edges on form tools & more.

Description	Order No.	List	Sale
0-1" Range	SHA-DM1	\$198.00	\$112.00
1-2" Range	SHA-DM2	218.00	124.00
2-3" Range	SHA-DM3	238.00	135.66
3-4" Range	SHA-DM4	258.00	147.00

Point Micrometers



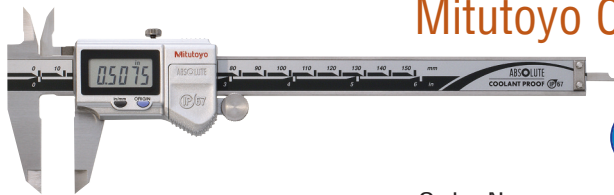
ProTool™
PRECISION TOOLING

- .0001" Graduations
- Carbide Points
- Ratchet Spindle
- Spindle Lock

Range	Order No.	Reg. Price	Sale Price
0-1"	SHA-PM1	\$164.00	\$74.10
1-2"	SHA-PM2	171.00	89.00
2-3"	SHA-PM3	271.00	98.00



Mitutoyo Coolant Proof Calipers



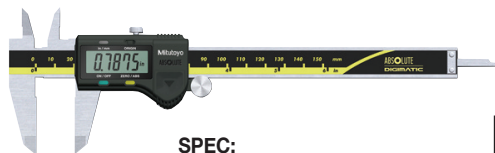
Mitutoyo

IP67

FEATURES

- It's sealed housing is IP-67 rated, meaning it's immune to the coolants, dirt, grit and chips found in shops today.
- .0005"/0.01mm resolution all models.
- ±.001" accuracy for 6" models and 8" models.
- ±.0015" accuracy for 12" Model
- Certificate of inspection provided.

Order No.	Measuring Range	Sale Price
MTI500-752-20	0-6"/0-150mm	\$201.83
MTI500-753-20	0-8"/0-200mm	285.30
MTI500-754-10	0-12"/0-300mm	466.65



Mitutoyo

My-Cal Digital Calipers

SPEC:

- New ABS Position Memory
- 3 year Battery Life
- .0005" / 0.01 mm Resolution
- Inch / MM Conversion, Zero set
- On / Off Button
- Certificate of Inspection Provided

Range	Order No.	Sale
0-6"/0-150mm	MTI50019630	\$159.30
0-6"/0-150mm w/SPC	MTI50017130	186.30
0-8"/0-200mm	MTI50019730	229.50
0-8"/0-200mm w/SPC	MTI50017230	245.70
0-12"/0-300mm	MTI500193	486.40

Mitutoyo Coolant Proof Super Solar Caliper



Mitutoyo

FEATURES

- Absolute Encoder Technology
- **IP-67 Coolant Proof Rating**
- **No battery needed**
- Works in low lighting conditions.
- Super capacitor power back-up
- 0.0005"/0.01mm resolution
- Certificate of Inspection provided

IP67

ABSOLUTE™
Absolute System Patented by MITUTOYO

Order No.	Measuring Range	Sale Price
MTI500-784	0-6"/0-150mm	226.80
MTI500-785	0-8"/0-200mm	283.50

Digital Calipers .0005" Resolution

- Inch/Metric Reading
- .0005" or .01mm Resolution
- On/Off Button on front
- Zero Button Anywhere on scale
- Inside/Outside Measuring Jaws
- Depth Measuring.
- Extra Large Numerals
- Fitted plastic case



ProTool™
PRECISION TOOLING

Order No.	Measuring Range	Sale Price
SHA6DIGI	0-6" / 150mm	\$29.67
SHA12DIGI	0-12" / 300mm	\$99.95

Fowler

EURO-CAL IV

0-6" / 150MM
ORDER NO. FOW541003301
List Price \$146.00
Sale Price \$158.91

0-8" / 200MM
ORDER NO. FOW54100331
List Price \$173.00
Sale Price \$130.21

0-12" / 300MM
ORDER NO. FOW54100332
List Price \$223.00
Sale Price \$241.26

FEATURES:

- Direct Inch/Metric/Fractional Readings
- Resolution: .0005"/0.01 mm/1/64" Fractions
- Absolute and incremental measuring system
- Water resistant to IP54 Standards
- 4 way measuring, Accuracy +/- .001"
- Stainless steel frame. Includes molded plastic case.

IP54
PROTECTED FROM WATER, DIRT & FINE PARTICLES

Fowler XTRA-VALUE CAL

K-SERIES

0-6" / 150MM
ORDER NO. FOW541011502
List Price \$56.43
Price \$61.03

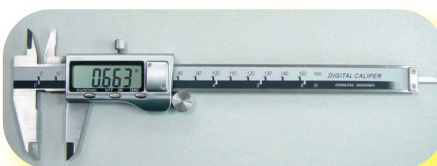
0-8" / 200MM
ORDER NO. FOW541012001
Price \$98.37

0-12" / 300MM
ORDER NO. FOW541013001
List Price \$112.00
Sale Price \$121.82

FEATURES:

- Direct Inch/Metric Conversion
- Resolution: .0005"/0.01 mm
- Absolute/incremental measuring system
- 4 way measuring, Accuracy .001"
- Stainless steel frame. Includes molded plastic case.

ProTool™ Digital Calipers .0005" Resolution



- **Metal housing on caliper body, prevents damage.**
- Inch/Metric Reading / .0005" or .01mm Resolution
- On/Off Button on front
- Zero Button Anywhere on scale
- Inside/Outside Measuring Jaws
- Depth Measuring.
- Extra Large (.375") Tall Numerals
- Fitted case/ SR44 Battery (included)

Order No.	Range	Sale Price
SHACES-6AL	0-6" / 150mm	\$29.67
SHACES-8AL	0-8" / 200mm	\$57.11
SHACES-12AL	0-12" / 300mm	\$109.00

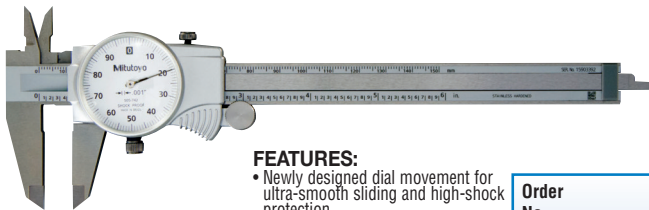
Electronic Calipers

←INSIZE→



- Resolution: 0.0005", 0.01mm
- Buttons: zero set, mm/inch conversion, Power on/off
- SR44 Battery, includes one spare battery.
- DIN862, Hardened Stainless Steel construction, with locking clamp and thumb wheel, for outside, inside, depth and step measurements.
- Data output via USB
- Supplied in fitted storage case.
- Limited one year warranty direct from manufacturer.

Range	Order Number	Price
0-6"/0-150mm	INS1108150	\$68.30
0-8"/0-200mm	INS1108200	101.00
0-12"/0-300mm	INS1108300	152.00



Dial Calipers

NEW

FEATURES:

- Newly designed dial movement for ultra-smooth sliding and high-shock protection
- New face for improved readability
- 4 way measurement, OD, ID, Depth and steps
- Lock screw for holding dial and sliding jaw position.
- Certificate of Inspection Provided

Order No.	Measuring Range	List Price	Sale Price
MTI505742	0-6" **	\$ 143.00	\$ 117.85
MTI505743	0-8" **	\$ 209.00	\$ 173.47
MTI505746	0-12" **	\$ 318.00	\$ 264.16

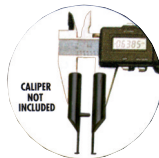
** .10" Range/Rev(easy to read)

Groove Measurement Caliper Jaws

A complete set of accessory jaws that fit on any 6" Caliper, for measuring grooves. Finds many uses, including undercuts, and grooves of all types. Works with Dial, Vernier, and Electronic tools, with measuring capacity from 0.200" to 6" in diameter. Manufactured in the USA of cold rolled Steel, Black Oxide finished for protection. Sets come in fitted case.



Minimum Measurement Dia.	Thickness of Measuring Tip	Maximum Depth	Clearance from end of Tip to Jaw	Order No.	Price per set
0.200	.015	.400	.050	AAZ9510	\$ 134.90
0.300	.015	.625	.070	AAZ9511	134.90
0.600	.025	1.00	.200	AAZ9512	134.90
0.725	.040	1.25	.255	AAZ9513	146.62
External Measurement	.024	3.00	.375	AAZ9514	460.16
3 pair Set - includes Max. Depth of .400, .625, & 1"				AAZ9500	321.16
5 pair Set - includes all of the above Jaws				AAZ9505	890.00



Caliper Extender Attachment



Caliper not included

Description	Order No.	Sale
26" Extension Kit	AAZ2526	\$401.46
36" Extension Kit	AAZ2536	513.86
51" Extension Kit	AAZ2551	578.08
71" Extension Kit	AAZ2571	770.78
91" Extension Kit	AAZ2591	1,124.06

Depth Base for Calipers



Turn any caliper into a depth measurement device. Fits 6" to 12" calipers. Precision ground top and bottom for perpendicularity. Black oxide finish. All bases 1/2" wide by 3/4" height.



- 3" long base fits 6" caliper
- 4" long base fits 6" caliper
- 5" long base fits 12" calipers

AAZ9225	\$125.48
AAZ9226	172.52
AAZ9227	203.86

T-Bar Depth Base Attachment

Order No.	Width	Height	Slot	Sale
AAZ9223	.210"	.975"	0.620"	\$49.00



Micro Tap Guide

Adjustable spring tensioned 1/2" body, knurled for easy handling. Both male and female. Reverse the point and you have a center hole for small taps.

Order No. FIS-20MTG
Sale \$17.50



FISHER Edge & Center Finders :

- Hardened & Ground All Over.
- Accurately locates the starting point for all types of machine work.
- Supplied in protective case



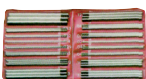
center finder edge finder combo edge & center finder



Audible Edge Finders		Order No.	Price
3/8" x .200	Audible Edge Finder	FIS-AA	\$ 17.25
1/2" x .200	Audible Edge Finder	FIS-AB	17.75
1/2" x .500	Audible Edge Finder	FIS-ABB	17.75
10mm/.375" x 10mm	Audible Edge Finder	FIS-AG	19.25
10mm x 10mm	Audible Edge Finder	FIS-AH	19.25
Regular Edge / Center Finders			
3/8" x .200	Regular Edge Finder	FIS-A	\$ 15.50
1/2" x .200	Regular Edge Finder	FIS-B	16.00
3/8"	Center Finder	FIS-C	15.25
1/2"	Center Finder	FIS-D	16.50
3/8"	Combo Edge & Center Finder	FIS-E	19.95
1/2"	Combo Edge & Center Finder	FIS-F	21.75

Thread Measuring Wire Set

48 Wires—16 Different Sizes
Measures Threads from 3 to 48 TPI.
In Plastic Case with Thread Chart



USA MADE
ORDER No. FIS-16
Sale \$42.00

IMPORT MODEL
ORDER No. SHA-16
Sale \$13.93



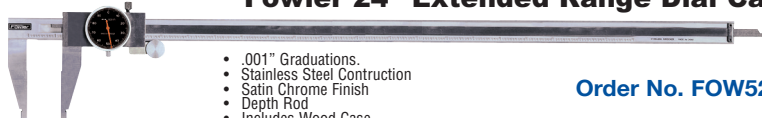
Starrett® Edge Finders

Work surfaces may be located easily, quickly and accurately with these edge finders. Work with flat, straight edges, shoulders, grooves, round work, stud, dowels, or center points and scribed lines - all can be accurately located with this handy tool. Body and contacts are made of tool steel. Hardened, ground and lapped to close tolerances for diameter and concentricity.



Desc.	Body Dia.	Contact	Order No.	Price
Single End	.375"	.200"	STA53062	\$36.00
Double End	.500"	.200" & point	STA53063	43.50
Single End	10 mm	6 mm	STA56041	37.00
Double End	10 mm	6 mm & point	STA66452	44.00

Fowler 24" Extended Range Dial Caliper



- .001" Graduations.
- Stainless Steel Construction
- Satin Chrome Finish
- Depth Rod
- Includes Wood Case
- 0-24" Range
- 3.375" Jaw Depth



Order No. FOW52008024

Sale \$393.69





MADE IN THE USA



Nylon Coiled Air Hose

Lightweight, permanently coiled 1/4" ID Hose with two 1/4" MPT Swivel Fittings.

	Order Number	Price
12' Hose	224-N14-12B	\$22.61
17' Hose	224-N14-17B	25.71
25' Hose	224-N14-25B	30.48



Needle Blow Gun Tips

Get into small, tight places.

- Stainless Steel Needle, Nickel Plated Brass base.
- 1/8" MPT will fit most blow guns
- .042, .050, .072, .095, .134" Diameter Needle Tips



5pc assorted kit
Order No. 224-SNTKIT
\$29.29




Air Tool Lubricant

16oz Bottle
Order No. 224-ATL016

\$12.18ea



Heavy Duty Filter
40 Micron Sintered Bronze Element. High Strength Plastic bowl. 150PSI Max Supply Pressure. 1/4" NPT Female Thread
Order No. 224-8822
\$74.00



Heavy Duty Regulator
0-125 PSI Regulator Pressure Range, Die Cast Aluminum Body. 250PSI Max Supply Pressure. 1/4" NPT Female Thread. 0-160 PSI Gage Included
Order No. 224-8802G
\$86.54



Heavy Duty Lubricator
Mist Atomizing Sightglass, refill thru fill port without requiring depressurization. 150PSI Max Supply Pressure. 1/4" NPT Female Thread.
Order No. 224-8842
\$94.94




CEG-1 Blow Gun
Ergonomic design for natural fit in users hand. High flow tip. Full Size hanging hook. Thermoplastic body cover. 1/4" NPT Female Thread. OSHA Compliant.
Order No. 224-CEG-1H
\$26.40ea



660S Blow Gun
Compact Economical Design. Push Button Design, rugged black finish. 1/4" NPT Female Thread. OSHA Compliant.
Order No. 224-660S
\$16.95ea



- 1 year limited Mfg. Warranty direct from Eagle Industries.
- Spare and repair parts available.



1/4" Angle Die Grinder
All ball bearing construction. .33hp, 1/4" Collet, 20,000 rpm, rear exhaust, lever throttle, 14 cfm
Order No. EAG-5003C
Sale \$88.06



1/4" Inline Die Grinder
Ergonomic Composite Housing, soft comfortable grip. All ball bearing construction. .75hp, 1/4" Collet, 22,000 rpm, rear exhaust, lever throttle, 14 cfm
Order No. EAG-5200EC
Sale \$98.00ea



3/8" Reversible Drill
3/8" Keved Chuck, Positive Trigger speed control, 1 3/8" Air inlet, 3.0 lbs weight.
Order No. EAG-7102
Sale \$195.16ea



1/4" Angle Die Grinder
Ergonomic Composite Housing, soft comfortable grip. All ball bearing construction. .60 hp, 1/4" Collet, 20,000 rpm, rear exhaust, lever throttle, 12 cfm
Order No. EAG-5202EC
Sale \$154.00ea



5" Angle Grinder
Removable dead handle, 5/8-11 Adapter included, Spiral Bevel Gearing for long life and low vibration, 11,000 rpm, 6hp, 18 cfm, 1/4" air inlet, 3/8-24 Spindle
Order No. EAG-5007
Sale \$242.76ea




Typhoon® Hi Volume Blow Gun
Delivers up to 51 CFM and over three lbs of thrust at 125 PSI. Meets or Exceeds OSHA Regulations, variable trigger for controlled blow-off
Order No. 224-TYP-2500CS
\$31.08ea



Typhoon® Pro All Metal Blow Gun
Designed for hardcore users. Meets or Exceeds OSHA Regulations, variable trigger for controlled blow-off
Order No. 224-TYP-2501CS
\$49.43ea




Flexcoil® Polyurethane Coiled Air Hose

- Toughest recoil hose available.
- Highly kink and abrasion resistant.
- Straight tails provide built-in whip hose.
- Includes Male 1/4" Swivel Fittings on both ends.

15 Feet Length
1/4" ID x 3/8" OD Hose
Order No. 224-PU14-15B-B
\$44.78ea

25 Feet Length
1/4" ID x 3/8" OD Hose
Order No. 224-PU14-25B-B
\$57.56ea



KI KALAMAZOO INDUSTRIES, INC. Belt Sanding Machines

Order No. KAL-1SM

1/3 hp, 1 ph, 1725 rpm. 1 x 42" Belt. Tilt Table. Vertical sander only. 1000 sfm.

32 lbs. Ship Weight

Sale \$420.00



Order No. KAL-2FSM

1/2 hp, 1 ph, 3450 rpm. 2 x 48" Belt. Tilt Table and removable platen. Full Hinge guard for quick belt change.

Vertical or Horizontal. 4500 sfm.

48 lbs. Ship Weight

Sale \$580.00



Order No. KAL-S4S

1/2 hp, 1 ph TEFC, 3450 rpm. 4 x 36" Belt. Full OSHA guard for quick belt change.

Vertical or Horizontal. 4500 sfm.

50 lbs. Ship Weight

Sale \$875.00



3 pc. Shop Roll Set



1" Wide x 50 Yard Long
1 ea: 80,120,180 Grit

Order No. SHA-AB900
Regular Low Price \$39.75

Sale \$23.00



Portable LED Worklight with Magnetic Base



- Flexible shaft with universal movement.
- LED Lights produce cool, bright light.
- Maximum Reach 8"
- Magnetic Base: 1.5" Diameter, 25 lbs pull
- LED Light requires 3 x "AAA" Batteries (included)

Order No. SHA-8LED
Sale Price \$29.00

Huot Extra-Heavy Duty Tool Storage Carts



- Heavy prime 12 gauge steel, in a gold vein powder coating, baked on finish.
- Heavy duty, extra smooth rolling casters load rated to 1600 lbs.
- 2 shelves with added storage capacity. With new molded inserts.
- Dimensions: 45 1/4" wide x 17 1/2" deep x 40" high. Includes handle and end tray. Tools not included.
- Ship Weight 132 lbs.



Desc.	Holder Cap.	Order No.	Price
40 Taper	90	HUO23940	\$917.00
50 Taper	52	HUO23950	917.00

CNC Tool Cart



- Heavy gauge all steel infrared baked epoxy finish
- 5" x 1-1/4" casters rated at 1000 lbs.
- 2 storage trays with protective lining
- Second shelf angled for easy access
- Durable nylon inserts to protect tools

Ship Weight 79 lbs



Order No. HUO-13940
40 Taper (CT, BT, NMTB) Size, Holds 48 Tools
Sale \$618.00



Order No. HUO-13950
50 Taper (CT, BT, NMTB) Size, Holds 36 Tools
Sale \$618.00

Portable Taper Tool Trays



- High Impact Reinforced Plastic-Protects Ground Tapers
- Holds all NMTB, CT or BT Taper Tools
- Holes Numbered for easy Set-up
- Handles for easy handling.



Order No. SA-50Taper
HOLDS SIX 50 TAPER TOOLS
Sale \$60.00

Order No. SA-40Taper
HOLDS TEN 40 TAPER TOOLS
Sale \$55.00

Order No. SA-30Taper
HOLDS TEN 30 TAPER TOOLS
Sale \$55.00





Steel Parallels 1/4" and 1/2" Thick all 6" length

Order No. **SHA-TPS-8**
1/2" 8pair set
Sale \$139.05

Order No. **SHA-TPS-9**
1/4" 9 pair set
Sale \$107.39



- 1/2" set : 7/8, 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2, 1-5/8, 1-3/4" height.
- 1/4" set : 3/4, 7/8, 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2, 1-5/8, 1-3/4" height
- High grade alloy steel, hardened and ground, 2 holes in each parallel.
- Accuracy: ±.0001" parallelism in height
- +.0002" to size in height, 50-54 HRC
- In plastic molded case

Steel Parallels 6" Long 4 Pair Sets



- All 6" Long.
- High grade alloy steel, hardened and ground, 2 holes in each parallel.
- Accuracy: ±.0001" parallelism in height
- +.0002" to size in height, 50-54 HRC
- In plastic molded case

Order No. **SHA-TPS-4-1/2**
1/2" Thick ~ 4 pair set
1", 1 1/4, 1 1/2", 1 3/4"
Sale \$61.11

Order No. **SHA-TPS-4-3/16**
3/16" Thick ~ 4 pair set
1", 1 1/4", 1 1/2", 1 3/4"
Sale \$48.76

Order No. **SHA-TPS-4 COMBO**
4 pair Combo set
3/16 x1", 3/16 x1 1/4",
1/2 x 1 1/2", 1/2 x 1 3/4"
Sale \$89.00

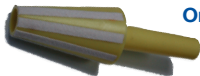


Ultra Thin Parallel Set 1/32" thick, 20 pairs

Heights from 1/2 to 1-11/16"
Paired in height +/- .0001"
Height specs. refer to consistency in each pair.
Absolute height is held to +/- .001"
+/- .0001" in parallelism

Order No. **SHA-PS132**
Sale Price \$89.00 per set

Spindle Taper Wipers
Helps maintain spindle accuracy and improves contact. Wipers use cotton material to clean taper.



Order No. **SHA-TW30**
30 taper spindle wiper
Regular Price \$34.10
Sale \$21.11

Order No. **SHA-TW40**
40 taper spindle wiper
Regular Price \$39.00
Sale \$24.32

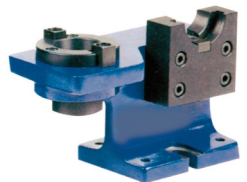
Order No. **SHA-TW50**
50 taper spindle wiper
Regular Price \$65.00
Sale \$30.26

Horizontal-Vertical Tightening Fixtures

CAT30 Model
Order No. **SHA-ETTF-30**
Regular Low Price \$325.00
Sale \$67.20

CAT40 Model
Order No. **SHA-ETTF-40**
Regular Low Price \$315.00
Sale \$99.00

CAT50 Model
Order No. **SHA-ETTF-50**
Regular Low Price \$399.00
Sale \$162.02



Securely hold your CAT toolholder for ease of tool change and preset.

American Pattern Mill Files

Excellent for a wide range of applications such as sharpening, draw filing, lathe work and general shop use; Mill Files are single cut on the sides and edges, and taper towards the point in width.



Length	Bastard	1-5pcs	6+	Second Cut	1-5pcs	6+	Smooth	1-5pcs	6+
4"	SIM73140500	\$7.13	\$5.70	SIM73141000	\$11.41	\$9.13	SIM73141500	\$10.83	\$8.66
6"	SIM73143000	7.13	5.70	SIM73143500	10.38	8.30	SIM73144000	11.03	8.82
8"	SIM73145500	8.60	6.88	SIM73146000	11.69	9.35	SIM73146500	12.94	10.35
10"	SIM73147500	9.60	7.68	SIM73148000	14.89	11.91	SIM73148500	15.85	12.68
12"	SIM73149500	17.96	14.37	SIM73150000	19.55	15.64	SIM73150500	21.50	17.20

Wavy Parallel Set

18 Pieces

- 9 Pairs—1/2" to 1-1/2" in 1/8" height increments
- Can be used as elastic shims
- Made of high quality spring steel, hardened, stress relieved & precision ground



Order No. **SHA-WPSS**
Sale \$65.97

Steel Parallels 6" Long 10 Pair Set - 1/8" Thick



- 10 Pairs—1/2" to 1-5/8" in 1/8" height increments
- +/- .0001 Parallelism in height. +.0002 to size in height. 50-54 HRC
- Made of high grade alloy steel. Hardened and ground. 2 Holes in each parallel.



Order No. **SHA-TPS11**
Sale \$58.93

Order No. **AAZ9980B**
Sale \$230.00



Deburring Tools with long lasting cobalt blades

Extendable for long reach work

B10S Blade

E100S Blade

Handle w/10 B10S Cobalt Blades	Order Number	Sale
	VAR29256	\$29.12/set
Handle w/10 E100S Cobalt Blades	Order Number	Sale
	VAR29254	\$36.89 /set



GENERAL

478 Triangular Scraper

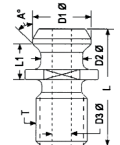
- Hardened and tempered triple edge blade is secured in wood handle with steel ferrule.
- Hollow ground cutting edges stay sharp longer and resharpen easily.
- Use for scraping, trimming and deburring metals, tubing and other materials.

Order No. **GEN-478**
Sale \$11.80ea

Caterpillar V-Flange Retention Knobs

Series	Thread Size(T)	Angle Rad.	Knob Diam.(D1)	Neck Diam.(D2)	OAL	L1	Coolant Hole	Order Number	Price
CT40	5/8-11	45	.740	.4900	1.500	.440	Yes	JM111122	\$23.00
CT40	5/8-11	45	.589	.3920	2.250	.988	No	JM311114	\$20.00
CT40	5/8-11	45	.589	.3920	2.250	.988	Yes	JM311114C	\$24.00
CT40	5/8-11	90	.589	.3920	2.250	.988	No	JM31114B	\$20.00
CT40	5/8-11	45	.588	.3920	2.125	.988	No	JM321114	\$22.00
CT50	1-8	45	1.140	.8200	2.300	.700	Yes	JM11144	\$27.00
CT50	1-8	45	.903	.6680	3.350	1.384	No	JM31118	\$31.00
CT50	1-8	90	.903	.6680	3.350	1.384	No	JM31118B	\$31.00
CT50	1-8	45	.903	.6680	3.350	1.384	Yes	JM31645	\$36.00

Cat-40 & Cat-50 Taper
Many other sizes available,
call for info.



- Ball bearing construction maximizes gripping force & drilling accuracy.
- Jaws center ground for absolute straightness and alignment.
- Jaws specially treated for extended thread life and surface hardness.
- One-piece sleeve stops cracking between driving teeth, unlike others.
- Fluted sleeve standard.

Chuck Capacity	Mount	Key Used	Order No.	Reg. Price	SALE PRICE
0-1/4"	2JT	K30	755-30209 (81/2N)	\$266.22	\$155.65
0-3/8"	2JT	K32	755-30215 (11N)	296.66	230.43
0-1/2"	3JT	K3	755-30221 (14N)	414.73	327.45
1/8-5/8"	3JT	K4	755-30227 (16N)	476.06	381.97
1/8-3/4"	4JT	K4	755-30233 (18N)	715.99	573.68
3/8-1"	5JT	K5	755-30239 (20N)	964.16	775.68



Morse Taper Drill Sleeves



- Hardened and ground throughout

Morse Taper Inside	Morse Taper Outside	Order No.	List Price	Sale
1	2	SHA-H-012	\$9.45	\$8.33
1	3	SHA-H-013	15.01	12.24
1	4	SHA-H-014	22.91	17.50
1	5	SHA-H-015	29.96	22.00
2	3	SHA-H-023	15.28	12.24
2	4	SHA-H-024	19.79	13.28
2	5	SHA-H-025	26.59	21.27
3	4	SHA-H-034	19.79	13.78
3	5	SHA-H-035	36.52	24.44
4	5	SHA-H-045	36.52	26.93
4	6	SHA-H-046	83.34	66.67
5	6	SHA-H-056	83.34	49.71

Heavy Duty

Chuck Capacity	Mount	Key Used	Order No.	Reg. Price	SALE PRICE
0-1/2"	2JT	K3	755-14442 (3402)	\$203.55	\$139.65
0-1/2"	6JT	K3	755-6295 (3406)	270.05	185.45
0-1/2"	33JT	K3	755-14445 (3433)	229.87	157.87
1.8-8.0	3JT	K4	755-6309 (36)	408.65	238.83



Plain Bearing Chucks

- The OEM Standard for accuracy and durability for all types of applications.
- Jaws center ground for straightness and alignment.
- TIR .004" at half capacity
- 100% Inspected.

Medium Duty

Chuck Capacity	Chuck Mount	Key Used	Order No.	Reg. Price	SALE PRICE
.0135-.156"	0JT	K0	755-6200 (0)	\$177.10	\$125.60
.040-.250"	1JT	K1	755-6206 (1A)	144.38	99.17
.040-.375"	2JT	K2	755-6214 (2A)	199.16	116.43
.080-.500"	33JT	K32	755-6279 (33)	260.13	198.60

Chuck Removal Wedges

For Removal of Taper Mounted Chucks

Removes Chuck Models	Order No.	Price per Set
All Chucks with #1 JT	755-13266	\$22.13
All Chucks with #2 JT	755-13267	22.13
All Chucks with #3 JT	755-13268	21.92
All Chucks with #6 JT	755-13269	21.92

Note: Removal of Jacobs Tapers No. 4 and No. 5 requires stacking of No. 3 and No. 6 Wedge Sets



Jacobs Brand Chuck Keys



Part Number	Price Each	Pilot Size Inch	Used On
755-3637 (K0)	\$7.23	1/8	0 Series
755-3641 (K1)	6.33	5/32	1 Series
755-3649 (K2)	10.33	1/4	2 Series
755-3651 (K3)	10.22	5/16	3, 34 Series & 14N
755-3655 (K4)	13.27	3/8	36, 16, 18N
755-3657 (K5)	39.15	7/16	20N
755-B3664(K30)	9.17	15/64	31 Series & 8-1/2N
755-3666 (K32)	6.10	1/4	32, 33 Series & 11N



Classic Keyless Drill Chucks

- Keyless Operation
- Self-tightening design
- Hi-Speed Balanced
- The more torque applied to the chuck the tighter it grips!
- Precision ground hardened ball bearings.



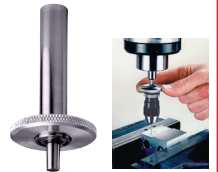
Chuck Capacity Inches	Mount	Chuck Model	Chuck Order No.	SALE PRICE
0-1/16"	J0	C15-J0	ALB70010	\$641.00
0-1/8"	J0	C30-J0	ALB70020	483.00
0-1/8"	J1	C30-J1	ALB70030	483.00
0-1/4"	J1	C65-J1	ALB70050	462.00
0-3/8"	J33	C100-J33	ALB70070	499.00
0-3/8"	J2	C100-J2	ALB70080	499.00
1/32-1/2"	J33	C130-J33	ALB70090	547.00
1/32-1/2"	J2	C130-J2	ALB70100	547.00
1/32-1/2"	J6	C130-J6	ALB70110	547.00
1/8-5/8"	J6	C160-J6	ALB70120	618.00



Sensitive Drill Feed

- Simple to use:
- Grasp free turning knurled ring and feed with gentle finger pressure.
- Drill Feed is Spring loaded and retracts automatically when ring is released.
- 1/2" Shank, #0 Jacobs Chuck Mount order chuck separately.

Order No. ROY25300
Sale Price \$119.00



Precision Ground R-8 Drill Chuck Arbors

Jacobs OR (for Bridgeport Type Mills)

Jacobs Order #	Price	Import Order #	Price	Description
755-7339	\$126.28	SHA7339	\$49.99	R-8 x 2JT
755-7340	126.28	SHA7340	49.99	R-8 x 3JT
755-7341	126.28	SHA7341	19.85	R-8 x 4JT
755-7342	130.08	SHA7342	49.99	R-8 x 6JT
755-7343	126.28	SHA7343	49.99	R-8 x 33JT



Morse Taper to Jacobs Taper

Jacobs Order #	Price	Import Order #	Price	Description
755-7299	\$26.72	SHA7299	\$8.49	1 MT x 1JT
755-7300	30.08	SHA7300	11.14	1 MT x 2JT
755-7303	25.80	SHA7303	12.06	1 MT x 6JT
755-7304	25.80	SHA7304	8.49	1 MT x 33JT
755-7306	28.93	SHA7306	8.34	2 MT x 1JT
755-7307	23.42	SHA7307	11.12	2 MT x 2JT
755-7308	22.97	SHA7308	11.33	2 MT x 3JT
755-7309	31.48	SHA7309	8.49	2 MT x 4JT
755-7311	41.29	SHA7311	11.12	2 MT x 6 JT
755-7312	23.42	SHA7312	11.12	2 MT x 33JT
755-7313	29.23	SHA7313	12.04	3 MT x 1JT
755-7314	32.73	SHA7314	15.31	3 MT x 2JT
755-7315	32.08	SHA7315	12.11	3 MT x 3JT
755-7316	36.40	SHA7316	11.63	3 MT x 4JT
755-7317	42.95	SHA7317	13.91	3 MT x 5JT
755-7318	32.73	SHA7318	12.11	3 MT x 6JT
755-7319	32.73	SHA7319	12.11	3 MT x 33JT
755-7320	59.17			4 MT x 2JT
755-7321	50.47	SHA7321	16.20	4 MT x 3JT
755-7322	50.47	SHA7322	16.20	4 MT x 4JT
755-7323	70.58	SHA7323	16.20	4 MT x 5JT
755-7324	51.70	SHA7324	16.17	4 MT x 6JT
755-7325	51.98	SHA7325	15.20	4 MT x 33JT
755-7327	104.85	SHA7327	28.16	5 MT x 3JT
755-7328	103.72	SHA7328	29.38	5 MT x 4JT
755-7329	102.40	SHA7329	35.06	5 MT x 5JT

Precision Ground Drill Chuck Arbors

Jacobs OR (World Quality Import)



Straight Shank to Jacobs Taper

Jacobs Order #	Price	Import Order #	Price	Description
755-7348	\$26.15	SHA7348	\$ 9.25	1/2" x 0JT
755-7349	23.90	SHA7349	9.25	1/2" x 1JT
755-7350	23.90	SHA7350	9.25	1/2" x 2JT
755-7351	23.90	SHA7351	8.63	1/2" x 3JT
755-7353	30.98	SHA7353	9.25	1/2" x 6JT
755-7354	23.90	SHA7354	8.69	1/2" x 33JT
755-7355	25.53	SHA7355	10.79	5/8" x 1JT
755-7356	29.43	SHA7356	10.07	5/8" x 2JT
755-7357	40.65	SHA7357	14.73	5/8" x 3JT
755-7359	31.68	SHA7359	11.73	5/8" x 6JT
755-7360	27.03	SHA7360	11.56	5/8" x 33JT
755-7361	40.65	SHA7361	11.56	3/4" x 2JT
755-7362	37.15	SHA7362	10.07	3/4" x 3JT
755-7364	43.63	SHA7364	11.90	3/4" x 6JT
755-7365	44.20	SHA7365	11.06	3/4" x 33JT
755-7367	45.60	SHA7367	15.80	1" x 3JT
755-7368	50.63	SHA7368	15.80	1" x 6JT

- Uses all standard ER Series Collets.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 & ground to ensure maximum accuracy.
- Through spindle coolant capability. Collet Seat taper .0002" TIR
- Retention Knobs and wrenches are sold separately.
- Highest quality import.



CLOSE-OUT
WHILE SUPPLIES LAST

High Precision ER Series Collet Chucks

ER Collet	Nut Dia.	Gage Length	Cat-40 Taper Order No.	List	Sale
ER16	1.1	2.50	SHA-CT40ER16-2.5	173.22	99.00
ER16	1.1	4	SHA-CT40ER16-4	173.22	99.00
ER16	1.1	6	SHA-CT40ER16-6	173.22	99.00
ER20	1.4	3	SHA-CT40ER20-3	193.50	99.00
ER20	1.4	5	SHA-CT40ER20-5	193.50	99.00
ER25	1.7	3	SHA-CT40ER25-3	193.50	99.00
ER25	1.7	5	SHA-CT40ER25-5	193.50	99.00
ER32	2.0	3	SHA-CT40ER32-3	176.28	99.00
ER32	2.0	5	SHA-CT40ER32-5	192.00	99.00
ER40	2.5	3.5	SHA-CT40ER40-3.5	176.28	99.00

R-8 Shank ER-32 Collet Set

Features:

- Hard Carrying case.
- Includes 12 ER-32 Collets (1/16"-3/4" Range)
- R-8 Precision Collet Chuck and Wrench.
- Collets are .0004" TIR



Order No. **SHA-ER3212**
Regular Low Price **\$274.00**

Sale \$187.69

High Precision CT40 ER Collet Sets

Fits all standard CT40 Milling Machines.
Supplied in fitted aluminum storage case.
.008MM Tolerance
Includes Collet Wrench



Holder Size	Collets Included	Order Number	Sale Price
CT40 x 2.75"	ER16: 1/32, 1/16, 3/32, 1/8, 3/16, 7/32, 1/4, 5/16, 11/32, 3/8"	SHA-CT40ER16SET .008mm Tolerance	\$304.78
CT40 x 2.5"	ER32: 1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 11/16, 3/4"	SHA-CT40ER32SET .008mm Tolerance	\$451.11

CAT V-Flange End Mill Holders

- Made of alloy forged steel for long, durable life.
- Hardened to RC52-56 and ground to ensure max accuracy.
- Through spindle coolant capability.
- Endmill socket T.I.R. <.0002"
- Highest quality import
- Pre-Balanced for superior tool life

CLOSE-OUT
WHILE SUPPLIES LAST



Caterpillar V-Flange End Mill Holders					
Gage		CAT-40 Taper	List	Sale	
Bore	Lnth	Order No.			
3/16	2-1/2	SHACAT40-3/16-2.5	\$99.90	\$35.29	
3/16	4	SHACAT40-3/16-4	127.60	99.00	
1/4	2-1/2	SHACAT40-1/4-2.5	99.90	40.83	
1/4	4	SHACAT40-1/4-4	127.60	99.00	
5/16	2-1/2	SHACAT40-5/16-2.5	99.90	65.69	
5/16	4	SHACAT40-5/16-4	110.00	78.00	
3/8	2-1/2	SHACAT40-3/8-2.5	99.90	62.57	
3/8	4	SHACAT40-3/8-4	110.00	78.00	
7/16	2-1/2	SHACAT40-7/16-2.5	119.00	68.12	
1/2	1-3/4	SHACAT40-1/2-1.75	127.00	68.12	
1/2	2-1/2	SHACAT40-1/2-2.5	99.90	68.12	
1/2	4	SHACAT40-1/2-4	135.00	42.86	
5/8	1-3/4	SHACAT40-5/8-1.75	109.00	47.78	
5/8	3	SHACAT40-5/8-3	109.00	76.88	
5/8	5	SHACAT40-5/8-5	119.00	74.30	
3/4	1-3/4	SHACAT40-3/4-1.75	109.00	76.88	
3/4	2-1/8	SHACAT40-3/4-2.12	109.00	76.88	
3/4	3	SHACAT40-3/4-3	109.00	76.88	
3/4	5	SHACAT40-3/4-5	109.00	76.88	
7/8	3-1/2	SHACAT40-7/8-3.50	129.00	76.88	
1	1-3/4	SHACAT40-1-1.75	119.00	89.00	
1-1/4	2	SHACAT40-1-1/4-2	119.00	89.00	
1-1/4	4-1/8	SHACAT40-1-1/4-4	139.00	82.50	

CLOSE-OUT
WHILE SUPPLIES LAST

CAT V-Flange End Mill Holders



High Precision ER Series Collet Chucks

- Uses standard ER Series Collets.
- Made of alloy forged steel for long, durable service life.
- Hardened to RC 52-56 & ground to ensure maximum accuracy.
- Through spindle coolant capability.
- Collet Seat taper .0002" TIR
- Retention Knobs and wrenches are sold separately.
- Highest quality import.
- Balanced for superior tool life.

CLOSE-OUT
WHILE SUPPLIES LAST



ER Collet	Gage Length	Cat-50 Taper Order No.	List	Sale
ER16	4	SHAC50ER16-4	\$175.00	\$121.00
ER16	6	SHAC50ER16-6	175.00	121.00
ER32	4	SHAC50ER32-4	175.00	121.00
ER32	6	SHAC50ER32-6	175.00	135.99
ER40	4	SHAC50ER40-4	191.66	135.99
ER40	6	SHAC50ER40-6	191.66	135.99

CAT V-Flange Jacobs Taper Holders

- Made of alloy forged steel for long, durable life.
- Hardened to RC52-56 and ground to ensure max accuracy.
- Highest quality import



Jacobs Taper	Gage Lnth	Taper	Order No.	List	Sale
3	1.50	CT40	SHACT40JT3	\$81.66	\$70.12
6	1.50	CT40	SHACT40JT6	81.66	70.12
33	1.50	CT40	SHACT40JT33	81.66	68.12
3	1.50	CT50	SHACT50JT3	\$141.66	\$115.00
6	1.50	CT50	SHACT50JT6	141.66	115.00
33	1.50	CT50	SHACT50JT33	141.66	115.00

Caterpillar V-Flange End Mill Holders					
Gage		CAT-50 Taper	List	Sale	
Bore	Lnth	Order No.			
3/8	2.50	SHACAT50-375-2.5	\$131.66	\$99.00	
3/8	4.50	SHACAT50-375-4.5	131.66	99.00	
3/8	6	SHACAT50-375-6	148.33	109.00	
1/2	2.63	SHACAT50-500-2.63	165.00	119.00	
1/2	4.63	SHACAT50-500-4.63	181.66	129.00	
1/2	6	SHACAT50-500-6	198.33	139.00	
5/8	3.75	SHACAT50-625-3.75	165.00	119.00	
5/8	5.75	SHACAT50-625-5.75	181.66	129.00	
5/8	6	SHACAT50-625-6	198.33	139.00	
3/4	3.75	SHACAT50-750-3.75	165.00	119.00	
3/4	5.75	SHACAT50-750-5.75	181.66	129.00	
3/4	6	SHACAT50-750-6	198.33	139.00	
1	4	SHACAT50-100-4	181.66	129.00	
1	6	SHACAT50-100-6	198.33	139.00	
1	8	SHACAT50-100-8	215.00	149.00	
1-1/4	4	SHACAT50-125-4	198.33	139.00	
1-1/4	6	SHACAT50-125-6	215.00	149.00	
1-1/4	8	SHACAT50-125-8	231.66	159.00	
1-1/2	4	SHACAT50-150-4	198.33	139.00	
1-1/2	6	SHACAT50-150-6	215.00	149.00	
1-1/2	8	SHACAT50-150-8	231.66	159.00	



Inch ER Spring Steel Collet Sets



High Precision and Concentricity
Superior Quality DIN6499 Spec.
Hardened And Ground .0003" TIR Max
Collapses Approx. .040" While Maintaining
Full Accuracy

Series	Range	# Collets	Order No.	List	SALE
ER11	1/32-1/4"	7	SHA2041170	220.00	110.00
ER16	1/32-3/8"	10	SHA2041630	231.00	161.70
ER20	1/16-1/2"	12	SHA2042040	277.00	193.90
ER25	1/16-5/8"	15	SHA2042550	363.00	254.10
ER32	3/32-3/4"	18	SHA2043260	454.00	317.80
ER40	1/8-1.0"	23	SHA2044000	699.00	489.30

High Precision ER Collets

- Maximum T.I.R. .0003"
- Highest quality import.



Individual ER11 Collets:
Order Number TMX31711-_____(specify size desired) \$24.00ea
Available: 1/16", 3/32, 1/8, 5/32, 3/16, 7/32, 1/4"

Individual ER16 Collets:
Order Number TMX31716-_____(specify size desired) \$21.95ea
Available: 1/16", 1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8"

Individual ER32 Collets:
Order Number TMX31732-_____(specify size desired) \$24.95ea
Available: 3/32", 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, 17/32, 9/16, 19/32, 5/8, 21/32, 11/16, 23/32, 3/4"

Metric ER Spring Steel Collet Sets



High Precision and Concentricity
Hardened And Ground .008mm TIR Max



Series	Range	# Collets	Order No.	List	SALE
ER11	1-7mm	7	SHA-244100	215.00	110.00
ER16	1-10mm	10	SHA-244200	231.00	161.70
ER20	2-13mm	12	SHA-244300	277.00	193.90
ER25	2-16mm	15	SHA-244400	363.00	254.10
ER32	3-20mm	18	SHA-244500	454.00	317.80
ER40	4-27mm	24	SHA-244600	699.00	489.30

High Precision ER Collet Sets



- Extreme Accuracy. Guaranteed to be 0.0002" TIR or better.
- Made from high grade steels imported from Germany.
- These are actual inch sizes, maximizing surface contact.
- Metric Sizes are available.



Series	Actual Sizes	# Collets	Order No.	SALE
ER11	1/16-1/4"x32nds	7	ROY53300	259.00
ER16	1/16-3/8"x32nds	11	ROY53302	407.00
ER20	5/32-1/2"x32nds	12	ROY53304	492.00
ER25	5/32-5/8"x32nds	16	ROY53306	688.00
ER32	7/32-3/4"x32nds	18	ROY53308	828.00
ER40	1/8-1.0"x16ths	15	ROY53310	750.00

ER Collet Tray-With Clear Cover for Protection



- Durable Plastic, does not scratch collets like metal trays
- Clear Slidable cover protects collets, and keeps in place.

Series	Capacity	Order No.	Price
ER11	40	SA-ER1140	49.65
ER16	40	SA-ER1640	49.65
ER20	40	SA-ER2040	53.95
ER25	40	SA-ER2540	53.95
ER32	40	SA-ER3240	55.65
ER40	28	SA-ER4028	55.65

TG-100 Series Collet Sets



- Interchangeable with all brands, collet collapse approx. 1/64"
- Maximum T.I.R. .0004"



Series	Range	Number Collets	Order No.	SALE
TG100	3/32-1"x32nds	30	TMX7166530	926.47



Double Angle DA Series Collet Sets

- Interchangeable with all brands, collets collapse approx. 1/64"
- Maximum T.I.R. .0004"



Series	Range	Number Collets	Order No.	List	SALE
DA180	1/4-3/4 x 32nds	17	TMX7167192	\$406.99	\$353.50
DA180	1/4-3/4 x 64ths	9	TMX7167194	777.58	585.50
DA200	1/8-3/8 x 32nds	33	TMX7167270	167.09	125.85
DA200	1/8-3/8 x 64ths	17	TMX7167275	305.73	230.20
DA300	1/8-1/4 x 32nds	5	TMX7167340	105.65	91.15



ER Collet Extensions

- Made from heat-treated alloy steel.
- Other sizes and lengths available. Includes locknut and backup screw.



Replacement Lock Nuts

Series	Price
107-ER11	\$24.00
107-ER16	30.00
107-ER20	35.00
107-ER25	39.00
107-ER32	48.00

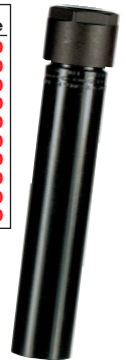
Series	Chuck Range	Lock Nut Diam.	Shank x OAL	Order Number	Reg Price	Sale Price
ER11	.019-.276	.62"	.500" x 6.65"	107-1002	\$96.40	\$80.00
ER11	.019-.276	.62"	.500" x 3.5"	107-10S2	88.00	71.00
ER11	.019-.276	.62"	.625" x 6.65"	107-1003	108.40	87.00
ER16	.019-.394	.86"	.625" x 7.10"	107-1004	115.75	99.00
ER16	.019-.394	.86"	.625" x 3.65"	107-10S4	112.00	92.00
ER16	.019-.394	.86"	.750" x 7.10"	107-1005	116.80	96.00
ER16	.019-.394	.86"	.750" x 3.65"	107-10S5	107.20	88.00
ER16	.019-.394	.86"	1.00" x 7.20"	107-1006	122.80	105.00
ER20	.039-.512	1.10"	1.00" x 7.20"	107-1007	130.00	110.00
ER25	.039-.630	1.36"	1.25" x 7.25"	107-1008	160.00	135.00
ER32	.039-.787	1.61"	1.00" x 6.20"	107-1030	172.00	151.00
ER32	.039-.787	1.61"	1.25" x 6.20"	107-1031	154.00	140.00
ER32	.039-.787	1.61"	1.50" x 6.20"	107-1032	154.00	135.00

Double Angle Collet Extensions



- Manufactured from heat-treated alloy steel.
- Ideal for hard to reach locations
- Other sizes and lengths available.
- Replacement Nuts Available

Series	Chuck Range	Lock Nut Diam.	Shank x OAL	Order	Price
DA300	1/64-1/4"	.56"	.500" x 6.80"	107-1010	\$69.00
DA200	1/64-3/8"	.81"	.750" x 7.10"	107-1011	80.00
DA100	1/64-9/16"	1.06"	1.00" x 7.30"	107-1012	85.00
DA180	1/32-3/4"	1.43"	1.25" x 7.30"	107-1013	109.00
DA300	1/64-1/4"	.56"	.50" x 3.60"	107-1020	69.00
DA300	1/64-1/4"	.56"	.625" x 3.75"	107-1021	72.00
DA200	1/64-3/8"	.81"	.750" x 3.80"	107-1022	83.00
DA100	1/64-9/16"	.90"	1.00" x 4.00"	107-1023	90.00
DA180	1/32-3/4"	1.56"	1.00" x 6.20"	107-1024	118.00
DA180	1/32-3/4"	1.56"	1.25" x 6.20"	107-1025	125.00



Series	Chuck Range	Lock Nut Diam.	Shank x OAL	Order	Price
DA300	1/64-1/4"	.56"	.500" x 8.00"	107-1040	115.00
DA300	1/64-1/4"	.56"	.500" x 9.00"	107-1041	125.00
DA300	1/64-1/4"	.56"	.500" x 10.00"	107-1042	140.00
DA200	1/64-3/8"	.81"	.750" x 14.00"	107-1043	220.00
DA100	1/64-9/16"	.90"	1.00" x 10.50"	107-1044	150.00
DA100	1/64-9/16"	.90"	1.00" x 12"	107-1045	190.00

Extra Length
Sizes now
available !



No-Mar LEAD Hammers

CLOSE-OUT
• WHILE SUPPLIES LAST •

- Vinyl grip for more comfort.
- Genuine 4% antimonial lead.
- Head secured by safety pin.
- Designed for NO RECOIL and NO MAR blows with maximum impact.



Head Dia.	Handle Length	Approx. Weight	Order No.	Price
3/4"	9"	1 lb.	KAN731	38.20
1-1/8"	10"	2 lb.	KAN732	72.15

Brass Hammers

CLOSE-OUT
• WHILE SUPPLIES LAST •

- Non-sparking, Non-magnetic
- Perfect Balance, High purity brass head
- Wood handle version uses copper wedges
- Exceptional long life head

Head Dia.	Handle Length	Approx. Weight	Fiberglass Handle	
			Order No.	Price
7/8"	11"	8 oz.	KAN750F	\$54.55
1"	12"	1 lb.	KAN751F	57.15
1-1/4"	12"	2 lb.	KAN752F	73.20
1-1/2"	12"	3 lb.	KAN753F	109.65
1-7/8"	12"	4 lb.	KAN754F	150.65
1-3/4"	12"	5 lb.	KAN755F	99.70
2"	12"	10 lb.	KAN7510F	209.65

Cordless Precision Engraver

- Diamond Tip Bit
- 20,000 rpm Motor Engraves Glass, Metal, Ceramic and Plastic.
- Heavy Duty Aluminum Body
- Uses Standard 3/32" Engraving Bit
- 2 "AAA" Batteries Included



Cordless Engraver
Order No. GEN-505
Sale \$17.90

Dia Sharp® Mini-Hone® Diamond Sharpeners

- Tight Space- No Problem. Dia-Sharp® 2.5" Diamond Mini-Hone® Sharpener with its ergonomically designed handle provides comfortable sharpening, deburring and honing in tight spaces. Easy access tip measures .033" Thick.
- Overall Tool Length 7"
- Available in three Monocrystalline Diamond grits
- Great for sharpening or honing carbide tools.



Description	Order Number	Price
Mini Hone® Coarse (Blue)	DIA-D2C	\$9.60
Mini Hone® Fine (Red)	DIA-D2F	9.60
Mini Hone® Extra Fine (Green)	DIA-D2E	9.60
Mini Hone® (Set 1 ea Blue, Red, Green)	DIA-D2K	28.50



Color	Order No.
Blue	DYK-84001
Black	DYK-84002
White	DYK-84003
Yellow	DYK-84004
Orange	DYK-84005
Red	DYK-84006
Green	DYK-84007

DYKEM Marking Pens

sale \$5.90 each

Use these felt tip marking pens to write on metal, glass, paper, wood and many other surfaces. A unique valve action tip prevents tip from drying out. Marking pens leave a permanent mark but can be removed with Dyken Remover & Thinner.



32 Leaf Thickness Gage Set



Order No. SHA-FG32
.0015-.035" Range
Sale \$12.95

GENERAL

Thread Repair Files

- These restore damaged external threads on studs, bolts, screws, plumbin and pipe fittings.
- Restores rusted or corroded threads.
- Doubles as screw pitch gage.
- Black oxide finish to prevent rust.

Thread Pitches	Order Number	Price
11,12,13,14,16,18,20,24 TPI	GEN177-1	\$16.00
9,10,12,16,20,27,28,32 TPI	GEN177-2	16.00
8,11-1/2, 14,18 iron pipe	GEN177-4	18.00
0.75,1.0,1.25,1.5,1.75,2.0,2.5,3.0 mm	GEN177-8	18.00

Small Hole Gage Sets



NEW

4pc set
Measures .125 - 500 range
Order No. SHA-SHF6
Regular Low Price \$28.00
Sale \$19.00ea



Starrett® Pin Vise Set

- Octagon Shaped PVC Insulated Handles
- Includes:
 - 0-.040" Range
 - .030-.062" Range
 - .050-.125" Range
 - .115-.137" Range

Order No. STA50614
Price \$137.00

All four sizes in a protective vinyl case



Demagnetizer

Features:

- 6.75" x 4.5" Surface Area
- Easy to use, simply pass item to be demagnetized slowly over unit.
- Removes residual magnetism from dies, cutters, punches and other items.
- Not designed for continuous use.



Order No. SHA-DM57
Sale \$99.00



Long Handle Telescoping Gages

10" or 12" Handle Length

Handle Length	Range	Order Number	Price
10"	5/16"-1/2"	INS4209-1	\$14.80
10"	1/2"-3/4"	INS4209-2	14.80
10"	3/4"-1-1/4"	INS4209-3	14.80
12"	1-1/4"-2-1/8"	INS4209-4	17.10
12"	2-1/8"-3-1/2"	INS4209-5	17.10
12"	3-1/2"-6"	INS4209-6	17.10
12"	4-3/4"-8"	INS4209-7	19.20



Arbor Presses

- Precision cut steel rams and pinions for accuracy.
- Semi-steel frames.
- Tables and slotted tableplates are flat and parallel to provide accurate support.
- Heavy Stub Teeth • 4 Position Anvil



Approx. Tons Pressure	Capacity Over Table (in.)	Press Hgt (in.)	Base Size (in.)	Shipping Weight	Order No.	Sale Price
1/2	4-3/4	10	4 x 9-1/2	23 lbs.	SHA-0	\$ 70.95
1	5-1/4	12	5 x 11	35 lbs.	SHA-1	109.03
2	8-1/2	17	6-3/4 x 17	90 lbs.	SHA-2	271.67
3	12-1/2	21-1/2	8 x 18	155 lbs.	SHA-3	448.00



Wiggler or Center Finder

Starrett®

Wiggler/Center Finder, complete with Pointed Shank, Ball Contact, Disc Contact, Offset Indicator Holder, & Case

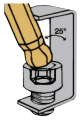


Order No. STA53064
Price \$86.00





Balldriver® T-Handle Sets with Stands



Balldriver T-Handle Set with Stand
 8 Pc. Metric Set
 2mm - 10mm
 Order No. BON13189
 List 71.37

Sale \$49.96

Balldriver T-Handle Set with Stand
 10 Pc. Inch Set
 3/32" - 3/8"
 Order No. BON13190
 List 85.95

Sale \$60.17

Protanium™ high torque steel is 20% stronger than competitors tools.

Balldriver® L-Wrench Sets

Set B
 9 Pc.
 Metric Set



Set C
 13 Pc.
 Inch Set



Set D
 13 Pc.
 Inch Set & 9Pc
 Metric Set



Order No.	Set	Set Includes	List	Sale
BON10995	A*	15 Pc Metric: 1.28, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10mm	\$34.94	\$27.95
BON10999	B	9 Pc. Metric: 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10mm	20.80	16.64
BON10937	C	13 Pc. Inch: .05, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8	25.60	20.48
BON20199	D†	13 Pc. Inch & 9 Pc. Metric Combo Set	43.67	34.94

* Not shown † Combo Set is Sets B & C Listed Above

BONDHUS Triple Pack



30 of the most popular sizes in inch & metric

Inch .050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"

Metric 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10

Torx T-6, T-7, T-8, T-9, T-10, T-15, T-20, T-25

Order No. BON14132
 List Price \$62.63
Sale \$43.84

Hardness Tester

Specifications:

- Automatic Dial Selection
- Measuring Range: 20-88HRA, 20-100HRB, 20-70 HRC
- Test Force: 60, 100, 150 kgf
- Depth of throat: 5.31"
- Max height of test piece: 6.69"
- Base size: 7 x 18", Machine Height: 24-1/2"
- Approx. Shipping Weight: 209 lbs.

Includes Standard Accessories:

- 3 testing anvils (large, small and v-anvil)
- 120 degree diamond cone penetrator
- 1/16" Steel ball penetrator
- 5 rockwell standard test blocks
- Instruction manual
- Dust Cover



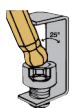
Order No. SHA-3R

Sale Price
\$1,900.00

CLOSE-OUT
WHILE SUPPLIES LAST



World Quality Import



GoldGuard
 Finish

Real 14 Carat Gold Finish !!
 Never wonder which set is yours again !!
 13pc Inch Set .050-3/8"
 9 pc. Metric Set 1.5-10mm

22pc Bondhus GoldGuard Ballpoint Set
Order No. BON20899
 List Price \$60.18
Sale \$ 48.14



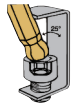
Timesaving GorillaProof Tools

ProGuard
 DRY SURFACE TECHNOLOGY
 DST

Ballpoint Allows Angled Entry
 13pc Inch Set .050-3/8"
 9 pc. Metric Set 1.5-10mm



22pc Bondhus Ballpoint Set
Order No. BON20199
 List Price \$43.67
Sale \$ 34.94



Tungsten Carbide Scriber & Magnet

- Tungsten carbide tip marks hard materials including hardened steel, ceramics and glass.
- Alnico permanent magnet picks up small parts and retrieves steel chips from hard to reach places.
- Scriber point reverses for safety.
- Overall length 6"

GENERAL

Order No. GEN-88CM \$9.25
Order No. GEN-88P(Replacement Point) \$5.00

Tungsten Carbide Point Scriber

- Tungsten carbide tip marks stainless steel, copper, ceramics and glass.
- Screw chuck for reversing tungsten carbide point when not in use.
- Measures 6" overall.

GENERAL

Order No. GEN-88 \$8.50
Order No. GEN-88P (Replacement Point) \$5.00

Single End Pin Vise Set

- For holding small rods, wire, drills, taps and other small tools.
- Tool steel collets are hardened and grip firmly when screw chuck is tightened.
- Nickel plated body is hollow to permit holding of long rods of wire.
- Available in individual sizes.
- Conforms to government specs. GGG-V-412a.

GENERAL

Order No.	Description	Price
GEN-S94	Set of 4 sizes, A-D, listed below, packed in plastic case	\$65.10
Order No.	Range	Price
GEN-94A	0-.055" (0-1.40mm)	\$16.00
GEN-94B	.025-.075" (64-1.91mm)	16.00
GEN-94C	.045-.125" (1.14-3.2mm)	18.30
GEN-94D	.110-.187" (2.80-4.75mm)	18.20



GENERAL



Bench and Pedestal Grinding Wheels Grey Aluminum Oxide Abrasive – Vitrified Bond

- Ideal for removing burrs on steel parts
- Fast cutting action – long life
- Good for sharpening high speed steel cutting tools



Grit-Hardness Size	A36-O-V Roughing Order No.	A60-M-V Semi Finishing Order No.	A80-M-V Finishing Order No.	Price Each	Max RPM
6" x 1" x 1"	CGW-38012	CGW-38014	CGW-38015	20.75	4138
7" x 1" x 1"	CGW-38017	CGW-38019	CGW-38020	23.90	3600
8" x 1" x 1 1/4"	CGW-38022	CGW-38024	CGW-38025	29.60	3600
10" x 1" x 1 1/4"	CGW-38027	CGW-38029	CGW-38030	58.45	2483

- Used for non-ferrous metals and tungsten carbide
- Fast cutting action – long life

Bench and Pedestal Grinding Wheels Green Silicon Carbide Abrasive – Vitrified Bond



Grit-Hardness Size	GC60-I-V Roughing Order No.	GC80-I-V Semi Finishing Order No.	GC100-I-V Finishing Order No.	Price Each	Max RPM
6" x 1" x 1"	CGW-38507	CGW-38508	CGW-38509	24.65	4138
7" x 1" x 1"	CGW-38513	CGW-38514	CGW-38515	31.00	3600
8" x 1" x 1 1/4"	CGW-38516	CGW-38517	CGW-38518	36.65	3600
10" x 1" x 1 1/4"	CGW-38519	CGW-38520	CGW-38521	71.85	2483



Premium V32A Blue Surface Grinding Wheels



- Specially developed for HSS applications above 55rc but can be used on general tool steels. This wheel is designed to cut freely while pulling the heat away from the part, and into the wheel.

Size	Order No.	Order No.	Order No.	Order No.	Order No.	Order No.	Order No.	Order No.	Order No.	Price Each
7 x 1/4 x 1 1/4 Grit-Hardness AZ46-I8	CGW-34303	CGW-34308	CGW-34309	CGW-34310	CGW-34312	CGW-34313	CGW-34314	CGW-34315	CGW-34317	15.50
7 x 1/2 x 1 1/4 Grit-Hardness AZ46-I8	CGW-34319	CGW-34320	CGW-34321	CGW-34323	CGW-34325	CGW-34326	CGW-34328	CGW-34330	CGW-34332	19.60
8 x 1/2 x 1 1/4 Grit-Hardness AZ46-H8	CGW-34350	CGW-34351	CGW-34352	CGW-34353	CGW-34355	CGW-34356	CGW-34357	CGW-34358	CGW-34359	25.95
12 x 1 x 3 Grit-Hardness AZ60-K8	CGW-34418									82.70



Premium Z3 Flap Wheels

- Excellent for Carbon and Stainless Steels
- USA Made Premium Flap Discs
- Advanced Aggressive Zirconia Alumina Abrasive.
- Designed for aggressive use and heavy duty applications.

Order No. [CGW42304](#)
4 1/2" x 7/8" Hole
Type 27, 60 Grit, 13,300 RPM
10 per carton

Order No. [CGW42301](#)
4 1/2" x 7/8" Hole
Type 27, 36 Grit, 13,300 RPM
10 per carton

Sale \$51.35 per 10pack

Sale \$51.35 per 10pack

Type 27 Depressed Center Wheels

- Fast Cut A24R Premium Grain Abrasive
- 1/4" Thick, Aluminum Oxide Grain.
- Designed for fast metal grinding.

Order No. [CGW35620](#)
4 1/2" x 1/4" x 7/8" Hole
Type 27, A24R, 13,300 RPM
25 per carton



Sale \$65.00 per carton

Order No. [CGW35621](#)
4 1/2" x 1/4" x 5/8-11
Type 27, A24R, 13,300 RPM
10 per carton



Sale \$44.85 per carton

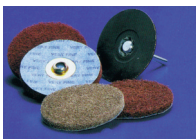
Surface Conditioning Discs



Surface Conditioning products have a woven fabric imbedded in the nylon structure to provide additional strength and durability for edge work, deburring and efficient blending of all metal types.

- Consistent rate of cut.
- Aluminum Oxide Grain.
- Works especially well on flat surfaces.

2" box Qty: 50
3" box Qty: 25
Sold in Full
Boxes Only!



Order No.	Dia.	Grade	Recommended R.P.M.	Sale
SAB840337	2"	Medium	12,000 – 20,000	73.50/box
SAB840338	2"	Medium	12,000 – 20,000	73.50/box
SAB840339	2"	Very Fine	12,000 – 20,000	73.50/box
SAB840437	3"	Coarse	10,000 – 18,000	70.25/box
SAB840438	3"	Medium	10,000 – 18,000	70.25/box
SAB840439	3"	Very Fine	10,000 – 18,000	70.25/box

Shop Roll

Cloth Rolls Aluminum Oxide

- Full resin Bond.
- Maximum flexibility.
- 50 Yards per box.



Order No.	Width	Grit	Sale
SAB706221	1"	80J	\$32.94
SAB713095	1"	120J	32.47
SAB713199	1"	180J	32.47
SAB706311	1-1/2"	80J	46.17
SAB713159	1-1/2"	120J	44.47
SAB713161	1-1/2"	180J	44.47
SAB707195	2"	80J	59.36
SAB713297	2"	120J	56.46
SAB713276	2"	180J	56.46



—Heavy Duty Deburring— Silicon Carbide

- Constructed by wrapping non-woven nylon, impregnated throughout with abrasive grain, around a hard core. Each layer is bonded to form a homogeneous wheel.
- Designed for heavy duty deburring, edge breaking and parting line removal in production settings.
- Ideal for exotic metals and hardened steels.

Standard Pack	Qty
6x1/2x1	4
6x1x1	3
8x1x3	3
12x1x5	2

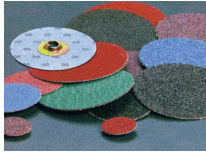


Order No.	Size	Spec.	Density	Grade	Max R.P.M.	Sale
SAB853093	6x1/2x1"	8SF	Medium	Fine	6,000	\$73.50
SAB854093	6x1/2x1"	9SF	Hard	Fine	6,000	73.50
SAB853152	6x1x1"	8SM	Medium	Medium	6,000	102.90
SAB853193	6x1x1"	8SF	Medium	Fine	6,000	102.90
SAB854193	6x1x1"	9SF	Hard	Fine	6,000	102.90
SAB853393	8x1x3"	8SF	Medium	Fine	4,500	128.64
SAB854393	8x1x3"	9SF	Hard	Fine	4,500	128.64
SAB854953	12x1x5"	9S	Hard	Fine	3,000	199.57

Quick Change Discs

SocAtt - Premium Aluminum Oxide 2 ply

- Our most popular disc.
- The best disc for general purpose grinding, deburring and blending on ferrous metals.
- Instant disc change, Disc is centered & smooth running.
- The Original Quick Change Disc.



Box Quantity Sold in Box
is 50 pcs Qty Only!

Order No.	Dia.	Grit	Sale
SAB522452	2"	36	\$53.15/box
SAB522454	2"	50	50.30/box
SAB522455	2"	60	49.00/box
SAB522456	2"	80	47.88/box
SAB522552	3"	36	67.37/box
SAB522555	3"	60	61.58/box
SAB522556	3"	80	58.00/box

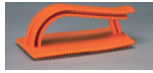


SA STANDARD ABRASIVES

Holder Pads with 1/4" Mandrel Combo

Order No.	Dia.	Density	R.P.M.	Price
SAB541057	SM 2	Med.	25,000	\$22.65
SAB541060	SM 3	Med.	20,000	26.20

- Deburring, Polishing, Cleaning, Finishing, Surface Preparation
- Hand applications on metals, composite or plastic surfaces.



6 x 9" Hand Pads BriteRite®



SA STANDARD ABRASIVES

Order No.	Description	Color	Pkg Qty	Sale
SAB827500	Ultra Fine	Gray	20	\$28.46
SAB827510	Heavy Duty	Tan	20	71.61
SAB827505	General Purp.	Maroon	20	28.46
SAB827599	General Purp.	Maroon	60	85.38
SAB827000	Holder Pad	Orange		29.57

Flap Wheels

Aluminum Oxide Resin Bond

SA STANDARD ABRASIVES



- 1/4" Shank.
- Use for removing flash and parting line.
- For applications requiring high stock removal.

Order No.	Size	Grit	R.P.M.	1-9 Pcs	10+
SAB611405	1x1"	60	30,000	\$9.00ea.	\$7.66ea.
SAB611406	1x1"	80	30,000	9.00ea.	7.66ea.
SAB611408	1x1"	120	30,000	9.00ea.	7.66ea.
SAB613445	2x1"	60	23,000	13.48ea.	11.46ea.
SAB613446	2x1"	80	23,000	13.48ea.	11.46ea.
SAB613448	2x1"	120	23,000	13.48ea.	11.46ea.
SAB615445	3x1"	60	20,000	16.50ea.	14.03ea.
SAB615446	3x1"	80	20,000	16.50ea.	14.03ea.
SAB615448	3x1"	120	20,000	16.50ea.	14.03ea.

Milling Machine Digital Readout Kits

Mitutoyo

NEW!
Now with
5 year
warranty!



IP67

All kits include:

- Two AT715 Linear Scales in sizes as shown. IP67 Coolant Proof.
- KA Counter (Two Axis) with tray/arm kit
- Bracket kit
5 year Warranty Direct from Mitutoyo.

Features

- Bolt hole circle calculation
- Diameter display and tool off sets (parameter mode)
- Memory Compensation value
- Selecting coordinates 0-10
- Preset.
- Zero approach machining.
- Pitch approach machining.
- 1/2 calculation
- mm/inch
- Standard Resolution: .001", .0005", .0002", .0001", .00005" Selected on counter.
- Magnetic scales are IP55 Rated for dust and water.
- Scale response speed 50m/min
- True Absolute scale technology means original part datum point is never lost even when power is off.

CLOSE-OUT
• WHILE SUPPLIES LAST •

Order No. MTI64PKA058

includes brackets for scales and display arm kit
List Price \$1,704.00
12 x 30" Travel Scales

Sale Price \$898.86

Order No. MTI64PKA059

includes brackets for scales and display arm kit
List Price \$1,704.00
12 x 36" Travel Scales

Sale Price \$898.86

You must measure the travel of your machine to ensure proper selection.
Electronics cannot be returned after box is opened. Mitutoyo Scale Warranty Applies direct from Manufacturer.

ABSOLUTE™
Absolute System Patented by MITUTOYO

overall length of scales: (OAL)
12"Travel = 19.21" OAL
30"Travel = 36.93" OAL
36"Travel = 43.23" OAL

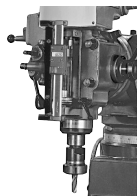
0-6" Z Axis Digital Readout

- Features:**
- in/mm readout
 - Zero/abs
 - .0005" Resolution



Make your own mounts and save!

Order No. SHAZAXIS
Reg. Price \$195.00
Sale Price \$65.67



Mitutoyo

Quill Kit with Absolute Encoder

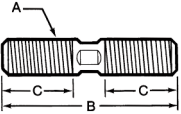
Easy Installation Fits Most Vertical Knee Mills

- FEATURES:**
- Easy to read LCD with resolution of .0005"/0.01mm.
 - Push button controls for inch/mm, Zero-Set and On/Off.
 - Powered by a single SR-44 Battery which lasts about 1 year with normal use.
 - SPC Output for data transmission to Data Processors or a Remote Display.



Order No. MTI053906B
Digimatic Quill Kit Complete with brackets & Scale for Bridgeport Type machines
Sale \$262.91

Driver Studs



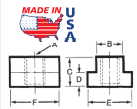
- Tensile 125,000 P.S.I.
- Medium Carbon Steel
- Black Oxide Finish
- Case Hardened
- Most Sizes have Wrench Flats

Thread A (in.)	Length B (in.)	C (in.)	C (in.)	Order No.	Price Each
1/4-20	1 1/2	1/2	1/2	TECO-40301*	\$2.42
1/4-20	2	3/4	3/4	TECO-40302*	2.42
1/4-20	2 1/2	1	1	TECO-40303*	2.42
5/16-18	1 1/2	1/2	1/2	TECO-40401*	2.65
5/16-18	2	3/4	3/4	TECO-40402*	2.73
5/16-18	2 1/2	1	1	TECO-40403*	2.73
5/16-18	3	1 1/8	1 1/8	TECO-40404*	2.84
5/16-18	3 1/2	1 1/8	1 1/8	TECO-40405*	2.94
3/8-16	1 1/2	1/2	1/2	TECO-40501*	2.31
3/8-16	2	3/4	3/4	TECO-40502*	2.31
3/8-16	2 1/2	1	1	TECO-40503*	2.31
3/8-16	3	1 1/8	1 1/8	TECO-40504	2.31
3/8-16	3 1/2	1 1/4	1 1/4	TECO-40505	2.31
3/8-16	4	1 1/4	1 1/4	TECO-40506	2.42
3/8-16	4 1/2	1 1/4	1 1/4	TECO-40507	2.42
3/8-16	5	1 1/4	1 1/4	TECO-40508	2.42
3/8-16	6	1 1/4	1 1/4	TECO-40510	2.52
3/8-16	7	1 1/4	1 1/4	TECO-40512	2.63
3/8-16	8	1 1/4	1 1/4	TECO-40514	2.63
1/2-13	1 1/2	1/2	1/2	TECO-40701*	2.39
1/2-13	2	3/4	3/4	TECO-40702*	2.50
1/2-13	2 1/2	1	1	TECO-40703*	2.39
1/2-13	3	1 1/8	1 1/8	TECO-40704	2.50
1/2-13	3 1/2	1 1/8	1 1/8	TECO-40705	2.60
1/2-13	4	1 1/2	1 1/2	TECO-40706	2.70
1/2-13	4 1/2	1 1/2	1 1/2	TECO-40707	2.70
1/2-13	5	1 1/2	1 1/2	TECO-40708	2.81
1/2-13	5 1/2	1 1/2	1 1/2	TECO-40709	2.81
1/2-13	6	1 1/2	1 1/2	TECO-40710	2.91
1/2-13	6 1/2	1 1/2	1 1/2	TECO-40711	3.12
1/2-13	7	1 1/2	1 1/2	TECO-40712	3.22
1/2-13	7 1/2	1 1/2	1 1/2	TECO-40713	3.33
1/2-13	8	1 1/2	1 1/2	TECO-40714	3.43
1/2-13	9	1 1/2	1 1/2	TECO-40715	6.45
1/2-13	10	1 1/2	1 1/2	TECO-40716	7.28
1/2-13	12	1 1/2	1 1/2	TECO-40717	8.84
1/2-13	14	1 1/2	1 1/2	TECO-40718	9.78
1/2-13	16	1 1/2	1 1/2	TECO-40719	12.50
5/8-11	3	1 1/8	1 1/8	TECO-40804	3.15
5/8-11	3 1/2	1 1/8	1 1/8	TECO-40805	3.36
5/8-11	4	1 3/8	1 3/8	TECO-40806	3.36
5/8-11	4 1/2	1 3/8	1 3/8	TECO-40807	3.57
5/8-11	5	1 3/8	1 3/8	TECO-40808	3.78
5/8-11	5 1/2	1 3/8	1 3/8	TECO-40809	3.89
5/8-11	6	1 3/8	1 3/8	TECO-40810	4.10
5/8-11	6 1/2	1 3/8	1 3/8	TECO-40811	4.31
5/8-11	7	1 3/8	1 3/8	TECO-40812	4.41
5/8-11	7 1/2	1 3/8	1 3/8	TECO-40813	4.83
5/8-11	8	1 3/8	1 3/8	TECO-40814	4.83
5/8-11	9	1 3/8	1 3/8	TECO-40815	8.30
5/8-11	10	1 3/8	1 3/8	TECO-40816	9.14
5/8-11	12	1 3/8	1 3/8	TECO-40817	10.10
5/8-11	14	1 3/8	1 3/8	TECO-40818	11.75
5/8-11	16	1 3/8	1 3/8	TECO-40819	13.45
5/8-11	18	1 3/8	1 3/8	TECO-40820	14.80
5/8-11	20	1 3/8	1 3/8	TECO-40821	16.60
5/8-11	22	1 3/8	1 3/8	TECO-40822	19.00
5/8-11	24	1 3/8	1 3/8	TECO-40823	20.50
3/4-10	3	1 1/8	1 1/8	TECO-40901	3.71
3/4-10	3 1/2	1 1/8	1 1/8	TECO-40902	4.02
3/4-10	4	1 1/8	1 1/8	TECO-40903	4.22
3/4-10	4 1/2	1 1/8	1 1/8	TECO-40904	4.64
3/4-10	5	2	2	TECO-40905	4.74
3/4-10	5 1/2	2	2	TECO-40906	5.05
3/4-10	6	2	2	TECO-40907	5.25
3/4-10	6 1/2	2	2	TECO-40908	5.56
3/4-10	7	2	2	TECO-40909	5.67
3/4-10	7 1/2	2	2	TECO-40910	6.08
3/4-10	8	2	2	TECO-40911	6.08
3/4-10	9	2	2	TECO-40912	11.10
3/4-10	10	2	2	TECO-40913	12.15
3/4-10	12	2	2	TECO-40914	13.70
3/4-10	14	2	2	TECO-40915	14.85
3/4-10	16	2	2	TECO-40916	16.25
3/4-10	18	2	2	TECO-40917	17.40
3/4-10	20	2	2	TECO-40918	18.85
3/4-10	22	2	2	TECO-40919	21.00
3/4-10	24	2	2	TECO-40920	22.75
7/8-9	3	1 1/8	1 1/8	TECO-41001	8.30
7/8-9	4	1 1/8	1 1/8	TECO-41003	9.35
7/8-9	5	2 1/8	2 1/8	TECO-41005	10.60
7/8-9	7	2 1/4	2 1/4	TECO-41009	13.00
7/8-9	8	2 1/4	2 1/4	TECO-41011	14.50
7/8-9	9	2 1/4	2 1/4	TECO-41012	16.60
7/8-9	10	2 1/4	2 1/4	TECO-41013	18.05
7/8-9	12	2 1/4	2 1/4	TECO-41014	19.45

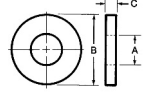


T-Slot Nuts

- Case hardened
- 1018 Material
- Black oxide finish
- The last thread is incomplete to prevent stud from turning through bottom of nut.



Order No.	Thread A (in.)	Table Slot		D (in.)	E (in.)	F (in.)	Each
		B (in.)	C (in.)				
TECO-41401	1/4-20	9/16	1/4	3/16	9/16	9/16	\$4.47
TECO-41402	1/4-20	3/8	3/8	15/64	9/16	9/16	4.58
TECO-41403	5/16-18	3/8	3/8	1/4	3/8	7/8	3.85
TECO-41404	3/8-16	7/16	1/2	7/32	1 1/16	7/8	3.85
TECO-41405	3/8-16	1/2	1/2	9/32	7/8	7/8	3.85
TECO-41406	3/8-16	9/16	5/8	1 1/32	1 1/8	1 1/8	4.37
TECO-41410	1/2-13	3/4	3/4	15/32	1	1 1/8	4.78
TECO-41411	1/2-13	1 1/4	3/4	3/8	1 1/8	1 1/8	6.34
TECO-41412	1/2-13	1 1/4	3/4	7/16	1 1/8	1 1/8	5.20
TECO-41413	1/2-13	3/4	3/4	15/32	1 1/4	1 1/4	7.07
TECO-41415	5/8-11	1 1/4	3/4	7/16	1 1/8	1 1/4	5.51
TECO-41416	5/8-11	3/4	3/4	15/32	1 1/4	1 1/4	5.72
TECO-41417	5/8-11	1 3/4	1	3/16	1 1/4	1 1/2	8.32
TECO-41418	3/4-10	1 3/4	1	3/16	1 1/4	1 1/2	9.15
TECO-41419	3/4-10	7/8	1	3/16	1 1/2	1 1/2	9.88
TECO-41420	3/4-10	1	1	5/8	1 3/4	1 3/4	11.25
TECO-41421	3/4-10	1	1 1/2	3/4	1 3/4	1 3/4	16.75
TECO-41422	3/4-10	1 1/4	1 1/8	1 1/8	1 3/4	2	13.10
TECO-41423	7/8-9	1	1	5/8	1 3/4	1 3/4	11.85
TECO-41424	7/8-9	1 1/4	1 1/8	1 1/8	1 3/4	2	15.60



Flat Washers

Case Hardened
Black Oxide Finish

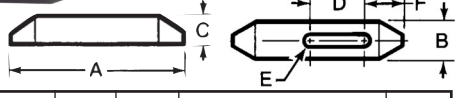


Stud Size	A	B	C	Order No.	Price Each
3/16	13/64	1/2	3/32	TECO-42600	\$0.59
1/4	9/32	5/8	1/8	TECO-42601	0.63
3/8	13/32	7/8	1/8	TECO-42603	0.69
7/16	15/32	1	1/8	TECO-42604	0.84
1/2	17/32	1-1/8	1/8	TECO-42605	0.84
5/8	21/32	1-3/8	1/8	TECO-42606	1.03
3/4	25/32	1-5/8	5/32	TECO-42607	1.45
7/8	29/32	1-3/4	5/32	TECO-42608	2.01
1	1-1/32	2	3/16	TECO-42609	2.69



Plain Clamps

Case Hardened
Black Oxide Finish



Order No.	Stud Size E	A	B	C, D, F			Price Each
				C	D	F	
TECO-30401	5/16 & 3/8	2-1/2	1	1/2	13/16	27/32	\$14.20
TECO-30402	5/16 & 3/8	4	1	5/8	1-7/16	1-1/32	18.95
TECO-30403	5/16 & 3/8	6	1-1/8	3/4	2-3/16	1-5/32	24.60
TECO-30404	1/2	2-1/2	1-1/8	1/2	11/16	29/32	16.50
TECO-30405	1/2	4	1-1/4	5/8	1-5/16	1-5/32	22.15
TECO-30406	1/2	6	1-1/4	3/4	2-1/16	1-5/32	27.30
TECO-30407	5/8	2-1/2	1-1/4	5/8	9/16	31/32	19.25
TECO-30408	5/8	4	1-1/2	3/4	1-3/16	1-7/32	24.20
TECO-30409	5/8	6	1-1/2	7/8	1-15/16	1-11/32	31.10
TECO-30410	3/4	4	1-1/2	3/4	1-1/16	1-9/32	25.85
TECO-30411	3/4	6	1-1/2	1	1-15/16	1-15/32	38.95
TECO-30412	3/4	8	1-3/4	1-1/8	2-3/16	1-29/32	52.20
TECO-30413	7/8 & 1	6	2	1-1/4	1-11/16	1-23/32	63.05
TECO-30414	7/8 & 1	8	2	1-3/8	1-15/16	2-1/32	81.05
TECO-30415	7/8 & 1	10	2	1-1/2	2-15/16	2-1/32	102.30

Serrated End Clamps

Case Hardened
Black Oxide Finish



Teeth Match
All Step Blocks

Order No.	Stud Size E	Overall A	B, C, D			F	Price Each
			B	C	D		
TECO-30501	1/4, 5/16 & 3/8	2-1/2	1	1/2	13/16	27/32	14.95
TECO-30502	1/4, 5/16 & 3/8	4	1	5/8	1-7/16	1-1/32	20.70
TECO-30503	1/4, 5/16 & 3/8	6	1-1/8	3/4	2-3/16	1-5/32	25.95
TECO-30504	1/2	2-1/2	1-1/8	1/2	11/16	29/32	17.40
TECO-30505	1/2	4	1-1/4	5/8	1-5/16	1-5/32	24.40
TECO-30506	1/2	6	1-1/4	3/4	2-1/16	1-5/32	29.75
TECO-30507	5/8	2-1/2	1-1/4	5/8	9/16	31/32	21.75
TECO-30508	5/8	4	1-1/2	3/4	1-3/16	1-7/32	29.95
TECO-30509	5/8	6	1-1/2	7/8	1-15/16	1-11/32	35.95
TECO-30510	3/4	4	1-1/2	3/4	1-1/16	1-9/32	32.85
TECO-30511	3/4	6	1-1/2	1	1-15/16	1-15/32	45.85
TECO-30512	3/4	8	1-3/4	1-1/8	2-3/16	1-29/32	62.00
TECO-30513	7/8 & 1	6	2	1-1/4	1-11/16	1-23/32	69.20
TECO-30514	7/8 & 1	8	2	1-3/8	1-15/16	2-1/32	85.50
TECO-30515	7/8 & 1	10	2	1-1/2	2-15/16	2-1/32	101.15

Special Offer! American Made

52-Piece Machinist Clamp Sets

For 5/8" Table Slot with 1/2" -13 T-Nuts & Studs

Each Set Contains:

- 4 Coupling nuts
- 6 Flange nuts
- 6 T-slot nuts
- 24 Studs, 4 each: 3, 4, 5, 6, 7 & 8" long
- 6 Step blocks
- 6 Serrated end clamps
- 1 All plastic holder



Order No. **TECO-12625CKUS**
Super Low Price **\$159.00**

TE-CO Machinist Clamping Sets

Each Set Contains:

- 6 Flange nuts
 - 6 T-Slot nuts
 - 4 Coupling nuts
 - 6 Step blocks
 - 6 Serrated end clamps
 - 1 T-Slot cleaner
 - 24 Studs; 4 each of 3, 4, 5, 6, 7 & 8" long
- Sizes longer than 3" have wrench flats
- 1 Holder (metal)



Order No.	Table T-Slot Size (in.)	Stud Size (in.)	Net Price Each
TECO-20412	7/16	3/8-16	\$372.30
TECO-20413	1/2	3/8-16	364.35
TECO-20401	9/16	1/2-13	383.15
TECO-20402*	5/8	1/2-13	337.50
TECO-20403	1 1/16	1/2-13	368.40
TECO-20416	3/4	5/8-11	476.75

*Fits Bridgeport

38 piece TE-CO T-Nut and Stud Sets



Order No.	Table T-Slot Size (in.)	Stud Size (in.)	Net Price Each
TECO-20601	3/8	5/16-18	\$114.30
TECO-20602	7/16	3/8-16	116.55
TECO-20603	1/2	3/8-16	121.00
TECO-20604	9/16	3/8-16	123.50
TECO-20605	5/8	1/2-13	132.20
TECO-20606	3/4	1/2-13	136.55
TECO-20607	1 1/16	1/2-13	138.90
TECO-20608	1 1/4	5/8-11	159.95
TECO-20609	3/4	5/8-11	178.25
TECO-20610	1 3/16	5/8-11	193.45
TECO-20611	1 3/8	5/8-11	257.00
TECO-20612	7/8	3/4-10	261.65
TECO-20613	1	3/4-10	268.00
TECO-20614	1	7/8-9	430.90
TECO-20615	1 1/16	7/8-9	434.70
TECO-20616	1 1/8	7/8-9	452.30
TECO-20617	1 1/4	1-8	478.00

Each Set Contains:

- 4 Flange nuts
- 1 T-Slot cleaner
- 4 T-Slot nuts
- 24 Studs; 4 each of 3, 4, 5, 6, 7 & 8" long
- 4 Coupling nuts
- 1 Holder (wooden base, metal tray)

Super Clamp Sets With Steel Blocks



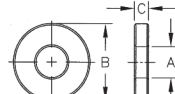
*Fits Bridgeport

Order No.	T-Slot Size	Stud Size	Step Block & Clamp Set	Net Price Each
With 1" Thick Steel Step Blocks				
TECO-20201	3/8	5/16-18	21001	\$358.05
TECO-20202	7/16	3/8-16	21001	347.35
TECO-20203	1/2	3/8-16	21001	347.35
TECO-20205	9/16	1/2-13	21002	386.30
TECO-20206	5/8	1/2-13	21002	*386.30
TECO-20207	1 1/16	1/2-13	21002	390.40
TECO-20208	1 1/16	5/8-11	21003	442.15
TECO-20209	3/4	5/8-11	21003	448.25
TECO-20210	1 3/16	5/8-11	21003	465.80
With 1 1/2" Thick Steel Step Blocks				
TECO-20212	3/8	1/2-13	21004	*541.00
TECO-20213	1 1/16	1/2-13	21004	541.00
TECO-20214	1 1/16	5/8-11	21005	601.00
TECO-20216	1 3/16	5/8-11	21005	637.50
TECO-20217	1 3/8	3/4-10	21006	766.00
TECO-20218	7/8	3/4-10	21006	772.50
TECO-20219	1	3/4-10	21006	789.75

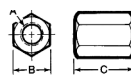
Each Set Contains:

- 4 Flange nuts
- 4 T-Slot nuts
- 1 T-Slot cleaner
- 4 Coupling nuts
- 6 Step blocks
- 6 Serrated end clamps
- 24 Studs; 4 each of 3, 4, 5, 6, 7 & 8" long
- 1 Holder (wooden base metal tray)

Heavy Duty Flat Washers



Stud Size	A	B	C	Order No.	Price Each
1/4	9/32	5/8	3/16	TECO-42619	\$1.45
5/16	11/32	3/4	3/16	TECO-42620	1.55
3/8	13/32	7/8	3/16	TECO-42621	1.64
1/2	17/32	1-1/8	3/16	TECO-42623	1.84
5/8	21/32	1-3/8	3/16	TECO-42624	2.01
3/4	25/32	1-5/8	1/4	TECO-42625	2.43
7/8	29/32	1-3/4	1/4	TECO-42626	3.28
1	1-1/32	2	9/32	TECO-42627	4.28



Coupling Nuts

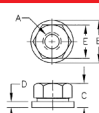
Case Hardened
Black Oxide Finish



A	B	C	Order No.	Price Each
1/4-20	1/2	5/8	TECO-41501	\$3.67
5/16-18	9/16	7/8	TECO-41502	4.00
3/8-16	11/16	1	TECO-41503	4.32
7/16-14	3/4	1-1/4	TECO-41504	4.97
1/2-13	7/8	1-1/4	TECO-41505	5.29
5/8-11	1-1/16	1-5/8	TECO-41506	7.67
3/4-10	1-1/4	1-7/8	TECO-41507	10.50
7/8-9	1-7/16	2-1/4	TECO-41508	15.90
1-8	1-5/8	2-1/2	TECO-41509	16.40

Flange Nuts

Case Hardened
Black Oxide Finish



A	C	D	E	Order No.	Price Each
1/4-20	5/16	3/32	1/2	TECO-41601	\$2.84
5/16-18	3/8	1/8	9/16	TECO-41602	3.15
3/8-16	1/2	1/8	11/16	TECO-41603	3.36
1/2-13	11/16	3/16	7/8	TECO-41605	3.78
5/8-11	13/16	3/16	1-1/16	TECO-41606	4.86
3/4-10	1	1/4	1-1/4	TECO-41607	8.18
7/8-9	1-1/8	1/4	1-7/16	TECO-41608	12.66
1-8	1-1/4	1/4	1-5/8	TECO-41609	15.51
1-1/4-7	1-1/4	1/4	1-13/16	TECO-41611	33.05



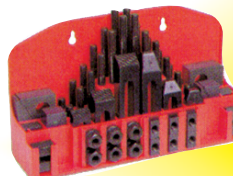
Steel Step Blocks



Order No.	Height Adj. Range	Price Per Pair
1" Thick		
TECO-40102	3/4 to 1-5/8	\$ 8.25
TECO-40103	1-1/8 to 2-1/2	11.75
TECO-40104	2-1/2 to 6	28.40
1-1/2" Thick		
TECO-40105	1-3/4 to 4	20.35
TECO-40106	2-1/2 to 6	40.25
TECO-40107	3-1/2 to 9	72.50
2" Thick		
TECO-40108	1-3/4 to 4	33.75
TECO-40109	2-1/2 to 6	51.25
TECO-40110	3-1/2 to 9	94.05
TECO-40111	4-7/8 to 10-1/2	285.00



52 Pc. Clamping Kits



- Each Set contains:
- 4 coupling nuts
 - 6 Flange nuts
 - 6 T-slot nuts
 - 24-studs, 4 each 3, 4, 5, 6, 7, & 8 long
 - 6 Step blocks
 - 6 serrated end clamps
 - Holder

T-Slot	Stud Size	Order Number	Price
3/8	5/16-18	SHA12375CK	\$ 75.63
1/2	3/8-16	SHA12500CK	76.83
9/16	1/2-13	SHA12562CK	67.00
5/8	1/2-13	SHA12625CK	86.29
3/4	5/8-11	SHA12750CK	145.86



Spilfyter® Sorbent Socks
 3" x 48" Gray Universal Socks
 Absorbs Oils, Coolant, Solvents,
 and Water-Based Liquids
 Packed 40 rolls per box
 Regular Low Price \$170.86
 Order Number SPY-G34
Sale \$99.98 per box

16" x 18" White Double Weight Pads
 Absorbs Oil Only
 Packed 100 pads per bag
 Regular Low Price \$90.00
 Order Number SPY-SF075
Sale \$69.45 per bag

Gray Universal Double Weight Pads
 16" x 18" Gray Universal Pads
 Absorbs Oils, Coolant, Solvents,
 and Water-Based Liquids
 Packed 100 pads per bag

Regular Low Price \$90.00
 Order Number SPY-SFG75

Sale \$69.45 per bag

Also Available in 32" x 150" Rolls Order #SPY-SFG90 \$126.00ea

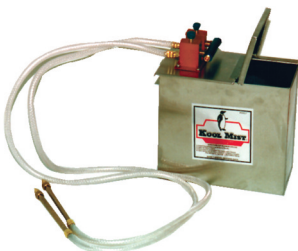


Also Available in 32" x 150" Rolls Order #SPY-SFO90 \$112.77ea



Kool Mist

Cooling
 Systems



*Unique design powered by your
 compressed air supply.*

1 Gallon stainless steel tank included
 4' long braided nylon reinforced coolant lines with 6"
 long brass nozzle

Dual Outlets

Order No. KM-102N

Sale \$314.20

Single Outlet

Order No. KM-100N

Sale \$218.85



Kool Mist *Portamist
 Tankless*

*Unique design
 powered by your
 compressed air supply.
 Tankless Design includes magnetic base, air
 and coolant hose. Simple single knob control*



12" LocLine® Coolant Line

Order No. KM-60M12

Sale \$167.95

18" LocLine® Coolant Line

Order No. KM-60M18

Sale \$225.00



Kool Mist

Formula #78, for universal use.
 Coolant for mist & flood cooling.
 100% synthetic & biodegradable.
 Concentrated, one gallon make
 33 gallons. Can be used on any
 metal or alloy.



Formula #77, for heavy duty use.
 For use where tougher machining
 requires greater lubricity.
 Coolant for mist & flood cooling.
 100% synthetic & biodegradable.
 Concentrated, one gallon make
 33 gallons. Can be used on any
 metal or alloy.

**Formula 77
 1 gallon**

Order No. KM-77-1

Sale \$71.00ea

**Formula 77
 5 gallon**

Order No. KM-77-5

Sale \$330.40ea

**Formula 78
 1 gallon**

Order No. KM-78-1

Sale \$69.00ea

**Formula 78
 5 gallon**

Order No. KM-78-5

Sale \$318.50ea

*Unique design powered
 by your
 compressed air supply.*
**1 Gallon stainless steel
 tank included**



**Single Outlet
 12" FlexLine**

Order No. KM-100NF12

307.40

**Single Outlet
 18" FlexLine**

Order No. KM-100NF18

339.10

**Refractometer
 0-18° Brix**

Keep Track of your coolant
 concentration levels.
 All Metal Construction.
 Magnified Scale for precise
 readings.



Order No. REF-HB18

Price \$155.00ea

Coolant Odor Control Tablets

- Eliminates and prevents odors such as hydrogen sulfide (rotten egg odor)
- Contains no formaldehyde.
- Most effective way to control odor in any coolant system.
- Safer and more economical than biocides.
- Just use one tablet per 25 gallons of sump coolant.
- Odorless tablets, 2" Diam x 3/8" thick approx.
- pH=8.6-8.8, 0.1% by weight solution

15 tablets per tube
 Order No. ZEB-XOCT
Sale \$55.00



Extremely versatile -
 applicable for all metals.
 It gives optimum performance on high tensile steels and alloys.
 Wide range of applications - tapping, threading, reaming, boring, drilling.
 Exceptional performance with roto-broach and hole-cut saw operations.
 Used as a dip or applied with a brush. Economical - little waste.
 SAFE - has a toxic/safety value 56 times above
 OSHA/WHMIS requirements.
 Does NOT contain metal active sulfur or chlorinated solvents.

Jokisch Econo 897 Metal Working Paste

Order No. JOK89700250
 8.8oz container

\$31.86ea

Order No. JOK89700750
 26.4oz container

\$68.00ea



**Jokisch Ultra Universal
 HDS400CF Metal Working Fluid**



- Primarily used on tapping operations.
- Can be used on any metal - Mild Steel, Stainless, aluminum and cast aluminum
- High lubricity & heat seeking property give great performance.
- Extremely SAFE
- Contains no solvent or sulphur & has a toxicity/safety value 44x over requirements.
- Has a medium viscosity - clings well to taps and cutters.
- Not recommended for recirculating/pump delivery systems

Order No. JOK400250
 8.45fl oz container
\$18.15ea

Order No. JOK400004
 1 gallon container
\$141.75ea

R-8 Right Angle Head Three Piece Set

- FEATURES:**
- **Aligning pads for quick positioning.**
 - **Uses precision hardened and ground spiral bevel gears.**
 - **Ductile iron body**

Includes:
R-8 Right Angle Attachment Head
Milling Arbor with Spacers
Adjustable arbor support

Order No. SHA-ERAST-R8

Sale \$1291.55





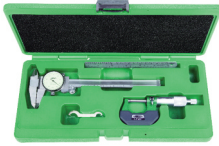
Center Finder



- Accurately and quickly locates center on round work-pieces
- Satin Chrome Finish, Made In USA. Approximate 2- 7/8" Capacity
- Place tool in drill chuck or collet and line up pointer with line scribed on shaft

Order No. PEC4200100

Sale \$22.44ea



INSIZE

3pc Set in fitted case

- 0-6" Dial Caliper Graduation: (INS13116)
- 0-1" Outside Micrometer, 0.0001" Graduation, ratchet stop, carbide tip and adjusting wrench. (INS320201)
- 0-6" Flex. Stainless Rule. 1/32", 1/64", 1/16"

Order No. INS-50031

Sale \$129.00



Drill Point Gage



- Satin chrome finish
- For measuring properly ground 59° drill tips
- Drill is graduated in 32nds and 64ths
- 6" Long, Graduations 4R (8ths, 16ths, 32nds, 64ths)

Order No. PEC5070

Sale \$53.70ea



HSS-Most Common-Deburs materials with spiral chips.
 Solid Carbide-Deburs materials with spiral chips.
 HSS-Left Handed-Deburs materials with spiral chips.
 PVD-TIN Coated-Deburs materials with spiral chips.
 Cobalt Enriched version of B10-good for stainless
 Extra-Thin HSS-Deburr holes as small as .08"
 HSS-Rotates both clockwise and counterclockwise
 Solid Carbide-Rotates both clockwise and counterclockwise
 TIN-PVD Coated-Rotates both clockwise and counterclockwise
 HSS-Thin nose design-specially designed for plastics
 Carbide-thin nose design-specially designed for plastics
 HSS-Simultaneously deburr ID & OD of holes up to .16" thick
 PVD-TIN Coated-Deburr both ID & OD of holes up to .16" thick
 HSS-Rotates CW and CCW version of B30
 Carbide tipped scriber-can be reground
 HSS-Removes burr from back edge of holes up to .80" thick

	VARB10	\$2.08ea
	VARB10C	\$13.93ea
	VARB10L	\$2.24ea
	VARB10P	\$4.29ea
	VARB10S	\$2.33ea
	VARB11	\$2.24ea
	VARB20	\$2.08ea
	VARB20C	\$13.93ea
	VARB20P	\$4.29ea
	VARB25	\$2.08ea
	VARB25C	\$13.93ea
	VARB30	\$3.06ea
	VARB30P	\$5.72ea
	VARB32	\$3.06ea
	VARB50	\$10.45ea
	VARB60	\$4.19ea

all "B" series tools inter-change

HSS-Small .16" Triangular Scraper for precision work
 HSS-Standard Size Triangular Scraper .31" for general use
 HSS-Double sided .30 Triangular Scraper

	VARC40	\$14.32ea
	VARC42	\$24.36ea
	VARC50	\$57.29ea

all "C" series tools inter-change

Solid Carbide-Scrape & Deburr Sheetmetal up to .12" Thick
 HSS Heavy Duty-Deburr material with spiral chips
 Solid Carbide Heavy Duty-Deburr material with spiral chips
 HSS Left Hand Heavy Duty-Deburr material with spiral chips
 PVD-TIN Heavy Duty-Deburr material with spiral chips
 Cobalt Enriched version of E100-good for stainless
 HSS-Thin nosed-Deburr holes with min .06" diameter
 HSS for materials with powdery chips- CW & CCW
 PVD-TIN for materials with powdery chips- CW & CCW
 Solid Carbide for materials with powdery chips- CW-CCW
 Specially designed for plastics . Very thin/heavy duty
 HSS-Simultaneously deburr ID & OD of holes up to .24" thick
 PVD-TIN-Simultaneously deburr ID & OD of holes up to .24" thick
 HSS-Rotates CW and CCW version of E300
 Mini triangular scraper
 HSS-Deburr back-edges of holes up to .8" thick

	VARD80	\$14.33ea
	VARE100	\$2.80ea
	VARE100C	\$13.93ea
	VARE100L	\$3.06ea
	VARE100P	\$5.72ea
	VARE100S	\$3.21ea
	VARE111	\$3.06ea
	VARE200	\$2.80ea
	VARE200P	\$5.72ea
	VARE200C	\$13.93ea
	VARE250	\$2.80ea
	VARE300	\$3.49ea
	VARE300P	\$6.12ea
	VARE350	\$2.80ea
	VARE400	\$10.45ea
	VARE600	\$5.27ea

all "E" series tools inter-change

Countersink for hole-edges up to 1/2" Diam.
 Countersink for hole-edges up to .8" Diam.
 Countersink for hole-edges up to 1.18" Diam.
 External chamfer of pipes up to 1.02" Diam.
 HSS-Deburr slots up to .6" wide
 HSS-4 cutting edges, for slots up to .4" wide

	VARF12	\$27.21ea
	VARF20	\$37.24ea
	VARF30	\$64.45ea
	VARF26X	\$51.56ea

Carbide-4 cutting corners, for slots up to .4" wide

	VARG10	\$10.03ea
	VARG20	\$10.03ea
	VARG40C	\$10.03ea

all "G" series tools inter-change

Solid Carbide Cleans corners, radii

	VARG30C	\$22.92ea
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Double sided round HSS Blade

	VARR10	\$9.75ea
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Double sided round HSS Blade for massive jobs

	VARR20	\$12.53ea
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all "R" series tools inter-change

Handles and Sets

All "B" series Blades fit all handles in this section
 all "B" series blades in this section sold in 10 packs

Mango II Set B, Includes Handle, Extension, B10 & B20 Blades
 Order Number VAR90056 \$27.17ea



Classic Set B, Includes Handle, Extension, B10 & B20 Blades
 Order Number VAR29065 \$25.07ea



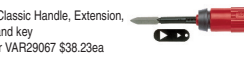
Aluminum Set B, Includes Handle, Extension, B10 & B20 Blades
 Order Number VAR29066 \$32.04ea



Mango II "B" Includes Handle only for close work.
 Order Number VAR90053 \$10.45ea



Scraper Set, Mango Handle, Extension, scraper C42 and key
 Order Number VAR90062 \$40.35ea



Scraper Set, Classic Handle, Extension, scraper C42 and key
 Order Number VAR29067 \$38.23ea



Sheet Scraper, mango handle, ext. D80 scraper.
 Order Number VAR90064 \$37.27ea



All "E" series Blades fit all handles in this section
 all "E" series blades in this section sold in 10 packs

Mango II Set E, Includes Handle, Extension, E100, E200 & E300 Blades
 Order Number VAR90065 \$31.35ea



Classic Set E, Includes Handle, Extension, E100, E200 & E300 Blades
 Order Number VAR29069 \$29.25ea



Mango II "E" Includes Handle only for close work.
 Order Number VAR90054 \$10.45ea

ID Ratchet Burr, Mango Handle, Ratchet Extension, F20
 Order Number VAR90072 \$76.48



OD Ratchet Burr, Mango Handle, Ratchet Extension, F26X
 Order Number VAR90073 \$83.68ea



Slot Edge Cleaner, Includes Handle, Extension, G10 Blade
 Order Number VAR90074 \$30.77ea



Heavy Duty Sheet Cleaner, use on sheets on up to .56" thick. Holder can take two R10 or R20 blades. Handguard attached for safety.
 Order Number VAR29140 \$42.52ea



Toolroom Grade B Granite Plates O-Ledge



36 x 48
18 x 36
+/- .0004"
+/- .00015"

Size	Weight	Order No.	Sale Price
36x48x4"	1100	SHA3648P	\$1,238.20
24x36x4"	400	SHA2436P	536.31
18x24x3"	150	SHA1824P	191.22

*Meets or exceeds Federal Spec GGG-P-463c

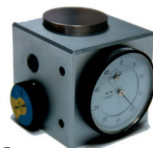
*Includes certificate of accuracy from manufacturer.

*Black Granite Plate.

Steel Body (magnetic) CNC Zero Setter

Features:

- Precision zero setting reference.
- Positive finding of zero position from direct reading indicator. Powerful magnet holds in place securely.
- Has "safe" position on side of tool. Allows handling without damage.
- 2" Nominal Height. .0005" Graduation Indicator Included.



Order No. SHA-ZSS
\$189.95

Carbide Tipped Boring Bar Sets



Both 3/8" & 1/2" are 9 pc. Sets, 5/8" & 3/4" are 12 pc. sets.
1" Shank is 7pc. set Grade C-6 Carbide, Brazed on to an alloy steel shank

Shank	Order No.	SALE
3/8"	SHA375BB	\$22.26
1/2"	SHA500BB	32.58
5/8"	SHA625BB	45.54
3/4"	SHA750BB	50.73
1"	SHA100BB	112.32

Boring Head Sets



Sets consist of:

- 2", 3" or 4" Boring Head with .001" Micr Dial.
- R-8 Shank included
- Carbide Tipped Boring Bar set for steel

Boring Head	Carbide Tipped Bars Included	Shank Included	Order No.	Sale Price
2"	1/2"-9pc Set	R-8 x 7/8-20	SHA-200K	\$255.06
3"	3/4"-12pc Set	R-8 x 1-1/2-18	SHA-300K	324.28
4"	1"-7pc Set	R-8 x 1-1/2-18	SHA-400K	249.00

Optional Straight Shanks for Boring Heads

	Order No.	Price
7/8-20 x 1/2" Straight Shank	SHA127820	\$32.54
7/8-20 x 3/4" Straight Shank	SHA347820	33.17
7/8-20 x 1" Straight Shank	SHA107820	32.54
1-1/2-18 x 1" Straight Shank	SHA1015018	32.54

Alum. Body CNC Zero Setter



Features

- Precision zero setting for CNC Machines.
- Fast setting of "O" refr. point with indicator.
- No averaging of several spindle approaches is required.
- Positive alignment of zero position with easy reading precision indicator, .001" reading.
- .125" Range
- Apprx 2" x 2" tall.



Order No. SHA-ZSET
\$109.00ea

Class A 25 person First Aid Kit



The Hart 0755 first aid kit is designed to provide first aid protection in a wide variety of situations. Complies with ANSI/ISEA #Z308.1-2015 Class A

- Weather proof gasket seal, positive latches and a combo handle/hanger.
- Silk Screened "First Aid" on a high impact polypropylene box.
- Contains a basic range of products for common workplace injuries such as; Major & Minor Wounds, Cuts & Abrasions, Minor Burns, Eye Injuries.

25 person First Aid Kit
Order No. HART 0755
Sale \$ 25.95



Boring Heads



Actual Size	Boring Bar Hole Size	Thread Back	Order No.	Price
2 dia.	1/2	7/8-20	CRICB202B	\$510.20
2 dia.	3/8	7/8-20	CRICB202A	350.00
3 dia.	3/4	1-1/2-18	CRICB203D	685.30
4 dia.	1	1-1/2-18	CRICB204E	969.10
6 dia.	1-1/2	2-1/4-10	CRIDBL206F	2,075.40

Shanks and Adapters



Shanks & Adapters with 7/8-20 Thread

Description	Order No.	Price
Bridgeport R-8	CRI20055	99.70
1/2 Round, Straight Shank	CRI20032	81.60
5/8 Round, Straight Shank	CRI20033	81.60
3/4 Round, Straight Shank	CRI20034	81.60
1 Round, Straight Shank	CRI20061	99.70

Shanks & Adapters with 1-1/2-18 Thread

Description	Order No.	Price
Bridgeport R-8	CRI20063	128.90
1 Round, Straight Shank	CRI20015	128.90
1-1/4 Round, Straight Shank	CRI20065	128.90
1-1/2 Round, Straight Shank	CRI20059	128.90
2 Round, Straight Shank	CRI20066	128.90

5C Collet Wrench



Order Number SA-CW56
Reg. Price \$38.00
Sale \$23.95

- Insert and remove 5C collets from front.
- Concave Face for perfect fit.
- Steel insert with High Impact One Piece Handle

Zero-Setter



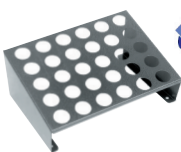
Fast and sure establishment of "0" reference point with built-in indicator. Spring loaded setting face to safe guard against damage from over run. Body dia. 1.44" (36.5mm) Wooden case included.



Order No.	Height	Grad.	List Price	Sale Price
MTI950111	1"	.0005"	\$452.00	\$406.80

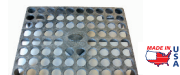
5C Collet Racks

can be used on workbench, or wall mounted



Horizontal Model Holds 30 5C Collets
Order No. SHA-239-9530
List Price \$79.00
Sale \$19.14

5C Collet Rack



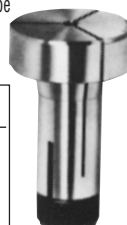
- High Impact Reinforced Plastic
- Secure location with tapered seat.
- Holds 76 5C collets.
- One rack holds twice as many collets as competitors.

Order No. SA-5C76
Regular Price \$69.78
Sale \$42.75

5C Step Collets



- Step collets allow large diameter parts to be held in a 5C collet.
- Soft Steel Head can be easily bored out to required size.



Order No.	Collet Dia.	Price
SHASC2	2"	\$30.81
SHASC3	3"	50.36
SHASC4	4"	71.59
SHASC5	5"	98.04
SHASC6	6"	89.00

5C Adjustable Collet Stops



Fine threaded stud for incremental positioning
Screwdriver slot in stud allows quick and accurate setting.

Order No. SHA-239-9051
\$7.91 ea



5C Precision Chucks 3 Jaw-Self Centering



These 5C chucks work with any 5C tooling. Eliminates tearing down a lathe collet set up when working with material diameters and don't have the correct size collets. Includes both internal and external hardened steel jaws and chuck wrench.

Order No.	Chuck Dia.	Price
SHA6003	3"	\$158.06
SHA6004	4"	195.94
SHA6005	5"	210.00
SHA6006	6"	269.00



5C Precision Chucks



These precision made 5C chucks work with any 5C tooling. Eliminates tearing down a lathe collet set up when working with material diameters and don't have the correct size collets. Includes both internal and external hardened steel jaws.

Part No.	Chuck Dia.	T.I.R. Repeat.	Description	Sale Price
AAZ9551	3"	.005	4 Jaw - Independent	181.00
AAZ9552	4"	.003	3 Jaw - Self Centering	323.00

5C Adjustable Collet Stop



Fine threaded stud for incremental positioning. Screwdriver slot in stud allows quick and accurate setting.



Order No. AAZ9002
Reg. Price \$23.47
Sale \$19.95

Self Aligning Tap and Reamer Holder

Great for tapping or reaming round stock. Reduce breakage. V-shape aligns fixture perpendicular to the surface. Includes 2 sets jaws. Holds from 0-80 to 5/16" taps. Choose USA made or Import.



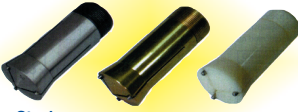
ProTool
Order No. SHA-390
Import Model Regular Price \$40.10
Sale \$40.20



Order No. SEL-14013
Regular Price \$71.40
Sale \$93.10

5C Emergency Collet

Emergency collets have a soft face for easy machining which allows operator to bore or shape collet as desired.



Steel
Order No. SHA-EC5C
Sale \$15.31

Brass
Order No. SHA-ECBR5C
Sale \$36.61

Nylon
Order No. SHA-ECNY5C
Reg. Price \$23.96
Sale \$22.74

Universal Collet Stops

5-piece set converts standard 1" lathe collets into solid or ejector stop collets. Complete with all attachments and springs.



Order No. AAZ9003
Reg. Price \$61.20
Sale \$49.00

Vertical 5C Collet Fixture

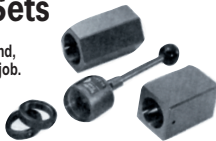
- Mounted on ground base for vertical use.
- Uses 5C Collets, capacity of 1-1/8"
- Will also accept hex and square collets.
- Just a small movement of the lever opens and closes the collet.
- 8 x 3" base, 4 3/8" Height



Order No. SHA-CF-A
Sale \$68.00

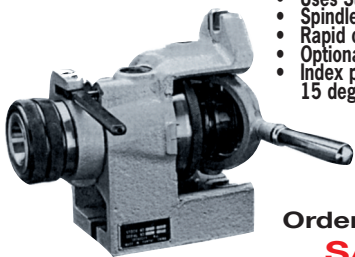
5C Hex & Square Collet Block Sets

Uses 5C Collets. Overall 2 x 2 x 3 1/2". Made of tool steel, Hardened & ground, square & parallel within .0005" Makes 60 and 120 degree indexing a simple job. Includes lever closer.



Order NO. SHA-ST5C
\$79.71 per set

5C Horizontal/Vertical Indexer

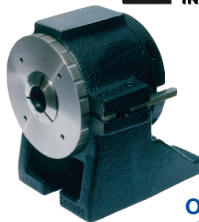


- Uses Standard 5C Collets
- Spindle nose is 2 1/4-8TPI for lathe chucks.
- Rapid opening & closing with the lever action.
- Optional screw feed tailstock available.
- Index plate has 24 index locations, 15 degree increments.



Order Number SHA2023011
SALE \$560.30ea

KALAMAZOO INDUSTRIES, INC.



5C Index Fixture

Order No. KAL-5C

Includes 24 space ring and 5C draw nut.

Sale \$450.00

- Specifications:
- Index plate easily changed.
 - Precision ground spindle.
 - Hardened and Ground 5C Taper.
 - Plate can be bolted to top for drill bushing.
 - Use in vertical position with angle plate. 3 1/4" Center Height.
 - Base model comes complete with 24 space ring and 5C draw nut.

Available Options:

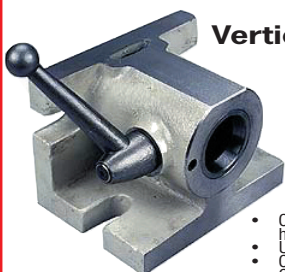
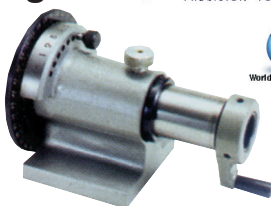
Description	Order Number	Price
Standard Tailstock	KAL-AT	\$336.00
Blank Index Ring	KAL-AR-0	48.00
20 Notch Index Ring	KAL-AR-20	88.00
36 Notch Index Ring	KAL-AR-36	88.00
1"-10 thread stub arbor	KAL-AS	240.00
Lever type collet closer	KAL-LC	184.00

5C Indexing Spin Jig



- A multi-purpose machine indexing fixture designed to extend work capabilities.
- 10 vernier holes for 1° indexing.
- Plate is graduated by degrees to 360°.
- Precise 36 hole pattern.
- Uses standard 5C collets, 1-1/8 Capacity
- 2" travel for flute grinding.

Order No. SHA-SJ5C
Sale Price \$98.52



Vertical/Horizontal 5C Collet Fixture



- Can be mounted and used either horizontal or vertical.
- Uses all standard 5C Collets.
- Cam lever action opens and closes collet.
- Can be adjusted without disturbing setup.
- Collet retains positive relation to base—does not move up or down.

Order No. SHA-5CCF
Sale \$101.75

Vertical/Horizontal 5C Collet Vise



Order No. SHA-5CCV
Sale \$90.50

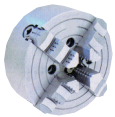


- Can be mounted on an angle plate, this precision fixture may be used in either vertical or horizontal position.
- Uses all standard 5C Collets, for a capacity of 1-1/8"
- Just a small movement of the lever opens and closes the collet.



4 Jaw Plain Back Independent Lathe Chucks

- Cast Iron Body
- Plain flat back.
- Reversible Hardened and Ground Carbon Steel Jaws.
- Includes Key



Size	Thru Hole	Order No.	Sale Price
6"	1.50	SHA-LCF46	\$182.75
8"	1.93	SHA-LCF48	234.68
10"	2.50	SHA-LCF410	305.93
12"	3.75	SHA-LCF412	575.08
16"	3.50	SHA-LCF416	879.45



3 Jaw Plain Back Universal Scroll Chucks

- Semi-Steel Body
- Plain flat back.
- Includes Key



Size	Thru Hole	Order No.	Sale Price
3"	.630	SHA-LCF33	\$123.36
4"	.866	SHA-LCF34	135.58
5"	1.18	SHA-LCF35	158.46
6"	1.57	SHA-LCF36	221.82
8"	2.55	SHA-LCF38	275.00
10"	3.15	SHA-LCF310	409.31
12"	3.93	SHA-LCF312	732.38
15"	4.00	SHA-LCF315	1,063.98

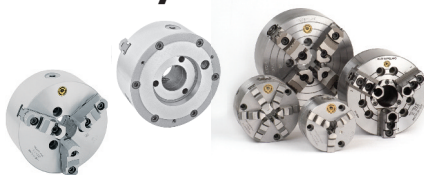
Bison Universal Chucks Semi-Steel Body

Universal 3-Jaw Self-Centering Scroll Chucks

Chucks are provided with American Standard Two-piece Tongue & Groove Jaws. The body is made of high quality cast iron, all precisely machined. The scroll plate is drop forged of fine alloy steel, case hardened and ground on both sides.

Two-Piece Jaw Chuck Standard Accessories:

- 1 set of 2-pc reversible jaws, (hard top jaw and hard masterjaw)
- 1 self-ejecting wrench
- 1 set of mounting screw
- 2 allen keys.



Plain Flat Back Order No.	Chuck Size	Hole Size	Wt. lbs.	Jaw Style	Price
TMX7800-0500	5"	1.2598	10.0	2-pc.	733.00
TMX7800-0600	6-1/4"	1.6535	19.0	2-pc.	780.00
TMX7800-0800	8"	2.1654	34.0	2-pc.	951.00
TMX7800-1000	10"	2.99	61.0	2-pc.	1317.00

Direct Mount Order No.	Chuck Size	Hole Size	Wt. lbs.	Jaw Style	Mount Type	Price
TMX78011016	10"	2.165	71.0	2-pc.	A1-6	2,041.00
TMX78011218	12.5"	3.150	121.0	2-pc.	A1-8	2,711.00
TMX78030634	6.25"	1.654	20.0	2-pc.	D1-4	957.00
TMX78030834	8"	2.165	42.0	2-pc.	D1-4	1,222.00
TMX78030835	8"	2.165	42.0	2-pc.	D1-5	1,222.00
TMX78030836	8"	2.165	42.0	2-pc.	D1-6	1,222.00
TMX78031036	10"	2.992	71.0	2-pc.	D1-6	1,657.00
TMX78031038	10"	2.992	71.0	2-pc.	D1-8	1,657.00
TMX78031236	12.5"	4.055	112.0	2-pc.	D1-6	2,366.00
TMX78031238	12.5"	4.055	112.0	2-pc.	D1-8	2,366.00

5C Round Collet SETS

- Hardened & Ground
- .0005" Accuracy, Internal and External threads
- Quality import product.
- 16 Pc. = 1/8-1 1/16th x 16^{ths}
- 31 Pc. = 1/8-1 1/16th x 32^{ths}
- 61 Pc. = 1/8-1 1/16th x 64^{ths}
- 65 Pc. = 1/16-1 1/16th x 64^{ths}



Set Size	Order No.	Price
16 pc.	SHA-5CS16	\$140.93
31 pc.	SHA-5CS31	295.52
61 pc.	SHA-5CS61	499.00
65 pc.	SHA-5CS65	549.02



5C Round Collets



- Hardened & Ground
- .0005" TIR Guaranteed.
- Internal and External threads



Order No.	Size	Sale (ea.)	Order No.	Size	Sale (ea.)
COL500003	3/64	\$27.00	COL500038	19/32	26.00
COL500004	1/16	27.00	COL500039	39/64	26.00
COL500005	5/64	27.00	COL500040	5/8	26.00
COL500006	3/32	27.00	COL500041	41/64	26.00
COL500007	7/64	27.00	COL500042	21/32	26.00
COL500008	1/8	26.00	COL500043	43/64	26.00
COL500009	9/64	26.00	COL500044	11/16	26.00
COL500010	5/32	26.00	COL500045	45/64	26.00
COL500011	11/64	26.00	COL500046	23/32	26.00
COL500012	3/16	26.00	COL500047	47/64	26.00
COL500013	13/64	26.00	COL500048	3/4	26.00
COL500014	7/32	26.00	COL500049	49/64	26.00
COL500015	15/64	26.00	COL500050	25/32	26.00
COL500016	1/4	26.00	COL500051	51/64	26.00
COL500017	17/64	26.00	COL500052	13/16	26.00
COL500018	9/32	26.00	COL500053	53/64	26.00
COL500019	19/64	26.00	COL500054	27/32	26.00
COL500020	5/16	26.00	COL500055	55/64	26.00
COL500021	21/64	26.00	COL500056	7/8	26.00
COL500022	11/32	26.00	COL500057	57/64	26.00
COL500023	23/64	26.00	COL500058	29/32	26.00
COL500024	3/8	26.00	COL500059	59/64	26.00
COL500025	25/64	26.00	COL500060	15/16	26.00
COL500026	13/32	26.00	COL500061	61/64	26.00
COL500027	27/64	26.00	COL500062	31/32	26.00
COL500028	7/16	26.00	COL500063	63/64	26.00
COL500029	29/64	26.00	COL500064	1	26.00
COL500030	15/32	26.00	COL500065	1-1/64	27.00
COL500031	31/64	26.00	COL500066	1-1/32	27.00
COL500032	1/2	26.00	COL500067	1-3/64	27.00
COL500033	33/64	26.00	COL500068	1-1/16	27.00
COL500034	17/32	26.00	COL500069	1-5/64	27.00
COL500035	35/64	26.00	COL500070	1-3/32	27.00
COL500036	9/16	26.00	COL500071	1-7/64	27.00
COL500037	37/64	26.00	COL500072	1-1/8	27.00

5C Metric Round Collets



- Hardened & Ground
- .0005" TIR Guaranteed.
- Internal and External threads

Order No.	Size	Sale (ea.)	Order No.	Size	Sale (ea.)
COL520003	3mm	\$40.00	COL520015	15mm	40.00
COL520004	4mm	40.00	COL520016	16mm	40.00
COL520005	5mm	40.00	COL520017	17mm	40.00
COL520006	6mm	40.00	COL520018	18mm	40.00
COL520007	7mm	40.00	COL520019	19mm	40.00
COL520008	8mm	40.00	COL520020	20mm	40.00
COL520009	9mm	40.00	COL520021	21mm	40.00
COL520010	10mm	40.00	COL520022	22mm	40.00
COL520011	11mm	40.00	COL520023	23mm	40.00
COL520012	12mm	40.00	COL520024	24mm	40.00
COL520013	13mm	40.00	COL520025	25mm	40.00
COL520014	14mm	40.00	COL520026	26mm	40.00

5C Hex Collet Sets



13pc Set, 1/8-7/8 x 16ths
Order No. SHA4364
Sale \$375.00



7pc Set, 1/8-7/8" x 8ths
Order No. SHA4360
Sale \$210.00

Individual 5C Hex Collets



Order No.	Size	Sale	Order No.	Size	Sale
SHA41-008	1/8	\$32.19	SHA41-036	9/16	32.19
SHA41-012	3/16	32.19	SHA41-040	5/8	32.19
SHA41-016	1/4	32.19	SHA41-044	11/16	32.19
SHA41-020	5/16	32.19	SHA41-048	3/4	32.19
SHA41-024	3/8	32.19	SHA41-052	13/16	32.19
SHA41-028	7/16	32.19	SHA41-056	7/8	32.19
SHA41-032	1/2	32.19			

5C Square Collet Sets



6pc Set, 1/8-3/4" x 8ths
Order No. SHA4252
Sale \$190.00

11pc Set, 1/8-3/4" x 16ths
Order No. SHA4256
Sale \$340.00

Individual 5C Square Collets

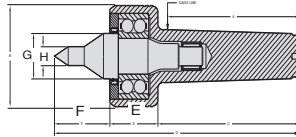
Order No.	Size	Sale	Order No.	Size	Sale
SHA42-008	1/8	\$32.49	SHA42-036	9/16	32.49
SHA42-012	3/16	32.49	SHA42-040	5/8	32.49
SHA42-016	1/4	32.49	SHA42-044	11/16	32.49
SHA42-020	5/16	32.49	SHA42-048	3/4	32.49
SHA42-024	3/8	32.49			
SHA42-028	7/16	32.49			
SHA42-032	1/2	32.49			





CNC POINT Heavy Duty LIVE CENTERS

- Excellent for engine lathes and CNC lathes.
- Designed for long life, +/- .0001" TIR
- Extended point provides additional tool clearance often needed on CNC lathes.



TAPER	B	E	F	G	H	Max. RPM*	Weight of Workpc.	Thrust Load	Order No.	Price
2 MT	1-3/4"	1-7/16"	1-3/8"	7/8"	3/8"	6,000	375 lbs.	2,360	ROY10212	\$879.00
3 MT	2-3/8"	1-3/4"	1-7/8"	1"	3/8"	5,000	740 lbs.	3,900	ROY10213	879.00
4 MT	2-3/4"	1-31/32"	2-7/32"	1-1/4"	1/2"	4,500	1,120 lbs.	4,050	ROY10214	1,110.00
5 MT	3-1/2"	2-13/16"	2-5/8"	1-1/2"	1/2"	3,500	1,930 lbs.	5,700	ROY10215	1,495.00
6 MT	4-5/32"	3-5/32"	3"	2"	3/4"	3,500	2,420 lbs.	6,000	ROY10216	2,895.00

*Maximum recommended operating limit. Operating above this speed could result in heat build-up and accelerated bearing wear.

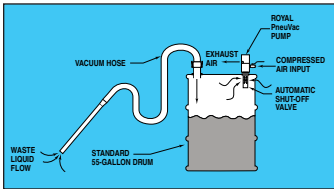
ROYAL PneuVac Pump

The perfect way to clean coolant sumps



Designed to remove liquids, (and sludge and chips suspended in liquids).

The Royal PneuVac pump filled this 55-gallon drum with coolant in less than two minutes.



Kit Consists of:
 pump, 1/4" ball valve, automatic shut-off valve,
 10 ft. of smooth-bore hose, quick-disconnect drum fittings, and one 18" aluminum wand.

Item	Order No.	Price
Stainless Steel Pump Kit	ROY48010	\$1,280.00
Aluminum Pump Kit	ROY48017	1,085.00
10-Foot Smooth-Bore Replacement Hose	ROY48019	114.00



- R-8 Shell Endmill Arbors
- Hardened & Ground
- 7/16-20 Drawbar thread.

Arbor Size	Order No.	Price
1/2"	SHAR8S12	\$50.16
3/4"	SHAR8S34	50.47
1"	SHAR8S1	58.38
1-1/4"	SHAR8S114	62.71
1-1/2"	SHAR8S112	68.88

Straight Shank Arbors available also.

R8 Vertical Collet Rack

Holds 48 Collets
 (not included)
 Order No. SHA-2399848
\$42.27



R-8 Endmill Holder Sets



5pc Set, 3/16, 3/8, 1/2, 5/8, 3/4"
 Order No. SHA0305
Sale \$103.94

8pc Set, 3/16, 3/8, 1/2, 5/8, 3/4,
 7/8, 1" & 1 1/4"
 Order No. SHA0308
Sale \$190.65



9pc Set, 3/16, 3/8, 1/2, 5/8, 3/4,
 7/8, 1", 1 1/4" & 1 1/2"
 Order No. SHA0309
Sale \$249.00

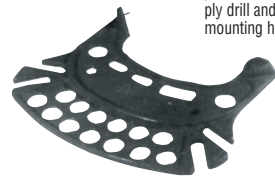


R8 Rotating Collet Rack
 Holds 11 Collets
 (not included)
 Order No. SHA-R8SM
\$33.84

R8 Collet Rack & Tool Tray



Sturdy Aluminum Casting.
 Simple to mount on your machine, simply drill and tap two mounting holes.



Order No. SHA-2399815
\$22.63

R-8 Collet SETS



- Hardened & Ground
- 7/16-20 Drawbar thread.
- 11 Pc. = 1/8-3/4 x 16^{ths}
- 23 Pc. = 1/16-3/4 x 32^{nds}
- 28 Pc. = 1/16-1" x 32^{nds}
- .0005" TIR 1" From Face

Set Size	Order No.	Price
11 pc.	SHA-R811	\$83.93
23 pc.	SHA-R823	169.78
28 pc.	SHA-R828	225.00

Round R-8 Collets

- Premium Grade
- Hardened & Ground
- .0005" TIR Guaranteed
- 7/16-20 drawbar thread



Order No.	Size	Sale	Order No.	Size	Sale	Order No.	Size	Sale
COL800004	1/16	\$28.50	COL800022	11/32	\$27.50	COL800040	5/8	\$27.50
COL800006	3/32	28.50	COL800024	3/8	27.50	COL800042	21/32	27.50
COL800008	1/8	27.50	COL800026	13/32	27.50	COL800044	11/16	27.50
COL800010	5/32	27.50	COL800028	7/16	27.50	COL800046	23/32	27.50
COL800012	3/16	27.50	COL800030	15/32	27.50	COL800048	3/4	27.50
COL800014	7/32	27.50	COL800032	1/2	27.50	COL800050	25/32	27.50
COL800016	1/4	27.50	COL800034	17/32	27.50	COL800052	13/16	27.50
COL800018	9/32	27.50	COL800036	9/16	27.50	COL800054	27/32	27.50
COL800020	5/16	27.50	COL800038	19/32	27.50	COL800056	7/8	27.50
						COL800064	1	40.00



- High Impact Reinforced Plastic
- Secure location with tapered seat.
- Holds 52 R8 collets.
- Larger spacing for oversized tools, boring heads-etc.

Order No. SA-R8-52
Sale \$48.00





New Master Tap & Drill Dispenser



- Hold taps with the correct drill size!
- Built in cam lock with two keys.
- Measures 26" x 12" x 12 1/2" High. Weighs 50 lbs.
- Heavy duty ball-bearing drawer slides.



Order No. HUU-13599

Metric-Holds from 1.6mm-24mm taps Holds from 0/80 to 1-1/2-12 taps and 3/64-1-27/64" Drills

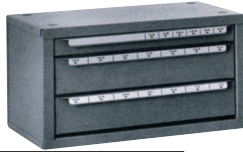
Sale \$890.69

Order No. HUU-13597

Holds from 0/80 to 1-1/2-12 taps and 3/64-1-27/64" Drills

Sale \$890.69

Tap Dispensers



- One piece drawer slide for long, useful life
- Stackable.
- All cabinets measure 7-3/8" x 7-3/4" x 14-5/8"

Order No.	Holds Sizes	Sale Price
HUU13500	Fractional Sizes 1/4"-20 to 1"-14	\$96.92
HUU13550	Machine Screw Sizes #2-56 to #12-28	120.38
HUU13575	29 Popular Metric Sizes 3mm to 24mm in 3 drawers	107.13
HUU13560	NPT Pipe Tap Dispenser 1/16-2" Pipe Sizes	112.23

- Fractional, Letter, Number and Metric, NEW 1/2" Shank sizes
- New, one piece drawer slide for long, useful life
- All cabinets measure 7-3/8" x 7-3/4" x 14-5/8"
- Stackable



Order No.	Wt. lbs.	Holds Drills	Sale Price
HUU-13000	10-1/4	1/16" to 1/2" by 64ths	\$140.89
HUU-13025	13-1/4	1 to 60 Wire Gage	178.14
HUU-13040	13-1/4	1 to 80 Wire Gage	218.63
HUU-13050	10-1/4	A to Z Letter size	139.27
HUU-13075	10-3/4	1mm to 13mm by 0.5mm	160.33
HUU-13100	10-3/4	1mm to 6.9mm by 0.1mm	218.63
HUU-13166	13-1/4	33/64-63/64 x 64ths 1/2" Shank	202.43

End Mill Dispenser

- 1 Compartment for - 9/16" - 11/16" - 7/8"
- 2 Compartments for 3/16" - 5/16" - 7/16" - 5/8" - 1"
- 3 Compartments for 1/8" - 1/4" - 3/8" - 1/2" - 3/4"
- Dimensions: 7-3/8" x 7-3/4" x 14-5/8"
- Weight: 10-1/4 lbs.



Order No. HUU-13350

Sale Price \$170.04



Precision Steel Gage Pin Sets

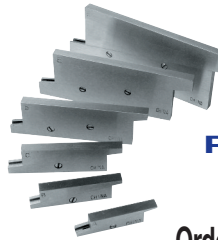
- Features For All Sets:
- Ground Edges, Class ZZ
 - Centerless Lapped With 10 Micro Finish or Better
 - Heat Treated to 60/63 RC
 - Uniform 2" Length
 - Furnished With Plastic Case
 - Minus Sets Are +.0000/-0002
 - Plus Sets Are +.0002/-0000



Great Deal



Size Range	Type	No. Of Pins	Order No.	Sale Price
.011-.060	Minus	50	SHA-HOM	51.00
.011-.060	Plus	50	SHA-HOP	55.00
.061-.250	Minus	190	SHA-H1M	82.08
.061-.250	Plus	190	SHA-H1P	82.08
.251-.500	Minus	250	SHA-H2M	165.94
.251-.500	Plus	250	SHA-H2P	165.94
.501-.625	Minus	125	SHA-H3M	173.50
.501-.625	Plus	125	SHA-H3P	199.00
.626-.750	Minus	125	SHA-H4M	207.93
.626-.750	Plus	125	SHA-H4P	225.00
.751-.832	Minus	82	SHA-H5M	226.82
.751-.832	Plus	82	SHA-H5P	275.00
.833-.916	Minus	84	SHA-H6M	274.48
.833-.916	Plus	84	SHA-H6P	350.00
.917-1.000	Minus	84	SHA-H7M	264.63
.917-1.000	Plus	84	SHA-H7P	375.00



6 piece Adjustable Parallel Sets

3/8-2 1/4" Max Range
Length 1 3/4-5 1/15"

Order No. SHAPSADJ6

Price \$65.30



World Quality Import

5 Digit Small Reset Counters

Knob resets to zero, 4 flange holes for rigid mounting. Imported 1-5/16" high x 2-1/2" wide x 1 1/2".

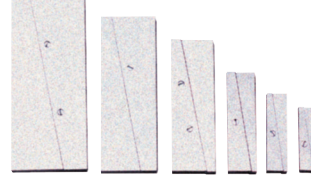


Order No. SHA-MC

Reg. Price \$12.95

Sale Price \$10.53

Adjustable Parallel Set 6 Piece Set



- Can Be Quickly Inserted into Openings and Expanded to Exact size, Then Measured With A Micrometer.
- Consists of Two Precision Ground Pieces Which Slide Smoothly On Each Other.
- Locked Into Position By Set Screws.



Order No. PECS1126
3/8" to 2-1/4" Range

List Price \$133.00

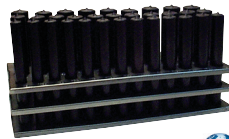
Sale \$146.25



Transfer Punch Sets

with Indexed Metal Stand

Heat treated temper steel. Black oxide finish.



World Quality Support

Order No.	Range	No. of Pcs.	Price
SHA-NTP	3/32 x 1/2" by 64ths + 1/32"	28	\$25.19
SHA-NTAZ	Letter A - Z	26	49.00
SHA-NT160	No. 1 - 60	60	49.00
SHA-NTP33	1/2-1" x 64ths	33	103.34



NEW ProTool™
PRECISION TOOLING

Order No.	Range	Price
SHA-DEP1	.0110-0605"	\$12.60
SHA-DEP2	.0610-2505	15.78
SHA-DEP3	.2510-5005	18.93
SHA-DEP4	.5010-6255	19.81
SHA-DEP5	.6260-7505	23.52

Double Ended Plug Gage Handles
Unique Design holds larger range of sizes per handle.

Replacement Drawbars



Black oxide finish



AAZ9004

Fits 1J Step Pulley Heads

\$29.54

AAZ9005

Fits 2J Step Pulley Heads

36.87

Starrett® Precision Steel Pin Gage Sets

Class ZZ Tolerance, -.0002" Tolerance



- Color coded, fully adjustable, go/no-go gage handle.
- Supplied in high impact case, with each space marked for the size gage.
- Full inspection report with every set, with individual inspection on each pin.
- All Starrett pin gages are class ZZ. Manufactured to -.0002" Tolerance.
- Each pin is centerless lapped to a 10ra finish, and is clearly etched with the stated size.
- All gages are 2" long, centerless lapped, and hardened to 60-62RC

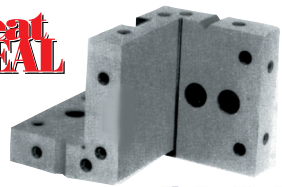
Size Range	Number of Pins	Order No.	Price
.011-.060"	50	STA67481	\$119.00
.061-.250"	190	STA67483	265.00
.251-.500"	250	STA67485	404.00
.501-.625"	125	STA67487	473.00
.626-.750"	125	STA67489	511.00
.751-.832"	82	STA67491	938.00
.833-.916"	84	STA67493	1,070.00
.917-1.00"	84	STA67495	1,139.00

+ .0002" Tolerance Sets Available Also, Just Ask. Individually Inspected.

Precision Ground Compound

Angle Plate
Square and parallel +/- .0002"
furnished with ground vee's
Solid one piece hardened steel construction
6 x 4 x 4 x 1"
includes one clamp

Great Deal



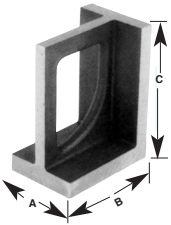
ProTool™
PRECISION TOOLING

Order No. SHACAP644

Sale \$273.27

Universal Right Angle Irons

Right Angle Irons can be used widely for fixture component as well as for checking squareness and parallelism. All faces, ends and edges are finished square and parallel



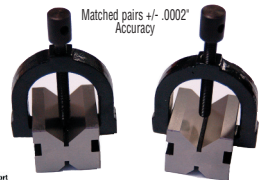
Square Within .0008" per 6"
Parallel Within .0004" per 6"

Length	First Angle	Second Angle	Approx. Shipping Wt. Lbs.	Order No.	Price
Precision Ground Finish					
3-3/4	4	5	12	SHA-UR1M	\$50.73
4	5	6	17	SHA-UR3M	58.00
4-1/2	5	8	23	SHA-UR4M	92.13
5	8	12	49	SHA-UR5M	176.54
5-1/2	8	10	42	SHA-UR7M	125.88
6	6	8	37	SHA-UR8M	174.38
8	10	12	81**	SHA-UR9M	309.36
8	9	16	97**	SHA-UR10M	345.00
10	12	16	139**	SHA-UR11M	366.00
12	12	24	218**	SHA-UR12M	510.00

**Truck Shipment Only

CLOSE-OUT
WHILE SUPPLIES LAST

Precision Ground Double V-Slot Block Set

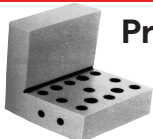


Matched pairs +/- .0002" Accuracy
1 3/8" x 1 5/8" x 1 3/4" LONG
1" CAPACITY MATCHED PAIR
ORDER No. SHA-VB2-1
Sale \$66.76

1 5/8" x 1 3/4" x 2 3/4" LONG
1 1/2" CAPACITY MATCHED PAIR
ORDER No. SHA-VB2-2
Sale \$79.97

1 3/4" x 2 1/2" x 2 3/4" LONG
1 1/2" CAPACITY MATCHED PAIR
ORDER No. SHA-VB2-3
Sale \$109.20

2 3/8" x 3 1/2" x 4 7/8" LONG
2 1/8" CAPACITY MATCHED PAIR
ORDER No. SHA-VB2-4
Sale \$227.48



Precision Ground Angle Plate

Square and parallel +/- .0002"
furnished with drilled and tapped holes
Solid one piece hardened steel construction,
55-60 Rockwell hardness



CLOSE-OUT
WHILE SUPPLIES LAST

Order No.	Size	Wght	List	Sale
SHA-APS333	3 x 3 x 3 x 1 x 1/2"	5#	\$195.00	\$116.00
SHA-APS444	4 x 4 x 4 x 1 1/4"	10#	205.00	142.00
SHA-APS443	4 x 4 x 3 x 1 1/8"	9#	199.00	142.00
SHA-APS644	6 x 4 x 4 x 1 1/4"	14#	253.00	181.00
SHA-APS664	6 x 6 x 4 x 1 1/4"	20#	383.00	223.10

THREE POINT INTERNAL MICROMETER SETS



- All Sets Feature:**
- Three Point Measuring.
 - Carbide Tipped Faces
 - Custom Aluminum carrying case
 - Setting standards and wrenches.



0.275-0.50" Set Includes:

- 0.275-.0375 Inside Micrometer .0001" Grad.
- 0.350-.0425" Inside Micrometer .0001" Grad.
- 0.425-.0500" Inside Micrometer .0001" Grad.
- 27488 & 0.3500 & 0.49984" Setting Rings.
- 4" Extension

Order No. SHA-MITS-275500
Sale Price \$858.00



2.0-4.0" Set (Triangle head Design) Includes:

- 2.0-2.5 Inside Micrometer .0002" Grad.
- 2.5-3.0" Inside Micrometer .0002" Grad.
- 3.0-3.5" Inside Micrometer .0002" Grad.
- 3.5-4.0" Inside Micrometer .0002" Grad.
- 2.49976 & 3.50094" Setting Rings.
- 6" Extension

Order No. SHA-MITS-2-4
Sale Price \$1,875.00

0.80-2.0" Set (shown above) Includes:

- 0.8-1.0 Inside Micrometer .0002" Grad.
- 1.0-1.2" Inside Micrometer .0002" Grad.
- 1.2-1.6" Inside Micrometer .0002" Grad.
- 1.6-2.0 Inside Micrometer .0002" Grad.
- 1.0000 & 1.59996" Setting Rings.
- 6" Extensions (2)

Order No. SHA-MITS-.8-2
Sale Price \$995.00

0.50-0.80 Set Includes:

- 0.5-0.65" Inside Micrometer .0002" Grad.
- 0.65-0.80" Inside Micrometer .0002" Grad.
- .64996" Setting Ring.
- 6" Extension

Order No. SHA-MITS-508
Sale Price \$550.00



4 pc. Combo Square Set



- 12" Rule — 8, 16, 32, 64ths graduations fully hardened and tempered
- Reversible Protractor
- Square and Center Head

Order No. SHACOMBOSET
Sale Price \$75.90

D810 10" Opening Kurt Anglock Vise

CLOSE-OUT
• WHILE SUPPLIES LAST •



- Quick Set up Feature
- Four bolt design on stationary jaw reduces vise deflection by 25%
- Limited warranty direct from Kurt
- Bed height matched to 3.310" +/- .0005"
- Special brush seals shield and protect vise screw from chips and residue.
- Clamping force up to 11,600 lbs, locks parts precisely
- 8" Jaw width with a 10" opening.
- Ship Weight 158 lbs

KURT LIFETIME WARRANTY
IRONCLAD



LTL (Truck) Shipment Only **Order No. KUR-D810**
Sale \$2,211.00

Aluminum Soft Vise Jaws 6" Long x 2.0" Height

Machined Ends and Holes



Great Deal

6" x 3/4" W x 2" Tall	6AJSET	\$27.50pr
6" x 1" W x 2" Tall	6AJSET1	34.95pr
6" x 1.5" W x 2" Tall	6AJSET1.5	46.50pr

Authentic Kurt Replacement Steel Vise Jaw



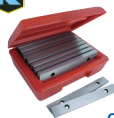
6"L x 3/4"W x 1 3/4"H



Order No. KUR-6SJ175
Sale Price \$49.85/ea



NEW Steel Parallels 1/4" thick x 8" length



- All 8" Long
- 6 pair set includes: 1, 1.25, 1.50, 1.75, 2.00, 2.125" height.
- 9 pair set height: 1, 1.25, 1.375, 1.50, 1.625, 1.75, 1.875, 2.00, 2.125"
- Accuracy: ±.0002" parallelism
- In plastic molded case

Order No. KUR-8PS-6
1/4" 6 pair set
\$172.25

Order No. KUR-8PS-9
1/4" 9 pair set
\$247.00

CNC Machine Vise

Features:

- Design can be mounted either on side or upright.
- 80,000lbs Ductile Iron Body
- Thrust bearing increases clamping pressure by 80%.
- 6600lbs Clamp Capacity
- Spherical segment design allows multi-directional alignment-eliminating jaw lift and workpiece lifting.
- Perpendicular and Parallel +/- .0004"



Order No.	Jaw Width	Max Opening	Total Height	Overall Length	Sale
SHA-VISCNC-4	4"	4"	3.40"	12"	\$315.12
SHA-VISCNC-6	6.25"	6"	4.75"	17.5"	495.20

Round Part-Milling Machine Vise 4" Wide Hardened Steel Jaws

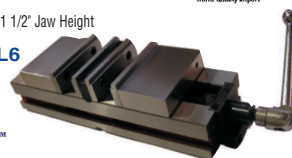
- 3/4-2-1/2" Capacity round parts
- V-Block at bottom of jaws for correct positioning.
- Hardened Steel Jaws
- Vise can be mounted vertical or horizontal.
- Adjustable sliding work stop
- Ship Weight 55 Pounds



Order No. SHA-VIS4R
List \$325.00
Sale \$296.43

6" Import Double Station Precision Vise

- High Precision and reliability. Hold two parts in same vise.
- Ductile cast iron body with hardened upper guide surface for improved rigidity and wear.
- 24" OAL, 6" Jaw Width, 5" Height, 1 1/2" Jaw Height



Order No. SHA-VISDL6
List \$1100.0
Sale \$756.31



Precision Milling Machine Vise with graduated swivel base



- Each pound of force in horizontal induces 1/2 pound of downward force. Helps reduce jaw lift.
- Vise bed is cast from 80,000 lb ductile iron to resist deflection.
- Sliding surface of vise bed is flame hardened and ground.
- All models include 360 degree swivel base



Width Jaw Opening	Jaws Depth	Body Length	Height Overall	Approx. Wt. lbs	Order No.	Price
3"	3"	1"	11-3/4"	3-3/4"	20	SHAVIS-3 180.29
4"	4"	1-1/8"	12-9/16"	3-3/8"	46	SHAVIS-4 188.24
6"	6-1/4"	1-1/2"	16-3/4"	4-3/8"	105	SHAVIS-6 347.88
6"	7.5"	1-1/2"	16-3/4"	4-3/8"	105	SHAVIS-6M 275.00
8"	7.5"	2"	21-3/4"	5-5/16"	225	SHAVIS-8 679.38

Use for all production milling or drilling operations with the quill. Just clip onto the correct spot and the quill stops at the same point time after time.

Quill Stop



Imported Model
Quill Stop Order No. SHA-QS1
\$10.71ea

EZ Vise Work Stop

Quickest and easiest vise stop, perfect for all repetitive work! Attaches to any vise jaw from 1/2" to 1" wide. One screw adjustment.

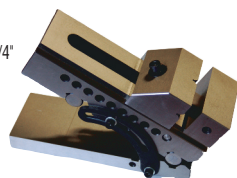


Imported Model
Vise Work Stop Order No. SHA-Z9030
\$11.95ea

5" High Precision Sine Vise

Features:

- Alloy Steel 58-62rc
- 3" Jaw Width
- Jaw Capacity 4 3/4" Jaw Depth 1 1/4"
- Dimensions: 7 1/2 x 3 x 3 5/8"
- Square & Parallel +/- .0002"



Order No. SHA-VISIN-5
List \$325.00
Sale \$195.00

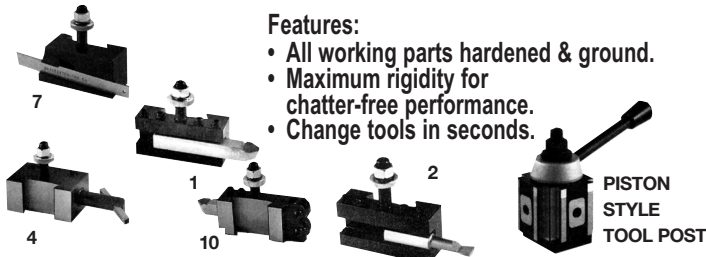


Quick Change Tool Post & Holders Sets

Each 6 pc. Set Contains:
1 Tool Post and 5 holders:

Features:

- All working parts hardened & ground.
- Maximum rigidity for chatter-free performance.
- Change tools in seconds.



PISTON
STYLE
TOOL POST

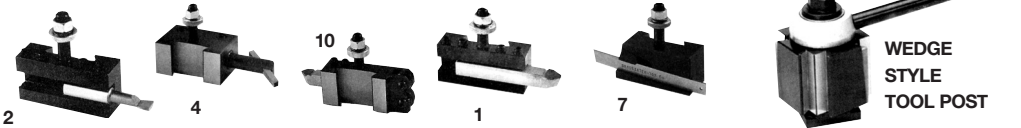
- Style 1: Turning & Facing;
- Style 2: Boring, Facing & Turning;
- Style 4: Boring Heavy Duty;
- Style 7: Universal Parting Blade;
- Style 10: Knurling, Facing & Turning

- and an oversized t-nut that can be machined to fit.

Tool Bit Cap.	Taper Holder	Bar ID	Capacity	Set Type	Order No.	Sale
3/16-1/2"	2MT	3/4"	6-12" Swing	AXA Piston	SHA251-100	\$247.62
1/4-5/8"	2MT	1"	10-15" Swing	BXA Piston	SHA251-200	310.16
1/2-3/4"	3MT	1"	13-18" Swing	CXA Piston	SHA251-300	436.73
1/2-1"	4MT	1 1/4"	14-20" Swing	CA Piston	SHA251-400	636.35



Your Choice, Either Piston or Wedge Type Tool Post



WEDGE
STYLE
TOOL POST

Tool Bit Cap.	Taper Holder	Bar ID	Capacity	Set Type	Order No.	Sale
3/16-1/2"	2MT	3/4"	6-12" Swing	AXA Wedge	SHA251-111	\$322.16
1/4-5/8"	2MT	1"	10-15" Swing	BXA Wedge	SHA251-222	397.22
1/2-3/4"	3MT	1"	13-18" Swing	CXA Wedge	SHA251-333	543.81
1/2-1"	4MT	1 1/4"	14-20" Swing	CA Wedge	SHA251-444	757.77

Will fit Aloris, Yuasa, Phase II, Enco & Dorian Tool Posts

Loc-Line® Quick-Set Shield™ Kit

- Provides protection from flying chips and splashing fluids.
- Shield rotates 360 degrees.
- Includes 14" adjustable 3/4" Loc-Line® arm, magnetic base and fitting for direct mounting.

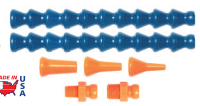
Order No.	Size	Sale
LOC60525	6x8" Shield Kit	\$34.76
LOC60526	7 1/2" x 10" Shield Kit	37.45
LOC60527	8 1/2" x 12" Shield Kit	40.12



MADE IN
USA

Loc-Line® Kits

- Unique ball and socket design is fully hand adjustable in both position and length.
- Bending doesn't decrease the inside diameter and it won't kink or fatigue like copper tubing.
- Unlike metal hoses, Loc-Line® won't damage machine tool cutters if contact occurs.



Order No.	Description	Price
LOC40413	1/4" Hose Kit, (shown above) 13" Length with fittings: 2 - 5 3/4" segments, 1/4", 1/8", 1/16" Nozzles, 1/4" & 1/8" Male NPT connectors	\$ 9.56
LOC50813	1/2" Hose Kit, 13" Length with fittings: 2 - 5 1/2" segments, 1/4", 3/8", 1/2" Nozzles, 3/8" & 1/2" Male NPT connectors	10.77
LOC60513	3/4" Hose Kit, 14" Length with fittings: 2 - 5 3/4" segments, 5/8" & 3/4" Nozzles, 3/4" Male NPT connectors	13.34

0-60 Degree Precision Ground Angle Block. 90° Vee

Order No. **SHA-AB601**

3" Long, 1.25" Height, 1" Wide, 1" Capacity

Sale **\$73.56**

Order No. **SHA-AB602**

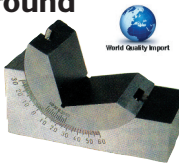
4" Long, 1.89" height, 1.125" Wide, 1.9" Capacity

Sale **\$83.19**

Order No. **SHA-AB603**

4" Long, 1.89" height, 1.75" Wide, 1.9" Capacity

Sale **\$119.00**



World Quality Import

- Locks securely at any angle from 0-60 degree
- Hardness 50-55 RC.
- Angle Accuracy: ±10 minutes
- Squareness: .0002"

ProTool™ Digital Protractor

- 360 Degree (4 x 90°) Measuring Range
- Display remains upright to view at all angles.
- Simple Calibration method, instructions included.
- 3V Lithium Battery, over 1000 hours life.
- Resolution 0.1°
- Accuracy 0-90° ≤ 0.1°

Order Number **SHA-DP360**
Sale **\$175.00ea**



6 x 6" Accu-Angle Sine Plate

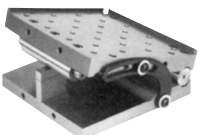


Hardened and ground side rail and one locking strap are included along with large hinge pins for extra strength.

- 1018 Steel Case Hardened to 58-60RC
- Size 6" x 6" x 2 3/8"
- Center distance of rolls 5" within .0002"
- 23 - 1/4-20 tapped holes in top of plate
- Square and parallelism .0002"

Order No. **SHA-NSP66**

Sale **\$247.50**



Double V Blocks Designed for use with Magnetic Chucks



1 7/8" x 2 3/8" x 4 3/8"

Dual "V" 2" and 1 1/2" Capacity.
Integrally Aluminum laminate cast into one solid piece, precision ground on all surfaces, selected for the highest transfer of magnetism. Along with the lowest retention of magnetic flux.

Order No. **SHA-DVMAG**

Price **\$75.95ea**



Toolmakers Double "V" V-Block

- Four tapped holes for additional clamping
- Forged clamp with adjustable side screw.
- Work capacity: 1 5/16" diameter approx.
- 1 7/8" Square x 3 5/8" Long
- "V" , are 90 degrees +/- .0003"
- Square and Parallel within +/- .0002"



Double V Block
Order No. **SHAVBDV**
Sale **\$102.80**





Hand Tapper #6-5/8" Capacity

Complete with offset handle, precision spindle, and adapter rack. Includes 9 tap adapters: Nos. 6, 8, 10, 1/4", 5/16", 3/8", 7/16", 1/2", 5/8" Spindle balance allows for highly sensitive tap feed. Sliding jaw prevents crimping.

Order No. **SHA-CHT**
\$257.23ea



Table Size .1-1/2" x 12-1/2"
Clearance Height . . . 7-7/8"
Spindle Diameter1"
Depth of Throat7-1/2"
Weight50 lbs.

PRSRIT STD
U.S. POSTAGE
PAID
SALEM, OR
PERMIT 526



Precision Ball Bearing Keyless Drill Chuck with Integral CAT V-Flange 1/32-5/8" Capacity



CAT40 Taper
.0019" TIR Max RPM 6500
Order No. **SHA-KCC40-5/8**
Sale \$244.00

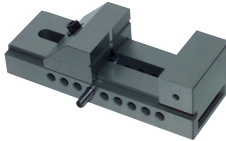
CAT50 Taper
.0019" TIR Max RPM 6500
Order No. **SHA-KCC50-5/8**

Sale \$269.00

CLOSE-OUT
CAT50 Taper
0-1/2" Capacity
Order No. **SHA-KCC50-1/2**
Sale \$199.00

Precision Screwless Vises

Precision ground Square and Parallel Within .0002"
Oil Hardened and Precision Ground Steel, Heat treated to HRC 58-62



CLOSE-OUT
• WHILE SUPPLIES LAST •

Width Jaw	Max Opening	Jaws Depth	Jaw Opening	Height Overall	Overall Length	Order No.	Price
1"	7/8"	3/8"	7/8"	1-1/8"	2-1/2"	SHAPV100	98.50
2"	3"	1-1/4"	1-1/4"	2-1/4"	5-7/8"	SHAPV200	87.00
2-1/2"	3-1/2"	1-3/8"	3-1/2"	2-1/2"	7"	SHAPV250	93.00
3"	4"	1-1/2"	4"	2-3/4"	7-1/2"	SHAPV300	135.65
3-1/2"	4-7/8"	1-23/64"	4-7/8"	3-9/16"	9-1/4"	SHAPV350	199.00
4"	4-7/8"	1-3/4"	4-7/8"	3-1/2"	9-3/4"	SHAPV400	220.00

EFFECTIVE 8/1/2023 TO 3/15/2024

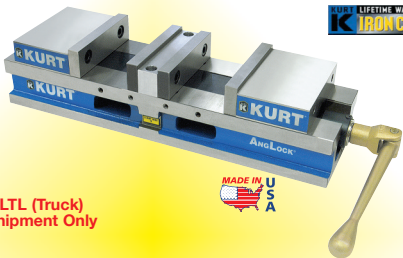
Not all items exactly as pictured. Not responsible for typographical errors.
No Returns after 30 days.

All returns must be returned prepaid, are subject to a restock fee and must be in all original packaging. Precision Tools cannot be returned unless a mfg. defect, and will be replaced only.

Prices subject to change. Min. order \$35.00

We reserve the right to limit quantities. Items available while supplies last.

Kurt HDL6 6" Doublelock Vise



LTL (Truck)
Shipment Only



- Multiple part workholding for better spindle utilization, reduced tool change times, and reduced machine travel time from part to part
- .0002" repeatable clamping accuracy
- 7,460 lbs. clamping force
- Vise Constructed of 80,000 psi ductile iron body
- Preload is adjustable from 0.010 to 0.150"
- 6" Jaw width, 22.45" Overall Length
- 4" Jaw Opening
- New holding block features the ability to clamp different sized parts and provides preloading capability in front or back jaw
- Warranty direct from Kurt.

Order No. **KUR-HDL6J**
Sale \$2450.00

VersaLock Modular Vise



- .0005" repeatable clamping accuracy
- 16,000 lbs. clamping force
- Body height matched to within .001"
- Stronger, weighs less, clamps up to part with less effort
- Zero clearance mounting of multiple vises designed with all sides flat to .0001"
- 6" Jaw width, 15.060" Overall Length
- 6" Standard Jaw Opening
- Can be mounted upright or on either side
- Warranty direct from Kurt.



LTL (Truck)
Shipment Only

Order No. **KUR-3600V**
Sale \$1050.00

Precision Keyless Drill Chucks



Features:

- Integral Design, Eliminates inaccuracy.
- 1/32-1/2" Capacity
- No more lost chuck keys.
- Highest quality import.



Order Number	Mount	OAL	Sale
SHA-KC3MT-1/2	#3 Morse Taper	7"	\$125.00
SHA-KC4MT-1/2	#4 Morse Taper	8"	183.93

A Word About Prices....
We have worked very hard to update pricing to be current as of the date we printed this.
BUT we still continue to see very unusual price increases from our vendors.
Please understand if we have to raise them before we print another flyer.
We are doing our best to hold prices!!!

