

Somma

TOOL COMPANY, INC.

**PREMIER TOOLING FOR THE
MANUFACTURING INDUSTRY**

since 1939

Material Selector

	Wear Resistance	Toughness	Red Hardness	Additional Notes
Forte				Best option for rotary broaching due to its superior toughness and increased wear resistance
M2				Economical solution for cutoff blades and form tools, also popular for rotary broaching
M42 Cobalt				Great but economical option for cutoff blades and form tools
T15PM				Great option for cutoff blades and form tools, can also be used for rotary broaching in tougher materials
76PM M48				Great option for form tools in short runs, low SFM, and/or interrupted cuts
86PM Maxamet				Great option for form tools - can be run near carbide SFM but is less prone to chipping in tough materials or interrupted cuts
C2 Micrograin Carbide				Great option for cutoff blades and form tools for long-running jobs, at SFM ≤ 250
C6 Micrograin Carbide				Great option for cutoff blades and form tools for long-running jobs, at SFM > 250

Wear Resistance: The relative ability of the material to withstand the abrasive action of difficult to machine materials

Toughness: The relative ability of the steel to withstand deflection and interrupted cuts without chipping

Red Hardness: The relative ability of the steel to withstand the heat generated when cutting hard materials without losing its own hardness

WHAT'S NEW IN THIS CATALOG

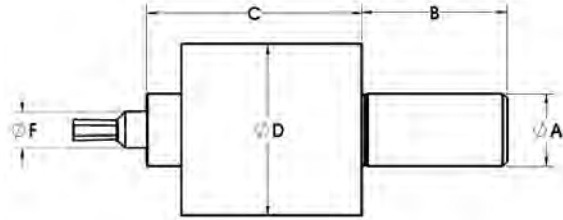
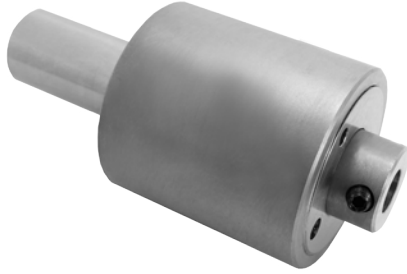
Somma Tool is indebted to you, our customers who have been demonstrating loyalty to us since 1939.

We hope you will find our new products listed to be of interest to you. Please feel free to contact our Sales Department with any inquiries for items not shown in this catalog.

Internal Broach Tool ER Collet Chuck Adapter.....	pg 7
New Design Adjustment Free Internal Broach Tool.....	pg 11
Broach GO/ NO-GO Gages.....	pg 16
Index Punch Broaches	pg 17
Expanded listing of RQC Gang Type Tool Holders.....	pg 21
Dovetail Sharpening Fixture for 12° & 17°	pg 35
Somma / Max-Bar Swiss Tooling.....	pgs 56 to 76
Carbide Countersinks.....	pgs 87 to 90
Tube End-Forming and Chamfering Tools.....	pgs 91 to 100
New Knurl Tool Holders	pgs 102 to 105
VDI Shank ER Collet Reamer Holder.....	pg 114
Morse Taper Shank ER Collet Reamer Holder.....	pg 115
Solid Carbide Reamers	pgs 116 & 117
Expanded Listing of ER Collet Chucks.....	pgs 124 to 127
Solid Carbide Drills.....	pgs 134 to 138
Flat Drill Blanks in T15PM	pg 139
Solid Carbide Endmills	pgs 181 to 185

CNC LATHE, ADJUSTMENT FREE, INTERNAL BROACH TOOL HOLDER

Introducing a wobble broach tool that can be quickly setup for use in CNC lathes.
(Not for use on milling machines)

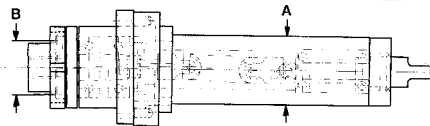


- No center indicating required
- Hex and square broaches in stock for these holders starting on page 12.
- Requires X-Axis machine adjustment only for broach lengths other than the standard designated lengths of 1.250" OAL for ORB00 holders and 1.750" OAL for ORB2 holders.

Catalog Number	A	B	C	D	F	Broach Series #
ORB00-CT/0.625	5/8"	1-1/2"	1-7/8"	1-1/2"	8MM	--00
ORB00-CT/0.750	3/4"					
ORB2-CT/0.750	3/4"	2"	2-15/16"	2-3/8"	1/2"	--2
ORB2-CT/1.000	1"					
ORB2-CT/1.250	1-1/4"	3"				
ORB2-CT/1.500	1-1/2"					

DRIVEN ROTATING BROACH HOLDERS FOR MULTIPLE SPINDLE AND CNC MACHINES

- Rotated by machine drive shaft
- Mounts in endworking tool holder block
- Rotates broach at same RPM as workpiece
- Eliminates spiralling
- Eliminates skidding action at start of cut
- Produces accurate straight broached forms
- Available for external and internal cutting
- Spline drive shafts available
- Can remove shank to center it off the machine.



CAT. NO.	INTERNAL BROACHING	
	"A"	BROACH SHANK DIA.
DB-1.50-ORB2	1.500	.500
DB-2.00-ORB2	2.000	.500
DB-2.25-ORB2	2.250	.500
DB-50MM-ORB2	50MM	.500

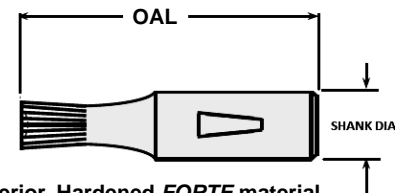
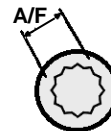
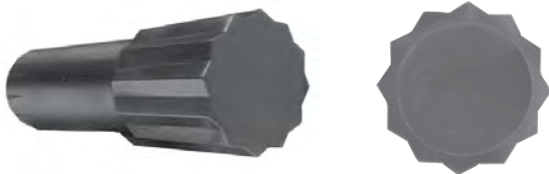
CAT. NO.	EXTERNAL BROACHING	
	"A"	"B"
DB-1.50-ORB2	1.500	1.575
DB-2.00-ORB2	2.000	1.575
DB-2.25-ORB2	2.250	1.575
DB-50MM-ORB2	50MM	1.575

Standard from stock
HSS broaches
shown on pages 12 - 14.
Broach gages available 16.

ALL BROACH HEAD DIMENSIONS SAME AS ORB2/... AND ORBX2/... AS SHOWN ON PAGES 10 & 18.

INCH /Double Hex, for ORBHD/...Holders			
3/4" (.750) Shank Diameter x 2-3/4" (2.750) OAL			
DOUBLE HEX SIZE	Actual A/F*	Max Cutting Depth*	Part Number
13/32	.4097	.700	DHXHD-13/32
7/16	.4415	.730	DHXHD-7/16
15/32	.4725	.761	DHXHD-15/32
1/2	.5045	.796	DHXHD-1/2
17/32	.5357	.831	DHXHD-17/32
9/16	.5675	.872	DHXHD-9/16
19/32	.5987	.912	DHXHD-19/32
5/8	.6305	.959	DHXHD-5/8
21/32	.6617	1.011	DHXHD-21/32-F
11/16	.6935	1.071	DHXHD-11/16-F
23/32	.7242	1.438	DHXHD-23/32-F
3/4	.7565		DHXHD-3/4-F
25/32	.7877		DHXHD-25/32-F
13/16	.8195		DHXHD-13/16-F
27/32	.8512		DHXHD-27/32-F
7/8	.8845		DHXHD-7/8-F
29/32	.9157		DHXHD-29/32-F
15/16	.9470		DHXHD-15/16-F
31/32	.9781		DHXHD-31/32-F
1"	1.0095		DHXHD-1-F

METRIC /Double Hex, for ORBHD/...Holders			
3/4" (.750) Shank Diameter x 2-3/4" (2.750) OAL			
DOUBLE HEX SIZE	Actual A/F*	Max Cutting Depth*	Part Number
10.0MM	.3985	.689	DHXHD-10.0
11.0MM	.4365	.725	DHXHD-11.0
12.0MM	.4775	.766	DHXHD-12.0
13.0MM	.5165	.809	DHXHD-13.0
14.0MM	.5565	.857	DHXHD-14.0
15.0MM	.5965	.909	DHXHD-15.0
16.0MM	.6355	.967	DHXHD-16.0
17.0MM	.6775	1.039	DHXHD-17.0
18.0MM	.7145	1.118	DHXHD-18.0
19.0MM	.7575	1.247	DHXHD-19.0
20.0MM	.7945	1.438	DHXHD-20.0
21.0MM	.8355		DHXHD-21.0
22.0MM	.8785		DHXHD-22.0
23.0MM	.9155		DHXHD-23.0
24.0MM	.9565		DHXHD-24.0
25.0MM	.9935		DHXHD-25.0
26.0MM	1.0335		DHXHD-26.0



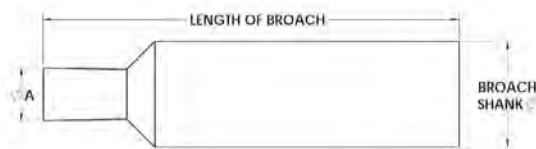
- * Superior, Hardened FORTE material
- * Precision ground
- * Angular clamping flat prevents pull out
- * Fit all brands of Rotating Broach Tools

INTERNAL ROTARY BROACH SETUP TOOL GAGE

Using this gage will allow you to center your broach tool in minutes.

To order:

Match the broach **shank diameter** and **broach length** of the broach currently using with the corresponding catalog number shown in the chart.



BROACH SHANK O.D.	LENGTH OF BROACH	CAT. NO.	A
.315 (8MM)	28MM (1.103")	CPSW-1.103	.156
.315 (8MM)	1-1/4"	CP00-1.25	.156
.315 (8MM)	1-1/2"	CP00-1.50	.156
.315 (8MM)	2"	CP00-2.00	.156
.500	1-1/2"	CP2-1.50	.250
.500	1-3/4"	CP2-1.75	.250
.500	2"	CP2-2.00	.250
.500	2-1/4"	CP2-2.25	.250
.500	2-1/2"	CP2-2.50	.250
.500	2-3/4"	CP2-2.75	.250
.500	3"	CP2-3.00	.250
.750	2-1/2"	CPHD-2.50	.250
.750	2-3/4"	CPHD-2.75	.250

GO / NO-GO GAGES with Handle

PART NUMBER	FOR CHECKING HEX SIZE	PART NUMBER	FOR CHECKING HEX SIZE
HEX GAGE SET-050	0.0500 / 0.0510	HEX GAGE SET-7/32	0.2187 / 0.2217
HEX GAGE SET-1/16	0.0625 / 0.0635	HEX GAGE SET-1/4	0.2500 / 0.2530
HEX GAGE SET-5/64	0.0781 / 0.0791	HEX GAGE SET-5/16	0.3125 / 0.3160
HEX GAGE SET-3/32	0.0937 / 0.0952	HEX GAGE SET-3/8	0.3750 / 0.3790
HEX GAGE SET-7/64	0.1094 / 0.1111	HEX GAGE SET-7/16	0.4375 / 0.4420
HEX GAGE SET-1/8	0.1250 / 0.1270	HEX GAGE SET-1/2	0.5000 / 0.5050
HEX GAGE SET-9/64	0.1406 / 0.1426	HEX GAGE SET-9/16	0.5625 / 0.5680
HEX GAGE SET-5/32	0.1562 / 0.1587	HEX GAGE SET-5/8	0.6250 / 0.6310
HEX GAGE SET-3/16	0.1875 / 0.1900	HEX GAGE SET-3/4	0.7500 / 0.7570



Custom made to your specifications or choose from Somma standard sizes shown

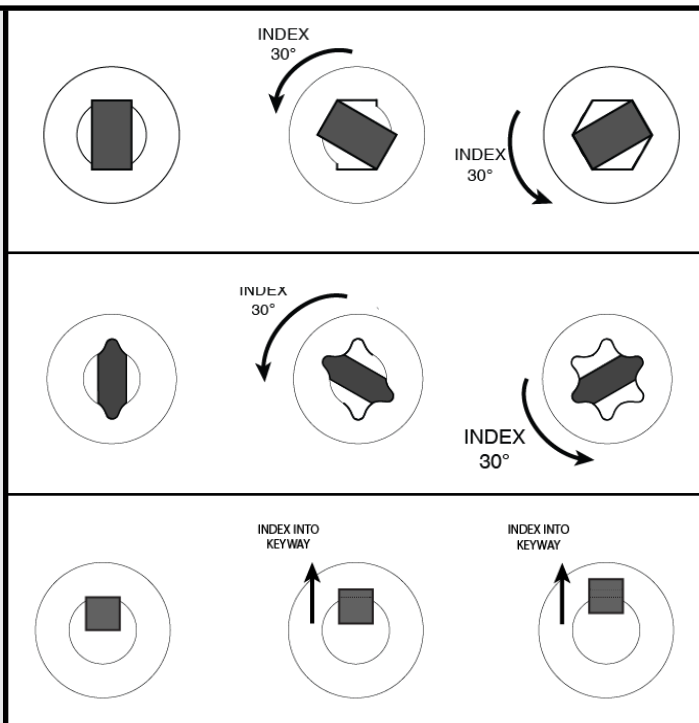
TORX STYLE PART NUMBER
T5 GAGE SET
T6 GAGE SET
T7 GAGE SET
T8 GAGE SET
T10 GAGE SET
T15 GAGE SET
T20 GAGE SET
T30 GAGE SET
T40 GAGE SET
T45 GAGE SET
T50 GAGE SET
T55 GAGE SET

Index punch broaching is typically used on CNC machining centers for applications:

- Where the machine cannot generate enough thrust to form the entire shape desired.
- With more stringent requirements on the straightness of the form than can be achieved with rotary broaching.

The process involves punching a partial form in a prepared hole and indexing the spindle the required number of times to produce the finished form.

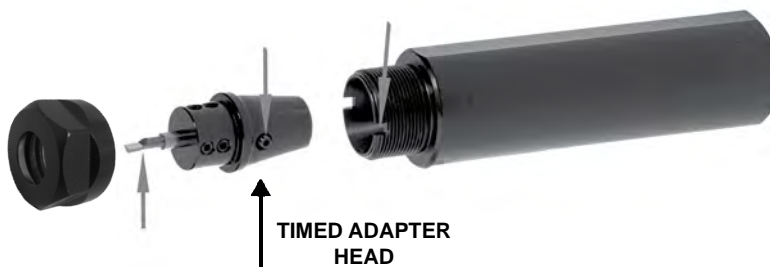
All Indexing broaches are made to order from superior Forte material to suit your application. Email Sales@sommatool.com for a quote



INDEX PUNCH BROACHING ER16 SERIES SHANKS (Collet nut not included)		
SHANK DIA	OAL	SHANK PART#
1/2"	4-1/2"	SS050BTER16
5/8"	4-1/2"	SS062BTER16
3/4"	4-1/2"	SS075BTER16
1"	3"	SS100BTER16
1"	4-1/2"	SS100BTER16
16MM	4-1/2"	SS16BTER16
20MM	71MM	SS20BTER16
20MM	114MM	SS20BTER16
22MM	118MM	SS22BTER16
25MM	60MM	SS25BTER16
25MM	95MM	SS25BTER16

INDEX PUNCH BROACHING SHANKS ER32 SERIES SHANKS (Collet nut not included)		
SHANK DIA	OAL	SHANK PART#
1"	4-1/2"	SS100BTER32
1-1/4"	4-1/2"	SS125BTER32
1-1/2"	6"	SS150BTER32
2"	6"	SS200BTER32
32MM	4-1/2"	SS32BTER32

Indexing Punch Broach Holders & Timed Adapter Heads



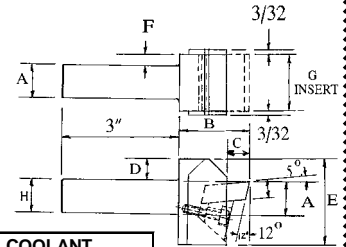
ADAPTER HEADS ARE PERFECTLY CENTERED DUE TO 90° TIMING OF THE FLAT ON THE SHANK OF THE TOOLHOLDER TO THE I.D. NOTCHES ON THE FRONT OF THE TOOLHOLDER AND THE SAME TIMING OF THE PINS ON THE ADAPTER HEADS TO THE SCREWS HOLDING THE BROACH TOOL.

HEADS FOR INDEX PUNCH BROACHING (COLLET NUT INCLUDED)			
SERIES	I.D.	NUT O.D.	PART#
ER16	8MM	25MM	ER16BT8MM
ER16	1/2"	25MM	ER16BT0500
ER32	8MM	50MM	ER32BT8MM
ER32	1/2"	50MM	ER32BT0500



RESHARPENABLE QUICK CHANGE INSERT SHANK TYPE TOOL HOLDERS (Patent No. 5,345,846)

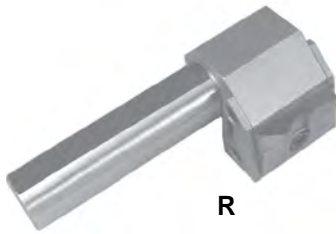
- Replaces full length H.S.S. toolbits
- Replaces brazed on type carbide tools



SEE PAGE 28
FOR INSERT
BLANKS.

CAT. NO.	W/ COOLANT ATTACHMENT	H	A	B	C	D	E	F	G INSERT SIZE	COOLANT ATTACHMENT ONLY
RQC-312	--	1/2	5/8	1-1/4	5/16	3/8	1-1/4	--	5/16 X 5/16	--
RQC00-1/2	RQC00-1/2-CS	1/2	1/2	1-3/32	5/16	13/32	1-3/8	1/8	3/4 X 5/16	RQC5/16-CA
RQC00-5/8	RQC00-5/8-CS	5/8	5/8	1-3/32	5/16	13/32	1-3/8	1/16	3/4 X 5/16	
RQC00-3/4	RQC00-3/4-CS	3/4	3/4	1-3/32	5/16	13/32	1-3/8	--	3/4 X 5/16	
RQC-5/8	RQC-5/8-CS	5/8	5/8	1-5/8	1/2	1/2	1-15/16	5/16	1-1/4 X 3/8	RQC3/8-CA
RQC-3/4	RQC-3/4-CS	3/4	3/4	1-5/8	1/2	1/2	1-15/16	1/4	1-1/4 X 3/8	
RQC-1.0	RQC-1.0-CS	1"	1"	1-5/8	1/2	1/2	1-15/16	1/8	1-1/4 X 3/8	
RQC-1.0-W	RQC-1.0-W-CS	1"	1"	1-5/8	1/2	1/2	1-15/16	1/8	1-3/4 X 3/8	
RQC-1.25	RQC-1.25-CS	1-1/4	1-1/4	1-5/8	1/2	1/2	1-15/16	--	1-1/4 X 3/8	
RQC-1.25-W	RQC-1.25-W-CS	1-1/4	1-1/4	1-5/8	1/2	1/2	1-15/16	1/4	1-3/4 X 3/8	

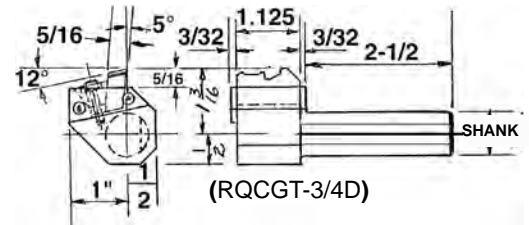
Eliminate Single Point Turning with RESHARPENABLE QUICK CHANGE INSERT GANG TYPE TOOL HOLDERS



R

SHANK DIA.	ROUND CAT. NO.
5/8"	RQCGT-5/8D
3/4"	RQCGT-3/4D
16MM	RQCGT-16D
20MM	RQCGT-20D

SQUARE SHANK	SQUARE CAT. NO.
5/8"	RQCGT-5/8S
3/4"	RQCGT-3/4S
16MM	RQCGT-16S
20MM	RQCGT-20S



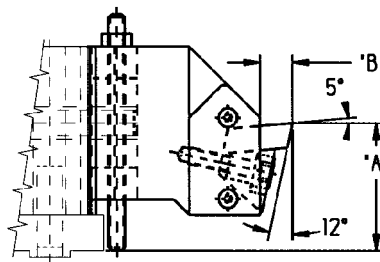
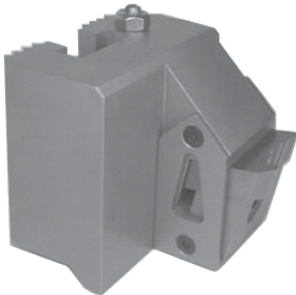
(RQCGT-3/4D)

- Center height adjustment never has to be reset after sharpening insert.
- Machine downtime less than one minute for insert resharpenings or replacement.

Insert size is 1-1/8" x 5/16"
See page 28 for Insert blanks

(Patent No. 5,345,846)

RESHARPENABLE QUICK CHANGE INSERT SERRATED TOOL HOLDERS FOR GILDEMEISTER AND EUROTURNS MACHINES (Patent No. 5,345,846)



- Fits serrated tool blocks.
- Inserts offset close to spindle
- Reversible for upside down positions.
- Replaces horizontal dovetail form tool holders.
- Center height adjustment never has to be reset after sharpening insert.
- Machine downtime less than one minute for insert resharpenings or replacement.

SEE PAGE 28
FOR INSERT
BLANKS.

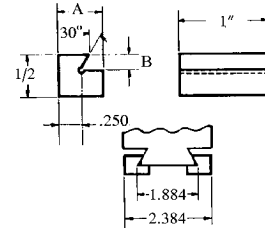
CAT. NO.	WITH COOLANT ATTACHMENT	MACHINE	"B"	INSERT SIZE	COOLANT ATTACHMENT ONLY
RQCGLD20	RQCGLD20-CS	GM16/20 &	5/16"	5/16 X 1-1/8	RQC5/16-CA
RQCGLD20-W	RQCGLD20-W-CS	EUROTURNS 6/20	5/16"	5/16 X 1-3/4	RQC5/16-CA
RQCGLD35-42-A	RQCGLD35-42-A-CS	GM35/42	1/2"	3/8 X 1-3/4	RQC3/8-CA
RQCGLD35-42-1.25	RQCGLD35-42-1.25-CS		1/2"	3/8 X 1-1/4	RQC3/8-CA
RQCEUR-32-1.25	RQCEUR-32-1.25-CS	EUR6/32-8/32	1/2"	3/8 X 1-1/4	RQC3/8-CA
RQCEUR-32-1.75	RQCEUR-32-1.75-CS		1/2"	3/8 X 1-3/4	RQC3/8-CA

CAT. NO.	A	B
DTG-250	1/2	.185
DTG-250 x 100	13/32	.100

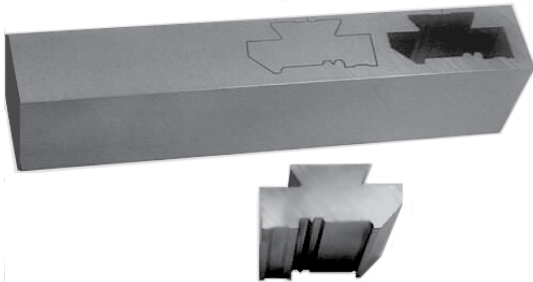
**SOLD AS A SET
2 PIECES**

DOVETAIL CHECKING GAGES

- EASIER THAN CHECKING OVER BALLS OR RODS.
- JUST ADD .500" TO THEORETICAL SHARP CORNER DIMENSION OF DOVETAIL. (SEE DIAGRAM.)



EDM WIRE READY H.S.S. BARS



**ASK FOR QUANTITY
DISCOUNT PRICES FOR
GREATER SAVINGS**

- HEAT TREATED / SURFACE GROUND
- FOR THOSE WHO HAVE WIRE EDM EQUIPMENT
- ECONOMICAL - MINIMUM WASTE
- USE ONLY WHAT YOU NEED FOR EACH JOB
- AVAILABLE IN M2, M42, T15PM AND 76PM HIGH SPEED STEEL

HEIGHT	WIDTH	LENGTH	M2 CAT. NO.	M42 CAT. NO.	T15PM CAT. NO.	76PM CAT. NO.
1"	2"	12"	EDM4848	EDM4848-H	EDM4848-P	EDM4848-A
1-1/2"	2"	12"	EDM6848	EDM6848-H	EDM6848-P	EDM6848-A
2"	2"	12"	EDM8848	EDM8848-H	EDM8848-P	EDM8848-A
2"	2-1/2"	12"	EDM81248	EDM81248-H	EDM81248-P	EDM81248-A

*CAN ALSO BE SUPPLIED IN
SPECIAL SIZES TO YOUR
SPECIFICATIONS. PRICES ON
APPLICATION - SPECIFY
QUANTITY, HEIGHT, WIDTH
AND LENGTH.*



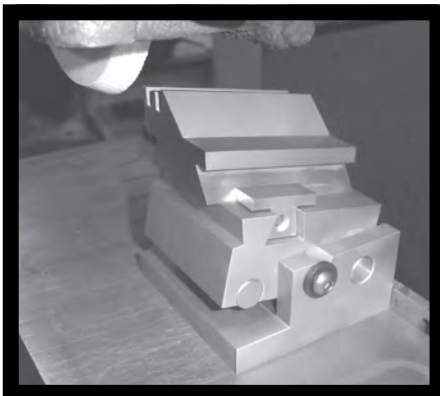
DOVETAIL SHARPENING FIXTURES FOR 12° AND 17° ANGLES

Dovetail Size	Cat. No.
5/8" (.951)	DSF-5/8
1-1/4" (1.882)	DSF-1-1/4

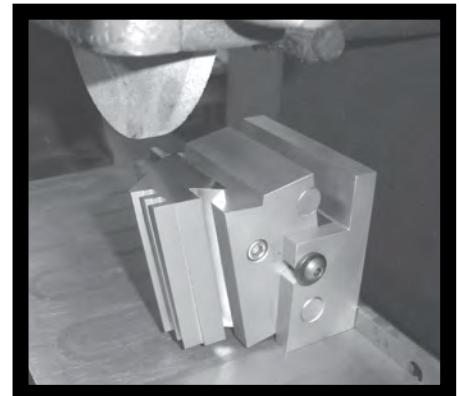
*One side of the fixture for grinding 12° angle dovetails
and the opposite side for 17° angle dovetails*

ADJUSTABLE DOVETAIL SHARPENING FIXTURE

**Cat. No.
DSF**



- CAN BE USED IN BOTH VERTICAL AND HORIZONTAL POSITIONS
- FOR DOVETAIL SIZES UP TO 1.882 (1-1/4)
- SUPPLIED WITH SPACERS FOR THE FOLLOWING ANGLES:
0, 2, 12, 17, 19.5 & 22 DEGREES



CAN ALSO SUPPLY SPACERS FOR OTHER ANGLES

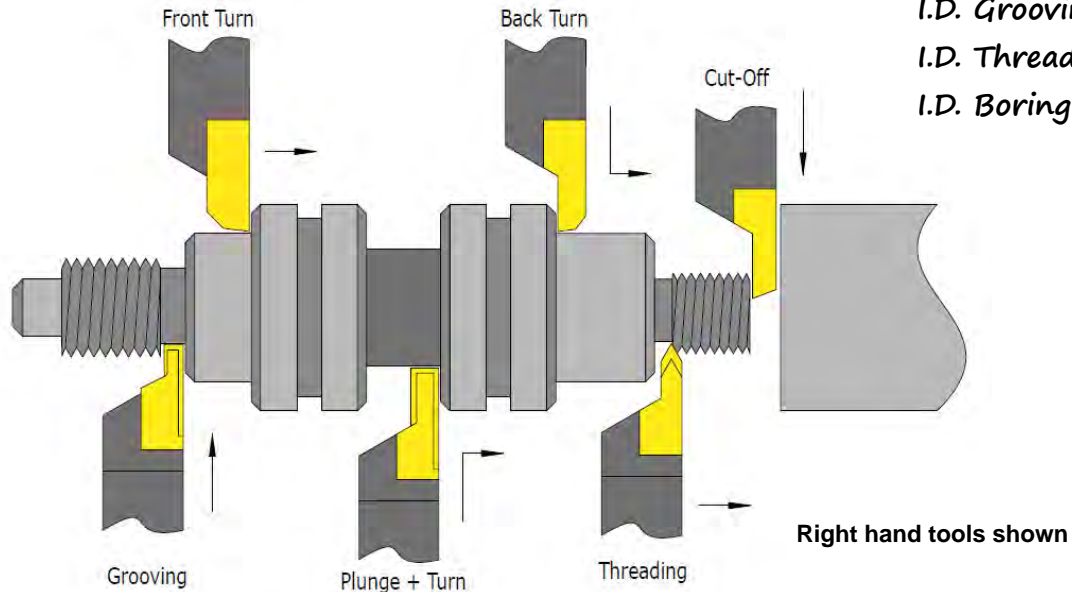
Somma / Max-Bar Mini Shank Tooling

Designed to fit your Swiss type CNC screw machine without the need of modification or large offsets

- Backturning geometries will plunge and turn to depths up to 3 times the width of the insert
- Threading inserts are designed to thread close to and behind shoulders
 - Inserts are precision ground for repeatability
 - Widest choice of inserts per holder
 - Zero radius as standard

Front Turn
Back Turn
Cut-Off
Groove
Thread

Plunge & Turn
Facegrooving
I.D. Grooving
I.D. Threading
I.D. Boring



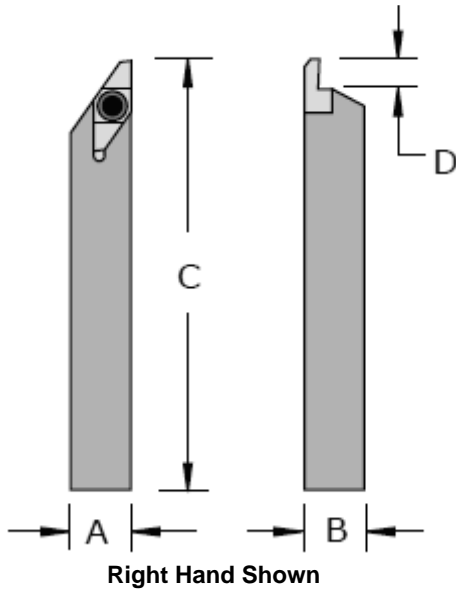
* **Diamond insert style**, offered 3 series sizes;

- Series 6** - (6mm I.C.) pages 57-63
- Series 8** - (8mm I.C.) pages 64-66 & pg. 76
- Series 50** - (1/2" I.C.) pages 67-69

* **Triangular insert style**, offered in 3 series sizes;

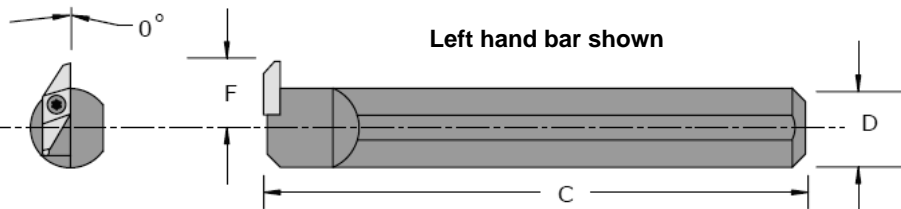
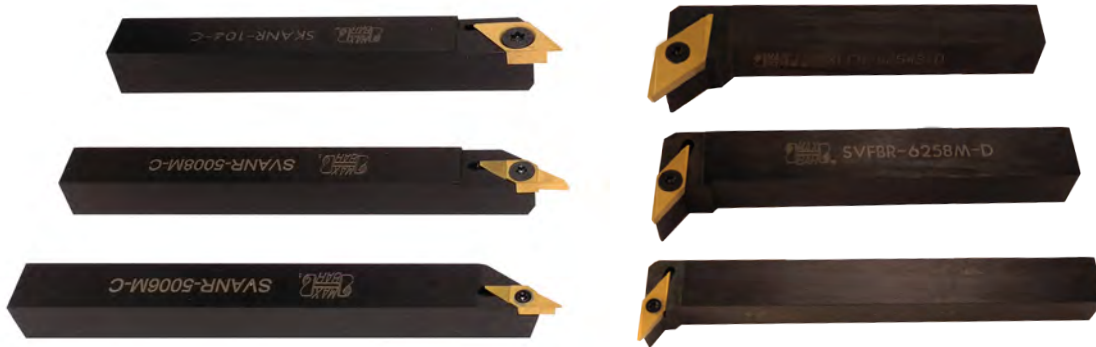
- Series 10** - (3/8" Dia. Cap.) pages 70-71
- Series 16** - (5/8" Dia. Cap.) pages 72-73
- Series 20** - (3/4" Dia. Cap.) pages 74-75





Series 6 Toolholders				
A/B	C	D	R.H. HOLDER	L.H. HOLDER
7MM	127MM	5MM	SVANR-07M6M-C	SVANL-07M6M-C
8MM	127MM	5MM	SVANR-08M6M-C	SVANL-08M6M-C
10MM	127MM	5MM	SVANR-10M6M-C	SVANL-10M6M-C
12MM	127MM	5MM	SVANR-12M6M-C	SVANL-12M6M-C
.375	5.00	.200	SVANR-3756M-C	SVANL-3756M-C
.500	5.00	.200	SVANR-5006M-C	SVANL-5006M-C
.625	5.00	.200	SVANR-6256M-C	SVANL-6256M-C
.750	5.00	.200	SVANR-7506M-C	SVANL-7506M-C

Holders include, Screw# 2.40-064, and Wrench# T-7



Note: See page 63 for a Universal Diamond Bar

Diamond Bars for Turret & Gang Loading/ Backworking (Series 6)						
NOTE: Right hand diamond bars use left hand inserts/ left hand bars use right hand inserts						
D	C	F	SCREW	WRENCH	R.H. BAR	L.H. BAR
.625	5.75	.515	2.40-064	T-7	S10D-SVFNR6M	S10D-SVFNL6M
.750	5.75	.575	2.40-064	T-7	S12D-SVFNR6M	S12D-SVFNL6M
20MM	146MM	15MM	2.40-064	T-7	S20MD-SVFNR6M	S20MD-SVFNL6M
22MM	146MM	16MM	2.40-064	T-7	S22MD-SVFNR6M	S22MD-SVFNL6M
25MM	146MM	17.5MM	2.40-064	T-7	S25MD-SVFNR6M	S25MD-SVFNL6M

	Front Turn (Series 6)						
	Depth		Radius		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.200	5.00	0	0	1°	VFTR-6M010	VFTL-6M010
	.200	5.00	0	0	4°	VFTR-6M040	VFTL-6M040
	.200	5.00	.002	.05	15°	VFTR-6M152	VFTL-6M152
	.200	5.00	.007	.18	15°	VFTR-6M157	VFTL-6M157
	.200	5.00	0	0	1°	VFTRB-6M010**	VFTLB-6M010**
	.200	5.00	0	0	4°	VFTRB-6M040**	VFTLB-6M040**
	.200	5.00	.002	.05	15°	VFTRB-6M152**	VFTLB-6M152**
	.200	5.00	.007	.18	15°	VFTRB-6M157**	VFTLB-6M157**

**With chip control

	Back Turn (Series 6)						
	Depth		Radius		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.031	0.78	.050	1.27	45°	VBTR-6M452	VBTL-6M452
	.047	1.19	.085	2.16	45°	VBTR-6M453	VBTL-6M453
	.062	1.57	.130	3.30	45°	VBTR-6M454	VBTL-6M454
	.078	1.98	.200	5.00	45°	VBTR-6M455	VBTL-6M455
	.093	2.36	.200	5.00	45°	VBTR-6M456	VBTL-6M456

	Cut-Off (Series 6)						
	Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.020	0.50	.050	1.30	25°	VCOR-6M2520	VCOL-6M2520
	.025	0.63	.065	1.65	25°	VCOR-6M2525	VCOL-6M2525
	.031	0.78	.090	2.30	25°	VCOR-6M2531	VCOL-6M2531
	.040	1.00	.100	2.60	20°	VCOR-6M2040	VCOL-6M2040
	.047	1.20	.130	3.30	20°	VCOR-6M2047	VCOL-6M2047
	.062	1.57	.160	4.06	15°	VCOR-6M1562	VCOL-6M1562
	.078	1.98	.200	5.00	15°	VCOR-6M1578	VCOL-6M1578
	.093	2.36	.200	5.00	15°	VCOR-6M1593	VCOL-6M1593

	Opp. Hand Cut-Off for Pickoff Spindle (Series 6)						
	Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
<p>Right hand with Left hand cut-off shown</p>	.031	0.78	.090	2.30	25°	VCORL-6M2531	VCOLR-6M2531
	.040	1.00	.100	2.60	20°	VCORL-6M2040	VCOLR-6M2040
	.047	1.20	.130	3.30	20°	VCORL-6M2047	VCOLR-6M2047
	.062	1.57	.160	4.06	15°	VCORL-6M1562	VCOLR-6M1562
	.078	1.98	.200	5.00	15°	VCORL-6M1578	VCOLR-6M1578
	.093	2.36	.200	5.00	15°	VCORL-6M1593	VCOLR-6M1593

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN

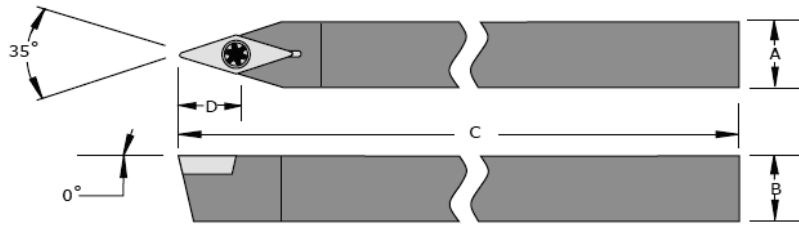
Plunge & Turn (Series 6)							
	Width		Depth		Radius	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.020	0.51	.030	0.76	0	VTGR-6M020	VTGL-6M020
	.031	0.78	.050	1.27	0	VTGR-6M031	VTGL-6M031
	.040	1.00	.075	1.90	0	VTGR-6M040	VTGL-6M040
	.047	1.20	.085	2.16	0	VTGR-6M047	VTGL-6M047
	.062	1.57	.130	3.30	0	VTGR-6M062	VTGL-6M062
	.078	2.00	.200	5.00	0	VTGR-6M078	VTGL-6M078
	.093	2.36	.200	5.00	0	VTGR-6M093	VTGL-6M093

Full Radius (Series 6)								
	Width		Depth		Radius		R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM	Inch	MM		
	.010	0.25	.030	0.76	.005	0.13	VFRR-6M010	VFRL-6M010
	.015	0.38	.040	1.00	.007	0.19	VFRR-6M015	VFRL-6M015
	.020	0.50	.050	1.30	.010	0.25	VFRR-6M020	VFRL-6M020
	.025	0.63	.065	1.65	.012	0.32	VFRR-6M025	VFRL-6M025
	.030	0.76	.090	2.30	.015	0.38	VFRR-6M030	VFRL-6M030
	.040	1.00	.110	2.80	.020	0.50	VFRR-6M040	VFRL-6M040
	.047	1.20	.130	3.30	.023	0.60	VFRR-6M047	VFRL-6M047
	.062	1.57	.160	4.06	.031	0.78	VFRR-6M062	VFRL-6M062
	.078	1.98	.180	4.57	.039	1.00	VFRR-6M078	VFRL-6M078
	.093	2.36	.180	4.57	.046	1.20	VFRR-6M093	VFRL-6M093

Threading 60° Centrally Located (Series 6)								
	Width		Depth		Radius		R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM	Inch	MM		
	.031	0.78	.150	3.80	0	0	VNVR-6M031	VNVL-6M031
	.047	1.20	.180	4.57	.002	.05	VNVR-6M047	VNVL-6M047
	.062	1.57	.200	5.00	.002	.05	VNVR-6M062	VNVL-6M062
	.093	2.36	.200	5.00	.004	.10	VNVR-6M093	VNVL-6M093

Grooving (Series 6)							
	Width		Depth		Radius	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.010	0.25	.020	0.50	0	VNGR-6M010	VNGL-6M010
	.012	0.30	.025	0.64	0	VNGR-6M012	VNGL-6M012
	.015	0.38	.035	0.89	0	VNGR-6M015	VNGL-6M015
	.020	0.50	.050	1.30	0	VNGR-6M020	VNGL-6M020
	.025	0.63	.065	1.65	0	VNGR-6M025	VNGL-6M025
	.031	0.78	.090	2.30	0	VNGR-6M031	VNGL-6M031
	.040	1.00	.100	2.60	0	VNGR-6M040	VNGL-6M040
	.047	1.20	.130	3.30	0	VNGR-6M047	VNGL-6M047
	.062	1.57	.160	4.06	0	VNGR-6M062	VNGL-6M062
	.078	1.98	.200	5.00	0	VNGR-6M078	VNGL-6M078
	.093	2.36	.200	5.00	0	VNGR-6M093	VNGL-6M093

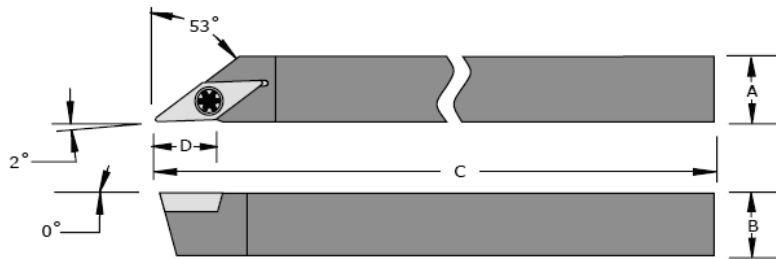
*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN



Note: Inserts for these Holders are on the next page

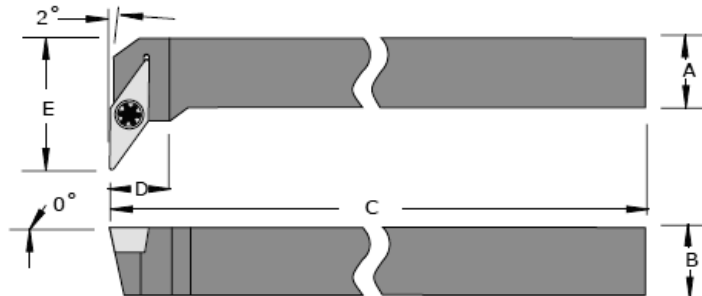
Neutral Rake 17° 30' Lead (6 Series)

A/B	C	D	SCREW	WRENCH	INSERT NO.	HOLDER NO.
8MM	127MM	10MM	2.40-064	T-7	VBGB-6M	SVVBN-08M6M-C
10MM	127MM	10MM	2.40-064	T-7	VBGB-6M	SVVBN-10M6M-C
12MM	127MM	10MM	2.40-064	T-7	VBGB-6M	SVVBN-12M6M-C
.375	5.00	.375	2.40-064	T-7	VBGB-6M	SVVBN-3756M-C
.500	5.00	.375	2.40-064	T-7	VBGB-6M	SVVBN-5006M-C



Neutral Rake 2° Lead (6 Series)

A/B	C	D	SCREW	WRENCH	INSERT NO.	R.H. HOLDER NO.	L.H. HOLDER NO.
8MM	127MM	10MM	2.40-064	T-7	VBGB-6M	SVJBR-08M6M-C	SVJBL-08M6M-C
10MM	127MM	10MM	2.40-064	T-7	VBGB-6M	SVJBR-10M6M-C	SVJBL-10M6M-C
12MM	127MM	10MM	2.40-064	T-7	VBGB-6M	SVJBR-12M6M-C	SVJBL-12M6M-C
.375	5.00	.375	2.40-064	T-7	VBGB-6M	SVJBR-3756M-C	SVJBL-3756M-C
.500	5.00	.375	2.40-064	T-7	VBGB-6M	SVJBR-5006M-C	SVJBL-5006M-C

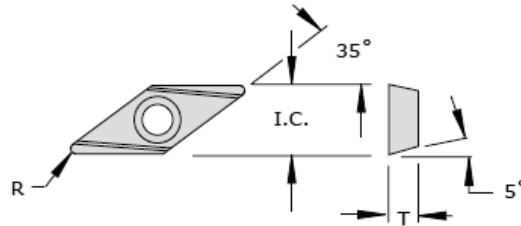


Gang Type Tooling-Neutral Rake 2° Lead (6 Series)

A	B	C	D	E	SCREW	R.H. HOLDER NO.	L.H. HOLDER NO.	INSERT SERIES
.500	.375	4.50	.375	.875	2.40-064	SVFBR-3756M-D	SVFBL-3756M-D	VBGBR & L-6
.500	.500	4.50	.375	.875	5.40-064	SVFBR-5006M-D	SVFBL-5006M-D	VBGBR & L-6

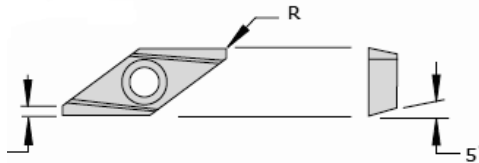
Wrench T-7

Right hand profiling with Chip Control shown



35° Diamond Turning & Profiling (6 Series)									
I.C.		T		R		NEUTRAL INSERT NO.	R.H. w/ Chip Control INSERT NO.	L.H. w/ Chip Control INSERT NO.	
INCH	MM	INCH	MM	INCH	MM				
.236	6.00	.118	3.00	.002	.05	VBGB-6M-002	VBGBR-6M-002	VBGBL-6M-002	
.236	6.00	.118	3.00	.005	.13	VBGB-6M-005	VBGBR-6M-005	VBGBL-6M-005	
.236	6.00	.118	3.00	.007	.18	VBGB-6M-007	VBGBR-6M-007	VBGBL-6M-007	
.236	6.00	.118	3.00	.010	.25	VBGB-6M-010	VBGBR-6M-010	VBGBL-6M-010	
.236	6.00	.118	3.00	.015	.38	VBGB-6M-015	VBGBR-6M-015	VBGBL-6M-015	

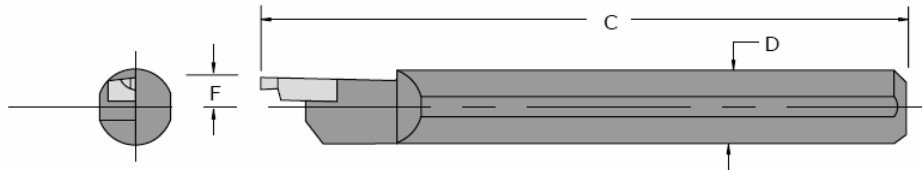
Right hand front turn with Chip Control shown



Front Turn & Chip Control (6 Series)						
T		R	W		RIGHT HAND INSERT NO.	LEFT HAND INSERT NO.
INCH	MM		INCH	MM		
.118	3.00	0	.031	.80	VBGBR-6M-FT	VBGBL-6M-FT

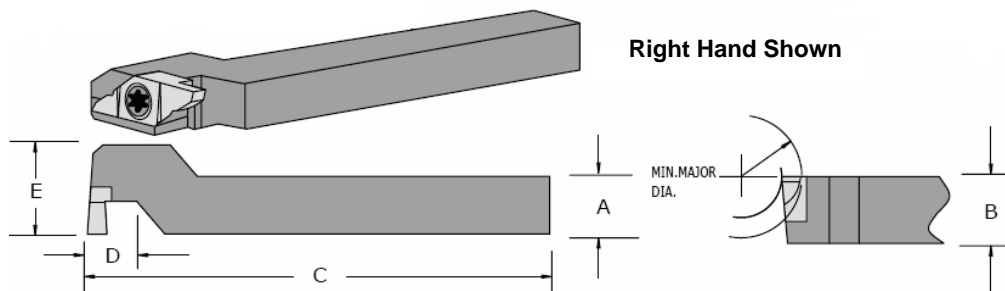
*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN





Left hand bar shown

Face Grooving Bars (Series 6)						
D	C	F	SCREW	WRENCH	L.H. BAR NO.	Insert Series
.625	5.75	.530	2.40-064	T-7	S10D-SVANL6M-FG	VFGL-6M-



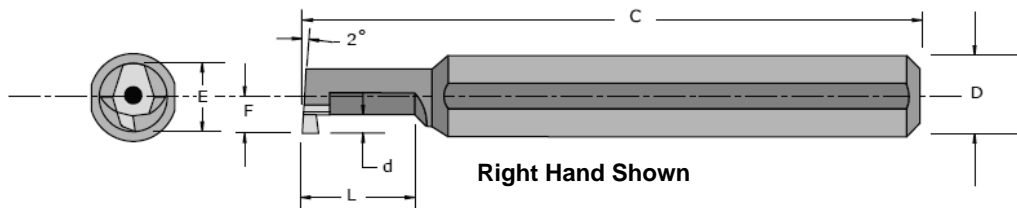
Right Hand Shown

Face Grooving (Series 6)							
NOTE: These right hand holders use left hand inserts/ left hand holders use right hand inserts							
A/B	C	D	E	SCREW	WRENCH	R.H. HOLDER NO.	L.H. HOLDER NO.
10MM	114MM	8MM	19MM	2.40-064	T-7	SVFGR-10M6M-D	SVFGL-10M6M-D
12MM	114MM	9.5MM	19MM	2.40-064	T-7	SVFGR-12M6M-D	SVFGL-12M6M-D
.375	4.50	.375	.750	2.40-064	T-7	SVFGR-3756M-D	SVFGL-3756M-D
.500	4.50	.410	.750	2.40-064	T-7	SVFGR-5006M-D	SVFGL-5006M-D
.625	4.50	.510	.750	2.40-064	T-7	SVFGR-6256M-D	SVFGL-6256M-D
.750	4.50	.625	.750	2.40-064	T-7	SVFGR-7506M-D	SVFGL-7506M-D

 Left hand insert shown	Inserts for Face Grooving Holders (Series 6)							
	Width		Depth		Min. Major Dia.		R.H. INSERT	L.H. INSERT
	Inch	MM	Inch	MM	Inch	MM	UNCOATED*	UNCOATED*
.030	0.76	.050	1.27	.250	6.35	VFGR-6M305025	VFGL-6M305025	
.030	0.76	.075	1.90	.500	12.7	VFGR-6M307550	VFGL-6M307550	
.040	1.01	.060	1.52	.250	6.35	VFGR-6M406025	VFGL-6M406025	
.040	1.01	.090	2.28	.500	12.7	VFGR-6M409050	VFGL-6M409050	
.050	1.27	.075	1.90	.300	7.62	VFGR-6M507530	VFGL-6M507530	
.050	1.27	.100	2.54	.600	15.3	VFGR-6M501060	VFGL-6M501060	
.060	1.52	.080	2.03	.300	7.62	VFGR-6M608030	VFGL-6M608030	
.060	1.52	.100	2.54	.600	15.3	VFGR-6M601060	VFGL-6M601060	
.070	1.78	.090	2.28	.300	7.62	VFGR-6M709030	VFGL-6M709030	
.070	1.78	.120	3.05	.600	15.3	VFGR-6M701260	VFGL-6M701260	
.080	2.03	.100	2.54	.300	7.62	VFGR-6M801030	VFGL-6M801030	
.080	2.03	.140	3.55	.600	15.3	VFGR-6M801460	VFGL-6M801460	
.090	2.28	.140	3.55	.300	7.62	VFGR-6M901430	VFGL-6M901430	
.090	2.28	.200	5.00	.600	15.3	VFGR-6M902060	VFGL-6M902060	

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN

One bar for both Right & Left Hand Turning & Grooving & Threading



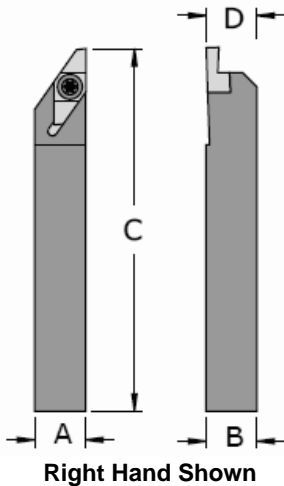
Uni-Max Diamond Bars								
Note: Right hand bar turning (counter clockwise rotation) use left hand inserts								
Left hand bar turning (clockwise rotation) use right hand inserts								
D	F	L	d	C	E	SCREW	WRENCH	L.H. & R.H. BAR NO.
.500	.218	.875	.093	5.75	.437	2.40-064	T-7	S08D-SVFNLR6MID-1A
.625	.218	.875	.093	5.75	.437	2.40-064	T-7	S10D-SVFNLR6MID-1A
.750	.218	.875	.093	5.75	.437	2.40-064	T-7	S12D-SVFNLR6MID-1A

 Left hand insert shown for Right hand grooving	Grooving						
	Width		Depth		Radius	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.020	0.50	.040	1.00	0	VNGR-6MID020	VNGL-6MID020
	.025	0.63	.050	1.27	0	VNGR-6MID025	VNGL-6MID025
	.031	0.78	.060	1.52	0	VNGR-6MID031	VNGL-6MID031
	.040	1.00	.080	2.03	0	VNGR-6MID040	VNGL-6MID040
	.047	1.20	.090	2.28	0	VNGR-6MID047	VNGL-6MID047
	.062	1.57	.090	2.28	0	VNGR-6MID062	VNGL-6MID062
	.078	1.98	.090	2.28	0	VNGR-6MID078	VNGL-6MID078
	.093	2.36	.090	2.28	0	VNGR-6MID093	VNGL-6MID093

 Left hand insert shown for Right hand boring	Boring						
	Width		Radius		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.060	1.52	0	0	4°	VFTR-6MID040	VFTR-6MID040
	.030	0.76	.002	.05	15°	VFTR-6MID152	VFTR-6MID152
	.030	0.76	.007	.18	15°	VFTR-6MID157	VFTR-6MID157

 Left hand insert shown for Right hand threading	Threading						
	Width		Radius		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.031	0.78	0	0	60°	VNVR-6MID6031	VNVL-6MID6031
	.062	1.57	.002	.05	60°	VNVR-6MID6092	VNVL-6MID6092
	.093	2.36	.004	.10	60°	VNVR-6MID6093	VNVL-6MID6093
	.047	1.20	.005	.13	90°	VNVR-6MID9047	VNVL-6MID9047
	.093	2.36	.005	.13	90°	VNVR-6MID9093	VNVL-6MID9093

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN



Series 8 Toolholders				
A/B	C	D	R.H. HOLDER	L.H. HOLDER
.375	3.50	.380	SVANR-3758M-V	SVANL-3758M-V
.375	5.00	.380	SVANR-3758M-C	SVANL-3758M-C
10MM	127MM	10MM	SVANR-10M8M-C	SVANL-10M8M-C
12MM	127MM	12MM	SVANR-12M8M-C	SVANL-12M8M-C
.500	3.50	.505	SVANR-5008M-V	SVANL-5008M-V
.500	5.00	.505	SVANR-5008M-C	SVANL-5008M-C
.625	5.00	.630	SVANR-6258-C	SVANL-6258M-C

Holders include, Screw# 3.20-095, and Wrench# T-10-P



Front Turn (Series 8)								
Width		Depth		Radius		R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM	Inch	MM	UNCOATED*	UNCOATED*	
.156	4	.300	7.62	0	0	VFTR-8M040	VFTL-8M040	
.156	4	.300	7.62	.005	0.13	VFTR-8M045	VFTL-8M045	
.156	4	.300	7.62	0	0	VFTRB-8M040**	VFTLB-8M040**	
.156	4	.300	7.62	.005	0.13	VFTRB-8M045**	VFTLB-8M045**	

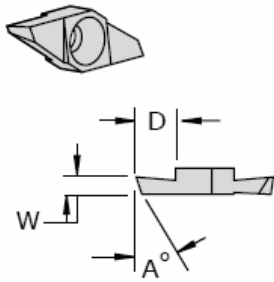
**With chip control

Back Turn (Series 8)							
Width		Depth		Radius	R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM		UNCOATED*	UNCOATED*	
.125	3.18	.300	7.62	0	VBTR-8M308	VBTL-8M308	
.093	2.36	.300	7.62	0	VBTR-8M306	VBTL-8M306	
.078	1.98	.250	6.35	0	VBTR-8M305	VBTL-8M305	
.062	1.57	.190	4.83	0	VBTR-8M304	VBTL-8M304	
.047	1.19	.130	3.30	0	VBTR-8M303	VBTL-8M303	

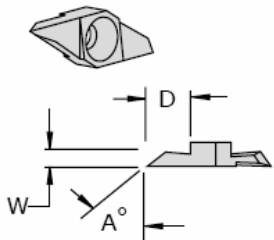
Plunge & Turn (Series 8)							
Width		Depth		Radius	R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM		UNCOATED*	UNCOATED*	
.125	3.18	.300	7.62	0	VGTR-8M125	VGTL-8M125	
.093	2.36	.300	7.62	0	VGTR-8M093	VGTL-8M093	
.078	1.98	.250	6.35	0	VGTR-8M078	VGTL-8M078	
.062	1.57	.190	4.82	0	VGTR-8M062	VGTL-8M062	
.047	1.19	.130	3.30	0	VGTR-8M047	VGTL-8M047	
.031	0.78	.050	1.27	0	VGTR-8M031	VGTL-8M031	

Threading 60° Centrally Located (Series 8)							
Width		Depth		Radius		R.H. INSERT	L.H. INSERT
Inch	MM	Inch	MM	Inch	MM	UNCOATED*	UNCOATED*
.125	3.18	.300	7.62	.004	.10	VNVR-8M125	VNVL-8M125
.062	1.57	.250	6.35	.002	.05	VNVR-8M062	VNVL-8M062
.031	0.78	.190	4.82	0	0	VNVR-8M031	VNVL-8M031

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN

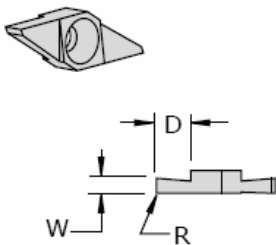


Cut-Off (Series 8)							
Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.125	3.18	.320	8.13	15°	VCOR-8M158	VCOL-8M158	
.093	2.36	.320	8.13	15°	VCOR-8M156	VCOL-8M156	
.078	1.98	.320	8.13	15°	VCOR-8M155	VCOL-8M155	
.062	1.57	.260	6.60	15°	VCOR-8M154	VCOL-8M154	
.047	1.19	.190	4.83	15°	VCOR-8M153	VCOL-8M153	
.040	1.00	.130	3.30	20°	VCOR-8M201M	VCOL-8M201M	
.031	0.78	.080	2.03	20°	VCOR-8M202	VCOL-8M202	



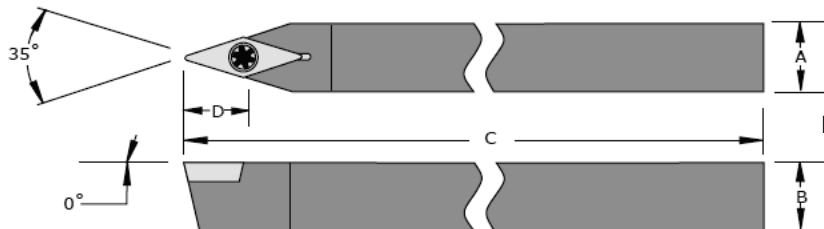
Right hand with
Left hand cut-off shown

Opp. Hand Cut-Off for Pickoff Spindle (Series 8)							
Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.125	3.18	.320	8.13	15°	VCORL-8M158	VCOLR-8M158	
.093	2.36	.320	8.13	15°	VCORL-8M156	VCOLR-8M156	
.078	1.98	.320	8.13	15°	VCORL-8M155	VCOLR-8M155	
.062	1.57	.260	6.60	15°	VCORL-8M154	VCOLR-8M154	
.047	1.19	.190	4.83	15°	VCORL-8M153	VCOLR-8M153	
.040	1.00	.130	3.30	20°	VCORL-8M201M	VCOLR-8M201M	



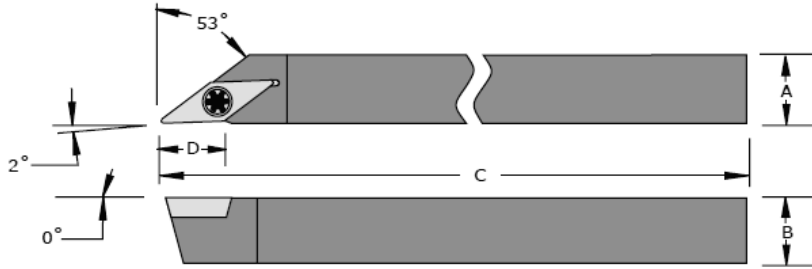
Grooving (Series 8)							
Width		Depth		Radius	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.125	3.18	.300	7.62	0	VNGR-8M125	VNGL-8M125	
.093	2.36	.300	7.62	0	VNGR-8M093	VNGL-8M093	
.078	1.98	.250	6.35	0	VNGR-8M078	VNGL-8M078	
.062	1.57	.250	6.35	0	VNGR-8M062	VNGL-8M062	
.047	1.19	.190	4.83	0	VNGR-8M047	VNGL-8M047	
.040	1.00	.130	3.30	0	VNGR-8M040	VNGL-8M040	
.031	0.79	.080	2.03	0	VNGR-8M031	VNGL-8M031	

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN



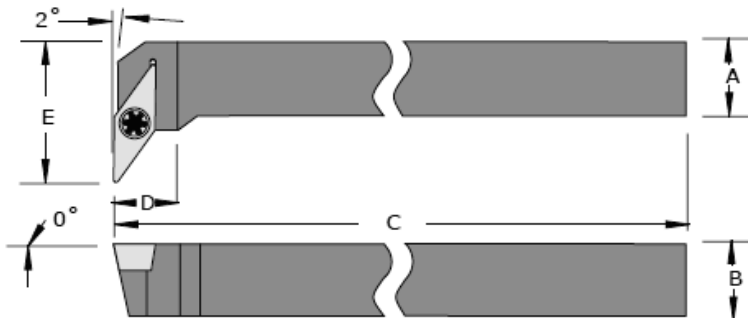
Note: Inserts for these
Holders are on the next page

Neutral Rake 17° 30' Lead (8 Series)						
A/B	C	D	SCREW	WRENCH	INSERT NO.	HOLDER NO.
.500	3.50	.500	3.20-095	T-10-P	VBGB-8M	SVVBN-5008M-V
.500	5.00	.500	3.20-095	T-10-P	VBGB-8M	SVVBN-5008M-C
.625	3.50	.500	3.20-095	T-10-P	VBGB-8M	SVVBN-6258M-V
.625	5.00	.500	3.20-095	T-10-P	VBGB-8M	SVVBN-6258M-C
.750	3.50	.500	3.20-095	T-10-P	VBGB-8M	SVVBN-7508M-V
.750	5.00	.500	3.20-095	T-10-P	VBGB-8M	SVVBN-7508M-C



SEE PAGE 70 FOR
50° SERIES 8
PROFILE TOOLING

Neutral Rake 2° Lead (8 Series)							
A/B	C	D	SCREW	WRENCH	INSERT NO.	R.H. HOLDER NO.	L.H. HOLDER NO.
.500	3.50	.500	3.20-095	T-10-P	VBGB-8M	SVLBR-5008M-V	SVJBL-5008M-V
.500	5.00	.500	3.20-095	T-10-P	VBGB-8M	SVLBR-5008M-C	SVJBL-5008M-C
.625	3.50	.500	3.20-095	T-10-P	VBGB-8M	SVLBR-6258M-V	SVJBL-6258M-V
.625	5.00	.500	3.20-095	T-10-P	VBGB-8M	SVLBR-6258M-C	SVJBL-6258M-C
.750	3.50	.500	3.20-095	T-10-P	VBGB-8M	SVLBR-7508M-V	SVJBL-7508M-V
.750	5.00	.500	3.20-095	T-10-P	VBGB-8M	SVLBR-7508M-C	SVJBL-7508M-C

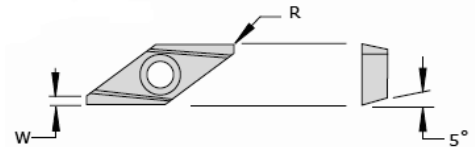


SEE PAGE 70 FOR
50° SERIES 8
PROFILE TOOLING

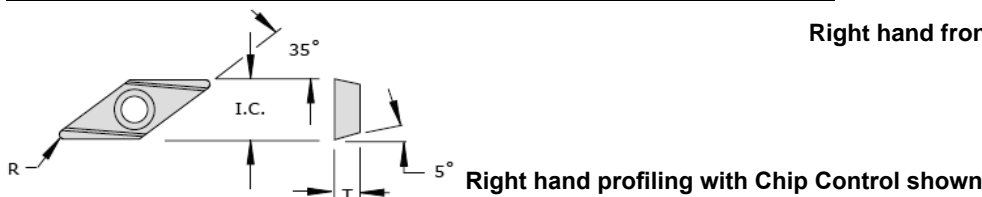
Wrench T-10-P

Gang Type Tooling-Neutral Rake 2° Lead (8 Series)									
A	B	C	D	E	SCREW	R.H. HOLDER NO.	L.H. HOLDER NO.	INSERT SERIES	
.625	.625	4.50	.500	1.12	3.20-095	SVFBR-6258M-D	SVFBL-6258M-D	VBGBR & L-8	

Front Turn & Chip Control (8 Series)						
T		R	W		RIGHT HAND INSERT NO.	LEFT HAND INSERT NO.
INCH	MM		INCH	MM		
.157	4.00	0	.031	.80	VBGBR-8M-FT	VBGBL-8M-FT



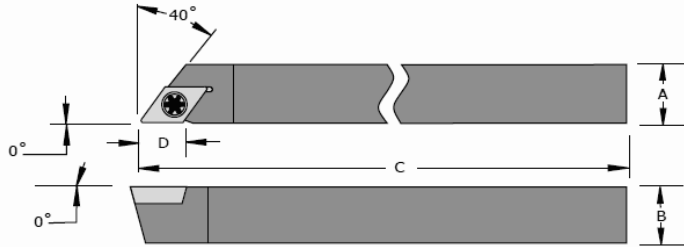
Right hand front turn with Chip Control shown



Right hand profiling with Chip Control shown

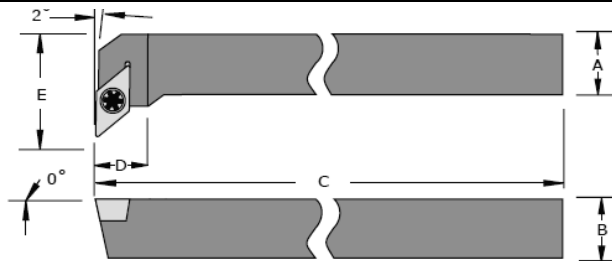
35° Diamond Turning & Profiling (8 Series)								
I.C.		T		R		NEUTRAL INSERT NO.	R.H. w/ Chip Control INSERT NO.	L.H. w/ Chip Control INSERT NO.
INCH	MM	INCH	MM	INCH	MM			
.314	8.00	.157	4.00	.002	.05	VBGB-8M-002	VBGBR-8M-002	VBGBL-8M-002
.314	8.00	.157	4.00	.005	.13	VBGB-8M-005	VBGBR-8M-005	VBGBL-8M-005
.314	8.00	.157	4.00	.007	.18	VBGB-8M-007	VBGBR-8M-007	VBGBL-8M-007
.314	8.00	.157	4.00	.015	.38	VBGB-8M-015	VBGBR-8M-015	VBGBL-8M-015

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN



Neutral Rake 0° Lead (50 Series 50° Insert)

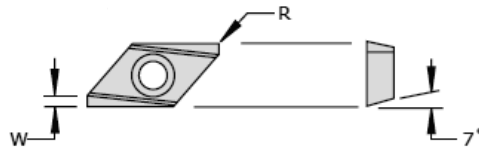
A/B	C	D	SCREW	WRENCH	R.H. HOLDER NO.	L.H. HOLDER NO.	INSERT NO.
.625	3.50	.625	4.76-127	T-25-P	SKACR-62543-V	SKACL-62543-V	KCGB-43
.625	5.00	.625	4.76-127	T-25-P	SKACR-62543-C	SKACL-62543-C	KCGB-43
.750	3.50	.625	4.76-127	T-25-P	SKACR-75043-V	SKACL-75043-V	KCGB-43
.750	5.00	.625	4.76-127	T-25-P	SKACR-75043-C	SKACL-75043-C	KCGB-43



Gang Type Tooling-Neutral Rake 2° Lead (50 Series 50° Insert)

A	B	C	D	E	SCREW	WRENCH	R.H. HOLDER NO.	L.H. HOLDER NO.	INSERT NO.
.625	.625	4.50	.625	1.25	4.76-127	T-25-P	SKFCR-62543-D	SKFCL-62543-D	KCGB-43

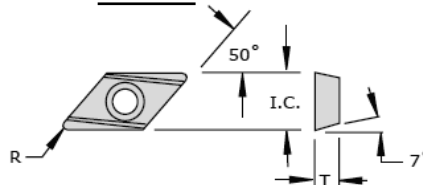
Right hand Front Turn with Chip Control shown



Front Turn & Chip Control (50 Series 50° Insert)

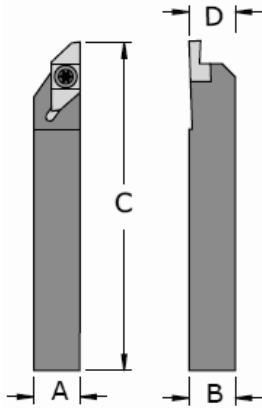
I.C.		T		R	W		RIGHT HAND	LEFT HAND
INCH	MM	INCH	MM		INCH	MM	INSERT NO.	INSERT NO.
.500	12.7	.188	4.76	0	.062	1.57	KCGBR-43-FT	KCGBL-43-FT

Right hand Profiling with Chip Control shown



50° Diamond Turning & Profiling (50 Series 50° Insert)

I.C.		T		R		NEUTRAL INSERT NO.	R.H. w/ Chip Control INSERT NO.	L.H. w/ Chip Control INSERT NO.
INCH	MM	INCH	MM	INCH	MM			
.500	12.7	.188	4.76	.005	.13	KCGB-43-005	KCGBR-43-005	KCGBL-43-005
.500	12.7	.188	4.76	.010	.25	KCGB-43-010	KCGBR-43-010	KCGBL-43-010
.500	12.7	.188	4.76	.015	.38	KCGB-43-015	KCGBR-43-015	KCGBL-43-015
.500	12.7	.188	4.76	.030	.76	KCGB-43-030	KCGBR-43-030	KCGBL-43-030



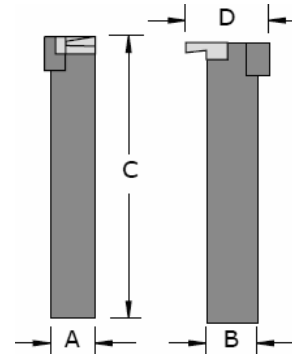
Right Hand Shown

Series 50 Toolholders				
A/B	C	D	R.H. HOLDER	L.H. HOLDER
.625	3.50	.630	SKANR-104-V	SKANL-104-V
.625	5.00	.630	SKANR-104-C	SKANL-104-C
.750	3.50	.755	SKANR-124-V	SKANL-124-V
.750	5.00	.755	SKANR-124-C	SKANL-124-C
1.00	5.00	1.00	SKANR-164-C	SKANL-164-C

Holders include, Screw# 4.76-127 and Wrench# T-25-P

Right Angle Holders (50 Series)				
NOTE: Right hand holders use left hand inserts Left hand holders use right hand inserts				
A/B	C	D	R.H. HOLDER NO.	L.H. HOLDER NO.
.375	.500	4.50	SKFNR-064-D	SKFNL-064-D
.500	.500	4.50	SKFNR-084-D	SKFNL-084-D
.625	.625	4.50	SKFNR--104-D	SKFNL-104-D
.750	.750	5.00	SKFNR-124-D	SKFNL-124-D
1.00	1.00	5.00	SKFNR-164-D	SKFNL-164-D

Holders include, Screw# 4.76-127 and Wrench# T-25-P



Right Hand Shown

	Front Turn (Series 50)							
	Width		Depth		Radius		R.H. INSERT	L.H. INSERT
	Inch	MM	Inch	MM	Inch	MM	UNCOATED*	UNCOATED*
	.187	4.75	.300	7.62	0	0	KFTR-4040	KFTL-4040
	.187	4.75	.300	7.62	.005	.13	KFTR-4045	KFTL-4045
	.187	4.75	.300	7.62	0	0	KFTRB-4040**	KFTLB-4040**
	.187	4.75	.300	7.62	.005	.13	KFTRB-4045**	KFTLB-4045**

**With chip control

	Back Turn (Series 50)						
	Width		Depth		Radius	R.H. INSERT	L.H. INSERT
	Inch	MM	Inch	MM		UNCOATED*	UNCOATED*
	.125	3.18	.300	7.62	0	KBTR-4308	KBTL-4308
	.093	2.36	.300	7.62	0	KBTR-4306	KBTL-4306
	.078	1.98	.250	6.35	0	KBTR-4305	KBTL-4305
	.062	1.57	.190	4.83	0	KBTR-4304	KBTL-4304
	.047	1.19	.130	3.30	0	KBTR-4303	KBTL-4303

	Punge & Turn (Series 50)						
	Width		Depth		Radius	R.H. INSERT	L.H. INSERT
	Inch	MM	Inch	MM		UNCOATED*	UNCOATED*
	.125	3.18	.300	7.62	0	KTGR-4125	KTGL-4125
	.093	2.36	.300	7.62	0	KTGR-4093	KTGL-4093
	.078	1.98	.250	6.35	0	KTGR-4078	KTGL-4078
	.062	1.57	.190	4.82	0	KTGR-4062	KTGL-4062
	.047	1.19	.130	3.30	0	KTGR-4047	KTGL-4047

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTiN

Cut-Off (Series 50)							
Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.125	3.18	.320	8.13	15°	KCOR-4158	KCOL-4158	
.093	2.36	.320	8.13	15°	KCOR-4156	KCOL-4156	
.078	1.98	.320	8.13	15°	KCOR-4155	KCOL-4155	
.062	1.57	.260	6.60	15°	KCOR-4154	KCOL-4154	
.047	1.19	.190	4.83	15°	KCOR-4153	KCOL-4153	
.040	1.00	.130	3.30	20°	KCOR-4201M	KCOL-4201M	

Opp. Hand Cut-Off for Pickoff Spindle (Series 50)							
Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.093	2.36	.320	8.13	15°	KCORL-4156	KCOLR-4156	
.078	1.98	.320	8.13	15°	KCORL-4155	KCOLR-4155	
.062	1.57	.260	6.60	15°	KCORL-4154	KCOLR-4154	
.047	1.19	.190	4.83	15°	KCORL-4153	KCOLR-4153	

Left hand insert with Right hand cut-off shown

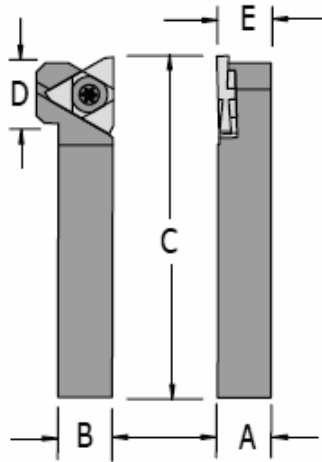
Grooving (Series 50)							
Width		Depth		Radius	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.125	3.18	.300	7.62	0	KNGR-4125	KNGL-4125	
.093	2.36	.300	7.62	0	KNGR-4093	KNGL-4093	
.078	1.98	.300	7.62	0	KNGR-4078	KNGL-4078	
.062	1.57	.250	6.60	0	KNGR-4062	KNGL-4062	
.047	1.19	.190	4.83	0	KNGR-4047	KNGL-4047	
.040	1.00	.130	3.30	0	KNGR-4040	KNGL-4040	
.031	0.79	.080	2.03	0	KNGR-4031	KNGL-4031	

Full Radius (Series 50)							
Width		Depth		Radius		R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
Inch	MM	Inch	MM	Inch	MM		
.125	3.18	.300	7.62	.062	1.58	KFRR-4125	KFRL-4125
.093	2.36	.300	7.62	.047	1.19	KFRR-4093	KFRL-4093
.078	1.98	.300	7.62	.039	1.00	KFRR-4078	KFRL-4078
.062	1.57	.250	4.83	.031	0.78	KFRR-4062	KFRL-4062
.047	1.19	.190	4.83	.023	0.60	KFRR-4047	KFRL-4047
.031	0.79	.080	2.03	.015	0.40	KFRR-4031	KFRL-4031

Threading 60° Centrally Located (Series 50)							
Width		Depth		Radius		R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
Inch	MM	Inch	MM	Inch	MM		
.125	3.18	.300	7.62	.004	.10	KNVR-4125	KNVL-4125
.062	1.57	.250	6.35	.002	.05	KNVR-4062	KNVL-4062
.031	0.78	.190	4.82	0	0	KNVR-4031	KNVL-4031

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN

SWISS TURN



Right Hand Shown

Series 10 Toolholders					
A/B	C	D	E	R.H. HOLDER	L.H. HOLDER
.312	3.50	.550	.317	STANR-053-V	STANL-053-V
.375	3.50	.550	.380	STANR-063-V	STANL-063-V
.375	5.00	.550	.380	STANR-063-C	STANL-063-C
.500	3.50	.550	.505	STANR-083-V	STANL-083-V
.500	5.00	.550	.505	STANR-083-C	STANL-083-C
.625	3.50	-	.630	STANR-103-V	STANL-103-V

Holders include, Screw# 3.50-095, and Wrench# T-15-P



Front Turn (Series 10)								
Width		Depth		Radius		R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM	Inch	MM	UNCOATED*	UNCOATED*	
.125	3.18	.230	5.84	0	0	TFTR-3040	TFTL-3040	
.125	3.18	.230	5.84	.005	0.13	TFTR-3045	TFTL-3045	
.125	3.18	.230	5.84	0	0	TFTRB-3040**	TFTLB-3040**	
.125	3.18	.230	5.84	.005	0.13	TFTRB-3045**	TFTLB-3045**	

**With chip control

Back Turn (Series 10)							
Width		Depth		Radius	R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM		UNCOATED*	UNCOATED*	
.093	2.36	.230	5.84	0	TBTR-3306	TBTL-3306	
.078	1.98	.230	5.84	0	TBTR-3305	TBTL-3305	
.062	1.57	.230	5.84	0	TBTR-3304	TBTL-3304	
.047	1.19	.130	3.30	0	TBTR-3303	TBTL-3303	

Plunge & Turn (Series 10)							
Width		Depth		Radius	R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM		UNCOATED*	UNCOATED*	
.093	2.36	.230	5.84	0	TTGR-3093	TTGL-3093	
.078	1.98	.230	5.84	0	TTGR-3078	TTGL-3078	
.062	1.57	.230	5.84	0	TTGR-3062	TTGL-3062	
.047	1.19	.130	3.30	0	TTGR-3047	TTGL-3047	
.030	0.76	.090	2.28	0	TTGR-3030	TTGL-3030	

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN

		Cut-off (Series 10)						
		Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
		Inch	MM	Inch	MM			
.093	2.36	.230	5.84	15°	TCOR-3156	TCOL-3156		
.078	1.98	.230	5.84	15°	TCOR-3155	TCOL-3155		
.062	1.57	.230	5.84	15°	TCOR-3154	TCOL-3154		
.047	1.19	.230	5.84	15°	TCOR-3153	TCOL-3153		
.040	1.00	.180	4.57	20°	TCOR-3201M	TCOL-3201M		
.031	0.78	.100	2.54	20°	TCOR-3202	TCOL-3202		

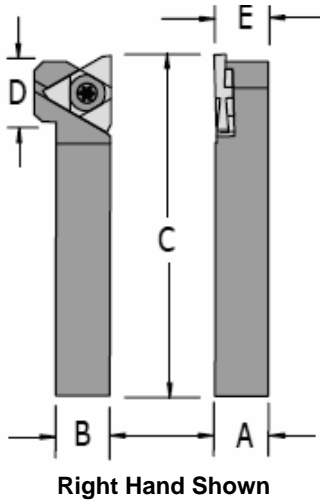
		Opp. Hand Cut-Off for Pickoff Spindle (Series 10)						
		Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
		Inch	MM	Inch	MM			
.093	2.36	.230	5.84	15°	TCOLR-3156	TCORL-3156		
.078	1.98	.230	5.84	15°	TCOLR-3155	TCORL-3155		
.062	1.57	.230	5.84	15°	TCOLR-3154	TCORL-3154		
.047	1.19	.230	5.84	15°	TCOLR-3153	TCORL-3153		
.040	1.00	.180	4.57	20°	TCOLR-3201M	TCORL-3201M		
.031	0.78	.100	2.54	20°	TCOLR-3202	TCORL-3202		

Left hand insert with Right hand cut-off shown

		Grooving (Series 10)						
		Width		Depth		Radius	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
		Inch	MM	Inch	MM			
.093	2.36	.230	5.84	0	TNGR-3093	TNGL-3093		
.078	1.98	.230	5.84	0	TNGR-3078	TNGL-3078		
.062	1.57	.230	5.84	0	TNGR-3062	TNGL-3062		
.047	1.19	.230	5.84	0	TNGR-3047	TNGL-3047		
.040	1.00	.180	4.57	0	TNGR-3040	TNGL-3040		
.031	0.78	.100	2.54	0	TNGR-3031	TNGL-3031		
.020	0.50	.090	2.28	0	TNGR-3020	TNGL-3020		
.015	0.38	.080	2.03	0	TNGR-3015	TNGL-3015		

		Threading 60° Centrally Located (Series 10)							
		Width		Depth		Radius		R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
		Inch	MM	Inch	MM	Inch	MM		
.125	3.18	.230	5.84	.004	.10	TNVR-3125	TNVL-3125		
.062	1.57	.230	5.84	.002	.05	TNVR-3062	TNVL-3062		
.031	0.78	.190	4.82	0	0	TNVR-3031	TNVL-3031		

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN



Series 16 Toolholders					
A/B	C	D	E	R.H. HOLDER	L.H. HOLDER
.375	3.50	.750	.380	STANR-064-V*	STANL-064-V*
.375	5.00	.750	.380	STANR-064-C*	STANL-064-C*
.500	3.50	.750	.505	STANR-084-V	STANL-084-V
.500	5.00	.750	.505	STANR-084-C	STANL-084-C
.625	3.50	.750	.630	STANR-104-V	STANL-104-V
.750	5.00	-	.755	STANR-124-C	STANL-124-C

Holders include, Screw#s *4.06-095, 4.06-127 and Wrench# T-20-P



Front Turn (Series 16)							
Width		Depth		Radius		R.H. INSERT	L.H. INSERT
Inch	MM	Inch	MM	Inch	MM	UNCOATED*	UNCOATED*
.187	4.75	.350	8.90	0	0	TFTR-4040	TFTL-4040
.187	4.75	.350	8.90	.005	0.13	TFTR-4045	TFTL-4045
.187	4.75	.350	8.90	0	0	TFTRB-4040**	TFTLB-4040**
.187	4.75	.350	8.90	.005	0.13	TFTRB-4045**	TFTLB-4045**

**With chip control

Back Turn (Series 16)							
Width		Depth		Radius	R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM		UNCOATED*	UNCOATED*	
.125	3.18	.350	8.90	0	TBTR-4308	TBTL-4308	
.093	2.36	.350	8.90	0	TBTR-4306	TBTL-4306	
.078	1.98	.300	7.62	0	TBTR-4305	TBTL-4305	
.062	1.57	.230	5.84	0	TBTR-4304	TBTL-4304	
.047	1.19	.130	3.30	0	TBTR-4303	TBTL-4303	

Plunge & Turn (Series 16)							
Width		Depth		Radius	R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM		UNCOATED*	UNCOATED*	
.125	3.18	.350	8.90	0	TTGR-4125	TTGL-4125	
.093	2.36	.350	8.90	0	TTGR-4093	TTGL-4093	
.078	1.98	.300	7.62	0	TTGR-4078	TTGL-4078	
.062	1.57	.230	5.84	0	TTGR-4062	TTGL-4062	
.047	1.19	.130	3.30	0	TTGR-4047	TTGL-4047	
.031	0.76	.090	2.28	0	TTGR-4031	TTGL-4031	

Square Bottom

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN

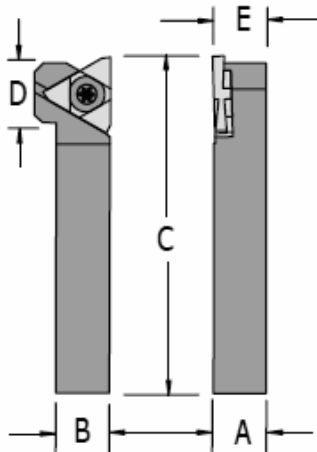
Cut-Off (Series 16)							
Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.125	3.18	.370	9.40	15°	TCOR-4158	TCOL-4158	
.093	2.36	.370	9.40	15°	TCOR-4156	TCOL-4156	
.078	1.98	.370	9.40	15°	TCOR-4155	TCOL-4155	
.062	1.57	.300	7.62	15°	TCOR-4154	TCOL-4154	
.047	1.19	.230	5.84	15°	TCOR-4153	TCOL-4153	
.040	1.00	.180	4.57	20°	TCOR-4201M	TCOL-4201M	
.031	0.78	.100	2.54	20°	TCOR-4202	TCOL-4202	

Opp. Hand Cut-off for Pickoff Spindle (Series 16)							
Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.093	2.36	.370	9.40	15°	TCOLR-4156	TCORL-4156	
.078	1.98	.370	9.40	15°	TCOLR-4155	TCORL-4155	
.062	1.57	.300	7.62	15°	TCOLR-4154	TCORL-4154	
.047	1.19	.230	5.84	15°	TCOLR-4153	TCORL-4153	
.040	1.00	.180	4.57	20°	TCOLR-4201M	TCORL-4201M	
.031	0.78	.100	2.54	20°	TCOLR-4202	TCORL-4202	

Grooving (Series 16)							
Width		Depth		Radius	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*	
Inch	MM	Inch	MM				
.125	3.18	.370	9.40	0	TNGR-4125	TNGL-4125	
.093	2.36	.370	9.40	0	TNGR-4093	TNGL-4093	
.078	1.98	.370	9.40	0	TNGR-4078	TNGL-4078	
.062	1.57	.300	7.62	0	TNGR-4062	TNGL-4062	
.047	1.19	.230	5.84	0	TNGR-4047	TNGL-4047	
.040	1.00	.180	4.57	0	TNGR-4040	TNGL-4040	
.031	0.78	.100	2.54	0	TNGR-4031	TNGL-4031	
.020	0.50	.090	2.28	0	TNGR-4020	TNGL-4020	

Threading 60° Centrally Located (Series 16)							
Width		Depth		Radius		R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
Inch	MM	Inch	MM	Inch	MM		
.125	3.18	.350	8.90	.004	.10	TNVR-4125	TNVL-4125
.078	1.98	.300	7.62	.002	.05	TNVR-4078	TNVL-4078
.031	0.78	.230	5.84	0	0	TNVR-4031	TNVL-4031

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN



Right Hand Shown

Series 20 Toolholders					
A/B	C	D	E	R.H. HOLDER	L.H. HOLDER
.500	3.50	.920	.505	STANR-085-V	STANL-085-V
.500	5.00	.920	.505	STANR-085-C	STANL-085-C
.625	3.50	.920	.630	STANR-105-V	STANL-105-V
.625	4.50	.920	.630	STANR-105-D	STANL-105-D
.750	5.00	.920	.755	STANR-125-C	STANL-125-C

Holders include, Screw# 4.76-127 and Wrench# T-25-P



Front Turn (Series 20)								
Width		Depth		Radius		R.H. INSERT	L.H. INSERT	
Inch	MM	Inch	MM	Inch	MM	UNCOATED*	UNCOATED*	
.250	6.35	.440	11.2	0	0	TFTR-5040	TFTL-5040	
.250	6.35	.440	11.2	.005	0.13	TFTR-5045	TFTL-5045	
.250	6.35	.440	11.2	0	0	TFTRB-5040**	TFTLB-5040**	
.250	6.35	.440	11.2	.005	0.13	TFTRB-5045**	TFTLB-5045**	

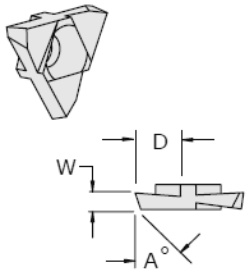
**With chip control

Back Turn (Series 20)								
Width		Depth		Radius	R.H. INSERT	L.H. INSERT		
Inch	MM	Inch	MM		UNCOATED*	UNCOATED*		
.156	3.96	.440	11.2	0	TBTR-53010	TBTL53010		
.125	3.18	.440	11.2	0	TBTR-5308	TBTL-5308		
.093	2.36	.370	9.40	0	TBTR-5306	TBTL-5306		
.078	1.98	.300	7.62	0	TBTR-5305	TBTL-5305		
.062	1.57	.230	5.84	0	TBTR-5304	TBTL-5304		

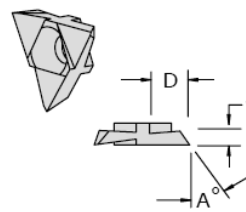
Plunge & Turn (Series 20)								
Width		Depth		Radius	R.H. INSERT	L.H. INSERT		
Inch	MM	Inch	MM		UNCOATED*	UNCOATED*		
.156	3.96	.440	11.2	0	TTGR-5156	TTGL-5156		
.125	3.18	.440	11.2	0	TTGR-5125	TTGL-5125		
.093	2.36	.370	9.40	0	TTGR-5093	TTGL-5093		
.078	1.98	.300	7.62	0	TTGR-5078	TTGL-5078		
.062	1.57	.230	5.84	0	TTGR-5062	TTGL-5062		
.047	1.19	.130	3.30	0	TTGR-5047	TTGL-5047		

Square Bottom

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN

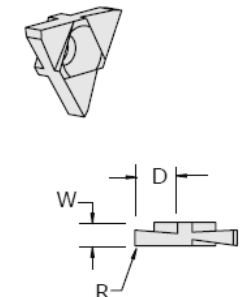


Cut-Off (Series 20)							
	Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.156	3.96	.440	11.2	15°	TCOR-51510	TCOL-51510
	.125	3.18	.440	11.2	15°	TCOR-5158	TCOL-5158
	.093	2.36	.440	11.2	15°	TCOR-5156	TCOL-5156
	.078	1.98	.370	9.40	15°	TCOR-5155	TCOL-5155
	.062	1.57	.300	7.62	15°	TCOR-5154	TCOL-5154
	.047	1.19	.230	5.84	15°	TCOR-5153	TCOL-5153
	.040	1.00	.180	4.57	20°	TCOR-5201M	TCOL-5201M

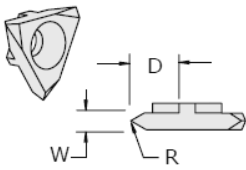


Left hand insert with Right hand cut-off shown

Opp. Hand Cut-Off for Pickoff Spindle (Series 20)							
	Width		Depth		A°	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.125	3.18	.440	11.2	15°	TCOLR-5158	TCORL-5158
	.093	2.36	.440	11.2	15°	TCOLR-5156	TCORL-5156
	.078	1.98	.370	9.40	15°	TCOLR-5155	TCORL-5155
	.062	1.57	.300	7.62	15°	TCOLR-5154	TCORL-5154
	.047	1.19	.230	5.84	15°	TCOLR-5153	TCORL-5153
	.040	1.00	.180	4.57	20°	TCOLR-5201M	TCORL-5201M

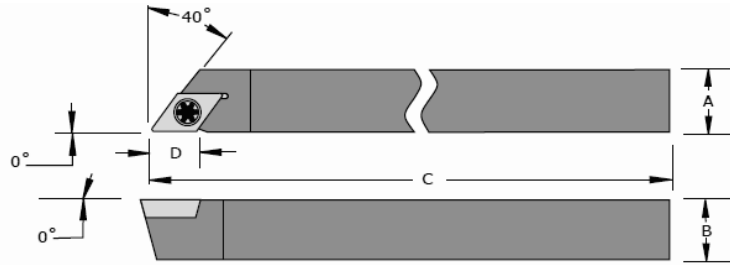


Grooving (Series 20)							
	Width		Depth		Radius	R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM			
	.156	3.96	.440	11.2	0	TNGR-5156	TNGL-5156
	.125	3.18	.440	11.2	0	TNGR-5125	TNGL-5125
	.093	2.36	.370	9.40	0	TNGR-5093	TNGL-5093
	.078	1.98	.370	9.40	0	TNGR-5078	TNGL-5078
	.062	1.57	.300	7.62	0	TNGR-5062	TNGL-5062
	.047	1.19	.230	5.84	0	TNGR-5047	TNGL-5047
	.040	1.00	.180	4.57	0	TNGR-5040	TNGL-5040



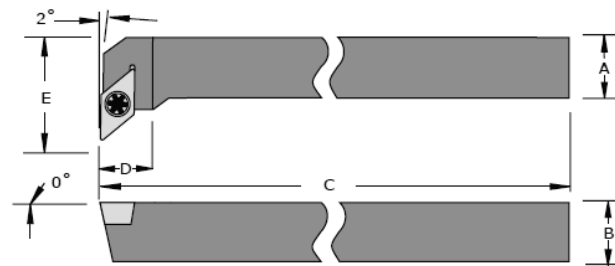
Threading 60° Centrally Located (Series 20)								
	Width		Depth		Radius		R.H. INSERT UNCOATED*	L.H. INSERT UNCOATED*
	Inch	MM	Inch	MM	Inch	MM		
	.125	3.18	.440	11.2	.004	0.10	TNVR-5125	TNVL-5125
	.093	2.36	.370	9.40	.002	0.05	TNVR-5093	TNVL-5093
	.047	1.19	.250	6.35	0	0	TNVR-5047	TNVL-5047

*For coated inserts add the appropriate suffix shown to the insert part number: -TIN, -TICN or -ALTIN



SERIES 8
50°

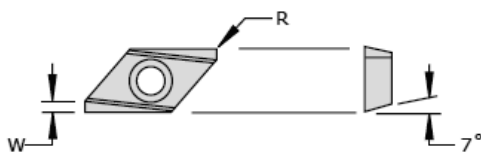
Neutral Rake 0° Lead (8 Series 50° Insert)							
A/B	C	D	SCREW	WRENCH	R.H. HOLDER NO.	L.H. HOLDER NO.	INSERT NO.
10MM	127MM	10MM	3.20-095	T-10-P	SKACR-10M8M-C	SKACL-10M8M-C	KCGB-8M
12MM	127MM	10MM	3.20-095	T-10-P	SKACR-12M8M-C	SKACL-12M8M-C	KCGB-8M
.375	3.50	.390	3.20-095	T-10-P	SKACR-3758M-V	SKACL-3758M-V	KCGB-8M
.375	5.00	.390	3.20-095	T-10-P	SKACR-3758M-C	SKACL-3758M-C	KCGB-8M
.500	3.50	.390	3.20-095	T-10-P	SKACR-5008M-V	SKACL-5008M-V	KCGB-8M
.500	5.00	.390	3.20-095	T-10-P	SKACR-5008M-C	SKACL-5008M-C	KCGB-8M



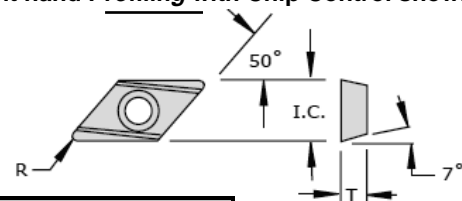
SERIES 8
50°

Gang Type Tooling-Neutral Rake 2° Lead (8 Series 50° Insert)									
A	B	C	D	E	SCREW	WRENCH	R.H. HOLDER NO.	L.H. HOLDER NO.	INSERT NO.
.500	.375	4.50	.430	.843	3.20-095	T-10-P	SKFCR-3758M-D	SKFCL-3758M-D	KCGB-8M
.500	.500	4.50	.430	.843	3.20-095	T-10-P	SKFCR-5008M-D	SKFCL-5008M-D	KCGB-8M

Right hand Front Turn with Chip Control shown



Right hand Profiling with Chip Control shown

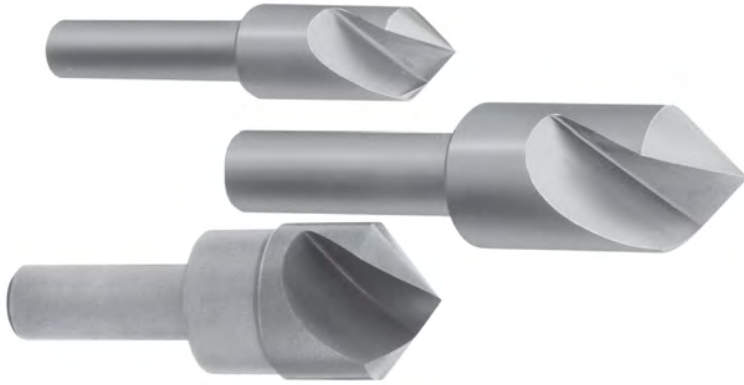


Front Turn & Chip Control (8 Series 50° Insert)						
T		R	W		RIGHT HAND	LEFT HAND
INCH	MM		INCH	MM	INSERT NO.	INSERT NO.
.157	4.00	0	.031	0.80	KCGBR-8M-FT	KCGBL-8M-FT

50° Diamond Turning & Profiling (8 Series 50° Insert)								
I.C.		T		R		NEUTRAL	R.H. w/ Chip Control	L.H. w/ Chip Control
INCH	MM	INCH	MM	INCH	MM	INSERT NO.	INSERT NO.	INSERT NO.
.314	8.00	.157	4.00	.002	.05	KCGB-8M-002	KCGBR-8M-002	KCGBL-8M-002
.314	8.00	.157	4.00	.005	.13	KCGB-8M-005	KCGBR-8M-005	KCGBL-8M-005
.314	8.00	.157	4.00	.007	.18	KCGB-8M-007	KCGBR-8M-007	KCGBL-8M-007
.314	8.00	.157	4.00	.010	.25	KCGB-8M-010	KCGBR-8M-010	KCGBL-8M-010
.314	8.00	.157	4.00	.015	.38	KCGB-8M-015	KCGBR-8M-015	KCGBL-8M-015

Single Flute Countersinks

Single flute countersinks produce excellent results for light burr-free countersinking operations, are excellent at small hole chamfers, can operate at slightly higher RPM's, and may be reground many times. Other Diameters and angles can be provided as specials. Countersinks larger than 1" are not pointed.



SINGLE FLUTE COUNTERSINKS High Speed Steel

HEAD DIA	SHANK DIA	OVERALL LENGTH	SHANK LENGTH	SERIES #	INCLUDED ANGLE					
					60° PART #	82° PART #	90° PART #	100° PART #	110° PART #	120° PART #
1/8"	1/8"	1-5/8"	1-5/8"	1/8-SF	00270	00288	00306	00324	00342	00360
3/16"	3/16"	1-1/2"	1-1/2"	3/16-SF	00271	00289	00307	00325	00343	00361
1/4"	3/16"	1-1/2"	3/4"	1/4-SF	00272	00290	00308	00326	00344	00362
5/16"	1/4"	1-3/4"	7/8"	5/16-SF	00273	00291	00309	00327	00345	00363
3/8"	1/4"	1-3/4"	7/8"	3/8-SF	00274	00292	00310	00328	00346	00364
1/2"	3/8"	2-1/8"	1-1/8"	1/2-SF	00275	00293	00311	00329	00347	00365
1/2"	1/4"	2-1/8"	1-1/8"	1/2-SF-1/4	00276	00294	00312	00330	00348	00366
5/8"	3/8"	2-3/8"	1-1/8"	5/8-SF	00277	00295	00313	00331	00349	00367
5/8"	1/4"	2-3/8"	1-1/8"	5/8-SF-1/4	00278	00296	00314	00332	00350	00368
3/4"	1/2"	2-11/16"	1-5/16"	3/4-SF	00279	00297	00315	00333	00351	00369
7/8"	1/2"	2-13/16"	1-5/16"	7/8-SF	00280	00298	00316	00334	00352	00370
1"	1/2"	2-13/16"	1-5/16"	1-SF	00281	00299	00317	00335	00353	00371
1-1/4"	3/4"	3-3/8"	1-5/8"	1-1/4-SF	00282	00300	00318	00336	00354	00372
1-1/2"	3/4"	3-1/2"	1-5/8"	1-1/2-SF	00283	00301	00319	00337	00355	00373
1-3/4"	1"	4-1/4"	2-1/8"	1-3/4-SF	00284	00302	00320	00338	00356	00374
2"	1"	4-3/8"	2-1/8"	2-SF	00285	00303	00321	00339	00357	00375
2-1/2"	1"	4-3/4"	2-1/8"	2-1/2-SF	00286	00304	00322	00340	00358	00376
3"	1"	5"	2-1/8"	3-SF	00287	00305	00323	00341	00359	00377

SINGLE FLUTE COUNTERSINKS Carbide

HEAD DIA	SHANK DIA	OVERALL LENGTH	SHANK LENGTH	SERIES #	INCLUDED ANGLE					
					60° PART #	82° PART #	90° PART #	100° PART #	110° PART #	120° PART #
1/8"	1/8"	1-1/2"	1-1/2"	1/8-SF-W	00420	00440	00460	00480	00500	00520
3/16"	3/16"	1-1/2"	1-1/2"	3/16-SF-W	00421	00441	00461	00481	00501	00521
1/4"	3/16"	1-1/2"	1-3/16"	1/4-SF-W	00422	00442	00462	00482	00502	00522
5/16"	1/4"	2-1/4"	1-3/4"	5/16-SF-W	00423	00443	00463	00483	00503	00523
3/8"	1/4"	2-1/4"	1-3/4"	3/8-SF-W	00424	00444	00464	00484	00504	00524
1/2"	3/8"	2-1/2"	2"	1/2-SF-W	00425	00445	00465	00485	00505	00525
1/2"	1/4"	2-1/4"	1-3/4"	1/2-SF-W-1/4	00426	00446	00466	00486	00506	00526
5/8"	3/8"	2-5/8"	2"	5/8-SF-W	00427	00447	00467	00487	00507	00527
5/8"	1/4"	2-3/8"	1-3/4"	5/8-SF-W-1/4	00428	00448	00468	00488	00508	00528
3/4"	1/2"	2-3/4"	2"	3/4-SF-W	00429	00449	00469	00489	00509	00529
7/8"	1/2"	2-7/8"	2"	7/8-SF-W	00430	00450	00470	00490	00510	00530
1"	1/2"	3"	2"	1-SF-W	00431	00451	00471	00491	00511	00531
1-1/4"	3/4"	3-3/8"	1-5/8"	1-1/4-SF-W	00432	00452	00472	00492	00512	00532
1-1/2"	3/4"	3-1/2"	1-5/8"	1-1/2-SF-W	00433	00453	00473	00493	00513	00533
1-3/4"	1"	4-1/4"	2-1/8"	1-3/4-SF-W	00434	00454	00474	00494	00514	00534
2"	1"	4-3/8"	2-1/8"	2-SF-W	00435	00455	00475	00495	00515	00535



4-Flute Chatter-Free® Econo-Sinks®

Econo-Sinks® features a Chatter-Free®, four-flute design. Econo-Sinks® are designed with four staggered cutting teeth arranged to insure free chip flow and rapid Chatter-Free® cutting. You will find the Econo-Sinks® give you better finishes, higher production, and more economic value than a single flute tool. Ideal on a wide range of materials including non-ferrous and other stringy materials and cast iron.

Other diameters and angles available upon request.

4-FLUTE CHATTER-FREE ECONO-SINKS High Speed Steel

HEAD DIA	SHANK DIA	OVERALL LENGTH	SHANK LENGTH	SERIES #	INCLUDED ANGLE					
					60° PART #	82° PART #	90° PART #	100° PART #	110° PART #	120° PART #
1/8"	1/8"	1-5/8"	1-5/8"	ES-1/8	00970	00991	01012	01033	01054	01075
3/16"	3/16"	1-1/2"	1-1/2"	ES-3/16	00971	00992	01013	01034	01055	01076
1/4"	3/16"	1-1/2"	3/4"	ES-1/4	00972	00993	01014	01035	01056	01077
5/16"	1/4"	1-3/4"	7/8"	ES-5/16	00973	00994	01015	01036	01057	01078
3/8"	1/4"	1-3/4"	7/8"	ES-3/8	00974	00995	01016	01037	01058	01079
1/2"	3/8"	2-1/8"	1-1/8"	ES-1/2	00976	00997	01018	01039	01060	01081
1/2"	1/4"	2-1/8"	1-1/8"	ES-1/2-1/4	00977	00998	01019	01040	01061	01082
5/8"	3/8"	2-3/8"	1-1/8"	ES-5/8	00978	00999	01020	01041	01062	01083
5/8"	1/4"	2-3/8"	1-1/8"	ES-5/8-1/4	00979	01000	01021	01042	01063	01084
3/4"	1/2"	2-11/16"	1-5/16"	ES-3/4	00980	01001	01022	01043	01064	01085
7/8"	1/2"	2-13/16"	1-5/16"	ES-7/8	00982	01003	01024	01045	01066	01087
1"	1/2"	2-13/16"	1-5/16"	ES-1	00983	01004	01025	01046	01067	01088
1-1/4"	3/4"	3-3/8"	1-5/8"	ES-1-1/4	00984	01005	01026	01047	01068	01089
1-1/2"	3/4"	3-1/2"	1-5/8"	ES-1-1/2	00985	01006	01027	01048	01069	01090
1-3/4"	1"	4-1/4"	2-1/8"	ES-1-3/4	00987	01008	01029	01050	01071	01092
2"	1"	4-3/8"	2-1/8"	ES-2	00988	01009	01030	01051	01072	01093
2-1/2"	1"	4-3/4"	2-1/8"	ES-2-1/2	00989	01010	01031	01052	01073	01094
3"	1"	5"	2-1/8"	ES-3	00990	01011	01032	01053	01074	01095

4-FLUTE CHATTER-FREE ECONO-SINKS Carbide

HEAD DIA	SHANK DIA	OVERALL LENGTH	SHANK LENGTH	SERIES #	INCLUDED ANGLE					
					60° PART #	82° PART #	90° PART #	100° PART #	110° PART #	120° PART #
1/8"	1/8"	1-1/2"	1-1/2"	ES-1/8-W	01120	01135	01150	01165	01180	01195
1/4"	3/16"	1-1/2"	1-3/16"	ES-1/4-W	01121	01136	01151	01166	01181	01196
3/8"	1/4"	2-1/4"	1-3/4"	ES-3/8-W	01122	01137	01152	01167	01182	01197
1/2"	3/8"	2-1/4"	1-3/4"	ES-1/2-W	01125	01140	01155	01170	01185	01200
5/8"	3/8"	2-5/8"	2"	ES-5/8-W	01126	01141	01156	01171	01186	01201
3/4"	1/2"	2-3/4"	2"	ES-3/4-W	01127	01142	01157	01172	01187	01202
1"	1/2"	3"	2"	ES-1-W	01128	01143	01158	01173	01188	01203

The flutes of the 6-flute Chatterless-Countersinks™ are designed with staggered cutting angles to eliminate the harmonics that cause chatter in conventional tools. Our tools feature a positive shearing action, are designed to take heavy cuts and produce exceptionally smooth seats. These six fluted countersinks give long service life because the cutting load is distributed over six cutting edges. Use them in your milling machine, drill press, screw machine, lathes, automatics, special machines, feed units, and hand tools. Available in a wide range of standard angles and sizes.

Don't see what you need? Submit your request for special angles, diameters, double angles, pilots, or radii.



All Carbide Countersinks over 1-1/2" diameter are individually tipped teeth.



6-FLUTE CHATTERLESS-COUNTERSINKS High Speed Steel

HEAD DIA	SHANK DIA	OVERALL LENGTH	SHANK LENGTH	SERIES #	INCLUDED ANGLE					
					60° PART #	82° PART #	90° PART #	100° PART #	110° PART #	120° PART #
1/8"	1/8"	1-5/8"	1-5/8"	CK-1/8	02370	02390	02410	02430	02450	02470
3/16"	3/16"	1-1/2"	1-1/2"	CK-3/16	02371	02391	02411	02431	02451	02471
1/4"	3/16"	1-1/2"	3/4"	CK-1/4	02372	02392	02412	02432	02452	02472
5/16"	1/4"	1-3/4"	7/8"	CK-5/16	02373	02393	02413	02433	02453	02473
3/8"	1/4"	1-3/4"	7/8"	CK-3/8	02374	02394	02414	02434	02454	02474
1/2"	3/8"	2-1/8"	1-1/8"	CK-1/2	02375	02395	02415	02435	02455	02475
1/2"	1/4"	2-1/8"	1-1/8"	CK-1/2-14	02376	02396	02416	02436	02456	02476
5/8"	3/8"	2-3/8"	1-1/8"	CK-5/8	02377	02397	02417	02437	02457	02477
5/8"	1/4"	2-3/8"	1-1/8"	CK-5/8-1/4	02378	02398	02418	02438	02458	02478
3/4"	1/2"	2-11/16"	1-5/16"	CK-3/4	02379	02399	02419	02439	02459	02479
7/8"	1/2"	2-13/16"	1-5/16"	CK-7/8	02380	02400	02420	02440	02460	02480
1"	1/2"	2-13/16"	1-5/16"	CK-1	02381	02401	02421	02441	02461	02481
1-1/4"	3/4"	3-3/8"	1-5/8"	CK-1-1/4	02382	02402	02422	02442	02462	02482
1-1/2"	3/4"	3-1/2"	1-5/8"	CK-1-1/2	02383	02403	02423	02443	02463	02483
1-3/4"	1"	4-1/4"	2-1/8"	CK-1-3/4	02384	02404	02424	02444	02464	02484
2"	1"	4-3/8"	2-1/8"	CK-2	02385	02405	02425	02445	02465	02485
2-1/2"	1"	4-3/4"	2-1/8"	CK-2-1/2	02386	02406	02426	02446	02466	02486
3"	1"	5"	2-1/8"	CK-3	02387	02407	02427	02447	02467	02487

6-FLUTE CHATTERLESS-COUNTERSINKS Carbide

HEAD DIA	SHANK DIA	OVERALL LENGTH	SHANK LENGTH	SERIES #	INCLUDED ANGLE					
					60° PART #	82° PART #	90° PART #	100° PART #	110° PART #	120° PART #
1/8"	1/8"	1-1/2"	1-1/2"	CK-1/8-W	02520	02540	02560	02580	02600	02620
3/16"	3/16"	1-1/2"	1-1/2"	CK-3/16-W	02521	02541	02561	02581	02601	02621
1/4"	3/16"	1-1/2"	1-3/16"	CK-1/4-W	02522	02542	02562	02582	02602	02622
5/16"	1/4"	2-1/4"	1-3/4"	CK-5/16-W	02523	02543	02563	02583	02603	02623
3/8"	1/4"	2-1/4"	1-3/4"	CK-3/8-W	02524	02544	02564	02584	02604	02624
1/2"	3/8"	2-1/2"	2"	CK-1/2-W	02525	02545	02565	02585	02605	02625
1/2"	1/4"	2-1/4"	1-3/4"	CK-1/2-W-1/4	02526	02546	02566	02586	02606	02626
5/8"	3/8"	2-5/8"	2"	CK-5/8-W	02527	02547	02567	02587	02607	02627
5/8"	1/4"	2-3/8"	1-3/4"	CK-5/8-W-1/4	02528	02548	02568	02588	02608	02628
3/4"	1/2"	2-3/4"	2"	CK-3/4-W	02529	02549	02569	02589	02609	02629
7/8"	1/2"	2-7/8"	2"	CK-7/8-W	02530	02550	02570	02590	02610	02630
1"	1/2"	3"	2"	CK-1-W	02531	02551	02571	02591	02611	02631
1-1/4"	3/4"	3-3/8"	1-5/8"	CK-1-1/4-W	02532	02552	02572	02592	02612	02632
1-1/2"	3/4"	3-1/2"	1-5/8"	CK-1-1/2-W	02533	02553	02573	02593	02613	02633
1-3/4"	1"	4-1/4"	2-1/8"	CK-1-3/4-W	02534	02554	02574	02594	02614	02634
2"	1"	4-3/8"	2-1/8"	CK-2-W	02535	02555	02575	02595	02615	02635



The Original 6-Flute Threaded Chatterless-Countersinks™

These countersink have a threaded back for use with separately ordered shanks; See Page 100. Ideal for use on radial drills, lathes, and Mills.

6-FLUTE THREADED CHATTERLESS-COUNTERSINKS High Speed Steel									
HEAD DIA	OVERALL LENGTH	THREAD SIZE	SERIES #	INCLUDED ANGLE					
				60° PART #	82° PART #	90° PART #	100° PART #	110° PART #	120° PART #
3/4"	1-1/2"	3/8"-24	CK-3/4-T	03270	03280	03290	03300	03310	03320
7/8"	1-1/2"	3/8"-24	CK-7/8-T	03271	03281	03291	03301	03311	03321
1"	1-1/2"	1/2"-20	CK-1-T	03272	03282	03292	03302	03312	03322
1-1/4"	1-3/4"	5/8"-18	CK-1-1/4-T	03273	03283	03293	03303	03313	03323
1-1/2"	1-7/8"	3/4"-16	CK-1-1/2-T	03274	03284	03294	03304	03314	03324
1-3/4"	2-1/8"	3/4"-16	CK-1/34-T	03275	03285	03295	03305	03315	03325
2"	2-1/4"	3/4"-16	CK-2-T	03276	03286	03296	03306	03316	03326
2-1/2"	3"	1"-14	CK-2-1/2-T	03277	03287	03297	03307	03317	03327
3"	3-1/4"	1-1/4"-12	CK-3-T	03278	03288	03298	03308	03318	03328

Multi-Flute Countersinks



All carbide Inside Deburring Cutters are designed with a pointed nose. Tools with a head diameter measuring 3/32" thru 1/4" are made of solid carbide and are double ended. Inside Deburring Cutters with a head diameter measuring 5/16" thru 1" have solid carbide heads brazed to hardened alloy precision ground shanks.

MULTI- FLUTE COUNTERSINKS Carbide				
HEAD DIA	SHANK DIA	OVERALL LENGTH	60° INCL'D PART#	90° INCL'D PART#
3/32"	3/32"	1-1/2"	3Z-W-DE	3Y-W-DE
1/8"	1/8"	1-1/2"	4Z-W-DE	4Y-W-DE
3/16"	3/16"	2"	6Z-W-DE	6Y-W-DE
1/4"	1/4"	2"	8Z-W-DE	8Y-W-DE
5/16"	1/4"	2-1/4"	ID-5/16-30-W	ID-5/16-45-W
3/8"	1/4"	2-1/4"	ID-3/8-30-W	ID-3/8-45-W
1/2"	1/4"	2-1/4"	ID-1/2-30-W	ID-1/2-45-W
1/2"	3/8"	2-1/8"	ID-1/2-30-W-3/8	ID-1/2-45-W-3/8
5/8"	1/4"	2-3/8"	ID-5/8-30-W	ID-5/8-45-W
5/8"	3/8"	2-3/8"	ID-5/8-30-W-3/8	ID-5/8-45-W-3/8
3/4"	1/2"	2-11/16"	ID-3/4-30-W	ID-3/4-45-W
7/8"	1/2"	2-13/16"	ID-7/8-30-W	ID-7/8-45-W
1"	1/2"	2-13/16"	ID-1-30-W	ID-1-45-W

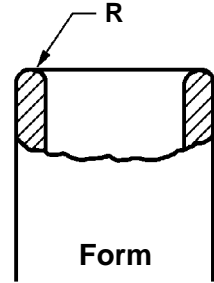
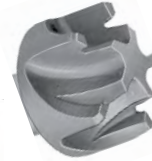


Inside Chamfering Mills can be depended upon to produce smooth, burrless, chamfers on most machinable materials and are suitable for fairly heavy chamfering. For still heavier chamfering, consider Chatterless™ countersinks

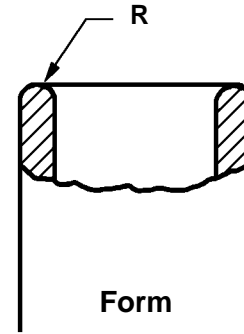
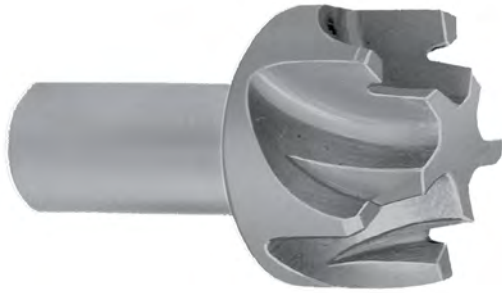
MULTI- FLUTE COUNTERSINKS High Speed Steel					
HEAD DIA	OVERALL LENGTH	NOSE PNT OR FLAT	60° INCL'D PART#	NOSE PNT OR FLAT	90° INCL'D PART#
1/4"	2-1/4"	P	IC-1/4-30	P	IC-1/4-45
5/16"	2-1/4"	1/32"	IC-5/16-30	1/16"	IC-5/16-45
3/8"	2-1/4"	P	IC-3/8-30	P	IC-3/8-45
1/2"	2-1/4"	9/64"	ICS-1/2-30	1/8"	ICS-1/2-45
1/2"	2-1/4"	P	ICL-1/2-30	P	ICL-1/2-45
5/8"	2-1/4"	13/64"	ICS-5/8-30	1/8"	ICS-5/8-45

Tube End Forming Cutter Heads

These tube end forming cutters have a threaded back for use with separately ordered shanks; See Page 100



TUBE END FORMING CUTTERS Heads						
TUBING SIZE	WALL THICKNESS		I.D. THREAD	HEAD DIA	OVERALL LENGTH	PART#
	GAUGE	INCH				
7/8"	22	.028"	1/2"-20	1-1/4"	1-1/8"	A-14-028
7/8"	21	.032"	1/2"-20	1-1/4"	1-1/8"	A-14-032
7/8"	20	.035"	1/2"-20	1-1/4"	1-1/8"	A-14-035
7/8"	18	.049"	1/2"-20	1-1/4"	1-1/8"	A-14-049
7/8"	17	.058"	1/2"-20	1-1/4"	1-1/8"	A-14-058
7/8"	16	.065"	1/2"-20	1-1/4"	1-1/8"	A-14-065
7/8"	14	.083"	1/2"-20	1-1/4"	1-1/8"	A-14-083
7/8"	13	.095"	1/2"-20	1-1/4"	1-1/8"	A-14-095
1"	22	.028"	1/2"-20	1-3/8"	1-1/8"	A-16-028
1"	20	.035"	1/2"-20	1-3/8"	1-1/8"	A-16-035
1"	18	.049"	1/2"-20	1-3/8"	1-1/8"	A-16-049
1"	17	.058"	1/2"-20	1-3/8"	1-1/8"	A-16-058
1"	16	.065"	1/2"-20	1-3/8"	1-1/8"	A-16-065
1"	14	.083"	1/2"-20	1-3/8"	1-1/8"	A-16-083
1"	13	.095"	1/2"-20	1-3/8"	1-1/8"	A-16-095
1"	11	.120"	1/2"-20	1-3/8"	1-1/8"	A-16-120
1-1/8"	22	.028"	1/2"-20	1-1/2"	1-1/8"	A-18-028
1-1/8"	20	.035"	1/2"-20	1-1/2"	1-1/8"	A-18-035
1-1/8"	18	.049"	1/2"-20	1-1/2"	1-1/8"	A-18-049
1-1/8"	17	.058"	1/2"-20	1-1/2"	1-1/8"	A-18-058
1-1/8"	16	.065"	1/2"-20	1-1/2"	1-1/8"	A-18-065
1-1/4"	20	.035"	1/2"-20	1-1/2"	1-1/8"	A-20-035
1-1/4"	18	.049"	1/2"-20	1-1/2"	1-1/8"	A-20-049
1-1/4"	16	.065"	1/2"-20	1-1/2"	1-1/8"	A-20-065
1-1/4"	14	.083"	1/2"-20	1-1/2"	1-1/8"	A-20-083
1-1/4"	11	.120"	1/2"-20	1-1/2"	1-1/8"	A-20-120
1-3/8"	20	.035"	1/2"-20	1-5/8"	1-1/8"	A-22-035
1-3/8"	18	.049"	1/2"-20	1-5/8"	1-1/8"	A-22-049
1-1/2"	18	.049"	5/8"-18	2"	1-1/4"	A-24-049
1-1/2"	17	.058"	5/8"-18	2"	1-1/4"	A-24-058
1-1/2"	16	.065"	5/8"-18	2"	1-1/4"	A-24-065
1-1/2"	14	.083"	5/8"-18	2"	1-1/4"	A-24-083
1-1/2"	13	.095"	5/8"-18	2"	1-1/4"	A-24-095
1-5/8"	16	.065"	5/8"-18	2"	1-1/4"	A-26-065



Caution: holding of tubing by hand is not recommended.

These cutters are used to produce a smooth, round lip on all types of tubing. These include steel, copper, aluminum, plastic and other materials. They are not recommended for tubing with irregular wall thickness or for interrupted cutting. Speeds of about 50 to 350 RPM are suggested for these cutters. It is advisable to start at a slower speed on any given material or size, and then increase the speed until best results are obtained. Larger sizes (A-6 x .025 and up) can be supplied in carbide. Special cutting shapes can also be provided.

TUBE END FORMING CUTTERS							
TUBING SIZE	WALL THICKNESS		SHANK DIA	HEAD DIA	OVERALL LENGTH	SHANK LENGTH	PART#
	GAUGE	INCH					
1/8"	31	.010"	1/4"	1/4"	2-1/4"	2"	A-2-010
1/8"	27	.016"	1/4"	1/4"	2-1/4"	2"	A-2-016
1/8"	25	.020"	1/4"	1/4"	2-1/4"	2"	A-2-020
1/8"	22	.028"	1/4"	1/4"	2-1/4"	2"	A-2-028
1/8"	21	.032"	1/4"	1/4"	2-1/4"	2"	A-2-032
1/8"	21	.035"	1/4"	1/4"	2-1/4"	2"	A-2-035
3/16"	25	.020"	3/8"	1/2"	1-9/16"	1"	A-3-020
3/16"	22	.028"	3/8"	1/2"	1-9/16"	1"	A-3-028
3/16"	21	.032"	3/8"	1/2"	1-9/16"	1"	A-3-032
3/16"	20	.035"	3/8"	1/2"	1-9/16"	1"	A-3-035
1/4"	25	.020"	3/8"	1/2"	1-9/16"	1"	A-4-020
1/4"	22	.028"	3/8"	1/2"	1-9/16"	1"	A-4-028
1/4"	21	.032"	3/8"	1/2"	1-9/16"	1"	A-4-032
1/4"	20	.035"	3/8"	1/2"	1-9/16"	1"	A-4-035
1/4"	18	.049"	3/8"	1/2"	1-9/16"	1"	A-4-049
1/4"	16	.065"	3/8"	1/2"	1-9/16"	1"	A-4-065
5/16"	25	.020"	3/8"	9/16"	1-9/16"	1"	A-5-020
5/16"	22	.028"	3/8"	9/16"	1-9/16"	1"	A-5-028
5/16"	21	.032"	3/8"	9/16"	1-9/16"	1"	A-5-032
5/16"	20	.035"	3/8"	9/16"	1-9/16"	1"	A-5-035
5/16"	18	.049"	3/8"	9/16"	1-9/16"	1"	A-5-049
5/16"	17	.058"	3/8"	9/16"	1-9/16"	1"	A-5-058
5/16"	16	.065"	3/8"	9/16"	1-9/16"	1"	A-5-065

Continued on Next Page...

TUBE END FORMING CUTTERS Continued

TUBE END FORMING CUTTERS							
TUBING SIZE	WALL THICKNESS		SHANK DIA	HEAD DIA	OVERALL LENGTH	SHANK LENGTH	PART#
	GAUGE	INCH					
3/8"	25	.020"	1/2"	3/4"	1-9/16"	1"	A-6-020
3/8"	22	.028"	1/2"	3/4"	1-9/16"	1"	A-6-028
3/8"	21	.032"	1/2"	3/4"	1-9/16"	1"	A-6-032
3/8"	20	.035"	1/2"	3/4"	1-9/16"	1"	A-6-035
3/8"	18	.049"	1/2"	3/4"	1-9/16"	1"	A-6-049
3/8"	17	.058"	1/2"	3/4"	1-9/16"	1"	A-6-058
3/8"	16	.065"	1/2"	3/4"	1-9/16"	1"	A-6-065
7/16"	25	.020"	1/2"	3/4"	1-9/16"	1"	A-7-020
7/16"	22	.028"	1/2"	3/4"	1-9/16"	1"	A-7-028
7/16"	21	.032"	1/2"	3/4"	1-9/16"	1"	A-7-032
7/16"	20	.035"	1/2"	3/4"	1-9/16"	1"	A-7-035
7/16"	18	.049"	1/2"	3/4"	1-9/16"	1"	A-7-049
7/16"	16	.065"	1/2"	3/4"	1-9/16"	1"	A-7-065
1/2"	25	.020"	1/2"	3/4"	1-9/16"	1"	A-8-020
1/2"	22	.028"	1/2"	3/4"	1-9/16"	1"	A-8-028
1/2"	21	.032"	1/2"	3/4"	1-9/16"	1"	A-8-032
1/2"	20	.035"	1/2"	3/4"	1-9/16"	1"	A-8-035
1/2"	18	.049"	1/2"	3/4"	1-9/16"	1"	A-8-049
1/2"	17	.058"	1/2"	3/4"	1-9/16"	1"	A-8-058
1/2"	16	.065"	1/2"	3/4"	1-9/16"	1"	A-8-065
1/2"	14	.083"	1/2"	3/4"	1-9/16"	1"	A-8-083
9/16"	22	.028"	1/2"	7/8"	1-5/8"	1"	A-9-028
9/16"	20	.035"	1/2"	7/8"	1-5/8"	1"	A-9-035
9/16"	18	.049"	1/2"	7/8"	1-5/8"	1"	A-9-049
9/16"	16	.065"	1/2"	7/8"	1-5/8"	1"	A-9-065
9/16"	13	.095"	1/2"	7/8"	1-5/8"	1"	A-9-095
5/8"	22	.028"	1/2"	7/8"	1-5/8"	1"	A-10-028
5/8"	21	.032"	1/2"	7/8"	1-5/8"	1"	A-10-032
5/8"	20	.035"	1/2"	7/8"	1-5/8"	1"	A-10-035
5/8"	18	.049"	1/2"	7/8"	1-5/8"	1"	A-10-049
5/8"	17	.058"	1/2"	7/8"	1-5/8"	1"	A-10-058
5/8"	16	.065"	1/2"	7/8"	1-5/8"	1"	A-10-065
5/8"	14	.083"	1/2"	7/8"	1-5/8"	1"	A-10-083
5/8"	13	.095"	1/2"	7/8"	1-5/8"	1"	A-10-095
3/4"	22	.028"	1/2"	1"	1-5/8"	1"	A-12-028
3/4"	21	.032"	1/2"	1"	1-5/8"	1"	A-12-032
3/4"	20	.035"	1/2"	1"	1-5/8"	1"	A-12-035
3/4"	18	.049"	1/2"	1"	1-5/8"	1"	A-12-049
3/4"	17	.058"	1/2"	1"	1-5/8"	1"	A-12-058
3/4"	16	.065"	1/2"	1"	1-5/8"	1"	A-12-065
3/4"	14	.083"	1/2"	1"	1-5/8"	1"	A-12-083
3/4"	13	.095"	1/2"	1"	1-5/8"	1"	A-12-095
3/4"	11	.120"	1/2"	1"	1-5/8"	1"	A-12-120

High Speed Steel Outside Deburring Cutter Heads with Threaded I.D.



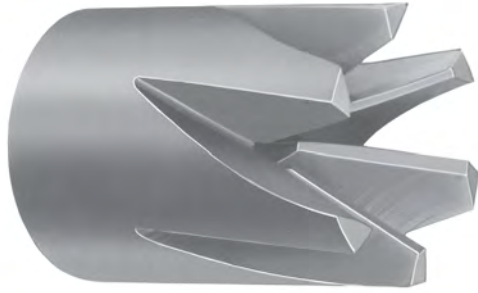
Outside Deburring Cutters are designed with shear-type cutting teeth to eliminate burrs on diameters of tubes and rods. One tool can handle various parts, may be reground, and can be provided in carbide.



Tools are furnished without shanks.
See page 100 for available shank styles and sizes

NOTE: Tools O-0, O-1, O-2, O-3, O-20, O-21, and O-22 have the tooth pattern illustrated above.

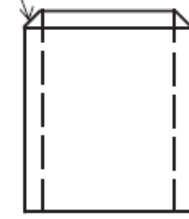
OUTSIDE DEBURRING CUTTERS High Speed Steel							
MAX CUTTING DIA	"H" RECESS HOLE	"D" MOUTH DIA	"B" BODY DIA	"L" BODY LENGTH	"C" COOLANT HOLE	"T" I.D. THREAD	PART#
1/8"	1/16"	5/32"	1/2"	7/8"	-	1/4"-28	O-0
3/16"	5/32"	7/32"	1/2"	7/8"	-	1/4"-28	O-1
1/4"	13/64"	19/64"	1/2"	7/8"	-	1/4"-28	O-2
5/16"	.242"	23/64"	1/2"	7/8"	-	1/4"-28	O-3
3/8"	9/32"	7/16"	5/8"	7/8"	1/8"	1/4"-28	O-4
1/2"	.332"	9/16"	3/4"	1"	3/16"	3/8"-24	O-5
5/8"	7/16"	11/16"	7/8"	1"	3/16"	3/8"-24	O-6
3/4"	17/32"	53/64"	1"	1"	3/16"	3/8"-24	O-7
1"	45/64"	1-5/64"	1-1/4"	1-3/8"	1/4"	1/2"-20	O-8
1-1/4"	7/8"	1-21/64"	1-1/2"	1-3/8"	1/4"	1/2"-20	O-9
1-1/2"	1-3/64"	1-19/32"	1-3/4"	1-5/8"	1/4"	5/8"-18	O-10
2"	1-13/32"	2-7/64"	2-3/8"	1-7/8"	5/16"	3/4"-16	O-11
2-1/2"	1-3/4"	2-39/64"	2-7/8"	2-1/8"	5/16"	3/4"-16	O-12
3"	2-3/32"	3-1/8"	3-3/8"	2-1/2"	7/16"	3/4"-16	O-13
4"	2-13/16"	4-1/8"	4-3/8"	3"	7/16"	1"-14	O-14
1/8"	5/64"	3/16"	1/2"	7/8"	-	1/4"-28	O-20
3/16"	7/64"	7/32"	1/2"	7/8"	-	1/4"-28	O-21
1/4"	9/64"	23/64"	1/2"	7/8"	-	1/4"-28	O-22
3/8"	3/16"	7/16"	5/8"	7/8"	1/8"	1/4"-28	O-23
1/2"	1/4"	9/16"	3/4"	1"	3/16"	3/8"-24	O-24
3/4"	3/8"	13/16"	1"	1"	3/16"	3/8"-24	O-25
1"	1/2"	1-5/64"	1-1/4"	1-3/8"	1/4"	1/2"-20	O-26
1-1/2"	3/4"	1-19/32"	1-3/4"	1-1/2"	1/4"	5/8"-18	O-27
2"	15/16"	2-7/64"	2-3/8"	1-3/4"	5/16"	3/4"-16	O-28
3"	1-7/16"	3-1/8"	3-1/2"	2-1/4"	7/16"	3/4"-16	O-29
4"	1-15/16"	4-1/8"	4-3/8"	2-5/8"	7/16"	1"-14	O-30



Puts an angle on end of rod



Puts an angle on the outside of a tube



Works well on both tubing and rods

Outside Chamfering Mills are designed to economically chamfer a large variety of diameters on tubing, pipes, and rods. The Chatterless™ teeth produce a heavy chamfer. One size can accommodate many size parts. The Outside Chamfering Mill is available in 60° and 90° included angles, and may be reground many times. These Outside Chamfering Mills are most efficient when used in screw machines, lathes, drill presses, or other chucking machines, or with work holding devices. Although, where requirements are not too exacting, they may be used in a portable power tool on some materials. Chatterless™ teeth provide amazing ease and speed of operation. It is recommended that guides such as V-blocks be positioned to facilitate quick positioning of the work.

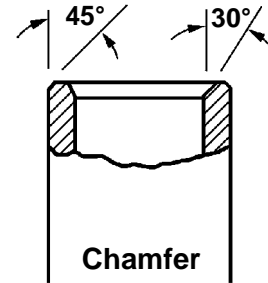
60° OUTSIDE CHAMFERING MILLS High Speed Steel						
CUTTING DIA	RECESS HOLE	MOUTH DIA	BODY DIA	BODY LENGTH	I.D. THREAD	60° INCL'D PART#
1/8"	1/32"	3/16"	1/2"	1"	5/16"-24	OC-1/8-30°
1/4"	3/64"	5/16"	1/2"	1"	5/16"-24	OC-1/4-30°
1/2"	1/8"	5/8"	7/8"	1-5/16"	3/8"-24	OC-1/2-30°
3/4"	1/4"	7/8"	1-1/8"	1-3/4"	1/2"-20	OC-3/4-30°
1"	1/4"	1-1/8"	1-1/2"	2"	3/4"-16	OC-1-30°
1-3/4"	1/2"	1-7/8"	2-1/4"	2-15/16"	1"-14	OC-1-3/4-30°
2"	7/8"	2-1/8"	2-1/2"	3"	1"-14	OC-2-30°
3"	1"	3-1/4"	3-3/4"	3-3/4"	1-1/4"-12	OC-3-30°

90° OUTSIDE CHAMFERING MILLS High Speed Steel						
CUTTING DIA	RECESS HOLE	MOUTH DIA	BODY DIA	BODY LENGTH	I.D. THREAD	90° INCL'D PART#
1/8"	1/32"	3/16"	1/2"	1"	5/16"-24	OC-1/8-45°
1/4"	3/64"	5/16"	1/2"	1"	5/16"-24	OC-1/4-45°
1/2"	1/8"	5/8"	7/8"	1-5/16"	3/8"-24	OC-1/2-45°
3/4"	3/16"	7/8"	1-1/8"	1-5/16"	1/2"-20	OC-3/4-45°
1"	1/4"	1-1/8"	1-1/2"	1-3/4"	3/4"-16	OC-1-45°
1-1/2"	3/8"	1-5/8"	2"	1-7/8"	3/4"-16	OC-1-1/2-45°
2"	7/8"	2-1/8"	2-1/2"	2-1/2"	1"-14	OC-2-45°
3"	1"	3-1/4"	3-3/4"	2-7/8"	1-1/4"-12	OC-3-45°

Tools are furnished without shanks.
See page 100 for available shank styles and sizes



Caution: holding of tubing by hand is not recommended.



The Chatterless™ design of the Tube End Chamfering Mills have cutting edges that are designed to provide a shearing action that yields a smooth machined surface. The standard tool produces a 30° angle on the tube inside diameter and 45° on the outside diameter. Other angles may be ordered as specials. This series of tools is offered in a range of sizes to accommodate pipe and tubing from 3/16" to 2-1/2" outside diameters. All models are adjustable for different wall thicknesses. The cutting teeth are developed as to preclude chatter and provide ample chip room for every operating condition. Moderate speeds of about 100 R.P.M. for 1-inch steel tubing to about 200 R.P.M. for 1/2-inch tubing are recommended for these cutters. It is advisable to start at a slower speed on any given material or size and increase until best results are obtained.

TUBE END CHAMFERING MILLS High Speed Steel							
STANDARD PIPE SIZE	TUBING O.D.	WALL THICKNESS		PLUG DIA	SHANK DIA	SHANK LENGTH	PART#
		MIN.	MAX.				
1/8"	3/16"	.022"	.045"	.152"	1/4"	7/8"	T-6
	1/4"	.022"	.065"	.228"	1/4"	1"	T-8
	5/16"	.022"	.095"	.290"	1/4"	1"	T-10
	3/8"	.022"	.095"	.353"	3/8"	1"	T-12
	7/16"	.028"	.095"	.409"	3/8"	1"	T-14
1/4"	1/2"	.028"	.095"	.472"	3/8"	1"	T-16
	9/16"	.028"	.120"	.534"	1/2"	1"	T-18
3/8"	5/8"	.028"	.120"	.597"	1/2"	1"	T-20
1/2"	3/4"	.028"	.120"	.722"	1/2"	1"	T-24
	7/8"	.022"	.156"	.847"	1/2"	1"	T-28
3/4"	1"	.035"	.156"	.965"	1/2"	1-5/16"	T-32



TUBE END CHAMFERING MILLS Heads						
STANDARD PIPE SIZE	TUBING O.D.	WALL THICKNESS		PLUG DIA	I.D. THREAD	PART#
		MIN.	MAX.			
1"	1-1/8"	.035"	.187"	1.090"	1/2"-20	T-36
	1-1/4"	.035"	.187"	1.215"	5/8"-18	T-40
	1-5/16"	.035"	.187"	1.280"	5/8"-18	T-42
	1-3/8"	.035"	.187"	1.340"	5/8"-18	T-44
	1-1/2"	.035"	.250"	1.465"	3/4"-16	T-48
1-1/4"	1-5/8"	.035"	.250"	1.590"	3/4"-16	T-52
1-1/2"	1-3/4"	.035"	.250"	1.715"	3/4"-16	T-56
	1-7/8"	.035"	.250"	1.840"	3/4"-16	T-60
2"	2"	.035"	.312"	1.965"	1"-14	T-64
	2-1/4"	.058"	.312"	2.195"	1"-14	T-72
	2-3/8"	.065"	.375"	2.310"	1"-14	T-76
	2-1/2"	.065"	.375"	2.435"	1"-14	T-80

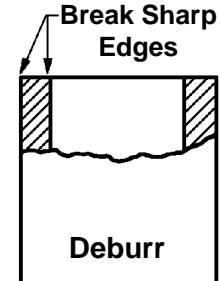
Tools are furnished without shanks. See page 100 for available shank styles and sizes



Caution: holding of tubing by hand is not recommended.

The cutting teeth are designed to give a shearing cut. They'll curl the fine chips away from the cutter to avoid loading. The inside member produces a chamfer of 30° angle with C/L and the outside member 45°. The tube end deburring cutters are intended for light deburring only, and will quickly deburr tubes of mostly any machinable material. They are available in high speed steel and carbide for the tougher and harder materials. The tooth arrangement on these cutters has been adopted to cover the widest possible range of the most commonly encountered materials. Any special material found not to be responsive to our Tube End Deburring Cutters should be given special consideration by our engineers. Simple guides such as V-blocks correctly positioned are recommended. The Ring or outside member is adjustable for more or less relative chamfer on the outside edge, and is secured after adjustment by socket screws. Operating speeds range from 50 to 200 R.P.M. depending on the size of the cutter, material and work condition. For heavier deburring, see the Tube End Chamfering Mills listed on page 94. Holding of parts by hand is not recommended.

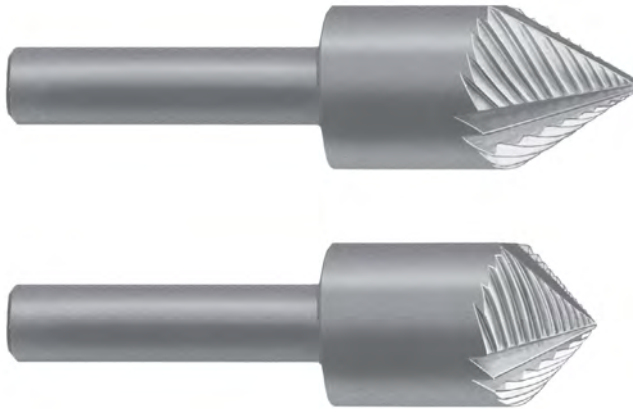
TUBE END DEBURRING CUTTERS					
TUBING O.D.	TUBING I.D.	HOLE DIA	SHANK DIA	H.S.S. PART#	CARBIDE PART#
1/8"	1/16"	.093"	1/4"	A-TUBE	A-TUBE-W
3/16"	1/8"	.156"	1/4"	BA-TUBE	BA-TUBE-W
1/4"	3/16"	.218"	1/4"	CB-TUBE	CB-TUBE-W
5/16"	1/4"	.281"	5/16"	DC-TUBE	DC-TUBE-W
3/8"	5/16"	.343"	3/8"	ED-TUBE	ED-TUBE-W
7/16"	3/8"	.406"	7/16"	FE-TUBE	FE-TUBE-W
1/2"	7/16"	.468"	1/2"	GF-TUBE	GF-TUBE-W
9/16"	1/2"	.531"	1/2"	HG-TUBE	HG-TUBE-W
5/8"	9/16"	.595"	1/2"	IH-TUBE	IH-TUBE-W
3/4"	5/8"	.685"	1/2"	JI-TUBE	JI-TUBE-W
7/8"	3/4"	.805"	1/2"	KJ-TUBE	KJ-TUBE-W
1"	7/8"	.930"	1/2"	LK-TUBE	LK-TUBE-W



TUBE END DEBURRING CUTTER Heads				
TUBING O.D.	TUBING I.D.	HOLE DIA	I.D. THREAD	H.S.S. PART#
1-1/8"	1"	1.063"	1/2"-20	ML-TUBE
1-1/4"	1-1/8"	1.180"	1/2"-20	NM-TUBE
1-3/8"	1-1/4"	1.313"	1/2"-20	ON-TUBE
1-1/2"	1-3/8"	1.430"	5/8"-18	PO-TUBE
1-3/4"	1-5/8"	1.680"	5/8"-18	RQ-TUBE
2"	1-3/4"	1.930"	3/4"-16	SR-TUBE
2-1/4"	2"	2.180"	3/4"-16	TS-TUBE

Tools are furnished without shanks. See page 100 for available shank styles and sizes

High Speed Steel One Piece Inside Chamfer Mills

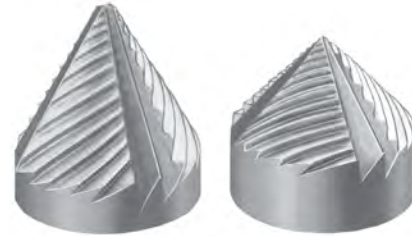


INSIDE CHAMFER MILLS High Speed Steel 1/4" Dia. Shanks x 2-1/4" Long				
HEAD DIA	NOSE PNT OR FLAT	60° INCL'D PART#	NOSE PNT OR FLAT	90° INCL'D PART#
1/4"	P	IC-1/4-30	P	IC-1/4-45
5/16"	1/32"	IC-5/16-30	1/16"	IC-5/16-45
3/8"	P	IC-3/8-30	P	IC-3/8-45
1/2"	9/64"	ICS-1/2-30	1/8"	ICS-1/2-45
1/2"	P	ICL-1/2-30	P	ICL-1/2-45
5/8"	13/64"	ICS-5/8-30	1/8"	ICS-5/8-45

Inside Chamfering Mills can be depended upon to produce smooth, burrless, chamfers on most machinable materials and are suitable for fairly heavy chamfering. For still heavier chamfering, consider Chatterless™ countersinks, on pages 88-90. Holding of parts by hand is not recommended.

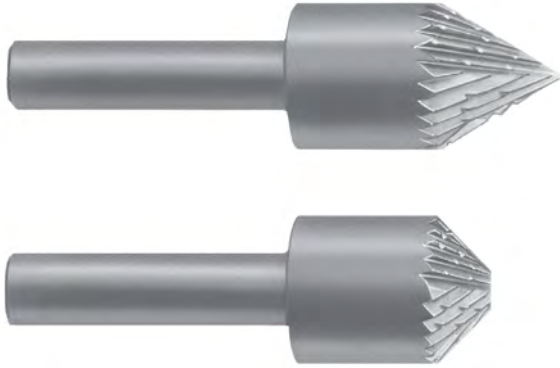
High Speed Steel Inside Chamfer Mills Heads with Threaded I.D.

Tools are furnished without shanks.
See page 100 for available shank styles and sizes



INSIDE CHAMFER MILLS High Speed Steel				
HEAD DIA	NOSE PNT OR FLAT	OVERALL LENGTH	I.D. THREAD	60° INCL'D PART#
5/8"	3/64"	7/8"	1/4"-28	IC-5/8-30
3/4"	1/32"	1"	5/16"-24	IC-3/4-30
7/8"	5/32"	1"	3/8"-24	IC-7/8-30
1"	9/32"	1-1/8"	3/8"-24	ICS-1-30
1"	1/8"	1-1/8"	3/8"-24	ICL-1-30
1-1/8"	1/8"	1-1/8"	3/8"-24	IC-1-1/8-30
1-1/4"	17/32"	1"	3/8"-24	ICS-1-1/4-30
1-1/4"	3/32"	1-1/4"	3/8"-24	ICL-1-1/4-30
1-1/2"	31/64"	1-1/8"	1/2"-20	ICS-1-1/2-30
1-1/2"	13/64"	1-1/2"	1/2"-20	ICL-1-1/2-30
1-3/4"	3/4"	1-1/4"	1/2"-20	ICS-1-3/4-30
1-3/4"	5/16"	1-1/2"	1/2"-20	ICL-1-3/4-30
2"	63/64"	1-1/4"	5/8"-18	ICS-2-30
2"	27/32"	1-1/4"	5/8"-18	ICL-2-30
2-1/4"	1-3/32"	1-3/8"	3/4"-16	ICS-2-1/4-30
2-1/4"	33/64"	1-7/8"	3/4"-16	ICL-2-1/4-30
2-1/2"	1-31/64"	1-1/4"	3/4"-16	ICS-2-1/2-30
2-1/2"	29/32"	1-3/4"	3/4"-16	ICL-2-1/2-30
3"	1-63/64"	1-1/4"	1"-14	IC-3-30

INSIDE CHAMFER MILLS High Speed Steel				
HEAD DIA	NOSE PNT OR FLAT	OVERALL LENGTH	I.D. THREAD	90° INCL'D PART#
5/8"	1/8"	11/16"	1/4"-28	IC-5/8-45
3/4"	P	13/16"	5/16"-24	IC-3/4-45
7/8"	5/32"	1"	3/8"-24	IC-7/8-45
1"	1/4"	7/8"	3/8"-24	ICS-1-45
1"	P	7/8"	3/8"-24	ICL-1-45
1-1/4"	3/8"	3/4"	3/8"-24	ICS-1-1/4-45
1-1/4"	P	1"	3/8"-24	ICL-1-1/4-45
1-1/2"	1/2"	7/8"	1/2"-20	ICS-1-1/2-45
1-1/2"	1/4"	1-1/16"	1/2"-20	ICL-1-1/2-45
1-3/4"	5/8"	7/8"	1/2"-20	IC-1-3/4-45
2"	1"	1"	5/8"-18	ICS-2-45
2"	1/4"	1-1/2"	5/8"-18	ICL-2-45
2-1/4"	1"	1"	5/8"-18	ICS-2-1/4-45
2-1/4"	1/4"	1-3/8"	5/8"-18	ICL-2-1/4-45
2-1/2"	3/4"	1-3/8"	3/4"-16	ICS-2-1/2-45
2-1/2"	1/4"	1-5/8"	3/4"-16	ICL-2-1/2-45
3"	3/4"	1-3/4"	1"-14	ICS-3-45
3"	1/4"	1-7/8"	1"-14	ICL-3-45

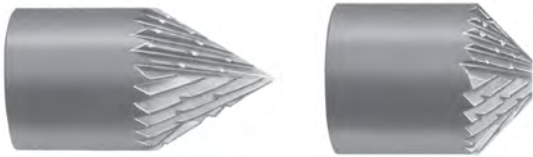


High Speed Steel One Piece Inside Deburring Cutters

Teeth on these cutters are furnished for quick light chamfering only. Stocked in 30° C/L and 45° C/L. The Inside Deburring Cutter is designed so that one tool can deburr many different hole diameters. The multi-flute design is self-piloting. Holding of parts by hand is not recommended.

INSIDE DEBURRING CUTTERS High Speed Steel 1/4" Dia. Shanks x 2-1/4" Long					
HEAD DIA	NOSE PNT OR FLAT	60° INCL'D PART#	HEAD DIA	NOSE PNT OR FLAT	90° INCL'D PART#
1/4"	P	ID-1/4-30	1/4"	P	ID-1/4-45
5/16"	1/32"	ID-5/16-30	5/16"	1/16"	ID-5/16-45
3/8"	P	ID-3/8-30	3/8"	P	ID-3/8-45
1/2"	9/64"	IDS-1/2-30	1/2"	1/8"	IDS-1/2-45
1/2"	P	IDL-1/2-30	1/2"	P	IDL-1/2-45
5/8"	13/64"	IDS-5/8-30	5/8"	1/8"	IDS-5/8-45

High Speed Steel Inside Deburring Cutter Heads with Threaded I.D.

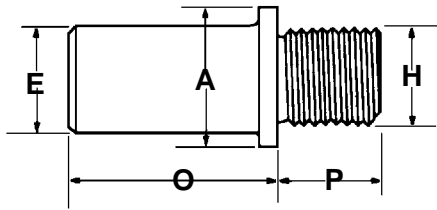


Tools are furnished without shanks.
See page 100 for available shank styles and sizes.

HEAD DIA	NOSE PNT OR FLAT	OVERALL LENGTH	I.D. THREAD	60° INCL'D PART#
5/8"	3/64"	7/8"	1/4"-28	ID-5/8-30
3/4"	1/32"	1"	5/16"-24	ID-3/4-30
7/8"	5/32"	1"	3/8"-24	ID-7/8-30
1"	9/32"	1-1/8"	3/8"-24	IDS-1-30
1"	1/8"	1-1/8"	3/8"-24	IDL-1-30
1-1/8"	1/8"	1-1/8"	3/8"-24	ID-1-1/8-30
1-1/4"	17/32"	1"	3/8"-24	IDS-1-1/4-30
1-1/4"	3/32"	1-1/4"	3/8"-24	IDL-1-1/4-30
1-1/2"	31/64"	1-1/8"	1/2"-20	IDS-1-1/2-30
1-1/2"	13/64"	1-1/2"	1/2"-20	IDL-1-1/2-30
1-3/4"	3/4"	1-1/4"	1/2"-20	IDS-1-3/4-30
1-3/4"	5/16"	1-1/2"	1/2"-20	IDL-1-3/4-30
2"	63/64"	1-1/4"	5/8"-18	IDS-2-30
2"	27/32"	1-1/4"	5/8"-18	IDL-2-30
2-1/4"	1-3/32"	1-3/8"	3/4"-16	IDS-2-1/4-30
2-1/4"	33/64"	1-7/8"	3/4"-16	IDL-2-1/4-30
2-1/2"	1-31/64"	1-1/4"	3/4"-16	IDS-2-1/2-30
2-1/2"	29/32"	1-3/4"	3/4"-16	IDL-2-1/2-30
3"	1-63/64"	1-1/4"	1"-14	ID-3-30

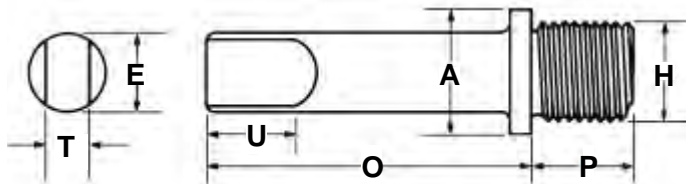
HEAD DIA	NOSE PNT OR FLAT	OVERALL LENGTH	I.D. THREAD	90° INCL'D PART#
5/8"	1/8"	11/16"	1/4"-28	ID-5/8-45
3/4"	P	13/16"	5/16"-24	ID-3/4-45
7/8"	5/32"	1"	3/8"-24	ID-7/8-45
1"	1/4"	7/8"	3/8"-24	IDS-1-45
1"	P	7/8"	3/8"-24	IDL-1-45
1-1/4"	3/8"	3/4"	3/8"-24	IDS-1-1/4-45
1-1/4"	P	1"	3/8"-24	IDL-1-1/4-45
1-1/2"	1/2"	7/8"	1/2"-20	IDS-1-1/2-45
1-1/2"	1/4"	1-1/16"	1/2"-20	IDL-1-1/2-45
1-3/4"	5/8"	7/8"	1/2"-20	ID-1-3/4-45
2"	1"	1"	5/8"-18	IDS-2-45
2"	1/4"	1-1/2"	5/8"-18	IDL-2-45
2-1/4"	1"	1"	5/8"-18	IDS-2-1/4-45
2-1/4"	1/4"	1-3/8"	5/8"-18	IDL-2-1/4-45
2-1/2"	3/4"	1-3/8"	3/4"-16	IDS-2-1/2-45
2-1/2"	1/4"	1-5/8"	3/4"-16	IDL-2-1/2-45
3"	3/4"	1-3/4"	1"-14	IDS-3-45
3"	1/4"	1-7/8"	1"-14	IDL-3-45

Straight Shanks



STRAIGHT SHANKS Steel

"H" THREAD SIZE	"E" SHANK DIA	"P" THREAD LENGTH	"O" SHANK LENGTH	"A" SHOULDER DIA	PART#
1/4"-28	1/4"	1/4"	1-3/4"	3/8"	4
1/4"-28	3/8"	1/4"	1-3/4"	3/8"	E-2
1/4"-28	1/2"	1/4"	1-3/4"	1/2"	G-2
5/16"-24	1/4"	5/16"	1-3/4"	7/16"	14
5/16"-24	3/8"	5/16"	1-3/4"	7/16"	E-12
5/16"-24	1/2"	5/16"	1-3/4"	1/2"	G-12
3/8"-24	1/4"	3/8"	1-3/4"	1/2"	24
3/8"-24	3/8"	3/8"	1-3/4"	1/2"	E-22
3/8"-24	1/2"	3/8"	1-3/4"	1/2"	G-22
3/8"-24	5/8"	3/8"	1-3/4"	5/8"	I-22
1/2"-20	3/8"	1/2"	1-3/4"	5/8"	E-32
1/2"-20	1/2"	1/2"	1-3/4"	5/8"	G-32
1/2"-20	5/8"	1/2"	1-3/4"	5/8"	I-32
1/2"-20	3/4"	1/2"	1-3/4"	3/4"	J-33
1/2"-20	1"	1/2"	2"	1"	L-33
5/8"-18	3/8"	5/8"	1-3/4"	3/4"	E-42
5/8"-18	1/2"	5/8"	1-3/4"	3/4"	G-42
5/8"-18	5/8"	5/8"	1-3/4"	3/4"	I-42
5/8"-18	3/4"	5/8"	1-3/4"	7/8"	J-43
5/8"-18	1"	5/8"	2"	1"	L-43
3/4"-16	1/2"	5/8"	1-3/4"	7/8"	G-54
3/4"-16	5/8"	5/8"	1-3/4"	7/8"	I-52
3/4"-16	3/4"	5/8"	1-3/4"	7/8"	J-53
3/4"-16	1"	5/8"	2"	1"	L-53
1"-14	1"	3/4"	2"	1-3/16"	L-63
1-1/4"-12	1"	3/4"	2"	1-1/2"	L-73



Straight Shanks with Tang

STRAIGHT SHANKS WITH TANG Steel

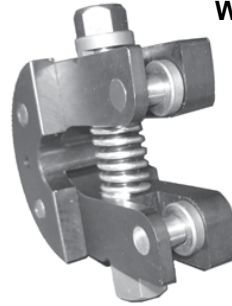
"H" THREAD SIZE	"E" SHANK DIA	"P" THREAD LENGTH	"O" SHANK LENGTH	"A" SHOULDER DIA	"U" TANG LENGTH	"T" TANG THICKNESS	PART#
1/4"-28	1/4"	1/4"	1-3/4"	3/8"	5/16"	.122	TX-4
1/4"-28	13/32"	1/4"	1-3/4"	13/32"	7/16"	.242	TZ-3
5/16"-24	1/4"	5/16"	1-3/4"	7/16"	5/16"	.122	TX-14
5/16"-24	13/32"	5/16"	1-3/4"	7/16"	7/16"	.242	TZ-13
3/8"-24	1/4"	3/8"	1-3/4"	1/2"	5/16"	.122	TX-24
3/8"-24	13/32"	3/8"	1-3/4"	1/2"	7/16"	.242	TZ-23
1/2"-20	13/32"	1/2"	1-3/4"	5/8"	7/16"	.242	TZ-33
1/2"-20	9/16"	1/2"	1-3/4"	5/8"	1/2"	.303	TH-33
5/8"-18	13/32"	5/8"	1-3/4"	7/8"	7/16"	.242	TZ-43
5/8"-18	9/16"	5/8"	1-3/4"	3/4"	1/2"	.303	TH-43
3/4"-16	9/16"	5/8"	1-3/4"	7/8"	1/2"	.303	TH-53



STRADDLE KNURL HOLDER FOR DAVENPORT

Cat. No.
2730-SA-SOMMA

Knurls:
Use *KT2 Series
knurls shown below



WIDE STRADDLE KNURL HOLDER FOR DAVENPORT

Cat. No.
2730-23-SA-SOMMA

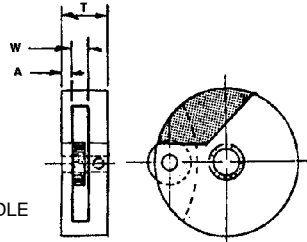
Knurls:
Use *KTP or *KTN
Series knurls shown
below

CIRCULAR KNURL HOLDERS FOR DAVENPORT CROSS SLIDES

Note: Davenport Tool is milled away for proper clearance (shaded area in diagram) and has two 9/64" pinholes thru.



- FEATURES:**
- MADE OF HEAT-TREATED STEEL
 - CARBIDE KNURL PINS
 - PERMITS KNURLING CLOSE TO SPINDLE

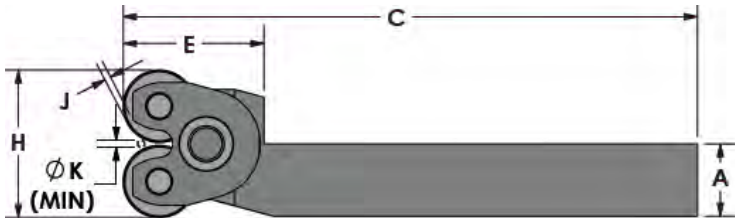


CIRCULAR KNURL HOLDER PARTS

Part No.	CSKT-DAV Cat. No.
2. Knurl	CSKT-DAV-2
3. Carbide Pin	CSKT2-3
4. Set Screw	CSKT00-4
5. Washer	1ANR-8

CAT. NO.	FITS	DIA.	CENTER HOLE	KNURL SERIES	W	A	T
CSKT-DAV	DAVENPORT	2"	9/16-REAM	*KTN	3/8	5/32	3/4

SELF-CENTERING KNURL TOOL HOLDERS



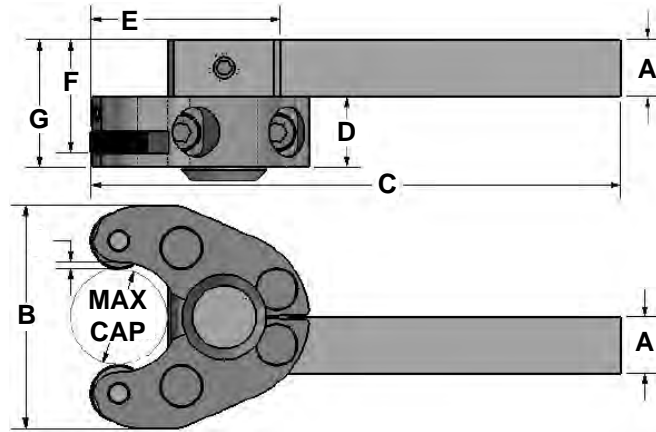
Inch - SELF-CENTERING KNURL HOLDERS										
PART#	A	B	C	E	H	J	K	L	KNURL SERIES	KNURL PIN
KTSCW-3/8	3/8	.50	4"	1"	.70	.02	.03	.06	*KTSW	206C
KTSC0-3/8	3/8	.50	4"	1"	1"	.04	.05	.06	*KT00	308C
KTSCW-1/2	1/2	.50	4"	1"	.70	.02	.03	.06	*KTSW	206C
KTSC0-1/2	1/2	.50	4"	1"	1"	.04	.05	.06	*KT00	308C
KTSC2-5/8	5/8	.75	4.5"	1.75	1.5	.04	.05	.12	*KT2 *KTN	410C
KTSC2-3/4	3/4	.75	4.5"	1.75	1.5	.04	.05	.12	*KT2 *KTN	410C
KTSCP-3/4	3/4	1.00	5"	2"	1.6	.10	.06	.19	*KTP	412C
KTSCW-3/4	3/4	1.00	5.4"	2.33	2.6	.14	.06	.12	*KTH	816C
KTSCP-1	1"	1.00	5"	2"	1.6	.10	.06	.19	*KTP	412C
KTSCW-1	1"	1.00	5.4"	2.33	2.6	.14	.06	.12	*KTH	816C

Metric - SELF-CENTERING KNURL HOLDERS										
PART#	A	B	C	E	H	J	K	L	KNURL SERIES	KNURL PIN
KTSC0-8	8mm	.50	4"	1"	1"	.02	.05	.06	*KT00	308C
KTSCW-12	12mm	.50	4"	1"	.70"	.02	.03	.06	*KTSW	206C
KTSC0-12	12mm	.50	4"	1"	1"	.04	.05	.06	*KT00	308C

KNURLS

SERIES PART#	O.D.	I.D.	Width
*KTSW-	5/16"	1/8"	5/32"
*KT00-	1/2"	3/16"	3/16"
*KT2-	5/8"	1/4"	1/4"
*KTN-	3/4"	1/4"	1/4"
*KTP-	3/4"	1/4"	3/8"
*KTR-	3/4"	1/4"	1/2"
*KTU-	1"	5/16"	3/8"
*KTH-	1-1/4"	1/2"	1/2"

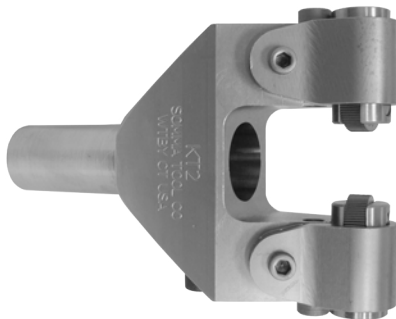
***When ordering knurls specify series number as well as the required pitch information**



See page 102 for Knurls

ADJUSTABLE STRADDLE KNURL HOLDERS

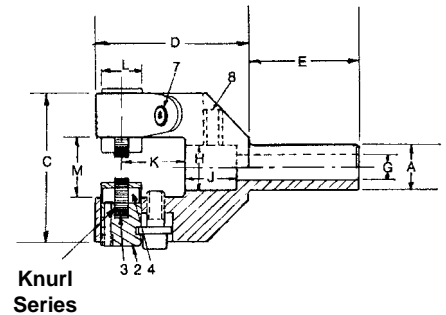
PART#	A	B	C	D	E	F	G	MAX CAPACITY	KNURL SERIES	KNURL PIN
KTASW-5/16	5/16	1.25	5.0	.500	1.12	.750	.812	.437	*KTSW	CK 082
KTASW-3/8	3/8	1.25	5.0	.500	1.12	.812	.875	.437	*KTSW	CK 082
KTAS0-3/8	3/8	1.50	5.0	.750	1.88	.875	1.000	.750	*KT00	CK 123
KTASW-1/2	1/2	1.25	5.0	.500	1.12	.937	1.000	.437	*KTSW	CK 082
KTAS0-1/2	1/2	1.50	5.0	.750	1.88	1.000	1.125	.750	*KT00	CK 123
KTAS0-5/8	5/8	1.50	5.0	.750	1.88	1.125	1.250	.750	*KT00	CK 123
KTASN-5/8	5/8	2.50	5.0	.750	2.00	1.175	1.375	1"	*KTN	CK 124
KTASP-5/8	5/8	2.50	5.0	.875	2.00	1.300	1.500	1"	*KTP	CK 144
KTAS0-3/4	3/4	1.50	5.0	.750	1.88	1.250	1.375	.750	*KT00	CK 123
KTASN-3/4	3/4	2.50	5.0	.750	2.00	1.300	1.500	1"	*KTN	CK 124
KTASP-3/4	3/4	2.50	5.0	.875	2.00	1.425	1.625	1"	*KTP	CK 144
KTASR-3/4	3/4	3.00	5.3	1.000	2.25	1.438	1.750	2"	*KTR	CK 164
KTASP-1	1"	2.50	5.0	.875	2.00	1.675	1.875	1"	*KTP	CK 144
KTASR-1	1"	3.00	5.3	1.000	2.25	1.688	2.000	2"	*KTR	CK 164



STRADDLE KNURLING TOOL W/ ADJUSTABLE KNURL ANGLE

- Knurl can be adjusted to produce straight, diagonal, or diamond knurls by rotating the barrels.
- Holds drills for combined operations
- Standard with carbide knurl pins
- Same tool can be converted to "extra capacity" by changing barrels.

See page 102 for Knurls



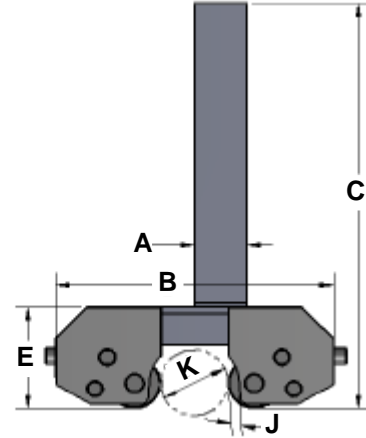
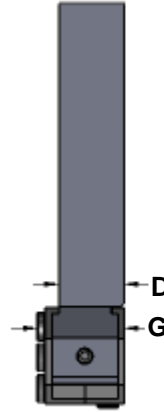
CAT. NO.	A	Knurl Series	C	D	E	G	H	J	K	L	M	BARREL LENGTH	CAPACITY DIA.
KT00	5/8	*KT00	1-15/16	1-7/8	1-1/8	5/16	1/2	9/16	5/8	9/16	5/8	7/8	Up to 1/2"
KT1	3/4	*KT2	2-15/32	2-9/16	1-7/8	7/16	5/8	7/8	1-1/16	11/16	1"	1-1/16	Up to 3/4"
KT2	1"	*KT2	3-5/16	3-7/16	2-3/16	5/8	1"	1-1/4	1-1/2	11/16	1-3/8	1-5/16	Up to 7/8"
KT2-EC	1"	*KT2	3-5/16	3-7/16	2-3/16	5/8	1"	1-1/4	1-1/2	11/16	1-3/8	1-1/16	7/16 to 1-5/16
KT3	1-1/4	*KT2	4"	4-1/4	3-1/4	5/8	1-1/4	1-1/4	2"	11/16	2-1/16	1-5/16	1/2 to 1-3/8
KT3-EC	1-1/4	*KT2	4"	4-1/4	3-1/4	5/8	1-1/4	1-1/4	2"	11/16	2-1/16	1-1/16	1" to 2"

Note -EC = Extra Capacity

COMMON KNURLING TOOL PARTS

* Specify pitch of knurl required when ordering.
Medium knurls supplied unless otherwise specified.

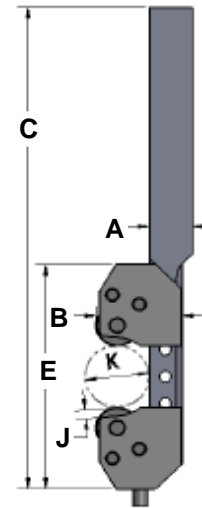
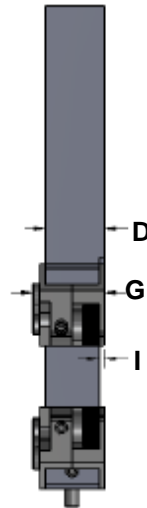
Part No.	KT00 Cat. No.	KT1 Cat. No.	KT2 Cat. No.	KT2 EC Cat. No.	KT3 Cat. No.	KT3 EC Cat. No.
2. Barrels	KT00-2	KT1-2	KT2-2	KT1-2	KT2-2	KT1-2
3. Knurls*	*KT00	*KT2	*KT2	*KT2	*KT2	*KT2
4. Knurl Pins, Carbide	KT00-4	KT2-4	KT2-4	KT2-4	KT2-4	KT2-4



SWISS T STYLE STRADDLE HOLDERS

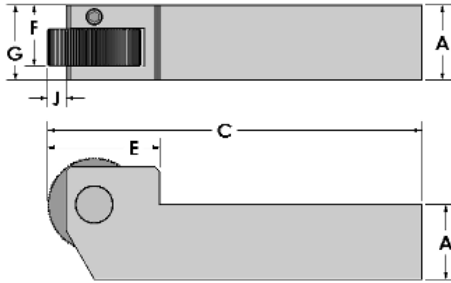
Part#	Max. Capacity	A	B	C	D	E	G	I	J	Knurl Series	Knurl Pin	Knurl Spacer
KTST-06	.65"	3/8"	2.65	4.0	.63	1.0	.83	.06	.10	*KT00	CK 103	SP030206
KTST-08	.65"	1/2"										
KTST-00	1.13"	5/8"	3.63	5.5	.63	1.55	.85	.06 / .20	1.13	*KT2, KTN	CK 124	-
KTST-1	1.13"	3/4"										
KTST-2	1.13"	1"										
KTST-10MM	.65	10mm	2.65	4.0	.63	1.0	.83	.06	.10	*KT00	CK 103	SP030206
KTST-12MM	.65	12mm										
KTST-20MM	1.13"	20mm	3.63	5.5	.63	1.55	.85	.06 / .20	1.13	*KT2, KTN	CK 124	-
KTST-25MM	1.13"	25mm										

See page 102 for Knurls



SWISS INLINE STRADDLE HOLDERS

Part#	Max. Capacity	A	B	C	D	E	G	I	J	Knurl Series	Knurl Pin	Knurl Spacer
KTSC-06	3/4	3/8	1"	5.9"	.69"	2.75"	.83	.06	.10	*KT00	CK 103	SP030206
KTSC-08	3/4	1/2										
KTSC-10MM	3/4	10mm										
KTSC-12MM	3/4	12mm										



See page 102 for Knurls

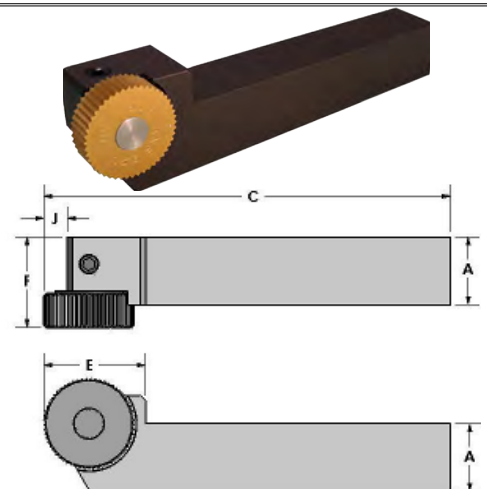
Inch - BUMP TYPE KNURLING TOOL HOLDERS									
PART # RH	PART # LH	KNURL SERIES	KNURL PIN	A	C	E	F	G	J
KTBSW	KTBSW-L	*KTSW-	C 062	5/16"	4-1/2"	5/8"	.313	3/8"	.05
KTBSWA	KTBSWA-L	*KTSW-	C 062	3/8"	4"	3/4"	.313	3/8"	.05
KTB00	KTB00-L	*KT00-	C 083	1/2"	4"	1"	.400	1/2"	.09
KTBEF	KTBEF-L	*KT00-	C 103	5/8"	4"	1"	.401	1/2"	.09
KTB2	KTB2-L	*KT2-	C 104	5/8"	4"	1"	.525	5/8"	.12
KTBP	KTBP-L	*KTP-	C 124	3/4"	4-1/2"	1-1/8"	.625	3/4"	.18
KTBR	KTBR-L	*KTR-	C 164	3/4"	4-1/2"	1-1/8"	.812	1"	.18
KTBPB	KTBPB-L	*KTP-	C 164	1"	5"	1-1/2"	.875	1"	.18
KTBRA	KTBRA-L	*KTR-	C 164	1"	5"	1-1/2"	.812	1"	.18
KTBU	KTBU-L	*KTU-	C 165	1"	5"	1-1/2"	.812	1"	.25
KTBH	KTBH-L	*KTH-	C 168	1"	5"	1-1/2"	.812	1"	.25
KTBA	KTBA-L	*KTH-	C 208	1-1/4"	6"	1-1/2"	1	1-1/4"	.25

Metric - BUMP TYPE KNURLING TOOL HOLDERS									
PART # RH	PART # LH	KNURL SERIES	KNURL PIN	A	C	E	F	G	J
KTBP-10MM	KTBP-10MM-L	*KT00-	C 083	10	4"	1"	.400	1/2"	.09
KTBP-12MM	KTBP-12MM-L	*KT00-	C 083	12	4"	1"	.400	1/2"	.09
KTBGK-12MM	KTBGK-12MM-L	*KT2-	C 104	12	4"	1"	.525	5/8"	.12
KTBP-20MM	KTBP-20MM-L	*KTP-	C 164	20	5"	1-1/2"	.875	1"	.18
KTBP-25MM	KTBP-25MM-L	*KTP-	C 164	25	5"	1-1/2"	.875	1"	.18
KTBP-25MM	KTBP-25MM-L	*KTH-	C 168	25	5"	1-1/2"	.812	1"	.25

UP TO THE SHOULDER BUMP HOLDERS

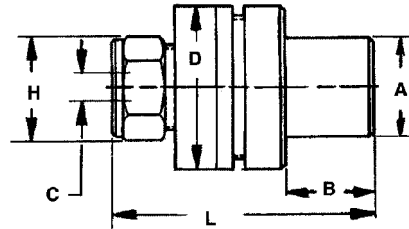
PART#	A	C	E	F	J	KNURL SERIES	KNURL PIN
KTBN	5/8"	4"	1"	3/4"	.12	*KTN-	SK 124X
KTBNB	3/4"	4-1/2"	1"	3/4"	.12	*KTN-	SK 124X
KTBNZ	3/4"	4-1/2"	1.12"	1"	.25	*KTU-	SK 165X
KTBNB	1"	5"	1"	1"	.12	*KTN-	SK 124X
KTBNZ	1"	5"	1-1/2"	1"	.25	*KTU-	SK 165X
KTBNZ	1"	5"	1-1/2"	1-1/4"	.25	*KTH-	SK 208X

See page 102 for Knurls



RECOMMENDED FOR REAMING

FULL FLOATING HOLDERS



SEE PAGES 160 & 161 FOR COLLETS.

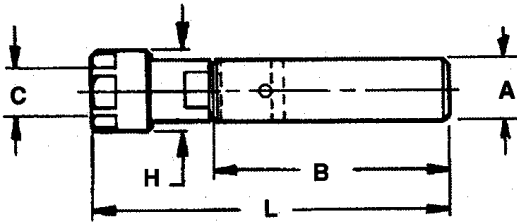
- COLLETS COLLAPSE TO COVER A 1/32" RANGE.
- HIGHEST QUALITY MATERIALS ARE USED THROUGHOUT.
- FLOATS APPROXIMATELY .010" OFF CENTER (.020" TOTAL) TO COMPENSATE FOR BOTH PARALLEL AND ANGULAR MISALIGNMENTS.
- IDEAL FOR REAMING OPERATIONS ON SINGLE AND MULTI-SPINDLE AUTOMATICS AND TURRET LATHES.
- HOLLOW DESIGN ALLOWS COOLANT THROUGH AND TOOL OVERHAND TO BE SHORTENED.
- RECOMMENDED ONLY FOR STATIONARY APPLICATIONS (LATHE)
- ADJUSTING NUT VARIES SPRING TENSION TO COMPENSATE FOR CUTTER WEIGHT.

C CAPACITY	COLLET SERIES	A	B	D DIA.	L	H HEX	CAT. NO.
3/64-25/64	200	3/4	4"	1-7/8	6.44	7/8	SS075FC208644
3/64-3/4	180	3/4	4"	2-3/8	6.88	1-1/2	SS075FC188688
3/64-9/16	100	1"	4"	2-1/16	6.59	1-1/8	SS100FC108659
3/64-3/4	180	1"	4"	2-3/8	6.88	1-1/2	SS100FC188688
3/64-3/4	180	1-1/4	6"	2-3/8	8.88	1-1/2	SS125FC188888
3/64-9/16	100	1-1/2	6"	2-1/16	8.59	1-1/8	SS150FC108859
3/64-3/4	180	1-1/2	4"	2-3/8	6.88	1-1/2	SS150FC188688
3/64-3/4	180	1-1/2	6"	2-3/8	8.88	1-1/2	SS150FC188888
3/32-1"	400	1-1/2	6"	3-3/4	9.88	2-1/4	SS150FC408988
3/64-3/4	180	1-3/4	6"	2-3/8	8.88	1-1/2	SS175FC188888
3/64-3/4	180	2"	6"	2-3/8	8.88	1-1/2	SS200FC188888
3/32-1"	400	2"	6"	3-3/4	9.88	2-1/4	SS200FC408988

REAMING

RECOMMENDED FOR REAMING

DOUBLE PIN FLOATING HOLDER

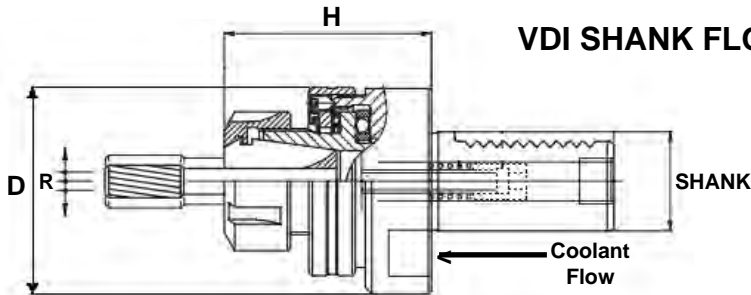


SEE PAGES 108 & 109 FOR COLLETS.

- FLOATS APPROXIMATELY .004" OFF CENTER (.008" TOTAL) TO COMPENSATE FOR BOTH PARALLEL AND ANGULAR MISALIGNMENTS.
- IDEAL FOR REAMING ON MACHINING CENTERS OR OTHER MACHINES WHERE MISALIGNMENTS ARE NOT EXCESSIVE.
- MAXIMUM 6000 RPM

C CAPACITY	COLLET SERIES	A	B	L	H HEX	CAT. NO.
1/32-1/4	300	1/2	2-1/2	4.03	5/8	SS050DP308403
1/32-1/4	300	3/4	2-1/2	4.03	5/8	SS075DP308403
3/64-25/64	200	3/4	2-7/8	4.48	7/8	SS075DP208448
3/64-25/64	200	1"	3"	4.48	7/8	SS100DP208448
1/32-1/4	300	1"	2-1/2	4.03	5/8	SS100DP308403
3/64-9/16	100	1"	3-1/2	5.62	1-1/8	SS100DP108562
3/64-3/4	180	1-1/4	4-1/2	6.96	1-3/8	SS125DP188696

VDI SHANK FLOATING REAMER HOLDER



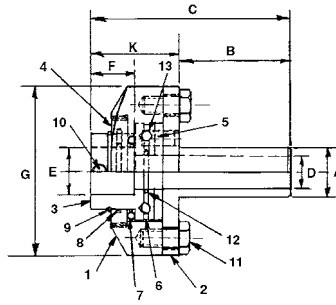
Features:

- The free moving ball bearing drive allows reamers to follow the existing drilled hole for high quality work.
- Could be used for synchronized tapping operations on lathes and CNC machining centers.
- Through the shank coolant capability

SHANK SIZE	COLLET SERIES	D	H	R	TOOL HOLDER PART NO.	COLLET WRENCH	COLLET NUT
VDI20	ER25	57	57	1	VDI20ERFC25	ER25EW	ER25E
VDI30	ER25	68	64	1	VDI30ERFC25	ER25EW	ER25E
VDI30	ER32	68	72	1.5	VDI30ERFC32	ER32EW	ER32E
VDI40	ER32	83	74	1.5	VDI40ERFC32	ER32EW	ER32E

SEE PAGES 156-160 FOR COLLETS

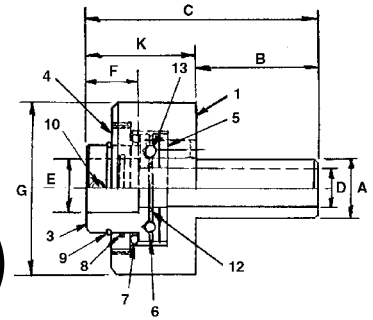
FLOATING (ADJUSTABLE) REAMER HOLDER



- Manually adjustable up to .015 for machine misalignment
 - Exclusive wave spring construction gives automatic centering - does not depend on "O" rings for float.
 - .005 Total float
 - Tangent opposed ball raceways give full lateral float.
 - Rides on free rolling balls - no pins to cause jamming
- SEE BELOW FOR REAMER BUSHINGS.

CAT. NO.	A	B	C	D	E	F	G	K
FARH00	5/8	1-1/4	2-11/32	3/8	1/2	9/16	1-5/8x2-1/4	1-1/16
FARH0	3/4	1-5/8	3-1/8	1/2	5/8	3/4	2-1/8x3	1-1/2
FARH2	1"	2-1/8	4"	11/16	1"	7/8	2-1/2x3-3/8	1-7/8

FLOATING REAMER HOLDERS



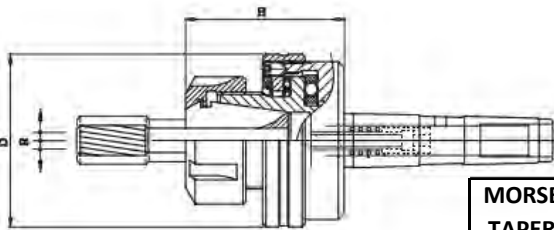
- Exclusive wave spring construction gives automatic centering - does not depend on "O" rings for float.
 - .005 Total float
 - Tangent opposed ball raceways give full lateral float.
 - Rides on free rolling balls - no pins to cause jamming
- SEE BELOW FOR REAMER BUSHINGS.

CAT. NO.	A	B	C	D	E	F	G	K
FRH00	5/8	1-1/4	2-3/8	3/8	1/2	9/16	1-3/4	1-1/8
FRH0	3/4	1-5/8	3-3/16	1/2	5/8	3/4	2-1/4	1-9/16
FRH2	1"	2-1/8	4-1/16	11/16	1"	7/8	3"	1-15/16

BUSHINGS FOR SOMMA TOOL REAMER HOLDERS (Above)

REAMER SETS	
00REAMER SET	SET OF 12 #00 BUSHINGS
0REAMER SET	SET OF 13 #0 BUSHINGS
2REAMER SET	SET OF 16 #2 BUSHINGS

REAMER SIZE	BUSHING I.D.	#00 BUSHINGS 1/2" O.D. X 3/4" L CAT. NO.	#0 BUSHINGS 5/8" O.D. X 15/16" L CAT. NO.	#2 BUSHINGS 1" O.D. X 1-1/4" L CAT. NO.
1/16"	0.059	MB00-.059	MB0-.059	MB2-.059
5/64" & 3/32"	0.088	MB00-.088	MB0-.088	MB2-.088
7/64" & 1/8"	0.119	MB00-.119	MB0-.119	MB2-.119
9/64" & 5/32"	0.151	MB00-.151	MB0-.151	MB2-.151
11/64" & 3/16"	0.181	MB00-.181	MB0-.181	MB2-.181
13/64" & 7/32"	0.208	MB00-.208	MB0-.208	MB2-.208
15/64" & 1/4"	0.241	MB00-.241	MB0-.241	MB2-.241
17/64" & 9/32"	0.250	MB00-.250	MB0-.250	MB2-.250
19/64" - 11/32"	0.281	MB00-.281	MB0-.281	MB2-.281
23/64" - 13/32"	0.312	MB00-.312	MB0-.312	MB2-.312
27/64" - 15/32"	0.375	MB00-.375	MB0-.375	MB2-.375
31/64" - 19/32"	0.437	MB00-.437	MB0-.437	MB2-.437
5/8" - 23/32"	0.562		MB0-.562	MB2-.562
3/4" - 27/32"	0.625			MB2-.625
7/8" - 31/32"	0.750			MB2-.750
1" - 1-1/8"	0.875			MB2-.875



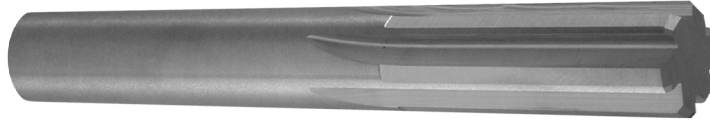
MORSE TAPER SHANK ER COLLET FLOATING REAMER HOLDER W/ COOLANT PORT

SEE PAGES 154-158 FOR COLLETS

Features:

- The free moving ball bearing drive allows reamers to follow the existing drilled hole for high quality work.
- Could be used for synchronized tapping operations on lathes and CNC machining centers.
- Through the shank or port coolant capability

MORSE TAPER	COLLET SERIES	COLLET CAPACITY	HOLDER PART NUMBER	FLOAT R (mm)	D (mm)	H (mm)	NUT O.D. (mm)
2	ER16	1/16 TO 13/32	MT2ERFC16	1	42	44	28
2	ER20	1/16 TO 1/2	MT2ERFC20	1	50	50	34
2	ER25	1/16 TO 5/8	MT2ERFC25	1	57	53	42
3	ER16	1/16 TO 13/32	MT3ERFC16	1	42	44	28
3	ER20	1/16 TO 1/2	MT3ERFC20	1	50	50	34
3	ER25	1/16 TO 5/8	MT3ERFC25	1	57	53	42
3	ER32	3/32 TO 3/4	MT3ERFC32	1.5	69	58	50
3	ER40	1/8 TO 1"	MT3ERFC40	1.5	79	64	63
4	ER32	3/32 TO 3/4	MT4ERFC32	1.5	69	58	50
4	ER40	1/8 TO 1"	MT4ERFC40	1.5	79	64	63



Chuckling Reamers Solid Carbide Straight Flute (fractional sizes)

Chuckling Reamers Solid Carbide Straight Flute (letter sizes)

Reamer Diameter	Flute Length	Overall Length	Part#
1/8" (.1250)	5/8"	2-1/4"	CCR-1/8
9/64" (.1406)	3/4"	2-1/2"	CCR-9/64
5/32" (.1562)	3/4"	2-1/2"	CCR-5/32
11/64" (.1719)	7/8"	2-3/4"	CCR-11/64
3/16" (.1875)	7/8"	2-3/4"	CCR-3/16
13/64" (.2031)	1"	3"	CCR-13/64
7/32" (.2187)	1"	3"	CCR-7/32
15/64" (.2344)	1"	3"	CCR-15/64
1/4" (.2500)	1"	3"	CCR-1/4
17/64" (.2656)	1-1/8"	3-1/4"	CCR-17/64
9/32" (.2812)	1-1/8"	3-1/4"	CCR-9/32
19/64" (.2969)	1-1/8"	3-1/4"	CCR-19/64
5/16" (.3125)	1-1/8"	3-1/4"	CCR-5/16
21/64" (.3281)	1-1/4"	3-1/2"	CCR-21/64
11/32" (.3437)	1-1/4"	3-1/2"	CCR-11/32
23/64" (.3594)	1-1/4"	3-1/2"	CCR-23/64
3/8" (.3750)	1-1/4"	3-1/2"	CCR-3/8
25/64" (.3906)	1-1/4"	3-1/2"	CCR-25/64
13/32" (.4062)	1-1/4"	3-1/2"	CCR-13/32
27/64" (.4219)	1-3/8"	4"	CCR-27/64
7/16" (.4375)	1-3/8"	4"	CCR-7/16
29/64" (.4531)	1-3/8"	4"	CCR-29/64
15/32" (.4687)	1-3/8"	4"	CCR-15/32
31/64" (.4844)	1-1/2"	4"	CCR-31/64
1/2" (.5000)	1-1/2"	4"	CCR-1/2

Reamer Diameter	Flute Length	Overall Length	Part#
A (.2340)	1"	3"	CCR-A
B (.2380)	1"	3"	CCR-B
C (.2420)	1"	3"	CCR-C
D (.2460)	1"	3"	CCR-D
E (.2500)	1"	3"	CCR-E
F (.2570)	1-1/8"	3-1/4"	CCR-F
G (.2610)	1-1/8"	3-1/4"	CCR-G
H (.2660)	1-1/8"	3-1/4"	CCR-H
I (.2720)	1-1/8"	3-1/4"	CCR-I
J (.2770)	1-1/8"	3-1/4"	CCR-J
K (.2810)	1-1/8"	3-1/4"	CCR-K
L (.2900)	1-1/8"	3-1/4"	CCR-L
M (.2950)	1-1/8"	3-1/4"	CCR-M
N (.3020)	1-1/8"	3-1/4"	CCR-N
O (.3160)	1-1/8"	3-1/4"	CCR-O
P (.3230)	1-1/4"	3-1/2"	CCR-P
Q (.3320)	1-1/4"	3-1/2"	CCR-Q
R (.3390)	1-1/4"	3-1/2"	CCR-R
S (.3480)	1-1/4"	3-1/2"	CCR-S
T (.3580)	1-1/4"	3-1/2"	CCR-T
U (.3680)	1-1/4"	3-1/2"	CCR-U
V (.3770)	1-1/4"	3-1/2"	CCR-V
W (.3860)	1-1/4"	3-1/2"	CCR-W
X (.3970)	1-1/4"	3-1/2"	CCR-X
Y (.4040)	1-1/4"	3-1/2"	CCR-Y
Z (.4130)	1-1/4"	3-1/2"	CCR-Z

Micro Reamers

Designed for smooth, chatter-free™ action, Micro-Reamers™ perform well in cast and malleable iron and in many nonferrous materials such as plastics, aluminum, etc. These tools feature solid carbide head, steel body, chatter-free tooth design and a unique wiping flute geometry. A rigid setup, perfect alignment between the hole to be reamed, and the Micro-Reamer™, and the guide bushing, will produce accurate, finely finished holes. The drilled hole, to be reamed, should be approximately .006 to .016 unde size in holes from 3/8 to 1 inch in diameter. Standard tool tolerance is +.0002/-.0000. Other sizes and tolerance specifications on request.



MICRO REAMERS Carbide				
CUTTING DIA	SHANK DIA	OVERALL LENGTH	SHANK LENGTH	PART #
1/8"	7/64"	2-3/4"	1-3/4"	RW-.1250
3/16"	11/64"	3-1/2"	2-3/8"	RW-.1875
3/8"	5/16"	5"	3-1/4"	RW-.3750
1/2"	7/16"	6"	4"	RW-.5000
9/16"	7/16"	6"	4"	RW-.5625

Chuckling Reamers, Solid Carbide, Straight Flute (number sizes)



Reamer Diameter	Flute Length	Overall Length	Part#
#1 (.2280)	1"	3"	CCR-1
#2 (.2211)	1"	3"	CCR-2
#3 (.2130)	1"	3"	CCR-3
#4 (.2090)	1"	3"	CCR-4
#5 (.2055)	1"	3"	CCR-5
#6 (.2040)	1"	3"	CCR-6
#7 (.2010)	1"	3"	CCR-7
#8 (.1990)	1"	3"	CCR-8
#9 (.1960)	1"	3"	CCR-9
#10 (.1935)	7/8"	2-3/4"	CCR-10
#11 (.1910)	7/8"	2-3/4"	CCR-11
#12 (.1890)	7/8"	2-3/4"	CCR-12
#13 (.1850)	7/8"	2-3/4"	CCR-13
#14 (.1820)	7/8"	2-3/4"	CCR-14
#15 (.1800)	7/8"	2-3/4"	CCR-15
#16 (.1770)	7/8"	2-3/4"	CCR-16
#17 (.1730)	7/8"	2-3/4"	CCR-17
#18 (.1695)	7/8"	2-3/4"	CCR-18
#19 (.1660)	7/8"	2-3/4"	CCR-19
#20 (.1610)	7/8"	2-3/4"	CCR-20
#21 (.1590)	3/4"	2-1/2"	CCR-21
#22 (.1570)	3/4"	2-1/2"	CCR-22
#23 (.1540)	3/4"	2-1/2"	CCR-23
#24 (.1520)	3/4"	2-1/2"	CCR-24
#25 (.1495)	3/4"	2-1/2"	CCR-25
#26 (.1470)	3/4"	2-1/2"	CCR-26
#27 (.1440)	3/4"	2-1/2"	CCR-27
#28 (.1405)	3/4"	2-1/2"	CCR-28
#29 (.1360)	3/4"	2-1/2"	CCR-29
#30 (.1285)	5/8"	2-1/4"	CCR-30

Reamer Diameter	Flute Length	Overall Length	Part#
#31 (.1200)	5/8"	2-1/4"	CCR-31
#32 (.1160)	5/8"	2-1/4"	CCR-32
#33 (.1130)	5/8"	2-1/4"	CCR-33
#34 (.1110)	5/8"	2-1/4"	CCR-34
#35 (.1100)	5/8"	2-1/4"	CCR-35
#36 (.1065)	5/8"	2-1/4"	CCR-36
#37 (.1040)	5/8"	2-1/4"	CCR-37
#38 (.1015)	5/8"	2-1/4"	CCR-38
#39 (.0995)	5/8"	2-1/4"	CCR-39
#40 (.0980)	5/8"	2-1/4"	CCR-40
#41 (.0960)	5/8"	2-1/4"	CCR-41
#42 (.0935)	1/2"	2"	CCR-42
#43 (.0890)	1/2"	2"	CCR-43
#44 (.0860)	1/2"	2"	CCR-44
#45 (.0820)	1/2"	2"	CCR-45
#46 (.0810)	1/2"	2"	CCR-46
#47 (.0785)	1/2"	1-3/4"	CCR-47
#48 (.0760)	1/2"	1-3/4"	CCR-48
#49 (.0730)	1/2"	1-3/4"	CCR-49
#50 (.0700)	1/2"	1-3/4"	CCR-50
#51 (.0670)	1/2"	1-3/4"	CCR-51
#52 (.0635)	3/8"	1-1/2"	CCR-52
#53 (.0595)	3/8"	1-1/2"	CCR-53
#54 (.0550)	3/8"	1-1/2"	CCR-54
#55 (.0520)	3/8"	1-1/2"	CCR-55
#56 (.0465)	3/8"	1-1/2"	CCR-56
#57 (.0430)	3/8"	1-1/2"	CCR-57
#58 (.0420)	3/8"	1-1/2"	CCR-58
#59 (.0410)	3/8"	1-1/2"	CCR-59
#60 (.0400)	3/8"	1-1/2"	CCR-60



REAMING

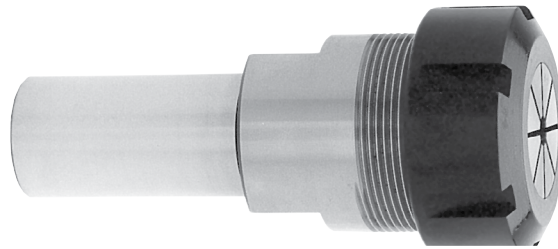
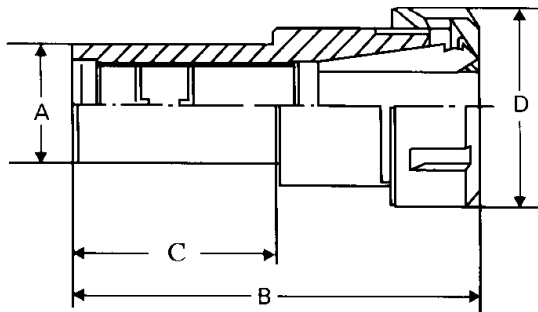
Micro-Center Reamers

These tools are used to clean center holes in parts after heat treat or other processes. Micro-Center Reamers™ are particularly well suited in center lapping operations where speed is a factor and close tolerances must be maintained.

They can be used in shifting centers to correct misalignment. Replace grinding wheels for: Dressing centers in hardened steel materials (will not chip out like center laps). They will do an outstanding job on a wide variety of materials such as hardened tool steels; heat-treated forgings; and cast steels; Melanite and chilled iron, pitch and cut can be readily made to suit unusual conditions not responsive to the standard tool.



MICRO-CENTER REAMERS Carbide					
CUTTING DIA	NOSE DIA	SHANK DIA	OVERALL LENGTH	SHANK LENGTH	PART #
1/4"	.015	3/16"	1-1/2"	1-3/16"	MCR-4-W
3/8"	.020	1/4"	1-3/4"	1-3/4"	MCR-6-W
1/2"	.040	1/4"	2-1/4"	1-3/4"	MCR-8-W
5/8"	.050	3/8"	2-3/8"	1-1/2"	MCR-10-W
3/4"	.060	1/2"	2-11/16"	1-5/16"	MCR-12-W
1"	.090	1/2"	2-13/16"	1-5/16"	MCR-16-W



INCH SHANK ER COLLET CHUCK (STEPPED O.D.)

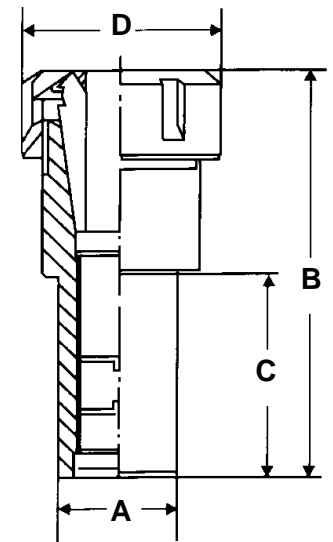
A SHANK	COLLET SERIES	COLLET CAPACITY	COLLET NUT	B	C	D	PART #	COLLET WRENCH
1/4"	ER11	1/16-1/4	ER11M	2.28	1.77	.63	SS025ER11228	ER11MW
3/8"	ER16	1/16-13/32	ER16M	2.76	1.73	.87	SS038ER16276	ER16MW
1/2"	ER16	1/16-13/32	ER16M	6.61	6.06	.87	SS050ER16661	ER16MW
5/8"	ER16	1/16-13/32	ER16H	3.35	2.36	1.10	SS062ER16335	ER16HW
5/8"	ER16	1/16-13/32	ER16H	4.13	3.15	1.10	SS062ER16413	ER16HW
5/8"	ER20	1/16-1/2	ER20M	5.60	3.94	1.10	SS062ER20560	ER20MW
5/8"	ER25	1/16-5/8	ER25E	3.35	1.97	1.65	SS062ER25335	ER25EW
3/4"	ER11	1/16-1/4	ER11M	4.72	3.94	.63	SS075ER11472	ER11MW
3/4"	ER16	1/16-13/32	ER16H	3.11	1.97	1.10	SS075ER16311	ER16HW
3/4"	ER16	1/16-13/32	ER16H	4.33	3.15	1.10	SS075ER16433	ER16HW
3/4"	ER16	1/16-13/32	ER16H	4.92	3.94	1.10	SS075ER16492	ER16HW
3/4"	ER25	1/16-5/8	ER25E	3.35	1.97	1.65	SS075ER25335	ER25EW
3/4"	ER25	1/16-5/8	ER25E	5.31	3.94	1.65	SS075ER25531	ER25EW
1"	ER16	1/16-13/32	ER16M	4.88	3.94	.87	SS100ER16488	ER16MW
1"	ER20	1/16-1/2	ER20H	3.38	2.36	1.34	SS100ER20338	ER20HW
1"	ER20	1/16-1/2	ER20H	4.17	3.15	1.34	SS100ER20417	ER20HW
1"	ER32	3/32-3/4	ER32E	3.74	1.97	1.97	SS100ER32374	ER32EW
1"	ER40	1/8-1	ER40E	3.74	1.97	2.48	SS100ER40374	ER40EW
1"	ER40	1/8-1	ER40E	4.33	2.38	2.48	SS100ER40433	ER40EW
1-1/4"	ER25	1/16-5/8	ER25E	4.02	2.76	1.65	SS125ER25402	ER25EW
1-1/4"	ER32	3/32-3/4	ER32E	4.33	1.97	1.97	SS125ER32433	ER32E W
1-1/4"	ER32	3/32-3/4	ER32E	4.13	2.36	1.97	SS125ER32413	ER32EW
1-1/4"	ER40	1/8-1	ER40E	4.13	2.36	2.48	SS125ER40413	ER40EW
1-1/4"	ER40	1/8-1	ER40E	5.12	2.76	2.48	SS125ER40512	ER40EW
1-1/2"	ER40	1/8-1	ER40E	8.46	6.10	2.48	SS150ER40846	ER40EW
1-3/4"	ER25	1/16-5/8	ER25E	7.20	6.10	1.65	SS175ER25720	ER25EW
1-3/4"	ER32	3/32-3/4	ER32E	5.12	3.35	1.97	SS175ER32512	ER32EW
1-3/4"	ER32	3/32-3/4	ER32E	7.28	6.10	1.97	SS175ER32728	ER32EW
1-3/4"	ER40	1/8-1	ER40E	7.87	6.10	2.48	SS175ER40787	ER40EW
2"	ER32	3/32-3/4	ER32E	7.28	6.10	1.97	SS200ER32728	ER32EW
2"	ER40	1/8-1	ER40E	8.07	6.70	2.48	SS200ER40807	ER40EW
2-1/2"	ER32	3/32-3/4	ER32E	7.28	6.10	1.97	SS250ER32728	ER32EW

SEE PAGES 156-161 FOR COLLETS.

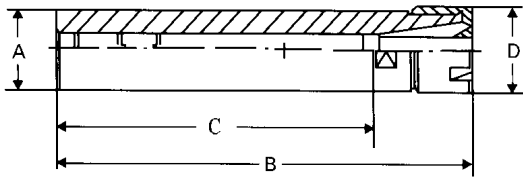
NOTE: Collet wrench is not included with the holder

METRIC SHANK ER COLLET CHUCK (STEPPED O.D.)

A SHANK	COLLET SERIES	COLLET CAPACITY	COLLET NUT	B	C	D	PART #	COLLET WRENCH
7MM	ER11	0.5-7.0MM	ER11M	58MM	45MM	16MM	SS7ER11058	ER11MW
8MM	ER11	0.5-7.0MM	ER11M	70MM	56MM	16MM	SS8ER11070	ER11MW
10MM	ER16	0.5-10.0MM	ER16M	70MM	44MM	22MM	SS10ER16070	ER16MW
10MM	ER16	0.5-10.0MM	ER16M	86MM	60MM	22MM	SS10ER16086	ER16MW
10MM	ER16	0.5-10.0MM	ER16M	120MM	80MM	22MM	SS10ER16120	ER16MW
12MM	ER16	0.5-10.0MM	ER16M	105MM	80MM	22MM	SS12ER16105M	ER16MW
12MM	ER16	0.5-10.0MM	ER16H	105MM	80MM	28MM	SS12ER16105H	ER16HW
12MM	ER20	1.0-13.0MM	ER20M	142MM	100MM	28MM	SS12ER20142	ER20MW
14MM	ER16	0.5-10.0MM	ER16H	55MM	30MM	28MM	SS14ER16055	ER16HW
14MM	ER16	0.5-10.0MM	ER16H	97MM	60MM	28MM	SS14ER16097	ER16HW
15MM	ER20	1.0-13.0MM	ER20M	142MM	100MM	28MM	SS15ER20142	ER20MW
16MM	ER16	0.5-10.0MM	ER16H	90MM	60MM	28MM	SS16ER16090	ER16HW
16MM	ER20	1.0-13.0MM	ER20M	142MM	100MM	28MM	SS16ER20142	ER20MW
20MM	ER11	0.5-7.0MM	ER11M	120MM	100MM	16MM	SS20ER11120	ER11MW
20MM	ER11	0.5-7.0MM	ER11M	180MM	160MM	16MM	SS20ER11180	ER11MW
20MM	ER20	1.0-13.0MM	ER20H	55MM	30MM	34MM	SS20ER20055	ER20HW
20MM	ER25	1-16MM	ER25E	85MM	50MM	42MM	SS20ER25085	ER25EW
20MM	ER25	1-16MM	ER25E	135MM	100MM	42MM	SS20ER25135	ER25EW
20MM	ER32	2-20MM	ER32E	83MM	35MM	50MM	SS20ER32083	ER32EW
20MM	ER32	2-20MM	ER32E	75MM	50MM	50MM	SS20ER32075	ER32EW
22MM	ER11	0.5-7.0MM	ER11M	140MM	120MM	16MM	SS22ER11140	ER11MW
22MM	ER20	1.0-13.0MM	ER20H	72MM	46MM	34MM	SS22ER20072	ER20HW
22MM	ER20	1.0-13.0MM	ER20H	106MM	80MM	34MM	SS22ER20106	ER20HW
22MM	ER25	1-16MM	ER25M	126MM	80MM	35MM	SS22ER25126	ER25MW
25MM	ER16	0.5-10.0MM	ER16M	84MM	60MM	22MM	SS25ER16084	ER16MW
25MM	ER16	0.5-10.0MM	ER16M	124MM	100MM	22MM	SS25ER16124	ER16MW
25MM	ER16	0.5-10.0MM	ER16M	154MM	130MM	22MM	SS25ER16154	ER16MW
25MM	ER16	0.5-10.0MM	ER16M	184MM	160MM	22MM	SS25ER16184	ER16MW
25MM	ER20	1.0-13.0MM	ER20H	86MM	60MM	34MM	SS25ER20086	ER20HW
25MM	ER20	1.0-13.0MM	ER20H	106MM	80MM	34MM	SS25ER20106	ER20HW
25MM	ER25	1-16MM	ER25E	85MM	50MM	42MM	SS25ER25085	ER25EW
25MM	ER32	2-20MM	ER32E	95MM	50MM	50MM	SS25ER32095	ER32EW
25MM	ER40	3-26MM	ER40E	95MM	50MM	63MM	SS25ER40095	ER40EW
30MM	ER20	1.0-13.0MM	ER20H	181MM	155MM	34MM	SS30ER20181	ER20HW
30MM	ER25	1-16MM	ER25E	102MM	70MM	42MM	SS30ER25102	ER25EW
32MM	ER16	0.5-10.0MM	ER16H	124MM	10MM	28MM	SS32ER16124	ER16HW
32MM	ER20	1.0-13.0MM	ER20M	121MM	95MM	28MM	SS32ER20121	ER20MW
32MM	ER20	1.0-13.0MM	ER20H	131MM	105MM	34MM	SS32ER20131	ER20HW
32MM	ER25	1-16MM	ER25E	102MM	70MM	42MM	SS32ER25102	ER25EW
32MM	ER25	1-16MM	ER25E	132MM	100MM	42MM	SS32ER25132	ER25EW
32MM	ER40	3-26MM	ER40E	130MM	70MM	63MM	SS32ER40130	ER40EW
40MM	ER25	1-16MM	ER25M	127MM	100MM	35MM	SS40ER25127	ER25MW
40MM	ER25	1-16MM	ER25M	147MM	120MM	35MM	SS40ER25147	ER25MW
40MM	ER32	2-20MM	ER32E	130MM	85MM	50MM	SS40ER32130	ER32EW
40MM	ER32	2-20MM	ER32E	185MM	155MM	50MM	SS40ER32185	ER32EW
40MM	ER40	3-26MM	ER40E	110MM	50MM	63MM	SS40ER40110	ER40EW
40MM	ER40	3-26MM	ER40E	140MM	80MM	63MM	SS40ER40140	ER40EW
40MM	ER40	3-26MM	ER40E	215MM	155MM	63MM	SS40ER40215	ER40EW
50MM	ER32	2-20MM	ER32E	185MM	155MM	50MM	SS50ER32185	ER32EW
50MM	ER40	3-26MM	ER40E	205MM	170MM	63MM	SS50ER40205	ER40EW
60MM	ER32	2-20MM	ER32E	185MM	155MM	50MM	SS60ER32185	ER32EW
60MM	ER40	3-26MM	ER40E	205MM	170MM	63MM	SS60ER40205	ER40EW
100MM	ER11	0.5-7.0MM	ER11M	140MM	120MM	16MM	SS100ER11140	ER11MW



NOTE: Collet wrench is not included with the holder



STRAIGHT SHANK COLLET CHUCK EXTENSIONS - INCH

A SHANK	COLLET SERIES	COLLET CAPACITY	COLLET NUT	B	C	D	PART #	COLLET WRENCH
1/2	ER8	0.5-5.0MM	ER8M	3.74	3.15	.47	SS050ER8374	ER8MW
1/2	ER11	1/16-1/4	ER11M	6.61	6.06	.63	SS050ER11661	ER11MW
1/2	ER11	1/16-1/4	ER11M	3.94	3.15	.63	SS050ER11394	ER11MW
1/2	ER11	1/16-1/4	ER11H	3.94	3.15	.75	SS050ER113941	ER11HW
5/8	ER11	1/16-1/4	ER11H	6.10	5.51	.75	SS062ER11610	ER11HW
5/8	ER11	1/16-1/4	ER11M	2.50	2.00	.63	SS062ER11250	ER11MW
5/8	ER11	1/16-1/4	ER11M	6.61	6.06	.63	SS062ER11661	ER11MW
5/8	ER11	1/16-1/4	ER11H	6.61	6.06	.75	SS062ER116612	ER11HW
5/8	ER16	1/16-13/32	ER16H	6.18	5.51	1.10	SS062ER16618	ER16HW
3/4	ER16	1/16-13/32	ER16M	5.31	3.94	.87	SS075ER16531	ER16MW
3/4	ER16	1/16-13/32	ER16M	6.40	5.28	.87	SS075ER16640	ER16MW
1"	ER11	1/16-1/4	ER11M	5.51	4.72	.63	SS100ER11551	ER11MW
1"	ER16	1/16-13/32	ER16H	5.28	3.94	1.10	SS100ER16528	ER16HW
1"	ER16	1/16-13/32	ER16H	6.18	5.51	1.10	SS100ER16618	ER16HW
1"	ER20	1/16-1/2	ER20M	6.30	5.28	1.10	SS100ER20630	ER20MW
1"	ER25	1/16-5/8	ER25E	3.35	1.97	1.65	SS100ER25335	ER25EW
1"	ER25	1/16-5/8	ER25E	5.31	3.94	1.65	SS100ER25531	ER25EW
1"	ER25	1/16-5/8	ER25M	3.35	1.97	1.38	SS100ER25335M	ER25MW
1"	ER25	1/16-5/8	ER25M	5.31	3.94	1.38	SS100ER25531M	ER25MW
2-1/2"	ER40	1/8-1	ER40E	8.07	6.70	2.48	SS250ER40807	ER40EW

COLLET WRENCH IS NOT INCLUDED WITH THE HOLDER
SEE PAGES 156-161 FOR COLLETS.

DRILLING

ER COLLET NUT WRENCHES



"M" WRENCH

TO FIT NUT#	WRENCH#
ER8M	ER8MW
ER11M	ER11MW
ER16M	ER16MW
ER20M	ER20MW
ER25M	ER25MW



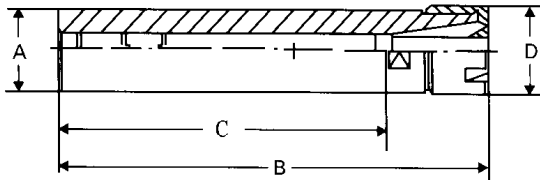
"H" WRENCH

TO FIT NUT#	WRENCH#
ER11H	ER11HW
ER12H	ER11HW
ER16H	ER16HW
ER20H	ER20HW



"E" WRENCH

TO FIT NUT#	WRENCH#
ER16E	ER16EW
ER20E	ER20EW
ER25E	ER25EW
ER32E	ER32EW
ER40E	ER40EW
ER50E	ER50EW



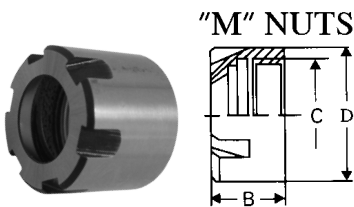
STRAIGHT SHANK COLLET CHUCK EXTENSIONS - METRIC

A SHANK	COLLET SERIES	COLLET CAPACITY	COLLET NUT	B	C	D	PART #	COLLET WRENCH
8MM	ER8	0.5-5.0MM	ER8M	70MM	56MM	12MM	SS8ER8070	ER8MW
8MM	ER8	0.5-5.0MM	ER8M	100MM	80MM	12MM	SS8ER8100	ER8MW
10MM	ER8	0.5-5.0MM	ER8M	70MM	56MM	12MM	SS10ER8070	ER8MW
10MM	ER8	0.5-5.0MM	ER8M	100MM	80MM	12MM	SS10ER8100	ER8MW
12MM	ER8	0.5-5.0MM	ER8M	95MM	80MM	12MM	SS12ER8095	ER8MW
12MM	ER8	0.5-5.0MM	ER8M	140MM	100MM	12MM	SS12ER8140	ER8MW
14MM	ER12	0.5-7.0MM	ER12H	38MM	25MM	19MM	SS14ER12038	ER12HW
16MM	ER11	0.5-10.0MM	ER11M	60MM	40MM	16MM	SS16ER11060	ER11MW
16MM	ER11	0.5-10.0MM	ER11M	120MM	100MM	16MM	SS16ER11120	ER11MW
16MM	ER11	0.5-10.0MM	ER11M	180MM	160MM	16MM	SS16ER11180	ER11MW
20MM	ER11	0.5-7.0MM	ER11H	145MM	115MM	19MM	SS20ER11145	ER11HW
20MM	ER16	0.5-10.0MM	ER16H	55MM	30MM	28MM	SS20ER16055	ER16HW
20MM	ER16	0.5-10.0MM	ER16H	79MM	50MM	28MM	SS20ER16079	ER16HW
20MM	ER16	0.5-10.0MM	ER16H	125MM	100MM	28MM	SS20ER16125	ER16HW
20MM	ER16	0.5-10.0MM	ER16M	135MM	100MM	22MM	SS20ER16135	ER16MW
20MM	ER20	1-13MM	ER20M	142MM	100MM	28MM	SS20ER20142M	ER20MW
20MM	ER20	1-13MM	ER20H	142MM	100MM	34MM	SS20ER20142H	ER20HW
22MM	ER11	0.5-7.0MM	ER11H	130MM	100MM	19MM	SS22ER11130	ER11HW
22MM	ER16	0.5-10.0MM	ER16H	103MM	80MM	28MM	SS22ER16103	ER16HW
22MM	ER16	0.5-10.0MM	ER16H	160MM	134MM	28MM	SS22ER16160	ER16HW
22MM	ER16	0.5-10.0MM	ER16M	149MM	125MM	22MM	SS22ER16149	ER16MW
22MM	ER20	1-13MM	ER20H	140MM	100MM	34MM	SS22ER20140	ER20HW
22MM	ER20	1-13MM	ER20H	160MM	120MM	34MM	SS22ER20160	ER20HW
22MM	ER20	1-13MM	ER20H	120MM	80MM	34MM	SS22ER20120	ER20HW
25MM	ER25	1-16MM	ER25E	135MM	100MM	42MM	SS25ER25135	ER25EW

COLLET WRENCH IS NOT INCLUDED WITH THE HOLDER
SEE PAGES 156-161 FOR COLLETS.

DRILLING

REPLACEMENT ER COLLET NUTS



"M" NUTS



"H" NUT

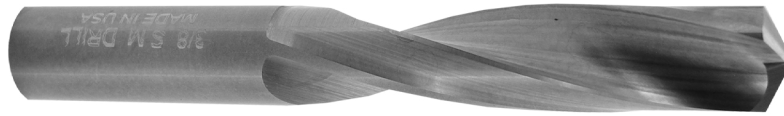


"E" NUT

PART#	D (MM)	B (MM)	C
ER8M	12	10.8	M10 X 0.75
ER11M	16	11.3	M13 X 0.75
ER16M	22	17	M19 X 1
ER20M	28	19	M24 X 1
ER25M	35	20	M30 X 1

PART#	D (MM)	B (MM)	C
ER11H	19	11.3	M14 X 0.75
ER12H	19	12.5	M14 X 0.75
ER16H	28	17	M22 X 1.5
ER20H	34	19	M25 X 1.5

PART#	D (MM)	B (MM)	C
ER16E	32	17.5	M22 X 1.5
ER20E	35	18.5	M25 X 1.5
ER25E	42	20	M32 X 1.5
ER32E	50	22	M40 X 1.5
ER40E	63	25	M50 X 1.5
ER50E	78	35	M64 X 2

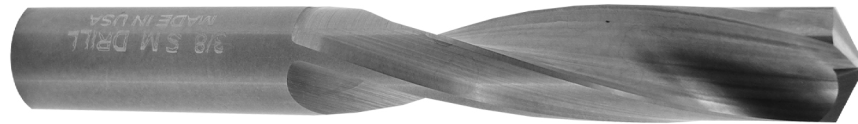
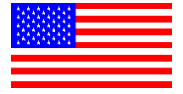


Drills, Screw Machine Solid Carbide, 135° Split Point (fractional sizes)

Drills, Screw Machine Solid Carbide, 135° Split Point (letter sizes)

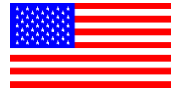
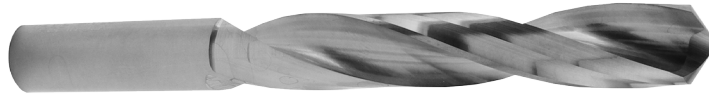
Drill Diameter	Flute Length	Overall Length	Part#
1/8" (.1250)	7/8"	1-7/8"	CDSM-1/8
9/64" (.1406)	15/16"	1-15/16"	CDSM-9/64
5/32" (.1562)	1"	2-1/16"	CDSM-5/32
11/64" (.1719)	1-1/16"	2-1/8"	CDSM-11/64
3/16" (.1875)	1-1/8"	2-3/16"	CDSM-3/16
13/64" (.2031)	1-3/16"	2-1/4"	CDSM-13/64
7/32" (.2187)	1-1/4"	2-3/8"	CDSM-7/32
15/64" (.2344)	1-5/16"	2-7/16"	CDSM-15/64
1/4" (.2500)	1-3/8"	2-1/2"	CDSM1/4
17/64" (.2656)	1-7/16"	2-5/8"	CDSM-17/64
9/32" (.2812)	1-1/2"	2-11/16"	CDSM-9/32
19/64" (.2969)	1-9/16"	2-3/4"	CDSM-19/64
5/16" (.3125)	1-5/8"	2-13/16"	CDSM-5/16
21/64" (.3281)	1-11/16"	2-15/16"	CDSM-21/64
11/32" (.3437)	1-11/16"	3"	CDSM-11/32
23/64" (.3594)	1-3/4"	3-1/16"	CDSM-23/64
3/8" (.3750)	1-13/16"	3-1/8"	CDSM-3/8
25/64" (.3906)	1-7/8"	3-1/4"	CDSM-25/64
13/32" (.4062)	1-15/16"	3-5/16"	CDSM-13/32
27/64" (.4219)	2"	3-3/8"	CDSM-27/64
7/16" (.4375)	2-1/16"	3-7/16"	CDSM-7/16
29/64" (.4531)	2-1/8"	3-9/16"	CDSM-29/64
15/32" (.4687)	2-1/8"	3-5/8"	CDSM-15/32
31/64" (.4844)	2-3/16"	3-11/16"	CDSM-31/64
1/2" (.5000)	2-1/4"	3-3/4"	CDSM-1/2
9/16" (.5625)	2-1/2"	4"	CDSM-9/16
5/8" (.6250)	2-3/4"	4-1/4"	CDSM-5/8
11/16" (.6875)	2-7/8"	4-5/8"	CDSM-11/16
3/4" (.7500)	3-1/8"	5"	CDSM-3/4

Drill Diameter	Flute Length	Overall Length	Part#
A (.2340)	1-5/16"	2-7/16"	CDSM-A
B (.2380)	1-3/8"	2-1/2"	CDSM-B
C (.2420)	1-3/8"	2-1/2"	CDSM-C
D (.2460)	1-3/8"	2-1/2"	CDSM-D
E (.2500)	1-3/8"	2-1/2"	CDSM-E
F (.2570)	1-7/16"	2-5/8"	CDSM-F
G (.2610)	1-7/16"	2-5/8"	CDSM-G
H (.2660)	1-1/2"	2-11/16"	CDSM-H
I (.2720)	1-1/2"	2-11/16"	CDSM-I
J (.2770)	1-1/2"	2-11/16"	CDSM-J
K (.2810)	1-1/2"	2-11/16"	CDSM-K
L (.2900)	1-9/16"	2-3/4"	CDSM-L
M (.2950)	1-9/16"	2-3/4"	CDSM-M
N (.3020)	1-5/8"	2-13/16"	CDSM-N
O (.3160)	1-11/16"	2-15/16"	CDSM-O
P (.3230)	1-11/16"	2-15/16"	CDSM-P
Q (.3320)	1-11/16"	3"	CDSM-Q
R (.3390)	1-11/16"	3"	CDSM-R
S (.3480)	1-3/4"	3-1/16"	CDSM-S
T (.3580)	1-3/4"	3-1/16"	CDSM-T
U (.3680)	1-13/16"	3-1/8"	CDSM-U
V (.3770)	1-7/8"	3-1/4"	CDSM-V
W (.3860)	1-15/16"	3-1/4"	CDSM-W
X (.3970)	1-15/16"	3-5/16"	CDSM-X
Y (.4040)	1-15/16"	3-5/16"	CDSM-Y
Z (.4130)	2"	3-3/8"	CDSM-Z



Drills, Screw Machine, Solid Carbide, 135° Split Point
(number sizes) (number sizes)

Drill Diameter	Flute Length	Overall Length	Part#	Drill Diameter	Flute Length	Overall Length	Part#
#1 (.2280)	1-5/16"	2-7/16"	CDSM-1	#31 (.1200)	7/8"	1-7/8"	CDSM-31
#2 (.2211)	1-5/16"	2-7/16"	CDSM-2	#32 (.1160)	7/8"	1-7/8"	CDSM-32
#3 (.2130)	1-1/4"	2-3/8"	CDSM-3	#33 (.1130)	7/8"	1-7/8"	CDSM-33
#4 (.2090)	1-1/4"	2-3/8"	CDSM-4	#34 (.1110)	7/8"	1-7/8"	CDSM-34
#5 (.2055)	1-1/4"	2-3/8"	CDSM-5	#35 (.1100)	7/8"	1-7/8"	CDSM-35
#6 (.2040)	1-1/4"	2-3/8"	CDSM-6	#36 (.1065)	13/16"	1-13/16"	CDSM-36
#7 (.2010)	1-3/16"	2-1/4"	CDSM-7	#37 (.1040)	13/16"	1-13/16"	CDSM-37
#8 (.1990)	1-3/16"	2-1/4"	CDSM-8	#38 (.1015)	13/16"	1-13/16"	CDSM-38
#9 (.1960)	1-3/16"	2-1/4"	CDSM-9	#39 (.0995)	13/16"	1-13/16"	CDSM-39
#10 (.1935)	1-3/16"	2-1/4"	CDSM-10	#40 (.0980)	13/16"	1-13/16"	CDSM-40
#11 (.1910)	1-3/16"	2-1/4"	CDSM-11	#41 (.0960)	13/16"	1-13/16"	CDSM-41
#12 (.1890)	1-3/16"	2-1/4"	CDSM-12	#42 (.0935)	3/4"	1-3/4"	CDSM-42
#13 (.1850)	1-1/8"	2-3/16"	CDSM-13	#43 (.0890)	3/4"	1-3/4"	CDSM-43
#14 (.1820)	1-1/8"	2-3/16"	CDSM-14	#44 (.0860)	3/4"	1-3/4"	CDSM-44
#15 (.1800)	1-1/8"	2-3/16"	CDSM-15	#45 (.0820)	3/4"	1-3/4"	CDSM-45
#16 (.1770)	1-1/8"	2-3/16"	CDSM-16	#46 (.0810)	3/4"	1-3/4"	CDSM-46
#17 (.1730)	1-1/8"	2-3/16"	CDSM-17	#47 (.0785)	3/4"	1-3/4"	CDSM-47
#18 (.1695)	1-1/16"	2-1/8"	CDSM-18	#48 (.0760)	11/16"	1-11/16"	CDSM-48
#19 (.1660)	1-1/16"	2-1/8"	CDSM-19	#49 (.0730)	11/16"	1-11/16"	CDSM-49
#20 (.1610)	1-1/16"	2-1/8"	CDSM-20	#50 (.0700)	11/16"	1-11/16"	CDSM-50
#21 (.1590)	1-1/16"	2-1/8"	CDSM-21	#51 (.0670)	11/16"	1-11/16"	CDSM-51
#22 (.1570)	1"	2-1/16"	CDSM-22	#52 (.0635)	11/16"	1-11/16"	CDSM-52
#23 (.1540)	1"	2-1/16"	CDSM-23	#53 (.0595)	1/2"	1-1/2"	CDSM-53
#24 (.1520)	1"	2-1/16"	CDSM-24	#54 (.0550)	1/2"	1-1/2"	CDSM-54
#25 (.1495)	1"	2-1/16"	CDSM-25	#55 (.0520)	1/2"	1-1/2"	CDSM-55
#26 (.1470)	1"	2-1/16"	CDSM-26	#56 (.0465)	1/2"	1-1/2"	CDSM-56
#27 (.1440)	1"	2-1/16"	CDSM-27	#57 (.0430)	1/2"	1-1/2"	CDSM-57
#28 (.1405)	15/16"	1-15/16"	CDSM-28	#58 (.0420)	1/2"	1-1/2"	CDSM-58
#29 (.1360)	15/16"	1-15/16"	CDSM-29	#59 (.0410)	1/2"	1-1/2"	CDSM-59
#30 (.1285)	15/16"	1-15/16"	CDSM-30	#60 (.0400)	1/2"	1-1/2"	CDSM-60



**Drills, Jobber Length
Solid Carbide
(fractional sizes)**

**Drills, Jobber Length
Solid Carbide
(letter sizes)**

Drill Diameter	Flute Length	Overall Length	Part#
1/16" (.0625)	3/4"	1-1/2"	CDJ-1/16
5/64" (.0781)	7/8"	1-3/4"	CDJ-5/64
3/32" (.0937)	1"	2"	CDJ-3/32
7/64" (.1094)	1-1/4"	2-1/4"	CDJ-7/64
1/8" (.1250)	1-1/4"	2-1/4"	CDJ-1/8
9/64" (.1406)	1-3/8"	2-1/2"	CDJ-9/64
5/32" (.1562)	1-3/8"	2-1/2"	CDJ-5/32
11/64" (.1719)	1-5/8"	2-3/4"	CDJ-11/64
3/16" (.1875)	1-5/8"	2-3/4"	CDJ-3/16
13/64" (.2031)	1-3/4"	3"	CDJ-13/64
7/32" (.2187)	1-3/4"	3"	CDJ-7/32
15/64" (.2344)	2"	3-1/4"	CDJ-15/64
1/4" (.2500)	2"	3-1/4"	CDJ-1/4
17/64" (.2656)	2-1/8"	3-1/2"	CDJ-17/64
9/32" (.2812)	2-1/8"	3-1/2"	CDJ-9/32
19/64" (.2969)	2-3/8"	3-3/4"	CDJ-19/64
5/16" (.3125)	2-3/8"	3-3/4"	CDJ-5/16
21/64" (.3281)	2-1/2"	4"	CDJ-21/64
11/32" (.3437)	2-1/2"	4"	CDJ-11/32
23/64" (.3594)	2-3/4"	4-1/4"	CDJ-23/64
3/8" (.3750)	2-3/4"	4-1/4"	CDJ-3/8
25/64" (.3906)	2-7/8"	4-1/2"	CDJ-25/64
13/32" (.4062)	2-7/8"	4-1/2"	CDJ-13/32
27/64" (.4219)	2-7/8"	4-1/2"	CDJ-27/64
7/16" (.4375)	2-7/8"	4-1/2"	CDJ-7/16
29/64" (.4531)	3"	4-3/4"	CDJ-29/64
15/32" (.4687)	3"	4-3/4"	CDJ-15/32
31/64" (.4844)	3"	4-3/4"	CDJ-31/64
1/2" (.5000)	3"	4-3/4"	CDJ-1/2
9/16" (.5625)	3-1/4"	5"	CDJ-9/16
5/8" (.6250)	4-1/4"	6"	CDJ-5/8
3/4" (.7500)	4-1/4"	6"	CDJ-3/4

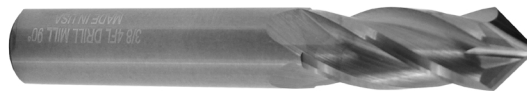
Drill Diameter	Flute Length	Overall Length	Part#
A (.2340)	2"	3-1/4"	CDJ-A
B (.2380)	2"	3-1/4"	CDJ-B
C (.2420)	2"	3-1/4"	CDJ-C
D (.2460)	2"	3-1/4"	CDJ-D
E (.2500)	2"	3-1/4"	CDJ-E
F (.2570)	2"	3-1/4"	CDJ-F
G (.2610)	2-1/8"	3-1/2"	CDJ-G
H (.2660)	2-1/8"	3-1/2"	CDJ-H
I (.2720)	2-1/8"	3-1/2"	CDJ-I
J (.2770)	2-1/8"	3-1/2"	CDJ-J
K (.2810)	2-1/8"	3-1/2"	CDJ-K
L (.2900)	2-1/8"	3-1/2"	CDJ-L
M (.2950)	2-3/8"	3-3/4"	CDJ-M
N (.3020)	2-3/8"	3-3/4"	CDJ-N
O (.3160)	2-3/8"	3-3/4"	CDJ-O
P (.3230)	2-3/8"	3-3/4"	CDJ-P
Q (.3320)	2-1/2"	4"	CDJ-Q
R (.3390)	2-1/2"	4"	CDJ-R
S (.3480)	2-1/2"	4"	CDJ-S
T (.3580)	2-3/4"	4-1/4"	CDJ-T
U (.3680)	2-3/4"	4-1/4"	CDJ-U
V (.3770)	2-3/4"	4-1/4"	CDJ-V
W (.3860)	2-7/8"	4-1/2"	CDJ-W
X (.3970)	2-7/8"	4-1/2"	CDJ-X
Y (.4040)	2-7/8"	4-1/2"	CDJ-Y
Z (.4130)	2-7/8"	4-1/2"	CDJ-Z

Drills, Jobber Length Solid Carbide

(number sizes)

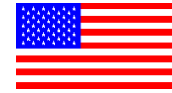
(number sizes)

Drill Diameter	Flute Length	Overall Length	Part#	Drill Diameter	Flute Length	Overall Length	Part#
#1 (.2280)	1-3/4"	3"	CDJ-1	#31 (.1200)	1-1/4"	2-1/4"	CDJ-31
#2 (.2211)	1-3/4"	3"	CDJ-2	#32 (.1160)	1-1/4"	2-1/4"	CDJ-32
#3 (.2130)	1-3/4"	3"	CDJ-3	#33 (.1130)	1-1/4"	2-1/4"	CDJ-33
#4 (.2090)	1-3/4"	3"	CDJ-4	#34 (.1110)	1-1/4"	2-1/4"	CDJ-34
#5 (.2055)	1-3/4"	3"	CDJ-5	#35 (.1100)	1-1/4"	2-1/4"	CDJ-35
#6 (.2040)	1-3/4"	3"	CDJ-6	#36 (.1065)	1-1/4"	2-1/4"	CDJ-36
#7 (.2010)	1-3/4"	3"	CDJ-7	#37 (.1040)	1-1/4"	2-1/4"	CDJ-37
#8 (.1990)	1-3/4"	3"	CDJ-8	#38 (.1015)	1-1/4"	2-1/4"	CDJ-38
#9 (.1960)	1-3/4"	3"	CDJ-9	#39 (.0995)	1-1/4"	2-1/4"	CDJ-39
#10 (.1935)	1-5/8"	2-3/4"	CDJ-10	#40 (.0980)	1"	2"	CDJ-40
#11 (.1910)	1-5/8"	2-3/4"	CDJ-11	#41 (.0960)	1"	2"	CDJ-41
#12 (.1890)	1-5/8"	2-3/4"	CDJ-12	#42 (.0935)	1"	2"	CDJ-42
#13 (.1850)	1-5/8"	2-3/4"	CDJ-13	#43 (.0890)	1"	2"	CDJ-43
#14 (.1820)	1-5/8"	2-3/4"	CDJ-14	#44 (.0860)	1"	2"	CDJ-44
#15 (.1800)	1-5/8"	2-3/4"	CDJ-15	#45 (.0820)	7/8"	1-3/4"	CDJ-45
#16 (.1770)	1-5/8"	2-3/4"	CDJ-16	#46 (.0810)	7/8"	1-3/4"	CDJ-46
#17 (.1730)	1-5/8"	2-3/4"	CDJ-17	#47 (.0785)	7/8"	1-3/4"	CDJ-47
#18 (.1695)	1-5/8"	2-3/4"	CDJ-18	#48 (.0760)	7/8"	1-3/4"	CDJ-48
#19 (.1660)	1-5/8"	2-3/4"	CDJ-19	#49 (.0730)	7/8"	1-3/4"	CDJ-49
#20 (.1610)	1-3/8"	2-3/4"	CDJ-20	#50 (.0700)	7/8"	1-3/4"	CDJ-50
#21 (.1590)	1-3/8"	2-1/2"	CDJ-21	#51 (.0670)	3/4"	1-1/2"	CDJ-51
#22 (.1570)	1-3/8"	2-1/2"	CDJ-22	#52 (.0635)	3/4"	1-1/2"	CDJ-52
#23 (.1540)	1-3/8"	2-1/2"	CDJ-23	#53 (.0595)	3/4"	1-1/2"	CDJ-53
#24 (.1520)	1-3/8"	2-1/2"	CDJ-24	#54 (.0550)	3/4"	1-1/2"	CDJ-54
#25 (.1495)	1-3/8"	2-1/2"	CDJ-25	#55 (.0520)	3/4"	1-1/2"	CDJ-55
#26 (.1470)	1-3/8"	2-1/2"	CDJ-26	#56 (.0465)	3/4"	1-1/2"	CDJ-56
#27 (.1440)	1-3/8"	2-1/2"	CDJ-27	#57 (.0430)	3/4"	1-1/2"	CDJ-57
#28 (.1405)	1-3/8"	2-1/2"	CDJ-28	#58 (.0420)	3/4"	1-1/2"	CDJ-58
#29 (.1360)	1-3/8"	2-1/2"	CDJ-29	#59 (.0410)	3/4"	1-1/2"	CDJ-59
#30 (.1285)	1-1/4"	2-1/4"	CDJ-30	#60 (.0400)	3/4"	1-1/2"	CDJ-60



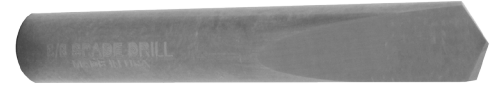
Drill Mills, Solid Carbide, 2 or 4 Flute, 90° Point, Single Ended

Cutter & Shank Diameter	Flute Length	Overall Length	2 Flute Part#	2 Flute w/ Alt Coating	4 Flute Part#	4 Flute w/ Alt Coating
1/8"	1/2"	1-1/2"	CDM2-1/8	CDM2-1/8-ALT	CDM4-1/8	CDM4-1/8-ALT
3/16"	5/8"	2"	CDM2-3/16	CDM2-3/16-ALT	CDM4-3/16	CDM4-3/16-ALT
1/4"	3/4"	2-1/2"	CDM2-1/4	CDM2-1/4-ALT	CDM4-1/4	CDM4-1/4-ALT
5/16"	13/16"	2-1/2"	CDM2-5/16	CDM2-5/16-ALT	CDM4-5/16	CDM4-5/16-ALT
3/8"	1"	2-1/2"	CDM2-3/8	CDM2-3/8-ALT	CDM4-3/8	CDM4-3/8-ALT
7/16"	1"	2-1/2"	CDM2-7/16	CDM2-7/16-ALT	CDM4-7/16	CDM4-7/16-ALT
1/2"	1"	3"	CDM2-1/2	CDM2-1/2-ALT	CDM4-1/2	CDM4-1/2-ALT
5/8"	1-1/4"	3-1/2"	CDM2-5/8	CDM2-5/8-ALT	CDM4-5/8	CDM4-5/8-ALT
3/4"	1-1/2"	4"	CDM2-3/4	CDM2-3/4-ALT	CDM4-3/4	CDM4-3/4-ALT



DRILLS, SPADE Solid Carbide 118° Point

Drill Diameter	Overall Length	Part#	Drill Diameter	Overall Length	Part#
3/32"	1-1/2"	CSD-3/32	5/16"	2-1/2"	CSD-5/16
1/8"	1-1/2"	CSD-1/8	11/32"	2-1/2"	CSD-11/32
5/32"	2"	CSD-5/32	3/8"	2-1/2"	CSD-3/8
3/16"	2"	CSD-3/16	13/32"	2-1/2"	CSD-13/32
7/32"	2"	CSD-7/32	7/16"	2-3/4"	CSD-7/16
1/4"	2"	CSD-1/4	15/32"	2-3/4"	CSD-15/32
9/32"	2"	CSD-9/32	1/2"	3"	CSD-1/2



DRILL, SPOTTING 60°, 90° or 120° Solid Carbide

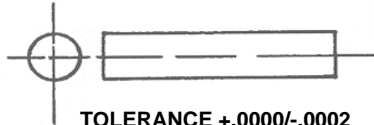
Drill Diameter	Flute Length	Overall Length	Part# 60°	Part# 90°	Part# 120°
1/4"	1"	2-1/2"	CSPD60-1/4	CSPD90-1/4	CSPD120-1/4
1/4"	1-3/8"	4"	CSPD60-1/4-4L	CSPD90-1/4-4L	CSPD120-1/4-4L
3/8"	1"	2-1/2"	CSPD60-3/8	CSPD90-3/8	CSPD120-3/8
3/8"	1-1/2"	6"	CSPD60-3/8-6L	CSPD90-3/8-6L	CSPD120-3/8-6L
1/2"	1-1/4"	3"	CSPD60-1/2	CSPD90-1/2	CSPD120-1/2
1/2"	1-1/2"	6"	CSPD60-1/2-6L	CSPD90-1/2-6L	CSPD120-1/2-6L
5/8"	1-1/4"	3-1/2"	CSPD60-5/8	CSPD90-5/8	CSPD120-5/8
5/8"	2"	6"	CSPD60-5/8-6L	CSPD90-5/8-6L	CSPD120-5/8-6L
3/4"	1-1/2"	4"	CSPD60-3/4	CSPD90-3/4	CSPD120-3/4
3/4"	2"	6"	CSPD60-3/4-6L	CSPD90-3/4-6L	CSPD120-3/4-6L



DRILLS, CENTER 60°, 82° or 90° Solid Carbide

Drill Size	Drill Diameter	Body Diameter	Overall Length	Part# 60°	Part# 82°	Part# 90°
#00	0.025	1/8"	1-1/2"	CCD60-00	CCD82-00	CCD90-00
#0	0.031	1/8"	1-1/2"	CCD60-0	CCD82-0	CCD90-0
1	0.046	1/8"	1-1/2"	CCD60-1	CCD82-1	CCD90-1
1	0.046	1/8"	4"	CCD60-1-4L	CCD82-1-4L	CCD90-1-4L
2	0.078	3/16"	2"	CCD60-2	CCD82-2	CCD90-2
2	0.078	3/16"	4"	CCD60-2-4L	CCD82-2-4L	CCD90-2-4L
3	0.109	1/4"	2"	CCD60-3	CCD82-3	CCD90-3
3	0.109	1/4"	4"	CCD60-3-4L	CCD82-3-4L	CCD90-3-4L
3	0.109	1/4"	6"	CCD60-3-6L	CCD82-3-6L	CCD90-3-6L
4	0.125	5/16"	2-1/2"	CCD60-4	CCD82-4	CCD90-4
4	0.125	5/16"	4"	CCD60-4-4L	CCD82-4-4L	CCD90-4-4L
4	0.125	5/16"	6"	CCD60-4-6L	CCD82-4-6L	CCD90-4-6L
5	0.187	7/16"	2-3/4"	CCD60-5	CCD82-5	CCD90-5
5	0.187	7/16"	4"	CCD60-5-4L	CCD82-5-4L	CCD90-5-4L
5	0.187	7/16"	6"	CCD60-5-6L	CCD82-5-6L	CCD90-5-6L
6	0.218	1/2"	3"	CCD60-6	CCD82-6	CCD90-6
6	0.218	1/2"	4"	CCD60-6-4L	CCD82-6-4L	CCD90-6-4L
6	0.218	1/2"	6"	CCD60-6-6L	CCD82-6-6L	CCD90-6-6L
7	0.25	5/8"	3-1/2"	CCD60-7	CCD82-7	CCD90-7
8	0.312	3/4"	4"	CCD60-8	CCD82-8	CCD90-8





**TOLERANCE +.0000/- .0002
(ALSO AVAILABLE +.0002/- .0000)**

CYLINDRICAL (DRILL) BLANKS

M2, M42, ASP30 & T15PM

These cylindrical blanks are hardened and ground on the O.D. They are ideal for grinding into step drills, counterbores, and other end cutting tools. They can be also be used for punches, roll pins, step pins and many other tool room applications.

CAT. NO. SUFFIX	M2 -M	M42 -H	ASP30 -A30	T15PM -P
1/64 DIA X 1.5	-M			
1/32 DIA X 1.5	-M	-H		
3/64 DIA X 1.75	-M	-H		
1/16 DIA X 1.875	-M	-H		
1/16 DIA X 2.5			-A30	
5/64 DIA X 2	-M	-H		
3/32 DIA X 2.25	-M	-H		
3/32 DIA X 2.5			-A30	
7/64 DIA 2.75	-M	-H		
1/8 DIA X 2.5	-M		-A30	
1/8 DIA X 2.75	-M	-H		
1/8 DIA X 4	-M		-A30	
1/8 DIA X 6	-M		-A30	-P
9/64 DIA X 3	-M	-H		
5/32 DIA 3.25	-M	-H		
11/64 DIA X 3.25	-M	-H		
3/16 DIA X 2.5	-M		-A30	
3/16 DIA X 3.5	-M	-H		
3/16 DIA X 4	-M		-A30	-P
3/16 DIA X 6	-M		-A30	-P
13/64 DIA X 3.625	-M	-H		
7/32 DIA X 3.75	-M	-H		
15/64 DIA X 3.875	-M	-H		
1/4 DIA X 2.5	-M		-A30	-P
1/4 DIA X 4	-M	-H	-A30	-P
1/4 DIA X 6	-M		-A30	-P
17/64 DIA X 4.125	-M	-H		
9/32 DIA X 4.25	-M	-H		
19/64 DIA X 4.375	-M	-H		
5/16 DIA X 4	-M		-A30	-P
5/16 DIA X 4.5	-M	-H		
5/16 DIA X 6	-M		-A30	-P
21/64 DIA X 4.625	-M	-H		
11/32 DIA X 4.75	-M	-H		
23/64 DIA X 4.875	-M	-H		
3/8 DIA X 4	-M		-A30	-P
3/8 DIA X 5	-M	-H		
3/8 DIA X 6	-M		-A30	-P

CAT. NO. SUFFIX	M2 -M	M42 -H	ASP30 -A30	T15PM -P
25/64 DIA X 5.125	-M	-H		
13/32 DIA X 5.25	-M	-H		
27/64 DIA X 5.375	-M	-H		
7/16 DIA X 5.5	-M	-H		
7/16 DIA X 6	-M		-A30	-P
29/64 DIA X 5.625	-M	-H		
15/32 DIA X 5.75	-M	-H		
31/64 DIA X 5.875	-M	-H		
1/2 DIA X 4	-M		-A30	-P
1/2 DIA X 6	-M	-H	-A30	-P
33/64 DIA X 6	-M	-H		
33/64 DIA X 9	-M	-H		
33/64 DIA X 12	-M	-H		
17/32 DIA X 6	-M	-H		
17/32 DIA X 9	-M	-H		
17/32 DIA X 12	-M	-H		
35/64 DIA X 6	-M	-H		
35/64 DIA X 9	-M	-H		
35/64 DIA X 12	-M	-H		
9/16 DIA X 6	-M	-H		-P
9/16 DIA X 9	-M	-H		
9/16 DIA X 12	-M	-H		
37/64 DIA X 6	-M	-H		
37/64 DIA X 9	-M	-H		
37/64 DIA X 12	-M	-H		
19/32 DIA X 6	-M	-H		
19/32 DIA X 9	-M	-H		
19/32 DIA X 12	-M	-H		
39/64 DIA X 6	-M	-H		
39/64 DIA X 9	-M	-H		
39/64 DIA X 12	-M	-H		
5/8 DIA X 4	-M		-A30	-P
5/8 DIA X 6	-M	-H	-A30	-P
5/8 DIA X 9	-M	-H		
5/8 DIA X 12	-M	-H		
41/64 DIA X 6	-M	-H		
41/64 DIA X 9	-M	-H		
41/64 DIA X 12	-M	-H		

CAT. NO. SUFFIX	M2 -M	M42 -H	ASP30 -A30	T15PM -P
21/32 DIA X 6	-M	-H		
21/32 DIA X 9	-M	-H		
21/32 DIA X 12	-M	-H		
43/64 DIA X 6	-M	-H		
43/64 DIA X 9	-M	-H		
43/64 DIA X 12	-M	-H		
11/16 DIA X 6	-M	-H		
11/16 DIA X 9	-M	-H		
11/16 DIA X 12	-M	-H		
45/64 DIA X 6	-M	-H		
45/64 DIA X 9	-M	-H		
45/64 DIA X 12	-M	-H		
23/32 DIA X 6	-M	-H		
23/32 DIA X 9	-M	-H		
23/32 DIA X 12	-M	-H		
47/64 DIA X 6	-M	-H		
47/64 DIA X 9	-M	-H		
47/64 DIA X 12	-M	-H		
3/4 DIA X 4	-M		-A30	-P
3/4 DIA X 6	-M	-H	-A30	-P
3/4 DIA X 9	-M	-H		
3/4 DIA X 12	-M	-H		
49/64 DIA X 6	-M	-H		
49/64 DIA X 9	-M	-H		
49/64 DIA X 12	-M	-H		
25/32 DIA X 6	-M	-H		
25/32 DIA X 9	-M	-H		
25/32 DIA X 12	-M	-H		
51/64 DIA X 6	-M	-H		
51/64 DIA X 9	-M	-H		
51/64 DIA X 12	-M	-H		
13/16 DIA X 6	-M	-H		
13/16 DIA X 9	-M	-H		
13/16 DIA X 12	-M	-H		
53/64 DIA X 6	-M	-H		
53/64 DIA X 9	-M	-H		
53/64 DIA X 12	-M	-H		

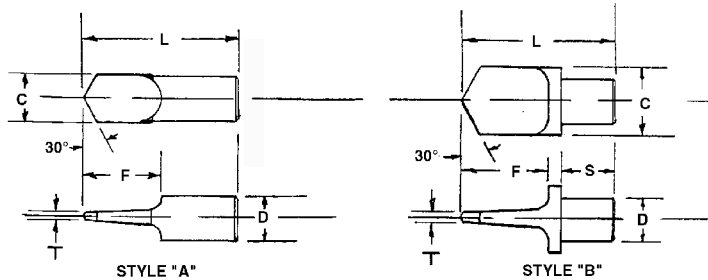
CAT. NO. SUFFIX	M2 -M	M42 -H	ASP30 -A30	T15PM -P
27/32 DIA X 6	-M	-H		
27/32 DIA X 9	-M	-H		
27/32 DIA X 12	-M	-H		
55/64 DIA X 6	-M	-H		
55/64 DIA X 9	-M	-H		
55/64 DIA X 12	-M	-H		
7/8 DIA X 6	-M	-H	-A30	-P
7/8 DIA X 9	-M	-H		
7/8 DIA X 12	-M	-H		
57/64 DIA X 6	-M	-H		
57/64 DIA X 9	-M	-H		
57/64 DIA X 12	-M	-H		
29/32 DIA X 6	-M	-H		
29/32 DIA X 9	-M	-H		
29/32 DIA X 12	-M	-H		
59/64 DIA X 6	-M	-H		
59/64 DIA X 9	-M	-H		
59/64 DIA X 12	-M	-H		
15/16 DIA X 6	-M	-H		
15/16 DIA X 9	-M	-H		
15/16 DIA X 12	-M	-H		
61/64 DIA X 6	-M	-H		
61/64 DIA X 9	-M	-H		
61/64 DIA X 12	-M	-H		
31/32 DIA X 6	-M	-H		
31/32 DIA X 9	-M	-H		
31/32 DIA X 12	-M	-H		
63/64 DIA X 6	-M	-H		
63/64 DIA X 9	-M	-H		
63/64 DIA X 12	-M	-H		
1" DIA X 6	-M	-H	-A30	-P
1" DIA X 9	-M	-H		
1" DIA X 12	-M	-H		

Metric Drill Blanks also available. Call with requests.

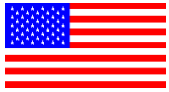
FLAT DRILL BLANKS HARDENED AND GROUND FLAT DRILL BLANKS



- Ready for step grinding to suit your job
- Eliminate flute grinding or milling
- Can be sharpened for right or left hand operation
- Short lengths for screw machine use
- No need to cut off length



M2 Cat. No.	T15pm Cat. No.	STYLE	D-.001	L	F	C + .010	S	T
FLDR-8	FLDR-8P	A	1/4"	2"	3/4"	1/4"	--	.050
FLDR-12	FLDR-12P	A	3/8"	2-1/4"	1"	3/8"	--	.060
FLDR-16	FLDR-16P	A	1/2"	2-1/2"	1-1/8"	1/2"	--	.070
FLDR-20	FLDR-20P	A	5/8"	2-3/4"	1-1/4"	5/8"	--	.090
FLDR-24	FLDR-24P	A	3/4"	3"	1-3/8"	3/4"	--	.100
FLDR-32	FLDR-32P	A	1"	3-1/2"	1-3/4"	1"	--	.110
FLDR-40	FLDR-40P	B	1"	3-1/2"	1-3/4"	1-1/4"	1-1/4"	.188
FLDR-48	FLDR-48P	B	1"	3-1/2"	1-1/2"	1-1/2"	1-1/4"	.218



ENDMILLS, STUB LENGTH SOLID CARBIDE

Uncoated* Single End Square with 2, 3 or 4 Flutes

* For coating options, see listings at the bottom of this page



Diameter	Flute Length	Overall Length	Uncoated Part# 2-Flute	Uncoated Part# 3-Flute	Uncoated Part# 4-Flute
1/32"	1/16"	1-1/2"	EMSC2-1/32	EMSC3-1/32	EMSC4-1/32
3/64"	3/32"	1-1/2"	EMSC2-3/64	EMSC3-3/64	EMSC4-3/64
1/16"	1/8"	1-1/2"	EMSC2-1/16	EMSC3-1/16	EMSC4-1/16
3/32"	3/16"	1-1/2"	EMSC2-3/32	EMSC3-3/32	EMSC4-3/32
1/8"	1/4"	1-1/2"	EMSC2-1/8	EMSC3-1/8	EMSC4-1/8
5/32"	5/16"	2"	EMSC2-5/32	EMSC3-5/32	EMSC4-5/32
3/16"	3/8"	2"	EMSC2-3/16	EMSC3-3/16	EMSC4-3/16
7/32"	7/16"	2"	EMSC2-7/32	EMSC3-7/32	EMSC4-7/32
1/4"	1/2"	2"	EMSC2-1/4	EMSC3-1/4	EMSC4-1/4
5/16"	1/2"	2"	EMSC2-5/16	EMSC3-5/16	EMSC4-5/16
3/8"	5/8"	2"	EMSC2-3/8	EMSC3-3/8	EMSC4-3/8
7/16"	5/8"	2-1/2"	EMSC2-7/16	EMSC3-7/16	EMSC4-7/16
1/2"	5/8"	2-1/2"	EMSC2-1/2	EMSC3-1/2	EMSC4-1/2
5/8"	3/4"	3"	EMSC2-5/8	EMSC3-5/8	EMSC4-5/8
3/4"	1"	3"	EMSC2-3/4	EMSC3-3/4	EMSC4-3/4
1"	1"	3"	EMSC2-1	EMSC3-1	EMSC4-1

ENDMILLS, LONG SOLID CARBIDE

Uncoated* Single End Square with 2 or 4 Flutes



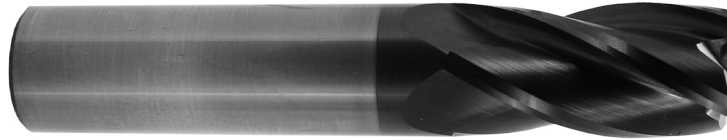
Diameter	Flute Length	Overall Length	Uncoated Part# 2-Flute	Uncoated Part# 4-Flute
1/8"	1"	3"	EMLC2-1/8	EMLC4-1/8
3/16"	1-1/8"	3"	EMLC2-3/16	EMLC4-3/16
1/4"	1-1/2"	4"	EMLC2-1/4	EMLC4-1/4
1/4"	1-1/2"	6"	EMLC2-1/4-6L	EMLC4-1/4-6L
5/16"	1-5/8"	4"	EMLC2-5/16	EMLC4-5/16
5/16"	1-3/4"	6"	EMLC2-5/16-6L	EMLC4-5/16-6L
3/8"	1-3/4"	4"	EMLC2-3/8	EMLC4-3/8
3/8"	3"	6"	EMLC2-3/8-6L	EMLC4-3/8-6L
1/2"	1-1/2"	6"	EMLC2-1/2	EMLC4-1/2
1/2"	3"	6"	EMLC2/3-1/2	EMLC4/3-1/2
5/8"	3"	6"	EMLC2-5/8	EMLC4-5/8
3/4"	3"	6"	EMCL2-3/4	EMCL4-3/4
3/4"	4"	7"	EMCL2-3/4-7L	EMCL4-3/4-7L
1"	3"	6"	EMCL2-1	EMCL4-1
1"	4"	7"	EMCL2-1-7L	EMCL4-1-7L

* For coated endmills add designation shown below to the end of the part numbers listed above

-TIN - A general purpose coating offering wear resistance and reduced friction. Can provide up to 4 times the tool life at 2 times the machining rate vs uncoated.

-TICN - High abrasion resistance, lower friction and 80% harder than TIN coating but with a lower temperature threshold. Can provide 2 to 4 times the tool life over TIN

-ALTIN - Has the highest temperature resistance while maintaining a high degree of surface hardness. Best choice for dry machining. A good choice for titanium & stainless alloys, inconel, and cast iron.



ENDMILLS, SOLID CARBIDE

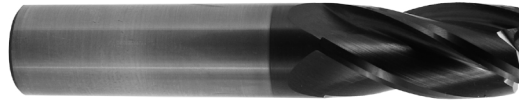
Uncoated* Single End Square with 2, 3 or 4 Flutes

* For coating options, see listings at the bottom of this page

Diameter	Flute Length	Overall Length	Uncoated Part#	Uncoated Part#	Uncoated Part#
			2-Flute	3-Flute	4-Flute
1/64"	1/16"	1-1/2"	EMC2-1/64	EMC3-1/64	EMC4-1/64
1/32"	3/32"	1-1/2"	EMC2-1/32	EMC3-1/32	EMC4-1/32
3/64"	1/8"	1-1/2"	EMC2-3/64	EMC3-3/64	EMC4-3/64
1/16"	3/16"	1-1/2"	EMC2-1/16	EMC3-1/16	EMC4-1/16
5/64"	1/4"	1-1/2"	EMC2-5/64	EMC3-5/64	EMC4-5/64
3/32"	3/8"	1-1/2"	EMC2-3/32	EMC3-3/32	EMC4-3/32
7/64"	3/8"	1-1/2"	EMC2-7/64	EMC3-7/64	EMC4-7/64
1/8"	1/2"	1-1/2"	EMC2-1/8	EMC3-1/8	EMC4-1/8
9/64"	9/16"	2"	EMC2-9/64	EMC3-9/64	EMC4-9/64
5/32"	9/16"	2"	EMC2-5/32	EMC3-5/32	EMC4-5/32
11/64"	9/16"	2"	EMC2-11/64	EMC3-11/64	EMC4-11/64
3/16"	5/8"	2"	EMC2-3/16	EMC3-3/16	EMC4-3/16
13/64"	5/8"	2-1/2"	EMC2-13/64	EMC3-13/64	EMC4-13/64
7/32"	5/8"	2-1/2"	EMC2-7/32	EMC3-7/32	EMC4-7/32
15/64"	3/4"	2-1/2"	EMC2-15/64	EMC3-15/64	EMC4-15/64
1/4"	3/4"	2-1/2"	EMC2-1/4	EMC3-1/4	EMC4-1/4
17/64"	7/8"	2-1/2"	EMC2-17/64	EMC3-17/64	EMC4-17/64
9/32"	7/8"	2-1/2"	EMC2-9/32	EMC3-9/32	EMC4-9/32
19/64"	7/8"	2-1/2"	EMC2-19/64	EMC3-19/64	EMC4-19/64
5/16"	7/8"	2-1/2"	EMC2-5/16	EMC3-5/16	EMC4-5/16
21/64"	7/8"	2-1/2"	EMC2-21/64	EMC3-21/64	EMC4-21/64
11/32"	7/8"	2-1/2"	EMC2-11/32	EMC3-11/32	EMC4-11/32
23/64"	7/8"	2-1/2"	EMC2-23/64	EMC3-23/64	EMC4-23/64
3/8"	7/8"	2-1/2"	EMC2-3/8	EMC3-3/8	EMC4-3/8
25/64"	7/8"	2-1/2"	EMC2-25/64	EMC3-25/64	EMC4-25/64
13/32"	7/8"	2-1/2"	EMC2-13/32	EMC3-13/32	EMC4-13/32
27/64"	7/8"	2-1/2"	EMC2-27/64	EMC3-27/64	EMC4-27/64
7/16"	1"	2-1/2"	EMC2-7/16	EMC3-7/16	EMC4-7/16
29/64"	1"	3"	EMC2-29/64	EMC3-29/64	EMC4-29/64
15/32"	1"	3"	EMC2-15/32	EMC3-15/32	EMC4-15/32
31/64"	1"	3"	EMC2-31/64	EMC3-31/64	EMC4-31/64
1/2"	1"	3"	EMC2-1/2	EMC3-1/2	EMC4-1/2

* For coated endmills add designation shown below to the end of the part numbers listed above

- TIN** - A general purpose coating offering wear resistance and reduced friction. Can provide up to 4 times the tool life at 2 times the machining rate vs uncoated.
- TICN** - High abrasion resistance, lower friction and 80% harder than TIN coating but with a lower temperature threshold. Can provide 2 to 4 times the tool life over TIN
- ALTIN** - Has the highest temperature resistance while maintaining a high degree of surface hardness. Best choice for dry machining. A good choice for titanium & stainless alloys, inconel, and cast iron.



ENDMILLS, SOLID CARBIDE

Uncoated* Single End Square with 2, 3 or 4 Flutes

* For coating options, see listings at the bottom of this page

Diameter	Flute Length	Overall Length	Uncoated Part# 2-Flute	Uncoated Part# 3-Flute	Uncoated Part# 4-Flute
33/64"	1-1/4"	3-1/2"	EMC2-33/64	EMC3-33/64	EMC4-33/64
17/32"	1-1/4"	3-1/2"	EMC2-17/32	EMC3-17/32	EMC4-17/32
35/64"	1-1/4"	3-1/2"	EMC2-35/64	EMC3-35/64	EMC4-35/64
9/16"	1-1/4"	3-1/2"	EMC2-9/16	EMC3-9/16	EMC4-9/16
37/64"	1-1/4"	3-1/2"	EMC2-37/64	EMC3-37/64	EMC4-37/64
19/32"	1-1/4"	3-1/2"	EMC2-19/32	EMC3-19/32	EMC4-19/32
39/64"	1-1/4"	3-1/2"	EMC2-39/64	EMC3-39/64	EMC4-39/64
5/8"	1-1/4"	3-1/2"	EMC2-5/8	EMC3-5/8	EMC4-5/8
41/64"	1-1/2"	4"	EMC2-41/64	EMC3-41/64	EMC4-41/64
21/32"	1-1/2"	4"	EMC2-21/32	EMC3-21/32	EMC4-21/32
43/64"	1-1/2"	4"	EMC2-43/64	EMC3-43/64	EMC4-43/64
11/16"	1-1/2"	4"	EMC2-11/16	EMC3-11/16	EMC4-11/16
45/64"	1-1/2"	4"	EMC2-45/64	EMC3-45/64	EMC4-45/64
23/32"	1-1/2"	4"	EMC2-23/32	EMC3-23/32	EMC4-23/32
47/64"	1-1/2"	4"	EMC2-47/64	EMC3-47/64	EMC4-47/64
3/4"	1-1/2"	4"	EMC2-3/4	EMC3-3/4	EMC4-3/4
49/64"	1-1/2"	4"	EMC2-49/64	EMC3-49/64	EMC4-49/64
25/32"	1-1/2"	4"	EMC2-25/32	EMC3-25/32	EMC4-25/32
51/64"	1-1/2"	4"	EMC2-51/64	EMC3-51/64	EMC4-51/64
13/16"	1-1/2"	4"	EMC2-13/16	EMC3-13/16	EMC4-13/16
53/64"	1-1/2"	4"	EMC2-53/64	EMC3-53/64	EMC4-53/64
27/32"	1-1/2"	4"	EMC2-27/32	EMC3-27/32	EMC4-27/32
55/64"	1-1/2"	4"	EMC2-55/64	EMC3-55/64	EMC4-55/64
7/8"	1-1/2"	4"	EMC2-7/8	EMC3-7/8	EMC4-7/8
57/64"	1-1/2"	4"	EMC2-57/64	EMC3-57/64	EMC4-57/64
29/32"	1-1/2"	4"	EMC2-29/32	EMC3-29/32	EMC4-29/32
59/64"	1-1/2"	4"	EMC2-59/64	EMC3-59/64	EMC4-59/64
15/16"	1-1/2"	4"	EMC2-15/16	EMC3-15/16	EMC4-15/16
61/64"	1-1/2"	4"	EMC2-61/64	EMC3-61/64	EMC4-61/64
31/32"	1-1/2"	4"	EMC2-31/32	EMC3-31/32	EMC4-31/32
63/64"	1-1/2"	4"	EMC2-63/64	EMC3-63/64	EMC4-63/64
1"	1-1/2"	4"	EMC2-1	EMC3-1	EMC4-1

* For coated endmills add designation shown below to the end of the part numbers listed above

- TIN** - A general purpose coating offering wear resistance and reduced friction. Can provide up to 4 times the tool life at 2 times the machining rate vs uncoated.
- TICN** - High abrasion resistance, lower friction and 80% harder than TIN coating but with a lower temperature threshold. Can provide 2 to 4 times the tool life over TIN
- ALTIN** - Has the highest temperature resistance while maintaining a high degree of surface hardness. Best choice for dry machining. A good choice for titanium & stainless alloys, inconel, and cast iron.

ENDMILLS, ROUGHING SOLID CARBIDE

Uncoated* Single End Square with 4 Flutes



Diameter	Flute Length	Overall Length	Uncoated Part# 4-Flute
1/8"	3/8"	1-1/2"	EMRC-1/8
3/16"	5/8"	2"	EMRC-3/16
1/4"	3/4"	2-1/2"	EMRC-1/4
1/4"	1-1/8"	3"	EMRC-1/4-3L
1/4"	1-1/2"	4"	EMRC-1/4-4L
5/16"	3/4"	2-1/2"	EMRC-5/16
5/16"	1-1/4"	3"	EMRC-5/16-3L
5/16"	1-5/8"	4"	EMRC-5/16-4L
3/8"	1"	2-1/2"	EMRC-3/8
3/8"	1-1/4"	3"	EMRC-3/8-3L
3/8"	1-3/4"	4"	EMRC-3/8-4L
7/16"	1"	3"	EMRC-7/16
7/16"	2"	4"	EMRC-7/16-4L
1/2"	1-1/4"	3"	EMRC-1/2
1/2"	2"	4"	EMRC-1/2-4L
1/2"	3"	6"	EMRC-1/2-6L
5/8"	1-1/4"	3-1/2"	EMRC-5/8
5/8"	2-1/4"	5"	EMRC-5/8-5L
5/8"	3"	6"	EMRC-5/8-6L
3/4"	1-1/2"	4"	EMRC-3/4
3/4"	2-1/4"	5"	EMRC-3/4-5L
3/4"	3"	6"	EMRC-3/4-6L
1"	1-1/2"	4"	EMRC-1
1"	2-1/4"	5"	EMRC-1-5L
1"	3"	6"	EMRC-1-6L



*For coated endmills add designation shown below to the end of the part numbers to the left

-TICN - High abrasion resistance, lower friction and 80% harder than TIN coating but with a lower temperature threshold. Can provide 2 to 4 times the tool life over TIN.

-ALTIN - Has the highest temperature resistance while maintaining a high degree of surface hardness. Best choice for dry machining. A good choice for titanium & stainless alloys, inconel, and cast iron.

ENDMILLS

HIGH PERFORMANCE SOLID CARBIDE ENDMILLS - SHOWN ON NEXT PAGE

Unique high performance 4 flute finishing variable-indexed acclerator carbide end mills cut stainless steel and other tough alloys at high metal removal rates. Special tool geometrics offer reduced vibration, greater strength, tool life and feeds & speeds.

- Variable indexed flute to flute; Reduces vibrations allowing increased feeds & speeds.
- Eccentric-radial O.D. relieved; Increases tool strength allowing greater feeds & speeds.
- Hard coated for heavy fast metal removal rates can be used dry.
- Shank O.D. coolant groove-each flute; to maximize cooling and chip evacuation velocity.
- Eccentric O.D. primary relief. • Flute diameter + .000-.002
- 35° Helix/Rhc-Rhs • Shank diameter - .0001-.0004
- Std with corner radius

H.P. SQUARE END SOLID CARBIDE ENDMILLS

Diameter	Flute Length	Overall Length	Stub Length Part# 4-Flute	Regular Part# 4-Flute	Long Reach Part# 4-Flute
1/8"	1/4"	1-1/2"	EMHSS-1/8	-	-
1/8"	1/2"	1-1/2"	-	EMHS-1/8	-
3/16"	1/4"	2"	EMHSS-3/16	-	-
3/16"	5/8"	2"	-	EMHS-3/16	-
1/4"	5/16"	2"	EMHSS-1/4	-	-
1/4"	3/4"	2-1/2"	-	EMHS-1/4	-
1/4"	3/4"	4"	-	-	EMHSL-1/4
5/16"	3/8"	2"	EMHSS-5/16	-	-
5/16"	7/8"	2-1/2"	-	EMHS-5/16	-
5/16"	7/8"	4"	-	-	EMHSL-5/16
3/8"	1/2"	2"	EMHSS-3/8	-	-
3/8"	1"	2-1/2"	-	EMHS-3/8	-
3/8"	1"	4"	-	-	EMHSL-3/8
7/16"	5/8"	2-1/2"	EMHSS-7/16	-	-
7/16"	1-1/8"	2-3/4"	-	EMHS-7/16	-
1/2"	5/8"	2-1/2"	EMHSS-1/2	-	-
1/2"	1-1/4"	3"	-	EMHS-1/2	-
1/2"	1-1/4"	4"	-	-	EMHSL-1/2
1/2"	1-1/4"	6"	-	-	EMHSEL-1/2
5/8"	1"	3"	EMHSS-5/8	-	-
5/8"	1-1/2"	3-1/2"	-	EMHS-5/8	-
5/8"	1-1/2"	6"	-	-	EMHSL-5/8
3/4"	1"	3"	EMHSS-3/4	-	-
3/4"	1-3/4"	4"	-	EMHS-3/4	-
3/4"	1-3/4"	6"	-	-	EMHSL-3/4
1"	1"	3"	EMHSS-1	-	-
1"	1-3/4"	4"	-	EMHS-1	-
1"	1-3/4"	6"	-	-	EMHSL-1

H.P. BALL END CARBIDE ENDMILLS

Diameter	Flute Length	Overall Length	Stub Length Part# 4-Flute	Regular Part# 4-Flute
1/8"	1/4"	1-1/2"	EMHBS-1/8	-
1/8"	1/2"	1-1/2"	-	EMHB-1/8
3/16"	1/4"	2"	EMHBS-3/16	-
3/16"	5/8"	2"	-	EMHB-3/16
1/4"	5/16"	2"	EMHBS-1/4	-
1/4"	3/4"	2-1/2"	-	EMHB-1/4
5/16"	3/8"	2"	EMHBS-5/16	-
5/16"	7/8"	2-1/2"	-	EMHB-5/16
3/8"	1/2"	2"	EMHBS-3/8	-
3/8"	1"	2-1/2"	-	EMHB-3/8
7/16"	5/8"	2-1/2"	EMHBS-7/16	-
7/16"	1-1/8"	2-3/4"	-	EMHB-7/16
1/2"	5/8"	2-1/2"	EMHBS-1/2	-
1/2"	1-1/4"	3"	-	EMHB-1/2
5/8"	1"	3"	EMHBS-5/8	-
5/8"	1-1/2"	3-1/2"	-	EMHB-5/8
3/4"	1"	3"	EMHBS-3/4	-
3/4"	1-3/4"	4"	-	EMHB-3/4
1"	1"	3"	EMHBS-1	-
1"	1-3/4"	4"	-	EMHB-1



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