



**ROCK RIVER TOOL INC.**

**STANDARD AND SPECIAL  
CARBIDE TIPPED CUTTING TOOLS**



**MADE IN USA**



**PRICED CATALOG  
NOVEMBER 2023**

2953 63rd Avenue East, Bradenton, FL 34203 Phone (800) 345-8924 Fax (800) 867-9312

E-Mail: [sales@rockrivertool.com](mailto:sales@rockrivertool.com) [www.rockrivertool.com](http://www.rockrivertool.com)



# COMPARISON CHART OF CARBIDE TIPPED

DESCRIPTION - USE	FRAC. PAGE	METRIC PAGE	TOOL TYPE	CJT	CLEVELAND	FULLERTON	CHICAGO LATROBE	MORSE	PTD/DORMER	IMCO
<b>DRILLS -</b>										
Die Drill - Negative Edge 118° Point	12	12	2670	—	—	—	HD	5423	D000	—
Die Drill - Negative Edge 140° Point	12	—	2671	—	—	—	—	—	—	—
Die Drill - Positive Edge 118° Point	12	12	2672	150	760	40 HD	—	—	—	4850
Die Drill - Positive Edge 140° Point	12	—	2673	—	—	—	—	—	—	—
Die Drill - Spade Type 120° Point	13	—	2674	152	—	—	—	5420	—	—
Die Drill - Spade Type 140° Point	13	—	2675	—	—	—	—	—	—	—
Jobbers Length - 118° Regular Point	14	15	2600	120	2727	40 CT	CTD	5330	D444	2850
Jobbers Length - 135° Split Point	14	15	2601	125	—	—	—	—	—	—
Jobbers Length Tanged - 118° Regular Point	16	17	2690	—	—	—	—	—	—	—
Jobbers Length Tanged - 135° Split Point	16	17	2691	—	—	—	—	—	—	—
Stub Length - 118° Regular Point	18-19	19	2640	110	—	—	—	—	—	—
Stub Length - 135° Split Point	18-19	19	2641	115	—	—	—	—	—	—
Taper Length - 118° Regular Point	20	21	2630	130	2745	40 TL	TLD	5314	D555	3850
Taper Length - 135° Split Point	20	21	2631	—	—	—	—	—	—	—
Taper Shank - 118° Regular Point	22	—	2660	140	2740	40 TLT	TSD	5302	D999	—
Taper Shank - 135° Split Point	22	—	2661	—	—	—	—	—	—	—
Aircraft Extension - 6" Length	23	—	2610	—	—	—	—	—	—	—
Aircraft Extension - 12" Length	23	—	2611	129	—	—	—	—	—	—
Jobber Length Cobalt Drill - 135° Split Point	24	—	2699	—	—	—	—	—	—	—
Jobbers Length Solid Carbide Drill - 118° Split Point	25	—	2860	—	—	—	—	—	—	—
Coolant Fed - Short Length - 125° Point	26	28	2652	171	—	—	—	—	—	—
Coolant Fed - Long Length - 125° Point	27	27	2650	170	—	—	—	—	—	—
Coolant Fed - Extra Long - 125° Point	28	—	2658	172	—	—	—	—	—	—
Silver & Deming - 118° Regular Point	29	—	2616	163	—	—	—	—	—	—
Silver & Deming - 135° Split Point	29	—	2618	—	—	—	—	—	—	—
Spot/Center (CNC) 90° Short or Regular Length	29	—	2647/2677	—	—	—	—	—	—	—
Spot/Center (CNC) 120° Short or Regular Length	29	—	2648/2678	—	—	—	—	—	—	—
Spot/Center (CNC) 140° Short or Regular Length	29	—	2649/2679	—	—	—	—	—	—	—
Reduced Shank Diameter - Stub Length	30	—	2640/2641	—	—	—	—	—	—	—
Reduced Shank Diameter - Jobbers Length	30	—	2600/2601	—	—	—	—	—	—	—
Reduced Shank Diameter - Hard Steel Die	30	—	2670/2672	—	—	—	—	—	—	—
Masonry Drill	31	—	2681-4	—	Yes	—	—	Yes	Yes	—
Glass & Tile Drill	31	—	2680	162	—	—	—	5467	PG 6	—
Core Drill - Straight Shank	32	33	2620	—	—	—	—	5456	—	—
Core Drill - Taper Shank	32	33	2622	410	—	—	—	5454	—	—
<b>CENTERS -</b>										
Morse, B&S, Jarno Taper (Full & Half)	34	—	2592-7	—	790	—	—	5292-7	—	—
<b>REAMERS -</b>										
Stub Length - Straight Flutes	35	—	2430	—	—	50SM	—	5670	—	—
Stub Length - Left Spiral Flutes	35	—	2440	—	4701	50SML	—	5669	—	—
Coolant Fed for Blind Holes - Straight Flutes	36	—	2424	452	—	—	—	—	—	—
Coolant Fed for Through Holes - Straight Flutes	37	—	2426	452A	—	—	—	—	—	—
Coolant Fed for Blind Holes - Right Spiral Flutes	38	—	2413	453	—	—	—	—	—	—
Coolant Fed for Through Holes - Right Spiral Flutes	39	—	2418	453A	—	—	—	—	—	—
Coolant Fed for Through Holes - Left Spiral Flutes	40	—	2428	—	—	—	—	—	—	—
Straight Shank - Straight Flutes	42-43	41	2400	450	4703	50SS	—	5655	—	—
Dowel Pin Sizes	43	—	2476	450	—	—	—	—	—	—
Over & Under Sizes	43	—	2478	450	—	—	—	—	—	—
Decimal Sizes	44-47	—	2400	—	—	—	—	—	—	—
Taper Shank - Straight Flutes	48	49	2402	—	—	50TS	—	5656	—	—
Flute Long Carbide - Straight Shank	50	51	2450	480	—	50SF	—	5659	—	—
Decimal Sizes	52-54	—	2450	—	—	—	—	—	—	—
Shell Reamer - Straight Flutes	55	—	2431	—	—	—	—	5625	—	—
Flute Long Carbide - Taper Shank	56	57	2452	—	—	—	—	5660	—	—
Steel Cutting - Straight Shank & Flutes	58-59	—	2480	—	—	—	—	—	—	—
Steel Cutting - Dowel Pin Sizes	59	—	2486	—	—	—	—	—	—	—
Steel Cutting - Over & Under Sizes	59	—	2488	—	—	—	—	—	—	—
NAS 897 - Flute Long Carbide - Straight Shank	60	—	2458	—	—	—	—	—	—	—
Extended Length - Flute Long Carbide - Straight Shank	61	—	2458EL	—	—	—	—	—	—	—
NAS 897 - Straight Shank & Flutes	62	—	2408	—	4703	—	—	—	—	—
Right Spiral Flute - Straight Shank	63	—	2410	470	4711	50SR	—	5653	—	—
Left Spiral Flute - Straight Shank	63	—	2420	—	4709	50SL	—	5651	—	—
Expansion Reamer - Straight Shank	64	65	2465	490	704	50ES	—	5733	—	—
Expansion Reamer - Taper Shank	66	67	2467	495	716	50ET	—	5734	—	—
Solid Carbide Head Reamer - Straight Flutes	68	—	2800	—	—	1450	—	—	—	9500
Solid Carbide Head Reamer - Right Spiral Flutes	69	—	2810	—	—	1450R	—	—	—	—
Solid Carbide Head Reamer - Left Spiral Flutes	69	—	2820	—	—	1450L	—	—	—	—
Solid Carbide - Straight Flutes - .0005 Inc.	70	—	2804	—	—	—	—	—	—	—
Solid Carbide - Straight Flutes - Frac/Metric	71	71	2804	—	1730	1400	—	5661	—	—
Solid Carbide - Straight Flutes - Wire/Letter	71	—	2804	—	—	1400	—	—	—	—
Solid Carbide - Straight Flutes	72	—	2802	—	1730	1410	—	—	—	—
Solid Carbide - Right Spiral Flutes	72	—	2812	—	1711	1410R	—	—	—	—
Solid Carbide - Left Spiral Flutes	72	—	2822	—	—	1410L	—	—	—	—
Semi-Finished Reamer	73	—	7 Types	—	—	—	—	—	—	—
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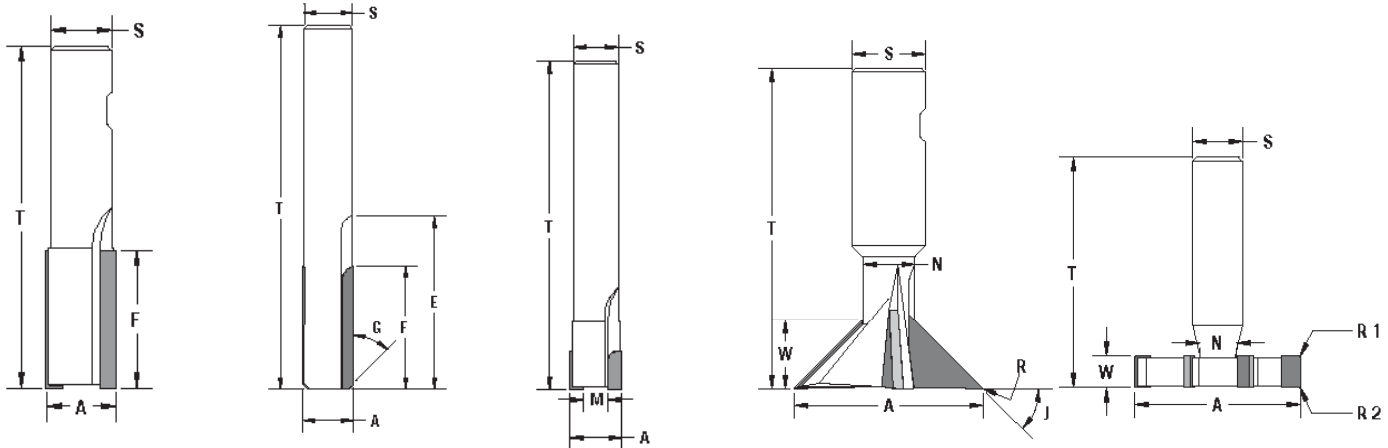
# CUTTING TOOLS STOCK STANDARDS

DESCRIPTION - USE	FRAC. PAGE	METRIC PAGE	TOOL TYPE	CLEVELAND	GAY-LEE	PUTNAM	FULLERTON	MORSE	NIAGARA	WHITNEY
<b>COUNTERBORES -</b>										
Replaceable Pilots	73	—	2500	Yes	—	—	—	776	—	—
Three Flutes - Reduced Shank	74	—	2522	—	—	—	—	—	—	—
Four Flutes - Straight Shank	75	—	2512	—	—	—	—	—	—	—
Three/Four Flutes - Straight Shank	75	—	2514	779	—	—	—	5779	—	—
Four Flutes - Taper Shank	76	—	2518	—	—	—	—	—	—	—
Three/Four Flutes - Taper Shank	76	—	2516	—	—	—	—	5780	—	—
Steel Cutting - Straight Shank	77	—	2510	—	—	—	—	—	—	—
Steel Cutting - Taper Shank	77	—	2511	—	—	—	—	—	—	—
Capscrew - Straight Shank - N/F & Cast Iron	78	78	2513	—	—	—	—	—	—	—
Capscrew - Straight Shank - Steel	78	78	2515	—	—	—	—	—	—	—
<b>PORT CONTOUR CUTTERS -</b>										
SAE Ports - MS16142 - J514F - J1926 - SS - N/F & CI	79	—	2780	—	—	—	—	—	—	—
SAE Ports - MS16142 - J514F - J1926 - SS - Steel	79	—	2781	—	—	—	—	—	—	—
MS 33649 Integral Reamer Pilot - SS - N/F & CI	79	—	2792	—	—	—	—	—	—	—
MS 33649 Integral Reamer Pilot - SS - Steel	79	—	2793	—	—	—	—	—	—	—
<b>END MILLS -</b>										
Shell End Mill - Non-Ferrous	80	—	2530	—	—	—	—	5858	4920	—
Shell End Mill - Cast Iron	80	—	2531	—	—	—	—	5859	4900	—
Shell End Mill - Steel	80	—	2532	—	—	—	—	5860	4910	—
15° Right Spiral - Steel	80	—	2350	—	—	HES	60GSS	5960	4820	—
25° Right Spiral	81	—	2325	—	—	HNS	60FS	5958	4860	—
15° Right Spiral	81	—	2375	—	—	HLS	—	5962	4840	—
Two Straight Flutes - Steel	82	—	2300	—	—	—	60TFSS	5927	—	—
6° Right Spiral Flutes - Steel	82	—	2308	—	—	—	60RSS	—	—	—
6° Left Spiral Flutes - Steel	82	—	2310	—	—	LSEM	60LSS	5964	—	—
Two Straight Flutes	83	—	2302	—	—	TFEM	60TF	5923	4700	—
Four Straight Flutes	83	—	2304	—	—	EM	60EM	5925	4750	—
6° Right Spiral Flutes	83	—	2306	—	—	RSEM	60RS	5921	—	—
Corner Rounding - Non-Ferrous & Cast Iron	84	—	2740	—	—	—	—	—	—	—
Corner Rounding - Steel	84	—	2741	—	—	—	—	—	—	—
Center Cutting - Cast Iron	84	—	2314	—	—	SKM	60SK	5935	4800	—
Center Cutting - Steel	84	—	2312	—	—	—	60SKS	5936	4780	—
Center Cutting - Non-Ferrous	84	—	2318	—	—	—	60CS	5966	—	—
<b>COUNTERSINKS -</b>										
Single Flute - 60°	85	—	2561	791	—	—	—	—	—	—
Single Flute - 82°	85	—	2581	791	—	—	—	—	—	—
Single Flute - 90°	85	—	2591	—	—	—	—	—	—	—
Single Flute - 100°	85	—	2584	—	—	—	—	—	—	—
Three Flutes - 60°	85	—	2563	793	—	—	—	—	—	—
Three Flutes - 82°	85	—	2583	793	—	—	—	—	—	—
Three Flutes - 90°	85	—	2590	—	—	—	—	—	—	—
Three Flutes - 100°	85	—	2585	—	—	—	—	—	—	—
<b>CUTTERS - SHANK TYPE</b>										
Double Angle - 60° & 90° - Non-Ferrous & Cast Iron	85	—	2746/2748	—	—	—	—	—	—	Yes
Double Angle - 60° & 90° - Steel	85	—	2747/2749	—	—	—	—	—	—	—
Keyseat - Straight Tooth - Non-Ferrous & Cast Iron	86	—	2700	—	—	—	—	—	CB444	120
Keyseat - Staggered Tooth - Non-Ferrous & Cast Iron	87	—	2701	—	—	—	—	—	—	121
Keyseat - Straight Tooth - Steel	88	—	2702	—	—	—	—	—	—	—
Keyseat - Staggered Tooth - Steel	89	—	2703	—	—	—	—	—	—	—
Keyseat - Straight Tooth - Aluminum	90	—	2704	—	—	—	—	—	—	—
T-Slot - Non-Ferrous & Cast Iron	91	—	2720	—	—	—	—	—	—	Yes
T-Slot - Steel	91	—	2721	—	—	—	—	—	—	—
Dovetail - 45° Included & 60° Included Angle - N/F & CI	91	—	2734/2736	—	—	—	—	—	—	Yes
Dovetail - 45° Included & 60° Included Angle - Steel	91	—	2735/2737	—	—	—	—	—	—	—
Chamfer Milling - 45° & 60° - Non-Ferrous & Cast Iron	92	—	2730/2732	—	—	—	—	—	—	Yes
Chamfer Milling - 45° & 60° - Steel	92	—	2731/2733	—	—	—	—	—	—	—
Radius - Non-Ferrous & Cast Iron	92	—	2718	—	—	—	—	—	—	Yes
Radius - Steel	92	—	2719	—	—	—	—	—	—	—
<b>CUTTERS - ARBOR TYPE</b>										
Single Angle - 45° & 60° Right - N/F & CI	93	—	2714/2724	—	—	—	—	—	—	—
Single Angle - 45° & 60° Left - N/F & CI	93	—	2716/2726	—	—	—	—	—	—	—
Double Angle - 45°, 60° & 90° Include Angle - N/F & CI	93	—	2750/2752/2754	—	—	—	—	—	—	—
Side Milling - Staggered Tooth	93	—	2547	—	—	—	—	—	—	—
Side Milling - Non-Ferrous	94	—	2540	—	—	—	—	5861	1630	—
Side Milling - Cast Iron	94	—	2541	—	—	—	—	5862	1590	—
Side Milling - Steel	94	—	2542	—	—	—	—	5863	1550	—
Side Milling - High Temp Alloy	94	—	2543	—	—	—	—	5849	—	—
Slitting Saws - Coarse Tooth - Non-Ferrous	95	—	2550	—	CNF	—	—	5846	4690	—
Slitting Saws - Coarse Tooth - Cast Iron	95	—	2552	—	CCI	—	—	5847	4240	—
Slitting Saws - Coarse Tooth - Steel	95	—	2554	—	CST	—	—	5848	4220	—
Slitting Saws - Coarse Tooth - High Temp Alloy	95	—	2558	—	GSS	—	—	5850	4260	—
Slitting Saws - Standard Tooth - Non-Ferrous	96	—	2551	1361	GPP	—	—	—	—	—
Slitting Saws - Standard Tooth - Cast Iron	96	—	2553	1361	GPP	—	—	—	—	—
Slitting Saws - Standard Tooth - Steel	96	—	2556	1360	STL	—	—	—	—	—
Slitting Saws - Standard Tooth - High Temp Alloy	96	—	2559	—	GSS	—	—	—	—	—
Slitting Saws - Any Width, Radius, or Chamfer - Steel	97-100	—	2556	—	—	—	—	—	—	—
Slitting Saws - Any Width, Radius, or Chamfer - Multi Purpose	101-104	—	2559	—	GSS	—	—	—	—	—
<b>BRAZED SINGLE POINTS</b>										
Single Points	105-106	—	26 Types	—	—	—	—	26 Types	—	—
Cut-Off Tools	107	—	2 Types	—	—	—	—	2 Types	—	—
—	—	—	—	—	—	—	—	—	—	—
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# SPECIAL TOOLS QUOTE FORM

Fax to: (800) 867-9312 or Email to: sales@rockrivertool.com



END MILL       REAMER       COUNTERBORE       DOVETAIL       KEYSEAT

Carbide Tipped    Solid Carbide

**BODY OF TOOL**

**FLUTES**  
 T= \_\_\_\_\_ Overall Length      S= \_\_\_\_\_ Shank Diameter      A= \_\_\_\_\_ Major Diameter  
 E= \_\_\_\_\_ Flute Length      F= \_\_\_\_\_ Carbide Length      G= \_\_\_\_\_ ° Chamfer Angle

Straight Flutes       Right Hand Cutting       Left Hand Cutting  
 Number of Flutes \_\_\_\_\_       Right Hand Spiral \_\_\_\_\_ °       Left Hand Spiral \_\_\_\_\_ °

**IF PILOTED** Head Diam. \_\_\_\_\_      Head Length \_\_\_\_\_      M= Min. Cutting Diam. \_\_\_\_\_

**IF STEP REAMER** Minor Diam. \_\_\_\_\_      Step Length \_\_\_\_\_      Step Angle \_\_\_\_\_ °

**IF KEYSEAT**      W= \_\_\_\_\_ Width       Straight Tooth      R1= \_\_\_\_\_ Radius/Chamfer  
 N= \_\_\_\_\_ Neck Diameter       Staggered Tooth      R2= \_\_\_\_\_ Radius/Chamfer

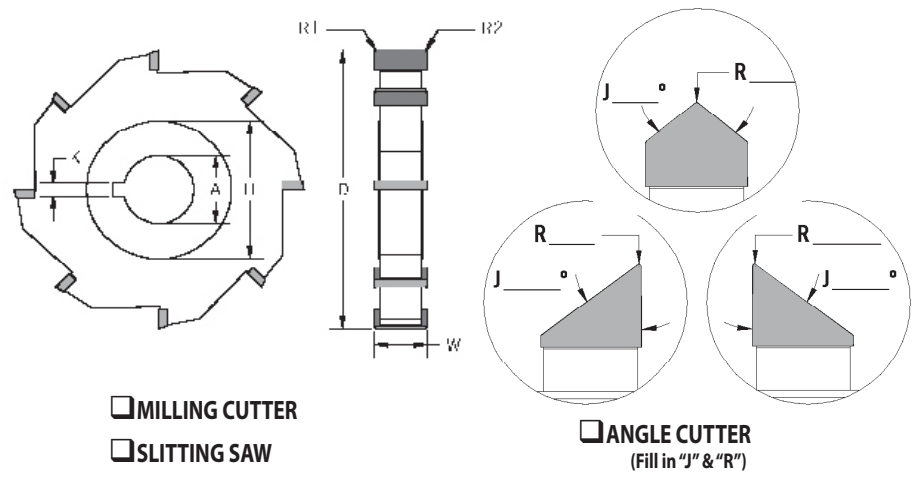
**IF DOVETAIL**      N= \_\_\_\_\_ Neck Diam.      J= \_\_\_\_\_ ° Angle      R= \_\_\_\_\_ Radius      W= \_\_\_\_\_ Width

Carbide Tipped    Solid Carbide

D= \_\_\_\_\_ Cutter Diameter  
 W= \_\_\_\_\_ Cutter Width  
 A= \_\_\_\_\_ Arbor Hole Diam.  
 N= \_\_\_\_\_ # of Teeth  
 H= \_\_\_\_\_ Hub Diameter  
 K= \_\_\_\_\_ Keyway Size  
 R1= \_\_\_\_\_ Radius/Chamfer  
 R2= \_\_\_\_\_ Radius/Chamfer

Straight Tooth  
 Straight Stagger  
 Herringbone Stagger

**MILLING CUTTERS & SAWS**



MILLING CUTTER       ANGLE CUTTER  
 SLITTING SAW      (Fill in "J" & "R")

Rock River Tool will manufacture your special tools quickly and competitively.

Name \_\_\_\_\_ Phone \_\_\_\_\_  
 Company \_\_\_\_\_ Fax \_\_\_\_\_  
 Full Address \_\_\_\_\_ Tipped or Solid? \_\_\_\_\_  
 Material Being Cut \_\_\_\_\_ HOW MANY? \_\_\_\_\_





# CARBIDE TIPPED PROBLEM SOLVING GUIDE

**AVOID  
PROBLEMS  
BY CAREFUL  
ORIGINAL  
SET-UP**

**MACHINE CONDITION  
TOOL CONDITION**

**FEEDS & SPEEDS  
COOLANT**

- Tool holder in good condition & secure part holding fixture.
- Use cutting tool recommended for material being machined. Avoid excessive tool overhang.
- Start with feeds & speeds recommended for material being machined.
- Where used, coolant flow must be adequate to avoid intermittent quenching and to flush chips promptly, avoiding the recutting of hardened chips.

<b>DRILLING PROBLEMS</b>	<b>POSSIBLE CAUSES</b>	<b>POSSIBLE SOLUTIONS</b>
1. CHIPPED CUTTING EDGE	Excessive feed Excessive lip relief Vibration	Reduce feed. Reduce lip relief to provide smaller chisel angle. Frequently a worn drill bushing replace.
2. SHORT TOOL LIFE	Thermal cracking carbide Drill dwelling	Maintain adequate coolant flow at all times. Maintain adequate feed at all times.
3. DRILL WALKS OR DRIFTS	Only one lip cutting Unequal lip heights	Regrind with equal lip heights and chisel in center. Regrind with equal lip heights and chisel in center.
4. OVERSIZED HOLES	Worn drill bushing Unequal lip heights	Replace drill bushing. Regrind with equal lip heights and chisel in center.
5. ROUGH FINISH	Excessive lip relief Worn drill bushing Dull cutting edge Inadequate coolant Improper speed & feed	Reduce lip relief to provide smaller chisel angle. Replace drill bushing. Regrind with fine grit diamond wheel. Review type of coolant and maintain adequate flow. Review speed & feed (chart on page 9)
<b>REAMING PROBLEMS</b>	<b>POSSIBLE CAUSES</b>	<b>POSSIBLE SOLUTIONS</b>
1. POOR FINISH	Unequal chamfers Incorrect margins Excessive spindle runout Chatter	Regrind reamer with equal chamfer height. Regrind reamer with narrower margins for reaming higher tensile materials. Use bushing — .0002"/.0003" over reamer diameter. Increase speed and reduce feed rate. Use power feed unless material is hard. Use spiral fluted reamer. Grind secondary lead angle immediately behind 45° chamfer.
2. OVERSIZED HOLES TAPERED HOLES BELL MOUTH HOLES	Insufficient cutting action Misalignment	Specify reamer with positive radial rake to reduce cutting pressure — may produce slightly larger diameter holes. Check fixturing & setup for possible causes; use floating holder if necessary. Consider using precision bushings or piloted reamers. Verify feeds & speeds (see page 9).
3. EXCESSIVE TOOL WEAR	Incorrect feed and/or speed Improper stock removal Excessive reaming pressure	Change pre-ream hole size to leave 2 to 3% of tool diameter. Decrease feed rate (see "Feeds & Speeds" Chart on page 9). See solution for "improper stock removal" in #3.
4. CROOKED HOLES	Misalignment Drill walking or incorrect sharpening	See solution for "misalignment" in #2. Correct drilling operation - reamer will follow drilled hole. Increase 90° included chamfer angle to 120° - 180°.
5. TOOL BREAKAGE	Excessive reaming pressure Misalignment	See solution for "excessive reaming pressure" in #3. See solution for "misalignment" in #2.
<b>MILLING PROBLEMS</b>	<b>POSSIBLE CAUSES</b>	<b>POSSIBLE SOLUTIONS</b>
1. ROUGH FINISH	Dull cutting edge Wrong feeds & speeds	Resharpen to original tool geometry. Increase speed - also try reduced feed.
2. EXCESSIVE CUTTING EDGE WEAR	Wrong feeds & speeds	Increase feed (should always be over .001" per tooth) - especially when machining ductile or free machining materials - Also try reduced speed. Lightly hone cutting edge with fine grit diamond hone.
3. CHIPPED CUTTING EDGE	Rough cutting edge Insufficient coolant Poor chip removal	Increase coolant flow - review type of coolant. Use tool with larger flute space - larger diameter or fewer flutes. Increase coolant flow.
4. CHATTER MARKS	Recutting work hardened chips Vibration Incorrect carbide grade Insufficient machine horsepower Vibration	Increase rigidity of set-up, especially worn tool holders. Change to tougher carbide grade. Use tool with fewer flutes as correct speeds & feeds must be maintained. Consider climb milling. Check setup rigidity. Use larger diameter cutter.
5. GLAZED FINISH	Feed to light Dull cutting edge	Resharpen tool with more clearance. Increase feed.
6. POOR TOOL LIFE	Insufficient clearance Excessive cratering	Resharpen tool to original geometry. Resharpen tool with more clearance. Increase speed or decrease feed. Change to harder grade of carbide.
	Milling abrasive material	Decrease speed and increase feed. Increase coolant flow. Climb milling better than conventional milling. Conventional milling better than climb milling. Reduce speed - rigidity very important. Use larger diameter tool. Prompt resharpening to original geometry will increase total tool life. Increase coolant flow at all times. Climb milling is cooler than conventional milling.
	Milling surface scale Milling hard material Insufficient chip room Delayed resharpening Thermal cracked carbide	



# WHY USE CARBIDE TIPPED TOOLS?

## MORE COST EFFECTIVE THAN HIGH SPEED STEEL TOOLS

1. Carbide tipped tools retain their cutting edge hardness at high machining temperatures generated by high cutting speeds and feeds that reduce machining cycle time.
2. Carbide tipped tools improve surface finish and hold size far longer for better quality.
3. Carbide tipped tools last far longer because the carbide chip forming surface resists wear as the chip flows over the tools. This greatly reduces need for costly changes with increased scrap and rework.
4. Carbide tipped tools should always be used when machining highly abrasive materials.

## USUALLY MORE COST EFFECTIVE THAN SOLID CARBIDE

1. Carbide tipped tools are far more durable than solid carbide tools. Under abnormal conditions the carbide may start to crack due to hard spots in the material being machined, incorrect feed rates or inadequate holding of workpiece. These cracks that shatter solid carbide tools are stopped in carbide tipped tools by the tough hardened alloy steel body - usually permitting the tool to complete the production run.
2. The carbide grade in carbide tipped tools can be selected wholly based on its cutting and wear characteristics rather than compromising for the carbide's structural strength, as is required for solid carbide tools. Some high cost specialty carbides necessary for aggressive machining of many tough alloys are not even available in solid carbide round form.
3. Although carbide tipped tools use higher quality more costly carbide, the overall cost is usually substantially less than solid carbide tools because only the thick cutting edge is carbide. The body and shank are made from less costly tough hardened alloy steel.

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## GENERAL INFORMATION

**DISTRIBUTORS** - Rock River Tool sells through industrial distributors who are your local supply, service and communication link with us.

**SHIPPING** - All shipments are normally sent UPS to the distributor. However, every day distributors request "next day delivery" or "drop shipments" to customers that must have the tools immediately.

**ORDERING** - The Rock River EDP number listed for each size of every tool type is the only description required when ordering. However, as a cross-check for possible copying errors, most orders also note a brief tool description.

**MODIFICATIONS** - Over 30% of the standard tools ordered include one or more simple modifications. Each catalog page lists the most commonly requested modifications for that type of tool. Rock River's modifications are competitively priced with prompt delivery.

**COMMUNICATIONS** - We prefer that all communications be directed through your local industrial distributor. However, in emergencies Rock River can be reached at:  
Sales/Engineering: 1-800-345-8924  
Fax: 1-800-867-9312  
E-mail: sales@rockrivertool.com

**QUALITY ASSURANCE** - Rock River has a very comprehensive measurement instrument dimensional control system. We apply statistical techniques wherever appropriate to assure manufacturing process control and effective final inspections.

**TOLERANCES** - All Rock River's standard tools are manufactured to one or more of the following specifications, unless otherwise shown on selected sizes:  
ASME/ANSI Standards  
NAS 907 - National Aerospace Standards  
USCTI - United States Cutting Institute  
ISO - International Standard Organization

**CARBIDE GRADES** - All Rock River's standard tools are manufactured with correct proven grade of carbide for the intended applications. We only utilize carbide that is made by major reputable manufacturers.

**TOOL PERFORMANCE** - Although the tool's price is always important, the real measure of tool value is the tool's performance in the user's plant - machining piece parts to correct dimensions with proper surface finishes utilizing high feeds and speeds with a long tool life between grinds.

**CHANGES** - All specifications and dimensions are subject to revision without notice.



# CARBIDE TIPPED TOOL SELECTION BASICS

## DRILL SELECTION BASICS –

- Carbide tipped drills are especially effective when production drilling abrasive cast irons and non-ferrous alloys.
- Carbide tipped coolant drills perform exceptionally well in most steels and all other materials.
- The drill is an end cutting tool and as the point angle increases, the cutting edge becomes shorter, reducing corner wear as the cutting shear angle is reduced. Rock River provides two different point angles in most drill types. Select the larger angle for abrasive or tough materials.
- Deep holes, in excess of 3 drill diameters—use coolant feeding drills.
- For drilling hardened steels, above Rc35—use straight flute die drills or coolant type.
- Use shortest tool available for accurate location and longer production runs as rigidity is increased and runout minimized.
- Core Drills are very effective for enlarging preformed holes, removing up to 30% of the tool diameter in all materials, including steel.

## REAMER SELECTION BASICS –

- Carbide tipped reamers are especially appropriate for close tolerance reaming. Because carbide is extremely resistant to wear, the reamer will produce accurate hole size and smooth finish far longer.
- The reamer is used to finish machine a previously formed hole to an exact diameter with a smooth finish. It should not be used to significantly enlarge a hole (max. 5% - depending on material and hardness).
- The reamer is an end cutting tool, cutting only on the chamfer's edge at the outside diameter of the preformed hole. The standard 45° chamfer angle provides effective cutting action for most materials.
- Standard geometry reamers tend to follow the axis of the existing hole. Mis-aligned or crooked holes can be straightened by increasing the chamfer angle - sometimes a 180° flat end is very effective. This is a simple modification.
- FLUTE AXIAL RELATIONSHIP:  
Straight Flutes - usual general purpose.  
Right Spiral Flutes - tend to bridge interruptions such as keyways, slots or intersecting holes. Good chip clearing ability for ductile materials and blind holes.  
Left Spiral Flutes - also tends to bridge interruptions. Good for hard cast iron, heat treated steels and other hard materials. Do not use in blind holes.
- LENGTH OF CARBIDE - usually partial but full length carbide should be selected for deep holes and abrasive materials.
- COOLANT FEEDING:  
Advantages - up to twice conventional feed rates will hold size much longer. Improved hole surface finish. Excellent chip disposal. Lubricates and cools the cutting edge.  
Center Feed for blind holes. Flute Feed for through holes.
- EXPANSION REAMERS - Economical for abrasive materials.

## COUNTERBORE SELECTION BASICS –

- The counterbore is used to enlarge the end of a preformed hole when a flat bottom is required.
- The counterbore is an end cutting tool which utilizes a pilot to align the enlarged hole being machined with the preformed hole.
- The three flute counterbore tends to reduce chatter & improve finish.
- Many different shank options are available.

## END MILL SELECTION BASICS –

- END MILLS have cutting teeth on both end and side, permitting end cutting and peripheral cutting. Center cutting types permit plunge and traverse milling.
- CUTTING EDGE: Select **sharp edged** for faster speeds. Select **radial edged** for longer tool life.
- SHANK DIAMETER: Select **largest diameter** available to maximize rigidity and minimize axial deflection and chatter.
- NUMBER OF FLUTES: Select **fewer flutes** for milling softer materials at higher speeds and feeds where more chip space is required or when machine horsepower is limited.
- Select **more flutes** for milling tougher materials at reduced speeds and feeds or for increased table feeds using the same cutting speeds.
- CUTTING DIAMETER: Select **largest practical diameter** to maximize rigidity, minimize chatter and improve tool life. If machine spindle speed is limited, the largest practical diameter permits higher cutting speeds.
- FLUTE AXIAL RELATIONSHIP: Select **straight flutes** for usual general purpose.  
Select **right spiral flutes** for improved cutting action and easier chip removal.  
Select **left spiral flutes** for use in absorbing impact shock when entering steel workpiece—maintains constant hold down pressure, and minimizes chatter.  
Select **high spiral** (15° or more) to **dramatically** improve cutting action, finish, chip removal and tool life. High spirals distribute impact load more evenly throughout the tool's entire revolution.
- COATINGS are especially effective.

## SLITTING SAW AND SIDE MILLING CUTTER SELECTION BASICS –

- SLITTING SAWS can be used in deep slotting applications since they have side clearance and side concavity on their carbide tips.
- ARBOR DIAMETER: Select **largest diameter** available to maximize rigidity and minimize deflection. (A 1 1/4" arbor is more than twice as rigid as a 1" arbor.)
- CUTTING DIAMETER: Select **smallest diameter** which permits two teeth to be in contact with the workpiece throughout the tool's entire revolution.  
If horsepower permits higher cutting speeds, but spindle speed is limited, select a **larger cutting diameter**.
- NUMBER OF TEETH: Select **coarse teeth** for general purpose. Select **standard teeth** for better finishes.
- TYPES OF MILLING: In **conventional milling**, the direction of the cutter rotation is opposite to the direction of the workpiece feed. The initial portion of the chip generated is very thin and gradually increases through the cutting cycle. The maximum cutting force is upward at the end of the cutting cycle.  
In **climb milling**, the direction of the cutter rotation and the direction of the workpiece feed are the same. The initial portion of the chip generated is thick and gradually thins through the cutting cycle, producing a better finish. The maximum cutting force is the initial downward thrust at the beginning of the cutting cycle.





# MODIFICATIONS AND COATINGS

## OPTIONAL MODIFICATIONS

### Solve Problems Economically –

- 30% of standard tools ordered include one or more simple modifications.
- Standard tool optional modifications eliminate need for costly special tools.
- Optional modifications are available with very short lead times.
- Improve standard cutting geometries for difficult machining materials- abrasive or extra tough.
- Incorporates cutting form to eliminate need for additional machining.
- Improve tool holding or driving.

## DRILL OPTIONAL MODIFICATIONS

- Intermediate cutting diameters to eliminate reaming operation.
- Special point types and point angles:
  - 135° split point for drilling abrasive and tough materials.
  - 90° point for drilling soft materials.
  - Double point angles to reduce breakout bur and corner wear.
- Coating to increase cutting speeds and feeds and reduce wear.
- Flat or tang on shank for positive drive.
- Short shanks to reduce run out due to set-up.
- Extra long shanks to solve reach problems.
- Reduced shank diameter or undersized Morse taper to accommodate tool holding limitations.

## REAMER OPTIONAL MODIFICATIONS

- Intermediate cutting diameters- priced on each reamer type data page.
- Closer tolerances- instead of plus .0003".
  - For plus .0002" - add \$1.00 per tool.
  - For plus .0001" - add \$3.00 per tool.
- Sharpen finish 30 micro inch or better.
- End chamfer other than 45°.
  - Less than 45° tend to straighten hole.
    - 31° to match 118° drill point at bottom of drilled hole.
    - 22 1/2° to match 135° drill point at bottom of drilled hole.
  - Greater than 45° tend to thin out chips that resist breaking.
  - Greater than 45° will produce better finishes and will follow drilled hole.
  - End Cutting - 180° chamfer (flat end - no chamfer).
- Corner radius - for better finish.
  - for stronger corner in abrasive and tough materials.
- Special O.D. relief depending on material being reamed.
- Reduce circular margins for some steels.
- Increase circular margins for some non-ferrous.
- Grind steel head below carbide- usually .008"- .020" to improve finish- normally much better to use full length carbide design.
- "Rose" Grind - Twice the normal back taper and full circle on the margin (not relieved). To improve finish but this reduces tool life.
- Cutting diameter partially reduced for non-cutting pilot.
- Cutting diameter partially reduced for cutting step.
- Coating to increase cutting speeds and reduce wear.
- Shortened shank reduces runout due to set-up.
- Reduced shank diameter or undersize morse taper shank to accommodate tool holder limitations.
- Flat or tang on shank for positive drive.

## COUNTERBORE OPTIONAL MODIFICATIONS

- Intermediate cutting diameter - priced on each counterbore type data page.
- Closer tolerance than .001" on cutting diameter.
- End chamfer other than 180° when used as a piloted countersink or hole bottom form operation.
- Corner radius for improved finish.
- Cutting diameter ground down for small cutting step.
- Drive flat or tang on shank for positive drive.
- Shortened shank reduces runout due to set-up.
- Reduce shank diameter or undersize morse taper shank to accommodate tool holder limitations.

## END MILL OPTIONAL MODIFICATIONS

- Intermediate decimal cutting diameter.
- Closer tolerance.
- Radius corners to improve finish.
- Coating to increase cutting speeds and reduce wear.
- Undersize shank to accommodate tool holding limitations.

## KEYSEAT CUTTER OPTIONAL MODIFICATIONS

- Intermediate width or diameters.
- Radius corners to improve finish.
- Reduce neck diameter.
- Drive flats on shanks for positive drive.

## SLITTING SAW & SIDE MILLING CUTTER OPTIONAL MODIFICATIONS

- Closer tolerance for cutting face width and cutting diameter.
- Alternate chamfer every other tooth.
- Full radius.
- Chamfer both sides.
- Radius both sides.
- Coating to increase cutting speeds and reduce wear.
- Matched sets.

## RECOMMENDED COATINGS

### Cost Justified

- Tool life dramatically extended.
- Part finish significantly improved.
- Reduced tool wear stabilizes tolerances.
- Faster cutting speeds and feeds.
- Utilize the physical deposition (PVD) process so the hardened alloy steel body is not softened and retains its toughness.

### TiN-Titanium Nitride

- Good coating for many materials and applications.
- Hardness: 2300 Vickers.
- Max Service Temperature: 550° C (1050° F).
- Friction Coefficient: .65.

### TiCN-Titanium Carbonitride

- Excellent where low temperatures are generated.
- Hardness: 2800 Vickers.
- Max Service Temperature: 400° C (750° F).
- Friction Coefficient: .40.

### AlTiN-Aluminum Titanium Nitride

- Excellent in materials generating high heat.
- Hardness: 3600 Vickers.
- Max Service Temperature 750° C (1380° F).
- Friction Coefficient: .60.

### ZrN-Zirconium Nitride

- Good in many applications in non-ferrous materials.
- Hardness: 2500 Vickers.
- Max Service Temperature 600° C (1100° F).
- Friction Coefficient: .50.



# CARBIDE TIPPED REAMERS TECHNICAL INFORMATION

## REAMER BASICS

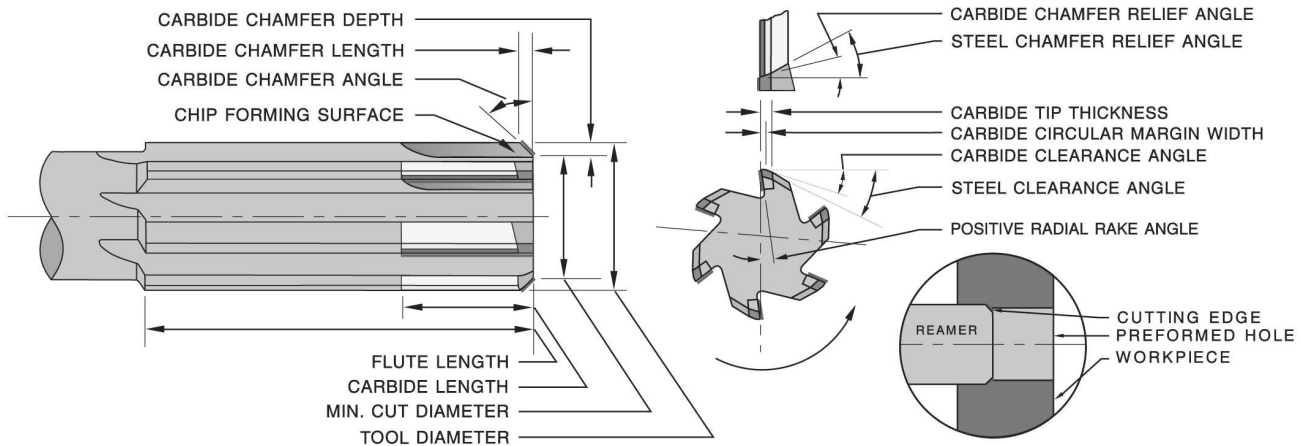
- The reamer is used to finish machine a previously formed hole to an exact diameter with a smooth finish. It should **not** be used to significantly enlarge a hole (max. 5% – depending on material and hardness).
- Carbide tipped reamers are especially appropriate for close tolerance reaming. Because carbide is very highly resistant to wear, the reamer will produce accurate hole size and a smooth finish far longer than high speed steel or cobalt.
- The reamer is an end cutting tool, cutting only on the chamfer's edge at the outside diameter of the preformed hole.

The standard 45° chamfer angle provides effective cutting action for most materials.

- Reamer Types:
  - Multi-Purpose** – Superior performance over high speed steel and cobalt; good in a wide variety of materials
  - Coolant Fed** – Exceptional performance and tool life using material specific reamer technology and coolant fed capabilities; maximizes feeds & speeds

**REAMER EXPEDITE FEES:** Order must be received by 2:00 PM CST.  
Does not apply to types 2431 and 2458EL.  
18 pieces max per diameter.  
Does NOT require air shipment of the product.

Reamer Diameter	Service	Fee
Up to 1.0000"	24 Hour	\$75.00
Up to 1.0000"	48 Hour	50.00
Over 1.0000"	48 Hour	75.00
Over 1.0000"	72 Hour	50.00



## REAMER SPECIFICATIONS

- Geometry and carbide grade appropriate for material being machined
- Carbide tips brazed to tough hardened alloy steel body, except expansion reamers which are not hardened
- Polished flutes for easy chip flow
- ASME/ANSI B94.2; NAS 897; USCTI
- Precision ground cutting edges
- "Taper Shank No." refers to American Standard taper series (formerly Morse taper series) per ASME/ANSI B5.10
- Material specific reamer shanks are ground to next smallest shank diameter listed in NAS 897 if tool diameter is within .005" of shank diameter
- Expansion reamers can be expanded for regrinding as follows:

Tool Diameter	Guaranteed Minimum Expansion
5/16" - 15/32"	.006"
1/2" - 31/32"	.010"
1" - 1 1/2"	.013"
1 1/4" - 2 1/2"	.015"

## REAMER TOLERANCES

- Tool diameter tolerance:
  - Multi-purpose & Coolant fed**  
Thru 1 1/2" tool diameter: plus .0003", minus .0000"  
Over 1 1/2" tool diameter: plus .0004", minus .0000"
  - NAS897**  
Thru 1/2" tool diameter: plus .0002", minus .0000"  
Over 1/2" tool diameter thru 3/4": plus .0003", minus .0000"  
Over 3/4" tool diameter: plus .0004", minus .0000"
- Closer tool diameter tolerance pricing per tool:

Standard Tolerance	Modified to Closer Tolerance		
	.0003"	.0002"	.0001"
.0004"	\$1	\$3	\$5
.0003"	–	\$1	\$3
.0002"	–	–	\$3

- Shank diameter tolerance:
  - General purpose  
minus .0005", minus .0015"
  - NAS & Coolant fed  
Thru 23/32" tool diameter: plus .0000", minus .0010"  
Over 23/32" tool diameter: plus .0000", minus .0015"



# CUTTING SPEEDS & FEEDS

Type of Material		Brinell Hardness 3000 kg	Cutting Speed - SFM Starting Range*		Feed Per Revolution Hole Diameter - Inches					
					1/8	1/4	1/2	3/4	1	1 1/2
Aluminum Alloys		30-150 500 kg	Drill	250-350	.003	.005	.008	.011	.014	.019
			Ream	150-250	.004	.006	.011	.013	.016	.020
Aluminum Bronze Cast		40-175 500 kg	Drill	125-190	.002	.005	.008	.010	.012	.016
			Ream	50-90	.004	.006	.012	.016	.018	.022
Copper Alloys/Bronze Tough		40-200 500 kg	Drill	125-190	.002	.005	.008	.010	.012	.016
			Ream	50-90	.005	.006	.010	.012	.014	.017
Copper Alloys/Brass Free Machining		10-100 Rb	Drill	225-400	.002	.005	.008	.010	.012	.016
			Ream	100-250	.005	.008	.015	.018	.020	.025
Magnesium		50-90 500 kg	Drill	300-400	.003	.005	.007	.009	.013	.016
			Ream	130-390	.005	.010	.015	.017	.020	.025
Plastics			Drill	175-450	.002	.004	.005	.008	.009	.012
			Ream	90-250	.004	.005	.008	.012	.014	.016
Zinc Alloys		80-100	Drill	300-400	.003	.005	.009	.011	.014	.018
			Ream	140-210	.005	.007	.010	.012	.015	.020
Cast Iron -	Gray Soft	120-220	Drill	175-300	.002	.005	.009	.014	.017	.019
			Ream	65-135	.005	.008	.011	.016	.020	.025
	Gray Hard	220-320	Drill	130-225	.002	.004	.007	.010	.013	.018
			Ream	45-70	.004	.006	.009	.012	.014	.020
	Ductile Soft	140-270	Drill	150-225	.002	.004	.008	.012	.014	.018
			Ream	50-90	.004	.005	.010	.014	.017	.023
	Ductile Hard	270-400	Drill	-	-	-	-	-	-	-
			Ream	35-60	.004	.006	.008	.010	.012	.016
Steel -	Low Carbon	85-275	Drill	-	-	-	-	-	-	-
			Ream	45-105	-	.010	.015	.020	.025	.030
	Medium Carbon	100-500	Drill	-	-	-	-	-	-	-
			Ream	20-105	-	.008	.012	.014	.016	.020
	High Carbon	175-500	Drill	-	-	-	-	-	-	-
			Ream	10-100	-	.006	.008	.010	.012	.016
	Tool Steel	100-500	Drill	-	-	-	-	-	-	-
			Ream	15-85	-	.006	.008	.010	.012	.016
Stainless -	Free Mach. 300 Series	135-275	Drill	100-150	.002	.004	.006	.008	.010	.014
			Ream	65-100	.004	.006	.008	.009	.010	.011
	300	135-375	Drill	-	-	-	-	-	-	-
			Ream	40-75	.003	.004	.006	.007	.008	.010
	400	135-325	Drill	-	-	-	-	-	-	-
		Ream	40-90	.003	.005	.007	.008	.010	.012	
High Temp. -	PH	150-440	Drill	-	-	-	-	-	-	-
			Ream	35-70	.003	.004	.005	.007	.008	.010
	Nickel Base	140-300	Drill	-	-	-	-	-	-	-
		Ream	15-85	.003	.005	.006	.007	.008	.012	
High Temp. -	Iron Base	140-300	Drill	-	-	-	-	-	-	-
			Ream	15-85	.003	.005	.006	.007	.008	.012
	Cobalt Base	180-425	Drill	-	-	-	-	-	-	-
		Ream	5-30	.003	.004	.006	.007	.008	.010	
Titanium		110-380	Drill	-	-	-	-	-	-	-
			Ream	35-45	.004	.006	.010	.011	.012	.014

\*For high side of hardness range start at low side of cutting speed. Note: Reduce cutting speed and feed when drilling more than 3 diameters deep.



# HARD STEEL DIE DRILLS

## CARBIDE TIPPED



**TYPE 2670 & 2671 NEGATIVE EDGE**



**TYPE 2672 & 2673 POSITIVE EDGE**

**USE:**

For drilling hardened steel in the range of 35 to 65 Rockwell C.  
 Flood the cutting point with coolant.  
 Clear chips frequently.  
 Light feed with steady pressure.  
 Will cut without annealing the workpiece.

**TYPE 2670 – 118° NEGATIVE EDGE**

Die drill - negative angle cutting edge.  
 118° included point.  
 Drill body diameter smaller than tip to prevent gauling.

**TYPE 2671 – 140° NEGATIVE EDGE  
 DISCONTINUED - WHILE SUPPLIES LAST**

Die drill - negative angle cutting edge.  
 Same as type 2670 above, except with 140° included point - designed for drilling abrasive and tough materials.

**TYPE 2672 – 118° POSITIVE EDGE  
 DISCONTINUED - WHILE SUPPLIES LAST**

Die drill - positive angle cutting edge.  
 118° included point.  
 Same as type 2670, except with thinned web, permitting higher feed rates with less spindle power.

**TYPE 2673 – 140° POSITIVE EDGE  
 DISCONTINUED - WHILE SUPPLIES LAST**

Die drill - positive angle cutting edge.  
 140° included point angle.  
 Same as type 2672, except with 140° included point - designed for drilling abrasive and tough materials.

**OPTIONS:**

Intermediate decimal and metric diameters.  
 Special point types and angles.  
 Undersize shank or flat on shank.

**METRIC DIAMETERS**

TOOL DIAMETER		LENGTH		118° POINT			140° POINT		
FRAC.	DEC.	FLUTE	OVER-ALL	TYPE 2670 EDP NO.	TYPE 2672 EDP NO.	BOTH TYPES PRICE	TYPE 2671 EDP NO.	TYPE 2673 EDP NO.	BOTH TYPES PRICE
1/16*	.0625	-	1 1/2	267004	-	\$35.20	267104	-	\$35.20
5/64*	.0781	-	1 1/2	267005	-	35.20	267105	-	35.20
3/32*	.0938	-	2	267006	-	38.65	267106	-	38.65
7/64*	.1094	-	2	267007	-	38.65	267107	-	38.65
1/8*	.1250	-	2	267008	-	39.80	267108	-	39.80
9/64*	.1406	-	2	267009	-	39.80	267109	-	39.80
5/32*	.1562	-	2	267010	-	41.90	267110	-	41.90
11/64*	.1719	-	2 3/8	267011	-	41.90	267111	-	41.90
3/16	.1875	1 1/2	3 1/2	267012	267212	38.00	267112	267312	38.00
13/64	.2031	1 1/2	3 1/2	267013	267213	38.00	267113	267313	38.00
7/32	.2188	1 3/4	3 3/4	267014	267214	39.25	267114	267314	39.25
15/64	.2344	1 3/4	3 3/4	267015	267215	40.50	267115	267315	40.50
1/4	.2500	2	4	267016	267216	40.50	267116	267316	40.50
17/64	.2656	2	4	267017	267217	42.80	267117	267317	42.80
9/32	.2812	2 1/4	4 1/4	267018	267218	42.80	267118	267318	42.80
19/64	.2969	2 1/4	4 1/4	267019	267219	44.80	267119	267319	44.80
5/16	.3125	2 1/2	4 1/2	267020	267220	44.80	267120	267320	44.80
21/64	.3281	2 1/2	4 1/2	267021	267221	47.75	267121	267321	47.75
11/32	.3438	2 3/4	4 3/4	267022	267222	47.75	267122	267322	47.75
23/64	.3594	2 3/4	4 3/4	267023	267223	51.40	267123	267323	51.40
3/8	.3750	3	5	267024	267224	51.40	267124	267324	51.40
25/64	.3906	3	5	267025	267225	57.95	267125	267325	57.95
13/32	.4062	3	5 1/4	267026	267226	60.05	267126	267326	60.05
27/64	.4219	3	5 1/4	267027	267227	64.90	267127	267327	64.90
7/16	.4375	3	5 1/2	267028	267228	69.75	267128	267328	69.75
29/64	.4531	3	5 1/2	267029	267229	73.15	267129	267329	73.15
15/32	.4688	3 1/4	5 3/4	267030	267230	76.70	267130	267330	76.70
31/64	.4844	3 1/4	5 3/4	267031	267231	92.95	267131	267331	92.95
1/2	.5000	3 1/2	6	267032	267232	89.85	267132	267332	89.85
17/32	.5312	3 1/2	6	267034	267234	103.05	267134	267334	103.05
9/16	.5625	3 1/2	6	267036	267236	106.60	267136	267336	106.60
19/32	.5938	4	7	267038	267238	112.80	267138	267338	112.80
5/8	.6250	4	7	267040	267240	116.25	267140	267340	116.25
21/32	.6562	4 1/2	7 1/2	267042	267242	124.45	267142	267342	124.45
11/16	.6875	4 1/2	7 1/2	267044	267244	127.70	267144	267344	127.70
23/32	.7188	4 3/4	8	267046	267246	133.85	267146	267346	133.85
3/4	.7500	4 3/4	8	267048	267248	137.60	267148	267348	137.60
25/32	.7812	4 3/4	8	267050	267250	265.65	267150	267350	265.65
13/16	.8125	4 3/4	8	267052	267252	246.55	267152	267352	246.55
7/8	.8750	4 3/4	8	267056	267256	251.70	267156	267356	251.70
15/16	.9375	4 3/4	8	267060	267260	280.30	267160	267360	280.30
1	1.0000	4 3/4	8	267064	267264	297.40	267164	267364	297.40

\*Solid carbide full length

TOOL DIAMETER	LENGTH				118° POINT			
	FLUTE		OVERALL		TYPE 2670 NEG. EDP NO.	TYPE 2672 POS. EDP NO.	BOTH TYPES PRICE	
mm	INCH	mm	INCH	mm	INCH			
5.0	.1969	38	1 1/2	89	3 1/2	2670050	2672050	\$35.55
5.5	.2165	45	1 3/4	95	3 3/4	2670055	2672055	39.45
6.0	.2362	51	2	102	4	2670060	2672060	39.75
6.5	.2559	51	2	102	4	2670065	2672065	42.05
7.0	.2756	57	2 1/4	108	4 1/4	2670070	2672070	42.05
7.5	.2953	57	2 1/4	108	4 1/4	2670075	2672075	43.95
8.0	.3150	64	2 1/2	114	4 1/2	2670080	2672080	47.40
8.5	.3346	70	2 3/4	121	4 3/4	2670085	2672085	47.40
9.0	.3543	70	2 3/4	121	4 3/4	2670090	2672090	50.55
9.5	.3740	76	3	127	5	2670095	2672095	47.95
10.0	.3937	76	3	133	5 1/4	2670100	2672100	58.95
10.5	.4134	76	3	133	5 1/4	2670105	2672105	68.35
11.0	.4331	76	3	140	5 1/2	2670110	2672110	96.25
11.5	.4528	76	3	140	5 1/2	2670115	2672115	72.00
12.0	.4724	83	3 1/4	146	5 3/4	2670120	2672120	88.00
12.5	.4921	89	3 1/2	152	6	2670125	2672125	88.00
13.0	.5118	89	3 1/2	152	6	2670130	2672130	101.00
13.5	.5315	89	3 1/2	152	6	2670135	2672135	101.00
14.0	.5512	89	3 1/2	152	6	2670140	2672140	104.60



# HARD STEEL DIE DRILLS

## SOLID CARBIDE - 120° POINT AND 140° POINT

**DISCONTINUED - WHILE SUPPLIES LAST**



### TYPE 2674 – SPADE TYPE - 120° POINT

Cam relieved 120° point.  
Precision ground to insure concentricity of tip and shank body.

### TYPE 2675 – SPADE TYPE - 140° POINT

Same as type 2674 above, except with 140° point designed for drilling abrasive and tough materials.

### USE:

Used for shallow holes, approximately 2 diameters deep. The short heavy construction allows more rigid hold drilling for tough applications, where longer length drills are not needed.

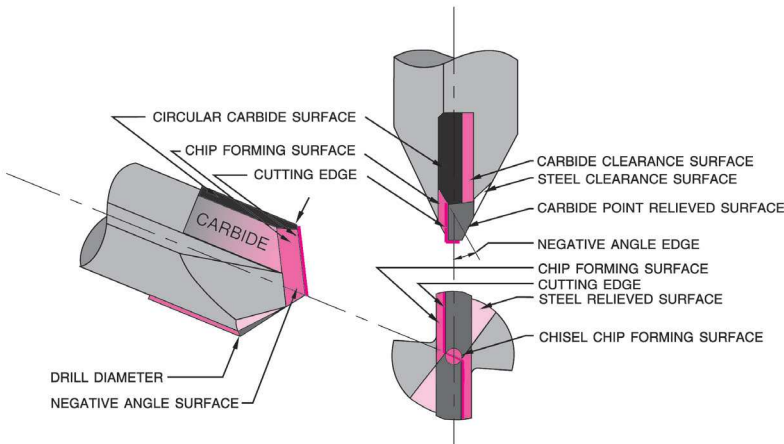
TOOL DIAMETER		OVER-ALL LENGTH	120° POINT	140° POINT	BOTH TYPES PRICE
FRAC.	DECIMAL		TYPE 2674 EDP NO.	TYPE 2675 EDP NO.	
3/32*	.0938	2	267406	267506	\$22.45
7/64*	.1094	2	267407	267507	22.95
1/8*	.1250	2	267408	267508	22.95
9/64*	.1406	2	267409	267509	24.85
5/32*	.1562	2	267410	267510	28.55
11/64*	.1719	3	267411	267511	30.50
3/16*	.1875	3	267412	267512	36.05
13/64*	.2031	3	267413	267513	40.60

\*Solid carbide full length

## SELECTING THE BEST DIE DRILL FOR YOUR NEEDS –

### TYPE 2670 & 2671

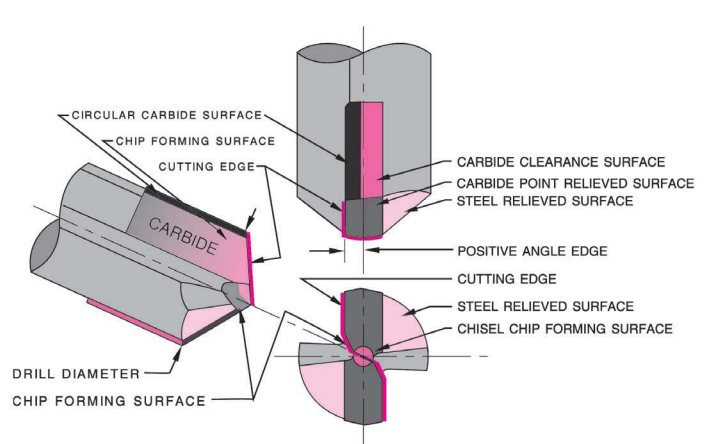
Negative angle cutting edge die drill or strongest edge, but higher spindle power required.



NEGATIVE ANGLE CUTTING EDGE DIE DRILL

### TYPE 2672 & 2673

Positive angle cutting edge die drill or thinned web permits feed rates with less spindle power.



POSITIVE ANGLE CUTTING EDGE DIE DRILL





















# TWIST DRILLS - CARBIDE TIPPED TAPER SHANK

**DISCONTINUED - WHILE SUPPLIES LAST**



### TYPE 2660 - TAPER SHANK - 118° POINT

Regular taper shank size.  
Heavy duty construction.

### TYPE 2661 - TAPER SHANK - 135° POINT

Same as type 2660 above, except with 135° split point  
designed for drilling abrasive and tough materials.

#### DRILL TOLERANCES:

Drill Diameter	Diameter		Included Angle		Lip Height T.I.V.
	Plus	Minus	Plus	Minus	
Thru 1/8"	.0000"	.0005"	5°	5°	.0020"
Over 1/8" thru 1/4"	.0000"	.0007"	5°	5°	.0030"
Over 1/4" thru 1/2"	.0000"	.0010"	5°	5°	.0040"
Over 1/2" thru 1"	.0000"	.0012"	3°	3°	.0050"
Over 1" thru 1 1/2"	.0000"	.0015"	3°	3°	.0060"

TOOL DIAMETER		LENGTH		MORSE TAPER	118° POINT		135° POINT	
FRAC.	DEC.	FLUTE	OVER-ALL		TYPE 2660 EDP NO.	PRICE	TYPE 2661 EDP NO.	PRICE
1/4	.2500	2 7/8	6 1/8	1	266016	\$53.90	266116	\$61.15
17/64	.2656	3	6 1/4	1	266017	N/A	266117	N/A
9/32	.2812	3	6 1/4	1	266018	N/A	266118	N/A
19/64	.2969	3 1/8	6 3/8	1	266019	N/A	266119	N/A
5/16	.3125	3 1/8	6 3/8	1	266020	55.15	266120	62.50
21/64	.3281	3 1/4	6 1/2	1	266021	70.20	266121	79.35
11/32	.3438	3 1/4	6 1/2	1	266022	70.20	266122	79.35
23/64	.3594	3 1/2	6 3/4	1	266023	70.20	266123	79.35
3/8	.3750	3 1/2	6 3/4	1	266024	70.20	266124	79.35
25/64	.3906	3 5/8	7	1	266025	81.20	266125	92.00
13/32	.4062	3 5/8	7	1	266026	81.20	266126	92.00
27/64	.4219	3 7/8	7 1/4	1	266027	81.20	266127	92.00
7/16	.4375	3 7/8	7 1/4	1	266028	71.00	266128	80.55
29/64	.4531	4 1/8	7 1/2	1	266029	86.30	266129	97.85
15/32	.4688	4 1/8	7 1/2	1	266030	86.30	266130	97.85
31/64	.4844	4 3/8	8 1/4	2	266031	86.30	266131	97.85
1/2	.5000	4 3/8	8 1/4	2	266032	67.95	266132	90.45
33/64	.5156	4 5/8	8 1/2	2	266033	87.70	266133	105.25
17/32	.5312	4 5/8	8 1/2	2	266034	71.65	266134	93.05
35/64	.5469	4 7/8	8 3/4	2	266035	89.00	266135	106.70
9/16	.5625	4 7/8	8 3/4	2	266036	72.25	266136	94.35
37/64	.5781	4 7/8	8 3/4	2	266037	93.05	266137	111.80
19/32	.5938	4 7/8	8 3/4	2	266038	79.70	266138	104.40
39/64	.6094	4 7/8	8 3/4	2	266039	107.85	266139	129.50
5/8	.6250	4 7/8	8 3/4	2	266040	87.80	266140	114.30
41/64	.6406	5 1/8	9	2	266041	109.55	266141	131.50
21/32	.6562	5 1/8	9	2	266042	85.60	266142	116.25
43/64	.6719	5 3/8	9 1/4	2	266043	110.85	266143	133.15
11/16	.6875	5 3/8	9 1/4	2	266044	88.35	266144	117.60
45/64	.7031	5 5/8	9 1/2	2	266045	113.95	266145	136.65
23/32	.7188	5 5/8	9 1/2	2	266046	98.15	266146	131.10
47/64	.7344	5 7/8	9 3/4	2	266047	116.20	266147	139.45
3/4	.7500	5 7/8	9 3/4	2	266048	100.50	266148	126.80
49/64	.7656	6	9 7/8	2	266049	123.55	266149	148.40
25/32	.7812	6	9 7/8	2	266050	119.65	266150	148.35
51/64	.7969	6 1/8	10 3/4	3	266051	124.85	266151	149.80
13/16	.8125	6 1/8	10 3/4	3	266052	120.95	266152	149.90

TOOL DIAMETER		LENGTH		MORSE TAPER	118° POINT		135° POINT	
FRAC.	DEC.	FLUTE	OVER-ALL		TYPE 2660 EDP NO.	PRICE	TYPE 2661 EDP NO.	PRICE
53/64	.8281	6 1/8	10 3/4	3	266053	\$135.45	266153	\$162.60
27/32	.8438	6 1/8	10 3/4	3	266054	123.50	266154	149.90
55/64	.8594	6 1/8	10 3/4	3	266055	N/A	266155	N/A
7/8	.8750	6 1/8	10 3/4	3	266056	131.35	266156	158.40
57/64	.8906	6 1/8	10 3/4	3	266057	141.50	266157	169.55
29/32	.9062	6 1/8	10 3/4	3	266058	142.45	266158	165.00
59/64	.9219	6 1/8	10 3/4	3	266059	144.05	266159	172.70
15/16	.9375	6 1/8	10 3/4	3	266060	144.50	266160	159.75
61/64	.9531	6 3/8	11	3	266061	N/A	266161	N/A
31/32	.9688	6 3/8	11	3	266062	150.75	266162	174.70
63/64	.9844	6 3/8	11	3	266063	157.80	266163	189.30
1	1.0000	6 3/8	11	3	266064	142.25	266164	171.85
1 1/64	1.0156	6 1/2	11 1/8	3	266065	N/A	266165	N/A
1 1/32	1.0312	6 1/2	11 1/8	3	266066	191.80	266166	217.50
1 3/64	1.0469	6 5/8	11 1/4	3	266067	N/A	266167	N/A
1 1/16	1.0625	6 5/8	11 1/4	3	266068	184.30	266168	233.55
1 5/64	1.0781	6 7/8	12 1/2	4	266069	N/A	266169	N/A
1 3/32	1.0938	6 7/8	12 1/2	4	266070	N/A	266170	N/A
1 7/64	1.1094	7 1/8	12 3/4	4	266071	N/A	266171	N/A
1 1/8	1.1250	7 1/8	12 3/4	4	266072	204.05	266172	259.00
1 9/64	1.1406	7 1/4	12 7/8	4	266073	N/A	266173	N/A
1 5/32	1.1562	7 1/4	12 7/8	4	266074	N/A	266174	N/A
1 11/64	1.1719	7 3/8	13	4	266075	N/A	266175	N/A
1 3/16	1.1875	7 3/8	13	4	266076	233.80	266176	296.40
1 13/64	1.2031	7 1/2	13 1/8	4	266077	N/A	266177	N/A
1 7/32	1.2188	7 1/2	13 1/8	4	266078	N/A	266178	N/A
1 15/64	1.2344	7 5/8	13 1/2	4	266079	N/A	266179	N/A
1 1/4	1.2500	7 5/8	13 1/2	4	266080	250.20	266180	317.50
1 9/32	1.2812	8 1/2	14 1/8	4	266082	N/A	266182	N/A
1 5/16	1.3125	8 5/8	14 1/4	4	266084	353.90	266184	400.85
1 11/32	1.3438	8 3/4	14 3/8	4	266086	N/A	266186	N/A
1 3/8	1.3750	8 7/8	14 1/2	4	266088	396.65	266188	449.35
1 13/32	1.4062	9	14 5/8	4	266090	N/A	266190	N/A
1 7/16	1.4375	9 1/8	14 3/4	4	266092	N/A	266192	N/A
1 15/32	1.4688	9 1/4	14 7/8	4	266094	N/A	266194	N/A
1 1/2	1.5000	9 3/8	15	4	266096	435.10	266196	493.05



# AIRCRAFT EXTENSION DRILLS

## CARBIDE TIPPED - 135° POINT

### TYPE 2610 - AIRCRAFT EXTENSION DRILLS - 6"

6" overall length aircraft extension drill.  
135° split point per NAS 907 specifications.

### TYPE 2611 - AIRCRAFT EXTENSION DRILLS - 12"

Same as type 2610, except 12" long.

#### USE:

For drilling holes where reach is normally not accessible with jobbers or taper length drills.  
Feeds should be light to medium range.  
Not recommended for deep hole applications.

#### OPTIONS:

Flat on shank.  
Intermediate diameters.  
Undersize diameter shank.



TOOL DIAMETER			FLUTE LENGTH	6" OVERALL LENGTH		12" OVERALL LENGTH	
FRAC.	WIRE LETTER	DEC. EQUIV.		TYPE 2610 EDP NO.	PRICE	TYPE 2611 EDP NO.	PRICE
1/8	32	.1160	1 3/8	261232	\$33.00	261332	\$39.00
	31	.1200	1 3/8	261231	29.60	261331	34.80
		.1250	1 3/8	261008	22.95	261108	27.00
	30	.1285	1 3/8	261230	31.20	261330	36.65
3/64	29	.1360	1 3/4	261229	32.20	261329	37.90
	28	.1405	1 3/4	261228	32.70	261328	38.60
		.1406	1 3/4	261009	24.90	261109	29.25
	27	.1440	1 3/8	261227	33.50	261327	39.30
1/4	26	.1470	1 7/8	261226	32.70	261326	38.60
	25	.1495	1 7/8	261225	32.70	261325	38.60
	24	.1520	2	261224	33.50	261324	39.30
	23	.1540	2	261223	32.70	261323	38.60
5/32		.1562	2	261010	24.35	261110	28.75
	22	.1570	2	261222	35.75	261322	42.10
	21	.1590	2 1/8	261221	34.65	261321	40.90
	20	.1610	2 1/8	261220	35.60	261320	41.80
3/16	19	.1660	2 1/8	261219	35.60	261319	41.80
	18	.1695	2 1/8	261218	35.60	261318	41.80
		.1719	2 1/8	261011	26.70	261111	31.30
	17	.1730	2 3/16	261217	35.60	261317	41.80
1/2	16	.1770	2 3/16	261216	34.65	261316	40.90
	15	.1800	2 3/16	261215	35.75	261315	42.10
	14	.1820	2 3/16	261214	34.65	261314	40.90
	13	.1850	2 3/16	261213	34.65	261313	40.90
5/16		.1875	2 5/16	261012	25.95	261112	30.65
	12	.1890	2 5/16	261212	36.20	261312	42.50
	11	.1910	2 5/16	261211	36.55	261311	43.15
	10	.1935	2 5/16	261210	36.20	261310	42.50
3/8	9	.1960	2 7/16	261209	36.55	261309	43.15
	8	.1990	2 7/16	261208	36.55	261308	43.15
	7	.2010	2 7/16	261207	36.55	261307	43.15
		.2031	2 7/16	261013	28.50	261113	33.50
7/16	6	.2040	2 1/2	261206	37.60	261306	44.30
	5	.2055	2 1/2	261205	36.55	261305	43.15
	4	.2090	2 1/2	261204	34.40	261304	40.50
	3	.2130	2 1/2	261203	36.55	261303	43.15
1		.2188	2 1/2	261014	28.50	261114	33.50
	2	.2210	2 5/8	261202	36.00	261302	42.35
	1	.2280	2 5/8	261201	35.60	261301	41.80
	A	.2340	2 5/8	261401	42.75	261501	50.15
1 1/4		.2344	2 5/8	261015	30.65	261115	36.05

TOOL DIAMETER			FLUTE LENGTH	6" OVERALL LENGTH		12" OVERALL LENGTH	
FRAC.	WIRE LETTER	DEC. EQUIV.		TYPE 2610 EDP NO.	PRICE	TYPE 2611 EDP NO.	PRICE
1/4	B	.2380	2 3/4	261402	\$42.75	261502	\$50.15
	C	.2420	2 3/4	261403	42.75	261503	50.15
	D	.2460	2 3/4	261404	42.00	261504	49.35
	E	.2500	2 3/4	261016	30.65	261116	36.05
5/16	F	.2570	2 7/8	261406	43.85	261506	51.55
	G	.2610	2 7/8	261407	44.80	261507	52.80
		.2656	2 7/8	261017	32.70	261117	38.60
	H	.2660	2 7/8	261408	45.80	261508	53.90
3/8	I	.2720	2 7/8	261409	44.80	261509	52.80
	J	.2770	2 7/8	261410	45.80	261510	53.90
	K	.2810	2 15/16	261411	45.80	261511	53.90
		.2812	2 15/16	261018	32.70	261118	38.60
7/16	L	.2900	2 15/16	261412	45.80	261512	53.90
	M	.2950	3 1/16	261413	50.50	261513	59.40
		.2969	3 1/16	261019	35.60	261119	41.80
	N	.3020	3 1/16	261414	49.35	261514	58.10
1/2	O	.3125	3 3/16	261020	35.60	261120	41.80
		.3160	3 3/16	261415	47.00	261515	55.20
	P	.3230	3 3/16	261416	49.95	261516	58.70
		.3281	3 3/16	261021	37.80	261121	44.50
5/8	Q	.3320	3 7/16	261417	51.30	261517	60.30
	R	.3390	3 7/16	261418	49.95	261518	58.70
		.3438	3 7/16	261022	37.80	261122	44.50
	S	.3480	3 1/2	261419	54.00	261519	63.45
3/4	T	.3580	3 1/2	261420	55.35	261520	65.05
		.3594	3 1/2	261023	40.30	261123	47.25
	U	.3680	3 5/8	261421	53.20	261521	62.65
		.3750	3 5/8	261024	40.30	261124	47.25
7/8	V	.3770	3 5/8	261422	54.00	261522	63.45
	W	.3860	3 3/4	261423	57.95	261523	68.10
		.3906	3 3/4	261025	41.35	261125	48.70
	X	.3970	3 3/4	261424	54.80	261524	64.55
1 1/8	Y	.4040	3 7/8	261425	56.90	261525	66.95
		.4062	3 7/8	261026	40.80	261126	47.95
	Z	.4130	3 7/8	261426	64.20	261526	75.50
		.4219	3 15/16	261027	44.80	261127	52.80
1 1/4		.4375	4 1/16	261028	44.80	261128	52.80
		.4531	4 3/16	261029	51.50	261129	60.65
		.4688	4 5/16	261030	50.50	261130	59.40
		.4844	4 3/8	261031	56.65	261131	66.65
1 1/2		.5000	4 1/2	261032	56.65	261132	66.65









# COOLANT FEEDING DRILLS

SHORT LENGTH - CARBIDE TIPPED 125° SELF CENTERING POINT

**DISCONTINUED - WHILE SUPPLIES LAST**



## TYPE 2652 - SHORT LENGTH

Coolant Drill - 125° four facet point, self centering. Shank diameter same size as cutting tip. Carbide tip high temperature brazed to hardened tool steel bodies with polished straight flutes. Shank coolant hole not tapped. Tip diameter tolerance +.000", -.001". Two coolant passages.

### USE:

Excellent coolant feeding drills for use when very high performance is required. Excellent hole straightness. Exceptional hole finish as coolant flushes chips out and away from cutting edges. High penetration feed rates for shorter drill operation times. Proven carbide tip point geometry assures long production runs within tolerances.

### OPTIONS:

Modified tool diameter.  
Modified metric tool diameter.  
Modified point and/or angle.  
Flat(s) on shank.  
Tanged shank.

TOOL DIAMETER		LENGTH		125° 4 FACET PT.	PRICE	TOOL DIAMETER RANGE*
FRAC.	DECIMAL	FLUTE	OVERALL	TYPE 2652 EDP NO.		
1/4	.2500	2 1/2	4 29/32	265216	\$189.30	0.2490-0.2530
17/64	.2656	2 3/4	5 5/32	265217	189.30	-
9/32	.2812	2 3/4	5 5/32	265218	189.30	0.2640-0.2840
19/64	.2969	3 3/16	5 19/32	265219	189.30	-
5/16	.3125	3 3/16	5 19/32	265220	189.30	0.2950-0.3160
21/64	.3281	3 7/16	5 27/32	265221	189.30	-
11/32	.3438	3 7/16	5 27/32	265222	189.30	0.3260-0.3460
23/64	.3594	3 5/8	6 1/32	265223	191.40	-
3/8	.3750	3 5/8	6 1/32	265224	191.40	0.3540-0.3770
25/64	.3906	3 7/8	6 9/32	265225	196.15	-
13/32	.4062	3 7/8	6 9/32	265226	196.15	0.3850-0.4080
27/64	.4219	4 1/16	6 15/32	265227	202.75	-
7/16	.4375	4 1/16	6 15/32	265228	202.75	0.4100-0.4390
29/64	.4531	4 5/16	6 23/32	265229	215.90	-
15/32	.4688	4 3/8	6 23/32	265230	215.90	0.4391-0.4724
31/64	.4844	4 1/2	6 29/32	265231	222.20	-
1/2	.5000	4 1/2	6 29/32	265232	222.20	0.4725-0.5030
33/64	.5156	4 13/16	7 7/32	265233	231.55	-
17/32	.5312	4 13/16	7 7/32	265234	235.45	0.5031-0.5330
35/64	.5469	4 13/16	7 7/32	265235	244.25	-
9/16	.5625	4 13/16	7 7/32	265236	248.50	0.5331-0.5650
37/64	.5781	5 3/16	7 19/32	265237	292.80	-
19/32	.5938	5 3/16	7 19/32	265238	297.65	0.5651-0.5950
39/64	.6094	5 3/16	7 19/32	265239	292.80	-
5/8	.6250	5 3/16	7 19/32	265240	297.65	0.5951-0.6270
41/64	.6406	5 3/16	7 19/32	265241	313.85	-
21/32	.6562	5 3/8	7 19/32	265242	313.85	0.6271-0.6570
43/64	.6719	5 5/8	8 1/32	265243	339.55	-
11/16	.6875	5 5/8	8 1/32	265244	340.00	0.6571-0.6900
45/64	.7031	5 5/8	8 1/32	265245	349.65	-
23/32	.7188	5 5/8	8 1/32	265246	349.65	0.6901-0.7220
47/64	.7344	6 1/16	8 15/32	265247	353.15	-
3/4	.7500	6 1/16	8 15/32	265248	353.15	0.7221-0.7530
49/64	.7656	6 1/16	8 9/16	265249	369.70	-
25/32	.7812	6 1/16	8 9/16	265250	376.05	0.7531-0.7840
13/16	.8125	6 1/16	8 9/16	265252	382.30	0.7841-0.8160
27/32	.8438	6 1/2	9	265254	405.40	0.8161-0.8470
7/8	.8750	6 1/2	9	265256	415.15	0.8471-0.8780
29/32	.9062	6 15/16	9 7/16	265258	444.25	0.8781-0.9090
15/16	.9375	6 15/16	9 7/16	265260	477.25	0.9091-0.9390
31/32	.9688	6 15/16	9 7/16	265262	496.80	0.9391-0.9700
1	1.0000	7 3/8	9 7/8	265264	509.85	0.9701-1.0030

\*Contact us for modified tool diameter prices.



# COOLANT FEEDING DRILLS

LONG LENGTH - CARBIDE TIPPED 125° SELF CENTERING POINT

**DISCONTINUED - WHILE SUPPLIES LAST**



## TYPE 2650 - LONG LENGTH

Coolant Drill - 125° four facet point, self centering.  
 Shank diameter same size as cutting tip.  
 Same as type 2652 except longer overall and flute lengths.  
 Where possible, use shorter length, type 2652, for greater rigidity.  
 Carbide tip high temperature brazed to hardened tool steel bodies with polished straight flutes.  
 Shank coolant hole not tapped.  
 Tip diameter tolerance +.000", - .001".  
 Two coolant passages.

## OPTIONS:

Modified tool diameter.  
 Modified metric tool diameter.  
 Modified point and/or angle.  
 Flat(s) on shank.  
 Tanged shank.

TOOL DIAMETER		LENGTH		125° 4 FACET PT. TYPE 2650 EDP NO.	PRICE	TOOL DIAMETER RANGE*
FRAC	DEC.	FLUTE	OVERALL			
1/4	.2500	4 3/8	6 1/8	265016	\$207.35	0.2490-0.2530
17/64	.2656	4 3/4	6 1/4	265017	207.35	-
9/32	.2812	4 3/4	6 1/4	265018	207.35	0.2640-0.2840
19/64	.2969	4 7/8	6 3/8	265019	207.35	-
5/16	.3125	4 7/8	6 3/8	265020	207.35	0.2950-0.3160
21/64	.3281	5	6 1/2	265021	199.60	-
11/32	.3438	5	6 1/2	265022	199.60	0.3260-0.3460
23/64	.3594	5 1/4	6 3/4	265023	194.45	-
3/8	.3750	5 1/4	6 3/4	265024	201.95	0.3540-0.3770
25/64	.3906	5 1/2	7	265025	199.60	-
13/32	.4062	5 1/2	7	265026	199.60	0.3850-0.4080
27/64	.4219	5 3/4	7 1/4	265027	206.05	-
7/16	.4375	5 3/4	7 1/4	265028	206.05	0.4100-0.4390
29/64	.4531	5 3/4	7 1/2	265029	219.00	-
15/32	.4688	5 3/4	7 1/2	265030	219.00	0.4391-0.4724
31/64	.4844	5 3/4	7 3/4	265031	225.55	-
1/2	.5000	5 3/4	7 3/4	265032	225.55	0.4725-0.5030
33/64	.5156	6	8	265033	242.05	-
17/32	.5312	6	8	265034	242.05	0.5031-0.5330
35/64	.5469	6 1/4	8 1/4	265035	250.70	-
9/16	.5625	6 1/4	8 1/4	265036	254.95	0.5331-0.5650
37/64	.5781	6 3/4	8 3/4	265037	301.85	-
19/32	.5938	6 3/4	8 3/4	265038	306.95	0.5651-0.5950
39/64	.6094	6 3/4	8 3/4	265039	301.85	-
5/8	.6250	6 3/4	8 3/4	265040	306.95	0.5951-0.6270
41/64	.6406	7	9	265041	318.10	-
21/32	.6562	7	9	265042	323.60	0.6271-0.6570
43/64	.6719	7 1/4	9 1/4	265043	340.50	-
11/16	.6875	7 1/4	9 1/4	265044	346.55	0.6571-0.6900
45/64	.7031	7 1/2	9 1/2	265045	353.55	-
23/32	.7188	7 1/2	9 1/2	265046	359.55	0.6901-0.7220
47/64	.7344	7 3/4	9 3/4	265047	356.50	-
3/4	.7500	7 3/4	9 3/4	265048	362.75	0.7221-0.7530
49/64	.7656	7 7/8	9 7/8	265049	385.65	-
25/32	.7812	7 7/8	9 7/8	265050	385.65	0.7531-0.7840
13/16	.8125	8	10	265052	392.15	0.7841-0.8160
27/32	.8438	8	10	265054	415.15	0.8161-0.8470
7/8	.8750	8	10	265056	425.00	0.8471-0.8780
29/32	.9062	8	10	265058	470.75	0.8781-0.9090
15/16	.9375	8 3/4	10 3/4	265060	490.25	0.9091-0.9390
31/32	.9688	9	11	265062	495.00	0.9391-0.9700
1	1.0000	9	11	265064	495.00	0.9701-1.0030

TOOL DIAMETER		LENGTH		125° 4 FACET PT. TYPE 2650 EDP NO.	PRICE	TOOL DIAMETER RANGE**
mm	INCH	FLUTE	OVER-ALL			
*6.5	.2559	4 5/8	6 1/8	2650065	\$216.10	-
7.0	.2756	4 3/4	6 1/4	2650070	216.10	6.706-7.214
7.5	.2953	4 7/8	6 3/8	2650075	216.10	7.493-8.026
8.0	.3150	4 7/8	6 3/8	2650080	216.10	-
8.5	.3346	5	6 1/2	2650085	208.70	8.280-8.788
9.0	.3543	5 1/4	6 3/4	2650090	208.70	8.992-9.576
9.5	.3740	5 1/4	6 3/4	2650095	208.70	-
10.0	.3937	5 1/2	7	2650100	208.70	9.779-10.363
10.5	.4134	5 3/4	7 1/4	2650105	216.10	10.414-11.151
11.0	.4331	5 3/4	7 1/4	2650110	216.10	-
11.5	.4528	5 3/4	7 1/2	2650115	233.55	11.153-12.000
12.0	.4724	5 3/4	7 1/2	2650120	233.55	-
12.5	.4921	5 3/4	7 3/4	2650125	238.50	12.002-12.776
13.0	.5118	6	8	2650130	253.35	12.779-13.538
13.5	.5315	6	8	2650135	253.35	-
14.0	.5512	6 1/4	8 1/4	2650140	265.80	13.541-14.351
14.5	.5709	6 3/4	8 3/4	2650145	322.80	14.354-15.113
15.0	.5906	6 3/4	8 3/4	2650150	322.80	-
15.5	.6102	6 3/4	8 3/4	2650155	322.80	15.116-15.926
16.0	.6299	7	9	2650160	330.35	15.928-16.688
16.5	.6496	7	9	2650165	330.35	-
17.0	.6693	7 1/4	9 1/4	2650170	352.60	16.690-17.526
17.5	.6890	7 1/4	9 1/4	2650175	352.60	-
18.0	.7087	7 1/2	9 1/2	2650180	370.10	17.529-18.339
18.5	.7283	7 3/4	9 3/4	2650185	372.55	18.341-19.126
19.0	.7480	7 3/4	9 3/4	2650190	372.55	-
19.5	.7677	7 7/8	9 7/8	2650195	395.00	19.129-19.914
20.0	.7874	8	10	2650200	400.05	19.916-20.726
20.5	.8071	8	10	2650205	400.05	-
21.0	.8268	8	10	2650210	422.30	20.729-21.514
21.5	.8465	8	10	2650215	422.30	-
22.0	.8661	8	10	2650220	432.20	21.516-22.301
22.5	.8858	8	10	2650225	476.95	22.304-23.089
23.0	.9055	8	10	2650230	476.95	-
23.5	.9252	8 3/4	10 3/4	2650235	494.30	23.091-23.851
24.0	.9449	9	11	2650240	514.20	23.853-24.638
24.5	.9646	9	11	2650245	514.20	-
25.0	.9843	9	11	2650250	514.20	24.641-25.476

\*Contact us for modified tool diameter prices.

\*6.5mm tool diameter has 6.35mm shank diameter.

\*\*Contact us for modified tool diameter prices.



# COOLANT FEEDING DRILLS

## SHORT LENGTH AND EXTRA LONG LENGTH - CARBIDE TIPPED

### TYPE 2652 - SHORT LENGTH - METRIC

125° four facet point.  
 Flat relieved, self centering point.  
 Polished straight flutes.  
 Two coolant outlets.  
 Drill body diameter smaller than tool diameter to prevent gauling.  
 Shank diameter same size as tool diameter.  
 Shank and tool diameter tolerances: plus .000", minus .001".  
 Carbide high temperature brazed to hardened tool steel body.  
 Extra long carbide tip for additional regrinds.  
 Straight flutes for superior hole straightness, improved finish and maximum chip capacity.



**DISCONTINUED - WHILE SUPPLIES LAST**  
**OPTIONS:**

- Modified tool diameter.
- Modified metric tool diameter.
- Modified point and/or angle.
- Flat(s) on shank.
- Tanged shank.

**USE:**

For drilling most materials, including some stainless steels.  
 For intermediate depth holes, 5-8 tool diameters deep.

TOOL DIAMETER		LENGTH				TYPE 2652 METRIC EDP NO.	METRIC PRICE	TOOL DIAMETER RANGE*
mm	INCH	FLUTE		OVERALL				
**6.5	.2559	64	2 1/2	125	4 29/32	2652065	\$244.60	-
7.0	.2756	70	2 3/4	131	5 5/32	2652070	244.60	6.706 - 7.214
7.5	.2953	81	3 3/16	142	5 19/32	2652075	244.60	7.493 - 8.026
8.0	.3150	81	3 3/16	142	5 19/32	2652080	244.60	-
8.5	.3346	87	3 7/16	148	5 27/32	2652085	236.20	8.280 - 8.788
9.0	.3543	92	3 5/8	153	6 1/32	2652090	236.20	8.992 - 9.576
9.5	.3740	92	3 5/8	153	6 1/32	2652095	236.20	-
10.0	.3937	98	3 7/8	159	6 9/32	2652100	236.20	9.779 - 10.363
10.5	.4134	103	4 1/16	164	6 15/32	2652105	244.60	10.414 - 11.151
11.0	.4331	103	4 1/16	164	6 15/32	2652110	244.60	-
11.5	.4528	109	4 3/16	171	6 23/32	2652115	264.40	11.153 - 12.000
12.0	.4724	109	4 3/16	171	6 23/32	2652120	264.40	-
12.5	.4921	114	4 1/2	175	6 29/32	2652125	270.00	12.002 - 12.776
13.0	.5118	122	4 13/16	183	7 7/32	2652130	286.80	12.779 - 13.538
13.5	.5315	122	4 13/16	183	7 7/32	2652135	286.80	-
14.0	.5512	122	4 13/16	183	7 7/32	2652140	300.90	13.541 - 14.351
14.5	.5709	131	5 3/16	193	7 19/32	2652145	365.55	14.354 - 15.113
15.0	.5906	131	5 3/16	193	7 19/32	2652150	365.55	-
15.5	.6102	131	5 3/16	193	7 19/32	2652155	365.55	15.116 - 15.926
16.0	.6299	131	5 3/16	193	7 19/32	2652160	373.90	15.928 - 16.688

TOOL DIAMETER		LENGTH				TYPE 2652 METRIC EDP NO.	METRIC PRICE	TOOL DIAMETER RANGE*
mm	INCH	FLUTE		OVERALL				
16.5	.6496	131	5 3/16	193	7 19/32	2652165	\$373.90	-
17.0	.6693	143	5 5/8	204	8 1/2	2652170	399.20	16.690 - 17.526
17.5	.6890	143	5 5/8	204	8 1/2	2652175	399.20	-
18.0	.7087	143	5 5/8	204	8 1/2	2652180	419.05	17.529 - 18.339
18.5	.7283	154	6 1/16	215	8 15/32	2652185	421.75	18.341 - 19.126
19.0	.7480	154	6 1/16	215	8 15/32	2652190	421.75	-
19.5	.7677	154	6 1/16	217	8 9/16	2652195	447.15	19.129 - 19.914
20.0	.7874	154	6 1/16	217	8 9/16	2652200	452.85	19.916 - 20.726
20.5	.8071	154	6 1/16	217	8 9/16	2652205	452.85	-
21.0	.8268	165	6 1/2	229	9	2652210	478.00	20.729 - 21.514
21.5	.8465	165	6 1/2	229	9	2652215	478.00	-
22.0	.8661	165	6 1/2	229	9	2652220	489.30	21.516 - 22.301
22.5	.8858	176	6 15/16	240	9 7/16	2652225	539.90	22.304 - 23.089
23.0	.9055	176	6 15/16	240	9 7/16	2652230	539.90	-
23.5	.9252	176	6 15/16	240	9 7/16	2652235	559.60	23.091 - 23.851
24.0	.9449	176	6 15/16	240	9 7/16	2652240	582.00	23.853 - 24.638
24.5	.9646	176	6 15/16	240	9 7/16	2652245	577.15	-
25.0	.9843	187	7 3/8	251	9 7/8	2652250	582.00	24.641 - 25.476

\*Contact us for modified tool diameter prices.  
 \*\*6.5mm tool diameter has 6.35mm shank diameter.

### TYPE 2658 - EXTRA LONG LENGTH

125° four facet point.  
 Flat relieved, self centering point.  
 Polished straight flutes.  
 Two coolant outlets.  
 Drill body diameter smaller than tool diameter to prevent gauling.  
 Shank diameter same size as tool diameter.  
 Shank and tool diameter tolerances: plus .000", minus .001".  
 Carbide high temperature brazed to hardened tool steel body.  
 Extra long carbide tip for additional regrinds.  
 Straight flutes for superior hole straightness, improved finish and maximum chip capacity.

**DISCONTINUED - WHILE SUPPLIES LAST**  
**OPTIONS:**

- Modified tool diameter.
- Modified metric tool diameter.
- Modified point and/or angle.
- Flat(s) on shank.
- Tanged shank.

**USE:**

For drilling most materials, including some stainless steels.  
 For very deep holes, 12-24 tool diameters deep.



TOOL DIAMETER		LENGTH		TYPE 2658 EDP NO.	PRICE	TOOL DIAMETER RANGE*
FRAC.	DECIMAL	FLUTE	OVER-ALL			
5/16	.3125	8	10	265820	\$299.25	0.3100-0.3160
11/32	.3438	8	10	265822	299.25	0.3281-0.3460
3/8	.3750	9	11	265824	316.30	0.3594-0.3770
13/32	.4062	9	11	265826	360.00	0.3906-0.4080
7/16	.4375	9	11	265828	360.00	0.4200-0.4390
15/32	.4688	9 3/4	12	265830	380.15	0.4531-0.4710
1/2	.5000	9 3/4	12	265832	380.15	0.4800-0.5030
17/32	.5312	9 3/4	12	265834	408.00	0.5118-0.5330

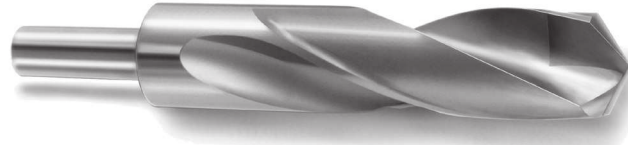
TOOL DIAMETER		LENGTH		TYPE 2658 EDP NO.	PRICE	TOOL DIAMETER RANGE*
FRAC.	DECIMAL	FLUTE	OVER-ALL			
5/16	.5625	10 3/4	13	265836	\$439.45	0.5430-0.5650
3/8	.6250	10 3/4	13	265840	464.00	0.6070-0.6270
11/16	.6875	11 3/4	14	265844	483.20	0.6693-0.6900
3/4	.7500	11 3/4	14	265848	511.50	0.7320-0.7530
13/16	.8125	12 3/4	15	265852	543.15	0.7953-0.8160
7/8	.8750	12 3/4	15	265856	585.25	0.8570-0.8780
15/16	.9375	13 3/4	16	265860	625.30	0.9180-0.9390
1	1.0000	13 3/4	16	265864	677.20	0.9820-1.0030

\*Contact us for modified tool diameter prices.



# SILVER & DEMING DRILLS

## CARBIDE TIPPED - 118° STANDARD AND 135° SPLIT POINT



### TYPE 2616 - 118° POINT

Shank: 1/2" diameter, 2 1/4" long.  
118° point - 6" overall length.  
Heavy duty quality construction.

### TYPE 2618 - 135° SPLIT POINT - DISCONTINUED WHILE SUPPLIES LAST

Same as Type 2616 above, except 135° split point.  
Designed for drilling tough abrasive or high tensile materials.

### OPTIONS:

Modified tool diameter.  
Metric tool diameter.  
Modified point and/or angle.  
Flat(s) on shank.

### USE:

Allows larger tool diameter drilling using a 1/2" drill chuck.

TOOL DIAMETER		LENGTH		118° POINT		135° POINT	
FRAC.	DECIMAL	FLUTE	OVER-ALL	TYPE 2616 EDP NO.	PRICE	TYPE 2618 EDP NO.	PRICE
1/2	.5000	3 1/8	6	261632	\$68.90	261832	\$72.35
17/32	.5312	3 1/8	6	261634	100.75	261834	105.90
9/16	.5625	3 1/8	6	261636	104.45	261836	109.75
19/32	.5938	3 1/8	6	261638	108.60	261838	114.05
5/8	.6250	3 1/8	6	261640	120.75	261840	126.70
21/32	.6562	3 1/8	6	261642	130.90	261842	137.40
11/16	.6875	3 1/8	6	261644	135.95	261844	142.90
23/32	.7188	3 1/8	6	261646	141.05	261846	148.10
3/4	.7500	3 1/8	6	261648	147.80	261848	155.30
25/32	.7812	3 1/8	6	261650	162.95	261850	171.15
13/16	.8125	3 1/8	6	261652	163.40	261852	171.60
27/32	.8438	3 1/8	6	261654	163.40	261854	171.60
7/8	.8750	3 1/8	6	261656	170.00	261856	178.45

TOOL DIAMETER		LENGTH		118° POINT		135° POINT	
FRAC.	DECIMAL	FLUTE	OVER-ALL	TYPE 2616 EDP NO.	PRICE	TYPE 2618 EDP NO.	PRICE
29/32	.9062	3 1/8	6	261658	\$174.05	261858	\$182.80
15/16	.9375	3 1/8	6	261660	175.80	261860	184.55
31/32	.9688	3 1/8	6	261662	181.75	261862	190.80
1	1.0000	3 1/8	6	261664	185.65	261864	195.00
1 1/32	1.0312	3 1/8	6	261666	179.15	261866	188.20
1 1/16	1.0625	3 1/8	6	261668	194.35	261868	204.00
1 1/8	1.0938	3 1/8	6	261670	198.95	261870	208.95
1 1/4	1.1250	3 1/8	6	261672	202.90	261872	212.90
1 1/8	1.1562	3 1/8	6	261674	246.20	261874	258.55
1 3/16	1.1875	3 1/8	6	261676	250.65	261876	263.20
1 1/2	1.2188	3 1/8	6	261678	263.15	261878	276.45
1 1/4	1.2500	3 1/8	6	261680	240.30	261880	252.35

# CNC SPOTTING/CENTERING DRILLS

## CARBIDE TIPPED

### DISCONTINUED - WHILE SUPPLIES LAST

#### ALL TYPES:

Tool diameter not cleared.  
Accurately ground point.  
Polished flutes.

#### USE:

For accurate centering and chamfering.  
Drill wandering minimized.  
Cuts only to depth of point.

Not for drilling holes.  
Ideal for CNC machining.



### TYPE 2677 - 90° POINT REGULAR LENGTH

### TYPE 2678 - 120° POINT REGULAR LENGTH

### TYPE 2679 - 140° POINT REGULAR LENGTH

### TYPE 2647 - 90° POINT SHORT LENGTH

### TYPE 2648 - 120° POINT SHORT LENGTH

### TYPE 2649 - 140° POINT SHORT LENGTH

TOOL DIAMETER		LENGTH		TYPE 2677	TYPE 2678	TYPE 2679	ALL TYPES PRICE
FRAC.	DECIMAL	FLUTE	OVER-ALL	90° PT. EDP NO.	120° PT. EDP NO.	140° PT. EDP NO.	
1/4	.2500	1	4	267716	267816	267916	\$97.45
3/8	.3750	1 1/8	5	267724	267824	267924	113.80
1/2	.5000	1 1/2	6	267732	267832	267932	153.00
3/8	.6250	1 3/8	7	267740	267840	267940	221.55
3/4	.7500	1 7/8	8	267748	267848	267948	257.05
1	1.0000	2 1/4	8	267764	267864	267964	340.80

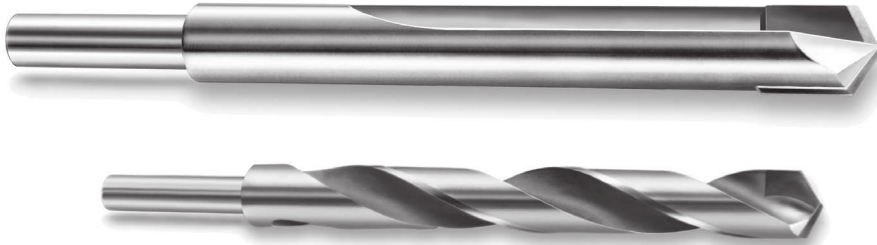
TOOL DIAMETER		LENGTH		TYPE 2647	TYPE 2648	TYPE 2649	ALL TYPES PRICE
FRAC.	DECIMAL	FLUTE	OVER-ALL	90° PT. EDP NO.	120° PT. EDP NO.	140° PT. EDP NO.	
1/4	.2500	1	2 1/2	264716	264816	264916	\$92.60
3/8	.3750	1 1/8	3 1/8	264724	264824	264924	108.10
1/2	.5000	1 1/2	3 3/4	264732	264832	264932	145.40
3/8	.6250	1 3/8	4 1/4	264740	264840	264940	210.55
3/4	.7500	1 7/8	5	264748	264848	264948	244.25
1	1.0000	2 1/4	6	264764	264864	264964	323.70



# REDUCED SHANK DIAMETER DRILLS

CARBIDE TIPPED - STUB LENGTH, JOBBERS LENGTH, AND HARD  
STEEL DIE DRILLS - 1/4", 3/8", 1/2", OR 3/4" SHANK DIAMETER

## TYPES 2640, 2641, 2600, 2601, 2670



### OPTIONS:

Modified tool diameter.  
Metric tool diameter.  
Modified point and/or angle.  
Flat(s) on shank.

### USE:

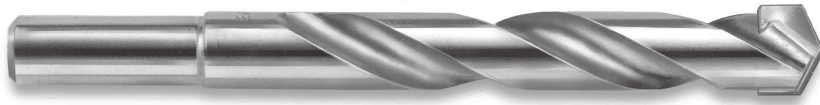
Can be used in drill chucks with  
diameter limitations.

SHANK DIAM.	TOOL DIAMETER		STUB LENGTH DRILLS						JOBBER'S LENGTH DRILLS				HARD STEEL DIE DRILLS		
			OVER-ALL LENGTH	TYPE 2640 118° PT.		TYPE 2641 135° PT.		OVER-ALL LENGTH	TYPE 2600 118° PT.		TYPE 2601 135° PT.		OVER-ALL LENGTH	TYPE 2670 NEG. 118° PT.	BOTH TYPES PRICE
	FRAC.	DEC.		EDP NO.	PRICE	EDP NO.	PRICE		EDP NO.	PRICE	EDP NO.	PRICE		EDP NO.	
1/4	9/32	.2812	2 11/16	2640618	\$41.55	2641618	\$48.20	4 1/4	2600618	\$41.10	2601618	\$47.65	-	-	-
	5/16	.3125	2 13/16	2640620	44.10	2641620	51.30	4 1/2	2600620	44.40	2601620	51.60	4 1/2	2670620	67.30
	11/32	.3438	3	2640622	51.40	2641622	59.50	4 3/4	2600622	47.20	2601622	54.95	4 3/4	2670622	71.65
	3/8	.3750	3 1/8	2640624	52.60	2641624	61.15	5	2600624	50.15	2601624	58.35	5	2670624	77.00
	13/32	.4062	3 3/16	2640626	62.40	2641626	72.65	5 1/4	2600626	54.55	2601626	63.50	5 1/4	2670626	90.30
	7/16	.4375	3 7/16	2640628	66.70	2641628	74.00	5 1/2	2600628	59.40	2601628	68.95	5 1/2	2670628	104.60
	15/32	.4688	3 3/8	2640630	94.95	2641630	110.45	5 3/4	2600630	66.80	2601630	77.40	5 3/4	2670630	114.90
	1/2	.5000	3 3/4	2640632	90.85	2641632	105.60	6	2600632	82.20	2601632	86.55	6	2670632	134.80
3/8	13/32	.4062	3 3/16	2640726	62.40	2641726	72.65	5 1/4	2600726	54.55	2601726	63.50	-	-	-
	7/16	.4375	3 7/16	2640728	66.70	2641728	74.00	5 1/2	2600728	59.40	2601728	68.95	5 1/2	2670728	104.60
	15/32	.4688	3 3/8	2640730	94.95	2641730	110.45	5 3/4	2600730	66.80	2601730	77.40	5 3/4	2670730	114.90
	1/2	.5000	3 3/4	2640732	90.85	2641732	105.60	6	2600732	82.20	2601732	86.55	6	2670732	134.80
	17/32	.5312	3 7/8	2640734	113.30	2641734	127.60	6 5/8	2600734	106.95	2601734	124.30	6	2670734	154.60
	9/16	.5625	4	2640736	113.30	2641736	127.60	6 3/4	2600736	108.00	2601736	125.40	6	2670736	159.95
	19/32	.5938	4 1/8	2640738	129.90	2641738	146.45	7 1/8	2600738	116.00	2601738	134.50	7	2670738	169.25
	5/8	.6250	4 1/4	2640740	129.90	2641740	146.45	7 1/2	2600740	131.45	2601740	152.35	7	2670740	174.40
	21/32	.6562	4 1/2	2640742	156.20	2641742	176.20	7 1/8	2600742	133.55	2601742	154.95	7 1/2	2670742	186.60
	11/16	.6875	4 5/8	2640744	160.25	2641744	180.85	7 5/8	2600744	136.15	2601744	157.90	7 1/2	2670744	191.70
	23/32	.7188	4 3/4	2640746	181.75	2641746	211.05	7 7/8	2600746	160.70	2601746	178.75	8	2670746	200.85
	3/4	.7500	5	2640748	182.20	2641748	205.20	8	2600748	164.05	2601748	182.35	8	2670748	206.15
1/2	17/32	.5312	3 7/8	2640834	113.30	2641834	127.60	6 5/8	2600834	106.95	2601834	124.30	-	-	-
	9/16	.5625	4	2640836	113.30	2641836	127.60	6 3/4	2600836	108.00	2601836	125.40	6	2670836	159.95
	19/32	.5938	4 1/8	2640838	129.90	2641838	146.45	7 1/8	2600838	116.00	2601838	134.50	7	2670838	169.25
	5/8	.6250	4 1/4	2640840	129.90	2641840	146.45	7 1/2	2600840	131.45	2601840	152.35	7	2670840	174.40
	21/32	.6562	4 1/2	2640842	156.20	2641842	176.20	7 1/8	2600842	133.55	2601842	154.95	7 1/2	2670842	186.60
	11/16	.6875	4 5/8	2640844	160.25	2641844	180.85	7 5/8	2600844	136.15	2601844	157.90	7 1/2	2670844	191.70
	23/32	.7188	4 3/4	2640846	181.75	2641846	211.05	7 7/8	2600846	160.70	2601846	178.75	8	2670846	200.85
	3/4	.7500	5	2640848	182.20	2641848	205.20	8	2600848	164.05	2601848	182.35	8	2670848	206.15
	13/16	.8125	5 1/4	2640852	225.15	2641852	254.10	-	-	-	-	-	8	2670852	369.75
	7/8	.8750	5 1/2	2640856	247.15	2641856	278.60	-	-	-	-	-	8	2670856	377.45
	15/16	.9375	5 3/4	2640860	265.30	2641860	299.25	-	-	-	-	-	8	2670860	420.60
	1	1.0000	6	2640864	280.25	2641864	316.20	-	-	-	-	-	8	2670864	446.20
3/4	13/16	.8125	5 1/4	2640952	225.15	2641952	254.10	-	-	-	-	-	8	2670952	369.75
	7/8	.8750	5 1/2	2640956	247.15	2641956	278.60	-	-	-	-	-	8	2670956	377.45
	15/16	.9375	5 3/4	2640960	265.30	2641960	299.25	-	-	-	-	-	8	2670960	420.60
	1	1.0000	6	2640964	280.25	2641964	316.20	-	-	-	-	-	8	2670964	446.20
	1 1/16	1.0625	6 1/4	2640968	351.20	2641968	396.00	-	-	-	-	-	-	-	-
	1 1/8	1.1250	6 3/8	2640972	390.00	2641972	439.65	-	-	-	-	-	-	-	-
	1 3/16	1.1875	6 5/8	2640976	475.85	2641976	533.40	-	-	-	-	-	-	-	-
	1 1/4	1.2500	6 3/4	2640980	475.85	2641980	533.40	-	-	-	-	-	-	-	-



# MASONRY DRILLS - CARBIDE TIPPED

## FOUR TYPES FOR MOST APPLICATIONS



### TYPE 2681 REGULAR HELIX (WIDE SPIRAL)

Fast feeding with large open flutes.

### TYPE 2682 HIGH HELIX (FAST SPIRAL)

### TYPE 2683 HIGH HELIX (FAST SPIRAL) - 13" LENGTH

### TYPE 2684 HIGH HELIX (FAST SPIRAL) - 18" LENGTH



### ALL TYPES

Carbide tips brazed to tough steel bodies.

Carbide tips are larger than the nominal drill size to provide clearance for installation of anchor screws, expansion shields and toggle bolts.

Designed for use in portable electric drills.

### USE:

For drilling masonry including concrete, plaster, wall board, stone, brick, marble, slate, carbon, asphalt and cement.

Drills perform best at moderate pressure and slow speeds.

Keep drill cutting rather than rubbing.

On deep holes, withdraw frequently to prevent clogging.

Use punch or star type hand drill to shatter obstructions such as glazed rock.

TOOL DIAMETER	SHANK DIAMETER	OVERALL LENGTH	TYPE 2681 REGULAR EDP NO.	TYPE 2682 HIGH HELIX EDP NO.	BOTH TYPES PRICE
1/8	1/8	3	268108	268208	\$5.50
3/16	3/16	3	268112	268212	5.50
1/4	1/4	4	268116	268216	5.50
1/4	1/4	6	268117	268217	6.25
5/16	1/4	4	268120	268220	6.25
5/16	1/4	6	268121	268221	6.80
3/8	1/4	4	268124	268224	6.80
3/8	1/4	6	268125	268225	6.80
7/16	1/4	4	268128	268228	7.50
7/16	1/4	6	268129	268229	7.70
1/2	1/4	4	268132	268232	8.30
1/2	1/4	6	268133	268233	8.30
1/2	3/8	6	268134	268234	8.30
9/16	3/8	6	268136	268236	11.25
5/8	1/2	6	268140	268240	11.95
11/16	1/2	6	268144	268244	13.55
3/4	1/2	6	268148	268248	14.80
7/8	1/2	6	268156	268256	18.45
1	1/2	6	268164	268264	22.85

TOOL DIAMETER	SHANK DIAMETER	13" OVERALL LENGTH		18" OVERALL LENGTH	
		TYPE 2683 EDP NO.	PRICE	TYPE 2684 EDP NO.	PRICE
1/4	1/4	268316	\$14.30	268416	\$19.30
5/16	1/4	268320	16.35	268420	22.35
3/8	1/4	268324	18.00	268424	23.60
7/16	1/4	268328	19.70	268428	25.80
1/2	3/8	268332	22.55	268432	26.50
9/16	3/8	268336	25.80	268436	28.90
5/8	1/2	268340	28.90	268440	32.40
11/16	1/2	268344	32.35	268444	34.95
3/4	1/2	268348	33.20	268448	37.35
7/8	1/2	268356	41.00	268456	46.70
1	1/2	268364	45.35	268464	51.15

# GLASS & TILE DRILLS - CARBIDE TIPPED

## DISCONTINUED - WHILE SUPPLIES LAST



### TYPE 2680 - CARBIDE SPEAR POINT STRAIGHT SHANK

Carbide tip high temperature brazed.

Heat treated tool steel body.

Long carbide tip permits many regrinds.

### USE:

Drills glass, tile, porcelain, ceramic and other hard fragile materials without chipping or cracking the material when properly used.

Speed should be about 25 surface feet per minute (300 to 600 RPM) using a steady, moderate hand feed.

Constant flow of coolant important.

Back material being drilled with wood or rubber to support material during drill break-through.

Avoid vibration and excessive stress.

Keep drill sharp to eliminate excessive pressure.

TOOL DIAMETER		SHANK DIAMETER	OVERALL LENGTH	EDP NO.	PRICE
FRAC.	DECIMAL				
1/8	.1250	7/64	2 1/2	268008	\$28.80
3/16	.1875	5/32	2 1/2	268012	28.80
1/4	.2500	7/32	2 1/2	268016	33.05
5/16	.3125	1/4	3	268020	42.50
3/8	.3750	5/16	3 1/2	268024	47.30
7/16	.4375	3/8	3 1/2	268028	53.70
1/2	.5000	7/16	3 1/2	268032	58.60
9/16	.5625	1/2	4	268036	82.30
5/8	.6250	9/16	4	268040	99.15









# CENTERS – CARBIDE TIPPED

## MORSE – BROWN & SHARPE – JARNO TAPERS



### FULL CENTERS

- TYPE 2595 MORSE TAPER – FULL CENTER
- TYPE 2596 BROWN & SHARPE TAPER – FULL CENTER
- TYPE 2597 JARNO TAPER – FULL CENTER

Carbide tips brazed to alloy steel bodies.  
Center precision ground to 60° included angle.  
Center concentric to precision ground taper.

### HALF CENTERS

- TYPE 2592 MORSE TAPER – HALF CENTER
- TYPE 2593 BROWN & SHARPE TAPER – HALF CENTER
- TYPE 2594 JARNO TAPER – HALF CENTER

Half centers provide clearance for the grinding wheel or turning tool when machining a small diameter near the end of a part.



### USE:

Carbide tip centers hold point angle and overall concentricity so parts can be held securely and accurately for precision turning and grinding.  
When operating at high rates of speed carbide tipped centers will not wear as rapidly, avoiding burning or scoring of the part's center holes.

MORSE TAPER NO.	OVERALL LENGTH	TYPE 2595 - FULL CENTER - MORSE TAPER				TYPE 2592 - HALF CENTER - MORSE TAPER					
		CARBIDE TIP LENGTH	CARBIDE TIP DIAMETER	EDP NO.	PRICE	CARBIDE TIP LENGTH	CARBIDE TIP DIAMETER	UNDERCUT LENGTH	HEIGHT ABOVE CENTER	EDP NO.	PRICE
1	3 5/16	7/16	1/4	259501	\$45.35	7/16	1/4	1	9/64	259201	\$83.55
2	4 3/16	9/16	5/16	259502	54.00	9/16	5/16	1 3/8	11/64	259202	103.45
3	5 1/4	7/8	1/2	259503	99.00	11/16	3/8	1 11/16	13/64	259203	156.35
4	6 3/4	7/8	1/2	259504	150.50	7/8	1/2	2 1/4	17/64	259204	228.60
5	8 1/2	1 1/16	5/8	259505	246.25	1 1/16	5/8	2 3/4	21/64	259205	382.10

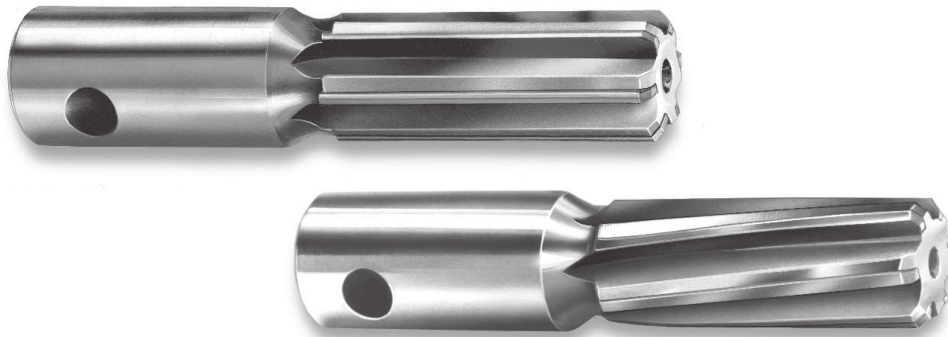
BROWN & SHARPE TAPER NO.	OVERALL LENGTH	TYPE 2596 - FULL CENTER - B & S TAPER				TYPE 2593 - HALF CENTER - B & S TAPER					
		CARBIDE TIP LENGTH	CARBIDE TIP DIAMETER	EDP NO.	PRICE	CARBIDE TIP LENGTH	CARBIDE TIP DIAMETER	UNDERCUT LENGTH	HEIGHT ABOVE CENTER	EDP NO.	PRICE
7	4 1/2	9/16	5/16	259607	\$69.25	9/16	5/16	1 1/8	11/64	259307	\$117.30
8	5 11/32	11/16	3/8	259608	97.15	9/16	5/16	1 5/16	11/64	259308	154.00
9	6	7/8	1/2	259609	123.25	11/16	3/8	1 1/2	13/64	259309	183.45
10	8 17/32	7/8	1/2	259610	176.10	7/8	1/2	2 1/4	17/64	259310	256.95
11	10 1/8	1 1/16	5/8	259611	233.95	1 1/16	5/8	2 1/2	3/8	259311	352.90

JARNO TAPER NO.	OVERALL LENGTH	TYPE 2597 - FULL CENTER - JARNO TAPER				TYPE 2594 - HALF CENTER - JARNO TAPER					
		CARBIDE TIP LENGTH	CARBIDE TIP DIAMETER	EDP NO.	PRICE	CARBIDE TIP LENGTH	CARBIDE TIP DIAMETER	UNDERCUT LENGTH	HEIGHT ABOVE CENTER	EDP NO.	PRICE
4	3	7/16	1/4	259704	\$49.55	7/16	1/4	25/32	9/64	259404	\$91.15
5	3 5/8	7/16	1/4	259705	54.80	7/16	1/4	15/16	9/64	259405	100.95
6	4 1/2	9/16	5/16	259706	67.65	9/16	5/16	1 1/8	11/64	259406	112.50
7	5 1/4	11/16	3/8	259707	87.65	11/16	3/8	1 3/16	13/64	259407	147.40
8	6	7/8	1/2	259708	113.35	7/8	1/2	1 3/8	17/64	259408	182.15
9	6 3/4	7/8	1/2	259709	123.00	7/8	1/2	1 5/8	17/64	259409	205.20
10	7 1/2	7/8	1/2	259710	156.35	7/8	1/2	2	17/64	259410	242.90
11	8 1/4	7/8	1/2	259711	175.95	7/8	1/2	2	17/64	259411	268.85
12	9	1 1/16	5/8	259712	194.60	1 1/16	5/8	2 1/4	21/64	259412	302.90



# CNC STUB REAMERS

## CARBIDE TIPPED - STRAIGHT FLUTES AND LEFT SPIRAL FLUTES



**TYPE 2430 - STRAIGHT FLUTES**  
**TYPE 2440 - LEFT SPIRAL FLUTES**  
**BOTH TYPES:**

Polished flutes for high volume chip flow.  
 Flute long carbide on .2841" tool diameter and larger.  
 Straight shanks fit into standard holders.  
 Pin cross holes permit use in pin drive floating holders.  
 Carbide tips brazed to one piece hardened alloy steel bodies.  
 Cutting diameter tolerance plus .0003" minus .0000".

**OPTIONS:**

Decimal & metric sizes (priced as indicated in extended table below).  
 Cutting diameter reduced for small steps or pilot.  
 Radius end or end chamfer other than 45°.  
 End cutting.  
 Semi-finished Type 2430 & Type 2440 in stock (pg. 65).  
 Closer tolerance.  
 For +.0002" add \$1.00 per tool.  
 For +.0001" add \$3.00 per tool.

TOOL DIAMETER		SHANK DIAM.	NO. OF FLUTES	LENGTH			PIN HOLE DIAM.	STRAIGHT TYPE 2430 EDP NO.	LEFT SPIRAL TYPE 2440 EDP NO.	BOTH TYPES PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
Frac.	Decimal			Flute	Carbide	Over-All						1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
3/16	.1875	1/4	4	1	1/2	2 1/4	3/32	243006	244006	\$56.15	0.1770 - 0.2040	\$97.30	\$76.70	\$69.75	\$66.55	\$62.95	\$60.15
7/32	.2188	1/4	4	1	1/2	2 1/4	3/32	243007	244007	56.15	0.2041 - 0.2210	97.30	76.70	69.75	66.55	62.95	60.15
15/64	.2344	1/4	4	1	1/2	2 1/4	3/32	24302344	24402344	56.15	0.2211 - 0.2380	97.30	76.70	69.75	66.55	62.95	60.15
1/4	.2500	1/4	4	1	1/2	2 1/4	3/32	243008	244008	56.15	0.2381 - 0.2530	97.30	76.70	69.75	66.55	62.95	60.15
9/32	.2812	3/8	4	1	1/2	2 1/4	1/8	243009	244009	56.15	0.2531 - 0.2840	97.30	76.70	69.75	66.55	62.95	60.15
5/16	.3125	3/8	4	1	1	2 1/4	1/8	243010	244010	65.30	0.2841 - 0.3150	106.45	85.75	78.95	75.65	72.05	69.30
11/32	.3438	3/8	4	1 1/4	1 1/4	2 1/2	1/8	243011	244011	65.75	0.3151 - 0.3470	107.05	86.45	79.50	76.30	72.65	69.90
3/8	.3750	3/8	4	1 1/4	1 1/4	2 1/2	1/8	243012	244012	71.40	0.3471 - 0.3780	112.65	92.00	85.10	81.70	78.20	75.40
13/32	.4062	1/2	4	1 1/4	1 1/4	2 1/2	3/16	243013	244013	72.40	0.3781 - 0.4090	113.70	92.90	86.10	82.80	79.20	76.50
7/16	.4375	1/2	4	1 1/4	1 1/4	2 1/2	3/16	243014	244014	85.70	0.4091 - 0.4410	127.00	106.35	99.35	96.10	92.60	89.85
15/32	.4688	1/2	4	1 1/4	1 1/4	2 1/2	3/16	243015	244015	85.70	0.4411 - 0.4720	127.00	106.35	99.35	96.10	92.60	89.85
1/2	.5000	1/2	4	1 1/4	1 1/4	2 1/2	3/16	243016	244016	93.85	0.4721 - 0.5030	136.25	115.00	107.90	104.55	100.80	98.05
17/32	.5312	5/8	6	1 1/2	1 1/2	3	1/4	243017	244017	93.85	0.5031 - 0.5340	136.25	115.00	107.90	104.55	100.80	98.05
9/16	.5625	5/8	6	1 1/2	1 1/2	3	1/4	243018	244018	98.95	0.5341 - 0.5660	141.15	120.00	112.80	109.50	105.85	102.90
19/32	.5938	5/8	6	1 1/2	1 1/2	3	1/4	243019	244019	98.95	0.5661 - 0.5970	141.15	120.00	112.80	109.50	105.85	102.90
5/8	.6250	5/8	6	1 1/2	1 1/2	3	1/4	243020	244020	101.50	0.5971 - 0.6280	143.90	122.70	115.55	112.10	108.50	105.70
21/32	.6562	5/8	6	1 1/2	1 1/2	3	1/4	243021	244021	101.50	0.6281 - 0.6590	143.90	122.70	115.55	112.10	108.50	105.70
11/16	.6875	5/8	6	1 1/2	1 1/2	3	1/4	243022	244022	106.25	0.6591 - 0.6910	148.55	127.40	120.30	116.85	113.25	110.40
23/32	.7188	3/4	6	1 1/2	1 1/2	3	5/16	243023	244023	106.25	0.6911 - 0.7220	148.55	127.40	120.30	116.85	113.25	110.40
3/4	.7500	3/4	6	1 1/2	1 1/2	3	5/16	243024	244024	109.05	0.7221 - 0.7530	151.20	130.10	122.95	119.55	115.95	113.15
25/32	.7812	3/4	6	1 1/2	1 1/2	3	5/16	243025	244025	109.05	0.7531 - 0.7840	151.20	130.10	122.95	119.55	115.95	113.15
13/16	.8125	3/4	6	1 1/2	1 1/2	3	5/16	243026	244026	118.30	0.7841 - 0.8160	160.65	139.55	132.35	129.00	125.35	122.60
27/32	.8438	3/4	6	1 1/2	1 1/2	3	5/16	243027	244027	118.30	0.8161 - 0.8470	160.65	139.55	132.35	129.00	125.35	122.60
7/8	.8750	3/4	6	1 1/2	1 1/2	3	5/16	243028	244028	129.35	0.8471 - 0.8780	173.30	151.15	143.80	140.30	136.55	133.60
29/32	.9062	3/4	6	1 1/2	1 1/2	3	5/16	243029	244029	129.35	0.8781 - 0.9090	173.30	151.15	143.80	140.30	136.55	133.60
15/16	.9375	3/4	6	1 1/2	1 1/2	3	5/16	243030	244030	142.40	0.9091 - 0.9410	186.30	164.40	157.00	153.45	149.75	146.75
31/32	.9688	3/4	8	1 1/2	1 1/2	3	5/16	243031	244031	142.40	0.9411 - 0.9720	186.30	164.40	157.00	153.45	149.75	146.75
1	1.0000	3/4	8	1 1/2	1 1/2	3	5/16	243032	244032	149.35	0.9721 - 1.0030	193.35	171.40	163.95	160.50	156.65	153.75
1 1/16	1.0625	3/4	8	1 1/2	1 1/2	3	5/16	243034	244034	149.35	1.0031 - 1.0660	193.35	171.40	163.95	160.50	156.65	153.75
1 1/8	1.1250	3/4	8	1 1/2	1 1/2	3	5/16	243036	244036	174.90	1.0661 - 1.1280	218.85	196.70	189.40	186.00	182.15	179.15
1 3/16	1.1875	3/4	8	1 1/2	1 1/2	3	5/16	243038	244038	182.30	1.1281 - 1.1905	226.35	204.30	196.85	193.35	189.65	186.60
1 1/4	1.2500	3/4	8	1 1/2	1 1/2	3	5/16	243040	244040	213.55	1.1906 - 1.2530	257.60	235.55	228.25	224.65	220.95	217.95
1 5/16	1.3125	3/4	8	1 1/2	1 1/2	3	5/16	243042	244042	213.55	1.2531 - 1.3155	257.60	235.55	228.25	224.65	220.95	217.95
1 3/8	1.3750	3/4	8	1 1/2	1 1/2	3	5/16	243044	244044	216.65	1.3156 - 1.3780	260.60	238.55	231.35	227.70	224.10	221.10
1 7/16	1.4375	3/4	8	1 1/2	1 1/2	3	5/16	243046	244046	252.55	1.3781 - 1.4405	296.60	274.50	267.20	263.65	259.90	257.00
1 1/2	1.5000	3/4	8	1 1/2	1 1/2	3	5/16	243048	244048	303.30	1.4406 - 1.5030	347.25	325.35	317.95	314.45	310.55	307.60

\*Quantities of 15 or more: price of fractional size in same size range.







# COOLANT FEEDING REAMERS

CARBIDE TIPPED - CENTER FEED FOR BLIND HOLES -  
RIGHT SPIRAL FLUTES



## TYPE 2413 - COOLANT FEEDING REAMER

Center coolant outlet.

Polished flutes; flute long carbide on .2841" tool diameter and larger.

Tool diameter tolerance plus .0003", minus .0000".

### USE:

Center coolant outlet for reaming blind holes as chips are flushed back towards the shank.

Improves hole finish and permits higher feeds & speeds with longer tool life.

### OPTIONS:

Decimal sizes priced below.

Metric tool diameter.

Cutting diameter reduced for step or pilot.

End chamfer other than 45°.

End cutting or corner radius.

Increased/decreased circular margin.

Increased/decreased tool diam. back taper.

Shortened shank or reduced shank diameter.

Flat(s) or tang on shank.

TOOL DIAMETER		NO. OF FLUTES	LENGTH		MAX SHANK DIAM.	TYPE 2413 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRAC.	DECIMAL		FLUTE	OVERALL					1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
1/4	.2500	4	1 1/2	6	.2405	241308	\$145.35	.2381 - .2530	\$186.55	\$165.95	\$159.00	\$155.70	\$152.10	\$149.30
3/32	.2812	4	1 1/2	6	.2485	241309	148.65	.2531 - .2840	188.45	168.55	161.85	158.70	155.35	152.50
3/16	.3125	4	1 1/2	6	.2792	241310	162.90	.2841 - .3150	204.15	183.50	176.55	173.25	169.55	166.85
1/2	.3438	4	1 1/2	6	.2792	241311	164.10	.3151 - .3470	205.35	184.75	177.90	174.55	170.90	168.15
3/8	.3750	4	1 3/4	7	.3105	241312	165.85	.3471 - .3780	207.10	186.30	179.45	176.20	172.70	169.95
13/32	.4062	4	1 3/4	7	.3105	241313	166.25	.3781 - .4090	207.50	186.95	180.05	176.70	173.10	170.35
7/16	.4375	6	1 3/4	7	.3730	241314	168.00	.4091 - .4410	209.30	188.55	181.70	178.45	174.85	172.15
15/32	.4688	6	1 3/4	7	.3730	241315	169.45	.4411 - .4720	210.80	190.05	183.20	179.85	176.30	173.55
1/2	.5000	6	2	8	.4355	241316	176.10	.4721 - .5030	218.50	197.20	190.05	186.70	183.05	180.30
17/32	.5312	6	2	8	.4355	241317	182.45	.5031 - .5340	224.80	203.55	196.45	193.10	189.45	186.60
9/16	.5625	6	2	8	.4355	241318	182.45	.5341 - .5660	224.80	203.55	196.45	193.10	189.45	186.60
19/32	.5938	6	2	8	.4355	241319	189.70	.5661 - .5970	232.15	210.85	203.75	200.45	196.70	193.90
5/8	.6250	6	2 1/4	9	.5615	241320	189.70	.5971 - .6280	232.15	210.85	203.75	200.45	196.70	193.90
21/32	.6562	6	2 1/4	9	.5615	241321	214.40	.6281 - .6590	256.70	235.55	228.35	224.95	221.35	218.55
11/16	.6875	6	2 1/4	9	.5615	241322	214.40	.6591 - .6910	256.70	235.55	228.35	224.95	221.35	218.55
23/32	.7188	6	2 1/4	9	.5615	241323	223.60	.6911 - .7220	266.10	244.85	237.75	234.45	230.70	227.75
3/4	.7500	6	2 1/2	9 1/2	.6245	241324	210.10	.7221 - .7530	249.95	229.95	223.35	220.10	216.65	213.95
25/32	.7812	6	2 1/2	9 1/2	.6245	241325	241.05	.7531 - .7840	283.40	262.10	255.10	251.65	248.10	245.10
13/16	.8125	6	2 1/2	9 1/2	.6245	241326	243.95	.7841 - .8160	286.35	265.10	258.05	254.65	251.10	248.25
27/32	.8438	6	2 1/2	9 1/2	.6245	241327	248.50	.8161 - .8470	291.05	269.75	262.65	259.20	255.65	252.75
7/8	.8750	6	2 5/8	10	.7495	241328	261.95	.8471 - .8780	305.85	284.00	276.55	273.10	269.25	266.35
29/32	.9062	6	2 5/8	10	.7495	241329	277.55	.8781 - .9090	321.50	299.50	292.15	288.70	284.80	281.90
15/16	.9375	8	2 5/8	10	.7495	241330	290.85	.9091 - .9410	334.90	312.80	305.55	301.90	298.10	295.15
31/32	.9688	8	2 5/8	10	.7495	241331	291.70	.9411 - .9720	335.55	313.65	306.25	302.65	298.90	296.05
1	1.0000	8	2 3/4	10 1/2	.8745	241332	292.15	.9721 - 1.0030	336.10	314.05	306.70	303.20	299.45	296.45
1 1/16	1.0625	8	2 3/4	10 1/2	.8745	241334	300.25	1.0031 - 1.0660	344.20	322.35	314.85	311.30	307.55	304.60
1 1/8	1.1250	8	2 7/8	11	.8745	241336	310.65	1.0661 - 1.1280	354.75	332.65	325.35	321.80	318.05	315.10
1 3/16	1.1875	8	2 7/8	11	.9995	241338	332.85	1.1281 - 1.1905	376.80	354.90	347.40	344.00	340.05	337.10
1 1/4	1.2500	8	3	11 1/2	.9995	241340	337.10	1.1906 - 1.2530	381.10	359.10	351.75	348.20	344.45	341.55
1 3/16	1.3125	8	3	11 1/2	.9995	241342	346.90	1.2531 - 1.3155	390.85	368.80	361.40	357.90	354.20	351.15
1 3/8	1.3750	8	3 1/4	12	.9995	241344	361.00	1.3156 - 1.3780	405.00	382.90	375.50	372.10	368.25	365.30
1 7/16	1.4375	8	3 1/4	12	.9995	241346	372.20	1.3781 - 1.4405	416.20	394.15	386.80	383.30	379.45	376.60
1 1/2	1.5000	8	3 1/2	12 1/2	1.2495	241348	384.80	1.4406 - 1.5030	428.75	406.85	399.40	395.80	392.10	389.20

\*Quantities of 15 or more: price of fractional size in same size range.



# COOLANT FEEDING REAMERS

CARBIDE TIPPED - FLUTE FEED FOR THROUGH HOLES -  
RIGHT SPIRAL FLUTES



## TYPE 2418 - COOLANT FEEDING REAMER

Coolant outlets in *each* flute.

Polished flutes; flute long carbide on .2841" tool diameter and larger.

Tool diameter tolerance plus .0003", minus .0000".

### USE:

Flute coolant outlets for reaming through holes as chips are flushed *forward* through the hole being reamed.

Improves hole finish and permits higher feeds & speeds with longer tool life.

### OPTIONS:

Decimal sizes priced below.

Metric tool diameter.

Cutting diameter reduced for step or pilot.

End chamfer other than 45°.

End cutting or corner radius.

Increased/decreased circular margin.

Increased/decreased tool diam. back taper.

Shortened shank or reduced shank diameter.

Flat(s) or tang on shank.

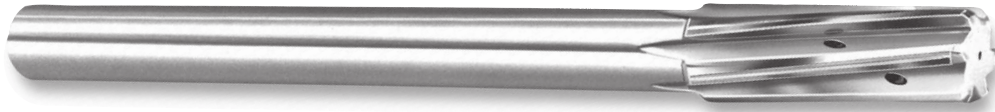
TOOL DIAMETER		NO. OF FLUTES	LENGTH		MAX SHANK DIAM.	TYPE 2418 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRAC.	DECIMAL		FLUTE	OVERALL					1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
1/4	.2500	4	1 1/2	6	.2405	241808	\$155.70	.2381 - .2530	\$199.85	\$177.80	\$170.35	\$166.80	\$163.10	\$160.00
9/32	.2812	4	1 1/2	6	.2485	241809	165.15	.2531 - .2840	209.35	187.25	179.75	176.25	172.50	169.45
5/16	.3125	4	1 1/2	6	.2792	241810	174.55	.2841 - .3150	218.70	196.55	189.15	185.70	181.80	178.85
11/32	.3438	4	1 1/2	6	.2792	241811	175.90	.3151 - .3470	220.10	197.90	190.50	187.00	183.10	180.30
3/8	.3750	4	1 3/4	7	.3105	241812	177.55	.3471 - .3780	221.95	199.70	192.25	188.75	184.95	182.00
13/32	.4062	4	1 3/4	7	.3105	241813	178.15	.3781 - .4090	222.35	200.25	192.95	189.30	185.45	182.50
7/16	.4375	6	1 3/4	7	.3730	241814	180.05	.4091 - .4410	224.25	202.05	194.70	191.05	187.35	184.35
15/32	.4688	6	1 3/4	7	.3730	241815	181.70	.4411 - .4720	225.90	203.70	196.25	192.75	188.95	186.00
1/2	.5000	6	2	8	.4355	241816	183.65	.4721 - .5030	227.85	205.80	198.45	194.85	191.00	188.10
17/32	.5312	6	2	8	.4355	241817	190.45	.5031 - .5340	234.65	212.40	205.05	201.65	197.70	194.80
9/16	.5625	6	2	8	.4355	241818	190.45	.5341 - .5660	234.65	212.40	205.05	201.65	197.70	194.80
19/32	.5938	6	2	8	.4355	241819	197.95	.5661 - .5970	242.20	220.10	212.60	209.15	205.25	202.30
5/8	.6250	6	2 1/4	9	.5615	241820	197.95	.5971 - .6280	242.20	220.10	212.60	209.15	205.25	202.30
21/32	.6562	6	2 1/4	9	.5615	241821	223.60	.6281 - .6590	267.85	245.80	238.35	234.75	230.95	228.00
11/16	.6875	6	2 1/4	9	.5615	241822	223.60	.6591 - .6910	267.85	245.80	238.35	234.75	230.95	228.00
23/32	.7188	6	2 1/4	9	.5615	241823	233.40	.6911 - .7220	277.60	255.40	248.20	244.55	240.80	237.75
3/4	.7500	6	2 1/2	9 1/2	.6245	241824	233.40	.7221 - .7530	277.60	255.40	248.20	244.55	240.80	237.75
25/32	.7812	6	2 1/2	9 1/2	.6245	241825	251.50	.7531 - .7840	295.65	273.50	266.15	262.65	258.80	255.90
13/16	.8125	6	2 1/2	9 1/2	.6245	241826	254.60	.7841 - .8160	298.80	276.70	269.25	265.80	261.90	258.90
27/32	.8438	6	2 1/2	9 1/2	.6245	241827	259.40	.8161 - .8470	303.65	281.45	274.00	270.50	266.65	263.75
7/8	.8750	6	2 5/8	10	.7495	241828	273.35	.8471 - .8780	319.30	296.30	288.65	284.85	280.95	277.80
29/32	.9062	6	2 5/8	10	.7495	241829	289.60	.8781 - .9090	335.45	312.55	304.85	301.15	297.15	294.15
15/16	.9375	8	2 5/8	10	.7495	241830	303.55	.9091 - .9410	349.45	326.40	318.65	315.10	311.15	308.05
31/32	.9688	8	2 5/8	10	.7495	241831	304.35	.9411 - .9720	350.25	327.30	319.50	315.85	311.90	308.85
1	1.0000	8	2 3/4	10 1/2	.8745	241832	304.85	.9721 - 1.0030	350.80	327.85	320.00	316.35	312.45	309.35
1 1/16	1.0625	8	2 3/4	10 1/2	.8745	241833	351.55	1.0031 - 1.0660	397.40	374.45	366.70	363.05	359.15	356.00
1 1/8	1.1250	8	2 7/8	11	.8745	241836	353.05	1.0661 - 1.1280	398.95	375.90	368.25	364.55	360.70	357.55
1 3/16	1.1875	8	2 7/8	11	.9995	241838	367.70	1.1281 - 1.1905	413.40	390.40	382.80	379.15	375.25	372.10
1 1/4	1.2500	8	3	11 1/2	.9995	241840	372.45	1.1906 - 1.2530	418.35	395.35	387.70	384.00	380.05	376.95
1 3/8	1.3125	8	3	11 1/2	.9995	241842	383.25	1.2531 - 1.3155	429.10	406.10	398.30	394.70	390.80	387.70
1 3/8	1.3750	8	3 1/4	12	.9995	241844	398.55	1.3156 - 1.3780	444.60	421.60	413.80	410.25	406.30	403.15
1 7/16	1.4375	8	3 1/4	12	.9995	241846	411.05	1.3781 - 1.4405	457.05	434.00	426.35	422.70	418.80	415.65
1 1/2	1.5000	8	3 1/2	12 1/2	1.2495	241848	424.95	1.4406 - 1.5030	470.75	447.90	440.10	436.45	432.50	429.40

\*Quantities of 15 or more: price of fractional size in same size range.



# COOLANT FEEDING REAMERS

CARBIDE TIPPED - FLUTE FEED FOR THROUGH HOLES -  
LEFT SPIRAL FLUTES



## TYPE 2428 - COOLANT FEEDING REAMER

Coolant outlets in *each* flute.

Polished flutes; flute long carbide on .2841" tool diameter and larger.

Left spiral flutes should not be used on blind holes.

Tool diameter tolerance plus .0003", minus .0000".

### USE:

Flute coolant outlets for reaming through holes as chips are flushed *forward* through the hole being reamed.

Improves hole finish and permits higher feeds & speeds with longer tool life.

### OPTIONS:

Decimal sizes priced below.

Metric tool diameter.

Cutting diameter reduced for step or pilot.

End chamfer other than 45°.

End cutting or corner radius.

Increased/decreased circular margin.

Increased/decreased tool diam. back taper.

Shortened shank or reduced shank diameter.

Flat(s) or tang on shank.

TOOL DIAMETER		NO. OF FLUTES	LENGTH		MAX SHANK DIAM.	TYPE 2428 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRAC.	DECIMAL		FLUTE	OVERALL					1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14**
* 1/4	.2500	4	1 1/2	6	.2405	242808	\$180.05	.2381 - .2530	\$224.25	\$202.05	\$194.70	\$191.05	\$187.35	\$184.35
* 9/32	.2812	4	1 1/2	6	.2485	242809	190.90	.2531 - .2840	235.05	213.05	205.65	202.05	198.35	195.30
3/16	.3125	4	1 1/2	6	.2792	242810	201.75	.2841 - .3150	245.90	223.65	216.40	212.85	209.00	206.05
11/32	.3438	4	1 1/2	6	.2792	242811	203.30	.3151 - .3470	247.35	225.25	217.90	214.40	210.60	207.50
3/8	.3750	4	1 3/4	7	.3105	242812	205.25	.3471 - .3780	249.60	227.40	220.00	216.45	212.60	209.75
13/32	.4062	4	1 3/4	7	.3105	242813	206.10	.3781 - .4090	250.35	228.25	220.80	217.30	213.40	210.55
7/16	.4375	6	1 3/4	7	.3730	242814	208.05	.4091 - .4410	252.35	230.15	222.75	219.25	215.50	212.40
15/32	.4688	6	1 3/4	7	.3730	242815	209.90	.4411 - .4720	254.05	232.05	224.60	221.10	217.30	214.25
1/2	.5000	6	2	8	.4355	242816	212.60	.4721 - .5030	256.95	234.70	227.30	223.65	220.00	217.05
17/32	.5312	6	2	8	.4355	242817	217.10	.5031 - .5340	261.30	239.10	231.70	228.25	224.40	221.40
9/16	.5625	6	2	8	.4355	242818	220.20	.5341 - .5660	264.45	242.30	234.85	231.40	227.55	224.60
19/32	.5938	6	2	8	.4355	242819	224.80	.5661 - .5970	268.95	246.95	239.50	236.00	232.20	229.20
5/8	.6250	6	2 1/4	9	.5615	242820	229.00	.5971 - .6280	273.20	251.10	243.60	240.15	236.30	233.35
21/32	.6562	6	2 1/4	9	.5615	242821	253.60	.6281 - .6590	297.85	275.65	268.25	264.75	260.95	257.90
11/16	.6875	6	2 1/4	9	.5615	242822	258.70	.6591 - .6910	303.00	280.85	273.35	269.90	266.10	263.15
23/32	.7188	6	2 1/4	9	.5615	242823	264.30	.6911 - .7220	308.45	286.30	278.85	275.35	271.55	268.55
3/4	.7500	6	2 1/2	9 1/2	.6245	242824	269.90	.7221 - .7530	314.05	292.00	284.45	281.05	277.20	274.25
25/32	.7812	6	2 1/2	9 1/2	.6245	242825	274.50	.7531 - .7840	318.65	296.60	289.05	285.60	281.75	278.80
13/16	.8125	6	2 1/2	9 1/2	.6245	242826	277.80	.7841 - .8160	321.90	299.90	292.45	288.90	285.15	282.10
27/32	.8438	6	2 1/2	9 1/2	.6245	242827	282.85	.8161 - .8470	327.20	305.00	297.55	294.00	290.20	287.30
7/8	.8750	6	2 5/8	10	.7495	242828	298.25	.8471 - .8780	344.15	321.20	313.45	309.80	305.80	302.65
29/32	.9062	6	2 5/8	10	.7495	242829	315.80	.8781 - .9090	361.70	338.65	331.00	327.35	323.45	320.35
15/16	.9375	8	2 5/8	10	.7495	242830	331.25	.9091 - .9410	377.05	354.15	346.40	342.75	338.70	335.70
31/32	.9688	8	2 5/8	10	.7495	242831	332.10	.9411 - .9720	377.90	355.00	347.20	343.55	339.60	336.55
1	1.0000	8	2 3/4	10 1/2	.8745	242832	332.55	.9721 - 1.0030	378.40	355.45	347.75	344.05	340.05	336.95
1 1/16	1.0625	8	2 3/4	10 1/2	.8745	242834	351.55	1.0031 - 1.0660	397.40	374.45	366.70	363.05	359.15	356.00
1 1/8	1.1250	8	2 7/8	11	.8745	242836	353.05	1.0661 - 1.1280	398.95	375.90	368.25	364.55	360.70	357.55
1 3/16	1.1875	8	2 7/8	11	.9995	242838	367.70	1.1281 - 1.1905	413.40	390.40	382.80	379.15	375.25	372.10
1 1/4	1.2500	8	3	11 1/2	.9995	242840	372.45	1.1906 - 1.2530	418.35	395.35	387.70	384.00	380.05	376.95
1 5/16	1.3125	8	3	11 1/2	.9995	242842	383.25	1.2531 - 1.3155	429.10	406.10	398.30	394.70	390.80	387.70
1 3/8	1.3750	8	3 1/4	12	.9995	242844	398.55	1.3156 - 1.3780	444.60	421.60	413.80	410.25	406.30	403.15
1 7/16	1.4375	8	3 1/4	12	.9995	242846	411.05	1.3781 - 1.4405	457.05	434.00	426.35	422.70	418.80	415.65
1 1/2	1.5000	8	3 1/2	12 1/2	1.2495	242848	424.95	1.4406 - 1.5030	470.75	447.90	440.10	436.45	432.50	429.40

\*1/2" Carbide Length

\*\*Quantities of 15 or more: price of fractional size in same size range.





# CHUCKING REAMERS

## CARBIDE TIPPED - STRAIGHT FLUTES & SHANK

### TYPE 2400 - METRIC



NOTE: Tool diameter in millimeters (mm); all other dimensions in inches.

TOOL DIAMETER		TYPE 2400 METRIC EDP NO.	METRIC PRICE	DIMENSIONS					SPECIAL METRIC SIZE RANGE	PRICE EACH - FINISHED TO METRIC SIZE						
mm	INCH			SHANK DIAM.	NO. OF FLUTES	LENGTH				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14	OVER 14
		FLT	CAR-BIDE			OVER-ALL										
4.0	.1575	2400040	\$60.60	.151	4	1	1/2	4	3.962 -4.493	\$91.55	\$71.00	\$64.05	\$60.65	\$57.25	\$54.25	\$50.40
4.5	.1772	2400045	56.45	1/64	4	1 1/8	1/2	4 1/2	4.494 -5.182	86.55	66.55	59.85	56.55	53.05	50.35	46.50
5.0	.1969	2400050	56.45	1/64	4	1 1/8	1/2	4 1/2	-	-	-	-	-	-	-	
5.5	.2165	2400055	56.45	1/64	4	1 1/4	1/2	5	5.183 -5.613	86.55	66.55	59.85	56.55	53.05	50.35	46.50
6.0	.2362	2400060	59.00	7/64	4	1 1/2	1/2	6	5.614 -6.045	89.15	69.10	62.30	59.10	55.60	52.85	49.00
6.3	.2480	2400063	56.45	1/64	4	1 1/2	1/2	6	6.046 -6.426	86.55	66.55	59.85	56.55	53.05	50.35	46.50
6.5	.2559	2400065	57.30	1/64	4	1 1/2	1/2	6	6.427 -7.214	87.60	67.40	60.75	57.40	54.05	51.20	47.35
7.0	.2756	2400070	57.30	1/64	4	1 1/2	1/2	6	-	-	-	-	-	-	-	
7.5	.2953	2400075	57.30	9/32	4	1 1/2	1/2	6	7.215 -8.001	87.60	67.40	60.75	57.40	54.05	51.20	47.35
8.0	.3150	2400080	57.30	9/32	4	1 1/2	1/2	6	-	-	-	-	-	-	-	
8.5	.3346	2400085	58.75	9/32	4	1 1/2	5/8	6	8.002 -8.814	89.10	69.00	62.25	59.00	55.55	52.80	48.90
9.0	.3543	2400090	58.75	5/16	4	1 3/4	5/8	7	8.815 -9.601	89.10	69.00	62.25	59.00	55.55	52.80	48.90
9.5	.3740	2400095	58.75	5/16	4	1 3/4	5/8	7	-	-	-	-	-	-	-	
10.0	.3937	2400100	61.00	5/16	4	1 3/4	5/8	7	9.602 -10.389	91.25	71.15	64.50	61.20	57.80	55.05	51.15
10.5	.4134	2400105	64.15	3/8	4	1 3/4	5/8	7	10.390 -11.201	94.45	74.40	67.70	64.35	61.00	58.25	54.30
11.0	.4331	2400110	64.15	3/8	4	1 3/4	5/8	7	-	-	-	-	-	-	-	
11.5	.4528	2400115	64.95	3/8	4	1 3/4	5/8	7	11.202 -11.989	95.15	75.15	68.40	65.20	61.70	59.00	55.15
12.0	.4724	2400120	76.10	7/16	6	2	5/8	8	11.990 -12.776	109.40	87.25	79.90	76.40	72.65	69.55	65.30
12.5	.4921	2400125	76.10	7/16	6	2	5/8	8	-	-	-	-	-	-	-	
13.0	.5118	2400130	81.60	7/16	6	2	5/8	8	12.777 -13.564	114.80	92.70	85.35	81.70	78.05	74.95	70.75
13.5	.5315	2400135	81.60	7/16	6	2	5/8	8	-	-	-	-	-	-	-	
14.0	.5512	2400140	81.60	7/16	6	2	5/8	8	13.565 -14.376	114.80	92.70	85.35	81.70	78.05	74.95	70.75
14.5	.5709	2400145	84.25	7/16	6	2	5/8	8	14.377 -15.164	117.55	95.45	88.00	84.45	80.80	77.70	73.40
15.0	.5906	2400150	84.25	7/16	6	2	5/8	8	-	-	-	-	-	-	-	
15.5	.6102	2400155	84.25	9/16	6	2 1/4	5/8	9	15.165 -15.951	117.55	95.45	88.00	84.45	80.80	77.70	73.40
16.0	.6299	2400160	85.45	9/16	6	2 1/4	5/8	9	15.952 -16.739	118.80	96.65	89.20	85.55	81.95	78.85	74.50
16.5	.6496	2400165	85.45	9/16	6	2 1/4	5/8	9	-	-	-	-	-	-	-	
17.0	.6693	2400170	85.45	9/16	6	2 1/4	5/8	9	16.740 -17.551	118.80	96.65	89.20	85.55	81.95	78.85	74.50
17.5	.6890	2400175	85.45	9/16	6	2 1/4	5/8	9	-	-	-	-	-	-	-	
18.0	.7087	2400180	88.80	9/16	6	2 1/4	5/8	9	17.552 -18.339	122.05	100.00	92.60	89.05	85.30	82.20	77.90
18.5	.7283	2400185	88.80	5/8	6	2 1/2	3/4	9 1/2	18.340 -19.126	122.05	100.00	92.60	89.05	85.30	82.20	77.90
19.0	.7480	2400190	88.80	5/8	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	
19.5	.7677	2400195	91.25	5/8	6	2 1/2	3/4	9 1/2	19.127 -19.914	124.45	102.50	95.05	91.35	87.75	84.60	80.40
20.0	.7874	2400200	91.25	5/8	6	2 1/2	3/4	9 1/2	19.915 -20.726	124.45	102.50	95.05	91.35	87.75	84.60	80.40
20.5	.8071	2400205	91.25	5/8	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	
21.0	.8268	2400210	94.35	5/8	6	2 1/2	3/4	9 1/2	20.727 -21.514	127.60	105.40	98.10	94.45	90.75	87.75	83.50
21.5	.8465	2400215	94.35	5/8	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	
22.0	.8661	2400220	94.35	3/4	6	2 5/8	3/4	10	21.515 -22.301	127.60	105.40	98.10	94.45	90.75	87.75	83.50
22.5	.8858	2400225	111.50	3/4	6	2 5/8	3/4	10	22.302 -23.089	146.00	123.05	115.40	111.65	107.85	104.65	100.20
23.0	.9055	2400230	111.50	3/4	6	2 5/8	3/4	10	-	-	-	-	-	-	-	
23.5	.9252	2400235	111.50	3/4	8	2 5/8	3/4	10	23.090 -23.901	146.00	123.05	115.40	111.65	107.85	104.65	100.20
24.0	.9449	2400240	116.25	3/4	8	2 5/8	3/4	10	23.902 -24.689	150.70	127.70	120.05	116.35	112.55	109.35	104.90
24.5	.9646	2400245	116.25	3/4	8	2 5/8	3/4	10	-	-	-	-	-	-	-	
25.0	.9843	2400250	116.25	7/8	8	2 3/4	3/4	10 1/2	24.690 -25.476	150.70	127.70	120.05	116.35	112.55	109.35	104.90
25.5	1.0039	2400255	118.90	7/8	8	2 3/4	3/4	10 1/2	25.477 -27.076	152.10	130.10	122.75	119.10	115.50	112.50	108.10
26.0	1.0236	2400260	118.90	7/8	8	2 3/4	3/4	10 1/2	-	-	-	-	-	-	-	
27.0	1.0630	2400270	118.90	7/8	8	2 3/4	3/4	10 1/2	-	-	-	-	-	-	-	
28.0	1.1024	2400280	127.50	7/8	8	2 7/8	7/8	11	27.077 -28.651	160.50	138.55	131.15	127.60	123.95	120.85	116.60
29.0	1.1417	2400290	133.15	1	8	2 7/8	7/8	11	28.652 -30.239	166.20	144.40	136.85	133.35	129.60	126.60	122.35
30.0	1.1811	2400300	133.15	1	8	2 7/8	7/8	11	-	-	-	-	-	-	-	
31.0	1.2205	2400310	139.95	1	8	3	7/8	11 1/2	30.240 -31.826	173.05	151.10	143.75	140.20	136.50	133.45	129.30
32.0	1.2598	2400320	146.40	1	8	3	7/8	11 1/2	31.827 -33.414	179.60	157.70	150.25	146.70	143.00	139.85	135.60
33.0	1.2992	2400330	146.40	1	8	3	7/8	11 1/2	-	-	-	-	-	-	-	
34.0	1.3386	2400340	154.60	1	8	3 1/4	7/8	12	33.415 -35.001	187.60	165.75	158.25	154.75	151.05	147.95	143.75
35.0	1.3780	2400350	154.60	1	8	3 1/4	7/8	12	-	-	-	-	-	-	-	
36.0	1.4173	2400360	170.60	1 1/4	8	3 1/4	7/8	12	35.002 -36.589	203.70	181.70	174.35	170.70	167.10	163.95	159.80
37.0	1.4567	2400370	179.40	1 1/4	8	3 1/2	7/8	12 1/2	36.590 -38.176	212.60	190.60	183.20	179.65	176.00	172.90	168.70

Modified tool diameters are available up to 50mm - contact us for price.



# CHUCKING REAMERS

## CARBIDE TIPPED - STRAIGHT POLISHED FLUTES - STRAIGHT SHANK



### TYPE 2400 - FINISHED FRACTIONAL SIZES

Straight shank and straight polished flutes.  
Carbide tips brazed to one piece hardened alloy steel bodies.  
Cutting diameter tolerance plus .0003", minus .0000".

### USE:

For all general reaming of steel, cast iron, non-ferrous metals, plastics and non-metals.

### OPTIONS:

Intermediate decimal sizes (priced as indicated in extended table below).  
Closer tolerances (see table on next page).  
Cutting diameter reduced for small steps or pilot.  
Radius end or end chamfer other than 45°.  
End cutting.  
Rose grind (twice normal back taper).  
Short shank or undersize shank diameter.  
Flat on shank or tanged shank.  
Semi-finished type reamers in stock (see page 73).

TOOL DIAMETER		NO. OF FLUTES	LENGTH		SHANK DIAM.	TYPE 2400 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRACTIONAL	DECIMAL		FLUTE	OVER-ALL					1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
5/32	.1562	4	1	4	.151	240005	\$46.85	0.1560 - 0.1769	\$88.60	\$67.40	\$60.60	\$57.25	\$53.70	\$50.90
11/64	.1719	4	1	4	.151	24001719	46.85	-	-	-	-	-	-	-
3/16	.1875	4	1 1/8	4 1/2	11/64	240006	43.00	0.1770 - 0.2040	83.15	63.00	56.45	53.05	49.70	46.95
3/16	.1875	4	1 1/4	5	11/64	240086	45.50	0.1770 - 0.2040	85.70	65.55	59.00	55.60	52.20	49.50
13/64	.2031	4	1 1/8	4 1/2	11/64	24002031	45.50	-	-	-	-	-	-	-
7/32	.2188	4	1 1/4	5	13/64	240007	43.00	0.2041 - 0.2210	83.15	63.00	56.45	53.05	49.70	46.95
15/64	.2344	4	1 1/2	6	7/32	24002344	45.50	0.2211 - 0.2380	85.70	65.55	59.00	55.60	52.20	49.50
1/4	.2500	4	1 1/2	6	15/64	240008	43.00	0.2381 - 0.2530	83.15	63.00	56.45	53.05	49.70	46.95
17/64	.2656	4	1 1/2	6	15/64	24002656	46.55	-	-	-	-	-	-	-
9/32	.2812	4	1 1/2	6	15/64	240009	43.95	0.2531 - 0.2840	84.10	64.00	57.30	54.05	50.55	47.85
19/64	.2969	4	1 1/2	6	9/32	24002969	46.55	-	-	-	-	-	-	-
5/16	.3125	4	1 1/2	6	9/32	240010	43.95	0.2841 - 0.3150	84.10	64.00	57.30	54.05	50.55	47.85
21/64	.3281	4	1 1/2	6	9/32	24003281	48.30	-	-	-	-	-	-	-
11/32	.3438	4	1 1/2	6	9/32	240011	45.45	0.3151 - 0.3470	85.65	65.50	58.75	55.55	52.15	49.40
23/64	.3594	4	1 3/4	7	5/16	24003594	48.30	-	-	-	-	-	-	-
3/8	.3750	4	1 3/4	7	5/16	240012	45.45	0.3471 - 0.3780	85.65	65.50	58.75	55.55	52.15	49.40
25/64	.3906	4	1 3/4	7	5/16	24003906	50.75	-	-	-	-	-	-	-
13/32	.4062	4	1 3/4	7	5/16	240013	47.75	0.3781 - 0.4090	87.85	67.75	61.00	57.80	54.30	51.70
27/64	.4219	4	1 3/4	7	3/8	24004219	54.00	-	-	-	-	-	-	-
7/16	.4375	4	1 3/4	7	3/8	240014	51.00	0.4091 - 0.4410	91.10	71.00	64.15	61.00	57.50	54.90
29/64	.4531	4	1 3/4	7	3/8	24004531	54.85	-	-	-	-	-	-	-
15/32	.4688	4	1 3/4	7	3/8	240015	51.70	0.4411 - 0.4720	91.85	71.70	64.95	61.70	58.30	55.55
31/64	.4844	6	2	8	7/16	24004844	59.25	-	-	-	-	-	-	-
1/2	.5000	6	2	8	7/16	240016	61.45	0.4721 - 0.5030	105.70	83.60	76.10	72.65	68.75	65.75
33/64	.5156	6	2	8	7/16	24005156	66.85	-	-	-	-	-	-	-
17/32	.5312	6	2	8	7/16	240017	66.85	0.5031 - 0.5340	111.20	89.05	81.60	78.05	74.20	71.25
35/64	.5469	6	2	8	7/16	24005469	66.85	-	-	-	-	-	-	-
9/16	.5625	6	2	8	7/16	240018	66.85	0.5341 - 0.5660	111.20	89.05	81.60	78.05	74.20	71.25
37/64	.5781	6	2	8	7/16	24005781	69.60	-	-	-	-	-	-	-
19/32	.5938	6	2	8	7/16	240019	69.60	0.5661 - 0.5970	113.90	91.65	84.25	80.80	76.90	74.05
39/64	.6094	6	2 1/4	9	9/16	24006094	69.60	-	-	-	-	-	-	-
5/8	.6250	6	2 1/4	9	9/16	240020	69.60	0.5971 - 0.6280	113.90	91.65	84.25	80.80	76.90	74.05
41/64	.6406	6	2 1/4	9	9/16	24006406	70.85	-	-	-	-	-	-	-
21/32	.6562	6	2 1/4	9	9/16	240021	70.85	0.6281 - 0.6590	115.00	92.75	85.45	81.95	78.10	75.15
43/64	.6719	6	2 1/4	9	9/16	24006719	70.85	-	-	-	-	-	-	-
11/16	.6875	6	2 1/4	9	9/16	240022	70.85	0.6591 - 0.6910	115.00	92.75	85.45	81.95	78.10	75.15
45/64	.7031	6	2 1/4	9	9/16	24007031	74.15	-	-	-	-	-	-	-
23/32	.7188	6	2 1/4	9	9/16	240023	74.15	0.6911 - 0.7220	118.30	96.30	88.80	85.30	81.45	78.50
47/64	.7344	6	2 1/2	9 1/2	5/8	24007344	74.15	-	-	-	-	-	-	-
3/4	.7500	6	2 1/2	9 1/2	5/8	240024	74.15	0.7221 - 0.7530	118.30	96.30	88.80	85.30	81.45	78.50

\*Quantities of 15 or more: price of fractional size in same size range.

TOOL DIAMETER		NO. OF FLUTES	LENGTH		SHANK DIAM.	TYPE 2400 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRACTIONAL	DECIMAL		FLUTE	OVER-ALL					1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
$\frac{49}{64}$	.7656	6	2 1/2	9 1/2	5/8	24007656	\$76.55	-	-	-	-	-	-	-
$\frac{25}{32}$	.7812	6	2 1/2	9 1/2	5/8	240025	76.55	0.7531 - 0.7840	\$120.75	\$98.60	\$91.25	\$87.75	\$83.90	\$80.90
$\frac{51}{64}$	.7969	6	2 1/2	9 1/2	5/8	24007969	76.55	-	-	-	-	-	-	-
$\frac{13}{16}$	.8125	6	2 1/2	9 1/2	5/8	240026	76.55	0.7841 - 0.8160	120.75	98.60	91.25	87.75	83.90	80.90
$\frac{53}{64}$	.8281	6	2 1/2	9 1/2	5/8	24008281	79.65	-	-	-	-	-	-	-
$\frac{27}{32}$	.8438	6	2 1/2	9 1/2	5/8	240027	79.65	0.8161 - 0.8470	123.90	101.70	94.35	90.75	86.95	83.95
$\frac{55}{64}$	.8594	6	2 5/8	10	3/4	24008594	79.65	-	-	-	-	-	-	-
$\frac{7}{8}$	.8750	6	2 5/8	10	3/4	240028	82.65	0.8471 - 0.8780	128.45	105.55	97.90	94.25	90.20	87.10
$\frac{57}{64}$	.8906	6	2 5/8	10	3/4	24008906	96.30	-	-	-	-	-	-	-
$\frac{29}{32}$	.9062	6	2 5/8	10	3/4	240029	96.30	0.8781 - 0.9090	142.15	119.10	111.50	107.85	103.85	100.75
$\frac{59}{64}$	.9219	8	2 5/8	10	3/4	24009219	96.30	-	-	-	-	-	-	-
$\frac{15}{16}$	.9375	8	2 5/8	10	3/4	240030	96.30	0.9091 - 0.9410	142.15	119.10	111.50	107.85	103.85	100.75
$\frac{61}{64}$	.9531	8	2 5/8	10	3/4	24009531	100.85	-	-	-	-	-	-	-
$\frac{31}{32}$	.9688	8	2 5/8	10	3/4	240031	100.85	0.9411 - 0.9720	146.85	123.80	116.25	112.55	108.50	105.40
$\frac{63}{64}$	.9844	8	2 3/4	10 1/2	7/8	24009844	100.85	-	-	-	-	-	-	-
1	1.0000	8	2 3/4	10 1/2	7/8	240032	100.85	0.9721 - 1.0030	146.85	123.80	116.25	112.55	108.50	105.40
1 1/16	1.0625	8	2 3/4	10 1/2	7/8	240034	104.35	1.0031 - 1.0660	148.40	126.35	118.90	115.50	111.65	108.65
1 1/8	1.1250	8	2 7/8	11	7/8	240036	112.75	1.0661 - 1.1280	156.80	134.80	127.50	123.95	120.05	117.15
1 3/16	1.1875	8	2 7/8	11	1	240038	118.65	1.1281 - 1.1905	162.55	140.55	133.15	129.60	125.95	122.85
1 1/4	1.2500	8	3	11 1/2	1	240040	125.35	1.1906 - 1.2530	169.40	147.45	139.95	136.50	132.70	129.65
1 5/16	1.3125	8	3	11 1/2	1	240042	131.90	1.2531 - 1.3155	175.90	153.85	146.40	143.00	139.15	136.25
1 3/8	1.3750	8	3 1/4	12	1	240044	139.95	1.3156 - 1.3780	183.85	161.95	154.60	151.05	147.35	144.40
1 7/16	1.4375	8	3 1/4	12	1 1/4	240046	155.95	1.3781 - 1.4405	200.00	178.00	170.60	167.10	163.30	160.35
1 1/2	1.5000	8	3 1/2	12 1/2	1 1/4	240048	164.90	1.4406 - 1.5030	208.85	186.85	179.40	176.00	172.20	169.20
1 9/16	1.5625	8	3 1/2	12 1/2	1 1/4	240050	244.90	1.5031 - 1.5660	288.85	266.85	259.50	255.95	252.25	249.20
1 5/8	1.6250	8	3 3/4	13	1 1/4	240052	253.30	1.5661 - 1.6280	297.15	275.25	267.85	264.35	260.55	257.60
1 11/16	1.6875	8	3 3/4	13	1 1/4	240054	284.85	1.6281 - 1.6910	328.90	306.90	299.50	296.05	292.30	289.30
1 3/4	1.7500	10	4	13 1/2	1 1/4	240056	284.85	1.6911 - 1.7530	328.90	306.90	299.50	296.05	292.30	289.30
1 13/16	1.8125	10	4	13 1/2	1 1/2	240058	284.85	1.7531 - 1.8160	328.90	306.90	299.50	296.05	292.30	289.30
1 7/8	1.8750	10	4 1/4	14	1 1/2	240060	298.55	1.8161 - 1.8780	342.45	320.45	313.00	309.55	305.75	302.70
1 15/16	1.9375	10	4 1/4	14	1 1/2	240062	298.55	1.8781 - 1.9410	342.45	320.45	313.00	309.55	305.75	302.70
2	2.0000	12	4 1/4	14	1 1/2	240064	298.55	1.9411 - 2.0030	342.45	320.45	313.00	309.55	305.75	302.70

\*Quantities of 15 or more: price of fractional size in same size range.

EXACT DECIMAL SIZE REAMERS -

For + .0002" tolerance add \$1.00 per tool. For + .0001" tolerance add \$3.00 per tool.

## CARBIDE TIPPED OVER & UNDER SIZE REAMERS

### TYPE 2478 - STRAIGHT FLUTE & SHANK

Cutting diameter tolerance plus .0002" minus .0000".

**USE:**

These precision ground carbide tipped reamers are very convenient for finishing accurate holes in most materials.

TOOL DIAMETER	SHANK DIAM.	OVERALL LENGTH	NO. OF FLUTES	TYPE 2478 EDP NO.	PRICE
.1865	1/16	4 1/2	4	247818	\$54.10
.1885	1/16	4 1/2	4	247819	54.10
.2490	5/16	6	4	247824	54.10
.2510	5/16	6	4	247825	54.10
.3115	3/32	6	4	247831	55.30
.3135	3/32	6	4	247832	55.30
.3740	5/16	7	4	247837	57.35
.3760	5/16	7	4	247838	57.35
.4365	3/8	7	4	247843	64.10
.4385	3/8	7	4	247844	64.10
.4990	7/16	8	6	247849	70.25
.5010	7/16	8	6	247850	70.25
.6240	9/16	9	6	247862	84.25
.6260	9/16	9	6	247863	84.25
.7490	5/8	9 1/2	6	247874	88.80
.7510	5/8	9 1/2	6	247875	88.80
.8740	3/4	10	6	247886	94.35
.8760	3/4	10	6	247887	97.90
.9990	7/8	10 1/2	8	247898	116.30
1.0010	7/8	10 1/2	8	247899	111.45

## CARBIDE TIPPED DOWEL PIN SIZE REAMERS

### TYPE 2476 - STRAIGHT FLUTE & SHANK

Cutting diameter tolerance plus .0000" minus .0002".

**USE:**

These precision ground carbide tipped reamers accurately finish dowel pin holes in most materials and result in properly fitted dowel pins subjected to shearing strain - assuring accurate alignment. Should be used in pairs of .0005" and .0020" under fraction size — Note special minus .0002" tolerance.

TOOL DIAMETER	SHANK DIAM.	OVERALL LENGTH	NO. OF FLUTES	TYPE 2476 EDP NO.	PRICE
.1855	1/16	4 1/2	4	247617	\$54.10
.1870	1/16	4 1/2	4	247618	54.10
.2480	5/16	6	4	247623	54.10
.2495	5/16	6	4	247624	54.10
.3105	3/32	6	4	247630	55.30
.3120	3/32	6	4	247631	55.30
.3730	5/16	7	4	247636	57.35
.3745	5/16	7	4	247637	57.35
.4355	3/8	7	4	247642	64.10
.4370	3/8	7	4	247643	64.10
.4980	7/16	8	6	247648	70.25
.4995	7/16	8	6	247649	70.25
CASED SET OF ABOVE 12 REAMERS				247600	\$675.05



# CHUCKING REAMERS

## CARBIDE TIPPED - STOCKED - SPECIAL DECIMAL SIZES - TYPE 2400

NOTE: Dimension details and modifications listed on page 42.

TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE
.1560	24001560	\$60.60	.1860	24001860	\$56.45	.2160	24002160	\$56.45	.2460	24002460	\$56.45	.2760	24002760	\$57.30
.1565	24001565	60.60	.1865	247818	54.10	.2165	2400055	56.45	.2465	24002465	56.45	.2765	24002765	57.30
.1570	24001570	60.60	.1870	24001870	56.45	.2170	24002170	56.45	.2470	24002470	56.45	.2770	24002770	57.30
.1575	2400040	60.60	.1875	240006	43.00	.2175	24002175	56.45	.2475	24002475	56.45	.2775	24002775	57.30
.1580	24001580	60.60	.1880	24001880	56.45	.2180	24002180	56.45	.2480	2400063	56.45	.2780	24002780	57.30
.1585	24001585	60.60	.1885	247819	54.10	.2185	24002185	56.45	.2485	24002485	56.45	.2785	24002785	57.30
.1590	24001590	60.60	.1890	2400048	56.45	.2190	24002190	56.45	.2490	247824	54.10	.2790	24002790	57.30
.1595	24001595	60.60	.1895	24001895	56.45	.2195	24002195	56.45	.2495	24002495	56.45	.2795	2400071	57.30
.1600	24001600	60.60	.1900	24001900	56.45	.2200	24002200	56.45	.2500	240008	43.00	.2800	24002800	57.30
.1605	24001605	60.60	.1905	24001905	56.45	.2205	2400056	56.45	.2505	24002505	56.45	.2805	24002805	57.30
.1610	24001610	60.60	.1910	24001910	56.45	.2210	24002210	56.45	.2510	247825	54.10	.2810	24002810	57.30
.1615	24001615	60.60	.1915	24001915	56.45	.2215	24002215	59.00	.2515	24002515	56.45	.2815	24002815	57.30
.1620	24001620	60.60	.1920	24001920	56.45	.2220	24002220	59.00	.2520	2400064	56.45	.2820	24002820	57.30
.1625	24001625	60.60	.1925	24001925	56.45	.2225	24002225	59.00	.2525	24002525	56.45	.2825	24002825	57.30
.1630	24001630	60.60	.1930	24001930	56.45	.2230	24002230	59.00	.2530	24002530	56.45	.2830	24002830	57.30
.1635	24001635	60.60	.1935	24001935	56.45	.2235	24002235	59.00	.2535	24002535	57.30	.2835	2400072	57.30
.1640	24001640	60.60	.1940	24001940	56.45	.2240	24002240	59.00	.2540	24002540	57.30	.2840	24002840	57.30
.1645	24001645	60.60	.1945	24001945	56.45	.2245	24002245	59.00	.2545	24002545	57.30	.2845	24002845	57.30
.1650	24001650	60.60	.1950	24001950	56.45	.2250	24002250	59.00	.2550	24002550	57.30	.2850	24002850	57.30
.1655	24001655	60.60	.1955	24001955	56.45	.2255	24002255	59.00	.2555	24002555	57.30	.2855	24002855	57.30
.1660	24001660	60.60	.1960	24001960	56.45	.2260	24002260	59.00	.2560	24002560	57.30	.2860	24002860	57.30
.1665	24001665	60.60	.1965	24001965	56.45	.2265	24002265	59.00	.2565	24002565	57.30	.2865	24002865	57.30
.1670	24001670	60.60	.1970	24001970	56.45	.2270	24002270	59.00	.2570	24002570	57.30	.2870	24002870	57.30
.1675	24001675	60.60	.1975	24001975	56.45	.2275	24002275	59.00	.2575	24002575	57.30	.2875	24002875	57.30
.1680	24001680	60.60	.1980	24001980	56.45	.2280	24002280	59.00	.2580	24002580	57.30	.2880	24002880	57.30
.1685	24001685	60.60	.1985	24001985	56.45	.2285	24002285	59.00	.2585	24002585	57.30	.2885	24002885	57.30
.1690	24001690	60.60	.1990	24001990	56.45	.2290	24002290	59.00	.2590	24002590	57.30	.2890	24002890	57.30
.1695	24001695	60.60	.1995	24001995	56.45	.2295	24002295	59.00	.2595	24002595	57.30	.2895	24002895	57.30
.1700	24001700	60.60	.2000	24002000	56.45	.2300	24002300	59.00	.2600	24002600	57.30	.2900	24002900	57.30
.1705	24001705	60.60	.2005	24002005	56.45	.2305	24002305	59.00	.2605	24002605	57.30	.2905	24002905	57.30
.1710	24001710	60.60	.2010	24002010	56.45	.2310	24002310	59.00	.2610	24002610	57.30	.2910	24002910	57.30
.1715	24001715	60.60	.2015	24002015	56.45	.2315	24002315	59.00	.2615	24002615	57.30	.2915	24002915	57.30
.1720	24001720	60.60	.2020	24002020	56.45	.2320	24002320	59.00	.2620	24002620	57.30	.2920	24002920	57.30
.1725	24001725	60.60	.2025	24002025	56.45	.2325	24002325	59.00	.2625	24002625	57.30	.2925	24002925	57.30
.1730	24001730	60.60	.2030	24002030	56.45	.2330	24002330	59.00	.2630	24002630	57.30	.2930	24002930	57.30
.1735	24001735	60.60	.2035	24002035	56.45	.2335	24002335	59.00	.2635	24002635	57.30	.2935	24002935	57.30
.1740	24001740	60.60	.2040	24002040	56.45	.2340	24002340	59.00	.2640	24002640	57.30	.2940	24002940	57.30
.1745	24001745	60.60	.2045	24002045	56.45	.2345	24002345	59.00	.2645	24002645	57.30	.2945	24002945	57.30
.1750	24001750	60.60	.2050	24002050	56.45	.2350	24002350	59.00	.2650	24002650	57.30	.2950	24002950	57.30
.1755	24001755	60.60	.2055	24002055	56.45	.2355	24002355	59.00	.2655	24002655	57.30	.2955	24002955	57.30
.1760	24001760	60.60	.2060	24002060	56.45	.2360	24002360	59.00	.2660	24002660	57.30	.2960	24002960	57.30
.1765	24001765	60.60	.2065	24002065	56.45	.2365	24002365	59.00	.2665	24002665	57.30	.2965	24002965	57.30
.1770	24001770	56.45	.2070	24002070	56.45	.2370	24002370	59.00	.2670	24002670	57.30	.2970	24002970	57.30
.1775	24001775	56.45	.2075	24002075	56.45	.2375	24002375	59.00	.2675	24002675	57.30	.2975	24002975	57.30
.1780	24001780	56.45	.2080	24002080	56.45	.2380	24002380	59.00	.2680	24002680	57.30	.2980	24002980	57.30
.1785	24001785	56.45	.2085	24002085	56.45	.2385	24002385	56.45	.2685	24002685	57.30	.2985	24002985	57.30
.1790	24001790	56.45	.2090	24002090	56.45	.2390	24002390	56.45	.2690	24002690	57.30	.2990	24002990	57.30
.1795	24001795	56.45	.2095	24002095	56.45	.2395	24002395	56.45	.2695	24002695	57.30	.2995	24002995	57.30
.1800	24001800	56.45	.2100	24002100	56.45	.2400	24002400	56.45	.2700	24002700	57.30	.3000	24003000	57.30
.1805	24001805	56.45	.2105	24002105	56.45	.2405	24002405	56.45	.2705	24002705	57.30	.3005	24003005	57.30
.1810	24001810	56.45	.2110	24002110	56.45	.2410	24002410	56.45	.2710	24002710	57.30	.3010	24003010	57.30
.1815	24001815	56.45	.2115	24002115	56.45	.2415	24002415	56.45	.2715	24002715	57.30	.3015	24003015	57.30
.1820	24001820	56.45	.2120	24002120	56.45	.2420	24002420	56.45	.2720	24002720	57.30	.3020	24003020	57.30
.1825	24001825	56.45	.2125	24002125	56.45	.2425	24002425	56.45	.2725	24002725	57.30	.3025	24003025	57.30
.1830	24001830	56.45	.2130	24002130	56.45	.2430	24002430	56.45	.2730	24002730	57.30	.3030	24003030	57.30
.1835	24001835	56.45	.2135	24002135	56.45	.2435	24002435	56.45	.2735	24002735	57.30	.3035	24003035	57.30
.1840	24001840	56.45	.2140	24002140	56.45	.2440	24002440	56.45	.2740	24002740	57.30	.3040	24003040	57.30
.1845	24001845	56.45	.2145	24002145	56.45	.2445	24002445	56.45	.2745	24002745	57.30	.3045	24003045	57.30
.1850	2400047	56.45	.2150	24002150	56.45	.2450	24002450	56.45	.2750	24002750	57.30	.3050	24003050	57.30
.1855	24001855	56.45	.2155	24002155	56.45	.2455	24002455	56.45	.2755	24002755	57.30	.3055	24003055	57.30



# CHUCKING REAMERS

CARBIDE TIPPED - STOCKED - SPECIAL DECIMAL SIZES - TYPE 2400

NOTE: Dimension details and modifications listed on page 42.

TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE
.3060	24003060	\$57.30	.3360	24003360	\$58.75	.3660	24003660	\$58.75	.3960	24003960	\$61.00	.4260	24004260	\$64.15
.3065	24003065	57.30	.3365	24003365	58.75	.3665	24003665	58.75	.3965	24003965	61.00	.4265	24004265	64.15
.3070	24003070	57.30	.3370	24003370	58.75	.3670	24003670	58.75	.3970	24003970	61.00	.4270	24004270	64.15
.3075	24003075	57.30	.3375	24003375	58.75	.3675	24003675	58.75	.3975	24003975	61.00	.4275	24004275	64.15
.3080	24003080	57.30	.3380	24003380	58.75	.3680	24003680	58.75	.3980	24003980	61.00	.4280	24004280	64.15
.3085	24003085	57.30	.3385	24003385	58.75	.3685	24003685	58.75	.3985	24003985	61.00	.4285	24004285	64.15
.3090	24003090	57.30	.3390	24003390	58.75	.3690	24003690	58.75	.3990	24003990	61.00	.4290	24004290	64.15
.3095	24003095	57.30	.3395	24003395	58.75	.3695	24003695	58.75	.3995	24003995	61.00	.4295	24004295	64.15
.3100	24003100	57.30	.3400	24003400	58.75	.3700	24003700	58.75	.4000	24004000	61.00	.4300	24004300	64.15
.3105	24003105	57.30	.3405	24003405	58.75	.3705	24003705	58.75	.4005	24004005	61.00	.4305	24004305	64.15
.3110	2400079	57.30	.3410	24003410	58.75	.3710	24003710	58.75	.4010	24004010	61.00	.4310	24004310	64.15
.3115	247831	55.30	.3415	24003415	58.75	.3715	24003715	58.75	.4015	24004015	61.00	.4315	24004315	64.15
.3120	24003120	57.30	.3420	24003420	58.75	.3720	24003720	58.75	.4020	24004020	61.00	.4320	24004320	64.15
.3125	240010	43.95	.3425	2400087	58.75	.3725	24003725	58.75	.4025	24004025	61.00	.4325	24004325	64.15
.3130	24003130	57.30	.3430	24003430	58.75	.3730	24003730	58.75	.4030	24004030	61.00	.4330	24004330	64.15
.3135	247832	55.30	.3435	24003435	58.75	.3735	24003735	58.75	.4035	24004035	61.00	.4335	24004335	64.15
.3140	24003140	57.30	.3440	24003440	58.75	.3740	247837	57.35	.4040	24004040	61.00	.4340	24004340	64.15
.3145	24003145	57.30	.3445	24003445	58.75	.3745	24003745	58.75	.4045	24004045	61.00	.4345	24004345	64.15
.3150	2400080	57.30	.3450	24003450	58.75	.3750	240012	45.45	.4050	24004050	61.00	.4350	24004350	64.15
.3155	24003155	58.75	.3455	24003455	58.75	.3755	24003755	58.75	.4055	2400103	61.00	.4355	24004355	64.15
.3160	24003160	58.75	.3460	24003460	58.75	.3760	247838	57.35	.4060	24004060	61.00	.4360	24004360	64.15
.3165	24003165	58.75	.3465	2400088	58.75	.3765	24003765	58.75	.4065	24004065	61.00	.4365	247843	64.10
.3170	24003170	58.75	.3470	24003470	58.75	.3770	24003770	58.75	.4070	24004070	61.00	.4370	2400111	64.15
.3175	24003175	58.75	.3475	24003475	58.75	.3775	24003775	58.75	.4075	24004075	61.00	.4375	240014	51.00
.3180	24003180	58.75	.3480	24003480	58.75	.3780	2400096	58.75	.4080	24004080	61.00	.4380	24004380	64.15
.3185	24003185	58.75	.3485	24003485	58.75	.3785	24003785	61.00	.4085	24004085	61.00	.4385	247844	64.10
.3190	24003190	58.75	.3490	24003490	58.75	.3790	24003790	61.00	.4090	24004090	61.00	.4390	24004390	64.15
.3195	24003195	58.75	.3495	24003495	58.75	.3795	24003795	61.00	.4095	24004095	64.15	.4395	24004395	64.15
.3200	24003200	58.75	.3500	24003500	58.75	.3800	24003800	61.00	.4100	24004100	64.15	.4400	24004400	64.15
.3205	24003205	58.75	.3505	24003505	58.75	.3805	24003805	61.00	.4105	24004105	64.15	.4405	24004405	64.15
.3210	24003210	58.75	.3510	24003510	58.75	.3810	24003810	61.00	.4110	24004110	64.15	.4410	24004410	64.15
.3215	24003215	58.75	.3515	24003515	58.75	.3815	24003815	61.00	.4115	24004115	64.15	.4415	24004415	64.95
.3220	24003220	58.75	.3520	24003520	58.75	.3820	24003820	61.00	.4120	24004120	64.15	.4420	24004420	64.95
.3225	24003225	58.75	.3525	24003525	58.75	.3825	24003825	61.00	.4125	24004125	64.15	.4425	24004425	64.95
.3230	24003230	58.75	.3530	24003530	58.75	.3830	24003830	61.00	.4130	24004130	64.15	.4430	24004430	64.95
.3235	24003235	58.75	.3535	24003535	58.75	.3835	24003835	61.00	.4135	24004135	64.15	.4435	24004435	64.95
.3240	24003240	58.75	.3540	24003540	58.75	.3840	24003840	61.00	.4140	24004140	64.15	.4440	24004440	64.95
.3245	24003245	58.75	.3545	24003545	58.75	.3845	24003845	61.00	.4145	24004145	64.15	.4445	24004445	64.95
.3250	24003250	58.75	.3550	24003550	58.75	.3850	24003850	61.00	.4150	24004150	64.15	.4450	24004450	64.95
.3255	24003255	58.75	.3555	24003555	58.75	.3855	24003855	61.00	.4155	24004155	64.15	.4455	24004455	64.95
.3260	24003260	58.75	.3560	24003560	58.75	.3860	24003860	61.00	.4160	24004160	64.15	.4460	24004460	64.95
.3265	24003265	58.75	.3565	24003565	58.75	.3865	24003865	61.00	.4165	24004165	64.15	.4465	24004465	64.95
.3270	24003270	58.75	.3570	24003570	58.75	.3870	24003870	61.00	.4170	24004170	64.15	.4470	24004470	64.95
.3275	24003275	58.75	.3575	24003575	58.75	.3875	24003875	61.00	.4175	24004175	64.15	.4475	24004475	64.95
.3280	24003280	58.75	.3580	24003580	58.75	.3880	24003880	61.00	.4180	24004180	64.15	.4480	24004480	64.95
.3285	24003285	58.75	.3585	24003585	58.75	.3885	24003885	61.00	.4185	24004185	64.15	.4485	24004485	64.95
.3290	24003290	58.75	.3590	24003590	58.75	.3890	24003890	61.00	.4190	24004190	64.15	.4490	24004490	64.95
.3295	24003295	58.75	.3595	24003595	58.75	.3895	24003895	61.00	.4195	24004195	64.15	.4495	24004495	64.95
.3300	24003300	58.75	.3600	24003600	58.75	.3900	24003900	61.00	.4200	24004200	64.15	.4500	24004500	64.95
.3305	24003305	58.75	.3605	24003605	58.75	.3905	24003905	61.00	.4205	24004205	64.15	.4505	24004505	64.95
.3310	24003310	58.75	.3610	24003610	58.75	.3910	24003910	61.00	.4210	24004210	64.15	.4510	24004510	64.95
.3315	24003315	58.75	.3615	24003615	58.75	.3915	24003915	61.00	.4215	24004215	64.15	.4515	24004515	64.95
.3320	24003320	58.75	.3620	24003620	58.75	.3920	24003920	61.00	.4220	24004220	64.15	.4520	24004520	64.95
.3325	24003325	58.75	.3625	24003625	58.75	.3925	24003925	61.00	.4225	24004225	64.15	.4525	24004525	64.95
.3330	24003330	58.75	.3630	24003630	58.75	.3930	24003930	61.00	.4230	24004230	64.15	.4530	24004530	64.95
.3335	24003335	58.75	.3635	24003635	58.75	.3935	24003935	61.00	.4235	24004235	64.15	.4535	24004535	64.95
.3340	24003340	58.75	.3640	24003640	58.75	.3940	24003940	61.00	.4240	24004240	64.15	.4540	24004540	64.95
.3345	24003345	58.75	.3645	24003645	58.75	.3945	24003945	61.00	.4245	24004245	64.15	.4545	24004545	64.95
.3350	24003350	58.75	.3650	24003650	58.75	.3950	24003950	61.00	.4250	24004250	64.15	.4550	24004550	64.95
.3355	24003355	58.75	.3655	24003655	58.75	.3955	24003955	61.00	.4255	24004255	64.15	.4555	24004555	64.95



# CHUCKING REAMERS

## CARBIDE TIPPED - STOCKED - SPECIAL DECIMAL SIZES - TYPE 2400

NOTE: Dimension details and modifications listed on page 42.

TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE
.4560	24004560	\$64.95	.4860	24004860	\$76.10	.5160	24005160	\$81.60	.5460	24005460	\$81.60	.5760	24005760	\$84.25
.4565	24004565	64.95	.4865	24004865	76.10	.5165	24005165	81.60	.5465	24005465	81.60	.5765	24005765	84.25
.4570	24004570	64.95	.4870	24004870	76.10	.5170	24005170	81.60	.5470	24005470	81.60	.5770	24005770	84.25
.4575	24004575	64.95	.4875	24004875	76.10	.5175	24005175	81.60	.5475	24005475	81.60	.5775	24005775	84.25
.4580	24004580	64.95	.4880	24004880	76.10	.5180	24005180	81.60	.5480	24005480	81.60	.5780	24005780	84.25
.4585	24004585	64.95	.4885	24004885	76.10	.5185	24005185	81.60	.5485	24005485	81.60	.5785	24005785	84.25
.4590	24004590	64.95	.4890	24004890	76.10	.5190	24005190	81.60	.5490	24005490	81.60	.5790	24005790	84.25
.4595	24004595	64.95	.4895	24004895	76.10	.5195	24005195	81.60	.5495	24005495	81.60	.5795	24005795	84.25
.4600	24004600	64.95	.4900	24004900	76.10	.5200	24005200	81.60	.5500	24005500	81.60	.5800	24005800	84.25
.4605	24004605	64.95	.4905	24004905	76.10	.5205	24005205	81.60	.5505	24005505	81.60	.5805	24005805	84.25
.4610	24004610	64.95	.4910	24004910	76.10	.5210	24005210	81.60	.5510	24005510	81.60	.5810	24005810	84.25
.4615	24004615	64.95	.4915	24004915	76.10	.5215	24005215	81.60	.5515	24005515	81.60	.5815	24005815	84.25
.4620	24004620	64.95	.4920	24004920	76.10	.5220	24005220	81.60	.5520	24005520	81.60	.5820	24005820	84.25
.4625	24004625	64.95	.4925	24004925	76.10	.5225	24005225	81.60	.5525	24005525	81.60	.5825	24005825	84.25
.4630	24004630	64.95	.4930	24004930	76.10	.5230	24005230	81.60	.5530	24005530	81.60	.5830	24005830	84.25
.4635	24004635	64.95	.4935	24004935	76.10	.5235	24005235	81.60	.5535	24005535	81.60	.5835	24005835	84.25
.4640	24004640	64.95	.4940	24004940	76.10	.5240	24005240	81.60	.5540	24005540	81.60	.5840	24005840	84.25
.4645	24004645	64.95	.4945	24004945	76.10	.5245	24005245	81.60	.5545	24005545	81.60	.5845	24005845	84.25
.4650	24004650	64.95	.4950	24004950	76.10	.5250	24005250	81.60	.5550	24005550	81.60	.5850	24005850	84.25
.4655	24004655	64.95	.4955	24004955	76.10	.5255	24005255	81.60	.5555	24005555	81.60	.5855	24005855	84.25
.4660	24004660	64.95	.4960	24004960	76.10	.5260	24005260	81.60	.5560	24005560	81.60	.5860	24005860	84.25
.4665	24004665	64.95	.4965	24004965	76.10	.5265	24005265	81.60	.5565	24005565	81.60	.5865	24005865	84.25
.4670	24004670	64.95	.4970	24004970	76.10	.5270	24005270	81.60	.5570	24005570	81.60	.5870	24005870	84.25
.4675	24004675	64.95	.4975	24004975	76.10	.5275	24005275	81.60	.5575	24005575	81.60	.5875	24005875	84.25
.4680	24004680	64.95	.4980	24004980	76.10	.5280	24005280	81.60	.5580	24005580	81.60	.5880	24005880	84.25
.4685	2400119	64.95	.4985	24004985	76.10	.5285	24005285	81.60	.5585	24005585	81.60	.5885	24005885	84.25
.4690	24004690	64.95	.4990	247849	70.25	.5290	24005290	81.60	.5590	24005590	81.60	.5890	24005890	84.25
.4695	24004695	64.95	.4995	24004995	76.10	.5295	24005295	81.60	.5595	24005595	81.60	.5895	24005895	84.25
.4700	24004700	64.95	.5000	240016	61.45	.5300	24005300	81.60	.5600	24005600	81.60	.5900	24005900	84.25
.4705	24004705	64.95	.5005	24005005	76.10	.5305	24005305	81.60	.5605	24005605	81.60	.5905	24005905	84.25
.4710	24004710	64.95	.5010	247850	70.25	.5310	24005310	81.60	.5610	24005610	81.60	.5910	24005910	84.25
.4715	24004715	64.95	.5015	24005015	76.10	.5315	2400135	81.60	.5615	24005615	81.60	.5915	24005915	84.25
.4720	24004720	64.95	.5020	24005020	76.10	.5320	24005320	81.60	.5620	24005620	81.60	.5920	24005920	84.25
.4725	24004725	76.10	.5025	24005025	76.10	.5325	24005325	81.60	.5625	240018	66.85	.5925	24005925	84.25
.4730	24004730	76.10	.5030	24005030	76.10	.5330	24005330	81.60	.5630	2400143	81.60	.5930	24005930	84.25
.4735	24004735	76.10	.5035	24005035	81.60	.5335	24005335	81.60	.5635	24005635	81.60	.5935	24005935	84.25
.4740	24004740	76.10	.5040	24005040	81.60	.5340	24005340	81.60	.5640	24005640	81.60	.5940	24005940	84.25
.4745	24004745	76.10	.5045	24005045	81.60	.5345	24005345	81.60	.5645	24005645	81.60	.5945	2400151	84.25
.4750	24004750	76.10	.5050	24005050	81.60	.5350	24005350	81.60	.5650	24005650	81.60	.5950	24005950	84.25
.4755	24004755	76.10	.5055	24005055	81.60	.5355	24005355	81.60	.5655	24005655	81.60	.5955	24005955	84.25
.4760	24004760	76.10	.5060	24005060	81.60	.5360	24005360	81.60	.5660	24005660	81.60	.5960	24005960	84.25
.4765	24004765	76.10	.5065	24005065	81.60	.5365	24005365	81.60	.5665	24005665	84.25	.5965	24005965	84.25
.4770	24004770	76.10	.5070	24005070	81.60	.5370	24005370	81.60	.5670	24005670	84.25	.5970	24005970	84.25
.4775	24004775	76.10	.5075	24005075	81.60	.5375	24005375	81.60	.5675	24005675	84.25	.5975	24005975	84.25
.4780	24004780	76.10	.5080	24005080	81.60	.5380	24005380	81.60	.5680	24005680	84.25	.5980	24005980	84.25
.4785	24004785	76.10	.5085	24005085	81.60	.5385	24005385	81.60	.5685	24005685	84.25	.5985	24005985	84.25
.4790	24004790	76.10	.5090	24005090	81.60	.5390	24005390	81.60	.5690	24005690	84.25	.5990	24005990	84.25
.4795	24004795	76.10	.5095	24005095	81.60	.5395	24005395	81.60	.5695	24005695	84.25	.5995	24005995	84.25
.4800	24004800	76.10	.5100	24005100	81.60	.5400	24005400	81.60	.5700	24005700	84.25	.6000	24006000	84.25
.4805	24004805	76.10	.5105	24005105	81.60	.5405	24005405	81.60	.5705	24005705	84.25	.6005	24006005	84.25
.4810	24004810	76.10	.5110	24005110	81.60	.5410	24005410	81.60	.5710	24005710	84.25	.6010	24006010	84.25
.4815	24004815	76.10	.5115	24005115	81.60	.5415	24005415	81.60	.5715	24005715	84.25	.6015	24006015	84.25
.4820	24004820	76.10	.5120	24005120	81.60	.5420	24005420	81.60	.5720	24005720	84.25	.6020	24006020	84.25
.4825	24004825	76.10	.5125	24005125	81.60	.5425	24005425	81.60	.5725	24005725	84.25	.6025	24006025	84.25
.4830	24004830	76.10	.5130	24005130	81.60	.5430	24005430	81.60	.5730	24005730	84.25	.6030	24006030	84.25
.4835	24004835	76.10	.5135	24005135	81.60	.5435	24005435	81.60	.5735	24005735	84.25	.6035	24006035	84.25
.4840	24004840	76.10	.5140	24005140	81.60	.5440	24005440	81.60	.5740	24005740	84.25	.6040	24006040	84.25
.4845	24004845	76.10	.5145	24005145	81.60	.5445	24005445	81.60	.5745	24005745	84.25	.6045	24006045	84.25
.4850	24004850	76.10	.5150	24005150	81.60	.5450	24005450	81.60	.5750	24005750	84.25	.6050	24006050	84.25
.4855	24004855	76.10	.5155	24005155	81.60	.5455	24005455	81.60	.5755	24005755	84.25	.6055	24006055	84.25



# CHUCKING REAMERS

## CARBIDE TIPPED - STOCKED - SPECIAL DECIMAL SIZES - TYPE 2400

NOTE: Dimension details and modifications listed on page 42.

TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE	TOOL DIAM.	EDP NO.	PRICE
.6060	24006060	\$84.25	.6360	24006360	\$85.45	.6660	24006660	\$85.45	.6960	24006960	\$88.80	.7260	24007260	\$88.80
.6065	24006065	84.25	.6365	24006365	85.45	.6665	24006665	85.45	.6965	24006965	88.80	.7265	24007265	88.80
.6070	24006070	84.25	.6370	24006370	85.45	.6670	24006670	85.45	.6970	24006970	88.80	.7270	24007270	88.80
.6075	24006075	84.25	.6375	24006375	85.45	.6675	24006675	85.45	.6975	24006975	88.80	.7275	24007275	88.80
.6080	24006080	84.25	.6380	24006380	85.45	.6680	24006680	85.45	.6980	24006980	88.80	.7280	24007280	88.80
.6085	24006085	84.25	.6385	24006385	85.45	.6685	24006685	85.45	.6985	24006985	88.80	.7285	24007285	88.80
.6090	24006090	84.25	.6390	24006390	85.45	.6690	24006690	85.45	.6990	24006990	88.80	.7290	24007290	88.80
.6095	24006095	84.25	.6395	24006395	85.45	.6695	24006695	85.45	.6995	24006995	88.80	.7295	24007295	88.80
.6100	24006100	84.25	.6400	24006400	85.45	.6700	24006700	85.45	.7000	24007000	88.80	.7300	24007300	88.80
.6105	24006105	84.25	.6405	24006405	85.45	.6705	24006705	85.45	.7005	24007005	88.80	.7305	24007305	88.80
.6110	24006110	84.25	.6410	24006410	85.45	.6710	24006710	85.45	.7010	24007010	88.80	.7310	24007310	88.80
.6115	24006115	84.25	.6415	24006415	85.45	.6715	24006715	85.45	.7015	24007015	88.80	.7315	24007315	88.80
.6120	24006120	84.25	.6420	24006420	85.45	.6720	24006720	85.45	.7020	24007020	88.80	.7320	24007320	88.80
.6125	24006125	84.25	.6425	24006425	85.45	.6725	24006725	85.45	.7025	24007025	88.80	.7325	24007325	88.80
.6130	24006130	84.25	.6430	24006430	85.45	.6730	24006730	85.45	.7030	24007030	88.80	.7330	24007330	88.80
.6135	24006135	84.25	.6435	24006435	85.45	.6735	24006735	85.45	.7035	24007035	88.80	.7335	24007335	88.80
.6140	24006140	84.25	.6440	24006440	85.45	.6740	24006740	85.45	.7040	24007040	88.80	.7340	24007340	88.80
.6145	24006145	84.25	.6445	24006445	85.45	.6745	24006745	85.45	.7045	24007045	88.80	.7345	24007345	88.80
.6150	24006150	84.25	.6450	24006450	85.45	.6750	24006750	85.45	.7050	24007050	88.80	.7350	24007350	88.80
.6155	24006155	84.25	.6455	24006455	85.45	.6755	24006755	85.45	.7055	24007055	88.80	.7355	24007355	88.80
.6160	24006160	84.25	.6460	24006460	85.45	.6760	24006760	85.45	.7060	24007060	88.80	.7360	24007360	88.80
.6165	24006165	84.25	.6465	24006465	85.45	.6765	24006765	85.45	.7065	24007065	88.80	.7365	24007365	88.80
.6170	24006170	84.25	.6470	24006470	85.45	.6770	24006770	85.45	.7070	24007070	88.80	.7370	24007370	88.80
.6175	24006175	84.25	.6475	24006475	85.45	.6775	24006775	85.45	.7075	24007075	88.80	.7375	24007375	88.80
.6180	24006180	84.25	.6480	24006480	85.45	.6780	24006780	85.45	.7080	24007080	88.80	.7380	24007380	88.80
.6185	24006185	84.25	.6485	24006485	85.45	.6785	24006785	85.45	.7085	24007085	88.80	.7385	24007385	88.80
.6190	24006190	84.25	.6490	24006490	85.45	.6790	24006790	85.45	.7090	24007090	88.80	.7390	24007390	88.80
.6195	24006195	84.25	.6495	24006495	85.45	.6795	24006795	85.45	.7095	24007095	88.80	.7395	24007395	88.80
.6200	24006200	84.25	.6500	24006500	85.45	.6800	24006800	85.45	.7100	24007100	88.80	.7400	24007400	88.80
.6205	24006205	84.25	.6505	24006505	85.45	.6805	24006805	85.45	.7105	24007105	88.80	.7405	24007405	88.80
.6210	24006210	84.25	.6510	24006510	85.45	.6810	24006810	85.45	.7110	24007110	88.80	.7410	24007410	88.80
.6215	24006215	84.25	.6515	24006515	85.45	.6815	24006815	85.45	.7115	24007115	88.80	.7415	24007415	88.80
.6220	2400158	84.25	.6520	24006520	85.45	.6820	24006820	85.45	.7120	24007120	88.80	.7420	24007420	88.80
.6225	24006225	84.25	.6525	24006525	85.45	.6825	24006825	85.45	.7125	24007125	88.80	.7425	24007425	88.80
.6230	24006230	84.25	.6530	24006530	85.45	.6830	24006830	85.45	.7130	24007130	88.80	.7430	24007430	88.80
.6235	24006235	84.25	.6535	2400166	85.45	.6835	24006835	85.45	.7135	24007135	88.80	.7435	24007435	88.80
.6240	247862	84.25	.6540	24006540	85.45	.6840	24006840	85.45	.7140	24007140	88.80	.7440	24007440	88.80
.6245	24006245	84.25	.6545	24006545	85.45	.6845	24006845	85.45	.7145	24007145	88.80	.7445	24007445	88.80
.6250	240020	69.60	.6550	24006550	85.45	.6850	2400174	85.45	.7150	24007150	88.80	.7450	24007450	88.80
.6255	24006255	84.25	.6555	24006555	85.45	.6855	24006855	85.45	.7155	24007155	88.80	.7455	24007455	88.80
.6260	247863	84.25	.6560	24006560	85.45	.6860	24006860	85.45	.7160	24007160	88.80	.7460	24007460	88.80
.6265	24006265	84.25	.6565	24006565	85.45	.6865	24006865	85.45	.7165	2400182	88.80	.7465	24007465	88.80
.6270	24006270	84.25	.6570	24006570	85.45	.6870	24006870	85.45	.7170	24007170	88.80	.7470	24007470	88.80
.6275	24006275	84.25	.6575	2400167	85.45	.6875	240022	70.85	.7175	24007175	88.80	.7475	24007475	88.80
.6280	24006280	84.25	.6580	24006580	85.45	.6880	24006880	85.45	.7180	24007180	88.80	.7480	2400190	88.80
.6285	24006285	85.45	.6585	24006585	85.45	.6885	24006885	85.45	.7185	24007185	88.80	.7485	24007485	88.80
.6290	24006290	85.45	.6590	24006590	85.45	.6890	2400175	85.45	.7190	24007190	88.80	.7490	247874	88.80
.6295	24006295	85.45	.6595	24006595	85.45	.6895	24006895	85.45	.7195	24007195	88.80	.7495	24007495	88.80
.6300	24006300	85.45	.6600	24006600	85.45	.6900	24006900	85.45	.7200	24007200	88.80	.7500	240024	74.15
.6305	24006305	85.45	.6605	24006605	85.45	.6905	24006905	85.45	.7205	2400183	88.80	.7505	24007505	88.80
.6310	24006310	85.45	.6610	24006610	85.45	.6910	24006910	85.45	.7210	24007210	88.80	.7510	247875	88.80
.6315	24006315	85.45	.6615	24006615	85.45	.6915	24006915	88.80	.7215	24007215	88.80	.7515	24007515	88.80
.6320	24006320	85.45	.6620	24006620	85.45	.6920	24006920	88.80	.7220	24007220	88.80	.7520	2400191	88.80
.6325	24006325	85.45	.6625	24006625	85.45	.6925	24006925	88.80	.7225	24007225	88.80	.7525	24007525	88.80
.6330	24006330	85.45	.6630	24006630	85.45	.6930	24006930	88.80	.7230	24007230	88.80	.7530	24007530	88.80
.6335	24006335	85.45	.6635	24006635	85.45	.6935	24006935	88.80	.7235	24007235	88.80	.7535	24007535	91.25
.6340	24006340	85.45	.6640	24006640	85.45	.6940	24006940	88.80	.7240	24007240	88.80	.7540	24007540	91.25
.6345	24006345	85.45	.6645	24006645	85.45	.6945	24006945	88.80	.7245	24007245	88.80	.7545	24007545	91.25
.6350	24006350	85.45	.6650	24006650	85.45	.6950	24006950	88.80	.7250	24007250	88.80	.7550	24007550	91.25
.6355	24006355	85.45	.6655	24006655	85.45	.6955	24006955	88.80	.7255	24007255	88.80	.7555	24007555	91.25



# CHUCKING REAMERS

## CARBIDE TIPPED - STRAIGHT POLISHED FLUTES - TAPER SHANK



### TYPE 2402 - FINISHED FRACTIONAL SIZES

Taper shank and straight polished flutes.  
Carbide tips brazed to one piece hardened alloy steel bodies.

Cutting diameter tolerance plus .0003", minus .0000".

### USE:

For general reaming of steel, cast iron, non-ferrous metals, plastics and non-metals.

### OPTIONS:

Intermediate decimal & metric sizes (priced as indicated in extended table below).  
Cutting diameter reduced for small steps or pilot.  
Radius end or end chamfer other than 45°.  
End cutting.  
Rose grind (twice normal back taper).  
Semi-finished type reamers in stock (see page 73).  
Closer tolerance.  
For +.0002" add \$1.00 per tool.  
For +.0001" add \$3.00 per tool.

TOOL DIAMETER		MORSE TAPER	NUMBER OF FLUTES	LENGTH		TYPE 2402 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRACTIONAL	DECIMAL			FLUTE	OVERALL				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
1/4	.2500	1	4	1 1/2	6	240208	\$49.55	0.2381 - 0.2530	\$89.65	\$69.60	\$62.90	\$59.70	\$56.40	\$53.60
3/32	.2812	1	4	1 1/2	6	240209	50.50	0.2531 - 0.2840	90.65	70.50	63.90	60.60	57.25	54.40
1/16	.3125	1	4	1 1/2	6	240210	50.50	0.2841 - 0.3150	90.65	70.50	63.90	60.60	57.25	54.40
1/32	.3438	1	4	1 1/2	6	240211	52.40	0.3151 - 0.3470	92.55	72.40	65.60	62.40	59.10	56.45
3/8	.3750	1	4	1 3/4	7	240212	48.05	0.3471 - 0.3780	84.90	66.45	60.20	57.35	54.15	51.70
13/32	.4062	1	4	1 3/4	7	240213	54.95	0.3781 - 0.4090	95.10	74.95	68.20	65.10	61.60	58.90
7/16	.4375	1	4	1 3/4	7	240214	58.50	0.4091 - 0.4410	98.60	78.50	71.75	68.60	65.20	62.35
15/32	.4688	1	4	1 3/4	7	240215	60.00	0.4411 - 0.4720	100.20	80.10	73.35	70.15	66.70	64.00
1/2	.5000	1	6	2	8	240216	70.75	0.4721 - 0.5030	114.90	92.70	85.35	81.90	78.05	75.10
17/32	.5312	1	6	2	8	240217	76.40	0.5031 - 0.5340	120.60	98.35	90.95	87.55	83.65	80.55
9/16	.5625	1	6	2	8	240218	76.40	0.5341 - 0.5660	120.60	98.35	90.95	87.55	83.65	80.55
19/32	.5938	1	6	2	8	240219	80.05	0.5661 - 0.5970	124.25	102.05	94.65	91.15	87.25	84.40
5/8	.6250	2	6	2 1/4	9	240220	80.05	0.5971 - 0.6280	124.25	102.05	94.65	91.15	87.25	84.40
21/32	.6562	2	6	2 1/4	9	240221	81.45	0.6281 - 0.6590	125.60	103.50	96.10	92.60	88.80	85.75
11/16	.6875	2	6	2 1/4	9	240222	81.45	0.6591 - 0.6910	125.60	103.50	96.10	92.60	88.80	85.75
23/32	.7188	2	6	2 1/4	9	240223	85.15	0.6911 - 0.7220	129.40	107.15	99.75	96.35	92.55	89.50
3/4	.7500	2	6	2 1/2	9 1/2	240224	85.15	0.7221 - 0.7530	129.40	107.15	99.75	96.35	92.55	89.50
25/32	.7812	2	6	2 1/2	9 1/2	240225	87.80	0.7531 - 0.7840	132.00	109.80	102.50	99.00	95.10	92.10
13/16	.8125	2	6	2 1/2	9 1/2	240226	87.80	0.7841 - 0.8160	132.00	109.80	102.50	99.00	95.10	92.10
27/32	.8438	2	6	2 1/2	9 1/2	240227	91.60	0.8161 - 0.8470	135.75	113.55	106.25	102.70	99.00	95.85
7/8	.8750	2	6	2 5/8	10	240228	95.10	0.8471 - 0.8780	140.85	118.00	110.25	106.50	102.65	99.50
29/32	.9062	2	6	2 5/8	10	240229	111.50	0.8781 - 0.9090	157.30	134.30	126.65	122.95	119.05	115.95
15/16	.9375	3	8	2 5/8	10	240230	111.50	0.9091 - 0.9410	157.30	134.30	126.65	122.95	119.05	115.95
31/32	.9688	3	8	2 5/8	10	240231	116.25	0.9411 - 0.9720	162.00	139.00	131.25	127.65	123.75	120.65
1	1.0000	3	8	2 3/4	10 1/2	240232	116.25	0.9721 - 1.0030	162.00	139.00	131.25	127.65	123.75	120.65
1 1/16	1.0625	3	8	2 3/4	10 1/2	240234	159.50	1.0031 - 1.0660	203.55	181.55	174.20	170.65	166.80	163.85
1 1/8	1.1250	3	8	2 7/8	11	240236	170.00	1.0661 - 1.1280	213.95	191.80	184.50	180.95	177.30	174.30
1 3/16	1.1875	3	8	2 7/8	11	240238	180.05	1.1281 - 1.1905	224.10	201.90	194.65	191.00	187.25	184.35
1 1/4	1.2500	4	8	3	11 1/2	240240	200.05	1.1906 - 1.2530	244.05	222.00	214.65	211.05	207.35	204.35
1 3/16	1.3125	4	8	3	11 1/2	240242	215.75	1.2531 - 1.3155	259.65	237.65	230.25	226.75	222.95	220.00
1 3/8	1.3750	4	8	3 1/4	12	240244	224.40	1.3156 - 1.3780	268.40	246.35	239.00	235.50	231.65	228.85
1 7/16	1.4375	4	8	3 1/4	12	240246	229.05	1.3781 - 1.4405	273.10	251.10	243.60	240.20	236.30	233.40
1 1/2	1.5000	4	8	3 1/2	12 1/2	240248	240.45	1.4406 - 1.5030	284.45	262.55	255.10	251.60	247.75	244.80
1 9/16	1.5625	4	8	3 1/2	12 1/2	240250	259.60	1.5031 - 1.5660	303.55	281.55	274.10	270.65	266.85	263.90
1 5/8	1.6250	4	8	3 3/4	13	240252	268.50	1.5661 - 1.6280	312.55	290.55	283.10	279.60	275.90	272.85
1 11/16	1.6875	4	8	3 3/4	13	240254	301.95	1.6281 - 1.6910	346.00	323.90	316.65	313.00	309.35	306.40
1 3/4	1.7500	4	10	4	13 1/2	240256	301.95	1.6911 - 1.7530	346.00	323.90	316.65	313.00	309.35	306.40
1 13/16	1.8125	4	10	4	13 1/2	240258	301.95	1.7531 - 1.8160	346.00	323.90	316.65	313.00	309.35	306.40
1 7/8	1.8750	4	10	4 1/4	14	240260	316.45	1.8161 - 1.8780	360.35	338.35	330.95	327.40	323.75	320.70
1 15/16	1.9375	4	10	4 1/4	14	240262	316.45	1.8781 - 1.9410	360.35	338.35	330.95	327.40	323.75	320.70
2	2.0000	4	12	4 1/4	14	240264	316.45	1.9411 - 2.0030	360.35	338.35	330.95	327.40	323.75	320.70

\*Quantities of 15 or more: price of fractional size in same size range.







# CHUCKING REAMERS

CARBIDE TIPPED - STRAIGHT FLUTE LONG CARBIDE - STRAIGHT SHANK



**TYPE 2450 - FINISHED FRACTIONAL SIZES**

Straight shank and straight polished flutes.  
Flute long carbide brazed to one piece hardened alloy steel bodies.  
Cutting diameter tolerance plus .0003" minus .0000".

**USE:**

For all general reaming - especially designed with flute long carbide for deep hole reaming to precision tolerances and for long production runs.

**OPTIONS:**

- Intermediate decimal sizes (priced as indicated in extended table below).
- Cutting diameter reduced for small steps or pilot.
- Radius end or end chamfer other than 45°.
- End cutting.
- Rose grind (twice normal back taper).
- Short shank or undersized shank diameter.
- Flat on shank or tapered shank.
- Semi-finished type reamers in stock (see page 73).
- Closer tolerance.
- For +.0002" add \$1.00 per tool.
- For +.0001" add \$3.00 per tool.

TOOL DIAMETER		SHANK DIAM.	NO. OF FLUTES	LENGTH		TYPE 2450 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRACTIONAL	DECIMAL			FLUTE	OVERALL				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
3/16	.1875	1/64	4	1 1/2	6	245006	\$51.45	0.1770 - 0.2040	\$92.70	\$72.05	\$65.30	\$61.90	\$58.30	\$55.50
7/32	.2188	1/64	4	1 1/2	6	245007	51.45	0.2041 - 0.2210	92.70	72.05	65.30	61.90	58.30	55.50
1/8	.2344	7/32	4	1 1/2	6	24502344	51.45	0.2211 - 0.2380	92.70	72.05	65.30	61.90	58.30	55.50
1/4	.2500	1/64	4	1 1/2	6	245008	51.45	0.2381 - 0.2530	92.70	72.05	65.30	61.90	58.30	55.50
9/32	.2812	1/64	4	1 1/2	6	245009	52.65	0.2531 - 0.2840	93.85	73.15	66.25	62.95	59.35	56.65
5/16	.3125	9/32	4	1 1/2	6	245010	52.65	0.2841 - 0.3150	93.85	73.15	66.25	62.95	59.35	56.65
11/32	.3438	9/32	4	1 1/2	6	245011	54.45	0.3151 - 0.3470	95.75	75.15	68.10	64.90	61.35	58.55
3/8	.3750	5/16	4	1 3/4	7	245012	54.45	0.3471 - 0.3780	95.75	75.15	68.10	64.90	61.35	58.55
13/32	.4062	5/16	4	1 3/4	7	245013	57.25	0.3781 - 0.4090	98.40	77.85	70.90	67.65	64.05	61.25
7/16	.4375	3/8	4	1 3/4	7	245014	61.90	0.4091 - 0.4410	103.15	82.40	75.50	72.30	68.70	65.95
15/32	.4688	3/8	4	1 3/4	7	245015	66.80	0.4411 - 0.4720	108.10	87.55	80.45	77.15	73.65	70.90
1/2	.5000	7/16	6	2	8	245016	71.55	0.4721 - 0.5030	115.80	93.65	86.35	82.75	79.00	75.85
17/32	.5312	7/16	6	2	8	245017	73.60	0.5031 - 0.5340	117.85	95.70	88.30	84.65	80.90	77.90
9/16	.5625	7/16	6	2	8	245018	73.60	0.5341 - 0.5660	117.85	95.70	88.30	84.65	80.90	77.90
19/32	.5938	7/16	6	2	8	245019	76.50	0.5661 - 0.5970	120.70	98.45	91.15	87.70	83.80	80.85
5/8	.6250	9/16	6	2	9	245020	76.50	0.5971 - 0.6280	120.70	98.45	91.15	87.70	83.80	80.85
21/32	.6562	9/16	6	2	9	245021	77.85	0.6281 - 0.6590	122.05	99.95	92.55	89.05	85.15	82.20
11/16	.6875	9/16	6	2	9	245022	77.85	0.6591 - 0.6910	122.05	99.95	92.55	89.05	85.15	82.20
23/32	.7188	9/16	6	2	9	245023	81.45	0.6911 - 0.7220	125.60	103.50	96.10	92.60	88.80	85.75
3/4	.7500	5/8	6	2	9 1/2	245024	81.45	0.7221 - 0.7530	125.60	103.50	96.10	92.60	88.80	85.75
25/32	.7812	5/8	6	2	9 1/2	245025	84.25	0.7531 - 0.7840	128.40	106.35	99.00	95.40	91.60	88.60
13/16	.8125	5/8	6	2	9 1/2	245026	84.25	0.7841 - 0.8160	128.40	106.35	99.00	95.40	91.60	88.60
27/32	.8438	5/8	6	2	9 1/2	245027	87.70	0.8161 - 0.8470	131.85	109.60	102.20	98.70	95.00	91.90
7/8	.8750	3/4	6	2 1/4	10	245028	90.95	0.8471 - 0.8780	136.80	113.90	106.15	102.45	98.45	95.40
29/32	.9062	3/4	6	2 1/4	10	245029	105.85	0.8781 - 0.9090	151.70	128.75	121.00	117.40	113.45	110.30
15/16	.9375	3/4	8	2 1/4	10	245030	105.85	0.9091 - 0.9410	151.70	128.75	121.00	117.40	113.45	110.30
31/32	.9688	3/4	8	2 1/4	10	245031	110.85	0.9411 - 0.9720	156.75	133.80	126.15	122.45	118.50	115.40
1	1.0000	7/8	8	2 1/4	10 1/2	245032	110.85	0.9721 - 1.0030	156.75	133.80	126.15	122.45	118.50	115.40
1 1/16	1.0625	7/8	8	2 1/4	10 1/2	245034	114.75	1.0031 - 1.0660	158.75	136.65	129.35	125.75	122.05	119.05
1 1/8	1.1250	7/8	8	2 1/4	11	245036	124.20	1.0661 - 1.1280	168.10	146.20	138.75	135.20	131.40	128.40
1 3/16	1.1875	1	8	2 1/4	11	245038	129.90	1.1281 - 1.1905	173.85	151.85	144.50	140.95	137.15	134.25
1 1/4	1.2500	1	8	2 1/2	11 1/2	245040	151.70	1.1906 - 1.2530	195.60	173.65	166.20	162.70	158.90	155.95
1 3/8	1.3125	1	8	2 1/2	11 1/2	245042	151.70	1.2531 - 1.3155	195.60	173.65	166.20	162.70	158.90	155.95
1 3/8	1.3750	1	8	2 1/2	12	245044	153.90	1.3156 - 1.3780	197.85	175.90	168.45	164.95	161.20	158.15
1 7/16	1.4375	1 1/4	8	2 1/2	12	245046	170.05	1.3781 - 1.4405	214.05	191.85	184.65	181.10	177.35	174.35
1 1/2	1.5000	1 1/4	8	2 1/2	12 1/2	245048	204.10	1.4406 - 1.5030	248.10	226.00	218.70	215.20	211.40	208.50
1 9/16	1.5625	1 1/4	8	2 1/2	12 1/2	245050	269.45	1.5031 - 1.5660	313.40	291.35	284.00	280.50	276.75	273.80
1 3/8	1.6250	1 1/4	8	2 3/4	13	245052	278.65	1.5661 - 1.6280	322.60	300.45	293.15	289.75	285.90	282.95
1 11/16	1.6875	1 1/4	8	2 3/4	13	245054	305.85	1.6281 - 1.6910	349.90	327.95	320.60	317.00	313.25	310.35
1 3/4	1.7500	1 1/4	10	3	13 1/2	245056	305.85	1.6911 - 1.7530	349.90	327.95	320.60	317.00	313.25	310.35
1 13/16	1.8125	1 1/2	10	3	13 1/2	245058	313.00	1.7531 - 1.8160	357.10	335.05	327.55	324.15	320.35	317.40
1 7/8	1.8750	1 1/2	10	3 1/4	14	245060	328.25	1.8161 - 1.8780	372.20	350.20	342.90	339.35	335.50	332.60
1 15/16	1.9375	1 1/2	10	3 1/4	14	245062	348.10	1.8781 - 1.9410	392.00	369.90	362.60	359.10	355.35	352.35
2	2.0000	1 1/2	12	3 1/4	14	245064	348.10	1.9411 - 2.0030	392.00	369.90	362.60	359.10	355.35	352.35

\*Quantities of 15 or more: price of fractional size in same size range.













# CHUCKING REAMERS

## CARBIDE TIPPED - STRAIGHT FLUTE LONG CARBIDE - TAPER SHANK



### TYPE 2452 - FINISHED FRACTIONAL SIZES

Taper shank and straight polished flutes.  
Flute long carbide brazed to one piece hardened alloy steel bodies.  
Cutting diameter tolerance plus .0003" minus .0000".

### USE:

For all general reaming.  
Especially designed with flute long carbide for deep hole reaming to precision tolerances and for long production runs.

### OPTIONS:

Intermediate decimal sizes (priced as indicated in extended table below).  
Cutting diameter reduced for small steps or pilot.  
Radius end or end chamfer other than 45°.  
End cutting.  
Rose grind (twice normal back taper).  
Closer tolerance.  
For +.0002" add \$1.00 per tool.  
For +.0001" add \$3.00 per tool.

TOOL DIAMETER		MORSE TAPER	NO. OF FLUTES	LENGTH		TYPE 2452 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRACTIONAL	DECIMAL			FLUTE	OVERALL				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
1/4	.2500	1	4	1 1/2	6	245208	\$59.25	0.2381 - 0.2530	\$100.55	\$79.85	\$72.90	\$69.60	\$66.10	\$63.25
9/32	.2812	1	4	1 1/2	6	245209	60.00	0.2531 - 0.2840	101.35	80.75	73.70	70.40	66.85	64.10
5/16	.3125	1	4	1 1/2	6	245210	60.00	0.2841 - 0.3150	101.35	80.75	73.70	70.40	66.85	64.10
11/32	.3438	1	4	1 1/2	6	245211	61.40	0.3151 - 0.3470	102.70	82.10	75.15	71.75	68.20	65.45
3/8	.3750	1	4	1 3/4	7	245212	62.10	0.3471 - 0.3780	103.40	82.75	75.75	72.45	68.90	66.20
13/32	.4062	1	4	1 3/4	7	245213	65.40	0.3781 - 0.4090	106.70	85.90	79.05	75.75	72.30	69.50
7/16	.4375	1	4	1 3/4	7	245214	69.65	0.4091 - 0.4410	110.90	90.30	83.40	80.10	76.55	73.70
15/32	.4688	1	4	1 3/4	7	245215	71.10	0.4411 - 0.4720	112.50	91.65	84.85	81.50	78.00	75.20
1/2	.5000	1	6	2	8	245216	76.70	0.4721 - 0.5030	120.80	98.70	91.30	87.80	83.95	81.05
17/32	.5312	1	6	2	8	245217	83.95	0.5031 - 0.5340	128.25	106.05	98.60	95.10	91.30	88.30
9/16	.5625	1	6	2	8	245218	83.95	0.5341 - 0.5660	128.25	106.05	98.60	95.10	91.30	88.30
19/32	.5938	1	6	2	8	245219	87.85	0.5661 - 0.5970	132.05	109.95	102.55	99.05	95.20	92.25
5/8	.6250	2	6	2	9	245220	87.85	0.5971 - 0.6280	132.05	109.95	102.55	99.05	95.20	92.25
21/32	.6562	2	6	2	9	245221	89.50	0.6281 - 0.6590	133.80	111.55	104.05	100.65	96.80	93.90
11/16	.6875	2	6	2	9	245222	89.50	0.6591 - 0.6910	133.80	111.55	104.05	100.65	96.80	93.90
23/32	.7188	2	6	2	9	245223	90.75	0.6911 - 0.7220	135.05	112.80	105.35	101.90	98.10	95.10
3/4	.7500	2	6	2	9 1/2	245224	93.65	0.7221 - 0.7530	137.90	115.70	108.30	104.75	100.85	98.05
25/32	.7812	2	6	2	9 1/2	245225	94.40	0.7531 - 0.7840	138.65	116.50	109.10	105.40	101.70	98.70
13/16	.8125	2	6	2	9 1/2	245226	96.60	0.7841 - 0.8160	140.70	118.50	111.25	107.70	103.90	100.80
27/32	.8438	2	6	2	9 1/2	245227	100.75	0.8161 - 0.8470	145.05	122.85	115.40	111.95	108.10	105.20
7/8	.8750	2	6	2 1/4	10	245228	104.65	0.8471 - 0.8780	150.55	127.55	119.70	116.25	112.10	109.20
29/32	.9062	2	6	2 1/4	10	245229	117.85	0.8781 - 0.9090	163.65	140.70	133.10	129.40	125.35	122.35
15/16	.9375	3	8	2 1/4	10	245230	122.60	0.9091 - 0.9410	168.30	145.40	137.75	134.05	130.10	127.05
31/32	.9688	3	8	2 1/4	10	245231	127.60	0.9411 - 0.9720	173.50	150.55	142.80	139.15	135.15	132.15
1	1.0000	3	8	2 1/4	10 1/2	245232	127.60	0.9721 - 1.0030	173.50	150.55	142.80	139.15	135.15	132.15
1 1/16	1.0625	3	8	2 1/4	10 1/2	245234	174.90	1.0031 - 1.0660	218.85	196.70	189.40	186.00	182.15	179.15
1 1/8	1.1250	3	8	2 1/4	11	245236	188.35	1.0661 - 1.1280	232.30	210.30	203.00	199.40	195.60	192.65
1 3/16	1.1875	3	8	2 1/4	11	245238	202.40	1.1281 - 1.1905	246.35	224.30	216.95	213.40	209.75	206.65
1 1/4	1.2500	4	8	2 1/2	11 1/2	245240	215.10	1.1906 - 1.2530	259.00	237.00	229.70	226.05	222.25	219.35
1 3/8	1.3125	4	8	2 1/2	11 1/2	245242	242.85	1.2531 - 1.3155	286.80	264.85	257.30	253.95	250.15	247.15
1 3/8	1.3750	4	8	2 1/2	12	245244	277.50	1.3156 - 1.3780	321.40	299.45	292.00	288.50	284.70	281.75
1 7/16	1.4375	4	8	2 1/2	12	245246	289.60	1.3781 - 1.4405	333.60	311.60	304.20	300.80	296.90	293.90
1 1/2	1.5000	4	8	2 1/2	12 1/2	245248	301.70	1.4406 - 1.5030	345.65	323.75	316.35	312.80	309.00	306.00

\*Quantities of 15 or more: price of fractional size in same size range.





# CHUCKING REAMERS

CARBIDE TIPPED - STRAIGHT FLUTE LONG CARBIDE & TAPER SHANK

## TYPE 2452 - METRIC



NOTE: Tool diameter in millimeters (mm); all other dimensions in inches.

TOOL DIAMETER		TYPE 2452 METRIC EDP NO.	METRIC PRICE	DIMENSIONS				SPECIAL METRIC SIZE RANGE	PRICE EACH - FINISHED TO METRIC SIZE						
mm	INCH			MORSE TAPER	NO. OF FLUTES	LENGTH			1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14	OVER 14
						FLUTE & CARBIDE	OVER-ALL								
6.0	.2362	2452060	\$72.90	1	4	1 1/2	6	6.000-6.426	\$103.95	\$83.40	\$76.50	\$73.05	\$69.60	\$66.75	\$62.80
6.5	.2559	2452065	73.70	1	4	1 1/2	6	6.427-7.214	104.75	84.25	77.35	74.00	70.40	67.65	63.60
7.0	.2756	2452070	73.70	1	4	1 1/2	6	-	-	-	-	-	-	-	-
7.5	.2953	2452075	73.70	1	4	1 1/2	6	7.215-8.001	104.75	84.25	77.35	74.00	70.40	67.65	63.60
8.0	.3150	2452080	73.70	1	4	1 1/2	6	-	-	-	-	-	-	-	-
8.5	.3346	2452085	75.15	1	4	1 1/2	6	8.002-8.814	106.20	85.55	78.70	75.30	71.75	68.90	64.95
9.0	.3543	2452090	75.75	1	4	1 3/4	7	8.815-9.601	106.85	86.35	79.25	75.85	72.45	69.60	65.55
9.5	.3740	2452095	75.75	1	4	1 3/4	7	-	-	-	-	-	-	-	-
10.0	.3937	2452100	79.05	1	4	1 3/4	7	9.602-10.389	110.20	89.50	82.55	79.20	75.75	72.90	68.90
10.5	.4134	2452105	83.40	1	4	1 3/4	7	10.390-11.201	114.35	93.85	86.95	83.60	80.10	77.15	73.30
11.0	.4331	2452110	83.40	1	4	1 3/4	7	-	-	-	-	-	-	-	-
11.5	.4528	2452115	84.85	1	4	1 3/4	7	11.202-11.989	115.90	95.20	88.35	85.00	81.50	78.70	74.55
12.0	.4724	2452120	91.30	1	6	2	8	11.990-12.776	124.60	102.55	95.10	91.50	87.80	84.65	80.45
12.5	.4921	2452125	91.30	1	6	2	8	-	-	-	-	-	-	-	-
13.0	.5118	2452130	98.60	1	6	2	8	12.777-13.564	131.90	109.80	102.50	98.95	95.10	92.05	87.80
13.5	.5315	2452135	98.60	1	6	2	8	-	-	-	-	-	-	-	-
14.0	.5512	2452140	98.60	1	6	2	8	13.565-14.376	131.90	109.80	102.50	98.95	95.10	92.05	87.80
14.5	.5709	2452145	102.55	1	6	2	8	14.377-15.164	135.75	113.85	106.35	102.70	99.05	95.85	91.65
15.0	.5906	2452150	102.55	1	6	2	8	-	-	-	-	-	-	-	-
15.5	.6102	2452155	102.55	2	6	2	9	15.165-15.951	135.75	113.85	106.35	102.70	99.05	95.85	91.65
16.0	.6299	2452160	104.05	2	6	2	9	15.952-16.739	137.45	115.30	107.95	104.35	100.65	97.65	93.30
16.5	.6496	2452165	104.05	2	6	2	9	-	-	-	-	-	-	-	-
17.0	.6693	2452170	104.05	2	6	2	9	16.740-17.551	137.45	115.30	107.95	104.35	100.65	97.65	93.30
17.5	.6890	2452175	104.05	2	6	2	9	-	-	-	-	-	-	-	-
18.0	.7087	2452180	105.35	2	6	2	9	17.552-18.339	138.75	116.60	109.30	105.60	101.90	98.95	94.50
18.5	.7283	2452185	108.30	2	6	2	9 1/2	18.340-19.126	141.65	119.50	112.05	108.45	104.75	101.70	97.50
19.0	.7480	2452190	108.30	2	6	2	9 1/2	-	-	-	-	-	-	-	-
19.5	.7677	2452195	109.10	2	6	2	9 1/2	19.127-19.914	142.30	120.30	112.80	109.30	105.40	102.50	98.15
20.0	.7874	2452200	111.25	2	6	2	9 1/2	19.915-20.726	144.50	122.35	115.00	111.40	107.70	104.60	100.40
20.5	.8071	2452205	111.25	2	6	2	9 1/2	-	-	-	-	-	-	-	-
21.0	.8268	2452210	115.40	2	6	2	9 1/2	20.727-21.514	148.70	126.65	119.30	115.60	111.95	108.90	104.60
21.5	.8465	2452215	115.40	2	6	2	9 1/2	-	-	-	-	-	-	-	-
22.0	.8661	2452220	115.40	2	6	2 1/4	10	21.515-22.301	148.70	126.65	119.30	115.60	111.95	108.90	104.60
22.5	.8858	2452225	133.10	2	6	2 1/4	10	22.302-23.089	167.55	144.60	136.95	133.20	129.40	126.20	121.90
23.0	.9055	2452230	133.10	2	6	2 1/4	10	-	-	-	-	-	-	-	-
23.5	.9252	2452235	137.75	3	8	2 1/4	10	23.090-23.901	172.25	149.30	141.75	137.90	134.05	130.85	126.45
24.0	.9449	2452240	142.80	3	8	2 1/4	10	23.902-24.689	177.35	154.40	146.75	143.05	139.15	135.95	131.50
24.5	.9646	2452245	142.80	3	8	2 1/4	10	-	-	-	-	-	-	-	-
25.0	.9843	2452250	142.80	3	8	2 1/4	10 1/2	24.690-25.476	177.35	154.40	146.75	143.05	139.15	135.95	131.50
25.5	1.0039	2452255	189.40	3	8	2 1/4	10 1/2	25.477-27.076	222.60	200.60	193.15	189.65	186.00	182.90	178.70
26.0	1.0236	2452260	189.40	3	8	2 1/4	10 1/2	-	-	-	-	-	-	-	-
27.0	1.0630	2452270	189.40	3	8	2 1/4	10 1/2	-	-	-	-	-	-	-	-
28.0	1.1024	2452280	203.00	3	8	2 1/4	11	27.077-28.651	236.05	214.10	206.65	203.10	199.40	196.35	192.20
29.0	1.1417	2452290	216.95	3	8	2 1/4	11	28.652-30.239	250.05	228.15	220.70	217.15	213.40	210.40	206.15
30.0	1.1811	2452300	216.95	3	8	2 1/4	11	-	-	-	-	-	-	-	-
31.0	1.2205	2452310	229.70	4	8	2 1/2	11 1/2	30.240-31.826	262.70	240.80	233.40	229.80	226.05	223.00	218.85
32.0	1.2598	2452320	257.30	4	8	2 1/2	11 1/2	31.827-33.414	290.55	268.50	261.25	257.60	253.95	250.80	246.55
33.0	1.2992	2452330	257.30	4	8	2 1/2	11 1/2	-	-	-	-	-	-	-	-
34.0	1.3386	2452340	292.00	4	8	2 1/2	12	33.415-35.001	325.10	303.20	295.80	292.30	288.50	285.50	281.25
35.0	1.3780	2452350	292.00	4	8	2 1/2	12	-	-	-	-	-	-	-	-
36.0	1.4173	2452360	304.20	4	8	2 1/2	12	35.002-36.589	337.25	315.30	308.00	304.35	300.80	297.60	293.25
37.0	1.4567	2452370	316.35	4	8	2 1/2	12 1/2	36.590-38.176	349.45	327.40	320.05	316.60	312.80	309.80	305.60
38.0	1.4961	2452380	316.35	4	8	2 1/2	12 1/2	-	-	-	-	-	-	-	-



# CHUCKING REAMERS

## CARBIDE TIPPED - FOR REAMING STEEL, TOUGH STEEL ALLOYS & CAST IRON



### TYPE 2480 - FINISHED FRACTIONAL SIZES

Steel cutting grade flute long carbide brazed to hardened alloy steel bodies.

Special steel cutting tool geometry:

Positive radial rake (behind center).

Narrow circular lands.

Minimum back taper.

Longer flutes for straighter holes.

Straight shanks to ANSI specifications.

### OPTIONS:

Decimal sizes priced below.

Cut diam. reduced for step or pilot.

End chamfer other than 45°.

End cutting or corner radius.

Short shank or undersize shank diam.

Flat on shank or tanged shank.

Closer tolerance.

For +.0002" add \$1.00 per tool.

For +.0001" add \$3.00 per tool.

### USE:

This carbide tipped reamer's design is based on our extensive development and design experience in manufacturing special reamers for reaming steel in the automotive industry. This design is proven in an industry where performance is carefully evaluated.

Traditional steel reaming problems have been reduced by the following:

1. Holds size longer because steel cutting grade carbide is utilized — but not just any steel cutting grade carbide as we discovered only a few domestic manufacturers' carbide have the field proven wear characteristics necessary when reaming tough abrasive materials.
2. Contrary to the machinery data handbook our design utilizes a smaller positive radial rake — for better performance when reaming steel.
3. Improved hole surface finish as this reamer's reduced circular land minimizes possible material buildup that will reduce surface quality.
4. Straighter holes because of longer full flute length carbide and reduced back taper. Many more regrinds before reinserting.
5. Controlled deep (-300°F) cryogenic treatment after the carbide is brazed on the tool - also several other subtle features that only our tools have.

TOOL DIAMETER		MAX. SHANK DIAMETER	NO. OF FLUTES	LENGTH		TYPE 2480 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRACTIONAL	DECIMAL			FLUTE & CARBIDE	OVERALL				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
3/16	.1875	.1805	4	1 1/8	4 1/2	248006	\$61.70	0.1770 - 0.2040	\$103.00	\$82.35	\$75.40	\$72.15	\$68.65	\$65.75
13/64	.2031	.1805	4	1 1/8	4 1/2	24802031	61.70	-	-	-	-	-	-	-
7/32	.2188	.2075	4	1 1/4	5	248007	61.70	0.2041 - 0.2210	103.00	82.35	75.40	72.15	68.65	65.75
15/64	.2344	.2265	4	1 1/2	6	24802344	61.70	0.2211 - 0.2380	103.00	82.35	75.40	72.15	68.65	65.75
1/4	.2500	.2405	4	1 1/2	6	248008	61.70	0.2381 - 0.2530	103.00	82.35	75.40	72.15	68.65	65.75
17/64	.2656	.2485	4	1 1/2	6	24802656	63.05	-	-	-	-	-	-	-
9/32	.2812	.2485	4	1 1/2	6	248009	63.05	0.2531 - 0.2840	104.35	83.75	76.75	73.55	69.95	67.25
19/64	.2969	.2792	4	1 1/2	6	24802969	63.05	-	-	-	-	-	-	-
5/16	.3125	.2792	4	1 1/2	6	248010	63.05	0.2841 - 0.3150	104.35	83.75	76.75	73.55	69.95	67.25
21/64	.3281	.2792	4	1 1/2	6	24803281	65.40	-	-	-	-	-	-	-
11/32	.3438	.2792	4	1 1/2	6	248011	65.40	0.3151 - 0.3470	106.70	85.90	79.05	75.75	72.30	69.50
23/64	.3594	.3105	4	1 3/4	7	24803594	65.40	-	-	-	-	-	-	-
3/8	.3750	.3105	4	1 3/4	7	248012	65.40	0.3471 - 0.3780	106.70	85.90	79.05	75.75	72.30	69.50
25/64	.3906	.3105	4	1 3/4	7	24803906	68.65	-	-	-	-	-	-	-
13/32	.4062	.3105	4	1 3/4	7	248013	68.65	0.3781 - 0.4090	109.80	89.20	82.30	79.00	75.40	72.65
27/64	.4219	.3730	6	1 3/4	7	24804219	79.50	-	-	-	-	-	-	-
7/16	.4375	.3730	6	1 3/4	7	248014	79.50	0.4091 - 0.4410	120.75	100.05	93.20	89.90	86.40	83.60
29/64	.4531	.3730	6	1 3/4	7	24804531	80.20	-	-	-	-	-	-	-
15/32	.4688	.3730	6	1 3/4	7	248015	80.20	0.4411 - 0.4720	121.55	100.75	93.95	90.65	87.05	84.30
31/64	.4844	.4355	6	2	8	24804844	85.90	-	-	-	-	-	-	-
1/2	.5000	.4355	6	2	8	248016	85.90	0.4721 - 0.5030	130.20	108.05	100.65	97.10	93.30	90.35
33/64	.5156	.4355	6	2	8	24805156	88.40	-	-	-	-	-	-	-
17/32	.5312	.4355	6	2	8	248017	88.40	0.5031 - 0.5340	132.60	110.45	103.00	99.50	95.75	92.70
35/64	.5469	.4355	6	2	8	24805469	88.40	-	-	-	-	-	-	-
9/16	.5625	.4355	6	2	8	248018	88.40	0.5341 - 0.5660	132.60	110.45	103.00	99.50	95.75	92.70
37/64	.5781	.4355	6	2	8	24805781	91.75	-	-	-	-	-	-	-
19/32	.5938	.4355	6	2	8	248019	91.75	0.5661 - 0.5970	135.95	113.90	106.40	102.85	99.10	96.10
39/64	.6094	.5615	6	2 1/4	9	24806094	91.75	-	-	-	-	-	-	-

\*Quantities of 15 or more: price of fractional size in same size range.

TOOL DIAMETER		MAX. SHANK DIAMETER	NO. OF FLUTES	LENGTH		TYPE 2480 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRACTIONAL	DECIMAL			FLUTE & CARBIDE	OVERALL				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
5/8	.6250	.5615	6	2 1/4	9	248020	\$91.75	0.5971 - 0.6280	\$135.95	\$113.90	\$106.40	\$102.85	\$99.10	\$96.10
41/64	.6406	.5615	6	2 1/4	9	24806406	93.45	-	-	-	-	-	-	-
21/32	.6562	.5615	6	2 1/4	9	248021	93.45	0.6281 - 0.6590	137.75	115.55	108.10	104.60	100.75	97.85
43/64	.6719	.5615	6	2 1/4	9	24806719	93.45	-	-	-	-	-	-	-
11/16	.6875	.5615	6	2 1/4	9	248022	93.45	0.6591 - 0.6910	137.75	115.55	108.10	104.60	100.75	97.85
45/64	.7031	.5615	6	2 1/4	9	24807031	97.75	-	-	-	-	-	-	-
23/32	.7188	.5615	6	2 1/4	9	248023	97.75	0.6911 - 0.7220	141.95	119.70	112.50	108.90	105.10	102.05
47/64	.7344	.6245	6	2 1/2	9 1/2	24807344	97.75	-	-	-	-	-	-	-
3/4	.7500	.6245	6	2 1/2	9 1/2	248024	97.75	0.7221 - 0.7530	141.95	119.70	112.50	108.90	105.10	102.05
49/64	.7656	.6245	6	2 1/2	9 1/2	24807656	101.20	-	-	-	-	-	-	-
25/32	.7812	.6245	6	2 1/2	9 1/2	248025	101.20	0.7531 - 0.7840	145.25	123.10	115.70	112.10	108.40	105.35
51/64	.7969	.6245	6	2 1/2	9 1/2	24807969	101.20	-	-	-	-	-	-	-
13/16	.8125	.6245	6	2 1/2	9 1/2	248026	101.20	0.7841 - 0.8160	145.25	123.10	115.70	112.10	108.40	105.35
53/64	.8281	.6245	6	2 1/2	9 1/2	24808281	105.20	-	-	-	-	-	-	-
27/32	.8438	.6245	6	2 1/2	9 1/2	248027	105.20	0.8161 - 0.8470	149.30	127.10	119.70	116.30	112.55	109.45
55/64	.8594	.7495	6	2 5/8	10	24808594	105.20	-	-	-	-	-	-	-
7/8	.8750	.7495	6	2 5/8	10	248028	109.20	0.8471 - 0.8780	154.95	132.00	124.30	120.65	116.65	113.55
57/64	.8906	.7495	6	2 5/8	10	24808906	127.05	-	-	-	-	-	-	-
29/32	.9062	.7495	6	2 5/8	10	248029	127.05	0.8781 - 0.9090	172.95	150.00	142.20	138.55	134.60	131.50
59/64	.9219	.7495	8	2 5/8	10	24809219	127.05	-	-	-	-	-	-	-
15/16	.9375	.7495	8	2 5/8	10	248030	127.05	0.9091 - 0.9410	172.95	150.00	142.20	138.55	134.60	131.50
61/64	.9531	.7495	8	2 5/8	10	24809531	133.15	-	-	-	-	-	-	-
31/32	.9688	.7495	8	2 5/8	10	248031	133.15	0.9411 - 0.9720	179.05	156.10	148.30	144.60	140.70	137.60
63/64	.9844	.8745	8	2 3/4	10 1/2	24809844	133.15	-	-	-	-	-	-	-
1	1.0000	.8745	8	2 3/4	10 1/2	248032	133.15	0.9721 - 1.0030	179.05	156.10	148.30	144.60	140.70	137.60
1 1/16	1.0625	.8745	8	2 3/4	10 1/2	248034	137.65	1.0031 - 1.0660	181.65	159.50	152.30	148.70	144.95	142.00
1 1/8	1.1250	.8745	8	2 7/8	11	248036	149.15	1.0661 - 1.1280	193.05	171.00	163.60	160.15	156.40	153.35
1 3/16	1.1875	.9995	8	2 7/8	11	248038	163.30	1.1281 - 1.1905	207.30	185.20	177.90	174.35	170.60	167.60
1 1/4	1.2500	.9995	8	3	11 1/2	248040	182.00	1.1906 - 1.2530	225.95	203.90	196.50	193.05	189.25	186.25
1 5/16	1.3125	.9995	8	3	11 1/2	248042	182.00	1.2531 - 1.3155	225.95	203.90	196.50	193.05	189.25	186.25
1 3/8	1.3750	.9995	8	3 1/4	12	248044	184.70	1.3156 - 1.3780	228.60	206.60	199.25	195.80	191.85	189.05
1 7/16	1.4375	.9995	8	3 1/4	12	248046	204.05	1.3781 - 1.4405	247.95	225.95	218.65	215.10	211.25	208.45
1 1/2	1.5000	1.2495	8	3 1/2	12 1/2	248048	245.00	1.4406 - 1.5030	288.95	266.90	259.60	256.00	252.35	249.30

\*Quantities of 15 or more: price of fractional size in same size range.

## CARBIDE TIPPED FOR REAMING STEEL OVER & UNDER SIZE REAMERS

### TYPE 2488 - STRAIGHT FLUTE & SHANK

Cutting diameter tolerance plus .0002" minus .0000".

#### USE:

These precision ground carbide tipped reamers are very convenient for finishing accurate holes in steel, tough steel alloys and cast steels.

TOOL DIAMETER	MAX. SHANK DIAM.	OVERALL LENGTH	NO. OF FLUTES	TYPE 2488 EDP NO.	PRICE
.1865	.1805	4 1/2	4	248818	\$77.15
.1885	.1805	4 1/2	4	248819	77.15
.2490	.2405	6	4	248824	77.15
.2510	.2405	6	4	248825	77.15
.3115	.2792	6	4	248831	78.55
.3135	.2792	6	4	248832	78.55
.3740	.3105	7	4	248837	80.85
.3760	.3105	7	4	248838	80.85
.4365	.3730	7	6	248843	95.00
.4385	.3730	7	6	248844	95.00
.4990	.4355	8	6	248849	102.55
.5010	.4355	8	6	248850	102.55
Cased set of above 12 reamers				248800	971.50

## CARBIDE TIPPED FOR REAMING STEEL DOWEL PIN SIZE REAMERS

### TYPE 2486 - STRAIGHT FLUTE & SHANK

Cutting diameter tolerance plus .0000" minus .0002".

#### USE:

These precision ground carbide tipped reamers accurately finish dowel pin holes in steels, tough steel alloys and cast steels and result in properly fitted dowel pins subjected to shearing strain - assuring accurate alignment. Should be used in pairs of .0005" and .0020" under fraction size — Note special minus .0002" tolerance.

TOOL DIAMETER	MAX. SHANK DIAM.	OVERALL LENGTH	NO. OF FLUTES	TYPE 2486 EDP NO.	PRICE
.1855	.1805	4 1/2	4	248617	\$77.15
.1870	.1805	4 1/2	4	248618	77.15
.2480	.2405	6	4	248623	77.15
.2495	.2405	6	4	248624	77.15
.3105	.2792	6	4	248630	78.55
.3120	.2792	6	4	248631	78.55
.3730	.3105	7	4	248636	80.85
.3745	.3105	7	4	248637	80.85
.4355	.3730	7	6	248642	95.00
.4370	.3730	7	6	248643	95.00
.4980	.4355	8	6	248648	102.55
.4995	.4355	8	6	248649	102.55
Cased set of above 12 reamers				248600	971.50





# EXTENDED LENGTH REAMERS

CARBIDE TIPPED - STRAIGHT FLUTE LONG CARBIDE - STRAIGHT SHANK



## TYPE 2458EL - EXTENDED LENGTH REAMER

Extended length version of type 2458 found on page 60.  
 Extended length reamers provided with controlled shank.  
 Specify overall length when ordering (centers supplied only at maximum overall length).  
 Precision ground cutting edges.  
 Straight shank.

### OPTIONS:

See page 60

Closer tolerance.

For +.0002" add \$1.00 per tool.

For +.0001" add \$3.00 per tool.

TOOL DIAMETER RANGE	MAX. SHANK DIAMETER	NO. OF FLUTES	LENGTH		TYPE 2458EL EDP NO.	PRICE EACH - FINISHED TO DECIMAL SIZE					
			FLUTE	OVERALL RANGE		1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14**
* 0.1121-0.1280	.1099	4	1 1/2	2 9/32 - 6	245804EL	\$297.05	\$260.15	\$247.75	\$241.90	\$235.65	\$230.60
* 0.1281-0.1435	.1255	4	1 1/2	2 17/32 - 6 1/2	2458045EL	298.10	261.25	248.90	242.90	236.55	231.65
* 0.1436-0.1590	.1411	4	1 1/2	2 17/32 - 7	245805EL	303.05	266.10	253.75	247.80	241.55	236.50
* 0.1591-0.1750	.1567	4	1 1/2	2 25/32 - 8	2458055EL	308.75	271.80	259.50	253.60	247.25	242.30
* 0.1751-0.1910	.1724	4	1 1/2	4 17/32 - 9	245806EL	316.95	280.05	267.60	261.85	255.40	250.45
* 0.1911-0.2210	.1880	4	1 1/2	5 1/32 - 10	245807EL	327.55	290.80	278.40	272.55	266.15	261.25
* 0.2211-0.2530	.2193	4	1 1/2	6 1/32 - 12	245808EL	348.80	311.85	299.60	293.70	287.40	282.40
* 0.2531-0.2840	.2505	4	1 1/2	6 1/32 - 12	245809EL	367.00	330.10	317.80	311.80	305.55	300.45
0.2841-0.3150	.2792	4	1 1/2	6 1/32 - 12	245810EL	260.40	223.50	211.20	205.25	198.95	194.00
0.3151-0.3470	.2792	4	1 1/2	6 1/32 - 12	245811EL	260.40	223.50	211.20	205.25	198.95	194.00
0.3471-0.3780	.3105	4	1 3/4	7 1/32 - 14	245812EL	268.90	232.10	219.75	213.75	207.45	202.45
0.3781-0.4090	.3105	4	1 3/4	7 1/32 - 14	245813EL	268.90	232.10	219.75	213.75	207.45	202.45
0.4091-0.4410	.3730	6	1 3/4	7 1/32 - 14	245814EL	277.50	240.50	228.25	222.25	216.00	211.00
0.4411-0.4720	.3730	6	1 3/4	7 1/32 - 14	245815EL	277.50	240.50	228.25	222.25	216.00	211.00
0.4721-0.5030	.4355	6	2	8 1/32 - 16	245816EL	283.25	246.25	233.95	228.05	221.80	216.75
0.5031-0.5340	.4355	6	2	8 1/32 - 16	245817EL	283.25	246.25	233.95	228.05	221.80	216.75
0.5341-0.5660	.4355	6	2	8 1/32 - 16	245818EL	288.50	251.55	239.20	233.35	227.00	222.05
0.5661-0.5970	.4355	6	2	8 1/32 - 16	245819EL	288.50	251.55	239.20	233.35	227.00	222.05
0.5971-0.6280	.5615	6	2 1/4	9 1/32 - 18	245820EL	294.55	257.65	245.25	239.45	233.15	228.15
0.6281-0.6590	.5615	6	2 1/4	9 1/32 - 18	245821EL	294.55	257.65	245.25	239.45	233.15	228.15
0.6591-0.6910	.5615	6	2 1/4	9 1/32 - 18	245822EL	295.45	258.50	246.10	240.25	233.95	228.95
0.6911-0.7220	.5615	6	2 1/4	9 1/32 - 18	245823EL	295.45	258.50	246.10	240.25	233.95	228.95
0.7221-0.7530	.6245	6	2 1/2	9 17/32 - 18	245824EL	317.10	280.15	267.75	261.95	255.70	250.65
0.7531-0.7840	.6245	6	2 1/2	9 17/32 - 18	245825EL	384.80	349.65	337.80	332.30	326.25	321.55
0.7841-0.8160	.6245	6	2 1/2	9 17/32 - 18	245826EL	397.05	361.85	350.10	344.55	338.55	333.75
0.8161-0.8470	.6245	6	2 1/2	9 17/32 - 18	245827EL	401.65	366.50	354.65	349.10	343.10	338.40
0.8471-0.8780	.7495	6	2 5/8	10 1/32 - 18	245828EL	410.20	374.90	363.15	357.65	351.60	346.80
0.8781-0.9090	.7495	6	2 5/8	10 1/32 - 18	245829EL	427.40	392.20	380.45	374.85	368.85	364.10
0.9091-0.9410	.7495	8	2 5/8	10 1/32 - 18	245830EL	431.75	396.45	384.70	379.15	373.10	368.45
0.9411-0.9720	.7495	8	2 5/8	10 1/32 - 18	245831EL	435.80	400.65	388.85	383.30	377.25	372.50
0.9721-1.0030	.8745	8	2 3/4	10 17/32 - 18	245832EL	445.95	410.80	399.00	393.45	387.35	382.65

\*Solid Carbide

\*\*Quantities of 15 or more: contact Rock River Tool Specials Dept.



# NAS 897 CHUCKING REAMERS

CARBIDE TIPPED - STRAIGHT FLUTE - STRAIGHT SHANK



### TYPE 2408 - NAS 897 REAMER

National Aerospace Standards.  
Type "C" with short carbide tip.  
Carbide tips brazed to hardened alloy steel bodies.  
Precision ground cutting edges.  
Straight polished flutes.  
Straight shank.

### OPTIONS:

Decimal sizes priced below.  
Cut diam. reduced for step or pilot.  
End chamfer other than 45°.  
End cutting or corner radius.  
Short shank or undersize shank diam.  
Flat on shank or tanged shank.

Closer tolerance.  
For +.0002" add \$1.00 per tool.  
For +.0001" add \$3.00 per tool.

TOOL DIAMETER		MAX. SHANK DIAMETER	NO. OF FLUTES	LENGTH			TYPE 2408 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRAC.	DEC.			FLUTE	CARBIDE	OVERALL				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
5/32	.1562	.1510	4	1	1/2	4	240805	\$56.40	0.1560 - 0.1769	\$97.65	\$76.80	\$69.95	\$66.70	\$63.05	\$60.30
3/16	.1875	.1805	4	1 1/8	1/2	4 1/2	240806	51.70	0.1770 - 0.2040	91.85	71.70	64.95	61.70	58.30	55.55
7/32	.2188	.2075	4	1 1/4	1/2	5	240807	51.70	0.2041 - 0.2210	91.85	71.70	64.95	61.70	58.30	55.55
15/64	.2344	.2265	4	1 1/2	1/2	6	24082344	54.85	0.2211 - 0.2380	95.00	74.85	68.05	64.90	61.40	58.70
1/4	.2500	.2405	4	1 1/2	1/2	6	240808	52.00	0.2381 - 0.2530	92.10	72.05	65.35	62.10	58.60	55.95
9/32	.2812	.2485	4	1 1/2	1/2	6	240809	52.95	0.2531 - 0.2840	93.25	73.05	66.40	63.05	59.70	56.85
5/16	.3125	.2792	4	1 1/2	1/2	6	240810	52.95	0.2841 - 0.3150	93.25	73.05	66.40	63.05	59.70	56.85
3/8	.3125	.2792	6	1 1/2	1/2	6	240890	58.30	0.2841 - 0.3150	98.40	78.30	71.55	68.40	64.95	62.25
11/32	.3438	.2792	4	1 1/2	5/8	6	240811	55.05	0.3151 - 0.3470	95.15	75.10	68.35	65.20	61.65	59.00
11/32	.3438	.2792	6	1 1/2	5/8	6	240891	60.45	0.3151 - 0.3470	100.60	80.45	73.70	70.50	67.05	64.35
3/8	.3750	.3105	4	1 3/4	5/8	7	240812	50.50	0.3471 - 0.3780	87.25	68.85	62.75	59.80	56.60	54.10
3/8	.3750	.3105	6	1 3/4	5/8	7	240892	55.40	0.3471 - 0.3780	92.30	73.80	67.70	64.75	61.55	59.10
13/32	.4062	.3105	4	1 3/4	5/8	7	240813	57.65	0.3781 - 0.4090	97.85	77.70	71.00	67.75	64.20	61.60
13/32	.4062	.3105	6	1 3/4	5/8	7	240893	61.45	0.3781 - 0.4090	101.65	81.50	74.85	71.55	68.10	65.45
7/16	.4375	.3730	6	1 3/4	5/8	7	240814	61.45	0.4091 - 0.4410	101.65	81.50	74.85	71.55	68.10	65.45
15/32	.4688	.3730	6	1 3/4	5/8	7	240815	62.35	0.4411 - 0.4720	102.55	82.40	75.70	72.45	69.10	66.40
1/2	.5000	.4355	6	2	5/8	8	240816	73.70	0.4721 - 0.5030	118.05	95.80	88.40	84.90	81.10	78.10
17/32	.5312	.4355	6	2	5/8	8	240817	80.30	0.5031 - 0.5340	124.45	102.30	95.00	91.35	87.70	84.60
9/16	.5625	.4355	6	2	5/8	8	240818	80.30	0.5341 - 0.5660	124.45	102.30	95.00	91.35	87.70	84.60
19/32	.5938	.4355	6	2	5/8	8	240819	83.60	0.5661 - 0.5970	127.75	105.60	98.15	94.65	90.90	87.85
5/8	.6250	.5615	6	2 1/4	5/8	9	240820	83.60	0.5971 - 0.6280	127.75	105.60	98.15	94.65	90.90	87.85
21/32	.6562	.5615	6	2 1/4	5/8	9	240821	85.00	0.6281 - 0.6590	129.30	107.05	99.60	96.10	92.30	89.35
11/16	.6875	.5615	6	2 1/4	5/8	9	240822	85.00	0.6591 - 0.6910	129.30	107.05	99.60	96.10	92.30	89.35
23/32	.7188	.5615	6	2 1/4	5/8	9	240823	89.05	0.6911 - 0.7220	133.20	110.95	103.70	100.05	96.35	93.30
3/4	.7500	.6245	6	2 1/2	3/4	9 1/2	240824	89.05	0.7221 - 0.7530	133.20	110.95	103.70	100.05	96.35	93.30
25/32	.7812	.6245	6	2 1/2	3/4	9 1/2	240825	91.85	0.7531 - 0.7840	136.10	113.95	106.50	102.90	99.15	96.30
13/16	.8125	.6245	6	2 1/2	3/4	9 1/2	240826	91.85	0.7841 - 0.8160	136.10	113.95	106.50	102.90	99.15	96.30
27/32	.8438	.6245	6	2 1/2	3/4	9 1/2	240827	95.60	0.8161 - 0.8470	139.70	117.60	110.25	106.70	102.85	99.95
7/8	.8750	.7495	6	2 5/8	3/4	10	240828	99.15	0.8471 - 0.8780	145.05	122.05	114.30	110.75	106.85	103.75
29/32	.9062	.7495	6	2 5/8	3/4	10	240829	115.50	0.8781 - 0.9090	161.35	138.35	130.75	127.05	123.05	119.95
15/16	.9375	.7495	8	2 5/8	3/4	10	240830	115.50	0.9091 - 0.9410	161.35	138.35	130.75	127.05	123.05	119.95
31/32	.9688	.7495	8	2 5/8	3/4	10	240831	120.95	0.9411 - 0.9720	166.80	143.80	136.20	132.40	128.45	125.35
1	1.0000	.8745	8	2 3/4	3/4	10 1/2	240832	120.95	0.9721 - 1.0030	166.80	143.80	136.20	132.40	128.45	125.35
1 1/16	1.0625	.8745	8	2 3/4	3/4	10 1/2	240834	125.25	1.0031 - 1.0660	169.20	147.25	139.80	136.30	132.45	129.55
1 1/8	1.1250	.8745	8	2 7/8	7/8	11	240836	135.45	1.0661 - 1.1280	179.35	157.30	150.00	146.40	142.65	139.70
1 3/16	1.1875	.9995	8	2 7/8	7/8	11	240838	142.30	1.1281 - 1.1905	186.25	164.30	156.90	153.35	149.60	146.70
1 1/4	1.2500	.9995	8	3	7/8	11 1/2	240840	150.40	1.1906 - 1.2530	194.40	172.40	164.95	161.45	157.75	154.75
1 5/16	1.3125	.9995	8	3	7/8	11 1/2	240842	158.25	1.2531 - 1.3155	202.30	180.35	172.90	169.40	165.55	162.60
1 3/8	1.3750	.9995	8	3 1/4	7/8	12	240844	167.95	1.3156 - 1.3780	212.00	189.90	182.45	179.05	175.10	172.25
1 7/16	1.4375	.9995	8	3 1/4	7/8	12	240846	187.15	1.3781 - 1.4405	231.30	209.10	201.80	198.35	194.45	191.60
1 1/2	1.5000	1.2495	8	3 1/2	7/8	12 1/2	240848	197.85	1.4406 - 1.5030	241.85	219.85	212.40	209.00	205.15	202.20

\*Quantities of 15 or more: price of fractional size in same size range.





# EXPANSION CHUCKING REAMERS

CARBIDE TIPPED - STRAIGHT FLUTE LONG CARBIDE AND STRAIGHT SHANK



**TYPE 2465 - FINISHED FRACTIONAL SIZES**

Expansion screw permits expansion of cutting diameter for re-grinding after wear without reinserting carbide. Straight shank and straight polished flutes. Flute long carbide tips brazed to one piece alloy steel bodies. Cutting diameter tolerance plus .0003" minus .0000". Guaranteed minimum expansion - see pg. 66.

**OPTIONS:** See page 66.

**USE:**

Expansion reamers are recommended for reaming abrasive materials and as the diameter wears down, the reamers can be expanded many times by tightening the end screw and regrinding it to original size. Because this procedure can be repeated several times, the expansion reamer is a very economical tool. Expansion reamers should not be expanded to use at diameters larger than listed diameters nor be considered as adjustable for use in producing holes of several sizes. The expansion screw should never be loosened.

TOOL DIAMETER		SHANK DIAM.	NO. OF FLUTES	LENGTH		TYPE 2465 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
Frac.	Decimal			Flute & Carbide	Overall				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
5/16	.3125	9/32	4	1	6	246510	\$79.35	0.2841 - 0.3150	\$120.70	\$100.00	\$92.95	\$89.85	\$86.35	\$83.50
1/32	.3438	9/32	4	1	6	246511	79.35	0.3151 - 0.3470	120.70	100.00	92.95	89.85	86.35	83.50
3/8	.3750	5/16	4	1	7	246512	74.40	0.3471 - 0.3780	113.20	93.75	87.15	84.15	80.85	78.20
13/32	.4062	3/16	4	1	7	246513	79.00	0.3781 - 0.4090	117.60	98.25	91.75	88.65	85.35	82.75
7/16	.4375	3/8	4	1	7	246514	79.00	0.4091 - 0.4410	117.60	98.25	91.75	88.65	85.35	82.75
15/32	.4688	3/8	4	1	7	246515	83.75	0.4411 - 0.4720	122.25	102.90	96.55	93.40	90.15	87.60
1/2	.5000	7/16	6	1	8	246516	83.75	0.4721 - 0.5030	122.25	102.90	96.55	93.40	90.15	87.60
17/32	.5312	7/16	6	1	8	246517	85.75	0.5031 - 0.5340	124.50	105.15	98.60	95.60	92.25	89.60
9/16	.5625	7/16	6	1 1/8	8	246518	85.75	0.5341 - 0.5660	124.50	105.15	98.60	95.60	92.25	89.60
19/32	.5938	7/16	6	1 1/8	8	246519	89.55	0.5661 - 0.5970	128.25	108.90	102.45	99.30	95.95	93.35
5/8	.6250	9/16	6	1 1/4	9	246520	89.55	0.5971 - 0.6280	128.25	108.90	102.45	99.30	95.95	93.35
21/32	.6562	9/16	6	1 1/4	9	246521	97.95	0.6281 - 0.6590	136.55	117.20	110.75	107.70	104.35	101.70
11/16	.6875	9/16	6	1 1/4	9	246522	97.95	0.6591 - 0.6910	136.55	117.20	110.75	107.70	104.35	101.70
23/32	.7188	9/16	6	1 1/4	9	246523	101.50	0.6911 - 0.7220	140.30	120.80	114.30	111.30	107.95	105.35
3/4	.7500	5/8	6	1 3/8	9 1/2	246524	101.50	0.7221 - 0.7530	140.30	120.80	114.30	111.30	107.95	105.35
25/32	.7812	5/8	6	1 3/8	9 1/2	246525	109.45	0.7531 - 0.7840	148.20	128.80	122.20	119.25	115.90	113.30
13/16	.8125	5/8	6	1 3/8	9 1/2	246526	109.45	0.7841 - 0.8160	148.20	128.80	122.20	119.25	115.90	113.30
27/32	.8438	5/8	6	1 3/8	9 1/2	246527	113.85	0.8161 - 0.8470	152.40	133.10	126.60	123.45	120.25	117.55
7/8	.8750	3/4	6	1 1/2	10	246528	118.10	0.8471 - 0.8780	158.10	138.10	131.25	128.20	124.70	122.00
29/32	.9062	3/4	6	1 1/2	10	246529	125.65	0.8781 - 0.9090	165.85	145.65	139.00	135.80	132.35	129.60
15/16	.9375	3/4	8	1 1/2	10	246530	125.65	0.9091 - 0.9410	165.85	145.65	139.00	135.80	132.35	129.60
31/32	.9688	3/4	8	1 1/2	10	246531	130.65	0.9411 - 0.9720	170.65	150.60	143.80	140.65	137.15	134.45
1	1.0000	7/8	8	1 5/8	10 1/2	246532	130.65	0.9721 - 1.0030	170.65	150.60	143.80	140.65	137.15	134.45
1 1/32	1.0312	7/8	8	1 5/8	10 1/2	246533	143.10	-	-	-	-	-	-	-
1 1/16	1.0625	7/8	8	1 3/8	10 1/2	246534	143.10	1.0031 - 1.0660	183.20	163.15	156.40	153.20	149.75	147.00
1 3/32	1.0938	7/8	8	1 3/8	11	246535	143.10	-	-	-	-	-	-	-
1 1/8	1.1250	7/8	8	1 3/8	11	246536	143.10	1.0661 - 1.1280	183.20	163.15	156.40	153.20	149.75	147.00
1 3/16	1.1875	1	8	1 3/8	11	246538	156.15	1.1281 - 1.1905	196.30	176.15	169.40	166.20	162.70	160.15
1 1/4	1.2500	1	8	1 7/8	11 1/2	246540	156.15	1.1906 - 1.2530	196.30	176.15	169.40	166.20	162.70	160.15
1 5/16	1.3125	1	8	1 7/8	11 1/2	246542	173.05	1.2531 - 1.3155	213.30	193.15	186.50	183.20	179.75	177.15
1 3/8	1.3750	1	8	2	12	246544	181.30	1.3156 - 1.3780	221.40	201.25	194.55	191.50	187.85	185.20
1 7/16	1.4375	1 1/4	8	2	12	246546	214.20	1.3781 - 1.4405	257.05	235.55	228.35	224.90	221.25	218.45
1 1/2	1.5000	1 1/4	8	2 1/8	12 1/2	246548	220.45	1.4406 - 1.5030	263.30	241.75	234.70	231.35	227.60	224.65
1 9/16	1.5625	1 1/4	8	2 1/8	12 1/2	246550	289.55	1.5031 - 1.5660	332.30	311.00	303.65	300.20	296.60	293.70
1 5/8	1.6250	1 1/4	8	2 1/4	13	246552	289.55	1.5661 - 1.6280	332.30	311.00	303.65	300.20	296.60	293.70
1 11/16	1.6875	1 1/4	8	2 1/4	13	246554	320.65	1.6281 - 1.6910	363.45	342.00	334.90	331.40	327.85	324.80
1 3/4	1.7500	1 1/4	10	2 3/8	13 1/2	246556	320.65	1.6911 - 1.7530	363.45	342.00	334.90	331.40	327.85	324.80
1 13/16	1.8125	1 1/2	10	2 3/8	13 1/2	246558	379.75	1.7531 - 1.8160	422.45	401.00	393.90	390.40	386.80	383.90
1 7/8	1.8750	1 1/2	10	2 1/2	14	246560	379.75	1.8161 - 1.8780	422.45	401.00	393.90	390.40	386.80	383.90
1 15/16	1.9375	1 1/2	10	2 1/2	14	246562	414.90	1.8781 - 1.9410	457.60	436.20	429.00	425.50	421.95	419.00
2	2.0000	1 1/2	12	2 1/2	14	246564	414.90	1.9411 - 2.0030	457.60	436.20	429.00	425.50	421.95	419.00
2 1/8	2.1250	1 1/2	12	2 3/4	14 1/2	246568	673.80	2.0031 - 2.1280	716.65	695.20	688.00	684.65	680.95	677.95
2 1/4	2.2500	1 3/4	12	2 3/4	14 1/2	246572	723.70	2.1281 - 2.2530	766.35	745.00	737.80	734.40	730.75	727.80
2 3/8	2.3750	1 3/4	12	3	15	246576	748.85	2.2531 - 2.3780	791.75	770.30	763.05	759.60	756.00	753.05
2 1/2	2.5000	1 3/4	12	3	15	246580	748.85	2.3781 - 2.5030	791.75	770.30	763.05	759.60	756.00	753.05

\*Quantities of 15 or more: price of fractional size in same size range.



















# CHUCKING REAMERS - SOLID CARBIDE

## STRAIGHT FLUTES & STRAIGHT SHANK - SHORT SERIES

### TYPE 2802 - STRAIGHT FLUTES - STRAIGHT SHANK

Solid carbide head and straight shank.

Tool diameter tolerance thru .2500": plus .0002", minus .0000"  
over .2500": plus .0003", minus .0000"

Shank diameter tolerance: plus .0000", minus .0010"



TOOL DIAMETER RANGE	DIMENSIONS				TYPE 2802 STRAIGHT EDP NO.	PRICE EACH - FINISHED TO DECIMAL SIZE						
	MAX. SHANK DIAM.	NO. OF FLUTES	LENGTH			1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14	OVER 14
			FLUTE	OVERALL								
*0.0591 - 0.0660	.0580	4	3/8	1 1/2	280204	\$82.35	\$51.30	\$40.90	\$36.00	\$30.65	\$26.45	\$20.35
*0.0661 - 0.0740	.0650	4	1/2	1 3/4	280245	82.65	51.50	41.15	36.20	30.90	26.70	20.65
*0.0741 - 0.0810	.0730	4	1/2	1 3/4	280205	82.80	51.60	41.20	36.40	30.95	26.90	20.70
*0.0811 - 0.0890	.0800	4	1/2	2	280255	83.20	52.20	41.80	36.90	31.60	27.40	21.30
*0.0891 - 0.0970	.0880	4	1/2	2	280206	83.80	52.65	42.30	37.35	32.15	27.75	21.80
*0.0971 - 0.1120	.0943	4	5/8	2 1/4	280207	84.10	52.90	42.60	37.65	32.35	28.20	22.10
0.1121 - 0.1280	.1099	4	5/8	2 1/4	280208	85.60	54.45	44.05	39.15	33.75	29.60	23.55
0.1281 - 0.1435	.1255	4	3/4	2 1/2	280209	86.15	55.10	44.65	39.80	34.45	30.30	24.15
0.1436 - 0.1590	.1411	4	3/4	2 1/2	280210	87.65	56.50	46.10	41.20	35.95	31.65	25.60
0.1591 - 0.1750	.1567	4	7/8	2 3/4	280211	90.95	59.80	49.40	44.55	39.20	35.05	28.90
0.1751 - 0.1910	.1724	4	7/8	2 3/4	280212	93.15	62.00	51.60	46.75	41.30	37.25	31.10
0.1911 - 0.2210	.1880	6	1	3	280214	97.00	65.90	55.50	50.60	45.35	41.10	35.05
0.2211 - 0.2530	.2193	6	1	3	280216	103.55	72.50	62.10	57.25	51.90	47.70	41.65
0.2531 - 0.2840	.2505	6	1 1/8	3 1/4	280218	111.30	80.15	69.75	64.85	59.55	55.35	49.30
0.2841 - 0.3150	.2817	6	1 1/8	3 1/4	280220	119.75	88.65	78.15	73.40	68.05	63.85	57.80
0.3151 - 0.3470	.3130	6	1 1/4	3 1/2	280222	132.30	101.25	90.90	85.95	80.70	76.30	70.40
0.3471 - 0.3780	.3443	6	1 1/4	3 1/2	280224	133.90	102.90	92.60	87.65	82.30	78.05	72.00
0.3781 - 0.4090	.3755	6	1 3/8	3 3/4	280226	145.05	113.95	103.55	98.55	93.30	89.10	83.00
0.4091 - 0.4410	.4067	6	1 3/8	3 3/4	280228	146.30	115.20	104.80	99.90	94.60	90.35	84.25
0.4411 - 0.4720	.4380	6	1 1/2	4	280230	155.20	124.10	113.65	108.80	103.45	99.30	93.20
0.4721 - 0.5150	.4693	6	1 1/2	4	280232	163.85	132.75	122.25	117.45	112.15	107.95	101.85

\*Provided with male centers

# CHUCKING REAMERS - SOLID CARBIDE

## RIGHT SPIRAL OR LEFT SPIRAL FLUTES - STRAIGHT SHANK - SHORT SERIES

### TYPE 2812 - RIGHT SPIRAL FLUTES - STRAIGHT SHANK

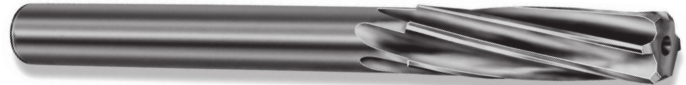
### TYPE 2822 - LEFT SPIRAL FLUTES - STRAIGHT SHANK

Solid carbide head and straight shank.

Tool diameter tolerance thru .2500": plus .0002", minus .0000"  
over .2500": plus .0003", minus .0000"

Shank diameter tolerance: plus .0000", minus .0010"

Left spiral flutes should not be used on blind holes.



TOOL DIAMETER RANGE	DIMENSIONS				TYPE 2812 R SPIRAL EDP NO.	TYPE 2822 L SPIRAL EDP NO.	PRICE EACH - FINISHED TO DECIMAL SIZE						
	MAX. SHANK DIAM.	NO. OF FLUTES	LENGTH				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14	OVER 14
			FLUTE	OVERALL									
*0.0971 - 0.1120	.0943	4	5/8	2 1/4	281207	282207	\$87.25	\$55.90	\$45.35	\$40.40	\$34.95	\$30.65	\$24.50
0.1121 - 0.1280	.1099	4	5/8	2 1/4	281208	282208	88.95	57.45	46.95	42.05	36.55	32.30	26.20
0.1281 - 0.1435	.1255	4	3/4	2 1/2	281209	282209	94.10	61.20	50.15	44.85	39.25	34.80	28.25
0.1436 - 0.1590	.1411	4	3/4	2 1/2	281210	282210	95.90	62.85	51.80	46.60	40.95	36.45	30.10
0.1591 - 0.1750	.1567	4	7/8	2 3/4	281211	282211	99.75	66.75	55.65	50.40	44.80	40.30	33.80
0.1751 - 0.1910	.1724	4	7/8	2 3/4	281212	282212	102.20	69.30	58.15	52.90	47.25	42.80	36.35
0.1911 - 0.2210	.1880	6	1	3	281214	282214	111.85	77.25	65.70	60.20	54.25	49.55	42.80
0.2211 - 0.2530	.2193	6	1	3	281216	282216	120.05	85.30	73.70	68.35	62.35	57.80	51.05
0.2531 - 0.2840	.2505	6	1 1/8	3 1/4	281218	282218	129.45	94.80	83.25	77.85	71.80	67.25	60.45
0.2841 - 0.3150	.2817	6	1 1/8	3 1/4	281220	282220	139.65	105.10	93.45	88.00	82.15	77.40	70.60
0.3151 - 0.3470	.3130	6	1 1/4	3 1/2	281222	282222	155.10	120.55	108.90	103.45	97.50	92.75	86.00
0.3471 - 0.3780	.3443	6	1 1/4	3 1/2	281224	282224	157.20	122.60	111.00	105.45	99.65	94.90	88.15
0.3781 - 0.4090	.3755	6	1 3/8	3 3/4	281226	282226	161.55	126.90	115.30	109.80	103.90	99.20	92.50
0.4091 - 0.4410	.4067	6	1 3/8	3 3/4	281228	282228	162.90	128.20	116.60	111.20	105.25	100.55	93.85
0.4411 - 0.4720	.4380	6	1 1/2	4	281230	282230	172.80	138.15	126.60	121.20	115.25	110.55	103.75
0.4721 - 0.5150	.4693	6	1 1/2	4	281232	282232	182.35	147.75	136.20	130.80	124.75	120.10	113.35

\*Provided with male centers





# SEMI-FINISHED CHUCKING REAMERS & COUNTERBORE PILOTS

Before semi-finished reamers can be used, the cutting diameter must be finish ground and relieved. The reamer end must be faced and chamfered.

SEMI-FINISHED TOOL DIAMETER RANGE	TYPE 2400 - PAGE 38		TYPE 2402 - PAGE 44		TYPE 2410 - PAGE 58		TYPE 2430 PAGE 31	TYPE 2440 PAGE 31	TYPE 2430 OR 2440 PRICE	TYPE 2450 - PAGE 46		TYPE 2465 - PAGE 54	
	EDP NO.	PRICE	EDP NO.	PRICE	EDP NO.	PRICE	EDP NO.	EDP NO.		EDP NO.	PRICE	EDP NO.	PRICE
0.1770 - 0.2040	240006SF	\$36.60	-	-	241006SF	\$51.55	243006SF	244006SF	\$47.75	245006SF	\$43.80	-	-
0.2041 - 0.2210	240007SF	36.60	-	-	241007SF	51.55	243007SF	244007SF	47.75	245007SF	43.80	-	-
0.2211 - 0.2380	24002344SF	38.65	-	-	24102344SF	51.55	24302344SF	24402344SF	47.75	24502344SF	43.80	-	-
0.2381 - 0.2530	240008SF	36.60	240208SF	\$42.25	241008SF	51.55	243008SF	244008SF	47.75	245008SF	43.80	-	-
0.2531 - 0.2840	240009SF	37.30	240209SF	42.90	241009SF	51.70	243009SF	244009SF	47.75	245009SF	44.80	-	-
0.2841 - 0.3150	240010SF	37.30	240210SF	42.90	241010SF	51.70	243010SF	244010SF	55.40	245010SF	44.80	246510SF	\$67.60
0.3151 - 0.3470	240011SF	38.60	240211SF	44.45	241011SF	56.80	243011SF	244011SF	56.00	245011SF	46.35	246511SF	67.60
0.3471 - 0.3780	240012SF	35.40	240212SF	40.90	241012SF	57.35	243012SF	244012SF	60.65	245012SF	46.35	246512SF	63.25
0.3781 - 0.4090	240013SF	40.50	240213SF	46.60	241013SF	59.95	243013SF	244013SF	61.45	245013SF	48.60	246513SF	67.05
0.4091 - 0.4410	240014SF	43.15	240214SF	49.70	241014SF	62.30	243014SF	244014SF	72.90	245014SF	52.65	246514SF	67.05
0.4411 - 0.4720	240015SF	43.95	240215SF	51.10	241015SF	66.20	243015SF	244015SF	72.90	245015SF	56.80	246515SF	71.10
0.4721 - 0.5030	240016SF	52.35	240216SF	60.10	241016SF	68.70	243016SF	244016SF	79.70	245016SF	60.95	246516SF	71.10
0.5031 - 0.5340	240017SF	56.80	240217SF	64.95	241017SF	70.85	243017SF	244017SF	79.70	245017SF	62.50	246517SF	72.90
0.5341 - 0.5660	240018SF	56.80	240218SF	64.95	241018SF	70.85	243018SF	244018SF	84.10	245018SF	62.50	246518SF	72.90
0.5661 - 0.5970	240019SF	59.15	240219SF	67.95	241019SF	72.90	243019SF	244019SF	84.10	245019SF	65.10	246519SF	76.10
0.5971 - 0.6280	240020SF	59.15	240220SF	67.95	241020SF	72.90	243020SF	244020SF	86.35	245020SF	65.10	246520SF	76.10
0.6281 - 0.6590	240021SF	60.15	240221SF	69.25	241021SF	74.95	243021SF	244021SF	86.35	245021SF	66.20	246521SF	83.25
0.6591 - 0.6910	240022SF	60.15	240222SF	69.25	241022SF	79.85	243022SF	244022SF	90.30	245022SF	66.20	246522SF	83.25
0.6911 - 0.7220	240023SF	62.95	240223SF	72.40	241023SF	80.95	243023SF	244023SF	90.30	245023SF	69.25	246523SF	86.45
0.7221 - 0.7530	240024SF	62.95	240224SF	72.40	241024SF	82.25	243024SF	244024SF	92.60	245024SF	69.25	246524SF	86.45
0.7531 - 0.7840	240025SF	65.20	240225SF	74.55	241025SF	84.30	243025SF	244025SF	92.60	245025SF	71.55	246525SF	93.20
0.7841 - 0.8160	240026SF	65.20	240226SF	74.55	241026SF	84.30	243026SF	244026SF	100.60	245026SF	71.55	246526SF	93.20
0.8161 - 0.8470	240027SF	67.75	240227SF	77.85	241027SF	88.90	243027SF	244027SF	100.60	245027SF	74.45	246527SF	96.70
0.8471 - 0.8780	240028SF	70.25	240228SF	80.80	241028SF	92.30	243028SF	244028SF	109.95	245028SF	77.35	246528SF	100.40
0.8781 - 0.9090	240029SF	82.05	240229SF	94.75	241029SF	107.55	243029SF	244029SF	109.95	245029SF	90.00	246529SF	106.85
0.9091 - 0.9410	240030SF	82.05	240230SF	94.75	241030SF	107.55	243030SF	244030SF	121.00	245030SF	90.00	246530SF	106.85
0.9411 - 0.9720	240031SF	85.85	240231SF	98.60	241031SF	112.70	243031SF	244031SF	121.00	245031SF	94.35	246531SF	110.95
0.9721 - 1.0030	240032SF	85.85	240232SF	98.60	241032SF	112.70	243032SF	244032SF	127.05	245032SF	94.35	246532SF	110.95

## TYPE 2500 - CARBON STEEL PILOTS

The shank diameter ordered must be the same as the pilot shank hole diameter in the counterbore to be used. The pilot diameter is always larger than the shank diameter and is determined by the part to be machined.

## OPTIONS: Intermediate decimal or metric pilot diameters.

Shank diameter tolerance plus .0000" minus .0005".

Pilot diameter tolerance:

1/8" to 1/4" minus .001" minus .002"

3/32" to 7/8" minus .003" minus .004"

1 1/16" to 1 1/8" minus .005" minus .006"



PILOT HEAD DIAMETER		SHANK DIAMETER									ALL TYPES PRICE
FRAC.	DECIMAL	3/32	5/32	3/16	1/4	5/16	3/8	7/16	1/2		
		EDP NO.	EDP NO.	EDP NO.	EDP NO.	EDP NO.	EDP NO.	EDP NO.	EDP NO.		
1/8	.1250	250104	-	-	-	-	-	-	-	\$27.75	
5/32	.1562	250105	-	-	-	-	-	-	-	22.55	
3/16	.1875	250106	250306	-	-	-	-	-	-	23.00	
7/32	.2188	250107	250307	250407	-	-	-	-	-	26.05	
1/4	.2500	250108	250308	250408	-	-	-	-	-	26.05	
9/32	.2812	250109	250309	250409	250509	-	-	-	-	27.75	
5/16	.3125	250110	250310	250410	250510	-	-	-	-	27.75	
3/8	.3750	-	250312	250412	250512	250612	-	-	-	30.60	
7/16	.4375	-	250314	250414	250514	250614	250714	-	-	31.35	
1/2	.5000	-	-	250416	250516	250616	250716	250816	-	35.80	
9/16	.5625	-	-	250418	250518	250618	250718	250818	250918	46.90	
5/8	.6250	-	-	250420	250520	250620	250720	250820	250920	51.60	
11/16	.6875	-	-	250422	250522	250622	250722	250822	250922	52.80	
3/4	.7500	-	-	250424	250524	250624	250724	250824	250924	59.80	
13/16	.8125	-	-	250426	250526	250626	250726	250826	250926	67.15	
7/8	.8750	-	-	250428	250528	250628	250728	250828	250928	74.35	
15/16	.9375	-	-	250430	250530	250630	250730	250830	250930	78.45	
1	1.0000	-	-	250432	250532	250632	250732	250832	250932	81.15	
1 1/16	1.0625	-	-	-	-	250634	250734	250834	250934	84.10	
1 1/8	1.1250	-	-	-	-	250636	250736	250836	250936	101.35	





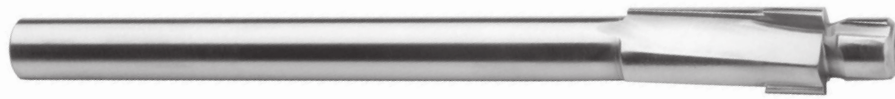






# CAPSCREW COUNTERBORES

## CARBIDE TIPPED - STRAIGHT SHANK



### TYPE 2513 - STRAIGHT SHANK - FOR NON-FERROUS & CAST IRON

### TYPE 2515 - STRAIGHT SHANK - FOR STEEL

Carbide tips brazed to hardened alloy steel bodies.

Right spiral smooth flutes.

Integral pilot type.

Tools are designed with appropriate carbide grade and tool geometry for material being machined. The pilot is manufactured in nominal screw body diameters as well as 1/64" and 1/32" over size diameters.

### OPTIONS:

Intermediate decimal diameters.

TOOL DIAMETER		PILOT DIAMETER	PILOT LENGTH	SHANK DIAMETER	OVERALL LENGTH	TYPE 2513 - NON-FERR/CI		PRICE	TYPE 2515 - STEEL		PRICE
DECIMAL	SCREW SIZE					NO. OF FLTS.	EDP NO.		NO. OF FLTS.	EDP NO.	
.3820	1/4	.2500	.3125	5/16	5 5/8	3	25132500	\$97.05	3	25152500	\$106.70
.3980	1/4	.2650	.3125	5/16	5 5/8	3	25132650	107.80	3	25152650	118.65
.4140	1/4	.2810	.3125	5/16	5 5/8	3	25132810	107.80	3	25152810	118.65
.4750	5/16	.3125	.3750	3/8	6 1/8	3	25133125	108.50	3	25153125	119.45
.4910	5/16	.3280	.3750	3/8	6 1/8	3	25133280	108.50	3	25153280	119.45
.5070	5/16	.3430	.3750	3/8	6 1/8	3	25133430	108.50	3	25153430	119.45
.5720	3/8	.3750	.5000	1/2	6 1/2	3	25133750	122.35	3	25153750	134.60
.5880	3/8	.3900	.5000	1/2	6 1/2	3	25133900	122.35	3	25153900	134.60
.6040	3/8	.4060	.5000	1/2	6 1/2	3	25134060	122.35	3	25154060	134.60
.6630	7/16	.4375	.5000	1/2	7	3	25134375	118.20	3	25154375	130.05
.6790	7/16	.4530	.5000	1/2	7	3	25134530	118.20	3	25154530	130.05
.6950	7/16	.4680	.5000	1/2	7	3	25134680	118.20	3	25154680	130.05
.7570	1/2	.5000	.5000	1/2	7 1/2	3	25135000	134.05	3	25155000	147.55
.7730	1/2	.5150	.5000	1/2	7 1/2	3	25135150	134.05	3	25155150	147.55
.7890	1/2	.5310	.5000	1/2	7 1/2	3	25135310	134.05	3	25155310	147.55
.8510	9/16	.5625	.5625	5/8	7 3/8	3	25135625	129.55	3	25155625	142.55
.8670	9/16	.5780	.5625	5/8	7 3/8	3	25135780	129.55	3	25155780	142.55
.8830	9/16	.5930	.5625	5/8	7 3/8	3	25135930	129.55	3	25155930	142.55
.9450	5/8	.6250	.6250	5/8	7 5/8	3	25136250	147.70	3	25156250	162.50
.9610	5/8	.6400	.6250	5/8	7 5/8	3	25136400	147.70	3	25156400	162.50
.9770	5/8	.6560	.6250	5/8	7 5/8	3	25136560	147.70	3	25156560	162.50
1.1330	3/4	.7500	.7500	3/4	7 3/4	3	25137500	145.60	3	25157500	160.15
1.1490	3/4	.7650	.7500	3/4	7 3/4	3	25137650	145.60	3	25157650	160.15
1.1650	3/4	.7810	.7500	3/4	7 3/4	3	25137810	145.60	3	25157810	160.15
1.3220	7/8	.8750	.8750	7/8	8 1/8	4	25138750	161.85	4	25158750	178.15
1.3380	7/8	.8910	.8750	7/8	8 1/8	4	25138910	161.85	4	25158910	178.15
1.3540	7/8	.9060	.8750	7/8	8 1/8	4	25139060	161.85	4	25159060	178.15
1.5100	1	1.0000	1.0000	1	8 1/2	4	25130000	185.35	4	25150000	203.90
1.5260	1	1.0150	1.0000	1	8 1/2	4	25130156	185.35	4	25150156	203.90
1.5420	1	1.0310	1.0000	1	8 1/2	4	25130313	185.35	4	25150313	203.90

### TYPE 2513 - STRAIGHT SHANK - FOR NON-FERROUS & CAST IRON - METRIC

### TYPE 2515 - STRAIGHT SHANK - FOR STEEL - METRIC

Same as above except metric sizes.

TOOL DIAMETER		PILOT DIAMETER	PILOT LENGTH	SHANK DIAMETER	OVERALL LENGTH	TYPE 2513 - NON-FERR/CI		PRICE	TYPE 2515 - STEEL		PRICE
DECIMAL	SCREW SIZE MM					NO. OF FLTS.	EDP NO.		NO. OF FLTS.	EDP NO.	
.3543	5	5.5	9/32	5/16	5 5/8	3	2513055	\$107.50	3	2515055	\$118.20
.4134	6	6.5	5/16	5/16	5 5/8	3	2513065	113.45	3	2515065	124.85
.5315	8	8.5	3/8	1/2	6 1/2	3	2513085	134.80	3	2515085	148.20
.6496	10	10.5	1/2	1/2	7	3	2513105	146.60	3	2515105	161.25
.7283	12	12.5	1/2	1/2	7 1/2	3	2513125	137.55	3	2515125	151.20
.8465	14	14.5	9/16	5/8	7 3/8	3	2513145	160.40	3	2515145	176.30
.9646	16	16.5	5/8	5/8	7 5/8	3	2513165	167.55	3	2515165	184.30
1.2008	20	20.5	3/4	7/8	8	3	2513205	155.40	3	2515205	170.90



# PORT CONTOUR CUTTERS

## CARBIDE TIPPED

**S.A.E. PORTS - MS16142 • J514F • J1926**

**STRAIGHT SHANK - TWO TYPES:**

**TYPE 2780 - FOR NON-FERROUS AND CAST IRON**

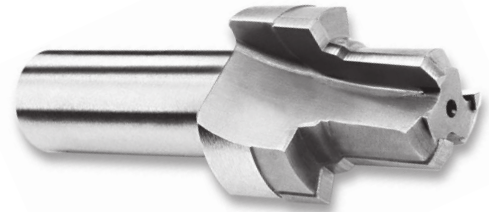
**TYPE 2781 - FOR STEEL**

5° axial rake.

Negative radial rake.

Heat treated bodies.

All tolerances within military specs.



### USE:

In a single operation, a port contour cutter can produce the form and finish required on internal straight thread o-ring ports.

### OPTIONS:

Reamer diameter.  
Spotface diameter.  
Reamer length.  
Shank style.  
Port ID groove.

Whistle notch.  
Tang.  
Shank length.  
Metric tool diameter.  
Weldon flats.

TUBE		DIMENSIONS									TYPE 2780 N-F/CI EDP NO.	TYPE 2781 STEEL EDP NO.	BOTH TYPES PRICE
NO.	SIZE	THREAD SIZE	DIAMETER			SEALING SEAT ANGLE	LENGTH						
			REAMER	SPOTFACE	SHANK		SHANK	REAMER	HEAD	OVERALL			
2	1/8	5/16-24	.2720	.6820	.5000	12°	2	.4730	1 1/8	3 1/8	278002	278102	\$399.30
3	3/16	3/8-24	.3350	.7600	.5000	12°	2	.4730	1 1/4	3 1/4	278003	278103	399.30
4	1/4	7/16-20	.3890	.8380	.5000	12°	2	.5520	1 1/4	3 1/4	278004	278104	399.30
5	5/16	1/2-20	.4520	.9160	.5000	12°	2	.5520	1 1/4	3 1/4	278005	278105	411.90
6	3/8	9/16-18	.5090	.9790	.5000	12°	2	.6140	1 1/4	3 1/4	278006	278106	411.90
8	1/2	3/4-16	.6890	1.1980	.7500	15°	2	.6930	1 3/8	3 3/8	278008	278108	450.80
10	5/8	7/8-14	.8060	1.3540	.7500	15°	2	.7860	1 5/8	3 5/8	278010	278110	509.80
12	3/4	1 1/16-12	.9810	1.6350	.7500	15°	2 1/4	.9110	1 7/8	4 1/8	278012	278112	549.95
14	7/8	1 3/16-12	1.1060	1.7750	.7500	15°	2 1/4	.9110	1 7/8	4 1/8	278014	278114	558.85
16	1	1 5/16-12	1.2310	1.9200	.7500	15°	2 1/4	.9110	1 7/8	4 1/8	278016	278116	601.50
20	1 1/4	1 5/8-12	1.5440	2.2800	1.0000	15°	2 1/4	.9110	2	4 1/4	278020	278120	662.65
24	1 1/2	1 7/8-12	1.7940	2.5700	1.0000	15°	2 1/4	.9110	2	4 1/4	278024	278124	814.90

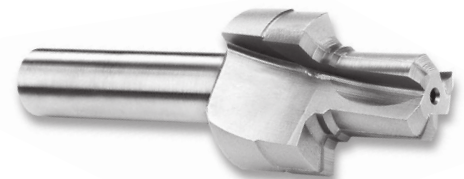
**MS 33649 INTEGRAL REAMER PILOT**

**STRAIGHT SHANK - TWO TYPES:**

**TYPE 2792 - FOR NON-FERROUS AND CAST IRON**

**TYPE 2793 - FOR STEEL**

NOTE: For use & option information, see above.



TUBE		DIMENSIONS								TYPE 2792 N-F/CI EDP NO.	TYPE 2793 STEEL EDP NO.	BOTH TYPES PRICE
NO.	SIZE	THREAD SIZE	DIAMETER			LENGTH						
			REAMER	SPOTFACE	SHANK	SHANK	REAMER	HEAD	OVERALL			
1	1/16	1/4-28	.2150	.6500	.5000	2	.4070	1	3	279201	279301	\$466.40
2	1/8	3/16-24	.2750	.7420	.5000	2	.5820	1 1/8	3 1/8	279202	279302	466.40
3	3/16	3/8-24	.3390	.8050	.5000	2	.5880	1 1/4	3 1/4	279203	279303	442.50
4	1/4	7/16-20	.3930	.8880	.5000	2	.6610	1 1/4	3 1/4	279204	279304	454.45
5	5/16	1/2-20	.4550	.9500	.5000	2	.6610	1 1/4	3 1/4	279205	279305	466.40
6	3/8	9/16-18	.5120	1.0120	.5000	2	.7140	1 1/2	3 1/2	279206	279306	490.30
7	7/16	5/8-18	.5750	1.1050	.5000	2	.7300	1 1/2	3 1/2	279207	279307	502.25
8	1/2	3/4-16	.6930	1.2400	.7500	2	.8390	1 5/8	3 5/8	279208	279308	514.25
9	9/16	13/16-16	.7560	1.3020	.7500	2	.8550	1 5/8	3 5/8	279209	279309	526.20
10	5/8	7/8-14	.8100	1.4150	.7500	2 1/4	.9350	1 7/8	4 1/8	279210	279310	538.15
11	11/16	1-12	.9250	1.6020	.7500	2 1/4	1.0690	2 1/8	4 3/8	279211	279311	585.95
12	3/4	1 1/16-12	.9870	1.6650	.7500	2 1/4	1.0690	2 1/8	4 3/8	279212	279312	621.85
14	7/8	1 3/16-12	1.1120	1.7900	.7500	2 1/4	1.0690	2 1/8	4 3/8	279214	279314	710.40
16	1	1 5/16-12	1.2370	1.9650	.7500	2 1/4	1.0690	2 1/8	4 3/8	279216	279316	797.60
18	1 1/8	1 1/2-12	1.4250	2.0900	.7500	2 1/4	1.1210	2 1/4	4 1/2	279218	279318	859.60
20	1 1/4	1 5/8-12	1.5500	2.3100	1.0000	2 1/4	1.1210	2 1/4	4 1/2	279220	279320	1001.50
24	1 1/2	1 7/8-12	1.8000	2.6000	1.0000	2 1/4	1.1320	2 1/4	4 1/2	279224	279324	1212.60



# SHELL END MILLS HIGH SPIRAL END MILLS CARBIDE TIPPED

## SHELL END MILLS

### TYPE 2530 - FOR NON-FERROUS MACHINING

For production machining of most non-ferrous materials.  
Large open flutes for easy chip disposal.  
Right hand spiral.

### TYPE 2531 - FOR CAST IRON MACHINING

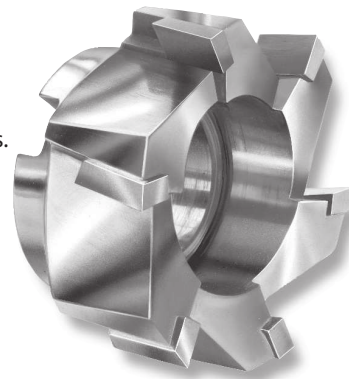
For production machining of cast iron and malleable iron.  
Open flutes for easy chip disposal.

### TYPE 2532 - FOR STEEL MACHINING

For production machining of steel.  
Steel cutting grade of carbide permits high chip loads.  
Left-hand spiral absorbs the impact shock on entering steel.

### OPTIONS:

Intermediate decimal cutting diameter.  
Cutting diameter steps.  
Radius corners.  
Chamfer corners.



### ALL TYPES:

Carbide tips brazed to alloy steel bodies.  
Cutting diameter tolerance plus 1/16" minus .000".  
Arbor hole tolerance plus .001" minus .000".

TOOL DIAM.	ARBOR HOLE	OVERALL LENGTH	DRIVE SLOTS		TYPE 2530 FOR NON-FERROUS			TYPE 2531 FOR CAST IRON			TYPE 2532 FOR STEEL		
			WIDTH	DEPTH	NO. OF TEETH	EDP NO.	PRICE	NO. OF TEETH	EDP NO.	PRICE	NO. OF TEETH	EDP NO.	PRICE
1 1/4	1/2	1	1/4	5/32	4	253024	\$219.20	4	253124	\$219.20	4	253224	\$228.00
1 1/2	1/2	1 1/8	1/4	5/32	4	253026	228.25	4	253126	228.25	4	253226	237.35
1 3/4	3/4	1 1/4	5/16	3/16	4	253028	284.40	4	253128	284.40	4	253228	295.70
2	3/4	1 3/8	5/16	3/16	4	253032	298.65	4	253132	317.80	4	253232	330.45
2 1/4	1	1 1/2	3/8	7/32	6	253036	315.50	6	253136	344.05	6	253236	357.80
2 1/2	1	1 5/8	3/8	7/32	6	253040	332.20	6	253140	375.00	6	253240	375.00
2 3/4	1	1 3/4	3/8	7/32	6	253044	350.55	6	253144	393.40	6	253244	393.40
3	1 1/4	1 3/4	1/2	9/32	6	253048	384.25	6	253148	427.85	6	253248	427.85
3 1/2	1 1/4	1 7/8	1/2	9/32	6	253056	470.40	8	253156	503.15	6	253256	531.90
4	1 1/2	2 1/4	5/8	3/8	6	253064	591.10	8	253164	622.50	6	253264	660.75

### TYPE 2350 - 15° RIGHT SPIRAL FLUTES

For milling all types of steel. The right spiral flutes permit fast chip removal and reduces cutting pressures. The constant spiral flutes distributes the impact load more evenly throughout the tool revolution and thus improves tool life while permitting faster cutting with smoother finishes.

Flute long, steel cutting grade carbide tips brazed to hardened alloy steel bodies.  
Cutting diameter NC tolerance plus .002" minus .000".  
Straight shank with drive flats.



### OPTIONS:

Intermediate decimal cutting diameters.  
Radius end.  
End chamfer.  
Undersize shank diameter.

TOOL DIAM.	SHANK DIAMETER	LENGTH		TYPE 2350 15° RIGHT SPIRAL		
		CARBIDE	OVERALL	NO. OF FLUTES	EDP NO.	PRICE
1/2	3/8	1	3	4	235016	\$117.50
1/2	1/2	1	3	4	235017	117.50
9/16	1/2	1	3	4	235018	126.20
5/8	1/2	1 1/4	3 1/4	4	235020	135.85
5/8	5/8	1 1/4	3 3/8	4	235021	135.85
11/16	1/2	1 1/4	3 1/4	4	235022	141.55
11/16	5/8	1 1/4	3 3/8	4	235023	141.55
3/4	1/2	1 1/4	3 1/4	4	235024	151.15
3/4	5/8	1 1/4	3 3/8	4	235025	151.15
13/16	5/8	1 1/2	3 3/8	4	235026	163.10
7/8	5/8	1 1/2	3 5/8	4	235028	173.05
7/8	7/8	1 1/2	3 3/4	4	235029	173.05

TOOL DIAM.	SHANK DIAMETER	LENGTH		TYPE 2350 15° RIGHT SPIRAL		
		CARBIDE	OVERALL	NO. OF FLUTES	EDP NO.	PRICE
15/16	5/8	1 1/2	3 3/4	4	235030	\$256.40
15/16	7/8	1 1/2	3 3/4	4	235031	256.40
1	7/8	1 1/2	3 3/4	6	235032	242.80
1	1	1 1/2	4	6	235033	242.80
1 1/8	1	1 3/4	4 1/4	6	235036	285.70
1 1/4	1	1 3/4	4 1/4	6	235040	327.45
1 3/8	1	1 3/4	4 1/4	6	235044	382.60
1 1/2	1 1/4	2	4 1/2	6	235048	376.80
1 5/8	1 1/4	2	4 1/2	8	235052	502.35
1 3/4	1 1/4	2	4 1/2	8	235056	535.80
1 7/8	1 1/4	2	4 1/2	8	235060	573.00
2	1 1/4	2	4 1/2	8	235064	605.10





# HIGH SPIRAL END MILLS

**CARBIDE TIPPED**  
**FOR MILLING CAST IRON, NON-FERROUS METALS, NON-METALS**



### TYPE 2325 - 25° RIGHT SPIRAL FLUTES

For milling all non-ferrous metals and non-metals. The high spiral flutes permit fast chip removal so maximum feeds and speeds can be used. The constant spiral flute distributes the impact load more evenly throughout the tool's revolution and thus improves tool life while permitting faster cutting with smoother finishes.

### BOTH TYPES:

Flute long carbide tips brazed to hardened alloy steel bodies.  
 Cutting diameter NC tolerance plus .002" minus .000".  
 Straight shanks with drive flats.

### TYPE 2375 - 15° RIGHT SPIRAL FLUTES

For milling cast iron and malleable iron. The 15° spiral flutes permit fast chip removal so maximum feeds and speeds can be used. The constant spiral flute distributes the impact load more evenly throughout the tool's revolution and thus improves tool life while permitting faster cutting with smoother finishes.

### OPTIONS:

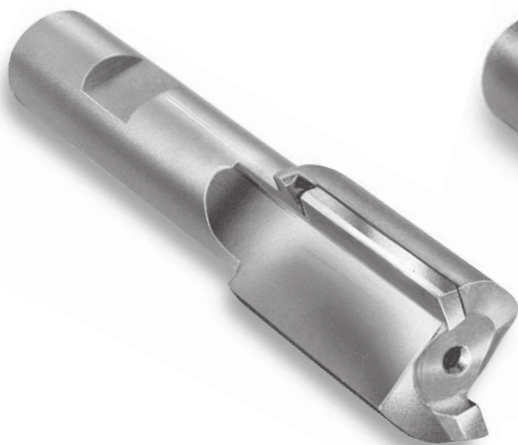
Intermediate decimal cutting diameters.  
 Radius end.  
 End chamfer.  
 Undersize shank diameter.

TOOL DIAM.	SHANK DIAMETER	LENGTH		TYPE 2325 25° RIGHT SPIRAL			TYPE 2375 15° RIGHT SPIRAL		
		CARBIDE	OVERALL	NUMBER OF FLUTES	EDP NO.	PRICE	NUMBER OF FLUTES	EDP NO.	PRICE
1/2	3/8	1	3	2	232516	\$117.50	2	237516	\$108.25
1/2	1/2	1	3	2	232517	117.50	2	237517	108.25
9/16	1/2	1	3	2	232518	126.20	2	237518	116.40
5/8	1/2	1 1/4	3 1/4	2	232520	135.85	2	237520	125.10
5/8	5/8	1 1/4	3 3/8	2	232521	135.85	2	237521	125.10
11/16	1/2	1 1/4	3 1/4	2	232522	141.55	2	237522	130.45
11/16	5/8	1 1/4	3 3/8	2	232523	141.55	2	237523	130.45
3/4	1/2	1 1/4	3 1/4	2	232524	151.15	2	237524	139.25
3/4	5/8	1 1/4	3 3/8	2	232525	151.15	2	237525	139.25
13/16	5/8	1 1/2	3 5/8	2	232526	163.10	2	237526	150.30
7/8	5/8	1 1/2	3 5/8	2	232528	173.05	2	237528	159.55
7/8	7/8	1 1/2	3 3/4	2	232529	173.05	2	237529	159.55
15/16	5/8	1 1/2	3 3/4	2	232530	195.80	3	237530	236.25
15/16	7/8	1 1/2	3 3/4	2	232531	195.80	3	237531	236.25
1	7/8	1 1/2	3 3/4	2	232532	199.85	3	237532	223.60
1	1	1 1/2	4	2	232533	199.85	3	237533	223.60
1 1/8	1	1 3/4	4 1/4	2	232536	218.85	3	237536	263.35
1 1/4	1	1 3/4	4 1/4	3	232540	290.25	4	237540	301.80
1 3/8	1	1 3/4	4 1/4	3	232544	314.70	4	237544	352.40
1 1/2	1 1/4	2	4 1/2	3	232548	351.50	4	237548	347.25
1 5/8	1 1/4	2	4 1/2	3	232552	416.00	4	237552	424.70
1 3/4	1 1/4	2	4 1/2	3	232556	446.35	4	237556	452.90
1 7/8	1 1/4	2	4 1/2	3	232560	480.50	4	237560	484.45
2	1 1/4	2	4 1/2	3	232564	513.65	4	237564	511.70



# END MILLS

## CARBIDE TIPPED - FOR MILLING STEEL & TOUGH STEEL ALLOYS



### TYPE 2300 - TWO STRAIGHT FLUTES

Maximum chip room for easier chip removal. Also used when machine horsepower is too low for higher capacity end mills.



### TYPE 2308 - 6° RIGHT SPIRAL FLUTES

The right spiral flutes greater capacity to remove chips permits heavier feeds and faster speeds, especially when machining free-cutting steels.



### TYPE 2310 - 6° LEFT SPIRAL FLUTES

The left spiral flutes maintain a constant pressure on the work piece and better absorb the impact shock on entering steel. For milling all types of steel, including hardened steel and other tough steel alloys.

### ALL TYPES:

Steel cutting grade flute long carbide tips brazed to hardened alloy steel bodies.  
Cutting diameter NC tolerance plus .002" minus .000".  
Straight shanks with drive flats.

### OPTIONS:

Intermediate decimal cutting diameters.  
Radius end.  
End chamfer.  
Undersize shank diameter.

### USE:

For milling steels and tough steel alloys as indicated.  
Special steel cutting grade of carbide permits the higher chip loads and higher speeds required for milling steel.

TOOL DIAM.	SHANK DIAMETER	LENGTH		TYPE 2300 STRAIGHT FLUTES			TYPE 2308 RIGHT SPIRAL			TYPE 2310 LEFT SPIRAL		
		CARBIDE	OVERALL	NUMBER OF FLUTES	EDP NO.	PRICE	NUMBER OF FLUTES	EDP NO.	PRICE	NUMBER OF FLUTES	EDP NO.	PRICE
1/4	3/8	1/2	2 1/2	2	230008	\$73.85	2	230808	\$76.05	2	231008	\$76.05
5/16	3/8	5/8	2 1/2	2	230010	76.95	2	230810	82.05	2	231010	82.05
3/8	3/8	5/8	2 1/2	2	230012	82.15	2	230812	86.95	2	231012	86.95
7/16	3/8	1	2 11/16	2	230014	82.15	2	230814	86.95	2	231014	86.95
1/2	1/2	1	3 1/4	2	230016	84.00	4	230816	93.65	4	231016	93.65
9/16	1/2	1	3 3/8	2	230018	93.20	4	230818	100.65	4	231018	100.65
5/8	1/2	1	3 3/8	2	230020	93.20	4	230820	124.20	4	231020	124.20
3/4	5/8	1	3 5/8	2	230024	104.60	4	230824	138.35	4	231024	138.35
7/8	5/8	1 1/4	4	2	230028	123.60	4	230828	166.70	4	231028	166.70
1	7/8	1 1/4	4	2	230032	136.55	6	230832	191.65	6	231032	191.65
1 1/8	1	1 1/4	4 1/4	2	230036	139.90	6	230836	203.25	6	231036	203.25
1 1/4	1	1 1/4	4 1/4	2	230040	156.00	6	230840	245.65	6	231040	245.65
1 1/2	1 1/4	1 1/2	4 1/2	2	230048	200.95	6	230848	298.75	6	231048	298.75
1 3/4	1 1/4	1 1/2	4 1/2	2	230056	225.35	8	230856	359.75	8	231056	359.75
2	1 1/4	1 1/2	4 1/2	2	230064	269.10	8	230864	401.60	8	231064	401.60



# END MILLS

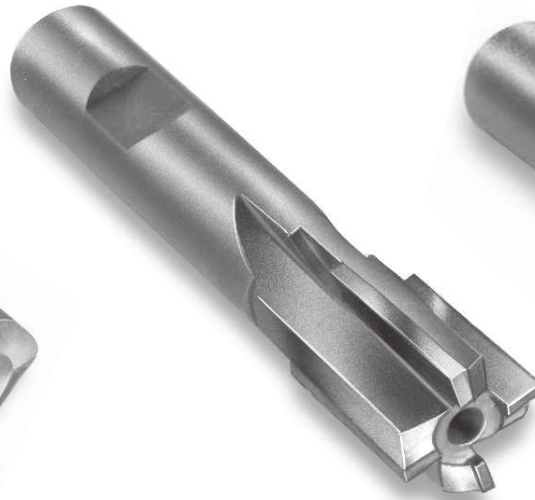
## CARBIDE TIPPED

### FOR MILLING CAST IRON, NON-FERROUS & NON-METALS



#### TYPE 2302 - TWO STRAIGHT FLUTES

Maximum chip room for easier chip removal. Also used when machine horsepower is too low for higher capacity end mills.



#### TYPE 2304 - STRAIGHT FLUTES

Where the machine horsepower permits a higher capacity end mill - feeds less than .002" per flute per revolution may result in fast dulling of cutting edges.



#### TYPE 2306 - 6° RIGHT SPIRAL FLUTES

The spiral flutes capacity to remove chips permits heavier feeds and faster speeds, especially on free cutting zinc and aluminum.

#### ALL TYPES:

Flute long carbide tips brazed to hardened alloy steel bodies.  
Cutting diameter NC tolerance plus .002" minus .000".  
Straight shanks with drive flats.

#### OPTIONS:

Intermediate decimal cutting diameters.  
Radius end.  
End chamfer.  
Undersize shank diameter.

#### USE:

For milling cast iron, non-ferrous metals and non-metals but excluding steel.

TOOL DIAM.	SHANK DIAMETER	LENGTH		TYPE 2302 TWO FLUTES			TYPE 2304 FOUR FLUTES			TYPE 2306 RIGHT SPIRAL		
		CARBIDE	OVERALL	NUMBER OF FLUTES	EDP NO.	PRICE	NUMBER OF FLUTES	EDP NO.	PRICE	NUMBER OF FLUTES	EDP NO.	PRICE
1/4	3/8	1/2	2 1/2	2	230208	\$64.25	4	230408	\$64.85	2	230608	\$65.70
5/16	3/8	5/8	2 1/2	2	230210	66.70	4	230410	69.30	2	230610	68.05
3/8	3/8	5/8	2 1/2	2	230212	71.55	4	230412	73.00	2	230612	72.85
7/16	3/8	1	2 11/16	2	230214	71.55	4	230414	73.00	2	230614	72.85
1/2	1/2	1	3 1/4	2	230216	73.35	4	230416	74.75	2	230616	74.80
9/16	1/2	1	3 3/8	2	230218	81.05	4	230418	83.90	2	230618	82.85
5/8	1/2	1	3 3/8	2	230220	81.05	4	230420	87.85	4	230620	86.00
11/16	5/8	1	3 3/8	2	230222	87.75	4	230422	96.70	-	-	-
3/4	5/8	1	3 5/8	2	230224	91.05	4	230424	90.45	4	230624	98.30
13/16	5/8	1	3 5/8	2	230226	110.05	4	230426	106.85	-	-	-
7/8	5/8	1 1/4	4	2	230228	110.75	4	230428	106.85	4	230628	131.40
15/16	7/8	1 1/4	4	2	230230	118.65	4	230430	118.70	-	-	-
1	7/8	1 1/4	4	2	230232	118.90	4	230432	123.45	4	230632	151.80
1 1/8	1	1 1/4	4 1/4	2	230236	122.05	4	230436	140.00	4	230636	172.15
1 1/4	1	1 1/4	4 1/4	2	230240	147.15	4	230440	157.45	4	230640	193.50
1 1/2	1 1/4	1 1/2	4 1/2	2	230248	182.25	4	230448	203.00	4	230648	239.50
1 3/4	1 1/4	1 1/2	4 1/2	2	230256	216.05	6	230456	261.65	6	230656	309.15
2	1 1/4	1 1/2	4 1/2	2	230264	241.00	6	230464	301.45	6	230664	355.95

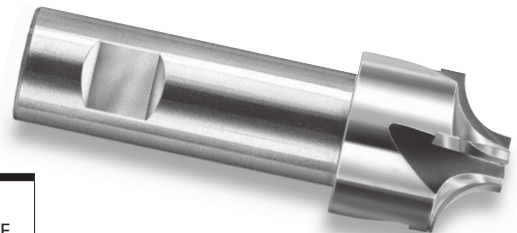


# CORNER ROUNDING END MILLS CENTER CUTTING END MILLS CARBIDE TIPPED

## TYPE 2740 - CORNER ROUNDING END MILLS FOR NON-FERROUS AND CAST IRON

## TYPE 2741 - CORNER ROUNDING END MILLS FOR STEEL

All sizes have three flutes and are used to mill round corners on square edges.



CIRCLE RADIUS	TOOL DIAM.	END DIAM.	SHANK DIAM.	LENGTH		TYPE 2740 CAST IRON EDP NO.	PRICE	TYPE 2741 STEEL EDP NO.	PRICE
				CARBIDE	OVERALL				
1/16	7/16	17/64	3/8	13/32	2 3/4	274002	\$142.40	274102	\$153.90
3/32	1/2	17/64	3/8	13/32	2 3/4	274003	142.40	274103	153.90
1/8	5/8	19/64	1/2	13/32	3	274004	147.45	274104	159.15
5/32	3/4	23/64	1/2	13/32	3	274005	156.40	274105	168.85
3/16	7/8	13/32	3/4	13/32	3 1/4	274006	165.45	274106	178.65
1/4	1	13/32	3/4	15/32	3 1/4	274008	188.55	274108	203.60
5/16	1 1/8	13/32	7/8	19/32	3 1/2	274010	193.70	274110	209.20
3/8	1 1/4	13/32	7/8	25/32	3 3/4	274012	201.20	274112	217.35
7/16	1 3/8	13/32	1	7/8	4	274014	224.10	274114	242.05
1/2	1 1/2	13/32	1	1	4	274016	249.35	274116	269.45
5/8	2	21/32	1 1/4	1 7/32	4 1/4	274020	306.90	274120	331.50



## TYPE 2312 FOR MILLING STEEL

Three straight flutes.  
One flute is center cutting.  
Steel cutting grade carbide.

## TYPE 2314 FOR MILLING CAST IRON

Three straight flutes.  
One flute is center cutting.  
General purpose carbide.

## TYPE 2318 FOR MILLING NON-FERROUS MATERIALS

Two 25° right spiral shear cutting flutes.  
One flute is center cutting. Large flute capacity for heavy milling of non-ferrous material.

### ALL TYPES:

Carbide tips brazed to hardened alloy steel bodies.  
Cutting diameter NC tolerance plus .002" minus .000".

### USE:

For plunge and side cut milling at moderate feeds and speeds. Extremely versatile and economical for machining splines, keyways, spot facing or regular peripheral milling.

### OPTIONS:

Radius end.  
End chamfer.

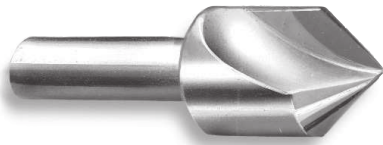
TOOL DIAM.	SHANK DIAM.	NUMBER OF FLUTES	LENGTH		TYPE 2312 EDP NO.	TYPE 2314 EDP NO.	BOTH TYPES PRICE
			CARBIDE	OVERALL			
3/8	3/8	3	1/2	2 1/2	231212	231412	\$122.85
7/16	3/8	3	3/4	2 1/2	231214	231414	125.60
1/2	1/2	3	3/4	3	231216	231416	128.70
5/16	1/2	3	3/4	3	231218	231418	133.80
5/8	5/8	3	3/4	3 1/4	231220	231420	156.45
3/4	5/8	3	3/4	3 3/8	231224	231424	163.85
7/8	7/8	3	3/4	3 3/4	231228	231428	191.25
1	7/8	3	3/4	3 3/4	231232	231432	210.10
1 1/8	1	3	3/4	4	231236	231436	224.90
1 1/4	1	3	3/4	4	231240	231440	260.80
1 1/2	1 1/4	3	3/4	4	231248	231448	310.00

TOOL DIAM.	SHANK DIAM.	NUMBER OF FLUTES	LENGTH		TYPE 2318 - RIGHT SPIRAL	
			CARBIDE	OVERALL	EDP NO.	PRICE
1/2	1/2	2	1	3	231816	\$197.70
5/8	5/8	2	1 1/4	3 3/8	231820	220.95
3/4	3/4	2	1 1/4	3 3/8	231824	234.15
7/8	7/8	2	1 1/2	3 3/4	231828	257.55
1	1	2	1 1/2	4	231832	295.90
1 1/4	1 1/4	2	1 3/4	4 1/4	231840	402.25
1 1/2	1 1/2	2	2	4 3/4	231848	469.35



# SPIRAL FLUTE COUNTERSINKS & DOUBLE ANGLE CUTTERS

## CARBIDE TIPPED



### SINGLE FLUTE TYPES:

The single flute design with a positive rake assures burr-free holes.  
Right spiral flute.  
Carbide tips brazed to alloy steel bodies.  
Not recommended for portable tool use - see three flute types.

- TYPE 2561 - 60° SINGLE FLUTE COUNTERSINKS**
- TYPE 2581 - 82° SINGLE FLUTE COUNTERSINKS**
- TYPE 2591 - 90° SINGLE FLUTE COUNTERSINKS**
- TYPE 2584 - 100° SINGLE FLUTE COUNTERSINKS**

### THREE FLUTE TYPES:

The three flute design tends to center the tool in portable use and results in longer tool life.  
Right spiral flutes.  
Carbide tips brazed to alloy steel bodies.

- TYPE 2563 - 60° THREE FLUTE COUNTERSINKS**
- TYPE 2583 - 82° THREE FLUTE COUNTERSINKS**
- TYPE 2590 - 90° THREE FLUTE COUNTERSINKS**
- TYPE 2585 - 100° THREE FLUTE COUNTERSINKS**

TOOL DIAM.	SHANK DIAM.	MIN. CUTTING DIAM.	EDP NO.				PRICE ALL TYPES
			TYPE 2561 60° ANGLE	TYPE 2581 82° ANGLE	TYPE 2591 90° ANGLE	TYPE 2584 100° ANGLE	
1/4	3/16	1/16	256108	258108	259108	258408	\$72.25
3/8	1/4	5/64	256112	258112	259112	258412	72.25
1/2	3/8	3/32	256116	258116	259116	258416	85.80
3/4	1/2	1/8	256124	258124	259124	258424	107.30
1	1/2	1/8	256132	258132	259132	258432	140.15
1 1/4	1/2	5/32	256140	258140	259140	258440	178.35
1 1/2	1/2	3/16	256148	258148	259148	258448	199.95

TOOL DIAM.	SHANK DIAM.	MIN. CUTTING DIAM.	EDP NO.				PRICE ALL TYPES
			TYPE 2563 60° ANGLE	TYPE 2583 82° ANGLE	TYPE 2590 90° ANGLE	TYPE 2585 100° ANGLE	
1/4	3/16	5/64	256308	258308	259008	258508	\$79.50
3/8	1/4	7/64	256312	258312	259012	258512	79.50
1/2	3/8	9/64	256316	258316	259016	258516	94.40
3/8	3/8	9/64	256320	258320	259020	258520	99.30
3/4	1/2	3/16	256324	258324	259024	258524	119.40
7/8	1/2	3/16	256328	258328	259028	258528	136.85
1	1/2	1/4	256332	258332	259032	258532	149.25
1 1/4	1/2	5/16	256340	258340	259040	258540	185.65
1 1/2	1/2	3/8	256348	258348	259048	258548	216.55

## DOUBLE ANGLE CUTTERS

- TYPE 2746 - 60° - FOR NON-FERROUS & CAST IRON**
- TYPE 2747 - 60° - FOR STEEL**

- TYPE 2748 - 90° - FOR NON-FERROUS & CAST IRON**
- TYPE 2749 - 90° - FOR STEEL**

Carbide tips brazed to hardened alloy steel bodies. Right hand cut. Straight shank with Weldon flats.

### ALL TYPES:

Angle tolerance: +/- 1/4°.  
Tool diameter tolerance: plus .015", minus .000"; Corner radius: .010" - .020".



TOOL DIAM.	SHANK DIAM.	NO. OF TEETH	60° INCLUDED ANGLE				90° INCLUDED ANGLE							
			OVERALL LENGTH	CUTTER WIDTH	TYPE 2746 EDP NO.	PRICE	TYPE 2747 EDP NO.	PRICE	OVERALL LENGTH	CUTTER WIDTH	TYPE 2748 EDP NO.	PRICE	TYPE 2749 EDP NO.	PRICE
3/4	3/8	6	2 3/8	3/16	274624	\$180.25	274724	\$198.30	2 3/8	1/4	274824	\$180.25	274924	\$198.30
1	1/2	6	2 27/32	5/16	274632	212.85	274732	234.20	2 29/32	3/8	274832	212.85	274932	234.20
1 3/8	5/8	6	3 7/32	7/16	274644	246.55	274744	271.30	3 9/32	1/2	274844	246.55	274944	271.30
1 1/2	5/8	6	3 3/8	1/2	274648	259.00	274748	284.85	3 7/16	9/16	274848	259.00	274948	284.85
1 7/8	3/4	6	3 25/32	5/8	274660	393.25	274760	432.60	3 25/32	5/8	274860	393.25	274960	432.60
2 1/4	7/8	6	4 5/32	3/4	274672	532.30	274772	585.50	4 5/32	3/4	274872	532.30	274972	585.50









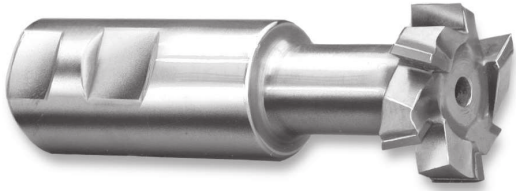






# T-SLOT & DOVETAIL CUTTERS

## CARBIDE TIPPED



### TYPE 2720 - T-SLOT CUTTERS FOR NON-FERROUS AND CAST IRON

Right and left hand helix with side cutting teeth.  
Straight shank with drive flats.

Cutting diameter tolerance plus .000", minus .010".

### TYPE 2721 - T-SLOT CUTTERS FOR STEEL

Same as Type 2720 above except carbide grade and geometry selected for cutting steel.

BOLT DIAMETER	TOOL DIAMETER	CUTTER WIDTH	NECK DIAMETER	OVERALL LENGTH	SHANK DIAMETER	UNDERCUT LENGTH	NO. OF TEETH	TYPE 2720 CAST IRON EDP NO.	PRICE	TYPE 2721 STEEL EDP NO.	PRICE
1/4	9/16	15/64	17/64	2 19/32	1/2	35/64	6	272008	\$155.20	272108	\$167.60
5/16	21/32	17/64	21/64	2 11/16	1/2	39/64	6	272010	153.30	272110	165.55
3/8	25/32	21/64	13/32	3 1/4	3/4	55/64	6	272012	192.95	272112	208.45
1/2	31/32	25/64	17/32	3 7/16	3/4	63/64	6	272016	209.80	272116	226.55
5/8	1 1/4	31/64	21/32	3 15/16	1	1 9/64	6	272020	278.40	272120	300.80
3/4	1 15/32	5/8	25/32	4 7/16	1	1 1/2	6	272024	311.15	272124	336.00
1	1 27/32	53/64	1 1/32	4 13/16	1 1/4	1 43/64	8	272032	444.20	272132	479.80
1 1/4	2 7/32	1 3/32	1 7/32	5 3/8	1 1/4	1 31/32	8	272040	560.55	272140	605.45
1 1/2	2 21/32	1 11/32	1 17/32	5 29/32	1 1/4	2 1/8	8	272048	649.15	272148	701.10

## DOVETAIL CUTTERS

TYPE 2734 - 45° DOVETAIL - FOR NON-FERROUS AND CAST IRON

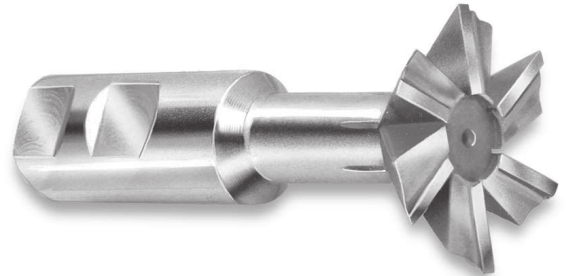
TYPE 2735 - 45° DOVETAIL - FOR STEEL

TYPE 2736 - 60° DOVETAIL - FOR NON-FERROUS AND CAST IRON

TYPE 2737 - 60° DOVETAIL - FOR STEEL

Right Hand Cut

Straight shank with drive flats.



### NOTE:

These dovetail cutters have a corner radius of .015" - .020".

TOOL DIAM.	SHANK DIAM.	OVER-ALL LENGTH	NECK DIAM.	NO. OF TEETH	45° INCLUDED ANGLE				60° INCLUDED ANGLE					
					CUTTER WIDTH	TYPE 2734 CAST IRON EDP NO.	PRICE	TYPE 2735 STEEL EDP NO.	PRICE	CUTTER WIDTH	TYPE 2736 CAST IRON EDP NO.	PRICE	TYPE 2737 STEEL EDP NO.	PRICE
1/2	3/8	2 1/8	3/16	3	5/32	273416	\$155.40	273516	\$157.75	7/32	273616	\$155.40	273716	\$157.75
3/4	3/8	2 1/4	1/4	3	1/4	273424	167.65	273524	170.00	1/4	273624	167.65	273724	170.00
1	1/2	2 1/2	3/8	4	3/16	273432	179.35	273532	181.95	3/8	273632	179.35	273732	181.95
1 1/4	5/8	2 3/4	1/2	4	3/8	273440	203.90	273540	206.80	1/2	273640	203.90	273740	206.80
1 1/2	3/4	3 1/4	1/2	4	1/2	273448	238.20	273548	241.65	5/8	273648	238.20	273748	241.65
2	1	4 1/4	3/4	6	5/8	273464	382.75	273564	388.20	3/4	273664	382.75	273764	388.20
2 1/2	1 1/4	4 3/8	1	6	3/4	273480	517.65	273580	524.90	7/8	273680	517.65	273780	524.90
3	1 1/4	4 1/2	1	6	1	273496	610.35	273596	619.15	1 1/8	273696	610.35	273796	619.15



# CHAMFER MILLING CUTTERS

## CARBIDE TIPPED - 45° AND 60° CUTTERS

**TYPE 2730 - 45° FOR NON-FERROUS & CAST IRON**  
**TYPE 2731 - 45° FOR STEEL**

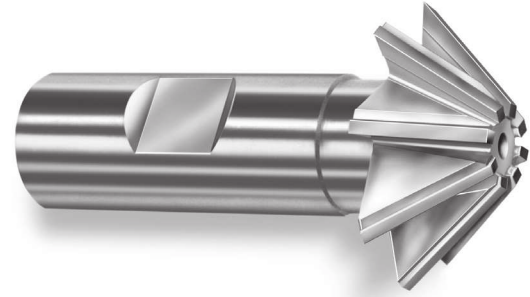
**TYPE 2732 - 60° FOR NON-FERROUS & CAST IRON**  
**TYPE 2733 - 60° FOR STEEL**

Right hand cut.

Straight shank with Weldon flats.

Tool diameter tolerance: plus .015", minus .000".

Tool geometry & carbide grade appropriate for material being machined.



### OPTIONS:

Reduced neck diameter.

Shortened shank or reduced shank diameter.

Additional shank drive flat(s).

TOOL DIAMETER	DIMENSIONS			45° ANGLE					60° ANGLE				
	SHANK DIAM.	OVERALL LENGTH	NO. OF TEETH	TOOL WIDTH	TYPE 2730 N-F/CI EDP NO.	PRICE	TYPE 2731 STEEL EDP NO.	PRICE	TOOL WIDTH	TYPE 2732 N-F/CI EDP NO.	PRICE	TYPE 2733 STEEL EDP NO.	PRICE
1/2	3/8	2 1/8	4	1/8	273016	\$189.85	273116	\$208.75	7/32	273216	\$189.85	273316	\$208.75
3/4	3/8	2 1/8	6	3/16	273024	204.65	273124	225.05	5/16	273224	204.65	273324	225.05
1	1/2	2 1/2	6	3/16	273032	240.15	273132	264.05	7/16	273232	240.15	273332	264.05
1 1/2	3/4	2 3/4	8	1/2	273048	304.30	273148	334.90	5/8	273248	304.30	273348	334.90

## RADIUS CUTTERS - CARBIDE TIPPED

**TYPE 2718 - FOR NON-FERROUS & CAST IRON**  
**TYPE 2719 - FOR STEEL**

Right hand cut; Convex radius.

Straight shank with Weldon flats.

Tool geometry & carbide grade appropriate for material being machined.

Tool diameter tolerance: plus .005", minus .000".

Tool radius tolerance thru 1/8" radius: plus .001", minus .001".

over 1/8" radius: plus .002", minus .002".



### OPTIONS:

Reduced neck diameter.

Shortened shank or reduced shank diameter.

Additional shank drive flat(s).

TOOL RADIUS	TOOL DIAMETER	DIMENSIONS				TYPE 2718 N-F/CI EDP NO.	PRICE	TYPE 2719 STEEL EDP NO.	PRICE
		TOOL WIDTH	SHANK DIAM.	OVERALL LENGTH	NO. OF TEETH				
1/32	3/4	1/16	1/2	3	6	271801	\$224.85	271901	\$247.35
1/16	3/4	1/8	1/2	3	6	271802	224.85	271902	247.35
3/32	7/8	3/16	1/2	3	6	271803	245.85	271903	270.30
1/8	1 1/4	1/4	3/4	3 1/2	6	271804	267.50	271904	294.35
5/32	1 5/16	5/16	3/4	3 1/2	6	271805	307.90	271905	338.65
3/16	1 3/8	3/8	3/4	3 1/2	6	271806	325.80	271906	358.40
1/4	1 1/2	1/2	3/4	4	6	271808	337.25	271908	371.05



# ANGLE & STAGGERED TOOTH CUTTERS

CARBIDE TIPPED

## SINGLE ANGLE CUTTERS

**TYPE 2714 - 45° RIGHT**

**TYPE 2716 - 45° LEFT**

**TYPE 2724 - 60° RIGHT**

**TYPE 2726 - 60° LEFT**

Carbide tips brazed to alloy steel bodies.  
General purpose cutters for cutting non-ferrous materials and cast iron.

TOOL DIAMETER	WIDTH	ARBOR HOLE	NO. OF TEETH	RIGHT 45° TYPE 2714 EDP NO.	LEFT 45° TYPE 2716 EDP NO.	RIGHT 60° TYPE 2724 EDP NO.	LEFT 60° TYPE 2726 EDP NO.	ALL TYPES PRICE
3	½	1	8	271408	271608	272408	272608	\$457.65
4	½	1 ¼	10	271416	271616	272416	272616	566.35
4	¾	1 ¼	10	271424	271624	272424	272624	614.40



## DOUBLE ANGLE CUTTERS

**TYPE 2750 - 45° INCLUDED**

**TYPE 2752 - 60° INCLUDED**

**TYPE 2754 - 90° INCLUDED**

Carbide tips brazed to alloy steel bodies.  
General purpose cutters for cutting non-ferrous materials and cast iron.

TOOL DIAMETER	WIDTH	ARBOR HOLE	NO. OF TEETH	45° TYPE 2750 EDP NO.	60° TYPE 2752 EDP NO.	90° TYPE 2754 EDP NO.	ALL TYPES PRICE
2 ¾	½	1	8	-	275207	275407	385.30
3	½	1	8	275008	275208	275408	480.50
4	½	1 ¼	10	275016	275216	275416	594.65
4	¾	1 ¼	10	275024	275224	275424	645.05
4	1	1 ¼	10	-	275232	275432	754.90

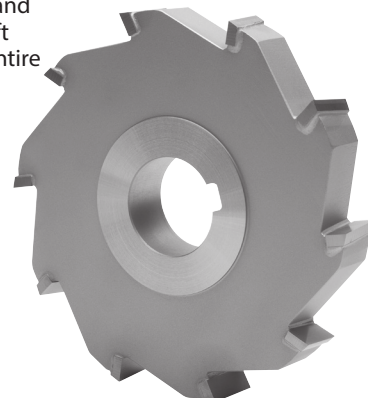


TOOL DIAM.	THICKNESS		TYPE 2547 FOR MOST MATERIALS			PRICE
	FRAC.	DEC.	NO. OF TEETH	1" ARBOR EDP NO.	1 ¼" ARBOR EDP NO.	
3	⅜	.1875	8	254710	-	\$434.10
3	¼	.2500	8	254712	-	444.45
3	⅜	.3125	8	254714	-	448.40
3	¾	.3750	8	254716	-	450.20
3	½	.5000	8	254718	-	464.20
3	⅝	.6250	8	254720	-	496.95
4	⅜	.1875	10	254722	-	471.65
4	¼	.2500	10	254724	-	477.55
4	⅜	.3125	10	254726	-	483.30
4	¾	.3750	10	254728	-	489.15
4	½	.5000	10	254730	-	496.00
4	⅝	.6250	10	254732	-	505.25
4	¾	.7500	10	254734	-	510.95
6	¼	.2500	14	-	254750	613.15
6	⅜	.3125	14	-	254752	617.80
6	¾	.3750	14	-	254754	618.65
6	½	.5000	14	-	254756	626.75
6	⅝	.6250	14	-	254758	630.30
6	¾	.7500	14	-	254760	650.85
6	1	1.0000	14	-	254762	696.85

## STAGGERED TOOTH SIDE MILLING CUTTERS

**TYPE 2547 - FOR MOST MATERIALS**

For milling most types of materials including steels, stainless steels, cast irons, aluminums, and composite materials. Alternating right and left hand axial rake. Carbide extends across the entire length of each tooth.



Tool diameter tolerance: +.016"/-0"  
Face width tolerance: +.001"/-0"  
Arbor hole tolerance: +.001"/-0"



# SIDE MILLING CUTTERS

CARBIDE TIPPED - FOUR TYPES - NON-FERROUS, CAST IRON, STEEL OR HIGH TEMP ALLOY

## TYPE 2540 - FOR NON-FERROUS MACHINING

Use for production milling of aluminum, magnesium, zinc, brass, bronze, plastics and non-metals.  
Very large flute capacity assures good chip flow and permits high feed rates.

## TYPE 2541 - FOR CAST IRON MACHINING

Use for heavy production milling of cast iron and malleable iron.  
Large flute capacity but more teeth permits high metal removal at moderate speeds and feeds.

## TYPE 2542 - FOR STEEL MACHINING

Use for production milling of steel.  
Steel cutting grade of carbide permits the heavy chip loads recommended for milling steel.

## TYPE 2543 - FOR HIGH TEMP ALLOY MACHINING

Use for production milling of austenitic and PH series of stainless steel and other high temp alloys. Larger number of teeth.

## ALL TYPES:

For slotting, straddle milling and face milling.  
Carbide tips brazed to alloy steel bodies.  
Cutting diameter tolerance: plus 1/16" minus .000".  
Face width tolerance: plus .001" minus .000".  
Arbor hole tolerance: plus .001" minus .000".



## OPTIONS:

Alternate chamfer every other tooth.  
Radius both sides.  
Chamfer both sides.

TOOL DIAM.	THICKNESS		TYPE 2540 FOR NON-FERROUS				TYPE 2541 FOR CAST IRON				TYPE 2542 FOR STEEL				TYPE 2543 FOR HIGH TEMP ALLOY			
	FRAC.	DEC.	NO. OF TEETH	1" ARBOR EDP NO.	1 1/4" ARBOR EDP NO.	PRICE	NO. OF TEETH	1" ARBOR EDP NO.	1 1/4" ARBOR EDP NO.	PRICE	NO. OF TEETH	1" ARBOR EDP NO.	1 1/4" ARBOR EDP NO.	PRICE	NO. OF TEETH	1" ARBOR EDP NO.	1 1/4" ARBOR EDP NO.	PRICE
3	1/4	.2500	4	254030	-	\$146.60	6	254130	-	\$183.40	6	254230	-	\$181.05	8	254330	-	\$225.85
3	5/16	.3125	4	254031	-	153.90	6	254131	-	184.20	6	254231	-	183.50	8	254331	-	236.65
3	3/8	.3750	4	254032	-	159.50	6	254132	-	187.80	6	254232	-	185.85	8	254332	-	239.80
3	7/16	.4375	4	254033	-	166.05	6	254133	-	203.10	6	254233	-	207.25	-	-	-	-
3	1/2	.5000	4	254034	-	174.10	6	254134	-	211.50	6	254234	-	210.00	8	254334	-	268.15
4	1/4	.2500	4	254040	-	191.05	8	254140	-	236.90	8	254240	-	238.40	10	254340	-	282.40
4	5/16	.3125	4	254041	-	196.50	8	254141	-	244.85	8	254241	-	253.15	10	254341	-	296.70
4	3/8	.3750	4	254042	254043	201.65	8	254142	254143	257.25	8	254242	254243	253.15	10	254342	254343	303.30
4	7/16	.4375	4	254074	-	202.55	8	254174	-	262.50	8	254274	-	260.70	10	254374	-	329.35
4	1/2	.5000	4	254044	254045	202.55	8	254144	254145	271.15	8	254244	254245	269.75	10	254344	254345	331.85
4	9/16	.5625	4	254094	-	220.20	8	254194	-	278.65	8	254294	-	283.10	-	-	-	-
4	5/8	.6250	4	254046	254047	236.30	8	254146	254147	301.95	8	254246	254247	330.95	10	254346	254347	349.45
4	3/4	.7500	4	254048	254049	264.75	8	254148	254149	301.95	8	254248	254249	335.10	10	254348	254349	359.90
5	1/4	.2500	6	254050	-	266.90	10	254150	-	313.70	10	254250	-	313.85	-	-	-	-
5	5/16	.3125	-	-	-	-	10	254151	-	313.70	10	254251	-	313.85	-	-	-	-
5	3/8	.3750	-	-	-	-	10	-	254153	321.25	10	-	254253	329.50	-	-	-	-
5	7/16	.4375	6	-	254075	277.65	10	-	254175	322.85	10	-	254275	340.10	-	-	-	-
5	1/2	.5000	6	254054	254055	280.95	10	254154	254155	342.75	10	254254	254255	340.20	12	254354	254355	381.20
5	9/16	.5625	6	-	254095	290.00	10	-	254195	348.60	10	-	254295	355.20	-	-	-	-
5	5/8	.6250	6	-	254057	305.05	10	-	254157	371.05	10	-	254257	416.90	12	-	254357	416.35
5	3/4	.7500	6	254058	254059	325.20	10	254158	254159	420.10	10	254258	254259	461.40	12	254358	254359	466.90
5	1	1.0000	6	-	254015	325.75	10	-	254115	457.20	10	-	254215	486.65	-	-	-	-
6	3/8	.3750	6	254062	-	286.40	12	-	254163	394.70	12	-	254263	417.00	-	-	-	-
6	1/2	.5000	6	254064	254065	313.70	12	254164	254165	419.15	12	254264	254265	429.45	14	254364	254365	490.35
6	5/8	.6250	6	-	254067	343.75	12	-	254167	458.10	12	-	254267	467.20	14	-	254367	494.30
6	3/4	.7500	6	254068	254069	395.35	12	254168	254169	513.95	12	254268	254269	532.20	14	254368	254369	533.40
6	1	1.0000	6	-	254016	453.15	12	-	254116	519.35	12	-	254216	542.95	-	-	-	-
				1 1/4" ARBOR	1 1/2" ARBOR			1 1/4" ARBOR	1 1/2" ARBOR			1 1/4" ARBOR	1 1/2" ARBOR			1 1/4" ARBOR	1 1/2" ARBOR	
8	3/4	.7500	8	254088	254089	514.30	12	254188	254189	539.40	12	254288	254289	559.55	14	254388	-	571.90
8	1	1.0000	8	254080	254081	558.15	12	254180	254181	562.15	12	254280	254281	582.40	-	-	-	-



# SLITTING SAWS - COARSE TOOTH

CARBIDE TIPPED - FOUR TYPES - NON-FERROUS, CAST IRON, STEEL OR HIGH TEMP ALLOY

## TYPE 2550 - FOR NON-FERROUS

Use for machining aluminum, magnesium, zinc, brass, bronze, plastics and non-metals.

## TYPE 2552 - FOR CAST IRON

Use for machining cast iron and malleable iron.

## TYPE 2554 - FOR STEEL

Use for machining steel.  
Steel cutting grade of carbide.

## TYPE 2558 - FOR HIGH TEMP ALLOY

Use for production milling of austenitic and PH series of stainless steel and other high temp alloys.  
Larger number of teeth.

## ALL TYPES:

For slitting, slotting, milling and cut-off operations.  
Precision ground.  
Cutting diameter tolerance plus 1/16" minus .000".  
Arbor hole tolerance plus .001" minus .000".  
Face width tolerance plus .001" minus .000".

## OPTIONS:

Alternate chamfer every other tooth.  
Chamfer both sides.  
Radius both sides.  
Tighter tolerances for cutting diameter and face width.



SAW DIAM.	THICKNESS		ARBOR HOLE	TYPE 2550 FOR NON-FERROUS			TYPE 2552 FOR CAST IRON			TYPE 2554 FOR STEEL			TYPE 2558 FOR HIGH TEMP ALLOY		
	FRAC.	DEC.		NO. OF TEETH	EDP NO.	PRICE	NO. OF TEETH	EDP NO.	PRICE	NO. OF TEETH	EDP NO.	PRICE	NO. OF TEETH	EDP NO.	PRICE
3	3/32	.0938	1	6	255032	\$173.85	6	255232	\$200.05	8	255432	\$198.35	8	255832	\$185.85
3	1/8	.1250	1	6	255034	179.05	6	255234	211.85	8	255434	222.00	8	255834	192.95
3	3/16	.1875	1	6	255036	186.15	6	255236	224.10	8	255436	224.10	8	255836	200.40
3	1/4	.2500	1	6	255037	126.60	6	255237	183.70	8	255437	183.70	8	255837	220.50
3	5/16	.3125	1	6	255031	133.00	6	255231	183.70	8	255431	183.70	8	255831	220.50
3	3/8	.3750	1	6	255038	135.60	6	255238	186.70	8	255438	186.70	8	255838	224.10
4	3/32	.0938	1	6	255042	213.40	8	255242	256.50	8	255442	256.50	10	255842	267.40
4	1/8	.1250	1	6	255044	219.75	8	255244	259.95	8	255444	259.95	10	255844	270.75
4	3/16	.1875	1	6	255046	223.00	8	255246	280.10	8	255446	280.10	10	255846	274.50
4	1/4	.2500	1	6	255047	162.70	8	255247	237.85	8	255447	237.85	10	255847	285.60
4	5/16	.3125	1	6	255041	167.30	8	255241	247.10	8	255441	247.10	10	255841	296.35
4	3/8	.3750	1	6	255048	171.70	8	255248	256.05	8	255448	256.05	10	255848	307.25
4	3/8	.3750	1 1/4	6	255049	171.70	8	255249	256.05	8	255449	256.05	10	255849	307.25
5	3/32	.0938	1	8	255052	230.90	10	255252	344.35	10	255452	344.35	12	255852	363.45
5	1/8	.1250	1	8	255054	230.90	10	255254	370.40	10	255454	370.40	12	255854	371.05
5	3/16	.1875	1	-	-	-	10	255256	417.00	10	255456	417.00	12	255856	385.85
6	1/8	.1250	1 1/4	8	255063	314.45	12	255263	452.05	12	255463	452.05	14	255863	434.05
6	3/16	.1875	1 1/4	8	255065	414.40	12	255265	466.95	12	255465	466.95	14	255865	445.25
6	1/4	.2500	1 1/4	8	255067	429.25	12	255267	476.70	12	255467	476.70	14	255867	452.50
8	1/8	.1250	1 1/4	10	255083	402.00	-	-	-	-	-	-	-	-	-
8	3/16	.1875	1 1/4	-	-	-	16	255285	642.60	16	255485	642.60	-	-	-
8	1/4	.2500	1 1/4	-	-	-	16	255287	667.15	16	255487	667.15	-	-	-







# 3" CARBIDE TIPPED MILLING CUTTERS FOR STEEL

## Width grinds between .0600" and .5312"

### TYPE 2556 - FOR STEEL

Cutter Notes (All cutters on page)

16 Teeth

C-5 Carbide

1° - 3° Positive Radial Rake

Width Tolerance: +.001"/-.000"

OD tolerance: +.0313"/-.000"

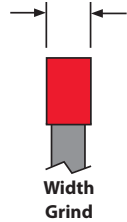
1" Arbor hole +.001"/-.000"

ANSI standard keyway dimensions

Add 5% to grind the hub width thinner

Add 5% to match OD's on cutter sets within .001"

Not designed to be used on heat treated materials greater than 475 Brinell (50Rc)



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED TO DECIMAL SIZE					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
3	0.0600-0.0703	255698D	.0555	\$399.00	\$372.05	\$367.05	\$364.55	\$363.00	\$327.45
3	0.0704-0.0859	255600D	.0711	467.40	440.50	435.55	433.15	431.55	396.00
3	0.0860-0.1015	255602D	.0867	399.00	372.05	367.05	364.55	363.00	327.45
3	0.1016-0.1171	255604D	.1024	373.55	346.55	341.65	339.25	337.60	302.25
3	0.1172-0.1406	255606D	.1180	345.20	318.30	313.40	311.00	309.25	273.85
3	0.1407-0.1718	255608D	.1562	359.10	332.15	327.25	324.75	323.10	287.60
3	0.1719-0.2031	255609D	.1875	372.90	346.00	341.05	338.60	336.95	301.50
3	0.2032-0.2343	255610D	.2188	386.70	359.80	354.95	352.35	350.90	315.30
3	0.2344-0.2812	255611D	.2500	400.70	373.70	368.80	366.40	364.70	329.25
3	0.2813-0.3437	255612D	.3125	432.45	405.40	400.55	398.10	396.45	361.00
3	0.3438-0.4062	255613D	.3750	464.35	437.40	432.45	429.95	428.35	392.80
3	0.4063-0.4687	255614D	.4375	507.85	480.90	476.05	473.60	471.95	436.50
3	0.4688-0.5312	255615D	.5000	556.40	529.45	524.60	522.15	520.50	485.05

## Corner Radius or Chamfer on ONE Side

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED WITH RADIUS OR CHAMFER					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
3	0.0600-0.0703	255698R1	.0555	\$417.00	\$377.55	\$372.05	\$369.15	\$367.40	\$366.55
3	0.0704-0.0859	255600R1	.0711	485.50	446.05	440.55	437.65	435.95	435.10
3	0.0860-0.1015	255602R1	.0867	417.00	377.55	372.05	369.15	367.40	366.55
3	0.1016-0.1171	255604R1	.1024	391.65	352.15	346.65	343.80	342.15	341.10
3	0.1172-0.1406	255606R1	.1180	363.30	323.85	318.35	315.50	313.75	312.80
3	0.1407-0.1718	255608R1	.1562	377.10	337.70	332.20	329.40	327.50	326.70
3	0.1719-0.2031	255609R1	.1875	391.00	351.55	346.10	343.15	341.50	340.60
3	0.2032-0.2343	255610R1	.2188	404.85	365.35	359.85	357.00	355.30	354.35
3	0.2344-0.2812	255611R1	.2500	418.75	379.25	373.75	371.00	369.15	368.25
3	0.2813-0.3437	255612R1	.3125	450.45	410.95	405.45	402.60	400.90	400.05
3	0.3438-0.4062	255613R1	.3750	482.25	442.95	437.45	434.55	432.75	431.90
3	0.4063-0.4687	255614R1	.4375	526.00	486.50	481.05	478.15	476.50	475.65
3	0.4688-0.5312	255615R1	.5000	574.55	535.10	529.60	526.75	524.95	524.20

### Radius Notes

Maximum radius on one side is .2656"

Full radius and maximum radius on both sides is 1/2 the width of the cutter

A non-tangent radii must be quoted

### Chamfer Notes

Chamfer Angles can range from 0° to 45°

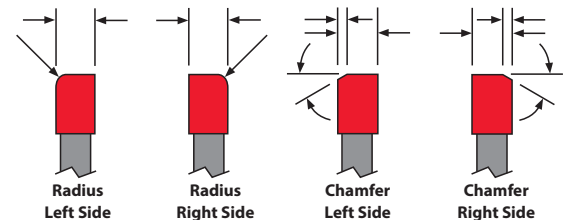
Chamfer is measured off of the OD

Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD

Chamfer Angle Tolerance: +/- 1/2°

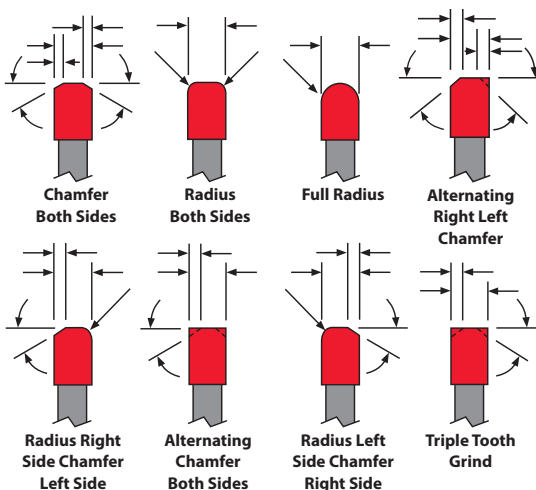
Chamfers greater than 45° must be quoted

Specify side for radius or chamfer



## Corner Radius or Chamfer on BOTH Sides OR a Full Radius

Alternating Chamfers add 5%



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH FINISHED WITH RADII, CHAMFERS OR COMBO					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
3	0.0600-0.0703	255698R2	.0555	\$426.90	\$383.20	\$376.95	\$373.75	\$371.95	\$370.95
3	0.0704-0.0859	255600R2	.0711	495.50	451.65	445.45	442.30	440.40	439.30
3	0.0860-0.1015	255602R2	.0867	426.90	383.20	376.95	373.75	371.95	370.95
3	0.1016-0.1171	255604R2	.1024	401.55	357.75	351.55	348.40	346.50	345.50
3	0.1172-0.1406	255606R2	.1180	373.30	329.40	323.25	320.10	318.15	317.10
3	0.1407-0.1718	255608R2	.1562	387.05	343.15	337.10	334.00	332.00	331.00
3	0.1719-0.2031	255609R2	.1875	400.90	357.10	351.00	347.85	345.85	344.90
3	0.2032-0.2343	255610R2	.2188	414.90	371.00	364.75	361.65	359.75	358.60
3	0.2344-0.2812	255611R2	.2500	428.70	384.80	378.65	375.50	373.55	372.60
3	0.2813-0.3437	255612R2	.3125	460.45	416.55	410.40	407.20	405.30	404.30
3	0.3438-0.4062	255613R2	.3750	492.25	448.35	442.30	439.20	437.30	436.20
3	0.4063-0.4687	255614R2	.4375	535.95	492.10	486.00	482.85	480.85	479.85
3	0.4688-0.5312	255615R2	.5000	584.50	540.55	534.55	531.40	529.40	528.40



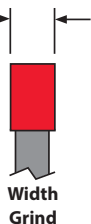
# 4" CARBIDE TIPPED MILLING CUTTERS FOR STEEL

## Width grinds between .0600" and .5312"

### TYPE 2556 - FOR STEEL

**Cutter Notes (All cutters on page)**

- 20 Teeth
- C-5 Carbide
- 1° - 3° Positive Radial Rake
- Width Tolerance: +.001"/-.000"
- OD tolerance: +.0313"/-.000"
- 1" Arbor hole +.001"/-.000"
- ANSI standard keyway dimensions
- Add 5% to grind the hub width thinner
- Add 5% to match OD's on cutter sets within .001"
- Not designed to be used on heat treated materials greater than 475 Brinell (50RC)



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED TO DECIMAL SIZE					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
4	0.0600-0.0703	255616D	.0545	\$480.35	\$449.15	\$443.30	\$440.25	\$438.45	\$396.00
4	0.0704-0.0859	255618D	.0701	517.50	486.40	480.55	477.50	475.75	433.30
4	0.0860-0.1015	255620D	.0858	480.35	449.15	443.30	440.25	438.45	396.00
4	0.1016-0.1171	255622D	.1014	458.85	427.70	421.85	418.80	416.95	374.50
4	0.1172-0.1406	255624D	.1170	434.05	402.90	397.05	394.05	392.25	349.75
4	0.1407-0.1718	255626D	.1562	460.15	429.00	423.20	420.10	418.35	375.90
4	0.1719-0.2031	255628D	.1875	461.65	430.55	424.65	421.65	419.75	377.30
4	0.2032-0.2343	255630D	.2188	483.90	452.85	446.95	443.90	442.15	399.70
4	0.2344-0.2812	255632D	.2500	489.20	458.05	452.15	449.15	447.40	404.85
4	0.2813-0.3437	255634D	.3125	523.55	492.50	486.60	483.60	481.80	439.30
4	0.3438-0.4062	255636D	.3750	555.40	524.30	518.50	515.45	513.50	471.10
4	0.4063-0.4687	255638D	.4375	607.70	576.55	570.80	567.65	565.85	523.40
4	0.4688-0.5312	255640D	.5000	665.85	634.80	628.90	625.90	624.10	581.70

## Corner Radius or Chamfer on ONE Side

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED WITH RADIUS OR CHAMFER					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
4	0.0600-0.0703	255616R1	.0545	\$499.75	\$455.10	\$448.75	\$445.30	\$443.25	\$442.15
4	0.0704-0.0859	255618R1	.0701	537.10	492.50	486.00	482.50	480.55	479.40
4	0.0860-0.1015	255620R1	.0858	499.75	455.10	448.75	445.30	443.25	442.15
4	0.1016-0.1171	255622R1	.1014	478.20	433.65	427.25	423.85	421.80	420.70
4	0.1172-0.1406	255624R1	.1170	453.55	409.00	402.50	399.10	397.00	396.00
4	0.1407-0.1718	255626R1	.1562	479.70	435.10	428.65	425.20	423.20	422.05
4	0.1719-0.2031	255628R1	.1875	481.10	436.55	430.10	426.60	424.60	423.50
4	0.2032-0.2343	255630R1	.2188	503.50	458.90	452.40	448.95	446.95	445.90
4	0.2344-0.2812	255632R1	.2500	508.65	463.95	457.60	454.25	452.10	451.05
4	0.2813-0.3437	255634R1	.3125	543.00	498.60	491.95	488.60	486.60	485.45
4	0.3438-0.4062	255636R1	.3750	574.90	530.30	523.70	520.35	518.35	517.20
4	0.4063-0.4687	255638R1	.4375	627.20	582.60	576.20	572.80	570.65	569.65
4	0.4688-0.5312	255640R1	.5000	685.35	640.85	634.30	630.90	628.85	627.75

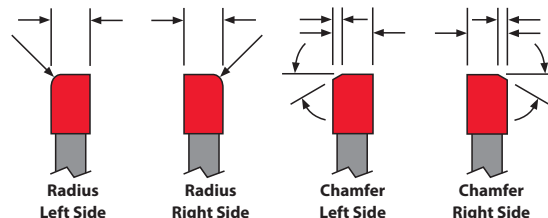
### Radius Notes

- Maximum radius on one side is .2656"
- Full radius and maximum radius on both sides is 1/2 the width of the cutter
- A non-tangent radii must be quoted

### Chamfer Notes

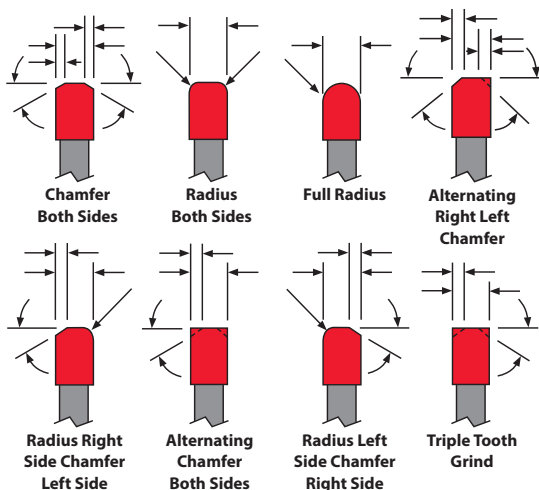
- Chamfer Angles can range from 0° to 45°
- Chamfer is measured off of the OD
- Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD
- Chamfer Angle Tolerance: +/- 1/2°
- Chamfers greater than 45° must be quoted

Specify side for radius or chamfer



## Corner Radius or Chamfer on BOTH Sides OR a Full Radius

Alternating Chamfers add 5%



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH FINISHED WITH RADII, CHAMFERS OR COMBO					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
4	0.0600-0.0703	255616R2	.0545	\$510.35	\$461.20	\$454.10	\$450.35	\$448.05	\$446.85
4	0.0704-0.0859	255618R2	.0701	547.60	498.60	491.45	487.55	485.35	484.10
4	0.0860-0.1015	255620R2	.0858	510.35	461.20	454.10	450.35	448.05	446.85
4	0.1016-0.1171	255622R2	.1014	488.85	439.80	432.55	428.85	426.55	425.35
4	0.1172-0.1406	255624R2	.1170	464.25	415.05	407.90	404.10	401.85	400.70
4	0.1407-0.1718	255626R2	.1562	490.30	441.15	434.00	430.20	427.95	426.75
4	0.1719-0.2031	255628R2	.1875	491.80	442.55	435.35	431.80	429.45	428.20
4	0.2032-0.2343	255630R2	.2188	514.15	464.90	457.85	454.00	451.75	450.50
4	0.2344-0.2812	255632R2	.2500	519.20	470.10	463.00	459.20	456.90	455.75
4	0.2813-0.3437	255634R2	.3125	553.75	504.60	497.40	493.60	491.50	490.10
4	0.3438-0.4062	255636R2	.3750	585.45	536.35	529.15	525.40	523.20	522.00
4	0.4063-0.4687	255638R2	.4375	637.85	588.65	581.40	577.75	575.55	574.30
4	0.4688-0.5312	255640R2	.5000	696.00	646.80	639.70	635.95	633.75	632.50



# 5" CARBIDE TIPPED MILLING CUTTERS FOR STEEL

**Width grinds between .0704" and .5312"**

## TYPE 2556 – FOR STEEL

**Cutter Notes (All cutters on page)**

24 Teeth

C-5 Carbide

1° - 3° Positive Radial Rake

Width Tolerance: +.001"/-.000"

OD tolerance: +.0313"/-.000"

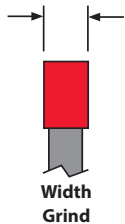
1" Arbor hole +.001"/-.000"

ANSI standard keyway dimensions

Add 5% to grind the hub width thinner

Add 5% to match OD's on cutter sets within .001"

Not designed to be used on heat treated materials greater than 475 Brinell (50Rc)



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED TO DECIMAL SIZE					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
5	0.0704 - 0.0859	255642D	.0691	\$622.65	\$590.90	\$585.05	\$581.85	\$580.00	\$536.55
5	0.0860 - 0.1015	255644D	.0848	626.50	594.65	588.75	585.65	583.75	540.30
5	0.1016 - 0.1171	255646D	.1004	590.15	558.45	552.55	549.35	547.50	504.15
5	0.1172 - 0.1406	255648D	.1160	523.30	491.55	485.50	482.40	480.55	437.15
5	0.1407 - 0.1718	255650D	.1562	533.35	501.60	495.60	492.50	490.65	447.15
5	0.1719 - 0.2031	255652D	.1875	564.80	533.00	527.05	523.90	522.05	478.65
5	0.2032 - 0.2343	255654D	.2188	578.45	546.70	540.55	537.50	535.70	492.25
5	0.2344 - 0.2812	255656D	.2500	599.55	567.75	561.80	558.75	556.90	513.45
5	0.2813 - 0.3437	255658D	.3125	644.45	612.75	606.75	603.65	601.70	558.40
5	0.3438 - 0.4062	255660D	.3750	689.55	657.75	651.65	648.65	646.70	603.35
5	0.4063 - 0.4687	255662D	.4375	756.60	724.75	718.80	715.60	713.85	670.40
5	0.4688 - 0.5312	255664D	.5000	831.05	799.20	793.30	790.15	788.40	744.90

## Corner Radius or Chamfer on ONE Side

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED WITH RADIUS OR CHAMFER					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
5	0.0704 - 0.0859	255642R1	.0691	\$642.45	\$596.95	\$590.35	\$586.85	\$584.80	\$583.70
5	0.0860 - 0.1015	255644R1	.0848	646.25	600.80	594.15	590.70	588.60	587.45
5	0.1016 - 0.1171	255646R1	.1004	610.00	564.45	557.80	554.35	552.35	551.30
5	0.1172 - 0.1406	255648R1	.1160	542.95	497.50	490.85	487.45	485.35	484.25
5	0.1407 - 0.1718	255650R1	.1562	553.10	507.65	501.00	497.50	495.50	494.30
5	0.1719 - 0.2031	255652R1	.1875	584.50	539.05	532.45	529.00	526.95	525.80
5	0.2032 - 0.2343	255654R1	.2188	598.15	552.70	546.00	542.65	540.45	539.40
5	0.2344 - 0.2812	255656R1	.2500	619.40	573.90	567.20	563.75	561.65	560.50
5	0.2813 - 0.3437	255658R1	.3125	664.25	618.75	612.20	608.75	606.65	605.55
5	0.3438 - 0.4062	255660R1	.3750	709.35	663.75	657.05	653.60	651.50	650.50
5	0.4063 - 0.4687	255662R1	.4375	776.25	730.85	724.15	720.75	718.70	717.55
5	0.4688 - 0.5312	255664R1	.5000	850.75	805.30	798.60	795.20	793.15	791.95

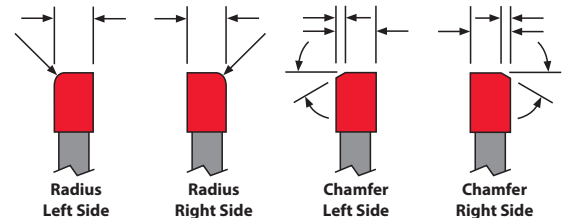
### Radius Notes

Maximum radius on one side is .2656"  
Full radius and maximum radius on both sides is 1/2 the width of the cutter  
A non-tangent radii must be quoted

### Chamfer Notes

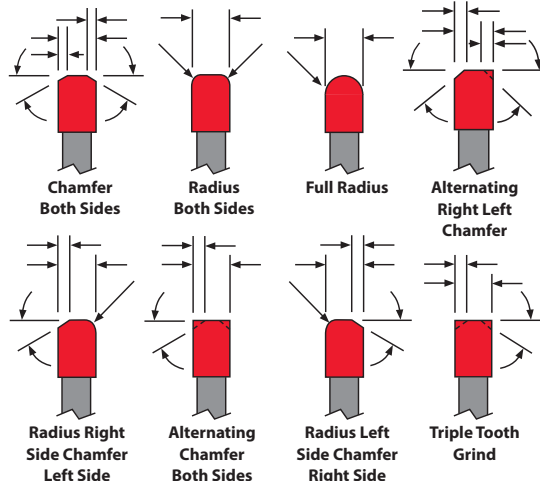
Chamfer Angles can range from 0° to 45°  
Chamfer is measured off of the OD  
Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD  
Chamfer Angle Tolerance: +/- 1/2°  
Chamfers greater than 45° must be quoted

Specify side for radius or chamfer



## Corner Radius or Chamfer on BOTH Sides OR a Full Radius

Alternating Chamfers add 5%



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH FINISHED WITH RADII, CHAMFERS OR COMBO					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
5	0.0704 - 0.0859	255642R2	.0691	663.60	\$609.00	\$601.15	\$596.95	\$594.50	\$593.15
5	0.0860 - 0.1015	255644R2	.0848	667.45	612.85	604.90	600.65	598.15	596.90
5	0.1016 - 0.1171	255646R2	.1004	631.15	576.55	568.60	564.40	561.90	560.65
5	0.1172 - 0.1406	255648R2	.1160	564.20	509.60	501.65	497.45	494.95	493.65
5	0.1407 - 0.1718	255650R2	.1562	574.30	519.75	511.75	507.55	505.05	503.75
5	0.1719 - 0.2031	255652R2	.1875	605.70	551.10	543.15	539.05	536.55	535.15
5	0.2032 - 0.2343	255654R2	.2188	619.40	564.80	556.90	552.65	550.15	548.75
5	0.2344 - 0.2812	255656R2	.2500	640.50	585.90	577.95	573.85	571.30	569.95
5	0.2813 - 0.3437	255658R2	.3125	685.50	630.90	622.90	618.70	616.25	614.90
5	0.3438 - 0.4062	255660R2	.3750	730.35	675.85	667.85	663.65	661.20	659.90
5	0.4063 - 0.4687	255662R2	.4375	797.45	743.00	734.95	730.75	728.20	726.95
5	0.4688 - 0.5312	255664R2	.5000	871.95	817.40	809.35	805.25	802.80	801.45



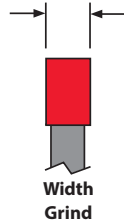
# 6" CARBIDE TIPPED MILLING CUTTERS FOR STEEL

## Width grinds between .0704" and .5312"

### TYPE 2556 – FOR STEEL

#### Cutter Notes (All cutters on page)

- 28 Teeth
- C-5 Carbide
- 1° - 3° Positive Radial Rake
- Width Tolerance: +.001"/-.000"
- OD tolerance: +.0313"/-.000"
- 1" Arbor hole +.001"/-.000"
- ANSI standard keyway dimensions
- Add 5% to grind the hub width thinner
- Add 5% to match OD's on cutter sets within .001"
- Not designed to be used on heat treated materials greater than 475 Brinell (50RC)



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED TO DECIMAL SIZE					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
6	0.0704-0.0859	255666D	.0681	699.80	664.90	658.10	654.60	652.50	603.25
6	0.0860-0.1015	255668D	.0838	649.20	614.35	607.55	604.00	601.95	552.65
6	0.1016-0.1171	255670D	.0994	701.90	667.00	660.20	656.70	654.55	605.35
6	0.1172-0.1406	255672D	.1150	676.45	641.55	634.80	631.20	629.15	579.85
6	0.1407-0.1718	255674D	.1562	676.15	641.15	634.40	630.90	628.80	579.60
6	0.1719-0.2031	255676D	.1875	718.35	683.50	676.75	673.20	671.05	621.75
6	0.2032-0.2343	255678D	.2188	729.00	694.10	687.35	683.85	681.70	632.45
6	0.2344-0.2812	255680D	.2500	772.70	737.70	730.95	727.45	725.35	676.05
6	0.2813-0.3437	255682D	.3125	782.05	747.10	740.30	736.80	734.65	685.50
6	0.3438-0.4062	255684D	.3750	808.45	773.40	766.60	763.05	761.00	711.85
6	0.4063-0.4687	255690D	.4375	887.50	852.55	845.80	842.15	840.15	790.85
6	0.4688-0.5312	255692D	.5000	975.30	940.45	933.70	930.05	928.05	878.75

## Corner Radius or Chamfer on ONE Side

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED WITH RADIUS OR CHAMFER					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
6	0.0704-0.0859	255666R1	.0681	720.70	671.50	664.05	660.05	657.75	656.50
6	0.0860-0.1015	255668R1	.0838	670.00	620.95	613.45	609.50	607.10	605.85
6	0.1016-0.1171	255670R1	.0994	722.70	673.55	666.05	662.20	659.85	658.55
6	0.1172-0.1406	255672R1	.1150	697.20	648.15	640.65	636.70	634.35	633.05
6	0.1407-0.1718	255674R1	.1562	697.00	647.85	640.35	636.40	634.05	632.85
6	0.1719-0.2031	255676R1	.1875	739.20	690.05	682.55	678.55	676.30	675.05
6	0.2032-0.2343	255678R1	.2188	749.90	700.75	693.20	689.35	687.00	685.70
6	0.2344-0.2812	255680R1	.2500	793.50	744.35	736.80	732.95	730.60	729.30
6	0.2813-0.3437	255682R1	.3125	802.95	753.70	746.25	742.35	740.00	738.70
6	0.3438-0.4062	255684R1	.3750	829.15	780.00	772.50	768.65	766.25	764.95
6	0.4063-0.4687	255690R1	.4375	908.30	859.05	851.60	847.65	845.35	844.05
6	0.4688-0.5312	255692R1	.5000	996.15	946.95	939.50	935.55	933.15	932.00

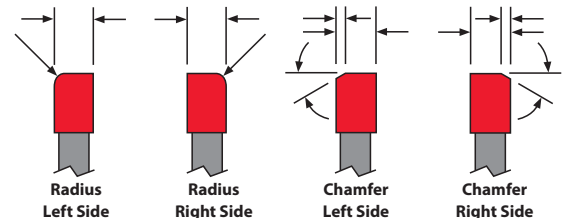
### Radius Notes

- Maximum radius on one side is .2656"
- Full radius and maximum radius on both sides is 1/2 the width of the cutter
- A non-tangent radii must be quoted

### Chamfer Notes

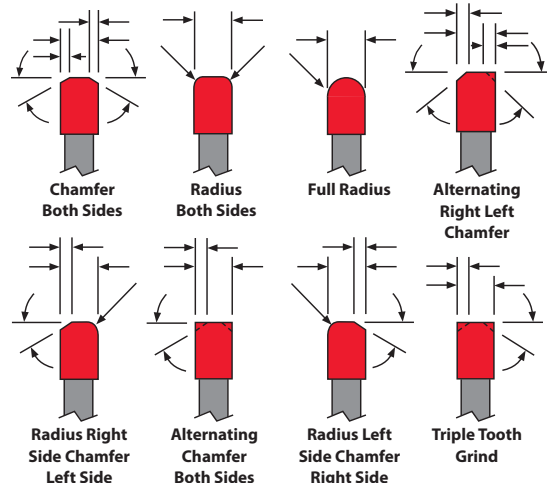
- Chamfer Angles can range from 0° to 45°
- Chamfer is measured off of the OD
- Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD
- Chamfer Angle Tolerance: +/- 1/2°
- Chamfers greater than 45° must be quoted

Specify side for radius or chamfer



## Corner Radius or Chamfer on BOTH Sides OR a Full Radius

Alternating Chamfers add 5%



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH FINISHED WITH RADI, CHAMFERS OR COMBO					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
6	0.0704-0.0859	255666R2	.0681	743.25	684.65	675.60	671.05	668.25	666.75
6	0.0860-0.1015	255668R2	.0838	692.65	634.00	625.05	620.40	617.60	616.15
6	0.1016-0.1171	255670R2	.0994	745.30	686.65	677.75	673.00	670.35	668.75
6	0.1172-0.1406	255672R2	.1150	719.85	661.20	652.25	647.55	644.90	643.35
6	0.1407-0.1718	255674R2	.1562	719.55	660.95	652.05	647.30	644.55	643.05
6	0.1719-0.2031	255676R2	.1875	761.80	703.20	694.15	689.55	686.75	685.20
6	0.2032-0.2343	255678R2	.2188	772.45	713.85	704.85	700.20	697.50	695.95
6	0.2344-0.2812	255680R2	.2500	816.00	757.40	748.55	743.80	741.05	739.50
6	0.2813-0.3437	255682R2	.3125	825.50	766.85	757.90	753.25	750.50	748.95
6	0.3438-0.4062	255684R2	.3750	851.75	793.15	784.20	779.45	776.80	775.15
6	0.4063-0.4687	255690R2	.4375	930.80	872.20	863.25	858.60	855.85	854.35
6	0.4688-0.5312	255692R2	.5000	1018.75	960.10	951.15	946.50	943.75	942.20



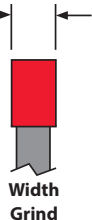
# 3" CARBIDE TIPPED MILLING CUTTERS

## Width grinds between .0600" and .5312"

### TYPE 2559 – MULTI-PURPOSE

**Cutter Notes (All cutters on page)**

- 12 Teeth
- C-2(m) Carbide
- 5° Positive Radial Rake
- Width Tolerance: +.001"/-.000"
- OD tolerance: +.0313"/-.000"
- 1" Arbor hole +.001"/-.000"
- ANSI standard keyway dimensions
- Add 5% to grind the hub width thinner
- Add 5% to match OD's on cutter sets within .001"
- Not designed to be used on heat treated materials greater than 363 Brinell (39Rc)



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED TO DECIMAL SIZE					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
3	0.0600-0.0703	255998D	.0555	\$378.70	\$351.30	\$346.65	\$344.15	\$342.70	\$308.05
3	0.0704-0.0859	255900D	.0711	415.80	388.40	383.65	381.20	379.60	345.05
3	0.0860-0.1015	255902D	.0867	378.70	351.30	346.65	344.15	342.70	308.05
3	0.1016-0.1171	255904D	.1024	364.70	337.45	332.65	330.15	328.65	294.05
3	0.1172-0.1406	255906D	.1180	351.55	324.15	319.35	316.85	315.40	280.85
3	0.1407-0.1718	255908D	.1562	358.35	331.05	326.25	323.80	322.35	287.60
3	0.1719-0.2031	255909D	.1875	365.25	337.80	333.00	330.60	329.15	294.50
3	0.2032-0.2343	255910D	.2188	374.50	347.25	342.45	339.95	338.45	303.85
3	0.2344-0.2812	255911D	.2500	383.85	356.50	351.60	349.10	347.70	313.00
3	0.2813-0.3437	255912D	.3125	413.65	386.30	381.50	379.10	377.60	342.90
3	0.3438-0.4062	255913D	.3750	445.70	418.40	413.65	411.05	409.60	375.10
3	0.4063-0.4687	255914D	.4375	478.15	450.85	446.10	443.60	442.10	407.60
3	0.4688-0.5312	255915D	.5000	510.75	483.25	478.50	476.05	474.65	439.90

## Corner Radius or Chamfer on ONE Side

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED WITH RADIUS OR CHAMFER					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
3	0.0600-0.0703	255998R1	.0555	\$397.20	\$356.80	\$351.30	\$348.70	\$347.05	\$346.20
3	0.0704-0.0859	255900R1	.0711	434.30	393.80	388.40	385.65	384.00	383.20
3	0.0860-0.1015	255902R1	.0867	397.20	356.80	351.30	348.70	347.05	346.20
3	0.1016-0.1171	255904R1	.1024	383.30	342.80	337.45	334.70	332.95	332.10
3	0.1172-0.1406	255906R1	.1180	370.05	329.50	324.15	321.40	319.80	318.80
3	0.1407-0.1718	255908R1	.1562	376.80	336.35	331.05	328.20	326.60	325.65
3	0.1719-0.2031	255909R1	.1875	383.80	343.15	337.80	335.10	333.55	332.60
3	0.2032-0.2343	255910R1	.2188	392.95	352.65	347.25	344.35	342.80	341.80
3	0.2344-0.2812	255911R1	.2500	402.25	361.75	356.50	353.65	352.05	351.10
3	0.2813-0.3437	255912R1	.3125	432.10	391.70	386.30	383.50	381.95	380.90
3	0.3438-0.4062	255913R1	.3750	464.35	423.80	418.40	415.65	414.00	413.15
3	0.4063-0.4687	255914R1	.4375	496.70	456.25	450.85	448.10	446.45	445.55
3	0.4688-0.5312	255915R1	.5000	529.15	488.65	483.25	480.60	478.80	478.00

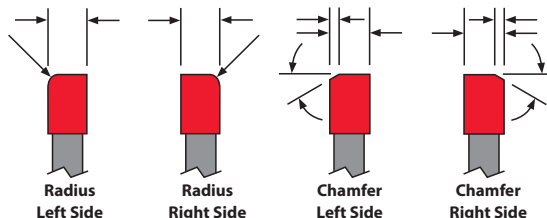
### Radius Notes

Maximum radius on one side is .2656"  
Full radius and maximum radius on both sides is 1/2 the width of the cutter  
A non-tangent radii must be quoted

### Chamfer Notes

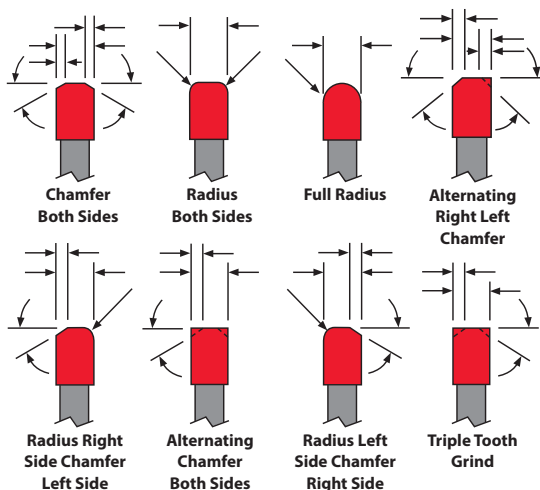
Chamfer Angles can range from 0° to 45°  
Chamfer is measured off of the OD  
Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD  
Chamfer Angle Tolerance: +/- 1/2°  
Chamfers greater than 45° must be quoted

Specify side for radius or chamfer



## Corner Radius or Chamfer on BOTH Sides OR a Full Radius

Alternating Chamfers add 5%



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH FINISHED WITH RADII, CHAMFERS OR COMBO					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
3	0.0600-0.0703	255998R2	.0555	\$407.10	\$362.25	\$356.30	\$353.10	\$351.25	\$350.35
3	0.0704-0.0859	255900R2	.0711	444.20	399.20	393.35	390.20	388.25	387.25
3	0.0860-0.1015	255902R2	.0867	407.10	362.25	356.30	353.10	351.25	350.35
3	0.1016-0.1171	255904R2	.1024	393.30	348.20	342.30	339.25	337.35	336.30
3	0.1172-0.1406	255906R2	.1180	379.95	335.00	329.00	325.95	324.05	323.10
3	0.1407-0.1718	255908R2	.1562	386.80	341.75	335.90	332.80	330.95	329.90
3	0.1719-0.2031	255909R2	.1875	393.55	348.70	342.75	339.60	337.75	336.80
3	0.2032-0.2343	255910R2	.2188	403.05	357.95	352.10	349.00	347.10	346.20
3	0.2344-0.2812	255911R2	.2500	412.15	367.15	361.25	358.15	356.30	355.30
3	0.2813-0.3437	255912R2	.3125	442.05	397.05	391.05	388.05	386.25	385.25
3	0.3438-0.4062	255913R2	.3750	474.25	429.25	423.25	420.15	418.30	417.35
3	0.4063-0.4687	255914R2	.4375	506.55	461.70	455.75	452.55	450.80	449.75
3	0.4688-0.5312	255915R2	.5000	539.05	494.20	488.15	485.10	483.20	482.20



# 4" CARBIDE TIPPED MILLING CUTTERS

## Width grinds between .0600" and .5312"

### TYPE 2559 - MULTI-PURPOSE

Cutter Notes (All cutters on page)

14 Teeth

C-2(m) Carbide

5° Positive Radial Rake

Width Tolerance: +.001"/-.000"

OD tolerance: +.0313"/-.000"

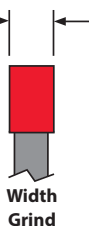
1" Arbor hole +.001"/-.000"

ANSI standard keyway dimensions

Add 5% to grind the hub width thinner

Add 5% to match OD's on cutter sets within .001"

Not designed to be used on heat treated materials greater than 363 Brinell (39RC)



Width Grind

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED TO DECIMAL SIZE					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
4	0.0600-0.0703	255916D	.0545	\$433.60	\$402.25	\$396.50	\$393.55	\$391.75	\$350.40
4	0.0704-0.0859	255918D	.0701	484.75	453.30	447.55	444.60	442.90	401.45
4	0.0860-0.1015	255920D	.0858	433.60	402.25	396.50	393.55	391.75	350.40
4	0.1016-0.1171	255922D	.1014	498.75	467.30	461.60	458.75	456.85	415.35
4	0.1172-0.1406	255924D	.1170	433.20	401.65	395.85	392.90	391.25	349.80
4	0.1407-0.1718	255926D	.1562	442.30	410.90	405.15	402.25	400.40	359.05
4	0.1719-0.2031	255928D	.1875	453.70	422.30	416.55	413.70	411.85	370.45
4	0.2032-0.2343	255930D	.2188	465.45	434.00	428.20	425.30	423.40	382.10
4	0.2344-0.2812	255932D	.2500	474.65	443.10	437.40	434.45	432.60	391.30
4	0.2813-0.3437	255934D	.3125	502.10	470.65	464.90	461.95	460.15	418.90
4	0.3438-0.4062	255936D	.3750	534.40	502.95	497.25	494.25	492.35	451.00
4	0.4063-0.4687	255938D	.4375	566.80	535.40	529.60	526.65	524.75	483.50
4	0.4688-0.5312	255940D	.5000	599.30	567.70	562.05	559.05	557.30	515.90

## Corner Radius or Chamfer on ONE Side

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED WITH RADIUS OR CHAMFER					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
4	0.0600-0.0703	255916R1	.0545	\$453.65	\$408.15	\$401.80	\$398.40	\$396.50	\$395.45
4	0.0704-0.0859	255918R1	.0701	504.70	459.15	452.85	449.45	447.55	446.45
4	0.0860-0.1015	255920R1	.0858	453.65	408.15	401.80	398.40	396.50	395.45
4	0.1016-0.1171	255922R1	.1014	518.85	473.20	466.85	463.60	461.60	460.50
4	0.1172-0.1406	255924R1	.1170	453.15	407.60	401.20	397.85	395.85	394.85
4	0.1407-0.1718	255926R1	.1562	462.30	416.65	410.40	407.10	405.15	404.05
4	0.1719-0.2031	255928R1	.1875	473.80	428.20	421.85	418.50	416.55	415.40
4	0.2032-0.2343	255930R1	.2188	485.45	439.85	433.45	430.20	428.20	427.10
4	0.2344-0.2812	255932R1	.2500	494.60	448.95	442.60	439.30	437.40	436.30
4	0.2813-0.3437	255934R1	.3125	522.15	476.50	470.20	466.90	464.90	463.75
4	0.3438-0.4062	255936R1	.3750	554.30	508.75	502.35	499.05	497.25	496.05
4	0.4063-0.4687	255938R1	.4375	586.80	541.30	534.80	531.60	529.60	528.50
4	0.4688-0.5312	255940R1	.5000	619.25	573.75	567.40	564.05	562.05	561.00

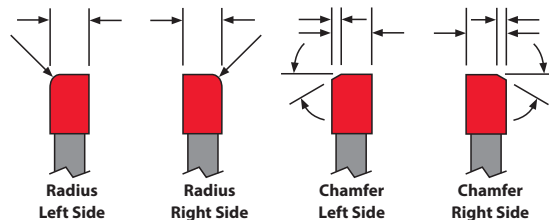
### Radius Notes

Maximum radius on one side is .2656"  
Full radius and maximum radius on both sides is 1/2 the width of the cutter  
A non-tangent radii must be quoted

### Chamfer Notes

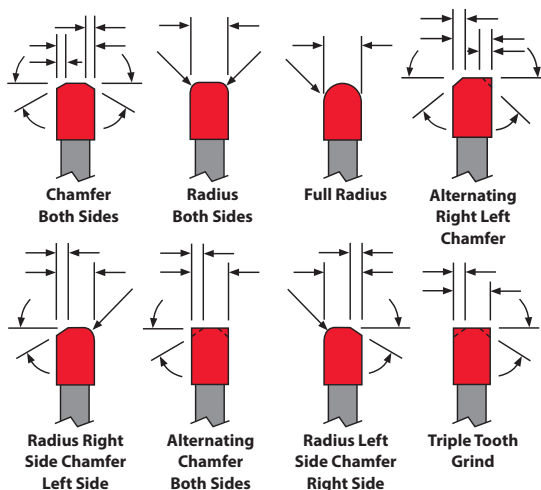
Chamfer Angles can range from 0° to 45°  
Chamfer is measured off of the OD  
Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD  
Chamfer Angle Tolerance: +/- 1/2°  
Chamfers greater than 45° must be quoted

Specify side for radius or chamfer



## Corner Radius or Chamfer on BOTH Sides OR a Full Radius

Alternating Chamfers add 5%



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH FINISHED WITH RADII, CHAMFERS OR COMBO					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
4	0.0600-0.0703	255916R2	.0545	\$464.35	\$414.05	\$407.00	\$403.40	\$401.20	\$400.05
4	0.0704-0.0859	255918R2	.0701	515.20	465.05	458.05	454.40	452.15	451.00
4	0.0860-0.1015	255920R2	.0858	464.35	414.05	407.00	403.40	401.20	400.05
4	0.1016-0.1171	255922R2	.1014	529.30	479.15	472.00	468.50	466.25	465.05
4	0.1172-0.1406	255924R2	.1170	463.65	413.40	406.40	402.80	400.65	399.40
4	0.1407-0.1718	255926R2	.1562	472.90	422.70	415.60	412.00	409.70	408.55
4	0.1719-0.2031	255928R2	.1875	484.40	434.10	427.10	423.40	421.20	420.10
4	0.2032-0.2343	255930R2	.2188	496.00	445.70	438.75	435.15	432.95	431.80
4	0.2344-0.2812	255932R2	.2500	505.05	454.90	447.90	444.20	442.05	440.80
4	0.2813-0.3437	255934R2	.3125	532.65	482.45	475.40	471.80	469.55	468.45
4	0.3438-0.4062	255936R2	.3750	564.95	514.65	507.65	504.05	501.90	500.65
4	0.4063-0.4687	255938R2	.4375	597.35	547.15	540.15	536.45	534.20	533.20
4	0.4688-0.5312	255940R2	.5000	629.80	579.65	572.50	568.90	566.70	565.45



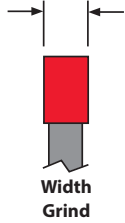
# 5" CARBIDE TIPPED MILLING CUTTERS

## Width grinds between .0704" and .5312"

### TYPE 2559 - MULTI-PURPOSE

#### Cutter Notes (All cutters on page)

- 16 Teeth
- C-2(m) Carbide
- 5° Positive Radial Rake
- Width Tolerance: +.001"/-.000"
- OD tolerance: +.0313"/-.000"
- 1" Arbor hole +.001"/-.000"
- ANSI standard keyway dimensions
- Add 5% to grind the hub width thinner
- Add 5% to match OD's on cutter sets within .001"
- Not designed to be used on heat treated materials greater than 363 Brinell (39Rc)



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED TO DECIMAL SIZE					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
5	0.0704 - 0.0859	255942D	.0691	\$579.85	\$547.60	\$541.75	\$538.80	\$537.05	\$494.65
5	0.0860 - 0.1015	255944D	.0848	509.50	477.30	471.55	468.50	466.70	424.20
5	0.1016 - 0.1171	255946D	.1004	551.70	519.65	513.70	510.80	508.95	466.65
5	0.1172 - 0.1406	255948D	.1160	497.25	464.90	459.15	456.10	454.35	411.95
5	0.1407 - 0.1718	255950D	.1562	510.85	478.65	472.90	469.75	467.95	425.55
5	0.1719 - 0.2031	255952D	.1875	533.95	501.80	496.00	493.00	491.15	448.75
5	0.2032 - 0.2343	255954D	.2188	557.05	524.75	519.00	515.95	514.15	471.80
5	0.2344 - 0.2812	255956D	.2500	579.90	547.65	541.95	538.90	537.15	494.70
5	0.2813 - 0.3437	255958D	.3125	618.95	586.80	581.00	577.95	576.20	533.85
5	0.3438 - 0.4062	255960D	.3750	660.40	628.25	622.50	619.45	617.60	575.30
5	0.4063 - 0.4687	255962D	.4375	692.85	660.80	655.00	651.95	650.05	607.70
5	0.4688 - 0.5312	255964D	.5000	725.40	693.20	687.35	684.40	682.55	640.10

## Corner Radius or Chamfer on ONE Side

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED WITH RADIUS OR CHAMFER					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
5	0.0704 - 0.0859	255942R1	.0691	\$600.05	\$553.50	\$547.05	\$543.60	\$541.55	\$540.55
5	0.0860 - 0.1015	255944R1	.0848	529.80	483.20	476.70	473.40	471.30	470.20
5	0.1016 - 0.1171	255946R1	.1004	572.00	525.55	519.00	515.65	513.55	512.50
5	0.1172 - 0.1406	255948R1	.1160	517.35	470.85	464.45	461.05	459.00	457.95
5	0.1407 - 0.1718	255950R1	.1562	531.10	484.50	478.05	474.75	472.60	471.65
5	0.1719 - 0.2031	255952R1	.1875	554.15	507.70	501.15	497.85	495.85	494.70
5	0.2032 - 0.2343	255954R1	.2188	577.20	530.70	524.25	520.95	518.85	517.75
5	0.2344 - 0.2812	255956R1	.2500	600.15	553.75	547.15	543.85	541.75	540.65
5	0.2813 - 0.3437	255958R1	.3125	639.25	592.65	586.20	582.80	580.90	579.75
5	0.3438 - 0.4062	255960R1	.3750	680.70	634.20	627.65	624.30	622.40	621.25
5	0.4063 - 0.4687	255962R1	.4375	713.20	666.70	660.15	656.80	654.75	653.65
5	0.4688 - 0.5312	255964R1	.5000	745.60	699.15	692.65	689.35	687.15	686.10

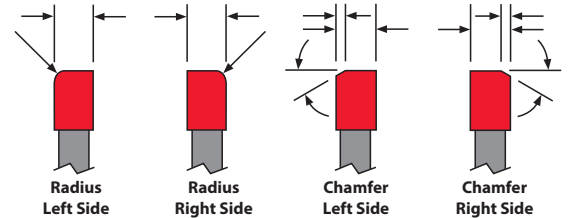
#### Radius Notes

- Maximum radius on one side is .2656"
- Full radius and maximum radius on both sides is 1/2 the width of the cutter
- A non-tangent radii must be quoted

#### Chamfer Notes

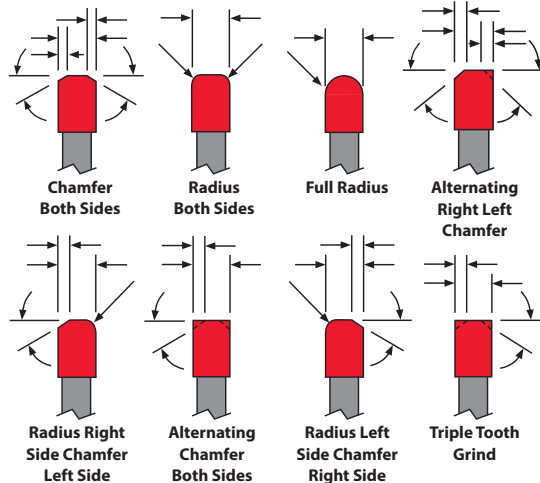
- Chamfer Angles can range from 0° to 45°
- Chamfer is measured off of the OD
- Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD
- Chamfer Angle Tolerance: +/- 1/2°
- Chamfers greater than 45° must be quoted

Specify side for radius or chamfer



## Corner Radius or Chamfer on BOTH Sides OR a Full Radius

Alternating Chamfers add 5%



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH FINISHED WITH RADII, CHAMFERS OR COMBO					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
5	0.0704 - 0.0859	255942R2	.0691	\$621.15	\$565.35	\$557.50	\$553.45	\$551.00	\$549.75
5	0.0860 - 0.1015	255944R2	.0848	550.85	494.95	487.20	483.15	480.70	479.45
5	0.1016 - 0.1171	255946R2	.1004	593.10	537.25	529.45	525.40	523.05	521.70
5	0.1172 - 0.1406	255948R2	.1160	538.50	482.65	474.90	470.75	468.45	467.10
5	0.1407 - 0.1718	255950R2	.1562	552.15	496.30	488.55	484.50	482.10	480.70
5	0.1719 - 0.2031	255952R2	.1875	575.30	519.50	511.60	507.65	505.20	503.95
5	0.2032 - 0.2343	255954R2	.2188	598.20	542.60	534.70	530.70	528.30	527.00
5	0.2344 - 0.2812	255956R2	.2500	621.25	565.40	557.55	553.60	551.30	549.95
5	0.2813 - 0.3437	255958R2	.3125	660.25	604.50	596.75	592.60	590.15	588.90
5	0.3438 - 0.4062	255960R2	.3750	701.85	645.95	638.25	634.10	631.70	630.50
5	0.4063 - 0.4687	255962R2	.4375	734.35	678.40	670.55	666.65	664.20	662.90
5	0.4688 - 0.5312	255964R2	.5000	766.70	710.90	703.15	699.15	696.60	695.30



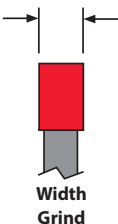
# 6" CARBIDE TIPPED MILLING CUTTERS

## Width grinds between .0704" and .5312"

### TYPE 2559 - MULTI-PURPOSE

Cutter Notes (All cutters on page)

- 18 Teeth
- C-2(m) Carbide
- 5° Positive Radial Rake
- Width Tolerance: +.001"/-.000"
- OD tolerance: +.0313"/-.000"
- 1" Arbor hole +.001"/-.000"
- ANSI standard keyway dimensions
- Add 5% to grind the hub width thinner
- Add 5% to match OD's on cutter sets within .001"
- Not designed to be used on heat treated materials greater than 363 Brinell (39RC)



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED TO DECIMAL SIZE					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
6	0.0704-0.0859	255966D	.0681	\$645.25	\$611.60	\$605.55	\$602.40	\$600.45	\$556.25
6	0.0860-0.1015	255968D	.0838	601.20	567.60	561.50	558.40	556.40	512.25
6	0.1016-0.1171	255970D	.0994	647.15	613.60	607.40	604.25	602.40	558.15
6	0.1172-0.1406	255972D	.1150	615.75	582.25	576.20	573.00	571.10	526.95
6	0.1407-0.1718	255974D	.1562	638.75	605.35	599.25	596.05	594.15	549.95
6	0.1719-0.2031	255976D	.1875	661.90	628.25	622.35	618.95	617.05	572.90
6	0.2032-0.2343	255978D	.2188	684.90	651.30	645.25	642.05	640.10	596.00
6	0.2344-0.2812	255980D	.2500	716.70	683.20	677.00	673.85	672.05	627.75
6	0.2813-0.3437	255982D	.3125	744.80	711.20	705.15	701.95	700.10	655.85
6	0.3438-0.4062	255984D	.3750	770.05	736.35	730.35	727.15	725.25	681.00
6	0.4063-0.4687	255990D	.4375	802.40	768.80	762.80	759.55	757.65	713.45
6	0.4688-0.5312	255992D	.5000	834.85	801.30	795.20	792.05	790.15	745.90

## Corner Radius or Chamfer on ONE Side

TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH - FINISHED WITH RADIUS OR CHAMFER					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
6	0.0704-0.0859	255966R1	.0681	\$665.80	\$617.50	\$610.70	\$607.30	\$605.10	\$604.00
6	0.0860-0.1015	255968R1	.0838	621.80	573.45	566.70	563.25	561.15	560.05
6	0.1016-0.1171	255970R1	.0994	667.80	619.40	612.60	609.10	606.95	605.90
6	0.1172-0.1406	255972R1	.1150	636.50	588.10	581.30	577.80	575.75	574.60
6	0.1407-0.1718	255974R1	.1562	659.55	611.25	604.35	601.00	598.80	597.65
6	0.1719-0.2031	255976R1	.1875	682.55	634.20	627.45	623.90	621.80	620.75
6	0.2032-0.2343	255978R1	.2188	705.55	657.25	650.55	646.85	644.90	643.75
6	0.2344-0.2812	255980R1	.2500	737.40	689.10	682.30	678.85	676.65	675.50
6	0.2813-0.3437	255982R1	.3125	765.45	717.10	710.40	706.90	704.75	703.55
6	0.3438-0.4062	255984R1	.3750	790.60	742.35	735.55	732.00	729.95	728.85
6	0.4063-0.4687	255990R1	.4375	823.05	774.85	768.05	764.55	762.35	761.30
6	0.4688-0.5312	255992R1	.5000	855.60	807.20	800.40	796.95	794.90	793.65

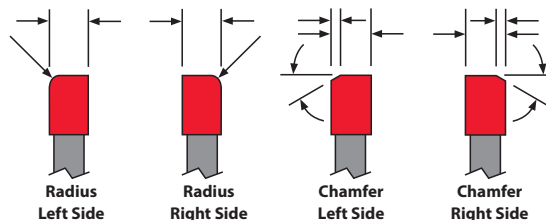
### Radius Notes

- Maximum radius on one side is .2656"
- Full radius and maximum radius on both sides is 1/2 the width of the cutter
- A non-tangent radii must be quoted

### Chamfer Notes

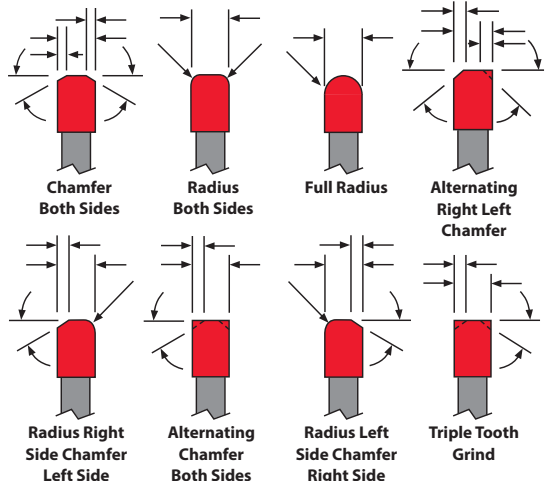
- Chamfer Angles can range from 0° to 45°
- Chamfer is measured off of the OD
- Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD
- Chamfer Angle Tolerance: +/- 1/2°
- Chamfers greater than 45° must be quoted

Specify side for radius or chamfer



## Corner Radius or Chamfer on BOTH Sides OR a Full Radius

Alternating Chamfers add 5%



TOOL DIAM.	DECIMAL SIZE WIDTH RANGE	1" ARBOR EDP NO.	HUB WIDTH	PRICE EACH FINISHED WITH RADIUS, CHAMFERS OR COMBO					
				1 PC.	2 PC.	3 PC.	4 PC.	5 PC.	6 PC.
6	0.0704-0.0859	255966R2	.0681	\$687.00	\$629.30	\$621.25	\$617.05	\$614.50	\$613.10
6	0.0860-0.1015	255968R2	.0838	642.90	585.30	577.20	573.05	570.55	569.10
6	0.1016-0.1171	255970R2	.0994	688.95	631.20	623.10	618.95	616.40	615.10
6	0.1172-0.1406	255972R2	.1150	657.65	600.00	591.85	587.70	585.20	583.80
6	0.1407-0.1718	255974R2	.1562	680.65	622.95	614.90	610.70	608.20	606.85
6	0.1719-0.2031	255976R2	.1875	703.55	645.95	637.90	633.80	631.30	629.90
6	0.2032-0.2343	255978R2	.2188	726.60	669.05	660.95	656.80	654.25	652.90
6	0.2344-0.2812	255980R2	.2500	758.50	700.80	692.75	688.55	686.00	684.75
6	0.2813-0.3437	255982R2	.3125	786.50	728.95	720.85	716.70	714.15	712.80
6	0.3438-0.4062	255984R2	.3750	811.65	754.10	746.05	741.90	739.35	738.05
6	0.4063-0.4687	255990R2	.4375	844.20	786.50	778.50	774.35	771.80	770.45
6	0.4688-0.5312	255992R2	.5000	876.65	819.00	810.95	806.85	804.35	802.95





# BRAZED SINGLE POINT TOOLS

CARBIDE TIPPED - 883/PREMIUM C2 FOR CAST IRON & NON-FERROUS  
370/PREMIUM C5-C6 FOR STEEL

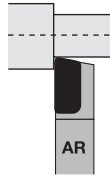
FINISH GROUND - READY FOR USE



**0° SIDE CUTTING EDGE ANGLE**  
For machining to a square shoulder

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
AR-4	211104	\$12.35	211204	\$9.00	1/4	1/4	2	12
AR-5	211105	10.90	211205	9.60	5/16	5/16	2 1/4	12
AR-6	211106	11.10	211206	9.75	3/8	3/8	2 1/2	12
AR-8	211108	10.25	211208	10.25	1/2	1/2	3 1/2	12
AR-10	211110	15.25	211210	14.10	5/8	5/8	4	12
AR-12	211112	19.55	211212	17.50	3/4	3/4	4 1/2	12
AR-16	211116	35.85	211216	34.95	1	1	7	6

\*Some sizes not available in premium grade carbide. Prices subject to change.



For turning to a square shoulder



**0° SIDE CUTTING EDGE ANGLE**  
For machining to a square shoulder

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
AL-4	211404	\$12.35	211504	\$9.00	1/4	1/4	2	12
AL-5	211405	10.90	211505	9.60	5/16	5/16	2 1/4	12
AL-6	211406	11.10	211506	9.75	3/8	3/8	2 1/2	12
AL-8	211408	10.25	211508	10.25	1/2	1/2	3 1/2	12
AL-10	211410	14.40	211510	14.10	5/8	5/8	4	12
AL-12	211412	18.65	211512	18.45	3/4	3/4	4 1/2	12
AL-16	211416	36.35	211516	36.35	1	1	7	6

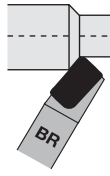
\*Some sizes not available in premium grade carbide. Prices subject to change.



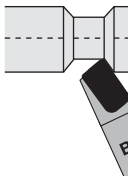
**15° SIDE CUTTING EDGE ANGLE**  
For interrupted or irregular cuts

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
BR-4	212104	\$12.35	212204	\$9.00	1/4	1/4	2	12
BR-5	212105	10.90	212205	9.60	5/16	5/16	2 1/4	12
BR-6	212106	11.10	212206	9.75	3/8	3/8	2 1/2	12
BR-7	212107	12.00	212207	10.65	7/16	7/16	3	12
BR-8	212108	10.25	212208	10.25	1/2	1/2	3 1/2	12
BR-10	212110	15.25	212210	14.10	5/8	5/8	4	12
BR-12	212112	19.55	212212	17.50	3/4	3/4	4 1/2	12
BR-16	212116	35.85	212216	34.95	1	1	7	6

\*Some sizes not available in premium grade carbide. Prices subject to change.



For turning where square shoulder is not required



**15° SIDE CUTTING EDGE ANGLE**  
For interrupted or irregular cuts

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
BL-4	212404	\$12.35	212504	\$9.00	1/4	1/4	2	12
BL-5	212405	10.90	212505	9.60	5/16	5/16	2 1/4	12
BL-6	212406	11.10	212506	9.75	3/8	3/8	2 1/2	12
BL-7	212407	12.00	212507	10.65	7/16	7/16	3	12
BL-8	212408	10.25	212508	10.25	1/2	1/2	3 1/2	12
BL-10	212410	14.40	212510	14.10	5/8	5/8	4	12
BL-12	212412	18.65	212512	18.45	3/4	3/4	4 1/2	12
BL-16	212416	36.35	212516	36.35	1	1	7	6

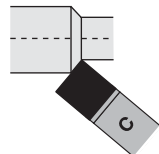
\*Some sizes not available in premium grade carbide. Prices subject to change.



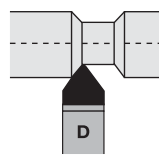
**0° SQUARE NOSE**  
No nose radius

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
C-4	213704	\$8.15	213804	\$8.15	1/4	1/4	2	12
C-5	213705	8.95	213805	8.65	5/16	5/16	2 1/4	12
C-6	213706	11.60	213806	9.60	3/8	3/8	2 1/2	12
C-7	213707	8.85	213807	12.25	7/16	7/16	3	12
C-8	213708	14.25	213808	13.20	1/2	1/2	3 1/2	12
C-10	213710	16.05	213810	17.50	5/8	5/8	4	12
C-12	213712	22.15	213812	25.10	3/4	3/4	4 1/2	12
C-16	213716	45.95	213816	44.10	1	1	7	6

\*Some sizes not available in premium grade carbide. Prices subject to change.



For undercutting and chamfering



For chamfering



**40° SIDE CUTTING EDGE ANGLE**  
80° pointed nose

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
D-4	214704	\$7.55	214804	\$7.55	1/4	1/4	2	12
D-5	214705	8.75	214805	9.00	5/16	5/16	2 1/4	12
D-6	214706	8.95	214806	9.65	3/8	3/8	2 1/2	12
D-7	214707	12.25	-	-	7/16	7/16	3	12
D-8	214708	11.75	214808	12.45	1/2	1/2	3 1/2	12
D-10	214710	16.45	214810	18.25	5/8	5/8	4	12
D-12	214712	23.55	214812	20.70	3/4	3/4	4 1/2	12
D-16	214716	35.00	214816	36.15	1	1	7	6

\*Some sizes not available in premium grade carbide. Prices subject to change.



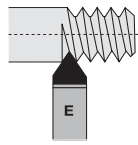
# BRAZED SINGLE POINT TOOLS

CARBIDE TIPPED - 883/PREMIUM C2 FOR CAST IRON & NON-FERROUS  
370/PREMIUM C5-C6 FOR STEEL

## FINISH GROUND - READY FOR USE

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
E-4	215704	\$7.55	215804	\$7.55	1/4	1/4	2	12
E-5	215705	8.25	215805	8.25	5/16	5/16	2 1/4	12
E-6	215706	8.60	215806	8.35	3/8	3/8	2 1/2	12
E-7	215707	13.30	215807	15.95	7/16	7/16	3	12
E-8	215708	19.70	215808	10.60	1/2	1/2	3 1/2	12
E-10	215710	16.35	215810	14.85	5/8	5/8	4	12
E-12	215712	20.30	215812	20.55	3/4	3/4	4 1/2	12
E-16	215716	35.60	215816	34.25	1	1	7	6

\*Some sizes not available in premium grade carbide. Prices subject to change.



For cutting threads



**60° INCLUDED ANGLE;  
30° SIDE CUTTING EDGE ANGLE**

For threading, chamfering, notching, or undercutting

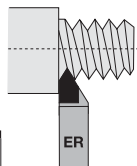


**30° SIDE CUTTING EDGE ANGLE**

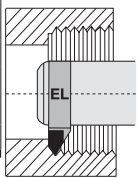
Offset for threading or boring

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
ER-4	215104	\$9.40	215204	\$7.55	1/4	1/4	2	12
ER-5	215105	9.40	215205	8.40	5/16	5/16	2 1/4	12
ER-6	215106	9.55	215206	8.65	3/8	3/8	2 1/2	12
ER-8	215108	16.85	215208	16.85	1/2	1/2	3 1/2	12
ER-10	215110	18.35	215210	18.35	5/8	5/8	4	12
ER-12	215112	19.85	215212	21.55	3/4	3/4	4 1/2	12

\*Some sizes not available in premium grade carbide. Prices subject to change.



For cutting threads



For bore threading in a 90° bar



**30° SIDE CUTTING EDGE ANGLE**

Offset for threading or boring

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
EL-4	215404	\$10.80	215504	\$7.55	1/4	1/4	2	12
EL-5	215405	10.80	215505	10.35	5/16	5/16	2 1/4	12
EL-6	215406	10.80	215506	10.50	3/8	3/8	2 1/2	12
EL-8	215408	16.85	215508	18.50	1/2	1/2	3 1/2	12
EL-10	215410	18.35	215510	20.25	5/8	5/8	4	12
EL-12	215412	19.85	215512	21.55	3/4	3/4	4 1/2	12

\*Some sizes not available in premium grade carbide. Prices subject to change.

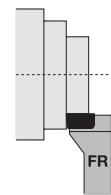


**0° END CUTTING EDGE ANGLE**

Offset for facing to a square shoulder or close to chuck jaws

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
FR-8	216108	\$14.15	216208	\$13.95	1/2	1/2	3 1/2	12
FR-10	216110	20.50	216210	19.50	5/8	5/8	4	12
FR-12	216112	26.50	216212	26.15	3/4	3/4	4 1/2	6
FR-16	216116	55.40	216216	58.30	1	1	7	4

\*Some sizes not available in premium grade carbide. Prices subject to change.



For facing to a square shoulder



**0° END CUTTING EDGE ANGLE**

Offset for facing to a square shoulder or close to chuck jaws

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
FL-8	216408	\$14.25	216508	\$13.55	1/2	1/2	3 1/2	12
FL-10	216410	21.40	216510	19.50	5/8	5/8	4	12
FL-12	216412	27.50	216512	24.30	3/4	3/4	4 1/2	6
FL-16	216416	51.70	216516	58.30	1	1	7	4

\*Some sizes not available in premium grade carbide. Prices subject to change.

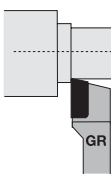


**0° SIDE CUTTING EDGE ANGLE**

Offset for facing or turning to a square shoulder or close to chuck jaws

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
GR-8	217108	\$14.25	217208	\$13.55	1/2	1/2	3 1/2	12
GR-10	217110	21.40	217210	19.50	5/8	5/8	4	12
GR-12	217112	27.50	217212	24.30	3/4	3/4	4 1/2	6
GR-16	217116	57.90	217216	58.30	1	1	7	4

\*Some sizes not available in premium grade carbide. Prices subject to change.



For turning to a square shoulder



**0° SIDE CUTTING EDGE ANGLE**

Offset for facing or turning to a square shoulder or close to chuck jaws

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
GL-8	217408	\$14.15	217508	\$13.95	1/2	1/2	3 1/2	12
GL-10	217410	20.50	217510	19.50	5/8	5/8	4	12
GL-12	217412	26.50	217512	26.15	3/4	3/4	4 1/2	6
GL-16	217416	56.15	217516	58.30	1	1	7	4

\*Some sizes not available in premium grade carbide. Prices subject to change.



# BRAZED CUT-OFF TOOLS

CARBIDE TIPPED - 883/PREMIUM C2 FOR CAST IRON & NON-FERROUS  
370/PREMIUM C5-C6 FOR STEEL



**CT**

## STANDARD CUT-OFF TOOL

For stock cut-off of solid bars  
Finish ground - ready for use

TOOL STYLE	CUT-OFF WIDTH	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS		
		EDP NO.	PRICE	EDP NO.	PRICE	W	H	L
CT-111	1/8	210111	\$18.30	210211	\$19.05	1/2	1	5
CT-122	3/16	210122	18.85	210222	19.45	1/2	1	5
CT-121	1/4	210133	19.50	210233	20.15	1/2	1	5
CT-120	5/16	210144	19.45	210244	20.15	1/2	1	5
CT-130	3/8	210155	23.55	210255	25.05	5/8	1 1/4	5
CT-140	3/4	210166	26.10	210266	27.00	3/4	1 1/2	6

\*Some sizes not available in premium grade carbide.  
Prices subject to change.

Standard packaging quantity is 6



**CTL**

## STANDARD CUT-OFF TOOL

For stock cut-off of solid bars  
Finish ground - ready for use

TOOL STYLE	CUT-OFF WIDTH	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS		
		EDP NO.	PRICE	EDP NO.	PRICE	W	H	L
CTL-111	1/8	210411	\$18.30	210511	\$19.05	1/2	1	5
CTL-122	3/16	210422	18.85	210522	19.45	1/2	1	5
CTL-121	1/4	210433	19.50	210533	20.15	1/2	1	5
CTL-120	5/16	210444	19.45	210544	20.15	1/2	1	5
CTL-130	3/8	210455	23.55	210555	25.05	5/8	1 1/4	5
CTL-140	3/4	210466	26.10	210566	27.00	3/4	1 1/2	6

\*Some sizes not available in premium grade carbide.  
Prices subject to change.

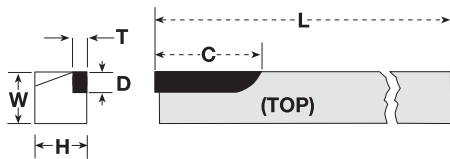
Standard packaging quantity is 6



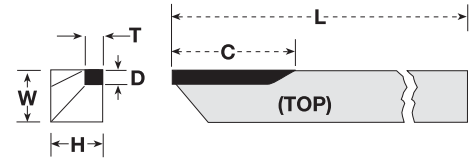
**SA-T**



**SA-C**



H = Tool Height  
W = Tool Width  
L = Overall Tool Length  
T = Carbide Thickness  
D = Cut-off Width  
C = Carbide Length



## S.A. SERIES SWISS AUTOMATIC TOOL

Requires finish grind for cut-off, forming or turning

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TOOL STYLE	C2 CARBIDE*		SHANK DIMENSIONS			CARBIDE DIMENSIONS		
	EDP NO.	PRICE	"W"	"H"	"L"	"T"	"D"	"C"
SA6T	219901	\$16.60	1/4	1/4	6	3/32	1/8	1 1/4
SA7T	219902	17.75	5/32	5/32	6	3/32	1/8	1 1/4
SA8T	219903	19.40	5/16	5/16	6	3/32	3/16	1 1/4
SA9T	219904	20.55	3/8	3/8	6	3/32	3/16	1 1/4
SA10T	219905	22.25	13/32	13/32	6	3/32	3/16	1 1/4
SA11T	219906	23.05	7/16	7/16	6	1/8	1/4	1
SA11.5T	219907	23.20	15/32	15/32	6	1/8	1/4	1
SA12T	219908	24.60	1/2	1/2	6	1/8	1/4	1

\*Prices subject to change.

Standard packaging quantity is 10

TOOL STYLE	C2 CARBIDE*		SHANK DIMENSIONS			CARBIDE DIMENSIONS		
	EDP NO.	PRICE	"W"	"H"	"L"	"T"	"D"	"C"
SA6C	219921	\$16.60	1/4	1/4	6	1/8	3/32	1 1/4
SA7C	219922	17.75	5/32	5/32	6	1/8	3/32	1 1/4
SA8C	219923	19.40	5/16	5/16	6	1/8	3/32	1 1/4
SA9C	219924	20.55	3/8	3/8	6	1/8	3/32	1 1/4
SA10C	219925	22.25	13/32	13/32	6	1/8	3/32	1 1/4
SA11C	219926	23.05	7/16	7/16	6	3/32	1/8	1 1/4
SA11.5C	219927	23.20	15/32	15/32	6	3/32	1/8	1 1/4
SA12C	219928	24.60	1/2	1/2	6	3/32	1/8	1 1/4

\*Prices subject to change.

Standard packaging quantity is 10

MADE IN USA



# ROCK RIVER TOOL WILL GIVE YOU –

## CONSISTENT HIGH QUALITY TOOLS

- Critical tool dimensions 100% inspected.
- Modern quality assurance system maintains consistent high quality tool production.
- Optimum performance tool geometries & carbide grades.
- Close tolerance tools will greatly reduce wear rates and maintain machined part quality.

## SERVICE – PROMPT DELIVERY

- Most orders shipped same day received.
- Very large stock tool inventory reduces need for costly user & distributor inventories.
- No minimum orders.

## LOWER TOOLING COST

- Improved cutting tool performance with much higher cutting speeds & feeds – far shorter machining cycle costs.
- Dramatic tool wear reduction results in much longer production runs with fewer tool changes & set-up scrap.
- Optional modifications of stocked standard tools eliminates need for costly special tools.
- Optional modifications reduce lead time for special tooling needs.

## LIMITED WARRANTY

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**WARNING** — Because cutting tools may shatter or break, government regulations require the use of safety glasses and other safety equipment at all times in the vicinity of cutting tool use. Grinding of solid carbide or carbide tipped tools will produce carbide and braze dust that may be hazardous to your health. Use adequate ventilation and read this applicable "Material Safety Data Sheets." For free "Material Safety Data Sheets", email Rock River Tool, Inc. at [sales@rockrivertool.com](mailto:sales@rockrivertool.com).

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