



**ROCK RIVER TOOL INC.**

**STANDARD AND SPECIAL  
CARBIDE TIPPED CUTTING TOOLS**



**MADE IN USA**



**PRICED CATALOG  
2016**

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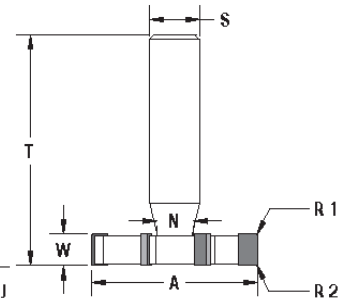
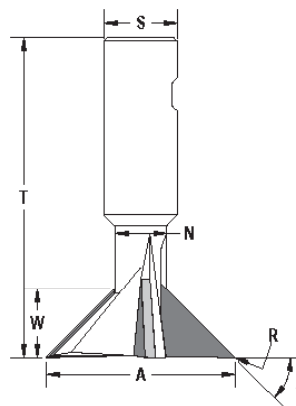
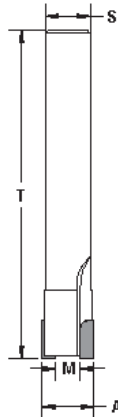
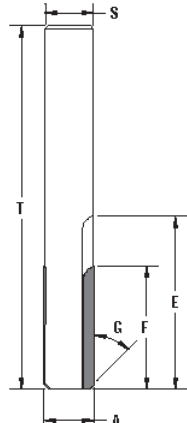
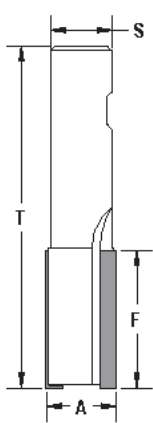






# SPECIAL TOOLS QUOTE FORM

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



END MILL

REAMER

COUNTERBORE

DOVETAIL

KEYSEAT

Carbide Tipped  Solid Carbide

**BODY OF TOOL**

T= \_\_\_\_\_ Overall Length

S= \_\_\_\_\_ Shank Diameter

A= \_\_\_\_\_ Major Diameter

**FLUTES**

E= \_\_\_\_\_ Flute Length

F= \_\_\_\_\_ Carbide Length

G= \_\_\_\_\_ ° Chamfer Angle

Straight Flutes  
Number of Flutes \_\_\_\_\_

Right Hand Cutting  
 Right Hand Spiral \_\_\_\_\_ °

Left Hand Cutting  
 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

**MILLING CUTTERS & SAWS**

D= \_\_\_\_\_ Cutter Diameter

W= \_\_\_\_\_ Cutter Width

A= \_\_\_\_\_ Arbor Hole Diam.

N= \_\_\_\_\_ # of Teeth

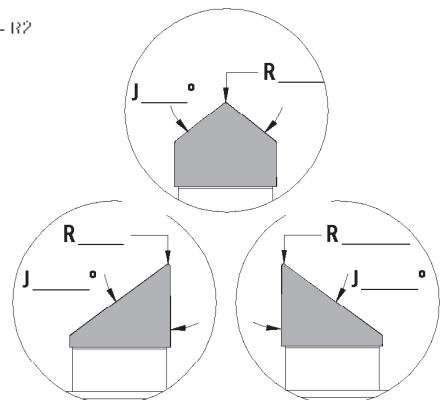
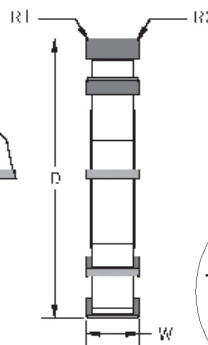
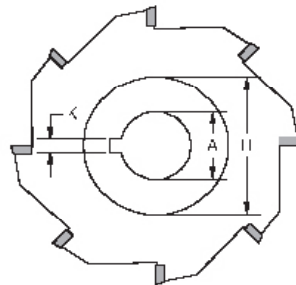
H= \_\_\_\_\_ Hub Diameter

K= \_\_\_\_\_ Keyway Size

R1= \_\_\_\_\_ Radius/Chamfer

R2= \_\_\_\_\_ Radius/Chamfer

Straight Tooth  
 Straight Stagger  
 Herringbone Stagger



MILLING CUTTER

SLITTING SAW

ANGLE CUTTER  
(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

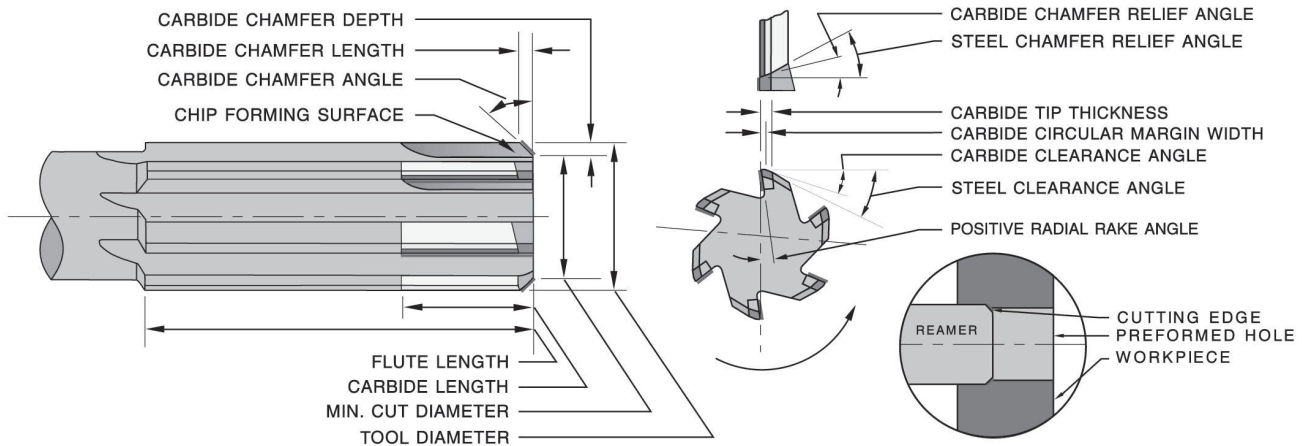
- The reamer is used to finish machine a previously formed hole to an exact diameter with a smooth finish. It should **not** be used to significantly enlarge a hole (max. 5% – depending on material and hardness).
- Carbide tipped reamers are especially appropriate for close tolerance reaming. Because 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
Malleable Soft	110-240	Drill	125-190	.002	.005	.009	.011	.012	.016	
		Ream	60-120	.004	.006	.011	.013	.014	.018	
Malleable Hard	250-320	Drill	100-150	.002	.004	.007	.010	.012	.016	
		Ream	45-70	.004	.006	.010	.013	.015	.025	
Nodular	120-275	Drill	200-275	.002	.004	.005	.010	.012	.015	
		Ream	40-60	.004	.006	.010	.013	.015	.020	
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	
PH	150-440	Drill	-	-	-	-	-	-		
		Ream	35-70	.003	.004	.005	.007	.008	.010	
High Temp. -	Nickel Base	140-300	Drill	-	-	-	-	-	-	
			Ream	15-85	.003	.005	.006	.007	.008	.012
	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**

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**

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**

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.

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	-	\$21.65	267104	-	\$21.65
5/64*	.0781	-	1 1/2	267005	-	21.65	267105	-	21.65
3/32*	.0938	-	2	267006	-	23.80	267106	-	23.80
7/64*	.1094	-	2	267007	-	23.80	267107	-	23.80
1/8*	.1250	-	2	267008	-	24.50	267108	-	24.50
9/64*	.1406	-	2	267009	-	24.50	267109	-	24.50
5/32*	.1562	-	2	267010	-	25.80	267110	-	25.80
11/64*	.1719	-	2 3/8	267011	-	25.80	267111	-	25.80
3/16	.1875	1 1/2	3 1/2	267012	267212	23.40	267112	267312	23.40
13/64	.2031	1 1/2	3 1/2	267013	267213	23.40	267113	267313	23.40
7/32	.2188	1 3/4	3 3/4	267014	267214	24.15	267114	267314	24.15
15/64	.2344	1 3/4	3 3/4	267015	267215	24.95	267115	267315	24.95
1/4	.2500	2	4	267016	267216	24.95	267116	267316	24.95
17/64	.2656	2	4	267017	267217	26.35	267117	267317	26.35
9/32	.2812	2 1/4	4 1/4	267018	267218	26.35	267118	267318	26.35
19/64	.2969	2 1/4	4 1/4	267019	267219	27.60	267119	267319	27.60
5/16	.3125	2 1/2	4 1/2	267020	267220	27.60	267120	267320	27.60
21/64	.3281	2 1/2	4 1/2	267021	267221	29.40	267121	267321	29.40
11/32	.3438	2 3/4	4 3/4	267022	267222	29.40	267122	267322	29.40
23/64	.3594	2 3/4	4 3/4	267023	267223	31.60	267123	267323	31.60
3/8	.3750	3	5	267024	267224	31.60	267124	267324	31.60
25/64	.3906	3	5	267025	267225	35.65	267125	267325	35.65
13/32	.4062	3	5 1/4	267026	267226	37.00	267126	267326	37.00
27/64	.4219	3	5 1/4	267027	267227	39.95	267127	267327	39.95
7/16	.4375	3	5 1/2	267028	267228	42.95	267128	267328	42.95
29/64	.4531	3	5 1/2	267029	267229	45.05	267129	267329	45.05
15/32	.4688	3 1/4	5 3/4	267030	267230	47.15	267130	267330	47.15
31/64	.4844	3 1/4	5 3/4	267031	267231	57.20	267131	267331	57.20
1/2	.5000	3 1/2	6	267032	267232	55.35	267132	267332	55.35
17/32	.5312	3 1/2	6	267034	267234	63.40	267134	267334	63.40
9/16	.5625	3 1/2	6	267036	267236	65.60	267136	267336	65.60
19/32	.5938	4	7	267038	267238	69.45	267138	267338	69.45
5/8	.6250	4	7	267040	267240	71.55	267140	267340	71.55
21/32	.6562	4 1/2	7 1/2	267042	267242	76.60	267142	267342	76.60
11/16	.6875	4 1/2	7 1/2	267044	267244	78.65	267144	267344	78.65
23/32	.7188	4 3/4	8	267046	267246	82.40	267146	267346	82.40
3/4	.7500	4 3/4	8	267048	267248	84.65	267148	267348	84.65
25/32	.7812	4 3/4	8	267050	267250	163.50	267150	267350	163.50
13/16	.8125	4 3/4	8	267052	267252	151.80	267152	267352	151.80
7/8	.8750	4 3/4	8	267056	267256	154.90	267156	267356	154.90
15/16	.9375	4 3/4	8	267060	267260	172.55	267160	267360	172.55
1	1.0000	4 3/4	8	267064	267264	183.05	267164	267364	183.05

\*Solid carbide full length

### METRIC DIAMETERS

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	\$23.90
5.5	.2165	45	1 3/4	95	3 3/4	2670055	2672055	26.60
6.0	.2362	51	2	102	4	2670060	2672060	26.80
6.5	.2559	51	2	102	4	2670065	2672065	28.35
7.0	.2756	57	2 1/4	108	4 1/4	2670070	2672070	28.35
7.5	.2953	57	2 1/4	108	4 1/4	2670075	2672075	29.60
8.0	.3150	64	2 1/2	114	4 1/2	2670080	2672080	32.00
8.5	.3346	70	2 3/4	121	4 3/4	2670085	2672085	32.00
9.0	.3543	70	2 3/4	121	4 3/4	2670090	2672090	34.05
9.5	.3740	76	3	127	5	2670095	2672095	32.30
10.0	.3937	76	3	133	5 1/4	2670100	2672100	39.75
10.5	.4134	76	3	133	5 1/4	2670105	2672105	46.10
11.0	.4331	76	3	140	5 1/2	2670110	2672110	64.85
11.5	.4528	76	3	140	5 1/2	2670115	2672115	48.55
12.0	.4724	83	3 1/4	146	5 3/4	2670120	2672120	59.30
12.5	.4921	89	3 1/2	152	6	2670125	2672125	59.30
13.0	.5118	89	3 1/2	152	6	2670130	2672130	68.05
13.5	.5315	89	3 1/2	152	6	2670135	2672135	68.05
14.0	.5512	89	3 1/2	152	6	2670140	2672140	70.45



# HARD STEEL DIE DRILLS

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



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

Cam relieved 120° point.  
Carbide tips high temperature brazed to tool steel bodies.  
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.

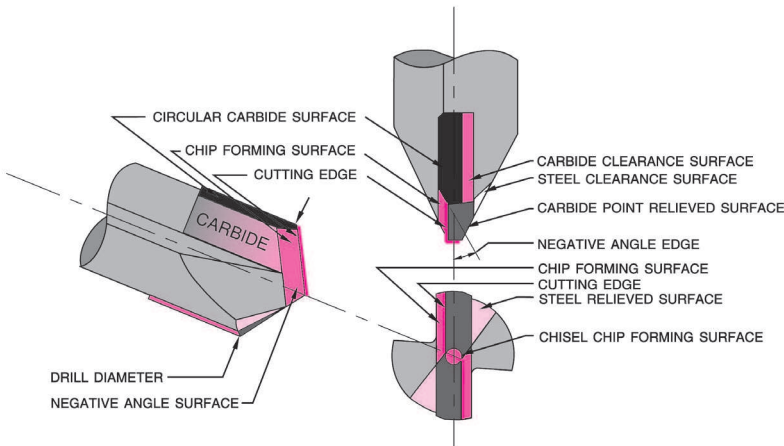
TOOL DIAMETER		OVER-ALL LENGTH	120° POINT	140° POINT	BOTH TYPES PRICE
FRAC.	DECIMAL		TYPE 2674 EDP NO.	TYPE 2675 EDP NO.	
3/32*	.0938	2	267406	267506	\$15.15
7/64*	.1094	2	267407	267507	15.45
1/8*	.1250	2	267408	267508	15.45
9/64*	.1406	2	267409	267509	16.75
5/32*	.1562	2	267410	267510	19.25
11/64*	.1719	3	267411	267511	20.55
3/16*	.1875	3	267412	267512	24.35
13/64*	.2031	3	267413	267513	27.40
7/32	.2188	3 1/2	267414	267514	27.70
15/64	.2344	3 1/2	267415	267515	28.15
1/4	.2500	4	267416	267516	28.95
17/64	.2656	4	267417	267517	29.40
9/32	.2812	4	267418	267518	30.30
19/64	.2969	4	267419	267519	30.80
5/16	.3125	4	267420	267520	31.60
21/64	.3281	4	267421	267521	33.20
11/32	.3438	4	267422	267522	34.30
23/64	.3594	4	267423	267523	35.40
3/8	.3750	4	267424	267524	36.55
25/64	.3906	4	267425	267525	37.45
13/32	.4062	4	267426	267526	42.50
27/64	.4219	4	267427	267527	44.10
7/16	.4375	4 1/2	267428	267528	49.45
29/64	.4531	4 1/2	267429	267529	51.55
15/32	.4688	4 1/2	267430	267530	53.85
31/64	.4844	4 1/2	267431	267531	59.15
1/2	.5000	5	267432	267532	63.95

\*Solid carbide full length

## SELECTING THE BEST DIE DRILL FOR YOUR NEEDS –

### TYPE 2670 & 2671

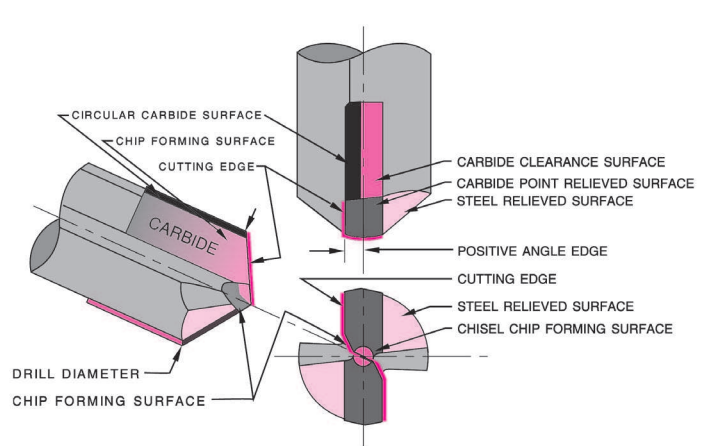
Negative angle cutting edge die drill or strongest edge, but higher spindle power required.



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.

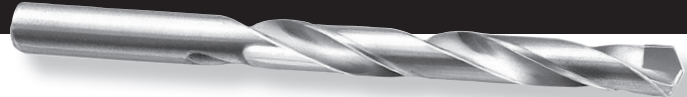


POSITIVE ANGLE CUTTING EDGE DIE DRILL



# TWIST DRILLS - CARBIDE TIPPED

## JOBBER LENGTH



**TYPE 2600 - JOBBERS LENGTH - 118° POINT**  
 For drilling cast iron, non-ferrous metals and non-metals.

**TYPE 2601 - JOBBERS LENGTH - 135° SPLIT POINT**  
 For drilling abrasive and tough materials.  
 Carbide tips brazed to hardened tool steel bodies.  
 Smooth flutes for effective chip flow. Precision ground to ensure concentricity of tip & body.

**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"

Thru 1/2" Dia. Overall Length Tolerance +1/4", -1/8"

TOOL DIAMETER			LENGTH		118° POINT		135° POINT	
FRAC.	DEC.	WIRE LETTER	FLUTE	OVER-ALL	TYPE 2600 EDP NO.	PRICE	TYPE 2601 EDP NO.	PRICE
	.0980	40*	1	2	260240	\$14.40	-	-
	.0995	39*	1 1/4	2 1/4	260239	14.40	-	-
	.1015	38*	1 1/4	2 1/4	260238	14.40	-	-
	.1040	37*	1 1/4	2 1/4	260237	14.40	-	-
7/64*	.1065	36*	1 1/4	2 1/4	260236	14.40	-	-
	.1094		1 1/4	2 1/4	260007	14.40	-	-
	.1100	35*	1 1/4	2 1/4	260235	14.40	-	-
	.1110	34*	1 1/4	2 1/4	260234	14.40	-	-
1/8	.1130	33*	1 1/4	2 1/4	260233	14.40	-	-
	.1160	32	1 5/8	2 3/4	260232	11.60	260332	\$13.60
	.1200	31	1 5/8	2 3/4	260231	10.45	260331	12.20
	.1250		1 5/8	2 3/4	260008	10.75	260108	12.55
9/64	.1285	30	1 5/8	2 3/4	260230	10.95	260330	12.70
	.1360	29	1 3/4	2 7/8	260229	11.35	260329	13.10
	.1405	28	1 3/4	2 7/8	260228	11.45	260328	13.35
	.1406		1 3/4	2 7/8	260009	11.60	260109	13.55
	.1440	27	1 7/8	3	260227	11.75	260327	13.65
	.1470	26	1 7/8	3	260226	10.90	260326	12.70
	.1495	25	1 7/8	3	260225	10.90	260325	12.70
	.1520	24	2	3 1/8	260224	11.75	260324	13.65
5/32	.1540	23	2	3 1/8	260223	11.45	260323	13.35
	.1562		2	3 1/8	260010	11.40	260110	13.35
	.1570	22	2	3 1/8	260222	12.65	260322	14.75
	.1590	21	2 1/8	3 1/4	260221	12.10	260321	14.10
11/64	.1610	20	2 1/8	3 1/4	260220	12.45	260320	14.40
	.1660	19	2 1/8	3 1/4	260219	12.45	260319	14.40
	.1695	18	2 1/8	3 1/4	260218	12.45	260318	14.40
	.1719		2 1/8	3 1/4	260011	12.45	260111	14.40
	.1730	17	2 3/16	3 3/8	260217	12.45	260317	14.40
	.1770	16	2 3/16	3 3/8	260216	12.10	260316	14.10
	.1800	15	2 3/16	3 3/8	260215	12.65	260315	14.75
	.1820	14	2 3/16	3 3/8	260214	12.10	260314	14.10
3/16	.1850	13	2 5/16	3 1/2	260213	13.35	260313	14.10
	.1875		2 5/16	3 1/2	260012	12.10	260112	14.10
	.1890	12	2 5/16	3 1/2	260212	13.95	260312	14.75
	.1910	11	2 5/16	3 1/2	260211	12.90	260311	14.90
	.1935	10	2 7/16	3 5/8	260210	12.65	260310	14.75
	.1960	9	2 7/16	3 5/8	260209	12.90	260309	14.90
	.1990	8	2 7/16	3 5/8	260208	12.90	260308	14.90
	.2010	7	2 7/16	3 5/8	260207	12.90	260307	14.90
13/64	.2031		2 7/16	3 5/8	260013	13.30	260113	15.35
	.2040	6	2 1/2	3 3/4	260206	13.15	260306	15.30
	.2055	5	2 1/2	3 3/4	260205	13.30	260305	14.90
	.2090	4	2 1/2	3 3/4	260204	13.15	260304	15.30
7/32	.2130	3	2 1/2	3 3/4	260203	13.30	260303	14.90
	.2188		2 1/2	3 3/4	260014	13.30	260114	15.35
	.2210	2	2 5/8	3 7/8	260202	13.85	260302	16.05
	.2280	1	2 5/8	3 7/8	260201	13.60	260301	15.80
15/64	.2340	A	2 5/8	3 7/8	260401	15.05	260501	17.45
	.2344		2 5/8	3 7/8	260015	14.30	260115	16.65
	.2380	B	2 3/4	4	260402	15.05	260502	17.45
	.2420	C	2 3/4	4	260403	15.05	260503	17.45
1/4	.2460	D	2 3/4	4	260404	14.70	260504	17.10
	.2500	E	2 3/4	4	260016	14.30	260116	16.65
	.2570	F	2 7/8	4 1/8	260406	16.90	260506	19.60

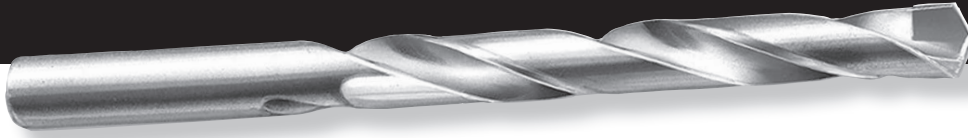
\*Solid Carbide

TOOL DIAMETER			LENGTH		118° POINT		135° POINT		
FRAC.	DEC.	WIRE LETTER	FLUTE	OVER-ALL	TYPE 2600 EDP NO.	PRICE	TYPE 2601 EDP NO.	PRICE	
17/64	.2610	G	2 7/8	4 1/8	260407	\$17.35	260507	\$20.05	
	.2656		2 7/8	4 1/8	260017	15.90	260117	18.20	
	.2660	H	2 7/8	4 1/8	260408	17.70	260508	20.50	
	.2720	I	2 7/8	4 1/8	260409	17.35	260509	20.05	
9/32	.2770	J	2 7/8	4 1/8	260410	17.70	260510	20.50	
	.2810	K	2 15/16	4 1/4	260411	17.70	260511	20.50	
	.2812		2 15/16	4 1/4	260018	16.85	260118	19.55	
	.2900	L	2 15/16	4 1/4	260412	17.70	260512	20.50	
19/64	.2950	M	3 1/16	4 3/8	260413	19.50	260513	22.70	
	.2969		3 1/16	4 3/8	260019	18.65	260119	21.60	
	.3020	N	3 1/16	4 3/8	260414	19.05	260514	22.15	
	.3125		3 3/16	4 1/2	260020	18.25	260120	21.20	
5/16	.3160	O	3 3/16	4 1/2	260415	18.75	260515	21.70	
	.3230	P	3 5/16	4 5/8	260416	20.00	260516	23.15	
	.3281		3 5/16	4 5/8	260021	19.35	260121	22.50	
	.3320	Q	3 7/16	4 3/4	260417	20.40	260517	23.75	
11/32	.3390	R	3 7/16	4 3/4	260418	20.00	260518	23.15	
	.3438		3 7/16	4 3/4	260022	19.35	260122	22.50	
	.3480	S	3 1/2	4 7/8	260419	21.50	260519	25.00	
	.3580	T	3 1/2	4 7/8	260420	21.95	260520	25.55	
23/64	.3594		3 1/2	4 7/8	260023	20.60	260123	23.95	
	.3680	U	3 5/8	5	260421	21.10	260521	24.50	
	.3750		3 5/8	5	260024	20.60	260124	23.95	
	.3770	V	3 5/8	5	260422	21.50	260522	25.00	
25/64	.3860	W	3 3/4	5 1/8	260423	23.65	260523	27.35	
	.3906		3 3/4	5 1/8	260025	22.40	260125	26.10	
	.3970	X	3 3/4	5 1/8	260424	22.65	260524	26.25	
	.4040	Y	3 7/8	5 1/4	260425	23.65	260525	27.35	
13/32	.4062		3 7/8	5 1/4	260026	22.40	260126	26.10	
	.4130	Z	3 7/8	5 1/4	260426	26.15	260526	30.25	
	.4219		3 15/16	5 3/8	260027	24.40	260127	28.30	
	.4375		4 1/16	5 1/2	260028	24.40	260128	28.30	
29/64	.4531		4 3/16	5 5/8	260029	28.00	260129	32.45	
	.4688		4 5/16	5 3/4	260030	27.40	260130	31.75	
	.4844		4 3/8	5 7/8	260031	30.65	260131	35.55	
	.5000		4 1/2	6	260032	33.70	260132	35.55	
33/64	.5156		4 13/16	6 5/8	260033	43.90	260133	51.00	
	.5312		4 13/16	6 5/8	260034	43.90	260134	51.00	
	.5469		4 13/16	6 5/8	260035	44.30	260135	51.40	
	.5625		4 13/16	6 5/8	260036	44.30	260136	51.40	
37/64	.5781		4 13/16	6 5/8	260037	48.90	260137	56.85	
	.5938		5 3/16	7 1/8	260038	47.55	260138	55.25	
	.6094		5 3/16	7 1/8	260039	56.25	260139	65.25	
	.6250		5 3/16	7 1/8	260040	53.90	260140	62.50	
41/64	.6406		5 3/16	7 1/8	260041	62.15	260141	72.20	
	.6562		5 3/16	7 1/8	260042	54.80	260142	63.60	
	.6719		5 5/8	7 5/8	260043	71.30	260143	82.85	
	.6875		5 5/8	7 5/8	260044	55.85	260144	64.80	
45/64	.7031		5 5/8	7 5/8	260045	65.25	260145	72.60	
	.7188		5 5/8	7 5/8	260046	65.95	260146	73.30	
	.7344		5 5/8	7 5/8	260047	66.30	260147	73.70	
	.7500		5 13/16	8	260048	67.30	260148	74.80	
TANGING QUANTITY			1	2	3	4	5-7	8-14	15 OR MORE
PRICE PER TOOL			\$14.00	\$8.00	\$6.00	\$5.00	\$4.00	\$3.00	\$2.00



# TWIST DRILLS - CARBIDE TIPPED

## METRIC DIAMETERS - JOBBERS LENGTH



TOOL DIAMETER		LENGTH				118° POINT		135° POINT	
		FLUTE		OVERALL		TYPE 2600	PRICE	TYPE 2601	PRICE
mm	INCH	mm	INCH	mm	INCH	EDP NO.		EDP NO.	
3.0	.1181	41	1 5/8	70	2 3/4	2600030	\$14.45	2601030	\$14.75
3.1	.1220	41	1 5/8	70	2 3/4	2600031	15.10	2601031	15.30
3.2	.1260	41	1 5/8	70	2 3/4	2600032	15.10	2601032	15.30
3.3	.1299	44	1 3/4	73	2 7/8	2600033	15.10	2601033	15.30
3.4	.1339	44	1 3/4	73	2 7/8	2600034	15.10	2601034	15.30
3.5	.1378	44	1 3/4	73	2 7/8	2600035	13.95	2601035	14.45
3.6	.1417	48	1 7/8	76	3	2600036	14.45	2601036	14.75
3.7	.1457	48	1 7/8	76	3	2600037	14.45	2601037	14.75
3.8	.1496	48	1 7/8	76	3	2600038	14.45	2601038	14.75
3.9	.1535	51	2	79	3 1/8	2600039	14.45	2601039	14.75
4.0	.1575	54	2 1/8	83	3 1/4	2600040	13.60	2601040	13.95
4.1	.1614	54	2 1/8	83	3 1/4	2600041	13.10	2601041	14.90
4.2	.1654	54	2 1/8	83	3 1/4	2600042	13.95	2601042	14.90
4.3	.1693	54	2 1/8	83	3 1/4	2600043	13.95	2601043	14.90
4.4	.1732	56	2 3/16	86	3 3/8	2600044	13.95	2601044	14.90
4.5	.1772	56	2 3/16	86	3 3/8	2600045	14.45	2601045	14.90
4.6	.1811	56	2 3/16	86	3 3/8	2600046	15.75	2601046	15.95
4.7	.1850	59	2 5/16	89	3 1/2	260213	13.35	260313	14.10
4.8	.1890	59	2 5/16	89	3 1/2	260212	13.95	260312	14.75
4.9	.1929	62	2 7/16	92	3 5/8	2600049	15.75	2601049	15.95
5.0	.1969	62	2 7/16	92	3 5/8	2600050	15.10	2601050	15.55
5.1	.2008	62	2 7/16	92	3 5/8	2600051	16.40	2601051	16.65
5.2	.2047	64	2 1/2	95	3 3/4	2600052	16.40	2601052	16.65
5.3	.2087	64	2 1/2	95	3 3/4	2600053	16.40	2601053	16.65
5.4	.2126	64	2 1/2	95	3 3/4	2600054	16.40	2601054	16.65
5.5	.2165	64	2 1/2	95	3 3/4	2600055	16.05	2601055	16.20
5.6	.2205	67	2 5/8	98	3 7/8	2600056	16.85	2601056	17.15
5.7	.2244	67	2 5/8	98	3 7/8	2600057	16.85	2601057	17.15
5.8	.2283	67	2 5/8	98	3 7/8	2600058	16.85	2601058	17.15
5.9	.2323	67	2 5/8	98	3 7/8	2600059	16.85	2601059	17.15
6.0	.2362	70	2 3/4	102	4	2600060	16.65	2601060	17.60
6.1	.2402	70	2 3/4	102	4	2600061	17.60	2601061	18.05
6.2	.2441	70	2 3/4	102	4	2600062	17.60	2601062	18.05
6.3	.2480	70	2 3/4	102	4	2600063	17.60	2601063	18.05
6.4	.2520	73	2 7/8	105	4 1/8	2600064	17.60	2601064	18.05
6.5	.2559	73	2 7/8	105	4 1/8	2600065	17.20	2601065	17.60
6.6	.2598	73	2 7/8	105	4 1/8	2600066	18.40	2601066	20.60
6.7	.2638	73	2 7/8	105	4 1/8	2600067	18.40	2601067	20.60
6.8	.2677	73	2 7/8	105	4 1/8	2600068	18.40	2601068	20.60
6.9	.2717	73	2 7/8	105	4 1/8	2600069	18.40	2601069	20.60
7.0	.2756	73	2 7/8	105	4 1/8	2600070	18.00	2601070	20.60
7.1	.2795	75	2 15/16	108	4 1/4	2600071	18.85	2601071	20.60
7.2	.2835	75	2 15/16	108	4 1/4	2600072	18.85	2601072	20.60
7.3	.2874	75	2 15/16	108	4 1/4	2600073	18.85	2601073	20.60
7.4	.2913	78	3 1/16	111	4 3/8	2600074	18.85	2601074	22.30
7.5	.2953	78	3 1/16	111	4 3/8	2600075	18.85	2601075	22.30
7.6	.2992	78	3 1/16	111	4 3/8	2600076	19.75	2601076	22.30
7.7	.3031	81	3 3/16	114	4 1/2	2600077	19.75	2601077	22.30
7.8	.3071	81	3 3/16	114	4 1/2	2600078	19.75	2601078	22.30
7.9	.3110	81	3 3/16	114	4 1/2	2600079	19.75	2601079	22.30
8.0	.3150	81	3 3/16	114	4 1/2	2600080	19.30	2601080	22.30
8.1	.3189	84	3 5/16	117	4 5/8	2600081	21.10	2601081	23.75
8.2	.3228	84	3 5/16	117	4 5/8	2600082	21.10	2601082	23.75
8.3	.3268	84	3 5/16	117	4 5/8	2600083	21.10	2601083	23.75
8.4	.3307	87	3 7/16	121	4 3/4	2600084	21.10	2601084	23.75
8.5	.3346	87	3 7/16	121	4 3/4	2600085	20.20	2601085	23.75
8.6	.3386	87	3 7/16	121	4 3/4	2600086	21.10	2601086	23.75
8.7	.3425	87	3 7/16	121	4 3/4	2600087	21.10	2601087	23.75
8.8	.3465	89	3 1/2	124	4 7/8	2600088	21.10	2601088	23.75

**OPTIONS:**

Intermediate metric diameters.

Special point types and angles.

Automotive tang for use in split sleeve drill drivers.

TOOL DIAMETER		LENGTH				118° POINT		135° POINT	
		FLUTE		OVERALL		TYPE 2600	PRICE	TYPE 2601	PRICE
mm	INCH	mm	INCH	mm	INCH	EDP NO.		EDP NO.	
8.9	.3504	89	3 1/2	124	4 7/8	2600089	\$21.10	2601089	\$25.30
9.0	.3543	89	3 1/2	124	4 7/8	2600090	20.60	2601090	25.30
9.1	.3583	89	3 1/2	124	4 7/8	2600091	22.85	2601091	25.30
9.2	.3622	92	3 5/8	127	5	2600092	22.85	2601092	25.30
9.3	.3661	92	3 5/8	127	5	2600093	22.85	2601093	25.30
9.4	.3701	92	3 5/8	127	5	2600094	22.85	2601094	25.30
9.5	.3740	92	3 5/8	127	5	2600095	22.40	2601095	25.30
9.6	.3780	95	3 3/4	130	5 1/8	2600096	23.20	2601096	27.55
9.7	.3819	95	3 3/4	130	5 1/8	2600097	23.20	2601097	27.55
9.8	.3858	95	3 3/4	130	5 1/8	2600098	23.20	2601098	27.55
9.9	.3898	95	3 3/4	130	5 1/8	2600099	23.20	2601099	27.55
10.0	.3937	95	3 3/4	130	5 1/8	2600100	23.20	2601100	27.55
10.1	.3976	98	3 7/8	133	5 1/4	2600101	27.65	2601101	28.40
10.2	.4016	98	3 7/8	133	5 1/4	2600102	27.65	2601102	28.40
10.3	.4055	98	3 7/8	133	5 1/4	2600103	27.65	2601103	28.40
10.4	.4094	98	3 7/8	133	5 1/4	2600104	27.65	2601104	29.80
10.5	.4134	98	3 7/8	133	5 1/4	2600105	26.75	2601105	29.80
10.6	.4173	100	3 15/16	137	5 3/8	2600106	30.30	2601106	30.85
10.7	.4213	100	3 15/16	137	5 3/8	2600107	30.30	2601107	30.85
10.8	.4252	103	4 1/16	140	5 1/2	2600108	30.30	2601108	30.85
10.9	.4291	103	4 1/16	140	5 1/2	2600109	30.30	2601109	30.85
11.0	.4331	103	4 1/16	140	5 1/2	2600110	29.00	2601110	29.80
11.1	.4370	103	4 1/16	140	5 1/2	2600111	33.80	2601111	34.35
11.2	.4409	106	4 3/16	143	5 5/8	2600112	33.80	2601112	34.60
11.3	.4449	106	4 3/16	143	5 5/8	2600113	33.80	2601113	34.60
11.4	.4488	106	4 3/16	143	5 5/8	2600114	33.80	2601114	33.60
11.5	.4528	106	4 3/16	143	5 5/8	2600115	32.50	2601115	33.60
11.6	.4567	110	4 5/16	146	5 3/4	2600116	36.85	2601116	37.40
11.7	.4606	110	4 5/16	146	5 3/4	2600117	36.85	2601117	37.40
11.8	.4646	110	4 5/16	146	5 3/4	2600118	36.85	2601118	37.40
11.9	.4685	110	4 5/16	146	5 3/4	2600119	36.85	2601119	37.40
12.0	.4724	111	4 3/8	149	5 7/8	2600120	35.20	2601120	37.60
12.1	.4764	111	4 3/8	149	5 7/8	2600121	38.30	2601121	38.85
12.2	.4803	111	4 3/8	149	5 7/8	2600122	38.30	2601122	38.85
12.3	.4843	111	4 3/8	149	5 7/8	2600123	38.30	2601123	38.85
12.4	.4882	114	4 1/2	152	6	2600124	38.30	2601124	38.85
12.5	.4921	114	4 1/2	152	6	2600125	36.50	2601125	37.60
12.6	.4961	114	4 1/2	152	6	2600126	39.65	2601126	40.15
12.7	.5000	114	4 1/2	152	6	260032	33.70	260132	35.55
12.8	.5039	114	4 1/2	152	6	2600128	43.50	2601128	55.40
12.9	.5079	114	4 1/2	152	6	2600129	43.50	2601129	55.40
13.0	.5118	114	4 1/2	152	6	2600130	43.50	2601130	55.40
13.5	.5315	122	4 13/16	168	6 5/8	2600135	56.30	2601135	60.75
14.0	.5512	122	4 13/16	168	6 5/8	2600140	59.70	2601140	64.40
14.5	.5709	122	4 13/16	168	6 5/8	2600145	64.00	2601145	69.20
15.0	.5906	132	5 3/16	181	7 1/8	2600150	64.00	2601150	69.20
15.5	.6102	132	5 3/16	181	7 1/8	2600155	64.85	2601155	70.05
16.0	.6299	132	5 3/16	181	7 1/8	2600160	66.05	2601160	71.30
16.5	.6496	132	5 3/16	181	7 1/8	2600165	66.05	2601165	71.30
17.0	.6693	143	5 5/8	194	7 5/8	2600170	68.60	2601170	74.10
17.5	.6890	143	5 5/8	194	7 5/8	2600175	68.60	2601175	74.10
18.0	.7087	143	5 5/8	194	7 5/8	2600180	69.40	2601180	74.80
18.5	.7283	143	5 5/8	194	7 5/8	2600185	69.75	2601185	75.30
19.0	.7480	148	5 13/16	203	8	2600190	70.65	2601190	76.35



# TWIST DRILLS - CARBIDE TIPPED

## JOBBER'S LENGTH - TANGED



### TYPE 2690 - JOBBERS LENGTH TANGED - 118° POINT

Tanged jobbers length - 118° standard point.

### TYPE 2691 - JOBBERS LENGTH TANGED - 135° SPLIT POINT

Same as Type 2690 above, except with 135° split point.

Designed for drilling tough abrasive or high tensile materials.

### OPTIONS:

- Modified tool diameter.
- Modified metric tool diameter.
- Modified point and/or angle.
- Reduced shank diameter.

Drill tolerances (see page 14).

### USE:

For use in ASA split sleeve drill drivers.

TOOL DIAMETER			LENGTH		118° POINT		135° POINT	
FRAC.	WIRE LETTER	DEC. EQUIV.	FLUTE	OVER-ALL	TYPE 2690 EDP NO.	PRICE	TYPE 2691 EDP NO.	PRICE
1/8	30	.1250	1 5/8	2 3/4	269008	\$12.90	269108	\$15.15
		.1285	1 5/8	2 3/4	269230	13.25	269330	15.40
		.1360	1 3/4	2 7/8	269229	13.70	269329	15.80
		.1405	1 3/4	2 7/8	269228	13.80	269328	16.15
3/16	27	.1406	1 3/4	2 7/8	269009	14.00	269109	16.40
		.1440	1 7/8	3	269227	14.20	269327	16.55
		.1470	1 7/8	3	269226	13.20	269326	15.40
		.1495	1 7/8	3	269225	13.20	269325	15.40
1/4	24	.1520	2	3 1/8	269224	14.20	269324	16.55
		.1540	2	3 1/8	269223	13.80	269323	16.15
		.1562	2	3 1/8	269010	13.75	269110	16.15
		.1570	2	3 1/8	269222	15.35	269322	17.80
5/16	21	.1590	2 1/8	3 1/4	269221	14.60	269321	17.00
		.1610	2 1/8	3 1/4	269220	15.00	269320	17.45
		.1660	2 1/8	3 1/4	269219	15.00	269319	17.45
		.1695	2 1/8	3 1/4	269218	15.00	269318	17.45
3/8	17	.1719	2 1/8	3 1/4	269011	15.00	269111	17.45
		.1730	2 3/16	3 3/8	269217	15.00	269317	17.45
		.1770	2 3/16	3 3/8	269216	14.60	269316	17.00
		.1800	2 3/16	3 3/8	269215	15.35	269315	17.80
7/16	14	.1820	2 3/16	3 3/8	269214	14.60	269314	17.00
		.1850	2 5/16	3 1/2	269213	16.15	269313	17.00
		.1875	2 5/16	3 1/2	269012	14.60	269112	17.00
		.1890	2 5/16	3 1/2	269212	16.80	269312	17.80
1/2	11	.1910	2 5/16	3 1/2	269211	15.55	269311	17.95
		.1935	2 7/16	3 5/8	269210	15.35	269310	17.80
		.1960	2 7/16	3 5/8	269209	15.55	269309	17.95
		.1990	2 7/16	3 5/8	269208	15.55	269308	17.95
5/8	7	.2010	2 7/16	3 5/8	269207	15.55	269307	17.95
		.2031	2 7/16	3 5/8	269013	16.05	269113	18.55
		.2040	2 1/2	3 3/4	269206	15.85	269306	18.50
		.2055	2 1/2	3 3/4	269205	16.10	269305	17.95
3/4	4	.2090	2 1/2	3 3/4	269204	15.85	269304	18.50
		.2130	2 1/2	3 3/4	269203	16.10	269303	17.95
		.2188	2 1/2	3 3/4	269014	16.05	269114	18.65
		.2210	2 5/8	3 7/8	269202	16.70	269302	19.35
7/8	1	.2280	2 5/8	3 7/8	269201	16.50	269301	19.10
		.2340	2 5/8	3 7/8	269401	18.20	269501	21.05
		.2344	2 5/8	3 7/8	269015	17.25	269115	20.10
		.2380	2 3/4	4	269402	18.20	269502	21.05
1 1/8	C	.2420	2 3/4	4	269403	18.20	269503	21.05
		.2460	2 3/4	4	269404	17.75	269504	20.60
		.2500	2 3/4	4	269016	17.25	269116	20.10
		.2570	2 7/8	4 1/8	269406	20.40	269506	23.80
1 1/4	G	.2610	2 7/8	4 1/8	269407	20.95	269507	24.20
		.2656	2 7/8	4 1/8	269017	19.20	269117	21.95
		.2660	2 7/8	4 1/8	269408	21.35	269508	24.80
		.2720	2 7/8	4 1/8	269409	20.95	269509	24.20

TOOL DIAMETER			LENGTH		118° POINT		135° POINT	
FRAC.	WIRE LETTER	DEC. EQUIV.	FLUTE	OVER-ALL	TYPE 2690 EDP NO.	PRICE	TYPE 2691 EDP NO.	PRICE
9/32	J	.2770	2 7/8	4 1/8	269410	\$21.35	269510	\$24.80
		.2810	2 15/16	4 1/4	269411	21.35	269511	24.80
		.2812	2 15/16	4 1/4	269018	20.35	269118	23.55
5/16	K	.2900	2 15/16	4 1/4	269412	21.35	269512	24.80
		.2950	3 1/16	4 3/8	269413	23.50	269513	27.40
		.2969	3 1/16	4 3/8	269019	22.60	269119	26.10
3/8	M	.3020	3 1/16	4 3/8	269414	23.00	269514	26.80
		.3125	3 3/16	4 1/2	269020	22.05	269120	25.60
		.3160	3 3/16	4 1/2	269415	22.65	269515	26.15
7/16	N	.3230	3 5/16	4 5/8	269416	24.15	269516	28.00
		.3281	3 5/16	4 5/8	269021	23.35	269121	27.20
		.3320	3 7/16	4 3/4	269417	24.70	269517	28.65
1/2	O	.3390	3 7/16	4 3/4	269418	24.15	269518	28.00
		.3438	3 7/16	4 3/4	269022	23.35	269122	27.20
		.3480	3 1/2	4 7/8	269419	26.00	269519	30.25
5/8	P	.3580	3 1/2	4 7/8	269420	26.50	269520	30.80
		.3594	3 1/2	4 7/8	269023	24.90	269123	28.95
		.3680	3 5/8	5	269421	25.55	269521	29.55
3/4	Q	.3750	3 5/8	5	269024	24.90	269124	28.95
		.3770	3 5/8	5	269422	26.00	269522	30.25
		.3860	3 3/4	5 1/8	269423	28.55	269523	33.00
7/8	R	.3906	3 3/4	5 1/8	269025	27.05	269125	31.50
		.3970	3 3/4	5 1/8	269424	27.30	269524	31.65
		.4040	3 7/8	5 1/4	269425	28.55	269525	33.00
1 1/8	S	.4062	3 7/8	5 1/4	269026	27.05	269126	31.50
		.4130	3 7/8	5 1/4	269426	31.55	269526	36.55
		.4219	3 15/16	5 3/8	269027	29.45	269127	34.20
1 1/4	T	.4375	4 1/16	5 1/2	269028	29.45	269128	34.20
		.4531	4 3/16	5 5/8	269029	33.75	269129	39.15
		.4688	4 5/16	5 3/4	269030	33.15	269130	38.30
1 3/8	U	.4844	4 3/8	5 7/8	269031	37.00	269131	42.95
		.5000	4 1/2	6	269032	40.70	269132	42.95
		.5156	4 13/16	6 5/8	269033	52.95	269133	61.55
1 1/2	V	.5312	4 13/16	6 5/8	269034	52.95	269134	61.55
		.5469	4 13/16	6 5/8	269035	53.50	269135	62.15
		.5625	4 13/16	6 5/8	269036	53.50	269136	62.15
1 5/8	W	.5781	4 13/16	6 5/8	269037	59.05	269137	68.65
		.5938	5 3/16	7 1/8	269038	57.50	269138	66.70
		.6094	5 3/16	7 1/8	269039	67.90	269139	78.80
1 3/4	X	.6250	5 3/16	7 1/8	269040	65.10	269140	75.45
		.6406	5 3/16	7 1/8	269041	75.10	269141	87.15
		.6562	5 3/16	7 1/8	269042	66.15	269142	76.80
1 7/8	Y	.6719	5 5/8	7 7/8	269043	86.20	269143	100.00
		.6875	5 5/8	7 7/8	269044	67.45	269144	78.20
		.7031	5 5/8	7 7/8	269045	78.85	269145	87.70
2	Z	.7188	5 5/8	7 7/8	269046	79.65	269146	88.45
		.7344	5 5/8	7 7/8	269047	80.05	269147	89.05
		.7500	5 13/16	8	269048	81.40	269148	90.35



MADE IN USA



# TWIST DRILLS - CARBIDE TIPPED

## METRIC DIAMETER - JOBBERS LENGTH - TANGED



**OPTIONS:**

- Modified tool diameter.
- Modified metric tool diameter.
- Modified point and/or angle.
- Reduced shank diameter.

Drill tolerances (see page 14).

TOOL DIAMETER		LENGTH				118° PT.		135° PT.	
						Type 2690	PRICE	Type 2691	PRICE
mm	INCH	mm	INCH	mm	INCH	EDP NO.		EDP NO.	
3.2	.1260	41	1 5/8	70	2 3/4	2690032	\$18.30	2691032	\$18.50
3.3	.1299	44	1 3/4	73	2 7/8	2690033	18.30	2691033	18.50
3.4	.1339	44	1 3/4	73	2 7/8	2690034	18.30	2691034	18.50
3.5	.1378	44	1 3/4	73	2 7/8	2690035	16.80	2691035	17.45
3.6	.1417	48	1 7/8	76	3	2690036	17.50	2691036	17.80
3.7	.1457	48	1 7/8	76	3	2690037	17.50	2691037	17.80
3.8	.1496	48	1 7/8	76	3	2690038	17.50	2691038	17.80
3.9	.1535	51	2	79	3 1/8	2690039	17.50	2691039	17.80
4.0	.1575	54	2 1/8	83	3 1/4	2690040	16.50	2691040	16.90
4.1	.1614	54	2 1/8	83	3 1/4	2690041	15.80	2691041	17.95
4.2	.1654	54	2 1/8	83	3 1/4	2690042	16.80	2691042	17.95
4.3	.1693	54	2 1/8	83	3 1/4	2690043	16.80	2691043	17.95
4.4	.1732	56	2 3/8	86	3 3/8	2690044	16.80	2691044	17.95
4.5	.1772	56	2 3/8	86	3 3/8	2690045	17.50	2691045	17.95
4.6	.1811	56	2 3/8	86	3 3/8	2690046	19.05	2691046	19.25
4.7	.1850	59	2 3/8	89	3 1/2	269213	16.15	269313	17.00
4.8	.1890	59	2 3/8	89	3 1/2	269212	16.80	269312	17.80
4.9	.1929	62	2 7/8	92	3 5/8	2690049	19.05	2691049	19.25
5.0	.1969	62	2 7/8	92	3 5/8	2690050	18.25	2691050	18.75
5.1	.2008	62	2 7/8	92	3 5/8	2690051	19.75	2691051	20.10
5.2	.2047	64	2 1/2	95	3 3/4	2690052	19.75	2691052	20.10
5.3	.2087	64	2 1/2	95	3 3/4	2690053	19.75	2691053	20.10
5.4	.2126	64	2 1/2	95	3 3/4	2690054	19.75	2691054	20.10
5.5	.2165	64	2 1/2	95	3 3/4	2690055	19.30	2691055	19.60
5.6	.2205	67	2 5/8	98	3 7/8	2690056	20.35	2691056	20.80
5.7	.2244	67	2 5/8	98	3 7/8	2690057	20.35	2691057	20.80
5.8	.2283	67	2 5/8	98	3 7/8	2690058	20.35	2691058	20.80
5.9	.2323	67	2 5/8	98	3 7/8	2690059	20.35	2691059	20.80
6.0	.2362	70	2 3/4	102	4	2690060	20.10	2691060	21.25
6.1	.2402	70	2 3/4	102	4	2690061	21.25	2691061	21.85
6.2	.2441	70	2 3/4	102	4	2690062	21.25	2691062	21.85
6.3	.2480	70	2 3/4	102	4	2690063	21.25	2691063	21.85
6.4	.2520	73	2 7/8	105	4 1/8	2690064	21.25	2691064	21.85
6.5	.2559	73	2 7/8	105	4 1/8	2690065	20.90	2691065	21.25
6.6	.2598	73	2 7/8	105	4 1/8	2690066	22.20	2691066	24.95
6.7	.2638	73	2 7/8	105	4 1/8	2690067	22.20	2691067	24.95
6.8	.2677	73	2 7/8	105	4 1/8	2690068	22.20	2691068	24.95
6.9	.2717	73	2 7/8	105	4 1/8	2690069	22.20	2691069	24.95
7.0	.2756	73	2 7/8	105	4 1/8	2690070	21.75	2691070	24.95
7.1	.2795	75	2 15/8	108	4 1/4	2690071	22.80	2691071	24.95
7.2	.2835	75	2 15/8	108	4 1/4	2690072	22.80	2691072	24.95
7.3	.2874	75	2 15/8	108	4 1/4	2690073	22.80	2691073	24.95
7.4	.2913	78	3 1/8	111	4 3/8	2690074	22.80	2691074	26.95
7.5	.2953	78	3 1/8	111	4 3/8	2690075	22.80	2691075	26.95
7.6	.2992	78	3 1/8	111	4 3/8	2690076	23.90	2691076	26.95
7.7	.3031	81	3 3/8	114	4 1/2	2690077	23.90	2691077	26.95
7.8	.3071	81	3 3/8	114	4 1/2	2690078	23.90	2691078	26.95
7.9	.3110	81	3 3/8	114	4 1/2	2690079	23.90	2691079	26.95
8.0	.3150	81	3 3/8	114	4 1/2	2690080	23.35	2691080	26.95
8.1	.3189	84	3 3/8	117	4 3/8	2690081	25.45	2691081	28.65
8.2	.3228	84	3 3/8	117	4 3/8	2690082	25.45	2691082	28.65
8.3	.3268	84	3 3/8	117	4 3/8	2690083	25.45	2691083	28.65

TOOL DIAMETER		LENGTH				118° PT.		135° PT.	
						Type 2690	PRICE	Type 2691	PRICE
mm	INCH	mm	INCH	mm	INCH	EDP NO.		EDP NO.	
8.4	.3307	87	3 7/8	121	4 3/4	2690084	\$25.45	2691084	28.65
8.5	.3346	87	3 7/8	121	4 3/4	2690085	24.35	2691085	28.65
8.6	.3386	87	3 7/8	121	4 3/4	2690086	25.45	2691086	28.65
8.7	.3425	87	3 7/8	121	4 3/4	2690087	25.45	2691087	28.65
8.8	.3465	89	3 1/2	124	4 7/8	2690088	25.45	2691088	28.65
8.9	.3504	89	3 1/2	124	4 7/8	2690089	25.45	2691089	30.45
9.0	.3543	89	3 1/2	124	4 7/8	2690090	24.90	2691090	30.45
9.1	.3583	89	3 1/2	124	4 7/8	2690091	27.60	2691091	30.45
9.2	.3622	92	3 5/8	127	5	2690092	27.60	2691092	30.45
9.3	.3661	92	3 5/8	127	5	2690093	27.60	2691093	30.45
9.4	.3701	92	3 5/8	127	5	2690094	27.60	2691094	30.45
9.5	.3740	92	3 5/8	127	5	2690095	27.05	2691095	30.45
9.6	.3780	95	3 3/4	130	5 1/8	2690096	28.05	2691096	33.30
9.7	.3819	95	3 3/4	130	5 1/8	2690097	28.05	2691097	33.30
9.8	.3858	95	3 3/4	130	5 1/8	2690098	28.05	2691098	33.30
9.9	.3898	95	3 3/4	130	5 1/8	2690099	28.05	2691099	33.30
10.0	.3937	95	3 3/4	130	5 1/8	2690100	28.05	2691100	33.30
10.1	.3976	98	3 7/8	133	5 1/4	2690101	33.35	2691101	34.25
10.2	.4016	98	3 7/8	133	5 1/4	2690102	33.35	2691102	34.25
10.3	.4055	98	3 7/8	133	5 1/4	2690103	33.35	2691103	34.25
10.4	.4094	98	3 7/8	133	5 1/4	2690104	33.40	2691104	35.95
10.5	.4134	98	3 7/8	133	5 1/4	2690105	32.35	2691105	35.95
10.6	.4173	100	3 15/8	137	5 3/8	2690106	36.70	2691106	37.20
10.7	.4213	100	3 15/8	137	5 3/8	2690107	36.70	2691107	37.20
10.8	.4252	103	4 1/8	140	5 1/2	2690108	36.70	2691108	37.20
10.9	.4291	103	4 1/8	140	5 1/2	2690109	36.70	2691109	37.20
11.0	.4331	103	4 1/8	140	5 1/2	2690110	35.00	2691110	35.95
11.1	.4370	103	4 1/8	140	5 1/2	2690111	40.80	2691111	41.40
11.2	.4409	106	4 3/8	143	5 5/8	2690112	40.85	2691112	41.80
11.3	.4449	106	4 3/8	143	5 5/8	2690113	40.85	2691113	41.80
11.4	.4488	106	4 3/8	143	5 5/8	2690114	40.80	2691114	40.55
11.5	.4528	106	4 3/8	143	5 5/8	2690115	39.20	2691115	40.55
11.6	.4567	110	4 5/8	146	5 3/4	2690116	44.35	2691116	45.15
11.7	.4606	110	4 5/8	146	5 3/4	2690117	44.35	2691117	45.15
11.8	.4646	110	4 5/8	146	5 3/4	2690118	44.35	2691118	45.15
11.9	.4685	110	4 5/8	146	5 3/4	2690119	44.35	2691119	45.15
12.0	.4724	111	4 3/4	149	5 7/8	2690120	42.50	2691120	45.40
12.5	.4921	114	4 1/2	152	6	2690125	44.10	2691125	45.40
13.0	.5118	114	4 1/2	152	6	2690130	52.55	2691130	66.95
13.5	.5315	122	4 13/8	168	6 5/8	2690135	67.95	2691135	73.35
14.0	.5512	122	4 13/8	168	6 5/8	2690140	72.10	2691140	77.75
14.5	.5709	122	4 13/8	168	6 5/8	2690145	77.30	2691145	83.60
15.0	.5906	132	5 3/8	181	7 1/8	2690150	77.30	2691150	83.60
15.5	.6102	132	5 3/8	181	7 1/8	2690155	78.35	2691155	84.60
16.0	.6299	132	5 3/8	181	7 1/8	2690160	79.75	2691160	86.10
16.5	.6496	132	5 3/8	181	7 1/8	2690165	79.75	2691165	86.10
17.0	.6693	143	5 5/8	194	7 3/8	2690170	82.80	2691170	89.55
17.5	.6890	143	5 5/8	194	7 3/8	2690175	82.80	2691175	89.55
18.0	.7087	143	5 5/8	194	7 3/8	2690180	83.70	2691180	90.35
18.5	.7283	143	5 5/8	194	7 3/8	2690185	84.20	2691185	90.90
19.0	.7480	148	5 13/8	203	8	2690190	85.30	2691190	92.20



# TWIST DRILLS - CARBIDE TIPPED

## CNC STUB LENGTH



### TYPE 2640 - STUB LENGTH - 118° POINT

Stub length - 118° standard point.

### TYPE 2641 - STUB LENGTH - 135° SPLIT POINT

Stub length - 135° split point.

Same as type 2640 above, except with 135° split point designed for drilling abrasive and tough materials.

#### USE:

Excellent starting drill.

Exact location shallow drilling.

Often used in CNC machining centers. Shorter length results in a very rigid and sturdy drill.

#### 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"	.0000"	.0015"	3°	3°	.0060"

TOOL DIAMETER					118° POINT		135° POINT	
FRACTIONAL	WIRE LETTER	DECIMAL EQUIV.	FLUTE	OVER-ALL	TYPE 2640 EDP NO.	PRICE	TYPE 2641 EDP NO.	PRICE
1/8	32	.1160	7/8	1 7/8	264232	\$16.20	264332	\$17.95
	31	.1200	7/8	1 7/8	264231	16.20	264331	17.95
	30	.1250	7/8	1 7/8	264008	12.10	264108	13.10
3/16		.1285	15/16	1 15/16	264230	17.10	264330	18.85
	29	.1360	15/16	1 15/16	264229	17.10	264329	18.85
	28	.1405	15/16	1 15/16	264228	17.10	264328	18.85
		.1406	15/16	1 15/16	264009	14.65	264109	17.25
1/4	27	.1440	1	2 1/4	264227	17.10	264327	18.85
	26	.1470	1	2 1/4	264226	17.10	264326	18.85
	25	.1495	1	2 1/4	264225	17.10	264325	18.85
	24	.1520	1	2 1/4	264224	17.10	264324	18.85
5/16	23	.1540	1	2 1/4	264223	17.10	264323	18.85
		.1562	1	2 1/4	264010	12.85	264110	13.95
	22	.1570	1 1/16	2 1/8	264222	17.10	264322	18.85
	21	.1590	1 1/16	2 1/8	264221	17.10	264321	18.85
3/8	20	.1610	1 1/16	2 1/8	264220	19.85	264320	22.10
	19	.1660	1 1/16	2 1/8	264219	19.85	264319	22.10
	18	.1695	1 1/16	2 1/8	264218	19.85	264318	22.10
		.1719	1 1/16	2 1/8	264011	17.45	264111	18.75
7/16	17	.1730	1 1/8	2 3/8	264217	20.30	264317	22.50
	16	.1770	1 1/8	2 3/8	264216	20.30	264316	22.50
	15	.1800	1 1/8	2 3/8	264215	20.30	264315	22.50
	14	.1820	1 1/8	2 3/8	264214	20.30	264314	22.50
1/2	13	.1850	1 1/8	2 3/8	264213	20.30	264313	22.50
		.1875	1 1/8	2 3/8	264012	13.50	264112	14.80
	12	.1890	1 3/16	2 1/4	264212	20.15	264312	22.30
	11	.1910	1 3/16	2 1/4	264211	20.15	264311	22.30
5/8	10	.1935	1 3/16	2 1/4	264210	20.15	264310	22.30
	9	.1960	1 3/16	2 1/4	264209	20.15	264309	22.30
	8	.1990	1 3/16	2 1/4	264208	20.15	264308	22.30
	7	.2010	1 3/16	2 1/4	264207	17.70	264307	21.25
3/4		.2031	1 3/16	2 1/4	264013	17.45	264113	18.75
	6	.2040	1 1/4	2 3/8	264206	20.30	264306	22.50
	5	.2055	1 1/4	2 3/8	264205	20.30	264305	22.50
	4	.2090	1 1/4	2 3/8	264204	20.30	264304	22.50
7/8	3	.2130	1 1/4	2 3/8	264203	17.70	264303	21.25
		.2188	1 1/4	2 3/8	264014	14.50	264114	16.10
	2	.2210	1 1/2	2 7/8	264202	20.15	264302	22.30
	1	.2280	1 1/2	2 7/8	264201	17.70	264301	22.30
1 1/8	A	.2340	1 1/2	2 7/8	264401	20.15	264501	22.30
		.2344	1 3/16	2 7/8	264015	16.10	264115	19.20
	B	.2380	1 3/8	2 1/2	264402	20.15	264502	22.30
	C	.2420	1 3/8	2 1/2	264403	20.15	264503	22.30
1 1/4	D	.2460	1 3/8	2 1/2	264404	17.70	264504	21.25
		.2500	1 3/8	2 1/2	264016	14.75	264116	17.05
	E	.2570	1 7/16	2 5/8	264406	20.55	264506	24.70
	F	.2610	1 7/16	2 5/8	264407	20.55	264507	24.70
1 1/2	G	.2656	1 7/16	2 5/8	264017	17.95	264117	21.30
		.2660	1 1/2	2 11/16	264408	19.90	264508	25.85
1 3/4	I	.2720	1 1/2	2 11/16	264409	20.55	264509	24.70

TOOL DIAMETER					118° POINT		135° POINT		
FRACTIONAL	WIRE LETTER	DECIMAL EQUIV.	FLUTE	OVER-ALL	TYPE 2640 EDP NO.	PRICE	TYPE 2641 EDP NO.	PRICE	
3/16	J	.2770	1 1/2	2 11/16	264410	\$23.25	264510	\$25.85	
	K	.2810	1 1/2	2 11/16	264411	23.25	264511	25.85	
	5/32		.2812	1 1/2	2 11/16	264018	17.00	264118	19.75
L		.2900	1 9/16	2 3/4	264412	24.00	264512	26.60	
1/4	M	.2950	1 9/16	2 3/4	264413	24.00	264513	26.60	
	3/8		.2969	1 9/16	2 3/4	264019	20.55	264119	24.40
		N	.3020	1 5/8	2 13/16	264414	27.50	264514	30.60
1/2		.3125	1 5/8	2 13/16	264020	18.05	264120	21.05	
	O	.3160	1 11/16	2 15/16	264415	25.35	264515	30.55	
	P	.3230	1 11/16	2 15/16	264416	28.75	264516	32.00	
3/4	7/16		.3281	1 11/16	2 15/16	264021	22.30	264121	25.95
		Q	.3320	1 11/16	3	264417	25.35	264517	30.55
	1 1/8	R	.3390	1 11/16	3	264418	25.35	264518	30.55
5/8			.3438	1 11/16	3	264022	21.10	264122	24.40
		S	.3480	1 3/4	3 1/16	264419	29.10	264519	32.35
1 1/4	T	.3580	1 3/4	3 1/16	264420	29.10	264520	32.35	
	3/4		.3594	1 3/4	3 1/16	264023	23.00	264123	26.80
		U	.3680	1 13/16	3 1/8	264421	26.05	264521	31.30
			.3750	1 13/16	3 1/8	264024	21.60	264124	25.05
1 3/8	V	.3770	1 7/8	3 1/4	264422	33.55	264522	37.20	
	1 1/2	W	.3860	1 7/8	3 1/4	264423	29.60	264523	35.60
			.3906	1 7/8	3 1/4	264025	25.60	264125	29.75
		X	.3970	1 15/16	3 5/16	264424	29.60	264524	37.20
1 5/8	Y	.4040	1 15/16	3 5/16	264425	33.55	264525	37.20	
	1 3/4	Z	.4062	1 15/16	3 5/16	264026	25.60	264126	29.75
			.4130	2	3 3/8	264426	38.10	264526	42.40
1 7/8		.4219	2	3 3/8	264027	28.40	264127	32.35	
	7/16	.4375	2 1/16	3 7/16	264028	27.40	264128	30.40	
	1 1/4	.4531	2 1/8	3 9/16	264029	36.50	264129	46.90	
2	1 1/2	.4688	2 1/8	3 5/8	264030	38.95	264130	45.30	
		.4844	2 3/16	3 11/16	264031	34.95	264131	44.90	
	1 3/4	.5000	2 1/4	3 3/4	264032	37.30	264132	43.35	
2 1/8	1 3/4	.5156	2 3/8	3 7/8	264033	55.65	264133	61.95	
		.5312	2 3/8	3 7/8	264034	46.45	264134	52.45	
	1 7/8	.5469	2 1/2	4	264035	55.65	264135	61.95	
2 1/4	1 7/8	.5625	2 1/2	4	264036	46.45	264136	52.45	
		.5781	2 5/8	4 1/8	264037	65.00	264137	72.25	
	1 1/2	.5938	2 5/8	4 1/8	264038	53.30	264138	60.10	
2 3/8		.6094	2 3/4	4 1/4	264039	65.00	264139	72.25	
	1 1/2	.6250	2 3/4	4 1/4	264040	53.30	264140	60.10	
2 1/2		.6406	2 7/8	4 1/2	264041	77.55	264141	86.30	
	1 3/4	.6562	2 7/8	4 1/2	264042	64.05	264142	72.30	
		.6719	2 7/8	4 5/8	264043	79.55	264143	88.45	
	1 3/4	.6875	2 7/8	4 5/8	264044	65.80	264144	74.20	
2 7/8		.7031	3	4 3/4	264045	89.90	264145	99.90	
	1 3/4	.7188	3	4 3/4	264046	74.55	264146	86.55	
		.7344	3 1/8	5	264047	90.00	264147	100.15	
	1 3/4	.7500	3 1/8	5	264048	74.75	264148	84.20	
3	1 3/4	.7656	3 1/4	5 1/8	264049	96.30	264149	107.15	
	1 3/4	.7812	3 1/4	5 1/8	264050	92.35	264150	107.20	

continued next page

# CNC STUB LENGTH DRILLS - METRIC DIAMETERS

Fractional continued from page 18

TOOL DIAMETER			LENGTH		118° POINT		135° POINT	
FRAC.	WIRE LETTER	DECIMAL EQUIV.	FLUTE	OVER-ALL	TYPE 2640 EDP NO.	PRICE	TYPE 2641 EDP NO.	PRICE
$\frac{5}{64}$		.7969	3 $\frac{3}{8}$	5 $\frac{1}{4}$	264051	\$107.80	264151	\$119.90
$\frac{13}{16}$		.8125	3 $\frac{3}{8}$	5 $\frac{1}{4}$	264052	92.45	264152	104.25
$\frac{53}{64}$		.8281	3 $\frac{1}{2}$	5 $\frac{3}{8}$	264053	105.60	264153	117.40
$\frac{27}{32}$		.8438	3 $\frac{1}{2}$	5 $\frac{3}{8}$	264054	101.20	264154	117.55
$\frac{59}{64}$		.8594	3 $\frac{1}{2}$	5 $\frac{1}{2}$	264055	118.25	264155	131.55
$\frac{7}{8}$		.8750	3 $\frac{1}{2}$	5 $\frac{1}{2}$	264056	101.40	264156	114.30
$\frac{57}{64}$		.8906	3 $\frac{5}{8}$	5 $\frac{5}{8}$	264057	113.45	264157	126.15
$\frac{29}{32}$		.9062	3 $\frac{5}{8}$	5 $\frac{5}{8}$	264058	108.75	264158	126.20
$\frac{59}{64}$		.9219	3 $\frac{3}{4}$	5 $\frac{3}{4}$	264059	126.95	264159	141.25
$\frac{13}{16}$		.9375	3 $\frac{3}{4}$	5 $\frac{3}{4}$	264060	108.85	264160	122.80
$\frac{67}{64}$		.9531	3 $\frac{7}{8}$	5 $\frac{7}{8}$	264061	126.95	264161	141.25
$\frac{37}{32}$		.9688	3 $\frac{7}{8}$	5 $\frac{7}{8}$	264062	114.85	264162	133.40
$\frac{63}{64}$		.9844	4	6	264063	134.15	264163	149.30
1		1.0000	4	6	264064	115.05	264164	129.80
*1 $\frac{1}{32}$		1.0312	4	6 $\frac{1}{4}$	264066	168.10	264166	186.95
*1 $\frac{1}{16}$		1.0625	4	6 $\frac{1}{4}$	264068	144.10	264168	162.55
*1 $\frac{3}{32}$		1.0938	4	6 $\frac{3}{8}$	264070	186.55	264170	207.55
*1 $\frac{1}{8}$		1.1250	4	6 $\frac{3}{8}$	264072	160.00	264172	180.35
*1 $\frac{5}{32}$		1.1562	4 $\frac{1}{4}$	6 $\frac{5}{8}$	264074	227.70	264174	253.35
*1 $\frac{3}{16}$		1.1875	4 $\frac{1}{4}$	6 $\frac{5}{8}$	264076	195.30	264176	218.85
*1 $\frac{7}{32}$		1.2188	4 $\frac{3}{8}$	6 $\frac{3}{4}$	264078	227.70	264178	253.35
*1 $\frac{1}{4}$		1.2500	4 $\frac{3}{8}$	6 $\frac{3}{4}$	264080	195.30	264180	218.85

\*1" Shank diameter x 2  $\frac{1}{4}$ " long.

## METRIC DIAMETERS

TOOL DIAMETER		LENGTH				118° POINT		135° POINT	
mm	INCH	mm	INCH	mm	INCH	TYPE 2640 EDP NO.	PRICE	TYPE 2641 EDP NO.	PRICE
3.0	.1181	22	$\frac{7}{8}$	48	1 $\frac{7}{8}$	2640030	\$17.60	2641030	\$19.40
3.1	.1220	22	$\frac{7}{8}$	48	1 $\frac{7}{8}$	2640031	17.60	2641031	19.40
3.2	.1260	24	$\frac{15}{16}$	49	1 $\frac{15}{16}$	2640032	17.60	2641032	19.40
3.3	.1299	24	$\frac{15}{16}$	49	1 $\frac{15}{16}$	2640033	17.60	2641033	19.40
3.4	.1339	24	$\frac{15}{16}$	49	1 $\frac{15}{16}$	2640034	17.60	2641034	19.40
3.5	.1378	24	$\frac{15}{16}$	49	1 $\frac{15}{16}$	2640035	15.05	2641035	17.25
3.6	.1417	25	1	52	2 $\frac{1}{16}$	2640036	17.60	2641036	19.40
3.7	.1457	25	1	52	2 $\frac{1}{16}$	2640037	17.60	2641037	19.40
3.8	.1496	25	1	52	2 $\frac{1}{16}$	2640038	17.60	2641038	19.40
3.9	.1535	25	1	52	2 $\frac{1}{16}$	2640039	17.60	2641039	19.40
4.0	.1575	27	1 $\frac{1}{16}$	54	2 $\frac{1}{8}$	2640040	15.05	2641040	17.30
4.1	.1614	27	1 $\frac{1}{16}$	54	2 $\frac{1}{8}$	2640041	21.00	2641041	23.10
4.2	.1654	27	1 $\frac{1}{16}$	54	2 $\frac{1}{8}$	2640042	21.00	2641042	23.10
4.3	.1693	27	1 $\frac{1}{16}$	54	2 $\frac{1}{8}$	2640043	21.00	2641043	23.10
4.4	.1732	29	1 $\frac{1}{8}$	56	2 $\frac{3}{16}$	2640044	21.00	2641044	23.10
4.5	.1772	29	1 $\frac{1}{8}$	56	2 $\frac{3}{16}$	2640045	17.95	2641045	20.60
4.6	.1811	29	1 $\frac{1}{8}$	56	2 $\frac{3}{16}$	2640046	21.00	2641046	23.10
4.7	.1850	29	1 $\frac{1}{8}$	56	2 $\frac{3}{16}$	264213	20.30	264313	22.50
4.8	.1890	30	1 $\frac{3}{16}$	57	2 $\frac{1}{4}$	264212	20.15	264312	22.30
4.9	.1929	30	1 $\frac{3}{16}$	57	2 $\frac{1}{4}$	2640049	21.00	2641049	23.10
5.0	.1969	30	1 $\frac{3}{16}$	57	2 $\frac{1}{4}$	2640050	17.95	2641050	20.60
5.1	.2008	30	1 $\frac{3}{16}$	57	2 $\frac{1}{4}$	2640051	21.00	2641051	23.10
5.2	.2047	32	1 $\frac{1}{4}$	60	2 $\frac{3}{8}$	2640052	21.00	2641052	23.10
5.3	.2087	32	1 $\frac{1}{4}$	60	2 $\frac{3}{8}$	2640053	21.00	2641053	23.10
5.4	.2126	32	1 $\frac{1}{4}$	60	2 $\frac{3}{8}$	2640054	21.00	2641054	23.10
5.5	.2165	32	1 $\frac{1}{4}$	60	2 $\frac{3}{8}$	2640055	17.95	2641055	20.60
5.6	.2205	33	1 $\frac{1}{8}$	62	2 $\frac{7}{16}$	2640056	21.00	2641056	23.10
5.7	.2244	33	1 $\frac{1}{8}$	62	2 $\frac{7}{16}$	2640057	21.00	2641057	23.10
5.8	.2283	33	1 $\frac{1}{8}$	62	2 $\frac{7}{16}$	2640058	21.00	2641058	23.10
5.9	.2323	33	1 $\frac{1}{8}$	62	2 $\frac{7}{16}$	2640059	21.00	2641059	23.10
6.0	.2362	35	1 $\frac{3}{8}$	64	2 $\frac{1}{2}$	2640060	16.80	2641060	19.20
6.1	.2402	35	1 $\frac{3}{8}$	64	2 $\frac{1}{2}$	2640061	21.65	2641061	24.00
6.2	.2441	35	1 $\frac{3}{8}$	64	2 $\frac{1}{2}$	2640062	21.65	2641062	24.00
6.3	.2480	35	1 $\frac{3}{8}$	64	2 $\frac{1}{2}$	2640063	21.65	2641063	24.00
6.4	.2520	37	1 $\frac{7}{16}$	67	2 $\frac{5}{8}$	2640064	21.65	2641064	24.00
6.5	.2559	37	1 $\frac{7}{16}$	67	2 $\frac{5}{8}$	2640065	18.60	2641065	21.30

TOOL DIAMETER		LENGTH				118° POINT		135° POINT	
mm	INCH	mm	INCH	mm	INCH	TYPE 2640 EDP NO.	PRICE	TYPE 2641 EDP NO.	PRICE
6.6	.2598	37	1 $\frac{7}{16}$	67	2 $\frac{5}{8}$	2640066	\$21.65	2641066	\$24.00
6.7	.2638	37	1 $\frac{7}{16}$	67	2 $\frac{5}{8}$	2640067	21.65	2641067	24.00
6.8	.2677	38	1 $\frac{1}{2}$	68	2 $\frac{1}{16}$	2640068	21.65	2641068	24.00
6.9	.2717	38	1 $\frac{1}{2}$	68	2 $\frac{1}{16}$	2640069	21.65	2641069	24.00
7.0	.2756	38	1 $\frac{1}{2}$	68	2 $\frac{1}{16}$	2640070	18.60	2641070	21.30
7.1	.2795	38	1 $\frac{1}{2}$	68	2 $\frac{1}{16}$	2640071	21.65	2641071	24.00
7.2	.2835	40	1 $\frac{9}{16}$	70	2 $\frac{3}{4}$	2640072	24.90	2641072	27.45
7.3	.2874	40	1 $\frac{9}{16}$	70	2 $\frac{3}{4}$	2640073	24.90	2641073	27.45
7.4	.2913	40	1 $\frac{9}{16}$	70	2 $\frac{3}{4}$	2640074	24.90	2641074	27.45
7.5	.2953	40	1 $\frac{9}{16}$	70	2 $\frac{3}{4}$	2640075	21.35	2641075	24.40
7.6	.2992	41	1 $\frac{5}{8}$	71	2 $\frac{13}{16}$	2640076	24.90	2641076	27.45
7.7	.3031	41	1 $\frac{5}{8}$	71	2 $\frac{13}{16}$	2640077	24.90	2641077	27.45
7.8	.3071	41	1 $\frac{5}{8}$	71	2 $\frac{13}{16}$	2640078	24.90	2641078	27.45
7.9	.3110	41	1 $\frac{5}{8}$	71	2 $\frac{13}{16}$	2640079	24.90	2641079	27.45
8.0	.3150	43	1 $\frac{11}{16}$	75	2 $\frac{15}{16}$	2640080	21.35	2641080	24.40
8.1	.3189	43	1 $\frac{11}{16}$	75	2 $\frac{15}{16}$	2640081	26.80	2641081	29.35
8.2	.3228	43	1 $\frac{11}{16}$	75	2 $\frac{15}{16}$	2640082	26.80	2641082	29.35
8.3	.3268	43	1 $\frac{11}{16}$	75	2 $\frac{15}{16}$	2640083	26.80	2641083	29.35
8.4	.3307	43	1 $\frac{11}{16}$	76	3	2640084	26.80	2641084	29.35
8.5	.3346	43	1 $\frac{11}{16}$	76	3	2640085	22.95	2641085	25.95
8.6	.3386	43	1 $\frac{11}{16}$	76	3	2640086	26.80	2641086	29.35
8.7	.3425	43	1 $\frac{11}{16}$	76	3	2640087	27.20	2641087	30.00
8.8	.3465	44	1 $\frac{3}{4}$	78	3 $\frac{1}{16}$	2640088	27.20	2641088	30.00
8.9	.3504	44	1 $\frac{3}{4}$	78	3 $\frac{1}{16}$	2640089	27.20	2641089	30.00
9.0	.3543	44	1 $\frac{3}{4}$	78	3 $\frac{1}{16}$	2640090	23.35	2641090	26.80
9.1	.3583	44	1 $\frac{3}{4}$	78	3 $\frac{1}{16}$	2640091	27.20	2641091	30.00
9.2	.3622	46	1 $\frac{13}{16}$	79	3 $\frac{1}{8}$	2640092	27.20	2641092	30.00
9.3	.3661	46	1 $\frac{13}{16}$	79	3 $\frac{1}{8}$	2640093	27.20	2641093	30.00
9.4	.3701	46	1 $\frac{13}{16}$	79	3 $\frac{1}{8}$	2640094	27.20	2641094	30.00
9.5	.3740	46	1 $\frac{13}{16}$	79	3 $\frac{1}{8}$	2640095	23.35	2641095	26.80
9.6	.3780	48	1 $\frac{7}{8}$	83	3 $\frac{1}{4}$	2640096	30.30	2641096	33.40
9.7	.3819	48	1 $\frac{7}{8}$	83	3 $\frac{1}{4}$	2640097	30.30	2641097	33.40
9.8	.3858	48	1 $\frac{7}{8}$	83	3 $\frac{1}{4}$	2640098	30.30	2641098	33.40
9.9	.3898	48	1 $\frac{7}{8}$	83	3 $\frac{1}{4}$	2640099	30.30	2641099	33.40
10.0	.3937	49	1 $\frac{15}{16}$	84	3 $\frac{5}{16}$	2640100	26.00	2641100	29.75
10.5	.4134	51	2	86	3 $\frac{3}{8}$	2640105	29.05	2641105	32.35
11.0	.4331	52	2 $\frac{1}{16}$	87	3 $\frac{7}{16}$	2640110	29.05	2641110	32.35
11.5	.4528	54	2 $\frac{1}{8}$	90	3 $\frac{9}{16}$	2640115	40.90	2641115	45.30
12.0	.4724	56	2 $\frac{3}{16}$	94	3 $\frac{11}{16}$	2640120	39.10	2641120	43.35
12.5	.4921	57	2 $\frac{1}{4}$	95	3 $\frac{3}{4}$	2640125	39.10	2641125	43.35
13.0	.5118	60	2 $\frac{3}{8}$	98	3 $\frac{7}{8}$	2640130	48.30	2641130	52.45
13.5	.5315	60	2 $\frac{3}{8}$	98	3 $\frac{7}{8}$	2640135	47.40	2641135	52.45
14.0	.5512	64	2 $\frac{1}{2}$	102	4	2640140	47.40	2641140	52.45
14.5	.5709	67	2 $\frac{5}{8}$	105	4 $\frac{1}{8}$	2640145	66.75	2641145	73.55
15.0	.5906	67	2 $\frac{5}{8}$	105	4 $\frac{1}{8}$	2640150	66.75	2641150	73.55
15.5	.6102	70	2 $\frac{3}{4}$	108	4 $\frac{1}{4}$	2640155	75.25	2641155	82.95
16.0	.6299	73	2 $\frac{7}{8}$	114	4 $\frac{1}{2}$	2640160	84.80	2641160	93.50
16.5	.6496	73	2 $\frac{7}{8}$	114	4 $\frac{1}{2}$	2640165	84.80	2641165	93.50
17.0	.6693								



# TWIST DRILLS - CARBIDE TIPPED

## TAPER LENGTH



### TYPE 2630 - TAPER LENGTH - 118° POINT

Straight shank, tapered, for use in ASA split sleeve drill drivers. Longer flute and overall lengths.

### TYPE 2631 - TAPER LENGTH - 135° POINT

Same as type 2630 above, except with 135° split point designed for drilling abrasive and tough materials.

TOOL DIAMETER			LENGTH			118° POINT		135° POINT	
FRAC.	WIRE LETTER	DEC. EQUIV.	FLUTE	OVER-ALL	TYPE 2630 EDP NO.	PRICE	TYPE 2631 EDP NO.	PRICE	
1/8		.1250	2 3/4	5 1/8	263008	\$14.45	263108	\$17.95	
	30	.1285	3	5 3/8	263230	20.15	263330	21.75	
	29	.1360	3	5 3/8	263229	20.15	263329	21.75	
	28	.1405	3	5 3/8	263228	20.15	263328	21.75	
9/64		.1406	3	5 3/8	263009	16.65	263109	18.95	
	27	.1440	3	5 3/8	263227	20.15	263327	21.75	
	26	.1470	3	5 3/8	263226	20.15	263326	21.75	
	25	.1495	3	5 3/8	263225	20.15	263325	21.75	
5/32		.1520	3	5 3/8	263224	20.15	263324	21.75	
	23	.1540	3	5 3/8	263223	20.15	263323	21.75	
		.1562	3	5 3/8	263010	15.30	263110	18.95	
	22	.1570	3 3/8	5 3/4	263222	20.90	263322	22.60	
		.1590	3 3/8	5 3/4	263221	20.90	263321	22.60	
	21	.1610	3 3/8	5 3/4	263220	20.90	263320	22.60	
	19	.1660	3 3/8	5 3/4	263219	20.90	263319	22.60	
	18	.1695	3 3/8	5 3/4	263218	20.90	263318	22.60	
11/64		.1719	3 3/8	5 3/4	263011	15.55	263111	19.65	
	17	.1730	3 3/8	5 3/4	263217	20.90	263317	22.60	
	16	.1770	3 3/8	5 3/4	263216	20.90	263316	22.60	
	15	.1800	3 3/8	5 3/4	263215	20.90	263315	22.60	
3/16		.1820	3 3/8	5 3/4	263214	20.90	263314	22.60	
	14	.1850	3 3/8	5 3/4	263213	20.90	263313	22.60	
		.1875	3 3/8	5 3/4	263012	15.55	263112	19.65	
	12	.1890	3 3/8	6	263212	22.05	263312	23.80	
		.1910	3 3/8	6	263211	22.05	263311	23.80	
	11	.1935	3 3/8	6	263210	22.05	263310	23.80	
	9	.1960	3 3/8	6	263209	22.05	263309	23.80	
	8	.1990	3 3/8	6	263208	22.05	263308	23.80	
13/64		.2010	3 3/8	6	263207	22.05	263307	23.80	
		.2031	3 3/8	6	263013	16.45	263113	20.70	
	6	.2040	3 3/8	6	263206	22.05	263306	23.80	
	5	.2055	3 3/8	6	263205	22.05	263305	23.80	
7/32		.2090	3 3/8	6	263204	22.05	263304	23.80	
	4	.2130	3 3/8	6	263203	22.05	263303	23.80	
		.2188	3 3/8	6	263014	16.45	263114	20.70	
	2	.2210	3 3/4	6 1/8	263202	24.95	263302	27.00	
15/64		.2280	3 3/4	6 1/8	263201	24.95	263301	27.00	
	A	.2340	3 3/4	6 1/8	263401	24.95	263501	27.00	
		.2344	3 3/4	6 1/8	263015	18.65	263115	23.40	
	B	.2380	3 3/4	6 1/8	263402	24.95	263502	27.00	
1/4		.2420	3 3/4	6 1/8	263403	24.95	263503	27.00	
	C	.2460	3 3/4	6 1/8	263404	24.95	263504	27.00	
	D	.2500	3 3/4	6 1/8	263016	18.65	263116	23.40	
	E	.2570	3 7/8	6 1/4	263406	27.90	263506	30.20	
17/64		.2610	3 7/8	6 1/4	263407	27.90	263507	30.20	
	F	.2656	3 7/8	6 1/4	263017	20.90	263117	26.25	
		.2660	3 7/8	6 1/4	263408	27.90	263508	30.20	
	G	.2720	3 7/8	6 1/4	263409	27.90	263509	30.20	
9/32		.2770	3 7/8	6 1/4	263410	27.90	263510	30.20	
	H	.2810	3 7/8	6 1/4	263411	27.90	263511	30.20	
		.2812	3 7/8	6 1/4	263018	20.90	263118	26.25	
	I	.2900	4	6 3/8	263412	30.25	263512	32.60	
19/64		.2950	4	6 3/8	263413	30.25	263513	32.60	
	J	.2969	4	6 3/8	263019	22.50	263119	28.35	
		.3020	4	6 3/8	263414	30.25	263514	32.60	
	K	.3125	4	6 3/8	263020	22.50	263120	28.35	
21/64		.3160	4 1/8	6 1/2	263415	34.30	263515	37.05	
		.3230	4 1/8	6 1/2	263416	34.30	263516	37.05	
		.3281	4 1/8	6 1/2	263021	24.80	263121	32.25	
	P								

TOOL DIAMETER			LENGTH			118° POINT		135° POINT	
FRAC.	WIRE LETTER	DEC. EQUIV.	FLUTE	OVER-ALL	TYPE 2630 EDP NO.	PRICE	TYPE 2631 EDP NO.	PRICE	
11/32		.3320	4 1/8	6 1/2	263417	\$34.30	263517	\$37.05	
	Q	.3390	4 1/8	6 1/2	263418	34.30	263518	37.05	
	R	.3438	4 1/8	6 1/2	263022	24.80	263122	32.60	
	S	.3480	4 1/4	6 3/4	263419	37.50	263519	40.55	
23/64		.3580	4 1/4	6 3/4	263420	37.50	263520	40.55	
	T	.3594	4 1/4	6 3/4	263023	27.95	263123	35.30	
		.3680	4 1/4	6 3/4	263421	37.50	263521	40.55	
	U	.3750	4 1/4	6 3/4	263024	27.95	263124	35.30	
25/64		.3770	4 3/8	7	263422	40.20	263522	43.45	
	V	.3860	4 3/8	7	263423	40.20	263523	43.45	
	W	.3906	4 3/8	7	263025	30.00	263125	37.85	
	X	.3970	4 3/8	7	263424	40.20	263524	43.45	
13/32		.4040	4 3/8	7	263425	40.20	263525	43.45	
	Y	.4062	4 3/8	7	263026	30.00	263126	37.85	
	Z	.4130	4 5/8	7 1/4	263426	46.30	263526	50.00	
		.4219	4 5/8	7 1/4	263027	34.60	263127	43.45	
27/64		.4375	4 5/8	7 1/4	263028	34.60	263128	43.45	
		.4531	4 3/4	7 1/2	263029	38.10	263129	48.05	
		.4688	4 3/4	7 1/2	263030	38.10	263130	48.05	
		.4844	4 3/4	7 3/4	263031	40.00	263131	50.35	
1/2		.5000	4 3/4	7 3/4	263032	40.00	263132	50.35	
		.5156	4 3/4	8	263033	44.95	263133	55.65	
		.5312	4 3/4	8	263034	45.95	263134	55.65	
		.5469	4 7/8	8 1/4	263035	46.40	263135	58.50	
9/16		.5625	4 7/8	8 1/4	263036	46.40	263136	58.50	
		.5781	4 7/8	8 3/4	263037	48.90	263137	61.85	
		.5938	4 7/8	8 3/4	263038	49.80	263138	61.85	
		.6094	4 7/8	8 3/4	263039	56.45	263139	71.15	
5/8		.6250	4 7/8	8 3/4	263040	56.45	263140	71.15	
		.6406	5 1/8	9	263041	58.55	263141	72.45	
		.6562	5 1/8	9	263042	57.55	263142	69.20	
		.6719	5 3/8	9 1/4	263043	60.55	263143	73.25	
11/16		.6875	5 3/8	9 1/4	263044	58.50	263144	73.25	
		.7031	5 3/8	9 1/2	263045	59.10	263145	74.55	
		.7188	5 3/8	9 1/2	263046	59.70	263146	75.30	
		.7344	5 7/8	9 3/4	263047	60.05	263147	75.75	
3/4		.7500	5 7/8	9 3/4	263048	61.00	263148	76.85	
		.7656	6	9 7/8	263049	77.50	263149	83.70	
		.7812	6	9 7/8	263050	77.50	263150	83.70	
		.7969	6 1/8	10	263051	77.80	263151	84.05	
13/16		.8125	6 1/8	10	263052	66.55	263152	84.05	
		.8281	6 1/8	10	263053	77.80	263153	84.05	
		.8438	6 1/8	10	263054	77.80	263154	84.05	
		.8594	6 1/8	10	263055	82.35	263155	88.95	
7/8		.8750	6 1/8	10	263056	70.45	263156	88.95	
		.8906	6 1/8	10	263057	85.15	263157	92.00	
		.9062	6 1/8	10	263058	85.15	263158	92.00	
		.9219	6 1/8	10 3/4	263059	86.40	263159	93.35	
15/16		.9375	6 1/8	10 3/4	263060	73.95	263160	93.35	
		.9531	6 3/8	11	263061	90.50	263161	97.70	
		.9688	6 3/8	11	263062	90.50	263162	97.70	
		.9844	6 3/8	11	263063	93.35	263163	100.75	
1		1.0000	6 3/8	11	263064	79.80	263164	100.75	



# TWIST DRILLS - CARBIDE TIPPED

## METRIC DIAMETERS - TAPER LENGTH

**USE:**

The longer length of these drills increases their effective reach through drill bushings.

**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"
Thru 1/2" Dia. Overall Length Tolerance +1/4", -1/8"					

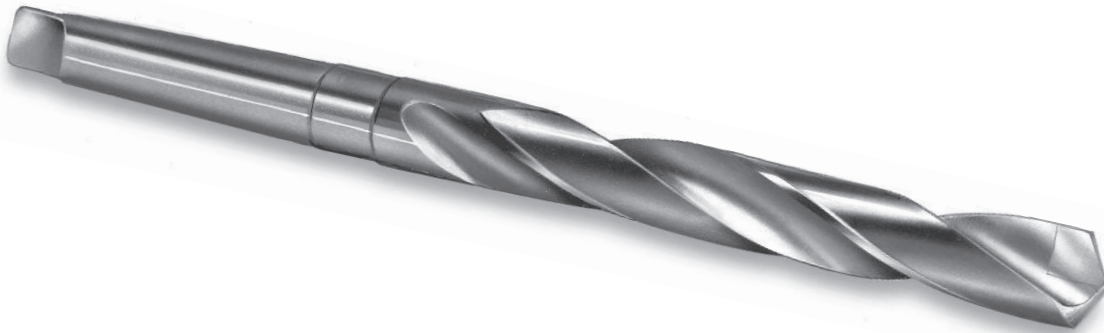
TOOL DIAMETER	LENGTH				118° POINT		135° POINT		
	FLUTE		OVERALL		TYPE 2630 EDP NO.	PRICE	TYPE 2631 EDP NO.	PRICE	
	mm	INCH	mm	INCH					
3.2	.1260	76	3	137	5 3/8	2630032	\$18.60	2631032	\$20.05
3.3	.1299	76	3	137	5 3/8	2630033	18.60	2631033	20.05
3.4	.1339	76	3	137	5 3/8	2630034	18.60	2631034	20.05
3.5	.1378	76	3	137	5 3/8	2630035	18.00	2631035	19.60
3.6	.1417	76	3	137	5 3/8	2630036	18.00	2631036	19.60
3.7	.1457	76	3	137	5 3/8	2630037	18.00	2631037	19.60
3.8	.1496	76	3	137	5 3/8	2630038	18.00	2631038	19.60
3.9	.1535	76	3	137	5 3/8	2630039	18.00	2631039	19.60
4.0	.1575	86	3 3/8	146	5 3/4	2630040	17.65	2631040	19.10
4.1	.1614	86	3 3/8	146	5 3/4	2630041	18.60	2631041	20.05
4.2	.1654	86	3 3/8	146	5 3/4	2630042	18.60	2631042	20.05
4.3	.1693	86	3 3/8	146	5 3/4	2630043	18.60	2631043	20.05
4.4	.1732	86	3 3/8	146	5 3/4	2630044	19.60	2631044	21.10
4.5	.1772	86	3 3/8	146	5 3/4	2630045	19.60	2631045	21.10
4.6	.1811	86	3 3/8	146	5 3/4	2630046	19.60	2631046	21.10
4.7	.1850	86	3 3/8	146	5 3/4	263213	20.90	263313	22.60
4.8	.1890	92	3 3/8	152	6	263212	22.05	263312	23.80
4.9	.1929	92	3 3/8	152	6	2630049	19.60	2631049	21.10
5.0	.1969	92	3 3/8	152	6	2630050	19.55	2631050	21.10
5.1	.2008	92	3 3/8	152	6	2630051	20.35	2631051	22.00
5.2	.2047	92	3 3/8	152	6	2630052	17.45	2631052	22.00
5.3	.2087	92	3 3/8	152	6	2630053	20.35	2631053	22.00
5.4	.2126	92	3 3/8	152	6	2630054	20.35	2631054	22.00
5.5	.2165	92	3 3/8	152	6	2630055	20.85	2631055	22.00
5.6	.2205	95	3 3/4	156	6 1/8	2630056	20.35	2631056	22.00
5.7	.2244	95	3 3/4	156	6 1/8	2630057	20.35	2631057	22.00
5.8	.2283	95	3 3/4	156	6 1/8	2630058	20.35	2631058	22.00
5.9	.2323	95	3 3/4	156	6 1/8	2630059	21.20	2631059	22.95
6.0	.2362	95	3 3/4	156	6 1/8	2630060	21.60	2631060	23.85
6.1	.2402	95	3 3/4	156	6 1/8	2630061	22.60	2631061	24.35
6.2	.2441	95	3 3/4	156	6 1/8	2630062	22.60	2631062	24.35
6.3	.2480	95	3 3/4	156	6 1/8	2630063	22.60	2631063	24.35
6.4	.2520	98	3 7/8	159	6 1/4	2630064	24.80	2631064	26.80
6.5	.2559	98	3 7/8	159	6 1/4	2630065	22.40	2631065	26.80
6.6	.2598	98	3 7/8	159	6 1/4	2630066	25.55	2631066	27.50
6.7	.2638	98	3 7/8	159	6 1/4	2630067	25.55	2631067	27.50
6.8	.2677	98	3 7/8	159	6 1/4	2630068	25.55	2631068	27.50
6.9	.2717	98	3 7/8	159	6 1/4	2630069	25.55	2631069	27.50
7.0	.2756	98	3 7/8	159	6 1/4	2630070	23.35	2631070	26.80
7.1	.2795	98	3 7/8	159	6 1/4	2630071	25.55	2631071	27.50
7.2	.2835	102	4	162	6 3/8	2630072	25.55	2631072	27.50
7.3	.2874	102	4	162	6 3/8	2630073	25.55	2631073	27.50
7.4	.2913	102	4	162	6 3/8	2630074	25.55	2631074	27.50
7.5	.2953	102	4	162	6 3/8	2630075	24.75	2631075	28.95
7.6	.2992	102	4	162	6 3/8	2630076	26.80	2631076	28.95
7.7	.3031	102	4	162	6 3/8	2630077	26.80	2631077	28.95
7.8	.3071	102	4	162	6 3/8	2630078	26.80	2631078	28.95
7.9	.3110	102	4	162	6 3/8	2630079	26.80	2631079	28.95
8.0	.3150	105	4 1/8	165	6 1/2	2630080	25.10	2631080	28.95
8.1	.3189	105	4 1/8	165	6 1/2	2630081	26.80	2631081	28.95
8.2	.3228	105	4 1/8	165	6 1/2	2630082	28.55	2631082	30.75
8.3	.3268	105	4 1/8	165	6 1/2	2630083	28.55	2631083	30.75
8.4	.3307	105	4 1/8	165	6 1/2	2630084	28.55	2631084	30.75
8.5	.3346	105	4 1/8	165	6 1/2	2630085	26.30	2631085	32.80
8.6	.3386	105	4 1/8	165	6 1/2	2630086	30.40	2631086	32.80
8.7	.3425	105	4 1/8	165	6 1/2	2630087	30.40	2631087	32.80

TOOL DIAMETER	LENGTH				118° POINT		135° POINT		
	FLUTE		OVERALL		TYPE 2630 EDP NO.	PRICE	TYPE 2631 EDP NO.	PRICE	
	mm	INCH	mm	INCH					
8.8	.3465	108	4 1/4	171	6 3/4	2630088	\$30.40	2631088	\$32.80
8.9	.3504	108	4 1/4	171	6 3/4	2630089	30.40	2631089	32.80
9.0	.3543	108	4 1/4	171	6 3/4	2630090	28.45	2631090	36.00
9.1	.3583	108	4 1/4	171	6 3/4	2630091	33.30	2631091	36.00
9.2	.3622	108	4 1/4	171	6 3/4	2630092	33.30	2631092	36.00
9.3	.3661	108	4 1/4	171	6 3/4	2630093	33.30	2631093	36.00
9.4	.3701	108	4 1/4	171	6 3/4	2630094	33.30	2631094	36.00
9.5	.3740	108	4 1/4	171	6 3/4	2630095	29.15	2631095	36.00
9.6	.3780	111	4 3/8	178	7	2630096	34.95	2631096	37.75
9.7	.3819	111	4 3/8	178	7	2630097	34.95	2631097	37.75
9.8	.3858	111	4 3/8	178	7	2630098	34.95	2631098	37.75
9.9	.3898	111	4 3/8	178	7	2630099	34.95	2631099	37.75
10.0	.3937	111	4 3/8	178	7	2630100	30.60	2631100	38.65
10.1	.3976	111	4 3/8	178	7	2630101	35.75	2631101	38.65
10.2	.4016	111	4 3/8	178	7	2630102	37.30	2631102	40.30
10.3	.4055	111	4 3/8	178	7	2630103	37.30	2631103	40.30
10.4	.4094	117	4 5/8	184	7 1/4	2630104	38.95	2631104	42.00
10.5	.4134	117	4 5/8	184	7 1/4	2630105	34.85	2631105	42.00
10.6	.4173	117	4 5/8	184	7 1/4	2630106	40.80	2631106	44.10
10.7	.4213	117	4 5/8	184	7 1/4	2630107	40.80	2631107	44.10
10.8	.4252	117	4 5/8	184	7 1/4	2630108	40.80	2631108	44.10
10.9	.4291	117	4 5/8	184	7 1/4	2630109	40.80	2631109	44.10
11.0	.4331	117	4 5/8	184	7 1/4	2630110	37.70	2631110	44.30
11.5	.4528	121	4 3/4	190	7 1/2	2630115	42.30	2631115	49.00
12.0	.4724	121	4 3/4	197	7 3/4	2630120	45.75	2631120	51.35
12.5	.4921	121	4 3/4	197	7 3/4	2630125	47.40	2631125	51.35
13.0	.5118	121	4 3/4	203	8	2630130	48.60	2631130	54.20
13.5	.5315	121	4 3/4	203	8	2630135	51.60	2631135	54.20
14.0	.5512	124	4 7/8	210	8 1/4	2630140	54.80	2631140	60.05
14.5	.5709	124	4 7/8	222	8 3/4	2630145	58.80	2631145	64.30
15.0	.5906	124	4 7/8	222	8 3/4	2630150	58.80	2631150	64.30
15.5	.6102	124	4 7/8	222	8 3/4	2630155	66.65	2631155	73.05
16.0	.6299	130	5 1/8	229	9	2630160	66.65	2631160	73.45
16.5	.6496	130	5 1/8	229	9	2630165	71.20	2631165	73.45
17.0	.6693	137	5 3/8	235	9 1/4	2630170	69.05	2631170	75.75
17.5	.6890	143	5 3/8	241	9 1/2	2630175	69.05	2631175	75.75
18.0	.7087	143	5 3/8	241	9 1/2	2630180	70.55	2631180	77.25
18.5	.7283	149	5 7/8	248	9 3/4	2630185	72.10	2631185	78.85
19.0	.7480	149	5 7/8	248	9 3/4	2630190	72.10	2631190	78.85
19.5	.7677	152	6	251	9 7/8	2630195	86.95	2631195	93.85
20.0	.7874	156	6 1/8	254	10	2630200	87.30	2631200	94.30
20.5	.8071	156	6 1/8	254	10	2630205	87.30	2631205	94.30
21.0	.8268	156	6 1/8	254	10	2630210	87.30	2631210	94.30
21.5	.8465	156	6 1/8	254	10	2630215	87.30	2631215	94.30
22.0	.8661	156	6 1/8	254	10	2630220	92.40	2631220	99.75
22.5	.8858	156	6 1/8	254	10	2630225	95.60	2631225	103.20
23.0	.9055	156	6 1/8	254	10	2630230	95.60	2631230	103.20
23.5	.9252	156	6 1/8	273	10 3/4	2630235	96.95	2631235	104.70
24.0	.9449	162	6 3/8	279	11	2630240	101.50	2631240	109.65
24.5	.9646	162	6 3/8	279	11	2630245	101.50	2631245	109.65
25.0	.9843	162	6 3/8	279	11	2630250	104.70	2631250	113.10



# TWIST DRILLS - CARBIDE TIPPED

## TAPER SHANK



### 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	\$36.30	266116	\$41.20
17/64	.2656	3	6 1/4	1	266017	37.15	266117	42.10
9/32	.2812	3	6 1/4	1	266018	37.15	266118	42.10
19/64	.2969	3 1/8	6 3/8	1	266019	37.15	266119	42.10
5/16	.3125	3 1/8	6 3/8	1	266020	37.15	266120	42.10
21/64	.3281	3 1/4	6 1/2	1	266021	47.30	266121	53.45
11/32	.3438	3 1/4	6 1/2	1	266022	47.30	266122	53.45
23/64	.3594	3 1/2	6 3/4	1	266023	47.30	266123	53.45
3/8	.3750	3 1/2	6 3/4	1	266024	47.30	266124	53.45
25/64	.3906	3 5/8	7	1	266025	54.70	266125	62.05
13/32	.4062	3 5/8	7	1	266026	54.70	266126	62.05
27/64	.4219	3 7/8	7 1/4	1	266027	54.70	266127	62.05
7/16	.4375	3 7/8	7 1/4	1	266028	47.90	266128	54.30
29/64	.4531	4 1/8	7 1/2	1	266029	58.15	266129	65.95
15/32	.4688	4 1/8	7 1/2	1	266030	58.15	266130	65.95
31/64	.4844	4 3/8	8 1/4	2	266031	58.15	266131	65.95
1/2	.5000	4 3/8	8 1/4	2	266032	45.75	266132	61.00
33/64	.5156	4 5/8	8 1/2	2	266033	59.10	266133	70.95
17/32	.5312	4 5/8	8 1/2	2	266034	48.30	266134	62.75
35/64	.5469	4 7/8	8 3/4	2	266035	59.95	266135	71.95
9/16	.5625	4 7/8	8 3/4	2	266036	48.70	266136	63.60
37/64	.5781	4 7/8	8 3/4	2	266037	62.75	266137	75.35
19/32	.5938	4 7/8	8 3/4	2	266038	50.85	266138	66.60
39/64	.6094	4 7/8	8 3/4	2	266039	72.70	266139	87.25
5/8	.6250	4 7/8	8 3/4	2	266040	59.20	266140	77.05
41/64	.6406	5 1/8	9	2	266041	73.85	266141	88.65
21/32	.6562	5 1/8	9	2	266042	57.70	266142	78.35
43/64	.6719	5 3/8	9 1/4	2	266043	74.70	266143	89.75
11/16	.6875	5 3/8	9 1/4	2	266044	59.55	266144	79.30
45/64	.7031	5 5/8	9 1/2	2	266045	76.80	266145	92.10
23/32	.7188	5 5/8	9 1/2	2	266046	61.00	266146	81.45
47/64	.7344	5 7/8	9 3/4	2	266047	78.30	266147	94.00
3/4	.7500	5 7/8	9 3/4	2	266048	65.85	266148	83.10
49/64	.7656	6	9 7/8	2	266049	83.30	266149	100.00
25/32	.7812	6	9 7/8	2	266050	71.25	266150	88.30
51/64	.7969	6 1/8	10 3/4	3	266051	84.15	266151	101.00
13/16	.8125	6 1/8	10 3/4	3	266052	72.05	266152	89.25

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	\$84.15	266153	\$101.00
27/32	.8438	6 1/8	10 3/4	3	266054	73.55	266154	89.25
55/64	.8594	6 1/8	10 3/4	3	266055	88.90	266155	106.70
7/8	.8750	6 1/8	10 3/4	3	266056	78.20	266156	94.30
57/64	.8906	6 1/8	10 3/4	3	266057	91.85	266157	110.15
29/32	.9062	6 1/8	10 3/4	3	266058	84.10	266158	97.45
59/64	.9219	6 1/8	10 3/4	3	266059	93.55	266159	112.20
15/16	.9375	6 1/8	10 3/4	3	266060	89.80	266160	99.20
61/64	.9531	6 3/8	11	3	266061	98.10	266161	117.70
31/32	.9688	6 3/8	11	3	266062	89.80	266162	104.00
63/64	.9844	6 3/8	11	3	266063	100.65	266163	120.80
1	1.0000	6 3/8	11	3	266064	88.35	266164	106.80
1 1/64	1.0156	6 1/2	11 1/8	3	266065	155.80	266165	176.55
1 1/32	1.0312	6 1/2	11 1/8	3	266066	129.30	266166	146.60
1 1/64	1.0469	6 5/8	11 1/4	3	266067	159.70	266167	180.90
1 1/16	1.0625	6 5/8	11 1/4	3	266068	109.70	266168	139.05
1 5/64	1.0781	6 7/8	12 1/2	4	266069	173.20	266169	196.30
1 3/32	1.0938	6 7/8	12 1/2	4	266070	143.80	266170	162.95
1 7/64	1.1094	7 1/8	12 3/4	4	266071	177.10	266171	200.60
1 1/8	1.1250	7 1/8	12 3/4	4	266072	121.50	266172	154.20
1 9/64	1.1406	7 1/4	12 7/8	4	266073	198.75	266173	225.20
1 1/32	1.1562	7 1/4	12 7/8	4	266074	165.00	266174	186.95
1 11/64	1.1719	7 3/8	13	4	266075	202.70	266175	229.45
1 3/16	1.1875	7 3/8	13	4	266076	139.20	266176	176.45
1 13/64	1.2031	7 1/2	13 1/8	4	266077	213.35	266177	241.60
1 7/32	1.2188	7 1/2	13 1/8	4	266078	177.05	266178	200.55
1 15/64	1.2344	7 5/8	13 1/2	4	266079	217.10	266179	246.00
1 1/4	1.2500	7 5/8	13 1/2	4	266080	148.95	266180	189.05
1 9/32	1.2812	8 1/2	14 1/8	4	266082	252.85	266182	286.45
1 5/16	1.3125	8 5/8	14 1/4	4	266084	219.85	266184	249.05
1 11/32	1.3438	8 3/4	14 3/8	4	266086	271.55	266186	307.65
1 3/8	1.3750	8 7/8	14 1/2	4	266088	236.15	266188	267.50
1 13/32	1.4062	9	14 5/8	4	266090	292.15	266190	331.10
1 7/16	1.4375	9 1/8	14 3/4	4	266092	254.10	266192	287.85
1 15/32	1.4688	9 1/4	14 7/8	4	266094	310.95	266194	352.30
1 1/2	1.5000	9 3/8	15	4	266096	270.30	266196	306.30



# 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.

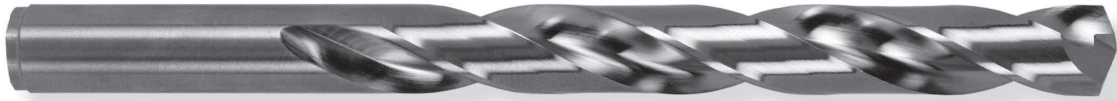


TOOL DIAMETER			FLUTE LENGTH	6" OVERALL LENGTH		12" OVERALL LENGTH	
FRAC.	WIRE LETTER	DEC. EQUIV.		TYPE 2610 EDP NO.	PRICE	TYPE 2611 EDP NO.	PRICE
1/8	32	.1160	1 3/8	261232	\$20.35	261332	\$24.00
	31	.1200	1 3/8	261231	18.20	261331	21.40
		.1250	1 3/8	261008	14.10	261108	16.65
	30	.1285	1 3/8	261230	19.20	261330	22.60
3/64	29	.1360	1 3/4	261229	19.80	261329	23.30
	28	.1405	1 3/4	261228	20.15	261328	23.75
		.1406	1 3/4	261009	15.35	261109	18.00
	27	.1440	1 3/8	261227	20.60	261327	24.20
1/4	26	.1470	1 7/8	261226	20.15	261326	23.75
	25	.1495	1 7/8	261225	20.15	261325	23.75
	24	.1520	2	261224	20.60	261324	24.20
	23	.1540	2	261223	20.15	261323	23.75
5/32	22	.1562	2	261010	15.00	261110	17.70
		.1570	2	261222	22.05	261322	25.95
	21	.1590	2 1/8	261221	21.35	261321	25.15
	20	.1610	2 1/8	261220	21.90	261320	25.70
3/16	19	.1660	2 1/8	261219	21.90	261319	25.70
	18	.1695	2 1/8	261218	21.90	261318	25.70
		.1719	2 1/8	261011	16.40	261111	19.25
	17	.1730	2 3/16	261217	21.90	261317	25.70
1/2	16	.1770	2 3/16	261216	21.35	261316	25.15
	15	.1800	2 3/16	261215	22.05	261315	25.95
	14	.1820	2 3/16	261214	21.35	261314	25.15
	13	.1850	2 3/16	261213	21.35	261313	25.15
5/8	12	.1875	2 5/16	261012	16.00	261112	18.85
		.1890	2 5/16	261212	22.25	261312	26.20
	11	.1910	2 5/16	261211	22.50	261311	26.55
	10	.1935	2 5/16	261210	22.25	261310	26.20
3/4	9	.1960	2 7/16	261209	22.50	261309	26.55
	8	.1990	2 7/16	261208	22.50	261308	26.55
	7	.2010	2 7/16	261207	22.50	261307	26.55
		.2031	2 7/16	261013	17.55	261113	20.60
7/8	6	.2040	2 1/2	261206	23.15	261306	27.25
	5	.2055	2 1/2	261205	22.50	261305	26.55
	4	.2090	2 1/2	261204	21.20	261304	24.95
	3	.2130	2 1/2	261203	22.50	261303	26.55
1		.2188	2 1/2	261014	17.55	261114	20.60
	2	.2210	2 5/8	261202	22.15	261302	26.05
	1	.2280	2 5/8	261201	21.90	261301	25.70
	A	.2340	2 5/8	261401	26.30	261501	30.90
1 1/4		.2344	2 5/8	261015	18.85	261115	22.20

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	\$26.30	261502	\$30.90
	C	.2420	2 3/4	261403	26.30	261503	30.90
	D	.2460	2 3/4	261404	25.85	261504	30.40
	E	.2500	2 3/4	261016	18.85	261116	22.20
17/64	F	.2570	2 7/8	261406	27.00	261506	31.75
	G	.2610	2 7/8	261407	27.60	261507	32.50
		.2656	2 7/8	261017	20.15	261117	23.75
	H	.2660	2 7/8	261408	28.20	261508	33.20
9/32	I	.2720	2 7/8	261409	27.60	261509	32.50
	J	.2770	2 7/8	261410	28.20	261510	33.20
	K	.2810	2 15/16	261411	28.20	261511	33.20
		.2812	2 15/16	261018	20.15	261118	23.75
19/64	L	.2900	2 15/16	261412	28.20	261512	33.20
	M	.2950	3 1/16	261413	31.05	261513	36.55
		.2969	3 1/16	261019	21.90	261119	25.70
	N	.3020	3 1/16	261414	30.40	261514	35.75
5/16	O	.3125	3 3/16	261020	21.90	261120	25.70
		.3160	3 3/16	261415	28.90	261515	33.95
		.3230	3 3/16	261416	30.75	261516	36.15
	P	.3281	3 3/16	261021	23.25	261121	27.40
11/32	Q	.3320	3 7/16	261417	31.55	261517	37.10
	R	.3390	3 7/16	261418	30.75	261518	36.15
		.3438	3 7/16	261022	23.25	261122	27.40
	S	.3480	3 1/2	261419	33.25	261519	39.05
23/64	T	.3580	3 1/2	261420	34.05	261520	40.05
		.3594	3 1/2	261023	24.80	261123	29.10
		.3680	3 5/8	261421	32.75	261521	38.60
	U	.3750	3 5/8	261024	24.80	261124	29.10
25/64	V	.3770	3 5/8	261422	33.25	261522	39.05
	W	.3860	3 3/4	261423	35.65	261523	41.95
		.3906	3 3/4	261025	25.45	261125	30.00
	X	.3970	3 3/4	261424	33.75	261524	39.75
13/32	Y	.4040	3 7/8	261425	35.05	261525	41.20
		.4062	3 7/8	261026	25.10	261126	29.55
		.4130	3 7/8	261426	39.55	261526	46.45
	Z	.4219	3 15/16	261027	27.60	261127	32.50
7/16		.4375	4 1/16	261028	27.60	261128	32.50
	29/64	.4531	4 3/16	261029	31.70	261129	37.35
	15/32	.4688	4 5/16	261030	31.05	261130	36.55
	31/64	.4844	4 3/8	261031	34.85	261131	41.00
1/2		.5000	4 1/2	261032	34.85	261132	41.00



# COBALT DRILLS FOR STEEL



**TYPE 2699 - JOBBERS LENGTH - 135° SPLIT POINT**

For drilling low and medium carbon steels, steel alloys, and stainless steel.

**USE:**

CNC machined for accuracy, improved chip evacuation and premium performance. Split point tip for improved accuracy and control - penetrates surface on contact and prevents drill bit “walking.” Hardened for high temperature applications. Engineered and manufactured for less end load pressure. Industrial grade NAS Cobalt.

**NOTE:**

Diameters .0400” to .3020” sold in packages of 12  
 Diameters .3125” and larger sold in packages of 6

TOOL DIAMETER			LENGTH		135° POINT		
FRAC.	DEC.	WIRE LETTER	FLT.	OAL	TYPE 2699 EDP NO.	PRICE EACH	
1/8	.0400	60	1 1/8	1 5/8	26990400	\$1.95	
	.0410	59	1 1/8	1 5/8	26990410	1.95	
	.0420	58	1 1/8	1 5/8	26990420	1.95	
	.0430	57	3/4	1 3/4	26990430	1.95	
3/16	.0465	56	3/4	1 3/4	26990465	1.95	
	.0520	55	7/8	1 7/8	26990520	1.70	
	.0550	54	7/8	1 7/8	26990550	1.70	
	.0595	53	7/8	1 7/8	26990595	1.70	
1/4	.0625	52	7/8	1 7/8	2699004	1.55	
	.0635		7/8	1 7/8	26990635	1.55	
	.0670	1	2	26990670	1.55		
	.0700	1	2	26990700	1.55		
5/16	.0730	49	1	2	26990730	1.55	
	.0760	48	1	2	26990760	1.55	
	.0781	1	2	2	269905	1.55	
	.0785		47	1	2	26990785	1.55
3/8	.0810	46	1 1/8	2 1/8	26990810	1.55	
	.0820	45	1 1/8	2 1/8	26990820	1.55	
	.0860	44	1 1/8	2 1/8	26990860	1.55	
	.0890	43	1 1/4	2 1/4	26990890	1.55	
1/2	.0935	42	1 1/4	2 1/4	26990935	1.55	
	.0938	41	1 1/4	2 1/4	269906	1.55	
	.0960		1 3/8	2 3/8	26990960	1.55	
	.0980	40	1 3/8	2 3/8	26990980	1.60	
5/8	.0995	39	1 3/8	2 3/8	26990995	1.60	
	.1015	38	1 7/8	2 1/2	26991015	1.60	
	.1040	37	1 7/8	2 1/2	26991040	1.70	
	.1065	36	1 7/8	2 1/2	26991065	1.70	
3/4	.1094	35	1 1/2	2 5/8	269907	1.65	
	.1100		1 1/2	2 5/8	26991100	1.70	
	.1110		34	1 1/2	2 5/8	26991110	1.70
	.1130		33	1 1/2	2 5/8	26991130	1.70
7/8	.1160	32	1 5/8	2 3/4	26991160	1.80	
	.1200	31	1 5/8	2 3/4	26991200	1.80	
	.1250	30	1 5/8	2 3/4	269908	2.00	
	.1285		1 5/8	2 3/4	26991285	1.85	
1 1/8	.1360	29	1 3/4	2 7/8	26991360	1.95	
	.1405	28	1 3/4	2 7/8	26991405	2.00	

TOOL DIAMETER			LENGTH		135° POINT	
FRAC.	DEC.	WIRE LETTER	FLT.	OAL	TYPE 2699 EDP NO.	PRICE EACH
1/4	.1406	27	1 3/4	2 7/8	269909	\$2.00
	.1440		1 7/8	3	26991440	2.15
	.1470	26	1 7/8	3	26991470	2.15
	.1495	25	1 7/8	3	26991495	2.15
5/16	.1520	24	2	3 1/8	26991520	2.40
	.1540	23	2	3 1/8	26991540	2.40
	.1562	22	2	3 1/8	269910	2.25
	.1570		2	3 1/8	26991570	2.40
3/8	.1590	21	2 1/8	3 1/4	26991590	2.40
	.1610	20	2 1/8	3 1/4	26991610	2.40
	.1660	19	2 1/8	3 1/4	26991660	2.40
	.1695	18	2 1/8	3 1/4	26991695	2.45
1/2	.1719	17	2 1/8	3 1/4	269911	2.35
	.1730		2 3/8	3 3/8	26991730	2.70
	.1770		2 3/8	3 3/8	26991770	2.75
	.1800		15	2 3/8	3 3/8	26991800
5/8	.1820	14	2 3/8	3 3/8	26991820	2.95
	.1850	13	2 5/8	3 1/2	26991850	2.95
	.1875	12	2 5/8	3 1/2	269912	2.65
	.1890		2 5/8	3 1/2	26991890	3.10
3/4	.1910	11	2 5/8	3 1/2	26991910	3.10
	.1935	10	2 7/8	3 3/8	26991935	3.10
	.1960	9	2 7/8	3 3/8	26991960	3.10
	.1990	8	2 7/8	3 3/8	26991990	3.10
7/8	.2010	7	2 7/8	3 3/8	26992010	3.10
	.2031	6	2 7/8	3 3/8	269913	3.20
	.2040		2 1/2	3 3/4	26992040	4.00
	.2055		2 1/2	3 3/4	26992055	4.00
.2090	4		2 1/2	3 3/4	26992090	4.00
1 1/8	.2130	3	2 1/2	3 3/4	26992130	4.00
	.2188	2	2 1/2	3 3/4	269914	3.50
	.2210		2 5/8	3 7/8	26992210	4.25
	1 1/4	.2280	1	2 5/8	3 7/8	26992280
.2340		A	2 5/8	3 7/8	26992340	4.90
.2344		B	2 5/8	3 7/8	269915	3.70
.2380			2 3/4	4	26992380	5.65
1 3/8	.2420	C	2 3/4	4	26992420	5.65
	.2460	D	2 3/4	4	26992460	5.70

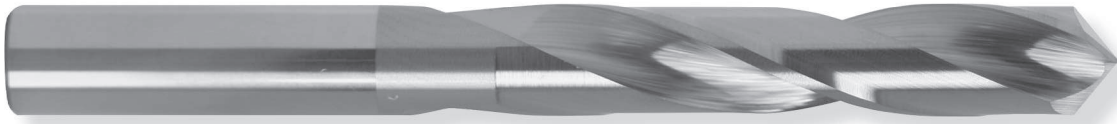
TOOL DIAMETER			LENGTH		135° POINT		
FRAC.	DEC.	WIRE LETTER	FLT.	OAL	TYPE 2699 EDP NO.	PRICE EACH	
1/4	.2500	E	2 3/4	4	269916	\$3.95	
	.2570	F	2 7/8	4 1/8	26992570	5.95	
	.2610	G	2 7/8	4 1/8	26992610	6.15	
1/8	.2656	H	2 7/8	4 1/8	269917	4.50	
1/4	.2660		2 7/8	4 1/8	26992660	6.35	
	.2720		I	2 7/8	4 1/8	26992720	6.40
	.2770		J	2 7/8	4 1/8	26992770	6.55
3/8	.2810	K	2 15/16	4 1/4	26992810	6.70	
	.2812	L	2 15/16	4 1/4	269918	4.70	
	.2900		2 15/16	4 1/4	26992900	7.20	
	.2950	M	3 1/16	4 3/8	26992950	7.65	
1/2	.2969	N	3 1/16	4 3/8	269919	5.75	
3/4	.3020		3 1/16	4 3/8	26993020	7.65	
	.3125		3 3/16	4 1/2	269920	6.10	
5/8	.3160		O	3 1/16	4 1/2	26993160	8.45
	.3230	P	3 3/16	4 5/8	26993230	9.00	
3/4	.3281	Q	3 5/16	4 5/8	269921	6.75	
	.3320		3 7/16	4 3/4	26993320	9.30	
	.3390		R	3 7/16	4 3/4	26993390	9.30
7/8	.3438	S	3 7/16	4 3/4	269922	7.40	
1 1/4	.3480		3 1/2	4 7/8	26993480	11.40	
	.3594		3 1/2	4 7/8	269923	8.15	
1 1/2	.3580		T	3 1/2	4 7/8	26993580	11.40
1 3/4	.3680	U	3 5/8	5	26993680	11.40	
	.3750	V	3 5/8	5	269924	8.45	
	.3770		3 5/8	5	26993770	12.55	
1 3/8	.3860	W	3 3/4	5 1/8	26993860	12.55	
	.3960	X	3 3/4	5 1/8	269925	9.70	
1 3/4	.3970		3 3/4	5 1/8	26993970	12.55	
	.4040		3 7/8	5 1/4	26994040	13.30	
1 3/8	.4062	Y	3 7/8	5 1/4	269926	10.10	
	.4130		3 7/8	5 1/4	26994130	14.50	
1 3/8	.4210	Z	3 15/16	5 3/8	269927	11.15	
	.4375		4 1/16	5 1/2	269928	11.40	
1 3/4	.4531	1 3/4	4 3/16	5 5/8	269929	13.70	
1 3/8	.4688		4 5/16	5 3/4	269930	13.95	
1 3/8	.4844	1 3/8	4 3/8	5 7/8	269931	14.40	
	.5000		4 1/2	6	269932	14.50	





# TWIST DRILLS - SOLID CARBIDE

## JOBBER'S LENGTH



### TYPE 2860 - JOBBER'S LENGTH - 118° SPLIT POINT

For drilling most types of material including steel and steel alloys.

TOOL DIAM.		LENGTH		118° POINT		TOOL DIAM.		LENGTH		118° POINT		TOOL DIAM.		LENGTH		118° POINT	
FRAC/mm WIRE/LTR	DEC.	FLUTE	OVER-ALL	TYPE 2860 EDP NO.	PRICE	FRAC/mm WIRE/LTR	DEC.	FLUTE	OVER-ALL	TYPE 2860 EDP NO.	PRICE	FRAC/mm WIRE/LTR	DEC.	FLUTE	OVER-ALL	TYPE 2860 EDP NO.	PRICE
1/32	.0312	5/16	1 1/4	286002	\$11.25	30	.1285	1 1/4	2 1/4	28601285	\$14.75	F	.2570	2	3 1/4	28602570	\$35.30
67	.0320	5/16	1 1/4	28600320	11.25	29	.1360	1 3/8	2 1/2	28601360	14.90	G	.2610	2 1/8	3 1/2	28602610	35.85
66	.0330	5/16	1 1/4	28600330	11.25	3.5mm	.1378	35	63	2860035	17.15	H	.2656	2 1/8	3 1/2	286017	31.50
65	.0350	5/8	1 3/8	28600350	11.25	28	.1405	1 3/8	2 1/2	28601405	15.30	I	.2660	2 1/8	3 1/2	28602660	36.85
64	.0360	5/8	1 3/8	28600360	11.25	9/64	.1406	1 3/8	2 1/2	286009	16.40	J	.2720	2 1/8	3 1/2	28602720	37.60
63	.0370	5/8	1 3/8	28600370	11.25	27	.1440	1 3/8	2 1/2	28601440	15.90	K	.2756	54	89	2860070	42.00
62	.0380	5/8	1 3/8	28600380	11.25	26	.1470	1 3/8	2 1/2	28601470	16.20	L	.2770	2 1/8	3 1/2	28602770	38.50
61	.0390	5/8	1 3/8	28600390	11.25	25	.1495	1 3/8	2 1/2	28601495	16.30	M	.2810	2 1/8	3 1/2	28602810	38.80
1.0mm	.0394	16	38	2860010	13.45	24	.1520	1 3/8	2 1/2	28601520	16.75	N	.2812	2 1/8	3 1/2	286018	34.00
60	.0400	3/4	1 1/2	28600400	11.25	23	.1540	1 3/8	2 1/2	28601540	17.40	O	.2900	2 1/8	3 1/2	28602900	40.70
59	.0410	3/4	1 1/2	28600410	11.25	22	.1562	1 3/8	2 1/2	286010	17.15	P	.2950	2 3/8	3 3/4	28602950	42.10
58	.0420	3/4	1 1/2	28600420	11.25	5/32	.1562	1 3/8	2 1/2	286010	17.15	7.5mm	.2953	60	95	2860075	45.85
57	.0430	3/4	1 1/2	28600430	11.25	4.0mm	.1575	35	63	2860040	20.50	9/32	.2812	2 1/8	3 1/2	286018	34.00
56	.0465	3/4	1 1/2	28600465	11.25	21	.1590	1 3/8	2 1/2	28601590	18.70	L	.2900	2 1/8	3 1/2	28602900	40.70
5/64	.0469	3/4	1 1/2	286003	11.25	20	.1610	1 3/8	2 1/2	28601610	18.85	M	.2950	2 3/8	3 3/4	28602950	42.10
55	.0520	3/4	1 1/2	28600520	11.25	19	.1660	1 3/8	2 3/4	28601660	19.60	7.5mm	.2953	60	95	2860075	45.85
54	.0550	3/4	1 1/2	28600550	11.25	18	.1695	1 3/8	2 3/4	28601695	19.75	19/64	.2969	2 3/8	3 3/4	286019	38.70
1.5mm	.0591	19	38	2860015	13.40	17/64	.1719	1 5/8	2 3/4	286011	20.15	N	.3020	2 3/8	3 3/4	28603020	44.60
53	.0595	3/4	1 1/2	28600595	11.25	17	.1730	1 5/8	2 3/4	28601730	20.15	5/16	.3125	2 3/8	3 3/4	286020	41.10
1/16	.0625	3/4	1 1/2	286004	10.60	16	.1770	1 5/8	2 3/4	28601770	20.50	8.0mm	.3150	60	95	2860080	46.60
52	.0635	3/4	1 1/2	28600635	11.25	4.5mm	.1772	41	70	2860045	22.70	O	.3160	2 3/8	3 3/4	28603160	47.25
51	.0670	3/4	1 1/2	28600670	11.25	15	.1800	1 5/8	2 3/4	28601800	20.65	P	.3230	2 3/8	3 3/4	28603230	48.75
50	.0700	7/8	1 3/4	28600700	11.50	14	.1820	1 5/8	2 3/4	28601820	20.55	21/64	.3281	2 1/2	4	286021	44.80
49	.0730	7/8	1 3/4	28600730	11.80	13	.1850	1 5/8	2 3/4	28601850	21.00	Q	.3320	2 1/2	4	28603320	51.75
48	.0760	7/8	1 3/4	28600760	11.95	9	.1875	1 5/8	2 3/4	286012	20.20	8.5mm	.3346	63	100	2860085	55.30
3/64	.0781	7/8	1 3/4	286005	11.75	12	.1890	1 5/8	2 3/4	28601890	21.30	R	.3390	2 1/2	4	28603390	53.40
47	.0785	7/8	1 3/4	28600785	11.95	11	.1910	1 5/8	2 3/4	28601910	21.70	11/32	.3438	2 1/2	4	286022	49.65
2.0mm	.0787	22	44	2860020	14.25	10	.1935	1 5/8	2 3/4	28601935	22.05	S	.3480	2 1/2	4	28603480	58.65
46	.0810	7/8	1 3/4	28600810	11.95	5.0mm	.1960	1 3/4	3	28601960	22.50	9.0mm	.3543	70	100	2860090	62.95
45	.0820	7/8	1 3/4	28600820	12.20	8	.1969	44	75	2860050	25.30	T	.3580	2 3/4	4 1/4	28603580	60.75
44	.0860	1	2	28600860	12.65	7	.1990	1 3/4	3	28601990	23.10	23/64	.3594	2 3/4	4 1/4	286023	54.20
43	.0890	1	2	28600890	12.65	6	.2010	1 3/4	3	28602010	23.35	U	.3680	2 3/4	4 1/4	28603680	61.95
42	.0935	1	2	28600935	12.70	13/64	.2031	1 3/4	3	286013	24.60	9.5mm	.3740	70	108	2860095	65.15
3/32	.0938	1	2	286006	12.15	6	.2040	1 3/4	3	28602040	24.30	3/8	.3750	2 3/4	4 1/4	286024	58.80
41	.0960	1	2	28600960	12.75	5	.2055	1 3/4	3	28602055	24.60	V	.3770	2 3/4	4 1/4	28603770	68.35
40	.0980	1	2	28600980	12.85	4	.2090	1 3/4	3	28602090	25.25	W	.3860	2 7/8	4 1/2	28603860	72.50
2.5mm	.0984	25	50	2860025	14.65	3	.2130	1 3/4	3	28602130	25.95	25/64	.3906	2 7/8	4 1/2	286025	66.50
39	.0995	1 1/4	2 1/4	28600995	13.00	5.5mm	.2165	44	75	2860055	28.55	10.0mm	.3937	73	114	2860100	77.50
38	.1015	1 1/4	2 1/4	28601015	13.00	7/32	.2188	1 3/4	3	286014	25.45	X	.3970	2 7/8	4 1/2	28603970	78.45
37	.1040	1 1/4	2 1/4	28601040	13.00	2	.2210	1 3/4	3	28602210	26.95	Y	.4040	2 7/8	4 1/2	28604040	77.85
36	.1065	1 1/4	2 1/4	28601065	13.00	1	.2280	1 3/4	3	28602280	28.35	13/32	.4062	2 7/8	4 1/2	286026	73.75
7/64	.1094	1 1/4	2 1/4	286007	13.30	A	.2340	2	3 1/4	28602340	31.45	Z	.4130	2 7/8	4 1/2	28604130	85.95
35	.1100	1 1/4	2 1/4	28601100	13.30	19/64	.2344	2	3 1/4	286015	28.25	10.5mm	.4134	73	114	2860105	88.70
34	.1110	1 1/4	2 1/4	28601110	13.65	6.0mm	.2362	50	82	2860060	31.65	27/64	.4219	2 7/8	4 1/2	286027	80.70
33	.1130	1 1/4	2 1/4	28601130	13.65	B	.2380	2	3 1/4	28602380	32.25	11.0mm	.4331	73	114	2860110	98.95
32	.1160	1 1/4	2 1/4	28601160	13.95	C	.2420	2	3 1/4	28602420	32.35	7/16	.4375	2 7/8	4 1/2	286028	87.40
3.0mm	.1181	32	57	2860030	16.30	D	.2460	2	3 1/4	28602460	33.25	11.5mm	.4528	76	120	2860115	108.05
31	.1200	1 1/4	2 1/4	28601200	14.20	E	.2500	2	3 1/4	286016	28.80	29/64	.4531	3	4 3/4	286029	94.70
1/8	.1250	1 1/4	2 1/4	286008	13.80	6.5mm	.2559	50	82	2860065	37.55	15/32	.4688	3	4 3/4	286030	101.95
												12.0mm	.4724	76	120	2860120	114.90
												31/64	.4844	3	4 3/4	286031	104.95
												12.5mm	.4921	76	120	2860125	127.65
												1/2	.5000	3	4 3/4	286032	107.60

Larger sizes available. Call for pricing.



# COOLANT FEEDING DRILLS

## SHORT LENGTH - CARBIDE TIPPED 125° SELF CENTERING POINT



### 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	\$127.65	0.2490-0.2530
17/64	.2656	2 3/4	5 5/32	265217	127.65	-
9/32	.2812	2 3/4	5 5/32	265218	127.65	0.2640-0.2840
19/64	.2969	3 3/16	5 19/32	265219	127.65	-
5/16	.3125	3 3/16	5 19/32	265220	127.65	0.2950-0.3160
21/64	.3281	3 7/16	5 27/32	265221	127.65	-
11/32	.3438	3 7/16	5 27/32	265222	127.65	0.3260-0.3460
23/64	.3594	3 5/8	6 1/32	265223	128.95	-
3/8	.3750	3 5/8	6 1/32	265224	128.95	0.3540-0.3770
25/64	.3906	3 7/8	6 9/32	265225	132.20	-
13/32	.4062	3 7/8	6 9/32	265226	132.20	0.3850-0.4080
27/64	.4219	4 1/16	6 15/32	265227	136.65	-
7/16	.4375	4 1/16	6 15/32	265228	136.65	0.4100-0.4390
29/64	.4531	4 5/16	6 23/32	265229	145.50	-
15/32	.4688	4 3/8	6 23/32	265230	145.50	0.4391-0.4724
31/64	.4844	4 1/2	6 29/32	265231	149.75	-
1/2	.5000	4 1/2	6 29/32	265232	149.75	0.4725-0.5030
33/64	.5156	4 13/16	7 7/32	265233	156.05	-
17/32	.5312	4 13/16	7 7/32	265234	158.70	0.5031-0.5330
35/64	.5469	4 13/16	7 7/32	265235	164.60	-
9/16	.5625	4 13/16	7 7/32	265236	167.50	0.5331-0.5650
37/64	.5781	5 3/16	7 19/32	265237	197.30	-
19/32	.5938	5 3/16	7 19/32	265238	200.60	0.5651-0.5950
39/64	.6094	5 3/16	7 19/32	265239	197.30	-
5/8	.6250	5 3/16	7 19/32	265240	200.60	0.5951-0.6270
41/64	.6406	5 3/16	7 19/32	265241	211.50	-
21/32	.6562	5 3/8	7 19/32	265242	211.50	0.6271-0.6570
43/64	.6719	5 5/8	8 1/32	265243	228.85	-
11/16	.6875	5 5/8	8 1/32	265244	229.15	0.6571-0.6900
45/64	.7031	5 5/8	8 1/32	265245	235.65	-
23/32	.7188	5 5/8	8 1/32	265246	235.65	0.6901-0.7220
47/64	.7344	6 1/16	8 15/32	265247	238.00	-
3/4	.7500	6 1/16	8 15/32	265248	238.00	0.7221-0.7530
49/64	.7656	6 1/16	8 9/16	265249	249.15	-
25/32	.7812	6 1/16	8 9/16	265250	253.45	0.7531-0.7840
13/16	.8125	6 1/16	8 9/16	265252	257.70	0.7841-0.8160
27/32	.8438	6 1/2	9	265254	273.25	0.8161-0.8470
7/8	.8750	6 1/2	9	265256	279.80	0.8471-0.8780
29/32	.9062	6 15/16	9 7/16	265258	299.45	0.8781-0.9090
15/16	.9375	6 15/16	9 7/16	265260	321.65	0.9091-0.9390
31/32	.9688	6 15/16	9 7/16	265262	334.85	0.9391-0.9700
1	1.0000	7 3/8	9 7/8	265264	343.65	0.9701-1.0030

\*Contact us for modified tool diameter prices.



# COOLANT FEEDING DRILLS

LONG LENGTH - CARBIDE TIPPED 125° SELF CENTERING POINT



## 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.

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	\$139.75	0.2490-0.2530
17/64	.2656	4 3/4	6 1/4	265017	139.75	-
9/32	.2812	4 3/4	6 1/4	265018	139.75	0.2640-0.2840
19/64	.2969	4 7/8	6 3/8	265019	139.75	-
5/16	.3125	4 7/8	6 3/8	265020	139.75	0.2950-0.3160
21/64	.3281	5	6 1/2	265021	134.55	-
11/32	.3438	5	6 1/2	265022	134.55	0.3260-0.3460
23/64	.3594	5 1/4	6 3/4	265023	131.10	-
3/8	.3750	5 1/4	6 3/4	265024	136.15	0.3540-0.3770
25/64	.3906	5 1/2	7	265025	134.55	-
13/32	.4062	5 1/2	7	265026	134.55	0.3850-0.4080
27/64	.4219	5 3/4	7 1/4	265027	138.85	-
7/16	.4375	5 3/4	7 1/4	265028	138.85	0.4100-0.4390
29/64	.4531	5 3/4	7 1/2	265029	147.65	-
15/32	.4688	5 3/4	7 1/2	265030	147.65	0.4391-0.4724
31/64	.4844	5 3/4	7 3/4	265031	152.05	-
1/2	.5000	5 3/4	7 3/4	265032	152.05	0.4725-0.5030
33/64	.5156	6	8	265033	163.10	-
17/32	.5312	6	8	265034	163.10	0.5031-0.5330
35/64	.5469	6 1/4	8 1/4	265035	168.95	-
9/16	.5625	6 1/4	8 1/4	265036	171.85	0.5331-0.5650
37/64	.5781	6 3/4	8 3/4	265037	203.45	-
19/32	.5938	6 3/4	8 3/4	265038	206.90	0.5651-0.5950
39/64	.6094	6 3/4	8 3/4	265039	203.45	-
5/8	.6250	6 3/4	8 3/4	265040	206.90	0.5951-0.6270
41/64	.6406	7	9	265041	214.40	-
21/32	.6562	7	9	265042	218.10	0.6271-0.6570
43/64	.6719	7 1/4	9 1/4	265043	229.55	-
11/16	.6875	7 1/4	9 1/4	265044	233.60	0.6571-0.6900
45/64	.7031	7 1/2	9 1/2	265045	238.30	-
23/32	.7188	7 1/2	9 1/2	265046	242.30	0.6901-0.7220
47/64	.7344	7 3/4	9 3/4	265047	240.30	-
3/4	.7500	7 3/4	9 3/4	265048	244.50	0.7221-0.7530
49/64	.7656	7 7/8	9 7/8	265049	259.95	-
25/32	.7812	7 7/8	9 7/8	265050	259.95	0.7531-0.7840
13/16	.8125	8	10	265052	264.35	0.7841-0.8160
27/32	.8438	8	10	265054	279.80	0.8161-0.8470
7/8	.8750	8	10	265056	286.40	0.8471-0.8780
29/32	.9062	8	10	265058	317.30	0.8781-0.9090
15/16	.9375	8 3/4	10 3/4	265060	330.45	0.9091-0.9390
31/32	.9688	9	11	265062	333.65	0.9391-0.9700
1	1.0000	9	11	265064	333.65	0.9701-1.0030

\*Contact us for modified tool diameter prices.

## 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**
mm	INCH	FLUTE	OVER-ALL			
*6.5	.2559	4 5/8	6 1/8	2650065	\$145.65	-
7.0	.2756	4 3/4	6 1/4	2650070	145.65	6.706-7.214
7.5	.2953	4 7/8	6 3/8	2650075	145.65	7.493-8.026
8.0	.3150	4 7/8	6 3/8	2650080	145.65	-
8.5	.3346	5	6 1/2	2650085	140.65	8.280-8.788
9.0	.3543	5 1/4	6 3/4	2650090	140.65	8.992-9.576
9.5	.3740	5 1/4	6 3/4	2650095	140.65	-
10.0	.3937	5 1/2	7	2650100	140.65	9.779-10.363
10.5	.4134	5 3/4	7 1/4	2650105	145.65	10.414-11.151
11.0	.4331	5 3/4	7 1/4	2650110	145.65	-
11.5	.4528	5 3/4	7 1/2	2650115	157.40	11.153-12.000
12.0	.4724	5 3/4	7 1/2	2650120	157.40	-
12.5	.4921	5 3/4	7 3/4	2650125	160.75	12.002-12.776
13.0	.5118	6	8	2650130	170.75	12.779-13.538
13.5	.5315	6	8	2650135	170.75	-
14.0	.5512	6 1/4	8 1/4	2650140	179.15	13.541-14.351
14.5	.5709	6 3/4	8 3/4	2650145	217.60	14.354-15.113
15.0	.5906	6 3/4	8 3/4	2650150	217.60	-
15.5	.6102	6 3/4	8 3/4	2650155	217.60	15.116-15.926
16.0	.6299	7	9	2650160	222.65	15.928-16.688
16.5	.6496	7	9	2650165	222.65	-
17.0	.6693	7 1/4	9 1/4	2650170	237.70	16.690-17.526
17.5	.6890	7 1/4	9 1/4	2650175	237.70	-
18.0	.7087	7 1/2	9 1/2	2650180	249.50	17.529-18.339
18.5	.7283	7 3/4	9 3/4	2650185	251.10	18.341-19.126
19.0	.7480	7 3/4	9 3/4	2650190	251.10	-
19.5	.7677	7 7/8	9 7/8	2650195	266.25	19.129-19.914
20.0	.7874	8	10	2650200	269.60	19.916-20.726
20.5	.8071	8	10	2650205	269.60	-
21.0	.8268	8	10	2650210	284.60	20.729-21.514
21.5	.8465	8	10	2650215	284.60	-
22.0	.8661	8	10	2650220	291.30	21.516-22.301
22.5	.8858	8	10	2650225	321.45	22.304-23.089
23.0	.9055	8	10	2650230	321.45	-
23.5	.9252	8 3/4	10 3/4	2650235	333.15	23.091-23.851
24.0	.9449	9	11	2650240	346.55	23.853-24.638
24.5	.9646	9	11	2650245	346.55	-
25.0	.9843	9	11	2650250	346.55	24.641-25.476

\*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.



#### 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	\$164.85	-
7.0	.2756	70	2 3/4	131	5 7/32	2652070	164.85	6.706 - 7.214
7.5	.2953	81	3 3/16	142	5 19/32	2652075	164.85	7.493 - 8.026
8.0	.3150	81	3 3/16	142	5 19/32	2652080	164.85	-
8.5	.3346	87	3 7/16	148	5 27/32	2652085	159.20	8.280 - 8.788
9.0	.3543	92	3 5/8	153	6 1/32	2652090	159.20	8.992 - 9.576
9.5	.3740	92	3 5/8	153	6 1/32	2652095	159.20	-
10.0	.3937	98	3 7/8	159	6 9/32	2652100	159.20	9.779 - 10.363
10.5	.4134	103	4 1/16	164	6 15/32	2652105	164.85	10.414 - 11.151
11.0	.4331	103	4 1/16	164	6 15/32	2652110	164.85	-
11.5	.4528	109	4 3/16	171	6 23/32	2652115	178.20	11.153 - 12.000
12.0	.4724	109	4 3/16	171	6 23/32	2652120	178.20	-
12.5	.4921	114	4 1/2	175	6 29/32	2652125	182.00	12.002 - 12.776
13.0	.5118	122	4 13/16	183	7 7/32	2652130	193.30	12.779 - 13.538
13.5	.5315	122	4 13/16	183	7 7/32	2652135	193.30	-
14.0	.5512	122	4 13/16	183	7 7/32	2652140	202.80	13.541 - 14.351
14.5	.5709	131	5 3/16	193	7 19/32	2652145	246.35	14.354 - 15.113
15.0	.5906	131	5 3/16	193	7 19/32	2652150	246.35	-
15.5	.6102	131	5 3/16	193	7 19/32	2652155	246.35	15.116 - 15.926
16.0	.6299	131	5 3/16	193	7 19/32	2652160	252.05	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	\$252.05	-
17.0	.6693	143	5 5/8	204	8 1/2	2652170	269.10	16.690 - 17.526
17.5	.6890	143	5 5/8	204	8 1/2	2652175	269.10	-
18.0	.7087	143	5 5/8	204	8 1/2	2652180	282.45	17.529 - 18.339
18.5	.7283	154	6 1/16	215	8 15/32	2652185	284.25	18.341 - 19.126
19.0	.7480	154	6 1/16	215	8 15/32	2652190	284.25	-
19.5	.7677	154	6 1/16	217	8 9/16	2652195	301.40	19.129 - 19.914
20.0	.7874	154	6 1/16	217	8 9/16	2652200	305.20	19.916 - 20.726
20.5	.8071	154	6 1/16	217	8 9/16	2652205	305.20	-
21.0	.8268	165	6 1/2	229	9	2652210	322.20	20.729 - 21.514
21.5	.8465	165	6 1/2	229	9	2652215	322.20	-
22.0	.8661	165	6 1/2	229	9	2652220	329.80	21.516 - 22.301
22.5	.8858	176	6 15/16	240	9 7/16	2652225	363.90	22.304 - 23.089
23.0	.9055	176	6 15/16	240	9 7/16	2652230	363.90	-
23.5	.9252	176	6 15/16	240	9 7/16	2652235	377.15	23.091 - 23.851
24.0	.9449	176	6 15/16	240	9 7/16	2652240	392.30	23.853 - 24.638
24.5	.9646	176	6 15/16	240	9 7/16	2652245	389.00	-
25.0	.9843	187	7 3/8	251	9 7/8	2652250	392.30	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.

#### 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	\$201.70	0.3100-0.3160
11/32	.3438	8	10	265822	201.70	0.3281-0.3460
3/8	.3750	9	11	265824	213.15	0.3594-0.3770
13/32	.4062	9	11	265826	242.65	0.3906-0.4080
7/16	.4375	9	11	265828	242.65	0.4200-0.4390
15/32	.4688	9 3/4	12	265830	256.25	0.4531-0.4710
1/2	.5000	9 3/4	12	265832	256.25	0.4800-0.5030
17/32	.5312	9 3/4	12	265834	275.05	0.5118-0.5330

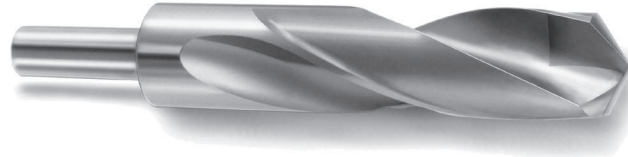
TOOL DIAMETER		LENGTH		TYPE 2658 EDP NO.	PRICE	TOOL DIAMETER RANGE*
FRAC.	DECIMAL	FLUTE	OVER-ALL			
9/16	.5625	10 3/4	13	265836	\$296.25	0.5430-0.5650
5/8	.6250	10 3/4	13	265840	312.80	0.6070-0.6270
11/16	.6875	11 3/4	14	265844	325.70	0.6693-0.6900
3/4	.7500	11 3/4	14	265848	344.70	0.7320-0.7530
13/16	.8125	12 3/4	15	265852	366.10	0.7953-0.8160
7/8	.8750	12 3/4	15	265856	394.50	0.8570-0.8780
15/16	.9375	13 3/4	16	265860	421.45	0.9180-0.9390
1	1.0000	13 3/4	16	265864	456.45	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

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	\$42.40	261832	\$48.75
17/32	.5312	3 1/8	6	261634	62.05	261834	71.35
9/16	.5625	3 1/8	6	261636	64.30	261836	73.95
19/32	.5938	3 1/8	6	261638	66.90	261838	76.90
5/8	.6250	3 1/8	6	261640	74.30	261840	85.40
21/32	.6562	3 1/8	6	261642	80.55	261842	92.60
11/16	.6875	3 1/8	6	261644	83.70	261844	96.30
23/32	.7188	3 1/8	6	261646	86.85	261846	99.85
3/4	.7500	3 1/8	6	261648	91.00	261848	104.65
25/32	.7812	3 1/8	6	261650	100.35	261850	115.35
13/16	.8125	3 1/8	6	261652	100.55	261852	115.65
27/32	.8438	3 1/8	6	261654	100.55	261854	115.65
7/8	.8750	3 1/8	6	261656	104.60	261856	120.30

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	\$107.10	261858	\$123.20
15/16	.9375	3 1/8	6	261660	108.20	261860	124.40
31/32	.9688	3 1/8	6	261662	111.90	261862	128.60
1	1.0000	3 1/8	6	261664	114.25	261864	131.40
1 1/32	1.0312	3 1/8	6	261666	110.30	261866	126.85
1 1/16	1.0625	3 1/8	6	261668	119.60	261868	137.50
1 1/8	1.0938	3 1/8	6	261670	122.45	261870	140.80
1 1/4	1.1250	3 1/8	6	261672	124.85	261872	143.55
1 1/8	1.1562	3 1/8	6	261674	151.50	261874	174.25
1 3/16	1.1875	3 1/8	6	261676	154.25	261876	177.40
1 1/2	1.2188	3 1/8	6	261678	162.00	261878	186.30
1 5/8	1.2500	3 1/8	6	261680	147.90	261880	170.10

# CNC SPOTTING/CENTERING DRILLS

## CARBIDE TIPPED

### 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	\$65.70
3/8	.3750	1 1/8	5	267724	267824	267924	76.70
1/2	.5000	1 1/2	6	267732	267832	267932	103.10
5/8	.6250	1 3/8	7	267740	267840	267940	149.35
3/4	.7500	1 7/8	8	267748	267848	267948	173.25
1	1.0000	2 1/4	8	267764	267864	267964	229.65

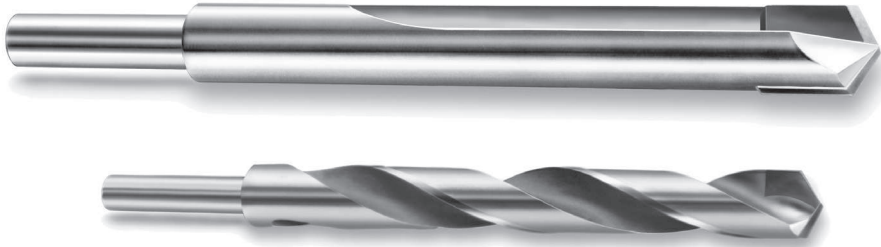
TOOL DIAMETER		LENGTH		TYPE 2647	TYPE 2648	TYPE 2649	ALL TYPES PRICE
FRAC.	DECIMAL	FLUTE	OVER-ALL	90° PT. EDP NO.	120° PT. EDP NO.	140° PT. EDP NO.	
1/4	.2500	1	2 1/2	264716	264816	264916	\$62.40
3/8	.3750	1 1/8	3 1/8	264724	264824	264924	72.85
1/2	.5000	1 1/2	3 3/4	264732	264832	264932	98.00
5/8	.6250	1 3/8	4 1/4	264740	264840	264940	141.90
3/4	.7500	1 7/8	5	264748	264848	264948	164.60
1	1.0000	2 1/4	6	264764	264864	264964	218.15



# 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, 2672



### OPTIONS:

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

### USE:

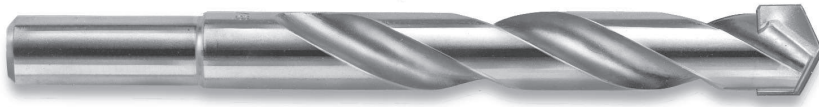
Can be used in drill chucks with diameter limitations.

SHANK DIAM.	TOOL DIAMETER		STUB LENGTH DRILLS						JOBBER 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.	TYPE 2672 POS. 118° PT.	BOTH TYPES PRICE
	FRAC.	DEC.		EDP NO.	PRICE	EDP NO.	PRICE		EDP NO.	PRICE	EDP NO.	PRICE		EDP NO.	EDP NO.	
1/4	9/32	.2812	2 11/16	2640618	\$25.55	2641618	\$29.65	4 1/4	2600618	\$25.30	2601618	\$29.30	-	-	-	-
	5/16	.3125	2 13/16	2640620	27.15	2641620	31.55	4 1/2	2600620	27.35	2601620	31.80	4 1/2	2670620	2672620	\$41.40
	11/32	.3438	3	2640622	31.60	2641622	36.60	4 3/4	2600622	29.05	2601622	33.80	4 3/4	2670622	2672622	44.10
	3/8	.3750	3 1/8	2640624	32.40	2641624	37.60	5	2600624	30.90	2601624	35.95	5	2670624	2672624	47.40
	13/32	.4062	3 5/16	2640626	38.40	2641626	44.70	5 1/4	2600626	33.60	2601626	39.10	5 1/4	2670626	2672626	55.55
	7/16	.4375	3 7/16	2640628	41.05	2641628	45.55	5 1/2	2600628	36.55	2601628	42.45	5 1/2	2670628	2672628	64.40
	15/32	.4688	3 3/8	2640630	58.45	2641630	67.95	5 3/4	2600630	41.15	2601630	47.60	5 3/4	2670630	2672630	70.70
	1/2	.5000	3 3/4	2640632	55.90	2641632	65.05	6	2600632	50.55	2601632	53.30	6	2670632	2672632	82.95
3/8	13/32	.4062	3 5/16	2640726	38.40	2641726	44.70	5 1/4	2600726	33.60	2601726	39.10	-	-	-	-
	7/16	.4375	3 7/16	2640728	41.05	2641728	45.55	5 1/2	2600728	36.55	2601728	42.45	5 1/2	2670728	2672728	64.40
	15/32	.4688	3 3/8	2640730	58.45	2641730	67.95	5 3/4	2600730	41.15	2601730	47.60	5 3/4	2670730	2672730	70.70
	1/2	.5000	3 3/4	2640732	55.90	2641732	65.05	6	2600732	50.55	2601732	53.30	6	2670732	2672732	82.95
	17/32	.5312	3 7/8	2640734	69.70	2641734	78.55	6 5/8	2600734	65.85	2601734	76.50	6	2670734	2672734	95.20
	9/16	.5625	4	2640736	69.70	2641736	78.55	6 3/4	2600736	66.45	2601736	77.15	6	2670736	2672736	98.45
	19/32	.5938	4 1/8	2640738	79.95	2641738	90.15	7 1/8	2600738	71.40	2601738	82.85	7	2670738	2672738	104.15
	5/8	.6250	4 1/4	2640740	79.95	2641740	90.15	7 1/8	2600740	80.90	2601740	93.75	7	2670740	2672740	107.35
	21/32	.6562	4 1/2	2640742	96.20	2641742	108.45	7 1/8	2600742	82.20	2601742	95.40	7 1/2	2670742	2672742	114.85
	11/16	.6875	4 5/8	2640744	98.65	2641744	111.30	7 5/8	2600744	83.80	2601744	97.20	7 1/2	2670744	2672744	117.95
	23/32	.7188	4 3/4	2640746	111.90	2641746	129.90	7 7/8	2600746	98.90	2601746	110.00	8	2670746	2672746	123.60
	3/4	.7500	5	2640748	112.15	2641748	126.30	8	2600748	101.00	2601748	112.25	8	2670748	2672748	126.95
1/2	17/32	.5312	3 7/8	2640834	69.70	2641834	78.55	6 5/8	2600834	65.85	2601834	76.50	-	-	-	-
	9/16	.5625	4	2640836	69.70	2641836	78.55	6 3/4	2600836	66.45	2601836	77.15	6	2670836	2672836	98.45
	19/32	.5938	4 1/8	2640838	79.95	2641838	90.15	7 1/8	2600838	71.40	2601838	82.85	7	2670838	2672838	104.15
	5/8	.6250	4 1/4	2640840	79.95	2641840	90.15	7 1/8	2600840	80.90	2601840	93.75	7	2670840	2672840	107.35
	21/32	.6562	4 1/2	2640842	96.20	2641842	108.45	7 1/8	2600842	82.20	2601842	95.40	7 1/2	2670842	2672842	114.85
	11/16	.6875	4 5/8	2640844	98.65	2641844	111.30	7 5/8	2600844	83.80	2601844	97.20	7 1/2	2670844	2672844	117.95
	23/32	.7188	4 3/4	2640846	111.90	2641846	129.90	7 7/8	2600846	98.90	2601846	110.00	8	2670846	2672846	123.60
	3/4	.7500	5	2640848	112.15	2641848	126.30	8	2600848	101.00	2601848	112.25	8	2670848	2672848	126.95
	13/16	.8125	5 1/4	2640852	138.60	2641852	156.45	-	-	-	-	-	8	2670852	2672852	227.60
	7/8	.8750	5 1/2	2640856	152.10	2641856	171.45	-	-	-	-	-	8	2670856	2672856	232.35
	15/16	.9375	5 3/4	2640860	163.30	2641860	184.20	-	-	-	-	-	8	2670860	2672860	258.90
	1	1.0000	6	2640864	172.50	2641864	194.65	-	-	-	-	-	8	2670864	2672864	274.65
3/4	13/16	.8125	5 1/4	2640952	138.60	2641952	156.45	-	-	-	-	8	2670952	2672952	227.60	
	7/8	.8750	5 1/2	2640956	152.10	2641956	171.45	-	-	-	-	8	2670956	2672956	232.35	
	15/16	.9375	5 3/4	2640960	163.30	2641960	184.20	-	-	-	-	8	2670960	2672960	258.90	
	1	1.0000	6	2640964	172.50	2641964	194.65	-	-	-	-	8	2670964	2672964	274.65	
	1 1/16	1.0625	6 1/4	2640968	216.20	2641968	243.75	-	-	-	-	-	-	-	-	
	1 1/8	1.1250	6 3/8	2640972	240.05	2641972	270.60	-	-	-	-	-	-	-	-	
	1 3/16	1.1875	6 5/8	2640976	292.90	2641976	328.35	-	-	-	-	-	-	-	-	
	1 1/4	1.2500	6 3/4	2640980	292.90	2641980	328.35	-	-	-	-	-	-	-	-	



# 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	\$4.45
3/16	3/16	3	268112	268212	4.45
1/4	1/4	4	268116	268216	4.45
1/4	1/4	6	268117	268217	5.05
5/16	1/4	4	268120	268220	5.05
5/16	1/4	6	268121	268221	5.50
3/8	1/4	4	268124	268224	5.50
3/8	1/4	6	268125	268225	5.50
7/16	1/4	4	268128	268228	6.10
7/16	1/4	6	268129	268229	6.25
1/2	1/4	4	268132	268232	6.75
1/2	1/4	6	268133	268233	6.75
1/2	3/8	6	268134	268234	6.75
9/16	3/8	6	268136	268236	9.10
5/8	1/2	6	268140	268240	9.65
11/16	1/2	6	268144	268244	10.95
3/4	1/2	6	268148	268248	12.00
7/8	1/2	6	268156	268256	14.95
1	1/2	6	268164	268264	18.50

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	\$11.55	268416	\$15.60
5/16	1/4	268320	13.25	268420	18.05
3/8	1/4	268324	14.55	268424	19.10
7/16	1/4	268328	15.95	268428	20.90
1/2	3/8	268332	18.25	268432	21.45
9/16	3/8	268336	20.90	268436	23.35
5/8	1/2	268340	23.35	268440	26.25
11/16	1/2	268344	26.20	268444	28.25
3/4	1/2	268348	26.85	268448	30.25
7/8	1/2	268356	33.15	268456	37.80
1	1/2	268364	36.70	268464	41.35

# GLASS & TILE DRILLS - CARBIDE TIPPED



### 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	\$17.45
3/16	.1875	5/32	2 1/2	268012	17.45
1/4	.2500	7/32	2 1/2	268016	20.05
5/16	.3125	1/4	3	268020	25.80
3/8	.3750	5/16	3 1/2	268024	28.70
7/16	.4375	3/8	3 1/2	268028	32.55
1/2	.5000	7/16	3 1/2	268032	35.50
9/16	.5625	1/2	4	268036	49.90
5/8	.6250	9/16	4	268040	60.15



# CORE DRILLS – CARBIDE TIPPED

## STRAIGHT & TAPER SHANK – FOUR SPIRAL FLUTES



**TYPE 2620 – STRAIGHT SHANK – FRACTIONAL SIZES**  
**TYPE 2622 – TAPER SHANK – FRACTIONAL SIZES**

**BOTH TYPES HAVE**

Cutting diameter tolerance plus .000" minus .001".  
 Carbide tips brazed to one piece hardened tool steel bodies.  
 Larger right spiral flute capacity permits higher feeds and speeds.  
 118° included chamfer angle.

**OPTIONS:**

Intermediate decimal sizes - see priced table below.  
 Special point angles.

**USE:**

Core drills are designed for economically enlarging cored, punched or drilled holes, removing up to 30% of the hole diameter.  
 The balanced cutting action of the core drill removes considerably more material than a reamer, often eliminating the need for a final reaming or boring operation.  
 For cast iron, non-ferrous metals, some steels, composites, plastics and non-metals.

TOOL DIAMETER		MIN. CUT DIAM.	LENGTH			STRAIGHT SHANK		TAPER SHANK		BOTH TYPES PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRACTIONAL	DECIMAL		CARBIDE TIP	FLUTE	OVER-ALL	SHANK DIAM.	EDP NO.	TAPER	EDP NO.			1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14**
3/8*	.3750	.262	5/8	3 1/2	6 3/4	3/8	262012	1	262212	\$84.20	0.3471 - 0.3780	\$114.95	\$99.50	\$94.40	\$91.95	\$89.25	\$87.25
13/32*	.4062	.284	5/8	3 5/8	7	13/32	262013	1	262213	84.20	0.3781 - 0.4090	114.95	99.50	94.40	91.95	89.25	87.25
7/16*	.4375	.306	3/4	3 7/8	7 1/4	7/16	262014	1	262214	84.20	0.4091 - 0.4410	114.95	99.50	94.40	91.95	89.25	87.25
15/32*	.4688	.328	3/4	4 1/8	7 1/2	15/32	262015	1	262215	84.20	0.4411 - 0.4720	114.95	99.50	94.40	91.95	89.25	87.25
1/2	.5000	.350	3/4	4 3/8	8 1/4	1/2	262016	2	262216	84.20	0.4721 - 0.5030	114.95	99.50	94.40	91.95	89.25	87.25
17/32	.5312	.372	3/4	4 3/8	8 1/4	17/32	262017	2	262217	84.55	0.5031 - 0.5340	115.40	99.95	94.70	92.30	89.65	87.55
9/16	.5625	.394	3/4	4 3/8	8 1/4	9/16	262018	2	262218	84.55	0.5341 - 0.5660	115.40	99.95	94.70	92.30	89.65	87.55
19/32	.5938	.416	3/4	4 3/8	8 1/4	19/32	262019	2	262219	88.75	0.5661 - 0.5970	119.55	104.10	99.00	96.50	93.90	91.85
5/8	.6250	.438	3/4	4 3/8	8 1/4	5/8	262020	2	262220	88.75	0.5971 - 0.6280	119.55	104.10	99.00	96.50	93.90	91.85
21/32	.6562	.459	3/4	4 3/8	8 1/4	21/32	262021	2	262221	89.80	0.6281 - 0.6590	120.60	105.20	100.05	97.55	95.00	92.90
11/16	.6875	.481	7/8	4 3/8	8 1/4	11/16	262022	2	262222	90.60	0.6591 - 0.6910	121.40	106.00	100.80	98.35	95.75	93.60
23/32	.7188	.503	7/8	4 3/8	8 1/4	23/32	262023	2	262223	90.60	0.6911 - 0.7220	121.40	106.00	100.80	98.35	95.75	93.60
3/4	.7500	.525	7/8	4 3/8	8 1/4	3/4	262024	2	262224	90.60	0.7221 - 0.7530	121.40	106.00	100.80	98.35	95.75	93.60
25/32	.7812	.547	7/8	4 3/8	8 1/4	25/32	262025	2	262225	92.60	0.7531 - 0.7840	123.40	107.95	102.85	100.40	97.75	95.65
13/16	.8125	.569	7/8	4 7/8	9 1/2	13/16	262026	3	262226	95.20	0.7841 - 0.8160	126.00	110.55	105.40	102.95	100.25	98.25
27/32	.8438	.591	7/8	4 7/8	9 1/2	27/32	262027	3	262227	100.25	0.8161 - 0.8470	131.10	115.65	110.50	108.00	105.40	103.30
7/8	.8750	.612	7/8	4 7/8	9 1/2	7/8	262028	3	262228	100.25	0.8471 - 0.8780	131.10	115.65	110.50	108.00	105.40	103.30
29/32	.9062	.634	7/8	4 7/8	9 1/2	29/32	262029	3	262229	100.90	0.8781 - 0.9090	131.70	116.30	111.10	108.70	106.05	103.95
15/16	.9375	.656	7/8	4 7/8	9 1/2	15/16	262030	3	262230	100.90	0.9091 - 0.9410	131.70	116.30	111.10	108.70	106.05	103.95
31/32	.9688	.678	7/8	4 7/8	9 1/2	31/32	262031	3	262231	104.65	0.9411 - 0.9720	135.40	119.95	114.85	112.40	109.70	107.70
1	1.0000	.700	7/8	4 7/8	9 1/2	1	262032	3	262232	106.60	0.9721 - 1.0030	137.40	122.00	116.75	114.35	111.70	109.60
1 1/32	1.0312	.722	7/8	4 7/8	9 1/2	1 1/32	262033	3	262233	107.50	1.0031 - 1.0340	138.25	122.80	117.70	115.20	112.60	110.50
1 1/16	1.0625	.744	7/8	4 7/8	9 1/2	1 1/16	262034	3	262234	108.95	1.0341 - 1.0660	139.80	124.35	119.20	116.70	114.05	112.00
1 3/32	1.0938	.766	1	4 7/8	10 1/2	1 3/32	262035	4	262235	126.95	1.0661 - 1.0970	157.70	142.30	137.10	134.70	132.05	129.95
1 1/8	1.1250	.787	1	4 7/8	10 1/2	1 1/8	262036	4	262236	126.95	1.0971 - 1.1280	157.70	142.30	137.10	134.70	132.05	129.95
1 5/32	1.1562	.809	1	4 7/8	10 1/2	1 5/32	262037	4	262237	138.60	1.1281 - 1.1590	169.35	153.95	148.80	146.35	143.70	141.60
1 3/16	1.1875	.831	1	4 7/8	10 1/2	1 3/16	262038	4	262238	142.60	1.1591 - 1.1905	173.35	158.00	152.80	150.35	147.75	145.65
1 7/32	1.2188	.853	1	4 7/8	10 1/2	1 7/32	262039	4	262239	143.10	1.1906 - 1.2220	173.90	158.45	153.35	150.85	148.20	146.15
1 1/4	1.2500	.875	1	4 7/8	10 1/2	1 1/4	262040	4	262240	143.70	1.2221 - 1.2530	174.50	159.05	153.90	151.40	148.80	146.70
1 9/32	1.2812	.897	1	4 7/8	10 1/2	1 9/32	262041	4	262241	153.95	1.2531 - 1.2840	184.75	169.30	164.20	161.65	159.05	156.95
1 5/16	1.3125	.919	1	4 7/8	10 1/2	1 5/16	262042	4	262242	158.25	1.2841 - 1.3150	189.05	173.65	168.40	166.00	163.35	161.25
1 11/32	1.3438	.940	1	4 7/8	10 1/2	1 11/32	262043	4	262243	161.55	1.3151 - 1.3470	192.35	176.95	171.75	169.30	166.70	164.55
1 3/8	1.3750	.962	1	4 7/8	10 1/2	1 3/8	262044	4	262244	165.45	1.3471 - 1.3780	196.25	180.85	175.65	173.20	170.60	168.45
1 13/32	1.4062	.984	1	4 7/8	10 1/2	1 13/32	262045	4	262245	169.25	1.3781 - 1.4090	200.05	184.65	179.45	177.00	174.35	172.25
1 7/16	1.4375	1.006	1	4 7/8	10 1/2	1 7/16	262046	4	262246	174.20	1.4091 - 1.4410	205.00	189.60	184.40	181.95	179.35	177.20
1 15/32	1.4688	1.025	1	4 7/8	10 1/2	1 15/32	262047	4	262247	179.40	1.4411 - 1.4720	210.15	194.70	189.60	187.15	184.45	182.45
1 1/2	1.5000	1.050	1	4 7/8	10 1/2	1 1/2	262048	4	262248	183.25	1.4721 - 1.5030	214.00	198.55	193.45	191.00	188.30	186.30

\*3 flutes

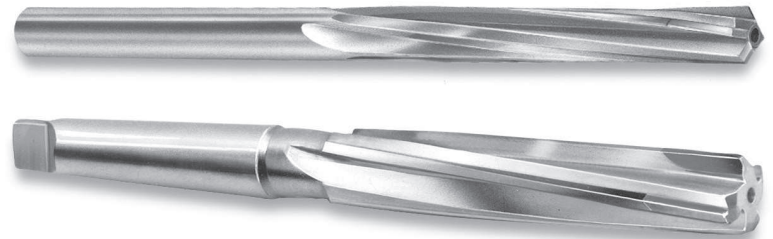
\*\*Quantities of 15 or more: price of fractional size in same size range.





# CORE DRILLS – CARBIDE TIPPED – METRIC DIAMETER

## STRAIGHT & TAPER SHANK – FOUR SPIRAL FLUTES



**TYPE 2620 – STRAIGHT SHANK**  
**TYPE 2622 – TAPER SHANK**

**BOTH TYPES HAVE**

Cutting diameter tolerance plus .000" minus .001".  
Carbide tips brazed to one piece hardened tool steel bodies.  
Larger right spiral flute capacity permits higher feeds and speeds.  
118° included chamfer angle.

**OPTIONS:**

Intermediate metric sizes - see priced table below.  
Special point angles.

**USE:**

Core drills are designed for economically enlarging cored, punched or drilled holes, removing up to 30% of the hole diameter. The balanced cutting action of the core drill removes considerably more material than a reamer, often eliminating the need for a final reaming or boring operation. For cast iron, non-ferrous metals, some steels, composites, plastics and non-metals.

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

TOOL DIAMETER		DIMENSIONS					TYPE 2620		TYPE 2622		BOTH TYPES METRIC PRICE	FINISHED TO MODIFIED TOOL DIAMETER						
		MIN. CUT DIAM.	LENGTH			SHANK DIAM.	METRIC EDP NO.	MORSE TAPER	METRIC EDP NO.	MODIFIED DECIMAL RANGE (mm)		PRICE EACH BASED ON QUANTITY ORDERED						
			CARBIDE TIP	FLUTE	OVER-ALL							1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14	OVER 14
mm	INCH																	
9.0*	.3543	.262	5/8	3 1/2	6 3/4	3/8	2620090	1	2622090	\$94.40	8.815-9.601	\$117.55	\$102.20	\$97.00	\$94.50	\$91.95	\$89.75	\$86.80
10.0*	.3937	.284	5/8	3 5/8	7	13/32	2620100	1	2622100	94.40	9.602-10.389	117.55	102.20	97.00	94.50	91.95	89.75	86.80
11.0*	.4331	.306	3/4	3 7/8	7 1/4	7/16	2620110	1	2622110	94.40	10.390-11.201	117.55	102.20	97.00	94.50	91.95	89.75	86.80
-	-	.328	3/4	4 1/8	7 1/2	15/32	2620119	1	2622119	-	11.202-11.989	117.55	102.20	97.00	94.50	91.95	89.75	86.80
12.0	.4724	.350	3/4	4 3/8	8 1/4	1/2	2620120	2	2622120	94.40	11.990-12.776	117.55	102.20	97.00	94.50	91.95	89.75	86.80
13.0	.5118	.372	3/4	4 3/8	8 1/4	17/32	2620130	2	2622130	94.70	12.777-13.564	117.90	102.60	97.40	94.95	92.30	90.20	87.25
14.0	.5512	.394	3/4	4 3/8	8 1/4	9/16	2620140	2	2622140	94.70	13.565-14.376	117.90	102.60	97.40	94.95	92.30	90.20	87.25
15.0	.5906	.416	3/4	4 3/8	8 1/4	19/32	2620150	2	2622150	99.00	14.377-15.164	122.15	106.80	101.65	99.10	96.50	94.40	91.40
-	-	.438	3/4	4 3/8	8 1/4	5/8	2620159	2	2622159	-	15.165-15.951	122.15	106.80	101.65	99.10	96.50	94.40	91.40
16.0	.6299	.459	3/4	4 3/8	8 1/4	21/32	2620160	2	2622160	100.05	15.952-16.739	123.25	107.85	102.70	100.15	97.55	95.40	92.50
17.0	.6693	.481	7/8	4 3/8	8 1/4	11/16	2620170	2	2622170	100.80	16.740-17.551	124.00	108.60	103.40	100.90	98.35	96.20	93.20
18.0	.7087	.503	7/8	4 3/8	8 1/4	23/32	2620180	2	2622180	100.80	17.552-18.339	124.00	108.60	103.40	100.90	98.35	96.20	93.20
19.0	.7480	.525	7/8	4 3/8	8 1/4	3/4	2620190	2	2622190	100.80	18.340-19.126	124.00	108.60	103.40	100.90	98.35	96.20	93.20
-	-	.547	7/8	4 3/8	8 1/4	25/32	2620199	2	2622199	-	19.127-19.914	126.00	110.65	105.50	102.95	100.40	98.25	95.25
20.0	.7874	.569	7/8	4 7/8	9 1/2	13/16	2620200	3	2622200	105.40	19.915-20.726	128.55	113.25	108.00	105.55	102.95	100.80	97.85
21.0	.8268	.591	7/8	4 7/8	9 1/2	27/32	2620210	3	2622210	110.50	20.727-21.514	133.70	118.30	113.15	110.65	108.00	105.95	102.95
22.0	.8661	.612	7/8	4 7/8	9 1/2	7/8	2620220	3	2622220	110.50	21.515-22.301	133.70	118.30	113.15	110.65	108.00	105.95	102.95
23.0	.9055	.634	7/8	4 7/8	9 1/2	29/32	2620230	3	2622230	111.10	22.302-23.089	134.30	118.90	113.80	111.20	108.70	106.55	103.60
-	-	.656	7/8	4 7/8	9 1/2	15/16	2620239	3	2622239	-	23.090-23.901	134.30	118.90	113.80	111.20	108.70	106.55	103.60
24.0	.9449	.678	7/8	4 7/8	9 1/2	31/32	2620240	3	2622240	114.85	23.902-24.689	138.00	122.65	117.50	114.95	112.40	110.20	107.25
25.0	.9843	.700	7/8	4 7/8	9 1/2	1	2620250	3	2622250	116.75	24.690-25.476	140.00	124.60	119.45	116.95	114.35	112.20	109.25
26.0	1.0236	.722	7/8	4 7/8	9 1/2	1 1/32	2620260	3	2622260	117.70	25.477-26.264	140.85	125.45	120.35	117.80	115.20	113.10	110.10
27.0	1.0630	.744	7/8	4 7/8	9 1/2	1 1/16	2620270	3	2622270	119.20	26.265-27.076	142.40	127.00	121.80	119.35	116.70	114.60	111.65
-	-	.766	1	4 7/8	10 1/2	1 3/32	2620279	4	2622279	-	27.077-27.864	160.30	144.90	139.80	137.20	134.70	132.50	129.60
28.0	1.1024	.787	1	4 7/8	10 1/2	1 1/8	2620280	4	2622280	137.10	27.865-28.651	160.30	144.90	139.80	137.20	134.70	132.50	129.60
29.0	1.1417	.809	1	4 7/8	10 1/2	1 5/32	2620290	4	2622290	148.80	28.652-29.439	171.95	156.60	151.40	148.90	146.35	144.15	141.20
30.0	1.1811	.831	1	4 7/8	10 1/2	1 3/16	2620300	4	2622300	152.80	29.440-30.239	176.00	160.60	155.50	152.90	150.35	148.20	145.30
31.0	1.2205	.853	1	4 7/8	10 1/2	1 7/32	2620310	4	2622310	153.35	30.240-31.039	176.50	161.15	156.00	153.45	150.85	148.70	145.75
-	-	.875	1	4 7/8	10 1/2	1 1/4	2620319	4	2622319	-	31.040-31.826	177.05	161.65	156.55	154.05	151.40	149.30	146.35
32.0	1.2598	.897	1	4 7/8	10 1/2	1 9/32	2620320	4	2622320	164.20	31.827-32.614	187.35	171.95	166.80	164.30	161.65	159.55	156.60
33.0	1.2992	.919	1	4 7/8	10 1/2	1 5/16	2620330	4	2622330	168.40	32.615-33.401	191.55	176.20	171.05	168.50	166.00	163.85	160.90
34.0	1.3386	.940	1	4 7/8	10 1/2	1 11/32	2620340	4	2622340	171.75	33.402-34.214	195.00	179.60	174.45	171.90	169.30	167.15	164.25
35.0	1.3780	.962	1	4 7/8	10 1/2	1 3/8	2620350	4	2622350	175.65	34.215-35.001	198.90	183.50	178.35	175.80	173.20	171.05	168.15
-	-	.984	1	4 7/8	10 1/2	1 13/32	2620359	4	2622359	-	35.002-35.789	202.60	187.30	182.05	179.60	177.00	174.85	171.90
36.0	1.4173	1.006	1	4 7/8	10 1/2	1 7/16	2620360	4	2622360	184.40	35.790-36.601	207.60	192.20	187.10	184.50	181.95	179.80	176.90
37.0	1.4567	1.025	1	4 7/8	10 1/2	1 15/32	2620370	4	2622370	189.60	36.602-37.389	212.75	197.40	192.20	189.70	187.15	184.95	182.00
38.0	1.4961	1.050	1	4 7/8	10 1/2	1 1/2	2620380	4	2622380	193.45	37.390-38.176	216.60	201.25	196.10	193.55	191.00	188.80	185.85

\*3 flutes



# 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	\$31.45	7/16	1/4	1	9/64	259201	\$57.95
2	4 3/16	9/16	5/16	259502	37.45	9/16	5/16	1 3/8	11/64	259202	71.80
3	5 1/4	7/8	1/2	259503	68.70	11/16	3/8	1 11/16	13/64	259203	108.45
4	6 3/4	7/8	1/2	259504	104.40	7/8	1/2	2 1/4	17/64	259204	158.60
5	8 1/2	1 1/16	5/8	259505	170.80	1 1/16	5/8	2 3/4	21/64	259205	265.05

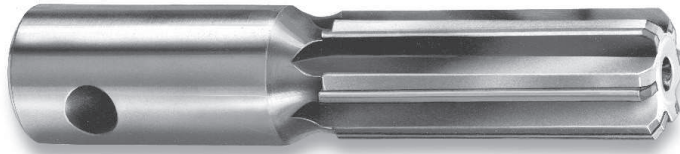
BROWN & SHARPE TAPER NO.	OVERALL LENGTH	TYPE 2596 - FULL CENTER - B & S TAPER				TYPE 2593 - HALF CENTER - B & S TAPER					
		CARBIDE TIP LENGTH	CARBIDE TIP DIAMETER	EDP NO.	PRICE	CARBIDE TIP LENGTH	CARBIDE TIP DIAMETER	UNDERCUT LENGTH	HEIGHT ABOVE CENTER	EDP NO.	PRICE
7	4 1/2	9/16	5/16	259607	\$48.00	9/16	5/16	1 1/8	11/64	259307	\$81.35
8	5 11/32	11/16	3/8	259608	67.40	9/16	5/16	1 5/16	11/64	259308	106.85
9	6	7/8	1/2	259609	85.45	11/16	3/8	1 1/2	13/64	259309	127.20
10	8 17/32	7/8	1/2	259610	122.15	7/8	1/2	2 1/4	17/64	259310	178.20
11	10 1/8	1 1/16	5/8	259611	162.25	1 1/16	5/8	2 1/2	3/8	259311	244.80

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	\$34.40	7/16	1/4	25/32	9/64	259404	\$63.25
5	3 5/8	7/16	1/4	259705	38.00	7/16	1/4	15/16	9/64	259405	70.00
6	4 1/2	9/16	5/16	259706	46.95	9/16	5/16	1 1/8	11/64	259406	78.00
7	5 1/4	11/16	3/8	259707	60.80	11/16	3/8	1 3/16	13/64	259407	102.25
8	6	7/8	1/2	259708	78.65	7/8	1/2	1 3/8	17/64	259408	126.30
9	6 3/4	7/8	1/2	259709	85.35	7/8	1/2	1 5/8	17/64	259409	142.30
10	7 1/2	7/8	1/2	259710	108.45	7/8	1/2	2	17/64	259410	168.50
11	8 1/4	7/8	1/2	259711	122.05	7/8	1/2	2	17/64	259411	186.50
12	9	1 1/16	5/8	259712	135.00	1 1/16	5/8	2 1/4	21/64	259412	210.10



# 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	CAR-BIDE	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	\$41.50	0.1770 - 0.2040	\$71.90	\$56.65	\$51.55	\$49.15	\$46.50	\$44.45
7/32	.2188	1/4	4	1	1/2	2 1/4	3/32	243007	244007	41.50	0.2041 - 0.2210	71.90	56.65	51.55	49.15	46.50	44.45
15/64	.2344	1/4	4	1	1/2	2 1/4	3/32	24302344	24402344	41.50	0.2211 - 0.2380	71.90	56.65	51.55	49.15	46.50	44.45
1/4	.2500	1/4	4	1	1/2	2 1/4	3/32	243008	244008	41.50	0.2381 - 0.2530	71.90	56.65	51.55	49.15	46.50	44.45
9/32	.2812	3/8	4	1	1/2	2 1/4	1/8	243009	244009	41.50	0.2531 - 0.2840	71.90	56.65	51.55	49.15	46.50	44.45
5/16	.3125	3/8	4	1	1	2 1/4	1/8	243010	244010	48.20	0.2841 - 0.3150	78.65	63.35	58.30	55.85	53.20	51.20
11/32	.3438	3/8	4	1 1/4	1 1/4	2 1/2	1/8	243011	244011	48.60	0.3151 - 0.3470	79.05	63.85	58.70	56.30	53.65	51.60
3/8	.3750	3/8	4	1 1/4	1 1/4	2 1/2	1/8	243012	244012	52.75	0.3471 - 0.3780	83.20	67.95	62.85	60.40	57.75	55.70
13/32	.4062	1/2	4	1 1/4	1 1/4	2 1/2	3/16	243013	244013	53.50	0.3781 - 0.4090	84.00	68.65	63.60	61.15	58.55	56.50
7/16	.4375	1/2	4	1 1/4	1 1/4	2 1/2	3/16	243014	244014	63.30	0.4091 - 0.4410	93.80	78.55	73.40	71.05	68.40	66.35
15/32	.4688	1/2	4	1 1/4	1 1/4	2 1/2	3/16	243015	244015	63.30	0.4411 - 0.4720	93.80	78.55	73.40	71.05	68.40	66.35
1/2	.5000	1/2	4	1 1/4	1 1/4	2 1/2	3/16	243016	244016	69.30	0.4721 - 0.5030	100.60	84.95	79.70	77.20	74.50	72.40
17/32	.5312	5/8	6	1 1/2	1 1/2	3	1/4	243017	244017	69.30	0.5031 - 0.5340	100.60	84.95	79.70	77.20	74.50	72.40
9/16	.5625	5/8	6	1 1/2	1 1/2	3	1/4	243018	244018	73.05	0.5341 - 0.5660	104.25	88.65	83.35	80.90	78.15	76.05
19/32	.5938	5/8	6	1 1/2	1 1/2	3	1/4	243019	244019	73.05	0.5661 - 0.5970	104.25	88.65	83.35	80.90	78.15	76.05
5/8	.6250	5/8	6	1 1/2	1 1/2	3	1/4	243020	244020	75.00	0.5971 - 0.6280	106.30	90.60	85.35	82.85	80.15	78.05
21/32	.6562	5/8	6	1 1/2	1 1/2	3	1/4	243021	244021	75.00	0.6281 - 0.6590	106.30	90.60	85.35	82.85	80.15	78.05
11/16	.6875	5/8	6	1 1/2	1 1/2	3	1/4	243022	244022	78.50	0.6591 - 0.6910	109.70	94.05	88.85	86.30	83.65	81.55
23/32	.7188	3/4	6	1 1/2	1 1/2	3	3/16	243023	244023	78.50	0.6911 - 0.7220	109.70	94.05	88.85	86.30	83.65	81.55
3/4	.7500	3/4	6	1 1/2	1 1/2	3	3/16	243024	244024	80.50	0.7221 - 0.7530	111.70	96.10	90.80	88.30	85.65	83.55
25/32	.7812	3/4	6	1 1/2	1 1/2	3	5/16	243025	244025	80.50	0.7531 - 0.7840	111.70	96.10	90.80	88.30	85.65	83.55
13/16	.8125	3/4	6	1 1/2	1 1/2	3	5/16	243026	244026	87.40	0.7841 - 0.8160	118.70	103.05	97.75	95.30	92.60	90.50
27/32	.8438	3/4	6	1 1/2	1 1/2	3	5/16	243027	244027	87.40	0.8161 - 0.8470	118.70	103.05	97.75	95.30	92.60	90.50
7/8	.8750	3/4	6	1 1/2	1 1/2	3	5/16	243028	244028	95.50	0.8471 - 0.8780	128.00	111.65	106.25	103.65	100.90	98.70
29/32	.9062	3/4	6	1 1/2	1 1/2	3	5/16	243029	244029	95.50	0.8781 - 0.9090	128.00	111.65	106.25	103.65	100.90	98.70
15/16	.9375	3/4	6	1 1/2	1 1/2	3	5/16	243030	244030	105.20	0.9091 - 0.9410	137.65	121.40	115.95	113.35	110.55	108.40
31/32	.9688	3/4	8	1 1/2	1 1/2	3	5/16	243031	244031	105.20	0.9411 - 0.9720	137.65	121.40	115.95	113.35	110.55	108.40
1	1.0000	3/4	8	1 1/2	1 1/2	3	5/16	243032	244032	110.35	0.9721 - 1.0030	142.85	126.60	121.15	118.55	115.70	113.55
1 1/16	1.0625	3/4	8	1 1/2	1 1/2	3	5/16	243034	244034	110.35	1.0031 - 1.0660	142.85	126.60	121.15	118.55	115.70	113.55
1 1/8	1.1250	3/4	8	1 1/2	1 1/2	3	5/16	243036	244036	129.20	1.0661 - 1.1280	161.65	145.35	139.90	137.35	134.55	132.35
1 3/16	1.1875	3/4	8	1 1/2	1 1/2	3	5/16	243038	244038	134.65	1.1281 - 1.1905	167.15	150.90	145.40	142.85	140.05	137.85
1 1/4	1.2500	3/4	8	1 1/2	1 1/2	3	5/16	243040	244040	157.75	1.1906 - 1.2530	190.25	174.00	168.60	165.95	163.20	161.00
1 5/16	1.3125	3/4	8	1 1/2	1 1/2	3	5/16	243042	244042	157.75	1.2531 - 1.3155	190.25	174.00	168.60	165.95	163.20	161.00
1 3/8	1.3750	3/4	8	1 1/2	1 1/2	3	5/16	243044	244044	160.05	1.3156 - 1.3780	192.50	176.25	170.85	168.20	165.50	163.30
1 7/16	1.4375	3/4	8	1 1/2	1 1/2	3	5/16	243046	244046	186.55	1.3781 - 1.4405	219.05	202.75	197.35	194.70	191.95	189.80
1 1/2	1.5000	3/4	8	1 1/2	1 1/2	3	5/16	243048	244048	224.05	1.4406 - 1.5030	256.50	240.30	234.85	232.25	229.40	227.20

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



# COOLANT FEEDING REAMERS

CARBIDE TIPPED - CENTER FEED FOR BLIND HOLES - STRAIGHT FLUTES

## TYPE 2424 - COOLANT FEEDING REAMER

Full length center feeding coolant hole.

Flute long carbide on .2841" tool diameter and larger.

Tool diameter tolerance +.0003", -.0000"

### USE:

Center coolant feeding hole for reaming blind holes as chips are flushed *back* towards 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.

TOOL DIAMETER		NO. OF FLUTES	LENGTH		MAX. SHANK DIAM.	TYPE 2424 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE						
FRAC.	DEC.		FLUTE	OVER-ALL					1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*	
3/16	.1875	4	1 1/4	5	.1805	242406	\$104.55	0.1770 - 0.2040	\$137.20	\$120.80	\$115.30	\$112.75	\$109.95	\$107.75	
	13/64	.2031	4	1 1/4	5	.1805	24242031	104.55	-	-	-	-	-	-	
	7/32	.2188	4	1 1/4	5	.2075	242407	104.55	0.2041 - 0.2210	137.20	120.80	115.30	112.75	109.95	107.75
	15/64	.2344	4	1 1/2	6	.2265	24242344	104.55	0.2211 - 0.2380	137.20	120.80	115.30	112.75	109.95	107.75
1/4	.2500	4	1 1/2	6	.2405	242408	104.55	0.2381 - 0.2530	137.20	120.80	115.30	112.75	109.95	107.75	
	17/64	.2656	4	1 1/2	6	.2485	24242656	110.95	-	-	-	-	-	-	
	9/32	.2812	4	1 1/2	6	.2485	242409	110.95	0.2531 - 0.2840	143.60	127.20	121.75	119.10	116.30	114.15
	19/64	.2969	4	1 1/2	6	.2792	24242969	117.15	-	-	-	-	-	-	
5/16	.3125	4	1 1/2	6	.2792	242410	117.15	0.2841 - 0.3150	149.85	133.45	127.95	125.30	122.55	120.35	
	21/64	.3281	4	1 1/2	6	.2792	24243281	118.05	-	-	-	-	-	-	
	11/32	.3438	4	1 1/2	6	.2792	242411	118.05	0.3151 - 0.3470	150.70	134.35	128.90	126.25	123.50	121.30
	23/64	.3594	4	1 3/4	7	.3105	24243594	119.30	-	-	-	-	-	-	
3/8	.3750	4	1 3/4	7	.3105	242412	119.30	0.3471 - 0.3780	151.95	135.55	130.10	127.45	124.65	122.50	
	25/64	.3906	4	1 3/4	7	.3105	24243906	119.65	-	-	-	-	-	-	
	13/32	.4062	4	1 3/4	7	.3105	242413	119.65	0.3781 - 0.4090	152.30	136.00	130.50	127.90	125.10	122.85
	27/64	.4219	6	1 3/4	7	.3730	24244219	120.85	-	-	-	-	-	-	
7/16	.4375	6	1 3/4	7	.3730	242414	120.85	0.4091 - 0.4410	153.55	137.20	131.65	129.10	126.25	124.10	
	29/64	.4531	6	1 3/4	7	.3730	24244531	121.90	-	-	-	-	-	-	
	15/32	.4688	6	1 3/4	7	.3730	242415	121.90	0.4411 - 0.4720	154.60	138.25	132.75	130.15	127.30	125.15
	31/64	.4844	6	2	8	.4355	24244844	123.30	-	-	-	-	-	-	
1/2	.5000	6	2	8	.4355	242416	123.30	0.4721 - 0.5030	156.00	139.65	134.20	131.55	128.80	126.50	
	33/64	.5156	6	2	8	.4355	24245156	126.10	-	-	-	-	-	-	
	17/32	.5312	6	2	8	.4355	242417	126.10	0.5031 - 0.5340	158.70	142.35	136.90	134.30	131.50	129.25
	9/16	.5625	6	2	8	.4355	242418	127.90	0.5341 - 0.5660	160.55	144.15	138.70	136.15	133.30	131.10
19/32	.5938	6	2	8	.4355	242419	130.55	0.5661 - 0.5970	163.20	146.85	141.35	138.80	136.00	133.75	
	5/8	.6250	6	2 1/4	9	.5615	242420	133.00	0.5971 - 0.6280	165.70	149.30	143.85	141.20	138.45	136.25
	21/32	.6562	6	2 1/4	9	.5615	242421	147.25	0.6281 - 0.6590	179.90	163.55	158.00	155.50	152.65	150.45
	11/16	.6875	6	2 1/4	9	.5615	242422	150.25	0.6591 - 0.6910	182.90	166.60	161.05	158.50	155.65	153.45
23/32	.7188	6	2 1/4	9	.6245	242423	156.70	0.6911 - 0.7220	189.35	173.05	167.60	164.95	162.15	159.90	
	3/4	.7500	6	2 1/2	9 1/2	.6245	242424	156.70	0.7221 - 0.7530	189.35	173.05	167.60	164.95	162.15	159.90
	25/32	.7812	6	2 1/2	9 1/2	.6245	242425	161.35	0.7531 - 0.7840	194.00	177.65	172.20	169.60	166.75	164.55
	13/16	.8125	6	2 1/2	9 1/2	.6245	242426	161.35	0.7841 - 0.8160	194.00	177.65	172.20	169.60	166.75	164.55
27/32	.8438	6	2 1/2	9 1/2	.6245	242427	166.90	0.8161 - 0.8470	199.55	183.20	177.70	175.10	172.30	170.05	
	7/8	.8750	6	2 5/8	10	.7495	242428	173.20	0.8471 - 0.8780	207.10	190.10	184.40	181.70	178.80	176.50
	29/32	.9062	6	2 5/8	10	.7495	242429	192.30	0.8781 - 0.9090	226.20	209.20	203.50	200.85	197.90	195.65
	15/16	.9375	8	2 5/8	10	.7495	242430	192.30	0.9091 - 0.9410	226.20	209.20	203.50	200.85	197.90	195.65
1	.9688	8	2 5/8	10	.7495	242431	193.05	0.9411 - 0.9720	226.95	210.00	204.35	201.60	198.65	196.40	
	1	1.0000	8	2 3/4	10 1/2	.8745	242432	193.05	0.9721 - 1.0030	226.95	210.00	204.35	201.60	198.65	196.40
	1 1/16	1.0625	8	2 3/4	10 1/2	.8745	242434	198.55	1.0031 - 1.0660	232.45	215.45	209.75	207.10	204.10	201.90
	1 1/8	1.1250	8	2 7/8	11	.8745	242436	205.45	1.0661 - 1.1280	239.30	222.35	216.60	213.90	211.00	208.70
1 3/16	1.1875	8	2 7/8	11	.9995	242438	220.05	1.1281 - 1.1905	253.95	236.95	231.20	228.60	225.65	223.40	
	1 1/4	1.2500	8	3	11 1/2	.9995	242440	222.90	1.1906 - 1.2530	256.85	239.80	234.15	231.45	228.60	226.30
	1 5/16	1.3125	8	3	11 1/2	.9995	242442	229.30	1.2531 - 1.3155	263.25	246.20	240.55	237.80	234.95	232.65
	1 3/8	1.3750	8	3 1/4	12	.9995	242444	238.60	1.3156 - 1.3780	272.50	255.45	249.85	247.10	244.25	241.90
1 7/16	1.4375	8	3 1/4	12	.9995	242446	246.05	1.3781 - 1.4405	280.00	262.95	257.35	254.60	251.70	249.45	
	1 1/2	1.5000	8	3 1/2	12 1/2	1.2495	242448	254.30	1.4406 - 1.5030	288.20	271.25	265.55	262.85	259.95	257.65
	1 9/16	1.5625	8	3 1/2	12 1/2	1.2495	242450	270.75	1.5031 - 1.5660	303.05	286.90	281.50	278.90	276.10	273.95
	1 5/8	1.6250	8	3 1/2	13	1.2495	242452	296.40	1.5661 - 1.6280	328.70	312.55	307.15	304.55	301.75	299.60
1 11/16	1.6875	8	3 1/2	13	1.2495	242454	302.70	1.6281 - 1.6910	335.00	318.85	313.45	310.85	308.05	305.90	
	1 3/4	1.7500	10	3 1/2	13 1/2	1.2495	242456	331.50	1.6911 - 1.7530	363.80	347.65	342.25	339.65	336.85	334.70
	1 13/16	1.8125	10	3 1/2	13 1/2	1.4995	242458	345.05	1.7531 - 1.8160	377.35	361.20	355.80	353.20	350.40	348.25
	1 7/8	1.8750	10	3 1/2	14	1.4995	242460	364.25	1.8161 - 1.8780	396.55	380.40	375.00	372.40	369.60	367.45
1 15/16	1.9375	10	3 1/2	14	1.4995	242462	386.20	1.8781 - 1.9410	418.50	402.35	396.95	394.35	391.55	389.40	
	2	2.0000	12	3 1/2	14	1.4995	242464	401.05	1.9411 - 2.0030	433.35	417.20	411.80	409.20	406.40	404.25

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



# COOLANT FEEDING REAMERS

## CARBIDE TIPPED - FLUTE FEED FOR THROUGH HOLES - STRAIGHT FLUTES

### TYPE 2426 - COOLANT FEEDING REAMER

Coolant feed outlets in *each* flute.

Flute long carbide on .2841" tool diameter and larger.

Tool diameter tolerance .0003", -.0000".

#### USE:

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



#### 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.

TOOL DIAMETER		NO. OF FLUTES	LENGTH		MAX. SHANK DIAM.	TYPE 2426 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*
3/16	.1875	4	1 1/4	5	.1805	242606	\$108.45	0.1770 - 0.2040	\$141.10	\$124.80	\$119.30	\$116.65	\$113.85	\$111.60
19/64	.2031	4	1 1/4	5	.1805	24262031	108.45	-	-	-	-	-	-	-
7/32	.2188	4	1 1/4	5	.2075	242607	108.45	0.2041 - 0.2210	141.10	124.80	119.30	116.65	113.85	111.60
19/64	.2344	4	1 1/2	6	.2265	24262344	108.45	0.2211 - 0.2380	141.10	124.80	119.30	116.65	113.85	111.60
1/4	.2500	4	1 1/2	6	.2405	242608	108.45	0.2381 - 0.2530	141.10	124.80	119.30	116.65	113.85	111.60
17/64	.2656	4	1 1/2	6	.2485	24262656	110.95	-	-	-	-	-	-	-
9/32	.2812	4	1 1/2	6	.2485	242609	110.95	0.2531 - 0.2840	143.60	127.20	121.75	119.10	116.30	114.15
19/64	.2969	4	1 1/2	6	.2792	24262969	120.35	-	-	-	-	-	-	-
5/16	.3125	4	1 1/2	6	.2792	242610	120.35	0.2841 - 0.3150	153.00	136.60	131.15	128.55	125.80	123.55
21/64	.3281	4	1 1/2	6	.2792	24263281	120.35	-	-	-	-	-	-	-
11/32	.3438	4	1 1/2	6	.2792	242611	120.35	0.3151 - 0.3470	153.00	136.60	131.15	128.55	125.80	123.55
23/64	.3594	4	1 3/4	7	.3105	24263594	120.35	-	-	-	-	-	-	-
3/8	.3750	4	1 3/4	7	.3105	242612	120.35	0.3471 - 0.3780	153.00	136.60	131.15	128.55	125.80	123.55
25/64	.3906	4	1 3/4	7	.3105	24263906	123.30	-	-	-	-	-	-	-
13/32	.4062	4	1 3/4	7	.3105	242613	123.30	0.3781 - 0.4090	156.00	139.65	134.20	131.55	128.80	126.50
27/64	.4219	6	1 3/4	7	.3730	24264219	126.30	-	-	-	-	-	-	-
7/16	.4375	6	1 3/4	7	.3730	242614	126.30	0.4091 - 0.4410	158.95	142.65	137.20	134.55	131.80	129.55
29/64	.4531	6	1 3/4	7	.3730	24264531	126.30	-	-	-	-	-	-	-
15/32	.4688	6	1 3/4	7	.3730	242615	126.30	0.4411 - 0.4720	158.95	142.65	137.20	134.55	131.80	129.55
31/64	.4844	6	2	8	.4355	24264844	126.30	-	-	-	-	-	-	-
1/2	.5000	6	2	8	.4355	242616	126.30	0.4721 - 0.5030	158.95	142.65	137.20	134.55	131.80	129.55
33/64	.5156	6	2	8	.4355	24265156	133.60	-	-	-	-	-	-	-
17/32	.5312	6	2	8	.4355	242617	133.60	0.5031 - 0.5340	166.25	149.95	144.50	141.85	139.00	136.85
9/16	.5625	6	2	8	.4355	242618	135.50	0.5341 - 0.5660	168.15	151.85	146.30	143.70	140.90	138.70
19/32	.5938	6	2	8	.4355	242619	136.75	0.5661 - 0.5970	169.40	153.05	147.60	144.95	142.15	139.95
5/8	.6250	6	2 1/4	9	.5615	242620	136.75	0.5971 - 0.6280	169.40	153.05	147.60	144.95	142.15	139.95
21/32	.6562	6	2 1/4	9	.5615	242621	151.55	0.6281 - 0.6590	184.30	167.90	162.40	159.80	157.00	154.80
11/16	.6875	6	2 1/4	9	.5615	242622	151.55	0.6591 - 0.6910	184.30	167.90	162.40	159.80	157.00	154.80
23/32	.7188	6	2 1/2	9	.6245	242623	162.00	0.6911 - 0.7220	194.65	178.30	172.85	170.25	167.35	165.20
3/4	.7500	6	2 1/2	9 1/2	.6245	242624	162.00	0.7221 - 0.7530	194.65	178.30	172.85	170.25	167.35	165.20
25/32	.7812	6	2 1/2	9 1/2	.6245	242625	162.00	0.7531 - 0.7840	194.65	178.30	172.85	170.25	167.35	165.20
13/16	.8125	6	2 1/2	9 1/2	.6245	242626	162.00	0.7841 - 0.8160	194.65	178.30	172.85	170.25	167.35	165.20
27/32	.8438	6	2 1/2	9 1/2	.6245	242627	166.90	0.8161 - 0.8470	199.55	183.20	177.70	175.10	172.30	170.05
7/8	.8750	6	2 5/8	10	.7495	242628	173.20	0.8471 - 0.8780	207.10	190.10	184.40	181.70	178.80	176.50
29/32	.9062	6	2 5/8	10	.7495	242629	194.45	0.8781 - 0.9090	228.30	211.35	205.70	202.95	200.00	197.80
15/16	.9375	8	2 5/8	10	.7495	242630	199.00	0.9091 - 0.9410	232.85	215.90	210.20	207.50	204.55	202.30
31/32	.9688	8	2 5/8	10	.7495	242631	199.00	0.9411 - 0.9720	232.85	215.90	210.20	207.50	204.55	202.30
1	1.0000	8	2 3/4	10 1/2	.8745	242632	199.00	0.9721 - 1.0030	232.85	215.90	210.20	207.50	204.55	202.30
1 1/16	1.0625	8	2 3/4	10 1/2	.8745	242634	210.40	1.0031 - 1.0660	244.35	227.40	221.70	219.00	216.10	213.80
1 1/8	1.1250	8	2 7/8	11	.8745	242636	211.30	1.0661 - 1.1280	245.25	228.20	222.50	219.80	216.95	214.60
1 3/16	1.1875	8	2 7/8	11	.9995	242638	220.05	1.1281 - 1.1905	253.95	236.95	231.20	228.60	225.65	223.40
1 1/4	1.2500	8	3	11 1/2	.9995	242640	222.90	1.1906 - 1.2530	256.85	239.80	234.15	231.45	228.60	226.30
1 5/16	1.3125	8	3	11 1/2	.9995	242642	229.30	1.2531 - 1.3155	263.25	246.20	240.55	237.80	234.95	232.65
1 3/8	1.3750	8	3 1/4	12	.9995	242644	238.60	1.3156 - 1.3780	272.50	255.45	249.85	247.10	244.25	241.90
1 7/16	1.4375	8	3 1/4	12	.9995	242646	246.05	1.3781 - 1.4405	280.00	262.95	257.35	254.60	251.70	249.45
1 1/2	1.5000	8	3 1/2	12 1/2	1.2495	242648	254.30	1.4406 - 1.5030	288.20	271.25	265.55	262.85	259.95	257.65
1 9/16	1.5625	8	3 1/2	12 1/2	1.2495	242650	285.90	1.5031 - 1.5660	318.20	302.05	296.60	294.05	291.25	289.10
1 5/8	1.6250	8	3 1/2	13	1.2495	242652	314.35	1.5661 - 1.6280	346.65	330.50	325.05	322.50	319.70	317.55
1 11/16	1.6875	8	3 1/2	13	1.2495	242654	319.80	1.6281 - 1.6910	352.10	335.95	330.50	327.95	325.15	323.00
1 3/4	1.7500	10	3 1/2	13 1/2	1.2495	242656	349.50	1.6911 - 1.7530	381.80	365.65	360.20	357.65	354.85	352.70
1 13/16	1.8125	10	3 1/2	13 1/2	1.4995	242658	363.90	1.7531 - 1.8160	396.20	380.05	374.60	372.05	369.25	367.10
1 7/8	1.8750	10	3 1/2	14	1.4995	242660	383.15	1.8161 - 1.8780	415.45	399.30	393.85	391.30	388.50	386.35
1 15/16	1.9375	10	3 1/2	14	1.4995	242662	407.60	1.8781 - 1.9410	439.90	423.75	418.30	415.75	412.95	410.80
2	2.0000	12	3 1/2	14	1.4995	242664	422.40	1.9411 - 2.0030	454.70	438.55	433.10	430.55	427.75	425.60

\*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	\$107.35	.2381 - .2530	\$137.80	\$122.55	\$117.45	\$115.00	\$112.35	\$110.30
3/32	.2812	4	1 1/2	6	.2485	241309	109.80	.2531 - .2840	139.20	124.50	119.55	117.20	114.70	112.65
3/16	.3125	4	1 1/2	6	.2792	241310	120.35	.2841 - .3150	150.80	135.50	130.40	127.95	125.30	123.25
1/2	.3438	4	1 1/2	6	.2792	241311	121.20	.3151 - .3470	151.70	136.45	131.35	128.90	126.25	124.20
3/8	.3750	4	1 3/4	7	.3105	241312	122.50	.3471 - .3780	152.95	137.65	132.55	130.15	127.60	125.50
13/32	.4062	4	1 3/4	7	.3105	241313	122.85	.3781 - .4090	153.30	138.10	132.95	130.50	127.90	125.85
7/16	.4375	6	1 3/4	7	.3730	241314	124.10	.4091 - .4410	154.60	139.30	134.20	131.80	129.15	127.10
15/32	.4688	6	1 3/4	7	.3730	241315	125.20	.4411 - .4720	155.70	140.40	135.35	132.90	130.25	128.20
1/2	.5000	6	2	8	.4355	241316	130.05	.4721 - .5030	161.35	145.65	140.40	137.90	135.25	133.15
17/32	.5312	6	2	8	.4355	241317	134.75	.5031 - .5340	166.05	150.35	145.10	142.65	139.95	137.85
9/16	.5625	6	2	8	.4355	241318	134.75	.5341 - .5660	166.05	150.35	145.10	142.65	139.95	137.85
19/32	.5938	6	2	8	.4355	241319	140.10	.5661 - .5970	171.45	155.75	150.50	148.05	145.35	143.20
5/8	.6250	6	2 1/4	9	.5615	241320	140.10	.5971 - .6280	171.45	155.75	150.50	148.05	145.35	143.20
21/32	.6562	6	2 1/4	9	.5615	241321	158.35	.6281 - .6590	189.60	174.00	168.70	166.20	163.50	161.40
11/16	.6875	6	2 1/4	9	.5615	241322	158.35	.6591 - .6910	189.60	174.00	168.70	166.20	163.50	161.40
23/32	.7188	6	2 1/4	9	.5615	241323	165.20	.6911 - .7220	196.55	180.85	175.60	173.15	170.40	168.25
3/4	.7500	6	2 1/2	9 1/2	.6245	241324	155.20	.7221 - .7530	184.60	169.85	164.95	162.55	160.05	158.00
25/32	.7812	6	2 1/2	9 1/2	.6245	241325	178.05	.7531 - .7840	209.35	193.65	188.40	185.90	183.20	181.05
13/16	.8125	6	2 1/2	9 1/2	.6245	241326	180.20	.7841 - .8160	211.50	195.80	190.60	188.10	185.45	183.35
27/32	.8438	6	2 1/2	9 1/2	.6245	241327	183.60	.8161 - .8470	214.95	199.25	194.00	191.45	188.80	186.70
7/8	.8750	6	2 5/8	10	.7495	241328	193.50	.8471 - .8780	225.95	209.75	204.30	201.70	198.85	196.70
29/32	.9062	6	2 5/8	10	.7495	241329	205.00	.8781 - .9090	237.45	221.25	215.80	213.20	210.35	208.20
15/16	.9375	8	2 5/8	10	.7495	241330	214.85	.9091 - .9410	247.35	231.05	225.65	223.00	220.20	218.00
31/32	.9688	8	2 5/8	10	.7495	241331	215.45	.9411 - .9720	247.90	231.65	226.20	223.60	220.80	218.65
1	1.0000	8	2 3/4	10 1/2	.8745	241332	215.80	.9721 - 1.0030	248.25	232.00	226.55	223.95	221.20	219.00
1 1/16	1.0625	8	2 3/4	10 1/2	.8745	241334	221.80	1.0031 - 1.0660	254.25	238.05	232.60	229.95	227.15	225.00
1 1/8	1.1250	8	2 7/8	11	.8745	241336	229.50	1.0661 - 1.1280	262.05	245.70	240.30	237.70	234.95	232.75
1 3/16	1.1875	8	2 7/8	11	.9995	241338	245.85	1.1281 - 1.1905	278.35	262.10	256.60	254.05	251.20	249.00
1 1/4	1.2500	8	3	11 1/2	.9995	241340	249.00	1.1906 - 1.2530	281.50	265.25	259.80	257.20	254.45	252.25
1 3/16	1.3125	8	3	11 1/2	.9995	241342	256.25	1.2531 - 1.3155	288.70	272.40	266.95	264.40	261.60	259.40
1 3/8	1.3750	8	3 1/4	12	.9995	241344	266.65	1.3156 - 1.3780	299.15	282.85	277.40	274.85	272.00	269.80
1 7/16	1.4375	8	3 1/4	12	.9995	241346	274.95	1.3781 - 1.4405	307.40	291.15	285.70	283.10	280.30	278.15
1 1/2	1.5000	8	3 1/2	12 1/2	1.2495	241348	284.25	1.4406 - 1.5030	316.70	300.45	295.00	292.35	289.60	287.45

\*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.

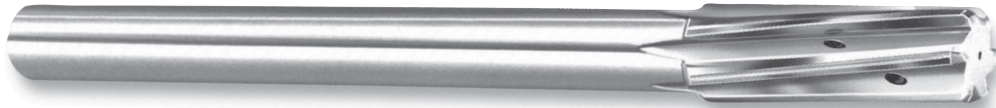
TOOL DIAMETER		NO. OF FLUTES	LENGTH		MAX SHANK DIAM.	TYPE 2418 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRAC.	DECIMAL		FLUTE	OVERALL					1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
1/4	.2500	4	1 1/2	6	.2405	241808	\$115.00	.2381 - .2530	\$147.65	\$131.30	\$125.85	\$123.20	\$120.45	\$118.20
9/32	.2812	4	1 1/2	6	.2485	241809	122.00	.2531 - .2840	154.65	138.30	132.80	130.20	127.40	125.20
5/16	.3125	4	1 1/2	6	.2792	241810	128.90	.2841 - .3150	161.55	145.20	139.70	137.15	134.30	132.10
11/32	.3438	4	1 1/2	6	.2792	241811	129.90	.3151 - .3470	162.55	146.20	140.70	138.15	135.30	133.15
3/8	.3750	4	1 3/4	7	.3105	241812	131.20	.3471 - .3780	163.90	147.50	142.00	139.45	136.60	134.45
13/32	.4062	4	1 3/4	7	.3105	241813	131.60	.3781 - .4090	164.25	147.90	142.50	139.85	137.00	134.80
7/16	.4375	6	1 3/4	7	.3730	241814	132.95	.4091 - .4410	165.65	149.25	143.80	141.15	138.35	136.20
15/32	.4688	6	1 3/4	7	.3730	241815	134.20	.4411 - .4720	166.85	150.45	144.95	142.35	139.55	137.35
1/2	.5000	6	2	8	.4355	241816	135.65	.4721 - .5030	168.30	152.00	146.55	143.90	141.10	138.90
17/32	.5312	6	2	8	.4355	241817	140.65	.5031 - .5340	173.30	156.90	151.45	148.90	146.00	143.85
9/16	.5625	6	2	8	.4355	241818	140.65	.5341 - .5660	173.30	156.90	151.45	148.90	146.00	143.85
19/32	.5938	6	2	8	.4355	241819	146.25	.5661 - .5970	178.90	162.55	157.05	154.50	151.60	149.45
5/8	.6250	6	2 1/4	9	.5615	241820	146.25	.5971 - .6280	178.90	162.55	157.05	154.50	151.60	149.45
21/32	.6562	6	2 1/4	9	.5615	241821	165.20	.6281 - .6590	197.85	181.55	176.05	173.40	170.60	168.40
11/16	.6875	6	2 1/4	9	.5615	241822	165.20	.6591 - .6910	197.85	181.55	176.05	173.40	170.60	168.40
23/32	.7188	6	2 1/4	9	.5615	241823	172.40	.6911 - .7220	205.05	188.70	183.30	180.65	177.85	175.60
3/4	.7500	6	2 1/2	9 1/2	.6245	241824	172.40	.7221 - .7530	205.05	188.70	183.30	180.65	177.85	175.60
25/32	.7812	6	2 1/2	9 1/2	.6245	241825	185.75	.7531 - .7840	218.40	202.05	196.60	194.00	191.20	189.00
13/16	.8125	6	2 1/2	9 1/2	.6245	241826	188.05	.7841 - .8160	220.70	204.35	198.85	196.30	193.45	191.25
27/32	.8438	6	2 1/2	9 1/2	.6245	241827	191.60	.8161 - .8470	224.30	207.90	202.40	199.75	197.00	194.80
7/8	.8750	6	2 5/8	10	.7495	241828	201.95	.8471 - .8780	235.85	218.85	213.15	210.40	207.55	205.20
29/32	.9062	6	2 5/8	10	.7495	241829	213.90	.8781 - .9090	247.80	230.85	225.15	222.45	219.55	217.25
15/16	.9375	8	2 5/8	10	.7495	241830	224.20	.9091 - .9410	258.10	241.10	235.40	232.75	229.80	227.55
31/32	.9688	8	2 5/8	10	.7495	241831	224.80	.9411 - .9720	258.70	241.75	236.05	233.30	230.40	228.10
1	1.0000	8	2 3/4	10 1/2	.8745	241832	225.15	.9721 - 1.0030	259.10	242.10	236.35	233.70	230.80	228.50
1 1/16	1.0625	8	2 3/4	10 1/2	.8745	241833	259.65	1.0031 - 1.0660	293.55	276.55	270.90	268.15	265.30	262.95
1 1/8	1.1250	8	2 7/8	11	.8745	241836	260.80	1.0661 - 1.1280	294.65	277.65	272.00	269.25	266.40	264.10
1 3/16	1.1875	8	2 7/8	11	.9995	241838	271.55	1.1281 - 1.1905	305.40	288.40	282.75	280.05	277.15	274.85
1 1/4	1.2500	8	3	11 1/2	.9995	241840	275.10	1.1906 - 1.2530	309.00	292.05	286.35	283.65	280.70	278.45
1 3/8	1.3125	8	3	11 1/2	.9995	241842	283.05	1.2531 - 1.3155	316.95	299.95	294.20	291.55	288.65	286.35
1 3/8	1.3750	8	3 1/4	12	.9995	241844	294.45	1.3156 - 1.3780	328.40	311.40	305.65	303.00	300.10	297.80
1 7/16	1.4375	8	3 1/4	12	.9995	241846	303.65	1.3781 - 1.4405	337.60	320.55	314.90	312.20	309.35	307.00
1 1/2	1.5000	8	3 1/2	12 1/2	1.2495	241848	313.85	1.4406 - 1.5030	347.75	330.80	325.10	322.35	319.45	317.15

\*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	\$132.95	.2381 - .2530	\$165.65	\$149.25	\$143.80	\$141.15	\$138.35	\$136.20
* 9/32	.2812	4	1 1/2	6	.2485	242809	141.00	.2531 - .2840	173.65	157.35	151.90	149.25	146.50	144.25
3/16	.3125	4	1 1/2	6	.2792	242810	149.00	.2841 - .3150	181.65	165.25	159.80	157.20	154.35	152.20
11/32	.3438	4	1 1/2	6	.2792	242811	150.15	.3151 - .3470	182.75	166.35	160.95	158.35	155.55	153.30
3/8	.3750	4	1 3/4	7	.3105	242812	151.60	.3471 - .3780	184.35	167.95	162.50	159.85	157.05	154.90
13/32	.4062	4	1 3/4	7	.3105	242813	152.25	.3781 - .4090	184.90	168.60	163.05	160.50	157.65	155.50
7/16	.4375	6	1 3/4	7	.3730	242814	153.70	.4091 - .4410	186.40	170.00	164.55	161.95	159.20	156.90
15/32	.4688	6	1 3/4	7	.3730	242815	155.05	.4411 - .4720	187.70	171.35	165.90	163.30	160.50	158.30
1/2	.5000	6	2	8	.4355	242816	157.05	.4721 - .5030	189.75	173.35	167.90	165.25	162.50	160.30
17/32	.5312	6	2	8	.4355	242817	160.35	.5031 - .5340	193.00	176.60	171.20	168.60	165.75	163.55
9/16	.5625	6	2	8	.4355	242818	162.65	.5341 - .5660	195.35	178.95	173.50	170.90	168.05	165.90
19/32	.5938	6	2	8	.4355	242819	166.05	.5661 - .5970	198.70	182.40	176.90	174.30	171.50	169.30
5/8	.6250	6	2 1/4	9	.5615	242820	169.15	.5971 - .6280	201.80	185.45	179.95	177.35	174.55	172.35
21/32	.6562	6	2 1/4	9	.5615	242821	187.30	.6281 - .6590	220.00	203.65	198.15	195.55	192.75	190.50
11/16	.6875	6	2 1/4	9	.5615	242822	191.10	.6591 - .6910	223.75	207.45	201.95	199.35	196.55	194.35
23/32	.7188	6	2 1/4	9	.5615	242823	195.20	.6911 - .7220	227.85	211.45	206.00	203.40	200.60	198.40
3/4	.7500	6	2 1/2	9 1/2	.6245	242824	199.35	.7221 - .7530	232.00	215.65	210.15	207.60	204.75	202.55
25/32	.7812	6	2 1/2	9 1/2	.6245	242825	202.75	.7531 - .7840	235.40	219.05	213.55	210.95	208.10	205.95
13/16	.8125	6	2 1/2	9 1/2	.6245	242826	205.20	.7841 - .8160	237.80	221.50	216.05	213.40	210.65	208.40
27/32	.8438	6	2 1/2	9 1/2	.6245	242827	208.95	.8161 - .8470	241.65	225.30	219.75	217.15	214.35	212.15
7/8	.8750	6	2 5/8	10	.7495	242828	220.30	.8471 - .8780	254.20	237.25	231.50	228.80	225.90	223.60
29/32	.9062	6	2 5/8	10	.7495	242829	233.25	.8781 - .9090	267.15	250.15	244.50	241.80	238.90	236.60
15/16	.9375	8	2 5/8	10	.7495	242830	244.65	.9091 - .9410	278.50	261.55	255.85	253.15	250.20	247.95
31/32	.9688	8	2 5/8	10	.7495	242831	245.30	.9411 - .9720	279.15	262.20	256.45	253.75	250.85	248.55
1	1.0000	8	2 3/4	10 1/2	.8745	242832	245.60	.9721 - 1.0030	279.50	262.55	256.85	254.10	251.20	248.90
1 1/16	1.0625	8	2 3/4	10 1/2	.8745	242834	259.65	1.0031 - 1.0660	293.55	276.55	270.90	268.15	265.30	262.95
1 1/8	1.1250	8	2 7/8	11	.8745	242836	260.80	1.0661 - 1.1280	294.65	277.65	272.00	269.25	266.40	264.10
1 3/16	1.1875	8	2 7/8	11	.9995	242838	271.55	1.1281 - 1.1905	305.40	288.40	282.75	280.05	277.15	274.85
1 1/4	1.2500	8	3	11 1/2	.9995	242840	275.10	1.1906 - 1.2530	309.00	292.05	286.35	283.65	280.70	278.45
1 5/16	1.3125	8	3	11 1/2	.9995	242842	283.05	1.2531 - 1.3155	316.95	299.95	294.20	291.55	288.65	286.35
1 3/8	1.3750	8	3 1/4	12	.9995	242844	294.45	1.3156 - 1.3780	328.40	311.40	305.65	303.00	300.10	297.80
1 7/16	1.4375	8	3 1/4	12	.9995	242846	303.65	1.3781 - 1.4405	337.60	320.55	314.90	312.20	309.35	307.00
1 1/2	1.5000	8	3 1/2	12 1/2	1.2495	242848	313.85	1.4406 - 1.5030	347.75	330.80	325.10	322.35	319.45	317.15

\*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						
			SHANK DIAM.	NO. OF FLUTES	LENGTH			1 PC.		2 PC.	3 PC.	4 PC.	5-7	8-14	OVER 14	
mm	INCH	FLT			CAR-BIDE	OVER-ALL										
4.0	.1575	2400040	\$44.75	.151	4	1	1/2	4	3.962 - 4.493	\$67.60	\$52.45	\$47.30	\$44.80	\$42.25	\$40.10	\$37.20
4.5	.1772	2400045	41.65	11/64	4	1 1/8	1/2	4 1/2	4.494 - 5.182	63.95	49.15	44.20	41.75	39.20	37.15	34.35
5.0	.1969	2400050	41.65	11/64	4	1 1/8	1/2	4 1/2	-	-	-	-	-	-	-	-
5.5	.2165	2400055	41.65	13/64	4	1 1/4	1/2	5	5.183 - 5.613	63.95	49.15	44.20	41.75	39.20	37.15	34.35
6.0	.2362	2400060	43.60	7/32	4	1 1/2	1/2	6	5.614 - 6.045	65.85	51.05	46.05	43.65	41.10	39.05	36.20
6.3	.2480	2400063	41.65	15/64	4	1 1/2	1/2	6	6.046 - 6.426	63.95	49.15	44.20	41.75	39.20	37.15	34.35
6.5	.2559	2400065	42.30	15/64	4	1 1/2	1/2	6	6.427 - 7.214	64.65	49.80	44.85	42.40	39.90	37.85	35.00
7.0	.2756	2400070	42.30	15/64	4	1 1/2	1/2	6	-	-	-	-	-	-	-	-
7.5	.2953	2400075	42.30	9/32	4	1 1/2	1/2	6	7.215 - 8.001	64.65	49.80	44.85	42.40	39.90	37.85	35.00
8.0	.3150	2400080	42.30	9/32	4	1 1/2	1/2	6	-	-	-	-	-	-	-	-
8.5	.3346	2400085	43.40	9/32	4	1 1/2	5/8	6	8.002 - 8.814	65.80	51.00	46.00	43.60	41.05	39.00	36.15
9.0	.3543	2400090	43.40	5/16	4	1 3/4	5/8	7	8.815 - 9.601	65.80	51.00	46.00	43.60	41.05	39.00	36.15
9.5	.3740	2400095	43.40	5/16	4	1 3/4	5/8	7	-	-	-	-	-	-	-	-
10.0	.3937	2400100	45.10	5/16	4	1 3/4	5/8	7	9.602 - 10.389	67.40	52.60	47.60	45.20	42.70	40.65	37.80
10.5	.4134	2400105	47.40	3/8	4	1 3/4	5/8	7	10.390 - 11.201	69.75	54.95	50.00	47.55	45.10	43.00	40.15
11.0	.4331	2400110	47.40	3/8	4	1 3/4	5/8	7	-	-	-	-	-	-	-	-
11.5	.4528	2400115	48.00	3/8	4	1 3/4	5/8	7	11.202 - 11.989	70.30	55.50	50.50	48.10	45.60	43.60	40.70
12.0	.4724	2400120	56.25	7/16	6	2	5/8	8	11.990 - 12.776	80.80	64.50	59.05	56.40	53.65	51.35	48.20
12.5	.4921	2400125	56.25	7/16	6	2	5/8	8	-	-	-	-	-	-	-	-
13.0	.5118	2400130	60.30	7/16	6	2	5/8	8	12.777 - 13.564	84.80	68.50	63.05	60.40	57.65	55.40	52.20
13.5	.5315	2400135	60.30	7/16	6	2	5/8	8	-	-	-	-	-	-	-	-
14.0	.5512	2400140	60.30	7/16	6	2	5/8	8	13.565 - 14.376	84.80	68.50	63.05	60.40	57.65	55.40	52.20
14.5	.5709	2400145	62.20	7/16	6	2	5/8	8	14.377 - 15.164	86.85	70.50	65.05	62.35	59.65	57.40	54.20
15.0	.5906	2400150	62.20	7/16	6	2	5/8	8	-	-	-	-	-	-	-	-
15.5	.6102	2400155	62.20	9/16	6	2 1/4	5/8	9	15.165 - 15.951	86.85	70.50	65.05	62.35	59.65	57.40	54.20
16.0	.6299	2400160	63.10	9/16	6	2 1/4	5/8	9	15.952 - 16.739	87.75	71.40	65.90	63.20	60.50	58.20	55.05
16.5	.6496	2400165	63.10	9/16	6	2 1/4	5/8	9	-	-	-	-	-	-	-	-
17.0	.6693	2400170	63.10	9/16	6	2 1/4	5/8	9	16.740 - 17.551	87.75	71.40	65.90	63.20	60.50	58.20	55.05
17.5	.6890	2400175	63.10	9/16	6	2 1/4	5/8	9	-	-	-	-	-	-	-	-
18.0	.7087	2400180	65.55	9/16	6	2 1/4	5/8	9	17.552 - 18.339	90.15	73.85	68.40	65.75	63.00	60.70	57.55
18.5	.7283	2400185	65.55	5/8	6	2 1/2	3/4	9 1/2	18.340 - 19.126	90.15	73.85	68.40	65.75	63.00	60.70	57.55
19.0	.7480	2400190	65.55	5/8	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	-
19.5	.7677	2400195	67.40	5/8	6	2 1/2	3/4	9 1/2	19.127 - 19.914	91.95	75.70	70.20	67.50	64.80	62.50	59.40
20.0	.7874	2400200	67.40	5/8	6	2 1/2	3/4	9 1/2	19.915 - 20.726	91.95	75.70	70.20	67.50	64.80	62.50	59.40
20.5	.8071	2400205	67.40	5/8	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	-
21.0	.8268	2400210	69.65	5/8	6	2 1/2	3/4	9 1/2	20.727 - 21.514	94.25	77.90	72.45	69.75	67.05	64.80	61.65
21.5	.8465	2400215	69.65	5/8	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	-
22.0	.8661	2400220	69.65	3/4	6	2 5/8	3/4	10	21.515 - 22.301	94.25	77.90	72.45	69.75	67.05	64.80	61.65
22.5	.8858	2400225	82.35	3/4	6	2 5/8	3/4	10	22.302 - 23.089	107.85	90.90	85.25	82.50	79.65	77.30	74.00
23.0	.9055	2400230	82.35	3/4	6	2 5/8	3/4	10	-	-	-	-	-	-	-	-
23.5	.9252	2400235	82.35	3/4	8	2 5/8	3/4	10	23.090 - 23.901	107.85	90.90	85.25	82.50	79.65	77.30	74.00
24.0	.9449	2400240	85.85	3/4	8	2 5/8	3/4	10	23.902 - 24.689	111.30	94.35	88.70	85.95	83.10	80.75	77.50
24.5	.9646	2400245	85.85	3/4	8	2 5/8	3/4	10	-	-	-	-	-	-	-	-
25.0	.9843	2400250	85.85	7/8	8	2 3/4	3/4	10 1/2	24.690 - 25.476	111.30	94.35	88.70	85.95	83.10	80.75	77.50
25.5	1.0039	2400255	87.85	7/8	8	2 3/4	3/4	10 1/2	25.477 - 27.076	112.35	96.10	90.65	88.00	85.30	83.05	79.85
26.0	1.0236	2400260	87.85	7/8	8	2 3/4	3/4	10 1/2	-	-	-	-	-	-	-	-
27.0	1.0630	2400270	87.85	7/8	8	2 3/4	3/4	10 1/2	-	-	-	-	-	-	-	-
28.0	1.1024	2400280	94.15	7/8	8	2 7/8	7/8	11	27.077 - 28.651	118.55	102.30	96.90	94.25	91.55	89.30	86.15
29.0	1.1417	2400290	98.35	1	8	2 7/8	7/8	11	28.652 - 30.239	122.80	106.65	101.10	98.50	95.75	93.50	90.40
30.0	1.1811	2400300	98.35	1	8	2 7/8	7/8	11	-	-	-	-	-	-	-	-
31.0	1.2205	2400310	103.40	1	8	3	7/8	11 1/2	30.240 - 31.826	127.85	111.60	106.20	103.55	100.85	98.60	95.45
32.0	1.2598	2400320	108.15	1	8	3	7/8	11 1/2	31.827 - 33.414	132.65	116.45	111.00	108.35	105.60	103.30	100.15
33.0	1.2992	2400330	108.15	1	8	3	7/8	11 1/2	-	-	-	-	-	-	-	-
34.0	1.3386	2400340	114.20	1	8	3 1/4	7/8	12	33.415 - 35.001	138.60	122.40	116.95	114.30	111.55	109.30	106.20
35.0	1.3780	2400350	114.20	1	8	3 1/4	7/8	12	-	-	-	-	-	-	-	-
36.0	1.4173	2400360	126.00	1 1/4	8	3 1/4	7/8	12	35.002 - 36.589	150.45	134.20	128.80	126.10	123.45	121.15	118.00
37.0	1.4567	2400370	132.50	1 1/4	8	3 1/2	7/8	12 1/2	36.590 - 38.176	157.05	140.80	135.35	132.70	130.00	127.70	124.60

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	\$34.60	0.1560 - 0.1769	\$65.45	\$49.80	\$44.75	\$42.25	\$39.65	\$37.60
11/64	.1719	4	1	4	.151	24001719	34.60	-	-	-	-	-	-	-
3/16	.1875	4	1 1/8	4 1/2	11/64	240006	31.75	0.1770 - 0.2040	61.40	46.55	41.65	39.20	36.70	34.65
3/16	.1875	4	1 1/4	5	11/64	240086	33.65	0.1770 - 0.2040	63.30	48.45	43.60	41.10	38.60	36.55
13/64	.2031	4	1 1/8	4 1/2	11/64	24002031	33.65	-	-	-	-	-	-	-
7/32	.2188	4	1 1/4	5	13/64	240007	31.75	0.2041 - 0.2210	61.40	46.55	41.65	39.20	36.70	34.65
15/64	.2344	4	1 1/2	6	7/32	24002344	33.65	0.2211 - 0.2380	63.30	48.45	43.60	41.10	38.60	36.55
1/4	.2500	4	1 1/2	6	15/64	240008	31.75	0.2381 - 0.2530	61.40	46.55	41.65	39.20	36.70	34.65
17/64	.2656	4	1 1/2	6	15/64	24002656	34.40	-	-	-	-	-	-	-
9/32	.2812	4	1 1/2	6	15/64	240009	32.45	0.2531 - 0.2840	62.10	47.25	42.30	39.90	37.35	35.35
19/64	.2969	4	1 1/2	6	9/32	24002969	34.40	-	-	-	-	-	-	-
5/16	.3125	4	1 1/2	6	9/32	240010	32.45	0.2841 - 0.3150	62.10	47.25	42.30	39.90	37.35	35.35
21/64	.3281	4	1 1/2	6	9/32	24003281	35.65	-	-	-	-	-	-	-
11/32	.3438	4	1 1/2	6	9/32	240011	33.60	0.3151 - 0.3470	63.25	48.40	43.40	41.05	38.55	36.50
23/64	.3594	4	1 3/4	7	5/16	24003594	35.65	-	-	-	-	-	-	-
3/8	.3750	4	1 3/4	7	5/16	240012	33.60	0.3471 - 0.3780	63.25	48.40	43.40	41.05	38.55	36.50
25/64	.3906	4	1 3/4	7	5/16	24003906	37.45	-	-	-	-	-	-	-
13/32	.4062	4	1 3/4	7	5/16	240013	35.25	0.3781 - 0.4090	64.90	50.05	45.10	42.70	40.15	38.15
27/64	.4219	4	1 3/4	7	3/8	24004219	39.85	-	-	-	-	-	-	-
7/16	.4375	4	1 3/4	7	3/8	240014	37.65	0.4091 - 0.4410	67.30	52.45	47.40	45.10	42.50	40.55
29/64	.4531	4	1 3/4	7	3/8	24004531	40.50	-	-	-	-	-	-	-
15/32	.4688	4	1 3/4	7	3/8	240015	38.15	0.4411 - 0.4720	67.85	52.95	48.00	45.60	43.05	41.05
31/64	.4844	6	2	8	7/16	24004844	43.75	-	-	-	-	-	-	-
1/2	.5000	6	2	8	7/16	240016	45.40	0.4721 - 0.5030	78.05	61.75	56.25	53.65	50.80	48.60
33/64	.5156	6	2	8	7/16	24005156	49.40	-	-	-	-	-	-	-
17/32	.5312	6	2	8	7/16	240017	49.40	0.5031 - 0.5340	82.10	65.75	60.30	57.65	54.80	52.65
35/64	.5469	6	2	8	7/16	24005469	49.40	-	-	-	-	-	-	-
9/16	.5625	6	2	8	7/16	240018	49.40	0.5341 - 0.5660	82.10	65.75	60.30	57.65	54.80	52.65
37/64	.5781	6	2	8	7/16	24005781	51.40	-	-	-	-	-	-	-
19/32	.5938	6	2	8	7/16	240019	51.40	0.5661 - 0.5970	84.10	67.70	62.20	59.65	56.80	54.65
39/64	.6094	6	2 1/4	9	9/16	24006094	51.40	-	-	-	-	-	-	-
5/8	.6250	6	2 1/4	9	9/16	240020	51.40	0.5971 - 0.6280	84.10	67.70	62.20	59.65	56.80	54.65
41/64	.6406	6	2 1/4	9	9/16	24006406	52.30	-	-	-	-	-	-	-
21/32	.6562	6	2 1/4	9	9/16	240021	52.30	0.6281 - 0.6590	84.95	68.55	63.10	60.50	57.70	55.50
43/64	.6719	6	2 1/4	9	9/16	24006719	52.30	-	-	-	-	-	-	-
11/16	.6875	6	2 1/4	9	9/16	240022	52.30	0.6591 - 0.6910	84.95	68.55	63.10	60.50	57.70	55.50
45/64	.7031	6	2 1/4	9	9/16	24007031	54.75	-	-	-	-	-	-	-
23/32	.7188	6	2 1/4	9	9/16	240023	54.75	0.6911 - 0.7220	87.40	71.10	65.55	63.00	60.15	58.00
47/64	.7344	6	2 1/2	9 1/2	5/8	24007344	54.75	-	-	-	-	-	-	-
3/4	.7500	6	2 1/2	9 1/2	5/8	240024	54.75	0.7221 - 0.7530	87.40	71.10	65.55	63.00	60.15	58.00

\*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*
.49/64 .25/32 .51/64 .13/16	.7656 .7812 .7969 .8125	6	2 1/2 2 1/2 2 1/2 2 1/2	9 1/2 9 1/2 9 1/2 9 1/2	5/8 5/8 5/8 5/8	24007656 240025 24007969 240026	\$56.55 56.55 56.55 56.55	0.7531 - 0.7840 - - 0.7841 - 0.8160	\$89.20 - - 89.20	\$72.85 - - 72.85	\$67.40 - - 67.40	\$64.80 - - 64.80	\$62.00 - - 62.00	\$59.75 - - 59.75
.53/64 .27/32 .55/64 .7/8	.8281 .8438 .8594 .8750	6	2 1/2 2 1/2 2 5/8 2 5/8	9 1/2 9 1/2 10 10	5/8 5/8 3/4 3/4	24008281 240027 24008594 240028	58.80 58.80 58.80 61.05	- 0.8161 - 0.8470 - 0.8471 - 0.8780	- 91.50 - 94.90	- 75.15 - 77.95	- 69.65 - 72.30	- 67.05 - 69.60	- 64.20 - 66.60	- 62.05 - 64.35
.57/64 .29/32 .59/64 .15/16	.8906 .9062 .9219 .9375	6	2 5/8 2 5/8 2 5/8 2 5/8	10 10 10 10	3/4 3/4 3/4 3/4	24008906 240029 24009219 240030	71.10 71.10 71.10 71.10	- 0.8781 - 0.9090 - 0.9091 - 0.9410	- 105.00 - 105.00	- 88.00 - 88.00	- 82.35 - 82.35	- 79.65 - 79.65	- 76.70 - 76.70	- 74.45 - 74.45
.61/64 .31/32 .63/64 1	.9531 .9688 .9844 1.0000	8	2 5/8 2 5/8 2 3/4 2 3/4	10 10 10 1/2 10 1/2	3/4 3/4 7/8 7/8	24009531 240031 24009844 240032	74.55 74.55 74.55 74.55	- 0.9411 - 0.9720 - 0.9721 - 1.0030	- 108.45 - 108.45	- 91.45 - 91.45	- 85.85 - 85.85	- 83.10 - 83.10	- 80.15 - 80.15	- 77.90 - 77.90
1 1/16 1 1/8 1 3/16 1 1/4	1.0625 1.1250 1.1875 1.2500	8	2 3/4 2 7/8 2 7/8 3	10 1/2 11 11 11 1/2	7/8 7/8 1 1	240034 240036 240038 240040	77.05 83.30 87.60 92.60	1.0031 - 1.0660 1.0661 - 1.1280 1.1281 - 1.1905 1.1906 - 1.2530	109.60 115.85 120.05 125.15	93.35 99.55 103.80 108.90	87.85 94.15 98.35 103.40	85.30 91.55 95.75 100.85	82.50 88.70 93.00 98.00	80.25 86.50 90.75 95.80
1 5/16 1 3/8 1 7/16 1 1/2	1.3125 1.3750 1.4375 1.5000	8	3 3 1/4 3 1/4 3 1/2	11 1/2 12 12 12 1/2	1 1 1 1/4 1 1/4	240042 240044 240046 240048	97.45 103.40 115.20 121.80	1.2531 - 1.3155 1.3156 - 1.3780 1.3781 - 1.4405 1.4406 - 1.5030	129.90 135.85 147.75 154.25	113.65 119.60 131.45 138.00	108.15 114.20 126.00 132.50	105.60 111.55 123.45 130.00	102.80 108.80 120.60 127.15	100.60 106.65 118.40 124.95
1 9/16 1 5/8 1 11/16 1 3/4	1.5625 1.6250 1.6875 1.7500	8	3 1/2 3 3/4 3 3/4 4	12 1/2 13 13 13 1/2	1 1/4 1 1/4 1 1/4 1 1/4	240050 240052 240054 240056	180.90 187.10 210.40 210.40	1.5031 - 1.5660 1.5661 - 1.6280 1.6281 - 1.6910 1.6911 - 1.7530	213.35 219.55 242.95 242.95	197.10 203.30 226.70 226.70	191.70 197.85 221.25 221.25	189.05 195.25 218.65 218.65	186.30 192.45 215.90 215.90	184.10 190.25 213.70 213.70
1 13/16 1 7/8 1 15/16 2	1.8125 1.8750 1.9375 2.0000	10	4 4 1/4 4 1/4 4 1/4	13 1/2 14 14 14	1 1/2 1 1/2 1 1/2 1 1/2	240058 240060 240062 240064	210.40 220.50 220.50 220.50	1.7531 - 1.8160 1.8161 - 1.8780 1.8781 - 1.9410 1.9411 - 2.0030	242.95 252.95 252.95 252.95	226.70 236.70 236.70 236.70	221.25 231.20 231.20 231.20	218.65 228.65 228.65 228.65	215.90 225.85 225.85 225.85	213.70 223.65 223.65 223.65

**EXACT DECIMAL SIZE REAMERS -**

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

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 .1885	1/16 1/16	4 1/2 4 1/2	4 4	247818 247819	\$39.95 39.95
.2490 .2510	1/8 1/8	6 6	4 4	247824 247825	39.95 39.95
.3115 .3135	3/16 3/16	6 6	4 4	247831 247832	40.85 40.85
.3740 .3760	1/4 1/4	7 7	4 4	247837 247838	42.35 42.35
.4365 .4385	5/16 5/16	7 7	4 4	247843 247844	47.35 47.35
.4990 .5010	3/8 3/8	8 8	6 6	247849 247850	51.90 51.90
.6240 .6260	7/16 7/16	9 9	6 6	247862 247863	62.20 62.20
.7490 .7510	1/2 1/2	9 1/2 9 1/2	6 6	247874 247875	65.55 65.55
.8740 .8760	5/8 5/8	10 10	6 6	247886 247887	69.65 72.30
.9990 1.0010	3/4 3/4	10 1/2 10 1/2	8 8	247898 247899	85.90 82.30

**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 .1870	1/16 1/16	4 1/2 4 1/2	4 4	247617 247618	\$39.95 39.95
.2480 .2495	1/8 1/8	6 6	4 4	247623 247624	39.95 39.95
.3105 .3120	3/16 3/16	6 6	4 4	247630 247631	40.85 40.85
.3730 .3745	1/4 1/4	7 7	4 4	247636 247637	42.35 42.35
.4355 .4370	5/16 5/16	7 7	4 4	247642 247643	47.35 47.35
.4980 .4995	3/8 3/8	8 8	6 6	247648 247649	51.90 51.90
CASED SET OF ABOVE 12 REAMERS				247600	\$498.60



# 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	\$44.75	.1860	24001860	\$41.65	.2160	24002160	\$41.65	.2460	24002460	\$41.65	.2760	24002760	\$42.30
.1565	24001565	44.75	.1865	247818	39.95	.2165	2400055	41.65	.2465	24002465	41.65	.2765	24002765	42.30
.1570	24001570	44.75	.1870	24001870	41.65	.2170	24002170	41.65	.2470	24002470	41.65	.2770	24002770	42.30
.1575	2400040	44.75	.1875	240006	31.75	.2175	24002175	41.65	.2475	24002475	41.65	.2775	24002775	42.30
.1580	24001580	44.75	.1880	24001880	41.65	.2180	24002180	41.65	.2480	2400063	41.65	.2780	24002780	42.30
.1585	24001585	44.75	.1885	247819	39.95	.2185	24002185	41.65	.2485	24002485	41.65	.2785	24002785	42.30
.1590	24001590	44.75	.1890	2400048	41.65	.2190	24002190	41.65	.2490	247824	39.95	.2790	24002790	42.30
.1595	24001595	44.75	.1895	24001895	41.65	.2195	24002195	41.65	.2495	24002495	41.65	.2795	2400071	42.30
.1600	24001600	44.75	.1900	24001900	41.65	.2200	24002200	41.65	.2500	240008	31.75	.2800	24002800	42.30
.1605	24001605	44.75	.1905	24001905	41.65	.2205	2400056	41.65	.2505	24002505	41.65	.2805	24002805	42.30
.1610	24001610	44.75	.1910	24001910	41.65	.2210	24002210	41.65	.2510	247825	39.95	.2810	24002810	42.30
.1615	24001615	44.75	.1915	24001915	41.65	.2215	24002215	43.60	.2515	24002515	41.65	.2815	24002815	42.30
.1620	24001620	44.75	.1920	24001920	41.65	.2220	24002220	43.60	.2520	2400064	41.65	.2820	24002820	42.30
.1625	24001625	44.75	.1925	24001925	41.65	.2225	24002225	43.60	.2525	24002525	41.65	.2825	24002825	42.30
.1630	24001630	44.75	.1930	24001930	41.65	.2230	24002230	43.60	.2530	24002530	41.65	.2830	24002830	42.30
.1635	24001635	44.75	.1935	24001935	41.65	.2235	24002235	43.60	.2535	24002535	42.30	.2835	2400072	42.30
.1640	24001640	44.75	.1940	24001940	41.65	.2240	24002240	43.60	.2540	24002540	42.30	.2840	24002840	42.30
.1645	24001645	44.75	.1945	24001945	41.65	.2245	24002245	43.60	.2545	24002545	42.30	.2845	24002845	42.30
.1650	24001650	44.75	.1950	24001950	41.65	.2250	24002250	43.60	.2550	24002550	42.30	.2850	24002850	42.30
.1655	24001655	44.75	.1955	24001955	41.65	.2255	24002255	43.60	.2555	24002555	42.30	.2855	24002855	42.30
.1660	24001660	44.75	.1960	24001960	41.65	.2260	24002260	43.60	.2560	24002560	42.30	.2860	24002860	42.30
.1665	24001665	44.75	.1965	24001965	41.65	.2265	24002265	43.60	.2565	24002565	42.30	.2865	24002865	42.30
.1670	24001670	44.75	.1970	24001970	41.65	.2270	24002270	43.60	.2570	24002570	42.30	.2870	24002870	42.30
.1675	24001675	44.75	.1975	24001975	41.65	.2275	24002275	43.60	.2575	24002575	42.30	.2875	24002875	42.30
.1680	24001680	44.75	.1980	24001980	41.65	.2280	24002280	43.60	.2580	24002580	42.30	.2880	24002880	42.30
.1685	24001685	44.75	.1985	24001985	41.65	.2285	24002285	43.60	.2585	24002585	42.30	.2885	24002885	42.30
.1690	24001690	44.75	.1990	24001990	41.65	.2290	24002290	43.60	.2590	24002590	42.30	.2890	24002890	42.30
.1695	24001695	44.75	.1995	24001995	41.65	.2295	24002295	43.60	.2595	24002595	42.30	.2895	24002895	42.30
.1700	24001700	44.75	.2000	24002000	41.65	.2300	24002300	43.60	.2600	24002600	42.30	.2900	24002900	42.30
.1705	24001705	44.75	.2005	24002005	41.65	.2305	24002305	43.60	.2605	24002605	42.30	.2905	24002905	42.30
.1710	24001710	44.75	.2010	24002010	41.65	.2310	24002310	43.60	.2610	24002610	42.30	.2910	24002910	42.30
.1715	24001715	44.75	.2015	24002015	41.65	.2315	24002315	43.60	.2615	24002615	42.30	.2915	24002915	42.30
.1720	24001720	44.75	.2020	24002020	41.65	.2320	24002320	43.60	.2620	24002620	42.30	.2920	24002920	42.30
.1725	24001725	44.75	.2025	24002025	41.65	.2325	24002325	43.60	.2625	24002625	42.30	.2925	24002925	42.30
.1730	24001730	44.75	.2030	24002030	41.65	.2330	24002330	43.60	.2630	24002630	42.30	.2930	24002930	42.30
.1735	24001735	44.75	.2035	24002035	41.65	.2335	24002335	43.60	.2635	24002635	42.30	.2935	24002935	42.30
.1740	24001740	44.75	.2040	24002040	41.65	.2340	24002340	43.60	.2640	24002640	42.30	.2940	24002940	42.30
.1745	24001745	44.75	.2045	24002045	41.65	.2345	24002345	43.60	.2645	24002645	42.30	.2945	24002945	42.30
.1750	24001750	44.75	.2050	24002050	41.65	.2350	24002350	43.60	.2650	24002650	42.30	.2950	24002950	42.30
.1755	24001755	44.75	.2055	24002055	41.65	.2355	24002355	43.60	.2655	24002655	42.30	.2955	24002955	42.30
.1760	24001760	44.75	.2060	24002060	41.65	.2360	24002360	43.60	.2660	24002660	42.30	.2960	24002960	42.30
.1765	24001765	44.75	.2065	24002065	41.65	.2365	24002365	43.60	.2665	24002665	42.30	.2965	24002965	42.30
.1770	24001770	41.65	.2070	24002070	41.65	.2370	24002370	43.60	.2670	24002670	42.30	.2970	24002970	42.30
.1775	24001775	41.65	.2075	24002075	41.65	.2375	24002375	43.60	.2675	24002675	42.30	.2975	24002975	42.30
.1780	24001780	41.65	.2080	24002080	41.65	.2380	24002380	43.60	.2680	24002680	42.30	.2980	24002980	42.30
.1785	24001785	41.65	.2085	24002085	41.65	.2385	24002385	41.65	.2685	24002685	42.30	.2985	24002985	42.30
.1790	24001790	41.65	.2090	24002090	41.65	.2390	24002390	41.65	.2690	24002690	42.30	.2990	24002990	42.30
.1795	24001795	41.65	.2095	24002095	41.65	.2395	24002395	41.65	.2695	24002695	42.30	.2995	24002995	42.30
.1800	24001800	41.65	.2100	24002100	41.65	.2400	24002400	41.65	.2700	24002700	42.30	.3000	24003000	42.30
.1805	24001805	41.65	.2105	24002105	41.65	.2405	24002405	41.65	.2705	24002705	42.30	.3005	24003005	42.30
.1810	24001810	41.65	.2110	24002110	41.65	.2410	24002410	41.65	.2710	24002710	42.30	.3010	24003010	42.30
.1815	24001815	41.65	.2115	24002115	41.65	.2415	24002415	41.65	.2715	24002715	42.30	.3015	24003015	42.30
.1820	24001820	41.65	.2120	24002120	41.65	.2420	24002420	41.65	.2720	24002720	42.30	.3020	24003020	42.30
.1825	24001825	41.65	.2125	24002125	41.65	.2425	24002425	41.65	.2725	24002725	42.30	.3025	24003025	42.30
.1830	24001830	41.65	.2130	24002130	41.65	.2430	24002430	41.65	.2730	24002730	42.30	.3030	24003030	42.30
.1835	24001835	41.65	.2135	24002135	41.65	.2435	24002435	41.65	.2735	24002735	42.30	.3035	24003035	42.30
.1840	24001840	41.65	.2140	24002140	41.65	.2440	24002440	41.65	.2740	24002740	42.30	.3040	24003040	42.30
.1845	24001845	41.65	.2145	24002145	41.65	.2445	24002445	41.65	.2745	24002745	42.30	.3045	24003045	42.30
.1850	2400047	41.65	.2150	24002150	41.65	.2450	24002450	41.65	.2750	24002750	42.30	.3050	24003050	42.30
.1855	24001855	41.65	.2155	24002155	41.65	.2455	24002455	41.65	.2755	24002755	42.30	.3055	24003055	42.30



# 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	\$42.30	.3360	24003360	\$43.40	.3660	24003660	\$39.85	.3960	24003960	\$45.10	.4260	24004260	\$47.40
.3065	24003065	42.30	.3365	24003365	43.40	.3665	24003665	39.85	.3965	24003965	45.10	.4265	24004265	47.40
.3070	24003070	42.30	.3370	24003370	43.40	.3670	24003670	39.85	.3970	24003970	45.10	.4270	24004270	47.40
.3075	24003075	42.30	.3375	24003375	43.40	.3675	24003675	39.85	.3975	24003975	45.10	.4275	24004275	47.40
.3080	24003080	42.30	.3380	24003380	43.40	.3680	24003680	39.85	.3980	24003980	45.10	.4280	24004280	47.40
.3085	24003085	42.30	.3385	24003385	43.40	.3685	24003685	39.85	.3985	24003985	45.10	.4285	24004285	47.40
.3090	24003090	42.30	.3390	24003390	43.40	.3690	24003690	39.85	.3990	24003990	45.10	.4290	24004290	47.40
.3095	24003095	42.30	.3395	24003395	43.40	.3695	24003695	39.85	.3995	24003995	45.10	.4295	24004295	47.40
.3100	24003100	42.30	.3400	24003400	43.40	.3700	24003700	39.85	.4000	24004000	45.10	.4300	24004300	47.40
.3105	24003105	42.30	.3405	24003405	43.40	.3705	24003705	39.85	.4005	24004005	45.10	.4305	24004305	47.40
.3110	2400079	42.30	.3410	24003410	43.40	.3710	24003710	39.85	.4010	24004010	45.10	.4310	24004310	47.40
.3115	247831	40.85	.3415	24003415	43.40	.3715	24003715	39.85	.4015	24004015	45.10	.4315	24004315	47.40
.3120	24003120	42.30	.3420	24003420	43.40	.3720	24003720	39.85	.4020	24004020	45.10	.4320	24004320	47.40
.3125	240010	32.45	.3425	2400087	43.40	.3725	24003725	39.85	.4025	24004025	45.10	.4325	24004325	47.40
.3130	24003130	42.30	.3430	24003430	43.40	.3730	24003730	39.85	.4030	24004030	45.10	.4330	24004330	47.40
.3135	247832	40.85	.3435	24003435	43.40	.3735	24003735	39.85	.4035	24004035	45.10	.4335	24004335	47.40
.3140	24003140	42.30	.3440	24003440	43.40	.3740	247837	42.35	.4040	24004040	45.10	.4340	24004340	47.40
.3145	24003145	42.30	.3445	24003445	43.40	.3745	24003745	39.85	.4045	24004045	45.10	.4345	24004345	47.40
.3150	2400080	42.30	.3450	24003450	43.40	.3750	240012	33.60	.4050	24004050	45.10	.4350	24004350	47.40
.3155	24003155	43.40	.3455	24003455	43.40	.3755	24003755	39.85	.4055	2400103	45.10	.4355	24004355	47.40
.3160	24003160	43.40	.3460	24003460	43.40	.3760	247838	42.35	.4060	24004060	45.10	.4360	24004360	47.40
.3165	24003165	43.40	.3465	2400088	43.40	.3765	24003765	39.85	.4065	24004065	45.10	.4365	247843	47.35
.3170	24003170	43.40	.3470	24003470	43.40	.3770	24003770	39.85	.4070	24004070	45.10	.4370	2400111	47.40
.3175	24003175	43.40	.3475	24003475	39.85	.3775	24003775	39.85	.4075	24004075	45.10	.4375	240014	37.65
.3180	24003180	43.40	.3480	24003480	39.85	.3780	2400096	39.85	.4080	24004080	45.10	.4380	24004380	47.40
.3185	24003185	43.40	.3485	24003485	39.85	.3785	24003785	45.10	.4085	24004085	45.10	.4385	247844	47.35
.3190	24003190	43.40	.3490	24003490	39.85	.3790	24003790	45.10	.4090	24004090	45.10	.4390	24004390	47.40
.3195	24003195	43.40	.3495	24003495	39.85	.3795	24003795	45.10	.4095	24004095	47.40	.4395	24004395	47.40
.3200	24003200	43.40	.3500	24003500	39.85	.3800	24003800	45.10	.4100	24004100	47.40	.4400	24004400	47.40
.3205	24003205	43.40	.3505	24003505	39.85	.3805	24003805	45.10	.4105	24004105	47.40	.4405	24004405	47.40
.3210	24003210	43.40	.3510	24003510	39.85	.3810	24003810	45.10	.4110	24004110	47.40	.4410	24004410	47.40
.3215	24003215	43.40	.3515	24003515	39.85	.3815	24003815	45.10	.4115	24004115	47.40	.4415	24004415	48.00
.3220	24003220	43.40	.3520	24003520	39.85	.3820	24003820	45.10	.4120	24004120	47.40	.4420	24004420	48.00
.3225	24003225	43.40	.3525	24003525	39.85	.3825	24003825	45.10	.4125	24004125	47.40	.4425	24004425	48.00
.3230	24003230	43.40	.3530	24003530	39.85	.3830	24003830	45.10	.4130	24004130	47.40	.4430	24004430	48.00
.3235	24003235	43.40	.3535	24003535	39.85	.3835	24003835	45.10	.4135	24004135	47.40	.4435	24004435	48.00
.3240	24003240	43.40	.3540	24003540	39.85	.3840	24003840	45.10	.4140	24004140	47.40	.4440	24004440	48.00
.3245	24003245	43.40	.3545	24003545	39.85	.3845	24003845	45.10	.4145	24004145	47.40	.4445	24004445	48.00
.3250	24003250	43.40	.3550	24003550	39.85	.3850	24003850	45.10	.4150	24004150	47.40	.4450	24004450	48.00
.3255	24003255	43.40	.3555	24003555	39.85	.3855	24003855	45.10	.4155	24004155	47.40	.4455	24004455	48.00
.3260	24003260	43.40	.3560	24003560	39.85	.3860	24003860	45.10	.4160	24004160	47.40	.4460	24004460	48.00
.3265	24003265	43.40	.3565	24003565	39.85	.3865	24003865	45.10	.4165	24004165	47.40	.4465	24004465	48.00
.3270	24003270	43.40	.3570	24003570	39.85	.3870	24003870	45.10	.4170	24004170	47.40	.4470	24004470	48.00
.3275	24003275	43.40	.3575	24003575	39.85	.3875	24003875	45.10	.4175	24004175	47.40	.4475	24004475	48.00
.3280	24003280	43.40	.3580	24003580	39.85	.3880	24003880	45.10	.4180	24004180	47.40	.4480	24004480	48.00
.3285	24003285	43.40	.3585	24003585	39.85	.3885	24003885	45.10	.4185	24004185	47.40	.4485	24004485	48.00
.3290	24003290	43.40	.3590	24003590	39.85	.3890	24003890	45.10	.4190	24004190	47.40	.4490	24004490	48.00
.3295	24003295	43.40	.3595	24003595	39.85	.3895	24003895	45.10	.4195	24004195	47.40	.4495	24004495	48.00
.3300	24003300	43.40	.3600	24003600	39.85	.3900	24003900	45.10	.4200	24004200	47.40	.4500	24004500	48.00
.3305	24003305	43.40	.3605	24003605	39.85	.3905	24003905	45.10	.4205	24004205	47.40	.4505	24004505	48.00
.3310	24003310	43.40	.3610	24003610	39.85	.3910	24003910	45.10	.4210	24004210	47.40	.4510	24004510	48.00
.3315	24003315	43.40	.3615	24003615	39.85	.3915	24003915	45.10	.4215	24004215	47.40	.4515	24004515	48.00
.3320	24003320	43.40	.3620	24003620	39.85	.3920	24003920	45.10	.4220	24004220	47.40	.4520	24004520	48.00
.3325	24003325	43.40	.3625	24003625	39.85	.3925	24003925	45.10	.4225	24004225	47.40	.4525	24004525	48.00
.3330	24003330	43.40	.3630	24003630	39.85	.3930	24003930	45.10	.4230	24004230	47.40	.4530	24004530	48.00
.3335	24003335	43.40	.3635	24003635	39.85	.3935	24003935	45.10	.4235	24004235	47.40	.4535	24004535	48.00
.3340	24003340	43.40	.3640	24003640	39.85	.3940	24003940	45.10	.4240	24004240	47.40	.4540	24004540	48.00
.3345	24003345	43.40	.3645	24003645	39.85	.3945	24003945	45.10	.4245	24004245	47.40	.4545	24004545	48.00
.3350	24003350	43.40	.3650	24003650	39.85	.3950	24003950	45.10	.4250	24004250	47.40	.4550	24004550	48.00
.3355	24003355	43.40	.3655	24003655	39.85	.3955	24003955	45.10	.4255	24004255	47.40	.4555	24004555	48.00



# 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	\$48.00	.4860	24004860	\$56.25	.5160	24005160	\$60.30	.5460	24005460	\$60.30	.5760	24005760	\$62.20
.4565	24004565	48.00	.4865	24004865	56.25	.5165	24005165	60.30	.5465	24005465	60.30	.5765	24005765	62.20
.4570	24004570	48.00	.4870	24004870	56.25	.5170	24005170	60.30	.5470	24005470	60.30	.5770	24005770	62.20
.4575	24004575	48.00	.4875	24004875	56.25	.5175	24005175	60.30	.5475	24005475	60.30	.5775	24005775	62.20
.4580	24004580	48.00	.4880	24004880	56.25	.5180	24005180	60.30	.5480	24005480	60.30	.5780	24005780	62.20
.4585	24004585	48.00	.4885	24004885	56.25	.5185	24005185	60.30	.5485	24005485	60.30	.5785	24005785	62.20
.4590	24004590	48.00	.4890	24004890	56.25	.5190	24005190	60.30	.5490	24005490	60.30	.5790	24005790	62.20
.4595	24004595	48.00	.4895	24004895	56.25	.5195	24005195	60.30	.5495	24005495	60.30	.5795	24005795	62.20
.4600	24004600	48.00	.4900	24004900	56.25	.5200	24005200	60.30	.5500	24005500	60.30	.5800	24005800	62.20
.4605	24004605	48.00	.4905	24004905	56.25	.5205	24005205	60.30	.5505	24005505	60.30	.5805	24005805	62.20
.4610	24004610	48.00	.4910	24004910	56.25	.5210	24005210	60.30	.5510	24005510	60.30	.5810	24005810	62.20
.4615	24004615	48.00	.4915	24004915	56.25	.5215	24005215	60.30	.5515	24005515	60.30	.5815	24005815	62.20
.4620	24004620	48.00	.4920	24004920	56.25	.5220	24005220	60.30	.5520	24005520	60.30	.5820	24005820	62.20
.4625	24004625	48.00	.4925	24004925	56.25	.5225	24005225	60.30	.5525	24005525	60.30	.5825	24005825	62.20
.4630	24004630	48.00	.4930	24004930	56.25	.5230	24005230	60.30	.5530	24005530	60.30	.5830	24005830	62.20
.4635	24004635	48.00	.4935	24004935	56.25	.5235	24005235	60.30	.5535	24005535	60.30	.5835	24005835	62.20
.4640	24004640	48.00	.4940	24004940	56.25	.5240	24005240	60.30	.5540	24005540	60.30	.5840	24005840	62.20
.4645	24004645	48.00	.4945	24004945	56.25	.5245	24005245	60.30	.5545	24005545	60.30	.5845	24005845	62.20
.4650	24004650	48.00	.4950	24004950	56.25	.5250	24005250	60.30	.5550	24005550	60.30	.5850	24005850	62.20
.4655	24004655	48.00	.4955	24004955	56.25	.5255	24005255	60.30	.5555	24005555	60.30	.5855	24005855	62.20
.4660	24004660	48.00	.4960	24004960	56.25	.5260	24005260	60.30	.5560	24005560	60.30	.5860	24005860	62.20
.4665	24004665	48.00	.4965	24004965	56.25	.5265	24005265	60.30	.5565	24005565	60.30	.5865	24005865	62.20
.4670	24004670	48.00	.4970	24004970	56.25	.5270	24005270	60.30	.5570	24005570	60.30	.5870	24005870	62.20
.4675	24004675	48.00	.4975	24004975	56.25	.5275	24005275	60.30	.5575	24005575	60.30	.5875	24005875	62.20
.4680	24004680	48.00	.4980	24004980	56.25	.5280	24005280	60.30	.5580	24005580	60.30	.5880	24005880	62.20
.4685	2400119	48.00	.4985	24004985	56.25	.5285	24005285	60.30	.5585	24005585	60.30	.5885	24005885	62.20
.4690	24004690	48.00	.4990	247849	51.90	.5290	24005290	60.30	.5590	24005590	60.30	.5890	24005890	62.20
.4695	24004695	48.00	.4995	24004995	56.25	.5295	24005295	60.30	.5595	24005595	60.30	.5895	24005895	62.20
.4700	24004700	48.00	.5000	240016	45.40	.5300	24005300	60.30	.5600	24005600	60.30	.5900	24005900	62.20
.4705	24004705	48.00	.5005	24005005	56.25	.5305	24005305	60.30	.5605	24005605	60.30	.5905	24005905	62.20
.4710	24004710	48.00	.5010	247850	51.90	.5310	24005310	60.30	.5610	24005610	60.30	.5910	24005910	62.20
.4715	24004715	48.00	.5015	24005015	56.25	.5315	2400135	60.30	.5615	24005615	60.30	.5915	24005915	62.20
.4720	24004720	48.00	.5020	24005020	56.25	.5320	24005320	60.30	.5620	24005620	60.30	.5920	24005920	62.20
.4725	24004725	56.25	.5025	24005025	56.25	.5325	24005325	60.30	.5625	240018	49.40	.5925	24005925	62.20
.4730	24004730	56.25	.5030	24005030	56.25	.5330	24005330	60.30	.5630	2400143	60.30	.5930	24005930	62.20
.4735	24004735	56.25	.5035	24005035	60.30	.5335	24005335	60.30	.5635	24005635	60.30	.5935	24005935	62.20
.4740	24004740	56.25	.5040	24005040	60.30	.5340	24005340	60.30	.5640	24005640	60.30	.5940	24005940	62.20
.4745	24004745	56.25	.5045	24005045	60.30	.5345	24005345	60.30	.5645	24005645	60.30	.5945	2400151	62.20
.4750	24004750	56.25	.5050	24005050	60.30	.5350	24005350	60.30	.5650	24005650	60.30	.5950	24005950	62.20
.4755	24004755	56.25	.5055	24005055	60.30	.5355	24005355	60.30	.5655	24005655	60.30	.5955	24005955	62.20
.4760	24004760	56.25	.5060	24005060	60.30	.5360	24005360	60.30	.5660	24005660	60.30	.5960	24005960	62.20
.4765	24004765	56.25	.5065	24005065	60.30	.5365	24005365	60.30	.5665	24005665	62.20	.5965	24005965	62.20
.4770	24004770	56.25	.5070	24005070	60.30	.5370	24005370	60.30	.5670	24005670	62.20	.5970	24005970	62.20
.4775	24004775	56.25	.5075	24005075	60.30	.5375	24005375	60.30	.5675	24005675	62.20	.5975	24005975	62.20
.4780	24004780	56.25	.5080	24005080	60.30	.5380	24005380	60.30	.5680	24005680	62.20	.5980	24005980	62.20
.4785	24004785	56.25	.5085	24005085	60.30	.5385	24005385	60.30	.5685	24005685	62.20	.5985	24005985	62.20
.4790	24004790	56.25	.5090	24005090	60.30	.5390	24005390	60.30	.5690	24005690	62.20	.5990	24005990	62.20
.4795	24004795	56.25	.5095	24005095	60.30	.5395	24005395	60.30	.5695	24005695	62.20	.5995	24005995	62.20
.4800	24004800	56.25	.5100	24005100	60.30	.5400	24005400	60.30	.5700	24005700	62.20	.6000	24006000	62.20
.4805	24004805	56.25	.5105	24005105	60.30	.5405	24005405	60.30	.5705	24005705	62.20	.6005	24006005	62.20
.4810	24004810	56.25	.5110	24005110	60.30	.5410	24005410	60.30	.5710	24005710	62.20	.6010	24006010	62.20
.4815	24004815	56.25	.5115	24005115	60.30	.5415	24005415	60.30	.5715	24005715	62.20	.6015	24006015	62.20
.4820	24004820	56.25	.5120	24005120	60.30	.5420	24005420	60.30	.5720	24005720	62.20	.6020	24006020	62.20
.4825	24004825	56.25	.5125	24005125	60.30	.5425	24005425	60.30	.5725	24005725	62.20	.6025	24006025	62.20
.4830	24004830	56.25	.5130	24005130	60.30	.5430	24005430	60.30	.5730	24005730	62.20	.6030	24006030	62.20
.4835	24004835	56.25	.5135	24005135	60.30	.5435	24005435	60.30	.5735	24005735	62.20	.6035	24006035	62.20
.4840	24004840	56.25	.5140	24005140	60.30	.5440	24005440	60.30	.5740	24005740	62.20	.6040	24006040	62.20
.4845	24004845	56.25	.5145	24005145	60.30	.5445	24005445	60.30	.5745	24005745	62.20	.6045	24006045	62.20
.4850	24004850	56.25	.5150	24005150	60.30	.5450	24005450	60.30	.5750	24005750	62.20	.6050	24006050	62.20
.4855	24004855	56.25	.5155	24005155	60.30	.5455	24005455	60.30	.5755	24005755	62.20	.6055	24006055	62.20



# 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	\$62.20	.6360	24006360	\$63.10	.6660	24006660	\$63.10	.6960	24006960	\$65.55	.7260	24007260	\$65.55
.6065	24006065	62.20	.6365	24006365	63.10	.6665	24006665	63.10	.6965	24006965	65.55	.7265	24007265	65.55
.6070	24006070	62.20	.6370	24006370	63.10	.6670	24006670	63.10	.6970	24006970	65.55	.7270	24007270	65.55
.6075	24006075	62.20	.6375	24006375	63.10	.6675	24006675	63.10	.6975	24006975	65.55	.7275	24007275	65.55
.6080	24006080	62.20	.6380	24006380	63.10	.6680	24006680	63.10	.6980	24006980	65.55	.7280	24007280	65.55
.6085	24006085	62.20	.6385	24006385	63.10	.6685	24006685	63.10	.6985	24006985	65.55	.7285	24007285	65.55
.6090	24006090	62.20	.6390	24006390	63.10	.6690	24006690	63.10	.6990	24006990	65.55	.7290	24007290	65.55
.6095	24006095	62.20	.6395	24006395	63.10	.6695	24006695	63.10	.6995	24006995	65.55	.7295	24007295	65.55
.6100	24006100	62.20	.6400	24006400	63.10	.6700	24006700	63.10	.7000	24007000	65.55	.7300	24007300	65.55
.6105	24006105	62.20	.6405	24006405	63.10	.6705	24006705	63.10	.7005	24007005	65.55	.7305	24007305	65.55
.6110	24006110	62.20	.6410	24006410	63.10	.6710	24006710	63.10	.7010	24007010	65.55	.7310	24007310	65.55
.6115	24006115	62.20	.6415	24006415	63.10	.6715	24006715	63.10	.7015	24007015	65.55	.7315	24007315	65.55
.6120	24006120	62.20	.6420	24006420	63.10	.6720	24006720	63.10	.7020	24007020	65.55	.7320	24007320	65.55
.6125	24006125	62.20	.6425	24006425	63.10	.6725	24006725	63.10	.7025	24007025	65.55	.7325	24007325	65.55
.6130	24006130	62.20	.6430	24006430	63.10	.6730	24006730	63.10	.7030	24007030	65.55	.7330	24007330	65.55
.6135	24006135	62.20	.6435	24006435	63.10	.6735	24006735	63.10	.7035	24007035	65.55	.7335	24007335	65.55
.6140	24006140	62.20	.6440	24006440	63.10	.6740	24006740	63.10	.7040	24007040	65.55	.7340	24007340	65.55
.6145	24006145	62.20	.6445	24006445	63.10	.6745	24006745	63.10	.7045	24007045	65.55	.7345	24007345	65.55
.6150	24006150	62.20	.6450	24006450	63.10	.6750	24006750	63.10	.7050	24007050	65.55	.7350	24007350	65.55
.6155	24006155	62.20	.6455	24006455	63.10	.6755	24006755	63.10	.7055	24007055	65.55	.7355	24007355	65.55
.6160	24006160	62.20	.6460	24006460	63.10	.6760	24006760	63.10	.7060	24007060	65.55	.7360	24007360	65.55
.6165	24006165	62.20	.6465	24006465	63.10	.6765	24006765	63.10	.7065	24007065	65.55	.7365	24007365	65.55
.6170	24006170	62.20	.6470	24006470	63.10	.6770	24006770	63.10	.7070	24007070	65.55	.7370	24007370	65.55
.6175	24006175	62.20	.6475	24006475	63.10	.6775	24006775	63.10	.7075	24007075	65.55	.7375	24007375	65.55
.6180	24006180	62.20	.6480	24006480	63.10	.6780	24006780	63.10	.7080	24007080	65.55	.7380	24007380	65.55
.6185	24006185	62.20	.6485	24006485	63.10	.6785	24006785	63.10	.7085	24007085	65.55	.7385	24007385	65.55
.6190	24006190	62.20	.6490	24006490	63.10	.6790	24006790	63.10	.7090	24007090	65.55	.7390	24007390	65.55
.6195	24006195	62.20	.6495	24006495	63.10	.6795	24006795	63.10	.7095	24007095	65.55	.7395	24007395	65.55
.6200	24006200	62.20	.6500	24006500	63.10	.6800	24006800	63.10	.7100	24007100	65.55	.7400	24007400	65.55
.6205	24006205	62.20	.6505	24006505	63.10	.6805	24006805	63.10	.7105	24007105	65.55	.7405	24007405	65.55
.6210	24006210	62.20	.6510	24006510	63.10	.6810	24006810	63.10	.7110	24007110	65.55	.7410	24007410	65.55
.6215	24006215	62.20	.6515	24006515	63.10	.6815	24006815	63.10	.7115	24007115	65.55	.7415	24007415	65.55
.6220	2400158	62.20	.6520	24006520	63.10	.6820	24006820	63.10	.7120	24007120	65.55	.7420	24007420	65.55
.6225	24006225	62.20	.6525	24006525	63.10	.6825	24006825	63.10	.7125	24007125	65.55	.7425	24007425	65.55
.6230	24006230	62.20	.6530	24006530	63.10	.6830	24006830	63.10	.7130	24007130	65.55	.7430	24007430	65.55
.6235	24006235	62.20	.6535	2400166	63.10	.6835	24006835	63.10	.7135	24007135	65.55	.7435	24007435	65.55
.6240	247862	62.20	.6540	24006540	63.10	.6840	24006840	63.10	.7140	24007140	65.55	.7440	24007440	65.55
.6245	24006245	62.20	.6545	24006545	63.10	.6845	24006845	63.10	.7145	24007145	65.55	.7445	24007445	65.55
.6250	240020	51.40	.6550	24006550	63.10	.6850	2400174	63.10	.7150	24007150	65.55	.7450	24007450	65.55
.6255	24006255	62.20	.6555	24006555	63.10	.6855	24006855	63.10	.7155	24007155	65.55	.7455	24007455	65.55
.6260	247863	62.20	.6560	24006560	63.10	.6860	24006860	63.10	.7160	24007160	65.55	.7460	24007460	65.55
.6265	24006265	62.20	.6565	24006565	63.10	.6865	24006865	63.10	.7165	2400182	65.55	.7465	24007465	65.55
.6270	24006270	62.20	.6570	24006570	63.10	.6870	24006870	63.10	.7170	24007170	65.55	.7470	24007470	65.55
.6275	24006275	62.20	.6575	2400167	63.10	.6875	240022	52.30	.7175	24007175	65.55	.7475	24007475	65.55
.6280	24006280	62.20	.6580	24006580	63.10	.6880	24006880	63.10	.7180	24007180	65.55	.7480	2400190	65.55
.6285	24006285	63.10	.6585	24006585	63.10	.6885	24006885	63.10	.7185	24007185	65.55	.7485	24007485	65.55
.6290	24006290	63.10	.6590	24006590	63.10	.6890	2400175	63.10	.7190	24007190	65.55	.7490	247874	65.55
.6295	24006295	63.10	.6595	24006595	63.10	.6895	24006895	63.10	.7195	24007195	65.55	.7495	24007495	65.55
.6300	24006300	63.10	.6600	24006600	63.10	.6900	24006900	63.10	.7200	24007200	65.55	.7500	240024	54.75
.6305	24006305	63.10	.6605	24006605	63.10	.6905	24006905	63.10	.7205	2400183	65.55	.7505	24007505	65.55
.6310	24006310	63.10	.6610	24006610	63.10	.6910	24006910	63.10	.7210	24007210	65.55	.7510	247875	65.55
.6315	24006315	63.10	.6615	24006615	63.10	.6915	24006915	65.55	.7215	24007215	65.55	.7515	24007515	65.55
.6320	24006320	63.10	.6620	24006620	63.10	.6920	24006920	65.55	.7220	24007220	65.55	.7520	2400191	65.55
.6325	24006325	63.10	.6625	24006625	63.10	.6925	24006925	65.55	.7225	24007225	65.55	.7525	24007525	65.55
.6330	24006330	63.10	.6630	24006630	63.10	.6930	24006930	65.55	.7230	24007230	65.55	.7530	24007530	65.55
.6335	24006335	63.10	.6635	24006635	63.10	.6935	24006935	65.55	.7235	24007235	65.55	.7535	24007535	67.40
.6340	24006340	63.10	.6640	24006640	63.10	.6940	24006940	65.55	.7240	24007240	65.55	.7540	24007540	67.40
.6345	24006345	63.10	.6645	24006645	63.10	.6945	24006945	65.55	.7245	24007245	65.55	.7545	24007545	67.40
.6350	24006350	63.10	.6650	24006650	63.10	.6950	24006950	65.55	.7250	24007250	65.55	.7550	24007550	67.40
.6355	24006355	63.10	.6655	24006655	63.10	.6955	24006955	65.55	.7255	24007255	65.55	.7555	24007555	67.40



# 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	\$36.60	0.2381 - 0.2530	\$66.25	\$51.40	\$46.45	\$44.10	\$41.60	\$39.60
3/32	.2812	1	4	1 1/2	6	240209	37.30	0.2531 - 0.2840	66.95	52.10	47.15	44.75	42.25	40.20
3/16	.3125	1	4	1 1/2	6	240210	37.30	0.2841 - 0.3150	66.95	52.10	47.15	44.75	42.25	40.20
1/32	.3438	1	4	1 1/2	6	240211	38.70	0.3151 - 0.3470	68.35	53.50	48.50	46.15	43.65	41.65
3/8	.3750	1	4	1 3/4	7	240212	35.50	0.3471 - 0.3780	62.75	49.10	44.50	42.35	40.00	38.15
13/32	.4062	1	4	1 3/4	7	240213	40.60	0.3781 - 0.4090	70.25	55.40	50.40	48.05	45.50	43.50
7/16	.4375	1	4	1 3/4	7	240214	43.20	0.4091 - 0.4410	72.85	58.00	53.00	50.65	48.10	46.10
19/32	.4688	1	4	1 3/4	7	240215	44.35	0.4411 - 0.4720	74.00	59.15	54.15	51.80	49.25	47.25
1/2	.5000	1	6	2	8	240216	52.20	0.4721 - 0.5030	84.85	68.50	63.05	60.45	57.65	55.45
17/32	.5312	1	6	2	8	240217	56.40	0.5031 - 0.5340	89.05	72.65	67.15	64.60	61.80	59.55
9/16	.5625	1	6	2	8	240218	56.40	0.5341 - 0.5660	89.05	72.65	67.15	64.60	61.80	59.55
19/32	.5938	1	6	2	8	240219	59.10	0.5661 - 0.5970	91.75	75.40	69.90	67.35	64.50	62.30
5/8	.6250	2	6	2 1/4	9	240220	59.10	0.5971 - 0.6280	91.75	75.40	69.90	67.35	64.50	62.30
21/32	.6562	2	6	2 1/4	9	240221	60.15	0.6281 - 0.6590	92.80	76.45	71.05	68.40	65.55	63.35
11/16	.6875	2	6	2 1/4	9	240222	60.15	0.6591 - 0.6910	92.80	76.45	71.05	68.40	65.55	63.35
23/32	.7188	2	6	2 1/4	9	240223	62.90	0.6911 - 0.7220	95.55	79.15	73.70	71.15	68.35	66.10
3/4	.7500	2	6	2 1/2	9 1/2	240224	62.90	0.7221 - 0.7530	95.55	79.15	73.70	71.15	68.35	66.10
25/32	.7812	2	6	2 1/2	9 1/2	240225	64.85	0.7531 - 0.7840	97.50	81.10	75.70	73.10	70.25	68.05
13/16	.8125	2	6	2 1/2	9 1/2	240226	64.85	0.7841 - 0.8160	97.50	81.10	75.70	73.10	70.25	68.05
27/32	.8438	2	6	2 1/2	9 1/2	240227	67.65	0.8161 - 0.8470	100.30	83.90	78.50	75.85	73.10	70.80
7/8	.8750	2	6	2 5/8	10	240228	70.25	0.8471 - 0.8780	104.05	87.10	81.45	78.70	75.80	73.50
29/32	.9062	2	6	2 5/8	10	240229	82.35	0.8781 - 0.9090	116.20	99.20	93.55	90.80	87.95	85.65
15/16	.9375	3	8	2 5/8	10	240230	82.35	0.9091 - 0.9410	116.20	99.20	93.55	90.80	87.95	85.65
31/32	.9688	3	8	2 5/8	10	240231	85.85	0.9411 - 0.9720	119.65	102.70	97.00	94.30	91.40	89.10
1	1.0000	3	8	2 3/4	10 1/2	240232	85.85	0.9721 - 1.0030	119.65	102.70	97.00	94.30	91.40	89.10
1 1/16	1.0625	3	8	2 3/4	10 1/2	240234	117.85	1.0031 - 1.0660	150.35	134.10	128.70	126.05	123.20	121.05
1 1/8	1.1250	3	8	2 7/8	11	240236	125.55	1.0661 - 1.1280	158.00	141.70	136.30	133.65	130.95	128.75
1 3/16	1.1875	3	8	2 7/8	11	240238	132.95	1.1281 - 1.1905	165.50	149.15	143.75	141.10	138.30	136.20
1 1/4	1.2500	4	8	3	11 1/2	240240	147.80	1.1906 - 1.2530	180.25	163.95	158.55	155.90	153.15	150.95
1 3/16	1.3125	4	8	3	11 1/2	240242	159.35	1.2531 - 1.3155	191.80	175.50	170.10	167.50	164.70	162.50
1 3/8	1.3750	4	8	3 1/4	12	240244	165.75	1.3156 - 1.3780	198.25	181.95	176.55	173.95	171.15	169.00
1 7/16	1.4375	4	8	3 1/4	12	240246	169.20	1.3781 - 1.4405	201.70	185.45	179.95	177.40	174.55	172.40
1 1/2	1.5000	4	8	3 1/2	12 1/2	240248	177.65	1.4406 - 1.5030	210.15	193.90	188.40	185.85	183.00	180.80
1 9/16	1.5625	4	8	3 1/2	12 1/2	240250	191.75	1.5031 - 1.5660	224.20	207.95	202.50	199.90	197.10	194.90
1 5/8	1.6250	4	8	3 3/4	13	240252	198.35	1.5661 - 1.6280	230.85	214.60	209.10	206.55	203.75	201.55
1 11/16	1.6875	4	8	3 3/4	13	240254	223.05	1.6281 - 1.6910	255.55	239.25	233.85	231.20	228.50	226.30
1 3/4	1.7500	4	10	4	13 1/2	240256	223.05	1.6911 - 1.7530	255.55	239.25	233.85	231.20	228.50	226.30
1 13/16	1.8125	4	10	4	13 1/2	240258	223.05	1.7531 - 1.8160	255.55	239.25	233.85	231.20	228.50	226.30
1 7/8	1.8750	4	10	4 1/4	14	240260	233.75	1.8161 - 1.8780	266.20	249.90	244.45	241.85	239.10	236.90
1 15/16	1.9375	4	10	4 1/4	14	240262	233.75	1.8781 - 1.9410	266.20	249.90	244.45	241.85	239.10	236.90
2	2.0000	4	12	4 1/4	14	240264	233.75	1.9411 - 2.0030	266.20	249.90	244.45	241.85	239.10	236.90

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





# CHUCKING REAMERS

## CARBIDE TIPPED - STRAIGHT FLUTES & TAPER SHANK

### TYPE 2402 - METRIC



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

TOOL DIAMETER		TYPE 2402 METRIC EDP NO.	METRIC PRICE	DIMENSIONS					SPECIAL METRIC SIZE RANGE	PRICE EACH - FINISHED TO METRIC SIZE								
				MORSE TAPER	NO. OF FLUTES	LENGTH				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14	OVER 14		
						FLT	CAR-BIDE	OVER-ALL										
mm	INCH																	
6.0	.2362	2402060	\$46.45	1	4	1 1/2	1/2	6	6.000 - 6.426	\$68.80	\$53.95	\$49.05	\$46.55	\$44.10	\$42.00	\$39.15		
6.5	.2559	2402065	47.15	1	4	1 1/2	1/2	6	6.427 - 7.214	69.45	54.65	49.70	47.25	44.75	42.70	39.85		
7.0	.2756	2402070	47.15	1	4	1 1/2	1/2	6	-	-	-	-	-	-	-	-	-	-
7.5	.2953	2402075	47.15	1	4	1 1/2	1/2	6	7.215 - 8.001	69.45	54.65	49.70	47.25	44.75	42.70	39.85		
8.0	.3150	2402080	47.15	1	4	1 1/2	1/2	6	-	-	-	-	-	-	-	-	-	-
8.5	.3346	2402085	48.50	1	4	1 1/2	5/8	6	8.002 - 8.814	70.80	56.00	51.10	48.60	46.15	44.10	41.20		
9.0	.3543	2402090	44.50	1	4	1 3/4	5/8	7	8.815 - 9.601	65.00	51.40	46.90	44.60	42.35	40.50	37.85		
9.5	.3740	2402095	44.50	1	4	1 3/4	5/8	7	-	-	-	-	-	-	-	-	-	-
10.0	.3937	2402100	50.40	1	4	1 3/4	5/8	7	9.602 - 10.389	72.70	57.90	52.95	50.50	48.05	46.00	43.15		
10.5	.4134	2402105	53.00	1	4	1 3/4	5/8	7	10.390 - 11.201	75.35	60.55	55.55	53.15	50.65	48.55	45.75		
11.0	.4331	2402110	53.00	1	4	1 3/4	5/8	7	-	-	-	-	-	-	-	-	-	-
11.5	.4528	2402115	54.15	1	4	1 3/4	5/8	7	11.202 - 11.989	76.45	61.75	56.70	54.35	51.80	49.75	46.95		
12.0	.4724	2402120	63.05	1	6	2	5/8	8	11.990 - 12.776	87.55	71.35	65.85	63.15	60.45	58.15	55.00		
12.5	.4921	2402125	63.05	1	6	2	5/8	8	-	-	-	-	-	-	-	-	-	-
13.0	.5118	2402130	67.15	1	6	2	5/8	8	12.777 - 13.564	91.75	75.45	70.00	67.35	64.60	62.30	59.15		
13.5	.5315	2402135	67.15	1	6	2	5/8	8	-	-	-	-	-	-	-	-	-	-
14.0	.5512	2402140	67.15	1	6	2	5/8	8	13.565 - 14.376	91.75	75.45	70.00	67.35	64.60	62.30	59.15		
14.5	.5709	2402145	69.90	1	6	2	5/8	8	14.377 - 15.164	94.50	78.15	72.70	70.10	67.35	65.05	61.90		
15.0	.5906	2402150	69.90	1	6	2	5/8	8	-	-	-	-	-	-	-	-	-	-
15.5	.6102	2402155	69.90	2	6	2 1/4	5/8	9	15.165 - 15.951	94.50	78.15	72.70	70.10	67.35	65.05	61.90		
16.0	.6299	2402160	71.05	2	6	2 1/4	5/8	9	15.952 - 16.739	95.55	79.20	73.80	71.15	68.40	66.10	63.00		
16.5	.6496	2402165	71.05	2	6	2 1/4	5/8	9	-	-	-	-	-	-	-	-	-	-
17.0	.6693	2402170	71.05	2	6	2 1/4	5/8	9	16.740 - 17.551	95.55	79.20	73.80	71.15	68.40	66.10	63.00		
17.5	.6890	2402175	71.05	2	6	2 1/4	5/8	9	-	-	-	-	-	-	-	-	-	-
18.0	.7087	2402180	73.70	2	6	2 1/4	5/8	9	17.552 - 18.339	98.30	82.00	76.55	73.85	71.15	68.85	65.75		
18.5	.7283	2402185	73.70	2	6	2 1/2	3/4	9 1/2	18.340 - 19.126	98.30	82.00	76.55	73.85	71.15	68.85	65.75		
19.0	.7480	2402190	73.70	2	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	-	-	-
19.5	.7677	2402195	75.70	2	6	2 1/2	3/4	9 1/2	19.127 - 19.914	100.20	83.90	78.50	75.80	73.10	70.75	67.65		
20.0	.7874	2402200	75.70	2	6	2 1/2	3/4	9 1/2	19.915 - 20.726	100.20	83.90	78.50	75.80	73.10	70.75	67.65		
20.5	.8071	2402205	75.70	2	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	-	-	-
21.0	.8268	2402210	78.50	2	6	2 1/2	3/4	9 1/2	20.727 - 21.514	103.05	86.80	81.25	78.60	75.85	73.55	70.45		
21.5	.8465	2402215	78.50	2	6	2 1/2	3/4	9 1/2	-	-	-	-	-	-	-	-	-	-
22.0	.8661	2402220	78.50	2	6	2 5/8	3/4	10	21.515 - 22.301	103.05	86.80	81.25	78.60	75.85	73.55	70.45		
22.5	.8858	2402225	93.55	2	6	2 5/8	3/4	10	22.302 - 23.089	119.05	102.15	96.45	93.65	90.80	88.45	85.25		
23.0	.9055	2402230	93.55	2	6	2 5/8	3/4	10	-	-	-	-	-	-	-	-	-	-
23.5	.9252	2402235	93.55	3	8	2 5/8	3/4	10	23.090 - 23.901	119.05	102.15	96.45	93.65	90.80	88.45	85.25		
24.0	.9449	2402240	97.00	3	8	2 5/8	3/4	10	23.902 - 24.689	122.55	105.65	99.90	97.10	94.30	91.95	88.70		
24.5	.9646	2402245	97.00	3	8	2 5/8	3/4	10	-	-	-	-	-	-	-	-	-	-
25.0	.9843	2402250	97.00	3	8	2 3/4	3/4	10 1/2	24.690 - 25.476	122.55	105.65	99.90	97.10	94.30	91.95	88.70		
25.5	1.0039	2402255	128.70	3	8	2 3/4	3/4	10 1/2	25.477 - 27.076	153.10	136.85	131.45	128.80	126.05	123.80	120.70		
26.0	1.0236	2402260	128.70	3	8	2 3/4	3/4	10 1/2	-	-	-	-	-	-	-	-	-	-
27.0	1.0630	2402270	128.70	3	8	2 3/4	3/4	10 1/2	-	-	-	-	-	-	-	-	-	-
28.0	1.1024	2402280	136.30	3	8	2 7/8	7/8	11	27.077 - 28.651	160.70	144.50	139.05	136.40	133.65	131.45	128.30		
29.0	1.1417	2402290	143.75	3	8	2 7/8	7/8	11	28.652 - 30.239	168.15	151.95	146.55	143.85	141.10	138.90	135.75		
30.0	1.1811	2402300	143.75	3	8	2 7/8	7/8	11	-	-	-	-	-	-	-	-	-	-
31.0	1.2205	2402310	158.55	4	8	3	7/8	11 1/2	30.240 - 31.826	182.95	166.80	161.30	158.65	155.90	153.65	150.55		
32.0	1.2598	2402320	170.10	4	8	3	7/8	11 1/2	31.827 - 33.414	194.50	178.35	172.85	170.20	167.50	165.20	162.10		
33.0	1.2992	2402330	170.10	4	8	3	7/8	11 1/2	-	-	-	-	-	-	-	-	-	-
34.0	1.3386	2402340	176.55	4	8	3 1/4	7/8	12	33.415 - 35.001	200.95	184.75	179.35	176.65	173.95	171.70	168.60		
35.0	1.3780	2402350	176.55	4	8	3 1/4	7/8	12	-	-	-	-	-	-	-	-	-	-
36.0	1.4173	2402360	179.95	4	8	3 1/4	7/8	12	35.002 - 36.589	204.45	188.20	182.80	180.15	177.40	175.15	172.00		
37.0	1.4567	2402370	188.40	4	8	3 1/2	7/8	12 1/2	36.590 - 38.176	212.90	196.65	191.20	188.60	185.85	183.60	180.50		
38.0	1.4961	2402380	188.40	4	8	3 1/2	7/8	12 1/2	-	-	-	-	-	-	-	-	-	-
39.0	1.5354	2402390	202.50	4	8	3 1/2	7/8	12 1/2	38.177 - 39.776	226.95	210.75	205.30	202.65	199.90	197.60	194.50		
40.0	1.5748	2402400	209.10	4	8	3 3/4	7/8	13	39.777 - 41.351	233.60	217.35	211.95	209.25	206.55	204.30	201.15		
41.0	1.6142	2402410	209.10	4	8	3 3/4	7/8	13	-	-	-	-	-	-	-	-	-	-

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



# 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	\$38.00	0.1770 - 0.2040	\$68.50	\$53.20	\$48.20	\$45.70	\$43.05	\$41.00
7/32	.2188	13/64	4	1 1/2	6	245007	38.00	0.2041 - 0.2210	68.50	53.20	48.20	45.70	43.05	41.00
15/64	.2344	7/32	4	1 1/2	6	24502344	38.00	0.2211 - 0.2380	68.50	53.20	48.20	45.70	43.05	41.00
1/4	.2500	15/64	4	1 1/2	6	245008	38.00	0.2381 - 0.2530	68.50	53.20	48.20	45.70	43.05	41.00
9/32	.2812	15/64	4	1 1/2	6	245009	38.85	0.2531 - 0.2840	69.30	54.00	48.95	46.50	43.85	41.85
5/16	.3125	9/32	4	1 1/2	6	245010	38.85	0.2841 - 0.3150	69.30	54.00	48.95	46.50	43.85	41.85
11/32	.3438	9/32	4	1 1/2	6	245011	40.25	0.3151 - 0.3470	70.70	55.50	50.35	47.95	45.30	43.25
3/8	.3750	5/16	4	1 3/4	7	245012	40.25	0.3471 - 0.3780	70.70	55.50	50.35	47.95	45.30	43.25
13/32	.4062	5/16	4	1 3/4	7	245013	42.25	0.3781 - 0.4090	72.70	57.50	52.35	49.95	47.30	45.25
7/16	.4375	3/8	4	1 3/4	7	245014	45.70	0.4091 - 0.4410	76.20	60.90	55.75	53.40	50.75	48.70
15/32	.4688	3/8	4	1 3/4	7	245015	49.35	0.4411 - 0.4720	79.85	64.60	59.45	57.00	54.45	52.35
1/2	.5000	7/16	6	2	8	245016	52.85	0.4721 - 0.5030	85.50	69.20	63.75	61.10	58.35	56.05
17/32	.5312	7/16	6	2	8	245017	54.40	0.5031 - 0.5340	87.05	70.65	65.20	62.55	59.75	57.55
9/16	.5625	7/16	6	2	8	245018	54.40	0.5341 - 0.5660	87.05	70.65	65.20	62.55	59.75	57.55
19/32	.5938	7/16	6	2	8	245019	56.50	0.5661 - 0.5970	89.15	72.75	67.35	64.75	61.90	59.70
5/8	.6250	9/16	6	2	9	245020	56.50	0.5971 - 0.6280	89.15	72.75	67.35	64.75	61.90	59.70
21/32	.6562	9/16	6	2	9	245021	57.50	0.6281 - 0.6590	90.15	73.80	68.35	65.75	62.90	60.70
11/16	.6875	9/16	6	2	9	245022	57.50	0.6591 - 0.6910	90.15	73.80	68.35	65.75	62.90	60.70
23/32	.7188	9/16	6	2	9	245023	60.15	0.6911 - 0.7220	92.80	76.45	71.05	68.40	65.55	63.35
3/4	.7500	5/8	6	2	9 1/2	245024	60.15	0.7221 - 0.7530	92.80	76.45	71.05	68.40	65.55	63.35
25/32	.7812	5/8	6	2	9 1/2	245025	62.20	0.7531 - 0.7840	94.85	78.55	73.10	70.45	67.65	65.45
13/16	.8125	5/8	6	2	9 1/2	245026	62.20	0.7841 - 0.8160	94.85	78.55	73.10	70.45	67.65	65.45
27/32	.8438	5/8	6	2	9 1/2	245027	64.75	0.8161 - 0.8470	97.40	81.00	75.50	72.90	70.15	67.90
7/8	.8750	3/4	6	2 1/4	10	245028	67.15	0.8471 - 0.8780	101.05	84.10	78.40	75.65	72.75	70.45
29/32	.9062	3/4	6	2 1/4	10	245029	78.15	0.8781 - 0.9090	112.05	95.10	89.40	86.70	83.80	81.50
15/16	.9375	3/4	8	2 1/4	10	245030	78.15	0.9091 - 0.9410	112.05	95.10	89.40	86.70	83.80	81.50
31/32	.9688	3/4	8	2 1/4	10	245031	81.90	0.9411 - 0.9720	115.80	98.80	93.15	90.45	87.55	85.25
1	1.0000	7/8	8	2 1/4	10 1/2	245032	81.90	0.9721 - 1.0030	115.80	98.80	93.15	90.45	87.55	85.25
1 1/16	1.0625	7/8	8	2 1/4	10 1/2	245034	84.75	1.0031 - 1.0660	117.25	100.95	95.50	92.90	90.15	87.95
1 1/8	1.1250	7/8	8	2 1/4	11	245036	91.70	1.0661 - 1.1280	124.15	107.95	102.45	99.90	97.05	94.85
1 3/16	1.1875	1	8	2 1/4	11	245038	95.95	1.1281 - 1.1905	128.40	112.15	106.75	104.10	101.30	99.15
1 1/4	1.2500	1	8	2 1/2	11 1/2	245040	112.05	1.1906 - 1.2530	144.50	128.25	122.80	120.20	117.40	115.20
1 3/8	1.3125	1	8	2 1/2	11 1/2	245042	112.05	1.2531 - 1.3155	144.50	128.25	122.80	120.20	117.40	115.20
1 3/8	1.3750	1	8	2 1/2	12	245044	113.70	1.3156 - 1.3780	146.15	129.90	124.40	121.85	119.05	116.85
1 7/16	1.4375	1 1/4	8	2 1/2	12	245046	125.60	1.3781 - 1.4405	158.10	141.75	136.35	133.75	131.00	128.80
1 1/2	1.5000	1 1/4	8	2 1/2	12 1/2	245048	150.75	1.4406 - 1.5030	183.20	166.95	161.55	158.90	156.15	154.00
1 9/16	1.5625	1 1/4	8	2 1/2	12 1/2	245050	199.00	1.5031 - 1.5660	231.45	215.20	209.75	207.15	204.40	202.20
1 3/8	1.6250	1 1/4	8	2 3/4	13	245052	205.80	1.5661 - 1.6280	238.30	221.95	216.55	214.00	211.20	209.00
1 11/16	1.6875	1 1/4	8	2 3/4	13	245054	225.95	1.6281 - 1.6910	258.50	242.20	236.80	234.15	231.40	229.20
1 3/4	1.7500	1 1/4	10	3	13 1/2	245056	225.95	1.6911 - 1.7530	258.50	242.20	236.80	234.15	231.40	229.20
1 13/16	1.8125	1 1/2	10	3	13 1/2	245058	231.20	1.7531 - 1.8160	263.75	247.50	242.00	239.45	236.60	234.45
1 7/8	1.8750	1 1/2	10	3 1/4	14	245060	242.50	1.8161 - 1.8780	274.95	258.65	253.25	250.65	247.85	245.65
1 15/16	1.9375	1 1/2	10	3 1/4	14	245062	257.10	1.8781 - 1.9410	289.55	273.25	267.85	265.25	262.50	260.30
2	2.0000	1 1/2	12	3 1/4	14	245064	257.10	1.9411 - 2.0030	289.55	273.25	267.85	265.25	262.50	260.30

\*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 - METRIC



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

TOOL DIAMETER		TYPE 2450 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
						FLUTE & CARBIDE	OVER-ALL								
4.5	.1772	2450045	\$48.20	1/64	4	1 1/2	6	4.494-5.182	\$71.10	\$55.85	50.75	\$48.25	\$45.70	\$43.60	\$40.65
5.0	.1969	2450050	48.20	1/64	4	1 1/2	6	-	-	-	-	-	-	-	-
5.5	.2165	2450055	48.20	1/64	4	1 1/2	6	5.183-5.613	71.10	55.85	50.75	48.25	45.70	43.60	40.65
6.0	.2362	2450060	48.20	7/32	4	1 1/2	6	5.614-6.045	71.10	55.85	50.75	48.25	45.70	43.60	40.65
6.3	.2480	2450063	48.20	1/64	4	1 1/2	6	6.046-6.426	71.10	55.85	50.75	48.25	45.70	43.60	40.65
6.5	.2559	2450065	48.95	1/64	4	1 1/2	6	6.427-7.214	71.80	56.65	51.55	49.05	46.50	44.35	41.50
7.0	.2756	2450070	48.95	1/64	4	1 1/2	6	-	-	-	-	-	-	-	-
7.5	.2953	2450075	48.95	7/32	4	1 1/2	6	7.215-8.001	71.80	56.65	51.55	49.05	46.50	44.35	41.50
8.0	.3150	2450080	48.95	7/32	4	1 1/2	6	-	-	-	-	-	-	-	-
8.5	.3346	2450085	50.35	7/32	4	1 1/2	6	8.002-8.814	73.30	58.10	52.95	50.45	47.95	45.80	42.90
9.0	.3543	2450090	50.35	7/32	4	1 3/4	7	8.815-9.601	73.30	58.10	52.95	50.45	47.95	45.80	42.90
9.5	.3740	2450095	50.35	7/32	4	1 3/4	7	-	-	-	-	-	-	-	-
10.0	.3937	2450100	52.35	7/32	4	1 3/4	7	9.602-10.389	75.30	60.10	54.95	52.50	49.95	47.85	44.85
10.5	.4134	2450105	55.75	7/32	4	1 3/4	7	10.390-11.201	78.75	63.45	58.40	55.90	53.40	51.25	48.30
11.0	.4331	2450110	55.75	7/32	4	1 3/4	7	-	-	-	-	-	-	-	-
11.5	.4528	2450115	59.45	7/32	4	1 3/4	7	11.202-11.989	82.40	67.15	62.10	59.60	57.00	54.90	52.00
12.0	.4724	2450120	63.75	7/32	6	2	8	11.990-12.776	88.25	72.05	66.50	63.85	61.10	58.80	55.70
12.5	.4921	2450125	63.75	7/32	6	2	8	-	-	-	-	-	-	-	-
13.0	.5118	2450130	65.20	7/32	6	2	8	12.777-13.564	89.80	73.45	68.00	65.30	62.55	60.30	57.15
13.5	.5315	2450135	65.20	7/32	6	2	8	-	-	-	-	-	-	-	-
14.0	.5512	2450140	65.20	7/32	6	2	8	13.565-14.376	89.80	73.45	68.00	65.30	62.55	60.30	57.15
14.5	.5709	2450145	67.35	7/32	6	2	8	14.377-15.164	91.90	75.55	70.15	67.45	64.75	62.40	59.30
15.0	.5906	2450150	67.35	7/32	6	2	8	-	-	-	-	-	-	-	-
15.5	.6102	2450155	67.35	7/32	6	2	9	15.165-15.951	91.90	75.55	70.15	67.45	64.75	62.40	59.30
16.0	.6299	2450160	68.35	7/32	6	2	9	15.952-16.739	92.85	76.60	71.15	68.45	65.75	63.40	60.30
16.5	.6496	2450165	68.35	7/32	6	2	9	-	-	-	-	-	-	-	-
17.0	.6693	2450170	68.35	7/32	6	2	9	16.740-17.551	92.85	76.60	71.15	68.45	65.75	63.40	60.30
17.5	.6890	2450175	68.35	7/32	6	2	9	-	-	-	-	-	-	-	-
18.0	.7087	2450180	71.05	7/32	6	2	9	17.552-18.339	95.55	79.20	73.80	71.15	68.40	66.10	63.00
18.5	.7283	2450185	71.05	7/32	6	2	9 1/2	18.340-19.126	95.55	79.20	73.80	71.15	68.40	66.10	63.00
19.0	.7480	2450190	71.05	7/32	6	2	9 1/2	-	-	-	-	-	-	-	-
19.5	.7677	2450195	73.10	7/32	6	2	9 1/2	19.127-19.914	97.60	81.40	75.85	73.20	70.45	68.15	65.05
20.0	.7874	2450200	73.10	7/32	6	2	9 1/2	19.915-20.726	97.60	81.40	75.85	73.20	70.45	68.15	65.05
20.5	.8071	2450205	73.10	7/32	6	2	9 1/2	-	-	-	-	-	-	-	-
21.0	.8268	2450210	75.50	7/32	6	2	9 1/2	20.727-21.514	100.10	83.80	78.35	75.70	72.90	70.65	67.50
21.5	.8465	2450215	75.50	7/32	6	2	9 1/2	-	-	-	-	-	-	-	-
22.0	.8661	2450220	75.50	7/32	6	2 1/4	10	21.515-22.301	100.10	83.80	78.35	75.70	72.90	70.65	67.50
22.5	.8858	2450225	89.40	7/32	6	2 1/4	10	22.302-23.089	114.90	98.00	92.30	89.50	86.70	84.30	81.05
23.0	.9055	2450230	89.40	7/32	6	2 1/4	10	-	-	-	-	-	-	-	-
23.5	.9252	2450235	89.40	7/32	8	2 1/4	10	23.090-23.901	114.90	98.00	92.30	89.50	86.70	84.30	81.05
24.0	.9449	2450240	93.15	7/32	8	2 1/4	10	23.902-24.689	118.60	101.75	96.00	93.25	90.45	88.10	84.85
24.5	.9646	2450245	93.15	7/32	8	2 1/4	10	-	-	-	-	-	-	-	-
25.0	.9843	2450250	93.15	7/32	8	2 1/4	10 1/2	24.690-25.476	118.60	101.75	96.00	93.25	90.45	88.10	84.85
25.5	1.0039	2450255	95.50	7/32	8	2 1/4	10 1/2	25.477-27.076	119.95	103.75	98.30	95.65	92.90	90.65	87.55
26.0	1.0236	2450260	95.50	7/32	8	2 1/4	10 1/2	-	-	-	-	-	-	-	-
27.0	1.0630	2450270	95.50	7/32	8	2 1/4	10 1/2	-	-	-	-	-	-	-	-
28.0	1.1024	2450280	102.45	7/32	8	2 1/4	11	27.077-28.651	126.95	110.70	105.25	102.65	99.90	97.60	94.50
29.0	1.1417	2450290	106.75	1	8	2 1/4	11	28.652-30.239	131.15	115.00	109.50	106.85	104.10	101.85	98.75
30.0	1.1811	2450300	106.75	1	8	2 1/4	11	-	-	-	-	-	-	-	-
31.0	1.2205	2450310	122.80	1	8	2 1/2	11 1/2	30.240-31.826	147.25	131.05	125.60	122.95	120.20	117.90	114.80
32.0	1.2598	2450320	122.80	1	8	2 1/2	11 1/2	31.827-33.414	147.25	131.05	125.60	122.95	120.20	117.90	114.80
33.0	1.2992	2450330	122.80	1	8	2 1/2	11 1/2	-	-	-	-	-	-	-	-
34.0	1.3386	2450340	124.40	1	8	2 1/2	12	33.415-35.001	148.90	132.70	127.20	124.60	121.85	119.60	116.50
35.0	1.3780	2450350	124.40	1	8	2 1/2	12	-	-	-	-	-	-	-	-
36.0	1.4173	2450360	136.35	1 1/4	8	2 1/2	12	35.002-36.589	160.75	144.60	139.10	136.45	133.75	131.50	128.35
37.0	1.4567	2450370	161.55	1 1/4	8	2 1/2	12 1/2	36.590-38.176	185.95	169.75	164.30	161.65	158.90	156.65	153.55
38.0	1.4961	2450380	161.55	1 1/4	8	2 1/2	12 1/2	-	-	-	-	-	-	-	-

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



# CHUCKING REAMERS

**CARBIDE TIPPED - STOCKED - FLUTE LENGTH CARBIDE - TYPE 2450**

NOTE: Dimension details and modifications listed on page 50.

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
.1770	24501770	\$48.20	.2070	24502070	\$48.20	.2370	24502370	\$48.20	.2670	24502670	\$48.95	.2970	24502970	\$48.95
.1775	24501775	48.20	.2075	24502075	48.20	.2375	24502375	48.20	.2675	24502675	48.95	.2975	24502975	48.95
.1780	24501780	48.20	.2080	24502080	48.20	.2380	24502380	48.20	.2680	24502680	48.95	.2980	24502980	48.95
.1785	24501785	48.20	.2085	24502085	48.20	.2385	24502385	48.20	.2685	24502685	48.95	.2985	24502985	48.95
.1790	24501790	48.20	.2090	24502090	48.20	.2390	24502390	48.20	.2690	24502690	48.95	.2990	24502990	48.95
.1795	24501795	48.20	.2095	24502095	48.20	.2395	24502395	48.20	.2695	24502695	48.95	.2995	24502995	48.95
.1800	24501800	48.20	.2100	24502100	48.20	.2400	24502400	48.20	.2700	24502700	48.95	.3000	24503000	48.95
.1805	24501805	48.20	.2105	24502105	48.20	.2405	24502405	48.20	.2705	24502705	48.95	.3005	24503005	48.95
.1810	24501810	48.20	.2110	24502110	48.20	.2410	24502410	48.20	.2710	24502710	48.95	.3010	24503010	48.95
.1815	24501815	48.20	.2115	24502115	48.20	.2415	24502415	48.20	.2715	24502715	48.95	.3015	24503015	48.95
.1820	24501820	48.20	.2120	24502120	48.20	.2420	24502420	48.20	.2720	24502720	48.95	.3020	24503020	48.95
.1825	24501825	48.20	.2125	24502125	48.20	.2425	24502425	48.20	.2725	24502725	48.95	.3025	24503025	48.95
.1830	24501830	48.20	.2130	24502130	48.20	.2430	24502430	48.20	.2730	24502730	48.95	.3030	24503030	48.95
.1835	24501835	48.20	.2135	24502135	48.20	.2435	24502435	48.20	.2735	24502735	48.95	.3035	24503035	48.95
.1840	24501840	48.20	.2140	24502140	48.20	.2440	24502440	48.20	.2740	24502740	48.95	.3040	24503040	48.95
.1845	24501845	48.20	.2145	24502145	48.20	.2445	24502445	48.20	.2745	24502745	48.95	.3045	24503045	48.95
.1850	2450047	48.20	.2150	24502150	48.20	.2450	24502450	48.20	.2750	24502750	48.95	.3050	24503050	48.95
.1855	24501855	48.20	.2155	24502155	48.20	.2455	24502455	48.20	.2755	24502755	48.95	.3055	24503055	48.95
.1860	24501860	48.20	.2160	24502160	48.20	.2460	24502460	48.20	.2760	24502760	48.95	.3060	24503060	48.95
.1865	24501865	48.20	.2165	2450055	48.20	.2465	24502465	48.20	.2765	24502765	48.95	.3065	24503065	48.95
.1870	24501870	48.20	.2170	24502170	48.20	.2470	24502470	48.20	.2770	24502770	48.95	.3070	24503070	48.95
.1875	245006	38.00	.2175	24502175	48.20	.2475	24502475	48.20	.2775	24502775	48.95	.3075	24503075	48.95
.1880	24501880	48.20	.2180	24502180	48.20	.2480	2450063	48.20	.2780	24502780	48.95	.3080	24503080	48.95
.1885	24501885	48.20	.2185	24502185	48.20	.2485	24502485	48.20	.2785	24502785	48.95	.3085	24503085	48.95
.1890	2450048	48.20	.2190	24502190	48.20	.2490	24502490	48.20	.2790	24502790	48.95	.3090	24503090	48.95
.1895	24501895	48.20	.2195	24502195	48.20	.2495	24502495	48.20	.2795	2450071	48.95	.3095	24503095	48.95
.1900	24501900	48.20	.2200	24502200	48.20	.2500	245008	38.00	.2800	24502800	48.95	.3100	24503100	48.95
.1905	24501905	48.20	.2205	2450056	48.20	.2505	24502505	48.20	.2805	24502805	48.95	.3105	24503105	48.95
.1910	24501910	48.20	.2210	24502210	48.20	.2510	24502510	48.20	.2810	24502810	48.95	.3110	2450079	48.95
.1915	24501915	48.20	.2215	24502215	48.20	.2515	24502515	48.20	.2815	24502815	48.95	.3115	24503115	48.95
.1920	24501920	48.20	.2220	24502220	48.20	.2520	2450064	48.20	.2820	24502820	48.95	.3120	24503120	48.95
.1925	24501925	48.20	.2225	24502225	48.20	.2525	24502525	48.20	.2825	24502825	48.95	.3125	245010	38.85
.1930	24501930	48.20	.2230	24502230	48.20	.2530	24502530	48.20	.2830	24502830	48.95	.3130	24503130	48.95
.1935	24501935	48.20	.2235	24502235	48.20	.2535	24502535	48.95	.2835	2450072	48.95	.3135	24503135	48.95
.1940	24501940	48.20	.2240	24502240	48.20	.2540	24502540	48.95	.2840	24502840	48.95	.3140	24503140	48.95
.1945	24501945	48.20	.2245	24502245	48.20	.2545	24502545	48.95	.2845	24502845	48.95	.3145	24503145	48.95
.1950	24501950	48.20	.2250	24502250	48.20	.2550	24502550	48.95	.2850	24502850	48.95	.3150	2450080	48.95
.1955	24501955	48.20	.2255	24502255	48.20	.2555	24502555	48.95	.2855	24502855	48.95	.3155	24503155	50.35
.1960	24501960	48.20	.2260	24502260	48.20	.2560	24502560	48.95	.2860	24502860	48.95	.3160	24503160	50.35
.1965	24501965	48.20	.2265	24502265	48.20	.2565	24502565	48.95	.2865	24502865	48.95	.3165	24503165	50.35
.1970	24501970	48.20	.2270	24502270	48.20	.2570	24502570	48.95	.2870	24502870	48.95	.3170	24503170	50.35
.1975	24501975	48.20	.2275	24502275	48.20	.2575	24502575	48.95	.2875	24502875	48.95	.3175	24503175	50.35
.1980	24501980	48.20	.2280	24502280	48.20	.2580	24502580	48.95	.2880	24502880	48.95	.3180	24503180	50.35
.1985	24501985	48.20	.2285	24502285	48.20	.2585	24502585	48.95	.2885	24502885	48.95	.3185	24503185	50.35
.1990	24501990	48.20	.2290	24502290	48.20	.2590	24502590	48.95	.2890	24502890	48.95	.3190	24503190	50.35
.1995	24501995	48.20	.2295	24502295	48.20	.2595	24502595	48.95	.2895	24502895	48.95	.3195	24503195	50.35
.2000	24502000	48.20	.2300	24502300	48.20	.2600	24502600	48.95	.2900	24502900	48.95	.3200	24503200	50.35
.2005	24502005	48.20	.2305	24502305	48.20	.2605	24502605	48.95	.2905	24502905	48.95	.3205	24503205	50.35
.2010	24502010	48.20	.2310	24502310	48.20	.2610	24502610	48.95	.2910	24502910	48.95	.3210	24503210	50.35
.2015	24502015	48.20	.2315	24502315	48.20	.2615	24502615	48.95	.2915	24502915	48.95	.3215	24503215	50.35
.2020	24502020	48.20	.2320	24502320	48.20	.2620	24502620	48.95	.2920	24502920	48.95	.3220	24503220	50.35
.2025	24502025	48.20	.2325	24502325	48.20	.2625	24502625	48.95	.2925	24502925	48.95	.3225	24503225	50.35
.2030	24502030	48.20	.2330	24502330	48.20	.2630	24502630	48.95	.2930	24502930	48.95	.3230	24503230	50.35
.2035	24502035	48.20	.2335	24502335	48.20	.2635	24502635	48.95	.2935	24502935	48.95	.3235	24503235	50.35
.2040	24502040	48.20	.2340	24502340	48.20	.2640	24502640	48.95	.2940	24502940	48.95	.3240	24503240	50.35
.2045	24502045	48.20	.2345	24502345	48.20	.2645	24502645	48.95	.2945	24502945	48.95	.3245	24503245	50.35
.2050	24502050	48.20	.2350	24502350	48.20	.2650	24502650	48.95	.2950	24502950	48.95	.3250	24503250	50.35
.2055	24502055	48.20	.2355	24502355	48.20	.2655	24502655	48.95	.2955	24502955	48.95	.3255	24503255	50.35
.2060	24502060	48.20	.2360	24502360	48.20	.2660	24502660	48.95	.2960	24502960	48.95	.3260	24503260	50.35
.2065	24502065	48.20	.2365	24502365	48.20	.2665	24502665	48.95	.2965	24502965	48.95	.3265	24503265	50.35



# CHUCKING REAMERS

CARBIDE TIPPED - STOCKED - FLUTE LENGTH CARBIDE - TYPE 2450

NOTE: Dimension details and modifications listed on page 50.

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
.3270	24503270	\$50.35	.3570	24503570	\$50.35	.3870	24503870	\$52.35	.4170	24504170	\$55.75	.4470	24504470	\$59.55
.3275	24503275	50.35	.3575	24503575	50.35	.3875	24503875	52.35	.4175	24504175	55.75	.4475	24504475	59.55
.3280	24503280	50.35	.3580	24503580	50.35	.3880	24503880	52.35	.4180	24504180	55.75	.4480	24504480	59.55
.3285	24503285	50.35	.3585	24503585	50.35	.3885	24503885	52.35	.4185	24504185	55.75	.4485	24504485	59.55
.3290	24503290	50.35	.3590	24503590	50.35	.3890	24503890	52.35	.4190	24504190	55.75	.4490	24504490	59.55
.3295	24503295	50.35	.3595	24503595	50.35	.3895	24503895	52.35	.4195	24504195	55.75	.4495	24504495	59.55
.3300	24503300	50.35	.3600	24503600	50.35	.3900	24503900	52.35	.4200	24504200	55.75	.4500	24504500	59.55
.3305	24503305	50.35	.3605	24503605	50.35	.3905	24503905	52.35	.4205	24504205	55.75	.4505	24504505	59.55
.3310	24503310	50.35	.3610	24503610	50.35	.3910	24503910	52.35	.4210	24504210	55.75	.4510	24504510	59.55
.3315	24503315	50.35	.3615	24503615	50.35	.3915	24503915	52.35	.4215	24504215	55.75	.4515	24504515	59.55
.3320	24503320	50.35	.3620	24503620	50.35	.3920	24503920	52.35	.4220	24504220	55.75	.4520	24504520	59.55
.3325	24503325	50.35	.3625	24503625	50.35	.3925	24503925	52.35	.4225	24504225	55.75	.4525	24504525	59.55
.3330	24503330	50.35	.3630	24503630	50.35	.3930	24503930	52.35	.4230	24504230	55.75	.4530	24504530	59.55
.3335	24503335	50.35	.3635	24503635	50.35	.3935	24503935	52.35	.4235	24504235	55.75	.4535	24504535	59.55
.3340	24503340	50.35	.3640	24503640	50.35	.3940	24503940	52.35	.4240	24504240	55.75	.4540	24504540	59.55
.3345	24503345	50.35	.3645	24503645	50.35	.3945	24503945	52.35	.4245	24504245	55.75	.4545	24504545	59.55
.3350	24503350	50.35	.3650	24503650	50.35	.3950	24503950	52.35	.4250	24504250	55.75	.4550	24504550	59.55
.3355	24503355	50.35	.3655	24503655	50.35	.3955	24503955	52.35	.4255	24504255	55.75	.4555	24504555	59.55
.3360	24503360	50.35	.3660	24503660	50.35	.3960	24503960	52.35	.4260	24504260	55.75	.4560	24504560	59.55
.3365	24503365	50.35	.3665	24503665	50.35	.3965	24503965	52.35	.4265	24504265	55.75	.4565	24504565	59.55
.3370	24503370	50.35	.3670	24503670	50.35	.3970	24503970	52.35	.4270	24504270	55.75	.4570	24504570	59.55
.3375	24503375	50.35	.3675	24503675	50.35	.3975	24503975	52.35	.4275	24504275	55.75	.4575	24504575	59.55
.3380	24503380	50.35	.3680	24503680	50.35	.3980	24503980	52.35	.4280	24504280	55.75	.4580	24504580	59.55
.3385	24503385	50.35	.3685	24503685	50.35	.3985	24503985	52.35	.4285	24504285	55.75	.4585	24504585	59.55
.3390	24503390	50.35	.3690	24503690	50.35	.3990	24503990	52.35	.4290	24504290	55.75	.4590	24504590	59.55
.3395	24503395	50.35	.3695	24503695	50.35	.3995	24503995	52.35	.4295	24504295	55.75	.4595	24504595	59.55
.3400	24503400	50.35	.3700	24503700	50.35	.4000	24504000	52.35	.4300	24504300	55.75	.4600	24504600	59.55
.3405	24503405	50.35	.3705	24503705	50.35	.4005	24504005	52.35	.4305	24504305	55.75	.4605	24504605	59.55
.3410	24503410	50.35	.3710	24503710	50.35	.4010	24504010	52.35	.4310	24504310	55.75	.4610	24504610	59.55
.3415	24503415	50.35	.3715	24503715	50.35	.4015	24504015	52.35	.4315	24504315	55.75	.4615	24504615	59.55
.3420	24503420	50.35	.3720	24503720	50.35	.4020	24504020	52.35	.4320	24504320	55.75	.4620	24504620	59.55
.3425	2450087	50.35	.3725	24503725	50.35	.4025	24504025	52.35	.4325	24504325	55.75	.4625	24504625	59.55
.3430	24503430	50.35	.3730	24503730	50.35	.4030	24504030	52.35	.4330	24504330	55.75	.4630	24504630	59.55
.3435	24503435	50.35	.3735	24503735	50.35	.4035	24504035	52.35	.4335	24504335	55.75	.4635	24504635	59.55
.3440	24503440	50.35	.3740	2450095	50.35	.4040	24504040	52.35	.4340	24504340	55.75	.4640	24504640	59.55
.3445	24503445	50.35	.3745	24503745	50.35	.4045	24504045	52.35	.4345	24504345	55.75	.4645	24504645	59.55
.3450	24503450	50.35	.3750	245012	40.25	.4050	24504050	52.35	.4350	24504350	55.75	.4650	24504650	59.55
.3455	24503455	50.35	.3755	24503755	50.35	.4055	2450103	52.35	.4355	24504355	55.75	.4655	24504655	59.55
.3460	24503460	50.35	.3760	24503760	50.35	.4060	24504060	52.35	.4360	24504360	55.75	.4660	24504660	59.55
.3465	2450088	50.35	.3765	24503765	50.35	.4065	24504065	52.35	.4365	24504365	55.75	.4665	24504665	59.55
.3470	24503470	50.35	.3770	24503770	50.35	.4070	24504070	52.35	.4370	2450111	55.75	.4670	24504670	59.55
.3475	24503475	50.35	.3775	24503775	50.35	.4075	24504075	52.35	.4375	245014	45.70	.4675	24504675	59.55
.3480	24503480	50.35	.3780	2450096	50.35	.4080	24504080	52.35	.4380	24504380	55.75	.4680	24504680	59.55
.3485	24503485	50.35	.3785	24503785	52.35	.4085	24504085	52.35	.4385	24504385	55.75	.4685	2450119	59.55
.3490	24503490	50.35	.3790	24503790	52.35	.4090	24504090	52.35	.4390	24504390	55.75	.4690	24504690	59.55
.3495	24503495	50.35	.3795	24503795	52.35	.4095	24504095	55.75	.4395	24504395	55.75	.4695	24504695	59.55
.3500	24503500	50.35	.3800	24503800	52.35	.4100	24504100	55.75	.4400	24504400	55.75	.4700	24504700	59.55
.3505	24503505	50.35	.3805	24503805	52.35	.4105	24504105	55.75	.4405	24504405	55.75	.4705	24504705	59.55
.3510	24503510	50.35	.3810	24503810	52.35	.4110	24504110	55.75	.4410	24504410	55.75	.4710	24504710	59.55
.3515	24503515	50.35	.3815	24503815	52.35	.4115	24504115	55.75	.4415	24504415	59.55	.4715	24504715	59.55
.3520	24503520	50.35	.3820	24503820	52.35	.4120	24504120	55.75	.4420	24504420	59.55	.4720	24504720	59.55
.3525	24503525	50.35	.3825	24503825	52.35	.4125	24504125	55.75	.4425	24504425	59.55	.4725	24504725	63.80
.3530	24503530	50.35	.3830	24503830	52.35	.4130	24504130	55.75	.4430	24504430	59.55	.4730	24504730	63.80
.3535	24503535	50.35	.3835	24503835	52.35	.4135	24504135	55.75	.4435	24504435	59.55	.4735	24504735	63.80
.3540	24503540	50.35	.3840	24503840	52.35	.4140	24504140	55.75	.4440	24504440	59.55	.4740	24504740	63.80
.3545	24503545	50.35	.3845	24503845	52.35	.4145	24504145	55.75	.4445	24504445	59.55	.4745	24504745	63.80
.3550	24503550	50.35	.3850	24503850	52.35	.4150	24504150	55.75	.4450	24504450	59.55	.4750	24504750	63.80
.3555	24503555	50.35	.3855	24503855	52.35	.4155	24504155	55.75	.4455	24504455	59.55	.4755	24504755	63.80
.3560	24503560	50.35	.3860	24503860	52.35	.4160	24504160	55.75	.4460	24504460	59.55	.4760	24504760	63.80
.3565	24503565	50.35	.3865	24503865	52.35	.4165	24504165	55.75	.4465	24504465	59.55	.4765	24504765	63.80



# CHUCKING REAMERS

CARBIDE TIPPED - STOCKED - FLUTE LENGTH CARBIDE - TYPE 2450

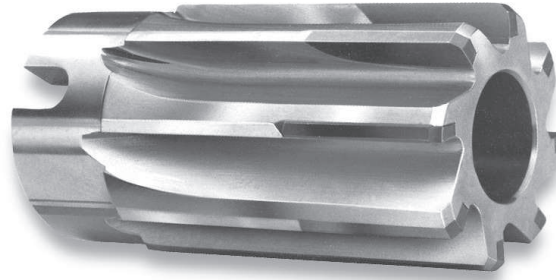
NOTE: Dimension details and modifications listed on page 50.

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
.4770	24504770	\$63.80	.5070	24505070	\$65.20	.5370	24505370	\$65.20	.5670	24505670	\$67.35	.5970	24505970	\$67.35
.4775	24504775	63.80	.5075	24505075	65.20	.5375	24505375	65.20	.5675	24505675	67.35	.5975	24505975	67.35
.4780	24504780	63.80	.5080	24505080	65.20	.5380	24505380	65.20	.5680	24505680	67.35	.5980	24505980	67.35
.4785	24504785	63.80	.5085	24505085	65.20	.5385	24505385	65.20	.5685	24505685	67.35	.5985	24505985	67.35
.4790	24504790	63.80	.5090	24505090	65.20	.5390	24505390	65.20	.5690	24505690	67.35	.5990	24505990	67.35
.4795	24504795	63.80	.5095	24505095	65.20	.5395	24505395	65.20	.5695	24505695	67.35	.5995	24505995	67.35
.4800	24504800	63.80	.5100	24505100	65.20	.5400	24505400	65.20	.5700	24505700	67.35	.6000	24506000	67.35
.4805	24504805	63.80	.5105	24505105	65.20	.5405	24505405	65.20	.5705	24505705	67.35	.6005	24506005	67.35
.4810	24504810	63.80	.5110	24505110	65.20	.5410	24505410	65.20	.5710	24505710	67.35	.6010	24506010	67.35
.4815	24504815	63.80	.5115	24505115	65.20	.5415	24505415	65.20	.5715	24505715	67.35	.6015	24506015	67.35
.4820	24504820	63.80	.5120	24505120	65.20	.5420	24505420	65.20	.5720	24505720	67.35	.6020	24506020	67.35
.4825	24504825	63.80	.5125	24505125	65.20	.5425	24505425	65.20	.5725	24505725	67.35	.6025	24506025	67.35
.4830	24504830	63.80	.5130	24505130	65.20	.5430	24505430	65.20	.5730	24505730	67.35	.6030	24506030	67.35
.4835	24504835	63.80	.5135	24505135	65.20	.5435	24505435	65.20	.5735	24505735	67.35	.6035	24506035	67.35
.4840	24504840	63.80	.5140	24505140	65.20	.5440	24505440	65.20	.5740	24505740	67.35	.6040	24506040	67.35
.4845	24504845	63.80	.5145	24505145	65.20	.5445	24505445	65.20	.5745	24505745	67.35	.6045	24506045	67.35
.4850	24504850	63.80	.5150	24505150	65.20	.5450	24505450	65.20	.5750	24505750	67.35	.6050	24506050	67.35
.4855	24504855	63.80	.5155	24505155	65.20	.5455	24505455	65.20	.5755	24505755	67.35	.6055	24506055	67.35
.4860	24504860	63.80	.5160	24505160	65.20	.5460	24505460	65.20	.5760	24505760	67.35	.6060	24506060	67.35
.4865	24504865	63.80	.5165	24505165	65.20	.5465	24505465	65.20	.5765	24505765	67.35	.6065	24506065	67.35
.4870	24504870	63.80	.5170	24505170	65.20	.5470	24505470	65.20	.5770	24505770	67.35	.6070	24506070	67.35
.4875	24504875	63.80	.5175	24505175	65.20	.5475	24505475	65.20	.5775	24505775	67.35	.6075	24506075	67.35
.4880	24504880	63.80	.5180	24505180	65.20	.5480	24505480	65.20	.5780	24505780	67.35	.6080	24506080	67.35
.4885	24504885	63.80	.5185	24505185	65.20	.5485	24505485	65.20	.5785	24505785	67.35	.6085	24506085	67.35
.4890	24504890	63.80	.5190	24505190	65.20	.5490	24505490	65.20	.5790	24505790	67.35	.6090	24506090	67.35
.4895	24504895	63.80	.5195	24505195	65.20	.5495	24505495	65.20	.5795	24505795	67.35	.6095	24506095	67.35
.4900	24504900	63.80	.5200	24505200	65.20	.5500	24505500	65.20	.5800	24505800	67.35	.6100	24506100	67.35
.4905	24504905	63.80	.5205	24505205	65.20	.5505	24505505	65.20	.5805	24505805	67.35	.6105	24506105	67.35
.4910	24504910	63.80	.5210	24505210	65.20	.5510	24505510	65.20	.5810	24505810	67.35	.6110	24506110	67.35
.4915	24504915	63.80	.5215	24505215	65.20	.5515	24505515	65.20	.5815	24505815	67.35	.6115	24506115	67.35
.4920	24504920	63.80	.5220	24505220	65.20	.5520	24505520	65.20	.5820	24505820	67.35	.6120	24506120	67.35
.4925	24504925	63.80	.5225	24505225	65.20	.5525	24505525	65.20	.5825	24505825	67.35	.6125	24506125	67.35
.4930	24504930	63.80	.5230	24505230	65.20	.5530	24505530	65.20	.5830	24505830	67.35	.6130	24506130	67.35
.4935	24504935	63.80	.5235	24505235	65.20	.5535	24505535	65.20	.5835	24505835	67.35	.6135	24506135	67.35
.4940	24504940	63.80	.5240	24505240	65.20	.5540	24505540	65.20	.5840	24505840	67.35	.6140	24506140	67.35
.4945	24504945	63.80	.5245	24505245	65.20	.5545	24505545	65.20	.5845	24505845	67.35	.6145	24506145	67.35
.4950	24504950	63.80	.5250	24505250	65.20	.5550	24505550	65.20	.5850	24505850	67.35	.6150	24506150	67.35
.4955	24504955	63.80	.5255	24505255	65.20	.5555	24505555	65.20	.5855	24505855	67.35	.6155	24506155	67.35
.4960	24504960	63.80	.5260	24505260	65.20	.5560	24505560	65.20	.5860	24505860	67.35	.6160	24506160	67.35
.4965	24504965	63.80	.5265	24505265	65.20	.5565	24505565	65.20	.5865	24505865	67.35	.6165	24506165	67.35
.4970	24504970	63.80	.5270	24505270	65.20	.5570	24505570	65.20	.5870	24505870	67.35	.6170	24506170	67.35
.4975	24504975	63.80	.5275	24505275	65.20	.5575	24505575	65.20	.5875	24505875	67.35	.6175	24506175	67.35
.4980	24504980	63.80	.5280	24505280	65.20	.5580	24505580	65.20	.5880	24505880	67.35	.6180	24506180	67.35
.4985	24504985	63.80	.5285	24505285	65.20	.5585	24505585	65.20	.5885	24505885	67.35	.6185	24506185	67.35
.4990	24504990	63.80	.5290	24505290	65.20	.5590	24505590	65.20	.5890	24505890	67.35	.6190	24506190	67.35
.4995	24504995	63.80	.5295	24505295	65.20	.5595	24505595	65.20	.5895	24505895	67.35	.6195	24506195	67.35
.5000	245016	52.85	.5300	24505300	65.20	.5600	24505600	65.20	.5900	24505900	67.35	.6200	24506200	67.35
.5005	24505005	63.80	.5305	24505305	65.20	.5605	24505605	65.20	.5905	24505905	67.35	.6205	24506205	67.35
.5010	24505010	63.80	.5310	24505310	65.20	.5610	24505610	65.20	.5910	24505910	67.35	.6210	24506210	67.35
.5015	24505015	63.80	.5315	2450135	65.20	.5615	24505615	65.20	.5915	24505915	67.35	.6215	24506215	67.35
.5020	24505020	63.80	.5320	24505320	65.20	.5620	24505620	65.20	.5920	24505920	67.35	.6220	2450158	67.35
.5025	24505025	63.80	.5325	24505325	65.20	.5625	245018	54.40	.5925	24505925	67.35	.6225	24506225	67.35
.5030	24505030	63.80	.5330	24505330	65.20	.5630	2450143	65.20	.5930	24505930	67.35	.6230	24506230	67.35
.5035	24505035	65.20	.5335	24505335	65.20	.5635	24505635	65.20	.5935	24505935	67.35	.6235	24506235	67.35
.5040	24505040	65.20	.5340	24505340	65.20	.5640	24505640	65.20	.5940	24505940	67.35	.6240	24506240	67.35
.5045	24505045	65.20	.5345	24505345	65.20	.5645	24505645	65.20	.5945	2450151	67.35	.6245	24506245	67.35
.5050	24505050	65.20	.5350	24505350	65.20	.5650	24505650	65.20	.5950	24505950	67.35	.6250	245020	56.50
.5055	24505055	65.20	.5355	24505355	65.20	.5655	24505655	65.20	.5955	24505955	67.35	.6255	24506255	67.35
.5060	24505060	65.20	.5360	24505360	65.20	.5660	24505660	65.20	.5960	24505960	67.35	.6260	2450159	67.35
.5065	24505065	65.20	.5365	24505365	65.20	.5665	24505665	67.35	.5965	24505965	67.35	.6265	24506265	67.35



# SHELL REAMERS

## CARBIDE TIPPED - STRAIGHT FLUTES



### TYPE 2431 - FINISHED FRACTIONAL SIZES

Straight polished flutes.  
 Carbide tips brazed to hardened alloy steel bodies.  
 Arbor hole tapered 1/8" per foot: Drive slots.  
 Cutting diameter tolerance: thru 1" diameter: +.0001", +.0005".  
 over 1" diameter: +.0002", +.0006".

Shell reamers are used with an arbor which is tapered to fit the hole in the reamer. Drive slots in the reamer engage lugs on the arbor to supplement the rotational drive from the tapered arbor. The space between the reamer's drive end and the arbor collar permits easy removal of the shell reamer by prying.

### OPTIONS:

Decimal sizes priced below.  
 Cut diam. reduced for step or pilot.  
 End chamfer other than 45°.  
 End cutting or corner radius.  
 Increased or decreased back taper.

TOOL DIAMETER		HOLE DIAM. LARGE END	FITS ARBOR NO.	LENGTH		NO. OF FLUTES	TYPE 2431 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*
3/4	.7500	3/8	4	1 3/4	2 1/4	6	243124	\$151.15	0.7221 - 0.7530	\$213.75	\$182.45	\$171.90	\$166.90	\$161.55	\$157.35
25/32	.7812	3/8	4	1 3/4	2 1/4	6	243125	154.10	0.7531 - 0.7840	216.70	185.30	174.90	169.85	164.50	160.30
13/16	.8125	1/2	5	1 15/16	2 1/2	6	243126	154.10	0.7841 - 0.8160	216.70	185.30	174.90	169.85	164.50	160.30
7/8	.8750	1/2	5	1 15/16	2 1/2	6	243128	172.20	0.8161 - 0.8780	237.20	204.60	193.70	188.60	182.95	178.55
15/16	.9375	1/2	5	1 15/16	2 1/2	8	243130	172.20	0.8781 - 0.9410	237.20	204.60	193.70	188.60	182.95	178.55
1	1.0000	1/2	5	1 15/16	2 1/2	8	243132	175.35	0.9411 - 1.0030	240.30	207.75	196.90	191.70	186.05	181.70
1 1/16	1.0625	5/8	6	2 1/8	2 3/4	8	243134	181.45	1.0031 - 1.0660	246.40	213.85	202.90	197.80	192.20	187.80
1 1/8	1.1250	5/8	6	2 1/8	2 3/4	8	243136	184.50	1.0661 - 1.1280	249.45	216.95	206.00	200.85	195.25	190.90
1 3/16	1.1875	5/8	6	2 1/8	2 3/4	8	243138	187.65	1.1281 - 1.1905	252.50	220.05	209.10	203.95	198.35	194.00
1 1/4	1.2500	5/8	6	2 1/8	2 3/4	8	243140	199.90	1.1906 - 1.2530	264.85	232.30	221.40	216.20	210.70	206.25
1 5/16	1.3125	3/4	7	2 1/4	3	8	243142	202.90	1.2531 - 1.3155	267.90	235.40	224.50	219.30	213.75	209.35
1 3/8	1.3750	3/4	7	2 1/4	3	8	243144	209.05	1.3156 - 1.3780	274.05	241.45	230.60	225.40	219.80	215.45
1 7/16	1.4375	3/4	7	2 1/4	3	8	243146	215.25	1.3781 - 1.4405	280.20	247.65	236.80	231.60	225.95	221.65
1 1/2	1.5000	3/4	7	2 1/4	3	8	243148	224.50	1.4406 - 1.5030	289.45	256.90	246.00	240.80	235.20	230.85
1 9/16	1.5625	3/4	7	2 1/4	3	10	243150	259.90	1.5031 - 1.5660	327.65	293.75	282.35	276.90	271.05	266.50
1 5/8	1.6250	3/4	7	2 1/4	3	10	243152	272.70	1.5661 - 1.6280	340.50	306.55	295.15	289.75	283.90	279.35
1 11/16	1.6875	1	8	2 3/4	3 1/2	10	243154	295.20	1.6281 - 1.6910	363.05	329.05	317.70	312.25	306.45	301.90
1 3/4	1.7500	1	8	2 3/4	3 1/2	10	243156	295.20	1.6911 - 1.7530	363.05	329.05	317.70	312.25	306.45	301.90
1 13/16	1.8125	1	8	2 3/4	3 1/2	10	243158	317.60	1.7531 - 1.8160	385.35	351.45	340.05	334.65	328.80	324.25
1 7/8	1.8750	1	8	2 3/4	3 1/2	10	243160	317.60	1.8161 - 1.8780	385.35	351.45	340.05	334.65	328.80	324.25
1 15/16	1.9375	1	8	2 3/4	3 1/2	10	243162	340.15	1.8781 - 1.9410	407.85	373.90	362.55	357.20	351.35	346.80
2	2.0000	1	8	2 3/4	3 1/2	10	243164	340.15	1.9411 - 2.0030	407.85	373.90	362.55	357.20	351.35	346.80
2 1/16	2.0625	1 1/4	9	2 7/8	3 3/4	12	243166	365.75	2.0031 - 2.0660	433.55	399.60	388.20	382.85	377.00	372.45
2 1/8	2.1250	1 1/4	9	2 7/8	3 3/4	12	243168	365.75	2.0661 - 2.1280	433.55	399.60	388.20	382.85	377.00	372.45
2 3/16	2.1875	1 1/4	9	2 7/8	3 3/4	12	243170	397.85	2.1281 - 2.1905	465.60	431.65	420.30	414.85	409.10	404.45
2 1/4	2.2500	1 1/4	9	2 7/8	3 3/4	12	243172	397.85	2.1906 - 2.2530	465.60	431.65	420.30	414.85	409.10	404.45
2 5/16	2.3125	1 1/4	9	2 7/8	3 3/4	12	243174	420.30	2.2531 - 2.3155	488.10	454.10	442.80	437.30	431.50	426.95
2 3/8	2.3750	1 1/4	9	2 7/8	3 3/4	12	243176	420.30	2.3156 - 2.3780	488.10	454.10	442.80	437.30	431.50	426.95
2 7/16	2.4375	1 1/4	9	2 7/8	3 3/4	12	243178	442.85	2.3781 - 2.4405	510.60	476.65	465.30	459.85	454.00	449.45
2 1/2	2.5000	1 1/4	9	2 7/8	3 3/4	12	243180	442.85	2.4406 - 2.5030	510.60	476.65	465.30	459.85	454.00	449.45
2 9/16	2.5625	1 1/2	10	3 1/8	4	14	243182	486.10	2.5031 - 2.5660	553.80	519.85	508.55	503.10	497.30	492.70
2 5/8	2.6250	1 1/2	10	3 1/8	4	14	243184	504.10	2.5661 - 2.6280	571.85	537.85	526.60	521.10	515.30	510.70
2 11/16	2.6875	1 1/2	10	3 1/8	4	14	243186	523.70	2.6281 - 2.6910	591.45	557.50	546.15	540.75	534.90	530.35
2 3/4	2.7500	1 1/2	10	3 1/8	4	14	243188	541.85	2.6911 - 2.7530	609.65	575.65	564.30	558.90	553.10	548.50
2 13/16	2.8125	1 1/2	10	3 1/8	4	14	243190	560.90	2.7531 - 2.8160	628.70	594.70	583.40	577.95	572.15	567.60
2 7/8	2.8750	1 1/2	10	3 1/8	4	14	243192	583.40	2.8161 - 2.8780	651.10	617.20	605.80	600.45	594.60	590.05
2 15/16	2.9375	1 1/2	10	3 1/8	4	14	243194	605.90	2.8781 - 2.9410	673.70	639.70	628.30	622.95	617.15	612.55
3	3.0000	1 1/2	10	3 1/8	4	14	243196	628.40	2.9411 - 3.0030	696.15	662.25	650.85	645.50	639.65	635.10

\*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	\$43.75	0.2381 - 0.2530	\$74.25	\$59.00	\$53.85	\$51.40	\$48.80	\$46.70
9/32	.2812	1	4	1 1/2	6	245209	44.35	0.2531 - 0.2840	74.85	59.60	54.50	52.05	49.40	47.35
5/16	.3125	1	4	1 1/2	6	245210	44.35	0.2841 - 0.3150	74.85	59.60	54.50	52.05	49.40	47.35
11/32	.3438	1	4	1 1/2	6	245211	45.35	0.3151 - 0.3470	75.85	60.60	55.50	53.00	50.40	48.35
3/8	.3750	1	4	1 3/4	7	245212	45.85	0.3471 - 0.3780	76.35	61.10	55.95	53.55	50.90	48.90
13/32	.4062	1	4	1 3/4	7	245213	48.30	0.3781 - 0.4090	78.80	63.45	58.40	55.95	53.40	51.30
7/16	.4375	1	4	1 3/4	7	245214	51.45	0.4091 - 0.4410	81.95	66.70	61.60	59.15	56.55	54.50
15/32	.4688	1	4	1 3/4	7	245215	52.55	0.4411 - 0.4720	83.05	67.70	62.70	60.20	57.60	55.55
1/2	.5000	1	6	2	8	245216	56.65	0.4721 - 0.5030	89.25	72.90	67.45	64.85	62.05	59.85
17/32	.5312	1	6	2	8	245217	62.05	0.5031 - 0.5340	94.70	78.35	72.85	70.25	67.45	65.20
9/16	.5625	1	6	2	8	245218	62.05	0.5341 - 0.5660	94.70	78.35	72.85	70.25	67.45	65.20
19/32	.5938	1	6	2	8	245219	64.90	0.5661 - 0.5970	97.55	81.20	75.75	73.15	70.35	68.10
5/8	.6250	2	6	2	9	245220	64.90	0.5971 - 0.6280	97.55	81.20	75.75	73.15	70.35	68.10
21/32	.6562	2	6	2	9	245221	66.10	0.6281 - 0.6590	98.80	82.40	76.90	74.35	71.50	69.35
11/16	.6875	2	6	2	9	245222	66.10	0.6591 - 0.6910	98.80	82.40	76.90	74.35	71.50	69.35
23/32	.7188	2	6	2	9	245223	67.05	0.6911 - 0.7220	99.75	83.35	77.85	75.25	72.45	70.25
3/4	.7500	2	6	2	9 1/2	245224	69.20	0.7221 - 0.7530	101.85	85.45	80.00	77.40	74.55	72.40
25/32	.7812	2	6	2	9 1/2	245225	69.70	0.7531 - 0.7840	102.40	86.05	80.55	77.90	75.15	72.90
13/16	.8125	2	6	2	9 1/2	245226	71.35	0.7841 - 0.8160	103.95	87.55	82.15	79.55	76.75	74.50
27/32	.8438	2	6	2	9 1/2	245227	74.45	0.8161 - 0.8470	107.10	90.75	85.25	82.70	79.85	77.70
7/8	.8750	2	6	2 1/4	10	245228	77.30	0.8471 - 0.8780	111.20	94.20	88.45	85.85	82.85	80.65
29/32	.9062	2	6	2 1/4	10	245229	87.05	0.8781 - 0.9090	120.90	103.95	98.30	95.55	92.60	90.40
15/16	.9375	3	8	2 1/4	10	245230	90.50	0.9091 - 0.9410	124.35	107.40	101.75	99.00	96.10	93.85
31/32	.9688	3	8	2 1/4	10	245231	94.25	0.9411 - 0.9720	128.15	111.20	105.45	102.80	99.85	97.60
1	1.0000	3	8	2 1/4	10 1/2	245232	94.25	0.9721 - 1.0030	128.15	111.20	105.45	102.80	99.85	97.60
1 1/16	1.0625	3	8	2 1/4	10 1/2	245234	129.20	1.0031 - 1.0660	161.65	145.35	139.90	137.35	134.55	132.35
1 1/8	1.1250	3	8	2 1/4	11	245236	139.10	1.0661 - 1.1280	171.60	155.35	149.95	147.30	144.50	142.30
1 3/16	1.1875	3	8	2 1/4	11	245238	149.50	1.1281 - 1.1905	181.95	165.70	160.25	157.65	154.90	152.65
1 1/4	1.2500	4	8	2 1/2	11 1/2	245240	158.85	1.1906 - 1.2530	191.30	175.05	169.65	167.00	164.20	162.05
1 3/8	1.3125	4	8	2 1/2	11 1/2	245242	179.40	1.2531 - 1.3155	211.85	195.60	190.10	187.60	184.75	182.55
1 3/8	1.3750	4	8	2 1/2	12	245244	204.95	1.3156 - 1.3780	237.40	221.20	215.65	213.10	210.30	208.10
1 7/16	1.4375	4	8	2 1/2	12	245246	213.90	1.3781 - 1.4405	246.40	230.15	224.65	222.15	219.30	217.10
1 1/2	1.5000	4	8	2 1/2	12 1/2	245248	222.85	1.4406 - 1.5030	255.35	239.10	233.70	231.05	228.25	226.05

\*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	\$53.85	1	4	1 1/2	6	6.000-6.426	\$76.80	\$61.60	\$56.50	\$53.95	\$51.40	\$49.30	\$46.35
6.5	.2559	2452065	54.50	1	4	1 1/2	6	6.427-7.214	77.40	62.20	57.10	54.60	52.05	49.95	47.00
7.0	.2756	2452070	54.50	1	4	1 1/2	6	-	-	-	-	-	-	-	-
7.5	.2953	2452075	54.50	1	4	1 1/2	6	7.215-8.001	77.40	62.20	57.10	54.60	52.05	49.95	47.00
8.0	.3150	2452080	54.50	1	4	1 1/2	6	-	-	-	-	-	-	-	-
8.5	.3346	2452085	55.50	1	4	1 1/2	6	8.002-8.814	78.45	63.20	58.10	55.60	53.00	50.90	48.00
9.0	.3543	2452090	55.95	1	4	1 3/4	7	8.815-9.601	78.90	63.75	58.60	56.05	53.55	51.40	48.45
9.5	.3740	2452095	55.95	1	4	1 3/4	7	-	-	-	-	-	-	-	-
10.0	.3937	2452100	58.40	1	4	1 3/4	7	9.602-10.389	81.40	66.10	61.00	58.55	55.95	53.85	50.90
10.5	.4134	2452105	61.60	1	4	1 3/4	7	10.390-11.201	84.50	69.30	64.20	61.75	59.15	57.00	54.10
11.0	.4331	2452110	61.60	1	4	1 3/4	7	-	-	-	-	-	-	-	-
11.5	.4528	2452115	62.70	1	4	1 3/4	7	11.202-11.989	85.60	70.35	65.25	62.80	60.20	58.10	55.10
12.0	.4724	2452120	67.45	1	6	2	8	11.990-12.776	92.05	75.75	70.25	67.55	64.85	62.55	59.45
12.5	.4921	2452125	67.45	1	6	2	8	-	-	-	-	-	-	-	-
13.0	.5118	2452130	72.85	1	6	2	8	12.777-13.564	97.45	81.10	75.70	73.05	70.25	68.00	64.85
13.5	.5315	2452135	72.85	1	6	2	8	-	-	-	-	-	-	-	-
14.0	.5512	2452140	72.85	1	6	2	8	13.565-14.376	97.45	81.10	75.70	73.05	70.25	68.00	64.85
14.5	.5709	2452145	75.75	1	6	2	8	14.377-15.164	100.30	84.05	78.55	75.85	73.15	70.80	67.70
15.0	.5906	2452150	75.75	1	6	2	8	-	-	-	-	-	-	-	-
15.5	.6102	2452155	75.75	2	6	2	9	15.165-15.951	100.30	84.05	78.55	75.85	73.15	70.80	67.70
16.0	.6299	2452160	76.90	2	6	2	9	15.952-16.739	101.50	85.20	79.75	77.05	74.35	72.10	68.90
16.5	.6496	2452165	76.90	2	6	2	9	-	-	-	-	-	-	-	-
17.0	.6693	2452170	76.90	2	6	2	9	16.740-17.551	101.50	85.20	79.75	77.05	74.35	72.10	68.90
17.5	.6890	2452175	76.90	2	6	2	9	-	-	-	-	-	-	-	-
18.0	.7087	2452180	77.85	2	6	2	9	17.552-18.339	102.45	86.15	80.70	78.00	75.25	73.05	69.80
18.5	.7283	2452185	80.00	2	6	2	9 1/2	18.340-19.126	104.60	88.25	82.80	80.10	77.40	75.15	72.05
19.0	.7480	2452190	80.00	2	6	2	9 1/2	-	-	-	-	-	-	-	-
19.5	.7677	2452195	80.55	2	6	2	9 1/2	19.127-19.914	105.10	88.85	83.35	80.70	77.90	75.70	72.50
20.0	.7874	2452200	82.15	2	6	2	9 1/2	19.915-20.726	106.75	90.40	84.95	82.25	79.55	77.25	74.15
20.5	.8071	2452205	82.15	2	6	2	9 1/2	-	-	-	-	-	-	-	-
21.0	.8268	2452210	85.25	2	6	2	9 1/2	20.727-21.514	109.85	93.55	88.10	85.40	82.70	80.45	77.25
21.5	.8465	2452215	85.25	2	6	2	9 1/2	-	-	-	-	-	-	-	-
22.0	.8661	2452220	85.25	2	6	2 1/4	10	21.515-22.301	109.85	93.55	88.10	85.40	82.70	80.45	77.25
22.5	.8858	2452225	98.30	2	6	2 1/4	10	22.302-23.089	123.75	106.85	101.15	98.40	95.55	93.20	90.00
23.0	.9055	2452230	98.30	2	6	2 1/4	10	-	-	-	-	-	-	-	-
23.5	.9252	2452235	101.75	3	8	2 1/4	10	23.090-23.901	127.20	110.30	104.65	101.85	99.00	96.65	93.45
24.0	.9449	2452240	105.45	3	8	2 1/4	10	23.902-24.689	131.00	114.05	108.40	105.65	102.80	100.45	97.10
24.5	.9646	2452245	105.45	3	8	2 1/4	10	-	-	-	-	-	-	-	-
25.0	.9843	2452250	105.45	3	8	2 1/4	10 1/2	24.690-25.476	131.00	114.05	108.40	105.65	102.80	100.45	97.10
25.5	1.0039	2452255	139.90	3	8	2 1/4	10 1/2	25.477-27.076	164.40	148.20	142.70	140.05	137.35	135.10	132.00
26.0	1.0236	2452260	139.90	3	8	2 1/4	10 1/2	-	-	-	-	-	-	-	-
27.0	1.0630	2452270	139.90	3	8	2 1/4	10 1/2	-	-	-	-	-	-	-	-
28.0	1.1024	2452280	149.95	3	8	2 1/4	11	27.077-28.651	174.35	158.15	152.65	150.05	147.30	145.05	141.95
29.0	1.1417	2452290	160.25	3	8	2 1/4	11	28.652-30.239	184.70	168.50	163.00	160.40	157.65	155.40	152.30
30.0	1.1811	2452300	160.25	3	8	2 1/4	11	-	-	-	-	-	-	-	-
31.0	1.2205	2452310	169.65	4	8	2 1/2	11 1/2	30.240-31.826	194.05	177.85	172.40	169.75	167.00	164.75	161.65
32.0	1.2598	2452320	190.10	4	8	2 1/2	11 1/2	31.827-33.414	214.60	198.35	192.95	190.25	187.60	185.25	182.10
33.0	1.2992	2452330	190.10	4	8	2 1/2	11 1/2	-	-	-	-	-	-	-	-
34.0	1.3386	2452340	215.65	4	8	2 1/2	12	33.415-35.001	240.15	223.95	218.50	215.90	213.10	210.85	207.75
35.0	1.3780	2452350	215.65	4	8	2 1/2	12	-	-	-	-	-	-	-	-
36.0	1.4173	2452360	224.65	4	8	2 1/2	12	35.002-36.589	249.10	232.90	227.50	224.80	222.15	219.80	216.65
37.0	1.4567	2452370	233.70	4	8	2 1/2	12 1/2	36.590-38.176	258.10	241.85	236.40	233.80	231.05	228.80	225.70
38.0	1.4961	2452380	233.70	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	\$45.60	0.1770 - 0.2040	\$76.10	\$60.85	\$55.70	\$53.30	\$50.70	\$48.60
13/64	.2031	.1805	4	1 1/8	4 1/2	24802031	45.60	-	-	-	-	-	-	-
7/32	.2188	.2075	4	1 1/4	5	248007	45.60	0.2041 - 0.2210	76.10	60.85	55.70	53.30	50.70	48.60
15/64	.2344	.2265	4	1 1/2	6	24802344	45.60	0.2211 - 0.2380	76.10	60.85	55.70	53.30	50.70	48.60
1/4	.2500	.2405	4	1 1/2	6	248008	45.60	0.2381 - 0.2530	76.10	60.85	55.70	53.30	50.70	48.60
17/64	.2656	.2485	4	1 1/2	6	24802656	46.60	-	-	-	-	-	-	-
9/32	.2812	.2485	4	1 1/2	6	248009	46.60	0.2531 - 0.2840	77.05	61.85	56.70	54.35	51.65	49.65
19/64	.2969	.2792	4	1 1/2	6	24802969	46.60	-	-	-	-	-	-	-
5/16	.3125	.2792	4	1 1/2	6	248010	46.60	0.2841 - 0.3150	77.05	61.85	56.70	54.35	51.65	49.65
21/64	.3281	.2792	4	1 1/2	6	24803281	48.30	-	-	-	-	-	-	-
11/32	.3438	.2792	4	1 1/2	6	248011	48.30	0.3151 - 0.3470	78.80	63.45	58.40	55.95	53.40	51.30
23/64	.3594	.3105	4	1 3/4	7	24803594	48.30	-	-	-	-	-	-	-
3/8	.3750	.3105	4	1 3/4	7	248012	48.30	0.3471 - 0.3780	78.80	63.45	58.40	55.95	53.40	51.30
25/64	.3906	.3105	4	1 3/4	7	24803906	50.70	-	-	-	-	-	-	-
13/32	.4062	.3105	4	1 3/4	7	248013	50.70	0.3781 - 0.4090	81.10	65.90	60.80	58.35	55.70	53.65
27/64	.4219	.3730	6	1 3/4	7	24804219	58.70	-	-	-	-	-	-	-
7/16	.4375	.3730	6	1 3/4	7	248014	58.70	0.4091 - 0.4410	89.20	73.90	68.80	66.40	63.80	61.75
29/64	.4531	.3730	6	1 3/4	7	24804531	59.25	-	-	-	-	-	-	-
15/32	.4688	.3730	6	1 3/4	7	248015	59.25	0.4411 - 0.4720	89.80	74.45	69.40	66.95	64.30	62.25
31/64	.4844	.4355	6	2	8	24804844	63.45	-	-	-	-	-	-	-
1/2	.5000	.4355	6	2	8	248016	63.45	0.4721 - 0.5030	96.20	79.80	74.35	71.70	68.90	66.75
33/64	.5156	.4355	6	2	8	24805156	65.30	-	-	-	-	-	-	-
17/32	.5312	.4355	6	2	8	248017	65.30	0.5031 - 0.5340	97.95	81.60	76.10	73.50	70.70	68.50
35/64	.5469	.4355	6	2	8	24805469	65.30	-	-	-	-	-	-	-
9/16	.5625	.4355	6	2	8	248018	65.30	0.5341 - 0.5660	97.95	81.60	76.10	73.50	70.70	68.50
37/64	.5781	.4355	6	2	8	24805781	67.80	-	-	-	-	-	-	-
19/32	.5938	.4355	6	2	8	248019	67.80	0.5661 - 0.5970	100.45	84.10	78.60	76.00	73.20	71.05
39/64	.6094	.5615	6	2 1/4	9	24806094	67.80	-	-	-	-	-	-	-

\*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	\$67.80	0.5971 - 0.6280	\$100.45	\$84.10	\$78.60	\$76.00	\$73.20	\$71.05
41/64	.6406	.5615	6	2 1/4	9	24806406	69.05	-	-	-	-	-	-	-
21/32	.6562	.5615	6	2 1/4	9	248021	69.05	0.6281 - 0.6590	101.75	85.35	79.85	77.25	74.45	72.25
43/64	.6719	.5615	6	2 1/4	9	24806719	69.05	-	-	-	-	-	-	-
11/16	.6875	.5615	6	2 1/4	9	248022	69.05	0.6591 - 0.6910	101.75	85.35	79.85	77.25	74.45	72.25
45/64	.7031	.5615	6	2 1/4	9	24807031	72.20	-	-	-	-	-	-	-
23/32	.7188	.5615	6	2 1/4	9	248023	72.20	0.6911 - 0.7220	104.85	88.45	83.05	80.45	77.60	75.40
47/64	.7344	.6245	6	2 1/2	9 1/2	24807344	72.20	-	-	-	-	-	-	-
3/4	.7500	.6245	6	2 1/2	9 1/2	248024	72.20	0.7221 - 0.7530	104.85	88.45	83.05	80.45	77.60	75.40
49/64	.7656	.6245	6	2 1/2	9 1/2	24807656	74.70	-	-	-	-	-	-	-
25/32	.7812	.6245	6	2 1/2	9 1/2	248025	74.70	0.7531 - 0.7840	107.30	90.95	85.45	82.85	80.05	77.85
51/64	.7969	.6245	6	2 1/2	9 1/2	24807969	74.70	-	-	-	-	-	-	-
13/16	.8125	.6245	6	2 1/2	9 1/2	248026	74.70	0.7841 - 0.8160	107.30	90.95	85.45	82.85	80.05	77.85
53/64	.8281	.6245	6	2 1/2	9 1/2	24808281	77.70	-	-	-	-	-	-	-
27/32	.8438	.6245	6	2 1/2	9 1/2	248027	77.70	0.8161 - 0.8470	110.30	93.90	88.45	85.90	83.10	80.85
55/64	.8594	.7495	6	2 5/8	10	24808594	77.70	-	-	-	-	-	-	-
7/8	.8750	.7495	6	2 5/8	10	248028	80.65	0.8471 - 0.8780	114.45	97.50	91.80	89.10	86.20	83.90
57/64	.8906	.7495	6	2 5/8	10	24808906	93.85	-	-	-	-	-	-	-
29/32	.9062	.7495	6	2 5/8	10	248029	93.85	0.8781 - 0.9090	127.75	110.80	105.05	102.30	99.45	97.10
59/64	.9219	.7495	8	2 5/8	10	24809219	93.85	-	-	-	-	-	-	-
15/16	.9375	.7495	8	2 5/8	10	248030	93.85	0.9091 - 0.9410	127.75	110.80	105.05	102.30	99.45	97.10
61/64	.9531	.7495	8	2 5/8	10	24809531	98.35	-	-	-	-	-	-	-
31/32	.9688	.7495	8	2 5/8	10	248031	98.35	0.9411 - 0.9720	132.25	115.30	109.55	106.85	103.95	101.65
63/64	.9844	.8745	8	2 3/4	10 1/2	24809844	98.35	-	-	-	-	-	-	-
1	1.0000	.8745	8	2 3/4	10 1/2	248032	98.35	0.9721 - 1.0030	132.25	115.30	109.55	106.85	103.95	101.65
1 1/16	1.0625	.8745	8	2 3/4	10 1/2	248034	101.70	1.0031 - 1.0660	134.15	117.85	112.45	109.85	107.05	104.90
1 1/8	1.1250	.8745	8	2 7/8	11	248036	110.15	1.0661 - 1.1280	142.60	126.30	120.85	118.30	115.50	113.30
1 3/16	1.1875	.9995	8	2 7/8	11	248038	120.60	1.1281 - 1.1905	153.10	136.80	131.35	128.80	126.00	123.80
1 1/4	1.2500	.9995	8	3	11 1/2	248040	134.45	1.1906 - 1.2530	166.90	150.60	145.15	142.60	139.80	137.60
1 5/16	1.3125	.9995	8	3	11 1/2	248042	134.45	1.2531 - 1.3155	166.90	150.60	145.15	142.60	139.80	137.60
1 3/8	1.3750	.9995	8	3 1/4	12	248044	136.40	1.3156 - 1.3780	168.85	152.60	147.15	144.60	141.75	139.60
1 7/16	1.4375	.9995	8	3 1/4	12	248046	150.70	1.3781 - 1.4405	183.15	166.90	161.50	158.85	156.05	153.95
1 1/2	1.5000	1.2495	8	3 1/2	12 1/2	248048	180.95	1.4406 - 1.5030	213.45	197.15	191.75	189.10	186.40	184.15

\*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	\$57.00
.1885	.1805	4 1/2	4	248819	57.00
.2490	.2405	6	4	248824	57.00
.2510	.2405	6	4	248825	57.00
.3115	.2792	6	4	248831	58.05
.3135	.2792	6	4	248832	58.05
.3740	.3105	7	4	248837	59.70
.3760	.3105	7	4	248838	59.70
.4365	.3730	7	6	248843	70.15
.4385	.3730	7	6	248844	70.15
.4990	.4355	8	6	248849	75.75
.5010	.4355	8	6	248850	75.75
Cased set of above 12 reamers				248800	717.60

## 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	\$57.00
.1870	.1805	4 1/2	4	248618	57.00
.2480	.2405	6	4	248623	57.00
.2495	.2405	6	4	248624	57.00
.3105	.2792	6	4	248630	58.05
.3120	.2792	6	4	248631	58.05
.3730	.3105	7	4	248636	59.70
.3745	.3105	7	4	248637	59.70
.4355	.3730	7	6	248642	70.15
.4370	.3730	7	6	248643	70.15
.4980	.4355	8	6	248648	75.75
.4995	.4355	8	6	248649	75.75
Cased set of above 12 reamers				248600	717.60



# NAS 897 CHUCKING REAMERS

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



### TYPE 2458 - NAS 897 REAMER

National Aerospace Standards.  
Type "C" with flute long carbide tips.  
Carbide tips brazed to hardened alloy steel bodies.  
Precision ground cutting edges.  
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 2458 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*
3/16	.1875	.1805	4	1 1/8	4 1/2	245806	\$45.60	0.1770 - 0.2040	\$76.10	\$60.85	\$55.70	\$53.30	\$50.70	\$48.60
7/32	.2188	.2075	4	1 1/4	5	245807	45.60	0.2041 - 0.2210	76.10	60.85	55.70	53.30	50.70	48.60
15/64	.2344	.2265	4	1 1/2	6	24582344	45.60	0.2211 - 0.2380	76.10	60.85	55.70	53.30	50.70	48.60
1/4	.2500	.2405	4	1 1/2	6	245808	45.60	0.2381 - 0.2530	76.10	60.85	55.70	53.30	50.70	48.60
9/32	.2812	.2485	4	1 1/2	6	245809	46.60	0.2531 - 0.2840	77.05	61.85	56.70	54.35	51.65	49.65
5/16	.3125	.2792	4	1 1/2	6	245810	46.60	0.2841 - 0.3150	77.05	61.85	56.70	54.35	51.65	49.65
11/32	.3438	.2792	4	1 1/2	6	245811	48.30	0.3151 - 0.3470	78.80	63.45	58.40	55.95	53.40	51.30
3/8	.3750	.3105	4	1 3/4	7	245812	48.30	0.3471 - 0.3780	78.80	63.45	58.40	55.95	53.40	51.30
13/32	.4062	.3105	4	1 3/4	7	245813	50.70	0.3781 - 0.4090	81.10	65.90	60.80	58.35	55.70	53.65
7/16	.4375	.3730	6	1 3/4	7	245814	54.85	0.4091 - 0.4410	85.30	70.10	64.95	62.50	59.90	57.80
15/32	.4688	.3730	6	1 3/4	7	245815	59.25	0.4411 - 0.4720	89.80	74.45	69.40	66.95	64.30	62.25
1/2	.5000	.4355	6	2	8	245816	63.45	0.4721 - 0.5030	96.20	79.80	74.35	71.70	68.90	66.75
17/32	.5312	.4355	6	2	8	245817	65.30	0.5031 - 0.5340	97.95	81.60	76.10	73.50	70.70	68.50
9/16	.5625	.4355	6	2	8	245818	65.30	0.5341 - 0.5660	97.95	81.60	76.10	73.50	70.70	68.50
19/32	.5938	.4355	6	2	8	245819	67.80	0.5661 - 0.5970	100.45	84.10	78.60	76.00	73.20	71.05
5/8	.6250	.5615	6	2 1/4	9	245820	67.80	0.5971 - 0.6280	100.45	84.10	78.60	76.00	73.20	71.05
21/32	.6562	.5615	6	2 1/4	9	245821	69.05	0.6281 - 0.6590	101.75	85.35	79.85	77.25	74.45	72.25
11/16	.6875	.5615	6	2 1/4	9	245822	69.05	0.6591 - 0.6910	101.75	85.35	79.85	77.25	74.45	72.25
23/32	.7188	.5615	6	2 1/4	9	245823	72.20	0.6911 - 0.7220	104.85	88.45	83.05	80.45	77.60	75.40
3/4	.7500	.6245	6	2 1/2	9 1/2	245824	72.20	0.7221 - 0.7530	104.85	88.45	83.05	80.45	77.60	75.40
25/32	.7812	.6245	6	2 1/2	9 1/2	245825	74.70	0.7531 - 0.7840	107.30	90.95	85.45	82.85	80.05	77.85
13/16	.8125	.6245	6	2 1/2	9 1/2	245826	74.70	0.7841 - 0.8160	107.30	90.95	85.45	82.85	80.05	77.85
27/32	.8438	.6245	6	2 1/2	9 1/2	245827	77.70	0.8161 - 0.8470	110.30	93.90	88.45	85.90	83.10	80.85
7/8	.8750	.7495	6	2 5/8	10	245828	80.65	0.8471 - 0.8780	114.45	97.50	91.80	89.10	86.20	83.90
29/32	.9062	.7495	6	2 5/8	10	245829	93.85	0.8781 - 0.9090	127.75	110.80	105.05	102.30	99.45	97.10
15/16	.9375	.7495	8	2 5/8	10	245830	93.85	0.9091 - 0.9410	127.75	110.80	105.05	102.30	99.45	97.10
31/32	.9688	.7495	8	2 5/8	10	245831	98.35	0.9411 - 0.9720	132.25	115.30	109.55	106.85	103.95	101.65
1	1.0000	.8745	8	2 3/4	10 1/2	245832	98.35	0.9721 - 1.0030	132.25	115.30	109.55	106.85	103.95	101.65
1 1/16	1.0625	.8745	8	2 3/4	10 1/2	245834	101.70	1.0031 - 1.0660	134.15	117.85	112.45	109.85	107.05	104.90
1 1/8	1.1250	.8745	8	2 7/8	11	245836	110.15	1.0661 - 1.1280	142.60	126.30	120.85	118.30	115.50	113.30
1 3/16	1.1875	.9995	8	2 7/8	11	245838	115.15	1.1281 - 1.1905	147.65	131.35	125.90	123.40	120.55	118.35
1 1/4	1.2500	.9995	8	3	11 1/2	245840	124.40	1.1906 - 1.2530	156.90	140.70	135.20	132.65	129.85	127.65
1 5/16	1.3125	.9995	8	3	11 1/2	245842	127.90	1.2531 - 1.3155	160.40	144.15	138.65	136.10	133.30	131.10
1 3/8	1.3750	.9995	8	3 1/4	12	245844	136.40	1.3156 - 1.3780	168.85	152.60	147.15	144.60	141.75	139.60
1 7/16	1.4375	.9995	8	3 1/4	12	245846	147.75	1.3781 - 1.4405	180.20	163.90	158.45	155.85	153.10	150.90
1 1/2	1.5000	1.2495	8	3 1/2	12 1/2	245848	152.00	1.4406 - 1.5030	184.50	168.20	162.80	160.20	157.45	155.25
1 9/16	1.5625	1.2495	8	3 1/2	12 1/2	245850	238.75	1.5031 - 1.5660	271.30	255.05	249.60	247.00	244.20	242.00
1 5/8	1.6250	1.2495	8	3 1/2	13	245852	246.95	1.5661 - 1.6280	279.50	263.25	257.80	255.20	252.35	250.20
1 11/16	1.6875	1.2495	8	3 1/2	13	245854	271.15	1.6281 - 1.6910	303.70	287.45	282.00	279.40	276.55	274.40
1 3/4	1.7500	1.2495	10	3 1/2	13 1/2	245856	271.15	1.6911 - 1.7530	303.70	287.45	282.00	279.40	276.55	274.40
1 13/16	1.8125	1.4995	10	3 1/2	13 1/2	245858	277.45	1.7531 - 1.8160	310.00	293.75	288.30	285.70	282.85	280.70
1 7/8	1.8750	1.4995	10	3 1/2	14	245860	291.00	1.8161 - 1.8780	323.55	307.30	301.80	299.25	296.40	294.25
1 15/16	1.9375	1.4995	10	3 1/2	14	245862	308.50	1.8781 - 1.9410	341.05	324.75	319.30	316.75	313.90	311.75
2	2.0000	1.4995	12	3 1/2	14	245864	308.05	1.9411 - 2.0030	340.60	324.35	318.90	316.30	313.50	311.30
2 1/8	2.1250	1.4995	12	3 1/2	14 1/2	245868	572.35	2.0031 - 2.1280	604.90	588.65	583.15	580.60	577.75	575.60
2 1/4	2.2500	1.7495	12	3 1/2	14 1/2	245872	614.70	2.1281 - 2.2530	647.25	631.00	625.55	622.95	620.15	618.00
2 3/8	2.3750	1.7495	12	3 1/2	15	245876	636.10	2.2531 - 2.3780	668.65	652.35	646.90	644.35	641.50	639.35
2 1/2	2.5000	1.7495	12	3 1/2	15	245880	636.10	2.3781 - 2.5030	668.65	652.35	646.90	644.35	641.50	639.35

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



# 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	\$219.45	\$192.15	\$183.00	\$178.70	\$174.05	\$170.35
* 0.1281-0.1435	.1255	4	1 1/2	2 17/32 - 6 1/2	2458045EL	220.20	192.95	183.80	179.45	174.75	171.15
* 0.1436-0.1590	.1411	4	1 1/2	2 17/32 - 7	245805EL	223.80	196.55	187.40	183.05	178.40	174.70
* 0.1591-0.1750	.1567	4	1 1/2	2 29/32 - 8	2458055EL	228.05	200.75	191.70	187.30	182.65	178.95
* 0.1751-0.1910	.1724	4	1 1/2	4 17/32 - 9	245806EL	234.10	206.85	197.70	193.40	188.70	185.00
* 0.1911-0.2210	.1880	4	1 1/2	5 1/32 - 10	245807EL	242.00	214.80	205.65	201.30	196.60	192.95
* 0.2211-0.2530	.2193	4	1 1/2	6 1/32 - 12	245808EL	257.65	230.35	221.30	216.95	212.25	208.60
* 0.2531-0.2840	.2505	4	1 1/2	6 1/32 - 12	245809EL	271.05	243.80	234.70	230.30	225.65	221.95
0.2841-0.3150	.2792	4	1 1/2	6 1/32 - 12	245810EL	192.35	165.10	156.00	151.60	146.95	143.30
0.3151-0.3470	.2792	4	1 1/2	6 1/32 - 12	245811EL	192.35	165.10	156.00	151.60	146.95	143.30
0.3471-0.3780	.3105	4	1 3/4	7 1/32 - 14	245812EL	198.65	171.40	162.30	157.90	153.25	149.55
0.3781-0.4090	.3105	4	1 3/4	7 1/32 - 14	245813EL	198.65	171.40	162.30	157.90	153.25	149.55
0.4091-0.4410	.3730	6	1 3/4	7 1/32 - 14	245814EL	204.95	177.70	168.60	164.20	159.55	155.85
0.4411-0.4720	.3730	6	1 3/4	7 1/32 - 14	245815EL	204.95	177.70	168.60	164.20	159.55	155.85
0.4721-0.5030	.4355	6	2	8 1/32 - 16	245816EL	209.20	181.90	172.80	168.45	163.80	160.10
0.5031-0.5340	.4355	6	2	8 1/32 - 16	245817EL	209.20	181.90	172.80	168.45	163.80	160.10
0.5341-0.5660	.4355	6	2	8 1/32 - 16	245818EL	213.10	181.90	176.70	172.35	167.70	164.00
0.5661-0.5970	.4355	6	2	8 1/32 - 16	245819EL	213.10	185.80	176.70	172.35	167.70	164.00
0.5971-0.6280	.5615	6	2 1/4	9 1/32 - 18	245820EL	217.60	190.30	181.20	176.85	172.20	168.50
0.6281-0.6590	.5615	6	2 1/4	9 1/32 - 18	245821EL	217.60	190.30	181.20	176.85	172.20	168.50
0.6591-0.6910	.5615	6	2 1/4	9 1/32 - 18	245822EL	218.20	190.95	181.80	177.45	172.80	169.10
0.6911-0.7220	.5615	6	2 1/4	9 1/32 - 18	245823EL	218.20	190.95	181.80	177.45	172.80	169.10
0.7221-0.7530	.6245	6	2 1/2	9 17/32 - 18	245824EL	234.25	206.95	197.80	193.50	188.85	185.15
0.7531-0.7840	.6245	6	2 1/2	9 17/32 - 18	245825EL	284.25	258.25	249.55	245.45	241.00	237.50
0.7841-0.8160	.6245	6	2 1/2	9 17/32 - 18	245826EL	293.30	267.30	258.60	254.50	250.05	246.55
0.8161-0.8470	.6245	6	2 1/2	9 17/32 - 18	245827EL	296.70	270.70	262.00	257.90	253.45	249.95
0.8471-0.8780	.7495	6	2 5/8	10 1/32 - 18	245828EL	302.95	276.95	268.25	264.15	259.70	256.20
0.8781-0.9090	.7495	6	2 5/8	10 1/32 - 18	245829EL	315.70	289.70	281.00	276.90	272.45	268.95
0.9091-0.9410	.7495	8	2 5/8	10 1/32 - 18	245830EL	318.85	292.85	284.15	280.05	275.60	272.10
0.9411-0.9720	.7495	8	2 5/8	10 1/32 - 18	245831EL	321.90	295.90	287.20	283.10	278.65	275.15
0.9721-1.0030	.8745	8	2 3/4	10 17/32 - 18	245832EL	329.40	303.40	294.70	290.60	286.15	282.65

\*Solid Carbide

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



# NAS 897 CHUCKING REAMERS

CARBIDE TIPPED - STRAIGHT FLUTE - 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.

**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.

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	\$41.60	0.1560 - 0.1769	\$72.10	\$56.75	\$51.65	\$49.25	\$46.60	\$44.55
3/16	.1875	.1805	4	1 1/8	1/2	4 1/2	240806	38.15	0.1770 - 0.2040	67.85	52.95	48.00	45.60	43.05	41.05
7/32	.2188	.2075	4	1 1/4	1/2	5	240807	38.15	0.2041 - 0.2210	67.85	52.95	48.00	45.60	43.05	41.05
15/64	.2344	.2265	4	1 1/2	1/2	6	24082344	40.50	0.2211 - 0.2380	70.15	55.30	50.30	47.95	45.35	43.35
1/4	.2500	.2405	4	1 1/2	1/2	6	240808	38.40	0.2381 - 0.2530	68.05	53.20	48.25	45.85	43.30	41.30
9/32	.2812	.2485	4	1 1/2	1/2	6	240809	39.15	0.2531 - 0.2840	68.85	53.95	49.05	46.60	44.10	42.05
5/16	.3125	.2792	4	1 1/2	1/2	6	240810	39.15	0.2841 - 0.3150	68.85	53.95	49.05	46.60	44.10	42.05
3/8	.3125	.2792	6	1 1/2	1/2	6	240890	43.05	0.2841 - 0.3150	72.70	57.85	52.85	50.50	48.00	46.00
11/32	.3438	.2792	4	1 1/2	5/8	6	240811	40.65	0.3151 - 0.3470	70.30	55.45	50.45	48.10	45.55	43.60
11/32	.3438	.2792	6	1 1/2	5/8	6	240891	44.60	0.3151 - 0.3470	74.30	59.45	54.50	52.10	49.55	47.55
3/8	.3750	.3105	4	1 3/4	5/8	7	240812	37.30	0.3471 - 0.3780	64.50	50.85	46.30	44.15	41.80	39.95
3/8	.3750	.3105	6	1 3/4	5/8	7	240892	40.95	0.3471 - 0.3780	68.15	54.55	50.00	47.85	45.45	43.65
13/32	.4062	.3105	4	1 3/4	5/8	7	240813	42.60	0.3781 - 0.4090	72.25	57.40	52.45	50.05	47.45	45.50
13/32	.4062	.3105	6	1 3/4	5/8	7	240893	45.40	0.3781 - 0.4090	75.10	60.20	55.30	52.85	50.35	48.35
7/16	.4375	.3730	6	1 3/4	5/8	7	240814	45.40	0.4091 - 0.4410	75.10	60.20	55.30	52.85	50.35	48.35
15/32	.4688	.3730	6	1 3/4	5/8	7	240815	46.10	0.4411 - 0.4720	75.75	60.90	55.90	53.55	51.05	49.05
1/2	.5000	.4355	6	2	5/8	8	240816	54.50	0.4721 - 0.5030	87.15	70.75	65.30	62.75	59.90	57.70
17/32	.5312	.4355	6	2	5/8	8	240817	59.30	0.5031 - 0.5340	91.95	75.55	70.15	67.50	64.75	62.50
9/16	.5625	.4355	6	2	5/8	8	240818	59.30	0.5341 - 0.5660	91.95	75.55	70.15	67.50	64.75	62.50
19/32	.5938	.4355	6	2	5/8	8	240819	61.75	0.5661 - 0.5970	94.40	78.00	72.50	69.90	67.10	64.90
5/8	.6250	.5615	6	2 1/4	5/8	9	240820	61.75	0.5971 - 0.6280	94.40	78.00	72.50	69.90	67.10	64.90
21/32	.6562	.5615	6	2 1/4	5/8	9	240821	62.80	0.6281 - 0.6590	95.45	79.05	73.55	71.05	68.15	66.00
11/16	.6875	.5615	6	2 1/4	5/8	9	240822	62.80	0.6591 - 0.6910	95.45	79.05	73.55	71.05	68.15	66.00
23/32	.7188	.5615	6	2 1/4	5/8	9	240823	65.75	0.6911 - 0.7220	98.40	82.00	76.55	73.90	71.15	68.90
3/4	.7500	.6245	6	2 1/2	3/4	9 1/2	240824	65.75	0.7221 - 0.7530	98.40	82.00	76.55	73.90	71.15	68.90
25/32	.7812	.6245	6	2 1/2	3/4	9 1/2	240825	67.85	0.7531 - 0.7840	100.50	84.15	78.70	76.05	73.25	71.10
13/16	.8125	.6245	6	2 1/2	3/4	9 1/2	240826	67.85	0.7841 - 0.8160	100.50	84.15	78.70	76.05	73.25	71.10
27/32	.8438	.6245	6	2 1/2	3/4	9 1/2	240827	70.55	0.8161 - 0.8470	103.20	86.90	81.45	78.80	76.00	73.80
7/8	.8750	.7495	6	2 5/8	3/4	10	240828	73.25	0.8471 - 0.8780	107.10	90.15	84.45	81.80	78.90	76.60
29/32	.9062	.7495	6	2 5/8	3/4	10	240829	85.30	0.8781 - 0.9090	119.20	102.20	96.55	93.85	90.90	88.60
15/16	.9375	.7495	8	2 5/8	3/4	10	240830	85.30	0.9091 - 0.9410	119.20	102.20	96.55	93.85	90.90	88.60
31/32	.9688	.7495	8	2 5/8	3/4	10	240831	89.35	0.9411 - 0.9720	123.20	106.25	100.55	97.80	94.90	92.60
1	1.0000	.8745	8	2 3/4	3/4	10 1/2	240832	89.35	0.9721 - 1.0030	123.20	106.25	100.55	97.80	94.90	92.60
1 1/16	1.0625	.8745	8	2 3/4	3/4	10 1/2	240834	92.50	1.0031 - 1.0660	124.95	108.75	103.25	100.65	97.85	95.70
1 1/8	1.1250	.8745	8	2 7/8	7/8	11	240836	100.00	1.0661 - 1.1280	132.45	116.20	110.80	108.15	105.40	103.20
1 3/16	1.1875	.9995	8	2 7/8	7/8	11	240838	105.10	1.1281 - 1.1905	137.60	121.35	115.90	113.30	110.50	108.35
1 1/4	1.2500	.9995	8	3	7/8	11 1/2	240840	111.10	1.1906 - 1.2530	143.60	127.35	121.85	119.30	116.50	114.30
1 5/16	1.3125	.9995	8	3	7/8	11 1/2	240842	116.95	1.2531 - 1.3155	149.45	133.20	127.70	125.15	122.30	120.10
1 3/8	1.3750	.9995	8	3 1/4	7/8	12	240844	124.05	1.3156 - 1.3780	156.55	140.30	134.75	132.25	129.40	127.20
1 7/16	1.4375	.9995	8	3 1/4	7/8	12	240846	138.25	1.3781 - 1.4405	170.80	154.45	149.05	146.50	143.65	141.50
1 1/2	1.5000	1.2495	8	3 1/2	7/8	12 1/2	240848	146.15	1.4406 - 1.5030	178.65	162.40	156.90	154.35	151.50	149.35

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



# CHUCKING REAMERS

CARBIDE TIPPED - RIGHT OR LEFT SPIRAL FLUTES - STRAIGHT SHANK



**TYPE 2410 - RIGHT SPIRAL FLUTES  
STRAIGHT SHANK**

**USE:**

Right spiral flutes have greater chip clearing ability for use with ductile materials, highly abrasive materials or blind holes. Spiral flutes tend to bridge interruptions such as keyways, slots or intersecting holes, permitting better finishes.

**BOTH TYPES:**

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



**TYPE 2420 - LEFT SPIRAL FLUTES  
STRAIGHT SHANK**

**USE:**

Left spiral flutes should only be used on through holes for heat treated steels, hard cast iron and other hard materials. Finishes are much better as spiral flutes tend to bridge interruptions such as keyways, slots or intersecting holes.

**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).
- Short shank or undersize shank diameter.
- Flat on shank or tanged 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 DIAMETER	NUMBER OF FLUTES	LENGTH		TYPE 2410 RIGHT EDP NO.	PRICE	TYPE 2420 LEFT 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 1/8	4 1/2	241006	\$44.75	242006	\$44.75	0.1770 - 0.2040	\$73.80	\$59.25	\$54.40	\$52.05	\$49.55	\$47.60
7/32	.2188	1/64	4	1 1/4	5	241007	44.75	242007	44.75	0.2041 - 0.2210	73.80	59.25	54.40	52.05	49.55	47.60
15/64	.2344	7/32	4	1 1/2	6	24102344	44.75	24202344	44.75	0.2211 - 0.2380	73.80	59.25	54.40	52.05	49.55	47.60
1/4	.2500	1/64	4	1 1/2	6	241008	44.75	242008	44.75	0.2381 - 0.2530	73.80	59.25	54.40	52.05	49.55	47.60
9/32	.2812	1/64	4	1 1/2	6	241009	44.90	242009	44.90	0.2531 - 0.2840	73.90	59.35	54.50	52.15	49.65	47.70
5/16	.3125	9/32	4	1 1/2	6	241010	44.90	242010	44.90	0.2841 - 0.3150	73.90	59.35	54.50	52.15	49.65	47.70
11/32	.3438	9/32	4	1 1/2	6	241011	49.40	242011	49.40	0.3151 - 0.3470	78.45	63.85	59.00	56.70	54.20	52.25
3/8	.3750	5/16	4	1 3/4	7	241012	49.85	242012	49.85	0.3471 - 0.3780	78.85	64.35	59.45	57.20	54.70	52.75
13/32	.4062	5/16	4	1 3/4	7	241013	52.10	242013	52.10	0.3781 - 0.4090	81.15	66.60	61.75	59.40	56.90	54.95
7/16	.4375	3/8	4	1 3/4	7	241014	54.20	242014	54.20	0.4091 - 0.4410	83.20	68.70	63.80	61.50	59.00	57.05
15/32	.4688	3/8	4	1 3/4	7	241015	57.50	242015	57.50	0.4411 - 0.4720	86.55	72.05	67.15	64.80	62.35	60.35
1/2	.5000	7/16	6	2	8	241016	59.70	242016	59.70	0.4721 - 0.5030	89.45	74.50	69.55	67.15	64.60	62.60
17/32	.5312	7/16	6	2	8	241017	61.50	242017	61.50	0.5031 - 0.5340	91.30	76.35	71.40	69.00	66.45	64.45
9/16	.5625	7/16	6	2	8	241018	61.50	242018	61.50	0.5341 - 0.5660	91.30	76.35	71.40	69.00	66.45	64.45
19/32	.5938	7/16	6	2	8	241019	63.35	242019	63.35	0.5661 - 0.5970	93.10	78.20	73.20	70.80	68.25	66.25
5/8	.6250	9/16	6	2 1/4	9	241020	63.35	242020	63.35	0.5971 - 0.6280	93.10	78.20	73.20	70.80	68.25	66.25
21/32	.6562	9/16	6	2 1/4	9	241021	65.15	242021	65.15	0.6281 - 0.6590	95.00	80.05	75.05	72.65	70.05	68.10
11/16	.6875	9/16	6	2 1/4	9	241022	69.40	242022	69.40	0.6591 - 0.6910	99.15	84.20	79.25	76.85	74.30	72.30
23/32	.7188	9/16	6	2 1/4	9	241023	70.35	242023	70.35	0.6911 - 0.7220	100.10	85.20	80.20	77.85	75.25	73.25
3/4	.7500	5/8	6	2 1/2	9 1/2	241024	71.45	242024	71.45	0.7221 - 0.7530	101.25	86.30	81.30	78.90	76.35	74.35
25/32	.7812	5/8	6	2 1/2	9 1/2	241025	73.25	242025	73.25	0.7531 - 0.7840	103.10	88.15	83.15	80.75	78.20	76.20
13/16	.8125	5/8	6	2 1/2	9 1/2	241026	73.25	242026	73.25	0.7841 - 0.8160	103.10	88.15	83.15	80.75	78.20	76.20
27/32	.8438	5/8	6	2 1/2	9 1/2	241027	77.25	242027	77.25	0.8161 - 0.8470	107.10	92.15	87.15	84.80	82.20	80.20
7/8	.8750	3/4	6	2 5/8	10	241028	80.20	242028	80.20	0.8471 - 0.8780	111.15	95.65	90.40	88.00	85.30	83.20
29/32	.9062	3/4	6	2 5/8	10	241029	93.45	242029	93.45	0.8781 - 0.9090	124.35	108.85	103.70	101.20	98.55	96.45
15/16	.9375	3/4	8	2 5/8	10	241030	93.45	242030	93.45	0.9091 - 0.9410	124.35	108.85	103.70	101.20	98.55	96.45
31/32	.9688	3/4	8	2 5/8	10	241031	97.95	242031	97.95	0.9411 - 0.9720	128.90	113.40	108.25	105.75	103.05	101.05
1	1.0000	7/8	8	2 3/4	10 1/2	241032	97.95	242032	97.95	0.9721 - 1.0030	128.90	113.40	108.25	105.75	103.05	101.05
1 1/16	1.0625	7/8	8	2 3/4	10 1/2	241034	105.10	242034	105.10	1.0031 - 1.0660	136.05	120.55	115.40	112.90	110.20	108.15
1 1/8	1.1250	7/8	8	2 7/8	11	241036	108.35	242036	108.35	1.0661 - 1.1280	139.25	123.80	118.60	116.10	113.45	111.40
1 1/4	1.1875	1	8	2 7/8	11	241038	113.85	242038	113.85	1.1281 - 1.1905	144.75	129.30	124.10	121.60	118.95	116.90
1 1/4	1.2500	1	8	3	11 1/2	241040	120.50	242040	120.50	1.1906 - 1.2530	151.40	135.90	130.75	128.25	125.60	123.55
1 5/16	1.3125	1	8	3	11 1/2	241042	133.30	242042	133.30	1.2531 - 1.3155	164.30	148.80	143.55	141.15	138.45	136.35
1 3/8	1.3750	1	8	3 1/4	12	241044	146.10	242044	146.10	1.3156 - 1.3780	177.05	161.55	156.35	153.90	151.25	149.15
1 7/16	1.4375	1 1/4	8	3 1/4	12	241046	154.75	242046	154.75	1.3781 - 1.4405	185.70	170.20	165.00	162.60	159.90	157.80
1 1/2	1.5000	1 1/4	8	3 1/2	12 1/2	241048	163.50	242048	163.50	1.4406 - 1.5030	194.40	178.90	173.75	171.25	168.65	166.55

\*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					
FRACTIONAL	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	\$58.65	0.2841 - 0.3150	\$89.15	\$73.85	\$68.70	\$66.35	\$63.75	\$61.65
11/32	.3438	9/32	4	1	6	246511	58.65	0.3151 - 0.3470	89.15	73.85	68.70	66.35	63.75	61.65
3/8	.3750	5/16	4	1	7	246512	54.95	0.3471 - 0.3780	83.60	69.25	64.40	62.15	59.70	57.75
13/32	.4062	3/16	4	1	7	246513	58.35	0.3781 - 0.4090	86.90	72.55	67.80	65.50	63.05	61.10
7/16	.4375	3/8	4	1	7	246514	58.35	0.4091 - 0.4410	86.90	72.55	67.80	65.50	63.05	61.10
15/32	.4688	3/8	4	1	7	246515	61.85	0.4411 - 0.4720	90.35	76.05	71.30	69.00	66.55	64.65
1/2	.5000	7/16	6	1	8	246516	61.85	0.4721 - 0.5030	90.35	76.05	71.30	69.00	66.55	64.65
17/32	.5312	7/16	6	1	8	246517	63.35	0.5031 - 0.5340	92.00	77.65	72.85	70.55	68.10	66.20
9/16	.5625	7/16	6	1 1/8	8	246518	63.35	0.5341 - 0.5660	92.00	77.65	72.85	70.55	68.10	66.20
19/32	.5938	7/16	6	1 1/8	8	246519	66.15	0.5661 - 0.5970	94.70	80.45	75.65	73.35	70.90	68.95
5/8	.6250	9/16	6	1 1/4	9	246520	66.15	0.5971 - 0.6280	94.70	80.45	75.65	73.35	70.90	68.95
21/32	.6562	9/16	6	1 1/4	9	246521	72.35	0.6281 - 0.6590	100.90	86.55	81.80	79.55	77.05	75.15
11/16	.6875	9/16	6	1 1/4	9	246522	72.35	0.6591 - 0.6910	100.90	86.55	81.80	79.55	77.05	75.15
23/32	.7188	9/16	6	1 1/4	9	246523	75.00	0.6911 - 0.7220	103.65	89.25	84.45	82.20	79.75	77.85
3/4	.7500	5/8	6	1 3/8	9 1/2	246524	75.00	0.7221 - 0.7530	103.65	89.25	84.45	82.20	79.75	77.85
25/32	.7812	5/8	6	1 3/8	9 1/2	246525	80.85	0.7531 - 0.7840	109.45	95.15	90.30	88.05	85.60	83.70
13/16	.8125	5/8	6	1 3/8	9 1/2	246526	80.85	0.7841 - 0.8160	109.45	95.15	90.30	88.05	85.60	83.70
27/32	.8438	5/8	6	1 3/8	9 1/2	246527	84.05	0.8161 - 0.8470	112.55	98.30	93.50	91.20	88.80	86.85
7/8	.8750	3/4	6	1 1/2	10	246528	87.20	0.8471 - 0.8780	116.80	102.00	97.00	94.65	92.10	90.10
29/32	.9062	3/4	6	1 1/2	10	246529	92.85	0.8781 - 0.9090	122.50	107.60	102.70	100.35	97.75	95.75
15/16	.9375	3/4	8	1 1/2	10	246530	92.85	0.9091 - 0.9410	122.50	107.60	102.70	100.35	97.75	95.75
31/32	.9688	3/4	8	1 1/2	10	246531	96.45	0.9411 - 0.9720	126.05	111.25	106.25	103.90	101.30	99.35
1	1.0000	7/8	8	1 5/8	10 1/2	246532	96.45	0.9721 - 1.0030	126.05	111.25	106.25	103.90	101.30	99.35
1 1/32	1.0312	7/8	8	1 5/8	10 1/2	246533	105.70	-	-	-	-	-	-	-
1 1/16	1.0625	7/8	8	1 3/8	10 1/2	246534	105.70	1.0031 - 1.0660	135.35	120.50	115.50	113.15	110.55	108.60
1 3/32	1.0938	7/8	8	1 3/8	11	246535	105.70	-	-	-	-	-	-	-
1 1/8	1.1250	7/8	8	1 3/4	11	246536	105.70	1.0661 - 1.1280	135.35	120.50	115.50	113.15	110.55	108.60
1 3/16	1.1875	1	8	1 3/4	11	246538	115.35	1.1281 - 1.1905	145.00	130.10	125.15	122.80	120.20	118.30
1 1/4	1.2500	1	8	1 7/8	11 1/2	246540	115.35	1.1906 - 1.2530	145.00	130.10	125.15	122.80	120.20	118.30
1 3/16	1.3125	1	8	1 7/8	11 1/2	246542	127.85	1.2531 - 1.3155	157.55	142.70	137.75	135.35	132.80	130.85
1 3/8	1.3750	1	8	2	12	246544	133.90	1.3156 - 1.3780	163.55	148.70	143.70	141.40	138.75	136.80
1 7/16	1.4375	1 1/4	8	2	12	246546	158.25	1.3781 - 1.4405	189.85	174.00	168.70	166.15	163.45	161.30
1 1/2	1.5000	1 1/4	8	2 1/8	12 1/2	246548	162.85	1.4406 - 1.5030	194.50	178.60	173.35	170.85	168.10	165.95
1 9/16	1.5625	1 1/4	8	2 1/8	12 1/2	246550	213.85	1.5031 - 1.5660	245.45	229.65	224.30	221.75	219.05	216.95
1 5/8	1.6250	1 1/4	8	2 1/4	13	246552	213.85	1.5661 - 1.6280	245.45	229.65	224.30	221.75	219.05	216.95
1 11/16	1.6875	1 1/4	8	2 1/4	13	246554	236.85	1.6281 - 1.6910	268.50	252.65	247.35	244.80	242.10	239.90
1 3/4	1.7500	1 1/4	10	2 3/8	13 1/2	246556	236.85	1.6911 - 1.7530	268.50	252.65	247.35	244.80	242.10	239.90
1 13/16	1.8125	1 1/2	10	2 3/8	13 1/2	246558	280.45	1.7531 - 1.8160	312.05	296.25	290.95	288.40	285.70	283.55
1 7/8	1.8750	1 1/2	10	2 1/2	14	246560	280.45	1.8161 - 1.8780	312.05	296.25	290.95	288.40	285.70	283.55
1 15/16	1.9375	1 1/2	10	2 1/2	14	246562	306.40	1.8781 - 1.9410	338.00	322.20	316.90	314.30	311.65	309.50
2	2.0000	1 1/2	12	2 1/2	14	246564	306.40	1.9411 - 2.0030	338.00	322.20	316.90	314.30	311.65	309.50
2 1/8	2.1250	1 1/2	12	2 3/4	14 1/2	246568	497.70	2.0031 - 2.1280	529.35	513.50	508.20	505.70	502.95	500.80
2 1/4	2.2500	1 3/4	12	2 3/4	14 1/2	246572	534.55	2.1281 - 2.2530	566.10	550.30	545.00	542.45	539.75	537.60
2 3/8	2.3750	1 3/4	12	3	15	246576	553.15	2.2531 - 2.3780	584.80	568.95	563.65	561.10	558.40	556.25
2 1/2	2.5000	1 3/4	12	3	15	246580	553.15	2.3781 - 2.5030	584.80	568.95	563.65	561.10	558.40	556.25

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





# EXPANSION CHUCKING REAMERS

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

### TYPE 2465 - METRIC



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

TOOL DIAMETER		TYPE 2465 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
		FLUTE & CARBIDE	OVERALL												
7.5	.2953	2465075	\$68.70	5/32	4	1	6	7.215 -8.001	\$91.70	\$76.45	\$71.35	\$68.90	\$66.35	\$64.20	\$61.25
8.0	.3150	2465080	68.70	5/32	4	1	6	-	-	-	-	-	-	-	-
8.5	.3346	2465085	68.70	5/32	4	1	6	8.002 -8.814	91.70	76.45	71.35	68.90	66.35	64.20	61.25
9.0	.3543	2465090	64.40	5/16	4	1	7	8.815 -9.601	86.00	71.65	66.90	64.60	62.15	60.20	57.45
9.5	.3740	2465095	64.40	5/16	4	1	7	-	-	-	-	-	-	-	-
10.0	.3937	2465100	67.80	5/16	4	1	7	9.602 -10.389	89.25	75.00	70.25	67.90	65.50	63.45	60.80
10.5	.4134	2465105	67.80	3/8	4	1	7	10.390 -11.201	89.25	75.00	70.25	67.90	65.50	63.45	60.80
11.0	.4331	2465110	67.80	3/8	4	1	7	-	-	-	-	-	-	-	-
11.5	.4528	2465115	71.30	3/8	4	1	7	11.202 -11.989	92.75	78.55	73.70	71.40	69.00	67.00	64.25
12.0	.4724	2465120	71.30	7/16	6	1	8	11.990 -12.776	92.75	78.55	73.70	71.40	69.00	67.00	64.25
12.5	.4921	2465125	71.30	7/16	6	1	8	-	-	-	-	-	-	-	-
13.0	.5118	2465130	72.85	7/16	6	1	8	12.777 -13.564	94.40	80.10	75.30	73.00	70.55	68.60	65.85
13.5	.5315	2465135	72.85	7/16	6	1	8	-	-	-	-	-	-	-	-
14.0	.5512	2465140	72.85	7/16	6	1 1/8	8	13.565 -14.376	94.40	80.10	75.30	73.00	70.55	68.60	65.85
14.5	.5709	2465145	75.65	7/16	6	1 1/8	8	14.377 -15.164	97.10	82.85	78.05	75.75	73.35	71.35	68.60
15.0	.5906	2465150	75.65	7/16	6	1 1/8	8	-	-	-	-	-	-	-	-
15.5	.6102	2465155	75.65	9/16	6	1 1/4	9	15.165 -15.951	97.10	82.85	78.05	75.75	73.35	71.35	68.60
16.0	.6299	2465160	81.80	9/16	6	1 1/4	9	15.952 -16.739	103.25	89.05	84.25	81.90	79.55	77.55	74.80
16.5	.6496	2465165	81.80	9/16	6	1 1/4	9	-	-	-	-	-	-	-	-
17.0	.6693	2465170	81.80	9/16	6	1 1/4	9	16.740 -17.551	103.25	89.05	84.25	81.90	79.55	77.55	74.80
17.5	.6890	2465175	81.80	9/16	6	1 1/4	9	-	-	-	-	-	-	-	-
18.0	.7087	2465180	84.45	9/16	6	1 1/4	9	17.552 -18.339	106.00	91.70	86.95	84.60	82.20	80.25	77.50
18.5	.7283	2465185	84.45	5/8	6	1 3/8	9 1/2	18.340 -19.126	106.00	91.70	86.95	84.60	82.20	80.25	77.50
19.0	.7480	2465190	84.45	5/8	6	1 3/8	9 1/2	-	-	-	-	-	-	-	-
19.5	.7677	2465195	90.30	5/8	6	1 3/8	9 1/2	19.127 -19.914	111.90	97.60	92.75	90.40	88.05	86.10	83.30
20.0	.7874	2465200	90.30	5/8	6	1 3/8	9 1/2	19.915 -20.726	111.90	97.60	92.75	90.40	88.05	86.10	83.30
20.5	.8071	2465205	90.30	5/8	6	1 3/8	9 1/2	-	-	-	-	-	-	-	-
21.0	.8268	2465210	93.50	5/8	6	1 3/8	9 1/2	20.727 -21.514	115.00	100.75	95.90	93.60	91.20	89.20	86.45
21.5	.8465	2465215	93.50	5/8	6	1 3/8	9 1/2	-	-	-	-	-	-	-	-
22.0	.8661	2465220	93.50	3/4	6	1 1/2	10	21.515 -22.301	115.00	100.75	95.90	93.60	91.20	89.20	86.45
22.5	.8858	2465225	102.70	3/4	6	1 1/2	10	22.302 -23.089	124.95	110.20	105.20	102.80	100.35	98.25	95.40
23.0	.9055	2465230	102.70	3/4	6	1 1/2	10	-	-	-	-	-	-	-	-
23.5	.9252	2465235	102.70	3/4	8	1 1/2	10	23.090 -23.901	124.95	110.20	105.20	102.80	100.35	98.25	95.40
24.0	.9449	2465240	106.25	3/4	8	1 1/2	10	23.902 -24.689	128.55	113.75	108.80	106.35	103.90	101.80	98.95
24.5	.9646	2465245	106.25	3/4	8	1 1/2	10	-	-	-	-	-	-	-	-
25.0	.9843	2465250	106.25	7/8	8	1 5/8	10 1/2	24.690 -25.476	128.55	113.75	108.80	106.35	103.90	101.80	98.95
25.5	1.0039	2465255	115.50	7/8	8	1 5/8	10 1/2	25.477 -27.076	137.85	123.00	118.00	115.60	113.15	111.10	108.20
26.0	1.0236	2465260	115.50	7/8	8	1 5/8	10 1/2	-	-	-	-	-	-	-	-
27.0	1.0630	2465270	115.50	7/8	8	1 5/8	10 1/2	-	-	-	-	-	-	-	-
28.0	1.1024	2465280	115.50	7/8	8	1 3/4	11	27.077 -28.651	137.85	123.00	118.00	115.60	113.15	111.10	108.20
29.0	1.1417	2465290	125.15	1	8	1 3/4	11	28.652 -30.239	147.45	132.65	127.70	125.25	122.80	120.75	117.85
30.0	1.1811	2465300	125.15	1	8	1 3/4	11	-	-	-	-	-	-	-	-
31.0	1.2205	2465310	125.15	1	8	1 7/8	11 1/2	30.240 -31.826	147.45	132.65	127.70	125.25	122.80	120.75	117.85
32.0	1.2598	2465320	137.75	1	8	1 7/8	11 1/2	31.827 -33.414	160.00	145.20	140.30	137.85	135.35	133.30	130.45
33.0	1.2992	2465330	137.75	1	8	1 7/8	11 1/2	-	-	-	-	-	-	-	-
34.0	1.3386	2465340	143.70	1	8	2	12	33.415 -35.001	166.00	151.25	146.25	143.85	141.40	139.30	136.40
35.0	1.3780	2465350	143.70	1	8	2	12	-	-	-	-	-	-	-	-
36.0	1.4173	2465360	168.70	1 1/4	8	2	12	35.002 -36.589	192.45	176.70	171.40	168.80	166.15	163.95	160.95
37.0	1.4567	2465370	173.35	1 1/4	8	2 1/8	12 1/2	36.590 -38.176	197.15	181.35	176.10	173.45	170.85	168.65	165.60
38.0	1.4961	2465380	173.35	1 1/4	8	2 1/8	12 1/2	-	-	-	-	-	-	-	-
39.0	1.5354	2465390	224.30	1 1/4	8	2 1/8	12 1/2	38.177 -39.776	248.10	232.30	227.00	224.45	221.75	219.55	216.55
40.0	1.5748	2465400	224.30	1 1/4	8	2 1/8	13	39.777 -41.351	248.10	232.30	227.00	224.45	221.75	219.55	216.55
41.0	1.6142	2465410	224.30	1 1/4	8	2 1/4	13	-	-	-	-	-	-	-	-
42.0	1.6535	2465420	247.35	1 1/4	8	2 1/4	13	41.352 -42.951	271.10	255.35	250.05	247.50	244.80	242.60	239.55
43.0	1.6929	2465430	247.35	1 1/4	10	2 3/8	13 1/2	42.952 -44.526	271.10	255.35	250.05	247.50	244.80	242.60	239.55
44.0	1.7323	2465440	247.35	1 1/4	10	2 3/8	13 1/2	-	-	-	-	-	-	-	-

Modified tool diameters are available up to 63mm - contact us for price.



# EXPANSION CHUCKING REAMERS

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



### TYPE 2467 - FINISHED FRACTIONAL SIZES

Expansion screw permits expansion of cutting diameter for regrinding after wear without reinserting carbide.

Taper shank and straight polished flutes.

Flute long carbide tips brazed to one piece alloy steel bodies.

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

TOOL DIAMETER	GUARANTEED MINIMUM EXPANSION
$\frac{5}{16}$ " - $\frac{15}{32}$ "	.006"
$\frac{1}{2}$ " - $\frac{31}{32}$ "	.010"
1" - 1 $\frac{1}{2}$ "	.013"
1 $\frac{3}{16}$ " - 2 $\frac{1}{2}$ "	.015"

### OPTIONS:

Intermediate decimal and 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).

Type 2465 semi-finished reamers in stock. (see pg. 73).

Closer tolerance.

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

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

**USE** - See page 64.

TOOL DIAMETER		MORSE TAPER	NO. OF FLUTES	LENGTH		TYPE 2467 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*
$\frac{5}{16}$	.3125	1	4	1	6	246710	\$66.05	0.2841 - 0.3150	\$96.55	\$81.25	\$76.20	\$73.70	\$71.15	\$69.05
$\frac{11}{32}$	.3438	1	4	1	6	246711	66.05	0.3151 - 0.3470	96.55	81.25	76.20	73.70	71.15	69.05
$\frac{3}{8}$	.3750	1	4	1	7	246712	61.95	0.3471 - 0.3780	90.50	76.20	71.40	69.15	66.70	64.75
$\frac{13}{32}$	.4062	1	4	1	7	246713	63.85	0.3781 - 0.4090	92.40	78.05	73.30	71.05	68.55	66.60
$\frac{7}{16}$	.4375	1	4	1	7	246714	63.85	0.4091 - 0.4410	92.40	78.05	73.30	71.05	68.55	66.60
$\frac{15}{32}$	.4688	1	4	1	7	246715	66.95	0.4411 - 0.4720	95.55	81.25	76.40	74.15	71.65	69.75
$\frac{1}{2}$	.5000	1	6	1	8	246716	66.95	0.4721 - 0.5030	95.55	81.25	76.40	74.15	71.65	69.75
$\frac{17}{32}$	.5312	1	6	1	8	246717	69.00	0.5031 - 0.5340	97.60	83.25	78.50	76.20	73.70	71.75
$\frac{9}{16}$	.5625	1	6	1 $\frac{1}{8}$	8	246718	69.00	0.5341 - 0.5660	97.60	83.25	78.50	76.20	73.70	71.75
$\frac{19}{32}$	.5938	1	6	1 $\frac{1}{8}$	8	246719	71.75	0.5661 - 0.5970	100.40	86.10	81.30	79.00	76.60	74.60
$\frac{5}{8}$	.6250	2	6	1 $\frac{1}{4}$	9	246720	71.75	0.5971 - 0.6280	100.40	86.10	81.30	79.00	76.60	74.60
$\frac{21}{32}$	.6562	2	6	1 $\frac{1}{4}$	9	246721	80.80	0.6281 - 0.6590	109.40	95.00	90.25	88.00	85.50	83.65
$\frac{11}{16}$	.6875	2	6	1 $\frac{1}{4}$	9	246722	80.80	0.6591 - 0.6910	109.40	95.00	90.25	88.00	85.50	83.65
$\frac{23}{32}$	.7188	2	6	1 $\frac{1}{4}$	9	246723	81.00	0.6911 - 0.7220	109.60	95.35	90.50	88.25	85.75	83.85
$\frac{3}{4}$	.7500	2	6	1 $\frac{3}{8}$	9 $\frac{1}{2}$	246724	81.00	0.7221 - 0.7530	109.60	95.35	90.50	88.25	85.75	83.85
$\frac{25}{32}$	.7812	2	6	1 $\frac{3}{8}$	9 $\frac{1}{2}$	246725	87.00	0.7531 - 0.7840	115.60	101.25	96.50	94.25	91.70	89.85
$\frac{13}{16}$	.8125	2	6	1 $\frac{3}{8}$	9 $\frac{1}{2}$	246726	87.00	0.7841 - 0.8160	115.60	101.25	96.50	94.25	91.70	89.85
$\frac{27}{32}$	.8438	2	6	1 $\frac{3}{8}$	9 $\frac{1}{2}$	246727	90.65	0.8161 - 0.8470	119.25	104.90	100.10	97.80	95.40	93.45
$\frac{7}{8}$	.8750	2	6	1 $\frac{1}{2}$	10	246728	94.10	0.8471 - 0.8780	123.70	108.90	103.90	101.55	98.95	96.95
$\frac{29}{32}$	.9062	2	6	1 $\frac{1}{2}$	10	246729	99.50	0.8781 - 0.9090	129.15	114.30	109.30	106.95	104.40	102.40
$\frac{15}{16}$	.9375	3	8	1 $\frac{1}{2}$	10	246730	99.50	0.9091 - 0.9410	129.15	114.30	109.30	106.95	104.40	102.40
$\frac{31}{32}$	.9688	3	8	1 $\frac{1}{2}$	10	246731	103.10	0.9411 - 0.9720	132.70	117.85	112.90	110.50	108.00	105.95
1	1.0000	3	8	1 $\frac{5}{8}$	10 $\frac{1}{2}$	246732	103.10	0.9721 - 1.0030	132.70	117.85	112.90	110.50	108.00	105.95
1 $\frac{1}{32}$	1.0312	3	8	1 $\frac{5}{8}$	10 $\frac{1}{2}$	246733	112.80	-	-	-	-	-	-	-
1 $\frac{1}{16}$	1.0625	3	8	1 $\frac{5}{8}$	10 $\frac{1}{2}$	246734	112.80	1.0031 - 1.0660	142.55	127.65	122.65	120.30	117.75	115.70
1 $\frac{3}{32}$	1.0938	3	8	1 $\frac{3}{4}$	11	246735	112.80	-	-	-	-	-	-	-
1 $\frac{1}{8}$	1.1250	3	8	1 $\frac{3}{4}$	11	246736	112.80	1.0661 - 1.1280	142.55	127.65	122.65	120.30	117.75	115.70
1 $\frac{3}{16}$	1.1875	3	8	1 $\frac{3}{4}$	11	246738	126.90	1.1281 - 1.1905	156.50	141.65	136.70	134.35	131.80	129.80
1 $\frac{1}{4}$	1.2500	4	8	1 $\frac{7}{8}$	11 $\frac{1}{2}$	246740	128.60	1.1906 - 1.2530	158.25	143.40	138.45	136.10	133.50	131.50
1 $\frac{5}{16}$	1.3125	4	8	1 $\frac{7}{8}$	11 $\frac{1}{2}$	246742	140.55	1.2531 - 1.3155	170.20	155.35	150.35	148.00	145.50	143.45
1 $\frac{3}{8}$	1.3750	4	8	2	12	246744	154.00	1.3156 - 1.3780	183.60	168.75	163.80	161.40	158.85	156.85
1 $\frac{7}{16}$	1.4375	4	8	2	12	246746	172.85	1.3781 - 1.4405	204.45	188.65	183.30	180.75	178.05	175.95
1 $\frac{1}{2}$	1.5000	4	8	2 $\frac{1}{8}$	12 $\frac{1}{2}$	246748	178.95	1.4406 - 1.5030	210.65	194.70	189.40	186.95	184.20	182.05
1 $\frac{9}{16}$	1.5625	4	8	2 $\frac{1}{8}$	12 $\frac{1}{2}$	246750	245.90	1.5031 - 1.5660	277.55	261.70	256.40	253.90	251.15	249.00
1 $\frac{5}{8}$	1.6250	4	8	2 $\frac{1}{4}$	13	246752	245.90	1.5661 - 1.6280	277.55	261.70	256.40	253.90	251.15	249.00
1 $\frac{11}{16}$	1.6875	4	8	2 $\frac{1}{4}$	13	246754	272.35	1.6281 - 1.6910	304.00	288.15	282.85	280.30	277.60	275.45
1 $\frac{3}{4}$	1.7500	4	10	2 $\frac{3}{8}$	13 $\frac{1}{2}$	246756	272.35	1.6911 - 1.7530	304.00	288.15	282.85	280.30	277.60	275.45
1 $\frac{13}{16}$	1.8125	4	10	2 $\frac{3}{8}$	13 $\frac{1}{2}$	246758	322.45	1.7531 - 1.8160	354.10	338.30	333.00	330.45	327.70	325.60
1 $\frac{7}{8}$	1.8750	4	10	2 $\frac{1}{2}$	14	246760	322.45	1.8161 - 1.8780	354.10	338.30	333.00	330.45	327.70	325.60
1 $\frac{15}{16}$	1.9375	4	10	2 $\frac{1}{2}$	14	246762	352.40	1.8781 - 1.9410	384.00	368.15	362.85	360.35	357.60	355.55
2	2.0000	4	12	2 $\frac{1}{2}$	14	246764	352.40	1.9411 - 2.0030	384.00	368.15	362.85	360.35	357.60	355.55
2 $\frac{1}{8}$	2.1250	5	12	2 $\frac{3}{4}$	14 $\frac{1}{2}$	246768	527.60	2.0031 - 2.1280	559.25	543.40	538.05	535.55	532.90	530.70
2 $\frac{1}{4}$	2.2500	5	12	2 $\frac{3}{4}$	14 $\frac{1}{2}$	246772	566.60	2.1281 - 2.2530	598.25	582.35	577.10	574.55	571.85	569.75
2 $\frac{3}{8}$	2.3750	5	12	3	15	246776	586.30	2.2531 - 2.3780	617.90	602.10	596.75	594.30	591.55	589.45
2 $\frac{1}{2}$	2.5000	5	12	3	15	246780	586.30	2.3781 - 2.5030	617.90	602.10	596.75	594.30	591.55	589.45

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



# EXPANSION CHUCKING REAMERS

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

### TYPE 2467 - METRIC



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

TOOL DIAMETER		TYPE 2467 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	OVERALL								
7.5	.2953	2467075	\$76.20	1	4	1	6	7.215 -8.001	\$99.10	\$83.90	\$78.80	\$76.30	\$73.70	\$71.60	\$68.65
8.0	.3150	2467080	76.20	1	4	1	6	-	-	-	-	-	-	-	-
8.5	.3346	2467085	76.20	1	4	1	6	8.002 -8.814	99.10	83.90	78.80	76.30	73.70	71.60	68.65
9.0	.3543	2467090	71.40	1	4	1	7	8.815 -9.601	92.90	78.65	73.85	71.50	69.15	67.10	64.35
9.5	.3740	2467095	71.40	1	4	1	7	-	-	-	-	-	-	-	-
10.0	.3937	2467100	73.30	1	4	1	7	9.602 -10.389	94.75	80.55	75.75	73.40	71.05	69.00	66.25
10.5	.4134	2467105	73.30	1	4	1	7	10.390 -11.201	94.75	80.55	75.75	73.40	71.05	69.00	66.25
11.0	.4331	2467110	73.30	1	4	1	7	-	-	-	-	-	-	-	-
11.5	.4528	2467115	76.40	1	4	1	7	11.202 -11.989	97.95	83.70	78.90	76.60	74.15	72.20	69.40
12.0	.4724	2467120	76.40	1	6	1	8	11.990 -12.776	97.95	83.70	78.90	76.60	74.15	72.20	69.40
12.5	.4921	2467125	76.40	1	6	1	8	-	-	-	-	-	-	-	-
13.0	.5118	2467130	78.50	1	6	1	8	12.777 -13.564	100.00	85.70	80.90	78.60	76.20	74.25	71.45
13.5	.5315	2467135	78.50	1	6	1	8	-	-	-	-	-	-	-	-
14.0	.5512	2467140	78.50	1	6	1 1/8	8	13.565 -14.376	100.00	85.70	80.90	78.60	76.20	74.25	71.45
14.5	.5709	2467145	81.30	1	6	1 1/8	8	14.377 -15.164	102.80	88.50	83.75	81.45	79.00	77.00	74.30
15.0	.5906	2467150	81.30	1	6	1 1/8	8	-	-	-	-	-	-	-	-
15.5	.6102	2467155	81.30	2	6	1 1/4	9	15.165 -15.951	102.80	88.50	83.75	81.45	79.00	77.00	74.30
16.0	.6299	2467160	90.25	2	6	1 1/4	9	15.952 -16.739	111.80	97.50	92.70	90.35	88.00	86.05	83.25
16.5	.6496	2467165	90.25	2	6	1 1/4	9	-	-	-	-	-	-	-	-
17.0	.6693	2467170	90.25	2	6	1 1/4	9	16.740 -17.551	111.80	97.50	92.70	90.35	88.00	86.05	83.25
17.5	.6890	2467175	90.25	2	6	1 1/4	9	-	-	-	-	-	-	-	-
18.0	.7087	2467180	90.50	2	6	1 1/4	9	17.552 -18.339	112.05	97.75	93.00	90.65	88.25	86.25	83.50
18.5	.7283	2467185	90.50	2	6	1 3/8	9 1/2	18.340 -19.126	112.05	97.75	93.00	90.65	88.25	86.25	83.50
19.0	.7480	2467190	90.50	2	6	1 3/8	9 1/2	-	-	-	-	-	-	-	-
19.5	.7677	2467195	96.50	2	6	1 3/8	9 1/2	19.127 -19.914	117.95	103.75	98.95	96.60	94.25	92.20	89.45
20.0	.7874	2467200	96.50	2	6	1 3/8	9 1/2	19.915 -20.726	117.95	103.75	98.95	96.60	94.25	92.20	89.45
20.5	.8071	2467205	96.50	2	6	1 3/8	9 1/2	-	-	-	-	-	-	-	-
21.0	.8268	2467210	100.10	2	6	1 3/8	9 1/2	20.727 -21.514	121.60	107.35	102.60	100.20	97.80	95.80	93.10
21.5	.8465	2467215	100.10	2	6	1 3/8	9 1/2	-	-	-	-	-	-	-	-
22.0	.8661	2467220	100.10	2	6	1 1/2	10	21.515 -22.301	121.60	107.35	102.60	100.20	97.80	95.80	93.10
22.5	.8858	2467225	109.30	2	6	1 1/2	10	22.302 -23.089	131.65	116.80	111.90	109.40	106.95	104.90	102.05
23.0	.9055	2467230	109.30	2	6	1 1/2	10	-	-	-	-	-	-	-	-
23.5	.9252	2467235	109.30	3	8	1 1/2	10	23.090 -23.901	131.65	116.80	111.90	109.40	106.95	104.90	102.05
24.0	.9449	2467240	112.90	3	8	1 1/2	10	23.902 -24.689	135.25	120.45	115.45	113.05	110.50	108.45	105.65
24.5	.9646	2467245	112.90	3	8	1 1/2	10	-	-	-	-	-	-	-	-
25.0	.9843	2467250	112.90	3	8	1 5/8	10 1/2	24.690 -25.476	135.25	120.45	115.45	113.05	110.50	108.45	105.65
25.5	1.0039	2467255	122.65	3	8	1 5/8	10 1/2	25.477 -27.076	145.00	130.15	125.20	122.80	120.30	118.30	115.40
26.0	1.0236	2467260	122.65	3	8	1 5/8	10 1/2	-	-	-	-	-	-	-	-
27.0	1.0630	2467270	122.65	3	8	1 5/8	10 1/2	-	-	-	-	-	-	-	-
28.0	1.1024	2467280	122.65	3	8	1 3/4	11	27.077 -28.651	145.00	130.15	125.20	122.80	120.30	118.30	115.40
29.0	1.1417	2467290	136.70	3	8	1 3/4	11	28.652 -30.239	158.95	144.20	139.25	136.80	134.35	132.25	129.40
30.0	1.1811	2467300	136.70	3	8	1 3/4	11	-	-	-	-	-	-	-	-
31.0	1.2205	2467310	138.45	4	8	1 7/8	11 1/2	30.240 -31.826	160.75	145.95	140.95	138.55	136.10	134.00	131.15
32.0	1.2598	2467320	150.35	4	8	1 7/8	11 1/2	31.827 -33.414	172.65	157.85	152.95	150.50	148.00	145.95	143.10
33.0	1.2992	2467330	150.35	4	8	1 7/8	11 1/2	-	-	-	-	-	-	-	-
34.0	1.3386	2467340	163.80	4	8	2	12	33.415 -35.001	186.05	171.30	166.30	163.90	161.40	159.35	156.50
35.0	1.3780	2467350	163.80	4	8	2	12	-	-	-	-	-	-	-	-
36.0	1.4173	2467360	183.30	4	8	2	12	35.002 -36.589	207.10	191.30	186.00	183.45	180.75	178.55	175.55
37.0	1.4567	2467370	189.40	4	8	2 1/8	12 1/2	36.590 -38.176	213.25	197.45	192.20	189.60	186.95	184.75	181.70
38.0	1.4961	2467380	189.40	4	8	2 1/8	12 1/2	-	-	-	-	-	-	-	-
39.0	1.5354	2467390	256.40	4	8	2 1/8	12 1/2	38.177 -39.776	280.20	264.45	259.15	256.50	253.90	251.70	248.65
40.0	1.5748	2467400	256.40	4	8	2 1/4	13	39.777 -41.351	280.20	264.45	259.15	256.50	253.90	251.70	248.65
41.0	1.6142	2467410	256.40	4	8	2 1/4	13	-	-	-	-	-	-	-	-
42.0	1.6535	2467420	282.85	4	8	2 1/4	13	41.352 -42.951	306.65	290.90	285.60	283.00	280.30	278.15	275.05
43.0	1.6929	2467430	282.85	4	10	2 3/8	13 1/2	42.952 -44.526	306.65	290.90	285.60	283.00	280.30	278.15	275.05
44.0	1.7323	2467440	282.85	4	10	2 3/8	13 1/2	-	-	-	-	-	-	-	-

Modified tool diameters are available up to 63mm - contact us for price.



# SOLID CARBIDE HEAD REAMERS

## STRAIGHT FLUTES & STRAIGHT STEEL SHANK

### TYPE 2800 - FINISHED FRACTIONAL SIZES

Solid carbide head.

Straight steel shank on .1911" tool diameter and larger (smaller sizes have a straight solid carbide shank).

Diameters 7/64" and below provided with male centers.

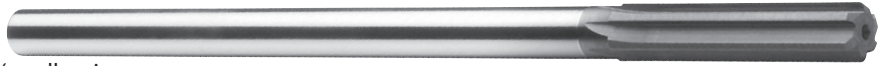
Tool diameter tolerance thru .2500": plus .0002", minus .0000".

over .2500": plus .0003", minus .0000".

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

**NOTE:** For best results in reaming tough steel alloys and cast steels, we recommend Type 2480 Carbide Tipped Reamer (page 58).

This reamer utilizes a special steel cutting grade carbide with excellent cutting and wear characteristics.



### 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		MAX. SHANK DIAM.	NUMBER OF FLUTES	LENGTH		TYPE 2800 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**
* -	-	.0800	4	3/4	3	280099	-	.0811 - .0890	\$60.45	\$44.70	\$39.30	\$36.85	\$34.05	\$32.00
* 3/32	.0938	.0880	4	3/4	3	280006	\$28.90	.0891 - .0970	60.45	44.70	39.30	36.85	34.05	32.00
* 7/64	.1094	.0943	4	7/8	3 1/2	280007	28.90	.0971 - .1120	60.45	44.70	39.30	36.85	34.05	32.00
* 1/8	.1250	.1099	4	7/8	3 1/2	280008	28.90	.1121 - .1280	60.45	44.70	39.30	36.85	34.05	32.00
* 9/64	.1406	.1255	4	7/8	3 1/2	280009	33.00	.1281 - .1435	64.60	48.75	43.45	40.95	38.25	36.10
* 5/32	.1562	.1411	4	1	4	280010	33.95	.1436 - .1590	65.50	49.75	44.40	41.90	39.15	37.10
* 11/64	.1719	.1567	4	1	4	280011	38.30	.1591 - .1750	69.80	54.10	48.75	46.25	43.60	41.40
* 3/16	.1875	.1724	4	1 1/8	4 1/2	280012	39.10	.1751 - .1910	70.70	54.90	49.55	47.05	44.35	42.25
13/64	.2031	.1880	6	1 1/4	5	280013	41.70	-	-	-	-	-	-	-
7/32	.2188	.1880	6	1 1/4	5	280014	41.70	.1911 - .2210	73.30	57.50	52.15	49.60	46.95	44.85
15/64	.2344	.2193	6	1 1/2	6	280015	44.35	-	-	-	-	-	-	-
1/4	.2500	.2193	6	1 1/2	6	280016	44.35	.2211 - .2530	75.90	60.10	54.80	52.35	49.55	47.45
17/64	.2656	.2505	6	1 1/2	6	280017	47.70	-	-	-	-	-	-	-
9/32	.2812	.2505	6	1 1/2	6	280018	47.70	.2531 - .2840	79.20	63.45	58.15	55.65	52.95	50.80
19/64	.2969	.2817	6	1 5/8	6	280019	49.60	-	-	-	-	-	-	-
5/16	.3125	.2817	6	1 5/8	6	280020	49.60	.2841 - .3150	81.20	65.40	60.10	57.60	54.90	52.75
21/64	.3281	.3130	6	1 3/4	6	280021	53.10	-	-	-	-	-	-	-
11/32	.3438	.3130	6	1 3/4	6	280022	53.10	.3151 - .3470	84.65	68.80	63.50	61.00	58.30	56.25
23/64	.3594	.3443	6	1 3/4	7	280023	57.10	-	-	-	-	-	-	-
3/8	.3750	.3443	6	1 3/4	7	280024	57.10	.3471 - .3780	88.65	72.85	67.55	65.05	62.35	60.25
25/64	.3906	.3755	6	1 3/4	7	280025	65.30	-	-	-	-	-	-	-
13/32	.4062	.3755	6	1 3/4	7	280026	65.30	.3781 - .4090	96.80	81.00	75.75	73.25	70.50	68.35
27/64	.4219	.4067	6	1 3/4	7	280027	69.35	-	-	-	-	-	-	-
7/16	.4375	.4067	6	1 3/4	7	280028	69.35	.4091 - .4410	100.85	85.05	79.80	77.30	74.55	72.40
29/64	.4531	.4380	6	1 3/4	8	280029	73.50	-	-	-	-	-	-	-
15/32	.4688	.4380	6	1 3/4	8	280030	73.50	.4411 - .4720	105.05	89.25	83.95	81.45	78.75	76.60
31/64	.4844	.4693	6	1 3/4	8	280031	78.90	-	-	-	-	-	-	-
1/2	.5000	.4693	6	1 3/4	8	280032	78.90	.4721 - .5030	110.50	94.65	89.35	86.85	84.15	82.05
33/64	.5156	.5005	6	1 7/8	9	280033	101.80	-	-	-	-	-	-	-
17/32	.5312	.5005	6	1 7/8	9	280034	101.80	.5031 - .5340	133.30	117.50	112.25	109.70	107.00	104.85
35/64	.5469	.5005	6	1 7/8	9	280035	120.15	-	-	-	-	-	-	-
9/16	.5625	.5005	6	1 7/8	9	280036	120.15	.5341 - .5660	151.70	135.85	130.55	128.05	125.35	123.25
37/64	.5781	.5630	6	1 7/8	9	280037	136.35	-	-	-	-	-	-	-
19/32	.5938	.5630	6	1 7/8	9	280038	136.35	.5661 - .5970	167.90	152.10	146.80	144.25	141.60	139.45
39/64	.6094	.5630	6	1 7/8	9	280039	137.90	-	-	-	-	-	-	-
5/8	.6250	.5630	6	1 7/8	9	280040	137.90	.5971 - .6280	169.40	153.60	148.35	145.85	143.10	140.95
21/32	.6562	.6255	6	2	9 1/2	280042	199.50	.6281 - .6590	229.50	214.45	209.45	207.05	204.75	202.40
11/16	.6875	.6255	6	2	9 1/2	280044	199.50	.6591 - .6910	229.50	214.45	209.45	207.05	204.75	202.40
23/32	.7188	.6880	6	2	9 1/2	280046	224.45	.6911 - .7220	254.45	239.40	234.40	232.00	229.70	227.35
3/4	.7500	.6880	6	2	9 1/2	280048	224.45	.7221 - .7530	254.45	239.40	234.40	232.00	229.70	227.35
25/32	.7812	.7505	8	2	10	280050	249.15	.7531 - .7840	279.15	264.10	259.10	256.70	254.40	252.05
13/16	.8125	.7817	8	2	10	280052	271.85	.7841 - .8160	301.85	286.80	281.80	279.40	277.10	274.75
27/32	.8438	.8130	8	2	10	280054	286.70	.8161 - .8470	316.70	301.65	296.65	294.25	291.95	289.60
7/8	.8750	.8440	8	2	10	280056	280.70	.8471 - .8780	310.70	295.65	290.65	288.25	285.95	283.60
29/32	.9062	.8755	8	2	10	280058	328.45	.8781 - .9090	358.45	343.40	338.40	336.00	333.70	331.35
15/16	.9375	.9067	8	2	10	280060	345.25	.9091 - .9410	375.25	360.20	355.20	352.80	350.50	348.15
31/32	.9688	.9380	8	2	10	280062	361.65	.9411 - .9720	391.65	376.60	371.60	369.20	366.90	364.55
1	1.0000	.9693	8	2	10	280064	375.30	.9721 - 1.0030	405.30	390.25	385.25	382.85	380.55	378.20

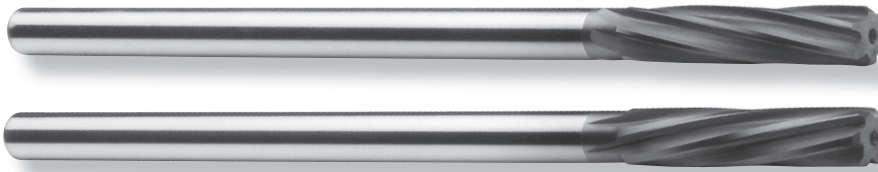
\*Solid carbide head and shank (.0811" - .1910" tool diameters)

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



# SOLID CARBIDE HEAD REAMERS

## RIGHT OR LEFT SPIRAL FLUTES & STRAIGHT STEEL SHANK



**TYPE 2810 - FINISHED FRACTIONAL SIZES - RIGHT HAND SPIRAL**  
**TYPE 2820 - FINISHED FRACTIONAL SIZES - LEFT HAND SPIRAL**

Solid carbide head.

Straight steel shank on .1911" tool diameter and larger (smaller sizes have a straight solid carbide 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.

**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.

**NOTE:** For best results in reaming tough steel alloys and cast steels, we recommend Type 2480 Carbide Tipped Reamer (page 58). This reamer utilizes a special steel cutting grade of carbide with excellent cutting and wear characteristics.

TOOL DIAMETER		MAX. SHANK DIAM.	NO. OF FLTS.	LENGTH		TYPE 2810 R SPIRAL EDP NO.	TYPE 2820 L SPIRAL EDP NO.	BOTH TYPES PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
Frac.	Dec.			Flute	Overall					1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14**
* 1/8	.1250	.1099	4	7/8	3 1/2	281008	282008	\$35.20	.1121 - .1280	\$66.80	\$51.00	\$45.60	\$43.10	\$40.40	\$38.30
* 9/64	.1406	.1255	4	7/8	3 1/2	281009	282009	40.20	.1281 - .1435	71.80	55.95	50.65	48.15	45.45	43.35
* 5/32	.1562	.1411	4	1	4	281010	282010	41.50	.1436 - .1590	73.05	57.15	51.90	49.40	46.65	44.55
* 11/64	.1719	.1567	4	1	4	281011	282011	46.70	.1591 - .1750	78.35	62.50	57.15	54.65	52.00	49.90
3/16	.1875	.1724	4	1 1/8	4 1/2	281012	282012	47.70	.1751 - .1910	79.20	63.45	58.15	55.65	52.95	50.80
13/64	.2031	.1880	6	1 1/4	5	281013	282013	50.80	-	-	-	-	-	-	-
7/32	.2188	.1880	6	1 1/4	5	281014	282014	50.80	.1911 - .2210	82.35	66.55	61.30	58.80	56.00	53.90
15/64	.2344	.2193	6	1 1/2	6	281015	282015	54.15	-	-	-	-	-	-	-
1/4	.2500	.2193	6	1 1/2	6	281016	282016	54.15	.2211 - .2530	85.65	69.80	64.60	62.05	59.30	57.15
17/64	.2656	.2505	6	1 1/2	6	281017	282017	58.15	-	-	-	-	-	-	-
9/32	.2812	.2505	6	1 1/2	6	281018	282018	58.15	.2531 - .2840	89.70	73.90	68.60	66.10	63.35	61.30
19/64	.2969	.2817	6	1 3/8	6	281019	282019	60.60	-	-	-	-	-	-	-
5/16	.3125	.2817	6	1 3/8	6	281020	282020	60.60	.2841 - .3150	92.10	76.30	71.05	68.50	65.80	63.65
21/64	.3281	.3130	6	1 3/8	6	281021	282021	64.70	-	-	-	-	-	-	-
11/32	.3438	.3130	6	1 3/8	6	281022	282022	64.70	.3151 - .3470	96.25	80.45	75.15	72.60	69.90	67.85
23/64	.3594	.3443	6	1 3/4	7	281023	282023	69.65	-	-	-	-	-	-	-
3/8	.3750	.3443	6	1 3/4	7	281024	282024	69.65	.3471 - .3780	101.15	85.35	80.10	77.60	74.85	72.70
25/64	.3906	.3755	6	1 3/4	7	281025	282025	79.60	-	-	-	-	-	-	-
13/32	.4062	.3755	6	1 3/4	7	281026	282026	79.60	.3781 - .4090	111.15	95.35	90.05	87.50	84.85	82.70
27/64	.4219	.4067	6	1 3/4	7	281027	282027	84.50	-	-	-	-	-	-	-
7/16	.4375	.4067	6	1 3/4	7	281028	282028	84.50	.4091 - .4410	116.00	100.20	94.95	92.45	89.70	87.55
29/64	.4531	.4380	6	1 3/4	8	281029	282029	89.65	-	-	-	-	-	-	-
15/32	.4688	.4380	6	1 3/4	8	281030	282030	89.65	.4411 - .4720	121.15	105.40	100.10	97.60	94.90	92.75
31/64	.4844	.4693	6	1 3/4	8	281031	282031	96.20	-	-	-	-	-	-	-
1/2	.5000	.4693	6	1 3/4	8	281032	282032	96.20	.4721 - .5030	127.70	111.95	106.65	104.10	101.45	99.30
33/64	.5156	.5005	6	1 7/8	9	281033	282033	124.00	-	-	-	-	-	-	-
17/32	.5312	.5005	6	1 7/8	9	281034	282034	124.00	.5031 - .5340	155.60	139.75	134.45	131.95	129.25	127.15
35/64	.5469	.5005	6	1 7/8	9	281035	282035	146.50	-	-	-	-	-	-	-
9/16	.5625	.5005	6	1 7/8	9	281036	282036	146.50	.5341 - .5660	178.05	162.20	156.90	154.40	151.70	149.55
37/64	.5781	.5630	6	1 7/8	9	281037	282037	166.20	-	-	-	-	-	-	-
19/32	.5938	.5630	6	1 7/8	9	281038	282038	166.20	.5661 - .5970	197.70	181.95	176.65	174.15	171.40	169.30
39/64	.6094	.5630	6	1 7/8	9	281039	282039	168.10	-	-	-	-	-	-	-
5/8	.6250	.5630	6	1 7/8	9	281040	282040	168.10	.5971 - .6280	199.70	183.90	178.55	176.05	173.35	171.25
21/32	.6562	.6255	6	2	9 1/2	281042	282042	243.40	.6281 - .6590	280.00	261.65	255.55	252.60	249.80	246.95
11/16	.6875	.6255	6	2	9 1/2	281044	282044	243.40	.6591 - .6910	280.00	261.65	255.55	252.60	249.80	246.95
23/32	.7188	.6880	6	2	9 1/2	281046	282046	273.85	.6911 - .7220	310.45	292.05	285.95	283.05	280.25	277.35
3/4	.7500	.6880	6	2	9 1/2	281048	282048	273.85	.7221 - .7530	310.45	292.05	285.95	283.05	280.25	277.35
25/32	.7812	.7505	8	2	10	281050	282050	303.95	.7531 - .7840	340.55	322.20	316.10	313.15	310.35	307.50
13/16	.8125	.7817	8	2	10	281052	282052	331.65	.7841 - .8160	368.25	349.90	343.80	340.85	338.05	335.20
27/32	.8438	.8130	8	2	10	281054	282054	349.75	.8161 - .8470	386.35	368.00	361.90	359.00	356.20	353.30
7/8	.8750	.8440	8	2	10	281056	282056	342.45	.8471 - .8780	379.05	360.70	354.60	351.65	348.85	346.00
29/32	.9062	.8755	8	2	10	281058	282058	400.70	.8781 - .9090	437.30	418.95	412.85	409.90	407.10	404.25
15/16	.9375	.9067	8	2	10	281060	282060	421.20	.9091 - .9410	457.80	439.45	433.35	430.40	427.60	424.75
31/32	.9688	.9380	8	2	10	281062	282062	441.20	.9411 - .9720	477.80	459.45	453.35	450.40	447.60	444.75
1	1.0000	.9693	8	2	10	281064	282064	457.85	.9721 - 1.0030	494.45	476.10	470.00	467.10	464.25	461.40

\*Solid carbide head and shank (.1121" - .1910" tool diameters)

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



# CHUCKING REAMERS

## SOLID CARBIDE - STRAIGHT FLUTES & STRAIGHT SHANK - SHORT SERIES

### TYPE 2804 - .0005 INCREMENTS

#### STOCKED DECIMAL TOOL DIAMETERS (.0280 - .1765)

NOTE: Dimension details (.0591 and larger) on page 72.



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
.0280	28040280	\$20.20	.0580	28040580	\$20.75	.0880	28040880	\$21.60	.1180	28041180	\$24.35	.1480	28041480	\$26.85
.0285	28040285	21.30	.0585	28040585	20.75	.0885	28040885	21.60	.1185	28041185	24.45	.1485	28041485	26.85
.0290	28040290	21.30	.0590	28040590	18.05	.0890	28040890	20.90	.1190	28041190	24.45	.1490	28041490	26.85
.0295	28040295	20.20	.0595	28040595	19.70	.0895	28040895	22.10	.1195	28041195	24.45	.1495	28041495	25.55
.0300	28040300	21.30	.0600	28040600	21.30	.0900	28040900	22.10	.1200	28041200	23.25	.1500	28041500	26.85
.0305	28040305	21.30	.0605	28040605	21.30	.0905	28040905	22.10	.1205	28041205	24.45	.1505	28041505	26.85
.0310	28040310	20.20	.0610	28040610	20.20	.0910	28040910	22.20	.1210	28041210	24.45	.1510	28041510	26.85
.0315	2804008	20.20	.0615	28040615	21.30	.0915	28040915	22.20	.1215	28041215	24.45	.1515	28041515	26.85
.0320	28040320	20.20	.0620	28040620	21.30	.0920	28040920	22.20	.1220	2804031	23.25	.1520	28041520	25.55
.0325	28040325	21.30	.0625	280404	18.60	.0925	28040925	21.00	.1225	28041225	24.45	.1525	28041525	28.00
.0330	28040330	20.20	.0630	2804016	20.20	.0930	28040930	22.20	.1230	28041230	24.45	.1530	28041530	28.00
.0335	28040335	20.20	.0635	28040635	20.20	.0935	28040935	21.00	.1235	28041235	24.45	.1535	2804039	26.60
.0340	28040340	20.55	.0640	28040640	21.30	.0940	28040940	22.20	.1240	28041240	24.45	.1540	28041540	26.60
.0345	28040345	20.55	.0645	28040645	21.30	.0945	2804024	21.00	.1245	28041245	24.45	.1545	28041545	28.00
.0350	28040350	19.55	.0650	28040650	21.40	.0950	28040950	22.50	.1250	280408	21.40	.1550	28041550	28.00
.0355	28040355	20.55	.0655	28040655	21.40	.0955	28040955	22.50	.1255	28041255	24.45	.1555	28041555	26.60
.0360	28040360	19.55	.0660	28040660	21.40	.0960	28040960	21.40	.1260	2804032	23.25	.1560	28041560	28.00
.0365	28040365	20.55	.0665	28040665	21.40	.0965	28040965	21.40	.1265	28041265	24.55	.1565	28041565	29.00
.0370	28040370	19.55	.0670	28040670	20.40	.0970	28040970	22.50	.1270	28041270	24.55	.1570	28041570	27.50
.0375	28040375	20.55	.0675	28040675	21.40	.0975	28040975	22.50	.1275	28041275	24.55	.1575	2804040	25.15
.0380	28040380	19.55	.0680	28040680	21.40	.0980	28040980	21.40	.1280	28041280	23.30	.1580	28041580	29.60
.0385	28040385	20.55	.0685	28040685	21.40	.0985	28040985	22.65	.1285	28041285	23.30	.1585	28041585	29.60
.0390	28040390	19.55	.0690	28040690	21.40	.0990	28040990	22.65	.1290	28041290	24.55	.1590	28041590	28.20
.0395	28040395	20.55	.0695	28040695	21.40	.0995	28040995	21.60	.1295	28041295	24.55	.1595	28041595	30.10
.0400	28040400	19.55	.0700	28040700	20.40	.1000	28041000	22.65	.1300	28041300	24.55	.1600	28041600	30.10
.0405	28040405	20.55	.0705	28040705	21.40	.1005	28041005	22.65	.1305	28041305	24.55	.1605	28041605	30.10
.0410	28040410	19.55	.0710	28040710	21.40	.1010	28041010	22.65	.1310	28041310	24.55	.1610	28041610	28.60
.0415	28040415	20.55	.0715	28040715	21.40	.1015	28041015	21.60	.1315	28041315	24.55	.1615	28041615	30.10
.0420	28040420	19.55	.0720	28040720	21.40	.1020	28041020	22.85	.1320	28041320	24.55	.1620	28041620	30.10
.0425	28040425	20.55	.0725	28040725	21.40	.1025	28041025	22.95	.1325	28041325	24.55	.1625	28041625	30.10
.0430	28040430	19.55	.0730	28040730	20.40	.1030	28041030	22.95	.1330	28041330	24.55	.1630	28041630	30.10
.0435	28040435	20.75	.0735	28040735	21.40	.1035	28041035	22.95	.1335	28041335	24.55	.1635	28041635	30.20
.0440	28040440	20.75	.0740	28040740	21.40	.1040	28041040	22.95	.1340	28041340	24.55	.1640	28041640	30.10
.0445	28040445	20.75	.0745	28040745	21.40	.1045	28041045	22.95	.1345	28041345	24.55	.1645	28041645	30.10
.0450	28040450	20.75	.0750	28040750	21.40	.1050	28041050	22.95	.1350	28041350	24.55	.1650	28041650	30.10
.0455	28040455	20.75	.0755	28040755	21.40	.1055	28041055	22.95	.1355	28041355	24.55	.1655	28041655	30.10
.0460	28040460	20.75	.0760	28040760	20.40	.1060	28041060	22.95	.1360	28041360	23.30	.1660	28041660	28.70
.0465	28040465	19.70	.0765	28040765	21.40	.1065	28041065	21.80	.1365	28041365	24.55	.1665	28041665	30.45
.0470	28040470	20.75	.0770	28040770	21.40	.1070	28041070	23.30	.1370	28041370	24.55	.1670	28041670	30.45
.0475	28040475	20.75	.0775	28040775	21.40	.1075	28041075	23.30	.1375	28041375	24.55	.1675	28041675	30.45
.0480	28040480	20.75	.0780	28040780	21.40	.1080	28041080	23.30	.1380	28041380	24.95	.1680	28041680	30.45
.0485	28040485	20.75	.0785	28040785	20.45	.1085	28041085	23.60	.1385	28041385	24.95	.1685	28041685	30.45
.0490	28040490	20.75	.0790	28040790	21.50	.1090	28041090	23.60	.1390	28041390	24.95	.1690	28041690	30.45
.0495	28040495	20.75	.0795	28040795	21.50	.1095	28041095	23.60	.1395	28041395	24.95	.1695	28041695	29.05
.0500	28040500	20.75	.0800	28040800	21.50	.1100	28041100	22.50	.1400	28041400	24.95	.1700	28041700	31.10
.0505	28040505	20.75	.0805	28040805	21.50	.1105	28041105	23.95	.1405	28041405	23.60	.1705	28041705	31.10
.0510	28040510	20.75	.0810	28040810	20.45	.1110	28041110	22.85	.1410	28041410	25.90	.1710	28041710	31.10
.0515	28040515	20.75	.0815	28040815	21.60	.1115	28041115	24.35	.1415	28041415	25.90	.1715	28041715	31.10
.0520	28040520	19.70	.0820	28040820	20.55	.1120	28041120	24.35	.1420	28041420	25.90	.1720	28041720	31.10
.0525	28040525	20.75	.0825	28040825	21.60	.1125	28041125	24.35	.1425	28041425	25.90	.1725	28041725	31.10
.0530	28040530	20.75	.0830	28040830	21.60	.1130	28041130	23.15	.1430	28041430	25.90	.1730	28041730	29.60
.0535	28040535	20.75	.0835	28040835	21.60	.1135	28041135	24.35	.1435	28041435	25.90	.1735	28041735	31.55
.0540	28040540	20.75	.0840	28040840	21.60	.1140	28041140	24.35	.1440	28041440	24.70	.1740	28041740	31.55
.0545	28040545	20.75	.0845	28040845	21.60	.1145	28041145	24.35	.1445	28041445	26.05	.1745	28041745	31.55
.0550	28040550	19.70	.0850	28040850	21.60	.1150	28041150	24.35	.1450	28041450	26.10	.1750	28041750	31.55
.0555	28040555	20.75	.0855	28040855	21.60	.1155	28041155	24.35	.1455	28041455	26.10	.1755	28041755	31.90
.0560	28040560	20.75	.0860	28040860	20.55	.1160	28041160	23.15	.1460	28041460	26.80	.1760	28041760	31.90
.0565	28040565	20.75	.0865	28040865	21.60	.1165	28041165	24.35	.1465	28041465	26.80	.1765	28041765	31.90
.0570	28040570	20.75	.0870	28040870	21.60	.1170	28041170	24.35	.1470	28041470	25.40	-	-	-
.0575	28040575	20.75	.0875	28040875	21.60	.1175	28041175	24.35	.1475	28041475	26.80	-	-	-



# CHUCKING REAMERS

## SOLID CARBIDE - STRAIGHT FLUTES & STRAIGHT SHANK - SHORT SERIES

### TYPE 2804 - FRACTIONAL, WIRE/LETTER & METRIC



NOTE: Dimension details (.0591 and larger) on page 72.

TOOL DIAMETER				TYPE 2804 EDP NO.	PRICE
FRACTION	WIRE	METRIC (mm)	DECIMAL		
* 1/32			.0312	280402	\$18.60
			*1.0 .0394	2804010	17.80
			*1.1 .0433	2804011	19.55
* 3/64			.0469	280403	19.70
			*1.2 .0472	2804012	19.70
			*1.3 .0512	2804013	19.70
			*1.4 .0551	2804014	19.70
			1.5 .0591	2804015	18.05
1/16			.0625	280404	18.60
			1.6 .0630	2804016	20.20
			1.7 .0669	2804017	20.40
	51		.0670	28040670	20.40
			.0700	28040700	20.40
			.0709	2804018	20.40
	49		.0730	28040730	20.40
			.0748	2804019	20.40
			.0760	28040760	20.40
			.0781	280405	20.40
	47		.0785	28040785	20.45
			2.0 .0787	2804020	18.80
			.0810	28040810	20.45
			.0820	28040820	20.55
			.0827	2804021	20.55
	44		.0860	28040860	20.55
			.0866	2804022	20.55
			.0890	28040890	20.90
	43		.0906	2804023	20.90
			.0935	28040935	21.00
			.0938	280406	19.35
			.0945	2804024	21.00
			.0960	28040960	21.40
	41		.0980	28040980	21.40
			.0984	2804025	19.55
	39		.0995	28040995	21.60
			.1015	28041015	21.60
	38		.1024	2804026	21.70
			.1040	28041040	22.95
			.1063	2804027	21.80
			.1065	28041065	21.80
	37		.1094	280407	22.50
			.1100	28041100	22.50
			.1102	2804028	22.50
	34		.1110	28041110	22.85
	33		.1130	28041130	23.15
			.1142	2804029	23.15
			.1160	28041160	23.15
			.1181	2804030	21.40
	32		.1200	28041200	23.25
			.1220	2804031	23.25
			.1250	280408	21.40
			.1260	2804032	23.25
			.1285	28041285	23.30
	30				
			.1299	2804033	23.30
			.1339	2804034	23.30
			.1360	28041360	23.30
			.1378	2804035	21.70
			.1405	28041405	23.60
			.1406	280409	24.35
			.1417	2804036	24.70
	28		.1440	28041440	24.70

TOOL DIAMETER				TYPE 2804 EDP NO.	PRICE
FRACTION	WIRE/LETTER	METRIC (mm)	DECIMAL		
		3.7	.1457	2804037	\$24.95
			.1470	28041470	25.40
	26		.1495	28041495	25.55
	25		.1496	2804038	26.85
		3.8	.1520	28041520	25.55
			.1535	2804039	26.60
	24		.1540	28041540	26.60
		3.9	.1562	280410	25.15
			.1570	28041570	27.50
		4.0	.1575	2804040	25.15
			.1590	28041590	28.20
	22		.1610	28041610	28.60
			.1614	2804041	28.60
		4.1	.1654	2804042	28.70
		4.2	.1660	28041660	28.70
			.1693	2804043	29.05
	19		.1695	28041695	29.05
			.1719	280411	29.60
		4.4	.1730	28041730	29.60
			.1732	2804044	29.60
	18		.1770	28041770	30.30
			.1772	2804045	27.50
		4.5	.1800	28041800	30.45
			.1811	2804046	30.85
	16		.1820	28041820	30.90
			.1850	2804047	31.10
		4.7	.1875	280412	29.85
			.1890	2804048	32.80
	14		.1910	28041910	33.20
			.1929	2804049	33.20
		4.9	.1935	28041935	33.40
			.1960	28041960	34.60
	11		.1969	2804050	31.55
			.1990	28041990	34.75
		5.0	.2008	2804051	35.85
			.2010	28042010	35.85
	8		.2031	280413	35.85
			.2040	28042040	35.85
		5.1	.2047	2804052	35.85
			.2055	28042055	35.85
	7		.2087	2804053	35.85
			.2090	28042090	37.70
		5.2	.2126	2804054	35.85
			.2130	28042130	35.85
	6		.2165	2804055	32.80
			.2188	280414	32.70
		5.3	.2205	2804056	40.00
			.2210	28042210	40.00
	5		.2244	2804057	41.50
			.2280	28042280	42.00
		5.4	.2283	2804058	42.00
			.2323	2804059	42.00
	4		.2340	28042340	42.00
			.2344	280415	42.00
		5.5	.2362	2804060	38.95
			.2380	28042380	42.85
	3		.2402	2804061	42.85
			.2420	28042420	42.85
		5.6	.2441	2804062	42.85
			.2460	28042460	42.85

TOOL DIAMETER				TYPE 2804 EDP NO.	PRICE
FRACTION	LETTER	METRIC (mm)	DECIMAL		
1/4	E		.2480	2804063	\$42.85
			.2500	280416	38.95
			.2520	2804064	47.20
		6.3	.2559	2804065	47.15
			.2570	28042570	47.15
	F		.2598	2804066	49.45
		6.6	.2610	28042610	47.15
	G		.2638	2804067	49.45
			.2656	280417	47.15
			.2660	28042660	47.15
		6.8	.2677	2804068	49.45
			.2717	2804069	49.45
		6.9			
	17/64				
			.2720	28042720	47.15
			.2756	2804070	43.05
		7.0	.2770	28042770	47.15
			.2795	2804071	53.70
		7.1			
			.2810	28042810	51.10
			.2812	280418	46.75
		7.2	.2835	2804072	58.05
			.2874	2804073	58.05
		7.3			
			.2900	28042900	55.35
			.2913	2804074	58.05
		7.4	.2950	28042950	55.35
			.2953	2804075	55.35
		7.5			
			.2969	280419	55.35
			.2992	2804076	60.55
		7.6	.3020	28043020	57.65
			.3031	2804077	60.55
		7.7			
			.3071	2804078	60.55
			.3110	2804079	60.55
		7.8	.3125	280420	52.70
			.3150	2804080	52.70
		8.0			
			.3160	28043160	60.55
			.3189	2804081	64.45
		8.1	.3228	2804082	64.45
			.3230	28043230	61.30
		8.2			
			.3268	2804083	73.70
			.3281	280421	70.15
		8.3	.3307	2804084	73.70
			.3320	28043320	70.15
		8.4			
			.3346	2804085	70.15
			.3386	2804086	73.70
		8.5	.3390	28043390	70.15
			.3425	2804087	73.70
		8.6			
			.3438	280422	70.15
			.3465	2804088	74.00
		8.7	.3480	28043480	70.45
			.3504	2804089	74.00
		8.8			
			.3543	2804090	64.75
			.3580	28043580	70.75
		8.9	.3583	2804091	74.70
			.3594	280423	71.10
		9.0			
			.3622	2804092	75.60
			.3661	2804093	75.60
		9.1	.3680	28043680	72.00
			.3701	2804094	76.00
		9.2			
			.3740	2804095	72.45
			.3750	280424	66.30
		9.3	.3770	28043770	86.00
			.3780	2804096	90.45
		9.4			
		9.5			
		9.6			

\*Dimensions thru .0590" tool diameter: # of flutes = 4; flute length = 3/8" (except for .0312" & .0394" tool diameters, flute = 1/4"); overall length = 1 1/2"



# 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	\$62.30	\$38.75	\$30.90	\$27.20	\$23.20	\$20.00	\$15.40
*0.0661 - 0.0740	.0650	4	1/2	1 3/4	280245	62.50	38.95	31.10	27.35	23.35	20.20	15.60
*0.0741 - 0.0810	.0730	4	1/2	1 3/4	280205	62.55	39.05	31.15	27.50	23.40	20.30	15.65
*0.0811 - 0.0890	.0800	4	1/2	2	280255	62.95	39.45	31.60	27.90	23.90	20.70	16.10
*0.0891 - 0.0970	.0880	4	1/2	2	280206	63.35	39.80	31.95	28.25	24.25	21.00	16.45
*0.0971 - 0.1120	.0943	4	5/8	2 1/4	280207	63.60	40.05	32.20	28.50	24.45	21.30	16.70
0.1121 - 0.1280	.1099	4	5/8	2 1/4	280208	64.70	41.15	33.30	29.60	25.55	22.40	17.80
0.1281 - 0.1435	.1255	4	3/4	2 1/2	280209	65.15	41.65	33.75	30.10	26.05	22.90	18.25
0.1436 - 0.1590	.1411	4	3/4	2 1/2	280210	66.25	42.70	34.85	31.15	27.15	23.95	19.35
0.1591 - 0.1750	.1567	4	7/8	2 3/4	280211	68.75	45.20	37.35	33.65	29.65	26.45	21.85
0.1751 - 0.1910	.1724	4	7/8	2 3/4	280212	70.40	46.90	39.05	35.35	31.25	28.15	23.50
0.1911 - 0.2210	.1880	6	1	3	280214	73.30	49.80	41.95	38.25	34.25	31.05	26.45
0.2211 - 0.2530	.2193	6	1	3	280216	78.30	54.80	46.95	43.25	39.25	36.05	31.45
0.2531 - 0.2840	.2505	6	1 1/8	3 1/4	280218	84.15	60.60	52.75	49.05	45.05	41.85	37.25
0.2841 - 0.3150	.2817	6	1 1/8	3 1/4	280220	90.55	67.00	59.10	55.45	51.45	48.25	43.65
0.3151 - 0.3470	.3130	6	1 1/4	3 1/2	280222	100.00	76.55	68.70	65.00	60.95	57.70	53.20
0.3471 - 0.3780	.3443	6	1 1/4	3 1/2	280224	101.30	77.80	70.00	66.25	62.25	59.00	54.45
0.3781 - 0.4090	.3755	6	1 3/8	3 3/4	280226	109.70	86.15	78.30	74.55	70.55	67.40	62.75
0.4091 - 0.4410	.4067	6	1 3/8	3 3/4	280228	110.60	87.05	79.20	75.50	71.50	68.30	63.70
0.4411 - 0.4720	.4380	6	1 1/2	4	280230	117.35	93.80	85.95	82.25	78.25	75.10	70.45
0.4721 - 0.5150	.4693	6	1 1/2	4	280232	123.85	100.35	92.45	88.80	84.75	81.60	76.95

\*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

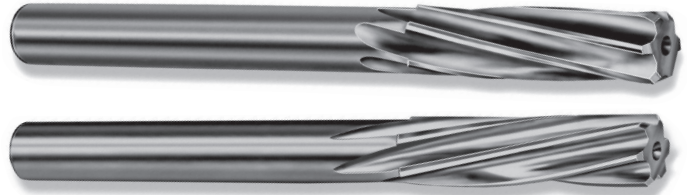
### TYPE 2822 - LEFT SPIRAL FLUTES - STRAIGHT SHANK

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	\$62.70	\$40.15	\$32.55	\$29.00	\$25.10	\$22.05	\$17.60
0.1121 - 0.1280	.1099	4	5/8	2 1/4	281208	282208	63.90	41.30	33.70	30.20	26.25	23.20	18.80
0.1281 - 0.1435	.1255	4	3/4	2 1/2	281209	282209	67.60	43.95	36.00	32.25	28.20	24.95	20.30
0.1436 - 0.1590	.1411	4	3/4	2 1/2	281210	282210	68.90	45.15	37.20	33.50	29.40	26.15	21.60
0.1591 - 0.1750	.1567	4	7/8	2 3/4	281211	282211	71.65	47.95	40.00	36.20	32.20	28.95	24.30
0.1751 - 0.1910	.1724	4	7/8	2 3/4	281212	282212	73.45	49.75	41.80	38.05	33.95	30.75	26.10
0.1911 - 0.2210	.1880	6	1	3	281214	282214	80.30	55.50	47.20	43.25	39.00	35.60	30.75
0.2211 - 0.2530	.2193	6	1	3	281216	282216	86.25	61.30	53.00	49.10	44.80	41.50	36.65
0.2531 - 0.2840	.2505	6	1 1/8	3 1/4	281218	282218	93.00	68.10	59.80	55.90	51.60	48.30	43.40
0.2841 - 0.3150	.2817	6	1 1/8	3 1/4	281220	282220	100.30	75.45	67.15	63.25	59.00	55.60	50.75
0.3151 - 0.3470	.3130	6	1 1/4	3 1/2	281222	282222	111.40	86.55	78.25	74.30	70.05	66.65	61.80
0.3471 - 0.3780	.3443	6	1 1/4	3 1/2	281224	282224	112.90	88.05	79.75	75.80	71.55	68.15	63.30
0.3781 - 0.4090	.3755	6	1 3/8	3 3/4	281226	282226	116.05	91.15	82.85	78.85	74.65	71.30	66.40
0.4091 - 0.4410	.4067	6	1 3/8	3 3/4	281228	282228	117.00	92.05	83.75	79.85	75.60	72.20	67.40
0.4411 - 0.4720	.4380	6	1 1/2	4	281230	282230	124.15	99.20	90.90	87.00	82.80	79.40	74.50
0.4721 - 0.5150	.4693	6	1 1/2	4	281232	282232	131.00	106.15	97.80	93.95	89.65	86.30	81.40

\*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	\$27.05	-	-	241006SF	\$38.05	243006SF	244006SF	\$35.25	245006SF	\$32.35	-	-
0.2041 - 0.2210	240007SF	27.05	-	-	241007SF	38.05	243007SF	244007SF	35.25	245007SF	32.35	-	-
0.2211 - 0.2380	24002344SF	28.60	-	-	24102344SF	38.05	24302344SF	24402344SF	35.25	24502344SF	32.35	-	-
0.2381 - 0.2530	240008SF	27.05	240208SF	\$31.20	241008SF	38.05	243008SF	244008SF	35.25	245008SF	32.35	-	-
0.2531 - 0.2840	240009SF	27.55	240209SF	31.65	241009SF	38.15	243009SF	244009SF	35.25	245009SF	33.10	-	-
0.2841 - 0.3150	240010SF	27.55	240210SF	31.65	241010SF	38.15	243010SF	244010SF	40.95	245010SF	33.10	246510SF	\$49.90
0.3151 - 0.3470	240011SF	28.55	240211SF	32.85	241011SF	42.00	243011SF	244011SF	41.35	245011SF	34.25	246511SF	49.90
0.3471 - 0.3780	240012SF	26.20	240212SF	30.20	241012SF	42.35	243012SF	244012SF	44.80	245012SF	34.25	246512SF	46.70
0.3781 - 0.4090	240013SF	29.90	240213SF	34.45	241013SF	44.30	243013SF	244013SF	45.40	245013SF	35.90	246513SF	49.55
0.4091 - 0.4410	240014SF	31.90	240214SF	36.70	241014SF	46.05	243014SF	244014SF	53.85	245014SF	38.85	246514SF	49.55
0.4411 - 0.4720	240015SF	32.45	240215SF	37.75	241015SF	48.90	243015SF	244015SF	53.85	245015SF	42.00	246515SF	52.55
0.4721 - 0.5030	240016SF	38.65	240216SF	44.40	241016SF	50.75	243016SF	244016SF	58.85	245016SF	45.05	246516SF	52.55
0.5031 - 0.5340	240017SF	42.00	240217SF	48.00	241017SF	52.30	243017SF	244017SF	58.85	245017SF	46.20	246517SF	53.85
0.5341 - 0.5660	240018SF	42.00	240218SF	48.00	241018SF	52.30	243018SF	244018SF	62.10	245018SF	46.20	246518SF	53.85
0.5661 - 0.5970	240019SF	43.70	240219SF	50.20	241019SF	53.85	243019SF	244019SF	62.10	245019SF	48.05	246519SF	56.25
0.5971 - 0.6280	240020SF	43.70	240220SF	50.20	241020SF	53.85	243020SF	244020SF	63.75	245020SF	48.05	246520SF	56.25
0.6281 - 0.6590	240021SF	44.45	240221SF	51.15	241021SF	55.40	243021SF	244021SF	63.75	245021SF	48.90	246521SF	61.50
0.6591 - 0.6910	240022SF	44.45	240222SF	51.15	241022SF	59.00	243022SF	244022SF	66.70	245022SF	48.90	246522SF	61.50
0.6911 - 0.7220	240023SF	46.50	240223SF	53.50	241023SF	59.80	243023SF	244023SF	66.70	245023SF	51.15	246523SF	63.85
0.7221 - 0.7530	240024SF	46.50	240224SF	53.50	241024SF	60.75	243024SF	244024SF	68.40	245024SF	51.15	246524SF	63.85
0.7531 - 0.7840	240025SF	48.10	240225SF	55.10	241025SF	62.25	243025SF	244025SF	68.40	245025SF	52.85	246525SF	68.80
0.7841 - 0.8160	240026SF	48.10	240226SF	55.10	241026SF	62.25	243026SF	244026SF	74.30	245026SF	52.85	246526SF	68.80
0.8161 - 0.8470	240027SF	50.05	240227SF	57.50	241027SF	65.65	243027SF	244027SF	74.30	245027SF	55.00	246527SF	71.45
0.8471 - 0.8780	240028SF	51.90	240228SF	59.65	241028SF	68.15	243028SF	244028SF	81.20	245028SF	57.10	246528SF	74.15
0.8781 - 0.9090	240029SF	60.55	240229SF	70.00	241029SF	79.45	243029SF	244029SF	81.20	245029SF	66.45	246529SF	78.90
0.9091 - 0.9410	240030SF	60.55	240230SF	70.00	241030SF	79.45	243030SF	244030SF	89.40	245030SF	66.45	246530SF	78.90
0.9411 - 0.9720	240031SF	63.40	240231SF	72.85	241031SF	83.25	243031SF	244031SF	89.40	245031SF	69.65	246531SF	82.00
0.9721 - 1.0030	240032SF	63.40	240232SF	72.85	241032SF	83.25	243032SF	244032SF	93.85	245032SF	69.65	246532SF	82.00

### 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	-	-	-	-	-	-	-	\$18.35	
5/32	.1562	250105	-	-	-	-	-	-	-	14.90	
3/16	.1875	250106	250306	-	-	-	-	-	-	15.20	
7/32	.2188	250107	250307	250407	-	-	-	-	-	17.20	
1/4	.2500	250108	250308	250408	-	-	-	-	-	17.20	
9/32	.2812	250109	250309	250409	250509	-	-	-	-	18.35	
5/16	.3125	250110	250310	250410	250510	-	-	-	-	18.35	
3/8	.3750	-	250312	250412	250512	250612	-	-	-	20.25	
7/16	.4375	-	250314	250414	250514	250614	250714	-	-	20.70	
1/2	.5000	-	-	250416	250516	250616	250716	250816	-	23.70	
9/16	.5625	-	-	250418	250518	250618	250718	250818	250918	31.00	
5/8	.6250	-	-	250420	250520	250620	250720	250820	250920	34.05	
11/16	.6875	-	-	250422	250522	250622	250722	250822	250922	34.85	
3/4	.7500	-	-	250424	250524	250624	250724	250824	250924	39.50	
13/16	.8125	-	-	250426	250526	250626	250726	250826	250926	44.40	
7/8	.8750	-	-	250428	250528	250628	250728	250828	250928	49.10	
15/16	.9375	-	-	250430	250530	250630	250730	250830	250930	51.80	
1	1.0000	-	-	250432	250532	250632	250732	250832	250932	53.60	
1 1/16	1.0625	-	-	-	-	250634	250734	250834	250934	55.55	
1 1/8	1.1250	-	-	-	-	250636	250736	250836	250936	66.95	



# REDUCED SHANK COUNTERBORES

## CARBIDE TIPPED - STRAIGHT SHANK - INTERCHANGEABLE PILOT TYPE



### TYPE 2522 - STRAIGHT SHANK

3 flutes.

Furnished with 1/64" corner radius.

Carbide tips brazed to tough alloy steel body.

Tool diameter tolerance: plus .001", minus .000".

Shank diameter tolerance: plus .0000", minus .001".

### USE:

For counterboring and spotfacing non-ferrous materials, composites, and non-metals used in airframe manufacturing.

### OPTIONS:

Modified tool diameter - priced below.

Metric tool diameter.

Cutting diameter reduced for step.

Corner chamfer or corner radius.

TOOL DIAMETER		DIMENSIONS				TYPE 2522 EDP NO.	PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
		MIN CUT DIAM.	PILOT HOLE DIAM.	SMALL SHANK DIAM.	OVERALL LENGTH				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
FRAC.	DEC.													
1/4	.2500	.1250	.0938	1/4	2 3/8	252208	\$46.70	0.2381 - 0.2530	\$79.40	\$63.10	\$57.60	\$55.00	\$52.20	\$49.90
9/32	.2812	.1250	.0938	1/4	2 3/8	252209	46.75	0.2531 - 0.2840	79.45	63.15	57.70	55.05	52.25	50.00
5/16	.3125	.1250	.0938	1/4	2 3/8	252210	47.95	0.2841 - 0.3150	80.70	64.30	58.80	56.15	53.40	51.20
11/32	.3438	.1250	.0938	1/4	2 3/8	252211	48.90	0.3151 - 0.3470	81.65	65.25	59.80	57.10	54.40	52.15
3/8	.3750	.1250	.0938	1/4	2 3/8	252212	49.05	0.3471 - 0.3780	81.75	65.40	60.00	57.25	54.50	52.25
13/32	.4062	.1560	.1250	1/4	2 3/4	252213	55.80	0.3781 - 0.4090	88.40	72.15	66.65	64.00	61.20	59.00
7/16	.4375	.1560	.1250	1/4	2 3/4	252214	60.15	0.4091 - 0.4410	92.85	76.45	71.05	68.30	65.60	63.35
15/32	.4688	.1560	.1250	1/4	2 3/4	252215	61.15	0.4411 - 0.4720	93.85	77.50	72.05	69.40	66.60	64.35
1/2	.5000	.1560	.1250	1/4	2 3/4	252216	61.90	0.4721 - 0.5030	94.60	78.25	72.80	70.05	67.30	65.05
17/32	.5312	.1560	.1250	1/4	2 3/4	252217	62.20	0.5031 - 0.5340	94.85	78.50	73.10	70.40	67.60	65.40
9/16	.5625	.1560	.1250	1/4	2 3/4	252218	62.45	0.5341 - 0.5660	95.15	78.80	73.35	70.60	67.95	65.65
19/32	.5938	.1560	.1250	1/4	2 3/4	252219	62.80	0.5661 - 0.5970	95.55	79.20	73.75	71.05	68.25	66.00
5/8	.6250	.1560	.1250	1/4	2 3/4	252220	63.50	0.5971 - 0.6280	96.20	79.90	74.40	71.80	69.00	66.70
21/32	.6562	.2190	.1875	1/4	2 3/4	252221	70.55	0.6281 - 0.6590	103.25	86.90	81.50	78.80	76.05	73.80
11/16	.6875	.2190	.1875	1/4	2 3/4	252222	74.10	0.6591 - 0.6910	106.80	90.45	85.00	82.30	79.50	77.30
23/32	.7188	.2190	.1875	1/4	2 3/4	252223	76.60	0.6911 - 0.7220	109.25	92.95	87.45	84.85	82.05	79.85
3/4	.7500	.2190	.1875	1/4	2 3/4	252224	77.55	0.7221 - 0.7530	110.25	93.90	88.40	85.80	83.05	80.80
25/32	.7812	.2190	.1875	1/4	2 3/4	252225	77.90	0.7531 - 0.7840	110.60	94.25	88.80	86.05	83.35	81.10
13/16	.8125	.2190	.1875	1/4	2 3/4	252226	78.55	0.7841 - 0.8160	111.35	94.90	89.50	86.80	84.05	81.80
27/32	.8438	.2190	.1875	1/4	2 3/4	252227	79.15	0.8161 - 0.8470	111.85	95.40	90.00	87.30	84.55	82.30
7/8	.8750	.2190	.1875	1/4	2 3/4	252228	79.90	0.8471 - 0.8780	112.55	96.20	90.80	88.10	85.30	83.10
29/32	.9062	.2190	.1875	1/4	2 3/4	252229	80.40	0.8781 - 0.9090	113.10	96.80	91.35	88.70	85.90	83.65
15/16	.9375	.2190	.1875	1/4	2 3/4	252230	81.20	0.9091 - 0.9410	113.90	97.60	92.10	89.45	86.70	84.40
31/32	.9688	.2190	.1875	1/4	2 3/4	252231	81.75	0.9411 - 0.9720	114.45	98.05	92.70	89.95	87.20	84.95
1	1.0000	.2190	.1875	1/4	2 3/4	252232	82.00	0.9721 - 1.0030	114.70	98.35	92.90	90.20	87.40	85.20
1 1/16	1.0625	.2190	.1875	3/8	2 3/4	252233	104.65	1.0031 - 1.0660	137.30	120.95	115.55	112.85	110.05	107.85
1 1/8	1.1250	.2190	.1875	3/8	2 3/4	252236	111.65	1.0661 - 1.1280	144.35	128.00	122.60	119.90	117.10	114.85
1 3/16	1.1875	.2190	.1875	3/8	2 3/4	252238	113.05	1.1281 - 1.1905	145.75	129.45	124.00	121.30	118.55	116.30
1 1/4	1.2500	.2810	.2500	3/8	2 3/4	252240	115.20	1.1906 - 1.2530	147.95	131.55	126.05	123.40	120.70	118.45
1 3/8	1.3125	.2810	.2500	3/8	2 3/4	252242	117.30	1.2531 - 1.3155	150.00	133.65	128.25	125.55	122.75	120.50
1 5/8	1.3750	.2810	.2500	3/8	2 3/4	252244	118.70	1.3156 - 1.3780	151.40	135.15	129.65	126.90	124.20	121.90
1 7/8	1.4375	.2810	.2500	3/8	2 3/4	252246	120.10	1.3781 - 1.4405	152.90	136.45	131.05	128.35	125.60	123.35
1 1/2	1.5000	.2810	.2500	3/8	2 3/4	252248	126.45	1.4406 - 1.5030	160.35	143.40	137.75	134.95	132.05	129.75
1 9/16	1.5625	.3430	.3125	1/2	3 1/16	252250	140.65	1.5031 - 1.5660	174.55	157.65	152.00	149.20	146.35	144.05
1 5/8	1.6250	.3430	.3125	1/2	3 1/16	252252	142.50	1.5661 - 1.6280	176.40	159.50	153.90	151.10	148.20	145.80
1 11/16	1.6875	.3430	.3125	1/2	3 1/16	252254	144.40	1.6281 - 1.6910	178.30	161.35	155.70	152.95	150.10	147.75
1 3/4	1.7500	.3430	.3125	1/2	3 1/16	252256	146.60	1.6911 - 1.7530	180.50	163.50	157.90	155.10	152.25	149.95
1 13/16	1.8125	.3430	.3125	1/2	3 1/16	252258	148.35	1.7531 - 1.8160	181.95	165.05	159.40	156.60	153.65	151.35
1 7/8	1.8750	.3430	.3125	1/2	3 1/16	252260	149.45	1.8161 - 1.8780	183.35	166.40	160.70	158.00	155.10	152.75
1 15/16	1.9375	.3430	.3125	1/2	3 1/16	252262	164.90	1.8781 - 1.9410	198.80	181.85	176.20	173.40	170.50	168.20
2	2.0000	.3430	.3125	1/2	3 1/16	252264	205.20	1.9411 - 2.0030	239.20	222.20	216.55	213.75	210.90	208.55

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

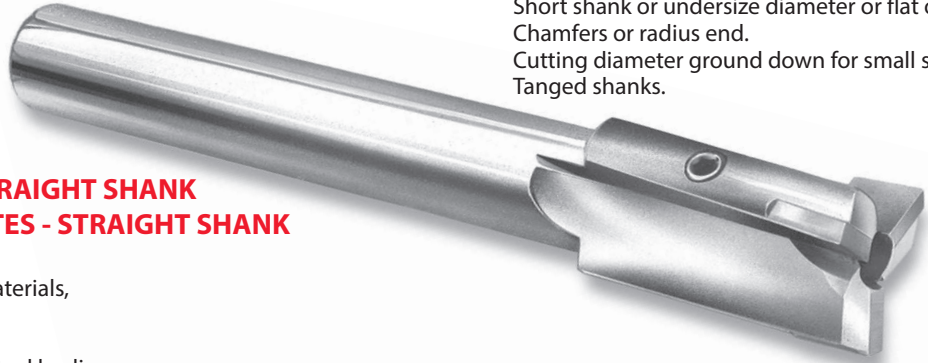


# COUNTERBORES

## CARBIDE TIPPED - STRAIGHT SHANK - INTERCHANGEABLE PILOT TYPE

### OPTIONS:

Intermediate decimal or metric diameters.  
Short shank or undersize diameter or flat on shank.  
Chamfers or radius end.  
Cutting diameter ground down for small step.  
Tanged shanks.



### TYPE 2512 - FOUR FLUTES - STRAIGHT SHANK

### TYPE 2514 - THREE/FOUR FLUTES - STRAIGHT SHANK

### BOTH TYPES:

For machining cast iron, non-ferrous materials,  
composites, plastics and non-metals.

Right spiral polished flutes.

Carbide tips brazed to hardened alloy steel bodies.

Cutting diameter tolerance: plus .001", minus .000".

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

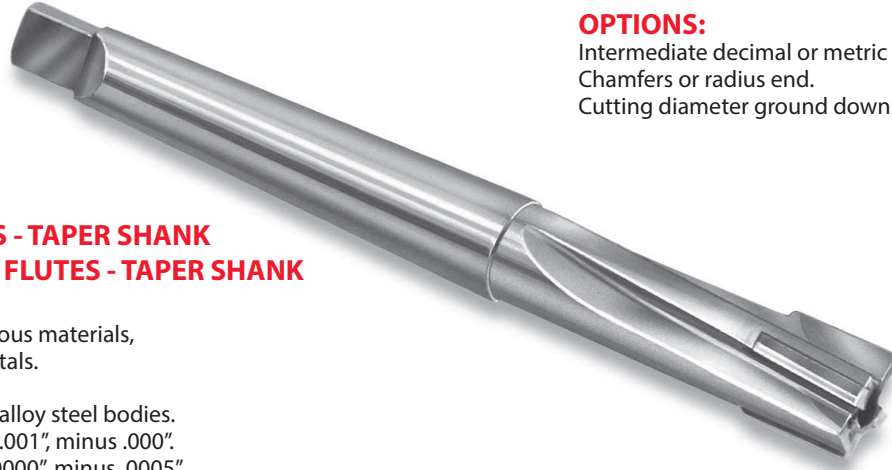
TOOL DIAMETER		MIN CUT DIAM.	PILOT HOLE DIAM.	OVER-ALL LENGTH	SHANK DIAM.	TYPE 2512		TYPE 2514		BOTH TYPES PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRAC.	DEC.					NO. OF FLTS	EDP NO.	NO. OF FLTS	EDP NO.			1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
1/4	.2500	.114	3/32	3 13/16	15/64	-	-	3	251408	\$57.90	0.2381 - 0.2530	\$90.55	\$74.25	\$68.80	\$66.10	\$63.30	\$61.10
9/32	.2812	.114	3/32	3 13/16	17/64	-	-	3	251409	70.75	0.2531 - 0.2840	103.35	87.10	81.65	78.95	76.25	73.95
5/16	.3125	.114	3/32	3 13/16	19/64	-	-	3	251410	64.30	0.2841 - 0.3150	96.95	80.65	75.20	72.50	69.75	67.50
11/32	.3438	.114	3/32	3 13/16	5/16	-	-	3	251411	81.40	0.3151 - 0.3470	114.00	97.65	92.20	89.55	86.80	84.50
3/8	.3750	.182	5/32	4 1/16	5/16	-	-	3	251412	68.15	0.3471 - 0.3780	98.30	83.25	78.20	75.75	73.20	71.15
13/32	.4062	.182	5/32	4 1/16	3/8	-	-	3	251413	76.90	0.3781 - 0.4090	107.00	92.00	86.95	84.45	81.90	79.85
7/16	.4375	.182	5/32	4 1/16	3/8	-	-	3	251414	69.95	0.4091 - 0.4410	100.05	85.00	79.95	77.55	74.95	72.90
15/32	.4688	.228	3/16	4 5/16	7/16	-	-	3	251415	85.40	0.4411 - 0.4720	115.50	100.45	95.45	93.00	90.40	88.35
1/2	.5000	.228	3/16	4 5/16	7/16	4	251216	3	251416	77.65	0.4721 - 0.5030	107.75	92.65	87.70	85.20	82.65	80.60
17/32	.5312	.228	3/16	4 5/16	1/2	4	251217	3	251417	87.90	0.5031 - 0.5340	117.95	102.95	97.95	95.45	92.90	90.80
9/16	.5625	.228	3/16	4 5/16	1/2	4	251218	3	251418	79.90	0.5341 - 0.5660	110.05	94.95	89.95	87.45	84.95	82.85
19/32	.5938	.228	3/16	5 1/8	1/2	4	251219	3	251419	88.80	0.5661 - 0.5970	118.85	103.85	98.85	96.35	93.75	91.70
5/8	.6250	.228	3/16	5 1/8	1/2	4	251220	3	251420	80.70	0.5971 - 0.6280	110.80	95.70	90.70	88.25	85.70	83.65
11/32	.6562	.228	3/16	5 1/8	1/2	4	251221	3	251421	94.00	0.6281 - 0.6590	124.05	109.05	104.00	101.50	99.00	96.95
11/16	.6875	.228	3/16	5 1/8	1/2	4	251222	3	251422	85.45	0.6591 - 0.6910	115.60	100.50	95.50	93.05	90.50	88.40
23/32	.7188	.290	1/4	5 3/8	1/2	4	251223	3	251423	96.25	0.6911 - 0.7220	126.25	111.25	106.25	103.80	101.20	99.15
3/4	.7500	.290	1/4	5 3/8	1/2	4	251224	3	251424	87.40	0.7221 - 0.7530	117.55	102.45	97.45	94.95	92.45	90.35
25/32	.7812	.290	1/4	5 3/8	5/8	4	251225	3	251425	98.25	0.7531 - 0.7840	128.30	113.25	108.25	105.80	103.20	101.15
13/16	.8125	.290	1/4	5 3/8	5/8	4	251226	3	251426	89.25	0.7841 - 0.8160	119.35	104.25	99.30	96.75	94.30	92.20
27/32	.8438	.290	1/4	5 3/8	3/4	4	251227	3	251427	104.05	0.8161 - 0.8470	134.15	119.05	114.10	111.60	109.10	107.00
7/8	.8750	.290	1/4	5 3/8	3/4	4	251228	3	251428	94.60	0.8471 - 0.8780	124.70	109.65	104.65	102.15	99.60	97.55
29/32	.9062	.290	1/4	6 1/8	3/4	4	251229	3	251429	106.15	0.8781 - 0.9090	136.30	121.20	116.20	113.75	111.20	109.15
15/16	.9375	.290	1/4	6 1/8	3/4	4	251230	3	251430	96.55	0.9091 - 0.9410	126.70	111.60	106.60	104.10	101.55	99.50
31/32	.9688	.353	5/16	6 3/8	3/4	4	251231	3	251431	109.25	0.9411 - 0.9720	139.35	124.25	119.30	116.80	114.25	112.20
1	1.0000	.353	5/16	6 3/8	3/4	4	251232	3	251432	99.35	0.9721 - 1.0030	129.45	114.35	109.35	106.90	104.35	102.25
1 1/16	1.0625	.353	5/16	6 3/8	3/4	4	251234	3	251434	100.40	1.0031 - 1.0660	130.50	115.40	110.40	107.95	105.40	103.30
1 1/8	1.1250	.353	5/16	6 3/8	1	4	251236	3	251436	102.95	1.0661 - 1.1280	133.00	117.95	113.00	110.45	107.95	105.90
1 3/16	1.1875	.353	5/16	6 3/8	1	4	251238	3	251438	107.50	1.1281 - 1.1905	137.60	122.60	117.60	115.10	112.50	110.45
1 1/4	1.2500	.426	3/8	6 5/8	1	-	-	4	251440	119.75	1.1906 - 1.2530	152.35	136.10	130.60	127.95	125.15	122.95
1 5/16	1.3125	.426	3/8	6 5/8	1	-	-	4	251442	129.25	1.2531 - 1.3155	161.95	145.60	140.10	137.45	134.70	132.45
1 3/8	1.3750	.426	3/8	6 5/8	1	-	-	4	251444	136.00	1.3156 - 1.3780	168.60	152.25	146.80	144.10	141.35	139.10
1 7/16	1.4375	.426	3/8	7 7/8	1 1/4	-	-	4	251446	149.05	1.3781 - 1.4405	184.50	166.75	160.80	157.90	154.95	152.45
1 1/2	1.5000	.426	3/8	7 7/8	1 1/4	-	-	4	251448	166.05	1.4406 - 1.5030	201.50	183.75	177.85	175.00	171.95	169.50
1 9/16	1.5625	.489	7/16	8 1/8	1 1/4	-	-	4	251450	170.90	1.5031 - 1.5660	206.45	188.65	182.75	179.80	176.85	174.40
1 5/8	1.6250	.489	7/16	8 1/8	1 1/4	-	-	4	251452	174.50	1.5661 - 1.6280	210.00	192.25	186.40	183.45	180.45	178.05
1 11/16	1.6875	.489	7/16	8 1/8	1 1/4	-	-	4	251454	208.80	1.6281 - 1.6910	247.05	227.95	221.55	218.35	215.15	212.50
1 3/4	1.7500	.489	7/16	8 1/8	1 1/2	-	-	4	251456	208.80	1.6911 - 1.7530	247.05	227.95	221.55	218.35	215.15	212.50
1 13/16	1.8125	.489	7/16	8 1/8	1 1/2	-	-	4	251458	247.20	1.7531 - 1.8160	285.50	266.35	259.95	256.80	253.50	250.95
1 7/8	1.8750	.489	7/16	8 1/8	1 1/2	-	-	4	251460	247.20	1.8161 - 1.8780	285.50	266.35	259.95	256.80	253.50	250.95
1 15/16	1.9375	.489	7/16	8 1/8	1 1/2	-	-	4	251462	270.15	1.8781 - 1.9410	308.50	289.35	282.90	279.75	276.50	273.90
2	2.0000	.551	1/2	8 3/8	1 1/2	-	-	4	251464	270.15	1.9411 - 2.0030	308.50	289.35	282.90	279.75	276.50	273.90

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



# COUNTERBORES

## CARBIDE TIPPED - TAPER SHANK - INTERCHANGEABLE PILOT TYPE



**OPTIONS:**

- Intermediate decimal or metric diameters.
- Chamfers or radius end.
- Cutting diameter ground down for small step.

**TYPE 2518 - FOUR FLUTES - TAPER SHANK**  
**TYPE 2516 - THREE/FOUR FLUTES - TAPER SHANK**  
**BOTH TYPES:**

For machining cast iron, non-ferrous materials, composites, plastics and non-metals.  
 Right spiral polished flutes.  
 Carbide tips brazed to hardened alloy steel bodies.  
 Cutting diameter tolerance: plus .001", minus .000".  
 Shank diameter tolerance: plus .0000", minus .0005".

TOOL DIAMETER		MORSE TAPER	MIN CUT DIAM.	PILOT HOLE DIAM.	OVER-ALL LENGTH	TYPE 2518		TYPE 2516			SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRAC.	DEC.					NO. OF FLTS	EDP NO.	NO. OF FLTS	EDP NO.	BOTH TYPES PRICE		1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
1/4	.2500	1	.114	3/32	3 13/16	-	-	3	251608	\$67.70	0.2381 - 0.2530	\$100.35	\$84.05	\$78.60	\$75.90	\$73.15	\$70.90
9/32	.2812	1	.114	3/32	3 13/16	-	-	3	251609	81.45	0.2531 - 0.2840	114.05	97.70	92.25	89.60	86.90	84.60
5/16	.3125	1	.114	3/32	3 13/16	-	-	3	251610	74.10	0.2841 - 0.3150	106.70	90.35	84.95	82.25	79.50	77.25
11/32	.3438	1	.114	3/32	3 13/16	-	-	3	251611	91.25	0.3151 - 0.3470	123.90	107.55	102.10	99.45	96.70	94.45
3/8	.3750	1	.182	5/32	4 1/16	-	-	3	251612	76.45	0.3471 - 0.3780	106.50	91.50	86.45	84.00	81.50	79.45
13/32	.4062	1	.182	5/32	4 1/16	-	-	3	251613	86.35	0.3781 - 0.4090	116.45	101.40	96.40	93.90	91.40	89.30
7/16	.4375	1	.182	5/32	4 1/16	-	-	3	251614	78.55	0.4091 - 0.4410	108.55	93.55	88.50	86.10	83.55	81.50
15/32	.4688	1	.228	3/16	4 3/16	-	-	3	251615	95.35	0.4411 - 0.4720	125.40	110.35	105.35	102.90	100.35	98.30
1/2	.5000	1	.228	3/16	4 3/16	4	251816	3	251616	86.70	0.4721 - 0.5030	116.80	101.75	96.70	94.30	91.70	89.65
17/32	.5312	1	.228	3/16	4 5/16	4	251817	3	251617	97.10	0.5031 - 0.5340	127.15	112.15	107.10	104.65	102.10	100.05
9/16	.5625	1	.228	3/16	4 3/16	4	251818	3	251618	88.30	0.5341 - 0.5660	118.40	103.30	98.35	95.80	93.35	91.25
19/32	.5938	2	.228	3/16	5 1/8	4	251819	3	251619	99.75	0.5661 - 0.5970	129.85	114.80	109.80	107.30	104.80	102.70
5/8	.6250	2	.228	3/16	5 1/8	4	251820	3	251620	90.65	0.5971 - 0.6280	120.75	105.75	100.70	98.25	95.65	93.60
21/32	.6562	2	.228	3/16	5 1/8	4	251821	3	251621	105.30	0.6281 - 0.6590	135.40	120.35	115.30	112.90	110.30	108.25
11/16	.6875	2	.228	3/16	5 3/8	4	251822	3	251622	95.65	0.6591 - 0.6910	125.80	110.70	105.75	103.20	100.70	98.60
23/32	.7188	2	.290	1/4	5 3/8	4	251823	3	251623	107.05	0.6911 - 0.7220	137.15	122.10	117.10	114.65	112.10	110.05
3/4	.7500	2	.290	1/4	5 3/8	4	251824	3	251624	97.30	0.7221 - 0.7530	127.35	112.30	107.30	104.85	102.25	100.20
25/32	.7812	2	.290	1/4	5 3/8	4	251825	3	251625	108.85	0.7531 - 0.7840	138.90	123.90	118.85	116.35	113.85	111.80
13/16	.8125	2	.290	1/4	5 3/8	4	251826	3	251626	99.00	0.7841 - 0.8160	129.05	114.05	109.05	106.50	104.00	101.95
27/32	.8438	2	.290	1/4	5 3/8	4	251827	3	251627	114.45	0.8161 - 0.8470	144.60	129.55	124.55	122.05	119.55	117.45
7/8	.8750	2	.290	1/4	5 3/8	4	251828	3	251628	104.05	0.8471 - 0.8780	134.15	119.05	114.10	111.60	109.10	107.00
29/32	.9062	3	.290	1/4	6 1/8	4	251829	3	251629	117.60	0.8781 - 0.9090	147.65	132.60	127.65	125.10	122.60	120.55
15/16	.9375	3	.290	1/4	6 1/8	4	251830	3	251630	106.90	0.9091 - 0.9410	136.95	121.90	116.90	114.40	111.95	109.85
31/32	.9688	3	.353	5/16	6 3/8	4	251831	3	251631	120.30	0.9411 - 0.9720	150.35	135.35	130.35	127.85	125.25	123.20
1	1.0000	3	.353	5/16	6 3/8	4	251832	3	251632	113.50	0.9721 - 1.0030	144.75	129.15	123.90	121.35	118.65	116.55
1 1/16	1.0625	3	.353	5/16	6 3/8	4	251834	3	251634	115.00	1.0031 - 1.0660	146.15	130.55	125.35	122.80	120.15	118.00
1 1/8	1.1250	3	.353	5/16	6 3/8	4	251836	3	251636	118.60	1.0661 - 1.1280	149.85	134.30	129.00	126.45	123.80	121.70
1 3/16	1.1875	3	.353	5/16	6 3/8	4	251838	3	251638	122.65	1.1281 - 1.1905	153.95	138.30	133.05	130.50	127.85	125.75
1 1/4	1.2500	3	.426	3/8	6 5/8	-	-	4	251640	136.35	1.1906 - 1.2530	170.20	153.25	147.65	144.85	142.00	139.65
1 5/16	1.3125	3	.426	3/8	6 5/8	-	-	4	251642	146.15	1.2531 - 1.3155	180.10	163.05	157.50	154.65	151.85	149.50
1 3/8	1.3750	3	.426	3/8	6 5/8	-	-	4	251644	153.15	1.3156 - 1.3780	187.00	170.10	164.45	161.65	158.80	156.45
1 7/16	1.4375	4	.426	3/8	7 7/8	-	-	4	251646	170.35	1.3781 - 1.4405	207.20	188.80	182.60	179.60	176.50	173.95
1 1/2	1.5000	4	.426	3/8	7 7/8	-	-	4	251648	188.90	1.4406 - 1.5030	225.75	207.30	201.20	198.15	195.10	192.50
1 9/16	1.5625	4	.489	7/16	8 1/8	-	-	4	251650	202.95	1.5031 - 1.5660	241.50	222.25	215.90	212.65	209.40	206.80
1 5/8	1.6250	4	.489	7/16	8 1/8	-	-	4	251652	206.60	1.5661 - 1.6280	245.15	225.90	219.50	216.25	213.00	210.45
1 11/16	1.6875	4	.489	7/16	8 1/8	-	-	4	251654	247.20	1.6281 - 1.6910	288.85	268.05	261.15	257.70	254.15	251.30
1 3/4	1.7500	4	.489	7/16	8 1/8	-	-	4	251656	247.20	1.6911 - 1.7530	288.85	268.05	261.15	257.70	254.15	251.30
1 13/16	1.8125	4	.489	7/16	8 1/8	-	-	4	251658	292.60	1.7531 - 1.8160	334.20	313.40	306.45	303.00	299.50	296.60
1 7/8	1.8750	4	.489	7/16	8 1/8	-	-	4	251660	292.60	1.8161 - 1.8780	334.20	313.40	306.45	303.00	299.50	296.60
1 15/16	1.9375	4	.489	7/16	8 1/8	-	-	4	251662	319.65	1.8781 - 1.9410	361.30	340.50	333.50	330.15	326.65	323.75
2	2.0000	4	.551	1/2	8 3/8	-	-	4	251664	319.65	1.9411 - 2.0030	361.30	340.50	333.50	330.15	326.65	323.75

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



# COUNTERBORES

## CARBIDE TIPPED - STRAIGHT SHANK & TAPER SHANK - INTERCHANGEABLE PILOT TYPE FOR STEEL



### TYPE 2510 - STRAIGHT SHANK FOR MACHINING STEEL

Carbide tips brazed to hardened alloy steel bodies.  
Right hand spiral polished flutes.  
Cutting diameter tolerance: plus .001" minus .000"  
Shank diameter tolerance: plus .0000" minus .0005"

### TYPE 2511 - TAPER SHANK FOR MACHINING STEEL

Same as Type 2510 above but with taper shank.

### OPTIONS:

Intermediate decimal or metric diameters.  
Short shank or undersize diameter or flat on shank.  
Chamfers or radius end.  
Cutting diameter ground down for small step.  
Tanged shanks.

### USE:

The special steel cutting grade of carbide permits the heavy chip loads and speeds required for machining steel - appropriate primary and secondary relief angles.

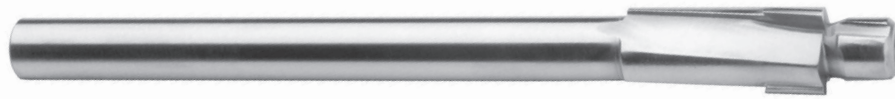
TOOL DIAMETER		MIN CUT DIAM.	PILOT HOLE DIAM.	OVER-ALL LENGTH	SHANK DIAM.	NO. OF FLTS	TYPE 2510 STRAIGHT SHANK EDP NO.	TYPE 2511 TAPER SHANK EDP NO.	MORSE TAPER	BOTH TYPES PRICE	SPECIAL DECIMAL SIZE RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
FRAC.	DEC.											1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
1/4	.2500	.114	3/32	3 13/16	15/64	3	251008	251108	1	\$67.70	0.2381 - 0.2530	\$100.35	\$84.05	\$78.60	\$75.90	\$73.15	\$70.90
9/32	.2812	.114	3/32	3 13/16	17/64	3	251009	251109	1	81.45	0.2531 - 0.2840	114.05	97.70	92.25	89.60	86.90	84.60
5/16	.3125	.114	3/32	3 13/16	19/64	3	251010	251110	1	74.10	0.2841 - 0.3150	106.70	90.35	84.95	82.25	79.50	77.25
11/32	.3438	.114	3/32	3 13/16	5/16	3	251011	251111	1	91.25	0.3151 - 0.3470	123.90	107.55	102.10	99.45	96.70	94.45
3/8	.3750	.182	5/32	4 1/16	5/16	3	251012	251112	1	76.45	0.3471 - 0.3780	106.50	91.50	86.45	84.00	81.50	79.45
13/32	.4062	.182	5/32	4 1/16	3/8	3	251013	251113	1	86.35	0.3781 - 0.4090	116.45	101.40	96.40	93.90	91.40	89.30
7/16	.4375	.182	5/32	4 1/16	3/8	3	251014	251114	1	78.55	0.4091 - 0.4410	108.55	93.55	88.50	86.10	83.55	81.50
15/32	.4688	.228	3/16	4 5/16	7/16	3	251015	251115	1	95.35	0.4411 - 0.4720	125.40	110.35	105.35	102.90	100.35	98.30
1/2	.5000	.228	3/16	4 5/16	7/16	3	251016	251116	1	86.70	0.4721 - 0.5030	116.80	101.75	96.70	94.30	91.70	89.65
17/32	.5312	.228	3/16	4 5/16	1/2	3	251017	251117	1	97.10	0.5031 - 0.5340	127.15	112.15	107.10	104.65	102.10	100.05
9/16	.5625	.228	3/16	4 5/16	1/2	3	251018	251118	1	88.30	0.5341 - 0.5660	118.40	103.30	98.35	95.80	93.35	91.25
19/32	.5938	.228	3/16	5 1/8	1/2	3	251019	251119	2	99.75	0.5661 - 0.5970	129.85	114.80	109.80	107.30	104.80	102.70
5/8	.6250	.228	3/16	5 1/8	1/2	3	251020	251120	2	90.65	0.5971 - 0.6280	120.75	105.75	100.70	98.25	95.65	93.60
21/32	.6562	.228	3/16	5 1/8	1/2	3	251021	251121	2	105.30	0.6281 - 0.6590	135.40	120.35	115.30	112.90	110.30	108.25
11/16	.6875	.228	3/16	5 1/8	1/2	3	251022	251122	2	95.65	0.6591 - 0.6910	125.80	110.70	105.75	103.20	100.70	98.60
23/32	.7188	.290	1/4	5 3/8	1/2	3	251023	251123	2	107.05	0.6911 - 0.7220	137.15	122.10	117.10	114.65	112.10	110.05
3/4	.7500	.290	1/4	5 3/8	1/2	3	251024	251124	2	97.30	0.7221 - 0.7530	127.35	112.30	107.30	104.85	102.25	100.20
25/32	.7812	.290	1/4	5 3/8	5/8	3	251025	251125	2	108.85	0.7531 - 0.7840	138.90	123.90	118.85	116.35	113.85	111.80
13/16	.8125	.290	1/4	5 3/8	5/8	3	251026	251126	2	99.00	0.7841 - 0.8160	129.05	114.05	109.05	106.50	104.00	101.95
27/32	.8438	.290	1/4	5 3/8	3/4	3	251027	251127	2	114.45	0.8161 - 0.8470	144.60	129.55	124.55	122.05	119.55	117.45
7/8	.8750	.290	1/4	5 3/8	3/4	3	251028	251128	2	104.05	0.8471 - 0.8780	134.15	119.05	114.10	111.60	109.10	107.00
29/32	.9062	.290	1/4	6 1/8	3/4	3	251029	251129	3	117.60	0.8781 - 0.9090	147.65	132.60	127.65	125.10	122.60	120.55
15/16	.9375	.290	1/4	6 1/8	3/4	3	251030	251130	3	106.90	0.9091 - 0.9410	136.95	121.90	116.90	114.40	111.95	109.85
31/32	.9688	.353	5/16	6 3/8	3/4	3	251031	251131	3	120.30	0.9411 - 0.9720	150.35	135.35	130.35	127.85	125.25	123.20
1	1.0000	.353	5/16	6 3/8	3/4	3	251032	251132	3	113.50	0.9721 - 1.0030	144.75	129.15	123.90	121.35	118.65	116.55
1 1/16	1.0625	.353	5/16	6 3/8	3/4	3	251034	251134	3	115.00	1.0031 - 1.0660	146.15	130.55	125.35	122.80	120.15	118.00
1 1/8	1.1250	.353	5/16	6 3/8	1	3	251036	251136	3	118.60	1.0661 - 1.1280	149.85	134.30	129.00	126.45	123.80	121.70
1 3/16	1.1875	.353	5/16	6 3/8	1	3	251038	251138	3	122.65	1.1281 - 1.1905	153.95	138.30	133.05	130.50	127.85	125.75
1 1/4	1.2500	.426	3/8	6 5/8	1	4	251040	251140	3	136.35	1.1906 - 1.2530	170.20	153.25	147.65	144.85	142.00	139.65
1 5/16	1.3125	.426	3/8	6 5/8	1	4	251042	251142	3	146.15	1.2531 - 1.3155	180.10	163.05	157.50	154.65	151.85	149.50
1 3/8	1.3750	.426	3/8	6 5/8	1	4	251044	251144	3	153.15	1.3156 - 1.3780	187.00	170.10	164.45	161.65	158.80	156.45
1 7/16	1.4375	.426	3/8	7 7/8	1 1/4	4	251046	251146	4	170.35	1.3781 - 1.4405	207.20	188.80	182.60	179.60	176.50	173.95
1 1/2	1.5000	.426	3/8	7 7/8	1 1/4	4	251048	251148	4	188.90	1.4406 - 1.5030	225.75	207.30	201.20	198.15	195.10	192.50
1 9/16	1.5625	.489	7/16	8 1/8	1 1/4	4	251050	251150	4	202.95	1.5031 - 1.5660	241.50	222.25	215.90	212.65	209.40	206.80
1 5/8	1.6250	.489	7/16	8 1/8	1 1/4	4	251052	251152	4	206.60	1.5661 - 1.6280	245.15	225.90	219.50	216.25	213.00	210.45
1 11/16	1.6875	.489	7/16	8 1/8	1 1/4	4	251054	251154	4	247.20	1.6281 - 1.6910	288.85	268.05	261.15	257.70	254.15	251.30
1 3/4	1.7500	.489	7/16	8 1/8	1 1/4	4	251056	251156	4	247.20	1.6911 - 1.7530	288.85	268.05	261.15	257.70	254.15	251.30
1 13/16	1.8125	.489	7/16	8 1/8	1 1/2	4	251058	251158	4	292.60	1.7531 - 1.8160	334.20	313.40	306.45	303.00	299.50	296.60
1 7/8	1.8750	.489	7/16	8 1/8	1 1/2	4	251060	251160	4	292.60	1.8161 - 1.8780	334.20	313.40	306.45	303.00	299.50	296.60
1 15/16	1.9375	.489	7/16	8 1/8	1 1/2	4	251062	251162	4	319.65	1.8781 - 1.9410	361.30	340.50	333.50	330.15	326.65	323.75
2	2.0000	.551	1/2	8 3/8	1 1/2	4	251064	251164	4	319.65	1.9411 - 2.0030	361.30	340.50	333.50	330.15	326.65	323.75

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



# 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	\$71.65	3	25152500	\$78.80
.3980	1/4	.2650	.3125	5/16	5 5/8	3	25132650	79.60	3	25152650	87.60
.4140	1/4	.2810	.3125	5/16	5 5/8	3	25132810	79.60	3	25152810	87.60
.4750	5/16	.3125	.3750	3/8	6 1/8	3	25133125	80.15	3	25153125	88.20
.4910	5/16	.3280	.3750	3/8	6 1/8	3	25133280	80.15	3	25153280	88.20
.5070	5/16	.3430	.3750	3/8	6 1/8	3	25133430	80.15	3	25153430	88.20
.5720	3/8	.3750	.5000	1/2	6 1/2	3	25133750	90.40	3	25153750	99.45
.5880	3/8	.3900	.5000	1/2	6 1/2	3	25133900	90.40	3	25153900	99.45
.6040	3/8	.4060	.5000	1/2	6 1/2	3	25134060	90.40	3	25154060	99.45
.6630	7/16	.4375	.5000	1/2	7	3	25134375	87.30	3	25154375	96.05
.6790	7/16	.4530	.5000	1/2	7	3	25134530	87.30	3	25154530	96.05
.6950	7/16	.4680	.5000	1/2	7	3	25134680	87.30	3	25154680	96.05
.7570	1/2	.5000	.5000	1/2	7 1/2	3	25135000	99.00	3	25155000	108.95
.7730	1/2	.5150	.5000	1/2	7 1/2	3	25135150	99.00	3	25155150	108.95
.7890	1/2	.5310	.5000	1/2	7 1/2	3	25135310	99.00	3	25155310	108.95
.8510	9/16	.5625	.5625	5/8	7 5/8	3	25135625	95.70	3	25155625	105.30
.8670	9/16	.5780	.5625	5/8	7 5/8	3	25135780	95.70	3	25155780	105.30
.8830	9/16	.5930	.5625	5/8	7 5/8	3	25135930	95.70	3	25155930	105.30
.9450	5/8	.6250	.6250	5/8	7 5/8	3	25136250	109.10	3	25156250	120.00
.9610	5/8	.6400	.6250	5/8	7 5/8	3	25136400	109.10	3	25156400	120.00
.9770	5/8	.6560	.6250	5/8	7 5/8	3	25136560	109.10	3	25156560	120.00
1.1330	3/4	.7500	.7500	3/4	7 3/4	3	25137500	107.55	3	25157500	118.30
1.1490	3/4	.7650	.7500	3/4	7 3/4	3	25137650	107.55	3	25157650	118.30
1.1650	3/4	.7810	.7500	3/4	7 3/4	3	25137810	107.55	3	25157810	118.30
1.3220	7/8	.8750	.8750	7/8	8 1/8	4	25138750	119.55	4	25158750	131.60
1.3380	7/8	.8910	.8750	7/8	8 1/8	4	25138910	119.55	4	25158910	131.60
1.3540	7/8	.9060	.8750	7/8	8 1/8	4	25139060	119.55	4	25159060	131.60
1.5100	1	1.0000	1.0000	1	8 1/2	4	25130000	136.90	4	25150000	150.60
1.5260	1	1.0150	1.0000	1	8 1/2	4	25130156	136.90	4	25150156	150.60
1.5420	1	1.0310	1.0000	1	8 1/2	4	25130313	136.90	4	25150313	150.60

### 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	\$79.40	3	2515055	\$87.30
.4134	6	6.5	5/16	5/16	5 5/8	3	2513065	83.80	3	2515065	92.20
.5315	8	8.5	3/8	1/2	6 1/2	3	2513085	99.55	3	2515085	109.45
.6496	10	10.5	1/2	1/2	7	3	2513105	108.25	3	2515105	119.10
.7283	12	12.5	1/2	1/2	7 1/2	3	2513125	101.60	3	2515125	111.70
.8465	14	14.5	5/16	5/8	7 5/8	3	2513145	118.45	3	2515145	130.25
.9646	16	16.5	5/8	5/8	7 5/8	3	2513165	123.75	3	2515165	136.15
1.2008	20	20.5	3/4	7/8	8	3	2513205	114.75	3	2515205	126.25



# PORT CONTOUR CUTTERS

## CARBIDE TIPPED

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

**STRAIGHT SHANK - TWO TYPES:**

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

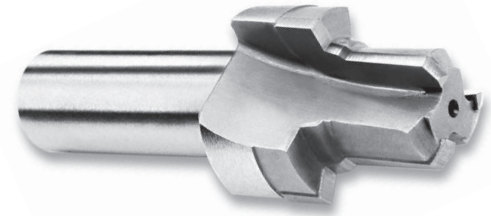
**TYPE 2781 - FOR STEEL**

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 3/8	278002	278102	\$265.45
3	3/16	3/8-24	.3350	.7600	.5000	12°	2	.4730	1 1/4	3 1/4	278003	278103	265.45
4	1/4	7/16-20	.3890	.8380	.5000	12°	2	.5520	1 1/4	3 1/4	278004	278104	265.45
5	5/16	1/2-20	.4520	.9160	.5000	12°	2	.5520	1 1/4	3 1/4	278005	278105	273.80
6	3/8	9/16-18	.5090	.9790	.5000	12°	2	.6140	1 1/4	3 1/4	278006	278106	273.80
8	1/2	3/4-16	.6890	1.1980	.7500	15°	2	.6930	1 3/8	3 3/8	278008	278108	299.65
10	5/8	7/8-14	.8060	1.3540	.7500	15°	2	.7860	1 5/8	3 5/8	278010	278110	338.90
12	3/4	1 1/16-12	.9810	1.6350	.7500	15°	2 1/4	.9110	1 7/8	4 1/8	278012	278112	365.60
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	371.50
16	1	1 5/16-12	1.2310	1.9200	.7500	15°	2 1/4	.9110	1 7/8	4 1/8	278016	278116	399.85
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	440.50
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	541.75
32	2	2 1/2-12	2.4190	3.4900	1.0000	15°	2 1/4	.9110	2 1/4	4 1/2	278032	278132	707.50

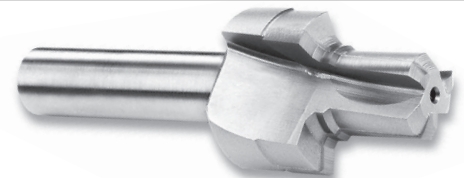
**MS 33649 INTEGRAL REAMER PILOT**

**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	\$310.05
2	1/8	5/16-24	.2750	.7420	.5000	2	.5820	1 1/8	3 1/8	279202	279302	310.05
3	3/16	3/8-24	.3390	.8050	.5000	2	.5880	1 1/4	3 1/4	279203	279303	294.15
4	1/4	7/16-20	.3930	.8880	.5000	2	.6610	1 1/4	3 1/4	279204	279304	302.10
5	5/16	1/2-20	.4550	.9500	.5000	2	.6610	1 1/4	3 1/4	279205	279305	310.05
6	3/8	9/16-18	.5120	1.0120	.5000	2	.7140	1 1/2	3 1/2	279206	279306	325.95
7	7/16	5/8-18	.5750	1.1050	.5000	2	.7300	1 1/2	3 1/2	279207	279307	333.90
8	1/2	3/4-16	.6930	1.2400	.7500	2	.8390	1 5/8	3 5/8	279208	279308	341.85
9	5/16	13/16-16	.7560	1.3020	.7500	2	.8550	1 5/8	3 5/8	279209	279309	349.80
10	5/8	7/8-14	.8100	1.4150	.7500	2 1/4	.9350	1 7/8	4 1/8	279210	279310	357.75
11	11/16	1-12	.9250	1.6020	.7500	2 1/4	1.0690	2 1/8	4 3/8	279211	279311	389.55
12	3/4	1 1/16-12	.9870	1.6650	.7500	2 1/4	1.0690	2 1/8	4 3/8	279212	279312	413.40
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	472.25
16	1	1 5/16-12	1.2370	1.9650	.7500	2 1/4	1.0690	2 1/8	4 3/8	279216	279316	530.25
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	571.45
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	665.80
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	806.15
32	2	2 1/2-12	2.4250	3.5200	1.0000	2 1/2	1.3730	2 1/2	5	279232	279332	1146.40



# 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

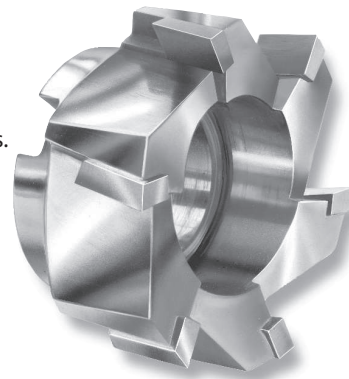
For production machining of cast iron and malleable iron.  
Open flutes for easy chip disposal.

### 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	\$161.90	4	253124	\$161.90	4	253224	\$168.40
1 1/2	1/2	1 1/8	1/4	5/32	4	253026	168.60	4	253126	168.60	4	253226	175.35
1 3/4	3/4	1 1/4	5/16	3/16	4	253028	210.10	4	253128	210.10	4	253228	218.45
2	3/4	1 3/8	5/16	3/16	4	253032	220.60	4	253132	234.70	4	253232	244.05
2 1/4	1	1 1/2	3/8	7/32	6	253036	233.05	6	253136	254.10	6	253236	264.30
2 1/2	1	1 5/8	3/8	7/32	6	253040	245.40	6	253140	277.00	6	253240	277.00
2 3/4	1	1 3/4	3/8	7/32	6	253044	258.95	6	253144	290.55	6	253244	290.55
3	1 1/4	1 3/4	1/2	9/32	6	253048	283.85	6	253148	316.05	6	253248	316.05
3 1/2	1 1/4	1 7/8	1/2	9/32	6	253056	347.45	8	253156	371.70	6	253256	392.90
4	1 1/2	2 1/4	5/8	3/8	6	253064	436.60	8	253164	459.80	6	253264	488.00

### 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	\$78.55
1/2	1/2	1	3	4	235017	78.55
9/16	1/2	1	3	4	235018	84.35
5/8	1/2	1 1/4	3 1/4	4	235020	90.80
5/8	5/8	1 1/4	3 3/8	4	235021	90.80
11/16	1/2	1 1/4	3 1/4	4	235022	94.65
11/16	5/8	1 1/4	3 3/8	4	235023	94.65
3/4	1/2	1 1/4	3 1/4	4	235024	101.05
3/4	5/8	1 1/4	3 3/8	4	235025	101.05
13/16	5/8	1 1/2	3 5/8	4	235026	109.00
7/8	5/8	1 1/2	3 5/8	4	235028	115.70
7/8	7/8	1 1/2	3 3/4	4	235029	115.70

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	\$171.35
15/16	7/8	1 1/2	3 3/4	4	235031	171.35
1	7/8	1 1/2	3 3/4	6	235032	162.25
1	1	1 1/2	4	6	235033	162.25
1 1/8	1	1 3/4	4 1/4	6	235036	191.00
1 1/4	1	1 3/4	4 1/4	6	235040	218.90
1 3/8	1	1 3/4	4 1/4	6	235044	255.75
1 1/2	1 1/4	2	4 1/2	6	235048	251.90
1 5/8	1 1/4	2	4 1/2	8	235052	335.80
1 3/4	1 1/4	2	4 1/2	8	235056	358.15
1 7/8	1 1/4	2	4 1/2	8	235060	383.00
2	1 1/4	2	4 1/2	8	235064	404.50





# 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	\$78.55	2	237516	\$72.35
1/2	1/2	1	3	2	232517	78.55	2	237517	72.35
9/16	1/2	1	3	2	232518	84.35	2	237518	77.80
5/8	1/2	1 1/4	3 1/4	2	232520	90.80	2	237520	83.65
5/8	5/8	1 1/4	3 3/8	2	232521	90.80	2	237521	83.65
11/16	1/2	1 1/4	3 1/4	2	232522	94.65	2	237522	87.20
11/16	5/8	1 1/4	3 3/8	2	232523	94.65	2	237523	87.20
3/4	1/2	1 1/4	3 1/4	2	232524	101.05	2	237524	93.10
3/4	5/8	1 1/4	3 3/8	2	232525	101.05	2	237525	93.10
13/16	5/8	1 1/2	3 3/8	2	232526	109.00	2	237526	100.45
7/8	5/8	1 1/2	3 5/8	2	232528	115.70	2	237528	106.70
7/8	7/8	1 1/2	3 3/4	2	232529	115.70	2	237529	106.70
15/16	5/8	1 1/2	3 3/4	2	232530	130.85	3	237530	157.90
15/16	7/8	1 1/2	3 3/4	2	232531	130.85	3	237531	157.90
1	7/8	1 1/2	3 3/4	2	232532	133.60	3	237532	149.50
1	1	1 1/2	4	2	232533	133.60	3	237533	149.50
1 1/8	1	1 3/4	4 1/4	2	232536	146.25	3	237536	176.05
1 1/4	1	1 3/4	4 1/4	3	232540	194.05	4	237540	201.75
1 3/8	1	1 3/4	4 1/4	3	232544	210.35	4	237544	235.60
1 1/2	1 1/4	2	4 1/2	3	232548	234.95	4	237548	232.15
1 5/8	1 1/4	2	4 1/2	3	232552	278.10	4	237552	283.90
1 3/4	1 1/4	2	4 1/2	3	232556	298.35	4	237556	302.75
1 7/8	1 1/4	2	4 1/2	3	232560	321.20	4	237560	323.80
2	1 1/4	2	4 1/2	3	232564	343.35	4	237564	342.05



# 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	\$49.35	2	230808	\$50.80	2	231008	\$50.80
5/16	3/8	5/8	2 1/2	2	230010	51.40	2	230810	54.80	2	231010	54.80
3/8	3/8	5/8	2 1/2	2	230012	54.90	2	230812	58.10	2	231012	58.10
7/16	3/8	1	2 11/16	2	230014	54.90	2	230814	58.10	2	231014	58.10
1/2	1/2	1	3 1/4	2	230016	56.20	4	230816	62.60	4	231016	62.60
9/16	1/2	1	3 3/8	2	230018	62.25	4	230818	67.25	4	231018	67.25
5/8	1/2	1	3 3/8	2	230020	62.25	4	230820	83.00	4	231020	83.00
3/4	5/8	1	3 5/8	2	230024	69.90	4	230824	92.50	4	231024	92.50
7/8	5/8	1 1/4	4	2	230028	82.60	4	230828	111.40	4	231028	111.40
1	7/8	1 1/4	4	2	230032	91.30	6	230832	128.10	6	231032	128.10
1 1/8	1	1 1/4	4 1/4	2	230036	93.50	6	230836	135.85	6	231036	135.85
1 1/4	1	1 1/4	4 1/4	2	230040	104.25	6	230840	164.20	6	231040	164.20
1 1/2	1 1/4	1 1/2	4 1/2	2	230048	134.30	6	230848	199.70	6	231048	199.70
1 3/4	1 1/4	1 1/2	4 1/2	2	230056	150.65	8	230856	240.45	8	231056	240.45
2	1 1/4	1 1/2	4 1/2	2	230064	179.85	8	230864	268.45	8	231064	268.45



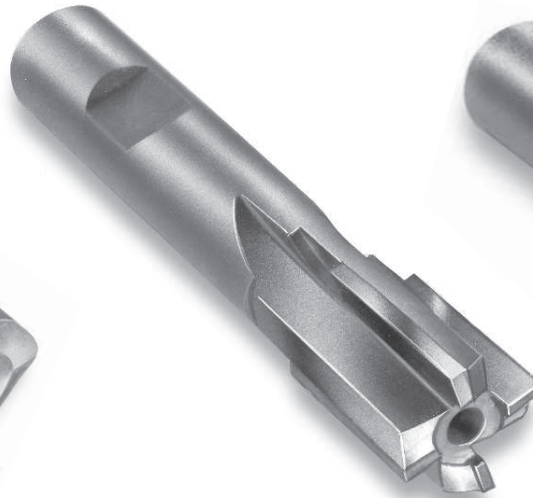
# END MILLS

**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	\$42.95	4	230408	\$43.35	2	230608	\$43.90
5/16	3/8	5/8	2 1/2	2	230210	44.60	4	230410	46.30	2	230610	45.50
3/8	3/8	5/8	2 1/2	2	230212	47.80	4	230412	48.80	2	230612	48.70
7/16	3/8	1	2 11/16	2	230214	47.80	4	230414	48.80	2	230614	48.70
1/2	1/2	1	3 1/4	2	230216	49.00	4	230416	49.95	2	230616	50.00
9/16	1/2	1	3 3/8	2	230218	54.20	4	230418	56.10	2	230618	55.35
5/8	1/2	1	3 3/8	2	230220	54.20	4	230420	58.75	4	230620	57.50
11/16	5/8	1	3 3/8	2	230222	58.65	4	230422	64.70	-	-	-
3/4	5/8	1	3 5/8	2	230224	60.85	4	230424	60.45	4	230624	65.70
13/16	5/8	1	3 5/8	2	230226	73.55	4	230426	71.40	-	-	-
7/8	5/8	1 1/4	4	2	230228	74.05	4	230428	71.40	4	230628	87.80
15/16	7/8	1 1/4	4	2	230230	79.25	4	230430	79.30	-	-	-
1	7/8	1 1/4	4	2	230232	79.50	4	230432	82.55	4	230632	101.45
1 1/8	1	1 1/4	4 1/4	2	230236	81.60	4	230436	93.60	4	230636	115.05
1 1/4	1	1 1/4	4 1/4	2	230240	98.35	4	230440	105.25	4	230640	129.30
1 1/2	1 1/4	1 1/2	4 1/2	2	230248	121.80	4	230448	135.70	4	230648	160.10
1 3/4	1 1/4	1 1/2	4 1/2	2	230256	144.40	6	230456	174.90	6	230656	206.65
2	1 1/4	1 1/2	4 1/2	2	230264	161.10	6	230464	201.50	6	230664	237.95

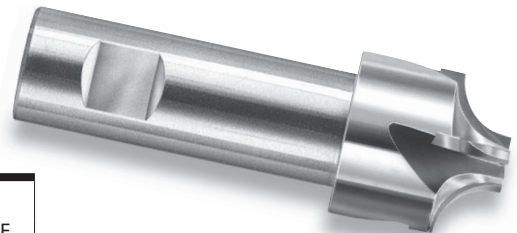


# CORNER ROUNDING END MILLS CENTER CUTTING END MILLS CARBIDE TIPPED

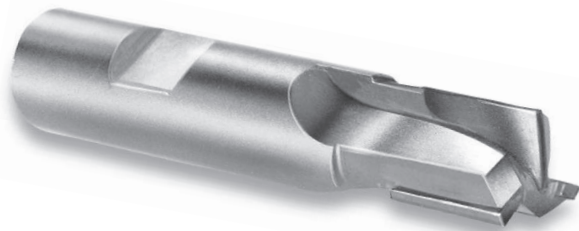
## TYPE 2740 - CORNER ROUNDING END MILLS FOR NON-FERROUS AND CAST IRON

## 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	1 13/32	2 3/4	274002	\$105.20	274102	\$113.70
3/32	1/2	17/64	3/8	1 13/32	2 3/4	274003	105.20	274103	113.70
1/8	5/8	19/64	1/2	1 13/32	3	274004	108.90	274104	117.55
5/32	3/4	23/64	1/2	1 13/32	3	274005	115.50	274105	124.70
3/16	7/8	13/32	3/4	1 13/32	3 1/4	274006	122.20	274106	131.95
1/4	1	13/32	3/4	1 15/32	3 1/4	274008	139.30	274108	150.40
5/16	1 1/8	13/32	7/8	1 19/32	3 1/2	274010	143.05	274110	154.55
3/8	1 1/4	13/32	7/8	1 25/32	3 3/4	274012	148.65	274112	160.55
7/16	1 3/8	13/32	1	1 7/8	4	274014	165.50	274114	178.75
1/2	1 1/2	13/32	1	1	4	274016	184.20	274116	199.00
5/8	2	21/32	1 1/4	1 1 7/32	4 1/4	274020	226.70	274120	244.85



## 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.

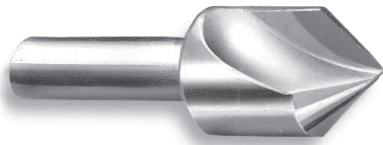
TOOL DIAM.	SHANK DIAM.	NUMBER OF FLUTES	LENGTH		TYPE 2312 EDP NO.	TYPE 2314 EDP NO.	BOTH TYPES PRICE
			CARBIDE	OVERALL			
3/8	3/8	3	1/2	2 1/2	231212	231412	\$81.70
7/16	3/8	3	3/4	2 1/2	231214	231414	83.50
1/2	1/2	3	3/4	3	231216	231416	85.50
5/16	1/2	3	3/4	3	231218	231418	88.95
5/8	5/8	3	3/4	3 1/4	231220	231420	104.00
3/4	5/8	3	3/4	3 3/8	231224	231424	108.90
7/8	7/8	3	3/4	3 3/4	231228	231428	127.15
1	7/8	3	3/4	3 3/4	231232	231432	139.65
1 1/8	1	3	3/4	4	231236	231436	149.55
1 1/4	1	3	3/4	4	231240	231440	173.40
1 1/2	1 1/4	3	3/4	4	231248	231448	206.10

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	\$131.40
5/8	5/8	2	1 1/4	3 3/8	231820	146.90
3/4	3/4	2	1 1/4	3 3/8	231824	155.65
7/8	7/8	2	1 1/2	3 3/4	231828	171.20
1	1	2	1 1/2	4	231832	196.75
1 1/4	1 1/4	2	1 3/4	4 1/4	231840	267.40
1 1/2	1 1/2	2	2	4 3/4	231848	312.05



# 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	\$46.15
3/8	1/4	5/64	256112	258112	259112	258412	46.15
1/2	3/8	3/32	256116	258116	259116	258416	54.75
3/4	1/2	1/8	256124	258124	259124	258424	68.50
1	1/2	1/8	256132	258132	259132	258432	89.45
1 1/4	1/2	5/32	256140	258140	259140	258440	113.80
1 1/2	1/2	3/16	256148	258148	259148	258448	127.65

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	\$50.70
3/8	1/4	7/64	256312	258312	259012	258512	50.70
1/2	3/8	9/64	256316	258316	259016	258516	60.25
3/8	3/8	9/64	256320	258320	259020	258520	63.35
3/4	1/2	3/16	256324	258324	259024	258524	76.20
7/8	1/2	3/16	256328	258328	259028	258528	87.30
1	1/2	1/4	256332	258332	259032	258532	95.25
1 1/4	1/2	5/16	256340	258340	259040	258540	118.50
1 1/2	1/2	3/8	256348	258348	259048	258548	138.20

## DOUBLE ANGLE CUTTERS

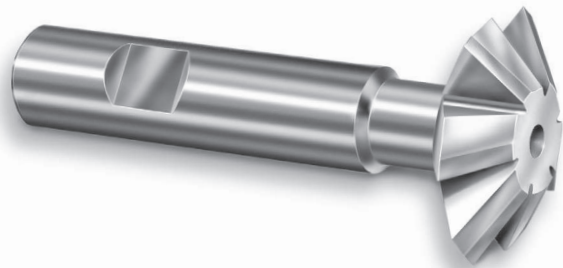
- TYPE 2746 - 60° - FOR NON-FERROUS & CAST IRON**
- TYPE 2747 - 60° - FOR STEEL**

- 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	\$125.00	274724	\$137.55	2 3/8	1/4	274824	\$125.00	274924	\$137.55
1	1/2	6	2 27/32	5/16	274632	147.65	274732	162.45	2 29/32	3/8	274832	147.65	274932	162.45
1 3/8	5/8	6	3 7/32	7/16	274644	171.05	274744	188.20	3 9/32	1/2	274844	171.05	274944	188.20
1 1/2	5/8	6	3 3/8	1/2	274648	179.65	274748	197.60	3 7/16	9/16	274848	179.65	274948	197.60
1 7/8	3/4	6	3 25/32	5/8	274660	272.80	274760	300.10	3 25/32	5/8	274860	272.80	274960	300.10
2 1/4	7/8	6	4 5/32	3/4	274672	369.25	274772	406.15	4 5/32	3/4	274872	369.25	274972	406.15



# KEYSEAT CUTTERS

CARBIDE TIPPED - STRAIGHT TOOTH FOR NON-FERROUS & CAST IRON

### TYPE 2700 - STRAIGHT TOOTH FOR NON-FERROUS & CAST IRON

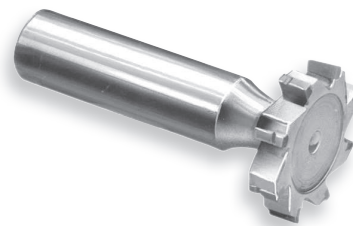
Fast cutting to close tolerances with longer tool life.  
 Carbide tips brazed to hardened alloy steel bodies.  
 Cutting diameter tolerance: plus .020", plus .015".  
 Face width tolerance: plus .0000" minus .0005".  
 Straight shank - 1/2" diameter, 2" long.  
 Chip breakers on cutters 5/32" and greater in width.  
 Decimal sized cutters DO NOT have chip breakers.

### OPTIONS:

Intermediate decimal & metric face width.  
 Intermediate decimal & metric cutting diameter.  
 Drive flats on shanks.  
 Radius corners or chamfer corners.

### USE:

For milling slots in cast iron, non-ferrous metals, plastic and non-metals.



AMERICAN STANDARD NO.	TOOL DIAM.	DIMENSIONS				TYPE 2700 EDP NO.	PRICE	MODIFIED FACE WIDTH RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
		FACE WIDTH	NECK DIAM.	OVERALL LENGTH	NO. OF TEETH				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
204	1/2	1/16	.130	2 1/16	6	27000204	\$86.55	.0575 - .0787	\$116.55	\$103.60	\$99.30	\$97.20	\$95.00	\$93.20
304	1/2	3/32	.160	2 3/32	6	27000304	86.55	.0788 - .1088	116.55	103.60	99.30	97.20	95.00	93.20
404	1/2	1/8	.191	2 1/8	6	27000404	86.55	.1089 - .1400	116.55	103.60	99.30	97.20	95.00	93.20
305	5/8	3/32	.191	2 3/32	6	27000305	89.65	.0788 - .1088	119.80	106.85	102.50	100.40	98.20	96.45
405	5/8	1/8	.223	2 1/8	6	27000405	89.65	.1089 - .1400	119.80	106.85	102.50	100.40	98.20	96.45
505	5/8	3/32	.252	2 5/32	6	27000505	89.65	.1401 - .1713	119.80	106.85	102.50	100.40	98.20	96.45
605	5/8	3/16	.279	2 3/16	6	27000605	89.65	.1714 - .2025	119.80	106.85	102.50	100.40	98.20	96.45
406	3/4	1/8	.217	2 1/8	6	27000406	93.60	.1100 - .1400	123.90	111.00	106.60	104.55	102.35	100.55
506	3/4	5/32	.246	2 5/32	6	27000506	93.60	.1401 - .1713	123.90	111.00	106.60	104.55	102.35	100.55
606	3/4	3/16	.279	2 3/16	6	27000606	93.60	.1714 - .2025	123.90	111.00	106.60	104.55	102.35	100.55
-	3/4	7/32	.342	2 7/32	6	27002407	102.50	.2026 - .2339	123.90	111.00	106.60	104.55	102.35	100.55
806	3/4	1/4	.342	2 1/4	6	27000806	93.60	.2340 - .2650	123.90	111.00	106.60	104.55	102.35	100.55
507	7/8	5/32	.246	2 5/32	6	27000507	98.00	.1401 - .1713	128.55	115.60	111.25	109.20	107.00	105.20
607	7/8	3/16	.279	2 3/16	6	27000607	98.00	.1714 - .2025	128.55	115.60	111.25	109.20	107.00	105.20
707	7/8	7/32	.312	2 7/32	6	27000707	98.00	.2026 - .2339	128.55	115.60	111.25	109.20	107.00	105.20
807	7/8	1/4	.342	2 1/4	6	27000807	98.00	.2340 - .2650	128.55	115.60	111.25	109.20	107.00	105.20
608	1	3/16	.279	2 3/16	8	27000608	110.55	.1714 - .2025	141.70	128.75	124.40	122.30	120.10	118.35
708	1	7/32	.312	2 7/32	8	27000708	110.55	.2026 - .2339	141.70	128.75	124.40	122.30	120.10	118.35
808	1	1/4	.342	2 1/4	8	27000808	110.55	.2340 - .2650	141.70	128.75	124.40	122.30	120.10	118.35
-	1	9/32	.401	2 5/32	8	27003209	121.10	.2651 - .2968	141.70	128.75	124.40	122.30	120.10	118.35
1008	1	5/16	.401	2 5/16	8	27001008	110.55	.2969 - .3281	141.70	128.75	124.40	122.30	120.10	118.35
-	1	11/32	.467	2 11/32	8	27003211	121.10	.3282 - .3593	141.70	128.75	124.40	122.30	120.10	118.35
1208	1	3/8	.467	2 3/8	8	27001208	110.55	.3594 - .3900	141.70	128.75	124.40	122.30	120.10	118.35
609	1 1/8	3/16	.312	2 3/16	8	27000609	116.15	.1714 - .2025	147.50	134.60	130.25	128.15	125.95	124.20
709	1 1/8	7/32	.342	2 7/32	8	27000709	116.15	.2026 - .2339	147.50	134.60	130.25	128.15	125.95	124.20
809	1 1/8	1/4	.374	2 1/4	8	27000809	116.15	.2340 - .2650	147.50	134.60	130.25	128.15	125.95	124.20
-	1 1/8	9/32	.435	2 9/32	8	27003609	127.20	.2651 - .2968	147.50	134.60	130.25	128.15	125.95	124.20
1009	1 1/8	5/16	.435	2 5/16	8	27001009	116.15	.2969 - .3281	147.50	134.60	130.25	128.15	125.95	124.20
610	1 1/4	3/16	.312	2 3/16	8	27000610	121.95	.1714 - .2025	153.60	140.70	136.30	134.25	132.05	130.25
710	1 1/4	7/32	.342	2 7/32	8	27000710	121.95	.2026 - .2339	153.60	140.70	136.30	134.25	132.05	130.25
810	1 1/4	1/4	.374	2 1/4	8	27000810	121.95	.2340 - .2650	153.60	140.70	136.30	134.25	132.05	130.25
-	1 1/4	9/32	.435	2 9/32	8	27004009	133.55	.2651 - .2968	153.60	140.70	136.30	134.25	132.05	130.25
1010	1 1/4	5/16	.435	2 5/16	8	27001010	121.95	.2969 - .3281	153.60	140.70	136.30	134.25	132.05	130.25
-	1 1/4	11/32	.467	2 11/32	8	27004011	133.55	.3282 - .3593	153.60	140.70	136.30	134.25	132.05	130.25
1210	1 1/4	3/8	.467	2 3/8	8	27001210	121.95	.3594 - .3900	153.60	140.70	136.30	134.25	132.05	130.25
811	1 3/8	1/4	.401	2 1/4	8	27000811	128.10	.2340 - .2650	160.05	147.10	142.80	140.70	138.50	136.75
-	1 3/8	9/32	.467	2 9/32	8	27004409	140.30	.2651 - .2968	160.05	147.10	142.80	140.70	138.50	136.75
1011	1 3/8	5/16	.467	2 5/16	8	27001011	128.10	.2969 - .3281	160.05	147.10	142.80	140.70	138.50	136.75
-	1 3/8	11/32	.467	2 11/32	8	27004411	140.30	.3282 - .3593	160.05	147.10	142.80	140.70	138.50	136.75
1211	1 3/8	3/8	.467	2 3/8	8	27001211	128.10	.3594 - .3900	160.05	147.10	142.80	140.70	138.50	136.75
812	1 1/2	1/4	.435	2 1/4	8	27000812	134.50	.2340 - .2650	166.75	153.85	149.50	147.40	145.20	143.45
-	1 1/2	9/32	.467	2 9/32	8	27004809	147.30	.2651 - .2968	166.75	153.85	149.50	147.40	145.20	143.45
1012	1 1/2	5/16	.467	2 5/16	8	27001012	134.50	.2969 - .3281	166.75	153.85	149.50	147.40	145.20	143.45
-	1 1/2	11/32	.467	2 11/32	8	27004811	147.30	.3282 - .3593	166.75	153.85	149.50	147.40	145.20	143.45
1212	1 1/2	3/8	.467	2 3/8	8	27001212	134.50	.3594 - .3900	166.75	153.85	149.50	147.40	145.20	143.45
-	1 1/2	13/32	.467	2 13/32	8	27004813	147.30	.3901 - .4219	166.75	153.85	149.50	147.40	145.20	143.45
-	1 1/2	7/16	.467	2 7/16	8	27004814	147.30	.4220 - .4531	166.75	153.85	149.50	147.40	145.20	143.45
-	1 1/2	15/32	.467	2 15/32	8	27004815	147.30	.4532 - .4843	166.75	153.85	149.50	147.40	145.20	143.45
-	1 1/2	1/2	.467	2 1/2	8	27004816	147.30	.4844 - .5150	166.75	153.85	149.50	147.40	145.20	143.45

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



# KEYSEAT CUTTERS

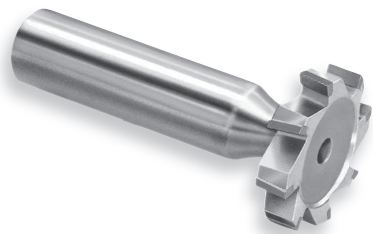
CARBIDE TIPPED - STAGGERED TOOTH FOR NON-FERROUS & CAST IRON

**TYPE 2701 - STAGGERED TOOTH FOR NON-FERROUS & CAST IRON**

Alternate right and left axial rake.  
 Fast cutting to close tolerances with longer tool life.  
 Carbide tips brazed to hardened alloy steel bodies.  
 Cutting diameter tolerance: plus .020", plus .015".  
 Face width tolerance: plus .0000" minus .0005".  
 Straight shank - 1/2" diameter, 2" long.

**OPTIONS:** Intermediate decimal & metric face width.  
 Intermediate decimal & metric cutting diameter.  
 Drive flats on shanks.  
 Radius corners or chamfer corners.

**USE:** For milling slots in cast iron, non-ferrous metals, plastic and non-metals.



AMERICAN STANDARD NO.	TOOL DIAM.	DIMENSIONS				TYPE 2701 EDP NO.	PRICE	MODIFIED FACE WIDTH RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
		FACE WIDTH	NECK DIAM.	OVERALL LENGTH	NO. OF TEETH				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
204	1/2	1/16	.130	2 1/16	6	27010204	\$101.85	.0575 - .0787	\$132.55	\$119.60	\$115.25	\$113.20	\$111.00	\$109.20
304	1/2	3/32	.160	2 3/32	6	27010304	101.85	.0788 - .1088	132.55	119.60	115.25	113.20	111.00	109.20
404	1/2	1/8	.191	2 1/8	6	27010404	101.85	.1089 - .1400	132.55	119.60	115.25	113.20	111.00	109.20
305	5/8	3/32	.191	2 3/32	6	27010305	105.45	.0788 - .1088	136.35	123.45	119.10	117.00	114.80	113.00
405	5/8	1/8	.223	2 1/8	6	27010405	105.45	.1089 - .1400	136.35	123.45	119.10	117.00	114.80	113.00
505	5/8	3/32	.252	2 3/32	6	27010505	105.45	.1401 - .1713	136.35	123.45	119.10	117.00	114.80	113.00
605	5/8	3/16	.279	2 3/16	6	27010605	105.45	.1714 - .2025	136.35	123.45	119.10	117.00	114.80	113.00
406	3/4	1/8	.217	2 1/8	6	27010406	110.20	.1100 - .1400	141.30	128.40	124.00	121.95	119.75	118.00
506	3/4	5/32	.246	2 5/32	6	27010506	110.20	.1401 - .1713	141.30	128.40	124.00	121.95	119.75	118.00
606	3/4	3/16	.279	2 3/16	6	27010606	110.20	.1714 - .2025	141.30	128.40	124.00	121.95	119.75	118.00
-	3/4	7/32	.342	2 7/32	6	27012407	120.70	.2026 - .2339	141.30	128.40	124.00	121.95	119.75	118.00
806	3/4	1/4	.342	2 1/4	6	27010806	110.20	.2340 - .2650	141.30	128.40	124.00	121.95	119.75	118.00
507	7/8	5/32	.246	2 5/32	6	27010507	115.25	.1401 - .1713	146.60	133.65	129.30	127.20	125.00	123.25
607	7/8	3/16	.279	2 3/16	6	27010607	115.25	.1714 - .2025	146.60	133.65	129.30	127.20	125.00	123.25
707	7/8	7/32	.312	2 7/32	6	27010707	115.25	.2026 - .2339	146.60	133.65	129.30	127.20	125.00	123.25
807	7/8	1/4	.342	2 1/4	6	27010807	115.25	.2340 - .2650	146.60	133.65	129.30	127.20	125.00	123.25
608	1	3/16	.279	2 3/16	8	27010608	130.05	.1714 - .2025	162.10	149.15	144.80	142.70	140.50	138.75
708	1	7/32	.312	2 7/32	8	27010708	130.05	.2026 - .2339	162.10	149.15	144.80	142.70	140.50	138.75
808	1	1/4	.342	2 1/4	8	27010808	130.05	.2340 - .2650	162.10	149.15	144.80	142.70	140.50	138.75
-	1	9/32	.401	2 9/32	8	27013209	142.45	.2651 - .2968	162.10	149.15	144.80	142.70	140.50	138.75
1008	1	3/16	.401	2 3/16	8	27011008	130.05	.2969 - .3281	162.10	149.15	144.80	142.70	140.50	138.75
-	1	11/32	.467	2 11/32	8	27013211	142.45	.3282 - .3593	162.10	149.15	144.80	142.70	140.50	138.75
1208	1	3/8	.467	2 3/8	8	27011208	130.05	.3594 - .3900	162.10	149.15	144.80	142.70	140.50	138.75
609	1 1/8	3/16	.312	2 3/16	8	27010609	136.50	.1714 - .2025	168.85	155.90	151.55	149.50	147.30	145.50
709	1 1/8	7/32	.342	2 7/32	8	27010709	136.50	.2026 - .2339	168.85	155.90	151.55	149.50	147.30	145.50
809	1 1/8	1/4	.374	2 1/4	8	27010809	136.50	.2340 - .2650	168.85	155.90	151.55	149.50	147.30	145.50
-	1 1/8	9/32	.435	2 9/32	8	27013609	149.50	.2651 - .2968	168.85	155.90	151.55	149.50	147.30	145.50
1009	1 1/8	3/16	.435	2 3/16	8	27011009	136.50	.2969 - .3281	168.85	155.90	151.55	149.50	147.30	145.50
610	1 1/4	3/16	.312	2 3/16	8	27010610	143.40	.1714 - .2025	176.05	163.10	158.75	156.65	154.45	152.70
710	1 1/4	7/32	.342	2 7/32	8	27010710	143.40	.2026 - .2339	176.05	163.10	158.75	156.65	154.45	152.70
810	1 1/4	1/4	.374	2 1/4	8	27010810	143.40	.2340 - .2650	176.05	163.10	158.75	156.65	154.45	152.70
-	1 1/4	9/32	.435	2 9/32	8	27014009	157.05	.2651 - .2968	176.05	163.10	158.75	156.65	154.45	152.70
1010	1 1/4	3/16	.435	2 3/16	8	27011010	143.40	.2969 - .3281	176.05	163.10	158.75	156.65	154.45	152.70
-	1 1/4	11/32	.467	2 11/32	8	27014011	157.05	.3282 - .3593	176.05	163.10	158.75	156.65	154.45	152.70
1210	1 1/4	3/8	.467	2 3/8	8	27011210	143.40	.3594 - .3900	176.05	163.10	158.75	156.65	154.45	152.70
811	1 3/8	1/4	.401	2 1/4	8	27010811	150.60	.2340 - .2650	183.65	170.75	166.40	164.30	162.10	160.30
-	1 3/8	9/32	.467	2 9/32	8	27014409	164.95	.2651 - .2968	183.65	170.75	166.40	164.30	162.10	160.30
1011	1 3/8	3/16	.467	2 3/16	8	27011011	150.60	.2969 - .3281	183.65	170.75	166.40	164.30	162.10	160.30
-	1 3/8	11/32	.467	2 11/32	8	27014411	164.95	.3282 - .3593	183.65	170.75	166.40	164.30	162.10	160.30
1211	1 3/8	3/8	.467	2 3/8	8	27011211	150.60	.3594 - .3900	183.65	170.75	166.40	164.30	162.10	160.30
812	1 1/2	1/4	.435	2 1/4	8	27010812	158.20	.2340 - .2650	191.55	178.65	174.25	172.20	170.00	168.20
-	1 1/2	9/32	.467	2 9/32	8	27014809	173.25	.2651 - .2968	191.55	178.65	174.25	172.20	170.00	168.20
1012	1 1/2	3/16	.467	2 3/16	8	27011012	158.20	.2969 - .3281	191.55	178.65	174.25	172.20	170.00	168.20
-	1 1/2	11/32	.467	2 11/32	8	27014811	173.25	.3282 - .3593	191.55	178.65	174.25	172.20	170.00	168.20
1212	1 1/2	3/8	.467	2 3/8	8	27011212	158.20	.3594 - .3900	191.55	178.65	174.25	172.20	170.00	168.20
-	1 1/2	13/32	.467	2 13/32	8	27014813	173.25	.3901 - .4219	191.55	178.65	174.25	172.20	170.00	168.20
-	1 1/2	7/16	.467	2 7/16	8	27014814	173.25	.4220 - .4531	191.55	178.65	174.25	172.20	170.00	168.20
-	1 1/2	15/32	.467	2 15/32	8	27014815	173.25	.4532 - .4843	191.55	178.65	174.25	172.20	170.00	168.20
-	1 1/2	1/2	.467	2 1/2	8	27014816	173.25	.4844 - .5150	191.55	178.65	174.25	172.20	170.00	168.20

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



# KEYSEAT CUTTERS

## CARBIDE TIPPED - STRAIGHT TOOTH FOR STEEL

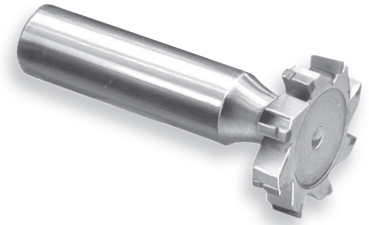
### TYPE 2702 - STRAIGHT TOOTH FOR STEEL

Fast cutting to close tolerances with longer tool life. Carbide tips brazed to hardened alloy steel bodies. Cutting diameter tolerance: plus .020", plus .015". Face width tolerance: plus .0000" minus .0005". Straight shank - 1/2" diameter, 2" long. Chip breakers on cutters 5/32" and greater in width. Decimal sized cutters DO NOT have chip breakers.

### OPTIONS:

Intermediate decimal & metric face width.  
Intermediate decimal & metric cutting diameter.  
Drive flats on shanks.  
Radius corners or chamfer corners.

**USE:** For milling slots in steel.



AMERICAN STANDARD NO.	TOOL DIAM.	DIMENSIONS				TYPE 2702 EDP NO.	PRICE	MODIFIED FACE WIDTH RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
		FACE WIDTH	NECK DIAM.	OVERALL LENGTH	NO. OF TEETH				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
204	1/2	1/16	.130	2 1/16	6	27020204	\$100.00	.0575 - .0787	\$131.95	\$118.35	\$113.75	\$111.55	\$109.25	\$107.40
304	1/2	3/32	.160	2 3/32	6	27020304	100.00	.0788 - .1088	131.95	118.35	113.75	111.55	109.25	107.40
404	1/2	1/8	.191	2 1/8	6	27020404	100.00	.1089 - .1400	131.95	118.35	113.75	111.55	109.25	107.40
305	5/8	3/32	.191	2 3/32	6	27020305	103.60	.0788 - .1088	135.60	122.05	117.50	115.30	113.00	111.15
405	5/8	1/8	.223	2 1/8	6	27020405	103.60	.1089 - .1400	135.60	122.05	117.50	115.30	113.00	111.15
505	5/8	3/32	.252	2 3/32	6	27020505	103.60	.1401 - .1713	135.60	122.05	117.50	115.30	113.00	111.15
605	5/8	3/16	.279	2 3/16	6	27020605	103.60	.1714 - .2025	135.60	122.05	117.50	115.30	113.00	111.15
406	3/4	1/8	.217	2 1/8	6	27020406	108.10	.1100 - .1400	140.45	126.85	122.25	120.05	117.75	115.90
506	3/4	3/32	.246	2 5/32	6	27020506	108.10	.1401 - .1713	140.45	126.85	122.25	120.05	117.75	115.90
606	3/4	3/16	.279	2 3/16	6	27020606	108.10	.1714 - .2025	140.45	126.85	122.25	120.05	117.75	115.90
-	3/4	7/32	.342	2 7/32	6	27022407	118.40	.2026 - .2339	140.45	126.85	122.25	120.05	117.75	115.90
806	3/4	1/4	.342	2 1/4	6	27020806	108.10	.2340 - .2650	140.45	126.85	122.25	120.05	117.75	115.90
507	7/8	5/32	.246	2 5/32	6	27020507	113.25	.1401 - .1713	145.75	132.15	127.60	125.40	123.10	121.20
607	7/8	3/16	.279	2 3/16	6	27020607	113.25	.1714 - .2025	145.75	132.15	127.60	125.40	123.10	121.20
707	7/8	7/32	.312	2 7/32	6	27020707	113.25	.2026 - .2339	145.75	132.15	127.60	125.40	123.10	121.20
807	7/8	1/4	.342	2 1/4	6	27020807	113.25	.2340 - .2650	145.75	132.15	127.60	125.40	123.10	121.20
608	1	3/16	.279	2 3/16	8	27020608	127.75	.1714 - .2025	160.90	147.35	142.75	140.60	138.30	136.40
708	1	7/32	.312	2 7/32	8	27020708	127.75	.2026 - .2339	160.90	147.35	142.75	140.60	138.30	136.40
808	1	1/4	.342	2 1/4	8	27020808	127.75	.2340 - .2650	160.90	147.35	142.75	140.60	138.30	136.40
-	1	9/32	.401	2 9/32	8	27023209	139.90	.2651 - .2968	160.90	147.35	142.75	140.60	138.30	136.40
1008	1	5/16	.401	2 5/16	8	27021008	127.75	.2969 - .3281	160.90	147.35	142.75	140.60	138.30	136.40
-	1	11/32	.467	2 11/32	8	27023211	139.90	.3282 - .3593	160.90	147.35	142.75	140.60	138.30	136.40
1208	1	3/8	.467	2 3/8	8	27021208	127.75	.3594 - .3900	160.90	147.35	142.75	140.60	138.30	136.40
609	1 1/8	3/16	.312	2 3/16	8	27020609	134.15	.1714 - .2025	167.70	154.10	149.50	147.35	145.05	143.15
709	1 1/8	7/32	.342	2 7/32	8	27020709	134.15	.2026 - .2339	167.70	154.10	149.50	147.35	145.05	143.15
809	1 1/8	1/4	.374	2 1/4	8	27020809	134.15	.2340 - .2650	167.70	154.10	149.50	147.35	145.05	143.15
-	1 1/8	9/32	.435	2 9/32	8	27023609	146.90	.2651 - .2968	167.70	154.10	149.50	147.35	145.05	143.15
1009	1 1/8	5/16	.435	2 5/16	8	27021009	134.15	.2969 - .3281	167.70	154.10	149.50	147.35	145.05	143.15
610	1 1/4	3/16	.312	2 3/16	8	27020610	140.85	.1714 - .2025	174.70	161.10	156.55	154.35	152.05	150.20
710	1 1/4	7/32	.342	2 7/32	8	27020710	140.85	.2026 - .2339	174.70	161.10	156.55	154.35	152.05	150.20
810	1 1/4	1/4	.374	2 1/4	8	27020810	140.85	.2340 - .2650	174.70	161.10	156.55	154.35	152.05	150.20
-	1 1/4	9/32	.435	2 9/32	8	27024009	154.25	.2651 - .2968	174.70	161.10	156.55	154.35	152.05	150.20
1010	1 1/4	5/16	.435	2 5/16	8	27021010	140.85	.2969 - .3281	174.70	161.10	156.55	154.35	152.05	150.20
-	1 1/4	11/32	.467	2 11/32	8	27024011	154.25	.3282 - .3593	174.70	161.10	156.55	154.35	152.05	150.20
1210	1 1/4	3/8	.467	2 3/8	8	27021210	140.85	.3594 - .3900	174.70	161.10	156.55	154.35	152.05	150.20
811	1 3/8	1/4	.401	2 1/4	8	27020811	147.95	.2340 - .2650	182.20	168.60	164.00	161.80	159.50	157.65
-	1 3/8	9/32	.467	2 9/32	8	27024409	162.05	.2651 - .2968	182.20	168.60	164.00	161.80	159.50	157.65
1011	1 3/8	5/16	.467	2 5/16	8	27021011	147.95	.2969 - .3281	182.20	168.60	164.00	161.80	159.50	157.65
-	1 3/8	11/32	.467	2 11/32	8	27024411	162.05	.3282 - .3593	182.20	168.60	164.00	161.80	159.50	157.65
1211	1 3/8	3/8	.467	2 3/8	8	27021211	147.95	.3594 - .3900	182.20	168.60	164.00	161.80	159.50	157.65
812	1 1/2	1/4	.435	2 1/4	8	27020812	155.35	.2340 - .2650	189.90	176.35	171.80	169.60	167.25	165.45
-	1 1/2	9/32	.467	2 9/32	8	27024809	170.15	.2651 - .2968	189.90	176.35	171.80	169.60	167.25	165.45
1012	1 1/2	5/16	.467	2 5/16	8	27021012	155.35	.2969 - .3281	189.90	176.35	171.80	169.60	167.25	165.45
-	1 1/2	11/32	.467	2 11/32	8	27024811	170.15	.3282 - .3593	189.90	176.35	171.80	169.60	167.25	165.45
1212	1 1/2	3/8	.467	2 3/8	8	27021212	155.35	.3594 - .3900	189.90	176.35	171.80	169.60	167.25	165.45
-	1 1/2	13/32	.467	2 13/32	8	27024813	170.15	.3901 - .4219	189.90	176.35	171.80	169.60	167.25	165.45
-	1 1/2	7/16	.467	2 7/16	8	27024814	170.15	.4220 - .4531	189.90	176.35	171.80	169.60	167.25	165.45
-	1 1/2	15/32	.467	2 15/32	8	27024815	170.15	.4532 - .4843	189.90	176.35	171.80	169.60	167.25	165.45
-	1 1/2	1/2	.467	2 1/2	8	27024816	170.15	.4844 - .5150	189.90	176.35	171.80	169.60	167.25	165.45

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





# KEYSEAT CUTTERS

## CARBIDE TIPPED - STAGGERED TOOTH FOR STEEL

### TYPE 2703 - STAGGERED TOOTH FOR STEEL

Alternate right and left axial rake.

Fast cutting to close tolerances with longer tool life.

Carbide tips brazed to hardened alloy steel bodies.

Cutting diameter tolerance: plus .020", plus .015".

Face width tolerance: plus .0000" minus .0005".

Straight shank - 1/2" diameter, 2" long.

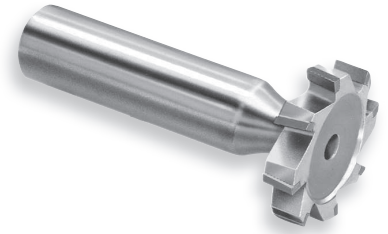
**OPTIONS:** Intermediate decimal & metric face width.

Intermediate decimal & metric cutting diameter.

Drive flats on shanks.

Radius corners or chamfer corners.

**USE:** For milling slots in steel.



AMERICAN STANDARD NO.	TOOL DIAM.	DIMENSIONS				TYPE 2703 EDP NO.	PRICE	MODIFIED FACE WIDTH RANGE	PRICE EACH - FINISHED TO DECIMAL SIZE					
		FACE WIDTH	NECK DIAM.	OVERALL LENGTH	NO. OF TEETH				1 PC.	2 PC.	3 PC.	4 PC.	5-7	8-14*
204	1/2	1/16	.130	2 1/16	6	27030204	\$117.65	.0575 - .0787	\$150.40	\$136.80	\$132.25	\$130.05	\$127.75	\$125.90
304	1/2	3/32	.160	2 3/32	6	27030304	117.65	.0788 - .1088	150.40	136.80	132.25	130.05	127.75	125.90
404	1/2	1/8	.191	2 1/8	6	27030404	117.65	.1089 - .1400	150.40	136.80	132.25	130.05	127.75	125.90
305	5/8	3/32	.191	2 3/32	6	27030305	121.80	.0788 - .1088	154.75	141.20	136.65	134.45	132.15	130.30
405	5/8	1/8	.223	2 1/8	6	27030405	121.80	.1089 - .1400	154.75	141.20	136.65	134.45	132.15	130.30
505	5/8	3/32	.252	2 3/32	6	27030505	121.80	.1401 - .1713	154.75	141.20	136.65	134.45	132.15	130.30
605	5/8	3/16	.279	2 3/16	6	27030605	121.80	.1714 - .2025	154.75	141.20	136.65	134.45	132.15	130.30
406	3/4	1/8	.217	2 1/8	6	27030406	127.25	.1100 - .1400	160.50	146.95	142.40	140.20	137.85	136.00
506	3/4	5/32	.246	2 5/32	6	27030506	127.25	.1401 - .1713	160.50	146.95	142.40	140.20	137.85	136.00
606	3/4	3/16	.279	2 3/16	6	27030606	127.25	.1714 - .2025	160.50	146.95	142.40	140.20	137.85	136.00
-	3/4	7/32	.342	2 7/32	6	27032407	139.40	.2026 - .2339	160.50	146.95	142.40	140.20	137.85	136.00
806	3/4	1/4	.342	2 1/4	6	27030806	127.25	.2340 - .2650	160.50	146.95	142.40	140.20	137.85	136.00
507	7/8	5/32	.246	2 5/32	6	27030507	133.15	.1401 - .1713	166.60	153.00	148.45	146.20	143.90	142.10
607	7/8	3/16	.279	2 3/16	6	27030607	133.15	.1714 - .2025	166.60	153.00	148.45	146.20	143.90	142.10
707	7/8	7/32	.312	2 7/32	6	27030707	133.15	.2026 - .2339	166.60	153.00	148.45	146.20	143.90	142.10
807	7/8	1/4	.342	2 1/4	6	27030807	133.15	.2340 - .2650	166.60	153.00	148.45	146.20	143.90	142.10
608	1	3/16	.279	2 3/16	8	27030608	150.20	.1714 - .2025	184.50	170.95	166.35	164.15	161.85	160.00
708	1	7/32	.312	2 7/32	8	27030708	150.20	.2026 - .2339	184.50	170.95	166.35	164.15	161.85	160.00
808	1	1/4	.342	2 1/4	8	27030808	150.20	.2340 - .2650	184.50	170.95	166.35	164.15	161.85	160.00
-	1	9/32	.401	2 9/32	8	27033209	164.55	.2651 - .2968	184.50	170.95	166.35	164.15	161.85	160.00
1008	1	3/16	.401	2 3/16	8	27031008	150.20	.2969 - .3281	184.50	170.95	166.35	164.15	161.85	160.00
-	1	1/32	.467	2 1/32	8	27033211	164.55	.3282 - .3593	184.50	170.95	166.35	164.15	161.85	160.00
1208	1	3/8	.467	2 3/8	8	27031208	150.20	.3594 - .3900	184.50	170.95	166.35	164.15	161.85	160.00
609	1 1/8	3/16	.312	2 3/16	8	27030609	157.65	.1714 - .2025	192.30	178.70	174.15	172.00	169.70	167.80
709	1 1/8	7/32	.342	2 7/32	8	27030709	157.65	.2026 - .2339	192.30	178.70	174.15	172.00	169.70	167.80
809	1 1/8	1/4	.374	2 1/4	8	27030809	157.65	.2340 - .2650	192.30	178.70	174.15	172.00	169.70	167.80
-	1 1/8	9/32	.435	2 9/32	8	27033609	172.65	.2651 - .2968	192.30	178.70	174.15	172.00	169.70	167.80
1009	1 1/8	3/16	.435	2 3/16	8	27031009	157.65	.2969 - .3281	192.30	178.70	174.15	172.00	169.70	167.80
610	1 1/4	3/16	.312	2 3/16	8	27030610	165.60	.1714 - .2025	200.60	187.00	182.50	180.30	178.00	176.15
710	1 1/4	7/32	.342	2 7/32	8	27030710	165.60	.2026 - .2339	200.60	187.00	182.50	180.30	178.00	176.15
810	1 1/4	1/4	.374	2 1/4	8	27030810	165.60	.2340 - .2650	200.60	187.00	182.50	180.30	178.00	176.15
-	1 1/4	9/32	.435	2 9/32	8	27034009	181.40	.2651 - .2968	200.60	187.00	182.50	180.30	178.00	176.15
1010	1 1/4	3/16	.435	2 3/16	8	27031010	165.60	.2969 - .3281	200.60	187.00	182.50	180.30	178.00	176.15
-	1 1/4	1/32	.467	2 1/32	8	27034011	181.40	.3282 - .3593	200.60	187.00	182.50	180.30	178.00	176.15
1210	1 1/4	3/8	.467	2 3/8	8	27031210	165.60	.3594 - .3900	200.60	187.00	182.50	180.30	178.00	176.15
811	1 3/8	1/4	.401	2 1/4	8	27030811	174.00	.2340 - .2650	209.40	195.90	191.25	189.10	186.80	184.90
-	1 3/8	9/32	.467	2 9/32	8	27034409	190.50	.2651 - .2968	209.40	195.90	191.25	189.10	186.80	184.90
1011	1 3/8	3/16	.467	2 3/16	8	27031011	174.00	.2969 - .3281	209.40	195.90	191.25	189.10	186.80	184.90
-	1 3/8	1/32	.467	2 1/32	8	27034411	190.50	.3282 - .3593	209.40	195.90	191.25	189.10	186.80	184.90
1211	1 3/8	3/8	.467	2 3/8	8	27031211	174.00	.3594 - .3900	209.40	195.90	191.25	189.10	186.80	184.90
812	1 1/2	1/4	.435	2 1/4	8	27030812	182.70	.2340 - .2650	218.55	204.95	200.40	198.20	195.90	194.05
-	1 1/2	9/32	.467	2 9/32	8	27034809	200.10	.2651 - .2968	218.55	204.95	200.40	198.20	195.90	194.05
1012	1 1/2	3/16	.467	2 3/16	8	27031012	182.70	.2969 - .3281	218.55	204.95	200.40	198.20	195.90	194.05
-	1 1/2	1/32	.467	2 1/32	8	27034811	200.10	.3282 - .3593	218.55	204.95	200.40	198.20	195.90	194.05
1212	1 1/2	3/8	.467	2 3/8	8	27031212	182.70	.3594 - .3900	218.55	204.95	200.40	198.20	195.90	194.05
-	1 1/2	13/32	.467	2 13/32	8	27034813	200.10	.3901 - .4219	218.55	204.95	200.40	198.20	195.90	194.05
-	1 1/2	7/16	.467	2 7/16	8	27034814	200.10	.4220 - .4531	218.55	204.95	200.40	198.20	195.90	194.05
-	1 1/2	15/32	.467	2 15/32	8	27034815	200.10	.4532 - .4843	218.55	204.95	200.40	198.20	195.90	194.05
-	1 1/2	1/2	.467	2 1/2	8	27034816	200.10	.4844 - .5150	218.55	204.95	200.40	198.20	195.90	194.05

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



# KEYSEAT CUTTERS

## CARBIDE TIPPED - HIGH PERFORMANCE FOR ALUMINUM

### TYPE 2704 - STRAIGHT TOOTH - FOR ALUMINUM

#### HIGH PERFORMANCE

Carbide tips brazed to hardened alloy steel bodies.  
Cutting diameter tolerance: plus .020", plus .015".  
Face width tolerance: plus .0005" minus .0005".



*TOOL DIAM.	SHANK DIAM.
Up to 1 1/2"	1/2"
1 3/4" to 2"	3/4"

**OPTIONS:** Intermediate decimal & metric face width.  
Intermediate decimal & metric cutting diameter.  
Drive flats on shanks.  
Radius corners or chamfer corners.

**USE:** For milling, slotting, grooving, snap rings, and O-rings. Also used in circular interpolation of spotfacing, back spotfacing, and counterboring.  
Starting point for Aluminum slotting: 1K-4K SFPM, .002-.008 IPT. Reduce SFPM and IPT by 25% for widths under .0938.

AMERICAN STANDARD NO.	TOOL DIAM.	DIMENSIONS				TYPE 2704 EDP NO.	PRICE	MODIFIED FACE WIDTH RANGE
		FACE WIDTH	NECK DIAM.	OVER-ALL LEN.	NO. OF TEETH			
-	5/8	1/16	.160	2 1/16	2	27042002	\$106.10	.0575 - .0787
305	5/8	3/32	.191	2 3/32	2	27040305	106.10	.0788 - .1099
405	5/8	1/8	.223	2 1/8	2	27040405	106.10	.1100 - .1400
505	5/8	5/32	.252	2 5/32	2	27040505	106.10	.1401 - .1713
605	5/8	3/16	.279	2 3/16	2	27040605	106.10	.1714 - .2025
-	5/8	7/32	.342	2 7/32	2	27042007	106.10	.2026 - .2339
-	5/8	1/4	.342	2 1/4	2	27042008	106.10	.2340 - .2650
-	3/4	1/16	.160	2 1/16	2	27042402	111.40	.0575 - .0787
-	3/4	3/32	.191	2 3/32	2	27042403	111.40	.0788 - .1099
406	3/4	1/8	.217	2 1/8	2	27040406	111.40	.1100 - .1400
506	3/4	5/32	.246	2 5/32	2	27040506	111.40	.1401 - .1713
606	3/4	3/16	.279	2 3/16	2	27040606	111.40	.1714 - .2025
-	3/4	7/32	.342	2 7/32	2	27042407	111.40	.2026 - .2339
806	3/4	1/4	.342	2 1/4	2	27040806	111.40	.2340 - .2650
-	7/8	1/16	.160	2 1/16	2	27042802	119.40	.0575 - .0787
-	7/8	3/32	.191	2 3/32	2	27042803	119.40	.0788 - .1099
-	7/8	1/8	.217	2 1/8	2	27042804	119.40	.1100 - .1400
507	7/8	5/32	.246	2 5/32	2	27040507	119.40	.1401 - .1713
607	7/8	3/16	.279	2 3/16	2	27040607	119.40	.1714 - .2025
707	7/8	7/32	.312	2 7/32	2	27040707	119.40	.2026 - .2339
807	7/8	1/4	.342	2 1/4	2	27040807	119.40	.2340 - .2650
-	1	3/32	.191	2 3/32	2	27043203	126.00	.0788 - .1088
-	1	1/8	.217	2 1/8	2	27043204	126.00	.1089 - .1400
-	1	5/32	.246	2 5/32	2	27043205	126.00	.1401 - .1713
608	1	3/16	.279	2 3/16	2	27040608	126.00	.1714 - .2025
708	1	7/32	.312	2 7/32	2	27040708	126.00	.2026 - .2339
808	1	1/4	.342	2 1/4	2	27040808	126.00	.2340 - .2650
-	1	9/32	.401	2 9/32	2	27043209	126.00	.2651 - .2968
1008	1	5/16	.401	2 5/16	2	27041008	126.00	.2969 - .3281
-	1	11/32	.467	2 11/32	2	27043211	126.00	.3282 - .3593
1208	1	3/8	.467	2 3/8	2	27041208	126.00	.3594 - .3900
-	1 1/8	3/32	.217	2 3/32	2	27043603	126.00	.0788 - .1088
-	1 1/8	1/8	.246	2 1/8	2	27043604	126.00	.1089 - .1400
-	1 1/8	5/32	.279	2 5/32	2	27043605	126.00	.1401 - .1713
609	1 1/8	3/16	.312	2 3/16	2	27040609	126.00	.1714 - .2025
709	1 1/8	7/32	.342	2 7/32	2	27040709	126.00	.2026 - .2339
809	1 1/8	1/4	.374	2 1/4	2	27040809	126.00	.2340 - .2650
-	1 1/8	9/32	.435	2 9/32	2	27043609	126.00	.2651 - .2968
1009	1 1/8	5/16	.435	2 5/16	2	27041009	126.00	.2969 - .3281
-	1 1/8	11/32	.467	2 11/32	2	27043611	126.00	.3282 - .3593
-	1 1/8	3/8	.467	2 3/8	2	27043612	126.00	.3594 - .3900
-	1 1/4	3/32	.217	2 3/32	3	27044003	132.60	.0788 - .1088
-	1 1/4	1/8	.246	2 1/8	3	27044004	132.60	.1089 - .1400
-	1 1/4	5/32	.279	2 5/32	3	27044005	132.60	.1401 - .1713
610	1 1/4	3/16	.312	2 3/16	3	27040610	132.60	.1714 - .2025
710	1 1/4	7/32	.342	2 7/32	3	27040710	132.60	.2026 - .2339
810	1 1/4	1/4	.374	2 1/4	3	27040810	132.60	.2340 - .2650
-	1 1/4	9/32	.435	2 9/32	3	27044009	132.60	.2651 - .2968
1010	1 1/4	5/16	.435	2 5/16	3	27041010	132.60	.2969 - .3281
-	1 1/4	11/32	.467	2 11/32	3	27044011	132.60	.3282 - .3593
1210	1 1/4	3/8	.467	2 3/8	3	27041210	132.60	.3594 - .3900

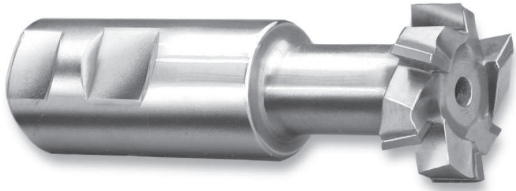
AMERICAN STANDARD NO.	TOOL DIAM.	DIMENSIONS				TYPE 2704 EDP NO.	PRICE	MODIFIED FACE WIDTH RANGE
		FACE WIDTH	NECK DIAM.	OVER-ALL LEN.	NO. OF TEETH			
-	1 3/8	3/32	.312	2 3/32	3	27044403	\$145.85	.0788 - .1088
-	1 3/8	1/8	.342	2 1/8	3	27044404	145.85	.1089 - .1400
-	1 3/8	5/32	.374	2 5/32	3	27044405	145.85	.1401 - .1713
-	1 3/8	3/16	.401	2 3/16	3	27044406	145.85	.1714 - .2025
-	1 3/8	7/32	.401	2 7/32	3	27044407	145.85	.2026 - .2339
811	1 3/8	1/4	.401	2 1/4	3	27040811	145.85	.2340 - .2650
-	1 3/8	9/32	.467	2 9/32	3	27044409	145.85	.2651 - .2968
1011	1 3/8	5/16	.467	2 5/16	3	27041011	145.85	.2969 - .3281
-	1 3/8	11/32	.467	2 11/32	3	27044411	145.85	.3282 - .3593
1211	1 3/8	3/8	.467	2 3/8	3	27041211	145.85	.3594 - .3900
-	1 1/2	3/32	.435	2 3/32	3	27044803	165.80	.0788 - .1088
-	1 1/2	1/8	.435	2 1/8	3	27044804	165.80	.1089 - .1400
-	1 1/2	5/32	.435	2 5/32	3	27044805	165.80	.1401 - .1713
-	1 1/2	3/16	.435	2 3/16	3	27044806	165.80	.1714 - .2025
-	1 1/2	7/32	.435	2 7/32	3	27044807	165.80	.2026 - .2339
812	1 1/2	1/4	.435	2 1/4	3	27040812	165.80	.2340 - .2650
-	1 1/2	9/32	.467	2 9/32	3	27044809	165.80	.2651 - .2968
1012	1 1/2	5/16	.467	2 5/16	3	27041012	165.80	.2969 - .3281
-	1 1/2	11/32	.467	2 11/32	3	27044811	165.80	.3282 - .3593
1212	1 1/2	3/8	.467	2 3/8	3	27041212	198.90	.3594 - .3900
-	1 1/2	13/32	.467	2 13/32	3	27044813	198.90	.3901 - .4219
-	1 1/2	7/16	.467	2 7/16	3	27044814	198.90	.4220 - .4531
-	1 1/2	15/32	.467	2 15/32	3	27044815	198.90	.4532 - .4843
-	1 1/2	1/2	.467	2 1/2	3	27044816	198.90	.4844 - .5150
-	1 3/4	1/8	.718	3 1/8	4	27045604	183.00	.1089 - .1400
-	1 3/4	5/32	.718	3 5/32	4	27045605	183.00	.1401 - .1713
-	1 3/4	3/16	.718	3 3/16	4	27045606	183.00	.1714 - .2025
-	1 3/4	7/32	.718	3 7/32	4	27045607	183.00	.2026 - .2339
-	1 3/4	1/4	.718	3 1/4	4	27045608	183.00	.2340 - .2650
-	1 3/4	9/32	.718	3 9/32	4	27045609	183.00	.2651 - .2968
-	1 3/4	5/16	.718	3 5/16	4	27045610	183.00	.2969 - .3281
-	1 3/4	11/32	.718	3 11/32	4	27045611	183.00	.3282 - .3593
-	1 3/4	3/8	.718	3 3/8	4	27045612	214.90	.3594 - .3900
-	1 3/4	13/32	.718	3 13/32	4	27045613	214.90	.3901 - .4219
-	1 3/4	7/16	.718	3 7/16	4	27045614	214.90	.4220 - .4531
-	1 3/4	15/32	.718	3 15/32	4	27045615	214.90	.4532 - .4843
-	1 3/4	1/2	.718	3 1/2	4	27045616	214.90	.4844 - .5150
-	2	1/8	.718	3 1/8	4	27046404	212.15	.1089 - .1400
-	2	5/32	.718	3 5/32	4	27046405	212.15	.1401 - .1713
-	2	3/16	.718	3 3/16	4	27046406	212.15	.1714 - .2025
-	2	7/32	.718	3 7/32	4	27046407	212.15	.2026 - .2339
-	2	1/4	.718	3 1/4	4	27046408	212.15	.2340 - .2650
-	2	9/32	.718	3 9/32	4	27046409	212.15	.2651 - .2968
-	2	5/16	.718	3 5/16	4	27046410	212.15	.2969 - .3281
-	2	11/32	.718	3 11/32	4	27046411	212.15	.3282 - .3593
-	2	3/8	.718	3 3/8	4	27046412	245.40	.3594 - .3900
-	2	13/32	.718	3 13/32	4	27046413	245.40	.3901 - .4219
-	2	7/16	.718	3 7/16	4	27046414	245.40	.4220 - .4531
-	2	15/32	.718	3 15/32	4	27046415	245.40	.4532 - .4843
-	2	1/2	.718	3 1/2	4	27046416	245.40	.4844 - .5150
-	-	-	-	-	-	-	-	-

\*Contact Rock River Tool for price and availability on diameters greater than 2".



# 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	\$114.65	272108	\$123.80
5/16	21/32	17/64	21/64	2 11/16	1/2	39/64	6	272010	113.25	272110	122.30
3/8	25/32	21/64	13/32	3 1/4	3/4	55/64	6	272012	142.50	272112	153.95
1/2	31/32	25/64	17/32	3 7/16	3/4	63/64	6	272016	154.95	272116	167.30
5/8	1 1/4	31/64	21/32	3 15/16	1	1 9/64	6	272020	205.65	272120	222.15
3/4	1 15/32	5/8	25/32	4 7/16	1	1 1/2	6	272024	229.80	272124	248.15
1	1 27/32	53/64	1 1/32	4 13/16	1 1/4	1 43/64	8	272032	328.10	272132	354.40
1 1/4	2 7/32	1 3/32	1 7/32	5 3/8	1 1/4	1 31/32	8	272040	414.05	272140	447.20
1 1/2	2 21/32	1 11/32	1 17/32	5 29/32	1 1/4	2 1/8	8	272048	479.50	272148	517.90

## DOVETAIL CUTTERS

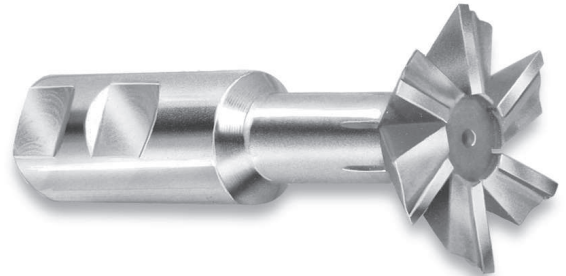
TYPE 2734 - 45° DOVETAIL - FOR NON-FERROUS AND CAST IRON

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	\$107.80	273516	\$116.50	7/32	273616	\$107.80	273716	\$116.50
3/4	3/8	2 1/4	1/4	3	1/4	273424	116.30	273524	125.55	1/4	273624	116.30	273724	125.55
1	1/2	2 1/2	3/8	4	3/16	273432	124.40	273532	134.40	3/8	273632	124.40	273732	134.40
1 1/4	5/8	2 3/4	1/2	4	3/8	273440	141.40	273540	152.80	1/2	273640	141.40	273740	152.80
1 1/2	3/4	3 1/4	1/2	4	1/2	273448	165.25	273548	178.50	5/8	273648	165.25	273748	178.50
2	1	4 1/4	3/4	6	5/8	273464	265.50	273564	286.75	3/4	273664	265.50	273764	286.75
2 1/2	1 1/4	4 3/8	1	6	3/4	273480	359.05	273580	387.70	7/8	273680	359.05	273780	387.70
3	1 1/4	4 1/2	1	6	1	273496	423.40	273596	457.30	1 1/8	273696	423.40	273796	457.30



# CHAMFER MILLING CUTTERS

## CARBIDE TIPPED - 45° AND 60° CUTTERS

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

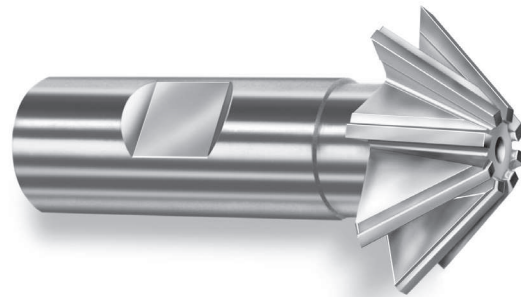
**TYPE 2732 - 60° FOR NON-FERROUS & CAST IRON**  
**TYPE 2733 - 60° FOR STEEL**

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	\$140.25	273116	\$154.20	7/32	273216	\$140.25	273316	\$154.20
3/4	3/8	2 1/8	6	3/16	273024	151.20	273124	166.25	5/16	273224	151.20	273324	166.25
1	1/2	2 1/2	6	3/16	273032	177.35	273132	195.05	7/16	273232	177.35	273332	195.05
1 1/2	3/4	2 3/4	8	1/2	273048	224.75	273148	247.35	5/8	273248	224.75	273348	247.35

## 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	\$166.10	271901	\$182.75
1/16	3/4	3/16	1/2	3	6	271802	166.10	271902	182.75
3/32	7/8	3/16	1/2	3	6	271803	181.60	271903	199.65
1/8	1 1/4	1/4	3/4	3 1/2	6	271804	197.60	271904	217.40
5/32	1 5/16	5/16	3/4	3 1/2	6	271805	227.40	271905	250.15
3/16	1 3/8	3/8	3/4	3 1/2	6	271806	240.65	271906	264.70
1/4	1 1/2	1/2	3/4	4	6	271808	249.10	271908	274.05



# 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	\$317.45
4	½	1 ¼	10	271416	271616	272416	272616	392.90
4	¾	1 ¼	10	271424	271624	272424	272624	426.25



## 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	267.25
3	½	1	8	275008	275208	275408	333.30
4	½	1 ¼	10	275016	275216	275416	412.50
4	¾	1 ¼	10	275024	275224	275424	447.45
4	1	1 ¼	10	-	275232	275432	523.70

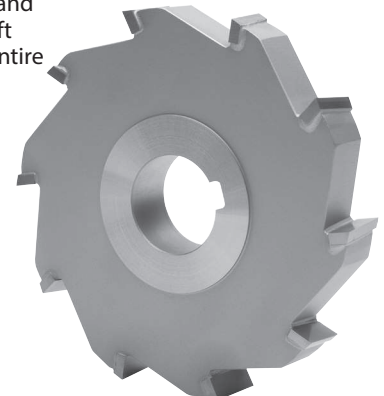


TOOL DIAM.	THICKNESS		TYPE 2547 FOR MOST MATERIALS			
	FRAC.	DEC.	NO. OF TEETH	1" ARBOR EDP NO.	1 ¼" ARBOR EDP NO.	PRICE
3	⅜	.1875	8	254710	-	\$600.85
3	¼	.2500	8	254712	-	615.15
3	⅜	.3125	8	254714	-	620.65
3	¾	.3750	8	254716	-	623.10
3	½	.5000	8	254718	-	642.45
3	⅝	.6250	8	254720	-	687.80
4	⅜	.1875	10	254722	-	652.80
4	¼	.2500	10	254724	-	660.95
4	⅜	.3125	10	254726	-	668.95
4	¾	.3750	10	254728	-	677.00
4	½	.5000	10	254730	-	686.50
4	⅝	.6250	10	254732	-	699.30
4	¾	.7500	10	254734	-	707.20
6	¼	.2500	14	-	254750	848.65
6	⅜	.3125	14	-	254752	855.05
6	¾	.3750	14	-	254754	856.30
6	½	.5000	14	-	254756	867.45
6	⅝	.6250	14	-	254758	872.40
6	¾	.7500	14	-	254760	900.85
6	1	1.0000	14	-	254762	964.55

## 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	-	\$104.30	6	254130	-	\$130.50	6	254230	-	\$128.85	8	254330	-	\$160.75
3	5/16	.3125	4	254031	-	109.55	6	254131	-	131.10	6	254231	-	130.60	8	254331	-	168.45
3	3/8	.3750	4	254032	-	113.55	6	254132	-	133.70	6	254232	-	132.25	8	254332	-	170.75
3	7/16	.4375	4	254033	-	118.20	6	254133	-	144.60	6	254233	-	147.50	-	-	-	-
3	1/2	.5000	4	254034	-	123.90	6	254134	-	150.55	6	254234	-	149.50	8	254334	-	190.85
4	1/4	.2500	4	254040	-	136.00	8	254140	-	168.60	8	254240	-	169.70	10	254340	-	201.00
4	5/16	.3125	4	254041	-	139.85	8	254141	-	174.25	8	254241	-	180.20	10	254341	-	211.15
4	3/8	.3750	4	254042	254043	143.50	8	254142	254143	183.15	8	254242	254243	180.20	10	254342	254343	215.90
4	7/16	.4375	4	254074	-	144.20	8	254174	-	186.80	8	254274	-	185.55	10	254374	-	234.40
4	1/2	.5000	4	254044	254045	144.20	8	254144	254145	192.95	8	254244	254245	192.00	10	254344	254345	236.20
4	9/16	.5625	4	254094	-	156.75	8	254194	-	198.30	8	254294	-	201.50	-	-	-	-
4	5/8	.6250	4	254046	254047	168.20	8	254146	254147	214.95	8	254246	254247	235.55	10	254346	254347	248.75
4	3/4	.7500	4	254048	254049	188.45	8	254148	254149	214.95	8	254248	254249	238.55	10	254348	254349	256.20
5	1/4	.2500	6	254050	-	190.00	10	254150	-	223.25	10	254250	-	223.40	-	-	-	-
5	5/16	.3125	-	-	-	-	10	254151	-	223.25	10	254251	-	223.40	-	-	-	-
5	3/8	.3750	-	-	-	-	10	-	254153	228.70	10	-	254253	234.55	-	-	-	-
5	7/16	.4375	6	-	254075	197.65	10	-	254175	229.80	10	-	254275	242.10	-	-	-	-
5	1/2	.5000	6	254054	254055	200.00	10	254154	254155	243.95	10	254254	254255	242.15	12	254354	254355	271.30
5	9/16	.5625	6	-	254095	206.40	10	-	254195	248.15	10	-	254295	252.80	-	-	-	-
5	5/8	.6250	6	-	254057	217.15	10	-	254157	264.10	10	-	254257	296.75	12	-	254357	296.30
5	3/4	.7500	6	254058	254059	231.50	10	254158	254159	299.05	10	254258	254259	328.40	12	254358	254359	332.30
5	1	1.0000	6	-	254015	231.85	10	-	254115	325.40	10	-	254215	346.35	-	-	-	-
6	3/8	.3750	6	254062	-	203.85	12	-	254163	280.95	12	-	254263	296.80	-	-	-	-
6	1/2	.5000	6	254064	254065	223.25	12	254164	254165	298.35	12	254264	254265	305.70	14	254364	254365	349.05
6	5/8	.6250	6	-	254067	244.70	12	-	254167	326.05	12	-	254267	332.55	14	-	254367	351.85
6	3/4	.7500	6	254068	254069	281.40	12	254168	254169	365.80	12	254268	254269	378.80	14	254368	254369	379.70
6	1	1.0000	6	-	254016	322.55	12	-	254116	369.70	12	-	254216	386.50	-	-	-	-
				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	366.10	12	254188	254189	383.90	12	254288	254289	398.25	14	254388	-	407.10
8	1	1.0000	8	254080	254081	397.25	12	254180	254181	400.15	12	254280	254281	414.50	-	-	-	-



# 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	\$128.40	6	255232	\$147.80	8	255432	\$146.50	8	255832	\$137.25
3	1/8	.1250	1	6	255034	132.25	6	255234	156.50	8	255434	163.95	8	255834	142.50
3	3/16	.1875	1	6	255036	137.50	6	255236	165.50	8	255436	165.50	8	255836	148.00
3	1/4	.2500	1	6	255037	93.50	6	255237	135.70	8	255437	135.70	8	255837	162.90
3	5/16	.3125	1	6	255031	98.20	6	255231	135.70	8	255431	135.70	8	255831	162.90
3	3/8	.3750	1	6	255038	100.15	6	255238	137.90	8	255438	137.90	8	255838	165.50
4	3/32	.0938	1	6	255042	157.65	8	255242	189.50	8	255442	189.50	10	255842	197.50
4	1/8	.1250	1	6	255044	162.30	8	255244	192.00	8	255444	192.00	10	255844	200.00
4	3/16	.1875	1	6	255046	164.75	8	255246	206.90	8	255446	206.90	10	255846	202.75
4	1/4	.2500	1	6	255047	120.20	8	255247	175.70	8	255447	175.70	10	255847	210.95
4	5/16	.3125	1	6	255041	123.55	8	255241	182.50	8	255441	182.50	10	255841	218.90
4	3/8	.3750	1	6	255048	126.85	8	255248	189.15	8	255448	189.15	10	255848	226.95
4	3/8	.3750	1 1/4	6	255049	126.85	8	255249	189.15	8	255449	189.15	10	255849	226.95
5	3/32	.0938	1	8	255052	170.55	10	255252	254.40	10	255452	254.40	12	255852	268.50
5	1/8	.1250	1	8	255054	170.55	10	255254	273.60	10	255454	273.60	12	255854	274.05
5	3/16	.1875	1	-	-	-	10	255256	308.00	10	255456	308.00	12	255856	285.00
6	1/8	.1250	1 1/4	8	255063	232.25	12	255263	333.90	12	255463	333.90	14	255863	320.60
6	3/16	.1875	1 1/4	8	255065	306.10	12	255265	344.90	12	255465	344.90	14	255865	328.85
6	1/4	.2500	1 1/4	8	255067	317.05	12	255267	352.10	12	255467	352.10	14	255867	334.25
8	1/8	.1250	1 1/4	10	255083	296.90	-	-	-	-	-	-	-	-	-
8	3/16	.1875	1 1/4	-	-	-	16	255285	474.65	16	255485	474.65	-	-	-
8	1/4	.2500	1 1/4	-	-	-	16	255287	492.80	16	255487	492.80	-	-	-



# SLITTING SAWS - STANDARD TOOTH

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

### TYPE 2551 - FOR NON-FERROUS

Similar to our Type 2550.  
Except designed with more teeth for better finishes.

### TYPE 2553 - FOR CAST IRON

Similar to our Type 2552.  
Except designed with more teeth for better finishes.

### TYPE 2556 - FOR STEEL

Similar to our Type 2554.  
Except designed with more teeth for better finishes.

### TYPE 2559 - FOR HIGH TEMP ALLOY

Similar to our Type 2558.  
Except designed with more teeth for better finishes.



SAW DIAM.	THICKNESS		TYPE 2551 FOR NON-FERROUS				TYPE 2553 FOR CAST IRON				TYPE 2556 FOR STEEL				TYPE 2559 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	1/16	.0625	12	255198	-	\$202.30	12	255398	-	\$202.30	16	255698	-	\$241.90	12	255998	-	\$227.55
3	3/64	.0781	12	255100	-	239.25	12	255300	-	239.25	16	255600	-	292.50	12	255900	-	254.90
3	3/32	.0938	12	255102	-	202.30	12	255302	-	202.30	16	255602	-	241.90	12	255902	-	227.55
3	7/64	.1094	12	255104	-	201.55	12	255304	-	201.55	16	255604	-	223.20	12	255904	-	217.20
3	1/8	.1250	12	255106	255107	162.65	12	255306	255307	162.65	16	255606	-	202.25	12	255906	255907	207.45
3	5/32	.1562	12	255108	-	193.80	12	255308	-	193.80	16	255608	-	212.45	12	255908	-	212.45
3	3/16	.1875	12	255109	-	173.35	12	255309	-	173.35	16	255609	-	222.70	12	255909	-	217.55
3	7/32	.2188	12	255110	-	200.55	12	255310	-	200.55	16	255610	-	232.90	12	255910	-	224.45
3	1/4	.2500	12	255111	-	210.85	12	255311	-	210.85	16	255611	-	243.20	12	255911	-	231.20
3	5/16	.3125	12	255112	-	231.20	12	255312	-	231.20	16	255612	-	266.60	12	255912	-	253.25
3	3/8	.3750	12	255113	-	251.60	12	255313	-	251.60	16	255613	-	290.15	12	255913	-	277.05
3	7/16	.4375	-	-	-	-	-	-	-	-	16	255614	-	322.40	12	255914	-	301.05
3	1/2	.5000	-	-	-	-	-	-	-	-	16	255615	-	358.25	12	255915	-	324.90
4	1/16	.0625	14	255116	255117	235.55	14	255316	-	235.55	20	255616	-	292.50	14	255916	255917	258.75
4	3/64	.0781	14	255118	255119	278.25	14	255318	255319	278.25	20	255618	255619	320.05	14	255918	255919	296.50
4	3/32	.0938	14	255120	255121	235.55	14	255320	255321	235.55	20	255620	255621	292.50	14	255920	255921	258.75
4	7/64	.1094	14	255122	255123	240.55	14	255322	255323	240.55	20	255622	255623	276.60	14	255922	255923	306.85
4	1/8	.1250	14	255124	255125	212.45	14	255324	255325	212.45	20	255624	255625	258.40	14	255924	255925	258.40
4	5/32	.1562	14	255126	255127	241.30	14	255326	255327	241.30	20	255626	255627	277.60	14	255926	255927	265.20
4	3/16	.1875	14	255128	255129	226.15	14	255328	255329	226.15	20	255628	255629	278.80	14	255928	255929	273.65
4	7/32	.2188	14	255130	255131	256.70	14	255330	255331	256.70	20	255630	255631	295.20	14	255930	255931	282.25
4	1/4	.2500	14	255132	255133	261.65	14	255332	255333	261.65	20	255632	255633	299.05	14	255932	255933	289.00
4	5/16	.3125	14	255134	255135	282.25	14	255334	255335	282.25	20	255634	255635	324.50	14	255934	255935	309.40
4	3/8	.3750	14	255136	255137	302.60	14	255336	255337	302.60	20	255636	255637	347.95	14	255936	255937	333.10
4	7/16	.4375	-	-	-	-	-	-	-	-	20	255638	-	386.60	14	255938	-	357.10
4	1/2	.5000	-	-	-	-	-	-	-	-	20	255640	-	429.60	14	255940	-	381.10
5	3/64	.0781	16	255142	255143	344.65	16	255342	255343	344.65	24	255642	255643	396.30	16	255942	255943	365.35
5	3/32	.0938	16	255144	255145	284.40	16	255344	255345	284.40	24	255644	255645	399.10	16	255944	255945	313.35
5	7/64	.1094	16	255146	255147	323.75	16	255346	255347	323.75	24	255646	255647	372.35	16	255946	255947	344.65
5	1/8	.1250	16	255148	255149	262.70	16	255348	255349	262.70	24	255648	255649	322.90	16	255948	255949	304.30
5	5/32	.1562	16	255150	255151	287.25	16	255350	255351	287.25	24	255650	255651	330.35	16	255950	255951	314.35
5	3/16	.1875	16	255152	255153	294.20	16	255352	255353	294.20	24	255652	255653	353.55	16	255952	255953	313.45
5	7/32	.2188	16	255154	255155	316.15	16	255354	255355	316.15	24	255654	255655	363.60	16	255954	255955	348.50
5	1/4	.2500	16	255156	255157	329.80	16	255356	255357	329.80	24	255656	255657	379.25	16	255956	255957	365.40
5	5/16	.3125	16	255158	255159	358.60	16	255358	255359	358.60	24	255658	255659	412.45	16	255958	255959	394.30
5	3/8	.3750	16	255160	255161	387.55	16	255360	255361	387.55	24	255660	255661	445.60	16	255960	255961	424.95
5	7/16	.4375	-	-	-	-	-	-	-	-	24	255662	-	495.20	16	255962	-	448.90
5	1/2	.5000	-	-	-	-	-	-	-	-	24	255664	-	550.20	16	255964	-	472.85
6	3/64	.0781	18	255166	255167	387.50	18	255366	255367	387.50	28	255666	255667	445.55	18	255966	255967	410.85
6	3/32	.0938	18	255168	255169	345.10	18	255368	255369	345.10	28	255668	255669	408.20	18	255968	255969	378.35
6	7/64	.1094	18	255170	255171	388.80	18	255370	255371	388.80	28	255670	255671	447.10	18	255970	255971	412.25
6	1/8	.1250	18	255172	255173	328.90	18	255372	255373	328.90	28	255672	255673	428.30	18	255972	255973	389.20
6	5/32	.1562	18	255174	255175	372.15	18	255374	255375	372.15	28	255674	255675	428.10	18	255974	255975	406.20
6	3/16	.1875	18	255176	255177	360.35	18	255376	255377	360.35	28	255676	255677	459.25	18	255976	255977	423.15
6	7/32	.2188	18	255178	255179	406.20	18	255378	255379	406.20	28	255678	255679	467.15	18	255978	255979	440.20
6	1/4	.2500	18	255180	255181	423.20	18	255380	255381	423.20	28	255680	255681	499.35	18	255980	255981	463.70
6	5/16	.3125	18	255182	255183	440.30	18	255382	255383	440.30	28	255682	255683	506.30	18	255982	255983	484.40
6	3/8	.3750	18	255184	255185	457.20	18	255384	255385	457.20	28	255684	255685	525.75	18	255984	255985	503.05
6	7/16	.4375	-	-	-	-	-	-	-	-	28	255690	-	584.10	18	255990	-	527.00
6	1/2	.5000	-	-	-	-	-	-	-	-	28	255692	-	649.05	18	255992	-	551.00
8	1/8	.1250	24	-	255186	546.10	24	-	255386	546.10	24	-	255686	577.25	24	-	255986	577.25
8	5/32	.1562	24	-	255187	552.60	24	-	255387	552.60	24	-	255687	583.80	24	-	255987	583.80
8	3/16	.1875	24	-	255188	559.10	24	-	255388	559.10	24	-	255688	590.30	24	-	255988	590.30
8	1/4	.2500	24	-	255189	592.85	24	-	255389	592.85	24	-	255689	624.10	24	-	255989	624.10





# 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"

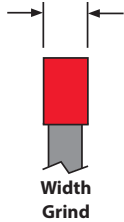
1" Arbor hole +.001"/-.000"

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	\$294.70	\$274.80	\$271.10	\$269.25	\$268.10	\$241.90
3	0.0704-0.0859	255600D	.0711	345.25	325.35	321.70	319.90	318.75	292.50
3	0.0860-0.1015	255602D	.0867	294.70	274.80	271.10	269.25	268.10	241.90
3	0.1016-0.1171	255604D	.1024	275.95	256.00	252.35	250.55	249.40	223.20
3	0.1172-0.1406	255606D	.1180	255.00	235.10	231.45	229.65	228.45	202.25
3	0.1407-0.1718	255608D	.1562	265.25	245.35	241.70	239.85	238.65	212.45
3	0.1719-0.2031	255609D	.1875	275.45	255.55	251.95	250.10	248.90	222.70
3	0.2032-0.2343	255610D	.2188	285.65	265.75	262.15	260.30	259.15	232.90
3	0.2344-0.2812	255611D	.2500	295.95	276.05	272.40	270.60	269.40	243.20
3	0.2813-0.3437	255612D	.3125	319.40	299.45	295.85	294.00	292.85	266.65
3	0.3438-0.4062	255613D	.3750	342.95	323.05	319.40	317.55	316.35	290.15
3	0.4063-0.4687	255614D	.4375	375.15	355.25	351.65	349.80	348.65	322.40
3	0.4688-0.5312	255615D	.5000	411.00	391.10	387.50	385.65	384.50	358.25

## 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	\$308.00	\$278.85	\$274.80	\$272.70	\$271.40	\$270.75
3	0.0704-0.0859	255600R1	.0711	358.65	329.45	325.40	323.30	322.05	321.35
3	0.0860-0.1015	255602R1	.0867	308.00	278.85	274.80	272.70	271.40	270.75
3	0.1016-0.1171	255604R1	.1024	289.30	260.10	256.05	253.95	252.70	252.00
3	0.1172-0.1406	255606R1	.1180	268.35	239.20	235.15	233.05	231.75	231.05
3	0.1407-0.1718	255608R1	.1562	278.55	249.45	245.40	243.30	241.95	241.30
3	0.1719-0.2031	255609R1	.1875	288.80	259.65	255.60	253.50	252.20	251.55
3	0.2032-0.2343	255610R1	.2188	299.05	269.85	265.80	263.70	262.45	261.75
3	0.2344-0.2812	255611R1	.2500	309.30	280.15	276.10	274.00	272.70	272.00
3	0.2813-0.3437	255612R1	.3125	332.75	303.55	299.50	297.40	296.15	295.45
3	0.3438-0.4062	255613R1	.3750	356.25	327.15	323.10	321.00	319.65	319.00
3	0.4063-0.4687	255614R1	.4375	388.55	359.35	355.30	353.20	351.95	351.30
3	0.4688-0.5312	255615R1	.5000	424.40	395.25	391.20	389.10	387.75	387.15

### 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°

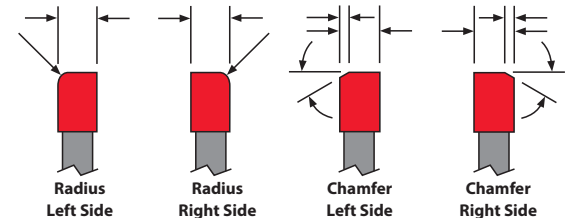
Chamfer is measured off of the OD

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°

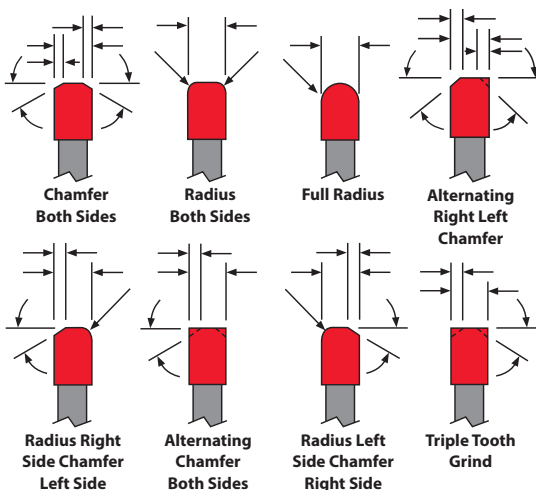
Chamfers greater than 45° must be quoted

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	\$315.35	\$283.00	\$278.45	\$276.10	\$274.70	\$273.95
3	0.0704-0.0859	255600R2	.0711	366.00	333.60	329.00	326.70	325.30	324.50
3	0.0860-0.1015	255602R2	.0867	315.35	283.00	278.45	276.10	274.70	273.95
3	0.1016-0.1171	255604R2	.1024	296.60	264.25	259.65	257.35	255.95	255.20
3	0.1172-0.1406	255606R2	.1180	275.70	243.30	238.75	236.45	235.00	234.25
3	0.1407-0.1718	255608R2	.1562	285.90	253.50	249.00	246.70	245.25	244.50
3	0.1719-0.2031	255609R2	.1875	296.15	263.75	259.25	256.95	255.45	254.75
3	0.2032-0.2343	255610R2	.2188	306.40	274.00	269.45	267.10	265.70	264.90
3	0.2344-0.2812	255611R2	.2500	316.65	284.25	279.70	277.40	275.95	275.20
3	0.2813-0.3437	255612R2	.3125	340.10	307.70	303.15	300.80	299.40	298.65
3	0.3438-0.4062	255613R2	.3750	363.60	331.20	326.70	324.40	322.95	322.20
3	0.4063-0.4687	255614R2	.4375	395.90	363.50	358.95	356.65	355.20	354.45
3	0.4688-0.5312	255615R2	.5000	431.75	399.30	394.80	392.50	391.05	390.30



# 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"

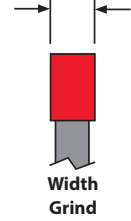
1" Arbor hole +.001"/-.000"

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)



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	255616D	.0545	\$354.75	\$331.75	\$327.45	\$325.20	\$323.85	\$292.50
4	0.0704-0.0859	255618D	.0701	382.25	359.30	354.95	352.75	351.40	320.05
4	0.0860-0.1015	255620D	.0858	354.75	331.75	327.45	325.20	323.85	292.50
4	0.1016-0.1171	255622D	.1014	338.90	315.90	311.60	309.35	307.95	276.60
4	0.1172-0.1406	255624D	.1170	320.60	297.60	293.30	291.05	289.75	258.35
4	0.1407-0.1718	255626D	.1562	339.90	316.90	312.60	310.35	309.00	277.65
4	0.1719-0.2031	255628D	.1875	341.00	318.00	313.70	311.45	310.05	278.70
4	0.2032-0.2343	255630D	.2188	357.45	334.50	330.15	327.90	326.60	295.25
4	0.2344-0.2812	255632D	.2500	361.30	338.30	334.00	331.75	330.45	299.05
4	0.2813-0.3437	255634D	.3125	386.70	363.75	359.40	357.20	355.85	324.50
4	0.3438-0.4062	255636D	.3750	410.25	387.25	382.95	380.70	379.30	347.95
4	0.4063-0.4687	255638D	.4375	448.90	425.90	421.60	419.30	417.95	386.60
4	0.4688-0.5312	255640D	.5000	491.85	468.90	464.55	462.30	460.95	429.60

## 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	\$369.15	\$336.20	\$331.45	\$328.90	\$327.40	\$326.60
4	0.0704-0.0859	255618R1	.0701	396.70	363.75	358.95	356.40	354.95	354.10
4	0.0860-0.1015	255620R1	.0858	369.15	336.20	331.45	328.90	327.40	326.60
4	0.1016-0.1171	255622R1	.1014	353.25	320.35	315.60	313.05	311.55	310.75
4	0.1172-0.1406	255624R1	.1170	335.00	302.10	297.30	294.80	293.25	292.50
4	0.1407-0.1718	255626R1	.1562	354.30	321.35	316.60	314.05	312.60	311.75
4	0.1719-0.2031	255628R1	.1875	355.35	322.45	317.70	315.15	313.65	312.85
4	0.2032-0.2343	255630R1	.2188	371.90	338.95	334.15	331.65	330.15	329.35
4	0.2344-0.2812	255632R1	.2500	375.70	342.75	338.00	335.50	333.95	333.15
4	0.2813-0.3437	255634R1	.3125	401.15	368.25	363.40	360.90	359.40	358.60
4	0.3438-0.4062	255636R1	.3750	424.60	391.70	386.85	384.35	382.90	382.05
4	0.4063-0.4687	255638R1	.4375	463.25	430.35	425.55	423.05	421.50	420.75
4	0.4688-0.5312	255640R1	.5000	506.25	473.35	468.50	466.00	464.50	463.70

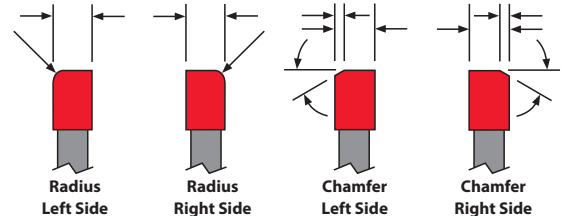
### Radius Notes

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

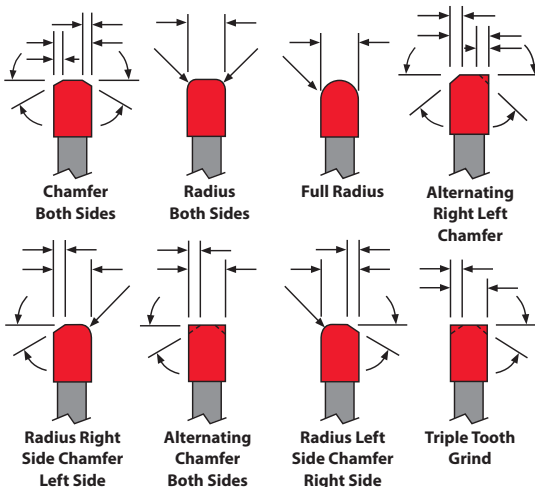
Chamfer Angles can range from 0° to 45°  
Chamfer is measured off of the OD  
Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD  
Chamfer Angle Tolerance: +/- 1/2°  
Chamfers greater than 45° must be quoted

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	\$377.00	\$340.65	\$335.40	\$332.65	\$330.95	\$330.05
4	0.0704-0.0859	255618R2	.0701	404.50	368.25	362.95	360.15	358.50	357.60
4	0.0860-0.1015	255620R2	.0858	377.00	340.65	335.40	332.65	330.95	330.05
4	0.1016-0.1171	255622R2	.1014	361.15	324.80	319.50	316.80	315.10	314.20
4	0.1172-0.1406	255624R2	.1170	342.90	306.55	301.30	298.50	296.85	295.95
4	0.1407-0.1718	255626R2	.1562	362.15	325.80	320.55	317.80	316.10	315.20
4	0.1719-0.2031	255628R2	.1875	363.25	326.90	321.60	318.90	317.20	316.30
4	0.2032-0.2343	255630R2	.2188	379.75	343.40	338.15	335.35	333.70	332.80
4	0.2344-0.2812	255632R2	.2500	383.55	347.25	342.00	339.20	337.50	336.65
4	0.2813-0.3437	255634R2	.3125	409.00	372.70	367.40	364.60	363.00	362.05
4	0.3438-0.4062	255636R2	.3750	432.45	396.15	390.85	388.10	386.45	385.55
4	0.4063-0.4687	255638R2	.4375	471.15	434.80	429.50	426.75	425.10	424.20
4	0.4688-0.5312	255640R2	.5000	514.10	477.80	472.50	469.70	468.10	467.20



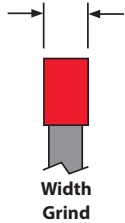
# 5" CARBIDE TIPPED MILLING CUTTERS FOR STEEL

## 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	\$459.95	\$436.50	\$432.10	\$429.75	\$428.40	\$396.30
5	0.0860 - 0.1015	255644D	.0848	462.75	439.25	434.85	432.55	431.20	399.10
5	0.1016 - 0.1171	255646D	.1004	435.95	412.50	408.10	405.75	404.40	372.35
5	0.1094 - 0.1406	255648D	.1160	386.50	363.05	358.65	356.30	354.95	322.90
5	0.1407 - 0.1718	255650D	.1562	393.95	370.50	366.10	363.75	362.40	330.35
5	0.1719 - 0.2031	255652D	.1875	417.15	393.70	389.30	387.00	385.60	353.55
5	0.2032 - 0.2343	255654D	.2188	427.25	403.80	399.30	397.05	395.65	363.60
5	0.2344 - 0.2812	255656D	.2500	442.90	419.40	414.95	412.70	411.30	379.25
5	0.2813 - 0.3437	255658D	.3125	476.05	452.60	448.15	445.90	444.45	412.45
5	0.3438 - 0.4062	255660D	.3750	509.30	485.85	481.35	479.10	477.70	445.65
5	0.4063 - 0.4687	255662D	.4375	558.80	535.35	530.95	528.60	527.25	495.20
5	0.4688 - 0.5312	255664D	.5000	613.85	590.35	585.95	583.65	582.30	550.20

## 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	\$474.55	\$440.95	\$436.05	\$433.50	\$431.95	\$431.15
5	0.0860 - 0.1015	255644R1	.0848	477.35	443.75	438.85	436.30	434.75	433.90
5	0.1016 - 0.1171	255646R1	.1004	450.55	416.95	412.05	409.50	408.00	407.15
5	0.1094 - 0.1406	255648R1	.1160	401.10	367.50	362.55	360.05	358.50	357.70
5	0.1407 - 0.1718	255650R1	.1562	408.55	374.95	370.05	367.50	366.00	365.15
5	0.1719 - 0.2031	255652R1	.1875	431.75	398.15	393.30	390.70	389.20	388.35
5	0.2032 - 0.2343	255654R1	.2188	441.85	408.25	403.30	400.80	399.20	398.40
5	0.2344 - 0.2812	255656R1	.2500	457.50	423.90	418.95	416.40	414.85	414.00
5	0.2813 - 0.3437	255658R1	.3125	490.65	457.05	452.15	449.60	448.05	447.25
5	0.3438 - 0.4062	255660R1	.3750	523.90	490.30	485.35	482.80	481.25	480.45
5	0.4063 - 0.4687	255662R1	.4375	573.40	539.80	534.90	532.35	530.85	530.00
5	0.4688 - 0.5312	255664R1	.5000	628.40	594.80	589.90	587.35	585.85	585.00

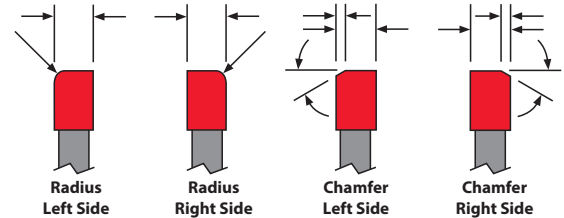
### Radius Notes

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

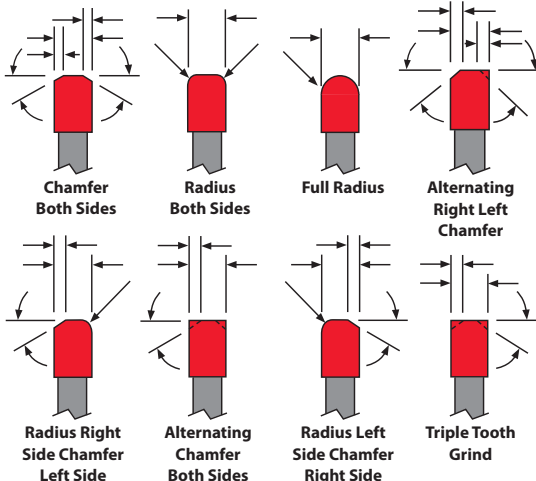
Chamfer Angles can range from 0° to 45°  
Chamfer is measured off of the OD  
Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD  
Chamfer Angle Tolerance: +/- 1/2°  
Chamfers greater than 45° must be quoted

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.
5	0.0704 - 0.0859	255642R2	.0691	490.20	\$449.85	\$444.00	\$440.95	\$439.10	\$438.10
5	0.0860 - 0.1015	255644R2	.0848	493.00	452.65	446.80	443.70	441.85	440.90
5	0.1016 - 0.1171	255646R2	.1004	466.20	425.90	420.00	416.90	415.05	414.10
5	0.1094 - 0.1406	255648R2	.1160	416.75	376.40	370.55	367.45	365.60	364.65
5	0.1407 - 0.1718	255650R2	.1562	424.20	383.90	378.00	374.90	373.05	372.10
5	0.1719 - 0.2031	255652R2	.1875	447.40	407.10	401.20	398.15	396.30	395.30
5	0.2032 - 0.2343	255654R2	.2188	457.50	417.15	411.30	408.20	406.35	405.35
5	0.2344 - 0.2812	255656R2	.2500	473.10	432.80	426.90	423.85	422.00	421.00
5	0.2813 - 0.3437	255658R2	.3125	506.30	466.00	460.10	457.00	455.20	454.20
5	0.3438 - 0.4062	255660R2	.3750	539.50	499.20	493.30	490.25	488.40	487.40
5	0.4063 - 0.4687	255662R2	.4375	589.05	548.75	542.85	539.75	537.90	536.95
5	0.4688 - 0.5312	255664R2	.5000	644.05	603.75	597.85	594.75	592.95	592.00



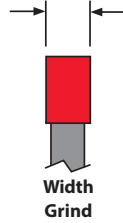
# 6" CARBIDE TIPPED MILLING CUTTERS FOR STEEL

**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	516.90	491.15	486.15	483.50	482.00	445.55
6	0.0860-0.1015	255668D	.0838	479.55	453.75	448.75	446.15	444.60	408.20
6	0.1016-0.1171	255670R	.0994	518.45	492.65	487.65	485.05	483.45	447.10
6	0.1094-0.1406	255672D	.1150	499.65	473.85	468.90	466.25	464.70	428.30
6	0.1407-0.1718	255674D	.1562	499.45	473.60	468.60	466.00	464.45	428.10
6	0.1719-0.2031	255676D	.1875	530.60	504.85	499.85	497.25	495.65	459.25
6	0.2032-0.2343	255678D	.2188	538.50	512.70	507.75	505.10	503.55	467.15
6	0.2344-0.2812	255680D	.2500	570.75	544.90	539.90	537.30	535.75	499.35
6	0.2813-0.3437	255682D	.3125	577.65	551.85	546.85	544.20	542.70	506.30
6	0.3438-0.4062	255684D	.3750	597.10	571.25	566.25	563.65	562.10	525.75
6	0.4063-0.4687	255690D	.4375	655.50	629.70	624.70	622.05	620.55	584.10
6	0.4688-0.5312	255692D	.5000	720.40	694.65	689.65	687.00	685.45	649.05

## 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.
6	0.0704-0.0859	255666R1	.0681	532.30	496.00	490.45	487.55	485.85	484.90
6	0.0860-0.1015	255668R1	.0838	494.90	458.65	453.10	450.20	448.45	447.50
6	0.1016-0.1171	255670R1	.0994	533.80	497.50	492.00	489.10	487.35	486.40
6	0.1094-0.1406	255672R1	.1150	515.00	478.75	473.20	470.30	468.55	467.60
6	0.1407-0.1718	255674R1	.1562	514.80	478.50	472.95	470.10	468.35	467.40
6	0.1719-0.2031	255676R1	.1875	546.00	509.70	504.15	501.25	499.55	498.60
6	0.2032-0.2343	255678R1	.2188	553.90	517.60	512.05	509.15	507.40	506.45
6	0.2344-0.2812	255680R1	.2500	586.10	549.80	544.20	541.35	539.65	538.70
6	0.2813-0.3437	255682R1	.3125	593.05	556.70	551.20	548.30	546.60	545.65
6	0.3438-0.4062	255684R1	.3750	612.45	576.15	570.60	567.75	566.00	565.05
6	0.4063-0.4687	255690R1	.4375	670.90	634.55	629.00	626.10	624.45	623.50
6	0.4688-0.5312	255692R1	.5000	735.80	699.50	693.95	691.05	689.30	688.40

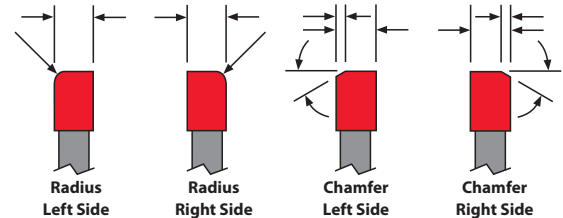
**Radius Notes**

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**

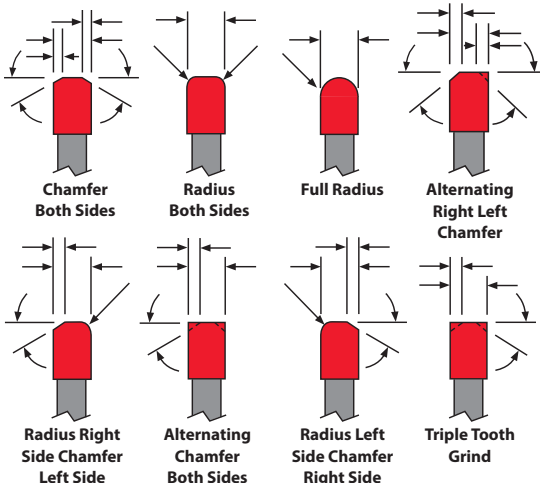
Chamfer Angles can range from 0° to 45°  
 Chamfer is measured off of the OD  
 Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD  
 Chamfer Angle Tolerance: +/- 1/2°  
 Chamfers greater than 45° must be quoted

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	549.00	505.70	499.05	495.65	493.60	492.50
6	0.0860-0.1015	255668R2	.0838	511.60	468.30	461.70	458.25	456.20	455.10
6	0.1016-0.1171	255670R2	.0994	550.50	507.20	500.60	497.10	495.15	493.95
6	0.1094-0.1406	255672R2	.1150	531.70	488.40	481.80	478.35	476.35	475.20
6	0.1407-0.1718	255674R2	.1562	531.50	488.20	481.60	478.10	476.10	474.95
6	0.1719-0.2031	255676R2	.1875	562.70	519.40	512.75	509.30	507.30	506.15
6	0.2032-0.2343	255678R2	.2188	570.55	527.25	520.65	517.20	515.20	514.05
6	0.2344-0.2812	255680R2	.2500	602.75	559.45	552.90	549.40	547.35	546.25
6	0.2813-0.3437	255682R2	.3125	609.75	566.40	559.80	556.35	554.35	553.20
6	0.3438-0.4062	255684R2	.3750	629.15	585.85	579.25	575.75	573.75	572.60
6	0.4063-0.4687	255690R2	.4375	687.55	644.25	637.65	634.20	632.15	631.05
6	0.4688-0.5312	255692R2	.5000	752.50	709.15	702.55	699.10	697.10	695.95



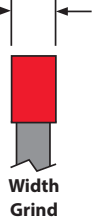
# 3" CARBIDE TIPPED MILLING CUTTERS

## 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	\$279.75	\$259.55	\$256.05	\$254.20	\$253.10	\$227.55
3	0.0704-0.0859	255900D	.0711	307.10	286.90	283.40	281.55	280.40	254.90
3	0.0860-0.1015	255902D	.0867	279.75	259.55	256.05	254.20	253.10	227.55
3	0.1016-0.1171	255904D	.1024	269.40	249.25	245.70	243.85	242.75	217.20
3	0.1172-0.1406	255906D	.1180	259.65	239.45	235.90	234.05	232.95	207.45
3	0.1407-0.1718	255908D	.1562	264.65	244.55	241.00	239.15	238.05	212.45
3	0.1719-0.2031	255909D	.1875	269.75	249.55	246.00	244.20	243.10	217.55
3	0.2032-0.2343	255910D	.2188	276.60	256.50	252.95	251.10	250.00	224.45
3	0.2344-0.2812	255911D	.2500	283.50	263.30	259.70	257.90	256.80	231.20
3	0.2813-0.3437	255912D	.3125	305.50	285.35	281.80	280.00	278.90	253.25
3	0.3438-0.4062	255913D	.3750	329.25	309.05	305.50	303.65	302.55	277.05
3	0.4063-0.4687	255914D	.4375	353.20	333.00	329.50	327.65	326.55	301.05
3	0.4688-0.5312	255915D	.5000	377.20	357.00	353.45	351.65	350.55	324.90

## 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	\$293.40	\$263.55	\$259.55	\$257.55	\$256.30	\$255.70
3	0.0704-0.0859	255900R1	.0711	320.80	290.90	286.90	284.85	283.65	283.00
3	0.0860-0.1015	255902R1	.0867	293.40	263.55	259.55	257.55	256.30	255.70
3	0.1016-0.1171	255904R1	.1024	283.10	253.20	249.25	247.20	245.95	245.30
3	0.1172-0.1406	255906R1	.1180	273.30	243.40	239.45	237.40	236.20	235.50
3	0.1407-0.1718	255908R1	.1562	278.35	248.50	244.55	242.45	241.25	240.55
3	0.1719-0.2031	255909R1	.1875	283.45	253.50	249.55	247.55	246.35	245.65
3	0.2032-0.2343	255910R1	.2188	290.30	260.45	256.50	254.40	253.20	252.50
3	0.2344-0.2812	255911R1	.2500	297.10	267.20	263.30	261.25	260.00	259.35
3	0.2813-0.3437	255912R1	.3125	319.20	289.35	285.35	283.30	282.10	281.35
3	0.3438-0.4062	255913R1	.3750	342.95	313.00	309.05	307.00	305.80	305.15
3	0.4063-0.4687	255914R1	.4375	366.90	337.00	333.00	331.00	329.80	329.10
3	0.4688-0.5312	255915R1	.5000	390.85	360.95	357.00	355.00	353.70	353.05

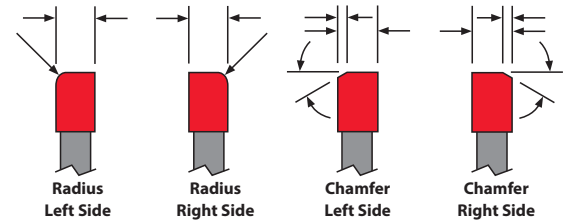
### Radius Notes

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

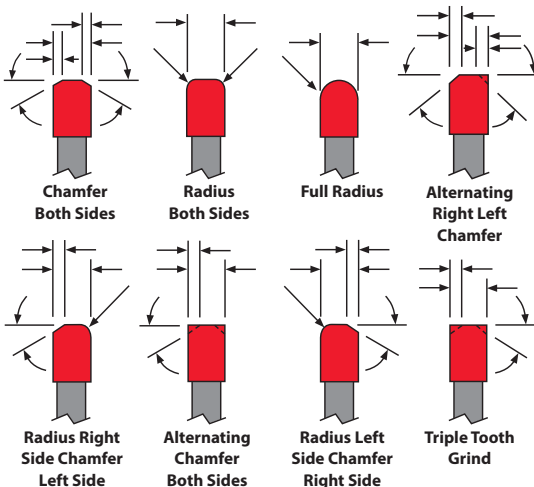
Chamfer Angles can range from 0° to 45°  
Chamfer is measured off of the OD  
Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD  
Chamfer Angle Tolerance: +/- 1/2°  
Chamfers greater than 45° must be quoted

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	\$300.70	\$267.55	\$263.20	\$260.85	\$259.50	\$258.75
3	0.0704-0.0859	255900R2	.0711	328.10	294.90	290.50	288.20	286.80	286.05
3	0.0860-0.1015	255902R2	.0867	300.70	267.55	263.20	260.85	259.50	258.75
3	0.1016-0.1171	255904R2	.1024	290.45	257.20	252.85	250.55	249.15	248.45
3	0.1172-0.1406	255906R2	.1180	280.65	247.45	243.00	240.75	239.35	238.65
3	0.1407-0.1718	255908R2	.1562	285.70	252.45	248.05	245.80	244.45	243.70
3	0.1719-0.2031	255909R2	.1875	290.70	257.55	253.15	250.85	249.50	248.75
3	0.2032-0.2343	255910R2	.2188	297.70	264.45	260.05	257.80	256.35	255.70
3	0.2344-0.2812	255911R2	.2500	304.45	271.20	266.85	264.55	263.20	262.45
3	0.2813-0.3437	255912R2	.3125	326.50	293.30	288.85	286.65	285.30	284.55
3	0.3438-0.4062	255913R2	.3750	350.30	317.05	312.65	310.40	308.95	308.25
3	0.4063-0.4687	255914R2	.4375	374.15	341.05	336.65	334.30	332.95	332.20
3	0.4688-0.5312	255915R2	.5000	398.15	365.05	360.55	358.30	356.95	356.20



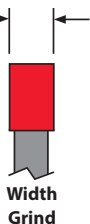
# 4" CARBIDE TIPPED MILLING CUTTERS

## 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)



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	\$320.30	\$297.10	\$292.90	\$290.70	\$289.40	\$258.80
4	0.0704-0.0859	255918D	.0701	358.05	334.80	330.55	328.40	327.10	296.50
4	0.0860-0.1015	255920D	.0858	320.30	297.10	292.90	290.70	289.40	258.80
4	0.1016-0.1171	255922D	.1014	368.40	345.20	340.95	338.80	337.45	306.85
4	0.1172-0.1406	255924D	.1170	319.95	296.70	292.40	290.25	288.95	258.40
4	0.1407-0.1718	255926D	.1562	326.70	303.50	299.25	297.10	295.75	265.20
4	0.1719-0.2031	255928D	.1875	335.15	311.95	307.70	305.55	304.20	273.65
4	0.2032-0.2343	255930D	.2188	343.75	320.55	316.30	314.15	312.80	282.20
4	0.2344-0.2812	255932D	.2500	350.55	327.30	323.05	320.90	319.55	289.00
4	0.2813-0.3437	255934D	.3125	370.85	347.65	343.40	341.25	339.90	309.40
4	0.3438-0.4062	255936D	.3750	394.70	371.50	367.25	365.10	363.70	333.10
4	0.4063-0.4687	255938D	.4375	418.65	395.45	391.20	389.00	387.65	357.10
4	0.4688-0.5312	255940D	.5000	442.65	419.35	415.15	412.95	411.65	381.10

## 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.
4	0.0600-0.0703	255916R1	.0545	\$335.10	\$301.45	\$296.80	\$294.30	\$292.90	\$292.10
4	0.0704-0.0859	255918R1	.0701	372.80	339.15	334.50	332.00	330.55	329.80
4	0.0860-0.1015	255920R1	.0858	335.10	301.45	296.80	294.30	292.90	292.10
4	0.1016-0.1171	255922R1	.1014	383.20	349.55	344.80	342.40	340.95	340.15
4	0.1172-0.1406	255924R1	.1170	334.70	301.05	296.30	293.90	292.40	291.65
4	0.1407-0.1718	255926R1	.1562	341.45	307.80	303.15	300.70	299.25	298.45
4	0.1719-0.2031	255928R1	.1875	349.95	316.30	311.60	309.15	307.70	306.90
4	0.2032-0.2343	255930R1	.2188	358.60	324.85	320.20	317.80	316.30	315.45
4	0.2344-0.2812	255932R1	.2500	365.30	331.65	326.95	324.50	323.05	322.25
4	0.2813-0.3437	255934R1	.3125	385.65	351.95	347.30	344.85	343.40	342.55
4	0.3438-0.4062	255936R1	.3750	409.45	375.80	371.10	368.65	367.25	366.40
4	0.4063-0.4687	255938R1	.4375	433.45	399.80	395.05	392.65	391.20	390.40
4	0.4688-0.5312	255940R1	.5000	457.40	423.75	419.05	416.60	415.15	414.40

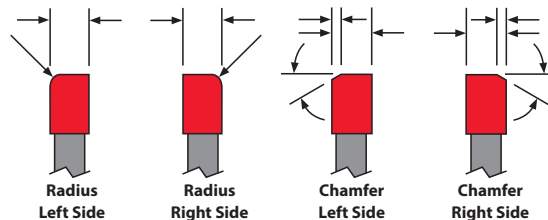
### Radius Notes

- 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

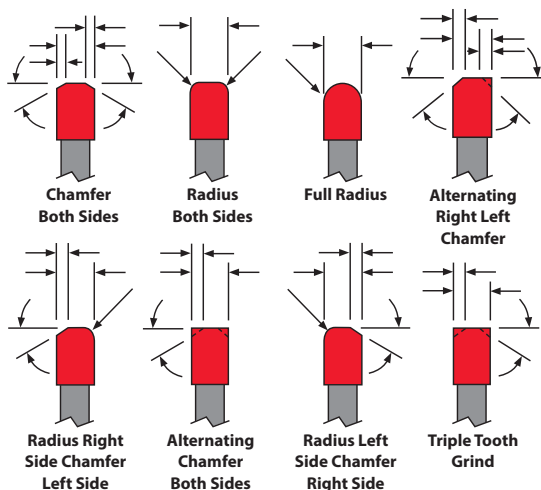
- Chamfer Angles can range from 0° to 45°
- Chamfer is measured off of the OD
- Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD
- Chamfer Angle Tolerance: +/- 1/2°
- Chamfers greater than 45° must be quoted

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	\$342.95	\$305.85	\$300.60	\$297.95	\$296.30	\$295.45
4	0.0704-0.0859	255918R2	.0701	380.55	343.50	338.30	335.65	334.00	333.10
4	0.0860-0.1015	255920R2	.0858	342.95	305.85	300.60	297.95	296.30	295.45
4	0.1016-0.1171	255922R2	.1014	391.00	353.90	348.70	346.05	344.40	343.50
4	0.1172-0.1406	255924R2	.1170	342.45	305.40	300.20	297.50	295.90	295.00
4	0.1407-0.1718	255926R2	.1562	349.30	312.20	306.95	304.35	302.65	301.80
4	0.1719-0.2031	255928R2	.1875	357.80	320.65	315.45	312.80	311.10	310.35
4	0.2032-0.2343	255930R2	.2188	366.35	329.25	324.05	321.40	319.80	318.90
4	0.2344-0.2812	255932R2	.2500	373.05	336.00	330.80	328.10	326.50	325.60
4	0.2813-0.3437	255934R2	.3125	393.45	356.35	351.15	348.50	346.85	346.00
4	0.3438-0.4062	255936R2	.3750	417.25	380.15	374.95	372.30	370.70	369.80
4	0.4063-0.4687	255938R2	.4375	441.25	404.15	398.95	396.25	394.60	393.80
4	0.4688-0.5312	255940R2	.5000	465.20	428.15	422.90	420.20	418.60	417.70



# 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"

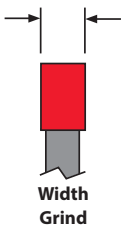
1" Arbor hole +.001"/-.000"

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	\$428.30	\$404.50	\$400.15	\$397.95	\$396.65	\$365.35
5	0.0860 - 0.1015	255944D	.0848	376.30	352.55	348.25	346.05	344.70	313.35
5	0.1016 - 0.1171	255946D	.1004	407.55	383.80	379.45	377.25	375.90	344.65
5	0.1094 - 0.1406	255948D	.1160	367.25	343.40	339.15	336.90	335.60	304.30
5	0.1407 - 0.1718	255950D	.1562	377.30	353.55	349.30	347.00	345.65	314.35
5	0.1719 - 0.2031	255952D	.1875	394.40	370.65	366.35	364.15	362.80	331.45
5	0.2032 - 0.2343	255954D	.2188	411.45	387.65	383.35	381.15	379.75	348.50
5	0.2188 - 0.2812	255956D	.2500	428.35	404.55	400.30	398.05	396.75	365.40
5	0.2813 - 0.3437	255958D	.3125	457.20	433.45	429.15	426.90	425.55	394.30
5	0.3438 - 0.4062	255960D	.3750	487.85	464.05	459.80	457.55	456.20	424.95
5	0.4063 - 0.4687	255962D	.4375	511.80	488.05	483.80	481.55	480.20	448.90
5	0.4688 - 0.5312	255964D	.5000	535.80	512.05	507.75	505.50	504.15	472.85

## 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	\$443.20	\$408.85	\$404.10	\$401.55	\$400.05	\$399.30
5	0.0860 - 0.1015	255944R1	.0848	391.30	356.95	352.10	349.65	348.15	347.30
5	0.1016 - 0.1171	255946R1	.1004	422.50	388.20	383.35	380.90	379.35	378.60
5	0.1094 - 0.1406	255948R1	.1160	382.15	347.80	343.05	340.50	339.05	338.25
5	0.1407 - 0.1718	255950R1	.1562	392.30	357.90	353.10	350.65	349.10	348.35
5	0.1719 - 0.2031	255952R1	.1875	409.35	375.00	370.20	367.70	366.25	365.40
5	0.2032 - 0.2343	255954R1	.2188	426.35	392.00	387.20	384.75	383.20	382.40
5	0.2188 - 0.2812	255956R1	.2500	443.30	409.00	404.15	401.70	400.15	399.35
5	0.2813 - 0.3437	255958R1	.3125	472.15	437.80	433.00	430.50	429.05	428.25
5	0.3438 - 0.4062	255960R1	.3750	502.80	468.45	463.65	461.15	459.70	458.90
5	0.4063 - 0.4687	255962R1	.4375	526.80	492.45	487.60	485.15	483.65	482.85
5	0.4688 - 0.5312	255964R1	.5000	550.70	516.40	511.60	509.15	507.55	506.80

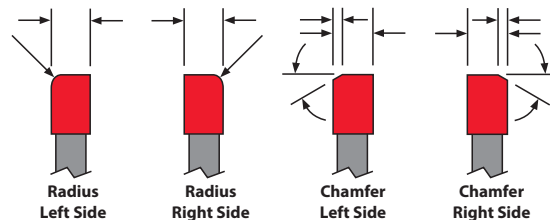
### Radius Notes

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

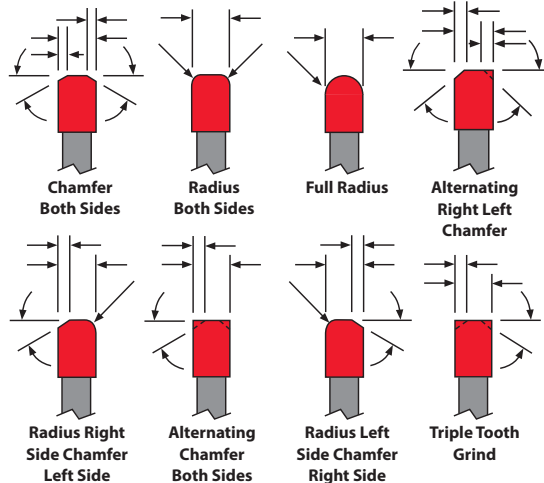
Chamfer Angles can range from 0° to 45°  
Chamfer is measured off of the OD  
Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD  
Chamfer Angle Tolerance: +/- 1/2°  
Chamfers greater than 45° must be quoted

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	\$458.80	\$417.60	\$411.80	\$408.80	\$407.05	\$406.10
5	0.0860 - 0.1015	255944R2	.0848	406.90	365.60	359.85	356.90	355.10	354.15
5	0.1016 - 0.1171	255946R2	.1004	438.05	396.85	391.10	388.10	386.35	385.35
5	0.1094 - 0.1406	255948R2	.1160	397.75	356.50	350.75	347.75	346.00	345.05
5	0.1407 - 0.1718	255950R2	.1562	407.85	366.60	360.85	357.90	356.10	355.10
5	0.1719 - 0.2031	255952R2	.1875	424.95	383.70	377.90	374.95	373.15	372.20
5	0.2032 - 0.2343	255954R2	.2188	441.90	400.75	394.95	392.00	390.20	389.25
5	0.2188 - 0.2812	255956R2	.2500	458.90	417.65	411.85	408.90	407.15	406.20
5	0.2813 - 0.3437	255958R2	.3125	487.70	446.50	440.75	437.75	435.95	435.00
5	0.3438 - 0.4062	255960R2	.3750	518.40	477.10	471.40	468.40	466.60	465.70
5	0.4063 - 0.4687	255962R2	.4375	542.40	501.10	495.35	492.40	490.60	489.65
5	0.4688 - 0.5312	255964R2	.5000	566.30	525.10	519.35	516.40	514.55	513.60



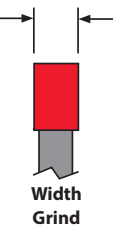
# 6" CARBIDE TIPPED MILLING CUTTERS

## 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	\$476.60	\$451.75	\$447.25	\$444.95	\$443.50	\$410.85
6	0.0860-0.1015	255968D	.0838	444.05	419.25	414.75	412.45	411.00	378.35
6	0.1016-0.1171	255970D	.0994	477.95	453.20	448.65	446.30	444.95	412.25
6	0.1094-0.1406	255972D	.1150	454.85	430.10	425.55	423.20	421.85	389.20
6	0.1407-0.1718	255974D	.1562	471.85	447.10	442.60	440.25	438.85	406.20
6	0.1719-0.2031	255976D	.1875	488.90	464.05	459.65	457.20	455.80	423.15
6	0.2032-0.2343	255978D	.2188	505.90	481.10	476.60	474.25	472.85	440.20
6	0.2188-0.2812	255980D	.2500	529.40	504.60	500.05	497.75	496.35	463.70
6	0.2813-0.3437	255982D	.3125	550.15	525.30	520.85	518.50	517.10	484.40
6	0.3438-0.4062	255984D	.3750	568.75	543.90	539.50	537.10	535.70	503.00
6	0.4063-0.4687	255992D	.4375	592.70	567.90	563.40	561.05	559.65	527.00
6	0.4688-0.5312	255990D	.5000	616.65	591.90	587.35	585.05	583.65	551.00

## 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	\$491.80	\$456.10	\$451.10	\$448.55	\$447.00	\$446.15
6	0.0860-0.1015	255968R1	.0838	459.30	423.60	418.60	416.05	414.50	413.65
6	0.1016-0.1171	255970R1	.0994	493.25	457.50	452.50	449.90	448.35	447.55
6	0.1094-0.1406	255972R1	.1150	470.15	434.40	429.40	426.80	425.30	424.45
6	0.1407-0.1718	255974R1	.1562	487.15	451.45	446.40	443.90	442.30	441.45
6	0.1719-0.2031	255976R1	.1875	504.15	468.45	463.45	460.85	459.30	458.50
6	0.2032-0.2343	255978R1	.2188	521.15	485.45	480.50	477.85	476.35	475.50
6	0.2188-0.2812	255980R1	.2500	544.65	509.00	503.95	501.40	499.80	498.95
6	0.2813-0.3437	255982R1	.3125	565.40	529.70	524.75	522.10	520.55	519.70
6	0.3438-0.4062	255984R1	.3750	584.00	548.30	543.30	540.70	539.20	538.35
6	0.4063-0.4687	255992R1	.4375	607.95	572.30	567.30	564.70	563.10	562.30
6	0.4688-0.5312	255990R1	.5000	631.95	596.25	591.20	588.70	587.10	586.25

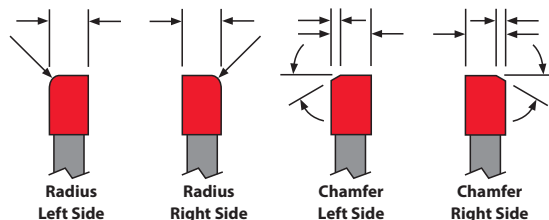
### Radius Notes

- 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

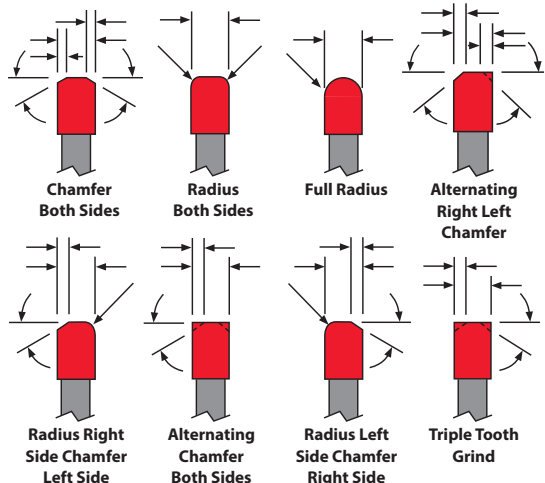
- Chamfer Angles can range from 0° to 45°
- Chamfer is measured off of the OD
- Maximum chamfer is the LESSER of 1/3 the width of the cutter OR .2656" length of angle when measured across the OD
- Chamfer Angle Tolerance: +/- 1/2°
- Chamfers greater than 45° must be quoted

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	\$507.40	\$464.85	\$458.90	\$455.80	\$453.90	\$452.90
6	0.0860-0.1015	255968R2	.0838	474.90	432.35	426.35	423.25	421.40	420.40
6	0.1016-0.1171	255970R2	.0994	508.85	466.25	460.25	457.20	455.35	454.35
6	0.1094-0.1406	255972R2	.1150	485.75	443.15	437.15	434.10	432.25	431.25
6	0.1407-0.1718	255974R2	.1562	502.75	460.15	454.20	451.10	449.25	448.25
6	0.1719-0.2031	255976R2	.1875	519.70	477.10	471.20	468.15	466.30	465.30
6	0.2032-0.2343	255978R2	.2188	536.75	494.20	488.20	485.15	483.25	482.25
6	0.2188-0.2812	255980R2	.2500	560.25	517.65	511.70	508.60	506.75	505.80
6	0.2813-0.3437	255982R2	.3125	580.95	538.45	532.45	529.40	527.50	526.50
6	0.3438-0.4062	255984R2	.3750	599.55	557.00	551.05	548.00	546.15	545.15
6	0.4063-0.4687	255992R2	.4375	623.55	580.95	575.05	572.00	570.10	569.10
6	0.4688-0.5312	255990R2	.5000	647.55	604.95	599.00	596.00	594.10	593.05





# 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



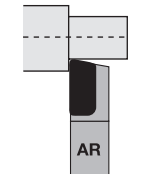
### AR

#### 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	\$9.60	211204	\$7.05	1/4	1/4	2	12
AR-5	211105	8.50	211205	7.45	5/16	5/16	2 1/4	12
AR-6	211106	8.65	211206	7.60	3/8	3/8	2 1/2	12
AR-7	211107	9.30	211207	8.25	7/16	7/16	3	12
AR-8	211108	7.95	211208	7.95	1/2	1/2	3 1/2	12
AR-10	211110	11.85	211210	10.95	5/8	5/8	4	12
AR-12	211112	15.20	211212	13.65	3/4	3/4	4 1/2	12
AR-16	211116	27.90	211216	27.15	1	1	7	6
AR-20	211120	CALL US	211220	CALL US	1 1/4	1 1/4	8	1
AR-44	211144	CALL US	211244	CALL US	1/2	1	7	12

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



For turning to a square shoulder



### AL

#### 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	\$9.60	211504	\$7.05	1/4	1/4	2	12
AL-5	211405	8.50	211505	7.45	5/16	5/16	2 1/4	12
AL-6	211406	8.65	211506	7.60	3/8	3/8	2 1/2	12
AL-7	211407	9.30	211507	8.25	7/16	7/16	3	12
AL-8	211408	7.95	211508	7.95	1/2	1/2	3 1/2	12
AL-10	211410	11.25	211510	10.95	5/8	5/8	4	12
AL-12	211412	14.50	211512	14.40	3/4	3/4	4 1/2	12
AL-16	211416	28.25	211516	28.25	1	1	7	6
AL-20	-	-	211520	CALL US	1 1/4	1 1/4	8	1
AL-44	211444	CALL US	211544	CALL US	1/2	1	7	12

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



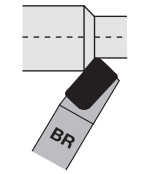
### BR

#### 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	\$9.60	212204	\$7.05	1/4	1/4	2	12
BR-5	212105	8.50	212205	7.45	5/16	5/16	2 1/4	12
BR-6	212106	8.65	212206	7.60	3/8	3/8	2 1/2	12
BR-7	212107	9.30	212207	8.25	7/16	7/16	3	12
BR-8	212108	7.95	212208	7.95	1/2	1/2	3 1/2	12
BR-10	212110	11.85	212210	10.95	5/8	5/8	4	12
BR-12	212112	15.20	212212	13.65	3/4	3/4	4 1/2	12
BR-16	212116	27.90	212216	27.15	1	1	7	6
BR-20	212120	CALL US	212220	CALL US	1 1/4	1 1/4	8	1
BR-44	212144	CALL US	212244	CALL US	1/2	1	7	12

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



For turning where square shoulder is not required



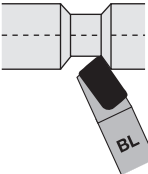
### BL

#### 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	\$9.60	212504	\$7.05	1/4	1/4	2	12
BL-5	212405	8.50	212505	7.45	5/16	5/16	2 1/4	12
BL-6	212406	8.65	212506	7.60	3/8	3/8	2 1/2	12
BL-7	212407	9.30	212507	8.25	7/16	7/16	3	12
BL-8	212408	7.95	212508	7.95	1/2	1/2	3 1/2	12
BL-10	212410	11.25	212510	10.95	5/8	5/8	4	12
BL-12	212412	14.50	212512	14.40	3/4	3/4	4 1/2	12
BL-16	212416	28.25	212516	28.25	1	1	7	6
BL-20	212420	CALL US	212520	CALL US	1 1/4	1 1/4	8	1
BL-44	212444	CALL US	212544	CALL US	1/2	1	7	12

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



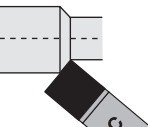
### C

#### 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	\$6.30	213804	\$6.30	1/4	1/4	2	12
C-5	213705	7.00	213805	6.75	5/16	5/16	2 1/4	12
C-6	213706	9.05	213806	7.45	3/8	3/8	2 1/2	12
C-7	213707	6.90	213807	8.25	7/16	7/16	3	12
C-8	213708	11.10	213808	10.30	1/2	1/2	3 1/2	12
C-10	213710	12.50	213810	13.65	5/8	5/8	4	12
C-12	213712	17.20	213812	19.55	3/4	3/4	4 1/2	12
C-16	213716	35.70	213816	34.35	1	1	7	6
C-20	213720	CALL US	213820	CALL US	1 1/4	1 1/4	8	1
C-44	213744	CALL US	213844	CALL US	1/2	1	7	12

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



For undercutting and chamfering



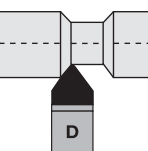
### D

#### 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	\$5.90	214804	\$5.90	1/4	1/4	2	12
D-5	214705	6.80	214805	7.05	5/16	5/16	2 1/4	12
D-6	214706	7.00	214806	7.50	3/8	3/8	2 1/2	12
D-7	214707	9.55	214807	11.55	7/16	7/16	3	12
D-8	214708	9.15	214808	9.70	1/2	1/2	3 1/2	12
D-10	214710	12.80	214810	14.20	5/8	5/8	4	12
D-12	214712	18.30	214812	16.10	3/4	3/4	4 1/2	12
D-16	214716	27.20	214816	28.05	1	1	7	6

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



For chamfering



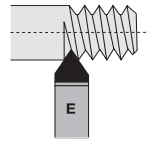
# BRAZED SINGLE POINT TOOLS

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	\$5.90	215804	\$5.90	1/4	1/4	2	12
E-5	215705	6.40	215805	6.40	5/16	5/16	2 1/4	12
E-6	215706	6.70	215806	6.50	3/8	3/8	2 1/2	12
E-7	215707	10.35	215807	12.40	7/16	7/16	3	12
E-8	215708	15.35	215808	8.20	1/2	1/2	3 1/2	12
E-10	215710	12.70	215810	11.50	5/8	5/8	4	12
E-12	215712	15.80	215812	16.00	3/4	3/4	4 1/2	12
E-16	215716	27.70	215816	26.65	1	1	7	6

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



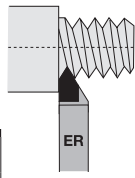
For cutting threads



**60° INCLUDED ANGLE;  
30° SIDE CUTTING EDGE ANGLE**  
For threading, chamfering,  
notching, or undercutting



**30° SIDE CUTTING EDGE ANGLE**  
Offset for threading or boring



For cutting threads



**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	\$7.30	215204	\$5.90	1/4	1/4	2	12
ER-5	215105	7.30	215205	6.55	5/16	5/16	2 1/4	12
ER-6	215106	7.40	215206	6.75	3/8	3/8	2 1/2	12
ER-8	215108	13.10	215208	13.10	1/2	1/2	3 1/2	12
ER-10	215110	14.30	215210	14.30	5/8	5/8	4	12
ER-12	215112	15.45	215212	16.80	3/4	3/4	4 1/2	12

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

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	\$8.40	215504	\$5.90	1/4	1/4	2	12
EL-5	215405	8.40	215505	8.05	5/16	5/16	2 1/4	12
EL-6	215406	8.40	215506	8.15	3/8	3/8	2 1/2	12
EL-8	215408	13.10	215508	14.45	1/2	1/2	3 1/2	12
EL-10	215410	14.30	215510	15.75	5/8	5/8	4	12
EL-12	215412	15.45	215512	16.80	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

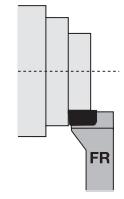
For bore threading  
in a 90° bar



**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	\$11.00	216208	\$10.85	1/2	1/2	3 1/2	12
FR-10	216110	15.95	216210	15.15	5/8	5/8	4	12
FR-12	216112	20.60	216212	20.35	3/4	3/4	4 1/2	6
FR-16	216116	43.10	216216	45.35	1	1	7	4
FR-44	216144	CALL US	216244	CALL US	1/2	1	6	6

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



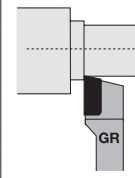
For facing to a square shoulder

TOOL STYLE	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS			STD. PKG. QTY.
	EDP NO.	PRICE	EDP NO.	PRICE	W	H	L	
FL-8	216408	\$11.10	216508	\$10.50	1/2	1/2	3 1/2	12
FL-10	216410	16.65	216510	15.15	5/8	5/8	4	12
FL-12	216412	21.35	216512	18.90	3/4	3/4	4 1/2	6
FL-16	216416	40.20	216516	45.35	1	1	7	4
FL-44	216444	CALL US	216544	CALL US	1/2	1	6	6

\*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



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	
GR-8	217108	\$11.10	217208	\$10.50	1/2	1/2	3 1/2	12
GR-10	217110	16.65	217210	15.15	5/8	5/8	4	12
GR-12	217112	21.35	217212	18.90	3/4	3/4	4 1/2	6
GR-16	217116	45.05	217216	45.35	1	1	7	4
GR-20	217120	CALL US	217220	CALL US	1 1/4	1 1/4	8	1
GR-44	217144	CALL US	217244	CALL US	1/2	1	6	6

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

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	\$11.00	217508	\$10.85	1/2	1/2	3 1/2	12
GL-10	217410	15.95	217510	15.15	5/8	5/8	4	12
GL-12	217412	20.60	217512	20.35	3/4	3/4	4 1/2	6
GL-16	217416	43.70	217516	45.35	1	1	7	4
GL-20	217420	CALL US	217520	CALL US	1 1/4	1 1/4	8	1
GL-44	217444	CALL US	217544	CALL US	1/2	1	6	6

\*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



## 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	\$14.25	210211	\$14.80	1/2	1	5
CT-122	3/16	210122	14.65	210222	15.10	1/2	1	5
CT-121	1/4	210133	15.15	210233	15.65	1/2	1	5
CT-120	5/16	210144	15.10	210244	15.65	1/2	1	5
CT-130	3/8	210155	18.30	210255	19.50	5/8	1 1/4	5
CT-140	3/8	210166	20.30	210266	21.00	3/4	1 1/2	6

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

Standard packaging quantity is 6

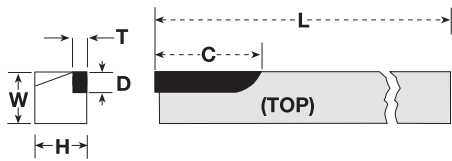
## STANDARD CUT-OFF TOOL

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

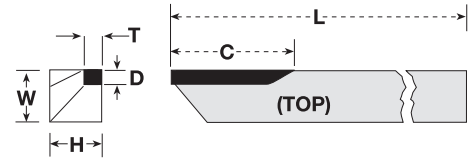
TOOL STYLE	CUT-OFF WIDTH	883/PREMIUM C2*		370/PREMIUM C5-C6*		SHANK DIMENSIONS		
		EDP NO.	PRICE	EDP NO.	PRICE	W	H	L
CTL-111	1/8	210411	\$14.25	210511	\$14.80	1/2	1	5
CTL-122	3/16	210422	14.65	210522	15.10	1/2	1	5
CTL-121	1/4	210433	15.15	210533	15.65	1/2	1	5
CTL-120	5/16	210444	15.10	210544	15.65	1/2	1	5
CTL-130	3/8	210455	18.30	210555	19.50	5/8	1 1/4	5
CTL-140	3/8	210466	20.30	210566	21.00	3/4	1 1/2	6

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

Standard packaging quantity is 6



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

TOOL STYLE	C2 CARBIDE*		SHANK DIMENSIONS			CARBIDE DIMENSIONS		
	EDP NO.	PRICE	"W"	"H"	"L"	"T"	"D"	"C"
SA6T	219901	\$12.90	1/4	1/4	6	3/32	1/8	1 1/4
SA7T	219902	13.80	5/32	5/32	6	3/32	1/8	1 1/4
SA8T	219903	15.05	5/16	5/16	6	3/32	3/16	1 1/4
SA9T	219904	16.00	3/8	3/8	6	3/32	3/16	1 1/4
SA10T	219905	17.30	13/32	13/32	6	3/32	3/16	1 1/4
SA11T	219906	17.95	7/16	7/16	6	1/8	1/4	1
SA11.5T	219907	18.00	15/32	15/32	6	1/8	1/4	1
SA12T	219908	19.15	1/2	1/2	6	1/8	1/4	1

\*Prices subject to change.

Standard packaging quantity is 10

## S.A. SERIES SWISS AUTOMATIC TOOL

Requires finish grind for cut-off, forming or turning

TOOL STYLE	C2 CARBIDE*		SHANK DIMENSIONS			CARBIDE DIMENSIONS		
	EDP NO.	PRICE	"W"	"H"	"L"	"T"	"D"	"C"
SA6C	219921	\$12.90	1/4	1/4	6	1/8	3/32	1 1/4
SA7C	219922	13.80	5/32	5/32	6	1/8	3/32	1 1/4
SA8C	219923	15.05	5/16	5/16	6	1/8	3/32	1 1/4
SA9C	219924	16.00	3/8	3/8	6	1/8	3/32	1 1/4
SA10C	219925	17.30	13/32	13/32	6	1/8	3/32	1 1/4
SA11C	219926	17.95	7/16	7/16	6	3/32	1/8	1 1/4
SA11.5C	219927	18.00	15/32	15/32	6	3/32	1/8	1 1/4
SA12C	219928	19.15	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

Rock River Tool, Inc. does not give any warranty on its products, except as follows: Rock River Tool, Inc. warrants to original equipment manufacturers, distributors and industrial and commercial users of its products that each new product manufactured or supplied by Rock River Tool, Inc. shall be free from defects in material and workmanship. Rock River Tool, Inc.'s sole obligation under this warranty is limited to furnishing, without additional charge, a replacement for, or at its option, repairing or issuing credit for any such product which shall within one year from the date of sale by Rock River Tool, Inc. be returned freight prepaid to Rock River Tool, Inc. and which upon inspection is determined by Rock River Tool, Inc. to be defective in materials or workmanship. The provisions of this warranty shall not apply to any product which has been subjected to misuse, improper operating conditions, machine set-up or application of cutting fluid or which has been repaired or altered if such repair or alteration in the judgement of Rock River Tool, Inc. would adversely affect performance of the product. Complete written information with respect to all such matters, including operating condition, machine set-up, cutting fluid, cutting speed and feed rate, must be furnished to Rock River Tool, Inc. as a prerequisite to its consideration of any claim or complaint under this 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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