

# Where to Find

▶ <i>How to Use Thread Mills</i> .....	2.
▶ <i>Thread Mills – Unified Threads – Straight Flute – Carbide</i> .....	3.
▶ <i>Thread Mills – Unified Threads – Helical Flute – Solid Carbide</i> .....	4.
▶ <i>Thread Mills – Unified Threads – Staggered Tooth – Carbide and H.S.S.</i> .....	5.
▶ <i>Thread Mills – ISO Metric – Straight Flute – Carbide</i> .....	6.
▶ <i>Thread Mills – ISO Metric – Helical Flute – Solid Carbide</i> .....	7.
▶ <i>Thread Mills – NPT – Carbide</i> .....	8.
▶ <i>Thread Mills – Single Profile – Solid Carbide</i> .....	9.
▶ <i>Speeds &amp; Feeds</i> .....	25.
▶ <i>Coolant Ejector Holders</i> .....	10.
▶ <i>Deluxe Holders</i> .....	10.
▶ <i>CBN – PCD – Diamond Tipped – Boring Bars</i> .....	11.
▶ <i>Boring Bars – Solid Carbide</i> .....	12.
▶ <i>Boring Bars – Radial Relief – Solid Carbide</i> .....	13.
▶ <i>Boring Bars – Helical – Solid Carbide</i> .....	14–15.
▶ <i>Groove Tools – Retaining Ring – Solid Carbide</i> .....	16.
▶ <i>Groove Tools – Full Radius – Solid Carbide</i> .....	17.
▶ <i>Threading Tools and “O” Ring Groove Tools – Solid Carbide</i> .....	18.
▶ <i>Tapered Pipe Reamer – British Parallel Pipe – Port Tools</i> .....	19.
▶ <i>MS16142 (SAEJ1926) (SAEJ514) – Port Tools – Carbide Tipped</i> .....	20.
▶ <i>ISO6149-1:1993 – Port Tools – Carbide Tipped</i> .....	21.
▶ <i>MS33649 – Port Tools – Carbide Tipped</i> .....	22.
▶ <i>AND10050 – Port Tools – Carbide Tipped</i> .....	23.
▶ <i>MS33514 – AS1300 – Port Tools – Carbide Tipped</i> .....	24.
▶ <i>MS21921 - MS21922 - MS20819 — Port Tools</i> .....	Call Factory
▶ <i>BACD2036 - BACU24AB - AN818 — Port Tools</i> .....	Call Factory

**Scientific Cutting Tools**  
**The Cutting Edge**



## Understanding Thread Mills

Any three axis mill that is capable of helical interpolation can be used for thread milling. Helical interpolation involves three axes moving simultaneously. Two axes, 'X' and 'Y', move in a circular motion while the 'Z' axis moves in a linear motion. For example, the path from point A to point B (see Figure 1) on the periphery of the cylinder combines a circular movement in the 'X-Y' plane with linear movement along the 'Z' axis. The 'X' and 'Y' circular motion will determine the diameter of the thread. The 'Z' axis linear motion will cut the pitch (or lead) of the thread.

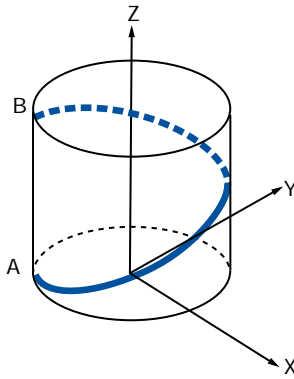


Figure 1

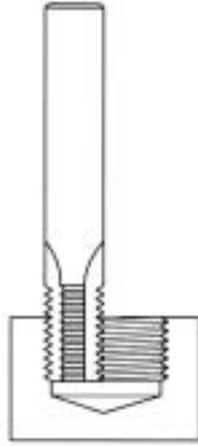


Figure 2

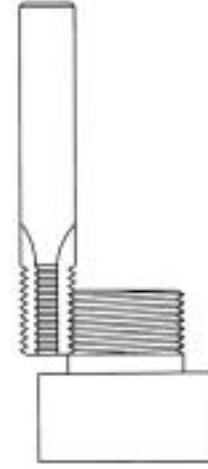


Figure 3

## How to Order Thread Mills

Thread mills must completely enter the minor thread diameter before cutting the internal thread (see Figure 2). Thus our catalog lists the smallest internal thread that each thread mill can produce. The same thread mill can also produce any larger size internal thread of that same pitch. Also, for small sizes, it is best to use our short series with the reduced length of cut if possible.

All of the straight flute thread mills are for internal threads only. All of the staggered tooth thread mills will cut both the internal and external threads. The helical thread mills over 0.187 diameter will also cut both internal and external threads.

Staggered tooth thread mills have every other tooth removed in a staggered pattern. As the tool rotates the adjacent flute fills in for the tooth that was removed. This helps to reduce side cutting pressure, thus reducing chatter. This can be extremely beneficial in small external sizes and for set-ups that lack rigidity.

Helical thread mills are also designed to reduce side cutting pressure by distributing the cutting pressure along a helical flute. Although these tools cost slightly more, their high performance design allows for less chatter and higher feed rates.

## How to Use Thread Mills

To produce internal threads, drill the minor thread diameter to its appropriate size. Then, position the thread mill to the required depth. Next, mill either the 'X' or 'Y' axis to the required thread pitch diameter. With small sizes and with difficult to cut material, it may be necessary to remove material in several passes. It is always best to "arc in" and "arc out" when thread milling. Any "arc in" and "arc out" movements must have a corresponding 'Z' axis motion during the 'X-Y' circular moves. For example, if the "arc in" is over 90 degrees, the 'Z' axis departure must be  $\frac{1}{4}$  of the thread pitch. (90 degrees is  $\frac{1}{4}$  of a circle). An internal right-hand thread is produced by orbiting in a counterclockwise direction while bringing the 'Z' axis up one pitch per 360 degrees.

A left-hand internal thread is produced by orbiting in a clockwise direction while bringing the 'Z' axis up one pitch per 360 degrees. The entire process can be achieved by interpolation in a downward direction and reversing the orbit direction.

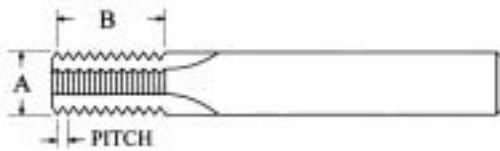
External threads (see Figure 3) must have the major diameter milled to size before a staggered tooth thread mill is used. Helical flute thread mills are crest cutting on external threads. Right-hand external threads are cut by interpolating down and in a clockwise direction. The same threads can be cut by interpolation up and changing the orbit direction.

NPT threads are usually produced while interpolating the tool in a downward direction. Since these tools are crest cutting, it is not absolutely necessary to ream the internal minor diameter or mill the external diameter to size. However, it is highly advisable to do so since the tools will have much less material to remove. If the tool is to be interpolated in an upward direction, spiral interpolation must be used.

The same surface feet per minute can be used for thread mills as for end mills of the same size. The feed rate must be slower, however, since thread milling often involves unfavorable length-to-diameter ratios. Also, keep in mind that the thread mills have more surface area contact than an end mill of equal length. Most CNC mills are programmed in inches per minute which is applied at the centerline of the spindle. In internal applications, the outside diameter of the tool will be traveling faster than the centerline of the tool. The reverse is true for external applications. It is best to start out conservatively with feed rates and the number of passes required and adjust upward per good machining practice.



# THREAD MILLS - UNIFIED THREAD - STRAIGHT FLUTE - CARBIDE



## INTERNAL THREADS ONLY



### Short Series Straight Flute Thread Mills\*

▲ Thread Mills can cut any larger size internal thread of the same pitch

Internal threads only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>TWO FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	4-40	.080	1/8"	TM080-40S	TM080-40SC
	6-32	.098	3/16	TM098-32S	TM098-32SC
	6-40	.098	3/16	TM098-40S	TM098-40SC
<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	8-32	.110	7/32"	TM110-32S	TM110-32SC
	8-32	.125	7/32"	TM125-32S	TM125-32SC
	10-24	.140	1/4	TM140-24S	TM140-24SC
	10-28	.140	1/4	TM140-28S	TM140-28SC
	10-32	.140	1/4	TM140-32S	TM140-32SC
	10-48	.140	1/4	TM140-48S	TM140-48SC

Internal threads only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>THREE FLUTE SOLID CARBIDE, 3/8" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	1/4-20	.170	5/16"	TM170-20S	TM170-20SC
	1/4-24	.170	5/16	TM170-24S	TM170-24SC
	1/4-28	.170	5/16	TM170-28S	TM170-28SC
	1/4-32	.170	5/16	TM170-32S	TM170-32SC
	1/4-36	.170	5/16	TM170-36S	TM170-36SC
	1/4-20	.187	5/16	TM187-20S	TM187-20SC
	1/4-24	.187	5/16	TM187-24S	TM187-24SC
	1/4-28	.187	5/16	TM187-28S	TM187-28SC
	1/4-32	.187	5/16	TM187-32S	TM187-32SC
	1/4-36	.187	5/16	TM187-36S	TM187-36SC
	1/4-40	.187	5/16	TM187-40S	TM187-40SC
	1/4-48	.187	5/16	TM187-48S	TM187-48SC

\* "B" LENGTH IS REDUCED FOR A BETTER LENGTH TO DIAMETER RATIO

### Straight Flute Thread Mills

▲ Thread Mills can cut any larger size internal thread of the same pitch

Internal threads only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>TWO FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	4-40	.080	3/16"	TM080-40	TM080-40C
	6-32	.098	1/4	TM098-32	TM098-32C
	6-40	.098	1/4	TM098-40	TM098-40C
<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	8-32	.110	5/16"	TM110-32	TM110-32C
	8-32	.125	5/16	TM125-32	TM125-32C
	10-24	.140	3/8	TM140-24	TM140-24C
	10-28	.140	3/8	TM140-28	TM140-28C
	10-32	.140	3/8	TM140-32	TM140-32C
	10-48	.140	3/8	TM140-48	TM140-48C
	1/4-20	.170	1/2	TM170-20	TM170-20C
	1/4-24	.170	1/2	TM170-24	TM170-24C
	1/4-28	.170	1/2	TM170-28	TM170-28C
	1/4-32	.170	1/2	TM170-32	TM170-32C
	1/4-36	.170	1/2	TM170-36	TM170-36C
	1/4-20	.187	1/2	TM187-20	TM187-20C
	1/4-24	.187	1/2	TM187-24	TM187-24C
	1/4-28	.187	1/2	TM187-28	TM187-28C
	1/4-32	.187	1/2	TM187-32	TM187-32C
	1/4-36	.187	1/2	TM187-36	TM187-36C
	1/4-40	.187	1/2	TM187-40	TM187-40C
	1/4-48	.187	1/2	TM187-48	TM187-48C
<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	5/16-18	.235	5/8"	TM235-18	TM235-18C
	5/16-20	.235	5/8	TM235-20	TM235-20C
	5/16-24	.235	5/8	TM235-24	TM235-24C
	5/16-28	.235	5/8	TM235-28	TM235-28C
	5/16-32	.235	5/8	TM235-32	TM235-32C
	5/16-40	.235	5/8	TM235-40	TM235-40C
<b>FOUR FLUTE SOLID CARBIDE, 5/16" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>					
	3/8-16	.290	3/4"	TM290-16	TM290-16C
	3/8-20	.290	3/4	TM290-20	TM290-20C
	3/8-24	.290	3/4	TM290-24	TM290-24C
	3/8-27	.290	3/4	TM290-27	TM290-27C
	3/8-32	.290	3/4	TM290-32	TM290-32C

Internal threads only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>FOUR FLUTE SOLID CARBIDE, 3/8" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>					
	7/16-14	.345	3/4"	TM345-14	TM345-14C
	7/16-18	.345	3/4	TM345-18	TM345-18C
	7/16-20	.345	3/4	TM345-20	TM345-20C
	7/16-24	.345	3/4	TM345-24	TM345-24C
	7/16-28	.345	3/4	TM345-28	TM345-28C
<b>FOUR FLUTE SOLID CARBIDE, 1/2" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>					
	1/2-12	.400	1"	TM400-12	TM400-12C
	1/2-13	.400	1	TM400-13	TM400-13C
	1/2-16	.400	1	TM400-16	TM400-16C
	1/2-20	.400	1	TM400-20	TM400-20C
	1/2-32	.400	1	TM400-32	TM400-32C
	3/4-10	.450	1	TM450-10	TM450-10C
	5/8-11	.450	1	TM450-11	TM450-11C
	9/16-16	.450	1	TM450-16	TM450-16C
	9/16-18	.450	1	TM450-18	TM450-18C
	9/16-20	.450	1	TM450-20	TM450-20C
<b>SIX FLUTE SOLID CARBIDE, 1/2" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>					
	5/8-12	.490	1"	TM490-12	TM490-12C
	5/8-14	.490	1	TM490-14	TM490-14C
	5/8-16	.490	1	TM490-16	TM490-16C
<b>SIX FLUTE SOLID CARBIDE, 5/8" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>					
	7/8-8	.620	1"	TM620-8	TM620-8C
	7/8-9	.620	1	TM620-9	TM620-9C
	7/8-12	.620	1	TM620-12	TM620-12C
	7/8-14	.620	1	TM620-14	TM620-14C
	7/8-16	.620	1	TM620-16	TM620-16C
<b>FOUR FLUTE CARBIDE TIP, 3/4" STEEL SHANK DIAMETER, 6" OVERALL LENGTH</b>					
	1-7	.740	1"	TM740-7	TM740-7C
	1-8	.740	1	TM740-8	TM740-8C
	1-10	.740	1	TM740-10	TM740-10C
	1-12	.740	1	TM740-12	TM740-12C
	1-14	.740	1	TM740-14	TM740-14C
	1-16	.740	1	TM740-16	TM740-16C
	1-20	.740	1	TM740-20	TM740-20C
<b>SIX FLUTE CARBIDE TIP, 1" STEEL SHANK DIAMETER, 7 1/2" OVERALL LENGTH</b>					
	1 1/2-6	.990	1"	TM990-6	TM990-6C
	1 1/2-8	.990	1	TM990-8	TM990-8C
	1 1/2-10	.990	1	TM990-10	TM990-10C
	1 1/2-12	.990	1	TM990-12	TM990-12C
	1 1/2-16	.990	1	TM990-16	TM990-16C

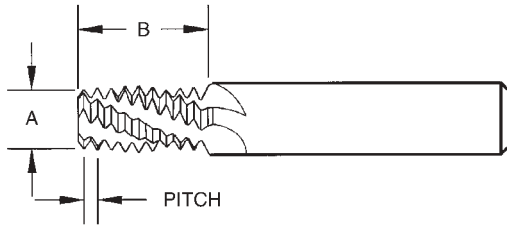


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# THREAD MILLS - UNIFIED THREAD - HELICAL FLUTE - SOLID CARBIDE

## INTERNAL or EXTERNAL THREADS



### Short Series Helical Thread Mills\*

▲ Thread Mills can cut any larger size internal thread of the same pitch

Internal threads only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	10-24	.140	1/4"	TM140-24SH	TM140-24SHC
	10-28	.140	1/4"	TM140-28SH	TM140-28SHC
	10-32	.140	1/4"	TM140-32SH	TM140-32SHC
	10-48	.140	1/4"	TM140-48SH	TM140-48SHC
	1/4-20	.170	5/16"	TM170-20SH	TM170-20SHC
	1/4-24	.170	5/16"	TM170-24SH	TM170-24SHC
	1/4-28	.170	5/16"	TM170-28SH	TM170-28SHC
	1/4-32	.170	5/16"	TM170-32SH	TM170-32SHC

Internal threads only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	1/4-36	.170	5/16"	TM170-36SH	TM170-36SHC
	1/4-20	.187	5/16"	TM187-20SH	TM187-20SHC
	1/4-24	.187	5/16"	TM187-24SH	TM187-24SHC
	1/4-28	.187	5/16"	TM187-28SH	TM187-28SHC
	1/4-32	.187	5/16"	TM187-32SH	TM187-32SHC
	1/4-36	.187	5/16"	TM187-36SH	TM187-36SHC
	1/4-40	.187	5/16"	TM187-40SH	TM187-40SHC

\* "B" LENGTH IS REDUCED FOR A BETTER LENGTH TO DIAMETER RATIO

### Helical Thread Mills

▲ Thread Mills can cut any larger size internal thread of the same pitch

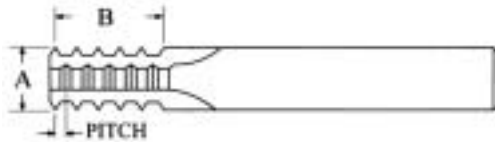
Internal threads only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
	10-24	.140	3/8"	TM140-24H	TM140-24HC
	10-28	.140	3/8"	TM140-28H	TM140-28HC
	10-32	.140	3/8"	TM140-32H	TM140-32HC
	10-48	.140	3/8"	TM140-48H	TM140-48HC
	1/4-20	.170	1/2"	TM170-20H	TM170-20HC
	1/4-24	.170	1/2"	TM170-24H	TM170-24HC
	1/4-28	.170	1/2"	TM170-28H	TM170-28HC
	1/4-32	.170	1/2"	TM170-32H	TM170-32HC
	1/4-36	.170	1/2"	TM170-36H	TM170-36HC
	1/4-20	.187	1/2"	TM187-20H	TM187-20HC
	1/4-24	.187	1/2"	TM187-24H	TM187-24HC
	1/4-28	.187	1/2"	TM187-28H	TM187-28HC
	1/4-32	.187	1/2"	TM187-32H	TM187-32HC
	1/4-36	.187	1/2"	TM187-36H	TM187-36HC
	1/4-40	.187	1/2"	TM187-40H	TM187-40HC
<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
Internal or external	5/16-18	.235	5/8"	TM235-18H	TM235-18HC
	5/16-20	.235	5/8"	TM235-20H	TM235-20HC
	5/16-24	.235	5/8"	TM235-24H	TM235-24HC
	5/16-28	.235	5/8"	TM235-28H	TM235-28HC
	5/16-32	.235	5/8"	TM235-32H	TM235-32HC
	5/16-40	.235	5/8"	TM235-40H	TM235-40HC

Internal or External threads	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>FOUR FLUTE SOLID CARBIDE, 5/16" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>					
	3/8-16	.290	3/4"	TM290-16H	TM290-16HC
	3/8-20	.290	3/4"	TM290-20H	TM290-20HC
	3/8-24	.290	3/4"	TM290-24H	TM290-24HC
	3/8-27	.290	3/4"	TM290-27H	TM290-27HC
	3/8-32	.290	3/4"	TM290-32H	TM290-32HC
<b>FOUR FLUTE SOLID CARBIDE, 3/8" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>					
	7/16-14	.345	3/4"	TM345-14H	TM345-14HC
	7/16-18	.345	3/4"	TM345-18H	TM345-18HC
	7/16-20	.345	3/4"	TM345-20H	TM345-20HC
	7/16-24	.345	3/4"	TM345-24H	TM345-24HC
	7/16-28	.345	3/4"	TM345-28H	TM345-28HC
<b>FOUR FLUTE SOLID CARBIDE, 1/2" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>					
	1/2-12	.400	1"	TM400-12H	TM400-12HC
	1/2-13	.400	1"	TM400-13H	TM400-13HC
	1/2-16	.400	1"	TM400-16H	TM400-16HC
	1/2-20	.400	1"	TM400-20H	TM400-20HC
	1/2-32	.400	1"	TM400-32H	TM400-32HC
	3/4-10	.450	1"	TM450-10H	TM450-10HC
	5/8-11	.450	1"	TM450-11H	TM450-11HC
	9/16-16	.450	1"	TM450-16H	TM450-16HC
	9/16-18	.450	1"	TM450-18H	TM450-18HC
	9/16-20	.450	1"	TM450-20H	TM450-20HC



# THREAD MILLS - UNIFIED THREAD - CARBIDE AND H. S. S.

## INTERNAL or EXTERNAL THREADS

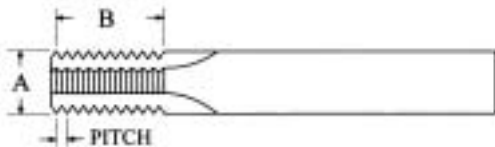


### Staggered Tooth - Carbide

▲ Thread Mills can cut any larger size internal thread of the same pitch

Internal or external threads	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>FOUR FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" O.A.L.</b>					
	3/8-20	.250	5/8"	TM250-20	TM250-20C
	3/8-24	.250	5/8	TM250-24	TM250-24C
	3/8-28	.250	5/8	TM250-28	TM250-28C
	3/8-32	.250	5/8	TM250-32	TM250-32C
	3/8-36	.250	5/8	TM250-36	TM250-36C
	3/8-40	.250	5/8	TM250-40	TM250-40C
<b>FOUR FLUTE SOLID CARBIDE HEAD, 3/4" STEEL SHANK, 6" O.A.L.</b>					
	7/16-16	.350	3/4"	TM350-16	TM350-16C
	7/16-18	.350	3/4	TM350-18	TM350-18C
	7/16-20	.350	3/4	TM350-20	TM350-20C
	7/16-24	.350	3/4	TM350-24	TM350-24C

Internal or external threads	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT		
<b>FOUR FLUTE SOLID CARBIDE HEAD, 3/4" STEEL SHANK, 6" O.A.L.</b>					
	5/8-12	.500	1"	TM500-12	TM500-12C
	5/8-14	.500	1	TM500-14	TM500-14C
	5/8-16	.500	1	TM500-16	TM500-16C
<b>FOUR FLUTE CARBIDE TIP, 3/4" STEEL SHANK, 6" O.A.L.</b>					
	1-12	.750	1"	TM750-12	TM750-12C
	1-14	.750	1	TM750-14	TM750-14C
	1-18	.750	1	TM750-18	TM750-18C
	1-20	.750	1	TM750-20	TM750-20C
<b>SIX FLUTE CARBIDE TIP, 1" STEEL SHANK, 7 1/2" O.A.L.</b>					
	1 1/2-12	1.000	1"	TM1000-12	TM1000-12C
	1 1/2-16	1.000	1	TM1000-16	TM1000-16C



### T15 High Speed Steel TiCN Coated

▲ Thread Mills can cut any larger size internal thread of the same pitch

Internal or external threads	▲ MIN I.D.	A	B	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT	
<b>THREE FLUTE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>				
	8-32	.115	5/16"	TM115-32C
	8-36	.115	5/16	TM115-36C
	10-24	.130	5/16	TM130-24C
	10-28	.130	5/16	TM130-28C
	10-32	.130	5/16	TM130-32C
	1/4-20	.180	1/2	TM180-20C
	1/4-24	.180	1/2	TM180-24C
	1/4-28	.180	1/2	TM180-28C
	1/4-32	.180	1/2	TM180-32C
	5/16-18	.240	5/8	TM240-18C
	5/16-20	.240	5/8	TM240-20C
	5/16-24	.240	5/8	TM240-24C
	5/16-28	.240	5/8	TM240-28C
	5/16-32	.240	5/8	TM240-32C
<b>FOUR FLUTE, 3/8" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>				
	3/8-14	.295	3/4"	TM295-14C
	3/8-16	.295	3/4	TM295-16C
	3/8-18	.295	3/4	TM295-18C
	3/8-20	.295	3/4	TM295-20C
	3/8-24	.295	3/4	TM295-24C
	3/8-27	.295	3/4	TM295-27C

Internal or external threads	▲ MIN I.D.	A	B	COATED ORDER #
	THREAD/ PITCH	CUTTER DIAMETER	LENGTH OF CUT	
<b>FOUR FLUTE, 1/2" SHANK DIAMETER, 4" OVERALL LENGTH</b>				
	1/2-13	.395	3/4"	TM395-13C
	1/2-20	.395	3/4	TM395-20C
	1/2-24	.395	3/4	TM395-24C
	1/2-28	.395	3/4	TM395-28C
	1/2-32	.395	3/4	TM395-32C
<b>SIX FLUTE, 1/2" SHANK DIAMETER, 4" OVERALL LENGTH</b>				
	5/8-10	.480	1"	TM480-10C
	5/8-11	.480	1	TM480-11C
	5/8-12	.480	1	TM480-12C
	5/8-16	.480	1	TM480-16C
	5/8-18	.480	1	TM480-18C
	5/8-20	.480	1	TM480-20C
<b>SIX FLUTE, 5/8" SHANK DIAMETER, 4" OVERALL LENGTH</b>				
	3/4-9	.600	1"	TM600-9C
	3/4-12	.600	1	TM600-12C
	3/4-14	.600	1	TM600-14C
	3/4-16	.600	1	TM600-16C
	3/4-20	.600	1	TM600-20C
<b>SIX FLUTE, 3/4" SHANK DIAMETER, 4" OVERALL LENGTH</b>				
	1.0-8	.735	1 1/4"	TM735-8C
	1.0-10	.735	1 1/4	TM735-10C
	1.0-12	.735	1 1/4	TM735-12C
	1.0-14	.735	1 1/4	TM735-14C
	1.0-16	.735	1 1/4	TM735-16C
	1.0-20	.735	1 1/4	TM735-20C

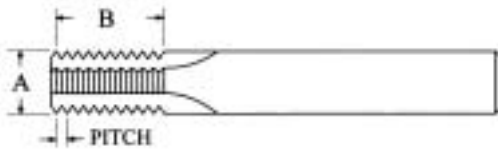


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# THREAD MILLS - ISO METRIC - STRAIGHT FLUTE - CARBIDE

## INTERNAL THREADS ONLY



### Metric - Short Series\* - Straight Flute

▲ Thread Mills can cut any larger size internal thread of the same pitch

Internal only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	DIAMETER INCH	LENGTH INCH		
	<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>				
	4-.5	.110	3/16"	TM4-.5mm-S	TM4-.5mm-SC
	4-.7	.110	3/16"	TM4-.7mm-S	TM4-.7mm-SC
	4.5-.75	.125	3/16"	TM4.5-.75mm-S	TM4.5-.75mm-SC
	5-.7	.140	1/4"	TM5-.7mm-S	TM5-.7mm-SC
	5-.8	.140	1/4"	TM5-.8mm-S	TM5-.8mm-SC

Internal only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	DIAMETER INCH	LENGTH INCH		
	<b>THREE FLUTE, SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>				
	6-.5	.170	5/16"	TM6-.5mm-S	TM6-.5mm-SC
	6-.75	.170	5/16"	TM6-.75mm-S	TM6-.75mm-SC
	6-1	.170	5/16"	TM6-1mm-S	TM6-1mm-SC
	6-1.25	.170	5/16"	TM6-1.25mm-S	TM6-1.25mm-SC

\* "B" LENGTH IS REDUCED FOR A BETTER LENGTH TO DIAMETER RATIO

### Metric - Straight Flute

▲ Thread Mills can cut any larger size internal thread of the same pitch

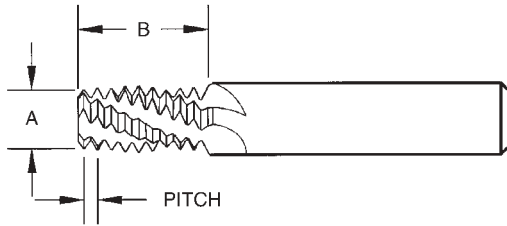
Internal threads only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	DIAMETER INCH	LENGTH INCH		
	<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>				
	4-.5	.110	5/16"	TM4-.5mm	TM4-.5mm-C
	4-.7	.110	5/16"	TM4-.7mm	TM4-.7mm-C
	4.5-.75	.125	5/16"	TM4.5-.75mm	TM4.5-.75mm-C
	5-.7	.140	3/8"	TM5-.7mm	TM5-.7mm-C
	5-.8	.140	3/8"	TM5-.8mm	TM5-.8mm-C
	6-.5	.170	1/2"	TM6-.5mm	TM6-.5mm-C
	6-.75	.170	1/2"	TM6-.75mm	TM6-.75mm-C
	6-1	.170	1/2"	TM6-1mm	TM6-1mm-C
	6-1.25	.170	1/2"	TM6-1.25mm	TM6-1.25mm-C
	<b>THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>				
	8-.75	.235	5/8"	TM8-.75mm	TM8-.75mm-C
	8-1	.235	5/8"	TM8-1mm	TM8-1mm-C
	8-1.25	.235	5/8"	TM8-1.25mm	TM8-1.25mm-C
	<b>FOUR FLUTE SOLID CARBIDE, 5/16" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>				
	10-1	.290	3/4"	TM10-1mm	TM10-1mm-C
	10-1.5	.290	3/4"	TM10-1.5mm	TM10-1.5mm-C
	<b>FOUR FLUTE SOLID CARBIDE, 3/8" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>				
	12-1.25	.345	3/4"	TM12-1.25mm	TM12-1.25mm-C
	12-1.5	.345	3/4"	TM12-1.5mm	TM12-1.5mm-C
	12-1.75	.345	3/4"	TM12-1.75mm	TM12-1.75mm-C

Internal threads	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	DIAMETER INCH	LENGTH INCH		
	<b>FOUR FLUTE SOLID CARBIDE, 1/2" SHANK DIAMETER, 3 1/2" OVERALL LENGTH</b>				
	12-1	.400	1"	TM12-1mm	TM12-1mm-C
	14-1.25	.450	1"	TM14-1.25mm	TM14-1.25mm-C
	14-1.5	.450	1"	TM14-1.5mm	TM14-1.5mm-C
	14-1.75	.450	1"	TM14-1.75mm	TM14-1.75mm-C
	14-2	.450	1"	TM14-2mm	TM14-2mm-C
	16-2.5	.450	1"	TM 16-2.5mm	TM16-2.5mm-C
	<b>FOUR FLUTE CARBIDE TIPPED, 3/4" STEEL SHANK, 6" OVERALL LENGTH</b>				
	24-1	.740	1"	TM24-1mm	TM24-1mm-C
	24-1.5	.740	1"	TM24-1.5mm	TM24-1.5mm-C
	24-2	.740	1"	TM24-2mm	TM24-2mm-C
	24-2.5	.740	1"	TM24-2.5mm	TM24-2.5mm-C
	24-3	.740	1"	TM24-3mm	TM24-3mm-C
	<b>SIX FLUTE CARBIDE TIP, 1" STEEL SHANK, 7 1/2" OVERALL LENGTH</b>				
	36-4	1.0	1"	TM36-4mm	TM36-4mm-C
	40-6	1.0	1"	TM40-6mm	TM40-6mm-C



# THREAD MILLS - ISO METRIC - HELICAL FLUTE - SOLID CARBIDE

## INTERNAL or EXTERNAL THREADS



### Metric - Short Series\* - Helical Flute

▲ Thread Mills can cut any larger size internal thread of the same pitch

Internal only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	DIAMETER INCH	LENGTH INCH		
THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH					
	6-.5	.170	5/16"	TM6-.5mm-SH	TM6-.5mm-SHC
	6-.75	.170	5/16"	TM6-.75mm-SH	TM6-.75mm-SHC

Internal only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	DIAMETER INCH	LENGTH INCH		
THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH					
	6-1	.170	5/16"	TM6-1mm-SH	TM6-1mm-SHC
	6-1.25	.170	5/16"	TM6-1.25mm-SH	TM6-1.25mm-SHC

\* "B" LENGTH IS REDUCED FOR A BETTER LENGTH TO DIAMETER RATIO

### Metric - Helical Flute

▲ Thread Mills can cut any larger size internal thread of the same pitch

Internal only	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	DIAMETER INCH	LENGTH INCH		
THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH					
	6-.5	.170	1/2"	TM6-.5mm-H	TM6-.5mm-HC
	6-.75	.170	1/2"	TM6-.75mm-H	TM6-.75mm-HC
	6-1	.170	1/2"	TM6-1mm-H	TM6-1mm-HC
	6-1.25	.170	1/2"	TM6-1.25mm-H	TM6-1.25mm-HC
THREE FLUTE SOLID CARBIDE, 1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH					
Internal or external	8-.75	.235	5/8"	TM8-.75mm-H	TM8-.75mm-HC
	8-1	.235	5/8"	TM8-1mm-H	TM8-1mm-HC
	8-1.25	.235	5/8"	TM8-1.25mm-H	TM8-1.25mm-HC
FOUR FLUTE SOLID CARBIDE, 5/16" SHANK DIAMETER, 3 1/2" OVERALL LENGTH					
	10-1	.290	3/4"	TM10-1mm-H	TM10-1mm-HC
	10-1.5	.290	3/4"	TM10-1.5mm-H	TM10-1.5mm-HC

Internal or external threads	▲ MIN I.D.	A	B	UNCOATED ORDER #	COATED ORDER #
	THREAD/ PITCH	DIAMETER INCH	LENGTH INCH		
FOUR FLUTE SOLID CARBIDE, 3/8" SHANK DIAMETER, 3 1/2" OVERALL LENGTH					
	12-1.25	.345	3/4"	TM12-1.25mm-H	TM12-1.25mm-HC
	12-1.5	.345	3/4"	TM12-1.5mm-H	TM12-1.5mm-HC
	12-1.75	.345	3/4"	TM12-1.75mm-H	TM12-1.75mm-HC
FOUR FLUTE SOLID CARBIDE, 1/2" SHANK DIAMETER, 3 1/2" OVERALL LENGTH					
	12-1	.400	1"	TM12-1mm-H	TM12-1mm-HC
	14-1.25	.450	1"	TM14-1.25mm-H	TM14-1.25mm-HC
	14-1.5	.450	1"	TM14-1.5mm-H	TM14-1.5mm-HC
	14-1.75	.450	1"	TM14-1.75mm-H	TM14-1.75mm-HC
	14-2	.450	1"	TM14-2mm-H	TM14-2mm-HC
	16-2.5	.450	1"	TM16-2.5mm-H	TM16-2.5mm-HC

METRIC DIAMETER SHANKS AVAILABLE UPON REQUEST

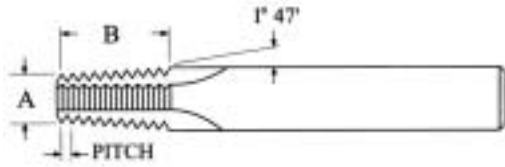


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# THREAD MILLS - N P T - CARBIDE

## INTERNAL or EXTERNAL THREADS



### N P T Pipe Straight Flute - Solid Carbide

	THREAD DIA./PITCH	A TOOL DIA.	B LENGTH OF CUT	UNCOATED ORDER #	COATED ORDER #	DRYSEAL		
						UNCOATED ORDER #	COATED ORDER #	
Internal or external threads	<b>SOLID CARBIDE FOUR FLUTE</b>							
	1/4" shank, 2 1/2" O.A.L.*	1/16, 1/8-27	.218	1/2"	TM218-27NPT	TM218-27NPT-C	TM218-27NPTF	TM218-27NPTF-C
	3/8 shank, 3 1/2 O.A.L.	1/8-27	.280	3/4	TM280-27NPT	TM280-27NPT-C	TM280-27NPTF	TM280-27NPTF-C
	3/8 shank, 3 1/2 O.A.L.	1/4, 3/8-18	.330	5/8	TM330-18NPT	TM330-18NPT-C	TM330-18NPTF	TM330-18NPTF-C
	7/16 shank, 3 1/2 O.A.L.	1/4, 3/8-18	.382	3/4	TM382-18NPT	TM382-18NPT-C	TM382-18NPTF	TM382-18NPTF-C
	1/2 shank, 3 1/2 O.A.L.	1/2, 3/4-14	.430	1	TM430-14NPT	TM430-14NPT-C	TM430-14NPTF	TM430-14NPTF-C
	3/4 shank, 4 O.A.L.	1 to 2-11 1/2	.650	1 1/2	TM650-11.5NPT	TM650-11.5NPT-C		
	3/4 shank, 4 O.A.L.	2 1/2 up-8	.650	1 1/2	TM650-8NPT	TM650-8NPT-C		

\*OVERALL LENGTH

### Straight Flute - Carbide Staggered Tooth

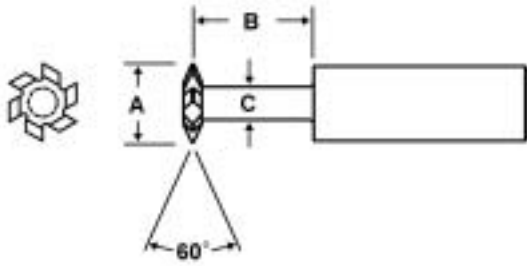
	THREAD DIA./PITCH	A TOOL DIA.	B LENGTH OF CUT	UNCOATED ORDER #	COATED ORDER #	DRYSEAL		
						UNCOATED ORDER #	COATED ORDER #	
Internal or external threads	<b>SOLID CARBIDE FOUR FLUTE</b>							
	1/4" shank, 2 1/2" O.A.L.	1/16, 1/8-27	.220	1/2"	TM220-27NPT	TM220-27NPT-C	TM220-27NPTF	TM220-27NPTF-C
	3/8 shank, 3 1/2 O.A.L.	1/8-27	.275	3/4	TM275-27NPT	TM275-27NPT-C	TM275-27NPTF	TM275-27NPTF-C
	3/8 shank, 3 1/2 O.A.L.	1/4, 3/8-18	.335	5/8	TM335-18NPT	TM335-18NPT-C	TM335-18NPTF	TM335-18NPTF-C
	7/16 shank, 3 1/2 O.A.L.	1/2, 3/8-18	.387	3/4	TM387-18NPT	TM387-18NPT-C	TM387-18NPTF	TM387-18NPTF-C
	1/2 shank, 3 1/2 O.A.L.	1/2, 3/4-14	.435	1	TM435-14NPT	TM435-14NPT-C	TM435-14NPTF	TM435-14NPTF-C
	3/4 steel shank, 6 O.A.L.	1/2, 3/4-14	.440	1	TM440-14NPT	TM440-14NPT-C	TM440-14NPTF	TM440-14NPTF-C
	<b>CARBIDE TIPPED SIX FLUTE</b>							
1 shank, 7 1/2" O.A.L.	1 to 2-11 1/2	1.000	2"	TM1.0-11.5NPT	TM1.0-11.5NPT-C	TM1.0-11.5NPTF	TM1.0-11.5NPTF-C	
<b>CARBIDE TIPPED EIGHT FLUTE</b>								
1/4 shank, 8" O.A.L.	2 1/2 up-8	1.875	2 1/2"	TM1.875-8NPT	TM1.875-8NPT-C	TM1.875-8NPTF	TM1.875-8NPTF-C	

### Helical Flute - Solid Carbide

	THREAD DIA./PITCH	A TOOL DIA.	B LENGTH OF CUT	UNCOATED ORDER #	COATED ORDER #	DRYSEAL		
						UNCOATED ORDER #	COATED ORDER #	
Internal or external threads	<b>SOLID CARBIDE FOUR FLUTE</b>							
	1/4" shank, 2 1/2" O.A.L.	1/16, 1/8-27	.218	1/2"	TM218-27NPT-H	TM218-27NPT-HC	TM218-27NPTF-H	TM218-27NPTF-HC
	3/8 shank, 3 1/2 O.A.L.	1/8-27	.280	3/4	TM280-27NPT-H	TM280-27NPT-HC	TM280-27NPTF-H	TM280-27NPTF-HC
	3/8 shank, 3 1/2 O.A.L.	1/4, 3/8-18	.330	5/8	TM330-18NPT-H	TM330-18NPT-HC	TM330-18NPTF-H	TM330-18NPTF-HC
	7/16 shank, 3 1/2 O.A.L.	1/4, 3/8-18	.382	3/4	TM382-18NPT-H	TM382-18NPT-HC	TM382-18NPTF-H	TM382-18NPTF-HC
	1/2 shank, 3 1/2 O.A.L.	1/2, 3/4-14	.430	1	TM430-14NPT-H	TM430-14NPT-HC	TM430-14NPTF-H	TM430-14NPTF-HC

# THREAD MILLS - SINGLE PROFILE - SOLID CARBIDE

## INTERNAL or EXTERNAL THREADS

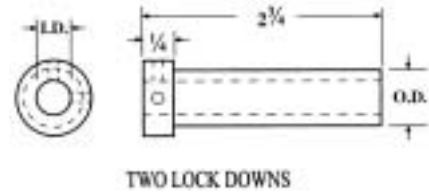
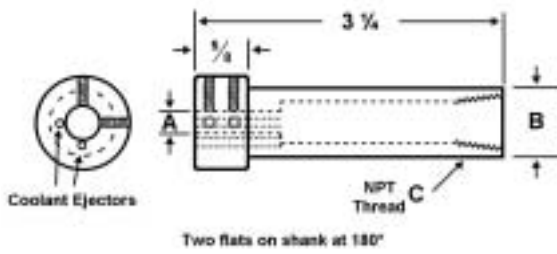


- Manufactured from Solid Carbide, providing maximum tool rigidity.
- Long reach tools available from stock for unfavorable length-to-diameter ratios.
- With only 17 different Thread Mills, you can mill coarse or fine threads from #0 through 1-1/2+.
- Single profile design provides controllable pitch diameter and cut depth.
- Tools are stocked both coated and uncoated.
- The tools will cut both UN and Metric sizes.

MIN I.D. THREAD	A CUTTER DIA.	B NECK LENGTH	C NECK DIA.	RECOM-MENDED T.P.I.	UNCOATED ORDER #	COATED ORDER #
<b>1/8" SHANK DIAMETER, 1 1/2 OVERALL LENGTH-TWO FLUTES</b>						
#0	.040	.090	.022	72 to 90	SPTM040	SPTM040C
#0	.040	.125	.022	72 to 90	SPTM040L	SPTM040LC
#1	.050	.100	.028	64 to 80	SPTM050	SPTM050C
#1	.050	.150	.028	64 to 80	SPTM050L	SPTM050LC
#2	.059	.125	.034	56 to 80	SPTM059	SPTM059C
#2	.059	.200	.034	56 to 80	SPTM059L	SPTM059LC
<b>3/16" SHANK DIAMETER, 2.0 OVERALL LENGTH-TWO FLUTES</b>						
#2	.060	.125	.034	56 to 80	SPTM060	SPTM060C
#2	.060	.200	.034	56 to 80	SPTM060L	SPTM060LC
#3	.072	.150	.040	48 to 72	SPTM072	SPTM072C
#3	.072	.250	.040	48 to 72	SPTM072L	SPTM072LC
#4	.080	.190	.045	40 to 64	SPTM080	SPTM080C
#4	.080	.300	.045	40 to 64	SPTM080L	SPTM080LC
<b>3/16" SHANK DIAMETER, 2.0 OVERALL LENGTH-THREE FLUTES</b>						
#6	.098	.250	.049	32 to 64	SPTM098	SPTM098C
#6	.098	.400	.049	32 to 64	SPTM098L	SPTM098LC
#8	.120	.300	.070	32 to 56	SPTM120	SPTM120C
#8	.120	.500	.070	32 to 56	SPTM120L	SPTM120LC
#10	.138	.400	.075	24 to 56	SPTM138	SPTM138C
#10	.138	.600	.075	24 to 56	SPTM138L	SPTM138LC

MIN I.D. THREAD	A CUTTER DIA.	B NECK LENGTH	C NECK DIA.	RECOM-MENDED T.P.I.	UNCOATED ORDER #	COATED ORDER #
<b>1/4" SHANK DIAMETER, 2 1/2 OVERALL LENGTH-FOUR FLUTES</b>						
1/4	.182	.400	.104	18 to 56	SPTM182	SPTM182C
1/4	.182	.650	.104	18 to 56	SPTM182L	SPTM182LC
5/16	.240	.500	.153	16 to 48	SPTM240	SPTM240C
5/16	.240	.800	.153	16 to 48	SPTM240L	SPTM240LC
<b>3/8" SHANK DIAMETER, 3.0 OVERALL LENGTH-FOUR FLUTES</b>						
3/8	.290	.600	.192	14 to 40	SPTM290	SPTM290C
3/8	.290	1.000	.192	14 to 40	SPTM290L	SPTM290LC
1/2	.372	.750	.240	12 to 32	SPTM372	SPTM372C
1/2	.372	1.200	.240	12 to 32	SPTM372L	SPTM372LC
<b>1/2" SHANK DIAMETER, 3 1/2 OVERALL LENGTH-FIVE FLUTES</b>						
5/8	.488	.850	.340	11 to 32	SPTM488	SPTM488C
5/8	.488	1.350	.340	11 to 32	SPTM488L	SPTM488LC
<b>5/8" SHANK DIAMETER, 4.0 OVERALL LENGTH-SIX FLUTES</b>						
3/4	.595	1.250	.430	10 to 32	SPTM595	SPTM595C
3/4	.595	2.000	.430	10 to 32	SPTM595L	SPTM595LC
<b>3/4" SHANK DIAMETER, 5.0 OVERALL LENGTH-SIX FLUTES</b>						
7/8	.695	1.500	.490	8 to 24	SPTM695	SPTM695C
7/8	.695	2.500	.490	8 to 24	SPTM695L	SPTM695LC
1 1/2	.745	1.500	.400	4 to 8	SPTM745	SPTM745C
1 1/2	.745	2.500	.400	4 to 8	SPTM745L	SPTM745LC





**Coolant Ejector Holders**

A Inside Diameter	B Outside Diameter	C NPT Thread	Order #
1/8"	5/8"	1/4" NPT	QHC62-1/8
5/32	5/8"	1/4 NPT	QHC62-5/32
3/16	5/8"	1/4 NPT	QHC62-3/16
7/32	5/8"	1/4 NPT	QHC62-7/32
1/4	5/8"	1/4 NPT	QHC62-1/4
1/8	3/4	3/8 NPT	QHC75-1/8
5/32	3/4	3/8 NPT	QHC75-5/32
3/16	3/4	3/8 NPT	QHC75-3/16
7/32	3/4	3/8 NPT	QHC75-7/32
1/4	3/4	3/8 NPT	QHC75-1/4
5/16	3/4	3/8 NPT	QHC75-5/16
3/8	3/4	3/8 NPT	QHC75-3/8
1/8	1.0	1/2 NPT	QHC10-1/8
3/16	1.0	1/2 NPT	QHC10-3/16
1/4	1.0	1/2 NPT	QHC10-1/4
5/16	1.0	1/2 NPT	QHC10-5/16
3/8	1.0	1/2 NPT	QHC10-3/8
1/2	1.0	1/2 NPT	QHC10-1/2

**Metric Sizes**

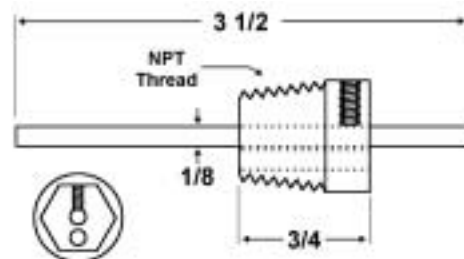
1/8"	20 mm	3/8" NPT	QHC20-1/8
5/32	20 mm	3/8 NPT	QHC20-5/32
3/16	20 mm	3/8 NPT	QHC20-3/16
7/32	20 mm	3/8 NPT	QHC20-7/32
1/4	20 mm	3/8 NPT	QHC20-1/4
5/16	20 mm	3/8 NPT	QHC20-5/16
3/8	20 mm	3/8 NPT	QHC20-3/8

**Deluxe Holders**

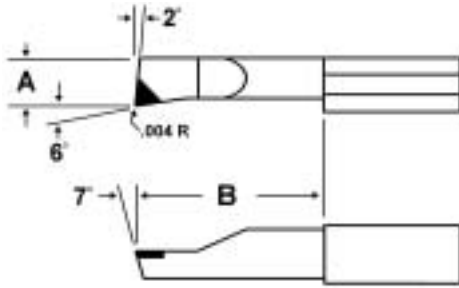
Outside Diameter	Inside Diameter	Order #
3/8"	1/8"	DH37-1/8
3/8	5/32	DH37-5/32
3/8	3/16	DH37-3/16
3/8	7/32	DH37-7/32
3/8	1/4	DH37-1/4
1/2	1/8	DH50-1/8
1/2	5/32	DH50-5/32
1/2	3/16	DH50-3/16
1/2	7/32	DH50-7/32
1/2	1/4	DH50-1/4
1/2	5/16	DH50-5/16
1/2	3/8	DH50-3/8
5/8	1/8	DH62-1/8
5/8	5/32	DH62-5/32
5/8	3/16	DH62-3/16
5/8	7/32	DH62-7/32
5/8	1/4	DH62-1/4
5/8	5/16	DH62-5/16
5/8	3/8	DH62-3/8
3/4	1/8	DH75-1/8
3/4	3/16	DH75-3/16
3/4	1/4	DH75-1/4
3/4	5/16	DH75-5/16
3/4	3/8	DH75-3/8
3/4	1/2	DH75-1/2

**Back Stops for QHC Series**

Outside Diameter	NPT Thread	Holder Series	Order #
5/8"	1/4" NPT	QHC62	QHC62-BKS
3/4	3/8 NPT	QHC75	QHC75-BKS
1.0	1/2 NPT	QHC10	QHC10-BKS
20 mm	3/8 NPT	QHC20	QHC20-BKS



# CBN - PCD - DIAMOND TIPPED - BORING BAR



- PCD for abrasive non-ferrous material
- CBN for hard ferrous metal
- Solid Carbide for maximum rigidity

PCD tipped boring bars provide excellent tool life for abrasive nonferrous metals, such as silicon aluminum, ceramics and composites. CBN tipped boring bars provide excellent tool life for abrasive cast iron and super alloys. They excel on ferrous metals over 45 RC. Both PCD and CBN provide longer tool life, higher machining feeds and speeds, better quality finishes and tighter tolerances.

A MIN HOLE	B MAX DEPTH	PCD ORDER #	CBN ORDER #
<i>3/16" SHANK DIAMETER, 2" OVERALL LENGTH</i>			
.120	.250	PCD-B120250	CBN-B120250
.120	.350	PCD-B120350	CBN-B120350
.120	.500	PCD-B120500	CBN-B120500
.120	.600	PCD-B120600	CBN-B120600
.120	.700	PCD-B120700	CBN-B120700
.120	.800	PCD-B120800	CBN-B120800
.140	.250	PCD-B140250	CBN-B140250
.140	.400	PCD-B140400	CBN-B140400
.140	.500	PCD-B140500	CBN-B140500
.140	.600	PCD-B140600	CBN-B140600
.140	.700	PCD-B140700	CBN-B140700
.140	.750	PCD-B140750	CBN-B140750
.140	.800	PCD-B140800	CBN-B140800
.160	.250	PCD-B160250	CBN-B160250
.160	.400	PCD-B160400	CBN-B160400
.160	.500	PCD-B160500	CBN-B160500
.160	.600	PCD-B160600	CBN-B160600
.160	.750	PCD-B160750	CBN-B160750
.160	.900	PCD-B160900	CBN-B160900
.160	1.000	PCD-B1601000	CBN-B1601000
<i>1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</i>			
.180	.350	PCD-B180350	CBN-B180350
.180	.500	PCD-B180500	CBN-B180500
.180	.600	PCD-B180600	CBN-B180600
.180	.750	PCD-B180750	CBN-B180750
.180	.900	PCD-B180900	CBN-B180900
.180	1.000	PCD-B1801000	CBN-B1801000
.180	1.100	PCD-B1801100	CBN-B1801100
.200	.400	PCD-B200400	CBN-B200400
.200	.500	PCD-B200500	CBN-B200500
.200	.600	PCD-B200600	CBN-B200600
.200	.700	PCD-B200700	CBN-B200700

A MIN HOLE	B MAX DEPTH	PCD ORDER #	CBN ORDER #
<i>1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</i>			
.200	.800	PCD-B200800	CBN-B200800
.200	.900	PCD-B200900	CBN-B200900
.200	1.000	PCD-B2001000	CBN-B2001000
.200	1.100	PCD-B2001100	CBN-B2001100
.200	1.200	PCD-B2001200	CBN-B2001200
.200	1.300	PCD-B2001300	CBN-B2001300
<i>5/16" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</i>			
.230	.400	PCD-B230400	CBN-B230400
.230	.500	PCD-B230500	CBN-B230500
.230	.600	PCD-B230600	CBN-B230600
.230	.700	PCD-B230700	CBN-B230700
.230	.800	PCD-B230800	CBN-B230800
.230	.900	PCD-B230900	CBN-B230900
.230	1.000	PCD-B2301000	CBN-B2301000
.230	1.150	PCD-B2301150	CBN-B2301150
.230	1.200	PCD-B2301200	CBN-B2301200
.230	1.250	PCD-B2301250	CBN-B2301250
.230	1.400	PCD-B2301400	CBN-B2301400
.230	1.500	PCD-B2301500	CBN-B2301500
.230	1.600	PCD-B2301600	CBN-B2301600
.290	.500	PCD-B290500	CBN-B290500
.290	.600	PCD-B290600	CBN-B290600
.290	.750	PCD-B290750	CBN-B290750
.290	.900	PCD-B290900	CBN-B290900
.290	1.000	PCD-B2901000	CBN-B2901000
.290	1.100	PCD-B2901100	CBN-B2901100
.290	1.250	PCD-B2901250	CBN-B2901250
.290	1.350	PCD-B2901350	CBN-B2901350
.290	1.500	PCD-B2901500	CBN-B2901500
.290	1.600	PCD-B2901600	CBN-B2901600
.290	1.750	PCD-B2901750	CBN-B2901750

A MIN HOLE	B MAX DEPTH	PCD ORDER #	CBN ORDER #
<i>3/8" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</i>			
.320	.500	PCD-B320500	CBN-B320500
.320	.600	PCD-B320600	CBN-B320600
.320	.750	PCD-B320750	CBN-B320750
.320	.900	PCD-B320900	CBN-B320900
.320	1.000	PCD-B3201000	CBN-B3201000
.320	1.100	PCD-B3201100	CBN-B3201100
.320	1.250	PCD-B3201250	CBN-B3201250
.320	1.500	PCD-B3201500	CBN-B3201500
.320	1.600	PCD-B3201600	CBN-B3201600
.320	1.800	PCD-B3201800	CBN-B3201800
<i>3/8" SHANK DIAMETER, 4" OVERALL LENGTH</i>			
.320	2.000	PCD-B3202000	CBN-B3202000
.320	2.500	PCD-B3202500	CBN-B3202500
.320	3.000	PCD-B3203000	CBN-B3203000
<i>3/8" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</i>			
.360	.500	PCD-B360500	CBN-B360500
.360	.650	PCD-B360600	CBN-B360600
.360	.750	PCD-B360750	CBN-B360750
.360	.900	PCD-B360900	CBN-B360900
.360	1.000	PCD-B3601000	CBN-B3601000
.360	1.150	PCD-B3601150	CBN-B3601150
.360	1.250	PCD-B3601250	CBN-B3601250
.360	1.500	PCD-B3601500	CBN-B3601500
.360	1.600	PCD-B3601600	CBN-B3601600
.360	1.800	PCD-B3601800	CBN-B3601800
<i>3/8" SHANK DIAMETER, 4" OVERALL LENGTH</i>			
.360	2.000	PCD-B3602000	CBN-B3602000
.360	2.500	PCD-B3602500	CBN-B3602500
.360	3.000	PCD-B3603000	CBN-B3603000

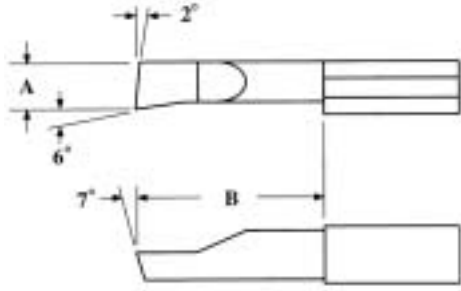
TOOL HOLDERS - SEE PAGE TEN



**SCSMC For Longer Tool Life**

(805) 584-9495 Fax (805) 584-9629 [www.sct-usa.com](http://www.sct-usa.com) [sales@sct-usa.com](mailto:sales@sct-usa.com)

# BORING BARS - SOLID CARBIDE



A MIN HOLE	B MAX DEPTH	UNCOATED ORDER #	COATED ORDER #
<b>1/8" SHANK DIAMETER, 1 1/2" OVERALL LEN.</b>			
.050	.150	<b>B050150</b>	<b>B050150C</b>
.050	.200	<b>B050200</b>	<b>B050200C</b>
.050	.300	<b>B050300</b>	<b>B050300C</b>
.050	.400	<b>B050400</b>	<b>B050400C</b>
.060	.150	<b>B060150</b>	<b>B060150C</b>
.060	.200	<b>B060200</b>	<b>B060200C</b>
.060	.300	<b>B060300</b>	<b>B060300C</b>
.060	.400	<b>B060400</b>	<b>B060400C</b>
.060	.500	<b>B060500</b>	<b>B060500C</b>
.080	.150	<b>B080150</b>	<b>B080150C</b>
.080	.200	<b>B080200</b>	<b>B080200C</b>
.080	.300	<b>B080300</b>	<b>B080300C</b>
.080	.400	<b>B080400</b>	<b>B080400C</b>
.080	.500	<b>B080500</b>	<b>B080500C</b>
.080	.600	<b>B080600</b>	<b>B080600C</b>
.100	.150	<b>B100150</b>	<b>B100150C</b>
.100	.200	<b>B100200</b>	<b>B100200C</b>
.100	.300	<b>B100300</b>	<b>B100300C</b>
.100	.400	<b>B100400</b>	<b>B100400C</b>
.100	.500	<b>B100500</b>	<b>B100500C</b>
.100	.600	<b>B100600</b>	<b>B100600C</b>
.100	.700	<b>B100700</b>	<b>B100700C</b>
.110	.150	<b>B110150</b>	<b>B110150C</b>
.110	.200	<b>B110200</b>	<b>B110200C</b>
.110	.300	<b>B110300</b>	<b>B110300C</b>
.110	.400	<b>B110400</b>	<b>B110400C</b>
.110	.500	<b>B110500</b>	<b>B110500C</b>
.110	.600	<b>B110600</b>	<b>B110600C</b>
.110	.700	<b>B110700</b>	<b>B110700C</b>
<b>3/16" SHANK DIAMETER, 2" OVERALL LEN.</b>			
.120	.250	<b>B120250</b>	<b>B120250C</b>
.120	.350	<b>B120350</b>	<b>B120350C</b>
.120	.500	<b>B120500</b>	<b>B120500C</b>
.120	.600	<b>B120600</b>	<b>B120600C</b>
.120	.700	<b>B120700</b>	<b>B120700C</b>
.120	.800	<b>B120800</b>	<b>B120800C</b>
.140	.250	<b>B140250</b>	<b>B140250C</b>
.140	.400	<b>B140400</b>	<b>B140400C</b>
.140	.500	<b>B140500</b>	<b>B140500C</b>
.140	.600	<b>B140600</b>	<b>B140600C</b>
.140	.700	<b>B140700</b>	<b>B140700C</b>
.140	.750	<b>B140750</b>	<b>B140750C</b>
.140	.800	<b>B140800</b>	<b>B140800C</b>
.160	.250	<b>B160250</b>	<b>B160250C</b>
.160	.400	<b>B160400</b>	<b>B160400C</b>
.160	.500	<b>B160500</b>	<b>B160500C</b>

A MIN HOLE	B MAX DEPTH	UNCOATED ORDER #	COATED ORDER #
<b>3/16" SHANK DIAMETER, 2" OVERALL LEN.</b>			
.160	.600	<b>B160600</b>	<b>B160600C</b>
.160	.750	<b>B160750</b>	<b>B160750C</b>
.160	.900	<b>B160900</b>	<b>B160900C</b>
.160	1.000	<b>B1601000</b>	<b>B1601000C</b>
<b>1/4" SHANK DIAMETER, 2 1/2" OVERALL LEN.</b>			
.180	.350	<b>B180350</b>	<b>B180350C</b>
.180	.500	<b>B180500</b>	<b>B180500C</b>
.180	.600	<b>B180600</b>	<b>B180600C</b>
.180	.750	<b>B180750</b>	<b>B180750C</b>
.180	.900	<b>B180900</b>	<b>B180900C</b>
.180	1.000	<b>B1801000</b>	<b>B1801000C</b>
.180	1.100	<b>B1801100</b>	<b>B1801100C</b>
.200	.400	<b>B200400</b>	<b>B200400C</b>
.200	.500	<b>B200500</b>	<b>B200500C</b>
.200	.600	<b>B200600</b>	<b>B200600C</b>
.200	.700	<b>B200700</b>	<b>B200700C</b>
.200	.800	<b>B200800</b>	<b>B200800C</b>
.200	.900	<b>B200900</b>	<b>B200900C</b>
.200	1.000	<b>B2001000</b>	<b>B2001000C</b>
.200	1.100	<b>B2001100</b>	<b>B2001100C</b>
.200	1.200	<b>B2001200</b>	<b>B2001200C</b>
.200	1.300	<b>B2001300</b>	<b>B2001300C</b>
<b>5/16" SHANK DIAMETER, 2 1/2" OVERALL LEN.</b>			
.230	.400	<b>B230400</b>	<b>B230400C</b>
.230	.500	<b>B230500</b>	<b>B230500C</b>
.230	.600	<b>B230600</b>	<b>B230600C</b>
.230	.700	<b>B230700</b>	<b>B230700C</b>
.230	.800	<b>B230800</b>	<b>B230800C</b>
.230	.900	<b>B230900</b>	<b>B230900C</b>
.230	1.000	<b>B2301000</b>	<b>B2301000C</b>
.230	1.150	<b>B2301150</b>	<b>B2301150C</b>
.230	1.200	<b>B2301200</b>	<b>B2301200C</b>
.230	1.250	<b>B2301250</b>	<b>B2301250C</b>
.230	1.400	<b>B2301400</b>	<b>B2301400C</b>
.230	1.500	<b>B2301500</b>	<b>B2301500C</b>
.230	1.600	<b>B2301600</b>	<b>B2301600C</b>
.290	.500	<b>B290500</b>	<b>B290500C</b>
.290	.600	<b>B290600</b>	<b>B290600C</b>
.290	.750	<b>B290750</b>	<b>B290750C</b>
.290	.900	<b>B290900</b>	<b>B290900C</b>
.290	1.000	<b>B2901000</b>	<b>B2901000C</b>
.290	1.100	<b>B2901100</b>	<b>B2901100C</b>
.290	1.250	<b>B2901250</b>	<b>B2901250C</b>
.290	1.350	<b>B2901350</b>	<b>B2901350C</b>
.290	1.500	<b>B2901500</b>	<b>B2901500C</b>
.290	1.600	<b>B2901600</b>	<b>B2901600C</b>
.290	1.750	<b>B2901750</b>	<b>B2901750C</b>

A MIN HOLE	B MAX DEPTH	UNCOATED ORDER #	COATED ORDER #
<b>3/8" SHANK DIAMETER, 2 1/2" OVERALL LEN.</b>			
.320	.500	<b>B320500</b>	<b>B320500C</b>
.320	.600	<b>B320600</b>	<b>B320600C</b>
.320	.750	<b>B320750</b>	<b>B320750C</b>
.320	.900	<b>B320900</b>	<b>B320900C</b>
.320	1.000	<b>B3201000</b>	<b>B3201000C</b>
.320	1.100	<b>B3201100</b>	<b>B3201100C</b>
.320	1.250	<b>B3201250</b>	<b>B3201250C</b>
.320	1.500	<b>B3201500</b>	<b>B3201500C</b>
.320	1.600	<b>B3201600</b>	<b>B3201600C</b>
.320	1.800	<b>B3201800</b>	<b>B3201800C</b>
<b>3/8" SHANK DIAMETER, 4" OVERALL LEN.</b>			
.320	2.000	<b>B3202000</b>	<b>B3202000C</b>
.320	2.500	<b>B3202500</b>	<b>B3202500C</b>
.320	3.000	<b>B3203000</b>	<b>B3203000C</b>
<b>3/8" SHANK DIAMETER, 2 1/2" OVERALL LEN.</b>			
.360	.500	<b>B360500</b>	<b>B360500C</b>
.360	.600	<b>B360600</b>	<b>B360600C</b>
.360	.750	<b>B360750</b>	<b>B360750C</b>
.360	.900	<b>B360900</b>	<b>B360900C</b>
.360	1.000	<b>B3601000</b>	<b>B3601000C</b>
.360	1.150	<b>B3601150</b>	<b>B3601150C</b>
.360	1.250	<b>B3601250</b>	<b>B3601250C</b>
.360	1.500	<b>B3601500</b>	<b>B3601500C</b>
.360	1.600	<b>B3601600</b>	<b>B3601600C</b>
.360	1.800	<b>B3601800</b>	<b>B3601800C</b>
<b>3/8" SHANK DIAMETER, 4" OVERALL LEN.</b>			
.360	2.000	<b>B3602000</b>	<b>B3602000C</b>
.360	2.500	<b>B3602500</b>	<b>B3602500C</b>
.360	3.000	<b>B3603000</b>	<b>B3603000C</b>
<b>1/2" SHANK DIAMETER, 3" OVERALL LEN.</b>			
.490	.750	<b>B490750</b>	<b>B490750C</b>
.490	1.000	<b>B4901000</b>	<b>B4901000C</b>
.490	1.250	<b>B4901250</b>	<b>B4901250C</b>
.490	1.500	<b>B4901500</b>	<b>B4901500C</b>
<b>1/2" SHANK DIAMETER, 4" OVERALL LEN.</b>			
.490	2.000	<b>B4902000</b>	<b>B4902000C</b>
.490	2.500	<b>B4902500</b>	<b>B4902500C</b>
.490	2.600	<b>B4902600</b>	<b>B4902600C</b>
.490	2.750	<b>B4902750</b>	<b>B4902750C</b>
<b>1/2" SHANK DIAMETER, 6" OVERALL LEN.</b>			
.490	3.000	<b>B4903000</b>	<b>B4903000C</b>
.490	3.500	<b>B4903500</b>	<b>B4903500C</b>
.490	4.000	<b>B4904000</b>	<b>B4904000C</b>
.490	4.500	<b>B4904500</b>	<b>B4904500C</b>

Left Hand Style Available in All Sizes.  
To Order Start the Item Number with "LH"

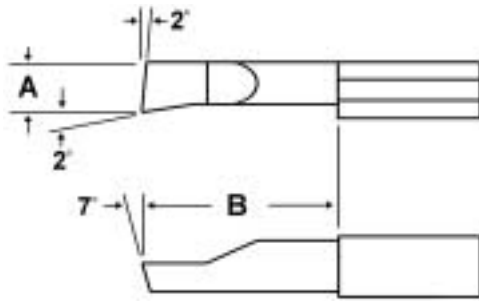
TOOL HOLDERS - SEE PAGE TEN



**SCSMC Super Compressed Sub-Micron Carbide**

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# BORING BARS - RADIAL RELIEF- SOLID CARBIDE



OVERALL LENGTH	A MIN HOLE	B MAX DEPTH	UNCOATED ORDER #	COATED ORDER #
<b>1/8" SHANK DIAMETER</b>				
1 1/2"	.060	1/8"	<b>BB61</b>	<b>BB61C</b>
1 1/2"	.060	1/4"	<b>BB62</b>	<b>BB62C</b>
1 1/2"	.060	3/8"	<b>BB63</b>	<b>BB63C</b>
1 1/2"	.060	1/2"	<b>BB64</b>	<b>BB64C</b>
1 1/2"	.075	1/8"	<b>BB71</b>	<b>BB71C</b>
1 1/2"	.075	1/4"	<b>BB72</b>	<b>BB72C</b>
1 1/2"	.075	3/8"	<b>BB73</b>	<b>BB73C</b>
1 1/2"	.075	1/2"	<b>BB74</b>	<b>BB74C</b>
1 1/2"	.090	1/8"	<b>BB91</b>	<b>BB91C</b>
1 1/2"	.090	1/4"	<b>BB92</b>	<b>BB92C</b>
1 1/2"	.090	3/8"	<b>BB93</b>	<b>BB93C</b>
1 1/2"	.090	1/2"	<b>BB94</b>	<b>BB94C</b>
1 1/2"	.090	5/8"	<b>BB95</b>	<b>BB95C</b>
1 1/2"	.105	1/4"	<b>BB102</b>	<b>BB102C</b>
1 1/2"	.105	3/8"	<b>BB103</b>	<b>BB103C</b>
1 1/2"	.105	1/2"	<b>BB104</b>	<b>BB104C</b>
1 1/2"	.105	5/8"	<b>BB105</b>	<b>BB105C</b>
1 1/2"	.120	1/4"	<b>BB122</b>	<b>BB122C</b>
1 1/2"	.120	3/8"	<b>BB123</b>	<b>BB123C</b>
1 1/2"	.120	1/2"	<b>BB124</b>	<b>BB124C</b>
1 1/2"	.120	5/8"	<b>BB125</b>	<b>BB125C</b>
1 1/2"	.120	3/4"	<b>BB126</b>	<b>BB126C</b>
<b>3/16" SHANK DIAMETER</b>				
1 1/2"	.155	3/8"	<b>BB153</b>	<b>BB153C</b>
1 1/2"	.155	1/2"	<b>BB154</b>	<b>BB154C</b>
1 1/2"	.155	5/8"	<b>BB155</b>	<b>BB155C</b>
1 1/2"	.155	3/4"	<b>BB156</b>	<b>BB156C</b>
2"	.155	1"	<b>BB158</b>	<b>BB158C</b>
1 1/2"	.185	3/8"	<b>BB183</b>	<b>BB183C</b>
1 1/2"	.185	1/2"	<b>BB184</b>	<b>BB184C</b>
1 1/2"	.185	5/8"	<b>BB185</b>	<b>BB185C</b>
1 1/2"	.185	3/4"	<b>BB186</b>	<b>BB186C</b>

OVERALL LENGTH	A MIN HOLE	B MAX DEPTH	UNCOATED ORDER #	COATED ORDER #
<b>3/16" SHANK DIAMETER</b>				
2"	.185	1"	<b>BB188</b>	<b>BB188C</b>
2"	.185	1 1/4"	<b>BB1812</b>	<b>BB1812C</b>
<b>1/4" SHANK DIAMETER</b>				
1 1/2"	.220	1/2"	<b>BB224</b>	<b>BB224C</b>
1 1/2"	.220	5/8"	<b>BB225</b>	<b>BB225C</b>
2"	.220	3/4"	<b>BB226</b>	<b>BB226C</b>
2"	.220	1"	<b>BB228</b>	<b>BB228C</b>
2 1/2"	.220	1 1/4"	<b>BB2212</b>	<b>BB2212C</b>
1 1/2"	.248	1/2"	<b>BB254</b>	<b>BB254C</b>
1 1/2"	.248	5/8"	<b>BB255</b>	<b>BB255C</b>
2"	.248	3/4"	<b>BB256</b>	<b>BB256C</b>
2"	.248	1"	<b>BB258</b>	<b>BB258C</b>
2 1/2"	.248	1 1/4"	<b>BB2512</b>	<b>BB2512C</b>
2 1/2"	.248	1 1/2"	<b>BB2514</b>	<b>BB2514C</b>
<b>5/16" SHANK DIAMETER</b>				
2"	.310	1/2"	<b>BB314</b>	<b>BB314C</b>
2"	.310	3/4"	<b>BB316</b>	<b>BB316C</b>
2 1/2"	.310	3/4"	<b>BB316L</b>	<b>BB316LC</b>
2 1/2"	.310	1"	<b>BB318</b>	<b>BB318C</b>
2 1/2"	.310	1 1/4"	<b>BB3112</b>	<b>BB3112C</b>
2 1/2"	.310	1 1/2"	<b>BB3114</b>	<b>BB3114C</b>
3"	.310	1 3/4"	<b>BB3116</b>	<b>BB3116C</b>
<b>3/8" SHANK DIAMETER</b>				
2"	.373	1/2"	<b>BB374</b>	<b>BB374C</b>
2"	.373	3/4"	<b>BB376</b>	<b>BB376C</b>
2 1/2"	.373	3/4"	<b>BB376L</b>	<b>BB376LC</b>
2 1/2"	.373	1"	<b>BB378</b>	<b>BB378C</b>
2 1/2"	.373	1 1/4"	<b>BB3712</b>	<b>BB3712C</b>
2 1/2"	.373	1 1/2"	<b>BB3714</b>	<b>BB3714C</b>
3"	.373	1 1/2"	<b>BB3714L</b>	<b>BB3714LC</b>
3"	.373	1 3/4"	<b>BB3716</b>	<b>BB3716C</b>
3"	.373	2"	<b>BB3718</b>	<b>BB3718C</b>

TOOL HOLDERS - SEE PAGE TEN

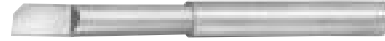
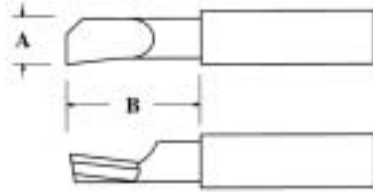


SCSMC For Greater Performance

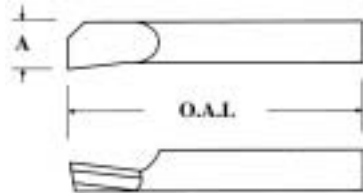
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# BORING BARS - HELICAL - SOLID CARBIDE

## Helical Back Rake



OVERALL LENGTH	A		WITHOUT FLAT		WITH FLAT	
	MIN HOLE	B MAX DEPTH	UNCOATED ORDER #	COATED ORDER #	UNCOATED ORDER #	COATED ORDER #
<i>1/8" SHANK DIAMETER</i>						
1 1/2"	.025	3/32"	<b>HB25</b>	<b>HB25C</b>	<b>HB25F</b>	<b>HB25FC</b>
1 1/2"	.027	1/8	<b>HB27</b>	<b>HB27C</b>	<b>HB27F</b>	<b>HB27FC</b>
1 1/2"	.031	5/32	<b>HB31</b>	<b>HB31C</b>	<b>HB31F</b>	<b>HB31FC</b>
1 1/2"	.031	3/16	<b>HB31L</b>	<b>HB31LC</b>	<b>HB31LF</b>	<b>HB31LFC</b>
1 1/2"	.036	5/32	<b>HB36</b>	<b>HB36C</b>	<b>HB36F</b>	<b>HB36FC</b>
1 1/2"	.036	1/4	<b>HB36L</b>	<b>HB36LC</b>	<b>HB36LF</b>	<b>HB36LFC</b>
1 1/2"	.042	1/4	<b>HB42</b>	<b>HB42C</b>	<b>HB42F</b>	<b>HB42FC</b>
1 1/2"	.042	5/16	<b>HB42L</b>	<b>HB42LC</b>	<b>HB42LF</b>	<b>HB42LFC</b>
1 1/2"	.052	5/16	<b>HB52</b>	<b>HB52C</b>	<b>HB52F</b>	<b>HB52FC</b>
1 1/2"	.057	5/16	<b>HB57</b>	<b>HB57C</b>	<b>HB57F</b>	<b>HB57FC</b>
1 1/2"	.060	3/8	<b>HB60</b>	<b>HB60C</b>	<b>HB60F</b>	<b>HB60FC</b>
1 1/2"	.060	1/2	<b>HB60L</b>	<b>HB60LC</b>	<b>HB60LF</b>	<b>HB60LFC</b>
1 1/2"	.070	7/16	<b>HB70</b>	<b>HB70C</b>	<b>HB70F</b>	<b>HB70FC</b>
1 1/2"	.080	1/2	<b>HB80</b>	<b>HB80C</b>	<b>HB80F</b>	<b>HB80FC</b>
1 1/2"	.085	1/2	<b>HB85</b>	<b>HB85C</b>	<b>HB85F</b>	<b>HB85FC</b>
1 1/2"	.090	1/2	<b>HB90</b>	<b>HB90C</b>	<b>HB90F</b>	<b>HB90FC</b>
1 1/2"	.090	5/8	<b>HB90L</b>	<b>HB90LC</b>	<b>HB90LF</b>	<b>HB90LFC</b>
1 1/2"	.100	9/16	<b>HB100</b>	<b>HB100C</b>	<b>HB100F</b>	<b>HB100FC</b>
2"	.100	5/8	<b>HB100L</b>	<b>HB100LC</b>	<b>HB100LF</b>	<b>HB100LFC</b>
1 1/2"	.110	9/16	<b>HB110</b>	<b>HB110C</b>	<b>HB110F</b>	<b>HB110FC</b>
2"	.110	5/8	<b>HB110L</b>	<b>HB110LC</b>	<b>HB110LF</b>	<b>HB110LFC</b>
1 1/2"	.120	5/8	<b>HB120</b>	<b>HB120C</b>	<b>HB120F</b>	<b>HB120FC</b>
2"	.120	5/8	<b>HB120L</b>	<b>HB120LC</b>	<b>HB120LF</b>	<b>HB120LFC</b>



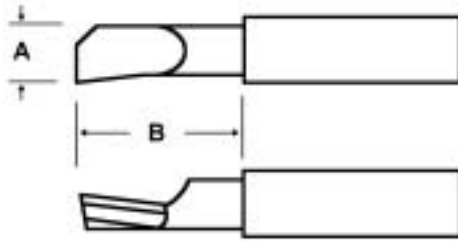
OVERALL LENGTH	A MIN HOLE	SHANK DIAMETER	UNCOATED ORDER #	COATED ORDER #
1 1/4"	.135	7/64"	<b>HB135</b>	<b>HB135C</b>
1 1/4"	.150	1/8	<b>HB150</b>	<b>HB150C</b>
2 1/4"	.150	1/8	<b>HB150L</b>	<b>HB150LC</b>
1 1/4"	.180	5/32	<b>HB180</b>	<b>HB180C</b>
1 1/2"	.180	5/32	<b>HB180L</b>	<b>HB180LC</b>
3"	.180	5/32	<b>HB180EL</b>	<b>HB180ELC</b>
1 1/2"	.210	3/16	<b>HB210</b>	<b>HB210C</b>
3"	.210	3/16	<b>HB210L</b>	<b>HB210LC</b>
1 1/2"	.240	7/32	<b>HB240</b>	<b>HB240C</b>
3"	.240	7/32	<b>HB240L</b>	<b>HB240LC</b>
2 1/2"	.300	1/4	<b>HB300</b>	<b>HB300C</b>
3 1/2"	.300	1/4	<b>HB300L</b>	<b>HB300LC</b>
3"	.360	5/16	<b>HB360</b>	<b>HB360C</b>
4 1/4"	.360	5/16	<b>HB360L</b>	<b>HB360LC</b>
3"	.480	7/16	<b>HB480</b>	<b>HB480C</b>
5 1/4"	.480	7/16	<b>HB480L</b>	<b>HB480LC</b>

TOOL HOLDERS - SEE PAGE TEN



**SCSMC Super Compressed Sub-Micron Carbide**

# BORING BARS - HELICAL - SOLID CARBIDE



"A" minimum bore diameter refers to the size hole that is produced when the tools are rotated on centerline. These tools are designed to be used for both mill and lathe applications.

*A MIN BORE	B MAX DEPTH	UNCOATED ORDER #	COATED ORDER #
<b>1/8" SHANK DIAMETER, 1-1/2" OVERALL LENGTH</b>			
.020	.062	<b>HB020062</b>	<b>HB020062C</b>
.025	.062	<b>HB025062</b>	<b>HB025062C</b>
.025	.125	<b>HB025125</b>	<b>HB025125C</b>
.030	.125	<b>HB030125</b>	<b>HB030125C</b>
.030	.187	<b>HB030187</b>	<b>HB030187C</b>
.035	.125	<b>HB035125</b>	<b>HB035125C</b>
.035	.187	<b>HB035187</b>	<b>HB035187C</b>
.040	.187	<b>HB040187</b>	<b>HB040187C</b>
.040	.250	<b>HB040250</b>	<b>HB040250C</b>
.050	.312	<b>HB050312</b>	<b>HB050312C</b>
.060	.375	<b>HB060375</b>	<b>HB060375C</b>
.070	.437	<b>HB070437</b>	<b>HB070437C</b>
.080	.500	<b>HB080500</b>	<b>HB080500C</b>
.090	.500	<b>HB090500</b>	<b>HB090500C</b>
.100	.562	<b>HB100562</b>	<b>HB100562C</b>
.120	.625	<b>HB120625</b>	<b>HB120625C</b>
.120	1.000	<b>HB1201000</b>	<b>HB1201000C</b>
<b>3/16" SHANK DIAMETER, 2" OVERALL LENGTH</b>			
.135	.750	<b>HB135750</b>	<b>HB135750C</b>
.135	1.000	<b>HB1351000</b>	<b>HB1351000C</b>
.150	1.000	<b>HB1501000</b>	<b>HB1501000C</b>
.150	1.250	<b>HB1501250</b>	<b>HB1501250C</b>
.180	1.000	<b>HB1801000</b>	<b>HB1801000C</b>
.180	1.250	<b>HB1801250</b>	<b>HB1801250C</b>
.180	1.500	<b>HB1801500</b>	<b>HB1801500C</b>

*A MIN BORE	B MAX DEPTH	UNCOATED ORDER #	COATED ORDER #
<b>1/4" SHANK DIAMETER, 2-1/2" OVERALL LENGTH</b>			
.210	1.000	<b>HB2101000</b>	<b>HB2101000C</b>
.210	1.250	<b>HB2101250</b>	<b>HB2101250C</b>
.210	1.500	<b>HB2101500</b>	<b>HB2101500C</b>
.240	1.000	<b>HB2401000</b>	<b>HB2401000C</b>
.240	1.500	<b>HB2401500</b>	<b>HB2401500C</b>
.240	1.750	<b>HB2401750</b>	<b>HB2401750C</b>
<b>5/16" SHANK DIAMETER, 2-1/2" OVERALL LENGTH</b>			
.300	1.000	<b>HB3001000</b>	<b>HB3001000C</b>
.300	1.500	<b>HB3001500</b>	<b>HB3001500C</b>
.300	1.750	<b>HB3001750</b>	<b>HB3001750C</b>
<b>3/8" SHANK DIAMETER, 2-1/2" OVERALL LENGTH</b>			
.360	1.000	<b>HB3601000</b>	<b>HB3601000C</b>
.360	1.500	<b>HB3601500</b>	<b>HB3601500C</b>
.360	1.750	<b>HB3601750</b>	<b>HB3601750C</b>
<b>3/8" SHANK DIAMETER, 4" OVERALL LENGTH</b>			
.360	2.000	<b>HB3602000</b>	<b>HB3602000C</b>
.360	2.250	<b>HB3602250</b>	<b>HB3602250C</b>
.360	2.500	<b>HB3602500</b>	<b>HB3602500C</b>
<b>1/2" SHANK DIAMETER, 3" OVERALL LENGTH</b>			
.480	1.500	<b>HB4801500</b>	<b>HB4801500C</b>
.480	2.000	<b>HB4802000</b>	<b>HB4802000C</b>
<b>1/2" SHANK DIAMETER, 4" OVERALL LENGTH</b>			
.480	2.500	<b>HB4802500</b>	<b>HB4802500C</b>
.480	3.000	<b>HB4803000</b>	<b>HB4803000C</b>
<b>1/2" SHANK DIAMETER, 6" OVERALL LENGTH</b>			
.480	3.500	<b>HB4803500</b>	<b>HB4803500C</b>
.480	4.000	<b>HB4804000</b>	<b>HB4804000C</b>
.480	4.500	<b>HB4804500</b>	<b>HB4804500C</b>

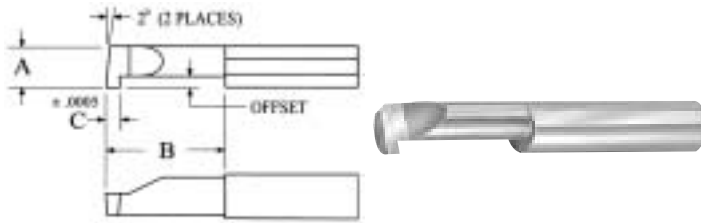
TOOL HOLDERS - SEE PAGE TEN



SCSMC For Higher Production

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# GROOVE TOOL - RETAINING RING - SOLID CARBIDE



A MIN HOLE	B MAX DEPTH	C GROOVE WIDTH	UNCOATED ORDER #	COATED ORDER #
<b>1/8" SHANK DIAMETER, .020 OFFSET, 1 1/2" OVERALL LENGTH</b>				
.060	3/16"	.032	GT031-3	GT031-3C
.060	1/4	.032	GT031-4	GT031-4C
.060	3/8	.032	GT031-6	GT031-6C
<b>1/8" SHANK DIAMETER, .030 OFFSET, 1 1/2" OVERALL LENGTH</b>				
.090	1/4"	.046	GT045-4	GT045-4C
.090	3/8	.046	GT045-6	GT045-6C
.090	1/2	.046	GT045-8	GT045-8C
<b>1/8" SHANK DIAMETER, .040 OFFSET, 1 1/2" OVERALL LENGTH</b>				
.120	1/4"	.062	GT061-4	GT061-4C
.120	3/8	.062	GT061-6	GT061-6C
.120	1/2	.062	GT061-8	GT061-8C
.120	5/8	.062	GT061-10	GT061-10C
<b>3/16" SHANK DIAMETER, .050 OFFSET, 2" OVERALL LENGTH</b>				
.187	1/4"	.0175	GT017K-4	GT017K-4C
.187	3/8	.0175	GT017K-6	GT017K-6C
.187	1/2	.0175	GT017K-8	GT017K-8C
.187	5/8	.0175	GT017K-10	GT017K-10C
.187	1/4	.0255	GT025K-4	GT025K-4C
.187	3/8	.0255	GT025K-6	GT025K-6C
.187	1/2	.0255	GT025K-8	GT025K-8C
.187	5/8	.0255	GT025K-10	GT025K-10C
.187	1/4	.0305	GT030K-4	GT030K-4C
.187	3/8	.0305	GT030K-6	GT030K-6C
.187	1/2	.0305	GT030K-8	GT030K-8C
.187	5/8	.0305	GT030K-10	GT030K-10C
.187	1/4	.063	GT062K-4	GT062K-4C
.187	3/8	.063	GT062K-6	GT062K-6C
.187	1/2	.063	GT062K-8	GT062K-8C
.187	5/8	.063	GT062K-10	GT062K-10C
<b>1/4" SHANK DIAMETER, .060 OFFSET, 2 1/2" OVERALL LENGTH</b>				
.250	1/4"	.0175	GT017Q-4	GT017Q-4C
.250	3/8	.0175	GT017Q-6	GT017Q-6C
.250	1/2	.0175	GT017Q-8	GT017Q-8C
.250	5/8	.0175	GT017Q-10	GT017Q-10C
.250	1/4	.0255	GT025Q-4	GT025Q-4C
.250	3/8	.0255	GT025Q-6	GT025Q-6C
.250	1/2	.0255	GT025Q-8	GT025Q-8C
.250	5/8	.0255	GT025Q-10	GT025Q-10C
.250	1/4	.0305	GT030Q-4	GT030Q-4C
.250	3/8	.0305	GT030Q-6	GT030Q-6C
.250	1/2	.0305	GT030Q-8	GT030Q-8C
.250	5/8	.0305	GT030Q-10	GT030Q-10C
.250	1/4	.093	GT092Q-4	GT092Q-4C
.250	3/8	.093	GT092Q-6	GT092Q-6C
.250	1/2	.093	GT092Q-8	GT092Q-8C
.250	5/8	.093	GT092Q-10	GT092Q-10C
<b>5/16" SHANK DIAMETER, .110 OFFSET, 2 1/2" OVERALL LENGTH</b>				
.312	1/4"	.0335	GT033-4	GT033-4C
.312	3/8	.0335	GT033-6	GT033-6C
.312	1/2	.0335	GT033-8	GT033-8C
.312	3/4	.0335	GT033-12	GT033-12C
.312	1/4	.0385	GT038-4	GT038-4C
.312	3/8	.0385	GT038-6	GT038-6C
.312	1/2	.0385	GT038-8	GT038-8C
.312	3/4	.0385	GT038-12	GT038-12C
.312	3/8	.125	GT124-6	GT124-6C
.312	1/2	.125	GT124-8	GT124-8C
.312	3/4	.125	GT124-12	GT124-12C
.312	1	.125	GT124-16	GT124-16C

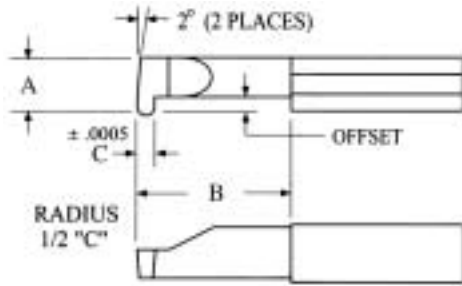
ANY GROOVE WIDTH REDUCED - 48 HOURS

A MIN HOLE	B MAX DEPTH	C GROOVE WIDTH	UNCOATED ORDER #	COATED ORDER #
<b>3/8" SHANK DIAMETER, .110 OFFSET, 2 1/2" OVERALL LENGTH</b>				
.375	1/4"	.040	GT039-4	GT039-4C
.375	3/8	.040	GT039-6	GT039-6C
.375	1/2	.040	GT039-8	GT039-8C
.375	3/4	.040	GT039-12	GT039-12C
.375	1	.040	GT039-16	GT039-16C
.375	1 1/4	.040	GT039-20	GT039-20C
.375	1/4	.047	GT046-4	GT046-4C
.375	3/8	.047	GT046-6	GT046-6C
.375	1/2	.047	GT046-8	GT046-8C
.375	3/4	.047	GT046-12	GT046-12C
.375	1	.047	GT046-16	GT046-16C
.375	1 1/4	.047	GT046-20	GT046-20C
.375	1/4	.056	GT055-4	GT055-4C
.375	3/8	.056	GT055-6	GT055-6C
.375	1/2	.056	GT055-8	GT055-8C
.375	3/4	.056	GT055-12	GT055-12C
.375	1	.056	GT055-16	GT055-16C
.375	1 1/4	.056	GT055-20	GT055-20C
.375	1/4	.063	GT062-4	GT062-4C
.375	3/8	.063	GT062-6	GT062-6C
.375	1/2	.063	GT062-8	GT062-8C
.375	3/4	.063	GT062-12	GT062-12C
.375	1	.063	GT062-16	GT062-16C
.375	1 1/4	.063	GT062-20	GT062-20C
.375	1/4	.070	GT069-4	GT069-4C
.375	3/8	.070	GT069-6	GT069-6C
.375	1/2	.070	GT069-8	GT069-8C
.375	3/4	.070	GT069-12	GT069-12C
.375	1	.070	GT069-16	GT069-16C
.375	1 1/4	.070	GT069-20	GT069-20C
.375	1/4	.088	GT087-4	GT087-4C
.375	3/8	.088	GT087-6	GT087-6C
.375	1/2	.088	GT087-8	GT087-8C
.375	3/4	.088	GT087-12	GT087-12C
.375	1	.088	GT087-16	GT087-16C
.375	1 1/4	.088	GT087-20	GT087-20C
.375	3/8	.127	GT126-6	GT126-6C
.375	1/2	.127	GT126-8	GT126-8C
.375	3/4	.127	GT126-12	GT126-12C
.375	1	.127	GT126-16	GT126-16C
.375	1 1/4	.127	GT126-20	GT126-20C
.375	3/8	.158	GT157-6	GT157-6C
.375	1/2	.158	GT157-8	GT157-8C
.375	3/4	.158	GT157-12	GT157-12C
.375	1	.158	GT157-16	GT157-16C
.375	1 1/4	.158	GT157-20	GT157-20C
<b>1/2" SHANK DIAMETER, .160 OFFSET, 3" OVERALL LENGTH</b>				
.500	1/2"	.094	GT093-8	GT093-8C
.500	3/4	.094	GT093-12	GT093-12C
.500	1	.094	GT093-16	GT093-16C
.500	1 1/4	.094	GT093-20	GT093-20C
.500	1 1/2	.094	GT093-24	GT093-24C
.500	1/2	.126	GT125-8	GT125-8C
.500	3/4	.126	GT125-12	GT125-12C
.500	1	.126	GT125-16	GT125-16C
.500	1 1/4	.126	GT125-20	GT125-20C
.500	1 1/2	.126	GT125-24	GT125-24C
.500	1/2	.157	GT156-8	GT156-8C
.500	3/4	.157	GT156-12	GT156-12C
.500	1	.157	GT156-16	GT156-16C
.500	1 1/4	.157	GT156-20	GT156-20C
.500	1 1/2	.157	GT156-24	GT156-24C
.500	1/2	.188	GT187-8	GT187-8C
.500	3/4	.188	GT187-12	GT187-12C
.500	1	.188	GT187-16	GT187-16C
.500	1 1/4	.188	GT187-20	GT187-20C
.500	1 1/2	.188	GT187-24	GT187-24C
.500	1/2	.251	GT250-8	GT250-8C
.500	3/4	.251	GT250-12	GT250-12C
.500	1	.251	GT250-16	GT250-16C
.500	1 1/4	.251	GT250-20	GT250-20C
.500	1 1/2	.251	GT250-24	GT250-24C

TOOL HOLDERS - SEE PAGE TEN



# GROOVE TOOLS - FULL RADIUS - SOLID CARBIDE



A MIN HOLE	B MAX DEPTH	C GROOVE WIDTH	UNCOATED ORDER #	COATED ORDER #
<b>3/16" SHANK DIAMETER, .050 OFFSET, 2" OVERALL LENGTH</b>				
.187	1/4"	.0175	GFR017K-4	GFR017K-4C
.187	3/8	.0175	GFR017K-6	GFR017K-6C
.187	1/2	.0175	GFR017K-8	GFR017K-8C
.187	5/8	.0175	GFR017K-10	GFR017K-10C
.187	1/4	.0255	GFR025K-4	GFR025K-4C
.187	3/8	.0255	GFR025K-6	GFR025K-6C
.187	1/2	.0255	GFR025K-8	GFR025K-8C
.187	5/8	.0255	GFR025K-10	GFR025K-10C
.187	1/4"	.0305	GFR030K-4	GFR030K-4C
.187	3/8	.0305	GFR030K-6	GFR030K-6C
.187	1/2	.0305	GFR030K-8	GFR030K-8C
.187	5/8	.0305	GFR030K-10	GFR030K-10C
<b>1/4" SHANK DIAMETER, .060 OFFSET, 2 1/2" OVERALL LENGTH</b>				
.250	1/4"	.0175	GFR017Q-4	GFR017Q-4C
.250	3/8	.0175	GFR017Q-6	GFR017Q-6C
.250	1/2	.0175	GFR017Q-8	GFR017Q-8C
.250	5/8	.0175	GFR017Q-10	GFR017Q-10C
.250	1/4	.0255	GFR025Q-4	GFR025Q-4C
.250	3/8	.0255	GFR025Q-6	GFR025Q-6C
.250	1/2	.0255	GFR025Q-8	GFR025Q-8C
.250	5/8	.0255	GFR025Q-10	GFR025Q-10C
.250	1/4	.0305	GFR030Q-4	GFR030Q-4C
.250	3/8	.0305	GFR030Q-6	GFR030Q-6C
.250	1/2	.0305	GFR030Q-8	GFR030Q-8C
.250	5/8	.0305	GFR030Q-10	GFR030Q-10C
<b>5/16" SHANK DIAMETER, .110 OFFSET, 2 1/2" OVERALL LENGTH</b>				
.312	1/4"	.0335	GFR033-4	GFR033-4C
.312	3/8	.0335	GFR033-6	GFR033-6C
.312	1/2	.0335	GFR033-8	GFR033-8C
.312	3/4	.0335	GFR033-12	GFR033-12C
.312	1/4	.0385	GFR038-4	GFR038-4C
.312	3/8	.0385	GFR038-6	GFR038-6C
.312	1/2	.0385	GFR038-8	GFR038-8C
.312	3/4	.0385	GFR038-12	GFR038-12C
<b>3/8" SHANK DIAMETER, .110 OFFSET, 2 1/2" OVERALL LENGTH</b>				
.375	1/4"	.040	GFR039-4	GFR039-4C
.375	3/8	.040	GFR039-6	GFR039-6C
.375	1/2	.040	GFR039-8	GFR039-8C
.375	3/4	.040	GFR039-12	GFR039-12C
.375	1	.040	GFR039-16	GFR039-16C
.375	1 1/4	.040	GFR039-20	GFR039-20C
.375	1/4	.047	GFR046-4	GFR046-4C
.375	3/8	.047	GFR046-6	GFR046-6C
.375	1/2	.047	GFR046-8	GFR046-8C
.375	3/4	.047	GFR046-12	GFR046-12C
.375	1	.047	GFR046-16	GFR046-16C
.375	1 1/4	.047	GFR046-20	GFR046-20C
.375	1/4	.056	GFR055-4	GFR055-4C
.375	3/8	.056	GFR055-6	GFR055-6C
.375	1/2	.056	GFR055-8	GFR055-8C

A MIN HOLE	B MAX DEPTH	C GROOVE WIDTH	UNCOATED ORDER #	COATED ORDER #
<b>3/8" SHANK DIAMETER, .110 OFFSET, 2 1/2" OVERALL LENGTH</b>				
.375	3/4"	.056	GFR055-12	GFR055-12C
.375	1	.056	GFR055-16	GFR055-16C
.375	1 1/4	.056	GFR055-20	GFR055-20C
.375	1/4	.063	GFR062-4	GFR062-4C
.375	3/8	.063	GFR062-6	GFR062-6C
.375	1/2	.063	GFR062-8	GFR062-8C
.375	3/4	.063	GFR062-12	GFR062-12C
.375	1	.063	GFR062-16	GFR062-16C
.375	1 1/4	.063	GFR062-20	GFR062-20C
.375	1/4	.070	GFR069-4	GFR069-4C
.375	3/8	.070	GFR069-6	GFR069-6C
.375	1/2	.070	GFR069-8	GFR069-8C
.375	3/4	.070	GFR069-12	GFR069-12C
.375	1	.070	GFR069-16	GFR069-16C
.375	1 1/4	.070	GFR069-20	GFR069-20C
.375	1/4	.088	GFR087-4	GFR087-4C
.375	3/8	.088	GFR087-6	GFR087-6C
.375	1/2	.088	GFR087-8	GFR087-8C
.375	3/4	.088	GFR087-12	GFR087-12C
.375	1	.088	GFR087-16	GFR087-16C
.375	1 1/4	.088	GFR087-20	GFR087-20C
.375	3/8	.125	GFR124-6	GFR124-6C
.375	1/2	.125	GFR124-8	GFR124-8C
.375	3/4	.125	GFR124-12	GFR124-12C
.375	1	.125	GFR124-16	GFR124-16C
.375	1 1/4	.125	GFR124-20	GFR124-20C
<b>1/2" SHANK DIAMETER, .160 OFFSET, 3" OVERALL LENGTH</b>				
.500	1/2"	.094	GFR093-8	GFR093-8C
.500	3/4	.094	GFR093-12	GFR093-12C
.500	1	.094	GFR093-16	GFR093-16C
.500	1 1/4	.094	GFR093-20	GFR093-20C
.500	1 1/2	.094	GFR093-24	GFR093-24C
.500	1/2	.126	GFR125-8	GFR125-8C
.500	3/4	.126	GFR125-12	GFR125-12C
.500	1	.126	GFR125-16	GFR125-16C
.500	1 1/4	.126	GFR125-20	GFR125-20C
.500	1 1/2	.126	GFR125-24	GFR125-24C
.500	1/2	.157	GFR156-8	GFR156-8C
.500	3/4	.157	GFR156-12	GFR156-12C
.500	1	.157	GFR156-16	GFR156-16C
.500	1 1/4	.157	GFR156-20	GFR156-20C
.500	1 1/2	.157	GFR156-24	GFR156-24C
.500	1/2	.188	GFR187-8	GFR187-8C
.500	3/4	.188	GFR187-12	GFR187-12C
.500	1	.188	GFR187-16	GFR187-16C
.500	1 1/4	.188	GFR187-20	GFR187-20C
.500	1 1/2	.188	GFR187-24	GFR187-24C
.500	1/2	.251	GFR250-8	GFR250-8C
.500	3/4	.251	GFR250-12	GFR250-12C
.500	1	.251	GFR250-16	GFR250-16C
.500	1 1/4	.251	GFR250-20	GFR250-20C
.500	1 1/2	.251	GFR250-24	GFR250-24C

TOOL HOLDERS - SEE PAGE TEN

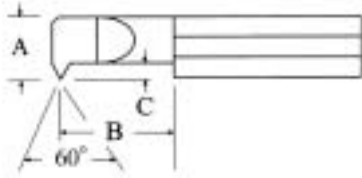


**SCSMC To Increase Feeds and Speeds**

(805) 584-9495 Fax (805) 584-9629 [www.sct-usa.com](http://www.sct-usa.com) [sales@sct-usa.com](mailto:sales@sct-usa.com)

# THREADING TOOLS and "O" RING GROOVE TOOLS - SOLID CARBIDE

## Threading Tools



A MIN HOLE	B MAX DEPTH	C MIN OFFSET	RECOM- MENDED T.P.I.*	UNCOATED ORDER #	COATED ORDER #
<b>1/8" SHANK DIAMETER, 1 1/2" OVERALL LENGTH</b>					
.040	.080	.013	56 to 80	<b>TT040080</b>	<b>TT040080C</b>
.040	.100	.013	56 to 80	<b>TT040100</b>	<b>TT040100C</b>
.040	.130	.013	56 to 80	<b>TT040130</b>	<b>TT040130C</b>
.050	.100	.017	48 to 80	<b>TT050100</b>	<b>TT050100C</b>
.050	.150	.017	48 to 80	<b>TT050150</b>	<b>TT050150C</b>
.050	.200	.017	48 to 80	<b>TT050200</b>	<b>TT050200C</b>
.060	.150	.020	40 to 80	<b>TT060150</b>	<b>TT060150C</b>
.060	.200	.020	40 to 80	<b>TT060200</b>	<b>TT060200C</b>
.060	.250	.020	40 to 80	<b>TT060250</b>	<b>TT060250C</b>
.060	.300	.020	40 to 80	<b>TT060300</b>	<b>TT060300C</b>
.075	.200	.020	36 to 72	<b>TT075200</b>	<b>TT075200C</b>
.075	.300	.020	36 to 72	<b>TT075300</b>	<b>TT075300C</b>
.075	.400	.020	36 to 72	<b>TT075400</b>	<b>TT075400C</b>
.090	.200	.025	32 to 64	<b>TT090200</b>	<b>TT090200C</b>
.090	.300	.025	32 to 64	<b>TT090300</b>	<b>TT090300C</b>
.090	.400	.025	32 to 64	<b>TT090400</b>	<b>TT090400C</b>
.090	.500	.025	32 to 64	<b>TT090500</b>	<b>TT090500C</b>
<b>3/16" SHANK DIAMETER, 2" OVERALL LENGTH</b>					
.120	.250	.030	24 to 56	<b>TT120250</b>	<b>TT120250C</b>
.120	.400	.030	24 to 56	<b>TT120400</b>	<b>TT120400C</b>
.120	.600	.030	24 to 56	<b>TT120600</b>	<b>TT120600C</b>
.120	.750	.030	24 to 56	<b>TT120750</b>	<b>TT120750C</b>
.150	.350	.035	20 to 56	<b>TT150350</b>	<b>TT150350C</b>
.150	.500	.035	20 to 56	<b>TT150500</b>	<b>TT150500C</b>
.150	.750	.035	20 to 56	<b>TT150750</b>	<b>TT150750C</b>
<b>1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
.180	.350	.040	18 to 56	<b>TT180350</b>	<b>TT180350C</b>
.180	.500	.040	18 to 56	<b>TT180500</b>	<b>TT180500C</b>
.180	.750	.040	18 to 56	<b>TT180750</b>	<b>TT180750C</b>
.180	1.000	.040	18 to 56	<b>TT1801000</b>	<b>TT1801000C</b>

A MIN HOLE	B MAX DEPTH	C MIN OFFSET	RECOM- MENDED T.P.I.*	UNCOATED ORDER #	COATED ORDER #
<b>1/4" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
.200	.400	.045	16 to 40	<b>TT200400</b>	<b>TT200400C</b>
.200	.600	.045	16 to 40	<b>TT200600</b>	<b>TT200600C</b>
.200	.800	.045	16 to 40	<b>TT200800</b>	<b>TT200800C</b>
.200	1.000	.045	16 to 40	<b>TT2001000</b>	<b>TT2001000C</b>
<b>5/16" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
.230	.400	.055	14 to 40	<b>TT230400</b>	<b>TT230400C</b>
.230	.600	.055	14 to 40	<b>TT230600</b>	<b>TT230600C</b>
.230	.750	.055	14 to 40	<b>TT230750</b>	<b>TT230750C</b>
.230	1.000	.055	14 to 40	<b>TT2301000</b>	<b>TT2301000C</b>
.230	1.250	.055	14 to 40	<b>TT2301250</b>	<b>TT2301250C</b>
.290	.500	.070	12 to 40	<b>TT290500</b>	<b>TT290500C</b>
.290	.750	.070	12 to 40	<b>TT290750</b>	<b>TT290750C</b>
.290	1.000	.070	12 to 40	<b>TT2901000</b>	<b>TT2901000C</b>
.290	1.250	.070	12 to 40	<b>TT2901250</b>	<b>TT2901250C</b>
.290	1.500	.070	12 to 40	<b>TT2901500</b>	<b>TT2901500C</b>
<b>3/8" SHANK DIAMETER, 2 1/2" OVERALL LENGTH</b>					
.320	.500	.075	10 to 32	<b>TT320500</b>	<b>TT320500C</b>
.320	.750	.075	10 to 32	<b>TT320750</b>	<b>TT320750C</b>
.320	1.000	.075	10 to 32	<b>TT3201000</b>	<b>TT3201000C</b>
.320	1.250	.075	10 to 32	<b>TT3201250</b>	<b>TT3201250C</b>
.320	1.500	.075	10 to 32	<b>TT3201500</b>	<b>TT3201500C</b>
.360	.500	.085	8 to 32	<b>TT360500</b>	<b>TT360500C</b>
.360	.750	.085	8 to 32	<b>TT360750</b>	<b>TT360750C</b>
.360	1.000	.085	8 to 32	<b>TT3601000</b>	<b>TT3601000C</b>
.360	1.250	.085	8 to 32	<b>TT3601250</b>	<b>TT3601250C</b>
.360	1.800	.085	8 to 32	<b>TT3601800</b>	<b>TT3601800C</b>
<b>1/2" SHANK DIAMETER, 3" OVERALL LENGTH</b>					
.490	.750	.120	8 to 32	<b>TT490750</b>	<b>TT490750C</b>
.490	1.500	.120	8 to 32	<b>TT4901500</b>	<b>TT4901500C</b>
.490	2.000	.120	8 to 32	<b>TT4902000</b>	<b>TT4902000C</b>

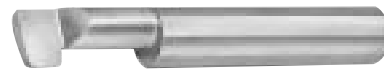
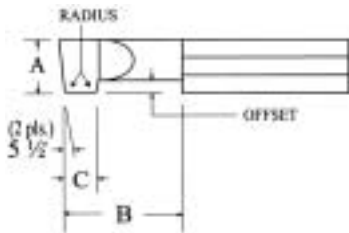
TOOL HOLDERS - SEE PAGE TEN

\*THREADS PER INCH

Left Hand Style Available in All Sizes.

To Order Start the Item Number with "LH"

## "O" Ring Groove Tools

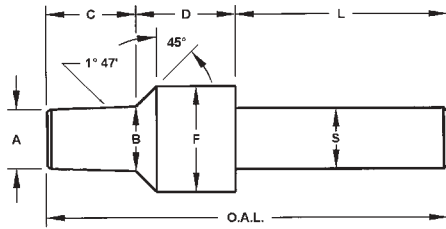


A MIN HOLE	B MAX DEPTH	C GROOVE WIDTH	RADIUS	UNCOATED ORDER #	COATED ORDER #
<b>1/4" SHANK DIAMETER, .110 OFFSET, 2 1/2" OVERALL LENGTH</b>					
.250	1/2"	.097	.015	<b>GOR096-8</b>	<b>GOR096-8C</b>
.250	9/16	.142	.040	<b>GOR141-9</b>	<b>GOR141-9C</b>
.250	5/8	.145	.040	<b>GOR144-10</b>	<b>GOR144-10C</b>

A MIN HOLE	B MAX DEPTH	C GROOVE WIDTH	RADIUS	UNCOATED ORDER #	COATED ORDER #
<b>3/8" SHANK DIAMETER, .125 OFFSET, 2 1/2" OVERALL LENGTH</b>					
.375	3/4"	.175	.015	<b>GOR174-12</b>	<b>GOR174-12C</b>
.375	13/16	.209	.040	<b>GOR208-13</b>	<b>GOR208-13C</b>
.375	15/16	.242	.040	<b>GOR241-15</b>	<b>GOR241-15C</b>

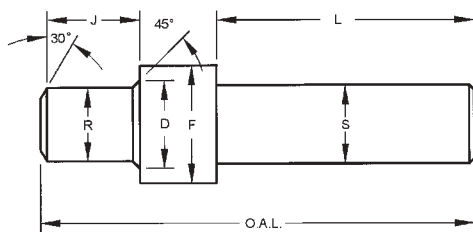
# TAPERED PIPE REAMER – BRITISH PARALLEL PIPE – PORT TOOLS

## Tapered Pipe Reamer



A	B	C	D	F	L	S	O.A.L.	THREAD	ORDER #
.320	.347	.470	.625	.625	1.50	.500	2.60	1/8-27NPT	PRSS-01
.409	.450	.655	.750	.750	1.50	.500	2.91	1/4-18NPT	PRSS-02
.543	.586	.690	.750	.875	2.00	.500	3.44	3/8-18NPT	PRSS-03
.670	.725	.875	1.000	1.000	2.00	.500	3.88	1/2-14NPT	PRSS-04
.882	.937	.875	1.250	1.250	2.50	1.000	4.62	3/4-14NPT	PRSS-05
1.107	1.173	1.060	1.500	1.500	2.50	1.000	5.06	1-11.5NPT	PRSS-06
1.448	1.518	1.125	1.500	1.875	3.00	1.250	5.62	1 1/4-11.5NPT	PRSS-07
1.687	1.757	1.125	1.750	2.125	3.00	1.250	5.88	1 1/2-11.5NPT	PRSS-08
2.154	2.230	1.220	2.000	2.625	3.00	1.250	6.22	2-11.5NPT	PRSS-09
2.561	2.670	1.750	2.000	3.125	3.00	1.250	6.75	2 1/2-8NPT	PRSS-10
3.180	3.296	1.875	2.000	3.750	3.00	1.250	6.88	3-8NPT	PRSS-11

## British Standard Parallel Pipe



D	F	J	L	R	S	O.A.L.	THREAD	ORDER #
.398	.719	.565	2.00	.345	.500	3.62	1/8 BSPP	PT-BSPP-1/8
.533	.938	.683	2.00	.459	.500	3.62	1/4 BSPP	PT-BSPP-1/4
.671	1.063	.683	2.00	.597	.500	3.62	3/8 BSPP	PT-BSPP-3/8
.840	1.250	.801	2.00	.741	.750	3.62	1/2 BSPP	PT-BSPP-1/2
1.055	1.500	.880	2.50	.958	.750	4.12	3/4 BSPP	PT-BSPP-3/4
1.325	1.875	.998	2.50	1.201	1.000	4.12	1.0 BSPP	PT-BSPP-1.0
1.665	2.313	1.078	2.50	1.541	1.000	4.12	1 1/4 BSPP	PT-BSPP-1 1/4
1.897	2.563	1.078	2.50	1.774	1.000	4.38	1 1/2 BSPP	PT-BSPP-1 1/2

MS21921 - MS21922 - MS20819 - BACD2036 - BACU24AB & AN818 — Port Tools Also Available.

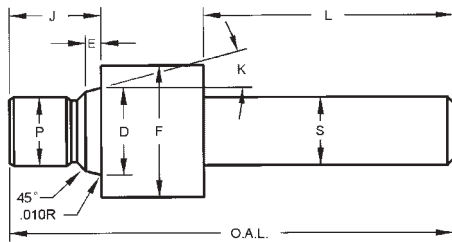


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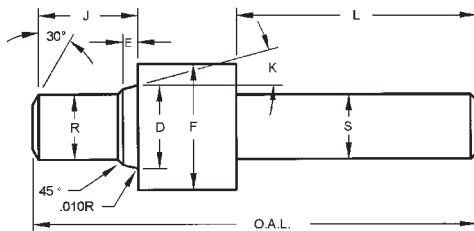
# MS16142 (SAEJ1926) (SAEJ514) – PORT TOOLS – CARBIDE TIPPED

## MS16142-S (SAEJ1926) (SAEJ514) O-Ring Boss – Solid Pilot



K	D	E	F	P	J	L	S	O.A.L.	TUBE	THREAD	ORDER #
12	.3605	.082	.682	.270	.430	2.00	.500	3.00	.125	.3125-24UNF-2B	MS16142-2S
12	.4235	.082	.760	.331	.470	2.00	.500	3.00	.188	.375-24UNF-2B	MS16142-3S
12	.4895	.101	.838	.385	.520	2.00	.500	3.12	.250	.4375-20UNF-2B	MS16142-4S
12	.5525	.101	.916	.448	.560	2.00	.500	3.12	.312	.500-20UNF-2B	MS16142-5S
12	.6185	.105	.979	.504	.600	2.00	.500	3.25	.375	.5625-18UNF-2B	MS16142-6S
15	.8135	.108	1.198	.685	.660	2.12	.750	3.57	.500	.750-16UNF-2B	MS16142-8S
15	.9445	.108	1.354	.801	.750	2.12	.750	3.66	.625	.875-14UNF-2B	MS16142-10S
15	1.1505	.138	1.635	.975	.800	2.12	.750	3.75	.750	1.0625-12UN-2B	MS16142-12S
15	1.2755	.138	1.775	1.101	.800	2.25	1.000	4.00	.875	1.1875-12UN-2B	MS16142-14S
15	1.4005	.138	1.920	1.225	.850	2.25	1.000	4.05	1.000	1.3125-12UN-2B	MS16142-16S
15	1.7155	.140	2.280	1.537	.900	2.25	1.000	4.20	1.250	1.625-12UN-2B	MS16142-20S
15	1.9645	.140	2.570	1.787	.900	2.25	1.000	4.20	1.500	1.875-12UN-2B	MS16142-24S
15	2.5895	.140	3.490	2.412	.950	2.50	1.250	4.60	2.000	2.500-12UN-2B	MS16142-32S

## MS16142-R (SAEJ1926) (SAEJ514) O-Ring Boss – Reamer



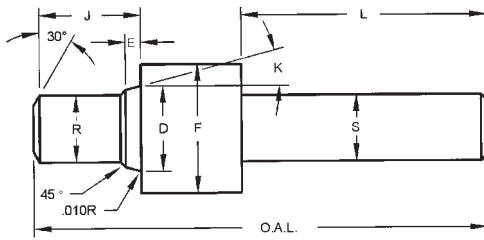
K	D	E	F	R	J	L	S	O.A.L.	TUBE	THREAD	ORDER #	COATED ORDER #
12	.3605	.082	.682	.271	.479	1.75	.500	3.00	.125	.3125-24UNF-2B	MS16142-2R	MS16142-2RC
12	.4235	.082	.760	.333	.479	1.75	.500	3.00	.188	.375-24UNF-2B	MS16142-3R	MS16142-3RC
12	.4895	.101	.838	.386	.558	1.88	.500	3.12	.250	.4375-20UNF-2B	MS16142-4R	MS16142-4RC
12	.5525	.101	.916	.449	.558	1.88	.500	3.12	.312	.500-20UNF-2B	MS16142-5R	MS16142-5RC
12	.6185	.105	.979	.506	.620	1.88	.500	3.38	.375	.5625-18UNF-2B	MS16142-6R	MS16142-6RC
15	.8135	.108	1.198	.686	.699	2.12	.750	3.70	.500	.750-16UNF-2B	MS16142-8R	MS16142-8RC
15	.9445	.108	1.354	.802	.792	2.12	.750	3.80	.625	.875-14UNF-2B	MS16142-10R	MS16142-10RC
15	1.1505	.138	1.635	.976	.917	2.12	.750	3.94	.750	1.0625-12UN-2B	MS16142-12R	MS16142-12RC
15	1.2755	.138	1.775	1.102	.917	2.25	1.000	4.21	.875	1.1875-12UN-2B	MS16142-14R	MS16142-14RC
15	1.4005	.138	1.920	1.226	.917	2.25	1.000	4.25	1.000	1.3125-12UN-2B	MS16142-16R	MS16142-16RC
15	1.7155	.140	2.280	1.538	.917	2.25	1.000	4.35	1.250	1.625-12UN-2B	MS16142-20R	MS16142-20RC
15	1.9645	.140	2.570	1.788	.917	2.25	1.000	4.35	1.500	1.875-12UN-2B	MS16142-24R	MS16142-24RC
15	2.5895	.140	3.490	2.413	.917	2.50	1.250	5.15	2.000	2.500-12UN-2B	MS16142-32R	MS16142-32RC

MS21921 - MS21922 - MS20819 - BACD2036 - BACU24AB & AN818 — Port Tools Also Available.



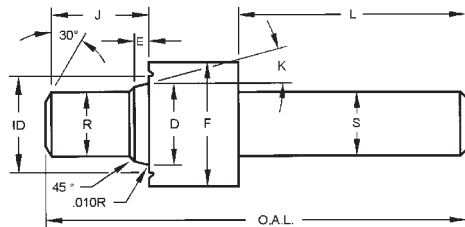
# ISO 6149-1:1993(E) – PORT TOOLS – CARBIDE TIPPED

## ISO 6149-1:1993(E)



K (deg)	D (mm)	E (mm)	F (mm)	R (mm)	J (mm)	L (inch)	S (inch)	O.A.L. (inch)	THREAD	ORDER #
12	9.15	1.8	14.1	7.0	11.6	1.75	.500	3.00	M8X1	6149-M8X1
12	11.15	1.8	16.1	9.0	11.6	1.75	.500	3.00	M10X1	6149-M10X1
15	13.85	2.6	19.1	10.5	14.1	1.88	.500	3.12	M12X1.5	6149-M12X1.5
15	15.85	2.6	21.1	12.5	14.1	1.88	.500	3.38	M14X1.5	6149-M14X1.5
15	17.85	2.6	24.1	14.5	15.6	1.88	.500	3.38	M16X1.5	6149-M16X1.5
15	19.85	2.6	26.1	16.5	17.1	2.12	.750	3.70	M18X1.5	6149-M18X1.5
15	21.85	2.6	27.1	18.5	17.5	2.12	.750	3.75	M20X1.5	6149-M20X1.5
15	23.85	2.6	29.1	20.5	18.1	2.12	.750	3.80	M22X1.5	6149-M22X1.5
15	29.45	3.3	34.1	25.0	22.1	2.12	.750	3.94	M27X2.0	6149-M27X2.0
15	35.45	3.3	43.1	31.0	22.1	2.25	1.000	4.25	M33X2.0	6149-M33X2.0
15	44.45	3.3	52.1	40.0	22.6	2.25	1.000	4.35	M42X2.0	6149-M42X2.0
15	50.45	3.3	57.1	46.0	25.1	2.25	1.000	4.35	M48X2.0	6149-M48X2.0

## ISO 6149-1:1993(E) with I.D. notch



K (deg)	D (mm)	E (mm)	F (mm)	ID (mm)	R (mm)	J (mm)	L (inch)	S (inch)	O.A.L. (inch)	THREAD	ORDER #
12	9.15	1.8	17.1	14.2	7.0	11.6	1.75	.500	3.00	M8X1	6149-M8X1-ID
12	11.15	1.8	20.1	16.2	9.0	11.6	1.75	.500	3.00	M10X1	6149-M10X1-ID
15	13.85	2.6	23.1	19.2	10.5	14.1	1.88	.500	3.12	M12X1.5	6149-M12X1.5-ID
15	15.85	2.6	25.1	21.2	12.5	14.1	1.88	.500	3.38	M14X1.5	6149-M14X1.5-ID
15	17.85	2.6	28.1	24.2	14.5	15.6	1.88	.500	3.38	M16X1.5	6149-M16X1.5-ID
15	19.85	2.6	30.1	26.2	16.5	17.1	2.12	.750	3.70	M18X1.5	6149-M18X1.5-ID
15	21.85	2.6	32.1	27.2	18.5	17.5	2.12	.750	3.75	M20X1.5	6149-M20X1.5-ID
15	23.85	2.6	34.1	29.2	20.5	18.1	2.12	.750	3.80	M22X1.5	6149-M22X1.5-ID
15	29.45	3.3	40.1	34.2	25.0	22.1	2.12	.750	3.94	M27X2.0	6149-M27X2.0-ID
15	35.45	3.3	49.1	43.2	31.0	22.1	2.25	1.000	4.25	M33X2.0	6149-M33X2.0-ID
15	44.45	3.3	60.1	52.2	40.0	22.6	2.25	1.000	4.35	M42X2.0	6149-M42X2.0-ID
15	50.45	3.3	66.1	57.2	46.0	25.1	2.25	1.000	4.35	M48X2.0	6149-M48X2.0-ID

MS21921 - MS21922 - MS20819 - BACD2036 - BACU24AB & AN818 — Port Tools Also Available.

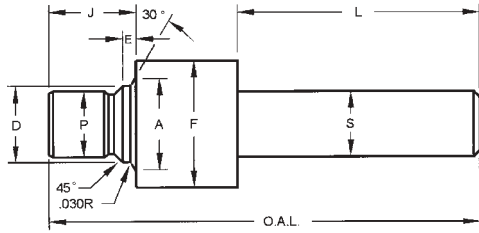


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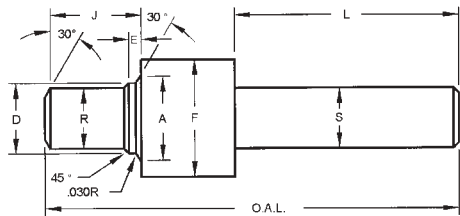
# MS33649 – PORT TOOLS – CARBIDE TIPPED

## MS33649-S – Solid Pilot



A	D	E	F	J	L	P	S	O.A.L.	TUBE	THREAD	ORDER #
.367	.2665	.071	.575	.390	2.00	.217	.500	3.00	—	.250-28UNJF-3B	MS33649-1S
.446	.3305	.071	.742	.430	2.00	.274	.500	3.00	.125	.3125-24UNJF-3B	MS33649-2S
.508	.3925	.071	.805	.470	2.00	.337	.500	3.00	.188	.375-24UNJF-3B	MS33649-3S
.570	.4565	.083	.888	.520	2.00	.392	.500	3.12	.250	.4375-20UNJF-3B	MS33649-4S
.633	.5195	.083	.950	.560	2.00	.454	.500	3.12	.312	.500-20UNJF-3B	MS33649-5S
.696	.5825	.091	1.012	.600	2.00	.511	.500	3.25	.375	.5625-18UNJF-3B	MS33649-6S
.758	.6455	.102	1.105	.600	2.00	.574	.500	3.25	.438	.625-18UNJF-3B	MS33649-7S
.883	.7715	.102	1.240	.660	2.12	.692	.750	3.57	.500	.750-16UNJF-3B	MS33649-8S
.946	.8345	.115	1.300	.700	2.12	.755	.750	3.61	.562	.8125-16UNJ-3B	MS33649-9S
1.008	.8985	.115	1.415	.750	2.12	.809	.750	3.66	.625	.875-14UNJF-3B	MS33649-10S
1.164	1.0255	.133	1.602	.800	2.12	.923	.750	3.75	.688	1.000-12UNJF-3B	MS33649-11S
1.242	1.0885	.133	1.665	.800	2.12	.983	.750	3.80	.750	1.0625-12UNJ-3B	MS33649-12S
1.370	1.2135	.133	1.790	.800	2.25	1.110	1.000	4.00	.875	1.1875-12UNJ-3B	MS33649-14S
1.495	1.3385	.133	1.965	.850	2.25	1.233	1.000	4.05	1.000	1.3125-12UNJ-3B	MS33649-16S
1.808	1.6505	.133	2.310	.900	2.25	1.547	1.000	4.20	1.250	1.625-12UNJ-3B	MS33649-20S
2.058	1.9005	.133	2.628	.900	2.25	1.797	1.000	4.20	1.500	1.875-12UNJ-3B	MS33649-24S
2.433	2.2755	.133	3.050	.950	2.50	2.172	1.250	4.50	1.750	2.250-12UNJ-3B	MS33649-28S
2.683	2.5265	.133	3.520	.950	2.50	2.422	1.250	4.60	2.000	2.500-12UNJ-3B	MS33649-32S

## MS33649-R – Reamer Pilot

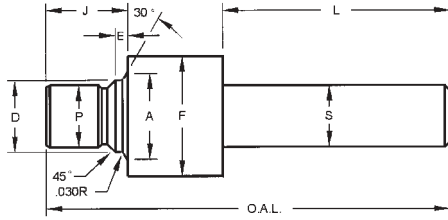


A	D	E	F	J	L	R	S	O.A.L.	TUBE	THREAD	ORDER #
.367	.2665	.071	.575	.425	1.75	.219	.500	3.00	—	.250-28UNJF-3B	MS33649-1R
.446	.3305	.071	.742	.610	1.75	.276	.500	3.00	.125	.3125-24UNJF-3B	MS33649-2R
.508	.3925	.071	.805	.610	1.75	.339	.500	3.00	.188	.375-24UNJF-3B	MS33649-3R
.570	.4565	.083	.888	.675	1.88	.393	.500	3.12	.250	.4375-20UNJF-3B	MS33649-4R
.633	.5195	.083	.950	.675	1.88	.455	.500	3.12	.312	.500-20UNJF-3B	MS33649-5R
.696	.5825	.091	1.012	.730	1.88	.513	.500	3.38	.375	.5625-18UNJF-3B	MS33649-6R
.758	.6455	.102	1.105	.745	1.88	.575	.500	3.38	.438	.625-18UNJF-3B	MS33649-7R
.883	.7715	.102	1.240	.855	2.12	.693	.750	3.84	.500	.750-16UNJF-3B	MS33649-8R
.946	.8345	.115	1.300	.875	2.12	.758	.750	3.84	.562	.8125-16UNJ-3B	MS33649-9R
1.008	.8985	.115	1.415	.950	2.12	.810	.750	3.94	.625	.875-14UNJF-3B	MS33649-10R
1.164	1.0255	.133	1.500	1.080	2.12	.925	.750	4.12	.688	1.000-12UNJF-3B	MS33649-11R
1.242	1.0885	.133	1.665	1.080	2.12	.985	.750	4.12	.750	1.0625-12UNJ-3B	MS33649-12R
1.370	1.2135	.133	1.790	1.080	2.25	1.112	1.000	4.37	.875	1.1875-12UNJ-3B	MS33649-14R
1.495	1.3385	.133	1.965	1.080	2.25	1.235	1.000	4.37	1.000	1.3125-12UNJ-3B	MS33649-16R
1.683	1.5265	.133	2.090	1.130	2.25	1.425	1.000	4.53	1.125	1.500-12UNJF-3B	MS33649-18R
1.808	1.6505	.133	2.310	1.130	2.25	1.549	1.000	4.54	1.250	1.625-12UNJ-3B	MS33649-20R
2.058	1.9005	.133	2.628	1.140	2.25	1.799	1.000	4.54	1.500	1.875-12UNJ-3B	MS33649-24R
2.433	2.2755	.133	3.050	1.270	2.50	2.174	1.250	4.92	1.750	2.250-12UNJ-3B	MS33649-28R
2.683	2.5265	.133	3.520	1.400	2.50	2.424	1.250	5.15	2.000	2.500-12UNJ-3B	MS33649-32R



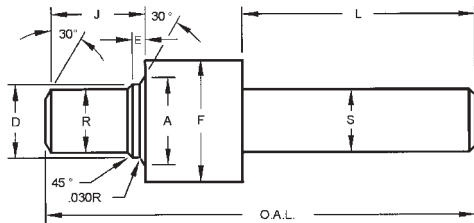
# AND10050 – PORT TOOLS – CARBIDE TIPPED

## AND10050-S – Solid Pilot



A	D	E	F	J	L	P	S	O.A.L.	TUBE	THREAD	ORDER #
.446	.3305	.071	.742	.430	2.00	.270	.500	3.00	.125	.3125-24UNF-3B	AND10050-2S
.508	.3925	.071	.805	.470	2.00	.331	.500	3.00	.188	.375-24UNF-3B	AND10050-3S
.570	.4565	.083	.888	.520	2.00	.385	.500	3.12	.250	.4375-20UNF-3B	AND10050-4S
.633	.5195	.083	.950	.560	2.00	.448	.500	3.12	.312	.500-20UNF-3B	AND10050-5S
.696	.5825	.091	1.012	.600	2.00	.504	.500	3.25	.375	.5625-18UNF-3B	AND10050-6S
.883	.7715	.102	1.240	.660	2.12	.685	.750	3.57	.500	.750-16UNF-3B	AND10050-8S
1.008	.8985	.115	1.415	.750	2.12	.801	.750	3.66	.625	.875-14UNF-3B	AND10050-10S
1.242	1.0885	.133	1.665	.800	2.12	.975	.750	3.75	.750	1.0625-12UN-3B	AND10050-12S
1.495	1.3385	.133	1.965	.850	2.25	1.225	1.000	4.05	1.000	1.3125-12UN-3B	AND10050-16S
1.808	1.6505	.133	2.310	.900	2.25	1.537	1.000	4.20	1.250	1.625-12UN-3B	AND10050-20S
2.058	1.9005	.133	2.628	.900	2.25	1.787	1.000	4.20	1.500	1.875-12UN-3B	AND10050-24S
2.433	2.2755	.133	3.050	.950	2.50	2.162	1.250	4.50	1.750	2.250-12UN-3B	AND10050-28S
2.683	2.5265	.133	3.520	.950	2.50	2.412	1.250	4.60	2.000	2.500-12UN-3B	AND10050-32S

## AND10050-R – Reamer Pilot



A	D	E	F	J	L	R	S	O.A.L.	TUBE	THREAD	ORDER #
.446	.3305	.071	.742	.515	1.75	.271	.500	3.00	.125	.3125-24UNF-3B	AND10050-2R
.508	.3925	.071	.805	.515	1.75	.333	.500	3.00	.188	.375-24UNF-3B	AND10050-3R
.570	.4565	.083	.888	.610	1.88	.386	.500	3.12	.250	.4375-20UNF-3B	AND10050-4R
.633	.5195	.083	.950	.610	1.88	.449	.500	3.12	.312	.500-20UNF-3B	AND10050-5R
.696	.5825	.091	1.012	.630	1.88	.506	.500	3.38	.375	.5625-18UNF-3B	AND10050-6R
.883	.7715	.102	1.240	.735	2.12	.686	.750	3.70	.500	.750-16UNF-3B	AND10050-8R
1.008	.8985	.115	1.415	.805	2.12	.802	.750	3.80	.625	.875-14UNF-3B	AND10050-10R
1.242	1.0885	.133	1.665	.925	2.12	.976	.750	3.94	.750	1.0625-12UN-3B	AND10050-12R
1.495	1.3385	.133	1.965	.955	2.25	1.226	1.000	4.25	1.000	1.3125-12UN-3B	AND10050-16R
1.808	1.6505	.133	2.310	1.000	2.25	1.538	1.000	4.35	1.250	1.625-12UN-3B	AND10050-20R
2.058	1.9005	.133	2.628	1.140	2.25	1.788	1.000	4.54	1.500	1.875-12UN-3B	AND10050-24R
2.433	2.2755	.133	3.050	1.260	2.50	2.163	1.250	4.92	1.750	2.250-12UN-3B	AND10050-28R
2.683	2.5265	.133	3.520	1.390	2.50	2.413	1.250	5.15	2.000	2.500-12UN-3B	AND10050-32R

MS21921 - MS21922 - MS20819 - BACD2036 - BACU24AB & AN818 — Port Tools Also Available.

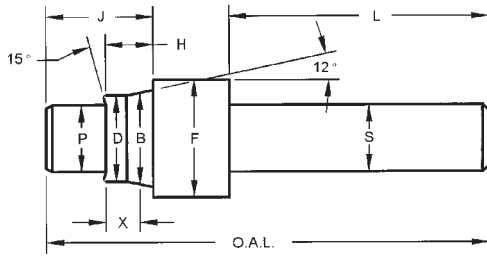


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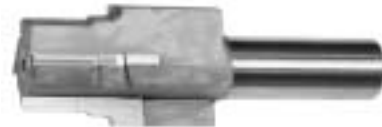
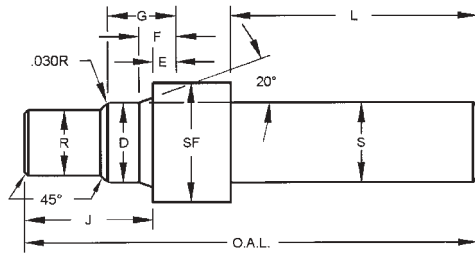
# MS33514 – PORT TOOLS – CARBIDE TIPPED

## MS33514 – Carbide Tipped



B	D	F	H	J	L	P	S	X	O.A.L.	TUBE	THREAD	ORDER #
.163	.137	.300	.188	.380	1.88	.091	.500	.128	3.00	.125	.3125-24UNJF-3A	MS33514-2CT
.234	.198	.400	.234	.440	1.88	.123	.500	.158	3.00	.188	.375-24UNJF-3A	MS33514-3CT
.293	.263	.410	.234	.440	1.88	.185	.500	.174	3.00	.250	.4375-20UNJF-3A	MS33514-4CT
.356	.326	.470	.250	.480	1.88	.232	.500	.190	3.00	.312	.500-20UNJF-3A	MS33514-5CT
.416	.388	.530	.250	.480	1.88	.295	.500	.193	3.00	.375	.5625-18UNJF-3A	MS33514-6CT
.560	.516	.690	.305	.640	1.88	.420	.500	.210	3.00	.500	.750-16UNJF-3A	MS33514-8CT
.686	.643	.830	.350	.740	1.88	.498	.500	.255	3.15	.625	.875-14UNJF-3A	MS33514-10CT
.810	.768	1.000	.350	.790	1.88	.654	.500	.253	3.23	.750	1.0625-12UNJ-3A	MS33514-12CT
1.062	1.018	1.250	.415	.940	2.00	.873	.750	.322	3.50	1.000	1.3125-12UNJ-3A	MS33514-16CT
1.316	1.272	1.560	.415	.950	2.00	1.091	.750	.325	3.62	1.250	1.625-12UNJ-3A	MS33514-20CT
1.565	1.522	1.800	.485	.950	2.12	1.342	1.000	.390	3.82	1.500	1.875-12UNJ-3A	MS33514-24CT
2.068	2.024	2.400	.485	1.060	2.12	1.811	1.000	.395	4.09	2.000	2.500-12UNJ-3A	MS33514-32CT

## (SAE) AS1300 for Rosan Cavity PS-10035



D	E	F	G	J	L	R	S	SF	O.A.L.	TUBE	THREAD	ORDER #
.255	.093	.1555	.2985	.610	2.00	.184	.375	.382	4.00	.125	.2160-28UNJF	RPT-2
.287	.093	.1555	.2985	.670	2.00	.218	.375	.449	4.00	.188	.2500-28UNJF	RPT-3
.340	.093	.1555	.2985	.700	2.00	.275	.500	.496	4.00	.250	.3125-24UNJF	RPT-4
.402	.093	.1555	.2985	.725	2.00	.337	.500	.602	3.48	.312	.3750-24UNJF	RPT-5
.465	.108	.1705	.3135	.785	2.00	.392	.500	.676	3.53	.375	.4375-20UNJF	RPT-6
.583	.108	.1705	.3135	.850	2.00	.511	.500	.785	3.85	.500	.5625-18UNJF	RPT-8
.726	.108	.1705	.3135	.810	2.00	.650	.500	1.016	3.81	.625	.6875-24UNJEF	RPT-10
.900	.108	.1705	.3455	.950	2.00	.767	.500	1.140	4.20	.750	.8125-20UNJEF	RPT-12
1.163	.108	.1705	.3455	1.015	2.00	1.073	.750	1.428	4.26	1.000	1.125-18UNJEF	RPT-16
1.388	.135	.1975	.3775	1.020	2.00	1.261	.750	1.751	4.52	1.250	1.312-18UNJEF	RPT-20

MS21921 - MS21922 - MS20819 - BACD2036 - BACU24AB & AN818 — Port Tools Also Available.



# THREAD MILL FEED & SPEED CHART

In order to use the following chart appropriately, it is necessary to understand that Machining Centers will apply the feed rate at the centerline of the spindle. It is correct to use a normal calculation and the following Feed & Speed Chart when cutting in a straight line, however it is incorrect when cutting an internal thread. Therefore, the feed rate must be recalculated.

The following is an example of how to apply the feed rate correctly:

- The tool is a TM290-24 cutting a 3/8-24 thread in stainless steel.
- The outside diameter of the tool is 0.290.
- The surface foot per minute (SFM) is 150.
- The chip per tooth is 0.001. The tool has four flutes.
- The revolutions per minute (RPM) equal the SFM x 3.82 divided by the outside diameter of the tool.  
In this example:  $(150 \times 3.82) / .290$ , which equals 1925 rpm.
- The RPM x feed (chip per tooth) x the number of flutes equals the non-adjusted feed rate or NAFR.  
In this example:  $1925 \times 0.001 \times 4 = 7.7$  (NAFR)

- The major diameter of the thread is 0.375. We will call this D. The outside diameter of the tool is 0.290. We will call this d.

- We will call the adjusted feed rate the AFR. The formula for the AFR for internal interpolation is  $AFR = NAFR \times \frac{(D-d)}{D}$

- In this example:

$$AFR = 7.7 \times \frac{(0.375 - 0.290)}{0.375}$$

**Therefore, the adjusted feed rate equals 1.75.** This is the feed rate that will equal .001 chip per tooth in the above example. This is the feed rate that must be used in the CNC program.

For small sizes with unfavorable length to diameter ratios and for coarse pitches cutting hard material, it is necessary to use more than one radial depth pass. When cutting a thread with two passes, cut approximately 65 percent of the thread on the first pass and 35 percent on the finish pass. For three passes use a 50/30/20 ratio. For four passes use a 40/27/20/13 ratio. The idea is to equalize the side cutting pressure. For programming information see page two, **“How to use Thread Mills.”**

MATERIAL	SPEED SPM	FEED (INCHES PER TOOTH)							
		.110-.125	.140	.170-.187	.250	.350	.500	.750	1.0+
Aluminum & Magnesium Brass Bronze Hard Bronze	800-UP	.0006-.0010	.0006-.0015	.0010-.0020	.0015-.0030	.002-.004	.003-.006	.004-.008	.006-.009
	500-800	.0006-.0010	.0006-.0015	.0010-.0020	.0015-.0025	.002-.003	.003-.005	.004-.008	.005-.009
	400-600	.0005-.0010	.0005-.0015	.0010-.0020	.0015-.0025	.002-.003	.003-.005	.005-.007	.005-.008
	230-290	.0004-.0008	.0004-.0009	.0005-.0013	.0007-.0015	.001-.002	.002-.003	.004-.006	.004-.007
Cast Iron-Soft Cast Iron-Hard Steel-Soft Steel-Medium	200-280	.0004-.0008	.0006-.0010	.0010-.0020	.0010-.0025	.002-.003	.002-.004	.003-.006	.004-.007
	190-260	.0003-.0007	.0005-.0010	.0006-.0015	.0007-.0015	.001-.002	.002-.003	.003-.004	.004-.005
	230-400	.0006-.0010	.0007-.0015	.0010-.0020	.0010-.0025	.002-.003	.002-.004	.003-.005	.003-.006
	200-350	.0004-.0008	.0006-.0015	.0007-.0013	.0008-.0020	.001-.003	.001-.003	.002-.004	.003-.005
Steel-Hard Stainless Steel Titanium Inconel	120-220	.0003-.0006	.0004-.0010	.0005-.0010	.0007-.0015	.001-.002	.001-.003	.002-.004	.002-.004
	120-220	.0003-.0010	.0004-.0010	.0005-.0010	.0007-.0015	.001-.002	.001-.003	.002-.004	.002-.004
	70-100	.0003-.0006	.0003-.0008	.0004-.0008	.0005-.0010	.001-.002	.001-.002	.002-.003	.002-.003
	70-100	.0003-.0006	.0003-.0007	.0004-.0007	.0005-.0010	.001-.002	.001-.002	.002-.003	.002-.003



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