

MICRO 100[®]

Make More With Micro 100

2024 Catalog

Available in
Quick Change
and Standard

ER collet connections
available in ER08, ER11, ER16

**Endless
Combinations
With Our **NEW**
Double-Ended Holders**

Holders & Systems begins pg 15



2024 Canada Catalog
All Prices in Canadian Dollar



Your Source for Fully Stocked Turning Tools

Make More with Micro 100

Endurance and Quality

Your search for high performance, solid round turning tools stops here! We manufacture an extremely broad selection of tooling for traditional and swiss lathes, designed to take your shop further.

Powerful Performance

With Micro 100, "difficult to machine materials" are easier to work in than ever before. Our products excel at vastly increased speed and feed rates and provide exceptional results, even in the toughest jobs.

Earned Reputation

Micro 100's stellar reputation is the result of more than six decades serving the manufacturing industry with high precision, tightly-toleranced turning tools that drive shop productivity.

New Canada Shipping Options & Website to Help You Make More

Same-Day Flat Rate Drop Shipping

Browse Micro 100's fully stocked inventory of high performance, solid round turning tools, then have your products delivered directly to your shop door faster than ever with our new Canada Shipping Programs! For program terms and rates, visit micro100.com/about-us/shipping.

Canadian Dollar List Pricing

Explore Micro 100's industry-leading selection of solid round turning tools, priced in CAD, by visiting our Canada-specific website at micro100.com



HARVEY PERFORMANCE COMPANY




Think Harvey Tool First

More than 29,000 miniature and specialty end mills. Ship today, in your machine tomorrow.




Trust in Titan USA


Broad assortment of quality, fully stocked cutting tools at exceptional value.

Helical

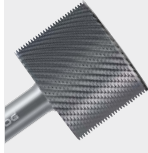
Let Helical Impress You

Material-optimized high performance carbide end mills. Run faster, push harder, machine smarter.



Innovative Tools for Innovative Materials

The industry's most innovative and advanced composite and honeycomb core cutting tools.




Make More with Micro 100

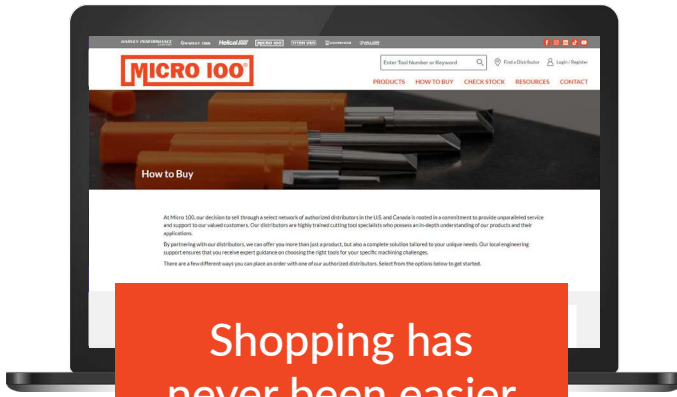
Exceptional quality turning tools designed for durability and performance in a range of difficult-to-machine materials.




Victory Starts with Valor Holemaking

High performance drills & complementary tooling solutions that revolutionize CNC holemaking.





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Tool Holders & Systems

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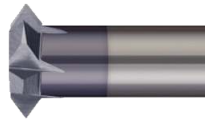
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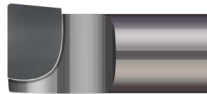
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Even More Combinations With Our **NEW** 2024 Products

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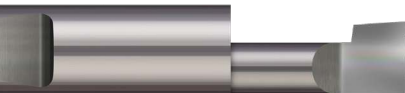
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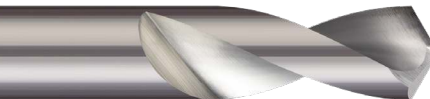
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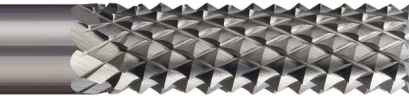
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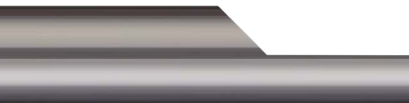
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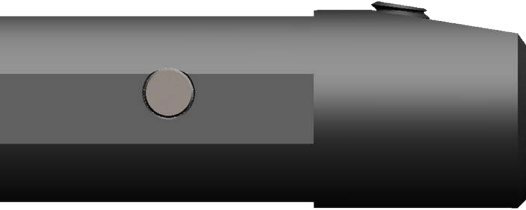
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Tool Holders & Systems

Uniquely
Designed to
Help You
Make More.



Quick Change Holders & Parts

Benefits & Options on pg 10

A breakthrough tool change system that saves machinists countless hours by allowing for incredibly fast tool changes without sacrificing locational repeatability or machining accuracy.

Standard Holders & Parts

Benefits & Options on pg 12

Designed for use with our standard shank tools in lathe applications, Micro 100's offering of Standard Tool Holders feature 4 alignment flats on the shank, providing added flexibility.



Rotational Holders & Parts

Starts on pg 49

Featuring Solid ER Taper Integrated Holders, this offering eliminates the need for multiple spindle adapters, is designed for Swiss and multi-function lathes, and works with any ER holder or ER spindle in both live and static applications.

Collets

Starts on pg 51

This offering of Collets includes ER Collets, Metric ID ER Collets, and Collet Sets, which are available in ER08, ER11, ER16, ER20, and ER32 Taper Sizes with both standard and metric options.



Animations, Benefits, and Details Found Online At
micro100.com/resources/tool-holders



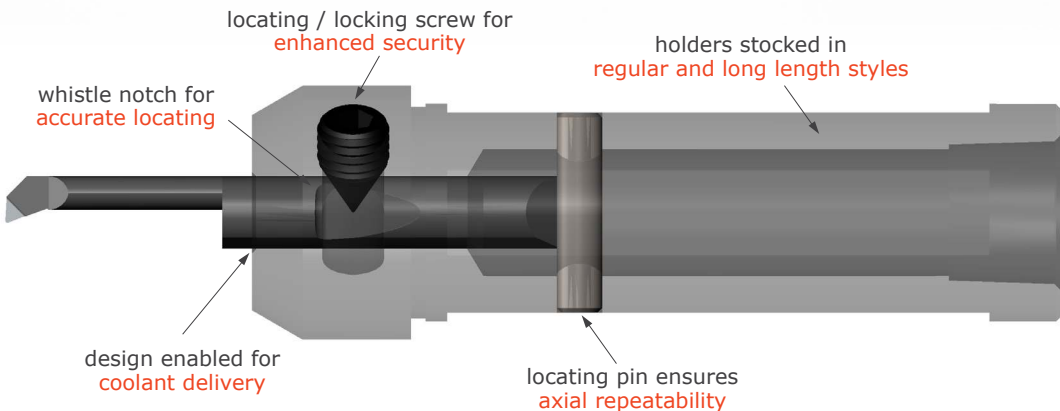
Micro 100 Micro-Quik

Micro 100's Micro-Quik is a foolproof system that delivers impressive **radial and axial repeatability, tip-to-tip consistency, and part-to-part accuracy.** It features a whistle notch configuration, proven to enhance axial accuracy over the standard set screw design used by other quick change system manufacturers, to ensure that the tool is always held in location, anchored accurately in place, and pushed completely against the locating mechanism.

In critical accuracy situations, many customers have enjoyed .0002" tool-to-tool repeatability, achieved in fewer than 30 seconds. This is 90% faster than conventional tool change methods, which oftentimes take in excess of 5 minutes, start-to-finish. Because of its simplicity and extremely low margin for error, Micro-Quik is the preferred tool change method of machine shops worldwide, including those employing new and up-and-coming machinists.



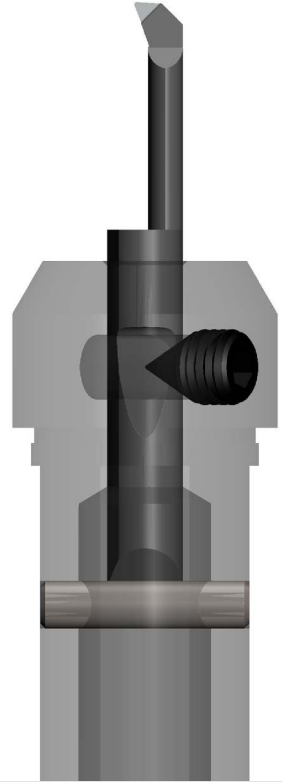
How It Works



During tool changes, the precision ground bevel specially engineered on the rear of each Micro 100 quick change tool aligns with a locating pin in the quick change tool holder. The distance from this locational point to the tip of the tool is highly controlled, meaning that our Micro-Quik tooling system ensures a very high degree of tool length and centerline repeatability.

Quick Change Tool Holders

starts on pg 16



Whistle notch configuration proven to enhance axial accuracy.

Micro 100's offering of quick change tool holders, including our popular headless-style products, deliver unparalleled speed, repeatability, and accuracy. These unique holders are engineered for use in all **Swiss, standard lathe, or multi-function lathe machines** and are designed for ease of installation through the back side of the tool block.



More Than 3,000 Stocked Quick Change Tools Ready for your Quick Change Holders!

Quick Change Reference Guide

	Straight Holder Standard Length	Straight Holder Long Length	Headed Holder Standard Length	Headed Holder Long Length	Tool Holder System Double Ended Modular
					
	QTS / QTSP	QTSL / QT SPL	QTH / QTHM	QTHL / QTHML	QDH / QDS / QDSM
	A reliable go-to for maximum machine compatibility and best-in-class coolant delivery options.		"The Original" holder designed to excel in high axial force operations.		Double-ended for use in twin spindle and Y-axis tooling block locations.
	pg 16	pg 18	pg 19	pg 21	pg 27
Coolant Access Type	Plumbed & Ported	Plumbed & Ported	Plumbed	Plumbed	Ported
Headless Holder Design for Easy Machine Access	✓	✓			✓
Adjustable Holder Depth in the Block	✓	✓			✓
Can Be Loaded Through Back of Tooling Block for Ease of Use	✓	✓			✓
Headed Design for Repeatable Holder Replacement			✓	✓	
Long Length for Extended Reach Applications		✓		✓	
Double-Ended for Added Versatility					✓
Locating/locking screw Number/Orientation	1/Top	1/Top	1/Side	1/Side	1/Side

NEW!

Quick Change Holders Double-Ended

Similar ID

Engineered with similar size quick change ID on opposing ends, this tool holder offering is designed for use in twin spindle machines on both the main and sub side spindle.

Dissimilar ID

Designed to maximize efficiency and reduce set up time in twin spindle machines, these holders feature dissimilar size quick change ID on opposing ends for a larger range of min bore offerings.

ER

Featuring quick change on one end and ER collet taper on the other end, this double ended holder allows for unmatched repeatability and versatility in twin spindle machines.

Double-Ended Similar ID	Double-Ended Dissimilar ID	Double-Ended ER
		
QD	QD	QDMR
Designed for use in twin spindle machines on both the main and sub side spindle.		
pg 23	pg 24	pg 25
✓	✓	✓
✓	✓	✓
✓	✓	✓
✓	✓	✓
✓	✓	✓
2/Top	2/Top	1/Top

Application Specific

PSC Tool Holder

pg 27

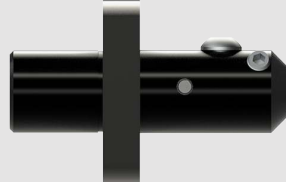


QT

Optimized for machines with PSC / Capto® connections

Star Swiss Machine Holders

starts on pg 24



QZST

Designed for Star Swiss Machines

Grinding Holder

pg 28



QSG

Engineered for grinders and some flat and slant bed lathes.

Standard Tool Holders

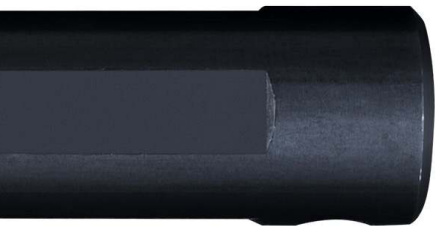
starts on pg 39

Micro 100 fully stocks tool holders for standard shank tool styles in both imperial and metric sizes. Designed for use with our standard shank tools in lathe applications, our standard-style tool holders feature tool engagement and holder orientation flexibility enabled by four alignment flats on its shank.

Expansive Tool Offering for Standard Holders

More Than **3,800** Stocked Standard Tools!

- Boring Tools
- Axial Profiling Tools
- Radial Profiling Tools
- Top Rake Chipbreakers
- Grooving Tools
- Face Grooving Tools
- Undercutting Tools
- Threading Tools
- Spotting Drills
- Combined Drill & Countersinks
- Spade Drills
- Chamfer Tools



Similar ID

Excellent for operations where a common range of min bore sizes is required, this offering of similar size standard ID holders is designed for use in twin spindle machines.

NEW!

Standard Holders Double-Ended



Dissimilar ID

Designed with dissimilar size standard ID on opposing ends, this tool accommodates operations where a larger range of bore diameters is required.

ER

Featuring a standard ID on one end and ER collet taper on the other, this tool allows for adjustability, while still providing the versatility of operations of an ER collet connection.

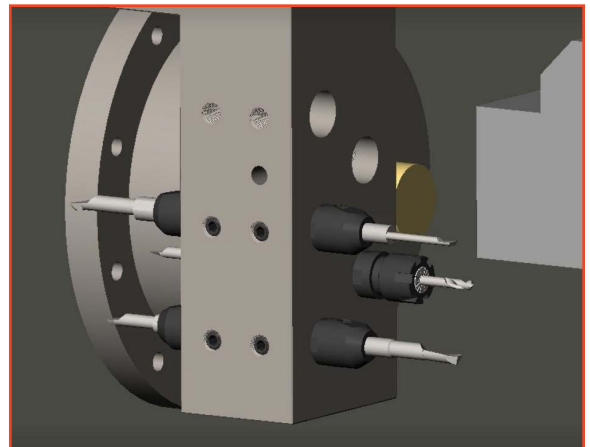
Standard Reference Guide

	Headed Holder Standard Length	Straight Holder Standard Length	Straight Holder Long Length	Double Ended Similar ID	Double Ended Dissimilar ID	Double Ended ER
						
	TH/THM/THMA	THS	THSL	TD	TD	TDMR
	pg 39	pg 41	pg 43	pg 44	pg 45	pg 46
Headless Holder Design for Easy Machine Access		✓	✓	✓	✓	✓
Adjustable Holder Depth in the Block		✓	✓	✓	✓	✓
Can Be Loaded Through Back of Tooling Block for Ease of Use		✓	✓	✓	✓	✓
Headed Design for Repeatable Holder Replacement	✓					
Long Length for Extended Reach Applications			✓			
Double-Ended for Added Versatility				✓	✓	✓
Locating/locking screw Number/Orientation	1/Side	1/Top	1/Top	2/Top	2/Top	1/Top

Technical Resources to Help You Make More

Double-Ended Tool Holder Animations

Get to know our new double ended holder with animations on Micro100.com. See how utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.



Scan to view or go online at micro100.com/resources/tool-holders

Let Us Help You Make More With Micro 100

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- ✓ Micro 100 Product Releases
- ✓ Valuable Technical Resources
- ✓ Machining Tips and Best Practices
- ✓ Giveaways & Promotions






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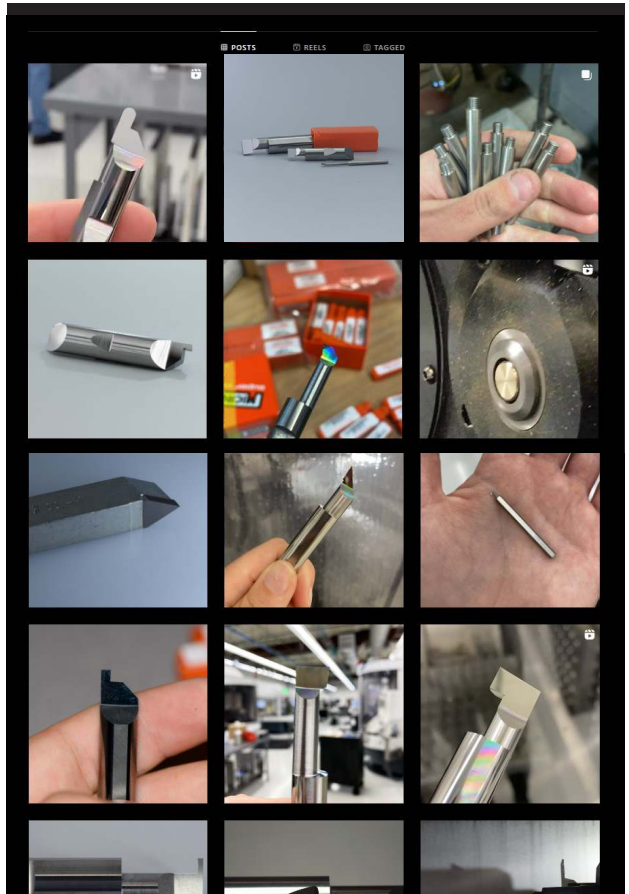
Scan the QR code below to sign up for our email list! Our weekly email delivers valuable information about Micro 100 products and technical resources directly to your inbox. Be the first to know of newly-released tools to gain an immediate leg-up on the competition!



Follow Us on Social

From amazing tool geometries to beautiful final parts made with Micro 100 turning tools, you'll find it all on our social media channels! Also, be sure to send us your pictures and videos! We love to check out what you accomplish with our tools.

-  Instagram @micro100
-  Facebook @micro100
-  LinkedIn @micro100
-  Youtube @micro.100
-  TikTok @micro.100



TOOL HOLDERS & SYSTEMS



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Collets

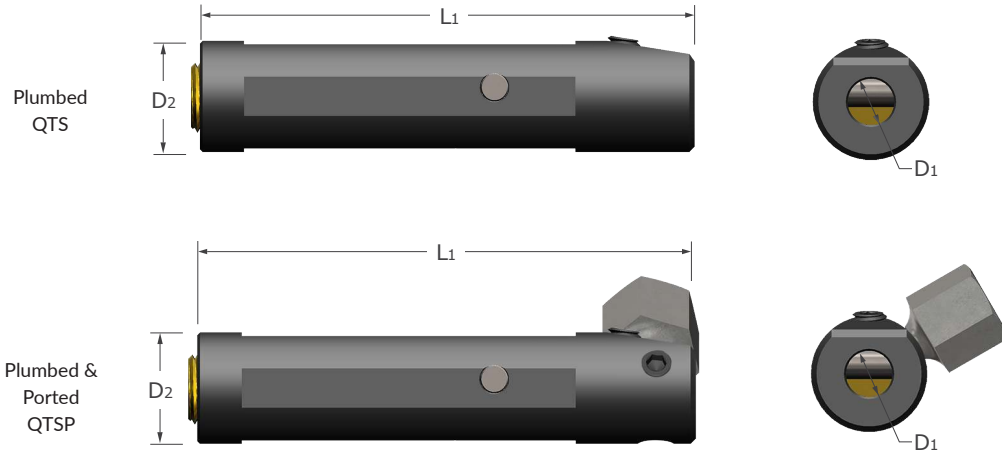
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Quick Change Holders

QTS / QTSP

Straight Holder – Standard Length

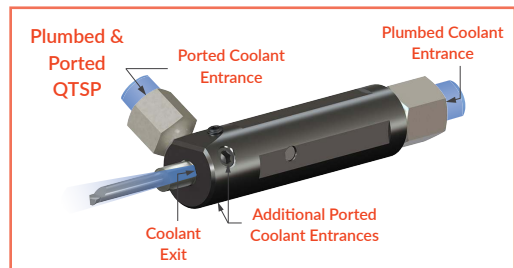
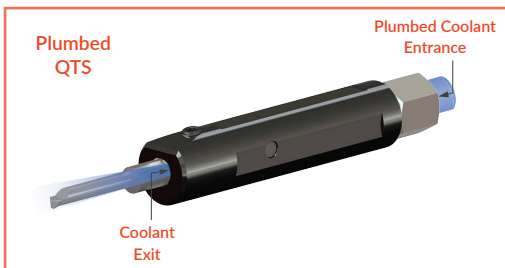
Quick Change – Holders



- Headless tool holder engineered for maximum versatility in any Swiss, standard lathe, or multi-function lathe
- Standard plumbed and 3 ported options for more enhanced coolant accessibility
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Headless design allows for installation through the back of the tooling block in machines where work envelope is limited
- Top screw orientation for easy access to set screw without interference of adjacent tools
- 4 alignment flats allow for multiple tool engagements and holder orientations
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw, porting plugs, straight coolant adapter and applicable brass plug
- Precision manufactured in the USA

Internal Diameter	Shank Diameter	Ported Thread	Plumbed Thread	Overall Length	Locating Locking Screw	Tool Holder	
D1 $+0.0005"$ $-0.0000"$	D2 $-0.0003"$ $-0.0008"$ $-0.008mm$ $-0.020mm$			L1		Tool #	Price
.1875	12 mm	-	1/8-27	2.8	40317	QTS-187-472	193.18
.1875	.5000	-	1/8-27	2.8	40317	QTS-187-500	193.18
.1875	.6250	-	1/8-27	2.8	40317	QTS-187-625	209.38
.1875	16 mm	-	1/8-27	2.8	40317	QTS-187-630	209.38
.1875	.7500	1/4-28 HP	1/8-27	2.8	40316	QTSP-187-750	271.68
.1875	20 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-187-787	271.68
.1875	22 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-187-866	271.68
.1875	25 mm	1/4-28 HP	1/8-27	2.8	40315	QTSP-187-984	271.68
.1875	1.0000	1/4-28 HP	1/8-27	2.8	40315	QTSP-187-1000	271.68

Continued on next page



See pg 35-38 for replacement parts and accessories

QTS / QTSP

Quick Change Holders

Straight Holder – Standard Length (cont.)

Continued from previous page

Internal Diameter	Shank Diameter	Ported Thread	Plumbed Thread	Overall Length	Locating Locking Screw	Tool Holder	
						Tool #	Price
D1 $+0.0005"$ $-0.0000"$	D2 $-0.0003"$ $-0.0008"$ $-0.008mm$ $-0.020mm$			L1			
.2500	12 mm	-	1/8-27	2.8	40317	QTS-250-472	193.18
.2500	.5000	-	1/8-27	2.8	40317	QTS-250-500	193.18
.2500	.6250	-	1/8-27	2.8	40317	QTS-250-625	209.38
.2500	16 mm	-	1/8-27	2.8	40317	QTS-250-630	209.38
.2500	.7500	1/4-28 HP	1/8-27	2.8	40316	QTSP-250-750	271.68
.2500	20 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-250-787	271.68
.2500	22 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-250-866	271.68
.2500	25 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-250-984	271.68
.2500	1.0000	1/4-28 HP	1/8-27	2.8	40315	QTSP-250-1000	271.68
.3125	.6250	-	1/4-18	2.8	40317	QTS-312-625	209.38
.3125	16 mm	-	1/4-18	2.8	40317	QTS-312-630	209.38
.3125	.7500	-	1/4-18	2.8	40317	QTS-312-750	225.48
.3125	20 mm	-	1/4-18	2.8	40317	QTS-312-787	225.48
.3125	22 mm	1/4-28 HP	1/4-18	2.8	40317	QTSP-312-866	271.68
.3125	25 mm	1/4-28 HP	1/4-18	2.8	40316	QTSP-312-984	271.68
.3125	1.0000	1/4-28 HP	1/4-18	2.8	40316	QTSP-312-1000	271.68
.3750	.6250	-	1/4-18	2.8	40317	QTS-375-625	209.38
.3750	.7500	-	1/4-18	2.8	40317	QTS-375-750	225.48
.3750	20 mm	-	1/4-18	2.8	40317	QTS-375-787	225.48
.3750	22 mm	1/4-28 HP	1/4-18	2.8	40317	QTSP-375-866	271.68
.3750	25 mm	1/4-28 HP	1/4-18	2.8	40316	QTSP-375-984	271.68
.3750	1.0000	1/4-28 HP	1/4-18	2.8	40316	QTSP-375-1000	271.68
.5000	.7500	-	3/8-18	2.8	40317	QTS-500-750	225.48
.5000	1.0000	1/4-28 HP	3/8-18	2.8	40317	QTSP-500-1000	248.38

See pg 35-38 for replacement parts and accessories

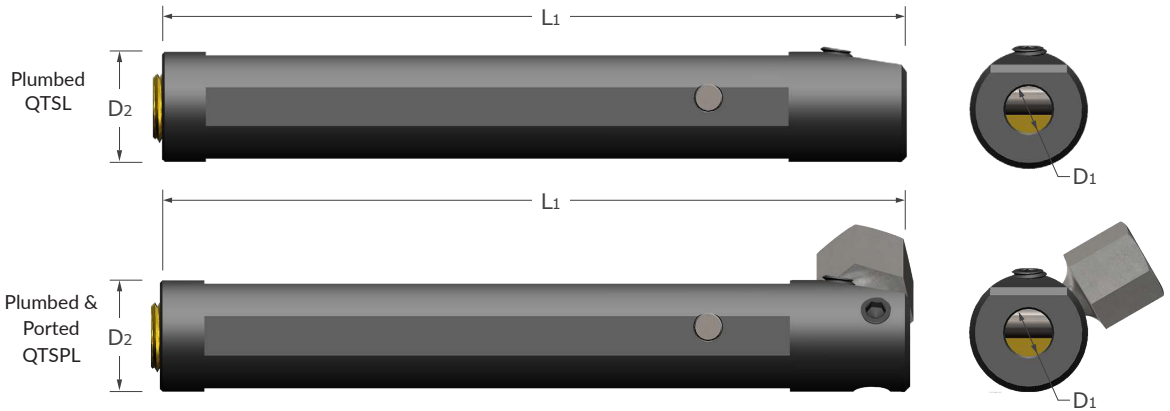


Quick Change Holders

Straight Holder – Long Length

QTSL / QT SPL

Quick Change – Holders

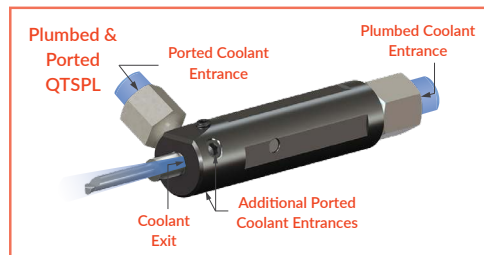
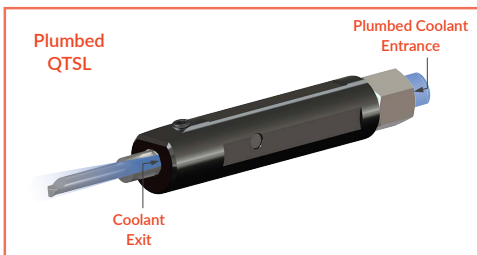


- Quick change, long length tool holder designed for applications requiring an extended reach
- Headless tool holder engineered for maximum versatility in any Swiss, standard lathe, or multi-function lathe
- Standard plumbed and 3 ported options for more enhanced coolant accessibility
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Headless design for installation through the back of the tooling block in machines where work envelope is limited
- Top screw orientation for easy access to set screw without interference of adjacent tools
- 4 alignment flats allow for multiple tool engagements and holder orientation
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw, porting plugs, straight coolant adapter and applicable brass plug
- Precision manufactured in the USA

Internal Diameter	Shank Diameter	Ported Thread	Plumbed Thread	Overall Length	Locating Locking Screw	Tool Holder	
$D_1 \begin{matrix} +.0005" \\ -.0000" \end{matrix}$	$D_2 \begin{matrix} -.0003" \\ -.0008" \\ -.008mm \\ -.020mm \end{matrix}$			L1		Tool #	Price
.1875	.7500	1/4-28 HP	1/8-27	5.8	40316	QT SPL-187-750	333.78
.1875	20 mm	1/4-28 HP	1/8-27	5.8	40316	QT SPL-187-787	333.78
.1875	22 mm	1/4-28 HP	1/8-27	5.8	40316	QT SPL-187-866	333.78
.1875	25 mm	1/4-28 HP	1/8-27	5.8	40315	QT SPL-187-984	333.78
.1875	1.0000	1/4-28 HP	1/8-27	5.8	40315	QT SPL-187-1000	333.78
.2500	.7500	1/4-28 HP	1/8-27	5.8	40316	QT SPL-250-750	333.78
.2500	20 mm	1/4-28 HP	1/8-27	5.8	40316	QT SPL-250-787	333.78
.2500	22 mm	1/4-28 HP	1/8-27	5.8	40316	QT SPL-250-866	333.78
.2500	25 mm	1/4-28 HP	1/8-27	5.8	40316	QT SPL-250-984	333.78
.2500	1.0000	1/4-28 HP	1/8-27	5.8	40315	QT SPL-250-1000	333.78
.3125	.7500	-	1/4-18	5.8	40317	QT SL-312-750*	279.38
.3125	22 mm	1/4-28 HP	1/4-18	5.8	40316	QT SPL-312-866	333.78
.3125	25 mm	1/4-28 HP	1/4-18	5.8	40316	QT SPL-312-984	333.78
.3125	1.0000	1/4-28 HP	1/4-18	5.8	40316	QT SPL-312-1000	333.78
.3750	.7500	-	1/4-18	5.8	40317	QT SL-375-750*	279.38
.3750	22 mm	-	1/4-18	5.8	40317	QT SL-375-866*	279.38
.3750	25 mm	1/4-28 HP	1/4-18	5.8	40316	QT SPL-375-984	333.78
.3750	1.0000	1/4-28 HP	1/4-18	5.8	40316	QT SPL-375-1000	333.78
.5000	.7500	-	3/8-18	5.8	40317	QT SL-500-750*	279.38
.5000	1.0000	1/4-28 HP	3/8-18	5.8	40316	QT SPL-500-1000	333.78

NEW
NEW
NEW
NEW

*Item not ported

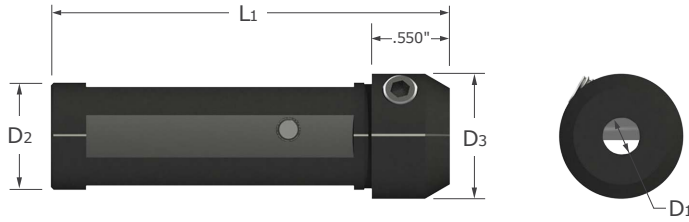


See pg 35-38 for replacement parts and accessories

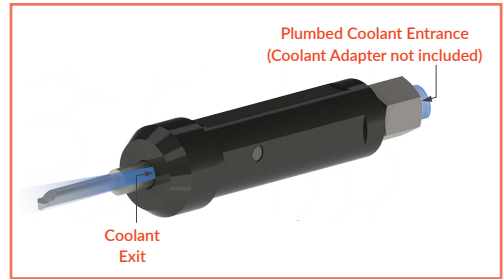


QTH / QTHM

Quick Change Holders
Headed Holder – Standard Length



- Quick change tool holder plumbed for NPT coolant connection and designed for use in lathe applications
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Unique “3 point” locking and locating system ensures axial and radial tool repeatability, tip-to-tip consistency, and part-to-part accuracy
- 4 alignment flats allow for multiple tool engagements and holder orientations
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, QC-1 locating/locking screw
- Precision manufactured in the USA



Quick Change – Holders

Internal Diameter	Head Diameter	Plumbed Thread	Shank Diameter	Overall Length	Tool Holder	
D1 $+0.005"$ $-0.0000"$	D3 $+0.003"$ $-0.003"$		D2 $-0.0003"$ $-0.0008"$ $-0.008mm$ $-0.020mm$	L1	Tool #	Price
.1875	.750	1/8-27 NPT	12 mm	2.8	QTHM-312	177.18
.1875	.750	1/8-27 NPT	.5000	2.8	QTH-85	177.18
.1875	.750	1/8-27 NPT	.6250	2.8	QTH-105	193.18
.1875	.750	1/8-27 NPT	16 mm	2.8	QTHM-316	193.18
.1875	.875	1/4-18 NPT	.7500	2.8	QTH-205	209.38
.1875	.875	1/4-18 NPT	20 mm	2.8	QTHM-320	209.38
.1875	1.062	1/4-18 NPT	22 mm	2.8	QTHM-322	209.38
.1875	1.250	1/4-18 NPT	25 mm	2.8	QTHM-325	209.38
.1875	1.062	1/4-18 NPT	1.0000	2.8	QTH-405	209.38
.1875	-	1/4-18 NPT	1.2500	2.8	QTH-605	209.38
.1875	-	1/4-18 NPT	32 mm	2.8	QTHM-332	209.38
.2500	.750	1/8-27 NPT	12 mm	2.8	QTHM-412	177.18
.2500	.750	1/8-27 NPT	.5000	2.8	QTH-86	177.18
.2500	.750	1/8-27 NPT	.6250	2.8	QTH-106	193.18
.2500	.750	1/8-27 NPT	16 mm	2.8	QTHM-416	193.18
.2500	.875	1/4-18 NPT	.7500	2.8	QTH-206	209.38
.2500	.875	1/4-18 NPT	20 mm	2.8	QTHM-420	209.38
.2500	1.062	1/4-18 NPT	22 mm	2.8	QTHM-422	209.38
.2500	1.250	1/4-18 NPT	25 mm	2.8	QTHM-425	209.38
.2500	1.062	1/4-18 NPT	1.0000	2.8	QTH-406	209.38
.2500	-	1/4-18 NPT	1.2500	2.8	QTH-606	209.38
.2500	-	1/4-18 NPT	32 mm	2.8	QTHM-432	209.38

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See pg 35-38 for replacement parts and accessories



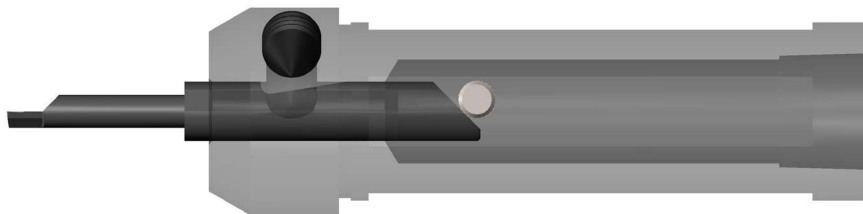
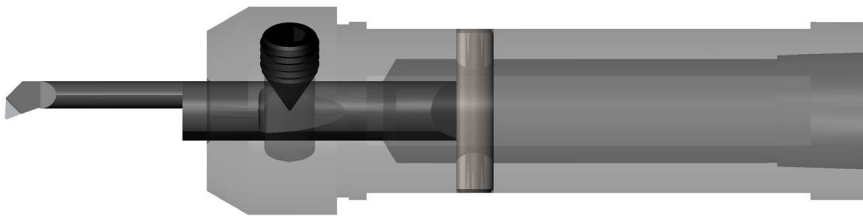
Quick Change Holders

Headed Holder – Standard Length (cont.)

QTH / QTHM

Continued from previous page

Internal Diameter	Head Diameter	Plumbed Thread	Shank Diameter	Overall Length	Tool Holder	
					Tool #	Price
D1 $+0.0005"$ $-0.0000"$	D3 $+0.003"$ $-0.003"$		D2 $-0.0003"$ $-0.0008"$ $-0.008mm$ $-0.020mm$	L1		
.3125	.875	1/8-27 NPT	.6250	2.8	QTH-107	193.18
.3125	.875	1/8-27 NPT	16 mm	2.8	QTHM-516	193.18
.3125	.875	1/4-18 NPT	.7500	2.8	QTH-207	209.38
.3125	.875	1/4-18 NPT	20 mm	2.8	QTHM-520	209.38
.3125	1.062	1/4-18 NPT	22 mm	2.8	QTHM-522	209.38
.3125	1.250	1/4-18 NPT	25 mm	2.8	QTHM-525	209.38
.3125	1.062	1/4-18 NPT	1.0000	2.8	QTH-407	209.38
.3125	-	1/4-18 NPT	1.2500	2.8	QTH-607	209.38
.3125	-	1/4-18 NPT	32 mm	2.8	QTHM-532	209.38
.3750	1.000	1/8-27 NPT	.6250	2.8	QTH-108	193.18
.3750	1.000	1/8-27 NPT	16 mm	2.8	QTHM-616	193.18
.3750	1.000	1/4-18 NPT	.7500	2.8	QTH-208	209.38
.3750	1.000	1/4-18 NPT	20 mm	2.8	QTHM-620	209.38
.3750	1.062	1/4-18 NPT	22 mm	2.8	QTHM-622	209.38
.3750	1.250	1/4-18 NPT	25 mm	2.8	QTHM-625	209.38
.3750	1.062	1/4-18 NPT	1.0000	2.8	QTH-408	209.38
.3750	-	1/4-18 NPT	1.2500	2.8	QTH-608	209.38
.3750	-	1/4-18 NPT	32 mm	2.8	QTHM-632	209.38
.5000	1.062	1/4-18 NPT	.7500	2.8	QTH-210	209.38
.5000	1.062	1/4-18 NPT	20 mm	2.8	QTHM-820	209.38
.5000	1.062	1/4-18 NPT	22 mm	2.8	QTHM-822	209.38
.5000	1.250	1/4-18 NPT	25 mm	2.8	QTHM-825	209.38
.5000	1.062	1/4-18 NPT	1.0000	2.8	QTH-410	209.38
.5000	-	1/4-18 NPT	1.2500	2.8	QTH-610	209.38
.5000	-	1/4-18 NPT	32 mm	2.8	QTHM-832	209.38



See pg 35-38 for replacement parts and accessories



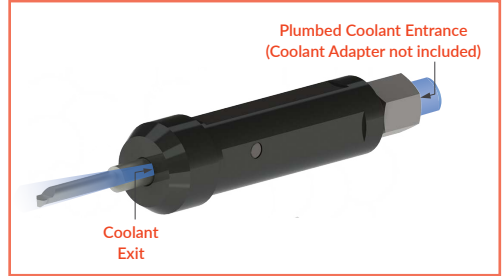
Quick Change – Holders

QTHL / QTHML

Quick Change Holders
Headed Holder – Long Length



- Quick change, long length tool holder designed for applications requiring an extended reach
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Unique “3 point” locking and locating system ensures axial and radial tool repeatability, tip-to-tip consistency, and part-to-part accuracy
- 4 alignment flats allow for multiple tool engagements and holder orientation flexibility
- Holder plumbed for NPT coolant connection
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, QC-1 locating/locking screw
- Precision manufactured in the USA



Quick Change – Holders

Internal Diameter	Head Diameter	Plumbed Thread	Shank Diameter	Overall Length	Tool Holder	
					Tool #	Price
D1 $+0.0005''$ $-0.0000''$	D3 $+0.003''$ $-0.003''$		D2 $-0.0003''$ $-0.0008''$ $-0.008mm$ $-0.020mm$	L1	Tool #	Price
.1875	.750	1/8-27 NPT	12 mm	5.8	QTHM-312L	241.48
.1875	.750	1/8-27 NPT	.5000	5.8	QTH-85L	241.48
.1875	.750	1/8-27 NPT	.6250	5.8	QTH-105L	257.68
.1875	.750	1/8-27 NPT	16 mm	5.8	QTHM-316L	257.68
.1875	.875	1/4-18 NPT	.7500	5.8	QTH-205L	273.68
.1875	.875	1/4-18 NPT	20 mm	5.8	QTHM-320L	273.68
.1875	1.062	1/4-18 NPT	22 mm	5.8	QTHM-322L	273.68
.1875	1.062	1/4-18 NPT	1.0000	5.8	QTH-405L	273.68
.1875	1.250	1/4-18 NPT	25 mm	5.8	QTHM-325L	273.68
.1875	-	1/4-18 NPT	1.2500	5.8	QTH-605L	273.68
.1875	-	1/4-18 NPT	32 mm	5.8	QTHM-332L	273.68
.2500	.750	1/8-27 NPT	12 mm	5.8	QTHM-412L	241.48
.2500	.750	1/8-27 NPT	.5000	5.8	QTH-86L	241.48
.2500	.750	1/8-27 NPT	.6250	5.8	QTH-106L	257.68
.2500	.750	1/8-27 NPT	16 mm	5.8	QTHM-416L	257.68
.2500	.875	1/4-18 NPT	.7500	5.8	QTH-206L	273.68
.2500	.875	1/4-18 NPT	20 mm	5.8	QTHM-420L	273.68
.2500	1.062	1/4-18 NPT	22 mm	5.8	QTHM-422L	273.68
.2500	1.062	1/4-18 NPT	1.0000	5.8	QTH-406L	273.68
.2500	1.250	1/4-18 NPT	25 mm	5.8	QTHM-425L	273.68
.2500	-	1/4-18 NPT	1.2500	5.8	QTH-606L	273.68
.2500	-	1/4-18 NPT	32 mm	5.8	QTHM-432L	273.68

Continued on next page

See pg 35-38 for replacement parts and accessories



Quick Change Holders

Headed Holder – Long Length (cont.)

QTHL / QTHML

Continued from previous page

Quick Change – Holders

Internal Diameter	Head Diameter	Plumbed Thread	Shank Diameter	Overall Length	Tool Holder	
					Tool #	Price
$D_1 \begin{smallmatrix} +.0005'' \\ -.0000'' \end{smallmatrix}$	$D_3 \begin{smallmatrix} +.003'' \\ -.003'' \end{smallmatrix}$		$D_2 \begin{smallmatrix} -.0003'' \\ -.0008'' \\ -.008mm \\ -.020mm \end{smallmatrix}$	L1		
.3125	.875	1/8-27 NPT	.6250	5.8	QTH-107L	257.68
.3125	.875	1/8-27 NPT	16 mm	5.8	QTHM-516L	257.68
.3125	.875	1/8-27 NPT	.7500	5.8	QTH-207L	273.68
.3125	.875	1/4-18 NPT	20 mm	5.8	QTHM-520L	273.68
.3125	1.062	1/4-18 NPT	22 mm	5.8	QTHM-522L	273.68
.3125	1.062	1/4-18 NPT	1.0000	5.8	QTH-407L	273.68
.3125	1.250	1/4-18 NPT	25 mm	5.8	QTHM-525L	273.68
.3125	-	1/4-18 NPT	1.2500	5.8	QTH-607L	273.68
.3125	-	1/4-18 NPT	32 mm	5.8	QTHM-532L	273.68
.3750	1.000	1/8-27 NPT	.6250	5.8	QTH-108L	257.68
.3750	1.000	1/8-27 NPT	16 mm	5.8	QTHM-616L	257.68
.3750	1.000	1/4-18 NPT	.7500	5.8	QTH-208L	273.68
.3750	1.000	1/4-18 NPT	20 mm	5.8	QTHM-620L	273.68
.3750	1.062	1/4-18 NPT	22 mm	5.8	QTHM-622L	273.68
.3750	1.062	1/4-18 NPT	1.0000	5.8	QTH-408L	273.68
.3750	1.250	1/4-18 NPT	25 mm	5.8	QTHM-625L	273.68
.3750	-	1/4-18 NPT	1.2500	5.8	QTH-608L	273.68
.3750	-	1/4-18 NPT	32 mm	5.8	QTHM-632L	273.68
.5000	1.062	1/4-18 NPT	.7500	5.8	QTH-210L	273.68
.5000	1.062	1/4-18 NPT	20 mm	5.8	QTHM-820L	273.68
.5000	1.062	1/4-18 NPT	22 mm	5.8	QTHM-822L	273.68
.5000	1.062	1/4-18 NPT	1.0000	5.8	QTH-410L	273.68
.5000	1.250	1/4-18 NPT	25 mm	5.8	QTHM-825L	273.68
.5000	-	1/4-18 NPT	1.2500	5.8	QTH-610L	273.68
.5000	-	1/4-18 NPT	32 mm	5.8	QTHM-832L	273.68

See pg 35-38 for replacement parts and accessories



QD

Quick Change Holders
Double-Ended - Similar ID



Quick Change - Holders

- Quick change double-ended tool holder allows for access to operations on both the main and sub side spindle
- Similar size quick change ID on opposing ends accommodates operations where common ranges of min bore sizes are required
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Utilizing multiple sizes of double-ended holders reduces set up time by having more shank variations available in the machine at time of set up
- Unique “3 point” locking and locating system ensures repeatability
- 4 alignment flats allow for multiple tool engagement and holder orientation
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screws
- Precision manufactured in the USA

	Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
	D1 $+0.0005"$ $-0.0000"$	D2 $-0.0003"$ $-0.0008"$ $-0.007mm$ $-0.020mm$	L1		Tool #	Price
NEW	.1875	.5000	2.20	40317	QD-3-500	302.78
NEW	.1875	.5000	3.20	40317	QD1-3-500	315.58
NEW	.1875	.6250	2.20	40317	QD-3-625	315.58
NEW	.1875	.6250	3.20	40317	QD1-3-625	328.38
NEW	.1875	.7500	3.20	40316	QD1-3-750	335.48
NEW	.1875	20 mm	3.20	40316	QD1-3-787	335.48
NEW	.1875	22 mm	3.20	40316	QD1-3-866	342.48
NEW	.1875	25 mm	3.20	40315	QD1-3-984	348.28
NEW	.1875	1.0000	3.20	40315	QD1-3-1000	348.28
NEW	.2500	.5000	3.20	40317	QD1-4-500	315.58
NEW	.2500	.6250	3.20	40317	QD1-4-625	328.38
NEW	.2500	.7500	3.20	40316	QD1-4-750	335.48
NEW	.2500	1.0000	3.20	40315	QD1-4-1000	348.28
NEW	.3125	.6250	3.20	40317	QD1-5-625	328.38
NEW	.3125	.7500	3.20	40317	QD1-5-750	335.48
NEW	.3125	1.0000	3.20	40316	QD1-5-1000	348.28
NEW	.3750	.7500	3.20	40317	QD1-6-750	335.48
NEW	.3750	1.0000	3.20	40316	QD1-6-1000	348.28
NEW	.5000	.7500	3.50	40317	QD2-8-750	335.48
NEW	.5000	1.0000	3.50	40316	QD2-8-1000	348.28



See It in Action

Scan the QR code to see tooling demonstrations to help you make more.

Tech Tip

Utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.

See pg 35-38 for replacement parts and accessories

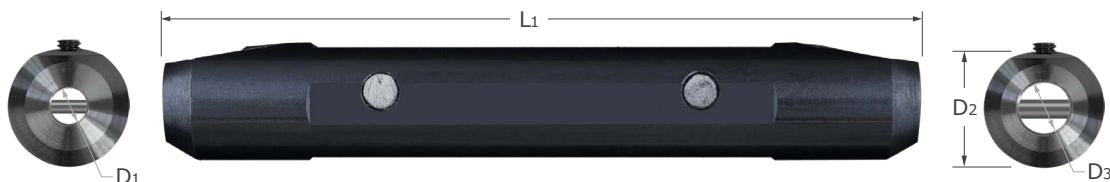


Quick Change Holders

Double-Ended - Dissimilar ID

QD

Quick Change - Holders



- Quick change double-ended tool holder allows for access to operations on both the main and sub side spindle
- Dissimilar size quick change ID on opposing ends accommodates operations where a larger range of min bore offerings are required
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Utilizing multiple sizes of double-ended holders reduces set up time by having more shank variations available in the machine at time of set up
- Unique “3 point” locking and locating system ensures repeatability
- 4 alignment flats allow for multiple tool engagement and holder orientation
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screws
- Precision manufactured in the USA

Internal Diameter (Side A)	Internal Diameter (Side B)	Shank Diameter	Overall Length	Locating Locking Screw (Side A)	Locating Locking Screw (Side B)	Tool Holder	
D1 $+0.0005"$ $-0.0000"$	D3 $+0.0005"$ $-0.0000"$	D2 $-0.0003"$ $-0.0008"$ $-0.07mm$ $-0.20mm$	L1			Tool #	Price
.1875	.2500	.5000	3.20	40317	40317	QD1-3-4-500	322.68 NEW
.1875	.2500	.6250	3.20	40317	40317	QD1-3-4-625	335.48 NEW
.1875	.2500	.7500	3.20	40316	40316	QD1-3-4-750	342.48 NEW
.1875	.2500	20 mm	3.20	40316	40316	QD1-3-4-787	342.48 NEW
.1875	.2500	22 mm	3.20	40316	40316	QD1-3-4-866	348.28 NEW
.1875	.2500	25 mm	3.20	40315	40316	QD1-3-4-984	355.48 NEW
.1875	.2500	1.0000	3.20	40315	40315	QD1-3-4-1000	355.48 NEW
.2500	.3125	.6250	3.20	40317	40317	QD1-4-5-625	335.48 NEW
.2500	.3125	.7500	3.20	40316	40317	QD1-4-5-750	342.48 NEW
.2500	.3125	1.0000	3.20	40315	40316	QD1-4-5-1000	355.48 NEW
.3125	.3750	.6250	3.20	40317	40317	QD1-5-6-625	335.48 NEW
.3125	.3750	.7500	3.20	40317	40317	QD1-5-6-750	342.48 NEW
.3125	.3750	1.0000	3.20	40316	40316	QD1-5-6-1000	355.48 NEW
.3750	.5000	.7500	3.20	40317	40317	QD1-6-8-750	342.48 NEW
.3750	.5000	1.0000	3.20	40316	40316	QD1-6-8-1000	355.48 NEW



See It in Action

Scan the QR code to see tooling demonstrations to help you make more.

Tech Tip

Utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.

See pg 35-38 for replacement parts and accessories

QDMR

Quick Change Holders
Double-Ended - Quick Change - ER



- Quick change double-ended tool holder allows for access to operations on both the main and sub side spindle
- Quick change on one end and ER collet taper on the other end allows for the repeatability of a quick change tool, with the versatility of operations that benefit from an ER collet connection
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Utilizing multiple sizes of double-ended holders reduces set up time by having more shank variations available in the machine at time of set up
- Unique "3 point" locking and locating system ensures repeatability
- 4 alignment flats allow for multiple tool engagement and holder orientation
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw
- Precision manufactured in the USA

	ER Taper Size	Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
						Tool #	Price
		$D_1 \begin{smallmatrix} +.0005'' \\ -.0000'' \end{smallmatrix}$	$D_2 \begin{smallmatrix} -.0003'' \\ -.0008'' \\ -.007mm \\ -.020mm \end{smallmatrix}$	L_1			
NEW	ER8-Mini	.1875	.5000	2.20	40317	QD-MR8-3-500	342.48
NEW		.1875	.5000	3.20	40317	QD1-MR8-3-500	355.48
NEW		.1875	.6250	2.20	40317	QD-MR8-3-625	355.48
NEW		.1875	.6250	3.20	40317	QD1-MR8-3-625	368.28
NEW		.2500	.5000	3.20	40317	QD1-MR8-4-500	355.48
NEW		.2500	.6250	3.20	40317	QD1-MR8-4-625	368.28
NEW		.3125	.6250	3.20	40317	QD1-MR8-5-625	368.28
NEW	ER11-Mini	.1875	.6250	2.20	40317	QD-MR11-3-625	355.48
NEW		.1875	.6250	3.20	40317	QD1-MR11-3-625	368.28
NEW		.1875	.7500	3.20	40316	QD1-MR11-3-750	375.28
NEW		.1875	20 mm	3.20	40316	QD1-MR11-3-787	375.28
NEW		.1875	22 mm	3.20	40316	QD1-MR11-3-866	380.98
NEW		.1875	25 mm	3.20	40315	QD1-MR11-3-984	388.08
NEW		.1875	1.0000	3.20	40315	QD1-MR11-3-1000	388.08
NEW		.2500	.6250	3.20	40317	QD1-MR11-4-625	368.28
NEW		.2500	.7500	3.20	40316	QD1-MR11-4-750	375.28

Continued on next page



See It in Action

Scan the QR code to see tooling demonstrations to help you make more.

Tech Tip

Utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.

See pg 35-38 for replacement parts and accessories

Quick Change Holders

Double-Ended - Quick Change - ER (cont.)

QDMR

Continued from previous page

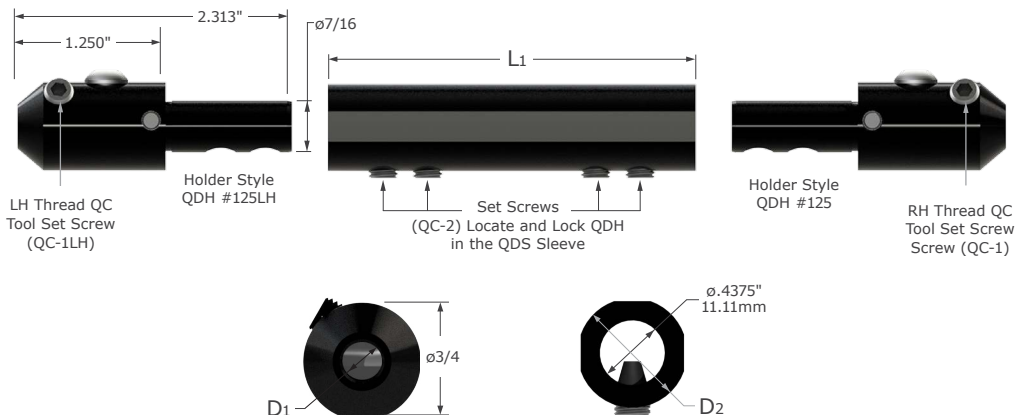
ER Taper Size	Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
D1 $^{+.0005}$ / $_{-.0000}$ "		D2 $^{-.0003}$ / $_{-.0008}$ " $^{-.007mm}$ / $_{-.020mm}$	L1		Tool #	Price
ER11-Mini	.2500	20 mm	3.20	40316	QD1-MR11-4-787	375.28 <small>NEW</small>
	.2500	22 mm	3.20	40316	QD1-MR11-4-866	380.98 <small>NEW</small>
	.2500	25 mm	3.20	40316	QD1-MR11-4-984	388.08 <small>NEW</small>
	.2500	1.0000	3.20	40315	QD1-MR11-4-1000	388.08 <small>NEW</small>
	.3125	.6250	3.20	40317	QD1-MR11-5-625	368.28 <small>NEW</small>
	.3125	.7500	3.20	40317	QD1-MR11-5-750	375.28 <small>NEW</small>
	.3125	1.0000	3.20	40316	QD1-MR11-5-1000	388.08 <small>NEW</small>
	.3750	.6250	3.20	40317	QD1-MR11-6-625	368.28 <small>NEW</small>
	.3750	.7500	3.20	40317	QD1-MR11-6-750	375.28 <small>NEW</small>
	.3750	1.0000	3.20	40316	QD1-MR11-6-1000	388.08 <small>NEW</small>
	.5000	.7500	3.50	40317	QD2-MR11-8-750	375.28 <small>NEW</small>
.5000	1.0000	3.50	40316	QD2-MR11-8-1000	388.08 <small>NEW</small>	
ER16-Mini	.1875	.7500	3.20	40316	QD1-MR16-3-750	375.28 <small>NEW</small>
	.1875	20 mm	3.20	40316	QD1-MR16-3-787	375.28 <small>NEW</small>
	.1875	22 mm	3.20	40316	QD1-MR16-3-866	380.98 <small>NEW</small>
	.1875	25 mm	3.20	40315	QD1-MR16-3-984	388.08 <small>NEW</small>
	.1875	1.0000	3.20	40315	QD1-MR16-3-1000	388.08 <small>NEW</small>
	.2500	.7500	3.20	40316	QD1-MR16-4-750	375.28 <small>NEW</small>
	.2500	20 mm	3.20	40316	QD1-MR16-4-787	375.28 <small>NEW</small>
	.2500	22 mm	3.20	40316	QD1-MR16-4-866	380.98 <small>NEW</small>
	.2500	25 mm	3.20	40316	QD1-MR16-4-984	388.08 <small>NEW</small>
	.2500	1.0000	3.20	40315	QD1-MR16-4-1000	388.08 <small>NEW</small>
	.3125	.7500	3.20	40317	QD1-MR16-5-750	375.28 <small>NEW</small>
	.3125	1.0000	3.20	40316	QD1-MR16-5-1000	388.08 <small>NEW</small>
	.3750	.7500	3.20	40317	QD1-MR16-6-750	375.28 <small>NEW</small>
	.3750	1.0000	3.20	40316	QD1-MR16-6-1000	388.08 <small>NEW</small>
	.5000	.7500	3.50	40317	QD2-MR16-8-750	375.28 <small>NEW</small>
	.5000	1.0000	3.50	40316	QD2-MR16-8-1000	388.08 <small>NEW</small>

Quick Change - Holders

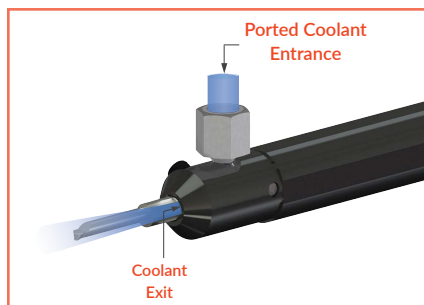


QDH / QDS / QDSM

Quick Change Holders
Double Ended Modular



- Quick change tool holder designed for use in twin spindle and Y-axis tooling block locations
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Unique “3 point” locking and locating system ensures axial and radial tool repeatability, tip-to-tip consistency, and part-to-part accuracy
- 4 alignment flats allow for multiple tool engagements and holder orientation flexibility
- Assemble unit prior to installation to reduce setup time
- Left and right holder design orients set screws on the same side as operator for easy access
- Left hand head has left hand threaded set screw
- Coolant delivered via external coolant port
- Heat treated and black oxide coated for durability and corrosion resistance
- Sleeve includes: hex wrench, locating/locking screw
- Tool holder includes: hex wrench, locating/locking screw, porting plug, straight coolant adapter
- Precision manufactured in the USA



Sleeve Diameter D2	Length of Sleeve L1	Sleeve		Internal Diameter D1	Ported Thread	Right Hand Tool Holder		Left Hand Tool Holder	
		Tool #	Price			Tool #	Price	Tool #	Price
-.0003" -.0008" -.008mm -.020mm	L1	Tool #	Price	D1 +.0005" -.0000"	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
						QDH-4125	178.68	QDH-4125LH	178.68
						QDH-5125	178.68	QDH-5125LH	178.68
.7500	2.5	QDS-750-2.5	193.98	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
						QDH-4125	178.68	QDH-4125LH	178.68
						QDH-5125	178.68	QDH-5125LH	178.68
.7500	3.1	QDS-750-3.1	201.78	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
						QDH-4125	178.68	QDH-4125LH	178.68
						QDH-5125	178.68	QDH-5125LH	178.68
20 mm	64 mm	QDSM-20-64	193.98	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
						QDH-4125	178.68	QDH-4125LH	178.68
						QDH-5125	178.68	QDH-5125LH	178.68
20 mm	79 mm	QDSM-20-79	201.78	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
						QDH-4125	178.68	QDH-4125LH	178.68
						QDH-5125	178.68	QDH-5125LH	178.68
22 mm	64 mm	QDSM-22-64	201.78	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
						QDH-4125	178.68	QDH-4125LH	178.68
						QDH-5125	178.68	QDH-5125LH	178.68

Continued on next page

See pg 35-38 for replacement parts and accessories

Quick Change Holders

QDH / QDS / QDSM

Double Ended Modular (cont.)

Continued from previous page

Sleeve Diameter D2 -.0003" -.0008" -.008mm -.020mm	Length of Sleeve L1	Sleeve		Internal Diameter D1 +.0005" -.0000"	Ported Thread	Right Hand Tool Holder		Left Hand Tool Holder	
		Tool #	Price			Tool #	Price	Tool #	Price
22 mm	79 mm	QDSM-22-79	209.48	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
				.2500	1/4-28 HP	QDH-4125	178.68	QDH-4125LH	178.68
				.3125	1/4-28 HP	QDH-5125	178.68	QDH-5125LH	178.68
25 mm	64 mm	QDSM-25-64	209.48	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
				.2500	1/4-28 HP	QDH-4125	178.68	QDH-4125LH	178.68
				.3125	1/4-28 HP	QDH-5125	178.68	QDH-5125LH	178.68
1.0000	2.500	QDS-1.00-2.5	209.48	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
				.2500	1/4-28 HP	QDH-4125	178.68	QDH-4125LH	178.68
				.3125	1/4-28 HP	QDH-5125	178.68	QDH-5125LH	178.68
1.0000	3.100	QDS-1.00-3.1	225.18	.1875	1/4-28 HP	QDH-3125	178.68	QDH-3125LH	178.68
				.2500	1/4-28 HP	QDH-4125	178.68	QDH-4125LH	178.68
					1/4-28 HP	QDH-5125	178.68	QDH-5125LH	178.68

Quick Change - Holders

Technical Resources on Micro100.com

Find Simulation Files, Speeds & Feeds, Torque Recommendations, Programs, Blogs, and more at micro100.com/resources



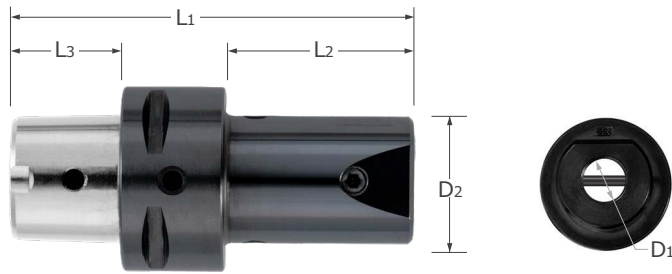
See pg 35-38 for replacement parts and accessories



Quick Change Holders

PSC Holders

QT



- PSC holder design combines Capto® compatible connection with proprietary Micro-Quik quick change system
- PSC flange designed for use on lathes with or without an automatic tool changer
- Short head length accommodates smaller work envelopes and provides maximum rigidity
- ID threaded for use with coolant adapter
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Unique “3 point” locking and locating system ensures axial and radial tool repeatability , tip-to-tip consistency, and part-to-part accuracy
- Heat treated for added durability
- Black oxide coated on all non-ground surfaces for corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw

Shank Type	Internal Diameter	Head Length	Head Diameter	Flange Length	Overall Length	Coolant Adapter Thread	Locating Locking Screw	Tool Holder	
								Tool #	Price
	$D_1 \begin{matrix} +.0005" \\ -.0000" \end{matrix}$	L2	D2	L3	L1				
C3	.1875	1.134	.866	.591	2.473	M12 x 1.5	40315	QT-187-C3	496.08
C3	.2500	1.340	.866	.591	2.679	M12 x 1.5	40315	QT-250-C3	496.08
C3	.3125	1.309	.866	.591	2.647	M12 x 1.5	40316	QT-312-C3	496.08
C3	.3750	1.278	.866	.591	2.616	M12 x 1.5	40316	QT-375-C3	496.08
C3	.5000	1.528	.984	.591	2.867	M12 x 1.5	40316	QT-500-C3	496.08
C4	.1875	1.134	.866	.787	2.867	M14 x 1.5	40315	QT-187-C4	496.08
C4	.2500	1.340	.866	.787	3.072	M14 x 1.5	40315	QT-250-C4	496.08
C4	.3125	1.309	.866	.787	3.041	M14 x 1.5	40316	QT-312-C4	496.08
C4	.3750	1.278	.866	.787	3.010	M14 x 1.5	40316	QT-375-C4	496.08
C4	.5000	1.528	.984	.787	3.260	M14 x 1.5	40316	QT-500-C4	496.08

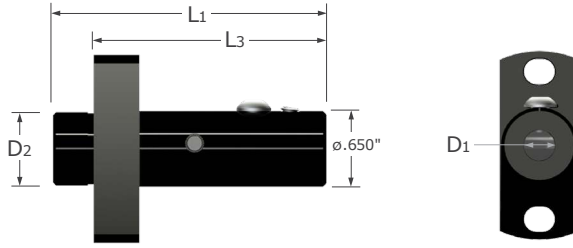
See pg 35-38 for replacement parts and accessories

Quick Change Holders

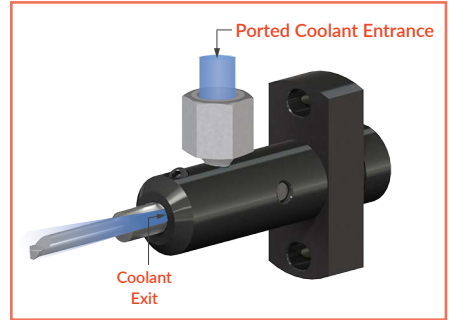
Star Swiss Machines – SR-10J

QZST

Quick Change – Holders



- Quick change tool holder designed for use in Star Swiss machine model SR-10J
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Designed for use with .1875", .2500", and .3125" diameter quick change tools
- Qualify with quick change centerline indicating tool (QI)
- Unique "3 point" locking and locating system ensures axial and radial tool repeatability, tip-to-tip consistency, and part-to-part accuracy
- Coolant delivered via external coolant port
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw, porting plug, straight porting adapter
- Precision manufactured in the USA



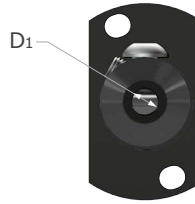
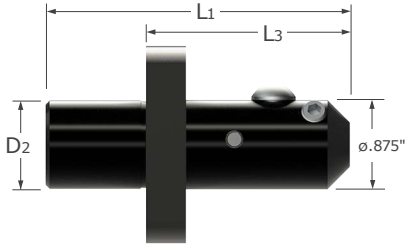
Internal Diameter	Overall Reach	Shank Diameter	Overall Length	Ported Thread	Locating/Locking Screw	Tool Holder	
						Tool #	Price
$D_1 \begin{matrix} +.0005" \\ -.0000" \end{matrix}$	L3	D2	L1				
.1875	1.956	16 mm	2.350	1/4-28 HP	40316	QZST-316L-SR10J	386.48
.2500	1.956	16 mm	2.350	1/4-28 HP	40317	QZST-416L-SR10J	386.48
.3125	1.956	16 mm	2.350	1/4-28 HP	40317	QZST-516L-SR10J	386.48

See pg 34 for Centerline Indicating Tool
 See pg 35-38 for replacement parts and accessories

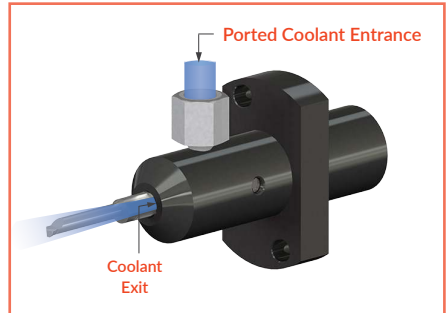


QZST

Quick Change Holders
Star Swiss Machines – SR-20



- Quick change tool holder designed for use in Star Swiss machine models SR-20, SB-16, SB-20R, SR-10J, SR-20J/JN, SR-20R, SR-20RIV, SR-32J/JN, SW-12RII, and SV-20R
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Designed for use with .1875", .2500", and .3125" diameter quick change tools
- Qualify with quick change centerline indicating tool (QI)
- Unique "3 point" locking and locating system ensures axial and radial tool repeatability, tip-to-tip consistency, and part-to-part accuracy
- Coolant delivered via external coolant port
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, QC-1 locating/locking screw, porting plug, straight coolant adapter
- Precision manufactured in the USA



Internal Diameter	Overall Reach	Shank Diameter	Overall Length	Ported Thread	Tool Holder	
					Tool #	Price
$D_1 \begin{smallmatrix} +.0005" \\ -.0000" \end{smallmatrix}$	L3	D2	L1			
.1875	1.400	22 mm	2.384	1/4-28 HP	QZST-322-SR20	401.98
.1875	2.000	22 mm	2.984	1/4-28 HP	QZST-322L-SR20	401.98
.2500	1.400	22 mm	2.384	1/4-28 HP	QZST-422-SR20	401.98
.2500	2.000	22 mm	2.984	1/4-28 HP	QZST-422L-SR20	401.98
.3125	1.400	22 mm	2.384	1/4-28 HP	QZST-522-SR20	401.98
.3125	2.000	22 mm	2.984	1/4-28 HP	QZST-522L-SR20	401.98
NEW .3750	1.400	22 mm	2.384	1/4-28 HP	QZST-622-SR20	401.98
NEW .3750	2.000	22 mm	2.984	1/4-28 HP	QZST-622L-SR20	401.98

See pg 34 for Centerline Indicating Tool

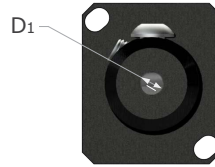
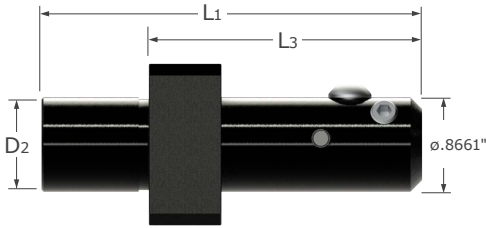
See pg 35-38 for replacement parts and accessories

Quick Change Holders

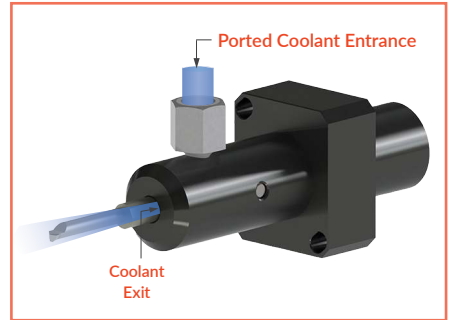
Star Swiss Machines – SR-20RIV

QZST

Quick Change – Holders



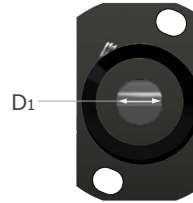
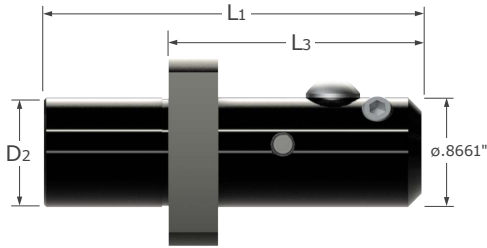
- Quick change tool holder designed for use in Star Swiss machine models SB-12/20R and SR-20RIV
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Designed for use with .1875", .2500", and .3125" diameter quick change tools
- Qualify with quick change centerline indicating tool (QI)
- Unique "3 point" locking and locating system ensures axial and radial tool repeatability, tip-to-tip consistency, and part-to-part accuracy
- Coolant delivered via external coolant port
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, QC-1 locating/locking screw, porting plug, straight coolant adapter
- Precision manufactured in the USA



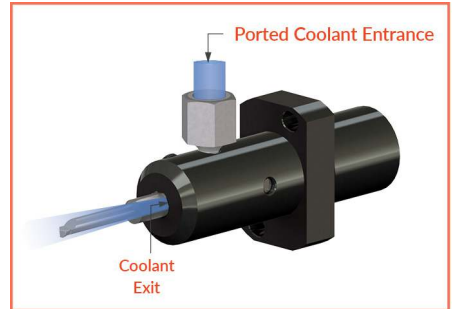
Internal Diameter	Overall Reach	Shank Diameter	Overall Length	Ported Thread	Tool Holder	
					Tool #	Price
D1 ^{+0.0005"} / _{-.0000"}	L3	D2	L1			
.1875	2.510	22 mm	3.494	1/4-28 HP	QZST-322L-SR20RIV	401.98
.2500	2.510	22 mm	3.494	1/4-28 HP	QZST-422L-SR20RIV	401.98
.3125	2.510	22 mm	3.494	1/4-28 HP	QZST-522L-SR20RIV	401.98

See pg 34 for Centerline Indicating Tool
 See pg 35-38 for replacement parts and accessories

QZST

Quick Change Holders
Star Swiss Machines – SW-20

- Quick change tool holder designed for use in Star Swiss machine model SW20
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Designed for use with .1875", .2500", and .3125" diameter quick change tools
- Qualify with quick change centerline indicating tool (QI)
- Unique "3 point" locking and locating system ensures axial and radial tool repeatability, tip-to-tip consistency, and part-to-part accuracy
- Coolant delivered via external coolant port
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, QC-1 locating/locking screw, porting plug, straight coolant adapter
- Precision manufactured in the USA



Internal Diameter	Overall Reach	Shank Diameter	Overall Length	Ported Thread	Tool Holder	
					Tool #	Price
$D_1 \begin{smallmatrix} +.0005" \\ -.0000" \end{smallmatrix}$	L3	D2	L1			
.1875	2.000	22 mm	2.984	1/4-28 HP	QZST-322L-SW20	401.98
.2500	2.000	22 mm	2.984	1/4-28 HP	QZST-422L-SW20	401.98
.3125	2.000	22 mm	2.984	1/4-28 HP	QZST-522L-SW20	401.98

See pg 34 for Centerline Indicating Tool

See pg 35-38 for replacement parts and accessories



Quick Change Holders Grinding Holder – Square

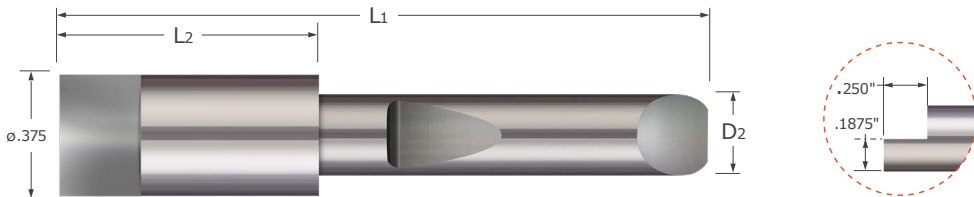


- Square shank holder designed to enable repeatable grinding of custom tool profiles on quick change blanks
- Optimized for use with proprietary half round (QSP) and full round (QSR) quick change blanks
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw
- Precision manufactured in the USA

Internal Diameter	Head Diameter	Square Shank	Overall Length	Tool Holder	
				Tool #	Price
D1 $^{+.0005"}_{-.0000}"$	D3 $^{+.005"}_{-.005}"$	A $^{+.0000"}_{-.0010}"$	L1		
.1875	.750	.5000	4.8	QSG-187-500	225.18
.1875	1.063	.7500	4.8	QSG-187-750	248.38
.2500	.750	.5000	4.8	QSG-250-500	225.18
.2500	1.063	.7500	4.8	QSG-250-750	248.38
.3125	.875	.5000	4.8	QSG-312-500	225.18
.3125	1.063	.7500	4.8	QSG-312-750	248.38
.3750	1.063	.7500	4.8	QSG-375-750	248.38
.5000	1.063	.7500	4.8	QSG-500-750	248.38

See pg 35-38 for replacement parts and accessories

Quick Change Holders Centerline Indicating Tool



- Designed to accurately indicate centerline when using quick change holders
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Precision ground .375" flat provides a wide area for accurate and easy indicating during set up and post crash
- Precision manufactured in the USA

Shank Diameter	Body Length	Overall Length	Uncoated	
			Tool #	Price
D2 (h6)	L2 $^{+.000"}_{-.015}"$	L1		
.1875	1.000	2.0	QI-187	168.58
.2500	.800	2.0	QI-250	168.58
.3125	.800	2.0	QI-312	168.58



Quick Change Holder Parts

Coolant Accessories

- Coolant adapters engineered to connect to both high pressure and low pressure with NPT and JIC-4 fitments
- Plumbed and ported accessories can be used together to allow for proper connection
- Sold individually or as packages of 10












	Accessory Type	Compatibility	Coolant Access Type	Holder Thread	Coolant Supply Thread	Single		Package of 10	
						Tool #	Price	Tool #	Price
	Straight Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/8-27 NPT	JIC 4	40301	6.78	41301	55.58
	Straight Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	JIC 4	40302	6.78	41302	55.58
	Straight Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	JIC 4	40303	9.78	41303	76.88
	Straight Coolant Adapter	Fits: QTH, QTHL, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	1/8-27 NPT	40311	9.78	41311	76.88
	Straight Coolant Adapter	Fits: QTH, QTHL, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	1/8-27 NPT	40312	9.78	41312	76.88
	90° Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/8-27 NPT	JIC 4	40304	11.48	41304	92.38
	90° Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	JIC 4	40305	11.48	41305	92.38
	90° Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	JIC 4	40306	11.48	41306	92.38
	90° Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	1/8-27 NPT	40307	15.68	41307	128.78
	NPT Coolant Reducer	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	1/8-27 NPT	40308	6.78	41308	55.58

Continued on next page

Quick Change Holder Parts

Coolant Accessories (cont.)

Continued from previous page

	Accessory Type	Compatibility	Coolant Access Type	Holder Thread	Coolant Supply Thread	Single		Package of 10	
						Tool #	Price	Tool #	Price
	NPT Coolant Reducer	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	1/8-27 NPT	40309	9.78	41309	76.88
	Plumbed Plug	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/8-27 NPT	-	40197	4.98	41197	40.08
	Plumbed Plug	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	-	40198	4.98	41198	40.08
	Plumbed Plug	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	-	40221	4.98	41221	40.08
	High Pressure Coolant Fitting	Fits: QZST, QDH, QTSP, QTSPL	Ported	1/4-28 HP	1/8-27 NPT	QN-1	9.78	QN-10	76.88
	1.28" Coolant Extension	Fits: QZST, QDH, QTSP, QTSPL	Ported	1/4-28 HP	1/4-28 HP	40199	9.28	41199	76.88
	45° Coolant Adapter	Fits: QZST, QDH, QTSP, QTSPL	Ported	1/4-28 HP	1/8-27 NPT	40313	9.78	41313	76.88
	90° Coolant Adapter	Fits: QZST, QDH, QTSP, QTSPL	Ported	1/4-28 HP	1/8-27 NPT	40314	9.78	41314	76.88
	Button Head Screw (Port Plug)	Fits: QDH, QZST / Hex Key not stocked for this item	Ported	1/4-28 HP	-	QC-5	1.68	QC-50	14.18
	Port Plug	Fits: QTSP, QTSPL	Ported	1/4-28 HP	-	40278	1.68	41278	13.58
	Hex Wrench	Fits: 40278 Porting Plug	Ported	-	-	40249	1.68	41249	14.18

Quick Change - Holder Parts



QC

Quick Change Holder Parts

Accessories

- Hardware and support tools for Micro 100 quick change tool holders
- Sold individually or as packages of 10

	Accessory Type	Compatibility	Single		Package of 10	
			Tool #	Price	Tool #	Price
	Locating / Locking Screw (Right Hand Threads)	Fits: QTH, QTHM, QZST, QSG, QDH Requires: QHT-1 Hex Key	QC-1	5.48	QC-10	38.58
	Locating / Locking Screw	Fits: QDH Requires: QHT-1 Hex Key	QC-1LH	15.68	QC-10LH	138.38
	Locating / Locking Screw	See QTS,QTSP,QTSL,QT SPL tables for compatibility	40208	1.68	41208	13.58
	Locating / Locking Screw	See QTS,QTSP,QTSL,QT SPL tables for compatibility	40215	1.68	41215	13.58
	Locating / Locking Screw	See QTS,QTSP,QTSL,QT SPL tables for compatibility	40216	1.68	41216	13.58
	Locating / Locking Screw	See QTS, QTSP, QT SPL, QTSL, QZST-SR10J tables for compatibility	40317	1.68	41317	13.58
	Locating / Locking Screw	See QTS, QTSP, QT SPL, QTSL, QZST-SR10J tables for compatibility	40316	1.68	41316	13.58
	Locating / Locking Screw	See QTS, QTSP, QT SPL, QTSL, QZST-SR10J tables for compatibility	40315	1.68	41315	13.58
	Locating / Locking Screw	See QTS, QTSP, QT SPL, QTSL, QZST-SR10J tables for compatibility	40279	1.68	41279	13.58

Continued on next page





Quick Change Parts

QC

Accessories (cont.)

Continued from previous page

Quick Change - Holder Parts

Accessory Type	Compatibility	Single		Package of 10	
		Tool #	Price	Tool #	Price
 <p>(Left Hand Threads) Locating / Locking Screw</p>	<p>Fits: QDS, QDSM Requires: QHT-1 Hex Key</p>	QC-2	5.48	QC-20	38.58
 <p>Locating / Locking Screw</p>	<p>Fits: QZST-SR10J Requires: 3/32" Hex Key</p>	QC-6	1.68	QC-60	14.18
 <p>Hex Wrench</p>	<p>Fits: QC-3, QC-4 Locking Screws</p>	QHK-1	1.68	QHK-10	14.18
 <p>Hex Wrench</p>	<p>Fits: QC-6 Socket Set Screws, 40208, 40215, 40216 Locating / Locking Screws</p>	QHK-2	1.68	QHK-20	14.18
 <p>T Style Handle Hex Wrench</p>	<p>Fits: QC-1, QC-1LH, QC-2 Locating / Locking Screws</p>	QHT-1	8.68	QHT-10	69.18



TH / THM / THMA

Standard Holders

Headed Holders - Standard Length



- Tool Holder optimized for use with Micro100 standard shank tools in turning applications
- Head allows for consistent length when seated against the tooling block.
- 4 alignment flats allow for multiple tool engagements and holder orientations
- Tools can be set at any length in the holder, allowing for maximum rigidity to reduce chatter and harmonics during machining
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw
- Precision manufactured in the USA

Internal Diameter		Head Diameter	Shank Diameter	Locating Locking Screw	Tool Holder	
D1 $+ .0005"$ $- .0000"$	decimal equiv.	D3 $+ .005"$ $- .005"$ $+ .127mm$ $- .127mm$	D2 $- .0003"$ $- .0008"$ $- .008mm$ $- .020mm$		Tool #	Price
3 mm	.1181	15 mm	12 mm	40239	THM-312	110.88
3 mm	.1181	19 mm	16 mm	40239	THM-316	110.88
3 mm	.1181	25 mm	20 mm	40287	THM-320	122.38
.1250	.1250	15 mm	12 mm	40239	THMA-412	139.38
.1250	.1250	.625	.5000	40211	TH-84	106.58
.1250	.1250	19 mm	16 mm	40239	THMA-416	139.38
.1250	.1250	.750	.6250	40263	TH-104	106.58
.1250	.1250	.875	.7500	40284	TH-204	117.58
.1250	.1250	25 mm	20 mm	40287	THMA-420	122.38
.1250	.1250	27 mm	22 mm	40287	THMA-422	122.38
.1250	.1250	32 mm	25 mm	40286	THMA-425	145.08
.1250	.1250	1.250	1.0000	40285	TH-404	139.48
4 mm	.1575	15 mm	12 mm	40283	THM-412	110.88
4 mm	.1575	19 mm	16 mm	40239	THM-416	110.88
4 mm	.1575	25 mm	20 mm	40287	THM-420	122.38
.1875	.1875	15 mm	12 mm	40283	THMA-512	139.38
.1875	.1875	.625	.5000	40211	TH-85	106.58
.1875	.1875	19 mm	16 mm	40239	THMA-516	139.38
.1875	.1875	.750	.6250	40263	TH-105	106.58
.1875	.1875	.875	.7500	40284	TH-205	117.58
.1875	.1875	25 mm	20 mm	40287	THMA-520	122.38
.1875	.1875	27 mm	22 mm	40287	THMA-522	122.38
.1875	.1875	32 mm	25 mm	40286	THMA-525	145.08
.1875	.1875	1.250	1.0000	40285	TH-405	139.48
6 mm	.2362	15 mm	12 mm	40283	THM-612	110.88
6 mm	.2362	19 mm	16 mm	40239	THM-616	110.88
6 mm	.2362	25 mm	20 mm	40287	THM-620	122.38

Continued on next page

See pg 48 for replacement parts and accessories

Standard Holders

TH / THM / THMA

Headed Holders - Standard Length (cont.)

Continued from previous page

Internal Diameter		Head Diameter	Shank Diameter	Locating Locking Screw	Tool Holder	
D1 $+ .0005"$ $- .0000"$	decimal equiv.	D3 $+ .005"$ $- .005"$ $+ .127mm$ $- .127mm$	D2 $- .0003"$ $- .0008"$ $- .008mm$ $- .020mm$		Tool #	Price
.2500	.2500	15 mm	12 mm	40283	THMA-612	139.38
.2500	.2500	.625	.5000	40211	TH-86	106.58
.2500	.2500	19 mm	16 mm	40239	THMA-616	139.38
.2500	.2500	.750	.6250	40211	TH-106	106.58
.2500	.2500	.875	.7500	40263	TH-206	117.58
.2500	.2500	25 mm	20 mm	40287	THMA-620	122.38
.2500	.2500	27 mm	22 mm	40287	THMA-622	122.38
.2500	.2500	32 mm	25 mm	40286	THMA-625	145.08
.2500	.2500	1.250	1.0000	40285	TH-406	139.48
.3125	.3125	15 mm	12 mm	40283	THMA-712	139.38
.3125	.3125	.625	.5000	40211	TH-87	106.58
.3125	.3125	19 mm	16 mm	40283	THMA-716	139.38
.3125	.3125	.750	.6250	40211	TH-107	106.58
.3125	.3125	.875	.7500	40263	TH-207	117.58
.3125	.3125	25 mm	20 mm	40287	THMA-720	122.38
.3125	.3125	27 mm	22 mm	40287	THMA-722	122.38
.3125	.3125	32 mm	25 mm	40287	THMA-725	145.08
.3125	.3125	1.250	1.0000	40284	TH-407	139.48
8 mm	.3150	15 mm	12 mm	40283	THM-812	110.88
8 mm	.3150	19 mm	16 mm	40283	THM-816	110.88
8 mm	.3150	25 mm	20 mm	40287	THM-820	122.38
.3750	.3750	.625	.5000	40211	TH-88	106.58
.3750	.3750	19 mm	16 mm	40283	THMA-816	139.38
.3750	.3750	.750	.6250	40211	TH-108	106.58
.3750	.3750	.875	.7500	40211	TH-208	117.58
.3750	.3750	25 mm	20 mm	40239	THMA-820	122.38
.3750	.3750	27 mm	22 mm	40287	THMA-822	122.38
.3750	.3750	32 mm	25 mm	40287	THMA-825	145.08
.3750	.3750	1.250	1.0000	40284	TH-408	139.48
10 mm	.3937	19 mm	16 mm	40283	THM-1016	110.88
10 mm	.3937	25 mm	20 mm	40239	THM-1020	122.38
12 mm	.4724	19 mm	16 mm	40283	THM-1216	110.88
12 mm	.4724	25 mm	20 mm	40283	THM-1220	122.38
.5000	.5000	.875	.7500	40211	TH-210	117.58
.5000	.5000	1.125	1.0000	40284	TH-410	139.48

Standard Holders

See pg 48 for replacement parts and accessories



THS

Standard Holders

Straight Holders - Standard Length



- Headless tool holder engineered for maximum versatility in any Swiss, standard lathe, or multi-function lathe
- Tool holder optimized for use with Micro 100 standard shank tools in turning applications
- 4 alignment flats allow for multiple tool engagements and holder orientations
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw
- Precision manufactured in the USA

Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
D1 +.0005" -.0000"	D2 +.0003" -.0008" +.008mm -.020mm	L1		Tool #	Price
.1250	.5000	2.75	40211	THS-2-500	140.88
.1250	.6250	2.75	40211	THS-2-625	140.88
.1250	16 mm	2.75	40263	THS-2-630	147.88
.1250	.7500	2.75	40263	THS-2-750	147.88
.1250	20 mm	2.75	40263	THS-2-787	147.88
.1250	22 mm	2.75	40284	THS-2-866	147.88
.1250	25 mm	2.75	40284	THS-2-984	154.98
.1250	1.0000	2.75	40284	THS-2-1000	154.98
.1875	.5000	2.75	40211	THS-3-500	140.88
.1875	.6250	2.75	40211	THS-3-625	140.88
.1875	16 mm	2.75	40211	THS-3-630	147.88
.1875	.7500	2.75	40263	THS-3-750	147.88
.1875	20 mm	2.75	40284	THS-3-787	147.88
.1875	22 mm	2.75	40284	THS-3-866	147.88
.1875	25 mm	2.75	40284	THS-3-984	154.98
.1875	1.0000	2.75	40284	THS-3-1000	154.98
.2500	.6250	2.75	40211	THS-4-625	140.88
.2500	16 mm	2.75	40211	THS-4-630	140.88
.2500	.7500	2.75	40211	THS-4-750	147.88
.2500	20 mm	2.75	40211	THS-4-787	147.88
.2500	22 mm	2.75	40263	THS-4-866	147.88
.2500	25 mm	2.75	40284	THS-4-984	147.88
.2500	1.0000	2.75	40284	THS-4-1000	154.98

Continued on next page

See pg 48 for replacement parts and accessories



Standard Holders

THS

Straight Holders - Standard Length (cont.)

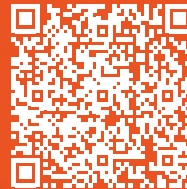
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Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
				Tool #	Price
D1 $+0.0005"$ $-0.0000"$	D2 $+0.0003"$ $-0.0008"$ $+0.008mm$ $-0.020mm$	L1			
.3125	.6250	2.75	40211	THS-5-625	140.88
.3125	16 mm	2.75	40211	THS-5-630	140.88
.3125	.7500	2.75	40211	THS-5-750	147.88
.3125	20 mm	2.75	40211	THS-5-787	147.88
.3125	22 mm	2.75	40263	THS-5-866	147.88
.3125	25 mm	2.75	40284	THS-5-984	147.88
.3125	1.0000	2.75	40284	THS-5-1000	154.98
.3750	.7500	2.75	40211	THS-6-750	147.88
.3750	20 mm	2.75	40211	THS-6-787	147.88
.3750	22 mm	2.75	40211	THS-6-866	147.88
.3750	25 mm	2.75	40263	THS-6-984	154.98
.3750	1.0000	2.75	40263	THS-6-1000	154.98
.5000	25 mm	2.75	40211	THS-8-984	154.98
.5000	1.0000	2.75	40211	THS-8-1000	154.98

Standard Holders

Sent Directly to Your Inbox

Valuable information about Micro 100 products and technical resources directly to your inbox. Be the first to know of newly-released tools to gain an immediate leg-up on the competition!



See pg 48 for replacement parts and accessories



THSL

Standard Holders
Straight Holders - Long Length



- Long length, headless tool holder designed for applications requiring an extended reach
- Headless tool holder engineered for maximum versatility in any Swiss, standard lathe, or multi-function lathe
- Tool holder optimized for use with Micro 100 standard shank tools in turning applications
- 4 alignment flats allow for multiple tool engagements and holder orientations
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw
- Precision manufactured in the USA

Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
				Tool #	Price
$D_1 \begin{matrix} +.0005'' \\ -.0000'' \end{matrix}$	$D_2 \begin{matrix} +.0003'' \\ -.0008'' \\ +.008\text{mm} \\ -.020\text{mm} \end{matrix}$	L_1			
.1250	.7500	5.75	40263	THSL-2-750	164.88
.1250	20 mm	5.75	40263	THSL-2-787	164.88
.1250	22 mm	5.75	40284	THSL-2-866	169.28
.1250	1.0000	5.75	40284	THSL-2-1000	173.48
.1875	.7500	5.75	40263	THSL-3-750	164.88
.1875	20 mm	5.75	40284	THSL-3-787	164.88
.1875	22 mm	5.75	40284	THSL-3-866	169.28
.1875	1.0000	5.75	40284	THSL-3-1000	173.48
.2500	.7500	5.75	40211	THSL-4-750	164.88
.2500	20 mm	5.75	40211	THSL-4-787	164.88
.2500	22 mm	5.75	40263	THSL-4-866	169.28
.2500	1.0000	5.75	40284	THSL-4-1000	173.48
.3125	.7500	5.75	40211	THSL-5-750	164.88
.3125	20 mm	5.75	40211	THSL-5-787	164.88
.3125	22 mm	5.75	40263	THSL-5-866	169.28
.3125	1.0000	5.75	40284	THSL-5-1000	173.48
.3750	.7500	5.75	40211	THSL-6-750	164.88
.3750	20 mm	5.75	40211	THSL-6-787	164.88
.3750	22 mm	5.75	40211	THSL-6-866	169.28
.3750	1.0000	5.75	40263	THSL-6-1000	173.48
.5000	1.0000	5.75	40211	THSL-8-1000	173.48

See pg 48 for replacement parts and accessories



Standard Holders

Double-Ended - Similar ID

TD



Standard Holders

- Standard ID double-ended tool holder allows for access to operations on both the main and sub side spindle
- Similar size standard ID on opposing ends accommodates operations where common range of min bore sizes are required
- Tool holder optimized for use with Micro 100 standard shank tools in turning applications
- Utilizing multiple sizes of double-ended holders reduces set up time by having more shank variations available in the machine at time of set up
- 4 alignment flats allow for multiple tool engagement and holder orientation
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screws
- Precision manufactured in the USA

Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
				Tool #	Price
$D_1 \begin{smallmatrix} +.0005'' \\ -.0000'' \end{smallmatrix}$	$D_2 \begin{smallmatrix} -.0003'' \\ -.0008'' \end{smallmatrix}$	L1			
.1875	.5000	2.20	40211	TD-3-500	262.98 NEW
.1875	.5000	3.20	40211	TD1-3-500	275.78 NEW
.1875	.6250	2.20	40211	TD-3-625	275.78 NEW
.1875	.6250	3.20	40211	TD1-3-625	290.08 NEW
.1875	.7500	3.20	40263	TD1-3-750	295.78 NEW
.1875	1.0000	3.20	40284	TD1-3-1000	308.48 NEW
.2500	.6250	3.20	40211	TD1-4-625	290.08 NEW
.2500	.7500	3.20	40211	TD1-4-750	295.78 NEW
.2500	1.0000	3.20	40263	TD1-4-1000	308.48 NEW
.3125	.6250	3.20	40211	TD1-5-625	290.08 NEW
.3125	.7500	3.20	40211	TD1-5-750	295.78 NEW
.3125	1.0000	3.20	40263	TD1-5-1000	308.48 NEW
.3750	.7500	3.20	40211	TD1-6-750	295.78 NEW
.3750	1.0000	3.20	40263	TD1-6-1000	308.48 NEW
.5000	1.0000	3.50	40211	TD2-8-1000	308.48 NEW



See It in Action

Scan the QR code to see tooling demonstrations to help you make more.

Tech Tip

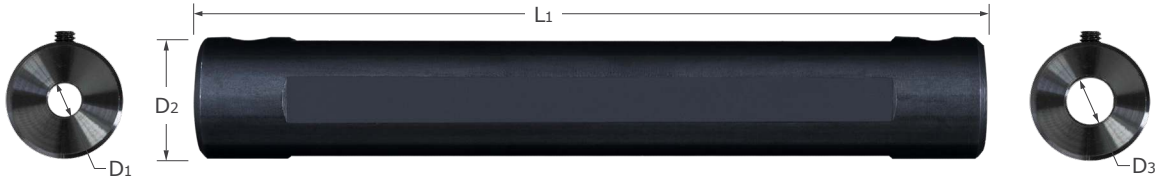
Utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.

See pg 48 for replacement parts and accessories



TD


Standard Holders
Double-Ended - Dissimilar ID



- Standard ID double-ended tool holder allows for access to operations on both the main and sub side spindle
- Dissimilar size standard ID on opposing ends accommodates operations where a larger range of min bore offerings are required
- Tool holder optimized for use with Micro 100 standard shank tools in turning applications
- Utilizing multiple sizes of double-ended holders reduces set up time by having more shank variations available in the machine at time of set up
- 4 alignment flats allow for multiple tool engagement and holder orientation
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screws
- Precision manufactured in the USA

	Internal Diameter (Side A)	Internal Diameter (Side B)	Shank Diameter	Overall Length	Locating Locking Screw (Side A)	Locating Locking Screw (Side B)	Tool Holder	
	D1 $^{+.0005}$ / $_{-.0000}$ "	D3 $^{+.0005}$ / $_{-.0000}$ "	D2 $^{-.0003}$ / $_{-.0008}$ "	L1			Tool #	Price
NEW	.1250	.1875	.5000	2.20	40211	40211	TD-2-3-500	270.18
NEW	.1250	.1875	.5000	3.20	40211	40211	TD1-2-3-500	282.98
NEW	.1250	.1875	.6250	2.20	40211	40211	TD-2-3-625	282.98
NEW	.1250	.1875	.6250	3.20	40211	40211	TD1-2-3-625	295.78
NEW	.1250	.1875	.7500	3.20	40263	40263	TD1-2-3-750	302.78
NEW	.1250	.1875	1.0000	3.20	40284	40284	TD1-2-3-1000	315.58
NEW	.1875	.2500	.6250	2.20	40211	40211	TD-3-4-625	282.98
NEW	.1875	.2500	.6250	3.20	40211	40211	TD1-3-4-625	295.78
NEW	.1875	.2500	.7500	3.20	40263	40211	TD1-3-4-750	302.78
NEW	.1875	.2500	1.0000	3.20	40284	40263	TD1-3-4-1000	315.58
NEW	.2500	.3125	.6250	3.20	40211	40211	TD1-4-5-625	295.78
NEW	.2500	.3125	.7500	3.20	40211	40211	TD1-4-5-750	302.78
NEW	.2500	.3125	1.0000	3.20	40263	40263	TD1-4-5-1000	315.58
NEW	.3125	.3750	.7500	3.20	40211	40211	TD1-5-6-750	302.78
NEW	.3125	.3750	1.0000	3.20	40263	40263	TD1-5-6-1000	315.58
NEW	.3750	.5000	1.0000	3.50	40263	40211	TD2-6-8-1000	315.58

Standard Holders



See It in Action

Scan the QR code to see tooling demonstrations to help you make more.

Tech Tip

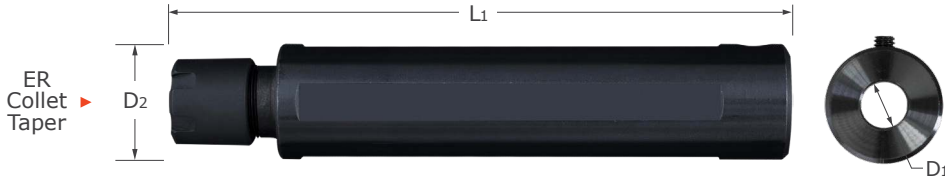
Utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.

See pg 48 for replacement parts and accessories

Standard Holders

Double-Ended - Standard - ER

TDMR



Standard Holders

- Standard ID double-ended tool holder allows for access to operations on both the main and sub side spindle
- Standard ID on one and ER collet taper on the other end allows the length adjustability of a standard shank tool, with the versatility of operations that benefit from an ER collet connection
- Tool holder optimized for use with Micro 100 standard shank tools in turning applications
- Utilizing multiple sizes of double-ended holders reduces set up time by having more shank variations available in the machine at time of set up
- 4 alignment flats allow for multiple tool engagement and holder orientation
- Heat treated and black oxide coated for durability and corrosion resistance
- Tool holder includes: hex wrench, locating/locking screws
- Precision manufactured in the USA

ER Taper Size	Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
					Tool #	Price
	D1 $^{+.0005"}_{-.0000"}"$	D2 $^{-.0003"}_{-.0008"}"$ $^{-.007mm}_{-.020mm}$	L1			
ER8-Mini	.1250	.5000	2.20	40211	TD-MR8-2-500	302.78
	.1250	.5000	3.20	40211	TD1-MR8-2-500	315.58
	.1250	.6250	2.20	40211	TD-MR8-2-625	315.58
	.1250	.6250	3.20	40211	TD1-MR8-2-625	328.38
	.1875	.5000	2.20	40211	TD-MR8-3-500	302.78
	.1875	.5000	3.20	40211	TD1-MR8-3-500	315.58
	.1875	.6250	2.20	40211	TD-MR8-3-625	315.58
	.1875	.6250	3.20	40211	TD1-MR8-3-625	328.38
	.2500	.6250	3.20	40211	TD1-MR8-4-625	328.38
.3125	.6250	3.20	40211	TD1-MR8-5-625	328.38	
ER11-Mini	.1250	.6250	2.20	40211	TD-MR11-2-625	315.58
	.1250	.6250	3.20	40211	TD1-MR11-2-625	328.38
	.1250	.7500	3.20	40263	TD1-MR11-2-750	335.48
	.1250	22 mm	3.20	40263	TD1-MR11-2-866	342.48
	.1250	25 mm	3.20	40284	TD1-MR11-2-984	348.28
	.1250	1.0000	3.20	40284	TD1-MR11-2-1000	348.28
	.1875	.6250	2.20	40211	TD-MR11-3-625	315.58
	.1875	.6250	3.20	40211	TD1-MR11-3-625	328.38
	.1875	.7500	3.20	40263	TD1-MR11-3-750	335.48

Continued on next page



See It In Action

Scan the QR code to see tooling demonstrations to help you make more

Tech Tip

Utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.

See pg 48 for replacement parts and accessories



TDMR

Standard Holders

Double-Ended - Standard - ER (cont.)

Continued from previous page

ER Taper Size	Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
D1 $\begin{matrix} +.0005" \\ -.0000" \end{matrix}$		D2 $\begin{matrix} -.0003" \\ -.0008" \\ -.007mm \\ -.020mm \end{matrix}$	L1		Tool #	Price
NEW	.1875	22 mm	3.20	40263	TD1-MR11-3-866	342.48
NEW	.1875	25 mm	3.20	40284	TD1-MR11-3-984	348.28
NEW	.1875	1.0000	3.20	40284	TD1-MR11-3-1000	348.28
NEW	.2500	.6250	3.20	40211	TD1-MR11-4-625	328.38
NEW	.2500	.7500	3.20	40211	TD1-MR11-4-750	335.48
NEW	.2500	1.0000	3.20	40263	TD1-MR11-4-1000	348.28
NEW	.3125	.6250	3.20	40211	TD1-MR11-5-625	328.38
NEW	.3125	.7500	3.20	40211	TD1-MR11-5-750	335.48
NEW	.3125	1.0000	3.20	40263	TD1-MR11-5-1000	348.28
NEW	.3750	.7500	3.20	40211	TD1-MR11-6-750	335.48
NEW	.3750	1.0000	3.20	40263	TD1-MR11-6-1000	348.28
NEW	.5000	1.0000	3.50	40211	TD2-MR11-8-1000	348.28
NEW	.1250	.7500	3.20	40263	TD1-MR16-2-750	335.48
NEW	.1250	22 mm	3.20	40263	TD1-MR16-2-866	342.48
NEW	.1250	25 mm	3.20	40284	TD1-MR16-2-984	348.28
NEW	.1250	1.0000	3.20	40284	TD1-MR16-2-1000	348.28
NEW	.1875	.7500	3.20	40263	TD1-MR16-3-750	335.48
NEW	.1875	22 mm	3.20	40263	TD1-MR16-3-866	342.48
NEW	.1875	25 mm	3.20	40284	TD1-MR16-3-984	348.28
NEW	.1875	1.0000	3.20	40284	TD1-MR16-3-1000	348.28
NEW	.2500	.7500	3.20	40211	TD1-MR16-4-750	335.48
NEW	.2500	1.0000	3.20	40263	TD1-MR16-4-1000	348.28
NEW	.3125	.7500	3.20	40211	TD1-MR16-5-750	335.48
NEW	.3125	1.0000	3.20	40263	TD1-MR16-5-1000	348.28
NEW	.3750	.7500	3.20	40211	TD1-MR16-6-750	335.48
NEW	.3750	1.0000	3.20	40263	TD1-MR16-6-1000	348.28
NEW	.5000	1.0000	3.50	40211	TD2-MR16-8-1000	348.28

Standard Holders

Standard Parts

Accessories

Standard Holder Parts

	Accessory Type	Compatibility	Single		Package of 10	
			Tool #	Price	Tool #	Price
	Locating / Locking Screw	See standard holder tables for compatibility page 39-47	40211	1.68	41211	13.58
	Locating / Locking Screw		40263	1.68	41263	13.58
	Locating / Locking Screw		40284	1.68	41284	13.58
	Locating / Locking Screw		40285	1.68	41285	13.58
	Locating / Locking Screw		40283	1.68	41283	13.58
	Locating / Locking Screw		40239	1.68	41239	13.58
	Locating / Locking Screw		40287	1.68	41287	13.58
	Locating / Locking Screw		40286	1.68	41286	13.58



ERI

Taper Integrated Holders

Solid ER



- Reached ER taper integrated holder that eliminates the need for multiple spindle adapters
- Designed for Swiss and multi-function lathes
- Works with any ER holder or ER spindle in both live and static applications
- Multiple projections available
- Maximum T.I.R. of < .0002"
- Included stop screw allows for quicker tool changes
- Stop screw can be adjusted from either end of the holder

Taper Size	Internal Diameter	Projection	Tool Holder	
			Tool #	Price
	D1	L2		
ER08	.1250	.394	ER08I-2-394	371.88
ER08	.1250	.590	ER08I-2-590	371.88
ER11	.1250	.394	ER11I-2-394	371.88
ER11	.1250	.590	ER11I-2-590	371.88
ER11	.1250	.787	ER11I-2-787	371.88
ER16	.1250	.630	ER16I-2-630	388.88
ER16	.1250	.984	ER16I-2-984	388.88
ER16	.1875	.630	ER16I-3-630	388.88
ER16	.1875	.984	ER16I-3-984	388.88

Taper Integrated Holders


See pg 50 for replacement parts and accessories



Taper Integrated Holder Parts

Accessories

- Hardware and support tools for Micro 100 ER taper integrated tool holders
- Sold individually or as packages of 10

Accessory Type	Thread Size	Single		Package of 10	
		Tool #	Price	Tool #	Price
 Stop Screw	M6	40810	20.78	41810	184.78
 Stop Screw	M8	40811	24.98	41811	227.48
 Locking Screw	M3	40812	3.18	41812	25.28
 Locking Screw	M4	40813	3.18	41813	25.28

Taper Integrated Holder Parts

ER

ER Collets
Metric ID

- Collets with metric ID sizes and ranges
- Can be utilized in live or static applications
- Maximum T.I.R. of .0004"
- High polished finish helps resist oxidation



Taper Size	ID D ₁	Clamp Range	Tool Holder	
			Tool #	Price
ER08	1.0 mm	0.5-1.0 mm	ER08-039	29.38
ER08	1.5 mm	1.0-1.5 mm	ER08-059	29.38
ER08	2.0 mm	1.5-2.0 mm	ER08-079	29.38
ER08	2.5 mm	2.0-2.5 mm	ER08-098	29.38
ER08	3.0 mm	2.5-3.0 mm	ER08-118	29.38
ER08	3.5 mm	3.0-3.5 mm	ER08-138	29.38
ER08	4.0 mm	3.5-4.0 mm	ER08-157	29.38
ER08	4.5 mm	4.0-4.5 mm	ER08-177	29.38
ER08	5.0 mm	4.5-5.0 mm	ER08-197	29.38
ER11	1.0 mm	0.5-1.0 mm	ER11-039	25.08
ER11	1.5 mm	1.0-1.5 mm	ER11-059	25.08
ER11	2.0 mm	1.5-2.0 mm	ER11-079	25.08
ER11	2.5 mm	2.0-2.5 mm	ER11-098	25.08
ER11	3.0 mm	2.5-3.0 mm	ER11-118	25.08
ER11	3.5 mm	3.0-3.5 mm	ER11-138	25.08
ER11	4.0 mm	3.5-4.0 mm	ER11-157	25.08
ER11	4.5 mm	4.0-4.5 mm	ER11-177	25.08
ER11	5.0 mm	4.5-5.0 mm	ER11-197	25.08
ER11	5.5 mm	5.0-5.5 mm	ER11-217	25.08
ER11	6.0 mm	5.5-6.0 mm	ER11-236	25.08
ER11	6.5 mm	6.0-6.5 mm	ER11-256	25.08
ER11	7.0 mm	6.5-7.0 mm	ER11-276	25.08
ER16	1.0 mm	0.5-1.0 mm	ER16-039	25.38
ER16	1.5 mm	1.0-1.5 mm	ER16-059	25.38
ER16	2.0 mm	1.5-2.0 mm	ER16-079	25.38
ER16	2.5 mm	1.5-2.5 mm	ER16-098	25.38
ER16	3.0 mm	2.0-3.0 mm	ER16-118	25.38
ER16	3.5 mm	2.5-3.5 mm	ER16-138	25.38
ER16	4.0 mm	3.0-4.0 mm	ER16-157	25.38
ER16	4.5 mm	3.5-4.5 mm	ER16-177	25.38
ER16	5.0 mm	4.0-5.0 mm	ER16-197	25.38
ER16	5.5 mm	4.5-5.5 mm	ER16-217	25.38
ER16	6.0 mm	5.0-6.0 mm	ER16-236	25.38
ER16	6.5 mm	5.5-6.5 mm	ER16-256	25.38
ER16	7.0 mm	6.0-7.0 mm	ER16-276	25.38

Continued on next page

ER Collets

Metric ID (cont.)

ER

Continued from previous page

Taper Size	ID D ₁	Clamp Range	Tool Holder	
			Tool #	Price
ER16	7.5 mm	6.5-7.5 mm	ER16-295	25.38
ER16	8.0 mm	7.0-8.0 mm	ER16-315	25.38
ER16	8.5 mm	7.5-8.5 mm	ER16-335	25.38
ER16	9.0 mm	8.0-9.0 mm	ER16-354	25.38
ER16	9.5 mm	8.5-9.5 mm	ER16-374	25.38
ER16	10.0 mm	9.0-10.0 mm	ER16-394	25.38
ER16	10.5 mm	9.5-10.5 mm	ER16-413	25.38
ER20	1.0 mm	0.5-1.0 mm	ER20-039	32.68 NEW
ER20	1.5 mm	1.0-1.5 mm	ER20-059	32.68 NEW
ER20	2.0 mm	1.5-2.0 mm	ER20-079	32.68 NEW
ER20	2.5 mm	1.5-2.5 mm	ER20-098	32.68 NEW
ER20	3.0 mm	2.0-3.0 mm	ER20-118	32.68 NEW
ER20	3.5 mm	2.5-3.5 mm	ER20-138	32.68 NEW
ER20	4.0 mm	3.0-4.0 mm	ER20-157	32.68 NEW
ER20	4.5 mm	3.5-4.5 mm	ER20-177	32.68 NEW
ER20	5.0 mm	4.0-5.0 mm	ER20-197	32.68 NEW
ER20	5.5 mm	4.5-5.5 mm	ER20-217	32.68 NEW
ER20	6.0 mm	5.0-6.0 mm	ER20-236	32.68 NEW
ER20	6.5 mm	5.5-6.5 mm	ER20-256	32.68 NEW
ER20	7.0 mm	6.0-7.0 mm	ER20-276	32.68 NEW
ER20	7.5 mm	6.5-7.5 mm	ER20-295	32.68 NEW
ER20	8.0 mm	7.0-8.0 mm	ER20-315	32.68 NEW
ER20	8.5 mm	7.5-8.5 mm	ER20-335	32.68 NEW
ER20	9.0 mm	8.0-9.0 mm	ER20-354	32.68 NEW
ER20	9.5 mm	8.5-9.5 mm	ER20-374	32.68 NEW
ER20	10.0 mm	9.0-10.0 mm	ER20-394	32.68 NEW
ER20	10.5 mm	9.5-10.5 mm	ER20-413	32.68 NEW
ER20	11.0 mm	10.0-11.0 mm	ER20-433	32.68 NEW
ER20	11.5 mm	10.5-11.5 mm	ER20-453	32.68 NEW
ER20	12.0 mm	11.0-12.0 mm	ER20-472	32.68 NEW
ER20	12.5 mm	11.5-12.5 mm	ER20-492	32.68 NEW
ER20	13.0 mm	12.0-13.0 mm	ER20-512	32.68 NEW
ER20	13.5 mm	12.5-13.5 mm	ER20-531	32.68 NEW
ER20	14.0 mm	13.0-14.0 mm	ER20-551	32.68 NEW
ER32	3.0 mm	2.0-3.0 mm	ER32-118	34.78 NEW
ER32	3.5 mm	2.5-3.5 mm	ER32-138	34.78 NEW
ER32	4.0 mm	3.0-4.0 mm	ER32-158	34.78 NEW
ER32	4.5 mm	3.5-4.5 mm	ER32-177	34.78 NEW
ER32	5.0 mm	4.0-5.0 mm	ER32-197	34.78 NEW
ER32	5.5 mm	4.5-5.5 mm	ER32-217	34.78 NEW
ER32	6.0 mm	5.0-6.0 mm	ER32-236	34.78 NEW
ER32	6.5 mm	5.5-6.5 mm	ER32-256	34.78 NEW
ER32	7.0 mm	6.0-7.0 mm	ER32-276	34.78 NEW
ER32	7.5 mm	6.5-7.5 mm	ER32-295	34.78 NEW
ER32	8.0 mm	7.0-8.0 mm	ER32-315	34.78 NEW

Continued on next page

Collets



ER

ER Collets
Metric ID (cont.)

Continued from previous page

	Taper Size	ID D1	Clamp Range	Tool Holder	
				Tool #	Price
NEW	ER32	8.5 mm	7.5-8.5 mm	ER32-335	34.78
NEW	ER32	9.0 mm	8.0-9.0 mm	ER32-354	34.78
NEW	ER32	9.5 mm	8.5-9.5 mm	ER32-374	34.78
NEW	ER32	10.0 mm	9.0-10.0 mm	ER32-394	34.78
NEW	ER32	10.5 mm	9.5-10.5 mm	ER32-413	34.78
NEW	ER32	11.0 mm	10.0-11.0 mm	ER32-433	34.78
NEW	ER32	11.5 mm	10.5-11.5 mm	ER32-453	34.78
NEW	ER32	12.0 mm	11.0-12.0 mm	ER32-472	34.78
NEW	ER32	12.5 mm	11.5-12.5 mm	ER32-492	34.78
NEW	ER32	13.0 mm	12.0-13.0 mm	ER32-512	34.78
NEW	ER32	13.5 mm	12.5-13.5 mm	ER32-532	34.78
NEW	ER32	14.0 mm	13.0-14.0 mm	ER32-551	34.78
NEW	ER32	14.5 mm	13.5-14.5 mm	ER32-571	34.78
NEW	ER32	15.0 mm	14.0-15.0 mm	ER32-591	34.78
NEW	ER32	15.5 mm	14.5-15.5 mm	ER32-610	34.78
NEW	ER32	16.0 mm	15.0-16.0 mm	ER32-630	34.78
NEW	ER32	16.5 mm	15.5-16.5 mm	ER32-650	34.78
NEW	ER32	17.0 mm	16.0-17.0 mm	ER32-669	34.78
NEW	ER32	17.5 mm	16.5-17.5 mm	ER32-689	34.78
NEW	ER32	18.0 mm	17.0-18.0 mm	ER32-709	34.78
NEW	ER32	18.5 mm	17.5-18.5 mm	ER32-728	34.78
NEW	ER32	19.0 mm	18.0-19.0 mm	ER32-748	34.78
NEW	ER32	19.5 mm	18.5-19.5 mm	ER32-768	34.78
NEW	ER32	20.0 mm	19.0-20.0 mm	ER32-787	34.78
NEW	ER32	21.0 mm	20.0-21.0 mm	ER32-827	34.78

ER Collets

Standard ID

ER

- Collets with standard ID sizes and ranges
- Can be utilized in live or static applications
- Maximum T.I.R. of .0004"
- High polished finish helps resist oxidation



Collets

Taper Size	ID	Clamp Range	ER Collet	
			Tool #	Price
	D1			
ER08	.0625	.043-.062	ER08-062	29.38
ER08	.1250	.086-.125	ER08-125	29.38
ER08	.1875	.148-.187	ER08-187	29.38
ER11	.0625	.043-.062	ER11-062	25.08
ER11	.0937	.054-.093	ER11-093	25.08
ER11	.1250	.086-.125	ER11-125	25.08
ER11	.1562	.117-.156	ER11-156	25.08
ER11	.1875	.148-.187	ER11-187	25.08
ER11	.2187	.179-.218	ER11-218	25.08
ER11	.2500	.211-.250	ER11-250	25.08
ER11	.2811	.242-.281	ER11-281	25.08
ER16	.0625	.043-.062	ER16-062	25.38
ER16	.0937	.054-.093	ER16-093	25.38
ER16	.1250	.086-.125	ER16-125	25.38
ER16	.1562	.117-.156	ER16-156	25.38
ER16	.1875	.148-.187	ER16-187	25.38
ER16	.2187	.179-.218	ER16-218	25.38
ER16	.2500	.211-.250	ER16-250	25.38
ER16	.2811	.242-.281	ER16-281	25.38
ER16	.3125	.273-.312	ER16-312	25.38
ER16	.3437	.304-.343	ER16-343	25.38
ER16	.3750	.336-.375	ER16-375	25.38
ER16	.4062	.367-.406	ER16-406	25.38
ER20	.0625	.043-.062	ER20-062	32.68
ER20	.0937	.054-.093	ER20-093	32.68
ER20	.1250	.086-.125	ER20-125	32.68
ER20	.1562	.117-.156	ER20-156	32.68
ER20	.1875	.148-.187	ER20-187	32.68
ER20	.2187	.179-.218	ER20-218	32.68
ER20	.2500	.211-.250	ER20-250	32.68
ER20	.2811	.242-.281	ER20-281	32.68
ER20	.3125	.273-.312	ER20-312	32.68
ER20	.3437	.304-.343	ER20-343	32.68
ER20	.3750	.336-.375	ER20-375	32.68
ER20	.4062	.367-.406	ER20-406	32.68
ER20	.4375	.398-.437	ER20-437	32.68
ER20	.4687	.429-.468	ER20-468	32.68
ER20	.5000	.461-.500	ER20-500	32.68

Continued on next page



ER

ER Collets
Standard ID

Continued from previous page

	Taper Size	ID	Clamp Range	ER Collet	
				Tool #	Price
		D1			
NEW	ER32	.0625	.043-.062	ER32-062	34.78
NEW	ER32	.0937	.054-.093	ER32-093	34.78
NEW	ER32	.1250	.086-.125	ER32-125	34.78
NEW	ER32	.1562	.117-.156	ER32-156	34.78
NEW	ER32	.1875	.148-.187	ER32-187	34.78
NEW	ER32	.2187	.179-.218	ER32-218	34.78
NEW	ER32	.2500	.211-.250	ER32-250	34.78
NEW	ER32	.2811	.242-.281	ER32-281	34.78
NEW	ER32	.3125	.273-.312	ER32-312	34.78
NEW	ER32	.3437	.304-.343	ER32-343	34.78
NEW	ER32	.3750	.336-.375	ER32-375	34.78
NEW	ER32	.4062	.367-.406	ER32-406	34.78
NEW	ER32	.4375	.398-.437	ER32-437	34.78
NEW	ER32	.4687	.429-.468	ER32-468	34.78
NEW	ER32	.5000	.461-.500	ER32-500	34.78
NEW	ER32	.5312	.492-.531	ER32-531	34.78
NEW	ER32	.5625	.523-.562	ER32-562	34.78
NEW	ER32	.5937	.554-.593	ER32-593	34.78
NEW	ER32	.6250	.586-.625	ER32-625	34.78
NEW	ER32	.6562	.617-.656	ER32-656	34.78
NEW	ER32	.6875	.648-.687	ER32-687	34.78
NEW	ER32	.7187	.679-.718	ER32-718	34.78
NEW	ER32	.7500	.711-.750	ER32-750	34.78

ER Collets

Metric ID - Metallic Sealed

ERMS

- Steel Sealed to 2000 PSI
- Size specific ID
- Collets with metric ID sizes
- Can be utilized in live or static applications
- Maximum T.I.R. of .0002"
- High polished finish helps resist oxidation



Collets

Taper Size	ID	ER Collet		
	D1	Tool #	Price	
ER11	3.0 mm	ERMS11-118	70.38	NEW
ER11	4.0 mm	ERMS11-157	70.38	NEW
ER11	5.0 mm	ERMS11-197	70.38	NEW
ER11	6.0 mm	ERMS11-236	70.38	NEW
ER11	7.0 mm	ERMS11-276	70.38	NEW
ER16	3.0 mm	ERMS16-118	56.48	NEW
ER16	4.0 mm	ERMS16-157	56.48	NEW
ER16	5.0 mm	ERMS16-197	56.48	NEW
ER16	6.0 mm	ERMS16-236	56.48	NEW
ER16	7.0 mm	ERMS16-276	56.48	NEW
ER16	8.0 mm	ERMS16-315	56.48	NEW
ER16	9.0 mm	ERMS16-354	56.48	NEW
ER16	10.0 mm	ERMS16-394	56.48	NEW
ER20	3.0 mm	ERMS20-118	63.28	NEW
ER20	4.0 mm	ERMS20-157	63.28	NEW
ER20	5.0 mm	ERMS20-197	63.28	NEW
ER20	6.0 mm	ERMS20-236	63.28	NEW
ER20	7.0 mm	ERMS20-276	63.28	NEW
ER20	8.0 mm	ERMS20-315	63.28	NEW
ER20	9.0 mm	ERMS20-354	63.28	NEW
ER20	10.0 mm	ERMS20-394	63.28	NEW
ER20	11.0 mm	ERMS20-433	63.28	NEW
ER20	12.0 mm	ERMS20-472	63.28	NEW
ER20	13.0 mm	ERMS20-512	63.28	NEW
ER32	3.0 mm	ERMS32-118	67.38	NEW
ER32	4.0 mm	ERMS32-157	67.38	NEW
ER32	5.0 mm	ERMS32-197	67.38	NEW
ER32	6.0 mm	ERMS32-236	67.38	NEW
ER32	7.0 mm	ERMS32-276	67.38	NEW
ER32	8.0 mm	ERMS32-315	67.38	NEW
ER32	9.0 mm	ERMS32-354	67.38	NEW
ER32	10.0 mm	ERMS32-394	67.38	NEW
ER32	11.0 mm	ERMS32-433	67.38	NEW
ER32	12.0 mm	ERMS32-472	67.38	NEW
ER32	13.0 mm	ERMS32-512	67.38	NEW
ER32	14.0 mm	ERMS32-551	67.38	NEW
ER32	15.0 mm	ERMS32-591	67.38	NEW
ER32	16.0 mm	ERMS32-630	67.38	NEW
ER32	17.0 mm	ERMS32-669	67.38	NEW
ER32	18.0 mm	ERMS32-709	67.38	NEW
ER32	19.0 mm	ERMS32-748	67.38	NEW
ER32	20.0 mm	ERMS32-787	67.38	NEW



ERMS

ER Collets

Standard ID - Metallic Sealed

- Steel Sealed to 2000 PSI
- Size specific ID
- Collets with standard ID sizes
- Can be utilized in live or static applications
- Maximum T.I.R. of .0002"
- High polished finish helps resist oxidation



	Taper Size	ID	ER Collet	
			Tool #	Price
		D1		
NEW	ER11	.1250	ERMS11-125	70.38
NEW	ER11	.1875	ERMS11-187	70.38
NEW	ER11	.2500	ERMS11-250	70.38
NEW	ER16	.1250	ERMS16-125	56.48
NEW	ER16	.1875	ERMS16-187	56.48
NEW	ER16	.2500	ERMS16-250	56.48
NEW	ER16	.3125	ERMS16-312	56.48
NEW	ER16	.3750	ERMS16-375	56.48
NEW	ER20	.1250	ERMS20-125	63.28
NEW	ER20	.1875	ERMS20-187	63.28
NEW	ER20	.2500	ERMS20-250	63.28
NEW	ER20	.3125	ERMS20-312	63.28
NEW	ER20	.3750	ERMS20-375	63.28
NEW	ER20	.5000	ERMS20-500	63.28
NEW	ER32	.2500	ERMS32-250	67.38
NEW	ER32	.3125	ERMS32-312	67.38
NEW	ER32	.3750	ERMS32-375	67.38
NEW	ER32	.5000	ERMS32-500	67.38
NEW	ER32	.6250	ERMS32-625	67.38
NEW	ER32	.7500	ERMS32-750	67.38

ER Collets Sets

ERS/ERM



- Collet sets available in either standard or metric ID sizes and ranges
- Can be utilized in live or static applications
- Maximum T.I.R. of .0004"
- High polished finish helps resist oxidation

Collets

Taper Size	ID Type	Collet Count	Clamp Range	Set	
				Tool #	Price
D1					
ER08	Metric	9	0.5-5.0 mm	ER08M-1	250.28
ER11	Standard	7	.043-.250	ER11S-1	165.98
ER11	Metric	13	0.5-7.0 mm	ER11M-1	308.78
ER16	Standard	10	.054-.375	ER16S-1	240.78
ER16	Metric	10	0.5-10.0 mm	ER16M-1	240.78
ER20	Standard	12	.117-.500	ER20S-1	372.68
ER20	Metric	12	1.5-13.0 mm	ER20M-1	372.68
ER32	Standard	18	.179-.750	ER32S-1	593.08
ER32	Metric	18	2.0-20 mm	ER32M-1	593.08

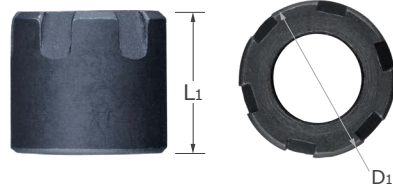
NEW
NEW
NEW
NEW



CMR

ER Collets
ER Collet Nuts

- For use where minimal OD is required
- Balanced to 25,000 RPM
- Black oxide with additional coating to reduce torque requirement



	Taper Size	Nut Type	Nut Diameter	Nut Length	Thread Size	ER Nuts	
						Tool #	Price
			D ₁	L ₁			
NEW	ER08	Mini	12 mm	11 mm	M10 x 0.75	CMR08-SW	36.78
NEW	ER11	Mini	16 mm	12 mm	M13 x 0.75	CMR11-SW	38.88
NEW	ER16	Mini	22 mm	18 mm	M19 x 1.0	CMR16-SW	40.18

Collets

MRSW

ER Collets
ER Collet Wrenches

- Wrenches utilized for various collet nut connections



	Taper Size	Nut Size	ER Wrenches	
			Tool #	Price
NEW	ER08	Mini	MR08-SW	25.88
NEW	ER11	Mini	MR11-SW	27.28
NEW	ER16	Mini	MR16-SW	28.68

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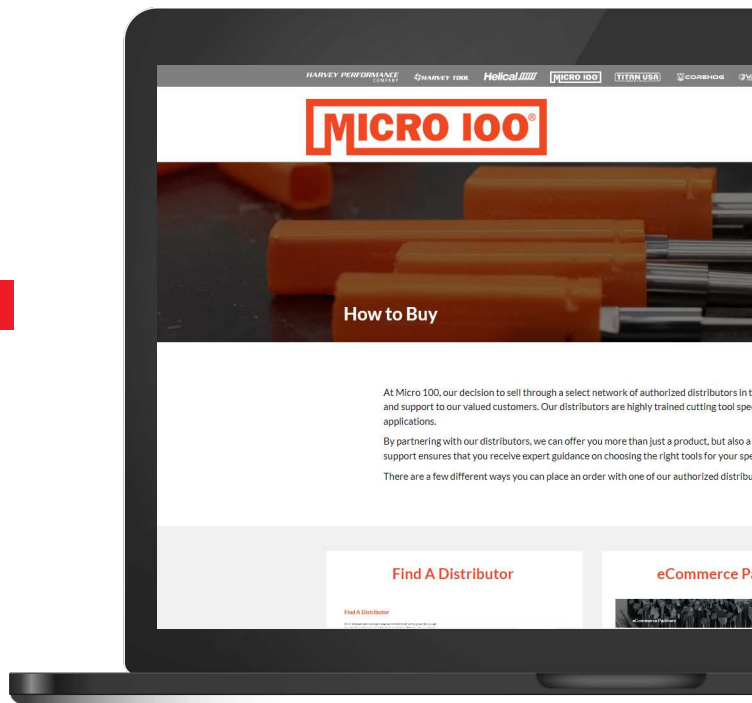
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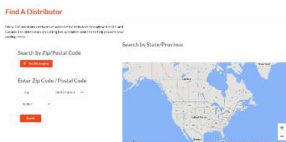
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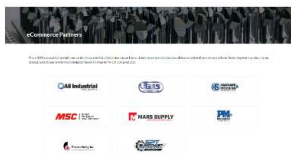
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TURNING TOOLS

Internal Diameter (ID) - Quick Change

Quick Change - Boring Tools <small>NEW SIZES!</small>	62
Quick Change - Profiling Tools <small>NEW SIZES!</small>	78
Quick Change - Grooving Tools <small>NEW SIZES!</small>	84
Quick Change - Threading Tools <small>NEW SIZES!</small>	105
Quick Change - Holemaking Tools	112
Quick Change - Blanks	117

Internal Diameter (ID) - Standard

Standard - Boring Tools <small>NEW SIZES!</small>	119
Standard - Profiling Tools	143
Standard - Grooving Tools <small>NEW SIZES!</small>	149
Standard - Threading Tools <small>NEW SIZES!</small>	174

Internal Diameter (ID) - Indexable

Indexable - Boring Bars, Boring	188
Indexable - Boring Bars, Facing	190
Indexable - Boring Bars, Profiling	191

Outside Diameter (OD) - Indexable

Indexable - Tool Holders, Chamfering & Turning	192
Indexable - Tool Holders, Facing & Turning	193
Indexable - Tool Holders, Profiling	196

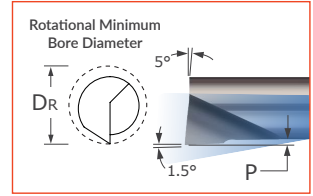
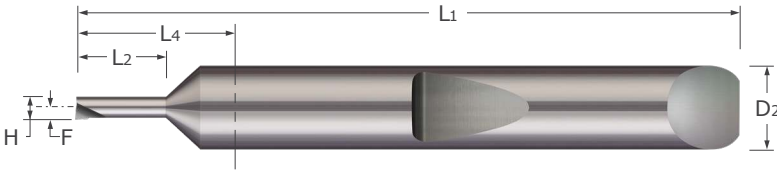
Outside Diameter (OD) - Brazed

Brazed - Box Turning Tools	197
Brazed - Forming Tools	198
Brazed - Grooving Tools	205
Brazed - Threading Tools	210
Brazed - Screw Machine Tools	211
Brazed - Cut Off Tools	213

Quick Change – Boring Tools

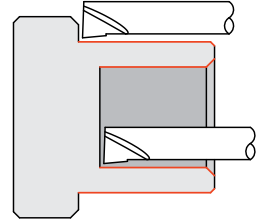
QMBB

Right Hand – Sharp - Miniature



Quick Change – Boring Tools

- Designed for facing and boring applications in bores .015" and larger
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- On center neck design allows for static and live/rotating applications
- Coolant fed enabled shank design
- Sharp corner profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA



Head Width	Rotational Minimum Bore Dia.	Max. Bore Depth	Projection	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
H	DR	L2 ^{+0.030"} / _{-.000"}	P	L4	F	D2 (h6)	L1				
.0135	.0150	.050	.0015	.590	.0075	.1875	1.5	QMBB-015050	64.18	QMBB-015050X	69.68
.0135	.0150	.075	.0015	.590	.0075	.1875	1.5	QMBB-015075	64.18	QMBB-015075X	70.98
.0180	.0200	.050	.0020	.590	.0100	.1875	1.5	QMBB-020050	64.18	QMBB-020050X	70.98
.0180	.0200	.075	.0020	.590	.0100	.1875	1.5	QMBB-020075	64.18	QMBB-020075X	69.68
.0180	.0200	.100	.0020	.590	.0100	.1875	1.5	QMBB-020100	64.18	QMBB-020100X	70.98
.0225	.0250	.050	.0025	.590	.0125	.1875	1.5	QMBB-025050	56.48	QMBB-025050X	63.28
.0225	.0250	.075	.0025	.590	.0125	.1875	1.5	QMBB-025075	56.48	QMBB-025075X	63.28
.0225	.0250	.100	.0025	.590	.0125	.1875	1.5	QMBB-025100	56.48	QMBB-025100X	61.78
.0225	.0250	.125	.0025	.590	.0125	.1875	1.5	QMBB-025125	56.48	QMBB-025125X	63.28
.0275	.0300	.075	.0025	.590	.0150	.1875	1.5	QMBB-030075	56.48	QMBB-030075X	63.28
.0275	.0300	.100	.0025	.590	.0150	.1875	1.5	QMBB-030100	56.48	QMBB-030100X	61.78
.0275	.0300	.125	.0025	.590	.0150	.1875	1.5	QMBB-030125	56.48	QMBB-030125X	63.28
.0275	.0300	.150	.0025	.590	.0150	.1875	1.5	QMBB-030150	56.48	QMBB-030150X	63.28
.0320	.0350	.075	.0030	.590	.0175	.1875	1.5	QMBB-035075	56.48	QMBB-035075X	63.28
.0320	.0350	.100	.0030	.590	.0175	.1875	1.5	QMBB-035100	56.48	QMBB-035100X	61.78
.0320	.0350	.150	.0030	.590	.0175	.1875	1.5	QMBB-035150	56.48	QMBB-035150X	61.78
.0320	.0350	.200	.0030	.590	.0175	.1875	1.5	QMBB-035200	56.48	QMBB-035200X	63.28
.0365	.0400	.100	.0035	.590	.0200	.1875	1.5	QMBB-040100	56.48	QMBB-040100X	63.28
.0365	.0400	.150	.0035	.590	.0200	.1875	1.5	QMBB-040150	56.48	QMBB-040150X	61.78
.0365	.0400	.200	.0035	.590	.0200	.1875	1.5	QMBB-040200	56.48	QMBB-040200X	61.78
.0405	.0450	.100	.0045	.590	.0225	.1875	1.5	QMBB-045100	56.48	QMBB-045100X	63.28
.0405	.0450	.150	.0045	.590	.0225	.1875	1.5	QMBB-045150	56.48	QMBB-045150X	61.78
.0405	.0450	.200	.0045	.590	.0225	.1875	1.5	QMBB-045200	56.48	QMBB-045200X	61.78
.0440	.0500	.100	.0060	.590	.0250	.1875	1.5	QMBB-050100	44.18	QMBB-050100X	50.98
.0440	.0500	.150	.0060	.590	.0250	.1875	1.5	QMBB-050150	44.18	QMBB-050150X	48.98
.0440	.0500	.200	.0060	.590	.0250	.1875	1.5	QMBB-050200	44.18	QMBB-050200X	48.98
.0440	.0500	.300	.0060	.590	.0250	.1875	1.5	QMBB-050300	44.18	QMBB-050300X	48.98
.0525	.0600	.150	.0075	.590	.0300	.1875	1.5	QMBB-060150	44.18	QMBB-060150X	48.98
.0525	.0600	.200	.0075	.590	.0300	.1875	1.5	QMBB-060200	44.18	QMBB-060200X	48.98
.0525	.0600	.300	.0075	.590	.0300	.1875	1.5	QMBB-060300	44.18	QMBB-060300X	48.98
.0525	.0600	.400	.0075	.590	.0300	.1875	1.5	QMBB-060400	44.18	QMBB-060400X	48.98
.0525	.0600	.500	.0075	.590	.0300	.1875	1.5	QMBB-060500	44.18	QMBB-060500X	48.98

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See pgs 16-34 for quick change holder options



QMBB

Quick Change – Boring Tools
Right Hand – Sharp - Miniature (cont.)

Continued from previous page

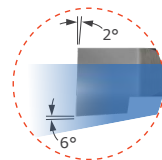
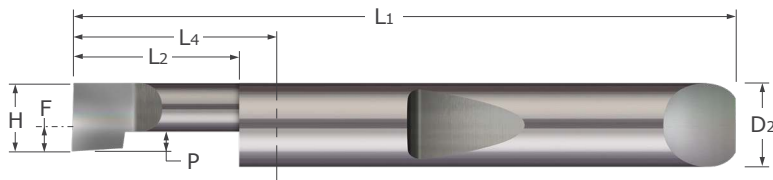
Head Width	Rotational Minimum Bore Dia.	Max. Bore Depth	Projection	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								H	DR	L2	P
.0625	.0700	.150	.0075	.590	.0350	.1875	1.5	QMBB-070150	44.18	QMBB-070150X	48.98
.0625	.0700	.200	.0075	.590	.0350	.1875	1.5	QMBB-070200	44.18	QMBB-070200X	48.98
.0625	.0700	.300	.0075	.590	.0350	.1875	1.5	QMBB-070300	44.18	QMBB-070300X	48.98
.0625	.0700	.400	.0075	.590	.0350	.1875	1.5	QMBB-070400	44.18	QMBB-070400X	48.98
.0625	.0700	.500	.0075	.590	.0350	.1875	1.5	QMBB-070500	44.18	QMBB-070500X	48.98
.0700	.0800	.150	.0100	.590	.0400	.1875	1.5	QMBB-080150	44.18	QMBB-080150X	48.98
.0700	.0800	.200	.0100	.590	.0400	.1875	1.5	QMBB-080200	44.18	QMBB-080200X	48.98
.0700	.0800	.300	.0100	.590	.0400	.1875	1.5	QMBB-080300	44.18	QMBB-080300X	48.98
.0700	.0800	.500	.0100	.590	.0400	.1875	1.5	QMBB-080500	44.18	QMBB-080500X	48.98
.0700	.0800	.600	.0100	1.090	.0400	.1875	2.0	QMBB-080600	44.18	QMBB-080600X	48.98
.0800	.0900	.200	.0100	.590	.0450	.1875	1.5	QMBB-090200	44.18	QMBB-090200X	50.98
.0800	.0900	.300	.0100	.590	.0450	.1875	1.5	QMBB-090300	44.18	QMBB-090300X	48.98
.0800	.0900	.500	.0100	.590	.0450	.1875	1.5	QMBB-090500	44.18	QMBB-090500X	48.98
.0800	.0900	.700	.0100	1.090	.0450	.1875	2.0	QMBB-090700	44.18	QMBB-090700X	48.98
.0875	.1000	.200	.0125	.590	.0500	.1875	1.5	QMBB-100200	44.18	QMBB-100200X	50.98
.0875	.1000	.300	.0125	.590	.0500	.1875	1.5	QMBB-100300	44.18	QMBB-100300X	48.98
.0875	.1000	.500	.0125	.590	.0500	.1875	1.5	QMBB-100500	44.18	QMBB-100500X	48.98
.0875	.1000	.700	.0125	1.090	.0500	.1875	2.0	QMBB-100700	44.18	QMBB-100700X	48.98
.0875	.1000	.800	.0125	1.090	.0500	.1875	2.0	QMBB-100800	44.18	QMBB-100800X	48.98

See pgs 16-34 for quick change holder options

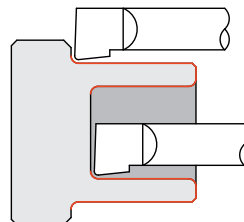


Quick Change – Boring Tools

Right Hand – Sharp



- Designed for facing and boring applications in bores .055" and larger
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Sharp corner profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Boring Tools

Head Width	Min. Bore Diameter*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
H		L2 ^{+0.030"} / _{-.000"}	P	L4	F	D2 (h6)	L1				
.0500	.0550	.150	.013	.590	-.0438	.1875	1.5	QBB-050150	44.18	QBB-050150X	48.98
.0500	.0550	.200	.013	.590	-.0438	.1875	1.5	QBB-050200	44.18	QBB-050200X	48.98
.0500	.0550	.250	.013	.590	-.0438	.1875	1.5	QBB-050250-000	44.18	QBB-050250-000X	50.98 NEW
.0500	.0550	.300	.013	.590	-.0438	.1875	1.5	QBB-050300	44.18	QBB-050300X	48.98
.0500	.0550	.400	.013	.590	-.0438	.1875	1.5	QBB-050400	44.18	QBB-050400X	48.98
.0600	.0700	.150	.015	.590	-.0338	.1875	1.5	QBB-060150	44.18	QBB-060150X	48.98
.0600	.0700	.200	.015	.590	-.0338	.1875	1.5	QBB-060200	44.18	QBB-060200X	48.98
.0600	.0700	.250	.015	.590	-.0338	.1875	1.5	QBB-060250-000	44.18	QBB-060250-000X	50.98 NEW
.0600	.0700	.300	.015	.590	-.0338	.1875	1.5	QBB-060300	44.18	QBB-060300X	48.98
.0600	.0700	.400	.015	.590	-.0338	.1875	1.5	QBB-060400	44.18	QBB-060400X	48.98
.0600	.0700	.500	.015	.590	-.0338	.1875	1.5	QBB-060500	44.18	QBB-060500X	48.98
.0700	.0800	.150	.015	.590	-.0238	.1875	1.5	QBB-070150-000	44.18	QBB-070150-000X	50.98
.0700	.0800	.200	.015	.590	-.0238	.1875	1.5	QBB-070200-000	44.18	QBB-070200-000X	50.98
.0700	.0800	.300	.015	.590	-.0238	.1875	1.5	QBB-070300-000	44.18	QBB-070300-000X	50.98
.0800	.0900	.150	.020	.590	-.0138	.1875	1.5	QBB-080150-000	44.18	QBB-080150-000X	50.98
.0800	.0900	.200	.020	.590	-.0138	.1875	1.5	QBB-080200	44.18	QBB-080200X	48.98
.0800	.0900	.300	.020	.590	-.0138	.1875	1.5	QBB-080300	44.18	QBB-080300X	48.98
.0800	.0900	.400	.020	.590	-.0138	.1875	1.5	QBB-080400-000	44.18	QBB-080400-000X	50.98
.0800	.0900	.500	.020	.590	-.0138	.1875	1.5	QBB-080500	44.18	QBB-080500X	48.98
.0800	.0900	.600	.020	1.090	-.0138	.1875	2.0	QBB-080600	44.18	QBB-080600X	48.98
.0900	.1000	.150	.020	.590	-.0038	.1875	1.5	QBB-090150-000	46.88	QBB-090150-000X	53.68
.0900	.1000	.200	.020	.590	-.0038	.1875	1.5	QBB-090200-000	46.88	QBB-090200-000X	53.68
.0900	.1000	.300	.020	.590	-.0038	.1875	1.5	QBB-090300-000	46.88	QBB-090300-000X	53.68
.0900	.1000	.400	.020	.590	-.0038	.1875	1.5	QBB-090400-000	46.88	QBB-090400-000X	53.68
.0900	.1000	.500	.020	.590	-.0038	.1875	1.5	QBB-090500-000	46.88	QBB-090500-000X	53.68

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 62 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 72-75

QBB

Quick Change – Boring Tools
Right Hand – Sharp (cont.)

Continued from previous page

	Head Width	Min. Bore Diameter*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AITIN Coated	
									H	L ₂ ^{+ .030"} _{-.000"}	P	L ₄
	.1000	.1100	.150	.025	.590	.0063	.1875	1.5	QBB-100150-000	46.88	QBB-100150-000X	53.68
	.1000	.1100	.200	.025	.590	.0063	.1875	1.5	QBB-100200	46.88	QBB-100200X	51.68
	.1000	.1100	.300	.025	.590	.0063	.1875	1.5	QBB-100300	46.88	QBB-100300X	51.68
	.1000	.1100	.400	.025	.590	.0063	.1875	1.5	QBB-100400-000	46.88	QBB-100400-000X	53.68
	.1000	.1100	.500	.025	.590	.0063	.1875	1.5	QBB-100500	46.88	QBB-100500X	51.68
	.1000	.1100	.600	.025	1.090	.0063	.1875	2.0	QBB-100600-000	48.78	QBB-100600-000X	55.58
	.1000	.1100	.700	.025	1.090	.0063	.1875	2.0	QBB-100700	46.88	QBB-100700X	51.68
NEW	.1000	.1100	.800	.025	1.090	.0063	.1875	2.0	QBB-100800-000	46.88	QBB-100800-000X	53.68
	.1100	.1220	.150	.028	.590	.0163	.1875	1.5	QBB-110150-000	46.88	QBB-110150-000X	53.68
	.1100	.1220	.200	.028	.590	.0163	.1875	1.5	QBB-110200-000	46.88	QBB-110200-000X	53.68
	.1100	.1220	.300	.028	.590	.0163	.1875	1.5	QBB-110300-000	46.88	QBB-110300-000X	53.18
	.1100	.1220	.400	.028	.590	.0163	.1875	1.5	QBB-110400-000	46.88	QBB-110400-000X	53.68
	.1100	.1220	.500	.028	.590	.0163	.1875	1.5	QBB-110500-000	46.88	QBB-110500-000X	53.68
	.1100	.1220	.600	.028	1.090	.0163	.1875	2.0	QBB-110600-000	48.78	QBB-110600-000X	55.58
	.1100	.1220	.700	.028	1.090	.0163	.1875	2.0	QBB-110700-000	48.78	QBB-110700-000X	55.58
	.1200	.1320	.250	.030	.590	.0263	.1875	1.5	QBB-120250-000	46.88	QBB-120250-000X	53.18
	.1200	.1320	.350	.030	.590	.0263	.1875	1.5	QBB-120350-000	46.88	QBB-120350-000X	53.18
	.1200	.1320	.500	.030	.590	.0263	.1875	1.5	QBB-120500-000	46.88	QBB-120500-000X	53.18
	.1200	.1320	.600	.030	1.090	.0263	.1875	2.0	QBB-120600-000	48.78	QBB-120600-000X	55.58
	.1200	.1320	.700	.030	1.090	.0263	.1875	2.0	QBB-120700-000	48.78	QBB-120700-000X	55.58
	.1200	.1320	.800	.030	1.090	.0263	.1875	2.0	QBB-120800-000	48.78	QBB-120800-000X	55.58
NEW	.1200	.1320	1.000	.030	1.090	.0263	.1875	2.0	QBB-1201000-000	48.78	QBB-1201000-000X	55.58
	.1400	.1520	.250	.035	.590	.0463	.1875	1.5	QBB-140250-000	46.88	QBB-140250-000X	53.18
	.1400	.1520	.400	.035	.590	.0463	.1875	1.5	QBB-140400-000	46.88	QBB-140400-000X	53.18
	.1400	.1520	.500	.035	.590	.0463	.1875	1.5	QBB-140500-000	46.88	QBB-140500-000X	53.18
	.1400	.1520	.600	.035	1.090	.0463	.1875	2.0	QBB-140600-000	48.78	QBB-140600-000X	55.58
	.1400	.1520	.700	.035	1.090	.0463	.1875	2.0	QBB-140700-000	48.78	QBB-140700-000X	55.58
	.1400	.1520	.750	.035	1.090	.0463	.1875	2.0	QBB-140750-000	48.78	QBB-140750-000X	55.58
	.1400	.1520	.800	.035	1.090	.0463	.1875	2.0	QBB-140800-000	48.78	QBB-140800-000X	55.58
	.1400	.1520	.900	.035	1.090	.0463	.1875	2.0	QBB-140900-000	48.78	QBB-140900-000X	55.58
	.1600	.1760	.250	.040	.590	.0663	.1875	1.5	QBB-160250-000	46.88	QBB-160250-000X	53.68
	.1600	.1760	.400	.040	.590	.0663	.1875	1.5	QBB-160400-000	46.88	QBB-160400-000X	53.18
	.1600	.1760	.500	.040	.590	.0663	.1875	1.5	QBB-160500-000	46.88	QBB-160500-000X	53.18
	.1600	.1760	.600	.040	1.090	.0663	.1875	2.0	QBB-160600-000	46.88	QBB-160600-000X	53.18
	.1600	.1760	.750	.040	1.090	.0663	.1875	2.0	QBB-160750-000	48.78	QBB-160750-000X	55.58
	.1600	.1760	.900	.040	1.090	.0663	.1875	2.0	QBB-160900-000	48.78	QBB-160900-000X	55.58
	.1600	.1760	1.000	.040	1.090	.0663	.1875	2.0	QBB-1601000-000	46.88	QBB-1601000-000X	53.18
NEW	.1600	.1760	1.250	.040	1.590	.0663	.1875	2.5	QBB-1601250-000	50.68	QBB-1601250-000X	57.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 62 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 72-75



Quick Change – Boring Tools

Right Hand – Sharp (cont.)

Continued from previous page

Head Width	Min. Bore Diameter*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								H	L ₂ ^{+ .030"} _{-.000"}	P	L ₄
.1800	.1960	.350	.045	.853	.0550	.2500	2.0	QBB-180350-000	52.58	QBB-180350-000X	60.58
.1800	.1960	.500	.045	.853	.0550	.2500	2.0	QBB-180500-000	52.58	QBB-180500-000X	60.58
.1800	.1960	.600	.045	.853	.0550	.2500	2.0	QBB-180600-000	52.58	QBB-180600-000X	60.58
.1800	.1960	.750	.045	.853	.0550	.2500	2.0	QBB-180750-000	52.58	QBB-180750-000X	60.58
.1800	.1960	.900	.045	1.353	.0550	.2500	2.5	QBB-180900-000	54.48	QBB-180900-000X	63.18
.1800	.1960	1.000	.045	1.353	.0550	.2500	2.5	QBB-1801000-000	54.48	QBB-1801000-000X	63.18
.1800	.1960	1.250	.045	1.353	.0550	.2500	2.5	QBB-1801250-000	54.48	QBB-1801250-000X	63.18
.1800	.1960	1.500	.045	1.853	.0550	.2500	3.0	QBB-1801500-000	56.68	QBB-1801500-000X	65.18
.2000	.2160	.400	.050	.853	.0750	.2500	2.0	QBB-200400-000	52.58	QBB-200400-000X	60.58
.2000	.2160	.500	.050	.853	.0750	.2500	2.0	QBB-200500-000	52.58	QBB-200500-000X	60.58
.2000	.2160	.600	.050	.853	.0750	.2500	2.0	QBB-200600-000	52.58	QBB-200600-000X	60.58
.2000	.2160	.700	.050	.853	.0750	.2500	2.0	QBB-200700-000	52.58	QBB-200700-000X	60.58
.2000	.2160	.750	.050	.853	.0750	.2500	2.0	QBB-200750-000	52.58	QBB-200750-000X	60.58
.2000	.2160	1.000	.050	1.353	.0750	.2500	2.5	QBB-2001000-000	52.58	QBB-2001000-000X	61.18
.2000	.2160	1.300	.050	1.353	.0750	.2500	2.5	QBB-2001300-000	52.58	QBB-2001300-000X	61.18
.2300	.2500	.400	.058	.853	.0738	.3125	2.0	QBB-230400-000	67.38	QBB-230400-000X	77.18
.2300	.2500	.500	.058	.853	.0738	.3125	2.0	QBB-230500-000	67.38	QBB-230500-000X	77.18
.2300	.2500	.600	.058	.853	.0738	.3125	2.0	QBB-230600-000	67.38	QBB-230600-000X	77.18
.2300	.2500	.700	.058	.853	.0738	.3125	2.0	QBB-230700-000	67.38	QBB-230700-000X	77.18
.2300	.2500	.750	.058	.853	.0738	.3125	2.0	QBB-230750-000	67.38	QBB-230750-000X	77.18
.2300	.2500	.800	.058	1.353	.0738	.3125	2.5	QBB-230800-000	69.28	QBB-230800-000X	79.68
.2300	.2500	.900	.058	1.353	.0738	.3125	2.5	QBB-230900-000	69.28	QBB-230900-000X	79.68
.2300	.2500	1.000	.058	1.353	.0738	.3125	2.5	QBB-2301000-000	67.38	QBB-2301000-000X	77.78
.2300	.2500	1.250	.058	1.353	.0738	.3125	2.5	QBB-2301250-000	67.38	QBB-2301250-000X	77.78
.2300	.2500	1.500	.058	1.853	.0738	.3125	3.0	QBB-2301500-000	67.38	QBB-2301500-000X	77.78
.2600	.2800	.500	.065	.853	.1038	.3125	2.0	QBB-260500-000	67.38	QBB-260500-000X	77.18
.2600	.2800	.750	.065	.853	.1038	.3125	2.0	QBB-260750-000	67.38	QBB-260750-000X	77.18
.2600	.2800	1.000	.065	1.353	.1038	.3125	2.5	QBB-2601000-000	69.28	QBB-2601000-000X	79.68
.2600	.2800	1.250	.065	1.353	.1038	.3125	2.5	QBB-2601250-000	69.28	QBB-2601250-000X	79.68
.2900	.3100	.500	.073	.853	.1338	.3125	2.0	QBB-290500-000	67.38	QBB-290500-000X	77.18
.2900	.3100	.600	.073	.853	.1338	.3125	2.0	QBB-290600-000	67.38	QBB-290600-000X	77.18
.2900	.3100	.750	.073	.853	.1338	.3125	2.0	QBB-290750-000	67.38	QBB-290750-000X	77.18
.2900	.3100	.900	.073	1.353	.1338	.3125	2.5	QBB-290900-000	69.28	QBB-290900-000X	79.68
.2900	.3100	1.000	.073	1.353	.1338	.3125	2.5	QBB-2901000-000	69.28	QBB-2901000-000X	79.68
.2900	.3100	1.250	.073	1.353	.1338	.3125	2.5	QBB-2901250-000	69.28	QBB-2901250-000X	79.68
.3200	.3400	.500	.080	.853	.1325	.3750	2.0	QBB-320500-000	92.38	QBB-320500-000X	103.98
.3200	.3400	1.000	.080	1.353	.1325	.3750	2.5	QBB-3201000-000	97.68	QBB-3201000-000X	109.98
.3200	.3400	1.500	.080	1.853	.1325	.3750	3.0	QBB-3201500-000	102.58	QBB-3201500-000X	114.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

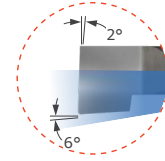
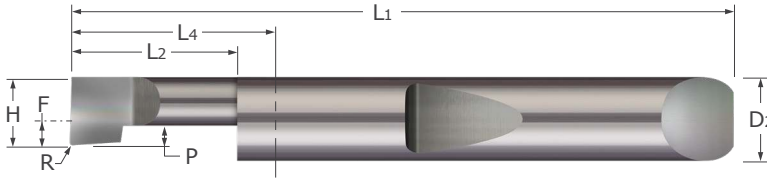
See pgs 16-34 for quick change holder options

See pg 62 for miniature sizes

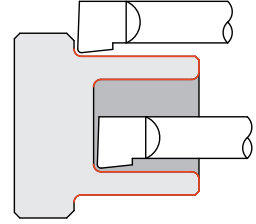
For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 72-75

QBB

Quick Change – Boring Tools
Right Hand



- Designed for facing and boring applications in bores .055" and larger
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Boring Tools

	Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
										H	L2	R	P
NEW	.0500	.0550	.150	.003	.013	.590	-.0438	.1875	1.5	QBB3-050150	49.28	QBB3-050150X	56.08
	.0500	.0550	.200	.003	.013	.590	-.0438	.1875	1.5	QBB3-050200	49.28	QBB3-050200X	56.08
	.0500	.0550	.250	.003	.013	.590	-.0438	.1875	1.5	QBB3-050250	49.28	QBB3-050250X	56.08
	.0500	.0550	.300	.003	.013	.590	-.0438	.1875	1.5	QBB3-050300	49.28	QBB3-050300X	56.08
	.0500	.0550	.400	.003	.013	.590	-.0438	.1875	1.5	QBB3-050400	49.28	QBB3-050400X	56.08
NEW	.0600	.0700	.150	.003	.015	.590	-.0338	.1875	1.5	QBB3-060150	49.28	QBB3-060150X	56.08
	.0600	.0700	.200	.003	.015	.590	-.0338	.1875	1.5	QBB3-060200	49.28	QBB3-060200X	56.08
	.0600	.0700	.250	.003	.015	.590	-.0338	.1875	1.5	QBB3-060250	49.28	QBB3-060250X	56.08
	.0600	.0700	.300	.003	.015	.590	-.0338	.1875	1.5	QBB3-060300	49.28	QBB3-060300X	56.08
	.0600	.0700	.400	.003	.015	.590	-.0338	.1875	1.5	QBB3-060400	49.28	QBB3-060400X	56.08
	.0600	.0700	.500	.003	.015	.590	-.0338	.1875	1.5	QBB3-060500	49.28	QBB3-060500X	56.08
	.0700	.0800	.150	.003	.015	.590	-.0238	.1875	1.5	QBB3-070150	49.28	QBB3-070150X	56.08
	.0700	.0800	.200	.003	.015	.590	-.0238	.1875	1.5	QBB3-070200	49.28	QBB3-070200X	56.08
	.0700	.0800	.300	.003	.015	.590	-.0238	.1875	1.5	QBB3-070300	49.28	QBB3-070300X	56.08
	.0800	.0900	.150	.003	.020	.590	-.0138	.1875	1.5	QBB3-080150	49.28	QBB3-080150X	56.08
	.0800	.0900	.200	.003	.020	.590	-.0138	.1875	1.5	QBB3-080200	49.28	QBB3-080200X	56.08
	.0800	.0900	.300	.003	.020	.590	-.0138	.1875	1.5	QBB3-080300	49.28	QBB3-080300X	56.08
	.0800	.0900	.400	.003	.020	.590	-.0138	.1875	1.5	QBB3-080400	49.28	QBB3-080400X	56.08
	.0800	.0900	.500	.003	.020	.590	-.0138	.1875	1.5	QBB3-080500	49.28	QBB3-080500X	56.08
	.0800	.0900	.600	.003	.020	1.090	-.0138	.1875	2.0	QBB3-080600	51.18	QBB3-080600X	57.98
	.0900	.1000	.150	.003	.020	.590	-.0038	.1875	1.5	QBB3-090150	49.28	QBB3-090150X	56.08
	.0900	.1000	.200	.003	.020	.590	-.0038	.1875	1.5	QBB3-090200	49.28	QBB3-090200X	56.08
	.0900	.1000	.300	.003	.020	.590	-.0038	.1875	1.5	QBB3-090300	49.28	QBB3-090300X	56.08
	.0900	.1000	.400	.003	.020	.590	-.0038	.1875	1.5	QBB3-090400	49.28	QBB3-090400X	56.08
	.0900	.1000	.500	.003	.020	.590	-.0038	.1875	1.5	QBB3-090500	49.28	QBB3-090500X	56.08

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 62 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 72-75



Quick Change – Boring Tools

QBB

Right Hand (cont.)

Continued from previous page

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
H	L ₂	$\begin{matrix} +.030" \\ -.000" \end{matrix}$	R	P	L ₄	F	D ₂ (h6)	L ₁				
			$\begin{matrix} +.001" \\ -.001" \end{matrix}$									
.1000	.1100	.150	.003	.025	.590	.0063	.1875	1.5	QBB3-100150	46.88	QBB3-100150X	53.68
.1000	.1100	.200	.003	.025	.590	.0063	.1875	1.5	QBB3-100200	46.88	QBB3-100200X	53.68
.1000	.1100	.300	.003	.025	.590	.0063	.1875	1.5	QBB3-100300	46.88	QBB3-100300X	53.68
.1000	.1100	.400	.003	.025	.590	.0063	.1875	1.5	QBB3-100400	46.88	QBB3-100400X	53.68
.1000	.1100	.500	.003	.025	.590	.0063	.1875	1.5	QBB3-100500	46.88	QBB3-100500X	53.68
.1000	.1100	.600	.003	.025	1.090	.0063	.1875	2.0	QBB3-100600	48.78	QBB3-100600X	55.58
.1000	.1100	.700	.003	.025	1.090	.0063	.1875	2.0	QBB3-100700	48.78	QBB3-100700X	55.58
.1000	.1100	.800	.003	.025	1.090	.0063	.1875	2.0	QBB3-100800	48.78	QBB3-100800X	55.58
.1100	.1220	.150	.003	.028	.590	.0163	.1875	1.5	QBB3-110150	46.88	QBB3-110150X	53.68
.1100	.1220	.200	.003	.028	.590	.0163	.1875	1.5	QBB3-110200	46.88	QBB3-110200X	53.68
.1100	.1220	.300	.003	.028	.590	.0163	.1875	1.5	QBB-110300	46.88	QBB-110300X	51.68
.1100	.1220	.400	.003	.028	.590	.0163	.1875	1.5	QBB3-110400	46.88	QBB3-110400X	53.68
.1100	.1220	.500	.003	.028	.590	.0163	.1875	1.5	QBB-110500	46.88	QBB-110500X	51.68
.1100	.1220	.600	.003	.028	1.090	.0163	.1875	2.0	QBB3-110600	48.78	QBB3-110600X	55.58
.1100	.1220	.700	.003	.028	1.090	.0163	.1875	2.0	QBB-110700	46.88	QBB-110700X	51.68
.1100	.1220	.800	.003	.028	1.090	.0163	.1875	2.0	QBB3-110800	46.88	QBB3-110800X	53.68
.1200	.1320	.250	.003	.030	.590	.0263	.1875	1.5	QBB-120250	46.88	QBB-120250X	51.68
.1200	.1320	.250	.005	.030	.590	.0263	.1875	1.5	QBB5-120250	46.88	QBB5-120250X	53.68
.1200	.1320	.350	.003	.030	.590	.0263	.1875	1.5	QBB-120350	46.88	QBB-120350X	51.68
.1200	.1320	.350	.005	.030	.590	.0263	.1875	1.5	QBB5-120350	46.88	QBB5-120350X	53.68
.1200	.1320	.500	.003	.030	.590	.0263	.1875	1.5	QBB-120500	46.88	QBB-120500X	51.68
.1200	.1320	.500	.005	.030	.590	.0263	.1875	1.5	QBB5-120500	46.88	QBB5-120500X	53.68
.1200	.1320	.600	.003	.030	1.090	.0263	.1875	2.0	QBB3-120600	48.78	QBB3-120600X	55.58
.1200	.1320	.600	.005	.030	1.090	.0263	.1875	2.0	QBB5-120600	48.78	QBB5-120600X	55.58
.1200	.1320	.700	.003	.030	1.090	.0263	.1875	2.0	QBB-120700	46.88	QBB-120700X	51.68
.1200	.1320	.700	.005	.030	1.090	.0263	.1875	2.0	QBB5-120700	48.78	QBB5-120700X	55.58
.1200	.1320	.800	.003	.030	1.090	.0263	.1875	2.0	QBB-120800	46.88	QBB-120800X	51.68
.1200	.1320	.800	.005	.030	1.090	.0263	.1875	2.0	QBB5-120800	48.78	QBB5-120800X	55.58
.1400	.1520	.250	.003	.035	.590	.0463	.1875	1.5	QBB3-140250	46.88	QBB3-140250X	53.68
.1400	.1520	.250	.005	.035	.590	.0463	.1875	1.5	QBB5-140250	46.88	QBB5-140250X	53.68
.1400	.1520	.400	.003	.035	.590	.0463	.1875	1.5	QBB-140400	46.88	QBB-140400X	51.68
.1400	.1520	.400	.005	.035	.590	.0463	.1875	1.5	QBB5-140400	46.88	QBB5-140400X	53.68
.1400	.1520	.500	.003	.035	.590	.0463	.1875	1.5	QBB3-140500	46.88	QBB3-140500X	53.68
.1400	.1520	.500	.005	.035	.590	.0463	.1875	1.5	QBB5-140500	46.88	QBB5-140500X	53.68
.1400	.1520	.600	.003	.035	1.090	.0463	.1875	2.0	QBB-140600	46.88	QBB-140600X	51.68
.1400	.1520	.600	.005	.035	1.090	.0463	.1875	2.0	QBB5-140600	48.78	QBB5-140600X	55.58
.1400	.1520	.700	.003	.035	1.090	.0463	.1875	2.0	QBB3-140700	48.78	QBB3-140700X	55.58
.1400	.1520	.700	.005	.035	1.090	.0463	.1875	2.0	QBB5-140700	48.78	QBB5-140700X	55.58
.1400	.1520	.750	.003	.035	1.090	.0463	.1875	2.0	QBB3-140750	48.78	QBB3-140750X	55.58
.1400	.1520	.750	.005	.035	1.090	.0463	.1875	2.0	QBB5-140750	48.78	QBB5-140750X	55.58
.1400	.1520	.800	.003	.035	1.090	.0463	.1875	2.0	QBB-140800	46.88	QBB-140800X	51.68
.1400	.1520	.800	.005	.035	1.090	.0463	.1875	2.0	QBB5-140800	48.78	QBB5-140800X	55.58
.1400	.1520	.900	.003	.035	1.090	.0463	.1875	2.0	QBB3-140900	48.78	QBB3-140900X	55.58
.1400	.1520	.900	.005	.035	1.090	.0463	.1875	2.0	QBB5-140900	48.78	QBB5-140900X	55.58

Quick Change – Boring Tools

NEW

NEW

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 62 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 72-75

QBB

Quick Change – Boring Tools
Right Hand (cont.)

Continued from previous page

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AITIN Coated	
									Tool #	Price	Tool #	Price
H	L2	R	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	
	$^{+.030"}_{-.000}"$	$^{+.001"}_{-.001}"$										
.1600	.1760	.250	.003	.040	.590	.0663	.1875	1.5	QBB3-160250	46.88	QBB3-160250X	53.68
.1600	.1760	.250	.005	.040	.590	.0663	.1875	1.5	QBB5-160250	46.88	QBB5-160250X	53.68
.1600	.1760	.400	.003	.040	.590	.0663	.1875	1.5	QBB-160400	46.88	QBB-160400X	51.68
.1600	.1760	.400	.005	.040	.590	.0663	.1875	1.5	QBB5-160400	46.88	QBB5-160400X	53.68
.1600	.1760	.500	.003	.040	.590	.0663	.1875	1.5	QBB3-160500	46.88	QBB3-160500X	53.68
.1600	.1760	.500	.005	.040	.590	.0663	.1875	1.5	QBB5-160500	46.88	QBB5-160500X	53.68
.1600	.1760	.600	.003	.040	1.090	.0663	.1875	2.0	QBB-160600	46.88	QBB-160600X	51.68
.1600	.1760	.600	.005	.040	1.090	.0663	.1875	2.0	QBB5-160600	48.78	QBB5-160600X	55.58
.1600	.1760	.700	.003	.040	1.090	.0663	.1875	2.0	QBB3-160700	48.78	QBB3-160700X	55.58
.1600	.1760	.700	.005	.040	1.090	.0663	.1875	2.0	QBB5-160700	48.78	QBB5-160700X	55.58
.1600	.1760	.750	.003	.040	1.090	.0663	.1875	2.0	QBB-160750	46.88	QBB-160750X	51.68
.1600	.1760	.750	.005	.040	1.090	.0663	.1875	2.0	QBB5-160750	48.78	QBB5-160750X	55.58
.1600	.1760	.800	.003	.040	1.090	.0663	.1875	2.0	QBB3-160800	48.78	QBB3-160800X	55.58
.1600	.1760	.800	.005	.040	1.090	.0663	.1875	2.0	QBB5-160800	48.78	QBB5-160800X	55.58
.1600	.1760	.900	.003	.040	1.090	.0663	.1875	2.0	QBB3-160900	48.78	QBB3-160900X	55.58
.1600	.1760	.900	.005	.040	1.090	.0663	.1875	2.0	QBB5-160900	48.78	QBB5-160900X	55.58
.1600	.1760	1.000	.003	.040	1.090	.0663	.1875	2.0	QBB-1601000	46.88	QBB-1601000X	51.68
.1600	.1760	1.000	.005	.040	1.090	.0663	.1875	2.0	QBB5-1601000	48.78	QBB5-1601000X	55.58
NEW .1600	.1760	1.250	.003	.040	1.590	.0663	.1875	2.5	QBB3-1601250	50.68	QBB3-1601250X	57.88
.1800	.1960	.350	.005	.045	.853	.0550	.2500	2.0	QBB5-180350	48.78	QBB5-180350X	56.78
.1800	.1960	.500	.005	.045	.853	.0550	.2500	2.0	QBB-180500	50.58	QBB-180500X	58.68
.1800	.1960	.600	.005	.045	.853	.0550	.2500	2.0	QBB5-180600	50.58	QBB5-180600X	58.68
.1800	.1960	.750	.005	.045	.853	.0550	.2500	2.0	QBB-180750	50.58	QBB-180750X	58.68
.1800	.1960	.900	.005	.045	1.353	.0550	.2500	2.5	QBB5-180900	52.48	QBB5-180900X	60.98
.1800	.1960	1.000	.005	.045	1.353	.0550	.2500	2.5	QBB-1801000	50.58	QBB-1801000X	58.78
.1800	.1960	1.250	.005	.045	1.353	.0550	.2500	2.5	QBB-1801250	50.58	QBB-1801250X	58.78
.1800	.1960	1.500	.005	.045	1.853	.0550	.2500	3.0	QBB-1801500	59.38	QBB-1801500X	67.98
.2000	.2160	.400	.005	.050	.853	.0750	.2500	2.0	QBB5-200400	50.58	QBB5-200400X	58.68
.2000	.2160	.500	.005	.050	.853	.0750	.2500	2.0	QBB-200500	50.58	QBB-200500X	58.68
.2000	.2160	.600	.005	.050	.853	.0750	.2500	2.0	QBB5-200600	50.58	QBB5-200600X	58.68
.2000	.2160	.700	.005	.050	.853	.0750	.2500	2.0	QBB-200700	50.58	QBB-200700X	58.68
.2000	.2160	.750	.005	.050	.853	.0750	.2500	2.0	QBB5-200750	50.58	QBB5-200750X	58.68
.2000	.2160	.800	.005	.050	1.353	.0750	.2500	2.5	QBB5-200800	52.48	QBB5-200800X	60.98
.2000	.2160	.900	.005	.050	1.353	.0750	.2500	2.5	QBB-200900	52.48	QBB-200900X	60.98
.2000	.2160	1.000	.005	.050	1.353	.0750	.2500	2.5	QBB5-2001000	50.58	QBB5-2001000X	58.78
.2000	.2160	1.100	.005	.050	1.353	.0750	.2500	2.5	QBB-2001100	52.48	QBB-2001100X	60.98
.2000	.2160	1.200	.005	.050	1.353	.0750	.2500	2.5	QBB5-2001200	50.58	QBB5-2001200X	58.78
.2000	.2160	1.300	.005	.050	1.853	.0750	.2500	3.0	QBB5-2001300	52.48	QBB5-2001300X	60.98
.2000	.2160	1.500	.005	.050	1.853	.0750	.2500	3.0	QBB-2001500	59.38	QBB-2001500X	67.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 62 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 72-75



Quick Change – Boring Tools

QBB

Right Hand (cont.)

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Quick Change – Boring Tools

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
H	L ₂	L ₂ ^{+ .030"} _{-.000"}	R ^{+ .001"} _{-.001"}	P	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.2300	.2500	.400	.005	.058	.853	.0738	.3125	2.0	QBB5-230400	67.78	QBB5-230400X	77.58
.2300	.2500	.500	.005	.058	.853	.0738	.3125	2.0	QBB-230500	67.78	QBB-230500X	77.08
.2300	.2500	.600	.005	.058	.853	.0738	.3125	2.0	QBB5-230600	67.78	QBB5-230600X	77.58
.2300	.2500	.700	.005	.058	.853	.0738	.3125	2.0	QBB5-230700	67.78	QBB5-230700X	77.58
.2300	.2500	.750	.005	.058	.853	.0738	.3125	2.0	QBB-230750	67.78	QBB-230750X	77.08
.2300	.2500	.800	.005	.058	1.353	.0738	.3125	2.5	QBB5-230800	69.58	QBB5-230800X	80.08
.2300	.2500	.900	.005	.058	1.353	.0738	.3125	2.5	QBB5-230900	69.58	QBB5-230900X	80.08
.2300	.2500	1.000	.005	.058	1.353	.0738	.3125	2.5	QBB-2301000	67.78	QBB-2301000X	78.18
.2300	.2500	1.100	.005	.058	1.353	.0738	.3125	2.5	QBB5-2301100	69.58	QBB5-2301100X	80.08
.2300	.2500	1.150	.005	.058	1.353	.0738	.3125	2.5	QBB5-2301150	69.58	QBB5-2301150X	80.08
.2300	.2500	1.200	.005	.058	1.353	.0738	.3125	2.5	QBB5-2301200	69.58	QBB5-2301200X	80.08
.2300	.2500	1.250	.005	.058	1.353	.0738	.3125	2.5	QBB-2301250	67.78	QBB-2301250X	78.18
.2300	.2500	1.400	.005	.058	1.853	.0738	.3125	3.0	QBB5-2301400	77.98	QBB5-2301400X	88.38
.2300	.2500	1.500	.005	.058	1.853	.0738	.3125	3.0	QBB-2301500	77.98	QBB-2301500X	88.38
.2300	.2500	1.600	.005	.058	1.853	.0738	.3125	3.0	QBB-2301600	77.98	QBB-2301600X	88.38
.2300	.2500	1.750	.005	.058	1.853	.0738	.3125	3.0	QBB5-2301750	77.98	QBB5-2301750X	88.38
.2600	.2800	.400	.005	.065	.853	.1038	.3125	2.0	QBB5-260400	67.78	QBB5-260400X	77.58
.2600	.2800	.500	.005	.065	.853	.1038	.3125	2.0	QBB5-260500	67.78	QBB5-260500X	77.58
.2600	.2800	.600	.005	.065	.853	.1038	.3125	2.0	QBB5-260600	67.78	QBB5-260600X	77.58
.2600	.2800	.700	.005	.065	.853	.1038	.3125	2.0	QBB5-260700	67.78	QBB5-260700X	77.58
.2600	.2800	.750	.005	.065	.853	.1038	.3125	2.0	QBB5-260750	67.78	QBB5-260750X	77.58
.2600	.2800	.800	.005	.065	1.353	.1038	.3125	2.5	QBB5-260800	69.58	QBB5-260800X	80.08
.2600	.2800	.900	.005	.065	1.353	.1038	.3125	2.5	QBB5-260900	69.58	QBB5-260900X	80.08
.2600	.2800	1.000	.005	.065	1.353	.1038	.3125	2.5	QBB5-2601000	69.58	QBB5-2601000X	80.08
.2600	.2800	1.250	.005	.065	1.353	.1038	.3125	2.5	QBB5-2601250	69.58	QBB5-2601250X	80.08
.2900	.3100	.500	.005	.073	.853	.1338	.3125	2.0	QBB-290500	67.78	QBB-290500X	77.08
.2900	.3100	.600	.005	.073	.853	.1338	.3125	2.0	QBB5-290600	67.78	QBB5-290600X	77.58
.2900	.3100	.750	.005	.073	.853	.1338	.3125	2.0	QBB-290750	67.78	QBB-290750X	77.08
.2900	.3100	.900	.005	.073	1.353	.1338	.3125	2.5	QBB5-290900	69.58	QBB5-290900X	80.08
.2900	.3100	1.000	.005	.073	1.353	.1338	.3125	2.5	QBB-2901000	67.78	QBB-2901000X	78.18
.2900	.3100	1.100	.005	.073	1.353	.1338	.3125	2.5	QBB5-2901100	69.58	QBB5-2901100X	80.08
.2900	.3100	1.250	.005	.073	1.353	.1338	.3125	2.5	QBB-2901250	67.78	QBB-2901250X	78.18
.2900	.3100	1.350	.005	.073	1.853	.1338	.3125	3.0	QBB5-2901350	77.98	QBB5-2901350X	88.38
.2900	.3100	1.500	.005	.073	1.853	.1338	.3125	3.0	QBB-2901500	77.98	QBB-2901500X	88.38
.2900	.3100	1.600	.005	.073	1.853	.1338	.3125	3.0	QBB5-2901600	77.98	QBB5-2901600X	88.38
.2900	.3100	1.750	.005	.073	1.853	.1338	.3125	3.0	QBB-2901750	77.98	QBB-2901750X	88.38
.3200	.3400	.500	.005	.080	.853	.1325	.3750	2.0	QBB-320500	92.38	QBB-320500X	102.68
.3200	.3400	.600	.005	.080	.853	.1325	.3750	2.0	QBB5-320600	92.38	QBB5-320600X	103.98
.3200	.3400	.750	.005	.080	.853	.1325	.3750	2.0	QBB-320750	92.38	QBB-320750X	102.68
.3200	.3400	.900	.005	.080	1.353	.1325	.3750	2.5	QBB5-320900	94.78	QBB5-320900X	107.08
.3200	.3400	1.000	.005	.080	1.353	.1325	.3750	2.5	QBB-3201000	92.38	QBB-3201000X	104.78
.3200	.3400	1.100	.005	.080	1.353	.1325	.3750	2.5	QBB5-3201100	94.78	QBB5-3201100X	107.08
.3200	.3400	1.250	.005	.080	1.353	.1325	.3750	2.5	QBB-3201250	92.38	QBB-3201250X	104.78
.3200	.3400	1.500	.005	.080	1.853	.1325	.3750	3.0	QBB-3201500	102.58	QBB-3201500X	114.98

NEW

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

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See pgs 16-34 for quick change holder options

See pg 62 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 72-75

QBB

Quick Change – Boring Tools

Right Hand (cont.)

Continued from previous page

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AITIN Coated	
									Tool #	Price	Tool #	Price
H	L2	$\begin{matrix} +.030" \\ -.000" \end{matrix}$	R	P	L4	F	D2 (h6)	L1				
			$\begin{matrix} +.001" \\ -.001" \end{matrix}$									
.3200	.3400	1.600	.005	.080	1.853	.1325	.3750	3.0	QBB5-3201600	102.58	QBB5-3201600X	114.98
.3200	.3400	1.800	.005	.080	1.853	.1325	.3750	3.0	QBB-3201800	102.58	QBB-3201800X	114.98
.3200	.3400	2.000	.005	.080	2.353	.1325	.3750	3.5	QBB-3202000	111.88	QBB-3202000X	125.08
.3200	.3400	2.500	.005	.080	2.853	.1325	.3750	4.0	QBB-3202500	118.08	QBB-3202500X	131.28
.3600	.3800	.500	.005	.090	.853	.1725	.3750	2.0	QBB5-3605000	92.38	QBB5-3605000X	103.98
.3600	.3800	.750	.005	.090	.853	.1725	.3750	2.0	QBB-360750	92.38	QBB-360750X	102.68
.3600	.3800	.900	.005	.090	1.353	.1725	.3750	2.5	QBB5-3609000	92.38	QBB5-3609000X	104.78
.3600	.3800	1.000	.005	.090	1.353	.1725	.3750	2.5	QBB-3601000	92.38	QBB-3601000X	104.78
.3600	.3800	1.250	.005	.090	1.353	.1725	.3750	2.5	QBB-3601250	92.38	QBB-3601250X	104.78
.3600	.3800	1.500	.005	.090	1.853	.1725	.3750	3.0	QBB-3601500	102.58	QBB-3601500X	114.98
.3600	.3800	1.800	.005	.090	1.853	.1725	.3750	3.0	QBB-3601800	102.58	QBB-3601800X	114.98
.3600	.3800	2.000	.005	.090	2.353	.1725	.3750	3.5	QBB-3602000	111.88	QBB-3602000X	125.08
.3600	.3800	2.500	.005	.090	2.853	.1725	.3750	4.0	QBB-3602500	118.08	QBB-3602500X	131.28
.4100	.4300	.750	.005	.104	1.040	.1600	.5000	2.5	QBB5-410750	128.78	QBB5-410750X	145.48
.4100	.4300	1.000	.005	.104	1.040	.1600	.5000	2.5	QBB5-4101000	128.78	QBB5-4101000X	145.48
.4100	.4300	1.250	.005	.104	1.540	.1600	.5000	3.0	QBB5-4101250	131.98	QBB5-4101250X	148.68
.4100	.4300	1.500	.005	.104	1.540	.1600	.5000	3.0	QBB5-4101500	131.98	QBB5-4101500X	148.68
.4600	.4800	1.000	.005	.115	1.040	.2100	.5000	2.5	QBB-4601000	128.78	QBB-4601000X	144.98
.4600	.4800	1.250	.005	.115	1.540	.2100	.5000	3.0	QBB-4601250	128.78	QBB-4601250X	144.98
.4600	.4800	1.500	.005	.115	1.540	.2100	.5000	3.0	QBB-4601500	128.78	QBB-4601500X	144.98
.4600	.4800	2.000	.005	.115	2.040	.2100	.5000	3.5	QBB-4602000	141.28	QBB-4602000X	159.18
.4600	.4800	2.500	.005	.115	2.540	.2100	.5000	4.0	QBB-4602500	149.38	QBB-4602500X	167.38
.4600	.4800	3.000	.005	.115	3.040	.2100	.5000	4.5	QBB-4603000	156.58	QBB-4603000X	175.88
.4900	.5100	1.000	.005	.123	1.040	.2400	.5000	2.5	QBB-4901000	128.78	QBB-4901000X	144.98
.4900	.5100	1.250	.005	.123	1.540	.2400	.5000	3.0	QBB-4901250	128.78	QBB-4901250X	144.98
.4900	.5100	1.500	.005	.123	1.540	.2400	.5000	3.0	QBB-4901500	128.78	QBB-4901500X	144.98
.4900	.5100	2.000	.005	.123	2.040	.2400	.5000	3.5	QBB-4902000	141.28	QBB-4902000X	159.18
.4900	.5100	2.500	.005	.123	2.540	.2400	.5000	4.0	QBB-4902500	149.38	QBB-4902500X	167.38
.4900	.5100	3.000	.005	.123	3.040	.2400	.5000	4.5	QBB-4903000	156.58	QBB-4903000X	175.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

See pg 62 for miniature sizes

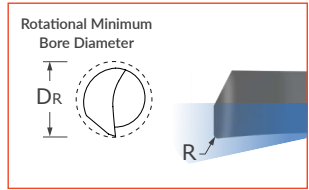
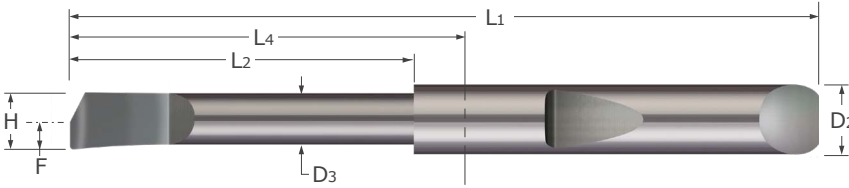
For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 72-75



Quick Change – Boring Tools

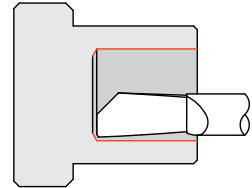
Helical Back Rake – Corner Radius

QHBBC



Quick Change – Boring Tools

- Designed for boring applications in bores .030" and larger
- Polished face for improved edge retention and chip evacuation while reducing galling
- Helical grind provides ideal top rake for better chip control and freer cutting
- Well suited for machining plastics
- On center neck design allows for static and live/rotating applications
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Solid carbide ■ CNC ground in the USA



Head Width	Rotational Min. Bore Diameter	Maximum Bore Depth	Radius	Length From Holder	Neck Diameter	Centerline Offset	Shank Diameter	Overall Length	Uncoated	
H	D _r	L ₂ ^{+0.050"} _{-.000"}	R ^{+0.003"} _{-.000"}	L ₄	D ₃ ^{+0.000"} _{-.002"}	F	D ₂ (h6)	L ₁	Tool #	Price
.0275	.030	.187	.004	.590	.025	.0150	.1875	1.5	QHBBC-030187-004	46.98
.0275	.030	.250	.004	.590	.025	.0150	.1875	1.5	QHBBC-030250-004	46.98
.0325	.035	.125	.004	.590	.030	.0175	.1875	1.5	QHBBC-035125-004	46.98
.0325	.035	.187	.004	.590	.030	.0175	.1875	1.5	QHBBC-035187-004	46.98
.0325	.035	.250	.004	.590	.030	.0175	.1875	1.5	QHBBC-035250-004	46.98
.0375	.040	.187	.004	.590	.035	.0200	.1875	1.5	QHBBC-040187-004	46.98
.0375	.040	.250	.004	.590	.035	.0200	.1875	1.5	QHBBC-040250-004	46.98
.0375	.040	.312	.004	.590	.035	.0200	.1875	1.5	QHBBC-040312-004	46.98
.0450	.050	.187	.004	.590	.040	.0250	.1875	1.5	QHBBC-050187-004	46.98
.0450	.050	.312	.004	.590	.040	.0250	.1875	1.5	QHBBC-050312-004	46.98
.0450	.050	.375	.004	.590	.040	.0250	.1875	1.5	QHBBC-050375-004	46.98
.0550	.060	.250	.004	.590	.050	.0300	.1875	1.5	QHBBC-060250-004	46.98
.0550	.060	.375	.004	.590	.050	.0300	.1875	1.5	QHBBC-060375-004	46.98
.0550	.060	.500	.004	.590	.050	.0300	.1875	1.5	QHBBC-060500-004	46.98
.0650	.070	.312	.004	.590	.060	.0350	.1875	1.5	QHBBC-070312-004	46.98
.0650	.070	.437	.004	.590	.060	.0350	.1875	1.5	QHBBC-070437-004	46.98
.0650	.070	.562	.004	1.090	.060	.0350	.1875	2.0	QHBBC-070562-004	46.98
.0750	.080	.375	.004	.590	.070	.0400	.1875	1.5	QHBBC-080375-004	46.98
.0750	.080	.500	.004	.590	.070	.0400	.1875	1.5	QHBBC-080500-004	46.98
.0750	.080	.625	.004	1.090	.070	.0400	.1875	2.0	QHBBC-080625-004	46.98
.0850	.090	.375	.004	.590	.080	.0450	.1875	1.5	QHBBC-090375-004	46.98
.0850	.090	.500	.004	.590	.080	.0450	.1875	1.5	QHBBC-090500-004	46.98
.0850	.090	.687	.004	1.090	.080	.0450	.1875	2.0	QHBBC-090687-004	46.98
.0950	.100	.437	.004	.590	.090	.0500	.1875	1.5	QHBBC-100437-004	46.98
.0950	.100	.562	.004	1.090	.090	.0500	.1875	2.0	QHBBC-100562-004	46.98
.0950	.100	.750	.004	1.090	.090	.0500	.1875	2.0	QHBBC-100750-004	46.98
.1100	.120	.500	.004	.590	.100	.0600	.1875	1.5	QHBBC-120500-004	46.98
.1100	.120	.625	.004	1.090	.100	.0600	.1875	2.0	QHBBC-120625-004	46.98
.1100	.120	1.000	.004	1.090	.100	.0600	.1875	2.0	QHBBC-1201000-004	46.98

Continued on next page

See pgs 16-34 for quick change holder options



QHBBC

Quick Change – Boring Tools

Helical Back Rake – Corner Radius (cont.)

Continued from previous page

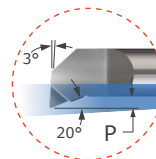
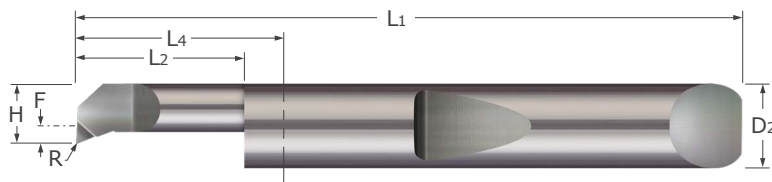
Head Width	Rotational Min. Bore Diameter	Maximum Bore Depth	Radius	Length From Holder	Neck Diameter	Centerline Offset	Shank Diameter	Overall Length	Uncoated	
									Tool #	Price
H	D _r	L ₂ $\begin{smallmatrix} +.050'' \\ -.000'' \end{smallmatrix}$	R $\begin{smallmatrix} +.003'' \\ -.000'' \end{smallmatrix}$	L ₄	D ₃ $\begin{smallmatrix} +.000'' \\ -.002'' \end{smallmatrix}$	F	D ₂ (h ₆)	L ₁		
.1225	.135	.562	.004	1.090	.110	.0675	.1875	2.0	QHBBC-135562-004	46.98
.1225	.135	.750	.004	1.090	.110	.0675	.1875	2.0	QHBBC-135750-004	46.98
.1225	.135	1.000	.004	1.090	.110	.0675	.1875	2.0	QHBBC-1351000-004	46.98
.1400	.150	.625	.004	1.090	.130	.0750	.1875	2.0	QHBBC-1500625-004	46.98
.1400	.150	1.000	.004	1.090	.130	.0750	.1875	2.0	QHBBC-1501000-004	46.98
.1400	.150	1.250	.004	1.590	.130	.0750	.1875	2.5	QHBBC-1501250-004	46.98
.1700	.180	1.000	.004	1.090	.160	.0900	.1875	2.0	QHBBC-1801000-004	46.98
.1700	.180	1.250	.004	1.590	.160	.0900	.1875	2.5	QHBBC-1801250-004	46.98
.1700	.180	1.500	.004	1.590	.160	.0900	.1875	2.5	QHBBC-1801500-004	46.98
.1975	.210	1.000	.004	1.353	.185	.1050	.2500	2.5	QHBBC-2101000-004	53.08
.1975	.210	1.250	.004	1.353	.185	.1050	.2500	2.5	QHBBC-2101250-004	53.08
.1975	.210	1.500	.004	1.853	.185	.1050	.2500	3.0	QHBBC-2101500-004	53.08
.2275	.240	1.000	.004	1.353	.215	.1200	.2500	2.5	QHBBC-2401000-004	53.08
.2275	.240	1.500	.004	1.853	.215	.1200	.2500	3.0	QHBBC-2401500-004	53.08
.2275	.240	1.750	.004	1.853	.215	.1200	.2500	3.0	QHBBC-2401750-004	53.08
.2750	.300	1.000	.004	1.353	.250	.1500	.3125	2.5	QHBBC-3001000-004	69.98
.2750	.300	1.500	.004	1.853	.250	.1500	.3125	3.0	QHBBC-3001500-004	69.98
.2750	.300	1.750	.004	1.853	.250	.1500	.3125	3.0	QHBBC-3001750-004	69.98
.3400	.360	1.000	.004	1.353	.320	.1800	.3750	2.5	QHBBC-3601000-004	95.28
.3400	.360	1.500	.004	1.853	.320	.1800	.3750	3.0	QHBBC-3601500-004	95.28
.3400	.360	2.000	.004	2.353	.320	.1800	.3750	3.5	QHBBC-3602000-004	118.98
.3400	.360	2.500	.004	2.853	.320	.1800	.3750	4.0	QHBBC-3602500-004	118.98

See pgs 16-34 for quick change holder options

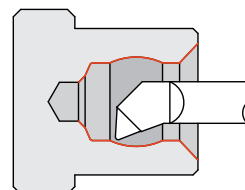


Quick Change – Boring Tools

Top Rake Chipbreaker



- Optimized for finishing operations
- Top rake geometry provides freer cutting
- Polished face for reducing galling
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Boring Tools

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	L2	L2 +.030" - .000"	R +.0005" - .0005"	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.0500	.0550	.150	.002	.005	.590	-.0438	.1875	1.5	QBT-050150	47.18	QBT-050150X	53.98
.0500	.0550	.200	.002	.005	.590	-.0438	.1875	1.5	QBT-050200	47.18	QBT-050200X	52.08
.0500	.0550	.300	.002	.005	.590	-.0438	.1875	1.5	QBT-050300	47.18	QBT-050300X	53.98
.0500	.0550	.400	.002	.005	.590	-.0438	.1875	1.5	QBT-050400	47.18	QBT-050400X	52.08
.0500	.0550	.500	.002	.005	.590	-.0438	.1875	1.5	QBT-050500	47.18	QBT-050500X	52.08
.0600	.0700	.150	.002	.010	.590	-.0338	.1875	1.5	QBT-060150	47.18	QBT-060150X	53.98
.0600	.0700	.200	.002	.010	.590	-.0338	.1875	1.5	QBT-060200	47.18	QBT-060200X	52.08
.0600	.0700	.300	.002	.010	.590	-.0338	.1875	1.5	QBT-060300	47.18	QBT-060300X	53.98
.0600	.0700	.400	.002	.010	.590	-.0338	.1875	1.5	QBT-060400	47.18	QBT-060400X	52.08
.0600	.0700	.500	.002	.010	.590	-.0338	.1875	1.5	QBT-060500	47.18	QBT-060500X	52.08
.0700	.0800	.150	.004	.015	.590	-.0238	.1875	1.5	QBT-070150	47.18	QBT-070150X	53.98
.0700	.0800	.200	.004	.015	.590	-.0238	.1875	1.5	QBT-070200	47.18	QBT-070200X	52.08
.0700	.0800	.300	.004	.015	.590	-.0238	.1875	1.5	QBT-070300	47.18	QBT-070300X	53.98
.0700	.0800	.400	.004	.015	.590	-.0238	.1875	1.5	QBT-070400	47.18	QBT-070400X	52.08
.0700	.0800	.600	.004	.015	1.090	-.0238	.1875	2.0	QBT-070600	47.18	QBT-070600X	52.08
.0800	.0900	.150	.004	.015	.590	-.0138	.1875	1.5	QBT4-080150	47.18	QBT4-080150X	53.98
.0800	.0900	.200	.004	.015	.590	-.0138	.1875	1.5	QBT4-080200	47.18	QBT4-080200X	53.98
.0800	.0900	.300	.004	.015	.590	-.0138	.1875	1.5	QBT4-080300	47.18	QBT4-080300X	53.98
.0800	.0900	.400	.004	.015	.590	-.0138	.1875	1.5	QBT4-080400	47.18	QBT4-080400X	53.98
.0800	.0900	.500	.004	.015	.590	-.0138	.1875	1.5	QBT4-080500	47.18	QBT4-080500X	53.98
.0800	.0900	.600	.004	.015	1.090	-.0138	.1875	2.0	QBT4-080600	47.18	QBT4-080600X	53.98
.0900	.1000	.200	.004	.015	.590	-.0038	.1875	1.5	QBT4-090200	47.18	QBT4-090200X	53.98
.0900	.1000	.300	.004	.015	.590	-.0038	.1875	1.5	QBT4-090300	47.18	QBT4-090300X	53.98
.0900	.1000	.400	.004	.015	.590	-.0038	.1875	1.5	QBT4-090400	47.18	QBT4-090400X	53.98
.0900	.1000	.500	.004	.015	.590	-.0038	.1875	1.5	QBT4-090500	47.18	QBT4-090500X	53.98
.1000	.1100	.200	.004	.015	.590	.0063	.1875	1.5	QBT4-100200	47.18	QBT4-100200X	53.98
.1000	.1100	.300	.004	.015	.590	.0063	.1875	1.5	QBT4-100300	47.18	QBT4-100300X	53.98
.1000	.1100	.400	.004	.015	.590	.0063	.1875	1.5	QBT4-100400	47.18	QBT4-100400X	53.98
.1000	.1100	.500	.004	.015	.590	.0063	.1875	1.5	QBT4-100500	47.18	QBT4-100500X	53.98
.1000	.1100	.600	.004	.015	1.090	.0063	.1875	2.0	QBT4-100600	47.18	QBT4-100600X	53.98
.1000	.1100	.700	.004	.015	1.090	.0063	.1875	2.0	QBT4-100700	47.18	QBT4-100700X	53.98
.1100	.1220	.250	.004	.020	.590	.0163	.1875	1.5	QBT-110250	47.18	QBT-110250X	52.08
.1100	.1220	.500	.004	.020	.590	.0163	.1875	1.5	QBT-110500	47.18	QBT-110500X	52.08
.1100	.1220	.750	.004	.020	1.090	.0163	.1875	2.0	QBT-110750	47.18	QBT-110750X	52.08

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options



QBT

Quick Change – Boring Tools
Top Rake Chipbreaker (cont.)

Continued from previous page

	Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
	H	L ₂	$\begin{matrix} +.030" \\ -.000" \end{matrix}$	R	P	L ₄	F	D ₂ (h6)	L ₁				
	.1200	.1320	.250	.004	.020	.590	.0263	.1875	1.5	QBT-120250	47.18	QBT-120250X	52.08
	.1200	.1320	.375	.004	.020	.590	.0263	.1875	1.5	QBT4-120375	47.18	QBT4-120375X	52.08
	.1200	.1320	.500	.004	.020	.590	.0263	.1875	1.5	QBT-120500	47.18	QBT-120500X	52.08
	.1200	.1320	.750	.004	.020	1.090	.0263	.1875	2.0	QBT-120750	47.18	QBT-120750X	52.08
	.1200	.1320	1.000	.004	.020	1.090	.0263	.1875	2.0	QBT-1201000	47.18	QBT-1201000X	52.08
NEW	.1200	.1320	1.250	.004	.020	1.590	.0263	.1875	2.5	QBT-1201250	51.58	QBT-1201250X	58.88
	.1400	.1520	.250	.004	.025	.590	.0463	.1875	1.5	QBT4-140250	47.18	QBT4-140250X	52.08
	.1400	.1520	.375	.004	.025	.590	.0463	.1875	1.5	QBT4-140375	47.18	QBT4-140375X	52.08
	.1400	.1520	.500	.004	.025	.590	.0463	.1875	1.5	QBT4-140500	47.18	QBT4-140500X	52.08
NEW	.1400	.1520	.750	.004	.025	1.090	.0463	.1875	2.0	QBT-140750	47.18	QBT-140750X	53.98
NEW	.1400	.1520	1.000	.004	.025	1.090	.0463	.1875	2.0	QBT-1401000	47.18	QBT-1401000X	53.98
	.1600	.1760	.375	.006	.025	.590	.0663	.1875	1.5	QBT6-160375	47.18	QBT6-160375X	52.08
	.1600	.1760	.500	.006	.025	.590	.0663	.1875	1.5	QBT-160500	47.18	QBT-160500X	52.08
	.1600	.1760	.750	.006	.025	1.090	.0663	.1875	2.0	QBT-160750	47.18	QBT-160750X	52.08
	.1600	.1760	1.000	.006	.025	1.090	.0663	.1875	2.0	QBT-1601000	47.18	QBT-1601000X	52.08
	.1600	.1760	1.250	.006	.025	1.590	.0663	.1875	2.5	QBT-1601250	47.18	QBT-1601250X	53.58
	.1800	.1960	.375	.006	.030	.853	.0550	.2500	2.0	QBT6-180375	58.98	QBT6-180375X	66.98
	.1800	.1960	.500	.006	.030	.853	.0550	.2500	2.0	QBT-180500	58.98	QBT-180500X	66.98
	.1800	.1960	.750	.006	.030	.853	.0550	.2500	2.0	QBT-180750	58.98	QBT-180750X	66.98
	.1800	.1960	1.000	.006	.030	1.353	.0550	.2500	2.5	QBT-1801000	58.98	QBT-1801000X	67.38
	.1800	.1960	1.250	.006	.030	1.353	.0550	.2500	2.5	QBT-1801250	58.98	QBT-1801250X	67.38
	.1800	.1960	1.500	.006	.030	1.853	.0550	.2500	3.0	QBT-1801500	67.68	QBT-1801500X	76.38
	.2000	.2160	.375	.006	.030	.853	.0750	.2500	2.0	QBT6-200375	58.98	QBT6-200375X	66.98
	.2000	.2160	.600	.006	.030	.853	.0750	.2500	2.0	QBT-200600	58.98	QBT-200600X	66.98
	.2000	.2160	.750	.006	.030	.853	.0750	.2500	2.0	QBT6-200750	58.98	QBT6-200750X	66.98
	.2000	.2160	1.000	.006	.030	1.353	.0750	.2500	2.5	QBT-2001000	58.98	QBT-2001000X	67.38
	.2000	.2160	1.250	.006	.030	1.353	.0750	.2500	2.5	QBT-2001250	58.98	QBT-2001250X	67.38
	.2000	.2160	1.500	.006	.030	1.853	.0750	.2500	3.0	QBT-2001500	67.68	QBT-2001500X	76.38
	.2300	.2500	.500	.004	.040	.853	.0738	.3125	2.0	QBT4-230500	73.48	QBT4-230500X	82.98
	.2300	.2500	.500	.006	.040	.853	.0738	.3125	2.0	QBT6-230500	73.48	QBT6-230500X	82.98
	.2300	.2500	.750	.004	.040	.853	.0738	.3125	2.0	QBT4-230750	73.48	QBT4-230750X	82.98
	.2300	.2500	.750	.006	.040	.853	.0738	.3125	2.0	QBT-230750	73.48	QBT-230750X	82.98
	.2300	.2500	1.100	.006	.040	1.353	.0738	.3125	2.5	QBT-2301100	73.48	QBT-2301100X	83.88
	.2300	.2500	1.300	.006	.040	1.353	.0738	.3125	2.5	QBT-2301300	73.48	QBT-2301300X	83.88
	.2300	.2500	1.600	.006	.040	1.853	.0738	.3125	3.0	QBT-2301600	85.58	QBT-2301600X	95.98
	.2600	.2800	.500	.004	.045	.853	.1038	.3125	2.0	QBT4-260500	73.48	QBT4-260500X	82.98
	.2600	.2800	.500	.006	.045	.853	.1038	.3125	2.0	QBT6-260500	73.48	QBT6-260500X	82.98
	.2600	.2800	.750	.004	.045	.853	.1038	.3125	2.0	QBT4-260750	73.48	QBT4-260750X	82.98
	.2600	.2800	.750	.006	.045	.853	.1038	.3125	2.0	QBT6-260750	73.48	QBT6-260750X	82.98
	.3000	.3200	.750	.006	.050	.853	.1125	.3750	2.0	QBT6-300750	73.48	QBT6-300750X	82.98
	.3000	.3200	1.000	.006	.050	1.353	.1125	.3750	2.5	QBT-3001000	88.38	QBT-3001000X	100.58
	.3000	.3200	1.250	.006	.050	1.353	.1125	.3750	2.5	QBT6-3001250	88.38	QBT6-3001250X	100.58
	.3000	.3200	1.600	.006	.050	1.853	.1125	.3750	3.0	QBT-3001600	98.78	QBT-3001600X	111.08
	.3000	.3200	2.100	.006	.050	2.353	.1125	.3750	3.5	QBT-3002100	107.68	QBT-3002100X	120.88
	.3600	.3800	1.000	.006	.050	1.353	.1725	.3750	2.5	QBT-3601000	88.38	QBT-3601000X	100.58
	.3600	.3800	1.600	.006	.050	1.853	.1725	.3750	3.0	QBT-3601600	98.78	QBT-3601600X	111.08
	.3600	.3800	2.100	.006	.050	2.353	.1725	.3750	3.5	QBT-3602100	107.68	QBT-3602100X	120.88
	.4600	.4800	1.000	.006	.075	1.040	.2100	.5000	2.5	QBT-4601000	134.18	QBT-4601000X	150.88
	.4600	.4800	1.600	.006	.075	2.040	.2100	.5000	3.5	QBT-4601600	134.18	QBT-4601600X	150.68
	.4600	.4800	2.100	.006	.075	2.540	.2100	.5000	4.0	QBT-4602100	141.68	QBT-4602100X	159.58
	.4900	.5100	1.000	.006	.075	1.040	.2400	.5000	2.5	QBT-4901000	134.18	QBT-4901000X	150.88
	.4900	.5100	1.600	.006	.075	2.040	.2400	.5000	3.5	QBT-4901600	134.18	QBT-4901600X	150.68
	.4900	.5100	2.100	.006	.075	2.540	.2400	.5000	4.0	QBT-4902100	141.68	QBT-4902100X	159.58

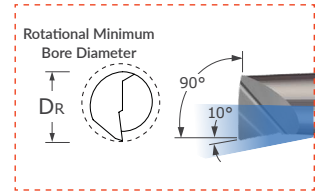
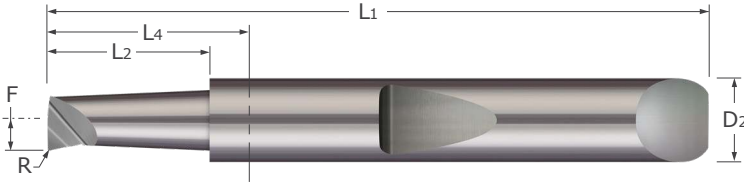
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.



Quick Change – Boring Tools

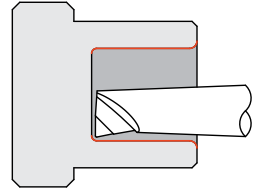
QBM

Boring Head Tools



Quick Change – Boring Tools

- Designed for boring applications requiring maximum rigidity
- Tapered neck and top rake geometry for increased performance
- Polished face for reducing galling
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quick quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

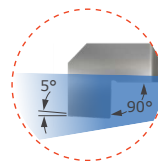
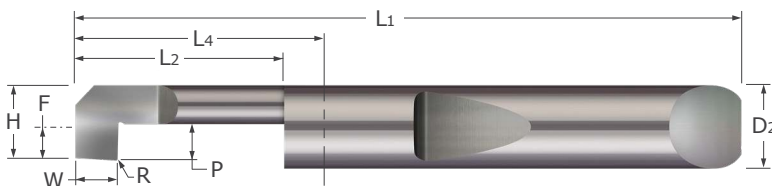


Rotational Minimum Bore Diameter	Maximum Bore Depth	Radius	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
DR	L2 ^{+0.030"} / _{-.000"}	R ^{+0.001"} / _{-.001"}	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.1180	.500	.003	.853	.0550	.2500	2.0	QBM-118500	50.58	QBM-118500X	58.68
.1180	.750	.003	.853	.0550	.2500	2.0	QBM-118750	50.58	QBM-118750X	58.68
.1500	.500	.003	.853	.0710	.2500	2.0	QBM-150500	50.58	QBM-150500X	58.68
.1500	.750	.003	.853	.0710	.2500	2.0	QBM-150750	50.58	QBM-150750X	58.68
.2000	.500	.008	.853	.0950	.2500	2.0	QBM-200500	50.58	QBM-200500X	58.68
.2000	.750	.008	.853	.0950	.2500	2.0	QBM-200750	50.58	QBM-200750X	58.68
.2000	1.250	.008	1.353	.0950	.2500	2.5	QBM-2001250	50.58	QBM-2001250X	58.78
.2300	.750	.008	.853	.1100	.2500	2.0	QBM-230750	50.58	QBM-230750X	58.68
.2300	1.250	.008	1.353	.1100	.2500	2.5	QBM-2301250	50.58	QBM-2301250X	58.78
.2300	1.500	.008	1.853	.1100	.2500	3.0	QBM-2301500	57.18	QBM-2301500X	65.68
.3000	1.000	.008	1.353	.1450	.3750	2.5	QBM-3001000	92.38	QBM-3001000X	104.78
.3000	1.500	.008	1.853	.1450	.3750	3.0	QBM-3001500	102.58		
.3000	1.750	.008	1.853	.1450	.3750	3.0	QBM-3001750	102.58	QBM-3001750X	114.98
.3600	1.000	.008	1.353	.1750	.3750	2.5	QBM-3601000	92.38		
.3600	1.500	.008	1.853	.1750	.3750	3.0	QBM-3601500	102.58	QBM-3601500X	114.98
.3600	2.000	.008	2.353	.1750	.3750	3.5	QBM-3602000	111.88	QBM-3602000X	125.08
.4600	1.000	.008	1.040	.2250	.5000	2.5	QBM-4601000	128.78	QBM-4601000X	145.48
.4600	1.500	.008	1.540	.2250	.5000	3.0	QBM-4601500	128.78		
.4600	2.000	.008	2.040	.2250	.5000	3.5	QBM-4602000	141.28	QBM-4602000X	159.18
.4600	2.500	.008	2.540	.2250	.5000	4.0	QBM-4602500	149.38	QBM-4602500X	167.38
.4600	3.000	.008	3.040	.2250	.5000	4.5	QBM-4603000	156.58	QBM-4603000X	175.88

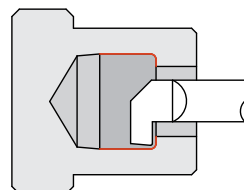
See pgs 16-34 for quick change holder options

QRB

Quick Change – Boring Tools
Reverse Boring



- Designed to bore from the inside, toward the face of the part
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Inside corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Boring Tools

Head Width	Min. Bore Dia.*	Max. Bore Depth	Width	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
H		L2 +.015" - .000"	W +.002" - .000"	R +.001" - .001"	P	L4	F	D2 (h6)	L1				
.1560	.1720	.500	.075	.005	.060	.590	.0623	.1875	1.5	QRB-156500	46.88		
.1560	.1720	.750	.075	.005	.060	1.090	.0623	.1875	2.0			QRB-156750X	51.68
.1560	.1720	1.000	.075	.005	.060	1.090	.0623	.1875	2.0			QRB-1561000X	51.68
.1800	.1960	.500	.100	.005	.080	.853	.0550	.2500	2.0	QRB-180500	50.58	QRB-180500X	58.68
.1800	.1960	.750	.100	.005	.080	1.353	.0550	.2500	2.5	QRB-180750	50.58	QRB-180750X	58.78
.1800	.1960	1.000	.100	.005	.080	1.353	.0550	.2500	2.5	QRB-1801000	50.58	QRB-1801000X	58.78
.2000	.2160	.500	.113	.008	.090	.853	.0750	.2500	2.0	QRB-200500	50.58	QRB-200500X	58.68
.2000	.2160	.750	.113	.008	.090	1.353	.0750	.2500	2.5	QRB-200750	50.58	QRB-200750X	58.78
.2000	.2160	1.000	.113	.008	.090	1.353	.0750	.2500	2.5	QRB-2001000	50.58		
.2000	.2160	1.250	.113	.008	.090	1.853	.0750	.2500	3.0	QRB-2001250	59.38		
.2300	.2500	.500	.138	.008	.110	.853	.0738	.3125	2.0	QRB-230500	67.78	QRB-230500X	77.08
.2300	.2500	.750	.138	.008	.110	1.353	.0738	.3125	2.5	QRB-230750	67.78	QRB-230750X	78.18
.2300	.2500	1.000	.138	.008	.110	1.353	.0738	.3125	2.5			QRB-2301000X	78.18
.2300	.2500	1.250	.138	.008	.110	1.853	.0738	.3125	3.0			QRB-2301250X	88.38
.3000	.3200	.500	.138	.008	.110	.853	.1438	.3125	2.0	QRB-300500	67.78		
.3000	.3200	.750	.138	.008	.110	1.353	.1438	.3125	2.5	QRB-300750	67.78	QRB-300750X	77.08
.3000	.3200	1.000	.138	.008	.110	1.353	.1438	.3125	2.5	QRB-3001000	67.78		
.3000	.3200	1.250	.138	.008	.110	1.853	.1438	.3125	3.0	QRB-3001250	77.98	QRB-3001250X	88.38
.3600	.3800	.750	.163	.008	.130	1.353	.1725	.3750	2.5	QRB-360750	92.38		
.3600	.3800	1.000	.163	.008	.130	1.353	.1725	.3750	2.5	QRB-3601000	92.38	QRB-3601000X	104.78
.3600	.3800	1.250	.163	.008	.130	1.853	.1725	.3750	3.0	QRB-3601250	102.58	QRB-3601250X	114.98
.3600	.3800	1.500	.163	.008	.130	1.853	.1725	.3750	3.0	QRB-3601500	102.58	QRB-3601500X	114.98
.4600	.4800	1.000	.200	.008	.160	1.540	.2100	.5000	3.0	QRB-4601000	128.78	QRB-4601000X	144.98
.4600	.4800	1.250	.200	.008	.160	1.540	.2100	.5000	3.0	QRB-4601250	128.78	QRB-4601250X	145.48
.4600	.4800	1.500	.200	.008	.160	2.040	.2100	.5000	3.5	QRB-4601500	141.28	QRB-4601500X	159.18
.4600	.4800	1.800	.200	.008	.160	2.040	.2100	.5000	3.5	QRB-4601800	141.28	QRB-4601800X	159.18
.4900	.5100	1.000	.200	.008	.160	1.540	.2400	.5000	3.0	QRB-4901000	128.78		
.4900	.5100	1.250	.200	.008	.160	1.540	.2400	.5000	3.0	QRB-4901250	128.78	QRB-4901250X	145.48
.4900	.5100	1.500	.200	.008	.160	2.040	.2400	.5000	3.5	QRB-4901500	141.28	QRB-4901500X	159.18
.4900	.5100	1.800	.200	.008	.160	2.040	.2400	.5000	3.5	QRB-4901800	141.28	QRB-4901800X	159.18

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

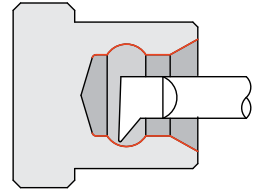
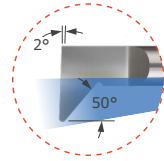
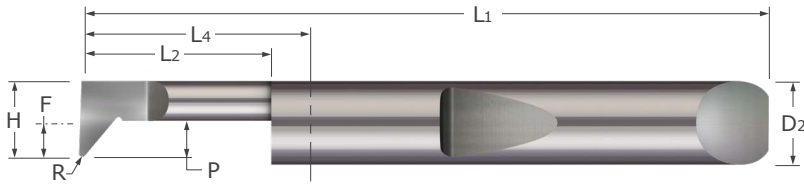
See pgs 16-34 for quick change holder options



Quick Change – Profiling Tools

QPR

Radial Profiling



Quick Change – Profiling Tools

- Designed for radial profiling
- Excellent choice for fine finishing
- Can be used in thread relief applications
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
H	L2	$^{+.030"}_{-.000"}$	$R_{-.0005"}$	P	L4	F	D2 (h6)	L1				
.0500	.0550	.150	.0020	.015	.590	-.0438	.1875	1.5	QPR2-050150	47.18	QPR2-050150X	53.98
.0500	.0550	.200	.0020	.015	.590	-.0438	.1875	1.5	QPR2-050200	47.18	QPR2-050200X	53.98
.0600	.0700	.150	.0020	.020	.590	-.0338	.1875	1.5	QPR2-060150	47.18	QPR2-060150X	53.98
.0600	.0700	.200	.0020	.020	.590	-.0338	.1875	1.5	QPR2-060200	47.18	QPR2-060200X	53.98
.0700	.0800	.150	.0020	.025	.590	-.0238	.1875	1.5	QPR2-070150	47.18	QPR2-070150X	53.98
.0700	.0800	.200	.0020	.025	.590	-.0238	.1875	1.5	QPR2-070200	47.18	QPR2-070200X	53.98
.0700	.0800	.200	.0050	.025	.590	-.0238	.1875	1.5	QPR-070200	47.18	QPR-070200X	52.08
.0700	.0800	.300	.0020	.025	.590	-.0238	.1875	1.5	QPR2-070300	47.18	QPR2-070300X	53.98
.0700	.0800	.300	.0050	.025	.590	-.0238	.1875	1.5	QPR-070300	47.18	QPR-070300X	52.08
.0700	.0800	.500	.0020	.025	.590	-.0238	.1875	1.5	QPR2-070500	47.18	QPR2-070500X	53.98
.0700	.0800	.500	.0050	.025	.590	-.0238	.1875	1.5	QPR-070500	47.18	QPR-070500X	52.08
.1000	.1100	.200	.0050	.035	.590	.0063	.1875	1.5	QPR5-100200	47.18	QPR5-100200X	52.08
.1000	.1100	.300	.0050	.035	.590	.0063	.1875	1.5	QPR5-100300	47.18	QPR5-100300X	52.08
.1100	.1240	.250	.0050	.040	.590	.0163	.1875	1.5	QPR-110250	47.18	QPR-110250X	52.08
.1100	.1240	.375	.0050	.040	.590	.0163	.1875	1.5	QPR5-110375	47.18	QPR5-110375X	52.08
.1100	.1240	.500	.0050	.040	.590	.0163	.1875	1.5	QPR-110500	47.18	QPR-110500X	52.08
.1200	.1340	.250	.0080	.050	.590	.0263	.1875	1.5	QPR-120250	47.18	QPR-120250X	52.08
.1200	.1340	.375	.0050	.050	.590	.0263	.1875	1.5	QPR5-120375	47.18	QPR5-120375X	52.08
.1200	.1340	.375	.0080	.050	.590	.0263	.1875	1.5	QPR8-120375	47.18	QPR8-120375X	52.08
.1200	.1340	.500	.0080	.050	.590	.0263	.1875	1.5	QPR-120500	47.18	QPR-120500X	52.08
.1200	.1340	.750	.0050	.050	1.090	.0263	.1875	2.0	QPR5-120750	47.18	QPR5-120750X	52.08
.1200	.1340	.750	.0080	.050	1.090	.0263	.1875	2.0	QPR-120750	47.18	QPR-120750X	52.08
.1400	.1540	.375	.0050	.050	.590	.0463	.1875	1.5	QPR5-140375	47.18	QPR5-140375X	52.08
.1400	.1540	.375	.0080	.050	.590	.0463	.1875	1.5	QPR8-140375	47.18	QPR8-140375X	52.08
.1400	.1540	.500	.0050	.050	.590	.0463	.1875	1.5	QPR5-140500	47.18	QPR5-140500X	52.08
.1400	.1540	.500	.0080	.050	.590	.0463	.1875	1.5	QPR8-140500	47.18	QPR8-140500X	52.08

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options



QPR

Quick Change – Profiling Tools

Radial Profiling (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
H	L ₂	$L_2 \begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	$R \begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	P	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.1600	.1780	.375	.0080	.050	.590	.0663	.1875	1.5	QPR8-160375	47.18	QPR8-160375X	52.08
.1600	.1780	.500	.0080	.050	.590	.0663	.1875	1.5	QPR-160500	47.18	QPR-160500X	52.08
.1600	.1780	.750	.0080	.050	1.090	.0663	.1875	2.0	QPR-160750	47.18	QPR-160750X	52.08
.1600	.1780	1.000	.0080	.050	1.090	.0663	.1875	2.0	QPR-1601000	47.18	QPR-1601000X	52.08
.1800	.1980	.375	.0080	.080	.853	.0550	.2500	2.0	QPR8-180375	58.98	QPR8-180375X	66.98
.1800	.1980	.500	.0080	.080	.853	.0550	.2500	2.0	QPR-180500	58.98	QPR-180500X	66.98
.1800	.1980	.750	.0080	.080	.853	.0550	.2500	2.0	QPR-180750	58.98	QPR-180750X	66.98
.1800	.1980	1.000	.0080	.080	1.353	.0550	.2500	2.5	QPR-1801000	58.98	QPR-1801000X	67.38
.2000	.2180	.500	.0050	.080	.853	.0750	.2500	2.0	QPR5-200500	58.98	QPR5-200500X	66.98
.2000	.2180	.500	.0080	.080	.853	.0750	.2500	2.0	QPR8-200500	58.98	QPR8-200500X	66.98
.2000	.2180	.750	.0050	.080	.853	.0750	.2500	2.0	QPR5-200750	58.98	QPR5-200750X	66.98
.2000	.2180	.750	.0080	.080	.853	.0750	.2500	2.0	QPR8-200750	58.98	QPR8-200750X	66.98
.2300	.2520	.500	.0080	.080	.853	.0738	.3125	2.0	QPR8-230500	73.48	QPR8-230500X	82.98
.2300	.2520	.750	.0080	.080	.853	.0738	.3125	2.0	QPR-230750	73.48	QPR-230750X	82.98
.2300	.2520	1.000	.0080	.080	1.353	.0738	.3125	2.5	QPR-2301000	73.48	QPR-2301000X	83.88
.2300	.2520	1.250	.0080	.080	1.353	.0738	.3125	2.5	QPR-2301250	73.48	QPR-2301250X	83.88
NEW	.2300	.2520	1.500	.0080	.080	1.853	.0738	3.0	QPR-2301500	75.18	QPR-2301500X	85.48
.2600	.2820	.750	.0080	.090	.853	.1038	.3125	2.0	QPR8-260750	73.48	QPR8-260750X	82.98
.2600	.2820	1.000	.0080	.090	1.353	.1038	.3125	2.5	QPR8-2601000	73.48	QPR8-2601000X	83.88
.3000	.3220	.750	.0080	.110	.853	.1438	.3125	2.0	QPR8-300750	73.48	QPR8-300750X	82.98
.3000	.3220	1.000	.0080	.110	1.353	.1438	.3125	2.5	QPR-3001000	73.48	QPR-3001000X	83.88
.3000	.3220	1.250	.0080	.110	1.353	.1438	.3125	2.5	QPR-3001250	73.48	QPR-3001250X	83.88
NEW	.3000	.3220	1.500	.0080	.110	1.853	.1438	3.0	QPR-3001500	75.18	QPR-3001500X	85.48
.3600	.3820	.750	.0080	.130	.853	.1725	.3750	2.0	QPR8-360750	95.78	QPR8-360750X	106.18
.3600	.3820	1.000	.0080	.130	1.353	.1725	.3750	2.5	QPR-3601000	95.78	QPR-3601000X	108.08
.3600	.3820	1.250	.0080	.130	1.353	.1725	.3750	2.5	QPR-3601250	95.78	QPR-3601250X	108.08
NEW	.3600	.3820	1.500	.0080	.130	1.853	.1725	3.0	QPR-3601500	97.48	QPR-3601500X	109.68
.4600	.4820	.750	.0080	.150	1.040	.2100	.5000	2.5	QPR8-460750	134.18	QPR8-460750X	150.88
.4600	.4820	1.000	.0080	.150	1.540	.2100	.5000	3.0	QPR-4601000	134.18	QPR-4601000X	150.88
.4600	.4820	1.500	.0080	.150	1.540	.2100	.5000	3.0	QPR-4601500	134.18	QPR-4601500X	150.88
.4600	.4820	1.800	.0080	.150	2.040	.2100	.5000	3.5	QPR-4601800	146.38	QPR-4601800X	164.38
.4900	.5120	1.000	.0080	.150	1.540	.2400	.5000	3.0	QPR-4901000	134.18	QPR-4901000X	150.88
.4900	.5120	1.500	.0080	.150	1.540	.2400	.5000	3.0	QPR-4901500	134.18	QPR-4901500X	150.88
.4900	.5120	1.800	.0080	.150	2.040	.2400	.5000	3.5	QPR-4901800	146.38	QPR-4901800X	164.38

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

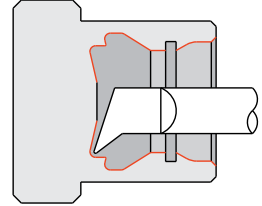
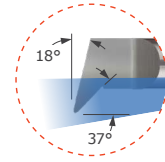
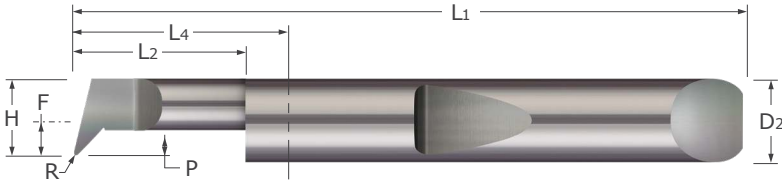
See pgs 16-34 for quick change holder options



Quick Change – Profiling Tools

Angled Profiling

QPA



Quick Change – Profiling Tools

- Designed for both radial and axial profiling
- Unique design maximizes tool versatility and part feature creation
- Excellent choice for fine finishing
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Head Width	Minimum Bore Dia*	Maximum Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
H	L2	$L2^{+0.030^*}_{-0.000^*}$	$R^{+0.0005^*}_{-0.0005^*}$	P	L4	F	D2 (h6)	L1				
.0500	.0550	.150	.0020	.015	.590	-.0438	.1875	1.5	QPA2-050150	47.18	QPA2-050150X	52.08
.0500	.0550	.200	.0020	.015	.590	-.0438	.1875	1.5	QPA2-050200	47.18	QPA2-050200X	52.08
.0600	.0700	.150	.0020	.020	.590	-.0338	.1875	1.5	QPA2-060150	47.18	QPA2-060150X	52.08
.0600	.0700	.200	.0020	.020	.590	-.0338	.1875	1.5	QPA2-060200	47.18	QPA2-060200X	52.08
.0700	.0800	.150	.0020	.020	.590	-.0238	.1875	1.5	QPA2-070150	47.18	QPA2-070150X	52.08
.0700	.0800	.200	.0020	.020	.590	-.0238	.1875	1.5	QPA2-070200	47.18	QPA2-070200X	52.08
.0800	.0900	.200	.0020	.025	.590	-.0138	.1875	1.5	QPA2-080200	47.18	QPA2-080200X	52.08
.0800	.0900	.300	.0020	.025	.590	-.0138	.1875	1.5	QPA2-080300	47.18	QPA2-080300X	52.08
.0900	.1000	.200	.0020	.030	.590	-.0038	.1875	1.5	QPA2-090200	47.18	QPA2-090200X	52.08
.0900	.1000	.300	.0020	.030	.590	-.0038	.1875	1.5	QPA2-090300	47.18	QPA2-090300X	52.08
.1000	.1100	.200	.0020	.030	.590	.0063	.1875	1.5	QPA2-100200	47.18	QPA2-100200X	52.08
.1000	.1100	.200	.0050	.030	.590	.0063	.1875	1.5	QPA5-100200	47.18	QPA5-100200X	52.08
.1000	.1100	.300	.0020	.030	.590	.0063	.1875	1.5	QPA2-100300	47.18	QPA2-100300X	52.08
.1000	.1100	.300	.0050	.030	.590	.0063	.1875	1.5	QPA5-100300	47.18	QPA5-100300X	52.08
.1100	.1240	.250	.0050	.035	.590	.0163	.1875	1.5	QPA5-110250	47.18	QPA5-110250X	52.08
.1100	.1240	.375	.0050	.035	.590	.0163	.1875	1.5	QPA5-110375	47.18	QPA5-110375X	52.08
.1200	.1340	.250	.0050	.035	.590	.0263	.1875	1.5	QPA5-120250	47.18	QPA5-120250X	52.08
.1200	.1340	.375	.0050	.035	.590	.0263	.1875	1.5	QPA5-120375	47.18	QPA5-120375X	52.08
.1400	.1540	.375	.0050	.040	.590	.0463	.1875	1.5	QPA5-140375	47.18	QPA5-140375X	52.08
.1400	.1540	.500	.0050	.040	.590	.0463	.1875	1.5	QPA5-140500	47.18	QPA5-140500X	52.08
.1600	.1780	.375	.0050	.050	.590	.0663	.1875	1.5	QPA5-160375	47.18	QPA5-160375X	52.08
.1600	.1780	.500	.0050	.050	.590	.0663	.1875	1.5	QPA5-160500	47.18	QPA5-160500X	52.08
.1800	.1980	.375	.0050	.055	.853	.0550	.2500	2.0	QPA5-180375	58.98	QPA5-180375X	66.98
.1800	.1980	.500	.0050	.055	.853	.0550	.2500	2.0	QPA5-180500	58.98	QPA5-180500X	66.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options



QPA

Quick Change – Profiling Tools
Angled Profiling (cont.)

Continued from previous page

Head Width	Minimum Bore Dia*	Maximum Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
H	L2	$^{+.030"}_{-.000"}$	$R^{+.0005"}_{-.0005"}$	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.2000	.2180	.500	.0050	.060	.853	.0750	.2500	2.0	QPA5-200500	58.98	QPA5-200500X	66.98
.2000	.2180	.500	.0080	.060	.853	.0750	.2500	2.0	QPA8-200500	58.98	QPA8-200500X	66.98
.2000	.2180	.750	.0050	.060	.853	.0750	.2500	2.0	QPA5-200750	58.98	QPA5-200750X	66.98
.2000	.2180	.750	.0080	.060	.853	.0750	.2500	2.0	QPA8-200750	58.98	QPA8-200750X	66.98
.2300	.2520	.500	.0080	.070	.853	.0738	.3125	2.0	QPA8-230500	73.48	QPA8-230500X	82.98
.2300	.2520	.750	.0080	.070	.853	.0738	.3125	2.0	QPA8-230750	73.48	QPA8-230750X	82.98
.2600	.2820	.750	.0080	.080	.853	.1038	.3125	2.0	QPA8-260750	73.48	QPA8-260750X	82.98
.2600	.2820	1.000	.0080	.080	1.353	.1038	.3125	2.5	QPA8-2601000	73.48	QPA8-2601000X	83.88
.3000	.3220	.750	.0080	.090	.853	.1438	.3125	2.0	QPA8-300750	73.48	QPA8-300750X	82.98
.3000	.3220	1.000	.0080	.090	1.353	.1438	.3125	2.5	QPA8-3001000	73.48	QPA8-3001000X	83.88
.3600	.3820	.750	.0080	.110	.853	.1725	.3750	2.0	QPA8-360750	95.78	QPA8-360750X	107.38
.3600	.3820	1.000	.0080	.110	1.353	.1725	.3750	2.5	QPA8-3601000	95.78	QPA8-3601000X	108.08
.4100	.4320	.750	.0080	.120	1.040	.1600	.5000	2.5	QPA8-410750	134.18	QPA8-410750X	150.88
.4100	.4320	1.250	.0080	.120	1.540	.1600	.5000	3.0	QPA8-4101250	134.18	QPA8-4101250X	150.88
.4600	.4820	.750	.0080	.140	1.040	.2100	.5000	2.5	QPA8-460750	134.18	QPA8-460750X	150.88
.4600	.4820	1.000	.0080	.140	1.040	.2100	.5000	2.5	QPA8-4601000	134.18	QPA8-4601000X	150.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.



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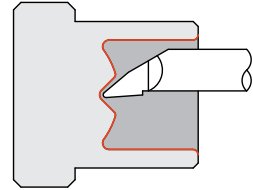
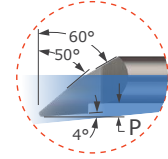
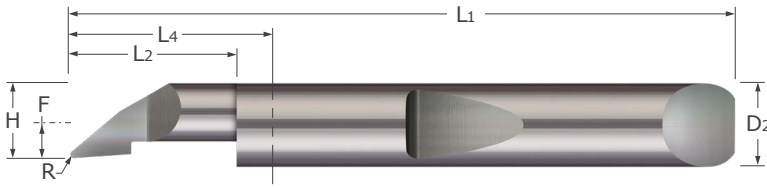
See pgs 16-34 for quick change holder options



Quick Change – Profiling Tools

Axial Profiling

QPF



Quick Change – Profiling Tools

- Designed for both radial and axial profiling
- Unique design maximizes tool versatility and part feature creation
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
H		L2	R	P	L4	F	D2 (h6)	L1				
		$^{+.030}_{-.000}$	$^{+.0005}_{-.0005}$									
.0500	.0550	.150	.0050	.005	.590	-.0438	.1875	1.5	QPF5-050150	47.18	QPF5-050150X	52.08
.0500	.0550	.200	.0050	.005	.590	-.0438	.1875	1.5	QPF-050200	47.18	QPF-050200X	52.08
.0500	.0550	.400	.0050	.005	.590	-.0438	.1875	1.5	QPF-050400	47.18	QPF-050400X	52.08
.0500	.0550	.500	.0050	.005	.590	-.0438	.1875	1.5	QPF-050500	47.18	QPF-050500X	52.08
.0600	.0700	.200	.0050	.005	.590	-.0338	.1875	1.5	QPF-060200	47.18	QPF-060200X	52.08
.0600	.0700	.400	.0050	.005	.590	-.0338	.1875	1.5	QPF-060400	47.18	QPF-060400X	52.08
.0600	.0700	.500	.0050	.005	.590	-.0338	.1875	1.5	QPF-060500	47.18	QPF-060500X	52.08
.0700	.0800	.150	.0050	.010	.590	-.0238	.1875	1.5	QPF5-070150	47.18	QPF5-070150X	52.08
.0700	.0800	.200	.0050	.010	.590	-.0238	.1875	1.5	QPF-070200	47.18	QPF-070200X	52.08
.0700	.0800	.300	.0050	.010	.590	-.0238	.1875	1.5	QPF5-070300	47.18	QPF5-070300X	52.08
.0700	.0800	.400	.0050	.010	.590	-.0238	.1875	1.5	QPF-070400	47.18	QPF-070400X	52.08
.0700	.0800	.500	.0050	.010	.590	-.0238	.1875	1.5	QPF-070500	47.18	QPF-070500X	52.08
.0700	.0800	.600	.0050	.010	1.090	-.0238	.1875	2.0	QPF-070600	47.18	QPF-070600X	52.08
.0800	.0900	.150	.0050	.010	.590	-.0138	.1875	1.5	QPF5-080150	47.18	QPF5-080150X	52.08
.0800	.0900	.200	.0050	.010	.590	-.0138	.1875	1.5	QPF5-080200	47.18	QPF5-080200X	52.08
.0800	.0900	.250	.0050	.010	.590	-.0138	.1875	1.5	QPF5-080250	47.18	QPF5-080250X	52.08
.0900	.1000	.200	.0050	.010	.590	-.0038	.1875	1.5	QPF5-090200	47.18	QPF5-090200X	52.08
.0900	.1000	.300	.0050	.010	.590	-.0038	.1875	1.5	QPF5-090300	47.18	QPF5-090300X	52.08
.1000	.1100	.300	.0050	.015	.590	.0063	.1875	1.5	QPF5-100300	47.18	QPF5-100300X	52.08
.1000	.1100	.400	.0050	.015	.590	.0063	.1875	1.5	QPF5-100400	47.18	QPF5-100400X	52.08
.1100	.1220	.250	.0050	.015	.590	.0163	.1875	1.5	QPF-110250	47.18	QPF-110250X	52.08
.1100	.1220	.375	.0050	.015	.590	.0163	.1875	1.5	QPF5-110375	47.18	QPF5-110375X	52.08
.1100	.1220	.500	.0050	.015	.590	.0163	.1875	1.5	QPF-110500	47.18	QPF-110500X	52.08
.1100	.1220	.750	.0050	.015	1.090	.0163	.1875	2.0	QPF-110750	47.18	QPF-110750X	52.08
.1200	.1320	.250	.0080	.020	.590	.0263	.1875	1.5	QPF-120250	47.18	QPF-120250X	52.08
.1200	.1320	.375	.0050	.020	.590	.0263	.1875	1.5	QPF5-120375	47.18	QPF5-120375X	52.08
.1200	.1320	.500	.0080	.020	.590	.0263	.1875	1.5	QPF-120500	47.18	QPF-120500X	52.08
.1200	.1320	.750	.0080	.020	1.090	.0263	.1875	2.0	QPF-120750	47.18	QPF-120750X	52.08
.1200	.1320	1.000	.0080	.020	1.090	.0263	.1875	2.0	QPF-1201000	47.18	QPF-1201000X	52.08

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options



QPF

Quick Change – Profiling Tools

Axial Profiling (cont.)

Continued from previous page

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		A1TiN Coated	
									Tool #	Price	Tool #	Price
H		L ₂ $\begin{matrix} +.030" \\ -.000" \end{matrix}$	R $\begin{matrix} +.0005" \\ -.0005" \end{matrix}$	P	L ₄	F	D ₂ (h6)	L ₁				
.1400	.1520	.375	.0080	.020	.590	.0463	.1875	1.5	QPF8-140375	47.18	QPF8-140375X	52.08
.1400	.1520	.500	.0080	.020	.590	.0463	.1875	1.5	QPF8-140500	47.18	QPF8-140500X	52.08
.1600	.1760	.375	.0080	.030	.590	.0663	.1875	1.5	QPF8-160375	47.18	QPF8-160375X	52.08
.1600	.1760	.500	.0080	.030	.590	.0663	.1875	1.5	QPF-160500	47.18	QPF-160500X	52.08
.1600	.1760	.750	.0080	.030	1.090	.0663	.1875	2.0	QPF-160750	47.18	QPF-160750X	52.08
.1600	.1760	1.000	.0080	.030	1.090	.0663	.1875	2.0	QPF-1601000	47.18	QPF-1601000X	52.08
.1800	.1960	.375	.0080	.030	.853	.0550	.2500	2.0	QPF8-180375	58.98	QPF8-180375X	66.98
.1800	.1960	.500	.0080	.030	.853	.0550	.2500	2.0	QPF-180500	58.98	QPF-180500X	66.98
.1800	.1960	.750	.0080	.030	.853	.0550	.2500	2.0	QPF-180750	58.98	QPF-180750X	66.98
.1800	.1960	1.000	.0080	.030	1.353	.0550	.2500	2.5	QPF-1801000	58.98	QPF-1801000X	67.38
.2000	.2160	.400	.0080	.030	.853	.0750	.2500	2.0	QPF8-200400	58.98	QPF8-200400X	66.98
.2000	.2160	.600	.0080	.030	.853	.0750	.2500	2.0	QPF-200600	58.98	QPF-200600X	66.98
.2000	.2160	.800	.0080	.030	1.353	.0750	.2500	2.5	QPF8-200800	58.98	QPF8-200800X	67.38
.2000	.2160	1.000	.0080	.030	1.353	.0750	.2500	2.5	QPF-2001000	58.98	QPF-2001000X	67.38
.2300	.2500	.750	.0080	.030	.853	.0738	.3125	2.0	QPF-230750	73.48	QPF-230750X	82.98
.2300	.2500	1.000	.0080	.030	1.353	.0738	.3125	2.5	QPF-2301000	73.48	QPF-2301000X	83.88
.2300	.2500	1.100	.0080	.030	1.353	.0738	.3125	2.5			QPF-2301100X	83.88
.2300	.2500	1.250	.0080	.030	1.353	.0738	.3125	2.5	QPF-2301250	73.48	QPF-2301250X	83.88
.2600	.2800	.750	.0080	.030	.853	.1038	.3125	2.5	QPF8-260750	73.48	QPF8-260750X	83.88
.3000	.3200	1.000	.0080	.030	1.353	.1438	.3125	2.5	QPF-3001000	73.48	QPF-3001000X	83.88
.3000	.3200	1.250	.0080	.030	1.353	.1438	.3125	2.5	QPF-3001250	73.48	QPF-3001250X	83.88
.3600	.3800	.750	.0080	.030	.853	.1725	.3750	2.0	QPF8-360750	95.78	QPF8-360750X	106.18
.3600	.3800	1.000	.0080	.030	1.353	.1725	.3750	2.5	QPF-3601000	95.78	QPF-3601000X	108.08
.3600	.3800	1.250	.0080	.030	1.353	.1725	.3750	2.5	QPF-3601250	95.78	QPF-3601250X	108.08
.4100	.4300	.750	.0080	.040	1.040	.1600	.5000	2.5	QPF8-410750	134.18	QPF8-410750X	150.88
.4100	.4300	1.000	.0080	.040	1.040	.1600	.5000	2.5	QPF8-4101000	134.18	QPF8-4101000X	150.88
.4600	.4800	.750	.0080	.050	1.040	.2100	.5000	2.5	QPF8-460750	134.18	QPF8-460750X	150.88
.4600	.4800	1.000	.0080	.050	1.040	.2100	.5000	2.5	QPF-4601000	134.18	QPF-4601000X	150.88
.4600	.4800	1.600	.0080	.050	2.040	.2100	.5000	3.5			QPF-4601600X	154.68
.4900	.5100	1.800	.0080	.050	2.040	.2400	.5000	3.5			QPF-4901800X	154.68

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Quick Change – Profiling Tools

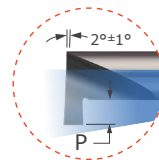
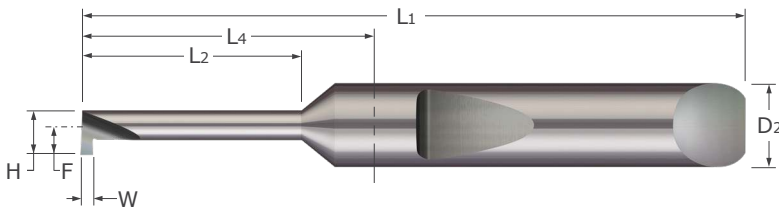
See pgs 16-34 for quick change holder options



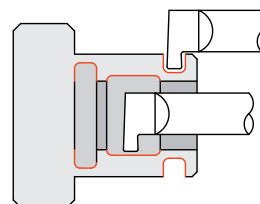
Quick Change – Grooving Tools

Retaining Ring – Square – Miniature

QMRR



- Designed for generating retaining ring grooves in bores .070" and larger
- Polished face for improved edge retention and chip evacuation while reducing galling
- On-center neck design
- Coolant fed enabled shank design
- Sharp corner profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Grooving Tools

Width	Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W	H		L2	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.010	.0600	.0700	.100	.020	.590	.0400	.1875	1.5	QMRR-010-100-060	65.68	QMRR-010-100-060X	71.18
.010	.0600	.0700	.150	.020	.590	.0400	.1875	1.5	QMRR-010-150-060	65.68	QMRR-010-150-060X	71.18
.010	.0600	.0700	.250	.020	.590	.0400	.1875	1.5	QMRR-010-250-060	65.68	QMRR-010-250-060X	71.18
.015	.0600	.0700	.100	.020	.590	.0400	.1875	1.5	QMRR-015-100-060	65.68	QMRR-015-100-060X	71.18
.015	.0600	.0700	.150	.020	.590	.0400	.1875	1.5	QMRR-015-150-060	65.68	QMRR-015-150-060X	71.18
.015	.0600	.0700	.250	.020	.590	.0400	.1875	1.5	QMRR-015-250-060	65.68	QMRR-015-250-060X	71.18
.015	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMRR-015-250-080	65.68	QMRR-015-250-080X	71.18
.015	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMRR-015-375-080	65.68	QMRR-015-375-080X	71.18
.015	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMRR-015-500-080	65.68		
.015	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMRR-015-250-100	65.68	QMRR-015-250-100X	71.18
.015	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMRR-015-500-100	65.68	QMRR-015-500-100X	71.18
.015	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMRR-015-750-100	65.68	QMRR-015-750-100X	71.18
.017	.1200	.1340	.150	.040	.590	.0800	.1875	1.5	QMRR-017-150-120	65.68	QMRR-017-150-120X	71.18
.017	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMRR-017-250-120	65.68	QMRR-017-250-120X	71.18
.020	.0600	.0700	.100	.020	.590	.0400	.1875	1.5	QMRR-020-100-060	58.98	QMRR-020-100-060X	64.38
.020	.0600	.0700	.150	.020	.590	.0400	.1875	1.5	QMRR-020-150-060	58.98	QMRR-020-150-060X	64.38
.020	.0600	.0700	.250	.020	.590	.0400	.1875	1.5	QMRR-020-250-060	58.98	QMRR-020-250-060X	64.38
.020	.0700	.0800	.100	.020	.590	.0450	.1875	1.5	QMRR-020-100-070	58.98	QMRR-020-100-070X	64.38
.020	.0700	.0800	.150	.020	.590	.0450	.1875	1.5	QMRR-020-150-070	58.98	QMRR-020-150-070X	64.38
.020	.0800	.0900	.150	.025	.590	.0525	.1875	1.5	QMRR-020-150-080	58.98	QMRR-020-150-080X	64.38
.020	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMRR-020-250-080	58.98	QMRR-020-250-080X	64.38
.020	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMRR-020-375-080	58.98	QMRR-020-375-080X	64.38
.020	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMRR-020-500-080	58.98	QMRR-020-500-080X	64.38
.020	.0900	.1000	.150	.025	.590	.0575	.1875	1.5	QMRR-020-150-090	58.98	QMRR-020-150-090X	64.38
.020	.0900	.1000	.250	.025	.590	.0575	.1875	1.5	QMRR-020-250-090	58.98	QMRR-020-250-090X	64.38
.020	.1000	.1100	.150	.030	.590	.0650	.1875	1.5	QMRR-020-150-100	58.98	QMRR-020-150-100X	64.38
.020	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMRR-020-250-100	58.98	QMRR-020-250-100X	64.38
.020	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMRR-020-500-100	58.98	QMRR-020-500-100X	64.38
.020	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMRR-020-750-100	58.98	QMRR-020-750-100X	64.38

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options



QMRR

Quick Change – Grooving Tools
Retaining Ring – Square – Miniature (cont.)

Continued from previous page

Width	Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	H		L ₂ $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	P	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.020	.1200	.1340	.150	.040	.590	.0800	.1875	1.5	QMRR-020-150-120	58.98	QMRR-020-150-120X	64.38
.020	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMRR-020-250-120	58.98	QMRR-020-250-120X	64.38
.020	.1200	.1340	.375	.040	.590	.0800	.1875	1.5	QMRR-020-375-120	58.98	QMRR-020-375-120X	64.38
.020	.1200	.1340	.500	.040	.590	.0800	.1875	1.5	QMRR-020-500-120	58.98	QMRR-020-500-120X	64.38
.020	.1200	.1340	.750	.040	1.090	.0800	.1875	2.0	QMRR-020-750-120	58.98	QMRR-020-750-120X	64.38
.025	.1200	.1340	.150	.040	.590	.0800	.1875	1.5	QMRR-025-150-120	58.98	QMRR-025-150-120X	64.38
.025	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMRR-025-250-120	58.98	QMRR-025-250-120X	64.38
.030	.0700	.0800	.100	.020	.590	.0450	.1875	1.5	QMRR-030-100-070	58.98	QMRR-030-100-070X	64.38
.030	.0700	.0800	.150	.020	.590	.0450	.1875	1.5	QMRR-030-150-070	58.98	QMRR-030-150-070X	64.38
.030	.0800	.0900	.150	.025	.590	.0525	.1875	1.5	QMRR-030-150-080	58.98	QMRR-030-150-080X	64.38
.030	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMRR-030-250-080	58.98	QMRR-030-250-080X	64.38
.030	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMRR-030-375-080	58.98	QMRR-030-375-080X	64.38
.030	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMRR-030-500-080	58.98	QMRR-030-500-080X	64.38
.030	.0900	.1000	.150	.025	.590	.0575	.1875	1.5	QMRR-030-150-090	58.98	QMRR-030-150-090X	64.38
.030	.0900	.1000	.250	.025	.590	.0575	.1875	1.5	QMRR-030-250-090	58.98	QMRR-030-250-090X	64.38
.030	.1000	.1100	.150	.030	.590	.0650	.1875	1.5	QMRR-030-150-100	58.98	QMRR-030-150-100X	64.38
.030	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMRR-030-250-100	58.98	QMRR-030-250-100X	64.38
.030	.1000	.1100	.375	.030	.590	.0650	.1875	1.5	QMRR-030-375-100	58.98	QMRR-030-375-100X	64.38
.030	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMRR-030-500-100	58.98	QMRR-030-500-100X	64.38
.030	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMRR-030-750-100	58.98	QMRR-030-750-100X	64.38
.030	.1200	.1340	.150	.040	.590	.0800	.1875	1.5	QMRR-030-150-120	58.98	QMRR-030-150-120X	64.38
.030	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMRR-030-250-120	58.98	QMRR-030-250-120X	64.38
.030	.1200	.1340	.375	.040	.590	.0800	.1875	1.5	QMRR-030-375-120	58.98	QMRR-030-375-120X	64.38
.030	.1200	.1340	.500	.040	.590	.0800	.1875	1.5	QMRR-030-500-120	58.98	QMRR-030-500-120X	64.38
.030	.1200	.1340	.750	.040	1.090	.0800	.1875	2.0	QMRR-030-750-120	58.98	QMRR-030-750-120X	64.38

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

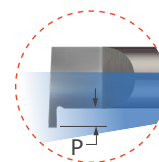
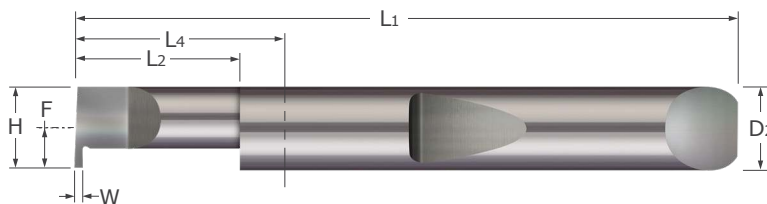
See pgs 16-34 for quick change holder options



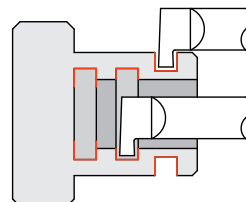
Quick Change – Grooving Tools

QRR

Retaining Ring – Square



- Designed for generating retaining ring grooves in bores .134" and larger
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Coolant fed enabled shank design
- Sharp corner profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Grooving Tools

Width	Head Width	Minimum Bore Dia.*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
W	H		L2	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
+.002" -.000"			+.030" -.000"									
.017	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-017-4	50.08	QRR-017-4X	55.08
.017	.1800	.1980	.375	.030	.590	.0863	.1875	1.5	QRR-017-6	50.08	QRR-017-6X	55.08
.017	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-017-8	50.08	QRR-017-8X	55.08
.017	.1800	.1980	.625	.030	1.090	.0863	.1875	2.0	QRR-017-10	50.08	QRR-017-10X	55.08
.017	.1800	.1980	.750	.030	1.090	.0863	.1875	2.0	QRR-017-750-180	50.08	QRR-017-750-180X	55.08
.017	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-017-250-245	58.98	QRR-017-250-245X	66.98
.017	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QRR-017-375-245	58.98	QRR-017-375-245X	66.98
.020	.1200	.1340	.150	.030	.590	.0263	.1875	1.5	QRR-020-150-120	50.08	QRR-020-150-120X	55.08
.020	.1200	.1340	.250	.030	.590	.0263	.1875	1.5	QRR-020-250-120	50.08	QRR-020-250-120X	55.08
.020	.1400	.1540	.250	.030	.590	.0463	.1875	1.5	QRR-020-250-140	50.08	QRR-020-250-140X	55.08
.020	.1400	.1540	.375	.030	.590	.0463	.1875	1.5	QRR-020-375-140	50.08	QRR-020-375-140X	55.08
.020	.1600	.1780	.250	.030	.590	.0663	.1875	1.5	QRR-020-250-160	50.08	QRR-020-250-160X	55.08
.020	.1600	.1780	.375	.030	.590	.0663	.1875	1.5	QRR-020-375-160	50.08	QRR-020-375-160X	55.08
.020	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-020-4	50.08	QRR-020-4X	55.08
.020	.1800	.1980	.375	.030	.590	.0863	.1875	1.5	QRR-020-6	50.08	QRR-020-6X	55.08
.020	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-020-8	50.08	QRR-020-8X	55.08
.020	.1800	.1980	.625	.030	1.090	.0863	.1875	2.0	QRR-020-10	50.08	QRR-020-10X	55.08
.020	.1800	.1980	.750	.030	1.090	.0863	.1875	2.0	QRR-020-750-180	58.98	QRR-020-750-180X	65.68
.020	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-020-250-245	58.98	QRR-020-250-245X	66.98
.020	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QRR-020-375-245	58.98	QRR-020-375-245X	66.98
.020	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-020-500-245	58.98	QRR-020-500-245X	66.98
.020	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QRR-020-625-245	58.98	QRR-020-625-245X	66.98
.020	.3700	.3920	.625	.050	.853	.1825	.3750	2.0	QRR-020-625-370	95.78	QRR-020-625-370X	107.38
.020	.3700	.3920	1.000	.050	1.353	.1825	.3750	2.5	QRR-020-1000-370	95.78	QRR-020-1000-370X	108.08
.025	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-025-4	58.98	QRR-025-4X	66.98
.025	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QRR-025-6	58.98	QRR-025-6X	66.98
.025	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-025-8	58.98	QRR-025-8X	66.98
.025	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QRR-025-10	58.98	QRR-025-10X	66.98
.025	.2450	.2670	.750	.050	.853	.1200	.2500	2.0	QRR-025-750-245	58.98	QRR-025-750-245X	66.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 84 for miniature sizes



QRR

Quick Change – Grooving Tools
Retaining Ring – Square (cont.)

Continued from previous page

	Width	Head Width	Minimum Bore Dia.*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AITIN Coated	
	W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	H	L2 $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	
	.030	.1200	.1340	.150	.030	.590	.0263	.1875	1.5	QRR-030-150-120	50.08	QRR-030-150-120X	55.08
	.030	.1200	.1340	.250	.030	.590	.0263	.1875	1.5	QRR-030-250-120	50.08	QRR-030-250-120X	55.08
	.030	.1400	.1540	.250	.030	.590	.0463	.1875	1.5	QRR-030-250-140	50.08	QRR-030-250-140X	55.08
	.030	.1400	.1540	.375	.030	.590	.0463	.1875	1.5	QRR-030-375-140	50.08	QRR-030-375-140X	55.08
NEW	.030	.1400	.1540	.375	.050	.590	.0463	.1875	1.5	QRR-6757	50.08	QRR-6757X	56.88
	.030	.1600	.1780	.250	.030	.590	.0663	.1875	1.5	QRR-030-250-160	50.08	QRR-030-250-160X	55.08
	.030	.1600	.1780	.375	.030	.590	.0663	.1875	1.5	QRR-030-375-160	50.08	QRR-030-375-160X	55.08
NEW	.030	.1600	.1780	.375	.050	.590	.0663	.1875	1.5	QRR-3565	50.08	QRR-3565X	56.88
	.030	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-030-250-180	50.08	QRR-030-250-180X	55.08
NEW	.030	.1800	.1980	.250	.050	.590	.0863	.1875	1.5	QRR-0495	50.08	QRR-0495X	56.88
	.030	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-030-500-180	50.08	QRR-030-500-180X	55.08
NEW	.030	.1800	.1980	.500	.050	.590	.0863	.1875	1.5	QRR-5911	50.08	QRR-5911X	56.88
	.030	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-030-4	58.98	QRR-030-4X	66.98
	.030	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QRR-030-6	58.98	QRR-030-6X	66.98
	.030	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-030-8	58.98	QRR-030-8X	66.98
	.030	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QRR-030-10	58.98	QRR-030-10X	66.98
	.030	.2450	.2670	.750	.050	.853	.1200	.2500	2.0	QRR-030-750-245	58.98	QRR-030-750-245X	66.98
	.030	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-030-500-310	73.48	QRR-030-500-310X	82.98
	.030	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-030-750-310	73.48	QRR-030-750-310X	82.98
	.030	.3700	.3920	.625	.050	.853	.1825	.3750	2.0	QRR-030-625-370	95.78	QRR-030-625-370X	107.38
	.030	.3700	.3920	1.000	.050	1.353	.1825	.3750	2.5	QRR-030-1000-370	95.78	QRR-030-1000-370X	108.08
	.033	.3100	.3320	.250	.100	.853	.1538	.3125	2.0	QRR-033-250-310	73.48	QRR-033-250-310X	82.98
	.033	.3100	.3320	.375	.100	.853	.1538	.3125	2.0	QRR-033-6	73.48	QRR-033-6X	82.98
	.033	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-033-8	73.48	QRR-033-8X	82.98
	.033	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-033-12	73.48	QRR-033-12X	82.98
NEW	.038	.2450	.2670	.500	.080	.853	.1200	.2500	2.0	QRR-9076	58.98	QRR-9076X	66.98
	.038	.3100	.3320	.250	.100	.853	.1538	.3125	2.0	QRR-038-250-310	73.48	QRR-038-250-310X	82.98
	.038	.3100	.3320	.375	.100	.853	.1538	.3125	2.0	QRR-038-6	73.48	QRR-038-6X	82.98
	.038	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-038-8	73.48	QRR-038-8X	82.98
	.038	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-038-12	73.48	QRR-038-12X	82.98
	.039	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-039-250-180	50.08	QRR-039-250-180X	55.08
NEW	.039	.1800	.1980	.250	.060	.590	.0863	.1875	1.5	QRR-5824	50.08	QRR-5824X	56.88
	.039	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-039-500-180	50.08	QRR-039-500-180X	55.08
NEW	.039	.1800	.1980	.500	.060	.590	.0863	.1875	1.5	QRR-1828	50.08	QRR-1828X	56.88
	.039	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-039-250-245	58.98	QRR-039-250-245X	66.98
NEW	.039	.2450	.2670	.250	.080	.853	.1200	.2500	2.0	QRR-8363	58.98	QRR-8363X	66.98
	.039	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-039-500-245	58.98	QRR-039-500-245X	66.98
NEW	.039	.2450	.2670	.500	.080	.853	.1200	.2500	2.0	QRR-1774	58.98	QRR-1774X	66.98
	.039	.3700	.3920	.375	.100	.853	.1825	.3750	2.0	QRR-039-375-370	95.78	QRR-039-375-370X	106.18
	.039	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-039-8	95.78	QRR-039-8X	106.18
	.039	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-039-12	95.78	QRR-039-12X	106.18
	.039	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-039-16	95.78	QRR-039-16X	108.08
	.039	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-039-20	95.78	QRR-039-20X	108.08
NEW	.040	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-2122	58.98	QRR-2122X	66.98
NEW	.040	.2450	.2670	.250	.080	.853	.1200	.2500	2.0	QRR-1248	58.98	QRR-1248X	66.98
NEW	.040	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-4112	58.98	QRR-4112X	66.98
NEW	.040	.2450	.2670	.500	.080	.853	.1200	.2500	2.0	QRR-3030	58.98	QRR-3030X	66.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 84 for miniature sizes

Quick Change – Grooving Tools



Quick Change – Grooving Tools

QRR

Retaining Ring – Square (cont.)

Continued from previous page

Width	Head Width	Minimum Bore Dia.*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	H		L2 $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.046	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-046-500-310	73.48	QRR-046-500-310X	82.98
.046	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-046-750-310	73.48	QRR-046-750-310X	82.98
.046	.3700	.3920	.375	.100	.853	.1825	.3750	2.0	QRR-046-375-370	95.78	QRR-046-375-370X	106.18
.046	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-046-8	95.78	QRR-046-8X	106.18
.046	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-046-12	95.78	QRR-046-12X	106.18
.046	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-046-16	95.78	QRR-046-16X	108.08
.046	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-046-20	95.78	QRR-046-20X	108.08
.055	.2450	.2670	.500	.080	.853	.1200	.2500	2.0	QRR-4257	58.98	QRR-4257X	66.98
.055	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-055-8	95.78	QRR-055-8X	106.18
.055	.3700	.3920	.500	.150	.853	.1825	.3750	2.0	QRR-1660	95.78	QRR-1660X	107.38
.055	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-055-12	95.78	QRR-055-12X	106.18
.055	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-5000	95.78	QRR-5000X	107.38
.055	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-055-16	95.78	QRR-055-16X	108.08
.055	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-055-20	95.78	QRR-055-20X	108.08
.059	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-059-8	95.78	QRR-059-8X	106.18
.059	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-059-12	95.78	QRR-059-12X	106.18
.059	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-059-16	95.78	QRR-059-16X	108.08
.059	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-059-20	95.78	QRR-059-20X	108.08
.062	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-062-250-180	50.08	QRR-062-250-180X	55.08
.062	.1800	.1980	.250	.070	.590	.0863	.1875	1.5	QRR-7865	50.08	QRR-7865X	56.88
.062	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-062-500-180	50.08	QRR-062-500-180X	55.08
.062	.1800	.1980	.500	.070	.590	.0863	.1875	1.5	QRR-4145	50.08	QRR-4145X	56.88
.062	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-062-250-245	58.98	QRR-062-250-245X	66.98
.062	.2450	.2670	.250	.090	.853	.1200	.2500	2.0	QRR-6681	58.98	QRR-6681X	66.98
.062	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-062-500-245	58.98	QRR-062-500-245X	66.98
.062	.2450	.2670	.500	.090	.853	.1200	.2500	2.0	QRR-2685	58.98	QRR-2685X	66.98
.062	.2450	.2670	.750	.050	.853	.1200	.2500	2.0	QRR-1198	58.98	QRR-1198X	66.98
.062	.2450	.2670	.750	.090	.853	.1200	.2500	2.0	QRR-2795	58.98	QRR-2795X	66.98
.062	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-062-500-310	73.48	QRR-062-500-310X	82.98
.062	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-062-750-310	73.48	QRR-062-750-310X	82.98
.062	.3700	.3920	.250	.100	.853	.1825	.3750	2.0	QRR-062-250-370	95.78	QRR-062-250-370X	106.18
.062	.3700	.3920	.375	.100	.853	.1825	.3750	2.0	QRR-062-375-370	95.78	QRR-062-375-370X	106.18
.062	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-062-8	95.78	QRR-062-8X	106.18
.062	.3700	.3920	.500	.150	.853	.1825	.3750	2.0	QRR-0824	95.78	QRR-0824X	107.38
.062	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-062-12	95.78	QRR-062-12X	106.18
.062	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-6068	95.78	QRR-6068X	107.38
.062	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-062-16	95.78	QRR-062-16X	108.08
.062	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-062-20	95.78	QRR-062-20X	108.08
.069	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-069-8	95.78	QRR-069-8X	106.18
.069	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-069-12	95.78	QRR-069-12X	106.18
.069	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-7828	95.78	QRR-7828X	107.38
.069	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-069-16	95.78	QRR-069-16X	108.08
.069	.3700	.3920	1.000	.150	1.353	.1825	.3750	2.5	QRR-4609	95.78	QRR-4609X	108.08
.069	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-069-20	95.78	QRR-069-20X	108.08
.079	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-079-8	95.78	QRR-079-8X	106.18
.079	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-079-12	95.78	QRR-079-12X	106.18
.079	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-079-16	95.78	QRR-079-16X	108.08
.079	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-079-20	95.78	QRR-079-20X	108.08

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 84 for miniature sizes



QRR

Quick Change – Grooving Tools
Retaining Ring – Square (cont.)

Continued from previous page

	Width	Head Width	Minimum Bore Dia.*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
	W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	H		L2 $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
	.087	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-087-500-310	73.48	QRR-087-500-310X	82.98
	.087	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-087-750-310	73.48	QRR-087-750-310X	82.98
	.087	.3700	.3920	.375	.100	.853	.1825	.3750	2.0	QRR-087-375-370	95.78	QRR-087-375-370X	106.18
	.087	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-087-8	95.78	QRR-087-8X	106.18
NEW	.087	.3700	.3920	.500	.150	.853	.1825	.3750	2.0	QRR-7847	95.78	QRR-7847X	107.38
	.087	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-087-12	95.78	QRR-087-12X	106.18
NEW	.087	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-4895	95.78	QRR-4895X	107.38
	.087	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-087-16	95.78	QRR-087-16X	108.08
	.087	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-087-20	95.78	QRR-087-20X	108.08
NEW	.093	.4950	.5170	.500	.150	1.040	.2450	.5000	2.5	QRR-7835	134.18	QRR-7835X	150.88
	.093	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-093-12	134.18	QRR-093-12X	150.88
	.093	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-093-16	134.18	QRR-093-16X	150.88
	.093	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-093-20	134.18	QRR-093-20X	150.88
	.093	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-093-24	134.18	QRR-093-24X	150.88
	.118	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-118-12	134.18	QRR-118-12X	150.88
	.118	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-118-16	134.18	QRR-118-16X	150.88
	.118	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-118-20	134.18	QRR-118-20X	150.88
	.118	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-118-24	134.18	QRR-118-24X	150.88
	.125	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-125-750-370	95.78	QRR-125-750-370X	106.18
NEW	.125	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-3068	95.78	QRR-3068X	107.38
	.125	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-125-1000-370	95.78	QRR-125-1000-370X	108.08
NEW	.125	.3700	.3920	1.000	.150	1.353	.1825	.3750	2.5	QRR-5586	95.78	QRR-5586X	108.08
	.125	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-125-1250-370	95.78	QRR-125-1250-370X	108.08
NEW	.125	.3700	.3920	1.250	.150	1.353	.1825	.3750	2.5	QRR-0965	95.78	QRR-0965X	108.08
	.125	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-125-12	134.18	QRR-125-12X	150.88
NEW	.125	.4950	.5170	.750	.200	1.040	.2450	.5000	2.5	QRR-5199	134.18	QRR-5199X	150.88
	.125	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-125-16	134.18	QRR-125-16X	150.88
	.125	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-125-20	134.18	QRR-125-20X	150.88
NEW	.125	.4950	.5170	1.250	.200	1.540	.2450	.5000	3.0	QRR-7934	134.18	QRR-7934X	150.88
	.125	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-125-24	134.18	QRR-125-24X	150.88
	.156	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-156-12	134.18	QRR-156-12X	150.88
NEW	.156	.4950	.5170	.750	.200	1.040	.2450	.5000	2.5	QRR-1563	134.18	QRR-1563X	150.88
	.156	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-156-16	134.18	QRR-156-16X	150.88
	.156	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-156-20	134.18	QRR-156-20X	150.88
NEW	.156	.4950	.5170	1.250	.200	1.540	.2450	.5000	3.0	QRR-9832	134.18	QRR-9832X	150.88
	.156	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-156-24	134.18	QRR-156-24X	150.88
	.187	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-187-12	134.18	QRR-187-12X	150.88
	.187	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-187-16	134.18	QRR-187-16X	150.88
	.187	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-187-20	134.18	QRR-187-20X	150.88
	.187	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-187-24	134.18	QRR-187-24X	150.88
	.236	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-236-12	134.18	QRR-236-12X	150.88
	.236	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-236-16	134.18	QRR-236-16X	150.88
	.236	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-236-20	134.18	QRR-236-20X	150.88
	.236	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-236-24	134.18	QRR-236-24X	150.88
	.250	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-250-16	134.18		
	.250	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-250-20	134.18	QRR-250-20X	150.88
	.250	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-250-24	134.18	QRR-250-24X	150.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

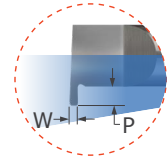
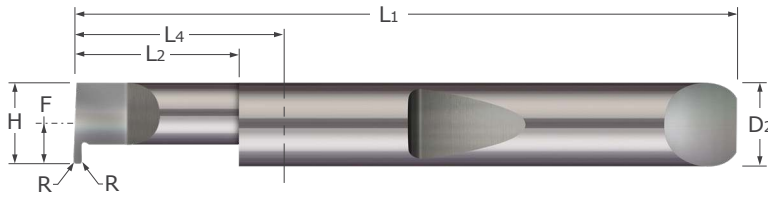
See pg 84 for miniature sizes



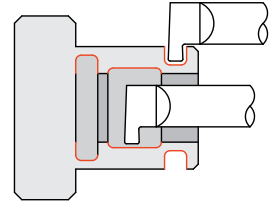
Quick Change - Grooving Tools

Retaining Ring - Corner Radius - Right Hand

QRRC



- Designed for generating corner radius retaining ring grooves in bores .198" and larger
- Corner radius designed for extended tool life and finished groove profiling
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change - Grooving Tools

Width	Head Width	Min. Bore Dia.*	Max. Bore Depth	Radius	Proj.	Length From Holder	Cntrln Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
W ^{+0.01"} / _{-0.00"}	H		L2 ^{+0.030"} / _{-0.00"}	R ^{+0.01"} / _{-0.00"}	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.017	.1800	.1980	.250	.003	.030	.590	.0863	.1875	1.5	QRRC3-017-250-180	54.18	QRRC3-017-250-180X	59.28
.017	.1800	.1980	.375	.003	.030	.590	.0863	.1875	1.5	QRRC3-017-375-180	54.18	QRRC3-017-375-180X	59.28
.017	.2450	.2670	.250	.003	.050	.853	.1200	.2500	2.0	QRRC3-017-250-245	67.68	QRRC3-017-250-245X	75.88
.017	.2450	.2670	.375	.003	.050	.853	.1200	.2500	2.0	QRRC3-017-375-245	67.68	QRRC3-017-375-245X	75.88
.020	.1800	.1980	.250	.003	.030	.590	.0863	.1875	1.5	QRRC3-020-250-180	54.18	QRRC3-020-250-180X	59.28
.020	.1800	.1980	.375	.003	.030	.590	.0863	.1875	1.5	QRRC3-020-375-180	54.18	QRRC3-020-375-180X	59.28
.020	.2450	.2670	.250	.003	.050	.853	.1200	.2500	2.0	QRRC3-020-250-245	67.68	QRRC3-020-250-245X	75.88
.020	.2450	.2670	.375	.003	.050	.853	.1200	.2500	2.0	QRRC3-020-375-245	67.68	QRRC3-020-375-245X	75.88
.025	.2450	.2670	.250	.003	.050	.853	.1200	.2500	2.0	QRRC3-025-250-245	67.68	QRRC3-025-250-245X	75.88
.025	.2450	.2670	.375	.003	.050	.853	.1200	.2500	2.0	QRRC3-025-375-245	67.68	QRRC3-025-375-245X	75.88
.030	.1800	.1980	.250	.003	.030	.590	.0863	.1875	1.5	QRRC3-030-250-180	54.18	QRRC3-030-250-180X	59.28
.030	.1800	.1980	.500	.003	.030	.590	.0863	.1875	1.5	QRRC3-030-500-180	54.18	QRRC3-030-500-180X	59.28
.030	.2450	.2670	.250	.003	.050	.853	.1200	.2500	2.0	QRRC3-030-250-245	67.68	QRRC3-030-250-245X	75.88
.030	.2450	.2670	.375	.003	.050	.853	.1200	.2500	2.0	QRRC3-030-375-245	67.68	QRRC3-030-375-245X	75.88
.030	.3100	.3320	.500	.003	.100	.853	.1538	.3125	2.0	QRRC3-030-500-310	84.38	QRRC3-030-500-310X	94.18
.030	.3100	.3320	.750	.003	.100	.853	.1538	.3125	2.0	QRRC3-030-750-310	84.38	QRRC3-030-750-310X	94.18
.033	.3100	.3320	.500	.003	.100	.853	.1538	.3125	2.0	QRRC3-033-500-310	84.38	QRRC3-033-500-310X	94.18
.033	.3100	.3320	.750	.003	.100	.853	.1538	.3125	2.0	QRRC3-033-750-310	84.38	QRRC3-033-750-310X	94.18
.038	.3100	.3320	.500	.003	.100	.853	.1538	.3125	2.0	QRRC3-038-500-310	84.38	QRRC3-038-500-310X	94.18
.038	.3100	.3320	.750	.003	.100	.853	.1538	.3125	2.0	QRRC3-038-750-310	84.38	QRRC3-038-750-310X	94.18

W ^{+0.002"} / _{-0.00"}	H	L2 ^{+0.030"} / _{-0.00"}	R ^{+0.001"} / _{-0.00"}	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	
.039	.3700	.3920	.500	.003	.100	.853	.1825	.3750	2.0	QRRC3-039-500-370	106.88	QRRC3-039-500-370X	117.78
.039	.3700	.3920	.750	.003	.100	.853	.1825	.3750	2.0	QRRC3-039-750-370	106.88	QRRC3-039-750-370X	117.78
.039	.3700	.3920	1.000	.003	.100	1.353	.1825	.3750	2.5	QRRC3-039-1000-370	106.88	QRRC3-039-1000-370X	119.18
.062	.3700	.3920	.500	.003	.100	.853	.1825	.3750	2.0	QRRC3-062-500-370	106.88	QRRC3-062-500-370X	117.78
.062	.3700	.3920	.500	.006	.100	.853	.1825	.3750	2.0	QRRC6-062-500-370	106.88	QRRC6-062-500-370X	117.78
.062	.3700	.3920	.750	.003	.100	.853	.1825	.3750	2.0	QRRC3-062-750-370	106.88	QRRC3-062-750-370X	117.78
.062	.3700	.3920	.750	.006	.100	.853	.1825	.3750	2.0	QRRC6-062-750-370	106.88	QRRC6-062-750-370X	118.38
.062	.3700	.3920	1.000	.003	.100	1.353	.1825	.3750	2.5	QRRC3-062-1000-370	106.88	QRRC3-062-1000-370X	119.18
.062	.3700	.3920	1.000	.006	.100	1.353	.1825	.3750	2.5	QRRC6-062-1000-370	106.88	QRRC6-062-1000-370X	119.18

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options



QRRC

Quick Change – Grooving Tools
Retaining Ring - Corner Radius - Right Hand (cont.)

Continued from previous page

Width	Head Width	Min. Bore Dia.*	Max. Bore Depth	Radius	Proj.	Length From Holder	Cntrln Offset	Shank Dia.	Overall Length	Uncoated		AITIN Coated	
										Tool #	Price	Tool #	Price
W $\begin{matrix} +.002" \\ -.000" \end{matrix}$	H		L ₂ $\begin{matrix} +.030" \\ -.000" \end{matrix}$	R $\begin{matrix} +.001" \\ -.000" \end{matrix}$	P	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.087	.3700	.3920	.500	.003	.100	.853	.1825	.3750	2.0	QRRC3-087-500-370	106.88	QRRC3-087-500-370X	117.78
.087	.3700	.3920	.500	.006	.100	.853	.1825	.3750	2.0	QRRC6-087-500-370	106.88	QRRC6-087-500-370X	117.78
.087	.3700	.3920	.750	.003	.100	.853	.1825	.3750	2.0	QRRC3-087-750-370	106.88	QRRC3-087-750-370X	117.78
.087	.3700	.3920	.750	.006	.100	.853	.1825	.3750	2.0	QRRC6-087-750-370	106.88	QRRC6-087-750-370X	117.78
.087	.3700	.3920	1.000	.003	.100	1.353	.1825	.3750	2.5	QRRC3-087-1000-370	106.88	QRRC3-087-1000-370X	119.18
.087	.3700	.3920	1.000	.006	.100	1.353	.1825	.3750	2.5	QRRC6-087-1000-370	106.88	QRRC6-087-1000-370X	119.18
.093	.4950	.5170	.750	.003	.150	1.040	.2450	.5000	2.5	QRRC3-093-750-495	146.98	QRRC3-093-750-495X	163.68
.093	.4950	.5170	.750	.006	.150	1.040	.2450	.5000	2.5	QRRC6-093-750-495	146.98	QRRC6-093-750-495X	163.68
.093	.4950	.5170	1.000	.003	.150	1.040	.2450	.5000	2.5	QRRC3-093-1000-495	146.98	QRRC3-093-1000-495X	163.68
.093	.4950	.5170	1.000	.006	.150	1.040	.2450	.5000	2.5	QRRC6-093-1000-495	146.98	QRRC6-093-1000-495X	163.68
.125	.4950	.5170	.750	.003	.150	1.040	.2450	.5000	2.5	QRRC3-125-750-495	146.98	QRRC3-125-750-495X	163.68
.125	.4950	.5170	.750	.006	.150	1.040	.2450	.5000	2.5	QRRC6-125-750-495	146.98	QRRC6-125-750-495X	163.68
.125	.4950	.5170	1.000	.003	.150	1.040	.2450	.5000	2.5	QRRC3-125-1000-495	146.98	QRRC3-125-1000-495X	163.68
.125	.4950	.5170	1.000	.006	.150	1.040	.2450	.5000	2.5	QRRC6-125-1000-495	146.98	QRRC6-125-1000-495X	163.68

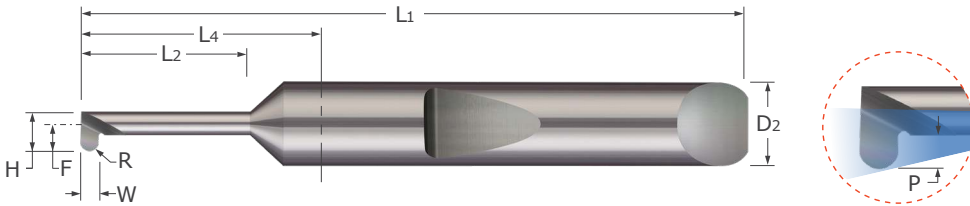
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

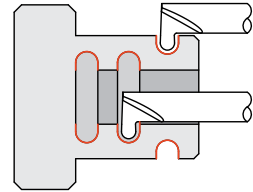
Quick Change – Grooving Tools

QMFR

Full Radius – Miniature



- Designed for generating full radius grooves in bores .090" and larger
- Polished face for improved edge retention and chip evacuation while reducing galling
- On-center neck design
- Coolant fed enabled shank design
- Full radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Grooving Tools

Width	Radius	Head Width	Mini. Bore Dia.*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W ^{+0.002"} _{-0.000"}	R ^{+0.001"} _{-0.000"}	H		L2 ^{+0.030"} _{-0.000"}	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.015	.0075	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMFR-015-250-080	65.68	QMFR-015-250-080X	71.18
.015	.0075	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMFR-015-375-080	65.68	QMFR-015-375-080X	71.18
.015	.0075	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMFR-015-500-080	65.68	QMFR-015-500-080X	71.18
.015	.0075	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMFR-015-250-100	65.68	QMFR-015-250-100X	71.18
.015	.0075	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMFR-015-500-100	65.68	QMFR-015-500-100X	71.18
.015	.0075	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMFR-015-750-100	65.68	QMFR-015-750-100X	71.18
.020	.0100	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMFR-020-250-080	58.98	QMFR-020-250-080X	64.38
.020	.0100	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMFR-020-375-080	58.98	QMFR-020-375-080X	64.38
.020	.0100	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMFR-020-500-080	58.98	QMFR-020-500-080X	64.38
.020	.0100	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMFR-020-250-100	58.98	QMFR-020-250-100X	64.38
.020	.0100	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMFR-020-500-100	58.98	QMFR-020-500-100X	64.38
.020	.0100	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMFR-020-750-100	58.98	QMFR-020-750-100X	64.38
.020	.0100	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMFR-020-250-120	58.98	QMFR-020-250-120X	64.38
.020	.0100	.1200	.1340	.500	.040	.590	.0800	.1875	1.5	QMFR-020-500-120	58.98	QMFR-020-500-120X	64.38
.020	.0100	.1200	.1340	.750	.040	1.090	.0800	.1875	2.0	QMFR-020-750-120	58.98	QMFR-020-750-120X	64.38
.030	.0150	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMFR-030-250-080	58.98	QMFR-030-250-080X	64.38
.030	.0150	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMFR-030-375-080	58.98	QMFR-030-375-080X	64.38
.030	.0150	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMFR-030-500-080	58.98	QMFR-030-500-080X	64.38
.030	.0150	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMFR-030-250-100	58.98	QMFR-030-250-100X	64.38
.030	.0150	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMFR-030-500-100	58.98	QMFR-030-500-100X	64.38
.030	.0150	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMFR-030-750-100	58.98	QMFR-030-750-100X	64.38
.030	.0150	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMFR-030-250-120	58.98	QMFR-030-250-120X	64.38
.030	.0150	.1200	.1340	.500	.040	.590	.0800	.1875	1.5	QMFR-030-500-120	58.98	QMFR-030-500-120X	64.38
.030	.0150	.1200	.1340	.750	.040	1.090	.0800	.1875	2.0	QMFR-030-750-120	58.98	QMFR-030-750-120X	64.38

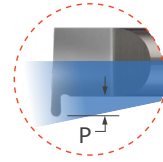
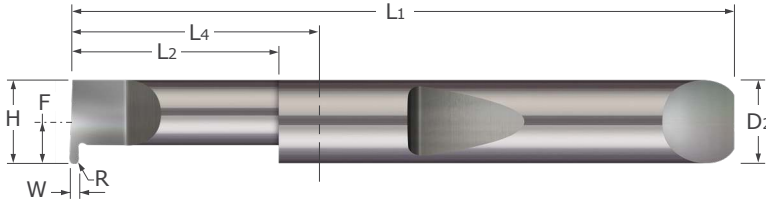
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

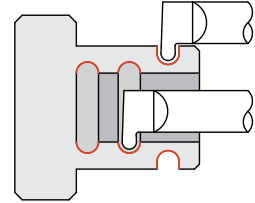
QFR

Quick Change – Grooving Tools

Full Radius



- Designed for generating full radius grooves in bores .198" and larger
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Coolant fed enabled shank design
- Full radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Grooving Tools

Width	Radius	Head Width	Min. Bore Dia.*	Max. Bore Depth	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
W ^{+ .002"} _{-.000"}	R	H		L2 ^{+ .030"} _{-.000"}	P	L4	F	D2 (h6)	L1				
.017	.0085	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QFR-017-4	54.18	QFR-017-4X	59.28
.017	.0085	.1800	.1980	.375	.030	.590	.0863	.1875	1.5			QFR-017-6X	59.28
.017	.0085	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QFR-017-8	54.18	QFR-017-8X	59.28
.017	.0085	.1800	.1980	.625	.030	1.090	.0863	.1875	2.0	QFR-017-10	54.18	QFR-017-10X	59.28
.020	.0100	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QFR-020-4	54.18	QFR-020-4X	59.28
.020	.0100	.1800	.1980	.375	.030	.590	.0863	.1875	1.5	QFR-020-6	54.18	QFR-020-6X	59.28
.020	.0100	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QFR-020-8	54.18	QFR-020-8X	59.28
.020	.0100	.1800	.1980	.625	.030	1.090	.0863	.1875	2.0	QFR-020-10	54.18	QFR-020-10X	59.28
.025	.0125	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QFR-025-4	67.68	QFR-025-4X	75.88
.025	.0125	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QFR-025-6	67.68	QFR-025-6X	75.88
.025	.0125	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QFR-025-8	67.68	QFR-025-8X	75.88
.025	.0125	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QFR-025-10	67.68	QFR-025-10X	75.88
.030	.0150	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QFR-030-4	67.68	QFR-030-4X	75.88
.030	.0150	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QFR-030-6	67.68	QFR-030-6X	75.88
.030	.0150	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QFR-030-8	67.68	QFR-030-8X	75.88
.030	.0150	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QFR-030-10	67.68	QFR-030-10X	75.88
.033	.0165	.3100	.3320	.375	.100	.853	.1538	.3125	2.0	QFR-033-6	84.38	QFR-033-6X	94.18
.033	.0165	.3100	.3320	.500	.100	.853	.1538	.3125	2.0			QFR-033-8X	94.18
.033	.0165	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QFR-033-12	84.38	QFR-033-12X	94.18
.038	.0190	.3100	.3320	.375	.100	.853	.1538	.3125	2.0	QFR-038-6	84.38	QFR-038-6X	94.18
.038	.0190	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QFR-038-8	84.38	QFR-038-8X	94.18
.038	.0190	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QFR-038-12	84.38	QFR-038-12X	94.18
.039	.0195	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-039-8	106.88	QFR-039-8X	117.78
.039	.0195	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-039-12	106.88		
.039	.0195	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-039-16	106.88	QFR-039-16X	119.18
.039	.0195	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-039-20	106.88	QFR-039-20X	119.18
.046	.0230	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-046-8	106.88	QFR-046-8X	117.78
.046	.0230	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-046-12	106.88	QFR-046-12X	118.38
.046	.0230	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-046-20	106.88	QFR-046-20X	119.18
.055	.0275	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-055-8	106.88	QFR-055-8X	117.78
.055	.0275	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-055-12	106.88	QFR-055-12X	118.38
.055	.0275	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-055-16	106.88	QFR-055-16X	119.18
.055	.0275	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-055-20	106.88	QFR-055-20X	119.18
.059	.0295	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-059-8	106.88	QFR-059-8X	117.78
.059	.0295	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-059-12	106.88	QFR-059-12X	118.38
.059	.0295	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-059-16	106.88		
.059	.0295	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-059-20	106.88	QFR-059-20X	119.18

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

See pg 92 for miniature sizes



Quick Change – Grooving Tools

QFR

Full Radius (cont.)

Continued from previous page

Width	Radius	Head Width	Min. Bore Dia.*	Max. Bore Depth	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W	R	H	L2	L2	P	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.062	.0310	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-062-8	106.88	QFR-062-8X	117.78
.062	.0310	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-062-12	106.88	QFR-062-12X	117.78
.062	.0310	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-062-16	106.88	QFR-062-16X	119.18
.062	.0310	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-062-20	106.88	QFR-062-20X	119.18
.069	.0345	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-069-8	106.88	QFR-069-8X	117.78
.069	.0345	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-069-12	106.88	QFR-069-12X	117.78
.069	.0345	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-069-16	106.88	QFR-069-16X	119.18
.069	.0345	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-069-20	106.88	QFR-069-20X	119.18
.079	.0395	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-079-8	106.88	QFR-079-8X	117.78
.079	.0395	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-079-12	106.88	QFR-079-12X	117.78
.079	.0395	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-079-16	106.88	QFR-079-16X	119.18
.079	.0395	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-079-20	106.88	QFR-079-20X	119.18
.087	.0435	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-087-8	106.88	QFR-087-8X	117.78
.087	.0435	.3700	.3920	.500	.150	.853	.1825	.3750	2.0	QFR-7847	106.88	QFR-7847X	118.38
.087	.0435	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-087-12	106.88	QFR-087-12X	118.38
.087	.0435	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QFR-4895	106.88	QFR-4895X	118.38
.087	.0435	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-087-16	106.88	QFR-087-16X	119.18
.087	.0435	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-087-20	106.88	QFR-087-20X	119.18
.093	.0465	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-093-12	146.98	QFR-093-12X	163.68
.093	.0465	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-093-16	146.98	QFR-093-16X	163.68
.093	.0465	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-093-20	146.98	QFR-093-20X	163.68
.093	.0465	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-093-24	146.98	QFR-093-24X	163.68
.118	.0590	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-118-12	146.98	QFR-118-12X	163.68
.118	.0590	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-118-16	146.98	QFR-118-16X	163.68
.118	.0590	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-118-20	146.98	QFR-118-20X	163.68
.118	.0590	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-118-24	146.98	QFR-118-24X	163.68
.125	.0625	.3700	.3920	1.000	.150	1.353	.1825	.3750	2.5	QFR-5586	106.88	QFR-5586X	119.18
.125	.0625	.3700	.3920	1.250	.150	1.353	.1825	.3750	2.5	QFR-0965	106.88	QFR-0965X	119.18
.125	.0625	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-125-12	146.98	QFR-125-12X	163.68
.125	.0625	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-125-16	146.98	QFR-125-16X	163.68
.125	.0625	.4950	.5170	1.000	.200	1.040	.2450	.5000	2.5	QFR-7934	146.98	QFR-7934X	163.68
.125	.0625	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-125-20	146.98	QFR-125-20X	163.68
.125	.0625	.4950	.5170	1.250	.200	1.540	.2450	.5000	3.0	QFR-0271	146.98	QFR-0271X	163.68
.125	.0625	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-125-24	146.98	QFR-125-24X	163.68
.156	.0780	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5			QFR-156-12X	163.38
.156	.0780	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5			QFR-156-16X	163.38
.156	.0780	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-156-20	146.98	QFR-156-20X	163.68
.156	.0780	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-156-24	146.98	QFR-156-24X	163.68
.187	.0935	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-187-12	146.98	QFR-187-12X	163.68
.187	.0935	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-187-16	146.98	QFR-187-16X	163.68
.187	.0935	.4950	.5170	1.000	.200	1.040	.2450	.5000	2.5	QFR-5272	146.98	QFR-5272X	163.68
.187	.0935	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-187-20	146.98	QFR-187-20X	163.68
.187	.0935	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-187-24	146.98	QFR-187-24X	163.68
.236	.1180	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-236-12	146.98	QFR-236-12X	163.68
.236	.1180	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-236-16	146.98	QFR-236-16X	163.68
.236	.1180	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-236-20	146.98	QFR-236-20X	163.68
.236	.1180	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-236-24	146.98	QFR-236-24X	163.68
.250	.1250	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-250-12	146.98	QFR-250-12X	163.68
.250	.1250	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5			QFR-250-16X	163.68
.250	.1250	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-250-20	146.98	QFR-250-20X	163.68
.250	.1250	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0			QFR-250-24X	163.68

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

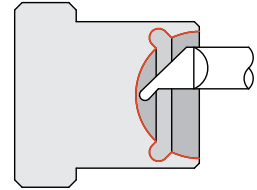
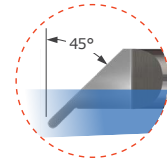
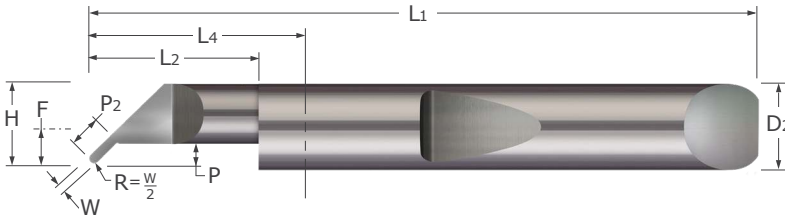
Quick Change – Grooving Tools



QUP

Quick Change – Grooving Tools

Undercutting – Full Radius



- Designed for plunging full radius undercut grooves and profiling
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Full radius profile
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Quick Change – Grooving Tools

Width	Projection	Angled Projection	Head Width	Min. Bore Diameter*	Max. Bore Depth	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
W ^{+0.002"} _{-.000"}	P	P ₂	H		L ₂ ^{+0.030"} _{-.000"}	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.020	.050	.0765	.1800	.1980	.375	.590	.0862	.1875	1.5	QUP-18020-6	62.78	QUP-18020-6X	69.58
.020	.050	.0765	.1800	.1980	.500	.590	.0862	.1875	1.5	QUP-18020-8	62.78	QUP-18020-8X	69.58
.025	.050	.0780	.1800	.1980	.375	.590	.0862	.1875	1.5	QUP-18025-6	62.78	QUP-18025-6X	69.58
.025	.050	.0780	.1800	.1980	.500	.590	.0862	.1875	1.5	QUP-18025-8	62.78	QUP-18025-8X	69.58
.025	.060	.0921	.2400	.2620	.375	.853	.1150	.2500	2.0	QUP-25025-6	67.58	QUP-25025-6X	75.68
.025	.060	.0921	.2400	.2620	.500	.853	.1150	.2500	2.0	QUP-25025-8	67.58	QUP-25025-8X	75.68
.030	.050	.0794	.1800	.1980	.375	.590	.0862	.1875	1.5	QUP-18030-6	62.78	QUP-18030-6X	69.58
.030	.050	.0794	.1800	.1980	.500	.590	.0862	.1875	1.5	QUP-18030-8	62.78	QUP-18030-8X	69.58
.030	.060	.0936	.2400	.2620	.500	.853	.1150	.2500	2.0	QUP-25030-8	67.58	QUP-25030-8X	75.68
.030	.060	.0936	.2400	.2620	1.000	1.353	.1150	.2500	2.5	QUP-25030-16	67.58	QUP-25030-16X	76.28
NEW	.039	.050	.0821	.1800	.1980	.375	.590	.0862	1.5	QUP-18039-6	62.78	QUP-18039-6X	69.58
NEW	.039	.060	.0962	.2400	.2620	.500	.853	.1150	2.0	QUP-25039-8	67.58	QUP-25039-8X	75.68
NEW	.039	.060	.0962	.2400	.2620	1.000	1.353	.1150	2.5	QUP-25039-16	67.58	QUP-25039-16X	76.28
NEW	.050	.083	.1320	.3030	.3250	.500	.853	.1467	2.0	QUP-31050-8	82.08	QUP-31050-8X	91.88
NEW	.050	.083	.1320	.3030	.3250	1.000	1.353	.1467	2.5	QUP-31050-16	84.78	QUP-31050-16X	95.28
	.062	.083	.1355	.3030	.3250	1.000	1.353	.1467	2.5	QUP-31062-16	84.78	QUP-31062-16X	95.18
	.062	.095	.1525	.3650	.3870	1.000	1.353	.1775	2.5	QUP-37062-16	109.18	QUP-37062-16X	121.38
	.062	.125	.1949	.4900	.5120	1.500	1.540	.2400	3.0	QUP-50062-24	150.68	QUP-50062-24X	167.38

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

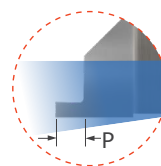
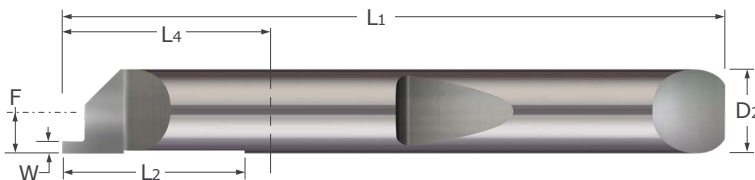
See pgs 16-34 for quick change holder options



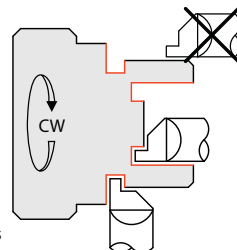
Quick Change – Grooving Tools

QFG

Face Grooving – Square



- Designed for generating square grooves in the face of the part
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Relief ground along Maximum Bore Depth (L2) to avoid interference during deep hole applications
- Coolant fed enabled shank design
- Sharp corner profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Grooving Tools

Width	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
W $^{+.002"}_{-.000"}$	P $^{+.015"}_{-.000"}$		L2	L4	F	D2 (h6)	L1				
.015	.025	.197	.500	.590	.0938	.1875	1.5	QFG-187-015-025	47.28	QFG-187-015-025X	52.28
.015	.025	.260	.750	.853	.1250	.2500	2.0	QFG-250-015-025	47.28	QFG-250-015-025X	55.28
.017	.025	.197	.500	.590	.0938	.1875	1.5	QFG-187-017-025	47.28	QFG-187-017-025X	52.28
.017	.025	.260	.750	.853	.1250	.2500	2.0	QFG-250-017-025	47.28	QFG-250-017-025X	55.28
.020	.025	.197	.500	.590	.0938	.1875	1.5	QFG-187-020-025	47.28	QFG-187-020-025X	52.28
.020	.025	.260	.750	.853	.1250	.2500	2.0	QFG-250-020-025	47.28	QFG-250-020-025X	55.28
.020	.050	.190	.155	.590	.0860	.1875	1.5	QFG-180-020	47.28	QFG-180-020X	52.28
.020	.050	.197	.500	.590	.0938	.1875	1.5	QFG-187-020-050	47.28	QFG-187-020-050X	52.28
.020	.050	.240	.190	.853	.1050	.2500	2.0	QFG-230-020	47.28	QFG-230-020X	55.28
.020	.050	.260	0.19	.853	.1250	.2500	2.0	QFG-250-020	47.28	QFG-250-020X	55.28
.025	.025	.197	.500	.590	.0938	.1875	1.5	QFG-187-025-025	47.28	QFG-187-025-025X	52.28
.025	.025	.260	.750	.853	.1250	.2500	2.0	QFG-250-025-025	47.28	QFG-250-025-025X	55.28
.025	.050	.197	.500	.590	.0938	.1875	1.5	QFG-187-025-050	47.28	QFG-187-025-050X	52.28
.025	.050	.260	.750	.853	.1250	.2500	2.0	QFG-250-025-050	47.28	QFG-250-025-050X	55.28
.030	.050	.190	.155	.590	.0860	.1875	1.5	QFG-180-030	47.28	QFG-180-030X	52.28
.030	.050	.197	.500	.590	.0938	.1875	1.5	QFG-187-030-050	47.28	QFG-187-030-050X	52.28
.030	.050	.240	.190	.853	.1050	.2500	2.0	QFG-230-030	47.28	QFG-230-030X	55.28
.030	.050	.260	.190	.853	.1250	.2500	2.0	QFG-250-030	47.28	QFG-250-030X	55.28
.030	.050	.322	.225	.853	.1563	.3125	2.0	QFG-312-030	64.58	QFG-312-030X	73.88
.030	.050	.385	.750	.853	.1875	.3750	2.0	QFG-375-030-050	89.88	QFG-375-030-050X	100.08
.030	.075	.197	.500	.590	.0938	.1875	1.5	QFG-187-030-075	47.28	QFG-187-030-075X	52.28
.030	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-030-075	47.28	QFG-250-030-075X	55.28
.030	.075	.322	.750	.853	.1563	.3125	2.0	QFG-3098	64.58	QFG-3098X	74.38
.039	.050	.260	.750	.853	.1250	.2500	2.0	QFG-250-039-050	47.28	QFG-250-039-050X	55.28
.039	.050	.385	.750	.853	.1875	.3750	2.0	QFG-375-039-050	89.88	QFG-375-039-050X	100.08
.039	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-039-075	47.28	QFG-250-039-075X	55.28
.040	.050	.197	.500	.590	.0938	.1875	1.5	QFG-187-040-050	47.28	QFG-187-040-050X	52.28
.040	.050	.260	.750	.853	.1250	.2500	2.0	QFG-250-040-050	47.28	QFG-250-040-050X	55.28
.040	.050	.322	.225	.853	.1563	.3125	2.0	QFG-312-040	64.58	QFG-312-040X	73.88
.040	.050	.385	.750	.853	.1875	.3750	2.0	QFG-375-040-050	89.88	QFG-375-040-050X	100.08
.040	.075	.197	.500	.590	.0938	.1875	1.5	QFG-187-040-075	47.28	QFG-187-040-075X	52.28
.040	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-040-075	47.28	QFG-250-040-075X	55.28
.040	.075	.322	.750	.853	.1563	.3125	2.0	QFG-5702	64.58	QFG-5702X	74.38

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

Continued on next page

See pgs 16-34 for quick change holder options

QFG

Quick Change – Grooving Tools
Face Grooving – Square (cont.)

Continued from previous page

W	P	Minimum Groove Diameter*	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AITIN Coated	
								Tool #	Price	Tool #	Price
.050	.050	.197	.500	.590	.0938	.1875	1.5	QFG-187-050-050	47.28	QFG-187-050-050X	52.28
.050	.050	.260	.750	.853	.1250	.2500	2.0	QFG-250-050-050	47.28	QFG-250-050-050X	55.28
.050	.050	.385	.750	.853	.1875	.3750	2.0	QFG-375-050-050	89.88	QFG-375-050-050X	100.08
.050	.075	.197	.500	.590	.0938	.1875	1.5	QFG-187-050-075	47.28	QFG-187-050-075X	52.28
.050	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-050-075	47.28	QFG-250-050-075X	55.28
.050	.075	.322	.750	.853	.1563	.3125	2.0	QFG-312-050-075	64.58	QFG-312-050-075X	73.88
.059	.075	.197	.500	.590	.0938	.1875	1.5	QFG-187-059-075	47.28	QFG-187-059-075X	52.28
.059	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-059-075	47.28	QFG-250-059-075X	55.28
.059	.075	.385	.750	.853	.1875	.3750	2.0	QFG-375-059-075	89.88	QFG-375-059-075X	100.08
.059	.100	.197	.500	.590	.0938	.1875	1.5	QFG-187-059-100	47.28	QFG-187-059-100X	52.28
.059	.100	.260	.750	.853	.1250	.2500	2.0	QFG-250-059-100	47.28	QFG-250-059-100X	55.28
.062	.075	.197	.500	.590	.0938	.1875	1.5	QFG-187-062-075	47.28	QFG-187-062-075X	52.28
.062	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-062-075	47.28	QFG-250-062-075X	55.28
.062	.075	.322	.750	.853	.1563	.3125	2.0	QFG-312-062-075	64.58	QFG-312-062-075X	73.88
.062	.075	.385	.750	.853	.1875	.3750	2.0	QFG-375-062-075	89.88	QFG-375-062-075X	100.08
.062	.100	.197	.500	.590	.0938	.1875	1.5	QFG-187-062-100	47.28	QFG-187-062-100X	52.28
.062	.100	.260	.750	.853	.1250	.2500	2.0	QFG-250-062-100	47.28	QFG-250-062-100X	55.28
.062	.100	.322	.225	.853	.1563	.3125	2.0	QFG-312-062	64.58	QFG-312-062X	73.88
.062	.100	.385	.260	.853	.1875	.3750	2.0	QFG-375-062	89.88	QFG-375-062X	100.08
.062	.100	.480	.335	1.040	.2200	.5000	2.5	QFG-470-062	101.78	QFG-470-062X	116.98
.062	.100	.500	.335	1.040	.2400	.5000	2.5	QFG-490-062	101.78	QFG-490-062X	116.98
.062	.150	.197	.500	.590	.0938	.1875	1.5	QFG-187-062-150	47.28	QFG-187-062-150X	52.28
.062	.150	.260	.750	.853	.1250	.2500	2.0	QFG-250-062-150	47.28	QFG-250-062-150X	55.28
.062	.150	.322	.750	.853	.1563	.3125	2.0	QFG-312-062-150	64.58	QFG-312-062-150X	73.88
.062	.150	.385	.750	.853	.1875	.3750	2.0	QFG-375-062-150	89.88	QFG-375-062-150X	100.08
NEW	.062	.150	.500	1.450	1.540	.2400	3.0	QFG-1206	103.98	QFG-1206X	120.68
.078	.100	.260	.750	.853	.1250	.2500	2.0	QFG-250-078-100	47.28	QFG-250-078-100X	55.28
.078	.100	.322	.750	.853	.1563	.3125	2.0	QFG-312-078-100	64.58	QFG-312-078-100X	73.88
.078	.100	.385	.260	.853	.1875	.3750	2.0	QFG-375-078	89.88	QFG-375-078X	100.08
.078	.100	.480	.335	1.040	.2200	.5000	2.5	QFG-470-078	101.78	QFG-470-078X	116.98
.078	.100	.500	.335	1.040	.2400	.5000	2.5	QFG-490-078	101.78	QFG-490-078X	116.98
.093	.100	.385	.260	.853	.1875	.3750	2.0	QFG-375-093	89.88	QFG-375-093X	100.08
.093	.100	.480	.335	1.040	.2200	.5000	2.5	QFG-470-093	101.78	QFG-470-093X	116.98
.093	.100	.500	.335	1.040	.2400	.5000	2.5	QFG-490-093	101.78	QFG-490-093X	116.98
.093	.150	.322	.750	.853	.1563	.3125	2.0	QFG-312-093-150	64.58	QFG-312-093-150X	73.88
.093	.150	.385	.750	.853	.1875	.3750	2.0	QFG-375-093-150	89.88	QFG-375-093-150X	100.08
.118	.150	.385	.260	.853	.1875	.3750	2.0	QFG-375-118	89.88	QFG-375-118X	100.08
.118	.150	.480	.335	1.040	.2200	.5000	2.5	QFG-470-118	101.78	QFG-470-118X	116.98
.118	.150	.500	.335	1.040	.2400	.5000	2.5	QFG-490-118	101.78	QFG-490-118X	116.98
.125	.150	.385	.260	.853	.1875	.3750	2.0	QFG-375-125	89.88	QFG-375-125X	100.08
.125	.150	.480	.335	1.040	.2200	.5000	2.5	QFG-470-125	101.78	QFG-470-125X	116.98
.125	.150	.500	.335	1.040	.2400	.5000	2.5	QFG-490-125	101.78	QFG-490-125X	116.98
.125	.250	.385	.750	.853	.1875	.3750	2.0	QFG-375-125-250	89.88	QFG-375-125-250X	100.08
NEW	.125	.250	.500	1.450	1.540	.2400	3.0	QFG-5017	103.98	QFG-5017X	120.68
.156	.150	.480	.335	1.040	.2200	.5000	2.5	QFG-470-156	101.78	QFG-470-156X	116.98
.156	.150	.500	.335	1.040	.2400	.5000	2.5	QFG-490-156	101.78	QFG-490-156X	116.98

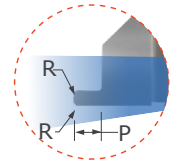
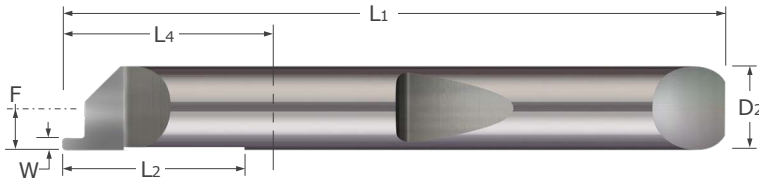
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 16-34 for quick change holder options

Quick Change – Grooving Tools

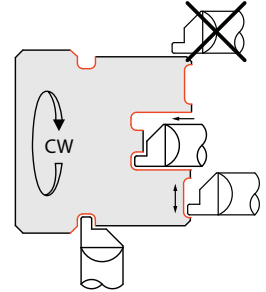
Face Grooving – Corner Radius

QFGC



Quick Change – Grooving Tools

- Designed for generating corner radius grooves within the face of the part
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Relief ground along Maximum Bore Depth (L₂) to avoid interference during deep hole applications
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Width	Projection	Minimum Groove Diameter*	Radius	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
W $\begin{matrix} +.002" \\ -.000" \end{matrix}$	P $\begin{matrix} +.015" \\ -.000" \end{matrix}$		R $\begin{matrix} +.001" \\ -.001" \end{matrix}$	L ₂	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.015	.025	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-015-025	43.58	QFGC3-187-015-025X	49.88
.015	.025	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-015-025	50.78	QFGC3-250-015-025X	58.98
.017	.025	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-017-025	43.58	QFGC3-187-017-025X	49.88
.017	.025	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-017-025	50.78	QFGC3-250-017-025X	58.98
.020	.025	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-020-025	43.58	QFGC3-187-020-025X	49.88
.020	.025	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-020-025	50.78	QFGC3-250-020-025X	58.98
.025	.025	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-025-025	43.58	QFGC3-187-025-025X	49.88
.025	.025	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-025-025	50.78	QFGC3-250-025-025X	58.98
.030	.050	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-030-050	43.58	QFGC3-187-030-050X	49.88
.030	.050	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-030-050	50.78	QFGC3-250-030-050X	58.98
.030	.050	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-030-050	66.68	QFGC3-312-030-050X	76.48
.030	.050	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-030-050	90.68	QFGC3-375-030-050X	102.18
.039	.050	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-039-050	43.58	QFGC3-187-039-050X	49.88
.039	.050	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-039-050	50.78	QFGC3-250-039-050X	58.98
.039	.050	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-039-050	90.68	QFGC3-375-039-050X	102.18
.040	.050	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-040-050	43.58	QFGC3-187-040-050X	49.88
.040	.050	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-040-050	50.78	QFGC3-250-040-050X	58.98
.040	.050	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-040-050	66.68	QFGC3-312-040-050X	76.48
.040	.050	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-040-050	90.68	QFGC3-375-040-050X	102.18
.050	.050	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-050-050	43.58	QFGC3-187-050-050X	49.88
.050	.050	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-050-050	50.78	QFGC3-250-050-050X	58.98
.050	.050	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-050-050	66.68	QFGC3-312-050-050X	76.48
.050	.050	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-050-050	90.68	QFGC3-375-050-050X	102.18
.059	.075	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-059-075	90.68	QFGC3-375-059-075X	102.18

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

Continued on next page

See pgs 16-34 for quick change holder options



QFGC

Quick Change – Grooving Tools
Face Grooving – Corner Radius (cont.)

Continued from previous page

Width	Projection	Minimum Groove Diameter*	Radius	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
W $\begin{matrix} +.002" \\ -.000" \end{matrix}$	P $\begin{matrix} +.015" \\ -.000" \end{matrix}$		R $\begin{matrix} +.001" \\ -.001" \end{matrix}$	L2	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.062	.075	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-062-075	43.58	QFGC3-187-062-075X	49.88
.062	.075	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-062-075	50.78	QFGC3-250-062-075X	58.98
.062	.075	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-062-075	66.68	QFGC3-312-062-075X	76.48
.062	.075	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-062-075	90.68	QFGC3-375-062-075X	102.18
.062	.100	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-062-100	43.58	QFGC3-187-062-100X	49.88
.062	.100	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-062-100	50.78	QFGC3-250-062-100X	58.98
.078	.100	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-078-100	50.78	QFGC3-250-078-100X	58.98
.078	.100	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-078-100	66.68	QFGC3-312-078-100X	76.48
.078	.100	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-078-100	90.68	QFGC3-375-078-100X	102.18
.093	.100	.385	.006	.750	.853	.1875	.3750	2.0	QFGC6-375-093-100	90.68	QFGC6-375-093-100X	102.18
.093	.150	.322	.006	.750	.853	.1563	.3125	2.0	QFGC6-312-093-150	66.68	QFGC6-312-093-150X	76.48
.118	.150	.385	.006	.750	.853	.1875	.3750	2.0	QFGC6-375-118-150	90.68	QFGC6-375-118-150X	102.18
.125	.100	.385	.006	.750	.853	.1875	.3750	2.0	QFGC6-375-125-100	90.68	QFGC6-375-125-100X	102.18

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

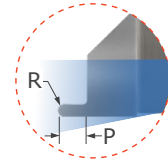
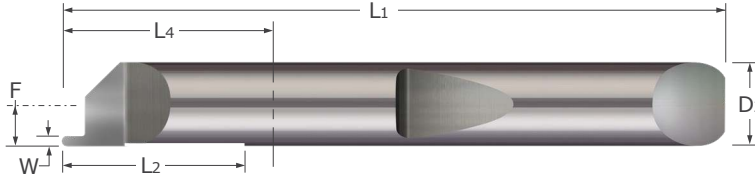
See pgs 16-34 for quick change holder options



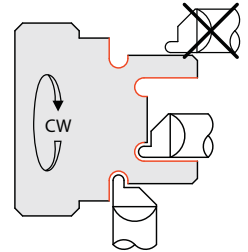
Quick Change – Grooving Tools

QFGF

Face Grooving – Full Radius



- Designed for generating full radius grooves in the face of the part
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Relief ground along Maximum Bore Depth (L₂) to avoid interference during deep hole applications
- Coolant fed enabled shank design ■ Full radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Grooving Tools

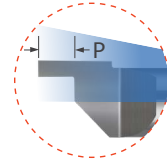
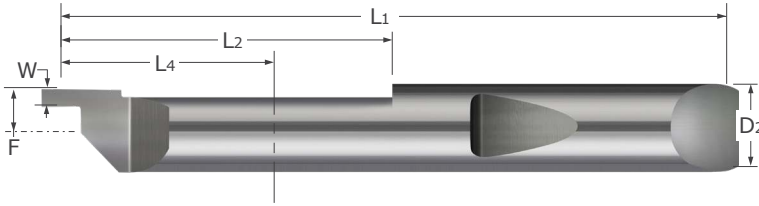
Width	Radius	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
W ^{+0.002"} _{-.000"}	R	P ^{+0.015"} _{-.000"}	L ₂	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price	
.015	.0075	.025	.197	.500	.590	.0938	.1875	1.5	QFGF-187-015-025	43.88	QFGF-187-015-025X	50.18
.015	.0075	.025	.260	.750	.853	.1250	.2500	2.0	QFGF-250-015-025	49.08	QFGF-250-015-025X	57.08
.017	.0085	.025	.197	.500	.590	.0938	.1875	1.5	QFGF-187-017-025	43.88	QFGF-187-017-025X	50.18
.017	.0085	.025	.260	.750	.853	.1250	.2500	2.0	QFGF-250-017-025	49.08	QFGF-250-017-025X	57.08
.020	.0100	.050	.190	.155	.590	.0860	.1875	1.5	QFGF-180-020	43.88	QFGF-180-020X	50.18
.020	.0100	.050	.197	.500	.590	.0938	.1875	1.5	QFGF-187-020-050	43.88	QFGF-187-020-050X	50.18
.020	.0100	.050	.240	.190	.853	.1050	.2500	2.0	QFGF-230-020	49.08	QFGF-230-020X	57.08
.020	.0100	.050	.260	.190	.853	.1250	.2500	2.0	QFGF-250-020	49.08	QFGF-250-020X	57.08
.025	.0125	.050	.197	.500	.590	.0938	.1875	1.5	QFGF-187-025-050	43.88	QFGF-187-025-050X	50.18
.025	.0125	.050	.260	.750	.853	.1250	.2500	2.0	QFGF-250-025-050	49.08	QFGF-250-025-050X	57.08
.030	.0150	.050	.190	.155	.590	.0860	.1875	1.5	QFGF-180-030	43.88	QFGF-180-030X	50.18
.030	.0150	.050	.197	.500	.590	.0938	.1875	1.5	QFGF-187-030-050	43.88	QFGF-187-030-050X	50.18
.030	.0150	.050	.260	.190	.853	.1250	.2500	2.0	QFGF-250-030	49.08	QFGF-250-030X	57.08
.039	.0195	.075	.197	.500	.590	.0938	.1875	1.5	QFGF-187-039-075	43.88	QFGF-187-039-075X	50.18
.039	.0195	.075	.260	.750	.853	.1250	.2500	2.0	QFGF-250-039-075	49.08	QFGF-250-039-075X	57.08
.040	.0200	.050	.260	.190	.853	.1250	.2500	2.0	QFGF-250-040	49.08	QFGF-250-040X	57.08
.040	.0200	.075	.197	.500	.590	.0938	.1875	1.5	QFGF-187-040-075	43.88	QFGF-187-040-075X	50.18
.040	.0200	.075	.260	.750	.853	.1250	.2500	2.0	QFGF-250-040-075	49.08	QFGF-250-040-075X	57.08
.050	.0250	.050	.322	.225	.853	.1563	.3125	2.0	QFGF-312-050	66.88	QFGF-312-050X	76.68
.050	.0250	.075	.197	.500	.590	.0938	.1875	1.5	QFGF-187-050-075	43.88	QFGF-187-050-075X	50.18
.050	.0250	.075	.260	.750	.853	.1250	.2500	2.0	QFGF-250-050-075	49.08	QFGF-250-050-075X	57.08
.062	.0310	.075	.322	.750	.853	.1563	.3125	2.0	QFGF-312-062-075	66.88	QFGF-312-062-075X	76.68
.062	.0310	.075	.385	.750	.853	.1875	.3750	2.0	QFGF-375-062-075	92.58	QFGF-375-062-075X	104.08
.062	.0310	.100	.197	.500	.590	.0938	.1875	1.5	QFGF-187-062-100	43.88	QFGF-187-062-100X	50.18
.062	.0310	.100	.260	.750	.853	.1250	.2500	2.0	QFGF-250-062-100	49.08	QFGF-250-062-100X	57.08
.062	.0310	.100	.322	.225	.853	.1563	.3125	2.0	QFGF-312-062	66.88	QFGF-312-062X	76.68
.062	.0310	.100	.385	.260	.853	.1875	.3750	2.0	QFGF-375-062	92.58	QFGF-375-062X	104.08
.078	.0390	.100	.385	.260	.853	.1875	.3750	2.0	QFGF-375-078	92.58	QFGF-375-078X	104.08
.093	.0465	.100	.385	.260	.853	.1875	.3750	2.0	QFGF-375-093	92.58	QFGF-375-093X	104.08
.125	.0625	.150	.385	.260	.853	.1875	.3750	2.0	QFGF-375-125	92.58	QFGF-375-125X	104.08

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

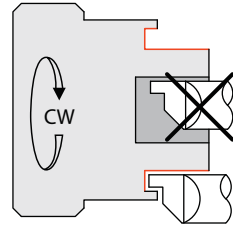
See pgs 16-34 for quick change holder options



QFGI

Quick Change – Grooving Tools
Face Grooving – Internal Tooth – Square

- Designed to generate square grooves around a boss in the face of a part for right hand grooving applications (M03) (See Graphic)
- Significantly reduces cycle times, as right hand design allows for multiple tools to be run simultaneously
- Relief ground along Maximum Turn Depth (L2) to avoid interference during long turning applications
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design ■ Sharp corner profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Width	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W $+0.002''$ $-0.000''$	P $+0.015''$ $-0.000''$		L2	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.020	.040	.260	.750	.853	.1150	.2500	2.0	QFGI-8240	48.68	QFGI-8240X	56.78
.020	.040	.260	1.250	1.353	.1150	.2500	2.5	QFGI-6198	50.58	QFGI-6198X	59.08
.020	.040	.322	.750	.853	.1463	.3125	2.0	QFGI-9800	66.58	QFGI-9800X	76.38
.020	.040	.322	1.250	1.353	.1463	.3125	2.5	QFGI-6738	68.38	QFGI-6738X	78.68
.030	.060	.260	.750	.853	.1150	.2500	2.0	QFGI-6600	48.68	QFGI-6600X	56.78
.030	.060	.260	1.250	1.353	.1150	.2500	2.5	QFGI-3461	50.58	QFGI-3461X	59.08
.030	.060	.322	.750	.853	.1463	.3125	2.0	QFGI-5774	66.58	QFGI-5774X	76.38
.030	.060	.322	1.250	1.353	.1463	.3125	2.5	QFGI-1413	68.38	QFGI-1413X	78.68
.040	.080	.260	.750	.853	.1150	.2500	2.0	QFGI-6481	48.68	QFGI-6481X	56.78
.040	.080	.260	1.250	1.353	.1150	.2500	2.5	QFGI-9741	50.58	QFGI-9741X	59.08
.040	.080	.322	.750	.853	.1463	.3125	2.0	QFGI-8157	66.58	QFGI-8157X	76.38
.040	.080	.322	1.250	1.353	.1463	.3125	2.5	QFGI-9114	68.38	QFGI-9114X	78.68
.050	.100	.260	.750	.853	.1150	.2500	2.0	QFGI-1311	48.68	QFGI-1311X	56.78
.050	.100	.260	1.250	1.353	.1150	.2500	2.5	QFGI-7516	50.58	QFGI-7516X	59.08
.050	.100	.322	.750	.853	.1463	.3125	2.0	QFGI-5336	66.58	QFGI-5336X	76.38
.050	.100	.322	1.250	1.353	.1463	.3125	2.5	QFGI-9489	68.38	QFGI-9489X	78.68
.062	.125	.322	.750	.853	.1463	.3125	2.0	QFGI-2609	66.58	QFGI-2609X	76.38
.062	.125	.322	1.250	1.353	.1463	.3125	2.5	QFGI-0720	68.38	QFGI-0720X	78.68
.062	.125	.385	.750	.853	.1775	.3750	2.0	QFGI-3852	92.58	QFGI-3852X	104.08
.062	.125	.385	1.250	1.353	.1775	.3750	2.5	QFGI-8466	94.48	QFGI-8466X	106.68
.078	.156	.322	.750	.853	.1463	.3125	2.0	QFGI-4397	66.58	QFGI-4397X	76.38
.078	.156	.322	1.250	1.353	.1463	.3125	2.5	QFGI-3465	68.38	QFGI-3465X	78.68
.078	.156	.385	.750	.853	.1775	.3750	2.0	QFGI-2855	92.58	QFGI-2855X	104.08
.078	.156	.385	1.250	1.353	.1775	.3750	2.5	QFGI-2684	94.48	QFGI-2684X	106.68

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

Continued on next page

See pgs 16-34 for quick change holder options



Quick Change – Grooving Tools

Face Grooving – Internal Tooth – Square (cont.)

QFGI

Continued from previous page

Width		Projection	Minimum Groove Diameter*	Maximum Turn Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W	$^{+.002''}$ $_{-.000''}$	P	$^{+.015''}$ $_{-.000''}$	L2	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.093	.187	.322	.750	.853	.1463	.3125	2.0	QFGI-5482	66.58	QFGI-5482X	76.38	
.093	.187	.322	1.250	1.353	.1463	.3125	2.5	QFGI-2378	68.38	QFGI-2378X	78.68	
.093	.187	.385	.750	.853	.1775	.3750	2.0	QFGI-1641	92.58	QFGI-1641X	104.08	
.093	.187	.385	1.250	1.353	.1775	.3750	2.5	QFGI-1707	94.48	QFGI-1707X	106.68	
.118	.236	.385	.750	.853	.1775	.3750	2.0	QFGI-4674	92.58	QFGI-4674X	104.08	
.118	.236	.385	1.250	1.353	.1775	.3750	2.5	QFGI-2969	94.48	QFGI-2969X	106.68	
.118	.236	.510	1.000	1.040	.2400	.5000	2.5	QFGI-6754	104.78	QFGI-6754X	121.48	
.118	.236	.510	1.500	1.540	.2400	.5000	3.0	QFGI-3667	106.68	QFGI-3667X	123.48	
.125	.250	.385	.750	.853	.1775	.3750	2.0	QFGI-1535	92.58	QFGI-1535X	104.08	
.125	.250	.385	1.250	1.353	.1775	.3750	2.5	QFGI-7015	94.48	QFGI-7015X	106.68	
.125	.250	.510	1.000	1.040	.2400	.5000	2.5	QFGI-4349	104.78	QFGI-4349X	121.48	
.125	.250	.510	1.500	1.540	.2400	.5000	3.0	QFGI-4098	106.68	QFGI-4098X	123.48	

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

Quick Change – Grooving Tools

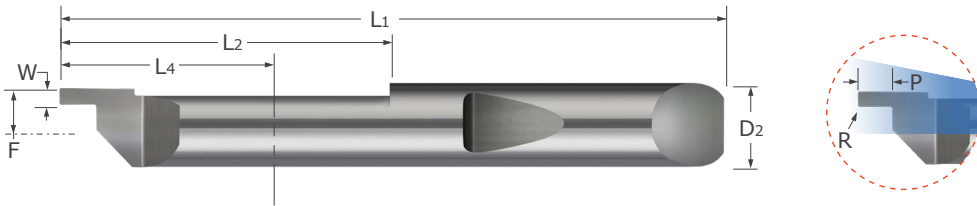
See pgs 16-34 for quick change holder options



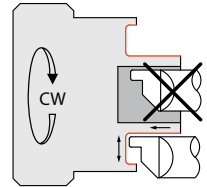
QFGIC

Quick Change – Grooving Tools

Face Grooving – Internal Tooth - Corner Radius



- Designed to generate corner radius grooves around a boss in the face of a part for right hand grooving applications (M03) (See Graphic)
- Significantly reduces cycle times, as right hand design allows for multiple tools to be run simultaneously
- Relief ground along Maximum Turn Depth (L2) to avoid interference during long turning applications
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA



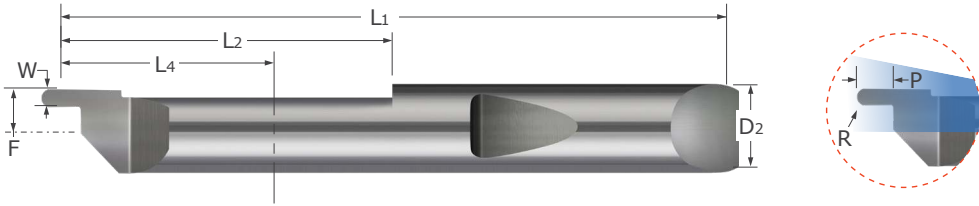
Width	Radius	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
W $+0.002''$ $-0.000''$	R $+0.001''$ $-0.001''$	P $+0.015''$ $-0.000''$		L2	L4	F	D2 (h6)	L1				
.020	.003	.040	.260	1.250	1.353	.1150	.2500	2.5	QFGIC3-6198	51.48	QFGIC3-6198X	60.18
.020	.003	.040	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-6738	69.58	QFGIC3-6738X	80.08
.030	.003	.060	.260	1.250	1.353	.1150	.2500	2.5	QFGIC3-3461	51.48	QFGIC3-3461X	60.18
.030	.003	.060	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-1413	69.58	QFGIC3-1413X	80.08
.040	.003	.080	.260	1.250	1.353	.1150	.2500	2.5	QFGIC3-9741	51.48	QFGIC3-9741X	60.18
.040	.003	.080	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-9114	69.58	QFGIC3-9114X	80.08
.050	.003	.100	.260	1.250	1.353	.1150	.2500	2.5	QFGIC3-7516	51.48	QFGIC3-7516X	60.18
.050	.003	.100	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-9489	69.58	QFGIC3-9489X	80.08
.062	.003	.125	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-0720	69.58	QFGIC3-0720X	80.08
.062	.003	.125	.385	1.250	1.353	.1775	.3750	2.5	QFGIC3-8466	96.28	QFGIC3-8466X	108.48
.078	.003	.156	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-3465	69.58	QFGIC3-3465X	80.08
.078	.003	.156	.385	1.250	1.353	.1775	.3750	2.5	QFGIC3-2684	96.28	QFGIC3-2684X	108.48
.093	.006	.187	.322	1.250	1.353	.1463	.3125	2.5	QFGIC6-2378	69.58	QFGIC6-2378X	80.08
.093	.006	.187	.385	1.250	1.353	.1775	.3750	2.5	QFGIC6-1707	96.28	QFGIC6-1707X	108.48
.118	.006	.236	.385	1.250	1.353	.1775	.3750	2.5	QFGIC6-2969	96.28	QFGIC6-2969X	108.48
.125	.006	.250	.385	1.250	1.353	.1775	.3750	2.5	QFGIC6-7015	96.28	QFGIC6-7015X	108.48

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 16-34 for quick change holder options

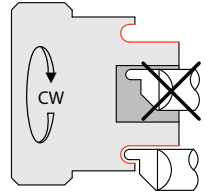
Quick Change – Grooving Tools

Face Grooving – Internal Tooth - Full Radius



Quick Change – Grooving Tools

- Designed to generate corner radius grooves around a boss in the face of a part for right hand grooving applications (M03) (See Graphic)
- Significantly reduces cycle times, as right hand design allows for multiple tools to be run simultaneously
- Relief ground along Maximum Turn Depth (L2) to avoid interference during long turning applications
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Full radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA



Width	Radius	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W	R	P		L2	L4	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .002" - .000"	+ .0010" - .0010"	+ .015" - .000"										
.020	.0100	.040	.260	1.250	1.353	.1150	.2500	2.5	QFGIF-6198	52.48	QFGIF-6198X	61.18
.020	.0100	.040	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-6738	71.08	QFGIF-6738X	81.38
.030	.0150	.060	.260	1.250	1.353	.1150	.2500	2.5	QFGIF-3461	52.48	QFGIF-3461X	61.18
.030	.0150	.060	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-1413	71.08	QFGIF-1413X	81.38
.040	.0200	.080	.260	1.250	1.353	.1150	.2500	2.5	QFGIF-9741	52.48	QFGIF-9741X	61.18
.040	.0200	.080	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-9114	71.08	QFGIF-9114X	81.38
.050	.0250	.100	.260	1.250	1.353	.1150	.2500	2.5	QFGIF-7516	52.48	QFGIF-7516X	61.18
.050	.0250	.100	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-9489	71.08	QFGIF-9489X	81.38
.062	.0310	.125	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-0720	71.08	QFGIF-0720X	81.38
.062	.0310	.125	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-8466	97.98	QFGIF-8466X	110.38
.078	.0390	.156	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-3465	71.08	QFGIF-3465X	81.38
.078	.0390	.156	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-2684	97.98	QFGIF-2684X	110.38
.093	.0465	.187	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-2378	71.08	QFGIF-2378X	81.38
.093	.0465	.187	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-1707	97.98	QFGIF-1707X	110.38
.118	.0590	.236	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-2969	97.98	QFGIF-2969X	110.38
.125	.0625	.250	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-7015	97.98	QFGIF-7015X	110.38

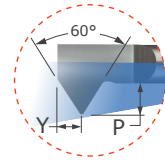
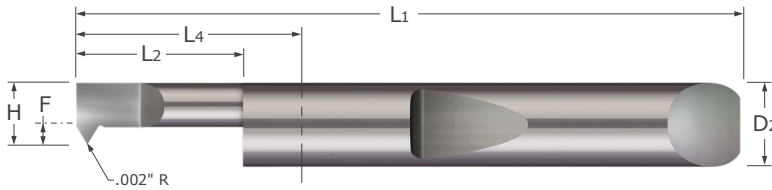
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 16-34 for quick change holder options

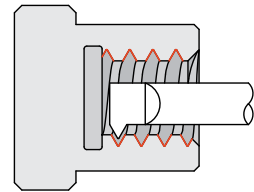


QIT

Quick Change – Threading Tools
UN Threads – Single Point



- Designed for threading in bores .040" and larger
- Able to cut multiple thread pitches (ANSI, UN, & Metric 60°) with one tool
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Tools with a .050" and smaller Head Width have an on-center neck design
- .002" tip radius
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Threading Tools

Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
TPI*	H		L2 ^{+0.030"} / _{-.000"}	Y ^{+0.002"} / _{-.000"}	P	L4	F	D2 (h6)	L1				
40-72	.0350	.0400	.075	.012	.015	.590	.0250	.1875	1.5	QIT-035075	68.78	QIT-035075X	74.58
40-72	.0350	.0400	.100	.012	.015	.590	.0250	.1875	1.5	QIT-035100	68.78	QIT-035100X	74.58
40-72	.0350	.0400	.150	.012	.015	.590	.0250	.1875	1.5	QIT-035150	68.78	QIT-035150X	74.58
28-72	.0400	.0450	.075	.015	.020	.590	.0300	.1875	1.5	QIT-040075	68.78	QIT-040075X	74.58
28-72	.0400	.0450	.150	.015	.020	.590	.0300	.1875	1.5	QIT-040150	68.78	QIT-040150X	74.58
28-72	.0500	.0550	.100	.015	.020	.590	.0350	.1875	1.5			QIT-050100X	63.48
28-72	.0500	.0550	.150	.015	.020	.590	.0350	.1875	1.5	QIT-050150	58.18	QIT-050150X	63.48
28-72	.0500	.0550	.200	.015	.020	.590	.0350	.1875	1.5	QIT-050200	58.18	QIT-050200X	63.48
28-56	.0600	.0700	.150	.015	.020	.590	-.0337	.1875	1.5	QIT-060150	58.18	QIT-060150X	64.98
28-56	.0600	.0700	.200	.015	.020	.590	-.0335	.1875	1.5	QIT-060200	58.18	QIT-060200X	63.48
28-56	.0600	.0700	.250	.015	.020	.590	-.0335	.1875	1.5	QIT-060250	58.18	QIT-060250X	63.48
28-56	.0600	.0700	.300	.015	.020	.590	-.0335	.1875	1.5	QIT-060300	58.18	QIT-060300X	63.48
NEW 28-56	.0600	.0700	.350	.015	.020	.590	-.0337	.1875	1.5	QIT-060350	58.18	QIT-060350X	64.98
28-56	.0800	.0900	.200	.015	.020	.590	-.0137	.1875	1.5	QIT-080200	58.18	QIT-080200X	64.98
28-56	.0800	.0900	.250	.015	.020	.590	-.0135	.1875	1.5	QIT-080250	58.18	QIT-080250X	63.48
28-56	.0800	.0900	.350	.015	.020	.590	-.0135	.1875	1.5	QIT-080350	58.18	QIT-080350X	63.48
28-56	.0800	.0900	.500	.015	.020	.590	-.0135	.1875	1.5	QIT-080500	58.18	QIT-080500X	63.48
NEW 28-56	.0800	.0900	.600	.015	.020	1.090	-.0137	.1875	2.0	QIT-080600	58.18	QIT-080600X	64.98
24-56	.1000	.1100	.250	.018	.025	.590	.0065	.1875	1.5	QIT-100250	58.18	QIT-100250X	63.48
24-56	.1000	.1100	.350	.018	.025	.590	.0065	.1875	1.5	QIT-100350	58.18	QIT-100350X	63.48
24-56	.1000	.1100	.500	.018	.025	.590	.0065	.1875	1.5	QIT-100500	58.18	QIT-100500X	63.48
24-56	.1000	.1100	.600	.018	.025	1.090	.0065	.1875	2.0	QIT-100600	58.18	QIT-100600X	63.48
NEW 24-56	.1000	.1100	.750	.018	.025	1.090	.0062	.1875	2.0	QIT-100750	58.18	QIT-100750X	64.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options



Quick Change – Threading Tools

QIT

UN Threads – Single Point (cont.)

Continued from previous page

Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
TPI*	H		L ₂ ^{+0.030"} _{-.000"}	Y ^{+0.002"} _{-.000"}	P	L ₄	F	D ₂ (h6)	L ₁				
20-56	.1100	.1260	.250	.020	.030	.590	.0165	.1875	1.5	QIT-110250	58.18	QIT-110250X	63.48
20-56	.1100	.1260	.400	.020	.030	.590	.0165	.1875	1.5	QIT-110400	58.18	QIT-110400X	63.48
20-56	.1100	.1260	.500	.020	.030	.590	.0165	.1875	1.5	QIT-110500	58.18	QIT-110500X	63.48
20-56	.1100	.1260	.600	.020	.030	1.090	.0165	.1875	2.0	QIT-110600	58.18	QIT-110600X	63.48
20-56	.1100	.1260	.750	.020	.030	1.090	.0165	.1875	2.0	QIT-110750	58.18	QIT-110750X	63.48
20-56	.1200	.1360	.250	.020	.030	.590	.0265	.1875	1.5	QIT-120250	58.18	QIT-120250X	63.48
20-56	.1200	.1360	.400	.020	.030	.590	.0265	.1875	1.5	QIT-120400	58.18	QIT-120400X	63.48
20-56	.1200	.1360	.500	.020	.030	.590	.0265	.1875	1.5	QIT-120500	58.18	QIT-120500X	63.48
20-56	.1200	.1360	.600	.020	.030	1.090	.0265	.1875	2.0	QIT-120600	58.18	QIT-120600X	63.48
20-56	.1200	.1360	.750	.020	.030	1.090	.0265	.1875	2.0	QIT-120750	58.18	QIT-120750X	63.48
16-56	.1400	.1560	.250	.023	.035	.590	.0465	.1875	1.5	QIT-140250	58.18	QIT-140250X	63.48
16-56	.1400	.1560	.400	.023	.035	.590	.0465	.1875	1.5	QIT-140400	58.18	QIT-140400X	63.48
16-56	.1400	.1560	.500	.023	.035	.590	.0465	.1875	1.5	QIT-140500	58.18	QIT-140500X	63.48
16-56	.1400	.1560	.750	.023	.035	1.090	.0465	.1875	2.0	QIT-140750	58.18	QIT-140750X	63.48
16-56	.1400	.1560	1.000	.023	.035	1.090	.0462	.1875	2.0	QIT-1401000	58.18	QIT-1401000X	64.98
14-56	.1600	.1820	.250	.029	.040	.590	.0665	.1875	1.5	QIT-160250	58.18	QIT-160250X	63.48
14-56	.1600	.1820	.400	.029	.040	.590	.0665	.1875	1.5	QIT-160400	58.18	QIT-160400X	63.48
14-56	.1600	.1820	.500	.029	.040	.590	.0665	.1875	1.5	QIT-160500	58.18	QIT-160500X	63.48
14-56	.1600	.1820	.750	.029	.040	1.090	.0665	.1875	2.0	QIT-160750	58.18	QIT-160750X	63.48
14-56	.1600	.1820	1.000	.029	.040	1.090	.0665	.1875	2.0	QIT-1601000	58.18	QIT-1601000X	63.48
14-56	.1800	.2020	.350	.029	.040	.853	.0550	.2500	2.0	QIT-180350	62.08	QIT-180350X	70.28
14-56	.1800	.2020	.500	.029	.040	.853	.0550	.2500	2.0	QIT-180500	62.08	QIT-180500X	70.28
14-56	.1800	.2020	.750	.029	.040	.853	.0550	.2500	2.0	QIT-180750	62.08	QIT-180750X	70.28
14-56	.1800	.2020	1.000	.029	.040	1.353	.0550	.2500	2.5	QIT-1801000	62.08	QIT-1801000X	70.78
14-56	.1800	.2020	1.125	.029	.040	1.353	.0550	.2500	2.5	QIT-1801125	62.08	QIT-1801125X	70.78
13-56	.2000	.2220	.400	.032	.045	.853	.0750	.2500	2.0	QIT-200400	62.08	QIT-200400X	70.28
13-56	.2000	.2220	.600	.032	.045	.853	.0750	.2500	2.0	QIT-200600	62.08	QIT-200600X	70.28
13-56	.2000	.2220	.750	.032	.045	.853	.0750	.2500	2.0	QIT-200750	62.08	QIT-200750X	70.28
13-56	.2000	.2220	1.000	.032	.045	1.353	.0750	.2500	2.5	QIT-2001000	62.08	QIT-2001000X	70.78
13-56	.2000	.2220	1.125	.032	.045	1.353	.0750	.2500	2.5	QIT-2001125	62.08	QIT-2001125X	70.78
10-48	.2300	.2520	.400	.038	.055	.853	.0735	.3125	2.0	QIT-230400	77.78	QIT-230400X	87.48
10-48	.2300	.2520	.600	.038	.055	.853	.0735	.3125	2.0	QIT-230600	77.78	QIT-230600X	87.48
10-48	.2300	.2520	.750	.038	.055	.853	.0735	.3125	2.0	QIT-230750	77.78	QIT-230750X	87.48
10-48	.2300	.2520	1.000	.038	.055	1.353	.0735	.3125	2.5	QIT-2301000	77.78	QIT-2301000X	88.08
10-48	.2300	.2520	1.250	.038	.055	1.353	.0737	.3125	2.5	QIT-2301250	77.78	QIT-2301250X	88.08
10-48	.2300	.2520	1.500	.038	.055	1.853	.0735	.3125	3.0	QIT-2301500	87.98	QIT-2301500X	98.28
10-48	.2300	.2520	1.750	.038	.055	1.853	.0737	.3125	3.0	QIT-2301750	87.98	QIT-2301750X	98.28
8-40	.2900	.3120	.500	.046	.070	.853	.1340	.3125	2.0	QIT-290500	77.78	QIT-290500X	87.48
8-40	.2900	.3120	.750	.046	.070	.853	.1340	.3125	2.0	QIT-290750	77.78	QIT-290750X	87.48
8-40	.2900	.3120	1.000	.046	.070	1.353	.1340	.3125	2.5	QIT-2901000	77.78	QIT-2901000X	87.48
8-40	.2900	.3120	1.250	.046	.070	1.353	.1340	.3125	2.5	QIT-2901250	77.78	QIT-2901250X	88.08
8-40	.2900	.3120	1.500	.046	.070	1.853	.1337	.3125	3.0	QIT-2901500	87.98	QIT-2901500X	98.28
8-40	.2900	.3120	1.750	.046	.070	1.853	.1340	.3125	3.0	QIT-2901750	87.98	QIT-2901750X	98.28
8-40	.3200	.3420	.500	.049	.075	.853	.1325	.3750	2.0	QIT-320500	101.28	QIT-320500X	111.78

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options

Quick Change – Threading Tools

NEW

QIT

Quick Change – Threading Tools

UN Threads – Single Point (cont.)

Continued from previous page

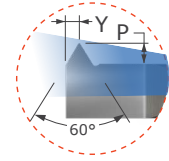
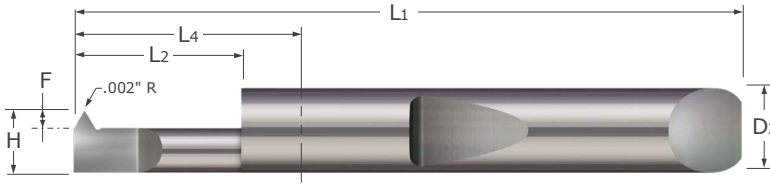
Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AITIN Coated	
										Tool #	Price	Tool #	Price
TPI*	H		L ₂ ^{+0.030"} _{-.000"}	Y ^{+0.002"} _{-.000"}	P	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
8-40	.3200	.3420	.750	.049	.075	.853	.1325	.3750	2.0	QIT-320750	101.28	QIT-320750X	111.78
8-40	.3200	.3420	1.000	.049	.075	1.353	.1325	.3750	2.5	QIT-3201000	101.28	QIT-3201000X	113.48
8-40	.3200	.3420	1.250	.049	.075	1.353	.1325	.3750	2.5	QIT-3201250	101.28	QIT-3201250X	113.48
8-40	.3200	.3420	1.500	.049	.075	1.853	.1325	.3750	3.0	QIT-3201500	111.48	QIT-3201500X	123.68
8-40	.3200	.3420	1.800	.049	.075	1.853	.1325	.3750	3.0	QIT-3201800	111.48	QIT-3201800X	123.68
7-32	.3600	.3820	.500	.055	.085	.853	.1725	.3750	2.0	QIT-360500	101.28	QIT-360500X	111.78
7-32	.3600	.3820	.750	.055	.085	.853	.1725	.3750	2.0	QIT-360750	101.28	QIT-360750X	111.78
7-32	.3600	.3820	1.000	.055	.085	1.353	.1725	.3750	2.5	QIT-3601000	101.28	QIT-3601000X	113.48
7-32	.3600	.3820	1.250	.055	.085	1.353	.1725	.3750	2.5	QIT-3601250	101.28	QIT-3601250X	113.48
7-32	.3600	.3820	1.500	.055	.085	1.853	.1725	.3750	3.0	QIT-3601500	111.48	QIT-3601500X	123.68
7-32	.3600	.3820	1.800	.055	.085	1.853	.1725	.3750	3.0	QIT-3601800	111.48	QIT-3601800X	123.68
NEW 7-32	.3600	.3820	2.000	.055	.085	2.353	.1725	.3750	3.5	QIT-3602000	113.88	QIT-3602000X	127.28
5-32	.4600	.4820	.750	.078	.120	1.040	.2100	.5000	2.5	QIT-460750	141.88	QIT-460750X	158.68
5-32	.4600	.4820	1.500	.078	.120	1.540	.2100	.5000	3.0	QIT-4601500	141.88	QIT-4601500X	158.68
5-32	.4600	.4820	2.000	.078	.120	2.040	.2100	.5000	3.5	QIT-4602000	154.88	QIT-4602000X	172.68
5-32	.4900	.5120	.750	.078	.120	1.040	.2400	.5000	2.5	QIT-490750	141.88	QIT-490750X	158.68
5-32	.4900	.5120	1.125	.078	.120	1.540	.2400	.5000	3.0	QIT-4901125	141.88	QIT-4901125X	158.68
5-32	.4900	.5120	1.500	.078	.120	1.540	.2400	.5000	3.0	QIT-4901500	141.88	QIT-4901500X	158.68
5-32	.4900	.5120	2.000	.078	.120	2.040	.2400	.5000	3.5	QIT-4902000	154.88	QIT-4902000X	172.68
NEW 5-32	.4900	.5120	2.500	.078	.120	2.540	.2400	.5000	4.0	QIT-4902500	160.88	QIT-4902500X	178.78

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

Quick Change – Threading Tools

UN Threads – Single Point – Left Hand



- Designed for threading multiple thread pitches (ANSI, UN, and Metric 60°) in a left hand threading application
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Corner radius profile
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA

Quick Change – Threading Tools

Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
TPI*	H		L ₂ ^{+0.030"} / _{-.000"}	Y ^{+0.002"} / _{-.000"}	P	L ₄	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
20-56	.1200	.1360	.500	.017	.030	.590	.0262	.1875	1.5	QITL-120500	58.18	QITL-120500X	64.98
16-56	.1400	.1560	.500	.020	.035	.590	.0462	.1875	1.5	QITL-140500	58.18	QITL-140500X	64.98
14-56	.1600	.1820	.400	.023	.040	.590	.0662	.1875	1.5	QITL-160400	58.18	QITL-160400X	64.98
14-56	.1600	.1820	.750	.023	.040	1.090	.0662	.1875	2.0	QITL-160750	59.78	QITL-160750X	66.58
13-56	.2000	.2220	.600	.026	.045	.853	.0750	.2500	2.0	QITL-200600	62.08	QITL-200600X	70.28
13-56	.2000	.2220	1.000	.026	.045	1.353	.0750	.2500	2.5	QITL-2001000	63.68	QITL-2001000X	72.48
10-48	.2300	.2520	.750	.032	.055	.853	.0737	.3125	2.0	QITL-230750	77.78	QITL-230750X	87.48
10-48	.2300	.2520	1.000	.032	.055	1.353	.0737	.3125	2.5	QITL-2301000	79.38	QITL-2301000X	89.68
8-40	.2900	.3120	.750	.040	.070	.853	.1337	.3125	2.0	QITL-290750	77.78	QITL-290750X	87.48
8-40	.2900	.3120	1.250	.040	.070	1.353	.1337	.3125	2.5	QITL-2901250	79.38	QITL-2901250X	89.68
8-40	.3200	.3420	.750	.043	.075	.853	.1325	.3750	2.0	QITL-320750	101.28	QITL-320750X	112.78
8-40	.3200	.3420	1.000	.043	.075	1.353	.1325	.3750	2.5	QITL-3201000	102.78	QITL-3201000X	114.98
7-32	.3600	.3820	.750	.049	.085	.853	.1725	.3750	2.0	QITL-360750	101.28	QITL-360750X	112.78
7-32	.3600	.3820	1.250	.049	.085	1.353	.1725	.3750	2.5	QITL-3601250	102.78	QITL-3601250X	114.98
5-32	.4900	.5120	1.500	.069	.120	1.540	.2400	.5000	3.0	QITL-4901500	143.58	QITL-4901500X	160.28

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

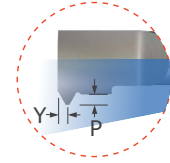
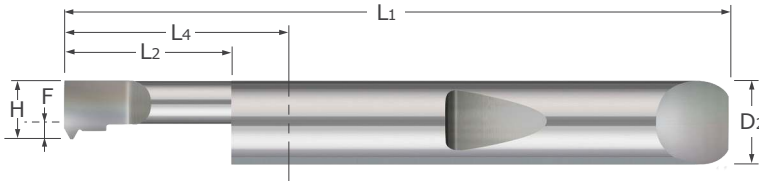
See pgs 16-34 for quick change holder options



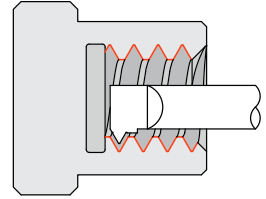
QTT

Quick Change – Threading Tools

UN Topping– Single Point



- Designed for threading 60° UN pitches in a right hand topping application
- Topping design generates a controlled thread height with a reduction in burr formation
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Thread Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										H	L2	Y	P
2-56	.050	.055	.150	.012	.0097	.590	-.0438	.1875	1.5	QTT-000256-015	59.38	QTT-000256-015X	66.18
2-56	.050	.055	.200	.012	.0097	.590	-.0438	.1875	1.5	QTT-000256-020	59.38	QTT-000256-020X	66.18
4-40	.065	.075	.200	.014	.0135	.590	-.0288	.1875	1.5	QTT-000440-020	59.38	QTT-000440-020X	66.18
4-40	.065	.075	.250	.014	.0135	.590	-.0288	.1875	1.5	QTT-000440-025	59.38	QTT-000440-025X	66.18
5-44	.080	.090	.200	.014	.0123	.590	-.0138	.1875	1.5	QTT-000544-020	59.38	QTT-000544-020X	66.18
5-44	.080	.090	.250	.014	.0123	.590	-.0138	.1875	1.5	QTT-000544-025	59.38	QTT-000544-025X	66.18
6-32	.080	.090	.250	.017	.0169	.590	-.0138	.1875	1.5	QTT-000632-025	59.38	QTT-000632-025X	66.18
6-32	.080	.090	.350	.017	.0169	.590	-.0138	.1875	1.5	QTT-000632-035	59.38	QTT-000632-035X	66.18
8-32	.100	.110	.250	.017	.0169	.590	.0063	.1875	1.5	QTT-000832-025	59.38	QTT-000832-025X	66.18
8-32	.100	.110	.350	.017	.0169	.590	.0063	.1875	1.5	QTT-000832-035	59.38	QTT-000832-035X	66.18
10-24	.120	.136	.250	.021	.0226	.590	.0263	.1875	1.5	QTT-001024-025	59.38	QTT-001024-025X	66.18
10-24	.120	.136	.400	.021	.0226	.590	.0263	.1875	1.5	QTT-001024-040	59.38	QTT-001024-040X	66.18
10-32	.120	.136	.250	.017	.0169	.590	.0263	.1875	1.5	QTT-001032-025	59.38	QTT-001032-025X	66.18
10-32	.120	.136	.400	.017	.0169	.590	.0263	.1875	1.5	QTT-001032-040	59.38	QTT-001032-040X	66.18
1/4-20	.160	.182	.400	.024	.0271	.590	.0663	.1875	1.5	QTT-014020-040	59.38	QTT-014020-040X	66.18
1/4-20	.160	.182	.500	.024	.0271	.590	.0663	.1875	1.5	QTT-014020-050	59.38	QTT-014020-050X	66.18
1/4-28	.180	.202	.500	.018	.0193	.853	.0550	.2500	2.0	QTT-014028-050	63.48	QTT-014028-050X	71.48
1/4-28	.180	.202	.750	.018	.0193	.853	.0550	.2500	2.0	QTT-014028-075	63.48	QTT-014028-075X	71.48
5/16-18	.220	.242	.750	.026	.0301	.853	.0638	.3125	2.0	QTT-051618-075	79.38	QTT-051618-075X	89.18
5/16-18	.220	.242	1.000	.026	.0301	1.353	.0638	.3125	2.5	QTT-051618-100	80.88	QTT-051618-100X	91.18
5/16-24	.220	.242	.750	.021	.0226	.853	.0638	.3125	2.0	QTT-051624-075	79.38	QTT-051624-075X	89.18
5/16-24	.220	.242	1.000	.021	.0226	1.353	.0638	.3125	2.5	QTT-051624-100	80.88	QTT-051624-100X	91.18
3/8-16	.280	.302	.750	.028	.0338	.853	.1238	.3125	2.0	QTT-038016-075	79.38	QTT-038016-075X	89.18
3/8-16	.280	.302	1.000	.028	.0338	1.353	.1238	.3125	2.5	QTT-038016-100	80.88	QTT-038016-100X	91.18
3/8-24	.300	.322	.750	.021	.0226	.853	.1438	.3125	2.0	QTT-038024-075	79.38	QTT-038024-075X	89.18

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 16-34 for quick change holder options



Quick Change – Threading Tools

QTT

UN Topping– Single Point (cont.)

Continued from previous page

Thread Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
	H		L ₂ $\begin{matrix} +.030" \\ -.000" \end{matrix}$	Y $\begin{matrix} +.005" \\ -.000" \end{matrix}$	P $\begin{matrix} +.000" \\ -.002" \end{matrix}$	L ₄	F	D ₂ (h6)	L ₁				
3/8-24	.300	.322	1.000	.021	.0226	1.353	.1438	.3125	2.5	QTT-038024-100	80.88	QTT-038024-100X	91.18
7/16-14	.310	.332	.750	.032	.0387	.853	.1538	.3125	2.0	QTT-071614-075	79.38	QTT-071614-075X	89.18
7/16-14	.310	.332	1.000	.032	.0387	1.353	.1538	.3125	2.5	QTT-071614-100	80.88	QTT-071614-100X	91.18
7/16-20	.350	.372	1.000	.024	.0271	1.353	.1625	.3750	2.5	QTT-071620-100	103.28	QTT-071620-100X	115.58
7/16-20	.350	.372	1.250	.024	.0271	1.353	.1625	.3750	2.5	QTT-071620-125	103.28	QTT-071620-125X	115.58
1/2-13	.380	.402	1.000	.034	.0416	1.040	.1300	.5000	2.5	QTT-012013-100	144.68	QTT-012013-100X	161.38
1/2-13	.380	.402	1.250	.034	.0416	1.540	.1300	.5000	3.0	QTT-012013-125	146.28	QTT-012013-125X	162.98
1/2-20	.410	.432	1.000	.024	.0271	1.040	.1600	.5000	2.5	QTT-012020-100	144.68	QTT-012020-100X	161.38
1/2-20	.410	.432	1.250	.024	.0271	1.540	.1600	.5000	3.0	QTT-012020-125	146.28	QTT-012020-125X	162.98
9/16-12	.410	.432	1.000	.036	.0451	1.040	.1600	.5000	2.5	QTT-091612-100	144.68	QTT-091612-100X	161.38
9/16-12	.410	.432	1.250	.036	.0451	1.540	.1600	.5000	3.0	QTT-091612-125	146.28	QTT-091612-125X	162.98
9/16-18	.460	.482	1.000	.026	.0301	1.040	.2100	.5000	2.5	QTT-091618-100	144.68	QTT-091618-100X	161.38
9/16-18	.460	.482	1.250	.026	.0301	1.540	.2100	.5000	3.0	QTT-091618-125	146.28	QTT-091618-125X	162.98
5/8-11	.490	.512	1.000	.039	.0492	1.040	.2400	.5000	2.5	QTT-058011-100	144.68	QTT-058011-100X	161.38
5/8-11	.490	.512	1.250	.039	.0492	1.540	.2400	.5000	3.0	QTT-058011-125	146.28	QTT-058011-125X	162.98
3/4-16	.490	.512	1.000	.028	.0338	1.040	.2400	.5000	2.5	QTT-034016-100	144.68	QTT-034016-100X	161.38
3/4-16	.490	.512	1.250	.028	.0338	1.540	.2400	.5000	3.0	QTT-034016-125	146.28	QTT-034016-125X	162.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Quick Change – Threading Tools

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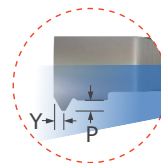
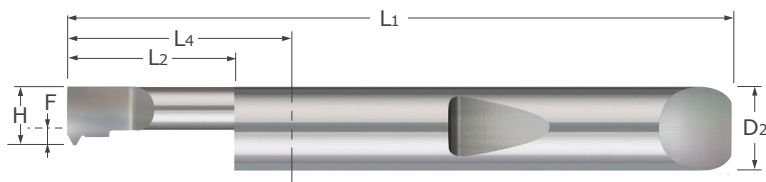
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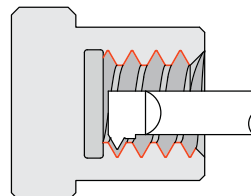
See pgs 16-34 for quick change holder options

QTMT

Quick Change – Threading Tools
Metric Topping– Single Point



- Designed for threading 60° Metric pitches in a right hand topping application
- Topping design generates a controlled thread height with a reduction in burr formation
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Quick Change – Threading Tools

Thread Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
	H		L2	Y	P	L4	F	D2 (h6)	L1				
			+1.27mm -.000mm	+1.27mm -.000mm	+1.000mm -.051mm								
M2.5x0.45	1.50mm	1.70mm	5.00mm	.300mm	.244mm	14.99mm	-0.88mm	.1875	1.5	QTMT-025045-05	59.38	QTMT-025045-05X	65.38
M2.5x0.45	1.50mm	1.70mm	7.00mm	.300mm	.244mm	14.99mm	-0.88mm	.1875	1.5	QTMT-025045-07	59.38	QTMT-025045-07X	65.38
M3x0.50	2.00mm	2.20mm	6.00mm	.319mm	.271mm	14.99mm	-0.38mm	.1875	1.5	QTMT-030050-06	59.38	QTMT-030050-06X	65.38
M3x0.50	2.00mm	2.20mm	8.00mm	.319mm	.271mm	14.99mm	-0.38mm	.1875	1.5	QTMT-030050-08	59.38	QTMT-030050-08X	65.38
M4x0.70	2.50mm	2.70mm	7.00mm	.396mm	.379mm	14.99mm	0.12mm	.1875	1.5	QTMT-040070-07	59.38	QTMT-040070-07X	65.38
M4x0.70	2.50mm	2.70mm	10.00mm	.396mm	.379mm	14.99mm	0.12mm	.1875	1.5	QTMT-040070-10	59.38	QTMT-040070-10X	65.38
M4.5x0.75	3.00mm	3.40mm	6.00mm	.415mm	.406mm	14.99mm	0.62mm	.1875	1.5	QTMT-045075-06	59.38	QTMT-045075-06X	65.38
M4.5x0.75	3.00mm	3.40mm	9.00mm	.415mm	.406mm	14.99mm	0.62mm	.1875	1.5	QTMT-045075-09	59.38	QTMT-045075-09X	65.38
M5x0.80	3.00mm	3.40mm	6.00mm	.434mm	.433mm	14.99mm	0.62mm	.1875	1.5	QTMT-050080-06	59.38	QTMT-050080-06X	65.38
M5x0.80	3.00mm	3.40mm	9.00mm	.434mm	.433mm	14.99mm	0.62mm	.1875	1.5	QTMT-050080-09	59.38	QTMT-050080-09X	65.38
M6x1.00	4.00mm	4.50mm	10.00mm	.511mm	.541mm	14.99mm	1.62mm	.1875	1.5	QTMT-060100-10	59.38	QTMT-060100-10X	65.38
M6x1.00	4.00mm	4.50mm	14.00mm	.511mm	.541mm	27.69mm	1.62mm	.1875	2.0	QTMT-060100-14	60.98	QTMT-060100-14X	66.98
M8x1.25	5.50mm	6.00mm	14.00mm	.607mm	.677mm	21.67mm	1.53mm	.3125	2.0	QTMT-080125-14	79.38	QTMT-080125-14X	85.38
M8x1.25	5.50mm	6.00mm	22.00mm	.607mm	.677mm	34.37mm	1.53mm	.3125	2.5	QTMT-080125-22	80.88	QTMT-080125-22X	86.88
M10x1.50	7.50mm	8.00mm	24.00mm	.703mm	.812mm	34.37mm	3.53mm	.3125	2.5	QTMT-100150-24	80.88	QTMT-100150-24X	86.88
M10x1.50	7.50mm	8.00mm	31.00mm	.703mm	.812mm	34.37mm	3.53mm	.3125	2.5	QTMT-100150-31	80.88	QTMT-100150-31X	86.88
M12x1.75	9.00mm	9.50mm	22.00mm	.804mm	.957mm	34.37mm	4.24mm	.3750	2.5	QTMT-120175-22	103.28	QTMT-120175-22X	109.28
M12x1.75	9.00mm	9.50mm	31.00mm	.804mm	.957mm	34.37mm	4.24mm	.3750	2.5	QTMT-120175-31	103.28	QTMT-120175-31X	109.28
M16x2.00	12.50mm	13.00mm	31.00mm	.896mm	1.085mm	39.12mm	6.15mm	.5000	3.0	QTMT-160200-31	146.28	QTMT-160200-31X	152.28
M16x2.00	12.50mm	13.00mm	44.00mm	.896mm	1.085mm	51.82mm	6.15mm	.5000	3.5	QTMT-160200-44	150.88	QTMT-160200-44X	156.88
M20x2.50	12.50mm	13.00mm	31.00mm	1.086mm	1.353mm	39.12mm	6.15mm	.5000	3.0	QTMT-200250-31	146.28	QTMT-200250-31X	152.28
M20x2.50	12.50mm	13.00mm	44.00mm	1.086mm	1.353mm	51.82mm	6.15mm	.5000	3.5	QTMT-200250-44	150.88	QTMT-200250-44X	156.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

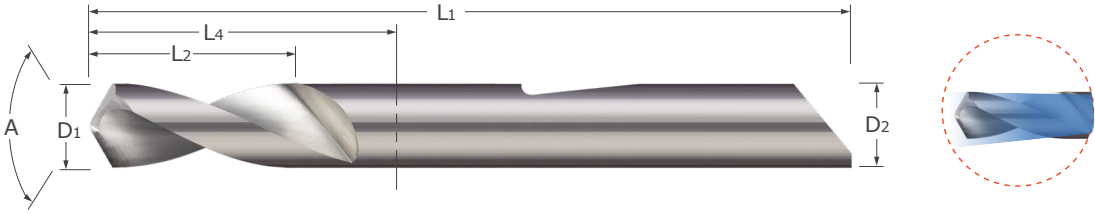
See pgs 16-34 for quick change holder options



Quick Change – Holemaking Tools

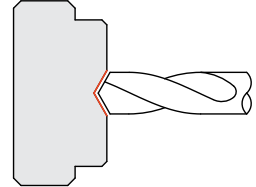
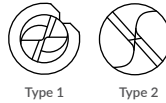
Spotting Drills

QSPD



- Designed for spot drilling
- Available in 82°, 90°, 120°, and 140° included angles
- Can be utilized for countersinking and chamfering existing holes
- Narrow web thickness allows for spotting small diameter holes
- Point geometry designed for self centering
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ 2 flutes ■ CNC ground in the USA

Point Geometry Types



Quick Change – Holemaking Tools

Included Angle	Drill Diameter	Flute Length	Web Thickness	Type	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
A	D1 ^{+0.000"} / _{-.0005"}	L2 ^{+0.01"} / _{-.000"}	^{+0.01"} / _{-.001"}		L4	D2 (h6)	L1				
82°	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-082	42.78	QSPD-090-082X	49.58
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-082	42.78	QSPD-118-082X	49.58
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-082	42.78	QSPD-125-082X	49.58
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-082	42.78	QSPD-187-082X	49.58
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-082	50.38	QSPD-250-082X	58.98
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-082	67.68	QSPD-375-082X	80.08
	.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-082	91.38	QSPD-500-082X	107.88
90°	.0200	.060	.002	I	.590	.1875	1.5			QSPD-020-090X	58.08
	.0250	.075	.002	I	.590	.1875	1.5	QSPD-025-090	49.08		
	.0300	.090	.003	I	.590	.1875	1.5	QSPD-030-090	49.08		
	.0350	.105	.003	I	.590	.1875	1.5			QSPD-035-090X	54.18
	.0400	.120	.004	I	.590	.1875	1.5	QSPD-040-090	42.78	QSPD-040-090X	47.48
	.0450	.135	.004	I	.590	.1875	1.5	QSPD-045-090	42.78		
	.0600	.180	.006	I	.590	.1875	1.5	QSPD-060-090	42.78	QSPD-060-090X	47.48
	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-090	42.78	QSPD-090-090X	47.48
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-090	42.78	QSPD-118-090X	47.48
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-090	42.78	QSPD-125-090X	47.48
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-090	42.78	QSPD-187-090X	47.48
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-090	50.38	QSPD-250-090X	58.38
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-090	67.68	QSPD-375-090X	79.58
.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-090	91.38	QSPD-500-090X	107.88	
100°	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-100	42.78	QSPD-090-100X	49.58
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-100	42.78	QSPD-118-100X	49.58
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-100	42.78	QSPD-125-100X	49.58
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-100	42.78	QSPD-187-100X	49.58
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-100	50.38	QSPD-250-100X	58.98
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-100	67.68	QSPD-375-100X	80.08
	.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-100	91.38	QSPD-500-100X	107.88

Continued on next page

See pgs 16-34 for quick change holder options



QSPD

Quick Change – Holmaking Tools
Spotting Drills (cont.)

Continued from previous page

Included Angle	Drill Diameter	Flute Length	Web Thickness	Type	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
A	D1 $\begin{matrix} +.0000" \\ -.0005" \end{matrix}$	L2 $\begin{matrix} +.010" \\ -.000" \end{matrix}$	$\begin{matrix} +.001" \\ -.001" \end{matrix}$		L4	D2 (h6)	L1				
120°	.0150	.045	.002	I	.590	.1875	1.5	QSPD-015-120	55.18	QSPD-015-120X	60.38
	.0200	.060	.002	I	.590	.1875	1.5			QSPD-020-120X	60.38
	.0300	.090	.003	I	.590	.1875	1.5	QSPD-030-120	49.08		
	.0350	.105	.003	I	.590	.1875	1.5	QSPD-035-120	49.08		
	.0400	.120	.004	I	.590	.1875	1.5	QSPD-040-120	42.78	QSPD-040-120X	47.48
	.0450	.135	.004	I	.590	.1875	1.5	QSPD-045-120	42.78	QSPD-045-120X	47.48
	.0500	.150	.005	I	.590	.1875	1.5			QSPD-050-120X	45.68
	.0600	.180	.006	I	.590	.1875	1.5	QSPD-060-120	42.78	QSPD-060-120X	47.48
	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-120	42.78	QSPD-090-120X	47.48
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-120	42.78	QSPD-118-120X	49.58
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-120	42.78	QSPD-125-120X	47.48
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-120	42.78	QSPD-187-120X	47.48
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-120	50.38	QSPD-250-120X	58.38
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-120	67.68	QSPD-375-120X	79.58
.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-120	91.38	QSPD-500-120X	107.88	
140°	.0200	.060	.002	I	.590	.1875	1.5			QSPD-020-140X	60.38
	.0250	.075	.002	I	.590	.1875	1.5	QSPD-025-140	49.08		
	.0300	.090	.003	I	.590	.1875	1.5	QSPD-030-140	49.08		
	.0350	.105	.003	I	.590	.1875	1.5	QSPD-035-140	49.08		
	.0400	.120	.004	I	.590	.1875	1.5	QSPD-040-140	42.78		
	.0450	.135	.004	I	.590	.1875	1.5			QSPD-045-140X	47.48
	.0500	.150	.005	I	.590	.1875	1.5	QSPD-050-140	42.78	QSPD-050-140X	47.48
	.0600	.180	.006	I	.590	.1875	1.5	QSPD-060-140	42.78	QSPD-060-140X	47.48
	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-140	42.78	QSPD-090-140X	47.48
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-140	42.78	QSPD-118-140X	47.48
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-140	42.78	QSPD-125-140X	47.48
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-140	42.78	QSPD-187-140X	47.48
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-140	50.38	QSPD-250-140X	58.38
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-140	67.68	QSPD-375-140X	79.58
.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-140	91.38	QSPD-500-140X	107.88	

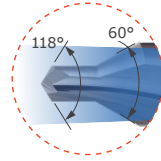
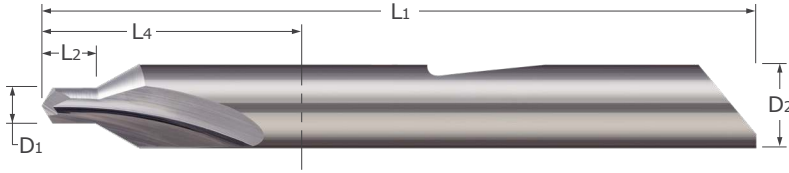
See pgs 16-34 for quick change holder options



Quick Change – Holmaking Tools

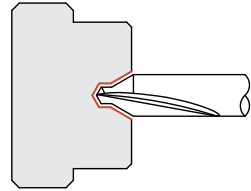
Combined Drill & Countersink Tools

QDC



Quick Change – Holmaking Tools

- Designed for pre-drilling 60° live center holes
- Can be utilized for countersinking and spot drilling
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Drill Diameter	Drill Length	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
$D_1 \begin{matrix} +.003'' \\ -.000'' \end{matrix}$	$L_2 \begin{matrix} +.015'' \\ -.000'' \end{matrix}$	L4	D2 (h6)	L1	Tool #	Price	Tool #	Price
.025	.025	1.090	.1875	2.0	QDC-00	33.78	QDC-00X	38.18
.031	.031	1.090	.1875	2.0	QDC-01	33.78	QDC-01X	38.18
.047	.047	1.090	.1875	2.0	QDC-1	33.78	QDC-1X	38.18
$D_1 \begin{matrix} +.003'' \\ -.000'' \end{matrix}$	$L_2 \begin{matrix} +.030'' \\ -.000'' \end{matrix}$	L4	D2 (h6)	L1	Tool #	Price	Tool #	Price
.078	.078	1.090	.1875	2.0	QDC-2	33.78	QDC-2X	38.18
.109	.109	1.353	.2500	2.5	QDC-3	58.98	QDC-3X	67.48
.125	.125	1.353	.3125	2.5	QDC-4	78.78	QDC-4X	89.18
.188	.188	1.540	.5000	3.0	QDC-5	118.68	QDC-5X	134.68
.219	.219	1.540	.5000	3.0	QDC-6	118.68	QDC-6X	134.68

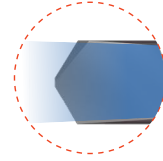
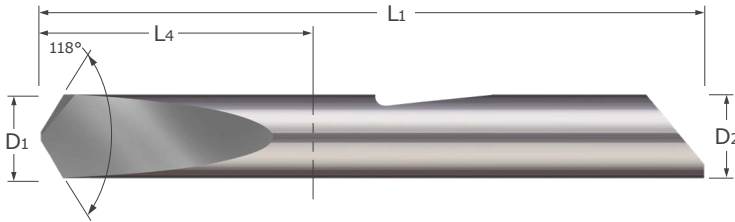
See pgs 16-34 for quick change holder options



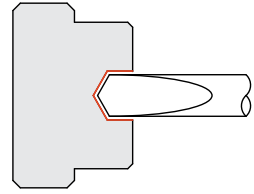
QSD

Quick Change – Holmaking Tools

Spade Drills



- Designed for drilling in hardened materials
- Excellent option when requiring holes free of retract marks in non-ferrous materials
- Coolant fed enabled shank design
- Point geometry designed for self-centering
- 118° tip angle
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



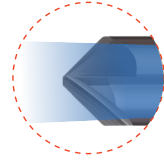
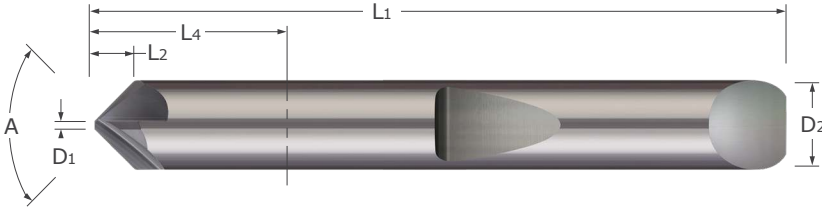
Quick Change – Holmaking Tools

Drill Diameter	Web Thickness	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
D1 $+0.0000''$ $-0.0005''$	$+0.001''$ $-0.001''$	L4	D2 (h6)	L1	Tool #	Price	Tool #	Price
.0312	.010	.340	.1875	1.25	QSD-031	24.98	QSD-031X	28.98
.0625	.012	.590	.1875	1.50	QSD-062	25.88	QSD-062X	29.98
.0938	.016	.590	.1875	1.50	QSD-093	26.58	QSD-093X	30.78
.1250	.020	.590	.1875	1.50	QSD-125	29.18	QSD-125X	33.48
.1562	.025	1.090	.1875	2.00	QSD-156	31.88		
.1875	.028	1.090	.1875	2.00	QSD-187	37.08	QSD-187X	41.58
.2500	.035	.853	.2500	2.00	QSD-250	49.88	QSD-250X	54.98
.3125	.040	1.353	.3125	2.50	QSD-312	69.08	QSD-312X	74.68
.3750	.046	1.353	.3750	2.50	QSD-375	83.18	QSD-375X	89.48

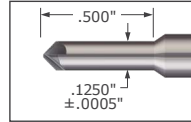
See pgs 16-34 for quick change holder options

Quick Change – Holmaking Tools

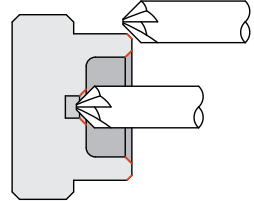
Countersink & Chamfer Tools



- Designed for countersinking and chamfering
- Available in 60°, 82°, 90°, 100°, and 120° included angles
- Tip Diameter (D₁) is non-cutting
- Multi-tooth for greater metal removal rates
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



*QCS-125 tools feature a necked down shank



Quick Change – Holmaking Tools

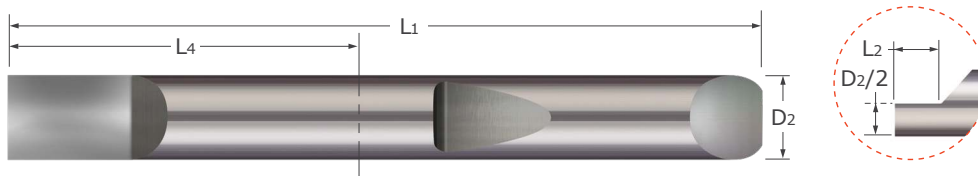
Included Angle	Tip Diameter	Length of Cut	Flutes	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
							Tool #	Price	Tool #	Price
A ^{+1°} _{-1°}	D ₁ ^{+0.000"} _{-.003"}	L ₂		L ₄	D ₂ (h6)	L ₁				
60°	.030	.082	3	.590	.1875	1.5	QCS-125-060*	48.78	QCS-125-060X*	53.58
	.040	.128	4	1.090	.1875	2.0	QCS-187-060	48.78	QCS-187-060X	53.58
	.050	.173	6	1.353	.2500	2.5	QCS-250-060	55.58	QCS-250-060X	64.08
	.060	.219	6	1.353	.3125	2.5	QCS-312-060	74.58	QCS-312-060X	84.98
	.070	.264	6	1.353	.3750	2.5	QCS-375-060	92.38	QCS-375-060X	104.78
	.080	.364	6	1.540	.5000	3.0	QCS-500-060	128.78	QCS-500-060X	145.48
82°	.030	.055	3	.590	.1875	1.5	QCS-125-082*	48.78	QCS-125-082X*	53.58
	.040	.085	4	1.090	.1875	2.0	QCS-187-082	48.78	QCS-187-082X	53.58
	.050	.115	6	1.353	.2500	2.5	QCS-250-082	55.58	QCS-250-082X	64.18
	.060	.145	6	1.353	.3125	2.5	QCS-312-082	74.58	QCS-312-082X	84.98
	.070	.175	6	1.353	.3750	2.5	QCS-375-082	92.38	QCS-375-082X	104.78
	.080	.242	6	1.540	.5000	3.0	QCS-500-082	128.78	QCS-500-082X	145.48
90°	.030	.047	3	.590	.1875	1.5	QCS-125-090*	48.78	QCS-125-090X*	53.58
	.040	.074	4	1.090	.1875	2.0	QCS-187-090	48.78	QCS-187-090X	53.58
	.050	.100	6	1.353	.2500	2.5	QCS-250-090	55.58	QCS-250-090X	64.08
	.060	.126	6	1.353	.3125	2.5	QCS-312-090	74.58	QCS-312-090X	84.98
	.070	.152	6	1.353	.3750	2.5	QCS-375-090	92.38	QCS-375-090X	104.78
	.080	.210	6	1.540	.5000	3.0	QCS-500-090	128.78	QCS-500-090X	145.48
100°	.030	.040	3	.590	.1875	1.5	QCS-125-100*	48.78	QCS-125-100X*	53.58
	.040	.062	4	1.090	.1875	2.0	QCS-187-100	48.78	QCS-187-100X	53.58
	.050	.084	6	1.353	.2500	2.5	QCS-250-100	55.58	QCS-250-100X	64.08
	.060	.106	6	1.353	.3125	2.5	QCS-312-100	74.58	QCS-312-100X	84.98
	.070	.128	6	1.353	.3750	2.5	QCS-375-100	92.38	QCS-375-100X	104.78
	.080	.176	6	1.540	.5000	3.0	QCS-500-100	128.78	QCS-500-100X	145.48
120°	.030	.027	3	.590	.1875	1.5	QCS-125-120*	48.78	QCS-125-120X*	53.58
	.040	.043	4	1.090	.1875	2.0	QCS-187-120	48.78	QCS-187-120X	53.58
	.050	.058	6	1.353	.2500	2.5	QCS-250-120	55.58	QCS-250-120X	64.18
	.060	.073	6	1.353	.3125	2.5	QCS-312-120	74.58	QCS-312-120X	84.98
	.070	.088	6	1.353	.3750	2.5	QCS-375-120	92.38	QCS-375-120X	104.78
	.080	.121	6	1.540	.5000	3.0	QCS-500-120	128.78	QCS-500-120X	145.48

*QCS-125 tools feature a necked down shank

See pgs 16-34 for quick change holder options



QSP

Quick Change – Blanks
Half Round

- Precision ground quick change blank designed for creating custom profiles requiring a split face
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Precision manufactured in the USA

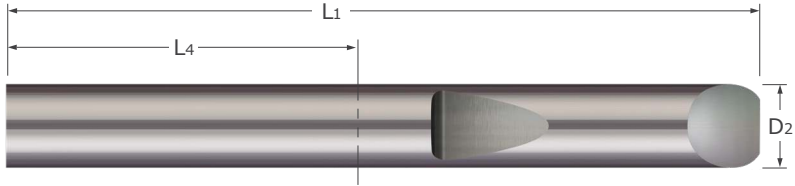
Shank Diameter	Split Length*	Length from Holder	Overall Length	Tool Holder	
				Tool #	Price
D2 (h6)	L2 $\begin{matrix} +.005'' \\ -.000'' \end{matrix}$	L4	L1		
.1875	.375	.590	1.5	QSP-187-1.5	29.88
.1875	.375	1.090	2.0	QSP-187-2.0	31.88
.2500	.375	.853	2.0	QSP-250-2.0	33.98
.2500	.375	1.353	2.5	QSP-250-2.5	36.98
.2500	.375	1.853	3.0	QSP-250-3.0	39.88
.3125	.500	.853	2.0	QSP-312-2.0	45.48
.3125	.500	1.353	2.5	QSP-312-2.5	47.98
.3125	.500	1.853	3.0	QSP-312-3.0	53.68
.3750	.500	.853	2.0	QSP-375-2.0	57.58
.3750	.500	1.353	2.5	QSP-375-2.5	59.68
.3750	.500	1.853	3.0	QSP-375-3.0	63.98
.3750	.500	2.353	3.5	QSP-375-3.5	65.78
.3750	.500	2.853	4.0	QSP-375-4.0	72.98
.5000	.625	1.040	2.5	QSP-500-2.5	80.48
.5000	.625	1.540	3.0	QSP-500-3.0	84.68
.5000	.625	2.040	3.5	QSP-500-3.5	88.08
.5000	.625	2.540	4.0	QSP-500-4.0	92.58
.5000	.625	3.040	4.5	QSP-500-4.5	97.68

*Centerline $+ .001'' / - .000''$

See pgs 16-34 for quick change holder options

Quick Change – Blanks

Full Round



- Precision ground quick change blank designed for creating custom profiles
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- Precision manufactured in the USA

Quick Change – Blanks

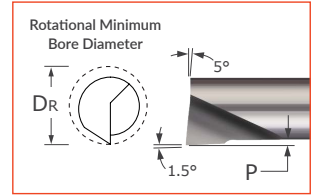
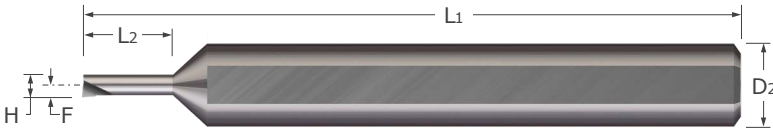
Shank Diameter	Length from Holder	Overall Length	Tool Holder	
			Tool #	Price
D2 (h6)	L4	L1		
.1875	.590	1.5	QSR-187-1.5	29.88
.1875	1.090	2.0	QSR-187-2.0	31.88
.2500	.853	2.0	QSR-250-2.0	33.98
.2500	1.353	2.5	QSR-250-2.5	36.98
.2500	1.853	3.0	QSR-250-3.0	39.88
.3125	.853	2.0	QSR-312-2.0	45.48
.3125	1.353	2.5	QSR-312-2.5	47.98
.3125	1.853	3.0	QSR-312-3.0	53.68
.3750	.853	2.0	QSR-375-2.0	57.58
.3750	1.353	2.5	QSR-375-2.5	59.68
.3750	1.853	3.0	QSR-375-3.0	63.98
.3750	2.353	3.5	QSR-375-3.5	65.78
.3750	2.853	4.0	QSR-375-4.0	72.98
.5000	1.040	2.5	QSR-500-2.5	80.48
.5000	1.540	3.0	QSR-500-3.0	84.68
.5000	2.040	3.5	QSR-500-3.5	88.08
.5000	2.540	4.0	QSR-500-4.0	92.58
.5000	3.040	4.5	QSR-500-4.5	97.68

See pgs 16-34 for quick change holder options

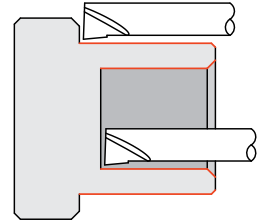


MBB / MBBM

Standard – Boring Tools
Right Hand – Sharp – Miniature



- Designed for facing and boring applications in bores .015" and larger
- Polished face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- On center neck design allows for static and live/rotating applications
- Sharp corner profile ■ Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Head Width		Rotational Minimum Bore Diameter	Maximum Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		AlTiN Coated	
H	decimal equiv.	DR	L2 +.010" -.000" +.25mm -.00mm	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.0135	.0135	.015	.050	.0015	.0075	.1250	1.5	MBB-015050	55.48	MBB-015050X	61.38
.0135	.0135	.015	.075	.0015	.0075	.1250	1.5	MBB-015075	55.48	MBB-015075X	61.38
.45 mm	.0177	0.5 mm	2 mm	.05 mm	.25 mm	3 mm	38 mm	MBBM-005020	44.38		
.0180	.0180	.020	.050	.0020	.0100	.1250	1.5	MBB-020050	55.48	MBB-020050X	61.38
.0180	.0180	.020	.075	.0020	.0100	.1250	1.5	MBB-020075	55.48	MBB-020075X	61.38
.0180	.0180	.020	.100	.0020	.0100	.1250	1.5	MBB-020100	55.48	MBB-020100X	61.38
.54 mm	.0213	0.6 mm	2.5 mm	.06 mm	.30 mm	3 mm	38 mm	MBBM-006025	44.38		
.0225	.0225	.025	.050	.0025	.0125	.1250	1.5	MBB-025050	48.88	MBB-025050X	54.88
.0225	.0225	.025	.075	.0025	.0125	.1250	1.5	MBB-025075	48.88	MBB-025075X	54.88
.0225	.0225	.025	.100	.0025	.0125	.1250	1.5	MBB-025100	48.88	MBB-025100X	54.78
.0225	.0225	.025	.125	.0025	.0125	.1250	1.5	MBB-025125	48.88	MBB-025125X	54.88
.63 mm	.0248	0.7 mm	3 mm	.07 mm	.35 mm	3 mm	38 mm	MBBM-007030	44.38		
.63 mm	.0248	0.7 mm	4 mm	.07 mm	.35 mm	3 mm	38 mm	MBBM-007040	44.38		
.0275	.0275	.030	.075	.0025	.0150	.1250	1.5	MBB-030075	48.88	MBB-030075X	54.88
.0275	.0275	.030	.100	.0025	.0150	.1250	1.5	MBB-030100	48.88	MBB-030100X	54.78
.0275	.0275	.030	.125	.0025	.0150	.1250	1.5	MBB-030125	48.88	MBB-030125X	54.88
.0275	.0275	.030	.150	.0025	.0150	.1250	1.5	MBB-030150	48.88	MBB-030150X	54.88
.72 mm	.0283	0.8 mm	3 mm	.08 mm	.40 mm	3 mm	38 mm	MBBM-008030	44.38		
.72 mm	.0283	0.8 mm	4 mm	.08 mm	.40 mm	3 mm	38 mm	MBBM-008040	44.38	MBBM-008040X	50.38
.0320	.0320	.035	.075	.0030	.0175	.1250	1.5	MBB-035075	48.88	MBB-035075X	54.88
.0320	.0320	.035	.100	.0030	.0175	.1250	1.5	MBB-035100	48.88	MBB-035100X	54.78
.0320	.0320	.035	.150	.0030	.0175	.1250	1.5	MBB-035150	48.88	MBB-035150X	54.78
.0320	.0320	.035	.200	.0030	.0175	.1250	1.5	MBB-035200	48.88	MBB-035200X	54.88
.81 mm	.0317	0.9 mm	4 mm	.09 mm	.45 mm	3 mm	38 mm	MBBM-009040	44.38		
.81 mm	.0317	0.9 mm	5 mm	.09 mm	0.45 mm	3 mm	38 mm	MBBM-009050	44.38		
.91 mm	.0357	1 mm	4 mm	.09 mm	0.50 mm	3 mm	38 mm	MBBM-010040	44.38		
.0365	.0365	.040	.100	.0035	.0200	.1250	1.5	MBB-040100	48.88	MBB-040100X	54.78
.0365	.0365	.040	.150	.0035	.0200	.1250	1.5	MBB-040150	48.88	MBB-040150X	54.78
.0365	.0365	.040	.200	.0035	.0200	.1250	1.5	MBB-040200	48.88	MBB-040200X	54.78

Continued on next page

See pgs 39-47 for standard tool holders
See pg 314 for tool set options



Standard – Boring Tools

MBB / MBBM

Right Hand – Sharp – Miniature (cont.)

Continued from previous page

Head Width		Rotational Minimum Bore Diameter	Maximum Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		AlTiN Coated	
H	decimal equiv.	DR	L2 +.010" -.000" +.25mm -.00mm	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.0405	.0405	.045	.100	.0045	.0225	.1250	1.5	MBB-045100	48.88	MBB-045100X	54.78
.0405	.0405	.045	.150	.0045	.0225	.1250	1.5	MBB-045150	48.88	MBB-045150X	54.78
.0405	.0405	.045	.200	.0045	.0225	.1250	1.5	MBB-045200	48.88	MBB-045200X	54.78
.0440	.0440	.050	.100	.0060	.0250	.1250	1.5	MBB-050100	48.88	MBB-050100X	54.88
.0440	.0440	.050	.150	.0060	.0250	.1250	1.5	MBB-050150	48.88	MBB-050150X	54.78
.0440	.0440	.050	.200	.0060	.0250	.1250	1.5	MBB-050200	48.88	MBB-050200X	54.88
.0440	.0440	.050	.300	.0060	.0250	.1250	1.5	MBB-050300	48.88	MBB-050300X	54.88
.0525	.0525	.060	.150	.0075	.0300	.1250	1.5	MBB-060150	48.88	MBB-060150X	54.78
.0525	.0525	.060	.200	.0075	.0300	.1250	1.5	MBB-060200	48.88	MBB-060200X	54.78
.0525	.0525	.060	.300	.0075	.0300	.1250	1.5	MBB-060300	48.88	MBB-060300X	54.88
.0525	.0525	.060	.400	.0075	.0300	.1250	1.5	MBB-060400	48.88	MBB-060400X	54.88
.0525	.0525	.060	.500	.0075	.0300	.1250	1.5	MBB-060500	48.88	MBB-060500X	54.88
.0625	.0625	.070	.150	.0075	.0350	.1250	1.5	MBB-070150	48.88	MBB-070150X	54.88
.0625	.0625	.070	.200	.0075	.0350	.1250	1.5	MBB-070200	48.88	MBB-070200X	54.78
.0625	.0625	.070	.300	.0075	.0350	.1250	1.5	MBB-070300	48.88	MBB-070300X	54.78
.0625	.0625	.070	.400	.0075	.0350	.1250	1.5	MBB-070400	48.88	MBB-070400X	54.88
.0625	.0625	.070	.500	.0075	.0350	.1250	1.5	MBB-070500	48.88	MBB-070500X	54.88
.0700	.0700	.080	.150	.0100	.0400	.1250	1.5	MBB-080150	48.88	MBB-080150X	54.78
.0700	.0700	.080	.200	.0100	.0400	.1250	1.5	MBB-080200	48.88	MBB-080200X	54.78
.0700	.0700	.080	.300	.0100	.0400	.1250	1.5	MBB-080300	48.88	MBB-080300X	54.88
.0700	.0700	.080	.500	.0100	.0400	.1250	1.5	MBB-080500	48.88	MBB-080500X	54.88
.0700	.0700	.080	.600	.0100	.0400	.1250	1.5	MBB-080600	48.88	MBB-080600X	54.88
.0800	.0800	.090	.200	.0100	.0450	.1250	1.5	MBB-090200	48.88	MBB-090200X	54.88
.0800	.0800	.090	.300	.0100	.0450	.1250	1.5	MBB-090300	48.88	MBB-090300X	54.78
.0800	.0800	.090	.500	.0100	.0450	.1250	1.5	MBB-090500	48.88	MBB-090500X	54.88
.0800	.0800	.090	.700	.0100	.0450	.1250	1.5	MBB-090700	48.88	MBB-090700X	54.88
.0875	.0875	.100	.200	.0125	.0500	.1250	1.5	MBB-100200	48.88	MBB-100200X	54.78
.0875	.0875	.100	.300	.0125	.0500	.1250	1.5	MBB-100300	48.88	MBB-100300X	54.78
.0875	.0875	.100	.500	.0125	.0500	.1250	1.5	MBB-100500	48.88	MBB-100500X	54.88
.0875	.0875	.100	.700	.0125	.0500	.1250	1.5	MBB-100700	48.88	MBB-100700X	54.88
.0875	.0875	.100	.800	.0125	.0500	.1250	2.0	MBB-100800	48.88	MBB-100800X	54.88

Standard – Boring Tools

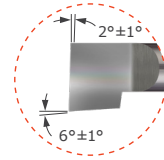
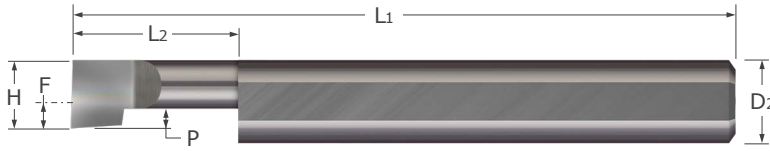
See pgs 39-47 for standard tool holders

See pg 314 for tool set options

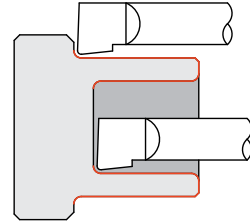


BBS / BBM

Standard – Boring Tools
Right Hand – Sharp



- Designed for facing and boring applications in bores .044" and larger
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- Coating options provide added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Head Width	Min. Bore Dia*	Max. Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
							Tool #	Price	Tool #	Price	Tool #	Price
H	decimal equiv.	L2	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	Tool #	Price
		+.050" -.000" +1.24mm -.00mm										
1 mm	.0394	1.12 mm 4 mm	.25 mm	-1 mm	4 mm	50 mm	BBM-040104	35.18	BBM-040104G	39.88	BBM-040104X	41.08
1 mm	.0394	1.12 mm 6 mm	.25 mm	-1 mm	4 mm	50 mm	BBM-040106	35.18	BBM-040106G	39.88	BBM-040106X	41.08
1 mm	.0394	1.12 mm 8 mm	.25 mm	-1 mm	4 mm	50 mm	BBM-040108	35.18	BBM-040108G	39.88	BBM-040108X	41.08
.050	.0500	.0550 .150	.012	-.0125	.1250	1.5	BB-050150S	35.88	BB-050150SG	40.28	BB-050150SX	41.18
.050	.0500	.0550 .200	.012	-.0125	.1250	1.5	BB-050200S	35.88	BB-050200SG	40.28	BB-050200SX	41.18
NEW	.050	.0550 .250	.012	-.0125	.1250	1.5	BB-050250S	35.88	BB-050250SG	40.08	BB-050250SX	41.58
.050	.0500	.0550 .300	.012	-.0125	.1250	1.5	BB-050300S	35.88	BB-050300SG	40.28	BB-050300SX	41.18
.050	.0500	.0550 .400	.012	-.0125	.1250	1.5	BB-050400S	35.88	BB-050400SG	40.28	BB-050400SX	41.18
.060	.0600	.0700 .150	.015	-.0025	.1250	1.5	BB-060150S	35.88	BB-060150SG	40.28	BB-060150SX	41.18
.060	.0600	.0700 .200	.015	-.0025	.1250	1.5	BB-060200S	35.88	BB-060200SG	40.28	BB-060200SX	41.18
NEW	.060	.0700 .250	.015	-.0025	.1250	1.5	BB-060250S	35.88	BB-060250SG	40.08	BB-060250SX	41.58
.060	.0600	.0700 .300	.015	-.0025	.1250	1.5	BB-060300S	35.88	BB-060300SG	40.28	BB-060300SX	41.18
.060	.0600	.0700 .400	.015	-.0025	.1250	1.5	BB-060400S	35.88	BB-060400SG	40.28	BB-060400SX	41.18
.060	.0600	.0700 .500	.015	-.0025	.1250	1.5	BB-060500S	35.88	BB-060500SG	40.28	BB-060500SX	41.18
.070	.0700	.0800 .150	.015	.0075	.1250	1.5	BB-070150S	35.88			BB-070150SX	41.18
.070	.0700	.0800 .200	.015	.0075	.1250	1.5	BB-070200S	35.88			BB-070200SX	41.18
.070	.0700	.0800 .300	.015	.0075	.1250	1.5	BB-070300S	35.88			BB-070300SX	41.18
2 mm	.0787	2.25 mm 4 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040204	35.18	BBM-040204G	39.88	BBM-040204X	41.08
2 mm	.0787	2.25 mm 6 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040206	35.18	BBM-040206G	39.88	BBM-040206X	41.08
2 mm	.0787	2.25 mm 8 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040208	35.18	BBM-040208G	39.88		
2 mm	.0787	2.25 mm 10 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040210	35.18			BBM-040210X	41.08
2 mm	.0787	2.25 mm 13 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040213	35.18	BBM-040213G	39.88	BBM-040213X	41.08
.080	.0800	.0900 .150	.020	.0175	.1250	1.5	BB-080150S	35.88	BB-080150SG	40.28	BB-080150SX	41.18
.080	.0800	.0900 .200	.020	.0175	.1250	1.5	BB-080200S	35.88	BB-080200SG	40.28	BB-080200SX	41.18
.080	.0800	.0900 .300	.020	.0175	.1250	1.5	BB-080300S	35.88	BB-080300SG	40.28	BB-080300SX	41.18
.080	.0800	.0900 .400	.020	.0175	.1250	1.5	BB-080400S	35.88	BB-080400SG	40.28	BB-080400SX	41.18
.080	.0800	.0900 .500	.020	.0175	.1250	1.5	BB-080500S	35.88	BB-080500SG	40.28	BB-080500SX	41.18
.080	.0800	.0900 .600	.020	.0175	.1250	1.5	BB-080600S	35.88	BB-080600SG	40.28	BB-080600SX	41.18

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Boring Tools

Right Hand – Sharp (cont.)

BBS / BBM

Continued from previous page

Head Width		Min. Bore Dia*	Max. Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
H	decimal equiv.	L2	+ .050" - .000" + 1.24mm - .00mm	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	Tool #	Price
.090	.0900	.1000	.150	.020	.0275	.1250	1.5	BB-090150S	35.88	BB-090150SG	41.78	BB-090150SX	41.88
.090	.0900	.1000	.200	.020	.0275	.1250	1.5	BB-090200S	35.88	BB-090200SG	41.78	BB-090200SX	41.88
.090	.0900	.1000	.300	.020	.0275	.1250	1.5	BB-090300S	35.88			BB-090300SX	41.18
.090	.0900	.1000	.400	.020	.0275	.1250	1.5	BB-090400S	35.88	BB-090400SG	41.78	BB-090400SX	41.88
.090	.0900	.1000	.500	.020	.0275	.1250	1.5	BB-090500S	35.88	BB-090500SG	41.78	BB-090500SX	41.88
.100	.1000	.1100	.150	.025	.0375	.1250	1.5	BB-100150S	35.88	BB-100150SG	40.28	BB-100150SX	41.18
.100	.1000	.1100	.200	.025	.0375	.1250	1.5	BB-100200S	35.88	BB-100200SG	40.28	BB-100200SX	41.18
.100	.1000	.1100	.300	.025	.0375	.1250	1.5	BB-100300S	35.88	BB-100300SG	40.28	BB-100300SX	41.18
.100	.1000	.1100	.400	.025	.0375	.1250	1.5	BB-100400S	35.88	BB-100400SG	40.28	BB-100400SX	41.18
.100	.1000	.1100	.500	.025	.0375	.1250	1.5	BB-100500S	35.88	BB-100500SG	40.28	BB-100500SX	41.18
.100	.1000	.1100	.600	.025	.0375	.1250	1.5	BB-100600S	35.88	BB-100600SG	40.28	BB-100600SX	41.18
.100	.1000	.1100	.700	.025	.0375	.1250	1.5	BB-100700S	35.88	BB-100700SG	40.28	BB-100700SX	41.18
.100	.1000	.1100	.800	.025	.0375	.1250	2.0	BB-100800S	37.18	BB-100800SG	41.58	BB-100800SX	43.28
.110	.1100	.1220	.150	.027	.0475	.1250	1.5	BB-110150S	35.88	BB-110150SG	40.28	BB-110150SX	41.18
.110	.1100	.1220	.200	.027	.0475	.1250	1.5	BB-110200S	35.88	BB-110200SG	40.28	BB-110200SX	41.18
.110	.1100	.1220	.300	.027	.0475	.1250	1.5	BB-110300S	35.88	BB-110300SG	40.28	BB-110300SX	41.18
.110	.1100	.1220	.400	.027	.0475	.1250	1.5	BB-110400S	35.88	BB-110400SG	40.28	BB-110400SX	41.18
.110	.1100	.1220	.500	.027	.0475	.1250	1.5	BB-110500S	35.88	BB-110500SG	40.28	BB-110500SX	41.18
.110	.1100	.1220	.600	.027	.0475	.1250	1.5	BB-110600S	35.88	BB-110600SG	40.28	BB-110600SX	41.18
.110	.1100	.1220	.700	.027	.0475	.1250	1.5	BB-110700S	35.88	BB-110700SG	40.28	BB-110700SX	41.18
3 mm	.1181	3.3 mm	8 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040308	35.18			BBM-040308X	41.08
3 mm	.1181	3.3 mm	10 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040310	35.18	BBM-040310G	39.88		
3 mm	.1181	3.3 mm	13 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040313	35.18	BBM-040313G	39.88	BBM-040313X	41.08
3 mm	.1181	3.3 mm	15 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040315	35.18	BBM-040315G	39.88	BBM-040315X	41.08
3 mm	.1181	3.3 mm	20 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040320	35.18	BBM-040320G	39.88	BBM-040320X	41.08
.120	.1200	.1320	.250	.030	.0263	.1875	2.0	BB-120250S	38.28	BB-120250SG	43.08	BB-120250SX	44.38
.120	.1200	.1320	.350	.030	.0263	.1875	2.0	BB-120350S	38.28	BB-120350SG	43.08	BB-120350SX	44.38
.120	.1200	.1320	.500	.030	.0263	.1875	2.0	BB-120500S	38.28	BB-120500SG	43.08	BB-120500SX	44.38
.120	.1200	.1320	.600	.030	.0263	.1875	2.0	BB-120600S	38.28	BB-120600SG	43.08	BB-120600SX	44.38
.120	.1200	.1320	.700	.030	.0263	.1875	2.0	BB-120700S	38.28	BB-120700SG	43.08	BB-120700SX	44.38
.120	.1200	.1320	.800	.030	.0263	.1875	2.0	BB-120800S	38.28	BB-120800SG	43.08	BB-120800SX	44.38
.120	.1200	.1320	1.000	.030	.0263	.1875	2.0	BB-1201000S	38.28	BB-1201000SG	43.18	BB-1201000SX	45.28
.140	.1400	.1520	.250	.035	.0463	.1875	2.0	BB-140250S	38.28	BB-140250SG	43.08	BB-140250SX	44.38
.140	.1400	.1520	.400	.035	.0463	.1875	2.0	BB-140400S	38.28	BB-140400SG	43.08	BB-140400SX	44.38
.140	.1400	.1520	.500	.035	.0463	.1875	2.0	BB-140500S	38.28	BB-140500SG	43.08	BB-140500SX	44.38
.140	.1400	.1520	.600	.035	.0463	.1875	2.0	BB-140600S	38.28	BB-140600SG	43.08	BB-140600SX	44.38
.140	.1400	.1520	.700	.035	.0463	.1875	2.0	BB-140700S	38.28			BB-140700SX	44.38
.140	.1400	.1520	.750	.035	.0463	.1875	2.0	BB-140750S	38.28	BB-140750SG	43.08	BB-140750SX	44.38
.140	.1400	.1520	.800	.035	.0463	.1875	2.0	BB-140800S	38.28	BB-140800SG	43.08	BB-140800SX	44.38
.140	.1400	.1520	.900	.035	.0463	.1875	2.0	BB-140900S	38.28	BB-140900SG	44.98	BB-140900SX	45.08
4 mm	.1575	4.4 mm	8 mm	1 mm	2 mm	4 mm	50 mm	BBM-040408	35.18			BBM-040408X	41.08
4 mm	.1575	4.4 mm	10 mm	1 mm	2 mm	4 mm	50 mm	BBM-040410	35.18	BBM-040410G	39.88	BBM-040410X	41.08
4 mm	.1575	4.4 mm	15 mm	1 mm	2 mm	4 mm	50 mm	BBM-040415	35.18	BBM-040415G	39.88	BBM-040415X	41.08
4 mm	.1575	4.4 mm	20 mm	1 mm	2 mm	4 mm	50 mm	BBM-040420	35.18	BBM-040420G	39.88		
4 mm	.1575	4.4 mm	25 mm	1 mm	2 mm	4 mm	50 mm	BBM-040425	35.18			BBM-040425X	41.08

NEW

NEW

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

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See pgs 39-47 for standard tool holders



Standard – Boring Tools

BBS / BBM

Standard – Boring Tools
Right Hand – Sharp (cont.)

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Head Width		Min. Bore Dia*	Max. Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
H	decimal equiv.	L ₂	L ₂	P	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price	Tool #	Price
.160	.1600	.1760	.250	.040	.0663	.1875	2.0	BB-160250S	38.28	BB-160250SG	43.08	BB-160250SX	44.38
.160	.1600	.1760	.400	.040	.0663	.1875	2.0	BB-160400S	38.28	BB-160400SG	43.08	BB-160400SX	44.38
.160	.1600	.1760	.500	.040	.0663	.1875	2.0	BB-160500S	38.28	BB-160500SG	43.08	BB-160500SX	44.38
.160	.1600	.1760	.600	.040	.0663	.1875	2.0	BB-160600S	38.28	BB-160600SG	43.08	BB-160600SX	44.38
.160	.1600	.1760	.750	.040	.0663	.1875	2.0	BB-160750S	38.28	BB-160750SG	43.08	BB-160750SX	44.38
.160	.1600	.1760	.900	.040	.0663	.1875	2.0	BB-160900S	38.28	BB-160900SG	43.08	BB-160900SX	44.38
.160	.1600	.1760	1.000	.040	.0663	.1875	2.0	BB-1601000S	38.28	BB-1601000SG	43.08	BB-1601000SX	44.38
NEW	.160	.1600	1.250	.040	.0663	.1875	2.5	BB-1601250S	39.68	BB-1601250SG	44.58	BB-1601250SX	46.58
.180	.1800	.1960	.350	.045	.0550	.2500	2.5	BB-180350S	41.28	BB-180350SG	48.18	BB-180350SX	49.98
.180	.1800	.1960	.500	.045	.0550	.2500	2.5	BB-180500S	41.28	BB-180500SG	48.18	BB-180500SX	49.98
.180	.1800	.1960	.600	.045	.0550	.2500	2.5	BB-180600S	41.28	BB-180600SG	48.18	BB-180600SX	49.98
.180	.1800	.1960	.750	.045	.0550	.2500	2.5	BB-180750S	41.28	BB-180750SG	48.18	BB-180750SX	49.98
.180	.1800	.1960	.900	.045	.0550	.2500	2.5	BB-180900S	41.28	BB-180900SG	48.18	BB-180900SX	49.98
.180	.1800	.1960	1.000	.045	.0550	.2500	2.5	BB-1801000S	41.28	BB-1801000SG	48.18	BB-1801000SX	49.98
.180	.1800	.1960	1.100	.045	.0550	.2500	2.5	BB-1801100S	41.28	BB-1801100SG	48.18	BB-1801100SX	49.98
.180	.1800	.1960	1.250	.045	.0550	.2500	2.5	BB-1801250S	41.28	BB-1801250SG	48.18	BB-1801250SX	49.98
.180	.1800	.1960	1.500	.045	.0550	.2500	2.5	BB-1801500S	41.28	BB-1801500SG	48.18	BB-1801500SX	49.98
5 mm	.1969	5.4 mm	10 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060510	39.38	BBM-060510G	46.08		
5 mm	.1969	5.4 mm	15 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060515	39.38	BBM-060515G	46.08		
5 mm	.1969	5.4 mm	20 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060520	39.38	BBM-060520G	46.08	BBM-060520X	47.98
5 mm	.1969	5.4 mm	25 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060525	39.38				
5 mm	.1969	5.4 mm	28 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060528	39.38	BBM-060528G	46.08	BBM-060528X	47.98
.200	.2000	.2160	.400	.050	.0750	.2500	2.5	BB-200400S	41.28	BB-200400SG	48.18	BB-200400SX	49.98
.200	.2000	.2160	.500	.050	.0750	.2500	2.5	BB-200500S	41.28	BB-200500SG	48.18	BB-200500SX	49.98
.200	.2000	.2160	.600	.050	.0750	.2500	2.5	BB-200600S	41.28	BB-200600SG	48.18	BB-200600SX	49.98
.200	.2000	.2160	.700	.050	.0750	.2500	2.5	BB-200700S	41.28	BB-200700SG	48.18	BB-200700SX	49.98
.200	.2000	.2160	.800	.050	.0750	.2500	2.5	BB-200800S	41.28	BB-200800SG	48.18	BB-200800SX	49.98
.200	.2000	.2160	.900	.050	.0750	.2500	2.5	BB-200900S	41.28	BB-200900SG	48.18	BB-200900SX	49.98
.200	.2000	.2160	1.000	.050	.0750	.2500	2.5	BB-2001000S	41.28	BB-2001000SG	48.18	BB-2001000SX	49.98
.200	.2000	.2160	1.100	.050	.0750	.2500	2.5	BB-2001100S	41.28			BB-2001100SX	49.98
.200	.2000	.2160	1.200	.050	.0750	.2500	2.5	BB-2001200S	41.28				
.200	.2000	.2160	1.300	.050	.0750	.2500	2.5	BB-2001300S	41.28			BB-2001300SX	49.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

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Standard – Boring Tools

See pgs 39-47 for standard tool holders



Standard – Boring Tools

BBS / BBM

Right Hand – Sharp (cont.)

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Head Width		Min. Bore Dia*	Max. Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TIN Coated		AITIN Coated	
H	decimal equiv.	L ₂	+ .050" - .000" + 1.24mm - .00mm	P	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price	Tool #	Price
.230	.2300	.2500	.400	.057	.0738	.3125	2.5	BB-230400S	56.68	BB-230400SG	66.68	BB-230400SX	66.98
.230	.2300	.2500	.500	.057	.0738	.3125	2.5	BB-230500S	56.68	BB-230500SG	66.68	BB-230500SX	66.98
.230	.2300	.2500	.600	.057	.0738	.3125	2.5	BB-230600S	56.68	BB-230600SG	66.68	BB-230600SX	66.98
.230	.2300	.2500	.700	.057	.0738	.3125	2.5	BB-230700S	56.68	BB-230700SG	66.68	BB-230700SX	66.98
.230	.2300	.2500	.800	.057	.0738	.3125	2.5	BB-230800S	56.68	BB-230800SG	66.68	BB-230800SX	66.98
.230	.2300	.2500	.900	.057	.0738	.3125	2.5	BB-230900S	56.68	BB-230900SG	66.68	BB-230900SX	66.98
.230	.2300	.2500	1.000	.057	.0738	.3125	2.5	BB-2301000S	56.68	BB-2301000SG	66.68	BB-2301000SX	66.98
.230	.2300	.2500	1.100	.057	.0738	.3125	2.5	BB-2301100S	56.68	BB-2301100SG	66.68	BB-2301100SX	66.98
.230	.2300	.2500	1.150	.057	.0738	.3125	2.5	BB-2301150S	56.68	BB-2301150SG	66.68	BB-2301150SX	66.98
.230	.2300	.2500	1.200	.057	.0738	.3125	2.5	BB-2301200S	56.68	BB-2301200SG	66.68	BB-2301200SX	66.98
.230	.2300	.2500	1.250	.057	.0738	.3125	2.5	BB-2301250S	56.68	BB-2301250SG	66.68	BB-2301250SX	66.98
.230	.2300	.2500	1.400	.057	.0738	.3125	2.5	BB-2301400S	56.68	BB-2301400SG	66.68	BB-2301400SX	66.98
.230	.2300	.2500	1.500	.057	.0738	.3125	2.5	BB-2301500S	56.68	BB-2301500SG	66.68	BB-2301500SX	66.98
.230	.2300	.2500	1.600	.057	.0738	.3125	2.5	BB-2301600S	56.68	BB-2301600SG	66.68	BB-2301600SX	66.98
6 mm	.2362	6.5 mm	10 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060610	39.38	BBM-060610G	46.08		
6 mm	.2362	6.5 mm	15 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060615	39.38	BBM-060615G	46.08		
6 mm	.2362	6.5 mm	20 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060620	39.38			BBM-060620X	47.98
6 mm	.2362	6.5 mm	25 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060625	39.38	BBM-060625G	46.08	BBM-060625X	47.98
6 mm	.2362	6.5 mm	30 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060630	39.38	BBM-060630G	46.08		
6 mm	.2362	6.5 mm	35 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060635	39.38	BBM-060635G	46.08		
6 mm	.2362	6.5 mm	38 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060638	39.38	BBM-060638G	46.08	BBM-060638X	47.98
.260	.2600	.2800	.500	.065	.1038	.3125	2.5	BB-260500S	56.68	BB-260500SG	66.78	BB-260500SX	66.98
.260	.2600	.2800	.750	.065	.1038	.3125	2.5	BB-260750S	56.68	BB-260750SG	66.78	BB-260750SX	66.98
.260	.2600	.2800	1.000	.065	.1038	.3125	2.5	BB-2601000S	56.68	BB-2601000SG	66.78	BB-2601000SX	66.98
.260	.2600	.2800	1.250	.065	.1038	.3125	2.5	BB-2601250S	56.68	BB-2601250SG	66.78	BB-2601250SX	66.98
7 mm	.2755	7.5 mm	15 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080715	53.68	BBM-080715G	63.48	BBM-080715X	65.88
7 mm	.2755	7.5 mm	20 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080720	53.68				
7 mm	.2755	7.5 mm	25 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080725	53.68				
7 mm	.2755	7.5 mm	32 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080732	53.68	BBM-080732G	63.48		
7 mm	.2755	7.5 mm	38 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080738	53.68	BBM-080738G	63.48		
7 mm	.2755	7.5 mm	46 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080746	53.68	BBM-080746G	63.48	BBM-080746X	65.88
.290	.2900	.3100	.500	.072	.1338	.3125	2.5	BB-290500S	56.68	BB-290500SG	66.68	BB-290500SX	66.98
.290	.2900	.3100	.600	.072	.1338	.3125	2.5	BB-290600S	56.68	BB-290600SG	66.68	BB-290600SX	66.98
.290	.2900	.3100	.750	.072	.1338	.3125	2.5	BB-290750S	56.68	BB-290750SG	66.68	BB-290750SX	66.98
.290	.2900	.3100	.900	.072	.1338	.3125	2.5	BB-290900S	56.68	BB-290900SG	66.68	BB-290900SX	66.98
.290	.2900	.3100	1.000	.072	.1338	.3125	2.5	BB-2901000S	56.68	BB-2901000SG	66.68	BB-2901000SX	66.98
.290	.2900	.3100	1.100	.072	.1338	.3125	2.5	BB-2901100S	56.68	BB-2901100SG	66.68	BB-2901100SX	66.98
.290	.2900	.3100	1.250	.072	.1338	.3125	2.5	BB-2901250S	56.68	BB-2901250SG	66.68	BB-2901250SX	66.98
.290	.2900	.3100	1.350	.072	.1338	.3125	2.5	BB-2901350S	56.68	BB-2901350SG	66.68		
.290	.2900	.3100	1.500	.072	.1338	.3125	2.5	BB-2901500S	56.68	BB-2901500SG	66.68	BB-2901500SX	66.98
.290	.2900	.3100	1.600	.072	.1338	.3125	2.5	BB-2901600S	56.68	BB-2901600SG	66.68	BB-2901600SX	66.98
.290	.2900	.3100	1.750	.072	.1338	.3125	2.5	BB-2901750S	56.68	BB-2901750SG	66.68	BB-2901750SX	66.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

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See pgs 39-47 for standard tool holders



Standard – Boring Tools

BBS / BBM

Standard – Boring Tools
Right Hand – Sharp (cont.)

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Head Width		Min. Bore Dia*	Max. Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TIN Coated		AITIN Coated	
H	decimal equiv.	L2	P	F	D2 (h6)	L1		Tool #	Price	Tool #	Price	Tool #	Price
8 mm	.3150	8.5 mm	13 mm	2 mm	4 mm	8 mm	63 mm	BBM-080813	53.68	BBM-080813G	63.48	BBM-080813X	65.88
8 mm	.3150	8.5 mm	20 mm	2 mm	4 mm	8 mm	63 mm	BBM-080820	53.68	BBM-080820G	63.48		
8 mm	.3150	8.5 mm	25 mm	2 mm	4 mm	8 mm	63 mm	BBM-080825	53.68	BBM-080825G	63.48	BBM-080825X	65.88
8 mm	.3150	8.5 mm	32 mm	2 mm	4 mm	8 mm	63 mm	BBM-080832	53.68	BBM-080832G	63.48		
8 mm	.3150	8.5 mm	38 mm	2 mm	4 mm	8 mm	63 mm	BBM-080838	53.68	BBM-080838G	63.48	BBM-080838X	65.88
8 mm	.3150	8.5 mm	46 mm	2 mm	4 mm	8 mm	63 mm	BBM-080846	53.68	BBM-080846G	63.48		
8 mm	.3150	8.5 mm	50 mm	2 mm	4 mm	8 mm	63 mm	BBM-080850	53.68	BBM-080850G	63.48		
.320	.3200	.3400	.500	.080	.1325	.3750	2.5	BB-320500S	77.88	BB-320500SG	88.68	BB-320500SX	90.08
.320	.3200	.3400	.600	.080	.1325	.3750	2.5	BB-320600S	77.88	BB-320600SG	88.68	BB-320600SX	90.08
.320	.3200	.3400	.750	.080	.1325	.3750	2.5	BB-320750S	77.88	BB-320750SG	88.68	BB-320750SX	90.08
.320	.3200	.3400	.900	.080	.1325	.3750	2.5	BB-320900S	77.88				
.320	.3200	.3400	1.000	.080	.1325	.3750	2.5	BB-3201000S	77.88	BB-3201000SG	88.68	BB-3201000SX	90.08
.320	.3200	.3400	1.100	.080	.1325	.3750	2.5	BB-3201100S	77.88	BB-3201100SG	88.68		
.320	.3200	.3400	1.250	.080	.1325	.3750	2.5	BB-3201250S	77.88	BB-3201250SG	88.68	BB-3201250SX	90.08
.320	.3200	.3400	1.500	.080	.1325	.3750	2.5	BB-3201500S	77.88	BB-3201500SG	88.68	BB-3201500SX	90.08
.320	.3200	.3400	1.600	.080	.1325	.3750	2.5	BB-3201600S	77.88	BB-3201600SG	88.68	BB-3201600SX	90.08
.320	.3200	.3400	1.800	.080	.1325	.3750	2.5	BB-3201800S	77.88	BB-3201800SG	88.68	BB-3201800SX	90.08
.320	.3200	.3400	2.000	.080	.1325	.3750	4.0	BB-3202000S	100.08	BB-3202000SG	112.98	BB-3202000SX	113.28
.320	.3200	.3400	2.500	.080	.1325	.3750	4.0	BB-3202500S	100.08	BB-3202500SG	112.98	BB-3202500SX	113.28
.320	.3200	.3400	3.000	.080	.1325	.3750	4.0	BB-3203000S	100.08			BB-3203000SX	113.28
9 mm	.3543	9.5 mm	25 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100925	81.28	BBM-100925G	92.38		
9 mm	.3543	9.5 mm	32 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100932	81.28	BBM-100932G	92.38		
9 mm	.3543	9.5 mm	38 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100938	81.28	BBM-100938G	92.38		
9 mm	.3543	9.5 mm	46 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100946	81.28	BBM-100946G	92.38		
9 mm	.3543	9.5 mm	50 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100950	81.28				
.360	.3600	.3800	.500	.090	.1725	.3750	2.5	BB-360500S	77.88	BB-360500SG	88.68	BB-360500SX	90.08
.360	.3600	.3800	.600	.090	.1725	.3750	2.5	BB-360600S	77.88	BB-360600SG	88.68	BB-360600SX	90.08
.360	.3600	.3800	.750	.090	.1725	.3750	2.5	BB-360750S	77.88	BB-360750SG	88.68	BB-360750SX	90.08
.360	.3600	.3800	.900	.090	.1725	.3750	2.5	BB-360900S	77.88	BB-360900SG	88.68	BB-360900SX	90.08
.360	.3600	.3800	1.000	.090	.1725	.3750	2.5	BB-3601000S	77.88	BB-3601000SG	88.68	BB-3601000SX	90.08
.360	.3600	.3800	1.150	.090	.1725	.3750	2.5	BB-3601150S	77.88	BB-3601150SG	88.68	BB-3601150SX	90.08
.360	.3600	.3800	1.250	.090	.1725	.3750	2.5	BB-3601250S	77.88	BB-3601250SG	88.68	BB-3601250SX	90.08
.360	.3600	.3800	1.500	.090	.1725	.3750	2.5	BB-3601500S	77.88	BB-3601500SG	88.68	BB-3601500SX	90.08
.360	.3600	.3800	1.600	.090	.1725	.3750	2.5	BB-3601600S	77.88	BB-3601600SG	88.68	BB-3601600SX	90.08
.360	.3600	.3800	1.800	.090	.1725	.3750	2.5	BB-3601800S	77.88	BB-3601800SG	88.68	BB-3601800SX	90.08
.360	.3600	.3800	2.000	.090	.1725	.3750	4.0	BB-3602000S	100.08	BB-3602000SG	112.98	BB-3602000SX	113.28
.360	.3600	.3800	2.500	.090	.1725	.3750	4.0	BB-3602500S	100.08	BB-3602500SG	112.98		
.360	.3600	.3800	3.000	.090	.1725	.3750	4.0	BB-3603000S	100.08			BB-3603000SX	113.28
10 mm	.3937	10.5 mm	15 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101015	81.28	BBM-101015G	92.38		
10 mm	.3937	10.5 mm	20 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101020	81.28	BBM-101020G	92.38		
10 mm	.3937	10.5 mm	25 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101025	81.28	BBM-101025G	92.38		
10 mm	.3937	10.5 mm	32 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101032	81.28	BBM-101032G	92.38		
10 mm	.3937	10.5 mm	38 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101038	81.28	BBM-101038G	92.38		
10 mm	.3937	10.5 mm	50 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101050	81.28	BBM-101050G	92.38	BBM-101050X	95.18

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Boring Tools
Right Hand – Sharp (cont.)

BBS / BBM

Continued from previous page

Head Width	Min. Bore Dia*	Max. Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
							Tool #	Price	Tool #	Price	Tool #	Price
H	decimal equiv.	L2	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	Tool #	Price
		+ .050" - .000"										
		+1.24mm -.00mm										
11 mm	.4331	11.5 mm	15 mm	2.75 mm	5 mm	12 mm 83 mm	BBM-121115	102.48				
11 mm	.4331	11.5 mm	38 mm	2.75 mm	5 mm	12 mm 83 mm	BBM-121138	102.48				
11 mm	.4331	11.5 mm	50 mm	2.75 mm	5 mm	12 mm 83 mm	BBM-121150	102.48	BBM-121150G	117.68		
12 mm	.4724	12.5 mm	20 mm	3 mm	6 mm	12 mm 83 mm	BBM-121220	102.48				
12 mm	.4724	12.5 mm	32 mm	3 mm	6 mm	12 mm 83 mm	BBM-121232	102.48	BBM-121232G	117.68		
12 mm	.4724	12.5 mm	46 mm	3 mm	6 mm	12 mm 83 mm	BBM-121246	102.48	BBM-121246G	117.68		
12 mm	.4724	12.5 mm	60 mm	3 mm	6 mm	12 mm 83 mm	BBM-121260	102.48	BBM-121260G	117.68		
.490	.4900	.5100	.750	.122	.2400	.5000 3.0	BB-490750S	109.28	BB-490750SG	122.68	BB-490750SX	125.98
.490	.4900	.5100	1.000	.122	.2400	.5000 3.0	BB-4901000S	109.28			BB-4901000SX	125.98
.490	.4900	.5100	1.250	.122	.2400	.5000 3.0	BB-4901250S	109.28			BB-4901250SX	125.98
.490	.4900	.5100	1.500	.122	.2400	.5000 3.0	BB-4901500S	109.28			BB-4901500SX	125.98
.490	.4900	.5100	2.000	.122	.2400	.5000 4.0	BB-4902000S	119.88	BB-4902000SG	135.78	BB-4902000SX	137.88
.490	.4900	.5100	2.500	.122	.2400	.5000 4.0	BB-4902500S	119.88	BB-4902500SG	135.78	BB-4902500SX	137.88
.490	.4900	.5100	2.750	.122	.2400	.5000 4.0	BB-4902750S	119.88	BB-4902750SG	135.78	BB-4902750SX	137.88
.490	.4900	.5100	3.000	.122	.2400	.5000 6.0	BB-4903000S	151.28				
.490	.4900	.5100	3.500	.122	.2400	.5000 6.0	BB-4903500S	151.28			BB-4903500SX	172.08
.490	.4900	.5100	4.000	.122	.2400	.5000 6.0	BB-4904000S	151.28			BB-4904000SX	172.08
.490	.4900	.5100	4.500	.122	.2400	.5000 6.0	BB-4904500S	151.28				

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Boring Tools

Technical Resources on Micro100.com

Find Simulation Files, Speeds & Feeds, Torque Recommendations, Programs, Blogs, and more at micro100.com/resources

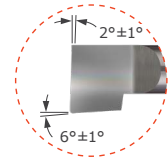
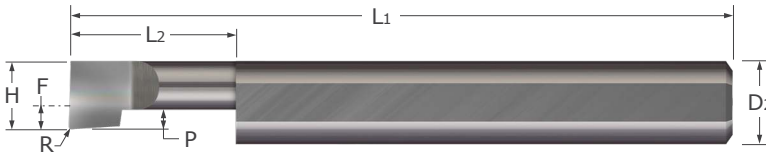


See pgs 39-47 for standard tool holders

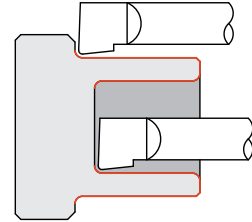


BB

Standard - Boring Tools
Right Hand



- Designed for facing and boring applications in bores .055" and larger
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Corner radius profile
- Lockdown flat automatically locates tool on center
- Coating options provide added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



NEW

NEW

NEW

Head Width	Minimum Bore Dia.*	Max. Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
H	L2	$^{+.050"}_{-.000"}$	$^{+.003"}_{-.000"}$	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	Tool #	Price
.050	.055	.150	.003	.012	-.0125	.1250	1.5	BB-050150	38.18	BB-050150G	42.58	BB-050150X	43.58
.050	.055	.200	.003	.012	-.0125	.1250	1.5	BB-050200	38.18	BB-050200G	42.58	BB-050200X	43.58
.050	.055	.250	.003	.012	-.0125	.1250	1.5	BB3-050250	38.18	BB3-050250G	42.38	BB3-050250X	43.88
.050	.055	.300	.003	.012	-.0125	.1250	1.5	BB-050300	38.18	BB-050300G	42.58	BB-050300X	43.58
.050	.055	.400	.003	.012	-.0125	.1250	1.5	BB-050400	38.18	BB-050400G	42.58	BB-050400X	43.58
.060	.070	.150	.003	.015	-.0025	.1250	1.5	BB-060150	38.18	BB-060150G	42.58	BB-060150X	43.58
.060	.070	.200	.003	.015	-.0025	.1250	1.5	BB-060200	38.18	BB-060200G	42.58	BB-060200X	43.58
.060	.070	.250	.003	.015	-.0025	.1250	1.5	BB3-060250	38.18	BB3-060250G	42.38	BB3-060250X	43.88
.060	.070	.300	.003	.015	-.0025	.1250	1.5	BB-060300	38.18	BB-060300G	42.58	BB-060300X	43.58
.060	.070	.400	.003	.015	-.0025	.1250	1.5	BB-060400	38.18	BB-060400G	42.58	BB-060400X	43.58
.060	.070	.500	.003	.015	-.0025	.1250	1.5	BB-060500	38.18	BB-060500G	42.58	BB-060500X	43.58
.070	.080	.150	.003	.015	.0075	.1250	1.5	BB-070150	38.18			BB-070150X	43.58
.070	.080	.200	.003	.015	.0075	.1250	1.5	BB-070200	38.18			BB-070200X	43.58
.070	.080	.300	.003	.015	.0075	.1250	1.5	BB-070300	38.18			BB-070300X	43.58
.080	.090	.150	.003	.020	.0175	.1250	1.5	BB-080150	38.18	BB-080150G	42.58	BB-080150X	43.58
.080	.090	.200	.003	.020	.0175	.1250	1.5	BB-080200	38.18	BB-080200G	42.58	BB-080200X	43.58
.080	.090	.300	.003	.020	.0175	.1250	1.5	BB-080300	38.18	BB-080300G	42.58	BB-080300X	43.58
.080	.090	.400	.003	.020	.0175	.1250	1.5	BB-080400	38.18	BB-080400G	42.58	BB-080400X	43.58
.080	.090	.500	.003	.020	.0175	.1250	1.5	BB-080500	38.18	BB-080500G	42.58	BB-080500X	43.58
.080	.090	.600	.003	.020	.0175	.1250	1.5	BB-080600	38.18	BB-080600G	42.58	BB-080600X	43.58
.090	.100	.150	.003	.020	.0275	.1250	1.5	BB3-090150	38.18	BB3-090150G	44.08	BB3-090150X	44.18
.090	.100	.200	.003	.020	.0275	.1250	1.5	BB3-090200	38.18	BB3-090200G	44.08	BB3-090200X	44.18
.090	.100	.300	.003	.020	.0275	.1250	1.5	BB-090300	38.18			BB-090300X	43.58
.090	.100	.400	.003	.020	.0275	.1250	1.5	BB3-090400	38.18	BB3-090400G	44.08	BB3-090400X	44.18
.090	.100	.500	.003	.020	.0275	.1250	1.5	BB3-090500	38.18	BB3-090500G	44.08	BB3-090500X	44.18
.100	.110	.150	.003	.025	.0375	.1250	1.5	BB-100150	38.18	BB-100150G	42.58	BB-100150X	43.58
.100	.110	.200	.003	.025	.0375	.1250	1.5	BB-100200	38.18	BB-100200G	42.58	BB-100200X	43.58
.100	.110	.300	.003	.025	.0375	.1250	1.5	BB-100300	38.18	BB-100300G	42.58	BB-100300X	43.58
.100	.110	.400	.003	.025	.0375	.1250	1.5	BB-100400	38.18	BB-100400G	42.58	BB-100400X	43.58
.100	.110	.500	.003	.025	.0375	.1250	1.5	BB-100500	38.18	BB-100500G	42.58	BB-100500X	43.58
.100	.110	.600	.003	.025	.0375	.1250	1.5	BB-100600	38.18	BB-100600G	42.58	BB-100600X	43.58
.100	.110	.700	.003	.025	.0375	.1250	1.5	BB-100700	38.18	BB-100700G	42.58	BB-100700X	43.58
.100	.110	.800	.003	.025	.0375	.1250	2.0	BB3-100800	40.08	BB3-100800G	44.38	BB3-100800X	46.18

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders

Standard - Boring Tools



Standard - Boring Tools

BB

Right Hand (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Max. Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TIN Coated		AITIN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
H	L2	$\begin{matrix} +.050'' \\ -.000'' \end{matrix}$	$\begin{matrix} R +.003'' \\ -.000'' \end{matrix}$	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	Tool #	Price
.110	.122	.150	.003	.027	.0475	.1250	1.5	BB-110150	38.18	BB-110150G	42.58	BB-110150X	43.58
.110	.122	.200	.003	.027	.0475	.1250	1.5	BB-110200	38.18	BB-110200G	42.58	BB-110200X	43.58
.110	.122	.300	.003	.027	.0475	.1250	1.5	BB-110300	38.18	BB-110300G	42.58	BB-110300X	43.58
.110	.122	.400	.003	.027	.0475	.1250	1.5	BB-110400	38.18	BB-110400G	42.58	BB-110400X	43.58
.110	.122	.500	.003	.027	.0475	.1250	1.5	BB-110500	38.18	BB-110500G	42.58	BB-110500X	43.58
.110	.122	.600	.003	.027	.0475	.1250	1.5	BB-110600	38.18	BB-110600G	42.58	BB-110600X	43.58
.110	.122	.700	.003	.027	.0475	.1250	1.5	BB-110700	38.18	BB-110700G	42.58	BB-110700X	43.58
.110	.122	.800	.003	.027	.0475	.1250	2.0	BB3-110800	40.08	BB3-110800G	44.38	BB3-110800X	46.18

NEW

Standard - Boring Tools

H	L2	$\begin{matrix} +.050'' \\ -.000'' \end{matrix}$	$\begin{matrix} R +.002'' \\ -.000'' \end{matrix}$	P	F	D2 (h6)	L1	Uncoated		TIN Coated		AITIN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
.120	.132	.250	.003	.030	.0263	.1875	2.0	BB3-120250	40.48	BB3-120250G	47.18	BB3-120250X	47.28
.120	.132	.250	.006	.030	.0263	.1875	2.0	BB-120250	40.48	BB-120250G	45.48	BB-120250X	46.68
.120	.132	.350	.003	.030	.0263	.1875	2.0	BB3-120350	40.48	BB3-120350G	47.18	BB3-120350X	47.28
.120	.132	.350	.006	.030	.0263	.1875	2.0	BB-120350	40.48	BB-120350G	45.48	BB-120350X	46.68
.120	.132	.500	.003	.030	.0263	.1875	2.0	BB3-120500	40.48	BB3-120500G	47.18	BB3-120500X	47.28
.120	.132	.500	.006	.030	.0263	.1875	2.0	BB-120500	40.48	BB-120500G	45.48	BB-120500X	46.68
.120	.132	.600	.003	.030	.0263	.1875	2.0	BB3-120600	40.48	BB3-120600G	47.18	BB3-120600X	47.28
.120	.132	.600	.006	.030	.0263	.1875	2.0	BB-120600	40.48	BB-120600G	45.48	BB-120600X	46.68
.120	.132	.700	.003	.030	.0263	.1875	2.0	BB3-120700	40.48	BB3-120700G	47.18	BB3-120700X	47.28
.120	.132	.700	.006	.030	.0263	.1875	2.0	BB-120700	40.48	BB-120700G	45.48	BB-120700X	46.68
.120	.132	.800	.003	.030	.0263	.1875	2.0	BB3-120800	40.48	BB3-120800G	47.18	BB3-120800X	47.28
.120	.132	.800	.006	.030	.0263	.1875	2.0	BB-120800	40.48	BB-120800G	45.48	BB-120800X	46.68
.140	.152	.250	.003	.035	.0463	.1875	2.0	BB3-140250	40.48	BB3-140250G	47.18	BB3-140250X	47.28
.140	.152	.250	.006	.035	.0463	.1875	2.0	BB-140250	40.48	BB-140250G	45.48	BB-140250X	46.68
.140	.152	.400	.003	.035	.0463	.1875	2.0	BB3-140400	40.48	BB3-140400G	47.18	BB3-140400X	47.28
.140	.152	.400	.006	.035	.0463	.1875	2.0	BB-140400	40.48	BB-140400G	45.48	BB-140400X	46.68
.140	.152	.500	.003	.035	.0463	.1875	2.0	BB3-140500	40.48	BB3-140500G	47.18	BB3-140500X	47.28
.140	.152	.500	.006	.035	.0463	.1875	2.0	BB-140500	40.48	BB-140500G	45.48	BB-140500X	46.68
.140	.152	.600	.003	.035	.0463	.1875	2.0	BB3-140600	40.48	BB3-140600G	47.18	BB3-140600X	47.28
.140	.152	.600	.006	.035	.0463	.1875	2.0	BB-140600	40.48	BB-140600G	45.48	BB-140600X	46.68
.140	.152	.700	.003	.035	.0463	.1875	2.0	BB3-140700	40.48	BB3-140700G	47.28	BB3-140700X	47.28
.140	.152	.700	.006	.035	.0463	.1875	2.0	BB-140700	40.48	BB-140700G	45.48	BB-140700X	46.68
.140	.152	.750	.003	.035	.0463	.1875	2.0	BB3-140750	40.48	BB3-140750G	47.18	BB3-140750X	47.28
.140	.152	.750	.006	.035	.0463	.1875	2.0	BB-140750	40.48	BB-140750G	45.48	BB-140750X	46.68
.140	.152	.800	.003	.035	.0463	.1875	2.0	BB3-140800	40.48	BB3-140800G	47.18	BB3-140800X	47.28
.140	.152	.800	.006	.035	.0463	.1875	2.0	BB-140800	40.48	BB-140800G	45.48	BB-140800X	46.68
.140	.152	.900	.003	.035	.0463	.1875	2.0	BB3-140900	40.48	BB3-140900G	47.18	BB3-140900X	47.28
.140	.152	.900	.006	.035	.0463	.1875	2.0	BB6-140900	40.48	BB6-140900G	47.18	BB6-140900X	47.28
.160	.176	.250	.003	.040	.0663	.1875	2.0	BB3-160250	40.48	BB3-160250G	47.18	BB3-160250X	47.28
.160	.176	.250	.006	.040	.0663	.1875	2.0	BB-160250	40.48	BB-160250G	45.48	BB-160250X	46.68
.160	.176	.400	.003	.040	.0663	.1875	2.0	BB3-160400	40.48	BB3-160400G	47.18	BB3-160400X	47.28
.160	.176	.400	.006	.040	.0663	.1875	2.0	BB-160400	40.48	BB-160400G	45.48	BB-160400X	46.68
.160	.176	.500	.003	.040	.0663	.1875	2.0	BB3-160500	40.48	BB3-160500G	47.18	BB3-160500X	47.28
.160	.176	.500	.006	.040	.0663	.1875	2.0	BB-160500	40.48	BB-160500G	45.48	BB-160500X	46.68
.160	.176	.600	.003	.040	.0663	.1875	2.0	BB3-160600	40.48	BB3-160600G	47.28	BB3-160600X	47.28
.160	.176	.600	.006	.040	.0663	.1875	2.0	BB-160600	40.48	BB-160600G	45.48	BB-160600X	46.68
.160	.176	.700	.003	.040	.0663	.1875	2.0	BB3-160700	40.48	BB3-160700G	47.18	BB3-160700X	47.28

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



BB

Standard – Boring Tools

Right Hand (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Max. Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
								H	L ₂	Tool #	Price	Tool #	Price
			$R_{-.000}^{+.002}$	P	F	D ₂ (h6)	L ₁						
								BB6-160700	40.48	BB6-160700G	47.28	BB6-160700X	47.28
								BB3-160750	40.48	BB3-160750G	47.18	BB3-160750X	47.28
								BB-160750	40.48	BB-160750G	45.48	BB-160750X	46.68
								BB3-160800	40.48	BB3-160800G	47.28	BB3-160800X	47.28
								BB6-160800	40.48	BB6-160800G	47.28	BB6-160800X	47.28
								BB3-160900	40.48	BB3-160900G	47.18	BB3-160900X	47.28
								BB-160900	40.48	BB-160900G	45.48	BB-160900X	46.68
								BB3-1601000	40.48	BB3-1601000G	47.18	BB3-1601000X	47.28
								BB-1601000	40.48	BB-1601000G	45.48	BB-1601000X	46.68
NEW								BB6-1601250	42.38	BB6-1601250G	47.28	BB6-1601250X	49.28
								BB-180350	43.78	BB-180350G	50.78	BB-180350X	52.28
								BB-180500	43.78	BB-180500G	50.78	BB-180500X	52.28
								BB-180600	43.78	BB-180600G	50.78	BB-180600X	52.28
								BB-180750	43.78	BB-180750G	50.78	BB-180750X	52.28
								BB-180900	43.78	BB-180900G	50.78	BB-180900X	52.28
								BB-1801000	43.78	BB-1801000G	50.78	BB-1801000X	52.28
								BB-1801100	43.78	BB-1801100G	50.78	BB-1801100X	52.28
								BB-1801250	43.78	BB-1801250G	50.78	BB-1801250X	52.28
								BB-1801500	43.78	BB-1801500G	50.78	BB-1801500X	52.28
								BB-200400	43.78	BB-200400G	50.78	BB-200400X	52.28
								BB-200500	43.78	BB-200500G	50.78	BB-200500X	52.28
								BB-200600	43.78	BB-200600G	50.78	BB-200600X	52.28
								BB-200700	43.78	BB-200700G	50.78	BB-200700X	52.28
								BB6-200750	43.78	BB6-200750G	52.28	BB6-200750X	52.28
								BB-200800	43.78	BB-200800G	50.78	BB-200800X	52.28
								BB-200900	43.78	BB-200900G	50.78	BB-200900X	52.28
								BB-2001000	43.78	BB-2001000G	50.78	BB-2001000X	52.28
								BB-2001100	43.78			BB-2001100X	52.28
								BB-2001200	43.78	BB-2001200G	50.78	BB-2001200X	52.28
								BB-2001300	43.78	BB-2001300G	50.78	BB-2001300X	52.28
								BB6-2001500	43.78	BB6-2001500G	52.28	BB6-2001500X	52.28
								BB-230400	58.68	BB-230400G	68.68	BB-230400X	69.08
								BB-230500	58.68	BB-230500G	68.68	BB-230500X	69.08
								BB-230600	58.68	BB-230600G	68.68	BB-230600X	69.08
								BB-230700	58.68	BB-230700G	68.68	BB-230700X	69.08
								BB6-230750	58.68	BB6-230750G	68.78	BB6-230750X	69.08
								BB-230800	58.68	BB-230800G	68.68	BB-230800X	69.08
								BB-230900	58.68	BB-230900G	68.68	BB-230900X	69.08
								BB-2301000	58.68	BB-2301000G	68.68	BB-2301000X	69.08
								BB-2301100	58.68	BB-2301100G	68.68	BB-2301100X	69.08
								BB-2301150	58.68	BB-2301150G	68.68	BB-2301150X	69.08
								BB-2301200	58.68	BB-2301200G	68.68	BB-2301200X	69.08
								BB-2301250	58.68	BB-2301250G	68.68	BB-2301250X	69.08
								BB-2301400	58.68	BB-2301400G	68.68	BB-2301400X	69.08
								BB-2301500	58.68	BB-2301500G	68.68	BB-2301500X	69.08
								BB-2301600	58.68	BB-2301600G	68.68	BB-2301600X	69.08
NEW								BB6-2301750	60.48	BB6-2301750G	68.08	BB6-2301750X	71.08

Standard – Boring Tools

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Boring Tools

BB

Right Hand (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Max. Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TIN Coated		AITIN Coated	
								H	L2	Tool #	Price	Tool #	Price
.260	.280	.400	.006	.065	.1038	.3125	2.5	BB6-260400	58.68	BB6-260400G	68.78	BB6-260400X	69.08
.260	.280	.500	.006	.065	.1038	.3125	2.5	BB6-260500	58.68	BB6-260500G	68.78	BB6-260500X	69.08
.260	.280	.600	.006	.065	.1038	.3125	2.5	BB6-260600	58.68	BB6-260600G	68.78	BB6-260600X	69.08
.260	.280	.700	.006	.065	.1038	.3125	2.5	BB6-260700	58.68	BB6-260700G	68.78	BB6-260700X	69.08
.260	.280	.750	.006	.065	.1038	.3125	2.5	BB6-260750	58.68	BB6-260750G	68.78	BB6-260750X	69.08
.260	.280	.800	.006	.065	.1038	.3125	2.5	BB6-260800	58.68	BB6-260800G	68.78	BB6-260800X	69.08
.260	.280	.900	.006	.065	.1038	.3125	2.5	BB6-260900	58.68	BB6-260900G	68.78	BB6-260900X	69.08
.260	.280	1.000	.006	.065	.1038	.3125	2.5	BB6-2601000	58.68	BB6-2601000G	68.78	BB6-2601000X	69.08
.260	.280	1.250	.006	.065	.1038	.3125	2.5	BB6-2601250	58.68	BB6-2601250G	68.78	BB6-2601250X	69.08
.290	.310	.500	.006	.072	.1338	.3125	2.5	BB-290500	58.68	BB-290500G	68.68	BB-290500X	69.08
.290	.310	.600	.006	.072	.1338	.3125	2.5	BB-290600	58.68	BB-290600G	68.68	BB-290600X	69.08
.290	.310	.750	.006	.072	.1338	.3125	2.5	BB-290750	58.68	BB-290750G	68.68	BB-290750X	69.08
.290	.310	.900	.006	.072	.1338	.3125	2.5	BB-290900	58.68	BB-290900G	68.68	BB-290900X	69.08
.290	.310	1.000	.006	.072	.1338	.3125	2.5	BB-2901000	58.68	BB-2901000G	68.68	BB-2901000X	69.08
.290	.310	1.100	.006	.072	.1338	.3125	2.5	BB-2901100	58.68	BB-2901100G	68.68	BB-2901100X	69.08
.290	.310	1.250	.006	.072	.1338	.3125	2.5	BB-2901250	58.68	BB-2901250G	68.68	BB-2901250X	69.08
.290	.310	1.350	.006	.072	.1338	.3125	2.5	BB-2901350	58.68	BB-2901350G	68.68	BB-2901350X	69.08
.290	.310	1.500	.006	.072	.1338	.3125	2.5	BB-2901500	58.68	BB-2901500G	68.68	BB-2901500X	69.08
.290	.310	1.600	.006	.072	.1338	.3125	2.5	BB-2901600	58.68	BB-2901600G	68.68	BB-2901600X	69.08
.290	.310	1.750	.006	.072	.1338	.3125	2.5	BB-2901750	58.68	BB-2901750G	68.68	BB-2901750X	69.08
.290	.310	2.000	.006	.072	.1338	.3125	3.0	BB6-2902000	60.48	BB6-2902000G	68.08	BB6-2902000X	71.08
.320	.340	.500	.006	.080	.1325	.3750	2.5	BB-320500	80.08	BB-320500G	90.88	BB-320500X	92.28
.320	.340	.600	.006	.080	.1325	.3750	2.5	BB-320600	80.08	BB-320600G	90.88	BB-320600X	92.28
.320	.340	.750	.006	.080	.1325	.3750	2.5	BB-320750	80.08	BB-320750G	90.88	BB-320750X	92.28
.320	.340	.900	.006	.080	.1325	.3750	2.5	BB-320900	80.08	BB-320900G	90.88	BB-320900X	92.28
.320	.340	1.000	.006	.080	.1325	.3750	2.5	BB-3201000	80.08	BB-3201000G	90.88	BB-3201000X	92.28
.320	.340	1.100	.006	.080	.1325	.3750	2.5	BB-3201100	80.08	BB-3201100G	90.88	BB-3201100X	92.28
.320	.340	1.250	.006	.080	.1325	.3750	2.5	BB-3201250	80.08	BB-3201250G	90.88	BB-3201250X	92.28
.320	.340	1.500	.006	.080	.1325	.3750	2.5	BB-3201500	80.08	BB-3201500G	90.88	BB-3201500X	92.28
.320	.340	1.600	.006	.080	.1325	.3750	2.5	BB-3201600	80.08	BB-3201600G	90.88	BB-3201600X	92.28
.320	.340	1.800	.006	.080	.1325	.3750	2.5	BB-3201800	80.08	BB-3201800G	90.88	BB-3201800X	92.28
.320	.340	2.000	.006	.080	.1325	.3750	4.0	BB-3202000	102.18	BB-3202000G	115.38	BB-3202000X	115.58
.320	.340	2.500	.006	.080	.1325	.3750	4.0	BB-3202500	102.18	BB-3202500G	115.38	BB-3202500X	115.58
.320	.340	3.000	.006	.080	.1325	.3750	4.0	BB-3203000	102.18			BB-3203000X	115.58
.360	.380	.500	.006	.090	.1725	.3750	2.5	BB-360500	80.08	BB-360500G	90.88	BB-360500X	92.28
.360	.380	.600	.006	.090	.1725	.3750	2.5	BB-360600	80.08	BB-360600G	90.88	BB-360600X	92.28
.360	.380	.750	.006	.090	.1725	.3750	2.5	BB-360750	80.08	BB-360750G	90.88	BB-360750X	92.28
.360	.380	.900	.006	.090	.1725	.3750	2.5	BB-360900	80.08	BB-360900G	90.88	BB-360900X	92.28
.360	.380	1.000	.006	.090	.1725	.3750	2.5	BB-3601000	80.08	BB-3601000G	90.88	BB-3601000X	92.28
.360	.380	1.150	.006	.090	.1725	.3750	2.5	BB-3601150	80.08	BB-3601150G	90.88	BB-3601150X	92.28
.360	.380	1.250	.006	.090	.1725	.3750	2.5	BB-3601250	80.08	BB-3601250G	90.88	BB-3601250X	92.28
.360	.380	1.500	.006	.090	.1725	.3750	2.5	BB-3601500	80.08	BB-3601500G	90.88	BB-3601500X	92.28
.360	.380	1.600	.006	.090	.1725	.3750	2.5	BB-3601600	80.08	BB-3601600G	90.88	BB-3601600X	92.28
.360	.380	1.800	.006	.090	.1725	.3750	2.5	BB-3601800	80.08	BB-3601800G	90.88	BB-3601800X	92.28
.360	.380	2.000	.006	.090	.1725	.3750	4.0	BB-3602000	102.18	BB-3602000G	115.38	BB-3602000X	115.58
.360	.380	2.500	.006	.090	.1725	.3750	4.0	BB-3602500	102.18	BB-3602500G	115.38	BB-3602500X	115.58
.360	.380	3.000	.006	.090	.1725	.3750	4.0	BB-3603000	102.18	BB-3603000G	115.38	BB-3603000X	115.58

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders

Standard – Boring Tools

BB

Standard – Boring Tools

Right Hand (cont.)

Continued from previous page

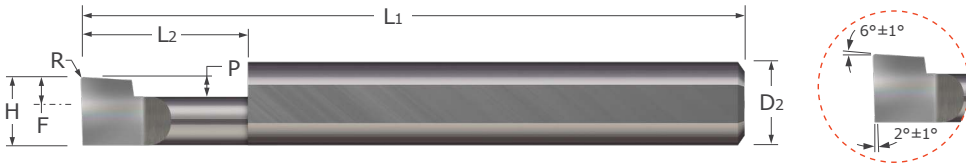
Head Width	Minimum Bore Dia.*	Max. Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
H	L2	$+.050''$ $-.000''$	$R+.002''$ $-.000''$	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	Tool #	Price
.410	.430	.750	.006	.104	.1600	.5000	3.0	BB6-410750	111.48	BB6-410750G	127.88	BB6-410750X	128.18
.410	.430	1.000	.006	.104	.1600	.5000	3.0	BB6-4101000	111.48	BB6-4101000G	127.88	BB6-4101000X	128.18
.410	.430	1.250	.006	.104	.1600	.5000	3.0	BB6-4101250	111.48	BB6-4101250G	127.88	BB6-4101250X	128.18
.410	.430	1.500	.006	.104	.1600	.5000	3.0	BB6-4101500	111.48	BB6-4101500G	127.88	BB6-4101500X	128.18
.460	.480	1.000	.006	.115	.2100	.5000	3.0	BB6-4601000	111.48	BB6-4601000G	127.88	BB6-4601000X	128.18
.460	.480	1.500	.006	.115	.2100	.5000	3.0	BB6-4601500	111.48	BB6-4601500G	127.88	BB6-4601500X	128.18
.460	.480	2.000	.006	.115	.2100	.5000	3.0	BB6-4602000	111.48	BB6-4602000G	127.88	BB6-4602000X	128.18
.490	.510	.750	.006	.122	.2400	.5000	3.0	BB-490750	111.48	BB-490750G	124.98	BB-490750X	128.18
.490	.510	1.000	.006	.122	.2400	.5000	3.0	BB-4901000	111.48	BB-4901000G	124.98	BB-4901000X	128.18
.490	.510	1.250	.006	.122	.2400	.5000	3.0	BB-4901250	111.48	BB-4901250G	124.98	BB-4901250X	128.18
.490	.510	1.500	.006	.122	.2400	.5000	3.0	BB-4901500	111.48			BB-4901500X	128.18
.490	.510	2.000	.006	.122	.2400	.5000	4.0	BB-4902000	122.18	BB-4902000G	138.08	BB-4902000X	139.98
.490	.510	2.500	.006	.122	.2400	.5000	4.0	BB-4902500	122.18	BB-4902500G	138.08	BB-4902500X	139.98
.490	.510	2.750	.006	.122	.2400	.5000	4.0	BB-4902750	122.18	BB-4902750G	138.08	BB-4902750X	139.98
.490	.510	3.000	.006	.122	.2400	.5000	6.0	BB-4903000	153.38	BB-4903000G	173.78	BB-4903000X	174.18
.490	.510	3.500	.006	.122	.2400	.5000	6.0	BB-4903500	153.38			BB-4903500X	174.18
.490	.510	4.000	.006	.122	.2400	.5000	6.0	BB-4904000	153.38			BB-4904000X	174.18
.490	.510	4.500	.006	.122	.2400	.5000	6.0	BB-4904500	153.38			BB-4904500X	174.18

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

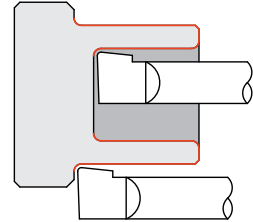
See pgs 39-47 for standard tool holders

Standard - Boring Tools

Left Hand



- Designed for left hand facing and boring applications
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Corner radius profile
- Lockdown flat automatically locates tool on center
- Coating options provide added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Standard - Boring Tools

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
								H	F	Tool #	Price	Tool #	Price
	L2	$\begin{matrix} +.050'' \\ -.000'' \end{matrix}$	$\begin{matrix} +.003'' \\ R \text{ } -.000'' \end{matrix}$	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	Tool #	Price
.050	.055	.150	.003	.012	-.0125	.1250	1.5	BBL-050150	38.18			BBL-050150X	43.58
.050	.055	.200	.003	.012	-.0125	.1250	1.5	BBL-050200	38.18				
.050	.055	.400	.003	.012	-.0125	.1250	1.5	BBL-050400	38.18			BBL-050400X	43.58
.060	.070	.150	.003	.015	-.0025	.1250	1.5	BBL-060150	38.18				
.060	.070	.200	.003	.015	-.0025	.1250	1.5	BBL-060200	38.18			BBL-060200X	43.58
.060	.070	.300	.003	.015	-.0025	.1250	1.5	BBL-060300	38.18			BBL-060300X	43.58
.080	.090	.150	.003	.020	.0175	.1250	1.5			BBL-080150G	42.58		
.080	.090	.200	.003	.020	.0175	.1250	1.5	BBL-080200	38.18			BBL-080200X	43.58
.080	.090	.300	.003	.020	.0175	.1250	1.5	BBL-080300	38.18				
.080	.090	.400	.003	.020	.0175	.1250	1.5	BBL-080400	38.18	BBL-080400G	42.58	BBL-080400X	43.58
.080	.090	.500	.003	.020	.0175	.1250	1.5	BBL-080500	38.18	BBL-080500G	42.58	BBL-080500X	43.58
.100	.110	.150	.003	.025	.0375	.1250	1.5	BBL-100150	38.18				
.100	.110	.300	.003	.025	.0375	.1250	1.5			BBL-100300G	42.58		
.100	.110	.500	.003	.025	.0375	.1250	1.5	BBL-100500	38.18	BBL-100500G	42.58	BBL-100500X	43.58
.100	.110	.600	.003	.025	.0375	.1250	1.5	BBL-100600	38.18				
.100	.110	.700	.003	.025	.0375	.1250	1.5	BBL-100700	38.18			BBL-100700X	43.58
.110	.122	.150	.003	.027	.0475	.1250	1.5	BBL-110150	38.18			BBL-110150X	43.58
.110	.122	.200	.003	.027	.0475	.1250	1.5			BBL-110200G	42.58		
.110	.122	.300	.003	.027	.0475	.1250	1.5	BBL-110300	38.18				
.110	.122	.400	.003	.027	.0475	.1250	1.5	BBL-110400	38.18				
.110	.122	.600	.003	.027	.0475	.1250	1.5	BBL-110600	38.18				
.110	.122	.700	.003	.027	.0475	.1250	1.5	BBL-110700	38.18				

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



BBL

Standard - Boring Tools

Left Hand (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
H	L2	$^{+.050''}_{-.000''}$	$R\ ^{+.002''}_{-.000''}$	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	Tool #	Price
.120	.132	.250	.006	.030	.0263	.1875	2.0	BBL-120250	40.48			BBL-120250X	46.68
.120	.132	.500	.006	.030	.0263	.1875	2.0	BBL-120500	40.48			BBL-120500X	46.68
.120	.132	.600	.006	.030	.0263	.1875	2.0	BBL-120600	40.48			BBL-120600X	46.68
.120	.132	.700	.006	.030	.0263	.1875	2.0	BBL-120700	40.48				
.140	.152	.250	.006	.035	.0463	.1875	2.0	BBL-140250	40.48	BBL-140250G	45.48	BBL-140250X	46.68
.140	.152	.400	.006	.035	.0463	.1875	2.0					BBL-140400X	46.68
.140	.152	.500	.006	.035	.0463	.1875	2.0	BBL-140500	40.48			BBL-140500X	46.68
.140	.152	.600	.006	.035	.0463	.1875	2.0	BBL-140600	40.48				
.140	.152	.700	.006	.035	.0463	.1875	2.0	BBL-140700	40.48				
.140	.152	.800	.006	.035	.0463	.1875	2.0	BBL-140800	40.48				
.160	.176	.500	.006	.040	.0663	.1875	2.0	BBL-160500	40.48			BBL-160500X	46.68
.160	.176	.600	.006	.040	.0663	.1875	2.0	BBL-160600	40.48			BBL-160600X	46.68
.160	.176	.750	.006	.040	.0663	.1875	2.0	BBL-160750	40.48				
.160	.176	.900	.006	.040	.0663	.1875	2.0	BBL-160900	40.48	BBL-160900G	45.48	BBL-160900X	46.68
.160	.176	1.000	.006	.040	.0663	.1875	2.0	BBL-1601000	40.48			BBL-1601000X	46.68
.180	.196	.350	.006	.045	.0550	.2500	2.5	BBL-180350	43.78			BBL-180350X	52.28
.180	.196	.500	.006	.045	.0550	.2500	2.5	BBL-180500	43.78			BBL-180500X	52.28
.180	.196	.600	.006	.045	.0550	.2500	2.5	BBL-180600	43.78	BBL-180600G	50.78	BBL-180600X	52.28
.180	.196	.750	.006	.045	.0550	.2500	2.5	BBL-180750	43.78	BBL-180750G	50.78		
.180	.196	.900	.006	.045	.0550	.2500	2.5	BBL-180900	43.78			BBL-180900X	52.28
.180	.196	1.000	.006	.045	.0550	.2500	2.5	BBL-1801000	43.78			BBL-1801000X	52.28
.180	.196	1.100	.006	.045	.0550	.2500	2.5	BBL-1801100	43.78				
.180	.196	1.500	.006	.045	.0550	.2500	2.5	BBL-1801500	43.78			BBL-1801500X	52.28
.200	.216	.400	.006	.050	.0750	.2500	2.5	BBL-200400	43.78	BBL-200400G	50.78	BBL-200400X	52.28
.200	.216	.500	.006	.050	.0750	.2500	2.5	BBL-200500	43.78			BBL-200500X	52.28
.200	.216	.600	.006	.050	.0750	.2500	2.5	BBL-200600	43.78	BBL-200600G	50.78		
.200	.216	.700	.006	.050	.0750	.2500	2.5	BBL-200700	43.78			BBL-200700X	52.28
.200	.216	.800	.006	.050	.0750	.2500	2.5	BBL-200800	43.78	BBL-200800G	50.78	BBL-200800X	52.28
.200	.216	1.000	.006	.050	.0750	.2500	2.5	BBL-2001000	43.78			BBL-2001000X	52.28
.200	.216	1.100	.006	.050	.0750	.2500	2.5	BBL-2001100	43.78				
.200	.216	1.200	.006	.050	.0750	.2500	2.5	BBL-2001200	43.78				
.200	.216	1.300	.006	.050	.0750	.2500	2.5	BBL-2001300	43.78				
.230	.250	.600	.006	.057	.0738	.3125	2.5	BBL-230600	58.68	BBL-230600G	69.08	BBL-230600X	69.08
.230	.250	.700	.006	.057	.0738	.3125	2.5	BBL-230700	58.68				
.230	.250	.800	.006	.057	.0738	.3125	2.5	BBL-230800	58.68			BBL-230800X	69.08
.230	.250	.900	.006	.057	.0738	.3125	2.5	BBL-230900	58.68			BBL-230900X	69.08
.230	.250	1.000	.006	.057	.0738	.3125	2.5	BBL-2301000	58.68			BBL-2301000X	69.08
.230	.250	1.200	.006	.057	.0738	.3125	2.5	BBL-2301200	58.68			BBL-2301200X	69.08
.230	.250	1.250	.006	.057	.0738	.3125	2.5	BBL-2301250	58.68				
.230	.250	1.500	.006	.057	.0738	.3125	2.5	BBL-2301500	58.68			BBL-2301500X	69.08
.230	.250	1.600	.006	.057	.0738	.3125	2.5	BBL-2301600	58.68			BBL-2301600X	69.08

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

Standard - Boring Tools

See pgs 39-47 for standard tool holders



Standard – Boring Tools

BBL

Left Hand (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
H	L ₂	$\begin{matrix} +.050'' \\ -.000'' \end{matrix}$	R	P	F	D ₂ (h6)	L ₁						
			$\begin{matrix} +.002'' \\ -.000'' \end{matrix}$										
.290	.310	.500	.006	.072	.1338	.3125	2.5	BBL-290500	58.68				
.290	.310	.600	.006	.072	.1338	.3125	2.5					BBL-290600X	69.08
.290	.310	.750	.006	.072	.1338	.3125	2.5	BBL-290750	58.68				
.290	.310	.900	.006	.072	.1338	.3125	2.5	BBL-290900	58.68				
.290	.310	1.000	.006	.072	.1338	.3125	2.5	BBL-2901000	58.68			BBL-2901000X	69.08
.290	.310	1.100	.006	.072	.1338	.3125	2.5	BBL-2901100	58.68				
.290	.310	1.250	.006	.072	.1338	.3125	2.5	BBL-2901250	58.68				
.290	.310	1.350	.006	.072	.1338	.3125	2.5	BBL-2901350	58.68				
.290	.310	1.500	.006	.072	.1338	.3125	2.5	BBL-2901500	58.68			BBL-2901500X	69.08
.320	.340	.600	.006	.080	.1325	.3750	2.5	BBL-320600	80.08	BBL-320600G	90.88		
.320	.340	.750	.006	.080	.1325	.3750	2.5	BBL-320750	80.08			BBL-320750X	92.28
.320	.340	1.000	.006	.080	.1325	.3750	2.5	BBL-3201000	80.08			BBL-3201000X	92.28
.320	.340	1.500	.006	.080	.1325	.3750	2.5	BBL-3201500	80.08			BBL-3201500X	92.28
.320	.340	1.800	.006	.080	.1325	.3750	2.5	BBL-3201800	80.08				
.320	.340	2.000	.006	.080	.1325	.3750	4.0	BBL-3202000	102.18			BBL-3202000X	115.58
.320	.340	2.500	.006	.080	.1325	.3750	4.0	BBL-3202500	102.18				
.320	.340	3.000	.006	.080	.1325	.3750	4.0					BBL-3203000X	115.58
.360	.380	.750	.006	.090	.1725	.3750	2.5	BBL-360750	80.08			BBL-360750X	92.28
.360	.380	.900	.006	.090	.1725	.3750	2.5	BBL-360900	80.08				
.360	.380	1.000	.006	.090	.1725	.3750	2.5	BBL-3601000	80.08				
.360	.380	1.500	.006	.090	.1725	.3750	2.5	BBL-3601500	80.08				
.360	.380	1.600	.006	.090	.1725	.3750	2.5	BBL-3601600	80.08				
.360	.380	1.800	.006	.090	.1725	.3750	2.5	BBL-3601800	80.08				
.360	.380	2.500	.006	.090	.1725	.3750	4.0	BBL-3602500	102.18				
.360	.380	3.000	.006	.090	.1725	.3750	4.0	BBL-3603000	102.18			BBL-3603000X	115.58
.490	.510	1.500	.006	.122	.2400	.5000	3.0	BBL-4901500	111.48			BBL-4901500X	128.18
.490	.510	3.500	.006	.122	.2400	.5000	6.0	BBL-4903500	153.38				
.490	.510	4.000	.006	.122	.2400	.5000	6.0	BBL-4904000	153.38				
.490	.510	4.500	.006	.122	.2400	.5000	6.0	BBL-4904500	153.38				

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

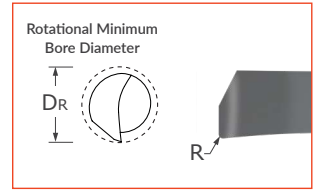
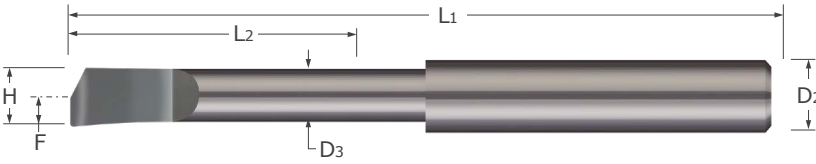
Standard – Boring Tools

See pgs 39-47 for standard tool holders

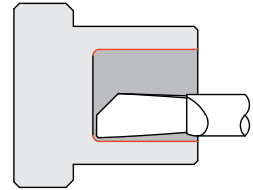


HBBC

Standard – Boring Tools
Helical Back Rake – Corner Radius



- Designed for boring applications in bores .030" and larger
- Polished face for improved edge retention and chip evacuation while reducing galling
- Helical grind provides ideal top rake for better chip control and freer cutting
- Well suited for machining plastics
- On center neck design allows for static and live/rotating applications
- Lockdown flat automatically locates tool on center
- Corner radius profile
- Solid carbide ■ CNC ground in the USA



Head Width	Rotational Minimum Bore Diameter	Maximum Bore Depth	Radius	Neck Diameter	Centerline Offset	Shank Diameter	Overall Length	Uncoated	
								Tool #	Price
H	DR	L2 ^{+0.032"} _{-.000"}	R ^{+0.001"} _{-.001"}	D3 ^{+0.000"} _{-.002"}	F	D2 (h6)	L1		
.0275	.030	.187	.004	.025	.0150	.1250	1.5	HBBC-030187-004	50.68
.0275	.030	.250	.004	.025	.0150	.1250	1.5	HBBC-030250-004	50.68
.0325	.035	.125	.004	.030	.0175	.1250	1.5	HBBC-035125-004	39.68
.0325	.035	.187	.004	.030	.0175	.1250	1.5	HBBC-035187-004	39.68
.0325	.035	.250	.004	.030	.0175	.1250	1.5	HBBC-035250-004	39.68
.0375	.040	.187	.004	.035	.0200	.1250	1.5	HBBC-040187-004	39.68
.0375	.040	.250	.004	.035	.0200	.1250	1.5	HBBC-040250-004	39.68
.0375	.040	.312	.004	.035	.0200	.1250	1.5	HBBC-040312-004	39.68
.0450	.050	.187	.004	.040	.0250	.1250	1.5	HBBC-050187-004	39.68
.0450	.050	.312	.004	.040	.0250	.1250	1.5	HBBC-050312-004	39.68
.0450	.050	.375	.004	.040	.0250	.1250	1.5	HBBC-050375-004	39.68
.0550	.060	.250	.004	.050	.0300	.1250	1.5	HBBC-060250-004	39.68
.0550	.060	.375	.004	.050	.0300	.1250	1.5	HBBC-060375-004	39.68
.0550	.060	.500	.004	.050	.0300	.1250	1.5	HBBC-060500-004	39.68
.0650	.070	.312	.004	.060	.0350	.1250	1.5	HBBC-070312-004	39.68
.0650	.070	.437	.004	.060	.0350	.1250	1.5	HBBC-070437-004	39.68
.0650	.070	.562	.004	.060	.0350	.1250	1.5	HBBC-070562-004	39.68
.0750	.080	.375	.004	.070	.0400	.1250	1.5	HBBC-080375-004	39.68
.0750	.080	.500	.004	.070	.0400	.1250	1.5	HBBC-080500-004	39.68
.0750	.080	.625	.004	.070	.0400	.1250	1.5	HBBC-080625-004	39.68
.0850	.090	.375	.004	.080	.0450	.1250	1.5	HBBC-090375-004	39.68
.0850	.090	.500	.004	.080	.0450	.1250	1.5	HBBC-090500-004	39.68
.0850	.090	.687	.004	.080	.0450	.1250	1.5	HBBC-090687-004	39.68
.0950	.100	.437	.004	.090	.0500	.1250	1.5	HBBC-100437-004	39.68
.0950	.100	.562	.004	.090	.0500	.1250	1.5	HBBC-100562-004	39.68
.0950	.100	.750	.004	.090	.0500	.1250	1.5	HBBC-100750-004	39.68

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Boring Tools

HBBC

Helical Back Rake – Corner Radius (cont.)

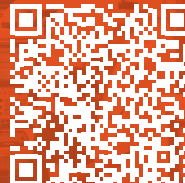
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Head Width	Rotational Minimum Bore Diameter	Maximum Bore Depth	Radius	Neck Diameter	Centerline Offset	Shank Diameter	Overall Length	Uncoated	
H	DR	L ₂ ^{+ .032"} _{-.000"}	R ^{+ .001"} _{-.001"}	D ₃ ^{+ .000"} _{-.002"}	F	D ₂ (h6)	L ₁	Tool #	Price
.1100	.120	.500	.004	.100	.0600	.1250	1.5	HBBC-120500-004	39.68
.1100	.120	.625	.004	.100	.0600	.1250	1.5	HBBC-120625-004	39.68
.1100	.120	1.000	.004	.100	.0600	.1250	1.5	HBBC-1201000-004	39.68
.1225	.135	.562	.004	.110	.0675	.1875	2.0	HBBC-135562-004	42.68
.1225	.135	.750	.004	.110	.0675	.1875	2.0	HBBC-135750-004	42.68
.1225	.135	1.000	.004	.110	.0675	.1875	2.0	HBBC-1351000-004	42.68
.1400	.150	.625	.004	.130	.0750	.1875	2.0	HBBC-150625-004	42.68
.1400	.150	1.000	.004	.130	.0750	.1875	2.0	HBBC-1501000-004	42.68
.1400	.150	1.250	.004	.130	.0750	.1875	2.0	HBBC-1501250-004	42.68
.1700	.180	1.000	.004	.160	.0900	.1875	2.0	HBBC-1801000-004	42.68
.1700	.180	1.250	.004	.160	.0900	.1875	2.0	HBBC-1801250-004	42.68
.1700	.180	1.500	.004	.160	.0900	.1875	2.0	HBBC-1801500-004	42.68
.1975	.210	1.000	.004	.185	.1050	.2500	2.5	HBBC-2101000-004	45.88
.1975	.210	1.250	.004	.185	.1050	.2500	2.5	HBBC-2101250-004	45.88
.1975	.210	1.500	.004	.185	.1050	.2500	2.5	HBBC-2101500-004	45.88
.2275	.240	1.000	.004	.215	.1200	.2500	2.5	HBBC-2401000-004	45.88
.2275	.240	1.500	.004	.215	.1200	.2500	2.5	HBBC-2401500-004	45.88
.2275	.240	1.750	.004	.215	.1200	.2500	2.5	HBBC-2401750-004	45.88
.2750	.300	1.000	.004	.250	.1500	.3125	2.5	HBBC-3001000-004	61.98
.2750	.300	1.500	.004	.250	.1500	.3125	2.5	HBBC-3001500-004	61.98
.2750	.300	1.750	.004	.250	.1500	.3125	2.5	HBBC-3001750-004	61.98
.3400	.360	1.000	.004	.320	.1800	.3750	2.5	HBBC-3601000-004	85.08
.3400	.360	1.500	.004	.320	.1800	.3750	2.5	HBBC-3601500-004	85.08
.3400	.360	2.000	.004	.320	.1800	.3750	4.0	HBBC-3602000-004	108.78
.3400	.360	2.500	.004	.320	.1800	.3750	4.0	HBBC-3602500-004	108.78

Standard – Boring Tools

Technical Resources on Micro100.com

Find Simulation Files, Speeds & Feeds, Torque Recommendations, Programs, Blogs, and more at micro100.com/resources

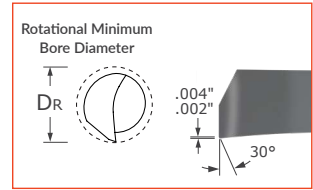
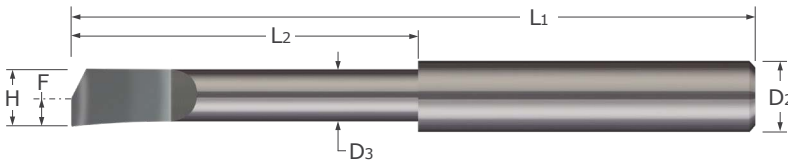


See pgs 39-47 for standard tool holders

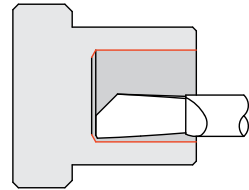


HBB / HBM

Standard - Boring Tools
Helical Back Rake



- Designed for boring applications in bores .020" and larger
- Polished face for improved edge retention and chip evacuation while reducing galling
- Helical grind provides ideal top rake for better chip control and freer cutting
- Uncoated variant ideal for plastics
- On center neck design allows for static and live/rotating applications
- Cylindrical shank (no set screw flat)
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Head Width		Rotational Min. Bore Diameter	Max. Bore Depth	Neck Diameter	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	decimal equiv.	DR	L2	D3	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.0175	.0175	.020	.063	.015	.0100	.1250	1.5	HBB-020062	48.48	HBB-020062X	54.28
0.45 mm	.0177	0.5 mm	2 mm	0.4 mm	0.25 mm	3 mm	38 mm	HBM-005002	43.98		
.0225	.0225	.025	.125	.020	.0125	.1250	1.5	HBB-025125	48.48	HBB-025125X	54.48
0.65 mm	.0256	0.7 mm	3 mm	0.6 mm	0.35 mm	3 mm	38 mm	HBM-007003	43.98		
.0275	.0275	.030	.188	.025	.0150	.1250	1.5	HBB-030187	48.48	HBB-030187X	54.28
0.75 mm	.0295	0.8 mm	4 mm	0.7 mm	0.40 mm	3 mm	38 mm	HBM-008004	43.98		
.0325	.0325	.035	.125	.030	.0175	.1250	1.5	HBB-035125	37.38		
.0325	.0325	.035	.188	.030	.0175	.1250	1.5	HBB-035187	37.38	HBB-035187X	42.88
0.90 mm	.0354	1.0 mm	6 mm	0.8 mm	0.50 mm	3 mm	38 mm	HBM-010006	34.08		
.0375	.0375	.040	.188	.035	.0200	.1250	1.5	HBB-040187	37.38	HBB-040187X	42.88
.0375	.0375	.040	.250	.035	.0200	.1250	1.5	HBB-040250	37.38	HBB-040250X	42.88
.0450	.0450	.050	.313	.040	.0250	.1250	1.5	HBB-050312	37.38	HBB-050312X	42.88
1.35 mm	.0531	1.5 mm	9 mm	1.2 mm	0.75 mm	3 mm	38 mm	HBM-015009	34.08		
.0550	.0550	.060	.375	.050	.0300	.1250	1.5	HBB-060375	37.38	HBB-060375X	42.88
1.63 mm	.0642	1.75 mm	10 mm	1.5 mm	0.875 mm	3 mm	38 mm	HBM-017510	34.08		
.0650	.0650	.070	.438	.060	.0350	.1250	1.5	HBB-070437	37.38	HBB-070437X	42.88
.0750	.0750	.080	.500	.070	.0400	.1250	1.5	HBB-080500	37.38	HBB-080500X	42.88
2.05 mm	.0807	2.26 mm	12 mm	1.9 mm	1.13 mm	3 mm	38 mm	HBM-022512	34.08		
.0850	.0850	.090	.500	.080	.0450	.1250	1.5	HBB-090500	37.38	HBB-090500X	42.88
.0950	.0950	.100	.563	.090	.0500	.1250	1.5	HBB-100562	37.38	HBB-100562X	42.88
2.58 mm	.1016	2.75 mm	14 mm	2.4 mm	1.375 mm	3 mm	38 mm	HBM-027514	34.08		
2.75 mm	.1083	3.0 mm	16 mm	2.5 mm	1.50 mm	4 mm	50 mm	HBM-030016	35.18		

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Boring Tools

HBB / HBM

Helical Back Rake (cont.)

Continued from previous page

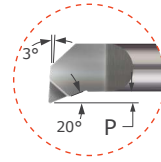
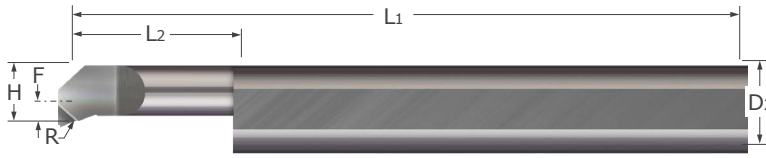
Head Width		Rotational Min. Bore Diameter	Max. Bore Depth	Neck Diameter	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	decimal equiv.	DR	L2 +.032" -.000" +.81 mm -.00 mm	D3 +.000" -.002" +.00 mm -.05 mm	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.1100	.1100	.120	.625	.100	.0600	.1250	1.5	HBB-120625	37.38	HBB-120625X	42.88
.1100	.1100	.120	1.000	.100	.0600	.1250	1.5	HBB-1201000	37.38	HBB-1201000X	42.88
.1225	.1225	.135	.750	.110	.0675	.1875	2.0	HBB-135750	40.08	HBB-135750X	46.08
.1225	.1225	.135	1.000	.110	.0675	.1875	2.0	HBB-1351000	40.08	HBB-1351000X	46.08
.1400	.1400	.150	1.000	.130	.0750	.1875	2.0	HBB-1501000	40.08	HBB-1501000X	46.08
.1400	.1400	.150	1.250	.130	.0750	.1875	2.0	HBB-1501250	40.08	HBB-1501250X	46.08
3.65 mm	.1437	4.0 mm	25 mm	3.3 mm	2.00 mm	6 mm	57 mm			HBM-040025X	54.18
4.15 mm	.1634	4.5 mm	30 mm	3.8 mm	2.25 mm	6 mm	57 mm	HBM-045030	39.38		
.1700	.1700	.180	1.000	.160	.0900	.1875	2.0	HBB-1801000	40.08	HBB-1801000X	46.08
.1700	.1700	.180	1.250	.160	.0900	.1875	2.0	HBB-1801250	40.08	HBB-1801250X	46.08
.1700	.1700	.180	1.500	.160	.0900	.1875	2.0	HBB-1801500	40.08	HBB-1801500X	46.08
.1975	.1975	.210	1.000	.185	.1050	.2500	2.5	HBB-2101000	43.28	HBB-2101000X	52.08
.1975	.1975	.210	1.250	.185	.1050	.2500	2.5	HBB-2101250	43.28	HBB-2101250X	52.08
.1975	.1975	.210	1.500	.185	.1050	.2500	2.5	HBB-2101500	43.28	HBB-2101500X	52.08
5.15 mm	.2028	5.5 mm	35 mm	4.7 mm	2.75 mm	6 mm	57 mm	HBM-055035	39.38		
.2275	.2275	.240	1.000	.215	.1200	.2500	2.5	HBB-2401000	43.28	HBB-2401000X	52.08
.2275	.2275	.240	1.500	.215	.1200	.2500	2.5	HBB-2401500	43.28	HBB-2401500X	52.08
.2275	.2275	.240	1.750	.215	.1200	.2500	2.5	HBB-2401750	43.28	HBB-2401750X	52.08
.2750	.2750	.300	1.000	.250	.1500	.3125	2.5	HBB-3001000	59.28	HBB-3001000X	69.58
.2750	.2750	.300	1.500	.250	.1500	.3125	2.5	HBB-3001500	59.28	HBB-3001500X	69.58
.2750	.2750	.300	1.750	.250	.1500	.3125	2.5	HBB-3001750	59.28	HBB-3001750X	69.58
.3400	.3400	.360	1.000	.320	.1800	.3750	2.5	HBB-3601000	82.18		
.3400	.3400	.360	1.500	.320	.1800	.3750	2.5	HBB-3601500	82.18	HBB-3601500X	94.48
.3400	.3400	.360	2.000	.320	.1800	.3750	4.0	HBB-3602000	105.88	HBB-3602000X	119.08
.3400	.3400	.360	2.250	.320	.1800	.3750	4.0	HBB-3602250	105.88		
.3400	.3400	.360	2.500	.320	.1800	.3750	4.0	HBB-3602500	105.88	HBB-3602500X	119.08
.4600	.4600	.480	2.500	.440	.2400	.5000	4.0	HBB-4802500	126.98		
.4600	.4600	.480	3.000	.440	.2400	.5000	4.0	HBB-4803000	126.98		

Standard – Boring Tools

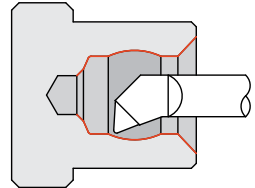
See pgs 39-47 for standard tool holders

PBT

Standard – Boring Tools
Top Rake Chipbreaker



- Optimized for finishing operations
- Top rake geometry provides freer cutting
- Polished face for reducing galling
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
H		L2	R	P	F	D2 (h6)	L1				
		$^{+.030}_{-.000}$ "	$^{+.003}_{-.000}$ "								
.0500	.0550	.150	.002	.005	-.0125	.1250	1.5	PBT2-050150	39.88	PBT2-050150X	45.58
.0500	.0550	.200	.002	.005	-.0125	.1250	1.5	PBT2-050200	39.88	PBT2-050200X	45.58
.0500	.0550	.400	.002	.005	-.0125	.1250	1.5	PBT2-050400	39.88	PBT2-050400X	45.58
.0500	.0550	.500	.002	.005	-.0125	.1250	1.5	PBT2-050500	39.88	PBT2-050500X	45.58
.0600	.0700	.150	.002	.010	-.0025	.1250	1.5	PBT2-060150	39.88	PBT2-060150X	45.58
.0600	.0700	.200	.002	.010	-.0025	.1250	1.5	PBT2-060200	39.88	PBT2-060200X	45.58
.0600	.0700	.400	.002	.010	-.0025	.1250	1.5	PBT2-060400	39.88	PBT2-060400X	45.58
.0600	.0700	.500	.002	.010	-.0025	.1250	1.5	PBT2-060500	39.88	PBT2-060500X	45.88
.0700	.0800	.150	.002	.015	.0075	.1250	1.5	PBT2-070150	38.98	PBT2-070150X	44.58
.0700	.0800	.200	.002	.015	.0075	.1250	1.5	PBT2-070200	38.98	PBT2-070200X	44.58
.0700	.0800	.400	.002	.015	.0075	.1250	1.5	PBT2-070400	38.98	PBT2-070400X	44.58
.0700	.0800	.600	.002	.015	.0075	.1250	1.5	PBT2-070600	38.98	PBT2-070600X	44.58
.0800	.0900	.200	.002	.015	.0175	.1250	1.5	PBT2-080200	38.98	PBT2-080200X	44.98
.0800	.0900	.400	.002	.015	.0175	.1250	1.5	PBT2-080400	38.98	PBT2-080400X	44.58
.0900	.1000	.200	.002	.015	.0275	.1250	1.5	PBT2-090200	38.98	PBT2-090200X	44.98
.0900	.1000	.400	.002	.015	.0275	.1250	1.5	PBT2-090400	38.98	PBT2-090400X	44.98
.1000	.1100	.200	.002	.015	.0375	.1250	1.5	PBT2-100200	38.98	PBT2-100200X	44.98
.1000	.1100	.400	.002	.015	.0375	.1250	1.5	PBT2-100400	38.98	PBT2-100400X	44.58
.1100	.1220	.250	.004	.020	.0475	.1250	1.5	PBT4-110250	38.98	PBT4-110250X	44.58
.1100	.1220	.500	.004	.020	.0475	.1250	1.5	PBT4-110500	38.98	PBT4-110500X	44.58
.1100	.1220	.750	.004	.020	.0475	.1250	1.5	PBT4-110750	38.98	PBT4-110750X	44.58
.1200	.1320	.250	.004	.020	.0263	.1875	2.0	PBT-120250	40.58	PBT-120250X	46.98
.1200	.1320	.375	.004	.020	.0263	.1875	2.0	PBT4-120375	40.58	PBT4-120375X	46.98
.1200	.1320	.500	.004	.020	.0263	.1875	2.0	PBT-120500	40.58	PBT-120500X	46.98
.1200	.1320	.750	.004	.020	.0263	.1875	2.0	PBT-120750	40.58	PBT-120750X	46.98
.1200	.1320	1.000	.004	.020	.0263	.1875	2.0	PBT-1201000	40.58	PBT-1201000X	46.98
.1400	.1520	.250	.002	.025	.0463	.1875	2.0	PBT2-140250	40.58	PBT2-140250X	46.98
.1400	.1520	.250	.004	.025	.0463	.1875	2.0	PBT4-140250	40.58	PBT4-140250X	46.98
.1400	.1520	.375	.002	.025	.0463	.1875	2.0	PBT2-140375	40.58	PBT2-140375X	46.98
.1400	.1520	.375	.004	.025	.0463	.1875	2.0	PBT4-140375	40.58	PBT4-140375X	46.98
.1400	.1520	.500	.002	.025	.0463	.1875	2.0	PBT2-140500	40.58	PBT2-140500X	46.98
.1400	.1520	.500	.004	.025	.0463	.1875	2.0	PBT4-140500	40.58	PBT4-140500X	46.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Boring Tools

Top Rake Chipbreaker (cont.)

PBT

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
H		L ₂ $\frac{+.030"}{-.000"}$	R $\frac{+.003"}{-.000"}$	P	F	D ₂ (h ₆)	L ₁				
.1600	.1760	.375	.006	.025	.0663	.1875	2.0	PBT6-160375	40.58	PBT6-160375X	46.98
.1600	.1760	.500	.006	.025	.0663	.1875	2.0	PBT-160500	40.58	PBT-160500X	46.98
.1600	.1760	.750	.006	.025	.0663	.1875	2.0	PBT-160750	40.58	PBT-160750X	46.98
.1600	.1760	1.000	.006	.025	.0663	.1875	2.0	PBT6-1601000	40.58	PBT6-1601000X	46.98
.1600	.1760	1.250	.006	.025	.0663	.1875	2.0	PBT6-1601250	40.58	PBT6-1601250X	46.98
.1800	.1960	.375	.006	.030	.0550	.2500	2.5	PBT6-180375	52.08	PBT6-180375X	60.78
.1800	.1960	.500	.006	.030	.0550	.2500	2.5	PBT-180500	52.08	PBT-180500X	60.78
.1800	.1960	.750	.006	.030	.0550	.2500	2.5	PBT6-180750	52.08	PBT6-180750X	60.78
.1800	.1960	1.000	.006	.030	.0550	.2500	2.5	PBT-1801000	52.08	PBT-1801000X	60.78
.1800	.1960	1.250	.006	.030	.0550	.2500	2.5	PBT6-1801250	52.08	PBT6-1801250X	60.78
.1800	.1960	1.500	.006	.030	.0550	.2500	2.5	PBT6-1801500	52.08	PBT6-1801500X	60.78
.2000	.2160	.375	.006	.030	.0750	.2500	2.5	PBT6-200375	52.08	PBT6-200375X	60.78
.2000	.2160	.600	.006	.030	.0750	.2500	2.5	PBT-200600	52.08	PBT-200600X	60.78
.2000	.2160	.750	.006	.030	.0750	.2500	2.5	PBT6-200750	52.08	PBT6-200750X	60.78
.2000	.2160	1.000	.006	.030	.0750	.2500	2.5	PBT-2001000	52.08	PBT-2001000X	60.78
.2000	.2160	1.250	.006	.030	.0750	.2500	2.5	PBT6-2001250	52.08	PBT6-2001250X	60.78
.2000	.2160	1.500	.006	.030	.0750	.2500	2.5	PBT6-2001500	52.08	PBT6-2001500X	60.78
.2300	.2500	.500	.004	.040	.0738	.3125	2.5	PBT4-230500	64.28	PBT4-230500X	74.58
.2300	.2500	.500	.006	.040	.0738	.3125	2.5	PBT6-230500	64.28	PBT6-230500X	74.58
.2300	.2500	.750	.004	.040	.0738	.3125	2.5	PBT4-230750	64.28	PBT4-230750X	74.58
.2300	.2500	.750	.006	.040	.0738	.3125	2.5	PBT-230750	64.28	PBT-230750X	74.58
.2300	.2500	1.100	.006	.040	.0738	.3125	2.5	PBT6-2301100	64.28	PBT6-2301100X	74.58
.2300	.2500	1.300	.006	.040	.0738	.3125	2.5	PBT6-2301300	64.28	PBT6-2301300X	74.58
.2300	.2500	1.600	.006	.040	.0738	.3125	3.0	PBT-2301600	76.38	PBT-2301600X	86.68
.2600	.2800	.500	.004	.045	.1038	.3125	2.5	PBT4-260500	64.28	PBT4-260500X	74.58
.2600	.2800	.500	.006	.045	.1038	.3125	2.5	PBT6-260500	64.28	PBT6-260500X	74.58
.2600	.2800	.750	.004	.045	.1038	.3125	2.5	PBT4-260750	64.28	PBT4-260750X	74.58
.2600	.2800	.750	.006	.045	.1038	.3125	2.5	PBT6-260750	64.28	PBT6-260750X	74.58
.3000	.3200	.750	.006	.050	.1125	.3750	2.5	PBT6-300750	77.78	PBT6-300750X	89.98
.3000	.3200	1.000	.006	.050	.1125	.3750	2.5	PBT-3001000	77.78	PBT-3001000X	89.98
.3000	.3200	1.250	.006	.050	.1125	.3750	2.5	PBT6-3001250	77.78	PBT6-3001250X	89.98
.3000	.3200	1.600	.006	.050	.1125	.3750	3.0	PBT6-3001600	77.78	PBT6-3001600X	89.98
.3000	.3200	2.100	.006	.050	.1125	.3750	3.5	PBT6-3002100	77.78	PBT6-3002100X	90.88

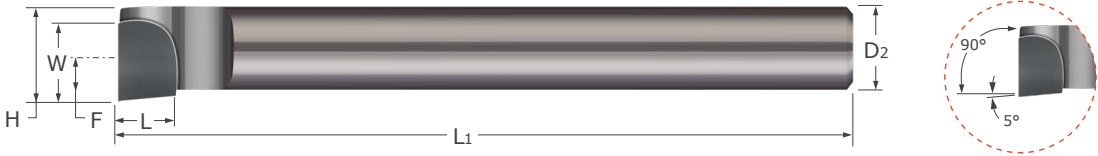
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Boring Tools

See pgs 39-47 for standard tool holders



TBB

Standard – Boring Tools
Right Hand – Brazed – Sharp

- Designed for right hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Sharp corner profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

Head Width	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	
H	W	L	F	D ₂ ^{+ .000"} _{-.003"}	L ₁	Tool #	Price
.320	.250	.188	.195	.2500	4.0	TBB-250	34.38
.413	.313	.250	.257	.3125	5.0	TBB-312	35.88
.463	.313	.250	.276	.3750	6.0	TBB-375	38.48
.625	.500	.250	.375	.5000	7.0	TBB-500	47.78
.795	.500	.250	.483	.6250	8.0	TBB-625	51.78
.935	.625	.250	.560	.7500	9.0	TBB-750	53.38
1.233	.750	.375	.733	1.0000	10.0	TBB-001	65.08

See pgs 39-47 for standard tool holders

See pg 318 for tool set options

Standard – Boring Tools

TBBL

Standard – Boring Tools
Left Hand – Brazed – Sharp

- Designed for left hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Sharp corner profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

Head Width	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	
H	W	L	F	D ₂ ^{+ .000"} _{-.003"}	L ₁	Tool #	Price
.320	.250	.188	.195	.2500	4.0	TBBL-250	33.38
.413	.313	.250	.257	.3125	5.0	TBBL-312	34.38
.463	.313	.250	.276	.3750	6.0	TBBL-375	36.78
.625	.500	.250	.375	.5000	7.0	TBBL-500	47.68
.795	.500	.250	.483	.6250	8.0	TBBL-625	50.98
.935	.625	.250	.560	.7500	9.0	TBBL-750	52.18
1.233	.750	.375	.733	1.0000	10.0	TBBL-001	65.08

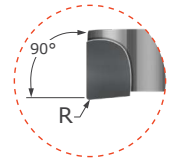
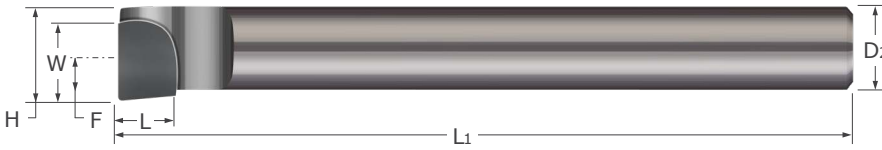
See pgs 39-47 for standard tool holders

See pg 318 for tool set options

Standard – Boring Tools

Right Hand – Brazed – Corner Radius

TBBC



- Designed for right hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

Head Width	Radius	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	
H	$R \begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	W	L	F	$D2 \begin{smallmatrix} +.0000" \\ -.0030" \end{smallmatrix}$	L1	Tool #	Price
.320	.008	.250	.188	.195	.2500	4.0	TBBC-250-008	36.98
.413	.008	.313	.250	.257	.3125	5.0	TBBC-312-008	38.48
.463	.008	.313	.250	.276	.3750	6.0	TBBC-375-008	40.98
.625	.008	.500	.250	.375	.5000	7.0	TBBC-500-008	50.38
.795	.008	.500	.250	.483	.6250	8.0	TBBC-625-008	54.38
.935	.008	.625	.250	.560	.7500	9.0	TBBC-750-008	55.98
1.233	.008	.750	.375	.733	1.0000	10.0	TBBC-001-008	65.08

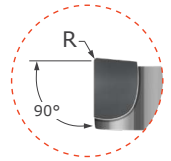
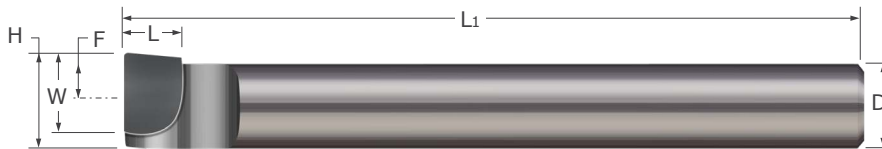
See pgs 39-47 for standard tool holders

Standard – Boring Tools

Standard – Boring Tools

Left Hand – Brazed – Corner Radius

TBBCL



- Designed for left hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

Head Width	Radius	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	
H	$R \begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	W	L	F	$D2 \begin{smallmatrix} +.0000" \\ -.0030" \end{smallmatrix}$	L1	Tool #	Price
.320	.008	.250	.188	.195	.2500	4.0	TBBCL-250-008	36.98
.413	.008	.313	.250	.257	.3125	5.0	TBBCL-312-008	38.48
.463	.008	.313	.250	.276	.3750	6.0	TBBCL-375-008	40.98
.625	.008	.500	.250	.375	.5000	7.0	TBBCL-500-008	50.38
.795	.008	.500	.250	.483	.6250	8.0	TBBCL-625-008	54.38
.935	.008	.625	.250	.560	.7500	9.0	TBBCL-750-008	55.98
1.233	.008	.750	.375	.733	1.0000	10.0	TBBCL-001-008	65.08

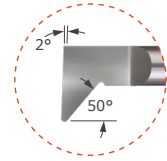
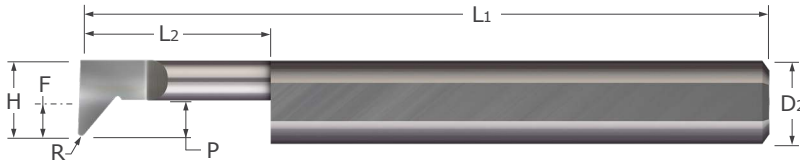
See pgs 39-47 for standard tool holders



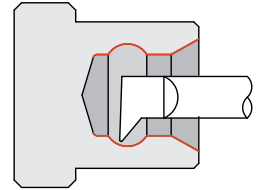
PR

Standard – Profiling Tools

Radial Profiling



- Designed for radial profiling
- Excellent choice for fine finishing
- Can be used in thread relief applications
- Split face geometry provides optimal edge strength
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
H		L2 ^{+.050"} _{-.000"}	R ^{+.002"} _{-.000"}	P	F	D2 (h6)	L1				
.0500	.0550	.150	.002	.015	-.0125	.1250	1.5	PR2-050150	40.08	PR2-050150X	45.68
.0500	.0550	.200	.002	.015	-.0125	.1250	1.5	PR2-050200	40.08	PR2-050200X	45.68
.0600	.0700	.150	.002	.020	-.0025	.1250	1.5	PR2-060150	40.08	PR2-060150X	45.68
.0600	.0700	.200	.002	.020	-.0025	.1250	1.5	PR2-060200	40.08	PR2-060200X	45.68
.0700	.0800	.150	.002	.025	.0075	.1250	1.5	PR2-070150	39.08	PR2-070150X	44.78
.0700	.0800	.200	.002	.025	.0075	.1250	1.5	PR2-070200	39.08	PR2-070200X	44.78
.0700	.0800	.200	.005	.025	.0075	.1250	1.5	PR-070200	39.08	PR-070200X	44.78
.0700	.0800	.300	.002	.025	.0075	.1250	1.5	PR2-070300	39.08	PR2-070300X	44.78
.0700	.0800	.500	.002	.025	.0075	.1250	1.5	PR2-070500	39.08	PR2-070500X	44.78
.0700	.0800	.500	.005	.025	.0075	.1250	1.5	PR-070500	39.08	PR-070500X	44.78
.0800	.0900	.200	.002	.030	.0175	.1250	1.5	PR2-080200	39.08	PR2-080200X	44.78
.0800	.0900	.300	.002	.030	.0175	.1250	1.5	PR2-080300	39.08	PR2-080300X	44.78
.0900	.1000	.200	.002	.030	.0275	.1250	1.5	PR2-090200	39.08	PR2-090200X	45.08
.0900	.1000	.300	.002	.030	.0275	.1250	1.5	PR2-090300	39.08	PR2-090300X	44.78
.1000	.1100	.200	.002	.035	.0375	.1250	1.5	PR2-100200	39.08	PR2-100200X	44.78
.1000	.1100	.200	.005	.035	.0375	.1250	1.5	PR5-100200	39.08	PR5-100200X	45.08
.1000	.1100	.300	.002	.035	.0375	.1250	1.5	PR2-100300	39.08	PR2-100300X	44.78
.1000	.1100	.300	.005	.035	.0375	.1250	1.5	PR5-100300	39.08	PR5-100300X	44.78
.1100	.1240	.250	.005	.040	.0475	.1250	1.5	PR-110250	39.08	PR-110250X	44.78
.1100	.1240	.375	.005	.040	.0475	.1250	1.5	PR5-110375	39.08	PR5-110375X	44.78
.1100	.1240	.500	.005	.040	.0475	.1250	1.5	PR5-110500	39.08	PR5-110500X	44.78
.1200	.1340	.250	.008	.050	.0263	.1875	2.0	PR-120250	40.78	PR-120250X	47.08
.1200	.1340	.375	.005	.050	.0263	.1875	2.0	PR5-120375	40.78	PR5-120375X	47.08
.1200	.1340	.375	.008	.050	.0263	.1875	2.0	PR8-120375	40.78	PR8-120375X	47.08
.1200	.1340	.500	.008	.050	.0263	.1875	2.0	PR-120500	40.78	PR-120500X	47.08
.1200	.1340	.750	.005	.050	.0263	.1875	2.0	PR5-120750	40.78	PR5-120750X	47.08
.1200	.1340	.750	.008	.050	.0263	.1875	2.0	PR8-120750	40.78	PR8-120750X	47.08

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Profiling Tools

PR

Radial Profiling (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AITIN Coated	
								Tool #	Price	Tool #	Price
H		$L_2^{+.050"}_{-.000"} $	$R^{+.002"}_{-.000"} $	P	F	D2 (h6)	L1				
.1400	.1540	.375	.005	.050	.0463	.1875	2.0	PR5-140375	40.78	PR5-140375X	47.08
.1400	.1540	.375	.008	.050	.0463	.1875	2.0	PR8-140375	40.78	PR8-140375X	47.08
.1400	.1540	.500	.005	.050	.0463	.1875	2.0	PR5-140500	40.78	PR5-140500X	47.08
.1400	.1540	.500	.008	.050	.0463	.1875	2.0	PR8-140500	40.78	PR8-140500X	47.08
.1600	.1780	.375	.008	.050	.0663	.1875	2.0	PR8-160375	40.78	PR8-160375X	47.08
.1600	.1780	.500	.008	.050	.0663	.1875	2.0	PR-160500	40.78	PR-160500X	47.08
.1600	.1780	.750	.008	.050	.0663	.1875	2.0	PR8-160750	40.78	PR8-160750X	47.08
.1600	.1780	1.000	.008	.050	.0663	.1875	2.0	PR8-1601000	40.78	PR8-1601000X	47.08
.1800	.1980	.375	.008	.080	.0550	.2500	2.5	PR8-180375	52.18	PR8-180375X	60.78
.1800	.1980	.500	.008	.080	.0550	.2500	2.5	PR-180500	52.18	PR-180500X	60.78
.1800	.1980	.750	.008	.080	.0550	.2500	2.5	PR-180750	52.18	PR-180750X	60.78
.1800	.1980	1.000	.008	.080	.0550	.2500	2.5	PR8-1801000	52.18	PR8-1801000X	60.78
.2000	.2180	.500	.005	.080	.0750	.2500	2.5	PR5-200500	52.18	PR5-200500X	60.78
.2000	.2180	.500	.008	.080	.0750	.2500	2.5	PR8-200500	52.18	PR8-200500X	60.78
.2000	.2180	.750	.005	.080	.0750	.2500	2.5	PR5-200750	52.18	PR5-200750X	60.78
.2000	.2180	.750	.008	.080	.0750	.2500	2.5	PR8-200750	52.18	PR8-200750X	60.78
.2300	.2520	.500	.008	.080	.0738	.3125	2.5	PR8-230500	64.28	PR8-230500X	74.58
.2300	.2520	.750	.008	.080	.0738	.3125	2.5	PR-230750	64.28	PR-230750X	74.58
.2300	.2520	1.000	.008	.080	.0738	.3125	2.5	PR-2301000	64.28	PR-2301000X	74.58
.2300	.2520	1.250	.008	.080	.0738	.3125	2.5	PR8-2301250	64.28	PR8-2301250X	74.58
.2600	.2820	.750	.008	.090	.1038	.3125	2.5	PR8-260750	64.28	PR8-260750X	74.58
.2600	.2820	1.000	.008	.090	.1038	.3125	2.5	PR8-2601000	64.28	PR8-2601000X	74.58
.3000	.3220	.750	.008	.110	.1438	.3125	2.5	PR8-300750	64.28	PR8-300750X	74.58
.3000	.3220	1.000	.008	.110	.1438	.3125	2.5	PR-3001000	64.28	PR-3001000X	74.58
.3000	.3220	1.250	.008	.110	.1438	.3125	2.5	PR-3001250	64.28	PR-3001250X	74.58
.3600	.3820	.750	.008	.130	.1725	.3750	2.5	PR8-360750	83.28	PR8-360750X	95.68
.3600	.3820	1.000	.008	.130	.1725	.3750	2.5	PR-3601000	83.28	PR-3601000X	95.68
.3600	.3820	1.250	.008	.130	.1725	.3750	2.5	PR-3601250	83.28	PR-3601250X	95.68
.4600	.4820	.750	.008	.150	.2100	.5000	3.0	PR8-460750	114.88	PR8-460750X	131.48
.4600	.4820	1.000	.008	.150	.2100	.5000	3.0	PR8-4601000	114.88	PR8-4601000X	131.48

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

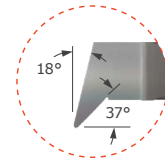
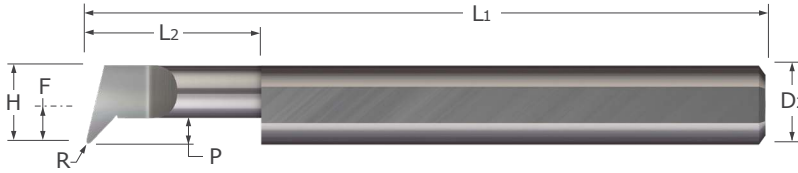
Standard – Profiling Tools

See pgs 39-47 for standard tool holders

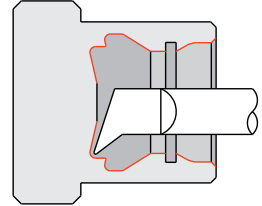


PA

Standard – Profiling Tools
Angled Profiling



- Designed for both radial and axial profiling
- Unique design maximizes tool versatility and part feature creation
- Excellent choice for fine finishing
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
H		L2 ^{+.030"} _{-.000"}	R ^{+.0005"} _{-.0005"}	P	F	D2 (h6)	L1				
.0500	.0550	.150	.0020	.015	-.0125	.1250	1.5	PA2-050150	40.08	PA2-050150X	45.68
.0500	.0550	.200	.0020	.015	-.0125	.1250	1.5	PA2-050200	40.08	PA2-050200X	45.68
.0600	.0700	.150	.0020	.020	-.0025	.1250	1.5	PA2-060150	40.08	PA2-060150X	46.08
.0600	.0700	.200	.0020	.020	-.0025	.1250	1.5	PA2-060200	40.08	PA2-060200X	46.08
.0700	.0800	.150	.0020	.020	.0075	.1250	1.5	PA2-070150	39.08	PA2-070150X	44.78
.0700	.0800	.200	.0020	.020	.0075	.1250	1.5	PA2-070200	39.08	PA2-070200X	44.78
.0800	.0900	.200	.0020	.025	.0175	.1250	1.5	PA2-080200	39.08	PA2-080200X	45.08
.0800	.0900	.300	.0020	.025	.0175	.1250	1.5	PA2-080300	39.08	PA2-080300X	44.78
.0900	.1000	.200	.0020	.030	.0275	.1250	1.5	PA2-090200	39.08	PA2-090200X	44.78
.0900	.1000	.300	.0020	.030	.0275	.1250	1.5	PA2-090300	39.08	PA2-090300X	45.08
.1000	.1100	.200	.0020	.030	.0375	.1250	1.5	PA2-100200	39.08	PA2-100200X	45.08
.1000	.1100	.200	.0050	.030	.0375	.1250	1.5	PA5-100200	39.08	PA5-100200X	44.78
.1000	.1100	.300	.0020	.030	.0375	.1250	1.5	PA2-100300	39.08	PA2-100300X	44.78
.1000	.1100	.300	.0050	.030	.0375	.1250	1.5	PA5-100300	39.08	PA5-100300X	44.78
.1100	.1240	.250	.0050	.035	.0475	.1250	1.5	PA5-110250	39.08	PA5-110250X	44.78
.1100	.1240	.375	.0050	.035	.0475	.1250	1.5	PA5-110375	39.08	PA5-110375X	44.78
.1200	.1340	.250	.0050	.035	.0263	.1875	2.0	PA5-120250	40.78	PA5-120250X	47.08
.1200	.1340	.375	.0050	.035	.0263	.1875	2.0	PA5-120375	40.78	PA5-120375X	47.08
.1400	.1540	.375	.0050	.040	.0463	.1875	2.0	PA5-140375	40.78	PA5-140375X	47.08
.1400	.1540	.500	.0050	.040	.0463	.1875	2.0	PA5-140500	40.78	PA5-140500X	47.08
.1600	.1780	.375	.0050	.050	.0663	.1875	2.0	PA5-160375	40.78	PA5-160375X	47.08
.1600	.1780	.500	.0050	.050	.0663	.1875	2.0	PA5-160500	40.78	PA5-160500X	47.08
.1800	.1980	.375	.0050	.055	.0550	.2500	2.5	PA5-180375	52.18	PA5-180375X	60.78
.1800	.1980	.500	.0050	.055	.0550	.2500	2.5	PA5-180500	52.18	PA5-180500X	60.78

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Profiling Tools

PA

Angled Profiling (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AITIN Coated	
								Tool #	Price	Tool #	Price
H		$L_2 \begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	$R \begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	P	F	D ₂ (h6)	L ₁				
.2000	.2180	.500	.0050	.060	.0750	.2500	2.5	PA5-200500	52.18	PA5-200500X	60.78
.2000	.2180	.500	.0080	.060	.0750	.2500	2.5	PA8-200500	52.18	PA8-200500X	60.78
.2000	.2180	.750	.0050	.060	.0750	.2500	2.5	PA5-200750	52.18	PA5-200750X	60.78
.2000	.2180	.750	.0080	.060	.0750	.2500	2.5	PA8-200750	52.18	PA8-200750X	60.78
.2300	.2520	.500	.0080	.070	.0738	.3125	2.5	PA8-230500	64.28	PA8-230500X	74.58
.2300	.2520	.750	.0080	.070	.0738	.3125	2.5	PA8-230750	64.28	PA8-230750X	74.58
.2600	.2820	.750	.0080	.080	.1038	.3125	2.5	PA8-260750	64.28	PA8-260750X	74.58
.2600	.2820	1.000	.0080	.080	.1038	.3125	2.5	PA8-2601000	64.28	PA8-2601000X	74.58
.3000	.3220	.750	.0080	.090	.1438	.3125	2.5	PA8-300750	64.28	PA8-300750X	74.58
.3000	.3220	1.000	.0080	.090	.1438	.3125	2.5	PA8-3001000	64.28	PA8-3001000X	74.58
.3600	.3820	.750	.0080	.110	.1725	.3750	2.5	PA8-360750	83.28	PA8-360750X	95.68
.3600	.3820	1.000	.0080	.110	.1725	.3750	2.5	PA8-3601000	83.28	PA8-3601000X	95.68
.4100	.4320	.750	.0080	.120	.1600	.5000	3.0	PA8-410750	116.68	PA8-410750X	133.38
.4100	.4320	1.250	.0080	.120	.1600	.5000	3.0	PA8-4101250	116.68	PA8-4101250X	133.38
.4600	.4820	.750	.0080	.140	.2100	.5000	3.0	PA8-460750	116.68	PA8-460750X	133.38
.4600	.4820	1.000	.0080	.140	.2100	.5000	3.0	PA8-4601000	116.68	PA8-4601000X	133.38

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Profiling Tools



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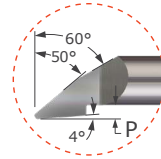
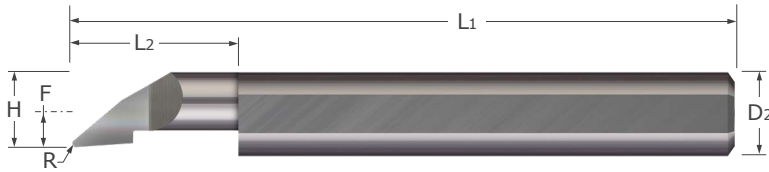
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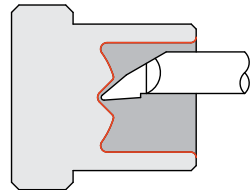


PF

Standard – Profiling Tools
Axial Profiling



- Designed for both radial and axial profiling
- Unique design maximizes tool versatility and part feature creation
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Coolant fed enabled shank design
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
H		L ₂ ^{+0.050"} / _{-.000"}	R ^{+0.002"} / _{-.000"}	P	F	D ₂ (h6)	L ₁				
.0500	.0550	.150	.005	.005	-.0125	.1250	1.5	PF5-050150	40.08	PF5-050150X	45.68
.0500	.0550	.200	.005	.005	-.0125	.1250	1.5	PF5-050200	40.08	PF5-050200X	45.68
.0600	.0700	.200	.005	.005	-.0025	.1250	1.5	PF5-060200	40.08	PF5-060200X	45.68
.0600	.0700	.250	.005	.005	-.0025	.1250	1.5	PF5-060250	39.08	PF5-060250X	44.78
.0700	.0800	.200	.005	.010	.0075	.1250	1.5	PF-070200	39.08	PF-070200X	45.08
.0700	.0800	.400	.005	.010	.0075	.1250	1.5	PF-070400	39.08	PF-070400X	44.78
.0700	.0800	.500	.005	.010	.0075	.1250	1.5	PF-070500	39.08	PF-070500X	44.78
.0800	.0900	.150	.005	.010	.0175	.1250	1.5	PF5-080150	39.08	PF5-080150X	44.78
.0800	.0900	.200	.005	.010	.0175	.1250	1.5	PF5-080200	39.08	PF5-080200X	45.08
.0800	.0900	.250	.005	.010	.0175	.1250	1.5	PF5-080250	39.08	PF5-080250X	45.08
.0900	.1000	.200	.005	.010	.0275	.1250	1.5	PF5-090200	39.08	PF5-090200X	44.78
.0900	.1000	.300	.005	.010	.0275	.1250	1.5	PF5-090300	39.08	PF5-090300X	45.08
.1000	.1100	.300	.005	.015	.0375	.1250	1.5	PF5-100300	39.08	PF5-100300X	44.78
.1000	.1100	.400	.005	.015	.0375	.1250	1.5	PF5-100400	39.08	PF5-100400X	44.78
.1100	.1220	.250	.005	.015	.0475	.1250	1.5	PF-110250	39.08	PF-110250X	44.78
.1100	.1220	.375	.005	.015	.0475	.1250	1.5	PF5-110375	39.08	PF5-110375X	44.78
.1100	.1220	.500	.005	.015	.0475	.1250	1.5	PF-110500	39.08	PF-110500X	44.78
.1100	.1220	.750	.005	.015	.0475	.1250	1.5	PF-110750	39.08	PF-110750X	44.78
.1200	.1320	.250	.005	.020	.0263	.1875	2.0	PF5-120250	40.78	PF5-120250X	47.08
.1200	.1320	.250	.008	.020	.0263	.1875	2.0	PF-120250	40.78	PF-120250X	47.08
.1200	.1320	.375	.005	.020	.0263	.1875	2.0	PF5-120375	40.78	PF5-120375X	47.08
.1200	.1320	.375	.008	.020	.0263	.1875	2.0	PF8-120375	40.78	PF8-120375X	47.08
.1200	.1320	.500	.008	.020	.0263	.1875	2.0	PF-120500	40.78	PF-120500X	47.08
.1200	.1320	.750	.008	.020	.0263	.1875	2.0	PF-120750	40.78	PF-120750X	47.08
.1400	.1520	.375	.008	.020	.0463	.1875	2.0	PF8-140375	40.78	PF8-140375X	47.08
.1400	.1520	.500	.008	.020	.0463	.1875	2.0	PF8-140500	40.78	PF8-140500X	47.08

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard - Profiling Tools

PF

Axial Profiling (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
H		L ₂ ^{+0.050"} / _{-.000"}	R ^{+0.002"} / _{-.000"}	P	F	D ₂ (h6)	L ₁				
.1600	.1760	.375	.008	.030	.0663	.1875	2.0	PF8-160375	40.78	PF8-160375X	47.08
.1600	.1760	.500	.008	.030	.0663	.1875	2.0	PF-160500	40.78	PF-160500X	47.08
.1600	.1760	.750	.008	.030	.0663	.1875	2.0	PF-160750	40.78	PF-160750X	47.08
.1800	.1960	.375	.008	.030	.0550	.2500	2.5	PF8-180375	52.18	PF8-180375X	60.78
.1800	.1960	.500	.008	.030	.0550	.2500	2.5	PF-180500	52.18	PF-180500X	60.78
.1800	.1960	.750	.008	.030	.0550	.2500	2.5	PF-180750	52.18	PF-180750X	60.78
.1800	.1960	1.000	.008	.030	.0550	.2500	2.5	PF-1801000	52.18	PF-1801000X	60.78
.2000	.2160	.400	.008	.030	.0750	.2500	2.5	PF8-200400	52.18	PF8-200400X	60.78
.2000	.2160	.600	.008	.030	.0750	.2500	2.5	PF-200600	52.18	PF-200600X	60.78
.2000	.2160	.800	.008	.030	.0750	.2500	2.5	PF8-200800	52.18	PF8-200800X	60.78
.2000	.2160	1.000	.008	.030	.0750	.2500	2.5	PF-2001000	52.18	PF-2001000X	60.78
.2300	.2500	.500	.008	.030	.0738	.3125	2.5	PF8-230500	64.28	PF8-230500X	74.58
.2300	.2500	.750	.008	.030	.0738	.3125	2.5	PF-230750	64.28	PF-230750X	74.58
.2300	.2500	1.000	.008	.030	.0738	.3125	2.5	PF-2301000	64.28	PF-2301000X	74.58
.2300	.2500	1.250	.008	.030	.0738	.3125	2.5	PF-2301250	64.28	PF-2301250X	74.58
.2600	.2800	.750	.008	.030	.1038	.3125	2.5	PF8-260750	64.28	PF8-260750X	74.58
.3000	.3200	1.000	.008	.030	.1438	.3125	2.5	PF-3001000	64.28	PF-3001000X	74.58
.3600	.3800	.750	.008	.030	.1725	.3750	2.5	PF8-360750	83.28	PF8-360750X	95.68
.3600	.3800	1.000	.008	.030	.1725	.3750	2.5	PF-3601000	83.28	PF-3601000X	95.68
.4100	.4300	.750	.008	.040	.1600	.5000	3.0	PF8-410750	114.88	PF8-410750X	131.48
.4100	.4300	1.000	.008	.040	.1600	.5000	3.0	PF8-4101000	114.88	PF8-4101000X	131.48
.4600	.4800	.750	.008	.050	.2100	.5000	3.0	PF8-460750	114.88	PF8-460750X	131.48
.4600	.4800	1.000	.008	.050	.2100	.5000	3.0	PF8-4601000	114.88	PF8-4601000X	131.48

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

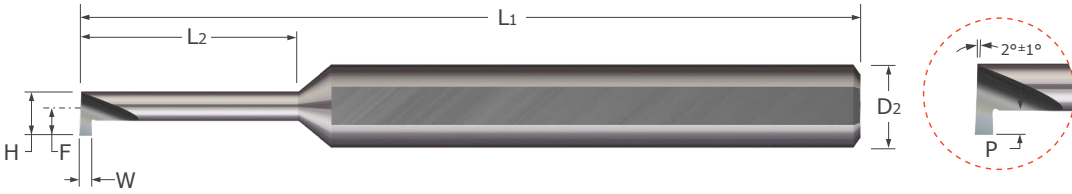
Standard - Profiling Tools

See pgs 39-47 for standard tool holders

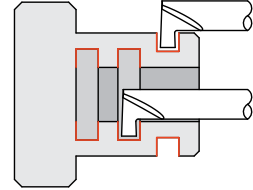


MRR

Standard – Grooving Tools
Retaining Ring – Square – Right Hand – Miniature



- Designed for generating retaining ring grooves in bores .070" and larger
- Polished face for improved edge retention and chip evacuation while reducing galling
- On-center neck design
- Coolant fed enabled shank design
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Width	Head Width	Min. Bore Diameter*	Maximum Bore Depth	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .001"} _{-.000"}	H		L2 ^{+ .030"} _{-.000"}	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.015	.0600	.0700	.150	.020	.0400	.1250	1.5	MRR-015-150-060	45.28	MRR-015-150-060X	50.98
.015	.0600	.0700	.250	.020	.0400	.1250	1.5	MRR-015-250-060	45.28	MRR-015-250-060X	50.98
.020	.0600	.0700	.150	.020	.0400	.1250	1.5	MRR-020-150-060	45.28	MRR-020-150-060X	50.98
.020	.0600	.0700	.250	.020	.0400	.1250	1.5	MRR-020-250-060	45.28	MRR-020-250-060X	50.98
.020	.0700	.0800	.100	.020	.0450	.1250	1.5	MRR-020-100-070	45.28	MRR-020-100-070X	50.98
.020	.0700	.0800	.150	.020	.0450	.1250	1.5	MRR-020-150-070	45.28	MRR-020-150-070X	50.98
.020	.0800	.0900	.150	.025	.0525	.1250	1.5	MRR-020-150-080	45.28	MRR-020-150-080X	50.98
.020	.0800	.0900	.250	.025	.0525	.1250	1.5	MRR-020-250-080	45.28	MRR-020-250-080X	50.98
.020	.0900	.1000	.150	.025	.0575	.1250	1.5	MRR-020-150-090	45.28	MRR-020-150-090X	50.98
.020	.0900	.1000	.250	.025	.0575	.1250	1.5	MRR-020-250-090	45.28	MRR-020-250-090X	50.98
.020	.1000	.1100	.150	.030	.0650	.1875	2.0	MRR-020-150-100	47.78	MRR-020-150-100X	54.28
.020	.1000	.1100	.250	.030	.0650	.1875	2.0	MRR-020-250-100	47.78	MRR-020-250-100X	54.28
.020	.1200	.1340	.150	.040	.0800	.1875	2.0	MRR-020-150-120	47.78	MRR-020-150-120X	54.28
.020	.1200	.1340	.250	.040	.0800	.1875	2.0	MRR-020-250-120	47.78	MRR-020-250-120X	54.28
.030	.0700	.0800	.100	.020	.0450	.1250	1.5	MRR-030-100-070	45.28	MRR-030-100-070X	50.98
.030	.0700	.0800	.150	.020	.0450	.1250	1.5	MRR-030-150-070	45.28	MRR-030-150-070X	50.98
.030	.0800	.0900	.150	.025	.0525	.1250	1.5	MRR-030-150-080	45.28	MRR-030-150-080X	50.98
.030	.0800	.0900	.250	.025	.0525	.1250	1.5	MRR-030-250-080	45.28	MRR-030-250-080X	50.98
.030	.0900	.1000	.150	.025	.0575	.1250	1.5	MRR-030-150-090	45.28	MRR-030-150-090X	50.98
.030	.0900	.1000	.250	.025	.0575	.1250	1.5	MRR-030-250-090	45.28	MRR-030-250-090X	50.98
.030	.1000	.1100	.150	.030	.0650	.1875	2.0	MRR-030-150-100	47.78	MRR-030-150-100X	54.28
.030	.1000	.1100	.250	.030	.0650	.1875	2.0	MRR-030-250-100	47.78	MRR-030-250-100X	54.28
.030	.1200	.1340	.150	.040	.0800	.1875	2.0	MRR-030-150-120	47.78	MRR-030-150-120X	54.28
.030	.1200	.1340	.250	.040	.0800	.1875	2.0	MRR-030-250-120	47.78	MRR-030-250-120X	54.28

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

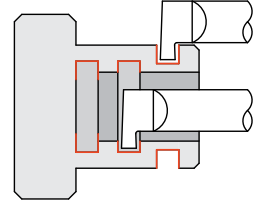
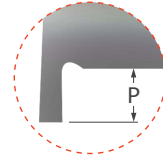
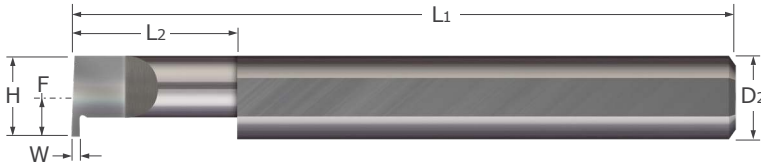
See pgs 39-47 for standard tool holders



Standard – Grooving Tools

Retaining Ring – Square – Right Hand

RR / RRM



- Designed for generating retaining ring grooves
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- Coating options provide added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Standard – Grooving Tools

Width	Head Width	Min. Bore Dia*	Max. Bore Depth	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TIN Coated		AlTiN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
W $\begin{matrix} +.001" \\ -.000" \\ \text{dec. equiv.} \\ +.025\text{mm} \\ -.000\text{mm} \end{matrix}$	H		$\begin{matrix} +.050" \\ -.000" \\ +1.25\text{mm} \\ -.00\text{mm} \end{matrix}$	P	F	D2 (h6)	L1						
0.3 mm .0118	3 mm	3.35 mm	10 mm	0.60 mm	1.5 mm	4 mm	50 mm	RRM-030-10	43.08			RRM-030-10X	49.38
0.3 mm .0118	3 mm	3.35 mm	15 mm	0.60 mm	1.5 mm	4 mm	50 mm	RRM-030-15	43.08			RRM-030-15X	49.38
0.4 mm .0157	4 mm	4.45 mm	10 mm	0.80 mm	2 mm	4 mm	50 mm	RRM-040-10	43.08			RRM-040-10X	49.38
0.4 mm .0157	4 mm	4.45 mm	15 mm	0.80 mm	2 mm	4 mm	50 mm	RRM-040-15	43.08			RRM-040-15X	49.38
0.4 mm .0157	4 mm	4.45 mm	20 mm	0.80 mm	2 mm	4 mm	50 mm	RRM-040-20	43.08	RRM-040-20G	48.18	RRM-040-20X	49.38
.017 .0170	.187	.205	.250	.030	.0937	.1875	2.0	RR-017-250-187	46.88			RR-017-250-187X	53.18
.017 .0170	.187	.205	.375	.030	.0937	.1875	2.0	RR-017-375-187	46.88			RR-017-375-187X	53.48
.017 .0170	.187	.205	.500	.030	.0937	.1875	2.0	RR-017-500-187	46.88			RR-017-500-187X	53.48
.017 .0170	.187	.205	.625	.030	.0937	.1875	2.0	RR-017-625-187	46.88			RR-017-625-187X	53.18
.017 .0170	.250	.272	.250	.050	.1250	.2500	2.5	RR-017-4	50.98			RR-017-4X	59.68
.017 .0170	.250	.272	.375	.050	.1250	.2500	2.5	RR-017-6	50.98			RR-017-6X	59.68
.017 .0170	.250	.272	.500	.050	.1250	.2500	2.5	RR-017-8	50.98			RR-017-8X	59.68
.017 .0170	.250	.272	.625	.050	.1250	.2500	2.5	RR-017-10	50.98			RR-017-10X	59.68
0.5 mm .0200	6 mm	6.55 mm	10 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-050-10	50.08	RRM-050-10G	57.38	RRM-050-10X	58.68
0.5 mm .0200	6 mm	6.55 mm	20 mm	1.24 mm	3 mm	6 mm	57 mm					RRM-050-20X	58.68
0.5 mm .0200	6 mm	6.55 mm	25 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-050-25	50.08	RRM-050-25G	57.38	RRM-050-25X	58.68
.020 .0200	.120	.134	.150	.030	.0262	.1875	2.0	RR-020-150-120	46.88			RR-020-150-120X	53.18
.020 .0200	.120	.134	.250	.030	.0262	.1875	2.0	RR-020-250-120	46.88			RR-020-250-120X	53.18
.020 .0200	.140	.154	.250	.030	.0462	.1875	2.0	RR-020-250-140	46.88			RR-020-250-140X	53.18
.020 .0200	.140	.154	.375	.030	.0462	.1875	2.0	RR-020-375-140	46.88			RR-020-375-140X	53.18
.020 .0200	.160	.178	.250	.030	.0662	.1875	2.0	RR-020-250-160	46.88			RR-020-250-160X	53.48
.020 .0200	.160	.178	.375	.030	.0662	.1875	2.0	RR-020-375-160	46.88			RR-020-375-160X	53.18
.020 .0200	.187	.205	.250	.030	.0937	.1875	2.0	RR-020-250-187	46.88			RR-020-250-187X	53.18
.020 .0200	.187	.205	.375	.030	.0937	.1875	2.0	RR-020-375-187	46.88			RR-020-375-187X	53.18
.020 .0200	.187	.205	.500	.030	.0937	.1875	2.0	RR-020-500-187	46.88			RR-020-500-187X	53.18
.020 .0200	.187	.205	.625	.030	.0937	.1875	2.0	RR-020-625-187	46.88			RR-020-625-187X	53.18
.020 .0200	.250	.272	.250	.050	.1250	.2500	2.5	RR-020-250-250	50.98			RR-020-250-250X	59.68
.020 .0200	.250	.272	.375	.050	.1250	.2500	2.5	RR-020-375-250	50.98			RR-020-375-250X	59.68
.020 .0200	.250	.272	.500	.050	.1250	.2500	2.5	RR-020-500-250	50.98			RR-020-500-250X	59.68
.020 .0200	.250	.272	.625	.050	.1250	.2500	2.5	RR-020-625-250	50.98			RR-020-625-250X	59.68

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



RR / RRM

Standard – Grooving Tools

Retaining Ring – Square – Right Hand (cont.)

Continued from previous page

Width W +.001" dec. -.000" equiv. +.025mm -.000mm	Head Width H	Min. Bore Dia* L2	Max. Bore Depth L2 +.050" - .000" +1.25mm - .00mm	Proj. P	Centerline Offset F	Shank Dia. D2 (h6)	OAL L1	Uncoated		TiN Coated		AlTiN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
.025 .0250	.250	.272	.250	.050	.1250	.2500	2.5	RR-025-4	50.98			RR-025-4X	59.68
.025 .0250	.250	.272	.375	.050	.1250	.2500	2.5	RR-025-6	50.98			RR-025-6X	59.68
.025 .0250	.250	.272	.500	.050	.1250	.2500	2.5	RR-025-8	50.98			RR-025-8X	59.68
.025 .0250	.250	.272	.625	.050	.1250	.2500	2.5	RR-025-10	50.98			RR-025-10X	59.68
.025 .0250	.250	.272	.750	.050	.1250	.2500	2.5	RR-025-750-250	50.98			RR-025-750-250X	59.68
.025 .0250	.250	.272	1.000	.050	.1250	.2500	2.5	RR-025-1000-250	50.98			RR-025-1000-250X	59.68
0.7 mm .0280	6 mm	6.55 mm	10 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-070-10	50.08			RRM-070-10X	58.68
0.7 mm .0280	6 mm	6.55 mm	15 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-070-15	50.08				
0.7 mm .0280	6 mm	6.55 mm	20 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-070-20	50.08				
0.7 mm .0280	6 mm	6.55 mm	25 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-070-25	50.08	RRM-070-25G	57.38	RRM-070-25X	58.68
.029 .0290	.250	.272	.250	.050	.1250	.2500	2.5	RR-029-250-250	50.98			RR-029-250-250X	59.68
.029 .0290	.250	.272	.500	.050	.1250	.2500	2.5	RR-029-500-250	50.98			RR-029-500-250X	59.68
.030 .0300	.120	.134	.150	.030	.0262	.1875	2.0	RR-030-150-120	46.88			RR-030-150-120X	53.18
.030 .0300	.120	.134	.250	.030	.0262	.1875	2.0	RR-030-250-120	46.88			RR-030-250-120X	53.18
.030 .0300	.140	.154	.250	.030	.0462	.1875	2.0	RR-030-250-140	46.88			RR-030-250-140X	53.18
.030 .0300	.140	.154	.375	.030	.0462	.1875	2.0	RR-030-375-140	46.88			RR-030-375-140X	53.18
NEW .030 .0300	.140	.154	.375	.050	.0462	.1875	2.0	RR-6757	46.88			RR-6757X	53.48
.030 .0300	.160	.178	.250	.030	.0662	.1875	2.0	RR-030-250-160	46.88			RR-030-250-160X	53.18
.030 .0300	.160	.178	.375	.030	.0662	.1875	2.0	RR-030-375-160	46.88			RR-030-375-160X	53.18
NEW .030 .0300	.160	.178	.375	.050	.0662	.1875	2.0	RR-3565	46.88			RR-3565X	53.48
.030 .0300	.187	.205	.250	.030	.0937	.1875	2.0	RR-030-250-187	46.88			RR-030-250-187X	53.18
NEW .030 .0300	.187	.205	.250	.050	.0937	.1875	2.0	RR-0495	46.88			RR-0495X	53.48
.030 .0300	.187	.205	.500	.030	.0937	.1875	2.0	RR-030-500-187	46.88			RR-030-500-187X	53.18
NEW .030 .0300	.187	.205	.500	.050	.0937	.1875	2.0	RR-5911	46.88			RR-5911X	53.48
.030 .0300	.250	.272	.250	.050	.1250	.2500	2.5	RR-030-4	50.98			RR-030-4X	59.68
.030 .0300	.250	.272	.375	.050	.1250	.2500	2.5	RR-030-6	50.98			RR-030-6X	59.68
.030 .0300	.250	.272	.500	.050	.1250	.2500	2.5	RR-030-8	50.98			RR-030-8X	59.68
.030 .0300	.250	.272	.625	.050	.1250	.2500	2.5	RR-030-10	50.98			RR-030-10X	59.68
.030 .0300	.250	.272	.750	.050	.1250	.2500	2.5	RR-030-750-250	50.98			RR-030-750-250X	59.68
.030 .0300	.250	.272	1.000	.050	.1250	.2500	2.5	RR-030-1000-250	50.98			RR-030-1000-250X	59.68
.030 .0300	.312	.334	.500	.100	.1562	.3125	2.5	RR-030-500-312	63.58			RR-030-500-312X	73.88
.030 .0300	.312	.334	.750	.100	.1562	.3125	2.5	RR-030-750-312	63.58			RR-030-750-312X	73.88
.031 .0310	.250	.272	.250	.050	.1250	.2500	2.5	RR-031-250-250	50.98			RR-031-250-250X	59.68
.031 .0310	.250	.272	.500	.050	.1250	.2500	2.5	RR-031-500-250	50.98			RR-031-500-250X	59.68
0.8 mm .0310	6 mm	6.55 mm	15 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-080-15	50.08	RRM-080-15G	57.38	RRM-080-15X	58.68
0.8 mm .0310	6 mm	6.55 mm	25 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-080-25	50.08	RRM-080-25G	57.38	RRM-080-25X	58.68
.033 .0330	.312	.334	.250	.100	.1562	.3125	2.5	RR-033-4	63.58			RR-033-4X	73.88
.033 .0330	.312	.334	.375	.100	.1562	.3125	2.5	RR-033-6	63.58			RR-033-6X	73.88
.033 .0330	.312	.334	.500	.100	.1562	.3125	2.5	RR-033-8	63.58			RR-033-8X	73.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Grooving Tools

Retaining Ring – Square – Right Hand (cont.)

RR / RRM

Continued from previous page

Width W +.001" dec. -.000" equiv. +.025mm -.000mm	Head Width H	Min. Bore Dia* L2	Max. Bore Depth L2 +.050" -.000" +1.25mm -.00mm	Proj. P	Centerline Offset F	Shank Dia. D2 (h6)	OAL L1	Uncoated		TIN Coated		AITIN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
.033 .0330	.312	.334	.750	.100	.1562	.3125	2.5	RR-033-12	63.58			RR-033-12X	73.88
.033 .0330	.312	.334	1.000	.100	.1562	.3125	2.5	RR-033-1000-312	63.58			RR-033-1000-312X	73.88
.033 .0330	.312	.334	1.250	.100	.1562	.3125	2.5	RR-033-1250-312	63.58			RR-033-1250-312X	73.88
0.9 mm .0350	8 mm	8.55 mm	20 mm	2.50 mm	4 mm	8 mm	63 mm	RRM-090-20	60.28				
0.9 mm .0350	8 mm	8.55 mm	30 mm	2.50 mm	4 mm	8 mm	63 mm	RRM-090-30	60.28			RRM-090-30X	72.68
.038 .0380	.250	.272	.250	.050	.1250	.2500	2.5	RR-038-250-250	50.98			RR-038-250-250X	59.68
.038 .0380	.250	.272	.500	.050	.1250	.2500	2.5	RR-038-500-250	50.98			RR-038-500-250X	59.68
.038 .0380	.250	.272	.500	.080	.1250	.2500	2.5	RR-9076	50.98			RR-9076X	59.68
.038 .0380	.312	.334	.250	.100	.1562	.3125	2.5	RR-038-4	63.58			RR-038-4X	73.88
.038 .0380	.312	.334	.375	.100	.1562	.3125	2.5	RR-038-6	63.58			RR-038-6X	73.88
.038 .0380	.312	.334	.500	.100	.1562	.3125	2.5	RR-038-8	63.58			RR-038-8X	73.88
.038 .0380	.312	.334	.750	.100	.1562	.3125	2.5	RR-038-12	63.58			RR-038-12X	73.88
.038 .0380	.312	.334	1.000	.100	.1562	.3125	2.5	RR-038-1000-312	63.58			RR-038-1000-312X	73.88
.038 .0380	.312	.334	1.250	.100	.1562	.3125	2.5	RR-038-1250-312	63.58			RR-038-1250-312X	73.88

Standard – Grooving Tools

Width W +.002" dec. -.000" equiv. +.050mm -.000mm	H	L2	L2 +.050" -.000" +1.25mm -.00mm	P	F	D2 (h6)	L1	Uncoated		TIN Coated		AITIN Coated	
								Tool #	Price	Tool #	Price	Tool #	Price
.039 .0390	.187	.205	.250	.030	.0937	.1875	2.0	RR-039-250-187	46.88			RR-039-250-187X	53.18
.039 .0390	.187	.205	.250	.060	.0937	.1875	2.0	RR-5824	46.88			RR-5824X	53.48
.039 .0390	.187	.205	.500	.030	.0937	.1875	2.0	RR-039-500-187	46.88			RR-039-500-187X	53.18
.039 .0390	.187	.205	.500	.060	.0937	.1875	2.0	RR-1828	46.88			RR-1828X	53.48
.039 .0390	.250	.272	.250	.050	.1250	.2500	2.5	RR-039-250-250	50.98			RR-039-250-250X	59.68
.039 .0390	.250	.272	.250	.080	.1250	.2500	2.5	RR-8363	50.98			RR-8363X	59.68
.039 .0390	.250	.272	.500	.050	.1250	.2500	2.5	RR-039-500-250	50.98			RR-039-500-250X	59.68
.039 .0390	.250	.272	.500	.080	.1250	.2500	2.5	RR-1774	50.98			RR-1774X	59.68
.039 .0390	.375	.397	.250	.100	.1875	.3750	2.5	RR-039-4	82.78				
.039 .0390	.375	.397	.375	.100	.1875	.3750	2.5	RR-039-6	82.78			RR-039-6X	95.18
.039 .0390	.375	.397	.500	.100	.1875	.3750	2.5	RR-039-8	82.78			RR-039-8X	95.18
.039 .0390	.375	.397	.750	.100	.1875	.3750	2.5	RR-039-12	82.78			RR-039-12X	95.18
.039 .0390	.375	.397	1.000	.100	.1875	.3750	2.5	RR-039-16	82.78			RR-039-16X	95.18
.039 .0390	.375	.397	1.250	.100	.1875	.3750	2.5	RR-039-20	82.78			RR-039-20X	95.18
.039 .0390	.375	.397	1.500	.100	.1875	.3750	2.5	RR-039-1500-375	82.78			RR-039-1500-375X	95.18
1 mm .0390	8 mm	8.55 mm	10 mm	2.50 mm	4 mm	8 mm	63 mm	RRM-100-10	60.28			RRM-100-10X	72.68
1 mm .0390	8 mm	8.55 mm	20 mm	2.50 mm	4 mm	8 mm	63 mm	RRM-100-20	60.28			RRM-100-20X	72.68
1 mm .0390	8 mm	8.55 mm	40 mm	2.50 mm	4 mm	8 mm	63 mm	RRM-100-40	60.28			RRM-100-40X	72.68
.040 .0400	.250	.272	.250	.050	.1250	.2500	2.5	RR-040-250-250	50.98			RR-040-250-250X	59.68
.040 .0400	.250	.272	.250	.080	.1250	.2500	2.5	RR-1248	50.98			RR-1248X	59.68
.040 .0400	.250	.272	.500	.050	.1250	.2500	2.5	RR-040-500-250	50.98			RR-040-500-250X	59.68
.040 .0400	.250	.272	.500	.080	.1250	.2500	2.5	RR-3030	50.98			RR-3030X	59.68
1.1 mm .0430	8 mm	8.55 mm	10 mm	2.50 mm	4 mm	8 mm	63 mm	RRM-110-10	60.28			RRM-110-10X	72.68
1.1 mm .0430	8 mm	8.55 mm	20 mm	2.50 mm	4 mm	8 mm	63 mm	RRM-110-20	60.28			RRM-110-20X	72.68
1.1 mm .0430	8 mm	8.55 mm	40 mm	2.50 mm	4 mm	8 mm	63 mm	RRM-110-40	60.28			RRM-110-40X	72.68

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



RR / RRM

Standard – Grooving Tools

Retaining Ring – Square – Right Hand (cont.)

Continued from previous page

Width W +.002" dec. -.000" equiv. +.050mm -.000mm	Head Width H	Min. Bore Dia* L1	Max. Bore Depth L2 +.050" -.000" +1.25mm -.00mm	Proj. P	Centerline Offset F	Shank Dia. D2 (h6)	OAL L1	Uncoated		TiN Coated		AlTiN Coated			
								Tool #	Price	Tool #	Price	Tool #	Price		
.046	.0460	.312	.334	.500	.100	.1562	.3125	2.5	RR-046-500-312	63.58			RR-046-500-312X	73.88	
.046	.0460	.312	.334	.750	.100	.1562	.3125	2.5	RR-046-750-312	63.58			RR-046-750-312X	73.88	
.046	.0460	.375	.397	.250	.100	.1875	.3750	2.5	RR-046-4	82.78			RR-046-4X	95.18	
.046	.0460	.375	.397	.375	.100	.1875	.3750	2.5	RR-046-6	82.78			RR-046-6X	95.18	
.046	.0460	.375	.397	.500	.100	.1875	.3750	2.5	RR-046-8	82.78			RR-046-8X	95.18	
.046	.0460	.375	.397	.750	.100	.1875	.3750	2.5	RR-046-12	82.78			RR-046-12X	95.18	
.046	.0460	.375	.397	1.000	.100	.1875	.3750	2.5	RR-046-16	82.78			RR-046-16X	95.18	
.046	.0460	.375	.397	1.250	.100	.1875	.3750	2.5	RR-046-20	82.78			RR-046-20X	95.18	
1.2 mm	.0470	10 mm	10.55 mm	20 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-120-20	84.98					
1.2 mm	.0470	10 mm	10.55 mm	40 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-120-40	84.98	RRM-120-40G	96.18			
1.3 mm	.0510	10 mm	10.55 mm	30 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-130-30	84.98					
1.3 mm	.0510	10 mm	10.55 mm	40 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-130-40	84.98					
	.055	.0550	.250	.272	.250	.050	.1250	.2500	2.5	RR-055-250-250	50.98			RR-055-250-250X	59.68
	.055	.0550	.250	.272	.500	.050	.1250	.2500	2.5	RR-055-500-250	50.98			RR-055-500-250X	59.68
NEW	.055	.0550	.250	.272	.500	.080	.1250	.2500	2.5	RR-4257	50.98			RR-4257X	59.68
	.055	.0550	.375	.397	.250	.100	.1875	.3750	2.5	RR-055-4	82.78			RR-055-4X	95.18
	.055	.0550	.375	.397	.375	.100	.1875	.3750	2.5	RR-055-6	82.78			RR-055-6X	95.18
	.055	.0550	.375	.397	.500	.100	.1875	.3750	2.5	RR-055-8	82.78			RR-055-8X	95.18
NEW	.055	.0550	.375	.397	.500	.150	.1875	.3750	2.5	RR-1660	82.78			RR-1660X	95.18
	.055	.0550	.375	.397	.750	.100	.1875	.3750	2.5	RR-055-12	82.78			RR-055-12X	95.18
NEW	.055	.0550	.375	.397	.750	.150	.1875	.3750	2.5	RR-5000	82.78			RR-5000X	95.18
	.055	.0550	.375	.397	1.000	.100	.1875	.3750	2.5	RR-055-16	82.78			RR-055-16X	95.18
	.055	.0550	.375	.397	1.250	.100	.1875	.3750	2.5	RR-055-20	82.78			RR-055-20X	95.18
	.055	.0550	.375	.397	1.500	.100	.1870	.3750	2.5	RR-055-1500-375	82.78			RR-055-1500-375X	95.18
	.056	.0560	.250	.272	.250	.050	.1250	.2500	2.5	RR-056-250-250	50.98			RR-056-250-250X	59.68
	.056	.0560	.250	.272	.500	.050	.1250	.2500	2.5	RR-056-500-250	50.98			RR-056-500-250X	59.68
	.059	.0590	.375	.397	.500	.100	.1870	.3750	2.5	RR-059-500-375	82.78			RR-059-500-375X	95.18
	.059	.0590	.375	.397	1.000	.100	.1870	.3750	2.5	RR-059-1000-375	82.78			RR-059-1000-375X	95.18
	.062	.0620	.187	.205	.250	.030	.0937	.1875	2.0	RR-062-250-187	46.88			RR-062-250-187X	53.18
NEW	.062	.0620	.187	.205	.250	.070	.0937	.1875	2.0	RR-7865	46.88			RR-7865X	53.48
	.062	.0620	.187	.205	.500	.030	.0937	.1875	2.0	RR-062-500-187	46.88			RR-062-500-187X	53.18
NEW	.062	.0620	.187	.205	.500	.070	.0937	.1875	2.0	RR-4145	46.88			RR-4145X	53.48
	.062	.0620	.250	.272	.250	.050	.1250	.2500	2.5	RR-062-250-250	50.98			RR-062-250-250X	59.68
NEW	.062	.0620	.250	.272	.250	.090	.1250	.2500	2.5	RR-6681	50.98			RR-6681X	59.68
	.062	.0620	.250	.272	.500	.050	.1250	.2500	2.5	RR-062-500-250	50.98			RR-062-500-250X	59.68
NEW	.062	.0620	.250	.272	.500	.090	.1250	.2500	2.5	RR-2685	50.98			RR-2685X	59.68
	.062	.0620	.250	.272	.750	.050	.1250	.2500	2.5	RR-062-750-250	50.98			RR-062-750-250X	59.68
NEW	.062	.0620	.250	.272	.750	.090	.1250	.2500	2.5	RR-2795	50.98			RR-2795X	59.68
	.062	.0620	.312	.334	.500	.100	.1562	.3125	2.5	RR-062-500-312	63.58			RR-062-500-312X	73.88
	.062	.0620	.312	.334	.750	.100	.1562	.3125	2.5	RR-062-750-312	63.58			RR-062-750-312X	73.88
	.062	.0620	.312	.334	1.000	.100	.1562	.3125	2.5	RR-062-1000-312	63.58			RR-062-1000-312X	73.88

Standard – Grooving Tools

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Grooving Tools

Retaining Ring – Square – Right Hand (cont.)

RR / RRM

Continued from previous page

Width W +.002" -.000" +.050mm -.000mm dec. equiv.	Head Width H	Min. Bore Dia* L2	Max. Bore Depth L2 +.050" -.000" +1.25mm -.00mm	Proj. P	Centerline Offset F	Shank Dia. D2 (h6)	OAL L1	Uncoated		TiN Coated		AlTiN Coated		
								Tool #	Price	Tool #	Price	Tool #	Price	
.062	.0620	.375	.397	.250	.100	.1875	.3750	2.5	RR-062-4	82.78			RR-062-4X	95.18
.062	.0620	.375	.397	.375	.100	.1875	.3750	2.5	RR-062-6	82.78			RR-062-6X	95.18
.062	.0620	.375	.397	.500	.100	.1875	.3750	2.5	RR-062-8	82.78			RR-062-8X	95.18
.062	.0620	.375	.397	.500	.150	.1875	.3750	2.5	RR-0824	82.78			RR-0824X	95.18
.062	.0620	.375	.397	.750	.100	.1875	.3750	2.5	RR-062-12	82.78			RR-062-12X	95.18
.062	.0620	.375	.397	.750	.150	.1875	.3750	2.5	RR-6068	82.78			RR-6068X	95.18
.062	.0620	.375	.397	1.000	.100	.1875	.3750	2.5	RR-062-16	82.78			RR-062-16X	95.18
.062	.0620	.375	.397	1.250	.100	.1875	.3750	2.5	RR-062-20	82.78			RR-062-20X	95.18
.062	.0620	.375	.397	1.500	.100	.1875	.3750	2.5	RR-062-1500-375	82.78			RR-062-1500-375X	95.18
1.6 mm	.0630	10 mm	10.55 mm	30 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-160-30	84.98				
1.6 mm	.0630	10 mm	10.55 mm	40 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-160-40	84.98				
.069	.0690	.375	.397	.375	.100	.1875	.3750	2.5	RR-069-6	82.78			RR-069-6X	95.18
.069	.0690	.375	.397	.500	.100	.1875	.3750	2.5	RR-069-8	82.78			RR-069-8X	95.18
.069	.0690	.375	.397	.750	.100	.1875	.3750	2.5	RR-069-12	82.78			RR-069-12X	95.18
.069	.0690	.375	.397	.750	.150	.1875	.3750	2.5	RR-7828	82.78			RR-7828X	95.18
.069	.0690	.375	.397	1.000	.100	.1875	.3750	2.5	RR-069-16	82.78			RR-069-16X	95.18
.069	.0690	.375	.397	1.000	.150	.1875	.3750	2.5	RR-4609	82.78			RR-4609X	95.18
.069	.0690	.375	.397	1.250	.100	.1875	.3750	2.5	RR-069-20	82.78			RR-069-20X	95.18
1.8 mm	.0710	10 mm	10.55 mm	10 mm	2.74 mm	5 mm	10 mm	72 mm			RRM-180-10G	96.18		
.079	.0790	.375	.397	.500	.100	.1875	.3750	2.5	RR-079-500-375	82.78			RR-079-500-375X	95.18
.079	.0790	.375	.397	1.000	.100	.1875	.3750	2.5	RR-079-1000-375	82.78			RR-079-1000-375X	95.18
2 mm	.0790	10 mm	10.55 mm	20 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-200-20	84.98	RRM-200-20G	96.18		
2 mm	.0790	10 mm	10.55 mm	30 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-200-30	84.98	RRM-200-30G	96.18	RRM-200-30X	98.88
.087	.0870	.250	.272	.250	.050	.1250	.2500	2.5	RR-087-250-250	50.98			RR-087-250-250X	59.68
.087	.0870	.250	.272	.500	.050	.1250	.2500	2.5	RR-087-500-250	50.98			RR-087-500-250X	59.68
.087	.0870	.250	.272	.750	.050	.1250	.2500	2.5	RR-087-750-250	50.98			RR-087-750-250X	59.68
.087	.0870	.312	.334	.500	.100	.1562	.3125	2.5	RR-087-500-312	63.58			RR-087-500-312X	73.88
.087	.0870	.312	.334	.750	.100	.1562	.3125	2.5	RR-087-750-312	63.58			RR-087-750-312X	73.88
.087	.0870	.375	.397	.250	.100	.1875	.3750	2.5	RR-087-4	82.78			RR-087-4X	95.18
.087	.0870	.375	.397	.375	.100	.1875	.3750	2.5	RR-087-6	82.78			RR-087-6X	95.18
.087	.0870	.375	.397	.500	.100	.1875	.3750	2.5	RR-087-8	82.78			RR-087-8X	95.18
.087	.0870	.375	.397	.500	.150	.1875	.3750	2.5	RR-7847	82.78			RR-7847X	95.18
.087	.0870	.375	.397	.750	.100	.1875	.3750	2.5	RR-087-12	82.78			RR-087-12X	95.18
.087	.0870	.375	.397	.750	.150	.1875	.3750	2.5	RR-4895	82.78			RR-4895X	95.18
.087	.0870	.375	.397	1.000	.100	.1875	.3750	2.5	RR-087-16	82.78			RR-087-16X	95.18
.087	.0870	.375	.397	1.250	.100	.1875	.3750	2.5	RR-087-20	82.78			RR-087-20X	95.18
.087	.0870	.375	.397	1.500	.100	.1875	.3750	2.5	RR-087-1500-375	82.78			RR-087-1500-375X	95.18
.093	.0930	.375	.397	.750	.100	.1875	.3750	2.5	RR-093-750-375	82.78			RR-093-750-375X	95.18
.093	.0930	.375	.397	1.000	.100	.1875	.3750	2.5	RR-093-1000-375	82.78			RR-093-1000-375X	95.18
.093	.0930	.375	.397	1.250	.100	.1875	.3750	2.5	RR-093-1250-375	82.78			RR-093-1250-375X	95.18
.093	.0930	.500	.522	.500	.150	.2500	.5000	3.0	RR-093-8	116.08			RR-093-8X	132.78
.093	.0930	.500	.522	.750	.150	.2500	.5000	3.0	RR-093-12	116.08			RR-093-12X	132.78
.093	.0930	.500	.522	1.000	.150	.2500	.5000	3.0	RR-093-16	116.08			RR-093-16X	132.78

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

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See pgs 39-47 for standard tool holders



Standard – Grooving Tools

NEW

NEW

NEW

NEW

NEW

NEW

RR / RRM

Standard – Grooving Tools

Retaining Ring – Square – Right Hand (cont.)

Continued from previous page

Width W ₁ +.002" dec. -.000" equiv. +.050mm -.000mm	Head Width H	Min. Bore Dia* L ₁	Max. Bore Depth L ₂ +.050" - .000" +1.25mm - .00mm	Proj. P	Centerline Offset F	Shank Dia. D ₂ (h6)	OAL L ₁	Uncoated		TiN Coated		AlTiN Coated		
								Tool #	Price	Tool #	Price	Tool #	Price	
.093	.0930	.500	.522	1.250	.150	.2500	.5000	3.0	RR-093-20	116.08			RR-093-20X	132.78
.093	.0930	.500	.522	1.500	.150	.2500	.5000	3.0	RR-093-24	116.08			RR-093-24X	132.78
.093	.0930	.500	.522	1.750	.150	.2500	.5000	3.0	RR-093-1750-500	116.08			RR-093-1750-500X	132.78
3 mm	.1180	12 mm	12.55 mm	20 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-300-20	108.78				
3 mm	.1180	12 mm	12.55 mm	30 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-300-30	108.78			RRM-300-30X	126.68
3 mm	.1180	12 mm	12.55 mm	40 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-300-40	108.78	RRM-300-40G	124.18		
.125	.1250	.375	.397	.750	.100	.1875	.3750	2.5	RR-125-750-375	82.78			RR-125-750-375X	95.18
NEW	.125	.1250	.375	.397	.750	.150	.1875	.3750	2.5	RR-3068	82.78		RR-3068X	95.18
.125	.1250	.375	.397	1.000	.100	.1875	.3750	2.5	RR-125-1000-375	82.78			RR-125-1000-375X	95.18
NEW	.125	.1250	.375	.397	1.000	.150	.1875	.3750	2.5	RR-5586	82.78		RR-5586X	95.18
.125	.1250	.375	.397	1.250	.100	.1875	.3750	2.5	RR-125-1250-375	82.78			RR-125-1250-375X	95.18
NEW	.125	.1250	.375	.397	1.250	.150	.1875	.3750	2.5	RR-0965	82.78		RR-0965X	95.18
.125	.1250	.500	.522	.500	.150	.2500	.5000	3.0	RR-125-8	116.08			RR-125-8X	132.78
.125	.1250	.500	.522	.750	.150	.2500	.5000	3.0	RR-125-12	116.08			RR-125-12X	132.78
NEW	.125	.1250	.500	.522	.750	.200	.2500	.5000	3.0	RR-5199	116.08		RR-5199X	132.78
.125	.1250	.500	.522	1.000	.150	.2500	.5000	3.0	RR-125-16	116.08			RR-125-16X	132.78
.125	.1250	.500	.522	1.250	.150	.2500	.5000	3.0	RR-125-20	116.08			RR-125-20X	132.78
NEW	.125	.1250	.500	.522	1.250	.200	.2500	.5000	3.0	RR-7934	116.08		RR-7934X	132.78
.125	.1250	.500	.522	1.500	.150	.2500	.5000	3.0	RR-125-24	116.08			RR-125-24X	132.78
.125	.1250	.500	.522	1.750	.150	.2500	.5000	3.0	RR-125-1750-500	116.08			RR-125-1750-500X	132.78
NEW	.156	.1560	.500	.522	.750	.150	.2500	.5000	3.0	RR-156-12	116.08			
.156	.1560	.500	.522	.750	.200	.2500	.5000	3.0	RR-1563	116.08			RR-1563X	132.78
.156	.1560	.500	.522	1.000	.150	.2500	.5000	3.0	RR-156-16	116.08			RR-156-16X	132.78
.156	.1560	.500	.522	1.250	.150	.2500	.5000	3.0	RR-156-20	116.08			RR-156-20X	132.78
NEW	.156	.1560	.500	.522	1.250	.200	.2500	.5000	3.0	RR-9832	116.08		RR-9832X	132.78
.156	.1560	.500	.522	1.500	.150	.2500	.5000	3.0	RR-156-24	116.08			RR-156-24X	132.78
4 mm	.1570	12 mm	12.55 mm	20 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-400-20	108.78				
4 mm	.1570	12 mm	12.55 mm	30 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-400-30	108.78				
4 mm	.1570	12 mm	12.55 mm	50 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-400-50	108.78	RRM-400-50G	124.18	RRM-400-50X	126.68
.187	.1870	.500	.522	.750	.150	.2500	.5000	3.0	RR-187-12	116.08			RR-187-12X	132.78
.187	.1870	.500	.522	1.000	.150	.2500	.5000	3.0	RR-187-16	116.08			RR-187-16X	132.78
.187	.1870	.500	.522	1.250	.150	.2500	.5000	3.0	RR-187-20	116.08				
.187	.1870	.500	.522	1.500	.150	.2500	.5000	3.0	RR-187-24	116.08			RR-187-24X	132.78
5 mm	.1970	12 mm	12.55 mm	20 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-500-20	108.78				
5 mm	.1970	12 mm	12.55 mm	50 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-500-50	108.78			RRM-500-50X	126.68
6 mm	.2360	12 mm	12.55 mm	20 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-600-20	108.78				
6 mm	.2360	12 mm	12.55 mm	50 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-600-50	108.78				
.250	.2500	.500	.522	.750	.150	.2500	.5000	3.0	RR-250-12	116.08				
.250	.2500	.500	.522	1.000	.150	.2500	.5000	3.0	RR-250-16	116.08			RR-250-16X	132.78
.250	.2500	.500	.522	1.250	.150	.2500	.5000	3.0	RR-250-20	116.08			RR-250-20X	132.78
.250	.2500	.500	.522	1.500	.150	.2500	.5000	3.0	RR-250-24	116.08				

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

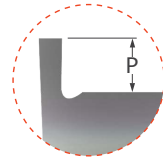
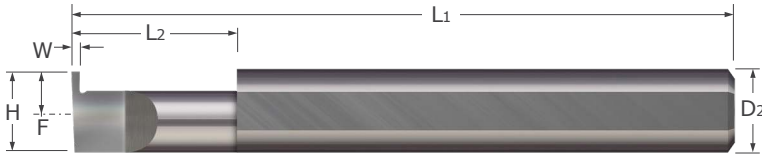
See pgs 39-47 for standard tool holders



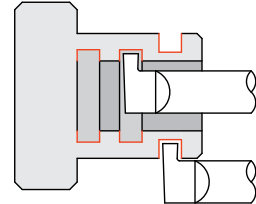
Standard - Grooving Tools

Retaining Ring - Square - Left Hand

RRL



- Designed for generating retaining ring grooves in a left hand turning application
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Standard - Grooving Tools

Width	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
W $\begin{smallmatrix} +.001" \\ -.000" \end{smallmatrix}$	H		L2 $\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	P	F	D2 (h6)	L1				
.017	.250	.272	.250	.050	.1250	.2500	2.5	RRL-017-4	50.98	RRL-017-4X	59.68
.017	.250	.272	.500	.050	.1250	.2500	2.5	RRL-017-8	50.98	RRL-017-8X	59.68
.025	.250	.272	.250	.050	.1250	.2500	2.5	RRL-025-4	50.98	RRL-025-4X	59.68
.025	.250	.272	.500	.050	.1250	.2500	2.5	RRL-025-8	50.98		
.030	.250	.272	.250	.050	.1250	.2500	2.5	RRL-030-4	50.98	RRL-030-4X	59.68
.030	.250	.272	.375	.050	.1250	.2500	2.5	RRL-030-6	50.98	RRL-030-6X	59.68
.030	.250	.272	.500	.050	.1250	.2500	2.5	RRL-030-8	50.98	RRL-030-8X	59.68
.030	.250	.272	.625	.050	.1250	.2500	2.5	RRL-030-10	50.98	RRL-030-10X	59.68
.033	.312	.334	.250	.100	.1562	.3125	2.5	RRL-033-4	63.58	RRL-033-4X	73.88
.033	.312	.334	.375	.100	.1562	.3125	2.5	RRL-033-6	63.58		
.033	.312	.334	.750	.100	.1562	.3125	2.5	RRL-033-12	63.58		
.038	.312	.334	.250	.100	.1562	.3125	2.5	RRL-038-4	63.58		
.038	.312	.334	.375	.100	.1562	.3125	2.5	RRL-038-6	63.58		
.038	.312	.334	.500	.100	.1562	.3125	2.5	RRL-038-8	63.58	RRL-038-8X	73.88
.038	.312	.334	.750	.100	.1562	.3125	2.5	RRL-038-12	63.58	RRL-038-12X	73.88

W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	H		L2 $\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.039	.375	.397	.250	.100	.1875	.3750	2.5	RRL-039-4	82.78	RRL-039-4X	95.18
.039	.375	.397	.500	.100	.1875	.3750	2.5	RRL-039-8	82.78	RRL-039-8X	95.18
.039	.375	.397	.750	.100	.1875	.3750	2.5	RRL-039-12	82.78		
.046	.375	.397	.250	.100	.1875	.3750	2.5	RRL-046-4	82.78	RRL-046-4X	95.18
.046	.375	.397	.375	.100	.1875	.3750	2.5	RRL-046-6	82.78		
.046	.375	.397	.750	.100	.1875	.3750	2.5	RRL-046-12	82.78	RRL-046-12X	95.18
.046	.375	.397	1.000	.100	.1875	.3750	2.5	RRL-046-16	82.78	RRL-046-16X	95.18
.046	.375	.397	1.250	.100	.1875	.3750	2.5	RRL-046-20	82.78	RRL-046-20X	95.18
.055	.375	.397	.250	.100	.1875	.3750	2.5	RRL-055-4	82.78		
.055	.375	.397	.500	.100	.1875	.3750	2.5	RRL-055-8	82.78		
.055	.375	.397	.750	.100	.1875	.3750	2.5	RRL-055-12	82.78		
.055	.375	.397	1.000	.100	.1875	.3750	2.5	RRL-055-16	82.78		

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



RRL

Standard – Grooving Tools
Retaining Ring – Left Hand (cont.)

Continued from previous page

Width W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	Head Width H	Minimum Bore Diameter*	Maximum Bore Depth L2 $\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	Projection P	Centerline Offset F	Shank Diameter D2 (h6)	Overall Length L1	Uncoated		AITIN Coated	
								Tool #	Price	Tool #	Price
.062	.375	.397	.250	.100	.1875	.3750	2.5	RRL-062-4	82.78		
.062	.375	.397	.500	.100	.1875	.3750	2.5	RRL-062-8	82.78	RRL-062-8X	95.18
.062	.375	.397	.750	.100	.1875	.3750	2.5	RRL-062-12	82.78	RRL-062-12X	95.18
.062	.375	.397	1.250	.100	.1875	.3750	2.5	RRL-062-20	82.78		
.069	.375	.397	.250	.100	.1875	.3750	2.5	RRL-069-4	82.78		
.069	.375	.397	.500	.100	.1875	.3750	2.5	RRL-069-8	82.78		
.069	.375	.397	1.000	.100	.1875	.3750	2.5	RRL-069-16	82.78	RRL-069-16X	95.18
.069	.375	.397	1.250	.100	.1875	.3750	2.5	RRL-069-20	82.78		
.087	.375	.397	.375	.100	.1875	.3750	2.5	RRL-087-6	82.78		
.087	.375	.397	.500	.100	.1875	.3750	2.5	RRL-087-8	82.78	RRL-087-8X	95.18
.087	.375	.397	.750	.100	.1875	.3750	2.5	RRL-087-12	82.78	RRL-087-12X	95.18
.087	.375	.397	1.000	.100	.1875	.3750	2.5	RRL-087-16	82.78		
.087	.375	.397	1.250	.100	.1875	.3750	2.5	RRL-087-20	82.78	RRL-087-20X	95.18
.093	.500	.522	.750	.150	.2500	.5000	3.0	RRL-093-12	116.08	RRL-093-12X	132.78
.093	.500	.522	1.000	.150	.2500	.5000	3.0	RRL-093-16	116.08	RRL-093-16X	132.78
.093	.500	.522	1.500	.150	.2500	.5000	3.0	RRL-093-24	116.08	RRL-093-24X	132.78
.125	.500	.522	.500	.150	.2500	.5000	3.0	RRL-125-8	116.08	RRL-125-8X	132.78
.125	.500	.522	.750	.150	.2500	.5000	3.0	RRL-125-12	116.08		
.125	.500	.522	1.000	.150	.2500	.5000	3.0	RRL-125-16	116.08		
.125	.500	.522	1.500	.150	.2500	.5000	3.0	RRL-125-24	116.08	RRL-125-24X	132.78
.156	.500	.522	.500	.150	.2500	.5000	3.0	RRL-156-8	116.08		
.187	.500	.522	.750	.150	.2500	.5000	3.0	RRL-187-12	116.08		
.187	.500	.522	1.000	.150	.2500	.5000	3.0	RRL-187-16	116.08		
.187	.500	.522	1.250	.150	.2500	.5000	3.0	RRL-187-20	116.08		
.250	.500	.522	.500	.150	.2500	.5000	3.0	RRL-250-8	116.08		
.250	.500	.522	.750	.150	.2500	.5000	3.0	RRL-250-12	116.08		
.250	.500	.522	1.000	.150	.2500	.5000	3.0	RRL-250-16	116.08		
.250	.500	.522	1.250	.150	.2500	.5000	3.0	RRL-250-20	116.08		

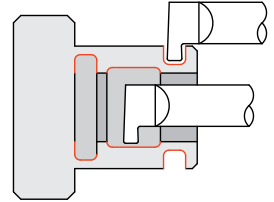
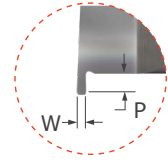
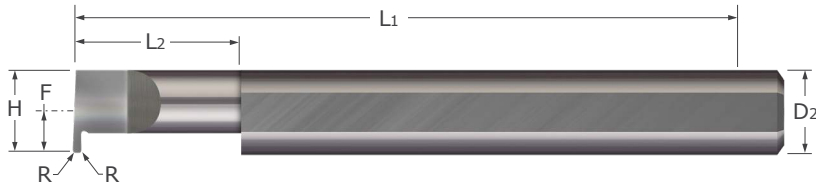
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 39-47 for standard tool holders

Standard - Grooving Tools

Retaining Ring - Corner Radius - Right Hand

RRC



- Designed for generating corner radius retaining ring grooves in bores .205" and larger
- Corner radius designed for extended tool life, and finished groove profiling
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Coolant fed enabled shank design
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Width	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
W ^{+0.001"} _{-.000"}	H		L2 ^{+0.050"} _{-.000"}	R ^{+0.001"} _{-.001"}	P	F	D2 (h6)	L1				
.017	.187	.205	.250	.003	.030	.0937	.1875	2.0	RRC3-017-250-187	54.38	RRC3-017-250-187X	61.08
.017	.187	.205	.375	.003	.030	.0937	.1875	2.0	RRC3-017-375-187	54.38	RRC3-017-375-187X	61.08
.017	.250	.272	.250	.003	.050	.1250	.2500	2.5	RRC3-017-250-250	58.58	RRC3-017-250-250X	67.28
.017	.250	.272	.375	.003	.050	.1250	.2500	2.5	RRC3-017-375-250	58.58	RRC3-017-375-250X	67.28
.020	.187	.205	.250	.003	.030	.0937	.1875	2.0	RRC3-020-250-187	54.38	RRC3-020-250-187X	61.08
.020	.187	.205	.375	.003	.030	.0937	.1875	2.0	RRC3-020-375-187	54.38	RRC3-020-375-187X	61.08
.020	.250	.272	.250	.003	.050	.1250	.2500	2.5	RRC3-020-250-250	58.58	RRC3-020-250-250X	67.28
.020	.250	.272	.375	.003	.050	.1250	.2500	2.5	RRC3-020-375-250	58.58	RRC3-020-375-250X	67.28
.025	.250	.272	.250	.003	.050	.1250	.2500	2.5	RRC3-025-250-250	58.58	RRC3-025-250-250X	67.28
.025	.250	.272	.375	.003	.050	.1250	.2500	2.5	RRC3-025-375-250	58.58	RRC3-025-375-250X	67.28
.030	.187	.205	.250	.003	.030	.0937	.1875	2.0	RRC3-030-250-187	54.38	RRC3-030-250-187X	61.08
.030	.187	.205	.500	.003	.030	.0937	.1875	2.0	RRC3-030-500-187	54.38	RRC3-030-500-187X	61.08
.030	.250	.272	.250	.003	.050	.1250	.2500	2.5	RRC3-030-250-250	58.58	RRC3-030-250-250X	67.28
.030	.250	.272	.375	.003	.050	.1250	.2500	2.5	RRC3-030-375-250	58.58	RRC3-030-375-250X	67.28
.030	.312	.334	.500	.003	.100	.1562	.3125	2.5	RRC3-030-500-312	73.08	RRC3-030-500-312X	83.48
.030	.312	.334	.750	.003	.100	.1562	.3125	2.5	RRC3-030-750-312	73.08	RRC3-030-750-312X	83.48
.033	.312	.334	.500	.003	.100	.1562	.3125	2.5	RRC3-033-500-312	73.08	RRC3-033-500-312X	83.48
.033	.312	.334	.750	.003	.100	.1562	.3125	2.5	RRC3-033-750-312	73.08	RRC3-033-750-312X	83.48
.038	.312	.334	.500	.003	.100	.1562	.3125	2.5	RRC3-038-500-312	73.08	RRC3-038-500-312X	83.48
.038	.312	.334	.750	.003	.100	.1562	.3125	2.5	RRC3-038-750-312	73.08	RRC3-038-750-312X	83.48
W ^{+0.002"} _{-.000"}	H		L2 ^{+0.050"} _{-.000"}	R ^{+0.001"} _{-.001"}	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.039	.375	.397	.500	.003	.100	.1875	.3750	2.5	RRC3-039-500-375	92.58	RRC3-039-500-375X	104.78
.039	.375	.397	.750	.003	.100	.1875	.3750	2.5	RRC3-039-750-375	92.58	RRC3-039-750-375X	104.78
.039	.375	.397	1.000	.003	.100	.1875	.3750	2.5	RRC3-039-1000-375	92.58	RRC3-039-1000-375X	104.78
.062	.375	.397	.500	.003	.100	.1875	.3750	2.5	RRC3-062-500-375	92.58	RRC3-062-500-375X	104.78
.062	.375	.397	.500	.006	.100	.1875	.3750	2.5	RRC6-062-500-375	92.58	RRC6-062-500-375X	104.78
.062	.375	.397	.750	.003	.100	.1875	.3750	2.5	RRC3-062-750-375	92.58	RRC3-062-750-375X	104.78

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders

RRC

Standard – Grooving Tools

Retaining Ring – Corner Radius – Right Hand (cont.)

Continued from previous page

Width W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	Head Width H	Minimum Bore Diameter*	Maximum Bore Depth L2 $\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	Radius R $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	Projection P	Centerline Offset F	Shank Diameter D2 (h6)	Overall Length L1	Uncoated		AITIN Coated	
									Tool #	Price	Tool #	Price
.062	.375	.397	.750	.006	.100	.1875	.3750	2.5	RRC6-062-750-375	92.58	RRC6-062-750-375X	104.78
.062	.375	.397	1.000	.003	.100	.1875	.3750	2.5	RRC3-062-1000-375	92.58	RRC3-062-1000-375X	104.78
.062	.375	.397	1.000	.006	.100	.1875	.3750	2.5	RRC6-062-1000-375	92.58	RRC6-062-1000-375X	104.78
.087	.375	.397	.500	.003	.100	.1875	.3750	2.5	RRC3-087-500-375	92.58	RRC3-087-500-375X	104.78
.087	.375	.397	.500	.006	.100	.1875	.3750	2.5	RRC6-087-500-375	92.58	RRC6-087-500-375X	104.78
.087	.375	.397	.750	.003	.100	.1875	.3750	2.5	RRC3-087-750-375	92.58	RRC3-087-750-375X	104.78
.087	.375	.397	.750	.006	.100	.1875	.3750	2.5	RRC6-087-750-375	92.58	RRC6-087-750-375X	104.78
.087	.375	.397	1.000	.003	.100	.1875	.3750	2.5	RRC3-087-1000-375	92.58	RRC3-087-1000-375X	104.78
.087	.375	.397	1.000	.006	.100	.1875	.3750	2.5	RRC6-087-1000-375	92.58	RRC6-087-1000-375X	104.78
.093	.500	.522	.750	.003	.150	.2500	.5000	3.0	RRC3-093-750-500	127.08	RRC3-093-750-500X	143.88
.093	.500	.522	.750	.006	.150	.2500	.5000	3.0	RRC6-093-750-500	127.08	RRC6-093-750-500X	143.88
.093	.500	.522	1.000	.003	.150	.2500	.5000	3.0	RRC3-093-1000-500	127.08	RRC3-093-1000-500X	143.88
.093	.500	.522	1.000	.006	.150	.2500	.5000	3.0	RRC6-093-1000-500	127.08	RRC6-093-1000-500X	143.88
.125	.500	.522	.750	.003	.150	.2500	.5000	3.0	RRC3-125-750-500	127.08	RRC3-125-750-500X	143.88
.125	.500	.522	.750	.006	.150	.2500	.5000	3.0	RRC6-125-750-500	127.08	RRC6-125-750-500X	143.88
.125	.500	.522	1.000	.003	.150	.2500	.5000	3.0	RRC3-125-1000-500	127.08	RRC3-125-1000-500X	143.88
.125	.500	.522	1.000	.006	.150	.2500	.5000	3.0	RRC6-125-1000-500	127.08	RRC6-125-1000-500X	143.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

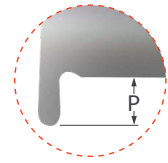
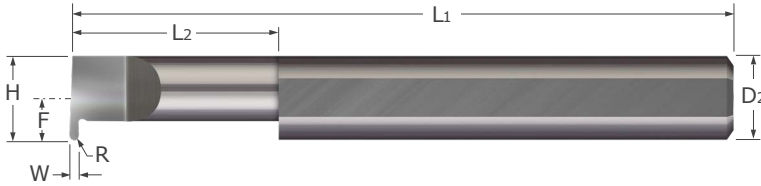
See pgs 39-47 for standard tool holders



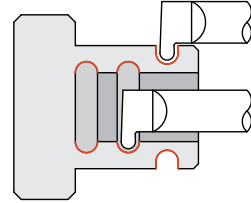
Standard - Grooving Tools

FR

Full Radius



- Designed for generating full radius grooves
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Full radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Standard - Grooving Tools

Width	Radius	Head Width	Min. Bore Dia*	Max. Bore Depth	Proj.	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
W $^{+.002"}_{-.000"}$	R	H		L2 $^{+.050"}_{-.000"}$	P	F	D2 (h6)	L1				
.017	.0085	.187	.205	.250	.030	.0937	.1875	2.0	FR-017-4-187	54.38	FR-017-4-187X	61.08
.017	.0085	.187	.205	.375	.030	.0937	.1875	2.0	FR-017-6-187	54.38	FR-017-6-187X	61.08
.017	.0085	.187	.205	.500	.030	.0937	.1875	2.0	FR-017-8-187	54.38	FR-017-8-187X	61.08
.017	.0085	.187	.205	.625	.030	.0937	.1875	2.0	FR-017-10-187	54.38	FR-017-10-187X	61.08
.017	.0085	.250	.272	.250	.050	.1250	.2500	2.5	FR-017-4	58.58	FR-017-4X	67.28
.017	.0085	.250	.272	.375	.050	.1250	.2500	2.5	FR-017-6	58.58	FR-017-6X	67.28
.017	.0085	.250	.272	.500	.050	.1250	.2500	2.5	FR-017-8	58.58	FR-017-8X	67.28
.017	.0085	.250	.272	.625	.050	.1250	.2500	2.5	FR-017-10	58.58	FR-017-10X	67.28
.020	.0100	.187	.205	.250	.030	.0937	.1875	2.0	FR-020-4-187	54.38	FR-020-4-187X	61.08
.020	.0100	.187	.205	.375	.030	.0937	.1875	2.0	FR-020-6-187	54.38	FR-020-6-187X	61.08
.020	.0100	.187	.205	.500	.030	.0937	.1875	2.0	FR-020-8-187	54.38	FR-020-8-187X	61.08
.020	.0100	.187	.205	.625	.030	.0937	.1875	2.0	FR-020-10-187	54.38	FR-020-10-187X	61.08
.025	.0125	.250	.272	.250	.050	.1250	.2500	2.5	FR-025-4	58.58	FR-025-4X	67.28
.025	.0125	.250	.272	.375	.050	.1250	.2500	2.5	FR-025-6	58.58	FR-025-6X	67.28
.025	.0125	.250	.272	.500	.050	.1250	.2500	2.5	FR-025-8	58.58	FR-025-8X	67.28
.025	.0125	.250	.272	.625	.050	.1250	.2500	2.5	FR-025-10	58.58	FR-025-10X	67.28
.030	.0150	.250	.272	.250	.050	.1250	.2500	2.5	FR-030-4	58.58	FR-030-4X	67.28
.030	.0150	.250	.272	.375	.050	.1250	.2500	2.5	FR-030-6	58.58	FR-030-6X	67.28
.030	.0150	.250	.272	.500	.050	.1250	.2500	2.5	FR-030-8	58.58	FR-030-8X	67.28
.030	.0150	.250	.272	.625	.050	.1250	.2500	2.5	FR-030-10	58.58	FR-030-10X	67.28
.033	.0165	.312	.334	.250	.100	.1562	.3125	2.5	FR-033-4	73.08	FR-033-4X	83.48
.033	.0165	.312	.334	.375	.100	.1562	.3125	2.5	FR-033-6	73.08	FR-033-6X	83.48
.033	.0165	.312	.334	.500	.100	.1562	.3125	2.5	FR-033-8	73.08	FR-033-8X	83.48
.033	.0165	.312	.334	.625	.100	.1562	.3125	2.5	FR-033-10	73.08	FR-033-10X	83.48
.038	.0190	.312	.334	.250	.100	.1562	.3125	2.5	FR-038-4	73.08	FR-038-4X	83.48
.038	.0190	.312	.334	.375	.100	.1562	.3125	2.5	FR-038-6	73.08	FR-038-6X	83.48
.038	.0190	.312	.334	.500	.100	.1562	.3125	2.5	FR-038-8	73.08	FR-038-8X	83.48
.038	.0190	.312	.334	.625	.100	.1562	.3125	2.5	FR-038-10	73.08	FR-038-10X	83.48
.039	.0195	.375	.397	.250	.100	.1875	.3750	2.5	FR-039-4	92.58	FR-039-4X	104.78
.039	.0195	.375	.397	.375	.100	.1875	.3750	2.5	FR-039-6	92.58	FR-039-6X	104.78
.039	.0195	.375	.397	.500	.100	.1875	.3750	2.5	FR-039-8	92.58	FR-039-8X	104.78
.039	.0195	.375	.397	.750	.100	.1875	.3750	2.5	FR-039-12	92.58	FR-039-12X	104.78
.039	.0195	.375	.397	1.000	.100	.1875	.3750	2.5	FR-039-16	92.58	FR-039-16X	104.78
.039	.0195	.375	.397	1.250	.100	.1875	.3750	2.5	FR-039-20	92.58	FR-039-20X	104.78

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



FR

Standard – Grooving Tools

Full Radius (cont.)

Continued from previous page

Width	Radius	Head Width	Min. Bore Dia*	Max. Bore Depth	Proj.	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AITIN Coated		
									Tool #	Price	Tool #	Price	
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	R	H		L2 $\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	P	F	D2 (h6)	L1					
.046	.0230	.375	.397	.250	.100	.1875	.3750	2.5	FR-046-4	92.58			
.046	.0230	.375	.397	.375	.100	.1875	.3750	2.5	FR-046-6	92.58	FR-046-6X	104.78	
.046	.0230	.375	.397	.500	.100	.1875	.3750	2.5	FR-046-8	92.58	FR-046-8X	104.78	
.046	.0230	.375	.397	.750	.100	.1875	.3750	2.5	FR-046-12	92.58	FR-046-12X	104.78	
.046	.0230	.375	.397	1.000	.100	.1875	.3750	2.5	FR-046-16	92.58	FR-046-16X	104.78	
.046	.0230	.375	.397	1.250	.100	.1875	.3750	2.5	FR-046-20	92.58	FR-046-20X	104.78	
.055	.0275	.375	.397	.250	.100	.1875	.3750	2.5	FR-055-4	92.58	FR-055-4X	104.78	
.055	.0275	.375	.397	.375	.100	.1875	.3750	2.5	FR-055-6	92.58			
.055	.0275	.375	.397	.500	.100	.1875	.3750	2.5	FR-055-8	92.58	FR-055-8X	104.78	
.055	.0275	.375	.397	.750	.100	.1875	.3750	2.5	FR-055-12	92.58	FR-055-12X	104.78	
.055	.0275	.375	.397	1.000	.100	.1875	.3750	2.5	FR-055-16	92.58	FR-055-16X	104.78	
.055	.0275	.375	.397	1.250	.100	.1875	.3750	2.5	FR-055-20	92.58			
.062	.0310	.375	.397	.250	.100	.1875	.3750	2.5	FR-062-4	92.58	FR-062-4X	104.78	
.062	.0310	.375	.397	.375	.100	.1875	.3750	2.5	FR-062-6	92.58	FR-062-6X	104.78	
.062	.0310	.375	.397	.500	.100	.1875	.3750	2.5	FR-062-8	92.58	FR-062-8X	104.78	
.062	.0310	.375	.397	.750	.100	.1875	.3750	2.5	FR-062-12	92.58	FR-062-12X	104.78	
.062	.0310	.375	.397	1.000	.100	.1875	.3750	2.5	FR-062-16	92.58	FR-062-16X	104.78	
.062	.0310	.375	.397	1.250	.100	.1875	.3750	2.5	FR-062-20	92.58	FR-062-20X	104.78	
.069	.0345	.375	.397	.250	.100	.1875	.3750	2.5	FR-069-4	92.58	FR-069-4X	104.78	
.069	.0345	.375	.397	.375	.100	.1875	.3750	2.5	FR-069-6	92.58			
.069	.0345	.375	.397	.500	.100	.1875	.3750	2.5	FR-069-8	92.58	FR-069-8X	104.78	
.069	.0345	.375	.397	.750	.100	.1875	.3750	2.5	FR-069-12	92.58	FR-069-12X	104.78	
.069	.0345	.375	.397	1.000	.100	.1875	.3750	2.5	FR-069-16	92.58	FR-069-16X	104.78	
.069	.0345	.375	.397	1.250	.100	.1875	.3750	2.5	FR-069-20	92.58			
.087	.0435	.375	.397	.250	.100	.1875	.3750	2.5	FR-087-4	92.58	FR-087-4X	104.78	
.087	.0435	.375	.397	.375	.100	.1875	.3750	2.5	FR-087-6	92.58	FR-087-6X	104.78	
.087	.0435	.375	.397	.500	.100	.1875	.3750	2.5	FR-087-8	92.58	FR-087-8X	104.78	
NEW	.087	.0435	.375	.397	.500	.150	.1875	.3750	2.5	FR-7847	92.58	FR-7847X	104.78
.087	.0435	.375	.397	.750	.100	.1875	.3750	2.5	FR-087-12	92.58	FR-087-12X	104.78	
NEW	.087	.0435	.375	.397	.750	.150	.1875	.3750	2.5	FR-4895	92.58	FR-4895X	104.78
.087	.0435	.375	.397	1.000	.100	.1875	.3750	2.5	FR-087-16	92.58	FR-087-16X	104.78	
.087	.0435	.375	.397	1.250	.100	.1875	.3750	2.5	FR-087-20	92.58	FR-087-20X	104.78	
.093	.0465	.500	.522	.500	.150	.2500	.5000	3.0	FR-093-8	127.08	FR-093-8X	143.88	
.093	.0465	.500	.522	.750	.150	.2500	.5000	3.0	FR-093-12	127.08	FR-093-12X	143.88	
.093	.0465	.500	.522	1.000	.150	.2500	.5000	3.0	FR-093-16	127.08	FR-093-16X	143.88	
.093	.0465	.500	.522	1.250	.150	.2500	.5000	3.0	FR-093-20	127.08	FR-093-20X	143.88	
.093	.0465	.500	.522	1.500	.150	.2500	.5000	3.0	FR-093-24	127.08	FR-093-24X	143.88	
NEW	.125	.0625	.375	.397	1.000	.150	.1875	.3750	2.5	FR-5586	92.58	FR-5586X	104.78
NEW	.125	.0625	.375	.397	1.250	.150	.1875	.3750	2.5	FR-0965	92.58	FR-0965X	104.78
.125	.0625	.500	.522	.500	.150	.2500	.5000	3.0	FR-125-8	127.08	FR-125-8X	143.88	
.125	.0625	.500	.522	.750	.150	.2500	.5000	3.0	FR-125-12	127.08	FR-125-12X	143.88	
.125	.0625	.500	.522	1.000	.150	.2500	.5000	3.0	FR-125-16	127.08	FR-125-16X	143.88	
NEW	.125	.0625	.500	.522	1.000	.200	.2500	.5000	3.0	FR-7934	127.08	FR-7934X	143.88
.125	.0625	.500	.522	1.250	.150	.2500	.5000	3.0	FR-125-20	127.08	FR-125-20X	143.88	
NEW	.125	.0625	.500	.522	1.250	.200	.2500	.5000	3.0	FR-0271	127.08	FR-0271X	143.88
.125	.0625	.500	.522	1.500	.150	.2500	.5000	3.0	FR-125-24	127.08	FR-125-24X	143.88	
.187	.0935	.500	.522	.500	.150	.2500	.5000	3.0			FR-187-8X	143.88	
.187	.0935	.500	.522	.750	.150	.2500	.5000	3.0	FR-187-12	127.08			
.187	.0935	.500	.522	1.000	.150	.2500	.5000	3.0	FR-187-16	127.08			
NEW	.187	.0935	.500	.522	1.000	.200	.2500	.5000	3.0	FR-5272	127.08	FR-5272X	143.88
.187	.0935	.500	.522	1.250	.150	.2500	.5000	3.0	FR-187-20	127.08			
.187	.0935	.500	.522	1.500	.150	.2500	.5000	3.0	FR-187-24	127.08	FR-187-24X	143.88	

Standard – Grooving Tools

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

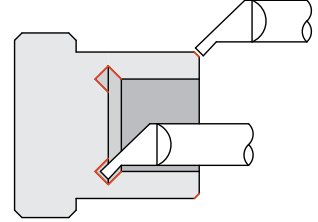
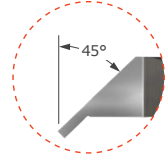
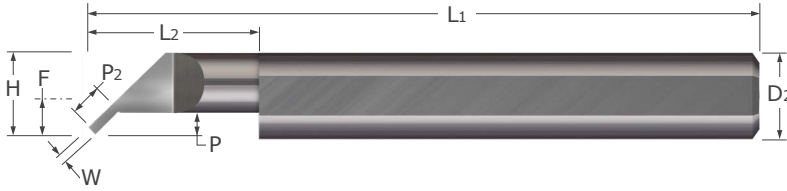
See pgs 39-47 for standard tool holders



Standard – Grooving Tools

Undercutting – Square

UC



- Designed for plunging square undercut grooves
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Width	Projection	Angled Projection	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
W $^{+.002}$ / $_{-.000}$ "	P	P2	H		L2 $^{+.050}$ / $_{-.000}$ "	F	D2 (h6)	L1				
.030	.060	.080	.240	.262	.500	.1150	.2500	2.5	UC-25030-8	52.88	UC-25030-8X	61.58
.050	.083	.120	.303	.325	.500	.1467	.3125	2.5	UC-31050-8	65.88	UC-31050-8X	76.28
.062	.083	.120	.303	.325	1.000	.1467	.3125	2.5	UC-31062-16	65.88	UC-31062-16X	76.28
.062	.083	.120	.303	.325	1.250	.1467	.3125	2.5	UC-31062-20	65.88	UC-31062-20X	76.28
.062	.095	.130	.365	.387	1.000	.1775	.3750	2.5	UC-37062-16	86.88	UC-37062-16X	99.08
.062	.125	.180	.490	.512	1.000	.2400	.5000	3.0	UC-50062-16	121.68	UC-50062-16X	138.28
.062	.125	.180	.490	.512	1.500	.2400	.5000	3.0	UC-50062-24	121.68		
.093	.095	.130	.365	.387	1.000	.1775	.3750	2.5	UC-37093-16	86.88	UC-37093-16X	99.08
.093	.125	.180	.490	.512	1.500	.2400	.5000	3.0	UC-50093-24	121.68	UC-50093-24X	138.28
.125	.095	.130	.365	.387	1.000	.1775	.3750	2.5	UC-37125-16	86.88	UC-37125-16X	99.08
.125	.095	.130	.365	.387	1.250	.1775	.3750	2.5	UC-37125-20	86.88		
.125	.125	.180	.490	.512	1.000	.2400	.5000	3.0	UC-50125-16	121.68		
.125	.125	.180	.490	.512	1.500	.2400	.5000	3.0	UC-50125-24	121.68	UC-50125-24X	138.28

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

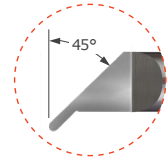
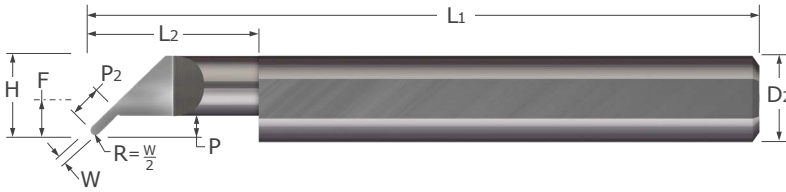
Standard – Grooving Tools

See pgs 39-47 for standard tool holders

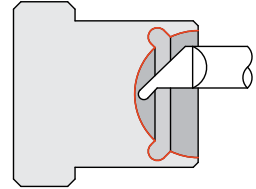


UP

Standard – Grooving Tools
Undercutting – Full Radius



- Designed for plunging full radius undercut grooves and profiling
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Full radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Width	Projection	Angled Projection	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated		
									Tool #	Price	Tool #	Price	
W $^{+.002''}$ $_{-.000''}$	P	P ₂	H		L ₂ $^{+.050''}$ $_{-.000''}$	F	D ₂ (h6)	L ₁					
.020	.050	.077	.180	.198	.375	.0862	.1875	2.0	UP-18020-6	56.48	UP-18020-6X	63.18	
.020	.050	.077	.180	.198	.500	.0862	.1875	2.0	UP-18020-8	56.48	UP-18020-8X	63.18	
.025	.050	.078	.180	.198	.375	.0862	.1875	2.0	UP-18025-6	56.48	UP-18025-6X	63.18	
.025	.050	.078	.180	.198	.500	.0862	.1875	2.0	UP-18025-8	56.48	UP-18025-8X	63.18	
.025	.060	.092	.240	.262	.375	.1150	.2500	2.5	UP-25025-6	60.78	UP-25025-6X	69.48	
.025	.060	.092	.240	.262	.500	.1150	.2500	2.5	UP-25025-8	60.78	UP-25025-8X	69.48	
.030	.050	.079	.180	.198	.375	.0862	.1875	2.0	UP-18030-6	56.48	UP-18030-6X	63.18	
.030	.050	.079	.180	.198	.500	.0862	.1875	2.0	UP-18030-8	56.48	UP-18030-8X	63.18	
.030	.060	.094	.240	.262	.500	.1150	.2500	2.5	UP-25030-8	60.78	UP-25030-8X	69.48	
.030	.060	.094	.240	.262	1.000	.1150	.2500	2.5	UP-25030-16	60.78	UP-25030-16X	69.48	
NEW	.039	.050	.082	.180	.198	.375	.0862	.1875	2.0	UP-18039-6	56.48	UP-18039-6X	63.18
NEW	.039	.060	.096	.240	.262	.500	.1150	.2500	2.5	UP-25039-8	60.78	UP-25039-8X	69.48
NEW	.039	.060	.096	.240	.262	1.000	.1150	.2500	2.5	UP-25039-16	60.78	UP-25039-16X	69.48
	.050	.083	.132	.303	.325	.500	.1467	.3125	2.5	UP-31050-8	75.58	UP-31050-8X	85.88
	.050	.083	.132	.303	.325	1.000	.1467	.3125	2.5	UP-31050-16	75.58	UP-31050-16X	85.88
	.062	.083	.136	.303	.325	1.000	.1467	.3125	2.5	UP-31062-16	75.58	UP-31062-16X	85.88
	.062	.083	.136	.303	.325	1.250	.1467	.3125	2.5	UP-31062-20	75.58	UP-31062-20X	85.88
	.062	.095	.153	.365	.387	1.000	.1775	.3750	2.5	UP-37062-16	96.68	UP-37062-16X	108.88
	.062	.095	.153	.365	.387	1.250	.1775	.3750	2.5	UP-37062-20	96.68	UP-37062-20X	108.88
	.062	.125	.195	.490	.512	1.000	.2400	.5000	3.0	UP-50062-16	133.38	UP-50062-16X	149.98
	.062	.125	.195	.490	.512	1.500	.2400	.5000	3.0	UP-50062-24	133.38	UP-50062-24X	149.98
	.093	.095	.162	.365	.387	1.000	.1775	.3750	2.5	UP-37093-16	96.68	UP-37093-16X	108.88
	.093	.125	.204	.490	.512	1.000	.2400	.5000	3.0	UP-50093-16	133.38	UP-50093-16X	149.98
	.093	.125	.204	.490	.512	1.500	.2400	.5000	3.0	UP-50093-24	133.38	UP-50093-24X	149.98
	.125	.095	.171	.365	.387	1.000	.1775	.3750	2.5	UP-37125-16	96.68	UP-37125-16X	108.88
	.125	.095	.171	.365	.387	1.250	.1775	.3750	2.5	UP-37125-20	96.68	UP-37125-20X	108.88
	.125	.125	.213	.490	.512	1.000	.2400	.5000	3.0	UP-50125-16	133.38	UP-50125-16X	149.98
	.125	.125	.213	.490	.512	1.500	.2400	.5000	3.0	UP-50125-24	133.38	UP-50125-24X	149.98

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

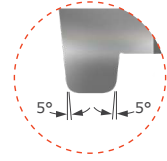
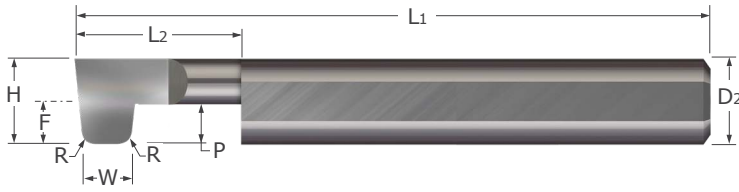
See pgs 39-47 for standard tool holders



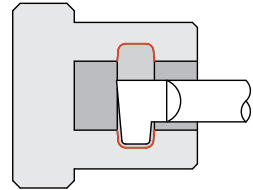
Standard - Grooving Tools

OR

O-Ring Grooving



- Designed for creating O-ring grooves
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Lockdown flat automatically locates tool on center
- AITiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Width	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AITiN Coated	
									Tool #	Price	Tool #	Price
W $\begin{matrix} +.002'' \\ -.000'' \end{matrix}$	H		L2 $\begin{matrix} +.050'' \\ -.000'' \end{matrix}$	R $\begin{matrix} +.010'' \\ -.000'' \end{matrix}$	P	F	D2 (h6)	L1	OR-096-8	50.98	OR-096-8X	59.68
.096	.250	.272	.500	.010	.100	.1250	.2500	2.5	OR-141-9	50.98		
.141	.250	.272	.562	.35	.100	.1250	.2500	2.5	OR-144-10	50.98		
.144	.250	.272	.625	.035	.100	.1250	.2500	2.5	OR-174-12	83.58	OR-174-12X	95.98
.174	.375	.397	.750	.010	.115	.1875	.3750	2.5	OR-208-13	83.58	OR-208-13X	95.98
.208	.375	.397	.812	.035	.115	.1875	.3750	2.5	OR-241-15	83.58		
.241	.375	.397	.938	.035	.115	.1875	.3750	2.5				

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

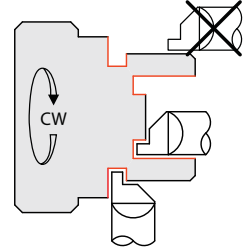
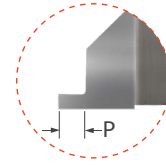
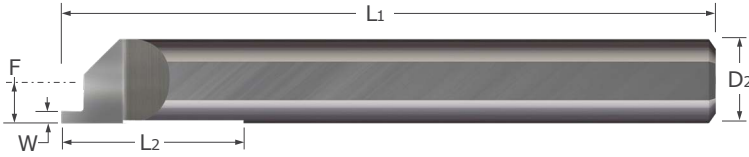
Standard - Grooving Tools

See pgs 39-47 for standard tool holders



FG

Standard – Grooving Tools
Face Grooving – Square



- Designed for generating square grooves in the face of the part
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Relief ground along Maximum Bore Depth (L2) to avoid interference during deep hole applications
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials ■ Solid carbide ■ CNC ground in the USA

Width	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W $+0.002''$ $-0.000''$	P $+0.015''$ $-0.000''$		L2	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
.015	.025	.197	.750	.0937	.1875	2.0	FG-187-015-025	36.68	FG-187-015-025X	42.88
.015	.025	.260	1.000	.1250	.2500	2.5	FG-250-015-025	40.88	FG-250-015-025X	49.58
.017	.025	.197	.750	.0937	.1875	2.0	FG-187-017-025	36.68	FG-187-017-025X	42.88
.017	.025	.260	1.000	.1250	.2500	2.5	FG-250-017-025	40.88	FG-250-017-025X	49.58
.020	.025	.135	.375	.0625	.1250	1.5	FG-125-020-025	35.58	FG-125-020-025X	40.98
.020	.025	.197	.750	.0937	.1875	2.0	FG-187-020-025	36.68	FG-187-020-025X	42.88
.020	.025	.260	1.000	.1250	.2500	2.5	FG-250-020-025	40.88	FG-250-020-025X	49.58
.020	.050	.197	.155	.0862	.1875	2.0	FG-180-020	36.68	FG-180-020X	42.88
.020	.050	.197	.750	.0937	.1875	2.0	FG-187-020-050	36.68	FG-187-020-050X	42.88
.020	.050	.240	.215	.1200	.2500	2.5	FG-230-020	40.88	FG-230-020X	47.18
.020	.050	.260	.215	.1250	.2500	2.5	FG-250-020	40.88	FG-250-020X	49.58
.025	.025	.135	.375	.0625	.1250	1.5	FG-125-025-025	35.58	FG-125-025-025X	40.98
.025	.025	.197	.750	.0937	.1875	2.0	FG-187-025-025	36.68	FG-187-025-025X	42.88
.025	.025	.260	1.000	.1250	.2500	2.5	FG-250-025-025	40.88	FG-250-025-025X	49.58
.025	.050	.197	.750	.0937	.1875	2.0	FG-187-025-050	36.68	FG-187-025-050X	42.88
.025	.050	.260	1.000	.1250	.2500	2.5	FG-250-025-050	40.88	FG-250-025-050X	49.58
.030	.050	.135	.375	.0625	.1250	1.5	FG-125-030-050	35.58	FG-125-030-050X	40.98
.030	.050	.190	.155	.0862	.1875	2.0	FG-180-030	36.68	FG-180-030X	43.48
.030	.050	.197	.750	.0937	.1875	2.0	FG-187-030-050	36.68	FG-187-030-050X	42.88
.030	.050	.260	.215	.1250	.2500	2.5	FG-250-030	40.88	FG-250-030X	49.58
.030	.050	.322	.240	.1563	.3125	2.5	FG-312-030	55.88	FG-312-030X	66.28
.030	.050	.385	.275	.1875	.3750	2.5	FG-375-030	77.88	FG-375-030X	90.08
.030	.075	.197	.750	.0937	.1875	2.0	FG-187-030-075	36.68	FG-187-030-075X	42.88
.030	.075	.260	1.000	.1250	.2500	2.5	FG-250-030-075	40.88	FG-250-030-075X	49.58
NEW	.030	.075	.322	1.125	.1563	2.5	FG-4363	55.88	FG-4363X	66.28
.039	.050	.197	.750	.0937	.1875	2.0	FG-187-039-050	36.68	FG-187-039-050X	42.88
.039	.050	.260	1.000	.1250	.2500	2.5	FG-250-039-050	40.88	FG-250-039-050X	49.58
.039	.050	.385	1.250	.1875	.3750	2.5	FG-375-039-050	77.88	FG-375-039-050X	90.08
.039	.075	.197	.750	.0937	.1875	2.0	FG-187-039-075	36.68	FG-187-039-075X	42.88
.039	.075	.260	1.000	.1250	.2500	2.5	FG-250-039-075	40.88	FG-250-039-075X	49.58
.040	.050	.197	.750	.0937	.1875	2.0	FG-187-040-050	36.68	FG-187-040-050X	42.88
.040	.050	.260	.215	.1250	.2500	2.5	FG-250-040	40.88	FG-250-040X	49.58
.040	.050	.322	.240	.1563	.3125	2.5	FG-312-040	55.88	FG-312-040X	66.28
.040	.050	.385	1.250	.1875	.3750	2.5	FG-375-040-050	77.88	FG-375-040-050X	90.08
.040	.075	.197	.750	.0937	.1875	2.0	FG-187-040-075	36.68	FG-187-040-075X	42.88
.040	.075	.260	1.000	.1250	.2500	2.5	FG-250-040-075	40.88	FG-250-040-075X	49.58
NEW	.040	.075	.322	1.125	.1563	2.5	FG-4322	55.88	FG-4322X	66.28

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Grooving Tools

Face Grooving – Square (cont.)

FG

Continued from previous page

Width	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
							Tool #	Price	Tool #	Price
W $^{+.002}$ / $_{-.000}$ "	P $^{+.015}$ / $_{-.000}$ "	L ₂	F	D ₂ (h6)	L ₁	FG-187-050-050	36.68	FG-187-050-050X	42.88	
.050	.050	.197	.750	.0937	.1875	2.0	FG-250-050	40.88	FG-250-050X	49.58
.050	.050	.260	.215	.1250	.2500	2.5	FG-312-050	55.88	FG-312-050X	66.28
.050	.050	.322	.240	.1563	.3125	2.5	FG-375-050-050	77.88	FG-375-050-050X	90.08
.050	.075	.385	1.250	.1875	.3750	2.5	FG-187-050-075	36.68	FG-187-050-075X	42.88
.050	.075	.197	.750	.0937	.1875	2.0	FG-250-050-075	40.88	FG-250-050-075X	49.58
.050	.075	.260	1.000	.1250	.2500	2.5	FG-312-050-075	55.88	FG-312-050-075X	66.28
.059	.075	.322	1.125	.1563	.3125	2.5	FG-187-059-075	36.68	FG-187-059-075X	42.88
.059	.075	.197	.750	.0937	.1875	2.0	FG-250-059-075	40.88	FG-250-059-075X	49.58
.059	.075	.260	1.000	.1250	.2500	2.5	FG-375-059-075	77.88	FG-375-059-075X	90.08
.059	.100	.385	1.250	.1875	.3750	2.5	FG-187-059-100	36.68	FG-187-059-100X	42.88
.059	.100	.197	.750	.0937	.1875	2.0	FG-250-059-100	40.88	FG-250-059-100X	49.58
.059	.100	.260	1.000	.1250	.2500	2.5	FG-312-062-075	36.68	FG-187-062-075X	42.88
.062	.075	.197	.750	.0937	.1875	2.0	FG-250-062-075	40.88	FG-250-062-075X	49.58
.062	.075	.260	1.000	.1250	.2500	2.5	FG-312-062	55.88	FG-312-062X	66.28
.062	.075	.322	.250	.1563	.3125	2.5	FG-375-062	77.88	FG-375-062X	90.08
.062	.075	.385	.285	.1875	.3750	2.5	FG-500-062	87.98	FG-500-062X	104.68
.062	.075	.510	.350	.2500	.5000	3.0	FG-625-062	143.38		
.062	.075	.635	.410	.3125	.6250	3.5	FG-187-062-100	36.68	FG-187-062-100X	42.88
.062	.100	.197	.750	.0937	.1875	2.0	FG-250-062-100	40.88	FG-250-062-100X	49.58
.062	.100	.260	1.000	.1250	.2500	2.5	FG-312-062-100	55.88	FG-312-062-100X	66.28
.062	.100	.322	1.125	.1563	.3125	2.5	FG-375-062-100	77.88	FG-375-062-100X	90.08
.062	.100	.385	1.250	.1875	.3750	2.5	FG-4909	87.98	FG-4909X	104.68
.062	.100	.510	1.250	.2500	.5000	3.0				NEW
.062	.150	.197	.750	.0937	.1875	2.0	FG-187-062-150	36.68	FG-187-062-150X	42.88
.062	.150	.260	1.000	.1250	.2500	2.5	FG-250-062-150	40.88	FG-250-062-150X	49.58
.062	.150	.322	1.125	.1563	.3125	2.5	FG-312-062-150	55.88	FG-312-062-150X	66.28
.062	.150	.385	1.250	.1875	.3750	2.5	FG-375-062-150	77.88	FG-375-062-150X	90.08
.062	.150	.510	1.250	.2500	.5000	3.0	FG-2828	87.98	FG-2828X	104.68
.062	.150	.635	1.250	.3125	.6250	3.5				NEW
.078	.100	.260	1.000	.1250	.2500	2.5	FG-250-078-100	40.88	FG-250-078-100X	49.58
.078	.100	.322	1.125	.1563	.3125	2.5	FG-312-078-100	55.88	FG-312-078-100X	66.28
.078	.100	.385	.300	.1875	.3750	2.5	FG-375-078	77.88	FG-375-078X	90.08
.093	.100	.385	.320	.1875	.3750	2.5	FG-375-093	77.88	FG-375-093X	90.08
.093	.100	.510	.375	.2500	.5000	3.0	FG-500-093	87.98	FG-500-093X	104.68
.093	.100	.635	.430	.3125	.6250	3.5	FG-625-093	143.38	FG-625-093X	164.08
.093	.100	.760	.475	.3750	.7500	4.0	FG-750-093	227.98		
.093	.150	.322	1.125	.1563	.3125	2.5	FG-312-093-150	55.88	FG-312-093-150X	66.28
.093	.150	.385	1.250	.1875	.3750	2.5	FG-375-093-150	77.88	FG-375-093-150X	90.08
.118	.150	.385	1.250	.1875	.3750	2.5	FG-375-118-150	77.88	FG-375-118-150X	90.08
.125	.100	.385	.320	.1875	.3750	2.5	FG-375-125	77.88	FG-375-125X	90.08
.125	.100	.510	.350	.2500	.5000	3.0	FG-500-125	87.98	FG-500-125X	104.68
.125	.100	.760	.475	.3750	.7500	4.0	FG-750-125	227.98	FG-750-125X	252.78
.125	.200	.385	1.250	.1875	.3750	2.5	FG-375-125-200	77.88	FG-375-125-200X	90.08
.125	.200	.510	1.250	.2500	.5000	3.0	FG-3140	87.98	FG-3140X	104.68
.125	.250	.385	1.250	.1875	.3750	2.5	FG-0531	77.88	FG-0531X	90.08
.125	.250	.510	1.250	.2500	.5000	3.0				NEW
.125	.250	.635	1.250	.3125	.6250	3.5				NEW
.125	.250	.760	1.250	.3750	.7500	4.0				NEW
.156	.100	.510	.375	.2500	.5000	3.0	FG-500-156	87.98	FG-500-156X	104.68
.156	.100	.635	.430	.3125	.6250	3.5	FG-625-156	143.38	FG-625-156X	164.08
.156	.100	.760	.475	.3750	.7500	4.0	FG-750-156	227.98		
.156	.200	.510	1.250	.2500	.5000	3.0	FG-5610	87.98	FG-5610X	104.68
.187	.150	.635	.480	.3125	.6250	3.5	FG-625-187	143.38	FG-625-187X	164.08
.187	.150	.760	.525	.3750	.7500	4.0	FG-750-187	227.98	FG-750-187X	252.78
.250	.250	.760	.625	.3750	.7500	4.0	FG-750-250	227.98		

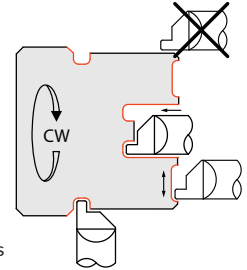
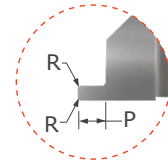
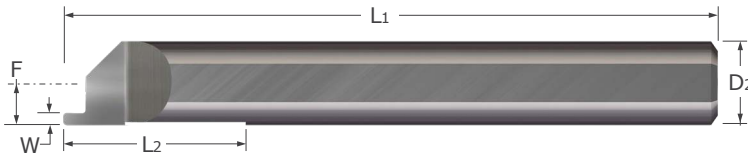
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 39-47 for standard tool holders



FGC

Standard – Grooving Tools
Face Grooving – Corner Radius



- Designed for generating corner radius grooves in the face of the part
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Relief ground along Maximum Bore Depth (L2) to avoid interference during deep hole applications
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Width	Projection	Minimum Groove Diameter*	Radius	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
W $+0.002"$ $-0.000"$	P $+0.015"$ $-0.000"$		R $+0.001"$ $-0.001"$	L2	F	D2 (h6)	L1				
.015	.025	.197	.003	.750	.0938	.1875	2.0	FGC3-187-015-025	39.38	FGC3-187-015-025X	45.58
.015	.025	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-015-025	43.58	FGC3-250-015-025X	52.18
.017	.025	.197	.003	.750	.0938	.1875	2.0	FGC3-187-017-025	39.38	FGC3-187-017-025X	45.58
.017	.025	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-017-025	43.58	FGC3-250-017-025X	52.18
.020	.025	.135	.003	.375	.0625	.1250	1.5	FGC3-125-020-025	38.18	FGC3-125-020-025X	43.58
.020	.025	.197	.003	.750	.0938	.1875	2.0	FGC3-187-020-025	39.38	FGC3-187-020-025X	45.58
.020	.025	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-020-025	43.58	FGC3-250-020-025X	52.18
.025	.025	.135	.003	.375	.0625	.1250	1.5	FGC3-125-025-025	38.18	FGC3-125-025-025X	43.58
.025	.025	.197	.003	.750	.0938	.1875	2.0	FGC3-187-025-025	39.38	FGC3-187-025-025X	45.58
.025	.025	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-025-025	43.58	FGC3-250-025-025X	52.18
.030	.050	.135	.003	.375	.0625	.1250	1.5	FGC3-125-030-050	38.18	FGC3-125-030-050X	43.58
.030	.050	.197	.003	.750	.0938	.1875	2.0	FGC3-187-030-050	39.38	FGC3-187-030-050X	45.58
.030	.050	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-030-050	43.58	FGC3-250-030-050X	52.18
.030	.050	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-030-050	58.58	FGC3-312-030-050X	68.88
.030	.050	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-030-050	80.28	FGC3-375-030-050X	92.58
.039	.050	.197	.003	.750	.0938	.1875	2.0	FGC3-187-039-050	39.38	FGC3-187-039-050X	45.58
.039	.050	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-039-050	43.58	FGC3-250-039-050X	52.18
.039	.050	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-039-050	80.28	FGC3-375-039-050X	92.58
.040	.050	.197	.003	.750	.0938	.1875	2.0	FGC3-187-040-050	39.38	FGC3-187-040-050X	45.58
.040	.050	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-040-050	43.58	FGC3-250-040-050X	52.18
.040	.050	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-040-050	58.58	FGC3-312-040-050X	68.88
.040	.050	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-040-050	80.28	FGC3-375-040-050X	92.58
.050	.050	.197	.003	.750	.0938	.1875	2.0	FGC3-187-050-050	39.38	FGC3-187-050-050X	45.58
.050	.050	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-050-050	43.58	FGC3-250-050-050X	52.18
.050	.050	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-050-050	58.58	FGC3-312-050-050X	68.88
.050	.050	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-050-050	80.28	FGC3-375-050-050X	92.58
.059	.075	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-059-075	80.28	FGC3-375-059-075X	92.58

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Grooving Tools

Face Grooving – Corner Radius (cont.)

FGC

Continued from previous page

Width W $\begin{smallmatrix} +.002'' \\ -.000'' \end{smallmatrix}$	Projection P $\begin{smallmatrix} +.015'' \\ -.000'' \end{smallmatrix}$	Minimum Groove Diameter*	Radius R $\begin{smallmatrix} +.001'' \\ -.001'' \end{smallmatrix}$	Maximum Bore Depth L2	Centerline Offset F	Shank Diameter D2 (h6)	Overall Length L1	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
.062	.075	.197	.003	.750	.0938	.1875	2.0	FGC3-187-062-075	39.38	FGC3-187-062-075X	45.58
.062	.075	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-062-075	43.58	FGC3-250-062-075X	52.18
.062	.075	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-062-075	58.58	FGC3-312-062-075X	68.88
.062	.075	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-062-075	80.28	FGC3-375-062-075X	92.58
.062	.100	.197	.003	.750	.0938	.1875	2.0	FGC3-187-062-100	39.38	FGC3-187-062-100X	45.58
.062	.100	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-062-100	43.58	FGC3-250-062-100X	52.18
.078	.100	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-078-100	43.58	FGC3-250-078-100X	52.18
.078	.100	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-078-100	58.58	FGC3-312-078-100X	68.88
.078	.100	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-078-100	80.28	FGC3-375-078-100X	92.58
.093	.100	.385	.006	1.250	.1875	.3750	2.5	FGC6-375-093-100	80.28	FGC6-375-093-100X	92.58
.093	.150	.322	.006	1.125	.1563	.3125	2.5	FGC6-312-093-150	58.58	FGC6-312-093-150X	68.88
.118	.150	.385	.006	1.250	.1875	.3750	2.5	FGC6-375-118-150	80.28	FGC6-375-118-150X	92.58
.125	.100	.385	.006	1.250	.1875	.3750	2.5	FGC6-375-125-100	80.28	FGC6-375-125-100X	92.58

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

Standard – Grooving Tools



Check Real-Time Availability of
Up to 50 Tools at Once

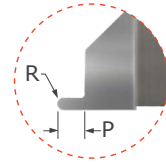
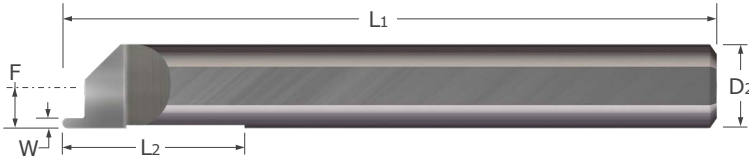
On Micro100.com/check-stock

See pgs 39-47 for standard tool holders

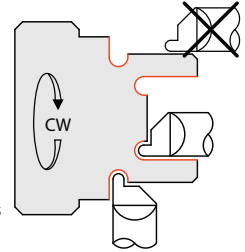


FGF

Standard – Grooving Tools
Face Grooving – Full Radius



- Designed for generating full radius grooves in the face of the part
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Relief ground along Maximum Bore Depth (L2) to avoid interference during deep hole applications
- Full radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Width	Radius	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
W ^{+0.002"} _{-0.000"}	R	P ^{+0.030"} _{-0.000"}		L2	F	D2 (h6)	L1				
.015	.0075	.025	.197	.750	.0937	.1875	2.0	FGF-187-015-025	37.58	FGF-187-015-025X	43.58
.015	.0075	.025	.260	1.000	.1250	.2500	2.5	FGF-250-015-025	42.28	FGF-250-015-025X	50.78
.017	.0085	.025	.197	.750	.0937	.1875	2.0	FGF-187-017-025	37.58	FGF-187-017-025X	43.58
.017	.0085	.025	.260	1.000	.1250	.2500	2.5	FGF-250-017-025	42.28	FGF-250-017-025X	50.78
.020	.0100	.050	.135	.375	.0625	.1250	1.5	FGF-125-020-050	36.28	FGF-125-020-050X	41.78
.020	.0100	.050	.190	.180	.0860	.1875	2.0	FGF-180-020	37.58	FGF-180-020X	43.58
.020	.0100	.050	.197	.750	.0937	.1875	2.0	FGF-187-020-050	37.58	FGF-187-020-050X	43.58
.020	.0100	.050	.240	.230	.1050	.2500	2.5	FGF-230-020	42.28	FGF-230-020X	50.78
.020	.0100	.050	.260	.230	.1250	.2500	2.5	FGF-250-020	42.28	FGF-250-020X	50.78
.025	.0125	.050	.135	.375	.0625	.1250	1.5	FGF-125-025-050	36.28	FGF-125-025-050X	41.78
.025	.0125	.050	.197	.750	.0937	.1875	2.0	FGF-187-025-050	37.58	FGF-187-025-050X	43.58
.025	.0125	.050	.260	1.000	.1250	.2500	2.5	FGF-250-025-050	42.28	FGF-250-025-050X	50.78
.030	.0150	.050	.135	.375	.0625	.1250	1.5	FGF-125-030-050	36.28	FGF-125-030-050X	41.78
.030	.0150	.050	.190	.180	.0860	.1875	2.0	FGF-180-030	37.58	FGF-180-030X	43.58
.030	.0150	.050	.197	.750	.0937	.1875	2.0	FGF-187-030-050	37.58	FGF-187-030-050X	43.58
.030	.0150	.050	.260	.230	.1250	.2500	2.5	FGF-250-030	42.28	FGF-250-030X	50.78
.039	.0195	.075	.197	.750	.0937	.1875	2.0	FGF-187-039-075	37.58	FGF-187-039-075X	43.58
.039	.0195	.075	.260	1.000	.1250	.2500	2.5	FGF-250-039-075	42.28	FGF-250-039-075X	50.78
.040	.0200	.050	.260	.230	.1250	.2500	2.5	FGF-250-040	42.28	FGF-250-040X	50.78
.040	.0200	.075	.197	.750	.0937	.1875	2.0	FGF-187-040-075	37.58	FGF-187-040-075X	43.58
.040	.0200	.075	.260	1.000	.1250	.2500	2.5	FGF-250-040-075	42.28	FGF-250-040-075X	50.78
.050	.0250	.050	.322	.255	.1563	.3125	2.5	FGF-312-050	57.58	FGF-312-050X	67.98
.050	.0250	.075	.197	.750	.0937	.1875	2.0	FGF-187-050-075	37.58	FGF-187-050-075X	43.58
.050	.0250	.075	.260	1.000	.1250	.2500	2.5	FGF-250-050-075	42.28	FGF-250-050-075X	50.78
.050	.0250	.075	.322	1.125	.1563	.3125	2.5	FGF-312-050-075	57.58	FGF-312-050-075X	67.98
.062	.0310	.075	.322	.280	.1563	.3125	2.5	FGF-312-062	57.58	FGF-312-062X	67.98
.062	.0310	.075	.385	.315	.1875	.3750	2.5	FGF-375-062	80.08	FGF-375-062X	92.28
.062	.0310	.100	.197	.750	.0937	.1875	2.0	FGF-187-062-100	37.58	FGF-187-062-100X	43.58
.062	.0310	.100	.260	1.000	.1250	.2500	2.5	FGF-250-062-100	42.28	FGF-250-062-100X	50.78
.062	.0310	.100	.322	1.125	.1563	.3125	2.5	FGF-312-062-100	57.58	FGF-312-062-100X	67.98
.062	.0310	.100	.385	1.250	.1875	.3750	2.5	FGF-375-062-100	80.08	FGF-375-062-100X	92.28
.078	.0390	.100	.385	.335	.1875	.3750	2.5	FGF-375-078	80.08	FGF-375-078X	92.28
.093	.0465	.100	.385	.335	.1875	.3750	2.5	FGF-375-093	80.08	FGF-375-093X	92.28
.125	.0625	.100	.385	.335	.1875	.3750	2.5	FGF-375-125	80.08	FGF-375-125X	92.28

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

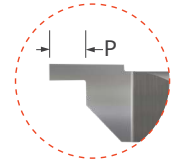
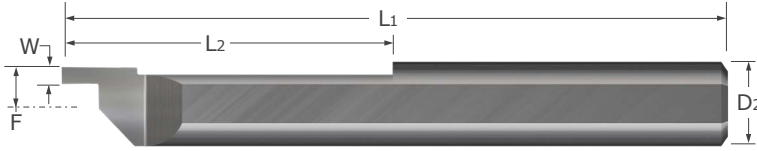
See pgs 39-47 for standard tool holders

Standard – Grooving Tools

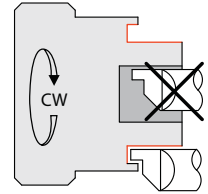
Standard – Grooving Tools

Face Grooving – Internal Tooth – Square

FGI



- Designed to generate square grooves around a boss in the face of a part for right hand grooving applications (M03) (See Graphic)
- Significantly reduces cycle times, as right hand design allows for multiple tools to be run simultaneously
- Relief ground along Maximum Turn Depth (L₂) to avoid interference during long turning applications
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Standard – Grooving Tools

Width	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W $+0.002$ -0.000 "	P $+0.015$ -0.000 "		L ₂	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.020	.040	.260	.750	.1150	.2500	2.5	FGI-8240	42.48	FGI-8240X	51.08
.020	.040	.260	1.250	.1150	.2500	2.5	FGI-6198	42.48	FGI-6198X	51.08
.020	.040	.322	.750	.1463	.3125	2.5	FGI-9800	57.98	FGI-9800X	68.38
.020	.040	.322	1.250	.1463	.3125	2.5	FGI-6738	57.98	FGI-6738X	68.38
.030	.060	.260	.750	.1150	.2500	2.5	FGI-6600	42.48	FGI-6600X	51.08
.030	.060	.260	1.250	.1150	.2500	2.5	FGI-3461	42.48	FGI-3461X	51.08
.030	.060	.322	.750	.1463	.3125	2.5	FGI-5774	57.98	FGI-5774X	68.38
.030	.060	.322	1.250	.1463	.3125	2.5	FGI-1413	57.98	FGI-1413X	68.38
.040	.080	.260	.750	.1150	.2500	2.5	FGI-6481	42.48	FGI-6481X	51.08
.040	.080	.260	1.250	.1150	.2500	2.5	FGI-9741	42.48	FGI-9741X	51.08
.040	.080	.322	.750	.1463	.3125	2.5	FGI-8157	57.98	FGI-8157X	68.38
.040	.080	.322	1.250	.1463	.3125	2.5	FGI-9114	57.98	FGI-9114X	68.38
.050	.100	.260	.750	.1150	.2500	2.5	FGI-1311	42.48	FGI-1311X	51.08
.050	.100	.260	1.250	.1150	.2500	2.5	FGI-7516	42.48	FGI-7516X	51.08
.050	.100	.322	.750	.1463	.3125	2.5	FGI-5336	57.98	FGI-5336X	68.38
.050	.100	.322	1.250	.1463	.3125	2.5	FGI-9489	57.98	FGI-9489X	68.38
.062	.125	.322	.750	.1463	.3125	2.5	FGI-2609	57.98	FGI-2609X	68.38
.062	.125	.322	1.250	.1463	.3125	2.5	FGI-0720	57.98	FGI-0720X	68.38
.062	.125	.385	.750	.1775	.3750	2.5	FGI-3852	80.68	FGI-3852X	93.08
.062	.125	.385	1.250	.1775	.3750	2.5	FGI-8466	80.68	FGI-8466X	93.08
.078	.156	.322	.750	.1463	.3125	2.5	FGI-4397	57.98	FGI-4397X	68.38
.078	.156	.322	1.250	.1463	.3125	2.5	FGI-3465	57.98	FGI-3465X	68.38
.078	.156	.385	.750	.1775	.3750	2.5	FGI-2855	80.68	FGI-2855X	93.08
.078	.156	.385	1.250	.1775	.3750	2.5	FGI-2684	80.68	FGI-2684X	93.08
.093	.187	.322	.750	.1463	.3125	2.5	FGI-5482	57.98	FGI-5482X	68.38
.093	.187	.322	1.250	.1463	.3125	2.5	FGI-2378	57.98	FGI-2378X	68.38
.093	.187	.385	.750	.1775	.3750	2.5	FGI-1641	80.68	FGI-1641X	93.08
.093	.187	.385	1.250	.1775	.3750	2.5	FGI-1707	80.68	FGI-1707X	93.08

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

Continued on next page

See pgs 39-47 for standard tool holders



FGI

Standard – Grooving Tools

Face Grooving – Internal Tooth – Square (cont.)

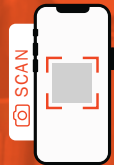
Continued from previous page

Width	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
							Tool #	Price	Tool #	Price
W $^{+.002"}_{-.000"}$	P $^{+.015"}_{-.000"}$		L ₂	F	D ₂ (h6)	L ₁				
.118	.236	.385	.750	.1775	.3750	2.5	FGI-4674	80.68	FGI-4674X	93.08
.118	.236	.385	1.250	.1775	.3750	2.5	FGI-2969	80.68	FGI-2969X	93.08
.118	.236	.510	1.000	.2400	.5000	3.0	FGI-6754	91.38	FGI-6754X	108.08
.118	.236	.510	1.500	.2400	.5000	3.0	FGI-3667	91.38	FGI-3667X	108.08
.125	.250	.385	.750	.1775	.3750	2.5	FGI-1535	80.68	FGI-1535X	93.08
.125	.250	.385	1.250	.1775	.3750	2.5	FGI-7015	80.68	FGI-7015X	93.08
.125	.250	.510	1.000	.2400	.5000	3.0	FGI-4349	91.38	FGI-4349X	108.08
.125	.250	.510	1.500	.2400	.5000	3.0	FGI-4098	91.38	FGI-4098X	108.08

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

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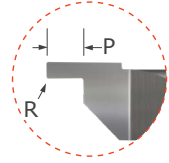
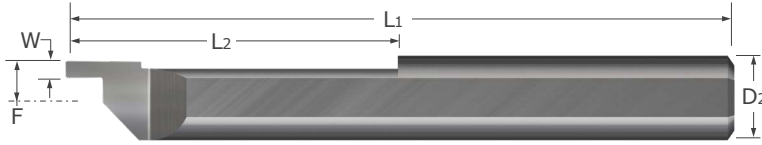


See pgs 39-47 for standard tool holders

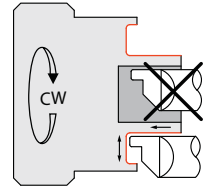
Standard – Grooving Tools

FGIC

Face Grooving – Internal Tooth – Corner Radius



- Designed to generate corner radius grooves around a boss in the face of a part for right hand grooving applications (M03) (See Graphic)
- Significantly reduces cycle times, as right hand design allows for multiple tools to be run simultaneously
- Relief ground along Maximum Turn Depth (L₂) to avoid interference during long turning applications
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Standard – Grooving Tools

Width	Radius	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W $\begin{matrix} +.002'' \\ -.000'' \end{matrix}$	R $\begin{matrix} +.0010'' \\ -.0010'' \end{matrix}$	P $\begin{matrix} +.015'' \\ -.000'' \end{matrix}$		L ₂	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.020	.003	.040	.260	1.250	.1150	.2500	2.5	FGIC3-6198	43.18	FGIC3-6198X	51.88
.020	.003	.040	.322	1.250	.1463	.3125	2.5	FGIC3-6738	58.98	FGIC3-6738X	69.28
.030	.003	.060	.260	1.250	.1150	.2500	2.5	FGIC3-3461	43.18	FGIC3-3461X	51.88
.030	.003	.060	.322	1.250	.1463	.3125	2.5	FGIC3-1413	58.98	FGIC3-1413X	69.28
.040	.003	.080	.260	1.250	.1150	.2500	2.5	FGIC3-9741	43.18	FGIC3-9741X	51.88
.040	.003	.080	.322	1.250	.1463	.3125	2.5	FGIC3-9114	58.98	FGIC3-9114X	69.28
.050	.003	.100	.260	1.250	.1150	.2500	2.5	FGIC3-7516	43.18	FGIC3-7516X	51.88
.050	.003	.100	.322	1.250	.1463	.3125	2.5	FGIC3-9489	58.98	FGIC3-9489X	69.28
.062	.003	.125	.322	1.250	.1463	.3125	2.5	FGIC3-0720	58.98	FGIC3-0720X	69.28
.062	.003	.125	.385	1.250	.1775	.3750	2.5	FGIC3-8466	82.08	FGIC3-8466X	94.28
.078	.003	.156	.322	1.250	.1463	.3125	2.5	FGIC3-3465	58.98	FGIC3-3465X	69.28
.078	.003	.156	.385	1.250	.1775	.3750	2.5	FGIC3-2684	82.08	FGIC3-2684X	94.28
.093	.006	.187	.322	1.250	.1463	.3125	2.5	FGIC6-2378	58.98	FGIC6-2378X	69.28
.093	.006	.187	.385	1.250	.1775	.3750	2.5	FGIC6-1707	82.08	FGIC6-1707X	94.28
.118	.006	.236	.385	1.250	.1775	.3750	2.5	FGIC6-2969	82.08	FGIC6-2969X	94.28
.125	.006	.250	.385	1.250	.1775	.3750	2.5	FGIC6-7015	82.08	FGIC6-7015X	94.28

*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

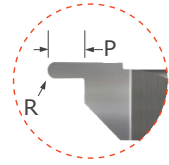
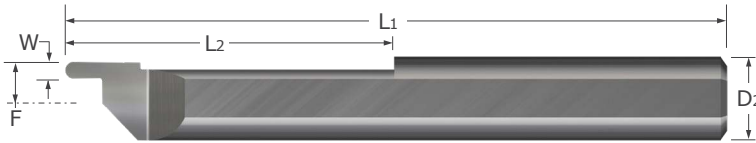
See pgs 39-47 for standard tool holders



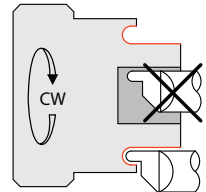
FGIF

Standard – Grooving Tools

Face Grooving – Internal Tooth – Full Radius



- Designed to generate full radius grooves around a boss in the face of a part for right hand grooving applications (M03) (See Graphic)
- Significantly reduces cycle times, as right hand design allows for multiple tools to be run simultaneously
- Relief ground along Maximum Turn Depth (L₂) to avoid interference during long turning applications
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Full radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Width	Radius	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
$W \begin{smallmatrix} +.002'' \\ -.000'' \end{smallmatrix}$	$R \begin{smallmatrix} +.0010'' \\ -.0010'' \end{smallmatrix}$	$P \begin{smallmatrix} +.015'' \\ -.000'' \end{smallmatrix}$		L ₂	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
.020	.0100	.040	.260	1.250	.1150	.2500	2.5	FGIF-6198	43.78	FGIF-6198X	52.28
.020	.0100	.040	.322	1.250	.1463	.3125	2.5	FGIF-6738	59.68	FGIF-6738X	69.98
.030	.0150	.060	.260	1.250	.1150	.2500	2.5	FGIF-3461	43.78	FGIF-3461X	52.28
.030	.0150	.060	.322	1.250	.1463	.3125	2.5	FGIF-1413	59.68	FGIF-1413X	69.98
.040	.0200	.080	.260	1.250	.1150	.2500	2.5	FGIF-9741	43.78	FGIF-9741X	52.28
.040	.0200	.080	.322	1.250	.1463	.3125	2.5	FGIF-9114	59.68	FGIF-9114X	69.98
.050	.0250	.100	.260	1.250	.1150	.2500	2.5	FGIF-7516	43.78	FGIF-7516X	52.28
.050	.0250	.100	.322	1.250	.1463	.3125	2.5	FGIF-9489	59.68	FGIF-9489X	69.98
.062	.0310	.125	.322	1.250	.1463	.3125	2.5	FGIF-0720	59.68	FGIF-0720X	69.98
.062	.0310	.125	.385	1.250	.1775	.3750	2.5	FGIF-8466	83.18	FGIF-8466X	95.38
.078	.0390	.156	.322	1.250	.1463	.3125	2.5	FGIF-3465	59.68	FGIF-3465X	69.98
.078	.0390	.156	.385	1.250	.1775	.3750	2.5	FGIF-2684	83.18	FGIF-2684X	95.38
.093	.0465	.187	.322	1.250	.1463	.3125	2.5	FGIF-2378	59.68	FGIF-2378X	69.98
.093	.0465	.187	.385	1.250	.1775	.3750	2.5	FGIF-1707	83.18	FGIF-1707X	95.38
.118	.0590	.236	.385	1.250	.1775	.3750	2.5	FGIF-2969	83.18	FGIF-2969X	95.38
.125	.0625	.250	.385	1.250	.1775	.3750	2.5	FGIF-7015	83.18	FGIF-7015X	95.38

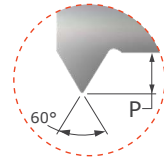
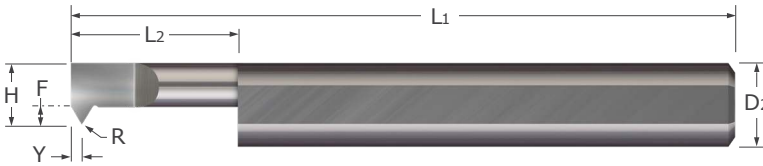
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 39-47 for standard tool holders

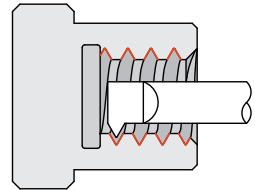
Standard - Threading Tools

UN Threads - Single Point - Right Hand

IT



- Designed for threading multiple thread pitches (ANSI, UN, and Metric 60°)
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Standard - Threading Tools

Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Radius	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
TPI	H		L2	Y	P	R	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
			$L2^{+.050" / -.000"}$	$Y^{+.010" / -.000"}$	P	$R^{+.001" / -.000"}$	F	D2 (h6)	L1	IT-040075	59.48	IT-040075X	65.48
40-72	.040	.045	.075	.009	.015	.001	-.0225	.1250	1.5	IT-040100	59.48	IT-040100X	65.48
40-72	.040	.045	.100	.009	.015	.001	-.0225	.1250	1.5	IT-040150	59.48	IT-040150X	65.48
28-72	.050	.055	.100	.012	.020	.001	-.0125	.1250	1.5	IT-050100	59.48	IT-050100X	65.48
28-72	.050	.055	.150	.012	.020	.001	-.0125	.1250	1.5	IT-050150	59.48	IT-050150X	65.48
28-72	.050	.055	.200	.012	.020	.001	-.0125	.1250	1.5	IT-050200	59.48	IT-050200X	65.48
28-72	.050	.055	.250	.012	.020	.001	-.0125	.1250	1.5	IT-050250	59.48	IT-050250X	65.48
28-56	.060	.070	.150	.012	.020	.001	-.0025	.1250	1.5	IT-060150	51.88	IT-060150X	57.88
28-56	.060	.070	.200	.012	.020	.001	-.0025	.1250	1.5	IT-060200	51.88	IT-060200X	57.88
28-56	.060	.070	.250	.012	.020	.001	-.0025	.1250	1.5	IT-060250	51.88	IT-060250X	57.88
28-56	.060	.070	.300	.012	.020	.001	-.0025	.1250	1.5	IT-060300	51.88	IT-060300X	57.88
28-56	.060	.070	.350	.012	.020	.001	-.0025	.1250	1.5	IT-060350	51.88	IT-060350X	57.88
28-56	.080	.090	.200	.012	.020	.002	.0175	.1250	1.5	IT-080200	47.28	IT-080200X	53.28
28-56	.080	.090	.250	.012	.020	.002	.0175	.1250	1.5	IT-080250	47.28	IT-080250X	53.08
28-56	.080	.090	.350	.012	.020	.002	.0175	.1250	1.5	IT-080350	47.28	IT-080350X	53.08
28-56	.080	.090	.500	.012	.020	.002	.0175	.1250	1.5	IT-080500	47.28	IT-080500X	53.08
28-56	.080	.090	.600	.012	.020	.002	.0175	.1250	2.0	IT-080600	48.88	IT-080600X	54.88
24-56	.100	.110	.250	.014	.025	.002	.0375	.1250	1.5	IT-100250	47.28	IT-100250X	53.08
24-56	.100	.110	.350	.014	.025	.002	.0375	.1250	1.5	IT-100350	47.28	IT-100350X	53.08
24-56	.100	.110	.500	.014	.025	.002	.0375	.1250	1.5	IT-100500	47.28	IT-100500X	53.08
24-56	.100	.110	.600	.014	.025	.002	.0375	.1250	1.5	IT-100600	47.28	IT-100600X	53.08
24-56	.100	.110	.750	.014	.025	.002	.0375	.1250	2.0	IT-100750	48.88	IT-100750X	54.88
20-56	.110	.126	.250	.017	.030	.002	.0475	.1250	1.5	IT-110250	47.28	IT-110250X	53.28
20-56	.110	.126	.400	.017	.030	.002	.0475	.1250	1.5	IT-110400	47.28	IT-110400X	53.28
20-56	.110	.126	.500	.017	.030	.002	.0475	.1250	1.5	IT-110500	47.28	IT-110500X	53.28
20-56	.110	.126	.600	.017	.030	.002	.0475	.1250	1.5	IT-110600	47.28	IT-110600X	53.28
20-56	.110	.126	.750	.017	.030	.002	.0475	.1250	2.0	IT-110750	48.88	IT-110750X	54.88
20-56	.120	.136	.250	.017	.030	.002	.0263	.1875	2.0	IT-120250	50.38	IT-120250X	56.88
20-56	.120	.136	.400	.017	.030	.002	.0263	.1875	2.0	IT-120400	50.38	IT-120400X	56.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders

See pg 317 for tool set options



IT

Standard – Threading Tools

UN Threads – Single Point – Right Hand (cont.)

Continued from previous page

Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Radius	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										TPI	H	L ₂ ^{+0.050"} _{-.000"}	Y ^{+0.010"} _{-.000"}
20-56	.120	.136	.500	.017	.030	.002	.0263	.1875	2.0	IT-120500	50.38	IT-120500X	56.88
20-56	.120	.136	.600	.017	.030	.002	.0263	.1875	2.0	IT-120600	50.38	IT-120600X	56.88
20-56	.120	.136	.750	.017	.030	.002	.0263	.1875	2.0	IT-120750	50.38	IT-120750X	56.88
16-56	.140	.156	.250	.020	.035	.002	.0463	.1875	2.0	IT-140250	50.38	IT-140250X	56.88
16-56	.140	.156	.400	.020	.035	.002	.0463	.1875	2.0	IT-140400	50.38	IT-140400X	56.88
16-56	.140	.156	.500	.020	.035	.002	.0463	.1875	2.0	IT-140500	50.38	IT-140500X	56.88
16-56	.140	.156	.750	.020	.035	.002	.0463	.1875	2.0	IT-140750	50.38	IT-140750X	56.88
16-56	.140	.156	.875	.020	.035	.002	.0463	.1875	2.0	IT-140875	50.38	IT-140875X	57.18
14-56	.160	.182	.250	.023	.040	.002	.0663	.1875	2.0	IT-160250	50.38	IT-160250X	56.88
14-56	.160	.182	.400	.023	.040	.002	.0663	.1875	2.0	IT-160400	50.38	IT-160400X	56.88
14-56	.160	.182	.500	.023	.040	.002	.0663	.1875	2.0	IT-160500	50.38	IT-160500X	56.88
14-56	.160	.182	.750	.023	.040	.002	.0663	.1875	2.0	IT-160750	50.38	IT-160750X	56.88
14-56	.160	.182	1.000	.023	.040	.002	.0663	.1875	2.0	IT-1601000	50.38	IT-1601000X	56.88
14-56	.180	.202	.350	.023	.040	.002	.0550	.2500	2.5	IT-180350	53.68	IT-180350X	62.38
14-56	.180	.202	.500	.023	.040	.002	.0550	.2500	2.5	IT-180500	53.68	IT-180500X	62.38
14-56	.180	.202	.750	.023	.040	.002	.0550	.2500	2.5	IT-180750	53.68	IT-180750X	62.38
14-56	.180	.202	1.000	.023	.040	.002	.0550	.2500	2.5	IT-1801000	53.68	IT-1801000X	62.38
14-56	.180	.202	1.125	.023	.040	.002	.0550	.2500	2.5	IT-1801125	53.68	IT-1801125X	62.38
13-56	.200	.222	.400	.026	.045	.002	.0750	.2500	2.5	IT-200400	53.68	IT-200400X	62.38
13-56	.200	.222	.600	.026	.045	.002	.0750	.2500	2.5	IT-200600	53.68	IT-200600X	62.38
13-56	.200	.222	.750	.026	.045	.002	.0750	.2500	2.5	IT-200750	53.68	IT-200750X	62.38
13-56	.200	.222	1.000	.026	.045	.002	.0750	.2500	2.5	IT-2001000	53.68	IT-2001000X	62.38
13-56	.200	.222	1.125	.026	.045	.002	.0750	.2500	2.5	IT-2001125	53.68	IT-2001125X	62.38
10-48	.230	.252	.400	.032	.055	.002	.0738	.3125	2.5	IT-230400	67.28	IT-230400X	77.58
10-48	.230	.252	.600	.032	.055	.002	.0738	.3125	2.5	IT-230600	67.28	IT-230600X	77.58
10-48	.230	.252	.750	.032	.055	.002	.0738	.3125	2.5	IT-230750	67.28	IT-230750X	77.58
10-48	.230	.252	1.000	.032	.055	.002	.0738	.3125	2.5	IT-2301000	67.28	IT-2301000X	77.58
10-48	.230	.252	1.250	.032	.055	.002	.0738	.3125	2.5	IT-2301250	67.28	IT-2301250X	77.58
10-48	.230	.252	1.500	.032	.055	.002	.0738	.3125	2.5	IT-2301500	67.28	IT-2301500X	77.58
NEW 10-48	.230	.252	1.750	.032	.055	.002	.0738	.3125	3.0	IT-2301750	68.58	IT-2301750X	78.98
8-40	.290	.312	.500	.040	.070	.002	.1338	.3125	2.5	IT-290500	67.28	IT-290500X	77.58
8-40	.290	.312	.750	.040	.070	.002	.1338	.3125	2.5	IT-290750	67.28	IT-290750X	77.58
8-40	.290	.312	1.000	.040	.070	.002	.1338	.3125	2.5	IT-2901000	67.28	IT-2901000X	77.58
8-40	.290	.312	1.250	.040	.070	.002	.1338	.3125	2.5	IT-2901250	67.28	IT-2901250X	77.58
8-40	.290	.312	1.500	.040	.070	.002	.1338	.3125	2.5	IT-2901500	67.28	IT-2901500X	77.58
8-40	.290	.312	1.750	.040	.070	.002	.1338	.3125	2.5	IT-2901750	67.28	IT-2901750X	77.58
8-40	.320	.342	.500	.043	.075	.002	.1325	.3750	2.5	IT-320500	87.48	IT-320500X	99.88
8-40	.320	.342	.750	.043	.075	.002	.1325	.3750	2.5	IT-320750	87.48	IT-320750X	99.88
8-40	.320	.342	1.000	.043	.075	.002	.1325	.3750	2.5	IT-3201000	87.48	IT-3201000X	99.88
8-40	.320	.342	1.250	.043	.075	.002	.1325	.3750	2.5	IT-3201250	87.48	IT-3201250X	99.88
8-40	.320	.342	1.500	.043	.075	.002	.1325	.3750	2.5	IT-3201500	87.48	IT-3201500X	99.88
8-40	.320	.342	1.750	.043	.075	.002	.1325	.3750	3.0	IT-3201750	89.68	IT-3201750X	101.98
8-40	.320	.342	1.800	.043	.075	.002	.1325	.3750	2.5	IT-3201800	87.48	IT-3201800X	99.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders

See pg 317 for tool set options



Standard – Threading Tools

UN Threads – Single Point – Right Hand (cont.)

Continued from previous page

Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Radius	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
TPI	H		L ₂	Y	P	R	F	D ₂ (h6)	L ₁				
7-32	.360	.382	.500	.049	.085	.002	.1725	.3750	2.5	IT-360500	87.48	IT-360500X	99.88
7-32	.360	.382	.750	.049	.085	.002	.1725	.3750	2.5	IT-360750	87.48	IT-360750X	99.88
7-32	.360	.382	1.000	.049	.085	.002	.1725	.3750	2.5	IT-3601000	87.48	IT-3601000X	99.88
7-32	.360	.382	1.250	.049	.085	.002	.1725	.3750	2.5	IT-3601250	87.48	IT-3601250X	99.88
7-32	.360	.382	1.500	.049	.085	.002	.1725	.3750	2.5	IT-3601500	87.48	IT-3601500X	99.88
7-32	.360	.382	1.750	.049	.085	.002	.1725	.3750	3.0	IT-3601750	89.68	IT-3601750X	101.98
7-32	.360	.382	1.800	.049	.085	.002	.1725	.3750	3.0	IT-3601800	87.48	IT-3601800X	99.88
7-32	.360	.382	2.000	.049	.085	.002	.1725	.3750	4.0	IT-3602000	91.08	IT-3602000X	104.28
5-32	.460	.482	.750	.069	.120	.002	.2100	.5000	3.0	IT-460750	89.68	IT-460750X	106.48
5-32	.460	.482	1.500	.069	.120	.002	.2100	.5000	3.0	IT-4601500	89.68	IT-4601500X	106.48
5-32	.460	.482	2.000	.069	.120	.002	.2100	.5000	3.0	IT-4602000	122.78	IT-4602000X	139.48
5-32	.490	.512	.750	.069	.120	.002	.2400	.5000	3.0	IT-490750	122.78	IT-490750X	139.48
5-32	.490	.512	1.125	.069	.120	.002	.2400	.5000	3.0	IT-4901125	122.78	IT-4901125X	139.48
5-32	.490	.512	1.500	.069	.120	.002	.2400	.5000	3.0	IT-4901500	122.78	IT-4901500X	139.48
5-32	.490	.512	2.000	.069	.120	.002	.2400	.5000	3.0	IT-4902000	122.78	IT-4902000X	139.48
5-32	.490	.512	2.500	.069	.120	.002	.2400	.5000	4.0	IT-4902500	125.58	IT-4902500X	143.58

NEW

NEW

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Threading Tools

See pgs 39-47 for standard tool holders

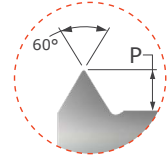
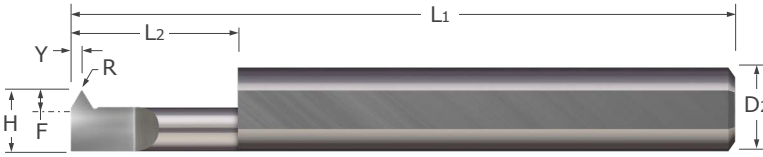
See pg 317 for tool set options



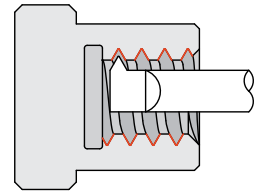
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Standard - Threading Tools

UN Threads - Single Point - Left Hand



- Designed for threading multiple thread pitches (ANSI, UN, and Metric 60°) in a left hand threading application
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Radius	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
TPI	H		L2	Y	P	R	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
40-72	.040	.045	.075	.009	.015	.001	-.0225	.1250	1.5	ITL-040075	59.48		
40-72	.040	.045	.150	.009	.015	.001	-.0225	.1250	1.5	ITL-040150	59.48		
28-72	.050	.055	.200	.012	.020	.001	-.0125	.1250	1.5	ITL-050200	59.48	ITL-050200X	65.48
28-56	.060	.070	.200	.012	.020	.001	-.0025	.1250	1.5	ITL-060200	51.88		
28-56	.060	.070	.250	.012	.020	.001	-.0025	.1250	1.5	ITL-060250	51.88	ITL-060250X	57.88
28-56	.060	.070	.300	.012	.020	.001	-.0025	.1250	1.5	ITL-060300	51.88	ITL-060300X	57.88
TPI	H		L2	Y	P	R	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
28-56	.080	.090	.250	.012	.020	.002	.0175	.1250	1.5	ITL-080250	47.28	ITL-080250X	53.08
28-56	.080	.090	.350	.012	.020	.002	.0175	.1250	1.5	ITL-080350	47.28	ITL-080350X	53.08
28-56	.080	.090	.500	.012	.020	.002	.0175	.1250	1.5	ITL-080500	47.28	ITL-080500X	53.08
24-56	.100	.110	.250	.014	.025	.002	.0375	.1250	1.5	ITL-100250	47.28	ITL-100250X	53.08
24-56	.100	.110	.350	.014	.025	.002	.0375	.1250	1.5	ITL-100350	47.28	ITL-100350X	53.08
24-56	.100	.110	.500	.014	.025	.002	.0375	.1250	1.5	ITL-100500	47.28	ITL-100500X	53.08
24-56	.100	.110	.600	.014	.025	.002	.0375	.1250	1.5	ITL-100600	47.28	ITL-100600X	53.08
20-56	.120	.136	.250	.017	.030	.002	.0263	.1875	2.0	ITL-120250	50.38	ITL-120250X	56.88
20-56	.120	.136	.400	.017	.030	.002	.0263	.1875	2.0	ITL-120400	50.38	ITL-120400X	56.88
20-56	.120	.136	.500	.017	.030	.002	.0263	.1875	2.0	ITL-120500	50.38	ITL-120500X	56.88
20-56	.120	.136	.600	.017	.030	.002	.0263	.1875	2.0	ITL-120600	50.38		
20-56	.120	.136	.750	.017	.030	.002	.0263	.1875	2.0	ITL-120750	50.38	ITL-120750X	56.88
16-56	.140	.156	.250	.020	.035	.002	.0463	.1875	2.0	ITL-140250	50.38	ITL-140250X	56.88
16-56	.140	.156	.400	.020	.035	.002	.0463	.1875	2.0	ITL-140400	50.38	ITL-140400X	56.88
16-56	.140	.156	.500	.020	.035	.002	.0463	.1875	2.0	ITL-140500	50.38		
16-56	.140	.156	.750	.020	.035	.002	.0463	.1875	2.0	ITL-140750	50.38	ITL-140750X	56.88

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



Standard – Threading Tools

UN Threads – Single Point – Left Hand (cont.)

Continued from previous page

Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Radius	Centerline Offset	Shank Dia.	Overall Length	Uncoated		A/TIN Coated	
										Tool #	Price	Tool #	Price
TPI	H	L ₂	$\begin{matrix} +.050'' \\ -.000'' \end{matrix}$	$\begin{matrix} +.010'' \\ -.000'' \end{matrix}$	P	$\begin{matrix} +.001'' \\ -.001'' \end{matrix}$	F	D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
14-56	.160	.182	.250	.023	.040	.002	.0663	.1875	2.0	ITL-160250	50.38	ITL-160250X	56.88
14-56	.160	.182	.400	.023	.040	.002	.0663	.1875	2.0	ITL-160400	50.38		
14-56	.160	.182	.500	.023	.040	.002	.0663	.1875	2.0	ITL-160500	50.38	ITL-160500X	56.88
14-56	.160	.182	.750	.023	.040	.002	.0663	.1875	2.0	ITL-160750	50.38	ITL-160750X	56.88
14-56	.180	.202	.350	.023	.040	.002	.0550	.2500	2.5	ITL-180350	53.68	ITL-180350X	62.38
14-56	.180	.202	.500	.023	.040	.002	.0550	.2500	2.5	ITL-180500	53.68	ITL-180500X	62.38
14-56	.180	.202	.750	.023	.040	.002	.0550	.2500	2.5	ITL-180750	53.68	ITL-180750X	62.38
14-56	.180	.202	1.000	.023	.040	.002	.0550	.2500	2.5	ITL-1801000	53.68	ITL-1801000X	62.38
13-56	.200	.222	.400	.026	.045	.002	.0750	.2500	2.5	ITL-200400	53.68	ITL-200400X	62.38
13-56	.200	.222	.600	.026	.045	.002	.0750	.2500	2.5	ITL-200600	53.68	ITL-200600X	62.38
13-56	.200	.222	.750	.026	.045	.002	.0750	.2500	2.5	ITL-200750	53.68	ITL-200750X	62.38
13-56	.200	.222	1.000	.026	.040	.002	.0750	.2500	2.5	ITL-2001000	53.68	ITL-2001000X	62.38
10-48	.230	.252	.400	.032	.055	.002	.0738	.3125	2.5	ITL-230400	67.28	ITL-230400X	77.58
10-48	.230	.252	.600	.032	.055	.002	.0738	.3125	2.5	ITL-230600	67.28	ITL-230600X	77.58
10-48	.230	.252	.750	.032	.055	.002	.0738	.3125	2.5	ITL-230750	67.28	ITL-230750X	77.58
10-48	.230	.252	1.000	.032	.055	.002	.0738	.3125	2.5	ITL-2301000	67.28	ITL-2301000X	77.58
8-40	.290	.312	.500	.040	.070	.002	.1338	.3125	2.5	ITL-290500	67.28	ITL-290500X	77.58
8-40	.290	.312	.750	.040	.070	.002	.1338	.3125	2.5	ITL-290750	67.28	ITL-290750X	77.58
8-40	.290	.312	1.000	.040	.070	.002	.1338	.3125	2.5	ITL-2901000	67.28	ITL-2901000X	77.58
8-40	.290	.312	1.250	.040	.070	.002	.1338	.3125	2.5	ITL-2901250	67.28	ITL-2901250X	77.58
8-40	.320	.342	.500	.043	.075	.002	.1325	.3750	2.5	ITL-320500	87.48	ITL-320500X	99.88
8-40	.320	.342	.750	.043	.075	.002	.1325	.3750	2.5	ITL-320750	87.48	ITL-320750X	99.88
8-40	.320	.342	1.000	.043	.075	.002	.1325	.3750	2.5	ITL-3201000	87.48	ITL-3201000X	99.88
8-40	.320	.342	1.250	.043	.075	.002	.1325	.3750	2.5	ITL-3201250	87.48	ITL-3201250X	99.88
7-32	.360	.382	.500	.049	.085	.002	.1725	.3750	2.5	ITL-360500	87.48	ITL-360500X	99.88
7-32	.360	.382	.750	.049	.085	.002	.1725	.3750	2.5	ITL-360750	87.48	ITL-360750X	99.88
7-32	.360	.382	1.000	.049	.085	.002	.1725	.3750	2.5	ITL-3601000	87.48	ITL-3601000X	99.88
7-32	.360	.382	1.250	.049	.085	.002	.1725	.3750	2.5	ITL-3601250	87.48	ITL-3601250X	99.88
7-32	.360	.382	1.800	.049	.085	.002	.1725	.3750	2.5	ITL-3601800	87.48	ITL-3601800X	99.88
5-32	.490	.512	.750	.069	.120	.002	.2400	.5000	3.0	ITL-490750	122.78	ITL-490750X	139.48
5-32	.490	.512	1.500	.069	.120	.002	.2400	.5000	3.0	ITL-4901500	122.78	ITL-4901500X	139.48
5-32	.490	.512	2.000	.069	.120	.002	.2400	.5000	3.0	ITL-4902000	122.78	ITL-4902000X	139.48

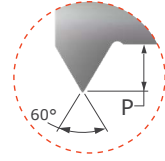
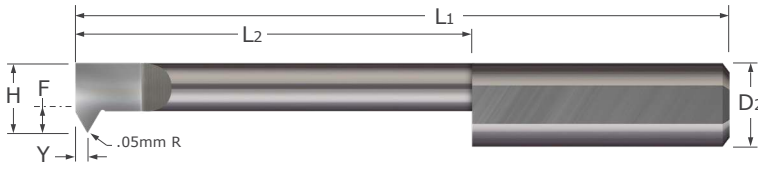
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.



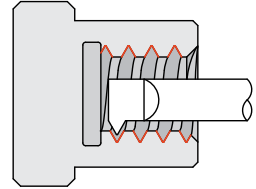
ITM

Standard – Threading Tools

Metric Shank – Single Point – Right Hand



- Designed for threading multiple thread pitches (ANSI, UN, & Metric 60°)
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Pitch	Head Width	Minimum Bore Diameter*	Max. Bore Depth	Point Offset	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TIN Coated		AlTiN Coated	
									Tool #	Price	Tool #	Price	Tool #	Price
.75-2.0 mm	H	L ₂	$+1.24\text{mm}$ -0.00mm	$+0.25\text{mm}$ -0.00mm	P	F	D ₂ (h6)	L ₁	ITM-064613	52.98	ITM-064613G	60.38	ITM-064613X	61.68
.75-2.0 mm	4.60 mm	5.15 mm	13 mm	0.71 mm	1.22 mm	1.6 mm	6 mm	57 mm	ITM-064625	52.98			ITM-064625X	61.68
.75-2.0 mm	5.10 mm	5.65 mm	15 mm	0.76 mm	1.32 mm	2.1 mm	6 mm	57 mm	ITM-065115	52.98			ITM-065115X	61.68
.75-2.0 mm	5.10 mm	5.65 mm	28 mm	0.76 mm	1.32 mm	2.1 mm	6 mm	57 mm	ITM-065128	52.98			ITM-065128X	61.68
.75-2.5 mm	5.80 mm	6.35 mm	15 mm	0.86 mm	1.50 mm	1.8 mm	8 mm	63 mm	ITM-085815	63.98			ITM-085815X	76.28
.75-2.5 mm	5.80 mm	6.35 mm	25 mm	0.86 mm	1.50 mm	1.8 mm	8 mm	63 mm	ITM-085825	63.98			ITM-085825X	76.28
.75-2.5 mm	5.80 mm	6.35 mm	38 mm	0.86 mm	1.50 mm	1.8 mm	8 mm	63 mm	ITM-085838	63.98			ITM-085838X	76.28
.75-3.5 mm	7.40 mm	7.95 mm	20 mm	1.09 mm	1.91 mm	3.4 mm	8 mm	63 mm	ITM-087420	63.98	ITM-087420G	74.18		
.75-3.5 mm	7.40 mm	7.95 mm	32 mm	1.09 mm	1.91 mm	3.4 mm	8 mm	63 mm	ITM-087432	63.98			ITM-087432X	76.28
.75-3.5 mm	7.40 mm	7.95 mm	46 mm	1.09 mm	1.91 mm	3.4 mm	8 mm	63 mm	ITM-087446	63.98	ITM-087446G	74.18	ITM-087446X	76.28
1.0-3.5 mm	9.60 mm	10.15 mm	20 mm	1.40 mm	2.41 mm	4.6 mm	10 mm	72 mm	ITM-109620	89.68				
1.0-3.5 mm	11.40 mm	11.95 mm	50 mm	1.85 mm	3.23 mm	5.4 mm	12 mm	83 mm	ITM-121150	114.98				

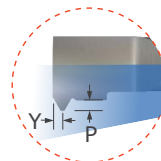
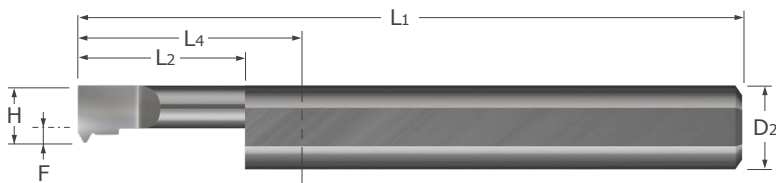
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 39-47 for standard tool holders

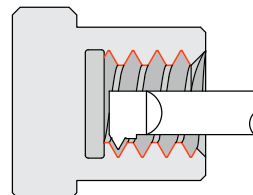


Standard – Threading Tools

UN Topping – Single Point



- Designed for threading 60° UN pitches in a right hand topping application
- Topping design generates a controlled thread height with a reduction in burr formation
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Standard – Threading Tools

Threads Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
	H	L2	$^{+.050"}_{-.000"}$	$^{+.005"}_{-.000"}$	$^{+.0000"}_{-.0020"}$	F	D2 (h6)	L1				
2-56	.050	.055	.150	.012	.0097	-.0125	.1250	1.5	TT-000256-015	60.58	TT-000256-015X	66.68
2-56	.050	.055	.200	.012	.0097	-.0125	.1250	1.5	TT-000256-020	60.58	TT-000256-020X	66.68
4-40	.065	.075	.200	.014	.0135	.0025	.1250	1.5	TT-000440-020	60.58	TT-000440-020X	66.68
4-40	.065	.075	.250	.014	.0135	.0025	.1250	1.5	TT-000440-025	48.08	TT-000440-025X	54.08
5-44	.080	.090	.200	.014	.0123	.0175	.1250	1.5	TT-000544-020	48.08	TT-000544-020X	54.08
5-44	.080	.090	.250	.014	.0123	.0175	.1250	1.5	TT-000544-025	48.08	TT-000544-025X	54.08
6-32	.080	.090	.250	.017	.0169	.0175	.1250	1.5	TT-000632-025	48.08	TT-000632-025X	54.08
6-32	.080	.090	.350	.017	.0169	.0175	.1250	1.5	TT-000632-035	48.08	TT-000632-035X	54.08
8-32	.100	.110	.250	.017	.0169	.0375	.1250	1.5	TT-000832-025	48.08	TT-000832-025X	54.08
8-32	.100	.110	.350	.017	.0169	.0375	.1250	1.5	TT-000832-035	48.08	TT-000832-035X	54.08
10-24	.120	.136	.250	.021	.0226	.0263	.1875	1.5	TT-001024-025	51.38	TT-001024-025X	58.18
10-24	.120	.136	.400	.021	.0226	.0263	.1875	1.5	TT-001024-040	51.38	TT-001024-040X	58.18
10-32	.120	.136	.250	.017	.0169	.0263	.1875	1.5	TT-001032-025	51.38	TT-001032-025X	58.18
10-32	.120	.136	.400	.017	.0169	.0263	.1875	1.5	TT-001032-040	51.38	TT-001032-040X	58.18
1/4-20	.160	.182	.400	.024	.0271	.0663	.1875	1.5	TT-014020-040	51.38	TT-014020-040X	58.18
1/4-20	.160	.182	.500	.024	.0271	.0663	.1875	1.5	TT-014020-050	51.38	TT-014020-050X	58.18
1/4-28	.180	.202	.500	.018	.0193	.0550	.2500	2.0	TT-014028-050	54.88	TT-014028-050X	62.88
1/4-28	.180	.202	.750	.018	.0193	.0550	.2500	2.0	TT-014028-075	54.88	TT-014028-075X	62.88
5/16-18	.220	.242	.750	.026	.0301	.0638	.3125	2.0	TT-051618-075	68.58	TT-051618-075X	78.38
5/16-18	.220	.242	1.000	.026	.0301	.0638	.3125	2.0	TT-051618-100	68.58	TT-051618-100X	78.38
5/16-24	.220	.242	.750	.021	.0226	.0638	.3125	2.0	TT-051624-075	68.58	TT-051624-075X	78.38
5/16-24	.220	.242	1.000	.021	.0226	.0638	.3125	2.0	TT-051624-100	68.58	TT-051624-100X	78.38
3/8-16	.280	.302	.750	.028	.0338	.1238	.3125	2.0	TT-038016-075	68.58	TT-038016-075X	78.38
3/8-16	.280	.302	1.000	.028	.0338	.1238	.3125	2.0	TT-038016-100	68.58	TT-038016-100X	78.38
3/8-24	.300	.322	.750	.021	.0226	.1438	.3125	2.0	TT-038024-075	68.58	TT-038024-075X	78.38
3/8-24	.300	.322	1.000	.021	.0226	.1438	.3125	2.0	TT-038024-100	68.58	TT-038024-100X	78.38

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders



TT

Standard – Threading Tools

UN Topping – Single Point (cont.)

Continued from previous page

Threads Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset		Projection	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
				L2 $\begin{matrix} +.050'' \\ -.000'' \end{matrix}$	Y $\begin{matrix} +.005'' \\ -.000'' \end{matrix}$					P $\begin{matrix} +.000'' \\ -.002'' \end{matrix}$	F	D2 (h6)	L1
7/16-14	.310	.332	.750	.032	.0387	.1538	.3125	2.0	TT-071614-075	68.58	TT-071614-075X	78.38	
7/16-14	.310	.332	1.000	.032	.0387	.1538	.3125	2.0	TT-071614-100	68.58	TT-071614-100X	78.38	
7/16-20	.350	.372	1.000	.024	.0271	.1625	.3750	2.0	TT-071620-100	89.48	TT-071620-100X	100.98	
7/16-20	.350	.372	1.250	.024	.0271	.1625	.3750	2.5	TT-071620-125	89.48	TT-071620-125X	101.68	
1/2-13	.380	.402	1.000	.034	.0416	.1300	.5000	3.0	TT-012013-100	125.18	TT-012013-100X	141.88	
1/2-13	.380	.402	1.250	.034	.0416	.1300	.5000	3.0	TT-012013-125	125.18	TT-012013-125X	141.88	
1/2-20	.410	.432	1.000	.024	.0271	.1600	.5000	3.0	TT-012020-100	125.18	TT-012020-100X	141.88	
1/2-20	.410	.432	1.250	.024	.0271	.1600	.5000	3.0	TT-012020-125	125.18	TT-012020-125X	141.88	
9/16-12	.410	.432	1.000	.036	.0451	.1600	.5000	3.0	TT-091612-100	125.18	TT-091612-100X	141.88	
9/16-12	.410	.432	1.250	.036	.0451	.1600	.5000	3.0	TT-091612-125	125.18	TT-091612-125X	141.88	
9/16-18	.460	.482	1.000	.026	.0301	.2100	.5000	3.0	TT-091618-100	125.18	TT-091618-100X	141.88	
9/16-18	.460	.482	1.250	.026	.0301	.2100	.5000	3.0	TT-091618-125	125.18	TT-091618-125X	141.88	
5/8-11	.490	.512	1.000	.039	.0492	.2400	.5000	3.0	TT-058011-100	125.18	TT-058011-100X	141.88	
5/8-11	.490	.512	1.250	.039	.0492	.2400	.5000	3.0	TT-058011-125	125.18	TT-058011-125X	141.88	
3/4-16	.490	.512	1.000	.028	.0338	.2400	.5000	3.0	TT-034016-100	125.18	TT-034016-100X	141.88	
3/4-16	.490	.512	1.250	.028	.0338	.2400	.5000	3.0	TT-034016-125	125.18	TT-034016-125X	141.88	

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

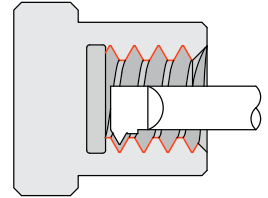
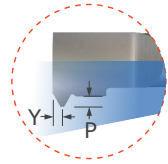
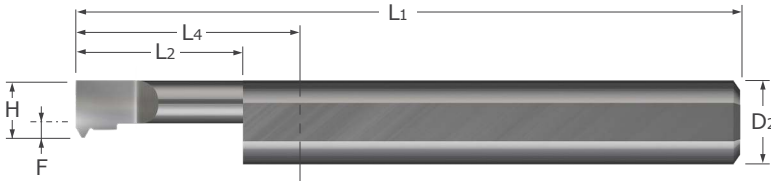
See pgs 39-47 for standard tool holders



Standard – Threading Tools

Metric Topping – Single Point

TMT



- Designed for threading 60° Metric pitches in a right hand topping application
- Topping design generates a controlled thread height with a reduction in burr formation
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Threads Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
	H		L2	Y	P	F	D2 (h6)	L1				
			+1.27mm -0.00mm	+1.27mm -0.00mm	+0.00mm -0.051mm							
M2.5x0.45	1.50 mm	1.70 mm	5.00 mm	.300 mm	.244 mm	-0.09 mm	.1250	1.5	TMT-025045-05	60.58	TMT-025045-05X	66.68
M2.5x0.45	1.50 mm	1.70 mm	7.00 mm	.300 mm	.244 mm	-0.09 mm	.1250	1.5	TMT-025045-07	60.58	TMT-025045-07X	66.68
M3x0.50	2.00 mm	2.20 mm	6.00 mm	.319 mm	.271 mm	0.41 mm	.1250	1.5	TMT-030050-06	48.08	TMT-030050-06X	54.08
M3x0.50	2.00 mm	2.20 mm	8.00 mm	.319 mm	.271 mm	0.41 mm	.1250	1.5	TMT-030050-08	48.08	TMT-030050-08X	54.08
M4x0.70	2.50 mm	2.70 mm	7.00 mm	.396 mm	.379 mm	0.91 mm	.1250	1.5	TMT-040070-07	48.08	TMT-040070-07X	54.08
M4x0.70	2.50 mm	2.70 mm	10.00 mm	.396 mm	.379 mm	0.91 mm	.1250	1.5	TMT-040070-10	48.08	TMT-040070-10X	54.08
M4.5x0.75	3.00 mm	3.40 mm	6.00 mm	.415 mm	.406 mm	0.62 mm	.1875	1.5	TMT-045075-06	51.38	TMT-045075-06X	57.38
M4.5x0.75	3.00 mm	3.40 mm	9.00 mm	.415 mm	.406 mm	0.62 mm	.1875	1.5	TMT-045075-09	51.38	TMT-045075-09X	57.38
M5x0.80	3.00 mm	3.40 mm	6.00 mm	.434 mm	.433 mm	0.62 mm	.1875	1.5	TMT-050080-06	51.38	TMT-050080-06X	57.38
M5x0.80	3.00 mm	3.40 mm	9.00 mm	.434 mm	.433 mm	0.62 mm	.1875	1.5	TMT-050080-09	51.38	TMT-050080-09X	57.38
M6x1.00	4.00 mm	4.50 mm	10.00 mm	.511 mm	.541 mm	1.62 mm	.1875	1.5	TMT-060100-10	51.38	TMT-060100-10X	57.38
M6x1.00	4.00 mm	4.50 mm	14.00 mm	.511 mm	.541 mm	1.62 mm	.1875	2.0	TMT-060100-14	52.98	TMT-060100-14X	58.98
M8x1.25	5.50 mm	6.00 mm	14.00 mm	.607 mm	.677 mm	1.53 mm	.3125	2.0	TMT-080125-14	68.58	TMT-080125-14X	74.58
M8x1.25	5.50 mm	6.00 mm	22.00 mm	.607 mm	.677 mm	1.53 mm	.3125	2.0	TMT-080125-22	68.58	TMT-080125-22X	74.58
M10x1.50	7.50 mm	8.00 mm	24.00 mm	.703 mm	.812 mm	3.53 mm	.3125	2.0	TMT-100150-24	68.58	TMT-100150-24X	74.58
M10x1.50	7.50 mm	8.00 mm	31.00 mm	.703 mm	.812 mm	3.53 mm	.3125	2.5	TMT-100150-31	68.58	TMT-100150-31X	74.58
M12x1.75	9.00 mm	9.50 mm	22.00 mm	.804 mm	.957 mm	4.24 mm	.3750	2.0	TMT-120175-22	89.48	TMT-120175-22X	95.38
M12x1.75	9.00 mm	9.50 mm	31.00 mm	.804 mm	.957 mm	4.24 mm	.3750	2.5	TMT-120175-31	90.88	TMT-120175-31X	97.08
M16x2.00	12.50 mm	13.00 mm	31.00 mm	.896 mm	1.085 mm	6.15 mm	.5000	3.0	TMT-160200-31	125.18	TMT-160200-31X	131.18
M16x2.00	12.50 mm	13.00 mm	44.00 mm	.896 mm	1.085 mm	6.15 mm	.5000	3.0	TMT-160200-44	125.18	TMT-160200-44X	131.18
M20x2.50	12.50 mm	13.00 mm	31.00 mm	1.086 mm	1.353 mm	6.15 mm	.5000	3.0	TMT-200250-31	125.18	TMT-200250-31X	131.18
M20x2.50	12.50 mm	13.00 mm	44.00 mm	1.086 mm	1.353 mm	6.15 mm	.5000	3.0	TMT-200250-44	125.18	TMT-200250-44X	131.18

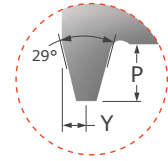
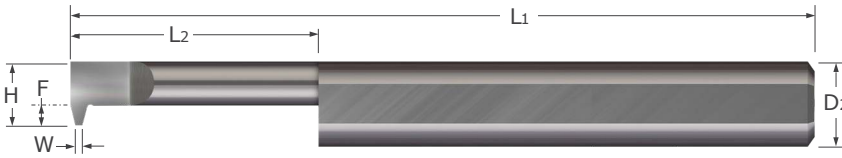
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 39-47 for standard tool holders

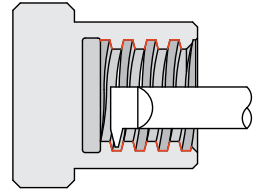


IAT

Standard – Threading Tools
ACME Threads



- Designed for cutting pitch-specific ACME threads
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Flat	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
TPI	H	L2	$^{+.050''}$ $_{-.000''}$	Y	P	$^{+.000''}$ $_{-.005''}$	F	D2 (h6)	L1	Tool #	Price	Tool #	Price
16	.165	.187	.400	.035	.045	.021	.0400	.2500	2.5	IAT2-400-16	53.68		
16	.165	.187	.600	.024	.050	.021	.0400	.2500	2.5	IAT2-600-16	53.68		
16	.165	.187	.750	.035	.045	.021	.0400	.2500	2.5	IAT2-750-16	53.68		
16	.165	.187	1.000	.035	.045	.021	.0400	.2500	2.5	IAT2-1000-16	53.68		
16	.200	.222	.400	.035	.045	.021	.0750	.2500	2.5	IAT-400-16	53.68	IAT-400-16X	62.38
16	.200	.222	.600	.024	.045	.021	.0750	.2500	2.5	IAT-600-16	53.68	IAT-600-16X	62.38
16	.200	.222	.750	.035	.045	.021	.0750	.2500	2.5	IAT-750-16	53.68	IAT-750-16X	62.38
16	.200	.222	1.000	.035	.045	.021	.0750	.2500	2.5	IAT-1000-16	53.68	IAT-1000-16X	62.38
14	.219	.241	.500	.043	.070	.024	.0627	.3125	2.5	IAT2-500-14	66.48		
14	.219	.241	.750	.030	.070	.024	.0627	.3125	2.5	IAT2-750-14	66.48		
14	.219	.241	1.000	.043	.070	.024	.0627	.3125	2.5	IAT2-1000-14	66.48		
14	.219	.241	1.250	.043	.070	.024	.0627	.3125	2.5	IAT2-1250-14	66.48		
14	.255	.277	.500	.043	.070	.024	.0988	.3125	2.5	IAT-500-14	66.48	IAT-500-14X	76.78
14	.255	.277	.750	.030	.070	.024	.0988	.3125	2.5	IAT-750-14	66.48	IAT-750-14X	76.78
14	.255	.277	1.000	.043	.070	.024	.0988	.3125	2.5	IAT-1000-14	66.48	IAT-1000-14X	76.78
14	.255	.277	1.250	.043	.070	.024	.0988	.3125	2.5	IAT-1250-14	66.48	IAT-1250-14X	76.78
12	.269	.291	.750	.049	.085	.028	.0815	.3750	2.5	IAT2-750-12	87.48		
12	.269	.291	1.000	.036	.085	.028	.0815	.3750	2.5	IAT2-1000-12	87.48		
12	.269	.291	1.250	.049	.085	.028	.0815	.3750	2.5	IAT2-1250-12	87.48		
12	.269	.291	1.800	.049	.085	.028	.0815	.3750	4.0	IAT2-1800-12	87.48		
12	.360	.382	.750	.049	.085	.028	.1725	.3750	2.5	IAT-750-12	87.48	IAT-750-12X	99.88
12	.360	.382	1.000	.036	.085	.028	.1725	.3750	2.5	IAT-1000-12	87.48	IAT-1000-12X	99.88
12	.360	.382	1.250	.049	.085	.028	.1725	.3750	2.5	IAT-1250-12	87.48	IAT-1250-12X	99.88
12	.360	.382	1.800	.049	.085	.028	.1725	.3750	2.5	IAT-1800-12	87.48	IAT-1800-12X	99.88
10	.378	.400	.750	.060	.120	.032	.1280	.5000	3.0	IAT2-750-10	122.78		
10	.378	.400	1.500	.060	.120	.032	.1280	.5000	3.0	IAT2-1500-10	122.78		
10	.378	.400	2.000	.060	.120	.032	.1280	.5000	3.0	IAT2-2000-10	122.78		
10	.490	.512	.750	.060	.120	.032	.2400	.5000	3.0	IAT-750-10	122.78	IAT-750-10X	139.48
10	.490	.512	1.500	.060	.120	.032	.2400	.5000	3.0	IAT-1500-10	122.78	IAT-1500-10X	139.48
10	.490	.512	2.000	.060	.120	.032	.2400	.5000	3.0	IAT-2000-10	122.78	IAT-2000-10X	139.48

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Continued on next page

See pgs 39-47 for standard tool holders

Standard – Threading Tools



Standard – Threading Tools

IAT

ACME Threads (cont.)

Continued from previous page

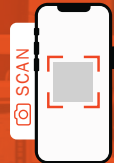
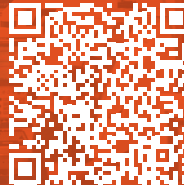
Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Flat	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
8	.478	.500	.750	.064	.120	.041	.2280	.5000	3.0	IAT2-750-8	122.78		
8	.478	.500	1.500	.064	.120	.041	.2280	.5000	3.0	IAT2-1500-8	122.78		
8	.478	.500	2.000	.064	.120	.041	.2280	.5000	3.0	IAT2-2000-8	122.78		
8	.490	.512	.750	.064	.120	.041	.2400	.5000	3.0	IAT-750-8	122.78	IAT-750-8X	139.48
8	.490	.512	1.500	.064	.120	.041	.2400	.5000	3.0	IAT-1500-8	122.78	IAT-1500-8X	139.48
8	.490	.512	2.000	.064	.120	.041	.2400	.5000	3.0	IAT-2000-8	122.78	IAT-2000-8X	139.48
6	.490	.512	.750	.072	.120	.057	.2400	.5000	3.0	IAT-750-6	122.78	IAT-750-6X	139.48
6	.490	.512	1.500	.072	.120	.057	.2400	.5000	3.0	IAT-1500-6	122.78	IAT-1500-6X	139.48
6	.490	.512	2.000	.072	.120	.057	.2400	.5000	3.0	IAT-2000-6	122.78	IAT-2000-6X	139.48
5	.490	.512	1.500	.078	.120	.069	.2400	.5000	3.0	IAT-1500-5	122.78	IAT-1500-5X	139.48
5	.490	.512	2.000	.078	.120	.069	.2400	.5000	3.0	IAT-2000-5	122.78	IAT-2000-5X	139.48

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Threading Tools

Technical Resources on Micro100.com

Find Simulation Files, Speeds & Feeds, Torque Recommendations, Programs, Blogs, and more at micro100.com/resources

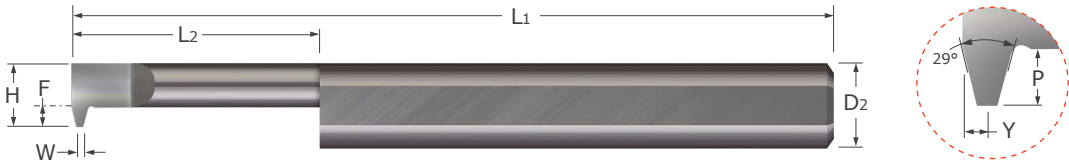


See pgs 39-47 for standard tool holders

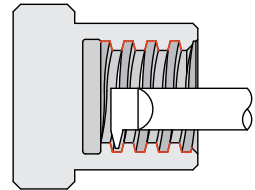


SAT

Standard – Threading Tools
Stub ACME Threads



- Designed for cutting pitch-specific stub ACME threads
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Flat	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
										Tool #	Price	Tool #	Price
TPI	H		L2	Y	P	W	F	D2 (h6)	L1				
			$^{+.050"}_{-.000}$			$^{+.000"}_{-.005}$							
16	.200	.222	.400	.024	.045	.024	.0750	.2500	2.5	SAT-400-16	53.68		
16	.200	.222	.600	.024	.045	.024	.0750	.2500	2.5	SAT-600-16	53.68	SAT-600-16X	62.38
16	.200	.222	.750	.024	.045	.024	.0750	.2500	2.5	SAT-750-16	53.68	SAT-750-16X	62.38
16	.200	.222	1.000	.024	.045	.024	.0750	.2500	2.5	SAT-1000-16	53.68	SAT-1000-16X	62.38
14	.235	.257	.500	.045	.070	.028	.0788	.3125	2.5	SAT-500-14	66.48	SAT-500-14X	76.78
14	.235	.257	.750	.045	.070	.028	.0788	.3125	2.5	SAT-750-14	66.48	SAT-750-14X	76.78
14	.235	.257	1.000	.045	.070	.028	.0788	.3125	2.5	SAT-1000-14	66.48	SAT-1000-14X	76.78
14	.235	.257	1.750	.045	.070	.028	.0788	.3125	2.5	SAT-1750-14	66.48	SAT-1750-14X	76.78
12	.360	.382	.500	.051	.085	.033	.1725	.3750	2.5	SAT-500-12	87.48		
12	.360	.382	.750	.051	.085	.033	.1725	.3750	2.5	SAT-750-12	87.48	SAT-750-12X	99.88
12	.360	.382	1.000	.051	.085	.033	.1725	.3750	2.5	SAT-1000-12	87.48	SAT-1000-12X	99.88
12	.360	.382	1.250	.051	.085	.033	.1725	.3750	2.5	SAT-1250-12	87.48	SAT-1250-12X	99.88
12	.360	.382	1.800	.051	.085	.033	.1725	.3750	2.5	SAT-1800-12	87.48	SAT-1800-12X	99.88
10	.490	.512	.750	.062	.120	.037	.2400	.5000	3.0	SAT-750-10	122.78	SAT-750-10X	139.48
10	.490	.512	1.500	.062	.120	.037	.2400	.5000	3.0	SAT-1500-10	122.78	SAT-1500-10X	139.48
10	.490	.512	2.000	.062	.120	.037	.2400	.5000	3.0	SAT-2000-10	122.78		
9	.490	.512	2.000	.052	.120	.042	.2400	.5000	3.0	SAT-2000-9	122.78	SAT-2000-9X	139.48
8	.490	.512	.750	.068	.120	.048	.2400	.5000	3.0	SAT-750-8	122.78		
8	.490	.512	1.500	.068	.120	.048	.2400	.5000	3.0	SAT-1500-8	122.78	SAT-1500-8X	139.48
8	.490	.512	2.000	.068	.120	.048	.2400	.5000	3.0	SAT-2000-8	122.78	SAT-2000-8X	139.48
7	.490	.512	.750	.059	.120	.055	.2400	.5000	3.0	SAT-750-7	122.78		
7	.490	.512	2.000	.059	.120	.055	.2400	.5000	3.0	SAT-2000-7	122.78	SAT-2000-7X	139.48
6	.490	.512	2.000	.076	.120	.065	.2400	.5000	3.0	SAT-2000-6	122.78	SAT-2000-6X	139.48
5	.490	.512	.750	.083	.120	.079	.2400	.5000	3.0	SAT-750-5	122.78		
5	.490	.512	1.500	.083	.120	.079	.2400	.5000	3.0	SAT-1500-5	122.78	SAT-1500-5X	139.48
5	.490	.512	2.000	.083	.120	.079	.2400	.5000	3.0	SAT-2000-5	122.78	SAT-2000-5X	139.48

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

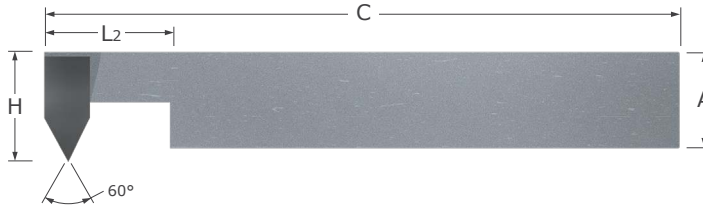
See pgs 39-47 for standard tool holders



Standard – Threading Tools

IDRT

UN Threads – Right Hand – Brazed



- Designed for threading multiple thread pitches (ANSI, UN and Metric 60°)
- Designed for single point threading where a square shank tool is required in .450" bores and larger
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

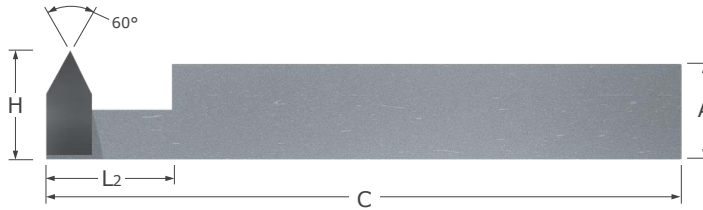
Head Width	Maximum Bore Depth	Square Shank	Overall Length	Brazed Style	
				Tool #	Price
H	L2 ^{+0.050"} / _{-.000"}	A ^{+0.0000"} / _{-.0030"}	C		
.450	.615	.3750	2.50	IDRT-60	77.78
.450	1.115	.3750	2.50	IDRT-61	77.78
.575	.875	.5000	3.52	IDRT-80	78.38
.575	1.395	.5000	3.52	IDRT-81	72.18

Standard – Threading Tools

Standard – Threading Tools

IDLT

UN Threads – Left Hand – Brazed



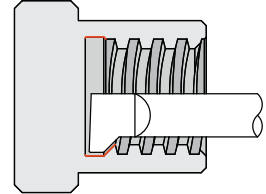
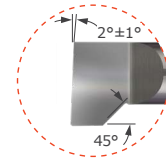
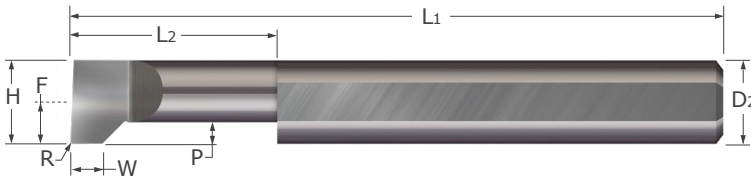
- Designed for threading multiple thread pitches (ANSI, UN, and Metric 60°) in a left hand threading application
- Designed for single point threading where a square shank tool is required in .450" bores and larger
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance ■ CNC ground in the USA

Head Width	Maximum Bore Depth	Square Shank	Overall Length	Brazed Style	
				Tool #	Price
H	L2 ^{+0.050"} / _{-.000"}	A ^{+0.0000"} / _{-.0030"}	C		
.450	.615	.3750	2.50	IDLT-60	77.78
.450	1.115	.3750	2.50	IDLT-61	77.78
.575	.875	.5000	3.52	IDLT-80	78.38
.575	1.395	.5000	3.52	IDLT-81	78.38



LTR

Standard – Threading Tools
Thread Relief Tools



- Designed for plunging thread relief at the bottom of a thread
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split face geometry provides optimal edge strength
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Flat	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
H	L2	W	R	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	
.094	.104	.250	.049	.002	.040	.0315	.1250	1.5	LTR-094-4	39.08	LTR-094-4X	44.78
.094	.104	.375	.049	.002	.040	.0315	.1250	1.5	LTR-094-6	39.08	LTR-094-6X	44.78
.125	.139	.375	.063	.002	.040	.0625	.1250	1.5	LTR-125-6	39.08	LTR-125-6X	44.78
.125	.139	.500	.063	.002	.040	.0625	.1250	1.5	LTR-125-8	39.08	LTR-125-8X	44.78

H	L2	W	R	P	F	D2 (h6)	L1	Tool #	Price	Tool #	Price	
												.156
.156	.174	.500	.063	.005	.040	.0625	.1875	2.0	LTR-156-8	44.98	LTR-156-8X	51.28
.187	.205	.375	.078	.005	.040	.0938	.1875	2.0	LTR-187-6	44.98	LTR-187-6X	51.28
.187	.205	.500	.078	.005	.040	.0938	.1875	2.0	LTR-187-8	44.98	LTR-187-8X	51.28
.187	.205	.750	.078	.005	.040	.0938	.1875	2.0	LTR-187-12	44.98	LTR-187-12X	51.28
.187	.205	1.000	.078	.005	.040	.0938	.1875	2.0	LTR-187-16	44.98	LTR-187-16X	51.28
.250	.272	.500	.094	.005	.050	.1250	.2500	2.5	LTR-250-8	53.68	LTR-250-8X	62.38
.250	.272	.750	.094	.005	.050	.1250	.2500	2.5	LTR-250-12	53.68	LTR-250-12X	62.38
.250	.272	1.000	.094	.005	.050	.1250	.2500	2.5	LTR-250-16	53.68	LTR-250-16X	62.38
.250	.272	1.250	.094	.005	.050	.1250	.2500	2.5	LTR-250-20	53.68	LTR-250-20X	62.38
.312	.334	.750	.094	.005	.075	.1563	.3125	2.5	LTR-312-12	67.28	LTR-312-12X	77.58
.312	.334	1.250	.094	.005	.075	.1563	.3125	2.5	LTR-312-20	67.28	LTR-312-20X	77.58
.375	.397	.750	.125	.005	.100	.1875	.3750	2.5	LTR-375-12	88.48	LTR-375-12X	100.88
.375	.397	1.250	.125	.005	.100	.1875	.3750	2.5	LTR-375-20	88.48	LTR-375-20X	100.88
.500	.522	1.000	.156	.010	.125	.2500	.5000	3.0	LTR-500-16	125.38	LTR-500-16X	142.08
.500	.522	1.500	.156	.010	.125	.2500	.5000	3.0	LTR-500-24	125.38	LTR-500-24X	142.08

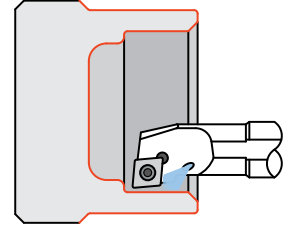
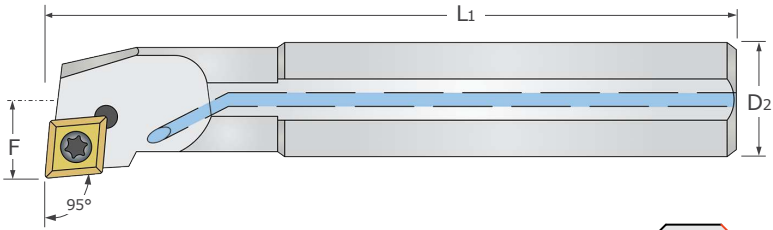
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 39-47 for standard tool holders



Indexable - Boring Bars

Boring - Coolant Through - Right Hand



- Coolant through boring bar for right hand boring and facing with 5° approach (lead) angle
- Made from precision ground heat treated steel
- Coolant through design for improved chip removal
- Insert not included

Minimum Bore Diameter*	Centerline Offset	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
						Tool #	Price
	F	D2	L1				
.330	.177	.2500	3.1	50-1100	A04F SCLCR 2	20-0821	110.78
.380	.197	.3125	3.9	50-1100	A05H SCLCR 2	20-0823	113.68
.490	.275	.3750	4.5	50-1100	A06J SCLCR 2	20-0825	118.68
.630	.354	.5000	4.9	50-1100	A08K SCLCR 2	20-0827	123.58
.630	.354	.5000	4.9	50-1105	A08K SCLCR 3	20-0850	128.48
.775	.433	.6250	5.9	50-1100	A10M SCLCR 2	20-0829	131.98
.775	.433	.6250	5.9	50-1105	A10M SCLCR 3	20-0852	137.08
.925	.511	.7500	7.1	50-1105	A12Q SCLCR 3	20-0854	148.28

*Suggested Minimum Bore Diameter to accommodate .015" insert radius, chip evacuation and retract clearance in static (not live) applications.

Indexable - Boring

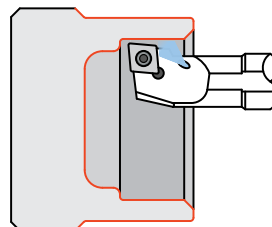
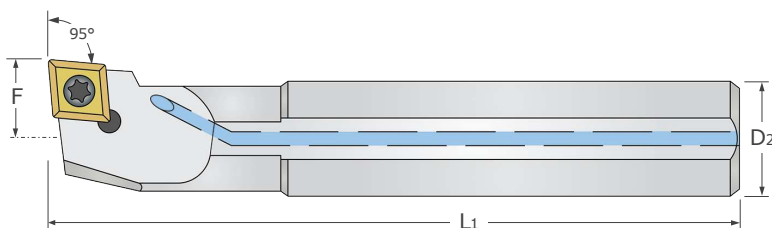
See pg 328 for indexable insert accessories

See pgs 320-325 for tool set options



Indexable – Boring Bars

Boring – Coolant Through – Left Hand



- Coolant through boring bar for left hand boring & facing with 5° approach (lead) angle
- Made from precision ground heat treated steel
- Coolant through design for improved chip removal
- Insert not included

Minimum Bore Diameter*	Centerline Offset	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
						Tool #	Price
	F	D ₂	L ₁				
.330	.177	.2500	3.1	50-1100	A04F SCLCL 2	20-0822	110.78
.380	.197	.3125	3.9	50-1100	A05H SCLCL 2	20-0824	113.68
.490	.275	.3750	4.5	50-1100	A06J SCLCL 2	20-0826	118.68
.630	.354	.5000	4.9	50-1100	A08K SCLCL 2	20-0828	123.58
.630	.354	.5000	4.9	50-1105	A08K SCLCL 3	20-0851	128.48
.775	.433	.6250	5.9	50-1100	A10M SCLCL 2	20-0830	131.98
.775	.433	.6250	5.9	50-1105	A10M SCLCL 3	20-0853	137.08
.925	.511	.7500	7.1	50-1105	A12Q SCLCL 3	20-0855	148.28

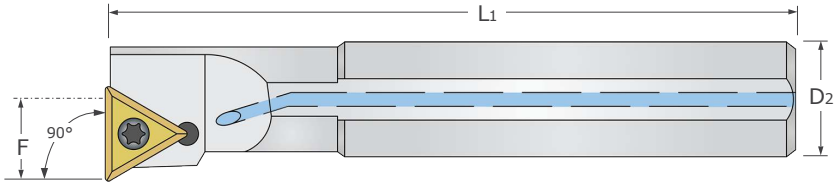
*Suggested Minimum Bore Diameter to accommodate .015" insert radius, chip evacuation and retract clearance in static (not live) applications.

See pg 328 for indexable insert accessories

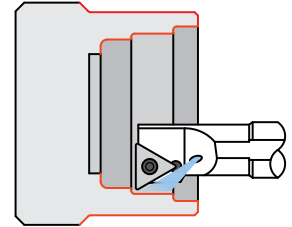
See pgs 320-325 for tool set options

Indexable – Boring Bars

Facing – Coolant Through – Right Hand



- Coolant through boring bar for left hand boring and facing with 0° approach (lead) angle, which allows for deeper roughing passes
- Made from precision ground heat treated steel
- Coolant through design for improved chip removal
- Insert not included



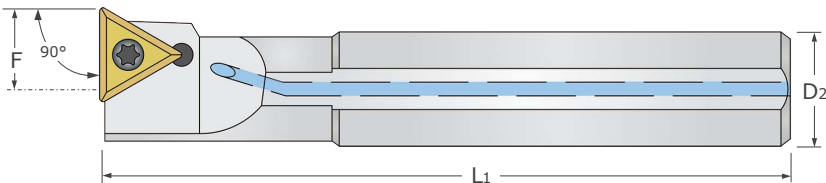
Minimum Bore Diameter*	Centerline Offset	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
						Tool #	Price
	F	D ₂	L ₁				
.490	.275	.3750	4.3	50-1300	A06J STFCL 2	20-1031	115.68
.633	.354	.5000	4.9	50-1300	A08K STFCL 2	20-1033	122.48
.775	.433	.6250	5.9	50-1300	A10M STFCL 2	20-1035	124.08

*Suggested Minimum Bore Diameter to accommodate .015" insert radius, chip evacuation and retract clearance in static (not live) applications.

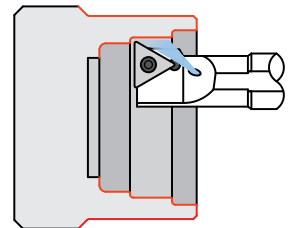
Indexable – Boring

Indexable – Boring Bars

Facing – Coolant Through – Left Hand



- Coolant through boring bar for left hand boring and facing with 0° approach (lead) angle, which allows for deeper roughing passes
- Made from precision ground heat treated steel
- Coolant through design for improved chip removal
- Insert not included



Minimum Bore Diameter*	Centerline Offset	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
						Tool #	Price
	F	D ₂	L ₁				
.490	.275	.3750	4.3	50-1300	A06J STFCL 2	20-1032	115.68
.633	.354	.5000	4.9	50-1300	A08K STFCL 2	20-1034	122.48
.775	.433	.6250	5.9	50-1300	A10M STFCL 2	20-1036	124.08

*Suggested Minimum Bore Diameter to accommodate .015" insert radius, chip evacuation and retract clearance in static (not live) applications.

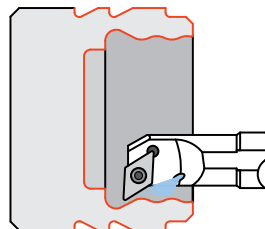
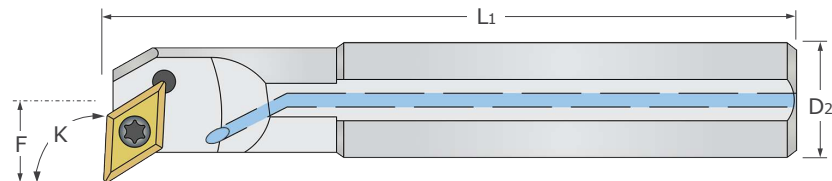
See pg 328 for indexable insert accessories

See pgs 320-325 for tool set options



Indexable – Boring Bars

Profiling – Coolant Through – Right Hand



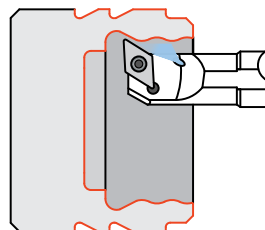
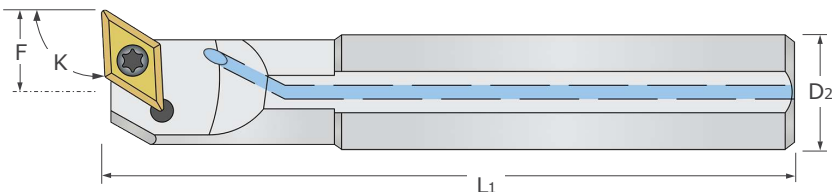
- Coolant through boring bar for right hand boring, facing, and profiling
- Made from precision ground heat treated steel
- Coolant through design for improved chip removal
- Insert not included

Minimum Bore Diameter*	Centerline Offset	K Angle	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
							Tool #	Price
	F	K	D ₂	L ₁				
.563	.197	107.5°	.3125	3.9	50-1200	A05H SDQCR 2	20-0901	111.28
.622	.275	93°	.3750	4.5	50-1200	A06J SDUCR 2	20-0931	115.68
.732	.354	93°	.5000	4.9	50-1200	A08K SDUCR 2	20-0933	122.48
.868	.433	93°	.6250	5.9	50-1200	A10M SDUCR 2	20-0935	124.08

*Suggested Minimum Bore Diameter to accommodate .015" insert radius, chip evacuation and retract clearance in static (not live) applications.

Indexable – Boring Bars

Profiling – Coolant Through – Left Hand



- Coolant through boring bar for left hand boring, facing, and profiling
- Made from precision ground heat treated steel
- Coolant through design for improved chip removal
- Insert not included

Minimum Bore Diameter*	Centerline Offset	K Angle	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
							Tool #	Price
	F	K	D ₂	L ₁				
.563	.197	107.5°	.3125	3.9	50-1200	A05H SDQCL 2	20-0902	111.28
.622	.275	93°	.3750	4.5	50-1200	A06J SDUCL 2	20-0932	115.68
.732	.354	93°	.5000	4.9	50-1200	A08K SDUCL 2	20-0934	122.48
.868	.433	93°	.6250	5.9	50-1200	A10M SDUCL 2	20-0936	124.08

*Suggested Minimum Bore Diameter to accommodate .015" insert radius, chip evacuation and retract clearance in static (not live) applications.

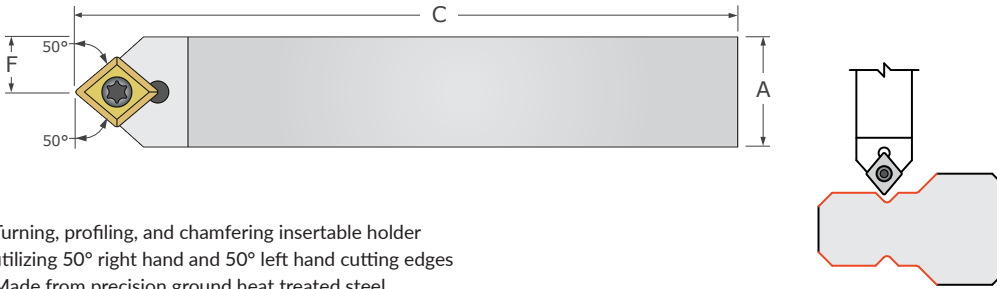
See pg 328 for indexable insert accessories

See pgs 320-325 for tool set options

Indexable - Boring

Indexable – Tool Holders

Chamfering & Turning – Style SCMCN



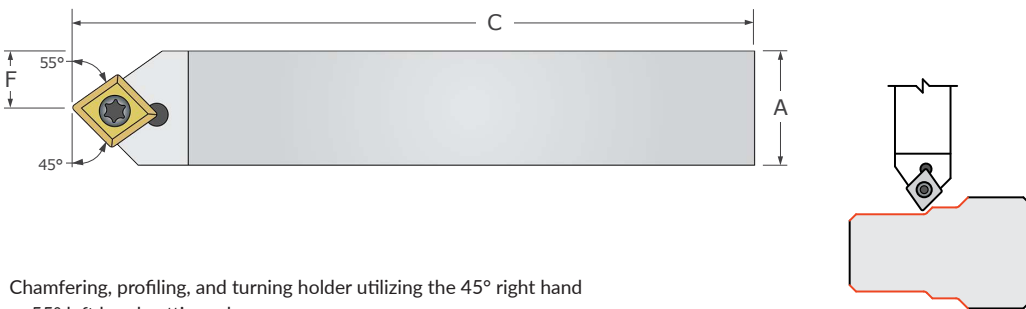
- Turning, profiling, and chamfering insertable holder utilizing 50° right hand and 50° left hand cutting edges
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.157	.2500	2.4	50-1100	SCMCN 0404 D2	10-3311	60.48
.157	.3125	2.4	50-1100	SCMCN 0505 D2	10-3312	65.48
.189	.3750	2.8	50-1100	SCMCN 0606 E2	10-3313	73.68
.250	.5000	3.2	50-1100	SCMCN 0808 F2	10-3314	80.58
.315	.6250	3.9	50-1100	SCMCN 1010 H2	10-3315	89.28

Indexable – Tool Holders

Chamfering & Turning – Style SCSCR

Indexable – Tool Holders



- Chamfering, profiling, and turning holder utilizing the 45° right hand or 55° left hand cutting edges
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.157	.2500	2.4	50-1100	SCSCR 0404 D2	10-3351	60.48
.157	.3125	2.4	50-1100	SCSCR 0505 D2	10-3353	65.48
.189	.3750	2.8	50-1100	SCSCR 0606 E2	10-3355	73.68
.250	.5000	3.2	50-1100	SCSCR 0808 F2	10-3357	80.58
.315	.6250	3.9	50-1100	SCSCR 1010 H2	10-3359	89.28
.390	.7500	4.9	50-1100	SCSCR 1212 J3	10-3365	104.98

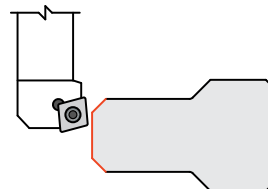
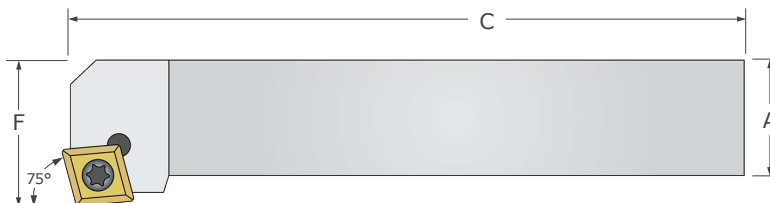
See pg 328 for indexable insert accessories

See pgs 320-325 for tool set options



Indexable – Tool Holders

Facing & Turning – Axial – Right Hand – Style SCKCR



- 75° facing and chamfering holder utilizing 100° unused left hand cutting edge of insert
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.394	.2500	2.4	50-1100	SCKCR 0404 D2	10-3211	60.48
.394	.3125	2.4	50-1100	SCKCR 0505 D2	10-3212	65.48
.472	.3750	2.8	50-1100	SCKCR 0606 E2	10-3213	73.68
.630	.5000	3.2	50-1100	SCKCR 0808 F2	10-3215	80.58
.787	.6250	3.9	50-1100	SCKCR 1010 H2	10-3217	89.28

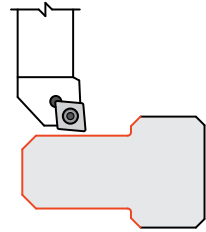
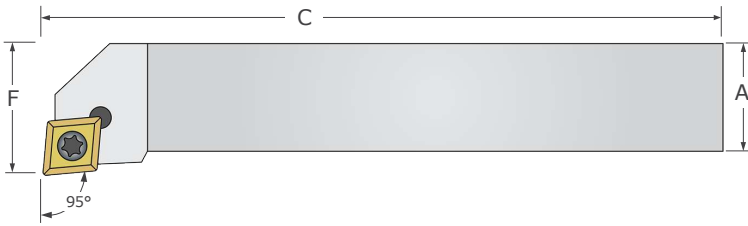
Indexable – Tool Holders

See pg 328 for indexable insert accessories

See pgs 320-325 for tool set options

Indexable – Tool Holders

Facing & Turning – Radial – Right Hand – Style SCLCR



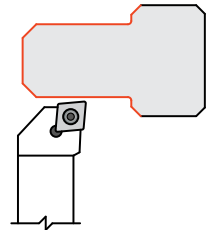
- Turning and facing indexable right hand holder with 95° approach
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.394	.2500	2.4	50-1100	SCLCR 0404 D2	10-3231	60.48
.394	.3125	2.4	50-1100	SCLCR 0404 D2	10-3233	65.48
.472	.3750	2.8	50-1100	SCLCR 0606 E2	10-3235	73.68
.628	.5000	3.2	50-1100	SCLCR 0808 F2	10-3237	80.58
.787	.6250	3.9	50-1100	SCLCR 1010 H2	10-3241	89.28
1.000	.7500	4.9	50-1105	SCLCR 1212 J3	10-3251	104.98

Indexable – Tool Holders

Indexable – Tool Holders

Facing & Turning – Radial – Left Hand – Style SCLCL



- Turning and facing indexable left hand holder with 95° approach
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.394	.2500	2.4	50-1100	SCLCL 0404 D2	10-3232	60.48
.394	.3125	2.4	50-1100	SCLCL 0505 D2	10-3234	65.48
.472	.3750	2.8	50-1100	SCLCL 0606 E2	10-3236	73.68
.600	.5000	3.2	50-1100	SCLCL 0808 F2	10-3238	80.58
.787	.6250	3.9	50-1100	SCLCL 1010 H2	10-3242	89.28
1.000	.7500	4.9	50-1105	SCLCL 1212 J3	10-3252	104.98

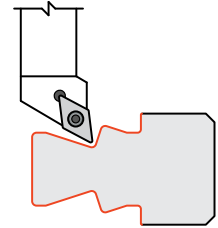
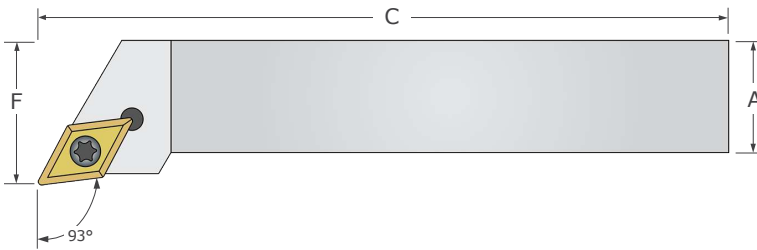
See pg 328 for indexable insert accessories

See pgs 320-325 for tool set options



Indexable – Tool Holders

Facing & Turning – Radial – Right Hand – Style SDJCR

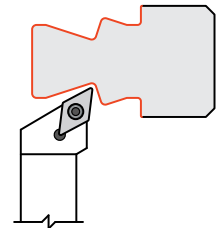
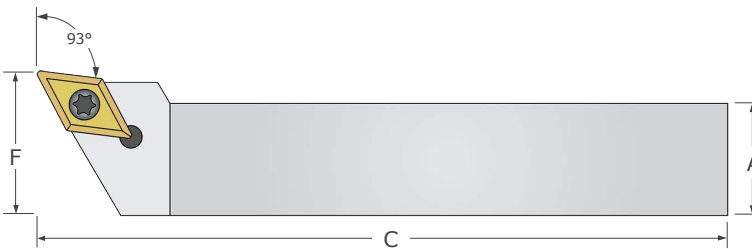


- Turning and profiling right hand holder
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.394	.3125	3.9	50-1200	SDJCR 0505 H2	10-3641	73.68
.472	.3750	3.9	50-1200	SDJCR 0606 H2	10-3651	86.18
.629	.5000	3.9	50-1200	SDJCR 0808H2	10-3653	90.78
.787	.6250	3.9	50-1200	SDJCR 1010 H2	10-3615	100.68

Indexable – Tool Holders

Facing & Turning – Radial – Left Hand – Style SDJCL



- Turning and profiling left hand holder
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.394	.3125	3.9	50-1200	SDJCL 0505 H2	10-3642	73.68
.472	.3750	3.9	50-1200	SDJCL 0606 H2	10-3652	86.18
.629	.7500	3.9	50-1200	SDJCL 0808H2	10-3654	90.78
.787	.6250	3.9	50-1200	SDJCL 1010 H2	10-3616	100.68

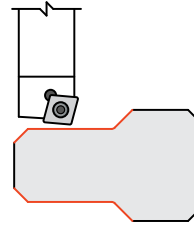
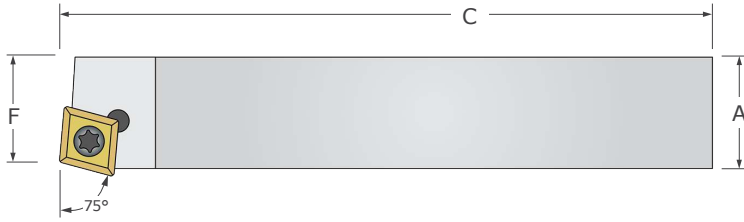
Indexable – Tool Holders

See pg 328 for indexable insert accessories

See pgs 320-325 for tool set options

Indexable – Tool Holders

Facing & Turning – Radial – Right Hand – Style SCBCR



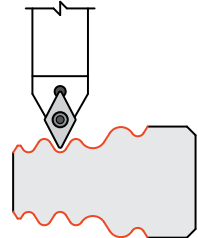
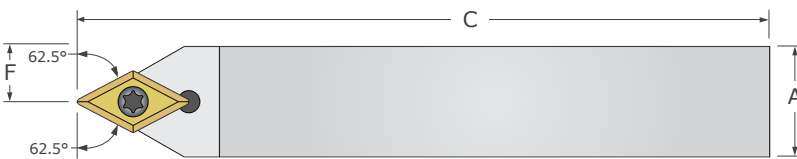
- Right hand 75° turning holder utilizing 100° unused right hand cutting edge of insert for turning and chamfering
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.267	.3125	2.4	50-1100	SCBCR 0505 D2	10-3153	65.48
.330	.3750	2.8	50-1100	SCBCR 0606 E2	10-3155	73.68
.460	.5000	3.2	50-1100	SCBCR 0808 F2	10-3157	80.58

Indexable – Tool Holders

Profiling – Style SDNCN

Indexable – Tool Holders



- 55° indexable turning and profiling holder
- Neutral design allows for right and left hand turning and profiling applications
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	Price
F	A	C				
.157	.3125	3.9	50-1200	SDNCN 0505 H2	10-3761	73.68
.189	.3750	3.9	50-1200	SDNCN 0606 H2	10-3762	86.18
.250	.5000	3.9	50-1200	SDNCN 0808 H2	10-3763	90.78
.313	.6250	3.9	50-1200	SDNCN 1010 H2	10-3764	100.68

See pg 328 for indexable insert accessories

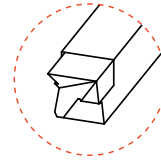
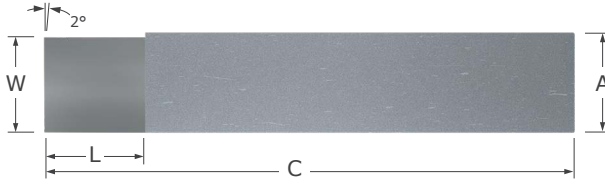
See pgs 320-325 for tool set options



BT

Brazed – Box Turning Tools

BT Style



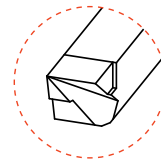
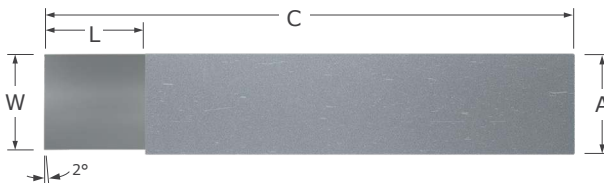
- Designed to be used for outside diameter (OD) turning with roller box turning attachments in automatic screw machines and turret lathes
- Ground to provide high metal removal rates improved finish and concentricity, when used in conjunction with a properly adjusted roller box turning attachment
- Solid carbide tipped with zinc coated hardened steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes ■ Ground in the USA

Width	Length	Square Shank	Overall Length	BT Style	
				Tool #	Price
$W \begin{matrix} +.040'' \\ -.000'' \end{matrix}$	L	$A \begin{matrix} +.0000'' \\ -.0100'' \end{matrix}$	C		
.200	.185	.2500	1.50	BT-4	46.88
.263	.185	.3125	1.75	BT-5	54.98
.325	.310	.3750	2.00	BT-6	49.58
.388	.310	.4375	2.25	BT-7	80.08
.450	.375	.5000	2.50	BT-8	54.08
.513	.375	.5625	2.75	BT-9	96.38
.575	.500	.6250	3.00	BT-10	83.68

BTL

Brazed – Box Turning Tools

BTL Style



- Designed to be used for left hand outside diameter (OD) turning with roller box turning attachments in automatic screw machines and turret lathes
- Ground to provide high metal removal rates, improved finish, and concentricity when used in conjunction with a properly adjusted roller box turning attachment
- Solid carbide tipped with zinc coated hardened steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes ■ Ground in the USA

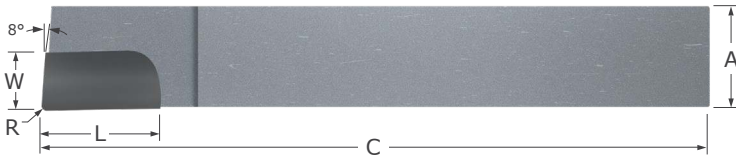
Width	Length	Square Shank	Overall Length	BTL Style	
				Tool #	Price
$W \begin{matrix} +.040'' \\ -.000'' \end{matrix}$	L	$A \begin{matrix} +.0000'' \\ -.0100'' \end{matrix}$	C		
.200	.185	.2500	1.50	BTL-4	76.88
.263	.185	.3125	1.75	BTL-5	77.08
.325	.310	.3750	2.00	BTL-6	80.18
.388	.310	.4375	2.25	BTL-7	80.98
.450	.375	.5000	2.50	BTL-8	80.28
.513	.375	.5625	2.75	BTL-9	96.78
.575	.500	.6250	3.00	BTL-10	102.78

Brazed

Brazed – Forming Tools

AR

AR Style



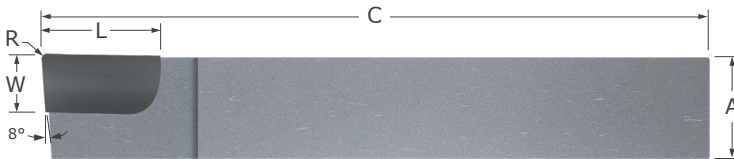
- Designed for right hand turning and facing in lathe applications
- Ground with side rake to provide a positive cutting action and better chip evacuation
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes ■ Ground in the USA

Radius	Width	Length	Square Shank	Overall Length	AR Style	
R	W	L	A $^{+.0000}$ $_{-.0050}$ "	C	Tool #	Price
.015	.170	.250	.2500	2.00	AR-4	28.68
.015	.233	.312	.3125	2.25	AR-5	30.38
.015	.240	.500	.3750	2.50	AR-6	16.98
.015	.233	.500	.4375	3.00	AR-7	31.38
.015	.235	.625	.5000	3.50	AR-8	19.78
.015	.360	.750	.6250	4.00	AR-10	32.68
.015	.420	.812	.7500	4.50	AR-12	45.68

Brazed – Forming Tools

AL

AL Style



- Designed for left hand turning and facing on the outside diameter (OD) in lathe applications
- Ground with side rake to provide a positive cutting action and better chip evacuation
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes ■ Ground in the USA

Radius	Width	Length	Square Shank	Overall Length	AL Style	
R	W	L	A $^{+.0000}$ $_{-.0050}$ "	C	Tool #	Price
.015	.170	.250	.2500	2.00	AL-4	28.68
.015	.233	.312	.3125	2.25	AL-5	30.38
.015	.240	.500	.3750	2.50	AL-6	16.98
.015	.233	.500	.4375	3.00	AL-7	31.38
.015	.235	.625	.5000	3.50	AL-8	19.78
.015	.360	.750	.6250	4.00	AL-10	32.68
.015	.420	.812	.7500	4.50	AL-12	45.68

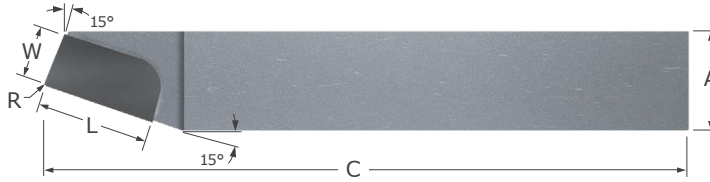
Brazed



BR

Brazed – Forming Tools

BR Style



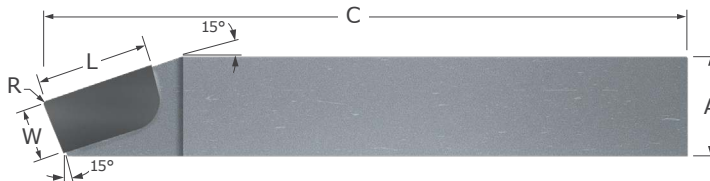
- Designed with a 15° side cutting edge angle for right hand turning in lathe applications
- Ground with side rake to provide a positive cutting action and better chip evacuation
- Side cutting edge angle allow for higher feed rates
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Radius	Width	Length	Square Shank	Overall Length	BR Style	
R	W	L	A $^{+.0000''}$ $_{-.0050''}$	C	Tool #	Price
.015	.250	.500	.3750	2.5	BR-6	19.08
.015	.250	.500	.4375	3.0	BR-7	23.38
.015	.250	.625	.5000	3.5	BR-8	19.38
.015	.375	.750	.6250	4.0	BR-10	34.48
.015	.438	.813	.7500	4.5	BR-12	47.78

BL

Brazed – Forming Tools

BL Style



- Designed with a 15° side cutting edge angle for right hand turning in lathe applications
- Ground with side rake to provide a positive cutting action and better chip evacuation
- Side cutting edge angle allow for higher feed rates
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

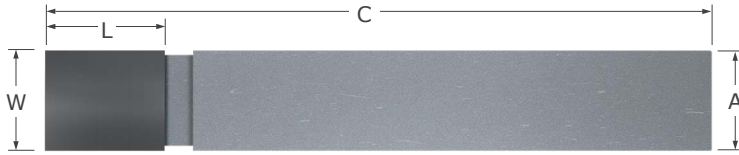
Radius	Width	Length	Square Shank	Overall Length	BL Style	
R	W	L	A $^{+.0000''}$ $_{-.0050''}$	C	Tool #	Price
.015	.250	.500	.3750	2.5	BL-6	19.28
.015	.250	.500	.4375	3.0	BL-7	23.58
.015	.250	.625	.5000	3.5	BL-8	22.08
.015	.375	.750	.6250	4.0	BL-10	34.48
.015	.438	.813	.7500	4.5	BL-12	54.78

Brazed

Brazed - Forming Tools

C

C Style



- Neutral design allows for right and left hand modifications
- First choice when modifying or making specials
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Length	Square Shank	Overall Length	C Style	
W	L	A $\begin{matrix} +.0000'' \\ -.0050'' \end{matrix}$	C	Tool #	Price
.235	.250	.2500	6.00	C-250	43.48
.235	.250	.2500	2.00	C-4	16.38
.281	.375	.2812	6.00	C-281	65.78
.312	.375	.3125	6.00	C-312	36.48
.313	.375	.3125	2.25	C-5	18.48
.375	.500	.3750	2.50	C-6	18.88
.375	.500	.3750	6.00	C-375	30.38
.437	.500	.4375	6.00	C-437	54.78
.438	.500	.4375	3.00	C-7	27.18
.500	.500	.5000	3.50	C-8	23.38
.500	.500	.5000	6.00	C-500	37.18
.625	.625	.6250	4.00	C-10	40.48
.750	.750	.7500	4.00	C-750	79.38
.750	.750	.7500	4.50	C-12	48.68

Brazed

Brazed - Forming Tools

CRT

CRT Style - Full Radius (Concave)



- Designed for forming a convex radius on the outside diameter (OD) of a part
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

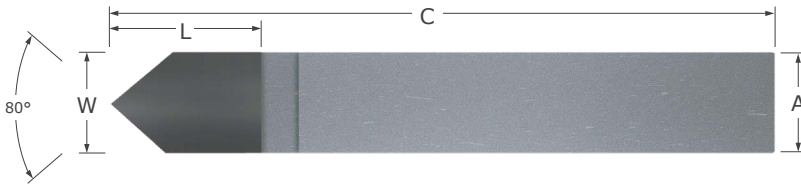
Radius	Width	Square Shank	Overall Length	CRT Style	
R $\begin{matrix} +.0005'' \\ -.0005'' \end{matrix}$	W $\begin{matrix} +.004'' \\ -.004'' \end{matrix}$	A $\begin{matrix} +.0000'' \\ -.0050'' \end{matrix}$	C	Tool #	Price
.0312	.067	.3750	2.5	CRT-1	71.38
.0625	.129	.3750	2.5	CRT-2	71.38
.0938	.192	.3750	2.5	CRT-3	71.38
.1250	.254	.5000	3.5	CRT-4	81.98
.1875	.379	.5000	3.5	CRT-6	88.18
.2500	.504	.7500	4.5	CRT-8	128.78



D

Brazed – Forming Tools

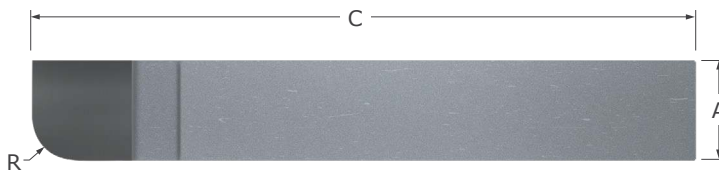
D Style



- Designed as a multi-functional tool for a manual lathe
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Length	Square Shank	Overall Length	D Style	
W	L	A $\begin{smallmatrix} +.0000'' \\ -.0030'' \end{smallmatrix}$	C	Tool #	Price
.2500	.313	.2500	2.00	D-4	15.48
.3125	.375	.3125	2.25	D-5	19.98
.3750	.500	.3750	2.50	D-6	35.48
.4375	.500	.4375	3.00	D-7	23.88
.5000	.500	.5000	3.50	D-8	18.68
.6250	.625	.6250	4.00	D-10	33.28
.7500	.725	.7500	4.50	D-12	44.28

RXD

Brazed – Forming Tools
90° Radius Convex – Right Hand

- Designed for forming a concave radius
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

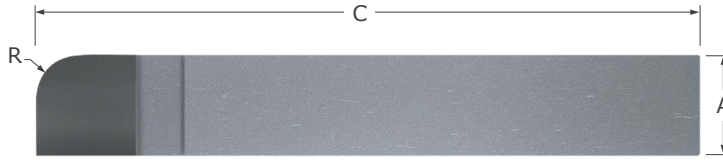
Radius	Square Shank	Overall Length	Brazed	
R $\begin{smallmatrix} +.0005'' \\ -.0005'' \end{smallmatrix}$	A $\begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	C	Tool #	Price
.0312	.3750	2.5	RXD-1	70.38
.0625	.3750	2.5	RXD-2	70.38
.0938	.3750	2.5	RXD-3	70.38
.1250	.3750	2.5	RXD-4	70.38
.1562	.3750	2.5	RXD-5	70.38
.1875	.3750	2.5	RXD-6	70.38
.2188	.3750	2.5	RXD-7	70.38
.2500	.3750	2.5	RXD-8	70.38
.2812	.5000	3.5	RXD-9	76.68
.4062	.7500	4.5	RXD-13	86.28
.4688	.7500	4.5	RXD-15	86.28
.5000	.7500	4.5	RXD-16	86.28

Brazed

Brazed – Forming Tools

90° Radius Convex – Left Hand

RXL



- Designed for forming a concave radius
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes ■ Ground in the USA

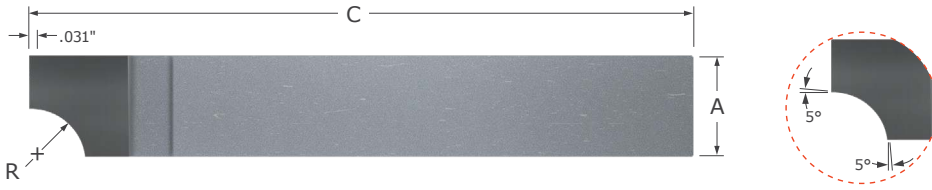
Radius	Square Shank	Overall Length	Brazed	
			Tool #	Price
R $^{+.0005''}$ $_{-.0005''}$	A $^{+.0000''}$ $_{-.0050''}$	C		
.0312	.3750	2.5	RXL-1	70.38
.0625	.3750	2.5	RXL-2	70.38
.0938	.3750	2.5	RXL-3	70.38
.1562	.3750	2.5	RXL-5	70.38
.2188	.3750	2.5	RXL-7	70.38
.2812	.5000	3.5	RXL-9	76.68
.3125	.5000	3.5	RXL-10	87.98
.3438	.5000	3.5	RXL-11	87.98
.4062	.7500	4.5	RXL-13	86.28
.4688	.7500	4.5	RXL-15	86.28
.5000	.7500	4.5	RXL-16	86.28

Brazed



RAD

Brazed – Forming Tools
90° Radius Concave – Right Hand



- Right hand tool designed for forming a convex radius
- Tangential 5° blend angles aid in providing a burr-free transition
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Radius	Square Shank	Overall Length	Brazed	
			Tool #	Price
R $^{+.0005''}$ $_{-.0005''}$	A $^{+.0000''}$ $_{-.0050''}$	C		
.0312	.3750	2.5	RAD-1	70.38
.0625	.3750	2.5	RAD-2	70.38
.0938	.3750	2.5	RAD-3	70.38
.1250	.3750	2.5	RAD-4	70.38
.1562	.3750	2.5	RAD-5	70.38
.1875	.3750	2.5	RAD-6	70.38
.2188	.3750	2.5	RAD-7	70.38
.2500	.3750	2.5	RAD-8	70.38
.2812	.5000	3.5	RAD-9	76.68
.3125	.5000	3.5	RAD-10	76.68
.3438	.5000	3.5	RAD-11	76.68
.3750	.5000	3.5	RAD-12	76.68
.4062	.7500	4.5	RAD-13	86.28
.4375	.7500	4.5	RAD-14	86.28
.4688	.7500	4.5	RAD-15	86.28
.5000	.7500	4.5	RAD-16	86.28

Brazed

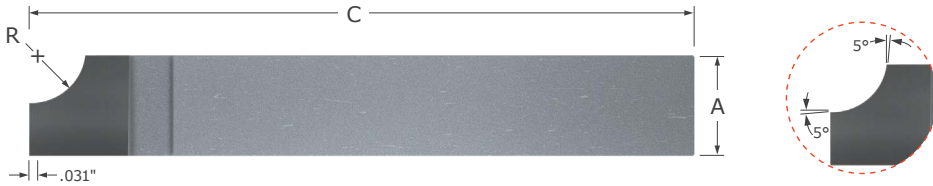
See pg 319 for tool set options



Brazed – Forming Tools

RAL

90° Radius Concave – Left Hand



- Left hand tool designed for forming a convex radius
- Tangential 5° blend angles
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Radius	Square Shank	Overall Length	Brazed	
			Tool #	Price
$R \begin{matrix} +.0005" \\ -.0005" \end{matrix}$	$A \begin{matrix} +.0000" \\ -.0050" \end{matrix}$	C		
.0312	.3750	2.5	RAL-1	70.38
.0625	.3750	2.5	RAL-2	70.38
.0938	.3750	2.5	RAL-3	70.38
.1250	.3750	2.5	RAL-4	70.38
.1562	.3750	2.5	RAL-5	70.38
.1875	.3750	2.5	RAL-6	70.38
.2188	.3750	2.5	RAL-7	70.38
.2500	.3750	2.5	RAL-8	70.38
.2812	.5000	3.5	RAL-9	76.68
.3125	.5000	3.5	RAL-10	76.68
.3438	.5000	3.5	RAL-11	76.68
.3750	.5000	3.5	RAL-12	76.68
.4062	.7500	4.5	RAL-13	86.28
.4375	.7500	4.5	RAL-14	86.28
.4688	.7500	4.5	RAL-15	86.28
.5000	.7500	4.5	RAL-16	86.28

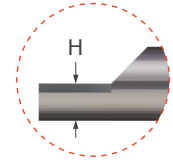
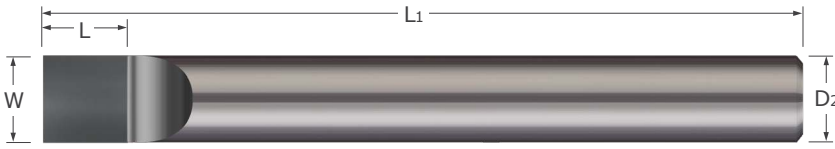
Brazed



TRG

Brazed - Forming Tools

Round Shank



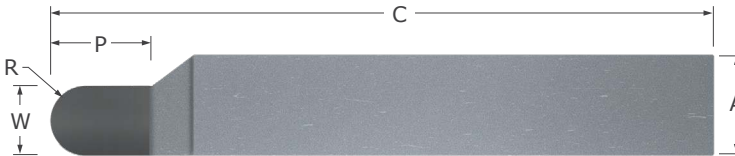
- Carbide tipped design allows for modification into a round shank special
- Carbide is mounted .031" above centerline to allow for grinding
- Neutral design allows for right and left hand modifications
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes ■ Ground in the USA

Width	Length	Split Height	Shank Diameter	Overall Length	Brazed	
W $^{+.0000"}$ $_{-.0050"}$	L $^{+.031"}$ $_{-.031"}$	H $^{+.000"}$ $_{-.010"}$	D2 $^{+.0000"}$ $_{-.0030"}$	L1	Tool #	Price
.2500	.253	.156	.2500	2.5	TRG-4	39.48
.3125	.375	.187	.3125	3.0	TRG-5	42.08
.3750	.500	.219	.3750	3.5	TRG-6	45.68
.4375	.500	.250	.4375	4.0	TRG-7	49.58
.5000	.500	.281	.5000	5.0	TRG-8	49.58
.6250	.625	.344	.6250	6.0	TRG-10	62.28

FRT

Brazed - Grooving Tools

FRT Style - Full Radius (Convex)



- Designed for generating a concave radius on the outside diameter (OD) of a part
- Available in industry standard shank sizes
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Ground in the USA

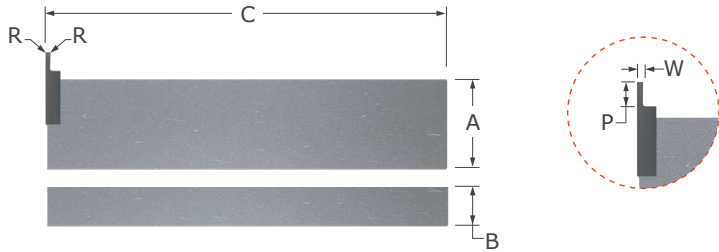
Radius	Width	Projection	Square Shank	Overall Length	Brazed	
R $^{+.0005"}$ $_{-.0005"}$	W $^{+.001"}$ $_{-.001"}$	P $^{+.015"}$ $_{-.015"}$	A $^{+.0000"}$ $_{-.0050"}$	C	Tool #	Price
.0312	.063	1.000	.3750	2.5	FRT-1	74.78
R $^{+.0005"}$ $_{-.0005"}$	W $^{+.001"}$ $_{-.001"}$	P $^{+.031"}$ $_{-.031"}$	A $^{+.0000"}$ $_{-.0050"}$	C	Tool #	Price
.0625	.125	.375	.3750	2.5	FRT-2	74.78
.0938	.188	.375	.3750	2.5	FRT-3	74.78
.1250	.250	.375	.3750	2.5	FRT-4	74.78
.1563	.313	.375	.3750	2.5	FRT-5	74.78
.1875	.375	.500	.5000	3.5	FRT-6	92.38
.2500	.500	.500	.5000	3.5	FRT-8	92.38
.3125	.625	.625	.6250	4.0	FRT-10	122.88
.3750	.750	.750	.7500	4.5	FRT-12	134.88

Brazed

Brazed – Grooving Tools

GR Style – Square

GR



- Designed for plunging outside diameter (OD) grooves when the tool is held parallel to the axis
- Square profile with .003" corner radius for added strength
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Projection	Radius	Shank Width	Shank Height	Overall Length	GR Style	
W $\begin{smallmatrix} +.002'' \\ -.000'' \end{smallmatrix}$	P $\begin{smallmatrix} +.000'' \\ -.030'' \end{smallmatrix}$	R (max)	A $\begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	B $\begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	C	Tool #	Price
.012	.030	.003	.7500	.3750	4.0	GR-012002	65.38
.018	.060	.003	.7500	.3750	4.0	GR-018002	65.38
.022	.090	.003	.7500	.3750	4.0	GR-022002	65.38
.028	.090	.003	.7500	.3750	4.0	GR-028002	65.38
.038	.120	.003	.7500	.3750	4.0	GR-038002	65.38
.040	.150	.003	.7500	.3750	4.0	GR-040002	65.38
.046	.150	.003	.7500	.3750	4.0	GR-046002	65.38
.054	.180	.003	.7500	.3750	4.0	GR-054002	65.38
.060	.210	.003	.7500	.3750	4.0	GR-060002	65.38
.072	.240	.003	.7500	.3750	4.0	GR-072002	65.38
.080	.270	.003	.7500	.3750	4.0	GR-080002	65.38
.086	.270	.003	.7500	.3750	4.0	GR-086002	65.38
.090	.300	.003	.7500	.3750	4.0	GR-090002	65.38
.096	.300	.003	.7500	.3750	4.0	GR-096002	65.38
.102	.400	.003	.7500	.3750	4.0	GR-102002	65.38
.114	.400	.003	.7500	.3750	4.0	GR-114002	65.38
.120	.400	.003	.7500	.3750	4.0	GR-120002	65.38
.122	.400	.003	.7500	.3750	4.0	GR-122002	65.38

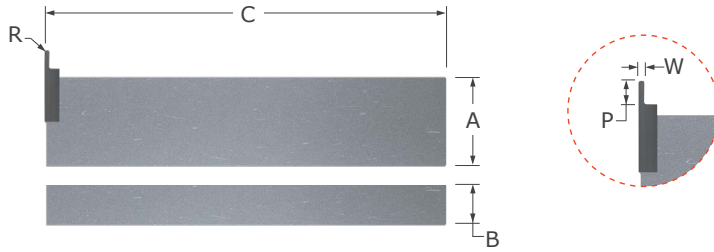
Brazed



GR-F

Brazed – Grooving Tools

GR Style – Full Radius



- Designed for plunging full radius outside diameter (OD) grooves when the tool is held parallel to the axis
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

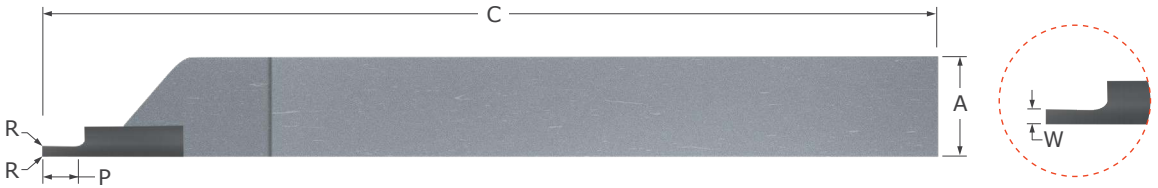
Radius	Width	Projection	Shank Width	Shank Height	Overall Length	GR-F Style	
R $\begin{matrix} +.001'' \\ -.000'' \end{matrix}$	W $\begin{matrix} +.002'' \\ -.000'' \end{matrix}$	P $\begin{matrix} +.000'' \\ -.030'' \end{matrix}$	A $\begin{matrix} +.0000'' \\ -.0050'' \end{matrix}$	B $\begin{matrix} +.0000'' \\ -.0050'' \end{matrix}$	C	Tool #	Price
.006	.012	.030	.7500	.3750	4.0	GR-012F	68.18
.009	.018	.060	.7500	.3750	4.0	GR-018F	68.18
.011	.022	.090	.7500	.3750	4.0	GR-022F	68.18
.019	.038	.120	.7500	.3750	4.0	GR-038F	68.18
.027	.054	.180	.7500	.3750	4.0	GR-054F	68.18
.030	.060	.210	.7500	.3750	4.0	GR-060F	68.18
.034	.068	.210	.7500	.3750	4.0	GR-068F	68.18
.036	.072	.240	.7500	.3750	4.0	GR-072F	68.18
.040	.080	.270	.7500	.3750	4.0	GR-080F	68.18
.043	.086	.270	.7500	.3750	4.0	GR-086F	68.18
.045	.090	.300	.7500	.3750	4.0	GR-090F	68.18
.048	.096	.300	.7500	.3750	4.0	GR-096F	68.18
.057	.114	.400	.7500	.3750	4.0	GR-114F	68.18
.060	.120	.400	.7500	.3750	4.0	GR-120F	68.18
.061	.122	.400	.7500	.3750	4.0	GR-122F	68.18

Brazed

Brazed – Grooving Tools

GS

GS Style – Square



- Designed for plunging grooves when on the outside diameter of a part
- Square profile with .003" corner radius for added strength
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Projection	Radius	Square Shank	Overall Length	GS Style	
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	P $\begin{smallmatrix} +.000" \\ -.030" \end{smallmatrix}$	R (max)	A $\begin{smallmatrix} +.0000" \\ -.0050" \end{smallmatrix}$	C	Tool #	Price
.012	.030	.003	.3750	3.0	GS-012002	53.08
.018	.060	.003	.3750	3.0	GS-018002	53.08
.022	.090	.003	.3750	3.0	GS-022002	53.08
.028	.090	.003	.3750	3.0	GS-028002	53.08
.038	.120	.003	.3750	3.0	GS-038002	53.08
.040	.150	.003	.3750	3.0	GS-040002	53.08
.046	.150	.003	.3750	3.0	GS-046002	53.08
.054	.180	.003	.3750	3.0	GS-054002	53.08
.060	.210	.003	.3750	3.0	GS-060002	53.08
.068	.210	.003	.3750	3.0	GS-068002	53.08
.072	.240	.003	.3750	3.0	GS-072002	53.08
.080	.270	.003	.3750	3.0	GS-080002	53.08
.086	.270	.003	.3750	3.0	GS-086002	53.08
.090	.300	.003	.3750	3.0	GS-090002	53.08
.096	.300	.003	.3750	3.0	GS-096002	53.08
.102	.400	.003	.3750	3.0	GS-102002	53.08
.114	.400	.003	.3750	3.0	GS-114002	53.08
.120	.400	.003	.3750	3.0	GS-120002	53.08
.122	.400	.003	.3750	3.0	GS-122002	53.08

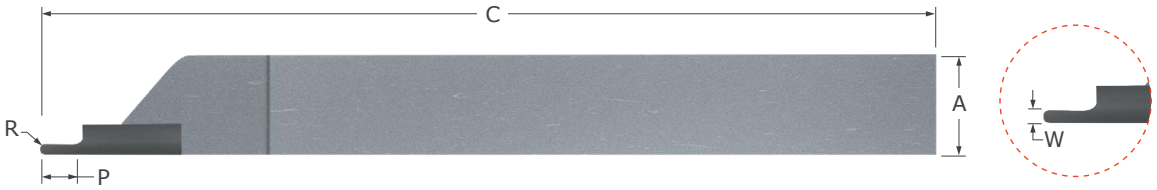
Brazed



GS-F

Brazed - Grooving Tools

GS Style - Full Radius



- Designed for generating full radius outside diameter (OD) grooves
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

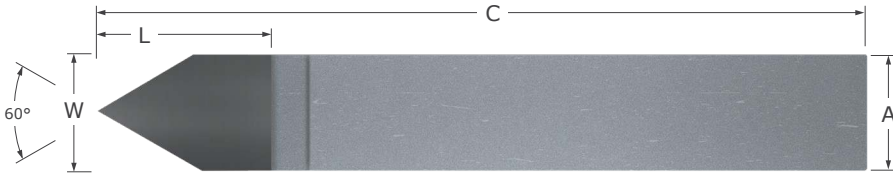
Radius	Width	Projection	Square Shank	Overall Length	GS-F Style	
					Tool #	Price
R $\begin{matrix} +.001" \\ -.000" \end{matrix}$	W $\begin{matrix} +.002" \\ -.000" \end{matrix}$	P $\begin{matrix} +.000" \\ -.030" \end{matrix}$	A $\begin{matrix} +.0000" \\ -.0050" \end{matrix}$	C		
.006	.012	.030	.3750	3.0	GS-012F	58.68
.009	.018	.060	.3750	3.0	GS-018F	58.68
.011	.022	.090	.3750	3.0	GS-022F	58.68
.014	.028	.090	.3750	3.0	GS-028F	58.68
.019	.038	.120	.3750	3.0	GS-038F	58.68
.020	.040	.150	.3750	3.0	GS-040F	58.68
.023	.046	.150	.3750	3.0	GS-046F	58.68
.027	.054	.180	.3750	3.0	GS-054F	58.68
.030	.060	.210	.3750	3.0	GS-060F	58.68
.034	.068	.210	.3750	3.0	GS-068F	58.68
.036	.072	.240	.3750	3.0	GS-072F	58.68
.040	.080	.270	.3750	3.0	GS-080F	58.68
.045	.090	.300	.3750	3.0	GS-090F	58.68
.048	.096	.300	.3750	3.0	GS-096F	58.68
.060	.120	.400	.3750	3.0	GS-120F	58.68

Brazed

Brazed – Threading Tools

E

E Style



- Designed for outside diameter (OD) general purpose threading
- Neutral design allows for right and left hand threading applications
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

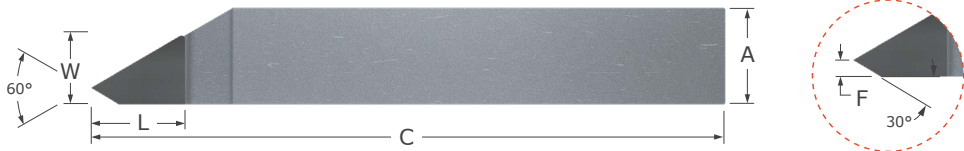
Width	Length	Square Shank	Overall Length	E Style	
W	L	A $\begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	C	Tool #	Price
.3125	.363	.3125	2.25	E-5	21.48
.3750	.568	.3750	2.50	E-6	16.98
.5000	.568	.5000	3.50	E-8	18.48
.6250	.653	.6250	4.00	E-10	33.78
.7500	.778	.7500	4.50	E-12	39.08

Brazed – Threading Tools

ER

ER Style

Brazed



- Designed for right hand threading on the outside diameter (OD), close to a shoulder
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

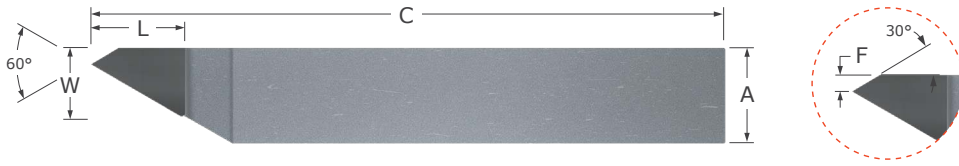
Point Offset	Width	Length	Square Shank	Overall Length	ER Style	
F $\begin{smallmatrix} +.010'' \\ -.010'' \end{smallmatrix}$	W	L	A $\begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	C	Tool #	Price
.063	.266	.360	.3750	2.50	ER-6	19.38
.063	.270	.360	.3125	2.25	ER-5	20.18
.094	.444	.610	.6250	4.00	ER-10	32.48
.094	.446	.610	.5000	3.50	ER-8	23.08
.125	.558	.750	.7500	4.50	ER-12	49.98



EL

Brazed - Threading Tools

EL Style



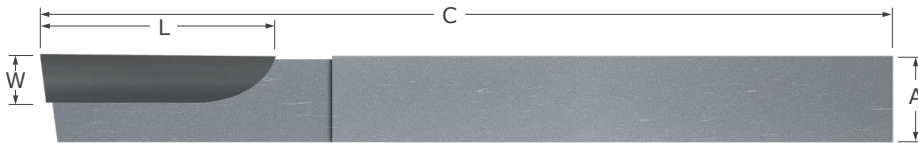
- Designed for left hand threading on the outside diameter (OD), close to a shoulder
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Point Offset	Width	Length	Square Shank	Overall Length	EL Style	
$F \begin{matrix} +.010'' \\ - .010'' \end{matrix}$	W	L	$A \begin{matrix} +.0000'' \\ - .0050'' \end{matrix}$	C	Tool #	Price
.063	.266	.360	.3750	2.50	EL-6	20.38
.063	.270	.360	.3125	2.25	EL-5	20.08
.094	.444	.610	.6250	4.00	EL-10	32.48
.094	.446	.610	.5000	3.50	EL-8	24.18
.125	.558	.750	.7500	4.50	EL-12	54.38

RT / LT

Brazed - Screw Machining Tools

Turning



- Designed for general purpose turning; RT for right hand and LT for left hand
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Length	Square Shank	Overall Length	Right Hand		Left Hand	
W	L	$A \begin{matrix} +.0000'' \\ - .0050'' \end{matrix}$	C	Tool #	Price	Tool #	Price
.128	1.075	.2500	6.0	RT-250	66.58	LT-250	63.28
.174	1.200	.2812	6.0	RT-281	66.58	LT-281	58.38
.188	1.200	.3750	6.0	RT-375	25.88	LT-375	51.58
.190	1.200	.3125	6.0	RT-312	49.98	LT-312	24.88
.253	1.345	.5000	6.0	RT-500	33.58	LT-500	41.58
.260	1.345	.4375	6.0	RT-437	60.58	LT-437	53.98
.263	1.345	.6250	4.0	RT-625	59.78	LT-625	57.18
.263	1.345	.7500	4.0	RT-750	64.98	LT-750	62.88

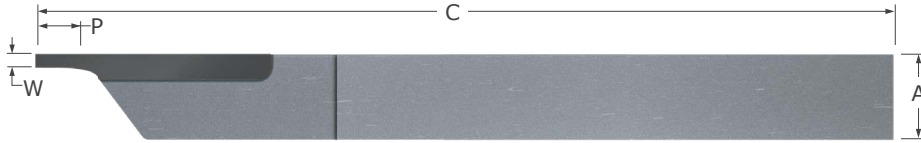
Brazed



Brazed – Screw Machine Tools

RC / LC

Cut Off



- Designed for cut off applications; RC for right hand and LC for left hand
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

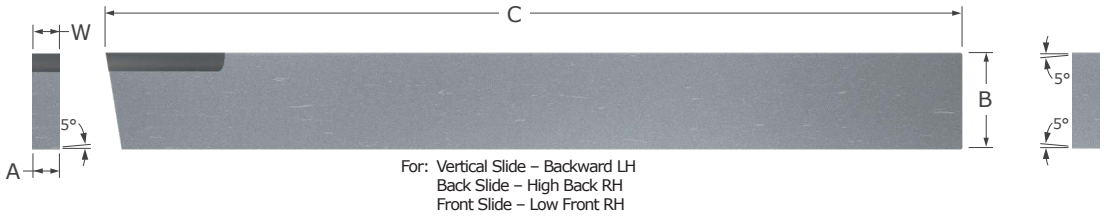
Width	Projection	Square Shank	Overall Length	Right Hand		Left Hand	
W ^{+ .000"} _{- .005"}	P (min)	A ^{+ .000"} _{- .0050"}	C	Tool #	Price	Tool #	Price
.040	.120	.2500	6.0	RC-250040	69.48	LC-250040	68.38
.040	.120	.2812	6.0	RC-281040	70.28	LC-281040	71.58
.040	.120	.3125	6.0	RC-312040	45.38	LC-312040	49.88
.040	.120	.3750	6.0	RC-375040	28.08	LC-375040	51.18
.060	.180	.2500	6.0	RC-250060	69.68	LC-250060	40.18
.060	.180	.2812	6.0	RC-281060	70.28	LC-281060	71.58
.060	.180	.3125	6.0	RC-312060	30.68	LC-312060	31.68
.060	.180	.3750	6.0	RC-375060	26.88	LC-375060	33.78
.060	.180	.4375	6.0	RC-437060	54.18	LC-437060	52.28
.060	.180	.5000	6.0	RC-500060	33.08	LC-500060	33.38
.060	.180	.6250	4.0	RC-625060	43.48	LC-625060	51.78
.060	.180	.7500	4.0	RC-750060	60.88	LC-750060	60.88
.080	.240	.2812	6.0	RC-281080	69.68	LC-281080	50.28
.080	.240	.3125	6.0	RC-312080	41.98	LC-312080	27.98
.080	.240	.3750	6.0	RC-375080	26.88	LC-375080	39.88
.080	.240	.4375	6.0	RC-437080	54.18	LC-437080	57.98
.080	.240	.5000	6.0	RC-500080	33.28	LC-500080	33.58
.080	.240	.6250	4.0	RC-625080	46.08	LC-625080	55.58
.080	.240	.7500	4.0	RC-750080	61.28	LC-750080	64.58
.100	.300	.2812	6.0	RC-281100	70.28	LC-281100	36.48
.100	.300	.3125	6.0	RC-312100	48.88	LC-312100	27.98
.100	.300	.3750	6.0	RC-375100	27.58	LC-375100	36.78
.100	.300	.4375	6.0	RC-437100	54.88	LC-437100	61.78
.100	.300	.5000	6.0	RC-500100	33.28	LC-500100	34.58
.100	.300	.6250	4.0	RC-625100	44.18	LC-625100	46.08
.100	.300	.7500	4.0	RC-750100	51.58	LC-750100	63.88
.120	.360	.3750	6.0	RC-375120	30.58	LC-375120	46.08
.120	.360	.4375	6.0	RC-437120	54.88	LC-437120	53.68
.120	.360	.5000	6.0	RC-500120	32.68	LC-500120	35.68
.125	.375	.6250	4.0	RC-625125	44.18	LC-625125	57.78
.125	.375	.7500	4.0	RC-750125	53.48	LC-750125	64.18
.187	.561	.6250	4.0	RC-625187	57.58	LC-625187	57.58
.187	.561	.7500	4.0	RC-750187	64.58	LC-750187	64.78

Brazed

CR

Brazed - Cut Off Tools

CR Style



- Right hand cut-off blades for Brown & Sharpe automatic screw machines
- Designed for use in Pratt & Whitney holders and dovetail slot holders
- Carbide tipped with hardened and precision ground steel blade
- Ground in the USA

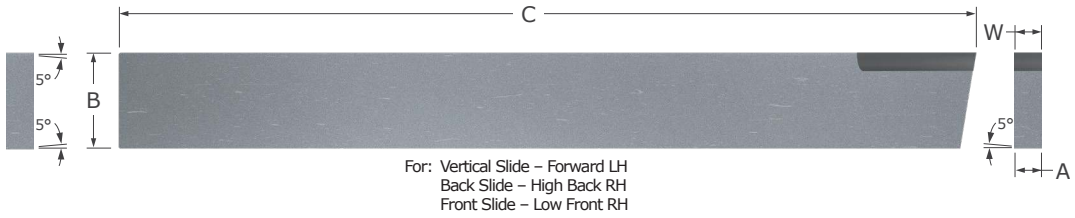
Width	Shank Width	Shank Height	Overall Length	CR Style	
				Tool #	Price
W $+0.0000''$ $-0.0050''$	A $+0.0000''$ $-0.0050''$	B $+0.0000''$ $-0.0050''$	C		
.0781	.0580	.5000	4.5	CR-101	107.78
.0938	.0730	.5000	4.5	CR-102	84.58
.0938	.0730	.6875	5.0	CR-104	119.58
.0938	.0730	.8125	6.0	CR-108	134.28
.0938	.0730	1.0000	6.0	CR-113	172.28
.1250	.1050	.5000	4.5	CR-103	81.98
.1250	.1050	.6875	5.0	CR-105	113.38
.1250	.1050	.8125	6.0	CR-109	99.18
.1562	.1360	.6875	5.0	CR-106	119.78
.1562	.1360	.8125	6.0	CR-110	193.88
.1875	.1670	.6875	5.0	CR-107	124.88
.1875	.1670	.8125	6.0	CR-111	195.08

Brazed

Brazed – Cut Off Tools

CL

CL Style



- Left hand cut-off blades for Brown & Sharpe automatic screw machines
- Designed for use in Pratt & Whitney holders and dovetail slot holders
- Carbide tipped with hardened and precision ground steel blade
- Ground in the USA

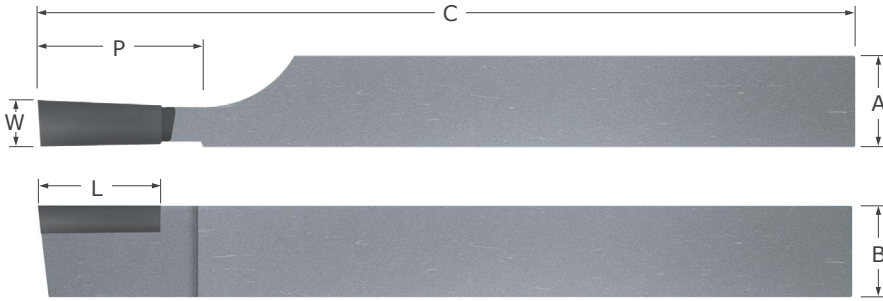
Width	Shank Width	Shank Height	Overall Length	CL Style	
W $+.0000"$ $-.0050"$	A $+.0000"$ $-.0050"$	B $+.0000"$ $-.0050"$	C	Tool #	Price
.0781	.0580	.5000	4.5	CL-101	108.18
.0938	.0730	.5000	4.5	CL-102	109.28
.0938	.0730	.6875	5.0	CL-104	127.38
.0938	.0730	.8125	6.0	CL-108	146.58
.0938	.0730	1.0000	6.0	CL-113	126.68
.1250	.1050	.5000	4.5	CL-103	111.88
.1250	.1050	.6875	5.0	CL-105	137.98
.1250	.1050	.8125	6.0	CL-109	139.78
.1562	.1360	.6875	5.0	CL-106	131.98
.1562	.1360	.8125	6.0	CL-110	183.78
.1875	.1670	.6875	5.0	CL-107	136.98
.1875	.1670	.8125	6.0	CL-111	126.68

Brazed

CT

Brazed - Cut Off Tools

CT Style



- Designed for cut-off with a 5° front clearance to reduce cut-off burr
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Projection	Length	Shank Width	Shank Height	Overall Length	CT Style	
W $^{+.000"}_{-.005"}"$	P $^{+.062"}_{-.000"}"$	L	A $^{+.0000"}_{-.0100"}"$	B $^{+.0000"}_{-.0100"}"$	C	Tool #	Price
.187	.813	.750	.5000	1.0000	5.0	CT-122	43.28
.250	1.000	.750	.5000	1.0000	5.0	CT-121	48.18
.312	1.000	.500	.5000	1.0000	5.0	CT-120	62.78
.375	1.250	.500	.6250	1.2500	5.0	CT-130	63.98
.375	1.250	.625	.7500	1.5000	6.0	CT-140	69.68

Brazed

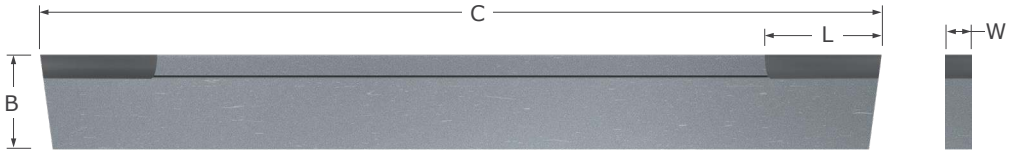


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Brazed – Cut Off Tools

T Style – Regular



- Double end "T" style cut-off tool that is parallel ground to help achieve a straighter cut
- Tops are hollow ground to help curl the chip to center for better evacuation
- Carbide tipped with hardened and precision ground steel blade
- Ground in the USA

Width	Length	Shank Height	Overall Length	T Style	
				Tool #	Price
W $^{+.001"}_{-.001"}$	L	B	C		
.062	.750	.5000	4.5	T-100	106.88
.078	.750	.5000	4.5	T-101	108.48
.093	.750	.5000	4.5	T-102	103.88
.093	.750	.6875	5.0	T-104	114.98
.125	.750	.5000	4.5	T-103	102.48
.125	.750	.6875	5.0	T-105	113.68
.125	.750	.7500	5.0	T-108	117.58
.125	.750	.8750	6.0	T-111	129.28
.156	.750	.6875	5.0	T-106	139.48
.156	.750	.7500	5.0	T-109	123.98
.156	.750	.8750	6.0	T-112	128.98
.187	.750	.6875	5.0	T-107	143.98
.187	.750	.7500	5.0	T-110	115.68
.187	.750	.8750	6.0	T-113	150.78
.187	.750	1.1250	6.0	T-116	156.08

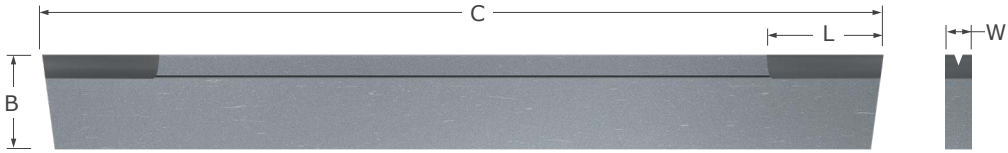
Brazed



T-V

Brazed - Cut Off Tools

T Style - V-Groove



- Double ended "T" style cut-off tool that is parallel ground to help achieve a straighter cut
- Tops are hollow ground to help curl the chip to center for better evacuation
- Additional V-groove ground into the top of the tool forces the chip into a "W" form to pull the chip to center resulting in better surface finish and chip evacuation
- Carbide tipped with hardened and precision ground steel blade
- Ground in the USA

Width	Length	Shank Height	Overall Length	Brazed Style	
				Tool #	Price
$W \begin{matrix} +.001" \\ -.001" \end{matrix}$	L	B	C		
.062	.760	.5000	4.5	T-100-V	111.18
.078	.760	.5000	4.5	T-101-V	112.78
.093	.760	.5000	4.5	T-102-V	108.18
.093	.760	.6875	5.0	T-104-V	119.18
.125	.750	.5000	4.5	T-103-V	106.88
.125	.760	.6875	5.0	T-105-V	117.88
.125	.750	.7500	5.0	T-108-V	121.78
.125	.750	.8750	6.0	T-111-V	133.48
.156	.750	.6875	5.0	T-106-V	143.68
.156	.750	.7500	5.0	T-109-V	128.18
.156	.750	.8750	6.0	T-112-V	133.38
.187	.750	.6875	5.0	T-107-V	148.18
.187	.750	.7500	5.0	T-110-V	119.88
.187	.750	.8750	6.0	T-113-V	154.98
.187	.750	1.1250	6.0	T-116-V	160.38

Brazed

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HOLEMAKING & THREADING TOOLS



Drills

220

Combined Drill & Countersink

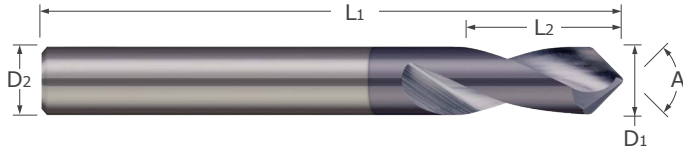
225

Thread Mill Cutters

226

Drills

Spotting & Centering Drill



Drills

- Optimized for spotting and chamfering applications
- Available in 82°, 90°, 100°, 120°, and 140° included point angles
- Can be utilized for countersinking and chamfering existing holes
- Maximum drill depth not to exceed included angle
- Solid carbide ■ CNC ground in the USA
- 2 flutes

Included Angle	Drill Diameter	Flute Length	Shank Diameter	Overall Length	Uncoated		AlTiN	
					Tool #	Price	Tool #	Price
$A_{-1}^{+1} \text{°}$	$D1_{-0.0005}^{+0.0000}$ "	$L2_{-0.031}^{+0.031}$ "	D2 (h6)	L1				
82°	.0937	.279	.1250	1.5	SPD-093-082	34.78	SPD-093-082X	40.78
	.1250	.375	.1250	1.5	SPD-125-082	34.78	SPD-125-082X	40.78
	.1875	.625	.1875	2.0	SPD-187-082	36.38	SPD-187-082X	43.08
	.2500	.750	.2500	2.5	SPD-250-082	37.48	SPD-250-082X	46.68
	.3125	.750	.3125	2.5	SPD-312-082	43.78	SPD-312-082X	54.68
	.3750	1.000	.3750	2.5	SPD-375-082	54.98	SPD-375-082X	67.98
	.5000	1.000	.5000	2.5	SPD-500-082	81.98	SPD-500-082X	99.58
	.6250	1.125	.6250	3.0	SPD1-625-082	146.18	SPD1-625-082X	165.58
	.7500	1.125	.7500	2.5	SPD-750-082	219.58		
	.7500	1.125	.7500	3.0	SPD1-750-082	221.58	SPD1-750-082X	244.78
90°	.0937	.279	.1250	1.5	SPD-093-090	34.78	SPD-093-090X	40.78
	.1250	.375	.1250	1.5	SPD-125-090	34.78	SPD-125-090X	40.78
	.1875	.625	.1875	2.0	SPD-187-090	36.38	SPD-187-090X	43.08
	.2500	.750	.2500	2.5	SPD-250-090	37.48	SPD-250-090X	46.68
	.3125	.750	.3125	2.5	SPD-312-090	43.78	SPD-312-090X	54.68
	.3750	1.000	.3750	2.5	SPD-375-090	54.98	SPD-375-090X	67.98
	.5000	1.000	.5000	2.5	SPD-500-090	81.98	SPD-500-090X	99.58
	.6250	1.125	.6250	3.0	SPD1-625-090	146.18	SPD1-625-090X	165.58
	.7500	1.125	.7500	2.5	SPD-750-090	219.58		
	.7500	1.125	.7500	3.0	SPD1-750-090	221.58	SPD1-750-090X	244.78
	1.0000	1.250	1.0000	2.5	SPD-001-090	332.78		
1.0000	1.250	1.0000	3.0	SPD1-001-090	335.98			
100°	.0937	.279	.1250	1.5	SPD-093-100	34.78	SPD-093-100X	40.78
	.1250	.375	.1250	1.5	SPD-125-100	34.78	SPD-125-100X	40.78
	.1875	.625	.1875	2.0	SPD-187-100	36.38	SPD-187-100X	43.08
	.2500	.750	.2500	2.5	SPD-250-100	37.48	SPD-250-100X	46.68
	.3125	.750	.3125	2.5	SPD-312-100	43.78	SPD-312-100X	54.68
	.3750	1.000	.3750	2.5	SPD-375-100	54.98	SPD-375-100X	67.98
	.5000	1.000	.5000	2.5	SPD-500-100	81.98	SPD-500-100X	99.58
	.6250	1.125	.6250	2.5	SPD-625-100	144.78		
	.6250	1.125	.6250	3.0	SPD1-625-100	146.18	SPD1-625-100X	165.58
	.7500	1.125	.7500	3.0	SPD1-750-100	221.58	SPD1-750-100X	244.78
	1.0000	1.250	1.0000	3.0	SPD1-001-100	335.98		

Continued on next page



SPD

Drills

Spotting & Centering Drill (cont.)

Continued from previous page

Included Angle	Drill Diameter	Flute Length	Shank Diameter	Overall Length	Uncoated		AlTiN	
					Tool #	Price	Tool #	Price
A $+1^\circ$ -1°	D1 $+0.000''$ $-0.005''$	L2 $+0.031''$ $-0.031''$	D2 (h6)	L1				
120°	.0937	.279	.1250	1.5	SPD-093-120	34.78	SPD-093-120X	40.78
	.1250	.375	.1250	1.5	SPD-125-120	34.78	SPD-125-120X	40.78
	.1875	.625	.1875	2.0	SPD-187-120	36.38	SPD-187-120X	43.08
	.2500	.750	.2500	2.5	SPD-250-120	37.48	SPD-250-120X	46.68
	.3125	.750	.3125	2.5	SPD-312-120	43.78	SPD-312-120X	54.68
	.3750	1.000	.3750	2.5	SPD-375-120	54.98	SPD-375-120X	67.98
	.5000	1.000	.5000	2.5	SPD-500-120	81.98	SPD-500-120X	99.58
	.6250	1.125	.6250	3.0	SPD1-625-120	146.18	SPD1-625-120X	165.58
	.7500	1.125	.7500	2.5	SPD-750-120	219.58		
	.7500	1.125	.7500	3.0	SPD1-750-120	221.58	SPD1-750-120X	244.78
140°	.0937	.279	.1250	1.5	SPD-093-140	34.78	SPD-093-140X	40.78
	.1250	.375	.1250	1.5	SPD-125-140	34.78	SPD-125-140X	40.78
	.1875	.625	.1875	2.0	SPD-187-140	36.38	SPD-187-140X	43.08
	.2500	.750	.2500	2.5	SPD-250-140	37.88	SPD-250-140X	46.48
	.3125	.750	.3125	2.5	SPD-312-140	44.18	SPD-312-140X	54.48
	.3750	1.000	.3750	2.5	SPD-375-140	55.58	SPD-375-140X	67.78
	.5000	1.000	.5000	2.5	SPD-500-140	82.68	SPD-500-140X	99.38

Drills

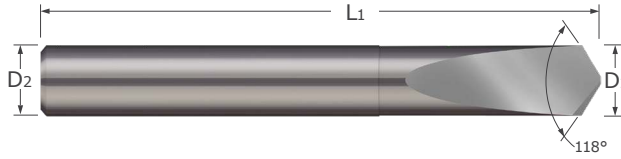


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Drills

Spade Drill



Drills

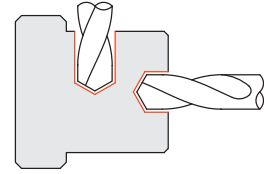
- Designed for drilling in hardened materials
- Excellent option when requiring holes free of retract marks in non-ferrous materials
- Solid carbide
- CNC ground in the USA

Drill Diameter	Web Thickness	Shank Diameter	Overall Length	Uncoated	
				Tool #	Price
$D_1 \begin{matrix} +.0000" \\ -.0005" \end{matrix}$	$\begin{matrix} +.002" \\ -.002" \end{matrix}$	D2 (h6)	L1		
.0312	.010	.0312	1.25	SD-031	21.18
.0625	.012	.0625	1.50	SD-062	21.98
.0937	.016	.0938	1.50	SD-093	22.48
.1250	.020	.1250	1.50	SD-125	24.68
.1562	.025	.1562	2.00	SD-156	26.98
.1875	.028	.1875	2.00	SD-187	31.48
.2188	.030	.2188	2.00	SD-218	36.98
.2500	.035	.2500	2.00	SD-250	42.38
.3125	.040	.3125	2.50	SD-312	58.58
.3750	.046	.3750	2.50	SD-375	70.48
.4375	.050	.4375	2.50	SD-437	80.88
.5000	.060	.5000	2.50	SD-500	98.68



DR

Drills
Miniature



- 1/8" common shank for ease of use in Taper Integrated Holders
- For tools .020" and smaller, there is an intermediate neck diameter as pictured
- 130° drill point
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC Ground in Germany

Drill Diameter			Flute Length	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
inch	wire	metric				Tool #	Price	Tool #	Price
D1 +.0000" ** -.0003"			L2	D2	L1	Tool #	Price	Tool #	Price
.0039	#102	.100 mm	.026	.1250	1.5	DR01-0039*	38.18		
.0051	#99	.130 mm	.056	.1250	1.5	DR02-0051	37.18		
.0059	#97	.150 mm	.066	.1250	1.5	DR02-0059	34.58		
.0071	#94		.106	.1250	1.5	DR02-0071	31.68		
.0079	#92	.200 mm	.160	.1250	1.5	DR02-0079	26.48	DR02-0079X	32.48
.0091	#89		.160	.1250	1.5	DR02-0091	25.78	DR02-0091X	31.78
.0098		.250 mm	.160	.1250	1.5	DR02-0098	25.78	DR02-0098X	31.78
.0100	#87		.160	.1250	1.5	DR02-0100	25.78	DR02-0100X	31.78
.0110	#85		.160	.1250	1.5	DR02-0110	25.78	DR02-0110X	31.78
.0118		.300 mm	.180	.1250	1.5	DR02-0118	25.78	DR02-0118X	31.78
.0120	#83		.230	.1250	1.5	DR02-0120	23.38	DR02-0120X	29.28
.0130	#81		.230	.1250	1.5	DR02-0130	23.38	DR02-0130X	29.28
.0135	#80		.270	.1250	1.5	DR02-0135	22.78	DR02-0135X	28.78
.0145	#79		.270	.1250	1.5	DR02-0145	22.78	DR02-0145X	28.78
.0157		.400 mm	.270	.1250	1.5	DR02-0157	22.78	DR02-0157X	28.78
.0160	#78		.270	.1250	1.5	DR02-0160	22.78	DR02-0160X	28.78
.0180	#77		.270	.1250	1.5	DR02-0180	21.18	DR02-0180X	27.18
.0197		.500 mm	.275	.1250	1.5	DR02-0197	21.18	DR02-0197X	27.18
.0200	#76		.275	.1250	1.5	DR02-0200	21.18	DR02-0200X	27.18
.0210	#75		.275	.1250	1.5	DR02-0210	21.18	DR02-0210X	27.18
.0225	#74		.275	.1250	1.5	DR02-0225	21.18	DR02-0225X	27.18
.0236		.600 mm	.275	.1250	1.5	DR02-0236	21.18	DR02-0236X	27.18
.0240	#73		.275	.1250	1.5	DR02-0240	21.18	DR02-0240X	27.18
.0250	#72		.275	.1250	1.5	DR02-0250	21.18	DR02-0250X	27.18
.0260	#71		.275	.1250	1.5	DR02-0260	21.18	DR02-0260X	27.18
.0276		.700 mm	.335	.1250	1.5	DR02-0276	21.18	DR02-0276X	27.18
.0280	#70		.335	.1250	1.5	DR02-0280	21.18	DR02-0280X	27.18
.0292	#69		.335	.1250	1.5	DR02-0292	21.18	DR02-0292X	27.18
.0310	#68		.395	.1250	1.5	DR02-0310	19.78	DR02-0310X	25.78
.0312			.395	.1250	1.5	DR02-0312	19.78	DR02-0312X	25.78
.0315		.800 mm	.395	.1250	1.5	DR02-0315	19.78	DR02-0315X	25.78
.0320	#67		.395	.1250	1.5	DR02-0320	19.78	DR02-0320X	25.78
.0330	#66		.395	.1250	1.5	DR02-0330	19.78	DR02-0330X	25.78
.0350	#65		.395	.1250	1.5	DR02-0350	19.78	DR02-0350X	25.78

* Total overhang from shank transition is .250" ** Tolerance for AlTiN coating is +.002"/-.0003" *** Tolerance for AlTiN coating is +.0002"/-.0005

Continued on next page

Taper Integrated holders can be found on pg 49



Drills

Miniature (cont.)

DR

Continued from previous page

Drills

Drill Diameter			Flute Length	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
inch	wire	metric				Tool #	Price	Tool #	Price
D ₁ ^{+ .0000"} ^{**} _{-.0003"}			L ₂	D ₂	L ₁				
.0354		.900 mm	.395	.1250	1.5	DR02-0354	19.78	DR02-0354X	25.78
.0360	#64		.395	.1250	1.5	DR02-0360	19.78	DR02-0360X	25.78
.0370	#63		.395	.1250	1.5	DR02-0370	19.78	DR02-0370X	25.78
.0380	#62		.395	.1250	1.5	DR02-0380	19.78	DR02-0380X	25.78
.0390	#61		.395	.1250	1.5	DR02-0390	19.78	DR02-0390X	25.78
.0394		1.000 mm	.395	.1250	1.5	DR02-0394	19.78	DR02-0394X	25.78
.0400	#60		.395	.1250	1.5	DR02-0400	19.78	DR02-0400X	25.78
.0410	#59		.395	.1250	1.5	DR02-0410	19.78	DR02-0410X	25.78
.0420	#58		.395	.1250	1.5	DR02-0420	19.78	DR02-0420X	25.78
.0430	#57		.395	.1250	1.5	DR02-0430	19.78	DR02-0430X	25.78
.0433		1.100 mm	.395	.1250	1.5	DR02-0433	19.78	DR02-0433X	25.78
.0440			.395	.1250	1.5	DR02-0440	19.78	DR02-0440X	25.78
.0469			.395	.1250	1.5	DR02-0469	19.78	DR02-0469X	25.78
.0472		1.200 mm	.395	.1250	1.5	DR02-0472	19.78	DR02-0472X	25.78
.0500		1.270 mm	.395	.1250	1.5	DR02-0500	19.78	DR02-0500X	25.78
.0512		1.300 mm	.413	.1250	1.5	DR01-0512	19.78	DR01-0512X	25.78
.0520	#55		.413	.1250	1.5	DR01-0520	19.78	DR01-0520X	25.78
.0550	#54		.413	.1250	1.5	DR01-0550	19.78	DR01-0550X	25.78
.0571		1.450 mm	.413	.1250	1.5	DR01-0571	19.78	DR01-0571X	25.78
.0591		1.500 mm	.413	.1250	1.5	DR01-0591	19.78	DR01-0591X	25.78
.0625			.413	.1250	1.5	DR01-0625	19.78	DR01-0625X	25.78

D ₁ ^{+ .0000"} ^{***} _{-.0005"}		decimal equiv.	L ₂	D ₂	L ₁	Tool #	Price	Tool #	Price
.0635	#52		.413	.1250	1.5	DR01-0635	19.78	DR01-0635X	25.78
.0670	#51		.413	.1250	1.5	DR01-0670	19.78	DR01-0670X	25.78
.0700	#50		.413	.1250	1.5	DR01-0700	19.78	DR01-0700X	25.78
.0730	#49		.413	.1250	1.5	DR01-0730	19.78	DR01-0730X	25.78
.0760	#48		.413	.1250	1.5	DR01-0760	19.78	DR01-0760X	25.78
.0781			.413	.1250	1.5	DR01-0781	19.78	DR01-0781X	25.78
.0787		2.000 mm	.413	.1250	1.5	DR01-0787	19.78	DR01-0787X	25.78
.0810	#46		.413	.1250	1.5	DR01-0810	19.78	DR01-0810X	25.78
.0860	#44		.413	.1250	1.5	DR01-0860	19.78	DR01-0860X	25.78
.0890	#43		.413	.1250	1.5	DR01-0890	19.78	DR01-0890X	25.78
.0938			.413	.1250	1.5	DR01-0938	19.78	DR01-0938X	25.78
.0960	#41		.413	.1250	1.5	DR01-0960	19.78	DR01-0960X	25.78
.0980	#40		.413	.1250	1.5	DR01-0980	19.78	DR01-0980X	25.78
.0995	#39		.413	.1250	1.5	DR01-0995	19.78	DR01-0995X	25.78
.1065	#36		.413	.1250	1.5	DR01-1065	19.78	DR01-1065X	25.78
.1094			.413	.1250	1.5	DR01-1094	19.78	DR01-1094X	25.78
.1110	#34		.413	.1250	1.5	DR01-1110	19.78	DR01-1110X	25.78
.1130	#33		.413	.1250	1.5	DR01-1130	19.78	DR01-1130X	25.78
.1181		3.000 mm	.413	.1250	1.5	DR01-1181	19.78	DR01-1181X	25.78
.1200	#31		.413	.1250	1.5	DR01-1200	19.78	DR01-1200X	25.78
.1250			.413	.1250	1.5	DR01-1250	19.78	DR01-1250X	25.78

* Total overhang from shank transition is .250" ** Tolerance for AlTiN coating is +.002"/-.0003" *** Tolerance for AlTiN coating is +.0002"/-.0005

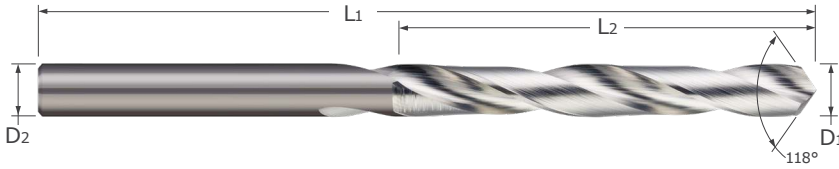
Taper Integrated holders can be found on pg 49



DR

Drills

Jobber Length Drills

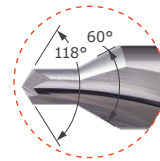
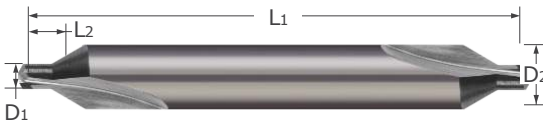


- 118° included point jobber drills can be used for general purpose drilling
- Solid carbide
- CNC ground in the USA

Drill Diameter	Flute Length	Shank Diameter	Overall Length	Uncoated	
				Tool #	Price
D1 $^{+.0000}$ / $_{-.0005}$ "	L2 $^{+.062}$ / $_{-.062}$ "	D2 (h6)	L1		
.0312	.500	.0312	1.25	DR-031-2	18.98
.0469	.750	.0469	1.50	DR-046-2	24.98
.0625	.750	.0625	1.50	DR-062-2	25.48
.1094	1.250	.1094	2.25	DR-109-2	32.28
.1250	1.250	.1250	2.25	DR-125-2	34.18
.1875	1.625	.1875	2.75	DR-187-2	50.08
.2500	2.000	.2500	3.25	DR-250-2	74.48
.3125	2.375	.3125	3.75	DR-312-2	98.98

DC / DCM

Combined Drill & Countersinks



- Designed for predrilling 60° live center holes
- Can be utilized for countersinking and spot drilling
- Double-ended for quicker tool changes
- Solid carbide ■ CNC ground in the USA

Drill Diameter	Drill Length	Shank Diameter	Overall Length	Uncoated	
				Tool #	Price
D1	L2	D2 (h6)	L1		
$^{+.0030}$ / $_{-.0000}$ "					
$^{+.08}$ mm					
$_{-.00}$ mm					
decimal equiv.					
.0250	.0250	.1250	1.500	DC-00	37.48
.0312	.0312	.1250	1.500	DC-01	37.48
0.8 mm	.0320	3.15 mm	35 mm	DCM-008	36.08
1.0 mm	.0390	3.15 mm	35 mm	DCM-010	36.08
.0469	.0469	.1250	1.500	DC-1	37.48
1.25 mm	.0490	3.15 mm	35 mm	DCM-013	36.08
.0781	.0781	.1875	1.875	DC-2	58.98
2.5 mm	.0980	6.3 mm	45 mm	DCM-025	63.28
.1094	.1094	.2500	2.000	DC-3	65.88
3.15 mm	.1240	8 mm	50 mm	DCM-032	84.68
.1250	.1250	.3125	2.125	DC-4	88.08
.1875	.1875	.4375	2.750	DC-5	132.68
.2188	.2188	.5000	3.000	DC-6	169.98

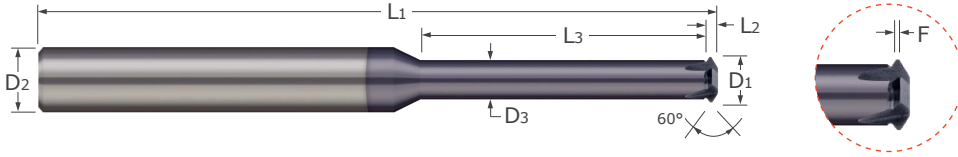
See pg 325 for tool set options



Thread Milling Cutters

Single Form – UN Threads

TM



- Mills internal and external 60° UN threads
- Single thread form designed to mill common pitch sizes
- Single form design reduces tool pressure for deep thread milling applications
- Mills right hand and left hand threads
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Thread Milling Cutters

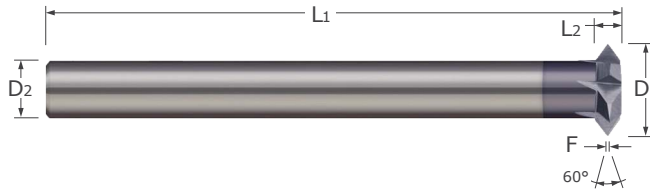
Threads Per Inch	Cutter Diameter	Neck Length	Neck Diameter	Flat	Cutter Width	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
TPI	$D_1^{+.000"}_{-.005"}"$	$L_3^{+.015"}_{-.000"}"$	D ₃	$F^{+.0010"}_{-.0000"}"$	L ₂		D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
56 - 80	.060	.250	.030	SHARP	.017	2	.1250	1.5	TM-060-4	95.98	TM-060-4X	99.18
56 - 80	.060	.375	.030	SHARP	.017	2	.1250	1.5	TM-060-6	95.98	TM-060-6X	99.18
40 - 64	.080	.250	.035	SHARP	.026	2	.1250	1.5	TM-080-4	90.08	TM-080-4X	93.48
40 - 64	.080	.500	.035	SHARP	.026	2	.1250	1.5	TM-080-8	90.08	TM-080-8X	93.48
32 - 64	.100	.375	.050	SHARP	.029	2	.1250	1.5	TM-100-6	77.78	TM-100-6X	81.38
32 - 64	.100	.500	.050	SHARP	.029	2	.1250	1.5	TM-100-8	77.78		
32 - 64	.100	.625	.050	SHARP	.029	2	.1250	2.0	TM-100-10	77.78	TM-100-10X	81.38
32 - 56	.120	.375	.070	.0010	.030	3	.1875	2.0	TM-120-6	91.88	TM-120-6X	95.88
32 - 56	.120	.500	.070	.0010	.030	3	.1875	2.0	TM-120-8	91.88	TM-120-8X	95.88
32 - 56	.120	.625	.070	.0010	.030	3	.1875	2.0	TM-120-10	91.88	TM-120-10X	95.88
24 - 56	.140	.500	.075	.0010	.038	3	.1875	2.0	TM-140-8	91.88	TM-140-8X	95.88
24 - 56	.140	.750	.075	.0010	.038	3	.1875	2.0	TM-140-12	91.88	TM-140-12X	95.88
18 - 56	.180	.500	.090	.0015	.055	4	.2500	2.5	TM-180-8	108.08	TM-180-8X	115.18
18 - 56	.180	.750	.090	.0015	.055	4	.2500	2.5	TM-180-12	108.08	TM-180-12X	115.18
18 - 56	.180	1.000	.090	.0015	.055	4	.2500	2.5	TM-180-16	108.08	TM-180-16X	115.18
16 - 48	.240	1.500	.150	.0015	.055	4	.3125	3.5	TM-250-24	120.58	TM-250-24X	132.18
14 - 48	.250	1.000	.100	.0015	.065	4	.2500	2.5	TM-250-16	108.08	TM-250-16X	115.18
16 - 48	.250	1.125	.150	.0015	.060	4	.2500	2.5	TM-250-18	108.08	TM-250-18X	115.18
14 - 40	.290	1.000	.170	.0020	.071	4	.3750	4.0	TM-290-16	134.08	TM-290-16X	147.88
12 - 32	.360	1.000	.210	.0020	.085	4	.3750	4.0	TM-360-16	134.08	TM-360-16X	147.88
11 - 32	.490	1.000	.300	.0020	.095	5	.5000	4.0	TM-490-16	154.88	TM-490-16X	170.58
11 - 32	.490	1.250	.300	.0020	.095	5	.5000	4.0	TM-490-20	154.88	TM-490-20X	170.58
10 - 32	.600	1.000	.420	.0020	.100	6	.6250	4.0	TM-600-16	192.48	TM-600-16X	211.38
10 - 32	.600	1.250	.420	.0020	.100	6	.6250	4.0	TM-600-20	192.48	TM-600-20X	211.38

TPI	$D_1^{+.000"}_{-.005"}"$	$L_3^{+.015"}_{-.000"}"$	D ₃	$F^{+.0030"}_{-.0000"}"$	L ₂		D ₂ (h6)	L ₁	Tool #	Price	Tool #	Price
5 - 12	.720	1.250	.360	.0045	.200	6	.7500	4.0	TM-720-20	221.08	TM-720-20X	242.78
5 - 12	.720	2.000	.360	.0045	.200	6	.7500	4.0	TM-720-32	221.08	TM-720-32X	242.78
5 - 12	.720	2.500	.360	.0045	.200	6	.7500	4.0	TM-720-40	221.08	TM-720-40X	242.78



TM

Thread Milling Cutters Single Form - UN Threads - Reduced Shank



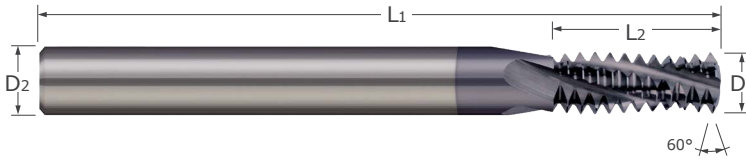
- Mills internal and external 60° threads
- Single thread form designed to mill common UN and metric pitch sizes
- Single form design reduces tool pressure for deep thread milling applications
- Reduced shank design can be chucked at any depth
- Mills right hand and left hand threads
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Carbide head brazed to carbide shank
- CNC ground in the USA

Threads Per Inch	Cutter Diameter	Flat	Cutter Width	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
							Tool #	Price	Tool #	Price
TPI	$D_1 \begin{smallmatrix} +.000'' \\ -.005'' \end{smallmatrix}$	$F \begin{smallmatrix} +.0030'' \\ -.0000'' \end{smallmatrix}$	$L_2 \begin{smallmatrix} +.005'' \\ -.005'' \end{smallmatrix}$		$D_2 (h6)$	L_1				
12-32	.375	.0020	.093	4	.2500	2.59	TM-375*	119.88	TM-375X*	126.88
11-32	.500	.0020	.125	5	.3125	2.63	TM-500*	145.88	TM-500X*	155.88
7-16	.750	.0040	.156	6	.3750	2.65	TM-750	180.98	TM-750X	190.58
5-12	1.000	.0045	.187	7	.5000	3.20	TM-001	236.28	TM-001X	247.68

* Reduced Neck

Thread Milling Cutters

Multi-Form – UN Threads



Thread Milling Cutters

- Mills internal and external 60° UN threads
- Able to cut larger threads of the same pitch
- 100% thread form creates superior threads vs. tapping
- Mills right and left hand threads
- Helical flutes
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

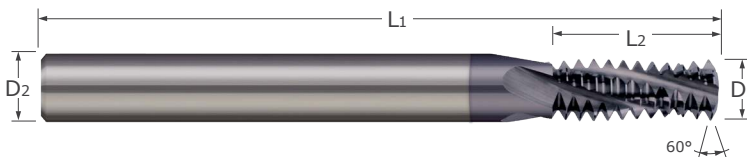
Thread Size	Cutter Diameter	Length of Cut*	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
	$D_1 \begin{smallmatrix} +.0005'' \\ -.0005'' \end{smallmatrix}$	$L_2 \begin{smallmatrix} +.0500'' \\ -.0000'' \end{smallmatrix}$		$D_2 \text{ (h6)}$	L_1				
4-40	.0800	.1875	2	.2500	2.0			TM-112-40X	210.98
6-32	.1000	.2500	2	.2500	2.0	TM-138-32	206.48	TM-138-32X	209.58
8-32	.1150	.2500	3	.2500	2.0			TM-164-32X	210.98
10-24	.1200	.3125	3	.2500	2.0	TM-190-24	215.48	TM-190-24X	218.38
10-28	.1200	.3125	3	.2500	2.0			TM-190-28X	218.38
10-32	.1200	.3125	3	.2500	2.0	TM-190-32	215.48	TM-190-32X	218.38
1/4-20	.1800	.5000	3	.2500	2.5	TM-250-20	224.88	TM-250-20X	230.98
1/4-28	.1800	.5000	3	.2500	2.5	TM-250-28	224.88	TM-250-28X	230.98
5/16-18	.2350	.6250	3	.2500	2.5	TM-312-18	246.38	TM-312-18X	252.18
5/16-24	.2350	.6250	3	.2500	2.5			TM-312-24X	252.18
3/8-16	.2850	.7500	4	.3125	2.5	TM-375-16	297.08	TM-375-16X	307.88
3/8-24	.2850	.7500	4	.3125	2.5	TM-375-24	297.08	TM-375-24X	307.88
7/16-14	.3050	.7500	4	.3125	2.5	TM-437-14	297.08	TM-437-14X	307.48
7/16-20	.3350	.8750	4	.3750	3.0	TM-437-20	312.08	TM-437-20X	320.38
1/2-13	.3500	.8750	4	.3750	3.0	TM-500-13	312.08	TM-500-13X	320.38
9/16-12	.3700	.8750	4	.3750	3.0			TM-562-12X	320.38
9/16-18	.3700	.8750	4	.3750	3.0	TM-562-18	312.08	TM-562-18X	320.38
5/8-11	.4700	1.2500	4	.5000	4.0			TM-625-11X	373.38
3/4-10	.4950	1.2500	4	.5000	4.0	TM-750-10	357.38	TM-750-10X	371.18
3/4-12	.4950	1.2500	4	.5000	4.0	TM-750-12	357.38	TM-750-12X	371.18
3/4-16	.4950	1.2500	4	.5000	4.0	TM-750-16	357.38	TM-750-16X	371.18
7/8-14	.4900	1.2500	4	.5000	4.0	TM-875-14	358.68	TM-875-14X	372.48
7/8-9	.6200	1.3750	4	.6250	4.0			TM-875-09X	398.88
1-8	.6200	1.3750	4	.6250	4.0	TM-001-08	384.78	TM-001-08X	405.68

* Length of cut measured to last full tooth.



TM

Thread Milling Cutters Multi-Form – NPT Threads



- Mills internal and external 60° NPT threads
- 100% thread form creates superior threads vs. tapping
- Mills right hand and left hand threads
- Helical flutes
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

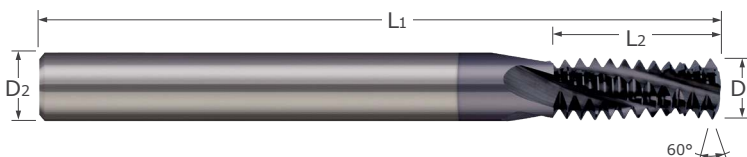
Thread Size	Major Cutter Diameter	Length of Cut*	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
	$D1 \begin{smallmatrix} +.0005'' \\ -.0005'' \end{smallmatrix}$	$L2 \begin{smallmatrix} +.050'' \\ -.000'' \end{smallmatrix}$		D2 (h6)	L1				
1/16 & 1/8-27 NPT	.2450	.437	3	.2500	2.5	TM-27NPT	247.18	TM-27NPTX	252.98
1/4 & 3/8-18 NPT	.3050	.625	4	.3125	3.0	TM-18NPT	297.88	TM-18NPTX	308.78
1/2 & 3/4-14 NPT	.4950	.875	4	.5000	4.0	TM-14NPT	300.08	TM-14NPTX	314.28
1 & 2-11.5 NPT	.6200	1.125	4	.6250	4.0	TM-11NPT	399.68	TM-11NPTX	416.48

* Length of cut measured to last full tooth.

Thread Milling Cutters

TM

Thread Milling Cutters Multi-Form – NPTF Threads



- Mills internal and external 60° NPTF threads
- 100% thread form creates superior threads vs. tapping
- Mills right hand and left hand threads
- Helical flutes
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

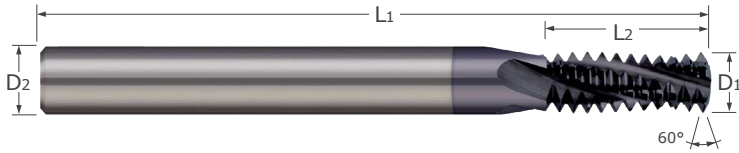
Thread Size	Major Cutter Diameter	Length of Cut*	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
	$D1 \begin{smallmatrix} +.0005'' \\ -.0005'' \end{smallmatrix}$	$L2 \begin{smallmatrix} +.030'' \\ -.000'' \end{smallmatrix}$		D2 (h6)	L1				
1/16 & 1/8-27 NPT	.2450	.437	3	.2500	2.5	TM-27NPTF	280.88	TM-27NPTFX	286.38
1/4 & 3/8-18 NPT	.3050	.625	4	.3125	3.0			TM-18NPTFX	328.18
1/2 & 3/4-14 NPT	.4950	.875	4	.5000	4.0	TM-14NPTF	345.38		
1 & 2-11.5 NPT	.6200	1.125	4	.6250	4.0			TM-11NPTFX	477.28

* Length of cut measured to last full tooth.

Thread Milling Cutters

Multi-Form – Metric Threads

TMM



- Mills internal and external 60° metric thread
- Able to cut larger threads of the same pitch
- 100% thread form creates superior threads vs. tapping
- Mills right hand threads
- Helical flutes
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Thread Milling Cutters

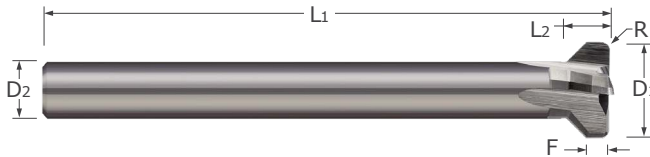
Thread Size	Cutter Diameter	Length of Cut*	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
	D ₁ (h8)	L ₂ ^{+1.3 mm} _{-0.0 mm}		D ₂ (h6)	L ₁				
M4.5x0.75	3.00 mm	6 mm	3	6 mm	57 mm	TMM-045075	204.18	TMM-045075X	210.58
M5.0x0.80	3.00 mm	8 mm	3	6 mm	57 mm			TMM-050080X	210.58
M6.0x1.00	4.30 mm	12 mm	3	6 mm	57 mm			TMM-060100X	233.78
M8.0x0.75	6.00 mm	16 mm	3	6 mm	57 mm	TMM-080075	285.58	TMM-080075X	291.08
M8.0x1.25	6.00 mm	16 mm	3	6 mm	57 mm			TMM-080125X	291.08
M10.0x1.50	7.62 mm	20 mm	4	8 mm	100 mm			TMM-100150X	331.98
M12.0x1.00	9.15 mm	22 mm	4	10 mm	100 mm			TMM-120100X	335.48
M12.0x1.75	9.15 mm	22 mm	4	10 mm	100 mm			TMM-120175X	335.48
M18.0x1.50	11.94 mm	32 mm	4	12 mm	100 mm			TMM-180150X	414.98
M20.0x2.50	11.94 mm	32 mm	4	12 mm	100 mm			TMM-200250X	414.98
M24.0x3.00	15.75 mm	35 mm	4	16 mm	100 mm	TMM-240300	462.18		

* Length of cut measured to last full tooth.

Thread Milling Cutters

Thread Relief Cutter

MTR



- Designed for milling thread relief at the bottom of a thread
- Relief operation typically done before threading to avoid thread form damage
- Chamfer eliminates burrs and partial threads at last thread
- Carbide head brazed to carbide shank
- CNC ground in the USA

Cutter Diameter	Cutter Width	Flat	Radius	Flutes	Shank Diameter	Overall Length	Uncoated	
							Tool #	Price
D ₁ ^{+ .000"} _{- .005"}	L ₂ ^{+ .015"} _{- .015"}	F ^{+ .000"} _{- .005"}	R ^{+ .002"} _{- .002"}		D ₂ (h6)	L ₁		
.375	.141	.075	.010	4	.2500	2.64	MTR-375	121.98
.500	.195	.100	.010	5	.3125	2.72	MTR-500	148.68
.750	.250	.125	.015	6	.3750	2.75	MTR-750	184.48
1.000	.250	.125	.015	7	.5000	3.25	MTR-001	240.68



MILLING TOOLS



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End Mills – Square

2 Flute – Stub & Standard – Miniature

RME / RMEM
SME / AMRM



End Mills

- Designed for general purpose micromachining
- Cutter diameter down to .005"
- 30° helix ■ Center cutting ■ Square profile
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0005"	+ .00 mm	decimal equiv.	+ .010"							
- .0005"	- .02 mm		- .000"							
			+ .25 mm							
			- .00 mm							
.0050		.0050	.007	2	.1250	1.5	SME-005-2	72.48	SME-005-2X	75.88
.0060		.0060	.009	2	.1250	1.5	SME-006-2	72.48	SME-006-2X	75.88
.0070		.0070	.010	2	.1250	1.5	SME-007-2	61.38	SME-007-2X	64.98
	0.2 mm	.0079	0.4 mm	2	3 mm	38 mm	RMEM-002-2	51.08	RMEM-002-2X	54.78
	0.2 mm	.0079	0.4 mm	2	4 mm	50 mm			AMRM-002-2X	59.68
.0080		.0080	.012	2	.1250	1.5	SME-008-2	61.38	SME-008-2X	64.98
.0090		.0090	.013	2	.1250	1.5	SME-009-2	55.88	SME-009-2X	59.48
.0100		.0100	.015	2	.1250	1.5	SME-010-2	55.88	SME-010-2X	59.48
.0100		.0100	.030	2	.1250	1.5	RME-010-2	58.28	RME-010-2X	61.98
.0110		.0110	.016	2	.1250	1.5	SME-011-2	50.38		
.0110		.0110	.033	2	.1250	1.5			RME-011-2X	56.48
	0.3 mm	.0118	0.9 mm	2	3 mm	38 mm	RMEM-003-2	43.98	RMEM-003-2X	47.78
	0.3 mm	.0118	0.9 mm	2	4 mm	50 mm	AMRM-003-2	48.38	AMRM-003-2X	52.78
.0120		.0120	.018	2	.1250	1.5	SME-012-2	50.38	SME-012-2X	54.18
.0120		.0120	.036	2	.1250	1.5	RME-012-2	52.88	RME-012-2X	56.48
.0130		.0130	.019	2	.1250	1.5	SME-013-2	42.88	SME-013-2X	46.68
.0130		.0130	.039	2	.1250	1.5	RME-013-2	44.98	RME-013-2X	48.58
.0140		.0140	.021	2	.1250	1.5	SME-014-2	42.88	SME-014-2X	46.68
.0140		.0140	.042	2	.1250	1.5	RME-014-2	44.98	RME-014-2X	48.58
.0150		.0150	.022	2	.1250	1.5	SME-015-2	34.18	SME-015-2X	38.08
.0150		.0150	.045	2	.1250	1.5	RME-015-2	35.58	RME-015-2X	39.48
	0.4 mm	.0157	1.2 mm	2	3 mm	38 mm	RMEM-004-2	32.28		
	0.4 mm	.0157	1.2 mm	2	4 mm	50 mm	AMRM-004-2	36.78		
.0160		.0160	.024	2	.1250	1.5	SME-016-2	34.18	SME-016-2X	38.08
.0160		.0160	.048	2	.1250	1.5	RME-016-2	35.58	RME-016-2X	39.48
.0170		.0170	.025	2	.1250	1.5	SME-017-2	34.18	SME-017-2X	38.08
.0170		.0170	.051	2	.1250	1.5	RME-017-2	35.58	RME-017-2X	39.48
.0180		.0180	.027	2	.1250	1.5	SME-018-2	34.18	SME-018-2X	38.08
.0180		.0180	.054	2	.1250	1.5	RME-018-2	35.58	RME-018-2X	39.48
.0190		.0190	.028	2	.1250	1.5	SME-019-2	34.18		
.0190		.0190	.057	2	.1250	1.5			RME-019-2X	39.48
	0.5 mm	.0197	1.5 mm	2	3 mm	38 mm	RMEM-005-2	29.88	RMEM-005-2X	33.78
	0.5 mm	.0197	1.5 mm	2	4 mm	50 mm	AMRM-005-2	32.28		

*.0005" / .013 mm max TIR

Continued on next page



RME / RMEM
SME / AMRMEnd Mills – Square
2 Flute – Stub & Standard – Miniature (cont.)

Continued from previous page

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 +.0005" -.0005"	+.00 mm -.02 mm	decimal equiv.	L2 +.010" -.000" +.25 mm -.00 mm	D2 (h6)	L1	Tool #	Price	Tool #	Price	
.0200		.0200	.030	2	.1250	1.5	SME-020-2	31.48	SME-020-2X	35.38
.0200		.0200	.060	2	.1250	1.5	RME-020-2	32.88	RME-020-2X	36.78
.0210		.0210	.063	2	.1250	1.5			RME-021-2X	36.78
.0220		.0220	.033	2	.1250	1.5	SME-022-2	31.48	SME-022-2X	35.38
.0220		.0220	.066	2	.1250	1.5	RME-022-2	32.88	RME-022-2X	36.78
.0230		.0230	.034	2	.1250	1.5	SME-023-2	31.48	SME-023-2X	35.38
.0230		.0230	.069	2	.1250	1.5	RME-023-2	32.88	RME-023-2X	36.78
	0.6 mm	.0236	1.8 mm	2	3 mm	38 mm	RMEM-006-2	29.88	RMEM-006-2X	33.78
.0240		.0240	.036	2	.1250	1.5	SME-024-2	31.48		
.0240		.0240	.072	2	.1250	1.5	RME-024-2	32.88	RME-024-2X	36.78
.0250		.0250	.037	2	.1250	1.5	SME-025-2	31.48	SME-025-2X	35.38
.0250		.0250	.075	2	.1250	1.5	RME-025-2	32.88	RME-025-2X	36.78
.0270		.0270	.040	2	.1250	1.5	SME-027-2	27.68	SME-027-2X	31.58
.0270		.0270	.081	2	.1250	1.5	RME-027-2	27.78	RME-027-2X	31.68
	0.7 mm	.0276	2.1 mm	2	3 mm	38 mm	RMEM-007-2	26.78	RMEM-007-2X	30.78
	0.7 mm	.0276	2.1 mm	2	4 mm	50 mm			AMRM-007-2X	33.58
.0280		.0280	.042	2	.1250	1.5			SME-028-2X	31.58
.0280		.0280	.084	2	.1250	1.5	RME-028-2	27.78	RME-028-2X	31.68
.0290		.0290	.043	2	.1250	1.5	SME-029-2	27.68	SME-029-2X	31.58
.0290		.0290	.087	2	.1250	1.5	RME-029-2	27.78	RME-029-2X	31.68
.0300		.0300	.045	2	.1250	1.5	SME-030-2	27.68	SME-030-2X	31.58
.0300		.0300	.090	2	.1250	1.5	RME-030-2	27.78	RME-030-2X	31.68
.0310		.0310	.047	2	.1250	1.5	SME-031-2	27.68	SME-031-2X	31.58
	0.8 mm	.0315	2.4 mm	2	3 mm	38 mm	RMEM-008-2	26.78	RMEM-008-2X	30.78
	0.8 mm	.0315	2.4 mm	2	4 mm	50 mm	AMRM-008-2	28.88		
.0320		.0320	.096	2	.1250	1.5	RME-032-2	27.78	RME-032-2X	31.68
.0340		.0340	.102	2	.1250	1.5			RME-034-2X	31.68
.0350		.0350	.105	2	.1250	1.5	RME-035-2	27.78	RME-035-2X	31.68
	0.9 mm	.0354	2.7 mm	2	3 mm	38 mm	RMEM-009-2	26.78	RMEM-009-2X	30.78
	0.9 mm	.0354	2.7 mm	2	4 mm	50 mm			AMRM-009-2X	33.58
	1 mm	.0394	3 mm	2	3 mm	38 mm	RMEM-010-2	26.78	RMEM-010-2X	30.78
	1 mm	.0394	3 mm	2	4 mm	50 mm	AMRM-010-2	28.88	AMRM-010-2X	33.58
.0400		.0400	.060	2	.1250	1.5	SME-040-2	27.68	SME-040-2X	31.58
.0400		.0400	.120	2	.1250	1.5	RME-040-2	27.78	RME-040-2X	31.68
	1.1 mm	.0433	3.3 mm	2	3 mm	38 mm	RMEM-011-2	26.78	RMEM-011-2X	30.78
	1.1 mm	.0433	3.3 mm	2	4 mm	50 mm	AMRM-011-2	28.88		
.0450		.0450	.068	2	.1250	1.5	SME-045-2	27.68	SME-045-2X	31.58
.0450		.0450	.135	2	.1250	1.5			RME-045-2X	31.68
	1.2 mm	.0472	3.8 mm	2	3 mm	38 mm	RMEM-012-2	26.78	RMEM-012-2X	30.78
	1.2 mm	.0472	3.8 mm	2	4 mm	50 mm	AMRM-012-2	28.88	AMRM-012-2X	33.58
.0500		.0500	.075	2	.1250	1.5	SME-050-2	27.68	SME-050-2X	31.58

*.0005" / .013 mm max TIR

Continued on next page

End Mills – Square

2 Flute – Stub & Standard – Miniature (cont.)

RME / RMEM
SME / AMRM

Continued from previous page

End Mills

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AITIN Coated	
D1			L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0005" - .0005"	+ .00 mm - .02 mm	decimal equiv.	+ .010" - .000" + .25 mm - .00 mm							
.0500		.0500	.150	2	.1250	1.5	RME-050-2	27.78	RME-050-2X	31.68
1.3 mm		.0512	3.9 mm	2	3 mm	38 mm	RMEM-013-2	26.78	RMEM-013-2X	30.78
1.3 mm		.0512	3.9 mm	2	4 mm	50 mm	AMRM-013-2	28.88	AMRM-013-2X	33.58
1.4 mm		.0551	4.2 mm	2	3 mm	38 mm	RMEM-014-2	26.78	RMEM-014-2X	30.78
1.5 mm		.0591	4.2 mm	2	3 mm	38 mm	RMEM-015-2	26.78	RMEM-015-2X	30.78
1.5 mm		.0591	4.2 mm	2	4 mm	50 mm	AMRM-015-2	28.88	AMRM-015-2X	33.58
1.6 mm		.0630	4.8 mm	2	3 mm	38 mm	RMEM-016-2	24.68		
1.6 mm		.0630	4.8 mm	2	4 mm	50 mm	AMRM-016-2	28.88	AMRM-016-2X	33.58
1.7 mm		.0669	5.1 mm	2	3 mm	38 mm	RMEM-017-2	24.68	RMEM-017-2X	28.68
1.7 mm		.0669	5.1 mm	2	4 mm	50 mm			AMRM-017-2X	33.58
1.8 mm		.0709	5.3 mm	2	3 mm	38 mm	RMEM-018-2	24.68		
1.8 mm		.0709	5.3 mm	2	4 mm	50 mm	AMRM-018-2	28.88	AMRM-018-2X	33.58
1.9 mm		.0748	5.7 mm	2	3 mm	38 mm	RMEM-019-2	24.68	RMEM-019-2X	28.68
1.9 mm		.0748	5.7 mm	2	4 mm	50 mm	AMRM-019-2	28.88	AMRM-019-2X	33.58
2 mm		.0787	6 mm	2	3 mm	38 mm	RMEM-020-2	24.68		
2 mm		.0787	6 mm	2	4 mm	50 mm	AMRM-020-2	28.88	AMRM-020-2X	33.58
2.5 mm		.0984	8 mm	2	3 mm	38 mm	RMEM-025-2	24.68		
2.5 mm		.0984	8 mm	2	4 mm	50 mm			AMRM-025-2X	33.58
3 mm		.1181	9 mm	2	4 mm	50 mm			AMRM-030-2X	33.58

*.0005" / .013 mm max TIR



**GEM / GEMM
SEM / AEMM**
**End Mills – Square
2, 3, 4 Flute**


- Designed for general purpose machining
- 30° helix ■ Center cutting ■ Square profile
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D ₁							L ₂	D ₂ (h6)	L ₁	Tool #
+ .0000" - .0020"	(h9)	decimal equiv.	+ .030" - .000" + .78 mm - .00 mm							
.0312		.0312	.063	2	.1250	1.5	SEM-031-02	23.78	SEM-031-02X	27.78
.0312		.0312	.063	3	.1250	1.5	SEM-031-03	23.78		
.0312		.0312	.063	4	.1250	1.5	SEM-031-04	23.78	SEM-031-04X	27.78
.0312		.0312	.078	2	.1250	1.5	GEM-031-2	24.98	GEM-031-2X	28.88
.0312		.0312	.078	3	.1250	1.5	GEM-031-3	24.98	GEM-031-3X	28.88
.0312		.0312	.078	4	.1250	1.5	GEM-031-4	24.98	GEM-031-4X	28.88
1 mm		.0394	3 mm	2	3 mm	38 mm	GEMM-010-2	23.88	GEMM-010-2X	27.88
1 mm		.0394	3 mm	3	3 mm	38 mm	GEMM-010-3	23.88	GEMM-010-3X	27.88
1 mm		.0394	3 mm	4	3 mm	38 mm	GEMM-010-4	23.88		
1 mm		.0394	4 mm	2	4 mm	50 mm			AEMM-010-2X	33.58
1 mm		.0394	4 mm	3	4 mm	50 mm	AEMM-010-3	28.88	AEMM-010-3X	33.58
1 mm		.0394	4 mm	4	4 mm	50 mm	AEMM-010-4	28.88	AEMM-010-4X	33.58
.0469		.0469	.094	2	.1250	1.5	SEM-046-02	23.78	SEM-046-02X	27.78
.0469		.0469	.094	3	.1250	1.5	SEM-046-03	23.78	SEM-046-03X	27.78
.0469		.0469	.094	4	.1250	1.5	SEM-046-04	23.78	SEM-046-04X	27.78
.0469		.0469	.109	2	.1250	1.5	GEM-046-2	24.98	GEM-046-2X	28.88
.0469		.0469	.109	3	.1250	1.5	GEM-046-3	24.98	GEM-046-3X	28.88
.0469		.0469	.109	4	.1250	1.5	GEM-046-4	24.98	GEM-046-4X	28.88
1.5 mm		.0591	4 mm	2	4 mm	50 mm	AEMM-015-2	28.88		
1.5 mm		.0591	4 mm	3	4 mm	50 mm	AEMM-015-3	28.88	AEMM-015-3X	33.58
1.5 mm		.0591	4 mm	4	4 mm	50 mm	AEMM-015-4	28.88	AEMM-015-4X	33.58
.0625		.0625	.125	2	.1250	1.5	SEM-062-02	21.58	SEM-062-02X	25.58
.0625		.0625	.125	3	.1250	1.5	SEM-062-03	21.58	SEM-062-03X	25.58
.0625		.0625	.125	4	.1250	1.5	SEM-062-04	21.58	SEM-062-04X	25.58
.0625		.0625	.188	2	.1250	1.5	GEM-062-2	22.78	GEM-062-2X	26.78
.0625		.0625	.188	3	.1250	1.5	GEM-062-3	22.78	GEM-062-3X	26.78
.0625		.0625	.188	4	.1250	1.5	GEM-062-4	22.78	GEM-062-4X	26.78
.0781		.0781	.156	2	.1250	1.5	SEM-078-02	21.58	SEM-078-02X	25.58
.0781		.0781	.156	3	.1250	1.5	SEM-078-03	21.58	SEM-078-03X	25.58
.0781		.0781	.156	4	.1250	1.5	SEM-078-04	21.58	SEM-078-04X	25.58
.0781		.0781	.188	2	.1250	1.5	GEM-078-2	22.78	GEM-078-2X	26.78
.0781		.0781	.188	3	.1250	1.5	GEM-078-3	22.78	GEM-078-3X	26.78
.0781		.0781	.188	4	.1250	1.5	GEM-078-4	22.78	GEM-078-4X	26.78
2 mm		.0787	5 mm	2	4 mm	50 mm	AEMM-020-2	28.88	AEMM-020-2X	33.58
2 mm		.0787	5 mm	3	4 mm	50 mm	AEMM-020-3	28.88	AEMM-020-3X	33.58
2 mm		.0787	5 mm	4	4 mm	50 mm	AEMM-020-4	28.88	AEMM-020-4X	33.58
2 mm		.0787	6 mm	2	3 mm	38 mm	GEMM-020-2	21.68	GEMM-020-2X	25.68
2 mm		.0787	6 mm	3	3 mm	38 mm			GEMM-020-3X	25.68
2 mm		.0787	7 mm	4	3 mm	38 mm	GEMM-020-4	21.68	GEMM-020-4X	25.68

* .0005" / .013 mm max TIR

Continued on next page

End Mills – Square

2, 3, 4 Flute (cont.)

GEM / GEMM
SEM / AEMM

Continued from previous page

End Mills

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" / - .0020"	(h9)	decimal equiv.	+ .030" / - .000" / + .78 mm / - .00 mm							
.0938		.0938	.188	2	.1250	1.5	SEM-093-02	21.58	SEM-093-02X	25.58
.0938		.0938	.188	3	.1250	1.5	SEM-093-03	21.58	SEM-093-03X	25.58
.0938		.0938	.188	4	.1250	1.5	SEM-093-04	21.58	SEM-093-04X	25.58
.0938		.0938	.375	2	.1250	1.5	GEM-093-2	22.78	GEM-093-2X	26.78
.0938		.0938	.375	3	.1250	1.5	GEM-093-3	22.78	GEM-093-3X	26.78
.0938		.0938	.375	4	.1250	1.5	GEM-093-4	22.78	GEM-093-4X	26.78
2.5 mm		.0984	6 mm	2	4 mm	50 mm	AEMM-025-2	28.88	AEMM-025-2X	33.58
2.5 mm		.0984	6 mm	3	4 mm	50 mm	AEMM-025-3	28.88	AEMM-025-3X	33.58
2.5 mm		.0984	6 mm	4	4 mm	50 mm	AEMM-025-4	28.88	AEMM-025-4X	33.58
.1094		.1094	.188	2	.1250	1.5	SEM-109-02	21.58	SEM-109-02X	25.58
.1094		.1094	.188	3	.1250	1.5	SEM-109-03	21.58	SEM-109-03X	25.58
.1094		.1094	.188	4	.1250	1.5	SEM-109-04	21.58	SEM-109-04X	25.58
.1094		.1094	.375	2	.1250	1.5	GEM-109-2	22.78	GEM-109-2X	26.78
.1094		.1094	.375	3	.1250	1.5	GEM-109-3	22.78	GEM-109-3X	26.78
.1094		.1094	.375	4	.1250	1.5	GEM-109-4	22.78	GEM-109-4X	26.78
3 mm		.1181	7 mm	2	3 mm	38 mm	GEMM-030-2	19.38	GEMM-030-2X	23.38
3 mm		.1181	7 mm	3	3 mm	38 mm	GEMM-030-3	19.38	GEMM-030-3X	23.38
3 mm		.1181	8 mm	4	3 mm	38 mm	GEMM-030-4	19.38	GEMM-030-4X	23.38
3 mm		.1181	8 mm	2	6 mm	57 mm	AEMM-030-2	36.28	AEMM-030-2X	44.08
3 mm		.1181	8 mm	3	6 mm	57 mm	AEMM-030-3	36.28		
3 mm		.1181	8 mm	4	6 mm	57 mm	AEMM-030-4	36.28	AEMM-030-4X	44.08
.1250		.1250	.250	2	.1250	1.5	SEM-125-02	19.28	SEM-125-02X	23.28
.1250		.1250	.250	3	.1250	1.5	SEM-125-03	19.28	SEM-125-03X	23.28
.1250		.1250	.250	4	.1250	1.5	SEM-125-04	19.28	SEM-125-04X	23.28
.1250		.1250	.500	2	.1250	1.5	GEM-125-2	20.38	GEM-125-2X	24.38
.1250		.1250	.500	3	.1250	1.5	GEM-125-3	20.38	GEM-125-3X	24.38
.1250		.1250	.500	4	.1250	1.5	GEM-125-4	20.38	GEM-125-4X	24.38
3.5 mm		.1378	10 mm	2	6 mm	57 mm			AEMM-035-2X	44.08
3.5 mm		.1378	10 mm	3	6 mm	57 mm	AEMM-035-3	36.28	AEMM-035-3X	44.08
3.5 mm		.1378	10 mm	4	6 mm	57 mm	AEMM-035-4	36.28	AEMM-035-4X	44.08
.1406		.1406	.250	2	.1875	1.5	SEM-140-02	30.68	SEM-140-02X	35.28
.1406		.1406	.250	3	.1875	1.5	SEM-140-03	30.68	SEM-140-03X	35.28
.1406		.1406	.250	4	.1875	1.5	SEM-140-04	30.68	SEM-140-04X	35.28
.1406		.1406	.500	2	.1875	2.0	GEM-140-2	32.18	GEM-140-2X	36.78
.1406		.1406	.500	3	.1875	2.0	GEM-140-3	32.18	GEM-140-3X	36.78
.1406		.1406	.500	4	.1875	2.0	GEM-140-4	32.18	GEM-140-4X	36.78
.1562		.1562	.313	2	.1875	1.5	SEM-156-02	30.68	SEM-156-02X	35.28
.1562		.1562	.313	3	.1875	1.5	SEM-156-03	30.68		
.1562		.1562	.313	4	.1875	1.5	SEM-156-04	30.68	SEM-156-04X	35.28
.1562		.1562	.563	2	.1875	2.0	GEM-156-2	32.18	GEM-156-2X	36.78
.1562		.1562	.563	3	.1875	2.0	GEM-156-3	32.18	GEM-156-3X	36.78
.1562		.1562	.563	4	.1875	2.0	GEM-156-4	32.18	GEM-156-4X	36.78
4 mm		.1575	8 mm	2	4 mm	50 mm	GEMM-040-2	28.88		
4 mm		.1575	8 mm	3	4 mm	50 mm	GEMM-040-3	28.88		
4 mm		.1575	11 mm	4	4 mm	50 mm	GEMM-040-4	28.88	GEMM-040-4X	33.58
4 mm		.1575	11 mm	2	6 mm	57 mm	AEMM-040-2	36.28	AEMM-040-2X	44.08
4 mm		.1575	11 mm	3	6 mm	57 mm	AEMM-040-3	36.28	AEMM-040-3X	44.08
4 mm		.1575	11 mm	4	6 mm	57 mm	AEMM-040-4	36.28	AEMM-040-4X	44.08

*.0005" / .013 mm max TIR

Continued on next page



GEM / GEMM
SEM / AEMMEnd Mills – Square
2, 3, 4 Flute (cont.)

Continued from previous page

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 +.0000" -.0020" (h9) decimal equiv.			L2 +.030" -.000" +.78 mm -.00 mm		D2 (h6)	L1	Tool #	Price	Tool #	Price
.1719		.1719	.313	3	.1875	1.5	SEM-171-03	30.68	SEM-171-03X	35.28
.1719		.1719	.313	4	.1875	1.5	SEM-171-04	30.68	SEM-171-04X	35.28
.1719		.1719	.625	2	.1875	2.0	GEM-171-2	32.18	GEM-171-2X	36.78
.1719		.1719	.625	4	.1875	2.0	GEM-171-4	32.18	GEM-171-4X	36.78
4.5 mm		.1772	11 mm	3	6 mm	57 mm			AEMM-045-3X	44.08
4.5 mm		.1772	11 mm	4	6 mm	57 mm	AEMM-045-4	36.28	AEMM-045-4X	44.08
.1875		.1875	.375	2	.1875	1.5	SEM-187-02	30.68	SEM-187-02X	35.28
.1875		.1875	.375	3	.1875	1.5	SEM-187-03	30.68	SEM-187-03X	35.28
.1875		.1875	.375	4	.1875	1.5	SEM-187-04	30.68	SEM-187-04X	35.28
.1875		.1875	.625	2	.1875	2.0	GEM-187-2	32.18	GEM-187-2X	36.78
.1875		.1875	.625	3	.1875	2.0	GEM-187-3	32.18	GEM-187-3X	36.78
.1875		.1875	.625	4	.1875	2.0	GEM-187-4	32.18	GEM-187-4X	36.78
5 mm		.1969	10 mm	2	6 mm	57 mm	GEMM-050-2	30.98		
5 mm		.1969	13 mm	4	6 mm	57 mm	GEMM-050-4	30.98	GEMM-050-4X	35.48
5 mm		.1969	16 mm	2	6 mm	57 mm	AEMM-050-2	36.28	AEMM-050-2X	44.08
5 mm		.1969	16 mm	3	6 mm	57 mm			AEMM-050-3X	44.08
5 mm		.1969	16 mm	4	6 mm	57 mm	AEMM-050-4	36.28	AEMM-050-4X	44.08
.2031		.2031	.375	3	.2500	2.0	SEM-203-03	37.98	SEM-203-03X	42.68
.2031		.2031	.375	4	.2500	2.0	SEM-203-04	37.98	SEM-203-04X	42.68
.2031		.2031	.625	2	.2500	2.5	GEM-203-2	40.18		
.2031		.2031	.625	4	.2500	2.5	GEM-203-4	40.18	GEM-203-4X	47.98
5.5 mm		.2165	16 mm	2	6 mm	57 mm	AEMM-055-2	36.28		
5.5 mm		.2165	16 mm	4	6 mm	57 mm	AEMM-055-4	36.28	AEMM-055-4X	44.08
.2187		.2187	.438	4	.2500	2.0	SEM-218-04	37.98	SEM-218-04X	42.68
.2187		.2187	.625	2	.2500	2.5	GEM-218-2	40.18	GEM-218-2X	47.98
.2187		.2187	.625	4	.2500	2.5	GEM-218-4	40.18		
.2344		.2344	.438	4	.2500	2.0	SEM-234-04	37.98	SEM-234-04X	42.68
6 mm		.2362	10 mm	2	6 mm	57 mm	GEMM-060-2	36.28	GEMM-060-2X	44.08
6 mm		.2362	10 mm	3	6 mm	57 mm	GEMM-060-3	36.28		
6 mm		.2362	13 mm	4	6 mm	57 mm	GEMM-060-4	36.28	GEMM-060-4X	44.08
6 mm		.2362	16 mm	2	6 mm	57 mm	AEMM-060-2	36.28	AEMM-060-2X	44.08
6 mm		.2362	16 mm	3	6 mm	57 mm	AEMM-060-3	36.28	AEMM-060-3X	44.08
6 mm		.2362	16 mm	4	6 mm	57 mm	AEMM-060-4	36.28	AEMM-060-4X	44.08
.2500		.2500	.500	2	.2500	2.0	SEM-250-02	37.98	SEM-250-02X	42.68
.2500		.2500	.500	3	.2500	2.0	SEM-250-03	37.98	SEM-250-03X	42.68
.2500		.2500	.500	4	.2500	2.0	SEM-250-04	37.98	SEM-250-04X	42.68
.2500		.2500	.750	2	.2500	2.5	GEM-250-2	40.18	GEM-250-2X	47.98
.2500		.2500	.750	3	.2500	2.5	GEM-250-3	40.18	GEM-250-3X	47.98
.2500		.2500	.750	4	.2500	2.5	GEM-250-4	40.18	GEM-250-4X	47.98
.2656		.2656	.500	4	.3125	2.0	SEM-265-04	42.08	SEM-265-04X	52.28
7 mm		.2756	22 mm	3	8 mm	63 mm			AEMM-070-3X	55.78
7 mm		.2756	22 mm	4	8 mm	63 mm	AEMM-070-4	44.98	AEMM-070-4X	55.78
.2812		.2812	.500	4	.3125	2.0	SEM-281-04	42.08	SEM-281-04X	52.28

*.0005" / .013 mm max TIR

Continued on next page

End Mills – Square 2, 3, 4 Flute (cont.)

GEM / GEMM
SEM / AEMM

Continued from previous page

End Mills

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" - .0030"	(h9)	decimal equiv.	+ .030" - .000" + .78 mm - .00 mm							
.2812		.2812	.750	2	.3125	2.5	GEM-281-2	46.68	GEM-281-2X	57.58
.2812		.2812	.750	3	.3125	2.5	GEM-281-3	46.68	GEM-281-3X	57.58
.2812		.2812	.750	4	.3125	2.5	GEM-281-4	46.68	GEM-281-4X	57.58
.3125		.3125	.500	2	.3125	2.0	SEM-312-02	42.08	SEM-312-02X	52.28
.3125		.3125	.500	4	.3125	2.0	SEM-312-04	42.08	SEM-312-04X	52.28
.3125		.3125	.813	2	.3125	2.5	GEM-312-2	46.68	GEM-312-2X	57.58
.3125		.3125	.813	4	.3125	2.5	GEM-312-4	46.68	GEM-312-4X	57.58
8 mm		.3150	16 mm	2	8 mm	63 mm	GEMM-080-2	44.98	GEMM-080-2X	55.78
8 mm		.3150	19 mm	4	8 mm	63 mm	GEMM-080-4	44.98		
8 mm		.3150	22 mm	2	8 mm	63 mm	AEMM-080-2	44.98		
8 mm		.3150	22 mm	3	8 mm	63 mm	AEMM-080-3	44.98	AEMM-080-3X	55.78
8 mm		.3150	22 mm	4	8 mm	63 mm	AEMM-080-4	44.98	AEMM-080-4X	55.78
.3281		.3281	.500	2	.3750	2.0	SEM-328-02	50.28	SEM-328-02X	59.48
.3281		.3281	.500	3	.3750	2.0			SEM-328-03X	59.48
.3281		.3281	.500	4	.3750	2.0	SEM-328-04	50.28		
.3750		.3750	.625	2	.3750	2.0	SEM-375-02	50.28	SEM-375-02X	58.48
.3750		.3750	.625	3	.3750	2.0	SEM-375-03	50.28	SEM-375-03X	58.48
.3750		.3750	.625	4	.3750	2.0	SEM-375-04	50.28	SEM-375-04X	58.48
.3750		.3750	.875	2	.3750	2.5	GEM-375-2	52.98	GEM-375-2X	63.78
.3750		.3750	.875	3	.3750	2.5	GEM-375-3	52.98	GEM-375-3X	63.78
.3750		.3750	.875	4	.3750	2.5	GEM-375-4	52.98	GEM-375-4X	63.78
.3906		.3906	.625	4	.4375	2.5	SEM-390-04	75.18	SEM-390-04X	88.18
10 mm		.3937	19 mm	2	10 mm	72 mm	GEMM-100-2	52.88	GEMM-100-2X	63.68
10 mm		.3937	19 mm	3	10 mm	72 mm	GEMM-100-3	52.88	GEMM-100-3X	63.68
10 mm		.3937	22 mm	4	10 mm	72 mm			GEMM-100-4X	63.68
10 mm		.3937	25 mm	2	10 mm	72 mm	AEMM-100-2	52.88	AEMM-100-2X	63.68
10 mm		.3937	25 mm	3	10 mm	72 mm	AEMM-100-3	52.88	AEMM-100-3X	63.68
10 mm		.3937	25 mm	4	10 mm	72 mm	AEMM-100-4	52.88	AEMM-100-4X	63.68
11 mm		.4331	30 mm	3	12 mm	83 mm	AEMM-110-3	84.28		
.4375		.4375	1.000	4	.4375	2.5	GEM-437-4	83.48	GEM-437-4X	96.28
12 mm		.4724	22 mm	2	12 mm	83 mm	GEMM-120-2	84.28	GEMM-120-2X	100.48
12 mm		.4724	22 mm	3	12 mm	83 mm	GEMM-120-3	84.28		
12 mm		.4724	30 mm	2	12 mm	83 mm	AEMM-120-2	84.28	AEMM-120-2X	100.48
12 mm		.4724	30 mm	3	12 mm	83 mm	AEMM-120-3	84.28		
12 mm		.4724	30 mm	4	12 mm	83 mm	AEMM-120-4	84.28	AEMM-120-4X	100.48
.5000		.5000	.625	2	.5000	2.5	SEM-500-02	82.88	SEM-500-02X	95.38
.5000		.5000	.625	3	.5000	2.5	SEM-500-03	82.88	SEM-500-03X	95.38
.5000		.5000	.625	4	.5000	2.5	SEM-500-04	82.88	SEM-500-04X	95.38
.5000		.5000	1.000	2	.5000	3.0	GEM-500-2	91.98	GEM-500-2X	104.78
.5000		.5000	1.000	3	.5000	3.0	GEM-500-3	91.98	GEM-500-3X	104.78
.5000		.5000	1.000	4	.5000	3.0	GEM-500-4	91.98	GEM-500-4X	104.78
.5000		.5000	1.250	4	.5000	3.5			GEM-5125-4X	107.58
14 mm		.5512	26 mm	4	14 mm	83 mm	GEMM-140-4	97.68		
14 mm		.5512	35 mm	2	14 mm	83 mm			AEMM-140-2X	115.78
14 mm		.5512	35 mm	3	14 mm	83 mm	AEMM-140-3	97.68		
14 mm		.5512	35 mm	4	14 mm	83 mm	AEMM-140-4	97.68	AEMM-140-4X	115.78

*.0005" / .013 mm max TIR

Continued on next page



GEM / GEMM
SEM / AEMMEnd Mills – Square
2, 3, 4 Flute (cont.)

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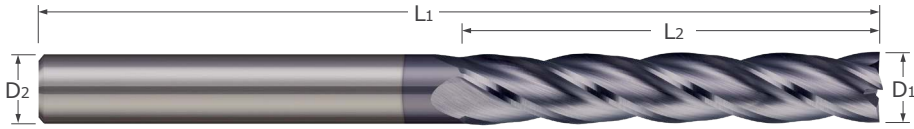
Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 + .0000" - .0030" (h9)	decimal equiv.	L2 + .78 mm - .00 mm					D2 (h6)	L1	Tool #	Price
.5625	.5625	1.250	2	.5625	3.5	GEM-562-2	141.08			
.5625	.5625	1.250	4	.5625	3.5	GEM-562-4	141.08			
.6250	.6250	1.250	4	.6250	3.5	GEM-625-4	162.18	GEM-625-4X	181.28	
16 mm	.6299	32 mm	4	16 mm	92 mm	GEMM-160-4	155.98			
16 mm	.6299	35 mm	3	16 mm	92 mm			AEMM-160-3X	175.08	
16 mm	.6299	35 mm	4	16 mm	92 mm	AEMM-160-4	155.98	AEMM-160-4X	175.08	
18 mm	.7087	26 mm	2	18 mm	92 mm	GEMM-180-2	209.48			
18 mm	.7087	26 mm	3	18 mm	92 mm			GEMM-180-3X	231.18	
18 mm	.7087	32 mm	4	18 mm	92 mm	GEMM-180-4	209.48			
18 mm	.7087	45 mm	3	18 mm	92 mm			AEMM-180-3X	231.18	
.7500	.7500	1.500	2	.7500	4.0	GEM-750-2	247.28			
.7500	.7500	1.500	4	.7500	4.0	GEM-750-4	247.28	GEM-750-4X	268.58	
20 mm	.7874	32 mm	3	20 mm	104 mm			GEMM-200-3X	298.28	
20 mm	.7874	38 mm	4	20 mm	104 mm	GEMM-200-4	266.28			
20 mm	.7874	45 mm	2	20 mm	104 mm			AEMM-200-2X	298.28	
20 mm	.7874	45 mm	3	20 mm	104 mm			AEMM-200-3X	298.28	
.8750	.8750	1.500	4	.8750	4.0	GEM-875-4	342.68			
25 mm	.9843	50 mm	2	25 mm	127 mm			AEMM-250-2X	351.48	
25 mm	.9843	50 mm	3	25 mm	127 mm	AEMM-250-3	316.68	AEMM-250-3X	351.48	
25 mm	.9843	50 mm	4	25 mm	127 mm			AEMM-250-4X	351.48	
1.0000	1.0000	1.500	4	1.0000	4.0	GEM-001-4	374.48			

*.0005" / .013 mm max TIR

End Mills – Square

2, 3, 4 Flute – Long Flute

GEL / GELM / AELM



End Mills

- Long flutes for deep pocket milling and long length peripheral milling
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- 30° helix ■ Center cutting ■ Square profile
- Solid carbide ■ CNC ground in the USA

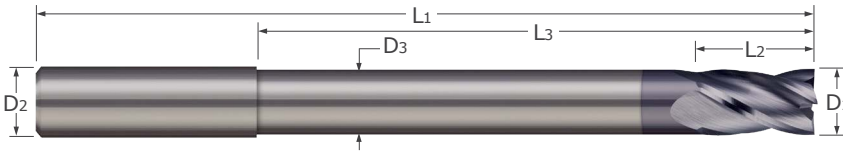
Cutter Diameter*	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
D1 +.0000" -.0020" (h9) decimal equiv.	L2 +.031" -.000" +.79 mm -.00 mm		D2 (h6)	L1				
3 mm .1181	15 mm	4	6 mm	75 mm	AELM-030-4	45.38		
4 mm .1575	20 mm	2	6 mm	75 mm			AELM-040-2X	53.18
4 mm .1575	25 mm	2	4 mm	75 mm			GELM-040-2X	39.88
6 mm .2362	25 mm	3	6 mm	75 mm	GELM-060-3	50.58		
6 mm .2362	25 mm	4	6 mm	75 mm	GELM-060-4	50.58		

Cutter Diameter*	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
D1 +.0000" -.0030" (h9) decimal equiv.	L2 +.031" -.000" +.79 mm -.00 mm		D2 (h6)	L1				
8 mm .3150	30 mm	3	8 mm	75 mm	GELM-080-3	60.88		
8 mm .3150	40 mm	2	8 mm	100 mm	AELM-080-2	79.68		
.3750	1.750	2	.3750	4.0	GEL-375-2	74.88		
10 mm .3937	38 mm	3	10 mm	100 mm			GELM-100-3X	90.08
12 mm .4724	55 mm	4	12 mm	130 mm	AELM-120-4	131.48		
14 mm .5512	60 mm	2	14 mm	140 mm			AELM-140-2X	222.18
16 mm .6299	65 mm	4	16 mm	150 mm			AELM-160-4X	238.58
18 mm .7087	75 mm	2	18 mm	150 mm			GELM-180-2X	310.68
20 mm .7874	75 mm	2	20 mm	150 mm			AELM-200-2X	421.58
25 mm .9843	75 mm	2	25 mm	150 mm			GELM-250-2X	505.38
25 mm .9843	75 mm	3	25 mm	150 mm	GELM-250-3	468.48		
25 mm .9843	75 mm	4	25 mm	150 mm			GELM-250-4X	505.38

*.0005" / .013 mm max TIR



GLR / GLRM

End Mills – Square
2 & 4 Flute – Reduced Neck

- Long reach design for deep cavities
- Reduced neck diameter to avoid heeling
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- 30° helix ■ Center cutting ■ Square profile
- Solid carbide ■ CNC ground in the USA

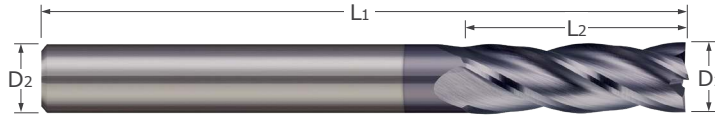
Cutter Diameter*	Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
							Tool #	Price	Tool #	Price
D ₁ +.0000" -.0020" (h9) decimal equiv.	L ₂ +.015" -.000" +.38 mm -.00 mm	L ₃ +.015" -.015" +.38 mm -.38 mm	D ₃		D ₂ (h6)	L ₁				
4 mm .1575	8 mm	30 mm	3.5 mm	2	6 mm	75 mm			GLRM-040-2X	62.98
D ₁ +.0000" -.0030" (h9) decimal equiv.	L ₂ +.015" -.000" +.38 mm -.00 mm	L ₃ +.015" -.015" +.38 mm -.38 mm	D ₃		D ₂ (h6)	L ₁				
10 mm .3937	18 mm	65 mm	9.5 mm	2	10 mm	120 mm	GLRM-100-2	88.58	GLRM-100-2X	104.18
16 mm .6299	30 mm	100 mm	15.5 mm	2	16 mm	150 mm			GLRM-160-2X	274.68

*.0005" / .013 mm max TIR

End Mills – Square

2, 3, 4, 6 Flute – NC Tolerance

EMS / EMSM



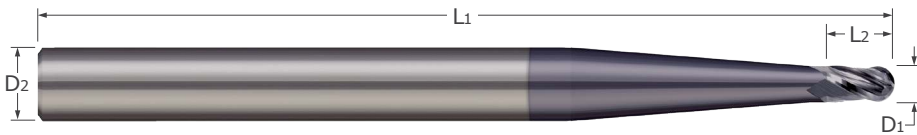
End Mills

- General purpose end mill with .001" plus tolerance on the cutting diameter
- Weldon flat featured on sizes 3/8" and larger
- 30° helix ■ Center cutting ■ Square profile
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 +.0010" -.0000"	D2		L2 +.030" -.000" +.78 mm -.00 mm	Flutes	D2 (h6)	L1	Tool #	Price	Tool #	Price
	+.03 mm -.00 mm	decimal equiv.								
.0312	.0312	.0312	.078	2	.1250	1.5	EMS-031-2	29.98		
.0312	.0312	.0312	.078	3	.1250	1.5	EMS-031-3	29.98	EMS-031-3X	33.88
.0312	.0312	.0312	.078	4	.1250	1.5	EMS-031-4	29.98	EMS-031-4X	33.88
.0625	.0625	.0625	.188	2	.1250	1.5	EMS-062-2	27.28	EMS-062-2X	31.18
.0625	.0625	.0625	.188	3	.1250	1.5	EMS-062-3	27.28	EMS-062-3X	31.18
.0625	.0625	.0625	.188	4	.1250	1.5	EMS-062-4	27.28	EMS-062-4X	31.18
.0938	.0938	.0938	.375	3	.1250	1.5	EMS-093-3	27.28	EMS-093-3X	31.18
.0938	.0938	.0938	.375	4	.1250	1.5	EMS-093-4	27.28	EMS-093-4X	31.18
3 mm	.1181	.1181	15 mm	2	3 mm	38 mm	EMSM-030-2	21.28		
3 mm	.1181	.1181	15 mm	4	3 mm	38 mm	EMSM-030-4	21.28		
.1250	.1250	.1250	.500	2	.1250	1.5	EMS-125-2	24.28	EMS-125-2X	28.28
.1250	.1250	.1250	.500	3	.1250	1.5	EMS-125-3	24.28	EMS-125-3X	28.28
.1250	.1250	.1250	.500	4	.1250	1.5	EMS-125-4	24.28	EMS-125-4X	28.28
.1562	.1562	.1562	.563	2	.1875	2.0	EMS-156-2	38.48		
.1562	.1562	.1562	.563	4	.1875	2.0	EMS-156-4	38.48	EMS-156-4X	42.88
4 mm	.1575	.1575	18 mm	2	4 mm	50 mm	EMSM-040-2	31.78	EMSM-040-2X	36.28
.1875	.1875	.1875	.625	2	.1875	2.0	EMS-187-2	38.48		
.1875	.1875	.1875	.625	4	.1875	2.0	EMS-187-4	38.48	EMS-187-4X	42.88
.2187	.2187	.2187	.625	3	.2500	2.5	EMS-218-3	48.18		
6 mm	.2362	.2362	18 mm	4	6 mm	57 mm	EMSM-060-4	40.08	EMSM-060-4X	47.88
.2500	.2500	.2500	.750	2	.2500	2.5	EMS-250-2	48.18		
.2500	.2500	.2500	.750	3	.2500	2.5	EMS-250-3	48.18	EMS-250-3X	55.88
.2500	.2500	.2500	.750	4	.2500	2.5	EMS-250-4	48.18	EMS-250-4X	55.88
.3125	.3125	.3125	.813	4	.3125	2.5	EMS-312-4	55.98	EMS-312-4X	66.78
8 mm	.3150	.3150	22 mm	3	8 mm	63 mm	EMSM-080-3	49.28		
.3750	.3750	.3750	.875	2	.3750	2.5	EMS-375-2	63.58	EMS-375-2X	74.28
.3750	.3750	.3750	.875	3	.3750	2.5	EMS-375-3	63.58		
.3750	.3750	.3750	.875	4	.3750	2.5	EMS-375-4	63.58	EMS-375-4X	74.28
10 mm	.3937	.3937	25 mm	3	10 mm	72 mm	EMSM-100-3	58.18		
12 mm	.4724	.4724	30 mm	3	12 mm	83 mm	EMSM-120-3	92.58		
.5000	.5000	.5000	1.000	2	.5000	3.0	EMS-500-2	109.98	EMS-500-2X	122.58
.5000	.5000	.5000	1.000	3	.5000	3.0	EMS-500-3	109.98	EMS-500-3X	122.58
.5000	.5000	.5000	1.000	4	.5000	3.0	EMS-500-4	109.98	EMS-500-4X	122.58
.6250	.6250	.6250	1.250	4	.6250	3.5	EMS-625-4	194.58		
16 mm	.6299	.6299	35 mm	3	16 mm	92 mm	EMSM-160-3	171.58		
.7500	.7500	.7500	1.500	2	.7500	4.0	EMS-750-2	296.68		
.7500	.7500	.7500	1.500	4	.7500	4.0	EMS-750-4	296.68		
20 mm	.7874	.7874	45 mm	4	20 mm	104 mm	EMSM-200-4	292.88		
1.0000	1.0000	1.0000	2.500	3	1.0000	5.0	EMS-001-3	449.18		
1.0000	1.0000	1.0000	2.500	6	1.0000	5.0	EMS-001-6	449.18		

*.0005" / .013 mm max TIR



**BMR / BMRM / BMS
BMSM / BEM / BEMM**
End Mills – Ball
 2, 3, 4 Flute – Stub & Standard


- Designed for general purpose machining
- 30° helix ■ Center cutting
- Ball profile
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 + .0005" - .0005"	+ .00 mm - .02 mm	decimal equiv.	L2	D2 (h6)	L1	Tool #	Price	Tool #	Price	
										.0100
.0100	.0100	.0100	.030	2	.1250	1.5	BMR-010-2	66.98	BMR-010-2X	70.48
.0110	.0110	.0110	.033	2	.1250	1.5	BMR-011-2	60.88	BMR-011-2X	64.48
	0.3 mm	.0118	0.5 mm	2	3 mm	38 mm	BMSM-003-2	48.38	BMSM-003-2X	52.08
.0120	.0120	.0120	.018	2	.1250	1.5			BMS-012-2X	61.58
.0120	.0120	.0120	.036	2	.1250	1.5	BMR-012-2	60.88	BMR-012-2X	64.48
.0130	.0130	.0130	.019	2	.1250	1.5	BMS-013-2	49.28	BMS-013-2X	53.08
.0130	.0130	.0130	.039	2	.1250	1.5			BMR-013-2X	55.48
.0140	.0140	.0140	.021	2	.1250	1.5	BMS-014-2	49.28	BMS-014-2X	53.08
.0140	.0140	.0140	.042	2	.1250	1.5	BMR-014-2	51.78		
.0150	.0150	.0150	.022	2	.1250	1.5	BMS-015-2	39.38	BMS-015-2X	43.08
.0150	.0150	.0150	.045	2	.1250	1.5	BMR-015-2	40.88	BMR-015-2X	44.58
	0.4 mm	.0157	0.6 mm	2	3 mm	38 mm	BMSM-004-2	35.68	BMSM-004-2X	39.58
.0160	.0160	.0160	.024	2	.1250	1.5	BMS-016-2	39.38	BMS-016-2X	43.08
.0160	.0160	.0160	.048	2	.1250	1.5	BMR-016-2	40.88	BMR-016-2X	44.58
.0180	.0180	.0180	.027	2	.1250	1.5	BMS-018-2	39.38	BMS-018-2X	43.08
.0180	.0180	.0180	.054	2	.1250	1.5	BMR-018-2	40.88		
.0190	.0190	.0190	.028	2	.1250	1.5	BMS-019-2	39.38	BMS-019-2X	43.08
.0190	.0190	.0190	.057	2	.1250	1.5	BMR-019-2	40.88		
	0.5 mm	.0197	0.8 mm	2	3 mm	38 mm	BMSM-005-2	32.98	BMSM-005-2X	36.88
	0.5 mm	.0197	1.5 mm	2	4 mm	50 mm	BMRM-005-2	36.08	BMRM-005-2X	40.58
.0200	.0200	.0200	.030	2	.1250	1.5	BMS-020-2	36.28	BMS-020-2X	40.18
.0200	.0200	.0200	.060	2	.1250	1.5	BMR-020-2	37.98	BMR-020-2X	41.78
.0210	.0210	.0210	.063	2	.1250	1.5	BMR-021-2	37.98		
.0220	.0220	.0220	.033	2	.1250	1.5			BMS-022-2X	40.18
.0220	.0220	.0220	.066	2	.1250	1.5	BMR-022-2	37.98	BMR-022-2X	41.78
.0230	.0230	.0230	.034	2	.1250	1.5	BMS-023-2	36.28	BMS-023-2X	40.18
.0230	.0230	.0230	.069	2	.1250	1.5	BMR-023-2	37.98	BMR-023-2X	41.78
	0.6 mm	.0236	0.9 mm	2	3 mm	38 mm	BMSM-006-2	32.98		
.0240	.0240	.0240	.072	2	.1250	1.5	BMR-024-2	37.98	BMR-024-2X	41.78
.0250	.0250	.0250	.037	2	.1250	1.5	BMS-025-2	36.28	BMS-025-2X	40.18
.0250	.0250	.0250	.075	2	.1250	1.5	BMR-025-2	37.98	BMR-025-2X	41.78
.0260	.0260	.0260	.039	2	.1250	1.5			BMS-026-2X	36.88
.0260	.0260	.0260	.078	2	.1250	1.5	BMR-026-2	34.58	BMR-026-2X	38.48
.0270	.0270	.0270	.081	2	.1250	1.5	BMR-027-2	34.58	BMR-027-2X	38.48
	0.7 mm	.0276	1.1 mm	2	3 mm	38 mm	BMSM-007-2	31.38		
	0.7 mm	.0276	2.1 mm	2	4 mm	50 mm	BMRM-007-2	36.08		

*.0005" / .013 mm max TIR

Continued on next page



End Mills – Ball 2, 3, 4 Flute – Stub & Standard (cont.)

BMR / BMRM / BMS
BMSM / BEM / BEMM

Continued from previous page

End Mills

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 +.0005" -.0005"	+.00 mm -.02 mm	decimal equiv.	L2	D2 (h6)	L1	Tool #	Price	Tool #	Price	
										.0280
.0280	.0280	.0280	.084	2	.1250	1.5	BMR-028-2	34.58	BMR-028-2X	38.48
.0300	.0300	.0300	.045	2	.1250	1.5	BMS-030-2	32.98	BMS-030-2X	36.88
.0300	.0300	.0300	.090	2	.1250	1.5	BMR-030-2	34.58	BMR-030-2X	38.48
.0310	.0310	.0310	.047	2	.1250	1.5	BMS-031-2	32.98	BMS-031-2X	36.88
.0310	.0310	.0310	.093	2	.1250	1.5	BMR-031-2	34.58	BMR-031-2X	38.48

D1			L2	D2 (h6)	L1	Tool #	Price	Tool #	Price	
+.0000" -.0020"	+.00 mm -.02 mm	decimal equiv.	L2	D2 (h6)	L1	Tool #	Price	Tool #	Price	
										.0313
.0313	.0313	.0313	.078	3	.1250	1.5	BEM-031-03	28.78	BEM-031-03X	32.68
.0313	.0313	.0313	.078	4	.1250	1.5	BEM-031-04	28.78	BEM-031-04X	32.68
0.8 mm	.0315	.0315	1.2 mm	2	3 mm	38 mm	BMSM-008-2	31.38	BMSM-008-2X	35.38
.0320	.0320	.0320	.048	2	.1250	1.5	BMS-032-2	32.98	BMS-032-2X	36.88
.0320	.0320	.0320	.096	2	.1250	1.5	BMR-032-2	34.58	BMR-032-2X	38.48
.0330	.0330	.0330	.050	2	.1250	1.5			BMS-033-2X	36.88
.0340	.0340	.0340	.051	2	.1250	1.5	BMS-034-2	32.98		
.0350	.0350	.0350	.053	2	.1250	1.5	BMS-035-2	32.98	BMS-035-2X	36.88
.0350	.0350	.0350	.105	2	.1250	1.5	BMR-035-2	34.58	BMR-035-2X	38.48
0.9 mm	.0354	.0354	1.4 mm	2	3 mm	38 mm	BMSM-009-2	31.38	BMSM-009-2X	35.38
0.9 mm	.0354	.0354	2.7 mm	2	4 mm	50 mm	BMRM-009-2	36.08	BMRM-009-2X	40.58
1 mm	.0394	.0394	1.5 mm	2	3 mm	38 mm	BMSM-010-2	30.68	BMSM-010-2X	34.58
1 mm	.0394	.0394	1.5 mm	4	3 mm	38 mm	BMSM-010-4	30.68	BMSM-010-4X	34.58
1 mm	.0394	.0394	3 mm	2	4 mm	50 mm	BMRM-010-2	33.28	BMRM-010-2X	37.68
1 mm	.0394	.0394	3 mm	4	4 mm	50 mm			BMRM-010-4X	37.68
.0400	.0400	.0400	.060	2	.1250	1.5	BMS-040-2	32.98	BMS-040-2X	36.88
.0400	.0400	.0400	.120	2	.1250	1.5	BMR-040-2	34.58	BMR-040-2X	38.48
1.1 mm	.0433	.0433	3.3 mm	2	4 mm	50 mm			BMRM-011-2X	37.68
1.1 mm	.0433	.0433	3.3 mm	4	4 mm	50 mm	BMRM-011-4	33.28	BMRM-011-4X	37.68
.0450	.0450	.0450	.135	2	.1250	1.5	BMR-045-2	34.58	BMR-045-2X	38.48
.0468	.0468	.0468	.109	2	.1250	1.5	BEM-046-02	28.78	BEM-046-02X	32.68
.0468	.0468	.0468	.109	3	.1250	1.5	BEM-046-03	28.78	BEM-046-03X	32.68
.0468	.0468	.0468	.109	4	.1250	1.5	BEM-046-04	28.78	BEM-046-04X	32.68
.0500	.0500	.0500	.075	2	.1250	1.5	BMS-050-2	32.98	BMS-050-2X	36.88
.0500	.0500	.0500	.150	2	.1250	1.5	BMR-050-2	34.58	BMR-050-2X	38.48
1.4 mm	.0551	.0551	2.1 mm	2	3 mm	38 mm	BMSM-014-2	30.68	BMSM-014-2X	34.58
1.5 mm	.0591	.0591	2.3 mm	2	3 mm	38 mm	BMSM-015-2	30.68	BMSM-015-2X	34.58
1.5 mm	.0591	.0591	4.2 mm	2	4 mm	50 mm	BMRM-015-2	33.28	BMRM-015-2X	37.68
1.5 mm	.0591	.0591	4.2 mm	4	4 mm	50 mm	BMRM-015-4	33.28	BMRM-015-4X	37.68
.0625	.0625	.0625	.188	2	.1250	1.5	BEM-062-02	25.88	BEM-062-02X	29.98
.0625	.0625	.0625	.188	3	.1250	1.5	BEM-062-03	25.88	BEM-062-03X	29.98
.0625	.0625	.0625	.188	4	.1250	1.5	BEM-062-04	25.88	BEM-062-04X	29.98
1.6 mm	.0630	.0630	2.4 mm	2	3 mm	38 mm	BMSM-016-2	28.28	BMSM-016-2X	32.08
1.6 mm	.0630	.0630	4.8 mm	2	4 mm	50 mm	BMRM-016-2	33.28	BMRM-016-2X	37.68
1.7 mm	.0669	.0669	2.5 mm	4	3 mm	38 mm			BMSM-017-4X	32.08
1.8 mm	.0709	.0709	2.7 mm	2	3 mm	38 mm	BMSM-018-2	28.28	BMSM-018-2X	32.08
1.8 mm	.0709	.0709	5.3 mm	2	4 mm	50 mm			BMRM-018-2X	37.68

*.0005" / .013 mm max TIR

Continued on next page



**BMR / BMRM / BMS
BMSM / BEM / BEMM**

End Mills – Ball
2, 3, 4 Flute – Stub & Standard (cont.)

Continued from previous page

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AITIN Coated	
D1			L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" - .0020"	+ .00 mm - .02 mm	decimal equiv.								
	1.9 mm	.0748	2.8 mm	2	3 mm	38 mm			BMSM-019-2X	32.08
	1.9 mm	.0748	2.8 mm	4	3 mm	38 mm	BMSM-019-4	28.28	BMSM-019-4X	32.08
.0781		.0781	.188	2	.1250	1.5	BEM-078-02	25.88	BEM-078-02X	29.98
.0781		.0781	.188	3	.1250	1.5	BEM-078-03	25.88	BEM-078-03X	29.98
.0781		.0781	.188	4	.1250	1.5	BEM-078-04	25.88	BEM-078-04X	29.98
	2 mm	.0787	3 mm	2	3 mm	38 mm	BMSM-020-2	28.28	BMSM-020-2X	32.08
	2 mm	.0787	6 mm	2	4 mm	50 mm	BMRM-020-2	33.28	BMRM-020-2X	37.68
	2 mm	.0787	6 mm	4	4 mm	50 mm			BMRM-020-4X	37.68
.0937		.0937	.375	2	.1250	1.5	BEM-093-02	25.88	BEM-093-02X	29.98
.0937		.0937	.375	3	.1250	1.5	BEM-093-03	25.88	BEM-093-03X	29.98
.0937		.0937	.375	4	.1250	1.5	BEM-093-04	25.88	BEM-093-04X	29.98
	2.5 mm	.0984	3.8 mm	2	3 mm	38 mm	BMSM-025-2	28.28	BMSM-025-2X	32.08
.1093		.1093	.375	2	.1250	1.5	BEM-109-02	25.88		
	3 mm	.1181	15 mm	2	3 mm	38 mm	BEMM-030-2	21.28		
	3 mm	.1181	15 mm	3	3 mm	38 mm	BEMM-030-3	21.28	BEMM-030-3X	25.28
	3 mm	.1181	15 mm	4	3 mm	38 mm	BEMM-030-4	21.28	BEMM-030-4X	25.28
	3 mm	.1181	9 mm	2	4 mm	50 mm	BMRM-030-2	33.28	BMRM-030-2X	37.68
	3 mm	.1181	9 mm	4	4 mm	50 mm			BMRM-030-4X	37.68
.1250		.1250	.500	2	.1250	1.5	BEM-125-02	23.18	BEM-125-02X	27.18
.1250		.1250	.500	3	.1250	1.5	BEM-125-03	23.18	BEM-125-03X	27.18
.1250		.1250	.500	4	.1250	1.5	BEM-125-04	23.18	BEM-125-04X	27.18
	3.5 mm	.1378	10.5 mm	2	4 mm	50 mm			BMRM-035-2X	37.68
.1562		.1562	.563	2	.1875	2.0	BEM-156-02	36.78	BEM-156-02X	41.38
.1562		.1562	.563	3	.1875	2.0	BEM-156-03	36.78	BEM-156-03X	41.38
.1562		.1562	.563	4	.1875	2.0	BEM-156-04	36.78	BEM-156-04X	41.38
	4 mm	.1575	18 mm	2	4 mm	50 mm	BEMM-040-2	31.78	BEMM-040-2X	36.28
	4 mm	.1575	18 mm	3	4 mm	50 mm	BEMM-040-3	31.78	BEMM-040-3X	36.28
	4 mm	.1575	18 mm	4	4 mm	50 mm	BEMM-040-4	31.78	BEMM-040-4X	36.28
.1719		.1719	.625	2	.1875	2.0			BEM-171-02X	41.38
.1875		.1875	.625	2	.1875	2.0	BEM-187-02	36.78	BEM-187-02X	41.38
.1875		.1875	.625	3	.1875	2.0	BEM-187-03	36.78	BEM-187-03X	41.38
.1875		.1875	.625	4	.1875	2.0	BEM-187-04	36.78	BEM-187-04X	41.38
.2031		.2031	.625	3	.2500	2.5			BEM-203-03X	53.88
.2187		.2187	.625	2	.2500	2.5	BEM-218-02	46.18	BEM-218-02X	53.88
.2187		.2187	.625	4	.2500	2.5	BEM-218-04	46.18	BEM-218-04X	53.88
.2343		.2343	.750	3	.2500	2.5	BEM-234-03	46.18		
	6 mm	.2362	18 mm	4	6 mm	57 mm	BEMM-060-4	40.08	BEMM-060-4X	47.88
.2500		.2500	.750	2	.2500	2.5	BEM-250-02	46.18	BEM-250-02X	53.88
.2500		.2500	.750	3	.2500	2.5	BEM-250-03	46.18	BEM-250-03X	53.88
.2500		.2500	.750	4	.2500	2.5	BEM-250-04	46.18	BEM-250-04X	53.88
.2812		.2812	.750	4	.3125	2.5	BEM-281-04	53.68	BEM-281-04X	64.58
.3125		.3125	.813	2	.3125	2.5	BEM-312-02	53.68	BEM-312-02X	64.58
.3125		.3125	.813	4	.3125	2.5	BEM-312-04	53.68	BEM-312-04X	64.58
	8 mm	.3150	22 mm	2	8 mm	63 mm	BEMM-080-2	49.28	BEMM-080-2X	60.08
.3750		.3750	.875	2	.3750	2.5	BEM-375-02	60.98	BEM-375-02X	71.68
.3750		.3750	.875	3	.3750	2.5	BEM-375-03	60.98	BEM-375-03X	71.68
.3750		.3750	.875	4	.3750	2.5	BEM-375-04	60.98	BEM-375-04X	71.68

*.0005" / .013 mm max TIR

Continued on next page



End Mills – Ball 2, 3, 4 Flute – Stub & Standard (cont.)

BMR / BMRM / BMS
BMSM / BEM / BEMM

Continued from previous page

End Mills

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" - .0020"	+ .00 mm - .02 mm	decimal equiv.								
	10 mm	.3937	25 mm	2	10 mm	72 mm	BEMM-100-2	58.18	BEMM-100-2X	68.78
	10 mm	.3937	25 mm	3	10 mm	72 mm	BEMM-100-3	58.18	BEMM-100-3X	68.78
	10 mm	.3937	25 mm	4	10 mm	72 mm	BEMM-100-4	58.18	BEMM-100-4X	68.78
.4370		.4370	1.000	2	.4375	2.5			BEM-437-02X	109.88
	12 mm	.4724	30 mm	3	12 mm	83 mm			BEMM-120-3X	108.78
	12 mm	.4724	30 mm	4	12 mm	83 mm	BEMM-120-4	92.58	BEMM-120-4X	108.78
.5000		.5000	1.000	3	.5000	3.0	BEM-500-03	105.48	BEM-500-03X	118.08
.5000		.5000	1.000	4	.5000	3.0	BEM-500-04	105.48	BEM-500-04X	118.08
.6250		.6250	1.250	4	.6250	3.5	BEM-625-04	186.58	BEM-625-04X	205.28
	16 mm	.6299	35 mm	3	16 mm	92 mm			BEMM-160-3X	190.58
.6875		.6875	1.375	2	.7500	4.0	BEM-687-02	229.48		
.6875		.6875	1.375	3	.7500	4.0	BEM-687-03	229.48		
.6875		.6875	1.375	4	.7500	4.0	BEM-687-04	229.48		
	18 mm	.7087	45 mm	2	18 mm	92 mm			BEMM-180-2X	251.98
	20 mm	.7874	45 mm	4	20 mm	104 mm	BEMM-200-4	292.88		
.8750		.8750	1.500	2	.8750	4.0	BEM-875-02	393.98		

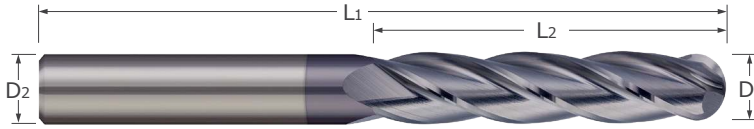
*.0005" / .013 mm max TIR



BEL / BELM

End Mills – Ball

2, 3, 4 Flute – Long Flute



- Long reach for deep pocket milling and long length peripheral milling
- 30° helix ■ Center cutting
- Ball profile
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

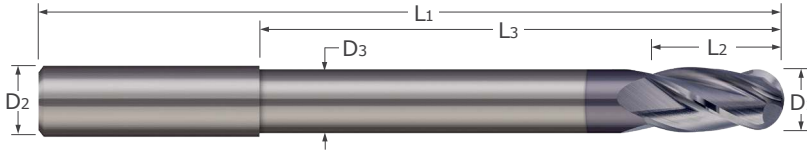
Cutter Diameter*	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
D1 (h9)	L2 $\begin{matrix} +.79 \text{ mm} \\ -.00 \text{ mm} \end{matrix}$		D2 (h6)	L1				
10 mm	38 mm	4	10 mm	100 mm	BELM-100-4	84.68		
14 mm	75 mm	4	14 mm	150 mm	BELM-140-4	184.08		
18 mm	75 mm	4	18 mm	150 mm	BELM-180-4	309.88		
25 mm	75 mm	2	25 mm	150 mm			BELM-250-2X	533.48
25 mm	75 mm	4	25 mm	150 mm	BELM-250-4	491.88	BELM-250-4X	533.48

*.013 mm max TIR

End Mills – Ball

2, 3, 4 Flute – Reduced Neck

BLR / BLRM
SFBM / MMBM



End Mills

- Long reach for deep pocket milling
- SFBM and MMBM manufactured to improved cutter diameter tolerance (h8) for mold making
- 30° helix ■ Center cutting
- Ball profile
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

Cutter Diameter*	Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
							Tool #	Price	Tool #	Price
D1 +.0000" -.0020" (h6) decimal equiv.	L2 +.015" -.000" +.38 mm -.00 mm	L3 +.015" -.015" +.38 mm -.38 mm	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
0.2 mm .0078	0.3 mm	0.3 mm	-	2	6 mm	57 mm	SFBM-002-0	102.58	SFBM-002-0X	109.88
0.3 mm .0118	0.3 mm	3.0 mm	0.28 mm	2	4 mm	50 mm	MMBM-003-3	78.18	MMBM-003-3X	82.28
0.3 mm .0118	0.4 mm	0.4 mm	0.4 mm	2	6 mm	57 mm			SFBM-003-0X	98.78
0.3 mm .0118	0.4 mm	1.0 mm	0.25 mm	2	6 mm	57 mm	SFBM-003-1	90.68		
0.4 mm .0157	0.4 mm	3.0 mm	0.38 mm	2	4 mm	50 mm	MMBM-004-3	67.28	MMBM-004-3X	71.38
0.4 mm .0157	0.4 mm	8.0 mm	0.38 mm	2	4 mm	50 mm	MMBM-004-8	67.28	MMBM-004-8X	71.38
0.4 mm .0157	0.5 mm	1.2 mm	0.35 mm	2	6 mm	57 mm			SFBM-004-1X	96.38
0.5 mm .0197	0.5 mm	5.0 mm	0.48 mm	2	4 mm	50 mm	MMBM-005-5	59.28	MMBM-005-5X	63.48
0.5 mm .0197	0.5 mm	10.0 mm	0.48 mm	2	4 mm	50 mm	MMBM-005-10	59.28	MMBM-005-10X	63.48
0.5 mm .0197	0.6 mm	1.6 mm	0.45 mm	2	6 mm	57 mm			SFBM-005-1X	92.28
0.6 mm .0236	0.6 mm	12.0 mm	0.58 mm	2	4 mm	50 mm			MMBM-006-12X	63.48
0.6 mm .0236	0.6 mm	5.0 mm	0.58 mm	2	4 mm	50 mm	MMBM-006-5	59.28	MMBM-006-5X	63.48
0.7 mm .0276	0.7 mm	5.0 mm	0.68 mm	2	4 mm	50 mm	MMBM-007-5	59.28		
0.8 mm .0315	0.8 mm	5.0 mm	0.78 mm	2	4 mm	50 mm			MMBM-008-5X	55.18
0.8 mm .0315	0.8 mm	5.2 mm	0.75 mm	2	6 mm	57 mm			SFBM-008-5X	87.88
0.8 mm .0315	0.8 mm	8.0 mm	0.75 mm	2	6 mm	57 mm			SFBM-008-8X	95.08
0.8 mm .0315	0.8 mm	10.0 mm	0.78 mm	2	4 mm	50 mm	MMBM-008-10	50.98		
1.0 mm .0394	1.3 mm	3.3 mm	0.95 mm	2	6 mm	57 mm			SFBM-010-3X	83.48
1.0 mm .0394	1.0 mm	6.0 mm	0.95 mm	2	6 mm	57 mm	MMBM-010-6	55.88	MMBM-010-6X	63.38
1.0 mm .0394	1.0 mm	11.0 mm	0.95 mm	2	6 mm	57 mm	MMBM-010-11	55.88	MMBM-010-11X	63.38
1.0 mm .0394	1.0 mm	12.0 mm	0.95 mm	2	6 mm	57 mm			MMBM-010-12X	63.38
1.0 mm .0394	1.0 mm	15.0 mm	0.95 mm	2	6 mm	57 mm			MMBM-010-15X	63.38
1.0 mm .0394	1.0 mm	20.0 mm	0.95 mm	2	6 mm	57 mm	MMBM-010-20	55.88	MMBM-010-20X	63.38
1.2 mm .0472	1.2 mm	7.0 mm	1.15 mm	2	6 mm	57 mm			MMBM-012-7X	63.38
1.2 mm .0472	1.2 mm	15.0 mm	1.15 mm	2	6 mm	57 mm	MMBM-012-15	55.88	MMBM-012-15X	63.38
1.2 mm .0472	1.2 mm	20.0 mm	1.15 mm	2	6 mm	57 mm	MMBM-012-20	55.88		
1.5 mm .0591	1.5 mm	7.0 mm	1.45 mm	2	6 mm	57 mm	MMBM-015-7	55.88	MMBM-015-7X	63.38
1.5 mm .0591	1.5 mm	9.5 mm	1.45 mm	2	6 mm	57 mm	SFBM-015-9	72.48	SFBM-015-9X	79.88
1.5 mm .0591	1.5 mm	15.0 mm	1.45 mm	2	6 mm	57 mm	MMBM-015-15	55.88	MMBM-015-15X	63.38
1.5 mm .0591	1.5 mm	20.0 mm	1.45 mm	2	6 mm	57 mm			MMBM-015-20X	63.38

*.0005" / .013 mm max TIR. SFBM and MMBM tools held to h8 tolerance

Continued on next page



BLR / BLRM
SFBM / MMBMEnd Mills – Ball
2, 3, 4 Flute – Reduced Neck (cont.)

Continued from previous page

Cutter Diameter*		Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		AITIN Coated	
D1 +.0000" -.0020"	(h6) decimal equiv.	L2 +.015" -.000" +.38 mm -.00 mm	L3 +.015" -.015" +.38 mm -.38 mm	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
2.0 mm	.0787	2.0 mm	7.0 mm	1.9 mm	2	6 mm	57 mm	MMBM-020-7	55.88	MMBM-020-7X	63.38
2.0 mm	.0787	2.0 mm	15.0 mm	1.9 mm	2	6 mm	57 mm	MMBM-020-15	55.88	MMBM-020-15X	63.38
2.0 mm	.0787	2.0 mm	20.0 mm	1.9 mm	2	6 mm	57 mm	MMBM-020-20	55.88	MMBM-020-20X	63.38
2.0 mm	.0787	2.5 mm	9.5 mm	1.95 mm	2	6 mm	57 mm	SFBM-020-9	69.58	SFBM-020-9X	77.08
2.0 mm	.0787	5.0 mm	15.0 mm	1.5 mm	4	6 mm	57 mm			BLRM-020-4X	55.08
3.0 mm	.1181	3.0 mm	12.0 mm	2.9 mm	2	6 mm	57 mm			MMBM-030-12X	63.38
3.0 mm	.1181	3.0 mm	15.0 mm	2.9 mm	2	6 mm	57 mm	MMBM-030-15	55.88	MMBM-030-15X	63.38
3.0 mm	.1181	4.0 mm	8.0 mm	2.9 mm	2	6 mm	57 mm	SFBM-030-8	62.28	SFBM-030-8X	69.88
3.0 mm	.1181	4.0 mm	15.0 mm	2.9 mm	2	6 mm	57 mm	SFBM-030-15	66.68	SFBM-030-15X	74.28
3.0 mm	.1181	8.0 mm	30.0 mm	2.5 mm	2	6 mm	75 mm	BLRM-030-2	50.08	BLRM-030-2X	57.78
3.0 mm	.1181	8.0 mm	30.0 mm	2.5 mm	4	6 mm	75 mm	BLRM-030-4	50.08		
4.0 mm	.1575	4.0 mm	15.0 mm	3.8 mm	2	6 mm	57 mm	MMBM-040-15	55.88	MMBM-040-15X	63.38
4.0 mm	.1575	5.0 mm	10.0 mm	3.9 mm	2	6 mm	57 mm			SFBM-040-10X	69.88
4.0 mm	.1575	8.0 mm	30.0 mm	3.5 mm	2	6 mm	75 mm	BLRM-040-2	50.08	BLRM-040-2X	57.78
4.0 mm	.1575	8.0 mm	30.0 mm	3.5 mm	4	6 mm	75 mm	BLRM-040-4	50.08	BLRM-040-4X	57.78

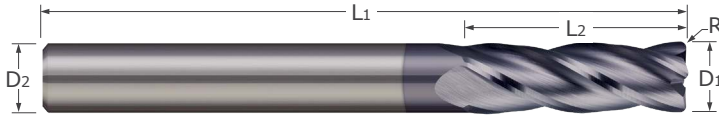
D1 +.0000" -.0030"	(h6) decimal equiv.	L2 +.015" -.000" +.38 mm -.00 mm	L3 +.030" -.030" +.38 mm -.38 mm	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
.1875	.1875	.375	2.00	.1675	2	.1875	3.0			BLR-187-2X	65.18
.1875	.1875	.375	2.00	.1675	4	.1875	3.0			BLR-187-4X	65.18
5 mm	.1969	6.0 mm	11.0 mm	4.9 mm	2	6 mm	57 mm			SFBM-050-11X	66.68
6 mm	.2362	7.5 mm	12.2 mm	5.9 mm	2	6 mm	57 mm	SFBM-060-12	58.28	SFBM-060-12X	65.88
6 mm	.2362	12.0 mm	50.0 mm	5.5 mm	4	6 mm	100 mm			BLRM-060-4X	71.78
6 mm	.2362	12.0 mm	50.0 mm	5.5 mm	3	6 mm	100 mm			BLRM-060-3X	71.78
.2500	.2500	.500	2.50	.2300	2	.2500	4.0	BLR-250-2	71.38	BLR-250-2X	78.78
.2500	.2500	.500	2.50	.2300	4	.2500	4.0	BLR-250-4	71.38	BLR-250-4X	78.78
8 mm	.3150	14.0 mm	50.0 mm	7.5 mm	2	8 mm	100 mm	BLRM-080-2	87.78	BLRM-080-2X	96.48
8 mm	.3150	14.0 mm	50.0 mm	7.5 mm	4	8 mm	100 mm			BLRM-080-4X	96.48
.3750	.3750	.750	2.75	.3550	4	.3750	4.0	BLR-375-4	94.58	BLR-375-4X	107.78
10 mm	.3937	18.0 mm	65.0 mm	9.5 mm	4	10 mm	120 mm	BLRM-100-4	98.58	BLRM-100-4X	113.88
.4375	.4375	1.000	4.50	.4175	2	.4375	6.0	BLR-437-2	142.78		
12 mm	.4724	22.0 mm	80.0 mm	11.5 mm	2	12 mm	130 mm	BLRM-120-2	137.98		
12 mm	.4724	22.0 mm	80.0 mm	11.5 mm	3	12 mm	130 mm			BLRM-120-3X	156.68
12 mm	.4724	22.0 mm	80.0 mm	11.5 mm	4	12 mm	130 mm			BLRM-120-4X	156.68
.5000	.5000	1.000	4.50	.4800	2	.5000	6.0	BLR-500-2	163.18	BLR-500-2X	184.88
.5000	.5000	1.000	4.50	.4800	4	.5000	6.0	BLR-500-4	163.18		
.6250	.6250	1.250	4.50	.6050	2	.6250	6.0	BLR-625-2	289.08		
16 mm	.6299	30.0 mm	100.0 mm	15.5 mm	4	16 mm	150 mm	BLRM-160-4	243.68		
20 mm	.7874	38.0 mm	100.0 mm	19.5 mm	3	20 mm	150 mm	BLRM-200-3	398.58	BLRM-200-3X	433.38
20 mm	.7874	38.0 mm	100.0 mm	19.5 mm	2	20 mm	150 mm			BLRM-200-2X	433.38

*.0005" / .013 mm max TIR. SFBM and MMBM tools held to h8 tolerance

End Mills – Corner Radius

2, 3, 4 Flute

AECM / GEC



End Mills

- Designed for general purpose machining
- 30° helix ■ Center cutting
- Corner radius profile
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

Cutter Diameter*		Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1	decimal equiv.	L2	R		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" - .0020"	(h9)	+ .031" - .000"	+ .0000" - .0005"							
		+ .79 mm - .00 mm	+ .000 mm - .013 mm							
.0312	.0312	.078	.005	2	.1250	1.5	GEC-031-2-005	28.78		
.0312	.0312	.078	.005	3	.1250	1.5	GEC-031-3-005	28.78	GEC-031-3-005X	32.68
.0312	.0312	.078	.005	4	.1250	1.5			GEC-031-4-005X	32.68
1 mm	.0394	4 mm	0.1 mm	4	4 mm	50 mm			AECM-0101-4X	36.18
1 mm	.0394	4 mm	0.2 mm	4	4 mm	50 mm			AECM-0102-4X	36.18
.0625	.0625	.188	.005	2	.1250	1.5	GEC-062-2-005	25.88		
.0625	.0625	.188	.005	3	.1250	1.5			GEC-062-3-005X	29.98
.0625	.0625	.188	.005	4	.1250	1.5	GEC-062-4-005	25.88	GEC-062-4-005X	29.98
.0625	.0625	.188	.010	3	.1250	1.5	GEC-062-3-010	25.88	GEC-062-3-010X	29.98
.0625	.0625	.188	.010	4	.1250	1.5	GEC-062-4-010	25.88	GEC-062-4-010X	29.98
2 mm	.0787	5 mm	0.2 mm	4	4 mm	50 mm			AECM-0202-4X	36.18
2 mm	.0787	5 mm	0.5 mm	4	4 mm	50 mm			AECM-0205-4X	36.18
.0938	.0938	.375	.005	4	.1250	1.5			GEC-093-4-005X	29.98
.0938	.0938	.375	.010	2	.1250	1.5	GEC-093-2-010	25.88		
.0938	.0938	.375	.010	3	.1250	1.5	GEC-093-3-010	25.88	GEC-093-3-010X	29.98
.0938	.0938	.375	.010	4	.1250	1.5			GEC-093-4-010X	29.98
3 mm	.1181	8 mm	0.5 mm	4	6 mm	57 mm			AECM-0305-4X	47.78
.1250	.1250	.500	.010	3	.1250	1.5	GEC-125-3-010	25.88	GEC-125-3-010X	29.98
.1250	.1250	.500	.010	4	.1250	1.5	GEC-125-4-010	25.88	GEC-125-4-010X	29.98
.1250	.1250	.500	.020	2	.1250	1.5			GEC-125-2-020X	29.98
.1250	.1250	.500	.020	3	.1250	1.5	GEC-125-3-020	25.88	GEC-125-3-020X	29.98
.1250	.1250	.500	.020	4	.1250	1.5	GEC-125-4-020	25.88	GEC-125-4-020X	29.98
4 mm	.1575	11 mm	0.2 mm	4	6 mm	57 mm			AECM-0402-4X	47.78
4 mm	.1575	11 mm	0.5 mm	4	6 mm	57 mm			AECM-0405-4X	47.78
.1875	.1875	.625	.010	4	.1875	2.0			GEC-187-4-010X	41.38
.1875	.1875	.625	.020	3	.1875	2.0	GEC-187-3-020	36.78		
.1875	.1875	.625	.030	2	.1875	2.0	GEC-187-2-030	36.78		
.1875	.1875	.625	.030	3	.1875	2.0	GEC-187-3-030	36.78	GEC-187-3-030X	41.38
.1875	.1875	.625	.030	4	.1875	2.0			GEC-187-4-030X	41.38
6 mm	.2362	16 mm	0.3 mm	4	6 mm	57 mm	AECM-0603-4	40.08	AECM-0603-4X	47.78
6 mm	.2362	16 mm	0.5 mm	4	6 mm	57 mm	AECM-0605-4	40.08	AECM-0605-4X	47.78
6 mm	.2362	16 mm	1.0 mm	4	6 mm	57 mm			AECM-0610-4X	47.78

*.0005" / .013 mm max TIR

Continued on next page



AECM / GEC

End Mills – Corner Radius

2, 3, 4 Flute (cont.)

Continued from previous page

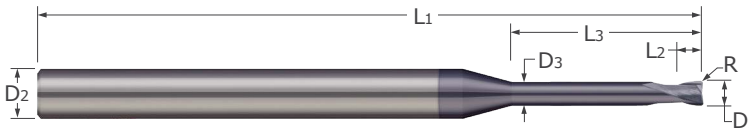
Cutter Diameter*		Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 +.0000" -.0020" (h9) decimal equiv.		L2 +.031" -.000" +.79 mm -.00 mm	R +.0000" -.0005" +.000 mm -.013 mm		D2 (h6)	L1	Tool #	Price	Tool #	Price
.2500	.2500	.750	.010	4	.2500	2.5	GEC-250-4-010	46.18	GEC-250-4-010X	53.88
.2500	.2500	.750	.020	2	.2500	2.5	GEC-250-2-020	46.18		
.2500	.2500	.750	.020	3	.2500	2.5			GEC-250-3-020X	53.88
.2500	.2500	.750	.020	4	.2500	2.5			GEC-250-4-020X	53.88
.2500	.2500	.750	.030	3	.2500	2.5	GEC-250-3-030	46.18	GEC-250-3-030X	53.88
.2500	.2500	.750	.030	4	.2500	2.5	GEC-250-4-030	46.18	GEC-250-4-030X	53.88

D1 +.0000" -.0030" (h9) decimal equiv.		L2 +.031" -.000" +.79 mm -.00 mm	R +.0000" -.0005" +.000 mm -.013 mm		D2 (h6)	L1	Tool #	Price	Tool #	Price
.3125	.3125	.813	.010	2	.3125	2.5	GEC-312-2-010	53.68	GEC-312-2-010X	64.58
.3125	.3125	.813	.010	4	.3125	2.5	GEC-312-4-010	53.68	GEC-312-4-010X	64.58
.3125	.3125	.813	.020	2	.3125	2.5	GEC-312-2-020	53.68		
8 mm	.3150	22 mm	1.0 mm	2	8 mm	63 mm	AECM-0810-2	49.28		
.3750	.3750	.875	.010	2	.3750	2.5	GEC-375-2-010	60.98		
.3750	.3750	.875	.010	4	.3750	2.5	GEC-375-4-010	60.98	GEC-375-4-010X	71.68
.3750	.3750	.875	.030	3	.3750	2.5	GEC-375-3-030	60.98	GEC-375-3-030X	71.68
.3750	.3750	.875	.030	4	.3750	2.5			GEC-375-4-030X	71.68
10 mm	.3937	25 mm	0.5 mm	4	10 mm	72 mm	AECM-1005-4	58.18		
10 mm	.3937	25 mm	1.5 mm	4	10 mm	72 mm	AECM-1015-4	58.18		
12 mm	.4724	30 mm	0.5 mm	4	12 mm	83 mm	AECM-1205-4	92.68		
12 mm	.4724	30 mm	1.5 mm	2	12 mm	83 mm			AECM-1215-2X	109.88
12 mm	.4724	30 mm	1.5 mm	3	12 mm	83 mm			AECM-1215-3X	109.88
12 mm	.4724	30 mm	1.5 mm	4	12 mm	83 mm	AECM-1215-4	92.68	AECM-1215-4X	108.98
.5000	.5000	1.000	.010	4	.5000	3.0	GEC-500-4-010	105.48	GEC-500-4-010X	118.08
.5000	.5000	1.000	.030	3	.5000	3.0	GEC-500-3-030	105.48		
.6250	.6250	1.250	.020	2	.6250	3.5	GEC-625-2-020	186.58		
.6250	.6250	1.250	.030	3	.6250	3.5	GEC-625-3-030	186.58		
.6250	.6250	1.250	.030	2	.6250	3.5	GEC-625-2-060	186.58		
.6250	.6250	1.250	.090	2	.6250	3.5	GEC-625-2-090	186.58		
.6250	.6250	1.250	.090	3	.6250	3.5	GEC-625-3-090	186.58		
.7500	.7500	1.500	.020	2	.7500	4.0	GEC-750-2-020	284.28		
1.0000	1.0000	1.500	.020	2	1.0000	4.0	GEC-001-2-020	430.68		
1.0000	1.0000	1.500	.030	2	1.0000	4.0	GEC-001-2-030	430.68		
1.0000	1.0000	1.500	.060	2	1.0000	4.0	GEC-001-2-060	430.68		
1.0000	1.0000	1.500	.060	2	1.0000	4.0	GEC-001-2-090	430.68		

*.0005" / .013 mm max TIR

End Mills – Corner Radius

2 Flute – Reduced Neck



End Mills

- Designed for mold making applications
- Manufactured to tighter cutter diameter tolerance (h8) for mold making applications
- Long reach for deep pocket milling
- Reduced neck diameter to avoid heeling
- Corner radius profile
- 30° helix ■ Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*	Length of Cut	Corner Radius	Overall Reach	Neck Diameter	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
							Tool #	Price	Tool #	Price
D1 (h8)	L2 ^{+0.38mm} / _{-.00mm}	R ^{+0.000mm} / _{-.013mm}	L3 ^{+0.25mm} / _{-.00mm}	D3 ^{+0.00mm} / _{-.13mm}	D2 (h6)	L1				
0.8 mm	0.8 mm	0.1 mm	10 mm	0.78 mm	4 mm	50 mm	MMRM-008-10	45.88	MMRM-008-10X	50.38
1 mm	1 mm	0.1 mm	8 mm	0.95 mm	6 mm	57 mm	MMRM-010-8	50.78		
1.5 mm	1.5 mm	0.15 mm	7 mm	1.45 mm	6 mm	57 mm	MMRM-015-7	50.78		
1.5 mm	1.5 mm	0.15 mm	15 mm	1.45 mm	6 mm	57 mm	MMRM-015-15	50.78		
1.5 mm	1.5 mm	0.15 mm	25 mm	1.45 mm	6 mm	72 mm	MMRM-015-25	50.78	MMRM-015-25X	58.38
4 mm	4 mm	0.25 mm	9 mm	3.8 mm	6 mm	57 mm	MMRM-040-9	50.78		
4 mm	4 mm	0.25 mm	15 mm	3.8 mm	6 mm	57 mm			MMRM-040-15X	58.38
6 mm	6 mm	1 mm	11 mm	5.8 mm	6 mm	57 mm	MMRM-060-11	50.78	MMRM-060-11X	58.38
10 mm	10 mm	1 mm	25 mm	9.8 mm	10 mm	72 mm	MMRM-100-25	77.08		
12 mm	12 mm	1.5 mm	25 mm	11.8 mm	12 mm	83 mm	MMRM-120-25	123.28		

*.0005" / .013 mm max TIR



HMCM

End Mills For Hardened Steels

Corner Radius – 4 Flute



- Designed for high performance in hardened tool, die, stainless, and mold steels
- Optimized geometry for increased edge strength in hard milling applications
- Corner radius profile for added edge strength
- 45° helix ■ Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

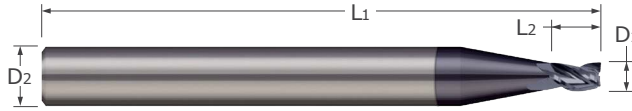
Cutter Diameter*	Length of Cut	Corner Radius	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
D ₁ (h8)	L ₂ ^{+0.38 mm} / _{-0.00 mm}	R ^{+0.000 mm} / _{-0.013 mm}	D ₂ (h6)	L ₁				
3 mm	8 mm	0.5 mm	6 mm	57 mm			HMCM-0305-4X	114.28
4 mm	11 mm	0.5 mm	6 mm	57 mm	HMCM-0405-4	107.08		
6 mm	13 mm	1.0 mm	6 mm	57 mm			HMCM-0610-4X	122.78
8 mm	19 mm	0.5 mm	8 mm	75 mm			HMCM-0805-4X	135.78
8 mm	19 mm	1.0 mm	8 mm	75 mm	HMCM-0810-4	124.48		
8 mm	19 mm	1.5 mm	8 mm	75 mm			HMCM-0815-4X	135.78
8 mm	19 mm	2.0 mm	8 mm	75 mm	HMCM-0820-4	124.48		
10 mm	22 mm	0.5 mm	10 mm	80 mm	HMCM-1005-4	137.18	HMCM-1005-4X	147.18
12 mm	26 mm	0.5 mm	12 mm	100 mm			HMCM-1205-4X	189.08
12 mm	26 mm	1.0 mm	12 mm	100 mm			HMCM-1210-4X	189.08
12 mm	26 mm	1.5 mm	12 mm	100 mm			HMCM-1215-4X	189.08
16 mm	32 mm	1.0 mm	16 mm	110 mm			HMCM-1610-4X	393.88
16 mm	32 mm	2.0 mm	16 mm	110 mm			HMCM-1620-4X	393.88
20 mm	38 mm	1.0 mm	20 mm	125 mm			HMCM-2010-4X	539.88
20 mm	38 mm	1.5 mm	20 mm	125 mm			HMCM-2015-4X	539.88
20 mm	38 mm	1.5 mm	20 mm	125 mm	HMCM-2015-4	507.78		
20 mm	38 mm	2.0 mm	20 mm	125 mm	HMCM-2020-4	507.78	HMCM-2020-4X	539.88
20 mm	38 mm	3.0 mm	20 mm	125 mm	HMCM-2030-4	507.78	HMCM-2030-4X	539.88

*.0005" / .013 mm max TIR

End Mills For Steels & High Temp Alloys

Square – 2 & 3 Flute – Stub Flute

MEF / MEFM



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Stub flutes for maximum rigidity
- Square profile ■ 20° helix ■ Center cutting
- nACRo® coating option for added heat resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Steels & High Temp. Alloys

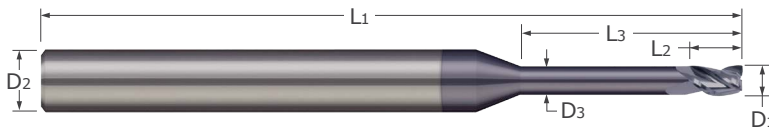
Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1			L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000"	+ .000 mm	decimal equiv.	+ .015"							
- .0005"	- .013 mm		- .000"							
			+ .38 mm							
			- .00 mm							
	0.1 mm	.0039	0.15 mm	2	3 mm	38 mm			MEFM-001-015K	111.88
	0.15 mm	.0059	0.25 mm	2	3 mm	38 mm			MEFM-0015-025K	90.88
	0.2 mm	.0079	0.3 mm	2	3 mm	38 mm	MEFM-002-030	70.98	MEFM-002-030K	76.88
.0100		.0100	.015	2	.1250	1.5	MEF-010-015	62.88		
	0.3 mm	.0118	0.45 mm	2	3 mm	38 mm	MEFM-003-045	62.88	MEFM-003-045K	68.88
.0150		.0150	.023	2	.1250	1.5	MEF-015-023	55.88	MEF-015-023K	61.98
.0150		.0150	.023	3	.1250	1.5	MEF-015-023-3	55.88	MEF-015-023-3K	61.98
	0.4 mm	.0157	0.6 mm	2	3 mm	38 mm	MEFM-004-060	55.88	MEFM-004-060K	62.18
.0200		.0200	.030	2	.1250	1.5			MEF-020-030K	45.58
	0.6 mm	.0236	0.9 mm	2	3 mm	38 mm	MEFM-006-090	39.28	MEFM-006-090K	45.28
.0250		.0250	.038	2	.1250	1.5	MEF-025-038	39.28	MEF-025-038K	45.28
.0300		.0300	.045	2	.1250	1.5	MEF-030-045	35.98	MEF-030-045K	41.98
.0300		.0300	.045	3	.1250	1.5	MEF-030-045-3	35.98	MEF-030-045-3K	41.98
.0313		.0313	.047	2	.1250	1.5	MEF-031-047	35.98	MEF-031-047K	41.98
.0313		.0313	.047	3	.1250	1.5			MEF-031-047-3K	41.98
	0.8 mm	.0315	1.2 mm	2	3 mm	38 mm	MEFM-008-120	35.98	MEFM-008-120K	41.98
.0350		.0350	.053	2	.1250	1.5	MEF-035-053	35.98	MEF-035-053K	41.98
	1 mm	.0394	1.5 mm	2	3 mm	38 mm	MEFM-010-150	35.98		
.0400		.0400	.060	2	.1250	1.5	MEF-040-060	35.98	MEF-040-060K	41.98
.0400		.0400	.060	3	.1250	1.5	MEF-040-060-3	35.98	MEF-040-060-3K	41.98
.0450		.0450	.068	2	.1250	1.5	MEF-045-068	35.98	MEF-045-068K	41.98
.0450		.0450	.068	3	.1250	1.5	MEF-045-068-3	35.98	MEF-045-068-3K	41.98
.0469		.0469	.071	2	.1250	1.5	MEF-047-071	35.98	MEF-047-071K	41.98
.0469		.0469	.071	3	.1250	1.5	MEF-047-071-3	35.98	MEF-047-071-3K	41.98
	1.2 mm	.0472	1.8 mm	2	3 mm	38 mm	MEFM-012-180	35.98	MEFM-012-180K	41.98
.0500		.0500	.075	2	.1250	1.5	MEF-050-075	35.98		
.0500		.0500	.075	3	.1250	1.5			MEF-050-075-3K	41.98
.0600		.0600	.090	2	.1250	1.5	MEF-060-090	35.98	MEF-060-090K	41.98
.0600		.0600	.090	3	.1250	1.5	MEF-060-090-3	35.98	MEF-060-090-3K	41.98
.0750		.0750	.113	2	.1250	1.5	MEF-075-113	35.98	MEF-075-113K	41.98
.0750		.0750	.113	3	.1250	1.5	MEF-075-113-3	35.98	MEF-075-113-3K	41.98
.0900		.0900	.125	2	.1250	1.5	MEF-090-125	35.98		
	2.5 mm	.0984	3 mm	2	3 mm	38 mm			MEFM-025-300K	42.18
	3 mm	.1181	3 mm	2	6 mm	57 mm	MEFM-030-300	47.58		
	4 mm	.1575	5 mm	2	6 mm	57 mm	MEFM-040-500	47.58	MEFM-040-500K	56.28
.1875		.1875	.200	2	.2500	2.5			MEF-187-250K	59.48
D1	+ .0000"	decimal equiv.	L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
	- .0010"		+ .015"							
			- .000"							
.2500		.2500	.250	2	.2500	2.5	MEF-250-250	47.58	MEF-250-250K	56.58

*.0005" / .013 mm max TIR



MEF / MEFM

End Mills For Steels & High Temp Alloys
Square – 2 & 3 Flute – Long Reach, Stub Flute



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Long reach for deep pocket milling
- Stub flutes for maximum rigidity
- Reduced neck diameter to avoid heeling
- Square profile ■ 20° helix ■ Center cutting
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated		
D1			L2	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price	
+ .0000"	+ .000 mm	decimal equiv.	+ .015"	-.000"	+ .010"	-.010"							
-.0005"	-.013 mm		+.38 mm	-.00 mm	+.25 mm	-.00 mm							
.0100	.0100	.0100	.015	.050	.009	2	.1250	1.5	MEF-010-050	71.38			
.0100	.0100	.0100	.015	.050	.009	3	.1250	1.5	MEF-010-050-3	71.38	MEF-010-050-3K	77.28	
.0100	.0100	.0100	.015	.075	.009	2	.1250	1.5	MEF-010-075	71.38	MEF-010-075K	77.28	
.0100	.0100	.0100	.015	.075	.009	3	.1250	1.5	MEF-010-075-3	71.38			
.0150	.0150	.0150	.023	.100	.014	2	.1250	1.5	MEF-015-100	64.18	MEF-015-100K	70.28	
.0150	.0150	.0150	.023	.100	.014	3	.1250	1.5	MEF-015-100-3	64.18			
.0150	.0150	.0150	.023	.200	.014	2	.1250	1.5	MEF-015-200	65.88	MEF-015-200K	71.88	
.0150	.0150	.0150	.023	.200	.014	3	.1250	1.5	MEF-015-200-3	65.88	MEF-015-200-3K	71.88	
.0200	.0200	.0200	.030	.150	.019	2	.1250	1.5			MEF-020-150K	53.88	
.0200	.0200	.0200	.030	.250	.019	2	.1250	1.5	MEF-020-250	49.18	MEF-020-250K	55.18	
.0200	.0200	.0200	.030	.250	.019	3	.1250	1.5	MEF-020-250-3	49.18	MEF-020-250-3K	55.18	
0.6 mm	.0236	.0236	0.9 mm	3 mm	0.55 mm	2	3 mm	38 mm	MEFM-006-300	47.58			
0.6 mm	.0236	.0236	0.9 mm	5 mm	0.55 mm	2	3 mm	38 mm	MEFM-006-500	49.18	MEFM-006-500K	55.18	
0.6 mm	.0236	.0236	0.9 mm	6 mm	0.55 mm	2	3 mm	38 mm			MEFM-006-600K	57.78	
.0250	.0250	.0250	.038	.250	.024	3	.1250	1.5	MEF-025-250-3	49.18	MEF-025-250-3K	55.18	
.0250	.0250	.0250	.038	.250	.024	2	.1250	1.5	MEF-025-250	49.18	MEF-025-250K	55.18	
.0300	.0300	.0300	.045	.100	.028	2	.1250	1.5	MEF-030-100	44.28	MEF-030-100K	50.28	
.0300	.0300	.0300	.045	.100	.028	3	.1250	1.5	MEF-030-100-3	44.28	MEF-030-100-3K	50.28	
.0300	.0300	.0300	.045	.200	.028	2	.1250	1.5	MEF-030-200	45.88			
.0300	.0300	.0300	.045	.200	.028	3	.1250	1.5	MEF-030-200-3	45.88			
.0300	.0300	.0300	.045	.375	.028	2	.1250	1.5	MEF-030-375	50.98			
.0300	.0300	.0300	.045	.375	.028	3	.1250	1.5	MEF-030-375-3	50.98	MEF-030-375-3K	56.88	
.0313	.0313	.0313	.047	.100	.029	2	.1250	1.5	MEF-031-100	44.28	MEF-031-100K	50.28	
.0313	.0313	.0313	.047	.100	.029	3	.1250	1.5			MEF-031-100-3K	50.28	
.0313	.0313	.0313	.047	.200	.029	2	.1250	1.5	MEF-031-200	45.88	MEF-031-200K	51.88	
.0313	.0313	.0313	.047	.200	.029	3	.1250	1.5	MEF-031-200-3	45.88	MEF-031-200-3K	51.88	
.0313	.0313	.0313	.047	.375	.029	2	.1250	1.5	MEF-031-375	50.98	MEF-031-375K	56.88	
.0313	.0313	.0313	.047	.375	.029	3	.1250	1.5	MEF-031-375-3	50.98	MEF-031-375-3K	56.88	
0.8 mm	.0315	.0315	1.2 mm	4 mm	0.75 mm	2	3 mm	38 mm	MEFM-008-400	47.58	MEFM-008-400K	53.48	
0.8 mm	.0315	.0315	1.2 mm	7 mm	0.75 mm	2	3 mm	38 mm	MEFM-008-700	51.78	MEFM-008-700K	57.78	
0.8 mm	.0315	.0315	1.2 mm	9 mm	0.75 mm	2	3 mm	38 mm			MEFM-008-900K	64.38	
.0350	.0350	.0350	.053	.150	.033	2	.1250	1.5	MEF-035-150	44.28			
.0350	.0350	.0350	.053	.150	.033	3	.1250	1.5	MEF-035-150-3	44.28	MEF-035-150-3K	50.28	
.0350	.0350	.0350	.053	.250	.033	2	.1250	1.5	MEF-035-250	45.88			
.0350	.0350	.0350	.053	.250	.033	3	.1250	1.5	MEF-035-250-3	45.88	MEF-035-250-3K	51.88	
.0350	.0350	.0350	.053	.400	.033	3	.1250	1.5	MEF-035-400-3	50.98	MEF-035-400-3K	56.88	

*.0005" / .013 mm max TIR

Continued on next page

Steels & High Temp. Alloys

End Mills For Steels & High Temp Alloys

Square – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

MEF / MEFM

Continued from previous page

Cutter Diameter*			Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1			L2	L3	D3	D2 (h6)	L1		Tool #	Price	Tool #	Price
+ .0000"	+ .000 mm	decimal equiv.	+ .015"	+ .010"								
-.0005"	-.013 mm		-.000"	-.010"								
			+ .38 mm	+ .25 mm								
			-.00 mm	-.00 mm								
1 mm	.0394		1.5 mm	4 mm	0.95 mm	2	3 mm	38 mm			MEFM-010-400K	53.88
1 mm	.0394		1.5 mm	7 mm	0.95 mm	2	3 mm	38 mm	MEFM-010-700	51.78	MEFM-010-700K	57.78
.0400	.0400		.060	.250	.038	3	.1250	1.5	MEF-040-250-3	45.88		
.0400	.0400		.060	.500	.038	2	.1250	1.5	MEF-040-500	54.18	MEF-040-500K	60.18
.0450	.0450		.068	.150	.043	2	.1250	1.5	MEF-045-150	44.28	MEF-045-150K	50.28
.0450	.0450		.068	.150	.043	3	.1250	1.5	MEF-045-150-3	44.28	MEF-045-150-3K	50.28
.0450	.0450		.068	.250	.043	2	.1250	1.5	MEF-045-250	45.88	MEF-045-250K	51.88
.0450	.0450		.068	.250	.043	3	.1250	1.5	MEF-045-250-3	45.88	MEF-045-250-3K	51.88
.0450	.0450		.068	.500	.043	2	.1250	1.5			MEF-045-500K	60.18
.0450	.0450		.068	.500	.043	3	.1250	1.5	MEF-045-500-3	54.18	MEF-045-500-3K	60.18
.0469	.0469		.071	.150	.045	2	.1250	1.5	MEF-047-150	44.28	MEF-047-150K	50.28
.0469	.0469		.071	.150	.045	3	.1250	1.5	MEF-047-150-3	44.28	MEF-047-150-3K	50.28
.0469	.0469		.071	.250	.045	2	.1250	1.5			MEF-047-250K	51.88
.0469	.0469		.071	.250	.045	3	.1250	1.5			MEF-047-250-3K	51.88
.0469	.0469		.071	.500	.045	2	.1250	1.5	MEF-047-500	54.18		
1.2 mm	.0472		1.8 mm	6 mm	1.1 mm	2	3 mm	38 mm	MEFM-012-600	51.78	MEFM-012-600K	57.78
1.2 mm	.0472		1.8 mm	10 mm	1.1 mm	2	3 mm	38 mm	MEFM-012-1000	58.38	MEFM-012-1000K	64.38
1.2 mm	.0472		1.8 mm	12 mm	1.1 mm	2	3 mm	38 mm	MEFM-012-1200	62.88	MEFM-012-1200K	68.88
.0500	.0500		.075	.200	.048	2	.1250	1.5			MEF-050-200K	50.28
.0500	.0500		.075	.200	.048	3	.1250	1.5	MEF-050-200-3	44.28	MEF-050-200-3K	50.28
.0500	.0500		.075	.300	.048	2	.1250	1.5	MEF-050-300	47.58	MEF-050-300K	53.48
.0500	.0500		.075	.300	.048	3	.1250	1.5	MEF-050-300-3	47.58		
.0500	.0500		.075	.550	.048	2	.1250	1.5			MEF-050-550K	60.58
.0500	.0500		.075	.550	.048	3	.1250	1.5			MEF-050-550-3K	60.58
1.5 mm	.0591		2.2 mm	6 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-600	51.78		
1.5 mm	.0591		2.2 mm	10 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-1000	58.38		
1.5 mm	.0591		2.2 mm	12 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-1200	62.88	MEFM-015-1200K	68.88
.0600	.0600		.090	.200	.056	2	.1250	1.5	MEF-060-200	44.28		
.0600	.0600		.090	.200	.056	3	.1250	1.5			MEF-060-200-3K	50.28
.0600	.0600		.090	.350	.056	2	.1250	1.5	MEF-060-350	47.58		
.0600	.0600		.090	.350	.056	3	.1250	1.5	MEF-060-350-3	47.58		
.0600	.0600		.090	.500	.056	2	.1250	1.5	MEF-060-500	54.18	MEF-060-500K	60.18
.0600	.0600		.090	.500	.056	3	.1250	1.5	MEF-060-500-3	54.18		
.0600	.0600		.090	.750	.056	2	.1250	2.0	MEF-060-750	62.68	MEF-060-750K	68.58
.0600	.0600		.090	.750	.056	3	.1250	2.0	MEF-060-750-3	62.68	MEF-060-750-3K	68.58
.0625	.0625		.093	.200	.058	2	.1250	1.5	MEF-062-200	44.28	MEF-062-200K	50.28
.0625	.0625		.093	.200	.058	3	.1250	1.5	MEF-062-200-3	44.28	MEF-062-200-3K	50.28
.0625	.0625		.093	.350	.058	2	.1250	1.5	MEF-062-350	47.58	MEF-062-350K	53.48
.0625	.0625		.093	.350	.058	3	.1250	1.5			MEF-062-350-3K	53.88
.0625	.0625		.093	.550	.058	2	.1250	1.5	MEF-062-550	54.18	MEF-062-550K	60.18
.0625	.0625		.093	.750	.058	2	.1250	2.0	MEF-062-750	62.68		
.0625	.0625		.093	.750	.058	3	.1250	2.0	MEF-062-750-3	62.68	MEF-062-750-3K	68.58
.0750	.0750		.113	.250	.071	2	.1250	1.5	MEF-075-250	44.28	MEF-075-250K	50.28
.0750	.0750		.113	.250	.071	3	.1250	1.5	MEF-075-250-3	44.28	MEF-075-250-3K	50.28
.0750	.0750		.113	.400	.071	2	.1250	1.5			MEF-075-400K	53.48
.0750	.0750		.113	.400	.071	3	.1250	1.5	MEF-075-400-3	47.58		
.0750	.0750		.113	.600	.071	2	.1250	2.0	MEF-075-600	54.18		
.0750	.0750		.113	.600	.071	3	.1250	2.0	MEF-075-600-3	54.18		
.0750	.0750		.113	.900	.071	2	.1250	2.0	MEF-075-900	65.08	MEF-075-900K	71.08
.0750	.0750		.113	.900	.071	3	.1250	2.0	MEF-075-900-3	65.08	MEF-075-900-3K	71.08

*.0005" / .013 mm max TIR

Continued on next page



MEF / MEFM

End Mills For Steels & High Temp Alloys
Square – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

Continued from previous page

Cutter Diameter*			Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1			L2	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" / - .0005"	+ .000 mm / - .013 mm	decimal equiv.	+ .015" / - .000" / + .38 mm / - .00 mm	+ .010" / - .010" / + .25 mm / - .00 mm								
.0781	.0781	.0781	.117	.250	.074	2	.1250	1.5	MEF-078-250	44.28	MEF-078-250K	50.28
.0781	.0781	.0781	.117	.250	.074	3	.1250	1.5	MEF-078-250-3	44.28		
.0781	.0781	.0781	.117	.400	.074	2	.1250	1.5			MEF-078-400K	53.88
.0781	.0781	.0781	.117	.650	.074	2	.1250	2.0	MEF-078-650	54.18	MEF-078-650K	60.18
.0781	.0781	.0781	.117	.900	.074	2	.1250	2.0	MEF-078-900	65.08	MEF-078-900K	71.08
.0781	.0781	.0781	.117	.900	.074	3	.1250	2.0	MEF-078-900-3	65.08	MEF-078-900-3K	71.08
2 mm	.0787	.0787	2.5 mm	7 mm	1.9 mm	2	3 mm	38 mm	MEFM-020-700	51.78		
2 mm	.0787	.0787	2.5 mm	12 mm	1.9 mm	2	3 mm	38 mm			MEFM-020-1200K	69.28
2 mm	.0787	.0787	2.5 mm	16 mm	1.9 mm	2	3 mm	38 mm			MEFM-020-1600K	73.08
2 mm	.0787	.0787	2.5 mm	20 mm	1.9 mm	2	3 mm	50 mm	MEFM-020-2000	83.28	MEFM-020-2000K	89.28
2 mm	.0787	.0787	2.5 mm	25 mm	1.9 mm	2	3 mm	50 mm	MEFM-020-2500	94.98	MEFM-020-2500K	100.98
.0900	.0900	.0900	.125	.250	.086	2	.1250	1.5	MEF-090-250	44.28	MEF-090-250K	50.28
.0900	.0900	.0900	.125	.400	.086	2	.1250	1.5	MEF-090-400	47.58	MEF-090-400K	53.48
.0900	.0900	.0900	.125	.900	.086	2	.1250	2.0	MEF-090-900	59.28	MEF-090-900K	65.18
.0938	.0938	.0938	.125	.250	.089	2	.1250	1.5	MEF-093-250	44.28		
.0938	.0938	.0938	.125	.500	.089	2	.1250	1.5			MEF-093-500K	53.88
.0938	.0938	.0938	.125	.750	.089	2	.1250	2.0	MEF-093-750	54.18	MEF-093-750K	60.18
.0938	.0938	.0938	.125	1.000	.089	2	.1250	2.0	MEF-093-1000	62.68	MEF-093-1000K	68.58
2.5 mm	.0984	.0984	3 mm	10 mm	2.4 mm	2	3 mm	38 mm	MEFM-025-1000	57.48	MEFM-025-1000K	63.48
2.5 mm	.0984	.0984	3 mm	20 mm	2.4 mm	2	3 mm	50 mm	MEFM-025-2000	83.28	MEFM-025-2000K	89.28
2.5 mm	.0984	.0984	3 mm	25 mm	2.4 mm	2	3 mm	50 mm	MEFM-025-2500	94.98	MEFM-025-2500K	100.98
3 mm	.1181	.1181	3 mm	15 mm	2.9 mm	2	6 mm	57 mm	MEFM-030-1500	68.38	MEFM-030-1500K	76.88
3 mm	.1181	.1181	3 mm	30 mm	2.9 mm	2	6 mm	57 mm			MEFM-030-3000K	102.68
.1250	.1250	.1250	.125	1.000	.121	2	.1875	2.0	MEF-125-1000	62.68		
.1250	.1250	.1250	.125	1.500	.121	2	.1875	3.0	MEF-125-1500	71.58		
4 mm	.1575	.1575	5 mm	30 mm	3.9 mm	2	6 mm	57 mm	MEFM-040-3000	91.58	MEFM-040-3000K	100.28
.1875	.1875	.1875	.200	1.000	.183	2	.2500	2.5			MEF-187-1000K	88.58
.1875	.1875	.1875	.200	1.500	.183	2	.2500	3	MEF-187-1500	91.58	MEF-187-1500K	100.28
.1875	.1875	.1875	.200	.500	.183	2	.2500	2.5	MEF-187-500	57.98		
.1875	.1875	.1875	.200	.750	.183	2	.2500	2.5	MEF-187-750	68.38	MEF-187-750K	76.88
5 mm	.1969	.1969	6 mm	25 mm	4.9 mm	2	6 mm	57 mm	MEFM-050-2500	80.08	MEFM-050-2500K	88.58
5 mm	.1969	.1969	6 mm	30 mm	4.9 mm	2	6 mm	57 mm	MEFM-050-3000	91.58	MEFM-050-3000K	100.28

D1	+ .0000" / - .0010"	decimal equiv.	L2	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
			+ .015" / - .000"	+ .010" / - .010"								
.2500	.2500	.2500	.250	1.000	.246	2	.2500	2.5	MEF-250-1000	80.08	MEF-250-1000K	88.58
.2500	.2500	.2500	.250	1.500	.246	2	.2500	3.0	MEF-250-1500	91.58		
.2500	.2500	.2500	.250	.750	.246	2	.2500	2.5	MEF-250-750	68.38	MEF-250-750K	76.88

*.0005" / .013 mm max TIR

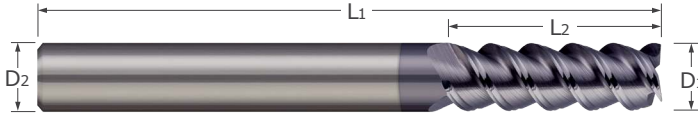
Steels & High Temp. Alloys



End Mills For Steels & High Temp Alloys

Square – 3 & 4 Flute

SDH / SDHM



Steels & High Temp. Alloys

- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- 60° high helix for reduced cutting forces and increased material removal rates
- Square profile ■ Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*		Length of Cut L2	Flutes	Shank Diameter D2 (h6)	Overall Length L1	Uncoated		AlTiN Coated	
D1 + .0000" - .0030" (h9)	decimal equiv.					Tool #	Price	Tool #	Price
6 mm	.2362	18 mm	3	6 mm	57 mm	SDHM-060-3	36.28		
.2500	.2500	.750	3	.2500	2.5	SDH-250-03	44.18	SDH-250-03X	51.98
.2813	.2813	.750	3	.3125	2.5	SDH-281-03	51.18		
12 mm	.4724	30 mm	4	12 mm	83 mm	SDHM-120-4	84.28		
.5000	.5000	1.000	3	.5000	3.0	SDH-500-03	101.08		
.5000	.5000	1.000	4	.5000	3.0			SDH-500-04X	113.88
14 mm	.5512	35 mm	3	14 mm	83 mm	SDHM-140-3	102.58		
16 mm	.6299	35 mm	3	16 mm	92 mm			SDHM-160-3X	182.78
18 mm	.7087	45 mm	3	18 mm	92 mm	SDHM-180-3	220.08	SDHM-180-3X	241.68
18 mm	.7087	45 mm	4	18 mm	92 mm	SDHM-180-4	220.08		
20 mm	.7874	45 mm	3	20 mm	104 mm			SDHM-200-3X	312.78
20 mm	.7874	45 mm	4	20 mm	104 mm	SDHM-200-4	280.68		

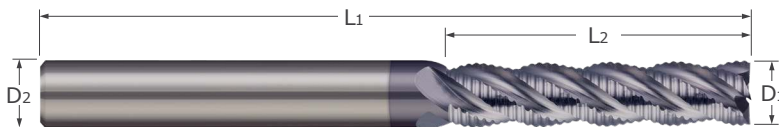
*.0005" / .013 mm max TIR



SHR / SHRM
SHL / SHLM

End Mills For Steels & High Temp Alloys

Square – 4 Flute – Chipbreaker Rougher



- Designed for roughing in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Integrated chipbreaker geometry generates increased material removal rates
- Available in standard and long length of cut options
- Weldon flat featured on sizes 3/8" and larger
- Square profile ■ 38° helix ■ Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Steels & High Temp. Alloys

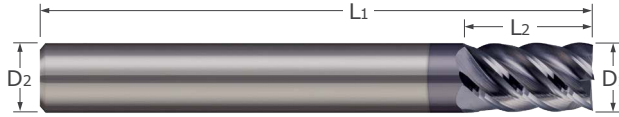
Cutter Diameter*		Length of Cut L2	Flutes	Shank Dia. D2 (h6)	Overall Length L1	Uncoated		AlTiN Coated	
D1 +.0000" -.0030" (h9)	decimal equiv.					Tool #	Price	Tool #	Price
6 mm	.2362	16 mm	4	6 mm	57 mm	SHRM-060-4	60.18	SHRM-060-4X	67.78
6 mm	.2362	25 mm	4	6 mm	75 mm	SHLM-060-4	76.88	SHLM-060-4X	84.38
.2500	.2500	.750	4	.2500	2.5			SHR-250-4X	68.68
.2500	.2500	1.125	4	.2500	3.0			SHL-250-4X	85.68
.3125	.3125	.813	4	.3125	2.5			SHR-312-4X	78.88
.3125	.3125	1.125	4	.3125	3.0			SHL-312-4X	98.38
8 mm	.3150	22 mm	4	8 mm	63 mm			SHRM-080-4X	80.48
8 mm	.3150	30 mm	4	8 mm	75 mm	SHLM-080-4	88.18		
.3750	.3750	.875	4	.3750	2.5	SHR-375-4	85.88	SHR-375-4X	96.28
.3750	.3750	1.250	4	.3750	3.0			SHL-375-4X	121.58
10 mm	.3937	25 mm	4	10 mm	72 mm			SHRM-100-4X	104.58
10 mm	.3937	38 mm	4	10 mm	100 mm	SHLM-100-4	115.58	SHLM-100-4X	128.38
12 mm	.4724	30 mm	4	12 mm	83 mm			SHRM-120-4X	136.38
12 mm	.4724	50 mm	4	12 mm	100 mm	SHLM-120-4	155.38	SHLM-120-4X	173.18
.5000	.5000	1.000	4	.5000	3.0	SHR-500-4	125.48	SHR-500-4X	137.88
.5000	.5000	2.000	4	.5000	4.5			SHL-500-4X	176.98
14 mm	.5512	35 mm	4	14 mm	83 mm	SHRM-140-4	200.98	SHRM-140-4X	217.98
.6250	.6250	1.250	4	.6250	3.5	SHR-625-4	222.88	SHR-625-4X	241.28
.6250	.6250	2.500	4	.6250	5.0			SHL-625-4X	305.38
16 mm	.6299	35 mm	4	16 mm	92 mm			SHRM-160-4X	242.68
16 mm	.6299	75 mm	4	16 mm	150 mm			SHLM-160-4X	313.58
18 mm	.7087	75 mm	4	18 mm	150 mm			SHLM-180-4X	434.78
.7500	.7500	1.500	4	.7500	4.0			SHR-750-4X	334.48
.7500	.7500	2.500	4	.7500	5.0			SHL-750-4X	424.78
20 mm	.7874	45 mm	4	20 mm	104 mm			SHRM-200-4X	401.18

*.0005" / .013 mm max TIR

End Mills For Steels & High Temp Alloys

Square – 5 Flute – Stub & Standard

ASM / ASMM
ARM / ARMM



Steels & High Temp. Alloys

- Designed for applications in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- 45° high helix for reduced cutting forces and increased material removal rates
- Stub flutes for maximum rigidity
- Square profile ■ Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut L2	Flutes	Shank Dia. D2 (h6)	Overall Length L1	Uncoated		AlTiN Coated	
+ .0000" - .0020"	(h9)	decimal equiv.					Tool #	Price	Tool #	Price
D1			+ .031" - .000" + .79 mm - .00 mm	5	D2 (h6)	L1	Tool #	Price	Tool #	Price
3 mm		.1181	6 mm	5	6 mm	57 mm	ASMM-030-5	43.08	ASMM-030-5X	50.88
4 mm		.1575	15 mm	5	6 mm	57 mm	ARMM-040-5	45.38		
.1875		.1875	.625	5	.1875	2.0	ARM-187-5	38.48		
5 mm		.1969	10 mm	5	6 mm	57 mm	ASMM-050-5	43.08		
.2500		.2500	.750	5	.2500	2.5	ARM-250-5	48.18		

Cutter Diameter*			Length of Cut L2	Flutes	Shank Dia. D2 (h6)	Overall Length L1	Uncoated		AlTiN Coated	
+ .0000" - .0030"	(h9)	decimal equiv.					Tool #	Price	Tool #	Price
D1			+ .031" - .000" + .79 mm - .00 mm	5	D2 (h6)	L1	Tool #	Price	Tool #	Price
8 mm		.3150	16 mm	5	8 mm	63 mm	ASMM-080-5	51.08		
.3750		.3750	.625	5	.3750	2.0	ASM-375-5	59.68		
10 mm		.3937	19 mm	5	10 mm	72 mm	ASMM-100-5	60.48		
10 mm		.3937	25 mm	5	10 mm	72 mm	ARMM-100-5	63.28	ARMM-100-5X	74.18
12 mm		.4724	22 mm	5	12 mm	83 mm	ASMM-120-5	96.88		
.5000		.5000	.625	5	.5000	2.5	ASM-500-5	93.68	ASM-500-5X	106.18
.5000		.5000	1.000	5	.5000	3.0	ARM-500-5	105.78	ARM-500-5X	118.38
14 mm		.5512	30 mm	5	14 mm	83 mm			ARMM-140-5X	164.18
16 mm		.6299	35 mm	5	16 mm	92 mm			ARMM-160-5X	206.08
18 mm		.7087	45 mm	5	18 mm	92 mm			ARMM-180-5X	272.58

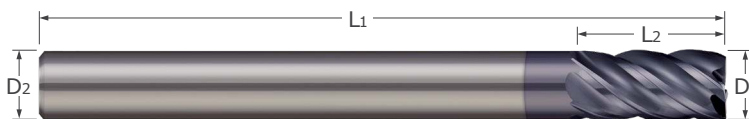
*.0005" / .013 mm max TIR



VHS / VHM

End Mills For Steels & High Temp Alloys

Square – 5 Flute – Variable Helix



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Variable helix design reduces chatter and harmonics and increases material removal rates
- Square profile ■ Center cutting
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

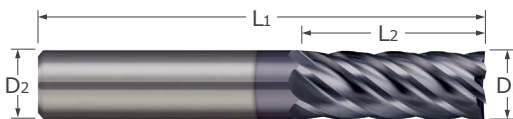
Cutter Diameter	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
					Tool #	Price	Tool #	Price
D1 $+0.0000''$ $-0.0030''$	L2 $+0.015''$ $-0.000''$		D2 (h6)	L1				
.5000	.625	5	.5000	3.0			VHS-500-5K	115.78
.5000	1.000	5	.5000	3.0			VHM-500-5K	127.48
.5000	1.250	5	.5000	3.5	VHM-5125-5	115.58	VHM-5125-5K	134.28
.7500	1.500	5	.7500	4.0	VHM-750-5	304.98		

Steels & High Temp. Alloys

EMH / EMHM

End Mills For Steels & High Temp Alloys

Square – 4 & 6 Flute



- Designed for finishing in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- 38° helix for superior surface finish ■ Square profile
- Weldon flat featured on sizes 3/8" and larger on ANSI shanks only
- Center cutting ■ AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

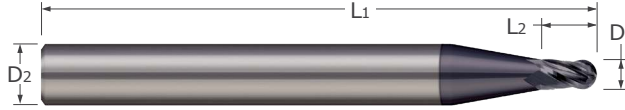
Cutter Diameter*	Length of Cut	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated		
					Tool #	Price	Tool #	Price	
D1 $+0.0000''$ $-0.0002''$ (h9)	L2 $+0.030''$ $-0.000''$ $+0.78$ mm -0.00 mm decimal equiv.		D2 (h6)	L1					
6 mm	.2362	18 mm	4	6 mm	57 mm		EMHM-060-4X	44.08	
6 mm	.2362	18 mm	6	6 mm	57 mm	EMHM-060-6	36.28		
D1 $+0.0000''$ $-0.0003''$ (h9)	L2 $+0.030''$ $-0.000''$ $+0.78$ mm -0.00 mm decimal equiv.		D2 (h6)	L1					
.2813	.2813	.750	6	.3125	2.5	EMH-281-06	55.98	EMH-281-06X	66.48
8 mm	.3150	20 mm	4	8 mm	63 mm	EMHM-080-4	44.98	EMHM-080-4X	55.78
10 mm	.3937	22 mm	6	10 mm	72 mm			EMHM-100-6X	63.28
12 mm	.4724	25 mm	6	12 mm	83 mm	EMHM-120-6	84.28		
14 mm	.5512	30 mm	6	14 mm	83 mm	EMHM-140-6	102.58		
.6250	.6250	1.250	6	.6250	3.5	EMH-625-06	194.58		
16 mm	.6299	35 mm	6	16 mm	92 mm			EMHM-160-6X	182.68
20 mm	.7874	45 mm	6	20 mm	104 mm			EMHM-200-6X	312.78

*.0005" / .013 mm max TIR

End Mills For Steels & High Temp Alloys

BEF / BEFM

Ball – 2 & 3 Flute – Stub Flute



Steels & High Temp. Alloys

- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Stub flutes for maximum rigidity
- Ball profile
- 20° helix
- Center cutting
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1			L2		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000"	+ .000 mm	decimal equiv.	+ .015"							
- .0005"	- .013 mm		- .000"							
			+ .38 mm							
			- .00 mm							
	0.2 mm	.0079	0.3 mm	2	3 mm	38 mm	BEFM-002-030	82.88	BEFM-002-030K	88.88
	0.3 mm	.0118	0.45 mm	2	3 mm	38 mm	BEFM-003-045	73.78		
	.0150	.0150	.023	2	.1250	1.5			BEF-015-023K	72.28
	.0200	.0200	.030	2	.1250	1.5			BEF-020-030K	52.28
	.0200	.0200	.030	3	.1250	1.5	BEF-020-030-3	46.28	BEF-020-030-3K	52.28
	.0313	.0313	.047	3	.1250	1.5	BEF-031-047-3	42.68		
	.0350	.0350	.053	3	.1250	1.5	BEF-035-053-3	42.68	BEF-035-053-3K	48.68
	1 mm	.0394	1.5 mm	2	3 mm	38 mm	BEFM-010-150	42.68		
	.0400	.0400	.060	2	.1250	1.5	BEF-040-060	42.68	BEF-040-060K	48.68
	.0400	.0400	.060	3	.1250	1.5	BEF-040-060-3	42.68	BEF-040-060-3K	48.68
	.0450	.0450	.068	2	.1250	1.5	BEF-045-068	42.68	BEF-045-068K	48.68
	.0450	.0450	.068	3	.1250	1.5	BEF-045-068-3	42.68	BEF-045-068-3K	48.68
	.0469	.0469	.071	3	.1250	1.5			BEF-047-071-3K	48.98
	1.2 mm	.0472	1.8 mm	2	3 mm	38 mm			BEFM-012-180K	49.08
	.0500	.0500	.075	2	.1250	1.5	BEF-050-075	42.68		
	.0500	.0500	.075	3	.1250	1.5			BEF-050-075-3K	48.98
	.0600	.0600	.090	2	.1250	1.5	BEF-060-090	42.68	BEF-060-090K	48.68
	.0600	.0600	.090	3	.1250	1.5	BEF-060-090-3	42.68	BEF-060-090-3K	48.98
	.0625	.0625	.093	2	.1250	1.5	BEF-062-093	42.68		
	.0625	.0625	.093	3	.1250	1.5	BEF-062-093-3	42.68		
	.0750	.0750	.113	2	.1250	1.5			BEF-075-113K	48.98
	.0750	.0750	.113	3	.1250	1.5	BEF-075-113-3	42.68	BEF-075-113-3K	48.98
	.0781	.0781	.117	2	.1250	1.5			BEF-078-117K	48.68
	.0781	.0781	.117	3	.1250	1.5	BEF-078-117-3	42.68	BEF-078-117-3K	48.68
	.0900	.0900	.125	2	.1250	1.5	BEF-090-125	42.68	BEF-090-125K	48.68
	.0938	.0938	.125	2	.1250	1.5	BEF-093-125	42.68		
	2.5 mm	.0984	3 mm	2	3 mm	38 mm	BEFM-025-300	42.68		
	3 mm	.1181	3 mm	2	6 mm	57 mm	BEFM-030-300	61.58		
	.1875	.1875	.200	2	.2500	2.5	BEF-187-250	61.58	BEF-187-250K	70.28
	5 mm	.1969	6 mm	2	6 mm	57 mm	BEFM-050-600	61.58	BEFM-050-600K	69.38

D1	decimal equiv.	L2	Flutes	D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000"		+ .015"							
- .0010"		- .000"							
.2500	.2500	.250	2	.2500	2.5	BEF-250-250	61.58		

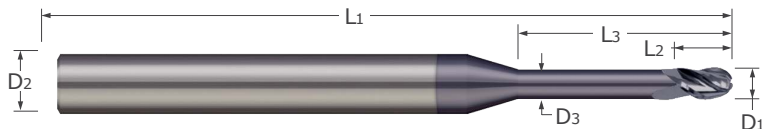
*.0005" / .013 mm max TIR



BEF / BEFM

End Mills For Steels & High Temp Alloys

Ball – 2 & 3 Flute – Long Reach, Stub Flute



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Long reach for deep pocket milling
- Stub flutes for maximum rigidity
- Reduced neck diameter to avoid heeling
- Ball profile ■ 20° helix ■ Center cutting
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1		decimal equiv.	L2	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" / + .000 mm	- .0005" / - .013 mm		+ .015" / -.000"	+ .010" / -.000"								
.0150		.0150	.023	.100	.014	2	.1250	1.5	BEF-015-100	73.78	BEF-015-100K	79.78
.0150		.0150	.023	.200	.014	2	.1250	1.5	BEF-015-200	75.38	BEF-015-200K	81.38
.0150		.0150	.023	.200	.014	3	.1250	1.5	BEF-015-200-3	75.38		
.0150		.0150	.023	.200	.014	3	.1250	1.5			BEF-015-200-3K	81.38
0.5 mm		.0197	0.7 mm	3 mm	0.45 mm	2	3 mm	38 mm	BEFM-005-300	54.58		
0.5 mm		.0197	0.7 mm	6 mm	0.45 mm	2	3 mm	38 mm			BEFM-005-600K	64.78
.0200		.0200	.030	.150	.019	2	.1250	1.5	BEF-020-150	54.58		
.0200		.0200	.030	.150	.019	3	.1250	1.5	BEF-020-150-3	54.58		
.0200		.0200	.030	.250	.019	3	.1250	1.5	BEF-020-250-3	56.28		
0.6 mm		.0236	0.9 mm	3 mm	0.55 mm	2	3 mm	38 mm	BEFM-006-300	54.58		
0.6 mm		.0236	0.9 mm	5 mm	0.55 mm	2	3 mm	38 mm	BEFM-006-500	56.28	BEFM-006-500K	62.28
0.6 mm		.0236	0.9 mm	6 mm	0.55 mm	2	3 mm	38 mm	BEFM-006-600	58.38	BEFM-006-600K	64.78
.0250		.0250	.038	.150	.024	2	.1250	1.5	BEF-025-150	54.58	BEF-025-150K	60.58
.0250		.0250	.038	.150	.024	3	.1250	1.5	BEF-025-150-3	54.58	BEF-025-150-3K	60.58
.0250		.0250	.038	.250	.024	2	.1250	1.5	BEF-025-250	56.28	BEF-025-250K	62.28
.0250		.0250	.038	.250	.024	3	.1250	1.5	BEF-025-250-3	56.28	BEF-025-250-3K	62.28
.0300		.0300	.045	.125	.028	2	.1250	1.5	BEF-030-100	50.98	BEF-030-100K	56.88
.0300		.0300	.045	.125	.028	3	.1250	1.5	BEF-030-100-3	50.98	BEF-030-100-3K	57.28
.0300		.0300	.045	.200	.028	2	.1250	1.5	BEF-030-200	52.58		
.0300		.0300	.045	.200	.028	3	.1250	1.5	BEF-030-200-3	52.58	BEF-030-200-3K	58.58
.0300		.0300	.045	.375	.028	2	.1250	1.5			BEF-030-375K	58.78
.0300		.0300	.045	.375	.028	3	.1250	1.5	BEF-030-375-3	52.58	BEF-030-375-3K	58.58
.0313		.0313	.047	.125	.029	2	.1250	1.5	BEF-031-100	50.98	BEF-031-100K	57.28
.0313		.0313	.047	.125	.029	3	.1250	1.5	BEF-031-100-3	50.98	BEF-031-100-3K	56.88
.0313		.0313	.047	.200	.029	2	.1250	1.5	BEF-031-200	52.58	BEF-031-200K	58.58
.0313		.0313	.047	.200	.029	3	.1250	1.5	BEF-031-200-3	52.58		
.0313		.0313	.047	.375	.029	2	.1250	1.5	BEF-031-375	57.48	BEF-031-375K	63.48
.0313		.0313	.047	.375	.029	3	.1250	1.5	BEF-031-375-3	57.48	BEF-031-375-3K	63.48

*.0005" / .013 mm max TIR

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Steels & High Temp. Alloys

End Mills For Steels & High Temp Alloys

Ball – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

BEF / BEFM

Continued from previous page

Steels & High Temp. Alloys

Cutter Diameter*			Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1 +.0000" +.000 mm -.0005" -.013 mm decimal equiv.			L2 +.015" +.010" -.000" -.000" +.38 mm +.25 mm -.00 mm -.00 mm	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
0.8 mm .0315			1.2 mm	4 mm	0.75 mm	2	3 mm	38 mm	BEFM-008-400	50.98	BEFM-008-400K	56.88
0.8 mm .0315			1.2 mm	7 mm	0.75 mm	2	3 mm	38 mm	BEFM-008-700	52.58	BEFM-008-700K	58.58
0.8 mm .0315			1.2 mm	9 mm	0.75 mm	2	3 mm	38 mm	BEFM-008-900	57.48		
.0350 .0350			.053	.150	.033	2	.1250	1.5	BEF-035-150	50.98	BEF-035-150K	56.88
.0350 .0350			.053	.150	.033	3	.1250	1.5	BEF-035-150-3	50.98		
.0350 .0350			.053	.250	.033	2	.1250	1.5	BEF-035-250	52.58	BEF-035-250K	58.58
.0350 .0350			.053	.250	.033	3	.1250	1.5	BEF-035-250-3	52.58	BEF-035-250-3K	58.58
.0350 .0350			.053	.400	.033	2	.1250	1.5	BEF-035-400	57.48	BEF-035-400K	63.48
.0350 .0350			.053	.400	.033	3	.1250	1.5	BEF-035-400-3	57.48	BEF-035-400-3K	63.48
.0400 .0400			.060	.150	.038	2	.1250	1.5			BEF-040-150K	56.88
.0400 .0400			.060	.150	.038	3	.1250	1.5	BEF-040-150-3	50.98	BEF-040-150-3K	56.88
.0400 .0400			.060	.250	.038	2	.1250	1.5	BEF-040-250	52.58	BEF-040-250K	58.58
.0400 .0400			.060	.250	.038	3	.1250	1.5			BEF-040-250-3K	58.58
.0400 .0400			.060	.500	.038	2	.1250	1.5			BEF-040-500K	67.18
.0400 .0400			.060	.500	.038	3	.1250	1.5	BEF-040-500-3	60.88	BEF-040-500-3K	66.88
.0450 .0450			.068	.150	.043	2	.1250	1.5	BEF-045-150	50.98	BEF-045-150K	56.88
.0450 .0450			.068	.150	.043	3	.1250	1.5	BEF-045-150-3	50.98	BEF-045-150-3K	56.88
.0450 .0450			.068	.250	.043	2	.1250	1.5	BEF-045-250	52.58	BEF-045-250K	58.58
.0450 .0450			.068	.250	.043	3	.1250	1.5	BEF-045-250-3	52.58	BEF-045-250-3K	58.58
.0450 .0450			.068	.500	.043	2	.1250	1.5	BEF-045-500	60.88	BEF-045-500K	66.88
.0450 .0450			.068	.500	.043	3	.1250	1.5	BEF-045-500-3	60.88		
.0469 .0469			.071	.150	.045	2	.1250	1.5	BEF-047-150	50.98		
.0469 .0469			.071	.150	.045	3	.1250	1.5			BEF-047-150-3K	56.88
.0469 .0469			.071	.250	.045	2	.1250	1.5	BEF-047-250	52.58	BEF-047-250K	58.58
.0469 .0469			.071	.250	.045	3	.1250	1.5	BEF-047-250-3	52.58		
.0469 .0469			.071	.500	.045	2	.1250	1.5			BEF-047-500K	66.88
.0469 .0469			.071	.500	.045	3	.1250	1.5	BEF-047-500-3	60.88	BEF-047-500-3K	66.88
1.2 mm .0472			1.8 mm	10 mm	1.1 mm	2	3 mm	38 mm			BEFM-012-1000K	63.48
1.2 mm .0472			1.8 mm	12 mm	1.1 mm	2	3 mm	38 mm	BEFM-012-1200	63.08	BEFM-012-1200K	69.08
.0500 .0500			.075	.200	.048	2	.1250	1.5	BEF-050-200	50.98	BEF-050-200K	56.88
.0500 .0500			.075	.200	.048	3	.1250	1.5	BEF-050-200-3	50.98	BEF-050-200-3K	56.88
.0500 .0500			.075	.300	.048	2	.1250	1.5	BEF-050-300	52.58	BEF-050-300K	58.58
.0500 .0500			.075	.300	.048	3	.1250	1.5	BEF-050-300-3	52.58	BEF-050-300-3K	58.58
.0500 .0500			.075	.550	.048	2	.1250	1.5			BEF-050-550K	66.88
.0500 .0500			.075	.550	.048	3	.1250	1.5	BEF-050-550-3	60.88	BEF-050-550-3K	66.88
1.5 mm .0591			2.2 mm	6 mm	1.4 mm	2	3 mm	38 mm	BEFM-015-600	52.58	BEFM-015-600K	58.58
1.5 mm .0591			2.2 mm	10 mm	1.4 mm	2	3 mm	38 mm	BEFM-015-1000	57.48	BEFM-015-1000K	63.48
1.5 mm .0591			2.2 mm	12 mm	1.4 mm	2	3 mm	38 mm	BEFM-015-1200	63.08	BEFM-015-1200K	69.08
1.5 mm .0591			2.2 mm	15 mm	1.4 mm	2	3 mm	38 mm	BEFM-015-1500	66.68	BEFM-015-1500K	72.68
1.5 mm .0591			2.2 mm	20 mm	1.4 mm	2	3 mm	50 mm	BEFM-015-2000	83.28	BEFM-015-2000K	89.28

*.0005" / .013 mm max TIR

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BEF / BEFM

End Mills For Steels & High Temp Alloys
Ball – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

Continued from previous page

Cutter Diameter*			Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1			L2	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" / +.000 mm	-.0005" / -.013 mm	decimal equiv.	+ .015" / -.000"	+ .010" / -.000"								
.0600	.0600	.0600	.090	.200	.056	2	.1250	1.5	BEF-060-200	50.98	BEF-060-200K	56.88
.0600	.0600	.0600	.090	.200	.056	3	.1250	1.5	BEF-060-200-3	50.98	BEF-060-200-3K	56.88
.0600	.0600	.0600	.090	.350	.056	2	.1250	1.5	BEF-060-350	52.58	BEF-060-350K	58.58
.0600	.0600	.0600	.090	.350	.056	3	.1250	1.5			BEF-060-350-3K	58.58
.0600	.0600	.0600	.090	.500	.056	2	.1250	1.5	BEF-060-500	60.88	BEF-060-500K	66.88
.0600	.0600	.0600	.090	.500	.056	3	.1250	1.5	BEF-060-500-3	60.88	BEF-060-500-3K	66.88
.0600	.0600	.0600	.090	.750	.056	2	.1250	2.0	BEF-060-750	69.18		
.0600	.0600	.0600	.090	.750	.056	3	.1250	2.0	BEF-060-750-3	69.18	BEF-060-750-3K	75.18
.0625	.0625	.0625	.093	.200	.058	2	.1250	1.5			BEF-062-200K	57.28
.0625	.0625	.0625	.093	.200	.058	3	.1250	1.5	BEF-062-200-3	50.98		
.0625	.0625	.0625	.093	.550	.058	2	.1250	1.5	BEF-062-550	60.88	BEF-062-550K	66.88
.0625	.0625	.0625	.093	.550	.058	3	.1250	1.5	BEF-062-550-3	60.88	BEF-062-550-3K	66.88
.0625	.0625	.0625	.093	.750	.058	2	.1250	2.0	BEF-062-750	69.18	BEF-062-750K	75.18
.0750	.0750	.0750	.113	.250	.071	2	.1250	1.5	BEF-075-250	50.98	BEF-075-250K	56.88
.0750	.0750	.0750	.113	.250	.071	3	.1250	1.5	BEF-075-250-3	50.98	BEF-075-250-3K	56.88
.0750	.0750	.0750	.113	.400	.071	2	.1250	1.5	BEF-075-400	60.88	BEF-075-400K	66.88
.0750	.0750	.0750	.113	.400	.071	3	.1250	1.5	BEF-075-400-3	60.88	BEF-075-400-3K	66.88
.0750	.0750	.0750	.113	.600	.071	2	.1250	2.0	BEF-075-600	67.58	BEF-075-600K	73.48
.0750	.0750	.0750	.113	.600	.071	3	.1250	2.0	BEF-075-600-3	67.58	BEF-075-600-3K	73.48
.0750	.0750	.0750	.113	.900	.071	2	.1250	2.0	BEF-075-900	72.98	BEF-075-900K	78.98
.0750	.0750	.0750	.113	.900	.071	3	.1250	2.0	BEF-075-900-3	72.98	BEF-075-900-3K	78.98
.0781	.0781	.0781	.117	.250	.074	2	.1250	1.5	BEF-078-250	50.98		
.0781	.0781	.0781	.117	.250	.074	3	.1250	1.5			BEF-078-250-3K	57.28
.0781	.0781	.0781	.117	.400	.074	2	.1250	1.5	BEF-078-400	60.88	BEF-078-400K	66.88
.0781	.0781	.0781	.117	.400	.074	3	.1250	1.5	BEF-078-400-3	60.88	BEF-078-400-3K	66.88
.0781	.0781	.0781	.117	.650	.074	2	.1250	2.0	BEF-078-650	67.58	BEF-078-650K	73.48
.0781	.0781	.0781	.117	.650	.074	3	.1250	2.0	BEF-078-650-3	67.58	BEF-078-650-3K	73.48
.0781	.0781	.0781	.117	.900	.074	2	.1250	2.0	BEF-078-900	72.98	BEF-078-900K	78.98
.0781	.0781	.0781	.117	.900	.074	3	.1250	2.0	BEF-078-900-3	72.98	BEF-078-900-3K	78.98
2 mm	.0787	.0787	2.5 mm	7 mm	1.9 mm	2	3 mm	38 mm	BEFM-020-700	52.58	BEFM-020-700K	58.58
2 mm	.0787	.0787	2.5 mm	16 mm	1.9 mm	2	3 mm	38 mm	BEFM-020-1600	66.68		
2 mm	.0787	.0787	2.5 mm	20 mm	1.9 mm	2	3 mm	50 mm	BEFM-020-2000	83.28	BEFM-020-2000K	89.28
2 mm	.0787	.0787	2.5 mm	25 mm	1.9 mm	2	3 mm	50 mm	BEFM-020-2500	92.58	BEFM-020-2500K	98.58
.0900	.0900	.0900	.125	.250	.086	2	.1250	1.5	BEF-090-250	50.98	BEF-090-250K	56.88
.0900	.0900	.0900	.125	.400	.086	2	.1250	1.5	BEF-090-400	60.88	BEF-090-400K	66.88
.0900	.0900	.0900	.125	.400	.086	3	.1250	1.5	BEF-090-400-3	60.88		
.0900	.0900	.0900	.125	.400	.086	3	.1250	1.5			BEF-090-400-3K	66.88
.0900	.0900	.0900	.125	.650	.086	2	.1250	2.0	BEF-090-650	67.58		
.0900	.0900	.0900	.125	.650	.086	3	.1250	2.0	BEF-090-650-3	67.58		
.0900	.0900	.0900	.125	.650	.086	3	.1250	2.0			BEF-090-650-3K	73.48
.0900	.0900	.0900	.125	.900	.086	2	.1250	2.0	BEF-090-900	69.18	BEF-090-900K	75.18

*.0005" / .013 mm max TIR

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Steels & High Temp. Alloys



End Mills For Steels & High Temp Alloys

Ball – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

BEF / BEFM

Continued from previous page

Steels & High Temp. Alloys

Cutter Diameter*			Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated		
D1		decimal equiv.	L2	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price	
+ .0000" / - .0005"	+ .000 mm / - .013 mm		+ .015" / - .000"	+ .010" / - .000"									
.0938	.0938	.0938	.125	.250	.089	2	.1250	1.5	BEF-093-250	50.98	BEF-093-250K	56.88	
.0938	.0938	.0938	.125	.500	.089	2	.1250	1.5	BEF-093-500	60.88	BEF-093-500K	66.88	
.0938	.0938	.0938	.125	.750	.089	2	.1250	2.0	BEF-093-750	69.18	BEF-093-750K	75.18	
.0938	.0938	.0938	.125	1.000	.089	2	.1250	2.0	BEF-093-1000	72.98	BEF-093-1000K	78.98	
2.5 mm	.0984	.0984	3 mm	10 mm	2.4 mm	2	3 mm	38 mm	BEFM-025-1000	57.48	BEFM-025-1000K	63.48	
2.5 mm	.0984	.0984	3 mm	15 mm	2.4 mm	2	3 mm	38 mm	BEFM-025-1500	66.68	BEFM-025-1500K	72.68	
2.5 mm	.0984	.0984	3 mm	20 mm	2.4 mm	2	3 mm	50 mm			BEFM-025-2000K	89.28	
2.5 mm	.0984	.0984	3 mm	25 mm	2.4 mm	2	3 mm	50 mm	BEFM-025-2500	92.58	BEFM-025-2500K	98.58	
2.5 mm	.0984	.0984	3 mm	30 mm	2.4 mm	2	3 mm	60 mm	BEFM-025-3000	101.68	BEFM-025-3000K	108.08	
3 mm	.1181	.1181	3 mm	10 mm	2.9 mm	2	6 mm	57 mm	BEFM-030-1000	71.88			
3 mm	.1181	.1181	3 mm	15 mm	2.9 mm	2	6 mm	57 mm	BEFM-030-1500	82.38			
3 mm	.1181	.1181	3 mm	25 mm	2.9 mm	2	6 mm	57 mm	BEFM-030-2500	94.18			
3 mm	.1181	.1181	3 mm	30 mm	2.9 mm	2	6 mm	57 mm	BEFM-030-3000	103.48	BEFM-030-3000K	110.68	
.1250	.1250	.1250	.125	.375	.121	2	.1875	2.0	BEF-125-375	60.88	BEF-125-375K	67.68	
.1250	.1250	.1250	.125	.750	.121	2	.1875	2.0	BEF-125-750	69.18	BEF-125-750K	75.98	
.1250	.1250	.1250	.125	1.000	.121	2	.1875	2.0	BEF-125-1000	72.98	BEF-125-1000K	79.78	
.1250	.1250	.1250	.125	1.500	.121	2	.1875	3.0	BEF-125-1500	78.28	BEF-125-1500K	85.48	
4 mm	.1575	.1575	5 mm	15 mm	3.9 mm	2	6 mm	57 mm	BEFM-040-1500	82.38	BEFM-040-1500K	89.88	
4 mm	.1575	.1575	5 mm	25 mm	3.9 mm	2	6 mm	57 mm	BEFM-040-2500	94.18	BEFM-040-2500K	101.78	
4 mm	.1575	.1575	5 mm	30 mm	3.9 mm	2	6 mm	57 mm	BEFM-040-3000	103.48	BEFM-040-3000K	110.68	
.1875	.1875	.1875	.200	.750	.183	2	.2500	2.5	BEF-187-750	68.38			
.1875	.1875	.1875	.200	1.000	.183	2	.2500	2.5	BEF-187-1000	80.08			
.1875	.1875	.1875	.200	1.500	.183	2	.2500	3.0			BEF-187-1500K	100.68	
5 mm	.1969	.1969	6 mm	15 mm	4.9 mm	2	6 mm	57 mm	BEFM-050-1500	82.38	BEFM-050-1500K	89.88	
5 mm	.1969	.1969	6 mm	25 mm	4.9 mm	2	6 mm	57 mm	BEFM-050-2500	94.18	BEFM-050-2500K	101.78	
5 mm	.1969	.1969	6 mm	30 mm	4.9 mm	2	6 mm	57 mm	BEFM-050-3000	103.48	BEFM-050-3000K	110.68	
D1	+ .0000" / - .0010"	decimal equiv.	L2	+ .015" / - .000"	L3	+ .010" / - .000"	D3	D2 (h6)	L1	Tool #	Price	Tool #	Price
.2500	.2500	.2500	.250	.500	.246	2	.2500	2.5	BEF-250-500	57.98	BEF-250-500K	66.68	
.2500	.2500	.2500	.250	.750	.246	2	.2500	2.5	BEF-250-750	68.38	BEF-250-750K	76.88	
.2500	.2500	.2500	.250	1.000	.246	2	.2500	2.5	BEF-250-1000	80.08	BEF-250-1000K	88.58	
.2500	.2500	.2500	.250	1.500	.246	2	.2500	3.0	BEF-250-1500	91.58	BEF-250-1500K	100.28	

*.0005" / .013 mm max TIR



MEF / MEFM

End Mills For Steels & High Temp Alloys
Corner Radius - 2 & 3 Flute - Stub Flute



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Stub flutes for maximum rigidity
- Corner radius profile ■ 20° helix ■ Center cutting
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1 +.0000" -.0005"	+.000 mm -.013 mm	decimal equiv.	L2 +.015" -.000" +.38 mm -.00 mm	R +.0000" -.0005" +.000 mm -.013 mm		D2 (h6)	L1	Tool #	Price	Tool #	Price
								.0150	.0150	.0150	.023
.0150	.0150	.0150	.023	.002	3	.1250	1.5	MEF-015-023-3-002	65.48	MEF-015-023-3-002K	71.48
0.5 mm		.0197	0.7 mm	0.05 mm	2	3 mm	38 mm	MEFM-005-070-05	46.28	MEFM-005-070-05K	52.28
.0200	.0200	.0200	.030	.002	2	.1250	1.5	MEF-020-030-002	46.28	MEF-020-030-002K	52.28
.0200	.0200	.0200	.030	.002	3	.1250	1.5			MEF-020-030-3-002K	52.68
.0250	.0250	.0250	.038	.003	2	.1250	1.5			MEF-025-038-003K	52.68
.0250	.0250	.0250	.038	.003	3	.1250	1.5	MEF-025-038-3-003	46.28	MEF-025-038-3-003K	52.68
.0300	.0300	.0300	.045	.005	2	.1250	1.5	MEF-030-045-005	42.68	MEF-030-045-005K	48.68
.0300	.0300	.0300	.045	.005	3	.1250	1.5	MEF-030-045-3-005	42.68		
.0300	.0300	.0300	.045	.010	2	.1250	1.5	MEF-030-045-010	42.68	MEF-030-045-010K	48.98
.0300	.0300	.0300	.045	.010	3	.1250	1.5			MEF-030-045-3-010K	48.98
.0313	.0313	.0313	.047	.005	2	.1250	1.5	MEF-031-047-005	42.68	MEF-031-047-005K	48.68
.0313	.0313	.0313	.047	.005	3	.1250	1.5	MEF-031-047-3-005	42.68		
.0313	.0313	.0313	.047	.010	3	.1250	1.5	MEF-031-047-3-010	42.68	MEF-031-047-3-010K	48.98
0.8 mm		.0315	1.2 mm	0.05 mm	2	3 mm	38 mm	MEFM-008-120-05	42.68	MEFM-008-120-05K	48.68
.0350	.0350	.0350	.053	.005	2	.1250	1.5	MEF-035-053-005	42.68	MEF-035-053-005K	48.68
.0350	.0350	.0350	.053	.005	3	.1250	1.5	MEF-035-053-3-005	42.68	MEF-035-053-3-005K	48.68
.0350	.0350	.0350	.053	.010	2	.1250	1.5	MEF-035-053-010	42.68	MEF-035-053-010K	48.68
.0350	.0350	.0350	.053	.010	3	.1250	1.5	MEF-035-053-3-010	42.68	MEF-035-053-3-010K	48.68
1 mm		.0394	1.5 mm	0.1 mm	2	3 mm	38 mm	MEFM-010-150-10	42.68	MEFM-010-150-10K	48.68
1 mm		.0394	1.5 mm	0.2 mm	2	3 mm	38 mm	MEFM-010-150-20	42.68	MEFM-010-150-20K	48.68
.0400	.0400	.0400	.060	.005	2	.1250	1.5	MEF-040-060-005	42.68	MEF-040-060-005K	48.98
.0400	.0400	.0400	.060	.010	2	.1250	1.5	MEF-040-060-010	42.68	MEF-040-060-010K	48.68
.0400	.0400	.0400	.060	.010	3	.1250	1.5	MEF-040-060-3-010	42.68	MEF-040-060-3-010K	48.68
.0450	.0450	.0450	.068	.005	2	.1250	1.5	MEF-045-068-005	42.68	MEF-045-068-005K	48.68
.0450	.0450	.0450	.068	.005	3	.1250	1.5	MEF-045-068-3-005	42.68	MEF-045-068-3-005K	48.68
.0450	.0450	.0450	.068	.010	2	.1250	1.5			MEF-045-068-010K	48.98
.0450	.0450	.0450	.068	.010	3	.1250	1.5	MEF-045-068-3-010	42.68	MEF-045-068-3-010K	48.68
.0469	.0469	.0469	.071	.005	2	.1250	1.5	MEF-047-071-005	42.68	MEF-047-071-005K	48.68
.0469	.0469	.0469	.071	.005	3	.1250	1.5	MEF-047-071-3-005	42.68	MEF-047-071-3-005K	48.68
.0469	.0469	.0469	.071	.010	2	.1250	1.5	MEF-047-071-010	42.68	MEF-047-071-010K	48.68
.0469	.0469	.0469	.071	.010	3	.1250	1.5	MEF-047-071-3-010	42.68		
1.2 mm		.0472	1.8 mm	0.1 mm	2	3 mm	38 mm	MEFM-012-180-10	42.68	MEFM-012-180-10K	48.68
1.2 mm		.0472	1.8 mm	0.2 mm	2	3 mm	38 mm	MEFM-012-180-20	42.68	MEFM-012-180-20K	48.68

*.0005" / .013 mm max TIR

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Steels & High Temp. Alloys

End Mills For Steels & High Temp Alloys

Corner Radius – 2 & 3 Flute – Stub Flute (cont.)

MEF / MEFM

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Cutter Diameter*			Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1 +.0000" -.0005"	+.000 mm -.013 mm	decimal equiv.	L2 +.015" -.000" +.38 mm -.00 mm	R +.0000" -.0005" +.000 mm -.013 mm	D2 (h6)	L1	Tool #	Price	Tool #	Price	
											.0500
.0500	.0500	.0500	.075	.005	3	.1250	1.5	MEF-050-075-3-005	42.68	MEF-050-075-3-005K	48.68
.0500	.0500	.0500	.075	.010	2	.1250	1.5	MEF-050-075-010	42.68	MEF-050-075-010K	48.68
.0500	.0500	.0500	.075	.010	3	.1250	1.5			MEF-050-075-3-010K	48.98
1.5 mm	.0591	.0591	2.2 mm	0.15 mm	2	3 mm	38 mm	MEFM-015-220-15	42.68		
1.5 mm	.0591	.0591	2.2 mm	0.25 mm	2	3 mm	38 mm	MEFM-015-220-25	42.68	MEFM-015-220-25K	48.68
.0600	.0600	.0600	.090	.005	2	.1250	1.5	MEF-060-090-005	42.68	MEF-060-090-005K	48.68
.0600	.0600	.0600	.090	.005	3	.1250	1.5	MEF-060-090-3-005	42.68	MEF-060-090-3-005K	48.68
.0600	.0600	.0600	.090	.010	2	.1250	1.5	MEF-060-090-010	42.68		
.0600	.0600	.0600	.090	.010	3	.1250	1.5	MEF-060-090-3-010	42.68	MEF-060-090-3-010K	48.68
.0600	.0600	.0600	.090	.015	2	.1250	1.5	MEF-060-090-015	42.68	MEF-060-090-015K	48.68
.0600	.0600	.0600	.090	.015	3	.1250	1.5	MEF-060-090-3-015	42.68		
.0625	.0625	.0625	.093	.005	2	.1250	1.5	MEF-062-093-005	42.68	MEF-062-093-005K	48.68
.0625	.0625	.0625	.093	.005	3	.1250	1.5	MEF-062-093-3-005	42.68		
.0625	.0625	.0625	.093	.010	2	.1250	1.5	MEF-062-093-010	42.68	MEF-062-093-010K	48.68
.0625	.0625	.0625	.093	.010	3	.1250	1.5	MEF-062-093-3-010	42.68		
.0625	.0625	.0625	.093	.015	2	.1250	1.5	MEF-062-093-015	42.68	MEF-062-093-015K	48.98
.0750	.0750	.0750	.113	.005	2	.1250	1.5	MEF-075-113-005	42.68	MEF-075-113-005K	48.68
.0750	.0750	.0750	.113	.005	3	.1250	1.5	MEF-075-113-3-005	42.68	MEF-075-113-3-005K	48.68
.0750	.0750	.0750	.113	.010	2	.1250	1.5	MEF-075-113-010	42.68	MEF-075-113-010K	48.68
.0750	.0750	.0750	.113	.010	3	.1250	1.5	MEF-075-113-3-010	42.68	MEF-075-113-3-010K	48.68
.0750	.0750	.0750	.113	.015	2	.1250	1.5	MEF-075-113-015	42.68	MEF-075-113-015K	48.68
.0750	.0750	.0750	.113	.015	3	.1250	1.5	MEF-075-113-3-015	42.68	MEF-075-113-3-015K	48.68
.0781	.0781	.0781	.117	.005	2	.1250	1.5	MEF-078-117-005	42.68	MEF-078-117-005K	48.68
.0781	.0781	.0781	.117	.005	3	.1250	1.5	MEF-078-117-3-005	42.68	MEF-078-117-3-005K	48.98
.0781	.0781	.0781	.117	.010	2	.1250	1.5	MEF-078-117-010	42.68		
.0781	.0781	.0781	.117	.015	2	.1250	1.5	MEF-078-117-015	42.68	MEF-078-117-015K	48.68
.0781	.0781	.0781	.117	.015	3	.1250	1.5	MEF-078-117-3-015	42.68	MEF-078-117-3-015K	48.68
2 mm	.0787	.0787	2.5 mm	0.15 mm	2	3 mm	38 mm	MEFM-020-250-15	42.68		
2 mm	.0787	.0787	2.5 mm	0.25 mm	2	3 mm	38 mm	MEFM-020-250-25	42.68	MEFM-020-250-25K	48.98
.0900	.0900	.0900	.125	.005	2	.1250	1.5	MEF-090-125-005	42.68	MEF-090-125-005K	48.68
.0900	.0900	.0900	.125	.010	2	.1250	1.5	MEF-090-125-010	42.68	MEF-090-125-010K	48.68
.0900	.0900	.0900	.125	.015	2	.1250	1.5			MEF-090-125-015K	48.98
.0938	.0938	.0938	.125	.005	2	.1250	1.5	MEF-093-125-005	42.68		
.0938	.0938	.0938	.125	.010	2	.1250	1.5	MEF-093-125-010	42.68	MEF-093-125-010K	48.68
3 mm	.1181	.1181	3 mm	0.15 mm	2	6 mm	57 mm			MEFM-030-300-15K	70.28
3 mm	.1181	.1181	3 mm	0.25 mm	2	6 mm	57 mm	MEFM-030-300-25	61.58	MEFM-030-300-25K	70.28
.1250	.1250	.1250	.125	.005	2	.1875	2.0	MEF-125-125-005	45.88	MEF-125-125-005K	52.68
.1250	.1250	.1250	.125	.010	2	.1875	2.0			MEF-125-125-010K	52.68
4 mm	.1575	.1575	5 mm	0.25 mm	2	6 mm	57 mm	MEFM-040-500-25	61.58		
5 mm	.1969	.1969	6 mm	0.25 mm	2	6 mm	57 mm	MEFM-050-600-25	61.58	MEFM-050-600-25K	70.28

D1 +.0000" -.0010"	decimal equiv.	L2 +.015" -.000"	R +.0000" -.0005"	D2 (h6)	L1	Tool #	Price	Tool #	Price	
.2500	.2500	.250	.005	2	.2500	2.5	MEF-250-250-005	61.58	MEF-250-250-005K	70.28
.2500	.2500	.250	.010	2	.2500	2.5	MEF-250-250-010	61.58	MEF-250-250-010K	70.28
.2500	.2500	.250	.015	2	.2500	2.5	MEF-250-250-015	61.58	MEF-250-250-015K	70.28

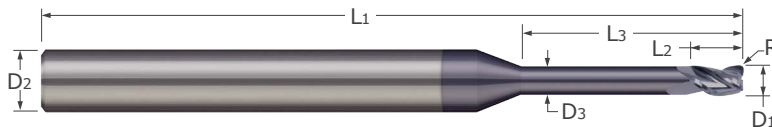
*.0005" / .013 mm max TIR

Steels & High Temp. Alloys



MEF / MEFM

End Mills For Steels & High Temp Alloys
Corner Radius - 2 & 3 Flute - Long Reach, Stub Flute



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Long reach for deep pocket milling
- Stub flutes for maximum rigidity
- Reduced neck diameter to avoid heeling
- Corner radius profile ■ 20° helix ■ Center cutting
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*		Length of Cut	Corner Radius	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1	D2	L2	R	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000" / +.000mm		+ .015" / -.000"	+ .0000" / -.0005"	+ .010" / -.010"								
-.0005" / -.013mm		+ .38mm / -.00mm	+ .000mm / -.013mm	+ .25mm / -.00mm								
.0150	.0150	.023	.002	.100	.014	2	.1250	1.5	MEF-015-100-002	73.78	MEF-015-100-002K	79.78
.0150	.0150	.023	.002	.100	.014	3	.1250	1.5			MEF-015-100-3-002K	79.78
.0150	.0150	.023	.002	.200	.014	2	.1250	1.5	MEF-015-200-002	75.38	MEF-015-200-002K	81.38
.0150	.0150	.023	.002	.200	.014	3	.1250	1.5	MEF-015-200-3-002	75.38	MEF-015-200-3-002K	81.38
0.5 mm	.0197	0.7 mm	0.05 mm	6 mm	0.45 mm	2	3 mm	38 mm	MEFM-005-600-05	57.48	MEFM-005-600-05K	63.48
.0200	.0200	.030	.002	.150	.019	2	.1250	1.5			MEF-020-150-002K	60.58
.0200	.0200	.030	.002	.250	.019	2	.1250	1.5	MEF-020-250-002	56.28		
.0200	.0200	.030	.002	.250	.019	3	.1250	1.5			MEF-020-250-3-002K	62.28
0.6 mm	.0236	0.9 mm	0.05 mm	5 mm	0.55 mm	2	3 mm	38 mm	MEFM-006-500-05	56.28	MEFM-006-500-05K	62.28
0.6 mm	.0236	0.9 mm	0.05 mm	6 mm	0.55 mm	2	3 mm	38 mm	MEFM-006-600-05	61.28	MEFM-006-600-05K	67.28
.0250	.0250	.038	.003	.150	.024	2	.1250	1.5	MEF-025-150-003	54.58	MEF-025-150-003K	60.58
.0250	.0250	.038	.003	.150	.024	3	.1250	1.5			MEF-025-150-3-003K	60.58
.0250	.0250	.038	.003	.250	.024	2	.1250	1.5	MEF-025-250-003	56.28	MEF-025-250-003K	62.28
.0250	.0250	.038	.003	.250	.024	3	.1250	1.5			MEF-025-250-3-003K	62.28
.0300	.0300	.045	.005	.100	.028	2	.1250	1.5	MEF-030-100-005	50.98	MEF-030-100-005K	56.88
.0300	.0300	.045	.005	.100	.028	3	.1250	1.5			MEF-030-100-3-005K	56.88
.0300	.0300	.045	.005	.200	.028	2	.1250	1.5	MEF-030-200-005	52.58	MEF-030-200-005K	58.58
.0300	.0300	.045	.005	.375	.028	2	.1250	1.5	MEF-030-375-005	57.48	MEF-030-375-005K	63.48
.0300	.0300	.045	.005	.375	.028	3	.1250	1.5	MEF-030-375-3-005	57.48	MEF-030-375-3-005K	63.48
.0300	.0300	.045	.010	.100	.028	2	.1250	1.5			MEF-030-100-010K	57.28
.0300	.0300	.045	.010	.100	.028	3	.1250	1.5	MEF-030-100-3-010	50.98	MEF-030-100-3-010K	56.88
.0300	.0300	.045	.010	.200	.028	2	.1250	1.5	MEF-030-200-010	52.58	MEF-030-200-010K	58.58
.0300	.0300	.045	.010	.375	.028	2	.1250	1.5	MEF-030-375-010	57.48	MEF-030-375-010K	63.48
.0300	.0300	.045	.010	.375	.028	3	.1250	1.5	MEF-030-375-3-010	57.48	MEF-030-375-3-010K	63.48
.0313	.0313	.047	.005	.100	.029	2	.1250	1.5	MEF-031-100-005	50.98	MEF-031-100-005K	56.88
.0313	.0313	.047	.005	.100	.029	3	.1250	1.5	MEF-031-100-3-005	50.98	MEF-031-100-3-005K	56.88
.0313	.0313	.047	.005	.200	.029	2	.1250	1.5	MEF-031-200-005	52.58	MEF-031-200-005K	58.58
.0313	.0313	.047	.005	.200	.029	3	.1250	1.5	MEF-031-200-3-005	52.58	MEF-031-200-3-005K	58.58
.0313	.0313	.047	.005	.375	.029	2	.1250	1.5	MEF-031-375-005	57.48	MEF-031-375-005K	63.48
.0313	.0313	.047	.005	.375	.029	3	.1250	1.5	MEF-031-375-3-005	57.48	MEF-031-375-3-005K	63.48
.0313	.0313	.047	.010	.100	.029	2	.1250	1.5	MEF-031-100-010	50.98		
.0313	.0313	.047	.010	.100	.029	3	.1250	1.5	MEF-031-100-3-010	50.98	MEF-031-100-3-010K	56.88

*.0005" / .013 mm max TIR

Continued on next page

Steels & High Temp. Alloys



End Mills For Steels & High Temp Alloys

Corner Radius – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

MEF / MEFM

Steels & High Temp. Alloys

Continued from previous page

Cutter Diameter*		Length of Cut	Corner Radius	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1 +.0000" +.000mm -.0005" -.013mm		L2 +.015" +.0000" -.000" -.0005"	R +.38mm +.000mm -.00mm -.013mm	L3 +.010" +.010" -.010" -.00mm	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
.0313	.0313	.047	.010	.200	.029	2	.1250	1.5	MEF-031-200-010	52.58	MEF-031-200-010K	58.58
.0313	.0313	.047	.010	.200	.029	3	.1250	1.5	MEF-031-200-3-010	52.58	MEF-031-200-3-010K	58.58
.0313	.0313	.047	.010	.375	.029	2	.1250	1.5	MEF-031-375-010	57.48	MEF-031-375-010K	63.48
.0313	.0313	.047	.010	.375	.029	3	.1250	1.5	MEF-031-375-3-010	57.48	MEF-031-375-3-010K	63.48
0.8 mm	.0315	1.2 mm	0.05 mm	4 mm	0.75 mm	2	3 mm	38 mm			MEFM-008-400-05K	56.48
0.8 mm	.0315	1.2 mm	0.05 mm	7 mm	0.75 mm	2	3 mm	38 mm	MEFM-008-700-05	56.78	MEFM-008-700-05K	62.78
0.8 mm	.0315	1.2 mm	0.05 mm	9 mm	0.75 mm	2	3 mm	38 mm	MEFM-008-900-05	63.28	MEFM-008-900-05K	69.28
.0350	.0350	.053	.005	.150	.033	2	.1250	1.5	MEF-035-150-005	50.98	MEF-035-150-005K	56.88
.0350	.0350	.053	.005	.150	.033	3	.1250	1.5	MEF-035-150-3-005	50.98	MEF-035-150-3-005K	56.88
.0350	.0350	.053	.005	.250	.033	2	.1250	1.5	MEF-035-250-005	52.58	MEF-035-250-005K	58.58
.0350	.0350	.053	.005	.250	.033	3	.1250	1.5	MEF-035-250-3-005	52.58	MEF-035-250-3-005K	58.58
.0350	.0350	.053	.005	.400	.033	2	.1250	1.5	MEF-035-400-005	57.48	MEF-035-400-005K	63.48
.0350	.0350	.053	.005	.400	.033	3	.1250	1.5	MEF-035-400-3-005	57.48	MEF-035-400-3-005K	63.48
.0350	.0350	.053	.010	.150	.033	2	.1250	1.5	MEF-035-150-010	50.98	MEF-035-150-010K	56.88
.0350	.0350	.053	.010	.150	.033	3	.1250	1.5	MEF-035-150-3-010	50.98		
.0350	.0350	.053	.010	.250	.033	2	.1250	1.5	MEF-035-250-010	52.58	MEF-035-250-010K	58.58
.0350	.0350	.053	.010	.250	.033	3	.1250	1.5	MEF-035-250-3-010	52.58	MEF-035-250-3-010K	58.58
.0350	.0350	.053	.010	.400	.033	2	.1250	1.5	MEF-035-400-010	57.48	MEF-035-400-010K	63.48
.0350	.0350	.053	.010	.400	.033	3	.1250	1.5	MEF-035-400-3-010	57.48	MEF-035-400-3-010K	63.48
1 mm	.0394	1.5 mm	0.1 mm	4 mm	0.95 mm	2	3 mm	38 mm	MEFM-010-400-10	50.98		
1 mm	.0394	1.5 mm	0.2 mm	4 mm	0.95 mm	2	3 mm	38 mm	MEFM-010-400-20	50.98		
1 mm	.0394	1.5 mm	0.2 mm	7 mm	0.95 mm	2	3 mm	38 mm	MEFM-010-700-20	56.78	MEFM-010-700-20K	62.78
1 mm	.0394	1.5 mm	0.2 mm	9 mm	0.95 mm	2	3 mm	38 mm	MEFM-010-900-20	63.18		
.0400	.0400	.060	.005	.150	.038	2	.1250	1.5	MEF-040-150-005	50.98	MEF-040-150-005K	56.88
.0400	.0400	.060	.005	.150	.038	3	.1250	1.5	MEF-040-150-3-005	50.98		
.0400	.0400	.060	.005	.250	.038	2	.1250	1.5	MEF-040-250-005	52.58	MEF-040-250-005K	58.58
.0400	.0400	.060	.005	.250	.038	3	.1250	1.5	MEF-040-250-3-005	52.58	MEF-040-250-3-005K	58.58
.0400	.0400	.060	.005	.500	.038	2	.1250	1.5	MEF-040-500-005	60.88	MEF-040-500-005K	66.88
.0400	.0400	.060	.005	.500	.038	3	.1250	1.5	MEF-040-500-3-005	60.88	MEF-040-500-3-005K	66.88
.0400	.0400	.060	.010	.150	.038	2	.1250	1.5	MEF-040-150-010	50.98	MEF-040-150-010K	56.88
.0400	.0400	.060	.010	.150	.038	3	.1250	1.5	MEF-040-150-3-010	50.98	MEF-040-150-3-010K	56.88
.0400	.0400	.060	.010	.250	.038	2	.1250	1.5	MEF-040-250-010	52.58	MEF-040-250-010K	58.58
.0400	.0400	.060	.010	.250	.038	3	.1250	1.5	MEF-040-250-3-010	52.58	MEF-040-250-3-010K	58.58
.0400	.0400	.060	.010	.500	.038	2	.1250	1.5	MEF-040-500-010	60.88	MEF-040-500-010K	66.88
.0400	.0400	.060	.010	.500	.038	3	.1250	1.5	MEF-040-500-3-010	60.88	MEF-040-500-3-010K	66.88
.0450	.0450	.068	.005	.150	.043	2	.1250	1.5	MEF-045-150-005	50.98	MEF-045-150-005K	56.88
.0450	.0450	.068	.005	.150	.043	3	.1250	1.5	MEF-045-150-3-005	50.98	MEF-045-150-3-005K	56.88
.0450	.0450	.068	.005	.250	.043	2	.1250	1.5	MEF-045-250-005	52.58	MEF-045-250-005K	58.58
.0450	.0450	.068	.005	.250	.043	3	.1250	1.5	MEF-045-250-3-005	52.58	MEF-045-250-3-005K	58.58
.0450	.0450	.068	.005	.500	.043	2	.1250	1.5	MEF-045-500-005	60.88	MEF-045-500-005K	66.88
.0450	.0450	.068	.005	.500	.043	3	.1250	1.5	MEF-045-500-3-005	60.88	MEF-045-500-3-005K	66.88
.0450	.0450	.068	.010	.150	.043	2	.1250	1.5	MEF-045-150-010	50.98	MEF-045-150-010K	56.88
.0450	.0450	.068	.010	.150	.043	3	.1250	1.5	MEF-045-150-3-010	50.98	MEF-045-150-3-010K	56.88
.0450	.0450	.068	.010	.250	.043	2	.1250	1.5	MEF-045-250-010	52.58	MEF-045-250-010K	58.58
.0450	.0450	.068	.010	.250	.043	3	.1250	1.5	MEF-045-250-3-010	52.58	MEF-045-250-3-010K	58.58
.0450	.0450	.068	.010	.500	.043	2	.1250	1.5	MEF-045-500-010	60.88	MEF-045-500-010K	66.88
.0450	.0450	.068	.010	.500	.043	3	.1250	1.5	MEF-045-500-3-010	60.88	MEF-045-500-3-010K	66.88

*.0005" / .013 mm max TIR

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MEF / MEFM

End Mills For Steels & High Temp Alloys
 Corner Radius – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

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Cutter Diameter*		Length of Cut	Corner Radius	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1	D2	L2	R	L3	D3	D2 (h6)	L1		Tool #	Price	Tool #	Price
+ .0000" / + .000mm - .0005" / - .013mm		+ .015" / - .000" + .38mm / - .00mm	+ .0000" / - .0005" + .000mm / - .013mm	+ .010" / - .010" + .25mm / - .00mm								
.0469	.0469	.071	.005	.150	.045	2	.1250	1.5	MEF-047-150-005	50.98	MEF-047-150-005K	56.88
.0469	.0469	.071	.005	.150	.045	3	.1250	1.5	MEF-047-150-3-005	50.98	MEF-047-150-3-005K	56.88
.0469	.0469	.071	.005	.250	.045	2	.1250	1.5	MEF-047-250-005	52.58	MEF-047-250-005K	58.58
.0469	.0469	.071	.005	.500	.045	2	.1250	1.5	MEF-047-500-005	60.88		
.0469	.0469	.071	.005	.500	.045	3	.1250	1.5	MEF-047-500-3-005	60.88	MEF-047-500-3-005K	66.88
.0469	.0469	.071	.010	.150	.045	2	.1250	1.5	MEF-047-150-010	50.98	MEF-047-150-010K	56.88
.0469	.0469	.071	.010	.150	.045	3	.1250	1.5	MEF-047-150-3-010	50.98	MEF-047-150-3-010K	56.88
.0469	.0469	.071	.010	.250	.045	2	.1250	1.5	MEF-047-250-010	52.58	MEF-047-250-010K	58.58
.0469	.0469	.071	.010	.250	.045	3	.1250	1.5	MEF-047-250-3-010	52.58	MEF-047-250-3-010K	58.58
.0469	.0469	.071	.010	.500	.045	2	.1250	1.5	MEF-047-500-010	60.88	MEF-047-500-010K	66.88
.0469	.0469	.071	.010	.500	.045	3	.1250	1.5	MEF-047-500-3-010	60.88	MEF-047-500-3-010K	66.88
1.2 mm	.0472	1.8 mm	0.1 mm	6 mm	1.1 mm	2	3 mm	38 mm	MEFM-012-600-10	56.78		
1.2 mm	.0472	1.8 mm	0.1 mm	10 mm	1.1 mm	2	3 mm	38 mm	MEFM-012-1000-10	63.28	MEFM-012-1000-10K	69.28
1.2 mm	.0472	1.8 mm	0.1 mm	12 mm	1.1 mm	2	3 mm	38 mm	MEFM-012-1200-10	68.78	MEFM-012-1200-10K	74.88
1.2 mm	.0472	1.8 mm	0.2 mm	6 mm	1.1 mm	2	3 mm	38 mm			MEFM-012-600-20K	62.78
1.2 mm	.0472	1.8 mm	0.2 mm	10 mm	1.1 mm	2	3 mm	38 mm	MEFM-012-1000-20	63.28	MEFM-012-1000-20K	69.28
1.2 mm	.0472	1.8 mm	0.2 mm	12 mm	1.1 mm	2	3 mm	38 mm	MEFM-012-1200-20	68.78	MEFM-012-1200-20K	74.88
.0500	.0500	.075	.005	.200	.048	2	.1250	1.5	MEF-050-200-005	50.98	MEF-050-200-005K	56.88
.0500	.0500	.075	.005	.200	.048	3	.1250	1.5	MEF-050-200-3-005	50.98	MEF-050-200-3-005K	56.88
.0500	.0500	.075	.005	.300	.048	2	.1250	1.5	MEF-050-300-005	54.18	MEF-050-300-005K	60.18
.0500	.0500	.075	.005	.300	.048	3	.1250	1.5	MEF-050-300-3-005	54.18	MEF-050-300-3-005K	60.18
.0500	.0500	.075	.005	.550	.048	2	.1250	1.5	MEF-050-550-005	60.88	MEF-050-550-005K	66.88
.0500	.0500	.075	.005	.550	.048	3	.1250	1.5	MEF-050-550-3-005	60.88		
.0500	.0500	.075	.010	.200	.048	2	.1250	1.5	MEF-050-200-010	50.98	MEF-050-200-010K	56.88
.0500	.0500	.075	.010	.200	.048	3	.1250	1.5	MEF-050-200-3-010	50.98	MEF-050-200-3-010K	57.28
.0500	.0500	.075	.010	.300	.048	2	.1250	1.5	MEF-050-300-010	54.18	MEF-050-300-010K	60.18
.0500	.0500	.075	.010	.300	.048	3	.1250	1.5	MEF-050-300-3-010	54.18	MEF-050-300-3-010K	60.18
.0500	.0500	.075	.010	.550	.048	2	.1250	1.5			MEF-050-550-010K	66.88
.0500	.0500	.075	.010	.550	.048	3	.1250	1.5	MEF-050-550-3-010	60.88	MEF-050-550-3-010K	66.88
1.5 mm	.0591	2.2 mm	0.15 mm	10 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-1000-15	63.28	MEFM-015-1000-15K	69.28
1.5 mm	.0591	2.2 mm	0.15 mm	12 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-1200-15	68.78	MEFM-015-1200-15K	74.88
1.5 mm	.0591	2.2 mm	0.15 mm	15 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-1500-15	72.58	MEFM-015-1500-15K	78.58
1.5 mm	.0591	2.2 mm	0.15 mm	20 mm	1.4 mm	2	3 mm	50 mm	MEFM-015-2000-15	89.28	MEFM-015-2000-15K	95.28
1.5 mm	.0591	2.2 mm	0.25 mm	10 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-1000-25	63.28		
1.5 mm	.0591	2.2 mm	0.25 mm	12 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-1200-25	68.78		
1.5 mm	.0591	2.2 mm	0.25 mm	15 mm	1.4 mm	2	3 mm	38 mm	MEFM-015-1500-25	72.58	MEFM-015-1500-25K	78.58
1.5 mm	.0591	2.2 mm	0.25 mm	20 mm	1.4 mm	2	3 mm	50 mm	MEFM-015-2000-25	89.28	MEFM-015-2000-25K	95.28
.0600	.0600	.090	.005	.200	.056	2	.1250	1.5	MEF-060-200-005	50.98	MEF-060-200-005K	56.88
.0600	.0600	.090	.005	.200	.056	3	.1250	1.5	MEF-060-200-3-005	50.98	MEF-060-200-3-005K	56.88
.0600	.0600	.090	.005	.350	.056	2	.1250	1.5	MEF-060-350-005	54.18	MEF-060-350-005K	60.18
.0600	.0600	.090	.005	.350	.056	3	.1250	1.5	MEF-060-350-3-005	54.18	MEF-060-350-3-005K	60.18
.0600	.0600	.090	.005	.500	.056	2	.1250	1.5	MEF-060-500-005	60.88	MEF-060-500-005K	66.88
.0600	.0600	.090	.005	.500	.056	3	.1250	1.5	MEF-060-500-3-005	60.88	MEF-060-500-3-005K	66.88
.0600	.0600	.090	.005	.750	.056	2	.1250	2.0	MEF-060-750-005	69.18	MEF-060-750-005K	75.18
.0600	.0600	.090	.005	.750	.056	3	.1250	2.0	MEF-060-750-3-005	69.18	MEF-060-750-3-005K	75.18
.0600	.0600	.090	.010	.200	.056	3	.1250	1.5	MEF-060-200-3-010	50.98	MEF-060-200-3-010K	56.88

Steels & High Temp. Alloys

*.0005" / .013 mm max TIR

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End Mills For Steels & High Temp Alloys

Corner Radius – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

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Steels & High Temp. Alloys

Cutter Diameter*	Length of Cut	Corner Radius	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated		
								Tool #	Price	Tool #	Price	
D1 +.0000"+.000mm -.0005"-.013mm	L2 +.015" -.000" +.38mm -.00mm	R +.0000" -.0005" +.000mm -.013mm	L3 +.010" -.010" +.25mm -.00mm	D3		D2 (h6)	L1					
.0600	.0600	.090	.010	.350	.056	2	.1250	1.5	MEF-060-350-010	54.18	MEF-060-350-010K	60.18
.0600	.0600	.090	.010	.350	.056	3	.1250	1.5	MEF-060-350-3-010	54.18	MEF-060-350-3-010K	60.18
.0600	.0600	.090	.010	.500	.056	2	.1250	1.5	MEF-060-500-010	60.88	MEF-060-500-010K	66.88
.0600	.0600	.090	.010	.500	.056	3	.1250	1.5	MEF-060-500-3-010	60.88	MEF-060-500-3-010K	66.88
.0600	.0600	.090	.010	.750	.056	2	.1250	2.0	MEF-060-750-010	69.18	MEF-060-750-010K	75.18
.0600	.0600	.090	.010	.750	.056	3	.1250	2.0	MEF-060-750-3-010	69.18	MEF-060-750-3-010K	75.18
.0600	.0600	.090	.015	.200	.056	2	.1250	1.5	MEF-060-200-015	50.98	MEF-060-200-015K	56.88
.0600	.0600	.090	.015	.200	.056	3	.1250	1.5	MEF-060-200-3-015	50.98	MEF-060-200-3-015K	56.88
.0600	.0600	.090	.015	.350	.056	2	.1250	1.5	MEF-060-350-015	54.18	MEF-060-350-015K	60.18
.0600	.0600	.090	.015	.350	.056	3	.1250	1.5	MEF-060-350-3-015	54.18	MEF-060-350-3-015K	60.18
.0600	.0600	.090	.015	.500	.056	2	.1250	1.5	MEF-060-500-015	60.88	MEF-060-500-015K	66.88
.0600	.0600	.090	.015	.500	.056	3	.1250	1.5	MEF-060-500-3-015	60.88	MEF-060-500-3-015K	66.88
.0600	.0600	.090	.015	.750	.056	2	.1250	2.0	MEF-060-750-015	69.18	MEF-060-750-015K	75.18
.0600	.0600	.090	.015	.750	.056	3	.1250	2.0	MEF-060-750-3-015	69.18	MEF-060-750-3-015K	75.18
.0625	.0625	.093	.005	.200	.058	2	.1250	1.5	MEF-062-200-005	50.98	MEF-062-200-005K	56.88
.0625	.0625	.093	.005	.200	.058	3	.1250	1.5	MEF-062-200-3-005	50.98	MEF-062-200-3-005K	56.88
.0625	.0625	.093	.005	.350	.058	2	.1250	1.5	MEF-062-350-005	54.18		
.0625	.0625	.093	.005	.350	.058	3	.1250	1.5	MEF-062-350-3-005	54.18	MEF-062-350-3-005K	60.18
.0625	.0625	.093	.005	.550	.058	2	.1250	1.5	MEF-062-550-005	60.88	MEF-062-550-005K	66.88
.0625	.0625	.093	.005	.550	.058	3	.1250	1.5			MEF-062-550-3-005K	66.88
.0625	.0625	.093	.005	.750	.058	2	.1250	2.0	MEF-062-750-005	69.18	MEF-062-750-005K	75.18
.0625	.0625	.093	.005	.750	.058	3	.1250	2.0	MEF-062-750-3-005	69.18	MEF-062-750-3-005K	75.18
.0625	.0625	.093	.010	.200	.058	2	.1250	1.5	MEF-062-200-010	50.98		
.0625	.0625	.093	.010	.200	.058	3	.1250	1.5	MEF-062-200-3-010	50.98		
.0625	.0625	.093	.010	.350	.058	2	.1250	1.5	MEF-062-350-010	54.18	MEF-062-350-010K	60.18
.0625	.0625	.093	.010	.350	.058	3	.1250	1.5	MEF-062-350-3-010	54.18	MEF-062-350-3-010K	60.18
.0625	.0625	.093	.010	.550	.058	2	.1250	1.5	MEF-062-550-010	60.88	MEF-062-550-010K	66.88
.0625	.0625	.093	.010	.550	.058	3	.1250	1.5	MEF-062-550-3-010	60.88		
.0625	.0625	.093	.010	.750	.058	2	.1250	2.0	MEF-062-750-010	69.18	MEF-062-750-010K	75.18
.0625	.0625	.093	.010	.750	.058	3	.1250	2.0	MEF-062-750-3-010	69.18	MEF-062-750-3-010K	75.18
.0625	.0625	.093	.015	.200	.058	2	.1250	1.5	MEF-062-200-015	50.98	MEF-062-200-015K	57.28
.0625	.0625	.093	.015	.200	.058	3	.1250	1.5	MEF-062-200-3-015	50.98	MEF-062-200-3-015K	56.88
.0625	.0625	.093	.015	.350	.058	2	.1250	1.5	MEF-062-350-015	53.38	MEF-062-350-015K	59.38
.0625	.0625	.093	.015	.350	.058	3	.1250	1.5	MEF-062-350-3-015	53.38	MEF-062-350-3-015K	59.38
.0625	.0625	.093	.015	.550	.058	2	.1250	1.5	MEF-062-550-015	60.88	MEF-062-550-015K	66.88
.0625	.0625	.093	.015	.550	.058	3	.1250	1.5	MEF-062-550-3-015	60.88	MEF-062-550-3-015K	66.88
.0625	.0625	.093	.015	.750	.058	2	.1250	2.0	MEF-062-750-015	69.18	MEF-062-750-015K	75.18
.0625	.0625	.093	.015	.750	.058	3	.1250	2.0	MEF-062-750-3-015	69.18	MEF-062-750-3-015K	75.18
.0750	.0750	.113	.005	.250	.071	2	.1250	1.5	MEF-075-250-005	50.98	MEF-075-250-005K	56.88
.0750	.0750	.113	.005	.250	.071	3	.1250	1.5	MEF-075-250-3-005	50.98	MEF-075-250-3-005K	56.88
.0750	.0750	.113	.005	.400	.071	2	.1250	1.5	MEF-075-400-005	54.18	MEF-075-400-005K	60.18
.0750	.0750	.113	.005	.400	.071	3	.1250	1.5	MEF-075-400-3-005	54.18	MEF-075-400-3-005K	60.18
.0750	.0750	.113	.005	.600	.071	2	.1250	2.0	MEF-075-600-005	60.88	MEF-075-600-005K	66.88
.0750	.0750	.113	.005	.600	.071	3	.1250	2.0	MEF-075-600-3-005	60.88	MEF-075-600-3-005K	66.88
.0750	.0750	.113	.005	.900	.071	2	.1250	2.0	MEF-075-900-005	72.98	MEF-075-900-005K	78.98
.0750	.0750	.113	.005	.900	.071	3	.1250	2.0	MEF-075-900-3-005	72.98	MEF-075-900-3-005K	78.98

*.0005" / .013 mm max TIR

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End Mills For Steels & High Temp Alloys
 Corner Radius – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

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Cutter Diameter*	Length of Cut	Corner Radius	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated		
								Tool #	Price	Tool #	Price	
D ₁ +.0000"+.000mm -.0005"-.013mm	L ₂ +.015" -.000"	R +.0000" -.0005"	L ₃ +.010" -.010"	D ₃		D ₂ (h6)	L ₁					
.0750	.0750	.113	.010	.250	.071	2	.1250	1.5	MEF-075-250-010	50.98	MEF-075-250-010K	56.88
.0750	.0750	.113	.010	.250	.071	3	.1250	1.5	MEF-075-250-3-010	50.98	MEF-075-250-3-010K	56.88
.0750	.0750	.113	.010	.400	.071	2	.1250	1.5	MEF-075-400-010	54.18	MEF-075-400-010K	60.18
.0750	.0750	.113	.010	.400	.071	3	.1250	1.5	MEF-075-400-3-010	54.18	MEF-075-400-3-010K	60.18
.0750	.0750	.113	.010	.600	.071	2	.1250	2.0	MEF-075-600-010	60.88	MEF-075-600-010K	66.88
.0750	.0750	.113	.010	.600	.071	3	.1250	2.0	MEF-075-600-3-010	60.88	MEF-075-600-3-010K	66.88
.0750	.0750	.113	.010	.900	.071	2	.1250	2.0	MEF-075-900-010	72.98	MEF-075-900-010K	78.98
.0750	.0750	.113	.010	.900	.071	3	.1250	2.0	MEF-075-900-3-010	72.98	MEF-075-900-3-010K	78.98
.0750	.0750	.113	.015	.250	.071	2	.1250	1.5	MEF-075-250-015	50.98	MEF-075-250-015K	56.88
.0750	.0750	.113	.015	.250	.071	3	.1250	1.5	MEF-075-250-3-015	50.98	MEF-075-250-3-015K	56.88
.0750	.0750	.113	.015	.400	.071	2	.1250	1.5	MEF-075-400-015	54.18	MEF-075-400-015K	60.18
.0750	.0750	.113	.015	.400	.071	3	.1250	1.5	MEF-075-400-3-015	54.18	MEF-075-400-3-015K	60.18
.0750	.0750	.113	.015	.600	.071	2	.1250	2.0	MEF-075-600-015	60.88	MEF-075-600-015K	66.88
.0750	.0750	.113	.015	.600	.071	3	.1250	2.0	MEF-075-600-3-015	60.88	MEF-075-600-3-015K	66.88
.0750	.0750	.113	.015	.900	.071	2	.1250	2.0	MEF-075-900-015	72.98	MEF-075-900-015K	78.98
.0750	.0750	.113	.015	.900	.071	3	.1250	2.0	MEF-075-900-3-015	72.98	MEF-075-900-3-015K	78.98
.0781	.0781	.117	.005	.250	.074	2	.1250	1.5	MEF-078-250-005	50.98	MEF-078-250-005K	56.88
.0781	.0781	.117	.005	.250	.074	3	.1250	1.5	MEF-078-250-3-005	50.98	MEF-078-250-3-005K	56.88
.0781	.0781	.117	.005	.400	.074	2	.1250	1.5	MEF-078-400-005	54.18	MEF-078-400-005K	60.18
.0781	.0781	.117	.005	.400	.074	3	.1250	1.5	MEF-078-400-3-005	54.18	MEF-078-400-3-005K	60.18
.0781	.0781	.117	.005	.650	.074	2	.1250	2.0	MEF-078-650-005	60.88	MEF-078-650-005K	66.88
.0781	.0781	.117	.005	.650	.074	3	.1250	2.0	MEF-078-650-3-005	60.88		
.0781	.0781	.117	.005	.900	.074	2	.1250	2.0	MEF-078-900-005	72.98	MEF-078-900-005K	78.98
.0781	.0781	.117	.005	.900	.074	3	.1250	2.0	MEF-078-900-3-005	72.98	MEF-078-900-3-005K	78.98
.0781	.0781	.117	.010	.250	.074	2	.1250	1.5	MEF-078-250-010	50.98	MEF-078-250-010K	57.28
.0781	.0781	.117	.010	.250	.074	3	.1250	1.5	MEF-078-250-3-010	50.98	MEF-078-250-3-010K	56.88
.0781	.0781	.117	.010	.400	.074	2	.1250	1.5	MEF-078-400-010	54.18	MEF-078-400-010K	60.18
.0781	.0781	.117	.010	.400	.074	3	.1250	1.5	MEF-078-400-3-010	54.18	MEF-078-400-3-010K	60.18
.0781	.0781	.117	.010	.650	.074	2	.1250	2.0	MEF-078-650-010	60.88	MEF-078-650-010K	66.88
.0781	.0781	.117	.010	.650	.074	3	.1250	2.0	MEF-078-650-3-010	60.88		
.0781	.0781	.117	.010	.900	.074	2	.1250	2.0	MEF-078-900-010	72.98	MEF-078-900-010K	78.98
.0781	.0781	.117	.010	.900	.074	3	.1250	2.0	MEF-078-900-3-010	72.98	MEF-078-900-3-010K	78.98
.0781	.0781	.117	.015	.250	.074	2	.1250	1.5	MEF-078-250-015	50.98	MEF-078-250-015K	56.88
.0781	.0781	.117	.015	.250	.074	3	.1250	1.5	MEF-078-250-3-015	50.98	MEF-078-250-3-015K	56.88
.0781	.0781	.117	.015	.400	.074	2	.1250	1.5	MEF-078-400-015	54.18	MEF-078-400-015K	60.18
.0781	.0781	.117	.015	.400	.074	3	.1250	1.5	MEF-078-400-3-015	54.18	MEF-078-400-3-015K	60.18
.0781	.0781	.117	.015	.650	.074	2	.1250	2.0	MEF-078-650-015	60.88	MEF-078-650-015K	66.88
.0781	.0781	.117	.015	.900	.074	2	.1250	2.0			MEF-078-900-015K	78.98
.0781	.0781	.117	.015	.900	.074	3	.1250	2.0	MEF-078-900-3-015	72.98	MEF-078-900-3-015K	78.98
2 mm	.0787	2.5 mm	0.15 mm	7 mm	1.9 mm	2	3 mm	38 mm	MEFM-020-700-15	58.38	MEFM-020-700-15K	64.38
2 mm	.0787	2.5 mm	0.15 mm	12 mm	1.9 mm	2	3 mm	38 mm	MEFM-020-1200-15	68.78	MEFM-020-1200-15K	74.88
2 mm	.0787	2.5 mm	0.15 mm	16 mm	1.9 mm	2	3 mm	38 mm			MEFM-020-1600-15K	78.88
2 mm	.0787	2.5 mm	0.15 mm	25 mm	1.9 mm	2	3 mm	50 mm			MEFM-020-2500-15K	104.38
2 mm	.0787	2.5 mm	0.25 mm	7 mm	1.9 mm	2	3 mm	38 mm	MEFM-020-700-25	58.38	MEFM-020-700-25K	64.38
2 mm	.0787	2.5 mm	0.25 mm	12 mm	1.9 mm	2	3 mm	38 mm	MEFM-020-1200-25	68.78	MEFM-020-1200-25K	74.88
2 mm	.0787	2.5 mm	0.25 mm	16 mm	1.9 mm	2	3 mm	38 mm	MEFM-020-1600-25	72.58	MEFM-020-1600-25K	78.58
2 mm	.0787	2.5 mm	0.25 mm	20 mm	1.9 mm	2	3 mm	50 mm	MEFM-020-2000-25	89.28	MEFM-020-2000-25K	95.28

*.0005" / .013 mm max TIR

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End Mills For Steels & High Temp Alloys

Corner Radius – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

MEF / MEFM

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Cutter Diameter*		Length of Cut	Corner Radius	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1 +.0000"-.000mm -.0005"-.013mm	L2 +.015" -.000"	R +.0000" -.0005"	L3 +.010" -.010"	D3	D2 (h6)	L1	Tool #	Price	Tool #	Price		
2 mm .0787	2.5 mm	0.25 mm	25 mm	1.9 mm	2	3 mm	50 mm	MEFM-020-2500-25	98.38	MEFM-020-2500-25K	104.38	
.0900 .0900	.125	.005	.250	.086	2	.1250	1.5	MEF-090-250-005	50.98	MEF-090-250-005K	56.88	
.0900 .0900	.125	.005	.400	.086	2	.1250	1.5	MEF-090-400-005	54.18	MEF-090-400-005K	60.18	
.0900 .0900	.125	.005	.650	.086	2	.1250	2.0	MEF-090-650-005	60.88	MEF-090-650-005K	66.88	
.0900 .0900	.125	.005	.900	.086	2	.1250	2.0	MEF-090-900-005	72.98	MEF-090-900-005K	78.98	
.0900 .0900	.125	.010	.250	.086	2	.1250	1.5	MEF-090-250-010	50.98	MEF-090-250-010K	56.88	
.0900 .0900	.125	.010	.400	.086	2	.1250	1.5	MEF-090-400-010	54.18	MEF-090-400-010K	60.18	
.0900 .0900	.125	.010	.650	.086	2	.1250	2.0	MEF-090-650-010	60.88	MEF-090-650-010K	66.88	
.0900 .0900	.125	.010	.900	.086	2	.1250	2.0	MEF-090-900-010	72.98	MEF-090-900-010K	78.98	
.0900 .0900	.125	.015	.250	.086	2	.1250	1.5	MEF-090-250-015	50.98	MEF-090-250-015K	56.88	
.0900 .0900	.125	.015	.400	.086	2	.1250	1.5	MEF-090-400-015	54.18	MEF-090-400-015K	60.18	
.0900 .0900	.125	.015	.650	.086	2	.1250	2.0	MEF-090-650-015	60.88	MEF-090-650-015K	66.88	
.0900 .0900	.125	.015	.900	.086	2	.1250	2.0	MEF-090-900-015	72.98	MEF-090-900-015K	78.98	
.0938 .0938	.125	.005	.250	.089	2	.1250	1.5	MEF-093-250-005	50.98	MEF-093-250-005K	56.88	
.0938 .0938	.125	.005	.500	.089	2	.1250	1.5			MEF-093-500-005K	66.88	
.0938 .0938	.125	.005	.750	.089	2	.1250	2.0	MEF-093-750-005	69.18	MEF-093-750-005K	75.18	
.0938 .0938	.125	.005	1.000	.089	2	.1250	2.0	MEF-093-1000-005	72.98	MEF-093-1000-005K	78.98	
.0938 .0938	.125	.010	.250	.089	2	.1250	1.5	MEF-093-250-010	50.98	MEF-093-250-010K	56.88	
.0938 .0938	.125	.010	.500	.089	2	.1250	1.5	MEF-093-500-010	60.88	MEF-093-500-010K	66.88	
.0938 .0938	.125	.010	.750	.089	2	.1250	2.0	MEF-093-750-010	69.18	MEF-093-750-010K	75.18	
.0938 .0938	.125	.010	1.000	.089	2	.1250	2.0	MEF-093-1000-010	72.98	MEF-093-1000-010K	78.98	
.0938 .0938	.125	.015	.250	.089	2	.1250	1.5	MEF-093-250-015	50.98	MEF-093-250-015K	57.28	
.0938 .0938	.125	.015	.500	.089	2	.1250	1.5	MEF-093-500-015	60.88	MEF-093-500-015K	66.88	
.0938 .0938	.125	.015	1.000	.089	2	.1250	2.0	MEF-093-1000-015	72.98			
2.5 mm .0984	3 mm	0.15 mm	15 mm	2.4 mm	2	3 mm	38 mm			MEFM-025-1500-15K	78.58	
2.5 mm .0984	3 mm	0.15 mm	20 mm	2.4 mm	2	3 mm	50 mm	MEFM-025-2000-15	89.28	MEFM-025-2000-15K	95.28	
2.5 mm .0984	3 mm	0.15 mm	25 mm	2.4 mm	2	3 mm	50 mm	MEFM-025-2500-15	98.38	MEFM-025-2500-15K	104.38	
2.5 mm .0984	3 mm	0.15 mm	30 mm	2.4 mm	2	3 mm	60 mm			MEFM-025-3000-15K	114.28	
2.5 mm .0984	3 mm	0.25 mm	20 mm	2.4 mm	2	3 mm	50 mm	MEFM-025-2000-25	89.28	MEFM-025-2000-25K	95.28	
2.5 mm .0984	3 mm	0.25 mm	25 mm	2.4 mm	2	3 mm	50 mm	MEFM-025-2500-25	98.38	MEFM-025-2500-25K	104.38	
3 mm .1181	3 mm	0.15 mm	10 mm	2.9 mm	2	6 mm	57 mm			MEFM-030-1000-15K	80.58	
3 mm .1181	3 mm	0.15 mm	15 mm	2.9 mm	2	6 mm	57 mm	MEFM-030-1500-15	82.38	MEFM-030-1500-15K	90.88	
3 mm .1181	3 mm	0.15 mm	25 mm	2.9 mm	2	6 mm	57 mm			MEFM-030-2500-15K	106.18	
3 mm .1181	3 mm	0.15 mm	30 mm	2.9 mm	2	6 mm	57 mm	MEFM-030-3000-15	103.48	MEFM-030-3000-15K	111.98	
3 mm .1181	3 mm	0.25 mm	10 mm	2.9 mm	2	6 mm	57 mm	MEFM-030-1000-25	71.88	MEFM-030-1000-25K	80.58	
3 mm .1181	3 mm	0.25 mm	15 mm	2.9 mm	2	6 mm	57 mm	MEFM-030-1500-25	82.38	MEFM-030-1500-25K	90.88	
.1250 .1250	.125	.005	.375	.121	2	.1875	2.0	MEF-125-375-005	54.18	MEF-125-375-005K	60.98	
.1250 .1250	.125	.005	.750	.121	2	.1875	2.0	MEF-125-750-005	64.18	MEF-125-750-005K	70.98	
.1250 .1250	.125	.005	1.000	.121	2	.1875	2.0	MEF-125-1000-005	72.58	MEF-125-1000-005K	79.38	
.1250 .1250	.125	.005	1.500	.121	2	.1875	3.0	MEF-125-1500-005	78.28			
.1250 .1250	.125	.010	.375	.121	2	.1875	2.0	MEF-125-375-010	54.18			
.1250 .1250	.125	.010	.750	.121	2	.1875	2.0	MEF-125-750-010	64.18	MEF-125-750-010K	70.98	
.1250 .1250	.125	.010	1.000	.121	2	.1875	2.0	MEF-125-1000-010	72.58			

*.0005" / .013 mm max TIR

Continued on next page



Steels & High Temp. Alloys

MEF / MEFM

End Mills For Steels & High Temp Alloys
 Corner Radius – 2 & 3 Flute – Long Reach, Stub Flute (cont.)

Continued from previous page

Cutter Diameter*		Length of Cut	Corner Radius	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1		L2	R	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
$+0.0000''$ $-0.0005''$	$+0.0000''$ $-0.0005''$	$+0.015''$ $-0.000''$	$+0.0000''$ $-0.0005''$	$+0.010''$ $-0.010''$								
.1250	.1250	.125	.010	1.500	.121	2	.1875	3.0	MEF-125-1500-010	78.28	MEF-125-1500-010K	85.48
.1250	.1250	.125	.015	.375	.121	2	.1875	2.0	MEF-125-375-015	54.18	MEF-125-375-015K	60.98
.1250	.1250	.125	.015	.750	.121	2	.1875	2.0	MEF-125-750-015	64.18	MEF-125-750-015K	70.98
.1250	.1250	.125	.015	1.000	.121	2	.1875	2.0	MEF-125-1000-015	72.58	MEF-125-1000-015K	79.38
4 mm	.1575	5 mm	0.25 mm	30 mm	3.9 mm	2	6 mm	57 mm			MEFM-040-3000-25K	111.78
4 mm	.1575	5 mm	0.5 mm	30 mm	3.9 mm	2	6 mm	57 mm	MEFM-040-3000-50	103.18	MEFM-040-3000-50K	111.78
4 mm	.1575	5 mm	1 mm	30 mm	3.9 mm	2	6 mm	57 mm	MEFM-040-3000-100	103.18	MEFM-040-3000-100K	111.78
.1875	.1875	.200	.005	1.000	.183	2	.2500	2.5	MEF-187-1000-005	91.78	MEF-187-1000-005K	100.28
.1875	.1875	.200	.010	1.000	.183	2	.2500	2.5	MEF-187-1000-010	91.78	MEF-187-1000-010K	100.28
.1875	.1875	.200	.010	1.500	.183	2	.2500	3.0	MEF-187-1500-010	103.48	MEF-187-1500-010K	111.98
.1875	.1875	.200	.015	1.000	.183	2	.2500	2.5	MEF-187-1000-015	91.78	MEF-187-1000-015K	100.28
.1875	.1875	.200	.015	1.500	.183	2	.2500	3.0	MEF-187-1500-015	103.48	MEF-187-1500-015K	111.98
.1875	.1875	.200	.005	.750	.183	2	.2500	2.5	MEF-187-750-005	81.68	MEF-187-750-005K	90.28
.1875	.1875	.200	.015	.750	.183	2	.2500	2.5	MEF-187-750-015	81.68	MEF-187-750-015K	90.28
.1875	.1875	.200	.010	.750	.183	2	.2500	2.5	MEF-187-750-010	81.68	MEF-187-750-010K	90.28
5 mm	.1969	6 mm	0.25 mm	15 mm	4.9 mm	2	6 mm	57 mm	MEFM-050-1500-25	82.18	MEFM-050-1500-25K	90.88
5 mm	.1969	6 mm	0.25 mm	25 mm	4.9 mm	2	6 mm	57 mm	MEFM-050-2500-25	93.88	MEFM-050-2500-25K	102.58
5 mm	.1969	6 mm	0.25 mm	30 mm	4.9 mm	2	6 mm	57 mm			MEFM-050-3000-25K	111.78
5 mm	.1969	6 mm	0.5 mm	30 mm	4.9 mm	2	6 mm	57 mm	MEFM-050-3000-50	103.18	MEFM-050-3000-50K	111.78
5 mm	.1969	6 mm	1 mm	30 mm	4.9 mm	2	6 mm	57 mm	MEFM-050-3000-100	103.18		
D1		L2	R	L3	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price
$+0.0000''$ $-0.0005''$	$+0.0000''$ $-0.0005''$	$+0.015''$ $-0.000''$	$+0.0000''$ $-0.0005''$	$+0.010''$ $-0.010''$								
.2500	.2500	.250	.005	.750	.246	2	.2500	2.5	MEF-250-750-005	81.68	MEF-250-750-005K	90.28
.2500	.2500	.250	.010	.750	.246	2	.2500	2.5	MEF-250-750-010	81.68	MEF-250-750-010K	90.28
.2500	.2500	.250	.015	.750	.246	2	.2500	2.5	MEF-250-750-015	81.68	MEF-250-750-015K	90.28
.2500	.2500	.250	.010	1.000	.246	2	.2500	2.5	MEF-250-1000-010	91.78	MEF-250-1000-010K	100.28
.2500	.2500	.250	.005	1.000	.246	2	.2500	2.5	MEF-250-1000-005	91.78	MEF-250-1000-005K	100.28
.2500	.2500	.250	.015	1.000	.246	2	.2500	2.5	MEF-250-1000-015	91.78	MEF-250-1000-015K	100.28

*.0005" / .013 mm max TIR

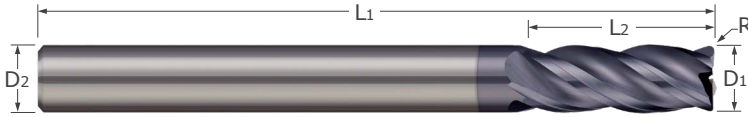
Steels & High Temp. Alloys



End Mills For Steels & High Temp Alloys

Corner Radius – 4 Flute – Variable Helix

VHS / VHSM
VHM / VHMM



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Variable helix design reduces chatter and harmonics and increases material removal rates
- Specialized geometry for maximum performance in high velocity tool paths
- Corner radius profile
- Weldon flat offered on sizes 3/8" and larger
- Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

Steels & High Temp. Alloys

Cutter Diameter*	Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
D1 +.0000" -.0020" (h9) decimal equiv.	L2 +.031" -.000" +.79 mm -.00 mm	R +.0000" -.0005" +.000 mm -.013 mm		D2 (h6)	L1				
3 mm .1181	8 mm	0.5 mm	4	4 mm	50 mm			VHMM-030-4X	30.88
.1250 .1250	.500	.010	4	.1250	1.5			VHM-125-4X	26.28
4 mm .1575	8 mm	0.5 mm	4	4 mm	50 mm	VHSM-040-4	33.78	VHSM-040-4X	38.38
4 mm .1575	11 mm	0.5 mm	4	4 mm	50 mm	VHMM-040-4	37.48		
5 mm .1969	16 mm	0.5 mm	4	6 mm	57 mm	VHMM-050-4	44.58		

Cutter Diameter*	Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
D1 +.0000" -.0030"	L2 +.031" -.000" +.79 mm -.00 mm	R +.0000" -.0005" +.000 mm -.013 mm		D2 (h6)	L1				
6 mm .2362	16 mm	0.5 mm	4	6 mm	57 mm			VHMM-060-4X	52.68
.2500 .2500	.500	.020	4	.2500	2.5	VHS-250-4	39.78	VHS-250-4X	47.48
8 mm .3150	16 mm	0.5 mm	4	8 mm	63 mm	VHSM-080-4	46.68		
8 mm .3150	19 mm	0.5 mm	4	8 mm	63 mm	VHMM-080-4	52.08	VHMM-080-4X	62.88
.3750 .3750	.875	.020	4	.3750	2.5	VHM-375-4	58.38		
10 mm .3937	19 mm	0.6 mm	4	10 mm	72 mm	VHSM-100-4	59.78		
10 mm .3937	22 mm	0.6 mm	4	10 mm	72 mm	VHMM-100-4	66.48	VHMM-100-4X	76.98
.4375 .4375	1.000	.020	4	.4375	2.5	VHM-437-4	91.18	VHM-437-4X	103.88
12 mm .4724	22 mm	0.5 mm	4	12 mm	83 mm			VHSM-120-4X	101.48
12 mm .4724	26 mm	0.6 mm	4	12 mm	83 mm	VHMM-120-4	94.58	VHMM-120-4X	110.68
.5000 .5000	1.250	.030	4	.5000	3.5	VHM-5125-4	106.18	VHM-5125-4X	116.98
25 mm .9843	38 mm	0.8 mm	4	25 mm	127 mm			VHMM-250-4X	476.08

*.0005" / .013 mm max TIR



VLM

End Mills For Steels & High Temp Alloys

Corner Radius – 4 & 5 Flute – Variable Helix – Long Flute



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Variable helix design reduces chatter and harmonics and increases material removal rates
- Specialized geometry for maximum performance in high velocity tool paths
- Long flutes for deep pocket milling
- Corner radius profile
- Weldon flat offered on sizes 3/8" and larger
- Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA

Steels & High Temp. Alloys

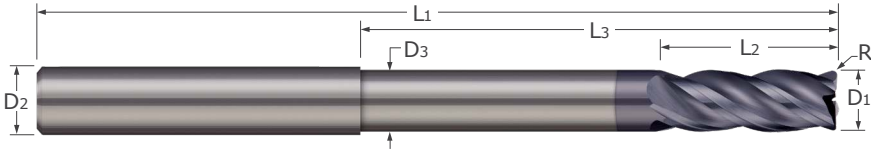
Cutter Diameter	Length of Cut	Corner Radius	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated		nACRo® Coated	
						Tool #	Price	Tool #	Price	Tool #	Price
D1 $\begin{matrix} +.0000" \\ -.0020" \end{matrix}$	L2 $\begin{matrix} +.030" \\ -.000" \end{matrix}$	R $\begin{matrix} +.0000" \\ -.0005" \end{matrix}$		D2 (h6)	L1						
.1875	.750	.0100	4	.1875	2.5			VLM-187-4X	51.18		
.2500	1.125	.0200	4	.2500	3.0	VLM-250-4	56.28				
.2500	1.125	.0200	5	.2500	3.0	VLM-250-5-020	62.88				

D1 $\begin{matrix} +.0000" \\ -.0020" \end{matrix}$	L2 $\begin{matrix} +.030" \\ -.000" \end{matrix}$	R $\begin{matrix} +.0000" \\ -.0005" \end{matrix}$	Flutes	D2 (h6)	L1	Uncoated		AlTiN Coated		nACRo® Coated	
						Tool #	Price	Tool #	Price	Tool #	Price
.3125	1.125	.0200	4	.3125	3.0	VLM-312-4	62.78				
.3125	1.125	.0200	5	.3125	3.0					VLM-312-5-020K	79.48
.3750	1.250	.0200	5	.3750	3.0	VLM-375-5-020	84.28			VLM-375-5-020K	96.48
.5000	1.750	.0900	5	.5000	4.5	VLM-500-5-090	142.58			VLM-500-5-090K	161.78

End Mills For Steels & High Temp Alloys

VLR / VLRM

Corner Radius – 4 Flute – Variable Helix – Long Reach – Reduced Neck



Steels & High Temp. Alloys

- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Variable helix design reduces chatter and harmonics and increases material removal rates
- Specialized geometry for maximum performance in high velocity tool paths
- Long reach for deep pocket milling
- Corner radius profile
- Weldon flat offered on sizes 3/8" and larger
- Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

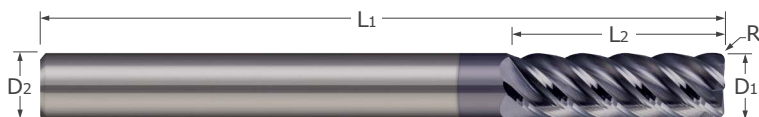
Cutter Diameter*	Length of Cut	Corner Radius	Overall Reach	Neck Diameter	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated		
								Tool #	Price	Tool #	Price	
D1 +.0000" (h9) -.0020" decimal equiv.	L2 +.010" - .000" +.25 mm - .00 mm	R +.0000" - .0005" +.000mm - .013mm	L3 +.015" - .000" +.38 mm - .00 mm	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price	
6 mm	.2362	8 mm	0.5 mm	30 mm	5.49 mm	4	6 mm	75 mm	VLRM-060-4	75.88	VLRM-060-4X	83.28
D1 +.0000" (h9) -.0030" decimal equiv.	L2 +.010" - .000" +.25 mm - .00 mm	R +.0000" - .0005" +.000mm - .013mm	L3 +.015" - .000" +.38 mm - .00 mm	D3		D2 (h6)	L1	Tool #	Price	Tool #	Price	
.3125	.3125	.625	.020	2.625	.293	4	.3125	4.0	VLR-312-4	80.28		
8 mm	.3150	10 mm	0.5 mm	50 mm	7.49 mm	4	8 mm	100 mm			VLRM-080-4X	93.88
.3750	.3750	.750	.020	2.750	.355	4	.3750	4.0			VLR-375-4X	123.18
10 mm	.3937	12 mm	0.6 mm	50 mm	9.5 mm	4	10 mm	100 mm	VLRM-100-4	120.58		
.5000	.5000	1.000	.030	4.500	.480	4	.5000	6.0			VLR-500-4X	220.28
.6250	.6250	1.250	.030	4.500	.605	4	.6250	6.0	VLR-625-4	310.48		
16 mm	.6299	22 mm	0.7 mm	80 mm	15.49 mm	4	16 mm	130 mm	VLRM-160-4	360.78		

*.0005" / .013 mm max TIR

ARC

End Mills For Steels & High Temp Alloys

Corner Radius – 5 Flute



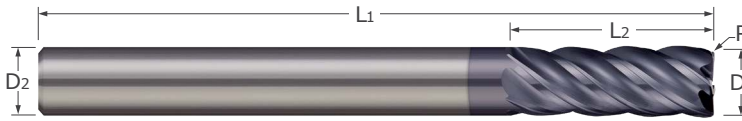
- Designed for roughing in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- 45° high helix for reduced cutting forces and increased material removal rates
- Corner radius profile
- Weldon flat offered on sizes 3/8" and larger
- Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

Cutter Diameter	Length of Cut	Corner Radius	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
D1 $\begin{matrix} +.0000" \\ -.0020" \end{matrix}$	L2 $\begin{matrix} +.030" \\ -.000" \end{matrix}$	R $\begin{matrix} +.0000" \\ -.0005" \end{matrix}$		D2 (h6)	L1				
.1875	.625	.0100	5	.1875	2.0	ARC-187-5-010	44.38		
.1875	.625	.0300	5	.1875	2.0	ARC-187-5-030	44.38		
D1 $\begin{matrix} +.0000" \\ -.0030" \end{matrix}$	L2 $\begin{matrix} +.030" \\ -.000" \end{matrix}$	R $\begin{matrix} +.0000" \\ -.0005" \end{matrix}$		D2 (h6)	L1	Tool #	Price	Tool #	Price
.3125	.813	.0200	5	.3125	2.5			ARC-312-5-020X	72.18
.3750	.875	.0600	5	.3750	2.5	ARC-375-5-060	70.08	ARC-375-5-060X	80.68
.5000	1.000	.0100	5	.5000	3.0	ARC-500-5-010	121.08		
.6250	1.250	.0900	5	.6250	3.5	ARC-625-5-090	204.38	ARC-625-5-090X	222.88
.7500	1.500	.0200	5	.7500	4.0			ARC-750-5-020X	332.28
.7500	1.500	.0900	5	.7500	4.0	ARC-750-5-090	311.48		

End Mills For Steels & High Temp Alloys

Corner Radius – 5 Flute – Variable Helix

VHS / VHSM
VHM / VHMM



Steels & High Temp. Alloys

- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Variable helix design reduces chatter and harmonics and increases material removal rates
- Specialized geometry for maximum performance in high velocity tool paths
- Corner radius profile
- Weldon flat offered on sizes 3/8" and larger ■ Center cutting
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1 +.0000" -.0020"	(h9)	decimal equiv.	L2 +.38 mm -.00 mm	R +.000 mm -.013 mm	5	D2 (h6)	L1	Tool #	Price	Tool #	Price
								3 mm	.1181	.1181	6 mm
3 mm	.1181	.1181	8 mm	0.3 mm	4 mm	50 mm	VHMM-030-5	29.28	VHMM-030-5K	36.08	
4 mm	.1575	.1575	8 mm	0.3 mm	4 mm	50 mm	VHSM-040-5	37.18	VHSM-040-5K	44.38	
4 mm	.1575	.1575	11 mm	0.3 mm	4 mm	50 mm	VHMM-040-5	41.28			
6 mm	.2362	.2362	10 mm	0.5 mm	6 mm	57 mm	VHSM-060-5	43.98	VHSM-060-5K	52.58	
6 mm	.2362	.2362	16 mm	0.5 mm	6 mm	57 mm	VHMM-060-5	48.88	VHMM-060-5K	57.58	
.2500	.2500	.2500	.500	.020	5	.2500	2.5	VHS-250-5-020	44.28		

Cutter Diameter*			Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1 +.0000" -.0030"	(h9)	decimal equiv.	L2 +.38 mm -.00 mm	R +.000 mm -.013 mm	5	D2 (h6)	L1	Tool #	Price	Tool #	Price
								.3125	.3125	.3125	.500
8 mm	.3150	.3150	16 mm	0.5 mm	8 mm	63 mm	VHSM-080-5	51.78	VHSM-080-5K	63.98	
8 mm	.3150	.3150	19 mm	0.5 mm	8 mm	63 mm	VHMM-080-5	57.48	VHMM-080-5K	69.88	
.3750	.3750	.3750	.625	.020	.3750	2.5	VHS-375-5-020	60.88	VHS-375-5-020K	73.08	
.3750	.3750	.3750	.875	.020	.3750	2.5			VHM-375-5-020K	80.38	
12 mm	.4724	.4724	22 mm	0.5 mm	12 mm	83 mm	VHSM-120-5	91.58	VHSM-120-5K	109.58	
12 mm	.4724	.4724	26 mm	0.5 mm	12 mm	83 mm			VHMM-120-5K	119.58	
.5000	.5000	.5000	.625	.030	.5000	3.0	VHS-500-5-030	98.98	VHS-500-5-030K	115.68	
.5000	.5000	.5000	1.000	.060	.5000	3.0	VHM-500-5-060	109.98			
.5000	.5000	.5000	.625	.090	.5000	3.0	VHS-500-5-090	98.98	VHS-500-5-090K	115.68	
.5000	.5000	.5000	1.000	.090	.5000	3.0	VHM-500-5-090	109.98	VHM-500-5-090K	127.48	
.5000	.5000	.5000	1.000	.125	.5000	3.0	VHM-500-5-125	109.98			
.6250	.6250	.6250	1.250	.060	.6250	3.5	VHM-625-5-060	207.08			
.7500	.7500	.7500	1.500	.125	.7500	4.0	VHM-750-5-125	304.98			

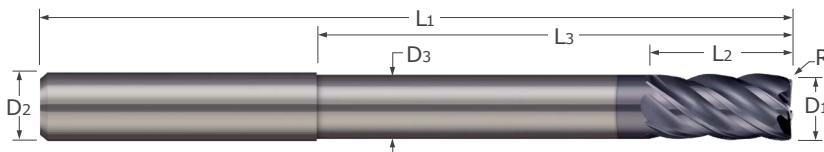
*.0005" / .013 mm max TIR



VLR

End Mills For Steels & High Temp Alloys

Corner Radius – 5 Flute – Variable Helix – Long Reach – Reduced Neck



- Designed for high performance in titanium alloys, inconel, nickel alloys, and other high-temperature materials with outstanding performance in difficult-to-machine steels, stainless steels, and tool steels
- Variable helix design reduces chatter and harmonics and increases material removal rates
- Specialized geometry for maximum performance in high velocity tool paths
- Long reach for deep pocket milling
- Corner radius profile
- Weldon flat offered on sizes 3/8" and larger ■ Center cutting
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

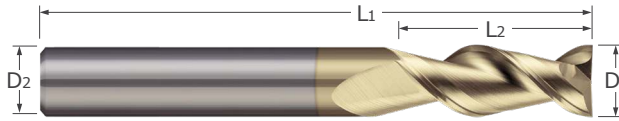
Cutter Diameter	Length of Cut	Corner Radius	Overall Reach	Neck Diameter	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
								Tool #	Price	Tool #	Price
D1 $^{+.0000}$ / $_{-.0030}$ "	L2 $^{+.010}$ / $_{-.000}$ "	R $^{+.0000}$ / $_{-.0005}$ "	L3 $^{+.015}$ / $_{-.000}$ "	D3		D2 (h6)	L1				
.3750	.750	.0200	2.750	.355	5	.3750	4.0			VLR-375-5-020K	130.78
.5000	1.000	.0300	4.500	.480	5	.5000	6.0	VLR-500-5-030	208.28	VLR-500-5-030K	229.98
.5000	1.000	.0600	4.500	.480	5	.5000	6.0	VLR-500-5-060	208.28		
.5000	1.000	.0900	4.500	.480	5	.5000	6.0	VLR-500-5-090	208.28	VLR-500-5-090K	229.28
.5000	1.000	.1250	4.500	.480	5	.5000	6.0			VLR-500-5-125K	229.98

Steels & High Temp. Alloys

End Mills For Aluminum Alloys

Square – 2 & 3 Flute – Stub & Standard

ASM / ASMM
ARM / ARMM



- Designed for exceptional performance in aluminum, non ferrous materials and soft materials
- 45° high helix for reduced cutting forces and increased material removal rates
- Square profile
- Center cutting
- ZrN coated option for high hardness, lubricity, and abrasion resistance
- Solid carbide ■ CNC ground in the USA

Aluminum Alloys

Cutter Diameter*		Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		ZrN Coated	
D1 (h8)	decimal equiv.					L2	D2 (h6)	L1	Tool #
2 mm	.0787	4 mm	2	4 mm	50 mm	ASMM-020-2	33.28		
6 mm	.2362	20 mm	3	6 mm	57 mm	ARMM-060-3	41.88		

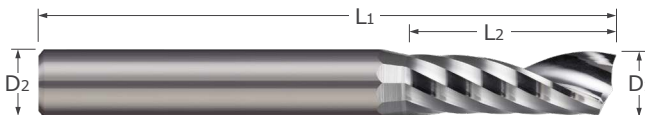
D1			L2	D2 (h6)	L1	Tool #	Price	Tool #	Price
+ .0000"	+ .00 mm	decimal equiv.							
.2813		.2813	.750	.3125	2.5	ARM-281-2	51.78		
.3125		.3125	.500	.3125	2.0	ASM-312-2	46.48		
.3125		.3125	.813	.3125	2.5	ARM-312-3	51.78		
8 mm		.3150	25 mm	8 mm	63 mm			ARMM-080-2S	64.58
8 mm		.3150	25 mm	8 mm	63 mm	ARMM-080-3	51.78	ARMM-080-3S	64.58
12 mm		.4724	30 mm	12 mm	83 mm	ARMM-120-3	96.88		
.5000		.5000	.625	.5000	2.5	ASM-500-2	91.48	ASM-500-2S	106.88
.5000		.5000	1.250	.5000	3.5	ARM-5125-3	106.48		
14 mm		.5510	30 mm	14 mm	83mm	ARMM-140-3	112.58		
16 mm		.6299	35 mm	16 mm	92 mm	ARMM-160-2	180.58	ARMM-160-2S	202.48
16 mm		.6299	35 mm	16 mm	92 mm			ARMM-160-3S	202.48
18 mm		.7087	45 mm	18 mm	92 mm	ARMM-180-3	240.98		

*.0005" / .013 mm max TIR



SFA / SFAM

End Mills For Aluminum Alloys
Square – Single Flute – Upcut Router



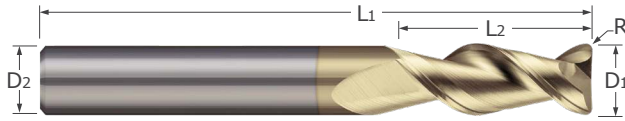
- Single flute design for applications in aluminum and non-ferrous materials
- Polished flute improves chip evacuation and helps to reduce built up edge
- Optimized geometry for increased material removal rates
- End cutting
- Solid carbide
- CNC ground in the USA

Cutter Diameter*			Length of Cut	Shank Diameter	Overall Length	Uncoated	
D1			L2	D2 (h6)	L1	Tool #	Price
+ .0000" - .0020"	+ .00 mm - .05 mm	decimal equiv.	+ .015" - .000" + .38 mm - .00 mm				
.0625		.0625	.250	.1250	1.5	SFA-062-22	44.18
.0625		.0625	.250	.2500	2.0	SFA-062-42	51.88
	2 mm	.0787	6 mm	6 mm	57 mm	SFAM-020020	48.78
	3 mm	.1181	12 mm	6 mm	57 mm	SFAM-030020	48.78
.1250		.1250	.250	.1250	1.5	SFA-125-22	38.98
.1250		.1250	.250	.2500	2.0	SFA-125-42	45.38
.1250		.1250	.500	.1250	1.5	SFA-125-24	38.98
.1250		.1250	.500	.2500	2.0	SFA-125-44	45.38
.1562		.1562	.625	.2500	2.0	SFA-156-45	45.38
	4 mm	.1575	16 mm	6 mm	57 mm	SFAM-040020	48.78
.1875		.1875	.500	.1875	2.0	SFA-187-33	43.08
.1875		.1875	.500	.2500	2.0	SFA-187-44	45.38
.1875		.1875	.625	.1875	2.0	SFA-187-35	43.08
.1875		.1875	.625	.2500	2.0	SFA-187-45	45.38
	5 mm	.1969	20 mm	6 mm	57 mm	SFAM-050025	48.78
.2188		.2188	.750	.2500	2.5	SFA-218-46	45.38
	6 mm	.2362	20 mm	6 mm	100 mm	SFAM-060100	72.98
	6 mm	.2362	25 mm	6 mm	57 mm	SFAM-060030	48.78
.2500		.2500	.375	.2500	2.5	SFA-250-43	45.38
.2500		.2500	.750	.2500	2.5	SFA-250-46	45.38
.2500		.2500	1.250	.2500	3.0	SFA-250-410	51.08
	8 mm	.3150	20 mm	8 mm	100 mm	SFAM-080100	93.28
	8 mm	.3150	30 mm	8 mm	75 mm	SFAM-080040	74.78
.3750		.3750	1.125	.3750	3.0	SFA-375-69	67.98
	10 mm	.3937	25 mm	10 mm	120 mm	SFAM-100100	113.48
	10 mm	.3937	35 mm	10 mm	90 mm	SFAM-100050	99.18
	12 mm	.4724	40 mm	12 mm	90 mm	SFAM-120050	123.18
.5000		.5000	1.000	.5000	3.0	SFA-500-88	112.58
.5000		.5000	1.500	.5000	4.0	SFA-500-812	118.28
	20 mm	.7874	40 mm	20 mm	150 mm	SFAM-200100	483.98
	20 mm	.7874	50 mm	20 mm	100 mm	SFAM-200050	371.08

*.0005" / .013 mm max TIR

End Mills For Aluminum Alloys

Corner Radius – 2 & 3 Flute



- Designed for exceptional performance in aluminum, non ferrous materials and soft materials
- 45° high helix for reduced cutting forces and increased material removal rates
- Stub flutes for maximum rigidity
- Corner radius profile
- Center cutting
- ZrN coated option for high hardness, lubricity, and abrasion resistance
- Solid carbide ■ CNC ground in the USA

Aluminum Alloys

Cutter Diameter	Length of Cut	Corner Radius	Flutes	Shank Dia.	Overall Length	Uncoated		ZrN Coated	
						Tool #	Price	Tool #	Price
D1 $\begin{matrix} +.0000'' \\ -.0020'' \end{matrix}$	L2 $\begin{matrix} +.030'' \\ -.000'' \end{matrix}$	R $\begin{matrix} +.0000'' \\ -.0005'' \end{matrix}$		D2 (h6)	L1				
.2500	.750	.0100	2	.2500	2.5	ARC-250-2-010	50.98		
D1 $\begin{matrix} +.0000'' \\ -.0030'' \end{matrix}$	L2 $\begin{matrix} +.030'' \\ -.000'' \end{matrix}$	R $\begin{matrix} +.0000'' \\ -.0005'' \end{matrix}$		D2 (h6)	L1				
.3125	.813	.0300	2	.3125	2.5			ARC-312-2-030S	67.38
.5000	1.000	.0300	3	.5000	3.0	ARC-500-3-030	111.78	ARC-500-3-030S	126.88
.5000	1.250	.0300	3	.5000	3.5	ARC-5125-3-030	117.18		
.6250	1.250	.0300	2	.6250	3.5	ARC-625-2-030	197.18		
.6250	1.250	.0600	2	.6250	3.5	ARC-625-2-060	197.18		
.6250	1.250	.0600	3	.6250	3.5	ARC-625-3-060	197.18		
.6250	1.250	.0900	2	.6250	3.5	ARC-625-2-090	197.18		
.6250	1.250	.0900	3	.6250	3.5	ARC-625-3-090	197.18		
.7500	1.500	.0600	2	.7500	4.0	ARC-750-2-060	287.08		
1.0000	1.500	.0200	2	1.0000	4.0	ARC-001-2-020	434.78		
1.0000	1.500	.0300	2	1.0000	4.0	ARC-001-2-030	434.78		
1.0000	1.500	.0600	2	1.0000	4.0	ARC-001-2-060	434.78		
1.0000	1.500	.0900	2	1.0000	4.0	ARC-001-2-090	434.78	ARC-001-2-090S	470.48
1.0000	1.500	.1250	2	1.0000	4.0	ARC-001-2-125	434.78	ARC-001-2-125S	470.48

* .0005" max TIR



SFP / SFPM

End Mills For Plastics & Composites

Square – Single Flute – Upcut Router



- Single flute design for applications in plastics
- Polished flute improves chip evacuation
- Optimized geometry for increased material removal rates
- End cutting ■ Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Shank Diameter	Overall Length	Uncoated	
D1 +.0000" -.0020"	+.00 mm -.05 mm	decimal equiv.	L2 +.015" -.000" +.38 mm -.00 mm	D2 (h6)	L1	Tool #	Price
	1 mm	.0394	5 mm	3 mm	57 mm	SFPM-010-10	42.08
.0625		.0625	.250	.1250	1.50	SFP-062-22	44.18
.0625		.0625	.250	.2500	2.00	SFP-062-42	51.88
	2 mm	.0787	6 mm	3 mm	57 mm	SFPM-020-10	42.08
	2 mm	.0787	10 mm	3 mm	38 mm	SFPM-020-20	38.18
	2 mm	.0787	12 mm	3 mm	57 mm	SFPM-020-30	42.08
	2 mm	.0787	14 mm	3 mm	75 mm	SFPM-020-40	48.78
	3 mm	.1181	8 mm	3 mm	57 mm	SFPM-030-10	42.08
	3 mm	.1181	8 mm	6 mm	57 mm	SFPM-030-50	46.28
	3 mm	.1181	12 mm	3 mm	38 mm	SFPM-030-20	38.18
	3 mm	.1181	18 mm	6 mm	57 mm	SFPM-030-60	49.88
.1250		.1250	.250	.1250	1.50	SFP-125-22	38.98
.1250		.1250	.250	.2500	2.00	SFP-125-42	45.38
.1250		.1250	.500	.1250	1.50	SFP-125-24	38.98
.1250		.1250	.500	.2500	2.00	SFP-125-44	45.38
.1562		.1562	.625	.2500	2.00	SFP-156-45	45.38
	4 mm	.1575	12 mm	4 mm	50 mm	SFPM-040-10	44.78
	4 mm	.1575	12 mm	6 mm	57 mm	SFPM-040-50	46.28
	4 mm	.1575	15 mm	4 mm	50 mm	SFPM-040-20	41.28
	4 mm	.1575	20 mm	6 mm	57 mm	SFPM-040-60	49.88
	4 mm	.1575	20 mm	6 mm	75 mm	SFPM-040-70	60.98
	4 mm	.1575	20 mm	8 mm	100 mm	SFPM-040-80	69.58
.1875		.1875	.500	.1875	2.00	SFP-187-33	43.08
.1875		.1875	.500	.2500	2.00	SFP-187-44	45.38
.1875		.1875	.625	.1875	2.00	SFP-187-35	43.08
.1875		.1875	.625	.2500	2.00	SFP-187-45	45.38
	5 mm	.1969	16 mm	5 mm	50 mm	SFPM-050-10	57.18
	5 mm	.1969	16 mm	6 mm	57 mm	SFPM-050-40	59.78
	5 mm	.1969	20 mm	8 mm	95 mm	SFPM-050-70	69.58
	5 mm	.1969	28 mm	6 mm	57 mm	SFPM-050-50	59.78
	5 mm	.1969	28 mm	6 mm	75 mm	SFPM-050-60	64.18
	6 mm	.2362	16 mm	6 mm	57 mm	SFPM-060-10	59.78

*.0005" / .013 mm max TIR

Continued on next page

Plastics & Composites



End Mills For Plastics & Composites

Square – Single Flute – Upcut Router (cont.)

SFP / SFPM

Continued from previous page

Cutter Diameter*			Length of Cut	Shank Diameter	Overall Length	Uncoated	
D1			L2	D2 (h6)	L1	Tool #	Price
+.0000" -.0020"	+.00 mm -.05 mm	decimal equiv.	+.015" -.000" +.38 mm -.00 mm				
	6 mm	.2362	20 mm	6 mm	57 mm	SFPM-060-20	60.98
	6 mm	.2362	20 mm	8 mm	95 mm	SFPM-060-60	69.58
	6 mm	.2362	35 mm	6 mm	75 mm	SFPM-060-30	64.18
	6 mm	.2362	35 mm	8 mm	75 mm	SFPM-060-50	73.48
.2500		.2500	.375	.2500	2.50	SFP-250-43	45.38
.2500		.2500	.750	.2500	2.50	SFP-250-46	45.38
.2500		.2500	1.250	.2500	3.00	SFP-250-410	51.08
	8 mm	.3150	18 mm	8 mm	50 mm	SFPM-080-10	53.68
	8 mm	.3150	22 mm	8 mm	63 mm	SFPM-080-20	57.98
	8 mm	.3150	30 mm	8 mm	75 mm	SFPM-080-30	69.58
	8 mm	.3150	40 mm	8 mm	100 mm	SFPM-080-40	88.78
.3750		.3750	1.125	.3750	3.00	SFP-375-69	67.98
	10 mm	.3937	25 mm	10 mm	72 mm	SFPM-100-10	74.58
	10 mm	.3937	30 mm	10 mm	150 mm	SFPM-100-30	131.18
	10 mm	.3937	55 mm	10 mm	100 mm	SFPM-100-20	105.58
	12 mm	.4724	30 mm	12 mm	83 mm	SFPM-120-10	113.78
	12 mm	.4724	40 mm	12 mm	150 mm	SFPM-120-20	169.58
.5000		.5000	1.000	.5000	3.00	SFP-500-88	112.58
.5000		.5000	1.500	.5000	4.00	SFP-500-812	118.28

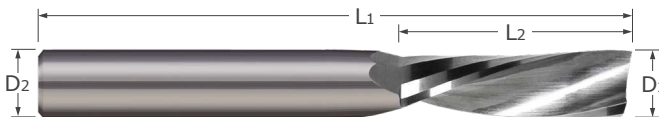
*.0005" / .013 mm max TIR

Plastics & Composites



SFL / SFLM

End Mills For Plastics & Composites
Square – Single Flute – Downcut Router



- Single flute design for applications in plastics and composites
- Left hand spiral routers drive chips downward, preventing delamination in multi-layered workpieces
- Polished flute improves chip evacuation
- Optimized geometry for increased material removal rates
- End cutting
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*			Length of Cut	Shank Diameter	Overall Length	Uncoated	
D1 +.0000" -.0020"	+.00 mm -.05 mm	decimal equiv.	L2 +.015" -.000" +.38 mm -.00 mm	D2 (h6)	L1	Tool #	Price
	1 mm	.0394	5 mm	3 mm	57 mm	SFLM-010-10	42.08
.0625		.0625	.250	.2500	2.0	SFL-062-42	51.88
	2 mm	.0787	6 mm	3 mm	57 mm	SFLM-020-10	42.08
	2 mm	.0787	14 mm	3 mm	75 mm	SFLM-020-40	48.78
	3 mm	.1181	8 mm	3 mm	57 mm	SFLM-030-10	42.08
	3 mm	.1181	12 mm	3 mm	38 mm	SFLM-030-20	38.18
.1250		.1250	.250	.1250	1.5	SFL-125-22	38.98
.1250		.1250	.250	.2500	2.0	SFL-125-42	45.38
.1250		.1250	.500	.1250	1.5	SFL-125-24	38.98
.1250		.1250	.500	.2500	2.0	SFL-125-44	45.38
	4 mm	.1575	12 mm	4 mm	57 mm	SFLM-040-10	44.78
	4 mm	.1575	15 mm	4 mm	40 mm	SFLM-040-20	41.28
	4 mm	.1575	20 mm	6 mm	57 mm	SFLM-040-60	49.88
	4 mm	.1575	20 mm	6 mm	75 mm	SFLM-040-70	60.98
	4 mm	.1575	20 mm	8 mm	95 mm	SFLM-040-80	69.58
.1875		.1875	.500	.1875	2.0	SFL-187-33	43.08
.1875		.1875	.500	.2500	2.0	SFL-187-44	45.38
.1875		.1875	.625	.1875	2.0	SFL-187-35	43.08
.1875		.1875	.625	.2500	2.0	SFL-187-45	45.38
	5 mm	.1969	20 mm	8 mm	95 mm	SFLM-050-70	69.58
	5 mm	.1969	28 mm	6 mm	75 mm	SFLM-050-60	64.18
.2188		.2188	.750	.2500	2.5	SFL-218-46	45.38
	6 mm	.2362	16 mm	6 mm	57 mm	SFLM-060-10	59.78
	6 mm	.2362	20 mm	8 mm	95 mm	SFLM-060-60	69.58
	6 mm	.2362	20 mm	6 mm	57 mm	SFLM-060-20	60.98
.2500		.2500	.375	.2500	2.5	SFL-250-43	45.38
.2500		.2500	.750	.2500	2.5	SFL-250-46	45.38
.2500		.2500	1.250	.2500	3.0	SFL-250-410	51.08
.3750		.3750	1.125	.3750	3.0	SFL-375-69	67.98
	12 mm	.4724	30 mm	12 mm	83 mm	SFLM-120-10	113.78
.5000		.5000	1.500	.5000	4.0	SFL-500-812	118.28

*.0005" / .013 mm max TIR

Plastics & Composites

End Mills For Plastics & Composites

RDA

Diamond Cut – No End Cut



- Ideal for routing fiber reinforced, epoxy resin, and composites
- Diamond-cut flute pattern provides smooth cutting action and reduces delamination
- Non end-cutting
- Solid carbide
- CNC ground in the USA

Plastics & Composites

Cutter Diameter*	Length of Cut	Shank Dia.	Overall Length	Uncoated	
				Tool #	Price
D1 $+0.0000''$ $-0.0030''$	L2 $+0.030''$ $-0.000''$	D2 (h6)	L1		
.0938	.375	.1250	1.5	RDA-20	18.98
.1250	.500	.1250	1.5	RDA-30	18.98
.2500	.750	.2500	2.0	RDA-60	32.48
.2500	.750	.2500	2.5	RDA-70	34.58
.2500	1.000	.2500	3.0	RDA-80	45.28

*.0005" max TIR

End Mills For Plastics & Composites

RDB

Diamond Cut – Burr End Cut



- Ideal for routing fiber reinforced, epoxy resin, and composites
- Diamond-cut flute pattern provides smooth cutting action and reduces delamination
- Burr end cut profile
- Solid carbide
- CNC ground in the USA

Cutter Diameter*	Length of Cut	Shank Dia.	Overall Length	Uncoated	
				Tool #	Price
D1 $+0.0000''$ $-0.0030''$	L2 $+0.030''$ $-0.000''$	D2 (h6)	L1		
.0625	.188	.1250	1.5	RDB-10	22.48
.0938	.375	.1250	1.5	RDB-20	22.48
.1250	.500	.1250	1.5	RDB-30	22.48
.1875	.625	.1875	2.0	RDB-40	32.08
.1875	.625	.2500	2.0	RDB-50	36.28
.2500	.750	.2500	2.0	RDB-60	38.58
.2500	.750	.2500	2.5	RDB-70	41.18
.2500	1.000	.2500	3.0	RDB-80	53.98
.3750	1.000	.3750	2.5	RDB-100	95.38
.5000	1.000	.5000	3.0	RDB-110	126.18

*.0005" max TIR



RDC

End Mills For Plastics & Composites

Diamond Cut – End Mill Cut



- Ideal for routing fiber reinforced, epoxy resin, and composites
- Diamond-cut flute pattern provides smooth cutting action and reduces delamination
- End mill end cut profile
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*	Length of Cut	Shank Dia.	Overall Length	Uncoated	
				Tool #	Price
D1 $+0.0000''$ $-0.0030''$	L2 $+0.030''$ $-0.000''$	D2 (h6)	L1		
.0938	.375	.1250	1.5	RDC-20	22.48
.1250	.500	.1250	1.5	RDC-30	22.48
.1875	.625	.1875	2.0	RDC-40	32.08
.1875	.625	.2500	2.0	RDC-50	36.28
.2500	.750	.2500	2.0	RDC-60	38.58
.2500	.750	.2500	2.5	RDC-70	41.18
.2500	1.000	.2500	3.0	RDC-80	53.98

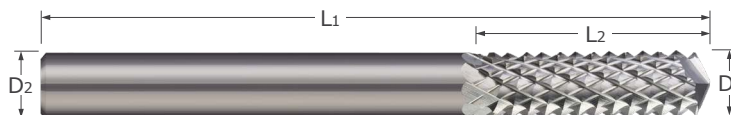
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Plastics & Composites

RDD

End Mills For Plastics & Composites

Diamond Cut – 135° Drill Point



- Ideal for routing fiber reinforced, epoxy resin, and composites
- Diamond-cut flute pattern provides smooth cutting action and reduces delamination
- 135° drill point
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*	Length of Cut	Shank Dia.	Overall Length	Uncoated	
				Tool #	Price
D1 $+0.0000''$ $-0.0030''$	L2 $+0.030''$ $-0.000''$	D2 (h6)	L1		
.0625	.188	.1250	1.5	RDD-10	22.48
.0938	.375	.1250	1.5	RDD-20	22.48
.1250	.500	.1250	1.5	RDD-30	22.48
.1875	.625	.1875	2.0	RDD-40	32.08
.1875	.625	.2500	2.0	RDD-50	36.28
.2500	.750	.2500	2.0	RDD-60	38.58
.2500	.750	.2500	2.5	RDD-70	41.18
.2500	1.000	.2500	3.0	RDD-80	53.98
.3125	1.000	.3125	2.5	RDD-90	71.88
.5000	1.000	.5000	3.0	RDD-110	126.18

*.0005" max TIR



End Mills For Plastics & Composites

Diamond Cut – Fish Tail End Cut

RDE



- Ideal for routing fiber reinforced, epoxy resin, and composites
- Diamond-cut flute pattern provides smooth cutting action and reduces delamination
- Less breakout when through-plunging
- Fish tail end cut profile
- Solid carbide
- CNC ground in the USA

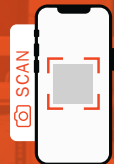
Plastics & Composites

Cutter Diameter*	Length of Cut	Shank Dia.	Overall Length	Uncoated	
				Tool #	Price
D1 $+0.0000''$ $-0.0030''$	L2 $+0.030''$ $-0.000''$	D2 (h6)	L1		
.1875	.625	.1875	2.0	RDE-40	32.08
.1875	.625	.2500	2.0	RDE-50	36.28
.2500	1.000	.2500	3.0	RDE-80	53.98
.3750	1.000	.3750	2.5	RDE-100	95.38
.5000	1.000	.5000	3.0	RDE-110	126.18

*.0005" max TIR

Technical Resources on Micro100.com

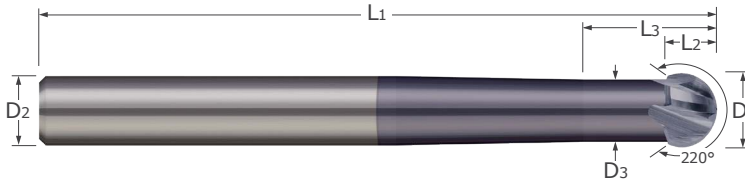
Find Simulation Files, Speeds & Feeds, Torque Recommendations, Programs, Blogs, and more at micro100.com/resources



SBM / SBMM

Undercutting End Mills

220°



- Designed for undercutting, deburring, and multi-axis machining
- 220° spherical ball
- 30° helix
- Center cutting
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter*	Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated		
							Tool #	Price	Tool #	Price	
D1 +.0000" +.00mm -.0020" -.05mm	L2	L3 +.030" -.000" +.78 mm -.00 mm	D3 +.003" -.005" +.08mm -.13mm		D2 (h6)	L1					
2 mm .0787	1.3 mm	6 mm	1.3 mm	2	6 mm	75 mm			SBMM-020-206X	128.98	
2 mm .0787	1.3 mm	6 mm	1.3 mm	4	6 mm	75 mm	SBMM-020-406	121.78	SBMM-020-406X	128.98	
2 mm .0787	1.3 mm	10 mm	1.3 mm	2	6 mm	75 mm	SBMM-020-210	121.78	SBMM-020-210X	128.98	
2 mm .0787	1.3 mm	10 mm	1.3 mm	4	6 mm	75 mm	SBMM-020-410	121.78	SBMM-020-410X	128.98	
2 mm .0787	1.3 mm	16 mm	1.3 mm	2	6 mm	75 mm	SBMM-020-216	121.78	SBMM-020-216X	128.98	
2 mm .0787	1.3 mm	16 mm	1.3 mm	3	6 mm	75 mm	SBMM-020-316	121.78	SBMM-020-316X	128.98	
2 mm .0787	1.3 mm	16 mm	1.3 mm	4	6 mm	75 mm			SBMM-020-416X	128.98	
3 mm .1181	2.0 mm	9 mm	2.0 mm	4	6 mm	75 mm			SBMM-030-409X	128.98	
3 mm .1181	2.0 mm	15 mm	2.0 mm	2	6 mm	75 mm	SBMM-030-215	121.78	SBMM-030-215X	128.98	
3 mm .1181	2.0 mm	15 mm	2.0 mm	4	6 mm	75 mm	SBMM-030-415	121.78	SBMM-030-415X	128.98	
3 mm .1181	2.0 mm	21 mm	2.0 mm	2	6 mm	75 mm	SBMM-030-221	121.78	SBMM-030-221X	128.98	
3 mm .1181	2.0 mm	21 mm	2.0 mm	3	6 mm	75 mm	SBMM-030-321	121.78			
3 mm .1181	2.0 mm	21 mm	2.0 mm	4	6 mm	75 mm			SBMM-030-421X	128.98	
.1250	.1250	.100	.250	.100	4	.2500	3.0	SBM-125-4	121.78	SBM-125-4X	128.98
4 mm .1575	2.7 mm	12 mm	2.7 mm	2	6 mm	75 mm	SBMM-040-212	121.78	SBMM-040-212X	128.98	
4 mm .1575	2.7 mm	12 mm	2.7 mm	4	6 mm	75 mm			SBMM-040-412X	128.98	
4 mm .1575	2.7 mm	20 mm	2.7 mm	2	6 mm	75 mm			SBMM-040-220X	128.98	
4 mm .1575	2.7 mm	20 mm	2.7 mm	4	6 mm	75 mm	SBMM-040-420	121.78	SBMM-040-420X	128.98	
4 mm .1575	2.7 mm	32 mm	2.7 mm	2	6 mm	100 mm	SBMM-040-232	121.78	SBMM-040-232X	128.98	
4 mm .1575	2.7 mm	32 mm	2.7 mm	4	6 mm	100 mm	SBMM-040-432	121.78	SBMM-040-432X	128.38	
.1875	.1875	.150	.350	.150	4	.2500	3.0	SBM-187-4	121.78	SBM-187-4X	128.98
6 mm .2362	4.0 mm	18 mm	4.0 mm	2	6 mm	75 mm	SBMM-060-218	121.78	SBMM-060-218X	128.98	
6 mm .2362	4.0 mm	18 mm	4.0 mm	3	6 mm	75 mm	SBMM-060-318	121.78			
6 mm .2362	4.0 mm	18 mm	4.0 mm	4	6 mm	75 mm	SBMM-060-418	121.78	SBMM-060-418X	128.98	
6 mm .2362	4.0 mm	30 mm	4.0 mm	2	6 mm	75 mm			SBMM-060-230X	128.98	
6 mm .2362	4.0 mm	30 mm	4.0 mm	4	6 mm	75 mm	SBMM-060-430	121.78	SBMM-060-430X	128.98	
6 mm .2362	4.0 mm	32 mm	4.0 mm	2	6 mm	100 mm	SBMM-060-248	121.78	SBMM-060-248X	128.98	
6 mm .2362	4.0 mm	32 mm	4.0 mm	3	6 mm	100 mm	SBMM-060-348	121.78			
6 mm .2362	4.0 mm	32 mm	4.0 mm	4	6 mm	100 mm	SBMM-060-448	121.78	SBMM-060-448X	128.38	
.2500	.2500	.200	.500	.200	2	.2500	3.0	SBM-250-2	121.78	SBM-250-2X	128.98
.2500	.2500	.200	.500	.200	3	.2500	3.0	SBM-250-3	121.78	SBM-250-3X	128.98
.2500	.2500	.200	.500	.200	4	.2500	3.0	SBM-250-4	121.78	SBM-250-4X	128.98

*.0005" / .013 mm max TIR

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Undercutting End Mills

Undercutting End Mills

SBM / SBMM

220° (cont.)

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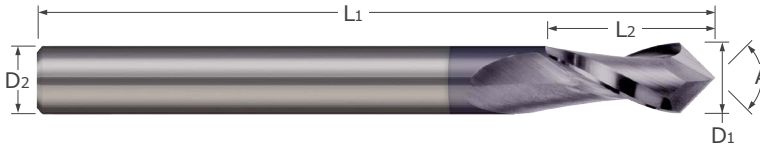
Cutter Diameter*		Length of Cut		Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		AITIN Coated	
D1 +.0000" -.0030"	+ .00mm -.08mm	L2	L3	+ .030" -.000" +.78 mm -.00 mm	D3 +.003" -.005" +.08mm -.13mm		D2 (h6)	L1	Tool #	Price	Tool #	Price
.3125	.3125	.250	.600	.250	4	.3125	4.0	SBM-312-4	153.18			
8 mm	.3150	5.4 mm	24 mm	5.4 mm	4	8 mm	100 mm	SBMM-080-424	153.18	SBMM-080-424X	166.98	
8 mm	.3150	5.4 mm	40 mm	5.4 mm	2	8 mm	100 mm	SBMM-080-240	153.18	SBMM-080-240X	166.38	
8 mm	.3150	5.4 mm	40 mm	5.4 mm	3	8 mm	100 mm	SBMM-080-340	153.18	SBMM-080-340X	166.38	
8 mm	.3150	5.4 mm	40 mm	5.4 mm	4	8 mm	100 mm			SBMM-080-440X	166.98	
8 mm	.3150	5.4 mm	55 mm	5.4 mm	2	8 mm	100 mm			SBMM-080-264X	166.38	
8 mm	.3150	5.4 mm	55 mm	5.4 mm	4	8 mm	100 mm			SBMM-080-464X	166.98	
.3750	.3750	.300	.800	.300	4	.3750	4.0	SBM-375-4	196.78	SBM-375-4X	210.58	
10 mm	.3937	6.7 mm	30 mm	6.7 mm	2	10 mm	100 mm	SBMM-100-230	206.48			
10 mm	.3937	6.7 mm	30 mm	6.7 mm	4	10 mm	100 mm			SBMM-100-430X	218.58	
10 mm	.3937	6.7 mm	50 mm	6.7 mm	2	10 mm	100 mm	SBMM-100-250	206.48	SBMM-100-250X	218.58	
10 mm	.3937	6.7 mm	50 mm	6.7 mm	4	10 mm	100 mm			SBMM-100-450X	218.58	
10 mm	.3937	6.7 mm	55 mm	6.7 mm	2	10 mm	100 mm	SBMM-100-272	206.48	SBMM-100-272X	218.58	
10 mm	.3937	6.7 mm	55 mm	6.7 mm	4	10 mm	100 mm	SBMM-100-472	206.48	SBMM-100-472X	218.58	
12 mm	.4724	8.0 mm	36 mm	8.0 mm	2	12 mm	100 mm			SBMM-120-236X	256.38	
12 mm	.4724	8.0 mm	36 mm	8.0 mm	4	12 mm	100 mm	SBMM-120-436	241.58	SBMM-120-436X	256.38	
12 mm	.4724	8.0 mm	55 mm	8.0 mm	4	12 mm	100 mm			SBMM-120-472X	256.38	
.5000	.5000	.400	.900	.400	2	.5000	4.0	SBM-500-2	244.78			
.5000	.5000	.400	.900	.400	4	.5000	4.0	SBM-500-4	244.78			
.6250	.6250	.500	1.000	.500	2	.6250	4.0	SBM-625-2	304.28	SBM-625-2X	321.88	
.6250	.6250	.500	1.000	.500	3	.6250	4.0	SBM-625-3	304.28	SBM-625-3X	321.88	
.6250	.6250	.500	1.000	.500	4	.6250	4.0			SBM-625-4X	321.88	

*.0005" / .013 mm max TIR

Undercutting End Mills



DM / DMM

Drill/End Mills
2 & 4 Flute

- Designed for chamfering, milling, and some spotting applications
- 2 flute design effective in spotting and drilling applications
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- 30° helix ■ Solid carbide ■ CNC ground in the USA

Included Angle	Cutter Diameter*	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
$A_{-1^{\circ}}^{+1^{\circ}}$	D1	L_2 $^{+.030''}$ $_{-.000''}$ $^{+.76 \text{ mm}}$ $_{-.00 \text{ mm}}$		D2 (h6)	L1				
90°	3 mm	8 mm	2	3 mm	38 mm	DMM-030-290	27.18	DMM-030-290X	30.98
	3 mm	8 mm	4	3 mm	38 mm	DMM-030-490	28.38	DMM-030-490X	32.38
	.1250	.500	2	.1250	1.5	DM-125-290	27.18	DM-125-290X	30.98
	.1250	.500	4	.1250	1.5	DM-125-490	28.38	DM-125-490X	32.38
	4 mm	11 mm	2	4 mm	50 mm	DMM-040-290	37.88	DMM-040-290X	42.48
	4 mm	11 mm	4	4 mm	50 mm	DMM-040-490	39.38	DMM-040-490X	43.98
	.1875	.625	2	.1875	2.0	DM-187-290	37.88	DM-187-290X	42.48
	.1875	.625	4	.1875	2.0	DM-187-490	39.68	DM-187-490X	44.08
	5 mm	13 mm	2	6 mm	57 mm	DMM-050-290	47.38	DMM-050-290X	55.08
	6 mm	16 mm	2	6 mm	57 mm			DMM-060-290X	55.08
	6 mm	16 mm	4	6 mm	57 mm			DMM-060-490X	57.28
	.2500	.750	2	.2500	2.5	DM-250-290	47.38	DM-250-290X	55.08
	.2500	.750	4	.2500	2.5	DM-250-490	49.58	DM-250-490X	57.28
	.3125	.813	2	.3125	2.5	DM-312-290	58.98	DM-312-290X	69.78
	.3125	.813	4	.3125	2.5	DM-312-490	61.98	DM-312-490X	72.78
	8 mm	22 mm	2	8 mm	63 mm	DMM-080-290	58.98	DMM-080-290X	69.78
	8 mm	22 mm	4	8 mm	63 mm	DMM-080-490	61.58	DMM-080-490X	72.18
	.3750	1.000	2	.3750	2.5	DM-375-290	73.88	DM-375-290X	84.48
	.3750	1.000	4	.3750	2.5	DM-375-490	77.78	DM-375-490X	88.38
	10 mm	25 mm	2	10 mm	72 mm			DMM-100-290X	84.48
	12 mm	30 mm	2	12 mm	83 mm			DMM-120-290X	127.58
	.5000	1.000	2	.5000	3.0	DM-500-290	111.58	DM-500-290X	124.18
	.5000	1.000	4	.5000	3.0	DM-500-490	122.08	DM-500-490X	134.68
	.6250	1.250	2	.6250	3.5	DM-625-290	223.98	DM-625-290X	242.38
.6250	1.250	4	.6250	3.5	DM-625-490	234.38	DM-625-490X	252.88	
.7500	1.500	2	.7500	4.0	DM-750-290	329.38	DM-750-290X	349.78	
.7500	1.500	4	.7500	4.0	DM-750-490	344.88	DM-750-490X	365.18	
20 mm	45 mm	4	20 mm	104 mm			DMM-200-490X	387.68	

* .0005" / .013 mm max TIR. Tolerances for cutter diameters .125"-.250": .000" / -.002"; diameters .313"-.750": .000" / -.003".

Continued on next page

Drill/End Mills

2 & 4 Flute (cont.)

DM / DMM

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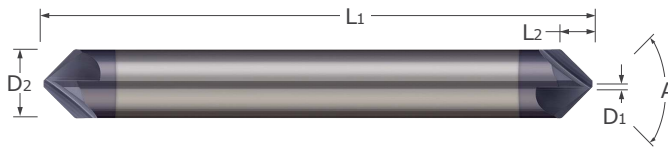
Included Angle	Cutter Diameter*	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
A $\begin{matrix} +1^\circ \\ -1^\circ \end{matrix}$	D1	L2 $\begin{matrix} +.030'' \\ -.000'' \\ +.76 \text{ mm} \\ -.00 \text{ mm} \end{matrix}$		D2 (h6)	L1				
	3 mm	8 mm	2	3 mm	38 mm	DMM-030-2120	27.18		
	3 mm	8 mm	4	3 mm	38 mm	DMM-030-4120	28.38	DMM-030-4120X	32.38
	.1250	.500	2	.1250	1.5			DM-125-2120X	30.98
	.1250	.500	4	.1250	1.5	DM-125-4120	28.38	DM-125-4120X	32.38
	4 mm	11 mm	2	4 mm	50 mm	DMM-040-2120	37.88	DMM-040-2120X	42.48
	4 mm	11 mm	4	4 mm	50 mm	DMM-040-4120	39.38		
	.1875	.625	2	.1875	2.0	DM-187-2120	37.88	DM-187-2120X	42.48
	.1875	.625	4	.1875	2.0	DM-187-4120	39.68	DM-187-4120X	44.08
	5 mm	13 mm	2	6 mm	57 mm			DMM-050-2120X	55.08
	5 mm	13 mm	4	6 mm	57 mm	DMM-050-4120	49.58		
	.2500	.750	2	.2500	2.5	DM-250-2120	47.38	DM-250-2120X	55.08
	.2500	.750	4	.2500	2.5	DM-250-4120	49.58	DM-250-4120X	57.28
	.3125	.813	2	.3125	2.5	DM-312-2120	58.98	DM-312-2120X	69.78
	.3125	.813	4	.3125	2.5	DM-312-4120	61.98		
	8 mm	22 mm	2	8 mm	63 mm	DMM-080-2120	58.98		
	8 mm	22 mm	4	8 mm	63 mm	DMM-080-4120	61.58		
	.3750	1.000	2	.3750	2.5	DM-375-2120	73.88	DM-375-2120X	84.48
	.3750	1.000	4	.3750	2.5	DM-375-4120	77.78	DM-375-4120X	88.38
	10 mm	25 mm	2	10 mm	72 mm	DMM-100-2120	73.88		
	10 mm	25 mm	4	10 mm	72 mm	DMM-100-4120	76.88		
	12 mm	30 mm	2	12 mm	83 mm	DMM-120-2120	111.58		
	.5000	1.000	2	.5000	3.0	DM-500-2120	111.58	DM-500-2120X	124.18
	.5000	1.000	4	.5000	3.0	DM-500-4120	122.08	DM-500-4120X	134.68
	.6250	1.250	2	.6250	3.5			DM-625-2120X	242.38
	.6250	1.250	4	.6250	3.5			DM-625-4120X	252.88
	16 mm	35 mm	4	16 mm	92 mm	DMM-160-4120	233.68	DMM-160-4120X	252.18
.7500	1.500	2	.7500	4.0	DM-750-2120	329.38	DM-750-2120X	349.78	
.7500	1.500	4	.7500	4.0	DM-750-4120	344.88			

* .0005" / .013 mm max TIR. Tolerances for cutter diameters .125"-.250": .000" / -.002"; diameters .313"-.750": .000" / -.003".

Drill/End Mills

CS

Chamfer Cutters



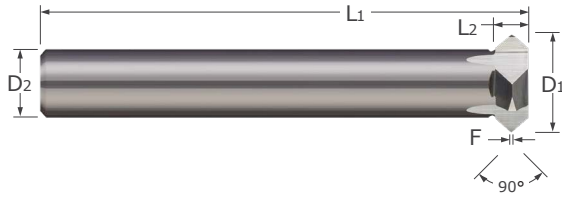
- Designed for chamfer milling, countersinking, and deburring
- Double-ended
- Available in 60°, 82°, 90°, 100°, and 120° included angles
- Tip Diameter (D1) is non-cutting
- Multi-tooth for greater metal removal rates
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

Included Angle	Tip Diameter	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	Price	Tool #	Price
A $\begin{matrix} +1^\circ \\ -1^\circ \end{matrix}$	D1 $\begin{matrix} +.000'' \\ -.003'' \end{matrix}$	L2		D2 (h6)	L1				
60°	.030	.082	3	.1250	1.5	CS-125-060	39.28	CS-125-060X	44.88
	.040	.128	4	.1875	2.0			CS-187-060X	53.48
	.050	.173	6	.2500	2.5	CS-250-060	51.18	CS-250-060X	63.38
	.060	.219	6	.3125	2.5	CS-312-060	71.58	CS-312-060X	89.68
	.070	.264	6	.3750	2.5	CS-375-060	81.68	CS-375-060X	98.98
	.080	.364	6	.5000	3.0	CS-500-060	118.68	CS-500-060X	139.68
82°	.030	.055	3	.1250	1.5	CS-125-082	39.28	CS-125-082X	44.88
	.040	.085	4	.1875	2.0			CS-187-082X	53.48
	.050	.115	6	.2500	2.5	CS-250-082	51.18	CS-250-082X	63.38
	.060	.145	6	.3125	2.5	CS-312-082	71.58	CS-312-082X	89.68
	.070	.175	6	.3750	2.5	CS-375-082	81.68	CS-375-082X	98.98
	.080	.242	6	.5000	3.0	CS-500-082	118.68	CS-500-082X	139.68
90°	.030	.047	3	.1250	1.5	CS-125-090	39.28	CS-125-090X	44.88
	.040	.074	4	.1875	2.0	CS-187-090	46.68	CS-187-090X	53.48
	.050	.100	6	.2500	2.5	CS-250-090	51.18	CS-250-090X	63.38
	.060	.126	6	.3125	2.5	CS-312-090	71.58	CS-312-090X	89.68
	.070	.152	6	.3750	2.5	CS-375-090	81.68	CS-375-090X	98.98
	.080	.210	6	.5000	3.0	CS-500-090	118.68	CS-500-090X	139.68
100°	.030	.040	3	.1250	1.5	CS-125-100	39.28	CS-125-100X	44.88
	.040	.062	4	.1875	2.0	CS-187-100	46.68	CS-187-100X	53.48
	.050	.084	6	.2500	2.5	CS-250-100	51.18	CS-250-100X	63.38
	.060	.106	6	.3125	2.5	CS-312-100	71.58	CS-312-100X	89.68
	.070	.128	6	.3750	2.5	CS-375-100	81.68	CS-375-100X	98.98
	.080	.176	6	.5000	3.0	CS-500-100	118.68	CS-500-100X	139.68
120°	.030	.027	3	.1250	1.5	CS-125-120	39.28	CS-125-120X	44.88
	.050	.058	6	.2500	2.5	CS-250-120	51.18	CS-250-120X	63.38
	.070	.088	6	.3750	2.5			CS-375-120X	98.98
	.080	.121	6	.5000	3.0			CS-500-120X	139.68

Chamfer Cutters

Chamfer Cutters

Back Chamfer Cutters



- 90° included angle for chamfer milling the top and bottom of a part
- Multiple flutes for improved finish and increased metal removal rates
- Cuts on angle only
- Solid carbide head brazed on a carbide shank
- CNC ground in the USA

Cutter Diameter	Cutter Width	Flat	Flutes	Shank Diameter	Overall Length	Uncoated	
						Tool #	Price
D1 $+0.000"$ $-0.005"$	L2 $+0.000"$ $-0.015"$	F $+0.000"$ $-0.005"$		D2 (h6)	L1		
.375	.125	.031	4	.2500	2.63	MBC-375	119.78
.500	.125	.031	5	.3125	2.63	MBC-500	145.98
.750	.156	.031	6	.3750	2.66	MBC-750	181.08
1.000	.188	.031	7	.5000	3.19	MBC-001	236.18

Chamfer Cutters

Runner Cutters

MRF / MRT



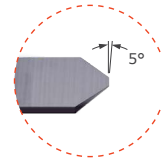
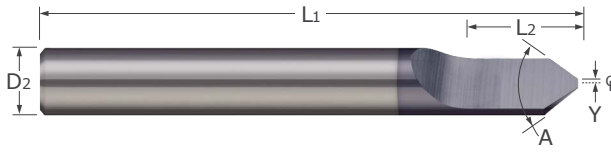
- Designed to mill 20° and 30° channels in molds
- 2 helical flutes
- Center cutting
- Solid carbide
- CNC ground in the USA

Included Angle	Radius	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated	
						Tool #	Price
A $+1°$ $-1°$	R $+0.0030"$ $-0.0000"$	L2		D2 (h6)	L1		
20°	.0312	.383	2	.1875	2.0	MRT-187-031	63.58
	.0469	.308	2	.1875	2.0	MRT-187-046	63.58
	.0625	.414	2	.2500	2.5	MRT-250-062	70.38
	.1094	.366	2	.3125	2.5	MRT-312-109	85.58
	.1250	.468	2	.3750	2.5	MRT-375-125	90.08
30°	.0312	.262	2	.1875	2.0	MRF-187-031	63.58
	.0625	.287	2	.2500	2.5	MRF-250-062	70.38
	.0781	.243	2	.2500	2.5	MRF-250-078	70.38



RTC / RTCM / RSC
RSCM / RNC / RNCM

Engraving Cutters
Tipped Off – Single Ended



- Designed for engraving and v-grooving in various applications
- Tipped off end diameter for improved cutting
- Point offset (Y) represents half of flat generated in workpiece (Workpiece Flat = 2Y)
- Half round style
- Relieved for right hand milling
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Included Angle	Shank Diameter	Point Offset	Split Length	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
30°	D2 (h6)	Y +.001" -.001" +.02 mm -.02 mm	L2 +.015" -.000" +.38 mm -.00 mm	L1				
	3 mm	0.10 mm	7 mm	38 mm	RTCM-030-1	21.88	RTCM-030-1X	25.88
	.1250	.004	.375	1.5	RTC-125-1	29.88	RTC-125-1X	31.98
	.1250	.004	.375	3.0	RTC-125-13	30.78	RTC-125-13X	34.18
	4 mm	0.10 mm	10 mm	50 mm	RTCM-040-1	27.78	RTCM-040-1X	32.48
	.1875	.004	.437	2.0	RTC-187-1	37.08		
	5 mm	0.10 mm	12 mm	50 mm	RTCM-050-1	31.68		
	6 mm	0.10 mm	12 mm	57 mm	RTCM-060-1	33.68	RTCM-060-1X	41.48
	.2500	.004	.500	2.5	RTC-250-1	40.08	RTC-250-1X	55.18
	.2500	.004	.500	4.0	RTC-250-14	58.38		
	.2500	.010	.500	2.5	RTC-250-120	38.68		
	.2500	.022	.500	2.5	RTC-250-145	50.78		
	.2500	.030	.500	2.5	RTC-250-160	50.78		
	.3125	.004	.500	2.5	RTC-312-1	74.88		
	.3125	.004	.500	4.0	RTC-312-14	94.08		
	8 mm	0.10 mm	12 mm	63 mm	RTCM-080-1	53.98	RTCM-080-1X	64.78
12 mm	0.10 mm	14 mm	83 mm			RTCM-120-1X	128.78	
60°	3 mm	0.10 mm	5 mm	38 mm	RSCM-030-1	21.88	RSCM-030-1X	25.88
	.1250	.004	.375	1.5	RSC-125-1	29.48	RSC-125-1X	30.98
	.1250	.004	.375	3.0	RSC-125-13	31.38		
	4 mm	0.10 mm	6 mm	50 mm	RSCM-040-1	27.78	RSCM-040-1X	32.48
	.1875	.004	.375	2.0	RSC-187-1	35.98	RSC-187-1X	45.28
	.1875	.004	.375	3.0	RSC-187-13	38.18		
	5 mm	0.10 mm	7 mm	50 mm			RSCM-050-1X	38.18
	6 mm	0.10 mm	8 mm	57 mm	RSCM-060-1	33.68	RSCM-060-1X	41.48
	.2500	.004	.375	2.5	RSC-250-1	42.78		
	.2500	.004	.375	4.0	RSC-250-14	63.58		
	.2500	.010	.375	2.5	RSC-250-120	42.48	RSC-250-120X	55.18
	.2500	.015	.375	2.5	RSC-250-130	47.28		
	.2500	.022	.375	2.5	RSC-250-145	50.78		

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Engraving Cutters

Tipped Off – Single Ended (cont.)

RTC / RTCM / RSC
RSCM / RNC / RNCM

Continued from previous page

Included Angle	Shank Diameter	Point Offset	Split Length	Overall Length	Uncoated		AITIN Coated	
					Tool #	Price	Tool #	Price
A $+0^{\circ}30'$ $-0^{\circ}30'$	D2 (h6)	Y $+ .001"$ $- .001"$ $+ .02$ mm $- .02$ mm	L2 $+ .015"$ $- .000"$ $+ .38$ mm $- .00$ mm	L1				
60°	.2500	.030	.375	2.5	RSC-250-160	50.78		
	.3125	.004	.500	2.5	RSC-312-1	74.58		
	.3125	.004	.500	4.0	RSC-312-14	94.08		
	8 mm	0.10 mm	10 mm	63 mm	RSCM-080-1	53.98	RSCM-080-1X	64.78
	.3750	.004	.500	2.5	RSC-375-1	91.88		
	.3750	.004	.500	4.0	RSC-375-14	132.78		
	10 mm	0.10 mm	12 mm	72 mm	RSCM-100-1	79.48	RSCM-100-1X	89.88
	12 mm	0.10 mm	14 mm	83 mm	RSCM-120-1	111.58		
.5000	.004	.625	3.0	RSC-500-1	146.58	RSC-500-1X	153.68	
90°	3 mm	0.10 mm	5 mm	38 mm	RNCM-030-1	21.88	RNCM-030-1X	25.88
	.1250	.004	.375	1.5	RNC-125-1	27.68	RNC-125-1X	38.18
	.1250	.004	.375	3.0	RNC-125-13	36.28		
	4 mm	0.10 mm	6 mm	50 mm	RNCM-040-1	27.78	RNCM-040-1X	32.48
	.1875	.004	.375	2.0	RNC-187-1	38.98		
	.1875	.004	.375	3.0	RNC-187-13	40.58	RNC-187-13X	48.38
	5 mm	0.10 mm	7 mm	50 mm	RNCM-050-1	31.68	RNCM-050-1X	37.78
	6 mm	0.10 mm	8 mm	57 mm	RNCM-060-1	33.68	RNCM-060-1X	41.48
	.2500	.004	.375	2.5	RNC-250-1	44.38	RNC-250-1X	45.98
	.2500	.004	.375	4.0	RNC-250-14	53.78	RNC-250-14X	68.18
	.2500	.015	.375	2.5	RNC-250-130	50.78		
	.2500	.022	.375	2.5	RNC-250-145	50.78		
	.2500	.030	.375	2.5	RNC-250-160	50.78		
	.3125	.004	.500	2.5	RNC-312-1	60.48		
	8 mm	0.10 mm	10 mm	63 mm	RNCM-080-1	53.98	RNCM-080-1X	64.78
	.3750	.004	.500	2.5	RNC-375-1	88.18	RNC-375-1X	101.08
	10 mm	0.10 mm	12 mm	72 mm	RNCM-100-1	79.48		
	12 mm	0.10 mm	14 mm	83 mm	RNCM-120-1	111.58	RNCM-120-1X	127.58
.5000	.004	.625	3.0	RNC-500-1	142.78			

Engraving Cutters



**RTC / RTCM / RSC
RSCM / RNC / RNCM**

Engraving Cutters
Tipped Off – Doubled Ended



- Designed for engraving and v-grooving in various applications
- Tipped off end diameter for improved cutting
- Point offset (Y) represents half of flat generated in workpiece (Workpiece Flat = 2Y)
- Double ended
- Half round drill style
- Relieved for right hand milling
- AITIN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Included Angle	Shank Diameter	Point Offset	Split Length	Overall Length	Uncoated		AITIN Coated	
					Tool #	Price	Tool #	Price
A $+0^{\circ}30'$ - $0^{\circ}30'$	D2 (h6)	Y $+0.001"$ $-0.001"$ $+0.02$ mm -0.02 mm	L2 $+0.015"$ $-0.015"$ $+0.38$ mm -0.38 mm	L1				
30°	3 mm	0.10 mm	7 mm	38 mm	RTCM-030-2	29.08	RTCM-030-2X	34.78
	.1250	.004	.375	2.0	RTC-125-2	35.08	RTC-125-2X	47.08
	.1250	.004	.375	3.0	RTC-125-23	43.78	RTC-125-23X	54.98
	4 mm	0.10 mm	10 mm	50 mm	RTCM-040-2	37.18	RTCM-040-2X	43.98
	.1875	.004	.437	2.0	RTC-187-2	46.08	RTC-187-2X	58.08
	.1875	.004	.437	3.0	RTC-187-23	53.28		
	5 mm	0.10 mm	12 mm	50 mm	RTCM-050-2	41.88	RTCM-050-2X	48.58
	6 mm	0.10 mm	12 mm	57 mm	RTCM-060-2	45.78	RTCM-060-2X	58.38
	.2500	.004	.500	2.5	RTC-250-2	53.68	RTC-250-2X	67.78
	.2500	.004	.500	4.0	RTC-250-24	74.58		
	.2500	.010	.500	2.5	RTC-250-220	56.78	RTC-250-220X	68.98
	.2500	.015	.500	2.5	RTC-250-230	49.58		
	.2500	.022	.500	2.5	RTC-250-245	63.28	RTC-250-245X	71.98
	.2500	.030	.500	2.5	RTC-250-260	63.28		
	.3125	.004	.500	2.5	RTC-312-2	94.08		
	.3125	.004	.500	4.0	RTC-312-24	114.48		
	8 mm	0.10 mm	12 mm	63 mm	RTCM-080-2	72.48	RTCM-080-2X	90.48
	.3750	.004	.500	2.5	RTC-375-2	116.78		
.3750	.004	.500	4.0	RTC-375-24	147.68			
10 mm	0.10 mm	12 mm	72 mm	RTCM-100-2	103.58			
.5000	.004	.625	3.0	RTC-500-2	160.18			
60°	3 mm	0.10 mm	5 mm	38 mm	RSCM-030-2	29.08	RSCM-030-2X	34.78
	.1250	.004	.375	2.0	RSC-125-2	36.48	RSC-125-2X	43.08
	.1250	.004	.375	3.0	RSC-125-23	43.28		
	4 mm	0.10 mm	6 mm	50 mm	RSCM-040-2	37.18	RSCM-040-2X	43.98
	.1875	.004	.375	2.0	RSC-187-2	44.38	RSC-187-2X	51.78
	.1875	.004	.375	3.0	RSC-187-23	55.18		
	5 mm	0.10 mm	7 mm	50 mm			RSCM-050-2X	47.58
	6 mm	0.10 mm	8 mm	57 mm	RSCM-060-2	45.78	RSCM-060-2X	58.38
	.2500	.004	.375	2.5	RSC-250-2	55.68	RSC-250-2X	70.98

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Engraving Cutters

Engraving Cutters

Tipped Off – Doubled Ended (cont.)

RTC / RTCM / RSC
RSCM / RNC / RNCM

Continued from previous page

Included Angle	Shank Diameter	Point Offset	Split Length	Overall Length	Uncoated		AITIN Coated	
					Tool #	Price	Tool #	Price
A $+0^{\circ}30'$ $-0^{\circ}30'$	D2 (h6)	Y $+0.001"$ $-0.001"$ $+0.02$ mm -0.02 mm	L2 $+0.015"$ $-0.015"$ $+0.38$ mm -0.38 mm	L1				
60°	.2500	.004	.375	4.0	RSC-250-24	81.28		
	.2500	.010	.375	2.5	RSC-250-220	56.28	RSC-250-220X	71.58
	.2500	.015	.375	2.5	RSC-250-230	57.48		
	.2500	.030	.375	2.5	RSC-250-260	63.28		
	.3125	.004	.500	2.5	RSC-312-2	96.28	RSC-312-2X	100.08
	.3125	.004	.500	4.0	RSC-312-24	114.48		
	.3750	.004	.500	2.5	RSC-375-2	111.88		
	.3750	.004	.500	4.0	RSC-375-24	146.68		
	10 mm	0.10 mm	12 mm	72 mm	RSCM-100-2	103.58	RSCM-100-2X	117.88
.5000	.004	.625	3.0	RSC-500-2	171.88			
90°	3 mm	0.10 mm	5 mm	38 mm	RNCM-030-2	29.08	RNCM-030-2X	34.78
	.1250	.004	.375	2.0	RNC-125-2	37.08	RNC-125-2X	49.88
	.1250	.004	.375	3.0	RNC-125-23	45.28	RNC-125-23X	56.48
	4 mm	0.10 mm	6 mm	50 mm	RNCM-040-2	37.18	RNCM-040-2X	43.98
	.1875	.004	.375	2.0	RNC-187-2	45.88	RNC-187-2X	53.88
	.1875	.004	.375	3.0	RNC-187-23	54.08		
	5 mm	0.10 mm	7 mm	50 mm	RNCM-050-2	41.88		
	6 mm	0.10 mm	8 mm	57 mm	RNCM-060-2	45.78	RNCM-060-2X	58.38
	.2500	.004	.375	2.5	RNC-250-2	56.88	RNC-250-2X	69.08
	.2500	.004	.375	4.0	RNC-250-24	74.58	RNC-250-24X	90.88
	.2500	.010	.375	2.5	RNC-250-220	56.38		
	.2500	.015	.375	2.5	RNC-250-230	58.88	RNC-250-230X	74.18
	.2500	.030	.375	2.5	RNC-250-260	63.28		
	.3125	.004	.500	2.5	RNC-312-2	91.78		
	.3125	0.004	.500	4.0	RNC-312-24	114.48	RNC-312-24X	134.28
	8 mm	0.10 mm	10 mm	63 mm	RNCM-080-2	72.48	RNCM-080-2X	90.48
	.3750	.004	.500	2.5	RNC-375-2	115.78	RNC-375-2X	137.68
	.3750	.004	.500	4.0	RNC-375-24	144.38		
	.5000	.004	.625	3.0	RNC-500-2	168.18	RNC-500-2X	192.58
	.5000	.004	.625	4.0	RNC-500-24	241.48		

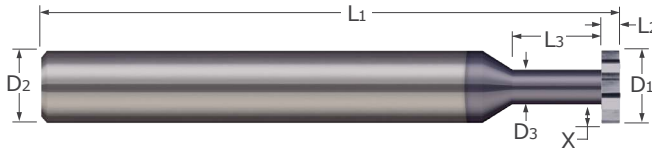
Engraving Cutters



KC

Keyseat Cutters

Square



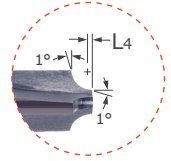
- Keyseat cutters down to .093" diameter
- Both sides of cutter are dished for clearance
- Standard and long length styles
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter	Cutter Width	Neck Diameter	Radial Depth of Cut	Neck Length	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	Price	Tool #	Price
$D_1 \begin{smallmatrix} +.0000" \\ -.0020" \end{smallmatrix}$	$L_2 \begin{smallmatrix} +.001" \\ -.000" \end{smallmatrix}$	$D_3 \begin{smallmatrix} +.000" \\ -.002" \end{smallmatrix}$	X	$L_3 \begin{smallmatrix} +.010" \\ -.000" \end{smallmatrix}$		D2 (h6)	L1	Tool #	Price	Tool #	Price
.0938	.010	.047	.019	.140	4	.1250	1.5	KC-093-140-010	63.98		
.0938	.015	.047	.019	.140	4	.1250	1.5	KC-093-140-015	60.48	KC-093-140-015X	64.08
.0938	.040	.047	.019	.140	4	.1250	1.5	KC-093-140-040	60.48		
.1250	.015	.062	.028	.190	6	.1250	1.5	KC-125-190-015	60.48	KC-125-190-015X	64.08
.1250	.025	.062	.028	.190	6	.1250	1.5	KC-125-190-025	60.48		
.1250	.030	.062	.028	.190	6	.1250	1.5	KC-125-190-030	60.48		
.1250	.040	.062	.028	.190	6	.1250	1.5	KC-125-190-040	60.48	KC-125-190-040X	64.08
.1250	.045	.062	.028	.190	6	.1250	1.5	KC-125-190-045	60.48	KC-125-190-045X	64.08
.1250	.050	.062	.028	.190	6	.1250	1.5	KC-125-190-050	60.48		
.1250	.060	.062	.028	.190	6	.1250	1.5	KC-125-190-060	60.48	KC-125-190-060X	64.08
.1250	.062	.062	.028	.190	6	.1250	1.5	KC-125-190-062	60.48		
.1250	.093	.062	.028	.190	6	.1250	1.5	KC-125-190-093	60.48	KC-125-190-093X	64.08
.1875	.025	.090	.045	.300	6	.1875	2.0	KC-187-300-025	63.98		
.1875	.029	.090	.045	.300	6	.1875	2.0	KC-187-300-029	63.98		
.1875	.045	.090	.045	.300	6	.1875	2.0			KC-187-300-045X	68.28
.1875	.050	.090	.045	.300	6	.1875	2.0	KC-187-300-050	63.98		
.1875	.093	.090	.045	.550	6	.1875	2.0	KC-187-550-093	63.98		
.1875	.125	.090	.045	.550	6	.1875	2.0	KC-187-550-125	63.98		
.3750	.156	.190	.089	.600	8	.3750	2.5	KC-375-600-156	98.98		
.3750	.187	.190	.089	1.125	8	.3750	2.5	KC-375-1125-187	98.98	KC-375-1125-187X	109.18
.5000	.030	.250	.121	.750	8	.5000	3.0	KC-500-750-030	127.68		
.5000	.093	.250	.121	1.500	8	.5000	3.0	KC-500-1500-093	144.38		
.5000	.103	.250	.121	.750	8	.5000	3.0	KC-500-750-103	127.68		
.5000	.118	.250	.121	1.500	8	.5000	3.0	KC-500-1500-118	144.38		
.5000	.120	.250	.121	.750	8	.5000	3.0	KC-500-750-120	127.68		
.5000	.156	.250	.121	.750	8	.5000	3.0	KC-500-750-156	127.68		
.5000	.156	.250	.121	1.500	8	.5000	3.0	KC-500-1500-156	144.38		
.5000	.187	.250	.121	.750	8	.5000	3.0	KC-500-750-187	127.68		
.5000	.187	.250	.121	1.500	8	.5000	3.0			KC-500-1500-187X	156.68

Keyseat Cutters

Corner Rounding End Mills

3 Flute – Single Ended



- Designed to mill corner radii into a part
- 1° max flares tangent at pilot and shoulder to avoid steps and burrs
- Cuts on radius only
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Minor Diameter	Radius	Max Lead in Length	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
D1 $+0.000$ mm -0.076 mm	R $+0.000$ mm -0.013 mm	L4	D2 (h6)	L1				
1.5 mm	0.3 mm	.13 mm	6 mm	57 mm	CREM-060-030	61.78		
1.5 mm	0.8 mm	.13 mm	6 mm	57 mm	CREM-060-080	61.78		
1.5 mm	1.5 mm	.13 mm	6 mm	57 mm	CREM-060-150	61.78		
1.5 mm	2.0 mm	.13 mm	6 mm	57 mm	CREM-060-200	61.78	CREM-060-200X	69.28
1.5 mm	2.5 mm	.13 mm	8 mm	63 mm			CREM-080-250X	84.88
1.5 mm	3.0 mm	.13 mm	8 mm	63 mm	CREM-080-300	74.18		
1.5 mm	4.0 mm	.13 mm	10 mm	73 mm	CREM-100-400	100.88		

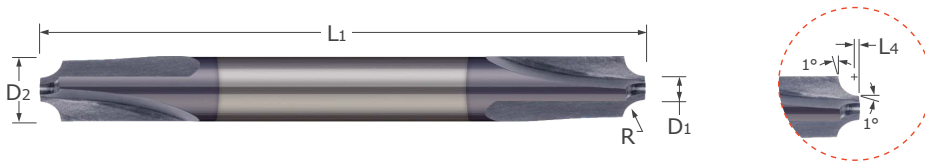
Corner Rounding End Mills



CRE

Corner Rounding End Mills

3 Flute – Double Ended



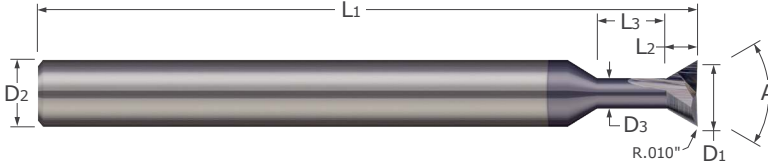
- Designed to mill corner radii into a part
- 1° max flares tangent at pilot and shoulder to avoid steps and burrs
- Cuts on radius only
- Double-ended
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Minor Diameter	Radius	Max Lead in Length	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
$D_1^{+.000"}$ $-.002"$	$R^{+.0000"}$ $-.0005"$	L4	D2 (h6)	L1				
.060	.0100	.005	.1250	2.0	CRE-125-010	54.98	CRE-125-010X	60.58
.060	.0156	.005	.1250	2.0	CRE-125-015	54.98	CRE-125-015X	60.58
.060	.0200	.005	.1250	2.0	CRE-125-020	54.98	CRE-125-020X	60.58
.060	.0250	.005	.1250	2.0	CRE-125-025	54.98	CRE-125-025X	60.58
.060	.0300	.005	.1250	2.0	CRE-125-030	54.98	CRE-125-030X	60.58
.060	.0312	.005	.1250	2.0	CRE-125-031	54.98	CRE-125-031X	60.58
.060	.0350	.005	.1875	2.0	CRE-187-035	59.38	CRE-187-035X	66.08
.060	.0400	.005	.1875	2.0	CRE-187-040	59.38	CRE-187-040X	66.08
.060	.0450	.005	.1875	2.0	CRE-187-045	59.38	CRE-187-045X	66.08
.060	.0469	.005	.1875	2.0	CRE-187-047	59.38	CRE-187-047X	66.08
.060	.0500	.005	.1875	2.0	CRE-187-050	59.38	CRE-187-050X	66.08
.060	.0550	.005	.1875	2.0	CRE-187-055	59.38	CRE-187-055X	66.08
.060	.0600	.005	.1875	2.0	CRE-187-060	59.38	CRE-187-060X	66.08
.060	.0625	.005	.1875	2.0	CRE-187-062	59.38	CRE-187-062X	66.08

Minor Diameter	Radius	Max Lead in Length	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	Price	Tool #	Price
$D_1^{+.000"}$ $-.003"$	$R^{+.0000"}$ $-.0005"$	L4	D2 (h6)	L1				
.060	.0700	.005	.2500	2.5	CRE-250-070	76.78	CRE-250-070X	87.28
.060	.0750	.005	.2500	2.5	CRE-250-075	76.78	CRE-250-075X	87.28
.060	.0781	.005	.2500	2.5	CRE-250-078	76.78	CRE-250-078X	87.28
.060	.0800	.005	.2500	2.5	CRE-250-080	76.78	CRE-250-080X	87.28
.060	.0900	.005	.2500	2.5	CRE-250-090	76.78	CRE-250-090X	87.28
.060	.0938	.005	.2500	2.5	CRE-250-093	76.78	CRE-250-093X	87.28
.060	.1000	.005	.3125	2.5	CRE-312-100	92.68	CRE-312-100X	110.98
.060	.1094	.005	.3125	2.5	CRE-312-109	92.68	CRE-312-109X	110.98
.060	.1250	.005	.3125	2.5	CRE-312-125	92.68	CRE-312-125X	110.98
.060	.1406	.005	.3750	2.5	CRE-375-140	125.98	CRE-375-140X	143.08
.060	.1562	.005	.3750	2.5	CRE-375-156	125.98	CRE-375-156X	143.08
.120	.1718	.010	.5000	3.0	CRE-500-171	195.08	CRE-500-171X	213.98
.120	.1875	.010	.5000	3.0	CRE-500-187	195.08	CRE-500-187X	213.98
.120	.2031	.010	.6250	3.5	CRE-625-203	209.08	CRE-625-203X	240.28
.120	.2188	.010	.6250	3.5	CRE-625-218	209.08	CRE-625-218X	240.28
.120	.2344	.010	.6250	3.5	CRE-625-234	209.08	CRE-625-234X	240.28
.120	.2500	.010	.6250	3.5	CRE-625-250	209.08	CRE-625-250X	240.28
.120	.2812	.010	.7500	4.0	CRE-750-281	293.28		
.120	.3125	.010	.7500	4.0	CRE-750-312	293.28	CRE-750-312X	329.28
.120	.3750	.010	1.0000	4.0	CRE-001-375	547.08	CRE-001-375X	595.78
.120	.4370	.010	1.0000	4.0	CRE-001-437	547.08	CRE-001-437X	595.78

Dovetail Cutters

DT



- Designed to mill dovetail grooves into a part
- Offered with 30°, 60°, and 90° included angles
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

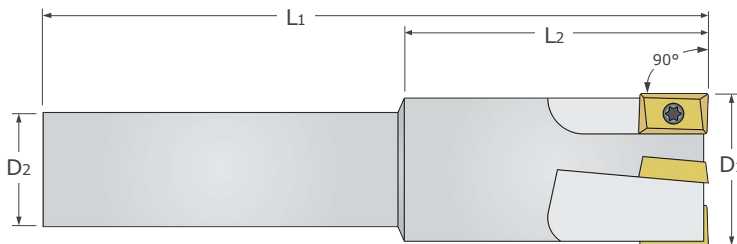
Included Angle	Cutter Diameter*	Length of Cut	Neck Diameter	Neck Length	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	Price	Tool #	Price
30°	D1 ^{+0.0001} / _{-.0020} "	L2	D3	L3 ^{+0.0301} / _{-.0001} "	R		D2 (h6)	L1				
	.1250	.095	.080	.125	.010	2	.1250	1.5	DT-125-030-010	86.68	DT-125-030-010X	90.08
	.1875	.127	.125	.125	.010	2	.1875	2.0	DT-187-030-010	92.68	DT-187-030-010X	96.68
	.2500	.161	.170	.125	.010	2	.2500	2.5	DT-250-030-010	116.88	DT-250-030-010X	123.88
	.3125	.221	.200	.312	.010	2	.3125	2.5	DT-312-030-010	126.38	DT-312-030-010X	136.78
	.3750	.263	.240	.375	.010	3	.3750	2.5	DT-375-030-010	133.48	DT-375-030-010X	143.58
60°	.5000	.347	.320	.500	.010	3	.5000	3.0	DT-500-030-010	173.08	DT-500-030-010X	185.28
	.1250	.065	.065	.125	.010	2	.1250	1.5	DT-125-060-010	86.68	DT-125-060-010X	90.08
	.1875	.093	.095	.125	.010	2	.1875	2.0	DT-187-060-010	92.68	DT-187-060-010X	96.68
	.2500	.125	.120	.125	.010	2	.2500	2.5	DT-250-060-010	116.88	DT-250-060-010X	123.88
	.3125	.162	.140	.312	.010	2	.3125	2.5	DT-312-060-010	126.38	DT-312-060-010X	136.78
	.3750	.190	.170	.375	.010	3	.3750	2.5	DT-375-060-010	133.48	DT-375-060-010X	143.58
90°	.5000	.255	.220	.500	.010	3	.5000	3.0	DT-500-060-010	173.08	DT-500-060-010X	185.28
	.1250	.042	.070	.125	.010	2	.1250	1.5	DT-125-090-010	86.68	DT-125-090-010X	90.08
	.1875	.048	.120	.125	.010	2	.1875	2.0	DT-187-090-010	92.68	DT-187-090-010X	96.68
	.2500	.064	.150	.125	.010	2	.2500	2.5	DT-250-090-010	116.88	DT-250-090-010X	123.88
	.3125	.095	.150	.312	.010	2	.3125	2.5	DT-312-090-010	126.38	DT-312-090-010X	137.38
	.3750	.127	.150	.375	.010	3	.3750	2.5	DT-375-090-010	133.48	DT-375-090-010X	143.58
	.5000	.164	.200	.500	.010	3	.5000	3.0	DT-500-090-010	173.08	DT-500-090-010X	185.28

* .0005" max TIR

Dovetail Cutters



Indexable Milling – Tool Holders

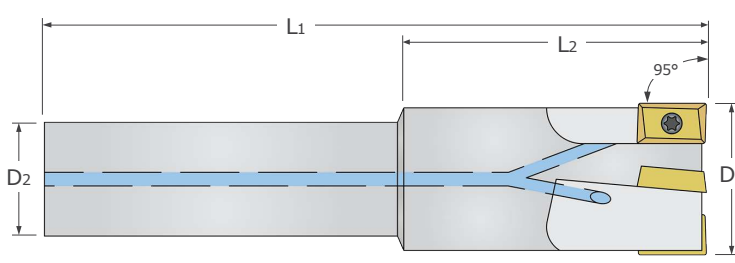


- 90° orientation angle allows for square shoulder cutting
- Utilizes ANSI standard APKT style inserts (not included)
- Each tool holder includes a M2.5 x T-8 torx screw and torx key (part # 16-1020)
- Non coolant-through
- Insert not included

Cutter Diameter	Body Length	Flutes	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
D1	L2		D2	L1			Tool #	Price
.375	1.500	1	.5000	3.0	50-2100	BAAP 1216 2	31-1216	171.28
.500	1.500	1	.5000	3.0	50-2100	BAAP 1616 2	31-1616	191.48
.625	1.500	2	.5000	3.0	50-2100	BAAP 1816 2	31-1816	211.58
.750	2.000	3	.7500	4.4	50-2100	BAAP 2424 2	31-2424	292.08
1.000	2.000	4	.7500	4.4	50-2100	BAAP 3224 2	31-3224	312.08
1.250	2.000	5	.7500	4.4	50-2100	BAAP 4024 2	31-4024	465.08

See pg 318 for indexable insert accessories

Indexable Milling – Tool Holders – Coolant Through



- Coolant-through milling tool holders designed to enhance chip evacuation
- 90° orientation angle allows for square shoulder cutting
- Utilizes ANSI standard APKT style inserts (not included)
- Each tool holder includes a M2.5 x T-8 torx screw and torx key (part # 16-1020)
- Insert not included

Cutter Diameter	Body Length	Flutes	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
D1	L2		D2	L1			Tool #	Price
.375	1.500	1	.5000	3.0	50-2100	AAAP 1216 2	30-1216	211.58
.500	1.500	1	.5000	3.0	50-2100	AAAP 1616 2	30-1616	231.58
.625	1.500	2	.5000	3.0	50-2100	AAAP 1816 2	30-1816	252.78
.750	2.000	3	.7500	4.4	50-2100	AAAP 2424 2	30-2424	297.68
1.000	2.000	4	.7500	4.4	50-2100	AAAP 3224 2	30-3224	477.18
1.250	2.000	5	.7500	4.4	50-2100	AAAP 4024 2	30-4024	511.28

See pg 318 for indexable insert accessories

See pg 325 for tool set options

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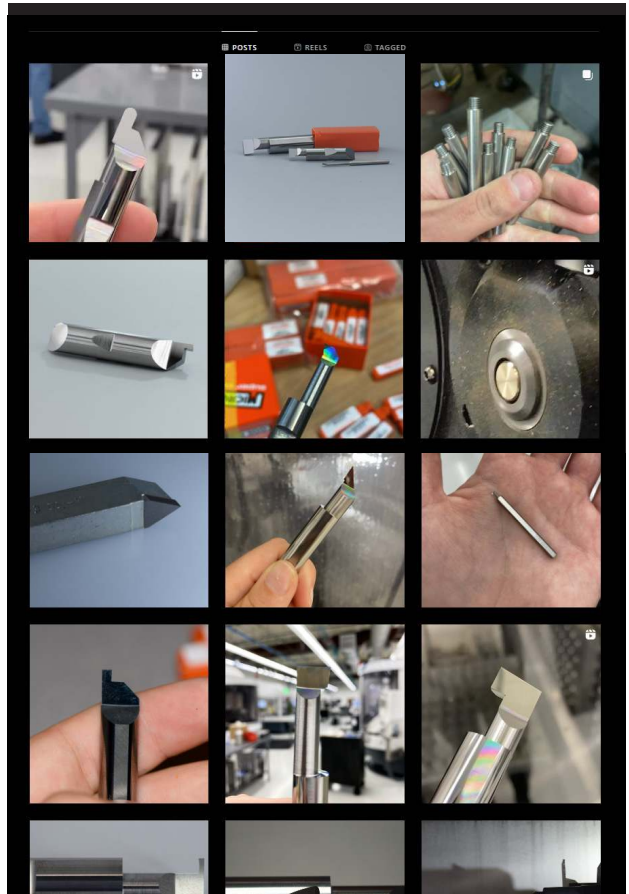
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BLANKS SETS & ACCESSORIES

Blanks

308

Sets

314

Accessories

328

Blanks

Half Round

HR / HRM

Blanks



- Half round style carbide blanks
- Polished split face
- Solid carbide
- CNC Ground in the USA

Split Height		Shank Diameter	Overall Length	Half Round Blank	
D ₂ /2	decimal equiv.	D ₂	L ₁	Tool #	Price
1 mm	.0394	2 mm	38 mm	HRM-020-38	23.78
1.5 mm	.0591	3 mm	38 mm	HRM-030-38	24.98
2.5 mm	.0984	5 mm	50 mm	HRM-050-50	41.58
3 mm	.1181	6 mm	57 mm	HRM-060-57	49.68
.1250	.1250	.2500	2.5	HR-250	60.58
4 mm	.1575	8 mm	63 mm	HRM-080-63	81.78
5 mm	.1969	10 mm	72 mm	HRM-100-72	115.28



SR / SRM

Blanks
Round Blanks

- Round style
- Finish ground blanks
- Solid carbide
- CNC ground in the USA

Shank Diameter		Overall Length	Round Blank	
D2(h6)		L1	Tool #	Price
1 mm	.0394	30 mm	SRM-010-030	7.58
1 mm	.0394	310 mm	SRM-010-310	20.98
1.5 mm	.0591	100 mm	SRM-015-100	10.28
.0625	.0625	1.0	SR-062-1	11.08
.0625	.0625	2.0	SR-062-2	10.98
.0625	.0625	3.0	SR-062-3	10.78
.0625	.0625	4.0	SR-062-4	10.28
.0625	.0625	12.0	SR-062-12	28.48
2 mm	.0787	38 mm	SRM-020-038	8.48
2 mm	.0787	100 mm	SRM-020-100	12.98
2 mm	.0787	310 mm	SRM-020-310	28.38
.0938	.0938	1.0	SR-093-1	12.18
.0938	.0938	3.0	SR-093-3	14.18
.0938	.0938	4.0	SR-093-4	17.58
.0938	.0938	6.0	SR-093-6	18.18
.0938	.0938	12.0	SR-093-12	26.48
2.5 mm	.0984	100 mm	SRM-025-100	12.98
3 mm	.1181	38 mm	SRM-030-038	9.28
3 mm	.1181	100 mm	SRM-030-100	15.58
3 mm	.1181	310 mm	SRM-030-310	37.88
.1250	.1250	1.5	SR-125-1.5	9.98
.1250	.1250	2.0	SR-125-2	10.98
.1250	.1250	3.0	SR-125-3	13.18
.1250	.1250	4.0	SR-125-4	16.68
.1250	.1250	6.0	SR-125-6	25.28
.1250	.1250	12.0	SR-125-12	43.08
.1562	.1562	1.5	SR-156-1.5	11.88
.1562	.1562	2.0	SR-156-2	15.08
.1562	.1562	3.0	SR-156-3	19.68
.1562	.1562	4.0	SR-156-4	22.68
.1562	.1562	6.0	SR-156-6	39.08
4 mm	.1575	50 mm	SRM-040-050	10.78
4 mm	.1575	100 mm	SRM-040-100	22.08

*Denotes chamfered end.

Continued on next page

Blanks

SR / SRM

Round Blanks (cont.)

Continued from previous page

Shank Diameter		Overall Length	Round Blank		
D2(h6)		L1	Tool #	Price	
	4 mm	.1575	310 mm	SRM-040-310	54.18
	4.5 mm	.1772	100 mm	SRM-045-100	26.18
.1875		.1875	1.5	SR-187-1.5*	12.28
.1875		.1875	2.0	SR-187-2*	14.18
.1875		.1875	4.0	SR-187-4	27.38
.1875		.1875	6.0	SR-187-6	39.48
.1875		.1875	12.0	SR-187-12	70.98
	5 mm	.1969	50 mm	SRM-050-050	13.58
	5 mm	.1969	100 mm	SRM-050-100	30.18
	5 mm	.1969	310 mm	SRM-050-310	86.68
	5.5 mm	.2165	100 mm	SRM-055-100	32.98
	6 mm	.2362	57 mm	SRM-060-057	20.38
	6 mm	.2362	100 mm	SRM-060-100	40.08
	6 mm	.2362	310 mm	SRM-060-310	102.78
.2500		.2500	2.0	SR-250-2*	20.98
.2500		.2500	2.5	SR-250-2.5*	24.98
.2500		.2500	3.0	SR-250-3*	26.18
.2500		.2500	4.0	SR-250-4	39.88
.2500		.2500	6.0	SR-250-6	57.08
.2500		.2500	12.0	SR-250-12	106.28
	7 mm	.2756	100 mm	SRM-070-100	52.88
.3125		.3125	2.0	SR-312-2*	26.78
.3125		.3125	2.5	SR-312-2.5*	32.28
.3125		.3125	4.0	SR-312-4*	58.58
.3125		.3125	6.0	SR-312-6	81.38
.3125		.3125	12.0	SR-312-12	146.78
	8 mm	.3150	100 mm	SRM-080-100	53.38
	8 mm	.3150	310 mm	SRM-080-310	138.98
	9 mm	.3543	100 mm	SRM-090-100	54.78
	9 mm	.3543	310 mm	SRM-090-310	166.98
.3750		.3750	2.0	SR-375-2*	32.58
.3750		.3750	2.5	SR-375-2.5*	40.18
.3750		.3750	4.0	SR-375-4*	65.48
.3750		.3750	6.0	SR-375-6	99.78
.3750		.3750	12.0	SR-375-12	190.58
	10 mm	.3937	72 mm	SRM-100-072	48.48
	10 mm	.3937	100 mm	SRM-100-100	79.88
	10 mm	.3937	310 mm	SRM-100-310	225.58
.4375		.4375	2.5	SR-437-2.5*	80.68
.4375		.4375	4.0	SR-437-4	119.38
.4375		.4375	6.0	SR-437-6	182.68
.4375		.4375	12.0	SR-437-12	281.58
	12 mm	.4724	100 mm	SRM-120-100	105.08
	12 mm	.4724	310 mm	SRM-120-310	299.78
.5000		.5000	2.5	SR-500-2.5*	62.88

*Denotes chamfered end.

Continued on next page

Blanks

SR / SRM

Blanks

Round Blanks (cont.)

Continued from previous page

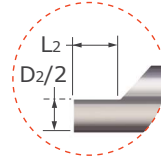
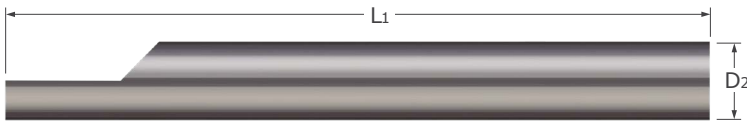
Shank Diameter		Overall Length	Round Blank	
D ₂ (h6)		L ₁	Tool #	Price
.5000	.5000	3.0	SR-500-3*	66.18
.5000	.5000	4.0	SR-500-4	101.28
.5000	.5000	6.0	SR-500-6	154.28
.5000	.5000	12.0	SR-500-12	347.58
13 mm	.5118	310 mm	SRM-130-310	305.38
14 mm	.5512	100 mm	SRM-140-100	150.38
.5625	.5625	3.5	SR-562-3.5*	126.98
.6250	.6250	3.5	SR-625-3.5*	156.98
.6250	.6250	4.0	SR-625-4	157.48
.6250	.6250	6.0	SR-625-6	229.38
.6250	.6250	12.0	SR-625-12	437.28
16 mm	.6299	100 mm	SRM-160-100	154.68
16 mm	.6299	310 mm	SRM-160-310	443.18
.6875	.6875	6.0	SR-687-6	455.98
18 mm	.7087	100 mm	SRM-180-100	211.68
.7500	.7500	4.0	SR-750-4*	187.88
.7500	.7500	6.0	SR-750-6	359.48
.7500	.7500	12.0	SR-750-12	588.18
20 mm	.7874	100 mm	SRM-200-100	228.68
25 mm	.9843	310 mm	SRM-250-310	988.38
1.0000	1.0000	5.0	SR-001-5*	610.98
1.0000	1.0000	12.0	SR-001-12	1022.38

*Denotes chamfered end.

Blanks

Split End – Single Ended

RS /RSM



Blanks

- Precision ground blank designed for custom profiles requiring a split face
- Precision manufactured in the USA

Split Length*			Shank Diameter	Overall Length	Single-Ended Blank	
L_2					Tool #	Price
$+0.015''$ $-0.000''$	$+1.0$ mm -0.0 mm	decimal equiv.	D_2 (h6)	L_1		
	4 mm	.1575	2 mm	38 mm	RSM-020-1	13.98
	6 mm	.2362	4 mm	50 mm	RSM-040-1	19.38
	8 mm	.3150	6 mm	57 mm	RSM-060-1	28.38
.375		.3750	.1250	1.5	RS-125-1	24.28
.375		.3750	.1250	3.0	RS-125-13	27.38
.375		.3750	.1875	2.0	RS-187-1	29.58
.375		.3750	.1875	3.0	RS-187-13	40.58
.375		.3750	.2500	2.5	RS-250-1	38.28
.375		.3750	.2500	4.0	RS-250-14	60.48
	10 mm	.3937	8 mm	63 mm	RSM-080-1	53.08
	12 mm	.4724	10 mm	72 mm	RSM-100-1	70.28
.500		.5000	.3125	2.5	RS-312-1	57.08
.500		.5000	.3125	4.0	RS-312-14	86.88
.500		.5000	.3750	2.5	RS-375-1	74.58
.500		.5000	.3750	4.0	RS-375-14	117.98
.625		.6250	.5000	3.0	RS-500-1	126.98
.625		.6250	.5000	4.0	RS-500-14	174.48

* Centerline $+0.0010'' / -0.0000''$ and $+0.024$ mm / -0.000 mm



RS /RSM

Blanks

Split End – Double Ended



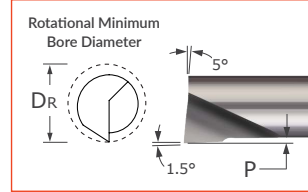
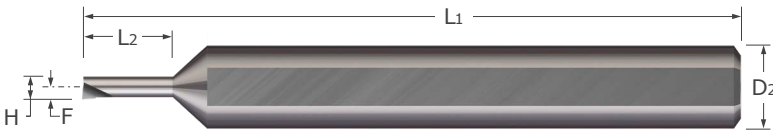
- Precision ground blank designed for custom profiles requiring a split face
- Double-ended allows for maximum utilization of the blank
- Precision manufactured in the USA

Split Length*			Shank Diameter	Overall Length	Double-Ended Blank	
L2			D2 (h6)	L1	Tool #	Price
+ .015" - .015"	+1.0 mm -0.0 mm	decimal equiv.				
	4 mm	.1575	2 mm	38 mm	RSM-020-2	19.38
	5 mm	.1969	3 mm	38 mm	RSM-030-2	20.58
	6 mm	.2362	4 mm	50 mm	RSM-040-2	25.68
	8 mm	.3150	6 mm	57 mm	RSM-060-2	37.78
.375		.3750	.1250	2.0000	RS-125-2	33.68
.375		.3750	.1250	3.0000	RS-125-23	36.08
.375		.3750	.1875	2.0000	RS-187-2	40.98
.375		.3750	.1875	3.0000	RS-187-23	50.58
.375		.3750	.2500	2.5000	RS-250-2	51.78
.375		.3750	.2500	4.0000	RS-250-24	71.18
	10 mm	.3937	8 mm	63 mm	RSM-080-2	67.78
	12 mm	.4724	10 mm	72 mm	RSM-100-2	94.48
.500		.5000	.3125	2.5000	RS-312-2	75.98
.500		.5000	.3125	4.0000	RS-312-24	106.58
.500		.5000	.3750	2.5000	RS-375-2	93.68
.500		.5000	.3750	4.0000	RS-375-24	139.78
.625		.6250	.5000	3.0000	RS-500-2	150.48
.625		.6250	.5000	4.0000	RS-500-24	215.48

* Centerline +.0010" / -.0000" and +.024 mm / -.000 mm

Sets

Standard – Boring Tools – Right Hand – Sharp – Miniature



Sets

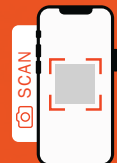
- Designed for facing and boring applications in bores .015" and larger
- Polished face for improved edge retention and chip evacuation while reducing galling
- Split geometry makes the tool as rigid as possible
- On center neck design allows for static and live/rotating applications
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA



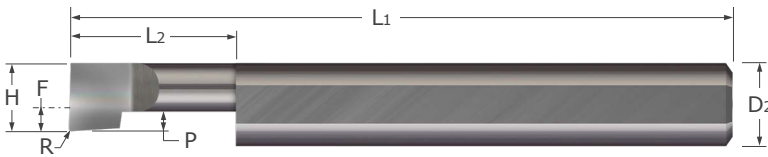
Head Width	Rotational Minimum Bore Diameter	Maximum Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated	Set	
							Tool #	Set #	Price
H	DR	L2 ^{+0.010"} / _{-.000"}	P	F	D2 (h6)	L1			
.0180	.020	.075	.0020	.0100	.1250	1.5	MBB-020075	MBB-0	292.88
.0225	.025	.100	.0025	.0125	.1250	1.5	MBB-025100		
.0275	.030	.100	.0025	.0150	.1250	1.5	MBB-030100		
.0320	.035	.100	.0030	.0175	.1250	1.5	MBB-035100		
.0365	.040	.150	.0035	.0200	.1250	1.5	MBB-040150		
.0405	.045	.150	.0045	.0225	.1250	1.5	MBB-045150		

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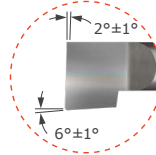
Valuable information about Micro 100 products and technical resources directly to your inbox. Be the first to know of newly-released tools to gain an immediate leg-up on the competition!



Standard – Boring Tools – Right Hand



- Designed for facing and boring applications in bores .050" and larger
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split geometry makes the tool as rigid as possible
- Corner radius profile
- Lockdown flat automatically locates tool on center
- Coating options provide added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

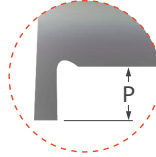
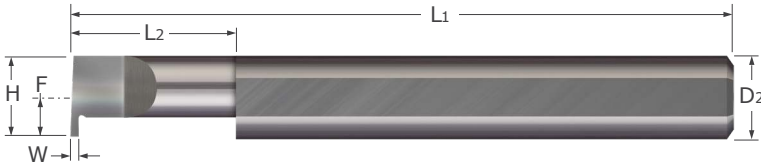


Shank Dia.	Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Overall Length	Uncoated	Set	
D ₂ (h6)	H	L ₂	R	P	F	L ₁	Tool #	Set #	Price	
1/8	.050	.060	.300	.003	.012	-.0125	1.5	BB-050300	BB-1	224.18
	.060	.070	.300	.003	.015	-.0025	1.5	BB-060300		
	.080	.090	.300	.003	.020	.0175	1.5	BB-080300		
	.100	.110	.400	.003	.025	.0375	1.5	BB-100400		
	.100	.110	.500	.003	.025	.0375	1.5	BB-100500		
3/16	.120	.132	.500	.006	.030	.0263	2.0	BB-120500	BB-2	236.88
	.120	.132	.700	.006	.030	.0263	2.0	BB-120700		
	.140	.152	.400	.006	.035	.0463	2.0	BB-140400		
	.140	.152	.700	.006	.035	.0463	2.0	BB-140700		
	.160	.176	.400	.006	.040	.0663	2.0	BB-160400		
1/4	.160	.176	.750	.006	.040	.0663	2.0	BB-160750	BB-3	256.48
	.180	.196	.500	.006	.045	.0550	2.5	BB-180500		
	.180	.196	.750	.006	.045	.0550	2.5	BB-180750		
	.180	.196	1.000	.006	.045	.0550	2.5	BB-1801000		
	.200	.216	.400	.006	.050	.0750	2.5	BB-200400		
5/16	.200	.216	.600	.006	.050	.0750	2.5	BB-200600	BB-4	344.68
	.200	.216	1.000	.006	.050	.0750	2.5	BB-2001000		
	.230	.250	.400	.006	.057	.0738	2.5	BB-230400		
	.230	.250	.600	.006	.057	.0738	2.5	BB-230600		
	.230	.250	.800	.006	.057	.0738	2.5	BB-230800		
3/8	.230	.250	1.000	.006	.057	.0738	2.5	BB-2301000	BB-5	469.38
	.290	.310	.500	.006	.072	.1338	2.5	BB-290500		
	.290	.310	1.000	.006	.072	.1338	2.5	BB-2901000		
	.320	.340	.500	.006	.080	.1325	2.5	BB-320500		
	.320	.340	1.000	.006	.080	.1325	2.5	BB-3201000		
3/8	.320	.340	1.500	.006	.080	.1325	2.5	BB-3201500	BB-5	469.38
	.360	.380	.750	.006	.090	.1725	2.5	BB-360750		
	.360	.380	1.250	.006	.090	.1725	2.5	BB-3601250		
	.360	.380	1.800	.006	.090	.1725	2.5	BB-3601800		
	.360	.380	1.800	.006	.090	.1725	2.5	BB-3601800		

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Sets

Standard – Grooving Tools – Retaining Ring – Right Hand



- Designed for generating retaining ring grooves
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- Coating options provide added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA

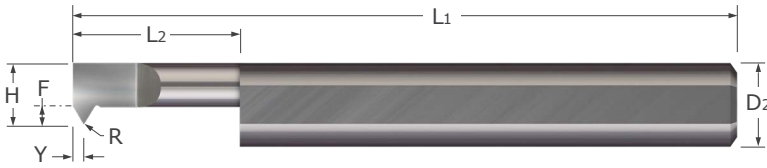
Width	Head Width	Min. Bore Diameter*	Max. Bore Depth	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated	Set	
W ^{+0.001"} / _{-.000"}	H		L2 ^{+0.050"} / _{-.000"}	P	F	D2 (h6)	L1	Tool #	Set #	Price
.017	.250	.272	.250	.050	.1250	.2500	2.5	RR-017-4	RR-1	323.58
.025	.250	.272	.625	.050	.1250	.2500	2.5	RR-025-10		
.030	.250	.272	.500	.050	.1250	.2500	2.5	RR-030-8		
.030	.250	.272	.625	.050	.1250	.2500	2.5	RR-030-10		
.033	.312	.334	.500	.100	.1562	.3125	2.5	RR-033-8		
.033	.312	.334	.750	.100	.1562	.3125	2.5	RR-033-12		
W ^{+0.002"} / _{-.000"}	H		L2 ^{+0.050"} / _{-.000"}	P	F	D2 (h6)	L1	Tool #	Set #	Price
.039	.375	.397	.750	.100	.1875	.3750	2.5	RR-039-12	RR-2	486.18
.046	.375	.397	1.000	.100	.1875	.3750	2.5	RR-046-16		
.055	.375	.397	1.250	.100	.1875	.3750	2.5	RR-055-20		
.062	.375	.397	.750	.100	.1875	.3750	2.5	RR-062-12		
.087	.375	.397	.750	.100	.1875	.3750	2.5	RR-087-12		
.087	.375	.397	1.250	.100	.1875	.3750	2.5	RR-087-20		

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

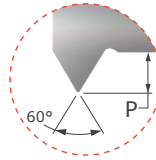
Sets

Sets

Standard – Threading Tools – UN Threads – Single Point – Right Hand



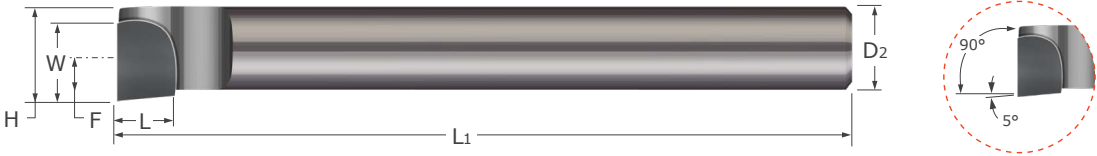
- Designed for threading multiple thread pitches (ANSI, UN, and Metric 60°)
- Polished split face for improved edge retention and chip evacuation while reducing galling
- Split geometry makes the tool as rigid as possible
- Corner radius profile
- Lockdown flat automatically locates tool on center
- AlTiN coated option provides added lubricity and increased wear resistance in difficult to machine materials
- Solid carbide ■ CNC ground in the USA



Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Radius	Centerline Offset	Shank Diameter	Overall Length	Uncoated	Set	
										Tool #	Set #	Price
TPI	H		L2	$Y^{+.010''}_{-.000''}$	P	$R^{+.001''}_{-.000''}$	F	D2 (h6)	L1			
24-56	.180	.202	.500	.023	.040	.002	.0550	.2500	2.5	IT-180500	IT-1	407.68
24-40	.200	.222	.600	.026	.045	.002	.0750	.2500	2.5	IT-200600		
20-40	.230	.252	.600	.032	.055	.002	.0738	.3125	2.5	IT-230600		
14-40	.290	.312	.750	.040	.070	.002	.1338	.3125	2.5	IT-290750		
10-32	.320	.342	.750	.043	.075	.002	.1325	.3750	2.5	IT-320750		
10-32	.360	.382	.750	.049	.085	.002	.1725	.3750	2.5	IT-360750		

*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

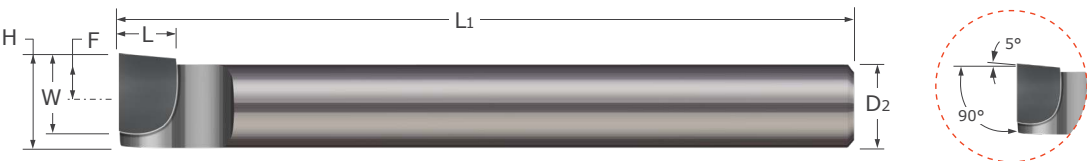
Sets Standard – Boring Tools – Right Hand – Brazed



- Designed for right hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Sharp corner profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

Head Width	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	Set	
H	W	L	F	D ₂ ^{+0.000"} _{-.003"}	L ₁	Tool #	Set #	Price
.320	.250	.188	.195	.250	4.0	TBB-250	TBB-5	221.38
.463	.313	.250	.276	.375	6.0	TBB-375		
.625	.500	.250	.375	.500	7.0	TBB-500		
.795	.500	.250	.483	.625	8.0	TBB-625		
.935	.625	.250	.560	.750	9.0	TBB-750		

Sets Standard – Boring Tools – Left Hand – Brazed

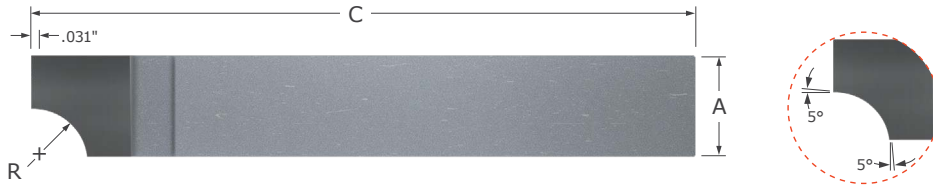


- Designed for left hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Sharp corner profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

Head Width	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	Set	
H	W	L	F	D ₂ ^{+0.000"} _{-.003"}	L ₁	Tool #	Set #	Price
.320	.250	.188	.195	.250	4.0	TBBL-250	TBBL-5	215.78
.463	.313	.250	.276	.375	6.0	TBBL-375		
.625	.500	.250	.375	.500	7.0	TBBL-500		
.795	.500	.250	.483	.625	8.0	TBBL-625		
.935	.625	.250	.560	.750	9.0	TBBL-750		



Braze – Forming Tools – 90° Radius Concave – Right Hand



- Right hand tool designed for forming a convex radius
- Tangential 5° blend angles aid in providing a burr-free transition
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Radius	Square Shank	Overall Length	Braze		
			Tool #	Set #	Price
$R \begin{smallmatrix} +.0005'' \\ -.0005'' \end{smallmatrix}$	$A \begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	C			
.0625	.3750	2.5	RAD-2	RAD-21	269.08
.1250	.3750	2.5	RAD-4		
.2500	.3750	2.5	RAD-8		
.3750	.5000	3.5	RAD-12		
.0312	.3750	2.5	RAD-1	RAD-22	543.58
.0625	.3750	2.5	RAD-2		
.0938	.3750	2.5	RAD-3		
.1250	.3750	2.5	RAD-4		
.1562	.3750	2.5	RAD-5		
.1875	.3750	2.5	RAD-6		
.2188	.3750	2.5	RAD-7		
.2500	.3750	2.5	RAD-8		
.0625	.3750	2.5	RAD-2	RAD-23	585.58
.1250	.3750	2.5	RAD-4		
.1875	.3750	2.5	RAD-6		
.2500	.3750	2.5	RAD-8		
.3125	.5000	3.5	RAD-10		
.3750	.5000	3.5	RAD-12		
.4375	.7500	4.5	RAD-14		
.5000	.7500	4.5	RAD-16		
.0312	.3750	2.5	RAD-1	RAD-24	1172.58
.0625	.3750	2.5	RAD-2		
.0938	.3750	2.5	RAD-3		
.1250	.3750	2.5	RAD-4		
.1562	.3750	2.5	RAD-5		
.1875	.3750	2.5	RAD-6		
.2188	.3750	2.5	RAD-7		
.2500	.3750	2.5	RAD-8		
.2812	.5000	3.5	RAD-9		
.3125	.5000	3.5	RAD-10		
.3438	.5000	3.5	RAD-11		
.3750	.5000	3.5	RAD-12		
.4062	.7500	4.5	RAD-13		
.4375	.7500	4.5	RAD-14		
.4688	.7500	4.5	RAD-15		
.5000	.7500	4.5	RAD-16		

Sets

Indexable Boring Bars – Boring – Coolant Through – Right Hand

Set Contents	Holder Nomenclature	Part Number	Set	
			Tool #	Set # Price
4 SCLCR Tool Holders 1/4", 5/16", 3/8", and 1/2" Shank Diameters	A04F SCLCR 2	20-0821	40-0100	443.18
	A05H SCLCR 2	20-0823		
	A06J SCLCR 2	20-0825		
	A08K SCLCR 2	20-0827		
	-	50-1100		
4 Inserts	-	50-1100		
4 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		
3 Tool Holders 1/2", 5/8", 3/4" Shank Diameters	A08K SCLCR 3	20-0850	40-2500	528.08
	A10M SCLCR 3	20-0852		
	A12Q SCLCR 3	20-0854		
	-	50-1105		
3 Inserts	-	50-1105		
3 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M3.5 x TK-15	-	16-1070		



Sets

Sets

Indexable Boring Bars – Profiling – Coolant Through – Right Hand



Set Contents	Holder Nomenclature	Part Number	Set	
			Tool #	Set # Price
3 SDUCR Tool Holders 3/8", 1/2", and 5/8" Shank Diameters	A06J SDUCR 2	20-0931	40-2400	372.68
	A08K SDUCR 2	20-0933		
	A10M SDUCR 2	20-0935		
3 Inserts	-	50-1200		
3 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		

Sets

Indexable Boring Bars – Multi-Purpose Set 1

Sets



Set Contents	Holder Nomenclature	Part Number	Set	
			Tool #	Set #
6 Assorted Tool Holders 1/4" Square Shank	SCLCR 0404 D2	10-3231	40-7101	400.88
	SCLCL 0404 D2	10-3232		
	SCBCR 0404 D2	10-3151		
	SCKCR 0404 D2	10-3211		
	SCMCN 0404 D2	10-3311		
	SCSCR 0404 D2	10-3351		
1 Boring Bar 1/4" Shank Diameter	A04F SCLCR 2	21-0921		
7 Inserts	-	50-1100		
7 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		
6 Assorted Tool Holders 5/16" Square Shank	SCLCL 0404 D2	10-3233	40-7102	412.88
	SCLCL 0505 D2	10-3234		
	SCBCR 0505 D2	10-3153		
	SCKCR 0505 D2	10-3212		
	SCMCN 0505 D2	10-3312		
	SCSCR 0505 D2	10-3353		
1 Boring Bar 1/4" Shank Diameter	A05H SCLCR 2	21-0921		
7 Inserts	-	50-1100		
7 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		
6 Assorted Tool Holders 3/8" Square Shank	SCLCR 0606 E2	10-3235	40-7103	432.98
	SCLCL 0606 E2	10-3236		
	SCBCR 0606 E2	10-3155		
	SCKCR 0606 E2	10-3213		
	SCMCN 0606 E2	10-3313		
	SCSCR 0606 E2	10-3355		
1 Boring Bar 5/16" Shank Diameter	A06J SCLCR 2	21-0923		
7 Inserts	-	50-1100		
7 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		
6 Assorted Tool Holders 1/2" Square Shank	SCLCR 0808 F2	10-3237	40-7104	463.48
	SCLCL 0808 F2	10-3238		
	SCBCR 0808 F2	10-3157		
	SCKCR 0808 F2	10-3215		
	SCMCN 0808 F2	10-3314		
	SCSCR 0808 F2	10-3357		
1 Boring Bar 3/8" Shank Diameter	A08K SCLCR 2	20-0825		
7 Inserts	-	50-1100		
7 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		

Continued on next page



Sets

Indexable Boring Bars – Multi-Purpose Set 1 (cont.)

Continued from previous page



Set Contents	Holder Nomenclature	Part Number	Set	
			Tool #	Set #
6 Assorted Tool Holders 5/8" Square Shank	SCLCR 1010 H2	10-3241	40-7105	624.48
	SCLCL 1010 H2	10-3242		
	SCBCR 1010 H2	10-3159		
	SCKCR 1010 H2	10-3217		
	SCMCN 1010 H2	10-3315		
	SCSCR 1010 H2	10-3359		
	1 Boring Bar 1/2" Shank Diameter	A10M SCLCR 2		
7 Inserts	-	50-1100		
7 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		

Sets

Sets

Indexable Boring Bars – Multi-Purpose Set 2



Set Contents	Holder Nomenclature	Part Number	Set	
			Tool #	Set #
3 Tool Holders 3/4" Square Shank	SCLCR 1212 J3	10-3251	40-7150	671.88
	SCLCL 1212 J3	10-3252		
	SCSCR 1212 J3	10-3365		
1 Boring Bar 3/4" Shank Diameter	A12Q SCLCR 3	20-0854		
4 Inserts	-	50-1105		
4 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M3.5 x TK-15	-	16-1070		

Sets

Indexable Boring Bars – Multi-Purpose Set 3

Sets

Set Contents	Holder Nomenclature	Part Number	Set	
			Tool #	Set # Price
3 Assorted Tool Holders 5/16" Square Shank	SDJCR 0505 H2 SDJCL 0505 H2 SDNCN 0505 H2	10-3641 10-3642 10-3761	40-7200	327.58
1 Boring Bar 5/16" Shank Diameter	A05H SDQCR 2	20-0901		
4 Inserts	-	50-1200		
4 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		
3 Assorted Tool Holders 3/8" Square Shank	SDJCR 0606 H2 SDJCL 0606 H2 SDNCN 0606 H2	10-3651 10-3652 10-3762		
1 Boring Bar 3/8" Shank Diameter	A06J SDUCR 2	21-1031		
4 Inserts	-	50-1200		
4 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		
3 Assorted Tool Holders 1/2" Square Shank	SDJCR 0808H2 SDJCL 0808H2 SDNCN 0808 H2	10-3653 10-3654 10-3763	40-7202	400.88
1 Boring Bar 1/2" Shank Diameter	A08K SDUCR 2	21-1033		
4 Inserts	-	50-1200		
4 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		
3 Assorted Tool Holders 5/8" Square Shank	SDJCR 1010 H2 SDJCL 1010 H2 SDNCN 1010 H2	10-3615 10-3616 10-3764		
1 Boring Bar 5/8" Shank Diameter	A10M SDUCR 2	21-1035		
4 Inserts	-	50-1200		
4 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M2.5 x TK-8	-	16-1060		



Sets

Indexable – Milling – Tool Holders – Coolant Through

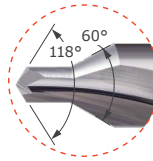
Set Contents	Holder Nomenclature	Part Number		Set	
		Tool #	Set #	Price	
3 Tool Holders 1/2" Shank Diameters	AAAP 1216 2	30-1216	60-3003	493.48	
	AAAP 1616 2	30-1616			
	AAAP 1816 2	30-1816			
4 Inserts	-	50-2100			
4 M2.5 x T-8 Torx Screws	-	16-1020			
1 Torx Key M3.5 x TK-15	-	16-1070			



Sets

Sets

Combined Drill & Countersinks



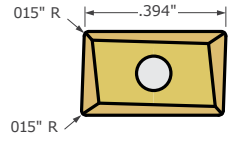
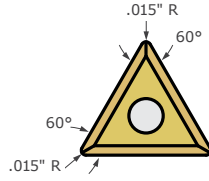
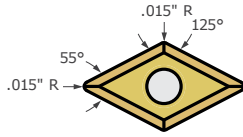
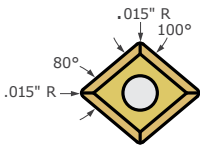
- Designed for predrilling 60° live center holes
- Can be utilized for countersinking and spot drilling
- Double-ended for quicker tool changes
- Solid carbide ■ CNC ground in the USA

Drill Diameter	Drill Length	Shank Diameter	Overall Length	Uncoated	Set	
				Tool #	Set #	Price
D1 $+0.0030''$ $-0.0000''$	L2	D2 (h6)	L1			
.0469	.047	.1250	1.500	DC-1	DC-0	516.98
.0781	.078	.1875	1.875	DC-2		
.1094	.109	.2500	2.000	DC-3		
.1250	.125	.3125	2.500	DC-4		
.1875	.188	.4375	2.750	DC-5		
.2188	.219	.5000	3.000	DC-6		




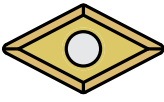

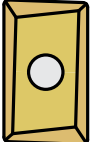
Indexable Inserts

Indexable Cutters – Inserts



Accessories

■ Solid carbide

Insert Type	Insert*	
	Tool #	Price
	50-1100	16.38
	50-1105	19.78
	50-1200	17.38
	50-1300	14.88
	50-2100	18.08

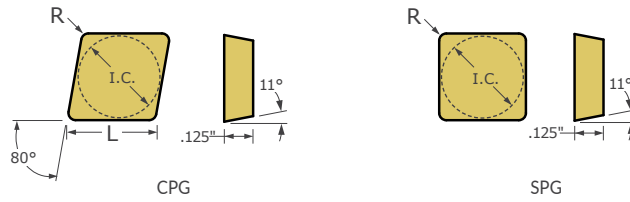
*Must be ordered in quantities of 10.



CPG / SPG

Indexable Inserts

Indexable Cutters – Generic Inserts – Diamond Style



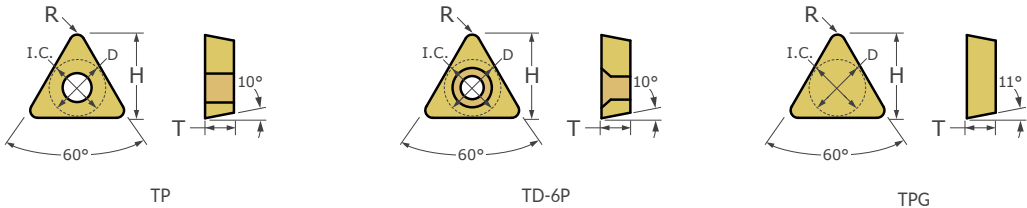
- 80° diamond insert with radius on corner
- For use in clamp locking style holder
- Solid carbide

Inscribed Circle	Length	Radius	Style	Diamond Style Insert	
				Tool #	Price
IC $^{+.001"}$ $_{-.001"}$	L $^{+.001"}$ $_{-.001"}$	R $^{+.003"}$ $_{-.003"}$			
.464	.471	.015	CPG	CPG-4621	22.78
.464	.471	.031	CPG	CPG-4622	22.78
.500	.508	.015	CPG	CPG-421	20.48
.500	.508	.031	CPG	CPG-422	17.18
.375	-	.031	SPG	SPG-322	20.58
.500	-	.031	SPG	SPG-422	18.28

TPG / TP / TD

Indexable Inserts

Indexable Cutters – Generic Inserts – Triangle Style




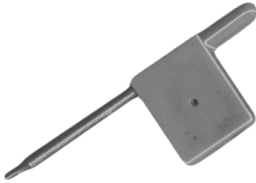
- 60° triangular insert with radius on corner
- For use with clamp locking style holder
- Solid carbide

Inscribed Circle	Thickness	Height	Radius	Hole Diameter	Set Screw UN	Style	Triangle Style Insert	
							Tool #	Price
IC $^{+.001"}$ $_{-.001"}$	T $^{+.005"}$ $_{-.005"}$	H	R $^{+.003"}$ $_{-.003"}$	D $^{+.003"}$ $_{-.003"}$				
.250	.094	.3438	.031	.137	4-40	TP	TP-42	19.48
.250	.094	.3600	.015	.137	4-40	TP	TP-41	13.68
.250	.125	.3440	.031			TPG	TPG-222	14.48
.375	.125	.5324	.031			TPG	TPG-322	17.18
.375	.125	.5324	.031	.163	6-32	TP	TP-62	22.68
.375	.125	.5324	.031	.125	4-40	TD	TD-6P-2	22.68
.375	.125	.5479	.015			TPG	TPG-321	16.28
.375	.125	.5479	.015	.163	6-32	TP	TP-61	22.68
.375	.125	.5480	.015	.125	4-40	TD	TD-6P-1	22.68
.500	.188	.7030	.047			TPG	TPG-433	26.28
.500	.188	.7199	.031			TPG	TPG-432	19.08

Accessories

Indexable Accessories

Accessories

Accessory Type	Compatibility	Description	Accessory	
			Tool #	Price
	Inserts 50-1100 50-1200 50-1300 50-2100	Torx Screw M2.5 x T-8	16-1020	6.08
	Inserts 50-1105	Torx Screw M3.5 x T-15	16-1030	7.18
	Screw 16-1020	Torx Key M2.5 x TK-8	16-1060	5.68
	Screw 16-1030	Torx Key M3.5 x TK-15	16-1070	6.58

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Coatings Chart

Coating/ Substrate:	TiN Titanium Nitride -G	AlTiN Aluminum Titanium Nitride -X	nACRo® Aluminum Chromium Nitride Silicone -K	ZrN Zirconium Nitride -S
Application/ Benefits:	<ul style="list-style-type: none"> General purpose coating with proven performance and increasing tool productivity with higher feeds and speeds in machining of ferrous materials and in applications that are not generating excessive/ extreme heat 	<ul style="list-style-type: none"> Maintains high surface hardness at elevated temperatures, promotes tool life and allows for faster feeds and speeds Higher breakdown temperatures High Performance and versatile coating Excellent for dry-machining 	<ul style="list-style-type: none"> Extremely heat and scratch resistant coating that provides exceptional performance for those "tough and difficult" materials where temperatures increase dramatically during the machining application 	<ul style="list-style-type: none"> Better tool performance over uncoated carbide in numerous non-ferrous materials Characteristics include a high hardness with lubricity and abrasion resistance Generally, an alternative to diamond coatings
Materials:	General purpose, ferrous and non-ferrous materials	Alloy steels, stainless steels, tool steels, titanium, inconel, nickel and other aerospace materials	Aluminum Alloy Steels, Carbon Steels, Stainless Steels, Hardened Steels, Nickel Alloys, Cast Irons, Titanium and other High Temperature Alloys	Abrasive non-ferrous alloys such as Brass, Bronze, Copper and Abrasive Aluminum Alloys
Color:	Gold	Dark Gray / Black	Black / Gray	Light Gold / Champagne
Structure:	Mono-layer	Multi-layer	Nano-composite	Mono-layer
Hardness (HV 0.05):	2170 (21 GPa)	3569 (35 GPa)	4079(40 GPa)	2460 (24 GPa)
Coefficient of Friction:	.50	.60	0.45	.50
Coating Thickness (microns):	2 - 5	2 - 5	1 - 7	2 - 5
Max. Working Temp:	1000° F	1400° F	2012° F	1100° F

PLEASE NOTE: Information and test results were compiled from multiple sources and testing methods. Data presented is intended to be a general application guideline for comparing various coatings.



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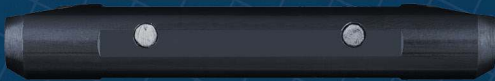
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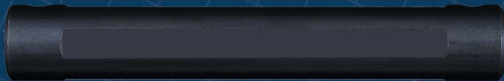
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