

MICRO 100®

Make More With Micro 100

**Excel In Any
Application
with Micro 100
Quick Change
Turning Tools**

NEW!
INTERACTIVE PDF
Click on the underlined text

NEW: Fully Stocked Static Broaches



2025 US Catalog

MICRO 100

Your Source for Fully Stocked Turning Tools



2025 Catalog



Your Source for Fully
Stocked Turning Tools
Make More with Micro 100

In today's competitive machining industry, the pressure is high for shops to increase metal removal rates, boost productivity, and improve their bottom line. When “making more” is pivotal, you can count on Micro 100 to help you gain a competitive edge and set your shop up for success. From our expansive tool offering and off-the-shelf availability, to our excellent product quality and highly repeatable Micro-Quik Quick Change system, we guarantee you'll Make More with Micro 100 every time you choose us.

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.

HARVEY PERFORMANCE COMPANY



**Think Harvey
Tool First**

More than 30,000 miniature
and specialty end mills.
Ship today, in your
machine tomorrow.



**Innovative Tools for
Innovative Materials**

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



**Let Helical
Impress You**

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



**Victory Starts with
Valor Holemaking**

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



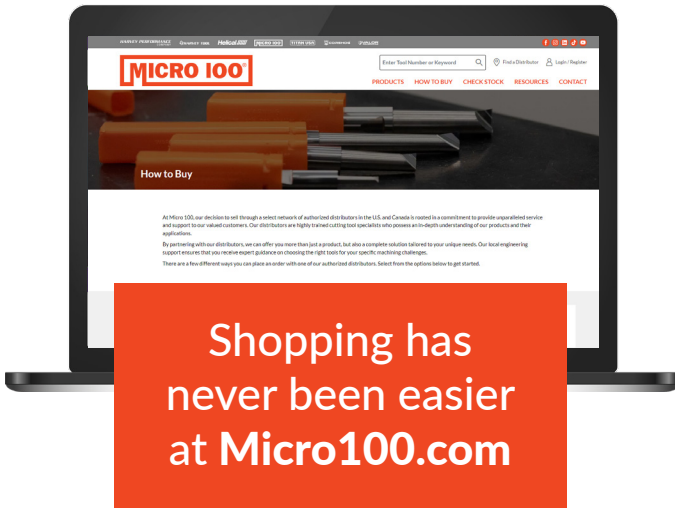
**Trust in
Titan USA**

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



**Superior Grinding and
Finishing Solutions**

More than 1,200
precision-engineered carbide
burs with options tailored to
every grinding application.



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never been easier
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Tool Holders & Systems

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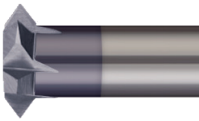
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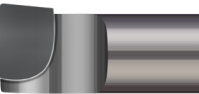
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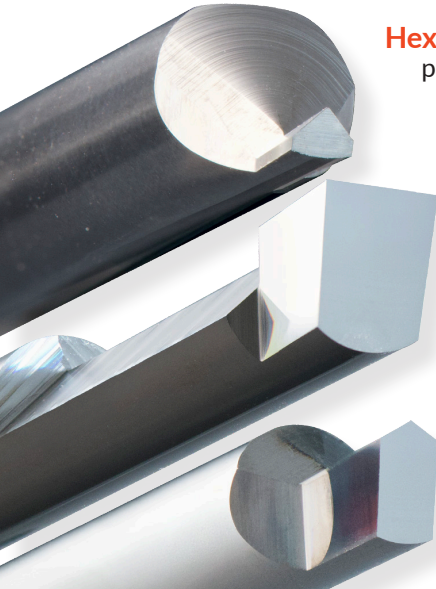
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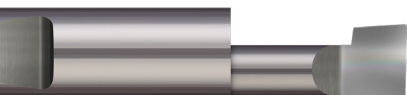
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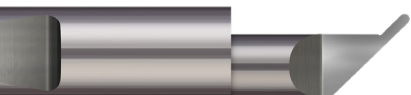
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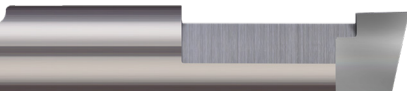
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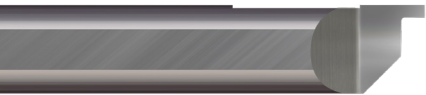
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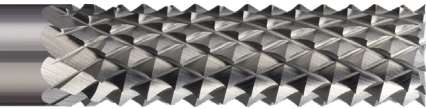
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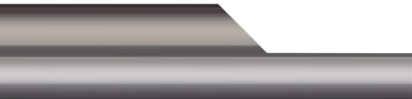


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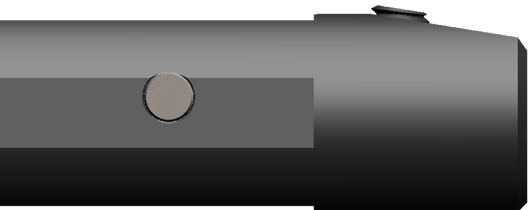
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Tool Holders & Systems

Uniquely
Designed to
Help You
Make More.



Quick Change Holders & Parts

Benefits & Options on pg 9

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 50

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 52

This offering of Collets include ER Collets, Metric ID ER Collets, and Collet Sets, which are available in counts of 7, 9, 10, and 13 with both standard and metric options.



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



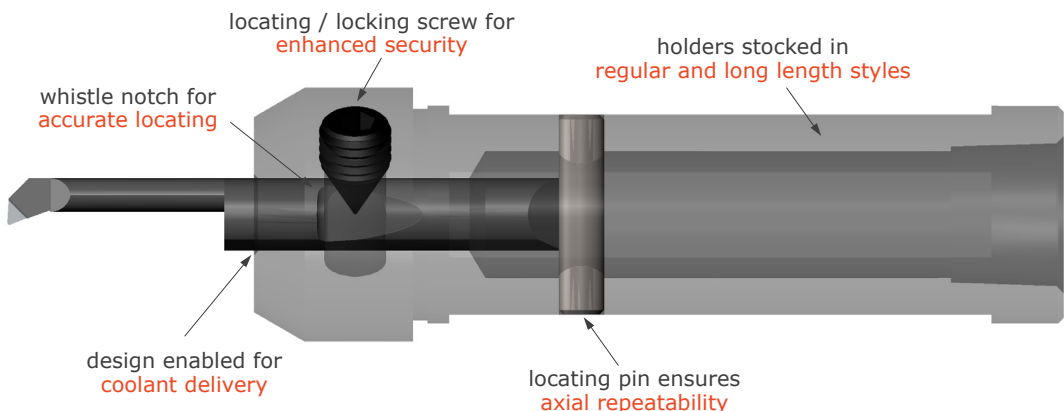
Micro 100 Micro-Quik

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

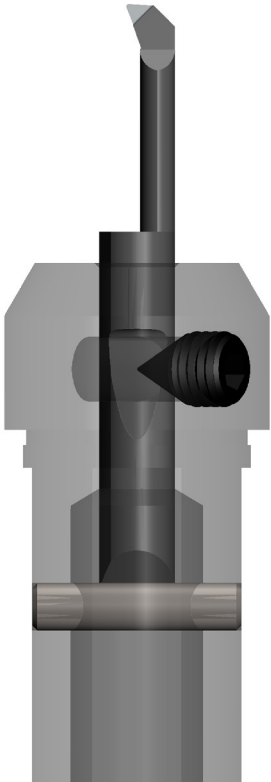
starts on pg 15

Whistle notch configuration proven to enhance axial accuracy.

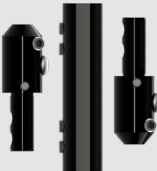
Micro 100's offering of quick change tool holders, including our popular headless-style products, deliver unparalleled speed, repeatability, and accuracy. These unique holders are engineered for use in all **Swiss, standard lathe, or multi-function lathe machines** and are designed for ease of installation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



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

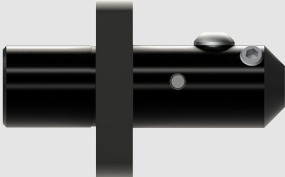
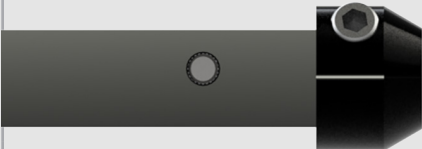
Designed to maximize efficiency and reduce set up time in twin spindle machines, these holders feature dissimilar size quick change ID on opposing ends for a larger range of min bore offerings.

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.

Continued from previous page

Double-Ended Similar ID	Double-Ended Dissimilar ID	Double-Ended ER
		
QD	QD	QDMR
Designed for use in tiwn 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 29
	
QT	
Optimized for machines with PSC / Capto® connections	
Star Swiss Machine Holders	starts on pg 30
	
QZST	
Designed for Star Swiss Machines	
Grinding Holder	pg 34
	
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

NEW Standard PSC Tool Holders

starts on pg 15

Micro 100's PSC Holders are designed for seamless compatibility, featuring a Capto®-compatible connection and a Standard shank ID system for use with all ID tools in standard turning applications. Optimized for lathes with or without an automatic tool changer, these holders offer maximum rigidity in small work envelopes. Heat-treated for durability and coated with black oxide for corrosion resistance, each holder includes a hex wrench, locating screw, and locking screw for easy setup.



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

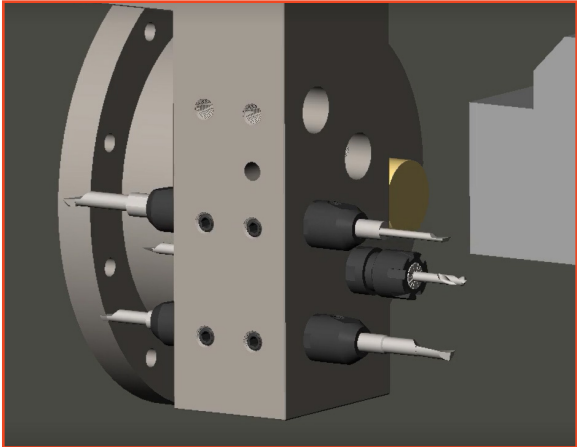
Technical Resources to Help You Make More

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



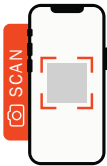
Let Us Help You Make More With Micro 100

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- ✓ 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.



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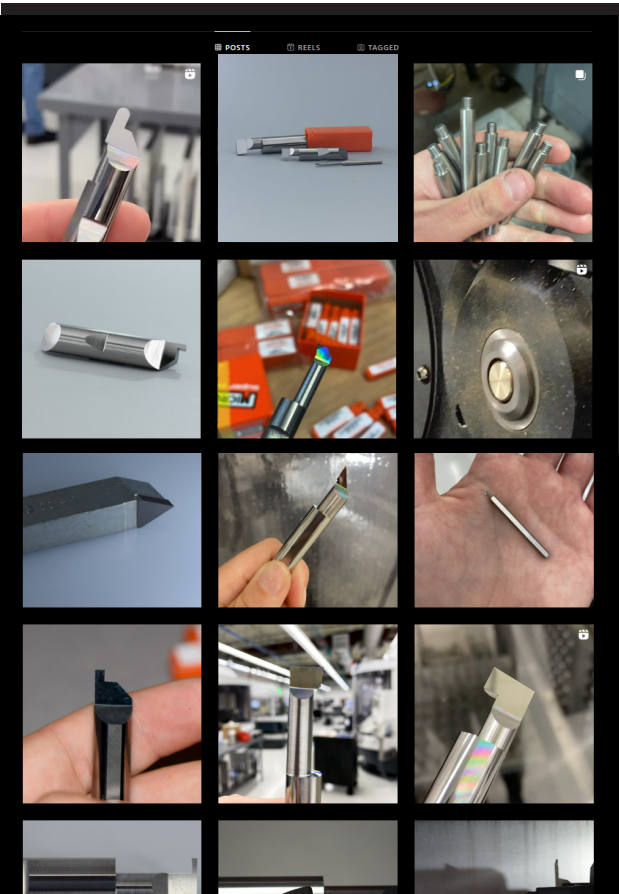
LinkedIn @micro100



Youtube @micro.100



TikTok @micro.100





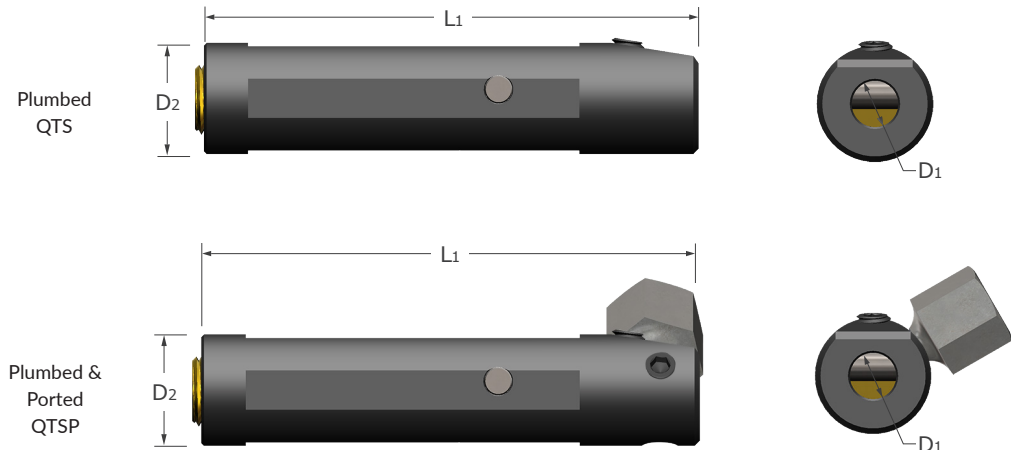
TOOL HOLDERS & SYSTEMS

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Quick Change Holders
Straight Holder – Standard Length

QTS / QTSP

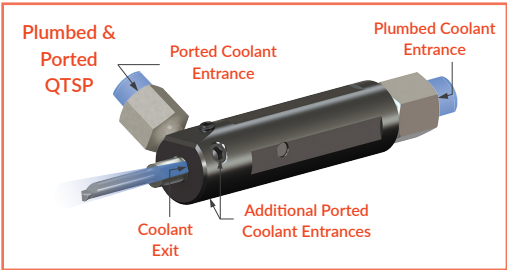
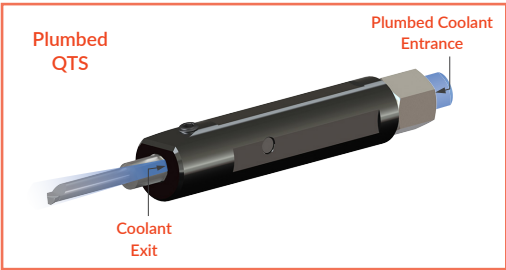
Quick Change – Holders



- 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 +.0005" -.0000"	D2 -.0003" -.0008" -.008mm -.020mm			L1		Tool #	USD\$
.1875	12 mm	-	1/8-27	2.8	40317	QTS-187-472	154.05
.1875	.5000	-	1/8-27	2.8	40317	QTS-187-500	154.05
.1875	.6250	-	1/8-27	2.8	40317	QTS-187-625	166.90
.1875	16 mm	-	1/8-27	2.8	40317	QTS-187-630	166.90
.1875	.7500	1/4-28 HP	1/8-27	2.8	40316	QTSP-187-750	216.65
.1875	20 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-187-787	216.65
.1875	22 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-187-866	216.65
.1875	25 mm	1/4-28 HP	1/8-27	2.8	40315	QTSP-187-984	216.65
.1875	1.0000	1/4-28 HP	1/8-27	2.8	40315	QTSP-187-1000	216.65

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	
D ₁ +.0005" -.0000"	D ₂ -.0003" -.0008" -.008mm -.020mm			L ₁		Tool #	USD\$
.2500	12 mm	-	1/8-27	2.8	40317	QTS-250-472	154.05
.2500	.5000	-	1/8-27	2.8	40317	QTS-250-500	154.05
.2500	.6250	-	1/8-27	2.8	40317	QTS-250-625	166.90
.2500	16 mm	-	1/8-27	2.8	40317	QTS-250-630	166.90
.2500	.7500	1/4-28 HP	1/8-27	2.8	40316	QTSP-250-750	216.65
.2500	20 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-250-787	216.65
.2500	22 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-250-866	216.65
.2500	25 mm	1/4-28 HP	1/8-27	2.8	40316	QTSP-250-984	216.65
.2500	1.0000	1/4-28 HP	1/8-27	2.8	40315	QTSP-250-1000	216.65
.3125	.6250	-	1/4-18	2.8	40317	QTS-312-625	166.90
.3125	16 mm	-	1/4-18	2.8	40317	QTS-312-630	166.90
.3125	.7500	-	1/4-18	2.8	40317	QTS-312-750	179.80
.3125	20 mm	-	1/4-18	2.8	40317	QTS-312-787	179.80
.3125	22 mm	1/4-28 HP	1/4-18	2.8	40317	QTSP-312-866	216.65
.3125	25 mm	1/4-28 HP	1/4-18	2.8	40316	QTSP-312-984	216.65
.3125	1.0000	1/4-28 HP	1/4-18	2.8	40316	QTSP-312-1000	216.65
.3750	.6250	-	1/4-18	2.8	40317	QTS-375-625	166.90
.3750	.7500	-	1/4-18	2.8	40317	QTS-375-750	179.80
.3750	20 mm	-	1/4-18	2.8	40317	QTS-375-787	179.80
.3750	22 mm	1/4-28 HP	1/4-18	2.8	40317	QTSP-375-866	216.65
.3750	25 mm	1/4-28 HP	1/4-18	2.8	40316	QTSP-375-984	216.65
.3750	1.0000	1/4-28 HP	1/4-18	2.8	40316	QTSP-375-1000	216.65
.5000	.7500	-	3/8-18	2.8	40317	QTS-500-750	179.80
.5000	1.0000	1/4-28 HP	3/8-18	2.8	40317	QTSP-500-1000	198.05

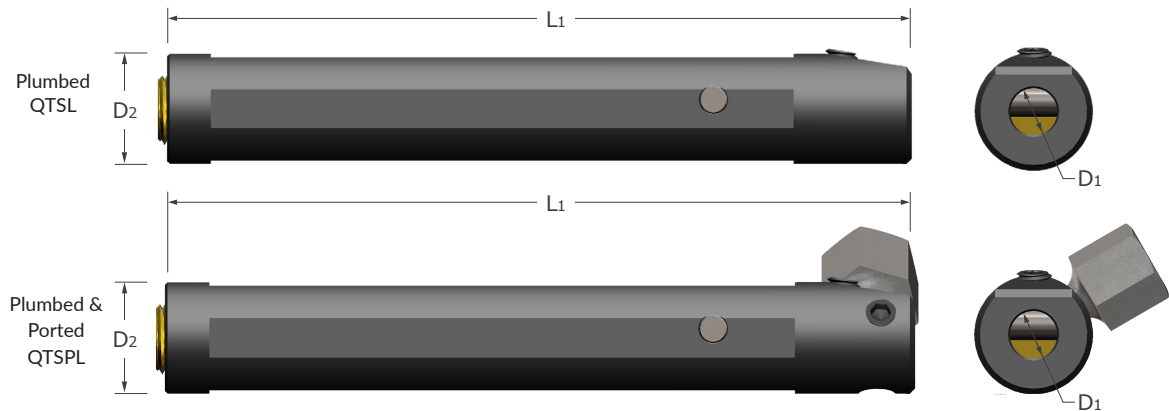
Quick Change – Holders

See pg 35-38 for replacement parts and accessories



Quick Change Holders
Straight Holder – Long Length

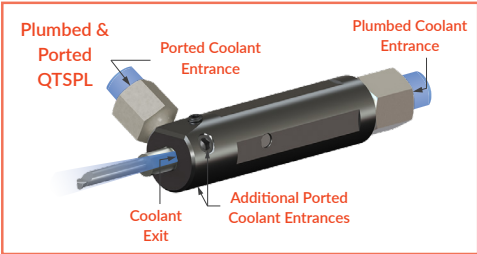
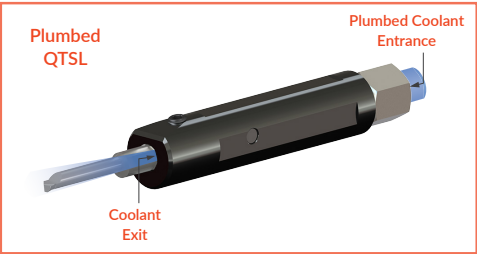
QTSL / QTSPL



- 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 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 #	USD\$
.1875	.7500	1/4-28 HP	1/8-27	5.8	40316	QTSPL-187-750	266.15
.1875	20 mm	1/4-28 HP	1/8-27	5.8	40316	QTSPL-187-787	266.15
.1875	22 mm	1/4-28 HP	1/8-27	5.8	40316	QTSPL-187-866	266.15
.1875	25 mm	1/4-28 HP	1/8-27	5.8	40315	QTSPL-187-984	266.15
.1875	1.0000	1/4-28 HP	1/8-27	5.8	40315	QTSPL-187-1000	266.15
.2500	.7500	1/4-28 HP	1/8-27	5.8	40316	QTSPL-250-750	266.15
.2500	20 mm	1/4-28 HP	1/8-27	5.8	40316	QTSPL-250-787	266.15
.2500	22 mm	1/4-28 HP	1/8-27	5.8	40316	QTSPL-250-866	266.15
.2500	25 mm	1/4-28 HP	1/8-27	5.8	40316	QTSPL-250-984	266.15
.2500	1.0000	1/4-28 HP	1/8-27	5.8	40315	QTSPL-250-1000	266.15
.3125	.7500	-	1/4-18	5.8	40317	QTSPL-312-750*	222.75
.3125	22 mm	1/4-28 HP	1/4-18	5.8	40316	QTSPL-312-866	266.15
.3125	25 mm	1/4-28 HP	1/4-18	5.8	40316	QTSPL-312-984	266.15
.3125	1.0000	1/4-28 HP	1/4-18	5.8	40316	QTSPL-312-1000	266.15
.3750	.7500	-	1/4-18	5.8	40317	QTSPL-375-750*	222.75
.3750	22 mm	-	1/4-18	5.8	40317	QTSPL-375-866*	222.75
.3750	25 mm	1/4-28 HP	1/4-18	5.8	40316	QTSPL-375-984	266.15
.3750	1.0000	1/4-28 HP	1/4-18	5.8	40316	QTSPL-375-1000	266.15
.5000	.7500	-	3/8-18	5.8	40317	QTSPL-500-750*	222.75
.5000	1.0000	1/4-28 HP	3/8-18	5.8	40316	QTSPL-500-1000	266.15

*Item not ported

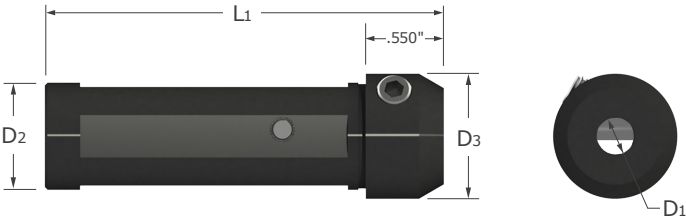


See pg 35-38 for replacement parts and accessories

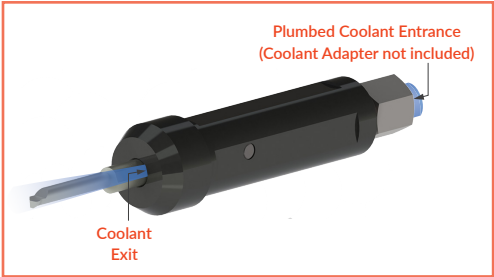


QTH / QTHM

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



Internal Diameter	Head Diameter	Plumbed Thread	Shank Diameter	Overall Length	Tool Holder	
D1 ^{+ .0005"} - .0000"	D3 ^{+ .003"} - .003"		D2 ^{- .0003"} ^{- .0008"} ^{- .008mm} ^{- .020mm}	L1	Tool #	USD\$
.1875	.750	1/8-27 NPT	12 mm	2.8	QTHM-312	141.25
.1875	.750	1/8-27 NPT	.5000	2.8	QTH-85	141.25
.1875	.750	1/8-27 NPT	.6250	2.8	QTH-105	154.05
.1875	.750	1/8-27 NPT	16 mm	2.8	QTHM-316	154.05
.1875	.875	1/4-18 NPT	.7500	2.8	QTH-205	166.90
.1875	.875	1/4-18 NPT	20 mm	2.8	QTHM-320	166.90
.1875	1.062	1/4-18 NPT	22 mm	2.8	QTHM-322	166.90
.1875	1.250	1/4-18 NPT	25 mm	2.8	QTHM-325	166.90
.1875	1.062	1/4-18 NPT	1.0000	2.8	QTH-405	166.90
.1875	-	1/4-18 NPT	1.2500	2.8	QTH-605	166.90
.1875	-	1/4-18 NPT	32 mm	2.8	QTHM-332	166.90
.2500	.750	1/8-27 NPT	12 mm	2.8	QTHM-412	141.25
.2500	.750	1/8-27 NPT	.5000	2.8	QTH-86	141.25
.2500	.750	1/8-27 NPT	.6250	2.8	QTH-106	154.05
.2500	.750	1/8-27 NPT	16 mm	2.8	QTHM-416	154.05
.2500	.875	1/4-18 NPT	.7500	2.8	QTH-206	166.90
.2500	.875	1/4-18 NPT	20 mm	2.8	QTHM-420	166.90
.2500	1.062	1/4-18 NPT	22 mm	2.8	QTHM-422	166.90
.2500	1.250	1/4-18 NPT	25 mm	2.8	QTHM-425	166.90
.2500	1.062	1/4-18 NPT	1.0000	2.8	QTH-406	166.90
.2500	-	1/4-18 NPT	1.2500	2.8	QTH-606	166.90
.2500	-	1/4-18 NPT	32 mm	2.8	QTHM-432	166.90

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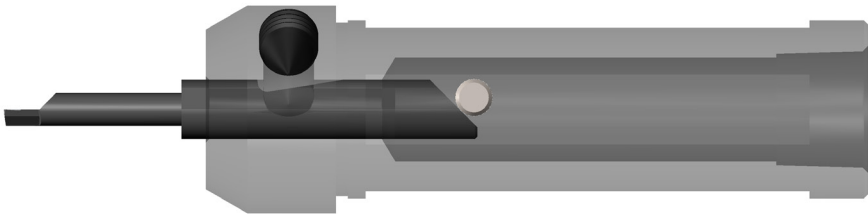
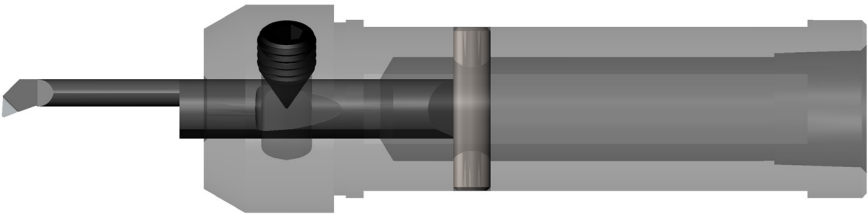
See pg 35-38 for replacement parts and accessories

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	
D1 ^{+0.0005"} _{-.0000"}	D3 ^{+0.003"} _{-.003"}		D2 ^{-.0003"} _{-.0008"} _{-.008mm} _{-.020mm}	L1	Tool #	USD\$
.3125	.875	1/8-27 NPT	.6250	2.8	QTH-107	154.05
.3125	.875	1/8-27 NPT	16 mm	2.8	QTHM-516	154.05
.3125	.875	1/4-18 NPT	.7500	2.8	QTH-207	166.90
.3125	.875	1/4-18 NPT	20 mm	2.8	QTHM-520	166.90
.3125	1.062	1/4-18 NPT	22 mm	2.8	QTHM-522	166.90
.3125	1.250	1/4-18 NPT	25 mm	2.8	QTHM-525	166.90
.3125	1.062	1/4-18 NPT	1.0000	2.8	QTH-407	166.90
.3125	-	1/4-18 NPT	1.2500	2.8	QTH-607	166.90
.3125	-	1/4-18 NPT	32 mm	2.8	QTHM-532	166.90
.3750	1.000	1/8-27 NPT	.6250	2.8	QTH-108	154.05
.3750	1.000	1/8-27 NPT	16 mm	2.8	QTHM-616	154.05
.3750	1.000	1/4-18 NPT	.7500	2.8	QTH-208	166.90
.3750	1.000	1/4-18 NPT	20 mm	2.8	QTHM-620	166.90
.3750	1.062	1/4-18 NPT	22 mm	2.8	QTHM-622	166.90
.3750	1.250	1/4-18 NPT	25 mm	2.8	QTHM-625	166.90
.3750	1.062	1/4-18 NPT	1.0000	2.8	QTH-408	166.90
.3750	-	1/4-18 NPT	1.2500	2.8	QTH-608	166.90
.3750	-	1/4-18 NPT	32 mm	2.8	QTHM-632	166.90
.5000	1.062	1/4-18 NPT	.7500	2.8	QTH-210	166.90
.5000	1.062	1/4-18 NPT	20 mm	2.8	QTHM-820	166.90
.5000	1.062	1/4-18 NPT	22 mm	2.8	QTHM-822	166.90
.5000	1.250	1/4-18 NPT	25 mm	2.8	QTHM-825	166.90
.5000	1.062	1/4-18 NPT	1.0000	2.8	QTH-410	166.90
.5000	-	1/4-18 NPT	1.2500	2.8	QTH-610	166.90
.5000	-	1/4-18 NPT	32 mm	2.8	QTHM-832	166.90



See pg 35-38 for replacement parts and accessories

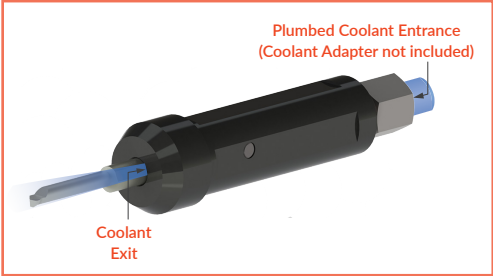


QTHL / QTHML

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



Internal Diameter	Head Diameter	Plumbed Thread	Shank Diameter	Overall Length	Tool Holder	
D1 $+ .0005"$ $- .0000"$	D3 $+ .003"$ $- .003"$		D2 $-.0003"$ $-.0008"$ $-.008mm$ $-.020mm$	L1	Tool #	USD\$
.1875	.750	1/8-27 NPT	12 mm	5.8	QTHM-312L	192.55
.1875	.750	1/8-27 NPT	.5000	5.8	QTH-85L	192.55
.1875	.750	1/8-27 NPT	.6250	5.8	QTH-105L	205.40
.1875	.750	1/8-27 NPT	16 mm	5.8	QTHM-316L	205.40
.1875	.875	1/4-18 NPT	.7500	5.8	QTH-205L	218.30
.1875	.875	1/4-18 NPT	20 mm	5.8	QTHM-320L	218.30
.1875	1.062	1/4-18 NPT	22 mm	5.8	QTHM-322L	218.30
.1875	1.062	1/4-18 NPT	1.0000	5.8	QTH-405L	218.30
.1875	1.250	1/4-18 NPT	25 mm	5.8	QTHM-325L	218.30
.1875	-	1/4-18 NPT	1.2500	5.8	QTH-605L	218.30
.1875	-	1/4-18 NPT	32 mm	5.8	QTHM-332L	218.30
.2500	.750	1/8-27 NPT	.5000	5.8	QTH-86L	192.55
.2500	.750	1/8-27 NPT	.6250	5.8	QTH-106L	205.40
.2500	.750	1/8-27 NPT	16 mm	5.8	QTHM-416L	205.40
.2500	.875	1/4-18 NPT	.7500	5.8	QTH-206L	218.30
.2500	.875	1/4-18 NPT	20 mm	5.8	QTHM-420L	218.30
.2500	1.062	1/4-18 NPT	22 mm	5.8	QTHM-422L	218.30
.2500	1.062	1/4-18 NPT	1.0000	5.8	QTH-406L	218.30
.2500	1.250	1/4-18 NPT	25 mm	5.8	QTHM-425L	218.30
.2500	-	1/4-18 NPT	1.2500	5.8	QTH-606L	218.30
.2500	-	1/4-18 NPT	32 mm	5.8	QTHM-432L	218.30

Continued on next page

Quick Change – Holders

See pg 35-38 for replacement parts and accessories

Quick Change Holders
Headed Holder – Long Length (cont.)

QTHL / QTHML

Continued from previous page

Internal Diameter	Head Diameter	Plumbed Thread	Shank Diameter	Overall Length	Tool Holder	
					Tool #	USD\$
D1 $\begin{smallmatrix} +.0005" \\ -.0000" \end{smallmatrix}$	D3 $\begin{smallmatrix} +.003" \\ -.003" \end{smallmatrix}$		D2 $\begin{smallmatrix} -.0003" \\ -.0008" \\ -.008mm \\ -.020mm \end{smallmatrix}$	L1		
.3125	.875	1/8-27 NPT	.6250	5.8	QTH-107L	205.40
.3125	.875	1/8-27 NPT	16 mm	5.8	QTHM-516L	205.40
.3125	.875	1/8-27 NPT	.7500	5.8	QTH-207L	218.30
.3125	.875	1/4-18 NPT	20 mm	5.8	QTHM-520L	218.30
.3125	1.062	1/4-18 NPT	22 mm	5.8	QTHM-522L	218.30
.3125	1.062	1/4-18 NPT	1.0000	5.8	QTH-407L	218.30
.3125	1.250	1/4-18 NPT	25 mm	5.8	QTHM-525L	218.30
.3125	-	1/4-18 NPT	1.2500	5.8	QTH-607L	218.30
.3125	-	1/4-18 NPT	32 mm	5.8	QTHM-532L	218.30
.3750	1.000	1/8-27 NPT	.6250	5.8	QTH-108L	205.40
.3750	1.000	1/8-27 NPT	16 mm	5.8	QTHM-616L	205.40
.3750	1.000	1/4-18 NPT	.7500	5.8	QTH-208L	218.30
.3750	1.062	1/4-18 NPT	22 mm	5.8	QTHM-622L	218.30
.3750	1.062	1/4-18 NPT	1.0000	5.8	QTH-408L	218.30
.3750	1.250	1/4-18 NPT	25 mm	5.8	QTHM-625L	218.30
.3750	-	1/4-18 NPT	1.2500	5.8	QTH-608L	218.30
.3750	-	1/4-18 NPT	32 mm	5.8	QTHM-632L	218.30
.5000	1.062	1/4-18 NPT	.7500	5.8	QTH-210L	218.30
.5000	1.062	1/4-18 NPT	22 mm	5.8	QTHM-822L	218.30
.5000	1.062	1/4-18 NPT	1.0000	5.8	QTH-410L	218.30
.5000	1.250	1/4-18 NPT	25 mm	5.8	QTHM-825L	218.30
.5000	-	1/4-18 NPT	1.2500	5.8	QTH-610L	218.30
.5000	-	1/4-18 NPT	32 mm	5.8	QTHM-832L	218.30

See pg 35-38 for replacement parts and accessories



QD

Quick Change Holders
Double-Ended - Similar ID



- 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 $+ .0005"$ $- .0000"$	D2 $-.0003"$ $-.0008"$ $-.007mm$ $-.020mm$	L1		Tool #	USD\$
.1875	.5000	2.20	40317	QD-3-500	241.45
.1875	.5000	3.20	40317	QD1-3-500	251.60
.1875	.6250	2.20	40317	QD-3-625	251.60
.1875	.6250	3.20	40317	QD1-3-625	261.90
.1875	.7500	3.20	40316	QD1-3-750	267.50
.1875	20 mm	3.20	40316	QD1-3-787	267.50
.1875	22 mm	3.20	40316	QD1-3-866	273.10
.1875	25 mm	3.20	40315	QD1-3-984	277.65
.1875	1.0000	3.20	40315	QD1-3-1000	277.65
.2500	.5000	3.20	40317	QD1-4-500	251.60
.2500	.6250	3.20	40317	QD1-4-625	261.90
.2500	.7500	3.20	40316	QD1-4-750	267.50
.2500	1.0000	3.20	40315	QD1-4-1000	277.65
.3125	.6250	3.20	40317	QD1-5-625	261.90
.3125	.7500	3.20	40317	QD1-5-750	267.50
.3125	1.0000	3.20	40316	QD1-5-1000	277.65
.3750	.7500	3.20	40317	QD1-6-750	267.50
.3750	1.0000	3.20	40316	QD1-6-1000	277.65
.5000	.7500	3.50	40317	QD2-8-750	267.50
.5000	1.0000	3.50	40316	QD2-8-1000	277.65



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.

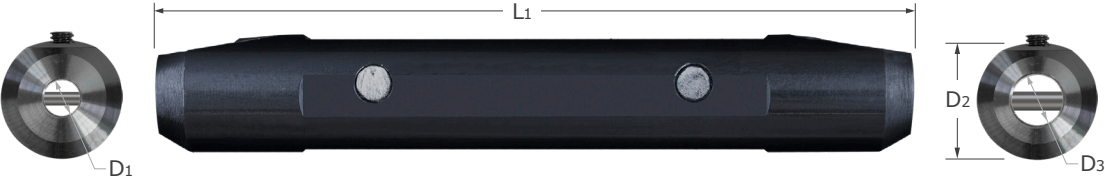
See pg 35-38 for replacement parts and accessories

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 ^{+ .0005"} - .0000"	D3 ^{+ .0005"} - .0000"	D2 ^{- .0003"} ^{- .0008"} - .007mm - .020mm	L1			Tool #	USD\$
.1875	.2500	.5000	3.20	40317	40317	QD1-3-4-500	257.30
.1875	.2500	.6250	3.20	40317	40317	QD1-3-4-625	267.50
.1875	.2500	.7500	3.20	40316	40316	QD1-3-4-750	273.10
.1875	.2500	20 mm	3.20	40316	40316	QD1-3-4-787	273.10
.1875	.2500	22 mm	3.20	40316	40316	QD1-3-4-866	277.65
.1875	.2500	25 mm	3.20	40315	40316	QD1-3-4-984	283.50
.1875	.2500	1.0000	3.20	40315	40315	QD1-3-4-1000	283.50
.2500	.3125	.6250	3.20	40317	40317	QD1-4-5-625	267.50
.2500	.3125	.7500	3.20	40316	40317	QD1-4-5-750	273.10
.2500	.3125	1.0000	3.20	40315	40316	QD1-4-5-1000	283.50
.3125	.3750	.6250	3.20	40317	40317	QD1-5-6-625	267.50
.3125	.3750	.7500	3.20	40317	40317	QD1-5-6-750	273.10
.3125	.3750	1.0000	3.20	40316	40316	QD1-5-6-1000	283.50
.3750	.5000	.7500	3.20	40317	40317	QD1-6-8-750	273.10
.3750	.5000	1.0000	3.20	40316	40316	QD1-6-8-1000	283.50



See It in Action

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

Tech Tip

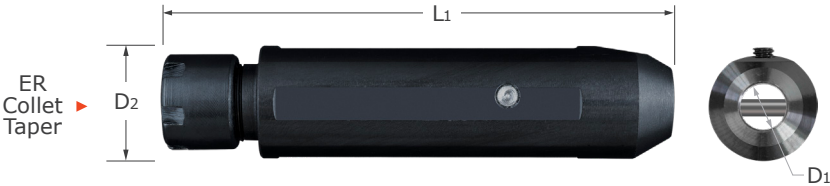
Utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.

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	
	D1 $+0.0005"$ $-0.0000"$	D2 $-.0003"$ $-.0008"$ $-.007mm$ $-.020mm$	L1		Tool #	USD\$
ER8-Mini	.1875	.5000	2.20	40317	OD-MR8-3-500	273.10
	.1875	.5000	3.20	40317	OD1-MR8-3-500	283.50
	.1875	.6250	2.20	40317	OD-MR8-3-625	283.50
	.1875	.6250	3.20	40317	OD1-MR8-3-625	293.65
	.2500	.5000	3.20	40317	OD1-MR8-4-500	283.50
	.2500	.6250	3.20	40317	OD1-MR8-4-625	293.65
	.3125	.6250	3.20	40317	OD1-MR8-5-625	293.65
ER11-Mini	.1875	.6250	2.20	40317	OD-MR11-3-625	283.50
	.1875	.6250	3.20	40317	OD1-MR11-3-625	293.65
	.1875	.7500	3.20	40316	OD1-MR11-3-750	299.25
	.1875	20 mm	3.20	40316	OD1-MR11-3-787	299.25
	.1875	22 mm	3.20	40316	OD1-MR11-3-866	303.80
	.1875	25 mm	3.20	40315	OD1-MR11-3-984	309.45
	.1875	1.0000	3.20	40315	OD1-MR11-3-1000	309.45
	.2500	.6250	3.20	40317	OD1-MR11-4-625	293.65
	.2500	.7500	3.20	40316	OD1-MR11-4-750	299.25

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

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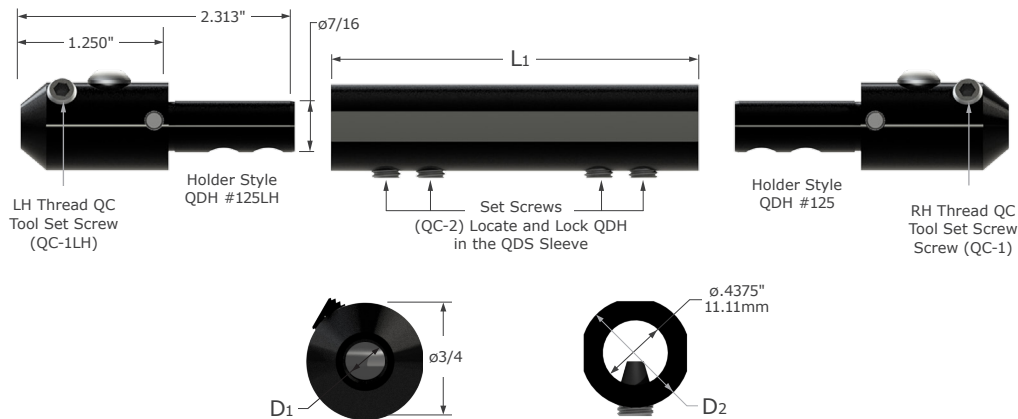
ER Taper Size	Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
D1 ^{+ .0005"} - .0000"		D2 ^{- .0003"} ^{- .0008"} ^{- .007mm} ^{- .020mm}	L1		Tool #	USD\$
ER11-Mini	.2500	20 mm	3.20	40316	QD1-MR11-4-787	299.25
	.2500	22 mm	3.20	40316	QD1-MR11-4-866	303.80
	.2500	25 mm	3.20	40316	QD1-MR11-4-984	309.45
	.2500	1.0000	3.20	40315	QD1-MR11-4-1000	309.45
	.3125	.6250	3.20	40317	QD1-MR11-5-625	293.65
	.3125	.7500	3.20	40317	QD1-MR11-5-750	299.25
	.3125	1.0000	3.20	40316	QD1-MR11-5-1000	309.45
	.3750	.6250	3.20	40317	QD1-MR11-6-625	293.65
	.3750	.7500	3.20	40317	QD1-MR11-6-750	299.25
	.3750	1.0000	3.20	40316	QD1-MR11-6-1000	309.45
	.5000	.7500	3.50	40317	QD2-MR11-8-750	299.25
	.5000	1.0000	3.50	40316	QD2-MR11-8-1000	309.45
ER16-Mini	.1875	.7500	3.20	40316	QD1-MR16-3-750	299.25
	.1875	20 mm	3.20	40316	QD1-MR16-3-787	299.25
	.1875	22 mm	3.20	40316	QD1-MR16-3-866	303.80
	.1875	25 mm	3.20	40315	QD1-MR16-3-984	309.45
	.1875	1.0000	3.20	40315	QD1-MR16-3-1000	309.45
	.2500	.7500	3.20	40316	QD1-MR16-4-750	299.25
	.2500	20 mm	3.20	40316	QD1-MR16-4-787	299.25
	.2500	22 mm	3.20	40316	QD1-MR16-4-866	303.80
	.2500	25 mm	3.20	40316	QD1-MR16-4-984	309.45
	.2500	1.0000	3.20	40315	QD1-MR16-4-1000	309.45
	.3125	.7500	3.20	40317	QD1-MR16-5-750	299.25
	.3125	1.0000	3.20	40316	QD1-MR16-5-1000	309.45
	.3750	.7500	3.20	40317	QD1-MR16-6-750	299.25
	.3750	1.0000	3.20	40316	QD1-MR16-6-1000	309.45
	.5000	.7500	3.50	40317	QD2-MR16-8-750	299.25
	.5000	1.0000	3.50	40316	QD2-MR16-8-1000	309.45

Quick Change - Holders

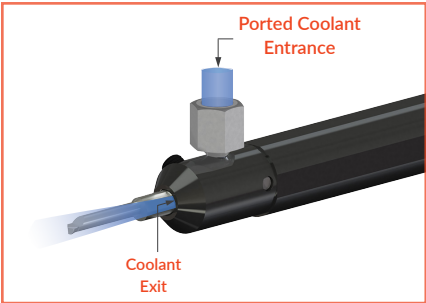


QDH / QDS / QDSM

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	Length of Sleeve	Sleeve		Internal Diameter	Ported Thread	Right Hand Tool Holder		Left Hand Tool Holder	
D2 -.0003" -.0008" -.008mm -.020mm	L1	Tool #	USD\$	D1 +.0005" -.0000"		Tool #	USD\$	Tool #	USD\$
.7500	2.5	QDS-750-2.5	154.65	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40
.7500	3.1	QDS-750-3.1	160.90	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40
20 mm	64 mm	QDSM-20-64	154.65	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40
20 mm	79 mm	QDSM-20-79	160.90	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40
22 mm	64 mm	QDSM-22-64	160.90	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40

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See pg 35-38 for replacement parts and accessories

Quick Change Holders
Double Ended Modular (cont.)

QDH / QDS / QDSM

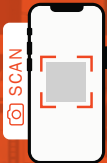
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Sleeve Diameter	Length of Sleeve	Sleeve		Internal Diameter	Ported Thread	Right Hand Tool Holder		Left Hand Tool Holder	
D2 -.0003" -.0008" -.008mm -.020mm	L1	Tool #	USD\$	D1 +.0005" -.0000"		Tool #	USD\$	Tool #	USD\$
22 mm	79 mm	QDSM-22-79	167.00	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40
25 mm	64 mm	QDSM-25-64	167.00	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40
1.0000	2.500	QDS-1.00-2.5	167.00	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40
1.0000	3.100	QDS-1.00-3.1	179.45	.1875	1/4-28 HP	QDH-3125	142.40	QDH-3125LH	142.40
				.2500	1/4-28 HP	QDH-4125	142.40	QDH-4125LH	142.40
				.3125	1/4-28 HP	QDH-5125	142.40	QDH-5125LH	142.40

Quick Change – Holders

Technical Resources on Micro100.com

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

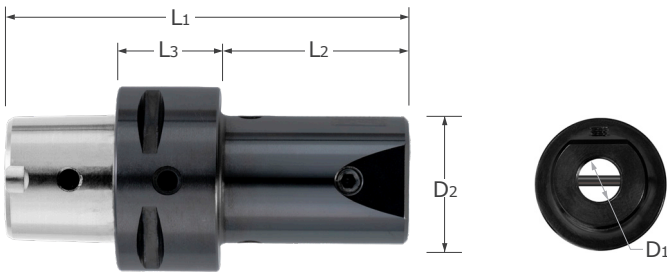


See pg 35-38 for replacement parts and accessories



QT

Quick Change Holders
PSC Holders



- 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	
	D1 ^{+0.0005"} _{-.0000"}	L2	D2	L3	L1			Tool #	USD\$
C3	.1875	1.134	.866	.591	2.473	M12 x 1.5	40315	QT-187-C3	395.60
C3	.2500	1.340	.866	.591	2.679	M12 x 1.5	40315	QT-250-C3	395.60
C3	.3125	1.309	.866	.591	2.647	M12 x 1.5	40316	QT-312-C3	395.60
C3	.3750	1.278	.866	.591	2.616	M12 x 1.5	40316	QT-375-C3	395.60
C3	.5000	1.528	.984	.591	2.867	M12 x 1.5	40316	QT-500-C3	395.60
C4	.1875	1.134	.866	.787	2.867	M14 x 1.5	40315	QT-187-C4	395.60
C4	.2500	1.340	.866	.787	3.072	M14 x 1.5	40315	QT-250-C4	395.60
C4	.3125	1.309	.866	.787	3.041	M14 x 1.5	40316	QT-312-C4	395.60
C4	.3750	1.278	.866	.787	3.010	M14 x 1.5	40316	QT-375-C4	395.60
C4	.5000	1.528	.984	.787	3.260	M14 x 1.5	40316	QT-500-C4	395.60
NEW C6	.1875	1.134	.866	.866	3.497	M20 x 2.0	40315	QT-187-C6	427.95
NEW C6	.2500	1.340	.866	.866	3.702	M20 x 2.0	40315	QT-250-C6	427.95
NEW C6	.3125	1.309	.866	.866	3.671	M20 x 2.0	40316	QT-312-C6	427.95
NEW C6	.3750	1.278	.866	.866	3.640	M20 x 2.0	40316	QT-375-C6	427.95
NEW C6	.5000	1.528	.984	.866	3.890	M20 x 2.0	40316	QT-500-C6	427.95

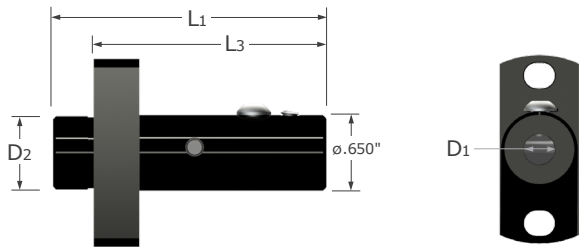
See pg 35-38 for replacement parts and accessories



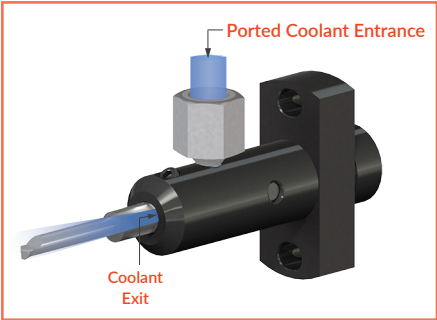
Quick Change Holders
Star Swiss Machines – SR-10J

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



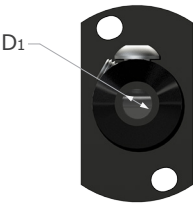
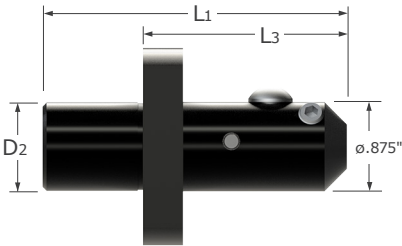
Internal Diameter	Overall Reach	Shank Diameter	Overall Length	Ported Thread	Locating/Locking Screw	Tool Holder	
D1 +.0005" -.0000"	L3	D2	L1			Tool #	USD\$
.1875	1.956	16 mm	2.350	1/4-28 HP	40316	QZST-316L-SR10J	308.20
.3125	1.956	16 mm	2.350	1/4-28 HP	40317	QZST-516L-SR10J	308.20

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

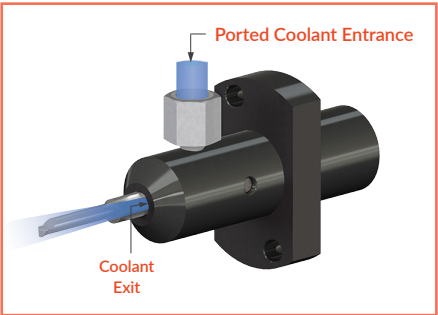


QZST

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	
D1 ^{+0.0005"} _{-.0000"}	L3	D2	L1		Tool #	USD\$
.1875	1.400	22 mm	2.384	1/4-28 HP	QZST-322-SR20	320.55
.1875	2.000	22 mm	2.984	1/4-28 HP	QZST-322L-SR20	320.55
.2500	1.400	22 mm	2.384	1/4-28 HP	QZST-422-SR20	320.55
.2500	2.000	22 mm	2.984	1/4-28 HP	QZST-422L-SR20	320.55
.3125	1.400	22 mm	2.384	1/4-28 HP	QZST-522-SR20	320.55
.3125	2.000	22 mm	2.984	1/4-28 HP	QZST-522L-SR20	320.55
.3750	1.400	22 mm	2.384	1/4-28 HP	QZST-622-SR20	320.55
.3750	2.000	22 mm	2.984	1/4-28 HP	QZST-622L-SR20	320.55

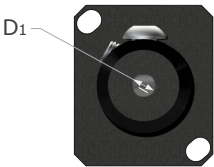
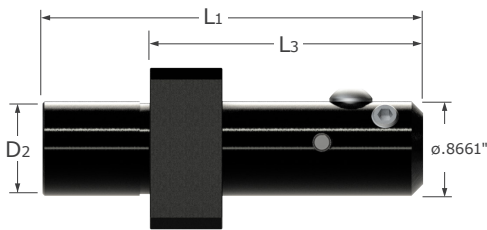
See pg 34 for Centerline Indicating Tool
See pg 35-38 for replacement parts and accessories

Quick Change Holders

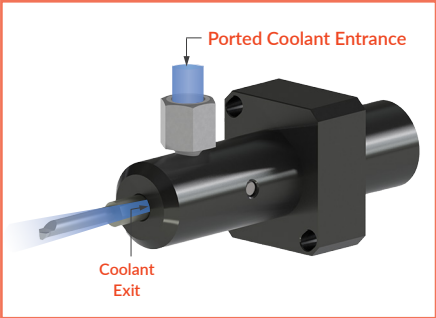
Star Swiss Machines – SR-20RIV

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



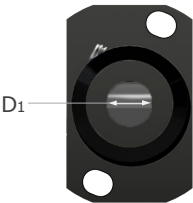
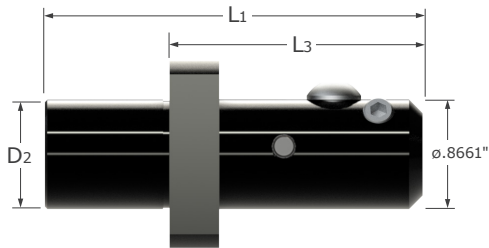
Internal Diameter	Overall Reach	Shank Diameter	Overall Length	Ported Thread	Tool Holder	
D1 $\pm .0005"$ $-.0000"$	L3	D2	L1		Tool #	USD\$
.1875	2.510	22 mm	3.494	1/4-28 HP	QZST-322L-SR20RIV	320.55
.2500	2.510	22 mm	3.494	1/4-28 HP	QZST-422L-SR20RIV	320.55
.3125	2.510	22 mm	3.494	1/4-28 HP	QZST-522L-SR20RIV	320.55

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

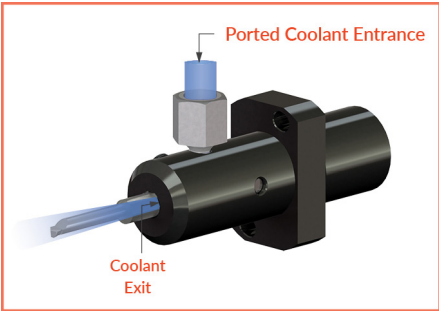


QZST

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 #	USD\$
D1 ^{+.0005"} _{-.0000"}	L3	D2	L1			
.1875	2.000	22 mm	2.984	1/4-28 HP	QZST-322L-SW20	320.55
.2500	2.000	22 mm	2.984	1/4-28 HP	QZST-422L-SW20	320.55
.3125	2.000	22 mm	2.984	1/4-28 HP	QZST-522L-SW20	320.55

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

Quick Change Holders

Grinding Holder – Square

QSG



- 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

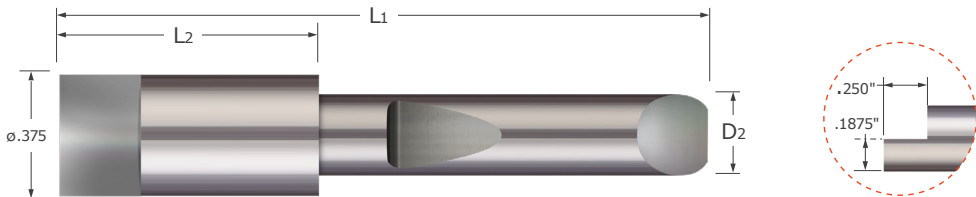
Internal Diameter	Head Diameter	Square Shank	Overall Length	Tool Holder	
				Tool #	USD\$
D1 $^{+.0005"}_{-.0000}"$	D3 $^{+.005"}_{-.005}"$	A $^{+.0000"}_{-.0010}"$	L1		
.1875	.750	.5000	4.8	QSG-187-500	179.45
.1875	1.063	.7500	4.8	QSG-187-750	198.05
.2500	.750	.5000	4.8	QSG-250-500	179.45
.2500	1.063	.7500	4.8	QSG-250-750	198.05
.3125	.875	.5000	4.8	QSG-312-500	179.45
.3125	1.063	.7500	4.8	QSG-312-750	198.05
.3750	1.063	.7500	4.8	QSG-375-750	198.05
.5000	1.063	.7500	4.8	QSG-500-750	198.05

See pg 35-38 for replacement parts and accessories

Quick Change Holders

Centerline Indicating Tool

QI



- 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 #	USD\$
D2 (h6)	L2 $^{+.000"}_{-.015}"$	L1		
.1875	1.000	2.0	QI-187	134.40
.2500	.800	2.0	QI-250	134.40
.3125	.800	2.0	QI-312	134.40



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 #	USD\$	Tool #	USD\$
	Straight Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/8-27 NPT	JIC 4	40301	5.30	41301	44.20
	Straight Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	JIC 4	40302	5.30	41302	44.20
	Straight Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	JIC 4	40303	7.70	41303	61.25
	Straight Coolant Adapter	Fits: QTH, QTHL, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	1/8-27 NPT	40311	7.70	41311	61.25
	Straight Coolant Adapter	Fits: QTH, QTHL, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	1/8-27 NPT	40312	7.70	41312	61.25
	90° Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/8-27 NPT	JIC 4	40304	9.15	41304	73.70
	90° Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	JIC 4	40305	9.15	41305	73.70
	90° Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	JIC 4	40306	9.15	41306	73.70
	90° Coolant Adapter	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	1/8-27 NPT	40307	12.45	41307	102.65
	NPT Coolant Reducer	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	1/8-27 NPT	40308	5.30	41308	44.20

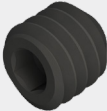
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Quick Change - Holder Parts

Quick Change Holder Parts

Coolant Accessories (cont.)

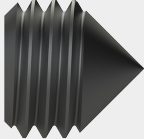
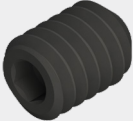
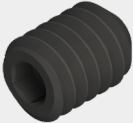
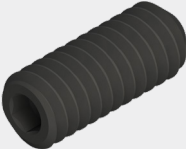
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	Accessory Type	Compatibility	Coolant Access Type	Holder Thread	Coolant Supply Thread	Single		Package of 10	
						Tool #	USD\$	Tool #	USD\$
	NPT Coolant Reducer	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	1/8-27 NPT	40309	7.70	41309	61.25
	Plumbed Plug	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/8-27 NPT	-	40197	3.95	41197	31.85
	Plumbed Plug	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	1/4-18 NPT	-	40198	3.95	41198	31.85
	Plumbed Plug	Fits: QTH, QTHL, QTHM, QTS, QTSP, QTSPL	Plumbed	3/8-18 NPT	-	40221	3.95	41221	31.85
	High Pressure Coolant Fitting	Fits: QZST, QDH, QTSP, QTSPL	Ported	1/4-28 HP	1/8-27 NPT	QN-1	7.70	QN-10	61.25
	1.28" Coolant Extension	Fits: QZST, QDH, QTSP, QTSPL	Ported	1/4-28 HP	1/4-28 HP	40199	7.35	41199	61.25
	45° Coolant Adapter	Fits: QZST, QDH, QTSP, QTSPL	Ported	1/4-28 HP	1/8-27 NPT	40313	7.70	41313	61.25
	90° Coolant Adapter	Fits: QZST, QDH, QTSP, QTSPL	Ported	1/4-28 HP	1/8-27 NPT	40314	7.70	41314	61.25
	Button Head Screw (Port Plug)	Fits: QDH, QZST / Hex Key not stocked for this item	Ported	1/4-28 HP	-	QC-5	1.35		
	Port Plug	Fits: QTSP, QTSPL	Ported	1/4-28 HP	-	40278	1.35	41278	10.70
	Hex Wrench	Fits: 40278 Porting Plug	Ported	-	-	40249	1.35	41249	11.30

Quick Change – Holder Parts



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

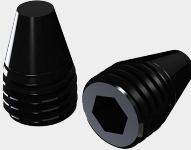
Accessory Type	Compatibility	Single		Package of 10	
		Tool #	USD\$	Tool #	USD\$
	Locating / Locking Screw (Right Hand Threads) Fits: QTH, QTHM, QZST, QSG, QDH Requires: QHT-1 Hex Key	QC-1	4.35	QC-10	30.70
	Locating / Locking Screw Fits: QDH Requires: QHT-1 Hex Key	QC-1LH	12.45		
	Locating / Locking Screw See QTS,QTSP,QTSL,QTSPL tables for compatibility	40208	1.35	41208	10.70
	Locating / Locking Screw See QTS,QTSP,QTSL,QTSPL tables for compatibility	40215	1.35	41215	10.70
	Locating / Locking Screw See QTS,QTSP,QTSL,QTSPL tables for compatibility	40216	1.35	41216	10.70
	Locating / Locking Screw See QTS, QTSP, QTSPL, QTSL, QZST-SR10J tables for compatibility	40317	1.35	41317	10.70
	Locating / Locking Screw See QTS, QTSP, QTSPL, QTSL, QZST-SR10J tables for compatibility	40316	1.35	41316	10.70
	Locating / Locking Screw See QTS, QTSP, QTSPL, QTSL, QZST-SR10J tables for compatibility	40315	1.35	41315	10.70
	Locating / Locking Screw See QTS, QTSP, QTSPL, QTSL, QZST-SR10J tables for compatibility	40279	1.35	41279	10.70

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Quick Change Parts
Accessories (cont.)

QC

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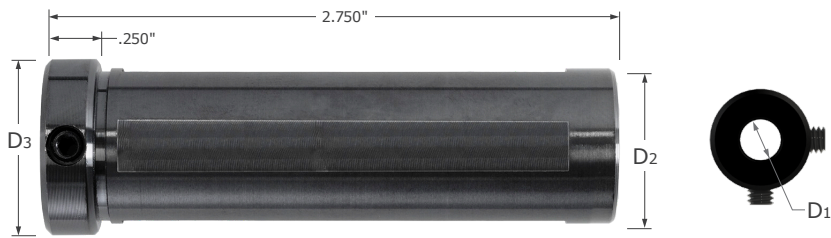
Accessory Type	Compatibility	Single		Package of 10	
		Tool #	USD\$	Tool #	USD\$
 (Left Hand Threads) Locating / Locking Screw	Fits: QDS, QDSM Requires: QHT-1 Hex Key	QC-2	4.35	QC-20	30.70
 Locating / Locking Screw	Fits: QZST-SR10J Requires: 3/32" Hex Key	QC-6	1.35		
 Hex Wrench	Fits: QC-3, QC-4 Locking Screws	QHK-1	1.35		
 Hex Wrench	Fits: QC-6 Socket Set Screws, 40208, 40215, 40216 Locating / Locking Screws	QHK-2	1.35		
 T Style Handle Hex Wrench	Fits: QC-1, QC-1LH, QC-2 Locating / Locking Screws	QHT-1	6.85	QHT-10	55.10

Quick Change – Holder Parts



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	
D ₁ $+ .0005"$ $- .0000"$	decimal equiv.	D ₃ $+ .005"$ $- .005"$ $+ .127mm$ $- .127mm$	D ₂ $- .0003"$ $- .0008"$ $- .008mm$ $- .020mm$		Tool #	USD\$
3 mm	.1181	15 mm	12 mm	40239	THM-312	88.45
3 mm	.1181	19 mm	16 mm	40239	THM-316	88.45
3 mm	.1181	25 mm	20 mm	40287	THM-320	97.45
.1250	.1250	15 mm	12 mm	40239	THMA-412	111.05
.1250	.1250	.625	.5000	40211	TH-84	84.90
.1250	.1250	19 mm	16 mm	40239	THMA-416	111.05
.1250	.1250	.750	.6250	40263	TH-104	84.90
.1250	.1250	.875	.7500	40284	TH-204	93.75
.1250	.1250	25 mm	20 mm	40287	THMA-420	97.45
.1250	.1250	27 mm	22 mm	40287	THMA-422	97.45
.1250	.1250	32 mm	25 mm	40286	THMA-425	115.65
.1250	.1250	1.250	1.0000	40285	TH-404	111.15
4 mm	.1575	15 mm	12 mm	40283	THM-412	88.45
4 mm	.1575	19 mm	16 mm	40239	THM-416	88.45
4 mm	.1575	25 mm	20 mm	40287	THM-420	97.45
.1875	.1875	15 mm	12 mm	40283	THMA-512	111.05
.1875	.1875	.625	.5000	40211	TH-85	84.90
.1875	.1875	19 mm	16 mm	40239	THMA-516	111.05
.1875	.1875	.750	.6250	40263	TH-105	84.90
.1875	.1875	.875	.7500	40284	TH-205	93.75
.1875	.1875	25 mm	20 mm	40287	THMA-520	97.45
.1875	.1875	27 mm	22 mm	40287	THMA-522	97.45
.1875	.1875	32 mm	25 mm	40286	THMA-525	115.65
.1875	.1875	1.250	1.0000	40285	TH-405	111.15
6 mm	.2362	15 mm	12 mm	40283	THM-612	88.45
6 mm	.2362	19 mm	16 mm	40239	THM-616	88.45
6 mm	.2362	25 mm	20 mm	40287	THM-620	97.45

Continued on next page

See pg 49 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 #	USD\$
.2500	.2500	15 mm	12 mm	40283	THMA-612	111.05
.2500	.2500	.625	.5000	40211	TH-86	84.90
.2500	.2500	19 mm	16 mm	40239	THMA-616	111.05
.2500	.2500	.750	.6250	40211	TH-106	84.90
.2500	.2500	.875	.7500	40263	TH-206	93.75
.2500	.2500	25 mm	20 mm	40287	THMA-620	97.45
.2500	.2500	27 mm	22 mm	40287	THMA-622	97.45
.2500	.2500	32 mm	25 mm	40286	THMA-625	115.65
.2500	.2500	1.250	1.0000	40285	TH-406	111.15
.3125	.3125	15 mm	12 mm	40283	THMA-712	111.05
.3125	.3125	.625	.5000	40211	TH-87	84.90
.3125	.3125	19 mm	16 mm	40283	THMA-716	111.05
.3125	.3125	.750	.6250	40211	TH-107	84.90
.3125	.3125	.875	.7500	40263	TH-207	93.75
.3125	.3125	25 mm	20 mm	40287	THMA-720	97.45
.3125	.3125	27 mm	22 mm	40287	THMA-722	97.45
.3125	.3125	32 mm	25 mm	40287	THMA-725	115.65
.3125	.3125	1.250	1.0000	40284	TH-407	111.15
8 mm	.3150	15 mm	12 mm	40283	THM-812	88.45
8 mm	.3150	19 mm	16 mm	40283	THM-816	88.45
8 mm	.3150	25 mm	20 mm	40287	THM-820	97.45
.3750	.3750	.625	.5000	40211	TH-88	84.90
.3750	.3750	19 mm	16 mm	40283	THMA-816	111.05
.3750	.3750	.750	.6250	40211	TH-108	84.90
.3750	.3750	.875	.7500	40211	TH-208	93.75
.3750	.3750	25 mm	20 mm	40239	THMA-820	97.45
.3750	.3750	27 mm	22 mm	40287	THMA-822	97.45
.3750	.3750	32 mm	25 mm	40287	THMA-825	115.65
.3750	.3750	1.250	1.0000	40284	TH-408	111.15
10 mm	.3937	25 mm	20 mm	40239	THM-1020	97.45
12 mm	.4724	19 mm	16 mm	40283	THM-1216	88.45
12 mm	.4724	25 mm	20 mm	40283	THM-1220	97.45
.5000	.5000	.875	.7500	40211	TH-210	93.75
.5000	.5000	1.125	1.0000	40284	TH-410	111.15

See pg 49 for replacement parts and accessories

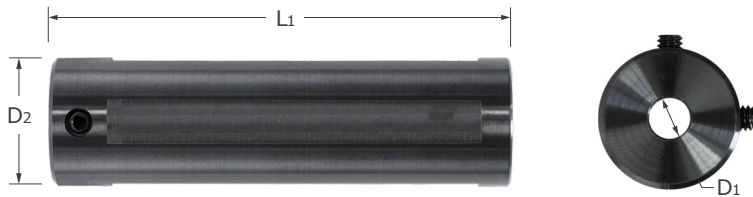


Standard Holders

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 #	USD\$
.1250	.5000	2.75	40211	THS-2-500	112.30
.1250	.6250	2.75	40211	THS-2-625	112.30
.1250	16 mm	2.75	40263	THS-2-630	117.90
.1250	.7500	2.75	40263	THS-2-750	117.90
.1250	20 mm	2.75	40263	THS-2-787	117.90
.1250	22 mm	2.75	40284	THS-2-866	117.90
.1250	25 mm	2.75	40284	THS-2-984	123.50
.1250	1.0000	2.75	40284	THS-2-1000	123.50
.1875	.5000	2.75	40211	THS-3-500	112.30
.1875	.6250	2.75	40211	THS-3-625	112.30
.1875	16 mm	2.75	40211	THS-3-630	117.90
.1875	.7500	2.75	40263	THS-3-750	117.90
.1875	20 mm	2.75	40284	THS-3-787	117.90
.1875	22 mm	2.75	40284	THS-3-866	117.90
.1875	25 mm	2.75	40284	THS-3-984	123.50
.1875	1.0000	2.75	40284	THS-3-1000	123.50
.2500	.6250	2.75	40211	THS-4-625	112.30
.2500	16 mm	2.75	40211	THS-4-630	112.30
.2500	.7500	2.75	40211	THS-4-750	117.90
.2500	20 mm	2.75	40211	THS-4-787	117.90
.2500	22 mm	2.75	40263	THS-4-866	117.90
.2500	25 mm	2.75	40284	THS-4-984	117.90
.2500	1.0000	2.75	40284	THS-4-1000	123.50

Continued on next page

See pg 49 for replacement parts and accessories

Standard Holders

THS

Straight Holders - Standard Length (cont.)

Continued from previous page

Internal Diameter	Shank Diameter	Overall Length	Locating Locking Screw	Tool Holder	
D1 $^{+.0005"}_{-.0000}"$	D2 $^{+.0003"}_{-.0008}"$ $^{+.008\text{mm}}_{-.020\text{mm}}$	L1		Tool #	USD\$
.3125	.6250	2.75	40211	THS-5-625	112.30
.3125	16 mm	2.75	40211	THS-5-630	112.30
.3125	.7500	2.75	40211	THS-5-750	117.90
.3125	20 mm	2.75	40211	THS-5-787	117.90
.3125	22 mm	2.75	40263	THS-5-866	117.90
.3125	25 mm	2.75	40284	THS-5-984	117.90
.3125	1.0000	2.75	40284	THS-5-1000	123.50
.3750	.7500	2.75	40211	THS-6-750	117.90
.3750	20 mm	2.75	40211	THS-6-787	117.90
.3750	22 mm	2.75	40211	THS-6-866	117.90
.3750	25 mm	2.75	40263	THS-6-984	123.50
.3750	1.0000	2.75	40263	THS-6-1000	123.50
.5000	25 mm	2.75	40211	THS-8-984	123.50
.5000	1.0000	2.75	40211	THS-8-1000	123.50

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!

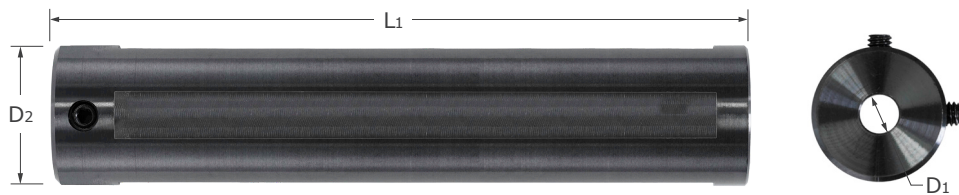


See pg 49 for replacement parts and accessories



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 #	USD\$
D1 $+ .0005"$ $- .0000"$	D2 $+ .0003"$ $- .0008"$ $+ .008mm$ $- .020mm$	L1			
.1250	.7500	5.75	40263	THSL-2-750	131.50
.1250	20 mm	5.75	40263	THSL-2-787	131.50
.1250	22 mm	5.75	40284	THSL-2-866	134.95
.1250	1.0000	5.75	40284	THSL-2-1000	138.25
.1875	.7500	5.75	40263	THSL-3-750	131.50
.1875	20 mm	5.75	40284	THSL-3-787	131.50
.1875	22 mm	5.75	40284	THSL-3-866	134.95
.1875	1.0000	5.75	40284	THSL-3-1000	138.25
.2500	.7500	5.75	40211	THSL-4-750	131.50
.2500	20 mm	5.75	40211	THSL-4-787	131.50
.2500	22 mm	5.75	40263	THSL-4-866	134.95
.2500	1.0000	5.75	40284	THSL-4-1000	138.25
.3125	.7500	5.75	40211	THSL-5-750	131.50
.3125	20 mm	5.75	40211	THSL-5-787	131.50
.3125	22 mm	5.75	40263	THSL-5-866	134.95
.3125	1.0000	5.75	40284	THSL-5-1000	138.25
.3750	.7500	5.75	40211	THSL-6-750	131.50
.3750	20 mm	5.75	40211	THSL-6-787	131.50
.3750	22 mm	5.75	40211	THSL-6-866	134.95
.3750	1.0000	5.75	40263	THSL-6-1000	138.25
.5000	1.0000	5.75	40211	THSL-8-1000	138.25

See pg 49 for replacement parts and accessories

Standard Holders

Double-Ended - Similar ID

TD



- 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	
D1 ^{+ .0005"} _{-.0000"}	D2 ^{-.0003"} _{-.0008"}	L1		Tool #	USD\$
.1875	.5000	2.20	40211	TD-3-500	209.70
.1875	.5000	3.20	40211	TD1-3-500	219.85
.1875	.6250	2.20	40211	TD-3-625	219.85
.1875	.6250	3.20	40211	TD1-3-625	231.25
.1875	.7500	3.20	40263	TD1-3-750	235.85
.1875	1.0000	3.20	40284	TD1-3-1000	246.00
.2500	.6250	3.20	40211	TD1-4-625	231.25
.2500	.7500	3.20	40211	TD1-4-750	235.85
.2500	1.0000	3.20	40263	TD1-4-1000	246.00
.3125	.6250	3.20	40211	TD1-5-625	231.25
.3125	.7500	3.20	40211	TD1-5-750	235.85
.3125	1.0000	3.20	40263	TD1-5-1000	246.00
.3750	.7500	3.20	40211	TD1-6-750	235.85
.3750	1.0000	3.20	40263	TD1-6-1000	246.00
.5000	1.0000	3.50	40211	TD2-8-1000	246.00



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.

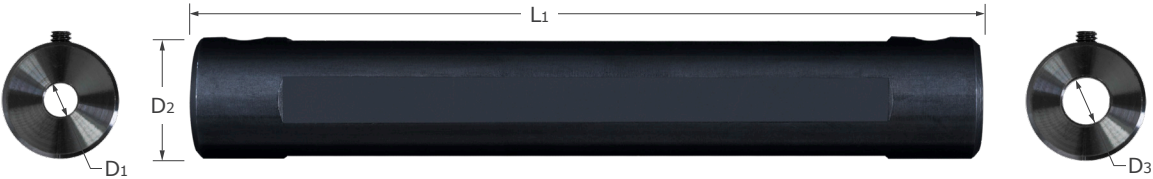
See pg 49 for replacement parts and accessories



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 #	USD\$
.1250	.1875	.5000	2.20	40211	40211	TD-2-3-500	215.40
.1250	.1875	.5000	3.20	40211	40211	TD1-2-3-500	225.65
.1250	.1875	.6250	2.20	40211	40211	TD-2-3-625	225.65
.1250	.1875	.6250	3.20	40211	40211	TD1-2-3-625	235.85
.1250	.1875	.7500	3.20	40263	40263	TD1-2-3-750	241.45
.1250	.1875	1.0000	3.20	40284	40284	TD1-2-3-1000	251.60
.1875	.2500	.6250	2.20	40211	40211	TD-3-4-625	225.65
.1875	.2500	.6250	3.20	40211	40211	TD1-3-4-625	235.85
.1875	.2500	.7500	3.20	40263	40211	TD1-3-4-750	241.45
.1875	.2500	1.0000	3.20	40284	40263	TD1-3-4-1000	251.60
.2500	.3125	.6250	3.20	40211	40211	TD1-4-5-625	235.85
.2500	.3125	.7500	3.20	40211	40211	TD1-4-5-750	241.45
.2500	.3125	1.0000	3.20	40263	40263	TD1-4-5-1000	251.60
.3125	.3750	.7500	3.20	40211	40211	TD1-5-6-750	241.45
.3125	.3750	1.0000	3.20	40263	40263	TD1-5-6-1000	251.60
.3750	.5000	1.0000	3.50	40263	40211	TD2-6-8-1000	251.60



See It in Action

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

Tech Tip

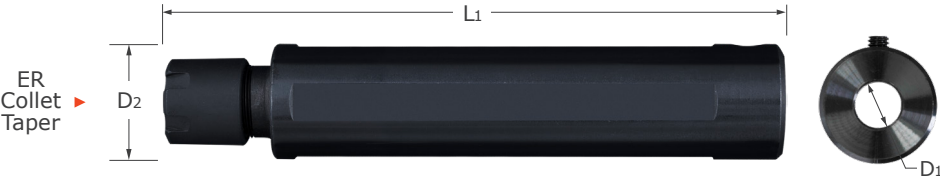
Utilizing multiple styles of double-ended holders can significantly reduce set up time by having multiple variations of connections readily accessible in the machine.

See pg 49 for replacement parts and accessories

Standard Holders

TDMR

Double-Ended - Standard - ER



- Standard ID double-ended tool holder allows for access to operations on both the main and sub side spindle
- Standard ID on one end 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	
	D1 ^{+ .0005"} _{- .0000"}	D2 ^{-.0003"} _{- .0008"} _{-.007mm} _{-.020mm}	L1		Tool #	USD\$
ER8-Mini	.1250	.5000	2.20	40211	TD-MR8-2-500	241.45
	.1250	.5000	3.20	40211	TD1-MR8-2-500	251.60
	.1250	.6250	2.20	40211	TD-MR8-2-625	251.60
	.1250	.6250	3.20	40211	TD1-MR8-2-625	261.90
	.1875	.5000	2.20	40211	TD-MR8-3-500	241.45
	.1875	.5000	3.20	40211	TD1-MR8-3-500	251.60
	.1875	.6250	2.20	40211	TD-MR8-3-625	251.60
	.1875	.6250	3.20	40211	TD1-MR8-3-625	261.90
	.2500	.6250	3.20	40211	TD1-MR8-4-625	261.90
	.3125	.6250	3.20	40211	TD1-MR8-5-625	261.90
ER11-Mini	.1250	.6250	2.20	40211	TD-MR11-2-625	251.60
	.1250	.6250	3.20	40211	TD1-MR11-2-625	261.90
	.1250	.7500	3.20	40263	TD1-MR11-2-750	267.50
	.1250	22 mm	3.20	40263	TD1-MR11-2-866	273.10
	.1250	25 mm	3.20	40284	TD1-MR11-2-984	277.65
	.1250	1.0000	3.20	40284	TD1-MR11-2-1000	277.65
	.1875	.6250	2.20	40211	TD-MR11-3-625	251.60
	.1875	.6250	3.20	40211	TD1-MR11-3-625	261.90
	.1875	.7500	3.20	40263	TD1-MR11-3-750	267.50

Continued on next page

See pg 49 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 ^{+ .0005"} _{-.0000"}		D2 ^{-.0003"} _{-.0008"} ^{-.007mm} _{-.020mm}	L1		Tool #	USD\$
ER11-Mini	.1875	22 mm	3.20	40263	TD1-MR11-3-866	273.10
	.1875	25 mm	3.20	40284	TD1-MR11-3-984	277.65
	.1875	1.0000	3.20	40284	TD1-MR11-3-1000	277.65
	.2500	.6250	3.20	40211	TD1-MR11-4-625	261.90
	.2500	.7500	3.20	40211	TD1-MR11-4-750	267.50
	.2500	1.0000	3.20	40263	TD1-MR11-4-1000	277.65
	.3125	.6250	3.20	40211	TD1-MR11-5-625	261.90
	.3125	.7500	3.20	40211	TD1-MR11-5-750	267.50
	.3125	1.0000	3.20	40263	TD1-MR11-5-1000	277.65
	.3750	.7500	3.20	40211	TD1-MR11-6-750	267.50
	.3750	1.0000	3.20	40263	TD1-MR11-6-1000	277.65
	.5000	1.0000	3.50	40211	TD2-MR11-8-1000	277.65
ER16-Mini	.1250	.7500	3.20	40263	TD1-MR16-2-750	267.50
	.1250	22 mm	3.20	40263	TD1-MR16-2-866	273.10
	.1250	25 mm	3.20	40284	TD1-MR16-2-984	277.65
	.1250	1.0000	3.20	40284	TD1-MR16-2-1000	277.65
	.1875	.7500	3.20	40263	TD1-MR16-3-750	267.50
	.1875	22 mm	3.20	40263	TD1-MR16-3-866	273.10
	.1875	25 mm	3.20	40284	TD1-MR16-3-984	277.65
	.1875	1.0000	3.20	40284	TD1-MR16-3-1000	277.65
	.2500	.7500	3.20	40211	TD1-MR16-4-750	267.50
	.2500	1.0000	3.20	40263	TD1-MR16-4-1000	277.65
	.3125	.7500	3.20	40211	TD1-MR16-5-750	267.50
	.3125	1.0000	3.20	40263	TD1-MR16-5-1000	277.65
	.3750	.7500	3.20	40211	TD1-MR16-6-750	267.50
	.3750	1.0000	3.20	40263	TD1-MR16-6-1000	277.65
	.5000	1.0000	3.50	40211	TD2-MR16-8-1000	277.65

Standard Holders



See It In Action

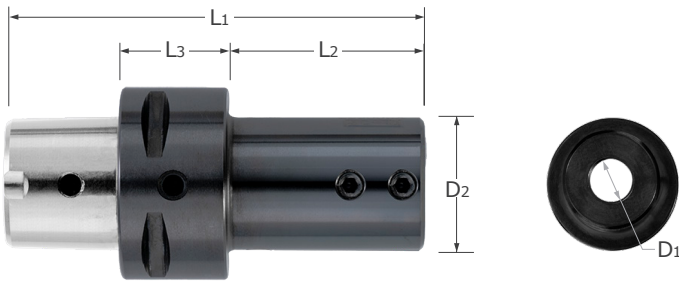
Scan the QR code to see tooling demonstrations to help you make more

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 49 for replacement parts and accessories

Standard Holders
PSC Holders



- PSC Holders combines a Capto® compatible connection with our Standard shank ID system
- Tool holder optimized for use with Micro 100 standard shank tools in turning applications
- 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
- Heat treated for added durability
- Black oxide coated on all non-ground surfaces for corrosion resistance
- Tool holder includes: hex wrench, locating/locking screw

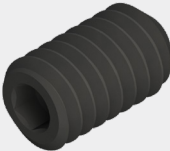
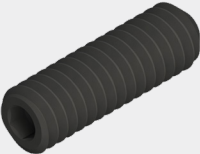
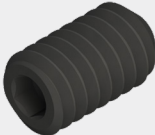
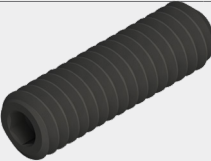
Shank Type	Internal Diameter	Head Length	Head Diameter	Flange Length	Overall Length	Coolant Adapter Thread	Locating Locking Screw	Tool Holder	
	D1 ^{+ .0005"} _{- .0000"}	L2	D2	L3	L1			Tool #	USD\$
C4	.1250	1.134	.866	.787	2.867	M14 x 1.5	40284	ST-125-C4	371.50
C4	.1875	1.134	.866	.787	2.867	M14 x 1.5	40284	ST-187-C4	371.50
C4	.2500	1.340	.866	.787	3.072	M14 x 1.5	40263	ST-250-C4	371.50
C4	.3125	1.309	.866	.787	3.041	M14 x 1.5	40263	ST-312-C4	371.50
C4	.3750	1.278	.866	.787	3.010	M14 x 1.5	40211	ST-375-C4	371.50
C4	.5000	1.528	.984	.787	3.260	M14 x 1.5	40211	ST-500-C4	371.50
C6	.1250	1.134	.866	.866	3.497	M20 x 2.0	40284	ST-125-C6	404.10
C6	.1875	1.134	.866	.866	3.497	M20 x 2.0	40284	ST-187-C6	404.10
C6	.2500	1.340	.866	.866	3.702	M20 x 2.0	40263	ST-250-C6	404.10
C6	.3125	1.309	.866	.866	3.671	M20 x 2.0	40263	ST-312-C6	404.10
C6	.3750	1.278	.866	.866	3.640	M20 x 2.0	40211	ST-375-C6	404.10
C6	.5000	1.528	.984	.866	3.890	M20 x 2.0	40211	ST-500-C6	404.10

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See pg 49 for replacement parts and accessories



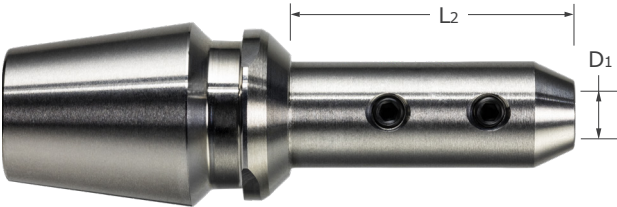
Standard Parts
Accessories

Accessory Type		Compatibility	Single		Package of 10	
			Tool #	USD\$	Tool #	USD\$
	Locating / Locking Screw	See standard holder tables for compatibility page 39-47	40211	1.35	41211	10.70
	Locating / Locking Screw		40263	1.35	41263	10.70
	Locating / Locking Screw		40284	1.35	41284	10.70
	Locating / Locking Screw		40285	1.35	41285	10.70
	Locating / Locking Screw		40283	1.35	41283	10.70
	Locating / Locking Screw		40239	1.35	41239	10.70
	Locating / Locking Screw		40287	1.35	41287	10.70
	Locating / Locking Screw		40286	1.35	41286	10.70

Standard Holder Parts

Taper Integrated Holders
Solid ER

ERI



- 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

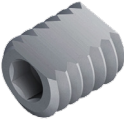
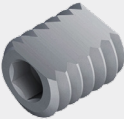
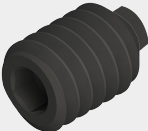
Taper Size	Internal Diameter	Projection	Tool Holder	
			Tool #	USD\$
	D1	L2		
ER08	.1250	.394	ER08I-2-394	296.55
ER08	.1250	.590	ER08I-2-590	296.55
ER11	.1250	.394	ER11I-2-394	296.55
ER11	.1250	.590	ER11I-2-590	296.55
ER11	.1250	.787	ER11I-2-787	296.55
ER16	.1250	.630	ER16I-2-630	310.15
ER16	.1250	.984	ER16I-2-984	310.15
ER16	.1875	.630	ER16I-3-630	310.15
ER16	.1875	.984	ER16I-3-984	310.15

See pg 51 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 #	USD\$	Tool #	USD\$
	Stop Screw	M6	40810	16.50	41810	147.30
	Stop Screw	M8	40811	19.85	41811	181.35
	Locking Screw	M3	40812	2.50	41812	20.05
	Locking Screw	M4	40813	2.50	41813	20.05

Taper Integrated Holder Parts

ER Collets

Metric ID

ER

- 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	Clamp Range	Tool Holder	
			Tool #	USD\$
	D1			
ER08	1.0 mm	0.5-1.0 mm	ER08-039	23.25
ER08	1.5 mm	1.0-1.5 mm	ER08-059	23.25
ER08	2.0 mm	1.5-2.0 mm	ER08-079	23.25
ER08	2.5 mm	2.0-2.5 mm	ER08-098	23.25
ER08	3.0 mm	2.5-3.0 mm	ER08-118	23.25
ER08	3.5 mm	3.0-3.5 mm	ER08-138	23.25
ER08	4.0 mm	3.5-4.0 mm	ER08-157	23.25
ER08	4.5 mm	4.0-4.5 mm	ER08-177	23.25
ER08	5.0 mm	4.5-5.0 mm	ER08-197	23.25
ER11	1.0 mm	0.5-1.0 mm	ER11-039	19.85
ER11	1.5 mm	1.0-1.5 mm	ER11-059	19.85
ER11	2.0 mm	1.5-2.0 mm	ER11-079	19.85
ER11	2.5 mm	2.0-2.5 mm	ER11-098	19.85
ER11	3.0 mm	2.5-3.0 mm	ER11-118	19.85
ER11	3.5 mm	3.0-3.5 mm	ER11-138	19.85
ER11	4.0 mm	3.5-4.0 mm	ER11-157	19.85
ER11	4.5 mm	4.0-4.5 mm	ER11-177	19.85
ER11	5.0 mm	4.5-5.0 mm	ER11-197	19.85
ER11	5.5 mm	5.0-5.5 mm	ER11-217	19.85
ER11	6.0 mm	5.5-6.0 mm	ER11-236	19.85
ER11	6.5 mm	6.0-6.5 mm	ER11-256	19.85
ER11	7.0 mm	6.5-7.0 mm	ER11-276	19.85
ER16	1.0 mm	0.5-1.0 mm	ER16-039	20.05
ER16	1.5 mm	1.0-1.5 mm	ER16-059	20.05
ER16	2.0 mm	1.5-2.0 mm	ER16-079	20.05
ER16	2.5 mm	1.5-2.5 mm	ER16-098	20.05
ER16	3.0 mm	2.0-3.0 mm	ER16-118	20.05
ER16	3.5 mm	2.5-3.5 mm	ER16-138	20.05
ER16	4.0 mm	3.0-4.0 mm	ER16-157	20.05
ER16	4.5 mm	3.5-4.5 mm	ER16-177	20.05
ER16	5.0 mm	4.0-5.0 mm	ER16-197	20.05
ER16	5.5 mm	4.5-5.5 mm	ER16-217	20.05
ER16	6.0 mm	5.0-6.0 mm	ER16-236	20.05
ER16	6.5 mm	5.5-6.5 mm	ER16-256	20.05
ER16	7.0 mm	6.0-7.0 mm	ER16-276	20.05

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ER

ER Collets

Metric ID (cont.)

Continued from previous page

Taper Size	ID	Clamp Range	Tool Holder	
	D ₁		Tool #	USD\$
ER16	7.5 mm	6.5-7.5 mm	ER16-295	20.05
ER16	8.0 mm	7.0-8.0 mm	ER16-315	20.05
ER16	8.5 mm	7.5-8.5 mm	ER16-335	20.05
ER16	9.0 mm	8.0-9.0 mm	ER16-354	20.05
ER16	9.5 mm	8.5-9.5 mm	ER16-374	20.05
ER16	10.0 mm	9.0-10.0 mm	ER16-394	20.05
ER16	10.5 mm	9.5-10.5 mm	ER16-413	20.05
ER20	1.0 mm	0.5-1.0 mm	ER20-039	25.95
ER20	1.5 mm	1.0-1.5 mm	ER20-059	25.95
ER20	2.0 mm	1.5-2.0 mm	ER20-079	25.95
ER20	2.5 mm	1.5-2.5 mm	ER20-098	25.95
ER20	3.0 mm	2.0-3.0 mm	ER20-118	25.95
ER20	3.5 mm	2.5-3.5 mm	ER20-138	25.95
ER20	4.0 mm	3.0-4.0 mm	ER20-157	25.95
ER20	4.5 mm	3.5-4.5 mm	ER20-177	25.95
ER20	5.0 mm	4.0-5.0 mm	ER20-197	25.95
ER20	5.5 mm	4.5-5.5 mm	ER20-217	25.95
ER20	6.0 mm	5.0-6.0 mm	ER20-236	25.95
ER20	6.5 mm	5.5-6.5 mm	ER20-256	25.95
ER20	7.0 mm	6.0-7.0 mm	ER20-276	25.95
ER20	7.5 mm	6.5-7.5 mm	ER20-295	25.95
ER20	8.0 mm	7.0-8.0 mm	ER20-315	25.95
ER20	8.5 mm	7.5-8.5 mm	ER20-335	25.95
ER20	9.0 mm	8.0-9.0 mm	ER20-354	25.95
ER20	9.5 mm	8.5-9.5 mm	ER20-374	25.95
ER20	10.0 mm	9.0-10.0 mm	ER20-394	25.95
ER20	10.5 mm	9.5-10.5 mm	ER20-413	25.95
ER20	11.0 mm	10.0-11.0 mm	ER20-433	25.95
ER20	11.5 mm	10.5-11.5 mm	ER20-453	25.95
ER20	12.0 mm	11.0-12.0 mm	ER20-472	25.95
ER20	12.5 mm	11.5-12.5 mm	ER20-492	25.95
ER20	13.0 mm	12.0-13.0 mm	ER20-512	25.95
ER20	13.5 mm	12.5-13.5 mm	ER20-531	25.95
ER20	14.0 mm	13.0-14.0 mm	ER20-551	25.95
ER32	3.0 mm	2.0-3.0 mm	ER32-118	27.50
ER32	3.5 mm	2.5-3.5 mm	ER32-138	27.50
ER32	4.0 mm	3.0-4.0 mm	ER32-158	27.50
ER32	4.5 mm	3.5-4.5 mm	ER32-177	27.50
ER32	5.0 mm	4.0-5.0 mm	ER32-197	27.50
ER32	5.5 mm	4.5-5.5 mm	ER32-217	27.50
ER32	6.0 mm	5.0-6.0 mm	ER32-236	27.50
ER32	6.5 mm	5.5-6.5 mm	ER32-256	27.50
ER32	7.0 mm	6.0-7.0 mm	ER32-276	27.50
ER32	7.5 mm	6.5-7.5 mm	ER32-295	27.50
ER32	8.0 mm	7.0-8.0 mm	ER32-315	27.50

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ER Collets

Metric ID (cont.)

ER

Continued from previous page

Taper Size	ID	Clamp Range	Tool Holder	
	D1		Tool #	USD\$
ER32	8.5 mm	7.5-8.5 mm	ER32-335	27.50
ER32	9.0 mm	8.0-9.0 mm	ER32-354	27.50
ER32	9.5 mm	8.5-9.5 mm	ER32-374	27.50
ER32	10.0 mm	9.0-10.0 mm	ER32-394	27.50
ER32	10.5 mm	9.5-10.5 mm	ER32-413	27.50
ER32	11.0 mm	10.0-11.0 mm	ER32-433	27.50
ER32	11.5 mm	10.5-11.5 mm	ER32-453	27.50
ER32	12.0 mm	11.0-12.0 mm	ER32-472	27.50
ER32	12.5 mm	11.5-12.5 mm	ER32-492	27.50
ER32	13.0 mm	12.0-13.0 mm	ER32-512	27.50
ER32	13.5 mm	12.5-13.5 mm	ER32-532	27.50
ER32	14.0 mm	13.0-14.0 mm	ER32-551	27.50
ER32	14.5 mm	13.5-14.5 mm	ER32-571	27.50
ER32	15.0 mm	14.0-15.0 mm	ER32-591	27.50
ER32	15.5 mm	14.5-15.5 mm	ER32-610	27.50
ER32	16.0 mm	15.0-16.0 mm	ER32-630	27.50
ER32	16.5 mm	15.5-16.5 mm	ER32-650	27.50
ER32	17.0 mm	16.0-17.0 mm	ER32-669	27.50
ER32	17.5 mm	16.5-17.5 mm	ER32-689	27.50
ER32	18.0 mm	17.0-18.0 mm	ER32-709	27.50
ER32	18.5 mm	17.5-18.5 mm	ER32-728	27.50
ER32	19.0 mm	18.0-19.0 mm	ER32-748	27.50
ER32	19.5 mm	18.5-19.5 mm	ER32-768	27.50
ER32	20.0 mm	19.0-20.0 mm	ER32-787	27.50
ER32	21.0 mm	20.0-21.0 mm	ER32-827	27.50

Collets



ER

ER Collets
Standard ID

- 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



Taper Size	ID	Clamp Range	ER Collet	
	D1		Tool #	USD\$
ER08	.0625	.043-.062	ER08-062	23.25
ER08	.1250	.086-.125	ER08-125	23.25
ER08	.1875	.148-.187	ER08-187	23.25
ER11	.0625	.043-.062	ER11-062	19.85
ER11	.0937	.054-.093	ER11-093	19.85
ER11	.1250	.086-.125	ER11-125	19.85
ER11	.1562	.117-.156	ER11-156	19.85
ER11	.1875	.148-.187	ER11-187	19.85
ER11	.2187	.179-.218	ER11-218	19.85
ER11	.2500	.211-.250	ER11-250	19.85
ER11	.2811	.242-.281	ER11-281	19.85
ER16	.0625	.043-.062	ER16-062	20.05
ER16	.0937	.054-.093	ER16-093	20.05
ER16	.1250	.086-.125	ER16-125	20.05
ER16	.1562	.117-.156	ER16-156	20.05
ER16	.1875	.148-.187	ER16-187	20.05
ER16	.2187	.179-.218	ER16-218	20.05
ER16	.2500	.211-.250	ER16-250	20.05
ER16	.2811	.242-.281	ER16-281	20.05
ER16	.3125	.273-.312	ER16-312	20.05
ER16	.3437	.304-.343	ER16-343	20.05
ER16	.3750	.336-.375	ER16-375	20.05
ER16	.4062	.367-.406	ER16-406	20.05
ER20	.0625	.043-.062	ER20-062	25.95
ER20	.0937	.054-.093	ER20-093	25.95
ER20	.1250	.086-.125	ER20-125	25.95
ER20	.1562	.117-.156	ER20-156	25.95
ER20	.1875	.148-.187	ER20-187	25.95
ER20	.2187	.179-.218	ER20-218	25.95
ER20	.2500	.211-.250	ER20-250	25.95
ER20	.2811	.242-.281	ER20-281	25.95
ER20	.3125	.273-.312	ER20-312	25.95
ER20	.3437	.304-.343	ER20-343	25.95
ER20	.3750	.336-.375	ER20-375	25.95
ER20	.4062	.367-.406	ER20-406	25.95
ER20	.4375	.398-.437	ER20-437	25.95
ER20	.4687	.429-.468	ER20-468	25.95
ER20	.5000	.461-.500	ER20-500	25.95

Continued on next page

Collets

ER Collets
Standard ID (cont.)

ER

Continued from previous page

Taper Size	ID	Clamp Range	ER Collet	
	D1		Tool #	USD\$
ER32	.0625	.043-.062	ER32-062	27.50
ER32	.0937	.054-.093	ER32-093	27.50
ER32	.1250	.086-.125	ER32-125	27.50
ER32	.1562	.117-.156	ER32-156	27.50
ER32	.1875	.148-.187	ER32-187	27.50
ER32	.2187	.179-.218	ER32-218	27.50
ER32	.2500	.211-.250	ER32-250	27.50
ER32	.2811	.242-.281	ER32-281	27.50
ER32	.3125	.273-.312	ER32-312	27.50
ER32	.3437	.304-.343	ER32-343	27.50
ER32	.3750	.336-.375	ER32-375	27.50
ER32	.4062	.367-.406	ER32-406	27.50
ER32	.4375	.398-.437	ER32-437	27.50
ER32	.4687	.429-.468	ER32-468	27.50
ER32	.5000	.461-.500	ER32-500	27.50
ER32	.5312	.492-.531	ER32-531	27.50
ER32	.5625	.523-.562	ER32-562	27.50
ER32	.5937	.554-.593	ER32-593	27.50
ER32	.6250	.586-.625	ER32-625	27.50
ER32	.6562	.617-.656	ER32-656	27.50
ER32	.6875	.648-.687	ER32-687	27.50
ER32	.7187	.679-.718	ER32-718	27.50
ER32	.7500	.711-.750	ER32-750	27.50

Collets



ERMS

ER Collets
Metric ID - Metallic Sealed

- 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



Taper Size	ID	ER Collet	
	D ₁	Tool #	USD\$
ER11	3.0 mm	ERMS11-118	55.85
ER11	4.0 mm	ERMS11-157	55.85
ER11	5.0 mm	ERMS11-197	55.85
ER11	6.0 mm	ERMS11-236	55.85
ER11	7.0 mm	ERMS11-276	55.85
ER16	3.0 mm	ERMS16-118	44.85
ER16	4.0 mm	ERMS16-157	44.85
ER16	5.0 mm	ERMS16-197	44.85
ER16	6.0 mm	ERMS16-236	44.85
ER16	7.0 mm	ERMS16-276	44.85
ER16	8.0 mm	ERMS16-315	44.85
ER16	9.0 mm	ERMS16-354	44.85
ER16	10.0 mm	ERMS16-394	44.85
ER20	3.0 mm	ERMS20-118	50.25
ER20	4.0 mm	ERMS20-157	50.25
ER20	5.0 mm	ERMS20-197	50.25
ER20	6.0 mm	ERMS20-236	50.25
ER20	7.0 mm	ERMS20-276	50.25
ER20	8.0 mm	ERMS20-315	50.25
ER20	9.0 mm	ERMS20-354	50.25
ER20	10.0 mm	ERMS20-394	50.25
ER20	11.0 mm	ERMS20-433	50.25
ER20	12.0 mm	ERMS20-472	50.25
ER20	13.0 mm	ERMS20-512	50.25
ER32	3.0 mm	ERMS32-118	53.45
ER32	4.0 mm	ERMS32-157	53.45
ER32	5.0 mm	ERMS32-197	53.45
ER32	6.0 mm	ERMS32-236	53.45
ER32	7.0 mm	ERMS32-276	53.45
ER32	8.0 mm	ERMS32-315	53.45
ER32	9.0 mm	ERMS32-354	53.45
ER32	10.0 mm	ERMS32-394	53.45
ER32	11.0 mm	ERMS32-433	53.45
ER32	12.0 mm	ERMS32-472	53.45
ER32	13.0 mm	ERMS32-512	53.45
ER32	14.0 mm	ERMS32-551	53.45
ER32	15.0 mm	ERMS32-591	53.45
ER32	16.0 mm	ERMS32-630	53.45
ER32	17.0 mm	ERMS32-669	53.45
ER32	18.0 mm	ERMS32-709	53.45
ER32	19.0 mm	ERMS32-748	53.45
ER32	20.0 mm	ERMS32-787	53.45

Collets

ER Collets

Standard ID - Metallic Sealed

ERMS

- 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 #	USD\$
	D1		
ER11	.1250	ERMS11-125	55.85
ER11	.1875	ERMS11-187	55.85
ER11	.2500	ERMS11-250	55.85
ER16	.1250	ERMS16-125	44.85
ER16	.1875	ERMS16-187	44.85
ER16	.2500	ERMS16-250	44.85
ER16	.3125	ERMS16-312	44.85
ER16	.3750	ERMS16-375	44.85
ER20	.1250	ERMS20-125	50.25
ER20	.1875	ERMS20-187	50.25
ER20	.2500	ERMS20-250	50.25
ER20	.3125	ERMS20-312	50.25
ER20	.3750	ERMS20-375	50.25
ER20	.5000	ERMS20-500	50.25
ER32	.2500	ERMS32-250	53.45
ER32	.3125	ERMS32-312	53.45
ER32	.3750	ERMS32-375	53.45
ER32	.5000	ERMS32-500	53.45
ER32	.6250	ERMS32-625	53.45
ER32	.7500	ERMS32-750	53.45

Collets



ERS/ERM

ER Collets
Sets



- 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

Taper Size	ID Type	Collet Count	Clamp Range	Set	
D1				Tool #	USD\$
ER08	Metric	9	0.5-5.0 mm	ER08M-1	198.65
ER11	Standard	7	.043-.250	ER11S-1	131.70
ER11	Metric	13	0.5-7.0 mm	ER11M-1	245.05
ER16	Standard	10	.054-.375	ER16S-1	191.10
ER16	Metric	10	0.5-10.0 mm	ER16M-1	191.10
ER20	Standard	12	.117-.500	ER20S-1	295.85
ER20	Metric	12	1.5-13.0 mm	ER20M-1	295.85
ER32	Standard	18	.179-.750	ER32S-1	470.65
ER32	Metric	18	2.0-20 mm	ER32M-1	470.65

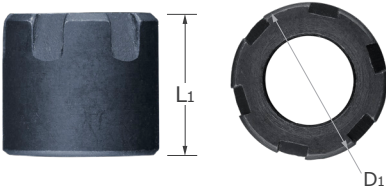
Collets

ER Collets

ER Collet Nuts

CMR

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



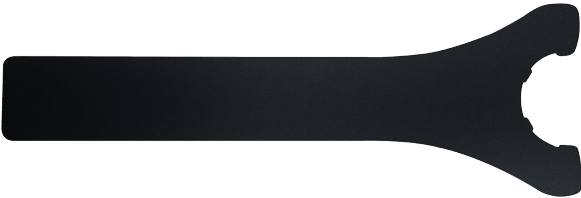
Taper Size	Nut Type	Nut Diameter	Nut Length	Thread Size	ER Nuts	
		D1	L1		Tool #	USD\$
ER08	Mini	12 mm	11 mm	M10 x 0.75	CMR08-SW	29.15
ER11	Mini	16 mm	12 mm	M13 x 0.75	CMR11-SW	30.70
ER16	Mini	22 mm	18 mm	M19 x 1.0	CMR16-SW	31.85

ER Collets

ER Collet Wrenches

MRSW

- Wrenches utilized for various collet nut connections



Taper Size	Nut Size	ER Wrenches	
		Tool #	USD\$
ER08	Mini	MR08-SW	20.55
ER11	Mini	MR11-SW	21.60
ER16	Mini	MR16-SW	22.65



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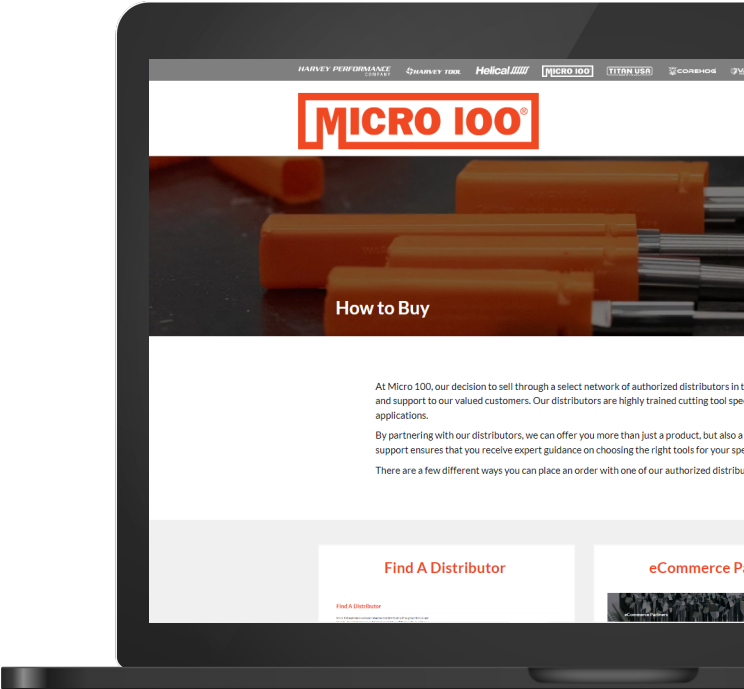
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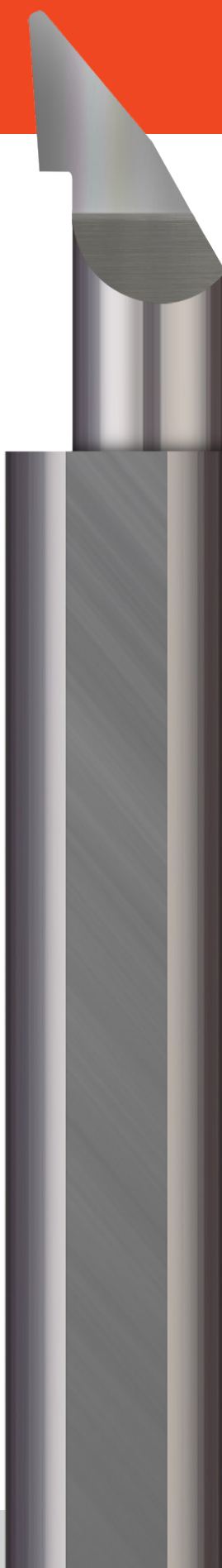
Item	Product Name	Price	Quantity	Total	Cart Options
1	Micro 100 1/2" x 1/2" x 1/2" 304 Stainless Steel Ball End Mill (1/2" x 1/2" x 1/2")	\$12.50	1	\$12.50	View Details Add to Cart Remove from Cart
2	Micro 100 1/2" x 1/2" x 1/2" 304 Stainless Steel Ball End Mill (1/2" x 1/2" x 1/2")	\$12.50	1	\$12.50	View Details Add to Cart Remove from Cart
3	Micro 100 1/2" x 1/2" x 1/2" 304 Stainless Steel Ball End Mill (1/2" x 1/2" x 1/2")	\$12.50	1	\$12.50	View Details Add to Cart Remove from Cart

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TURNING TOOLS

Internal Diameter (ID) - Quick Change

Quick Change - Boring Tools	NEW SIZES!	63
Quick Change - Profiling Tools		79
Quick Change - Grooving Tools		85
Quick Change - Broaching		106
Quick Change - Threading Tools	NEW SIZES!	110
Quick Change - Holmaking Tools		119
Quick Change - Blanks		124

Internal Diameter (ID) - Standard

Standard - Boring Tools	NEW SIZES!	126
Standard - Profiling Tools		150
Standard - Grooving Tools		156
Standard - Threading Tools		181

Internal Diameter (ID) - Indexable

Indexable - Boring Bars, Boring	195
Indexable - Boring Bars, Facing	197
Indexable - Boring Bars, Profiling	198

Outside Diameter (OD) - Indexable

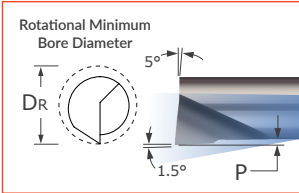
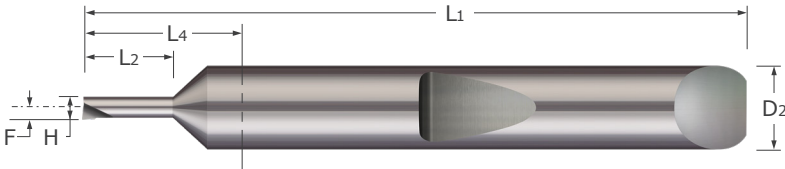
Indexable - Tool Holders, Chamfering & Turning	199
Indexable - Tool Holders, Facing & Turning	200
Indexable - Tool Holders, Profiling	203

Outside Diameter (OD) - Brazed

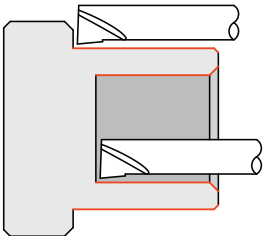
Brazed - Box Turning Tools	204
Brazed - Forming Tools	205
Brazed - Grooving Tools	212
Brazed - Threading Tools	217
Brazed - Screw Machine Tools	218
Brazed - Cut Off Tools	220

QMBB

Quick Change – Boring Tools
Right Hand – Sharp - Miniature



- 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	
H	DR	L2 ^{+.030"} _{-.000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0135	.0150	.050	.0015	.590	.0075	.1875	1.5	QMBB-015050	50.85	QMBB-015050X	55.25
.0135	.0150	.075	.0015	.590	.0075	.1875	1.5	QMBB-015075	50.85	QMBB-015075X	56.05
.0180	.0200	.050	.0020	.590	.0100	.1875	1.5	QMBB-020050	50.85	QMBB-020050X	56.05
.0180	.0200	.075	.0020	.590	.0100	.1875	1.5	QMBB-020075	50.85	QMBB-020075X	55.25
.0180	.0200	.100	.0020	.590	.0100	.1875	1.5	QMBB-020100	50.85	QMBB-020100X	56.05
.0225	.0250	.050	.0025	.590	.0125	.1875	1.5	QMBB-025050	44.85	QMBB-025050X	49.95
.0225	.0250	.075	.0025	.590	.0125	.1875	1.5	QMBB-025075	44.85	QMBB-025075X	49.95
.0225	.0250	.100	.0025	.590	.0125	.1875	1.5	QMBB-025100	44.85	QMBB-025100X	49.05
.0225	.0250	.125	.0025	.590	.0125	.1875	1.5	QMBB-025125	44.85	QMBB-025125X	49.95
.0275	.0300	.075	.0025	.590	.0150	.1875	1.5	QMBB-030075	44.85	QMBB-030075X	49.95
.0275	.0300	.100	.0025	.590	.0150	.1875	1.5	QMBB-030100	44.85	QMBB-030100X	49.05
.0275	.0300	.125	.0025	.590	.0150	.1875	1.5	QMBB-030125	44.85	QMBB-030125X	49.95
.0275	.0300	.150	.0025	.590	.0150	.1875	1.5	QMBB-030150	44.85	QMBB-030150X	49.95
.0320	.0350	.075	.0030	.590	.0175	.1875	1.5	QMBB-035075	44.85	QMBB-035075X	49.95
.0320	.0350	.100	.0030	.590	.0175	.1875	1.5	QMBB-035100	44.85	QMBB-035100X	49.05
.0320	.0350	.150	.0030	.590	.0175	.1875	1.5	QMBB-035150	44.85	QMBB-035150X	49.05
.0320	.0350	.200	.0030	.590	.0175	.1875	1.5	QMBB-035200	44.85	QMBB-035200X	49.95
.0365	.0400	.100	.0035	.590	.0200	.1875	1.5	QMBB-040100	44.85	QMBB-040100X	49.95
.0365	.0400	.150	.0035	.590	.0200	.1875	1.5	QMBB-040150	44.85	QMBB-040150X	49.05
.0365	.0400	.200	.0035	.590	.0200	.1875	1.5	QMBB-040200	44.85	QMBB-040200X	49.05
.0405	.0450	.100	.0045	.590	.0225	.1875	1.5	QMBB-045100	44.85	QMBB-045100X	49.95
.0405	.0450	.150	.0045	.590	.0225	.1875	1.5	QMBB-045150	44.85	QMBB-045150X	49.05
.0405	.0450	.200	.0045	.590	.0225	.1875	1.5	QMBB-045200	44.85	QMBB-045200X	49.05
.0440	.0500	.100	.0060	.590	.0250	.1875	1.5	QMBB-050100	35.00	QMBB-050100X	40.15
.0440	.0500	.150	.0060	.590	.0250	.1875	1.5	QMBB-050150	35.00	QMBB-050150X	38.85
.0440	.0500	.200	.0060	.590	.0250	.1875	1.5	QMBB-050200	35.00	QMBB-050200X	38.85
.0440	.0500	.300	.0060	.590	.0250	.1875	1.5	QMBB-050300	35.00	QMBB-050300X	38.85
.0525	.0600	.150	.0075	.590	.0300	.1875	1.5	QMBB-060150	35.00	QMBB-060150X	38.85
.0525	.0600	.200	.0075	.590	.0300	.1875	1.5	QMBB-060200	35.00	QMBB-060200X	38.85
.0525	.0600	.300	.0075	.590	.0300	.1875	1.5	QMBB-060300	35.00	QMBB-060300X	38.85
.0525	.0600	.400	.0075	.590	.0300	.1875	1.5	QMBB-060400	35.00	QMBB-060400X	38.85
.0525	.0600	.500	.0075	.590	.0300	.1875	1.5	QMBB-060500	35.00	QMBB-060500X	38.85

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See pgs 16-34 for quick change holder options

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

QMBB

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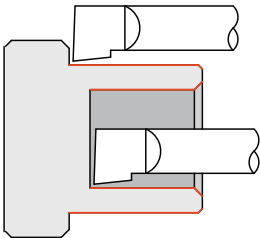
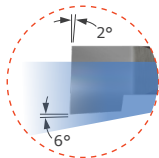
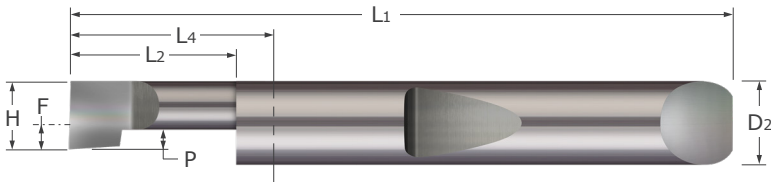
Head Width	Rotational Minimum Bore Dia.	Max. Bore Depth	Projection	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
								Tool #	USD\$	Tool #	USD\$
H	DR	L2 ^{+ .030"} _{– .000"}	P	L4	F	D2 (h6)	L1				
.0625	.0700	.150	.0075	.590	.0350	.1875	1.5	QMBB-070150	35.00	QMBB-070150X	38.85
.0625	.0700	.200	.0075	.590	.0350	.1875	1.5	QMBB-070200	35.00	QMBB-070200X	38.85
.0625	.0700	.300	.0075	.590	.0350	.1875	1.5	QMBB-070300	35.00	QMBB-070300X	38.85
.0625	.0700	.400	.0075	.590	.0350	.1875	1.5	QMBB-070400	35.00	QMBB-070400X	38.85
.0625	.0700	.500	.0075	.590	.0350	.1875	1.5	QMBB-070500	35.00	QMBB-070500X	38.85
.0700	.0800	.150	.0100	.590	.0400	.1875	1.5	QMBB-080150	35.00	QMBB-080150X	38.85
.0700	.0800	.200	.0100	.590	.0400	.1875	1.5	QMBB-080200	35.00	QMBB-080200X	38.85
.0700	.0800	.300	.0100	.590	.0400	.1875	1.5	QMBB-080300	35.00	QMBB-080300X	38.85
.0700	.0800	.500	.0100	.590	.0400	.1875	1.5	QMBB-080500	35.00	QMBB-080500X	38.85
.0700	.0800	.600	.0100	1.090	.0400	.1875	2.0	QMBB-080600	35.00	QMBB-080600X	38.85
.0800	.0900	.200	.0100	.590	.0450	.1875	1.5	QMBB-090200	35.00	QMBB-090200X	40.15
.0800	.0900	.300	.0100	.590	.0450	.1875	1.5	QMBB-090300	35.00	QMBB-090300X	38.85
.0800	.0900	.500	.0100	.590	.0450	.1875	1.5	QMBB-090500	35.00	QMBB-090500X	38.85
.0800	.0900	.700	.0100	1.090	.0450	.1875	2.0	QMBB-090700	35.00	QMBB-090700X	38.85
.0875	.1000	.200	.0125	.590	.0500	.1875	1.5	QMBB-100200	35.00	QMBB-100200X	40.15
.0875	.1000	.300	.0125	.590	.0500	.1875	1.5	QMBB-100300	35.00	QMBB-100300X	38.85
.0875	.1000	.500	.0125	.590	.0500	.1875	1.5	QMBB-100500	35.00	QMBB-100500X	38.85
.0875	.1000	.700	.0125	1.090	.0500	.1875	2.0	QMBB-100700	35.00	QMBB-100700X	38.85
.0875	.1000	.800	.0125	1.090	.0500	.1875	2.0	QMBB-100800	35.00	QMBB-100800X	38.85

See pgs 16-34 for quick change holder options



QBB

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

Head Width	Min. Bore Diameter*	Max. Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
H		L2 +.030" - .000"	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0500	.0550	.150	.013	.590	-.0438	.1875	1.5	QBB-050150	35.00	QBB-050150X	38.85
.0500	.0550	.200	.013	.590	-.0438	.1875	1.5	QBB-050200	35.00	QBB-050200X	38.85
.0500	.0550	.250	.013	.590	-.0438	.1875	1.5	QBB-050250-000	35.00	QBB-050250-000X	40.15
.0500	.0550	.300	.013	.590	-.0438	.1875	1.5	QBB-050300	35.00	QBB-050300X	38.85
.0500	.0550	.400	.013	.590	-.0438	.1875	1.5	QBB-050400	35.00	QBB-050400X	38.85
.0600	.0700	.150	.015	.590	-.0338	.1875	1.5	QBB-060150	35.00	QBB-060150X	38.85
.0600	.0700	.200	.015	.590	-.0338	.1875	1.5	QBB-060200	35.00	QBB-060200X	38.85
.0600	.0700	.250	.015	.590	-.0338	.1875	1.5	QBB-060250-000	35.00	QBB-060250-000X	40.15
.0600	.0700	.300	.015	.590	-.0338	.1875	1.5	QBB-060300	35.00	QBB-060300X	38.85
.0600	.0700	.400	.015	.590	-.0338	.1875	1.5	QBB-060400	35.00	QBB-060400X	38.85
.0600	.0700	.500	.015	.590	-.0338	.1875	1.5	QBB-060500	35.00	QBB-060500X	38.85
.0700	.0800	.150	.015	.590	-.0238	.1875	1.5	QBB-070150-000	35.00	QBB-070150-000X	40.15
.0700	.0800	.200	.015	.590	-.0238	.1875	1.5	QBB-070200-000	35.00	QBB-070200-000X	40.15
.0700	.0800	.300	.015	.590	-.0238	.1875	1.5	QBB-070300-000	35.00	QBB-070300-000X	40.15
.0800	.0900	.150	.020	.590	-.0138	.1875	1.5	QBB-080150-000	35.00	QBB-080150-000X	40.15
.0800	.0900	.200	.020	.590	-.0138	.1875	1.5	QBB-080200	35.00	QBB-080200X	38.85
.0800	.0900	.300	.020	.590	-.0138	.1875	1.5	QBB-080300	35.00	QBB-080300X	38.85
.0800	.0900	.400	.020	.590	-.0138	.1875	1.5	QBB-080400-000	35.00	QBB-080400-000X	40.15
.0800	.0900	.500	.020	.590	-.0138	.1875	1.5	QBB-080500	35.00	QBB-080500X	38.85
.0800	.0900	.600	.020	1.090	-.0138	.1875	2.0	QBB-080600	35.00	QBB-080600X	38.85
.0900	.1000	.150	.020	.590	-.0038	.1875	1.5	QBB-090150-000	37.15	QBB-090150-000X	42.35
.0900	.1000	.200	.020	.590	-.0038	.1875	1.5	QBB-090200-000	37.15	QBB-090200-000X	42.35
.0900	.1000	.300	.020	.590	-.0038	.1875	1.5	QBB-090300-000	37.15	QBB-090300-000X	42.35
.0900	.1000	.400	.020	.590	-.0038	.1875	1.5	QBB-090400-000	37.15	QBB-090400-000X	42.35
.0900	.1000	.500	.020	.590	-.0038	.1875	1.5	QBB-090500-000	37.15	QBB-090500-000X	42.35

*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 pgs 63 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 73 - 76

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

QBB

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	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.1000	.1100	.150	.025	.590	.0063	.1875	1.5	QBB-100150-000	37.15	QBB-100150-000X	42.35
.1000	.1100	.200	.025	.590	.0063	.1875	1.5	QBB-100200	37.15	QBB-100200X	41.05
.1000	.1100	.300	.025	.590	.0063	.1875	1.5	QBB-100300	37.15	QBB-100300X	41.05
.1000	.1100	.400	.025	.590	.0063	.1875	1.5	QBB-100400-000	37.15	QBB-100400-000X	42.35
.1000	.1100	.500	.025	.590	.0063	.1875	1.5	QBB-100500	37.15	QBB-100500X	41.05
.1000	.1100	.600	.025	1.090	.0063	.1875	2.0	QBB-100600-000	38.60	QBB-100600-000X	43.80
.1000	.1100	.700	.025	1.090	.0063	.1875	2.0	QBB-100700	37.15	QBB-100700X	41.05
.1000	.1100	.800	.025	1.090	.0063	.1875	2.0	QBB-100800-000	37.15	QBB-100800-000X	42.35
.1100	.1220	.150	.028	.590	.0163	.1875	1.5	QBB-110150-000	37.15	QBB-110150-000X	42.35
.1100	.1220	.200	.028	.590	.0163	.1875	1.5	QBB-110200-000	37.15	QBB-110200-000X	42.35
.1100	.1220	.300	.028	.590	.0163	.1875	1.5	QBB-110300-000	37.15	QBB-110300-000X	42.35
.1100	.1220	.400	.028	.590	.0163	.1875	1.5	QBB-110400-000	37.15	QBB-110400-000X	42.35
.1100	.1220	.500	.028	.590	.0163	.1875	1.5	QBB-110500-000	37.15	QBB-110500-000X	42.35
.1100	.1220	.600	.028	1.090	.0163	.1875	2.0	QBB-110600-000	38.60	QBB-110600-000X	43.80
.1100	.1220	.700	.028	1.090	.0163	.1875	2.0	QBB-110700-000	38.60	QBB-110700-000X	43.80
.1200	.1320	.250	.030	.590	.0263	.1875	1.5	QBB-120250-000	37.15	QBB-120250-000X	42.35
.1200	.1320	.350	.030	.590	.0263	.1875	1.5	QBB-120350-000	37.15	QBB-120350-000X	42.35
.1200	.1320	.500	.030	.590	.0263	.1875	1.5	QBB-120500-000	37.15	QBB-120500-000X	42.35
.1200	.1320	.600	.030	1.090	.0263	.1875	2.0	QBB-120600-000	38.60	QBB-120600-000X	43.80
.1200	.1320	.700	.030	1.090	.0263	.1875	2.0	QBB-120700-000	38.60	QBB-120700-000X	43.80
.1200	.1320	.800	.030	1.090	.0263	.1875	2.0	QBB-120800-000	38.60	QBB-120800-000X	43.80
.1200	.1320	1.000	.030	1.090	.0263	.1875	2.0	QBB-1201000-000	38.60	QBB-1201000-000X	43.80
.1400	.1520	.250	.035	.590	.0463	.1875	1.5	QBB-140250-000	37.15	QBB-140250-000X	42.35
.1400	.1520	.400	.035	.590	.0463	.1875	1.5	QBB-140400-000	37.15	QBB-140400-000X	42.35
.1400	.1520	.500	.035	.590	.0463	.1875	1.5	QBB-140500-000	37.15	QBB-140500-000X	42.35
.1400	.1520	.600	.035	1.090	.0463	.1875	2.0	QBB-140600-000	38.60	QBB-140600-000X	43.80
.1400	.1520	.700	.035	1.090	.0463	.1875	2.0	QBB-140700-000	38.60	QBB-140700-000X	43.80
.1400	.1520	.750	.035	1.090	.0463	.1875	2.0	QBB-140750-000	38.60	QBB-140750-000X	43.80
.1400	.1520	.800	.035	1.090	.0463	.1875	2.0	QBB-140800-000	38.60	QBB-140800-000X	43.80
.1400	.1520	.900	.035	1.090	.0463	.1875	2.0	QBB-140900-000	38.60	QBB-140900-000X	43.80
.1600	.1760	.250	.040	.590	.0663	.1875	1.5	QBB-160250-000	37.15	QBB-160250-000X	42.35
.1600	.1760	.400	.040	.590	.0663	.1875	1.5	QBB-160400-000	37.15	QBB-160400-000X	42.35
.1600	.1760	.500	.040	.590	.0663	.1875	1.5	QBB-160500-000	37.15	QBB-160500-000X	42.35
.1600	.1760	.600	.040	1.090	.0663	.1875	2.0	QBB-160600-000	37.15	QBB-160600-000X	42.35
.1600	.1760	.750	.040	1.090	.0663	.1875	2.0	QBB-160750-000	38.60	QBB-160750-000X	43.80
.1600	.1760	.900	.040	1.090	.0663	.1875	2.0	QBB-160900-000	38.60	QBB-160900-000X	43.80
.1600	.1760	1.000	.040	1.090	.0663	.1875	2.0	QBB-1601000-000	37.15	QBB-1601000-000X	42.35
.1600	.1760	1.250	.040	1.590	.0663	.1875	2.5	QBB-1601250-000	40.15	QBB-1601250-000X	45.65

*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 pgs 63 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 73 - 76

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		AlTiN Coated	
H	L2	L2	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1800	.1960	.350	.045	.853	.0550	.2500	2.0	QBB-180350-000	41.60	QBB-180350-000X	47.85
.1800	.1960	.500	.045	.853	.0550	.2500	2.0	QBB-180500-000	41.60	QBB-180500-000X	47.85
.1800	.1960	.600	.045	.853	.0550	.2500	2.0	QBB-180600-000	41.60	QBB-180600-000X	47.85
.1800	.1960	.750	.045	.853	.0550	.2500	2.0	QBB-180750-000	41.60	QBB-180750-000X	47.85
.1800	.1960	.900	.045	1.353	.0550	.2500	2.5	QBB-180900-000	43.20	QBB-180900-000X	49.80
.1800	.1960	1.000	.045	1.353	.0550	.2500	2.5	QBB-1801000-000	43.20	QBB-1801000-000X	49.80
.1800	.1960	1.250	.045	1.353	.0550	.2500	2.5	QBB-1801250-000	43.20	QBB-1801250-000X	49.80
.1800	.1960	1.500	.045	1.853	.0550	.2500	3.0	QBB-1801500-000	44.95	QBB-1801500-000X	51.50
.2000	.2160	.400	.050	.853	.0750	.2500	2.0	QBB-200400-000	41.60	QBB-200400-000X	47.85
.2000	.2160	.500	.050	.853	.0750	.2500	2.0	QBB-200500-000	41.60	QBB-200500-000X	47.85
.2000	.2160	.600	.050	.853	.0750	.2500	2.0	QBB-200600-000	41.60	QBB-200600-000X	47.85
.2000	.2160	.700	.050	.853	.0750	.2500	2.0	QBB-200700-000	41.60	QBB-200700-000X	47.85
.2000	.2160	.750	.050	.853	.0750	.2500	2.0	QBB-200750-000	41.60	QBB-200750-000X	47.85
.2000	.2160	1.000	.050	1.353	.0750	.2500	2.5	QBB-2001000-000	41.60	QBB-2001000-000X	48.25
.2000	.2160	1.300	.050	1.353	.0750	.2500	2.5	QBB-2001300-000	41.60	QBB-2001300-000X	48.25
.2300	.2500	.400	.058	.853	.0738	.3125	2.0	QBB-230400-000	53.45	QBB-230400-000X	60.95
.2300	.2500	.500	.058	.853	.0738	.3125	2.0	QBB-230500-000	53.45	QBB-230500-000X	60.95
.2300	.2500	.600	.058	.853	.0738	.3125	2.0	QBB-230600-000	53.45	QBB-230600-000X	60.95
.2300	.2500	.700	.058	.853	.0738	.3125	2.0	QBB-230700-000	53.45	QBB-230700-000X	60.95
.2300	.2500	.750	.058	.853	.0738	.3125	2.0	QBB-230750-000	53.45	QBB-230750-000X	60.95
.2300	.2500	.800	.058	1.353	.0738	.3125	2.5	QBB-230800-000	54.90	QBB-230800-000X	62.80
.2300	.2500	.900	.058	1.353	.0738	.3125	2.5	QBB-230900-000	54.90	QBB-230900-000X	62.80
.2300	.2500	1.000	.058	1.353	.0738	.3125	2.5	QBB-2301000-000	53.45	QBB-2301000-000X	61.35
.2300	.2500	1.250	.058	1.353	.0738	.3125	2.5	QBB-2301250-000	53.45	QBB-2301250-000X	61.35
.2300	.2500	1.500	.058	1.853	.0738	.3125	3.0	QBB-2301500-000	53.45	QBB-2301500-000X	61.35
.2600	.2800	.500	.065	.853	.1038	.3125	2.0	QBB-260500-000	53.45	QBB-260500-000X	60.95
.2600	.2800	.750	.065	.853	.1038	.3125	2.0	QBB-260750-000	53.45	QBB-260750-000X	60.95
.2600	.2800	1.000	.065	1.353	.1038	.3125	2.5	QBB-2601000-000	54.90	QBB-2601000-000X	62.80
.2600	.2800	1.250	.065	1.353	.1038	.3125	2.5	QBB-2601250-000	54.90	QBB-2601250-000X	62.80
.2900	.3100	.500	.073	.853	.1338	.3125	2.0	QBB-290500-000	53.45	QBB-290500-000X	60.95
.2900	.3100	.600	.073	.853	.1338	.3125	2.0	QBB-290600-000	53.45	QBB-290600-000X	60.95
.2900	.3100	.750	.073	.853	.1338	.3125	2.0	QBB-290750-000	53.45	QBB-290750-000X	60.95
.2900	.3100	.900	.073	1.353	.1338	.3125	2.5	QBB-290900-000	54.90	QBB-290900-000X	62.80
.2900	.3100	1.000	.073	1.353	.1338	.3125	2.5	QBB-2901000-000	54.90	QBB-2901000-000X	62.80
.2900	.3100	1.250	.073	1.353	.1338	.3125	2.5	QBB-2901250-000	54.90	QBB-2901250-000X	62.80
.3200	.3400	.500	.080	.853	.1325	.3750	2.0	QBB-320500-000	73.30	QBB-320500-000X	82.10
.3200	.3400	1.000	.080	1.353	.1325	.3750	2.5	QBB-3201000-000	77.55	QBB-3201000-000X	86.90
.3200	.3400	1.500	.080	1.853	.1325	.3750	3.0	QBB-3201500-000	81.40	QBB-3201500-000X	90.70

*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

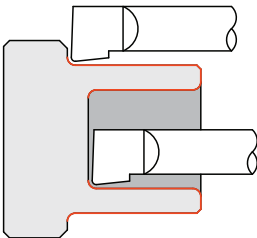
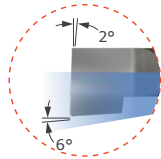
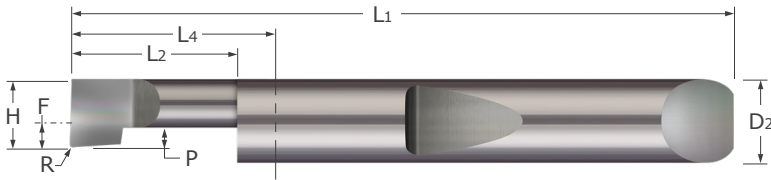
See pgs 63 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 73 - 76



Quick Change – Boring Tools
Right Hand

QBB



- 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

Head Width	Min. Bore Dia.*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H		L2 ^{+0.030"} _{-.000"}	R ^{+0.001"} _{-.001"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0500	.0550	.150	.003	.013	.590	-.0438	.1875	1.5	QBB3-050150	39.05	QBB3-050150X	44.20
.0500	.0550	.200	.003	.013	.590	-.0438	.1875	1.5	QBB3-050200	39.05	QBB3-050200X	44.20
.0500	.0550	.250	.003	.013	.590	-.0438	.1875	1.5	QBB3-050250	39.05	QBB3-050250X	44.20
.0500	.0550	.300	.003	.013	.590	-.0438	.1875	1.5	QBB3-050300	39.05	QBB3-050300X	44.20
.0500	.0550	.400	.003	.013	.590	-.0438	.1875	1.5	QBB3-050400	39.05	QBB3-050400X	44.20
.0600	.0700	.150	.003	.015	.590	-.0338	.1875	1.5	QBB3-060150	39.05	QBB3-060150X	44.20
.0600	.0700	.200	.003	.015	.590	-.0338	.1875	1.5	QBB3-060200	39.05	QBB3-060200X	44.20
.0600	.0700	.250	.003	.015	.590	-.0338	.1875	1.5	QBB3-060250	39.05	QBB3-060250X	44.20
.0600	.0700	.300	.003	.015	.590	-.0338	.1875	1.5	QBB3-060300	39.05	QBB3-060300X	44.20
.0600	.0700	.400	.003	.015	.590	-.0338	.1875	1.5	QBB3-060400	39.05	QBB3-060400X	44.20
.0600	.0700	.500	.003	.015	.590	-.0338	.1875	1.5	QBB3-060500	39.05	QBB3-060500X	44.20
.0700	.0800	.150	.003	.015	.590	-.0238	.1875	1.5	QBB3-070150	39.05	QBB3-070150X	44.20
.0700	.0800	.200	.003	.015	.590	-.0238	.1875	1.5	QBB3-070200	39.05	QBB3-070200X	44.20
.0700	.0800	.300	.003	.015	.590	-.0238	.1875	1.5	QBB3-070300	39.05	QBB3-070300X	44.20
.0800	.0900	.150	.003	.020	.590	-.0138	.1875	1.5	QBB3-080150	39.05	QBB3-080150X	44.20
.0800	.0900	.200	.003	.020	.590	-.0138	.1875	1.5	QBB3-080200	39.05	QBB3-080200X	44.20
.0800	.0900	.300	.003	.020	.590	-.0138	.1875	1.5	QBB3-080300	39.05	QBB3-080300X	44.20
.0800	.0900	.400	.003	.020	.590	-.0138	.1875	1.5	QBB3-080400	39.05	QBB3-080400X	44.20
.0800	.0900	.500	.003	.020	.590	-.0138	.1875	1.5	QBB3-080500	39.05	QBB3-080500X	44.20
.0800	.0900	.600	.003	.020	1.090	-.0138	.1875	2.0	QBB3-080600	40.60	QBB3-080600X	45.80
.0900	.1000	.150	.003	.020	.590	-.0038	.1875	1.5	QBB3-090150	39.05	QBB3-090150X	44.20
.0900	.1000	.200	.003	.020	.590	-.0038	.1875	1.5	QBB3-090200	39.05	QBB3-090200X	44.20
.0900	.1000	.300	.003	.020	.590	-.0038	.1875	1.5	QBB3-090300	39.05	QBB3-090300X	44.20
.0900	.1000	.400	.003	.020	.590	-.0038	.1875	1.5	QBB3-090400	39.05	QBB3-090400X	44.20
.0900	.1000	.500	.003	.020	.590	-.0038	.1875	1.5	QBB3-090500	39.05	QBB3-090500X	44.20

*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 pgs 63 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 73 - 76



QBB

Quick Change – Boring Tools
Right Hand (cont.)

Continued from previous page

Head Width	Min. Bore Dia.*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AITIN Coated	
H	L2	L2 ^{+ .030"} - .000"	R ^{+ .001"} - .001"	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1000	.1100	.150	.003	.025	.590	.0063	.1875	1.5	QBB3-100150	37.15	QBB3-100150X	42.35
.1000	.1100	.200	.003	.025	.590	.0063	.1875	1.5	QBB3-100200	37.15	QBB3-100200X	42.35
.1000	.1100	.300	.003	.025	.590	.0063	.1875	1.5	QBB3-100300	37.15	QBB3-100300X	42.35
.1000	.1100	.400	.003	.025	.590	.0063	.1875	1.5	QBB3-100400	37.15	QBB3-100400X	42.35
.1000	.1100	.500	.003	.025	.590	.0063	.1875	1.5	QBB3-100500	37.15	QBB3-100500X	42.35
.1000	.1100	.600	.003	.025	1.090	.0063	.1875	2.0	QBB3-100600	38.60	QBB3-100600X	43.80
.1000	.1100	.700	.003	.025	1.090	.0063	.1875	2.0	QBB3-100700	38.60	QBB3-100700X	43.80
.1000	.1100	.800	.003	.025	1.090	.0063	.1875	2.0	QBB3-100800	38.60	QBB3-100800X	43.80
.1100	.1220	.150	.003	.028	.590	.0163	.1875	1.5	QBB3-110150	37.15	QBB3-110150X	42.35
.1100	.1220	.200	.003	.028	.590	.0163	.1875	1.5	QBB3-110200	37.15	QBB3-110200X	42.35
.1100	.1220	.300	.003	.028	.590	.0163	.1875	1.5	QBB-110300	37.15	QBB-110300X	41.05
.1100	.1220	.400	.003	.028	.590	.0163	.1875	1.5	QBB3-110400	37.15	QBB3-110400X	42.35
.1100	.1220	.500	.003	.028	.590	.0163	.1875	1.5	QBB-110500	37.15	QBB-110500X	41.05
.1100	.1220	.600	.003	.028	1.090	.0163	.1875	2.0	QBB3-110600	38.60	QBB3-110600X	43.80
.1100	.1220	.700	.003	.028	1.090	.0163	.1875	2.0	QBB-110700	37.15	QBB-110700X	41.05
.1100	.1220	.800	.003	.028	1.090	.0163	.1875	2.0	QBB3-110800	37.15	QBB3-110800X	42.35
.1200	.1320	.250	.003	.030	.590	.0263	.1875	1.5	QBB-120250	37.15	QBB-120250X	41.05
.1200	.1320	.250	.005	.030	.590	.0263	.1875	1.5	QBB5-120250	37.15	QBB5-120250X	42.35
.1200	.1320	.350	.003	.030	.590	.0263	.1875	1.5	QBB-120350	37.15	QBB-120350X	41.05
.1200	.1320	.350	.005	.030	.590	.0263	.1875	1.5	QBB5-120350	37.15	QBB5-120350X	42.35
.1200	.1320	.500	.003	.030	.590	.0263	.1875	1.5	QBB-120500	37.15	QBB-120500X	41.05
.1200	.1320	.500	.005	.030	.590	.0263	.1875	1.5	QBB5-120500	37.15	QBB5-120500X	42.35
.1200	.1320	.600	.003	.030	1.090	.0263	.1875	2.0	QBB3-120600	38.60	QBB3-120600X	43.80
.1200	.1320	.600	.005	.030	1.090	.0263	.1875	2.0	QBB5-120600	38.60	QBB5-120600X	43.80
.1200	.1320	.700	.003	.030	1.090	.0263	.1875	2.0	QBB-120700	37.15	QBB-120700X	41.05
.1200	.1320	.700	.005	.030	1.090	.0263	.1875	2.0	QBB5-120700	38.60	QBB5-120700X	43.80
.1200	.1320	.800	.003	.030	1.090	.0263	.1875	2.0	QBB-120800	37.15	QBB-120800X	41.05
.1200	.1320	.800	.005	.030	1.090	.0263	.1875	2.0	QBB5-120800	38.60	QBB5-120800X	43.80
.1400	.1520	.250	.003	.035	.590	.0463	.1875	1.5	QBB3-140250	37.15	QBB3-140250X	42.35
.1400	.1520	.250	.005	.035	.590	.0463	.1875	1.5	QBB5-140250	37.15	QBB5-140250X	42.35
.1400	.1520	.400	.003	.035	.590	.0463	.1875	1.5	QBB-140400	37.15	QBB-140400X	41.05
.1400	.1520	.400	.005	.035	.590	.0463	.1875	1.5	QBB5-140400	37.15	QBB5-140400X	42.35
.1400	.1520	.500	.003	.035	.590	.0463	.1875	1.5	QBB3-140500	37.15	QBB3-140500X	42.35
.1400	.1520	.500	.005	.035	.590	.0463	.1875	1.5	QBB5-140500	37.15	QBB5-140500X	42.35
.1400	.1520	.600	.003	.035	1.090	.0463	.1875	2.0	QBB-140600	37.15	QBB-140600X	41.05
.1400	.1520	.600	.005	.035	1.090	.0463	.1875	2.0	QBB5-140600	38.60	QBB5-140600X	43.80
.1400	.1520	.700	.003	.035	1.090	.0463	.1875	2.0	QBB3-140700	38.60	QBB3-140700X	43.80
.1400	.1520	.700	.005	.035	1.090	.0463	.1875	2.0	QBB5-140700	38.60	QBB5-140700X	43.80
.1400	.1520	.750	.003	.035	1.090	.0463	.1875	2.0	QBB3-140750	38.60	QBB3-140750X	43.80
.1400	.1520	.750	.005	.035	1.090	.0463	.1875	2.0	QBB5-140750	38.60	QBB5-140750X	43.80
.1400	.1520	.800	.003	.035	1.090	.0463	.1875	2.0	QBB-140800	37.15	QBB-140800X	41.05
.1400	.1520	.800	.005	.035	1.090	.0463	.1875	2.0	QBB5-140800	38.60	QBB5-140800X	43.80
.1400	.1520	.900	.003	.035	1.090	.0463	.1875	2.0	QBB3-140900	38.60	QBB3-140900X	43.80
.1400	.1520	.900	.005	.035	1.090	.0463	.1875	2.0	QBB5-140900	38.60	QBB5-140900X	43.80

*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 pgs 63 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 73 - 76

Quick Change – Boring Tools
Right Hand (cont.)

QBB

Continued from previous page

Head Width	Min. Bore Dia.*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	L2	L2 ^{+ .030"} _{– .000"}	R ^{+ .001"} _{– .001"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1600	.1760	.250	.003	.040	.590	.0663	.1875	1.5	QBB3-160250	37.15	QBB3-160250X	42.35
.1600	.1760	.250	.005	.040	.590	.0663	.1875	1.5	QBB5-160250	37.15	QBB5-160250X	42.35
.1600	.1760	.400	.003	.040	.590	.0663	.1875	1.5	QBB-160400	37.15	QBB-160400X	41.05
.1600	.1760	.400	.005	.040	.590	.0663	.1875	1.5	QBB5-160400	37.15	QBB5-160400X	42.35
.1600	.1760	.500	.003	.040	.590	.0663	.1875	1.5	QBB3-160500	37.15	QBB3-160500X	42.35
.1600	.1760	.500	.005	.040	.590	.0663	.1875	1.5	QBB5-160500	37.15	QBB5-160500X	42.35
.1600	.1760	.600	.003	.040	1.090	.0663	.1875	2.0	QBB-160600	37.15	QBB-160600X	41.05
.1600	.1760	.600	.005	.040	1.090	.0663	.1875	2.0	QBB5-160600	38.60	QBB5-160600X	43.80
.1600	.1760	.700	.003	.040	1.090	.0663	.1875	2.0	QBB3-160700	38.60	QBB3-160700X	43.80
.1600	.1760	.700	.005	.040	1.090	.0663	.1875	2.0	QBB5-160700	38.60	QBB5-160700X	43.80
.1600	.1760	.750	.003	.040	1.090	.0663	.1875	2.0	QBB-160750	37.15	QBB-160750X	41.05
.1600	.1760	.750	.005	.040	1.090	.0663	.1875	2.0	QBB5-160750	38.60	QBB5-160750X	43.80
.1600	.1760	.800	.003	.040	1.090	.0663	.1875	2.0	QBB3-160800	38.60	QBB3-160800X	43.80
.1600	.1760	.800	.005	.040	1.090	.0663	.1875	2.0	QBB5-160800	38.60	QBB5-160800X	43.80
.1600	.1760	.900	.003	.040	1.090	.0663	.1875	2.0	QBB3-160900	38.60	QBB3-160900X	43.80
.1600	.1760	.900	.005	.040	1.090	.0663	.1875	2.0	QBB5-160900	38.60	QBB5-160900X	43.80
.1600	.1760	1.000	.003	.040	1.090	.0663	.1875	2.0	QBB-1601000	37.15	QBB-1601000X	41.05
.1600	.1760	1.000	.005	.040	1.090	.0663	.1875	2.0	QBB5-1601000	38.60	QBB5-1601000X	43.80
.1600	.1760	1.250	.003	.040	1.590	.0663	.1875	2.5	QBB3-1601250	40.15	QBB3-1601250X	45.65
.1800	.1960	.350	.005	.045	.853	.0550	.2500	2.0	QBB5-180350	38.60	QBB5-180350X	44.85
.1800	.1960	.500	.005	.045	.853	.0550	.2500	2.0	QBB-180500	40.05	QBB-180500X	46.20
.1800	.1960	.500	.008	.045	.853	.0550	.2500	2.0	QBB8-180500	40.05	QBB8-180500X	46.20
.1800	.1960	.600	.005	.045	.853	.0550	.2500	2.0	QBB5-180600	40.05	QBB5-180600X	46.20
.1800	.1960	.750	.005	.045	.853	.0550	.2500	2.0	QBB-180750	40.05	QBB-180750X	46.20
.1800	.1960	.750	.008	.045	.853	.0550	.2500	2.0	QBB8-180750	40.05	QBB8-180750X	46.20
.1800	.1960	.900	.005	.045	1.353	.0550	.2500	2.5	QBB5-180900	41.50	QBB5-180900X	48.15
.1800	.1960	1.000	.005	.045	1.353	.0550	.2500	2.5	QBB-1801000	40.05	QBB-1801000X	46.60
.1800	.1960	1.000	.008	.045	1.353	.0550	.2500	2.5	QBB8-1801000	41.50	QBB8-1801000X	48.15
.1800	.1960	1.250	.005	.045	1.353	.0550	.2500	2.5	QBB-1801250	40.05	QBB-1801250X	46.60
.1800	.1960	1.500	.005	.045	1.853	.0550	.2500	3.0	QBB-1801500	47.00	QBB-1801500X	53.65
.2000	.2160	.400	.005	.050	.853	.0750	.2500	2.0	QBB5-200400	40.05	QBB5-200400X	46.20
.2000	.2160	.500	.005	.050	.853	.0750	.2500	2.0	QBB-200500	40.05	QBB-200500X	46.20
.2000	.2160	.500	.008	.050	.853	.0750	.2500	2.0	QBB8-200500	40.05	QBB8-200500X	46.20
.2000	.2160	.600	.005	.050	.853	.0750	.2500	2.0	QBB5-200600	40.05	QBB5-200600X	46.20
.2000	.2160	.700	.005	.050	.853	.0750	.2500	2.0	QBB5-200700	40.05	QBB5-200700X	46.20
.2000	.2160	.750	.005	.050	.853	.0750	.2500	2.0	QBB-200750	40.05	QBB-200750X	46.20
.2000	.2160	.750	.008	.050	.853	.0750	.2500	2.0	QBB8-200750	40.05	QBB8-200750X	46.20
.2000	.2160	.800	.005	.050	1.353	.0750	.2500	2.5	QBB5-200800	41.50	QBB5-200800X	48.15
.2000	.2160	.900	.005	.050	1.353	.0750	.2500	2.5	QBB5-200900	41.50	QBB5-200900X	48.15
.2000	.2160	1.000	.005	.050	1.353	.0750	.2500	2.5	QBB-2001000	40.05	QBB-2001000X	46.60
.2000	.2160	1.000	.008	.050	1.353	.0750	.2500	2.5	QBB8-2001000	41.50	QBB8-2001000X	48.15
.2000	.2160	1.100	.005	.050	1.353	.0750	.2500	2.5	QBB5-2001100	41.50	QBB5-2001100X	48.15
.2000	.2160	1.200	.005	.050	1.353	.0750	.2500	2.5	QBB-2001200	40.05	QBB-2001200X	46.60
.2000	.2160	1.300	.005	.050	1.853	.0750	.2500	3.0	QBB5-2001300	41.50	QBB5-2001300X	48.15
.2000	.2160	1.500	.005	.050	1.853	.0750	.2500	3.0	QBB-2001500	47.00	QBB-2001500X	53.65

*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 pgs 63 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 73 - 76



Quick Change – Boring Tools

QBB

Quick Change – Boring Tools
Right Hand (cont.)

Continued from previous page

	Head Width	Min. Bore Dia.*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
	H	L2	$\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} R \text{ } +.001" \\ -.001" \end{smallmatrix}$	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
NEW	.2300	.2500	.400	.005	.058	.853	.0738	.3125	2.0	QBB5-230400	53.75	QBB5-230400X	61.25
	.2300	.2500	.500	.005	.058	.853	.0738	.3125	2.0	QBB-230500	53.75	QBB-230500X	61.25
	.2300	.2500	.500	.008	.058	.853	.0738	.3125	2.0	QBB8-230500	53.75	QBB8-230500X	61.25
	.2300	.2500	.600	.005	.058	.853	.0738	.3125	2.0	QBB5-230600	53.75	QBB5-230600X	61.25
NEW	.2300	.2500	.700	.005	.058	.853	.0738	.3125	2.0	QBB5-230700	53.75	QBB5-230700X	61.25
	.2300	.2500	.750	.005	.058	.853	.0738	.3125	2.0	QBB-230750	53.75	QBB-230750X	61.25
	.2300	.2500	.750	.008	.058	.853	.0738	.3125	2.0	QBB8-230750	53.75	QBB8-230750X	61.25
	.2300	.2500	.800	.005	.058	1.353	.0738	.3125	2.5	QBB5-230800	55.10	QBB5-230800X	63.10
NEW	.2300	.2500	.900	.005	.058	1.353	.0738	.3125	2.5	QBB5-230900	55.10	QBB5-230900X	63.10
	.2300	.2500	1.000	.005	.058	1.353	.0738	.3125	2.5	QBB-2301000	53.75	QBB-2301000X	61.65
	.2300	.2500	1.000	.008	.058	1.353	.0738	.3125	2.5	QBB8-2301000	55.10	QBB8-2301000X	63.10
	.2300	.2500	1.100	.005	.058	1.353	.0738	.3125	2.5	QBB5-2301100	55.10	QBB5-2301100X	63.10
NEW	.2300	.2500	1.150	.005	.058	1.353	.0738	.3125	2.5	QBB5-2301150	55.10	QBB5-2301150X	63.10
	.2300	.2500	1.200	.005	.058	1.353	.0738	.3125	2.5	QBB5-2301200	55.10	QBB5-2301200X	63.10
	.2300	.2500	1.250	.005	.058	1.353	.0738	.3125	2.5	QBB-2301250	53.75	QBB-2301250X	61.65
	.2300	.2500	1.400	.005	.058	1.853	.0738	.3125	3.0	QBB5-2301400	61.85	QBB5-2301400X	69.75
NEW	.2300	.2500	1.500	.005	.058	1.853	.0738	.3125	3.0	QBB-2301500	61.85	QBB-2301500X	69.75
	.2300	.2500	1.600	.005	.058	1.853	.0738	.3125	3.0	QBB-2301600	61.85	QBB-2301600X	69.75
	.2300	.2500	1.750	.005	.058	1.853	.0738	.3125	3.0	QBB5-2301750	61.85	QBB5-2301750X	69.75
	.2600	.2800	.400	.005	.065	.853	.1038	.3125	2.0	QBB5-260400	53.75	QBB5-260400X	61.25
NEW	.2600	.2800	.500	.005	.065	.853	.1038	.3125	2.0	QBB5-260500	53.75	QBB5-260500X	61.25
	.2600	.2800	.600	.005	.065	.853	.1038	.3125	2.0	QBB5-260600	53.75	QBB5-260600X	61.25
	.2600	.2800	.700	.005	.065	.853	.1038	.3125	2.0	QBB5-260700	53.75	QBB5-260700X	61.25
	.2600	.2800	.750	.005	.065	.853	.1038	.3125	2.0	QBB5-260750	53.75	QBB5-260750X	61.25
NEW	.2600	.2800	.750	.008	.065	.853	.1038	.3125	2.0	QBB8-260750	53.75	QBB8-260750X	61.25
	.2600	.2800	.800	.005	.065	1.353	.1038	.3125	2.5	QBB5-260800	55.10	QBB5-260800X	63.10
	.2600	.2800	.900	.005	.065	1.353	.1038	.3125	2.5	QBB5-260900	55.10	QBB5-260900X	63.10
	.2600	.2800	1.000	.005	.065	1.353	.1038	.3125	2.5	QBB5-2601000	55.10	QBB5-2601000X	63.10
NEW	.2600	.2800	1.000	.008	.065	1.353	.1038	.3125	2.5	QBB8-2601000	55.10	QBB8-2601000X	63.10
	.2600	.2800	1.250	.005	.065	1.353	.1038	.3125	2.5	QBB5-2601250	55.10	QBB5-2601250X	63.10
	.2600	.2800	1.250	.008	.065	1.353	.1038	.3125	2.5	QBB8-2601250	55.10	QBB8-2601250X	63.10
	.2900	.3100	.500	.005	.073	.853	.1338	.3125	2.0	QBB-290500	53.75	QBB-290500X	61.25
NEW	.2900	.3100	.600	.005	.073	.853	.1338	.3125	2.0	QBB5-290600	53.75	QBB5-290600X	61.25
	.2900	.3100	.750	.005	.073	.853	.1338	.3125	2.0	QBB-290750	53.75	QBB-290750X	61.25
	.2900	.3100	.750	.008	.073	.853	.1338	.3125	2.0	QBB8-290750	53.75	QBB8-290750X	61.25
	.2900	.3100	.900	.005	.073	1.353	.1338	.3125	2.5	QBB5-290900	55.10	QBB5-290900X	63.10
NEW	.2900	.3100	1.000	.005	.073	1.353	.1338	.3125	2.5	QBB-2901000	53.75	QBB-2901000X	61.65
	.2900	.3100	1.000	.008	.073	1.353	.1338	.3125	2.5	QBB8-2901000	55.10	QBB8-2901000X	63.10
	.2900	.3100	1.100	.005	.073	1.353	.1338	.3125	2.5	QBB5-2901100	55.10	QBB5-2901100X	63.10
	.2900	.3100	1.250	.005	.073	1.353	.1338	.3125	2.5	QBB-2901250	53.75	QBB-2901250X	61.65
NEW	.2900	.3100	1.250	.008	.073	1.353	.1338	.3125	2.5	QBB8-2901250	55.10	QBB8-2901250X	63.10
	.2900	.3100	1.350	.005	.073	1.853	.1338	.3125	3.0	QBB5-2901350	61.85	QBB5-2901350X	69.75
	.2900	.3100	1.500	.005	.073	1.853	.1338	.3125	3.0	QBB-2901500	61.85	QBB-2901500X	69.75
	.2900	.3100	1.600	.005	.073	1.853	.1338	.3125	3.0	QBB5-2901600	61.85	QBB5-2901600X	69.75
NEW	.2900	.3100	1.750	.005	.073	1.853	.1338	.3125	3.0	QBB-2901750	61.85	QBB-2901750X	69.75

*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 pgs 63 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 73 - 76



Quick Change – Boring Tools

QBB

Right Hand (cont.)

Continued from previous page

Head Width	Min. Bore Dia.*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	L2	^{+ .030"} _{– .000"}	R	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.3200	.3400	.500	.005	.080	.853	.1325	.3750	2.0	QBB-320500	73.30	QBB-320500X	81.55
.3200	.3400	.600	.005	.080	.853	.1325	.3750	2.0	QBB5-320600	73.30	QBB5-320600X	82.10
.3200	.3400	.750	.005	.080	.853	.1325	.3750	2.0	QBB-320750	73.30	QBB-320750X	81.55
.3200	.3400	.750	.008	.080	.853	.1325	.3750	2.0	QBB8-320750	73.30	QBB8-320750X	82.10
.3200	.3400	.900	.005	.080	1.353	.1325	.3750	2.5	QBB5-320900	75.15	QBB5-320900X	84.50
.3200	.3400	1.000	.005	.080	1.353	.1325	.3750	2.5	QBB-3201000	73.30	QBB-3201000X	82.60
.3200	.3400	1.000	.008	.080	1.353	.1325	.3750	2.5	QBB8-3201000	75.15	QBB8-3201000X	84.50
.3200	.3400	1.100	.005	.080	1.353	.1325	.3750	2.5	QBB5-3201100	75.15	QBB5-3201100X	84.50
.3200	.3400	1.250	.005	.080	1.353	.1325	.3750	2.5	QBB-3201250	73.30	QBB-3201250X	82.60
.3200	.3400	1.250	.008	.080	1.353	.1325	.3750	2.5	QBB8-3201250	75.15	QBB8-3201250X	84.50
.3200	.3400	1.500	.005	.080	1.853	.1325	.3750	3.0	QBB-3201500	81.40	QBB-3201500X	90.70
.3200	.3400	1.600	.005	.080	1.853	.1325	.3750	3.0	QBB5-3201600	81.40	QBB5-3201600X	90.70
.3200	.3400	1.800	.005	.080	1.853	.1325	.3750	3.0	QBB-3201800	81.40	QBB-3201800X	90.70
.3200	.3400	2.000	.005	.080	2.353	.1325	.3750	3.5	QBB-3202000	88.75	QBB-3202000X	98.80
.3200	.3400	2.500	.005	.080	2.853	.1325	.3750	4.0	QBB-3202500	93.75	QBB-3202500X	103.80
.3600	.3800	.500	.005	.090	.853	.1725	.3750	2.0	QBB5-360500	73.30	QBB5-360500X	82.10
.3600	.3800	.750	.005	.090	.853	.1725	.3750	2.0	QBB-360750	73.30	QBB-360750X	81.55
.3600	.3800	.750	.008	.090	.853	.1725	.3750	2.0	QBB8-360750	73.30	QBB8-360750X	82.10
.3600	.3800	.900	.005	.090	1.353	.1725	.3750	2.5	QBB5-360900	73.30	QBB5-360900X	82.60
.3600	.3800	1.000	.005	.090	1.353	.1725	.3750	2.5	QBB-3601000	73.30	QBB-3601000X	82.60
.3600	.3800	1.000	.008	.090	1.353	.1725	.3750	2.5	QBB8-3601000	73.30	QBB8-3601000X	82.60
.3600	.3800	1.250	.005	.090	1.353	.1725	.3750	2.5	QBB-3601250	73.30	QBB-3601250X	82.60
.3600	.3800	1.250	.008	.090	1.353	.1725	.3750	2.5	QBB8-3601250	73.30	QBB8-3601250X	82.60
.3600	.3800	1.500	.005	.090	1.853	.1725	.3750	3.0	QBB-3601500	81.40	QBB-3601500X	90.70
.3600	.3800	1.800	.005	.090	1.853	.1725	.3750	3.0	QBB-3601800	81.40	QBB-3601800X	90.70
.3600	.3800	2.000	.005	.090	2.353	.1725	.3750	3.5	QBB-3602000	88.75	QBB-3602000X	98.80
.3600	.3800	2.500	.005	.090	2.853	.1725	.3750	4.0	QBB-3602500	93.75	QBB-3602500X	103.80
.4100	.4300	.750	.005	.104	1.040	.1600	.5000	2.5	QBB5-410750	102.15	QBB5-410750X	114.90
.4100	.4300	1.000	.005	.104	1.040	.1600	.5000	2.5	QBB5-4101000	102.15	QBB5-4101000X	114.90
.4100	.4300	1.250	.005	.104	1.540	.1600	.5000	3.0	QBB5-4101250	104.75	QBB5-4101250X	117.50
.4100	.4300	1.500	.005	.104	1.540	.1600	.5000	3.0	QBB5-4101500	104.75	QBB5-4101500X	117.50
.4600	.4800	1.000	.005	.115	1.040	.2100	.5000	2.5	QBB-4601000	102.15	QBB-4601000X	114.90
.4600	.4800	1.250	.005	.115	1.540	.2100	.5000	3.0	QBB-4601250	102.15	QBB-4601250X	114.90
.4600	.4800	1.500	.005	.115	1.540	.2100	.5000	3.0	QBB-4601500	102.15	QBB-4601500X	114.90
.4600	.4800	2.000	.005	.115	2.040	.2100	.5000	3.5	QBB-4602000	112.10	QBB-4602000X	125.70
.4600	.4800	2.500	.005	.115	2.540	.2100	.5000	4.0	QBB-4602500	118.55	QBB-4602500X	132.25
.4600	.4800	3.000	.005	.115	3.040	.2100	.5000	4.5	QBB-4603000	124.25	QBB-4603000X	139.00
.4900	.5100	1.000	.005	.123	1.040	.2400	.5000	2.5	QBB-4901000	102.15	QBB-4901000X	114.90
.4900	.5100	1.250	.005	.123	1.540	.2400	.5000	3.0	QBB-4901250	102.15	QBB-4901250X	114.90
.4900	.5100	1.500	.005	.123	1.540	.2400	.5000	3.0	QBB-4901500	102.15	QBB-4901500X	114.90
.4900	.5100	2.000	.005	.123	2.040	.2400	.5000	3.5	QBB-4902000	112.10	QBB-4902000X	125.70
.4900	.5100	2.500	.005	.123	2.540	.2400	.5000	4.0	QBB-4902500	118.55	QBB-4902500X	132.25
.4900	.5100	3.000	.005	.123	3.040	.2400	.5000	4.5	QBB-4903000	124.25	QBB-4903000X	139.00

*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

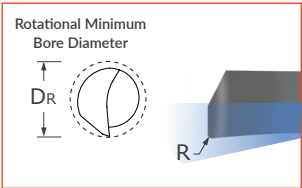
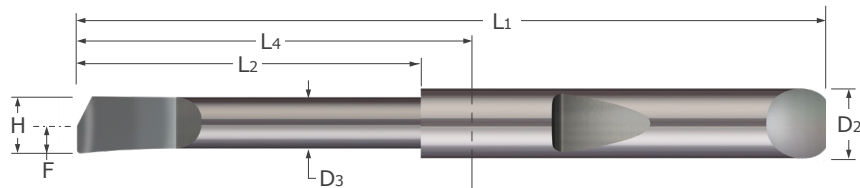
See pgs 63 for miniature sizes

For better chip control and freer cutting action, see Helical Back Rake and Top Rake Chipbreaker tools on pgs 73 - 76

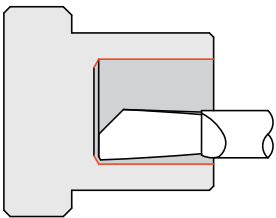


QHBBC

Quick Change – 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
- 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	Dr	L2 ^{+ .050"} _{-.000"}	R ^{+ .003"} _{-.000"}	L4	D3 ^{+ .000"} _{-.002"}	F	D2 (h6)	L1	Tool #	USD\$
.0275	.030	.187	.004	.590	.025	.0150	.1875	1.5	QHBBC-030187-004	37.25
.0275	.030	.250	.004	.590	.025	.0150	.1875	1.5	QHBBC-030250-004	37.25
.0325	.035	.125	.004	.590	.030	.0175	.1875	1.5	QHBBC-035125-004	37.25
.0325	.035	.187	.004	.590	.030	.0175	.1875	1.5	QHBBC-035187-004	37.25
.0325	.035	.250	.004	.590	.030	.0175	.1875	1.5	QHBBC-035250-004	37.25
.0375	.040	.187	.004	.590	.035	.0200	.1875	1.5	QHBBC-040187-004	37.25
.0375	.040	.250	.004	.590	.035	.0200	.1875	1.5	QHBBC-040250-004	37.25
.0375	.040	.312	.004	.590	.035	.0200	.1875	1.5	QHBBC-040312-004	37.25
.0450	.050	.187	.004	.590	.040	.0250	.1875	1.5	QHBBC-050187-004	37.25
.0450	.050	.312	.004	.590	.040	.0250	.1875	1.5	QHBBC-050312-004	37.25
.0450	.050	.375	.004	.590	.040	.0250	.1875	1.5	QHBBC-050375-004	37.25
.0550	.060	.250	.004	.590	.050	.0300	.1875	1.5	QHBBC-060250-004	37.25
.0550	.060	.375	.004	.590	.050	.0300	.1875	1.5	QHBBC-060375-004	37.25
.0550	.060	.500	.004	.590	.050	.0300	.1875	1.5	QHBBC-060500-004	37.25
.0650	.070	.312	.004	.590	.060	.0350	.1875	1.5	QHBBC-070312-004	37.25
.0650	.070	.437	.004	.590	.060	.0350	.1875	1.5	QHBBC-070437-004	37.25
.0650	.070	.562	.004	1.090	.060	.0350	.1875	2.0	QHBBC-070562-004	37.25
.0750	.080	.375	.004	.590	.070	.0400	.1875	1.5	QHBBC-080375-004	37.25
.0750	.080	.500	.004	.590	.070	.0400	.1875	1.5	QHBBC-080500-004	37.25
.0750	.080	.625	.004	1.090	.070	.0400	.1875	2.0	QHBBC-080625-004	37.25
.0850	.090	.375	.004	.590	.080	.0450	.1875	1.5	QHBBC-090375-004	37.25
.0850	.090	.500	.004	.590	.080	.0450	.1875	1.5	QHBBC-090500-004	37.25
.0850	.090	.687	.004	1.090	.080	.0450	.1875	2.0	QHBBC-090687-004	37.25
.0950	.100	.437	.004	.590	.090	.0500	.1875	1.5	QHBBC-100437-004	37.25
.0950	.100	.562	.004	1.090	.090	.0500	.1875	2.0	QHBBC-100562-004	37.25
.0950	.100	.750	.004	1.090	.090	.0500	.1875	2.0	QHBBC-100750-004	37.25
.1100	.120	.500	.004	.590	.100	.0600	.1875	1.5	QHBBC-120500-004	37.25
.1100	.120	.625	.004	1.090	.100	.0600	.1875	2.0	QHBBC-120625-004	37.25
.1100	.120	1.000	.004	1.090	.100	.0600	.1875	2.0	QHBBC-1201000-004	37.25

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See pgs 16-34 for quick change holder options

Quick Change – Boring Tools
Helical Back Rake – Corner Radius (cont.)

QHBBC

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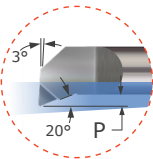
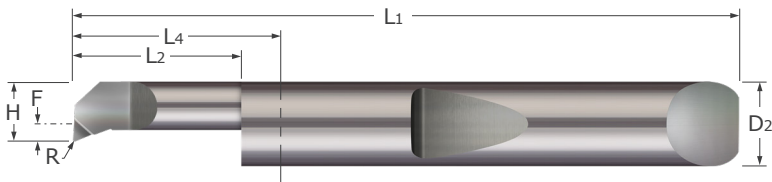
Head Width	Rotational Min. Bore Diameter	Maximum Bore Depth	Radius	Length From Holder	Neck Diameter	Centerline Offset	Shank Diameter	Overall Length	Uncoated	
H	Dr	L2 ^{+.050"} _{–.000"}	R ^{+.003"} _{–.000"}	L4	D3 ^{+.000"} _{–.002"}	F	D2 (h6)	L1	Tool #	USD\$
.1225	.135	.562	.004	1.090	.110	.0675	.1875	2.0	QHBBC-135562-004	37.25
.1225	.135	.750	.004	1.090	.110	.0675	.1875	2.0	QHBBC-135750-004	37.25
.1225	.135	1.000	.004	1.090	.110	.0675	.1875	2.0	QHBBC-1351000-004	37.25
.1400	.150	.625	.004	1.090	.130	.0750	.1875	2.0	QHBBC-1500625-004	37.25
.1400	.150	1.000	.004	1.090	.130	.0750	.1875	2.0	QHBBC-1501000-004	37.25
.1400	.150	1.250	.004	1.590	.130	.0750	.1875	2.5	QHBBC-1501250-004	37.25
.1700	.180	1.000	.004	1.090	.160	.0900	.1875	2.0	QHBBC-1801000-004	37.25
.1700	.180	1.250	.004	1.590	.160	.0900	.1875	2.5	QHBBC-1801250-004	37.25
.1700	.180	1.500	.004	1.590	.160	.0900	.1875	2.5	QHBBC-1801500-004	37.25
.1975	.210	1.000	.004	1.353	.185	.1050	.2500	2.5	QHBBC-2101000-004	42.15
.1975	.210	1.250	.004	1.353	.185	.1050	.2500	2.5	QHBBC-2101250-004	42.15
.1975	.210	1.500	.004	1.853	.185	.1050	.2500	3.0	QHBBC-2101500-004	42.15
.2275	.240	1.000	.004	1.353	.215	.1200	.2500	2.5	QHBBC-2401000-004	42.15
.2275	.240	1.500	.004	1.853	.215	.1200	.2500	3.0	QHBBC-2401500-004	42.15
.2275	.240	1.750	.004	1.853	.215	.1200	.2500	3.0	QHBBC-2401750-004	42.15
.2750	.300	1.000	.004	1.353	.250	.1500	.3125	2.5	QHBBC-3001000-004	55.55
.2750	.300	1.500	.004	1.853	.250	.1500	.3125	3.0	QHBBC-3001500-004	55.55
.2750	.300	1.750	.004	1.853	.250	.1500	.3125	3.0	QHBBC-3001750-004	55.55
.3400	.360	1.000	.004	1.353	.320	.1800	.3750	2.5	QHBBC-3601000-004	75.55
.3400	.360	1.500	.004	1.853	.320	.1800	.3750	3.0	QHBBC-3601500-004	75.55
.3400	.360	2.000	.004	2.353	.320	.1800	.3750	3.5	QHBBC-3602000-004	94.35
.3400	.360	2.500	.004	2.853	.320	.1800	.3750	4.0	QHBBC-3602500-004	94.35

See pgs 16-34 for quick change holder options

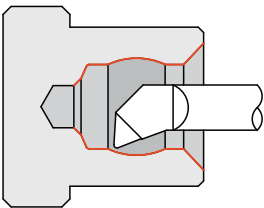


QBT

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



Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H		L2 +.030"-.000"	R +.0005"-.0005"	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0500	.0550	.150	.002	.005	.590	-.0438	.1875	1.5	QBT-050150	37.35	QBT-050150X	42.55
.0500	.0550	.200	.002	.005	.590	-.0438	.1875	1.5	QBT-050200	37.35	QBT-050200X	41.35
.0500	.0550	.300	.002	.005	.590	-.0438	.1875	1.5	QBT-050300	37.35	QBT-050300X	42.55
.0500	.0550	.400	.002	.005	.590	-.0438	.1875	1.5	QBT-050400	37.35	QBT-050400X	41.35
.0500	.0550	.500	.002	.005	.590	-.0438	.1875	1.5	QBT-050500	37.35	QBT-050500X	41.35
.0600	.0700	.150	.002	.010	.590	-.0338	.1875	1.5	QBT-060150	37.35	QBT-060150X	42.55
.0600	.0700	.200	.002	.010	.590	-.0338	.1875	1.5	QBT-060200	37.35	QBT-060200X	41.35
.0600	.0700	.300	.002	.010	.590	-.0338	.1875	1.5	QBT-060300	37.35	QBT-060300X	42.55
.0600	.0700	.400	.002	.010	.590	-.0338	.1875	1.5	QBT-060400	37.35	QBT-060400X	41.35
.0600	.0700	.500	.002	.010	.590	-.0338	.1875	1.5	QBT-060500	37.35	QBT-060500X	41.35
.0700	.0800	.150	.004	.015	.590	-.0238	.1875	1.5	QBT-070150	37.35	QBT-070150X	42.55
.0700	.0800	.200	.004	.015	.590	-.0238	.1875	1.5	QBT-070200	37.35	QBT-070200X	41.35
.0700	.0800	.300	.004	.015	.590	-.0238	.1875	1.5	QBT-070300	37.35	QBT-070300X	42.55
.0700	.0800	.400	.004	.015	.590	-.0238	.1875	1.5	QBT-070400	37.35	QBT-070400X	41.35
.0700	.0800	.600	.004	.015	1.090	-.0238	.1875	2.0	QBT-070600	37.35	QBT-070600X	41.35
.0800	.0900	.150	.004	.015	.590	-.0138	.1875	1.5	QBT4-080150	37.35	QBT4-080150X	42.55
.0800	.0900	.200	.004	.015	.590	-.0138	.1875	1.5	QBT4-080200	37.35	QBT4-080200X	42.55
.0800	.0900	.300	.004	.015	.590	-.0138	.1875	1.5	QBT4-080300	37.35	QBT4-080300X	42.55
.0800	.0900	.400	.004	.015	.590	-.0138	.1875	1.5	QBT4-080400	37.35	QBT4-080400X	42.55
.0800	.0900	.500	.004	.015	.590	-.0138	.1875	1.5	QBT4-080500	37.35	QBT4-080500X	42.55
.0800	.0900	.600	.004	.015	1.090	-.0138	.1875	2.0	QBT4-080600	37.35	QBT4-080600X	42.55
.0900	.1000	.200	.004	.015	.590	-.0038	.1875	1.5	QBT4-090200	37.35	QBT4-090200X	42.55
.0900	.1000	.300	.004	.015	.590	-.0038	.1875	1.5	QBT4-090300	37.35	QBT4-090300X	42.55
.0900	.1000	.400	.004	.015	.590	-.0038	.1875	1.5	QBT4-090400	37.35	QBT4-090400X	42.55
.0900	.1000	.500	.004	.015	.590	-.0038	.1875	1.5	QBT4-090500	37.35	QBT4-090500X	42.55
.1000	.1100	.200	.004	.015	.590	.0063	.1875	1.5	QBT4-100200	37.35	QBT4-100200X	42.55
.1000	.1100	.300	.004	.015	.590	.0063	.1875	1.5	QBT4-100300	37.35	QBT4-100300X	42.55
.1000	.1100	.400	.004	.015	.590	.0063	.1875	1.5	QBT4-100400	37.35	QBT4-100400X	42.55
.1000	.1100	.500	.004	.015	.590	.0063	.1875	1.5	QBT4-100500	37.35	QBT4-100500X	42.55
.1000	.1100	.600	.004	.015	1.090	.0063	.1875	2.0	QBT4-100600	37.35	QBT4-100600X	42.55
.1000	.1100	.700	.004	.015	1.090	.0063	.1875	2.0	QBT4-100700	37.35	QBT4-100700X	42.55
.1100	.1220	.250	.004	.020	.590	.0163	.1875	1.5	QBT-110250	37.35	QBT-110250X	41.35
.1100	.1220	.500	.004	.020	.590	.0163	.1875	1.5	QBT-110500	37.35	QBT-110500X	41.35
.1100	.1220	.750	.004	.020	1.090	.0163	.1875	2.0	QBT-110750	37.35	QBT-110750X	41.35

*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 – Boring Tools

QBT

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	
H	L2	L2 +.030" - .000"	R +.0005" - .0005"	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1200	.1320	.250	.004	.020	.590	.0263	.1875	1.5	QBT-120250	37.35	QBT-120250X	41.35
.1200	.1320	.375	.004	.020	.590	.0263	.1875	1.5	QBT4-120375	37.35	QBT4-120375X	41.35
.1200	.1320	.500	.004	.020	.590	.0263	.1875	1.5	QBT-120500	37.35	QBT-120500X	41.35
.1200	.1320	.750	.004	.020	1.090	.0263	.1875	2.0	QBT-120750	37.35	QBT-120750X	41.35
.1200	.1320	1.000	.004	.020	1.090	.0263	.1875	2.0	QBT-1201000	37.35	QBT-1201000X	41.35
.1200	.1320	1.250	.004	.020	1.590	.0263	.1875	2.5	QBT-1201250	40.90	QBT-1201250X	46.40
.1400	.1520	.250	.004	.025	.590	.0463	.1875	1.5	QBT4-140250	37.35	QBT4-140250X	41.35
.1400	.1520	.375	.004	.025	.590	.0463	.1875	1.5	QBT4-140375	37.35	QBT4-140375X	41.35
.1400	.1520	.500	.004	.025	.590	.0463	.1875	1.5	QBT4-140500	37.35	QBT4-140500X	41.35
.1400	.1520	.750	.004	.025	1.090	.0463	.1875	2.0	QBT-140750	37.35	QBT-140750X	42.55
.1400	.1520	1.000	.004	.025	1.090	.0463	.1875	2.0	QBT-1401000	37.35	QBT-1401000X	42.55
.1600	.1760	.375	.006	.025	.590	.0663	.1875	1.5	QBT6-160375	37.35	QBT6-160375X	41.35
.1600	.1760	.500	.006	.025	.590	.0663	.1875	1.5	QBT-160500	37.35	QBT-160500X	41.35
.1600	.1760	.750	.006	.025	1.090	.0663	.1875	2.0	QBT-160750	37.35	QBT-160750X	41.35
.1600	.1760	1.000	.006	.025	1.090	.0663	.1875	2.0	QBT-1601000	37.35	QBT-1601000X	41.35
.1600	.1760	1.250	.006	.025	1.590	.0663	.1875	2.5	QBT-1601250	37.35	QBT-1601250X	42.50
.1800	.1960	.375	.006	.030	.853	.0550	.2500	2.0	QBT6-180375	46.70	QBT6-180375X	52.95
.1800	.1960	.500	.006	.030	.853	.0550	.2500	2.0	QBT-180500	46.70	QBT-180500X	52.95
.1800	.1960	.750	.006	.030	.853	.0550	.2500	2.0	QBT-180750	46.70	QBT-180750X	52.95
.1800	.1960	1.000	.006	.030	1.353	.0550	.2500	2.5	QBT-1801000	46.70	QBT-1801000X	53.35
.1800	.1960	1.250	.006	.030	1.353	.0550	.2500	2.5	QBT-1801250	46.70	QBT-1801250X	53.35
.1800	.1960	1.500	.006	.030	1.853	.0550	.2500	3.0	QBT-1801500	53.65	QBT-1801500X	60.20
.2000	.2160	.375	.006	.030	.853	.0750	.2500	2.0	QBT6-200375	46.70	QBT6-200375X	52.95
.2000	.2160	.600	.006	.030	.853	.0750	.2500	2.0	QBT-200600	46.70	QBT-200600X	52.95
.2000	.2160	.750	.006	.030	.853	.0750	.2500	2.0	QBT6-200750	46.70	QBT6-200750X	52.95
.2000	.2160	1.000	.006	.030	1.353	.0750	.2500	2.5	QBT-2001000	46.70	QBT-2001000X	53.35
.2000	.2160	1.250	.006	.030	1.353	.0750	.2500	2.5	QBT-2001250	46.70	QBT-2001250X	53.35
.2000	.2160	1.500	.006	.030	1.853	.0750	.2500	3.0	QBT-2001500	53.65	QBT-2001500X	60.20
.2300	.2500	.500	.004	.040	.853	.0738	.3125	2.0	QBT4-230500	58.35	QBT4-230500X	65.80
.2300	.2500	.500	.006	.040	.853	.0738	.3125	2.0	QBT6-230500	58.35	QBT6-230500X	65.80
.2300	.2500	.750	.004	.040	.853	.0738	.3125	2.0	QBT4-230750	58.35	QBT4-230750X	65.80
.2300	.2500	.750	.006	.040	.853	.0738	.3125	2.0	QBT-230750	58.35	QBT-230750X	65.80
.2300	.2500	1.100	.006	.040	1.353	.0738	.3125	2.5	QBT-2301100	58.35	QBT-2301100X	66.20
.2300	.2500	1.300	.006	.040	1.353	.0738	.3125	2.5	QBT-2301300	58.35	QBT-2301300X	66.20
.2300	.2500	1.600	.006	.040	1.853	.0738	.3125	3.0	QBT-2301600	67.90	QBT-2301600X	75.75
.2600	.2800	.500	.004	.045	.853	.1038	.3125	2.0	QBT4-260500	58.35	QBT4-260500X	65.80
.2600	.2800	.500	.006	.045	.853	.1038	.3125	2.0	QBT6-260500	58.35	QBT6-260500X	65.80
.2600	.2800	.750	.004	.045	.853	.1038	.3125	2.0	QBT4-260750	58.35	QBT4-260750X	65.80
.2600	.2800	.750	.006	.045	.853	.1038	.3125	2.0	QBT6-260750	58.35	QBT6-260750X	65.80
.3000	.3200	.750	.006	.050	.853	.1125	.3750	2.0	QBT6-300750	58.35	QBT6-300750X	65.85
.3000	.3200	1.000	.006	.050	1.353	.1125	.3750	2.5	QBT-3001000	70.05	QBT-3001000X	79.40
.3000	.3200	1.250	.006	.050	1.353	.1125	.3750	2.5	QBT6-3001250	70.05	QBT6-3001250X	79.40
.3000	.3200	1.600	.006	.050	1.853	.1125	.3750	3.0	QBT-3001600	78.35	QBT-3001600X	87.70
.3000	.3200	2.100	.006	.050	2.353	.1125	.3750	3.5	QBT-3002100	85.45	QBT-3002100X	95.50
.3600	.3800	1.000	.006	.050	1.353	.1725	.3750	2.5	QBT-3601000	70.05	QBT-3601000X	79.40
.3600	.3800	1.600	.006	.050	1.853	.1725	.3750	3.0	QBT-3601600	78.35	QBT-3601600X	87.70
.3600	.3800	2.100	.006	.050	2.353	.1725	.3750	3.5	QBT-3602100	85.45	QBT-3602100X	95.50
.4600	.4800	1.000	.006	.075	1.040	.2100	.5000	2.5	QBT-4601000	106.40	QBT-4601000X	119.15
.4600	.4800	1.600	.006	.075	2.040	.2100	.5000	3.5	QBT-4601600	106.40	QBT-4601600X	120.10
.4600	.4800	2.100	.006	.075	2.540	.2100	.5000	4.0	QBT-4602100	112.40	QBT-4602100X	126.00
.4900	.5100	1.000	.006	.075	1.040	.2400	.5000	2.5			QBT-4901000X	119.15
.4900	.5100	1.600	.006	.075	2.040	.2400	.5000	3.5	QBT-4901600	106.40	QBT-4901600X	120.10
.4900	.5100	2.100	.006	.075	2.540	.2400	.5000	4.0	QBT-4902100	112.40	QBT-4902100X	126.00

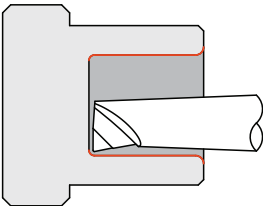
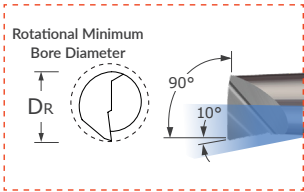
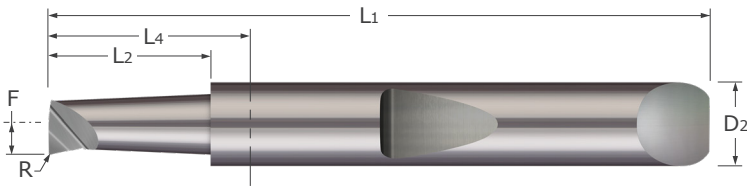
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Quick Change – Boring Tools



QBM

Quick Change – Boring Tools
Boring Head 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-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

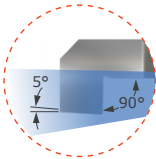
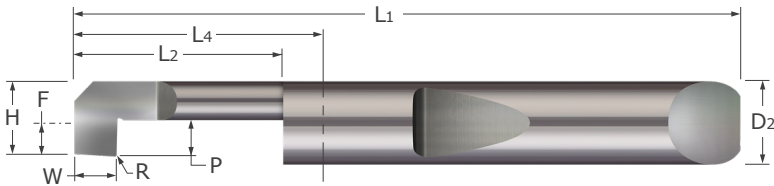
Rotational Minimum Bore Diameter	Maximum Bore Depth	Radius	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
DR	L2 ^{+0.030"} _{-.000"}	R ^{+0.001"} _{-.001"}	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1180	.500	.003	.853	.0550	.2500	2.0	QBM-118500	40.05	QBM-118500X	46.20
.1180	.750	.003	.853	.0550	.2500	2.0			QBM-118750X	46.20
.1500	.500	.003	.853	.0710	.2500	2.0	QBM-150500	40.05	QBM-150500X	46.20
.1500	.750	.003	.853	.0710	.2500	2.0	QBM-150750	40.05	QBM-150750X	46.20
.2000	.500	.008	.853	.0950	.2500	2.0	QBM-200500	40.05	QBM-200500X	46.20
.2000	.750	.008	.853	.0950	.2500	2.0	QBM-200750	40.05	QBM-200750X	46.20
.2000	1.250	.008	1.353	.0950	.2500	2.5	QBM-2001250	40.05	QBM-2001250X	46.60
.2300	.750	.008	.853	.1100	.2500	2.0	QBM-230750	40.05	QBM-230750X	46.20
.2300	1.250	.008	1.353	.1100	.2500	2.5	QBM-2301250	40.05	QBM-2301250X	46.60
.2300	1.500	.008	1.853	.1100	.2500	3.0	QBM-2301500	45.35	QBM-2301500X	51.90
.3000	1.000	.008	1.353	.1450	.3750	2.5	QBM-3001000	73.30		
.3000	1.500	.008	1.853	.1450	.3750	3.0	QBM-3001500	81.40		
.3000	1.750	.008	1.853	.1450	.3750	3.0	QBM-3001750	81.40	QBM-3001750X	90.70
.3600	1.000	.008	1.353	.1750	.3750	2.5	QBM-3601000	73.30		
.3600	1.500	.008	1.853	.1750	.3750	3.0	QBM-3601500	81.40	QBM-3601500X	90.70
.3600	2.000	.008	2.353	.1750	.3750	3.5	QBM-3602000	88.75	QBM-3602000X	98.80
.4600	1.000	.008	1.040	.2250	.5000	2.5	QBM-4601000	102.15		
.4600	1.500	.008	1.540	.2250	.5000	3.0	QBM-4601500	102.15		
.4600	2.000	.008	2.040	.2250	.5000	3.5	QBM-4602000	112.10	QBM-4602000X	125.70
.4600	2.500	.008	2.540	.2250	.5000	4.0	QBM-4602500	118.55		
.4600	3.000	.008	3.040	.2250	.5000	4.5	QBM-4603000	124.25	QBM-4603000X	139.00

See pgs 16-34 for quick change holder options

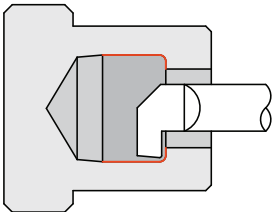
Quick Change – Boring Tools

Reverse Boring

QRB



- 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



Head Width	Min. Bore Dia.*	Max. Bore Depth	Width	Radius	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	L2	L4	W	R	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1560	.1720	.500	.075	.005	.060	.590	.0623	.1875	1.5	QRB-156500	37.15		
.1560	.1720	.750	.075	.005	.060	1.090	.0623	.1875	2.0			QRB-156750X	41.05
.1560	.1720	1.000	.075	.005	.060	1.090	.0623	.1875	2.0			QRB-1561000X	41.05
.1800	.1960	.500	.100	.005	.080	.853	.0550	.2500	2.0	QRB-180500	40.05	QRB-180500X	46.20
.1800	.1960	.750	.100	.005	.080	1.353	.0550	.2500	2.5	QRB-180750	40.05	QRB-180750X	46.60
.1800	.1960	1.000	.100	.005	.080	1.353	.0550	.2500	2.5	QRB-1801000	40.05	QRB-1801000X	46.60
.2000	.2160	.500	.113	.008	.090	.853	.0750	.2500	2.0	QRB-200500	40.05		
.2000	.2160	.750	.113	.008	.090	1.353	.0750	.2500	2.5	QRB-200750	40.05	QRB-200750X	46.60
.2000	.2160	1.000	.113	.008	.090	1.353	.0750	.2500	2.5	QRB-2001000	40.05		
.2000	.2160	1.250	.113	.008	.090	1.853	.0750	.2500	3.0	QRB-2001250	47.00		
.2300	.2500	.500	.138	.008	.110	.853	.0738	.3125	2.0	QRB-230500	53.75	QRB-230500X	61.25
.2300	.2500	.750	.138	.008	.110	1.353	.0738	.3125	2.5	QRB-230750	53.75	QRB-230750X	61.65
.2300	.2500	1.250	.138	.008	.110	1.853	.0738	.3125	3.0			QRB-2301250X	69.75
.3000	.3200	.750	.138	.008	.110	1.353	.1438	.3125	2.5	QRB-300750	53.75	QRB-300750X	61.20
.3000	.3200	1.250	.138	.008	.110	1.853	.1438	.3125	3.0	QRB-3001250	61.85	QRB-3001250X	69.75
.3600	.3800	.750	.163	.008	.130	1.353	.1725	.3750	2.5	QRB-360750	73.30		
.3600	.3800	1.000	.163	.008	.130	1.353	.1725	.3750	2.5			QRB-3601000X	82.60
.3600	.3800	1.250	.163	.008	.130	1.853	.1725	.3750	3.0	QRB-3601250	81.40	QRB-3601250X	90.70
.3600	.3800	1.500	.163	.008	.130	1.853	.1725	.3750	3.0	QRB-3601500	81.40	QRB-3601500X	90.70
.4600	.4800	1.250	.200	.008	.160	1.540	.2100	.5000	3.0	QRB-4601250	102.15		
.4600	.4800	1.500	.200	.008	.160	2.040	.2100	.5000	3.5	QRB-4601500	112.10	QRB-4601500X	125.70
.4600	.4800	1.800	.200	.008	.160	2.040	.2100	.5000	3.5	QRB-4601800	112.10	QRB-4601800X	125.70
.4900	.5100	1.000	.200	.008	.160	1.540	.2400	.5000	3.0	QRB-4901000	102.15		
.4900	.5100	1.250	.200	.008	.160	1.540	.2400	.5000	3.0	QRB-4901250	102.15	QRB-4901250X	114.90
.4900	.5100	1.500	.200	.008	.160	2.040	.2400	.5000	3.5	QRB-4901500	112.10	QRB-4901500X	125.70
.4900	.5100	1.800	.200	.008	.160	2.040	.2400	.5000	3.5			QRB-4901800X	125.70

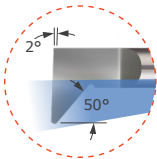
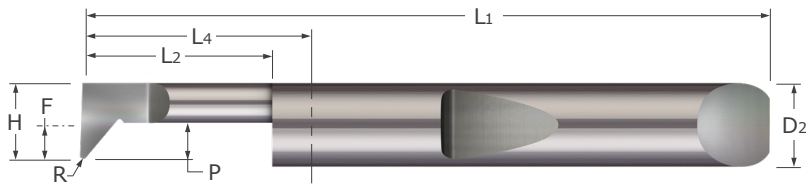
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

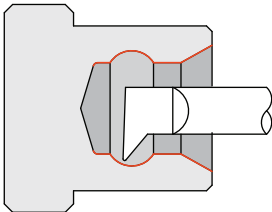


QPR

Quick Change – 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
- 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 – Profiling Tools

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	L2	L1	R	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0500	.0550	.150	.0020	.015	.590	-.0438	.1875	1.5	QPR2-050150	37.35	QPR2-050150X	42.55
.0500	.0550	.200	.0020	.015	.590	-.0438	.1875	1.5	QPR2-050200	37.35	QPR2-050200X	42.55
.0600	.0700	.150	.0020	.020	.590	-.0338	.1875	1.5	QPR2-060150	37.35	QPR2-060150X	42.55
.0600	.0700	.200	.0020	.020	.590	-.0338	.1875	1.5	QPR2-060200	37.35	QPR2-060200X	42.55
.0700	.0800	.150	.0020	.025	.590	-.0238	.1875	1.5	QPR2-070150	37.35	QPR2-070150X	42.55
.0700	.0800	.200	.0020	.025	.590	-.0238	.1875	1.5	QPR2-070200	37.35	QPR2-070200X	42.55
.0700	.0800	.200	.0050	.025	.590	-.0238	.1875	1.5	QPR-070200	37.35	QPR-070200X	41.35
.0700	.0800	.300	.0020	.025	.590	-.0238	.1875	1.5	QPR2-070300	37.35	QPR2-070300X	42.55
.0700	.0800	.300	.0050	.025	.590	-.0238	.1875	1.5	QPR-070300	37.35	QPR-070300X	41.35
.0700	.0800	.500	.0020	.025	.590	-.0238	.1875	1.5	QPR2-070500	37.35	QPR2-070500X	42.55
.0700	.0800	.500	.0050	.025	.590	-.0238	.1875	1.5	QPR-070500	37.35	QPR-070500X	41.35
.1000	.1100	.200	.0050	.035	.590	.0063	.1875	1.5	QPR5-100200	37.35	QPR5-100200X	41.35
.1000	.1100	.300	.0050	.035	.590	.0063	.1875	1.5	QPR5-100300	37.35	QPR5-100300X	41.35
.1100	.1240	.250	.0050	.040	.590	.0163	.1875	1.5	QPR-110250	37.35	QPR-110250X	41.35
.1100	.1240	.375	.0050	.040	.590	.0163	.1875	1.5	QPR5-110375	37.35	QPR5-110375X	41.35
.1100	.1240	.500	.0050	.040	.590	.0163	.1875	1.5	QPR-110500	37.35	QPR-110500X	41.35
.1200	.1340	.250	.0080	.050	.590	.0263	.1875	1.5	QPR-120250	37.35	QPR-120250X	41.35
.1200	.1340	.375	.0050	.050	.590	.0263	.1875	1.5	QPR5-120375	37.35	QPR5-120375X	41.35
.1200	.1340	.375	.0080	.050	.590	.0263	.1875	1.5	QPR8-120375	37.35	QPR8-120375X	41.35
.1200	.1340	.500	.0080	.050	.590	.0263	.1875	1.5	QPR-120500	37.35	QPR-120500X	41.35
.1200	.1340	.750	.0050	.050	1.090	.0263	.1875	2.0	QPR5-120750	37.35	QPR5-120750X	41.35
.1200	.1340	.750	.0080	.050	1.090	.0263	.1875	2.0	QPR-120750	37.35	QPR-120750X	41.35
.1400	.1540	.375	.0050	.050	.590	.0463	.1875	1.5	QPR5-140375	37.35	QPR5-140375X	41.35
.1400	.1540	.375	.0080	.050	.590	.0463	.1875	1.5	QPR8-140375	37.35	QPR8-140375X	42.55
.1400	.1540	.500	.0050	.050	.590	.0463	.1875	1.5	QPR5-140500	37.35	QPR5-140500X	41.35
.1400	.1540	.500	.0080	.050	.590	.0463	.1875	1.5	QPR8-140500	37.35	QPR8-140500X	41.35

*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 – Profiling Tools
Radial Profiling (cont.)

QPR

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	
H	L2	L2 ^{+ .030"} _{− .000"}	R ^{+ .0005"} _{− .0005"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1600	.1780	.375	.0080	.050	.590	.0663	.1875	1.5	QPR8-160375	37.35	QPR8-160375X	41.35
.1600	.1780	.500	.0080	.050	.590	.0663	.1875	1.5	QPR-160500	37.35	QPR-160500X	41.35
.1600	.1780	.750	.0080	.050	1.090	.0663	.1875	2.0	QPR-160750	37.35	QPR-160750X	41.35
.1600	.1780	1.000	.0080	.050	1.090	.0663	.1875	2.0	QPR-1601000	37.35	QPR-1601000X	41.35
.1800	.1980	.375	.0080	.080	.853	.0550	.2500	2.0	QPR8-180375	46.70	QPR8-180375X	52.95
.1800	.1980	.500	.0080	.080	.853	.0550	.2500	2.0	QPR-180500	46.70	QPR-180500X	52.95
.1800	.1980	.750	.0080	.080	.853	.0550	.2500	2.0	QPR-180750	46.70	QPR-180750X	52.95
.1800	.1980	1.000	.0080	.080	1.353	.0550	.2500	2.5	QPR-1801000	46.70	QPR-1801000X	53.35
.2000	.2180	.500	.0050	.080	.853	.0750	.2500	2.0	QPR5-200500	46.70	QPR5-200500X	52.95
.2000	.2180	.500	.0080	.080	.853	.0750	.2500	2.0	QPR8-200500	46.70	QPR8-200500X	52.95
.2000	.2180	.750	.0050	.080	.853	.0750	.2500	2.0	QPR5-200750	46.70	QPR5-200750X	52.95
.2000	.2180	.750	.0080	.080	.853	.0750	.2500	2.0	QPR8-200750	46.70	QPR8-200750X	52.95
.2300	.2520	.500	.0080	.080	.853	.0738	.3125	2.0	QPR8-230500	58.35	QPR8-230500X	65.80
.2300	.2520	.750	.0080	.080	.853	.0738	.3125	2.0	QPR-230750	58.35	QPR-230750X	65.80
.2300	.2520	1.000	.0080	.080	1.353	.0738	.3125	2.5	QPR-2301000	58.35	QPR-2301000X	66.20
.2300	.2520	1.250	.0080	.080	1.353	.0738	.3125	2.5	QPR-2301250	58.35	QPR-2301250X	66.20
.2300	.2520	1.500	.0080	.080	1.853	.0738	.3125	3.0	QPR-2301500	59.60	QPR-2301500X	67.45
.2600	.2820	.750	.0080	.090	.853	.1038	.3125	2.0	QPR8-260750	58.35	QPR8-260750X	65.80
.2600	.2820	1.000	.0080	.090	1.353	.1038	.3125	2.5	QPR8-2601000	58.35	QPR8-2601000X	66.20
.3000	.3220	.750	.0080	.110	.853	.1438	.3125	2.0	QPR8-300750	58.35	QPR8-300750X	65.80
.3000	.3220	1.000	.0080	.110	1.353	.1438	.3125	2.5	QPR-3001000	58.35	QPR-3001000X	66.20
.3000	.3220	1.250	.0080	.110	1.353	.1438	.3125	2.5	QPR-3001250	58.35	QPR-3001250X	66.20
.3000	.3220	1.500	.0080	.110	1.853	.1438	.3125	3.0	QPR-3001500	59.60	QPR-3001500X	67.45
.3600	.3820	.750	.0080	.130	.853	.1725	.3750	2.0	QPR8-360750	76.00	QPR8-360750X	84.35
.3600	.3820	1.000	.0080	.130	1.353	.1725	.3750	2.5	QPR-3601000	76.00	QPR-3601000X	85.30
.3600	.3820	1.250	.0080	.130	1.353	.1725	.3750	2.5	QPR-3601250	76.00	QPR-3601250X	85.30
.3600	.3820	1.500	.0080	.130	1.853	.1725	.3750	3.0	QPR-3601500	77.35	QPR-3601500X	86.65
.4600	.4820	.750	.0080	.150	1.040	.2100	.5000	2.5	QPR8-460750	106.40	QPR8-460750X	119.15
.4600	.4820	1.000	.0080	.150	1.540	.2100	.5000	3.0	QPR-4601000	106.40	QPR-4601000X	119.15
.4600	.4820	1.500	.0080	.150	1.540	.2100	.5000	3.0	QPR-4601500	106.40	QPR-4601500X	119.15
.4600	.4820	1.800	.0080	.150	2.040	.2100	.5000	3.5	QPR-4601800	116.15	QPR-4601800X	129.85
.4900	.5120	1.000	.0080	.150	1.540	.2400	.5000	3.0	QPR-4901000	106.40	QPR-4901000X	119.15
.4900	.5120	1.500	.0080	.150	1.540	.2400	.5000	3.0	QPR-4901500	106.40	QPR-4901500X	119.15
.4900	.5120	1.800	.0080	.150	2.040	.2400	.5000	3.5	QPR-4901800	116.15	QPR-4901800X	129.85

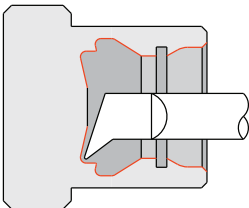
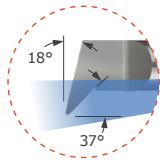
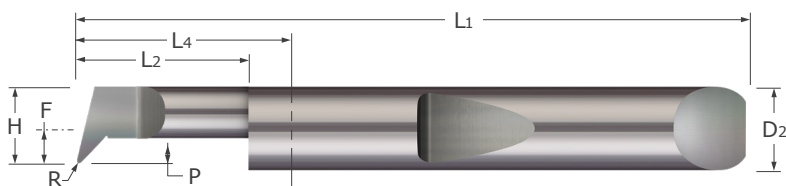
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options



QPA

Quick Change – 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
- 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	
H		L2	R	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0500	.0550	.150	.0020	.015	.590	-.0438	.1875	1.5	OPA2-050150	37.35	OPA2-050150X	41.35
.0500	.0550	.200	.0020	.015	.590	-.0438	.1875	1.5	OPA2-050200	37.35	OPA2-050200X	41.35
.0600	.0700	.150	.0020	.020	.590	-.0338	.1875	1.5	OPA2-060150	37.35	OPA2-060150X	41.35
.0600	.0700	.200	.0020	.020	.590	-.0338	.1875	1.5	OPA2-060200	37.35	OPA2-060200X	41.35
.0700	.0800	.150	.0020	.020	.590	-.0238	.1875	1.5	OPA2-070150	37.35	OPA2-070150X	41.35
.0700	.0800	.200	.0020	.020	.590	-.0238	.1875	1.5	OPA2-070200	37.35	OPA2-070200X	41.35
.0800	.0900	.200	.0020	.025	.590	-.0138	.1875	1.5	OPA2-080200	37.35	OPA2-080200X	41.35
.0800	.0900	.300	.0020	.025	.590	-.0138	.1875	1.5	OPA2-080300	37.35	OPA2-080300X	41.35
.0900	.1000	.200	.0020	.030	.590	-.0038	.1875	1.5	OPA2-090200	37.35	OPA2-090200X	41.35
.0900	.1000	.300	.0020	.030	.590	-.0038	.1875	1.5	OPA2-090300	37.35	OPA2-090300X	41.35
.1000	.1100	.200	.0020	.030	.590	.0063	.1875	1.5	OPA2-100200	37.35	OPA2-100200X	41.35
.1000	.1100	.200	.0050	.030	.590	.0063	.1875	1.5	OPA5-100200	37.35	OPA5-100200X	41.35
.1000	.1100	.300	.0020	.030	.590	.0063	.1875	1.5	OPA2-100300	37.35	OPA2-100300X	41.35
.1000	.1100	.300	.0050	.030	.590	.0063	.1875	1.5	OPA5-100300	37.35	OPA5-100300X	41.35
.1100	.1240	.250	.0050	.035	.590	.0163	.1875	1.5	OPA5-110250	37.35	OPA5-110250X	41.35
.1100	.1240	.375	.0050	.035	.590	.0163	.1875	1.5	OPA5-110375	37.35	OPA5-110375X	41.35
.1200	.1340	.250	.0050	.035	.590	.0263	.1875	1.5	OPA5-120250	37.35	OPA5-120250X	41.35
.1200	.1340	.375	.0050	.035	.590	.0263	.1875	1.5	OPA5-120375	37.35	OPA5-120375X	41.35
.1400	.1540	.375	.0050	.040	.590	.0463	.1875	1.5	OPA5-140375	37.35	OPA5-140375X	41.35
.1400	.1540	.500	.0050	.040	.590	.0463	.1875	1.5	OPA5-140500	37.35	OPA5-140500X	41.35
.1600	.1780	.375	.0050	.050	.590	.0663	.1875	1.5	OPA5-160375	37.35	OPA5-160375X	41.35
.1600	.1780	.500	.0050	.050	.590	.0663	.1875	1.5	OPA5-160500	37.35	OPA5-160500X	41.35
.1800	.1980	.375	.0050	.055	.853	.0550	.2500	2.0	OPA5-180375	46.70	OPA5-180375X	52.95
.1800	.1980	.500	.0050	.055	.853	.0550	.2500	2.0	OPA5-180500	46.70	OPA5-180500X	52.95

*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 – Profiling Tools
Angled Profiling (cont.)

QPA

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	
H	L2	$+ .030''$ $- .000''$	$R + .0005''$ $- .0005''$	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.2000	.2180	.500	.0050	.060	.853	.0750	.2500	2.0	QPA5-200500	46.70	QPA5-200500X	52.95
.2000	.2180	.500	.0080	.060	.853	.0750	.2500	2.0	QPA8-200500	46.70	QPA8-200500X	52.95
.2000	.2180	.750	.0050	.060	.853	.0750	.2500	2.0	QPA5-200750	46.70	QPA5-200750X	52.95
.2000	.2180	.750	.0080	.060	.853	.0750	.2500	2.0	QPA8-200750	46.70	QPA8-200750X	52.95
.2300	.2520	.500	.0080	.070	.853	.0738	.3125	2.0	QPA8-230500	58.35	QPA8-230500X	65.80
.2300	.2520	.750	.0080	.070	.853	.0738	.3125	2.0	QPA8-230750	58.35	QPA8-230750X	65.80
.2600	.2820	.750	.0080	.080	.853	.1038	.3125	2.0	QPA8-260750	58.35	QPA8-260750X	65.80
.2600	.2820	1.000	.0080	.080	1.353	.1038	.3125	2.5	QPA8-2601000	58.35	QPA8-2601000X	66.20
.3000	.3220	.750	.0080	.090	.853	.1438	.3125	2.0	QPA8-300750	58.35	QPA8-300750X	65.80
.3000	.3220	1.000	.0080	.090	1.353	.1438	.3125	2.5	QPA8-3001000	58.35	QPA8-3001000X	66.20
.3600	.3820	.750	.0080	.110	.853	.1725	.3750	2.0	QPA8-360750	76.00	QPA8-360750X	84.80
.3600	.3820	1.000	.0080	.110	1.353	.1725	.3750	2.5	QPA8-3601000	76.00	QPA8-3601000X	85.30
.4100	.4320	.750	.0080	.120	1.040	.1600	.5000	2.5	QPA8-410750	106.40	QPA8-410750X	119.15
.4100	.4320	1.250	.0080	.120	1.540	.1600	.5000	3.0	QPA8-4101250	106.40	QPA8-4101250X	119.15
.4600	.4820	.750	.0080	.140	1.040	.2100	.5000	2.5	QPA8-460750	106.40	QPA8-460750X	119.15
.4600	.4820	1.000	.0080	.140	1.040	.2100	.5000	2.5	QPA8-4601000	106.40	QPA8-4601000X	119.15

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

Quick Change – Profiling Tools



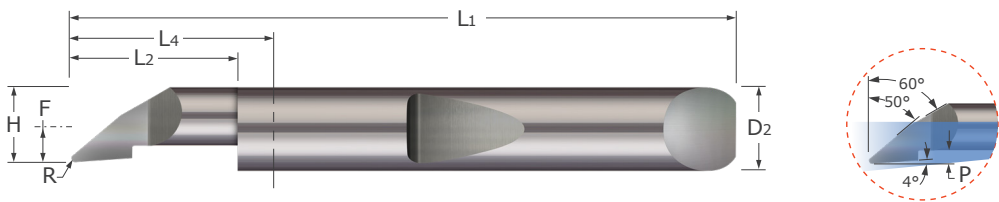
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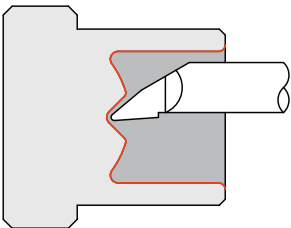
See pgs 16-34 for quick change holder options

QPF

Quick Change – 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
- 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 – Profiling Tools

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	L2	$\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0500	.0550	.150	.0050	.005	.590	-.0438	.1875	1.5	QPF5-050150	37.35	QPF5-050150X	41.35
.0500	.0550	.200	.0050	.005	.590	-.0438	.1875	1.5	QPF-050200	37.35	QPF-050200X	41.35
.0500	.0550	.400	.0050	.005	.590	-.0438	.1875	1.5	QPF-050400	37.35	QPF-050400X	41.35
.0500	.0550	.500	.0050	.005	.590	-.0438	.1875	1.5	QPF-050500	37.35	QPF-050500X	41.35
.0600	.0700	.200	.0050	.005	.590	-.0338	.1875	1.5			QPF-060200X	41.35
.0600	.0700	.400	.0050	.005	.590	-.0338	.1875	1.5	QPF-060400	37.35	QPF-060400X	41.35
.0600	.0700	.500	.0050	.005	.590	-.0338	.1875	1.5	QPF-060500	37.35	QPF-060500X	41.35
.0700	.0800	.150	.0050	.010	.590	-.0238	.1875	1.5	QPF5-070150	37.35	QPF5-070150X	41.35
.0700	.0800	.200	.0050	.010	.590	-.0238	.1875	1.5	QPF-070200	37.35	QPF-070200X	41.35
.0700	.0800	.300	.0050	.010	.590	-.0238	.1875	1.5	QPF5-070300	37.35	QPF5-070300X	41.35
.0700	.0800	.400	.0050	.010	.590	-.0238	.1875	1.5	QPF-070400	37.35	QPF-070400X	41.35
.0700	.0800	.500	.0050	.010	.590	-.0238	.1875	1.5	QPF-070500	37.35	QPF-070500X	41.35
.0700	.0800	.600	.0050	.010	1.090	-.0238	.1875	2.0	QPF-070600	37.35	QPF-070600X	41.35
.0800	.0900	.150	.0050	.010	.590	-.0138	.1875	1.5	QPF5-080150	37.35	QPF5-080150X	41.35
.0800	.0900	.200	.0050	.010	.590	-.0138	.1875	1.5	QPF5-080200	37.35	QPF5-080200X	41.35
.0800	.0900	.250	.0050	.010	.590	-.0138	.1875	1.5	QPF5-080250	37.35	QPF5-080250X	41.35
.0900	.1000	.200	.0050	.010	.590	-.0038	.1875	1.5	QPF5-090200	37.35	QPF5-090200X	41.35
.0900	.1000	.300	.0050	.010	.590	-.0038	.1875	1.5	QPF5-090300	37.35	QPF5-090300X	41.35
.1000	.1100	.300	.0050	.015	.590	.0063	.1875	1.5	QPF5-100300	37.35	QPF5-100300X	41.35
.1000	.1100	.400	.0050	.015	.590	.0063	.1875	1.5	QPF5-100400	37.35	QPF5-100400X	41.35
.1100	.1220	.250	.0050	.015	.590	.0163	.1875	1.5	QPF-110250	37.35	QPF-110250X	41.35
.1100	.1220	.375	.0050	.015	.590	.0163	.1875	1.5	QPF5-110375	37.35	QPF5-110375X	41.35
.1100	.1220	.500	.0050	.015	.590	.0163	.1875	1.5	QPF-110500	37.35	QPF-110500X	41.35
.1100	.1220	.750	.0050	.015	1.090	.0163	.1875	2.0	QPF-110750	37.35	QPF-110750X	41.35
.1200	.1320	.250	.0080	.020	.590	.0263	.1875	1.5	QPF-120250	37.35	QPF-120250X	41.35
.1200	.1320	.375	.0050	.020	.590	.0263	.1875	1.5	QPF5-120375	37.35	QPF5-120375X	41.35
.1200	.1320	.500	.0080	.020	.590	.0263	.1875	1.5	QPF-120500	37.35	QPF-120500X	41.35
.1200	.1320	.750	.0080	.020	1.090	.0263	.1875	2.0	QPF-120750	37.35	QPF-120750X	41.35
.1200	.1320	1.000	.0080	.020	1.090	.0263	.1875	2.0	QPF-1201000	37.35	QPF-1201000X	41.35

*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 – Profiling Tools
Axial Profiling (cont.)

QPF

Continued from previous page

Head Width	Min. Bore Diameter*	Max. Bore Depth	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AITIN Coated	
H	L ₂	$L_2^{+.030"}_{-.000"} R^{+.0005"}_{-.0005"}$	P		L ₄	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.1400	.1520	.375	.0080	.020	.590	.0463	.1875	1.5	QPF8-140375	37.35	QPF8-140375X	41.35
.1400	.1520	.500	.0080	.020	.590	.0463	.1875	1.5	QPF8-140500	37.35	QPF8-140500X	41.35
.1600	.1760	.375	.0080	.030	.590	.0663	.1875	1.5	QPF8-160375	37.35	QPF8-160375X	41.35
.1600	.1760	.500	.0080	.030	.590	.0663	.1875	1.5	QPF-160500	37.35	QPF-160500X	41.35
.1600	.1760	.750	.0080	.030	1.090	.0663	.1875	2.0	QPF-160750	37.35	QPF-160750X	41.35
.1600	.1760	1.000	.0080	.030	1.090	.0663	.1875	2.0	QPF-1601000	37.35	QPF-1601000X	41.35
.1800	.1960	.375	.0080	.030	.853	.0550	.2500	2.0	QPF8-180375	46.70	QPF8-180375X	52.95
.1800	.1960	.500	.0080	.030	.853	.0550	.2500	2.0	QPF-180500	46.70	QPF-180500X	52.95
.1800	.1960	.750	.0080	.030	.853	.0550	.2500	2.0	QPF-180750	46.70	QPF-180750X	52.95
.1800	.1960	1.000	.0080	.030	1.353	.0550	.2500	2.5	QPF-1801000	46.70	QPF-1801000X	53.35
.2000	.2160	.400	.0080	.030	.853	.0750	.2500	2.0	QPF8-200400	46.70	QPF8-200400X	52.95
.2000	.2160	.600	.0080	.030	.853	.0750	.2500	2.0	QPF-200600	46.70	QPF-200600X	52.95
.2000	.2160	.800	.0080	.030	1.353	.0750	.2500	2.5	QPF8-200800	46.70	QPF8-200800X	53.35
.2000	.2160	1.000	.0080	.030	1.353	.0750	.2500	2.5	QPF-2001000	46.70	QPF-2001000X	53.35
.2300	.2500	.750	.0080	.030	.853	.0738	.3125	2.0	QPF-230750	58.35	QPF-230750X	65.80
.2300	.2500	1.000	.0080	.030	1.353	.0738	.3125	2.5	QPF-2301000	58.35	QPF-2301000X	66.20
.2300	.2500	1.100	.0080	.030	1.353	.0738	.3125	2.5			QPF-2301100X	66.20
.2300	.2500	1.250	.0080	.030	1.353	.0738	.3125	2.5	QPF-2301250	58.35	QPF-2301250X	66.20
.2600	.2800	.750	.0080	.030	.853	.1038	.3125	2.5	QPF8-260750	58.35	QPF8-260750X	66.20
.3000	.3200	1.000	.0080	.030	1.353	.1438	.3125	2.5	QPF-3001000	58.35	QPF-3001000X	66.20
.3000	.3200	1.250	.0080	.030	1.353	.1438	.3125	2.5	QPF-3001250	58.35	QPF-3001250X	66.20
.3600	.3800	.750	.0080	.030	.853	.1725	.3750	2.0	QPF8-360750	76.00	QPF8-360750X	84.35
.3600	.3800	1.000	.0080	.030	1.353	.1725	.3750	2.5	QPF-3601000	76.00	QPF-3601000X	85.30
.3600	.3800	1.250	.0080	.030	1.353	.1725	.3750	2.5	QPF-3601250	76.00	QPF-3601250X	85.30
.4100	.4300	.750	.0080	.040	1.040	.1600	.5000	2.5	QPF8-410750	106.40	QPF8-410750X	119.15
.4100	.4300	1.000	.0080	.040	1.040	.1600	.5000	2.5	QPF8-4101000	106.40	QPF8-4101000X	119.15
.4600	.4800	.750	.0080	.050	1.040	.2100	.5000	2.5	QPF8-460750	106.40	QPF8-460750X	119.15
.4600	.4800	1.000	.0080	.050	1.040	.2100	.5000	2.5	QPF-4601000	106.40	QPF-4601000X	119.15
.4600	.4800	1.600	.0080	.050	2.040	.2100	.5000	3.5			QPF-4601600X	122.40
.4900	.5100	1.800	.0080	.050	2.040	.2400	.5000	3.5			QPF-4901800X	122.40

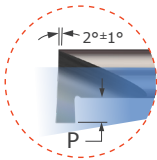
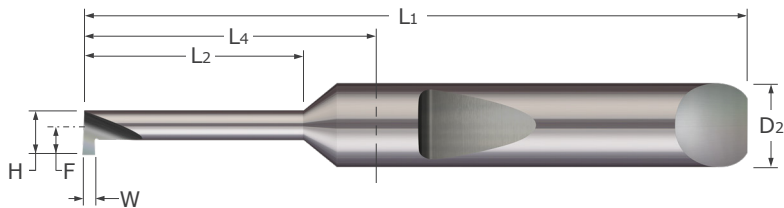
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

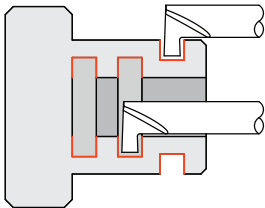


QMRR

Quick Change – Grooving Tools
Retaining Ring – Square – 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
- 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 ^{+0.002"} _{–.000"}	H		L2 ^{+0.030"} _{–.000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.010	.0600	.0700	.100	.020	.590	.0400	.1875	1.5	QMRR-010-100-060	52.00	QMRR-010-100-060X	56.40
.010	.0600	.0700	.150	.020	.590	.0400	.1875	1.5	QMRR-010-150-060	52.00	QMRR-010-150-060X	56.40
.010	.0600	.0700	.250	.020	.590	.0400	.1875	1.5	QMRR-010-250-060	52.00	QMRR-010-250-060X	56.40
.015	.0600	.0700	.100	.020	.590	.0400	.1875	1.5	QMRR-015-100-060	52.00	QMRR-015-100-060X	56.40
.015	.0600	.0700	.150	.020	.590	.0400	.1875	1.5	QMRR-015-150-060	52.00	QMRR-015-150-060X	56.40
.015	.0600	.0700	.250	.020	.590	.0400	.1875	1.5	QMRR-015-250-060	52.00	QMRR-015-250-060X	56.40
.015	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMRR-015-250-080	52.00	QMRR-015-250-080X	56.40
.015	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMRR-015-375-080	52.00	QMRR-015-375-080X	56.40
.015	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMRR-015-500-080	52.00		
.015	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMRR-015-250-100	52.00	QMRR-015-250-100X	56.40
.015	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMRR-015-500-100	52.00		
.015	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMRR-015-750-100	52.00	QMRR-015-750-100X	56.40
.017	.1200	.1340	.150	.040	.590	.0800	.1875	1.5	QMRR-017-150-120	52.00	QMRR-017-150-120X	56.40
.017	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMRR-017-250-120	52.00	QMRR-017-250-120X	56.40
.020	.0600	.0700	.100	.020	.590	.0400	.1875	1.5	QMRR-020-100-060	46.70	QMRR-020-100-060X	51.00
.020	.0600	.0700	.150	.020	.590	.0400	.1875	1.5	QMRR-020-150-060	46.70	QMRR-020-150-060X	51.00
.020	.0600	.0700	.250	.020	.590	.0400	.1875	1.5	QMRR-020-250-060	46.70	QMRR-020-250-060X	51.00
.020	.0700	.0800	.100	.020	.590	.0450	.1875	1.5	QMRR-020-100-070	46.70	QMRR-020-100-070X	51.00
.020	.0700	.0800	.150	.020	.590	.0450	.1875	1.5	QMRR-020-150-070	46.70	QMRR-020-150-070X	51.00
.020	.0800	.0900	.150	.025	.590	.0525	.1875	1.5	QMRR-020-150-080	46.70	QMRR-020-150-080X	51.00
.020	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMRR-020-250-080	46.70	QMRR-020-250-080X	51.00
.020	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMRR-020-375-080	46.70	QMRR-020-375-080X	51.00
.020	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMRR-020-500-080	46.70		
.020	.0900	.1000	.150	.025	.590	.0575	.1875	1.5	QMRR-020-150-090	46.70	QMRR-020-150-090X	51.00
.020	.0900	.1000	.250	.025	.590	.0575	.1875	1.5	QMRR-020-250-090	46.70	QMRR-020-250-090X	51.00
.020	.1000	.1100	.150	.030	.590	.0650	.1875	1.5	QMRR-020-150-100	46.70	QMRR-020-150-100X	51.00
.020	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMRR-020-250-100	46.70	QMRR-020-250-100X	51.00
.020	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMRR-020-500-100	46.70	QMRR-020-500-100X	51.00
.020	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0			QMRR-020-750-100X	51.00

*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 – Grooving Tools

Retaining Ring – Square – Miniature (cont.)

QMRR

Continued from previous page

Width	Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Proj.	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		A/TiN Coated	
W ^{+ .002"} _{– .000"}	H		L ₂ ^{+ .030"} _{– .000"}	P	L ₄	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.020	.1200	.1340	.150	.040	.590	.0800	.1875	1.5	QMRR-020-150-12Q	46.70	QMRR-020-150-120X	51.00
.020	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMRR-020-250-12Q	46.70	QMRR-020-250-120X	51.00
.020	.1200	.1340	.375	.040	.590	.0800	.1875	1.5	QMRR-020-375-12Q	46.70	QMRR-020-375-120X	51.00
.020	.1200	.1340	.500	.040	.590	.0800	.1875	1.5	QMRR-020-500-12Q	46.70	QMRR-020-500-120X	51.00
.020	.1200	.1340	.750	.040	1.090	.0800	.1875	2.0	QMRR-020-750-12Q	46.70	QMRR-020-750-120X	51.00
.025	.1200	.1340	.150	.040	.590	.0800	.1875	1.5	QMRR-025-150-12Q	46.70	QMRR-025-150-120X	51.00
.025	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMRR-025-250-12Q	46.70	QMRR-025-250-120X	51.00
.030	.0700	.0800	.100	.020	.590	.0450	.1875	1.5	QMRR-030-100-07Q	46.70	QMRR-030-100-070X	51.00
.030	.0700	.0800	.150	.020	.590	.0450	.1875	1.5	QMRR-030-150-07Q	46.70	QMRR-030-150-070X	51.00
.030	.0800	.0900	.150	.025	.590	.0525	.1875	1.5	QMRR-030-150-08Q	46.70	QMRR-030-150-080X	51.00
.030	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMRR-030-250-08Q	46.70	QMRR-030-250-080X	51.00
.030	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMRR-030-375-08Q	46.70	QMRR-030-375-080X	51.00
.030	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMRR-030-500-08Q	46.70	QMRR-030-500-080X	51.00
.030	.0900	.1000	.150	.025	.590	.0575	.1875	1.5	QMRR-030-150-09Q	46.70	QMRR-030-150-090X	51.00
.030	.0900	.1000	.250	.025	.590	.0575	.1875	1.5	QMRR-030-250-09Q	46.70	QMRR-030-250-090X	51.00
.030	.1000	.1100	.150	.030	.590	.0650	.1875	1.5	QMRR-030-150-10Q	46.70	QMRR-030-150-100X	51.00
.030	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMRR-030-250-10Q	46.70	QMRR-030-250-100X	51.00
.030	.1000	.1100	.375	.030	.590	.0650	.1875	1.5	QMRR-030-375-10Q	46.70	QMRR-030-375-100X	51.00
.030	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMRR-030-500-10Q	46.70	QMRR-030-500-100X	51.00
.030	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMRR-030-750-10Q	46.70	QMRR-030-750-100X	51.00
.030	.1200	.1340	.150	.040	.590	.0800	.1875	1.5	QMRR-030-150-12Q	46.70	QMRR-030-150-120X	51.00
.030	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMRR-030-250-12Q	46.70	QMRR-030-250-120X	51.00
.030	.1200	.1340	.375	.040	.590	.0800	.1875	1.5	QMRR-030-375-12Q	46.70	QMRR-030-375-120X	51.00
.030	.1200	.1340	.500	.040	.590	.0800	.1875	1.5	QMRR-030-500-12Q	46.70	QMRR-030-500-120X	51.00
.030	.1200	.1340	.750	.040	1.090	.0800	.1875	2.0	QMRR-030-750-12Q	46.70	QMRR-030-750-120X	51.00

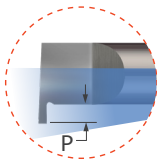
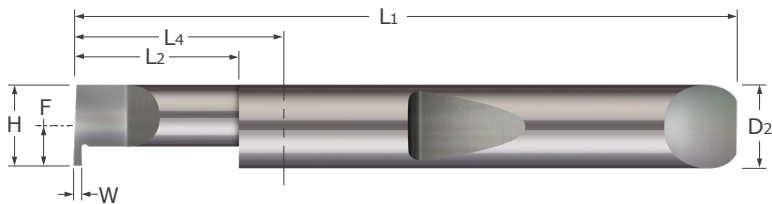
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

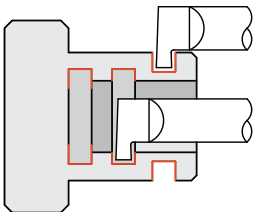


QRR

Quick Change – Grooving Tools
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	
W ^{+ .002"} _{– .000"}	H		L2 ^{+ .030"} _{– .000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.017	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-017-4	39.75	QRR-017-4X	43.75
.017	.1800	.1980	.375	.030	.590	.0863	.1875	1.5	QRR-017-6	39.75	QRR-017-6X	43.75
.017	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-017-8	39.75	QRR-017-8X	43.75
.017	.1800	.1980	.625	.030	1.090	.0863	.1875	2.0	QRR-017-10	39.75	QRR-017-10X	43.75
.017	.1800	.1980	.750	.030	1.090	.0863	.1875	2.0	QRR-017-750-180	39.75	QRR-017-750-180X	43.75
.017	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-017-250-245	46.70	QRR-017-250-245X	52.95
.017	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QRR-017-375-245	46.70	QRR-017-375-245X	52.95
.020	.1200	.1340	.150	.030	.590	.0263	.1875	1.5	QRR-020-150-120	39.75	QRR-020-150-120X	43.75
.020	.1200	.1340	.250	.030	.590	.0263	.1875	1.5	QRR-020-250-120	39.75	QRR-020-250-120X	43.75
.020	.1400	.1540	.250	.030	.590	.0463	.1875	1.5	QRR-020-250-140	39.75	QRR-020-250-140X	43.75
.020	.1400	.1540	.375	.030	.590	.0463	.1875	1.5	QRR-020-375-140	39.75	QRR-020-375-140X	43.75
.020	.1600	.1780	.250	.030	.590	.0663	.1875	1.5	QRR-020-250-160	39.75	QRR-020-250-160X	43.75
.020	.1600	.1780	.375	.030	.590	.0663	.1875	1.5	QRR-020-375-160	39.75	QRR-020-375-160X	43.75
.020	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-020-4	39.75	QRR-020-4X	43.75
.020	.1800	.1980	.375	.030	.590	.0863	.1875	1.5	QRR-020-6	39.75	QRR-020-6X	43.75
.020	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-020-8	39.75	QRR-020-8X	43.75
.020	.1800	.1980	.625	.030	1.090	.0863	.1875	2.0	QRR-020-10	39.75	QRR-020-10X	43.75
.020	.1800	.1980	.750	.030	1.090	.0863	.1875	2.0	QRR-020-750-180	46.70	QRR-020-750-180X	51.90
.020	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-020-250-245	46.70	QRR-020-250-245X	52.95
.020	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QRR-020-375-245	46.70	QRR-020-375-245X	52.95
.020	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-020-500-245	46.70	QRR-020-500-245X	52.95
.020	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QRR-020-625-245	46.70	QRR-020-625-245X	52.95
.020	.3700	.3920	.625	.050	.853	.1825	.3750	2.0	QRR-020-625-370	76.00	QRR-020-625-370X	84.80
.020	.3700	.3920	1.000	.050	1.353	.1825	.3750	2.5	QRR-020-1000-370	76.00	QRR-020-1000-370X	85.30
.025	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-025-4	46.70	QRR-025-4X	52.95
.025	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QRR-025-6	46.70	QRR-025-6X	52.95
.025	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-025-8	46.70	QRR-025-8X	52.95
.025	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QRR-025-10	46.70	QRR-025-10X	52.95
.025	.2450	.2670	.750	.050	.853	.1200	.2500	2.0	QRR-025-750-245	46.70	QRR-025-750-245X	52.95

*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 pgs 85 for miniature sizes

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

QRR

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 ^{+ .002"} _{-.000"}	H	L2 ^{+ .030"} _{-.000"}	P	L4	F	D2 (h6)	L1		Tool #	USD\$	Tool #	USD\$
.030	.1200	.1340	.150	.030	.590	.0263	.1875	1.5	QRR-030-150-120	39.75	QRR-030-150-120X	43.75
.030	.1200	.1340	.250	.030	.590	.0263	.1875	1.5	QRR-030-250-120	39.75	QRR-030-250-120X	43.75
.030	.1400	.1540	.250	.030	.590	.0463	.1875	1.5	QRR-030-250-140	39.75	QRR-030-250-140X	43.75
.030	.1400	.1540	.375	.030	.590	.0463	.1875	1.5	QRR-030-375-140	39.75	QRR-030-375-140X	43.75
.030	.1400	.1540	.375	.050	.590	.0463	.1875	1.5	QRR-6757	39.75	QRR-6757X	44.95
.030	.1600	.1780	.250	.030	.590	.0663	.1875	1.5	QRR-030-250-160	39.75	QRR-030-250-160X	43.75
.030	.1600	.1780	.375	.030	.590	.0663	.1875	1.5	QRR-030-375-160	39.75	QRR-030-375-160X	43.75
.030	.1600	.1780	.375	.050	.590	.0663	.1875	1.5	QRR-3565	39.75	QRR-3565X	44.95
.030	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-030-250-180	39.75	QRR-030-250-180X	43.75
.030	.1800	.1980	.250	.050	.590	.0863	.1875	1.5	QRR-0495	39.75	QRR-0495X	44.95
.030	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-030-500-180	39.75	QRR-030-500-180X	43.75
.030	.1800	.1980	.500	.050	.590	.0863	.1875	1.5	QRR-5911	39.75	QRR-5911X	44.95
.030	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-030-4	46.70	QRR-030-4X	52.95
.030	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QRR-030-6	46.70	QRR-030-6X	52.95
.030	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-030-8	46.70	QRR-030-8X	52.95
.030	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QRR-030-10	46.70	QRR-030-10X	52.95
.030	.2450	.2670	.750	.050	.853	.1200	.2500	2.0	QRR-030-750-245	46.70	QRR-030-750-245X	52.95
.030	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-030-500-310	58.35	QRR-030-500-310X	65.80
.030	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-030-750-310	58.35	QRR-030-750-310X	65.80
.030	.3700	.3920	.625	.050	.853	.1825	.3750	2.0	QRR-030-625-370	76.00	QRR-030-625-370X	84.80
.030	.3700	.3920	1.000	.050	1.353	.1825	.3750	2.5	QRR-030-1000-370	76.00	QRR-030-1000-370X	85.30
.033	.3100	.3320	.250	.100	.853	.1538	.3125	2.0	QRR-033-250-310	58.35	QRR-033-250-310X	65.80
.033	.3100	.3320	.375	.100	.853	.1538	.3125	2.0	QRR-033-6	58.35	QRR-033-6X	65.80
.033	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-033-8	58.35	QRR-033-8X	65.80
.033	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-033-12	58.35	QRR-033-12X	65.80
.038	.2450	.2670	.500	.080	.853	.1200	.2500	2.0	QRR-9076	46.70	QRR-9076X	52.95
.038	.3100	.3320	.250	.100	.853	.1538	.3125	2.0	QRR-038-250-310	58.35	QRR-038-250-310X	65.80
.038	.3100	.3320	.375	.100	.853	.1538	.3125	2.0	QRR-038-6	58.35	QRR-038-6X	65.80
.038	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-038-8	58.35	QRR-038-8X	65.80
.038	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-038-12	58.35	QRR-038-12X	65.80
.039	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-039-250-180	39.75	QRR-039-250-180X	43.75
.039	.1800	.1980	.250	.060	.590	.0863	.1875	1.5	QRR-5824	39.75	QRR-5824X	44.95
.039	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-039-500-180	39.75	QRR-039-500-180X	43.75
.039	.1800	.1980	.500	.060	.590	.0863	.1875	1.5	QRR-1828	39.75	QRR-1828X	44.95
.039	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-039-250-245	46.70	QRR-039-250-245X	52.95
.039	.2450	.2670	.250	.080	.853	.1200	.2500	2.0	QRR-8363	46.70	QRR-8363X	52.95
.039	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-039-500-245	46.70	QRR-039-500-245X	52.95
.039	.2450	.2670	.500	.080	.853	.1200	.2500	2.0	QRR-1774	46.70	QRR-1774X	52.95
.039	.3700	.3920	.375	.100	.853	.1825	.3750	2.0	QRR-039-375-370	76.00	QRR-039-375-370X	84.35
.039	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-039-8	76.00	QRR-039-8X	84.35
.039	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-039-12	76.00	QRR-039-12X	84.35
.039	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-039-16	76.00	QRR-039-16X	85.30
.039	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-039-20	76.00	QRR-039-20X	85.30
.040	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-2122	46.70	QRR-2122X	52.95
.040	.2450	.2670	.250	.080	.853	.1200	.2500	2.0	QRR-1248	46.70	QRR-1248X	52.95
.040	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-4112	46.70	QRR-4112X	52.95
.040	.2450	.2670	.500	.080	.853	.1200	.2500	2.0	QRR-3030	46.70	QRR-3030X	52.95

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

Continued on next page

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 ^{+ .002"} _{-.000"}	H		L2 ^{+ .030"} _{-.000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.046	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-046-500-310	58.35	QRR-046-500-310X	65.80
.046	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-046-750-310	58.35	QRR-046-750-310X	65.80
.046	.3700	.3920	.375	.100	.853	.1825	.3750	2.0	QRR-046-375-370	76.00	QRR-046-375-370X	84.35
.046	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-046-8	76.00	QRR-046-8X	84.35
.046	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-046-12	76.00	QRR-046-12X	84.35
.046	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-046-16	76.00	QRR-046-16X	85.30
.046	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-046-20	76.00	QRR-046-20X	85.30
.055	.2450	.2670	.500	.080	.853	.1200	.2500	2.0	QRR-4257	46.70	QRR-4257X	52.95
.055	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-055-8	76.00	QRR-055-8X	84.35
.055	.3700	.3920	.500	.150	.853	.1825	.3750	2.0	QRR-1660	76.00	QRR-1660X	84.80
.055	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-055-12	76.00	QRR-055-12X	84.35
.055	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-5000	76.00	QRR-5000X	84.80
.055	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-055-16	76.00	QRR-055-16X	85.30
.055	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-055-20	76.00	QRR-055-20X	85.30
.059	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-059-8	76.00	QRR-059-8X	84.35
.059	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-059-12	76.00	QRR-059-12X	84.35
.059	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-059-16	76.00		
.059	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-059-20	76.00	QRR-059-20X	85.30
.062	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QRR-062-250-180	39.75	QRR-062-250-180X	43.75
.062	.1800	.1980	.250	.070	.590	.0863	.1875	1.5	QRR-7865	39.75	QRR-7865X	44.95
.062	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QRR-062-500-180	39.75	QRR-062-500-180X	43.75
.062	.1800	.1980	.500	.070	.590	.0863	.1875	1.5	QRR-4145	39.75	QRR-4145X	44.95
.062	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QRR-062-250-245	46.70	QRR-062-250-245X	52.95
.062	.2450	.2670	.250	.090	.853	.1200	.2500	2.0	QRR-6681	46.70	QRR-6681X	52.95
.062	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QRR-062-500-245	46.70	QRR-062-500-245X	52.95
.062	.2450	.2670	.500	.090	.853	.1200	.2500	2.0	QRR-2685	46.70	QRR-2685X	52.95
.062	.2450	.2670	.750	.050	.853	.1200	.2500	2.0	QRR-1198	46.70	QRR-1198X	52.95
.062	.2450	.2670	.750	.090	.853	.1200	.2500	2.0	QRR-2795	46.70	QRR-2795X	52.95
.062	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-062-500-310	58.35	QRR-062-500-310X	65.80
.062	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-062-750-310	58.35	QRR-062-750-310X	65.80
.062	.3700	.3920	.250	.100	.853	.1825	.3750	2.0	QRR-062-250-370	76.00	QRR-062-250-370X	84.35
.062	.3700	.3920	.375	.100	.853	.1825	.3750	2.0	QRR-062-375-370	76.00	QRR-062-375-370X	84.35
.062	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-062-8	76.00	QRR-062-8X	84.35
.062	.3700	.3920	.500	.150	.853	.1825	.3750	2.0	QRR-0824	76.00	QRR-0824X	84.80
.062	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-062-12	76.00	QRR-062-12X	84.35
.062	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-6068	76.00	QRR-6068X	84.80
.062	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-062-16	76.00	QRR-062-16X	85.30
.062	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-062-20	76.00	QRR-062-20X	85.30
.069	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-069-8	76.00	QRR-069-8X	84.35
.069	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-069-12	76.00	QRR-069-12X	84.35
.069	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-7828	76.00	QRR-7828X	84.80
.069	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-069-16	76.00	QRR-069-16X	85.30
.069	.3700	.3920	1.000	.150	1.353	.1825	.3750	2.5	QRR-4609	76.00	QRR-4609X	85.30
.069	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-069-20	76.00		
.079	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-079-8	76.00	QRR-079-8X	84.35
.079	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-079-12	76.00	QRR-079-12X	84.35
.079	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-079-16	76.00	QRR-079-16X	85.30
.079	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-079-20	76.00	QRR-079-20X	85.30

*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 pgs 85 for miniature sizes

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

QRR

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 ^{+ .002"} _{– .000"}	H		L2 ^{+ .030"} _{– .000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.087	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QRR-087-500-310	58.35	QRR-087-500-310X	65.80
.087	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QRR-087-750-310	58.35	QRR-087-750-310X	65.80
.087	.3700	.3920	.375	.100	.853	.1825	.3750	2.0	QRR-087-375-370	76.00	QRR-087-375-370X	84.35
.087	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QRR-087-8	76.00	QRR-087-8X	84.35
.087	.3700	.3920	.500	.150	.853	.1825	.3750	2.0	QRR-7847	76.00	QRR-7847X	84.80
.087	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-087-12	76.00	QRR-087-12X	84.35
.087	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-4895	76.00	QRR-4895X	84.80
.087	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-087-16	76.00	QRR-087-16X	85.30
.087	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-087-20	76.00	QRR-087-20X	85.30
.093	.4950	.5170	.500	.150	1.040	.2450	.5000	2.5	QRR-7835	106.40	QRR-7835X	119.15
.093	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-093-12	106.40	QRR-093-12X	119.15
.093	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-093-16	106.40	QRR-093-16X	119.15
.093	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-093-20	106.40	QRR-093-20X	119.15
.093	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-093-24	106.40	QRR-093-24X	119.15
.118	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-118-12	106.40	QRR-118-12X	119.15
.118	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-118-16	106.40	QRR-118-16X	119.15
.118	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-118-20	106.40	QRR-118-20X	119.15
.118	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-118-24	106.40		
.125	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QRR-125-750-370	76.00	QRR-125-750-370X	84.35
.125	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QRR-3068	76.00	QRR-3068X	84.80
.125	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QRR-125-1000-370	76.00	QRR-125-1000-370X	85.30
.125	.3700	.3920	1.000	.150	1.353	.1825	.3750	2.5	QRR-5586	76.00	QRR-5586X	85.30
.125	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QRR-125-1250-370	76.00	QRR-125-1250-370X	85.30
.125	.3700	.3920	1.250	.150	1.353	.1825	.3750	2.5	QRR-0965	76.00	QRR-0965X	85.30
.125	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-125-12	106.40	QRR-125-12X	119.15
.125	.4950	.5170	.750	.200	1.040	.2450	.5000	2.5	QRR-5199	106.40	QRR-5199X	119.15
.125	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-125-16	106.40	QRR-125-16X	119.15
.125	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-125-20	106.40	QRR-125-20X	119.15
.125	.4950	.5170	1.250	.200	1.540	.2450	.5000	3.0	QRR-7934	106.40	QRR-7934X	119.15
.125	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-125-24	106.40	QRR-125-24X	119.15
.156	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-156-12	106.40		
.156	.4950	.5170	.750	.200	1.040	.2450	.5000	2.5	QRR-1563	106.40	QRR-1563X	119.15
.156	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5			QRR-156-16X	119.15
.156	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-156-20	106.40	QRR-156-20X	119.15
.156	.4950	.5170	1.250	.200	1.540	.2450	.5000	3.0	QRR-9832	106.40	QRR-9832X	119.15
.156	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-156-24	106.40		
.187	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-187-12	106.40		
.187	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-187-16	106.40	QRR-187-16X	119.15
.187	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-187-20	106.40		
.187	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-187-24	106.40		
.236	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QRR-236-12	106.40		
.236	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5			QRR-236-16X	119.15
.236	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-236-20	106.40		
.250	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QRR-250-16	106.40		
.250	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QRR-250-20	106.40		
.250	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QRR-250-24	106.40	QRR-250-24X	119.15

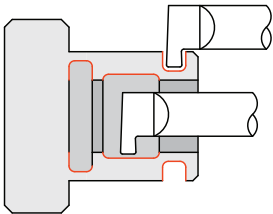
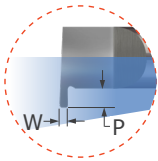
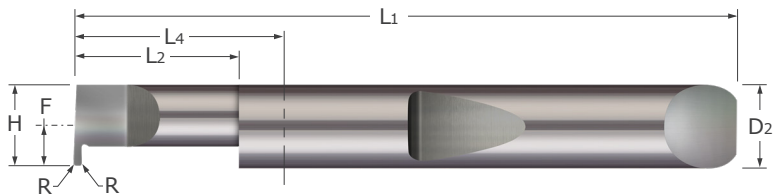
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options
See pgs 85 for miniature sizes



QRRC

Quick Change – Grooving Tools
Retaining Ring - Corner Radius - Right Hand



- 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

Width	Head Width	Min. Bore Dia.*	Max. Bore Depth	Radius	Proj.	Length From Holder	Cntrln Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .001"} _{-.000"}	H		L2 ^{+ .030"} _{-.000"}	R ^{+ .001"} _{-.001"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.017	.1800	.1980	.250	.003	.030	.590	.0863	.1875	1.5	QRRC3-017-250-180	42.95	QRRC3-017-250-180X	47.05
.017	.1800	.1980	.375	.003	.030	.590	.0863	.1875	1.5	QRRC3-017-375-180	42.95	QRRC3-017-375-180X	47.05
.017	.2450	.2670	.250	.003	.050	.853	.1200	.2500	2.0	QRRC3-017-250-245	53.65	QRRC3-017-250-245X	59.80
.017	.2450	.2670	.375	.003	.050	.853	.1200	.2500	2.0	QRRC3-017-375-245	53.65	QRRC3-017-375-245X	59.80
.020	.1800	.1980	.250	.003	.030	.590	.0863	.1875	1.5	QRRC3-020-250-180	42.95	QRRC3-020-250-180X	47.05
.020	.1800	.1980	.375	.003	.030	.590	.0863	.1875	1.5	QRRC3-020-375-180	42.95	QRRC3-020-375-180X	47.05
.020	.2450	.2670	.250	.003	.050	.853	.1200	.2500	2.0	QRRC3-020-250-245	53.65	QRRC3-020-250-245X	59.80
.020	.2450	.2670	.375	.003	.050	.853	.1200	.2500	2.0	QRRC3-020-375-245	53.65	QRRC3-020-375-245X	59.80
.025	.2450	.2670	.250	.003	.050	.853	.1200	.2500	2.0	QRRC3-025-250-245	53.65	QRRC3-025-250-245X	59.80
.025	.2450	.2670	.375	.003	.050	.853	.1200	.2500	2.0	QRRC3-025-375-245	53.65	QRRC3-025-375-245X	59.80
.030	.1800	.1980	.250	.003	.030	.590	.0863	.1875	1.5	QRRC3-030-250-180	42.95	QRRC3-030-250-180X	47.05
.030	.1800	.1980	.500	.003	.030	.590	.0863	.1875	1.5	QRRC3-030-500-180	42.95	QRRC3-030-500-180X	47.05
.030	.2450	.2670	.250	.003	.050	.853	.1200	.2500	2.0	QRRC3-030-250-245	53.65	QRRC3-030-250-245X	59.80
.030	.2450	.2670	.375	.003	.050	.853	.1200	.2500	2.0	QRRC3-030-375-245	53.65	QRRC3-030-375-245X	59.80
.030	.3100	.3320	.500	.003	.100	.853	.1538	.3125	2.0	QRRC3-030-500-310	66.95	QRRC3-030-500-310X	74.40
.030	.3100	.3320	.750	.003	.100	.853	.1538	.3125	2.0	QRRC3-030-750-310	66.95	QRRC3-030-750-310X	74.40
.033	.3100	.3320	.500	.003	.100	.853	.1538	.3125	2.0	QRRC3-033-500-310	66.95	QRRC3-033-500-310X	74.40
.033	.3100	.3320	.750	.003	.100	.853	.1538	.3125	2.0	QRRC3-033-750-310	66.95	QRRC3-033-750-310X	74.40
.038	.3100	.3320	.500	.003	.100	.853	.1538	.3125	2.0	QRRC3-038-500-310	66.95	QRRC3-038-500-310X	74.40
.038	.3100	.3320	.750	.003	.100	.853	.1538	.3125	2.0	QRRC3-038-750-310	66.95	QRRC3-038-750-310X	74.40

W ^{+ .002"} _{-.000"}	H		L2 ^{+ .030"} _{-.000"}	R ^{+ .001"} _{-.000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.039	.3700	.3920	.500	.003	.100	.853	.1825	.3750	2.0	QRRC3-039-500-370	84.70	QRRC3-039-500-370X	93.50
.039	.3700	.3920	.750	.003	.100	.853	.1825	.3750	2.0	QRRC3-039-750-370	84.70	QRRC3-039-750-370X	93.50
.039	.3700	.3920	1.000	.003	.100	1.353	.1825	.3750	2.5	QRRC3-039-1000-370	84.70	QRRC3-039-1000-370X	94.15
.062	.3700	.3920	.500	.003	.100	.853	.1825	.3750	2.0	QRRC3-062-500-370	84.70	QRRC3-062-500-370X	93.50
.062	.3700	.3920	.500	.006	.100	.853	.1825	.3750	2.0	QRRC6-062-500-370	84.70	QRRC6-062-500-370X	93.50
.062	.3700	.3920	.750	.003	.100	.853	.1825	.3750	2.0	QRRC3-062-750-370	84.70	QRRC3-062-750-370X	93.50
.062	.3700	.3920	.750	.006	.100	.853	.1825	.3750	2.0	QRRC6-062-750-370	84.70	QRRC6-062-750-370X	93.50
.062	.3700	.3920	1.000	.003	.100	1.353	.1825	.3750	2.5	QRRC3-062-1000-370	84.70	QRRC3-062-1000-370X	94.15
.062	.3700	.3920	1.000	.006	.100	1.353	.1825	.3750	2.5	QRRC6-062-1000-370	84.70	QRRC6-062-1000-370X	94.15

*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 – Grooving Tools

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

QRRC

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	
W ^{+ .002"} _{-.000"}	H	L2	L2 ^{+ .030"} _{-.000"}	R ^{+ .001"} _{-.000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.087	.3700	.3920	.500	.003	.100	.853	.1825	.3750	2.0	QRRC3-087-500-370	84.70	QRRC3-087-500-370X	93.50
.087	.3700	.3920	.500	.006	.100	.853	.1825	.3750	2.0	QRRC6-087-500-370	84.70	QRRC6-087-500-370X	93.50
.087	.3700	.3920	.750	.003	.100	.853	.1825	.3750	2.0	QRRC3-087-750-370	84.70	QRRC3-087-750-370X	93.50
.087	.3700	.3920	.750	.006	.100	.853	.1825	.3750	2.0	QRRC6-087-750-370	84.70	QRRC6-087-750-370X	93.50
.087	.3700	.3920	1.000	.003	.100	1.353	.1825	.3750	2.5	QRRC3-087-1000-370	84.70	QRRC3-087-1000-370X	94.15
.087	.3700	.3920	1.000	.006	.100	1.353	.1825	.3750	2.5	QRRC6-087-1000-370	84.70	QRRC6-087-1000-370X	94.15
.093	.4950	.5170	.750	.003	.150	1.040	.2450	.5000	2.5	QRRC3-093-750-495	116.55	QRRC3-093-750-495X	129.35
.093	.4950	.5170	.750	.006	.150	1.040	.2450	.5000	2.5	QRRC6-093-750-495	116.55	QRRC6-093-750-495X	129.35
.093	.4950	.5170	1.000	.003	.150	1.040	.2450	.5000	2.5	QRRC3-093-1000-495	116.55	QRRC3-093-1000-495X	129.35
.093	.4950	.5170	1.000	.006	.150	1.040	.2450	.5000	2.5	QRRC6-093-1000-495	116.55	QRRC6-093-1000-495X	129.35
.125	.4950	.5170	.750	.003	.150	1.040	.2450	.5000	2.5	QRRC3-125-750-495	116.55	QRRC3-125-750-495X	129.35
.125	.4950	.5170	.750	.006	.150	1.040	.2450	.5000	2.5	QRRC6-125-750-495	116.55	QRRC6-125-750-495X	129.35
.125	.4950	.5170	1.000	.003	.150	1.040	.2450	.5000	2.5	QRRC3-125-1000-495	116.55	QRRC3-125-1000-495X	129.35
.125	.4950	.5170	1.000	.006	.150	1.040	.2450	.5000	2.5	QRRC6-125-1000-495	116.55	QRRC6-125-1000-495X	129.35

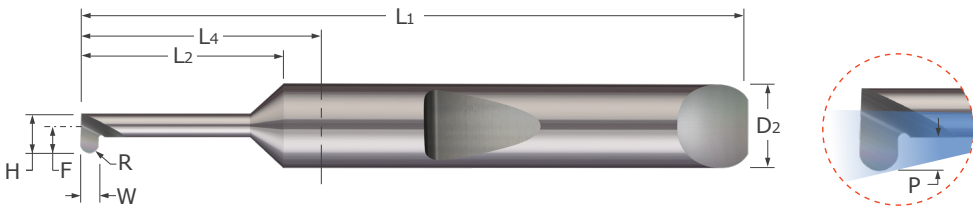
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

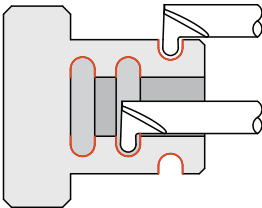


QMFR

Quick Change – Grooving Tools
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 ^{+ .002"} _{- .000"}	R ^{+ .001"} _{- .000"}	H		L2 ^{+ .030"} _{- .000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.015	.0075	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMFR-015-250-080	52.00	QMFR-015-250-080X	56.40
.015	.0075	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMFR-015-375-080	52.00	QMFR-015-375-080X	56.40
.015	.0075	.0800	.0900	.500	.025	.590	.0525	.1875	1.5			QMFR-015-500-080X	56.40
.015	.0075	.1000	.1100	.250	.030	.590	.0650	.1875	1.5			QMFR-015-250-100X	56.40
.015	.0075	.1000	.1100	.500	.030	.590	.0650	.1875	1.5	QMFR-015-500-100	52.00	QMFR-015-500-100X	56.40
.015	.0075	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMFR-015-750-100	52.00	QMFR-015-750-100X	56.40
.020	.0100	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMFR-020-250-080	46.70	QMFR-020-250-080X	51.00
.020	.0100	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMFR-020-375-080	46.70	QMFR-020-375-080X	51.00
.020	.0100	.0800	.0900	.500	.025	.590	.0525	.1875	1.5			QMFR-020-500-080X	51.00
.020	.0100	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMFR-020-250-100	46.70	QMFR-020-250-100X	51.00
.020	.0100	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMFR-020-750-100	46.70		
.020	.0100	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMFR-020-250-120	46.70	QMFR-020-250-120X	51.00
.020	.0100	.1200	.1340	.500	.040	.590	.0800	.1875	1.5	QMFR-020-500-120	46.70	QMFR-020-500-120X	51.00
.020	.0100	.1200	.1340	.750	.040	1.090	.0800	.1875	2.0	QMFR-020-750-120	46.70	QMFR-020-750-120X	51.00
.030	.0150	.0800	.0900	.250	.025	.590	.0525	.1875	1.5	QMFR-030-250-080	46.70	QMFR-030-250-080X	51.00
.030	.0150	.0800	.0900	.375	.025	.590	.0525	.1875	1.5	QMFR-030-375-080	46.70		
.030	.0150	.0800	.0900	.500	.025	.590	.0525	.1875	1.5	QMFR-030-500-080	46.70	QMFR-030-500-080X	51.00
.030	.0150	.1000	.1100	.250	.030	.590	.0650	.1875	1.5	QMFR-030-250-100	46.70	QMFR-030-250-100X	51.00
.030	.0150	.1000	.1100	.500	.030	.590	.0650	.1875	1.5			QMFR-030-500-100X	51.00
.030	.0150	.1000	.1100	.750	.030	1.090	.0650	.1875	2.0	QMFR-030-750-100	46.70	QMFR-030-750-100X	51.00
.030	.0150	.1200	.1340	.250	.040	.590	.0800	.1875	1.5	QMFR-030-250-120	46.70	QMFR-030-250-120X	51.00
.030	.0150	.1200	.1340	.500	.040	.590	.0800	.1875	1.5	QMFR-030-500-120	46.70	QMFR-030-500-120X	51.00
.030	.0150	.1200	.1340	.750	.040	1.090	.0800	.1875	2.0	QMFR-030-750-120	46.70	QMFR-030-750-120X	51.00

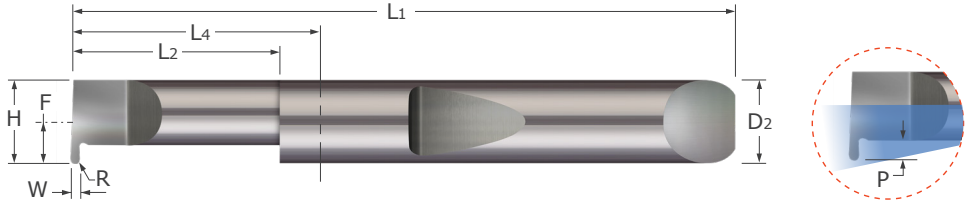
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

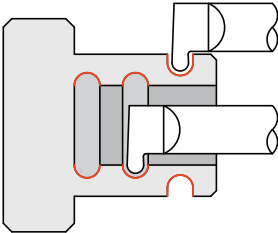
Quick Change – Grooving Tools

QFR

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



Width	Radius	Head Width	Min. Bore Dia.*	Max. Bore Depth	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} _{-.000"}	R	H		L2 ^{+ .030"} _{-.000"}	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.017	.0085	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QFR-017-4	42.95	QFR-017-4X	47.05
.017	.0085	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QFR-017-8	42.95	QFR-017-8X	47.05
.017	.0085	.1800	.1980	.625	.030	1.090	.0863	.1875	2.0	QFR-017-10	42.95		
.020	.0100	.1800	.1980	.250	.030	.590	.0863	.1875	1.5	QFR-020-4	42.95	QFR-020-4X	47.05
.020	.0100	.1800	.1980	.375	.030	.590	.0863	.1875	1.5	QFR-020-6	42.95	QFR-020-6X	47.05
.020	.0100	.1800	.1980	.500	.030	.590	.0863	.1875	1.5	QFR-020-8	42.95	QFR-020-8X	47.05
.020	.0100	.1800	.1980	.625	.030	1.090	.0863	.1875	2.0			QFR-020-10X	47.05
.025	.0125	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QFR-025-4	53.65	QFR-025-4X	59.80
.025	.0125	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QFR-025-6	53.65	QFR-025-6X	59.80
.025	.0125	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QFR-025-8	53.65	QFR-025-8X	59.80
.025	.0125	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QFR-025-10	53.65	QFR-025-10X	59.80
.030	.0150	.2450	.2670	.250	.050	.853	.1200	.2500	2.0	QFR-030-4	53.65	QFR-030-4X	59.80
.030	.0150	.2450	.2670	.375	.050	.853	.1200	.2500	2.0	QFR-030-6	53.65		
.030	.0150	.2450	.2670	.500	.050	.853	.1200	.2500	2.0	QFR-030-8	53.65	QFR-030-8X	59.80
.030	.0150	.2450	.2670	.625	.050	.853	.1200	.2500	2.0	QFR-030-10	53.65	QFR-030-10X	59.80
.033	.0165	.3100	.3320	.375	.100	.853	.1538	.3125	2.0	QFR-033-6	66.95	QFR-033-6X	74.40
.033	.0165	.3100	.3320	.500	.100	.853	.1538	.3125	2.0			QFR-033-8X	74.40
.033	.0165	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QFR-033-12	66.95	QFR-033-12X	74.40
.038	.0190	.3100	.3320	.375	.100	.853	.1538	.3125	2.0	QFR-038-6	66.95	QFR-038-6X	74.40
.038	.0190	.3100	.3320	.500	.100	.853	.1538	.3125	2.0	QFR-038-8	66.95	QFR-038-8X	74.40
.038	.0190	.3100	.3320	.750	.100	.853	.1538	.3125	2.0	QFR-038-12	66.95	QFR-038-12X	74.40
.039	.0195	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-039-8	84.70	QFR-039-8X	93.50
.039	.0195	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-039-12	84.70		
.039	.0195	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-039-16	84.70		
.046	.0230	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-046-8	84.70	QFR-046-8X	93.50
.046	.0230	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-046-12	84.70		
.046	.0230	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-046-20	84.70		
.055	.0275	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-055-8	84.70	QFR-055-8X	93.50
.055	.0275	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-055-12	84.70	QFR-055-12X	93.50
.055	.0275	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-055-16	84.70	QFR-055-16X	94.15
.055	.0275	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5			QFR-055-20X	94.15
.059	.0295	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-059-8	84.70	QFR-059-8X	93.50
.059	.0295	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-059-12	84.70	QFR-059-12X	93.50
.059	.0295	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-059-16	84.70		
.059	.0295	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-059-20	84.70		

*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 pgs 93 for miniature sizes

QFR

Quick Change – Grooving Tools
Full Radius (cont.)

Continued from previous page

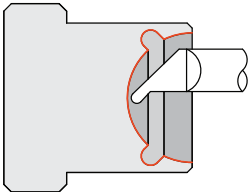
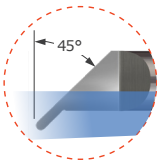
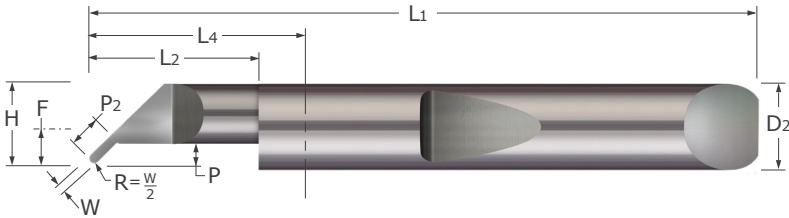
Width	Radius	Head Width	Min. Bore Dia.*	Max. Bore Depth	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} - .000"	R	H		L2 ^{+ .030"} - .000"	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.062	.0310	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-062-8	84.70	QFR-062-8X	93.50
.062	.0310	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-062-12	84.70	QFR-062-12X	93.50
.062	.0310	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-062-16	84.70	QFR-062-16X	94.15
.062	.0310	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-062-20	84.70	QFR-062-20X	94.15
.069	.0345	.3700	.3920	.500	.100	.853	.1825	.3750	2.0			QFR-069-8X	93.50
.069	.0345	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-069-12	84.70	QFR-069-12X	93.50
.069	.0345	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5			QFR-069-16X	94.15
.069	.0345	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-069-20	84.70	QFR-069-20X	94.15
.079	.0395	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-079-8	84.70	QFR-079-8X	93.50
.079	.0395	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-079-12	84.70	QFR-079-12X	93.50
.079	.0395	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5	QFR-079-16	84.70	QFR-079-16X	94.15
.079	.0395	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5	QFR-079-20	84.70	QFR-079-20X	94.15
.087	.0435	.3700	.3920	.500	.100	.853	.1825	.3750	2.0	QFR-087-8	84.70	QFR-087-8X	93.50
.087	.0435	.3700	.3920	.500	.150	.853	.1825	.3750	2.0	QFR-7847	84.70	QFR-7847X	93.50
.087	.0435	.3700	.3920	.750	.100	.853	.1825	.3750	2.0	QFR-087-12	84.70	QFR-087-12X	93.50
.087	.0435	.3700	.3920	.750	.150	.853	.1825	.3750	2.0	QFR-4895	84.70	QFR-4895X	93.50
.087	.0435	.3700	.3920	1.000	.100	1.353	.1825	.3750	2.5			QFR-087-16X	94.15
.087	.0435	.3700	.3920	1.250	.100	1.353	.1825	.3750	2.5			QFR-087-20X	94.15
.093	.0465	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-093-12	116.55	QFR-093-12X	129.35
.093	.0465	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-093-16	116.55	QFR-093-16X	129.35
.093	.0465	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0			QFR-093-20X	129.35
.093	.0465	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-093-24	116.55	QFR-093-24X	129.35
.118	.0590	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-118-12	116.55		
.118	.0590	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-118-16	116.55	QFR-118-16X	129.35
.125	.0625	.3700	.3920	1.000	.150	1.353	.1825	.3750	2.5	QFR-5586	84.70	QFR-5586X	94.15
.125	.0625	.3700	.3920	1.250	.150	1.353	.1825	.3750	2.5	QFR-0965	84.70	QFR-0965X	94.15
.125	.0625	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-125-12	116.55	QFR-125-12X	129.35
.125	.0625	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-125-16	116.55	QFR-125-16X	129.35
.125	.0625	.4950	.5170	1.000	.200	1.040	.2450	.5000	2.5	QFR-7934	116.55	QFR-7934X	129.35
.125	.0625	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-125-20	116.55	QFR-125-20X	129.35
.125	.0625	.4950	.5170	1.250	.200	1.540	.2450	.5000	3.0	QFR-0271	116.55	QFR-0271X	129.35
.125	.0625	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-125-24	116.55	QFR-125-24X	129.35
.156	.0780	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-156-20	116.55	QFR-156-20X	129.35
.156	.0780	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-156-24	116.55		
.187	.0935	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-187-12	116.55		
.187	.0935	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5	QFR-187-16	116.55		
.187	.0935	.4950	.5170	1.000	.200	1.040	.2450	.5000	2.5	QFR-5272	116.55	QFR-5272X	129.35
.187	.0935	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0			QFR-187-20X	129.35
.187	.0935	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0			QFR-187-24X	129.35
.236	.1180	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-236-12	116.55		
.236	.1180	.4950	.5170	1.500	.150	1.540	.2450	.5000	3.0	QFR-236-24	116.55		
.250	.1250	.4950	.5170	.750	.150	1.040	.2450	.5000	2.5	QFR-250-12	116.55		
.250	.1250	.4950	.5170	1.000	.150	1.040	.2450	.5000	2.5			QFR-250-16X	129.35
.250	.1250	.4950	.5170	1.250	.150	1.540	.2450	.5000	3.0	QFR-250-20	116.55		

*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 pgs 93 for miniature sizes

Quick Change – Grooving Tools
Undercutting – Full Radius

QUP



- 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-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	Angled Projection	Head Width	Min. Bore Diameter*	Max. Bore Depth	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
W ^{+0.002"} _{-.000"}	P	P2	H		L2 ^{+0.030"} _{-.000"}	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.020	.050	.0765	.1800	.1980	.375	.590	.0862	.1875	1.5	QUP-18020-6	49.70	QUP-18020-6X	54.90
.020	.050	.0765	.1800	.1980	.500	.590	.0862	.1875	1.5	QUP-18020-8	49.70	QUP-18020-8X	54.90
.025	.050	.0780	.1800	.1980	.375	.590	.0862	.1875	1.5	QUP-18025-6	49.70	QUP-18025-6X	54.90
.025	.050	.0780	.1800	.1980	.500	.590	.0862	.1875	1.5	QUP-18025-8	49.70	QUP-18025-8X	54.90
.025	.060	.0921	.2400	.2620	.375	.853	.1150	.2500	2.0	QUP-25025-6	53.55	QUP-25025-6X	59.70
.025	.060	.0921	.2400	.2620	.500	.853	.1150	.2500	2.0	QUP-25025-8	53.55	QUP-25025-8X	59.70
.030	.050	.0794	.1800	.1980	.375	.590	.0862	.1875	1.5	QUP-18030-6	49.70	QUP-18030-6X	54.90
.030	.050	.0794	.1800	.1980	.500	.590	.0862	.1875	1.5	QUP-18030-8	49.70	QUP-18030-8X	54.90
.030	.060	.0936	.2400	.2620	.500	.853	.1150	.2500	2.0	QUP-25030-8	53.55	QUP-25030-8X	59.70
.030	.060	.0936	.2400	.2620	1.000	1.353	.1150	.2500	2.5	QUP-25030-16	53.55	QUP-25030-16X	60.10
.039	.050	.0821	.1800	.1980	.375	.590	.0862	.1875	1.5	QUP-18039-6	49.70	QUP-18039-6X	54.90
.039	.060	.0962	.2400	.2620	.500	.853	.1150	.2500	2.0	QUP-25039-8	53.55	QUP-25039-8X	59.70
.039	.060	.0962	.2400	.2620	1.000	1.353	.1150	.2500	2.5	QUP-25039-16	53.55	QUP-25039-16X	60.10
.050	.083	.1320	.3030	.3250	.500	.853	.1467	.3125	2.0	QUP-31050-8	65.10	QUP-31050-8X	72.55
.050	.083	.1320	.3030	.3250	1.000	1.353	.1467	.3125	2.5	QUP-31050-16	67.25	QUP-31050-16X	75.15
.062	.083	.1355	.3030	.3250	1.000	1.353	.1467	.3125	2.5	QUP-31062-16	67.25	QUP-31062-16X	75.15
.062	.095	.1525	.3650	.3870	1.000	1.353	.1775	.3750	2.5	QUP-37062-16	86.55	QUP-37062-16X	95.90
.062	.125	.1949	.4900	.5120	1.500	1.540	.2400	.5000	3.0	QUP-50062-24	119.45	QUP-50062-24X	132.25

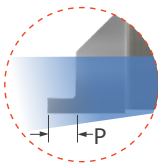
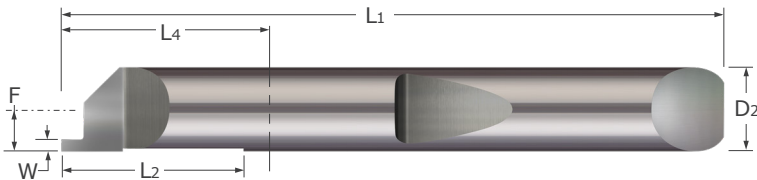
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options

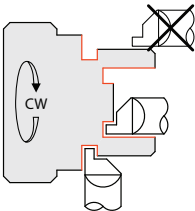


QFG

Quick Change – 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
- 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

									Uncoated		AlTiN Coated	
Width	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length		Tool #	USD\$	Tool #	USD\$
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	37.45	QFG-187-015-025X	41.45
.015	.025	.260	.750	.853	.1250	.2500	2.0		QFG-250-015-025	37.45	QFG-250-015-025X	43.60
.017	.025	.197	.500	.590	.0938	.1875	1.5		QFG-187-017-025	37.45	QFG-187-017-025X	41.45
.017	.025	.260	.750	.853	.1250	.2500	2.0		QFG-250-017-025	37.45	QFG-250-017-025X	43.60
.020	.025	.197	.500	.590	.0938	.1875	1.5		QFG-187-020-025	37.45	QFG-187-020-025X	41.45
.020	.025	.260	.750	.853	.1250	.2500	2.0		QFG-250-020-025	37.45	QFG-250-020-025X	43.60
.020	.050	.190	.500	.590	.0860	.1875	1.5		QFG-180-020	37.45	QFG-180-020X	41.45
.020	.050	.197	.500	.590	.0938	.1875	1.5		QFG-187-020-050	37.45	QFG-187-020-050X	41.45
.020	.050	.240	.750	.853	.1050	.2500	2.0		QFG-230-020	37.45	QFG-230-020X	43.60
.020	.050	.260	.750	.853	.1250	.2500	2.0		QFG-250-020	37.45	QFG-250-020X	43.60
.025	.025	.197	.500	.590	.0938	.1875	1.5		QFG-187-025-025	37.45	QFG-187-025-025X	41.45
.025	.025	.260	.750	.853	.1250	.2500	2.0		QFG-250-025-025	37.45	QFG-250-025-025X	43.60
.025	.050	.197	.500	.590	.0938	.1875	1.5		QFG-187-025-050	37.45	QFG-187-025-050X	41.45
.025	.050	.260	.750	.853	.1250	.2500	2.0		QFG-250-025-050	37.45	QFG-250-025-050X	43.60
.030	.050	.190	.500	.590	.0860	.1875	1.5		QFG-180-030	37.45	QFG-180-030X	41.45
.030	.050	.197	.500	.590	.0938	.1875	1.5		QFG-187-030-050	37.45	QFG-187-030-050X	41.45
.030	.050	.240	.750	.853	.1050	.2500	2.0		QFG-230-030	37.45	QFG-230-030X	43.60
.030	.050	.260	.750	.853	.1250	.2500	2.0		QFG-250-030	37.45	QFG-250-030X	43.60
.030	.050	.322	.750	.853	.1563	.3125	2.0		QFG-312-030	51.15	QFG-312-030X	58.65
.030	.050	.385	.750	.853	.1875	.3750	2.0		QFG-375-030-050	71.20	QFG-375-030-050X	79.45
.030	.075	.197	.500	.590	.0938	.1875	1.5		QFG-187-030-075	37.45	QFG-187-030-075X	41.45
.030	.075	.260	.750	.853	.1250	.2500	2.0		QFG-250-030-075	37.45	QFG-250-030-075X	43.60
.030	.075	.322	.750	.853	.1563	.3125	2.0		QFG-3098	51.15	QFG-3098X	58.65
.039	.050	.260	.750	.853	.1250	.2500	2.0		QFG-250-039-050	37.45	QFG-250-039-050X	43.60
.039	.050	.385	.750	.853	.1875	.3750	2.0		QFG-375-039-050	71.20	QFG-375-039-050X	79.45
.039	.075	.260	.750	.853	.1250	.2500	2.0		QFG-250-039-075	37.45	QFG-250-039-075X	43.60
.040	.050	.197	.500	.590	.0938	.1875	1.5		QFG-187-040-050	37.45	QFG-187-040-050X	41.45
.040	.050	.260	.750	.853	.1250	.2500	2.0		QFG-250-040-050	37.45	QFG-250-040-050X	43.60
.040	.050	.322	.750	.853	.1563	.3125	2.0		QFG-312-040	51.15	QFG-312-040X	58.65
.040	.050	.385	.750	.853	.1875	.3750	2.0		QFG-375-040-050	71.20	QFG-375-040-050X	79.45
.040	.075	.197	.500	.590	.0938	.1875	1.5		QFG-187-040-075	37.45	QFG-187-040-075X	41.45
.040	.075	.260	.750	.853	.1250	.2500	2.0		QFG-250-040-075	37.45	QFG-250-040-075X	43.60
.040	.075	.322	.750	.853	.1563	.3125	2.0		QFG-5702	51.15	QFG-5702X	58.65

*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 – Square (cont.)

QFG

Continued from previous page

Width	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} _{-.000"}	P ^{+ .015"} _{-.000"}		L ₂	L ₄	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.050	.050	.197	.500	.590	.0938	.1875	1.5	QFG-187-050-050	37.45	QFG-187-050-050X	41.45
.050	.050	.260	.750	.853	.1250	.2500	2.0	QFG-250-050-050	37.45	QFG-250-050-050X	43.60
.050	.050	.385	.750	.853	.1875	.3750	2.0	QFG-375-050-050	71.20	QFG-375-050-050X	79.45
.050	.075	.197	.500	.590	.0938	.1875	1.5	QFG-187-050-075	37.45	QFG-187-050-075X	41.45
.050	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-050-075	37.45	QFG-250-050-075X	43.60
.050	.075	.322	.750	.853	.1563	.3125	2.0	QFG-312-050-075	51.15	QFG-312-050-075X	58.65
.059	.075	.197	.500	.590	.0938	.1875	1.5	QFG-187-059-075	37.45	QFG-187-059-075X	41.45
.059	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-059-075	37.45	QFG-250-059-075X	43.60
.059	.075	.385	.750	.853	.1875	.3750	2.0	QFG-375-059-075	71.20	QFG-375-059-075X	79.45
.059	.100	.197	.500	.590	.0938	.1875	1.5	QFG-187-059-100	37.45	QFG-187-059-100X	41.45
.059	.100	.260	.750	.853	.1250	.2500	2.0	QFG-250-059-100	37.45	QFG-250-059-100X	43.60
.062	.075	.197	.500	.590	.0938	.1875	1.5	QFG-187-062-075	37.45	QFG-187-062-075X	41.45
.062	.075	.260	.750	.853	.1250	.2500	2.0	QFG-250-062-075	37.45	QFG-250-062-075X	43.60
.062	.075	.322	.750	.853	.1563	.3125	2.0	QFG-312-062-075	51.15	QFG-312-062-075X	58.65
.062	.075	.385	.750	.853	.1875	.3750	2.0	QFG-375-062-075	71.20	QFG-375-062-075X	79.45
.062	.100	.197	.500	.590	.0938	.1875	1.5	QFG-187-062-100	37.45	QFG-187-062-100X	41.45
.062	.100	.260	.750	.853	.1250	.2500	2.0	QFG-250-062-100	37.45	QFG-250-062-100X	43.60
.062	.100	.322	.750	.853	.1563	.3125	2.0	QFG-312-062	51.15	QFG-312-062X	58.65
.062	.100	.385	.750	.853	.1875	.3750	2.0	QFG-375-062	71.20	QFG-375-062X	79.45
.062	.100	.480	1.000	1.040	.2200	.5000	2.5	QFG-470-062	80.75	QFG-470-062X	92.85
.062	.100	.500	1.000	1.040	.2400	.5000	2.5	QFG-490-062	80.75	QFG-490-062X	92.85
.062	.150	.197	.500	.590	.0938	.1875	1.5	QFG-187-062-150	37.45	QFG-187-062-150X	41.45
.062	.150	.260	.750	.853	.1250	.2500	2.0	QFG-250-062-150	37.45	QFG-250-062-150X	43.60
.062	.150	.322	.750	.853	.1563	.3125	2.0	QFG-312-062-150	51.15	QFG-312-062-150X	58.65
.062	.150	.385	.750	.853	.1875	.3750	2.0	QFG-375-062-150	71.20	QFG-375-062-150X	79.45
.062	.150	.500	1.450	1.540	.2400	.5000	3.0	QFG-1206	82.50	QFG-1206X	95.20
.078	.100	.260	.750	.853	.1250	.2500	2.0	QFG-250-078-100	37.45	QFG-250-078-100X	43.60
.078	.100	.322	.750	.853	.1563	.3125	2.0	QFG-312-078-100	51.15	QFG-312-078-100X	58.65
.078	.100	.385	.750	.853	.1875	.3750	2.0	QFG-375-078	71.20	QFG-375-078X	79.45
.078	.100	.480	1.000	1.040	.2200	.5000	2.5	QFG-470-078	80.75	QFG-470-078X	92.85
.078	.100	.500	1.000	1.040	.2400	.5000	2.5	QFG-490-078	80.75	QFG-490-078X	92.85
.093	.100	.385	.750	.853	.1875	.3750	2.0	QFG-375-093	71.20	QFG-375-093X	79.45
.093	.100	.480	1.000	1.040	.2200	.5000	2.5	QFG-470-093	80.75	QFG-470-093X	92.85
.093	.100	.500	1.000	1.040	.2400	.5000	2.5	QFG-490-093	80.75	QFG-490-093X	92.85
.093	.150	.322	.750	.853	.1563	.3125	2.0	QFG-312-093-150	51.15	QFG-312-093-150X	58.65
.093	.150	.385	.750	.853	.1875	.3750	2.0	QFG-375-093-150	71.20	QFG-375-093-150X	79.45
.118	.150	.385	.750	.853	.1875	.3750	2.0	QFG-375-118	71.20	QFG-375-118X	79.45
.118	.150	.480	1.000	1.040	.2200	.5000	2.5	QFG-470-118	80.75	QFG-470-118X	92.85
.118	.150	.500	1.000	1.040	.2400	.5000	2.5	QFG-490-118	80.75	QFG-490-118X	92.85
.125	.150	.385	.750	.853	.1875	.3750	2.0	QFG-375-125	71.20	QFG-375-125X	79.45
.125	.150	.480	1.000	1.040	.2200	.5000	2.5	QFG-470-125	80.75	QFG-470-125X	92.85
.125	.150	.500	1.000	1.040	.2400	.5000	2.5	QFG-490-125	80.75	QFG-490-125X	92.85
.125	.250	.385	.750	.853	.1875	.3750	2.0	QFG-375-125-250	71.20	QFG-375-125-250X	79.45
.125	.250	.500	1.450	1.540	.2400	.5000	3.0	QFG-5017	82.50	QFG-5017X	95.20
.156	.150	.480	1.000	1.040	.2200	.5000	2.5	QFG-470-156	80.75	QFG-470-156X	92.85
.156	.150	.500	1.000	1.040	.2400	.5000	2.5	QFG-490-156	80.75		

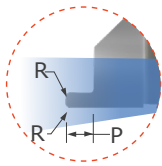
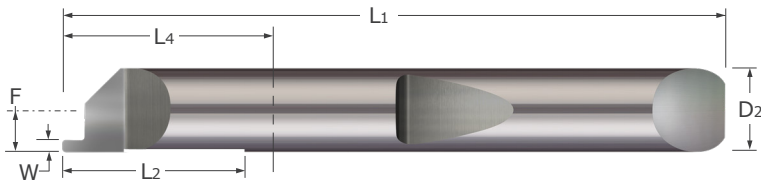
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 16-34 for quick change holder options

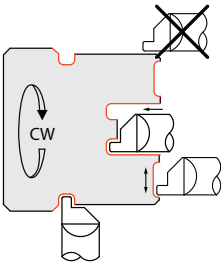


QFGC

Quick Change – Grooving Tools
Face Grooving – Corner Radius



- 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	Proj.	Minimum Groove Diameter*	Radius	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W _{+ .002" - .000"}	P _{+ .015" - .000"}		R _{+ .001" - .001"}	L ₂	L ₄	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.015	.025	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-015-025	34.55	QFGC3-187-015-025X	39.75
.015	.025	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-015-025	40.25	QFGC3-250-015-025X	46.40
.017	.025	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-017-025	34.55	QFGC3-187-017-025X	39.75
.017	.025	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-017-025	40.25	QFGC3-250-017-025X	46.40
.020	.025	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-020-025	34.55	QFGC3-187-020-025X	39.75
.020	.025	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-020-025	40.25	QFGC3-250-020-025X	46.40
.025	.025	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-025-025	34.55	QFGC3-187-025-025X	39.75
.025	.025	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-025-025	40.25	QFGC3-250-025-025X	46.40
.030	.050	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-030-050	34.55	QFGC3-187-030-050X	39.75
.030	.050	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-030-050	40.25	QFGC3-250-030-050X	46.40
.030	.050	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-030-050	52.95	QFGC3-312-030-050X	60.40
.030	.050	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-030-050	71.95	QFGC3-375-030-050X	80.75
.039	.050	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-039-050	34.55	QFGC3-187-039-050X	39.75
.039	.050	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-039-050	40.25	QFGC3-250-039-050X	46.40
.039	.050	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-039-050	71.95	QFGC3-375-039-050X	80.75
.040	.050	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-040-050	34.55	QFGC3-187-040-050X	39.75
.040	.050	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-040-050	40.25	QFGC3-250-040-050X	46.40
.040	.050	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-040-050	52.95	QFGC3-312-040-050X	60.40
.040	.050	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-040-050	71.95	QFGC3-375-040-050X	80.75
.050	.050	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-050-050	34.55	QFGC3-187-050-050X	39.75
.050	.050	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-050-050	40.25	QFGC3-250-050-050X	46.40
.050	.050	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-050-050	52.95	QFGC3-312-050-050X	60.40
.050	.050	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-050-050	71.95	QFGC3-375-050-050X	80.75
.059	.075	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-059-075	71.95	QFGC3-375-059-075X	80.75

*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 – Corner Radius (cont.)

QFGC

Continued from previous page

Width	Proj.	Minimum Groove Diameter*	Radius	Maximum Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	P $\begin{smallmatrix} +.015" \\ -.000" \end{smallmatrix}$		R $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	L2	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.062	.075	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-062-075	34.55	QFGC3-187-062-075X	39.75
.062	.075	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-062-075	40.25	QFGC3-250-062-075X	46.40
.062	.075	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-062-075	52.95	QFGC3-312-062-075X	60.40
.062	.075	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-062-075	71.95	QFGC3-375-062-075X	80.75
.062	.100	.197	.003	.500	.590	.0938	.1875	1.5	QFGC3-187-062-100	34.55	QFGC3-187-062-100X	39.75
.062	.100	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-062-100	40.25	QFGC3-250-062-100X	46.40
.078	.100	.260	.003	.750	.853	.1250	.2500	2.0	QFGC3-250-078-100	40.25	QFGC3-250-078-100X	46.40
.078	.100	.322	.003	.750	.853	.1563	.3125	2.0	QFGC3-312-078-100	52.95	QFGC3-312-078-100X	60.40
.078	.100	.385	.003	.750	.853	.1875	.3750	2.0	QFGC3-375-078-100	71.95	QFGC3-375-078-100X	80.75
.093	.100	.385	.006	.750	.853	.1875	.3750	2.0	QFGC6-375-093-100	71.95	QFGC6-375-093-100X	80.75
.093	.150	.322	.006	.750	.853	.1563	.3125	2.0	QFGC6-312-093-150	52.95	QFGC6-312-093-150X	60.40
.118	.150	.385	.006	.750	.853	.1875	.3750	2.0	QFGC6-375-118-150	71.95	QFGC6-375-118-150X	80.75
.125	.100	.385	.006	.750	.853	.1875	.3750	2.0	QFGC6-375-125-100	71.95	QFGC6-375-125-100X	80.75

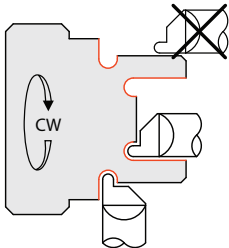
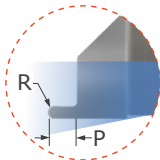
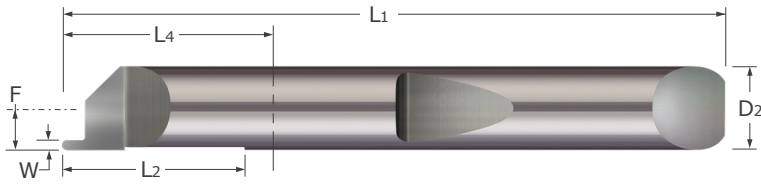
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 16-34 for quick change holder options



QFGF

Quick Change – 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
- 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 Bore Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+0.002"} _{–.000"}	R	P ^{+0.015"} _{–.000"}		L2	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.015	.0075	.025	.197	.500	.590	.0938	.1875	1.5	QFGF-187-015-025	34.75	QFGF-187-015-025X	39.95
.015	.0075	.025	.260	.750	.853	.1250	.2500	2.0	QFGF-250-015-025	38.80	QFGF-250-015-025X	45.05
.017	.0085	.025	.197	.500	.590	.0938	.1875	1.5	QFGF-187-017-025	34.75	QFGF-187-017-025X	39.95
.017	.0085	.025	.260	.750	.853	.1250	.2500	2.0	QFGF-250-017-025	38.80	QFGF-250-017-025X	45.05
.020	.0100	.050	.190	.500	.590	.0860	.1875	1.5	QFGF-180-020	34.75	QFGF-180-020X	39.95
.020	.0100	.050	.197	.500	.590	.0938	.1875	1.5	QFGF-187-020-050	34.75	QFGF-187-020-050X	39.95
.020	.0100	.050	.240	.750	.853	.1050	.2500	2.0	QFGF-230-020	38.80	QFGF-230-020X	45.05
.020	.0100	.050	.260	.750	.853	.1250	.2500	2.0	QFGF-250-020	38.80	QFGF-250-020X	45.05
.025	.0125	.050	.197	.500	.590	.0938	.1875	1.5	QFGF-187-025-050	34.75	QFGF-187-025-050X	39.95
.025	.0125	.050	.260	.750	.853	.1250	.2500	2.0	QFGF-250-025-050	38.80	QFGF-250-025-050X	45.05
.030	.0150	.050	.190	.500	.590	.0860	.1875	1.5	QFGF-180-030	34.75	QFGF-180-030X	39.95
.030	.0150	.050	.197	.500	.590	.0938	.1875	1.5	QFGF-187-030-050	34.75	QFGF-187-030-050X	39.95
.030	.0150	.050	.260	.750	.853	.1250	.2500	2.0	QFGF-250-030	38.80	QFGF-250-030X	45.05
.039	.0195	.075	.197	.500	.590	.0938	.1875	1.5	QFGF-187-039-075	34.75	QFGF-187-039-075X	39.95
.039	.0195	.075	.260	.750	.853	.1250	.2500	2.0	QFGF-250-039-075	38.80	QFGF-250-039-075X	45.05
.040	.0200	.050	.260	.750	.853	.1250	.2500	2.0	QFGF-250-040	38.80	QFGF-250-040X	45.05
.040	.0200	.075	.197	.500	.590	.0938	.1875	1.5	QFGF-187-040-075	34.75	QFGF-187-040-075X	39.95
.040	.0200	.075	.260	.750	.853	.1250	.2500	2.0	QFGF-250-040-075	38.80	QFGF-250-040-075X	45.05
.050	.0250	.050	.322	.750	.853	.1563	.3125	2.0	QFGF-312-050	53.05	QFGF-312-050X	60.50
.050	.0250	.075	.197	.500	.590	.0938	.1875	1.5	QFGF-187-050-075	34.75	QFGF-187-050-075X	39.95
.050	.0250	.075	.260	.750	.853	.1250	.2500	2.0	QFGF-250-050-075	38.80	QFGF-250-050-075X	45.05
.062	.0310	.075	.322	.750	.853	.1563	.3125	2.0	QFGF-312-062-075	53.05	QFGF-312-062-075X	60.50
.062	.0310	.075	.385	.750	.853	.1875	.3750	2.0	QFGF-375-062-075	73.40	QFGF-375-062-075X	82.20
.062	.0310	.100	.197	.500	.590	.0938	.1875	1.5	QFGF-187-062-100	34.75	QFGF-187-062-100X	39.95
.062	.0310	.100	.260	.750	.853	.1250	.2500	2.0	QFGF-250-062-100	38.80	QFGF-250-062-100X	45.05
.062	.0310	.100	.322	.750	.853	.1563	.3125	2.0	QFGF-312-062	53.05	QFGF-312-062X	60.50
.062	.0310	.100	.385	.750	.853	.1875	.3750	2.0	QFGF-375-062	73.40	QFGF-375-062X	82.20
.078	.0390	.100	.385	.750	.853	.1875	.3750	2.0	QFGF-375-078	73.40	QFGF-375-078X	82.20
.093	.0465	.100	.385	.750	.853	.1875	.3750	2.0	QFGF-375-093	73.40	QFGF-375-093X	82.20
.125	.0625	.150	.385	.750	.853	.1875	.3750	2.0	QFGF-375-125	73.40	QFGF-375-125X	82.20

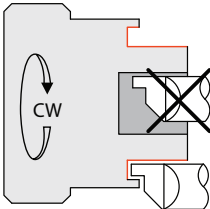
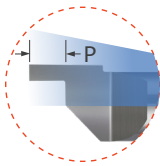
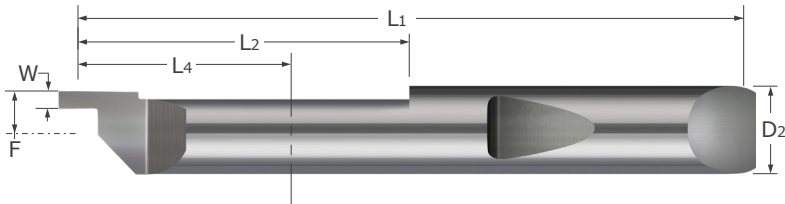
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 16-34 for quick change holder options



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

QFGI



- 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 #	USD\$	Tool #	USD\$
.020		.040	.260	.750	.853	.1150	.2500	2.0	QFGI-8240	38.50	QFGI-8240X	44.75
.020		.040	.260	1.250	1.353	.1150	.2500	2.5	QFGI-6198	40.05	QFGI-6198X	46.60
.020		.040	.322	.750	.853	.1463	.3125	2.0	QFGI-9800	52.85	QFGI-9800X	60.20
.020		.040	.322	1.250	1.353	.1463	.3125	2.5	QFGI-6738	54.20	QFGI-6738X	62.05
.030		.060	.260	.750	.853	.1150	.2500	2.0	QFGI-6600	38.50	QFGI-6600X	44.75
.030		.060	.260	1.250	1.353	.1150	.2500	2.5	QFGI-3461	40.05	QFGI-3461X	46.60
.030		.060	.322	.750	.853	.1463	.3125	2.0	QFGI-5774	52.85	QFGI-5774X	60.20
.030		.060	.322	1.250	1.353	.1463	.3125	2.5	QFGI-1413	54.20	QFGI-1413X	62.05
.040		.080	.260	.750	.853	.1150	.2500	2.0	QFGI-6481	38.50	QFGI-6481X	44.75
.040		.080	.260	1.250	1.353	.1150	.2500	2.5	QFGI-9741	40.05	QFGI-9741X	46.60
.040		.080	.322	.750	.853	.1463	.3125	2.0	QFGI-8157	52.85	QFGI-8157X	60.20
.040		.080	.322	1.250	1.353	.1463	.3125	2.5	QFGI-9114	54.20	QFGI-9114X	62.05
.050		.100	.260	.750	.853	.1150	.2500	2.0	QFGI-1311	38.50	QFGI-1311X	44.75
.050		.100	.260	1.250	1.353	.1150	.2500	2.5	QFGI-7516	40.05	QFGI-7516X	46.60
.050		.100	.322	.750	.853	.1463	.3125	2.0	QFGI-5336	52.85	QFGI-5336X	60.20
.050		.100	.322	1.250	1.353	.1463	.3125	2.5	QFGI-9489	54.20	QFGI-9489X	62.05
.062		.125	.322	.750	.853	.1463	.3125	2.0	QFGI-2609	52.85	QFGI-2609X	60.20
.062		.125	.322	1.250	1.353	.1463	.3125	2.5	QFGI-0720	54.20	QFGI-0720X	62.05
.062		.125	.385	.750	.853	.1775	.3750	2.0	QFGI-3852	73.40	QFGI-3852X	82.20
.062		.125	.385	1.250	1.353	.1775	.3750	2.5	QFGI-8466	74.95	QFGI-8466X	84.30
.078		.156	.322	.750	.853	.1463	.3125	2.0	QFGI-4397	52.85	QFGI-4397X	60.20
.078		.156	.322	1.250	1.353	.1463	.3125	2.5	QFGI-3465	54.20	QFGI-3465X	62.05
.078		.156	.385	.750	.853	.1775	.3750	2.0	QFGI-2855	73.40	QFGI-2855X	82.20
.078		.156	.385	1.250	1.353	.1775	.3750	2.5	QFGI-2684	74.95	QFGI-2684X	84.30

*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



QFGI

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

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 #	USD\$	Tool #	USD\$
.093	.187	.322	.750	.853	.1463	.3125	2.0	QFGI-5482	52.85	QFGI-5482X	60.20
.093	.187	.322	1.250	1.353	.1463	.3125	2.5	QFGI-2378	54.20	QFGI-2378X	62.05
.093	.187	.385	.750	.853	.1775	.3750	2.0	QFGI-1641	73.40	QFGI-1641X	82.20
.093	.187	.385	1.250	1.353	.1775	.3750	2.5	QFGI-1707	74.95	QFGI-1707X	84.30
.118	.236	.385	.750	.853	.1775	.3750	2.0	QFGI-4674	73.40	QFGI-4674X	82.20
.118	.236	.385	1.250	1.353	.1775	.3750	2.5	QFGI-2969	74.95	QFGI-2969X	84.30
.118	.236	.510	1.000	1.040	.2400	.5000	2.5	QFGI-6754	83.15	QFGI-6754X	95.90
.118	.236	.510	1.500	1.540	.2400	.5000	3.0	QFGI-3667	84.60	QFGI-3667X	97.35
.125	.250	.385	.750	.853	.1775	.3750	2.0	QFGI-1535	73.40	QFGI-1535X	82.20
.125	.250	.385	1.250	1.353	.1775	.3750	2.5	QFGI-7015	74.95	QFGI-7015X	84.30
.125	.250	.510	1.000	1.040	.2400	.5000	2.5	QFGI-4349	83.15	QFGI-4349X	95.90
.125	.250	.510	1.500	1.540	.2400	.5000	3.0	QFGI-4098	84.60	QFGI-4098X	97.35

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

Quick Change – Grooving Tools

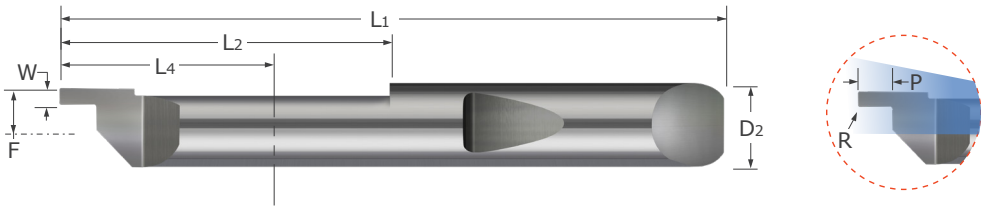
See pgs 16-34 for quick change holder options



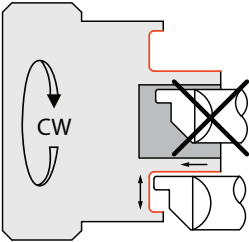
Quick Change – Grooving Tools

Face Grooving – Internal Tooth - Corner Radius

QFGIC



- 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	
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	R $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	P $\begin{smallmatrix} +.015" \\ -.000" \end{smallmatrix}$		L2	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.020	.003	.040	.260	1.250	1.353	.1150	.2500	2.5	QFGIC3-6198	40.80	QFGIC3-6198X	47.45
.020	.003	.040	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-6738	55.10	QFGIC3-6738X	63.10
.030	.003	.060	.260	1.250	1.353	.1150	.2500	2.5	QFGIC3-3461	40.80	QFGIC3-3461X	47.45
.030	.003	.060	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-1413	55.10	QFGIC3-1413X	63.10
.040	.003	.080	.260	1.250	1.353	.1150	.2500	2.5	QFGIC3-9741	40.80	QFGIC3-9741X	47.45
.040	.003	.080	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-9114	55.10	QFGIC3-9114X	63.10
.050	.003	.100	.260	1.250	1.353	.1150	.2500	2.5	QFGIC3-7516	40.80	QFGIC3-7516X	47.45
.050	.003	.100	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-9489	55.10	QFGIC3-9489X	63.10
.062	.003	.125	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-0720	55.10	QFGIC3-0720X	63.10
.062	.003	.125	.385	1.250	1.353	.1775	.3750	2.5	QFGIC3-8466	76.30	QFGIC3-8466X	85.75
.078	.003	.156	.322	1.250	1.353	.1463	.3125	2.5	QFGIC3-3465	55.10	QFGIC3-3465X	63.10
.078	.003	.156	.385	1.250	1.353	.1775	.3750	2.5	QFGIC3-2684	76.30	QFGIC3-2684X	85.75
.093	.006	.187	.322	1.250	1.353	.1463	.3125	2.5	QFGIC6-2378	55.10	QFGIC6-2378X	63.10
.093	.006	.187	.385	1.250	1.353	.1775	.3750	2.5	QFGIC6-1707	76.30	QFGIC6-1707X	85.75
.118	.006	.236	.385	1.250	1.353	.1775	.3750	2.5	QFGIC6-2969	76.30	QFGIC6-2969X	85.75
.125	.006	.250	.385	1.250	1.353	.1775	.3750	2.5	QFGIC6-7015	76.30	QFGIC6-7015X	85.75

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

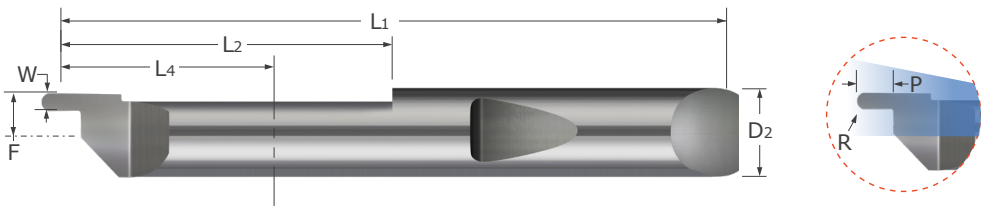
See pgs 16-34 for quick change holder options



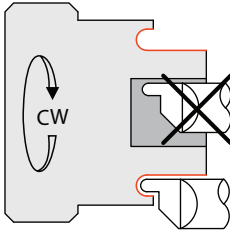
QFGIF

Quick Change – Grooving Tools

Face Grooving – Internal Tooth - Full 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 ■ 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



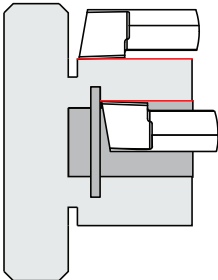
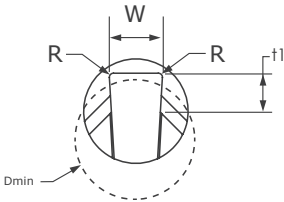
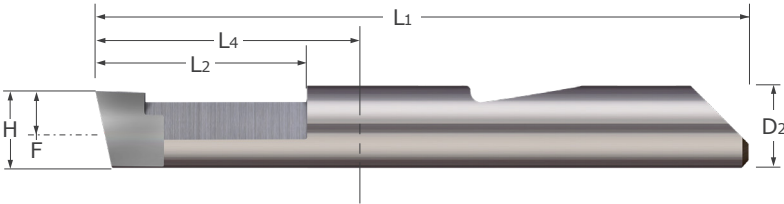
Width	Radius	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Length From Holder	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	R $\begin{smallmatrix} +.0010" \\ -.0010" \end{smallmatrix}$	P $\begin{smallmatrix} +.015" \\ -.000" \end{smallmatrix}$		L2	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.020	.0100	.040	.260	1.250	1.353	.1150	.2500	2.5	QFGIF-6198	41.50	QFGIF-6198X	48.15
.020	.0100	.040	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-6738	56.35	QFGIF-6738X	64.25
.030	.0150	.060	.260	1.250	1.353	.1150	.2500	2.5	QFGIF-3461	41.50	QFGIF-3461X	48.15
.030	.0150	.060	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-1413	56.35	QFGIF-1413X	64.25
.040	.0200	.080	.260	1.250	1.353	.1150	.2500	2.5	QFGIF-9741	41.50	QFGIF-9741X	48.15
.040	.0200	.080	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-9114	56.35	QFGIF-9114X	64.25
.050	.0250	.100	.260	1.250	1.353	.1150	.2500	2.5	QFGIF-7516	41.50	QFGIF-7516X	48.15
.050	.0250	.100	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-9489	56.35	QFGIF-9489X	64.25
.062	.0310	.125	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-0720	56.35	QFGIF-0720X	64.25
.062	.0310	.125	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-8466	77.75	QFGIF-8466X	87.10
.078	.0390	.156	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-3465	56.35	QFGIF-3465X	64.25
.078	.0390	.156	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-2684	77.75	QFGIF-2684X	87.10
.093	.0465	.187	.322	1.250	1.353	.1463	.3125	2.5	QFGIF-2378	56.35	QFGIF-2378X	64.25
.093	.0465	.187	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-1707	77.75	QFGIF-1707X	87.10
.118	.0590	.236	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-2969	77.75	QFGIF-2969X	87.10
.125	.0625	.250	.385	1.250	1.353	.1775	.3750	2.5	QFGIF-7015	77.75	QFGIF-7015X	87.10

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

See pgs 16-34 for quick change holder options

Quick Change – Broaching Tools
Standard Keyway

QBRK



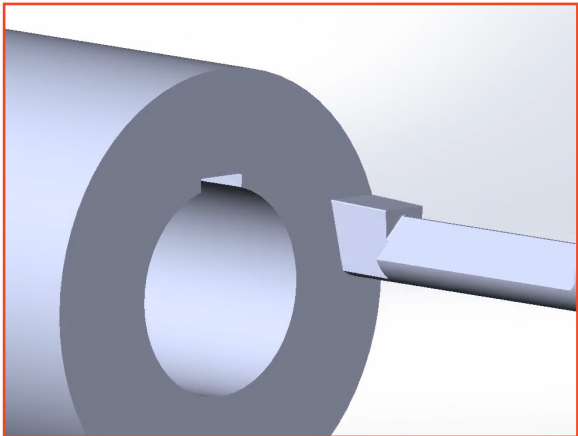
- Designed for multiple pass static broaching of standard internal and external keyways
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA

Broach Width	Min. Bore Dia.*	Max Broach Depth	Corner Radius	Max Radial Engagement	Broach Height	Centerline Offset	Length From Holder	Shank Dia*	Overall Length	Uncoated		nACRo® Coated	
										Tool #	USD\$	Tool #	USD\$
W $+0.0000"$ $-0.0010"$	Dmin	L2 $+0.030"$ $-0.000"$	R	T1	H	F	L4	D2 (h6)	L1				
.0938	.1875	.500	.000	.065	.170	.076	.590	.1875	1.5	QBRK-09300500	37.60	QBRK-09300500K	42.75
.0938	.1875	1.000	.000	.065	.170	.076	1.090	.1875	2.0	QBRK-093001000	39.05	QBRK-093001000K	44.20
.1250	.1875	.500	.000	.080	.159	.065	.590	.1875	1.5	QBRK-12500500	37.60	QBRK-12500500K	42.75
.1250	.1875	1.000	.000	.080	.159	.065	1.090	.1875	2.0	QBRK-125001000	39.05	QBRK-125001000K	44.20
.1875	.3125	1.000	.000	.115	.276	.120	1.353	.3125	2.5	QBRK-187001000	53.05	QBRK-187001000K	60.95
.1875	.3125	1.500	.000	.115	.276	.120	1.853	.3125	3.0	QBRK-187001500	59.50	QBRK-187001500K	67.35
.2500	.3750	1.000	.000	.150	.323	.135	1.353	.3750	2.5	QBRK-250001000	72.25	QBRK-250001000K	81.60
.2500	.3750	1.500	.000	.150	.323	.135	1.853	.3750	3.0	QBRK-250001500	78.25	QBRK-250001500K	87.60

*Minimum Bore Diameter is for reference only. Please refer to workpiece specifications or standard bore sizes for proper bore sizing.

Quick Change
Broaching Animations

Get to know our new Quick Change Broaching Tools with animations on Micro100.com. Designed for multiple pass static broaching, these solid carbide tools feature a coolant-fed enabled shank for improved chip evacuation and nACRo® coating options for enhanced heat resistance in difficult-to-machine materials.



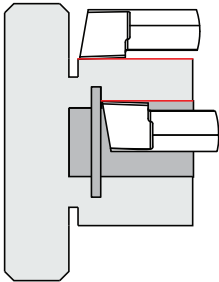
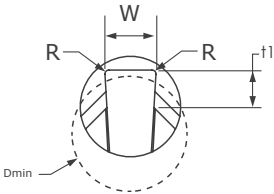
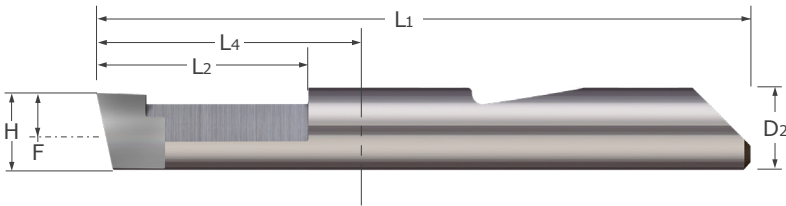
Scan to view or go online at
micro100.com/resources/quick-change-broaching

See pgs 16-34 for quick change holder options



QBRKM

Quick Change – Broaching Tools
Metric Keyway



- Designed for multiple pass static broaching of metric internal and external keyways
- Available in tolerance grades P9, JS9 (DIN 6885), and C11 (DIN 138)
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA

	Tolerance Grade	Broach Width		Min Bore Dia.*	Max Broach Depth	Corner Radius	Max Radial Engagement	Broach Height	Centerline Offset	Length From Holder	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
		W metric equiv.	W +.0000" -.0010"	Dmin	L2 L2 ^{+.030"} _{-.000"}	R	T1	H	F	L4	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
NEW	P9	1.98 mm	.0780	.1875	.472	.004	.051	.174	.080	.590	.1875	1.5	QBRKM-1981012	37.60	QBRKM-1981012K	42.75
NEW	P9	2.99 mm	.1177	.1875	.472	.004	.075	.162	.068	.590	.1875	1.5	QBRKM-2981012	37.60	QBRKM-2981012K	42.75
NEW	P9	2.99 mm	.1177	.1875	.984	.004	.075	.162	.068	1.090	.1875	2.0	QBRKM-2981025	39.05	QBRKM-2981025K	44.20
NEW	P9	3.98 mm	.1568	.2500	.591	.004	.102	.217	.092	.853	.2500	2.0	QBRKM-3981015	38.50	QBRKM-3981015K	44.65
NEW	P9	3.98 mm	.1568	.2500	.984	.004	.102	.217	.092	1.353	.2500	2.5	QBRKM-3981025	39.95	QBRKM-3981025K	46.60
NEW	P9	3.98 mm	.1568	.2500	1.575	.004	.102	.217	.092	1.853	.2500	3.0	QBRKM-3981040	45.25	QBRKM-3981040K	51.90
NEW	P9	4.98 mm	.1962	.2500	.984	.008	.075	.197	.072	1.353	.2500	2.5	QBRKM-4982025	39.95	QBRKM-4982025K	46.60
NEW	P9	4.98 mm	.1962	.2500	1.575	.008	.075	.197	.072	1.853	.2500	3.0	QBRKM-4982040	45.25	QBRKM-4982040K	51.90
NEW	P9	4.98 mm	.2356	.3125	.984	.008	.142	.254	.098	1.353	.3125	2.5	QBRKM-5982025	53.05	QBRKM-5982025K	60.95
NEW	P9	4.98 mm	.2356	.3125	1.575	.008	.142	.254	.098	1.853	.3125	3.0	QBRKM-5982040	59.50	QBRKM-5982040K	67.35
NEW	JS9	2.00 mm	.0787	.1875	.472	.004	.051	.174	.080	.590	.1875	1.5	QBRKM-2001012	37.60	QBRKM-2001012K	42.75
NEW	JS9	3.00 mm	.1181	.1875	.472	.004	.075	.162	.068	.590	.1875	1.5	QBRKM-3001012	37.60	QBRKM-3001012K	42.75
NEW	JS9	3.00 mm	.1181	.1875	.984	.004	.075	.162	.068	1.090	.1875	2.0	QBRKM-3001025	39.05	QBRKM-3001025K	44.20
NEW	JS9	4.00 mm	.1575	.2500	.591	.004	.102	.217	.092	.853	.2500	2.0	QBRKM-4001015	38.50	QBRKM-4001015K	44.65
NEW	JS9	4.00 mm	.1575	.2500	.984	.004	.102	.217	.092	1.353	.2500	2.5	QBRKM-4001025	39.95	QBRKM-4001025K	46.60
NEW	JS9	4.00 mm	.1575	.2500	1.575	.004	.102	.217	.092	1.853	.2500	3.0	QBRKM-4001040	45.25	QBRKM-4001040K	51.90
NEW	JS9	5.00 mm	.1969	.2500	.984	.008	.075	.197	.072	1.353	.2500	2.5	QBRKM-5002025	39.95	QBRKM-5002025K	46.60
NEW	JS9	5.00 mm	.1969	.2500	1.575	.008	.075	.197	.072	1.853	.2500	3.0	QBRKM-5002040	45.25	QBRKM-5002040K	51.90
NEW	JS9	6.00 mm	.2362	.3125	.984	.008	.142	.253	.097	1.353	.3125	2.5	QBRKM-6002025	53.05	QBRKM-6002025K	60.95
NEW	JS9	6.00 mm	.2362	.3125	1.575	.008	.142	.253	.097	1.853	.3125	3.0	QBRKM-6002040	59.50	QBRKM-6002040K	67.35
NEW	C11	2.11 mm	.0831	.1875	.472	.014	.051	.173	.079	.590	.1875	1.5	QBRKM-2113512	37.60	QBRKM-2113512K	42.75
NEW	C11	3.11 mm	.1224	.1875	.472	.014	.075	.160	.066	.590	.1875	1.5	QBRKM-3113512	37.60	QBRKM-3113512K	42.75
NEW	C11	3.11 mm	.1224	.1875	.472	.020	.075	.160	.066	.590	.1875	1.5	QBRKM-3115012	37.60	QBRKM-3115012K	42.75
NEW	C11	4.13 mm	.1626	.2500	.591	.020	.102	.215	.090	.853	.2500	2.0	QBRKM-4135015	38.50	QBRKM-4135015K	44.65
NEW	C11	4.13 mm	.1626	.2500	.984	.020	.102	.215	.090	1.353	.2500	2.5	QBRKM-4135025	39.95	QBRKM-4135025K	46.60
NEW	C11	4.13 mm	.1626	.2500	1.575	.020	.102	.215	.090	1.853	.2500	3.0	QBRKM-4135040	45.25	QBRKM-4135040K	51.90
NEW	C11	5.13 mm	.2020	.2500	.984	.020	.075	.194	.069	1.353	.2500	2.5	QBRKM-5135025	39.95	QBRKM-5135025K	46.60
NEW	C11	5.13 mm	.2020	.2500	1.575	.020	.075	.194	.069	1.853	.2500	3.0	QBRKM-5135040	45.25	QBRKM-5135040K	51.90
NEW	C11	6.13 mm	.2413	.3125	.984	.020	.142	.250	.094	1.353	.3125	2.5	QBRKM-6135025	53.05	QBRKM-6135025K	60.95
NEW	C11	6.13 mm	.2413	.3125	1.575	.020	.142	.250	.094	1.853	.3125	3.0	QBRKM-6135040	59.50	QBRKM-6135040K	67.35

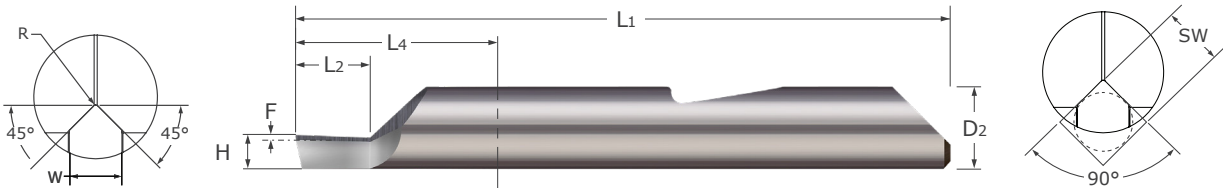
*Minimum Bore Diameter is for reference only. Please refer to workpiece specifications or standard bore sizes for proper bore sizing.

See pgs 16-34 for quick change holder options

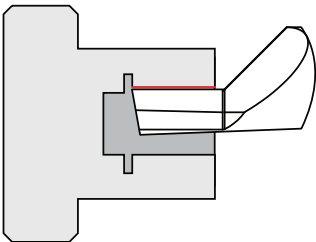
Quick Change – Broaching Tools

Quick Change – Broaching Tools
Square

QBRSQ



- Designed for multiple pass static broaching of standard and metric square id forms
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA



Square Width Range		Broach Width	Max Broach Depth	Corner Radius	Broach Height	Centerline Offset	Length From Holder	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
SW	metric	W ^{+ .001"} _{- .001"}	L2 ^{+ .030"} _{- .000"}	R	H	F	L4	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.059-.078	1.5-2.0 mm	.056	.138	.002	.043	-.051	.590	.1875	1.5	OBRSO-1520	38.20	OBRSO-1520K	43.40
.078-.098	2.0-2.5 mm	.070	.138	.002	.064	-.030	.590	.1875	1.5	OBRSO-2025	38.20	OBRSO-2025K	43.40
.098-.114	2.5-2.9 mm	.081	.138	.002	.086	-.008	.590	.1875	1.5	OBRSO-2529	38.20	OBRSO-2529K	43.40
.114-.137	2.9-3.5 mm	.097	.177	.002	.101	.007	.590	.1875	1.5	OBRSO-2935	38.20	OBRSO-2935K	43.40
.137-.157	3.5-4.0 mm	.111	.217	.002	.128	.034	.590	.1875	1.5	OBRSO-3540	38.20	OBRSO-3540K	43.40

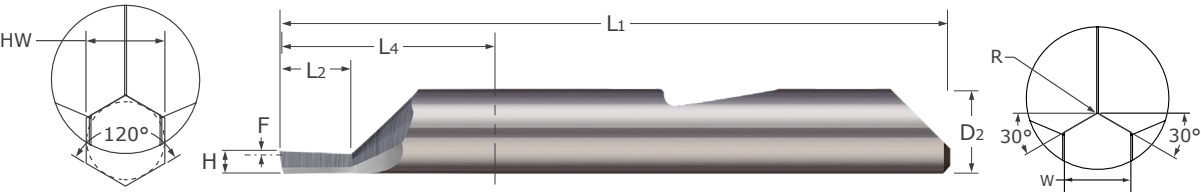
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See pgs 16-34 for quick change holder options

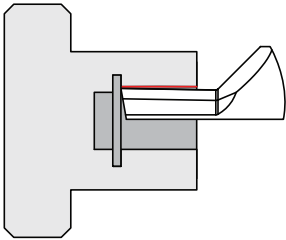


QBRH

Quick Change – Broaching Tools
Hexagon



- Designed for multiple pass static broaching of standard and metric hexagon forms
- Coolant fed enabled shank design
- Proprietary Micro-Quik quick change system maximizes productivity through reliable accuracy and locational repeatability
- nACRo® coating option for added heat resistance in difficult to machine materials
- Solid carbide
- CNC ground in the USA



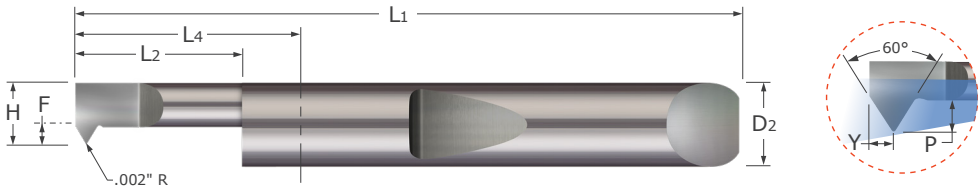
Hex Width Range		Broach Width	Max Broach Depth	Corner Radius	Broach Height	Centerline Offset	Length From Holder	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
HW	metric	W ^{+ .001"} _{-.001"}	L2 ^{+ .030"} _{-.000"}	R	H	F	L4	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
NEW .078-.098	2.0-2.5 mm	.041	.157	.002	.075	-.019	.590	.1875	1.5	OBRH-2025	38.80	OBRH-2025K	44.00
NEW .098-.114	2.5-2.9 mm	.051	.157	.002	.095	.001	.590	.1875	1.5	OBRH-2529	38.80	OBRH-2529K	44.00
NEW .114-.137	2.9-3.5 mm	.059	.177	.002	.111	.017	.590	.1875	1.5	OBRH-2935	38.80	OBRH-2935K	44.00
NEW .137-.157	3.5-4.0 mm	.071	.217	.002	.135	.041	.590	.1875	1.5	OBRH-3540	38.80	OBRH-3540K	44.00
NEW .157-.177	4.0-4.5 mm	.082	.236	.004	.155	.061	.590	.1875	1.5	OBRH-4045	38.80	OBRH-4045K	44.00
NEW .177-.196	4.5-5.0 mm	.092	.276	.004	.173	.048	.853	.2500	2.0	OBRH-4550	39.75	OBRH-4550K	45.90
NEW .196-.315	5.0-8.0 mm	.102	.354	.004	.194	.069	.853	.2500	2.0	OBRH-5080	39.75	OBRH-5080K	45.90

See pgs 16-34 for quick change holder options

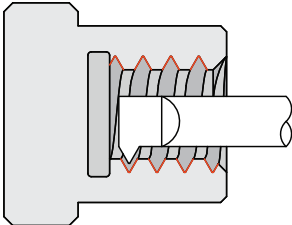
Quick Change – Threading Tools

UN Threads – Single Point

QIT



- 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



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	
TPI*	H		L2 +.030" - .000"	Y +.002" - .000"	P	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
40-72	.0350	.0400	.075	.012	.015	.590	.0250	.1875	1.5	QIT-035075	54.50	QIT-035075X	59.10
40-72	.0350	.0400	.100	.012	.015	.590	.0250	.1875	1.5	QIT-035100	54.50	QIT-035100X	59.10
40-72	.0350	.0400	.150	.012	.015	.590	.0250	.1875	1.5	QIT-035150	54.50	QIT-035150X	59.10
28-72	.0400	.0450	.075	.015	.020	.590	.0300	.1875	1.5	QIT-040075	54.50	QIT-040075X	59.10
28-72	.0400	.0450	.150	.015	.020	.590	.0300	.1875	1.5	QIT-040150	54.50	QIT-040150X	59.10
28-72	.0500	.0550	.100	.015	.020	.590	.0350	.1875	1.5			QIT-050100X	50.15
28-72	.0500	.0550	.150	.015	.020	.590	.0350	.1875	1.5	QIT-050150	46.10	QIT-050150X	50.40
28-72	.0500	.0550	.200	.015	.020	.590	.0350	.1875	1.5	QIT-050200	46.10	QIT-050200X	50.40
28-56	.0600	.0700	.150	.015	.020	.590	-.0337	.1875	1.5	QIT-060150	46.10	QIT-060150X	51.30
28-56	.0600	.0700	.200	.015	.020	.590	-.0335	.1875	1.5	QIT-060200	46.10	QIT-060200X	50.40
28-56	.0600	.0700	.250	.015	.020	.590	-.0335	.1875	1.5	QIT-060250	46.10	QIT-060250X	50.40
28-56	.0600	.0700	.300	.015	.020	.590	-.0335	.1875	1.5	QIT-060300	46.10	QIT-060300X	50.40
28-56	.0600	.0700	.350	.015	.020	.590	-.0337	.1875	1.5	QIT-060350	46.10	QIT-060350X	51.30
28-56	.0800	.0900	.200	.015	.020	.590	-.0137	.1875	1.5	QIT-080200	46.10	QIT-080200X	51.30
28-56	.0800	.0900	.250	.015	.020	.590	-.0135	.1875	1.5	QIT-080250	46.10	QIT-080250X	50.40
28-56	.0800	.0900	.350	.015	.020	.590	-.0135	.1875	1.5	QIT-080350	46.10	QIT-080350X	50.40
28-56	.0800	.0900	.500	.015	.020	.590	-.0135	.1875	1.5	QIT-080500	46.10	QIT-080500X	50.40
28-56	.0800	.0900	.600	.015	.020	1.090	-.0137	.1875	2.0	QIT-080600	46.10	QIT-080600X	51.30
24-56	.1000	.1100	.250	.018	.025	.590	.0065	.1875	1.5	QIT-100250	46.10	QIT-100250X	50.40
24-56	.1000	.1100	.350	.018	.025	.590	.0065	.1875	1.5	QIT-100350	46.10	QIT-100350X	50.40
24-56	.1000	.1100	.500	.018	.025	.590	.0065	.1875	1.5	QIT-100500	46.10	QIT-100500X	50.40
24-56	.1000	.1100	.600	.018	.025	1.090	.0065	.1875	2.0	QIT-100600	46.10	QIT-100600X	50.40
24-56	.1000	.1100	.750	.018	.025	1.090	.0062	.1875	2.0	QIT-100750	46.10	QIT-100750X	51.30

*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

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		AlTiN Coated	
										Tool #	USD\$	Tool #	USD\$
TPI*	H		L2 ^{+ .030"} _{– .000"}	Y ^{+ .002"} _{– .000"}	P	L4	F	D2 (h6)	L1				
20-56	.1100	.1260	.250	.020	.030	.590	.0165	.1875	1.5	QIT-110250	46.10	QIT-110250X	50.40
20-56	.1100	.1260	.400	.020	.030	.590	.0165	.1875	1.5	QIT-110400	46.10	QIT-110400X	50.40
20-56	.1100	.1260	.500	.020	.030	.590	.0165	.1875	1.5	QIT-110500	46.10	QIT-110500X	50.40
20-56	.1100	.1260	.600	.020	.030	1.090	.0165	.1875	2.0	QIT-110600	46.10	QIT-110600X	50.40
20-56	.1100	.1260	.750	.020	.030	1.090	.0165	.1875	2.0	QIT-110750	46.10	QIT-110750X	50.40
20-56	.1200	.1360	.250	.020	.030	.590	.0265	.1875	1.5	QIT-120250	46.10	QIT-120250X	50.40
20-56	.1200	.1360	.400	.020	.030	.590	.0265	.1875	1.5	QIT-120400	46.10	QIT-120400X	50.40
20-56	.1200	.1360	.500	.020	.030	.590	.0265	.1875	1.5	QIT-120500	46.10	QIT-120500X	50.40
20-56	.1200	.1360	.600	.020	.030	1.090	.0265	.1875	2.0	QIT-120600	46.10	QIT-120600X	50.40
20-56	.1200	.1360	.750	.020	.030	1.090	.0265	.1875	2.0	QIT-120750	46.10	QIT-120750X	50.40
16-56	.1400	.1560	.250	.023	.035	.590	.0465	.1875	1.5	QIT-140250	46.10	QIT-140250X	50.40
16-56	.1400	.1560	.400	.023	.035	.590	.0465	.1875	1.5	QIT-140400	46.10	QIT-140400X	50.40
16-56	.1400	.1560	.500	.023	.035	.590	.0465	.1875	1.5	QIT-140500	46.10	QIT-140500X	50.40
16-56	.1400	.1560	.750	.023	.035	1.090	.0465	.1875	2.0	QIT-140750	46.10	QIT-140750X	50.40
16-56	.1400	.1560	1.000	.023	.035	1.090	.0462	.1875	2.0	QIT-1401000	46.10	QIT-1401000X	51.30
14-56	.1600	.1820	.250	.029	.040	.590	.0665	.1875	1.5	QIT-160250	46.10	QIT-160250X	50.40
14-56	.1600	.1820	.400	.029	.040	.590	.0665	.1875	1.5	QIT-160400	46.10	QIT-160400X	50.40
14-56	.1600	.1820	.500	.029	.040	.590	.0665	.1875	1.5	QIT-160500	46.10	QIT-160500X	50.40
14-56	.1600	.1820	.750	.029	.040	1.090	.0665	.1875	2.0	QIT-160750	46.10	QIT-160750X	50.40
14-56	.1600	.1820	1.000	.029	.040	1.090	.0665	.1875	2.0	QIT-1601000	46.10	QIT-1601000X	50.40
14-56	.1800	.2020	.350	.029	.040	.853	.0550	.2500	2.0	QIT-180350	49.20	QIT-180350X	55.45
14-56	.1800	.2020	.500	.029	.040	.853	.0550	.2500	2.0	QIT-180500	49.20	QIT-180500X	55.45
14-56	.1800	.2020	.750	.029	.040	.853	.0550	.2500	2.0	QIT-180750	49.20	QIT-180750X	55.45
14-56	.1800	.2020	1.000	.029	.040	1.353	.0550	.2500	2.5	QIT-1801000	49.20	QIT-1801000X	55.85
14-56	.1800	.2020	1.125	.029	.040	1.353	.0550	.2500	2.5	QIT-1801125	49.20	QIT-1801125X	55.85
13-56	.2000	.2220	.400	.032	.045	.853	.0750	.2500	2.0	QIT-200400	49.20	QIT-200400X	55.45
13-56	.2000	.2220	.600	.032	.045	.853	.0750	.2500	2.0	QIT-200600	49.20	QIT-200600X	55.45
13-56	.2000	.2220	.750	.032	.045	.853	.0750	.2500	2.0	QIT-200750	49.20	QIT-200750X	55.45
13-56	.2000	.2220	1.000	.032	.045	1.353	.0750	.2500	2.5	QIT-2001000	49.20	QIT-2001000X	55.85
13-56	.2000	.2220	1.125	.032	.045	1.353	.0750	.2500	2.5	QIT-2001125	49.20	QIT-2001125X	55.85
10-48	.2300	.2520	.400	.038	.055	.853	.0735	.3125	2.0	QIT-230400	61.65	QIT-230400X	69.15
10-48	.2300	.2520	.600	.038	.055	.853	.0735	.3125	2.0	QIT-230600	61.65	QIT-230600X	69.15
10-48	.2300	.2520	.750	.038	.055	.853	.0735	.3125	2.0	QIT-230750	61.65	QIT-230750X	69.15
10-48	.2300	.2520	1.000	.038	.055	1.353	.0735	.3125	2.5	QIT-2301000	61.65	QIT-2301000X	69.55
10-48	.2300	.2520	1.250	.038	.055	1.353	.0737	.3125	2.5	QIT-2301250	61.65	QIT-2301250X	69.55
10-48	.2300	.2520	1.500	.038	.055	1.853	.0735	.3125	3.0	QIT-2301500	69.75	QIT-2301500X	77.65
10-48	.2300	.2520	1.750	.038	.055	1.853	.0737	.3125	3.0	QIT-2301750	69.75	QIT-2301750X	77.65
8-40	.2900	.3120	.500	.046	.070	.853	.1340	.3125	2.0	QIT-290500	61.65	QIT-290500X	69.15
8-40	.2900	.3120	.750	.046	.070	.853	.1340	.3125	2.0	QIT-290750	61.65	QIT-290750X	69.15
8-40	.2900	.3120	1.000	.046	.070	1.353	.1340	.3125	2.5	QIT-2901000	61.65	QIT-2901000X	69.55
8-40	.2900	.3120	1.250	.046	.070	1.353	.1340	.3125	2.5	QIT-2901250	61.65	QIT-2901250X	69.55
8-40	.2900	.3120	1.500	.046	.070	1.853	.1337	.3125	3.0	QIT-2901500	69.75	QIT-2901500X	77.65
8-40	.2900	.3120	1.750	.046	.070	1.853	.1340	.3125	3.0	QIT-2901750	69.75	QIT-2901750X	77.65
8-40	.3200	.3420	.500	.049	.075	.853	.1325	.3750	2.0	QIT-320500	80.35	QIT-320500X	88.70

*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
UN Threads – Single Point (cont.)

QIT

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		A1TIN Coated	
										Tool #	USD\$	Tool #	USD\$
TPI*	H		L2 ^{+.030" - .000"}	Y ^{+.002" - .000"}	P	L4	F	D2 (h6)	L1				
8-40	.3200	.3420	.750	.049	.075	.853	.1325	.3750	2.0	QIT-320750	80.35	QIT-320750X	88.70
8-40	.3200	.3420	1.000	.049	.075	1.353	.1325	.3750	2.5	QIT-3201000	80.35	QIT-3201000X	89.70
8-40	.3200	.3420	1.250	.049	.075	1.353	.1325	.3750	2.5	QIT-3201250	80.35	QIT-3201250X	89.70
8-40	.3200	.3420	1.500	.049	.075	1.853	.1325	.3750	3.0	QIT-3201500	88.45	QIT-3201500X	97.80
8-40	.3200	.3420	1.800	.049	.075	1.853	.1325	.3750	3.0	QIT-3201800	88.45	QIT-3201800X	97.80
7-32	.3600	.3820	.500	.055	.085	.853	.1725	.3750	2.0	QIT-360500	80.35	QIT-360500X	88.70
7-32	.3600	.3820	.750	.055	.085	.853	.1725	.3750	2.0	QIT-360750	80.35	QIT-360750X	88.70
7-32	.3600	.3820	1.000	.055	.085	1.353	.1725	.3750	2.5	QIT-3601000	80.35	QIT-3601000X	89.70
7-32	.3600	.3820	1.250	.055	.085	1.353	.1725	.3750	2.5	QIT-3601250	80.35	QIT-3601250X	89.70
7-32	.3600	.3820	1.500	.055	.085	1.853	.1725	.3750	3.0	QIT-3601500	88.45	QIT-3601500X	97.80
7-32	.3600	.3820	1.800	.055	.085	1.853	.1725	.3750	3.0	QIT-3601800	88.45	QIT-3601800X	97.80
7-32	.3600	.3820	2.000	.055	.085	2.353	.1725	.3750	3.5	QIT-3602000	90.30	QIT-3602000X	100.50
5-32	.4600	.4820	.750	.078	.120	1.040	.2100	.5000	2.5	QIT-460750	112.60	QIT-460750X	125.40
5-32	.4600	.4820	1.500	.078	.120	1.540	.2100	.5000	3.0	QIT-4601500	112.60	QIT-4601500X	125.40
5-32	.4600	.4820	2.000	.078	.120	2.040	.2100	.5000	3.5	QIT-4602000	122.90	QIT-4602000X	136.50
5-32	.4900	.5120	.750	.078	.120	1.040	.2400	.5000	2.5	QIT-490750	112.60	QIT-490750X	125.40
5-32	.4900	.5120	1.125	.078	.120	1.540	.2400	.5000	3.0	QIT-4901125	112.60	QIT-4901125X	125.40
5-32	.4900	.5120	1.500	.078	.120	1.540	.2400	.5000	3.0	QIT-4901500	112.60	QIT-4901500X	125.40
5-32	.4900	.5120	2.000	.078	.120	2.040	.2400	.5000	3.5	QIT-4902000	122.90	QIT-4902000X	136.50
5-32	.4900	.5120	2.500	.078	.120	2.540	.2400	.5000	4.0	QIT-4902500	127.55	QIT-4902500X	141.25

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

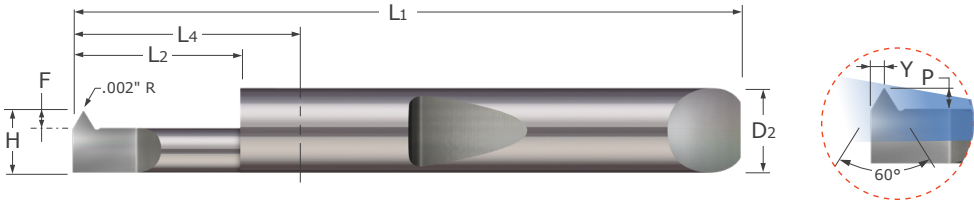
See pgs 16-34 for quick change holder options



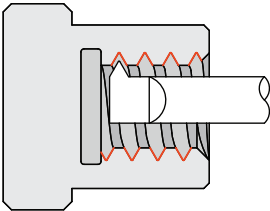
Quick Change – Threading Tools

QITL

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	
	TPI*	H	L2	Y	P	L4	F	D2 (h6)	L1		Tool #	USD\$	Tool #	USD\$
NEW	28-56	.0800	.0900	.350	.015	.020	.590	-.0137	.1875	1.5	QITL-080350	46.10	QITL-080350X	46.10
NEW	24-56	.1000	.1100	.250	.018	.025	.590	.0062	.1875	1.5	QITL-100250	46.10	QITL-100250X	46.10
NEW	24-56	.1000	.1100	.500	.018	.025	.590	.0062	.1875	1.5	QITL-100500	46.10	QITL-100500X	46.10
NEW	20-56	.1200	.1360	.250	.020	.030	.590	.0262	.1875	1.5	QITL-120250	46.10	QITL-120250X	46.10
	20-56	.1200	.1360	.500	.017	.030	.590	.0262	.1875	1.5	QITL-120500	46.10	QITL-120500X	51.30
	16-56	.1400	.1560	.500	.020	.035	.590	.0462	.1875	1.5	QITL-140500	46.10	QITL-140500X	51.30
	14-56	.1600	.1820	.400	.023	.040	.590	.0662	.1875	1.5	QITL-160400	46.10	QITL-160400X	51.30
	14-56	.1600	.1820	.750	.023	.040	1.090	.0662	.1875	2.0	QITL-160750	47.45	QITL-160750X	52.50
NEW	14-56	.1800	.2020	.350	.029	.040	.853	.0550	.2500	2.0	QITL-180350	49.20	QITL-180350X	49.20
NEW	14-56	.1800	.2020	.500	.029	.040	.853	.0550	.2500	2.0	QITL-180500	49.20	QITL-180500X	49.20
NEW	14-56	.1800	.2020	.750	.029	.040	.853	.0550	.2500	2.0	QITL-180750	49.20	QITL-180750X	49.20
NEW	14-56	.1800	.2020	1.000	.029	.040	1.353	.0550	.2500	2.5	QITL-1801000	50.55	QITL-1801000X	50.55
	13-56	.2000	.2220	.600	.026	.045	.853	.0750	.2500	2.0	QITL-200600	49.20	QITL-200600X	55.45
	13-56	.2000	.2220	1.000	.026	.045	1.353	.0750	.2500	2.5	QITL-2001000	50.55	QITL-2001000X	57.10
	10-48	.2300	.2520	.750	.032	.055	.853	.0737	.3125	2.0	QITL-230750	61.65	QITL-230750X	69.15
	10-48	.2300	.2520	1.000	.032	.055	1.353	.0737	.3125	2.5	QITL-2301000	62.90	QITL-2301000X	70.80
	8-40	.2900	.3120	.750	.040	.070	.853	.1337	.3125	2.0	QITL-290750	61.65	QITL-290750X	69.15
	8-40	.2900	.3120	1.250	.040	.070	1.353	.1337	.3125	2.5	QITL-2901250	62.90	QITL-2901250X	70.80
	8-40	.3200	.3420	.750	.043	.075	.853	.1325	.3750	2.0	QITL-320750	80.35	QITL-320750X	89.15
	8-40	.3200	.3420	1.000	.043	.075	1.353	.1325	.3750	2.5	QITL-3201000	81.50	QITL-3201000X	90.85
	7-32	.3600	.3820	.750	.049	.085	.853	.1725	.3750	2.0	QITL-360750	80.35	QITL-360750X	89.15
	7-32	.3600	.3820	1.250	.049	.085	1.353	.1725	.3750	2.5	QITL-3601250	81.50	QITL-3601250X	90.85
	5-32	.4900	.5120	1.500	.069	.120	1.540	.2400	.5000	3.0	QITL-4901500	113.85	QITL-4901500X	126.65

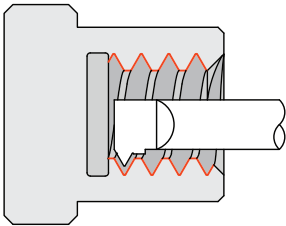
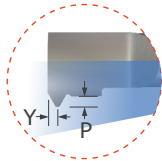
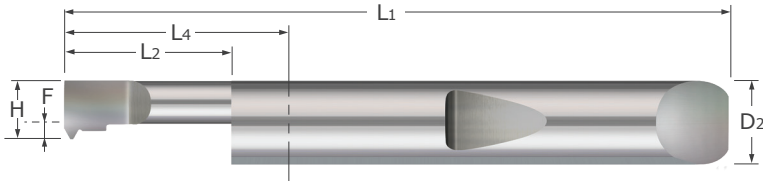
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options



Quick Change – Threading Tools
UN Topping– Single Point

QTT



- 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 +.030" - .000"	Y +.005" - .000"	P +.0000" - .0020"	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
2-56	.050	.055	.150	.012	.0097	.590	-.0438	.1875	1.5	QTT-000256-015	47.00	QTT-000256-015X	52.20
2-56	.050	.055	.200	.012	.0097	.590	-.0438	.1875	1.5	QTT-000256-020	47.00	QTT-000256-020X	52.20
4-40	.065	.075	.200	.014	.0135	.590	-.0288	.1875	1.5	QTT-000440-020	47.00	QTT-000440-020X	52.20
4-40	.065	.075	.250	.014	.0135	.590	-.0288	.1875	1.5	QTT-000440-025	47.00	QTT-000440-025X	52.20
5-44	.080	.090	.200	.014	.0123	.590	-.0138	.1875	1.5	QTT-000544-020	47.00	QTT-000544-020X	52.20
5-44	.080	.090	.250	.014	.0123	.590	-.0138	.1875	1.5	QTT-000544-025	47.00	QTT-000544-025X	52.20
6-32	.080	.090	.250	.017	.0169	.590	-.0138	.1875	1.5	QTT-000632-025	47.00	QTT-000632-025X	52.20
6-32	.080	.090	.350	.017	.0169	.590	-.0138	.1875	1.5	QTT-000632-035	47.00	QTT-000632-035X	52.20
8-32	.100	.110	.250	.017	.0169	.590	.0063	.1875	1.5	QTT-000832-025	47.00	QTT-000832-025X	52.20
8-32	.100	.110	.350	.017	.0169	.590	.0063	.1875	1.5	QTT-000832-035	47.00	QTT-000832-035X	52.20
10-24	.120	.136	.250	.021	.0226	.590	.0263	.1875	1.5	QTT-001024-025	47.00	QTT-001024-025X	52.20
10-24	.120	.136	.400	.021	.0226	.590	.0263	.1875	1.5	QTT-001024-040	47.00	QTT-001024-040X	52.20
10-32	.120	.136	.250	.017	.0169	.590	.0263	.1875	1.5	QTT-001032-025	47.00	QTT-001032-025X	52.20
10-32	.120	.136	.400	.017	.0169	.590	.0263	.1875	1.5	QTT-001032-040	47.00	QTT-001032-040X	52.20
1/4-20	.160	.182	.400	.024	.0271	.590	.0663	.1875	1.5	QTT-014020-040	47.00	QTT-014020-040X	52.20
1/4-20	.160	.182	.500	.024	.0271	.590	.0663	.1875	1.5	QTT-014020-050	47.00	QTT-014020-050X	52.20
1/4-28	.180	.202	.500	.018	.0193	.853	.0550	.2500	2.0	QTT-014028-050	50.35	QTT-014028-050X	56.45
1/4-28	.180	.202	.750	.018	.0193	.853	.0550	.2500	2.0	QTT-014028-075	50.35	QTT-014028-075X	56.45
5/16-18	.220	.242	.750	.026	.0301	.853	.0638	.3125	2.0	QTT-051618-075	62.90	QTT-051618-075X	70.40
5/16-18	.220	.242	1.000	.026	.0301	1.353	.0638	.3125	2.5	QTT-051618-100	64.15	QTT-051618-100X	72.05
5/16-24	.220	.242	.750	.021	.0226	.853	.0638	.3125	2.0	QTT-051624-075	62.90	QTT-051624-075X	70.40
5/16-24	.220	.242	1.000	.021	.0226	1.353	.0638	.3125	2.5	QTT-051624-100	64.15	QTT-051624-100X	72.05
3/8-16	.280	.302	.750	.028	.0338	.853	.1238	.3125	2.0	QTT-038016-075	62.90	QTT-038016-075X	70.40
3/8-16	.280	.302	1.000	.028	.0338	1.353	.1238	.3125	2.5	QTT-038016-100	64.15	QTT-038016-100X	72.05
3/8-24	.300	.322	.750	.021	.0226	.853	.1438	.3125	2.0	QTT-038024-075	62.90	QTT-038024-075X	70.40
3/8-24	.300	.322	1.000	.021	.0226	1.353	.1438	.3125	2.5	QTT-038024-100	64.15	QTT-038024-100X	72.05

*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



QTT

Quick Change – Threading Tools
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	
	H	L2	$\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} +.005" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} +.000" \\ -.002" \end{smallmatrix}$	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
7/16-14	.310	.332	.750	.032	.0387	.853	.1538	.3125	2.0	QTT-071614-075	62.90	QTT-071614-075X	70.40
7/16-14	.310	.332	1.000	.032	.0387	1.353	.1538	.3125	2.5	QTT-071614-100	64.15	QTT-071614-100X	72.05
7/16-20	.350	.372	1.000	.024	.0271	1.353	.1625	.3750	2.5	QTT-071620-100	81.90	QTT-071620-100X	91.35
7/16-20	.350	.372	1.250	.024	.0271	1.353	.1625	.3750	2.5	QTT-071620-125	81.90	QTT-071620-125X	91.35
1/2-13	.380	.402	1.000	.034	.0416	1.040	.1300	.5000	2.5	QTT-012013-100	114.80	QTT-012013-100X	127.45
1/2-13	.380	.402	1.250	.034	.0416	1.540	.1300	.5000	3.0	QTT-012013-125	116.05	QTT-012013-125X	128.80
1/2-20	.410	.432	1.000	.024	.0271	1.040	.1600	.5000	2.5	QTT-012020-100	114.80	QTT-012020-100X	127.45
1/2-20	.410	.432	1.250	.024	.0271	1.540	.1600	.5000	3.0	QTT-012020-125	116.05	QTT-012020-125X	128.80
9/16-12	.410	.432	1.000	.036	.0451	1.040	.1600	.5000	2.5	QTT-091612-100	114.80	QTT-091612-100X	127.45
9/16-12	.410	.432	1.250	.036	.0451	1.540	.1600	.5000	3.0	QTT-091612-125	116.05	QTT-091612-125X	128.80
9/16-18	.460	.482	1.000	.026	.0301	1.040	.2100	.5000	2.5	QTT-091618-100	114.80	QTT-091618-100X	127.45
9/16-18	.460	.482	1.250	.026	.0301	1.540	.2100	.5000	3.0	QTT-091618-125	116.05	QTT-091618-125X	128.80
5/8-11	.490	.512	1.000	.039	.0492	1.040	.2400	.5000	2.5	QTT-058011-100	114.80	QTT-058011-100X	127.45
5/8-11	.490	.512	1.250	.039	.0492	1.540	.2400	.5000	3.0	QTT-058011-125	116.05	QTT-058011-125X	128.80
3/4-16	.490	.512	1.000	.028	.0338	1.040	.2400	.5000	2.5	QTT-034016-100	114.80	QTT-034016-100X	127.45
3/4-16	.490	.512	1.250	.028	.0338	1.540	.2400	.5000	3.0	QTT-034016-125	116.05	QTT-034016-125X	128.80

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

Quick Change – Threading Tools

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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!

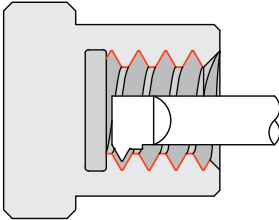
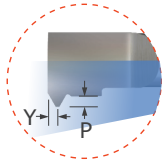
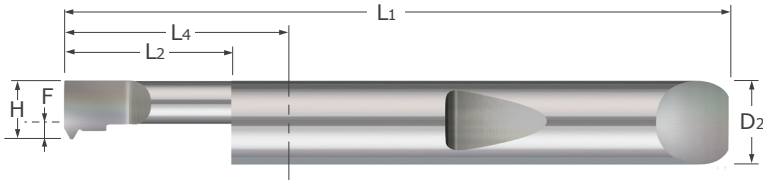


See pgs 16-34 for quick change holder options



Quick Change – Threading Tools
Metric Topping– Single Point

QTMT



- 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

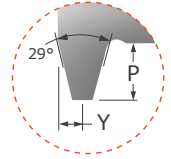
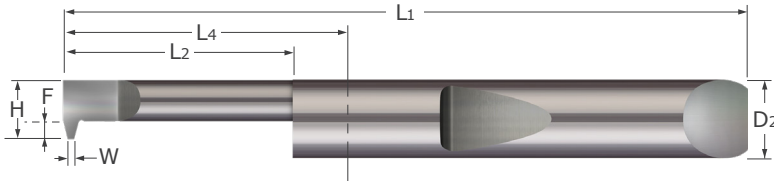
Thread Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
										Tool #	USD\$	Tool #	USD\$
	H		L2 +1.27mm -.000mm	Y +.127mm -.000mm	P +.000mm -.051mm	L4	F	D2 (h6)	L1				
M2.5x0.45	1.50mm	1.70mm	5.00mm	.300mm	.244mm	14.99mm	-0.88mm	.1875	1.5	QTMT-025045-05	47.00	QTMT-025045-05X	51.70
M2.5x0.45	1.50mm	1.70mm	7.00mm	.300mm	.244mm	14.99mm	-0.88mm	.1875	1.5	QTMT-025045-07	47.00	QTMT-025045-07X	51.70
M3x0.50	2.00mm	2.20mm	6.00mm	.319mm	.271mm	14.99mm	-0.38mm	.1875	1.5	QTMT-030050-06	47.00	QTMT-030050-06X	51.70
M3x0.50	2.00mm	2.20mm	8.00mm	.319mm	.271mm	14.99mm	-0.38mm	.1875	1.5	QTMT-030050-08	47.00	QTMT-030050-08X	51.70
M4x0.70	2.50mm	2.70mm	7.00mm	.396mm	.379mm	14.99mm	0.12mm	.1875	1.5	QTMT-040070-07	47.00	QTMT-040070-07X	51.70
M4x0.70	2.50mm	2.70mm	10.00mm	.396mm	.379mm	14.99mm	0.12mm	.1875	1.5	QTMT-040070-10	47.00	QTMT-040070-10X	51.70
M4.5x0.75	3.00mm	3.40mm	6.00mm	.415mm	.406mm	14.99mm	0.62mm	.1875	1.5	QTMT-045075-06	47.00	QTMT-045075-06X	51.70
M4.5x0.75	3.00mm	3.40mm	9.00mm	.415mm	.406mm	14.99mm	0.62mm	.1875	1.5	QTMT-045075-09	47.00	QTMT-045075-09X	51.70
M5x0.80	3.00mm	3.40mm	6.00mm	.434mm	.433mm	14.99mm	0.62mm	.1875	1.5	QTMT-050080-06	47.00	QTMT-050080-06X	51.70
M5x0.80	3.00mm	3.40mm	9.00mm	.434mm	.433mm	14.99mm	0.62mm	.1875	1.5	QTMT-050080-09	47.00	QTMT-050080-09X	51.70
M6x1.00	4.00mm	4.50mm	10.00mm	.511mm	.541mm	14.99mm	1.62mm	.1875	1.5	QTMT-060100-10	47.00	QTMT-060100-10X	51.70
M6x1.00	4.00mm	4.50mm	14.00mm	.511mm	.541mm	27.69mm	1.62mm	.1875	2.0	QTMT-060100-14	48.35	QTMT-060100-14X	52.95
M8x1.25	5.50mm	6.00mm	14.00mm	.607mm	.677mm	21.67mm	1.53mm	.3125	2.0	QTMT-080125-14	62.90	QTMT-080125-14X	67.45
M8x1.25	5.50mm	6.00mm	22.00mm	.607mm	.677mm	34.37mm	1.53mm	.3125	2.5	QTMT-080125-22	64.15	QTMT-080125-22X	68.70
M10x1.50	7.50mm	8.00mm	24.00mm	.703mm	.812mm	34.37mm	3.53mm	.3125	2.5	QTMT-100150-24	64.15	QTMT-100150-24X	68.70
M10x1.50	7.50mm	8.00mm	31.00mm	.703mm	.812mm	34.37mm	3.53mm	.3125	2.5	QTMT-100150-31	64.15	QTMT-100150-31X	68.70
M12x1.75	9.00mm	9.50mm	22.00mm	.804mm	.957mm	34.37mm	4.24mm	.3750	2.5	QTMT-120175-22	81.90	QTMT-120175-22X	86.45
M12x1.75	9.00mm	9.50mm	31.00mm	.804mm	.957mm	34.37mm	4.24mm	.3750	2.5	QTMT-120175-31	81.90	QTMT-120175-31X	86.45
M16x2.00	12.50mm	13.00mm	31.00mm	.896mm	1.085mm	39.12mm	6.15mm	.5000	3.0	QTMT-160200-31	116.05	QTMT-160200-31X	120.60
M16x2.00	12.50mm	13.00mm	44.00mm	.896mm	1.085mm	51.82mm	6.15mm	.5000	3.5	QTMT-160200-44	119.70	QTMT-160200-44X	124.25
M20x2.50	12.50mm	13.00mm	31.00mm	1.086mm	1.353mm	39.12mm	6.15mm	.5000	3.0	QTMT-200250-31	116.05	QTMT-200250-31X	120.60
M20x2.50	12.50mm	13.00mm	44.00mm	1.086mm	1.353mm	51.82mm	6.15mm	.5000	3.5	QTMT-200250-44	119.70	QTMT-200250-44X	124.25

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

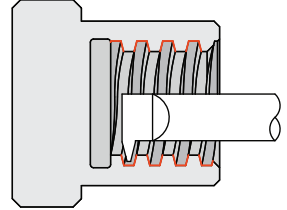
See pgs 16-34 for quick change holder options



QIAT

Quick Change – 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 geometry makes the tool as rigid as possible
- 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
- Unique "3 point" locking and locating system ensures axial and radial tool repeatability, tip-to-tip consistency, and part-to-part accuracy
- Solid carbide ■ CNC ground in the USA



Quick Change – Threading Tools

	Thread Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Flat	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
	T.P.I.	H		$L_2^{+.300}_{-.000}$	Y	P	$W^{+.010}_{-.000}$	L4	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
NEW	16	.165	.187	.400	.035	.045	.021	.853	.0400	.2500	2.0	QIAT2-400-16	43.80	QIAT2-400-16X	43.80
NEW	16	.165	.187	.600	.024	.045	.021	.853	.0400	.2500	2.0	QIAT2-600-16	43.80	QIAT2-600-16X	43.80
NEW	16	.165	.187	.750	.035	.045	.021	.853	.0400	.2500	2.0	QIAT2-750-16	43.80	QIAT2-750-16X	43.80
NEW	16	.165	.187	1.000	.035	.045	.021	1.353	.0400	.2500	2.5	QIAT2-1000-16	44.30	QIAT2-1000-16X	44.30
NEW	14	.219	.241	.500	.043	.070	.024	.853	.0627	.3125	2.0	QIAT2-500-14	54.30	QIAT2-500-14X	54.30
NEW	14	.219	.241	.750	.030	.070	.024	.853	.0627	.3125	2.0	QIAT2-750-14	54.30	QIAT2-750-14X	54.30
NEW	14	.219	.241	1.000	.043	.070	.024	1.353	.0627	.3125	2.5	QIAT2-1000-14	54.80	QIAT2-1000-14X	54.80
NEW	14	.219	.241	1.250	.043	.070	.024	1.353	.0627	.3125	2.5	QIAT2-1250-14	54.80	QIAT2-1250-14X	54.80
NEW	12	.269	.291	.750	.049	.085	.028	.853	.1127	.3125	2.0	QIAT2-750-12	71.40	QIAT2-750-12X	71.40
NEW	12	.269	.291	1.000	.036	.085	.028	1.353	.1127	.3125	2.5	QIAT2-1000-12	72.05	QIAT2-1000-12X	72.05
NEW	12	.269	.291	1.250	.049	.085	.028	1.353	.1127	.3125	2.5	QIAT2-1250-12	72.05	QIAT2-1250-12X	72.05
NEW	12	.269	.291	1.800	.049	.085	.028	2.353	.1127	.3125	3.5	QIAT2-1800-12	73.10	QIAT2-1800-12X	73.10
NEW	10	.378	.400	.750	.060	.120	.032	1.040	.1280	.5000	2.5	QIAT2-750-10	100.25	QIAT2-750-10X	100.25
NEW	10	.378	.400	1.500	.060	.120	.032	1.540	.1280	.5000	3.0	QIAT2-1500-10	100.80	QIAT2-1500-10X	100.80
NEW	10	.378	.400	2.000	.060	.120	.032	2.040	.1280	.5000	3.5	QIAT2-2000-10	101.40	QIAT2-2000-10X	101.40
NEW	8	.478	.500	.750	.064	.120	.041	1.040	.2280	.5000	2.5	QIAT2-750-8	100.25	QIAT2-750-8X	100.25
NEW	8	.478	.500	1.500	.064	.120	.041	1.540	.2280	.5000	3.0	QIAT2-1500-8	100.80	QIAT2-1500-8X	100.80
NEW	8	.478	.500	2.000	.064	.120	.041	2.040	.2280	.5000	3.5	QIAT2-2000-8	101.40	QIAT2-2000-8X	101.40
NEW	6	.490	.512	.750	.072	.120	.057	1.040	.2400	.5000	2.5	QIAT-750-6	100.25	QIAT-750-6X	100.25
NEW	6	.490	.512	1.500	.072	.120	.057	1.540	.2400	.5000	3.0	QIAT-1500-6	100.80	QIAT-1500-6X	100.80
NEW	6	.490	.512	2.000	.072	.120	.057	2.040	.2400	.5000	3.5	QIAT-2000-6	101.40	QIAT-2000-6X	101.40
NEW	5	.490	.512	1.500	.078	.120	.069	1.540	.2400	.5000	3.0	QIAT-1500-5	100.80	QIAT-1500-5X	100.80
NEW	5	.490	.512	2.000	.078	.120	.069	2.040	.2400	.5000	3.5	QIAT-2000-5	101.40	QIAT-2000-5X	101.40

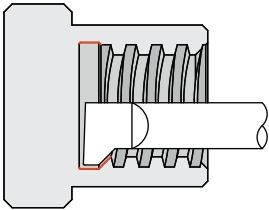
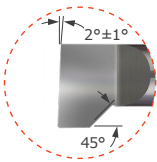
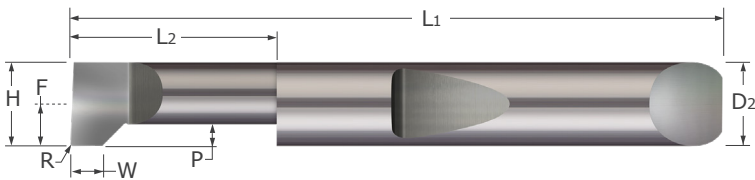
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options



Quick Change – Threading Tools
Thread Relief Tools

QLTR



- 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 geometry makes the tool as rigid as possible
- 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
- Unique “3 point” locking and locating system ensures axial and radial tool repeatability , tip-to-tip consistency, and part-to-part accuracy
- Solid carbide ■ CNC ground in the USA

Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Flat	Radius	Projection	Length From Holder	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
H	L2 ^{+.300"} _{-.000"}	W ^{+.002"} _{-.002"}	R ^{+.001"} _{-.001"}	P	L4	F	D2 (h6)	L1		Tool #	USD\$	Tool #	USD\$
.094	.104	.250	.049	.002	.040	.590	.0002	.1875	1.5	QLTR-094-4	36.10	QLTR-094-4X	36.10
.094	.104	.375	.049	.002	.040	.590	.0002	.1875	1.5	QLTR-094-6	36.10	QLTR-094-6X	36.10
.125	.141	.250	.063	.002	.040	.590	.0312	.1875	1.5	QLTR-125-4	36.10	QLTR-125-4X	36.10
.125	.141	.375	.063	.002	.040	.590	.0312	.1875	1.5	QLTR-125-6	36.10	QLTR-125-6X	36.10
.156	.178	.375	.063	.005	.040	.590	.0624	.1875	1.5	QLTR-156-6	36.10	QLTR-156-6X	36.10
.156	.178	.500	.063	.005	.040	.590	.0624	.1875	1.5	QLTR-156-8	36.10	QLTR-156-8X	36.10
.180	.202	.375	.078	.005	.040	.590	.0862	.1875	1.5	QLTR-180-6	36.10	QLTR-180-6X	36.10
.180	.202	.500	.078	.005	.040	1.090	.0862	.1875	1.5	QLTR-180-8	36.10	QLTR-180-8X	36.10
.180	.202	.750	.078	.005	.040	1.090	.0862	.1875	2.0	QLTR-180-12	36.75	QLTR-180-12X	36.75
.180	.202	1.000	.078	.005	.040	1.090	.0862	.1875	2.0	QLTR-180-16	36.75	QLTR-180-16X	36.75
.245	.267	.500	.094	.005	.050	1.353	.1200	.2500	2.0	QLTR-245-8	43.30	QLTR-245-8X	43.30
.245	.267	.750	.094	.005	.050	1.353	.1200	.2500	2.0	QLTR-245-12	43.30	QLTR-245-12X	43.30
.245	.267	1.000	.094	.005	.050	1.853	.1200	.2500	2.5	QLTR-245-16	43.80	QLTR-245-16X	43.80
.245	.267	1.250	.094	.005	.050	1.853	.1200	.2500	2.5	QLTR-245-20	43.80	QLTR-245-20X	43.80
.310	.332	.750	.094	.005	.075	.853	.1537	.3125	2.0	QLTR-310-12	54.40	QLTR-310-12X	54.40
.310	.332	1.250	.094	.005	.075	1.353	.1537	.3125	2.5	QLTR-310-20	54.90	QLTR-310-20X	54.90
.370	.392	.750	.125	.005	.100	.853	.1825	.3750	2.0	QLTR-370-12	71.85	QLTR-370-12X	71.85
.370	.392	1.250	.125	.005	.100	1.353	.1825	.3750	2.5	QLTR-370-20	72.35	QLTR-370-20X	72.35
.495	.517	1.000	.156	.005	.125	1.040	.2450	.5000	2.5	QLTR-495-16	101.95	QLTR-495-16X	101.95
.495	.517	1.500	.156	.005	.125	1.540	.2450	.5000	3.0	QLTR-495-24	102.45	QLTR-495-24X	102.45

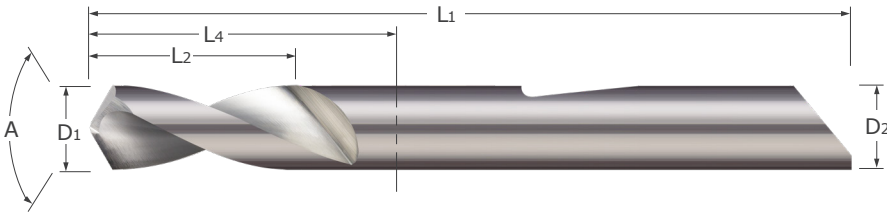
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 16-34 for quick change holder options



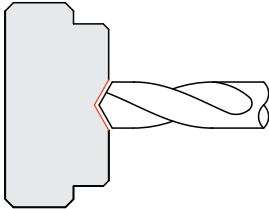
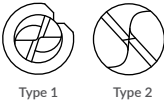
QSPD

Quick Change – Holmaking Tools
Spotting Drills



- 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 – Holmaking Tools

Included Angle	Drill Diameter	Flute Length	Web Thickness	Type	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
A	D1 ^{+ .0000"} _{- .0005"}	L2 ^{+ .010"} _{- .000"}	^{+ .001"} _{- .001"}		L4	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
82°	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-082	33.95	QSPD-090-082X	39.05
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-082	33.95	QSPD-118-082X	39.05
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-082	33.95	QSPD-125-082X	39.05
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-082	33.95	QSPD-187-082X	39.05
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-082	39.95	QSPD-250-082X	46.50
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-082	53.65	QSPD-375-082X	63.00
	.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-082	72.45	QSPD-500-082X	85.20
90°	.0200	.060	.002	I	.590	.1875	1.5			QSPD-020-090X	45.90
	.0250	.075	.002	I	.590	.1875	1.5	QSPD-025-090	38.80		
	.0300	.090	.003	I	.590	.1875	1.5	QSPD-030-090	38.80		
	.0350	.105	.003	I	.590	.1875	1.5			QSPD-035-090X	42.65
	.0400	.120	.004	I	.590	.1875	1.5	QSPD-040-090	33.95	QSPD-040-090X	37.65
	.0450	.135	.004	I	.590	.1875	1.5	QSPD-045-090	33.95		
	.0600	.180	.006	I	.590	.1875	1.5	QSPD-060-090	33.95	QSPD-060-090X	37.65
	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-090	33.95	QSPD-090-090X	37.65
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-090	33.95	QSPD-118-090X	37.65
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-090	33.95	QSPD-125-090X	37.65
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-090	33.95	QSPD-187-090X	37.65
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-090	39.95	QSPD-250-090X	46.35
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-090	53.65	QSPD-375-090X	63.00
100°	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-100	33.95	QSPD-090-100X	39.05
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-100	33.95	QSPD-118-100X	39.05
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-100	33.95	QSPD-125-100X	39.05
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-100	33.95	QSPD-187-100X	39.05
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-100	39.95	QSPD-250-100X	46.50
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-100	53.65	QSPD-375-100X	63.00
	.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-100	72.45	QSPD-500-100X	85.20

Continued on next page

See pgs 16-34 for quick change holder options

Quick Change – Holmaking Tools
Spotting Drills (cont.)

QSPD

Included Angle	Drill Diameter	Flute Length	Web Thickness	Type	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
A					L ₄		L ₁	Tool #	USD\$	Tool #	USD\$
120°	.0150	.045	.002	I	.590	.1875	1.5	QSPD-015-120	43.70		
	.0300	.090	.003	I	.590	.1875	1.5	QSPD-030-120	38.80		
	.0350	.105	.003	I	.590	.1875	1.5	QSPD-035-120	38.80		
	.0400	.120	.004	I	.590	.1875	1.5	QSPD-040-120	33.95		
	.0450	.135	.004	I	.590	.1875	1.5	QSPD-045-120	33.95	QSPD-045-120X	37.65
	.0500	.150	.005	I	.590	.1875	1.5			QSPD-050-120X	36.00
	.0600	.180	.006	I	.590	.1875	1.5	QSPD-060-120	33.95	QSPD-060-120X	37.65
	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-120	33.95	QSPD-090-120X	37.65
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-120	33.95	QSPD-118-120X	39.05
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-120	33.95	QSPD-125-120X	37.65
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-120	33.95	QSPD-187-120X	37.65
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-120	39.95	QSPD-250-120X	46.35
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-120	53.65	QSPD-375-120X	63.00
140°	.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-120	72.45	QSPD-500-120X	85.20
	.0300	.090	.003	I	.590	.1875	1.5	QSPD-030-140	38.80		
	.0400	.120	.004	I	.590	.1875	1.5				
	.0450	.135	.004	I	.590	.1875	1.5			QSPD-045-140X	37.65
	.0600	.180	.006	I	.590	.1875	1.5	QSPD-060-140	33.95	QSPD-060-140X	37.65
	.0900	.270	.006	I	.590	.1875	1.5	QSPD-090-140	33.95	QSPD-090-140X	37.65
	.1181	.354	.008	I	.590	.1875	1.5	QSPD-118-140	33.95	QSPD-118-140X	37.65
	.1250	.375	.010	I	.590	.1875	1.5	QSPD-125-140	33.95	QSPD-125-140X	37.65
	.1875	.625	.005	II	1.090	.1875	2.0	QSPD-187-140	33.95	QSPD-187-140X	37.65
	.2500	.750	.005	II	1.353	.2500	2.5	QSPD-250-140	39.95	QSPD-250-140X	46.35
	.3750	1.000	.005	II	1.353	.3750	2.5	QSPD-375-140	53.65	QSPD-375-140X	63.00
	.5000	1.000	.005	II	1.540	.5000	3.0	QSPD-500-140	72.45	QSPD-500-140X	85.20

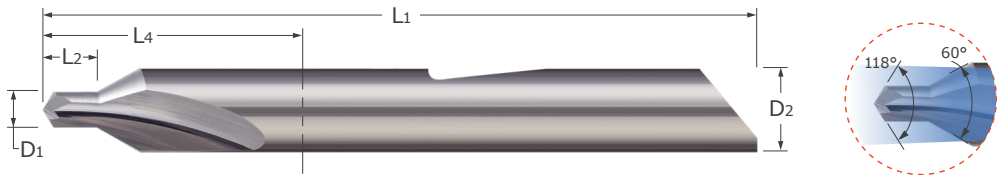
Quick Change – Holmaking Tools

See pgs 16-34 for quick change holder options

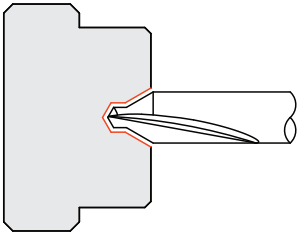


QDC

Quick Change – Holmaking Tools
Combined Drill & Countersink 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 #	USD\$	Tool #	USD\$
$D_1 \begin{smallmatrix} +.003" \\ -.000" \end{smallmatrix}$	$L_2 \begin{smallmatrix} +.015" \\ -.000" \end{smallmatrix}$	L4	D2 (h6)	L1	QDC-00	26.80	QDC-00X	30.35
.025	.025	1.090	.1875	2.0	QDC-01	26.80	QDC-01X	30.35
.031	.031	1.090	.1875	2.0	QDC-1	26.80	QDC-1X	30.35
.047	.047	1.090	.1875	2.0				

$D_1 \begin{smallmatrix} +.003" \\ -.000" \end{smallmatrix}$	$L_2 \begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	L4	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.078	.078	1.090	.1875	2.0	QDC-2	26.80	QDC-2X	30.35
.109	.109	1.353	.2500	2.5	QDC-3	46.70	QDC-3X	53.35
.125	.125	1.353	.3125	2.5	QDC-4	62.50	QDC-4X	70.40
.188	.188	1.540	.5000	3.0	QDC-5	94.15	QDC-5X	106.90
.219	.219	1.540	.5000	3.0	QDC-6	94.15	QDC-6X	106.90

Quick Change – Holmaking Tools

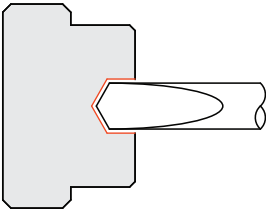
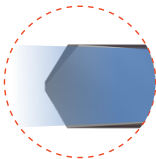
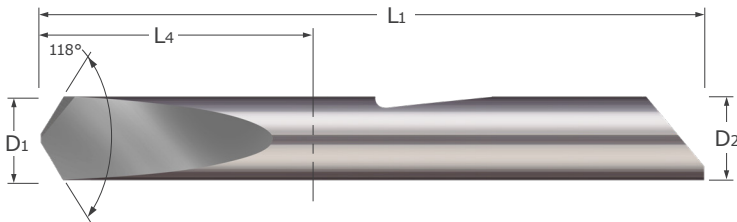
See pgs 16-34 for quick change holder options



Quick Change – Holmaking Tools

Spade Drills

QSD



- 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

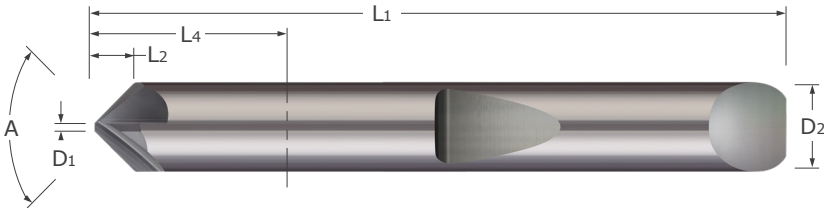
Drill Diameter	Web Thickness	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
					Tool #	USD\$	Tool #	USD\$
D1 +.0000" -.0005"	+.001" -.001"	L4	D2 (h6)	L1				
.0312	.010	.340	.1875	1.25	QSD-031	19.70	QSD-031X	23.00
.0625	.012	.590	.1875	1.50	QSD-062	20.55	QSD-062X	23.70
.0938	.016	.590	.1875	1.50	QSD-093	21.05	QSD-093X	24.45
.1250	.020	.590	.1875	1.50	QSD-125	23.15	QSD-125X	26.50
.1562	.025	1.090	.1875	2.00	QSD-156	25.20		
.1875	.028	1.090	.1875	2.00	QSD-187	29.40	QSD-187X	33.05
.2500	.035	.853	.2500	2.00	QSD-250	39.55	QSD-250X	43.65
.3125	.040	1.353	.3125	2.50	QSD-312	54.70	QSD-312X	59.20
.3750	.046	1.353	.3750	2.50	QSD-375	65.90	QSD-375X	71.05

See pgs 16-34 for quick change holder options

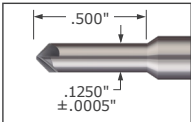


QCS

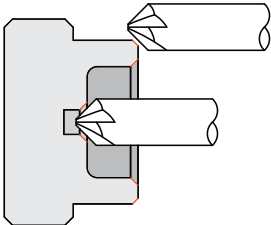
Quick Change – Holmaking Tools
Countersink & Chamfer Tools



- 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



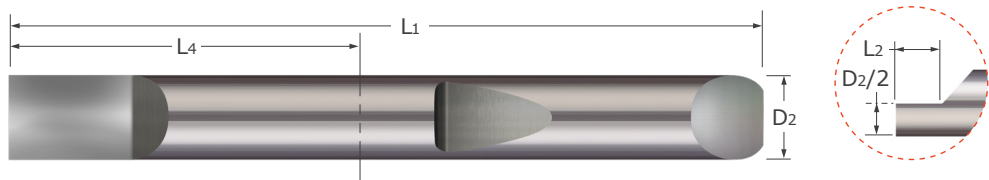
Included Angle	Tip Diameter	Length of Cut	Flutes	Length From Holder	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
							Tool #	USD\$	Tool #	USD\$
60° A_{-1}^{+1}	$D_{1 \pm .003}^{+.000}$	L ₂		L ₄	D ₂ (h6)	L ₁				
	.030	.082	3	.590	.1875	1.5	QCS-125-060	38.60	QCS-125-060X*	42.50
	.040	.128	4	1.090	.1875	2.0	QCS-187-060	38.60	QCS-187-060X	42.50
	.050	.173	6	1.353	.2500	2.5	QCS-250-060	44.00	QCS-250-060X	50.65
	.060	.219	6	1.353	.3125	2.5	QCS-312-060	59.15	QCS-312-060X	67.05
82°	.070	.264	6	1.353	.3750	2.5	QCS-375-060	73.30	QCS-375-060X	82.60
	.030	.055	3	.590	.1875	1.5	QCS-125-082	38.60	QCS-125-082X*	42.50
	.040	.085	4	1.090	.1875	2.0	QCS-187-082	38.60	QCS-187-082X	42.50
	.050	.115	6	1.353	.2500	2.5	QCS-250-082	44.00	QCS-250-082X	50.65
	.060	.145	6	1.353	.3125	2.5	QCS-312-082	59.15	QCS-312-082X	67.05
90°	.070	.175	6	1.353	.3750	2.5	QCS-375-082	73.30		
	.030	.047	3	.590	.1875	1.5	QCS-125-090	38.60	QCS-125-090X*	42.50
	.040	.074	4	1.090	.1875	2.0	QCS-187-090	38.60	QCS-187-090X	42.50
	.050	.100	6	1.353	.2500	2.5	QCS-250-090	44.00	QCS-250-090X	50.65
	.060	.126	6	1.353	.3125	2.5	QCS-312-090	59.15	QCS-312-090X	67.05
100°	.070	.152	6	1.353	.3750	2.5	QCS-375-090	73.30	QCS-375-090X	82.60
	.080	.210	6	1.540	.5000	3.0	QCS-500-090	102.15	QCS-500-090X	114.90
	.030	.040	3	.590	.1875	1.5	QCS-125-100	38.60	QCS-125-100X*	42.50
	.040	.062	4	1.090	.1875	2.0	QCS-187-100	38.60	QCS-187-100X	42.50
	.050	.084	6	1.353	.2500	2.5	QCS-250-100	44.00	QCS-250-100X	50.65
120°	.060	.106	6	1.353	.3125	2.5	QCS-312-100	59.15	QCS-312-100X	67.05
	.070	.128	6	1.353	.3750	2.5	QCS-375-100X			82.60
	.030	.027	3	.590	.1875	1.5	QCS-125-120	38.60	QCS-125-120X*	42.50
	.040	.043	4	1.090	.1875	2.0	QCS-187-120	38.60	QCS-187-120X	42.50
	.050	.058	6	1.353	.2500	2.5	QCS-250-120	44.00	QCS-250-120X	50.65
120°	.060	.073	6	1.353	.3125	2.5	QCS-312-120	59.15	QCS-312-120X	67.05
	.080	.121	6	1.540	.5000	3.0	QCS-500-120X			114.90

*QCS-125 tools feature a necked down shank

See pgs 16-34 for quick change holder options

Quick Change – Blanks
Half Round

QSP



- 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 #	USD\$
D2 (h6)	L2 $\begin{smallmatrix} +.005" \\ -.000" \end{smallmatrix}$	L4	L1		
.1875	.375	.590	1.5	QSP-187-1.5	23.75
.1875	.375	1.090	2.0	QSP-187-2.0	25.45
.2500	.375	.853	2.0	QSP-250-2.0	27.00
.2500	.375	1.353	2.5	QSP-250-2.5	29.40
.2500	.375	1.853	3.0	QSP-250-3.0	31.75
.3125	.500	.853	2.0	QSP-312-2.0	36.25
.3125	.500	1.353	2.5	QSP-312-2.5	38.20
.3125	.500	1.853	3.0	QSP-312-3.0	42.75
.3750	.500	.853	2.0	QSP-375-2.0	45.90
.3750	.500	1.353	2.5	QSP-375-2.5	47.55
.3750	.500	1.853	3.0	QSP-375-3.0	50.95
.5000	.625	1.040	2.5	QSP-500-2.5	64.15
.5000	.625	1.540	3.0	QSP-500-3.0	67.45
.5000	.625	3.040	4.5	QSP-500-4.5	77.85

*Centerline +.001" / -.000"

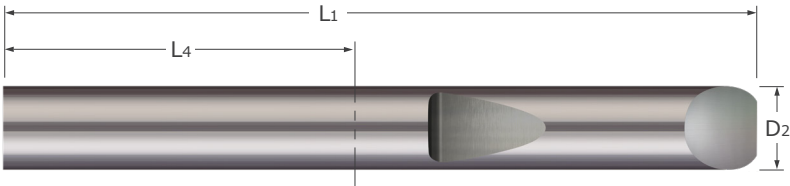
Quick Change – Blanks

See pgs 16-34 for quick change holder options



QSR

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

Shank Diameter	Length from Holder	Overall Length	Tool Holder	
D2 (h6)	L4	L1	Tool #	USD\$
.1875	.590	1.5	QSR-187-1.5	23.75
.1875	1.090	2.0	QSR-187-2.0	25.45
.2500	.853	2.0	QSR-250-2.0	27.00
.2500	1.353	2.5	QSR-250-2.5	29.40
.2500	1.853	3.0	QSR-250-3.0	31.75
.3125	.853	2.0	QSR-312-2.0	36.25
.3125	1.353	2.5	QSR-312-2.5	38.20
.3125	1.853	3.0	QSR-312-3.0	42.75
.3750	1.353	2.5	QSR-375-2.5	47.55
.3750	1.853	3.0	QSR-375-3.0	50.95
.3750	2.353	3.5	QSR-375-3.5	52.40
.5000	1.040	2.5	QSR-500-2.5	64.15
.5000	1.540	3.0	QSR-500-3.0	67.45
.5000	2.040	3.5	QSR-500-3.5	70.15
.5000	2.540	4.0	QSR-500-4.0	73.80

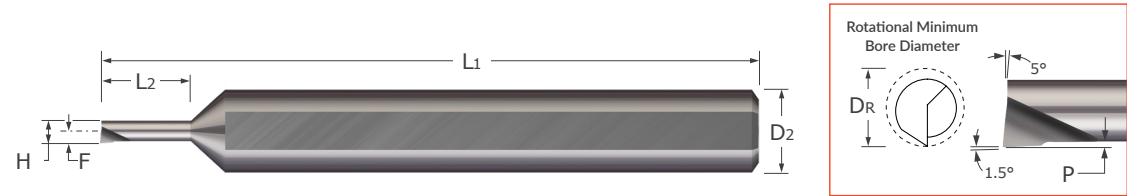
Quick Change – Blanks

See pgs 16-34 for quick change holder options

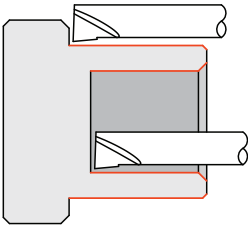


Standard – Boring Tools
Right Hand – Sharp – Miniature

MBB / MBBM



- 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 #	USD\$	Tool #	USD\$
.0135	.0135	.015	.050	.0015	.0075	.1250	1.5	MBB-015050	43.50	MBB-015050X	48.05
.0135	.0135	.015	.075	.0015	.0075	.1250	1.5	MBB-015075	43.50	MBB-015075X	48.05
.45 mm	.0177	0.5 mm	2 mm	.05 mm	.25 mm	3 mm	38 mm	MBBM-005020	34.90		
.0180	.0180	.020	.050	.0020	.0100	.1250	1.5	MBB-020050	43.50	MBB-020050X	48.05
.0180	.0180	.020	.075	.0020	.0100	.1250	1.5	MBB-020075	43.50	MBB-020075X	48.05
.0180	.0180	.020	.100	.0020	.0100	.1250	1.5	MBB-020100	43.50	MBB-020100X	48.05
.54 mm	.0213	0.6 mm	2.5 mm	.06 mm	.30 mm	3 mm	38 mm	MBBM-006025	34.90		
.0225	.0225	.025	.050	.0025	.0125	.1250	1.5	MBB-025050	38.40	MBB-025050X	42.95
.0225	.0225	.025	.075	.0025	.0125	.1250	1.5	MBB-025075	38.40	MBB-025075X	42.95
.0225	.0225	.025	.100	.0025	.0125	.1250	1.5	MBB-025100	38.40	MBB-025100X	42.95
.0225	.0225	.025	.125	.0025	.0125	.1250	1.5	MBB-025125	38.40	MBB-025125X	42.95
.0275	.0275	.030	.075	.0025	.0150	.1250	1.5	MBB-030075	38.40	MBB-030075X	42.95
.0275	.0275	.030	.100	.0025	.0150	.1250	1.5	MBB-030100	38.40	MBB-030100X	42.95
.0275	.0275	.030	.125	.0025	.0150	.1250	1.5	MBB-030125	38.40	MBB-030125X	42.95
.0275	.0275	.030	.150	.0025	.0150	.1250	1.5	MBB-030150	38.40	MBB-030150X	42.95
.72 mm	.0283	0.8 mm	3 mm	.08 mm	.40 mm	3 mm	38 mm	MBBM-008030	34.90		
.72 mm	.0283	0.8 mm	4 mm	.08 mm	.40 mm	3 mm	38 mm	MBBM-008040	34.90	MBBM-008040X	39.45
.0320	.0320	.035	.075	.0030	.0175	.1250	1.5	MBB-035075	38.40	MBB-035075X	42.95
.0320	.0320	.035	.100	.0030	.0175	.1250	1.5	MBB-035100	38.40	MBB-035100X	42.95
.0320	.0320	.035	.150	.0030	.0175	.1250	1.5	MBB-035150	38.40	MBB-035150X	42.95
.0320	.0320	.035	.200	.0030	.0175	.1250	1.5	MBB-035200	38.40	MBB-035200X	42.95
.81 mm	.0317	0.9 mm	4 mm	.09 mm	.45 mm	3 mm	38 mm	MBBM-009040	34.90		
.81 mm	.0317	0.9 mm	5 mm	.09 mm	0.45 mm	3 mm	38 mm	MBBM-009050	34.90		
.91 mm	.0357	1 mm	4 mm	.09 mm	0.50 mm	3 mm	38 mm	MBBM-010040	34.90		
.0365	.0365	.040	.100	.0035	.0200	.1250	1.5	MBB-040100	38.40	MBB-040100X	42.95
.0365	.0365	.040	.150	.0035	.0200	.1250	1.5	MBB-040150	38.40	MBB-040150X	42.95
.0365	.0365	.040	.200	.0035	.0200	.1250	1.5	MBB-040200	38.40	MBB-040200X	42.95
.0405	.0405	.045	.100	.0045	.0225	.1250	1.5	MBB-045100	38.40	MBB-045100X	42.95
.0405	.0405	.045	.150	.0045	.0225	.1250	1.5	MBB-045150	38.40	MBB-045150X	42.95
.0405	.0405	.045	.200	.0045	.0225	.1250	1.5	MBB-045200	38.40	MBB-045200X	42.95

Continued on next page

See pgs 39-47 for standard tool holders
See pg 306 for tool set options



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 #	USD\$	Tool #	USD\$
.0440	.0440	.050	.100	.0060	.0250	.1250	1.5	MBB-050100	38.40	MBB-050100X	42.95
.0440	.0440	.050	.150	.0060	.0250	.1250	1.5	MBB-050150	38.40	MBB-050150X	42.95
.0440	.0440	.050	.200	.0060	.0250	.1250	1.5	MBB-050200	38.40	MBB-050200X	42.95
.0440	.0440	.050	.300	.0060	.0250	.1250	1.5	MBB-050300	38.40	MBB-050300X	42.95
.0525	.0525	.060	.150	.0075	.0300	.1250	1.5	MBB-060150	38.40	MBB-060150X	42.95
.0525	.0525	.060	.200	.0075	.0300	.1250	1.5	MBB-060200	38.40	MBB-060200X	42.95
.0525	.0525	.060	.300	.0075	.0300	.1250	1.5	MBB-060300	38.40	MBB-060300X	42.95
.0525	.0525	.060	.400	.0075	.0300	.1250	1.5	MBB-060400	38.40	MBB-060400X	42.95
.0525	.0525	.060	.500	.0075	.0300	.1250	1.5	MBB-060500	38.40	MBB-060500X	42.95
.0625	.0625	.070	.150	.0075	.0350	.1250	1.5	MBB-070150	38.40	MBB-070150X	42.95
.0625	.0625	.070	.200	.0075	.0350	.1250	1.5	MBB-070200	38.40	MBB-070200X	42.95
.0625	.0625	.070	.300	.0075	.0350	.1250	1.5	MBB-070300	38.40	MBB-070300X	42.95
.0625	.0625	.070	.400	.0075	.0350	.1250	1.5	MBB-070400	38.40	MBB-070400X	42.95
.0625	.0625	.070	.500	.0075	.0350	.1250	1.5	MBB-070500	38.40	MBB-070500X	42.95
.0700	.0700	.080	.150	.0100	.0400	.1250	1.5	MBB-080150	38.40	MBB-080150X	42.95
.0700	.0700	.080	.200	.0100	.0400	.1250	1.5	MBB-080200	38.40	MBB-080200X	42.95
.0700	.0700	.080	.300	.0100	.0400	.1250	1.5	MBB-080300	38.40	MBB-080300X	42.95
.0700	.0700	.080	.500	.0100	.0400	.1250	1.5	MBB-080500	38.40	MBB-080500X	42.95
.0700	.0700	.080	.600	.0100	.0400	.1250	1.5	MBB-080600	38.40	MBB-080600X	42.95
.0800	.0800	.090	.200	.0100	.0450	.1250	1.5	MBB-090200	38.40	MBB-090200X	42.95
.0800	.0800	.090	.300	.0100	.0450	.1250	1.5	MBB-090300	38.40	MBB-090300X	42.95
.0800	.0800	.090	.500	.0100	.0450	.1250	1.5	MBB-090500	38.40	MBB-090500X	42.95
.0800	.0800	.090	.700	.0100	.0450	.1250	1.5	MBB-090700	38.40	MBB-090700X	42.95
.0875	.0875	.100	.200	.0125	.0500	.1250	1.5	MBB-100200	38.40	MBB-100200X	42.95
.0875	.0875	.100	.300	.0125	.0500	.1250	1.5	MBB-100300	38.40	MBB-100300X	42.95
.0875	.0875	.100	.500	.0125	.0500	.1250	1.5	MBB-100500	38.40	MBB-100500X	42.95
.0875	.0875	.100	.700	.0125	.0500	.1250	1.5	MBB-100700	38.40	MBB-100700X	42.95
.0875	.0875	.100	.800	.0125	.0500	.1250	2.0	MBB-100800	38.40	MBB-100800X	42.95

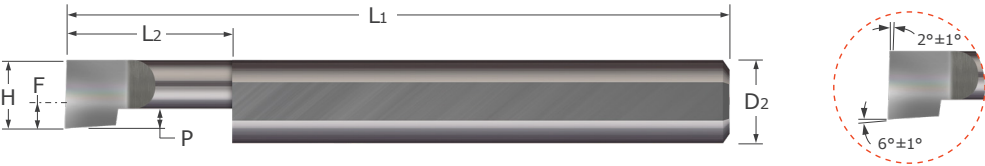
Standard - Boring Tools

See pgs 39-47 for standard tool holders

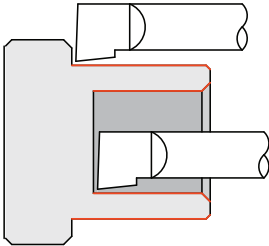
See pg 306 for tool set options

Standard – Boring Tools
Right Hand – Sharp

BBS / BBM



- 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	
H	decimal equiv.	L2	$\begin{matrix} +.050" \\ -.000" \\ +1.24mm \\ -.00mm \end{matrix}$	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
1 mm	.0394	1.12 mm	4 mm	.25 mm	-1 mm	4 mm	50 mm	BBM-040104	27.60	BBM-040104G	31.30	BBM-040104X	32.35
1 mm	.0394	1.12 mm	6 mm	.25 mm	-1 mm	4 mm	50 mm	BBM-040106	27.60	BBM-040106G	31.30	BBM-040106X	32.35
1 mm	.0394	1.12 mm	8 mm	.25 mm	-1 mm	4 mm	50 mm	BBM-040108	27.60	BBM-040108G	31.30	BBM-040108X	32.35
.050	.0500	.0550	.150	.012	-.0125	.1250	1.5	BB-050150S	28.15	BB-050150SG	31.60	BB-050150SX	32.45
.050	.0500	.0550	.200	.012	-.0125	.1250	1.5	BB-050200S	28.15	BB-050200SG	31.60	BB-050200SX	32.45
.050	.0500	.0550	.250	.012	-.0125	.1250	1.5	BB-050250S	28.15	BB-050250SG	32.70	BB-050250SX	32.70
.050	.0500	.0550	.300	.012	-.0125	.1250	1.5	BB-050300S	28.15	BB-050300SG	31.60	BB-050300SX	32.45
.050	.0500	.0550	.400	.012	-.0125	.1250	1.5	BB-050400S	28.15	BB-050400SG	31.60	BB-050400SX	32.45
.060	.0600	.0700	.150	.015	-.0025	.1250	1.5	BB-060150S	28.15	BB-060150SG	31.60	BB-060150SX	32.45
.060	.0600	.0700	.200	.015	-.0025	.1250	1.5	BB-060200S	28.15	BB-060200SG	31.60	BB-060200SX	32.45
.060	.0600	.0700	.250	.015	-.0025	.1250	1.5	BB-060250S	28.15	BB-060250SG	32.70	BB-060250SX	32.70
.060	.0600	.0700	.300	.015	-.0025	.1250	1.5	BB-060300S	28.15	BB-060300SG	31.60	BB-060300SX	32.45
.060	.0600	.0700	.400	.015	-.0025	.1250	1.5	BB-060400S	28.15	BB-060400SG	31.60	BB-060400SX	32.45
.060	.0600	.0700	.500	.015	-.0025	.1250	1.5	BB-060500S	28.15	BB-060500SG	31.60	BB-060500SX	32.45
.070	.0700	.0800	.150	.015	.0075	.1250	1.5	BB-070150S	28.15			BB-070150SX	32.45
.070	.0700	.0800	.200	.015	.0075	.1250	1.5	BB-070200S	28.15			BB-070200SX	32.45
.070	.0700	.0800	.300	.015	.0075	.1250	1.5	BB-070300S	28.15			BB-070300SX	32.45
2 mm	.0787	2.25 mm	4 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040204	27.60	BBM-040204G	31.30	BBM-040204X	32.35
2 mm	.0787	2.25 mm	6 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040206	27.60	BBM-040206G	31.30	BBM-040206X	32.35
2 mm	.0787	2.25 mm	8 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040208	27.60	BBM-040208G	31.30		
2 mm	.0787	2.25 mm	10 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040210	27.60			BBM-040210X	32.35
2 mm	.0787	2.25 mm	13 mm	.50 mm	0 mm	4 mm	50 mm	BBM-040213	27.60			BBM-040213X	32.35
.080	.0800	.0900	.150	.020	.0175	.1250	1.5	BB-080150S	28.15	BB-080150SG	31.60	BB-080150SX	32.45
.080	.0800	.0900	.200	.020	.0175	.1250	1.5	BB-080200S	28.15	BB-080200SG	31.60	BB-080200SX	32.45
.080	.0800	.0900	.300	.020	.0175	.1250	1.5	BB-080300S	28.15	BB-080300SG	31.60	BB-080300SX	32.45
.080	.0800	.0900	.400	.020	.0175	.1250	1.5	BB-080400S	28.15	BB-080400SG	31.60	BB-080400SX	32.45
.080	.0800	.0900	.500	.020	.0175	.1250	1.5	BB-080500S	28.15	BB-080500SG	31.60	BB-080500SX	32.45
.080	.0800	.0900	.600	.020	.0175	.1250	1.5	BB-080600S	28.15	BB-080600SG	31.60	BB-080600SX	32.45

*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.)

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	$+.050''$ $-.000''$ $+1.24\text{mm}$ $-.00\text{mm}$	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.090	.0900	.1000	.150	.020	.0275	.1250	1.5	BB-090150S	28.15	BB-090150SG	32.70	BB-090150SX	32.70
.090	.0900	.1000	.200	.020	.0275	.1250	1.5	BB-090200S	28.15	BB-090200SG	32.70	BB-090200SX	32.70
.090	.0900	.1000	.300	.020	.0275	.1250	1.5	BB-090300S	28.15			BB-090300SX	32.45
.090	.0900	.1000	.400	.020	.0275	.1250	1.5	BB-090400S	28.15	BB-090400SG	32.70	BB-090400SX	32.70
.090	.0900	.1000	.500	.020	.0275	.1250	1.5	BB-090500S	28.15	BB-090500SG	32.70	BB-090500SX	32.70
.100	.1000	.1100	.150	.025	.0375	.1250	1.5	BB-100150S	28.15	BB-100150SG	31.60	BB-100150SX	32.45
.100	.1000	.1100	.200	.025	.0375	.1250	1.5	BB-100200S	28.15	BB-100200SG	31.60	BB-100200SX	32.45
.100	.1000	.1100	.300	.025	.0375	.1250	1.5	BB-100300S	28.15	BB-100300SG	31.60	BB-100300SX	32.45
.100	.1000	.1100	.400	.025	.0375	.1250	1.5	BB-100400S	28.15	BB-100400SG	31.60	BB-100400SX	32.45
.100	.1000	.1100	.500	.025	.0375	.1250	1.5	BB-100500S	28.15	BB-100500SG	31.60	BB-100500SX	32.45
.100	.1000	.1100	.600	.025	.0375	.1250	1.5	BB-100600S	28.15	BB-100600SG	31.60	BB-100600SX	32.45
.100	.1000	.1100	.700	.025	.0375	.1250	1.5	BB-100700S	28.15	BB-100700SG	31.60	BB-100700SX	32.45
.100	.1000	.1100	.800	.025	.0375	.1250	2.0	BB-100800S	29.15	BB-100800SG	33.75	BB-100800SX	33.75
.110	.1100	.1220	.150	.027	.0475	.1250	1.5	BB-110150S	28.15	BB-110150SG	31.60	BB-110150SX	32.45
.110	.1100	.1220	.200	.027	.0475	.1250	1.5	BB-110200S	28.15	BB-110200SG	31.60	BB-110200SX	32.45
.110	.1100	.1220	.300	.027	.0475	.1250	1.5	BB-110300S	28.15	BB-110300SG	31.60	BB-110300SX	32.45
.110	.1100	.1220	.400	.027	.0475	.1250	1.5	BB-110400S	28.15	BB-110400SG	31.60	BB-110400SX	32.45
.110	.1100	.1220	.500	.027	.0475	.1250	1.5	BB-110500S	28.15	BB-110500SG	31.60	BB-110500SX	32.45
.110	.1100	.1220	.600	.027	.0475	.1250	1.5	BB-110600S	28.15	BB-110600SG	31.60	BB-110600SX	32.45
.110	.1100	.1220	.700	.027	.0475	.1250	1.5	BB-110700S	28.15	BB-110700SG	31.60	BB-110700SX	32.45
3 mm	.1181	3.3 mm	8 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040308	27.60			BBM-040308X	32.35
3 mm	.1181	3.3 mm	10 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040310	27.60	BBM-040310G	31.30		
3 mm	.1181	3.3 mm	13 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040313	27.60			BBM-040313X	32.35
3 mm	.1181	3.3 mm	15 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040315	27.60			BBM-040315X	32.35
3 mm	.1181	3.3 mm	20 mm	.75 mm	1 mm	4 mm	50 mm	BBM-040320	27.60	BBM-040320G	31.30	BBM-040320X	32.35
.120	.1200	.1320	.250	.030	.0263	.1875	2.0	BB-120250S	30.00	BB-120250SG	33.90	BB-120250SX	34.80
.120	.1200	.1320	.350	.030	.0263	.1875	2.0	BB-120350S	30.00	BB-120350SG	33.90	BB-120350SX	34.80
.120	.1200	.1320	.500	.030	.0263	.1875	2.0	BB-120500S	30.00	BB-120500SG	33.90	BB-120500SX	34.80
.120	.1200	.1320	.600	.030	.0263	.1875	2.0	BB-120600S	30.00	BB-120600SG	33.90	BB-120600SX	34.80
.120	.1200	.1320	.700	.030	.0263	.1875	2.0	BB-120700S	30.00	BB-120700SG	33.90	BB-120700SX	34.80
.120	.1200	.1320	.800	.030	.0263	.1875	2.0	BB-120800S	30.00	BB-120800SG	33.90	BB-120800SX	34.80
.120	.1200	.1320	1.000	.030	.0263	.1875	2.0	BB-1201000S	30.00	BB-1201000SG	35.20	BB-1201000SX	35.20
.140	.1400	.1520	.250	.035	.0463	.1875	2.0	BB-140250S	30.00	BB-140250SG	33.90	BB-140250SX	34.80
.140	.1400	.1520	.400	.035	.0463	.1875	2.0	BB-140400S	30.00	BB-140400SG	33.90	BB-140400SX	34.80
.140	.1400	.1520	.500	.035	.0463	.1875	2.0	BB-140500S	30.00	BB-140500SG	33.90	BB-140500SX	34.80
.140	.1400	.1520	.600	.035	.0463	.1875	2.0	BB-140600S	30.00	BB-140600SG	33.90	BB-140600SX	34.80
.140	.1400	.1520	.700	.035	.0463	.1875	2.0	BB-140700S	30.00			BB-140700SX	34.80
.140	.1400	.1520	.750	.035	.0463	.1875	2.0	BB-140750S	30.00	BB-140750SG	33.90	BB-140750SX	34.80
.140	.1400	.1520	.800	.035	.0463	.1875	2.0	BB-140800S	30.00	BB-140800SG	33.90	BB-140800SX	34.80
.140	.1400	.1520	.900	.035	.0463	.1875	2.0	BB-140900S	30.00	BB-140900SG	35.20	BB-140900SX	35.20
4 mm	.1575	4.4 mm	8 mm	1 mm	2 mm	4 mm	50 mm	BBM-040408	27.60			BBM-040408X	32.35
4 mm	.1575	4.4 mm	10 mm	1 mm	2 mm	4 mm	50 mm	BBM-040410	27.60	BBM-040410G	31.30	BBM-040410X	32.35
4 mm	.1575	4.4 mm	15 mm	1 mm	2 mm	4 mm	50 mm	BBM-040415	27.60	BBM-040415G	31.30	BBM-040415X	32.35
4 mm	.1575	4.4 mm	20 mm	1 mm	2 mm	4 mm	50 mm	BBM-040420	27.60	BBM-040420G	31.30		
4 mm	.1575	4.4 mm	25 mm	1 mm	2 mm	4 mm	50 mm	BBM-040425	27.60			BBM-040425X	32.35

*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

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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.	L2		P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.160	.1600	.1760	.250	.040	.0663	.1875	2.0	BB-160250S	30.00	BB-160250SG	33.90	BB-160250SX	34.80
.160	.1600	.1760	.400	.040	.0663	.1875	2.0	BB-160400S	30.00	BB-160400SG	33.90	BB-160400SX	34.80
.160	.1600	.1760	.500	.040	.0663	.1875	2.0	BB-160500S	30.00	BB-160500SG	33.90	BB-160500SX	34.80
.160	.1600	.1760	.600	.040	.0663	.1875	2.0	BB-160600S	30.00	BB-160600SG	33.90	BB-160600SX	34.80
.160	.1600	.1760	.750	.040	.0663	.1875	2.0	BB-160750S	30.00	BB-160750SG	33.90	BB-160750SX	34.80
.160	.1600	.1760	.900	.040	.0663	.1875	2.0	BB-160900S	30.00	BB-160900SG	33.90	BB-160900SX	34.80
.160	.1600	.1760	1.000	.040	.0663	.1875	2.0	BB-1601000S	30.00	BB-1601000SG	33.90	BB-1601000SX	34.80
.160	.1600	.1760	1.250	.040	.0663	.1875	2.5	BB-1601250S	31.15	BB-1601250SG	36.65	BB-1601250SX	36.65
.180	.1800	.1960	.350	.045	.0550	.2500	2.5	BB-180350S	32.40	BB-180350SG	37.85	BB-180350SX	39.05
.180	.1800	.1960	.500	.045	.0550	.2500	2.5	BB-180500S	32.40	BB-180500SG	37.85	BB-180500SX	39.05
.180	.1800	.1960	.600	.045	.0550	.2500	2.5	BB-180600S	32.40	BB-180600SG	37.85	BB-180600SX	39.05
.180	.1800	.1960	.750	.045	.0550	.2500	2.5	BB-180750S	32.40	BB-180750SG	37.85	BB-180750SX	39.05
.180	.1800	.1960	.900	.045	.0550	.2500	2.5	BB-180900S	32.40	BB-180900SG	37.85	BB-180900SX	39.05
.180	.1800	.1960	1.000	.045	.0550	.2500	2.5	BB-1801000S	32.40	BB-1801000SG	37.85	BB-1801000SX	39.05
.180	.1800	.1960	1.100	.045	.0550	.2500	2.5	BB-1801100S	32.40	BB-1801100SG	37.85	BB-1801100SX	39.05
.180	.1800	.1960	1.250	.045	.0550	.2500	2.5	BB-1801250S	32.40	BB-1801250SG	37.85	BB-1801250SX	39.05
.180	.1800	.1960	1.500	.045	.0550	.2500	2.5	BB-1801500S	32.40	BB-1801500SG	37.85	BB-1801500SX	39.05
5 mm	.1969	5.4 mm	10 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060510	30.95				
5 mm	.1969	5.4 mm	15 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060515	30.95				
5 mm	.1969	5.4 mm	20 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060520	30.95				
5 mm	.1969	5.4 mm	25 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060525	30.95				
5 mm	.1969	5.4 mm	28 mm	1.25 mm	2 mm	6 mm	57 mm	BBM-060528	30.95	BBM-060528G	36.30	BBM-060528X	37.45
.200	.2000	.2160	.400	.050	.0750	.2500	2.5	BB-200400S	32.40	BB-200400SG	37.85	BB-200400SX	39.05
.200	.2000	.2160	.500	.050	.0750	.2500	2.5	BB-200500S	32.40	BB-200500SG	37.85	BB-200500SX	39.05
.200	.2000	.2160	.600	.050	.0750	.2500	2.5	BB-200600S	32.40	BB-200600SG	37.85	BB-200600SX	39.05
.200	.2000	.2160	.700	.050	.0750	.2500	2.5	BB-200700S	32.40	BB-200700SG	37.85	BB-200700SX	39.05
.200	.2000	.2160	.800	.050	.0750	.2500	2.5	BB-200800S	32.40	BB-200800SG	37.85	BB-200800SX	39.05
.200	.2000	.2160	.900	.050	.0750	.2500	2.5	BB-200900S	32.40	BB-200900SG	37.85	BB-200900SX	39.05
.200	.2000	.2160	1.000	.050	.0750	.2500	2.5	BB-2001000S	32.40	BB-2001000SG	37.85	BB-2001000SX	39.05
.200	.2000	.2160	1.100	.050	.0750	.2500	2.5	BB-2001100S	32.40			BB-2001100SX	39.05
.200	.2000	.2160	1.200	.050	.0750	.2500	2.5	BB-2001200S	32.40				
.200	.2000	.2160	1.300	.050	.0750	.2500	2.5	BB-2001300S	32.40			BB-2001300SX	39.05

*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



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	+ .050" - .000" + 1.24mm - .00mm	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.230	.2300	.2500	.400	.057	.0738	.3125	2.5	BB-230400S	44.45	BB-230400SG	52.40	BB-230400SX	52.40
.230	.2300	.2500	.500	.057	.0738	.3125	2.5	BB-230500S	44.45	BB-230500SG	52.40	BB-230500SX	52.40
.230	.2300	.2500	.600	.057	.0738	.3125	2.5	BB-230600S	44.45	BB-230600SG	52.40	BB-230600SX	52.40
.230	.2300	.2500	.700	.057	.0738	.3125	2.5	BB-230700S	44.45	BB-230700SG	52.40	BB-230700SX	52.40
.230	.2300	.2500	.800	.057	.0738	.3125	2.5	BB-230800S	44.45	BB-230800SG	52.40	BB-230800SX	52.40
.230	.2300	.2500	.900	.057	.0738	.3125	2.5	BB-230900S	44.45	BB-230900SG	52.40	BB-230900SX	52.40
.230	.2300	.2500	1.000	.057	.0738	.3125	2.5	BB-2301000S	44.45	BB-2301000SG	52.40	BB-2301000SX	52.40
.230	.2300	.2500	1.100	.057	.0738	.3125	2.5	BB-2301100S	44.45	BB-2301100SG	52.40	BB-2301100SX	52.40
.230	.2300	.2500	1.150	.057	.0738	.3125	2.5	BB-2301150S	44.45	BB-2301150SG	52.40		
.230	.2300	.2500	1.200	.057	.0738	.3125	2.5	BB-2301200S	44.45	BB-2301200SG	52.40	BB-2301200SX	52.40
.230	.2300	.2500	1.250	.057	.0738	.3125	2.5	BB-2301250S	44.45	BB-2301250SG	52.40	BB-2301250SX	52.40
.230	.2300	.2500	1.400	.057	.0738	.3125	2.5	BB-2301400S	44.45	BB-2301400SG	52.40	BB-2301400SX	52.40
.230	.2300	.2500	1.500	.057	.0738	.3125	2.5	BB-2301500S	44.45	BB-2301500SG	52.40	BB-2301500SX	52.40
.230	.2300	.2500	1.600	.057	.0738	.3125	2.5	BB-2301600S	44.45	BB-2301600SG	52.40	BB-2301600SX	52.40
6 mm	.2362	6.5 mm	10 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060610	30.95				
6 mm	.2362	6.5 mm	15 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060615	30.95	BBM-060615G	36.30		
6 mm	.2362	6.5 mm	20 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060620	30.95			BBM-060620X	37.45
6 mm	.2362	6.5 mm	25 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060625	30.95			BBM-060625X	37.45
6 mm	.2362	6.5 mm	30 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060630	30.95				
6 mm	.2362	6.5 mm	35 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060635	30.95				
6 mm	.2362	6.5 mm	38 mm	1.50 mm	3 mm	6 mm	57 mm	BBM-060638	30.95			BBM-060638X	37.45
.260	.2600	.2800	.500	.065	.1038	.3125	2.5	BB-260500S	44.45	BB-260500SG	52.40	BB-260500SX	52.40
.260	.2600	.2800	.750	.065	.1038	.3125	2.5	BB-260750S	44.45	BB-260750SG	52.40	BB-260750SX	52.40
.260	.2600	.2800	1.000	.065	.1038	.3125	2.5	BB-2601000S	44.45	BB-2601000SG	52.40	BB-2601000SX	52.40
.260	.2600	.2800	1.250	.065	.1038	.3125	2.5	BB-2601250S	44.45	BB-2601250SG	52.40	BB-2601250SX	52.40
7 mm	.2755	7.5 mm	15 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080715	42.15				
7 mm	.2755	7.5 mm	25 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080725	42.15				
7 mm	.2755	7.5 mm	32 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080732	42.15				
7 mm	.2755	7.5 mm	38 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080738	42.15	BBM-080738G	49.90		
7 mm	.2755	7.5 mm	46 mm	1.75 mm	3 mm	8 mm	63 mm	BBM-080746	42.15				
.290	.2900	.3100	.500	.072	.1338	.3125	2.5	BB-290500S	44.45	BB-290500SG	52.40	BB-290500SX	52.40
.290	.2900	.3100	.600	.072	.1338	.3125	2.5	BB-290600S	44.45	BB-290600SG	52.40	BB-290600SX	52.40
.290	.2900	.3100	.750	.072	.1338	.3125	2.5	BB-290750S	44.45	BB-290750SG	52.40	BB-290750SX	52.40
.290	.2900	.3100	.900	.072	.1338	.3125	2.5	BB-290900S	44.45	BB-290900SG	52.40	BB-290900SX	52.40
.290	.2900	.3100	1.000	.072	.1338	.3125	2.5	BB-2901000S	44.45	BB-2901000SG	52.40	BB-2901000SX	52.40
.290	.2900	.3100	1.100	.072	.1338	.3125	2.5	BB-2901100S	44.45	BB-2901100SG	52.40		
.290	.2900	.3100	1.250	.072	.1338	.3125	2.5	BB-2901250S	44.45	BB-2901250SG	52.40	BB-2901250SX	52.40
.290	.2900	.3100	1.350	.072	.1338	.3125	2.5			BB-2901350SG	52.40		
.290	.2900	.3100	1.500	.072	.1338	.3125	2.5	BB-2901500S	44.45	BB-2901500SG	52.40	BB-2901500SX	52.40
.290	.2900	.3100	1.600	.072	.1338	.3125	2.5	BB-2901600S	44.45	BB-2901600SG	52.40	BB-2901600SX	52.40
.290	.2900	.3100	1.750	.072	.1338	.3125	2.5	BB-2901750S	44.45	BB-2901750SG	52.40	BB-2901750SX	52.40

*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 #	USD\$	Tool #	USD\$	Tool #	USD\$
8 mm	.3150	8.5 mm	13 mm	2 mm	4 mm	8 mm	63 mm	BBM-080813	42.15	BBM-080825G	49.90	BBM-080838X	51.50
8 mm	.3150	8.5 mm	20 mm	2 mm	4 mm	8 mm	63 mm	BBM-080820	42.15				
8 mm	.3150	8.5 mm	25 mm	2 mm	4 mm	8 mm	63 mm	BBM-080825	42.15				
8 mm	.3150	8.5 mm	32 mm	2 mm	4 mm	8 mm	63 mm	BBM-080832	42.15				
8 mm	.3150	8.5 mm	38 mm	2 mm	4 mm	8 mm	63 mm	BBM-080838	42.15				
8 mm	.3150	8.5 mm	46 mm	2 mm	4 mm	8 mm	63 mm	BBM-080846	42.15				
8 mm	.3150	8.5 mm	50 mm	2 mm	4 mm	8 mm	63 mm	BBM-080850	42.15	BBM-080850G	49.90		
.320	.3200	.3400	.500	.080	.1325	.3750	2.5	BB-320500S	61.15	BB-320600SG	69.70	BB-320500SX	70.50
.320	.3200	.3400	.600	.080	.1325	.3750	2.5	BB-320600S	61.15			BB-320600SX	70.50
.320	.3200	.3400	.750	.080	.1325	.3750	2.5	BB-320750S	61.15			BB-320750SX	70.50
.320	.3200	.3400	.900	.080	.1325	.3750	2.5	BB-320900S	61.15			BB-3201000SX	70.50
.320	.3200	.3400	1.000	.080	.1325	.3750	2.5	BB-3201000S	61.15	BB-3201000SG	69.70		
.320	.3200	.3400	1.100	.080	.1325	.3750	2.5	BB-3201100S	61.15	BB-3201100SG	69.70		
.320	.3200	.3400	1.250	.080	.1325	.3750	2.5	BB-3201250S	61.15	BB-3201250SG	69.70		
.320	.3200	.3400	1.500	.080	.1325	.3750	2.5	BB-3201500S	61.15	BB-3201500SG	69.70		
.320	.3200	.3400	1.600	.080	.1325	.3750	2.5	BB-3201600S	61.15	BB-3202000SG	88.65	BB-3201600SX	70.50
.320	.3200	.3400	1.800	.080	.1325	.3750	2.5	BB-3201800S	61.15			BB-3201800SX	70.50
.320	.3200	.3400	2.000	.080	.1325	.3750	4.0	BB-3202000S	78.60			BB-3202000SX	88.65
.320	.3200	.3400	2.500	.080	.1325	.3750	4.0	BB-3202500S	78.60			BB-3202500SX	88.65
.320	.3200	.3400	3.000	.080	.1325	.3750	4.0	BB-3203000S	78.60			BB-3203000SX	88.65
9 mm	.3543	9.5 mm	25 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100925	63.85				
9 mm	.3543	9.5 mm	32 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100932	63.85				
9 mm	.3543	9.5 mm	38 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100938	63.85				
9 mm	.3543	9.5 mm	46 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100946	63.85				
9 mm	.3543	9.5 mm	50 mm	2.25 mm	4mm	10 mm	72 mm	BBM-100950	63.85				
.360	.3600	.3800	.500	.090	.1725	.3750	2.5	BB-360500S	61.15	BB-360500SG	69.70	BB-360500SX	70.50
.360	.3600	.3800	.600	.090	.1725	.3750	2.5	BB-360600S	61.15	BB-360600SG	69.70	BB-360600SX	70.50
.360	.3600	.3800	.750	.090	.1725	.3750	2.5	BB-360750S	61.15	BB-360750SG	69.70	BB-360750SX	70.50
.360	.3600	.3800	.900	.090	.1725	.3750	2.5	BB-360900S	61.15	BB-3601000SG	69.70	BB-360900SX	70.50
.360	.3600	.3800	1.000	.090	.1725	.3750	2.5	BB-3601000S	61.15			BB-3601000SX	70.50
.360	.3600	.3800	1.150	.090	.1725	.3750	2.5	BB-3601150S	61.15			BB-3601150SX	70.50
.360	.3600	.3800	1.250	.090	.1725	.3750	2.5	BB-3601250S	61.15			BB-3601250SX	70.50
.360	.3600	.3800	1.500	.090	.1725	.3750	2.5	BB-3601500S	61.15			BB-3601500SX	70.50
.360	.3600	.3800	1.600	.090	.1725	.3750	2.5	BB-3601600S	61.15			BB-3601600SX	70.50
.360	.3600	.3800	1.800	.090	.1725	.3750	2.5	BB-3601800S	61.15			BB-3601800SX	70.50
.360	.3600	.3800	2.000	.090	.1725	.3750	4.0	BB-3602000S	78.60			BB-3602000SX	88.65
.360	.3600	.3800	2.500	.090	.1725	.3750	4.0	BB-3602500S	78.60			BB-3602500SX	88.65
.360	.3600	.3800	3.000	.090	.1725	.3750	4.0	BB-3603000S	78.60			BB-3603000SX	88.65
10 mm	.3937	10.5 mm	15 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101015	63.85	BBM-101038G	72.60	BBM-101050X	74.75
10 mm	.3937	10.5 mm	25 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101025	63.85				
10 mm	.3937	10.5 mm	32 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101032	63.85				
10 mm	.3937	10.5 mm	38 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101038	63.85				
10 mm	.3937	10.5 mm	50 mm	2.50 mm	5 mm	10 mm	72 mm	BBM-101050	63.85	BBM-101050G	72.60		

*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

BBS / BBM

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

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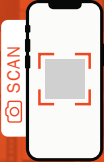
Head Width		Min. Bore Dia*	Max. Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
H	decimal equiv.	L2		P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
11 mm	.4331	11.5 mm	15 mm	2.75 mm	5 mm	12 mm	83 mm	BBM-121115	80.55				
11 mm	.4331	11.5 mm	38 mm	2.75 mm	5 mm	12 mm	83 mm	BBM-121138	80.55				
12 mm	.4724	12.5 mm	20 mm	3 mm	6 mm	12 mm	83 mm	BBM-121220	80.55				
12 mm	.4724	12.5 mm	32 mm	3 mm	6 mm	12 mm	83 mm	BBM-121232	80.55				
12 mm	.4724	12.5 mm	46 mm	3 mm	6 mm	12 mm	83 mm	BBM-121246	80.55				
12 mm	.4724	12.5 mm	60 mm	3 mm	6 mm	12 mm	83 mm	BBM-121260	80.55				
.490	.4900	.5100	.750	.122	.2400	.5000	3.0	BB-490750S	85.85			BB-490750SX	98.60
.490	.4900	.5100	1.000	.122	.2400	.5000	3.0	BB-4901000S	85.85			BB-4901000SX	98.60
.490	.4900	.5100	1.250	.122	.2400	.5000	3.0	BB-4901250S	85.85			BB-4901250SX	98.60
.490	.4900	.5100	1.500	.122	.2400	.5000	3.0	BB-4901500S	85.85			BB-4901500SX	98.60
.490	.4900	.5100	2.000	.122	.2400	.5000	4.0	BB-4902000S	94.15	BB-4902000SG	106.65	BB-4902000SX	107.85
.490	.4900	.5100	2.500	.122	.2400	.5000	4.0	BB-4902500S	94.15	BB-4902500SG	106.65	BB-4902500SX	107.85
.490	.4900	.5100	2.750	.122	.2400	.5000	4.0	BB-4902750S	94.15	BB-4902750SG	106.65	BB-4902750SX	107.85
.490	.4900	.5100	3.000	.122	.2400	.5000	6.0	BB-4903000S	118.85				
.490	.4900	.5100	3.500	.122	.2400	.5000	6.0	BB-4903500S	118.85			BB-4903500SX	134.85
.490	.4900	.5100	4.000	.122	.2400	.5000	6.0					BB-4904000SX	134.85
.490	.4900	.5100	4.500	.122	.2400	.5000	6.0	BB-4904500S	118.85				

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

Standard – Boring Tools

Technical Resources on Micro100.com

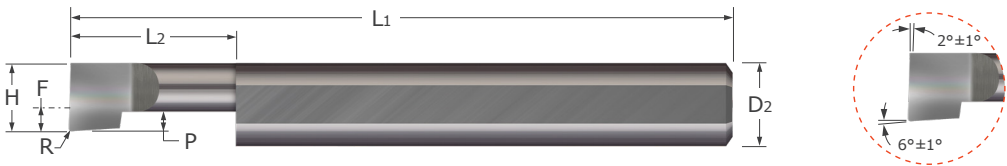
Find Simulation Files, Speeds & Feeds, Torque Recommendations, Programs, Blogs, and more at micro100.com/resources



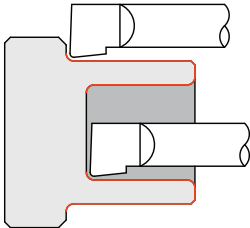
See pgs 39-47 for standard tool holders

Standard – Boring Tools
Right Hand

BB



- 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



Head Width	Minimum Bore Dia.*	Max. Bore Depth	Radius	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TIN Coated		AlTiN Coated	
H	L2	$+.050'' \atop -.000''$	$R \atop +.003'' \atop -.000''$	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.050	.055	.150	.003	.012	-.0125	.1250	1.5	BB-050150	29.90	BB-050150G	33.50	BB-050150X	34.20
.050	.055	.200	.003	.012	-.0125	.1250	1.5	BB-050200	29.90	BB-050200G	33.50	BB-050200X	34.20
.050	.055	.250	.003	.012	-.0125	.1250	1.5	BB3-050250	29.90	BB3-050250G	34.55	BB3-050250X	34.55
.050	.055	.300	.003	.012	-.0125	.1250	1.5	BB-050300	29.90	BB-050300G	33.50	BB-050300X	34.20
.050	.055	.400	.003	.012	-.0125	.1250	1.5	BB-050400	29.90	BB-050400G	33.50	BB-050400X	34.20
.060	.070	.150	.003	.015	-.0025	.1250	1.5	BB-060150	29.90	BB-060150G	33.50	BB-060150X	34.20
.060	.070	.200	.003	.015	-.0025	.1250	1.5	BB-060200	29.90	BB-060200G	33.50	BB-060200X	34.20
.060	.070	.250	.003	.015	-.0025	.1250	1.5	BB3-060250	29.90	BB3-060250G	34.55	BB3-060250X	34.55
.060	.070	.300	.003	.015	-.0025	.1250	1.5	BB-060300	29.90	BB-060300G	33.50	BB-060300X	34.20
.060	.070	.400	.003	.015	-.0025	.1250	1.5	BB-060400	29.90	BB-060400G	33.50	BB-060400X	34.20
.060	.070	.500	.003	.015	-.0025	.1250	1.5	BB-060500	29.90	BB-060500G	33.50	BB-060500X	34.20
.070	.080	.150	.003	.015	.0075	.1250	1.5	BB-070150	29.90			BB-070150X	34.20
.070	.080	.200	.003	.015	.0075	.1250	1.5	BB-070200	29.90			BB-070200X	34.20
.070	.080	.300	.003	.015	.0075	.1250	1.5	BB-070300	29.90			BB-070300X	34.20
.080	.090	.150	.003	.020	.0175	.1250	1.5	BB-080150	29.90	BB-080150G	33.50	BB-080150X	34.20
.080	.090	.200	.003	.020	.0175	.1250	1.5	BB-080200	29.90	BB-080200G	33.50	BB-080200X	34.20
.080	.090	.300	.003	.020	.0175	.1250	1.5	BB-080300	29.90	BB-080300G	33.50	BB-080300X	34.20
.080	.090	.400	.003	.020	.0175	.1250	1.5	BB-080400	29.90	BB-080400G	33.50	BB-080400X	34.20
.080	.090	.500	.003	.020	.0175	.1250	1.5	BB-080500	29.90	BB-080500G	33.50	BB-080500X	34.20
.080	.090	.600	.003	.020	.0175	.1250	1.5	BB-080600	29.90	BB-080600G	33.50	BB-080600X	34.20
.090	.100	.150	.003	.020	.0275	.1250	1.5	BB3-090150	29.90	BB3-090150G	34.55	BB3-090150X	34.55
.090	.100	.200	.003	.020	.0275	.1250	1.5	BB3-090200	29.90	BB3-090200G	34.55	BB3-090200X	34.55
.090	.100	.300	.003	.020	.0275	.1250	1.5	BB-090300	29.90			BB-090300X	34.20
.090	.100	.400	.003	.020	.0275	.1250	1.5	BB3-090400	29.90	BB3-090400G	34.55	BB3-090400X	34.55
.090	.100	.500	.003	.020	.0275	.1250	1.5	BB3-090500	29.90	BB3-090500G	34.55	BB3-090500X	34.55
.100	.110	.150	.003	.025	.0375	.1250	1.5	BB-100150	29.90	BB-100150G	33.50	BB-100150X	34.20
.100	.110	.200	.003	.025	.0375	.1250	1.5	BB-100200	29.90	BB-100200G	33.50	BB-100200X	34.20
.100	.110	.300	.003	.025	.0375	.1250	1.5	BB-100300	29.90	BB-100300G	33.50	BB-100300X	34.20
.100	.110	.400	.003	.025	.0375	.1250	1.5	BB-100400	29.90	BB-100400G	33.50	BB-100400X	34.20
.100	.110	.500	.003	.025	.0375	.1250	1.5	BB-100500	29.90	BB-100500G	33.50	BB-100500X	34.20
.100	.110	.600	.003	.025	.0375	.1250	1.5	BB-100600	29.90	BB-100600G	33.50	BB-100600X	34.20
.100	.110	.700	.003	.025	.0375	.1250	1.5	BB-100700	29.90	BB-100700G	33.50	BB-100700X	34.20
.100	.110	.800	.003	.025	.0375	.1250	2.0	BB3-100800	31.45	BB3-100800G	36.00	BB3-100800X	36.00

*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	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
H	L ₂	$^{+.050}_{-.000}$ "	R $^{+.003}_{-.000}$ "	P	F	D ₂ (h6)		Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.110	.122	.150	.003	.027	.0475	.1250	1.5	BB-110150	29.90	BB-110150G	33.50	BB-110150X	34.20
.110	.122	.200	.003	.027	.0475	.1250	1.5	BB-110200	29.90	BB-110200G	33.50	BB-110200X	34.20
.110	.122	.300	.003	.027	.0475	.1250	1.5	BB-110300	29.90	BB-110300G	33.50	BB-110300X	34.20
.110	.122	.400	.003	.027	.0475	.1250	1.5	BB-110400	29.90	BB-110400G	33.50	BB-110400X	34.20
.110	.122	.500	.003	.027	.0475	.1250	1.5	BB-110500	29.90	BB-110500G	33.50	BB-110500X	34.20
.110	.122	.600	.003	.027	.0475	.1250	1.5	BB-110600	29.90	BB-110600G	33.50	BB-110600X	34.20
.110	.122	.700	.003	.027	.0475	.1250	1.5	BB-110700	29.90	BB-110700G	33.50	BB-110700X	34.20
.110	.122	.800	.003	.027	.0475	.1250	2.0	BB3-110800	31.45	BB3-110800G	36.00	BB3-110800X	36.00

H		L ₂ ^{+.050" -.000"}	R ^{+.002" -.000"}	P	F		D ₂ (h6)	Uncoated		TiN Coated		AlTiN Coated	
.120	.132	.250	.003	.030	.0263	.1875	2.0	BB3-120250	31.75	BB3-120250G	36.95	BB3-120250X	36.95
.120	.132	.250	.006	.030	.0263	.1875	2.0	BB-120250	31.75	BB-120250G	35.75	BB-120250X	36.70
.120	.132	.350	.003	.030	.0263	.1875	2.0	BB3-120350	31.75	BB3-120350G	36.95	BB3-120350X	36.95
.120	.132	.350	.006	.030	.0263	.1875	2.0	BB-120350	31.75	BB-120350G	35.75	BB-120350X	36.70
.120	.132	.500	.003	.030	.0263	.1875	2.0	BB3-120500	31.75	BB3-120500G	36.95	BB3-120500X	36.95
.120	.132	.500	.006	.030	.0263	.1875	2.0	BB-120500	31.75	BB-120500G	35.75	BB-120500X	36.70
.120	.132	.600	.003	.030	.0263	.1875	2.0	BB3-120600	31.75	BB3-120600G	36.95	BB3-120600X	36.95
.120	.132	.600	.006	.030	.0263	.1875	2.0	BB-120600	31.75	BB-120600G	35.75	BB-120600X	36.70
.120	.132	.700	.003	.030	.0263	.1875	2.0	BB3-120700	31.75	BB3-120700G	36.95	BB3-120700X	36.95
.120	.132	.700	.006	.030	.0263	.1875	2.0	BB-120700	31.75	BB-120700G	35.75	BB-120700X	36.70
.120	.132	.800	.003	.030	.0263	.1875	2.0	BB3-120800	31.75	BB3-120800G	36.95	BB3-120800X	36.95
.120	.132	.800	.006	.030	.0263	.1875	2.0	BB-120800	31.75	BB-120800G	35.75	BB-120800X	36.70
.140	.152	.250	.003	.035	.0463	.1875	2.0	BB3-140250	31.75	BB3-140250G	36.95	BB3-140250X	36.95
.140	.152	.250	.006	.035	.0463	.1875	2.0	BB-140250	31.75	BB-140250G	35.75	BB-140250X	36.70
.140	.152	.400	.003	.035	.0463	.1875	2.0	BB3-140400	31.75	BB3-140400G	36.95	BB3-140400X	36.95
.140	.152	.400	.006	.035	.0463	.1875	2.0	BB-140400	31.75	BB-140400G	35.75	BB-140400X	36.70
.140	.152	.500	.003	.035	.0463	.1875	2.0	BB3-140500	31.75	BB3-140500G	36.95	BB3-140500X	36.95
.140	.152	.500	.006	.035	.0463	.1875	2.0	BB-140500	31.75	BB-140500G	35.75	BB-140500X	36.70
.140	.152	.600	.003	.035	.0463	.1875	2.0	BB3-140600	31.75	BB3-140600G	36.95	BB3-140600X	36.95
.140	.152	.600	.006	.035	.0463	.1875	2.0	BB-140600	31.75	BB-140600G	35.75	BB-140600X	36.70
.140	.152	.700	.003	.035	.0463	.1875	2.0	BB3-140700	31.75	BB3-140700G	36.95	BB3-140700X	36.95
.140	.152	.700	.006	.035	.0463	.1875	2.0	BB-140700	31.75	BB-140700G	35.75	BB-140700X	36.70
.140	.152	.750	.003	.035	.0463	.1875	2.0	BB3-140750	31.75	BB3-140750G	36.95	BB3-140750X	36.95
.140	.152	.750	.006	.035	.0463	.1875	2.0	BB-140750	31.75	BB-140750G	35.75	BB-140750X	36.70
.140	.152	.800	.003	.035	.0463	.1875	2.0	BB3-140800	31.75	BB3-140800G	36.95	BB3-140800X	36.95
.140	.152	.800	.006	.035	.0463	.1875	2.0	BB-140800	31.75	BB-140800G	35.75	BB-140800X	36.70
.140	.152	.900	.003	.035	.0463	.1875	2.0	BB3-140900	31.75	BB3-140900G	36.95	BB3-140900X	36.95
.140	.152	.900	.006	.035	.0463	.1875	2.0	BB6-140900	31.75	BB6-140900G	36.95	BB6-140900X	36.95
.160	.176	.250	.003	.040	.0663	.1875	2.0	BB3-160250	31.75	BB3-160250G	36.95	BB3-160250X	36.95
.160	.176	.250	.006	.040	.0663	.1875	2.0	BB-160250	31.75	BB-160250G	35.75	BB-160250X	36.70
.160	.176	.400	.003	.040	.0663	.1875	2.0	BB3-160400	31.75	BB3-160400G	36.95	BB3-160400X	36.95
.160	.176	.400	.006	.040	.0663	.1875	2.0	BB-160400	31.75	BB-160400G	35.75	BB-160400X	36.70
.160	.176	.500	.003	.040	.0663	.1875	2.0	BB3-160500	31.75	BB3-160500G	36.95	BB3-160500X	36.95
.160	.176	.500	.006	.040	.0663	.1875	2.0	BB-160500	31.75	BB-160500G	35.75	BB-160500X	36.70
.160	.176	.600	.003	.040	.0663	.1875	2.0	BB3-160600	31.75	BB3-160600G	36.95	BB3-160600X	36.95
.160	.176	.600	.006	.040	.0663	.1875	2.0	BB-160600	31.75	BB-160600G	35.75	BB-160600X	36.70
.160	.176	.700	.003	.040	.0663	.1875	2.0	BB3-160700	31.75	BB3-160700G	36.95	BB3-160700X	36.95

*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 (cont.)

BB

Continued from previous page

Head Width	Minimum Bore Dia.*	Max. Bore Depth	Radius	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
H	L2	$\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} R +.002" \\ -.000" \end{smallmatrix}$	P	F	D2	(H6)	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.160	.176	.700	.006	.040	.0663	.1875	2.0	BB6-160700	31.75	BB6-160700G	36.95	BB6-160700X	36.95
.160	.176	.750	.003	.040	.0663	.1875	2.0	BB3-160750	31.75	BB3-160750G	36.95	BB3-160750X	36.95
.160	.176	.750	.006	.040	.0663	.1875	2.0	BB-160750	31.75	BB-160750G	35.75	BB-160750X	36.70
.160	.176	.800	.003	.040	.0663	.1875	2.0	BB3-160800	31.75	BB3-160800G	36.95	BB3-160800X	36.95
.160	.176	.800	.006	.040	.0663	.1875	2.0	BB6-160800	31.75	BB6-160800G	36.95	BB6-160800X	36.95
.160	.176	.900	.003	.040	.0663	.1875	2.0	BB3-160900	31.75	BB3-160900G	36.95	BB3-160900X	36.95
.160	.176	.900	.006	.040	.0663	.1875	2.0	BB-160900	31.75	BB-160900G	35.75	BB-160900X	36.70
.160	.176	1.000	.003	.040	.0663	.1875	2.0	BB3-1601000	31.75	BB3-1601000G	36.95	BB3-1601000X	36.95
.160	.176	1.000	.006	.040	.0663	.1875	2.0	BB-1601000	31.75	BB-1601000G	35.75	BB-1601000X	36.70
.160	.176	1.250	.006	.040	.0663	.1875	2.5	BB6-1601250	33.20	BB6-1601250G	38.70	BB6-1601250X	38.70
.180	.196	.350	.006	.045	.0550	.2500	2.5	BB-180350	34.35	BB-180350G	39.90	BB-180350X	40.90
.180	.196	.500	.006	.045	.0550	.2500	2.5	BB-180500	34.35	BB-180500G	39.90	BB-180500X	40.90
.180	.196	.500	.012	.045	.0550	.2500	2.5	BB12-180500	34.35	BB12-180500G	40.90	BB12-180500X	40.90
.180	.196	.600	.006	.045	.0550	.2500	2.5	BB-180600	34.35	BB-180600G	39.90	BB-180600X	40.90
.180	.196	.750	.006	.045	.0550	.2500	2.5	BB-180750	34.35	BB-180750G	39.90	BB-180750X	40.90
.180	.196	.750	.012	.045	.0550	.2500	2.5	BB12-180750	34.35	BB12-180750G	40.90	BB12-180750X	40.90
.180	.196	.900	.006	.045	.0550	.2500	2.5	BB-180900	34.35	BB-180900G	39.90	BB-180900X	40.90
.180	.196	1.000	.006	.045	.0550	.2500	2.5	BB-1801000	34.35	BB-1801000G	39.90	BB-1801000X	40.90
.180	.196	1.000	.012	.045	.0550	.2500	2.5	BB12-1801000	34.35	BB12-1801000G	40.90	BB12-1801000X	40.90
.180	.196	1.100	.006	.045	.0550	.2500	2.5	BB-1801100	34.35	BB-1801100G	39.90	BB-1801100X	40.90
.180	.196	1.250	.006	.045	.0550	.2500	2.5	BB-1801250	34.35	BB-1801250G	39.90	BB-1801250X	40.90
.180	.196	1.500	.006	.045	.0550	.2500	2.5	BB-1801500	34.35	BB-1801500G	39.90	BB-1801500X	40.90
.200	.216	.400	.006	.050	.0750	.2500	2.5	BB-200400	34.35	BB-200400G	39.90	BB-200400X	40.90
.200	.216	.500	.006	.050	.0750	.2500	2.5	BB-200500	34.35	BB-200500G	39.90	BB-200500X	40.90
.200	.216	.500	.012	.050	.0750	.2500	2.5	BB12-200500	34.35	BB12-200500G	40.90	BB12-200500X	40.90
.200	.216	.600	.006	.050	.0750	.2500	2.5	BB-200600	34.35	BB-200600G	39.90	BB-200600X	40.90
.200	.216	.700	.006	.050	.0750	.2500	2.5	BB-200700	34.35	BB-200700G	39.90	BB-200700X	40.90
.200	.216	.750	.006	.050	.0750	.2500	2.5	BB6-200750	34.35	BB6-200750G	40.90	BB6-200750X	40.90
.200	.216	.750	.012	.050	.0750	.2500	2.5	BB12-200750	34.35	BB12-200750G	40.90	BB12-200750X	40.90
.200	.216	.800	.006	.050	.0750	.2500	2.5	BB-200800	34.35	BB-200800G	39.90	BB-200800X	40.90
.200	.216	.900	.006	.050	.0750	.2500	2.5	BB-200900	34.35	BB-200900G	39.90	BB-200900X	40.90
.200	.216	1.000	.006	.050	.0750	.2500	2.5	BB-2001000	34.35	BB-2001000G	39.90	BB-2001000X	40.90
.200	.216	1.000	.012	.050	.0750	.2500	2.5	BB12-2001000	34.35	BB12-2001000G	40.90	BB12-2001000X	40.90
.200	.216	1.100	.006	.050	.0750	.2500	2.5	BB-2001100	34.35			BB-2001100X	40.90
.200	.216	1.200	.006	.050	.0750	.2500	2.5	BB-2001200	34.35	BB-2001200G	39.90	BB-2001200X	40.90
.200	.216	1.300	.006	.050	.0750	.2500	2.5	BB-2001300	34.35	BB-2001300G	39.90	BB-2001300X	40.90
.200	.216	1.500	.006	.050	.0750	.2500	2.5	BB6-2001500	34.35	BB6-2001500G	40.90	BB6-2001500X	40.90
.230	.250	.400	.006	.057	.0738	.3125	2.5	BB-230400	46.10	BB-230400G	54.00	BB-230400X	54.00
.230	.250	.500	.006	.057	.0738	.3125	2.5	BB-230500	46.10	BB-230500G	54.00	BB-230500X	54.00
.230	.250	.500	.012	.057	.0738	.3125	2.5	BB12-230500	46.10	BB12-230500G	54.00	BB12-230500X	54.00
.230	.250	.600	.006	.057	.0738	.3125	2.5	BB-230600	46.10	BB-230600G	54.00	BB-230600X	54.00
.230	.250	.700	.006	.057	.0738	.3125	2.5	BB-230700	46.10	BB-230700G	54.00	BB-230700X	54.00
.230	.250	.750	.006	.057	.0738	.3125	2.5	BB6-230750	46.10	BB6-230750G	54.00	BB6-230750X	54.00
.230	.250	.750	.012	.057	.0738	.3125	2.5	BB12-230750	46.10	BB12-230750G	54.00	BB12-230750X	54.00
.230	.250	.800	.006	.057	.0738	.3125	2.5	BB-230800	46.10	BB-230800G	54.00	BB-230800X	54.00
.230	.250	.900	.006	.057	.0738	.3125	2.5	BB-230900	46.10	BB-230900G	54.00	BB-230900X	54.00
.230	.250	1.000	.006	.057	.0738	.3125	2.5	BB-2301000	46.10	BB-2301000G	54.00	BB-2301000X	54.00

*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	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
	H	L2	$\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} R \text{ } +.002" \\ -.000" \end{smallmatrix}$	P	F	D2	($\frac{H}{L2}$)	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
NEW	.230	.250	1.000	.012	.057	.0738	.3125	2.5	BB12-2301000	46.10	BB12-2301000G	54.00	BB12-2301000X	54.00
	.230	.250	1.100	.006	.057	.0738	.3125	2.5	BB-2301100	46.10	BB-2301100G	54.00	BB-2301100X	54.00
	.230	.250	1.150	.006	.057	.0738	.3125	2.5	BB-2301150	46.10	BB-2301150G	54.00	BB-2301150X	54.00
	.230	.250	1.200	.006	.057	.0738	.3125	2.5	BB-2301200	46.10	BB-2301200G	54.00	BB-2301200X	54.00
	.230	.250	1.250	.006	.057	.0738	.3125	2.5	BB-2301250	46.10	BB-2301250G	54.00	BB-2301250X	54.00
	.230	.250	1.400	.006	.057	.0738	.3125	2.5	BB-2301400	46.10	BB-2301400G	54.00	BB-2301400X	54.00
	.230	.250	1.500	.006	.057	.0738	.3125	2.5	BB-2301500	46.10	BB-2301500G	54.00	BB-2301500X	54.00
	.230	.250	1.600	.006	.057	.0738	.3125	2.5	BB-2301600	46.10	BB-2301600G	54.00	BB-2301600X	54.00
	.230	.250	1.750	.006	.057	.0738	.3125	3.0	BB6-2301750	47.45	BB6-2301750G	55.35	BB6-2301750X	55.35
	.260	.280	.400	.006	.065	.1038	.3125	2.5	BB6-260400	46.10	BB6-260400G	54.00	BB6-260400X	54.00
NEW	.260	.280	.500	.006	.065	.1038	.3125	2.5	BB6-260500	46.10	BB6-260500G	54.00	BB6-260500X	54.00
	.260	.280	.600	.006	.065	.1038	.3125	2.5	BB6-260600	46.10	BB6-260600G	54.00	BB6-260600X	54.00
	.260	.280	.700	.006	.065	.1038	.3125	2.5	BB6-260700	46.10	BB6-260700G	54.00	BB6-260700X	54.00
	.260	.280	.750	.006	.065	.1038	.3125	2.5	BB6-260750	46.10	BB6-260750G	54.00	BB6-260750X	54.00
	.260	.280	.750	.012	.065	.1038	.3125	2.5	BB12-260750	46.10	BB12-260750G	54.00	BB12-260750X	54.00
	.260	.280	.800	.006	.065	.1038	.3125	2.5	BB6-260800	46.10	BB6-260800G	54.00	BB6-260800X	54.00
	.260	.280	.900	.006	.065	.1038	.3125	2.5	BB6-260900	46.10	BB6-260900G	54.00	BB6-260900X	54.00
	.260	.280	1.000	.006	.065	.1038	.3125	2.5	BB6-2601000	46.10	BB6-2601000G	54.00	BB6-2601000X	54.00
	.260	.280	1.000	.012	.065	.1038	.3125	2.5	BB12-2601000	46.10	BB12-2601000G	54.00	BB12-2601000X	54.00
	.260	.280	1.250	.006	.065	.1038	.3125	2.5	BB6-2601250	46.10	BB6-2601250G	54.00	BB6-2601250X	54.00
NEW	.260	.280	1.250	.012	.065	.1038	.3125	2.5	BB12-2601250	46.10	BB12-2601250G	54.00	BB12-2601250X	54.00
	.290	.310	.500	.006	.072	.1338	.3125	2.5	BB-290500	46.10	BB-290500G	54.00	BB-290500X	54.00
	.290	.310	.600	.006	.072	.1338	.3125	2.5	BB-290600	46.10	BB-290600G	54.00	BB-290600X	54.00
	.290	.310	.750	.006	.072	.1338	.3125	2.5	BB-290750	46.10	BB-290750G	54.00	BB-290750X	54.00
	.290	.310	.750	.012	.072	.1338	.3125	2.5	BB12-290750	46.10	BB12-290750G	54.00	BB12-290750X	54.00
	.290	.310	.900	.006	.072	.1338	.3125	2.5	BB-290900	46.10	BB-290900G	54.00	BB-290900X	54.00
	.290	.310	1.000	.006	.072	.1338	.3125	2.5	BB-2901000	46.10	BB-2901000G	54.00	BB-2901000X	54.00
	.290	.310	1.000	.012	.072	.1338	.3125	2.5	BB12-2901000	46.10	BB12-2901000G	54.00	BB12-2901000X	54.00
	.290	.310	1.100	.006	.072	.1338	.3125	2.5	BB-2901100	46.10	BB-2901100G	54.00	BB-2901100X	54.00
	.290	.310	1.250	.006	.072	.1338	.3125	2.5	BB-2901250	46.10	BB-2901250G	54.00	BB-2901250X	54.00
NEW	.290	.310	1.250	.012	.072	.1338	.3125	2.5	BB12-2901250	46.10	BB12-2901250G	54.00	BB12-2901250X	54.00
	.290	.310	1.350	.006	.072	.1338	.3125	2.5	BB-2901350	46.10	BB-2901350G	54.00	BB-2901350X	54.00
	.290	.310	1.500	.006	.072	.1338	.3125	2.5	BB-2901500	46.10	BB-2901500G	54.00	BB-2901500X	54.00
	.290	.310	1.600	.006	.072	.1338	.3125	2.5	BB-2901600	46.10	BB-2901600G	54.00	BB-2901600X	54.00
	.290	.310	1.750	.006	.072	.1338	.3125	2.5	BB-2901750	46.10	BB-2901750G	54.00	BB-2901750X	54.00
	.290	.310	2.000	.006	.072	.1338	.3125	3.0	BB6-2902000	47.45	BB6-2902000G	55.35	BB6-2902000X	55.35
	.320	.340	.500	.006	.080	.1325	.3750	2.5	BB-320500	62.90	BB-320500G	71.45	BB-320500X	72.25
	.320	.340	.600	.006	.080	.1325	.3750	2.5	BB-320600	62.90			BB-320600X	72.25
	.320	.340	.750	.006	.080	.1325	.3750	2.5	BB-320750	62.90	BB-320750G	71.45	BB-320750X	72.25
	.320	.340	.750	.012	.080	.1325	.3750	2.5	BB12-320750	62.90	BB12-320750G	72.25	BB12-320750X	72.25
NEW	.320	.340	.900	.006	.080	.1325	.3750	2.5	BB-320900	62.90	BB-320900G	71.45	BB-320900X	72.25
	.320	.340	1.000	.006	.080	.1325	.3750	2.5	BB-3201000	62.90	BB-3201000G	71.45	BB-3201000X	72.25
	.320	.340	1.000	.012	.080	.1325	.3750	2.5	BB12-3201000	62.90	BB12-3201000G	72.25	BB12-3201000X	72.25
	.320	.340	1.100	.006	.080	.1325	.3750	2.5	BB-3201100	62.90	BB-3201100G	71.45	BB-3201100X	72.25
	.320	.340	1.250	.006	.080	.1325	.3750	2.5	BB-3201250	62.90	BB-3201250G	71.45	BB-3201250X	72.25
	.320	.340	1.250	.012	.080	.1325	.3750	2.5	BB12-3201250	62.90	BB12-3201250G	72.25	BB12-3201250X	72.25
	.320	.340	1.500	.006	.080	.1325	.3750	2.5	BB-3201500	62.90	BB-3201500G	71.45	BB-3201500X	72.25
	.320	.340	1.500	.006	.080	.1325	.3750	2.5	BB-3201500	62.90	BB-3201500G	71.45	BB-3201500X	72.25
	.320	.340	1.500	.006	.080	.1325	.3750	2.5	BB-3201500	62.90	BB-3201500G	71.45	BB-3201500X	72.25
	.320	.340	1.500	.006	.080	.1325	.3750	2.5	BB-3201500	62.90	BB-3201500G	71.45	BB-3201500X	72.25

*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 (cont.)

BB

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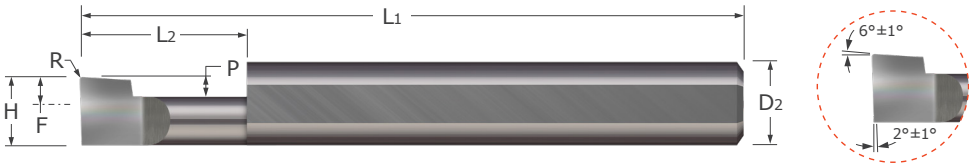
Head Width	Minimum Bore Dia.*	Max. Bore Depth	Radius	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
H	L2	$\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} R +.002" \\ -.000" \end{smallmatrix}$	P	F	D2	(H)	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.320	.340	1.600	.006	.080	.1325	.3750	2.5	BB-3201600	62.90	BB-3201600G	71.45	BB-3201600X	72.25
.320	.340	1.800	.006	.080	.1325	.3750	2.5	BB-3201800	62.90	BB-3201800G	71.45	BB-3201800X	72.25
.320	.340	2.000	.006	.080	.1325	.3750	4.0	BB-3202000	80.35	BB-3202000G	90.40	BB-3202000X	90.40
.320	.340	2.500	.006	.080	.1325	.3750	4.0	BB-3202500	80.35	BB-3202500G	90.40	BB-3202500X	90.40
.320	.340	3.000	.006	.080	.1325	.3750	4.0	BB-3203000	80.35			BB-3203000X	90.40
.360	.380	.500	.006	.090	.1725	.3750	2.5	BB-360500	62.90	BB-360500G	71.45	BB-360500X	72.25
.360	.380	.600	.006	.090	.1725	.3750	2.5	BB-360600	62.90	BB-360600G	71.45		
.360	.380	.750	.006	.090	.1725	.3750	2.5	BB-360750	62.90	BB-360750G	71.45	BB-360750X	72.25
.360	.380	.750	.012	.090	.1725	.3750	2.5	BB12-360750	62.90	BB12-360750G	72.25	BB12-360750X	72.25
.360	.380	.900	.006	.090	.1725	.3750	2.5	BB-360900	62.90			BB-360900X	72.25
.360	.380	1.000	.006	.090	.1725	.3750	2.5	BB-3601000	62.90	BB-3601000G	71.45	BB-3601000X	72.25
.360	.380	1.000	.012	.090	.1725	.3750	2.5	BB12-3601000	62.90	BB12-3601000G	72.25	BB12-3601000X	72.25
.360	.380	1.150	.006	.090	.1725	.3750	2.5	BB-3601150	62.90	BB-3601150G	71.45	BB-3601150X	72.25
.360	.380	1.250	.006	.090	.1725	.3750	2.5	BB-3601250	62.90	BB-3601250G	71.45	BB-3601250X	72.25
.360	.380	1.250	.012	.090	.1725	.3750	2.5	BB12-3601250	62.90	BB12-3601250G	72.25	BB12-3601250X	72.25
.360	.380	1.500	.006	.090	.1725	.3750	2.5	BB-3601500	62.90	BB-3601500G	71.45	BB-3601500X	72.25
.360	.380	1.600	.006	.090	.1725	.3750	2.5	BB-3601600	62.90	BB-3601600G	71.45	BB-3601600X	72.25
.360	.380	1.800	.006	.090	.1725	.3750	2.5	BB-3601800	62.90	BB-3601800G	71.45	BB-3601800X	72.25
.360	.380	2.000	.006	.090	.1725	.3750	4.0	BB-3602000	80.35	BB-3602000G	90.40	BB-3602000X	90.40
.360	.380	2.500	.006	.090	.1725	.3750	4.0	BB-3602500	80.35			BB-3602500X	90.40
.360	.380	3.000	.006	.090	.1725	.3750	4.0	BB-3603000	80.35			BB-3603000X	90.40
.410	.430	.750	.006	.104	.1600	.5000	3.0	BB6-410750	87.60	BB6-410750G	100.25	BB6-410750X	100.25
.410	.430	1.000	.006	.104	.1600	.5000	3.0	BB6-4101000	87.60	BB6-4101000G	100.25	BB6-4101000X	100.25
.410	.430	1.250	.006	.104	.1600	.5000	3.0	BB6-4101250	87.60	BB6-4101250G	100.25	BB6-4101250X	100.25
.410	.430	1.500	.006	.104	.1600	.5000	3.0	BB6-4101500	87.60	BB6-4101500G	100.25	BB6-4101500X	100.25
.460	.480	1.000	.006	.115	.2100	.5000	3.0	BB6-4601000	87.60	BB6-4601000G	100.25	BB6-4601000X	100.25
.460	.480	1.500	.006	.115	.2100	.5000	3.0	BB6-4601500	87.60	BB6-4601500G	100.25	BB6-4601500X	100.25
.460	.480	2.000	.006	.115	.2100	.5000	3.0	BB6-4602000	87.60	BB6-4602000G	100.25	BB6-4602000X	100.25
.490	.510	.750	.006	.122	.2400	.5000	3.0	BB-490750	87.60	BB-490750G	98.25	BB-490750X	100.25
.490	.510	1.000	.006	.122	.2400	.5000	3.0	BB-4901000	87.60			BB-4901000X	100.25
.490	.510	1.250	.006	.122	.2400	.5000	3.0	BB-4901250	87.60				
.490	.510	1.500	.006	.122	.2400	.5000	3.0	BB-4901500	87.60			BB-4901500X	100.25
.490	.510	2.000	.006	.122	.2400	.5000	4.0	BB-4902000	96.00	BB-4902000G	108.50	BB-4902000X	109.70
.490	.510	2.500	.006	.122	.2400	.5000	4.0	BB-4902500	96.00	BB-4902500G	108.50	BB-4902500X	109.70
.490	.510	2.750	.006	.122	.2400	.5000	4.0	BB-4902750	96.00	BB-4902750G	108.50		
.490	.510	3.000	.006	.122	.2400	.5000	6.0	BB-4903000	120.50			BB-4903000X	136.40
.490	.510	3.500	.006	.122	.2400	.5000	6.0	BB-4903500	120.50			BB-4903500X	136.40
.490	.510	4.000	.006	.122	.2400	.5000	6.0	BB-4904000	120.50			BB-4904000X	136.40
.490	.510	4.500	.006	.122	.2400	.5000	6.0	BB-4904500	120.50			BB-4904500X	136.40

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

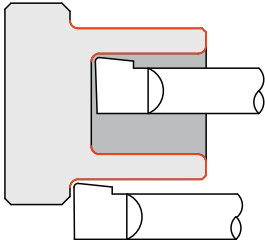
See pgs 39-47 for standard tool holders



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



Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
H	L2	$^{+.050}_{-.000}$	$R^{+.003}_{-.000}$	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.050	.055	.150	.003	.012	-.0125	.1250	1.5	BBL-050150	29.90			BBL-050150X	34.20
.050	.055	.200	.003	.012	-.0125	.1250	1.5	BBL-050200	29.90				
.050	.055	.400	.003	.012	-.0125	.1250	1.5	BBL-050400	29.90			BBL-050400X	34.20
.060	.070	.150	.003	.015	-.0025	.1250	1.5	BBL-060150	29.90				
.060	.070	.200	.003	.015	-.0025	.1250	1.5	BBL-060200	29.90			BBL-060200X	34.20
.060	.070	.300	.003	.015	-.0025	.1250	1.5					BBL-060300X	34.20
.080	.090	.150	.003	.020	.0175	.1250	1.5			BBL-080150G	33.50		
.080	.090	.200	.003	.020	.0175	.1250	1.5	BBL-080200	29.90				
.080	.090	.300	.003	.020	.0175	.1250	1.5	BBL-080300	29.90				
.080	.090	.400	.003	.020	.0175	.1250	1.5	BBL-080400	29.90	BBL-080400G	33.50	BBL-080400X	34.20
.080	.090	.500	.003	.020	.0175	.1250	1.5			BBL-080500G	33.50	BBL-080500X	34.20
.100	.110	.150	.003	.025	.0375	.1250	1.5	BBL-100150	29.90				
.100	.110	.300	.003	.025	.0375	.1250	1.5			BBL-100300G	33.50		
.100	.110	.500	.003	.025	.0375	.1250	1.5	BBL-100500	29.90	BBL-100500G	33.50	BBL-100500X	34.20
.100	.110	.600	.003	.025	.0375	.1250	1.5	BBL-100600	29.90				
.100	.110	.700	.003	.025	.0375	.1250	1.5	BBL-100700	29.90			BBL-100700X	34.20
.110	.122	.200	.003	.027	.0475	.1250	1.5			BBL-110200G	33.50		
.110	.122	.300	.003	.027	.0475	.1250	1.5	BBL-110300	29.90				
.110	.122	.400	.003	.027	.0475	.1250	1.5	BBL-110400	29.90				
.110	.122	.700	.003	.027	.0475	.1250	1.5	BBL-110700	29.90				
.120	.132	.250	.006	.030	.0263	.1875	2.0	BBL-120250	31.75			BBL-120250X	36.70
.120	.132	.500	.006	.030	.0263	.1875	2.0	BBL-120500	31.75			BBL-120500X	36.70
.120	.132	.600	.006	.030	.0263	.1875	2.0	BBL-120600	31.75			BBL-120600X	36.70
.120	.132	.700	.006	.030	.0263	.1875	2.0	BBL-120700	31.75				

*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
Left Hand (cont.)

BBL

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
H	L2	L2 +.050" - .000"	R +.002" - .000"	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.140	.152	.250	.006	.035	.0463	.1875	2.0	BBL-140250	31.75	BBL-140250G	35.75	BBL-140250X	36.70
.140	.152	.400	.006	.035	.0463	.1875	2.0					BBL-140400X	36.70
.140	.152	.500	.006	.035	.0463	.1875	2.0	BBL-140500	31.75			BBL-140500X	36.70
.140	.152	.600	.006	.035	.0463	.1875	2.0	BBL-140600	31.75				
.140	.152	.700	.006	.035	.0463	.1875	2.0	BBL-140700	31.75				
.140	.152	.800	.006	.035	.0463	.1875	2.0	BBL-140800	31.75				
.160	.176	.500	.006	.040	.0663	.1875	2.0	BBL-160500	31.75			BBL-160500X	36.70
.160	.176	.600	.006	.040	.0663	.1875	2.0					BBL-160600X	36.70
.160	.176	.750	.006	.040	.0663	.1875	2.0	BBL-160750	31.75				
.160	.176	.900	.006	.040	.0663	.1875	2.0	BBL-160900	31.75	BBL-160900G	35.75	BBL-160900X	36.70
.160	.176	1.000	.006	.040	.0663	.1875	2.0	BBL-1601000	31.75			BBL-1601000X	36.70
.180	.196	.350	.006	.045	.0550	.2500	2.5	BBL-180350	34.35				
.180	.196	.500	.006	.045	.0550	.2500	2.5	BBL-180500	34.35			BBL-180500X	40.90
.180	.196	.600	.006	.045	.0550	.2500	2.5	BBL-180600	34.35	BBL-180600G	39.90	BBL-180600X	40.90
.180	.196	.750	.006	.045	.0550	.2500	2.5	BBL-180750	34.35	BBL-180750G	39.90		
.180	.196	.900	.006	.045	.0550	.2500	2.5	BBL-180900	34.35				
.180	.196	1.000	.006	.045	.0550	.2500	2.5	BBL-1801000	34.35			BBL-1801000X	40.90
.180	.196	1.100	.006	.045	.0550	.2500	2.5	BBL-1801100	34.35				
.180	.196	1.500	.006	.045	.0550	.2500	2.5	BBL-1801500	34.35			BBL-1801500X	40.90
.200	.216	.400	.006	.050	.0750	.2500	2.5	BBL-200400	34.35	BBL-200400G	39.90	BBL-200400X	40.90
.200	.216	.500	.006	.050	.0750	.2500	2.5	BBL-200500	34.35			BBL-200500X	40.90
.200	.216	.600	.006	.050	.0750	.2500	2.5	BBL-200600	34.35	BBL-200600G	39.90		
.200	.216	.700	.006	.050	.0750	.2500	2.5	BBL-200700	34.35			BBL-200700X	40.90
.200	.216	.800	.006	.050	.0750	.2500	2.5	BBL-200800	34.35	BBL-200800G	39.90	BBL-200800X	40.90
.200	.216	1.000	.006	.050	.0750	.2500	2.5	BBL-2001000	34.35			BBL-2001000X	40.90
.200	.216	1.100	.006	.050	.0750	.2500	2.5	BBL-2001100	34.35				
.200	.216	1.200	.006	.050	.0750	.2500	2.5	BBL-2001200	34.35				
.200	.216	1.300	.006	.050	.0750	.2500	2.5	BBL-2001300	34.35				
.230	.250	.600	.006	.057	.0738	.3125	2.5	BBL-230600	46.10	BBL-230600G	54.00	BBL-230600X	54.00
.230	.250	.700	.006	.057	.0738	.3125	2.5	BBL-230700	46.10				
.230	.250	.800	.006	.057	.0738	.3125	2.5	BBL-230800	46.10			BBL-230800X	54.00
.230	.250	.900	.006	.057	.0738	.3125	2.5	BBL-230900	46.10			BBL-230900X	54.00
.230	.250	1.000	.006	.057	.0738	.3125	2.5	BBL-2301000	46.10			BBL-2301000X	54.00
.230	.250	1.200	.006	.057	.0738	.3125	2.5	BBL-2301200	46.10				
.230	.250	1.250	.006	.057	.0738	.3125	2.5	BBL-2301250	46.10				
.230	.250	1.500	.006	.057	.0738	.3125	2.5	BBL-2301500	46.10			BBL-2301500X	54.00
.230	.250	1.600	.006	.057	.0738	.3125	2.5	BBL-2301600	46.10			BBL-2301600X	54.00
.290	.310	.500	.006	.072	.1338	.3125	2.5	BBL-290500	46.10				
.290	.310	.750	.006	.072	.1338	.3125	2.5	BBL-290750	46.10				
.290	.310	.900	.006	.072	.1338	.3125	2.5	BBL-290900	46.10				
.290	.310	1.000	.006	.072	.1338	.3125	2.5	BBL-2901000	46.10			BBL-2901000X	54.00
.290	.310	1.250	.006	.072	.1338	.3125	2.5	BBL-2901250	46.10				
.290	.310	1.350	.006	.072	.1338	.3125	2.5	BBL-2901350	46.10				
.290	.310	1.500	.006	.072	.1338	.3125	2.5	BBL-2901500	46.10			BBL-2901500X	54.00

*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	
H	L2	$\begin{smallmatrix} +.050'' \\ -.000'' \end{smallmatrix}$	$\begin{smallmatrix} +.002'' \\ -.000'' \end{smallmatrix}$	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.320	.340	.600	.006	.080	.1325	.3750	2.5	BBL-320600	62.90	BBL-320600G	71.45		
.320	.340	.750	.006	.080	.1325	.3750	2.5	BBL-320750	62.90			BBL-320750X	72.25
.320	.340	1.000	.006	.080	.1325	.3750	2.5	BBL-3201000	62.90			BBL-3201000X	72.25
.320	.340	1.500	.006	.080	.1325	.3750	2.5	BBL-3201500	62.90			BBL-3201500X	72.25
.320	.340	1.800	.006	.080	.1325	.3750	2.5	BBL-3201800	62.90				
.320	.340	2.000	.006	.080	.1325	.3750	4.0	BBL-3202000	80.35			BBL-3202000X	90.40
.320	.340	2.500	.006	.080	.1325	.3750	4.0	BBL-3202500	80.35				
.320	.340	3.000	.006	.080	.1325	.3750	4.0					BBL-3203000X	90.40
.360	.380	.750	.006	.090	.1725	.3750	2.5	BBL-360750	62.90			BBL-360750X	72.25
.360	.380	.900	.006	.090	.1725	.3750	2.5	BBL-360900	62.90				
.360	.380	1.000	.006	.090	.1725	.3750	2.5	BBL-3601000	62.90				
.360	.380	1.500	.006	.090	.1725	.3750	2.5	BBL-3601500	62.90				
.360	.380	1.600	.006	.090	.1725	.3750	2.5	BBL-3601600	62.90				
.360	.380	1.800	.006	.090	.1725	.3750	2.5	BBL-3601800	62.90				
.360	.380	2.500	.006	.090	.1725	.3750	4.0	BBL-3602500	80.35				
.360	.380	3.000	.006	.090	.1725	.3750	4.0	BBL-3603000	80.35			BBL-3603000X	90.40
.490	.510	1.500	.006	.122	.2400	.5000	3.0	BBL-4901500	87.60			BBL-4901500X	100.25
.490	.510	3.500	.006	.122	.2400	.5000	6.0	BBL-4903500	120.50				
.490	.510	4.500	.006	.122	.2400	.5000	6.0	BBL-4904500	120.50				

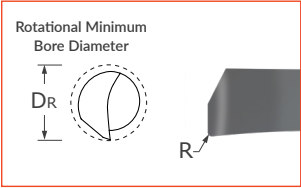
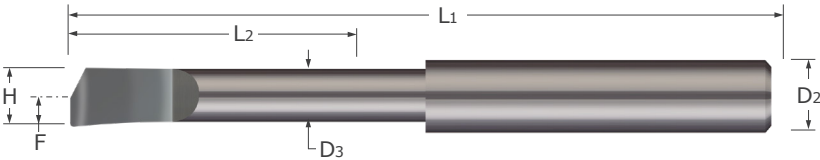
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Boring Tools

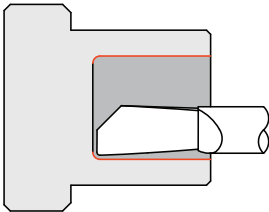
Standard – Boring Tools

HBBC

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	
H	DR	L2 ^{+ .032"} _{– .000"}	R ^{+ .001"} _{– .001"}	D3 ^{+ .000"} _{– .002"}	F	D2 (h6)	L1	Tool #	USD\$
.0275	.030	.187	.004	.025	.0150	.1250	1.5	HBBC-030187-004	39.75
.0275	.030	.250	.004	.025	.0150	.1250	1.5	HBBC-030250-004	39.75
.0325	.035	.125	.004	.030	.0175	.1250	1.5	HBBC-035125-004	31.15
.0325	.035	.187	.004	.030	.0175	.1250	1.5	HBBC-035187-004	31.15
.0325	.035	.250	.004	.030	.0175	.1250	1.5	HBBC-035250-004	31.15
.0375	.040	.187	.004	.035	.0200	.1250	1.5	HBBC-040187-004	31.15
.0375	.040	.250	.004	.035	.0200	.1250	1.5	HBBC-040250-004	31.15
.0375	.040	.312	.004	.035	.0200	.1250	1.5	HBBC-040312-004	31.15
.0450	.050	.187	.004	.040	.0250	.1250	1.5	HBBC-050187-004	31.15
.0450	.050	.312	.004	.040	.0250	.1250	1.5	HBBC-050312-004	31.15
.0450	.050	.375	.004	.040	.0250	.1250	1.5	HBBC-050375-004	31.15
.0550	.060	.250	.004	.050	.0300	.1250	1.5	HBBC-060250-004	31.15
.0550	.060	.375	.004	.050	.0300	.1250	1.5	HBBC-060375-004	31.15
.0550	.060	.500	.004	.050	.0300	.1250	1.5	HBBC-060500-004	31.15
.0650	.070	.312	.004	.060	.0350	.1250	1.5	HBBC-070312-004	31.15
.0650	.070	.437	.004	.060	.0350	.1250	1.5	HBBC-070437-004	31.15
.0650	.070	.562	.004	.060	.0350	.1250	1.5	HBBC-070562-004	31.15
.0750	.080	.375	.004	.070	.0400	.1250	1.5	HBBC-080375-004	31.15
.0750	.080	.500	.004	.070	.0400	.1250	1.5	HBBC-080500-004	31.15
.0750	.080	.625	.004	.070	.0400	.1250	1.5	HBBC-080625-004	31.15
.0850	.090	.375	.004	.080	.0450	.1250	1.5	HBBC-090375-004	31.15
.0850	.090	.500	.004	.080	.0450	.1250	1.5	HBBC-090500-004	31.15
.0850	.090	.687	.004	.080	.0450	.1250	1.5	HBBC-090687-004	31.15
.0950	.100	.437	.004	.090	.0500	.1250	1.5	HBBC-100437-004	31.15
.0950	.100	.562	.004	.090	.0500	.1250	1.5	HBBC-100562-004	31.15
.0950	.100	.750	.004	.090	.0500	.1250	1.5	HBBC-100750-004	31.15

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See pgs 39-47 for standard tool holders



HBBC

Standard – Boring Tools

Helical Back Rake – Corner Radius (cont.)

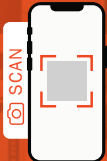
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Head Width	Rotational Minimum Bore Diameter	Maximum Bore Depth	Radius	Neck Diameter	Centerline Offset	Shank Diameter	Overall Length	Uncoated	
H	DR	L2 ^{+ .032"} _{– .000"}	R ^{+ .001"} _{– .001"}	D3 ^{+ .000"} _{– .002"}	F	D2 (h6)	L1	Tool #	USD\$
.1100	.120	.500	.004	.100	.0600	.1250	1.5	HBBC-120500-004	31.15
.1100	.120	.625	.004	.100	.0600	.1250	1.5	HBBC-120625-004	31.15
.1100	.120	1.000	.004	.100	.0600	.1250	1.5	HBBC-1201000-004	31.15
.1225	.135	.562	.004	.110	.0675	.1875	2.0	HBBC-135562-004	33.40
.1225	.135	.750	.004	.110	.0675	.1875	2.0	HBBC-135750-004	33.40
.1225	.135	1.000	.004	.110	.0675	.1875	2.0	HBBC-1351000-004	33.40
.1400	.150	.625	.004	.130	.0750	.1875	2.0	HBBC-150625-004	33.40
.1400	.150	1.000	.004	.130	.0750	.1875	2.0	HBBC-1501000-004	33.40
.1400	.150	1.250	.004	.130	.0750	.1875	2.0	HBBC-1501250-004	33.40
.1700	.180	1.000	.004	.160	.0900	.1875	2.0	HBBC-1801000-004	33.40
.1700	.180	1.250	.004	.160	.0900	.1875	2.0	HBBC-1801250-004	33.40
.1700	.180	1.500	.004	.160	.0900	.1875	2.0	HBBC-1801500-004	33.40
.1975	.210	1.000	.004	.185	.1050	.2500	2.5	HBBC-2101000-004	36.00
.1975	.210	1.250	.004	.185	.1050	.2500	2.5	HBBC-2101250-004	36.00
.1975	.210	1.500	.004	.185	.1050	.2500	2.5	HBBC-2101500-004	36.00
.2275	.240	1.000	.004	.215	.1200	.2500	2.5	HBBC-2401000-004	36.00
.2275	.240	1.500	.004	.215	.1200	.2500	2.5	HBBC-2401500-004	36.00
.2275	.240	1.750	.004	.215	.1200	.2500	2.5	HBBC-2401750-004	36.00
.2750	.300	1.000	.004	.250	.1500	.3125	2.5	HBBC-3001000-004	48.70
.2750	.300	1.500	.004	.250	.1500	.3125	2.5	HBBC-3001500-004	48.70
.2750	.300	1.750	.004	.250	.1500	.3125	2.5	HBBC-3001750-004	48.70
.3400	.360	1.000	.004	.320	.1800	.3750	2.5	HBBC-3601000-004	66.85
.3400	.360	1.500	.004	.320	.1800	.3750	2.5	HBBC-3601500-004	66.85
.3400	.360	2.000	.004	.320	.1800	.3750	4.0	HBBC-3602000-004	85.45
.3400	.360	2.500	.004	.320	.1800	.3750	4.0	HBBC-3602500-004	85.45

Standard – Boring Tools

Technical Resources on Micro100.com

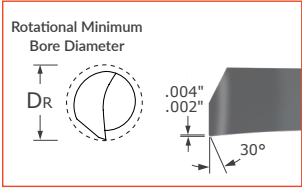
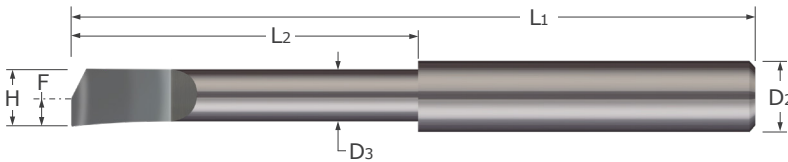
Find Simulation Files, Speeds & Feeds, Torque Recommendations, Programs, Blogs, and more at micro100.com/resources



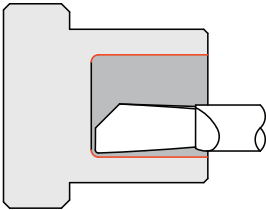
See pgs 39-47 for standard tool holders

Standard – Boring Tools
Helical Back Rake

HBB / HBM



- 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 +.032" - .000" / +.81 mm - .00 mm	D3 +.000" - .002" / +.00 mm - .05 mm	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0175	.0175	.020	.063	.015	.0100	.1250	1.5	HBB-020062	38.10	HBB-020062X	42.65
.0225	.0225	.025	.125	.020	.0125	.1250	1.5	HBB-025125	38.10		
0.65 mm	.0256	0.7 mm	3 mm	0.6 mm	0.35 mm	3 mm	38 mm	HBM-007003	34.55		
.0275	.0275	.030	.188	.025	.0150	.1250	1.5	HBB-030187	38.10	HBB-030187X	42.65
0.75 mm	.0295	0.8 mm	4 mm	0.7 mm	0.40 mm	3 mm	38 mm	HBM-008004	34.55		
.0325	.0325	.035	.188	.030	.0175	.1250	1.5	HBB-035187	29.25	HBB-035187X	33.70
0.90 mm	.0354	1.0 mm	6 mm	0.8 mm	0.50 mm	3 mm	38 mm	HBM-010006	26.80		
.0375	.0375	.040	.188	.035	.0200	.1250	1.5	HBB-040187	29.25	HBB-040187X	33.70
.0375	.0375	.040	.250	.035	.0200	.1250	1.5			HBB-040250X	33.70
.0450	.0450	.050	.313	.040	.0250	.1250	1.5	HBB-050312	29.25	HBB-050312X	33.70
1.35 mm	.0531	1.5 mm	9 mm	1.2 mm	0.75 mm	3 mm	38 mm	HBM-015009	26.80		
.0550	.0550	.060	.375	.050	.0300	.1250	1.5	HBB-060375	29.25	HBB-060375X	33.70
1.63 mm	.0642	1.75 mm	10 mm	1.5 mm	0.875 mm	3 mm	38 mm	HBM-017510	26.80		
.0650	.0650	.070	.438	.060	.0350	.1250	1.5	HBB-070437	29.25	HBB-070437X	33.70
.0750	.0750	.080	.500	.070	.0400	.1250	1.5	HBB-080500	29.25	HBB-080500X	33.70
2.05 mm	.0807	2.26 mm	12 mm	1.9 mm	1.13 mm	3 mm	38 mm	HBM-022512	26.80		
.0850	.0850	.090	.500	.080	.0450	.1250	1.5	HBB-090500	29.25	HBB-090500X	33.70
.0950	.0950	.100	.563	.090	.0500	.1250	1.5	HBB-100562	29.25	HBB-100562X	33.70
2.75 mm	.1083	3.0 mm	16 mm	2.5 mm	1.50 mm	4 mm	50 mm	HBM-030016	27.60		
.1100	.1100	.120	.625	.100	.0600	.1250	1.5	HBB-120625	29.25	HBB-120625X	33.70
.1100	.1100	.120	1.000	.100	.0600	.1250	1.5	HBB-1201000	29.25	HBB-1201000X	33.70
.1225	.1225	.135	.750	.110	.0675	.1875	2.0	HBB-135750	31.45	HBB-135750X	36.30
.1225	.1225	.135	1.000	.110	.0675	.1875	2.0	HBB-1351000	31.45	HBB-1351000X	36.30

Continued on next page

See pgs 39-47 for standard tool holders



HBB / HBM

Standard – Boring Tools

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 	D3 	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1400	.1400	.150	1.000	.130	.0750	.1875	2.0	HBB-1501000	31.45	HBB-1501000X	36.30
.1400	.1400	.150	1.250	.130	.0750	.1875	2.0	HBB-1501250	31.45	HBB-1501250X	36.30
3.65 mm	.1437	4.0 mm	25 mm	3.3 mm	2.00 mm	6 mm	57 mm			HBM-040025X	42.55
.1700	.1700	.180	1.000	.160	.0900	.1875	2.0	HBB-1801000	31.45	HBB-1801000X	36.30
.1700	.1700	.180	1.250	.160	.0900	.1875	2.0	HBB-1801250	31.45	HBB-1801250X	36.30
.1700	.1700	.180	1.500	.160	.0900	.1875	2.0	HBB-1801500	31.45	HBB-1801500X	36.30
.1975	.1975	.210	1.000	.185	.1050	.2500	2.5	HBB-2101000	34.05	HBB-2101000X	40.60
.1975	.1975	.210	1.250	.185	.1050	.2500	2.5	HBB-2101250	34.05	HBB-2101250X	40.60
.1975	.1975	.210	1.500	.185	.1050	.2500	2.5	HBB-2101500	34.05	HBB-2101500X	40.60
.2275	.2275	.240	1.000	.215	.1200	.2500	2.5	HBB-2401000	34.05	HBB-2401000X	40.60
.2275	.2275	.240	1.500	.215	.1200	.2500	2.5	HBB-2401500	34.05	HBB-2401500X	40.60
.2275	.2275	.240	1.750	.215	.1200	.2500	2.5	HBB-2401750	34.05	HBB-2401750X	40.60
.2750	.2750	.300	1.000	.250	.1500	.3125	2.5	HBB-3001000	46.50	HBB-3001000X	54.40
.2750	.2750	.300	1.500	.250	.1500	.3125	2.5	HBB-3001500	46.50	HBB-3001500X	54.40
.2750	.2750	.300	1.750	.250	.1500	.3125	2.5	HBB-3001750	46.50	HBB-3001750X	54.40
.3400	.3400	.360	1.000	.320	.1800	.3750	2.5	HBB-3601000	64.55		
.3400	.3400	.360	1.500	.320	.1800	.3750	2.5	HBB-3601500	64.55	HBB-3601500X	73.90
.3400	.3400	.360	2.000	.320	.1800	.3750	4.0	HBB-3602000	83.15	HBB-3602000X	93.20
.3400	.3400	.360	2.250	.320	.1800	.3750	4.0	HBB-3602250	83.15		
.3400	.3400	.360	2.500	.320	.1800	.3750	4.0	HBB-3602500	83.15	HBB-3602500X	93.20
.4600	.4600	.480	2.500	.440	.2400	.5000	4.0	HBB-4802500	99.75		
.4600	.4600	.480	3.000	.440	.2400	.5000	4.0	HBB-4803000	99.75		

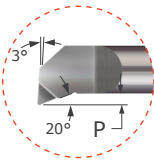
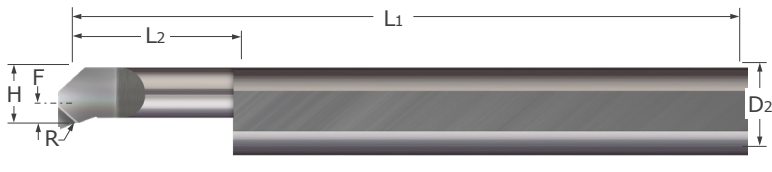
Standard – Boring Tools

See pgs 39-47 for standard tool holders

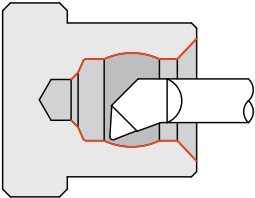


Standard – Boring Tools
Top Rake Chipbreaker

PBT



- 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	
H		L2 ^{+.030"} _{–.000"}	R ^{+.003"} _{–.000"}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0500	.0550	.150	.002	.005	-.0125	.1250	1.5	PBT2-050150	31.35	PBT2-050150X	35.90
.0500	.0550	.200	.002	.005	-.0125	.1250	1.5	PBT2-050200	31.35	PBT2-050200X	35.90
.0500	.0550	.400	.002	.005	-.0125	.1250	1.5	PBT2-050400	31.35	PBT2-050400X	35.90
.0500	.0550	.500	.002	.005	-.0125	.1250	1.5	PBT2-050500	31.35	PBT2-050500X	35.90
.0600	.0700	.150	.002	.010	-.0025	.1250	1.5	PBT2-060150	31.35	PBT2-060150X	35.90
.0600	.0700	.200	.002	.010	-.0025	.1250	1.5	PBT2-060200	31.35	PBT2-060200X	35.90
.0600	.0700	.400	.002	.010	-.0025	.1250	1.5	PBT2-060400	31.35	PBT2-060400X	35.90
.0600	.0700	.500	.002	.010	-.0025	.1250	1.5	PBT2-060500	31.35	PBT2-060500X	35.90
.0700	.0800	.150	.002	.015	.0075	.1250	1.5	PBT2-070150	30.60	PBT2-070150X	35.20
.0700	.0800	.200	.002	.015	.0075	.1250	1.5	PBT2-070200	30.60	PBT2-070200X	35.05
.0700	.0800	.400	.002	.015	.0075	.1250	1.5	PBT2-070400	30.60	PBT2-070400X	35.05
.0700	.0800	.600	.002	.015	.0075	.1250	1.5	PBT2-070600	30.60	PBT2-070600X	35.05
.0800	.0900	.200	.002	.015	.0175	.1250	1.5	PBT2-080200	30.60	PBT2-080200X	35.20
.0800	.0900	.400	.002	.015	.0175	.1250	1.5	PBT2-080400	30.60	PBT2-080400X	35.05
.0900	.1000	.200	.002	.015	.0275	.1250	1.5	PBT2-090200	30.60	PBT2-090200X	35.20
.0900	.1000	.400	.002	.015	.0275	.1250	1.5	PBT2-090400	30.60	PBT2-090400X	35.20
.1000	.1100	.200	.002	.015	.0375	.1250	1.5	PBT2-100200	30.60	PBT2-100200X	35.20
.1000	.1100	.400	.002	.015	.0375	.1250	1.5	PBT2-100400	30.60	PBT2-100400X	35.05
.1100	.1220	.250	.004	.020	.0475	.1250	1.5	PBT4-110250	30.60	PBT4-110250X	35.05
.1100	.1220	.500	.004	.020	.0475	.1250	1.5	PBT4-110500	30.60	PBT4-110500X	35.05
.1100	.1220	.750	.004	.020	.0475	.1250	1.5	PBT4-110750	30.60	PBT4-110750X	35.05
.1200	.1320	.250	.004	.020	.0263	.1875	2.0	PBT-120250	31.85	PBT-120250X	37.05
.1200	.1320	.375	.004	.020	.0263	.1875	2.0	PBT4-120375	31.85	PBT4-120375X	37.05
.1200	.1320	.500	.004	.020	.0263	.1875	2.0	PBT-120500	31.85	PBT-120500X	37.05
.1200	.1320	.750	.004	.020	.0263	.1875	2.0	PBT-120750	31.85	PBT-120750X	37.05
.1200	.1320	1.000	.004	.020	.0263	.1875	2.0	PBT-1201000	31.85	PBT-1201000X	37.05
.1400	.1520	.250	.002	.025	.0463	.1875	2.0	PBT2-140250	31.85	PBT2-140250X	37.05
.1400	.1520	.250	.004	.025	.0463	.1875	2.0	PBT4-140250	31.85	PBT4-140250X	37.05
.1400	.1520	.375	.002	.025	.0463	.1875	2.0	PBT2-140375	31.85	PBT2-140375X	37.05
.1400	.1520	.375	.004	.025	.0463	.1875	2.0	PBT4-140375	31.85	PBT4-140375X	37.05
.1400	.1520	.500	.002	.025	.0463	.1875	2.0	PBT2-140500	31.85	PBT2-140500X	37.05
.1400	.1520	.500	.004	.025	.0463	.1875	2.0	PBT4-140500	31.85	PBT4-140500X	37.05

*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

PBT

Standard – Boring Tools
Top Rake Chipbreaker (cont.)

Continued from previous page

Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
H	L2	$\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} R \text{ } +.003" \\ -.000" \end{smallmatrix}$	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.1600	.1760	.375	.006	.025	.0663	.1875	2.0	PBT6-160375	31.85	PBT6-160375X	37.05
.1600	.1760	.500	.006	.025	.0663	.1875	2.0	PBT-160500	31.85	PBT-160500X	37.05
.1600	.1760	.750	.006	.025	.0663	.1875	2.0	PBT-160750	31.85	PBT-160750X	37.05
.1600	.1760	1.000	.006	.025	.0663	.1875	2.0	PBT6-1601000	31.85	PBT6-1601000X	37.05
.1600	.1760	1.250	.006	.025	.0663	.1875	2.0	PBT6-1601250	31.85	PBT6-1601250X	37.05
.1800	.1960	.375	.006	.030	.0550	.2500	2.5	PBT6-180375	40.80	PBT6-180375X	47.45
.1800	.1960	.500	.006	.030	.0550	.2500	2.5	PBT-180500	40.80	PBT-180500X	47.45
.1800	.1960	.750	.006	.030	.0550	.2500	2.5	PBT6-180750	40.80	PBT6-180750X	47.45
.1800	.1960	1.000	.006	.030	.0550	.2500	2.5	PBT-1801000	40.80	PBT-1801000X	47.45
.1800	.1960	1.250	.006	.030	.0550	.2500	2.5	PBT6-1801250	40.80	PBT6-1801250X	47.45
.1800	.1960	1.500	.006	.030	.0550	.2500	2.5	PBT6-1801500	40.80	PBT6-1801500X	47.45
.2000	.2160	.375	.006	.030	.0750	.2500	2.5	PBT6-200375	40.80	PBT6-200375X	47.45
.2000	.2160	.600	.006	.030	.0750	.2500	2.5	PBT-200600	40.80	PBT-200600X	47.45
.2000	.2160	.750	.006	.030	.0750	.2500	2.5	PBT6-200750	40.80	PBT6-200750X	47.45
.2000	.2160	1.000	.006	.030	.0750	.2500	2.5	PBT-2001000	40.80	PBT-2001000X	47.45
.2000	.2160	1.250	.006	.030	.0750	.2500	2.5	PBT6-2001250	40.80	PBT6-2001250X	47.45
.2000	.2160	1.500	.006	.030	.0750	.2500	2.5	PBT6-2001500	40.80	PBT6-2001500X	47.45
.2300	.2500	.500	.004	.040	.0738	.3125	2.5	PBT4-230500	50.45	PBT4-230500X	58.35
.2300	.2500	.500	.006	.040	.0738	.3125	2.5	PBT6-230500	50.45	PBT6-230500X	58.35
.2300	.2500	.750	.004	.040	.0738	.3125	2.5	PBT4-230750	50.45	PBT4-230750X	58.35
.2300	.2500	.750	.006	.040	.0738	.3125	2.5	PBT-230750	50.45	PBT-230750X	58.35
.2300	.2500	1.100	.006	.040	.0738	.3125	2.5	PBT6-2301100	50.45	PBT6-2301100X	58.35
.2300	.2500	1.300	.006	.040	.0738	.3125	2.5	PBT6-2301300	50.45	PBT6-2301300X	58.35
.2300	.2500	1.600	.006	.040	.0738	.3125	3.0	PBT-2301600	60.00	PBT-2301600X	67.90
.2600	.2800	.500	.004	.045	.1038	.3125	2.5	PBT4-260500	50.45	PBT4-260500X	58.35
.2600	.2800	.500	.006	.045	.1038	.3125	2.5	PBT6-260500	50.45	PBT6-260500X	58.35
.2600	.2800	.750	.004	.045	.1038	.3125	2.5	PBT4-260750	50.45	PBT4-260750X	58.35
.2600	.2800	.750	.006	.045	.1038	.3125	2.5	PBT6-260750	50.45	PBT6-260750X	58.35
.3000	.3200	.750	.006	.050	.1125	.3750	2.5	PBT6-300750	61.05	PBT6-300750X	70.40
.3000	.3200	1.000	.006	.050	.1125	.3750	2.5	PBT-3001000	61.05	PBT-3001000X	70.40
.3000	.3200	1.250	.006	.050	.1125	.3750	2.5	PBT6-3001250	61.05	PBT6-3001250X	70.40
.3000	.3200	1.600	.006	.050	.1125	.3750	3.0	PBT6-3001600	61.05	PBT6-3001600X	70.40
.3000	.3200	2.100	.006	.050	.1125	.3750	3.5	PBT6-3002100	61.05	PBT6-3002100X	71.10

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

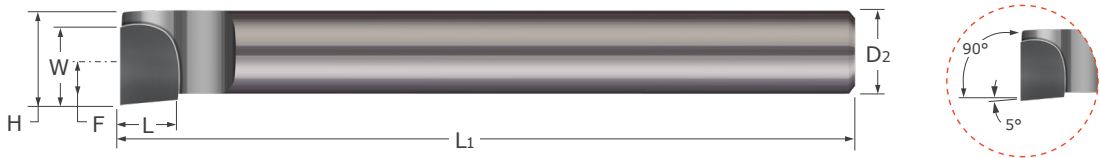
See pgs 39-47 for standard tool holders



Standard – Boring Tools

TBB

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

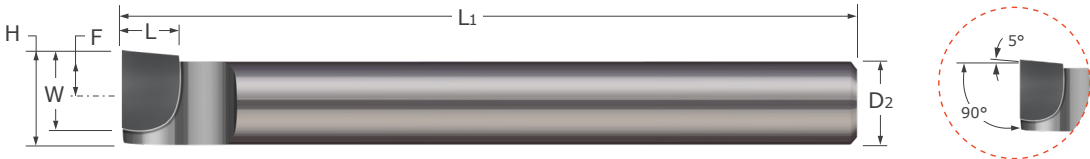
Head Width	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	
H	W	L	F	D2 ^{+.000"} _{-.003"}	L1	Tool #	USD\$
.320	.250	.188	.195	.2500	4.0	TBB-250	27.00
.413	.313	.250	.257	.3125	5.0	TBB-312	28.15
.463	.313	.250	.276	.3750	6.0	TBB-375	30.10
.625	.500	.250	.375	.5000	7.0	TBB-500	37.60
.795	.500	.250	.483	.6250	8.0	TBB-625	40.60
.935	.625	.250	.560	.7500	9.0	TBB-750	41.95
1.233	.750	.375	.733	1.0000	10.0	TBB-001	51.05

See pgs 39-47 for standard tool holders
 See pg 310 for tool set options

Standard – Boring Tools

TBBL

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

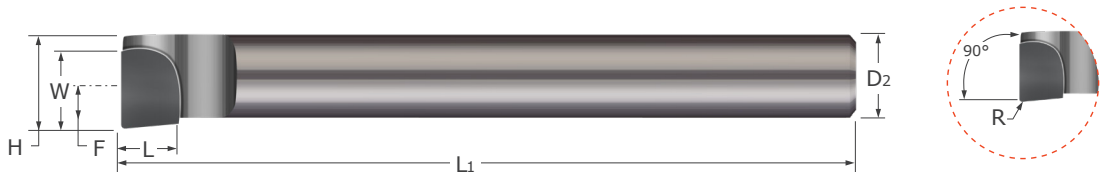
Head Width	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	
H	W	L	F	D2 ^{+.000"} _{-.003"}	L1	Tool #	USD\$
.320	.250	.188	.195	.2500	4.0	TBBL-250	26.15
.413	.313	.250	.257	.3125	5.0	TBBL-312	27.00
.463	.313	.250	.276	.3750	6.0	TBBL-375	28.85
.625	.500	.250	.375	.5000	7.0	TBBL-500	37.35
.795	.500	.250	.483	.6250	8.0	TBBL-625	39.95
.935	.625	.250	.560	.7500	9.0	TBBL-750	40.90
1.233	.750	.375	.733	1.0000	10.0	TBBL-001	51.05

See pgs 39-47 for standard tool holders
 See pg 310 for tool set options



TBBC

Standard – Boring Tools
Right Hand – Brazed – Corner Radius



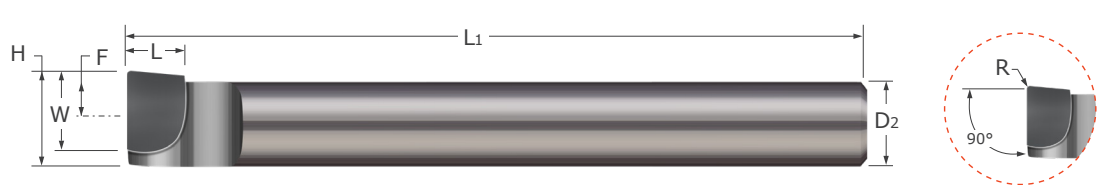
- Designed for right hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

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 #	USD\$
.320	.008	.250	.188	.195	.2500	4.0	TBBC-250-008	28.95
.413	.008	.313	.250	.257	.3125	5.0	TBBC-312-008	30.10
.463	.008	.313	.250	.276	.3750	6.0	TBBC-375-008	32.20
.625	.008	.500	.250	.375	.5000	7.0	TBBC-500-008	39.55
.795	.008	.500	.250	.483	.6250	8.0	TBBC-625-008	42.65
.935	.008	.625	.250	.560	.7500	9.0	TBBC-750-008	43.90
1.233	.008	.750	.375	.733	1.0000	10.0	TBBC-001-008	51.05

See pgs 39-47 for standard tool holders

TBBCL

Standard – Boring Tools
Left Hand – Brazed – Corner Radius



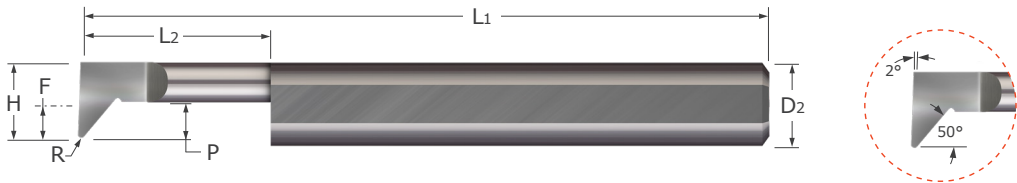
- Designed for left hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

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 #	USD\$
.320	.008	.250	.188	.195	.2500	4.0	TBBCL-250-008	28.95
.413	.008	.313	.250	.257	.3125	5.0	TBBCL-312-008	30.10
.463	.008	.313	.250	.276	.3750	6.0	TBBCL-375-008	32.20
.625	.008	.500	.250	.375	.5000	7.0	TBBCL-500-008	39.55
.795	.008	.500	.250	.483	.6250	8.0	TBBCL-625-008	42.65
.935	.008	.625	.250	.560	.7500	9.0	TBBCL-750-008	43.90
1.233	.008	.750	.375	.733	1.0000	10.0	TBBCL-001-008	51.05

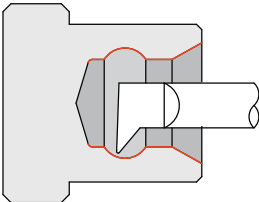
See pgs 39-47 for standard tool holders

Standard – Profiling Tools
Radial Profiling

PR



- 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	
H		L2 ^{+.050"} _{-.000"}	R ^{+.002"} _{-.000"}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0500	.0550	.150	.002	.015	-.0125	.1250	1.5	PR2-050150	31.45	PR2-050150X	36.00
.0500	.0550	.200	.002	.015	-.0125	.1250	1.5	PR2-050200	31.45	PR2-050200X	36.00
.0600	.0700	.150	.002	.020	-.0025	.1250	1.5	PR2-060150	31.45	PR2-060150X	36.00
.0600	.0700	.200	.002	.020	-.0025	.1250	1.5	PR2-060200	31.45	PR2-060200X	36.00
.0700	.0800	.150	.002	.025	.0075	.1250	1.5	PR2-070150	30.70	PR2-070150X	35.30
.0700	.0800	.200	.002	.025	.0075	.1250	1.5	PR2-070200	30.70	PR2-070200X	35.30
.0700	.0800	.200	.005	.025	.0075	.1250	1.5	PR-070200	30.70	PR-070200X	35.30
.0700	.0800	.300	.002	.025	.0075	.1250	1.5	PR2-070300	30.70	PR2-070300X	35.30
.0700	.0800	.500	.002	.025	.0075	.1250	1.5	PR2-070500	30.70	PR2-070500X	35.30
.0700	.0800	.500	.005	.025	.0075	.1250	1.5	PR-070500	30.70	PR-070500X	35.30
.0800	.0900	.200	.002	.030	.0175	.1250	1.5	PR2-080200	30.70	PR2-080200X	35.30
.0800	.0900	.300	.002	.030	.0175	.1250	1.5	PR2-080300	30.70	PR2-080300X	35.30
.0900	.1000	.200	.002	.030	.0275	.1250	1.5	PR2-090200	30.70	PR2-090200X	35.30
.0900	.1000	.300	.002	.030	.0275	.1250	1.5	PR2-090300	30.70	PR2-090300X	35.30
.1000	.1100	.200	.002	.035	.0375	.1250	1.5	PR2-100200	30.70	PR2-100200X	35.30
.1000	.1100	.200	.005	.035	.0375	.1250	1.5	PR5-100200	30.70	PR5-100200X	35.30
.1000	.1100	.300	.002	.035	.0375	.1250	1.5	PR2-100300	30.70	PR2-100300X	35.30
.1000	.1100	.300	.005	.035	.0375	.1250	1.5	PR5-100300	30.70	PR5-100300X	35.30
.1100	.1240	.250	.005	.040	.0475	.1250	1.5	PR-110250	30.70	PR-110250X	35.30
.1100	.1240	.375	.005	.040	.0475	.1250	1.5	PR5-110375	30.70	PR5-110375X	35.30
.1100	.1240	.500	.005	.040	.0475	.1250	1.5	PR5-110500	30.70	PR5-110500X	35.30
.1200	.1340	.250	.008	.050	.0263	.1875	2.0	PR-120250	31.95	PR-120250X	37.15
.1200	.1340	.375	.005	.050	.0263	.1875	2.0	PR5-120375	31.95	PR5-120375X	37.15
.1200	.1340	.375	.008	.050	.0263	.1875	2.0	PR8-120375	31.95	PR8-120375X	37.15
.1200	.1340	.500	.008	.050	.0263	.1875	2.0	PR-120500	31.95	PR-120500X	37.15
.1200	.1340	.750	.005	.050	.0263	.1875	2.0	PR5-120750	31.95	PR5-120750X	37.15
.1200	.1340	.750	.008	.050	.0263	.1875	2.0	PR8-120750	31.95	PR8-120750X	37.15

*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



PR

Standard – Profiling Tools
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	
H		L ₂ ^{+ .050"} _{– .000"}	R ^{+ .002"} _{– .000"}	P	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.1400	.1540	.375	.005	.050	.0463	.1875	2.0	PR5-140375	31.95	PR5-140375X	37.15
.1400	.1540	.375	.008	.050	.0463	.1875	2.0	PR8-140375	31.95	PR8-140375X	37.15
.1400	.1540	.500	.005	.050	.0463	.1875	2.0	PR5-140500	31.95	PR5-140500X	37.15
.1400	.1540	.500	.008	.050	.0463	.1875	2.0	PR8-140500	31.95	PR8-140500X	37.15
.1600	.1780	.375	.008	.050	.0663	.1875	2.0	PR8-160375	31.95	PR8-160375X	37.15
.1600	.1780	.500	.008	.050	.0663	.1875	2.0	PR-160500	31.95	PR-160500X	37.15
.1600	.1780	.750	.008	.050	.0663	.1875	2.0	PR8-160750	31.95	PR8-160750X	37.15
.1600	.1780	1.000	.008	.050	.0663	.1875	2.0	PR8-1601000	31.95	PR8-1601000X	37.15
.1800	.1980	.375	.008	.080	.0550	.2500	2.5	PR8-180375	40.90	PR8-180375X	47.55
.1800	.1980	.500	.008	.080	.0550	.2500	2.5	PR-180500	40.90	PR-180500X	47.55
.1800	.1980	.750	.008	.080	.0550	.2500	2.5	PR-180750	40.90	PR-180750X	47.55
.1800	.1980	1.000	.008	.080	.0550	.2500	2.5	PR8-1801000	40.90	PR8-1801000X	47.55
.2000	.2180	.500	.005	.080	.0750	.2500	2.5	PR5-200500	40.90	PR5-200500X	47.55
.2000	.2180	.500	.008	.080	.0750	.2500	2.5	PR8-200500	40.90	PR8-200500X	47.55
.2000	.2180	.750	.005	.080	.0750	.2500	2.5	PR5-200750	40.90	PR5-200750X	47.55
.2000	.2180	.750	.008	.080	.0750	.2500	2.5	PR8-200750	40.90	PR8-200750X	47.55
.2300	.2520	.500	.008	.080	.0738	.3125	2.5	PR8-230500	50.45	PR8-230500X	58.35
.2300	.2520	.750	.008	.080	.0738	.3125	2.5	PR-230750	50.45	PR-230750X	58.35
.2300	.2520	1.000	.008	.080	.0738	.3125	2.5	PR-2301000	50.45	PR-2301000X	58.35
.2300	.2520	1.250	.008	.080	.0738	.3125	2.5	PR8-2301250	50.45	PR8-2301250X	58.35
.2600	.2820	.750	.008	.090	.1038	.3125	2.5	PR8-260750	50.45	PR8-260750X	58.35
.2600	.2820	1.000	.008	.090	.1038	.3125	2.5	PR8-2601000	50.45	PR8-2601000X	58.35
.3000	.3220	.750	.008	.110	.1438	.3125	2.5	PR8-300750	50.45	PR8-300750X	58.35
.3000	.3220	1.000	.008	.110	.1438	.3125	2.5	PR-3001000	50.45	PR-3001000X	58.35
.3000	.3220	1.250	.008	.110	.1438	.3125	2.5	PR-3001250	50.45	PR-3001250X	58.35
.3600	.3820	.750	.008	.130	.1725	.3750	2.5	PR8-360750	65.40	PR8-360750X	74.85
.3600	.3820	1.000	.008	.130	.1725	.3750	2.5	PR-3601000	65.40	PR-3601000X	74.85
.3600	.3820	1.250	.008	.130	.1725	.3750	2.5	PR-3601250	65.40	PR-3601250X	74.85
.4600	.4820	.750	.008	.150	.2100	.5000	3.0	PR8-460750	90.20	PR8-460750X	102.95
.4600	.4820	1.000	.008	.150	.2100	.5000	3.0	PR8-4601000	90.20	PR8-4601000X	102.95

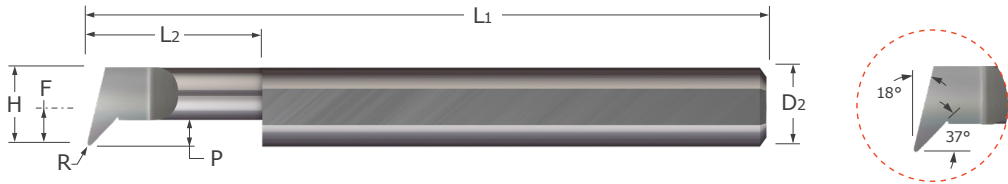
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Profiling Tools

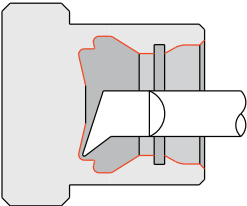
Standard – Profiling Tools

Angled Profiling

PA



- 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 #	USD\$	Tool #	USD\$
H		L2 ^{+.030"} _{-.000"}	R ^{+.0005"} _{-.0005"}	P	F	D2 (h6)	L1				
.0500	.0550	.150	.0020	.015	-.0125	.1250	1.5	PA2-050150	31.45	PA2-050150X	36.00
.0500	.0550	.200	.0020	.015	-.0125	.1250	1.5	PA2-050200	31.45	PA2-050200X	36.00
.0600	.0700	.150	.0020	.020	-.0025	.1250	1.5	PA2-060150	31.45	PA2-060150X	36.00
.0600	.0700	.200	.0020	.020	-.0025	.1250	1.5	PA2-060200	31.45	PA2-060200X	36.00
.0700	.0800	.150	.0020	.020	.0075	.1250	1.5	PA2-070150	30.70	PA2-070150X	35.30
.0700	.0800	.200	.0020	.020	.0075	.1250	1.5	PA2-070200	30.70	PA2-070200X	35.30
.0800	.0900	.200	.0020	.025	.0175	.1250	1.5	PA2-080200	30.70	PA2-080200X	35.30
.0800	.0900	.300	.0020	.025	.0175	.1250	1.5	PA2-080300	30.70	PA2-080300X	35.30
.0900	.1000	.200	.0020	.030	.0275	.1250	1.5	PA2-090200	30.70	PA2-090200X	35.30
.0900	.1000	.300	.0020	.030	.0275	.1250	1.5	PA2-090300	30.70	PA2-090300X	35.30
.1000	.1100	.200	.0020	.030	.0375	.1250	1.5	PA2-100200	30.70	PA2-100200X	35.30
.1000	.1100	.200	.0050	.030	.0375	.1250	1.5	PA5-100200	30.70	PA5-100200X	35.30
.1000	.1100	.300	.0020	.030	.0375	.1250	1.5	PA2-100300	30.70	PA2-100300X	35.30
.1000	.1100	.300	.0050	.030	.0375	.1250	1.5	PA5-100300	30.70	PA5-100300X	35.30
.1100	.1240	.250	.0050	.035	.0475	.1250	1.5	PA5-110250	30.70	PA5-110250X	35.30
.1100	.1240	.375	.0050	.035	.0475	.1250	1.5	PA5-110375	30.70	PA5-110375X	35.30
.1200	.1340	.250	.0050	.035	.0263	.1875	2.0	PA5-120250	31.95	PA5-120250X	37.15
.1200	.1340	.375	.0050	.035	.0263	.1875	2.0	PA5-120375	31.95	PA5-120375X	37.15
.1400	.1540	.375	.0050	.040	.0463	.1875	2.0	PA5-140375	31.95	PA5-140375X	37.15
.1400	.1540	.500	.0050	.040	.0463	.1875	2.0	PA5-140500	31.95	PA5-140500X	37.15
.1600	.1780	.375	.0050	.050	.0663	.1875	2.0	PA5-160375	31.95	PA5-160375X	37.15
.1600	.1780	.500	.0050	.050	.0663	.1875	2.0	PA5-160500	31.95	PA5-160500X	37.15
.1800	.1980	.375	.0050	.055	.0550	.2500	2.5	PA5-180375	40.90	PA5-180375X	47.55
.1800	.1980	.500	.0050	.055	.0550	.2500	2.5	PA5-180500	40.90	PA5-180500X	47.55

*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



PA

Standard – Profiling Tools
Angled 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	
H		L2 ⁺ _{-.030"} ⁺ _{-.000"}	R ⁺ _{-.0005"} ⁺ _{-.0005"}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.2000	.2180	.500	.0050	.060	.0750	.2500	2.5	PA5-200500	40.90	PA5-200500X	47.55
.2000	.2180	.500	.0080	.060	.0750	.2500	2.5	PA8-200500	40.90	PA8-200500X	47.55
.2000	.2180	.750	.0050	.060	.0750	.2500	2.5	PA5-200750	40.90	PA5-200750X	47.55
.2000	.2180	.750	.0080	.060	.0750	.2500	2.5	PA8-200750	40.90	PA8-200750X	47.55
.2300	.2520	.500	.0080	.070	.0738	.3125	2.5	PA8-230500	50.45	PA8-230500X	58.35
.2300	.2520	.750	.0080	.070	.0738	.3125	2.5	PA8-230750	50.45	PA8-230750X	58.35
.2600	.2820	.750	.0080	.080	.1038	.3125	2.5	PA8-260750	50.45	PA8-260750X	58.35
.2600	.2820	1.000	.0080	.080	.1038	.3125	2.5	PA8-2601000	50.45	PA8-2601000X	58.35
.3000	.3220	.750	.0080	.090	.1438	.3125	2.5	PA8-300750	50.45	PA8-300750X	58.35
.3000	.3220	1.000	.0080	.090	.1438	.3125	2.5	PA8-3001000	50.45	PA8-3001000X	58.35
.3600	.3820	.750	.0080	.110	.1725	.3750	2.5	PA8-360750	65.40	PA8-360750X	74.85
.3600	.3820	1.000	.0080	.110	.1725	.3750	2.5	PA8-3601000	65.40	PA8-3601000X	74.85
.4100	.4320	.750	.0080	.120	.1600	.5000	3.0	PA8-410750	91.65	PA8-410750X	104.40
.4100	.4320	1.250	.0080	.120	.1600	.5000	3.0	PA8-4101250	91.65	PA8-4101250X	104.40
.4600	.4820	.750	.0080	.140	.2100	.5000	3.0	PA8-460750	91.65	PA8-460750X	104.40
.4600	.4820	1.000	.0080	.140	.2100	.5000	3.0	PA8-4601000	91.65	PA8-4601000X	104.40

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

Standard – Profiling Tools



Build & Send Shopping Carts Directly to
Your Distributor or Purchasing Agent

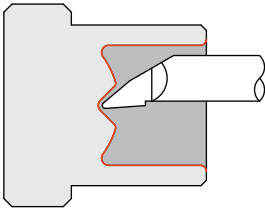
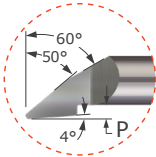
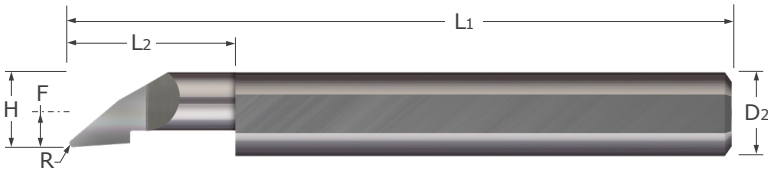
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See pgs 39-47 for standard tool holders

Standard – Profiling Tools

Axial Profiling

PF



- 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	
H		L2 ^{+ .050"} _{-.000"}	R ^{+ .002"} _{-.000"}	P	F	D2 (h6)	L1	Tool#	USD\$	Tool#	USD\$
.0500	.0550	.150	.005	.005	-.0125	.1250	1.5	PF5-050150	31.45	PF5-050150X	36.00
.0500	.0550	.200	.005	.005	-.0125	.1250	1.5	PF5-050200	31.45	PF5-050200X	36.00
.0600	.0700	.200	.005	.005	-.0025	.1250	1.5	PF5-060200	31.45	PF5-060200X	36.00
.0600	.0700	.250	.005	.005	-.0025	.1250	1.5	PF5-060250	30.70	PF5-060250X	35.30
.0700	.0800	.200	.005	.010	.0075	.1250	1.5	PF-070200	30.70	PF-070200X	35.30
.0700	.0800	.400	.005	.010	.0075	.1250	1.5	PF-070400	30.70	PF-070400X	35.30
.0700	.0800	.500	.005	.010	.0075	.1250	1.5	PF-070500	30.70	PF-070500X	35.30
.0800	.0900	.150	.005	.010	.0175	.1250	1.5	PF5-080150	30.70	PF5-080150X	35.30
.0800	.0900	.200	.005	.010	.0175	.1250	1.5	PF5-080200	30.70	PF5-080200X	35.30
.0800	.0900	.250	.005	.010	.0175	.1250	1.5	PF5-080250	30.70	PF5-080250X	35.30
.0900	.1000	.200	.005	.010	.0275	.1250	1.5	PF5-090200	30.70	PF5-090200X	35.30
.0900	.1000	.300	.005	.010	.0275	.1250	1.5	PF5-090300	30.70	PF5-090300X	35.30
.1000	.1100	.300	.005	.015	.0375	.1250	1.5	PF5-100300	30.70	PF5-100300X	35.30
.1000	.1100	.400	.005	.015	.0375	.1250	1.5	PF5-100400	30.70	PF5-100400X	35.30
.1100	.1220	.250	.005	.015	.0475	.1250	1.5	PF-110250	30.70	PF-110250X	35.30
.1100	.1220	.375	.005	.015	.0475	.1250	1.5	PF5-110375	30.70	PF5-110375X	35.30
.1100	.1220	.500	.005	.015	.0475	.1250	1.5	PF-110500	30.70	PF-110500X	35.30
.1100	.1220	.750	.005	.015	.0475	.1250	1.5	PF-110750	30.70	PF-110750X	35.30
.1200	.1320	.250	.005	.020	.0263	.1875	2.0	PF5-120250	31.95	PF5-120250X	37.15
.1200	.1320	.250	.008	.020	.0263	.1875	2.0	PF-120250	31.95	PF-120250X	37.15
.1200	.1320	.375	.005	.020	.0263	.1875	2.0	PF5-120375	31.95	PF5-120375X	37.15
.1200	.1320	.375	.008	.020	.0263	.1875	2.0	PF8-120375	31.95	PF8-120375X	37.15
.1200	.1320	.500	.008	.020	.0263	.1875	2.0	PF-120500	31.95	PF-120500X	37.15
.1200	.1320	.750	.008	.020	.0263	.1875	2.0	PF-120750	31.95	PF-120750X	37.15
.1400	.1520	.375	.008	.020	.0463	.1875	2.0	PF8-140375	31.95	PF8-140375X	37.15
.1400	.1520	.500	.008	.020	.0463	.1875	2.0	PF8-140500	31.95	PF8-140500X	37.15

*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



PF

Standard – Profiling Tools
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 #	USD\$	Tool #	USD\$
H		L2 ^{+.050"} _{-.000"}	R ^{+.002"} _{-.000"}	P	F	D2 (h6)	L1				
.1600	.1760	.375	.008	.030	.0663	.1875	2.0	PF8-160375	31.95	PF8-160375X	37.15
.1600	.1760	.500	.008	.030	.0663	.1875	2.0	PF-160500	31.95	PF-160500X	37.15
.1600	.1760	.750	.008	.030	.0663	.1875	2.0	PF-160750	31.95	PF-160750X	37.15
.1800	.1960	.375	.008	.030	.0550	.2500	2.5	PF8-180375	40.90	PF8-180375X	47.55
.1800	.1960	.500	.008	.030	.0550	.2500	2.5	PF-180500	40.90	PF-180500X	47.55
.1800	.1960	.750	.008	.030	.0550	.2500	2.5	PF-180750	40.90	PF-180750X	47.55
.1800	.1960	1.000	.008	.030	.0550	.2500	2.5	PF-1801000	40.90	PF-1801000X	47.55
.2000	.2160	.400	.008	.030	.0750	.2500	2.5	PF8-200400	40.90	PF8-200400X	47.55
.2000	.2160	.600	.008	.030	.0750	.2500	2.5	PF-200600	40.90	PF-200600X	47.55
.2000	.2160	.800	.008	.030	.0750	.2500	2.5	PF8-200800	40.90	PF8-200800X	47.55
.2000	.2160	1.000	.008	.030	.0750	.2500	2.5	PF-2001000	40.90	PF-2001000X	47.55
.2300	.2500	.500	.008	.030	.0738	.3125	2.5	PF8-230500	50.45	PF8-230500X	58.35
.2300	.2500	.750	.008	.030	.0738	.3125	2.5	PF-230750	50.45	PF-230750X	58.35
.2300	.2500	1.000	.008	.030	.0738	.3125	2.5	PF-2301000	50.45	PF-2301000X	58.35
.2300	.2500	1.250	.008	.030	.0738	.3125	2.5	PF-2301250	50.45	PF-2301250X	58.35
.2600	.2800	.750	.008	.030	.1038	.3125	2.5	PF8-260750	50.45	PF8-260750X	58.35
.3000	.3200	1.000	.008	.030	.1438	.3125	2.5	PF-3001000	50.45	PF-3001000X	58.35
.3600	.3800	.750	.008	.030	.1725	.3750	2.5	PF8-360750	65.40	PF8-360750X	74.85
.3600	.3800	1.000	.008	.030	.1725	.3750	2.5	PF-3601000	65.40	PF-3601000X	74.85
.4100	.4300	.750	.008	.040	.1600	.5000	3.0	PF8-410750	90.20	PF8-410750X	102.95
.4100	.4300	1.000	.008	.040	.1600	.5000	3.0	PF8-4101000	90.20	PF8-4101000X	102.95
.4600	.4800	.750	.008	.050	.2100	.5000	3.0	PF8-460750	90.20	PF8-460750X	102.95
.4600	.4800	1.000	.008	.050	.2100	.5000	3.0	PF8-4601000	90.20	PF8-4601000X	102.95

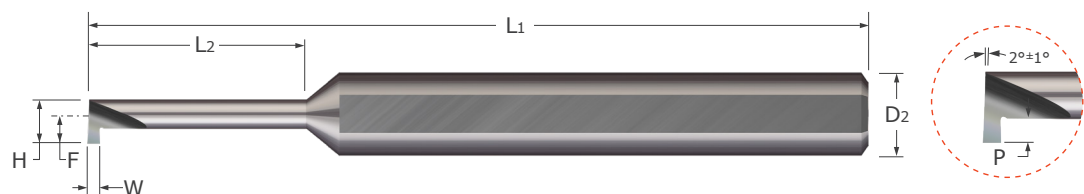
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Profiling Tools

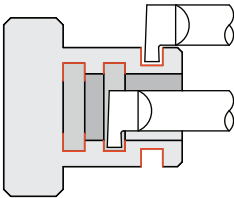
Standard – Grooving Tools

Retaining Ring – Square – Right Hand – Miniature

MRR



- 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 #	USD\$	Tool #	USD\$
.015	.0600	.0700	.150	.020	.0400	.1250	1.5	MRR-015-150-06Q	35.50	MRR-015-150-060X	40.05
.015	.0600	.0700	.250	.020	.0400	.1250	1.5	MRR-015-250-06Q	35.50	MRR-015-250-060X	40.05
.020	.0600	.0700	.150	.020	.0400	.1250	1.5	MRR-020-150-06Q	35.50	MRR-020-150-060X	40.05
.020	.0600	.0700	.250	.020	.0400	.1250	1.5	MRR-020-250-06Q	35.50	MRR-020-250-060X	40.05
.020	.0700	.0800	.100	.020	.0450	.1250	1.5	MRR-020-100-07Q	35.50	MRR-020-100-070X	40.05
.020	.0700	.0800	.150	.020	.0450	.1250	1.5	MRR-020-150-07Q	35.50	MRR-020-150-070X	40.05
.020	.0800	.0900	.150	.025	.0525	.1250	1.5	MRR-020-150-08Q	35.50	MRR-020-150-080X	40.05
.020	.0800	.0900	.250	.025	.0525	.1250	1.5	MRR-020-250-08Q	35.50	MRR-020-250-080X	40.05
.020	.0900	.1000	.150	.025	.0575	.1250	1.5	MRR-020-150-09Q	35.50	MRR-020-150-090X	40.05
.020	.0900	.1000	.250	.025	.0575	.1250	1.5	MRR-020-250-09Q	35.50	MRR-020-250-090X	40.05
.020	.1000	.1100	.150	.030	.0650	.1875	2.0	MRR-020-150-10Q	37.60	MRR-020-150-100X	42.65
.020	.1000	.1100	.250	.030	.0650	.1875	2.0	MRR-020-250-10Q	37.60	MRR-020-250-100X	42.65
.020	.1200	.1340	.150	.040	.0800	.1875	2.0	MRR-020-150-12Q	37.60	MRR-020-150-120X	42.65
.020	.1200	.1340	.250	.040	.0800	.1875	2.0	MRR-020-250-12Q	37.60	MRR-020-250-120X	42.65
.030	.0700	.0800	.100	.020	.0450	.1250	1.5	MRR-030-100-07Q	35.50	MRR-030-100-070X	40.05
.030	.0700	.0800	.150	.020	.0450	.1250	1.5	MRR-030-150-07Q	35.50	MRR-030-150-070X	40.05
.030	.0800	.0900	.150	.025	.0525	.1250	1.5	MRR-030-150-08Q	35.50	MRR-030-150-080X	40.05
.030	.0800	.0900	.250	.025	.0525	.1250	1.5	MRR-030-250-08Q	35.50	MRR-030-250-080X	40.05
.030	.0900	.1000	.150	.025	.0575	.1250	1.5	MRR-030-150-09Q	35.50	MRR-030-150-090X	40.05
.030	.0900	.1000	.250	.025	.0575	.1250	1.5	MRR-030-250-09Q	35.50	MRR-030-250-090X	40.05
.030	.1000	.1100	.150	.030	.0650	.1875	2.0	MRR-030-150-10Q	37.60	MRR-030-150-100X	42.65
.030	.1000	.1100	.250	.030	.0650	.1875	2.0	MRR-030-250-10Q	37.60	MRR-030-250-100X	42.65
.030	.1200	.1340	.150	.040	.0800	.1875	2.0	MRR-030-150-12Q	37.60	MRR-030-150-120X	42.65
.030	.1200	.1340	.250	.040	.0800	.1875	2.0	MRR-030-250-12Q	37.60	MRR-030-250-120X	42.65

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

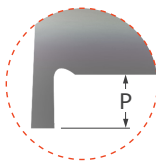
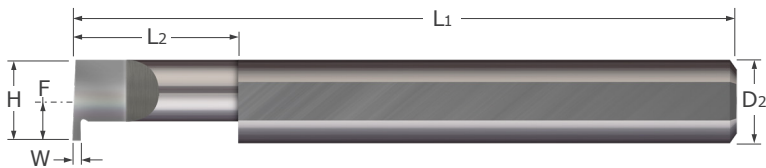
See pgs 39-47 for standard tool holders



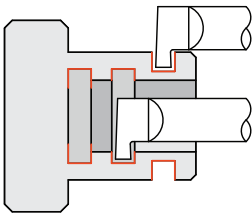
RR / RRM

Standard – Grooving Tools

Retaining Ring – Square – 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 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 #	USD\$	Tool #	USD\$	Tool #	USD\$
0.3 mm .0118	3 mm	3.35 mm	10 mm	0.60 mm	1.5 mm	4 mm	50 mm	RRM-030-10	33.75			RRM-030-10X	38.95
0.3 mm .0118	3 mm	3.35 mm	15 mm	0.60 mm	1.5 mm	4 mm	50 mm	RRM-030-15	33.75			RRM-030-15X	38.95
0.4 mm .0157	4 mm	4.45 mm	10 mm	0.80 mm	2 mm	4 mm	50 mm	RRM-040-10	33.75			RRM-040-10X	38.95
0.4 mm .0157	4 mm	4.45 mm	15 mm	0.80 mm	2 mm	4 mm	50 mm	RRM-040-15	33.75			RRM-040-15X	38.95
0.4 mm .0157	4 mm	4.45 mm	20 mm	0.80 mm	2 mm	4 mm	50 mm	RRM-040-20	33.75	RRM-040-20G	37.85	RRM-040-20X	38.95
.017 .0170	.187	.205	.250	.030	.0937	.1875	2.0	RR-017-250-187	36.75			RR-017-250-187X	41.95
.017 .0170	.187	.205	.375	.030	.0937	.1875	2.0	RR-017-375-187	36.75			RR-017-375-187X	41.95
.017 .0170	.187	.205	.500	.030	.0937	.1875	2.0	RR-017-500-187	36.75			RR-017-500-187X	41.95
.017 .0170	.187	.205	.625	.030	.0937	.1875	2.0	RR-017-625-187	36.75			RR-017-625-187X	41.95
.017 .0170	.250	.272	.250	.050	.1250	.2500	2.5	RR-017-4	39.95			RR-017-4X	46.60
.017 .0170	.250	.272	.375	.050	.1250	.2500	2.5	RR-017-6	39.95			RR-017-6X	46.60
.017 .0170	.250	.272	.500	.050	.1250	.2500	2.5	RR-017-8	39.95			RR-017-8X	46.60
.017 .0170	.250	.272	.625	.050	.1250	.2500	2.5	RR-017-10	39.95			RR-017-10X	46.60
0.5 mm .0200	6 mm	6.55 mm	10 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-050-10	39.35	RRM-050-10G	45.10	RRM-050-10X	46.00
0.5 mm .0200	6 mm	6.55 mm	20 mm	1.24 mm	3 mm	6 mm	57 mm					RRM-050-20X	45.90
0.5 mm .0200	6 mm	6.55 mm	25 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-050-25	39.35			RRM-050-25X	46.00
.020 .0200	.120	.134	.150	.030	.0262	.1875	2.0	RR-020-150-120	36.75			RR-020-150-120X	41.95
.020 .0200	.120	.134	.250	.030	.0262	.1875	2.0	RR-020-250-120	36.75			RR-020-250-120X	41.95
.020 .0200	.140	.154	.250	.030	.0462	.1875	2.0	RR-020-250-140	36.75			RR-020-250-140X	41.95
.020 .0200	.140	.154	.375	.030	.0462	.1875	2.0	RR-020-375-140	36.75			RR-020-375-140X	41.95
.020 .0200	.160	.178	.250	.030	.0662	.1875	2.0	RR-020-250-160	36.75			RR-020-250-160X	41.95
.020 .0200	.160	.178	.375	.030	.0662	.1875	2.0	RR-020-375-160	36.75			RR-020-375-160X	41.95
.020 .0200	.187	.205	.250	.030	.0937	.1875	2.0	RR-020-250-187	36.75			RR-020-250-187X	41.95
.020 .0200	.187	.205	.375	.030	.0937	.1875	2.0	RR-020-375-187	36.75			RR-020-375-187X	41.95
.020 .0200	.187	.205	.500	.030	.0937	.1875	2.0	RR-020-500-187	36.75			RR-020-500-187X	41.95
.020 .0200	.187	.205	.625	.030	.0937	.1875	2.0	RR-020-625-187	36.75			RR-020-625-187X	41.95
.020 .0200	.250	.272	.250	.050	.1250	.2500	2.5	RR-020-250-250	39.95			RR-020-250-250X	46.60
.020 .0200	.250	.272	.375	.050	.1250	.2500	2.5	RR-020-375-250	39.95			RR-020-375-250X	46.60
.020 .0200	.250	.272	.500	.050	.1250	.2500	2.5	RR-020-500-250	39.95			RR-020-500-250X	46.60
.020 .0200	.250	.272	.625	.050	.1250	.2500	2.5	RR-020-625-250	39.95			RR-020-625-250X	46.60

*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	Head Width	Min. Bore Dia*	Max. Bore Depth	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated		
W ₁ +.001" dec. -.000" equiv. +.025mm -.000mm	H	L ₂	+.050" -.000" +1.25mm -.00mm	P	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$	
.025	.0250	.250	.272	.250	.050	.1250	.2500	2.5	RR-025-4	39.95		RR-025-4X	46.60	
.025	.0250	.250	.272	.375	.050	.1250	.2500	2.5	RR-025-6	39.95		RR-025-6X	46.60	
.025	.0250	.250	.272	.500	.050	.1250	.2500	2.5	RR-025-8	39.95		RR-025-8X	46.60	
.025	.0250	.250	.272	.625	.050	.1250	.2500	2.5	RR-025-10	39.95		RR-025-10X	46.60	
.025	.0250	.250	.272	.750	.050	.1250	.2500	2.5	RR-025-750-250	39.95		RR-025-750-250X	46.60	
.025	.0250	.250	.272	1.000	.050	.1250	.2500	2.5	RR-025-1000-250	39.95		RR-025-1000-250X	46.60	
0.7 mm	.0280	6 mm	6.55 mm	10 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-070-10	39.35		RRM-070-10X	46.00	
0.7 mm	.0280	6 mm	6.55 mm	15 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-070-15	39.35				
0.7 mm	.0280	6 mm	6.55 mm	20 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-070-20	39.35				
0.7 mm	.0280	6 mm	6.55 mm	25 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-070-25	39.35	RRM-070-25G	45.10		
.029	.0290	.250	.272	.250	.050	.1250	.2500	2.5	RR-029-250-250	39.95		RR-029-250-250X	46.60	
.029	.0290	.250	.272	.500	.050	.1250	.2500	2.5	RR-029-500-250	39.95		RR-029-500-250X	46.60	
.030	.0300	.120	.134	.150	.030	.0262	.1875	2.0	RR-030-150-120	36.75		RR-030-150-120X	41.95	
.030	.0300	.120	.134	.250	.030	.0262	.1875	2.0	RR-030-250-120	36.75		RR-030-250-120X	41.95	
.030	.0300	.140	.154	.250	.030	.0462	.1875	2.0	RR-030-250-140	36.75		RR-030-250-140X	41.95	
.030	.0300	.140	.154	.375	.030	.0462	.1875	2.0	RR-030-375-140	36.75		RR-030-375-140X	41.95	
.030	.0300	.140	.154	.375	.050	.0462	.1875	2.0	RR-6757	36.75		RR-6757X	41.95	
.030	.0300	.160	.178	.250	.030	.0662	.1875	2.0	RR-030-250-160	36.75		RR-030-250-160X	41.95	
.030	.0300	.160	.178	.375	.030	.0662	.1875	2.0	RR-030-375-160	36.75		RR-030-375-160X	41.95	
.030	.0300	.160	.178	.375	.050	.0662	.1875	2.0	RR-3565	36.75		RR-3565X	41.95	
.030	.0300	.187	.205	.250	.030	.0937	.1875	2.0	RR-030-250-187	36.75		RR-030-250-187X	41.95	
.030	.0300	.187	.205	.250	.050	.0937	.1875	2.0	RR-0495	36.75		RR-0495X	41.95	
.030	.0300	.187	.205	.500	.030	.0937	.1875	2.0	RR-030-500-187	36.75		RR-030-500-187X	41.95	
.030	.0300	.187	.205	.500	.050	.0937	.1875	2.0	RR-5911	36.75		RR-5911X	41.95	
.030	.0300	.250	.272	.250	.050	.1250	.2500	2.5	RR-030-4	39.95		RR-030-4X	46.60	
.030	.0300	.250	.272	.375	.050	.1250	.2500	2.5	RR-030-6	39.95		RR-030-6X	46.60	
.030	.0300	.250	.272	.500	.050	.1250	.2500	2.5	RR-030-8	39.95		RR-030-8X	46.60	
.030	.0300	.250	.272	.625	.050	.1250	.2500	2.5	RR-030-10	39.95		RR-030-10X	46.60	
.030	.0300	.250	.272	.750	.050	.1250	.2500	2.5	RR-030-750-250	39.95		RR-030-750-250X	46.60	
.030	.0300	.250	.272	1.000	.050	.1250	.2500	2.5	RR-030-1000-250	39.95		RR-030-1000-250X	46.60	
.030	.0300	.312	.334	.500	.100	.1562	.3125	2.5	RR-030-500-312	49.95		RR-030-500-312X	57.80	
.030	.0300	.312	.334	.750	.100	.1562	.3125	2.5	RR-030-750-312	49.95		RR-030-750-312X	57.80	
.031	.0310	.250	.272	.250	.050	.1250	.2500	2.5	RR-031-250-250	39.95		RR-031-250-250X	46.60	
.031	.0310	.250	.272	.500	.050	.1250	.2500	2.5	RR-031-500-250	39.95		RR-031-500-250X	46.60	
0.8 mm	.0310	6 mm	6.55 mm	15 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-080-15	39.35	RRM-080-15G	45.10	RRM-080-15X	46.00
0.8 mm	.0310	6 mm	6.55 mm	25 mm	1.24 mm	3 mm	6 mm	57 mm	RRM-080-25	39.35	RRM-080-25G	45.10	RRM-080-25X	46.00
.033	.0330	.312	.334	.250	.100	.1562	.3125	2.5	RR-033-4	49.95		RR-033-4X	57.80	
.033	.0330	.312	.334	.375	.100	.1562	.3125	2.5	RR-033-6	49.95		RR-033-6X	57.80	
.033	.0330	.312	.334	.500	.100	.1562	.3125	2.5	RR-033-8	49.95		RR-033-8X	57.80	

*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



RR / RRM

Standard – Grooving Tools

Retaining Ring – Square – Right Hand (cont.)

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Width	Head Width	Min. Bore Dia*	Max. Bore Depth	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		AlTiN Coated	
W ^{+0.001" dec. -0.000" equiv. +0.025mm -0.000mm}	H	L2 ^{+0.050" -0.000" +1.25mm -0.00mm}	P	F	D2 (h6)	L1		Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.033 .0330	.312 .334	.750 .100	.1562 .3125	2.5	RR-033-12	49.95		RR-033-12	57.80				
.033 .0330	.312 .334	1.000 .100	.1562 .3125	2.5	RR-033-1000-312	49.95		RR-033-1000-312	57.80				
.033 .0330	.312 .334	1.250 .100	.1562 .3125	2.5	RR-033-1250-312	49.95		RR-033-1250-312	57.80				
0.9 mm .0350	8 mm 8.55 mm	20 mm 2.50 mm	4 mm 8 mm	63 mm	RRM-090-20	47.35							
0.9 mm .0350	8 mm 8.55 mm	30 mm 2.50 mm	4 mm 8 mm	63 mm	RRM-090-30	47.35							
.038 .0380	.250 .272	.250 .050	.1250 .2500	2.5	RR-038-250-250	39.95		RR-038-250-250	46.60				
.038 .0380	.250 .272	.500 .050	.1250 .2500	2.5	RR-038-500-250	39.95		RR-038-500-250	46.60				
.038 .0380	.250 .272	.500 .080	.1250 .2500	2.5	RR-9076	39.95		RR-9076	46.60				
.038 .0380	.312 .334	.250 .100	.1562 .3125	2.5	RR-038-4	49.95		RR-038-4	57.80				
.038 .0380	.312 .334	.375 .100	.1562 .3125	2.5	RR-038-6	49.95		RR-038-6	57.80				
.038 .0380	.312 .334	.500 .100	.1562 .3125	2.5	RR-038-8	49.95		RR-038-8	57.80				
.038 .0380	.312 .334	.750 .100	.1562 .3125	2.5	RR-038-12	49.95		RR-038-12	57.80				
.038 .0380	.312 .334	1.000 .100	.1562 .3125	2.5	RR-038-1000-312	49.95		RR-038-1000-312	57.80				
.038 .0380	.312 .334	1.250 .100	.1562 .3125	2.5	RR-038-1250-312	49.95		RR-038-1250-312	57.80				

W ^{+0.002" dec. -0.000" equiv. +0.050mm -0.000mm}	H	L2 ^{+0.050" -0.000" +1.25mm -0.00mm}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.039 .0390	.187 .205	.250 .030	.0937 .1875	2.0	RR-039-250-187	36.75		RR-039-250-187	41.95			
.039 .0390	.187 .205	.250 .060	.0937 .1875	2.0	RR-5824	36.75		RR-5824	41.95			
.039 .0390	.187 .205	.500 .030	.0937 .1875	2.0	RR-039-500-187	36.75		RR-039-500-187	41.95			
.039 .0390	.187 .205	.500 .060	.0937 .1875	2.0	RR-1828	36.75		RR-1828	41.95			
.039 .0390	.250 .272	.250 .050	.1250 .2500	2.5	RR-039-250-250	39.95		RR-039-250-250	46.60			
.039 .0390	.250 .272	.250 .080	.1250 .2500	2.5	RR-8363	39.95		RR-8363	46.60			
.039 .0390	.250 .272	.500 .050	.1250 .2500	2.5	RR-039-500-250	39.95		RR-039-500-250	46.60			
.039 .0390	.250 .272	.500 .080	.1250 .2500	2.5	RR-1774	39.95		RR-1774	46.60			
.039 .0390	.375 .397	.250 .100	.1875 .3750	2.5	RR-039-4	65.00						
.039 .0390	.375 .397	.375 .100	.1875 .3750	2.5	RR-039-6	65.00		RR-039-6	74.40			
.039 .0390	.375 .397	.500 .100	.1875 .3750	2.5	RR-039-8	65.00		RR-039-8	74.40			
.039 .0390	.375 .397	.750 .100	.1875 .3750	2.5	RR-039-12	65.00		RR-039-12	74.40			
.039 .0390	.375 .397	1.000 .100	.1875 .3750	2.5	RR-039-16	65.00		RR-039-16	74.40			
.039 .0390	.375 .397	1.250 .100	.1875 .3750	2.5	RR-039-20	65.00		RR-039-20	74.40			
.039 .0390	.375 .397	1.500 .100	.1875 .3750	2.5	RR-039-1500-375	65.00		RR-039-1500-375	74.40			
1 mm .0390	8 mm 8.55 mm	10 mm 2.50 mm	4 mm 8 mm	63 mm	RRM-100-10	47.35						
1 mm .0390	8 mm 8.55 mm	20 mm 2.50 mm	4 mm 8 mm	63 mm	RRM-100-20	47.35		RRM-100-20	56.80			
1 mm .0390	8 mm 8.55 mm	40 mm 2.50 mm	4 mm 8 mm	63 mm	RRM-100-40	47.35		RRM-100-40	56.80			
.040 .0400	.250 .272	.250 .050	.1250 .2500	2.5	RR-040-250-250	39.95		RR-040-250-250	46.60			
.040 .0400	.250 .272	.250 .080	.1250 .2500	2.5	RR-1248	39.95		RR-1248	46.60			
.040 .0400	.250 .272	.500 .050	.1250 .2500	2.5	RR-040-500-250	39.95		RR-040-500-250	46.60			
.040 .0400	.250 .272	.500 .080	.1250 .2500	2.5	RR-3030	39.95		RR-3030	46.60			
1.1 mm .0430	8 mm 8.55 mm	10 mm 2.50 mm	4 mm 8 mm	63 mm	RRM-110-10	47.35		RRM-110-10	56.80			
1.1 mm .0430	8 mm 8.55 mm	20 mm 2.50 mm	4 mm 8 mm	63 mm	RRM-110-20	47.35		RRM-110-20	56.80			
1.1 mm .0430	8 mm 8.55 mm	40 mm 2.50 mm	4 mm 8 mm	63 mm	RRM-110-40	47.35		RRM-110-40	56.80			

*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

Retaining Ring – Square – Right Hand (cont.)

RR / RRM

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Width + .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 #	USD\$	Tool #	USD\$	Tool #	USD\$
.046	.0460	.312	.334	.500	.100	.1562	.3125	2.5	RR-046-500-312	49.95		RR-046-500-312X	57.80
.046	.0460	.312	.334	.750	.100	.1562	.3125	2.5	RR-046-750-312	49.95		RR-046-750-312X	57.80
.046	.0460	.375	.397	.250	.100	.1875	.3750	2.5	RR-046-4	65.00		RR-046-4X	74.40
.046	.0460	.375	.397	.375	.100	.1875	.3750	2.5	RR-046-6	65.00		RR-046-6X	74.40
.046	.0460	.375	.397	.500	.100	.1875	.3750	2.5	RR-046-8	65.00		RR-046-8X	74.40
.046	.0460	.375	.397	.750	.100	.1875	.3750	2.5	RR-046-12	65.00		RR-046-12X	74.40
.046	.0460	.375	.397	1.000	.100	.1875	.3750	2.5	RR-046-16	65.00		RR-046-16X	74.40
.046	.0460	.375	.397	1.250	.100	.1875	.3750	2.5	RR-046-20	65.00		RR-046-20X	74.40
1.2 mm	.0470	10 mm	10.55 mm	20 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-120-20	66.75			
1.3 mm	.0510	10 mm	10.55 mm	30 mm	2.74 mm	5 mm	10 mm	72 mm	RRM-130-30	66.75			
.055	.0550	.250	.272	.250	.050	.1250	.2500	2.5	RR-055-250-250	39.95		RR-055-250-250X	46.60
.055	.0550	.250	.272	.500	.050	.1250	.2500	2.5	RR-055-500-250	39.95		RR-055-500-250X	46.60
.055	.0550	.250	.272	.500	.080	.1250	.2500	2.5	RR-4257	39.95		RR-4257X	46.60
.055	.0550	.375	.397	.250	.100	.1875	.3750	2.5	RR-055-4	65.00			
.055	.0550	.375	.397	.375	.100	.1875	.3750	2.5	RR-055-6	65.00		RR-055-6X	74.40
.055	.0550	.375	.397	.500	.100	.1875	.3750	2.5	RR-055-8	65.00		RR-055-8X	74.40
.055	.0550	.375	.397	.500	.150	.1875	.3750	2.5	RR-1660	65.00		RR-1660X	74.40
.055	.0550	.375	.397	.750	.100	.1875	.3750	2.5	RR-055-12	65.00		RR-055-12X	74.40
.055	.0550	.375	.397	.750	.150	.1875	.3750	2.5	RR-5000	65.00		RR-5000X	74.40
.055	.0550	.375	.397	1.000	.100	.1875	.3750	2.5	RR-055-16	65.00		RR-055-16X	74.40
.055	.0550	.375	.397	1.250	.100	.1875	.3750	2.5	RR-055-20	65.00		RR-055-20X	74.40
.055	.0550	.375	.397	1.500	.100	.1870	.3750	2.5	RR-055-1500-375	65.00		RR-055-1500-375X	74.40
.056	.0560	.250	.272	.250	.050	.1250	.2500	2.5	RR-056-250-250	39.95		RR-056-250-250X	46.60
.056	.0560	.250	.272	.500	.050	.1250	.2500	2.5	RR-056-500-250	39.95		RR-056-500-250X	46.60
.059	.0590	.375	.397	.500	.100	.1870	.3750	2.5	RR-059-500-375	65.00		RR-059-500-375X	74.40
.059	.0590	.375	.397	1.000	.100	.1870	.3750	2.5	RR-059-1000-375	65.00		RR-059-1000-375X	74.40
.062	.0620	.187	.205	.250	.030	.0937	.1875	2.0	RR-062-250-187	36.75		RR-062-250-187X	41.95
.062	.0620	.187	.205	.250	.070	.0937	.1875	2.0	RR-7865	36.75		RR-7865X	41.95
.062	.0620	.187	.205	.500	.030	.0937	.1875	2.0	RR-062-500-187	36.75		RR-062-500-187X	41.95
.062	.0620	.187	.205	.500	.070	.0937	.1875	2.0	RR-4145	36.75		RR-4145X	41.95
.062	.0620	.250	.272	.250	.050	.1250	.2500	2.5	RR-062-250-250	39.95		RR-062-250-250X	46.60
.062	.0620	.250	.272	.250	.090	.1250	.2500	2.5	RR-6681	39.95		RR-6681X	46.60
.062	.0620	.250	.272	.500	.050	.1250	.2500	2.5	RR-062-500-250	39.95		RR-062-500-250X	46.60
.062	.0620	.250	.272	.500	.090	.1250	.2500	2.5	RR-2685	39.95		RR-2685X	46.60
.062	.0620	.250	.272	.750	.050	.1250	.2500	2.5	RR-062-750-250	39.95		RR-062-750-250X	46.60
.062	.0620	.250	.272	.750	.090	.1250	.2500	2.5	RR-2795	39.95		RR-2795X	46.60
.062	.0620	.312	.334	.500	.100	.1562	.3125	2.5	RR-062-500-312	49.95		RR-062-500-312X	57.80
.062	.0620	.312	.334	.750	.100	.1562	.3125	2.5	RR-062-750-312	49.95		RR-062-750-312X	57.80
.062	.0620	.312	.334	1.000	.100	.1562	.3125	2.5	RR-062-1000-312	49.95		RR-062-1000-312X	57.80
.062	.0620	.375	.397	.250	.100	.1875	.3750	2.5	RR-062-4	65.00		RR-062-4X	74.40
.062	.0620	.375	.397	.375	.100	.1875	.3750	2.5	RR-062-6	65.00		RR-062-6X	74.40
.062	.0620	.375	.397	.500	.100	.1875	.3750	2.5	RR-062-8	65.00		RR-062-8X	74.40
.062	.0620	.375	.397	.500	.150	.1875	.3750	2.5	RR-0824	65.00		RR-0824X	74.40

*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

RR / RRM

Standard – Grooving Tools

Retaining Ring – Square – Right Hand (cont.)

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Width W ^{+ .002" dec. - .000" equiv. + .050mm - .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 #	USD\$	Tool #	USD\$	Tool #	USD\$
.062 .0620	.375 .397	.750	.100	.1875	.3750	2.5		RR-062-12	65.00			RR-062-12X	74.40
.062 .0620	.375 .397	.750	.150	.1875	.3750	2.5		RR-6068	65.00			RR-6068X	74.40
.062 .0620	.375 .397	1.000	.100	.1875	.3750	2.5		RR-062-16	65.00			RR-062-16X	74.40
.062 .0620	.375 .397	1.250	.100	.1875	.3750	2.5		RR-062-20	65.00			RR-062-20X	74.40
.062 .0620	.375 .397	1.500	.100	.1875	.3750	2.5		RR-062-1500-375	65.00			RR-062-1500-375X	74.40
1.6 mm .0630	10 mm 10.55 mm	30 mm	2.74 mm	5 mm	10 mm	72 mm		RRM-160-30	66.75				
1.6 mm .0630	10 mm 10.55 mm	40 mm	2.74 mm	5 mm	10 mm	72 mm							
.069 .0690	.375 .397	.375	.100	.1875	.3750	2.5		RR-069-6	65.00			RR-069-6X	74.40
.069 .0690	.375 .397	.500	.100	.1875	.3750	2.5		RR-069-8	65.00			RR-069-8X	74.40
.069 .0690	.375 .397	.750	.100	.1875	.3750	2.5		RR-069-12	65.00			RR-069-12X	74.40
.069 .0690	.375 .397	.750	.150	.1875	.3750	2.5		RR-7828	65.00			RR-7828X	74.40
.069 .0690	.375 .397	1.000	.100	.1875	.3750	2.5		RR-069-16	65.00			RR-069-16X	74.40
.069 .0690	.375 .397	1.000	.150	.1875	.3750	2.5		RR-4609	65.00			RR-4609X	74.40
.069 .0690	.375 .397	1.250	.100	.1875	.3750	2.5		RR-069-20	65.00			RR-069-20X	74.40
1.8 mm .0710	10 mm 10.55 mm	10 mm	2.74 mm	5 mm	10 mm	72 mm							
.079 .0790	.375 .397	.500	.100	.1875	.3750	2.5		RR-079-500-375	65.00			RR-079-500-375X	74.40
.079 .0790	.375 .397	1.000	.100	.1875	.3750	2.5		RR-079-1000-375	65.00			RR-079-1000-375X	74.40
2 mm .0790	10 mm 10.55 mm	20 mm	2.74 mm	5 mm	10 mm	72 mm		RRM-200-20	66.75	RRM-200-20G	75.60		
2 mm .0790	10 mm 10.55 mm	30 mm	2.74 mm	5 mm	10 mm	72 mm		RRM-200-30	66.75	RRM-200-30G	75.60		
.087 .0870	.250 .272	.250	.050	.1250	.2500	2.5		RR-087-250-250	39.95			RR-087-250-250X	46.60
.087 .0870	.250 .272	.500	.050	.1250	.2500	2.5		RR-087-500-250	39.95			RR-087-500-250X	46.60
.087 .0870	.250 .272	.750	.050	.1250	.2500	2.5		RR-087-750-250	39.95			RR-087-750-250X	46.60
.087 .0870	.312 .334	.500	.100	.1562	.3125	2.5		RR-087-500-312	49.95			RR-087-500-312X	57.80
.087 .0870	.312 .334	.750	.100	.1562	.3125	2.5		RR-087-750-312	49.95			RR-087-750-312X	57.80
.087 .0870	.375 .397	.250	.100	.1875	.3750	2.5		RR-087-4	65.00			RR-087-4X	74.40
.087 .0870	.375 .397	.375	.100	.1875	.3750	2.5		RR-087-6	65.00			RR-087-6X	74.40
.087 .0870	.375 .397	.500	.100	.1875	.3750	2.5		RR-087-8	65.00			RR-087-8X	74.40
.087 .0870	.375 .397	.500	.150	.1875	.3750	2.5		RR-7847	65.00			RR-7847X	74.40
.087 .0870	.375 .397	.750	.100	.1875	.3750	2.5		RR-087-12	65.00			RR-087-12X	74.40
.087 .0870	.375 .397	.750	.150	.1875	.3750	2.5		RR-4895	65.00			RR-4895X	74.40
.087 .0870	.375 .397	1.000	.100	.1875	.3750	2.5		RR-087-16	65.00			RR-087-16X	74.40
.087 .0870	.375 .397	1.250	.100	.1875	.3750	2.5		RR-087-20	65.00			RR-087-20X	74.40
.087 .0870	.375 .397	1.500	.100	.1875	.3750	2.5		RR-087-1500-375	65.00			RR-087-1500-375X	74.40
.093 .0930	.375 .397	.750	.100	.1875	.3750	2.5		RR-093-750-375	65.00			RR-093-750-375X	74.40
.093 .0930	.375 .397	1.000	.100	.1875	.3750	2.5		RR-093-1000-375	65.00			RR-093-1000-375X	74.40
.093 .0930	.375 .397	1.250	.100	.1875	.3750	2.5		RR-093-1250-375	65.00			RR-093-1250-375X	74.40
.093 .0930	.500 .522	.500	.150	.2500	.5000	3.0		RR-093-8	91.25			RR-093-8X	103.90
.093 .0930	.500 .522	.750	.150	.2500	.5000	3.0		RR-093-12	91.25			RR-093-12X	103.90
.093 .0930	.500 .522	1.000	.150	.2500	.5000	3.0		RR-093-16	91.25			RR-093-16X	103.90
.093 .0930	.500 .522	1.250	.150	.2500	.5000	3.0		RR-093-20	91.25			RR-093-20X	103.90
.093 .0930	.500 .522	1.500	.150	.2500	.5000	3.0		RR-093-24	91.25			RR-093-24X	103.90
.093 .0930	.500 .522	1.750	.150	.2500	.5000	3.0		RR-093-1750-500	91.25			RR-093-1750-500X	103.90
3 mm .1180	12 mm 12.55 mm	30 mm	3.76 mm	6 mm	12 mm	83 mm		RRM-300-30	85.45			RRM-300-30X	99.15
3 mm .1180	12 mm 12.55 mm	40 mm	3.76 mm	6 mm	12 mm	83 mm		RRM-300-40	85.45	RRM-300-40G	97.60		

*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

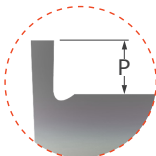
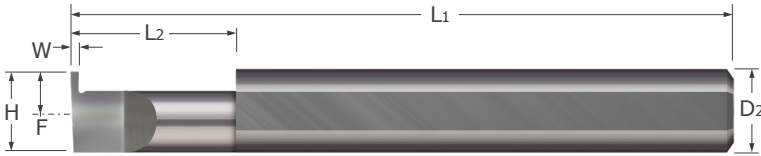
Width		Head Width	Min. Bore Dia*	Max. Bore Depth	Proj.	Centerline Offset	Shank Dia.	OAL	Uncoated		TiN Coated		ATiN Coated	
W ₁	dec. equiv.	H	L ₂	L ₂	P	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
+.002"	dec.			+.050"										
-.000"	equiv.			-.000"										
+.050mm				+1.25mm										
-.000mm				-.00mm										
.125	.1250	.375	.397	.750	.100	.1875	.3750	2.5	RR-125-750-375	65.00			RR-125-750-375X	74.40
.125	.1250	.375	.397	.750	.150	.1875	.3750	2.5	RR-3068	65.00			RR-3068X	74.40
.125	.1250	.375	.397	1.000	.100	.1875	.3750	2.5	RR-125-1000-375	65.00			RR-125-1000-375X	74.40
.125	.1250	.375	.397	1.000	.150	.1875	.3750	2.5	RR-5586	65.00			RR-5586X	74.40
.125	.1250	.375	.397	1.250	.100	.1875	.3750	2.5	RR-125-1250-375	65.00			RR-125-1250-375X	74.40
.125	.1250	.375	.397	1.250	.150	.1875	.3750	2.5	RR-0965	65.00			RR-0965X	74.40
.125	.1250	.500	.522	.500	.150	.2500	.5000	3.0	RR-125-8	91.25			RR-125-8X	103.90
.125	.1250	.500	.522	.750	.150	.2500	.5000	3.0	RR-125-12	91.25			RR-125-12X	103.90
.125	.1250	.500	.522	.750	.200	.2500	.5000	3.0	RR-5199	91.25			RR-5199X	103.90
.125	.1250	.500	.522	1.000	.150	.2500	.5000	3.0	RR-125-16	91.25			RR-125-16X	103.90
.125	.1250	.500	.522	1.250	.150	.2500	.5000	3.0	RR-125-20	91.25			RR-125-20X	103.90
.125	.1250	.500	.522	1.250	.200	.2500	.5000	3.0	RR-7934	91.25			RR-7934X	103.90
.125	.1250	.500	.522	1.500	.150	.2500	.5000	3.0	RR-125-24	91.25			RR-125-24X	103.90
.125	.1250	.500	.522	1.750	.150	.2500	.5000	3.0	RR-125-1750-500	91.25			RR-125-1750-500X	103.90
.156	.1560	.500	.522	.750	.150	.2500	.5000	3.0	RR-156-12	91.25				
.156	.1560	.500	.522	.750	.200	.2500	.5000	3.0	RR-1563	91.25			RR-1563X	103.90
.156	.1560	.500	.522	1.000	.150	.2500	.5000	3.0	RR-156-16	91.25			RR-156-16X	103.90
.156	.1560	.500	.522	1.250	.150	.2500	.5000	3.0	RR-156-20	91.25			RR-156-20X	103.90
.156	.1560	.500	.522	1.250	.200	.2500	.5000	3.0	RR-9832	91.25			RR-9832X	103.90
.156	.1560	.500	.522	1.500	.150	.2500	.5000	3.0	RR-156-24	91.25			RR-156-24X	103.90
4 mm	.1570	12 mm	12.55 mm	20 mm	3.76 mm	6 mm	12 mm	83 mm						
4 mm	.1570	12 mm	12.55 mm	30 mm	3.76 mm	6 mm	12 mm	83 mm						
4 mm	.1570	12 mm	12.55 mm	50 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-400-50	85.45	RRM-400-50G	97.60		
.187	.1870	.500	.522	.750	.150	.2500	.5000	3.0	RR-187-12	91.25				
.187	.1870	.500	.522	1.000	.150	.2500	.5000	3.0	RR-187-16	91.25			RR-187-16X	103.90
.187	.1870	.500	.522	1.250	.150	.2500	.5000	3.0	RR-187-20	91.25				
.187	.1870	.500	.522	1.500	.150	.2500	.5000	3.0	RR-187-24	91.25			RR-187-24X	103.90
5 mm	.1970	12 mm	12.55 mm	20 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-500-20	85.45				
5 mm	.1970	12 mm	12.55 mm	50 mm	3.76 mm	6 mm	12 mm	83 mm	RRM-500-50	85.45			RRM-500-50X	99.15
6 mm	.2360	12 mm	12.55 mm	20 mm	3.76 mm	6 mm	12 mm	83 mm						
6 mm	.2360	12 mm	12.55 mm	50 mm	3.76 mm	6 mm	12 mm	83 mm						
.250	.2500	.500	.522	.750	.150	.2500	.5000	3.0	RR-250-12	91.25				
.250	.2500	.500	.522	1.000	.150	.2500	.5000	3.0	RR-250-16	91.25			RR-250-16X	103.90
.250	.2500	.500	.522	1.250	.150	.2500	.5000	3.0	RR-250-20	91.25			RR-250-20X	103.90
.250	.2500	.500	.522	1.500	.150	.2500	.5000	3.0	RR-250-24	91.25				

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

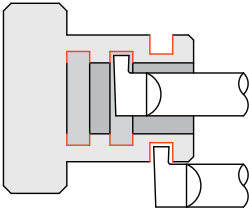
See pgs 39-47 for standard tool holders



Standard – Grooving Tools
Retaining Ring – Square – Left Hand



- 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



Width	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .001"} _{– .000"}	H		L2 ^{+ .050"} _{– .000"}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.017	.250	.272	.250	.050	.1250	.2500	2.5	RRL-017-4	39.95	RRL-017-4X	46.60
.017	.250	.272	.500	.050	.1250	.2500	2.5	RRL-017-8	39.95	RRL-017-8X	46.60
.025	.250	.272	.250	.050	.1250	.2500	2.5	RRL-025-4	39.95		
.025	.250	.272	.500	.050	.1250	.2500	2.5	RRL-025-8	39.95		
.030	.250	.272	.250	.050	.1250	.2500	2.5	RRL-030-4	39.95	RRL-030-4X	46.60
.030	.250	.272	.375	.050	.1250	.2500	2.5	RRL-030-6	39.95	RRL-030-6X	46.60
.030	.250	.272	.500	.050	.1250	.2500	2.5	RRL-030-8	39.95	RRL-030-8X	46.60
.030	.250	.272	.625	.050	.1250	.2500	2.5	RRL-030-10	39.95	RRL-030-10X	46.60
.033	.312	.334	.250	.100	.1562	.3125	2.5	RRL-033-4	49.95	RRL-033-4X	57.80
.033	.312	.334	.375	.100	.1562	.3125	2.5	RRL-033-6	49.95		
.033	.312	.334	.750	.100	.1562	.3125	2.5	RRL-033-12	49.95		
.038	.312	.334	.250	.100	.1562	.3125	2.5	RRL-038-4	49.95		
.038	.312	.334	.375	.100	.1562	.3125	2.5	RRL-038-6	49.95		
.038	.312	.334	.500	.100	.1562	.3125	2.5	RRL-038-8	49.95	RRL-038-8X	57.80
.038	.312	.334	.750	.100	.1562	.3125	2.5	RRL-038-12	49.95	RRL-038-12X	57.80

W ^{+ .002"} _{– .000"}	H		L2 ^{+ .050"} _{– .000"}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.039	.375	.397	.250	.100	.1875	.3750	2.5	RRL-039-4	65.00	RRL-039-4X	74.40
.039	.375	.397	.500	.100	.1875	.3750	2.5	RRL-039-8	65.00	RRL-039-8X	74.40
.039	.375	.397	.750	.100	.1875	.3750	2.5	RRL-039-12	65.00		
.046	.375	.397	.250	.100	.1875	.3750	2.5	RRL-046-4	65.00	RRL-046-4X	74.40
.046	.375	.397	.375	.100	.1875	.3750	2.5	RRL-046-6	65.00		
.046	.375	.397	.750	.100	.1875	.3750	2.5	RRL-046-12	65.00	RRL-046-12X	74.40
.046	.375	.397	1.000	.100	.1875	.3750	2.5	RRL-046-16	65.00	RRL-046-16X	74.40
.046	.375	.397	1.250	.100	.1875	.3750	2.5	RRL-046-20	65.00		
.055	.375	.397	.250	.100	.1875	.3750	2.5	RRL-055-4	65.00		
.055	.375	.397	.500	.100	.1875	.3750	2.5	RRL-055-8	65.00		
.055	.375	.397	.750	.100	.1875	.3750	2.5	RRL-055-12	65.00		
.055	.375	.397	1.000	.100	.1875	.3750	2.5	RRL-055-16	65.00		

*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 – Left Hand (cont.)

RRL

Continued from previous page

Width	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} _{– .000"}	H		L2 ^{+ .050"} _{– .000"}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.062	.375	.397	.250	.100	.1875	.3750	2.5	RRL-062-4	65.00		
.062	.375	.397	.500	.100	.1875	.3750	2.5	RRL-062-8	65.00	RRL-062-8X	74.40
.062	.375	.397	.750	.100	.1875	.3750	2.5	RRL-062-12	65.00	RRL-062-12X	74.40
.062	.375	.397	1.250	.100	.1875	.3750	2.5	RRL-062-20	65.00		
.069	.375	.397	.250	.100	.1875	.3750	2.5	RRL-069-4	65.00		
.069	.375	.397	.500	.100	.1875	.3750	2.5	RRL-069-8	65.00		
.069	.375	.397	1.000	.100	.1875	.3750	2.5	RRL-069-16	65.00	RRL-069-16X	74.40
.087	.375	.397	.375	.100	.1875	.3750	2.5	RRL-087-6	65.00		
.087	.375	.397	.500	.100	.1875	.3750	2.5	RRL-087-8	65.00		
.087	.375	.397	.750	.100	.1875	.3750	2.5	RRL-087-12	65.00	RRL-087-12X	74.40
.087	.375	.397	1.000	.100	.1875	.3750	2.5	RRL-087-16	65.00		
.087	.375	.397	1.250	.100	.1875	.3750	2.5	RRL-087-20	65.00	RRL-087-20X	74.40
.093	.500	.522	.750	.150	.2500	.5000	3.0	RRL-093-12	91.25	RRL-093-12X	103.90
.093	.500	.522	1.000	.150	.2500	.5000	3.0	RRL-093-16	91.25	RRL-093-16X	103.90
.093	.500	.522	1.500	.150	.2500	.5000	3.0	RRL-093-24	91.25	RRL-093-24X	103.90
.125	.500	.522	.500	.150	.2500	.5000	3.0	RRL-125-8	91.25	RRL-125-8X	103.90
.125	.500	.522	.750	.150	.2500	.5000	3.0	RRL-125-12	91.25		
.125	.500	.522	1.000	.150	.2500	.5000	3.0	RRL-125-16	91.25		
.125	.500	.522	1.500	.150	.2500	.5000	3.0	RRL-125-24	91.25	RRL-125-24X	103.90
.156	.500	.522	.500	.150	.2500	.5000	3.0	RRL-156-8	91.25		
.187	.500	.522	.750	.150	.2500	.5000	3.0	RRL-187-12	91.25		
.187	.500	.522	1.000	.150	.2500	.5000	3.0	RRL-187-16	91.25		
.187	.500	.522	1.250	.150	.2500	.5000	3.0	RRL-187-20	91.25		
.250	.500	.522	1.250	.150	.2500	.5000	3.0	RRL-250-20	91.25		

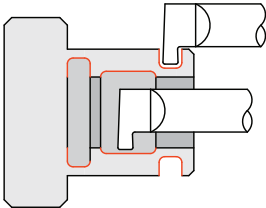
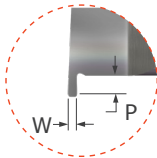
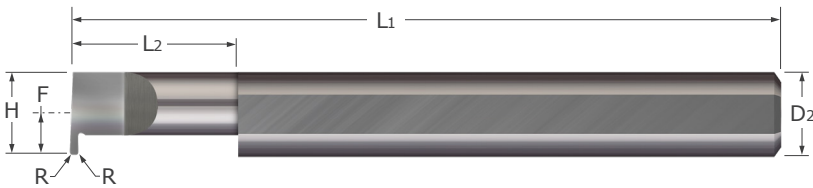
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 39-47 for standard tool holders



RRC

Standard – Grooving Tools
Retaining Ring – Corner Radius – Right Hand



- 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 #	USD\$	Tool #	USD\$
W $\begin{smallmatrix} +.001" \\ -.000" \end{smallmatrix}$	H		L2 $\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	R $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	P	F	D2 (h6)	L1				
.017	.187	.205	.250	.003	.030	.0937	.1875	2.0	RRC3-017-250-187	42.65	RRC3-017-250-187X	47.85
.017	.187	.205	.375	.003	.030	.0937	.1875	2.0	RRC3-017-375-187	42.65	RRC3-017-375-187X	47.85
.017	.250	.272	.250	.003	.050	.1250	.2500	2.5	RRC3-017-250-250	46.00	RRC3-017-250-250X	52.50
.017	.250	.272	.375	.003	.050	.1250	.2500	2.5	RRC3-017-375-250	46.00	RRC3-017-375-250X	52.50
.020	.187	.205	.250	.003	.030	.0937	.1875	2.0	RRC3-020-250-187	42.65	RRC3-020-250-187X	47.85
.020	.187	.205	.375	.003	.030	.0937	.1875	2.0	RRC3-020-375-187	42.65	RRC3-020-375-187X	47.85
.020	.250	.272	.250	.003	.050	.1250	.2500	2.5	RRC3-020-250-250	46.00	RRC3-020-250-250X	52.50
.020	.250	.272	.375	.003	.050	.1250	.2500	2.5	RRC3-020-375-250	46.00	RRC3-020-375-250X	52.50
.025	.250	.272	.250	.003	.050	.1250	.2500	2.5	RRC3-025-250-250	46.00	RRC3-025-250-250X	52.50
.025	.250	.272	.375	.003	.050	.1250	.2500	2.5	RRC3-025-375-250	46.00	RRC3-025-375-250X	52.50
.030	.187	.205	.250	.003	.030	.0937	.1875	2.0	RRC3-030-250-187	42.65	RRC3-030-250-187X	47.85
.030	.187	.205	.500	.003	.030	.0937	.1875	2.0	RRC3-030-500-187	42.65	RRC3-030-500-187X	47.85
.030	.250	.272	.250	.003	.050	.1250	.2500	2.5	RRC3-030-250-250	46.00	RRC3-030-250-250X	52.50
.030	.250	.272	.375	.003	.050	.1250	.2500	2.5	RRC3-030-375-250	46.00	RRC3-030-375-250X	52.50
.030	.312	.334	.500	.003	.100	.1562	.3125	2.5	RRC3-030-500-312	57.40	RRC3-030-500-312X	65.30
.030	.312	.334	.750	.003	.100	.1562	.3125	2.5	RRC3-030-750-312	57.40	RRC3-030-750-312X	65.30
.033	.312	.334	.500	.003	.100	.1562	.3125	2.5	RRC3-033-500-312	57.40	RRC3-033-500-312X	65.30
.033	.312	.334	.750	.003	.100	.1562	.3125	2.5	RRC3-033-750-312	57.40	RRC3-033-750-312X	65.30
.038	.312	.334	.500	.003	.100	.1562	.3125	2.5	RRC3-038-500-312	57.40	RRC3-038-500-312X	65.30
.038	.312	.334	.750	.003	.100	.1562	.3125	2.5	RRC3-038-750-312	57.40	RRC3-038-750-312X	65.30

W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	H		L2 $\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	R $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.039	.375	.397	.500	.003	.100	.1875	.3750	2.5	RRC3-039-500-375	72.65	RRC3-039-500-375X	82.10
.039	.375	.397	.750	.003	.100	.1875	.3750	2.5	RRC3-039-750-375	72.65	RRC3-039-750-375X	82.10
.039	.375	.397	1.000	.003	.100	.1875	.3750	2.5	RRC3-039-1000-375	72.65	RRC3-039-1000-375X	82.10
.062	.375	.397	.500	.003	.100	.1875	.3750	2.5	RRC3-062-500-375	72.65	RRC3-062-500-375X	82.10
.062	.375	.397	.500	.006	.100	.1875	.3750	2.5	RRC6-062-500-375	72.65	RRC6-062-500-375X	82.10
.062	.375	.397	.750	.003	.100	.1875	.3750	2.5	RRC3-062-750-375	72.65	RRC3-062-750-375X	82.10

*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 – Corner Radius – Right Hand (cont.)

RRC

Continued from previous page

Width	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated		ATIN Coated	
W ^{+ .002"} _{– .000"}	H	L ₂	^{+ .050"} _{– .000"}	R ^{+ .001"} _{– .001"}	P	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.062	.375	.397	.750	.006	.100	.1875	.3750	2.5	RRC6-062-750-375	72.65	RRC6-062-750-375X	82.10
.062	.375	.397	1.000	.003	.100	.1875	.3750	2.5	RRC3-062-1000-375	72.65	RRC3-062-1000-375X	82.10
.062	.375	.397	1.000	.006	.100	.1875	.3750	2.5	RRC6-062-1000-375	72.65	RRC6-062-1000-375X	82.10
.087	.375	.397	.500	.003	.100	.1875	.3750	2.5	RRC3-087-500-375	72.65	RRC3-087-500-375X	82.10
.087	.375	.397	.500	.006	.100	.1875	.3750	2.5	RRC6-087-500-375	72.65	RRC6-087-500-375X	82.10
.087	.375	.397	.750	.003	.100	.1875	.3750	2.5	RRC3-087-750-375	72.65	RRC3-087-750-375X	82.10
.087	.375	.397	.750	.006	.100	.1875	.3750	2.5	RRC6-087-750-375	72.65	RRC6-087-750-375X	82.10
.087	.375	.397	1.000	.003	.100	.1875	.3750	2.5	RRC3-087-1000-375	72.65	RRC3-087-1000-375X	82.10
.087	.375	.397	1.000	.006	.100	.1875	.3750	2.5	RRC6-087-1000-375	72.65	RRC6-087-1000-375X	82.10
.093	.500	.522	.750	.003	.150	.2500	.5000	3.0	RRC3-093-750-500	99.85	RRC3-093-750-500X	112.60
.093	.500	.522	.750	.006	.150	.2500	.5000	3.0	RRC6-093-750-500	99.85	RRC6-093-750-500X	112.60
.093	.500	.522	1.000	.003	.150	.2500	.5000	3.0	RRC3-093-1000-500	99.85	RRC3-093-1000-500X	112.60
.093	.500	.522	1.000	.006	.150	.2500	.5000	3.0	RRC6-093-1000-500	99.85	RRC6-093-1000-500X	112.60
.125	.500	.522	.750	.003	.150	.2500	.5000	3.0	RRC3-125-750-500	99.85	RRC3-125-750-500X	112.60
.125	.500	.522	.750	.006	.150	.2500	.5000	3.0	RRC6-125-750-500	99.85	RRC6-125-750-500X	112.60
.125	.500	.522	1.000	.003	.150	.2500	.5000	3.0	RRC3-125-1000-500	99.85	RRC3-125-1000-500X	112.60
.125	.500	.522	1.000	.006	.150	.2500	.5000	3.0	RRC6-125-1000-500	99.85	RRC6-125-1000-500X	112.60

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

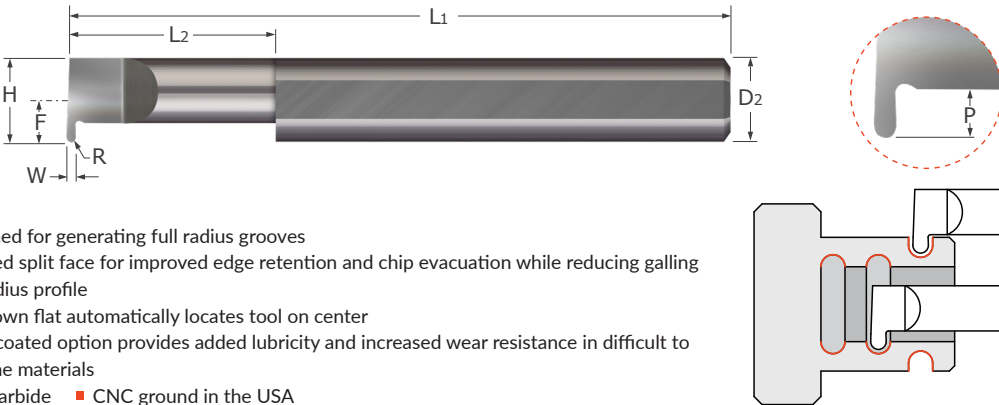
See pgs 39-47 for standard tool holders



FR

Standard – Grooving Tools

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

Width	Radius	Head Width	Min. Bore Dia*	Max. Bore Depth	Proj.	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} _{-.000"}	R	H		L2 ^{+ .050"} _{-.000"}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.017	.0085	.187	.205	.250	.030	.0937	.1875	2.0	FR-017-4-187	42.65	FR-017-4-187X	47.85
.017	.0085	.187	.205	.375	.030	.0937	.1875	2.0	FR-017-6-187	42.65	FR-017-6-187X	47.85
.017	.0085	.187	.205	.500	.030	.0937	.1875	2.0	FR-017-8-187	42.65	FR-017-8-187X	47.85
.017	.0085	.187	.205	.625	.030	.0937	.1875	2.0	FR-017-10-187	42.65	FR-017-10-187X	47.85
.017	.0085	.250	.272	.250	.050	.1250	.2500	2.5	FR-017-4	46.00	FR-017-4X	52.50
.017	.0085	.250	.272	.375	.050	.1250	.2500	2.5	FR-017-6	46.00	FR-017-6X	52.50
.017	.0085	.250	.272	.500	.050	.1250	.2500	2.5	FR-017-8	46.00	FR-017-8X	52.50
.017	.0085	.250	.272	.625	.050	.1250	.2500	2.5	FR-017-10	46.00	FR-017-10X	52.50
.020	.0100	.187	.205	.250	.030	.0937	.1875	2.0	FR-020-4-187	42.65	FR-020-4-187X	47.85
.020	.0100	.187	.205	.375	.030	.0937	.1875	2.0	FR-020-6-187	42.65	FR-020-6-187X	47.85
.020	.0100	.187	.205	.500	.030	.0937	.1875	2.0	FR-020-8-187	42.65	FR-020-8-187X	47.85
.020	.0100	.187	.205	.625	.030	.0937	.1875	2.0	FR-020-10-187	42.65	FR-020-10-187X	47.85
.025	.0125	.250	.272	.250	.050	.1250	.2500	2.5	FR-025-4	46.00	FR-025-4X	52.50
.025	.0125	.250	.272	.375	.050	.1250	.2500	2.5	FR-025-6	46.00	FR-025-6X	52.50
.025	.0125	.250	.272	.500	.050	.1250	.2500	2.5	FR-025-8	46.00		
.025	.0125	.250	.272	.625	.050	.1250	.2500	2.5	FR-025-10	46.00	FR-025-10X	52.50
.030	.0150	.250	.272	.250	.050	.1250	.2500	2.5	FR-030-4	46.00	FR-030-4X	52.50
.030	.0150	.250	.272	.375	.050	.1250	.2500	2.5	FR-030-6	46.00	FR-030-6X	52.50
.030	.0150	.250	.272	.500	.050	.1250	.2500	2.5	FR-030-8	46.00	FR-030-8X	52.50
.030	.0150	.250	.272	.625	.050	.1250	.2500	2.5	FR-030-10	46.00	FR-030-10X	52.50
.033	.0165	.312	.334	.250	.100	.1562	.3125	2.5	FR-033-4	57.40	FR-033-4X	65.30
.033	.0165	.312	.334	.375	.100	.1562	.3125	2.5	FR-033-6	57.40	FR-033-6X	65.30
.033	.0165	.312	.334	.500	.100	.1562	.3125	2.5	FR-033-8	57.40	FR-033-8X	65.30
.033	.0165	.312	.334	.625	.100	.1562	.3125	2.5	FR-033-10	57.40	FR-033-10X	65.30
.038	.0190	.312	.334	.250	.100	.1562	.3125	2.5	FR-038-4	57.40	FR-038-4X	65.30
.038	.0190	.312	.334	.375	.100	.1562	.3125	2.5	FR-038-6	57.40	FR-038-6X	65.30
.038	.0190	.312	.334	.500	.100	.1562	.3125	2.5	FR-038-8	57.40	FR-038-8X	65.30
.038	.0190	.312	.334	.625	.100	.1562	.3125	2.5	FR-038-10	57.40	FR-038-10X	65.30
.039	.0195	.375	.397	.250	.100	.1875	.3750	2.5	FR-039-4	72.65	FR-039-4X	82.10
.039	.0195	.375	.397	.375	.100	.1875	.3750	2.5	FR-039-6	72.65	FR-039-6X	82.10
.039	.0195	.375	.397	.500	.100	.1875	.3750	2.5	FR-039-8	72.65	FR-039-8X	82.10
.039	.0195	.375	.397	.750	.100	.1875	.3750	2.5	FR-039-12	72.65	FR-039-12X	82.10
.039	.0195	.375	.397	1.000	.100	.1875	.3750	2.5	FR-039-16	72.65	FR-039-16X	82.10
.039	.0195	.375	.397	1.250	.100	.1875	.3750	2.5	FR-039-20	72.65	FR-039-20X	82.10

*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
Full Radius (cont.)

FR

Continued from previous page

Width	Radius	Head Width	Min. Bore Dia*	Max. Bore Depth	Proj.	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AItIN Coated	
W $\pm .002"$ -.000"	R	H		L2 $\pm .050"$ -.000"	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.046	.0230	.375	.397	.250	.100	.1875	.3750	2.5	FR-046-4	72.65		
.046	.0230	.375	.397	.375	.100	.1875	.3750	2.5	FR-046-6	72.65	FR-046-6X	82.10
.046	.0230	.375	.397	.500	.100	.1875	.3750	2.5	FR-046-8	72.65	FR-046-8X	82.10
.046	.0230	.375	.397	.750	.100	.1875	.3750	2.5	FR-046-12	72.65	FR-046-12X	82.10
.046	.0230	.375	.397	1.000	.100	.1875	.3750	2.5	FR-046-16	72.65	FR-046-16X	82.10
.046	.0230	.375	.397	1.250	.100	.1875	.3750	2.5	FR-046-20	72.65	FR-046-20X	82.10
.055	.0275	.375	.397	.250	.100	.1875	.3750	2.5	FR-055-4	72.65	FR-055-4X	82.10
.055	.0275	.375	.397	.375	.100	.1875	.3750	2.5	FR-055-6	72.65		
.055	.0275	.375	.397	.500	.100	.1875	.3750	2.5	FR-055-8	72.65	FR-055-8X	82.10
.055	.0275	.375	.397	.750	.100	.1875	.3750	2.5	FR-055-12	72.65	FR-055-12X	82.10
.055	.0275	.375	.397	1.000	.100	.1875	.3750	2.5	FR-055-16	72.65	FR-055-16X	82.10
.055	.0275	.375	.397	1.250	.100	.1875	.3750	2.5	FR-055-20	72.65		
.062	.0310	.375	.397	.250	.100	.1875	.3750	2.5	FR-062-4	72.65	FR-062-4X	82.10
.062	.0310	.375	.397	.375	.100	.1875	.3750	2.5	FR-062-6	72.65	FR-062-6X	82.10
.062	.0310	.375	.397	.500	.100	.1875	.3750	2.5	FR-062-8	72.65	FR-062-8X	82.10
.062	.0310	.375	.397	.750	.100	.1875	.3750	2.5	FR-062-12	72.65	FR-062-12X	82.10
.062	.0310	.375	.397	1.000	.100	.1875	.3750	2.5	FR-062-16	72.65	FR-062-16X	82.10
.062	.0310	.375	.397	1.250	.100	.1875	.3750	2.5	FR-062-20	72.65	FR-062-20X	82.10
.069	.0345	.375	.397	.250	.100	.1875	.3750	2.5	FR-069-4	72.65	FR-069-4X	82.10
.069	.0345	.375	.397	.500	.100	.1875	.3750	2.5	FR-069-8	72.65		
.069	.0345	.375	.397	.750	.100	.1875	.3750	2.5	FR-069-12	72.65	FR-069-12X	82.10
.069	.0345	.375	.397	1.000	.100	.1875	.3750	2.5	FR-069-16	72.65	FR-069-16X	82.10
.069	.0345	.375	.397	1.250	.100	.1875	.3750	2.5	FR-069-20	72.65		
.087	.0435	.375	.397	.250	.100	.1875	.3750	2.5	FR-087-4	72.65	FR-087-4X	82.10
.087	.0435	.375	.397	.375	.100	.1875	.3750	2.5	FR-087-6	72.65	FR-087-6X	82.10
.087	.0435	.375	.397	.500	.100	.1875	.3750	2.5	FR-087-8	72.65	FR-087-8X	82.10
.087	.0435	.375	.397	.500	.150	.1875	.3750	2.5	FR-7847	72.65	FR-7847X	82.10
.087	.0435	.375	.397	.750	.100	.1875	.3750	2.5	FR-087-12	72.65	FR-087-12X	82.10
.087	.0435	.375	.397	.750	.150	.1875	.3750	2.5	FR-4895	72.65	FR-4895X	82.10
.087	.0435	.375	.397	1.000	.100	.1875	.3750	2.5	FR-087-16	72.65	FR-087-16X	82.10
.087	.0435	.375	.397	1.250	.100	.1875	.3750	2.5	FR-087-20	72.65	FR-087-20X	82.10
.093	.0465	.500	.522	.500	.150	.2500	.5000	3.0	FR-093-8	99.85	FR-093-8X	112.60
.093	.0465	.500	.522	.750	.150	.2500	.5000	3.0	FR-093-12	99.85		
.093	.0465	.500	.522	1.000	.150	.2500	.5000	3.0	FR-093-16	99.85	FR-093-16X	112.60
.093	.0465	.500	.522	1.250	.150	.2500	.5000	3.0	FR-093-20	99.85	FR-093-20X	112.60
.093	.0465	.500	.522	1.500	.150	.2500	.5000	3.0	FR-093-24	99.85	FR-093-24X	112.60
.125	.0625	.375	.397	1.000	.150	.1875	.3750	2.5	FR-5586	72.65	FR-5586X	82.10
.125	.0625	.375	.397	1.250	.150	.1875	.3750	2.5	FR-0965	72.65	FR-0965X	82.10
.125	.0625	.500	.522	.500	.150	.2500	.5000	3.0	FR-125-8	99.85	FR-125-8X	112.60
.125	.0625	.500	.522	.750	.150	.2500	.5000	3.0	FR-125-12	99.85	FR-125-12X	112.60
.125	.0625	.500	.522	1.000	.150	.2500	.5000	3.0	FR-125-16	99.85	FR-125-16X	112.60
.125	.0625	.500	.522	1.000	.200	.2500	.5000	3.0	FR-7934	99.85	FR-7934X	112.60
.125	.0625	.500	.522	1.250	.150	.2500	.5000	3.0	FR-125-20	99.85	FR-125-20X	112.60
.125	.0625	.500	.522	1.250	.200	.2500	.5000	3.0	FR-0271	99.85	FR-0271X	112.60
.125	.0625	.500	.522	1.500	.150	.2500	.5000	3.0	FR-125-24	99.85	FR-125-24X	112.60
.187	.0935	.500	.522	.500	.150	.2500	.5000	3.0			FR-187-8X	112.60
.187	.0935	.500	.522	.750	.150	.2500	.5000	3.0	FR-187-12	99.85		
.187	.0935	.500	.522	1.000	.150	.2500	.5000	3.0	FR-187-16	99.85		
.187	.0935	.500	.522	1.000	.200	.2500	.5000	3.0	FR-5272	99.85	FR-5272X	112.60
.187	.0935	.500	.522	1.250	.150	.2500	.5000	3.0	FR-187-20	99.85		
.187	.0935	.500	.522	1.500	.150	.2500	.5000	3.0	FR-187-24	99.85		

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

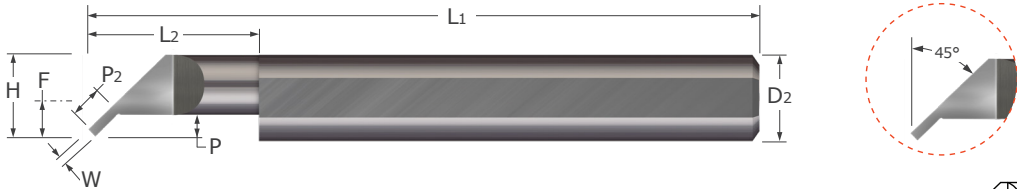
See pgs 39-47 for standard tool holders



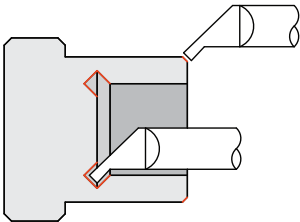
UC

Standard – Grooving Tools

Undercutting – Square



- 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	
W ^{+.002"} _{-.000"}	P	P ₂	H		L ₂ ^{+.050"} _{-.000"}	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.030	.060	.080	.240	.262	.500	.1150	.2500	2.5	UC-25030-8	41.50	UC-25030-8X	48.05
.050	.083	.120	.303	.325	.500	.1467	.3125	2.5	UC-31050-8	51.80	UC-31050-8X	59.70
.062	.083	.120	.303	.325	1.000	.1467	.3125	2.5	UC-31062-16	51.80	UC-31062-16X	59.70
.062	.083	.120	.303	.325	1.250	.1467	.3125	2.5	UC-31062-20	51.80	UC-31062-20X	59.70
.062	.095	.130	.365	.387	1.000	.1775	.3750	2.5	UC-37062-16	68.20		
.062	.125	.180	.490	.512	1.000	.2400	.5000	3.0	UC-50062-16	95.60		
.062	.125	.180	.490	.512	1.500	.2400	.5000	3.0	UC-50062-24	95.60		
.093	.095	.130	.365	.387	1.000	.1775	.3750	2.5	UC-37093-16	68.20	UC-37093-16X	77.55
.093	.125	.180	.490	.512	1.500	.2400	.5000	3.0	UC-50093-24	95.60	UC-50093-24X	108.35
.125	.095	.130	.365	.387	1.000	.1775	.3750	2.5	UC-37125-16	68.20	UC-37125-16X	77.55
.125	.095	.130	.365	.387	1.250	.1775	.3750	2.5	UC-37125-20	68.20		
.125	.125	.180	.490	.512	1.000	.2400	.5000	3.0	UC-50125-16	95.60		
.125	.125	.180	.490	.512	1.500	.2400	.5000	3.0	UC-50125-24	95.60	UC-50125-24X	108.35

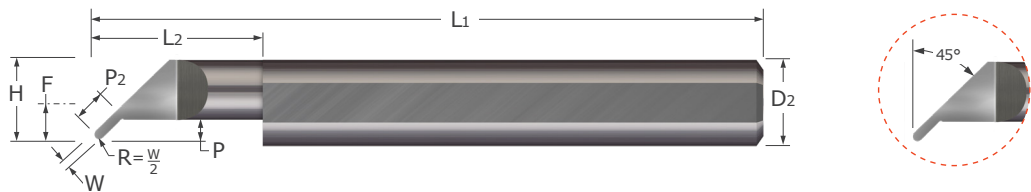
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 39-47 for standard tool holders

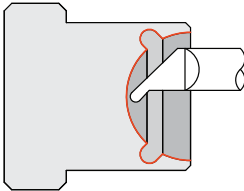
Standard – Grooving Tools

Undercutting – Full Radius

UP



- 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 #	USD\$	Tool #	USD\$
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	P	P2	H		L2 $\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	F	D2 (h6)	L1				
.020	.050	.077	.180	.198	.375	.0862	.1875	2.0	UP-18020-6	44.30	UP-18020-6X	49.50
.020	.050	.077	.180	.198	.500	.0862	.1875	2.0	UP-18020-8	44.30	UP-18020-8X	49.50
.025	.050	.078	.180	.198	.375	.0862	.1875	2.0	UP-18025-6	44.30	UP-18025-6X	49.50
.025	.050	.078	.180	.198	.500	.0862	.1875	2.0	UP-18025-8	44.30	UP-18025-8X	49.50
.025	.060	.092	.240	.262	.375	.1150	.2500	2.5	UP-25025-6	47.65	UP-25025-6X	54.30
.025	.060	.092	.240	.262	.500	.1150	.2500	2.5	UP-25025-8	47.65	UP-25025-8X	54.30
.030	.050	.079	.180	.198	.375	.0862	.1875	2.0	UP-18030-6	44.30	UP-18030-6X	49.50
.030	.050	.079	.180	.198	.500	.0862	.1875	2.0	UP-18030-8	44.30	UP-18030-8X	49.50
.030	.060	.094	.240	.262	.500	.1150	.2500	2.5	UP-25030-8	47.65	UP-25030-8X	54.30
.030	.060	.094	.240	.262	1.000	.1150	.2500	2.5	UP-25030-16	47.65	UP-25030-16X	54.30
.039	.050	.082	.180	.198	.375	.0862	.1875	2.0	UP-18039-6	44.30	UP-18039-6X	49.50
.039	.060	.096	.240	.262	.500	.1150	.2500	2.5	UP-25039-8	47.65	UP-25039-8X	54.30
.039	.060	.096	.240	.262	1.000	.1150	.2500	2.5	UP-25039-16	47.65	UP-25039-16X	54.30
.050	.083	.132	.303	.325	.500	.1467	.3125	2.5	UP-31050-8	59.35	UP-31050-8X	67.25
.050	.083	.132	.303	.325	1.000	.1467	.3125	2.5	UP-31050-16	59.35	UP-31050-16X	67.25
.062	.083	.136	.303	.325	1.000	.1467	.3125	2.5	UP-31062-16	59.35	UP-31062-16X	67.25
.062	.083	.136	.303	.325	1.250	.1467	.3125	2.5	UP-31062-20	59.35	UP-31062-20X	67.25
.062	.095	.153	.365	.387	1.000	.1775	.3750	2.5	UP-37062-16	75.90	UP-37062-16X	85.30
.062	.095	.153	.365	.387	1.250	.1775	.3750	2.5	UP-37062-20	75.90	UP-37062-20X	85.30
.062	.125	.195	.490	.512	1.000	.2400	.5000	3.0	UP-50062-16	104.75	UP-50062-16X	117.50
.062	.125	.195	.490	.512	1.500	.2400	.5000	3.0	UP-50062-24	104.75	UP-50062-24X	117.50
.093	.095	.162	.365	.387	1.000	.1775	.3750	2.5	UP-37093-16	75.90	UP-37093-16X	85.30
.093	.125	.204	.490	.512	1.000	.2400	.5000	3.0	UP-50093-16	104.75	UP-50093-16X	117.50
.093	.125	.204	.490	.512	1.500	.2400	.5000	3.0	UP-50093-24	104.75	UP-50093-24X	117.50
.125	.095	.171	.365	.387	1.000	.1775	.3750	2.5	UP-37125-16	75.90	UP-37125-16X	85.30
.125	.095	.171	.365	.387	1.250	.1775	.3750	2.5	UP-37125-20	75.90	UP-37125-20X	85.30
.125	.125	.213	.490	.512	1.000	.2400	.5000	3.0	UP-50125-16	104.75	UP-50125-16X	117.50
.125	.125	.213	.490	.512	1.500	.2400	.5000	3.0	UP-50125-24	104.75	UP-50125-24X	117.50

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

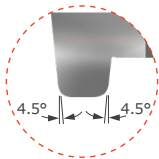
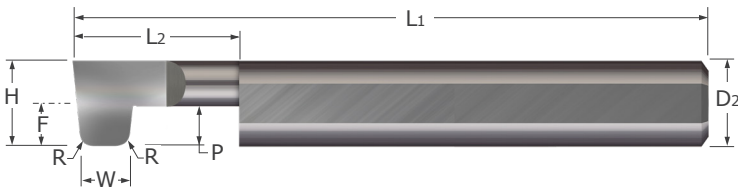
See pgs 39-47 for standard tool holders



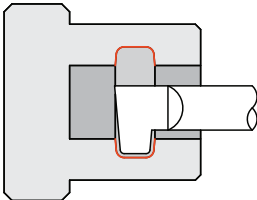
OR

Standard – Grooving Tools

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
- 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	
W ^{+ .002"} _{– .000"}	H		L2 ^{+ .050"} _{– .000"}	R ^{+ .010"} _{– .000"}	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.096	.250	.272	.500	.010	.100	.1250	.2500	2.5	OR-096-8	39.95	OR-096-8X	46.60
.141	.250	.272	.562	.35	.100	.1250	.2500	2.5	OR-141-9	39.95		
.144	.250	.272	.625	.035	.100	.1250	.2500	2.5	OR-144-10	39.95		
.174	.375	.397	.750	.010	.115	.1875	.3750	2.5	OR-174-12	65.60	OR-174-12X	75.05
.208	.375	.397	.812	.035	.115	.1875	.3750	2.5	OR-208-13	65.60	OR-208-13X	75.05
.241	.375	.397	.938	.035	.115	.1875	.3750	2.5	OR-241-15	65.60		

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

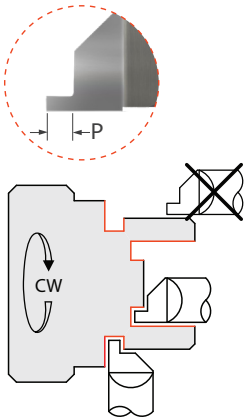
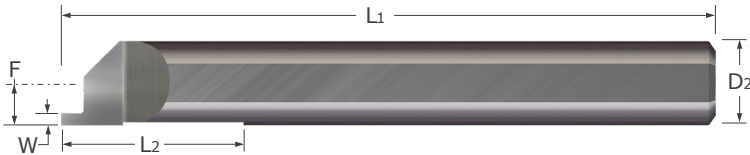
Standard – Grooving Tools

See pgs 39-47 for standard tool holders

Standard – Grooving Tools

Face Grooving – Square

FG



- 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 ^{+ .002"} _{– .000"}	P ^{+ .015"} _{– .000"}		L2	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.015	.025	.197	.750	.0937	.1875	2.0	FG-187-015-025	28.75	FG-187-015-025X	33.70
.015	.025	.260	1.000	.1250	.2500	2.5	FG-250-015-025	32.05	FG-250-015-025X	38.70
.017	.025	.197	.750	.0937	.1875	2.0	FG-187-017-025	28.75	FG-187-017-025X	33.70
.017	.025	.260	1.000	.1250	.2500	2.5	FG-250-017-025	32.05	FG-250-017-025X	38.70
.020	.025	.135	.375	.0625	.1250	1.5	FG-125-020-025	27.90	FG-125-020-025X	32.25
.020	.025	.197	.750	.0937	.1875	2.0	FG-187-020-025	28.75	FG-187-020-025X	33.70
.020	.025	.260	1.000	.1250	.2500	2.5	FG-250-020-025	32.05	FG-250-020-025X	38.70
.020	.050	.190	.750	.0862	.1875	2.0	FG-180-020	28.75	FG-180-020X	33.70
.020	.050	.197	.750	.0937	.1875	2.0	FG-187-020-050	28.75	FG-187-020-050X	33.70
.020	.050	.240	1.000	.1200	.2500	2.5	FG-230-020	32.05	FG-230-020X	37.10
.020	.050	.260	1.000	.1250	.2500	2.5	FG-250-020	32.05	FG-250-020X	38.70
.025	.025	.135	.375	.0625	.1250	1.5	FG-125-025-025	27.90	FG-125-025-025X	32.25
.025	.025	.197	.750	.0937	.1875	2.0	FG-187-025-025	28.75	FG-187-025-025X	33.70
.025	.025	.260	1.000	.1250	.2500	2.5	FG-250-025-025	32.05	FG-250-025-025X	38.70
.025	.050	.197	.750	.0937	.1875	2.0	FG-187-025-050	28.75	FG-187-025-050X	33.70
.025	.050	.260	1.000	.1250	.2500	2.5	FG-250-025-050	32.05	FG-250-025-050X	38.70
.030	.050	.135	.375	.0625	.1250	1.5	FG-125-030-050	27.90	FG-125-030-050X	32.25
.030	.050	.190	.750	.0862	.1875	2.0	FG-180-030	28.75	FG-180-030X	33.95
.030	.050	.197	.750	.0937	.1875	2.0	FG-187-030-050	28.75	FG-187-030-050X	33.70
.030	.050	.260	1.000	.1250	.2500	2.5	FG-250-030	32.05	FG-250-030X	38.70
.030	.050	.322	1.125	.1563	.3125	2.5	FG-312-030	43.80	FG-312-030X	51.70
.030	.050	.385	1.250	.1875	.3750	2.5	FG-375-030	61.15	FG-375-030X	70.50
.030	.075	.197	.750	.0937	.1875	2.0	FG-187-030-075	28.75	FG-187-030-075X	33.70
.030	.075	.260	1.000	.1250	.2500	2.5	FG-250-030-075	32.05	FG-250-030-075X	38.70
.030	.075	.322	1.250	.1563	.3125	2.5	FG-4363	43.80	FG-4363X	51.70
.039	.050	.197	.750	.0937	.1875	2.0	FG-187-039-050	28.75	FG-187-039-050X	33.70
.039	.050	.260	1.000	.1250	.2500	2.5	FG-250-039-050	32.05	FG-250-039-050X	38.70
.039	.050	.385	1.250	.1875	.3750	2.5	FG-375-039-050	61.15	FG-375-039-050X	70.50
.039	.075	.197	.750	.0937	.1875	2.0	FG-187-039-075	28.75	FG-187-039-075X	33.70
.039	.075	.260	1.000	.1250	.2500	2.5	FG-250-039-075	32.05	FG-250-039-075X	38.70
.040	.050	.197	.750	.0937	.1875	2.0	FG-187-040-050	28.75	FG-187-040-050X	33.70
.040	.050	.260	1.000	.1250	.2500	2.5	FG-250-040	32.05	FG-250-040X	38.70
.040	.050	.322	1.250	.1563	.3125	2.5	FG-312-040	43.80	FG-312-040X	51.70
.040	.050	.385	1.250	.1875	.3750	2.5	FG-375-040-050	61.15	FG-375-040-050X	70.50
.040	.075	.197	.750	.0937	.1875	2.0	FG-187-040-075	28.75	FG-187-040-075X	33.70
.040	.075	.260	1.000	.1250	.2500	2.5	FG-250-040-075	32.05	FG-250-040-075X	38.70
.040	.075	.322	1.250	.1563	.3125	2.5	FG-4322	43.80	FG-4322X	51.70

*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.)

Continued from previous page

Width	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} - .000"	P ^{+ .015"} - .000"		L ₂	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
.050	.050	.197	.750	.0937	.1875	2.0	FG-187-050-050	28.75	FG-187-050-050X	33.70
.050	.050	.260	1.000	.1250	.2500	2.5	FG-250-050	32.05	FG-250-050X	38.70
.050	.050	.322	1.250	.1563	.3125	2.5	FG-312-050	43.80	FG-312-050X	51.70
.050	.050	.385	1.250	.1875	.3750	2.5	FG-375-050-050	61.15	FG-375-050-050X	70.50
.050	.075	.197	.750	.0937	.1875	2.0	FG-187-050-075	28.75	FG-187-050-075X	33.70
.050	.075	.260	1.000	.1250	.2500	2.5	FG-250-050-075	32.05	FG-250-050-075X	38.70
.050	.075	.322	1.125	.1563	.3125	2.5	FG-312-050-075	43.80	FG-312-050-075X	51.70
.059	.075	.197	.750	.0937	.1875	2.0	FG-187-059-075	28.75	FG-187-059-075X	33.70
.059	.075	.260	1.000	.1250	.2500	2.5	FG-250-059-075	32.05	FG-250-059-075X	38.70
.059	.075	.385	1.250	.1875	.3750	2.5	FG-375-059-075	61.15	FG-375-059-075X	70.50
.059	.100	.197	.750	.0937	.1875	2.0	FG-187-059-100	28.75	FG-187-059-100X	33.70
.059	.100	.260	1.000	.1250	.2500	2.5	FG-250-059-100	32.05		
.062	.075	.197	.750	.0937	.1875	2.0	FG-187-062-075	28.75	FG-187-062-075X	33.70
.062	.075	.260	1.000	.1250	.2500	2.5	FG-250-062-075	32.05	FG-250-062-075X	38.70
.062	.075	.322	1.250	.1563	.3125	2.5	FG-312-062	43.80	FG-312-062X	51.70
.062	.075	.385	1.250	.1875	.3750	2.5	FG-375-062	61.15	FG-375-062X	70.50
.062	.075	.510	1.250	.2500	.5000	3.0	FG-500-062	69.05	FG-500-062X	81.80
.062	.075	.635	1.500	.3125	.6250	3.5	FG-625-062	112.75		
.062	.100	.197	.750	.0937	.1875	2.0	FG-187-062-100	28.75	FG-187-062-100X	33.70
.062	.100	.260	1.000	.1250	.2500	2.5	FG-250-062-100	32.05	FG-250-062-100X	38.70
.062	.100	.322	1.125	.1563	.3125	2.5	FG-312-062-100	43.80	FG-312-062-100X	51.70
.062	.100	.385	1.250	.1875	.3750	2.5	FG-375-062-100	61.15	FG-375-062-100X	70.50
.062	.100	.510	1.250	.2500	.5000	3.0	FG-4909	69.05	FG-4909X	81.80
.062	.150	.197	.750	.0937	.1875	2.0	FG-187-062-150	28.75	FG-187-062-150X	33.70
.062	.150	.260	1.000	.1250	.2500	2.5	FG-250-062-150	32.05	FG-250-062-150X	38.70
.062	.150	.322	1.125	.1563	.3125	2.5	FG-312-062-150	43.80	FG-312-062-150X	51.70
.062	.150	.385	1.250	.1875	.3750	2.5	FG-375-062-150	61.15	FG-375-062-150X	70.50
.062	.150	.510	1.250	.2500	.5000	3.0	FG-2828	69.05	FG-2828X	81.80
.078	.100	.260	1.000	.1250	.2500	2.5	FG-250-078-100	32.05	FG-250-078-100X	38.70
.078	.100	.322	1.125	.1563	.3125	2.5	FG-312-078-100	43.80	FG-312-078-100X	51.70
.078	.100	.385	1.250	.1875	.3750	2.5	FG-375-078	61.15	FG-375-078X	70.50
.093	.100	.385	1.250	.1875	.3750	2.5	FG-375-093	61.15	FG-375-093X	70.50
.093	.100	.510	1.250	.2500	.5000	3.0	FG-500-093	69.05	FG-500-093X	81.80
.093	.100	.635	1.500	.3125	.6250	3.5	FG-625-093	112.75	FG-625-093X	128.50
.093	.100	.760	1.750	.3750	.7500	4.0	FG-750-093	179.15		
.093	.150	.322	1.125	.1563	.3125	2.5	FG-312-093-150	43.80	FG-312-093-150X	51.70
.093	.150	.385	1.250	.1875	.3750	2.5	FG-375-093-150	61.15	FG-375-093-150X	70.50
.118	.150	.385	1.250	.1875	.3750	2.5	FG-375-118-150	61.15	FG-375-118-150X	70.50
.125	.100	.385	1.250	.1875	.3750	2.5	FG-375-125	61.15	FG-375-125X	70.50
.125	.100	.510	1.250	.2500	.5000	3.0	FG-500-125	69.05	FG-500-125X	81.80
.125	.100	.760	1.750	.3750	.7500	4.0	FG-750-125	179.15	FG-750-125X	198.05
.125	.200	.385	1.250	.1875	.3750	2.5	FG-375-125-200	61.15	FG-375-125-200X	70.50
.125	.200	.510	1.250	.2500	.5000	3.0	FG-3140	69.05	FG-3140X	81.80
.125	.250	.385	1.250	.1875	.3750	2.5	FG-0531	61.15	FG-0531X	70.50
.156	.100	.510	1.250	.2500	.5000	3.0	FG-500-156	69.05	FG-500-156X	81.80
.156	.100	.635	1.500	.3125	.6250	3.5	FG-625-156	112.75	FG-625-156X	128.50
.156	.100	.760	1.750	.3750	.7500	4.0	FG-750-156	179.15		
.156	.200	.510	1.250	.2500	.5000	3.0	FG-5610	69.05	FG-5610X	81.80
.187	.150	.635	1.500	.3125	.6250	3.5	FG-625-187	112.75	FG-625-187X	128.50
.187	.150	.760	1.750	.3750	.7500	4.0	FG-750-187	179.15		
.250	.250	.760	.625	.3750	.7500	4.0	FG-750-250	179.15		

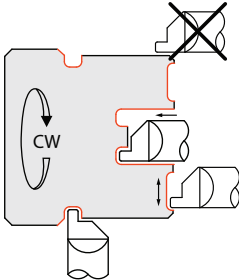
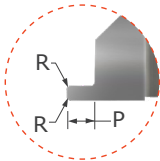
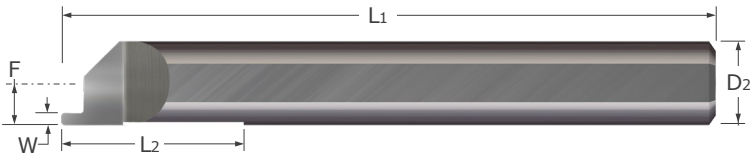
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 39-47 for standard tool holders

Standard – Grooving Tools

Face Grooving – Corner Radius

FGC



- 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

								Uncoated		AlTiN Coated	
Width	Projection	Minimum Groove Diameter*	Radius	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Tool #	USD\$	Tool #	USD\$
W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	P $\begin{smallmatrix} +.015" \\ -.000" \end{smallmatrix}$		R $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	L2	F	D2 (h6)	L1				
.015	.025	.197	.003	.750	.0938	.1875	2.0	FGC3-187-015-025	30.95	FGC3-187-015-025X	35.85
.015	.025	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-015-025	34.25	FGC3-250-015-025X	40.80
.017	.025	.197	.003	.750	.0938	.1875	2.0	FGC3-187-017-025	30.95	FGC3-187-017-025X	35.85
.017	.025	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-017-025	34.25	FGC3-250-017-025X	40.80
.020	.025	.135	.003	.375	.0625	.1250	1.5	FGC3-125-020-025	29.90	FGC3-125-020-025X	34.20
.020	.025	.197	.003	.750	.0938	.1875	2.0	FGC3-187-020-025	30.95	FGC3-187-020-025X	35.85
.020	.025	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-020-025	34.25	FGC3-250-020-025X	40.80
.025	.025	.135	.003	.375	.0625	.1250	1.5	FGC3-125-025-025	29.90	FGC3-125-025-025X	34.20
.025	.025	.197	.003	.750	.0938	.1875	2.0	FGC3-187-025-025	30.95	FGC3-187-025-025X	35.85
.025	.025	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-025-025	34.25	FGC3-250-025-025X	40.80
.030	.050	.135	.003	.375	.0625	.1250	1.5	FGC3-125-030-050	29.90	FGC3-125-030-050X	34.20
.030	.050	.197	.003	.750	.0938	.1875	2.0	FGC3-187-030-050	30.95	FGC3-187-030-050X	35.85
.030	.050	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-030-050	34.25	FGC3-250-030-050X	40.80
.030	.050	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-030-050	46.00	FGC3-312-030-050X	53.85
.030	.050	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-030-050	63.10	FGC3-375-030-050X	72.45
.039	.050	.197	.003	.750	.0938	.1875	2.0	FGC3-187-039-050	30.95	FGC3-187-039-050X	35.85
.039	.050	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-039-050	34.25	FGC3-250-039-050X	40.80
.039	.050	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-039-050	63.10	FGC3-375-039-050X	72.45
.040	.050	.197	.003	.750	.0938	.1875	2.0	FGC3-187-040-050	30.95	FGC3-187-040-050X	35.85
.040	.050	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-040-050	34.25	FGC3-250-040-050X	40.80
.040	.050	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-040-050	46.00	FGC3-312-040-050X	53.85
.040	.050	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-040-050	63.10	FGC3-375-040-050X	72.45
.050	.050	.197	.003	.750	.0938	.1875	2.0	FGC3-187-050-050	30.95	FGC3-187-050-050X	35.85
.050	.050	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-050-050	34.25	FGC3-250-050-050X	40.80
.050	.050	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-050-050	46.00	FGC3-312-050-050X	53.85
.050	.050	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-050-050	63.10	FGC3-375-050-050X	72.45
.059	.075	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-059-075	63.10	FGC3-375-059-075X	72.45

*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



FGC

Standard – Grooving Tools
Face Grooving – Corner Radius (cont.)

Continued from previous page

Width	Projection	Minimum Groove Diameter*	Radius	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} _{– .000"}	P ^{+ .015"} _{– .000"}		R ^{+ .001"} _{– .001"}	L2	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.062	.075	.197	.003	.750	.0938	.1875	2.0	FGC3-187-062-075	30.95	FGC3-187-062-075X	35.85
.062	.075	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-062-075	34.25	FGC3-250-062-075X	40.80
.062	.075	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-062-075	46.00	FGC3-312-062-075X	53.85
.062	.075	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-062-075	63.10	FGC3-375-062-075X	72.45
.062	.100	.197	.003	.750	.0938	.1875	2.0	FGC3-187-062-100	30.95	FGC3-187-062-100X	35.85
.062	.100	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-062-100	34.25	FGC3-250-062-100X	40.80
.078	.100	.260	.003	1.000	.1250	.2500	2.5	FGC3-250-078-100	34.25	FGC3-250-078-100X	40.80
.078	.100	.322	.003	1.125	.1563	.3125	2.5	FGC3-312-078-100	46.00	FGC3-312-078-100X	53.85
.078	.100	.385	.003	1.250	.1875	.3750	2.5	FGC3-375-078-100	63.10	FGC3-375-078-100X	72.45
.093	.100	.385	.006	1.250	.1875	.3750	2.5	FGC6-375-093-100	63.10	FGC6-375-093-100X	72.45
.093	.150	.322	.006	1.125	.1563	.3125	2.5	FGC6-312-093-150	46.00	FGC6-312-093-150X	53.85
.118	.150	.385	.006	1.250	.1875	.3750	2.5	FGC6-375-118-150	63.10	FGC6-375-118-150X	72.45
.125	.100	.385	.006	1.250	.1875	.3750	2.5	FGC6-375-125-100	63.10	FGC6-375-125-100X	72.45

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



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

On Micro100.com/check-stock

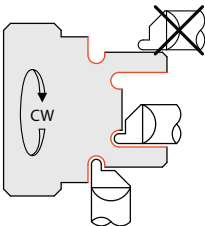
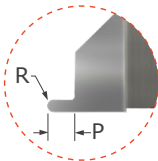
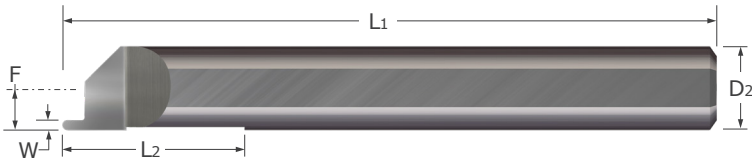
See pgs 39-47 for standard tool holders



Standard – Grooving Tools

Face Grooving – Full Radius

FGF



- 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

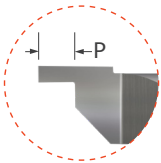
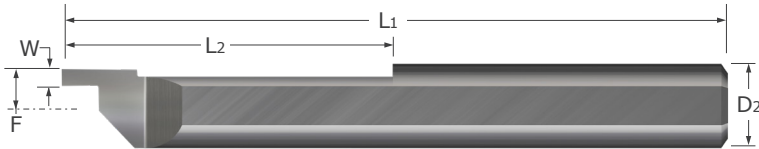
Width	Radius	Projection	Minimum Groove Diameter*	Maximum Bore Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} _{– .000"}	R	P ^{+ .030"} _{– .000"}		L2	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.015	.0075	.025	.197	.750	.0937	.1875	2.0	FGF-187-015-025	29.50	FGF-187-015-025X	34.20
.015	.0075	.025	.260	1.000	.1250	.2500	2.5	FGF-250-015-025	33.10	FGF-250-015-025X	39.75
.017	.0085	.025	.197	.750	.0937	.1875	2.0	FGF-187-017-025	29.50	FGF-187-017-025X	34.20
.017	.0085	.025	.260	1.000	.1250	.2500	2.5	FGF-250-017-025	33.10	FGF-250-017-025X	39.75
.020	.0100	.050	.135	.375	.0625	.1250	1.5	FGF-125-020-050	28.45	FGF-125-020-050X	32.85
.020	.0100	.050	.190	.750	.0860	.1875	2.0	FGF-180-020	29.50	FGF-180-020X	34.20
.020	.0100	.050	.197	.750	.0937	.1875	2.0	FGF-187-020-050	29.50	FGF-187-020-050X	34.20
.020	.0100	.050	.240	1.000	.1050	.2500	2.5	FGF-230-020	33.10	FGF-230-020X	39.75
.020	.0100	.050	.260	1.000	.1250	.2500	2.5	FGF-250-020	33.10	FGF-250-020X	39.75
.025	.0125	.050	.135	.375	.0625	.1250	1.5	FGF-125-025-050	28.45	FGF-125-025-050X	32.85
.025	.0125	.050	.197	.750	.0937	.1875	2.0	FGF-187-025-050	29.50	FGF-187-025-050X	34.20
.025	.0125	.050	.260	1.000	.1250	.2500	2.5	FGF-250-025-050	33.10	FGF-250-025-050X	39.75
.030	.0150	.050	.135	.375	.0625	.1250	1.5	FGF-125-030-050	28.45	FGF-125-030-050X	32.85
.030	.0150	.050	.190	.750	.0860	.1875	2.0	FGF-180-030	29.50	FGF-180-030X	34.20
.030	.0150	.050	.197	.750	.0937	.1875	2.0	FGF-187-030-050	29.50	FGF-187-030-050X	34.20
.030	.0150	.050	.260	1.000	.1250	.2500	2.5	FGF-250-030	33.10	FGF-250-030X	39.75
.039	.0195	.075	.197	.750	.0937	.1875	2.0	FGF-187-039-075	29.50	FGF-187-039-075X	34.20
.039	.0195	.075	.260	1.000	.1250	.2500	2.5	FGF-250-039-075	33.10	FGF-250-039-075X	39.75
.040	.0200	.050	.260	1.000	.1250	.2500	2.5	FGF-250-040	33.10	FGF-250-040X	39.75
.040	.0200	.075	.197	.750	.0937	.1875	2.0	FGF-187-040-075	29.50	FGF-187-040-075X	34.20
.040	.0200	.075	.260	1.000	.1250	.2500	2.5	FGF-250-040-075	33.10	FGF-250-040-075X	39.75
.050	.0250	.050	.322	1.125	.1563	.3125	2.5	FGF-312-050	45.25	FGF-312-050X	53.15
.050	.0250	.075	.197	.750	.0937	.1875	2.0	FGF-187-050-075	29.50	FGF-187-050-075X	34.20
.050	.0250	.075	.260	1.000	.1250	.2500	2.5	FGF-250-050-075	33.10	FGF-250-050-075X	39.75
.050	.0250	.075	.322	1.125	.1563	.3125	2.5	FGF-312-050-075	45.25	FGF-312-050-075X	53.15
.062	.0310	.075	.322	1.125	.1563	.3125	2.5	FGF-312-062	45.25	FGF-312-062X	53.15
.062	.0310	.075	.385	1.250	.1875	.3750	2.5	FGF-375-062	62.90	FGF-375-062X	72.25
.062	.0310	.100	.197	.750	.0937	.1875	2.0	FGF-187-062-100	29.50	FGF-187-062-100X	34.20
.062	.0310	.100	.260	1.000	.1250	.2500	2.5	FGF-250-062-100	33.10	FGF-250-062-100X	39.75
.062	.0310	.100	.322	1.125	.1563	.3125	2.5	FGF-312-062-100	45.25	FGF-312-062-100X	53.15
.062	.0310	.100	.385	1.250	.1875	.3750	2.5	FGF-375-062-100	62.90	FGF-375-062-100X	72.25
.078	.0390	.100	.385	1.250	.1875	.3750	2.5	FGF-375-078	62.90	FGF-375-078X	72.25
.093	.0465	.100	.385	1.250	.1875	.3750	2.5	FGF-375-093	62.90	FGF-375-093X	72.25
.125	.0625	.100	.385	1.250	.1875	.3750	2.5	FGF-375-125	62.90	FGF-375-125X	72.25

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

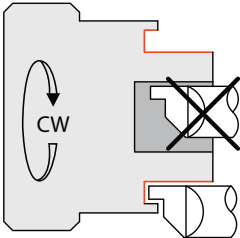
See pgs 39-47 for standard tool holders



Standard – 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
- 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 Turn Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W $+ .002"$ $- .000"$	P $+ .015"$ $- .000"$		L2	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.020	.040	.260	.750	.1150	.2500	2.5	FGI-8240	33.30	FGI-8240X	39.95
.020	.040	.260	1.250	.1150	.2500	2.5	FGI-6198	33.30	FGI-6198X	39.95
.020	.040	.322	.750	.1463	.3125	2.5	FGI-9800	45.55	FGI-9800X	53.45
.020	.040	.322	1.250	.1463	.3125	2.5	FGI-6738	45.55	FGI-6738X	53.45
.030	.060	.260	.750	.1150	.2500	2.5	FGI-6600	33.30	FGI-6600X	39.95
.030	.060	.260	1.250	.1150	.2500	2.5	FGI-3461	33.30	FGI-3461X	39.95
.030	.060	.322	.750	.1463	.3125	2.5	FGI-5774	45.55	FGI-5774X	53.45
.030	.060	.322	1.250	.1463	.3125	2.5	FGI-1413	45.55	FGI-1413X	53.45
.040	.080	.260	.750	.1150	.2500	2.5	FGI-6481	33.30	FGI-6481X	39.95
.040	.080	.260	1.250	.1150	.2500	2.5	FGI-9741	33.30	FGI-9741X	39.95
.040	.080	.322	.750	.1463	.3125	2.5	FGI-8157	45.55	FGI-8157X	53.45
.040	.080	.322	1.250	.1463	.3125	2.5	FGI-9114	45.55	FGI-9114X	53.45
.050	.100	.260	.750	.1150	.2500	2.5	FGI-1311	33.30	FGI-1311X	39.95
.050	.100	.260	1.250	.1150	.2500	2.5	FGI-7516	33.30	FGI-7516X	39.95
.050	.100	.322	.750	.1463	.3125	2.5	FGI-5336	45.55	FGI-5336X	53.45
.050	.100	.322	1.250	.1463	.3125	2.5	FGI-9489	45.55	FGI-9489X	53.45
.062	.125	.322	.750	.1463	.3125	2.5	FGI-2609	45.55	FGI-2609X	53.45
.062	.125	.322	1.250	.1463	.3125	2.5	FGI-0720	45.55	FGI-0720X	53.45
.062	.125	.385	.750	.1775	.3750	2.5	FGI-3852	63.40	FGI-3852X	72.75
.062	.125	.385	1.250	.1775	.3750	2.5	FGI-8466	63.40	FGI-8466X	72.75
.078	.156	.322	.750	.1463	.3125	2.5	FGI-4397	45.55	FGI-4397X	53.45
.078	.156	.322	1.250	.1463	.3125	2.5	FGI-3465	45.55	FGI-3465X	53.45
.078	.156	.385	.750	.1775	.3750	2.5	FGI-2855	63.40	FGI-2855X	72.75
.078	.156	.385	1.250	.1775	.3750	2.5	FGI-2684	63.40	FGI-2684X	72.75
.093	.187	.322	.750	.1463	.3125	2.5	FGI-5482	45.55	FGI-5482X	53.45
.093	.187	.322	1.250	.1463	.3125	2.5	FGI-2378	45.55	FGI-2378X	53.45
.093	.187	.385	.750	.1775	.3750	2.5	FGI-1641	63.40	FGI-1641X	72.75
.093	.187	.385	1.250	.1775	.3750	2.5	FGI-1707	63.40	FGI-1707X	72.75

*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 – Internal Tooth – Square (cont.)

FGI

Continued from previous page

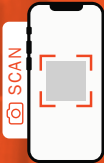
Width	Projection	Minimum Groove Diameter*	Maximum Turn Depth	Centerline Offset	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
W ^{+ .002"} _{– .000"}	P ^{+ .015"} _{– .000"}		L2	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.118	.236	.385	.750	.1775	.3750	2.5	FGI-4674	63.40	FGI-4674X	72.75
.118	.236	.385	1.250	.1775	.3750	2.5	FGI-2969	63.40	FGI-2969X	72.75
.118	.236	.510	1.000	.2400	.5000	3.0	FGI-6754	71.75	FGI-6754X	84.50
.118	.236	.510	1.500	.2400	.5000	3.0	FGI-3667	71.75	FGI-3667X	84.50
.125	.250	.385	.750	.1775	.3750	2.5	FGI-1535	63.40	FGI-1535X	72.75
.125	.250	.385	1.250	.1775	.3750	2.5	FGI-7015	63.40	FGI-7015X	72.75
.125	.250	.510	1.000	.2400	.5000	3.0	FGI-4349	71.75	FGI-4349X	84.50
.125	.250	.510	1.500	.2400	.5000	3.0	FGI-4098	71.75	FGI-4098X	84.50

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

Standard – Grooving Tools

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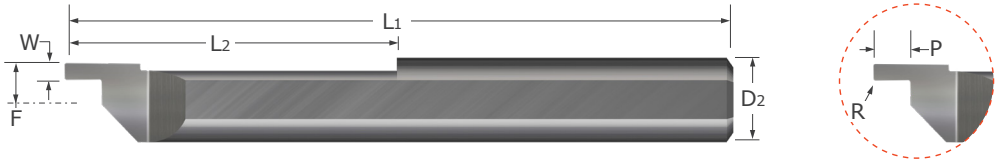
See pgs 39-47 for standard tool holders



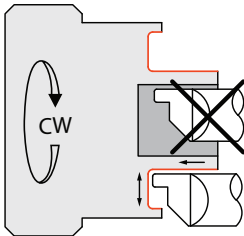
FGIC

Standard – 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
- 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	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 $\begin{smallmatrix} +.015" \\ -.000" \end{smallmatrix}$		L2	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.020	.003	.040	.260	1.250	.1150	.2500	2.5	FGIC3-6198	33.95	FGIC3-6198X	40.50
.020	.003	.040	.322	1.250	.1463	.3125	2.5	FGIC3-6738	46.30	FGIC3-6738X	54.20
.030	.003	.060	.260	1.250	.1150	.2500	2.5	FGIC3-3461	33.95	FGIC3-3461X	40.50
.030	.003	.060	.322	1.250	.1463	.3125	2.5	FGIC3-1413	46.30	FGIC3-1413X	54.20
.040	.003	.080	.260	1.250	.1150	.2500	2.5	FGIC3-9741	33.95	FGIC3-9741X	40.50
.040	.003	.080	.322	1.250	.1463	.3125	2.5	FGIC3-9114	46.30	FGIC3-9114X	54.20
.050	.003	.100	.260	1.250	.1150	.2500	2.5	FGIC3-7516	33.95	FGIC3-7516X	40.50
.050	.003	.100	.322	1.250	.1463	.3125	2.5	FGIC3-9489	46.30	FGIC3-9489X	54.20
.062	.003	.125	.322	1.250	.1463	.3125	2.5	FGIC3-0720	46.30	FGIC3-0720X	54.20
.062	.003	.125	.385	1.250	.1775	.3750	2.5	FGIC3-8466	64.45	FGIC3-8466X	73.80
.078	.003	.156	.322	1.250	.1463	.3125	2.5	FGIC3-3465	46.30	FGIC3-3465X	54.20
.078	.003	.156	.385	1.250	.1775	.3750	2.5	FGIC3-2684	64.45	FGIC3-2684X	73.80
.093	.006	.187	.322	1.250	.1463	.3125	2.5	FGIC6-2378	46.30	FGIC6-2378X	54.20
.093	.006	.187	.385	1.250	.1775	.3750	2.5	FGIC6-1707	64.45	FGIC6-1707X	73.80
.118	.006	.236	.385	1.250	.1775	.3750	2.5	FGIC6-2969	64.45	FGIC6-2969X	73.80
.125	.006	.250	.385	1.250	.1775	.3750	2.5	FGIC6-7015	64.45	FGIC6-7015X	73.80

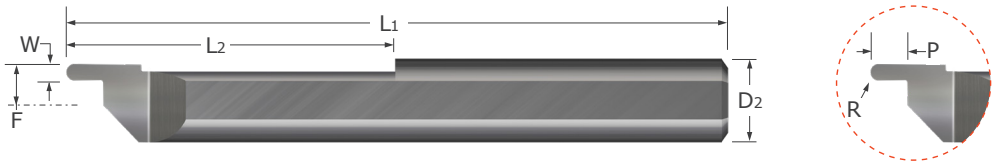
*Minimum Groove Diameter provides proper clearance on outside of tooth during initial plunge.

See pgs 39-47 for standard tool holders

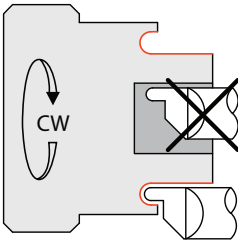
Standard – Grooving Tools

Face Grooving – Internal Tooth – Full Radius

FGIF



- 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 ^{+0.002"} _{-.000"}	R ^{+0.0010"} _{-.0010"}	P ^{+0.015"} _{-.000"}		L2	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.020	.0100	.040	.260	1.250	.1150	.2500	2.5	FGIF-6198	34.35	FGIF-6198X	40.90
.020	.0100	.040	.322	1.250	.1463	.3125	2.5	FGIF-6738	46.80	FGIF-6738X	54.70
.030	.0150	.060	.260	1.250	.1150	.2500	2.5	FGIF-3461	34.35	FGIF-3461X	40.90
.030	.0150	.060	.322	1.250	.1463	.3125	2.5	FGIF-1413	46.80	FGIF-1413X	54.70
.040	.0200	.080	.260	1.250	.1150	.2500	2.5	FGIF-9741	34.35	FGIF-9741X	40.90
.040	.0200	.080	.322	1.250	.1463	.3125	2.5	FGIF-9114	46.80	FGIF-9114X	54.70
.050	.0250	.100	.260	1.250	.1150	.2500	2.5	FGIF-7516	34.35	FGIF-7516X	40.90
.050	.0250	.100	.322	1.250	.1463	.3125	2.5	FGIF-9489	46.80	FGIF-9489X	54.70
.062	.0310	.125	.322	1.250	.1463	.3125	2.5	FGIF-0720	46.80	FGIF-0720X	54.70
.062	.0310	.125	.385	1.250	.1775	.3750	2.5	FGIF-8466	65.30	FGIF-8466X	74.75
.078	.0390	.156	.322	1.250	.1463	.3125	2.5	FGIF-3465	46.80	FGIF-3465X	54.70
.078	.0390	.156	.385	1.250	.1775	.3750	2.5	FGIF-2684	65.30	FGIF-2684X	74.75
.093	.0465	.187	.322	1.250	.1463	.3125	2.5	FGIF-2378	46.80	FGIF-2378X	54.70
.093	.0465	.187	.385	1.250	.1775	.3750	2.5	FGIF-1707	65.30	FGIF-1707X	74.75
.118	.0590	.236	.385	1.250	.1775	.3750	2.5	FGIF-2969	65.30	FGIF-2969X	74.75
.125	.0625	.250	.385	1.250	.1775	.3750	2.5	FGIF-7015	65.30	FGIF-7015X	74.75

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

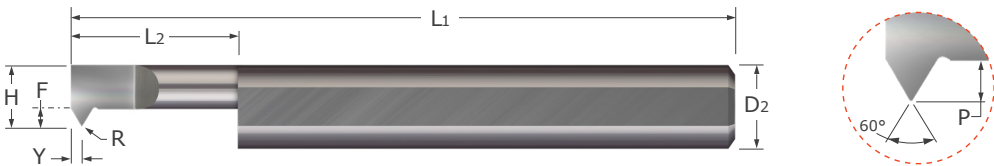
See pgs 39-47 for standard tool holders



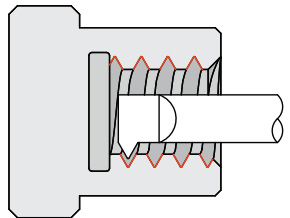
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Standard – Threading Tools

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 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 #	USD\$	Tool #	USD\$
TPI	H		L2 ^{+.050"} _{-.000"}	Y ^{+.010"} _{-.000"}	P	R ^{+.001"} _{-.000"}	F	D2 (h6)	L1				
40-72	.040	.045	.075	.009	.015	.001	-.0225	.1250	1.5	IT-040075	46.70	IT-040075X	51.30
40-72	.040	.045	.100	.009	.015	.001	-.0225	.1250	1.5	IT-040100	46.70	IT-040100X	51.30
40-72	.040	.045	.150	.009	.015	.001	-.0225	.1250	1.5	IT-040150	46.70	IT-040150X	51.30
28-72	.050	.055	.100	.012	.020	.001	-.0125	.1250	1.5	IT-050100	46.70		
28-72	.050	.055	.150	.012	.020	.001	-.0125	.1250	1.5	IT-050150	46.70	IT-050150X	51.30
28-72	.050	.055	.200	.012	.020	.001	-.0125	.1250	1.5	IT-050200	46.70	IT-050200X	51.30
28-72	.050	.055	.250	.012	.020	.001	-.0125	.1250	1.5	IT-050250	46.70	IT-050250X	51.30
28-56	.060	.070	.150	.012	.020	.001	-.0025	.1250	1.5	IT-060150	40.70	IT-060150X	45.35
28-56	.060	.070	.200	.012	.020	.001	-.0025	.1250	1.5	IT-060200	40.70	IT-060200X	45.35
28-56	.060	.070	.250	.012	.020	.001	-.0025	.1250	1.5	IT-060250	40.70	IT-060250X	45.35
28-56	.060	.070	.300	.012	.020	.001	-.0025	.1250	1.5	IT-060300	40.70	IT-060300X	45.35
28-56	.060	.070	.350	.012	.020	.001	-.0025	.1250	1.5	IT-060350	40.70	IT-060350X	45.35

TPI	H		L2 ^{+.050"} _{-.000"}	Y ^{+.010"} _{-.000"}	P	R ^{+.001"} _{-.001"}	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
28-56	.080	.090	.200	.012	.020	.002	.0175	.1250	1.5	IT-080200	37.05	IT-080200X	41.75
28-56	.080	.090	.250	.012	.020	.002	.0175	.1250	1.5	IT-080250	37.05	IT-080250X	41.75
28-56	.080	.090	.350	.012	.020	.002	.0175	.1250	1.5	IT-080350	37.05	IT-080350X	41.75
28-56	.080	.090	.500	.012	.020	.002	.0175	.1250	1.5	IT-080500	37.05	IT-080500X	41.75
28-56	.080	.090	.600	.012	.020	.002	.0175	.1250	2.0	IT-080600	38.40	IT-080600X	42.95
24-56	.100	.110	.250	.014	.025	.002	.0375	.1250	1.5	IT-100250	37.05	IT-100250X	41.75
24-56	.100	.110	.350	.014	.025	.002	.0375	.1250	1.5	IT-100350	37.05	IT-100350X	41.75
24-56	.100	.110	.500	.014	.025	.002	.0375	.1250	1.5	IT-100500	37.05	IT-100500X	41.75
24-56	.100	.110	.600	.014	.025	.002	.0375	.1250	1.5	IT-100600	37.05	IT-100600X	41.75
24-56	.100	.110	.750	.014	.025	.002	.0375	.1250	2.0	IT-100750	38.40	IT-100750X	42.95
20-56	.110	.126	.250	.017	.030	.002	.0475	.1250	1.5	IT-110250	37.05	IT-110250X	41.75
20-56	.110	.126	.400	.017	.030	.002	.0475	.1250	1.5	IT-110400	37.05	IT-110400X	41.75
20-56	.110	.126	.500	.017	.030	.002	.0475	.1250	1.5	IT-110500	37.05	IT-110500X	41.75
20-56	.110	.126	.600	.017	.030	.002	.0475	.1250	1.5	IT-110600	37.05	IT-110600X	41.75
20-56	.110	.126	.750	.017	.030	.002	.0475	.1250	2.0	IT-110750	38.40	IT-110750X	42.95
20-56	.120	.136	.250	.017	.030	.002	.0263	.1875	2.0	IT-120250	39.55	IT-120250X	44.75
20-56	.120	.136	.400	.017	.030	.002	.0263	.1875	2.0	IT-120400	39.55	IT-120400X	44.75

*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 309 for tool set options

Standard – Threading Tools

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

IT

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 ^{+ .050"} _{– .000"}	Y ^{+ .010"} _{– .000"}	P	R ^{+ .001"} _{– .001"}	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
20-56	.120	.136	.500	.017	.030	.002	.0263	.1875	2.0	IT-120500	39.55	IT-120500X	44.75
20-56	.120	.136	.600	.017	.030	.002	.0263	.1875	2.0	IT-120600	39.55	IT-120600X	44.75
20-56	.120	.136	.750	.017	.030	.002	.0263	.1875	2.0	IT-120750	39.55	IT-120750X	44.75
16-56	.140	.156	.250	.020	.035	.002	.0463	.1875	2.0	IT-140250	39.55	IT-140250X	44.75
16-56	.140	.156	.400	.020	.035	.002	.0463	.1875	2.0	IT-140400	39.55	IT-140400X	44.75
16-56	.140	.156	.500	.020	.035	.002	.0463	.1875	2.0	IT-140500	39.55	IT-140500X	44.75
16-56	.140	.156	.750	.020	.035	.002	.0463	.1875	2.0	IT-140750	39.55	IT-140750X	44.75
16-56	.140	.156	.875	.020	.035	.002	.0463	.1875	2.0	IT-140875	39.55	IT-140875X	44.75
14-56	.160	.182	.250	.023	.040	.002	.0663	.1875	2.0	IT-160250	39.55	IT-160250X	44.75
14-56	.160	.182	.400	.023	.040	.002	.0663	.1875	2.0	IT-160400	39.55	IT-160400X	44.75
14-56	.160	.182	.500	.023	.040	.002	.0663	.1875	2.0	IT-160500	39.55	IT-160500X	44.75
14-56	.160	.182	.750	.023	.040	.002	.0663	.1875	2.0	IT-160750	39.55	IT-160750X	44.75
14-56	.160	.182	1.000	.023	.040	.002	.0663	.1875	2.0	IT-1601000	39.55	IT-1601000X	44.75
14-56	.180	.202	.350	.023	.040	.002	.0550	.2500	2.5	IT-180350	42.15	IT-180350X	48.70
14-56	.180	.202	.500	.023	.040	.002	.0550	.2500	2.5	IT-180500	42.15	IT-180500X	48.70
14-56	.180	.202	.750	.023	.040	.002	.0550	.2500	2.5	IT-180750	42.15	IT-180750X	48.70
14-56	.180	.202	1.000	.023	.040	.002	.0550	.2500	2.5	IT-1801000	42.15	IT-1801000X	48.70
14-56	.180	.202	1.125	.023	.040	.002	.0550	.2500	2.5	IT-1801125	42.15	IT-1801125X	48.70
13-56	.200	.222	.400	.026	.045	.002	.0750	.2500	2.5	IT-200400	42.15	IT-200400X	48.70
13-56	.200	.222	.600	.026	.045	.002	.0750	.2500	2.5	IT-200600	42.15	IT-200600X	48.70
13-56	.200	.222	.750	.026	.045	.002	.0750	.2500	2.5	IT-200750	42.15	IT-200750X	48.70
13-56	.200	.222	1.000	.026	.045	.002	.0750	.2500	2.5	IT-2001000	42.15	IT-2001000X	48.70
13-56	.200	.222	1.125	.026	.045	.002	.0750	.2500	2.5	IT-2001125	42.15	IT-2001125X	48.70
10-48	.230	.252	.400	.032	.055	.002	.0738	.3125	2.5	IT-230400	52.85	IT-230400X	60.70
10-48	.230	.252	.600	.032	.055	.002	.0738	.3125	2.5	IT-230600	52.85	IT-230600X	60.70
10-48	.230	.252	.750	.032	.055	.002	.0738	.3125	2.5	IT-230750	52.85	IT-230750X	60.70
10-48	.230	.252	1.000	.032	.055	.002	.0738	.3125	2.5	IT-2301000	52.85	IT-2301000X	60.70
10-48	.230	.252	1.250	.032	.055	.002	.0738	.3125	2.5	IT-2301250	52.85	IT-2301250X	60.70
10-48	.230	.252	1.500	.032	.055	.002	.0738	.3125	2.5	IT-2301500	52.85	IT-2301500X	60.70
10-48	.230	.252	1.750	.032	.055	.002	.0738	.3125	3.0	IT-2301750	53.85	IT-2301750X	61.75
8-40	.290	.312	.500	.040	.070	.002	.1338	.3125	2.5	IT-290500	52.85	IT-290500X	60.70
8-40	.290	.312	.750	.040	.070	.002	.1338	.3125	2.5	IT-290750	52.85	IT-290750X	60.70
8-40	.290	.312	1.000	.040	.070	.002	.1338	.3125	2.5	IT-2901000	52.85	IT-2901000X	60.70
8-40	.290	.312	1.250	.040	.070	.002	.1338	.3125	2.5	IT-2901250	52.85	IT-2901250X	60.70
8-40	.290	.312	1.500	.040	.070	.002	.1338	.3125	2.5	IT-2901500	52.85	IT-2901500X	60.70
8-40	.290	.312	1.750	.040	.070	.002	.1338	.3125	2.5	IT-2901750	52.85	IT-2901750X	60.70
8-40	.320	.342	.500	.043	.075	.002	.1325	.3750	2.5	IT-320500	68.70	IT-320500X	78.15
8-40	.320	.342	.750	.043	.075	.002	.1325	.3750	2.5	IT-320750	68.70	IT-320750X	78.15
8-40	.320	.342	1.000	.043	.075	.002	.1325	.3750	2.5	IT-3201000	68.70	IT-3201000X	78.15
8-40	.320	.342	1.250	.043	.075	.002	.1325	.3750	2.5	IT-3201250	68.70	IT-3201250X	78.15
8-40	.320	.342	1.500	.043	.075	.002	.1325	.3750	2.5	IT-3201500	68.70	IT-3201500X	78.15
8-40	.320	.342	1.750	.043	.075	.002	.1325	.3750	3.0	IT-3201750	70.50	IT-3201750X	79.80
8-40	.320	.342	1.800	.043	.075	.002	.1325	.3750	2.5	IT-3201800	68.70	IT-3201800X	78.15

*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 309 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	
										Tool #	USD\$	Tool #	USD\$
TPI	H	L2	$\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} +.010" \\ -.000" \end{smallmatrix}$	P	$\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	F	D2 (h6)	L1				
7-32	.360	.382	.500	.049	.085	.002	.1725	.3750	2.5	IT-360500	68.70	IT-360500X	78.15
7-32	.360	.382	.750	.049	.085	.002	.1725	.3750	2.5	IT-360750	68.70	IT-360750X	78.15
7-32	.360	.382	1.000	.049	.085	.002	.1725	.3750	2.5	IT-3601000	68.70	IT-3601000X	78.15
7-32	.360	.382	1.250	.049	.085	.002	.1725	.3750	2.5	IT-3601250	68.70	IT-3601250X	78.15
7-32	.360	.382	1.500	.049	.085	.002	.1725	.3750	2.5	IT-3601500	68.70	IT-3601500X	78.15
7-32	.360	.382	1.750	.049	.085	.002	.1725	.3750	3.0	IT-3601750	70.50	IT-3601750X	79.80
7-32	.360	.382	1.800	.049	.085	.002	.1725	.3750	3.0	IT-3601800	68.70	IT-3601800X	78.15
7-32	.360	.382	2.000	.049	.085	.002	.1725	.3750	4.0	IT-3602000	71.50	IT-3602000X	81.60
5-32	.460	.482	.750	.069	.120	.002	.2100	.5000	3.0	IT-460750	70.50	IT-460750X	83.25
5-32	.460	.482	1.500	.069	.120	.002	.2100	.5000	3.0	IT-4601500	70.50	IT-4601500X	83.25
5-32	.460	.482	2.000	.069	.120	.002	.2100	.5000	3.0	IT-4602000	96.45	IT-4602000X	109.20
5-32	.490	.512	.750	.069	.120	.002	.2400	.5000	3.0	IT-490750	96.45	IT-490750X	109.20
5-32	.490	.512	1.125	.069	.120	.002	.2400	.5000	3.0	IT-4901125	96.45	IT-4901125X	109.20
5-32	.490	.512	1.500	.069	.120	.002	.2400	.5000	3.0	IT-4901500	96.45	IT-4901500X	109.20
5-32	.490	.512	2.000	.069	.120	.002	.2400	.5000	3.0	IT-4902000	96.45	IT-4902000X	109.20
5-32	.490	.512	2.500	.069	.120	.002	.2400	.5000	4.0	IT-4902500	98.70	IT-4902500X	112.30

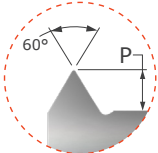
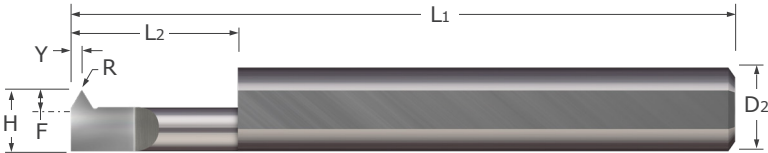
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Threading Tools

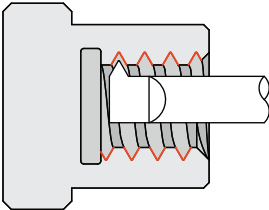
Standard – Threading Tools

UN Threads – Single Point – Left Hand

ITL



- 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	
TPI	H		L2	$Y \begin{smallmatrix} +.010" \\ -.000" \end{smallmatrix}$	P	$R \begin{smallmatrix} +.001" \\ -.000" \end{smallmatrix}$	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
40-72	.040	.045	.150	.009	.015	.001	-.0225	.1250	1.5	ITL-040150	46.70		
28-72	.050	.055	.200	.012	.020	.001	-.0125	.1250	1.5	ITL-050200	46.70	ITL-050200X	51.25
28-56	.060	.070	.200	.012	.020	.001	-.0025	.1250	1.5	ITL-060200	40.70		
28-56	.060	.070	.250	.012	.020	.001	-.0025	.1250	1.5	ITL-060250	40.70	ITL-060250X	45.35
28-56	.060	.070	.300	.012	.020	.001	-.0025	.1250	1.5	ITL-060300	40.70	ITL-060300X	45.35

TPI	H		L2	$Y \begin{smallmatrix} +.010" \\ -.000" \end{smallmatrix}$	P	$R \begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
28-56	.080	.090	.250	.012	.020	.002	.0175	.1250	1.5	ITL-080250	37.05	ITL-080250X	41.75
28-56	.080	.090	.350	.012	.020	.002	.0175	.1250	1.5	ITL-080350	37.05	ITL-080350X	41.75
28-56	.080	.090	.500	.012	.020	.002	.0175	.1250	1.5	ITL-080500	37.05		
24-56	.100	.110	.250	.014	.025	.002	.0375	.1250	1.5	ITL-100250	37.05	ITL-100250X	41.75
24-56	.100	.110	.350	.014	.025	.002	.0375	.1250	1.5	ITL-100350	37.05	ITL-100350X	41.75
24-56	.100	.110	.500	.014	.025	.002	.0375	.1250	1.5	ITL-100500	37.05	ITL-100500X	41.75
24-56	.100	.110	.600	.014	.025	.002	.0375	.1250	1.5	ITL-100600	37.05		
20-56	.120	.136	.250	.017	.030	.002	.0263	.1875	2.0	ITL-120250	39.55	ITL-120250X	44.75
20-56	.120	.136	.400	.017	.030	.002	.0263	.1875	2.0	ITL-120400	39.55	ITL-120400X	44.75
20-56	.120	.136	.500	.017	.030	.002	.0263	.1875	2.0	ITL-120500	39.55	ITL-120500X	44.75
20-56	.120	.136	.600	.017	.030	.002	.0263	.1875	2.0	ITL-120600	39.55		
20-56	.120	.136	.750	.017	.030	.002	.0263	.1875	2.0	ITL-120750	39.55	ITL-120750X	44.75
16-56	.140	.156	.250	.020	.035	.002	.0463	.1875	2.0	ITL-140250	39.55	ITL-140250X	44.75
16-56	.140	.156	.400	.020	.035	.002	.0463	.1875	2.0	ITL-140400	39.55	ITL-140400X	44.75
16-56	.140	.156	.500	.020	.035	.002	.0463	.1875	2.0	ITL-140500	39.55		
16-56	.140	.156	.750	.020	.035	.002	.0463	.1875	2.0	ITL-140750	39.55	ITL-140750X	44.75

*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



ITL

Standard – Threading Tools

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

Continued from previous page

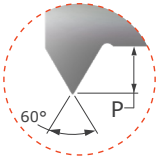
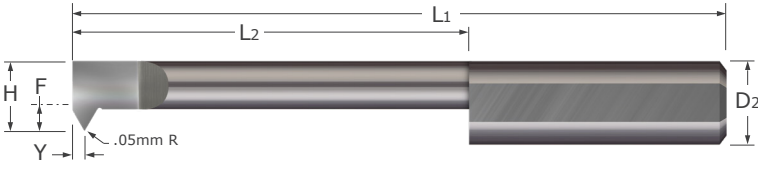
Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Radius	Centerline Offset	Shank Dia.	Overall Length	Uncoated		A1TiN Coated	
TPI	H	L ₂	$\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	$\begin{smallmatrix} Y +.010" \\ -.000" \end{smallmatrix}$	P	$\begin{smallmatrix} R +.001" \\ -.001" \end{smallmatrix}$	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
14-56	.160	.182	.250	.023	.040	.002	.0663	.1875	2.0	ITL-160250	39.55	ITL-160250X	44.75
14-56	.160	.182	.400	.023	.040	.002	.0663	.1875	2.0	ITL-160400	39.55		
14-56	.160	.182	.500	.023	.040	.002	.0663	.1875	2.0	ITL-160500	39.55	ITL-160500X	44.75
14-56	.160	.182	.750	.023	.040	.002	.0663	.1875	2.0	ITL-160750	39.55	ITL-160750X	44.75
14-56	.180	.202	.350	.023	.040	.002	.0550	.2500	2.5	ITL-180350	42.15	ITL-180350X	48.70
14-56	.180	.202	.500	.023	.040	.002	.0550	.2500	2.5	ITL-180500	42.15	ITL-180500X	48.70
14-56	.180	.202	.750	.023	.040	.002	.0550	.2500	2.5	ITL-180750	42.15	ITL-180750X	48.70
14-56	.180	.202	1.000	.023	.040	.002	.0550	.2500	2.5	ITL-1801000	42.15	ITL-1801000X	48.70
13-56	.200	.222	.400	.026	.045	.002	.0750	.2500	2.5	ITL-200400	42.15	ITL-200400X	48.70
13-56	.200	.222	.600	.026	.045	.002	.0750	.2500	2.5	ITL-200600	42.15		
13-56	.200	.222	.750	.026	.045	.002	.0750	.2500	2.5	ITL-200750	42.15	ITL-200750X	48.70
13-56	.200	.222	1.000	.026	.040	.002	.0750	.2500	2.5	ITL-2001000	42.15	ITL-2001000X	48.70
10-48	.230	.252	.400	.032	.055	.002	.0738	.3125	2.5	ITL-230400	52.85	ITL-230400X	60.70
10-48	.230	.252	.600	.032	.055	.002	.0738	.3125	2.5	ITL-230600	52.85	ITL-230600X	60.70
10-48	.230	.252	.750	.032	.055	.002	.0738	.3125	2.5	ITL-230750	52.85	ITL-230750X	60.70
10-48	.230	.252	1.000	.032	.055	.002	.0738	.3125	2.5	ITL-2301000	52.85	ITL-2301000X	60.70
8-40	.290	.312	.500	.040	.070	.002	.1338	.3125	2.5	ITL-290500	52.85	ITL-290500X	60.70
8-40	.290	.312	.750	.040	.070	.002	.1338	.3125	2.5	ITL-290750	52.85	ITL-290750X	60.70
8-40	.290	.312	1.000	.040	.070	.002	.1338	.3125	2.5	ITL-2901000	52.85	ITL-2901000X	60.70
8-40	.290	.312	1.250	.040	.070	.002	.1338	.3125	2.5	ITL-2901250	52.85	ITL-2901250X	60.70
8-40	.320	.342	.500	.043	.075	.002	.1325	.3750	2.5	ITL-320500	68.70	ITL-320500X	78.15
8-40	.320	.342	.750	.043	.075	.002	.1325	.3750	2.5	ITL-320750	68.70	ITL-320750X	78.15
8-40	.320	.342	1.000	.043	.075	.002	.1325	.3750	2.5	ITL-3201000	68.70	ITL-3201000X	78.15
8-40	.320	.342	1.250	.043	.075	.002	.1325	.3750	2.5	ITL-3201250	68.70	ITL-3201250X	78.15
7-32	.360	.382	.500	.049	.085	.002	.1725	.3750	2.5			ITL-360500X	78.15
7-32	.360	.382	.750	.049	.085	.002	.1725	.3750	2.5	ITL-360750	68.70	ITL-360750X	78.15
7-32	.360	.382	1.000	.049	.085	.002	.1725	.3750	2.5	ITL-3601000	68.70	ITL-3601000X	78.15
7-32	.360	.382	1.250	.049	.085	.002	.1725	.3750	2.5	ITL-3601250	68.70	ITL-3601250X	78.15
7-32	.360	.382	1.800	.049	.085	.002	.1725	.3750	2.5	ITL-3601800	68.70	ITL-3601800X	78.15
5-32	.490	.512	.750	.069	.120	.002	.2400	.5000	3.0	ITL-490750	96.45	ITL-490750X	109.20
5-32	.490	.512	1.500	.069	.120	.002	.2400	.5000	3.0	ITL-4901500	96.45	ITL-4901500X	109.20
5-32	.490	.512	2.000	.069	.120	.002	.2400	.5000	3.0	ITL-4902000	96.45	ITL-4902000X	109.20

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

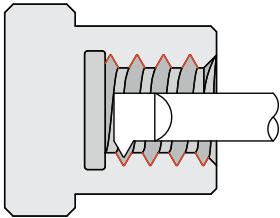
See pgs 39-47 for standard tool holders

Standard – Threading Tools
Metric Shank – Single Point – Right Hand

ITM



- 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 #	USD\$	Tool #	USD\$	Tool #	USD\$
	H	L2	+1.24mm -0.00mm	Y+.25mm - .00mm	P	F	D2 (h6)	L1						
.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-064613	41.60	ITM-064613G	47.50	ITM-064613X	48.15
.75-2.0 mm	4.60 mm	5.15 mm	25 mm	0.71 mm	1.22 mm	1.6 mm	6 mm	57 mm	ITM-064625	41.60			ITM-064625X	48.15
.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	41.60			ITM-065115X	48.15
.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	41.60			ITM-065128X	48.15
.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	50.25			ITM-085815X	59.60
.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	50.25			ITM-085825X	59.60
.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	50.25				
.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	50.25	ITM-087420G	58.30		
.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	50.25			ITM-087432X	59.60
.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	50.25	ITM-087446G	58.30	ITM-087446X	59.60
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	70.50				
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	90.30				

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

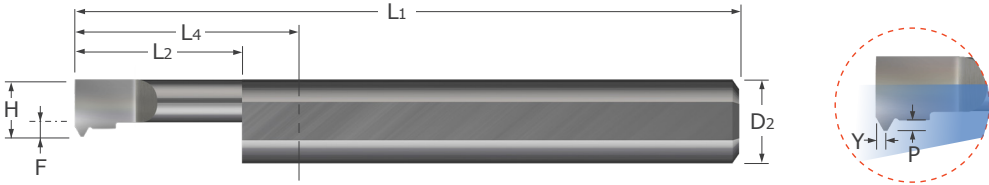
See pgs 39-47 for standard tool holders



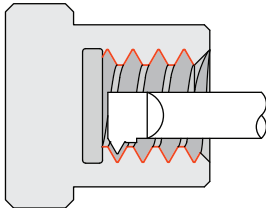
TT

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



Threads Size	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Centerline Offset	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
									Tool #	USD\$	Tool #	USD\$
	H		L2	Y	P	F	D2 (h6)	L1				
2-56	.050	.055	.150	.012	.0097	-.0125	.1250	1.5	TT-000256-015	47.55	TT-000256-015X	52.10
2-56	.050	.055	.200	.012	.0097	-.0125	.1250	1.5	TT-000256-020	47.55	TT-000256-020X	52.10
4-40	.065	.075	.200	.014	.0135	.0025	.1250	1.5	TT-000440-020	47.55	TT-000440-020X	52.10
4-40	.065	.075	.250	.014	.0135	.0025	.1250	1.5	TT-000440-025	37.80	TT-000440-025X	42.35
5-44	.080	.090	.200	.014	.0123	.0175	.1250	1.5	TT-000544-020	37.80	TT-000544-020X	42.35
5-44	.080	.090	.250	.014	.0123	.0175	.1250	1.5	TT-000544-025	37.80	TT-000544-025X	42.35
6-32	.080	.090	.250	.017	.0169	.0175	.1250	1.5	TT-000632-025	37.80	TT-000632-025X	42.35
6-32	.080	.090	.350	.017	.0169	.0175	.1250	1.5	TT-000632-035	37.80	TT-000632-035X	42.35
8-32	.100	.110	.250	.017	.0169	.0375	.1250	1.5	TT-000832-025	37.80	TT-000832-025X	42.35
8-32	.100	.110	.350	.017	.0169	.0375	.1250	1.5	TT-000832-035	37.80	TT-000832-035X	42.35
10-24	.120	.136	.250	.021	.0226	.0263	.1875	1.5	TT-001024-025	40.25	TT-001024-025X	45.45
10-24	.120	.136	.400	.021	.0226	.0263	.1875	1.5	TT-001024-040	40.25	TT-001024-040X	45.45
10-32	.120	.136	.250	.017	.0169	.0263	.1875	1.5	TT-001032-025	40.25	TT-001032-025X	45.45
10-32	.120	.136	.400	.017	.0169	.0263	.1875	1.5	TT-001032-040	40.25	TT-001032-040X	45.45
1/4-20	.160	.182	.400	.024	.0271	.0663	.1875	1.5	TT-014020-040	40.25	TT-014020-040X	45.45
1/4-20	.160	.182	.500	.024	.0271	.0663	.1875	1.5	TT-014020-050	40.25	TT-014020-050X	45.45
1/4-28	.180	.202	.500	.018	.0193	.0550	.2500	2.0	TT-014028-050	43.10	TT-014028-050X	49.20
1/4-28	.180	.202	.750	.018	.0193	.0550	.2500	2.0	TT-014028-075	43.10	TT-014028-075X	49.20
5/16-18	.220	.242	.750	.026	.0301	.0638	.3125	2.0	TT-051618-075	53.85	TT-051618-075X	61.35
5/16-18	.220	.242	1.000	.026	.0301	.0638	.3125	2.0	TT-051618-100	53.85	TT-051618-100X	61.35
5/16-24	.220	.242	.750	.021	.0226	.0638	.3125	2.0	TT-051624-075	53.85	TT-051624-075X	61.35
5/16-24	.220	.242	1.000	.021	.0226	.0638	.3125	2.0	TT-051624-100	53.85	TT-051624-100X	61.35
3/8-16	.280	.302	.750	.028	.0338	.1238	.3125	2.0	TT-038016-075	53.85	TT-038016-075X	61.35
3/8-16	.280	.302	1.000	.028	.0338	.1238	.3125	2.0	TT-038016-100	53.85	TT-038016-100X	61.35
3/8-24	.300	.322	.750	.021	.0226	.1438	.3125	2.0	TT-038024-075	53.85	TT-038024-075X	61.35
3/8-24	.300	.322	1.000	.021	.0226	.1438	.3125	2.0	TT-038024-100	53.85	TT-038024-100X	61.35

*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 Topping – Single Point (cont.)

TT

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		
	H		L ₂	$\begin{smallmatrix} +.050'' \\ -.000'' \end{smallmatrix}$	$\begin{smallmatrix} +.005'' \\ -.000'' \end{smallmatrix}$	$\begin{smallmatrix} +.000'' \\ -.002'' \end{smallmatrix}$	F	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
7/16-14	.310	.332	.750	.032	.0387	.1538	.3125	2.0		TT-071614-075	53.85	TT-071614-075X	61.35
7/16-14	.310	.332	1.000	.032	.0387	.1538	.3125	2.0		TT-071614-100	53.85	TT-071614-100X	61.35
7/16-20	.350	.372	1.000	.024	.0271	.1625	.3750	2.0		TT-071620-100	70.25	TT-071620-100X	79.10
7/16-20	.350	.372	1.250	.024	.0271	.1625	.3750	2.5		TT-071620-125	70.25	TT-071620-125X	79.60
1/2-13	.380	.402	1.000	.034	.0416	.1300	.5000	3.0		TT-012013-100	98.40	TT-012013-100X	111.05
1/2-13	.380	.402	1.250	.034	.0416	.1300	.5000	3.0		TT-012013-125	98.40	TT-012013-125X	111.05
1/2-20	.410	.432	1.000	.024	.0271	.1600	.5000	3.0		TT-012020-100	98.40	TT-012020-100X	111.05
1/2-20	.410	.432	1.250	.024	.0271	.1600	.5000	3.0		TT-012020-125	98.40	TT-012020-125X	111.05
9/16-12	.410	.432	1.000	.036	.0451	.1600	.5000	3.0		TT-091612-100	98.40	TT-091612-100X	111.05
9/16-12	.410	.432	1.250	.036	.0451	.1600	.5000	3.0		TT-091612-125	98.40	TT-091612-125X	111.05
9/16-18	.460	.482	1.000	.026	.0301	.2100	.5000	3.0		TT-091618-100	98.40	TT-091618-100X	111.05
9/16-18	.460	.482	1.250	.026	.0301	.2100	.5000	3.0		TT-091618-125	98.40	TT-091618-125X	111.05
5/8-11	.490	.512	1.000	.039	.0492	.2400	.5000	3.0		TT-058011-100	98.40	TT-058011-100X	111.05
5/8-11	.490	.512	1.250	.039	.0492	.2400	.5000	3.0		TT-058011-125	98.40	TT-058011-125X	111.05
3/4-16	.490	.512	1.000	.028	.0338	.2400	.5000	3.0		TT-034016-100	98.40	TT-034016-100X	111.05
3/4-16	.490	.512	1.250	.028	.0338	.2400	.5000	3.0		TT-034016-125	98.40	TT-034016-125X	111.05

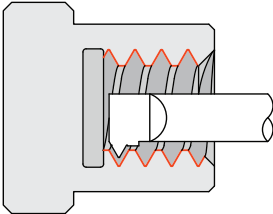
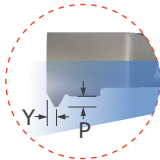
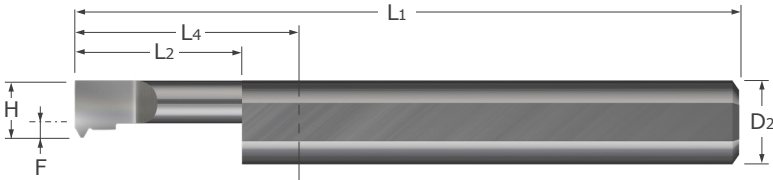
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

Standard – Threading Tools

See pgs 39-47 for standard tool holders



Standard – 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
- 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	
H		L2		Y	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
		+1.27mm -.000mm		+1.27mm -.000mm	+.000mm -.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	47.55	TMT-025045-05X	52.10
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	47.55	TMT-025045-07X	52.10
M3x0.50	2.00 mm	2.20 mm	6.00 mm	.319 mm	.271 mm	0.41 mm	.1250	1.5	TMT-030050-06	37.80	TMT-030050-06X	42.35
M3x0.50	2.00 mm	2.20 mm	8.00 mm	.319 mm	.271 mm	0.41 mm	.1250	1.5	TMT-030050-08	37.80	TMT-030050-08X	42.35
M4x0.70	2.50 mm	2.70 mm	7.00 mm	.396 mm	.379 mm	0.91 mm	.1250	1.5	TMT-040070-07	37.80	TMT-040070-07X	42.35
M4x0.70	2.50 mm	2.70 mm	10.00 mm	.396 mm	.379 mm	0.91 mm	.1250	1.5	TMT-040070-10	37.80	TMT-040070-10X	42.35
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	40.25	TMT-045075-06X	44.85
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	40.25	TMT-045075-09X	44.85
M5x0.80	3.00 mm	3.40 mm	6.00 mm	.434 mm	.433 mm	0.62 mm	.1875	1.5	TMT-050080-06	40.25	TMT-050080-06X	44.85
M5x0.80	3.00 mm	3.40 mm	9.00 mm	.434 mm	.433 mm	0.62 mm	.1875	1.5	TMT-050080-09	40.25	TMT-050080-09X	44.85
M6x1.00	4.00 mm	4.50 mm	10.00 mm	.511 mm	.541 mm	1.62 mm	.1875	1.5	TMT-060100-10	40.25	TMT-060100-10X	44.85
M6x1.00	4.00 mm	4.50 mm	14.00 mm	.511 mm	.541 mm	1.62 mm	.1875	2.0	TMT-060100-14	41.60	TMT-060100-14X	46.20
M8x1.25	5.50 mm	6.00 mm	14.00 mm	.607 mm	.677 mm	1.53 mm	.3125	2.0	TMT-080125-14	53.85	TMT-080125-14X	58.45
M8x1.25	5.50 mm	6.00 mm	22.00 mm	.607 mm	.677 mm	1.53 mm	.3125	2.0	TMT-080125-22	53.85	TMT-080125-22X	58.45
M10x1.50	7.50 mm	8.00 mm	24.00 mm	.703 mm	.812 mm	3.53 mm	.3125	2.0	TMT-100150-24	53.85	TMT-100150-24X	58.45
M10x1.50	7.50 mm	8.00 mm	31.00 mm	.703 mm	.812 mm	3.53 mm	.3125	2.5	TMT-100150-31	53.85	TMT-100150-31X	58.45
M12x1.75	9.00 mm	9.50 mm	22.00 mm	.804 mm	.957 mm	4.24 mm	.3750	2.0	TMT-120175-22	70.25	TMT-120175-22X	74.85
M12x1.75	9.00 mm	9.50 mm	31.00 mm	.804 mm	.957 mm	4.24 mm	.3750	2.5	TMT-120175-31	71.40	TMT-120175-31X	76.00
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	98.40	TMT-160200-31X	102.95
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	98.40	TMT-160200-44X	102.95
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	98.40	TMT-200250-31X	102.95
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	98.40	TMT-200250-44X	102.95

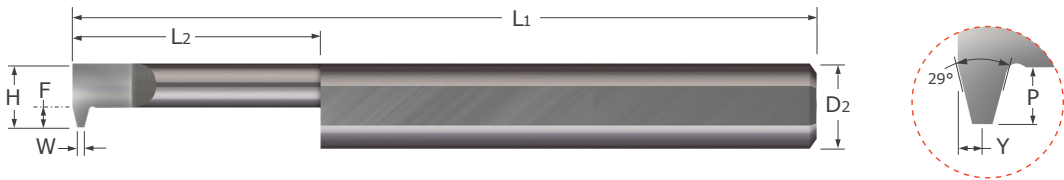
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 39-47 for standard tool holders

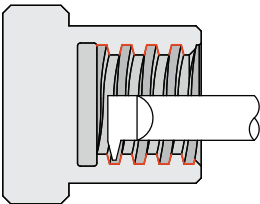


Standard – Threading Tools
ACME Threads

IAT



- 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	
TPI	H	L2	$^{+.050"}_{-.000"}$	Y	P	$W^{+.000"}_{-.005"}$	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
16	.165	.187	.400	.035	.045	.021	.0400	.2500	2.5	IAT2-400-16	42.15		
16	.165	.187	.600	.024	.050	.021	.0400	.2500	2.5	IAT2-600-16	42.15		
16	.165	.187	.750	.035	.045	.021	.0400	.2500	2.5	IAT2-750-16	42.15		
16	.165	.187	1.000	.035	.045	.021	.0400	.2500	2.5	IAT2-1000-16	42.15		
16	.200	.222	.400	.035	.045	.021	.0750	.2500	2.5	IAT-400-16	42.15	IAT-400-16X	48.70
16	.200	.222	.600	.024	.045	.021	.0750	.2500	2.5	IAT-600-16	42.15		
16	.200	.222	.750	.035	.045	.021	.0750	.2500	2.5	IAT-750-16	42.15	IAT-750-16X	48.70
16	.200	.222	1.000	.035	.045	.021	.0750	.2500	2.5	IAT-1000-16	42.15	IAT-1000-16X	48.70
14	.219	.241	.500	.043	.070	.024	.0627	.3125	2.5	IAT2-500-14	52.20		
14	.219	.241	.750	.030	.070	.024	.0627	.3125	2.5	IAT2-750-14	52.20		
14	.219	.241	1.000	.043	.070	.024	.0627	.3125	2.5	IAT2-1000-14	52.20		
14	.219	.241	1.250	.043	.070	.024	.0627	.3125	2.5	IAT2-1250-14	52.20		
14	.255	.277	.500	.043	.070	.024	.0988	.3125	2.5	IAT-500-14	52.20	IAT-500-14X	60.10
14	.255	.277	.750	.030	.070	.024	.0988	.3125	2.5	IAT-750-14	52.20	IAT-750-14X	60.10
14	.255	.277	1.000	.043	.070	.024	.0988	.3125	2.5	IAT-1000-14	52.20	IAT-1000-14X	60.10
14	.255	.277	1.250	.043	.070	.024	.0988	.3125	2.5	IAT-1250-14	52.20	IAT-1250-14X	60.10
12	.269	.291	.750	.049	.085	.028	.0815	.3750	2.5	IAT2-750-12	68.70		
12	.269	.291	1.000	.036	.085	.028	.0815	.3750	2.5	IAT2-1000-12	68.70		
12	.269	.291	1.250	.049	.085	.028	.0815	.3750	2.5	IAT2-1250-12	68.70		
12	.269	.291	1.800	.049	.085	.028	.0815	.3750	4.0	IAT2-1800-12	68.70		
12	.360	.382	.750	.049	.085	.028	.1725	.3750	2.5	IAT-750-12	68.70	IAT-750-12X	78.15
12	.360	.382	1.000	.036	.085	.028	.1725	.3750	2.5	IAT-1000-12	68.70	IAT-1000-12X	78.15
12	.360	.382	1.250	.049	.085	.028	.1725	.3750	2.5	IAT-1250-12	68.70	IAT-1250-12X	78.15
12	.360	.382	1.800	.049	.085	.028	.1725	.3750	2.5	IAT-1800-12	68.70	IAT-1800-12X	78.15
10	.378	.400	.750	.060	.120	.032	.1280	.5000	3.0	IAT2-750-10	96.45		
10	.378	.400	1.500	.060	.120	.032	.1280	.5000	3.0	IAT2-1500-10	96.45		
10	.378	.400	2.000	.060	.120	.032	.1280	.5000	3.0	IAT2-2000-10	96.45		
10	.490	.512	.750	.060	.120	.032	.2400	.5000	3.0	IAT-750-10	96.45	IAT-750-10X	109.20
10	.490	.512	1.500	.060	.120	.032	.2400	.5000	3.0	IAT-1500-10	96.45	IAT-1500-10X	109.20
10	.490	.512	2.000	.060	.120	.032	.2400	.5000	3.0	IAT-2000-10	96.45	IAT-2000-10X	109.20

*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



IAT

Standard – Threading Tools
ACME Threads (cont.)

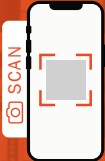
Continued from previous page

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 #	USD\$	Tool #	USD\$
TPI	H		L2 ^{+ .050"} _{– .000"}	Y	P	W ^{+ .000"} _{– .005"}	F	D2 (h6)	L1				
8	.478	.500	.750	.064	.120	.041	.2280	.5000	3.0	IAT2-750-8	96.45		
8	.478	.500	1.500	.064	.120	.041	.2280	.5000	3.0	IAT2-1500-8	96.45		
8	.478	.500	2.000	.064	.120	.041	.2280	.5000	3.0	IAT2-2000-8	96.45		
8	.490	.512	.750	.064	.120	.041	.2400	.5000	3.0	IAT-750-8	96.45	IAT-750-8X	109.20
8	.490	.512	1.500	.064	.120	.041	.2400	.5000	3.0	IAT-1500-8	96.45	IAT-1500-8X	109.20
8	.490	.512	2.000	.064	.120	.041	.2400	.5000	3.0	IAT-2000-8	96.45	IAT-2000-8X	109.20
6	.490	.512	.750	.072	.120	.057	.2400	.5000	3.0	IAT-750-6	96.45	IAT-750-6X	109.20
6	.490	.512	1.500	.072	.120	.057	.2400	.5000	3.0	IAT-1500-6	96.45	IAT-1500-6X	109.20
6	.490	.512	2.000	.072	.120	.057	.2400	.5000	3.0	IAT-2000-6	96.45	IAT-2000-6X	109.20
5	.490	.512	1.500	.078	.120	.069	.2400	.5000	3.0	IAT-1500-5	96.45	IAT-1500-5X	109.20
5	.490	.512	2.000	.078	.120	.069	.2400	.5000	3.0	IAT-2000-5	96.45	IAT-2000-5X	109.20

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

Technical Resources on Micro100.com

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



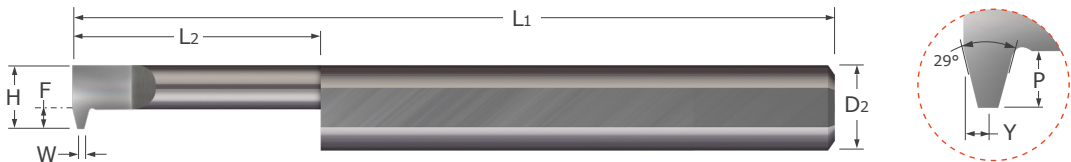
See pgs 39-47 for standard tool holders



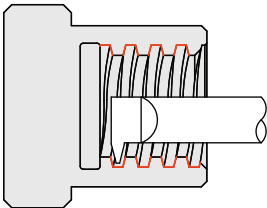
Standard – Threading Tools

Stub ACME Threads

SAT



- 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		
TPI	H		L2	$\begin{smallmatrix} +.050" \\ -.000" \end{smallmatrix}$	Y	P	$\begin{smallmatrix} +.000" \\ -.005" \end{smallmatrix}$	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
16	.200	.222	.400	.024	.045	.024	.0750	.2500	2.5		SAT-400-16	42.15		
16	.200	.222	.600	.024	.045	.024	.0750	.2500	2.5		SAT-600-16	42.15	SAT-600-16X	48.70
16	.200	.222	.750	.024	.045	.024	.0750	.2500	2.5		SAT-750-16	42.15	SAT-750-16X	48.70
16	.200	.222	1.000	.024	.045	.024	.0750	.2500	2.5		SAT-1000-16	42.15	SAT-1000-16X	48.70
14	.235	.257	.500	.045	.070	.028	.0788	.3125	2.5		SAT-500-14	52.20	SAT-500-14X	60.10
14	.235	.257	.750	.045	.070	.028	.0788	.3125	2.5		SAT-750-14	52.20	SAT-750-14X	60.10
14	.235	.257	1.000	.045	.070	.028	.0788	.3125	2.5		SAT-1000-14	52.20	SAT-1000-14X	60.10
14	.235	.257	1.750	.045	.070	.028	.0788	.3125	2.5		SAT-1750-14	52.20	SAT-1750-14X	60.10
12	.360	.382	.500	.051	.085	.033	.1725	.3750	2.5		SAT-500-12	68.70		
12	.360	.382	.750	.051	.085	.033	.1725	.3750	2.5		SAT-750-12	68.70	SAT-750-12X	78.15
12	.360	.382	1.000	.051	.085	.033	.1725	.3750	2.5		SAT-1000-12	68.70	SAT-1000-12X	78.15
12	.360	.382	1.250	.051	.085	.033	.1725	.3750	2.5		SAT-1250-12	68.70		
12	.360	.382	1.800	.051	.085	.033	.1725	.3750	2.5		SAT-1800-12	68.70	SAT-1800-12X	78.15
10	.490	.512	.750	.062	.120	.037	.2400	.5000	3.0		SAT-750-10	96.45	SAT-750-10X	109.20
10	.490	.512	1.500	.062	.120	.037	.2400	.5000	3.0		SAT-1500-10	96.45	SAT-1500-10X	109.20
10	.490	.512	2.000	.062	.120	.037	.2400	.5000	3.0		SAT-2000-10	96.45		
9	.490	.512	2.000	.052	.120	.042	.2400	.5000	3.0		SAT-2000-9	96.45	SAT-2000-9X	109.20
8	.490	.512	.750	.068	.120	.048	.2400	.5000	3.0		SAT-750-8	96.45		
8	.490	.512	1.500	.068	.120	.048	.2400	.5000	3.0		SAT-1500-8	96.45	SAT-1500-8X	109.20
8	.490	.512	2.000	.068	.120	.048	.2400	.5000	3.0		SAT-2000-8	96.45	SAT-2000-8X	109.20
7	.490	.512	.750	.059	.120	.055	.2400	.5000	3.0		SAT-750-7	96.45		
7	.490	.512	2.000	.059	.120	.055	.2400	.5000	3.0		SAT-2000-7	96.45	SAT-2000-7X	109.20
6	.490	.512	2.000	.076	.120	.065	.2400	.5000	3.0		SAT-2000-6	96.45	SAT-2000-6X	109.20
5	.490	.512	.750	.083	.120	.079	.2400	.5000	3.0		SAT-750-5	96.45		
5	.490	.512	1.500	.083	.120	.079	.2400	.5000	3.0		SAT-1500-5	96.45	SAT-1500-5X	109.20
5	.490	.512	2.000	.083	.120	.079	.2400	.5000	3.0		SAT-2000-5	96.45		

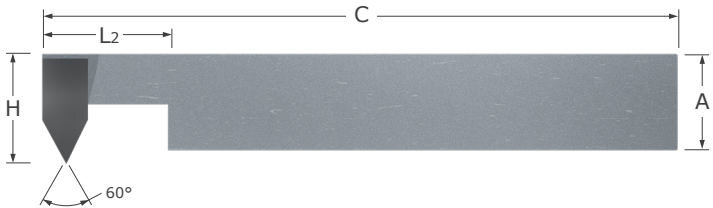
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

See pgs 39-47 for standard tool holders



IDRT

Standard – Threading Tools
UN Threads – Right Hand – Brazed

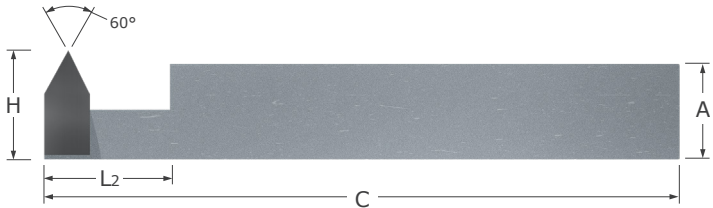


- Designed for threading multiple thread pitches (ANSI, UN and Metric 60°)
- Designed for single point threading where a square shank tool is required in .450" bores and larger
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- Solid carbide tipped with zinc coated steel shank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

Head Width	Maximum Bore Depth	Square Shank	Overall Length	Brazed Style	
				Tool #	USD\$
H	L2 ^{+.050"} _{-.000"}	A ^{+.0000"} _{-.0030"}	C		
.450	.615	.3750	2.50	IDRT-60	61.05
.450	1.115	.3750	2.50	IDRT-61	61.05
.575	.875	.5000	3.52	IDRT-80	61.55
.575	1.395	.5000	3.52	IDRT-81	56.65

IDLT

Standard – Threading Tools
UN Threads – Left Hand – Brazed



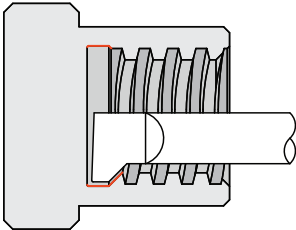
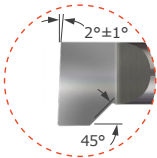
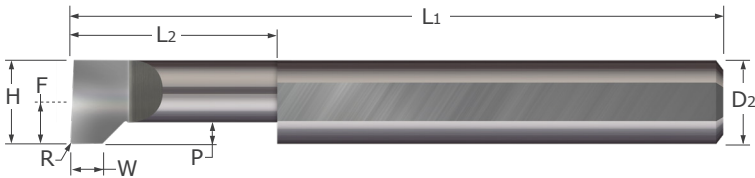
- Designed for threading multiple thread pitches (ANSI, UN, and Metric 60°) in a left hand threading application
- Designed for single point threading where a square shank tool is required in .450" bores and larger
- Sharp corner profile
- Lockdown flat automatically locates tool on center
- Solid carbide 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 #	USD\$
H	L2 ^{+.050"} _{-.000"}	A ^{+.0000"} _{-.0030"}	C		
.450	.615	.3750	2.50	IDLT-60	61.05
.450	1.115	.3750	2.50	IDLT-61	61.05
.575	.875	.5000	3.52	IDLT-80	61.55
.575	1.395	.5000	3.52	IDLT-81	61.55

Standard – Threading Tools

Thread Relief Tools

LTR



- 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 #	USD\$	Tool #	USD\$
H	L2	W	F	R	P	F	D2 (h6)	L1				
.094	.104	.250	.049	.002	.040	.0315	.1250	1.5	LTR-094-4	30.70	LTR-094-4X	35.30
.094	.104	.375	.049	.002	.040	.0315	.1250	1.5	LTR-094-6	30.70		
.125	.139	.375	.063	.002	.040	.0625	.1250	1.5	LTR-125-6	30.70		
.125	.139	.500	.063	.002	.040	.0625	.1250	1.5	LTR-125-8	30.70	LTR-125-8X	35.30

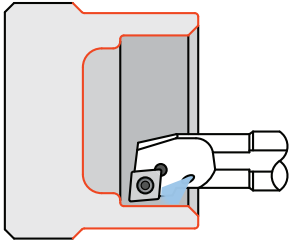
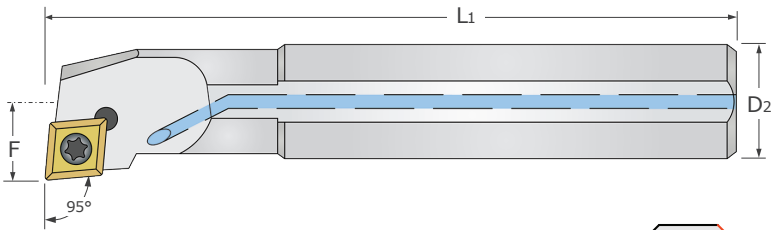
H	L2	W	F	R	P	F	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.156	.174	.375	.063	.005	.040	.0625	.1875	2.0	LTR-156-6	35.30	LTR-156-6X	40.50
.156	.174	.500	.063	.005	.040	.0625	.1875	2.0	LTR-156-8	35.30	LTR-156-8X	40.50
.187	.205	.375	.078	.005	.040	.0938	.1875	2.0	LTR-187-6	35.30	LTR-187-6X	40.50
.187	.205	.500	.078	.005	.040	.0938	.1875	2.0	LTR-187-8	35.30	LTR-187-8X	40.50
.187	.205	.750	.078	.005	.040	.0938	.1875	2.0	LTR-187-12	35.30	LTR-187-12X	40.50
.187	.205	1.000	.078	.005	.040	.0938	.1875	2.0	LTR-187-16	35.30	LTR-187-16X	40.50
.250	.272	.500	.094	.005	.050	.1250	.2500	2.5	LTR-250-8	42.15	LTR-250-8X	48.70
.250	.272	.750	.094	.005	.050	.1250	.2500	2.5	LTR-250-12	42.15	LTR-250-12X	48.70
.250	.272	1.000	.094	.005	.050	.1250	.2500	2.5	LTR-250-16	42.15	LTR-250-16X	48.70
.250	.272	1.250	.094	.005	.050	.1250	.2500	2.5	LTR-250-20	42.15	LTR-250-20X	48.70
.312	.334	.750	.094	.005	.075	.1563	.3125	2.5	LTR-312-12	52.85	LTR-312-12X	60.70
.312	.334	1.250	.094	.005	.075	.1563	.3125	2.5	LTR-312-20	52.85	LTR-312-20X	60.70
.375	.397	.750	.125	.005	.100	.1875	.3750	2.5	LTR-375-12	69.55	LTR-375-12X	78.90
.375	.397	1.250	.125	.005	.100	.1875	.3750	2.5	LTR-375-20	69.55	LTR-375-20X	78.90
.500	.522	1.000	.156	.010	.125	.2500	.5000	3.0	LTR-500-16	98.50	LTR-500-16X	111.15
.500	.522	1.500	.156	.010	.125	.2500	.5000	3.0	LTR-500-24	98.50	LTR-500-24X	111.15

*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

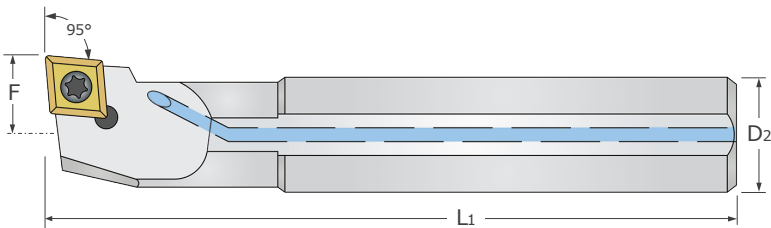
Minimum Bore Diameter*	Centerline Offset	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
						Tool #	USD\$
.330	.177	.2500	3.1	50-1100	A04F SCLCR 2	20-0821	89.60
.380	.197	.3125	3.9	50-1100	A05H SCLCR 2	20-0823	91.85
.490	.275	.3750	4.5	50-1100	A06J SCLCR 2	20-0825	95.90
.630	.354	.5000	4.9	50-1100	A08K SCLCR 2	20-0827	99.85
.630	.354	.5000	4.9	50-1105	A08K SCLCR 3	20-0850	103.90
.775	.433	.6250	5.9	50-1100	A10M SCLCR 2	20-0829	106.70
.775	.433	.6250	5.9	50-1105	A10M SCLCR 3	20-0852	110.75
.925	.511	.7500	7.1	50-1105	A12Q SCLCR 3	20-0854	119.90

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

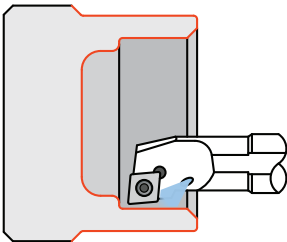
See pg 328 for indexable insert accessories
See pgs 312-317 for tool set options

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	
	F	D2	L1			Tool #	USD\$
.330	.177	.2500	3.1	50-1100	A04F SCLCL 2	20-0822	89.60
.380	.197	.3125	3.9	50-1100	A05H SCLCL 2	20-0824	91.85
.490	.275	.3750	4.5	50-1100	A06J SCLCL 2	20-0826	95.90
.630	.354	.5000	4.9	50-1100	A08K SCLCL 2	20-0828	99.85
.630	.354	.5000	4.9	50-1105	A08K SCLCL 3	20-0851	103.90
.775	.433	.6250	5.9	50-1100	A10M SCLCL 2	20-0830	106.70
.775	.433	.6250	5.9	50-1105	A10M SCLCL 3	20-0853	110.75
.925	.511	.7500	7.1	50-1105	A12Q SCLCL 3	20-0855	119.90

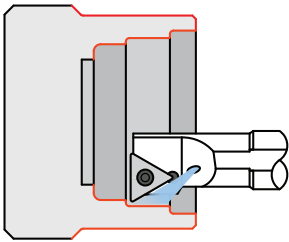
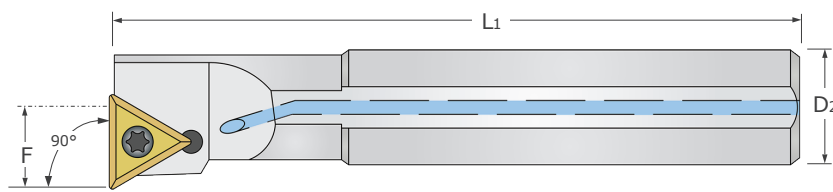
*Suggested Minimum Bore Diameter to accommodate .015" insert radius, chip evacuation and retract clearance in static (not live) applications.

See pg 328 for indexable insert accessories
See pgs 312-317 for tool set options



Indexable – Boring Bars

Facing – Coolant Through – Right Hand



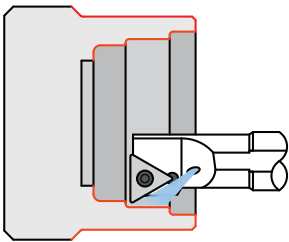
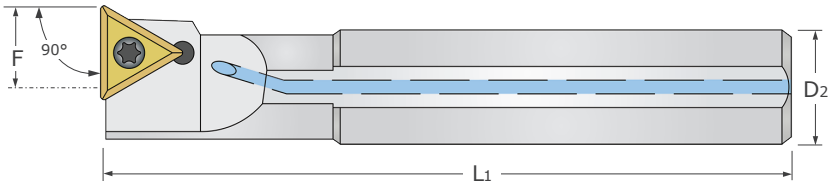
- Coolant through boring bar for left hand boring and facing with 0° approach (lead) angle, which allows for deeper roughing passes
- Made from precision ground heat treated steel
- Coolant through design for improved chip removal
- Insert not included

Minimum Bore Diameter*	Centerline Offset	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
	F					Tool #	USD\$
.490	.275	.3750	4.3	50-1300	A06J STFCR 2	20-1031	93.50
.633	.354	.5000	4.9	50-1300	A08K STFCR 2	20-1033	99.05
.775	.433	.6250	5.9	50-1300	A10M STFCR 2	20-1035	100.35

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

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

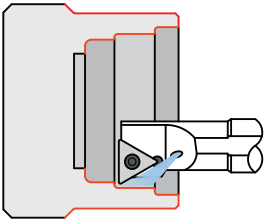
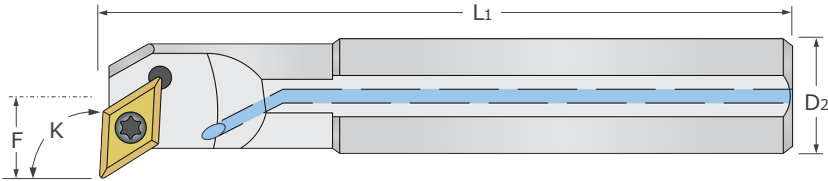
Minimum Bore Diameter*	Centerline Offset	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
	F					Tool #	USD\$
.633	.354	.5000	4.9	50-1300	A08K STFCL 2	20-1034	99.05
.775	.433	.6250	5.9	50-1300	A10M STFCL 2	20-1036	100.35

*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 312-317 for tool set options

Indexable – Boring Bars

Profiling – Coolant Through – Right Hand



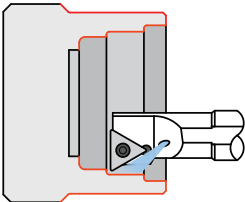
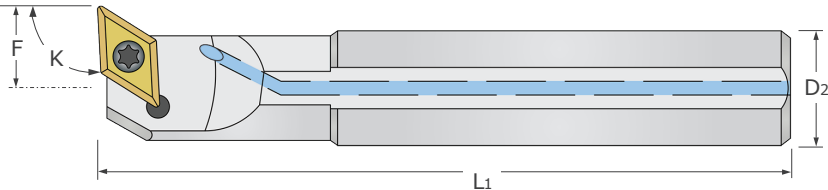
- Coolant through boring bar for right hand boring, facing, and profiling
- Made from precision ground heat treated steel
- Coolant through design for improved chip removal
- Insert not included

Minimum Bore Diameter*	Centerline Offset	K Angle	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
	F	K	D2	L1			Tool #	USD\$
.563	.197	107.5°	.3125	3.9	50-1200	A05H SDQCR 2	20-0901	90.00
.622	.275	93°	.3750	4.5	50-1200	A06J SDUCR 2	20-0931	93.50
.732	.354	93°	.5000	4.9	50-1200	A08K SDUCR 2	20-0933	99.05
.868	.433	93°	.6250	5.9	50-1200	A10M SDUCR 2	20-0935	100.35

*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

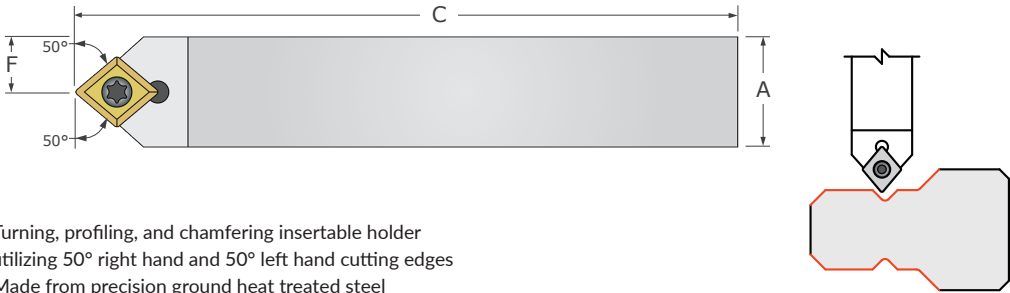
Minimum Bore Diameter*	Centerline Offset	K Angle	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
	F	K	D2	L1			Tool #	USD\$
.563	.197	107.5°	.3125	3.9	50-1200	A05H SDQCL 2	20-0902	90.00
.622	.275	93°	.3750	4.5	50-1200	A06J SDUCL 2	20-0932	93.50
.732	.354	93°	.5000	4.9	50-1200	A08K SDUCL 2	20-0934	99.05
.868	.433	93°	.6250	5.9	50-1200	A10M SDUCL 2	20-0936	100.35

*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 312-317 for tool set options



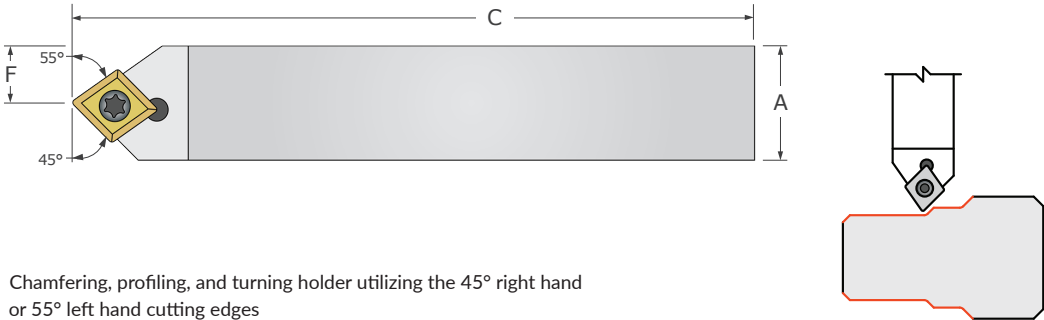
Indexable – Tool Holders
Chamfering & Turning – Style SCMCN



- 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 #	USD\$
F	A	C				
.157	.2500	2.4	50-1100	SCMCN 0404 D2	10-3311	48.90
.157	.3125	2.4	50-1100	SCMCN 0505 D2	10-3312	52.95
.189	.3750	2.8	50-1100	SCMCN 0606 E2	10-3313	59.50
.250	.5000	3.2	50-1100	SCMCN 0808 F2	10-3314	65.20
.315	.6250	3.9	50-1100	SCMCN 1010 H2	10-3315	72.15

Indexable – Tool Holders
Chamfering & Turning – Style SCSCR



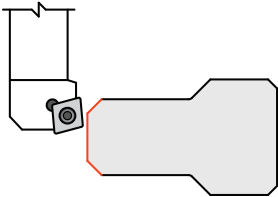
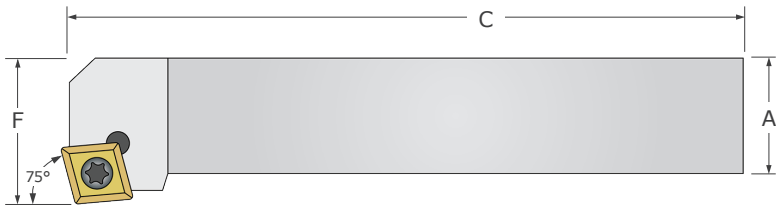
- Chamfering, profiling, and turning holder utilizing the 45° right hand or 55° left hand cutting edges
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
					Tool #	USD\$
F	A	C				
.157	.2500	2.4	50-1100	SCSCR 0404 D2	10-3351	48.90
.157	.3125	2.4	50-1100	SCSCR 0505 D2	10-3353	52.95
.189	.3750	2.8	50-1100	SCSCR 0606 E2	10-3355	59.50
.250	.5000	3.2	50-1100	SCSCR 0808 F2	10-3357	65.20
.315	.6250	3.9	50-1100	SCSCR 1010 H2	10-3359	72.15
.390	.7500	4.9	50-1100	SCSCR 1212 J3	10-3365	84.80

See pg 328 for indexable insert accessories
See pgs 312-317 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	
F	A	C			Tool #	USD\$
.394	.2500	2.4	50-1100	SCKCR 0404 D2	10-3211	48.90
.472	.3750	2.8	50-1100	SCKCR 0606 E2	10-3213	59.50
.630	.5000	3.2	50-1100	SCKCR 0808 F2	10-3215	65.20
.787	.6250	3.9	50-1100	SCKCR 1010 H2	10-3217	72.15

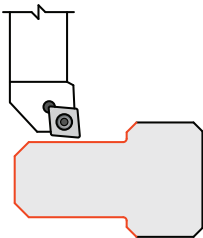
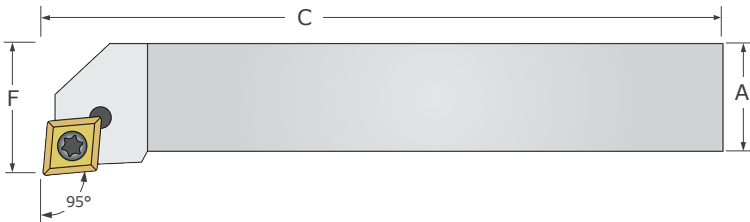
Indexable – Tool Holders

See pg 328 for indexable insert accessories
See pgs 312-317 for tool set options



Indexable – Tool Holders

Facing & Turning – Radial – Right Hand – Style SCLCR

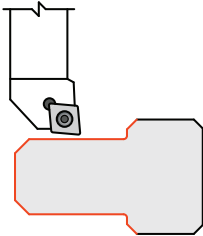


- Turning and facing indexable right hand holder with 95° approach
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
F	A	C			Tool #	USD\$
.394	.2500	2.4	50-1100	SCLCR 0404 D2	10-3231	48.90
.394	.3125	2.4	50-1100	SCLCR 0404 D2	10-3233	52.95
.472	.3750	2.8	50-1100	SCLCR 0606 E2	10-3235	59.50
.628	.5000	3.2	50-1100	SCLCR 0808 F2	10-3237	65.20
.787	.6250	3.9	50-1100	SCLCR 1010 H2	10-3241	72.15
1.000	.7500	4.9	50-1105	SCLCR 1212 J3	10-3251	84.80

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	
F	A	C			Tool #	USD\$
.394	.2500	2.4	50-1100	SCLCL 0404 D2	10-3232	48.90
.394	.3125	2.4	50-1100	SCLCL 0505 D2	10-3234	52.95
.472	.3750	2.8	50-1100	SCLCL 0606 E2	10-3236	59.50
.600	.5000	3.2	50-1100	SCLCL 0808 F2	10-3238	65.20
.787	.6250	3.9	50-1100	SCLCL 1010 H2	10-3242	72.15
1.000	.7500	4.9	50-1105	SCLCL 1212 J3	10-3252	84.80

See pg 328 for indexable insert accessories

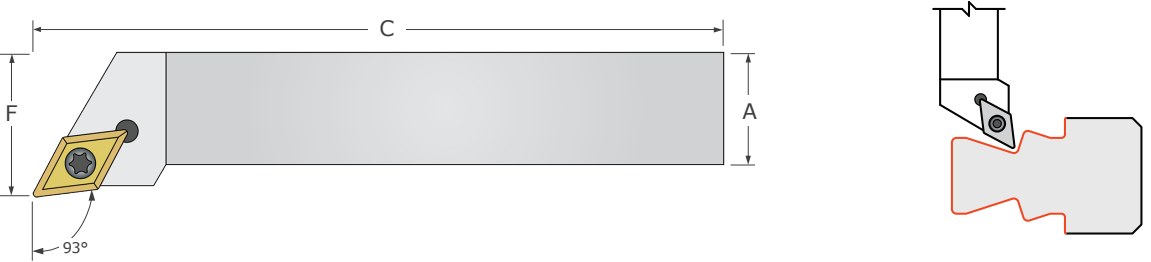
See pgs 312-317 for tool set options

Indexable – Tool Holders



Indexable – Tool Holders

Facing & Turning – Radial – Right Hand – Style SDJCR

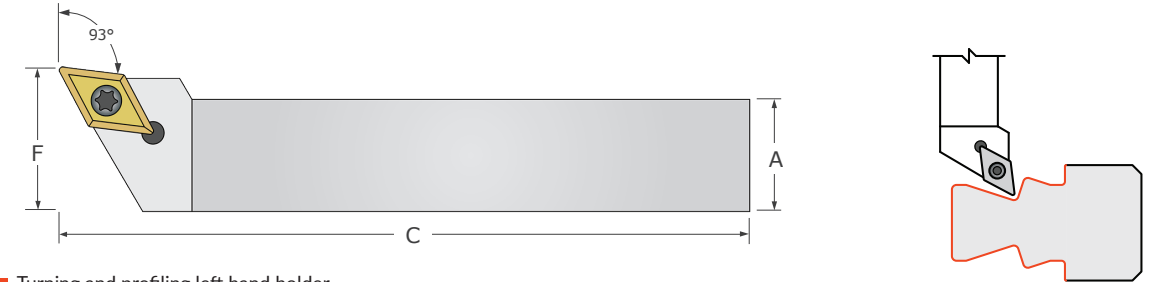


- Turning and profiling right hand holder
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
F	A	C			Tool #	USD\$
.394	.3125	3.9	50-1200	SDJCR 0505 H2	10-3641	59.50
.472	.3750	3.9	50-1200	SDJCR 0606 H2	10-3651	69.65
.629	.5000	3.9	50-1200	SDJCR 0808H2	10-3653	73.40
.787	.6250	3.9	50-1200	SDJCR 1010 H2	10-3615	81.40

Indexable – Tool Holders

Facing & Turning – Radial – Left Hand – Style SDJCL



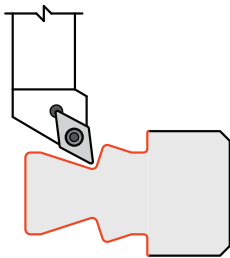
- Turning and profiling left hand holder
- Made from precision ground heat treated steel
- Insert not included

Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
F	A	C			Tool #	USD\$
.394	.3125	3.9	50-1200	SDJCL 0505 H2	10-3642	59.50
.472	.3750	3.9	50-1200	SDJCL 0606 H2	10-3652	69.65
.629	.7500	3.9	50-1200	SDJCL 0808H2	10-3654	73.40
.787	.6250	3.9	50-1200	SDJCL 1010 H2	10-3616	81.40

See pg 328 for indexable insert accessories
See pgs 312-317 for tool set options



Indexable – Tool Holders
Profiling – Style SDNCN



- 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

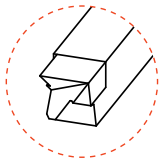
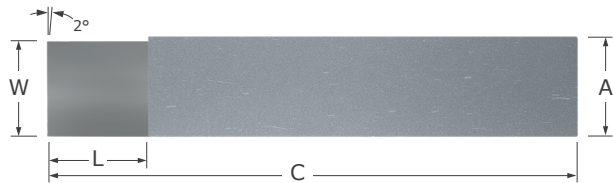
Locating Offset	Square Shank	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
F	A	C			Tool #	USD\$
.157	.3125	3.9	50-1200	SDNCN 0505 H2	10-3761	59.50
.189	.3750	3.9	50-1200	SDNCN 0606 H2	10-3762	69.65
.250	.5000	3.9	50-1200	SDNCN 0808 H2	10-3763	73.40
.313	.6250	3.9	50-1200	SDNCN 1010 H2	10-3764	81.40

See pg 328 for indexable insert accessories
See pgs 312-317 for tool set options

Brazed – Box Turning Tools

BT

BT Style



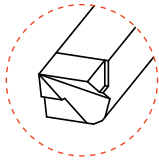
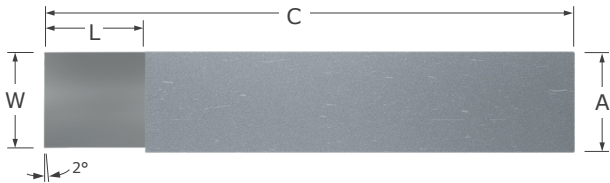
- Designed to be used for outside diameter (OD) turning with roller box turning attachments in automatic screw machines and turret lathes
- Ground to provide high metal removal rates improved finish and concentricity, when used in conjunction with a properly adjusted roller box turning attachment
- Solid 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	
W ^{+ .040"} _{– .000"}	L	A ^{+ .0000"} _{– .0100"}	C	Tool #	USD\$
.200	.185	.2500	1.50	BT-4	37.25
.263	.185	.3125	1.75	BT-5	43.80
.325	.310	.3750	2.00	BT-6	39.45
.388	.310	.4375	2.25	BT-7	63.75
.450	.375	.5000	2.50	BT-8	43.10
.513	.375	.5625	2.75	BT-9	76.80
.575	.500	.6250	3.00	BT-10	66.75

Brazed – Box Turning Tools

BTL

BTL Style



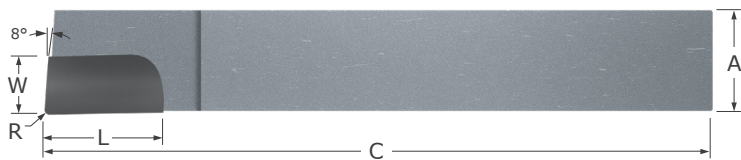
- Designed to be used for left hand outside diameter (OD) turning with roller box turning attachments in automatic screw machines and turret lathes
- Ground to provide high metal removal rates, improved finish, and concentricity when used in conjunction with a properly adjusted roller box turning attachment
- 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	
W ^{+ .040"} _{– .000"}	L	A ^{+ .0000"} _{– .0100"}	C	Tool #	USD\$
.200	.185	.2500	1.50	BTL-4	61.25
.263	.185	.3125	1.75	BTL-5	61.35
.388	.310	.4375	2.25	BTL-7	64.55
.450	.375	.5000	2.50	BTL-8	64.05
.513	.375	.5625	2.75	BTL-9	77.10
.575	.500	.6250	3.00	BTL-10	81.90



AR

Brazed – Forming Tools
AR Style

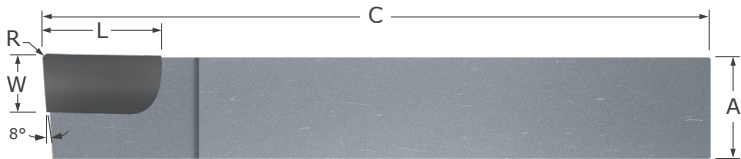


- Designed for right hand turning and facing in lathe applications
- Ground with side rake to provide a positive cutting action and better chip evacuation
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard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

Radius	Width	Length	Square Shank	Overall Length	AR Style	
R	W	L	A ^{+.0000"} _{-.0050"}	C	Tool #	USD\$
.015	.170	.250	.2500	2.00	AR-4	22.85
.015	.233	.312	.3125	2.25	AR-5	24.20
.015	.240	.500	.3750	2.50	AR-6	13.50
.015	.233	.500	.4375	3.00	AR-7	25.00
.015	.235	.625	.5000	3.50	AR-8	15.80
.015	.360	.750	.6250	4.00	AR-10	26.05
.015	.420	.812	.7500	4.50	AR-12	36.35

AL

Brazed – Forming Tools
AL Style



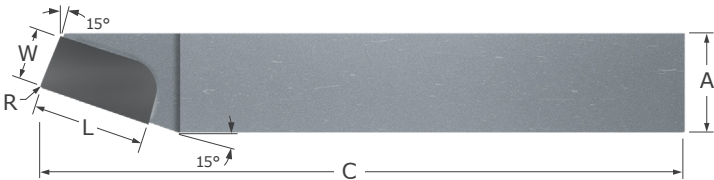
- Designed for left hand turning and facing on the outside diameter (OD) in lathe applications
- Ground with side rake to provide a positive cutting action and better chip evacuation
- Corner radius profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- 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 #	USD\$
.015	.170	.250	.2500	2.00	AL-4	22.85
.015	.233	.312	.3125	2.25	AL-5	24.20
.015	.240	.500	.3750	2.50	AL-6	13.50
.015	.233	.500	.4375	3.00	AL-7	25.00
.015	.235	.625	.5000	3.50	AL-8	15.80
.015	.360	.750	.6250	4.00	AL-10	26.05
.015	.420	.812	.7500	4.50	AL-12	36.35

Brazed

Brazed – Forming Tools
BR Style

BR

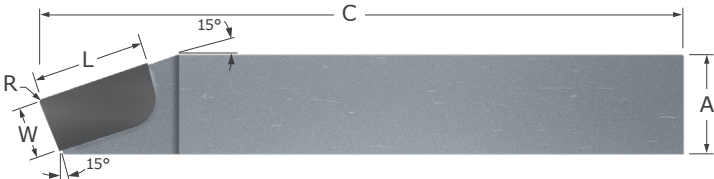


- Designed with a 15° side cutting edge angle for right hand turning in lathe applications
- Ground with side rake to provide a positive cutting action and better chip evacuation
- Side cutting edge angle allow for higher feed rates
- Corner radius profile
- Solid carbide tipped with zinc coated steel 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 #	USD\$
.015	.250	.500	.3750	2.5	BR-6	15.15
.015	.250	.500	.4375	3.0	BR-7	18.60
.015	.250	.625	.5000	3.5	BR-8	15.35
.015	.375	.750	.6250	4.0	BR-10	27.40
.015	.438	.813	.7500	4.5	BR-12	38.10

Brazed – Forming Tools
BL Style

BL



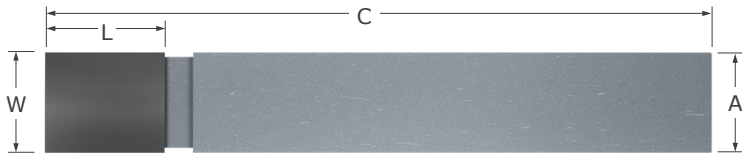
- Designed with a 15° side cutting edge angle for right hand turning in lathe applications
- Ground with side rake to provide a positive cutting action and better chip evacuation
- Side cutting edge angle allow for higher feed rates
- Corner radius profile
- Solid carbide tipped with zinc coated steel 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 #	USD\$
.015	.250	.500	.3750	2.5	BL-6	15.25
.015	.250	.500	.4375	3.0	BL-7	18.80
.015	.250	.625	.5000	3.5	BL-8	17.55
.015	.375	.750	.6250	4.0	BL-10	27.40
.015	.438	.813	.7500	4.5	BL-12	43.60



C

Brazed – Forming Tools
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 ^{+ .0000"} _{– .0050"}	C	Tool #	USD\$
.235	.250	.2500	6.00	C-250	34.55
.235	.250	.2500	2.00	C-4	13.00
.281	.375	.2812	6.00	C-281	52.40
.312	.375	.3125	6.00	C-312	29.05
.313	.375	.3125	2.25	C-5	14.65
.375	.500	.3750	2.50	C-6	14.95
.375	.500	.3750	6.00	C-375	24.20
.437	.500	.4375	6.00	C-437	43.60
.438	.500	.4375	3.00	C-7	21.60
.500	.500	.5000	3.50	C-8	18.60
.500	.500	.5000	6.00	C-500	29.60
.625	.625	.6250	4.00	C-10	32.20
.750	.750	.7500	4.00	C-750	63.20
.750	.750	.7500	4.50	C-12	38.70

CRT

Brazed – Forming Tools
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

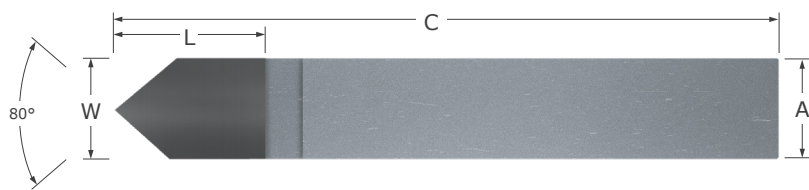
Radius	Width	Square Shank	Overall Length	CRT Style	
R ^{+ .0005"} _{– .0005"}	W ^{+ .004"} _{– .004"}	A ^{+ .0000"} _{– .0050"}	C	Tool #	USD\$
.0625	.129	.3750	2.5	CRT-2	56.90
.2500	.504	.7500	4.5	CRT-8	102.65

Brazed

Brazed – Forming Tools

D

D Style



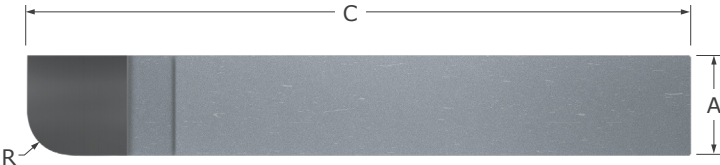
- Designed as a multi-functional tool for a manual lathe
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Length	Square Shank	Overall Length	D Style	
W	L	A ^{+ .0000"} _{-.0030"}	C	Tool #	USD\$
.2500	.313	.2500	2.00	D-4	12.25
.3125	.375	.3125	2.25	D-5	15.90
.3750	.500	.3750	2.50	D-6	27.05
.4375	.500	.4375	3.00	D-7	19.00
.5000	.500	.5000	3.50	D-8	14.85
.6250	.625	.6250	4.00	D-10	26.45
.7500	.725	.7500	4.50	D-12	35.30

Brazed – Forming Tools

RXD

90° Radius Convex – Right Hand



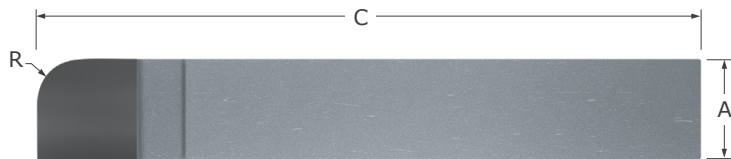
- Designed for forming a concave radius
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes ■ Ground in the USA

Radius	Square Shank	Overall Length	Brazed	
R ^{+ .0005"} _{-.0005"}	A ^{+ .0000"} _{-.0050"}	C	Tool #	USD\$
.0312	.3750	2.5	RXD-1	56.05
.1875	.3750	2.5	RXD-6	56.05
.2188	.3750	2.5	RXD-7	56.05
.2500	.3750	2.5	RXD-8	56.05
.2812	.5000	3.5	RXD-9	61.05
.4062	.7500	4.5	RXD-13	68.80
.4688	.7500	4.5	RXD-15	68.80



RXL

Brazed – Forming Tools
90° Radius Convex – Left 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	
			Tool #	USD\$
R $\begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	A $\begin{smallmatrix} +.0000" \\ -.0050" \end{smallmatrix}$	C		
.0312	.3750	2.5	RXL-1	56.05
.0938	.3750	2.5	RXL-3	56.05
.1562	.3750	2.5	RXL-5	56.05
.2188	.3750	2.5	RXL-7	56.05
.3125	.5000	3.5	RXL-10	70.05
.3438	.5000	3.5	RXL-11	70.05
.4062	.7500	4.5	RXL-13	68.80
.4688	.7500	4.5	RXL-15	68.80
.5000	.7500	4.5	RXL-16	68.80

Brazed

Brazed – Forming Tools

RAD

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 R ^{+.0005"} - _{.0005"}	Square Shank A ^{+.0000"} - _{.0050"}	Overall Length C	Brazed	
			Tool #	USD\$
.0312	.3750	2.5	RAD-1	56.05
.0625	.3750	2.5	RAD-2	56.05
.0938	.3750	2.5	RAD-3	56.05
.1250	.3750	2.5	RAD-4	56.05
.1562	.3750	2.5	RAD-5	56.05
.1875	.3750	2.5	RAD-6	56.05
.2188	.3750	2.5	RAD-7	56.05
.2500	.3750	2.5	RAD-8	56.05
.2812	.5000	3.5	RAD-9	61.05
.3125	.5000	3.5	RAD-10	61.05
.3438	.5000	3.5	RAD-11	61.05
.3750	.5000	3.5	RAD-12	61.05
.4062	.7500	4.5	RAD-13	68.80
.4375	.7500	4.5	RAD-14	68.80
.4688	.7500	4.5	RAD-15	68.80
.5000	.7500	4.5	RAD-16	68.80

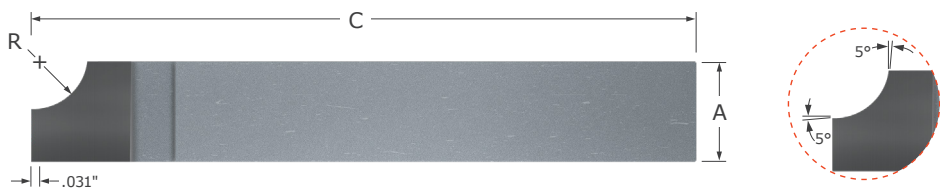
Brazed

See pg 311 for tool set options



RAL

Brazed – Forming Tools
90° Radius Concave – Left Hand



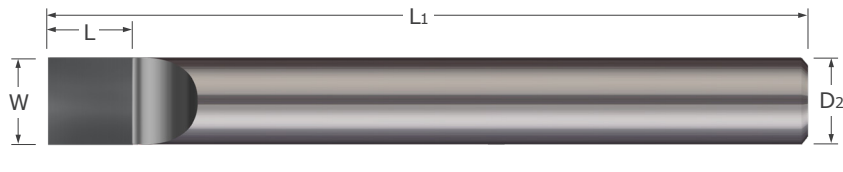
- Left hand tool designed for forming a convex radius
- Tangential 5° blend angles
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Radius	Square Shank	Overall Length	Brazed	
			Tool #	USD\$
$R \begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	$A \begin{smallmatrix} +.0000" \\ -.0050" \end{smallmatrix}$	C		
.0312	.3750	2.5	RAL-1	56.05
.0625	.3750	2.5	RAL-2	56.05
.0938	.3750	2.5	RAL-3	56.05
.1250	.3750	2.5	RAL-4	56.05
.1562	.3750	2.5	RAL-5	56.05
.1875	.3750	2.5	RAL-6	56.05
.2188	.3750	2.5	RAL-7	56.05
.2500	.3750	2.5	RAL-8	56.05
.2812	.5000	3.5	RAL-9	61.05
.3438	.5000	3.5	RAL-11	61.05
.3750	.5000	3.5	RAL-12	61.05
.4062	.7500	4.5	RAL-13	68.80
.4375	.7500	4.5	RAL-14	68.80
.4688	.7500	4.5	RAL-15	68.80
.5000	.7500	4.5	RAL-16	68.80

Brazed

Brazed – Forming Tools
Round Shank

TRG

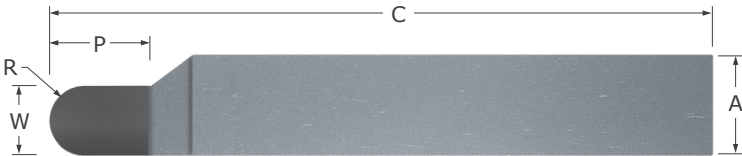


- Carbide tipped design allows for modification into a round shank special
- Carbide is mounted .031" above centerline to allow for grinding
- Neutral design allows for right and left hand modifications
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available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

Width		Length		Split Height		Shank Diameter		Overall Length		Brazed	
W	$\begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	L	$\begin{smallmatrix} +.031'' \\ -.031'' \end{smallmatrix}$	H	$\begin{smallmatrix} +.000'' \\ -.010'' \end{smallmatrix}$	D2	$\begin{smallmatrix} +.0000'' \\ -.0030'' \end{smallmatrix}$	L1		Tool #	USD\$
.2500		.253		.156		.2500		2.5		TRG-4	31.45
.3125		.375		.187		.3125		3.0		TRG-5	33.55
.3750		.500		.219		.3750		3.5		TRG-6	36.35
.4375		.500		.250		.4375		4.0		TRG-7	39.45
.5000		.500		.281		.5000		5.0		TRG-8	39.45
.6250		.625		.344		.6250		6.0		TRG-10	49.60

Brazed – Grooving Tools
FRT Style – Full Radius (Convex)

FRT



- 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

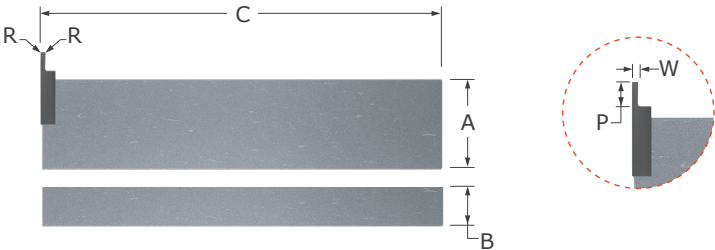
Radius	Width	Projection	Square Shank	Overall Length	Brazed	
R $\begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	W $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	P $\begin{smallmatrix} +.015" \\ -.015" \end{smallmatrix}$	A $\begin{smallmatrix} +.0000" \\ -.0050" \end{smallmatrix}$	C	Tool #	USD\$
.0312	.063	1.000	.3750	2.5	FRT-1	59.60

R $\begin{smallmatrix} +.0005" \\ -.0005" \end{smallmatrix}$	W $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	P $\begin{smallmatrix} +.031" \\ -.031" \end{smallmatrix}$	A $\begin{smallmatrix} +.0000" \\ -.0050" \end{smallmatrix}$	C	Tool #	USD\$
.0625	.125	.375	.3750	2.5	FRT-2	59.60
.0938	.188	.375	.3750	2.5	FRT-3	59.60
.1250	.250	.375	.3750	2.5	FRT-4	59.60
.1563	.313	.375	.3750	2.5	FRT-5	59.60
.1875	.375	.500	.5000	3.5	FRT-6	73.70
.2500	.500	.500	.5000	3.5	FRT-8	73.70
.3125	.625	.625	.6250	4.0	FRT-10	98.00
.3750	.750	.750	.7500	4.5	FRT-12	107.55



GR

Brazed – Grooving Tools
GR Style – Square



- 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

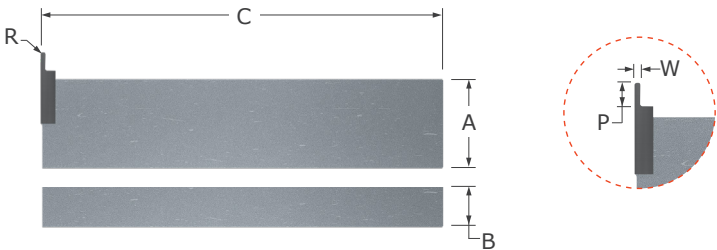
Width	Projection	Radius	Shank Width	Shank Height	Overall Length	GR Style	
W ^{+ .002"} _{– .000"}	P ^{+ .000"} _{– .030"}	R (max)	A ^{+ .0000"} _{– .0050"}	B ^{+ .0000"} _{– .0050"}	C	Tool #	USD\$
.012	.030	.003	.7500	.3750	4.0	GR-012002	52.10
.018	.060	.003	.7500	.3750	4.0	GR-018002	52.10
.022	.090	.003	.7500	.3750	4.0	GR-022002	52.10
.028	.090	.003	.7500	.3750	4.0	GR-028002	52.10
.038	.120	.003	.7500	.3750	4.0	GR-038002	52.10
.040	.150	.003	.7500	.3750	4.0	GR-040002	52.10
.046	.150	.003	.7500	.3750	4.0	GR-046002	52.10
.054	.180	.003	.7500	.3750	4.0	GR-054002	52.10
.080	.270	.003	.7500	.3750	4.0	GR-080002	52.10
.086	.270	.003	.7500	.3750	4.0	GR-086002	52.10
.090	.300	.003	.7500	.3750	4.0	GR-090002	52.10
.096	.300	.003	.7500	.3750	4.0	GR-096002	52.10
.102	.400	.003	.7500	.3750	4.0	GR-102002	52.10
.114	.400	.003	.7500	.3750	4.0	GR-114002	52.10
.120	.400	.003	.7500	.3750	4.0	GR-120002	52.10
.122	.400	.003	.7500	.3750	4.0	GR-122002	52.10

Brazed

Brazed – Grooving Tools

GR Style – Full Radius

GR-F



- 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

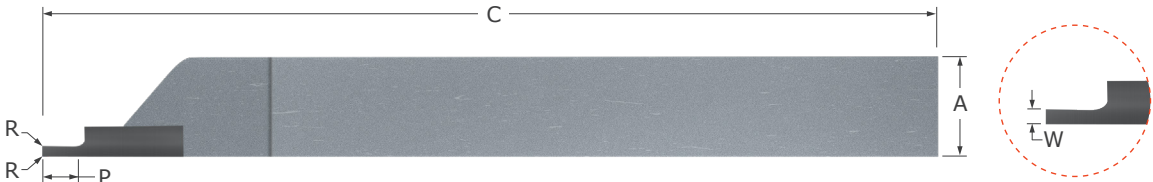
Radius	Width	Projection	Shank Width	Shank Height	Overall Length	GR-F Style	
R $\begin{smallmatrix} +.001'' \\ -.000'' \end{smallmatrix}$	W $\begin{smallmatrix} +.002'' \\ -.000'' \end{smallmatrix}$	P $\begin{smallmatrix} +.000'' \\ -.030'' \end{smallmatrix}$	A $\begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	B $\begin{smallmatrix} +.0000'' \\ -.0050'' \end{smallmatrix}$	C	Tool #	USD\$
.006	.012	.030	.7500	.3750	4.0	GR-012F	54.40
.009	.018	.060	.7500	.3750	4.0	GR-018F	54.40
.011	.022	.090	.7500	.3750	4.0	GR-022F	54.40
.027	.054	.180	.7500	.3750	4.0	GR-054F	54.40
.030	.060	.210	.7500	.3750	4.0	GR-060F	54.40
.036	.072	.240	.7500	.3750	4.0	GR-072F	54.40
.040	.080	.270	.7500	.3750	4.0	GR-080F	54.40
.045	.090	.300	.7500	.3750	4.0	GR-090F	54.40
.057	.114	.400	.7500	.3750	4.0	GR-114F	54.40
.060	.120	.400	.7500	.3750	4.0	GR-120F	54.40
.061	.122	.400	.7500	.3750	4.0	GR-122F	54.40

Brazed



GS

Brazed – Grooving Tools
GS Style – Square



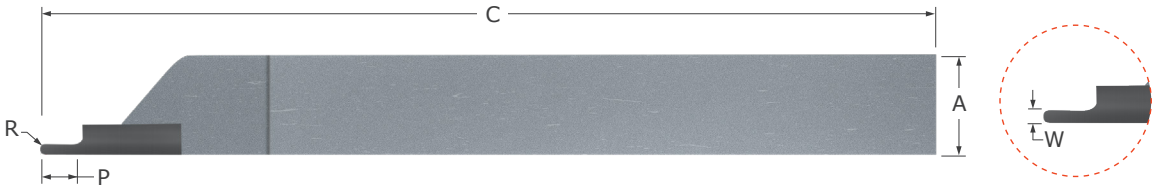
- Designed for plunging grooves when on the outside diameter of a part
- Square profile with .003" corner radius for added strength
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

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 #	USD\$
.012	.030	.003	.3750	3.0	GS-012002	42.35
.018	.060	.003	.3750	3.0	GS-018002	42.35
.022	.090	.003	.3750	3.0	GS-022002	42.35
.028	.090	.003	.3750	3.0	GS-028002	42.35
.038	.120	.003	.3750	3.0	GS-038002	42.35
.040	.150	.003	.3750	3.0	GS-040002	42.35
.046	.150	.003	.3750	3.0	GS-046002	42.35
.054	.180	.003	.3750	3.0	GS-054002	42.35
.060	.210	.003	.3750	3.0	GS-060002	42.35
.068	.210	.003	.3750	3.0	GS-068002	42.35
.072	.240	.003	.3750	3.0	GS-072002	42.35
.080	.270	.003	.3750	3.0	GS-080002	42.35
.086	.270	.003	.3750	3.0	GS-086002	42.35
.090	.300	.003	.3750	3.0	GS-090002	42.35
.096	.300	.003	.3750	3.0	GS-096002	42.35
.102	.400	.003	.3750	3.0	GS-102002	42.35
.120	.400	.003	.3750	3.0	GS-120002	42.35
.122	.400	.003	.3750	3.0	GS-122002	42.35

Brazed

Brazed – Grooving Tools
GS Style – Full Radius

GS-F



- 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

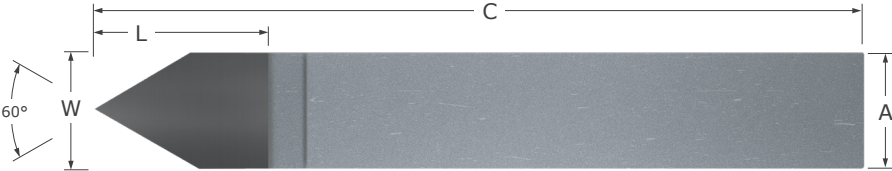
Radius	Width	Projection	Square Shank	Overall Length	GS-F Style	
R $\begin{smallmatrix} +.001" \\ -.000" \end{smallmatrix}$	W $\begin{smallmatrix} +.002" \\ -.000" \end{smallmatrix}$	P $\begin{smallmatrix} +.000" \\ -.030" \end{smallmatrix}$	A $\begin{smallmatrix} +.0000" \\ -.0050" \end{smallmatrix}$	C	Tool #	USD\$
.006	.012	.030	.3750	3.0	GS-012F	46.70
.009	.018	.060	.3750	3.0	GS-018F	46.70
.011	.022	.090	.3750	3.0	GS-022F	46.70
.014	.028	.090	.3750	3.0	GS-028F	46.70
.019	.038	.120	.3750	3.0	GS-038F	46.70
.020	.040	.150	.3750	3.0	GS-040F	46.70
.023	.046	.150	.3750	3.0	GS-046F	46.70
.027	.054	.180	.3750	3.0	GS-054F	46.70
.030	.060	.210	.3750	3.0	GS-060F	46.70
.034	.068	.210	.3750	3.0	GS-068F	46.70
.036	.072	.240	.3750	3.0	GS-072F	46.70
.040	.080	.270	.3750	3.0	GS-080F	46.70
.045	.090	.300	.3750	3.0	GS-090F	46.70
.048	.096	.300	.3750	3.0	GS-096F	46.70

Brazed



E

Brazed – Threading Tools
E Style

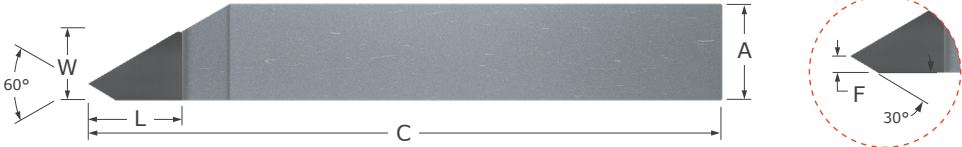


- Designed for outside diameter (OD) general purpose threading
- Neutral design allows for right and left hand threading applications
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Length	Square Shank	Overall Length	E Style	
W	L	A ^{+0.0000"} _{-.0050"}	C	Tool #	USD\$
.3125	.363	.3125	2.25	E-5	17.00
.3750	.568	.3750	2.50	E-6	13.50
.5000	.568	.5000	3.50	E-8	14.65
.6250	.653	.6250	4.00	E-10	26.90
.7500	.778	.7500	4.50	E-12	31.15

ER

Brazed – Threading Tools
ER Style



- 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

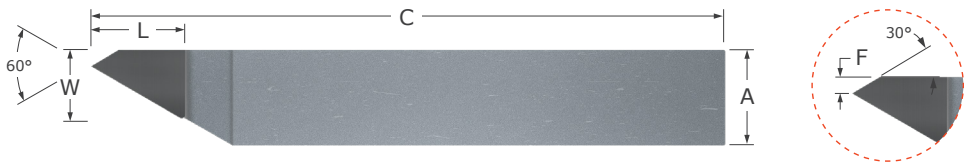
Point Offset	Width	Length	Square Shank	Overall Length	ER Style	
F ^{+0.010"} _{-.010"}	W	L	A ^{+0.0000"} _{-.0050"}	C	Tool #	USD\$
.063	.266	.360	.3750	2.50	ER-6	15.35
.063	.270	.360	.3125	2.25	ER-5	16.10
.094	.444	.610	.6250	4.00	ER-10	25.85
.094	.446	.610	.5000	3.50	ER-8	18.35
.125	.558	.750	.7500	4.50	ER-12	39.85

Brazed

Brazed – Threading Tools

EL

EL Style



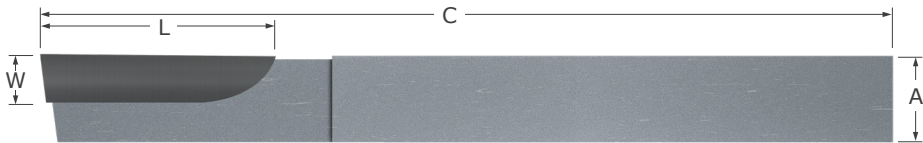
- Designed for left hand threading on the outside diameter (OD), close to a shoulder
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Point Offset	Width	Length	Square Shank	Overall Length	EL Style	
F $\begin{smallmatrix} +.010" \\ - .010" \end{smallmatrix}$	W	L	A $\begin{smallmatrix} +.0000" \\ - .0050" \end{smallmatrix}$	C	Tool #	USD\$
.063	.266	.360	.3750	2.50	EL-6	16.20
.063	.270	.360	.3125	2.25	EL-5	16.00
.094	.444	.610	.6250	4.00	EL-10	25.85
.094	.446	.610	.5000	3.50	EL-8	19.20
.125	.558	.750	.7500	4.50	EL-12	43.30

Brazed – Screw Machining Tools

RT / LT

Turning



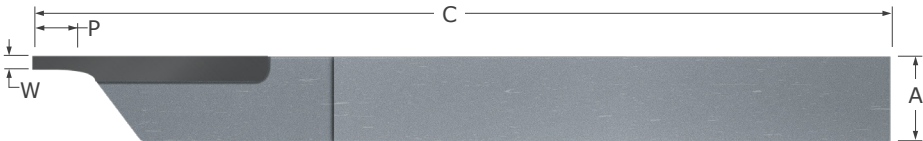
- Designed for general purpose turning; RT for right hand and LT for left hand
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- Available in industry standard fractional shank sizes
- Ground in the USA

Width	Length	Square Shank	Overall Length	Right Hand		Left Hand	
W	L	A $\begin{smallmatrix} +.0000" \\ - .0050" \end{smallmatrix}$	C	Tool #	USD\$	Tool #	USD\$
.128	1.075	.2500	6.0	RT-250	53.05	LT-250	50.45
.174	1.200	.2812	6.0	RT-281	53.05	LT-281	46.50
.188	1.200	.3750	6.0	RT-375	20.65	LT-375	41.10
.190	1.200	.3125	6.0	RT-312	39.85	LT-312	19.70
.253	1.345	.5000	6.0	RT-500	26.70	LT-500	33.10
.260	1.345	.4375	6.0	RT-437	48.25	LT-437	42.95
.263	1.345	.6250	4.0	RT-625	47.65		
.263	1.345	.7500	4.0	RT-750	51.70	LT-750	50.15



RC / LC

Brazed – Screw Machine Tools
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

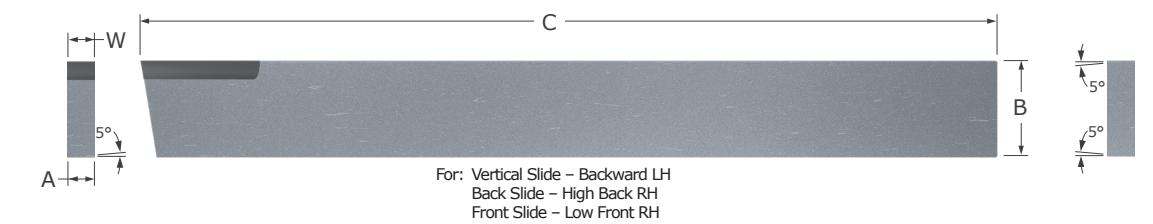
Width	Projection	Square Shank	Overall Length	Right Hand		Left Hand	
W ^{+ .000"} _{– .005"}	P (min)	A ^{+ .0000"} _{– .0050"}	C	Tool #	USD\$	Tool #	USD\$
.040	.120	.2500	6.0	RC-250040	55.35	LC-250040	54.50
.040	.120	.2812	6.0	RC-281040	55.95	LC-281040	57.10
.040	.120	.3125	6.0	RC-312040	36.10	LC-312040	39.65
.040	.120	.3750	6.0	RC-375040	22.30	LC-375040	40.80
.060	.180	.2500	6.0	RC-250060	55.55	LC-250060	31.95
.060	.180	.2812	6.0	RC-281060	55.95	LC-281060	57.10
.060	.180	.3125	6.0	RC-312060	24.40	LC-312060	25.10
.060	.180	.3750	6.0	RC-375060	21.40	LC-375060	26.90
.060	.180	.4375	6.0	RC-437060	43.20	LC-437060	41.60
.060	.180	.5000	6.0	RC-500060	26.35	LC-500060	26.55
.060	.180	.6250	4.0	RC-625060	34.55	LC-625060	41.20
.060	.180	.7500	4.0	RC-750060	48.45	LC-750060	48.45
.080	.240	.2812	6.0	RC-281080	55.55	LC-281080	40.05
.080	.240	.3125	6.0	RC-312080	33.40	LC-312080	22.20
.080	.240	.3750	6.0	RC-375080	21.40	LC-375080	31.75
.080	.240	.4375	6.0	RC-437080	43.20	LC-437080	46.20
.080	.240	.5000	6.0	RC-500080	26.45	LC-500080	26.70
.080	.240	.6250	4.0	RC-625080	36.65	LC-625080	44.20
.080	.240	.7500	4.0	RC-750080	48.80	LC-750080	51.40
.100	.300	.2812	6.0	RC-281100	55.95	LC-281100	29.05
.100	.300	.3125	6.0	RC-312100	38.95	LC-312100	22.20
.100	.300	.3750	6.0	RC-375100	21.90	LC-375100	29.25
.100	.300	.4375	6.0	RC-437100	43.70	LC-437100	49.20
.100	.300	.5000	6.0	RC-500100	26.45	LC-500100	27.50
.100	.300	.6250	4.0	RC-625100	35.20	LC-625100	36.65
.100	.300	.7500	4.0	RC-750100	41.10	LC-750100	50.85
.120	.360	.3750	6.0	RC-375120	24.30	LC-375120	36.65
.120	.360	.4375	6.0	RC-437120	43.70	LC-437120	42.75
.120	.360	.5000	6.0	RC-500120	26.05	LC-500120	28.45
.125	.375	.6250	4.0	RC-625125	35.20	LC-625125	46.00
.125	.375	.7500	4.0	RC-750125	42.65	LC-750125	51.05
.187	.561	.6250	4.0	RC-625187	45.90	LC-625187	45.90
.187	.561	.7500	4.0	RC-750187	51.40	LC-750187	51.60

Brazed

Brazed – Cut Off Tools

CR Style

CR



- 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

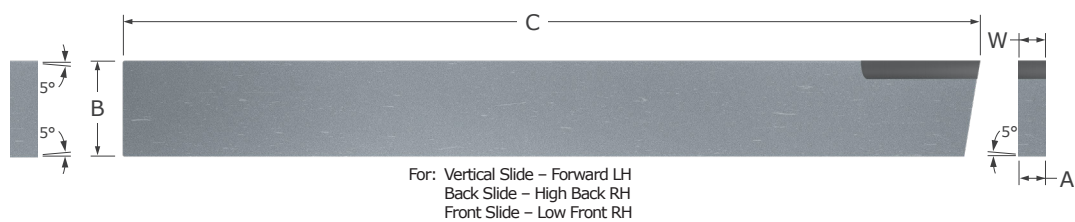
Width	Shank Width	Shank Height	Overall Length	CR Style	
W ^{+ .0000"} _{– .0050"}	A ^{+ .0000"} _{– .0050"}	B ^{+ .0000"} _{– .0050"}	C	Tool #	USD\$
.0781	.0580	.5000	4.5	CR-101	85.95
.0938	.0730	.5000	4.5	CR-102	67.35
.0938	.0730	.6875	5.0	CR-104	95.40
.0938	.0730	.8125	6.0	CR-108	107.00
.0938	.0730	1.0000	6.0	CR-113	137.35
.1250	.1050	.5000	4.5	CR-103	65.30
.1250	.1050	.6875	5.0	CR-105	90.30
.1250	.1050	.8125	6.0	CR-109	79.10
.1562	.1360	.6875	5.0	CR-106	95.50
.1562	.1360	.8125	6.0	CR-110	154.55
.1875	.1670	.6875	5.0	CR-107	99.55
.1875	.1670	.8125	6.0	CR-111	155.60



CL

Brazed – Cut Off Tools

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

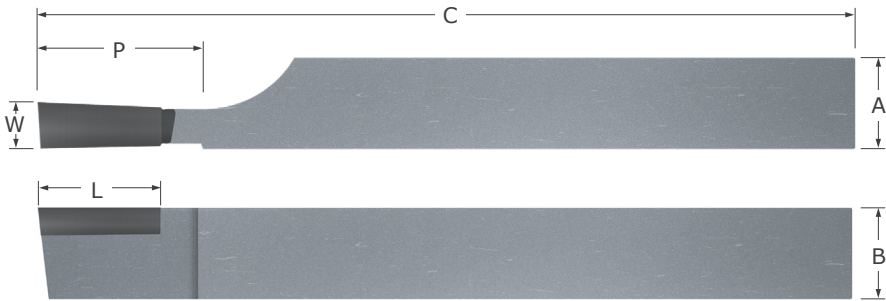
Width	Shank Width	Shank Height	Overall Length	CL Style	
W $+.0000"$ $-.0050"$	A $+.0000"$ $-.0050"$	B $+.0000"$ $-.0050"$	C	Tool #	USD\$
.0781	.0580	.5000	4.5	CL-101	86.25
.0938	.0730	.5000	4.5	CL-102	87.10
.0938	.0730	.6875	5.0	CL-104	101.50
.0938	.0730	.8125	6.0	CL-108	116.80
.0938	.0730	1.0000	6.0	CL-113	101.00
.1250	.1050	.5000	4.5	CL-103	89.15
.1250	.1050	.6875	5.0	CL-105	110.05
.1250	.1050	.8125	6.0	CL-109	111.40
.1562	.1360	.6875	5.0	CL-106	105.25
.1562	.1360	.8125	6.0	CL-110	146.55
.1875	.1670	.8125	6.0	CL-111	101.00

Brazed

Brazed – Cut Off Tools

CT Style

CT



- 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 #	USD\$
.187	.813	.750	.5000	1.0000	5.0	CT-122	34.45
.250	1.000	.750	.5000	1.0000	5.0	CT-121	38.40
.312	1.000	.500	.5000	1.0000	5.0	CT-120	50.05
.375	1.250	.500	.6250	1.2500	5.0	CT-130	50.95
.375	1.250	.625	.7500	1.5000	6.0	CT-140	55.55

Brazed



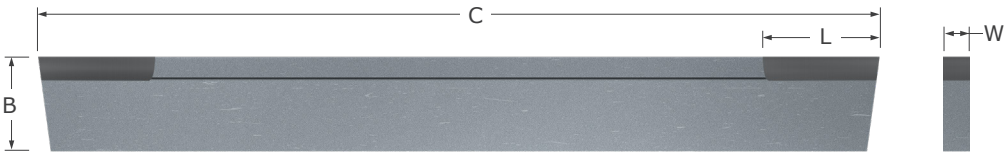
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T

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

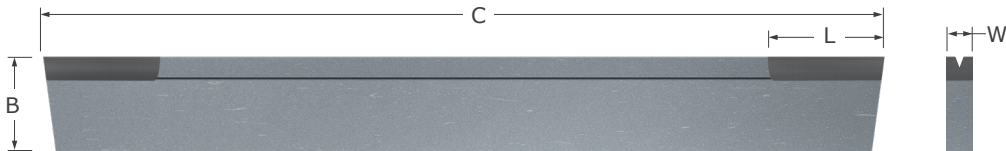
Width	Length	Shank Height	Overall Length	T Style	
W ^{+.001"} _{–.001"}	L	B	C	Tool #	USD\$
.062	.750	.5000	4.5	T-100	85.10
.078	.750	.5000	4.5	T-101	86.45
.093	.750	.5000	4.5	T-102	82.75
.093	.750	.6875	5.0	T-104	91.65
.125	.750	.5000	4.5	T-103	81.70
.125	.750	.6875	5.0	T-105	90.60
.125	.750	.7500	5.0	T-108	93.75
.125	.750	.8750	6.0	T-111	103.05
.156	.750	.6875	5.0	T-106	111.15
.156	.750	.7500	5.0	T-109	98.80
.156	.750	.8750	6.0	T-112	102.85
.187	.750	.6875	5.0	T-107	114.80
.187	.750	.7500	5.0	T-110	92.15
.187	.750	.8750	6.0	T-113	120.20
.187	.750	1.1250	6.0	T-116	124.45

Brazed

Brazed – Cut Off Tools

T-V

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	
W	+ .001" - .001"	L	B	C	Tool #	USD\$
.062		.760	.5000	4.5	T-100-V	88.65
.078		.760	.5000	4.5	T-101-V	89.90
.093		.760	.5000	4.5	T-102-V	86.25
.093		.760	.6875	5.0	T-104-V	95.00
.125		.750	.5000	4.5	T-103-V	85.10
.125		.760	.6875	5.0	T-105-V	93.95
.125		.750	.7500	5.0	T-108-V	97.05
.125		.750	.8750	6.0	T-111-V	106.40
.156		.750	.6875	5.0	T-106-V	114.60
.156		.750	.7500	5.0	T-109-V	102.15
.156		.750	.8750	6.0	T-112-V	106.30
.187		.750	.6875	5.0	T-107-V	118.10
.187		.750	.7500	5.0	T-110-V	95.60
.187		.750	.8750	6.0	T-113-V	123.50
.187		.750	1.1250	6.0	T-116-V	127.90

Brazed



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HOLEMAKING & THREADING TOOLS



Drills

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[232](#)

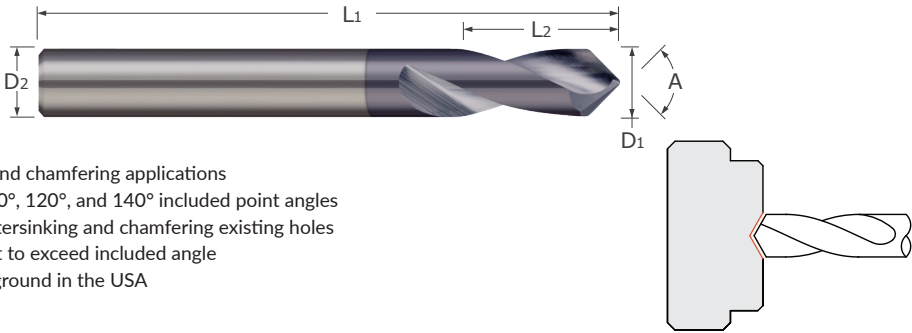
Thread Mill Cutters

[233](#)

SPD

Drills

Spotting & Centering Drill



- 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	
A $\begin{smallmatrix} +1^{\circ} \\ -1^{\circ} \end{smallmatrix}$	D1 $\begin{smallmatrix} +.0000" \\ -.0005" \end{smallmatrix}$	L2 $\begin{smallmatrix} +.031" \\ -.031" \end{smallmatrix}$	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
82°	.0937	.279	.1250	1.5	SPD-093-082	28.05	SPD-093-082X	32.60
	.1250	.375	.1250	1.5	SPD-125-082	28.05	SPD-125-082X	32.60
	.1875	.625	.1875	2.0	SPD-187-082	29.40	SPD-187-082X	34.55
	.2500	.750	.2500	2.5	SPD-250-082	30.20	SPD-250-082X	36.85
	.3125	.750	.3125	2.5	SPD-312-082	35.30	SPD-312-082X	43.20
	.3750	1.000	.3750	2.5	SPD-375-082	44.45	SPD-375-082X	53.85
	.5000	1.000	.5000	2.5	SPD-500-082	66.20	SPD-500-082X	79.00
	.6250	1.125	.6250	3.0	SPD1-625-082	118.10	SPD1-625-082X	132.95
	.7500	1.125	.7500	2.5	SPD-750-082	177.60		
	.7500	1.125	.7500	3.0	SPD1-750-082	179.25	SPD1-750-082X	196.80
90°	.0937	.279	.1250	1.5	SPD-093-090	28.05	SPD-093-090X	32.60
	.1250	.375	.1250	1.5	SPD-125-090	28.05	SPD-125-090X	32.60
	.1875	.625	.1875	2.0	SPD-187-090	29.40	SPD-187-090X	34.55
	.2500	.750	.2500	2.5	SPD-250-090	30.20	SPD-250-090X	36.85
	.3125	.750	.3125	2.5	SPD-312-090	35.30	SPD-312-090X	43.20
	.3750	1.000	.3750	2.5	SPD-375-090	44.45	SPD-375-090X	53.85
	.5000	1.000	.5000	2.5	SPD-500-090	66.20	SPD-500-090X	79.00
	.6250	1.125	.6250	3.0	SPD1-625-090	118.10	SPD1-625-090X	132.95
	.7500	1.125	.7500	2.5	SPD-750-090	177.60		
	.7500	1.125	.7500	3.0	SPD1-750-090	179.25	SPD1-750-090X	196.80
	1.0000	1.250	1.0000	2.5	SPD-001-090	269.15		
	1.0000	1.250	1.0000	3.0	SPD1-001-090	271.75		
100°	.0937	.279	.1250	1.5	SPD-093-100	28.05	SPD-093-100X	32.60
	.1250	.375	.1250	1.5	SPD-125-100	28.05	SPD-125-100X	32.60
	.1875	.625	.1875	2.0	SPD-187-100	29.40	SPD-187-100X	34.55
	.2500	.750	.2500	2.5	SPD-250-100	30.20	SPD-250-100X	36.85
	.3125	.750	.3125	2.5	SPD-312-100	35.30	SPD-312-100X	43.20
	.3750	1.000	.3750	2.5	SPD-375-100	44.45	SPD-375-100X	53.85
	.5000	1.000	.5000	2.5	SPD-500-100	66.20	SPD-500-100X	79.00
	.6250	1.125	.6250	3.0	SPD1-625-100	118.10	SPD1-625-100X	132.95
	.7500	1.125	.7500	3.0	SPD1-750-100	179.25	SPD1-750-100X	196.80
	1.0000	1.250	1.0000	3.0	SPD1-001-100	271.75		

Continued on next page

Drills

Drills
Spotting & Centering Drill (cont.)

SPD

Continued from previous page

Included Angle	Drill Diameter	Flute Length	Shank Diameter	Overall Length	Uncoated		AlTiN	
A ^{+1°} _{-1°}	D ₁ ^{+0.000"} _{-.0005"}	L ₂ ^{+0.031"} _{-.031"}	D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
120°	.0937	.279	.1250	1.5	SPD-093-120	28.05	SPD-093-120X	32.60
	.1250	.375	.1250	1.5	SPD-125-120	28.05	SPD-125-120X	32.60
	.1875	.625	.1875	2.0	SPD-187-120	29.40	SPD-187-120X	34.55
	.2500	.750	.2500	2.5	SPD-250-120	30.20	SPD-250-120X	36.85
	.3125	.750	.3125	2.5	SPD-312-120	35.30	SPD-312-120X	43.20
	.3750	1.000	.3750	2.5	SPD-375-120	44.45	SPD-375-120X	53.85
	.5000	1.000	.5000	2.5	SPD-500-120	66.20	SPD-500-120X	79.00
	.6250	1.125	.6250	3.0	SPD1-625-120	118.10	SPD1-625-120X	132.95
	.7500	1.125	.7500	2.5	SPD-750-120	177.60		
	.7500	1.125	.7500	3.0	SPD1-750-120	179.25	SPD1-750-120X	196.80
140°	.0937	.279	.1250	1.5	SPD-093-140	28.05	SPD-093-140X	32.60
	.1250	.375	.1250	1.5	SPD-125-140	28.05	SPD-125-140X	32.60
	.1875	.625	.1875	2.0	SPD-187-140	29.40	SPD-187-140X	34.55
	.2500	.750	.2500	2.5	SPD-250-140	30.60	SPD-250-140X	37.15
	.3125	.750	.3125	2.5	SPD-312-140	35.60	SPD-312-140X	43.60
	.3750	1.000	.3750	2.5	SPD-375-140	44.85	SPD-375-140X	54.30
	.5000	1.000	.5000	2.5	SPD-500-140	66.75	SPD-500-140X	79.50

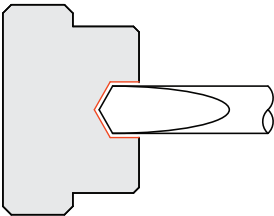
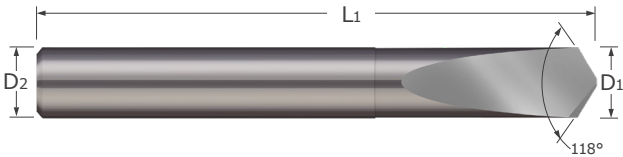


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Drills
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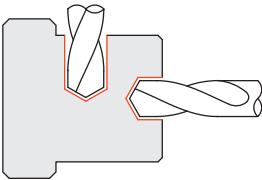
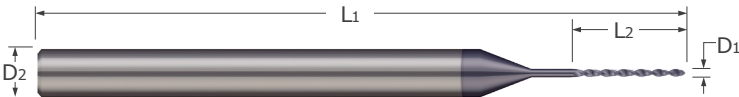


- Designed for drilling in hardened materials
- Excellent option when requiring holes free of retract marks in non-ferrous materials
- Solid carbide
- CNC ground in the USA

Drill Diameter	Web Thickness	Shank Diameter	Overall Length	Uncoated	
				Tool #	USD\$
$D_1^{+.0000"}_{-.0005"}$	$^{+.002"}_{-.002"}$	$D_2 \text{ (h6)}$	L_1		
.0312	.010	.0312	1.25	SD-031	17.00
.0625	.012	.0625	1.50	SD-062	17.75
.0937	.016	.0938	1.50	SD-093	18.15
.1250	.020	.1250	1.50	SD-125	19.95
.1562	.025	.1562	2.00	SD-156	21.80
.1875	.028	.1875	2.00	SD-187	25.45
.2188	.030	.2188	2.00	SD-218	29.80
.2500	.035	.2500	2.00	SD-250	34.25
.3125	.040	.3125	2.50	SD-312	47.35
.3750	.046	.3750	2.50	SD-375	57.00
.5000	.060	.5000	2.50	SD-500	79.70

Drills
Miniature

DR



- 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 #	USD\$	Tool #	USD\$
D1 +.0000*** -.0003"			L2	D2	L1	Tool #	USD\$	Tool #	USD\$
.0039	#102	.100 mm	.026	.1250	1.5	DR01-0039*	30.85		
.0051	#99	.130 mm	.056	.1250	1.5	DR02-0051	30.00		
.0059	#97	.150 mm	.066	.1250	1.5	DR02-0059	27.90		
.0071	#94		.106	.1250	1.5	DR02-0071	25.55		
.0079	#92	.200 mm	.160	.1250	1.5	DR02-0079	21.40	DR02-0079X	25.95
.0091	#89		.160	.1250	1.5	DR02-0091	20.75	DR02-0091X	25.35
.0098		.250 mm	.160	.1250	1.5	DR02-0098	20.75	DR02-0098X	25.35
.0100	#87		.160	.1250	1.5	DR02-0100	20.75	DR02-0100X	25.35
.0110	#85		.160	.1250	1.5	DR02-0110	20.75	DR02-0110X	25.35
.0118		.300 mm	.180	.1250	1.5	DR02-0118	20.75	DR02-0118X	25.35
.0120	#83		.230	.1250	1.5	DR02-0120	18.80	DR02-0120X	23.35
.0130	#81		.230	.1250	1.5	DR02-0130	18.80	DR02-0130X	23.35
.0135	#80		.270	.1250	1.5	DR02-0135	18.35	DR02-0135X	22.95
.0145	#79		.270	.1250	1.5	DR02-0145	18.35	DR02-0145X	22.95
.0157		.400 mm	.270	.1250	1.5	DR02-0157	18.35	DR02-0157X	22.95
.0160	#78		.270	.1250	1.5	DR02-0160	18.35	DR02-0160X	22.95
.0180	#77		.270	.1250	1.5	DR02-0180	17.00	DR02-0180X	21.60
.0197		.500 mm	.275	.1250	1.5	DR02-0197	17.00	DR02-0197X	21.60
.0200	#76		.275	.1250	1.5	DR02-0200	17.00	DR02-0200X	21.60
.0210	#75		.275	.1250	1.5	DR02-0210	17.00	DR02-0210X	21.60
.0225	#74		.275	.1250	1.5	DR02-0225	17.00	DR02-0225X	21.60
.0236		.600 mm	.275	.1250	1.5	DR02-0236	17.00	DR02-0236X	21.60
.0240	#73		.275	.1250	1.5	DR02-0240	17.00	DR02-0240X	21.60
.0250	#72		.275	.1250	1.5	DR02-0250	17.00	DR02-0250X	21.60
.0260	#71		.275	.1250	1.5	DR02-0260	17.00	DR02-0260X	21.60
.0276		.700 mm	.335	.1250	1.5	DR02-0276	17.00	DR02-0276X	21.60
.0280	#70		.335	.1250	1.5	DR02-0280	17.00	DR02-0280X	21.60
.0292	#69		.335	.1250	1.5	DR02-0292	17.00	DR02-0292X	21.60
.0310	#68		.395	.1250	1.5	DR02-0310	16.00	DR02-0310X	20.55
.0312			.395	.1250	1.5	DR02-0312	16.00	DR02-0312X	20.55
.0315		.800 mm	.395	.1250	1.5	DR02-0315	16.00	DR02-0315X	20.55
.0320	#67		.395	.1250	1.5	DR02-0320	16.00	DR02-0320X	20.55
.0330	#66		.395	.1250	1.5	DR02-0330	16.00	DR02-0330X	20.55
.0350	#65		.395	.1250	1.5	DR02-0350	16.00	DR02-0350X	20.55

* 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 50



DR

Drills

Miniature (cont.)

Continued from previous page

Drill Diameter			Flute Length	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
inch	wire	metric							
D ₁ ^{+ .0000"} *** _{- .0003"}			L ₂	D ₂	L ₁	Tool #	USD\$	Tool #	USD\$
.0354		.900 mm	.395	.1250	1.5	DR02-0354	16.00	DR02-0354X	20.55
.0360	#64		.395	.1250	1.5	DR02-0360	16.00	DR02-0360X	20.55
.0370	#63		.395	.1250	1.5	DR02-0370	16.00	DR02-0370X	20.55
.0380	#62		.395	.1250	1.5	DR02-0380	16.00	DR02-0380X	20.55
.0390	#61		.395	.1250	1.5	DR02-0390	16.00	DR02-0390X	20.55
.0394		1.000 mm	.395	.1250	1.5	DR02-0394	16.00	DR02-0394X	20.55
.0400	#60		.395	.1250	1.5	DR02-0400	16.00	DR02-0400X	20.55
.0410	#59		.395	.1250	1.5	DR02-0410	16.00	DR02-0410X	20.55
.0420	#58		.395	.1250	1.5	DR02-0420	16.00	DR02-0420X	20.55
.0430	#57		.395	.1250	1.5	DR02-0430	16.00	DR02-0430X	20.55
.0433		1.100 mm	.395	.1250	1.5	DR02-0433	16.00	DR02-0433X	20.55
.0440			.395	.1250	1.5	DR02-0440	16.00	DR02-0440X	20.55
.0469			.395	.1250	1.5	DR02-0469	16.00	DR02-0469X	20.55
.0472		1.200 mm	.395	.1250	1.5	DR02-0472	16.00	DR02-0472X	20.55
.0500		1.270 mm	.395	.1250	1.5	DR02-0500	16.00	DR02-0500X	20.55
.0512		1.300 mm	.413	.1250	1.5	DR01-0512	16.00	DR01-0512X	20.55
.0520	#55		.413	.1250	1.5	DR01-0520	16.00	DR01-0520X	20.55
.0550	#54		.413	.1250	1.5	DR01-0550	16.00	DR01-0550X	20.55
.0571		1.450 mm	.413	.1250	1.5	DR01-0571	16.00	DR01-0571X	20.55
.0591		1.500 mm	.413	.1250	1.5	DR01-0591	16.00	DR01-0591X	20.55
.0625			.413	.1250	1.5	DR01-0625	16.00	DR01-0625X	20.55

D ₁ ^{+ .0000"} *** _{- .0005"}		decimal equiv.	L ₂	D ₂	L ₁	Tool #	USD\$	Tool #	USD\$
.0635	#52		.413	.1250	1.5	DR01-0635	16.00	DR01-0635X	20.55
.0670	#51		.413	.1250	1.5	DR01-0670	16.00	DR01-0670X	20.55
.0700	#50		.413	.1250	1.5	DR01-0700	16.00	DR01-0700X	20.55
.0730	#49		.413	.1250	1.5	DR01-0730	16.00	DR01-0730X	20.55
.0760	#48		.413	.1250	1.5	DR01-0760	16.00	DR01-0760X	20.55
.0781			.413	.1250	1.5	DR01-0781	16.00	DR01-0781X	20.55
.0787		2.000 mm	.413	.1250	1.5	DR01-0787	16.00	DR01-0787X	20.55
.0810	#46		.413	.1250	1.5	DR01-0810	16.00	DR01-0810X	20.55
.0860	#44		.413	.1250	1.5	DR01-0860	16.00	DR01-0860X	20.55
.0890	#43		.413	.1250	1.5	DR01-0890	16.00	DR01-0890X	20.55
.0938			.413	.1250	1.5	DR01-0938	16.00	DR01-0938X	20.55
.0960	#41		.413	.1250	1.5	DR01-0960	16.00	DR01-0960X	20.55
.0980	#40		.413	.1250	1.5	DR01-0980	16.00	DR01-0980X	20.55
.0995	#39		.413	.1250	1.5	DR01-0995	16.00	DR01-0995X	20.55
.1065	#36		.413	.1250	1.5	DR01-1065	16.00	DR01-1065X	20.55
.1094			.413	.1250	1.5	DR01-1094	16.00	DR01-1094X	20.55
.1110	#34		.413	.1250	1.5	DR01-1110	16.00	DR01-1110X	20.55
.1130	#33		.413	.1250	1.5	DR01-1130	16.00	DR01-1130X	20.55
.1181		3.000 mm	.413	.1250	1.5	DR01-1181	16.00	DR01-1181X	20.55
.1200	#31		.413	.1250	1.5	DR01-1200	16.00	DR01-1200X	20.55
.1250			.413	.1250	1.5	DR01-1250	16.00	DR01-1250X	20.55

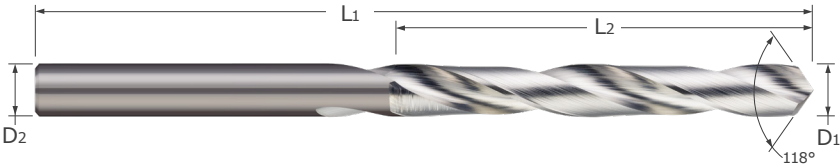
* Total overhang from shank transition is .250" ** Tolerance for AlTiN coating is +.002"/-.0003" *** Tolerance for AlTiN coating is +.0002"/-.0005

Taper Integrated holders can be found on pg 50

Drills

Jobber Length Drills

DR



- 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	
D1 ^{+ .0000"} _{-.0005"}	L2 ^{+ .062"} _{-.062"}	D2 (h6)	L1	Tool #	USD\$
.0312	.500	.0312	1.25	DR-031-2	15.25
.0469	.750	.0469	1.50	DR-046-2	20.15
.0625	.750	.0625	1.50	DR-062-2	20.55
.1094	1.250	.1094	2.25	DR-109-2	26.05
.1250	1.250	.1250	2.25	DR-125-2	27.60
.1875	1.625	.1875	2.75	DR-187-2	40.50
.2500	2.000	.2500	3.25	DR-250-2	60.20
.3125	2.375	.3125	3.75	DR-312-2	80.05

Combined Drill & Countersinks

DC / DCM



- 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

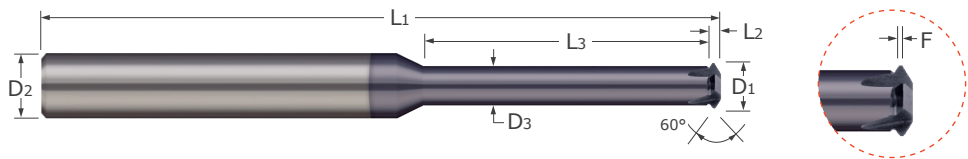
Drill Diameter			Drill Length	Shank Diameter	Overall Length	Uncoated	
D1			L2	D2 (h6)	L1	Tool #	USD\$
+ .0030" −.0000"	+ .08 mm −.00 mm	decimal equiv.					
.0250		.0250	.030	.1250	1.500	DC-00	30.20
.0312		.0312	.038	.1250	1.500	DC-01	30.20
	0.8 mm	.0320	1.1 mm	3.15 mm	35 mm	DCM-008	29.15
	1.0 mm	.0390	1.3 mm	3.15 mm	35 mm	DCM-010	29.15
.0469		.0469	.047	.1250	1.500	DC-1	30.20
.0781		.0781	.078	.1875	1.875	DC-2	47.65
	2.5 mm	.0980	3.1 mm	6.3 mm	45 mm	DCM-025	51.15
.1094		.1094	.109	.2500	2.000	DC-3	53.25
.1250		.1250	.125	.3125	2.125	DC-4	71.20
.1875		.1875	.188	.4375	2.750	DC-5	107.25
.2188		.2188	.219	.5000	3.000	DC-6	137.45

See pgs 317 for tool set options



TM

Thread Milling Cutters
Single Form – UN Threads



- 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

Threads Per Inch	Cutter Diameter	Neck Length	Neck Diameter	Flat	Cutter Width	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	USD\$	Tool #	USD\$
TPI	$D_1^{+.000}_{-.005}$ "	$L_3^{+.015}_{-.000}$ "	D3	$F^{+.0010}_{-.0000}$ "	L2		D2 (h6)	L1				
56 - 80	.060	.250	.030	SHARP	.017	2	.1250	1.5	TM-060-4	77.55	TM-060-4X	80.20
56 - 80	.060	.375	.030	SHARP	.017	2	.1250	1.5	TM-060-6	77.55	TM-060-6X	80.20
40 - 64	.080	.250	.035	SHARP	.026	2	.1250	1.5	TM-080-4	72.85	TM-080-4X	75.60
40 - 64	.080	.500	.035	SHARP	.026	2	.1250	1.5	TM-080-8	72.85	TM-080-8X	75.60
32 - 64	.100	.375	.050	SHARP	.029	2	.1250	1.5	TM-100-6	62.80	TM-100-6X	65.75
32 - 64	.100	.500	.050	SHARP	.029	2	.1250	1.5	TM-100-8	62.80		
32 - 64	.100	.625	.050	SHARP	.029	2	.1250	2.0	TM-100-10	62.80	TM-100-10X	65.75
32 - 56	.120	.375	.070	.0010	.030	3	.1875	2.0	TM-120-6	74.20	TM-120-6X	77.60
32 - 56	.120	.500	.070	.0010	.030	3	.1875	2.0	TM-120-8	74.20	TM-120-8X	77.60
32 - 56	.120	.625	.070	.0010	.030	3	.1875	2.0	TM-120-10	74.20	TM-120-10X	77.60
24 - 56	.140	.500	.075	.0010	.038	3	.1875	2.0	TM-140-8	74.20	TM-140-8X	77.60
24 - 56	.140	.750	.075	.0010	.038	3	.1875	2.0	TM-140-12	74.20	TM-140-12X	77.60
18 - 56	.180	.500	.090	.0015	.055	4	.2500	2.5	TM-180-8	87.40	TM-180-8X	93.15
18 - 56	.180	.750	.090	.0015	.055	4	.2500	2.5	TM-180-12	87.40	TM-180-12X	93.15
18 - 56	.180	1.000	.090	.0015	.055	4	.2500	2.5	TM-180-16	87.40	TM-180-16X	93.15
16 - 48	.240	1.500	.150	.0015	.055	4	.3125	3.5	TM-250-24	97.45	TM-250-24X	106.00
14 - 48	.250	1.000	.100	.0015	.065	4	.2500	2.5	TM-250-16	87.40	TM-250-16X	93.15
16 - 48	.250	1.125	.150	.0015	.060	4	.2500	2.5	TM-250-18	87.40	TM-250-18X	93.15
14 - 40	.290	1.000	.170	.0020	.071	4	.3750	4.0	TM-290-16	108.35	TM-290-16X	118.45
12 - 32	.360	1.000	.210	.0020	.085	4	.3750	4.0	TM-360-16	108.35	TM-360-16X	118.45
11 - 32	.490	1.000	.300	.0020	.095	5	.5000	4.0	TM-490-16	125.20	TM-490-16X	138.00
11 - 32	.490	1.250	.300	.0020	.095	5	.5000	4.0	TM-490-20	125.20	TM-490-20X	138.00
10 - 32	.600	1.000	.420	.0020	.100	6	.6250	4.0	TM-600-16	155.70	TM-600-16X	171.60
10 - 32	.600	1.250	.420	.0020	.100	6	.6250	4.0	TM-600-20	155.70	TM-600-20X	171.60

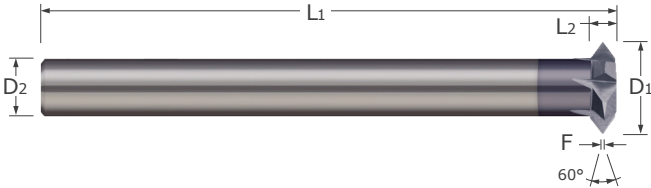
TPI	$D_1^{+.000}_{-.005}$ "	$L_3^{+.015}_{-.000}$ "	D3	$F^{+.0030}_{-.0000}$ "	L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
5 - 12	.720	1.250	.360	.0045	.200	6	.7500	4.0	TM-720-20	178.85	TM-720-20X	196.45
5 - 12	.720	2.000	.360	.0045	.200	6	.7500	4.0	TM-720-32	178.85	TM-720-32X	196.45
5 - 12	.720	2.500	.360	.0045	.200	6	.7500	4.0	TM-720-40	178.85	TM-720-40X	196.45

Thread Milling Cutters

Thread Milling Cutters

Single Form – UN Threads – Reduced Shank

TM



- 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

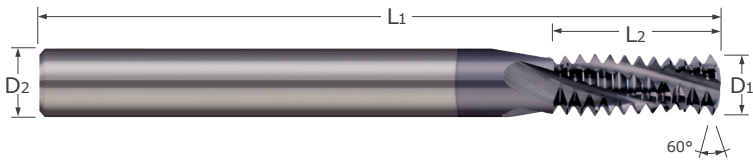
Threads Per Inch	Cutter Diameter	Flat	Cutter Width	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
							Tool #	USD\$	Tool #	USD\$
TPI	$D_1 \begin{smallmatrix} +.000" \\ -.005" \end{smallmatrix}$	$F \begin{smallmatrix} +.0030" \\ -.0000" \end{smallmatrix}$	$L_2 \begin{smallmatrix} +.005" \\ -.005" \end{smallmatrix}$		D2 (h6)	L1				
12-32	.375	.0020	.093	4	.2500	2.59	TM-375*	96.95	TM-375X*	102.60
11-32	.500	.0020	.125	5	.3125	2.63	TM-500*	117.90	TM-500X*	126.05
7-16	.750	.0040	.156	6	.3750	2.65	TM-750	146.35	TM-750X	154.20
5-12	1.000	.0045	.187	7	.5000	3.20	TM-001	191.10	TM-001X	200.40

* Reduced Neck



TM

Thread Milling Cutters
Multi-Form – UN Threads



- 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 #	USD\$	Tool #	USD\$
4-40	D1 +.0005" -.0005"	L2 +.0500" -.0000"		D2 (h6)	L1			TM-112-40X	170.70
6-32	.1000	.2500	2	.2500	2.0	TM-138-32	167.00	TM-138-32X	169.55
8-32	.1150	.2500	3	.2500	2.0			TM-164-32X	170.70
10-24	.1200	.3125	3	.2500	2.0	TM-190-24	174.30	TM-190-24X	176.70
10-32	.1200	.3125	3	.2500	2.0	TM-190-32	174.30	TM-190-32X	176.70
1/4-20	.1800	.5000	3	.2500	2.5	TM-250-20	181.85	TM-250-20X	186.80
1/4-28	.1800	.5000	3	.2500	2.5	TM-250-28	181.85	TM-250-28X	186.80
5/16-18	.2350	.6250	3	.2500	2.5	TM-312-18	199.30	TM-312-18X	204.00
5/16-24	.2350	.6250	3	.2500	2.5			TM-312-24X	204.00
3/8-16	.2850	.7500	4	.3125	2.5	TM-375-16	240.30	TM-375-16X	248.20
3/8-24	.2850	.7500	4	.3125	2.5	TM-375-24	240.30	TM-375-24X	248.20
7/16-14	.3050	.7500	4	.3125	2.5	TM-437-14	240.30	TM-437-14X	248.20
7/16-20	.3350	.8750	4	.3750	3.0	TM-437-20	252.45	TM-437-20X	259.25
1/2-13	.3500	.8750	4	.3750	3.0	TM-500-13	252.45	TM-500-13X	259.25
9/16-12	.3700	.8750	4	.3750	3.0			TM-562-12X	258.55
9/16-18	.3700	.8750	4	.3750	3.0	TM-562-18	252.45	TM-562-18X	259.25
5/8-11	.4700	1.2500	4	.5000	4.0			TM-625-11X	302.00
3/4-10	.4950	1.2500	4	.5000	4.0	TM-750-10	289.10	TM-750-10X	300.25
3/4-12	.4950	1.2500	4	.5000	4.0	TM-750-12	289.10	TM-750-12X	300.25
3/4-16	.4950	1.2500	4	.5000	4.0	TM-750-16	289.10	TM-750-16X	300.25
7/8-14	.4900	1.2500	4	.5000	4.0	TM-875-14	290.10	TM-875-14X	301.40
7/8-9	.6200	1.3750	4	.6250	4.0			TM-875-09X	322.65
1-8	.6200	1.3750	4	.6250	4.0	TM-001-08	311.30	TM-001-08X	327.20

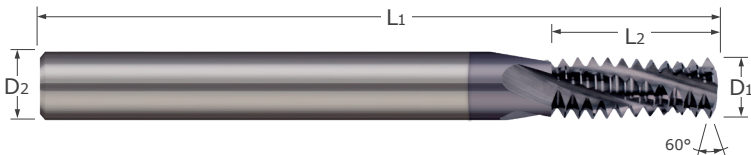
* Length of cut measured to last full tooth.

Thread Milling Cutters

Thread Milling Cutters

Multi-Form – NPT Threads

TM



- 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

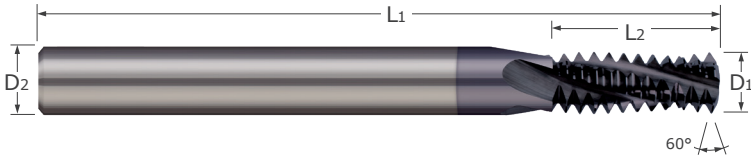
Thread Size	Major Cutter Diameter	Length of Cut*	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	USD\$	Tool #	USD\$
1/16 & 1/8-27 NPT	D1 ^{+.0005"} _{-.0005"}	L2 ^{+.050"} _{-.000"}		D2 (h6)	L1	TM-27NPT	199.90	TM-27NPTX	204.65
1/4 & 3/8-18 NPT	.3050	.625	4	.3125	3.0	TM-18NPT	240.90	TM-18NPTX	248.90
1/2 & 3/4-14 NPT	.4950	.875	4	.5000	4.0	TM-14NPT	242.70	TM-14NPTX	254.25
1 & 2-11.5 NPT	.6200	1.125	4	.6250	4.0	TM-11NPT	323.25	TM-11NPTX	336.90

* Length of cut measured to last full tooth.

Thread Milling Cutters

Multi-Form – NPTF Threads

TM



- 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

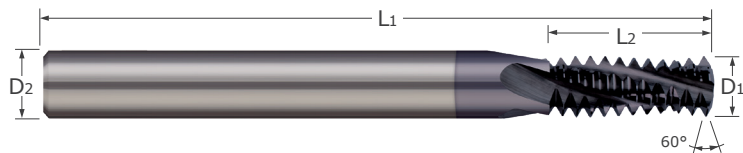
Thread Size	Major Cutter Diameter	Length of Cut*	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	USD\$	Tool #	USD\$
1/16 & 1/8-27 NPT	D1 ^{+.0005"} _{-.0005"}	L2 ^{+.030"} _{-.000"}		D2 (h6)	L1	TM-27NPTF	227.20	TM-27NPTFX	231.75
1/4 & 3/8-18 NPT	.3050	.625	4	.3125	3.0			TM-18NPTFX	265.45
1/2 & 3/4-14 NPT	.4950	.875	4	.5000	4.0	TM-14NPTF	279.35		
1 & 2-11.5 NPT	.6200	1.125	4	.6250	4.0			TM-11NPTFX	360.30

* Length of cut measured to last full tooth.



TMM

Thread Milling Cutters
Multi-Form – Metric Threads



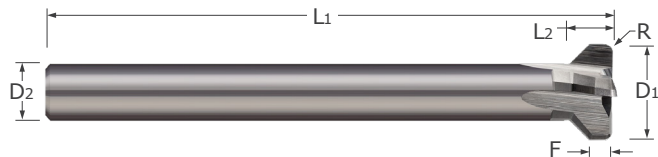
- Mills internal and external 60° metric thread
- Able to cut larger threads of the same pitch
- 100% thread form creates superior threads vs. tapping
- Mills right hand threads
- Helical flutes
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials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

Thread Size	Cutter Diameter	Length of Cut*	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
						Tool #	USD\$	Tool #	USD\$
	D1 (h8)	L2 +1.3 mm -0.0 mm		D2 (h6)	L1				
M5.0x0.80	3.00 mm	8 mm	3	6 mm	57 mm			TMM-050080X	170.30
M6.0x1.00	4.30 mm	12 mm	3	6 mm	57 mm			TMM-060100X	189.20
M8.0x0.75	6.00 mm	16 mm	3	6 mm	57 mm	TMM-080075	230.95	TMM-080075X	235.45
M8.0x1.25	6.00 mm	16 mm	3	6 mm	57 mm			TMM-080125X	235.00
M10.0x1.50	7.62 mm	20 mm	4	8 mm	100 mm			TMM-100150X	267.90
M12.0x1.00	9.15 mm	22 mm	4	10 mm	100 mm			TMM-120100X	271.40
M12.0x1.75	9.15 mm	22 mm	4	10 mm	100 mm			TMM-120175X	270.70
M18.0x1.50	11.94 mm	32 mm	4	12 mm	100 mm			TMM-180150X	334.15
M20.0x2.50	11.94 mm	32 mm	4	12 mm	100 mm			TMM-200250X	334.15
M24.0x3.00	15.75 mm	35 mm	4	16 mm	100 mm	TMM-240300	373.90		

* Length of cut measured to last full tooth.

MTR

Thread Milling Cutters
Thread Relief Cutter



- 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 #	USD\$
D1 +.000" -.005"	L2 +.015" -.015"	F +.000" -.005"	R +.002" -.002"		D2 (h6)	L1		
.375	.141	.075	.010	4	.2500	2.64	MTR-375	98.60
.500	.195	.100	.010	5	.3125	2.72	MTR-500	120.30
.750	.250	.125	.015	6	.3750	2.75	MTR-750	149.15
1.000	.250	.125	.015	7	.5000	3.25	MTR-001	194.65



MILLING TOOLS

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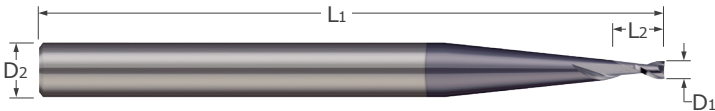
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RME / RMEM
SME / AMRM

End Mills – Square
2 Flute – Stub & Standard – Miniature



- 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 #	USD\$	Tool #	USD\$
+ .0005"	+ .00 mm	decimal equiv.	+ .010"							
- .0005"	- .02 mm		- .000"							
			+ .25 mm							
			- .00 mm							
.0050		.0050	.007	2	.1250	1.5	SME-005-2	58.55	SME-005-2X	61.40
.0060		.0060	.009	2	.1250	1.5	SME-006-2	58.55	SME-006-2X	61.40
.0070		.0070	.010	2	.1250	1.5	SME-007-2	49.60	SME-007-2X	52.55
	0.2 mm	.0079	0.4 mm	2	3 mm	38 mm	RMEM-002-2	41.30	RMEM-002-2X	44.35
	0.2 mm	.0079	0.4 mm	2	4 mm	50 mm			AMRM-002-2X	47.95
.0080		.0080	.012	2	.1250	1.5	SME-008-2	49.60		
.0090		.0090	.013	2	.1250	1.5	SME-009-2	45.15		
.0100		.0100	.015	2	.1250	1.5	SME-010-2	45.15	SME-010-2X	48.10
.0100		.0100	.030	2	.1250	1.5	RME-010-2	47.15	RME-010-2X	50.20
.0110		.0110	.033	2	.1250	1.5			RME-011-2X	45.60
	0.3 mm	.0118	0.9 mm	2	3 mm	38 mm	RMEM-003-2	35.50	RMEM-003-2X	38.65
	0.3 mm	.0118	0.9 mm	2	4 mm	50 mm	AMRM-003-2	39.05	AMRM-003-2X	42.70
.0120		.0120	.036	2	.1250	1.5			RME-012-2X	45.60
.0130		.0130	.019	2	.1250	1.5	SME-013-2	34.65	SME-013-2X	37.75
.0130		.0130	.039	2	.1250	1.5	RME-013-2	36.35		
.0140		.0140	.021	2	.1250	1.5	SME-014-2	34.65	SME-014-2X	37.75
.0140		.0140	.042	2	.1250	1.5	RME-014-2	36.35	RME-014-2X	39.30
.0150		.0150	.022	2	.1250	1.5	SME-015-2	27.60	SME-015-2X	30.80
.0150		.0150	.045	2	.1250	1.5	RME-015-2	28.75	RME-015-2X	31.90
	0.4 mm	.0157	1.2 mm	2	3 mm	38 mm	RMEM-004-2	26.05		
	0.4 mm	.0157	1.2 mm	2	4 mm	50 mm	AMRM-004-2	29.70		
.0160		.0160	.024	2	.1250	1.5	SME-016-2	27.60	SME-016-2X	30.80
.0160		.0160	.048	2	.1250	1.5	RME-016-2	28.75	RME-016-2X	31.90
.0170		.0170	.025	2	.1250	1.5	SME-017-2	27.60		
.0170		.0170	.051	2	.1250	1.5	RME-017-2	28.75	RME-017-2X	31.90
.0180		.0180	.027	2	.1250	1.5	SME-018-2	27.60	SME-018-2X	30.80
.0180		.0180	.054	2	.1250	1.5	RME-018-2	28.75	RME-018-2X	31.90
.0190		.0190	.028	2	.1250	1.5	SME-019-2	27.60		
.0190		.0190	.057	2	.1250	1.5			RME-019-2X	31.90
	0.5 mm	.0197	1.5 mm	2	3 mm	38 mm	RMEM-005-2	24.10		
	0.5 mm	.0197	1.5 mm	2	4 mm	50 mm	AMRM-005-2	26.05		
.0200		.0200	.030	2	.1250	1.5	SME-020-2	25.45	SME-020-2X	28.60
.0200		.0200	.060	2	.1250	1.5	RME-020-2	26.45	RME-020-2X	29.75

*.0005" / .013 mm max TIR

Continued on next page

End Mills

End Mills – Square
2 Flute – Stub & Standard – Miniature (cont.)

RME / RMEM
SME / AMRM

Continued from previous page

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0005"	+ .00 mm	decimal equiv.	+ .010"							
– .0005"	– .02 mm		+ .25 mm							
			– .00 mm							
.0210		.0210	.063	2	.1250	1.5			RME-021-2X	29.40
.0220		.0220	.033	2	.1250	1.5	SME-022-2	25.45		
.0220		.0220	.066	2	.1250	1.5	RME-022-2	26.45	RME-022-2X	29.75
.0230		.0230	.034	2	.1250	1.5	SME-023-2	25.45	SME-023-2X	28.60
.0230		.0230	.069	2	.1250	1.5	RME-023-2	26.45	RME-023-2X	29.75
	0.6 mm	.0236	1.8 mm	2	3 mm	38 mm	RMEM-006-2	24.10	RMEM-006-2X	27.25
.0240		.0240	.072	2	.1250	1.5	RME-024-2	26.45	RME-024-2X	29.75
.0250		.0250	.037	2	.1250	1.5	SME-025-2	25.45	SME-025-2X	28.60
.0250		.0250	.075	2	.1250	1.5	RME-025-2	26.45	RME-025-2X	29.75
.0270		.0270	.040	2	.1250	1.5	SME-027-2	22.30		
.0270		.0270	.081	2	.1250	1.5	RME-027-2	22.40	RME-027-2X	25.60
	0.7 mm	.0276	2.1 mm	2	3 mm	38 mm	RMEM-007-2	21.60		
.0280		.0280	.042	2	.1250	1.5			SME-028-2X	25.20
.0280		.0280	.084	2	.1250	1.5			RME-028-2X	25.60
.0290		.0290	.087	2	.1250	1.5	RME-029-2	22.40	RME-029-2X	25.60
.0300		.0300	.045	2	.1250	1.5	SME-030-2	22.30	SME-030-2X	25.50
.0300		.0300	.090	2	.1250	1.5	RME-030-2	22.40	RME-030-2X	25.60
.0310		.0310	.047	2	.1250	1.5	SME-031-2	22.30	SME-031-2X	25.50
	0.8 mm	.0315	2.4 mm	2	3 mm	38 mm	RMEM-008-2	21.60	RMEM-008-2X	24.85
	0.8 mm	.0315	2.4 mm	2	4 mm	50 mm	AMRM-008-2	23.35		
.0320		.0320	.096	2	.1250	1.5	RME-032-2	22.40	RME-032-2X	25.60
.0340		.0340	.102	2	.1250	1.5			RME-034-2X	25.60
.0350		.0350	.105	2	.1250	1.5	RME-035-2	22.40	RME-035-2X	25.60
	0.9 mm	.0354	2.7 mm	2	3 mm	38 mm	RMEM-009-2	21.60	RMEM-009-2X	24.85
	0.9 mm	.0354	2.7 mm	2	4 mm	50 mm			AMRM-009-2X	27.15
	1 mm	.0394	3 mm	2	3 mm	38 mm	RMEM-010-2	21.60	RMEM-010-2X	24.85
	1 mm	.0394	3 mm	2	4 mm	50 mm	AMRM-010-2	23.35	AMRM-010-2X	27.15
.0400		.0400	.060	2	.1250	1.5	SME-040-2	22.30	SME-040-2X	25.50
.0400		.0400	.120	2	.1250	1.5	RME-040-2	22.40		
	1.1 mm	.0433	3.3 mm	2	3 mm	38 mm	RMEM-011-2	21.60		
	1.1 mm	.0433	3.3 mm	2	4 mm	50 mm	AMRM-011-2	23.35		
.0450		.0450	.135	2	.1250	1.5			RME-045-2X	25.35
	1.2 mm	.0472	3.8 mm	2	3 mm	38 mm	RMEM-012-2	21.60	RMEM-012-2X	24.85
	1.2 mm	.0472	3.8 mm	2	4 mm	50 mm	AMRM-012-2	23.35	AMRM-012-2X	27.15
.0500		.0500	.075	2	.1250	1.5	SME-050-2	22.30	SME-050-2X	25.50
.0500		.0500	.150	2	.1250	1.5	RME-050-2	22.40	RME-050-2X	25.60
	1.3 mm	.0512	3.9 mm	2	3 mm	38 mm	RMEM-013-2	21.60	RMEM-013-2X	24.85
	1.3 mm	.0512	3.9 mm	2	4 mm	50 mm	AMRM-013-2	23.35	AMRM-013-2X	27.15
	1.4 mm	.0551	4.2 mm	2	3 mm	38 mm	RMEM-014-2	21.60		
	1.5 mm	.0591	4.2 mm	2	3 mm	38 mm	RMEM-015-2	21.60		
	1.6 mm	.0630	4.8 mm	2	3 mm	38 mm	RMEM-016-2	19.95		

*.0005" / .013 mm max TIR

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RME / RMEM
SME / AMRM

End Mills – Square
2 Flute – Stub & Standard – Miniature (cont.)

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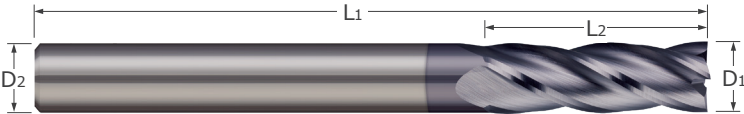
Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 +.0005" -.0005"			L2 +.010" -.000" +.25 mm -.00 mm		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
1.6 mm			.0630		4.8 mm	2	4 mm	50 mm	AMRM-016-2	23.35
1.7 mm			.0669		5.1 mm	2	3 mm	38 mm	RMEM-017-2	19.95
1.7 mm			.0669		5.1 mm	2	4 mm	50 mm	AMRM-017-2X	27.15
1.8 mm			.0709		5.3 mm	2	3 mm	38 mm	RMEM-018-2	19.95
1.8 mm			.0709		5.3 mm	2	4 mm	50 mm	AMRM-018-2	23.35
1.9 mm			.0748		5.7 mm	2	3 mm	38 mm	RMEM-019-2	19.95
1.9 mm			.0748		5.7 mm	2	4 mm	50 mm	AMRM-019-2X	27.15
2 mm			.0787		6 mm	2	3 mm	38 mm	RMEM-020-2	19.95
2 mm			.0787		6 mm	2	4 mm	50 mm	AMRM-020-2	23.35
2.5 mm			.0984		8 mm	2	3 mm	38 mm	RMEM-025-2	19.95
2.5 mm			.0984		8 mm	2	4 mm	50 mm	AMRM-025-2X	26.80
3 mm			.1181		9 mm	2	4 mm	50 mm	AMRM-030-2X	26.80

*.0005" / .013 mm max TIR

End Mills

End Mills – Square
2, 3, 4 Flute

GEM / GEMM
SEM / AEMM



- 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	
D1 +.0000" -.0020" (h9)	decimal equiv.	L2 +.030" -.000" +.78 mm -.00 mm					D2 (h6)	L1	Tool #	USD\$
.0312	.0312	.063	2	.1250	1.5	SEM-031-02	19.10	SEM-031-02X	22.45	
.0312	.0312	.063	3	.1250	1.5	SEM-031-03	19.10			
.0312	.0312	.063	4	.1250	1.5	SEM-031-04	19.10	SEM-031-04X	22.45	
.0312	.0312	.078	2	.1250	1.5	GEM-031-2	20.15	GEM-031-2X	23.30	
.0312	.0312	.078	3	.1250	1.5	GEM-031-3	20.15	GEM-031-3X	23.30	
.0312	.0312	.078	4	.1250	1.5	GEM-031-4	20.15	GEM-031-4X	23.30	
1 mm	.0394	3 mm	2	3 mm	38 mm	GEMM-010-2	19.30	GEMM-010-2X	22.60	
1 mm	.0394	3 mm	3	3 mm	38 mm	GEMM-010-3	19.30	GEMM-010-3X	22.60	
1 mm	.0394	3 mm	4	3 mm	38 mm	GEMM-010-4	19.30			
1 mm	.0394	4 mm	2	4 mm	50 mm			AEMM-010-2X	27.15	
1 mm	.0394	4 mm	3	4 mm	50 mm	AEMM-010-3	23.35			
1 mm	.0394	4 mm	4	4 mm	50 mm	AEMM-010-4	23.35	AEMM-010-4X	27.15	
.0469	.0469	.094	2	.1250	1.5	SEM-046-02	19.10	SEM-046-02X	22.45	
.0469	.0469	.094	3	.1250	1.5	SEM-046-03	19.10	SEM-046-03X	22.45	
.0469	.0469	.094	4	.1250	1.5	SEM-046-04	19.10	SEM-046-04X	22.45	
.0469	.0469	.109	2	.1250	1.5	GEM-046-2	20.15			
.0469	.0469	.109	3	.1250	1.5	GEM-046-3	20.15	GEM-046-3X	23.30	
.0469	.0469	.109	4	.1250	1.5	GEM-046-4	20.15	GEM-046-4X	23.30	
1.5 mm	.0591	4 mm	2	4 mm	50 mm	AEMM-015-2	23.35			
1.5 mm	.0591	4 mm	3	4 mm	50 mm	AEMM-015-3	23.35	AEMM-015-3X	27.15	
1.5 mm	.0591	4 mm	4	4 mm	50 mm	AEMM-015-4	23.35	AEMM-015-4X	27.15	
.0625	.0625	.125	2	.1250	1.5	SEM-062-02	17.35	SEM-062-02X	20.70	
.0625	.0625	.125	3	.1250	1.5	SEM-062-03	17.35	SEM-062-03X	20.70	
.0625	.0625	.125	4	.1250	1.5	SEM-062-04	17.35	SEM-062-04X	20.70	
.0625	.0625	.188	2	.1250	1.5	GEM-062-2	18.35	GEM-062-2X	21.65	
.0625	.0625	.188	3	.1250	1.5	GEM-062-3	18.35	GEM-062-3X	21.65	
.0625	.0625	.188	4	.1250	1.5	GEM-062-4	18.35	GEM-062-4X	21.65	
.0781	.0781	.156	2	.1250	1.5	SEM-078-02	17.35			
.0781	.0781	.156	3	.1250	1.5	SEM-078-03	17.35	SEM-078-03X	20.70	
.0781	.0781	.156	4	.1250	1.5	SEM-078-04	17.35	SEM-078-04X	20.70	
.0781	.0781	.188	2	.1250	1.5	GEM-078-2	18.35	GEM-078-2X	21.65	
.0781	.0781	.188	3	.1250	1.5	GEM-078-3	18.35	GEM-078-3X	21.65	
.0781	.0781	.188	4	.1250	1.5	GEM-078-4	18.35	GEM-078-4X	21.65	
2 mm	.0787	5 mm	2	4 mm	50 mm	AEMM-020-2	23.35	AEMM-020-2X	27.15	
2 mm	.0787	5 mm	3	4 mm	50 mm	AEMM-020-3	23.35	AEMM-020-3X	27.15	
2 mm	.0787	5 mm	4	4 mm	50 mm			AEMM-020-4X	27.15	
2 mm	.0787	6 mm	2	3 mm	38 mm	GEMM-020-2	17.55	GEMM-020-2X	20.80	
2 mm	.0787	6 mm	3	3 mm	38 mm			GEMM-020-3X	20.80	
2 mm	.0787	7 mm	4	3 mm	38 mm	GEMM-020-4	17.55	GEMM-020-4X	20.80	

*.0005" / .013 mm max TIR

Continued on next page



GEM / GEMM
SEM / AEMM

End 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			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
$\begin{matrix} +.0000" \\ -.0020" \end{matrix}$	(h9)	decimal equiv.	$\begin{matrix} +.030" \\ -.000" \\ +.78 \text{ mm} \\ -.00 \text{ mm} \end{matrix}$							
.0938		.0938	.188	2	.1250	1.5	SEM-093-02	17.35	SEM-093-02X	20.70
.0938		.0938	.188	3	.1250	1.5	SEM-093-03	17.35	SEM-093-03X	20.70
.0938		.0938	.188	4	.1250	1.5	SEM-093-04	17.35	SEM-093-04X	20.70
.0938		.0938	.375	2	.1250	1.5	GEM-093-2	18.35	GEM-093-2X	21.65
.0938		.0938	.375	3	.1250	1.5	GEM-093-3	18.35	GEM-093-3X	21.65
.0938		.0938	.375	4	.1250	1.5	GEM-093-4	18.35	GEM-093-4X	21.65
2.5 mm		.0984	6 mm	2	4 mm	50 mm	AEMM-025-2	23.35	AEMM-025-2X	27.15
2.5 mm		.0984	6 mm	3	4 mm	50 mm	AEMM-025-3	23.35	AEMM-025-3X	27.15
2.5 mm		.0984	6 mm	4	4 mm	50 mm	AEMM-025-4	23.35	AEMM-025-4X	27.15
.1094		.1094	.188	2	.1250	1.5	SEM-109-02	17.35	SEM-109-02X	20.70
.1094		.1094	.188	3	.1250	1.5	SEM-109-03	17.35	SEM-109-03X	20.70
.1094		.1094	.188	4	.1250	1.5	SEM-109-04	17.35	SEM-109-04X	20.70
.1094		.1094	.375	2	.1250	1.5	GEM-109-2	18.35	GEM-109-2X	21.65
.1094		.1094	.375	3	.1250	1.5	GEM-109-3	18.35	GEM-109-3X	21.65
.1094		.1094	.375	4	.1250	1.5	GEM-109-4	18.35	GEM-109-4X	21.65
3 mm		.1181	7 mm	2	3 mm	38 mm	GEMM-030-2	15.65		
3 mm		.1181	7 mm	3	3 mm	38 mm	GEMM-030-3	15.65	GEMM-030-3X	18.95
3 mm		.1181	8 mm	4	3 mm	38 mm	GEMM-030-4	15.65	GEMM-030-4X	18.95
3 mm		.1181	8 mm	2	6 mm	57 mm	AEMM-030-2	29.25	AEMM-030-2X	35.80
3 mm		.1181	8 mm	3	6 mm	57 mm	AEMM-030-3	29.25		
3 mm		.1181	8 mm	4	6 mm	57 mm	AEMM-030-4	29.25	AEMM-030-4X	35.80
.1250		.1250	.250	2	.1250	1.5	SEM-125-02	15.45	SEM-125-02X	18.85
.1250		.1250	.250	3	.1250	1.5	SEM-125-03	15.45	SEM-125-03X	18.85
.1250		.1250	.250	4	.1250	1.5	SEM-125-04	15.45	SEM-125-04X	18.85
.1250		.1250	.500	2	.1250	1.5	GEM-125-2	16.40	GEM-125-2X	19.65
.1250		.1250	.500	3	.1250	1.5	GEM-125-3	16.40	GEM-125-3X	19.65
.1250		.1250	.500	4	.1250	1.5	GEM-125-4	16.40	GEM-125-4X	19.65
3.5 mm		.1378	10 mm	2	6 mm	57 mm			AEMM-035-2X	35.80
3.5 mm		.1378	10 mm	3	6 mm	57 mm	AEMM-035-3	29.25	AEMM-035-3X	35.80
3.5 mm		.1378	10 mm	4	6 mm	57 mm	AEMM-035-4	29.25	AEMM-035-4X	35.80
.1406		.1406	.250	2	.1875	1.5	SEM-140-02	24.80	SEM-140-02X	28.50
.1406		.1406	.250	3	.1875	1.5	SEM-140-03	24.80	SEM-140-03X	28.50
.1406		.1406	.250	4	.1875	1.5	SEM-140-04	24.80	SEM-140-04X	28.50
.1406		.1406	.500	2	.1875	2.0	GEM-140-2	25.95	GEM-140-2X	29.75
.1406		.1406	.500	3	.1875	2.0	GEM-140-3	25.95	GEM-140-3X	29.75
.1406		.1406	.500	4	.1875	2.0	GEM-140-4	25.95	GEM-140-4X	29.75
.1562		.1562	.313	2	.1875	1.5	SEM-156-02	24.80	SEM-156-02X	28.50
.1562		.1562	.313	3	.1875	1.5	SEM-156-03	24.80		
.1562		.1562	.313	4	.1875	1.5	SEM-156-04	24.80	SEM-156-04X	28.50
.1562		.1562	.563	2	.1875	2.0	GEM-156-2	25.95	GEM-156-2X	29.75
.1562		.1562	.563	3	.1875	2.0	GEM-156-3	25.95	GEM-156-3X	29.75
.1562		.1562	.563	4	.1875	2.0	GEM-156-4	25.95	GEM-156-4X	29.75
4 mm		.1575	8 mm	2	4 mm	50 mm	GEMM-040-2	23.35		
4 mm		.1575	8 mm	3	4 mm	50 mm	GEMM-040-3	23.35		
4 mm		.1575	11 mm	4	4 mm	50 mm	GEMM-040-4	23.35	GEMM-040-4X	27.15
4 mm		.1575	11 mm	2	6 mm	57 mm	AEMM-040-2	29.25	AEMM-040-2X	35.80
4 mm		.1575	11 mm	3	6 mm	57 mm	AEMM-040-3	29.25		
4 mm		.1575	11 mm	4	6 mm	57 mm	AEMM-040-4	29.25	AEMM-040-4X	35.80

*.0005" / .013 mm max TIR

Continued on next page

End Mills

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

GEM / GEMM
SEM / AEMM

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 #	USD\$	Tool #	USD\$
.1719	.1719	.313	3	.1875	1.5	SEM-171-03	24.80	SEM-171-03X	28.50
.1719	.1719	.313	4	.1875	1.5	SEM-171-04	24.80	SEM-171-04X	28.50
.1719	.1719	.625	2	.1875	2.0			GEM-171-2X	29.75
.1719	.1719	.625	4	.1875	2.0	GEM-171-4	25.95	GEM-171-4X	29.75
4.5 mm	.1772	11 mm	3	6 mm	57 mm			AEMM-045-3X	35.80
4.5 mm	.1772	11 mm	4	6 mm	57 mm	AEMM-045-4	29.25	AEMM-045-4X	35.80
.1875	.1875	.375	2	.1875	1.5	SEM-187-02	24.80	SEM-187-02X	28.50
.1875	.1875	.375	3	.1875	1.5	SEM-187-03	24.80	SEM-187-03X	28.50
.1875	.1875	.375	4	.1875	1.5	SEM-187-04	24.80	SEM-187-04X	28.50
.1875	.1875	.625	2	.1875	2.0	GEM-187-2	25.95	GEM-187-2X	29.75
.1875	.1875	.625	3	.1875	2.0	GEM-187-3	25.95	GEM-187-3X	29.75
.1875	.1875	.625	4	.1875	2.0	GEM-187-4	25.95	GEM-187-4X	29.75
5 mm	.1969	10 mm	2	6 mm	57 mm	GEMM-050-2	25.00		
5 mm	.1969	13 mm	4	6 mm	57 mm			GEMM-050-4X	28.70
5 mm	.1969	16 mm	2	6 mm	57 mm	AEMM-050-2	29.25	AEMM-050-2X	35.80
5 mm	.1969	16 mm	4	6 mm	57 mm	AEMM-050-4	29.25	AEMM-050-4X	35.80
.2031	.2031	.375	3	.2500	2.0	SEM-203-03	30.70	SEM-203-03X	34.50
.2031	.2031	.375	4	.2500	2.0	SEM-203-04	30.70	SEM-203-04X	34.50
.2031	.2031	.625	2	.2500	2.5	GEM-203-2	32.50		
.2031	.2031	.625	4	.2500	2.5	GEM-203-4	32.50	GEM-203-4X	39.05
5.5 mm	.2165	16 mm	2	6 mm	57 mm	AEMM-055-2	29.25		
5.5 mm	.2165	16 mm	4	6 mm	57 mm	AEMM-055-4	29.25	AEMM-055-4X	35.80
.2187	.2187	.438	4	.2500	2.0	SEM-218-04	30.70	SEM-218-04X	34.50
.2187	.2187	.625	2	.2500	2.5	GEM-218-2	32.50	GEM-218-2X	39.05
.2187	.2187	.625	4	.2500	2.5	GEM-218-4	32.50		
.2344	.2344	.438	4	.2500	2.0	SEM-234-04	30.70		
6 mm	.2362	10 mm	2	6 mm	57 mm	GEMM-060-2	29.25	GEMM-060-2X	35.80
6 mm	.2362	10 mm	3	6 mm	57 mm	GEMM-060-3	29.25		
6 mm	.2362	13 mm	4	6 mm	57 mm	GEMM-060-4	29.25	GEMM-060-4X	35.80
6 mm	.2362	16 mm	2	6 mm	57 mm	AEMM-060-2	29.25	AEMM-060-2X	35.80
6 mm	.2362	16 mm	3	6 mm	57 mm	AEMM-060-3	29.25		
6 mm	.2362	16 mm	4	6 mm	57 mm	AEMM-060-4	29.25	AEMM-060-4X	35.80
.2500	.2500	.500	2	.2500	2.0	SEM-250-02	30.70	SEM-250-02X	34.50
.2500	.2500	.500	3	.2500	2.0	SEM-250-03	30.70	SEM-250-03X	34.50
.2500	.2500	.500	4	.2500	2.0	SEM-250-04	30.70	SEM-250-04X	34.50
.2500	.2500	.750	2	.2500	2.5	GEM-250-2	32.50	GEM-250-2X	39.05
.2500	.2500	.750	3	.2500	2.5	GEM-250-3	32.50	GEM-250-3X	39.05
.2500	.2500	.750	4	.2500	2.5	GEM-250-4	32.50	GEM-250-4X	39.05

*.0005" / .013 mm max TIR

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GEM / GEMM
SEM / AEMM

End 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		L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0000" - .0030"		+ .030" - .000" + .78 mm - .00 mm							
(h9)	decimal equiv.								
.2656	.2656	.500	4	.3125	2.0	SEM-265-04	34.05	SEM-265-04X	41.40
7 mm	.2756	22 mm	3	8 mm	63 mm			AEMM-070-3X	45.10
7 mm	.2756	22 mm	4	8 mm	63 mm	AEMM-070-4	36.35	AEMM-070-4X	45.10
.2812	.2812	.500	4	.3125	2.0	SEM-281-04	34.05	SEM-281-04X	41.40
.2812	.2812	.750	2	.3125	2.5	GEM-281-2	37.80	GEM-281-2X	45.65
.2812	.2812	.750	3	.3125	2.5	GEM-281-3	37.80	GEM-281-3X	45.65
.2812	.2812	.750	4	.3125	2.5	GEM-281-4	37.80	GEM-281-4X	45.65
.3125	.3125	.500	4	.3125	2.0	SEM-312-04	34.05	SEM-312-04X	41.40
.3125	.3125	.813	2	.3125	2.5	GEM-312-2	37.80	GEM-312-2X	45.65
.3125	.3125	.813	4	.3125	2.5	GEM-312-4	37.80	GEM-312-4X	45.65
8 mm	.3150	19 mm	4	8 mm	63 mm	GEMM-080-4	36.35		
8 mm	.3150	22 mm	2	8 mm	63 mm	AEMM-080-2	36.35		
8 mm	.3150	22 mm	3	8 mm	63 mm	AEMM-080-3	36.35	AEMM-080-3X	45.10
8 mm	.3150	22 mm	4	8 mm	63 mm	AEMM-080-4	36.35	AEMM-080-4X	45.10
.3281	.3281	.500	2	.3750	2.0	SEM-328-02	40.60	SEM-328-02X	48.10
.3281	.3281	.500	3	.3750	2.0			SEM-328-03X	48.10
.3281	.3281	.500	4	.3750	2.0	SEM-328-04	40.60		
.3750	.3750	.625	2	.3750	2.0	SEM-375-02	40.60		
.3750	.3750	.625	3	.3750	2.0	SEM-375-03	40.60	SEM-375-03X	47.30
.3750	.3750	.625	4	.3750	2.0	SEM-375-04	40.60	SEM-375-04X	47.30
.3750	.3750	.875	2	.3750	2.5	GEM-375-2	42.75	GEM-375-2X	51.65
.3750	.3750	.875	3	.3750	2.5	GEM-375-3	42.75		
.3750	.3750	.875	4	.3750	2.5	GEM-375-4	42.75	GEM-375-4X	51.65
.3906	.3906	.625	4	.4375	2.5	SEM-390-04	60.70	SEM-390-04X	71.75
10 mm	.3937	19 mm	2	10 mm	72 mm			GEMM-100-2X	51.55
10 mm	.3937	19 mm	3	10 mm	72 mm			GEMM-100-3X	51.55
10 mm	.3937	25 mm	2	10 mm	72 mm	AEMM-100-2	42.65	AEMM-100-2X	51.55
10 mm	.3937	25 mm	3	10 mm	72 mm	AEMM-100-3	42.65	AEMM-100-3X	51.55
10 mm	.3937	25 mm	4	10 mm	72 mm	AEMM-100-4	42.65	AEMM-100-4X	51.55
11 mm	.4331	30 mm	3	12 mm	83 mm	AEMM-110-3	68.10		
.4375	.4375	1.000	4	.4375	2.5	GEM-437-4	67.45	GEM-437-4X	77.90
12 mm	.4724	22 mm	2	12 mm	83 mm	GEMM-120-2	68.10	GEMM-120-2X	81.80
12 mm	.4724	22 mm	3	12 mm	83 mm	GEMM-120-3	68.10		
12 mm	.4724	30 mm	2	12 mm	83 mm	AEMM-120-2	68.10		
12 mm	.4724	30 mm	4	12 mm	83 mm	AEMM-120-4	68.10	AEMM-120-4X	81.80
.5000	.5000	.625	2	.5000	2.5	SEM-500-02	67.05	SEM-500-02X	77.20
.5000	.5000	.625	3	.5000	2.5	SEM-500-03	67.05	SEM-500-03X	77.20
.5000	.5000	.625	4	.5000	2.5	SEM-500-04	67.05	SEM-500-04X	77.20
.5000	.5000	1.000	2	.5000	3.0	GEM-500-2	74.40	GEM-500-2X	84.75
.5000	.5000	1.000	3	.5000	3.0	GEM-500-3	74.40	GEM-500-3X	84.75
.5000	.5000	1.000	4	.5000	3.0	GEM-500-4	74.40	GEM-500-4X	84.75
.5000	.5000	1.250	4	.5000	3.5			GEM-5125-4X	86.15
14 mm	.5512	26 mm	4	14 mm	83 mm	GEMM-140-4	79.00		
14 mm	.5512	35 mm	2	14 mm	83 mm			AEMM-140-2X	92.60
14 mm	.5512	35 mm	3	14 mm	83 mm	AEMM-140-3	79.00		
14 mm	.5512	35 mm	4	14 mm	83 mm	AEMM-140-4	79.00		

*.0005" / .013 mm max TIR

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

GEM / GEMM
SEM / AEMM

Continued from previous page

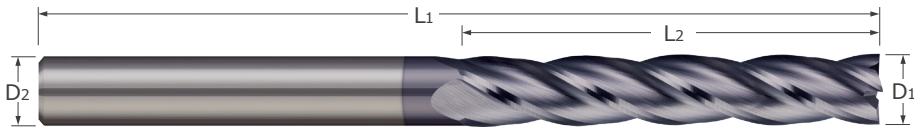
Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 +.0000" –.0030" (h9)	decimal equiv.	L2 +.030" –.000" +.78 mm –.00 mm			D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.5625	.5625	1.250	2	.5625	3.5	GEM-562-2	114.10			
.5625	.5625	1.250	4	.5625	3.5	GEM-562-4	114.10			
.6250	.6250	1.250	4	.6250	3.5	GEM-625-4	131.20	GEM-625-4X	147.00	
16 mm	.6299	32 mm	4	16 mm	92 mm	GEMM-160-4	126.10			
16 mm	.6299	35 mm	3	16 mm	92 mm			AEMM-160-3X	141.65	
16 mm	.6299	35 mm	4	16 mm	92 mm			AEMM-160-4X	141.65	
18 mm	.7087	32 mm	4	18 mm	92 mm	GEMM-180-4	169.40			
.7500	.7500	1.500	2	.7500	4.0	GEM-750-2	200.00			
.7500	.7500	1.500	4	.7500	4.0	GEM-750-4	200.00	GEM-750-4X	217.30	
20 mm	.7874	38 mm	4	20 mm	104 mm	GEMM-200-4	215.30			
.8750	.8750	1.500	4	.8750	4.0	GEM-875-4	277.15			
25 mm	.9843	50 mm	4	25 mm	127 mm			AEMM-250-4X	285.55	
1.0000	1.0000	1.500	4	1.0000	4.0	GEM-001-4	302.90			

*.0005" / .013 mm max TIR



GEL / GELM / AELM

End Mills – Square
2, 3, 4 Flute – Long Flute



- 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	
D1 +.0000" -.0020" (h9)	decimal equiv.	L2 +.031" -.000" +.79 mm -.00 mm					Tool #	USD\$	Tool #	USD\$
3 mm	.1181	15 mm	4	6 mm	75 mm	AELM-030-4	36.65			
4 mm	.1575	20 mm	2	6 mm	75 mm				AELM-040-2X	43.20
6 mm	.2362	25 mm	3	6 mm	75 mm	GELM-060-3	40.80			
6 mm	.2362	25 mm	4	6 mm	75 mm	GELM-060-4	40.80			

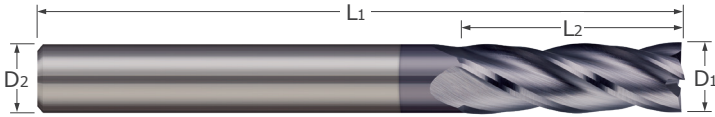
D1 +.0000" -.0030" (h9)	decimal equiv.	L2 +.031" -.000" +.79 mm -.00 mm	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 +.0000" -.0030" (h9)	decimal equiv.	L2 +.031" -.000" +.79 mm -.00 mm				Tool #	USD\$	Tool #	USD\$
8 mm	.3150	30 mm	3	8 mm	75 mm	GELM-080-3	49.20		
8 mm	.3150	40 mm	2	8 mm	100 mm	AELM-080-2	64.35		
12 mm	.4724	55 mm	4	12 mm	130 mm	AELM-120-4	106.30		
18 mm	.7087	75 mm	2	18 mm	150 mm			GELM-180-2X	250.05
20 mm	.7874	75 mm	2	20 mm	150 mm			AELM-200-2X	341.00

*.0005" / .013 mm max TIR

End Mills

End Mills – Square
2, 3, 4, 6 Flute – NC Tolerance

EMS / EMSM



- 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

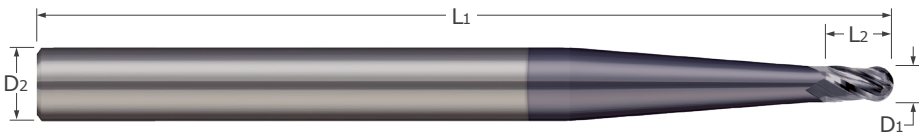
Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0010" - .0000"	+ .03 mm - .00 mm	decimal equiv.	+ .030" - .000" + .78 mm - .00 mm							
.0312	.0312	.0312	.078	2	.1250	1.5	FMS-031-2	24.20		
.0312	.0312	.0312	.078	3	.1250	1.5	FMS-031-3	24.20		
.0312	.0312	.0312	.078	4	.1250	1.5	FMS-031-4	24.20	FMS-031-4X	27.35
.0625	.0625	.0625	.188	2	.1250	1.5	FMS-062-2	22.00	FMS-062-2X	25.15
.0625	.0625	.0625	.188	3	.1250	1.5	FMS-062-3	22.00	FMS-062-3X	25.15
.0625	.0625	.0625	.188	4	.1250	1.5	FMS-062-4	22.00	FMS-062-4X	25.15
.0938	.0938	.0938	.375	3	.1250	1.5	FMS-093-3	22.00	FMS-093-3X	25.15
.0938	.0938	.0938	.375	4	.1250	1.5	FMS-093-4	22.00	FMS-093-4X	25.15
.1250	.1250	.1250	.500	2	.1250	1.5	FMS-125-2	19.60	FMS-125-2X	22.90
.1250	.1250	.1250	.500	3	.1250	1.5	FMS-125-3	19.60	FMS-125-3X	22.90
.1250	.1250	.1250	.500	4	.1250	1.5	FMS-125-4	19.60		
.1562	.1562	.1562	.563	2	.1875	2.0	FMS-156-2	31.05		
.1562	.1562	.1562	.563	4	.1875	2.0	FMS-156-4	31.05	FMS-156-4X	34.60
4 mm	.1575	.1575	18 mm	2	4 mm	50 mm	FMSM-040-2	25.65	FMSM-040-2X	29.30
.1875	.1875	.1875	.625	2	.1875	2.0	FMS-187-2	31.05		
.1875	.1875	.1875	.625	4	.1875	2.0	FMS-187-4	31.05	FMS-187-4X	34.60
6 mm	.2362	.2362	18 mm	4	6 mm	57 mm	FMSM-060-4	32.40	FMSM-060-4X	38.95
.2500	.2500	.2500	.750	3	.2500	2.5	FMS-250-3	38.95	FMS-250-3X	45.20
.2500	.2500	.2500	.750	4	.2500	2.5	FMS-250-4	38.95	FMS-250-4X	45.20
.3125	.3125	.3125	.813	4	.3125	2.5	FMS-312-4	45.25	FMS-312-4X	53.15
.3750	.3750	.3750	.875	2	.3750	2.5			FMS-375-2X	60.05
.3750	.3750	.3750	.875	3	.3750	2.5	FMS-375-3	51.40		
.3750	.3750	.3750	.875	4	.3750	2.5	FMS-375-4	51.40	FMS-375-4X	60.05
.5000	.5000	.5000	1.000	2	.5000	3.0	FMS-500-2	88.85	FMS-500-2X	99.20
.5000	.5000	.5000	1.000	3	.5000	3.0	FMS-500-3	88.85	FMS-500-3X	99.20
.5000	.5000	.5000	1.000	4	.5000	3.0	FMS-500-4	88.85		
.6250	.6250	.6250	1.250	4	.6250	3.5	FMS-625-4	157.35		
.7500	.7500	.7500	1.500	2	.7500	4.0	FMS-750-2	240.00		
.7500	.7500	.7500	1.500	4	.7500	4.0	FMS-750-4	240.00		
1.0000	1.0000	1.0000	2.500	3	1.0000	5.0	FMS-001-3	363.30		
1.0000	1.0000	1.0000	2.500	6	1.0000	5.0	FMS-001-6	363.30		

*.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			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0005" - .0005"	+ .00 mm - .02 mm	decimal equiv.								
.0100		.0100	.015	2	.1250	1.5	BMS-010-2	51.80	BMS-010-2X	54.75
.0100		.0100	.030	2	.1250	1.5	BMR-010-2	54.20	BMR-010-2X	57.05
.0110		.0110	.033	2	.1250	1.5	BMR-011-2	49.20	BMR-011-2X	52.15
0.3 mm		.0118	0.5 mm	2	3 mm	38 mm	BMSM-003-2	39.05	BMSM-003-2X	42.10
.0120		.0120	.018	2	.1250	1.5			BMS-012-2X	49.50
.0120		.0120	.036	2	.1250	1.5	BMR-012-2	49.20		
.0130		.0130	.019	2	.1250	1.5	BMS-013-2	39.85	BMS-013-2X	42.90
.0130		.0130	.039	2	.1250	1.5			BMR-013-2X	44.90
.0140		.0140	.021	2	.1250	1.5	BMS-014-2	39.85	BMS-014-2X	42.90
.0140		.0140	.042	2	.1250	1.5	BMR-014-2	41.85		
.0150		.0150	.022	2	.1250	1.5	BMS-015-2	31.75	BMS-015-2X	34.80
.0150		.0150	.045	2	.1250	1.5	BMR-015-2	33.00	BMR-015-2X	36.05
0.4 mm		.0157	0.6 mm	2	3 mm	38 mm	BMSM-004-2	28.85	BMSM-004-2X	32.00
.0160		.0160	.024	2	.1250	1.5	BMS-016-2	31.75	BMS-016-2X	34.80
.0160		.0160	.048	2	.1250	1.5	BMR-016-2	33.00	BMR-016-2X	36.05
.0180		.0180	.027	2	.1250	1.5	BMS-018-2	31.75	BMS-018-2X	34.80
.0180		.0180	.054	2	.1250	1.5	BMR-018-2	33.00		
.0190		.0190	.028	2	.1250	1.5	BMS-019-2	31.75	BMS-019-2X	34.80
.0190		.0190	.057	2	.1250	1.5	BMR-019-2	33.00		
0.5 mm		.0197	0.8 mm	2	3 mm	38 mm	BMSM-005-2	26.70	BMSM-005-2X	29.85
0.5 mm		.0197	1.5 mm	2	4 mm	50 mm	BMRM-005-2	29.15	BMRM-005-2X	32.75
.0200		.0200	.030	2	.1250	1.5	BMS-020-2	29.25	BMS-020-2X	32.45
.0200		.0200	.060	2	.1250	1.5	BMR-020-2	30.70	BMR-020-2X	33.80
.0220		.0220	.033	2	.1250	1.5			BMS-022-2X	32.45
.0220		.0220	.066	2	.1250	1.5	BMR-022-2	30.70	BMR-022-2X	33.80
.0230		.0230	.034	2	.1250	1.5	BMS-023-2	29.25		
.0230		.0230	.069	2	.1250	1.5	BMR-023-2	30.70		
0.6 mm		.0236	0.9 mm	2	3 mm	38 mm	BMSM-006-2	26.70		
.0240		.0240	.072	2	.1250	1.5	BMR-024-2	30.70	BMR-024-2X	33.80
.0250		.0250	.037	2	.1250	1.5	BMS-025-2	29.25	BMS-025-2X	32.45
.0250		.0250	.075	2	.1250	1.5	BMR-025-2	30.70	BMR-025-2X	33.80
.0260		.0260	.039	2	.1250	1.5			BMS-026-2X	29.50
.0260		.0260	.078	2	.1250	1.5	BMR-026-2	27.90	BMR-026-2X	31.10
0.7 mm		.0276	1.1 mm	2	3 mm	38 mm	BMSM-007-2	25.35		
0.7 mm		.0276	2.1 mm	2	4 mm	50 mm	BMRM-007-2	29.15		
.0280		.0280	.042	2	.1250	1.5	BMS-028-2	26.70	BMS-028-2X	29.85
.0280		.0280	.084	2	.1250	1.5	BMR-028-2	27.90	BMR-028-2X	31.10
.0300		.0300	.045	2	.1250	1.5	BMS-030-2	26.70	BMS-030-2X	29.85
.0300		.0300	.090	2	.1250	1.5	BMR-030-2	27.90	BMR-030-2X	31.10
.0310		.0310	.047	2	.1250	1.5	BMS-031-2	26.70	BMS-031-2X	29.85
.0310		.0310	.093	2	.1250	1.5	BMR-031-2	27.90	BMR-031-2X	31.10

*.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

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0005" / - .0005"	+ .00 mm / - .02 mm	decimal equiv.								
.0313		.0313	.078	2	.1250	1.5	BEM-031-02	23.25	BEM-031-02X	26.40
.0313		.0313	.078	3	.1250	1.5	BEM-031-03	23.25	BEM-031-03X	26.40
.0313		.0313	.078	4	.1250	1.5	BEM-031-04	23.25	BEM-031-04X	26.40
0.8 mm		.0315	1.2 mm	2	3 mm	38 mm	BMSM-008-2	25.35	BMSM-008-2X	28.60
.0320		.0320	.048	2	.1250	1.5	BMS-032-2	26.70	BMS-032-2X	29.85
.0320		.0320	.096	2	.1250	1.5	BMR-032-2	27.90		
.0330		.0330	.050	2	.1250	1.5			BMS-033-2X	29.50
.0350		.0350	.053	2	.1250	1.5	BMS-035-2	26.70	BMS-035-2X	29.85
.0350		.0350	.105	2	.1250	1.5	BMR-035-2	27.90	BMR-035-2X	31.10
0.9 mm		.0354	1.4 mm	2	3 mm	38 mm	BMSM-009-2	25.35	BMSM-009-2X	28.60
0.9 mm		.0354	2.7 mm	2	4 mm	50 mm	BMRM-009-2	29.15	BMRM-009-2X	32.75
1 mm		.0394	1.5 mm	2	3 mm	38 mm	BMSM-010-2	24.80	BMSM-010-2X	27.95
1 mm		.0394	1.5 mm	4	3 mm	38 mm	BMSM-010-4	24.80	BMSM-010-4X	27.95
1 mm		.0394	3 mm	2	4 mm	50 mm	BMRM-010-2	26.90	BMRM-010-2X	30.45
1 mm		.0394	3 mm	4	4 mm	50 mm			BMRM-010-4X	30.45
.0400		.0400	.060	2	.1250	1.5	BMS-040-2	26.70	BMS-040-2X	29.85
.0400		.0400	.120	2	.1250	1.5	BMR-040-2	27.90	BMR-040-2X	31.10
1.1 mm		.0433	3.3 mm	4	4 mm	50 mm			BMRM-011-4X	30.45
.0450		.0450	.135	2	.1250	1.5	BMR-045-2	27.90	BMR-045-2X	31.10
.0468		.0468	.109	2	.1250	1.5	BEM-046-02	23.25	BEM-046-02X	26.40
.0468		.0468	.109	3	.1250	1.5	BEM-046-03	23.25	BEM-046-03X	26.40
.0468		.0468	.109	4	.1250	1.5	BEM-046-04	23.25	BEM-046-04X	26.40
.0500		.0500	.075	2	.1250	1.5			BMS-050-2X	29.85
.0500		.0500	.150	2	.1250	1.5	BMR-050-2	27.90	BMR-050-2X	31.10
1.4 mm		.0551	2.1 mm	2	3 mm	38 mm	BMSM-014-2	24.80	BMSM-014-2X	27.95
1.5 mm		.0591	2.3 mm	2	3 mm	38 mm	BMSM-015-2	24.80	BMSM-015-2X	27.95
1.5 mm		.0591	4.2 mm	2	4 mm	50 mm	BMRM-015-2	26.90	BMRM-015-2X	30.45
1.5 mm		.0591	4.2 mm	4	4 mm	50 mm	BMRM-015-4	26.90	BMRM-015-4X	30.45
.0625		.0625	.188	2	.1250	1.5	BEM-062-02	20.85	BEM-062-02X	24.25
.0625		.0625	.188	3	.1250	1.5	BEM-062-03	20.85	BEM-062-03X	24.25
.0625		.0625	.188	4	.1250	1.5	BEM-062-04	20.85	BEM-062-04X	24.25
1.6 mm		.0630	2.4 mm	2	3 mm	38 mm	BMSM-016-2	22.75	BMSM-016-2X	26.00
1.7 mm		.0669	2.5 mm	4	3 mm	38 mm			BMSM-017-4X	26.00
1.8 mm		.0709	2.7 mm	2	3 mm	38 mm	BMSM-018-2	22.75	BMSM-018-2X	26.00
1.9 mm		.0748	2.8 mm	4	3 mm	38 mm	BMSM-019-4	22.75	BMSM-019-4X	26.00
.0781		.0781	.188	2	.1250	1.5	BEM-078-02	20.85	BEM-078-02X	24.25
.0781		.0781	.188	3	.1250	1.5	BEM-078-03	20.85	BEM-078-03X	24.25
.0781		.0781	.188	4	.1250	1.5	BEM-078-04	20.85	BEM-078-04X	24.25
2 mm		.0787	3 mm	2	3 mm	38 mm	BMSM-020-2	22.75	BMSM-020-2X	26.00
2 mm		.0787	6 mm	2	4 mm	50 mm	BMRM-020-2	26.90	BMRM-020-2X	30.45
2 mm		.0787	6 mm	4	4 mm	50 mm			BMRM-020-4X	30.45
.0937		.0937	.375	2	.1250	1.5	BEM-093-02	20.85	BEM-093-02X	24.25
.0937		.0937	.375	3	.1250	1.5	BEM-093-03	20.85	BEM-093-03X	24.25
.0937		.0937	.375	4	.1250	1.5	BEM-093-04	20.85	BEM-093-04X	24.25
2.5 mm		.0984	3.8 mm	2	3 mm	38 mm	BMSM-025-2	22.75	BMSM-025-2X	26.00
.1093		.1093	.375	2	.1250	1.5	BEM-109-02	20.85		

*.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.)

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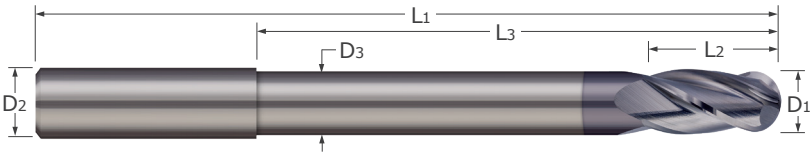
Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0000"	+ .00 mm	decimal equiv.								
– .0020"	– .02 mm									
	3 mm	.1181	15 mm	2	3 mm	38 mm	BEMM-030-2	17.15		
	3 mm	.1181	15 mm	3	3 mm	38 mm	BEMM-030-3	17.15	BEMM-030-3X	20.50
	3 mm	.1181	15 mm	4	3 mm	38 mm	BEMM-030-4	17.15	BEMM-030-4X	20.50
	3 mm	.1181	9 mm	2	4 mm	50 mm	BMRM-030-2	26.90	BMRM-030-2X	30.45
	3 mm	.1181	9 mm	4	4 mm	50 mm			BMRM-030-4X	30.45
.1250		.1250	.500	2	.1250	1.5	BEM-125-02	18.70	BEM-125-02X	21.95
.1250		.1250	.500	3	.1250	1.5	BEM-125-03	18.70	BEM-125-03X	21.95
.1250		.1250	.500	4	.1250	1.5	BEM-125-04	18.70	BEM-125-04X	21.95
3.5 mm		.1378	10.5 mm	2	4 mm	50 mm			BMRM-035-2X	30.45
.1562		.1562	.563	2	.1875	2.0	BEM-156-02	29.70	BEM-156-02X	33.50
.1562		.1562	.563	3	.1875	2.0			BEM-156-03X	33.50
.1562		.1562	.563	4	.1875	2.0	BEM-156-04	29.70	BEM-156-04X	33.50
4 mm		.1575	18 mm	2	4 mm	50 mm	BEMM-040-2	25.65	BEMM-040-2X	29.30
4 mm		.1575	18 mm	3	4 mm	50 mm	BEMM-040-3	25.65		
4 mm		.1575	18 mm	4	4 mm	50 mm	BEMM-040-4	25.65		
.1875		.1875	.625	2	.1875	2.0	BEM-187-02	29.70	BEM-187-02X	33.50
.1875		.1875	.625	3	.1875	2.0	BEM-187-03	29.70	BEM-187-03X	33.50
.1875		.1875	.625	4	.1875	2.0	BEM-187-04	29.70	BEM-187-04X	33.50
.2187		.2187	.625	2	.2500	2.5	BEM-218-02	37.25	BEM-218-02X	43.55
.2187		.2187	.625	4	.2500	2.5	BEM-218-04	37.25	BEM-218-04X	43.55
6 mm		.2362	18 mm	4	6 mm	57 mm	BEMM-060-4	32.40	BEMM-060-4X	38.95
.2500		.2500	.750	2	.2500	2.5			BEM-250-02X	43.55
.2500		.2500	.750	3	.2500	2.5	BEM-250-03	37.25		
.2500		.2500	.750	4	.2500	2.5	BEM-250-04	37.25	BEM-250-04X	43.55
.2812		.2812	.750	4	.3125	2.5			BEM-281-04X	51.30
.3125		.3125	.813	2	.3125	2.5	BEM-312-02	43.40	BEM-312-02X	51.30
.3125		.3125	.813	4	.3125	2.5	BEM-312-04	43.40	BEM-312-04X	51.30
8 mm		.3150	22 mm	2	8 mm	63 mm	BEMM-080-2	39.85	BEMM-080-2X	48.65
.3750		.3750	.875	2	.3750	2.5			BEM-375-02X	57.95
.3750		.3750	.875	3	.3750	2.5	BEM-375-03	49.30	BEM-375-03X	57.95
.3750		.3750	.875	4	.3750	2.5	BEM-375-04	49.30	BEM-375-04X	57.95
10 mm		.3937	25 mm	2	10 mm	72 mm	BEMM-100-2	47.00	BEMM-100-2X	55.70
10 mm		.3937	25 mm	3	10 mm	72 mm	BEMM-100-3	47.00		
.4370		.4370	1.000	2	.4375	2.5			BEM-437-02X	88.75
12 mm		.4724	30 mm	4	12 mm	83 mm	BEMM-120-4	74.85		
.5000		.5000	1.000	3	.5000	3.0	BEM-500-03	85.30	BEM-500-03X	95.55
.5000		.5000	1.000	4	.5000	3.0	BEM-500-04	85.30	BEM-500-04X	95.55
.6250		.6250	1.250	4	.6250	3.5	BEM-625-04	150.80		
.6875		.6875	1.375	2	.7500	4.0	BEM-687-02	185.60		
18 mm		.7087	45 mm	2	18 mm	92 mm			BEMM-180-2X	205.30
20 mm		.7874	45 mm	4	20 mm	104 mm	BEMM-200-4	236.85		
.8750		.8750	1.500	2	.8750	4.0	BEM-875-02	318.65		

*.0005" / .013 mm max TIR

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End Mills – Ball
2, 3, 4 Flute – Reduced Neck

BLR / BLRM
SFBM / MMBM



- 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	
D1								Tool #	USD\$	Tool #	USD\$
+ .0000" / - .0020" (h6)	decimal equiv.	L2	L3	D3		D2 (h6)	L1				
		+ .015" / - .000" / + .38 mm / - .00 mm	+ .015" / - .015" / + .38 mm / - .38 mm								
0.2 mm	.0078	0.3 mm	0.3 mm	-	2	6 mm	57 mm	SFBM-002-0	82.95		
0.3 mm	.0118	0.3 mm	3.0 mm	0.28 mm	2	4 mm	50 mm	MMBM-003-3	63.10	MMBM-003-3X	66.60
0.4 mm	.0157	0.4 mm	3.0 mm	0.38 mm	2	4 mm	50 mm	MMBM-004-3	54.40	MMBM-004-3X	57.75
0.4 mm	.0157	0.4 mm	8.0 mm	0.38 mm	2	4 mm	50 mm	MMBM-004-8	54.40	MMBM-004-8X	57.75
0.5 mm	.0197	0.5 mm	5.0 mm	0.48 mm	2	4 mm	50 mm			MMBM-005-5X	51.35
0.5 mm	.0197	0.5 mm	10.0 mm	0.48 mm	2	4 mm	50 mm			MMBM-005-10X	51.35
0.5 mm	.0197	0.6 mm	1.6 mm	0.45 mm	2	6 mm	57 mm			SFBM-005-1X	74.65
0.6 mm	.0236	0.6 mm	12.0 mm	0.58 mm	2	4 mm	50 mm			MMBM-006-12X	50.95
0.6 mm	.0236	0.6 mm	5.0 mm	0.58 mm	2	4 mm	50 mm	MMBM-006-5	47.85	MMBM-006-5X	51.35
0.7 mm	.0276	0.7 mm	5.0 mm	0.68 mm	2	4 mm	50 mm	MMBM-007-5	47.85		
0.8 mm	.0315	0.8 mm	5.0 mm	0.78 mm	2	4 mm	50 mm			MMBM-008-5X	44.70
0.8 mm	.0315	0.8 mm	5.2 mm	0.75 mm	2	6 mm	57 mm			SFBM-008-5X	66.10
0.8 mm	.0315	0.8 mm	8.0 mm	0.75 mm	2	6 mm	57 mm			SFBM-008-8X	76.85
0.8 mm	.0315	0.8 mm	10.0 mm	0.78 mm	2	4 mm	50 mm	MMBM-008-10	41.10		
1.0 mm	.0394	1.0 mm	6.0 mm	0.95 mm	2	6 mm	57 mm	MMBM-010-6	45.15	MMBM-010-6X	51.25
1.0 mm	.0394	1.0 mm	11.0 mm	0.95 mm	2	6 mm	57 mm	MMBM-010-11	45.15	MMBM-010-11X	51.25
1.0 mm	.0394	1.0 mm	12.0 mm	0.95 mm	2	6 mm	57 mm			MMBM-010-12X	51.25
1.0 mm	.0394	1.0 mm	15.0 mm	0.95 mm	2	6 mm	57 mm			MMBM-010-15X	51.25
1.0 mm	.0394	1.0 mm	20.0 mm	0.95 mm	2	6 mm	57 mm	MMBM-010-20	45.15	MMBM-010-20X	51.25
1.2 mm	.0472	1.2 mm	7.0 mm	1.15 mm	2	6 mm	57 mm			MMBM-012-7X	50.85
1.2 mm	.0472	1.2 mm	15.0 mm	1.15 mm	2	6 mm	57 mm			MMBM-012-15X	51.25
1.2 mm	.0472	1.2 mm	20.0 mm	1.15 mm	2	6 mm	57 mm	MMBM-012-20	45.15		
1.5 mm	.0591	1.5 mm	7.0 mm	1.45 mm	2	6 mm	57 mm	MMBM-015-7	45.15	MMBM-015-7X	51.25
1.5 mm	.0591	1.5 mm	9.5 mm	1.45 mm	2	6 mm	57 mm			SFBM-015-9X	64.60
1.5 mm	.0591	1.5 mm	15.0 mm	1.45 mm	2	6 mm	57 mm			MMBM-015-15X	51.25
1.5 mm	.0591	1.5 mm	20.0 mm	1.45 mm	2	6 mm	57 mm			MMBM-015-20X	51.25
2.0 mm	.0787	2.0 mm	7.0 mm	1.9 mm	2	6 mm	57 mm	MMBM-020-7	45.15	MMBM-020-7X	51.25
2.0 mm	.0787	2.0 mm	15.0 mm	1.9 mm	2	6 mm	57 mm	MMBM-020-15	45.15	MMBM-020-15X	51.25
2.0 mm	.0787	2.0 mm	20.0 mm	1.9 mm	2	6 mm	57 mm			MMBM-020-20X	51.25
2.0 mm	.0787	2.5 mm	9.5 mm	1.95 mm	2	6 mm	57 mm			SFBM-020-9X	62.80
2.0 mm	.0787	5.0 mm	15.0 mm	1.5 mm	4	6 mm	57 mm			BLRM-020-4X	44.60

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

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BLR / BLRM
SFBM / MMBM

End Mills – Ball
2, 3, 4 Flute – Reduced Neck (cont.)

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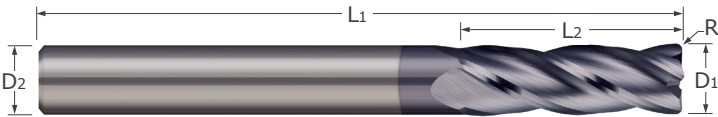
Cutter Diameter*		Length of Cut	Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
D1 +.0000" -.0020" (h6)	decimal equiv.	L2 +.015" -.000" +.38 mm -.00 mm	L3 +.015" -.015" +.38 mm -.38 mm	D3		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
3.0 mm	.1181	3.0 mm	12.0 mm	2.9 mm	2	6 mm	57 mm			MMBM-030-12X	51.25
3.0 mm	.1181	3.0 mm	15.0 mm	2.9 mm	2	6 mm	57 mm	MMBM-030-15	45.15	MMBM-030-15X	51.25
3.0 mm	.1181	4.0 mm	15.0 mm	2.9 mm	2	6 mm	57 mm	SFBM-030-15	53.85		
3.0 mm	.1181	8.0 mm	30.0 mm	2.5 mm	2	6 mm	75 mm			BLRM-030-2X	46.75
3.0 mm	.1181	8.0 mm	30.0 mm	2.5 mm	4	6 mm	75 mm	BLRM-030-4	40.50		
4.0 mm	.1575	4.0 mm	15.0 mm	3.8 mm	2	6 mm	57 mm	MMBM-040-15	45.15	MMBM-040-15X	51.25
4.0 mm	.1575	5.0 mm	10.0 mm	3.9 mm	2	6 mm	57 mm			SFBM-040-10X	56.90
4.0 mm	.1575	8.0 mm	30.0 mm	3.5 mm	2	6 mm	75 mm	BLRM-040-2	40.50	BLRM-040-2X	46.75
4.0 mm	.1575	8.0 mm	30.0 mm	3.5 mm	4	6 mm	75 mm	BLRM-040-4	40.50	BLRM-040-4X	46.75

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 #	USD\$	Tool #	USD\$
.1875	.1875	.375	2.00	.1675	4	.1875	3.0			BLR-187-4X	52.30
5 mm	.1969	6.0 mm	11.0 mm	4.9 mm	2	6 mm	57 mm			SFBM-050-11X	53.45
6 mm	.2362	7.5 mm	12.2 mm	5.9 mm	2	6 mm	57 mm	SFBM-060-12	47.15	SFBM-060-12X	53.30
.2500	.2500	.500	2.50	.2300	2	.2500	4.0	BLR-250-2	57.60	BLR-250-2X	63.70
.3750	.3750	.750	2.75	.3550	4	.3750	4.0	BLR-375-4	76.50	BLR-375-4X	86.55
10 mm	.3937	18.0 mm	65.0 mm	9.5 mm	4	10 mm	120 mm	BLRM-100-4	79.60	BLRM-100-4X	92.30
12 mm	.4724	22.0 mm	80.0 mm	11.5 mm	3	12 mm	130 mm			BLRM-120-3X	127.45
12 mm	.4724	22.0 mm	80.0 mm	11.5 mm	4	12 mm	130 mm			BLRM-120-4X	125.70
.5000	.5000	1.000	4.50	.4800	2	.5000	6.0	BLR-500-2	131.95	BLR-500-2X	147.80
16 mm	.6299	30.0 mm	100.0 mm	15.5 mm	4	16 mm	150 mm	BLRM-160-4	197.00		

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

End Mills – Corner Radius
2, 3, 4 Flute

AECM / GEC



- 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		L2	R		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
$+ .0000"$ $- .0020"$	(h9)	decimal equiv.	$+ .0000"$ $- .0005"$ $+ .000$ mm $- .013$ mm							
.0312	.0312	.078	.005	2	.1250	1.5	GEC-031-2-005	23.25		
.0312	.0312	.078	.005	3	.1250	1.5	GEC-031-3-005	23.25	GEC-031-3-005X	26.40
.0312	.0312	.078	.005	4	.1250	1.5			GEC-031-4-005X	26.40
1 mm	.0394	4 mm	0.1 mm	4	4 mm	50 mm			AECM-0101-4X	29.20
1 mm	.0394	4 mm	0.2 mm	4	4 mm	50 mm			AECM-0102-4X	29.20
.0625	.0625	.188	.005	2	.1250	1.5	GEC-062-2-005	20.85		
.0625	.0625	.188	.005	3	.1250	1.5			GEC-062-3-005X	23.85
.0625	.0625	.188	.005	4	.1250	1.5			GEC-062-4-005X	24.25
.0625	.0625	.188	.010	3	.1250	1.5	GEC-062-3-010	20.85	GEC-062-3-010X	24.25
.0625	.0625	.188	.010	4	.1250	1.5	GEC-062-4-010	20.85	GEC-062-4-010X	24.25
2 mm	.0787	5 mm	0.2 mm	4	4 mm	50 mm			AECM-0202-4X	29.20
2 mm	.0787	5 mm	0.5 mm	4	4 mm	50 mm			AECM-0205-4X	29.20
.0938	.0938	.375	.005	4	.1250	1.5			GEC-093-4-005X	24.25
.0938	.0938	.375	.010	2	.1250	1.5	GEC-093-2-010	20.85		
.0938	.0938	.375	.010	3	.1250	1.5	GEC-093-3-010	20.85	GEC-093-3-010X	24.25
.0938	.0938	.375	.010	4	.1250	1.5			GEC-093-4-010X	24.25
3 mm	.1181	8 mm	0.5 mm	4	6 mm	57 mm			AECM-0305-4X	38.65
.1250	.1250	.500	.010	3	.1250	1.5	GEC-125-3-010	20.85	GEC-125-3-010X	24.25
.1250	.1250	.500	.010	4	.1250	1.5	GEC-125-4-010	20.85	GEC-125-4-010X	24.25
.1250	.1250	.500	.020	2	.1250	1.5			GEC-125-2-020X	24.25
.1250	.1250	.500	.020	3	.1250	1.5	GEC-125-3-020	20.85	GEC-125-3-020X	24.25
.1250	.1250	.500	.020	4	.1250	1.5	GEC-125-4-020	20.85	GEC-125-4-020X	24.25
4 mm	.1575	11 mm	0.2 mm	4	6 mm	57 mm			AECM-0402-4X	38.65
.1875	.1875	.625	.010	4	.1875	2.0			GEC-187-4-010X	33.10
.1875	.1875	.625	.020	3	.1875	2.0	GEC-187-3-020	29.70		
.1875	.1875	.625	.030	2	.1875	2.0	GEC-187-2-030	29.70		
.1875	.1875	.625	.030	3	.1875	2.0	GEC-187-3-030	29.70		
.1875	.1875	.625	.030	4	.1875	2.0			GEC-187-4-030X	33.10
6 mm	.2362	16 mm	0.3 mm	4	6 mm	57 mm	AECM-0603-4	32.40	AECM-0603-4X	38.65
6 mm	.2362	16 mm	0.5 mm	4	6 mm	57 mm	AECM-0605-4	32.40	AECM-0605-4X	38.65
6 mm	.2362	16 mm	1.0 mm	4	6 mm	57 mm			AECM-0610-4X	38.65

*.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 #	USD\$	Tool #	USD\$
.2500	.2500		.750	.010	4	.2500	2.5	GEC-250-4-010	37.25	GEC-250-4-010X	43.55
.2500	.2500		.750	.020	3	.2500	2.5			GEC-250-3-020X	43.55
.2500	.2500		.750	.020	4	.2500	2.5			GEC-250-4-020X	43.55
.2500	.2500		.750	.030	3	.2500	2.5	GEC-250-3-030	37.25	GEC-250-3-030X	43.55
.2500	.2500		.750	.030	4	.2500	2.5	GEC-250-4-030	37.25	GEC-250-4-030X	43.55

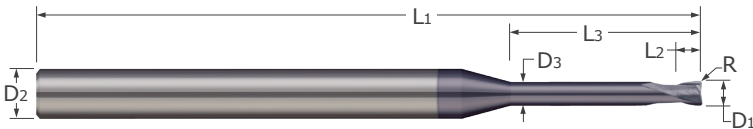
D1 +.0000" -.0030" (h9)	decimal equiv.		L2 +.031" -.000" +.79 mm -.00 mm	R +.0000" -.0005" +.000 mm -.013 mm		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.3125	.3125		.813	.010	2	.3125	2.5	GEC-312-2-010	43.40	GEC-312-2-010X	51.30
.3125	.3125		.813	.010	4	.3125	2.5	GEC-312-4-010	43.40	GEC-312-4-010X	51.30
8 mm	.3150		22 mm	1.0 mm	2	8 mm	63 mm	AECM-0810-2	39.85		
.3750	.3750		.875	.010	2	.3750	2.5	GEC-375-2-010	49.30		
.3750	.3750		.875	.010	4	.3750	2.5	GEC-375-4-010	49.30	GEC-375-4-010X	57.95
.3750	.3750		.875	.030	3	.3750	2.5	GEC-375-3-030	49.30	GEC-375-3-030X	57.95
.3750	.3750		.875	.030	4	.3750	2.5			GEC-375-4-030X	57.95
10 mm	.3937		25 mm	0.5 mm	4	10 mm	72 mm	AECM-1005-4	47.00		
12 mm	.4724		30 mm	1.5 mm	4	12 mm	83 mm			AECM-1215-4X	88.65
.5000	.5000		1.000	.010	4	.5000	3.0	GEC-500-4-010	85.30	GEC-500-4-010X	95.55
.5000	.5000		1.000	.030	3	.5000	3.0	GEC-500-3-030	85.30		
.6250	.6250		1.250	.090	2	.6250	3.5	GEC-625-2-090	150.80		
1.0000	1.0000		1.500	.060	2	1.0000	4.0	GEC-001-2-060	348.35		

*.0005" / .013 mm max TIR

End Mills

End Mills – Corner Radius
2 Flute – Reduced Neck

MMRM



- 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

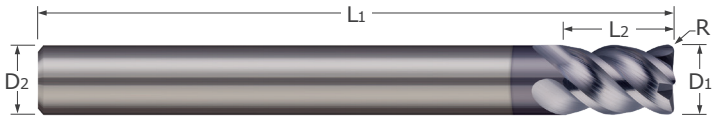
Cutter Diameter*	Length of Cut	Corner Radius	Overall Reach	Neck Diameter	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1 (h8)	L2 ^{+ .38mm} _{– .00mm}	R ^{+ .000mm} _{– .013mm}	L3 ^{+ .25mm} _{– .00mm}	D3 ^{+ .00mm} _{– .13mm}	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
0.8 mm	0.8 mm	0.1 mm	10 mm	0.78 mm	4 mm	50 mm	MMRM-008-10	37.05	MMRM-008-10X	40.75
1.5 mm	1.5 mm	0.15 mm	7 mm	1.45 mm	6 mm	57 mm	MMRM-015-7	41.00		
1.5 mm	1.5 mm	0.15 mm	15 mm	1.45 mm	6 mm	57 mm	MMRM-015-15	41.00		
1.5 mm	1.5 mm	0.15 mm	25 mm	1.45 mm	6 mm	72 mm	MMRM-015-25	41.00	MMRM-015-25X	47.20
4 mm	4 mm	0.25 mm	15 mm	3.8 mm	6 mm	57 mm			MMRM-040-15X	47.20
6 mm	6 mm	1 mm	11 mm	5.8 mm	6 mm	57 mm			MMRM-060-11X	47.65

*.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	
D1 (h8)	L2 ^{+ .38 mm} _{-.00 mm}	R ^{+ .000 mm} _{-.013 mm}	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
3 mm	8 mm	0.5 mm	6 mm	57 mm	HMCM-0405-4	86.55	HMCM-0305-4X	92.45
4 mm	11 mm	0.5 mm	6 mm	57 mm			HMCM-0610-4X	98.80
6 mm	13 mm	1.0 mm	6 mm	57 mm	HMCM-0820-4	100.70		
8 mm	19 mm	2.0 mm	8 mm	75 mm	HMCM-1005-4	110.85	HMCM-1205-4X	152.95
10 mm	22 mm	0.5 mm	10 mm	80 mm				
12 mm	26 mm	0.5 mm	12 mm	100 mm				
20 mm	38 mm	2.0 mm	20 mm	125 mm	HMCM-2020-4	410.75		

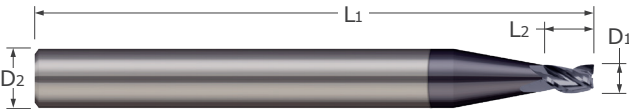
*.0005" / .013 mm max TIR

Hardened Steels

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

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0000"	+ .000 mm	decimal equiv.								
– .0005"	– .013 mm		+ .015"							
			– .000"							
			+ .38 mm							
			– .00 mm							
0.1 mm	.0039		0.15 mm (1.5x)	2	3 mm	38 mm			MEFM-001-015K	90.40
0.15 mm	.0059		0.25 mm (1.7x)	2	3 mm	38 mm			MEFM-0015-025K	73.20
.0100	.0100		.015 (1.5x)	2	.1250	1.5	MEF-010-015	50.85		
0.3 mm	.0118		0.45 mm (1.5x)	2	3 mm	38 mm	MEFM-003-045	50.85		
.0150	.0150		.023 (1.6x)	2	.1250	1.5	MEF-015-023	45.15	MEF-015-023K	49.70
.0150	.0150		.023 (1.6x)	3	.1250	1.5	MEF-015-023-3	45.15	MEF-015-023-3K	49.70
0.4 mm	.0157		0.6 mm (1.5x)	2	3 mm	38 mm	MEFM-004-060	45.15		
.0300	.0300		.045 (1.5x)	2	.1250	1.5	MEF-030-045	29.05	MEF-030-045K	33.65
.0300	.0300		.045 (1.5x)	3	.1250	1.5	MEF-030-045-3	29.05	MEF-030-045-3K	33.65
.0313	.0313		.047 (1.6x)	2	.1250	1.5			MEF-031-047K	33.65
.0313	.0313		.047 (1.6x)	3	.1250	1.5			MEF-031-047-3K	33.65
.0400	.0400		.060 (1.5x)	2	.1250	1.5			MEF-040-060K	33.65
.0500	.0500		.075 (1.5x)	2	.1250	1.5	MEF-050-075	29.05		
.0500	.0500		.075 (1.5x)	3	.1250	1.5			MEF-050-075-3K	33.65
.0600	.0600		.090 (1.5x)	3	.1250	1.5			MEF-060-090-3K	33.65
4 mm	.1575		5 mm (1.3x)	2	6 mm	57 mm			MEFM-040-500K	44.95
.1875	.1875		.200 (1.1x)	2	.2500	2.5			MEF-187-250K	48.05

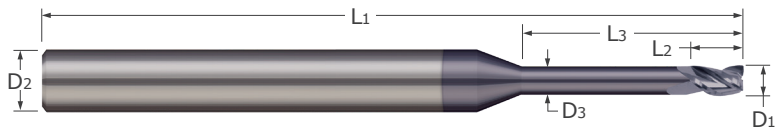
D1 + .0000"	decimal equiv.	L2 + .015"	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
– .0010"		– .000"						
.2500	.2500	.250	2	.2500	2.5		MEF-250-250K	44.95

*.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 #	USD\$	Tool #	USD\$
$+0.0000"$ $-0.0005"$	$+0.000$ mm -0.013 mm	decimal equiv.	$+0.015"$ $-0.000"$ $+0.38$ mm -0.00 mm	$+0.010"$ $-0.010"$ $+0.25$ mm -0.00 mm							
.0100	.0100	.015	.050 (5x)	.009	2	.1250	1.5	MEF-010-050	57.60		
.0100	.0100	.015	.075 (7.5x)	.009	3	.1250	1.5	MEF-010-075-3	57.60		
.0150	.0150	.023	.100 (6.7x)	.014	3	.1250	1.5	MEF-015-100-3	51.80		
.0150	.0150	.023	.200 (13.4x)	.014	2	.1250	1.5			MEF-015-200K	57.80
.0150	.0150	.023	.200 (13.4x)	.014	3	.1250	1.5	MEF-015-200-3	53.25		
.0200	.0200	.030	.250 (12.5x)	.019	2	.1250	1.5	MEF-020-250	39.75	MEF-020-250K	44.30
.0200	.0200	.030	.250 (12.5x)	.019	3	.1250	1.5	MEF-020-250-3	39.75	MEF-020-250-3K	44.30
0.6 mm	.0236	0.9 mm	5 mm (8.4x)	0.55 mm	2	3 mm	38 mm			MEFM-006-500K	44.30
.0250	.0250	.038	.250 (10x)	.024	3	.1250	1.5	MEF-025-250-3	39.75	MEF-025-250-3K	44.30
.0250	.0250	.038	.250 (10x)	.024	2	.1250	1.5	MEF-025-250	39.75		
.0300	.0300	.045	.100 (3.4x)	.028	2	.1250	1.5			MEF-030-100K	40.40
.0300	.0300	.045	.200 (6.7x)	.028	2	.1250	1.5	MEF-030-200	37.05		
.0300	.0300	.045	.200 (6.7x)	.028	3	.1250	1.5	MEF-030-200-3	37.05		
.0313	.0313	.047	.100 (3.2x)	.029	2	.1250	1.5			MEF-031-100K	40.40
.0313	.0313	.047	.200 (6.4x)	.029	2	.1250	1.5	MEF-031-200	37.05		
.0313	.0313	.047	.200 (6.4x)	.029	3	.1250	1.5	MEF-031-200-3	37.05	MEF-031-200-3K	41.60
.0313	.0313	.047	.375 (12x)	.029	2	.1250	1.5	MEF-031-375	41.10		
0.8 mm	.0315	1.2 mm	7 mm (8.8x)	0.75 mm	2	3 mm	38 mm			MEFM-008-700K	46.40
.0350	.0350	.053	.150 (4.3x)	.033	2	.1250	1.5	MEF-035-150	35.80		
1 mm	.0394	1.5 mm	7 mm (7x)	0.95 mm	2	3 mm	38 mm	MEFM-010-700	41.85	MEFM-010-700K	46.40
.0400	.0400	.060	.250 (6.3x)	.038	3	.1250	1.5	MEF-040-250-3	37.05		
.0450	.0450	.068	.150 (3.4x)	.043	2	.1250	1.5	MEF-045-150	35.80	MEF-045-150K	40.40
.0450	.0450	.068	.500 (11.2x)	.043	3	.1250	1.5			MEF-045-500-3K	48.35
.0469	.0469	.071	.250 (5.4x)	.045	2	.1250	1.5			MEF-047-250K	42.00
.0469	.0469	.071	.500 (10.7x)	.045	2	.1250	1.5	MEF-047-500	43.80		
.0500	.0500	.075	.200 (4x)	.048	3	.1250	1.5			MEF-050-200-3K	40.40
.0500	.0500	.075	.300 (6x)	.048	2	.1250	1.5	MEF-050-300	38.40	MEF-050-300K	42.95
.0500	.0500	.075	.300 (6x)	.048	3	.1250	1.5	MEF-050-300-3	38.40		
.0500	.0500	.075	.550 (11x)	.048	3	.1250	1.5			MEF-050-550-3K	48.70
1.5 mm	.0591	2.2 mm	10 mm (6.7x)	1.4 mm	2	3 mm	38 mm	MEFM-015-1000	47.25		
1.5 mm	.0591	2.2 mm	12 mm (8x)	1.4 mm	2	3 mm	38 mm	MEFM-015-1200	50.85		
.0600	.0600	.090	.500 (8.4x)	.056	3	.1250	1.5	MEF-060-500-3	43.80		

*.0005" / .013 mm max TIR

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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 #	USD\$	Tool #	USD\$
$\begin{matrix} +.0000" \\ -.0005" \end{matrix}$	$\begin{matrix} +.000 \text{ mm} \\ -.013 \text{ mm} \end{matrix}$	decimal equiv.										
.0625	.0625	.093	.200 (3.2x)	.058	2	.1250	1.5		MEF-062-200	35.80	MEF-062-200K	40.40
.0625	.0625	.093	.350 (5.6x)	.058	2	.1250	1.5				MEF-062-350K	42.95
.0625	.0625	.093	.350 (5.6x)	.058	3	.1250	1.5				MEF-062-350-3K	42.95
.0625	.0625	.093	.550 (8.8x)	.058	2	.1250	1.5		MEF-062-550	43.80	MEF-062-550K	48.35
.0625	.0625	.093	.750 (12x)	.058	2	.1250	2.0		MEF-062-750	50.65		
.0625	.0625	.093	.750 (12x)	.058	3	.1250	2.0		MEF-062-750-3	50.65	MEF-062-750-3K	55.20
.0750	.0750	.113	.250 (3.4x)	.071	2	.1250	1.5		MEF-075-250	35.80		
.0750	.0750	.113	.250 (3.4x)	.071	3	.1250	1.5				MEF-075-250-3K	40.40
.0750	.0750	.113	.400 (5.4x)	.071	3	.1250	1.5		MEF-075-400-3	38.40		
.0750	.0750	.113	.900 (12x)	.071	2	.1250	2.0		MEF-075-900	52.65	MEF-075-900K	57.20
.0781	.0781	.117	.250 (3.3x)	.074	2	.1250	1.5		MEF-078-250	35.80	MEF-078-250K	40.40
.0781	.0781	.117	.650 (8.4x)	.074	2	.1250	2.0		MEF-078-650	43.80		
.0781	.0781	.117	.900 (11.6x)	.074	3	.1250	2.0		MEF-078-900-3	52.65		
2 mm	.0787	2.5 mm	7 mm (3.5x)	1.9 mm	2	3 mm	38 mm		MEFM-020-700	41.85		
2 mm	.0787	2.5 mm	20 mm (10x)	1.9 mm	2	3 mm	50 mm		MEFM-020-2000	67.35		
2 mm	.0787	2.5 mm	25 mm (12.5x)	1.9 mm	2	3 mm	50 mm				MEFM-020-2500K	81.40
.0900	.0900	.125	.400 (4.5x)	.086	2	.1250	1.5		MEF-090-400	38.40	MEF-090-400K	42.95
.0900	.0900	.125	.900 (10x)	.086	2	.1250	2.0		MEF-090-900	47.85		
.0938	.0938	.125	.250 (2.7x)	.089	2	.1250	1.5		MEF-093-250	35.80		
.0938	.0938	.125	.500 (5.4x)	.089	2	.1250	1.5				MEF-093-500K	43.30
.0938	.0938	.125	.750 (8x)	.089	2	.1250	2.0		MEF-093-750	43.80	MEF-093-750K	48.35
.0938	.0938	.125	1.000 (10.7x)	.089	2	.1250	2.0		MEF-093-1000	50.65		
2.5 mm	.0984	3 mm	20 mm (8x)	2.4 mm	2	3 mm	50 mm				MEFM-025-2000K	71.95
3 mm	.1181	3 mm	15 mm (5x)	2.9 mm	2	6 mm	57 mm		MEFM-030-1500	55.20		
.1250	.1250	.125	1.000 (8x)	.121	2	.1875	2.0		MEF-125-1000	50.65		
.1250	.1250	.125	1.500 (12x)	.121	2	.1875	3.0		MEF-125-1500	57.90		
.1875	.1875	.200	1.000 (5.4x)	.183	2	.2500	2.5				MEF-187-1000K	71.30
.1875	.1875	.200	1.500 (8x)	.183	2	.2500	3.0				MEF-187-1500K	80.65
5 mm	.1969	6 mm	25 mm (5x)	4.9 mm	2	6 mm	57 mm		MEFM-050-2500	64.65		

D1	$\begin{matrix} +.0000" \\ -.0010" \end{matrix}$	decimal equiv.	L2	$\begin{matrix} +.015" \\ -.000" \end{matrix}$	L3	$\begin{matrix} +.010" \\ -.010" \end{matrix}$	D3	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.2500	.2500	.2500	.250	1.500 (6x)	.246	2	.2500	3.0		MEF-250-1500	74.00		

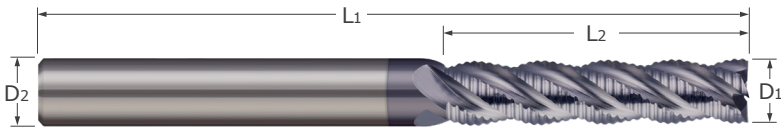
*.0005" / .013 mm max TIR

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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

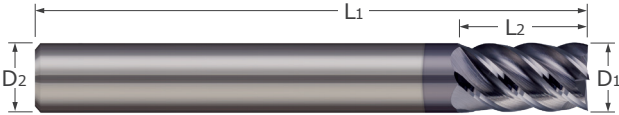
Cutter Diameter*			Length of Cut	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
D1 +.0000" -.0030" (h9)	decimal equiv.	L2 +.030" -.000" +.78 mm -.00 mm					Tool #	USD\$	Tool #	USD\$
.2500	.2500	.750	4	.2500	2.5				SHR-250-4X	55.60
.2500	.2500	1.125	4	.2500	3.0				SHL-250-4X	68.80
.3125	.3125	.813	4	.3125	2.5				SHR-312-4X	63.80
.3125	.3125	1.125	4	.3125	3.0				SHL-312-4X	79.55
8 mm	.3150	22 mm	4	8 mm	63 mm				SHRM-080-4X	60.50
.3750	.3750	.875	4	.3750	2.5	SHR-375-4	69.45		SHR-375-4X	77.90
.3750	.3750	1.250	4	.3750	3.0				SHL-375-4X	98.35
10 mm	.3937	25 mm	4	10 mm	72 mm				SHRM-100-4X	78.70
10 mm	.3937	38 mm	4	10 mm	100 mm				SHLM-100-4X	103.85
12 mm	.4724	50 mm	4	12 mm	100 mm	SHLM-120-4	125.70		SHLM-120-4X	139.30
.5000	.5000	1.000	4	.5000	3.0	SHR-500-4	101.40		SHR-500-4X	111.55
.5000	.5000	2.000	4	.5000	4.5				SHL-500-4X	143.20
14 mm	.5512	35 mm	4	14 mm	83 mm				SHRM-140-4X	176.40
.6250	.6250	1.250	4	.6250	3.5	SHR-625-4	180.20		SHR-625-4X	196.10
.6250	.6250	2.500	4	.6250	5.0				SHL-625-4X	247.00
16 mm	.6299	35 mm	4	16 mm	92 mm				SHRM-160-4X	182.80
16 mm	.6299	75 mm	4	16 mm	150 mm				SHLM-160-4X	252.35
18 mm	.7087	75 mm	4	18 mm	150 mm				SHLM-180-4X	351.65
.7500	.7500	1.500	4	.7500	4.0				SHR-750-4X	270.55
.7500	.7500	2.500	4	.7500	5.0				SHL-750-4X	342.35

*.0005" / .013 mm max TIR

Steels & High Temp. Alloys

End Mills For Steels & High Temp Alloys
Square – 5 Flute – Stub & Standard

ASM / ASMM
ARM / ARMM



- 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	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
D ₁ +.0000" -.0020" (h9)	decimal equiv.	L ₂ +.031" -.000" +.79 mm -.00 mm			D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
3 mm	.1181	6 mm	5	6 mm	57 mm		ASMM-030-5	34.75	ASMM-030-5X	41.30
4 mm	.1575	15 mm	5	6 mm	57 mm		ARMM-040-5	36.65		
.1875	.1875	.625	5	.1875	2.0		ARM-187-5	31.05		
.2500	.2500	.750	5	.2500	2.5		ARM-250-5	38.95		

D ₁ +.0000" -.0030" (h9)	decimal equiv.	L ₂ +.031" -.000" +.79 mm -.00 mm			D ₂ (h6)	L ₁	Tool #	USD\$	Tool #	USD\$
8 mm	.3150	16 mm	5	8 mm	63 mm		ASMM-080-5	41.30		
.3750	.3750	.625	5	.3750	2.0		ASM-375-5	48.15		
10 mm	.3937	19 mm	5	10 mm	72 mm		ASMM-100-5	48.90		
10 mm	.3937	25 mm	5	10 mm	72 mm		ARMM-100-5	51.15	ARMM-100-5X	59.95
.5000	.5000	.625	5	.5000	2.5		ASM-500-5	75.65	ASM-500-5X	85.90
.5000	.5000	1.000	5	.5000	3.0		ARM-500-5	85.55	ARM-500-5X	95.75
16 mm	.6299	35 mm	5	16 mm	92 mm				ARMM-160-5X	155.10

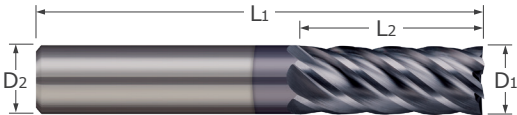
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EMH / EMHM

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	
D1			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
$+.0000"$ $-.0002"$ (h9)	decimal equiv.		$+.030"$ $-.000"$ $+.78$ mm $-.00$ mm							
6 mm	.2362		18 mm	6	6 mm	57 mm	EMHM-060-6	29.25		

D1			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
$+.0000"$ $-.0003"$ (h9)	decimal equiv.		$+.030"$ $-.000"$ $+.78$ mm $-.00$ mm							
8 mm	.3150		20 mm	4	8 mm	63 mm	EMHM-080-4	36.35	EMHM-080-4X	45.10
10 mm	.3937		22 mm	6	10 mm	72 mm			EMHM-100-6X	51.10
14 mm	.5512		30 mm	6	14 mm	83 mm	EMHM-140-6	82.95		
.6250	.6250		1.250	6	.6250	3.5	EMH-625-06	157.35		
16 mm	.6299		35 mm	6	16 mm	92 mm			EMHM-160-6X	137.45

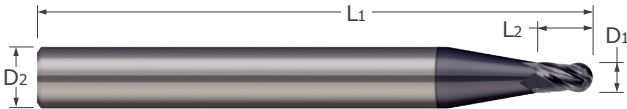
*.0005" / .013 mm max TIR

Steels & High Temp. Alloys

End Mills For Steels & High Temp Alloys

Ball – 2 & 3 Flute – Stub Flute

BEF / BEFM



- 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

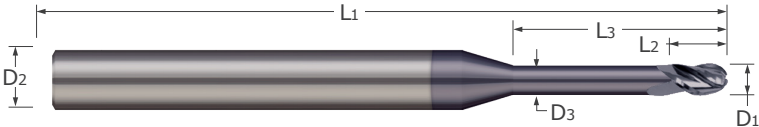
Cutter Diameter*			Length of Cut		Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1			L2			D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0000"	+ .000 mm	decimal equiv.	+ .015"	– .000"							
– .0005"	– .013 mm		+ .38 mm	– .00 mm							
0.2 mm	.0079		0.3 mm	(1.5x)	2	3 mm	38 mm			BEFM-002-030K	71.60
0.3 mm	.0118		0.45 mm	(1.5x)	2	3 mm	38 mm	BEFM-003-045	59.70		
.0150	.0150		.023	(1.6x)	2	.1250	1.5			BEF-015-023K	58.45
.0200	.0200		.030	(1.5x)	3	.1250	1.5			BEF-020-030-3K	42.05
.0313	.0313		.047	(1.6x)	3	.1250	1.5	BEF-031-047-3	34.45		
.0400	.0400		.060	(1.5x)	2	.1250	1.5			BEF-040-060K	39.05
.0400	.0400		.060	(1.5x)	3	.1250	1.5	BEF-040-060-3	34.45		
.0450	.0450		.068	(1.6x)	2	.1250	1.5	BEF-045-068	34.45	BEF-045-068K	39.05
.0450	.0450		.068	(1.6x)	3	.1250	1.5			BEF-045-068-3K	39.05
1.2 mm	.0472		1.8 mm	(1.5x)	2	3 mm	38 mm			BEFM-012-180K	36.85
.0500	.0500		.075	(1.5x)	3	.1250	1.5			BEF-050-075-3K	39.05
.0600	.0600		.090	(1.5x)	2	.1250	1.5	BEF-060-090	34.45		
.0600	.0600		.090	(1.5x)	3	.1250	1.5	BEF-060-090-3	34.45	BEF-060-090-3K	39.05
.0625	.0625		.093	(1.5x)	3	.1250	1.5	BEF-062-093-3	34.45		
.0750	.0750		.113	(1.6x)	2	.1250	1.5			BEF-075-113K	39.25
.0750	.0750		.113	(1.6x)	3	.1250	1.5			BEF-075-113-3K	39.05
.0900	.0900		.125	(1.4x)	2	.1250	1.5			BEF-090-125K	39.05
.0938	.0938		.125	(1.4x)	2	.1250	1.5	BEF-093-125	34.45		
2.5 mm	.0984		3 mm	(1.2x)	2	3 mm	38 mm	BEFM-025-300	34.45		
.1875	.1875		.200	(1.1x)	2	.2500	2.5			BEF-187-250K	56.35
5 mm	.1969		6 mm	(1.2x)	2	6 mm	57 mm	BEFM-050-600	49.70	BEFM-050-600K	56.35

*.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		L2		L3		D3		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+.0000" +.000 mm decimal -.0005" -.013 mm equiv.		+.015" -.000" +.38 mm -.00 mm		+.010" -.000" +.25 mm -.00 mm									
.0150	.0150	.023 (1.6x)	.200 (13.4x)	.014	2	.1250	1.5			BEF-015-200	60.95		
0.5 mm	.0197	0.7 mm (1.4x)	3 mm (6x)	0.45 mm	2	3 mm	38 mm			BEFM-005-300	44.10		
0.5 mm	.0197	0.7 mm (1.4x)	6 mm (12x)	0.45 mm	2	3 mm	38 mm					BEFM-005-600K	51.80
.0200	.0200	.030 (1.5x)	.150 (7.5x)	.019	3	.1250	1.5			BEF-020-150-3	44.10		
0.6 mm	.0236	0.9 mm (1.5x)	5 mm (8.4x)	0.55 mm	2	3 mm	38 mm			BEFM-006-500	45.45		
0.6 mm	.0236	0.9 mm (1.5x)	6 mm (10x)	0.55 mm	2	3 mm	38 mm					BEFM-006-600K	51.80
.0250	.0250	.038 (1.6x)	.150 (6x)	.024	2	.1250	1.5					BEF-025-150K	48.70
.0250	.0250	.038 (1.6x)	.250 (10x)	.024	2	.1250	1.5			BEF-025-250	45.45	BEF-025-250K	50.05
.0250	.0250	.038 (1.6x)	.250 (10x)	.024	3	.1250	1.5					BEF-025-250-3K	50.05
.0300	.0300	.045 (1.5x)	.125 (4.2x)	.028	2	.1250	1.5			BEF-030-100	41.10		
.0300	.0300	.045 (1.5x)	.125 (4.2x)	.028	3	.1250	1.5					BEF-030-100-3K	45.80
.0300	.0300	.045 (1.5x)	.200 (6.7x)	.028	2	.1250	1.5						
.0300	.0300	.045 (1.5x)	.200 (6.7x)	.028	3	.1250	1.5			BEF-030-200-3	42.45		
.0300	.0300	.045 (1.5x)	.375 (12.5x)	.028	2	.1250	1.5						
.0313	.0313	.047 (1.6x)	.125 (4x)	.029	2	.1250	1.5					BEF-031-100K	45.80
.0313	.0313	.047 (1.6x)	.375 (12x)	.029	3	.1250	1.5			BEF-031-375-3	46.40		
.0350	.0350	.053 (1.6x)	.250 (7.2x)	.033	2	.1250	1.5					BEF-035-250K	47.00
.0350	.0350	.053 (1.6x)	.400 (11.5x)	.033	2	.1250	1.5			BEF-035-400	46.40		
.0350	.0350	.053 (1.6x)	.400 (11.5x)	.033	3	.1250	1.5			BEF-035-400-3	46.40		
.0400	.0400	.060 (1.5x)	.250 (6.3x)	.038	2	.1250	1.5			BEF-040-250	42.45	BEF-040-250K	47.00
.0400	.0400	.060 (1.5x)	.250 (6.3x)	.038	3	.1250	1.5					BEF-040-250-3K	47.00
.0400	.0400	.060 (1.5x)	.500 (12.5x)	.038	2	.1250	1.5					BEF-040-500K	54.00
.0400	.0400	.060 (1.5x)	.500 (12.5x)	.038	3	.1250	1.5			BEF-040-500-3	49.20		
.0450	.0450	.068 (1.6x)	.150 (3.4x)	.043	2	.1250	1.5					BEF-045-150K	45.80
.0450	.0450	.068 (1.6x)	.500 (11.2x)	.043	2	.1250	1.5			BEF-045-500	49.20		
.0450	.0450	.068 (1.6x)	.500 (11.2x)	.043	3	.1250	1.5			BEF-045-500-3	49.20		
.0469	.0469	.071 (1.6x)	.250 (5.4x)	.045	2	.1250	1.5			BEF-047-250	42.45		
.0469	.0469	.071 (1.6x)	.250 (5.4x)	.045	3	.1250	1.5			BEF-047-250-3	42.45		

*.0005" / .013 mm max TIR

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Steels & High Temp. Alloys

End Mills For Steels & High Temp Alloys

BEF / BEFM

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

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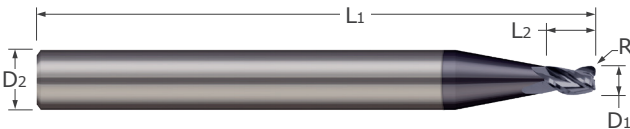
Cutter Diameter*			Length of Cut		Overall Reach		Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		nACRo® Coated	
D1 +.0000" +.000 mmdecimal –.0005" –.013 mm equiv.			L2 +.015" –.000" +.38 mm –.00 mm		L3 +.010" –.000" +.25 mm –.00 mm		D3	D2 (h6) L1			Tool #	USD\$	Tool #	USD\$
1.2 mm .0472			1.8 mm (1.5x)	10 mm (8.4x)	1.1 mm	2	3 mm	38 mm					BEFM-012-1000K	50.95
1.2 mm .0472			1.8 mm (1.5x)	12 mm (10x)	1.1 mm	2	3 mm	38 mm					BEFM-012-1200K	55.55
.0500 .0500			.075 (1.5x)	.200 (4x)	.048	2	.1250	1.5					BEF-050-200K	45.80
.0500 .0500			.075 (1.5x)	.200 (4x)	.048	3	.1250	1.5	BEF-050-200-3	41.10				
.0500 .0500			.075 (1.5x)	.300 (6x)	.048	2	.1250	1.5	BEF-050-300	42.45			BEF-050-300K	47.00
.0500 .0500			.075 (1.5x)	.300 (6x)	.048	3	.1250	1.5					BEF-050-300-3K	47.00
.0500 .0500			.075 (1.5x)	.550 (11x)	.048	2	.1250	1.5					BEF-050-550K	53.75
.0500 .0500			.075 (1.5x)	.550 (11x)	.048	3	.1250	1.5	BEF-050-550-3	49.20			BEF-050-550-3K	53.75
1.5 mm .0591			2.2 mm (1.5x)	6 mm (4x)	1.4 mm	2	3 mm	38 mm	BEFM-015-600	42.45			BEFM-015-600K	47.00
1.5 mm .0591			2.2 mm (1.5x)	10 mm (6.7x)	1.4 mm	2	3 mm	38 mm					BEFM-015-1000K	50.95
1.5 mm .0591			2.2 mm (1.5x)	12 mm (8x)	1.4 mm	2	3 mm	38 mm					BEFM-015-1200K	55.55
1.5 mm .0591			2.2 mm (1.5x)	15 mm (10x)	1.4 mm	2	3 mm	38 mm					BEFM-015-1500K	58.45
.0600 .0600			.090 (1.5x)	.500 (8.4x)	.056	3	.1250	1.5					BEF-060-500-3K	53.75
.0625 .0625			.093 (1.5x)	.200 (3.2x)	.058	3	.1250	1.5	BEF-062-200-3	41.10				
.0625 .0625			.093 (1.5x)	.550 (8.8x)	.058	3	.1250	1.5					BEF-062-550-3K	53.75
.0625 .0625			.093 (1.5x)	.750 (12x)	.058	2	.1250	2.0	BEF-062-750	55.85				
.0781 .0781			.117 (1.5x)	.400 (5.2x)	.074	2	.1250	1.5	BEF-078-400	49.20			BEF-078-400K	53.75
.0781 .0781			.117 (1.5x)	.400 (5.2x)	.074	3	.1250	1.5					BEF-078-400-3K	53.75
.0781 .0781			.117 (1.5x)	.650 (8.4x)	.074	2	.1250	2.0					BEF-078-650K	59.15
.0781 .0781			.117 (1.5x)	.650 (8.4x)	.074	3	.1250	2.0					BEF-078-650-3K	59.15
2 mm .0787			2.5 mm (1.3x)	7 mm (3.5x)	1.9 mm	2	3 mm	38 mm					BEFM-020-700K	47.00
2 mm .0787			2.5 mm (1.3x)	20 mm (10x)	1.9 mm	2	3 mm	50 mm					BEFM-020-2000K	71.95
2 mm .0787			2.5 mm (1.3x)	25 mm (12.5x)	1.9 mm	2	3 mm	50 mm	BEFM-020-2500	74.85				
.0900 .0900			.125 (1.4x)	.650 (7.3x)	.086	2	.1250	2.0	BEF-090-650	54.60				
.0938 .0938			.125 (1.4x)	.250 (2.7x)	.089	2	.1250	1.5	BEF-093-250	41.10				
.0938 .0938			.125 (1.4x)	.750 (8x)	.089	2	.1250	2.0	BEF-093-750	55.85			BEF-093-750K	60.50
.0938 .0938			.125 (1.4x)	1.000 (10.7x)	.089	2	.1250	2.0	BEF-093-1000	58.95			BEF-093-1000K	63.55
3 mm .1181			3 mm (1x)	15 mm (5x)	2.9 mm	2	6 mm	57 mm	BEFM-030-1500	66.55				
.1250 .1250			.125 (1x)	.375 (3x)	.121	2	.1875	2.0					BEF-125-375K	54.40
.1250 .1250			.125 (1x)	.750 (6x)	.121	2	.1875	2.0					BEF-125-750K	61.05
.1250 .1250			.125 (1x)	1.000 (8x)	.121	2	.1875	2.0	BEF-125-1000	58.95				
.1250 .1250			.125 (1x)	1.500 (12x)	.121	2	.1875	3.0	BEF-125-1500	63.30			BEF-125-1500K	68.80
4 mm .1575			5 mm (1.3x)	15 mm (3.8x)	3.9 mm	2	6 mm	57 mm					BEFM-040-1500K	73.20
4 mm .1575			5 mm (1.3x)	30 mm (7.5x)	3.9 mm	2	6 mm	57 mm	BEFM-040-3000	83.65				
.1875 .1875			.200 (1.1x)	.750 (4x)	.183	2	.2500	2.5	BEF-187-750	55.20				
.1875 .1875			.200 (1.1x)	1.000 (5.4x)	.183	2	.2500	2.5	BEF-187-1000	64.65				
.1875 .1875			.200 (1.1x)	1.500 (8x)	.183	2	.2500	3.0					BEF-187-1500K	80.95
5 mm .1969			6 mm (1.2x)	15 mm (3x)	4.9 mm	2	6 mm	57 mm					BEFM-050-1500K	73.20
D1 +.0000" –.0010"	decimal equiv.	L2 +.015" –.000"	L3 +.010" –.000"	D3	D2 (h6) L1			Tool #	USD\$	Tool #	USD\$			
.2500	.2500	.250 (1x)	1.000 (4x)	.246	2	.2500	2.5	BEF-250-1000	64.65	BEF-250-1000K	71.30			
.2500	.2500	.250 (1x)	1.500 (6x)	.246	2	.2500	3.0	BEF-250-1500	74.00	BEF-250-1500K	80.65			

*.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 #	USD\$	Tool #	USD\$
.0150		.0150	.023 (1.6x)	.002	2	.1250	1.5			MEF-015-023-002K	57.50
	0.5 mm	.0197	0.7 mm (1.4x)	0.05 mm	2	3 mm	38 mm			MEFM-005-070-05K	42.05
.0200		.0200	.030 (1.5x)	.002	2	.1250	1.5			MEF-020-030-002K	42.05
.0200		.0200	.030 (1.5x)	.002	3	.1250	1.5			MEF-020-030-3-002K	42.25
.0300		.0300	.045 (1.5x)	.005	3	.1250	1.5	MEF-030-045-3-005	34.45		
.0300		.0300	.045 (1.5x)	.010	2	.1250	1.5	MEF-030-045-010	34.45	MEF-030-045-010K	39.05
.0300		.0300	.045 (1.5x)	.010	3	.1250	1.5			MEF-030-045-3-010K	39.25
.0313		.0313	.047 (1.6x)	.005	3	.1250	1.5	MEF-031-047-3-005	34.45		
	0.8 mm	.0315	1.2 mm (1.5x)	0.05 mm	2	3 mm	38 mm			MEFM-008-120-05K	39.05
.0350		.0350	.053 (1.6x)	.010	3	.1250	1.5			MEF-035-053-3-010K	39.05
.0400		.0400	.060 (1.5x)	.005	2	.1250	1.5	MEF-040-060-005	34.45		
.0400		.0400	.060 (1.5x)	.010	3	.1250	1.5			MEF-040-060-3-010K	39.05
.0450		.0450	.068 (1.6x)	.005	2	.1250	1.5			MEF-045-068-005K	39.05
.0469		.0469	.071 (1.6x)	.010	3	.1250	1.5	MEF-047-071-3-010	34.45		
	1.2 mm	.0472	1.8 mm (1.5x)	0.1 mm	2	3 mm	38 mm			MEFM-012-180-10K	39.05
.0500		.0500	.075 (1.5x)	.005	2	.1250	1.5			MEF-050-075-005K	39.05
	1.5 mm	.0591	2.2 mm (1.5x)	0.15 mm	2	3 mm	38 mm	MEFM-015-220-15	34.45		
	1.5 mm	.0591	2.2 mm (1.5x)	0.25 mm	2	3 mm	38 mm			MEFM-015-220-25K	39.05
.0600		.0600	.090 (1.5x)	.005	2	.1250	1.5	MEF-060-090-005	34.45		
.0600		.0600	.090 (1.5x)	.010	3	.1250	1.5			MEF-060-090-3-010K	39.05
.0625		.0625	.093 (1.5x)	.005	2	.1250	1.5	MEF-062-093-005	34.45		
.0625		.0625	.093 (1.5x)	.005	3	.1250	1.5	MEF-062-093-3-005	34.45		
.0625		.0625	.093 (1.5x)	.015	2	.1250	1.5	MEF-062-093-015	34.45	MEF-062-093-015K	39.05
.0750		.0750	.113 (1.6x)	.015	2	.1250	1.5	MEF-075-113-015	34.45		
.0781		.0781	.117 (1.5x)	.005	2	.1250	1.5			MEF-078-117-005K	39.05
.0781		.0781	.117 (1.5x)	.005	3	.1250	1.5			MEF-078-117-3-005K	39.05
.0781		.0781	.117 (1.5x)	.010	2	.1250	1.5	MEF-078-117-010	34.45		
.0781		.0781	.117 (1.5x)	.015	2	.1250	1.5			MEF-078-117-015K	39.05
.0781		.0781	.117 (1.5x)	.015	3	.1250	1.5	MEF-078-117-3-015	34.45	MEF-078-117-3-015K	39.05
.0938		.0938	.125 (1.4x)	.005	2	.1250	1.5	MEF-093-125-005	34.45		
.0938		.0938	.125 (1.4x)	.010	2	.1250	1.5	MEF-093-125-010	34.45	MEF-093-125-010K	39.05

*.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

Continued from previous page

Cutter Diameter*			Length of Cut		Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		nACRo® Coated	
D1			L2		R		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0000" – .0005"	+ .000 mm – .013 mm	decimal equiv.	+ .015" – .000"	+ .38 mm – .00 mm	+ .0000" – .0005"	+ .000 mm – .013 mm						
3 mm	.1181		3 mm (1x)	0.25 mm	2	6 mm	57 mm				MEFM-030-300-25K	56.35
.1250	.1250		.125 (1x)	.005	2	.1875	2.0	MEF-125-125-005	37.05		MEF-125-125-005K	42.25
.1250	.1250		.125 (1x)	.010	2	.1875	2.0				MEF-125-125-010K	42.25
4 mm	.1575		5 mm (1.3x)	0.25 mm	2	6 mm	57 mm	MEFM-040-500-25	49.70			

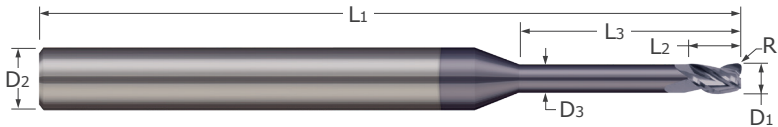
D1		decimal equiv.	L2		R		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0000" – .0010"			+ .015" – .000"		+ .0000" – .0005"							
.2500	.2500		.250 (1x)	.015	2	.2500	2.5				MEF-250-250-015K	56.35

*.0005" / .013 mm max TIR



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		L2		R	L3		D3		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+ .0000" +.000mm	-.0005" -.013mm	+ .015" -.000"		+ .0000" -.0005"	+ .010" -.010"									
		+ .38mm -.00mm		+ .000mm -.013mm	+ .25mm -.00mm									
.0150	.0150	.023 (1.6x)	.002	.200 (13.4x)	.014	2	.1250	1.5			MEF-015-200-002	60.95		
.0150	.0150	.023 (1.6x)	.002	.200 (13.4x)	.014	3	.1250	1.5					MEF-015-200-3-002K	65.50
0.5 mm	.0197	0.7 mm (1.4x)	0.05 mm	6 mm (12x)	0.45 mm	2	3 mm	38 mm			MEFM-005-600-05	46.40		
.0200	.0200	.030 (1.5x)	.002	.150 (7.5x)	.019	2	.1250	1.5					MEF-020-150-002K	48.70
.0200	.0200	.030 (1.5x)	.002	.250 (12.5x)	.019	2	.1250	1.5			MEF-020-250-002	45.45		
.0200	.0200	.030 (1.5x)	.002	.250 (12.5x)	.019	3	.1250	1.5					MEF-020-250-3-002K	50.05
.0300	.0300	.045 (1.5x)	.005	.375 (12.5x)	.028	2	.1250	1.5					MEF-030-375-005K	50.95
.0300	.0300	.045 (1.5x)	.010	.200 (6.7x)	.028	2	.1250	1.5			MEF-030-200-010	42.45		
.0300	.0300	.045 (1.5x)	.010	.375 (12.5x)	.028	2	.1250	1.5					MEF-030-375-010K	50.95
.0300	.0300	.045 (1.5x)	.010	.375 (12.5x)	.028	3	.1250	1.5			MEF-030-375-3-010	46.40	MEF-030-375-3-010K	50.95
.0313	.0313	.047 (1.6x)	.005	.375 (12x)	.029	3	.1250	1.5			MEF-031-375-3-005	46.40	MEF-031-375-3-005K	50.95
.0313	.0313	.047 (1.6x)	.010	.200 (6.4x)	.029	2	.1250	1.5					MEF-031-200-010K	47.00
.0313	.0313	.047 (1.6x)	.010	.375 (12x)	.029	2	.1250	1.5			MEF-031-375-010	46.40		
0.8 mm	.0315	1.2 mm (1.5x)	0.05 mm	7 mm (8.8x)	0.75 mm	2	3 mm	38 mm			MEFM-008-700-05	45.90		
.0350	.0350	.053 (1.6x)	.005	.150 (4.3x)	.033	2	.1250	1.5			MEF-035-150-005	41.10		
.0350	.0350	.053 (1.6x)	.005	.250 (7.2x)	.033	3	.1250	1.5			MEF-035-250-3-005	42.45		
.0350	.0350	.053 (1.6x)	.010	.400 (11.5x)	.033	3	.1250	1.5			MEF-035-400-3-010	46.40		
1 mm	.0394	1.5 mm (1.5x)	0.2 mm	7 mm (7x)	0.95 mm	2	3 mm	38 mm					MEFM-010-700-20K	50.45
1 mm	.0394	1.5 mm (1.5x)	0.2 mm	9 mm (9x)	0.95 mm	2	3 mm	38 mm			MEFM-010-900-20	51.05		
.0400	.0400	.060 (1.5x)	.005	.150 (3.8x)	.038	3	.1250	1.5			MEF-040-150-3-005	41.10		
.0400	.0400	.060 (1.5x)	.005	.250 (6.3x)	.038	3	.1250	1.5					MEF-040-250-3-005K	47.00
.0400	.0400	.060 (1.5x)	.010	.150 (3.8x)	.038	3	.1250	1.5					MEF-040-150-3-010K	45.80
.0400	.0400	.060 (1.5x)	.010	.250 (6.3x)	.038	3	.1250	1.5			MEF-040-250-3-010	42.45	MEF-040-250-3-010K	47.00
.0450	.0450	.068 (1.6x)	.005	.500 (11.2x)	.043	2	.1250	1.5					MEF-045-500-005K	53.75
.0450	.0450	.068 (1.6x)	.005	.500 (11.2x)	.043	3	.1250	1.5			MEF-045-500-3-005	49.20		
.0450	.0450	.068 (1.6x)	.010	.500 (11.2x)	.043	3	.1250	1.5					MEF-045-500-3-010K	53.75
.0469	.0469	.071 (1.6x)	.005	.500 (10.7x)	.045	2	.1250	1.5			MEF-047-500-005	49.20		
.0469	.0469	.071 (1.6x)	.005	.500 (10.7x)	.045	3	.1250	1.5			MEF-047-500-3-005	49.20		
1.2 mm	.0472	1.8 mm (1.5x)	0.1 mm	10 mm (8.4x)	1.1 mm	2	3 mm	38 mm					MEFM-012-1000-10K	55.75
1.2 mm	.0472	1.8 mm (1.5x)	0.1 mm	12 mm (10x)	1.1 mm	2	3 mm	38 mm					MEFM-012-1200-10K	60.10

*.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 – 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	
			L2	L3					Tool #	USD\$	Tool #	USD\$
D1 +.0000" +.000mm -.0005" -.013mm		R +.0000" +.000mm -.0005" -.013mm			D3		D2 (h6)	L1				
.0500 .0500	.075 (1.5x)	.005	.300 (6x)	.048	2	.1250	1.5		MEF-050-300-005	43.80		
.0500 .0500	.075 (1.5x)	.005	.550 (11x)	.048	2	.1250	1.5		MEF-050-550-005	49.20		
.0500 .0500	.075 (1.5x)	.010	.200 (4x)	.048	3	.1250	1.5		MEF-050-200-3-010	41.10	MEF-050-200-3-010K	45.80
.0500 .0500	.075 (1.5x)	.010	.300 (6x)	.048	3	.1250	1.5		MEF-050-300-3-010	43.80	MEF-050-300-3-010K	48.35
.0500 .0500	.075 (1.5x)	.010	.550 (11x)	.048	3	.1250	1.5		MEF-050-550-3-010	49.20		
1.5 mm .0591	2.2 mm (1.5x)	0.25 mm	12 mm (8x)	1.4 mm	2	3 mm	38 mm		MEFM-015-1200-25	55.55		
1.5 mm .0591	2.2 mm (1.5x)	0.25 mm	15 mm (10x)	1.4 mm	2	3 mm	38 mm				MEFM-015-1500-25K	63.20
.0600 .0600	.090 (1.5x)	.010	.350 (5.9x)	.056	3	.1250	1.5		MEF-060-350-3-010	43.80		
.0600 .0600	.090 (1.5x)	.015	.350 (5.9x)	.056	3	.1250	1.5				MEF-060-350-3-015K	48.35
.0600 .0600	.090 (1.5x)	.015	.500 (8.4x)	.056	3	.1250	1.5		MEF-060-500-3-015	49.20		
.0600 .0600	.090 (1.5x)	.015	.750 (12.5x)	.056	2	.1250	2.0		MEF-060-750-015	55.85		
.0625 .0625	.093 (1.5x)	.005	.200 (3.2x)	.058	3	.1250	1.5				MEF-062-200-3-005K	45.80
.0625 .0625	.093 (1.5x)	.005	.350 (5.6x)	.058	2	.1250	1.5		MEF-062-350-005	43.80		
.0625 .0625	.093 (1.5x)	.005	.350 (5.6x)	.058	3	.1250	1.5		MEF-062-350-3-005	43.80	MEF-062-350-3-005K	48.35
.0625 .0625	.093 (1.5x)	.005	.750 (12x)	.058	2	.1250	2.0				MEF-062-750-005K	60.50
.0625 .0625	.093 (1.5x)	.010	.200 (3.2x)	.058	3	.1250	1.5		MEF-062-200-3-010	41.10		
.0625 .0625	.093 (1.5x)	.010	.350 (5.6x)	.058	2	.1250	1.5		MEF-062-350-010	43.80		
.0625 .0625	.093 (1.5x)	.010	.550 (8.8x)	.058	3	.1250	1.5		MEF-062-550-3-010	49.20		
.0625 .0625	.093 (1.5x)	.015	.200 (3.2x)	.058	2	.1250	1.5				MEF-062-200-015K	45.80
.0625 .0625	.093 (1.5x)	.015	.200 (3.2x)	.058	3	.1250	1.5				MEF-062-200-3-015K	45.80
.0625 .0625	.093 (1.5x)	.015	.350 (5.6x)	.058	3	.1250	1.5		MEF-062-350-3-015	43.20	MEF-062-350-3-015K	47.75
.0625 .0625	.093 (1.5x)	.015	.750 (12x)	.058	3	.1250	2.0		MEF-062-750-3-015	55.85		
.0750 .0750	.113 (1.6x)	.005	.400 (5.4x)	.071	3	.1250	1.5				MEF-075-400-3-005K	48.35
.0750 .0750	.113 (1.6x)	.010	.900 (12x)	.071	3	.1250	2.0		MEF-075-900-3-010	58.95		
.0750 .0750	.113 (1.6x)	.015	.600 (8x)	.071	3	.1250	2.0				MEF-075-600-3-015K	53.75
.0781 .0781	.117 (1.5x)	.005	.400 (5.2x)	.074	3	.1250	1.5				MEF-078-400-3-005K	48.35
.0781 .0781	.117 (1.5x)	.005	.650 (8.4x)	.074	3	.1250	2.0		MEF-078-650-3-005	49.20		
.0781 .0781	.117 (1.5x)	.010	.250 (3.3x)	.074	2	.1250	1.5		MEF-078-250-010	41.10		
.0781 .0781	.117 (1.5x)	.010	.650 (8.4x)	.074	2	.1250	2.0				MEF-078-650-010K	53.75
.0781 .0781	.117 (1.5x)	.015	.250 (3.3x)	.074	2	.1250	1.5				MEF-078-250-015K	45.80
.0781 .0781	.117 (1.5x)	.015	.900 (11.6x)	.074	3	.1250	2.0		MEF-078-900-3-015	58.95	MEF-078-900-3-015K	63.55
2 mm .0787	2.5 mm (1.3x)	0.15 mm	12 mm (6x)	1.9 mm	2	3 mm	38 mm		MEFM-020-1200-15	55.55		
2 mm .0787	2.5 mm (1.3x)	0.15 mm	16 mm (8x)	1.9 mm	2	3 mm	38 mm				MEFM-020-1600-15K	63.55
2 mm .0787	2.5 mm (1.3x)	0.25 mm	7 mm (3.5x)	1.9 mm	2	3 mm	38 mm				MEFM-020-700-25K	51.80
2 mm .0787	2.5 mm (1.3x)	0.25 mm	12 mm (6x)	1.9 mm	2	3 mm	38 mm				MEFM-020-1200-25K	60.10
2 mm .0787	2.5 mm (1.3x)	0.25 mm	16 mm (8x)	1.9 mm	2	3 mm	38 mm				MEFM-020-1600-25K	63.20
.0900 .0900	.125 (1.4x)	.005	.650 (7.3x)	.086	2	.1250	2.0		MEF-090-650-005	49.20		
.0900 .0900	.125 (1.4x)	.010	.400 (4.5x)	.086	2	.1250	1.5				MEF-090-400-010K	48.35
.0900 .0900	.125 (1.4x)	.015	.650 (7.3x)	.086	2	.1250	2.0		MEF-090-650-015	49.20	MEF-090-650-015K	53.75
.0938 .0938	.125 (1.4x)	.005	.500 (5.4x)	.089	2	.1250	1.5				MEF-093-500-005K	53.75
.0938 .0938	.125 (1.4x)	.005	.750 (8x)	.089	2	.1250	2.0		MEF-093-750-005	55.85	MEF-093-750-005K	60.50
.0938 .0938	.125 (1.4x)	.005	1.000 (10.7x)	.089	2	.1250	2.0				MEF-093-1000-005K	63.55
.0938 .0938	.125 (1.4x)	.010	.250 (2.7x)	.089	2	.1250	1.5		MEF-093-250-010	41.10	MEF-093-250-010K	45.80
.0938 .0938	.125 (1.4x)	.010	.500 (5.4x)	.089	2	.1250	1.5		MEF-093-500-010	49.20		
.0938 .0938	.125 (1.4x)	.015	.250 (2.7x)	.089	2	.1250	1.5		MEF-093-250-015	41.10		
.0938 .0938	.125 (1.4x)	.015	.500 (5.4x)	.089	2	.1250	1.5				MEF-093-500-015K	53.75

*.0005" / .013 mm max TIR

Continued on next page



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 +.0000" +.000mm -.0005" -.013mm		L2 +.015" +.38mm -.000" -.00mm		R +.0000" +.000mm -.0005" -.013mm	L3 +.010" +.25mm -.010" -.00mm		D3		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
3 mm	.1181	3 mm	(1x)	0.25 mm	10 mm (3.4x)		2.9 mm	2	6 mm	57 mm			MEFM-030-1000-25K	64.65
3 mm	.1181	3 mm	(1x)	0.25 mm	15 mm (5x)		2.9 mm	2	6 mm	57 mm			MEFM-030-1500-25K	73.20
.1250	.1250	.125	(1x)	.005	.375 (3x)		.121	2	.1875	2.0	MEF-125-375-005	43.80	MEF-125-375-005K	49.00
.1250	.1250	.125	(1x)	.005	.750 (6x)		.121	2	.1875	2.0	MEF-125-750-005	51.80		
.1250	.1250	.125	(1x)	.005	1.000 (8x)		.121	2	.1875	2.0	MEF-125-1000-005	58.65		
.1250	.1250	.125	(1x)	.005	1.500 (12x)		.121	2	.1875	3.0	MEF-125-1500-005	63.30		
.1250	.1250	.125	(1x)	.010	.750 (6x)		.121	2	.1875	2.0			MEF-125-750-010K	57.00
.1250	.1250	.125	(1x)	.010	1.500 (12x)		.121	2	.1875	3.0	MEF-125-1500-010	63.30		
.1250	.1250	.125	(1x)	.015	.375 (3x)		.121	2	.1875	2.0	MEF-125-375-015	43.80	MEF-125-375-015K	49.00
.1250	.1250	.125	(1x)	.015	1.000 (8x)		.121	2	.1875	2.0			MEF-125-1000-015K	63.85
4 mm	.1575	5 mm (1.3x)		0.5 mm	30 mm (7.5x)		3.9 mm	2	6 mm	57 mm			MEFM-040-3000-50K	90.00
.1875	.1875	.200	(1.1x)	.010	.750 (4x)		.183	2	.2500	2.5	MEF-187-750-010	66.00	MEF-187-750-010K	72.65
5 mm	.1969	6 mm (1.2x)		0.25 mm	30 mm (6x)		4.9 mm	2	6 mm	57 mm			MEFM-050-3000-25K	90.00
5 mm	.1969	6 mm (1.2x)		1 mm	30 mm (6x)		4.9 mm	2	6 mm	57 mm	MEFM-050-3000-100	83.35		

D1 +.0000" +.000mm -.0005" -.013mm		L2 +.015" +.38mm -.000" -.00mm		R +.0000" +.000mm -.0005" -.013mm	L3 +.010" +.25mm -.010" -.00mm		D3		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.2500	.2500	.250	(1x)	.015	1.000 (4x)		.246	2	.2500	2.5			MEF-250-1000-015K	80.75

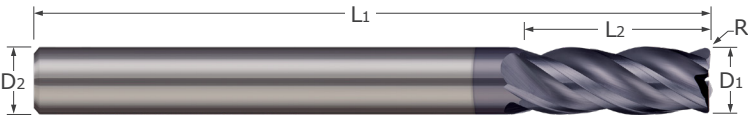
*.0005" / .013 mm max TIR

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

Cutter Diameter*			Length of Cut	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
D1			L2	R		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
$+.0000"$ $-.0020"$	(h9)	decimal equiv.	$+.031"$ $-.000"$ $+.79\text{ mm}$ $-.00\text{ mm}$	$+.0000"$ $-.0005"$ $+.000\text{ mm}$ $-.013\text{ mm}$							
3 mm			8 mm	0.5 mm	4	4 mm	50 mm			VHMM-030-4X	24.95
4 mm		.1575	8 mm	0.5 mm	4	4 mm	50 mm			VHSM-040-4X	31.00
4 mm		.1575	11 mm	0.5 mm	4	4 mm	50 mm	VHMM-040-4	30.20		
5 mm		.1969	16 mm	0.5 mm	4	6 mm	57 mm	VHMM-050-4	36.00		

D1			L2	R		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
$+.0000"$ $-.0030"$	(h9)	decimal equiv.	$+.031"$ $-.000"$ $+.79\text{ mm}$ $-.00\text{ mm}$	$+.0000"$ $-.0005"$ $+.000\text{ mm}$ $-.013\text{ mm}$							
.2500		.2500	.500	.020	4	.2500	2.5			VHS-250-4X	38.35
8 mm		.3150	19 mm	0.5 mm	4	8 mm	63 mm			VHMM-080-4X	50.80
10 mm		.3937	22 mm	0.6 mm	4	10 mm	72 mm	VHMM-100-4	53.65	VHMM-100-4X	62.25
.4375		.4375	1.000	.020	4	.4375	2.5	VHM-437-4	73.70	VHM-437-4X	84.70
12 mm		.4724	22 mm	0.6 mm	4	12 mm	83 mm			VHSM-120-4X	82.50
12 mm		.4724	26 mm	0.6 mm	4	12 mm	83 mm			VHMM-120-4X	90.10
.5000		.5000	1.250	.030	4	.5000	3.5	VHM-5125-4	85.85	VHM-5125-4X	94.60
25 mm		.9843	38 mm	0.8 mm	4	25 mm	127 mm			VHMM-250-4X	385.10

*.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

Cutter Diameter	Length of Cut	Corner Radius	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated		nACRo® Coated	
						Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
D1 $\begin{smallmatrix} +.0000" \\ -.0020" \end{smallmatrix}$	L2 $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	R $\begin{smallmatrix} +.0000" \\ -.0005" \end{smallmatrix}$		D2 (h6)	L1			VLM-187-4X	41.35		
.1875	.750	.0100	4	.1875	2.5						
.2500	1.125	.0200	4	.2500	3.0	VLM-250-4	45.45				
.2500	1.125	.0200	5	.2500	3.0	VLM-250-5-020	50.85				

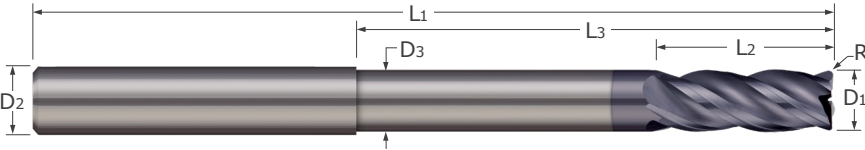
D1 $\begin{smallmatrix} +.0000" \\ -.0020" \end{smallmatrix}$	L2 $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	R $\begin{smallmatrix} +.0000" \\ -.0005" \end{smallmatrix}$		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$	Tool #	USD\$
.3750	1.250	.0200	5	.3750	3.0					VLM-375-5-020K	77.45
.5000	1.750	.0900	5	.5000	4.5					VLM-500-5-090K	130.05

Steels & High Temp. Alloys

End Mills For Steels & High Temp Alloys

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

VLR / VLRM



- 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	
D1 +.0000" -.0020" (h9)	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 #	USD\$	Tool #	USD\$
6 mm	.2362	8 mm (1.4x)	0.5 mm	30 mm (5x)		5.49 mm	4	6 mm	75 mm	VLRM-060-4	61.25	VLRM-060-4X	67.30

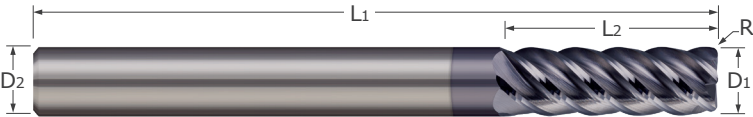
D1 +.0000" -.0030" (h9)	decimal equiv.	L2 +.010" -.000" +.25 mm -.00 mm	R +.0000" -.0005" +.000mm -.013mm	L3 +.015" -.000" +.38 mm -.00 mm		D3		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.3125	.3125	.625 (2x)	.020	2.625 (8.4x)		.293	4	.3125	4.0	VLR-312-4	64.90		
.3750	.3750	.750 (2x)	.020	2.750 (7.4x)		.355	4	.3750	4.0			VLR-375-4X	98.90
.5000	.5000	1.000 (2x)	.030	4.500 (9x)		.480	4	.5000	6.0			VLR-500-4X	178.10
.6250	.6250	1.250 (2x)	.030	4.500 (7.2x)		.605	4	.6250	6.0	VLR-625-4	251.10		

*.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

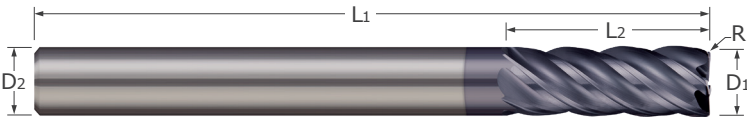
Cutter Diameter	Length of Cut	Corner Radius	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
						Tool #	USD\$	Tool #	USD\$
D1 $\begin{smallmatrix} +.0000" \\ -.0020" \end{smallmatrix}$	L2 $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	R $\begin{smallmatrix} +.0000" \\ -.0005" \end{smallmatrix}$		D2 (h6)	L1				
.1875	.625	.0100	5	.1875	2.0	ARC-187-5-010	35.90		
.1875	.625	.0300	5	.1875	2.0	ARC-187-5-030	35.90		

D1 $\begin{smallmatrix} +.0000" \\ -.0030" \end{smallmatrix}$	L2 $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	R $\begin{smallmatrix} +.0000" \\ -.0005" \end{smallmatrix}$		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.3125	.813	.0200	5	.3125	2.5			ARC-312-5-020X	57.80
.3750	.875	.0600	5	.3750	2.5	ARC-375-5-060	56.65	ARC-375-5-060X	65.25
.5000	1.000	.0100	5	.5000	3.0	ARC-500-5-010	97.90		
.6250	1.250	.0900	5	.6250	3.5			ARC-625-5-090X	181.15
.7500	1.500	.0200	5	.7500	4.0			ARC-750-5-020X	267.60

Steels & High Temp. Alloys

End Mills For Steels & High Temp Alloys
Corner Radius – 5 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
- 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			L2	R		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+.0000" / -.0020"	(h9)	decimal equiv.	+.015" / -.000" / +.38 mm / -.00 mm	+.0000" / -.0005" / +.000 mm / -.013 mm	5						
3 mm	.1181		6 mm	0.3 mm	5	4 mm	50 mm			VHSM-030-5K	26.35
4 mm	.1575		8 mm	0.3 mm	5	4 mm	50 mm	VHSM-040-5	30.00	VHSM-040-5K	35.20
4 mm	.1575		11 mm	0.3 mm	5	4 mm	50 mm	VHMM-040-5	33.30		
6 mm	.2362		10 mm	0.5 mm	5	6 mm	57 mm	VHSM-060-5	35.50	VHSM-060-5K	42.15

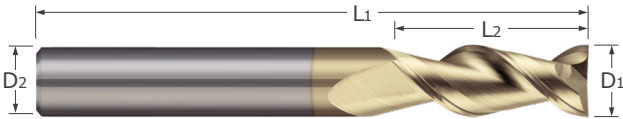
D1			L2	R		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+.0000" / -.0030"	(h9)	decimal equiv.	+.015" / -.000" / +.38 mm / -.00 mm	+.0000" / -.0005" / +.000 mm / -.013 mm	5						
.3750	.3750		.625	.020	5	.3750	2.5			VHS-375-5-020K	58.55
.3750	.3750		.875	.020	5	.3750	2.5			VHM-375-5-020K	63.95
12 mm	.4724		22 mm	0.5 mm	5	12 mm	83 mm	VHSM-120-5	74.00		
12 mm	.4724		26 mm	0.5 mm	5	12 mm	83 mm			VHMM-120-5K	95.80
.5000	.5000		.625	.030	5	.5000	3.0	VHS-500-5-030	80.05	VHS-500-5-030K	92.70
.5000	.5000		.625	.090	5	.5000	3.0	VHS-500-5-090	80.05		
.5000	.5000		1.000	.090	5	.5000	3.0	VHM-500-5-090	88.85		
.6250	.6250		1.250	.060	5	.6250	3.5	VHM-625-5-060	167.45		
.7500	.7500		1.500	.125	5	.7500	4.0	VHM-750-5-125	246.75		

*.0005" / .013 mm max TIR



ASM / ASMM
ARM / ARMM

End Mills For Aluminum Alloys
Square – 2 & 3 Flute – Stub & Standard



- 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

Cutter Diameter*			Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		ZrN Coated	
D1			L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
+.0000"	+.00 mm	decimal equiv.								
-.0030"	-.08 mm		+.030"							
			-.000"							
			+.51 mm							
			-.00 mm							
.2813		.2813	.750	2	.3125	2.5	ARM-281-2	41.85		
	8 mm	.3150	25 mm	2	8 mm	63 mm			ARMM-080-2S	51.15
	8 mm	.3150	25 mm	3	8 mm	63 mm	ARMM-080-3	41.85		
	12 mm	.4724	30 mm	3	12 mm	83 mm	ARMM-120-3	78.35		
.5000		.5000	.625	2	.5000	2.5			ASM-500-2S	86.65
.5000		.5000	1.250	3	.5000	3.5	ARM-5125-3	86.05		
	14 mm	.5510	30 mm	3	14 mm	83mm	ARMM-140-3	91.05		
	16 mm	.6299	35 mm	2	16 mm	92 mm	ARMM-160-2	146.05		

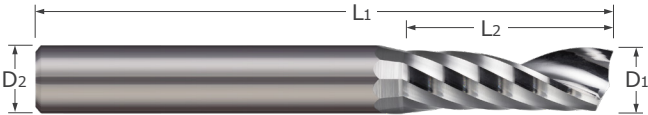
*.0005" / .013 mm max TIR

Aluminum Alloys

End Mills For Aluminum Alloys

Square – Single Flute – Upcut Router

SFA / SFAM



- 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

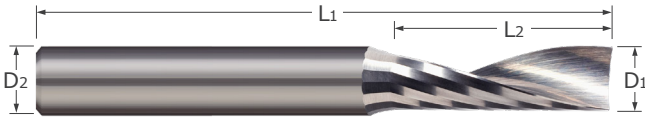
Cutter Diameter*			Length of Cut	Shank Diameter	Overall Length	Uncoated	
D1			L2	D2 (h6)	L1	Tool #	USD\$
+ .0000"	+ .00 mm	decimal equiv.	+ .015"				
- .0020"	- .05 mm		- .000"				
			+ .38 mm				
			- .00 mm				
.0625		.0625	.250	.1250	1.5	SFA-062-22	35.60
.0625		.0625	.250	.2500	2.0	SFA-062-42	41.95
2 mm		.0787	6 mm	6 mm	57 mm	SFAM-020020	39.35
3 mm		.1181	12 mm	6 mm	57 mm	SFAM-030020	39.35
.1250		.1250	.250	.1250	1.5	SFA-125-22	31.45
.1250		.1250	.250	.2500	2.0	SFA-125-42	36.65
.1250		.1250	.500	.1250	1.5	SFA-125-24	31.45
.1250		.1250	.500	.2500	2.0	SFA-125-44	36.65
.1562		.1562	.625	.2500	2.0	SFA-156-45	36.65
4 mm		.1575	16 mm	6 mm	57 mm	SFAM-040020	39.35
.1875		.1875	.500	.1875	2.0	SFA-187-33	34.75
.1875		.1875	.500	.2500	2.0	SFA-187-44	36.65
.1875		.1875	.625	.1875	2.0	SFA-187-35	34.75
.1875		.1875	.625	.2500	2.0	SFA-187-45	36.65
5 mm		.1969	20 mm	6 mm	57 mm	SFAM-050025	39.35
.2188		.2188	.750	.2500	2.5	SFA-218-46	36.65
6 mm		.2362	20 mm	6 mm	100 mm	SFAM-060100	58.95
6 mm		.2362	25 mm	6 mm	57 mm	SFAM-060030	39.35
.2500		.2500	.375	.2500	2.5	SFA-250-43	36.65
.2500		.2500	.750	.2500	2.5	SFA-250-46	36.65
.2500		.2500	1.250	.2500	3.0	SFA-250-410	41.30
8 mm		.3150	20 mm	8 mm	100 mm	SFAM-080100	75.35
8 mm		.3150	30 mm	8 mm	75 mm	SFAM-080040	60.40
.3750		.3750	1.125	.3750	3.0	SFA-375-69	54.90
10 mm		.3937	25 mm	10 mm	120 mm	SFAM-100100	91.75
10 mm		.3937	35 mm	10 mm	90 mm	SFAM-100050	80.25
12 mm		.4724	40 mm	12 mm	90 mm	SFAM-120050	99.55
.5000		.5000	1.000	.5000	3.0	SFA-500-88	91.05
.5000		.5000	1.500	.5000	4.0	SFA-500-812	95.60

*.0005" / .013 mm 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	
D ₁ +.0000" -.0020"			L ₂ +.015" -.000" +.38 mm -.00 mm	D ₂ (h6)	L ₁	Tool #	USD\$
1 mm			5 mm	3 mm	57 mm	SFPM-010-10	34.05
.0625			.250	.1250	1.50	SFP-062-22	35.60
.0625			.250	.2500	2.00	SFP-062-42	41.95
2 mm			6 mm	3 mm	57 mm	SFPM-020-10	34.05
2 mm			10 mm	3 mm	38 mm	SFPM-020-20	30.85
2 mm			12 mm	3 mm	57 mm	SFPM-020-30	34.05
2 mm			14 mm	3 mm	75 mm	SFPM-020-40	39.35
3 mm			8 mm	3 mm	57 mm	SFPM-030-10	34.05
3 mm			8 mm	6 mm	57 mm	SFPM-030-50	37.35
3 mm			12 mm	3 mm	38 mm	SFPM-030-20	30.85
3 mm			18 mm	6 mm	57 mm	SFPM-030-60	40.25
.1250			.250	.1250	1.50	SFP-125-22	31.45
.1250			.250	.2500	2.00	SFP-125-42	36.65
.1250			.500	.1250	1.50	SFP-125-24	31.45
.1250			.500	.2500	2.00	SFP-125-44	36.65
.1562			.625	.2500	2.00	SFP-156-45	36.65
4 mm			12 mm	4 mm	50 mm	SFPM-040-10	36.25
4 mm			12 mm	6 mm	57 mm	SFPM-040-50	37.35
4 mm			15 mm	4 mm	50 mm	SFPM-040-20	33.30
4 mm			20 mm	6 mm	57 mm	SFPM-040-60	40.25
4 mm			20 mm	6 mm	75 mm	SFPM-040-70	49.30
4 mm			20 mm	8 mm	100 mm	SFPM-040-80	56.25
.1875			.500	.1875	2.00	SFP-187-33	34.75
.1875			.500	.2500	2.00	SFP-187-44	36.65
.1875			.625	.1875	2.00	SFP-187-35	34.75
.1875			.625	.2500	2.00	SFP-187-45	36.65
5 mm			16 mm	5 mm	50 mm	SFPM-050-10	46.20
5 mm			16 mm	6 mm	57 mm	SFPM-050-40	48.25
5 mm			20 mm	8 mm	95 mm	SFPM-050-70	56.25
5 mm			28 mm	6 mm	57 mm	SFPM-050-50	48.25
5 mm			28 mm	6 mm	75 mm	SFPM-050-60	51.80

*.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 #	USD\$
+ .0000"	+ .00 mm	decimal equiv.	+ .015"				
- .0020"	- .05 mm		+ .38 mm				
			- .00 mm				
	6 mm	.2362	16 mm	6 mm	57 mm	SFPM-060-10	48.25
	6 mm	.2362	20 mm	6 mm	57 mm	SFPM-060-20	49.30
	6 mm	.2362	20 mm	8 mm	95 mm	SFPM-060-60	56.25
	6 mm	.2362	35 mm	6 mm	75 mm	SFPM-060-30	51.80
	6 mm	.2362	35 mm	8 mm	75 mm	SFPM-060-50	59.35
.2500		.2500	.375	.2500	2.50	SFP-250-43	36.65
.2500		.2500	.750	.2500	2.50	SFP-250-46	36.65
.2500		.2500	1.250	.2500	3.00	SFP-250-410	41.30
	8 mm	.3150	18 mm	8 mm	50 mm	SFPM-080-10	43.40
	8 mm	.3150	22 mm	8 mm	63 mm	SFPM-080-20	46.90
	8 mm	.3150	30 mm	8 mm	75 mm	SFPM-080-30	56.25
	8 mm	.3150	40 mm	8 mm	100 mm	SFPM-080-40	71.75
.3750		.3750	1.125	.3750	3.00	SFP-375-69	54.90
	10 mm	.3937	25 mm	10 mm	72 mm	SFPM-100-10	60.30
	10 mm	.3937	55 mm	10 mm	100 mm	SFPM-100-20	85.45
	12 mm	.4724	30 mm	12 mm	83 mm	SFPM-120-10	91.95
	12 mm	.4724	40 mm	12 mm	150 mm	SFPM-120-20	137.10
.5000		.5000	1.000	.5000	3.00	SFP-500-88	91.05
.5000		.5000	1.500	.5000	4.00	SFP-500-812	95.60

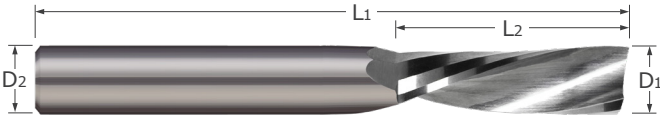
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Plastics & Composites



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

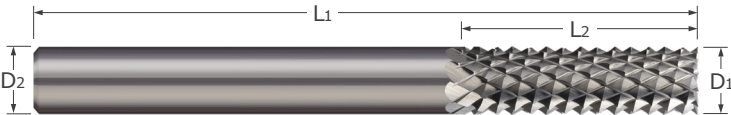
Cutter Diameter*			Length of Cut		Shank Diameter	Overall Length	Uncoated	
D1			L2		D2 (h6)	L1	Tool #	USD\$
+.0000" -.0020"	+.00 mm -.05 mm	decimal equiv.	+.015" -.000"					
			+.38 mm -.00 mm					
	1 mm	.0394	5 mm (5x)		3 mm	57 mm	SFLM-010-10	34.05
.0625		.0625	.250 (4x)		.2500	2.0	SFL-062-42	41.95
	2 mm	.0787	6 mm (3x)		3 mm	57 mm	SFLM-020-10	34.05
	3 mm	.1181	8 mm (2.7x)		3 mm	57 mm	SFLM-030-10	34.05
	3 mm	.1181	12 mm (4x)		3 mm	38 mm	SFLM-030-20	30.85
.1250		.1250	.250 (2x)		.1250	1.5	SFL-125-22	31.45
.1250		.1250	.250 (2x)		.2500	2.0	SFL-125-42	36.65
.1250		.1250	.500 (4x)		.1250	1.5	SFL-125-24	31.45
.1250		.1250	.500 (4x)		.2500	2.0	SFL-125-44	36.65
	4 mm	.1575	15 mm (3.8x)		4 mm	40 mm	SFLM-040-20	33.30
	4 mm	.1575	20 mm (5x)		6 mm	57 mm	SFLM-040-60	40.25
	4 mm	.1575	20 mm (5x)		8 mm	95 mm	SFLM-040-80	56.25
.1875		.1875	.500 (2.7x)		.1875	2.0	SFL-187-33	34.75
.1875		.1875	.500 (2.7x)		.2500	2.0	SFL-187-44	36.65
.1875		.1875	.625 (3.4x)		.1875	2.0	SFL-187-35	34.75
	5 mm	.1969	20 mm (4x)		8 mm	95 mm	SFLM-050-70	56.25
	5 mm	.1969	28 mm (5.6x)		6 mm	75 mm	SFLM-050-60	51.80
.2188		.2188	.750 (3.5x)		.2500	2.5	SFL-218-46	36.65
	6 mm	.2362	16 mm (2.7x)		6 mm	57 mm	SFLM-060-10	48.25
	6 mm	.2362	20 mm (3.4x)		8 mm	95 mm	SFLM-060-60	56.25
	6 mm	.2362	20 mm (3.4x)		6 mm	57 mm	SFLM-060-20	49.30
.2500		.2500	.375 (1.5x)		.2500	2.5	SFL-250-43	36.65
.2500		.2500	.750 (3x)		.2500	2.5	SFL-250-46	36.65
.2500		.2500	1.250 (5x)		.2500	3.0	SFL-250-410	41.30
.3750		.3750	1.125 (3x)		.3750	3.0	SFL-375-69	54.90
	12 mm	.4724	30 mm (2.5x)		12 mm	83 mm	SFLM-120-10	91.95
.5000		.5000	1.500 (3x)		.5000	4.0	SFL-500-812	95.60

*.0005" / .013 mm 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 #	USD\$
D1 $\begin{smallmatrix} +.0000" \\ -.0030" \end{smallmatrix}$	L2 $\begin{smallmatrix} +.030" \\ -.000" \end{smallmatrix}$	D2 (h6)	L1		
.0625	.188	.1250	1.5	RDB-10	18.15
.0938	.375	.1250	1.5	RDB-20	18.15
.1250	.500	.1250	1.5	RDB-30	18.15
.1875	.625	.1875	2.0	RDB-40	25.85
.2500	.750	.2500	2.0	RDB-60	31.15
.2500	.750	.2500	2.5	RDB-70	33.20
.2500	1.000	.2500	3.0	RDB-80	43.60
.3750	1.000	.3750	2.5	RDB-100	77.10
.5000	1.000	.5000	3.0	RDB-110	102.05

*.0005" max TIR

Plastics & Composites



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	
D1 $+0.0000''$ $-0.0030''$	L2 $+0.030''$ $-0.000''$	D2 (h6)	L1	Tool #	USD\$
.0938	.375	.1250	1.5	RDC-20	18.15
.1250	.500	.1250	1.5	RDC-30	18.15
.1875	.625	.1875	2.0	RDC-40	25.85
.1875	.625	.2500	2.0	RDC-50	29.25
.2500	.750	.2500	2.0	RDC-60	31.15
.2500	.750	.2500	2.5	RDC-70	33.20
.2500	1.000	.2500	3.0	RDC-80	43.60

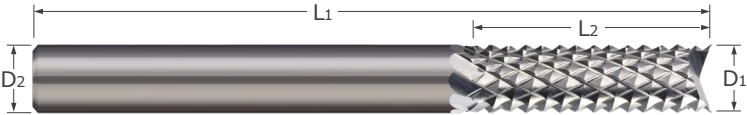
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Plastics & Composites

End Mills For Plastics & Composites

RDE

Diamond Cut – Fish Tail End Cut



- 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

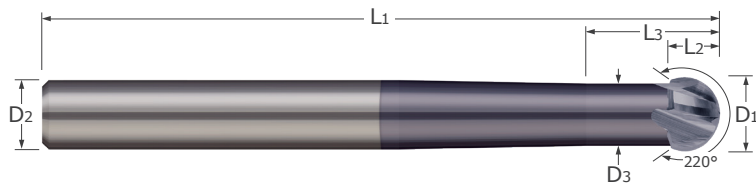
Cutter Diameter*	Length of Cut	Shank Dia.	Overall Length	Uncoated	
				Tool #	USD\$
D1 $+.0000"$ $-.0030"$	L2 $+.030"$ $-.000"$	D2 (h6)	L1		
.1875	.625	.1875	2.0	RDE-40	25.85
.1875	.625	.2500	2.0	RDE-50	29.25
.3750	1.000	.3750	2.5	RDE-100	77.10
.5000	1.000	.5000	3.0	RDE-110	102.05

*.0005" max TIR



SBM / SBMM

Undercutting End Mills220°



- 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	
D1		L2	L3	D3		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
$+ .0000''$ $- .0020''$	$+ .00\text{mm}$ $- .05\text{mm}$		$+ .030''$ $- .000''$ $+ .78\text{ mm}$ $- .00\text{ mm}$	$+ .003''$ $- .005''$ $+ .08\text{mm}$ $- .13\text{mm}$							
2 mm	.0787	1.3 mm	6 mm	1.3 mm	2	6 mm	75 mm			SBMM-020-206X	104.25
2 mm	.0787	1.3 mm	6 mm	1.3 mm	4	6 mm	75 mm	SBMM-020-406	98.50	SBMM-020-406X	104.25
2 mm	.0787	1.3 mm	10 mm	1.3 mm	2	6 mm	75 mm	SBMM-020-210	98.50	SBMM-020-210X	104.25
2 mm	.0787	1.3 mm	10 mm	1.3 mm	4	6 mm	75 mm	SBMM-020-410	98.50	SBMM-020-410X	104.25
2 mm	.0787	1.3 mm	16 mm	1.3 mm	2	6 mm	75 mm	SBMM-020-216	98.50		
2 mm	.0787	1.3 mm	16 mm	1.3 mm	3	6 mm	75 mm	SBMM-020-316	98.50		
2 mm	.0787	1.3 mm	16 mm	1.3 mm	4	6 mm	75 mm			SBMM-020-416X	104.25
3 mm	.1181	2.0 mm	9 mm	2.0 mm	4	6 mm	75 mm			SBMM-030-409X	104.25
3 mm	.1181	2.0 mm	15 mm	2.0 mm	2	6 mm	75 mm	SBMM-030-215	98.50	SBMM-030-215X	104.25
3 mm	.1181	2.0 mm	15 mm	2.0 mm	4	6 mm	75 mm	SBMM-030-415	98.50	SBMM-030-415X	104.25
3 mm	.1181	2.0 mm	21 mm	2.0 mm	2	6 mm	75 mm	SBMM-030-221	98.50	SBMM-030-221X	104.25
3 mm	.1181	2.0 mm	21 mm	2.0 mm	4	6 mm	75 mm			SBMM-030-421X	104.25
.1250	.1250	.100	.250	.100	4	.2500	3.0	SBM-125-4	98.50	SBM-125-4X	104.25
4 mm	.1575	2.7 mm	12 mm	2.7 mm	2	6 mm	75 mm	SBMM-040-212	98.50	SBMM-040-212X	104.25
4 mm	.1575	2.7 mm	12 mm	2.7 mm	4	6 mm	75 mm			SBMM-040-412X	103.90
4 mm	.1575	2.7 mm	20 mm	2.7 mm	4	6 mm	75 mm	SBMM-040-420	98.50	SBMM-040-420X	104.25
4 mm	.1575	2.7 mm	32 mm	2.7 mm	2	6 mm	100 mm	SBMM-040-232	98.50	SBMM-040-232X	104.25
4 mm	.1575	2.7 mm	32 mm	2.7 mm	4	6 mm	100 mm	SBMM-040-432	98.50	SBMM-040-432X	103.85
.1875	.1875	.150	.350	.150	4	.2500	3.0	SBM-187-4	98.50	SBM-187-4X	104.25
6 mm	.2362	4.0 mm	18 mm	4.0 mm	2	6 mm	75 mm			SBMM-060-218X	104.25
6 mm	.2362	4.0 mm	18 mm	4.0 mm	4	6 mm	75 mm	SBMM-060-418	98.50	SBMM-060-418X	104.25
6 mm	.2362	4.0 mm	30 mm	4.0 mm	2	6 mm	75 mm			SBMM-060-230X	104.25
6 mm	.2362	4.0 mm	30 mm	4.0 mm	4	6 mm	75 mm	SBMM-060-430	98.50	SBMM-060-430X	104.25
6 mm	.2362	4.0 mm	32 mm	4.0 mm	2	6 mm	100 mm	SBMM-060-248	98.50	SBMM-060-248X	104.25
6 mm	.2362	4.0 mm	32 mm	4.0 mm	4	6 mm	100 mm	SBMM-060-448	98.50	SBMM-060-448X	103.85
.2500	.2500	.200	.500	.200	2	.2500	3.0	SBM-250-2	98.50	SBM-250-2X	104.25
.2500	.2500	.200	.500	.200	3	.2500	3.0	SBM-250-3	98.50	SBM-250-3X	104.25
.2500	.2500	.200	.500	.200	4	.2500	3.0	SBM-250-4	98.50	SBM-250-4X	104.25

*.0005" / .013 mm max TIR

Continued on next page

Undercutting End Mills

Undercutting End Mills

220° (cont.)

SBM / SBMM

Continued from previous page

Cutter Diameter*		Length of Cut		Overall Reach	Neck Dia.	Flutes	Shank Dia.	Overall Length	Uncoated		AlTiN Coated	
D1 +.0000" +.00mm -.0030" -.08mm		L2	L3	+.030" +.003" -.000" -.005" +.78 mm +.08mm -.00 mm -.13mm	D3		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
8 mm	.3150	5.4 mm	24 mm	5.4 mm	4	8 mm	100 mm		SBMM-080-424	123.95	SBMM-080-424X	134.00
8 mm	.3150	5.4 mm	40 mm	5.4 mm	3	8 mm	100 mm		SBMM-080-340	123.95		
8 mm	.3150	5.4 mm	40 mm	5.4 mm	4	8 mm	100 mm				SBMM-080-440X	134.00
8 mm	.3150	5.4 mm	55 mm	5.4 mm	2	8 mm	100 mm				SBMM-080-264X	134.00
8 mm	.3150	5.4 mm	55 mm	5.4 mm	4	8 mm	100 mm				SBMM-080-464X	134.00
.3750	.3750	.300	.800	.300	4	.3750	4.0		SBM-375-4	159.15	SBM-375-4X	169.20
10 mm	.3937	6.7 mm	30 mm	6.7 mm	2	10 mm	100 mm		SBMM-100-230	167.00		
10 mm	.3937	6.7 mm	30 mm	6.7 mm	4	10 mm	100 mm				SBMM-100-430X	176.80
10 mm	.3937	6.7 mm	50 mm	6.7 mm	2	10 mm	100 mm				SBMM-100-250X	176.80
10 mm	.3937	6.7 mm	50 mm	6.7 mm	4	10 mm	100 mm				SBMM-100-450X	176.80
10 mm	.3937	6.7 mm	55 mm	6.7 mm	2	10 mm	100 mm				SBMM-100-272X	176.80
10 mm	.3937	6.7 mm	55 mm	6.7 mm	4	10 mm	100 mm		SBMM-100-472	167.00	SBMM-100-472X	176.80
12 mm	.4724	8.0 mm	36 mm	8.0 mm	2	12 mm	100 mm				SBMM-120-236X	207.45
12 mm	.4724	8.0 mm	36 mm	8.0 mm	4	12 mm	100 mm		SBMM-120-436	195.45	SBMM-120-436X	207.45
12 mm	.4724	8.0 mm	55 mm	8.0 mm	4	12 mm	100 mm				SBMM-120-472X	207.45
.5000	.5000	.400	.900	.400	2	.5000	4.0		SBM-500-2	197.95		
.5000	.5000	.400	.900	.400	4	.5000	4.0		SBM-500-4	197.95		

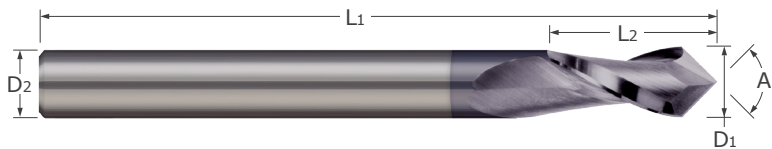
*.0005" / .013 mm max TIR

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	
A ^{+1°} _{-1°}	D1	L2 ^{+ .030"} _{-.000"} ^{+ .76 mm} _{-.00 mm}		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
90°	3 mm	8 mm	4	3 mm	38 mm	DMM-030-490	22.85		
	.1250	.500	2	.1250	1.5	DM-125-290	21.90	DM-125-290X	25.05
	.1250	.500	4	.1250	1.5	DM-125-490	22.85	DM-125-490X	26.20
	4 mm	11 mm	4	4 mm	50 mm	DMM-040-490	31.75	DMM-040-490X	35.55
	.1875	.625	2	.1875	2.0	DM-187-290	30.60	DM-187-290X	34.30
	.1875	.625	4	.1875	2.0	DM-187-490	31.95	DM-187-490X	35.65
	5 mm	13 mm	2	6 mm	57 mm	DMM-050-290	38.30		
	.2500	.750	2	.2500	2.5	DM-250-290	38.30	DM-250-290X	44.60
	.2500	.750	4	.2500	2.5	DM-250-490	40.05	DM-250-490X	46.35
	.3125	.813	2	.3125	2.5	DM-312-290	47.65	DM-312-290X	55.55
	.3125	.813	4	.3125	2.5	DM-312-490	50.05	DM-312-490X	57.90
	8 mm	22 mm	2	8 mm	63 mm	DMM-080-290	47.65	DMM-080-290X	56.40
	8 mm	22 mm	4	8 mm	63 mm	DMM-080-490	49.70	DMM-080-490X	58.40
	.3750	1.000	2	.3750	2.5	DM-375-290	59.80	DM-375-290X	68.35
	.3750	1.000	4	.3750	2.5	DM-375-490	62.80	DM-375-490X	71.45
	.5000	1.000	2	.5000	3.0	DM-500-290	90.20	DM-500-290X	100.45
	.5000	1.000	4	.5000	3.0	DM-500-490	98.70	DM-500-490X	108.95
	.6250	1.250	2	.6250	3.5	DM-625-290	181.15	DM-625-290X	197.00
	.6250	1.250	4	.6250	3.5	DM-625-490	189.55	DM-625-490X	205.40
	.7500	1.500	2	.7500	4.0	DM-750-290	266.35	DM-750-290X	283.00
	.7500	1.500	4	.7500	4.0	DM-750-490	278.90	DM-750-490X	295.45
	20 mm	45 mm	4	20 mm	104 mm			DMM-200-490X	313.60

* .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

Drill/End Mills
2 & 4 Flute (cont.)

DM / DMM

Continued from previous page

Included Angle	Cutter Diameter*	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
A ^{+1°} _{-1°}	D1	L2 ^{+ .030"} _{-.000"} ^{+ .76 mm} _{-.00 mm}		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
120°	3 mm	8 mm	4	3 mm	38 mm			DMM-030-4120X	26.20
	.1250	.500	2	.1250	1.5			DM-125-2120X	25.05
	.1250	.500	4	.1250	1.5	DM-125-4120	22.85	DM-125-4120X	26.20
	4 mm	11 mm	2	4 mm	50 mm	DMM-040-2120	30.60	DMM-040-2120X	34.30
	4 mm	11 mm	4	4 mm	50 mm	DMM-040-4120	31.75		
	.1875	.625	2	.1875	2.0	DM-187-2120	30.60	DM-187-2120X	34.30
	.1875	.625	4	.1875	2.0	DM-187-4120	31.95	DM-187-4120X	35.65
	.2500	.750	2	.2500	2.5	DM-250-2120	38.30		
	.2500	.750	4	.2500	2.5			DM-250-4120X	46.35
	.3125	.813	2	.3125	2.5	DM-312-2120	47.65	DM-312-2120X	55.55
	.3125	.813	4	.3125	2.5	DM-312-4120	50.05		
	8 mm	22 mm	2	8 mm	63 mm	DMM-080-2120	47.65		
	8 mm	22 mm	4	8 mm	63 mm	DMM-080-4120	49.70		
	.3750	1.000	2	.3750	2.5	DM-375-2120	59.80		
	.3750	1.000	4	.3750	2.5	DM-375-4120	62.80	DM-375-4120X	71.45
	10 mm	25 mm	2	10 mm	72 mm	DMM-100-2120	59.80		
	12 mm	30 mm	2	12 mm	83 mm	DMM-120-2120	90.20		
	.5000	1.000	2	.5000	3.0	DM-500-2120	90.20	DM-500-2120X	100.45
	.5000	1.000	4	.5000	3.0	DM-500-4120	98.70	DM-500-4120X	108.95
	.7500	1.500	2	.7500	4.0	DM-750-2120	266.35		
	.7500	1.500	4	.7500	4.0	DM-750-4120	278.90		

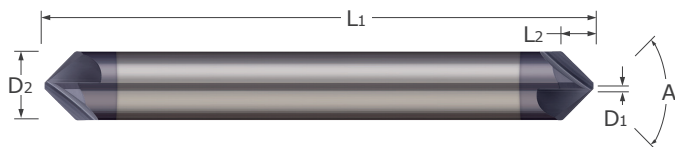
* .0005" / .013 mm max TIR. Tolerances for cutter diameters .125"-.250": .000" / -.002"; diameters .313"-.750": .000" / -.003".

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

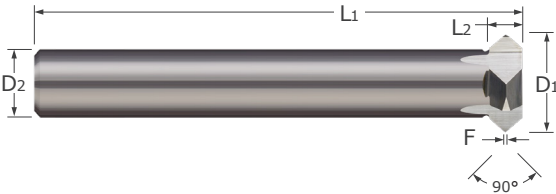
Included Angle	Tip Diameter	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
A ^{+1°} _{-1°}	D1 ^{+0.000"} _{-.003"}	L2		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
60°	.030	.082	3	.1250	1.5	CS-125-060	31.65	CS-125-060X	36.25
	.040	.128	4	.1875	2.0			CS-187-060X	42.85
	.050	.173	6	.2500	2.5	CS-250-060	41.40	CS-250-060X	51.25
	.060	.219	6	.3125	2.5	CS-312-060	57.90	CS-312-060X	72.50
	.070	.264	6	.3750	2.5	CS-375-060	66.00	CS-375-060X	80.10
	.080	.364	6	.5000	3.0	CS-500-060	95.90	CS-500-060X	108.70
82°	.030	.055	3	.1250	1.5	CS-125-082	31.65		
	.040	.085	4	.1875	2.0			CS-187-082X	42.85
	.050	.115	6	.2500	2.5	CS-250-082	41.40	CS-250-082X	51.25
	.060	.145	6	.3125	2.5	CS-312-082	57.90	CS-312-082X	72.50
	.070	.175	6	.3750	2.5	CS-375-082	66.00	CS-375-082X	80.10
	.080	.242	6	.5000	3.0	CS-500-082	95.90	CS-500-082X	108.70
90°	.030	.047	3	.1250	1.5	CS-125-090	31.65	CS-125-090X	36.25
	.040	.074	4	.1875	2.0	CS-187-090	37.80	CS-187-090X	42.85
	.050	.100	6	.2500	2.5	CS-250-090	41.40	CS-250-090X	51.25
	.060	.126	6	.3125	2.5	CS-312-090	57.90	CS-312-090X	72.50
	.070	.152	6	.3750	2.5	CS-375-090	66.00	CS-375-090X	80.10
	.080	.210	6	.5000	3.0	CS-500-090	95.90	CS-500-090X	108.70
100°	.030	.040	3	.1250	1.5	CS-125-100	31.65	CS-125-100X	36.25
	.040	.062	4	.1875	2.0	CS-187-100	37.80	CS-187-100X	42.85
	.050	.084	6	.2500	2.5	CS-250-100	41.40		
	.060	.106	6	.3125	2.5	CS-312-100	57.90	CS-312-100X	72.50
	.070	.128	6	.3750	2.5			CS-375-100X	80.10
	.080	.176	6	.5000	3.0	CS-500-100	95.90	CS-500-100X	108.70
120°	.030	.027	3	.1250	1.5	CS-125-120	31.65	CS-125-120X	36.25
	.050	.058	6	.2500	2.5	CS-250-120	41.40	CS-250-120X	51.25
	.070	.088	6	.3750	2.5			CS-375-120X	80.10
	.080	.121	6	.5000	3.0			CS-500-120X	108.70

Chamfer Cutters

Chamfer Cutters

Back Chamfer Cutters

MBC

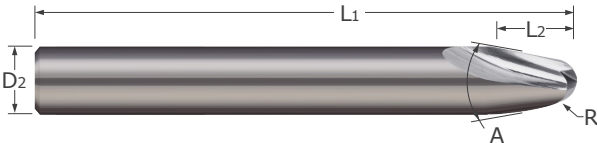


- 90° included angle for chamfer milling the top and bottom of a part
- Multiple flutes for improved finish and increased metal removal rates
- Cuts on angle only
- Solid carbide head brazed on a carbide shank
- CNC ground in the USA

Cutter Diameter	Cutter Width	Flat	Flutes	Shank Diameter	Overall Length	Uncoated	
D1 ^{+ .000"} _{− .005"}	L2 ^{+ .000"} _{− .015"}	F ^{+ .000"} _{− .005"}		D2 (h6)	L1	Tool #	USD\$
.375	.125	.031	4	.2500	2.63	MBC-375	96.85
.500	.125	.031	5	.3125	2.63	MBC-500	118.00
.750	.156	.031	6	.3750	2.66	MBC-750	146.45
1.000	.188	.031	7	.5000	3.19	MBC-001	191.00

Runner Cutters

MRF / MRT



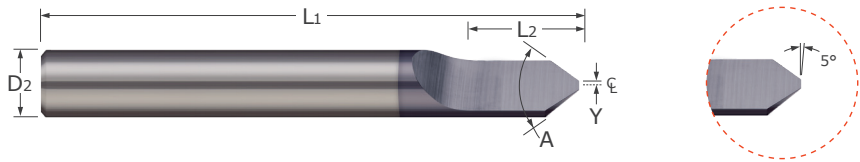
- Designed to mill 20° and 30° channels in molds
- 2 helical flutes
- Center cutting
- Solid carbide
- CNC ground in the USA

Included Angle	Radius	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated	
A ^{+1°} _{−1°}	R ^{+ .0030"} _{− .0000"}	L2		D2 (h6)	L1	Tool #	USD\$
20°	.0312	.383	2	.1875	2.0	MRT-187-031	51.40
	.0469	.308	2	.1875	2.0	MRT-187-046	51.40
	.0625	.414	2	.2500	2.5	MRT-250-062	56.90
	.1094	.366	2	.3125	2.5	MRT-312-109	69.25
	.1250	.468	2	.3750	2.5	MRT-375-125	72.85
30°	.0312	.262	2	.1875	2.0	MRF-187-031	51.40
	.0625	.287	2	.2500	2.5	MRF-250-062	56.90
	.0781	.243	2	.2500	2.5	MRF-250-078	56.90



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	
A ^{+0°30'} _{-0°30'}	D2 (h6)	Y ^{+ .001"} _{- .001"} ^{+ .02 mm} _{- .02 mm}	L2 ^{+ .015"} _{- .000"} ^{+ .38 mm} _{- .00 mm}	L1	Tool #	USD\$	Tool #	USD\$
30°	3 mm	0.10 mm	7 mm	38 mm	RTCM-030-1	17.65	RTCM-030-1X	20.90
	.1250	.004	.375	1.5	RTC-125-1	24.10	RTC-125-1X	25.90
	.1250	.004	.375	3.0	RTC-125-13	24.90	RTC-125-13X	27.65
	4 mm	0.10 mm	10 mm	50 mm	RTCM-040-1	22.40	RTCM-040-1X	26.30
	.1875	.004	.437	2.0	RTC-187-1	29.90		
	6 mm	0.10 mm	12 mm	57 mm	RTCM-060-1	27.20	RTCM-060-1X	33.75
	.2500	.004	.500	2.5	RTC-250-1	32.40	RTC-250-1X	44.70
	.2500	.004	.500	4.0	RTC-250-14	47.25		
	.2500	.010	.500	2.5	RTC-250-120	31.25		
	.2500	.022	.500	2.5	RTC-250-145	41.00		
	.3125	.004	.500	2.5	RTC-312-1	60.50		
	8 mm	0.10 mm	12 mm	63 mm	RTCM-080-1	43.60		
	3 mm	0.10 mm	5 mm	38 mm	RSCM-030-1	17.65	RSCM-030-1X	20.90
	.1250	.004	.375	1.5	RSC-125-1	23.75	RSC-125-1X	25.05
	.1250	.004	.375	3.0	RSC-125-13	25.35		
	4 mm	0.10 mm	6 mm	50 mm	RSCM-040-1	22.40	RSCM-040-1X	26.30
60°	.1875	.004	.375	2.0	RSC-187-1	29.05	RSC-187-1X	36.60
	.1875	.004	.375	3.0	RSC-187-13	30.85		
	6 mm	0.10 mm	8 mm	57 mm	RSCM-060-1	27.20	RSCM-060-1X	33.75
	.2500	.004	.375	2.5	RSC-250-1	34.55		
	.2500	.004	.375	4.0	RSC-250-14	51.40		
	.2500	.010	.375	2.5	RSC-250-120	34.35	RSC-250-120X	44.70
	.2500	.015	.375	2.5	RSC-250-130	38.20		
	.2500	.022	.375	2.5	RSC-250-145	41.00		
	.2500	.030	.375	2.5	RSC-250-160	41.00		
	.3125	.004	.500	2.5	RSC-312-1	60.30		
	8 mm	0.10 mm	10 mm	63 mm	RSCM-080-1	43.60	RSCM-080-1X	52.35
	.3750	.004	.500	2.5	RSC-375-1	74.20		
	.3750	.004	.500	4.0	RSC-375-14	107.45		
	10 mm	0.10 mm	12 mm	72 mm			RSCM-100-1X	72.70

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Engraving Cutters
Tipped Off – Single Ended (cont.)

RTC / RTCM / RSC
RSCM / RNC / RNCM

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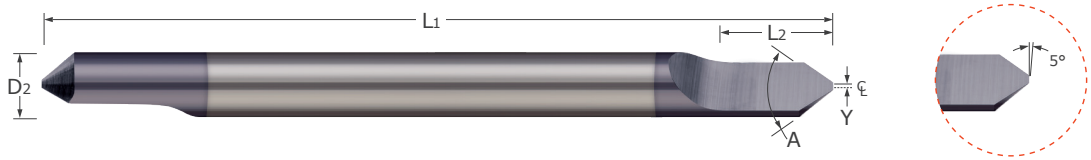
Included Angle	Shank Diameter	Point Offset	Split Length	Overall Length	Uncoated		AlTiN Coated	
A ^{+0°30'} _{-0°30'}	D ₂ (h6)	Y ^{+ .001"} _{- .001"} _{+ .02 mm} _{- .02 mm}	L ₂ ^{+ .015"} _{- .000"} _{+ .38 mm} _{- .00 mm}	L ₁	Tool #	USD\$	Tool #	USD\$
90°	3 mm	0.10 mm	5 mm	38 mm	RNCM-030-1	17.65	RNCM-030-1X	20.90
	.1250	.004	.375	1.5	RNC-125-1	22.30	RNC-125-1X	30.90
	.1250	.004	.375	3.0	RNC-125-13	29.25		
	4 mm	0.10 mm	6 mm	50 mm	RNCM-040-1	22.40	RNCM-040-1X	26.30
	.1875	.004	.375	2.0	RNC-187-1	31.45		
	.1875	.004	.375	3.0	RNC-187-13	32.80	RNC-187-13X	38.30
	5 mm	0.10 mm	7 mm	50 mm	RNCM-050-1	25.55		
	6 mm	0.10 mm	8 mm	57 mm	RNCM-060-1	27.20	RNCM-060-1X	33.75
	.2500	.004	.375	2.5	RNC-250-1	35.90	RNC-250-1X	37.20
	.2500	.004	.375	4.0	RNC-250-14	43.50	RNC-250-14X	55.15
	.2500	.015	.375	2.5	RNC-250-130	41.00		
	.2500	.022	.375	2.5	RNC-250-145	41.00		
	.2500	.030	.375	2.5	RNC-250-160	41.00		
	.3125	.004	.500	2.5	RNC-312-1	48.90		
	8 mm	0.10 mm	10 mm	63 mm	RNCM-080-1	43.60	RNCM-080-1X	52.35
	.3750	.004	.500	2.5	RNC-375-1	71.30		
	12 mm	0.10 mm	14 mm	83 mm			RNCM-120-1X	103.90
	.5000	.004	.625	3.0	RNC-500-1	115.45		

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
- 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	
A ^{+0°30'} _{-0°30'}	D2 (h6)	Y ^{+ .001"} _{- .001"} ^{+ .02 mm} _{- .02 mm}	L2 ^{+ .015"} _{- .015"} ^{+ .38 mm} _{- .38 mm}	L1	Tool #	USD\$	Tool #	USD\$
30°	3 mm	0.10 mm	7 mm	38 mm	RTCM-030-2	23.45	RTCM-030-2X	28.05
	.1250	.004	.375	2.0	RTC-125-2	28.25	RTC-125-2X	38.05
	.1250	.004	.375	3.0	RTC-125-23	35.30	RTC-125-23X	44.50
	4 mm	0.10 mm	10 mm	50 mm	RTCM-040-2	30.00		
	.1875	.004	.437	2.0	RTC-187-2	37.15	RTC-187-2X	46.95
	.1875	.004	.437	3.0	RTC-187-23	42.95		
	5 mm	0.10 mm	12 mm	50 mm	RTCM-050-2	33.75		
	6 mm	0.10 mm	12 mm	57 mm	RTCM-060-2	36.95	RTCM-060-2X	47.20
	.2500	.004	.500	2.5	RTC-250-2	43.40	RTC-250-2X	54.75
	.2500	.004	.500	4.0	RTC-250-24	60.30		
	.2500	.010	.500	2.5	RTC-250-220	45.90	RTC-250-220X	55.80
	.2500	.015	.500	2.5	RTC-250-230	40.05		
	.2500	.022	.500	2.5	RTC-250-245	51.15		
	.3125	.004	.500	2.5	RTC-312-2	76.00		
	8 mm	0.10 mm	12 mm	63 mm	RTCM-080-2	58.55	RTCM-080-2X	67.90
	.3750	.004	.500	2.5	RTC-375-2	94.35		
	.3750	.004	.500	4.0	RTC-375-24	119.35		
	.5000	.004	.625	3.0	RTC-500-2	129.55		
60°	3 mm	0.10 mm	5 mm	38 mm	RSCM-030-2	23.45	RSCM-030-2X	28.05
	.1250	.004	.375	2.0	RSC-125-2	29.50	RSC-125-2X	34.05
	.1250	.004	.375	3.0	RSC-125-23	35.00		
	4 mm	0.10 mm	6 mm	50 mm	RSCM-040-2	30.00	RSCM-040-2X	35.20
	.1875	.004	.375	2.0	RSC-187-2	35.90	RSC-187-2X	41.00
	.1875	.004	.375	3.0	RSC-187-23	44.55		
	6 mm	0.10 mm	8 mm	57 mm	RSCM-060-2	36.95	RSCM-060-2X	47.20
	.2500	.004	.375	2.5	RSC-250-2	45.05	RSC-250-2X	57.45
	.2500	.004	.375	4.0	RSC-250-24	65.70		
	.2500	.010	.375	2.5	RSC-250-220	45.45	RSC-250-220X	57.85
	.2500	.015	.375	2.5	RSC-250-230	46.40		
	.2500	.030	.375	2.5	RSC-250-260	51.15		
	.3125	.004	.500	2.5	RSC-312-2	77.75		

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Engraving Cutters

Engraving Cutters

Tipped Off – Doubled Ended (cont.)

RTC / RTCM / RSC
RSCM / RNC / RNCM

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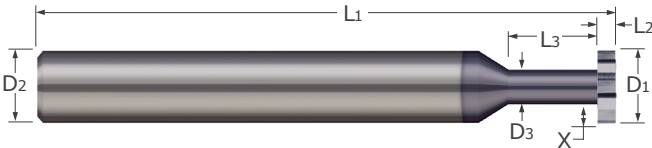
Included Angle	Shank Diameter	Point Offset	Split Length	Overall Length	Uncoated		AlTiN Coated	
A ^{+0°30'} -0°30'	D2 (h6)	Y ^{+ .001"} ^{- .001"} ^{+ .02 mm} ^{- .02 mm}	L2 ^{+ .015"} ^{- .015"} ^{+ .38 mm} ^{- .38 mm}	L1	Tool #	USD\$	Tool #	USD\$
60°	.3125	.004	.500	4.0	RSC-312-24	92.50		
	.3750	.004	.500	2.5	RSC-375-2	90.40		
	.3750	.004	.500	4.0	RSC-375-24	118.65		
	.5000	.004	.625	3.0	RSC-500-2	139.00		
90°	3 mm	0.10 mm	5 mm	38 mm	RNCM-030-2	23.45	RNCM-030-2X	28.05
	.1250	.004	.375	2.0	RNC-125-2	29.90	RNC-125-2X	40.35
	.1250	.004	.375	3.0	RNC-125-23	36.55		
	4 mm	0.10 mm	6 mm	50 mm	RNCM-040-2	30.00	RNCM-040-2X	35.20
	.1875	.004	.375	2.0	RNC-187-2	37.05	RNC-187-2X	42.25
	.1875	.004	.375	3.0	RNC-187-23	43.70		
	6 mm	0.10 mm	8 mm	57 mm	RNCM-060-2	36.95	RNCM-060-2X	47.20
	.2500	.004	.375	2.5	RNC-250-2	46.00	RNC-250-2X	55.90
	.2500	.004	.375	4.0	RNC-250-24	60.30	RNC-250-24X	73.55
	.2500	.010	.375	2.5	RNC-250-220	45.55		
	.2500	.015	.375	2.5	RNC-250-230	47.55	RNC-250-230X	59.95
	.2500	.030	.375	2.5	RNC-250-260	51.15		
	.3125	.004	.500	2.5	RNC-312-2	74.10		
	.3125	0.004	.500	4.0	RNC-312-24	92.50		
	.3750	.004	.500	2.5	RNC-375-2	93.65		
	.3750	.004	.500	4.0	RNC-375-24	116.80		
	.5000	.004	.625	3.0	RNC-500-2	136.00	RNC-500-2X	148.75
	.5000	.004	.625	4.0	RNC-500-24	195.35		

Engraving Cutters



KC

Keyseat Cutters
Square



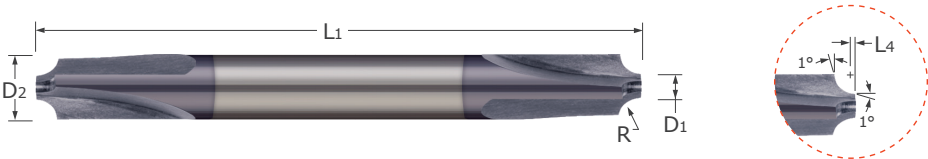
- Keyseat cutters down to .093" diameter
- Both sides of cutter are dished for clearance
- Standard and long length styles
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide ■ CNC ground in the USA

Cutter Diameter	Cutter Width	Neck Diameter	Radial Depth of Cut	Neck Length	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
$D_1 \begin{smallmatrix} +.0000" \\ -.0020" \end{smallmatrix}$	$L_2 \begin{smallmatrix} +.001" \\ -.000" \end{smallmatrix}$	$D_3 \begin{smallmatrix} +.000" \\ -.002" \end{smallmatrix}$	X	$L_3 \begin{smallmatrix} +.010" \\ -.000" \end{smallmatrix}$		D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.0938	.010	.047	.019	.140	4	.1250	1.5	KC-093-140-010	51.70		
.0938	.015	.047	.019	.140	4	.1250	1.5	KC-093-140-015	48.90	KC-093-140-015X	51.85
.0938	.040	.047	.019	.140	4	.1250	1.5	KC-093-140-040	48.90		
.1250	.025	.062	.028	.190	6	.1250	1.5	KC-125-190-025	48.90		
.1250	.030	.062	.028	.190	6	.1250	1.5	KC-125-190-030	48.90		
.1250	.040	.062	.028	.190	6	.1250	1.5	KC-125-190-040	48.90		
.1250	.045	.062	.028	.190	6	.1250	1.5	KC-125-190-045	48.90	KC-125-190-045X	51.85
.1250	.060	.062	.028	.190	6	.1250	1.5	KC-125-190-060	48.90	KC-125-190-060X	51.85
.1250	.062	.062	.028	.190	6	.1250	1.5	KC-125-190-062	48.90		
.1250	.093	.062	.028	.190	6	.1250	1.5	KC-125-190-093	48.90		
.1875	.025	.090	.045	.300	6	.1875	2.0	KC-187-300-025	51.70		
.1875	.029	.090	.045	.300	6	.1875	2.0	KC-187-300-029	51.70		
.1875	.093	.090	.045	.550	6	.1875	2.0	KC-187-550-093	51.70		
.3750	.156	.190	.089	.600	8	.3750	2.5	KC-375-600-156	80.05		
.5000	.093	.250	.121	1.500	8	.5000	3.0	KC-500-1500-093	116.80		
.5000	.118	.250	.121	1.500	8	.5000	3.0	KC-500-1500-118	116.80		
.5000	.120	.250	.121	.750	8	.5000	3.0	KC-500-750-120	103.20		
.5000	.156	.250	.121	1.500	8	.5000	3.0	KC-500-1500-156	116.80		
.5000	.187	.250	.121	.750	8	.5000	3.0	KC-500-750-187	103.20		

Keyseat Cutters

Corner Rounding End Mills
3 Flute – Double Ended

CRE



- 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	
D1 ^{+ .000"} _{– .002"}	R ^{+ .0000"} _{– .0005"}	L4	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.060	.0100	.005	.1250	2.0	CRE-125-010	44.45	CRE-125-010X	49.00
.060	.0156	.005	.1250	2.0	CRE-125-015	44.45	CRE-125-015X	49.00
.060	.0200	.005	.1250	2.0	CRE-125-020	44.45	CRE-125-020X	49.00
.060	.0250	.005	.1250	2.0	CRE-125-025	44.45	CRE-125-025X	49.00
.060	.0300	.005	.1250	2.0	CRE-125-030	44.45	CRE-125-030X	49.00
.060	.0312	.005	.1250	2.0	CRE-125-031	44.45	CRE-125-031X	49.00
.060	.0350	.005	.1875	2.0	CRE-187-035	47.95	CRE-187-035X	53.15
.060	.0400	.005	.1875	2.0	CRE-187-040	47.95	CRE-187-040X	53.15
.060	.0450	.005	.1875	2.0	CRE-187-045	47.95	CRE-187-045X	53.15
.060	.0469	.005	.1875	2.0	CRE-187-047	47.95	CRE-187-047X	53.15
.060	.0500	.005	.1875	2.0	CRE-187-050	47.95	CRE-187-050X	53.15
.060	.0550	.005	.1875	2.0	CRE-187-055	47.95	CRE-187-055X	53.15
.060	.0600	.005	.1875	2.0	CRE-187-060	47.95	CRE-187-060X	53.15
.060	.0625	.005	.1875	2.0	CRE-187-062	47.95	CRE-187-062X	53.15

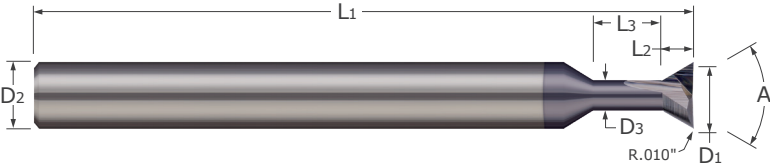
D1 ^{+ .000"} _{– .003"}	R ^{+ .0000"} _{– .0005"}	L4	D2 (h6)	L1	Tool #	USD\$	Tool #	USD\$
.060	.0700	.005	.2500	2.5	CRE-250-070	62.05	CRE-250-070X	68.60
.060	.0750	.005	.2500	2.5	CRE-250-075	62.05	CRE-250-075X	68.60
.060	.0781	.005	.2500	2.5	CRE-250-078	62.05	CRE-250-078X	68.60
.060	.0800	.005	.2500	2.5	CRE-250-080	62.05	CRE-250-080X	68.60
.060	.0900	.005	.2500	2.5	CRE-250-090	62.05	CRE-250-090X	68.60
.060	.0938	.005	.2500	2.5	CRE-250-093	62.05	CRE-250-093X	68.60
.060	.1000	.005	.3125	2.5	CRE-312-100	74.95	CRE-312-100X	89.75
.060	.1094	.005	.3125	2.5	CRE-312-109	74.95	CRE-312-109X	89.75
.060	.1250	.005	.3125	2.5	CRE-312-125	74.95	CRE-312-125X	89.75
.060	.1406	.005	.3750	2.5	CRE-375-140	101.95	CRE-375-140X	111.25
.060	.1562	.005	.3750	2.5	CRE-375-156	101.95	CRE-375-156X	111.25
.120	.1718	.010	.5000	3.0	CRE-500-171	157.80	CRE-500-171X	170.55
.120	.1875	.010	.5000	3.0	CRE-500-187	157.80	CRE-500-187X	170.55
.120	.2031	.010	.6250	3.5	CRE-625-203	169.10	CRE-625-203X	184.95
.120	.2188	.010	.6250	3.5	CRE-625-218	169.10	CRE-625-218X	184.95
.120	.2344	.010	.6250	3.5	CRE-625-234	169.10	CRE-625-234X	184.95
.120	.2500	.010	.6250	3.5	CRE-625-250	169.10	CRE-625-250X	184.95
.120	.2812	.010	.7500	4.0	CRE-750-281	237.20		
.120	.3125	.010	.7500	4.0	CRE-750-312	237.20	CRE-750-312X	256.05
.120	.3750	.010	1.0000	4.0	CRE-001-375	442.50	CRE-001-375X	469.80
.120	.4370	.010	1.0000	4.0	CRE-001-437	442.50	CRE-001-437X	469.80

Corner Rounding End Mills



DT

Dovetail Cutters



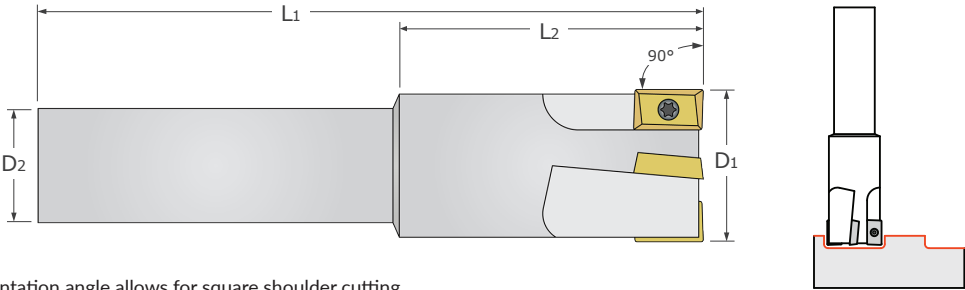
- Designed to mill dovetail grooves into a part
- Offered with 30°, 60°, and 90° included angles
- AlTiN coating option for added lubricity and increased wear resistance in difficult-to-machine materials
- Solid carbide
- CNC ground in the USA

Included Angle	Cutter Diameter*	Length of Cut	Neck Diameter	Neck Length	Corner Radius	Flutes	Shank Diameter	Overall Length	Uncoated		AlTiN Coated	
									Tool #	USD\$	Tool #	USD\$
30°	$D_1^{+.0000}_{-.0020}$	L2	D3	$L_3^{+.030}_{-.000}$	R		D2 (h6)	L1	DT-125-030-010	70.05	DT-125-030-010X	72.80
	.1250	.095	.080	.125	.010	2	.1250	1.5	DT-187-030-010	74.95	DT-187-030-010X	78.20
	.1875	.127	.125	.125	.010	2	.1875	2.0	DT-250-030-010	94.55		
	.2500	.161	.170	.125	.010	2	.2500	2.5	DT-312-030-010	102.25	DT-312-030-010X	110.15
	.3125	.221	.200	.312	.010	2	.3125	2.5	DT-375-030-010	107.95	DT-375-030-010X	116.20
	.3750	.263	.240	.375	.010	3	.3750	2.5	DT-500-030-010	139.90	DT-500-030-010X	149.85
60°	.5000	.347	.320	.500	.010	3	.5000	3.0	DT-125-060-010	70.05	DT-125-060-010X	72.80
	.1250	.065	.065	.125	.010	2	.1250	1.5	DT-187-060-010	74.95	DT-187-060-010X	78.20
	.1875	.093	.095	.125	.010	2	.1875	2.0	DT-250-060-010	94.55	DT-250-060-010X	100.20
	.2500	.125	.120	.125	.010	2	.2500	2.5	DT-312-060-010	102.25	DT-312-060-010X	110.15
	.3125	.162	.140	.312	.010	2	.3125	2.5	DT-375-060-010	107.95	DT-375-060-010X	116.20
	.3750	.190	.170	.375	.010	3	.3750	2.5	DT-500-060-010	139.90	DT-500-060-010X	149.85
90°	.5000	.255	.220	.500	.010	3	.5000	3.0	DT-125-090-010	70.05	DT-125-090-010X	72.80
	.1250	.042	.070	.125	.010	2	.1250	1.5	DT-187-090-010	74.95	DT-187-090-010X	78.20
	.1875	.048	.120	.125	.010	2	.1875	2.0	DT-250-090-010	94.55	DT-250-090-010X	100.20
	.2500	.064	.150	.125	.010	2	.2500	2.5	DT-312-090-010	102.25	DT-312-090-010X	110.15
	.3125	.095	.150	.312	.010	2	.3125	2.5	DT-375-090-010	107.95	DT-375-090-010X	116.20
	.3750	.127	.150	.375	.010	3	.3750	2.5	DT-500-090-010	139.90	DT-500-090-010X	149.85

* .0005" max TIR

Dovetail Cutters

Indexable
Milling – Tool Holders

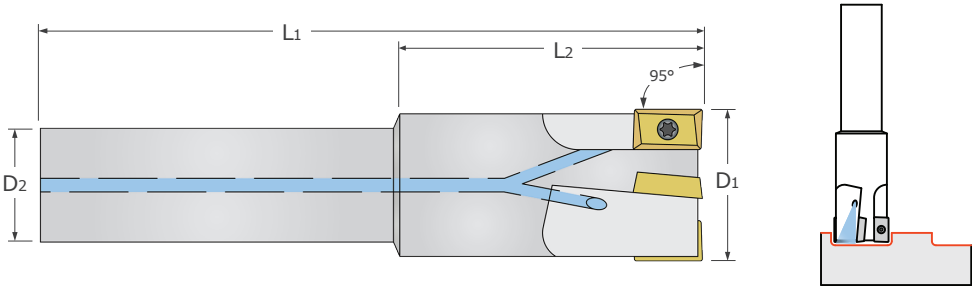


- 90° orientation angle allows for square shoulder cutting
- Utilizes ANSI standard APKT style inserts (not included)
- Each tool holder includes a M2.5 x T-8 torx screw and torx key (part # 16-1020)
- Non coolant-through
- Insert not included

Cutter Diameter	Body Length	Flutes	Shank Diameter	Overall Length	Insert Part Number	Holder Nomenclature	Tool Holder	
D1	L2		D2	L1			Tool #	USD\$
.375	1.500	1	.5000	3.0	50-2100	BAAP 1216 2	31-1216	138.55
.500	1.500	1	.5000	3.0	50-2100	BAAP 1616 2	31-1616	154.75
.625	1.500	2	.5000	3.0	50-2100	BAAP 1816 2	31-1816	171.05
.750	2.000	3	.7500	4.4	50-2100	BAAP 2424 2	31-2424	236.25
1.000	2.000	4	.7500	4.4	50-2100	BAAP 3224 2	31-3224	252.45
1.250	2.000	5	.7500	4.4	50-2100	BAAP 4024 2	31-4024	376.15

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 #	USD\$
.375	1.500	1	.5000	3.0	50-2100	AAAP 1216 2	30-1216	171.05
.500	1.500	1	.5000	3.0	50-2100	AAAP 1616 2	30-1616	187.25
.625	1.500	2	.5000	3.0	50-2100	AAAP 1816 2	30-1816	204.40
.750	2.000	3	.7500	4.4	50-2100	AAAP 2424 2	30-2424	240.70
1.000	2.000	4	.7500	4.4	50-2100	AAAP 3224 2	30-3224	385.95
1.250	2.000	5	.7500	4.4	50-2100	AAAP 4024 2	30-4024	413.65

See pg 318 for indexable insert accessories

See pgs 317 for tool set options



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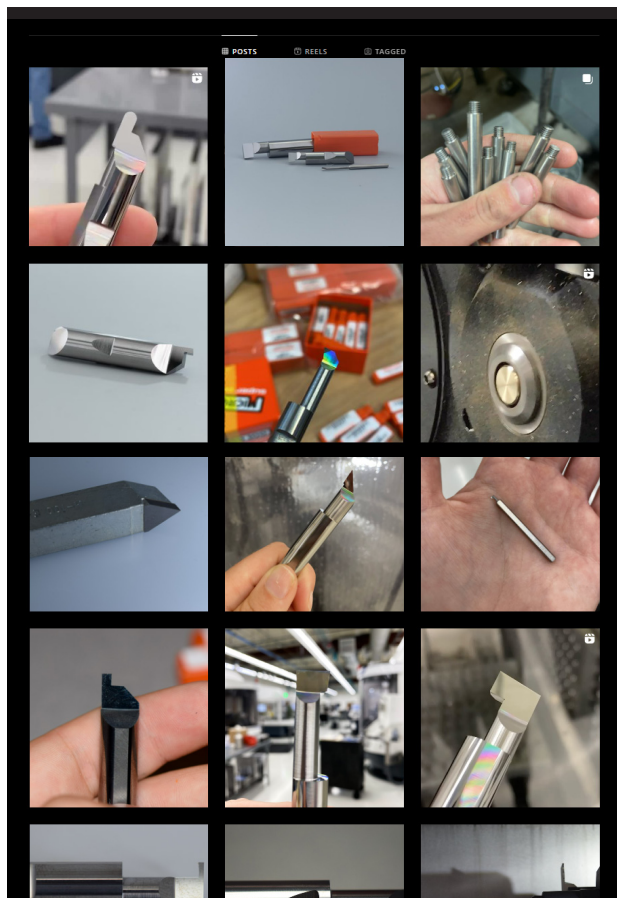
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BLANKS SETS & ACCESSORIES

Blanks 301

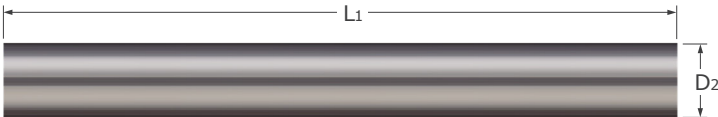
Sets 306

Accessories 320



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 #	USD\$
1 mm	.0394	30 mm	SRM-010-030	5.90
1 mm	.0394	310 mm	SRM-010-310	16.70
1.5 mm	.0591	100 mm	SRM-015-100	8.10
.0625	.0625	1.0	SR-062-1	8.80
.0625	.0625	2.0	SR-062-2	8.70
.0625	.0625	3.0	SR-062-3	8.60
.0625	.0625	4.0	SR-062-4	8.10
.0625	.0625	12.0	SR-062-12	22.65
2 mm	.0787	38 mm	SRM-020-038	6.75
2 mm	.0787	100 mm	SRM-020-100	10.30
2 mm	.0787	310 mm	SRM-020-310	22.50
.0938	.0938	1.0	SR-093-1	9.65
.0938	.0938	3.0	SR-093-3	11.30
.0938	.0938	4.0	SR-093-4	14.00
.0938	.0938	6.0	SR-093-6	14.45
.0938	.0938	12.0	SR-093-12	21.05
2.5 mm	.0984	100 mm	SRM-025-100	10.30
3 mm	.1181	38 mm	SRM-030-038	7.35
3 mm	.1181	100 mm	SRM-030-100	12.35
3 mm	.1181	310 mm	SRM-030-310	30.20
.1250	.1250	1.5	SR-125-1.5	7.90
.1250	.1250	2.0	SR-125-2	8.70
.1250	.1250	3.0	SR-125-3	10.40
.1250	.1250	4.0	SR-125-4	13.20
.1250	.1250	6.0	SR-125-6	20.05
.1250	.1250	12.0	SR-125-12	34.25
.1562	.1562	1.5	SR-156-1.5	9.45
.1562	.1562	2.0	SR-156-2	11.95
.1562	.1562	3.0	SR-156-3	15.55
.1562	.1562	4.0	SR-156-4	17.95
.1562	.1562	6.0	SR-156-6	31.15
4 mm	.1575	50 mm	SRM-040-050	8.60
4 mm	.1575	100 mm	SRM-040-100	17.55

*Denotes chamfered end.

Continued on next page

Blanks

Blanks

SR / SRM

Round Blanks (cont.)

Continued from previous page

Shank Diameter		Overall Length	Round Blank	
D2(h6)		L1	Tool #	USD\$
4 mm	.1575	310 mm	SRM-040-310	43.20
	.1875	1.5	SR-187-1.5*	9.75
	.1875	2.0	SR-187-2*	11.30
	.1875	4.0	SR-187-4	21.80
	.1875	6.0	SR-187-6	31.45
	.1875	12.0	SR-187-12	56.45
5 mm	.1969	50 mm	SRM-050-050	10.70
	.1969	100 mm	SRM-050-100	24.00
	.1969	310 mm	SRM-050-310	69.15
5.5 mm	.2165	100 mm	SRM-055-100	26.25
6 mm	.2362	57 mm	SRM-060-057	16.20
	.2362	100 mm	SRM-060-100	31.85
	.2362	310 mm	SRM-060-310	81.90
.2500	.2500	2.0	SR-250-2*	16.70
.2500	.2500	2.5	SR-250-2.5*	19.85
.2500	.2500	3.0	SR-250-3*	20.85
.2500	.2500	4.0	SR-250-4	31.75
.2500	.2500	6.0	SR-250-6	45.45
.2500	.2500	12.0	SR-250-12	84.70
7 mm	.2756	100 mm	SRM-070-100	42.05
	.3125	2.0	SR-312-2*	21.30
	.3125	2.5	SR-312-2.5*	25.75
	.3125	4.0	SR-312-4*	46.60
	.3125	6.0	SR-312-6	64.90
	.3125	12.0	SR-312-12	117.10
8 mm	.3150	100 mm	SRM-080-100	42.55
	.3150	310 mm	SRM-080-310	110.75
9 mm	.3543	100 mm	SRM-090-100	43.60
	.3750	2.0	SR-375-2*	25.95
	.3750	2.5	SR-375-2.5*	31.95
	.3750	4.0	SR-375-4*	52.20
	.3750	6.0	SR-375-6	79.50
	.3750	12.0	SR-375-12	151.95
10 mm	.3937	72 mm	SRM-100-072	38.60
	.3937	100 mm	SRM-100-100	63.65
	.3937	310 mm	SRM-100-310	179.90
.4375	.4375	2.5	SR-437-2.5*	64.35
.4375	.4375	4.0	SR-437-4	95.10
.4375	.4375	6.0	SR-437-6	145.65
.4375	.4375	12.0	SR-437-12	224.50
12 mm	.4724	310 mm	SRM-120-310	239.05
.5000	.5000	2.5	SR-500-2.5*	50.15
.5000	.5000	3.0	SR-500-3*	52.75
.5000	.5000	4.0	SR-500-4	80.65
.5000	.5000	6.0	SR-500-6	123.00
.5000	.5000	12.0	SR-500-12	277.15

*Denotes chamfered end.

Continued on next page

SR / SRM

Blanks
Round Blanks (cont.)

Continued from previous page

Shank Diameter		Overall Length	Round Blank	
D2(h6)		L1	Tool #	USD\$
13 mm	.5118	310 mm	SRM-130-310	243.50
14 mm	.5512	100 mm	SRM-140-100	119.90
.5625	.5625	3.5	SR-562-3.5*	101.20
.6250	.6250	3.5	SR-625-3.5*	125.20
.6250	.6250	4.0	SR-625-4	125.50
.6250	.6250	6.0	SR-625-6	182.90
.6250	.6250	12.0	SR-625-12	348.75
16 mm	.6299	310 mm	SRM-160-310	353.45
.7500	.7500	4.0	SR-750-4*	149.80
.7500	.7500	6.0	SR-750-6	286.70
.7500	.7500	12.0	SR-750-12	469.05
20 mm	.7874	100 mm	SRM-200-100	182.40
1.0000	1.0000	12.0	SR-001-12	815.35

*Denotes chamfered end.

Blanks

Blanks

RS /RSM

Split End – Single Ended



- 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	
L2			D2 (h6)	L1	Tool #	USD\$
+ .015" / - .000"	+1.0 mm / -0.0 mm	decimal equiv.				
	6 mm	.2362	4 mm	50 mm	RSM-040-1	15.35
	8 mm	.3150	6 mm	57 mm	RSM-060-1	22.50
.375		.3750	.1250	1.5	RS-125-1	19.30
.375		.3750	.1875	2.0	RS-187-1	23.55
.375		.3750	.1875	3.0	RS-187-13	32.30
.375		.3750	.2500	2.5	RS-250-1	30.50
	10 mm	.3937	8 mm	63 mm	RSM-080-1	42.35
	12 mm	.4724	10 mm	72 mm	RSM-100-1	55.95
.500		.5000	.3125	2.5	RS-312-1	45.45
.500		.5000	.3125	4.0	RS-312-14	69.25
.500		.5000	.3750	2.5	RS-375-1	59.50
.500		.5000	.3750	4.0	RS-375-14	94.05
.625		.6250	.5000	3.0	RS-500-1	101.20
.625		.6250	.5000	4.0	RS-500-14	139.10

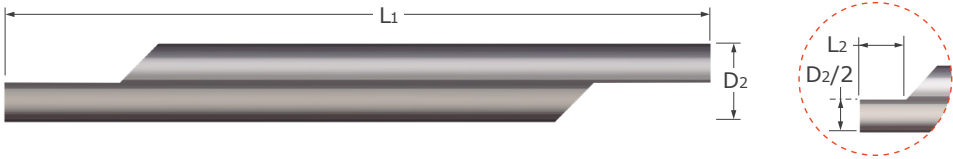
* Centerline +.0010" / -.0000" and +.024 mm / -.000 mm



RS /RSM

Blanks

Split End – Double Ended



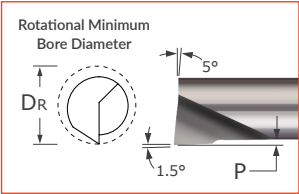
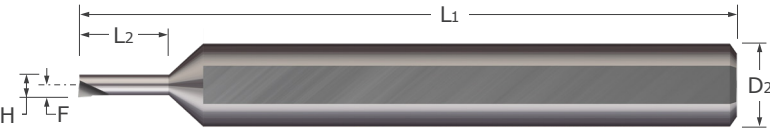
- Precision ground blank designed for custom profiles requiring a split face
- Double-ended allows for maximum utilization of the blank
- Precision manufactured in the USA

Split Length*			Shank Diameter	Overall Length	Double-Ended Blank	
L2			D2 (h6)	L1	Tool #	USD\$
+.015"	+1.0 mm	decimal				
-.015"	-0.0 mm	equiv.				
	4 mm	.1575	2 mm	38 mm	RSM-020-2	15.35
	5 mm	.1969	3 mm	38 mm	RSM-030-2	16.40
	6 mm	.2362	4 mm	50 mm	RSM-040-2	20.35
	8 mm	.3150	6 mm	57 mm	RSM-060-2	30.00
.375		.3750	.1250	2.0000	RS-125-2	26.80
.375		.3750	.1250	3.0000	RS-125-23	28.75
.375		.3750	.1875	2.0000	RS-187-2	32.70
.375		.3750	.1875	3.0000	RS-187-23	40.25
.375		.3750	.2500	2.5000	RS-250-2	41.20
.375		.3750	.2500	4.0000	RS-250-24	56.80
	10 mm	.3937	8 mm	63 mm	RSM-080-2	54.00
	12 mm	.4724	10 mm	72 mm	RSM-100-2	75.25
.500		.5000	.3125	2.5000	RS-312-2	60.50
.500		.5000	.3125	4.0000	RS-312-24	84.90
.500		.5000	.3750	2.5000	RS-375-2	74.65
.500		.5000	.3750	4.0000	RS-375-24	111.40
.625		.6250	.5000	3.0000	RS-500-2	120.00

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

Sets

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 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



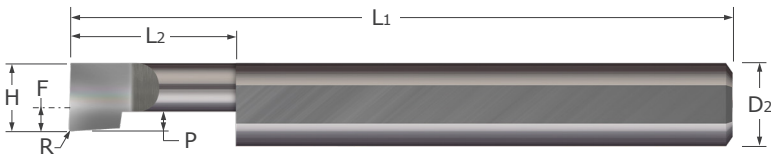
Head Width	Rotational Minimum Bore Diameter	Maximum Bore Depth	Projection	Centerline Offset	Shank Dia.	OAL	Uncoated	Set	
H	DR	L2 ^{+.010"} _{-.000"}	P	F	D2 (h6)	L1	Tool #	Set #	USD\$
.0180	.020	.075	.0020	.0100	.1250	1.5	MBB-020075	MBB-Q	230.25
.0225	.025	.100	.0025	.0125	.1250	1.5	MBB-025100		
.0275	.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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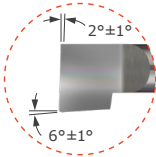
Valuable information about Micro 100 products and technical resources directly to your inbox. Be the first to know of newly-released tools to gain an immediate leg-up on the competition!



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



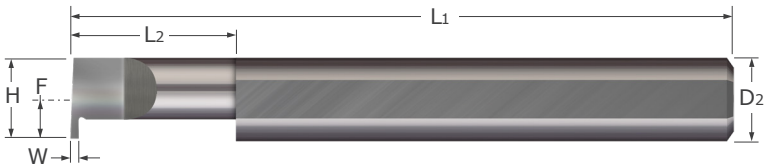
Sets

Shank Dia.	Head Width	Minimum Bore Dia.*	Maximum Bore Depth	Radius	Projection	Centerline Offset	Overall Length	Uncoated	Set	
D2 (h6)	H	L2	$+ .050''$ $- .000''$	$R \begin{smallmatrix} + .003'' \\ - .000'' \end{smallmatrix}$	P	F	L1	Tool #	Set #	USD\$
1/8	.050	.060	.300	.003	.012	-.0125	1.5	BB-050300	BB-1	176.15
	.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		
	.100	.110	.600	.003	.025	.0375	1.5	BB-100600		
D2 (h6)	H	L2	$+ .050''$ $- .000''$	$R \begin{smallmatrix} + .002'' \\ - .000'' \end{smallmatrix}$	P	F	L1	Tool #	Set #	USD\$
3/16	.120	.132	.500	.006	.030	.0263	2.0	BB-120500	BB-2	186.10
	.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		
	.160	.176	.750	.006	.040	.0663	2.0	BB-160750		
1/4	.180	.196	.500	.006	.045	.0550	2.5	BB-180500	BB-3	201.60
	.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		
	.200	.216	.600	.006	.050	.0750	2.5	BB-200600		
	.200	.216	1.000	.006	.050	.0750	2.5	BB-2001000		
5/16	.230	.250	.400	.006	.057	.0738	2.5	BB-230400	BB-4	270.90
	.230	.250	.600	.006	.057	.0738	2.5	BB-230600		
	.230	.250	.800	.006	.057	.0738	2.5	BB-230800		
	.230	.250	1.000	.006	.057	.0738	2.5	BB-2301000		
	.290	.310	.500	.006	.072	.1338	2.5	BB-290500		
	.290	.310	1.000	.006	.072	.1338	2.5	BB-2901000		
3/8	.320	.340	.500	.006	.080	.1325	2.5	BB-320500	BB-5	369.00
	.320	.340	1.000	.006	.080	.1325	2.5	BB-3201000		
	.320	.340	1.500	.006	.080	.1325	2.5	BB-3201500		
	.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		

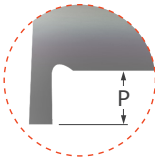
*Suggested Minimum Bore Diameter to accommodate chip evacuation and retract clearance in static (not live) applications.

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



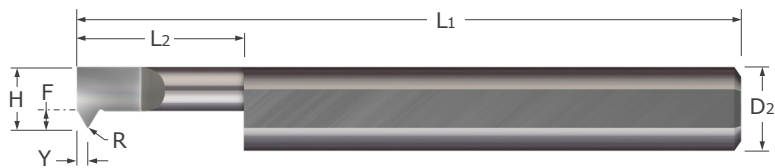
Width	Head Width	Min. Bore Diameter*	Max. Bore Depth	Projection	Centerline Offset	Shank Diameter	Overall Length	Uncoated	Set	
W ^{+ .001"} _{- .000"}	H		L2 ^{+ .050"} _{- .000"}	P	F	D2 (h6)	L1	Tool #	Set #	USD\$
.017	.250	.272	.250	.050	.1250	.2500	2.5	RR-017-4	RR-1	254.30
.025	.250	.272	.625	.050	.1250	.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 ^{+ .002"} _{- .000"}	H		L2 ^{+ .050"} _{- .000"}	P	F	D2 (h6)	L1	Tool #	Set #	USD\$
.039	.375	.397	.750	.100	.1875	.3750	2.5	RR-039-12	RR-2	382.10
.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.

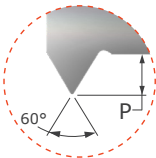


Sets

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



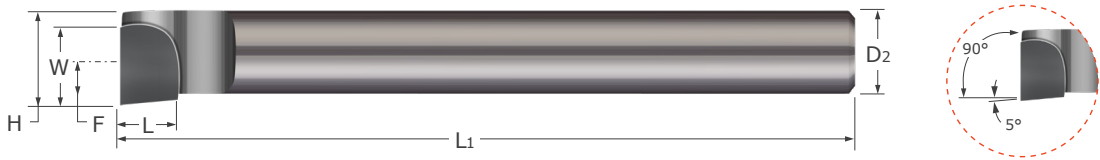
Sets

Threads Per Inch	Head Width	Minimum Bore Diameter*	Maximum Bore Depth	Point Offset	Projection	Radius	Centerline Offset	Shank Diameter	Overall Length	Uncoated	Set	
TPI	H	L2	$^{+.050}_{-.000}$ "	$Y^{+.010}_{-.000}$ "	P	$R^{+.001}_{-.000}$ "	F	D2 (h6)	L1	Tool #	Set #	USD\$
24-56	.180	.202	.500	.023	.040	.002	.0550	.2500	2.5	IT-180500	IT-1	320.45
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

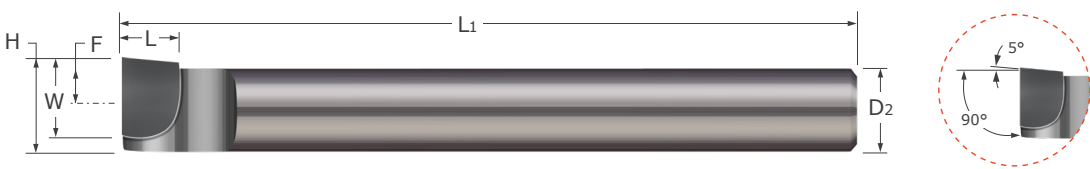


- Designed for right hand facing and boring applications in bores .320" and larger
- Long shank enables flexible reach options (preset at any length)
- Sharp corner profile
- Solid carbide tipped with zinc coated steel shank for durability and corrosion resistance
- CNC ground in the USA

Head Width	Width	Length	Centerline Offset	Shank Diameter	Overall Length	Brazed Style	Set	
H	W	L	F	D2 ^{+ .000"} _{-.003"}	L1	Tool #	Set #	USD\$
.320	.250	.188	.195	.250	4.0	TBB-250	TBB-5	173.95
.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	D2 ^{+ .000"} _{-.003"}	L1	Tool #	Set #	USD\$
.320	.250	.188	.195	.250	4.0	TBBL-250	TBBL-5	169.60
.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		



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	Set	
R ^{+0.0005"} _{-0.0005"}	A ^{+0.0000"} _{-0.0050"}	C	Tool #	Set #	USD\$
.0625	.3750	2.5	RAD-2	RAD-21	211.45
.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	427.25
.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	460.25
.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	921.75
.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

Sets

Indexable Boring Bars – Boring – Coolant Through – Right Hand

Set Contents	Holder Nomenclature	Part Number	Set	
		Tool #	Set #	USD\$
4 SCLCR Tool Holders 1/4", 5/16", 3/8", and 1/2" Shank Diameters	A04F SCLCR 2	20-0821	40-0100	348.35
	A05H SCLCR 2	20-0823		
	A06J SCLCR 2	20-0825		
	A08K SCLCR 2	20-0827		
4 Inserts	-	50-1100	40-2500	415.00
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		
	A10M SCLCR 3	20-0852		
	A12Q SCLCR 3	20-0854		
3 Inserts	-	50-1105	40-2500	415.00
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 #	USD\$
3 SDUCR Tool Holders 3/8", 1/2", and 5/8" Shank Diameters	A06J SDUCR 2	20-0931	40-2400	292.90
	A08K SDUCR 2	20-0933		
	A10M SDUCR 2	20-0935		
3 Inserts	-	50-1200	40-2400	292.90
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



Set Contents	Holder Nomenclature	Part Number	Set	
		Tool #	Set #	USD\$
6 Assorted Tool Holders 1/4" Square Shank	SCLCR 0404 D2	10-3231	40-7101	315.05
	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	40-7102	324.50
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		
	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	40-7103	340.25
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		
	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	40-7104	364.25
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		
	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	40-7104	364.25
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 #	USD\$
6 Assorted Tool Holders 5/8" Square Shank	SCLCR 1010 H2	10-3241	40-7105	490.85
	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	20-0827		
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 #	USD\$
3 Tool Holders 3/4" Square Shank	SCLCR 1212 J3	10-3251	40-7150	528.15
	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 – Milling – Tool Holders – Coolant Through

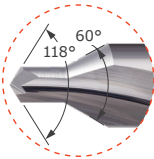
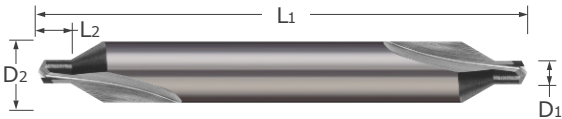
Set Contents	Holder Nomenclature	Part Number	Set	
		Tool #	Set #	USD\$
3 Tool Holders 1/2" Shank Diameters	AAAP 1216 2	30-1216	60-3003	387.90
	AAAP 1616 2	30-1616		
	AAAP 1816 2	30-1816		
4 Inserts	-	50-2100		
4 M2.5 x T-8 Torx Screws	-	16-1020		
1 Torx Key M3.5 x TK-15	-	16-1070		



Sets

Sets

Combined Drill & Countersinks



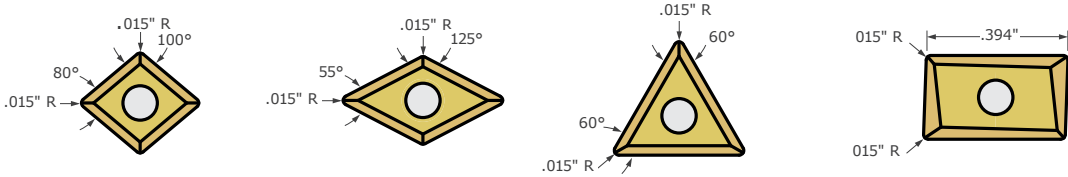
- Designed for predrilling 60° live center holes
- Can be utilized for countersinking and spot drilling
- Double-ended for quicker tool changes
- Solid carbide ■ CNC ground in the USA



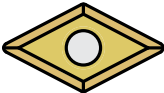
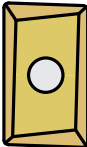
Drill Diameter	Drill Length	Shank Diameter	Overall Length	Uncoated	Set	
D1 $^{+.0030}_{-.0000}$ "	L2	D2 (h6)	L1	Tool #	Set #	USD\$
.0469	.047	.1250	1.500	DC-1	DC-0	406.40
.0781	.078	.1875	1.875	DC-2		
.1094	.109	.2500	2.000	DC-3		
.1250	.125	.3125	2.500	DC-4		
.1875	.188	.4375	2.750	DC-5		
.2188	.219	.5000	3.000	DC-6		

Indexable Inserts

Indexable Cutters – Inserts



■ Solid carbide

Insert Type	Insert*	
	Tool #	USD\$
	50-1100	13.20
	50-1105	16.00
	50-1200	14.00
	50-1300	12.05
	50-2100	14.55

*Must be ordered in quantities of 10.

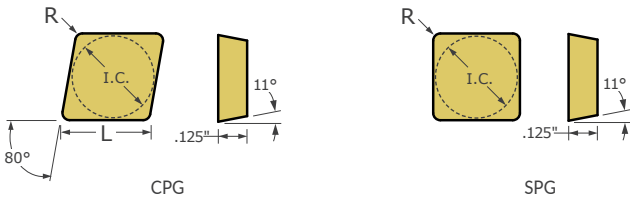
Accessories



CPG / SPG

Indexable Inserts

Indexable Cutters – Generic Inserts – Diamond Style



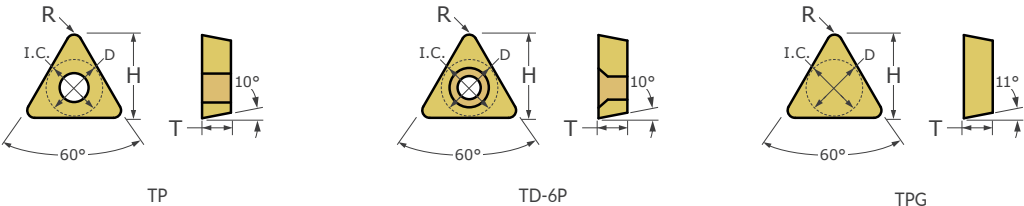
- 80° diamond insert with radius on corner
- For use in clamp locking style holder
- Solid carbide

Inscribed Circle	Length	Radius	Style	Diamond Style Insert	
				Tool #	USD\$
IC $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	L $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	R $\begin{smallmatrix} +.003" \\ -.003" \end{smallmatrix}$			
.464	.471	.031	CPG	CPG-4622	18.35
.500	.508	.015	CPG	CPG-421	16.50
.500	.508	.031	CPG	CPG-422	13.90
.375	-	.031	SPG	SPG-322	16.60
.500	-	.031	SPG	SPG-422	14.75

TPG / TP / TD

Indexable Inserts

Indexable Cutters – Generic Inserts – Triangle Style



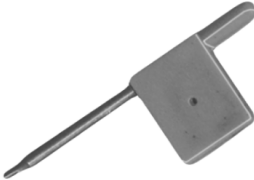
- 60° triangular insert with radius on corner
- For use with clamp locking style holder
- Solid carbide

Inscribed Circle	Thickness	Height	Radius	Hole Diameter	Set Screw UN	Style	Triangle Style Insert	
							Tool #	USD\$
IC $\begin{smallmatrix} +.001" \\ -.001" \end{smallmatrix}$	T $\begin{smallmatrix} +.005" \\ -.005" \end{smallmatrix}$	H	R $\begin{smallmatrix} +.003" \\ -.003" \end{smallmatrix}$	D $\begin{smallmatrix} +.003" \\ -.003" \end{smallmatrix}$				
.250	.094	.3438	.031	.137	4-40	TP	TP-42	15.80
.250	.094	.3600	.015	.137	4-40	TP	TP-41	11.00
.250	.125	.3440	.031			TPG	TPG-222	11.65
.375	.125	.5324	.031			TPG	TPG-322	13.90
.375	.125	.5324	.031	.163	6-32	TP	TP-62	18.25
.375	.125	.5324	.031	.125	4-40	TD	TD-6P-2	18.25
.375	.125	.5479	.015			TPG	TPG-321	13.10
.375	.125	.5479	.015	.163	6-32	TP	TP-61	18.25
.375	.125	.5480	.015	.125	4-40	TD	TD-6P-1	18.25
.500	.188	.7030	.047			TPG	TPG-433	21.30
.500	.188	.7199	.031			TPG	TPG-432	15.35

Accessories

Indexable Accessories

Accessories

Accessory Type	Compatibility	Description	Accessory	
			Tool #	USD\$
	Inserts 50-1100 50-1200 50-1300 50-2100	Torx Screw M2.5 x T-8	16-1020	4.90
	Inserts 50-1105	Torx Screw M3.5 x T-15	16-1030	5.70
	Screw 16-1020	Torx Key M2.5 x TK-8	16-1060	4.45
	Screw 16-1030	Torx Key M3.5 x TK-15	16-1070	5.30



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Speeds & Feeds Online



SIM Files Online

See more resources at
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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:	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	- 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	Extremely heat and scratch resistant coating that provides exceptional performance for those "tough and difficult" materials where temperatures increase dramatically during the machining application	- 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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Standard PSC Holder
pg 48

ACME Thread
pg 117

Thread relief
pg 118

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