



Number One for Rotary Broaching



Design • Engineer • Manufacture • Support

# ROTARY BROACH TOOLING CATALOG

CALL: (586) 465-5000    [WWW.SLATERTOOLS.COM](http://WWW.SLATERTOOLS.COM)    FAX: (586) 465-3030





Number One for Rotary Broaching



## OUR COMMITMENT TO YOU

Since the early 1950s, Slater Tools has been dedicated to designing and manufacturing quality precision cutting tools used around the world. Through innovation and high standards, our tooling has led the industry providing dependable and precise solutions for our manufacturing customers in aerospace, medical, automotive, and many other industries. All of our tools are backed by a strong commitment to application assistance and customer satisfaction. Our products are proudly designed and manufactured in the USA. Slater's complete line of Rotary Broach Tooling will reduce cycle times and add value to your precision machining operations. Our courteous technical staff and engineers are eager to review your tooling requirements and assist you in choosing the right tools for your application. With over six decades of experience in the industry and thousands of tools in operation throughout the world, Slater Tools is THE company for Rotary Broach Tooling. We put our name on it.

## BENEFITS OF SLATER ROTARY BROACHING TOOLS

Slater's Rotary Broaching Tools quickly and accurately cut internal and external hexagons, squares, six lobe (Hexalobular), Rosan-type, serrations, splines and other custom shapes into a workpiece. The entire operation is completed in seconds and is capable of producing forms with an accuracy of 0.0005" (0.0127mm) or better.

The main advantage of Slater's Rotary Broaching Tools is that they can be used on any lathe, mill, machining center or other turning machine. This eliminates secondary operations, thereby increasing speed and profitability during production without sacrificing accuracy.

Rotary broaching requires two components: a Rotary Broach Tool Holder and a Rotary Broach.

Slater Tools' Rotary Broach Tool Holders have an internal live spindle that holds the Rotary Broach at a 1 degree angle. In a mill, the Rotary Broach remains stationary with the workpiece while the body of the tool holder rotates. In a lathe, the Rotary Broach rotates 1:1 with the workpiece while the body of the tool holder remains stationary. This creates a chisel-like action, cutting one corner at a time as the broach is fed through the workpiece to the desired depth.

Slater Tools Rotary Broaching Products are used throughout the world by both large manufacturing companies and small machine shops. Rotary broaching is extremely popular in the medical, aerospace, automotive, fastener and plumbing industries.

Please visit [www.slatertools.com](http://www.slatertools.com) to view our instructional videos and to learn more about rotary broaching.

Over  
60 Years of  
Manufacturing  
Excellence



## ORDERING, RETURNS & REPAIRS

**Call: (586) 465-5000 | Fax: (586) 465-3030 | Email: [direct@slatertools.com](mailto:direct@slatertools.com)**

Monday through Friday, 8:00 a.m. - 5:00 p.m. Eastern Standard Time (EST).

Order direct by fax or email 24 hours daily.

### Delivery

Stock orders placed by 4:30 p.m. EST will be shipped the same day. Orders placed after 4:30 p.m. will be shipped the following business day. Please allow 1-2 business days on special Internal Hex and Square Rotary Broaches. For external and all other special/custom forms, please allow 5-10 business days upon your print approval.

### Return Policy

Full credit is given for all unused standard catalog items returned within 30 days of the invoice date. All returns require a return goods authorization number.

### Rebuild/ Replacement Parts

Tool holder replacement parts are available from stock for immediate delivery. See page 33 for more details.

### Factory Repairs and Broach Re-sharpening Services

Upon receipt, an evaluation and price quote will be submitted for your approval before repairs or re-sharpening is done. Once we receive your authorization to proceed, your tooling will be repaired or re-sharpened and shipped back to you within 1-2 days. See page 39 for more details.

## TECHNICAL SUPPORT

At Slater Tools, we pride ourselves on providing our customers with the most accurate and relevant technical information on the tools of our trade.

If you have any questions about our products or your specific application, please call us at **(586) 465-5000**, visit our website at **[www.slatertools.com](http://www.slatertools.com)**, or email us at **[direct@slatertools.com](mailto:direct@slatertools.com)**.





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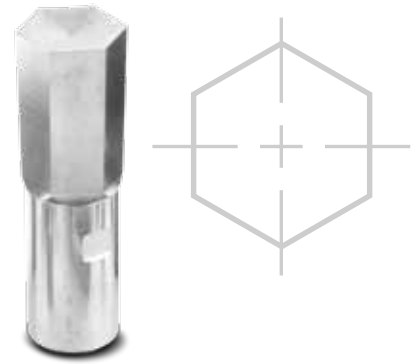
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## INTERNAL HEXAGON BROACHES

Slaters Tools offers a large inventory of Hexagon Rotary Broaches. The below listed sizes are available for immediate delivery in a variety of materials and coatings. Additional popular sizes are also available from stock. Slaters Tools can make any custom size hex in only 1-2 days. Across-the-flats dimensions conform to IFI and ANSI/ASME standards for maximum tool life. We also offer pressure relief vent holes, quantity discounts and re-sharpening services.

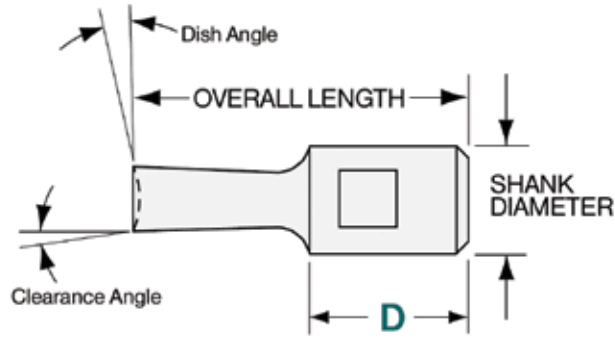
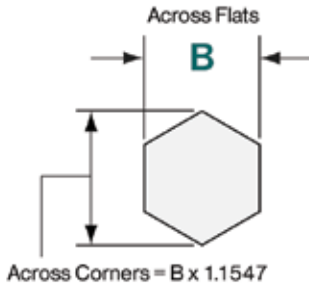


### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH | FORM SIZE RANGE .028-.650"

Standard Size (in)	B	D	Order #	Metric Size (mm)	B	D	Order #
1/16"	.064	.81	306-064	1.25mm	.051	.81	306-051
5/64"	.079	.81	306-079	1.50mm	.061	.81	306-061
3/32"	.095	.81	306-095	2.00mm	.081	.81	306-081
7/64"	.111	.75	306-111	2.50mm	.101	.81	306-101
1/8"	.127	.75	306-127	3.00mm	.121	.75	306-121
9/64"	.142	.75	306-142	4.00mm	.161	.75	306-161
5/32"	.159	.75	306-159	5.00mm	.200	.62	306-200
11/64"	.174	.75	306-174	6.00mm	.240	.62	306-240
3/16"	.190	.75	306-190	7.00mm	.279	.62	306-279
7/32"	.222	.62	306-222	8.00mm	.320	.62	306-320
1/4"	.253	.62	306-253	9.00mm	.358	.62	306-358
9/32"	.284	.62	306-284	10.00mm	.399	.62	306-399
5/16"	.316	.62	306-316	11.00mm	.437	.62	306-437
11/32"	.347	.62	306-347	12.00mm	.478	.62	306-478
3/8"	.379	.62	306-379				
13/32"	.410	.62	306-410				

### .500" SHANK DIAMETER | 1.75" OVERALL LENGTH | FORM SIZE RANGE .080-1.300"

Standard Size (in)	B	D	Order #	Metric Size (mm)	B	D	Order #
3/32"	.095	1.00	506-095	2.00mm	.081	1.00	506-081
7/64"	.111	1.00	506-111	2.50mm	.101	1.00	506-101
1/8"	.127	1.00	506-127	3.00mm	.121	1.00	506-121
9/64"	.142	1.00	506-142	4.00mm	.161	1.00	506-161
5/32"	.159	1.00	506-159	5.00mm	.200	.88	506-200
3/16"	.190	1.00	506-190	6.00mm	.240	.88	506-240
7/32"	.222	.88	506-222	7.00mm	.279	.88	506-279
1/4"	.253	.88	506-253	8.00mm	.320	.88	506-320
9/32"	.284	.88	506-284	9.00mm	.358	.75	506-358
5/16"	.316	.88	506-316	10.00mm	.399	.75	506-399
11/32"	.347	.75	506-347	11.00mm	.437	.75	506-437
3/8"	.379	.75	506-379	12.00mm	.478	.75	506-478
13/32"	.410	.75	506-410	13.00mm	.517	.75	506-517
7/16"	.442	.75	506-442	14.00mm	.557	.75	506-557
15/32"	.473	.75	506-473	15.00mm	.597	.75	506-597
1/2"	.505	.75	506-505	16.00mm	.636	.75	506-636
17/32"	.536	.75	506-536	17.00mm	.678	.75	506-678
9/16"	.568	.75	506-568	18.00mm	.715	.75	506-715
19/32"	.599	.75	506-599	19.00mm	.758	.75	506-758
5/8"	.631	.75	506-631				
21/32"	.662	.75	506-662				
11/16"	.694	.75	506-694				
23/32"	.725	.75	506-725				
3/4"	.757	.75	506-757				



**.750" SHANK DIAMETER | 2.75" OVERALL LENGTH | FORM SIZE RANGE .180-2.050"**

Standard Size (in)	B	D	Order #	Metric Size (mm)	B	D	Order #
1/4"	.253	1.62	706-253	6.00mm	.240	1.62	706-240
9/32"	.284	1.62	706-284	7.00mm	.279	1.62	706-279
5/16"	.316	1.62	706-316	8.00mm	.320	1.62	706-320
11/32"	.347	1.62	706-347	9.00mm	.358	1.62	706-358
3/8"	.379	1.62	706-379	10.00mm	.399	1.50	706-399
13/32"	.410	1.50	706-410	11.00mm	.437	1.50	706-437
7/16"	.442	1.50	706-442	12.00mm	.478	1.50	706-478
15/32"	.473	1.50	706-473	13.00mm	.517	1.50	706-517
1/2"	.505	1.50	706-505	14.00mm	.557	1.50	706-557
17/32"	.536	1.50	706-536	15.00mm	.597	1.31	706-597
9/16"	.568	1.50	706-568	16.00mm	.636	1.31	706-636
19/32"	.599	1.31	706-599	17.00mm	.678	1.31	706-678
5/8"	.631	1.31	706-631	18.00mm	.715	1.31	706-715
21/32"	.662	1.31	706-662	19.00mm	.758	1.31	706-758
11/16"	.694	1.31	706-694	20.00mm	.795	1.31	706-795
23/32"	.725	1.31	706-725	21.00mm	.836	1.31	706-836
3/4"	.757	1.31	706-757	22.00mm	.879	1.31	706-879
25/32"	.789	1.31	706-789	23.00mm	.916	1.31	706-916
13/16"	.821	1.31	706-821	24.00mm	.957	1.31	706-957
27/32"	.853	1.31	706-853	25.00mm	.994	1.31	706-994
7/8"	.885	1.31	706-885	26.00mm	1.034	1.31	706-1.034
29/32"	.919	1.31	706-919				
15/16"	.953	1.31	706-953				
31/32"	.986	1.31	706-986				
1"	1.020	1.31	706-1.020				

NOTE: All dimensions in inches unless otherwise specified

**AVAILABLE INTERNAL BROACH OPTIONS:**

- Coatings: TiN, TiCN, TiAlN
- Materials: M2, PM4, T15 High Speed Tool Steels
- Different overall lengths (including 28mm)
- Custom cut lengths
- Custom across-the-flat dimensions: .028-2.050" (0.70-52mm)
- MICRO forms
- Corner radius
- Spun ground diameter on broach corners
- Single or double vent holes
- Flat on shank can be aligned with flat on form (for holding orientation)
- Re-sharpening
- Quantity discounts at 5, 10, 30, 50, 100, 150, 200 pieces





## INTERNAL SQUARE BROACHES

Slater Tools offers a large inventory of Square Rotary Broaches. The below listed sizes are available for immediate delivery in a variety of materials and coatings. Additional popular sizes are also available from stock. Slater Tools can make any custom size square in only 1-2 days. Across-the-flats dimensions conform to IFI and ANSI/ASME standards for maximum tool life. We also offer pressure relief vent holes, quantity discounts and re-sharpening services.



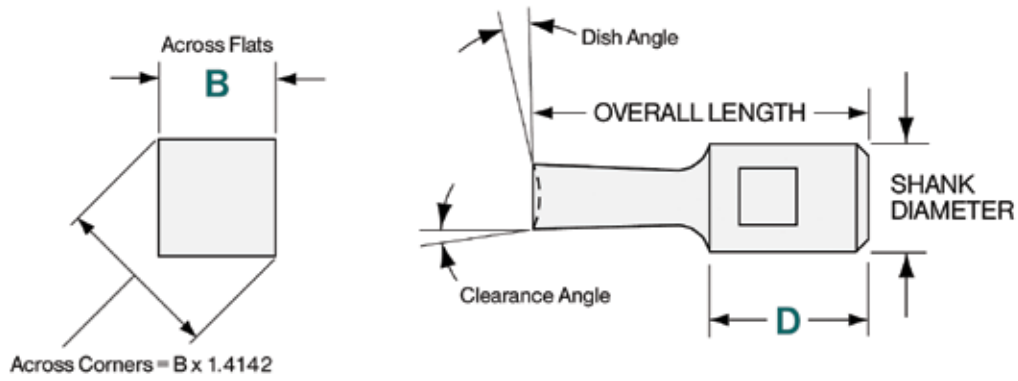
### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH | FORM SIZE RANGE .028-.530"

Standard Size (in)	B	D	Order #	Metric Size (mm)	B	D	Order #
1/16"	.064	.81	304-064	1.25mm	.051	.81	304-051
5/64"	.079	.81	304-079	1.50mm	.061	.81	304-061
3/32"	.095	.75	304-095	2.00mm	.081	.81	304-081
7/64"	.111	.75	304-111	2.50mm	.101	.75	304-101
1/8"	.127	.75	304-127	3.00mm	.121	.75	304-121
9/64"	.142	.75	304-142	4.00mm	.161	.75	304-161
5/32"	.159	.75	304-159	5.00mm	.200	.62	304-200
11/64"	.174	.62	304-174	6.00mm	.240	.62	304-240
3/16"	.190	.62	304-190	7.00mm	.279	.62	304-279
7/32"	.222	.62	304-222	8.00mm	.320	.62	304-320
1/4"	.253	.62	304-253	9.00mm	.358	.62	304-358
9/32"	.284	.62	304-284	10.00mm	.399	.62	304-399
5/16"	.316	.62	304-316				
11/32"	.347	.62	304-347				
3/8"	.379	.62	304-379				
13/32"	.410	.62	304-410				

### .500" SHANK DIAMETER | 1.75" OVERALL LENGTH | FORM SIZE RANGE .080-1.061"

Standard Size (in)	B	D	Order #	Metric Size (mm)	B	D	Order #
3/32"	.095	1.00	504-095	2.00mm	.081	1.00	504-081
7/64"	.111	1.00	504-111	2.50mm	.101	1.00	504-101
1/8"	.127	1.00	504-127	3.00mm	.121	1.00	504-121
9/64"	.142	1.00	504-142	4.00mm	.161	1.00	504-161
5/32"	.159	1.00	504-159	5.00mm	.200	.88	504-200
3/16"	.190	.88	504-190	6.00mm	.240	.88	504-240
7/32"	.222	.88	504-222	7.00mm	.279	.75	504-279
1/4"	.253	.88	504-253	8.00mm	.320	.75	504-320
9/32"	.284	.75	504-284	9.00mm	.358	.75	504-358
5/16"	.316	.75	504-316	10.00mm	.399	.75	504-399
11/32"	.347	.75	504-347	11.00mm	.437	.75	504-437
3/8"	.379	.75	504-379	12.00mm	.478	.75	504-478
13/32"	.410	.75	504-410	13.00mm	.517	.75	504-517
7/16"	.442	.75	504-442	14.00mm	.557	.75	504-557
15/32"	.473	.75	504-473	15.00mm	.597	.75	504-597
1/2"	.505	.75	504-505				
17/32"	.536	.75	504-536				
9/16"	.568	.75	504-568				
19/32"	.599	.75	504-599				
5/8"	.631	.75	504-631				





**.750" SHANK DIAMETER | 2.75" OVERALL LENGTH | FORM SIZE RANGE .180-1.675"**

Standard Size (in)	B	D	Order #	Metric Size (mm)	B	D	Order #
1/4"	.253	1.62	704-253	6.00mm	.240	1.62	704-240
9/32"	.284	1.62	704-284	7.00mm	.279	1.62	704-279
5/16"	.316	1.62	704-316	8.00mm	.320	1.62	704-320
11/32"	.347	1.62	704-347	9.00mm	.358	1.62	704-358
3/8"	.379	1.62	704-379	10.00mm	.399	1.50	704-399
13/32"	.410	1.50	704-410	11.00mm	.437	1.50	704-437
7/16"	.442	1.50	704-442	12.00mm	.478	1.50	704-478
15/32"	.473	1.50	704-473	13.00mm	.517	1.50	704-517
1/2"	.505	1.50	704-505	14.00mm	.557	1.50	704-557
17/32"	.536	1.50	704-536	15.00mm	.597	1.31	704-597
9/16"	.568	1.50	704-568	16.00mm	.636	1.31	704-636
19/32"	.599	1.31	704-599	17.00mm	.678	1.31	704-678
5/8"	.631	1.31	704-631	18.00mm	.715	1.31	704-715
21/32"	.662	1.31	704-662	19.00mm	.758	1.31	704-758
11/16"	.694	1.31	704-694	20.00mm	.795	1.31	704-795
23/32"	.725	1.31	704-725				
3/4"	.757	1.31	704-757				
25/32"	.788	1.31	704-788				
13/16"	.819	1.31	704-819				

NOTE: All dimensions in inches unless otherwise specified

**AVAILABLE INTERNAL BROACH OPTIONS:**

- Coatings: TiN, TiCN, TiAlN
- Materials: M2, PM4, T15 High Speed Tool Steels
- Different overall lengths (including 28mm)
- Custom cut lengths
- Custom across-the-flat dimensions: .028-1.675" (0.70-42.5mm)
- MICRO forms
- Corner radius
- Spun ground diameter on broach corners
- Single or double vent holes
- Flat on shank can be aligned with flat on form (for holding orientation)
- Re-sharpening
- Quantity discounts at 5, 10, 30, 50, 100, 150, 200 pieces

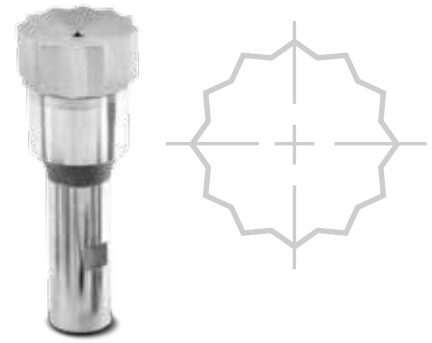




## INTERNAL DOUBLE HEX BROACHES

Slatertool's Double Hex Rotary Broaches, also known as 12-point Rotary Broaches, can be produced in special sizes, custom lengths, and in a variety of materials and coatings. Pressure relief vent holes, quantity discounts and re-sharpening are available for all broaches.

**For all available broach options, see page 13.**



### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH

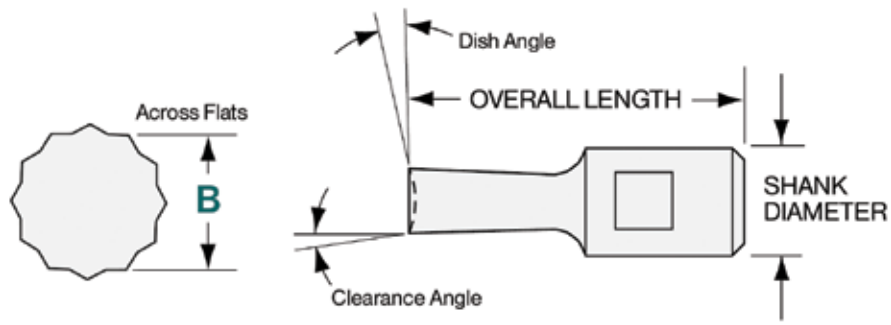
Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/4"	.253	302-253	6.00mm	.240	302-240
9/32"	.284	302-284	7.00mm	.279	302-279
5/16"	.316	302-316	8.00mm	.320	302-320
11/32"	.347	302-347	9.00mm	.358	302-358
3/8"	.379	302-379	10.00mm	.399	302-399
13/32"	.410	302-410	11.00mm	.437	302-437
7/16"	.442	302-442	12.00mm	.478	302-478
15/32"	.473	302-473			
1/2"	.505	302-505			

### .500" SHANK DIAMETER | 1.75" OVERALL LENGTH

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/4"	.253	502-253	6.00mm	.240	502-240
9/32"	.284	502-284	7.00mm	.279	502-279
5/16"	.316	502-316	8.00mm	.320	502-320
11/32"	.347	502-347	9.00mm	.358	502-358
3/8"	.379	502-379	10.00mm	.399	502-399
13/32"	.410	502-410	11.00mm	.437	502-437
7/16"	.442	502-442	12.00mm	.478	502-478
15/32"	.473	502-473	13.00mm	.517	502-517
1/2"	.505	502-505	14.00mm	.557	502-557
17/32"	.536	502-536	15.00mm	.597	502-597
9/16"	.568	502-568	16.00mm	.636	502-636
19/32"	.599	502-599	17.00mm	.678	502-678
5/8"	.631	502-631	18.00mm	.715	502-715
21/32"	.662	502-662	19.00mm	.758	502-758
11/16"	.694	502-694			
23/32"	.725	502-725			

### .500" SHANK DIAMETER | 2.25" OVERALL LENGTH

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/4"	.253	542-253	6.00mm	.240	542-240
9/32"	.284	542-284	7.00mm	.279	542-279
5/16"	.316	542-316	8.00mm	.320	542-320
11/32"	.347	542-347	9.00mm	.358	542-358
3/8"	.379	542-379	10.00mm	.399	542-399
13/32"	.410	542-410	11.00mm	.437	542-437
7/16"	.442	542-442	12.00mm	.478	542-478
15/32"	.473	542-473	13.00mm	.517	542-517
1/2"	.505	542-505	14.00mm	.557	542-557
17/32"	.536	542-536	15.00mm	.597	542-597
9/16"	.568	542-568	16.00mm	.636	542-636
19/32"	.599	542-599	17.00mm	.678	542-678
5/8"	.631	542-631	18.00mm	.715	542-715
21/32"	.662	542-662	19.00mm	.758	542-758
11/16"	.694	542-694			
23/32"	.725	542-725			
3/4"	.757	542-757			



**.750" SHANK DIAMETER | 2.75" OVERALL LENGTH**

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
13/32"	.410	702-410	10.00mm	.399	702-399
7/16"	.442	702-442	11.00mm	.437	702-437
15/32"	.473	702-473	12.00mm	.478	702-478
1/2"	.505	702-505	13.00mm	.517	702-517
17/32"	.536	702-536	14.00mm	.557	702-557
9/16"	.568	702-568	15.00mm	.597	702-597
19/32"	.599	702-599	16.00mm	.636	702-636
5/8"	.631	702-631	17.00mm	.678	702-678
21/32"	.662	702-662	18.00mm	.715	702-715
11/16"	.694	702-694	19.00mm	.758	702-758
23/32"	.725	702-725	20.00mm	.795	702-795
3/4"	.757	702-757	21.00mm	.836	702-836
25/32"	.789	702-789	22.00mm	.879	702-879
13/16"	.821	702-821	23.00mm	.916	702-916
27/32"	.853	702-853	24.00mm	.957	702-957
7/8"	.885	702-885	25.00mm	.994	702-994
29/32"	.919	702-919	26.00mm	1.034	702-1.034
15/16"	.953	702-953			
31/32"	.986	702-986			
1"	1.020	702-1.020			

**.750" SHANK DIAMETER | 3.75" OVERALL LENGTH**

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/2"	.505	782-505	13.00mm	.517	782-517
17/32"	.536	782-536	14.00mm	.557	782-557
9/16"	.568	782-568	15.00mm	.597	782-597
19/32"	.599	782-599	16.00mm	.636	782-636
5/8"	.631	782-631	17.00mm	.678	782-678
21/32"	.662	782-662	18.00mm	.715	782-715
11/16"	.694	782-694	19.00mm	.758	782-758
23/32"	.725	782-725	20.00mm	.795	782-795
3/4"	.757	782-757	21.00mm	.836	782-836
25/32"	.789	782-789	22.00mm	.879	782-879
13/16"	.821	782-821	23.00mm	.916	782-916
27/32"	.853	782-853	24.00mm	.957	782-957
7/8"	.885	782-885	25.00mm	.994	782-994
29/32"	.919	782-919	26.00mm	1.034	782-1.034
15/16"	.953	782-953			
31/32"	.986	782-986			
1"	1.020	782-1.020			

NOTE: All dimensions in inches unless otherwise specified



## INTERNAL SERRATION BROACHES

Slater Tools offers precision ground Internal Serration Rotary Broaches designed to be used individually or as mating parts with Slater's External Standard Serration Rotary Broaches (see page 20). When mating the internal with the external serration, there will be a .0028" per side tooth clearance. Internal and External Serration Rotary Broaches can be produced with a variety of custom options. **For all available broach options, see page 13.**



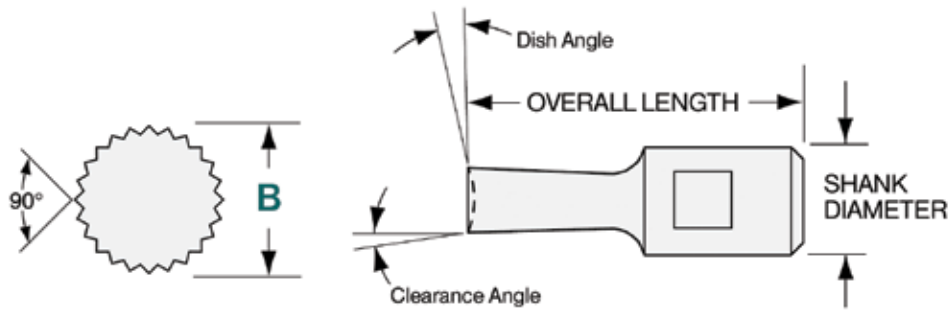
### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH

Standard Size (in)	# OF TEETH	B	Order #
5/16"	11	.3165	303-3165
	15	.3165	305-3165
	19	.3165	307-3165
11/32"	12	.3480	303-3480
	16	.3480	305-3480
	21	.3480	307-3480
3/8"	14	.3790	303-3790
	18	.3790	305-3790
	23	.3790	307-3790

### .500" SHANK DIAMETER | 1.75" OVERALL LENGTH

Standard Size (in)	# OF TEETH	B	Order #
11/32"	12	.3480	503-3480
	16	.3480	505-3480
	21	.3480	507-3480
3/8"	14	.3790	503-3790
	18	.3790	505-3790
	23	.3790	507-3790
13/32"	15	.4100	503-4100
	19	.4100	505-4100
	24	.4100	507-4100
7/16"	16	.4415	503-4415
	21	.4415	505-4415
	26	.4415	507-4415
15/32"	17	.4730	503-4730
	22	.4730	505-4730
	28	.4730	507-4730
1/2"	18	.5040	503-5040
	24	.5040	505-5040
	30	.5040	507-5040
9/16"	20	.5665	503-5665
	27	.5665	505-5665
	34	.5665	507-5665
5/8"	23	.6290	503-6290
	30	.6290	505-6290
	38	.6290	507-6290
21/32"	24	.6600	503-6600
	31	.6600	505-6600
	39	.6600	507-6600
11/16"	25	.6915	503-6915
	33	.6915	505-6915
	41	.6915	507-6915
3/4"	27	.7540	503-7540
	36	.7540	505-7540
	45	.7540	507-7540

INTERNAL  
SERRATION BROACHES



**.750" SHANK DIAMETER | 2.75" OVERALL LENGTH**

Standard Size (in)	# OF TEETH	B	Order #
3/4"	27	.7540	703-7540
	36	.7540	705-7540
	45	.7540	707-7540
13/16"	29	.8165	703-8165
	39	.8165	705-8165
	49	.8165	707-8165
7/8"	32	.8790	703-8790
	42	.8790	705-8790
	53	.8790	707-8790
15/16"	34	.9415	703-9415
	45	.9415	705-9415
	56	.9415	707-9415
1"	36	1.004	703-1.004
	48	1.004	705-1.004
	60	1.004	707-1.004

NOTE: All dimensions in inches unless otherwise specified

**AVAILABLE INTERNAL BROACH OPTIONS:**

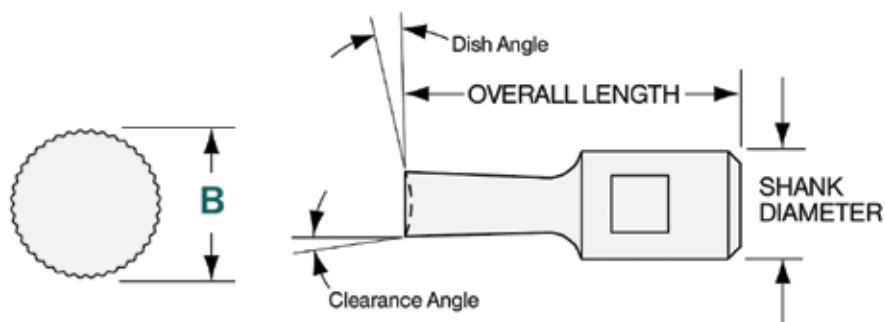
- Coatings: TiN, TiCN, TiAlN
- Materials: M2, PM4, T15 High Speed Tool Steels
- Different overall lengths (including 28mm)
- Custom cut lengths
- Custom major and minor dimensions
- Any desired number of teeth
- Custom tooth profiles
- MICRO forms
- Corner radius
- Spun ground diameter on broach corners
- Single or double vent holes
- Flat on shank can be aligned with flat on form (for holding orientation)
- Re-sharpening
- Quantity discounts at 5, 10, 30, 50, 100, 150, 200 pieces



## INTERNAL J500 BROACHES

Slater Tools offers a variety of Internal J500 Rotary Broach Tools available for quick delivery. Sizes conform to SAE standards and are designed for maximum tool life. J500 Rotary Broaches can be produced in special sizes and custom lengths. They can also be made in a variety of materials and coatings. Vent holes, quantity discounts and re-sharpening are available.

**For all available broach options, see page 13.**



### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH

Standard Size (in)	# of Teeth	B	Order #
1/8"	36	.1270	301-1250
3/16"	36	.1900	301-1875
1/4"	36	.2520	301-2500
5/16"	36	.3150	301-3125

### .500" SHANK DIAMETER | 1.75" OVERALL LENGTH

Standard Size (in)	# of Teeth	B	Order #
1/8"	36	.1270	501-1250
3/16"	36	.1900	501-1875
1/4"	36	.2520	501-2500
5/16"	36	.3150	501-3125
3/8"	36	.3770	501-3750
1/2"	36	.5020	501-5000

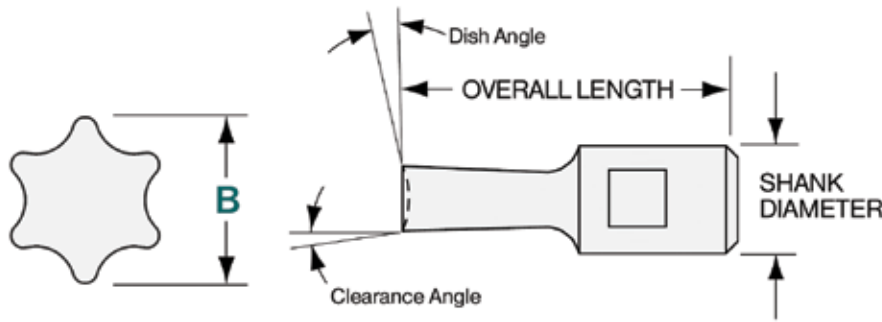
### .750" SHANK DIAMETER | 2.75" OVERALL LENGTH

Standard Size (in)	# of Teeth	B	Order #
3/8"	36	.3770	701-3750
1/2"	36	.5020	701-5000
5/8"	36	.6270	701-6250
3/4"	48	.7520	701-7500
7/8"	48	.8770	701-8750
1"	48	1.002	701-1000



## INTERNAL SIX LOBE (HEXALOBULAR) BROACHES

Slater Tools offers a large variety of Internal Six Lobe torx-like Rotary Broach Tools, also known as hexalobular or Torx-like Rotary Broaches. Most standard size Six Lobe Torx-like Rotary Broach Tools are in stock and available for immediate delivery. Six Lobe Rotary Broaches conform with ISO 10664 and can be produced in special sizes and custom lengths. They can also be made in a variety of materials and coatings. Vent holes, quantity discounts and re-sharpening are available. **For all available broach options, see page 13.**



### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH

Size	B	Order #
T-06	.0703	308-06
T-08	.0954	308-08
T-10	.1123	308-10
T-15	.1333	308-15
T-20	.1563	308-20
T-25	.1798	308-25

### .315" SHANK DIAMETER | 1.75" OVERALL LENGTH

Size	B	Order #
T-06	.0703	348-06
T-08	.0954	348-08
T-10	.1123	348-10
T-15	.1333	348-15
T-20	.1563	348-20
T-25	.1798	348-25

### .500" SHANK DIAMETER | 1.75" OVERALL LENGTH

Size	B	Order #
T-08	.0954	508-08
T-10	.1123	508-10
T-15	.1333	508-15
T-20	.1563	508-20
T-25	.1798	508-25
T-27	.2018	508-27
T-30	.2228	508-30
T-40	.2683	508-40
T-45	.3147	508-45
T-50	.3543	508-50

### .750" SHANK DIAMETER | 2.75" OVERALL LENGTH

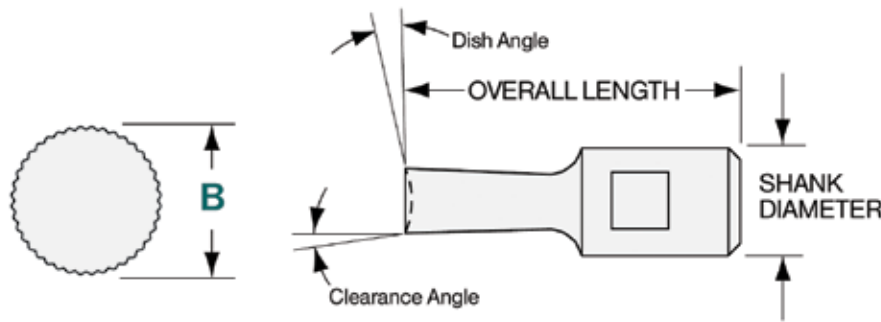
Size	B	Order #
T-25	.1798	708-25
T-27	.2018	708-27
T-30	.2228	708-30
T-40	.2683	708-40
T-45	.3147	708-45
T-50	.3543	708-50

NOTE: All dimensions in inches unless otherwise specified



## INTERNAL ROSAN-TYPE BROACHES

Slaters Tools' Rosan-type Broaches are designed to produce serrations for SAE standard AS1300 ports (PS10035). Most standard Rosan-type Rotary/Wobble Broach Tools are in stock and available for immediate delivery. Rosan-type Broaches can be produced in special sizes and custom lengths. They can also be made in a variety of materials and coatings. Vent holes, quantity discounts and re-sharpening services are available. **For all available broach options, see page 13.**



### .500" SHANK DIAMETER | 1.75" OVERALL LENGTH

SAE Port Reference #	To Produce Serrations for Port #	# of Teeth	B	Order #
AS1300-02	PS10035-02	24	.411	513-02
AS1300-03	PS10035-03	26	.481	513-03
AS1300-04	PS10035-04	30	.527	513-04
AS1300-05	PS10035-05	36	.638	513-05
AS1300-06	PS10035-06	36	.713	513-06
AS1300-08	PS10035-08	40	.829	513-08
AS1300-10	PS10035-10	38	1.055	513-10
AS1300-12	PS10035-12	40	1.185	513-12
AS1300-14	PS10035-14	50	1.357	513-14
AS1300-16	PS10035-16	36	1.474	513-16

### .750" SHANK DIAMETER | 2.75" OVERALL LENGTH

SAE Port Reference #	To Produce Serrations for Port #	# of Teeth	B	Order #
AS1300-02	PS10035-02	24	.411	713-02
AS1300-03	PS10035-03	26	.481	713-03
AS1300-04	PS10035-04	30	.527	713-04
AS1300-05	PS10035-05	36	.638	713-05
AS1300-06	PS10035-06	36	.713	713-06
AS1300-08	PS10035-08	40	.829	713-08
AS1300-10	PS10035-10	38	1.055	713-10
AS1300-12	PS10035-12	40	1.185	713-12
AS1300-14	PS10035-14	50	1.357	713-14
AS1300-16	PS10035-16	36	1.474	713-16
AS1300-20	PS10035-20	56	1.798	713-20
AS1300-24	PS10035-24	81	2.048	713-24

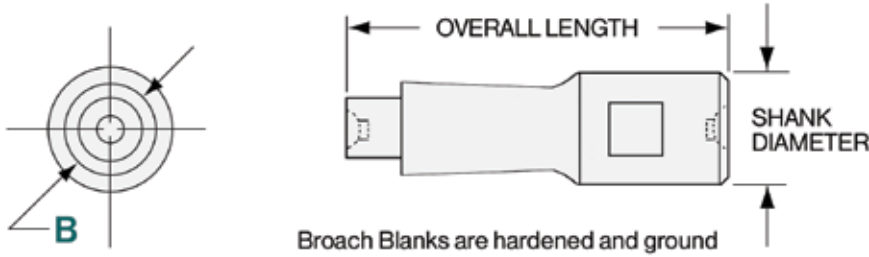
NOTE: All dimensions in inches unless otherwise specified





## INTERNAL BROACH BLANKS

Slater Tools' Internal Rotary Broach Blanks are hardened and ground with a false center, allowing for easy use. Internal Rotary Broach Blanks are available in different materials and are stock items ready for immediate delivery.



### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH

Standard Size (in)	B	Order #
13/64"	.220	311-200
15/64"	.250	311-230
19/64"	.320	311-300
3/8"	.400	311-380
29/64"	.470	311-450
33/64"	.540	311-520
19/32"	.610	311-590

### .500" SHANK DIAMETER | 1.75" OVERALL LENGTH

Standard Size (in)	B	Order #
19/64"	.320	511-300
3/8"	.400	511-380
29/64"	.470	511-450
33/64"	.540	511-520
19/32"	.610	511-590
21/32"	.680	511-660
47/64"	.750	511-730
13/16"	.830	511-810
29/32"	.920	511-900
1"	1.020	511-1.000
1-3/64"	1.060	511-1.040
1-3/32"	1.110	511-1.090

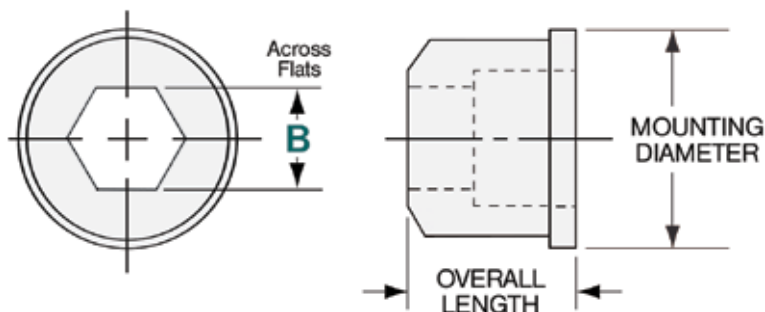
### .750" SHANK DIAMETER | 2.75" OVERALL LENGTH

Standard Size (in)	B	Order #
19/32"	.610	711-590
21/32"	.680	711-660
47/64"	.750	711-730
13/16"	.830	711-810
29/32"	.920	711-900
1"	1.020	711-1.000
1-3/64"	1.060	711-1.040
1-7/64"	1.120	711-1.100
1-3/16"	1.210	711-1.190
1-21/64"	1.350	711-1.330
1-15/32"	1.490	711-1.470
1-1/2"	1.520	711-1.500
1-5/8"	1.650	711-1.630
1-11/16"	1.710	711-1.690
1-3/4"	1.770	711-1.750
1-7/8"	1.900	711-1.880



## EXTERNAL HEXAGON BROACHES

External Hexagon Rotary Broaches are offered in standard sizes and can also be made per your print. Various materials, coatings and re-sharpening are also offered on any of Slater Tools' External Rotary Broaches. **For all available broach options, see page 21.**



### .9448" MOUNTING DIAMETER | .75" OVERALL LENGTH

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/4"	.244	1661-244	6.00mm	.228	1661-228
9/32"	.275	1661-275	7.00mm	.267	1661-267
5/16"	.305	1661-305	8.00mm	.306	1661-306
11/32"	.336	1661-336	9.00mm	.346	1661-346

### 1.5748" MOUNTING DIAMETER | 1.00" OVERALL LENGTH

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/4"	.244	1462-244	6.00mm	.228	1462-228
9/32"	.275	1462-275	7.00mm	.267	1462-267
5/16"	.305	1462-305	8.00mm	.306	1462-306
11/32"	.336	1462-336	9.00mm	.346	1462-346
3/8"	.367	1462-367	10.00mm	.385	1462-385
13/32"	.397	1462-397	11.00mm	.424	1462-424
7/16"	.428	1462-428	12.00mm	.462	1462-462
15/32"	.463	1462-463	13.00mm	.501	1462-501
1/2"	.489	1462-489	14.00mm	.540	1462-540
17/32"	.520	1462-520	15.00mm	.580	1462-580
9/16"	.551	1462-551	16.00mm	.619	1462-619
19/32"	.582	1462-582	17.00mm	.659	1462-659
5/8"	.612	1462-612	18.00mm	.698	1462-698
21/32"	.643	1462-643	19.00mm	.737	1462-737
11/16"	.674	1462-674			
23/32"	.705	1462-705			
3/4"	.736	1462-736			

### 2.3125" MOUNTING DIAMETER | 1.25" OVERALL LENGTH

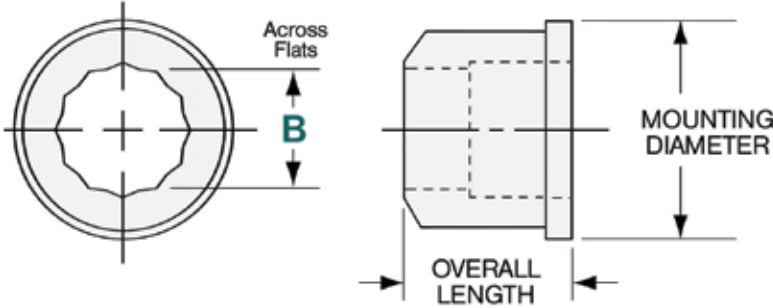
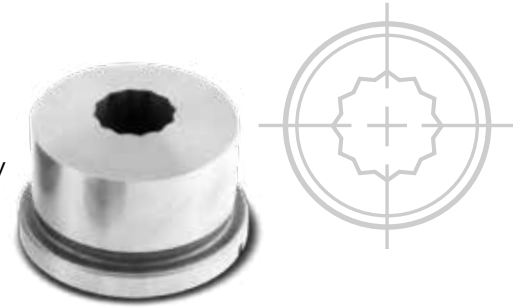
Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
11/16"	.674	1463-674	18.00mm	.698	1463-698
23/32"	.705	1463-705	19.00mm	.737	1463-737
3/4"	.736	1463-736	20.00mm	.775	1463-775
25/32"	.767	1463-767	21.00mm	.814	1463-814
13/16"	.798	1463-798	22.00mm	.853	1463-853
27/32"	.829	1463-829	23.00mm	.893	1463-893
7/8"	.860	1463-860	24.00mm	.932	1463-932
29/32"	.891	1463-891	25.00mm	.970	1463-970
15/16"	.922	1463-922	26.00mm	1.009	1463-1.009
31/32"	.952	1463-952			
1"	.982	1463-982			

EXTERNAL  
HEXAGON BROACHES



## EXTERNAL DOUBLE HEX BROACHES

External Double Hexagon Rotary Broaches, commonly known as 12-point Broaches, are offered in standard sizes or custom made per your print. Various materials, coatings and re-sharpening are available on any of Slater Tools' External Rotary Broaches. **For all available broach options, see page 21.**



### .9448" MOUNTING DIAMETER | .75" OVERALL LENGTH

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/4"	.244	1621-244	6.00mm	.228	1621-228
9/32"	.275	1621-275	7.00mm	.267	1621-267
5/16"	.305	1621-305	8.00mm	.306	1621-306
11/32"	.337	1621-337	9.00mm	.346	1621-346

### 1.5748" MOUNTING DIAMETER | 1.00" OVERALL LENGTH

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/4"	.244	1422-244	6.00mm	.228	1422-228
9/32"	.275	1422-275	7.00mm	.267	1422-267
5/16"	.305	1422-305	8.00mm	.306	1422-306
11/32"	.337	1422-337	9.00mm	.346	1422-346
3/8"	.368	1422-368	10.00mm	.385	1422-385
13/32"	.399	1422-399	11.00mm	.424	1422-424
7/16"	.429	1422-429	12.00mm	.462	1422-462
15/32"	.462	1422-462	13.00mm	.501	1422-501
1/2"	.493	1422-493	14.00mm	.540	1422-540
17/32"	.524	1422-524	15.00mm	.580	1422-580
9/16"	.555	1422-555	16.00mm	.619	1422-619
19/32"	.587	1422-587	17.00mm	.659	1422-659
5/8"	.618	1422-618	18.00mm	.698	1422-698
21/32"	.649	1422-649	19.00mm	.737	1422-737
11/16"	.681	1422-681			
23/32"	.712	1422-712			
3/4"	.743	1422-743			

### 2.3125" MOUNTING DIAMETER | 1.25" OVERALL LENGTH

Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
11/16"	.681	1423-681	18.00mm	.698	1423-698
23/32"	.712	1423-712	19.00mm	.737	1423-737
3/4"	.743	1423-743	20.00mm	.775	1423-775
25/32"	.774	1423-774	21.00mm	.814	1423-814
13/16"	.805	1423-805	22.00mm	.853	1423-853
27/32"	.835	1423-835	23.00mm	.893	1423-893
7/8"	.866	1423-866	24.00mm	.932	1423-932
29/32"	.897	1423-897	25.00mm	.970	1423-970
15/16"	.929	1423-929	26.00mm	1.009	1423-1.009
31/32"	.960	1423-960			
1"	.991	1423-991			

NOTE: All dimensions in inches unless otherwise specified



## EXTERNAL SERRATION BROACHES

These precision ground External Serration Broaches are designed to be used individually or as mating parts with Slaters Tools' Internal Serration Broaches (see page 12). When mating the internal with the external serration, there will be a .0028" per side tooth clearance. Internal and External Serration Rotary Broaches can be produced with a variety of custom options.

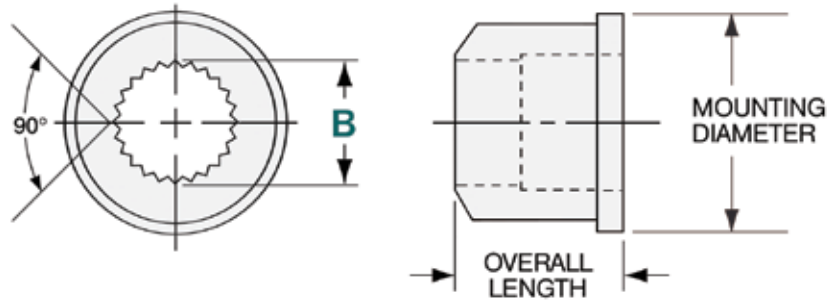


### .9448" MOUNTING DIAMETER | 1.00" OVERALL LENGTH

Standard Size (in)	# OF TEETH	B	Order #
5/16"	11	.3085	1831-3085
	15	.3085	1851-3085
	19	.3085	1871-3085
11/32"	12	.3400	1831-3400
	16	.3400	1851-3400
	21	.3400	1871-3400
3/8"	14	.3710	1831-3710
	18	.3710	1851-3710
	23	.3710	1871-3710

### 1.5748" MOUNTING DIAMETER | 1.50" OVERALL LENGTH

Standard Size (in)	# OF TEETH	B	Order #
11/32"	12	.3400	1832-3400
	16	.3400	1852-3400
	21	.3400	1872-3400
3/8"	14	.3710	1832-3710
	18	.3710	1852-3710
	23	.3710	1872-3710
13/32"	15	.4020	1832-4020
	19	.4020	1852-4020
	24	.4020	1872-4020
7/16"	16	.4335	1832-4335
	21	.4335	1852-4335
	26	.4335	1872-4335
15/32"	17	.4650	1832-4650
	22	.4650	1852-4650
	28	.4650	1872-4650
1/2"	18	.4960	1832-4960
	24	.4960	1852-4960
	30	.4960	1872-4960
9/16"	20	.5585	1832-5585
	27	.5585	1852-5585
	34	.5585	1872-5585
5/8"	23	.6210	1832-6210
	30	.6210	1852-6210
	38	.6210	1872-6210
21/32"	24	.6520	1832-6520
	31	.6520	1852-6520
	39	.6520	1872-6520
11/16"	25	.6835	1832-6835
	33	.6835	1852-6835
	41	.6835	1872-6835
3/4"	27	.7460	1832-7460
	36	.7460	1852-7460
	45	.7460	1872-7460



**2.3125" MOUNTING DIAMETER | 1.75" OVERALL LENGTH**

Standard Size (in)	# OF TEETH	B	Order #
3/4"	27	.7460	1833-7460
	36	.7460	1853-7460
	45	.7460	1873-7460
13/16"	29	.8085	1833-8085
	39	.8085	1853-8085
	49	.8085	1873-8085
7/8"	32	.8710	1833-8710
	42	.8710	1853-8710
	53	.8710	1873-8710
15/16"	34	.9335	1833-9335
	45	.9335	1853-9335
	56	.9335	1873-9335
1"	36	.9960	1833-9960
	48	.9960	1853-9960
	60	.9960	1873-9960

NOTE: All dimensions in inches unless otherwise specified

**AVAILABLE EXTERNAL BROACH OPTIONS:**

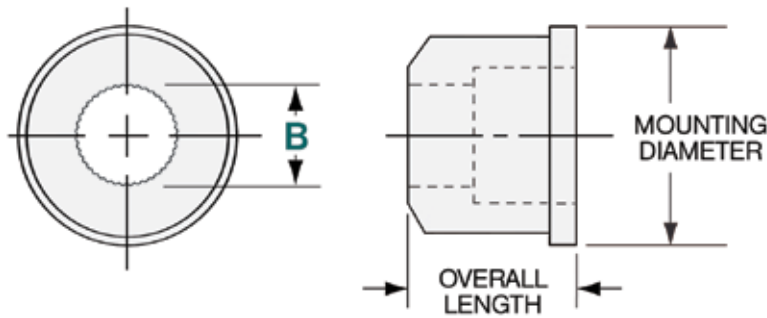
- Coatings: TiN, TiCN, TiAlN
- Materials: M2, PM4 High Speed Tool Steels
- Different overall lengths
- Custom major and minor dimensions
- Any desired number of teeth
- Custom tooth profiles
- Corner radius
- MICRO forms
- Form can be aligned with slot (for holding orientation)
- Re-sharpening
- Quantity discounts at 5, 10, 30, 50, 100, 150, 200 pieces



## EXTERNAL J500 BROACHES

Slaters Tools offers a variety of External J500 Rotary Broach Tools available for quick delivery. Sizes conform to SAE standards and are designed for maximum tool life. J500 Rotary Broaches can be produced in special sizes and custom lengths. They can also be made in a variety of materials and coatings. Quantity discounts and re-sharpening are available.

**For all available broach options, see page 21.**



### .9448" MOUNTING DIAMETER | .75" OVERALL LENGTH

Standard Size (in)	# OF TEETH	B	Order #
1/8"	36	.1240	1611-1250
3/16"	36	.1860	1611-1875
1/4"	36	.2490	1611-2500
5/16"	36	.3110	1611-3125

### 1.5748" MOUNTING DIAMETER | 1.00" OVERALL LENGTH

Standard Size (in)	# OF TEETH	B	Order #
1/8"	36	.1240	1412-1250
3/16"	36	.1860	1412-1875
1/4"	36	.2490	1412-2500
5/16"	36	.3110	1412-3125
3/8"	36	.3740	1412-3750
1/2"	36	.4990	1412-5000

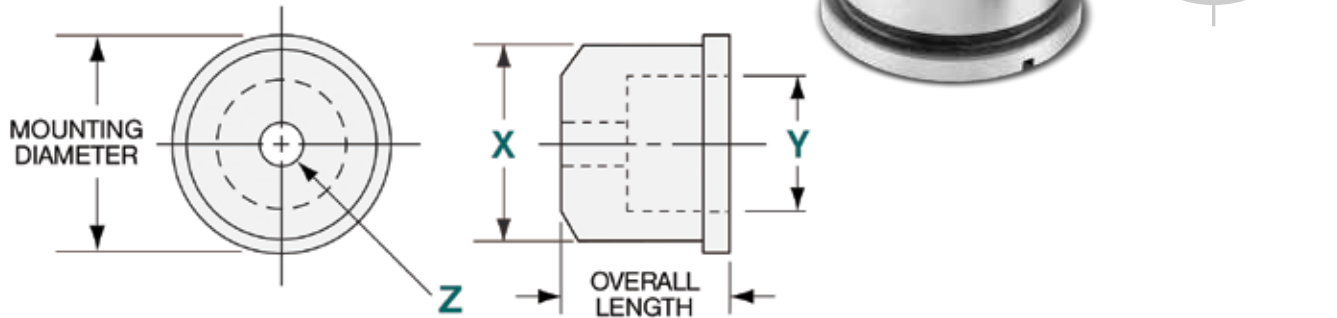
### 2.3125" MOUNTING DIAMETER | 1.25" OVERALL LENGTH

Standard Size (in)	# OF TEETH	B	Order #
3/8"	36	.3740	1413-3750
1/2"	36	.4990	1413-5000
5/8"	36	.6240	1413-6250
3/4"	48	.7490	1413-7500
7/8"	48	.8740	1413-8750
1"	48	.9990	1413-1000



## EXTERNAL BROACH BLANKS

Available from stock and wire-ready, these External Rotary Broach Blanks are made from high-quality M2 high-speed tool steel. Slater Tools also offers Rotary Broach Blanks made from PM4.



### .9448" MOUNTING DIAMETER

OVERALL LENGTH	X	Y	Z	Order #
.50	.75	.44	.09	1001-2
.62	.75	.44	.09	1001-4
.75	.75	.44	.09	1001-6
1.00	.75	.44	.09	1001-8

### 1.5748" MOUNTING DIAMETER

OVERALL LENGTH	X	Y	Z	Order #
.75	1.40	.75	.12	1002-2
1.00	1.40	.75	.12	1002-4
1.25	1.40	.75	.12	1002-6
1.50	1.40	.75	.12	1002-8

### 2.3125" MOUNTING DIAMETER

OVERALL LENGTH	X	Y	Z	Order #
1.00	2.06	1.38	.50	1003-2
1.25	2.06	1.38	.50	1003-4
1.50	2.06	1.38	.50	1003-6
1.75	2.06	1.38	.50	1003-8

NOTE: All dimensions in inches unless otherwise specified



## CUSTOM INTERNAL AND EXTERNAL ROTARY BROACHES

### MADE BASED ON YOUR PRINT AND TO YOUR SPECIFICATIONS

Because Slater Tools designs and manufactures everything in-house, we are able to offer extremely quick turn-around time for all special forms. Any internal or external shape can be produced to suit your specific application. Custom broaches can also be made to ANSI and SAE specifications. Our most popular special form broaches include double D, involutes, keyways, serrations, six lobe (hexalobular), Rosan-type and splines. Custom broaches can be produced with a variety of available broach options.



### AVAILABLE BROACH OPTIONS:

- Coatings: TiN, TiCN, TiAlN
- Materials: M2, PM4, T15 High Speed Tool Steels
- Different overall lengths
- Custom cut lengths (internal broaches)
- Custom dimensions
- MICRO forms
- Corner radius
- Spun ground diameter on broach corners (internal broaches)
- Single or double vent holes (internal broaches)
- Form can be aligned with flat on shank or slot (for holding orientation)
- Re-sharpening
- Quantity discounts at 5, 10, 30, 50, 100, 150, 200 pieces

### CUSTOM BROACH ORDER PROCESS

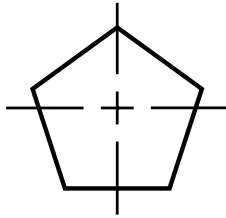
- Please submit a portion of your print showing the area to be broached.
- You will receive a quote along with technical recommendations to ensure successful broaching.
- Once the order is placed, we will design your tool and submit a drawing for your approval.
- Manufacturing begins upon approval and takes only 5-10 business days.



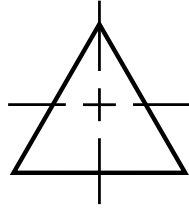




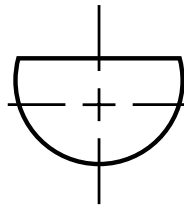
**POPULAR CUSTOM SHAPES INCLUDE:**



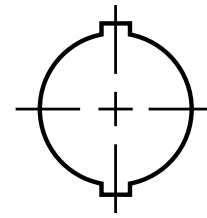
**PENTAGON**



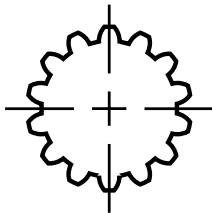
**TRIANGLE**



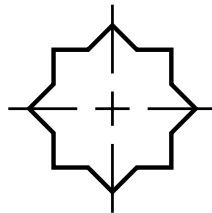
**D SHAPE**



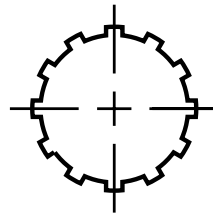
**KEYWAY**



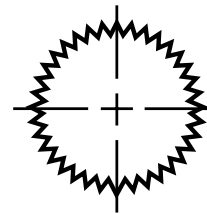
**INVOLUTE**



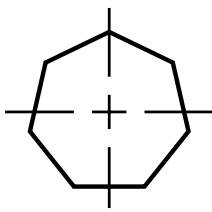
**DOUBLE SQUARE**



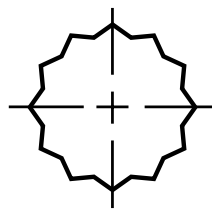
**SPLINE**



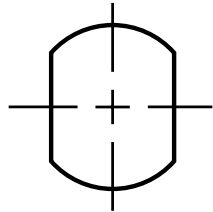
**SERRATION/KNURL**



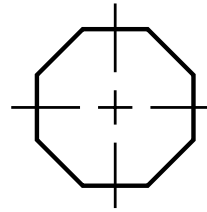
**HEPTAGON**



**DOUBLE HEX**



**DOUBLE D**



**OCTAGON**

**MICRO INTERNAL AND EXTERNAL BROACHES**

Slater Tools' Micro-sized Internal and External Broaches are a cost effective and efficient way to make bone screws and other micro fasteners. Micro forms as small as .028" can be successfully rotary broached with Slater Tools' Micro Broaches. External Micro Broaches can be produced to fit onto the Adjustable and Adjustment-Free Internal Tool Holders which greatly reduces manufacturing costs. Using the same tool holder, customers are able to produce both internal/ID and external/OD forms. External forms as small as .056" and up to .225" can be produced to fit the internal holders.





## INTERNAL ADJUSTMENT-FREE ROTARY BROACH TOOL HOLDERS

Slaters Tools is the leading manufacturer of high quality, compact Rotary Broaching Tool Holders designed specifically for Swiss type and other precision machines.

The Adjustment-Free Rotary Broach Tool Holder reduces set-up time and helps eliminate operator error in any CNC mill or lathe. Simply set the Adjustment-Free Tool Holder into your machine and you are ready to rotary broach.



### SMALL SWISS TYPE TOOL HOLDER

**.315" TOOL BORE | BROACHING CAPACITY .028-.375" | 2.00" LONG STRAIGHT SHANK**

Straight Shank (SD)	TB	TL (REQ)	BD	BL	L	Order #
.625"	.315	1.25	1.06	1.72	2.40	0600-1
.750"	.315	1.25	1.06	1.72	2.40	0600-2
1.00"	.315	1.25	1.06	1.72	2.40	0600-3
12mm	.315	1.25	1.06	1.72	2.40	0600-12
16mm	.315	1.25	1.06	1.72	2.40	0600-16
20mm	.315	1.25	1.06	1.72	2.40	0600-20
22mm	.315	1.25	1.06	1.72	2.40	0600-22
25mm	.315	1.25	1.06	1.72	2.40	0600-25

### SMALL SWISS TYPE LONG TOOL HOLDER

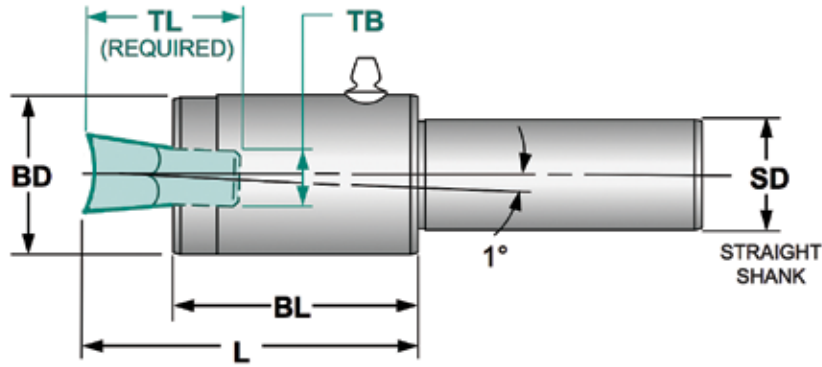
**.315" TOOL BORE | BROACHING CAPACITY .028-.375" | 4.00" LONG STRAIGHT SHANK**

Straight Shank (SD)	TB	TL (REQ)	BD	BL	L	Order #
.750"	.315	1.25	1.06	1.72	2.40	0600-2L
1.00"	.315	1.25	1.06	1.72	2.40	0600-3L
20mm	.315	1.25	1.06	1.72	2.40	0600-20L
22mm	.315	1.25	1.06	1.72	2.40	0600-22L
25mm	.315	1.25	1.06	1.72	2.40	0600-25L

### INTERNAL ADJUSTMENT-FREE TOOL HOLDER BENEFITS:

- No center-indicating required
- Industry-best tool clearance eliminates tool interference
- High-durability three piece bearing configuration
- Conveniently offered in different shank sizes
- Eliminates secondary operations
- Capable of producing small external forms

INTERNAL ADJUSTMENT-FREE ROTARY BROACH TOOL HOLDERS



### LARGE SWISS TYPE TOOL HOLDER

**.500" TOOL BORE | BROACHING CAPACITY .050-.500" | 2.00" LONG STRAIGHT SHANK**

Straight Shank (SD)	TB	TL (REQ)	BD	BL	L	Order #
.625"	.500	1.75	1.24	2.14	3.19	0700-1
.750"	.500	1.75	1.24	2.14	3.19	0700-2
1.00"	.500	1.75	1.24	2.14	3.19	0700-3
12mm	.500	1.75	1.24	2.14	3.19	0700-12
16mm	.500	1.75	1.24	2.14	3.19	0700-16
20mm	.500	1.75	1.24	2.14	3.19	0700-20
22mm	.500	1.75	1.24	2.14	3.19	0700-22
25mm	.500	1.75	1.24	2.14	3.19	0700-25

### STANDARD TYPE TOOL HOLDER

**.500" TOOL BORE | BROACHING CAPACITY .050-.750" | 3.00" LONG STRAIGHT SHANK**

Straight Shank (SD)	TB	TL (REQ)	BD	BL	L	Order #
.750"	.500	1.75	1.50	2.33	3.37	3700-1
1.00"	.500	1.75	1.50	2.33	3.37	3700-2
1.25"	.500	1.75	1.50	2.33	3.37	3700-3
1.50"	.500	1.75	1.50	2.33	3.37	3700-4
25mm	.500	1.75	1.50	2.33	3.37	3700-25
32mm	.500	1.75	1.50	2.33	3.37	3700-32

NOTE: All dimensions in inches unless otherwise specified

† Broaching capacities are application specific



## INTERNAL ADJUSTABLE ROTARY BROACH TOOL HOLDERS

Slater Tools' Internal Adjustable Tool Holders are known to be the industry's best for reliability and longevity. The ability to be adjusted allows this Rotary Broach Tool Holder to be used on any CNC, Swiss, screw, milling or other turning machine. The tool holder can be adjusted to compensate for variations in machine alignment. This holder also can be used with any overall length broach, which is useful in applications where you may need to reach through a deep counter bore.



### SMALL SWISS TYPE TOOL HOLDER

**.315" TOOL BORE | BROACHING CAPACITY .028-.375"**

Straight Shank (SD)	TB	TL (MAX)	BD	BL	BW	BH	Order #
.625"	.315	2.00	1.03	1.75	1.12	2.28	7600-1
.750"	.315	2.00	1.03	1.75	1.12	2.28	7600-2
12mm	.315	2.00	1.03	1.75	1.12	2.28	7600-12
16mm	.315	2.00	1.03	1.75	1.12	2.28	7600-16

Morse Taper (MT)	TB	TL (MAX)	BD	BL	BW	BH	Order #
#1	.315	2.00	1.03	1.75	1.12	2.28	7600-51
#2	.315	2.00	1.03	1.75	1.12	2.28	7600-52

### LARGE SWISS TYPE TOOL HOLDER

**.500" TOOL BORE | BROACHING CAPACITY .050-.500"**

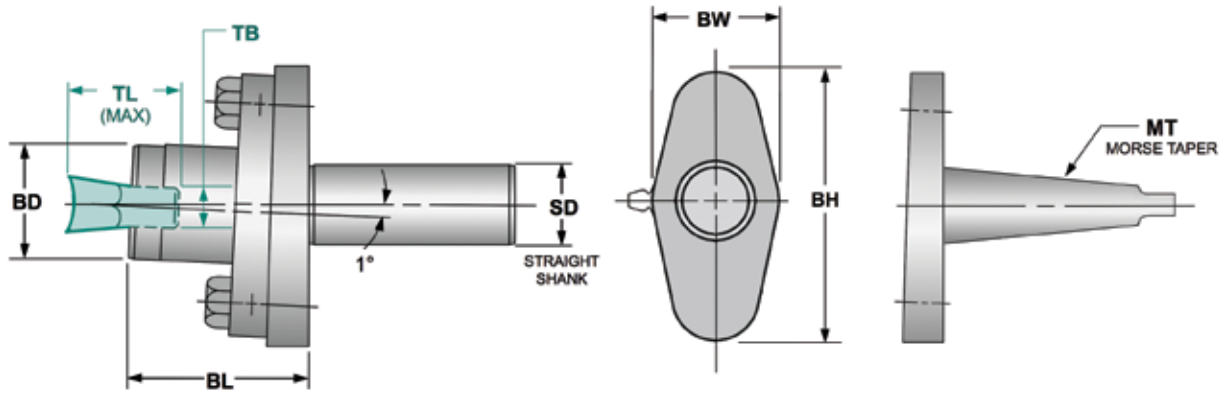
Straight Shank (SD)	TB	TL (MAX)	BD	BL	BW	BH	Order #
.625"	.500	2.00	1.19	2.16	1.25	2.56	1760-1
.750"	.500	2.00	1.19	2.16	1.25	2.56	1760-2
16mm	.500	2.00	1.19	2.16	1.25	2.56	1760-16

Morse Taper (MT)	TB	TL (MAX)	BD	BL	BW	BH	Order #
#1	.500	2.00	1.19	2.16	1.25	2.56	1760-51
#2	.500	2.00	1.19	2.16	1.25	2.56	1760-52

### INTERNAL ADJUSTABLE TOOL HOLDER BENEFITS:

- Adjustable to compensate for machine alignment/variations
- Flexibility for use of different overall length broaches
- High-durability three piece bearing configuration
- Conveniently offered in different shank sizes
- Industry-best broaching capacity
- Eliminates secondary operations
- Capable of producing small external forms

INTERNAL ADJUSTABLE ROTARY BROACH TOOL HOLDERS



### STANDARD TYPE TOOL HOLDER

**.500" TOOL BORE | BROACHING CAPACITY .050-.750"**

Straight Shank (SD)	TB	TL (MAX)	BD	BL	BW	BH	Order #
.750"	.500	3.00	1.44	2.31	1.50	3.25	3760-1
1.00"	.500	3.00	1.44	2.31	1.50	3.25	3760-2
1.25"	.500	3.00	1.44	2.31	1.50	3.25	3760-3
1.50"	.500	3.00	1.44	2.31	1.50	3.25	3760-4
22mm	.500	3.00	1.44	2.31	1.50	3.25	3760-22
25mm	.500	3.00	1.44	2.31	1.50	3.25	3760-25

Morse Taper (MT)	TB	TL (MAX)	BD	BL	BW	BH	Order #
#2	.500	3.00	1.44	2.31	1.50	3.25	3760-52
#3	.500	3.00	1.44	2.31	1.50	3.25	3760-53
#4	.500	3.00	1.44	2.31	1.50	3.25	3760-54

### HEAVY DUTY TOOL HOLDER

**.750" TOOL BORE | BROACHING CAPACITY .625-2.00"**

Straight Shank (SD)	TB	TL (MAX)	BD	BL	BW	BH	Order #
1.00"	.750	3.88	2.62	3.22	2.62	4.38	7760-1
1.25"	.750	3.88	2.62	3.22	2.62	4.38	7760-2
1.50"	.750	3.88	2.62	3.22	2.62	4.38	7760-3
1.75"	.750	3.88	2.62	3.22	2.62	4.38	7760-4
2.00"	.750	3.88	2.62	3.22	2.62	4.38	7760-5

Morse Taper (MT)	TB	TL (MAX)	BD	BL	BW	BH	Order #
#3	.750	3.88	2.62	3.22	2.62	4.38	7760-53
#4	.750	3.88	2.62	3.22	2.62	4.38	7760-54
#5	.750	3.88	2.62	3.22	2.62	4.38	7760-55

NOTE: All dimensions in inches unless otherwise specified

† Broaching capacities are application specific



# EXTERNAL ADJUSTABLE ROTARY BROACH TOOL HOLDERS

Rotary broaching has become a popular method of producing external/OD forms. Most external shapes can be produced up to 1.80 inches in diameter using Slaters Tools' External Adjustable Rotary Broach Tool Holders. These tool holders can be used on any CNC lathe, mill, Swiss, screw, machining center or other turning machine and can be adjusted to compensate for variations in machine alignment.



## SWISS TYPE TOOL HOLDER

**.9448" MOUNTING DIAMETER | BROACHING CAPACITY .125-.250"**

Straight Shank (SD)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
.625"	.9448	1.00	1.62	2.16	1.12	2.28	.56	.31	7700-1
.750"	.9448	1.00	1.62	2.16	1.12	2.28	.56	.31	7700-2
12mm	.9448	1.00	1.62	2.16	1.12	2.28	.56	.31	7700-12
16mm	.9448	1.00	1.62	2.16	1.12	2.28	.56	.31	7700-16

Morse Taper (MT)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
#1	.9448	1.00	1.62	2.16	1.12	2.28	.56	.31	7700-51
#2	.9448	1.00	1.62	2.16	1.12	2.28	.56	.31	7700-52

## LARGE SWISS TYPE TOOL HOLDER

**.9448" MOUNTING DIAMETER | BROACHING CAPACITY .125-.375"**

Straight Shank (SD)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
.625"	.9448	1.00	1.62	2.47	1.25	2.56	.69	.50	1770-1
.750"	.9448	1.00	1.62	2.47	1.25	2.56	.69	.50	1770-2
16mm	.9448	1.00	1.62	2.47	1.25	2.56	.69	.50	1770-16

Morse Taper (MT)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
#1	.9448	1.00	1.62	2.47	1.25	2.56	.69	.50	1770-51
#2	.9448	1.00	1.62	2.47	1.25	2.56	.69	.50	1770-52

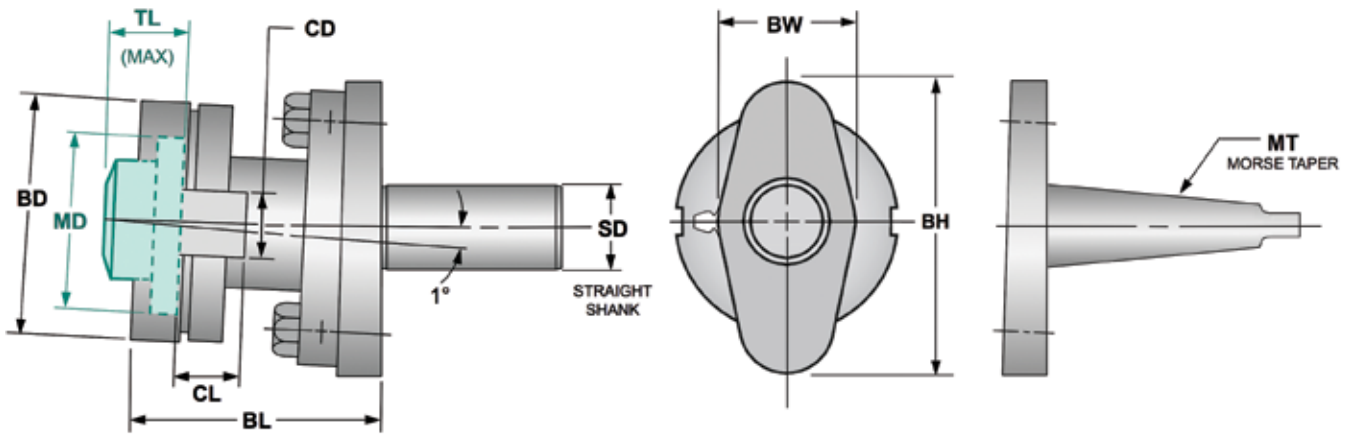
## STANDARD TYPE TOOL HOLDER

**1.5748" MOUNTING DIAMETER | BROACHING CAPACITY .250-.625"**

Straight Shank (SD)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
.750"	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-1
1.00"	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-2
1.25"	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-3
1.50"	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-4
22mm	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-22
25mm	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-25

Morse Taper (MT)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
#2	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-52
#3	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-53
#4	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-54

EXTERNAL ADJUSTABLE ROTARY BROACH TOOL HOLDERS



### HEAVY DUTY TOOL HOLDER

**1.5748" MOUNTING DIAMETER | BROACHING CAPACITY .625-1.00"**

Straight Shank (SD)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
1.00"	1.5748	1.50	2.62	3.90	2.62	4.38	1.25	.75	7770-1
1.25"	1.5748	1.50	2.62	3.90	2.62	4.38	1.25	.75	7770-2
1.50"	1.5748	1.50	2.62	3.90	2.62	4.38	1.25	.75	7770-3
1.75"	1.5748	1.50	2.62	3.90	2.62	4.38	1.25	.75	7770-4
2.00"	1.5748	1.50	2.62	3.90	2.62	4.38	1.25	.75	7770-5

Morse Taper (MT)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
#3	1.5748	1.50	2.62	3.90	2.62	4.38	1.25	.75	7770-53
#4	1.5748	1.50	2.62	3.90	2.62	4.38	1.25	.75	7770-54
#5	1.5748	1.50	2.62	3.90	2.62	4.38	1.25	.75	7770-55

### EXTRA LARGE FORM TOOL HOLDER

**2.3125" MOUNTING DIAMETER | BROACHING CAPACITY .875-1.80"**

Straight Shank (SD)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
1.00"	2.3125	1.75	3.12	3.95	2.62	4.38	1.25	.75	7773-1
1.25"	2.3125	1.75	3.12	3.95	2.62	4.38	1.25	.75	7773-2
1.50"	2.3125	1.75	3.12	3.95	2.62	4.38	1.25	.75	7773-3
1.75"	2.3125	1.75	3.12	3.95	2.62	4.38	1.25	.75	7773-4
2.00"	2.3125	1.75	3.12	3.95	2.62	4.38	1.25	.75	7773-5

Morse Taper (MT)	MD	TL (MAX)	BD	BL	BW	BH	CL	CD	Order #
#3	2.3125	1.75	3.12	3.95	2.62	4.38	1.25	.75	7773-53
#4	2.3125	1.75	3.12	3.95	2.62	4.38	1.25	.75	7773-54
#5	2.3125	1.75	3.12	3.95	2.62	4.38	1.25	.75	7773-55

NOTE: All dimensions in inches unless otherwise specified  
 † Broaching capacities are application specific

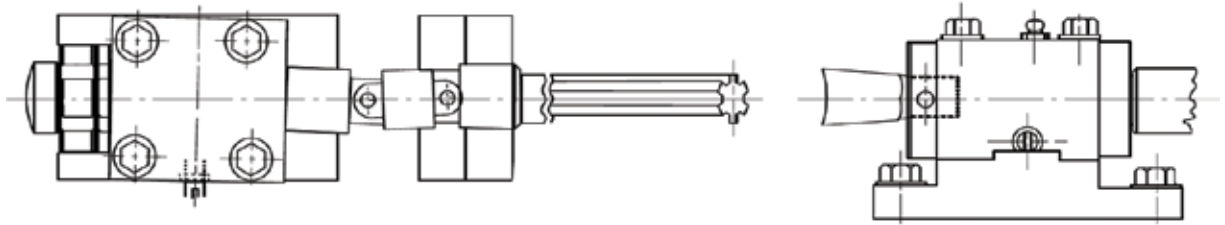
### EXTERNAL ADJUSTABLE TOOL HOLDER BENEFITS:

- Adjustable to compensate for machine alignment/variations
- Flexibility for use of different overall length broaches
- High-durability three piece bearing configuration
- Conveniently offered in different shank sizes
- Eliminates secondary operations
- Industry-best broaching capacity



## PARTS & ACCESSORIES

Slater Tools provides a variety of parts and accessories for all of our Rotary Broach Tools. We have developed these accessories to enhance and extend the life of our tooling and help our customers get the most out of each broaching application.



### SCREW MACHINE SHAFT-DRIVEN ATTACHMENTS

Slater Tools' Shaft-Driven Broaching Attachment can be used on any multi-spindle screw machine as an alternative to our Rotary Broach Tool Holders. Benefits of using this attachment include increased broach tool life, deeper broaching capabilities, and elimination of spiraling and witness marks. It can be used in any position with a 1:1 ratio capability. Slater Tools offers a variety of attachment sizes for internal and external broaching. Please call or email us with your screw machine make and model to receive a quote.



### GO / NO-GO GAGES

Slater Tools manufactures inspection gages for your specific application. Use our GO and NO-GO Gages to inspect your parts for machining process variations such as form size, twist, tool wear, etc. Gages can be made for any shape either as full form composite, sector or progressive forms. Gages are produced from hardened M2 tool steel.



### ROTARY BROACHING ORIENTATION DOGS

The Rotary Broaching Orientation Dog is used for orientation or alignment of the broach to the workpiece in milling applications. This tool holds the spindle of the Rotary Broach Tool Holder stationary against the stop rod as the tool holder body rotates. Take control of positioning with this unique fixture.

To order a Rotary Broaching Orientation Dog, please call or email with your tool holder part number. Visit [www.slatertools.com](http://www.slatertools.com) to view the Orientation Dog operation video.





## REBUILD/REPLACEMENT PARTS

The ability to replace parts is an important feature of our tool holders, allowing Slater Tools customers to increase longevity and enjoy our products for years to come. Replacement parts are available for all of our Rotary Broach Tool Holders from stock and for immediate delivery. Please visit [www.slatertools.com](http://www.slatertools.com) to view tool holder part breakdowns. Email or call with your tool holder part number to get a quote on the proper replacement parts.

- Rotary Broach Tool Holder's main components can be purchased individually: **spindle, body, bearings, or adaptor (shank)**
- **Sub-Assemblies** consist of the tool holder spindle, body, and bearings
- **Bearing Rebuild Kits** include ball bearing, needle bearing, thrust bearing, snap ring and space shims
- **Setting plugs** used for centering Internal and External Adjustable Rotary Broach Tool Holders are available

If you prefer a skilled technician to evaluate your holder, please see page 39 for details. **Factory repairs** are completed within 48 hours.



## MOBIL 32 GREASE

Mobil 32 grease is a red synthetic grease without graphite that is ideal for use with Slater Tools' Rotary Broach Tool Holders. Greasing your holder protects against wear, providing for longer tool life while enhancing reliability and performance. It is recommended to grease the holder every few hours on a constant run. Grease is also an important part of the rotary broaching process as it helps prevent oxidation of precision tool holder components.

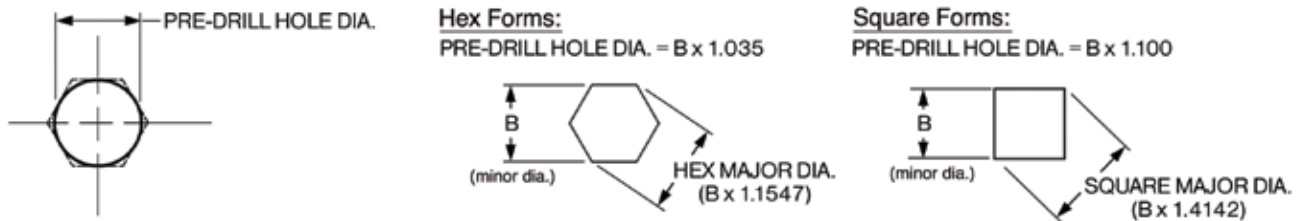


## PART PREPARATION GUIDE

### INTERNAL BROACHING PART PREPARATION

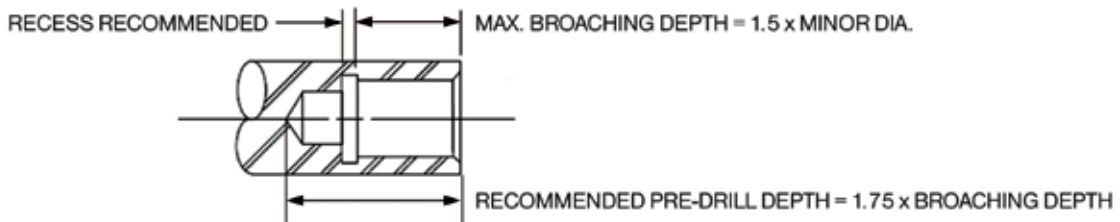
#### Pre-Drill Hole Diameter:

- A pre-drill hole is required for internal broaching.
- The pre-drill hole must be at least equal to the minor diameter of the broach. It is strongly recommended to open the hole diameter larger than the minor diameter.
- See below formulas for recommended pre-drill hole diameters of hex and square forms.



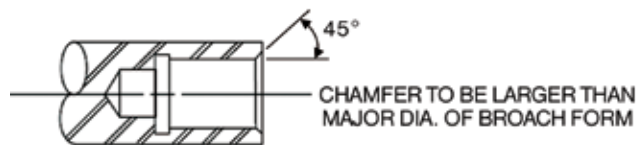
#### Pre-Drill Hole Depth:

- The depth of the pre-drill hole must be greater than the broaching depth to allow for chips to accumulate and avoid excess packing.
- If chips must be removed after broaching, it can be done with a drill or boring tool. A recess at the bottom of the pre-drill will allow the chips to break cleanly. The recess diameter should be larger than the major diameter of the broach.
- It is recommended to have a pre-drill depth of 1.75 x depth of broached area.



#### Lead Chamfer:

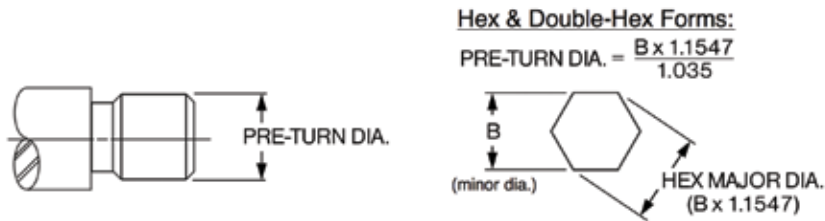
- A 45° lead chamfer must be provided for successful internal rotary broaching, going from the major diameter to the minor diameter of the form.



## EXTERNAL BROACHING PART PREPARATION

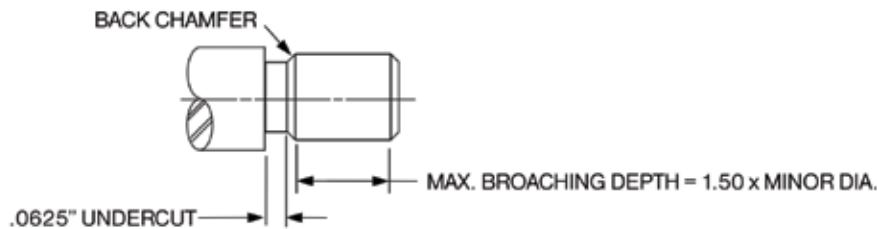
### Pre-Turn Diameter:

- Pre-turning the diameter of the workpiece is required for external broaching.
- The pre-turned diameter must be smaller than the major diameter of the broach.
- It is recommended to turn the workpiece diameter to the smallest allowable diameter so the broach will clear on the major diameter. Allowing for more clearance will reduce the required broaching pressure and increase tool life.
- See below formulas for recommended pre-turn diameters of hex and double-hex forms.



### External Form Depth:

- Maximum recommended broach depth is 1.5 x minor diameter of form.
- A back-chamfer or undercut will allow chips to break cleanly. The undercut should be approximately .0625" wide.



### Lead Chamfer:

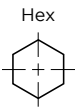





- A 45° lead chamfer must be provided for successful external rotary broaching, going from the minor diameter to the major diameter of the form.





# THRUST LBS. FOR INTERNAL/EXTERNAL BROACHING

## APPROXIMATE AXIAL LOADS (Lbs.) BY BROACH FORMS & MATERIALS

Broach Forms			Aluminum (6061)	F.C. Brass (360)	Cold Rolled (12L14)	Alloys (4140)	S.S. (303SS)	Super Alloys, S.S. 400 Series, Titanium, etc. (17-4PH, 18-8PH...)
TYPE	SHAPE	SIZE						
Internal	Hex 	1/8"	41	48	54	68	81	88
		1/2"	636	742	848	1,060	1,272	1,378
		1"	2,530	2,950	3,371	4,215	5,060	5,480
	Serrations 	3/8"-14 Teeth	166	133	220	190	331	360
		1"-36 Teeth	1,178	1,319	1,571	1,885	2,356	2,552
	Square 	1/8"	90	95	120	150	177	200
		1/2"	1,430	1,670	1,910	2,385	2,623	3,100
		1"	5,700	6,650	7,600	9,500	11,400	12,350
	External	Hex 	1/8"	52	61	69	87	104
1/2"			785	917	1,047	1,310	1,570	1,702
1"			3,142	3,666	4,188	5,236	6,284	6,807
Serrations 		3/8"-14 Teeth	199	232	265	332	397	431
		1"-36 Teeth	1,414	1,650	1,885	2,356	2,827	3,063
Square 		1/8"	114	133	152	190	228	247
		1/2"	1,696	979	2,262	2,827	3,393	3,676
		1"	6,786	7,917	9,048	11,310	13,571	14,703

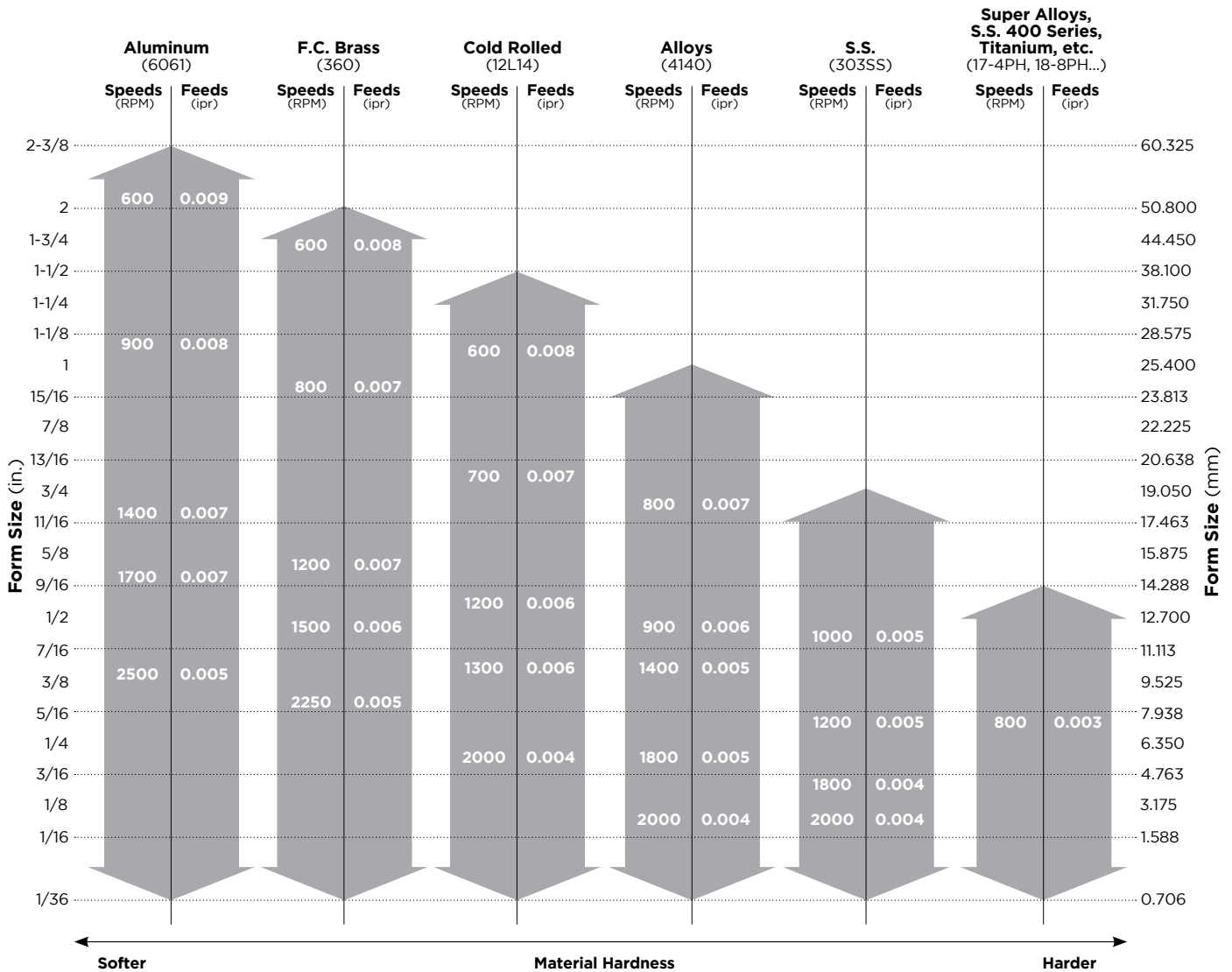


- The table is provided as a reference to compare loads between various forms, sizes and materials.
- Rotary broaching is a cutting process, requiring very little pressure (low axial machine loads).
- Minimal pressure is generated when following Slater Tools' workpiece preparation recommendations. See pages 34 and 35.
- The tool holder takes the brunt of the broaching forces, not the machine.
- Actual loads should be less than the values in the table.



# RECOMMENDED SPEEDS & FEEDS

## COMMON WORKPIECE MATERIALS & FORM SIZES



- This chart is provided as a reference to give starting point recommendations.
- Contact Slater Tools for the best solutions on your specific application.
- Larger external applications may require higher speeds or feeds.
- Slater Tools can also assist you with applications in plastics.
- In all materials, the smaller the broach diameter the lighter the feed should be.
- Lower feed rates give better workpiece finish. However, feed rates under 0.004 ipr can cause chips to lose flowing motion, creating excessive end loading pressure.
- Use rapid traverse when retracting off or out of a part.
- Mimimum and Maximum Conditions:  
Speeds 400-3500 RPM (revolutions per minute)  
Feeds 0.003-0.009 ipr (inches per revolution)



## ADJUSTABLE TOOL HOLDER SET-UP STEPS

**STEP 1** - Measure “L” length of broach and record.

**STEP 2** - Insert setting plug and scribe “L” length measurement.

**STEP 3** - Mount the Rotary Broach Tool Holder in the turret and position the tool holder so that the cutting portion of the Rotary Broach (“L” length scribed line) is as close to the work zero point as possible.

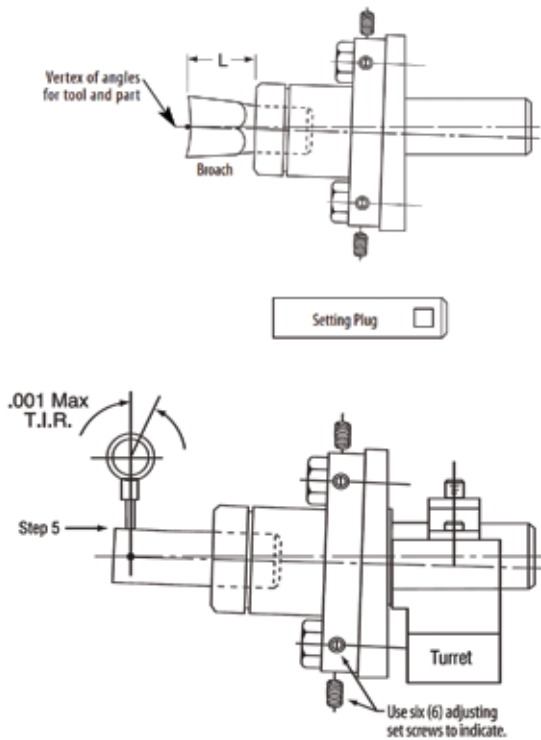
**STEP 4** - Slightly loosen two (2) hex nuts located on flange of Rotary Broach Tool Holder.

**STEP 5** - Mount a magnetic base dial indicator on the chuck and place needle on scribed “L” line. Using six (6) adjusting set screws, indicate tool holder to a maximum of .001 total indicator reading (T.I.R.). This is done by rotating the chuck, NOT the Rotary Broach Tool Holder (use of a telescoping inspection mirror is recommended).

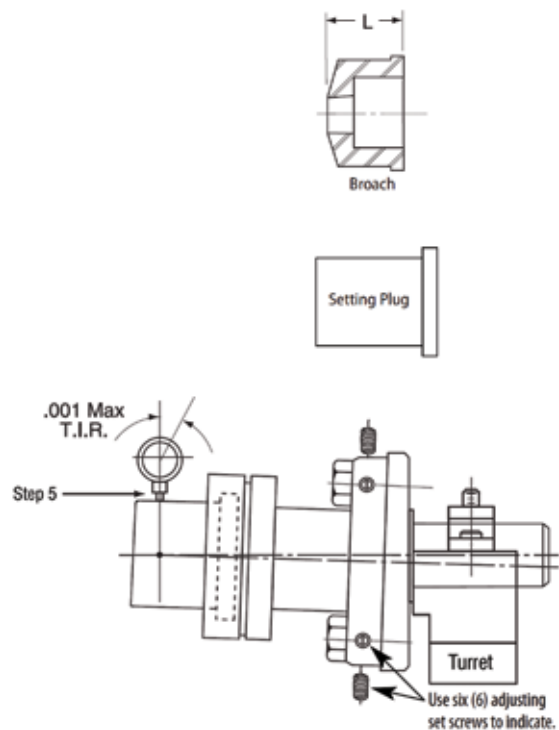
**FINAL STEP** - Lock two (2) hex nuts and snug all six (6) adjusting screws against studs. Recheck against possible movement and secure Rotary Broach into Rotary Broach Tool Holder spindle.

Visit [www.slatertools.com](http://www.slatertools.com) to view Adjustable Rotary Broach Tool Holder Set-Up Videos

### INTERNAL TOOL HOLDER



### EXTERNAL TOOL HOLDER





## FLUIDS & TOOL CARE

### CUTTING FLUIDS

Fluids play a minor role in rotary broaching. Any type of water or oil based fluid is acceptable. The chip is a flowing type and the amount of heat generated is very minimal.

When internal rotary broaching in blind holes, fluids should be applied on the broaching tool tip prior to contacting workpiece and not inside of workpiece pilot hole. Trapped fluid sometimes is unable to escape causing inability to broach to full depth. Slater Tools offers vent holes and double vent holes for customers who are concerned about trapped fluids. Opening your pre-drill hole to larger than the minor diameter of form as recommended will alleviate pressure from fluids.

For external rotary broaching, fluids may be applied prior to or continuously on the workpiece diameter.

### LUBRICATION OF HOLDER

Lubricate every few hours of continued usage. After lubrication, hand rotate spindle to relieve pressure caused by greasing. Slater Tools offers and recommends Mobiltemp SHC 32<sup>©</sup>. This is a clay thickened, synthetic, dark red grease. Do not use grease containing graphite. Mobiltemp SHC 32<sup>©</sup> is available from Slater Tools.

### REPLACEMENT PARTS

Replacement parts for Slater's Rotary Broach Tool Holders are available from stock. Orders placed before 4:30 p.m. EST will be shipped that same day. See page 33 for more information on replacement/rebuild parts.

### FACTORY REPAIRS

If you would like a skilled technician to evaluate your Slater Rotary Broach Tool Holder, simply send us your holder "Attn: Repairs". Upon receipt, an evaluation and price quote will be submitted for your consideration. Once we receive your authorization, the holder will be repaired and sent back to you the same day.

### RE-SHARPENING BROACHES

Slater Tools offers broach re-sharpening for both internal and external Rotary Broaches. Re-sharpened broaches can be ready within 48 hours of receipt. Please include contact information, mark "Attn: Re-sharp" on your paperwork, and indicate the low limit of the tolerance for internal broaches and the high side of your tolerance for external broaches.

#### **Mailing Address:**

Slater Tools, Inc.  
Attn: "Repairs" or "Re-sharp"  
44725 Trinity Drive  
Clinton Township, MI 48038  
USA



## TROUBLESHOOTING SOLUTIONS

If you have any technical questions or concerns, Slater Tools' experienced associates and engineers are readily available to assist you. Please call or visit our online Customer Support & Service section and instructional videos at [www.slatertools.com](http://www.slatertools.com).

ISSUE	POSSIBLE CAUSES	RECOMMENDATIONS
Machine is alarming / stalling	<ol style="list-style-type: none"> <li>1. Broach Holder is off-center</li> <li>2. Broach Holder bearings failing</li> <li>3. Excessive chip accumulation</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure the Adjustable Tool Holder is centered correctly (see page 38, or view videos at <a href="http://www.slatertools.com">www.slatertools.com</a>).</li> <li>2. Check the Broach Holder bearings by turning the spindle in your fingers. The spindle should spin freely. If you feel hesitations, graininess, or stickiness, replace the holder bearings. Bearing Rebuild Kits with instructions are available. Slater Tools offers inspection and repair services.</li> <li>3. Typical solutions to reduce chip accumulation: <ul style="list-style-type: none"> <li>• For Internal Broaches, increase pre-drill size (larger workpiece I.D.)</li> <li>• For External Broaches, pre-turn dia. smaller (smaller workpiece O.D.)</li> <li>• Reduce depth of broached area (less than 1.5 x Minor Dia.)</li> <li>• Add an undercut or recess to help break the chip</li> </ul> </li> </ol>
Skid / witness marks on chamfer of workpiece	<ol style="list-style-type: none"> <li>1. Broach is bouncing off the face of the workpiece at initial contact</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the speed to approx. 100-200 RPM during initial contact into the chamfer (maintaining feed rate). Then, increase the speed back to the recommended RPMs once tool is .010" into the chamfer. Consider leaving extra stock on workpiece and clean-off after broaching.</li> </ol>
Spiraling form / form is getting smaller towards bottom	<ol style="list-style-type: none"> <li>1. Excessive chip accumulation</li> <li>2. Broach Holder bearings failing</li> </ol>	<ol style="list-style-type: none"> <li>1. Typical solutions to reduce chip accumulation: <ul style="list-style-type: none"> <li>• For Internal Broaches, increase pre-drill size (larger workpiece I.D.)</li> <li>• For External Broaches, pre-turn dia. smaller (smaller workpiece O.D.)</li> <li>• Reduce depth of broached area (less than 1.5 x Minor Dia.)</li> <li>• Add an undercut or recess to help break the chip</li> </ul> </li> <li>2. Check the Broach Holder bearings by turning the spindle in your fingers. The spindle should spin freely. If you feel hesitations, graininess, or stickiness, replace the holder bearings. Bearing Rebuild Kits with instructions are available. Slater Tools offers inspection and repair services.</li> </ol>
Workpiece / stock is pushing back into the machine	<ol style="list-style-type: none"> <li>1. Workpiece not held tight</li> <li>2. Excess pressure is created by trapped fluids/air</li> <li>3. Excessive chip accumulation</li> </ol>	<ol style="list-style-type: none"> <li>1. Use a serrated collet to hold the workpiece.</li> <li>2. Typical solutions for releasing trapped fluids/air: <ul style="list-style-type: none"> <li>• Turn off coolant during broach cycle</li> <li>• Increase the pre-drill hole size (increase I.D.)</li> <li>• Use a vented broach. Slater Tools offers vented broach options.</li> </ul> </li> <li>3. Typical solutions to reduce chip accumulation: <ul style="list-style-type: none"> <li>• For Internal Broaches, increase pre-drill size (larger workpiece I.D.)</li> <li>• For External Broaches, pre-turn dia. smaller (smaller workpiece O.D.)</li> <li>• Reduce depth of broached area (less than 1.5 x Minor Dia.)</li> <li>• Add an undercut or recess to help break the chip</li> </ul> </li> </ol>





ISSUE	POSSIBLE CAUSES	RECOMMENDATIONS
Broach tool chipping / poor tool life	<ol style="list-style-type: none"><li>1. Broach Holder is off-center</li><li>2. Broach Holder bearings failing</li><li>3. Improper workpiece preparation</li><li>4. Speed is too high (RPM)</li></ol>	<ol style="list-style-type: none"><li>1. Make sure the Adjustable Tool Holder is centered correctly (see page 38, or view videos at <a href="http://www.slatertools.com">www.slatertools.com</a>).</li><li>2. Check the Broach Holder bearings by turning the spindle in your fingers. The spindle should spin freely. If you feel hesitations, graininess, or stickiness, replace the holder bearings. Bearing Rebuild Kits with instructions are available. Slater Tools offers inspection and repair services.</li><li>3. Check workpiece geometry:<ul style="list-style-type: none"><li>• Refer to the part preparation guide (page 34-35)</li><li>• For Internal Broaches, increase pre-drill depth and size (larger I.D.)</li><li>• For External Broaches, pre-turn dia. smaller (smaller O.D.)</li><li>• Ensure there is a 45° lead-in chamfer (ideal)</li><li>• Consider broaching material in annealed state</li></ul></li><li>4. Refer to speeds and feeds chart on page 37 (also available at <a href="http://www.slatertools.com">www.slatertools.com</a>, or contact us for recommendations).</li></ol>
Form is larger than the broach	<ol style="list-style-type: none"><li>1. Broach Holder bearings failing</li><li>2. Too much end play in holder</li></ol>	<ol style="list-style-type: none"><li>1. Check the Broach Holder bearings by turning the spindle in your fingers. The spindle should spin freely. If you feel hesitations, graininess, or stickiness, replace the holder bearings. Bearing Rebuild Kits with instructions are available. Slater Tools offers inspection and repair services.</li><li>2. Measure holder end play. If end play is more than .005", replace the bearings. Bearing Rebuild Kits with instructions are available. Slater Tools offers inspection and repair services.</li></ol>
Form not centered / teeth larger on one side	<ol style="list-style-type: none"><li>1. Broach Holder is off-center</li><li>2. Workpiece deflection</li></ol>	<ol style="list-style-type: none"><li>1. Make sure the Adjustable Tool Holder is centered correctly (see page 38, or view videos at <a href="http://www.slatertools.com">www.slatertools.com</a>).</li><li>2. Reduce speed during initial contact (maintain feed rate). Support the workpiece to ensure there is no deflection.</li></ol>



## COMMON QUESTIONS

**I do not see the size broach I am looking for listed. Can you make the broach I need?**

**Answer** Yes. We can produce any size hex or square in only 1-2 days. All other custom broaches have a 5-10 day lead time.

**What materials can I broach?**

**Answer** A wide variety of materials commonly cut during machining can also be broached using Rotary Broach Tooling from Slater Tools. Common materials include soft metals such as aluminum, brass, alloy metals, stainless steel, plastics and carbon fiber. Tensile strength of the material plays a large role in how the material will respond to broaching. The higher the tensile strength, the more difficult it may be to rotary broach. Although we may not recommend broaching certain materials, this does not mean they cannot be broached. Sometimes by opening up your pre-drill diameter or broaching a shallow depth, rotary broaching can be successfully accomplished but tool life may be reduced.

**What type of fluid should I use during the broaching process?**

**Answer** Fluids play a minor role in rotary broaching. Any conventional water or oil based fluid is acceptable. Many customers choose to turn off the coolant during the rotary broaching cycle.

**When mounted in a mill, why does my holder look like it is wobbling?**

**Answer** The holder is built on a 1 degree angle. This design reduces broaching pressure and causes the holder to look like it is wobbling. Do not alter the holder's 1 degree angle.

**How do I remove the chips from my part?**

**Answer** Add an undercut or recess before broaching to allow the chips to break cleanly. You can also rebores or flat bottom drills after internal broaching.

**What will happen if I do not pre-drill or pre-turn the diameter to the recommended size?**

**Answer** While it is possible to remove full-form, you will likely see a significant reduction in tool life of the broach. There is also potential for premature bearing wear of the tool holder or excessive pressures that may alarm your machine.

**What is the largest form I can rotary broach?**

**Answer** We are able to produce internal broaches up to 2.30" and external forms up to 1.80" in diameter. The ability to successfully broach these forms is application specific and will depend on the type of material you are broaching and the depth of broached area. If you have questions about an application, it is always best to call or send us a print.

**What information do I need to provide for checking feasibility of rotary broaching?**

**Answer** We will need to know the shape, major diameter, minor diameter, material and broaching depth. We recommend sending us a portion of your print of the area to be broached.

**How deep am I able to broach?**

**Answer** As a general rule, you should not attempt to broach more than 1.5 times the minor diameter of the form. Depending on the type of application and the material you are broaching, this could be reduced or increased. It is always best to send us a portion of your print to ensure you will be able to successfully rotary broach.



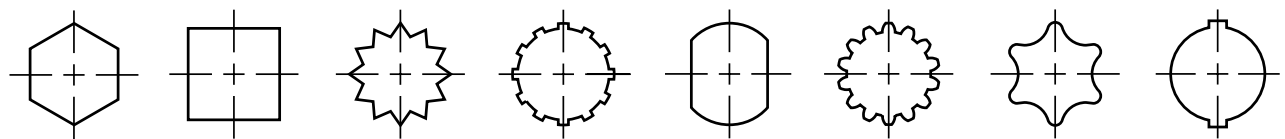
## SAMPLE PARTS

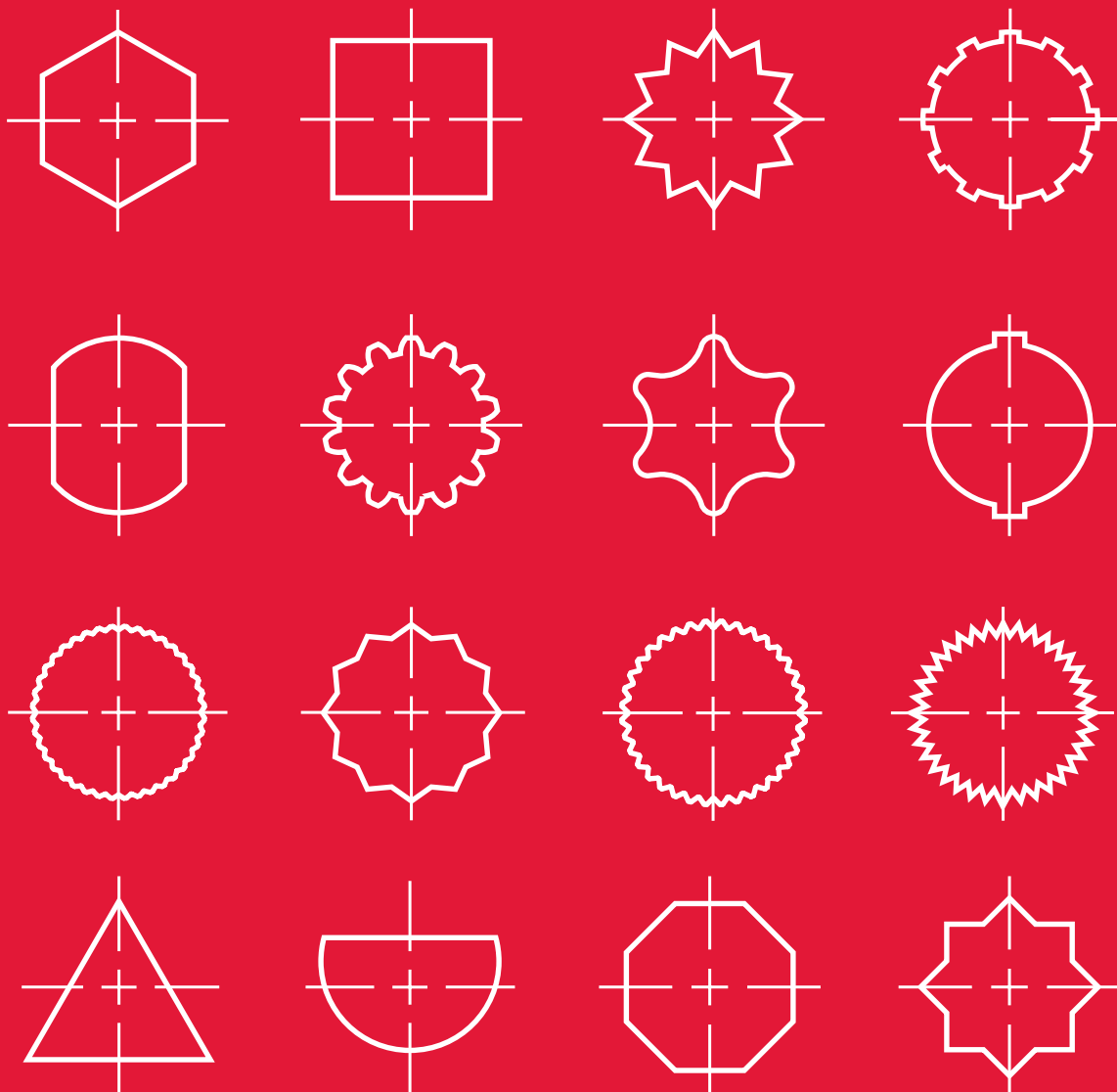
Broached with Slater Rotary Broaching Tools

TECHNICAL SUPPORT



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WWW.SLATERTOOLS.COM



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