



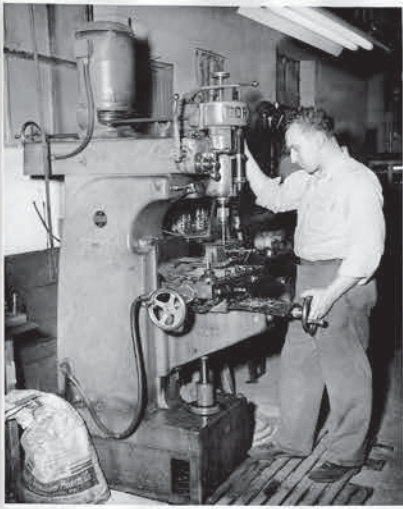
Precision Tooling Since 1951



Rotary Broach Tooling | Punch Broach Tooling | Go/NoGo Gages  
Screw Machine Tooling | Live Centers



**Design. Manufacture. Support.**



## **Celebrating Over 70 Years of Manufacturing Excellence**

### **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. Product offerings include rotary broach and punch broach tooling, Go/NoGo inspection gages, spring loaded live centers and screw machine tooling. Through innovation and high standards, our tooling has led the industry, providing dependable and precise solutions for our manufacturing customers in the aerospace, medical, automotive, plumbing, fastener and many other industries.

At Slater Tools, we are able to provide the flexibility and service of a small company with the resources and reliability of a large company. All of our tools are backed by a strong commitment to application assistance and customer satisfaction. All Slater Tools products are proudly designed and manufactured in the USA by qualified, dedicated people using state-of-the-art technology. Slater's complete line of products reduces cycle times, boosts efficiency and increases profitability for our customers' precision machining operations. With over six decades of experience in the industry and hundreds of thousands of tools in operation throughout the world, Slater Tools is THE company for precision tools that take shape.

## ORDERING, RETURNS & REPAIRS

### To Order Direct

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).

### Delivery

Stock orders placed by 4:30 p.m. EST will be shipped the same day. Please allow 1-2 business days for special Internal Hex and Square Broaches. For external and all other special/custom broach or gage 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.

### 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. Please see page 39 for more details.

## TECHNICAL SUPPORT

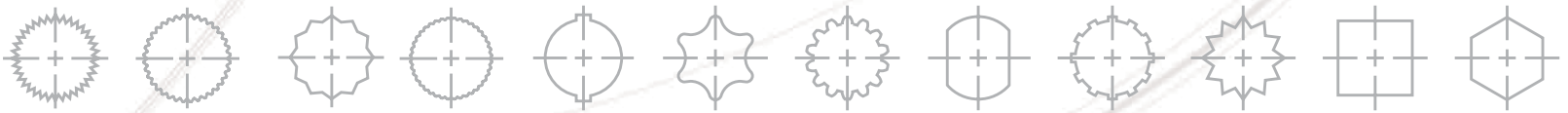
At Slater Tools, we pride ourselves on providing our customers with the most accurate and relevant technical information on the tools of our trade.

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).



**PROUDLY MADE IN THE U.S.A.**





## TABLE OF CONTENTS

### ROTARY BROACH TOOLING

#### Internal Rotary Broaches (ID)

	<b>Page</b>
Hexagon _____	6
Square _____	8
Double Hexagon _____	10
Serration _____	12
J500 _____	14
Six Lobe (ISO10664) _____	15
Rosan-type (AS1300) _____	16
Blanks _____	17

#### External Rotary Broaches (OD)

Hexagon _____	18
Double Hexagon _____	19
Serration _____	20
J500 _____	22
Blanks _____	23

<b>Custom Internal and External Rotary Broaches</b> _____	24
Micro Broaches _____	25

<b>Internal Adjustment-Free Rotary Broach Tool Holders</b> _____	26
Small Swiss Type, Small Swiss Type Long, Large Swiss Type, Standard Type	

<b>Internal Adjustable Rotary Broach Tool Holders</b> _____	28
Small Swiss Type, Large Swiss Type, Standard Type, Heavy Duty	

<b>External Adjustable Rotary Broach Tool Holders</b> _____	30
Swiss Type, Large Swiss Type, Standard Type, Heavy Duty, Extra Large Form	

### ROTARY BROACHING PARTS & ACCESSORIES

Orientation Dogs, Rebuild/Replacement Parts, Mobil 32 Grease _____	32
--	----





## ROTARY BROACHING TECHNICAL SUPPORT

Part Preparation Guide	34
Thrust Lbs. for Internal/External Broaching	36
Recommended Speeds & Feeds	37
Adjustable Tool Holder Set-up Steps	38
Fluids & Tool Care	39
Troubleshooting Solutions	40
Common Questions	42
Sample Parts	43

## PUNCH BROACH TOOLING

### Internal Punch Broaches

Hex Punch Broaches	44
Square Punch Broaches	46
Six Lobe Punch Broaches	47
Keyway Punch Broaches	48

<b>Indexable Punch Broach Tool Holders</b>	49
--	----

## PUNCH BROACHING TECHNICAL SUPPORT

Part Preparation Guide	50
Set Up Parameters	51

## GO/NOGO FORM GAGES

### Internal Plug Gages

Hexagon Plug Gages	52
Six lobe	53

### External Ring Gages

Hexagon Ring Gages	54
--------------------	----

### Custom Internal and External Gages

Custom Plug And Ring Gage	55
---------------------------	----

## SPRING LIVE CENTERS

Female Point Live Center Assemblies	56
Male Point Live Center Assemblies	57
Interchangeable Female Center Points	58
Interchangeable Male Center Points	59

## SCREW MACHINE TOOLING

Boring Bar Tool Holders, Cut-Off Blade Tooling, Davenport Accessories, Forming Tools, Knurling Tool Holders, Recess Tool Holders, Shaft-Driven Attachments, Shaving Tools, Skiving Tooling, Supports, T-Slot Nuts, Turning Knee, Turning Roll Turner

ROTARY BROACH

PUNCH BROACH

GO/NOGO GAGE

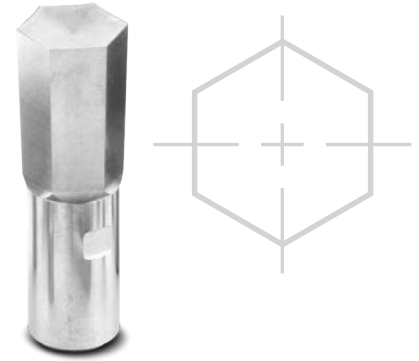
LIVE CENTERS

SCREW MACHINE



## INTERNAL HEXAGON BROACHES

Slater 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. Slater 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.

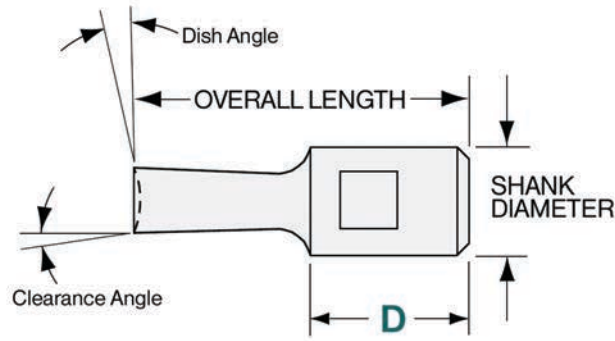
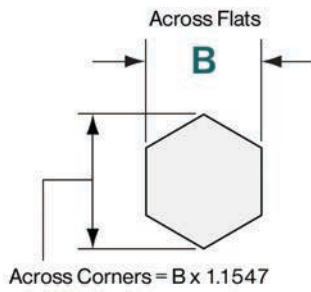


### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH | FORM SIZE RANGE .028-.650"

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	.75	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	706-1034
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	706-1020				

NOTE: All dimensions in inches unless otherwise specified

**AVAILABLE INTERNAL BROACH OPTIONS:**

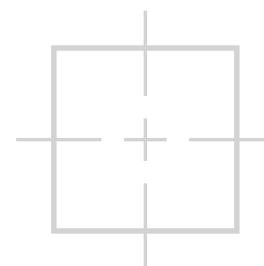
- Coatings: TiN, TiCN, TiAlN
- Materials: M2, PM4, T15 High Speed Tool Steels
- Different overall lengths (including 28mm)
- Custom cut lengths
- Custom across-the-flat dimensions: .028-2.050" (0.70-52mm)
- MICRO forms
- Corner radius
- Spun ground diameter on broach corners
- Single or double vent holes
- 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

**Custom Hexagons  
in Only 1-2 Days**



## 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.



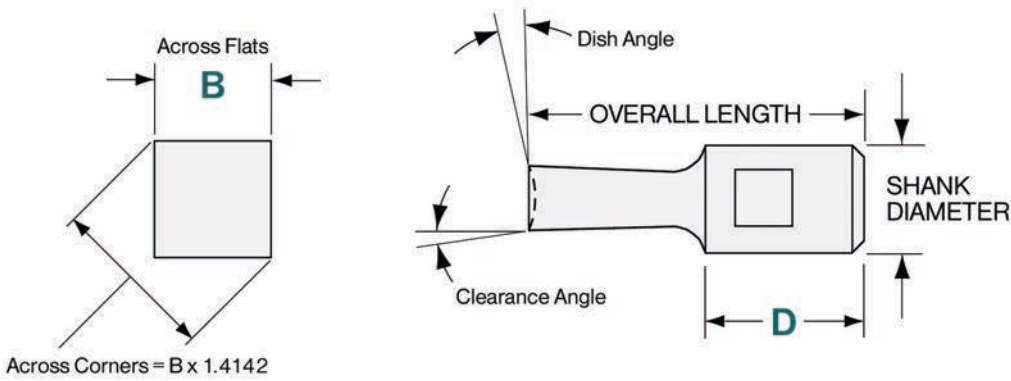
### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH | FORM SIZE RANGE .028-.530"

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

**Custom Squares  
in Only 1-2 Days**



## INTERNAL DOUBLE HEX BROACHES

Slater Tool'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

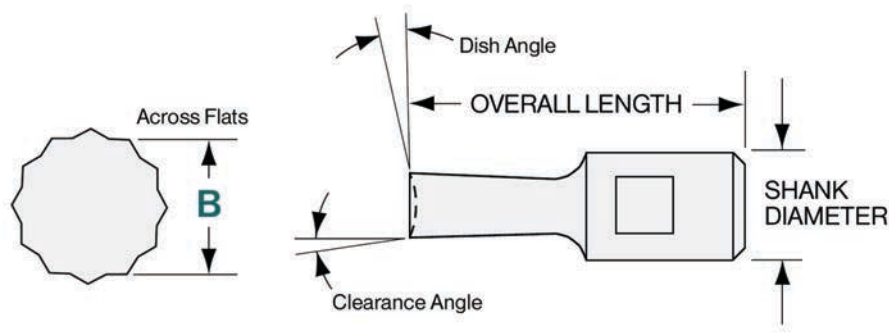
Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
1/4"	.253	302-253	6.00mm	.240	302-240
9/32"	.284	302-284	7.00mm	.279	302-279
5/16"	.316	302-316	8.00mm	.320	302-320
11/32"	.347	302-347	9.00mm	.358	302-358
3/8"	.379	302-379	10.00mm	.399	302-399
13/32"	.410	302-410	11.00mm	.437	302-437
7/16"	.442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

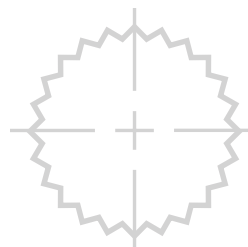
NOTE: All dimensions in inches unless otherwise specified



## INTERNAL SERRATION BROACHES

Slaters Tools offers precision ground Internal Serration Rotary Broaches designed to be used individually or as mating parts with Slaters 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.**

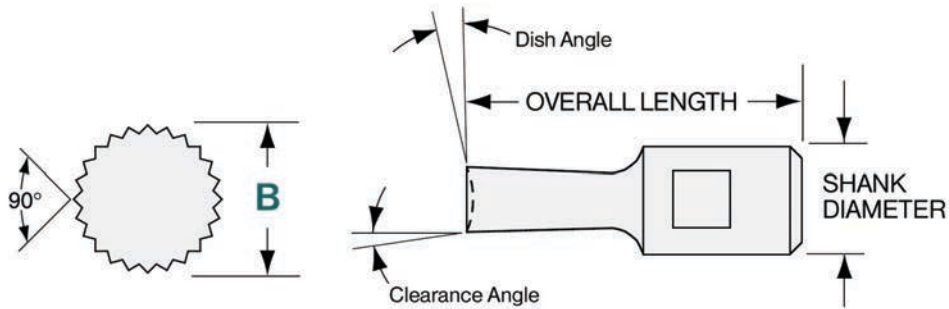


### .315" SHANK DIAMETER | 1.25" OVERALL LENGTH

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



**.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

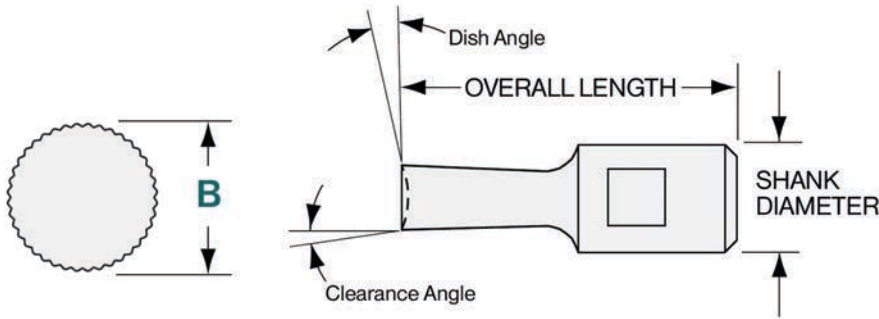
**AVAILABLE INTERNAL BROACH OPTIONS:**

- 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

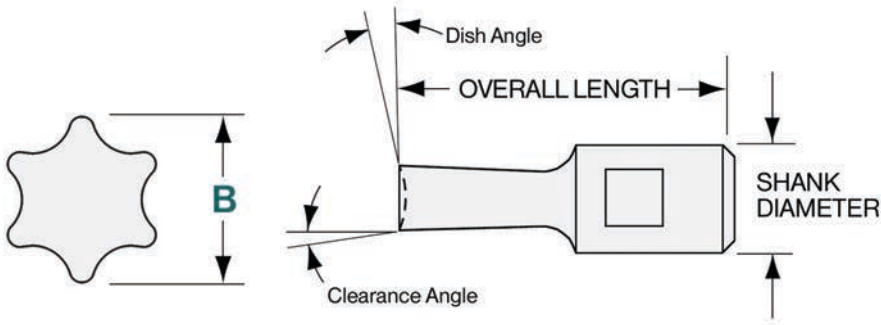
Standard Size (in)	# of Teeth	B	Order #
3/8"	36	.3770	701-3750
1/2"	36	.5020	701-5000
5/8"	36	.6270	701-6250
3/4"	48	.7520	701-7500
7/8"	48	.8770	701-8750
1"	48	1.002	701-1.000



## INTERNAL SIX LOBE BROACHES

Slaters Tools offers a large variety of Internal Torx-type Rotary Broach Tools, also known as hexalobular or 6-lobe Rotary Broaches. Most standard size Torx-type Rotary Broach Tools are in stock and available for immediate delivery. Torx-type 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

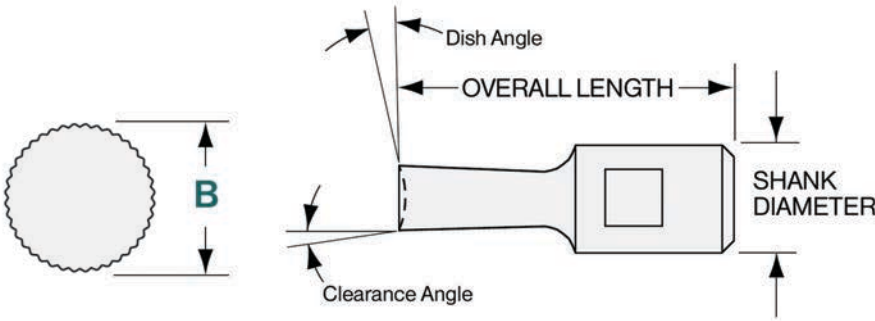
NOTE: All dimensions in inches unless otherwise specified



## 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

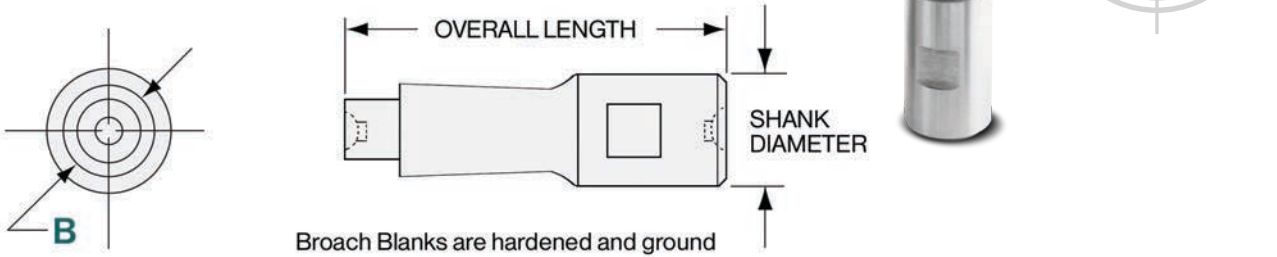
NOTE: All dimensions in inches unless otherwise specified





## INTERNAL BROACH BLANKS

Slaters 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.



Broach Blanks are hardened and ground

### .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 | 2.00" OVERALL LENGTH

Standard Size (in)	B	Order #
19/64"	.320	521-300
3/8"	.400	521-380
29/64"	.470	521-450
33/64"	.540	521-520
19/32"	.610	521-590
21/32"	.680	521-660
29/32"	.920	521-900
1"	1.020	521-1.000
1-3/64"	1.060	521-1.040
1-3/32"	1.110	521-1.090

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

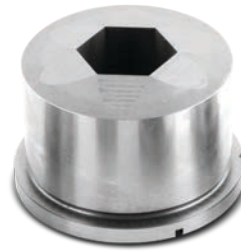
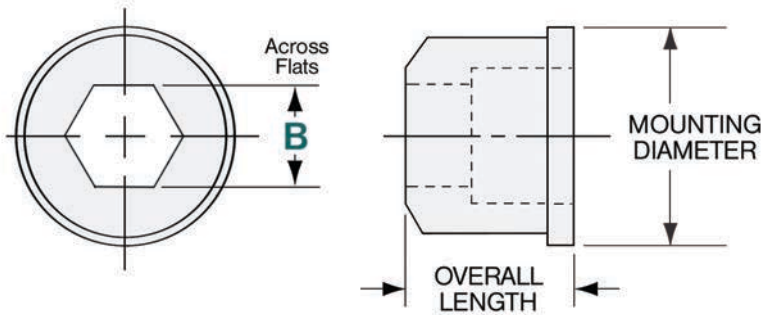
Standard Size (in)	B	Order #
19/32"	.610	711-590
21/32"	.680	711-660
47/64"	.750	711-730
13/16"	.830	711-810
29/32"	.920	711-900
1"	1.020	711-1.000
1-3/64"	1.060	711-1.040
1-7/64"	1.120	711-1.100
1-3/16"	1.210	711-1.190
1-21/64"	1.350	711-1.330
1-15/32"	1.490	711-1.470
1-1/2"	1.520	711-1.500
1-5/8"	1.650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

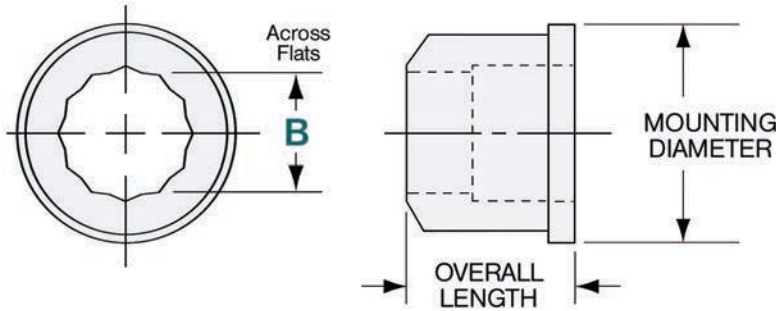
Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
11/16"	.674	1463-674	18.00mm	.698	1463-698
23/32"	.705	1463-705	19.00mm	.737	1463-737
3/4"	.736	1463-736	20.00mm	.775	1463-775
25/32"	.767	1463-767	21.00mm	.814	1463-814
13/16"	.798	1463-798	22.00mm	.853	1463-853
27/32"	.829	1463-829	23.00mm	.893	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 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

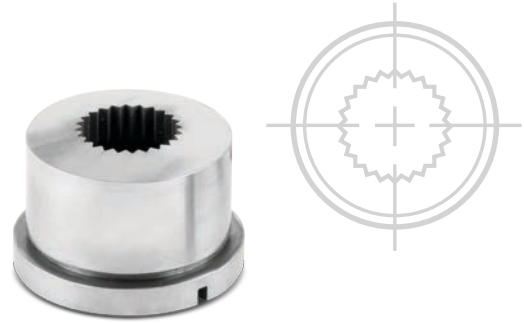
Standard Size (in)	B	Order #	Metric Size (mm)	B	Order #
11/16"	.681	1423-681	18.00mm	.698	1423-698
23/32"	.712	1423-712	19.00mm	.737	1423-737
3/4"	.743	1423-743	20.00mm	.775	1423-775
25/32"	.774	1423-774	21.00mm	.814	1423-814
13/16"	.805	1423-805	22.00mm	.853	1423-853
27/32"	.835	1423-835	23.00mm	.893	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 Slater 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.

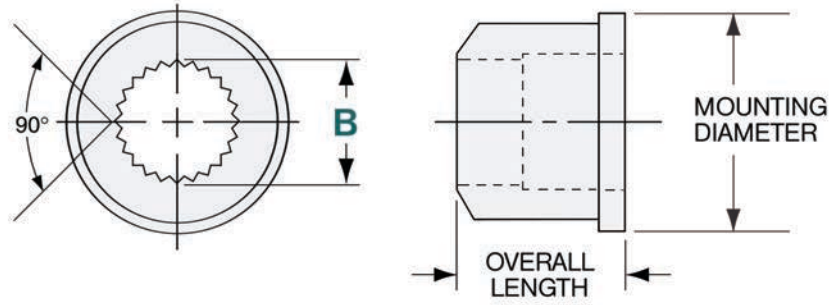


### .9448" MOUNTING DIAMETER | 1.00" OVERALL LENGTH

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

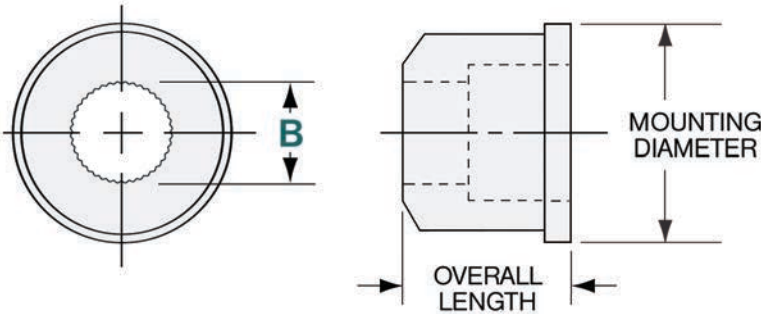
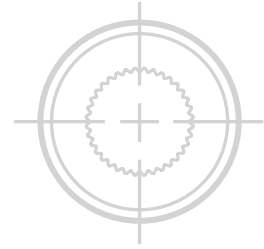
#### AVAILABLE EXTERNAL BROACH OPTIONS:

- 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

Slater 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

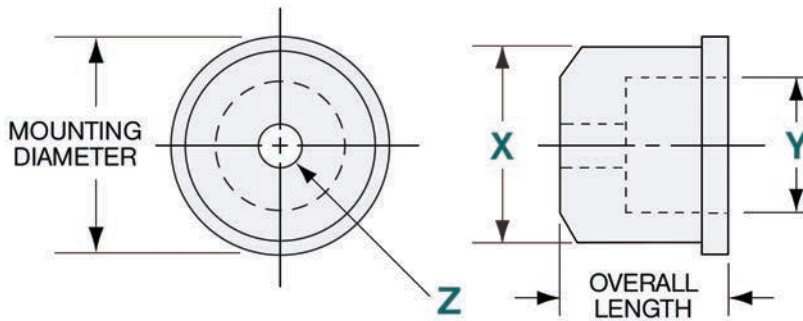
### 2.3125" MOUNTING DIAMETER | 1.25" OVERALL LENGTH

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

ROTARY BROACH

CUSTOM

### 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, Torx-type (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

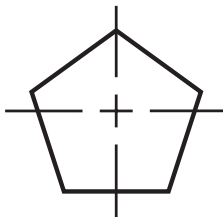
- Please submit a portion of your print showing the area to be broached.
- You will receive a quote along with technical recommendations to ensure successful broaching.
- Once the order is placed, we will design your tool and submit a drawing for your approval.
- Manufacturing begins upon approval and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



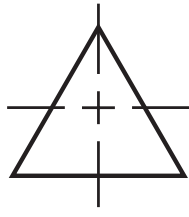




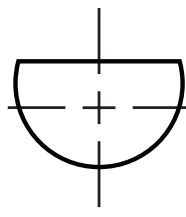
**POPULAR CUSTOM SHAPES INCLUDE:**



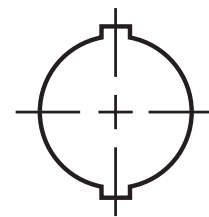
**PENTAGON**



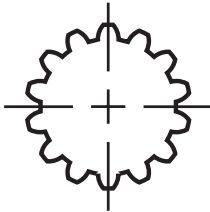
**TRIANGLE**



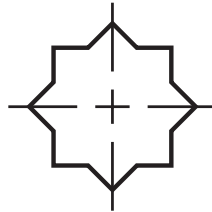
**D SHAPE**



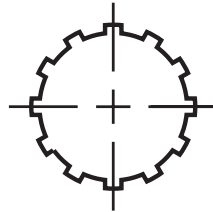
**KEYWAY**



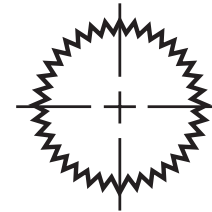
**INVOLUTE**



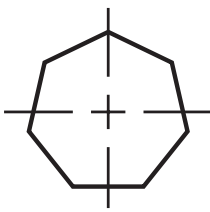
**DOUBLE SQUARE**



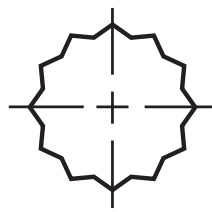
**SPLINE**



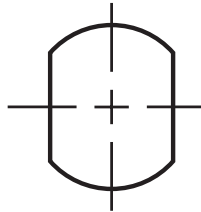
**SERRATION/KNURL**



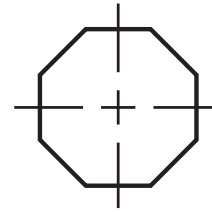
**HEPTAGON**



**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

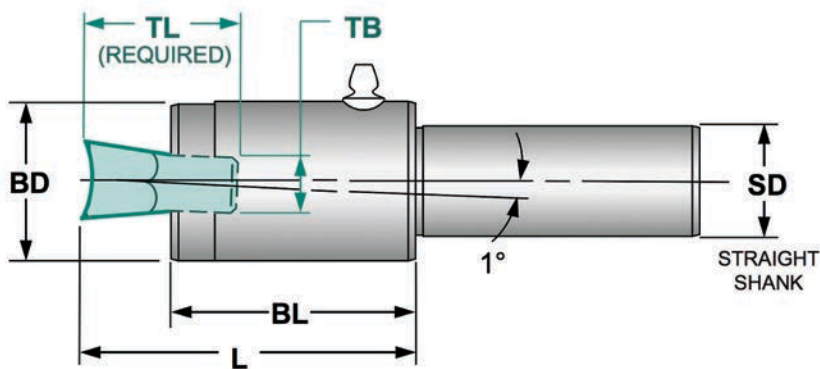
### SMALL SWISS TYPE LONG TOOL HOLDER

**.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



### 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
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

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 #
#2	.315	2.00	1.03	1.75	1.12	2.28	7600-52

## LARGE SWISS TYPE TOOL HOLDER

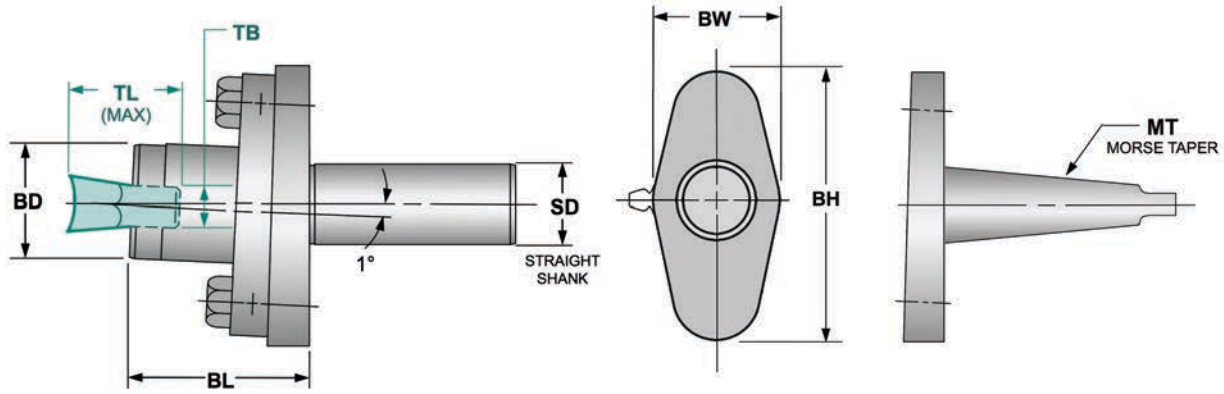
**.500" TOOL BORE | BROACHING CAPACITY .050-.500"**

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



**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 #
#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 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 Slater 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 #
#2	.9448	1.00	1.62	2.16	1.12	2.28	.56	.31	7700-52

### LARGE SWISS TYPE TOOL HOLDER

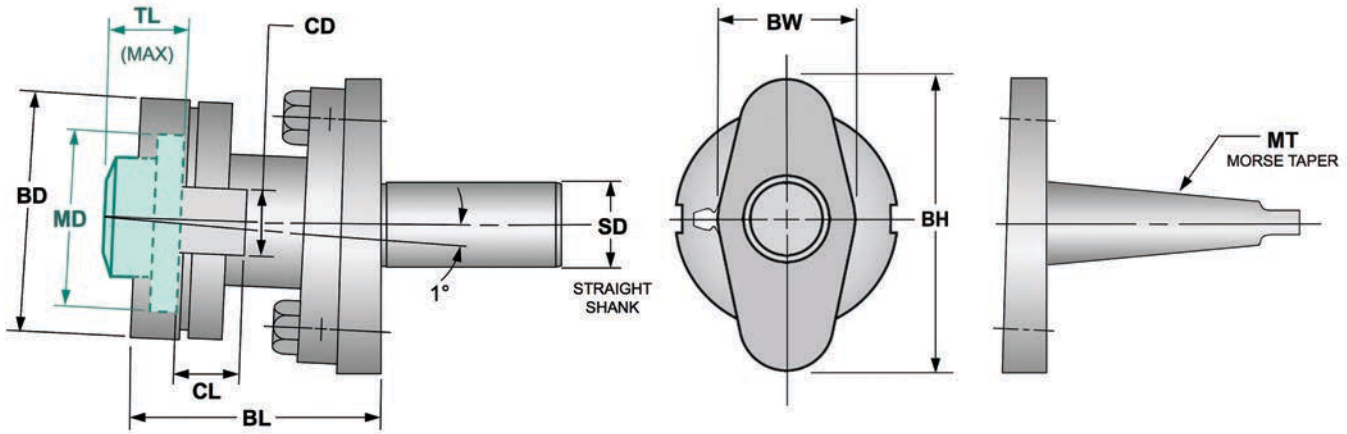
**.9448" MOUNTING DIAMETER | BROACHING CAPACITY .125-.375"**

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 #
#4	1.5748	1.50	2.25	2.69	1.50	3.25	.69	.50	3770-54



**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

ROTARY BROACH

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.



### 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.

For Tool Holder Series	Part #
0600 and 7600	BOD-7600
0700 and 1760	BOD-1760
3700 and 3760	BOD-3760
3770	BOD-3770
7760	BOD-7760



### 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.

For Use With	Part #
All series rotary broach tool holders	Mobil-32





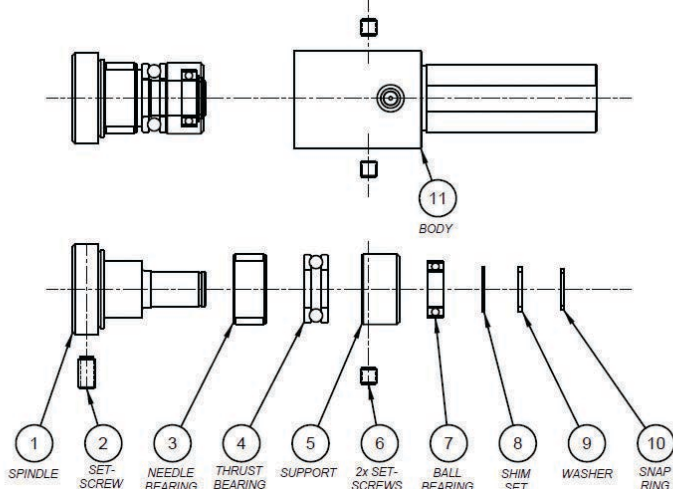
### REBUILD/REPLACEMENT PARTS

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

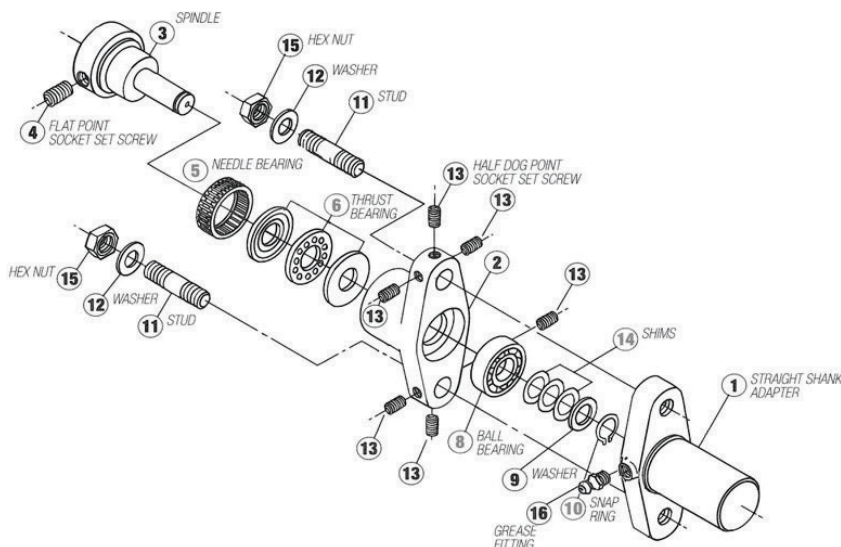
If you prefer a skilled technician to evaluate your holder, please see page 39 for details. **Factory repairs** are completed within 48 hours.

### ADJUSTMENT-FREE ROTARY BROACH TOOL HOLDER AVAILABLE PARTS



Tool Holder Series	Bearing Kit Order #
0600	0600-BS1
0700	0700-BS1
3700	3700-BS1

### ADJUSTABLE ROTARY BROACH TOOL HOLDER AVAILABLE PARTS



Tool Holder Series	Bearing Kit Order #
7600	7600-BS1
7700	7600-BS1
1760	17600-BS1
1770	17600-BS1
3760	37600-BS1
3770	37600-BS1
7760	77600-BS1
7770	77600-BS1
7773	77600-BS1

Tool Holder Series	Sub-Assembly Order #
7600	07600-0
7700	07700-0
1760	17600-0
1770	17700-0
3760	37600-0
3770	37700-0
7760	77600-0
7770	77700-0
7773	77730-0

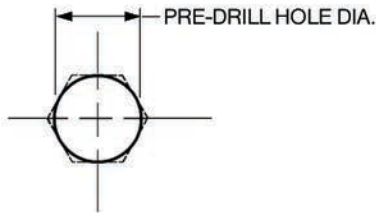


## PART PREPARATION GUIDE

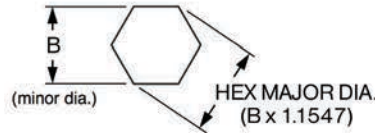
### INTERNAL BROACHING PART PREPARATION

#### Pre-Drill Hole Diameter:

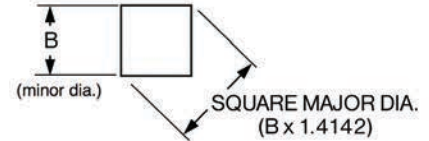
- A pre-drill hole is required for internal broaching.
- The pre-drill hole must be at least equal to the minor diameter of the broach. It is strongly recommended to open the hole diameter larger than the minor diameter.
- See below formulas for recommended pre-drill hole diameters of hex and square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



**Hex Forms:**  
PRE-DRILL HOLE DIA. =  $B \times 1.035$

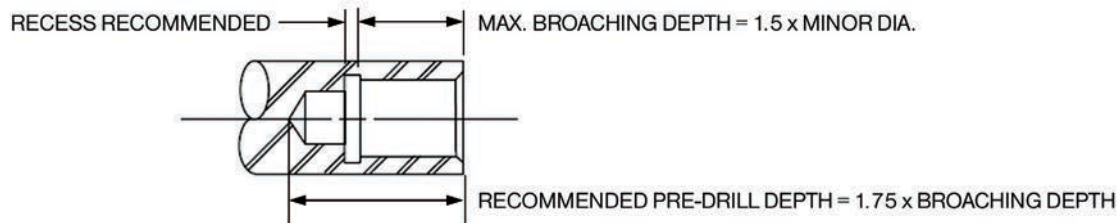


**Square Forms:**  
PRE-DRILL HOLE DIA. =  $B \times 1.100$



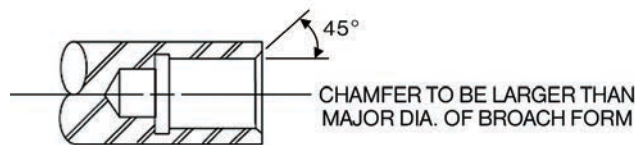
#### Pre-Drill Hole Depth:

- 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.

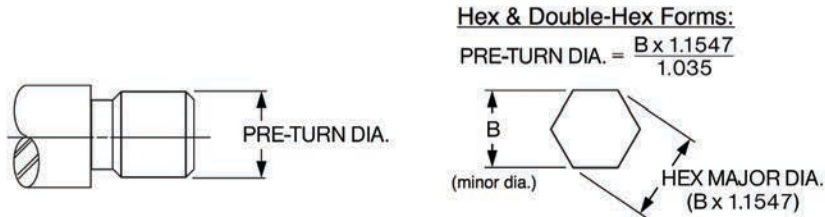




## EXTERNAL BROACHING PART PREPARATION

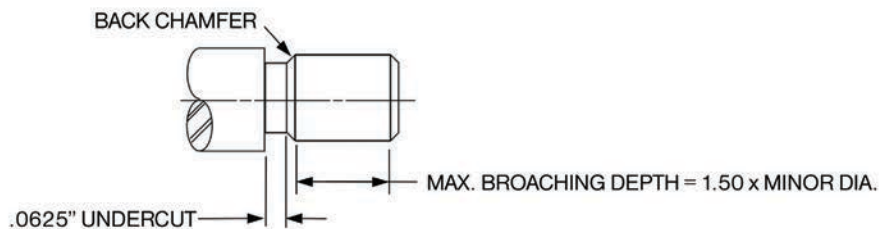
### Pre-Turn Diameter:

- 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 a 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

ROTARY BROACH

TECHNICAL SUPPORT

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

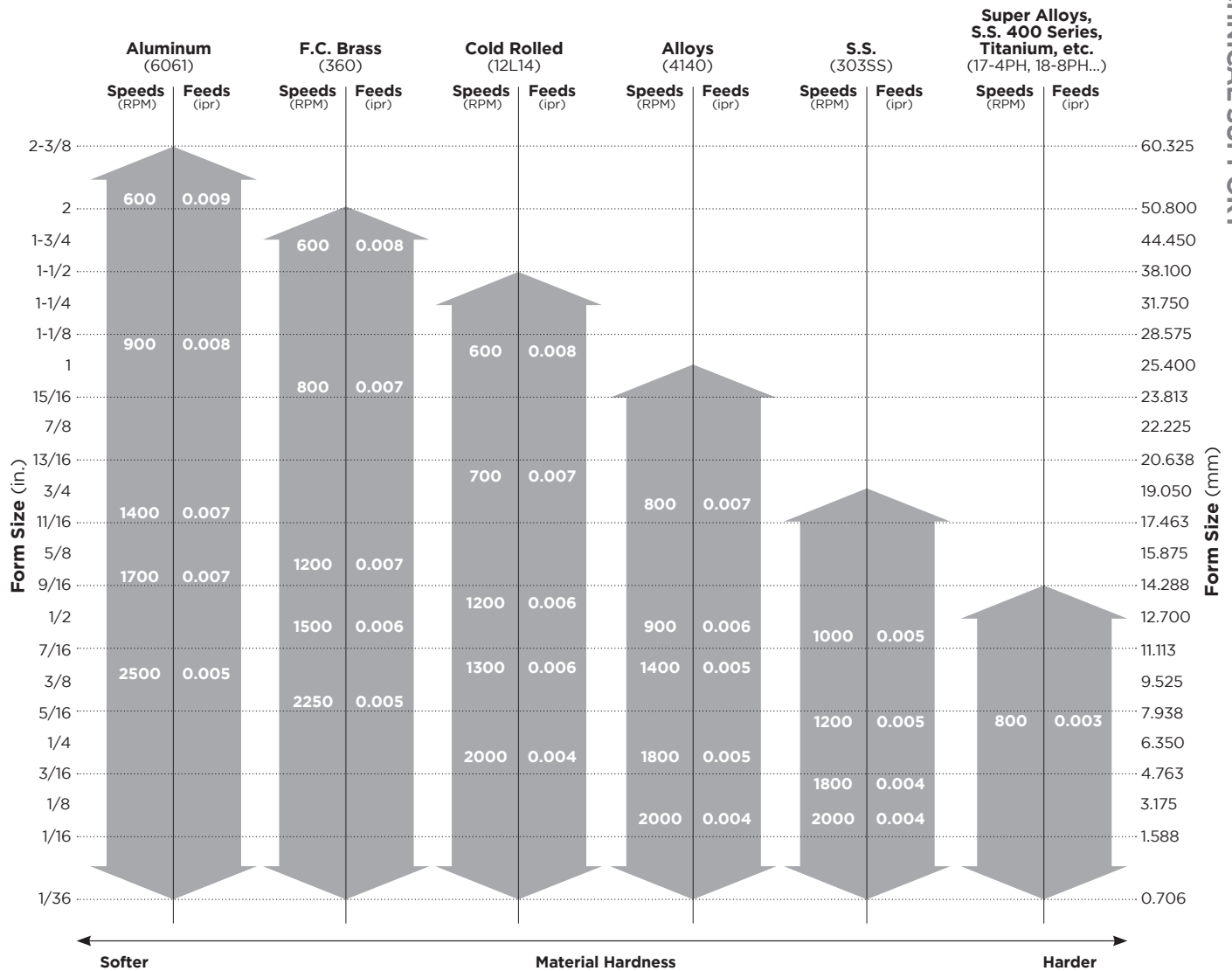
← Softer Material Hardness Harder →

- 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.
- Minimum 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.

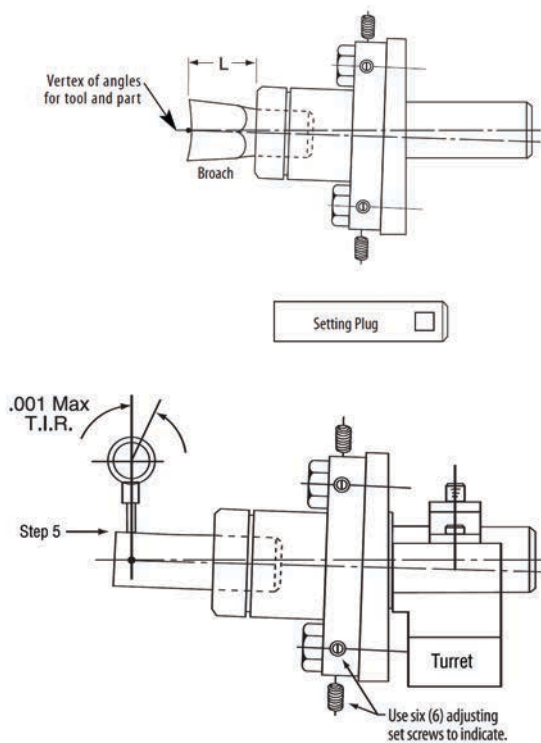
**STEP 4** - Slightly loosen two (2) hex nuts located on flange of Rotary Broach Tool Holder.

**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).

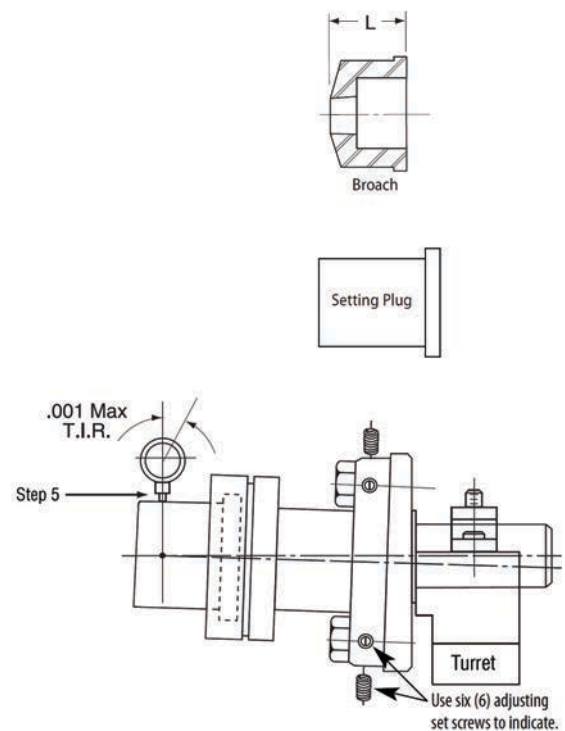
**FINAL STEP** - Lock two (2) hex nuts and snug all six (6) adjusting screws against studs. Recheck against possible movement and secure Rotary Broach into Rotary Broach Tool Holder spindle.

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 drill 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.



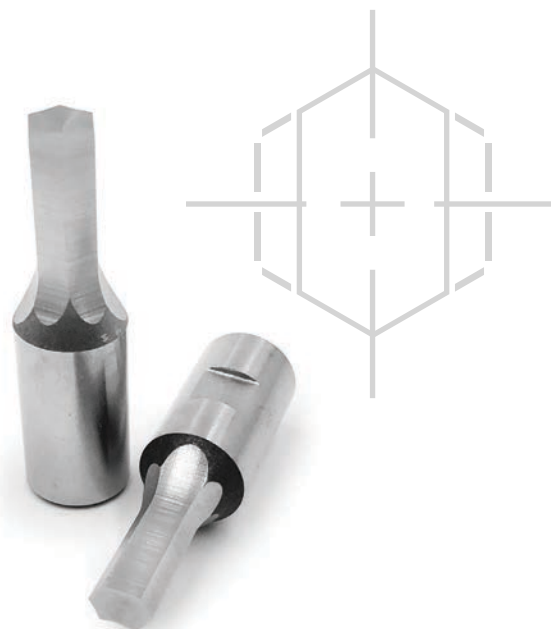
# SAMPLE PARTS GALLERY





## HEX PUNCH BROACHES

Slater Tools' Hexagon Punch Broaches are manufactured as two-point forms and facilitate punch broaching on CNC lathes, mills and presses. By using partial form broach tools and indexing the tool or workpiece, cutting pressures are greatly reduced. This method of broaching is most beneficial for applications requiring no witness (pre-drill) marks, excessive material removal, or timing of the form to a feature on the part.

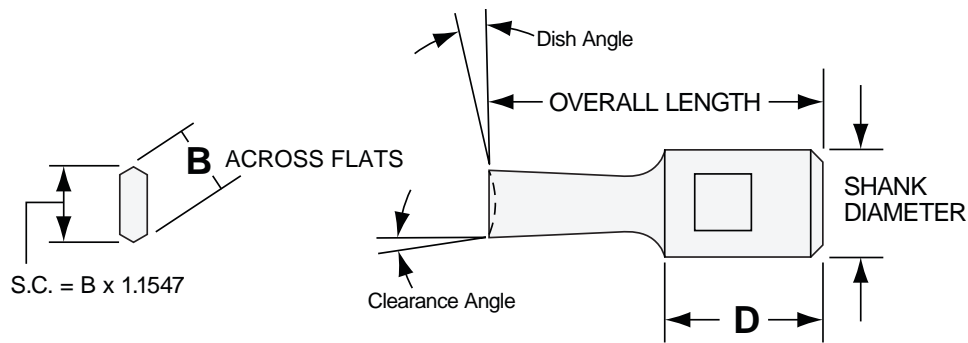


PUNCH BROACH

INTERNAL

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

Standard Sizes (in)	B	Order #	Metric Sizes (mm)	B	Order #
.050"	0.051	SP3-6-051	1.25mm	0.051	SP3-6-051
1/16"	0.064	SP3-6-064	1.50mm	0.061	SP3-6-061
5/64"	0.079	SP3-6-079	2mm	0.081	SP3-6-081
3/32"	0.095	SP3-6-095	2.50mm	0.101	SP3-6-101
7/64"	0.111	SP3-6-111	3mm	0.121	SP3-6-121
1/8"	0.127	SP3-6-127	4mm	0.161	SP3-6-161
9/64"	0.142	SP3-6-142	5mm	0.200	SP3-6-200
5/32"	0.159	SP3-6-159	6mm	0.240	SP3-6-240
11/64"	0.174	SP3-6-174	7mm	0.279	SP3-6-279
3/16"	0.190	SP3-6-190	8mm	0.320	SP3-6-320
7/32"	0.222	SP3-6-222	9mm	0.358	SP3-6-358
1/4"	0.253	SP3-6-253	10mm	0.399	SP3-6-399
9/32"	0.284	SP3-6-284	11mm	0.437	SP3-6-437
5/16"	0.316	SP3-6-316	12mm	0.478	SP3-6-478
11/32"	0.347	SP3-6-347			
3/8"	0.379	SP3-6-379			
13/32"	0.410	SP3-6-410			



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

Standard Sizes (in)	B	Order #	Metric Sizes (mm)	B	Order #
3/32"	0.095	SP5-6-095	2mm	0.081	SP5-6-081
7/64"	0.111	SP5-6-111	2.5mm	0.101	SP5-6-101
1/8"	0.127	SP5-6-127	3mm	0.121	SP5-6-121
9/64"	0.142	SP5-6-142	4mm	0.161	SP5-6-161
5/32"	0.159	SP5-6-159	5mm	0.200	SP5-6-200
3/16"	0.190	SP5-6-190	6mm	0.240	SP5-6-240
7/32"	0.222	SP5-6-222	7mm	0.279	SP5-6-279
1/4"	0.253	SP5-6-253	8mm	0.320	SP5-6-320
9/32"	0.284	SP5-6-284	9mm	0.358	SP5-6-358
5/16"	0.316	SP5-6-316	10mm	0.399	SP5-6-399
11/32"	0.347	SP5-6-347	11mm	0.437	SP5-6-437
3/8"	0.379	SP5-6-379	12mm	0.478	SP5-6-478
13/32"	0.410	SP5-6-410	13mm	0.517	SP5-6-517
7/16"	0.442	SP5-6-442	14mm	0.557	SP5-6-557
15/32"	0.473	SP5-6-473	15mm	0.597	SP5-6-597
1/2"	0.505	SP5-6-505	16mm	0.636	SP5-6-636
17/32"	0.536	SP5-6-536	17mm	0.678	SP5-6-678
9/16"	0.568	SP5-6-568	18mm	0.715	SP5-6-715
19/32"	0.599	SP5-6-599	19mm	0.758	SP5-6-758
5/8"	0.631	SP5-6-631			
21/32"	0.662	SP5-6-662			
11/16"	0.694	SP5-6-694			
23/32"	0.725	SP5-6-725			
3/4"	0.757	SP5-6-757			

### AVAILABLE INTERNAL BROACH OPTIONS:

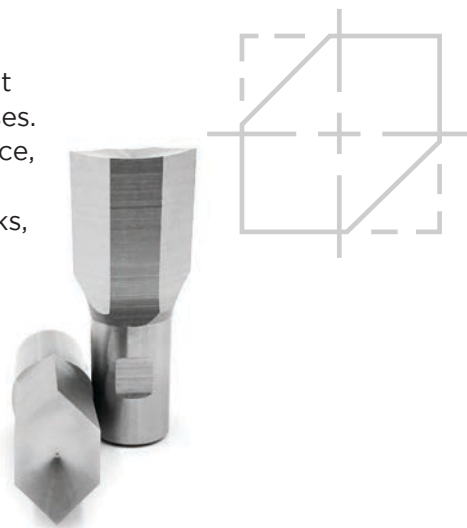
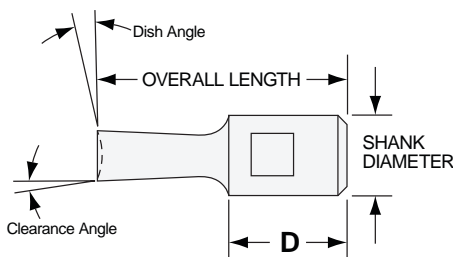
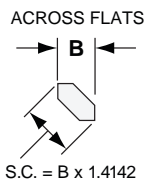
- Coatings: TiN, TiCN, TiAlN
- Materials: M2, PM4, T15 High Speed Tool Steels
- Different overall lengths (including 28mm)
- Custom cut lengths
- Custom across-the-flat dimensions: .028-2.050" (0.70-52mm)
- MICRO forms
- Corner radius
- Spun ground diameter on broach corners
- Single or double vent holes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

INTERNAL  
PUNCH BROACH



## SQUARE PUNCH BROACHES

Slater Tools' Square Punch Broaches are manufactured as two-point forms and facilitate punch broaching on CNC lathes, mills and presses. By using partial form broach tools and indexing the tool or workpiece, cutting pressures are greatly reduced. This method of broaching is most beneficial for applications requiring no witness (pre-drill) marks, excessive material removal, or timing of the form to a feature on the part.



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

Standard Sizes (in)	B	Order #	Metric Sizes (mm)	B	Order #
1/16"	0.064	SP3-4-064	1.25mm	0.051	SP3-4-051
5/64"	0.079	SP3-4-079	1.5mm	0.061	SP3-4-061
3/32"	0.095	SP3-4-095	2mm	0.081	SP3-4-081
7/64"	0.111	SP3-4-111	2.5mm	0.101	SP3-4-101
1/8"	0.127	SP3-4-127	3mm	0.121	SP3-4-121
9/64"	0.142	SP3-4-142	4mm	0.161	SP3-4-161
5/32"	0.159	SP3-4-159	5mm	0.200	SP3-4-200
11/64"	0.174	SP3-4-174	6mm	0.240	SP3-4-240
3/16"	0.190	SP3-4-190	7mm	0.279	SP3-4-279
7/32"	0.222	SP3-4-222	8mm	0.320	SP3-4-320
1/4"	0.253	SP3-4-253	9mm	0.358	SP3-4-358
9/32"	0.284	SP3-4-284	10mm	0.399	SP3-4-399
5/16"	0.316	SP3-4-316			
11/32"	0.347	SP3-4-347			
3/8"	0.379	SP3-4-379			
13/32"	0.410	SP3-4-410			

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

Standard Sizes (in)	B	Order #	Metric Sizes (mm)	B	Order #
3/32"	0.095	SP5-4-095	2mm	0.081	SP5-4-081
7/64"	0.111	SP5-4-111	2.5mm	0.101	SP5-4-101
1/8"	0.127	SP5-4-127	3mm	0.121	SP5-4-121
9/64"	0.142	SP5-4-142	4mm	0.161	SP5-4-161
5/32"	0.159	SP5-4-159	5mm	0.200	SP5-4-200
3/16"	0.190	SP5-4-190	6mm	0.240	SP5-4-240
7/32"	0.222	SP5-4-222	7mm	0.279	SP5-4-279
1/4"	0.253	SP5-4-253	8mm	0.320	SP5-4-320
9/32"	0.284	SP5-4-284	9mm	0.358	SP5-4-358
5/16"	0.316	SP5-4-316	10mm	0.399	SP5-4-399
11/32"	0.347	SP5-4-347	11mm	0.437	SP5-4-437
3/8"	0.379	SP5-4-379	12mm	0.478	SP5-4-478
13/32"	0.410	SP5-4-410	13mm	0.517	SP5-4-517
7/16"	0.442	SP5-4-442	14mm	0.557	SP5-4-557
15/32"	0.473	SP5-4-473	15mm	0.597	SP5-4-597
1/2"	0.505	SP5-4-505			
17/32"	0.536	SP5-4-536			
9/16"	0.568	SP5-4-568			
19/32"	0.599	SP5-4-599			
5/8"	0.631	SP5-4-631			

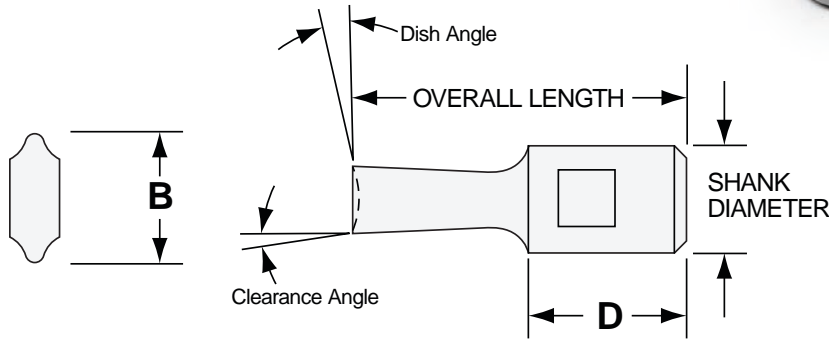
PUNCH BROACH

INTERNAL



## SIX LOBE PUNCH BROACHES

Created with two opposing lobes, Slater Tools' Six Lobe Punch Broach Tools are used to produce hexalobular or Torx-type forms in tough applications on CNC lathes and mills. The Six Lobe punches are designed to conform with ISO 10664 and can be manufactured out of different materials and with coatings. These tools are especially beneficial when needing to create full form hexlobes and when broaching difficult-to-machine materials.



**PUNCH BROACH**  
INTERNAL

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

T Size	B	Order #
T6	0.0703	SP3-8-06
T8	0.0954	SP3-8-08
T10	0.1123	SP3-8-10
T15	0.1333	SP3-8-15
T20	0.1563	SP3-8-20
T25	0.1798	SP3-8-25

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

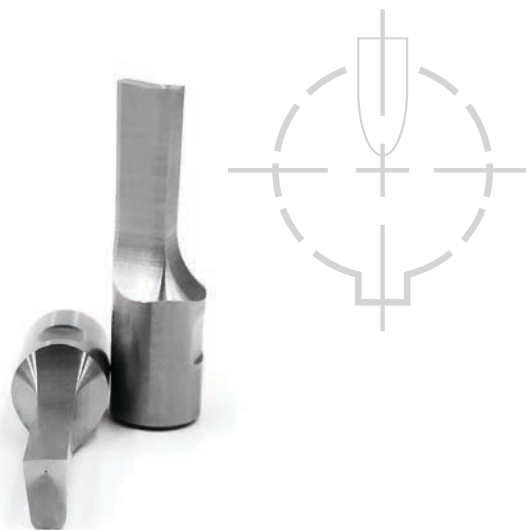
T Size	B	Order #
T8	0.0954	SP5-8-08
T10	0.1123	SP5-8-10
T15	0.1333	SP5-8-15
T20	0.1563	SP5-8-20
T25	0.1798	SP5-8-25
T27	0.2018	SP5-8-27
T30	0.2228	SP5-8-30
T40	0.2683	SP5-8-40
T45	0.3147	SP5-8-45
T50	0.3543	SP5-8-50



## KEYWAY PUNCH BROACHES

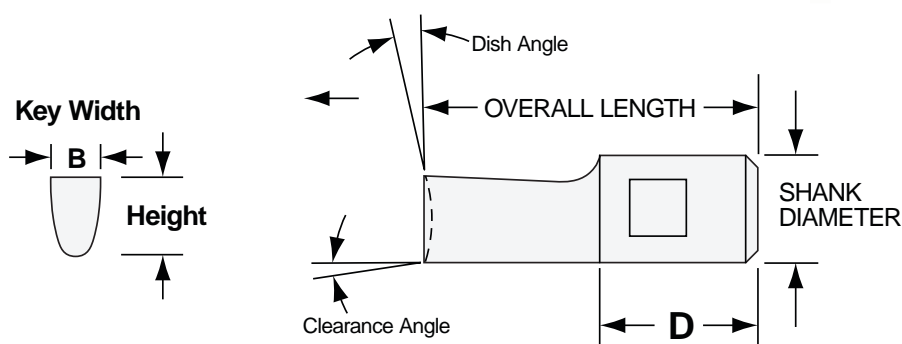
Produce keyways in blind or through holes with Slater Tools keyway slotting tools. Slater Tools' Keyway Punch Broaches allow full form keyways to be produced on your CNC machine. Also known as single point keyway tools, the form is created in the work piece by slotting a portion of material and incrementally indexing the machine forward until the desired key height is achieved.

Keyway punch broaches are designed to meet ANSI B17.1, DIN-6885, and ISO R773 Standards. They are also available in non-standard geometries. Engineered to optimize tool life, Slater's keyway punch broaches allow for multiple re-sharpenings.



PUNCH BROACH

INTERNAL



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

Standard Sizes (in)	B	Height	Order #	Metric Sizes (mm)	B	Height	Order #
1/16	0.0635	0.218	SP3-K-0635	2	0.0790	0.218	SP3-K-0790
3/32	0.0948	0.218	SP3-K-0948	3	0.1185	0.218	SP3-K-1185
1/8	0.1260	0.218	SP3-K-1260	4	0.1579	0.218	SP3-K-1579
5/32	0.1572	0.218	SP3-K-1572	5	0.1970	0.218	SP3-K-1970
3/16	0.1885	0.218	SP3-K-1885	6	0.2366	0.218	SP3-K-2366
1/4	0.2510	0.218	SP3-K-2510	8	0.3155	0.260	SP3-K-3155
5/16	0.3137	0.260	SP3-K-3137				
3/8	0.3765	0.260	SP3-K-3765				

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

Standard Sizes (in)	B	Height	Order #	Metric Sizes (mm)	B	Height	Order #
3/32	0.0948	0.310	SP5-K-0948	3	0.1185	0.310	SP5-K-1185
1/8	0.1260	0.310	SP5-K-1260	4	0.1579	0.310	SP5-K-1579
5/32	0.1572	0.310	SP5-K-1572	5	0.1970	0.310	SP5-K-1970
3/16	0.1885	0.310	SP5-K-1885	6	0.2366	0.310	SP5-K-2366
1/4	0.2510	0.310	SP5-K-2510	8	0.3155	0.310	SP5-K-3155
5/16	0.3135	0.310	SP5-K-3135	10	0.3940	0.310	SP5-K-3940
3/8	0.3760	0.310	SP5-K-3760	12	0.4730	0.310	SP5-K-4730
7/16	0.4385	0.310	SP5-K-4385	14	0.5518	0.365	SP5-K-5518
1/2	0.5010	0.330	SP5-K-5010	16	0.6306	0.400	SP5-K-6306
5/8	0.6265	0.400	SP5-K-6265				
3/4	0.7515	0.475	SP5-K-7515				



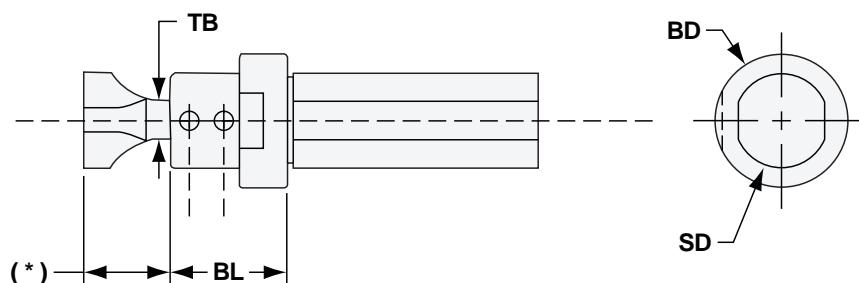


## INDEXABLE PUNCH BROACH HOLDERS

Slater Tools' Indexable Punch Broach Holders facilitate punch broaching on CNC lathes and mills. By using partial form broach tools and indexing either the tool or the workpiece, Slater Tools' punch broach holders provide the rigidity necessary to make this type of machining successful and prevents the broach or holder from backing up from pressure. The punch broach holder is precision ground and has multiple flats for easier indicating of the tool and increased repeatability. This is especially helpful in applications that need to have the form timed to another feature in the workpiece.



### SH0300 SERIES | .315" TOOL BORE | 2.00" LONG STRAIGHT SHANK

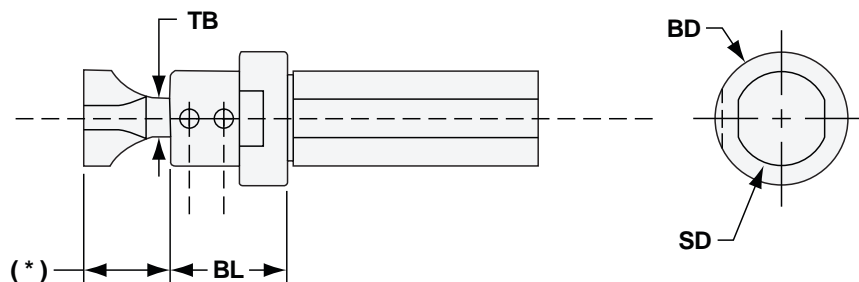


PUNCH BROACH  
TOOL HOLDERS

Shank Dia.	TB	BL	BD	Order #
20mm	.315	.935	1.00	SH0300-20
22mm	.315	.935	1.00	SH0300-22
.625"	.315	.935	1.00	SH0300-1
.750"	.315	.935	1.00	SH0300-2

\* Exposed tool length with standard .315 shank broaches is .690"

### SH0500 SERIES | .500" TOOL BORE | 3.00" LONG STRAIGHT SHANK



Shank Dia.	TB	BL	BD	Order #
22mm	.500	1.25	1.24	SH0500-22
25mm	.500	1.25	1.24	SH0500-25
.750"	.500	1.25	1.24	SH0500-1
1.00"	.500	1.25	1.24	SH0500-2
1.25"	.500	1.25	1.49	SH0500-3

\* Exposed tool length with standard .500 shank broaches is 1.06"



## PART PREPARATION GUIDE

### INDEX AND SINGLE POINT PUNCH BROACHING PART PREPARATION GUIDE

#### **Pre-Drill Hole Diameter:**

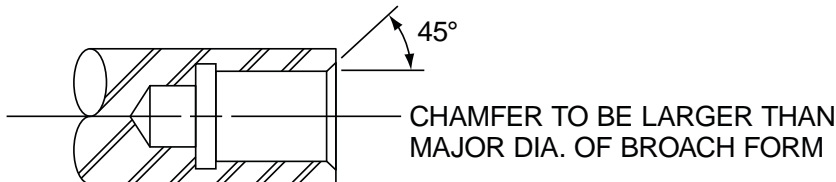
- A pre-drill hole is required for index punch broaching.
  - The pre-drill hole must be at least equal to the minor diameter of the finished form. It is strongly recommended to open the hole diameter larger than the minor diameter.
  - For keyway and single point broaching, the pre-drill hole must be equal to the finished keyway bore or minor diameter

#### **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.
- It is recommended to have a pre-drill depth of 1.75 x depth of broached area.
- For full form or two corner punch broaching:
  - A recess at the bottom of the pre-drill is recommended. This will allow the chips to break cleanly. The recess diameter should be larger than the major diameter of the broach. Alternatively, if chips must be removed after broaching, it can be done with a drill or boring tool.
- For keyway and single point broaching:
  - A recess at the bottom of the pre-drill is mandatory and should be larger than the major diameter of the final keyway or tooth height.

#### **Lead Chamfer:**

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





## SET UP PARAMETERS

### FULL FORM OR TWO CORNER PUNCH BROACHING

- Position broach tool a sufficient distance away from face of workpiece to allow for acceleration to full cutting speed
- Use machine's peck mode and feed to the desired depth. Alternatively, program the machine to rapid in and then retract the tool in .005 increments
- Spindle lock or ability to program lock is required

### KEYWAY OR SINGLE POINT PUNCH BROACHING

- Position the tool at least 1" away from face of workpiece to allow for acceleration to full cutting speed (otherwise could contribute to deflection or tapering)
- .0008-.0015" doc per pass/ 200-550 IPM (inches per minute)
- After feeding to desired depth, program machine to drop down away from tooth
- Chip must break off completely after each pass; program tool to enter into relief groove (blind hole) or pass end of part (through hole)
- Spindle lock or ability to program lock is required





## HEXAGON PLUG GAGES

Slater Tools manufactures both standard and custom sized hexagon inspection gages. Use our Go and No-Go Gages to inspect your parts for machining process variations such as form size, twist, tool wear, etc.

Slater Tools Hex Gages are held to extremely tight tolerances (+0/-.0002) with extremely fast delivery times. Go/ No-Go Gages are precision ground from oil hardened M2 high speed steel and can be custom made to any shape or size to fit your specific application. Long form gage certification is also available on all internal and external gages.



### ENGLISH - GO GAGE SIZES

Nominal Sizes (in)	Order #
1/16"	G506-0627
5/64"	G506-0783
3/32"	G506-0939
7/64"	G506-1096
1/8"	G506-1252
9/64"	G506-1408
5/32"	G506-1564
3/16"	G506-1877
7/32"	G506-2189
1/4"	G506-2502
5/16"	G506-3127
3/8"	G506-3752
7/16"	G506-4377
1/2"	G506-5002
9/16"	G506-5627
5/8"	G506-6252
3/4"	G506-7502
7/8"	G506-8752
1"	G506-1.0002

### ENGLISH - NOGO GAGE SIZES

Nominal Sizes (in)	Order #
1/16"	NG506-0640
5/64"	NG506-0791
3/32"	NG506-0952
7/64"	NG506-1110
1/8"	NG506-1270
9/64"	NG506-1426
5/32"	NG506-1590
3/16"	NG506-1900
7/32"	NG506-2220
1/4"	NG506-2530
5/16"	NG506-3160
3/8"	NG506-3790
7/16"	NG506-4420
1/2"	NG506-5050
9/16"	NG506-5680
5/8"	NG506-6310
3/4"	NG506-7570
7/8"	NG506-8850
1"	NG506-1.0200

### METRIC - GO GAGE SIZES

Nominal Sizes (mm)	Order #
1.5mm	G506-0600
2mm	G506-0797
2.5mm	G506-0994
3mm	G506-1191
4mm	G506-1585
5mm	G506-1978
6mm	G506-2372
8mm	G506-3161
10mm	G506-3949
12mm	G506-4739
14mm	G506-5526
17mm	G506-6715
19mm	G506-7508
22mm	G506-8689
24mm	G506-9476

### METRIC - NOGO GAGE SIZES

Nominal Sizes (mm)	Order #
1.5mm	NG506-0610
2mm	NG506-0810
2.5mm	NG506-1010
3mm	NG506-1210
4mm	NG506-1610
5mm	NG506-2001
6mm	NG506-2400
8mm	NG506-3200
10mm	NG506-3990
12mm	NG506-4782
14mm	NG506-5574
17mm	NG506-6780
19mm	NG506-7580
22mm	NG506-8790
24mm	NG506-9574

GO/NOGO GAGE  
INTERNAL



## SIX LOBE PLUG GAGES

Slater Tools Six Lobe Plug Gages are used for validating part specifications for hexalobular/six lobe, also known as Torx-type, internal forms. Six Lobe plug gages are held to extremely tight tolerances (+0/-.0002) with extremely fast delivery times. Go/ No-Go Gages are precision ground from oil hardened M2 high speed steel and are available as a set or single ended. Long form gage certification is also available on all internal and external gages.



### GO GAGE SIZES

Nominal Sizes (in)	Part #
T15	G508-15
T20	G508-20
T25	G508-25
T27	G508-27
T30	G508-30
T40	G508-40
T45	G508-45
T50	G508-50

### NOGO GAGE SIZES

Nominal Sizes (in)	Part #
T15	NG508-15
T20	NG508-20
T25	NG508-25
T27	NG508-27
T30	NG508-30
T40	NG508-40
T45	NG508-45
T50	NG508-50

### INTERNAL GAGE SPECIFICATIONS:

- Gages are available as Go/NoGo sets or as single ended gages
- Each gage order comes with single or double-ended handle
- Long form gage certification is available upon request
- Custom plug gages per customer specifications can be manufactured
- Ideal for use with Slater Tools Rotary Broaches
- Manufacturing tolerances are held within .0002 inches (.005 mm)

INTERNAL  
GO/NOGO GAGE



## EXTERNAL HEXAGON RING GAGES

Slater Tools manufactures standard and custom external hexagon ring gages held to extremely tight tolerances with extremely fast delivery times. Standard external hexagon ring gages are made to ANSI/ASME B18.2.1 (B18.2.3.1M) for Hex Cap Screws (finished hex bolt). Use our Go and No-Go Gages to inspect your parts for machining process variations such as form size, twist, tool wear, etc.



### ENGLISH- GO GAGE SIZES

Nominal Sizes (in)	GO Across Flats	Order #
7/16"	.4382/.4380	G1462-4382
1/2"	.5002/.5000	G1462-5002
9/16"	.5622/.5620	G1462-5622
5/8"	.6252/.6250	G1462-6252
3/4"	.7502/.7500	G1462-7502
13/16"	.8122/.8120	G1462-8122
15/16"	.9382/.9380	G1462-9382

### ENGLISH- NOGO GAGE SIZES

Nominal Sizes (in)	NOGO Across Flats	Order #
7/16"	.4280/.4278	NG1462-4280
1/2"	.4890/.4888	NG1462-4890
9/16"	.5510/.5508	NG1462-5510
5/8"	.6120/.6118	NG1462-6120
3/4"	.7360/.7358	NG1462-7360
13/16"	.7980/.7978	NG1462-7980
15/16"	.9220/.9218	NG1462-9220

### METRIC- GO GAGE SIZES

Nominal Sizes (mm)	GO Across Flats	Order #
8mm	.3151/.3149	G1462-3151
10mm	.3939/.3937	G1462-3939
13mm	.5120/.5118	G1462-5120
16mm	.6301/.6299	G1462-6301
18mm	.7088/.7086	G1462-7088
21mm	.8269/.8267	G1462-8269
24mm	.9450/.9448	G1462-9450

### METRIC- NOGO GAGE SIZES

Nominal Sizes (mm)	NOGO Across Flats	Order #
8mm	.3062/.3060	NG1462-3062
10mm	.3850/.3848	NG1462-3850
13mm	.5011/.5009	NG1462-5011
16mm	.6192/.6190	NG1462-6192
18mm	.6980/.6978	NG1462-6980
21mm	.8137/.8135	NG1462-8137
24mm	.9318/.9316	NG1462-9318

### EXTERNAL GAGE SPECIFICATIONS:

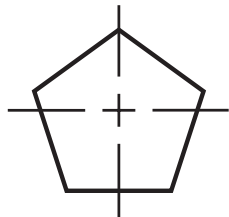
- Standard external hexagon ring gages are made to ANSI/ASME B18.2.1 (B18.2.3.1M) for Hex Cap Screws (finished hex bolt).
- Gages are available as Go/No-Go sets or as single member gages
- Long form gage certification is available upon request
- Custom ring gages per customer specifications can be manufactured
- Ideal for use with Slater Tools Rotary Broaches
- Manufacturing tolerances are held within .0002 inches (.005 mm)

EXTERNAL  
GO/NOGO GAGE

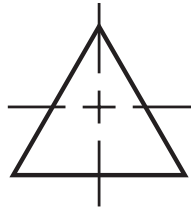


## CUSTOM INTERNAL AND EXTERNAL FORM GAGES

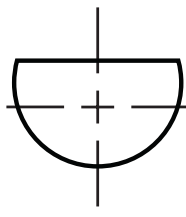
POPULAR CUSTOM SHAPES INCLUDE:



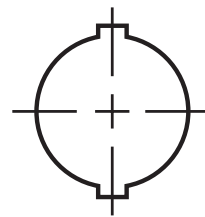
PENTAGON



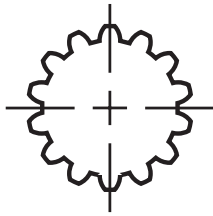
TRIANGLE



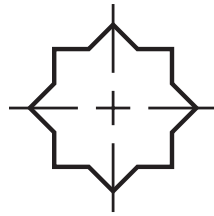
D SHAPE



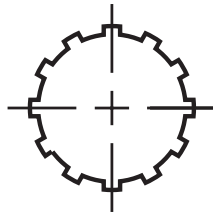
KEYWAY



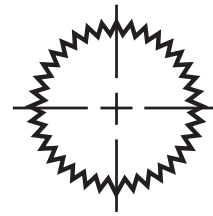
INVOLUTE



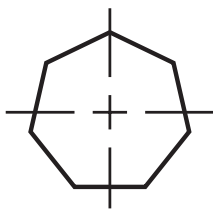
DOUBLE SQUARE



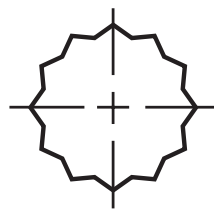
SPLINE



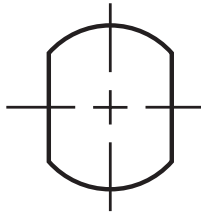
SERRATION/KNURL



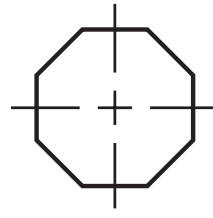
HEPTAGON



DOUBLE HEX



DOUBLE D



OCTAGON

### CUSTOM PLUG AND RING GAGE ORDER PROCESS:

- Please submit a portion of your print showing the form to be gaged and tolerances
- Please indicate whether you would like the gages to be certified
- You will receive a quote within 24 business hours
- Once the order is placed, we will design your gages and submit a drawing for your approval



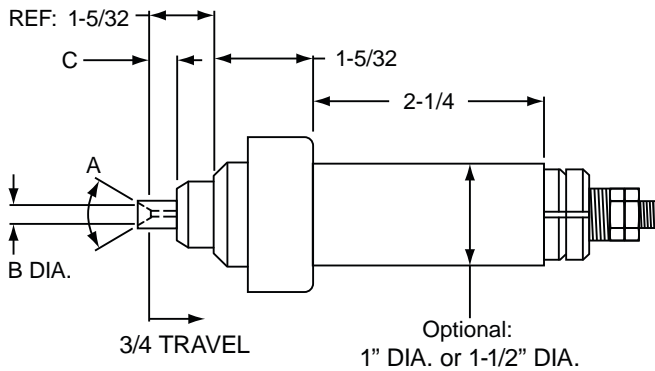
CUSTOM

GO/NOGO GAGE



## FEMALE POINT LIVE CENTER ASSEMBLIES

Slater Tools' 1" and 1.5" shank diameter Female Point Spring Live Centers are offered with a 60 or 90 degree female point in various sizes. Male or female points can be purchased separately and interchanged with this unit, reducing inventory, cost and downtime.



### 1" SHANK DIAMETER

A	B Dia (in)	C	Part #
60° FEMALE	7/32"	3/8"	CLR-0111
60° FEMALE	15/32"	n/a	CLR-0112
60° FEMALE	19/32"	11/32"	CLR-0113
90° FEMALE	7/32"	3/8"	CLR-0115
90° FEMALE	15/32"	n/a	CLR-0116
90° FEMALE	19/32"	11/32"	CLR-0117

### 1.5" SHANK DIAMETER

A	B Dia (in)	C	Part #
60° FEMALE	7/32"	3/8"	CLR-0211
60° FEMALE	15/32"	3/8"	CLR-0212
60° FEMALE	19/32"	25/64"	CLR-0213
90° FEMALE	7/32"	3/8"	CLR-0215
90° FEMALE	15/32"	3/8"	CLR-0216
90° FEMALE	19/32"	25/64"	CLR-0217

### SPECIFICATIONS:

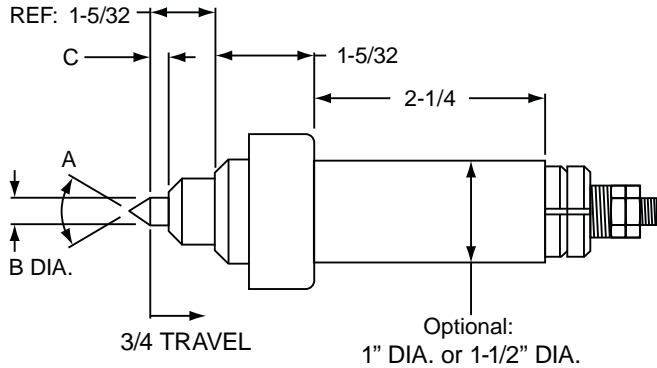
- Precision bearing placement for greater rigidity required by Live Centers
- Independent inner housings provide rigidity while allowing the live center shaft to retract with workpiece
- Spring loaded design compensates for variations, without damage to the work piece or center tip. This assures the operator of uniform constant tension
- Interchangeable Live Center points offer versatility; reducing inventory, costs, and down time
- Point configuration is designed to meet required tool clearance
- Female and male point centers provide excellent support, and prevent deflection of long parts while machining
- Retractable spring loaded centers combined with an independent inner housing empowers you with the ultimate design in live centers available to the turning industry





## MALE POINT LIVE CENTER ASSEMBLIES

Slater Tools' 1" and 1.5" diameter Male Point Spring Live Centers are offered with a 60 or 90 degree male point in various sizes. Male or female points can be purchased separately and interchanged with this unit, reducing inventory, cost and downtime.



### 1" SHANK DIAMETER

A	B Dia (in)	C	Part #
60° MALE	1/4"	3/8"	CLR-0151
60° MALE	1/2"	n/a	CLR-0152
60° MALE	5/8"	11/32"	CLR-0153
90° MALE	1/4"	3/8"	CLR-0155
90° MALE	1/2"	n/a	CLR-0156
90° MALE	5/8"	11/32"	CLR-0157

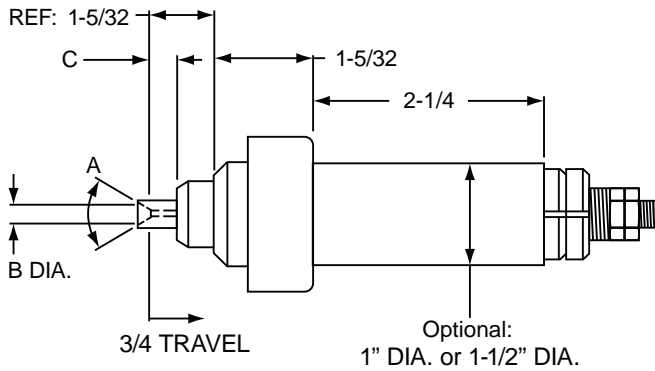
### 1.5" SHANK DIAMETER

A	B Dia (in)	C	Part #
60° MALE	1/4"	3/8"	CLR-0251
60° MALE	1/2"	3/8"	CLR-0252
60° MALE	5/8"	25/64"	CLR-0253
90° MALE	1/4"	3/8"	CLR-0255
90° MALE	1/2"	3/8"	CLR-0256
90° MALE	5/8"	25/64"	CLR-0257



## FEMALE CENTER POINTS

Slater Tools' female center points are manufactured from high-quality hardened tool steel. They can be easily interchanged in Slater Tools' 1" or 1.5" inch Spring-type Live Centers, allowing for maximum flexibility with different workpiece types. Many sizes are available from stock for same day delivery. Custom point configurations are also available upon request.



### TO FIT 1" SHANK LIVE CENTER ASSEMBLIES

A	B Dia (in)	C	Part #
60° FEMALE	7/32"	3/8"	10021201
60° FEMALE	15/32"	n/a	10021401
60° FEMALE	19/32"	11/32"	10021501
90° FEMALE	7/32"	3/8"	10023201
90° FEMALE	15/32"	n/a	10023401
90° FEMALE	19/32"	11/32"	10023501

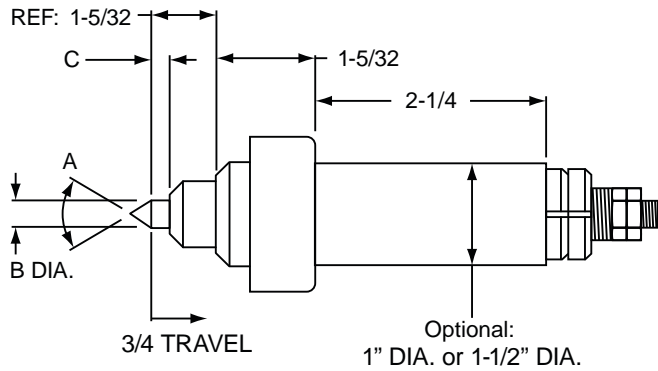
### TO FIT 1.5" SHANK LIVE CENTER ASSEMBLIES

A	B Dia (in)	C	Part #
60° FEMALE	7/32"	3/8"	10421201
60° FEMALE	15/32"	3/8"	10421401
60° FEMALE	19/32"	25/64"	10421501
90° FEMALE	7/32"	3/8"	10423201
90° FEMALE	15/32"	3/8"	10423401
90° FEMALE	19/32"	25/64"	10423501



## MALE CENTER POINTS

These male center points are manufactured from high-quality hardened tool steel. They can be easily interchanged in Slater Tools' 1" or 1.5" inch Spring-type Live Centers, allowing for maximum flexibility with different workpiece types. Many sizes are available from stock for same day delivery. Custom point configurations are also available upon request.



### TO FIT 1" SHANK LIVE CENTER ASSEMBLIES

A	B Dia (in)	C	Part #
60° MALE	1/4"	3/8"	10022201
60° MALE	1/2"	n/a	10022401
60° MALE	5/8"	11/32"	10022501
90° MALE	1/4"	3/8"	10024201
90° MALE	1/2"	n/a	10024401
90° MALE	5/8"	11/32"	10024501

### TO FIT 1.5" SHANK LIVE CENTER ASSEMBLIES

A	B Dia (in)	C	Part #
60° MALE	1/4"	3/8"	10422201
60° MALE	1/2"	3/8"	10422401
60° MALE	5/8"	25/64"	10422501
90° MALE	1/4"	3/8"	10424201
90° MALE	1/2"	3/8"	10424401
90° MALE	5/8"	25/64"	10424501

LIVE CENTERS  
CENTER POINTS



## BORING BAR TOOL HOLDERS

The high precision head of this Boring Bar Tool Holder is designed and ruggedly built for heavy cuts and accurate bore sizing for large volume production runs. Slater Tools' Boring Bar Tool Holders use industry standard boring bars, reducing the need for special tooling. Tool bores are ground concentric with the shank and can be used for trepanning. The double hole is designed to accommodate a larger range of bore sizes. All moving parts on this tool holder are hardened and ground.



### SINGLE HOLE BORING HEADS

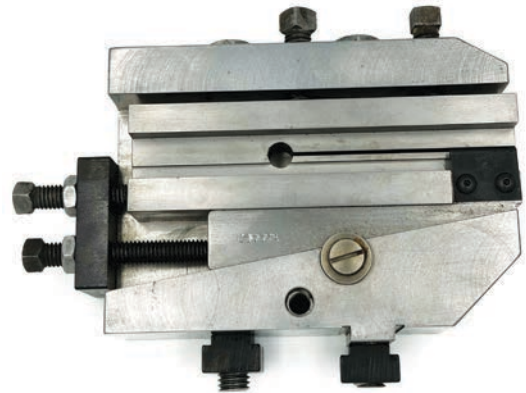
Shank Dia. B	Tool Bore A	C	D	E	F	Max Adj.	Part #
3/4	5/8	3/4	1 3/4	7/8	2	5/16	BBH-0130
1	5/8	3/4	1 3/4	7/8	2	5/16	BBH-0135
1 1/4	3/4	1	2 1/2	1 1/8	2 1/2	1/2	BBH-0140
1 3/4	1	1 1/8	2 3/4	1 1/4	3	5/8	BBH-0150
2	1 1/8	1 1/2	3	1 1/2	3 1/2	3/4	BBH-0160
2 1/2	1 1/4	1 3/4	3 1/2	1 3/4	4	7/8	BBH-0170

### DOUBLE HOLE BORING HEADS

Shank Dia. B	Tool Bore A	C	D	E	F	G	H	Max Adj.	Part #
3/4	5/8	3/4	1 3/4	7/8	2	9/16	1/4	5/16	BBH-0230
1	5/8	3/4	1 3/4	7/8	2	9/16	1/4	5/16	BBH-0235
1 1/4	3/4	1	2 1/2	1 1/8	2 1/2	5/8	3/8	1/2	BBH-0240
1 3/4	1	1 1/8	2 3/4	1 1/4	3	3/4	1/2	5/8	BBH-0250
2	1 1/8	1 1/2	3	1 1/2	3 1/2	13/16	5/8	3/4	BBH-0260
2 1/2	1 1/4	1 3/4	3 1/2	1 3/4	4	1	1 1/16	7/8	BBH-0270

## CUT-OFF BLADE HOLDERS

This Cut-Off Blade Holder holds T-style cut-off blades, also available from Slater Tools. Both Cross-Slide and Intermediate Side-Slide Holders are available, giving the flexibility for any designated position. There is in stock availability for most screw machines.



## T-STYLE CUT-OFF BLADES

Slater Tools' T-shaped Cut-Off Blades are made of premium high speed tool steel and have excellent tool life. They are all-purpose T-Type blades that fit into Slater Tools' Cut-Off Blade Holder Inserts.





## DAVENPORT UNIVERSAL VERTICAL SLIDE

Update your Davenport with Slater Tools' universal type slide. It will give you a new approach to tooling, eliminating the need for special tooling or semi-standard setups. No alterations are required for mounting. No adjustments of other stations are needed to work with a stationary 4th position slide. It will enable you to save time on initial job setups, on minor adjustments during job runs, and when changing from one job to another. It accepts up to six types of tool holders. Tooling options are available for the Fourth "D" Position.



Position	Machine Model	Part #
Fourth "D"	Model "B": 5/8" or 7/8"	SVS-7340

## DAVENPORT SWING ARM

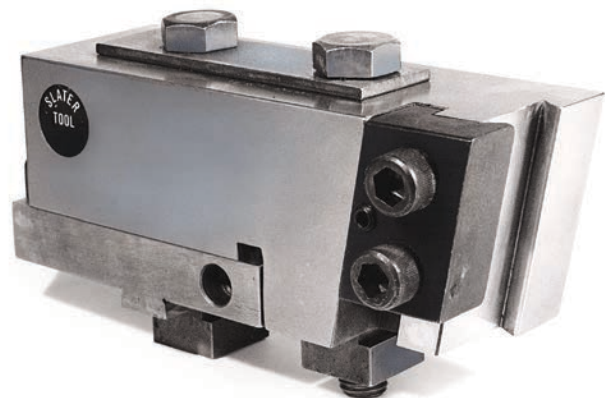
Slater Tools' Davenport Swing Arm is suited for holder blocks in the third position. This product allows for versatility of holder use. Use Slater Tools' Shank-type Knurling, Shaving, and Skiving mounting blocks in the third position with the Davenport Swing Arm.



Position	Machine Model	Part #
Third "C"	Model "B": 5/8" or 7/8"	SSA-7103

## FORMING TOOLS

Slater Tools offers many types of forming tool holders and double decks. Every job has its own unique conditions, and each condition calls for a different type of form tool. To form at the tool's full potential, familiarize yourself with several individual features of the application-shape of work, width and depth of cut, for rough forming or finishing operations, location of tool holder in relation to other tools in the set-up, type of material, and speeds and feeds at which the work is done.

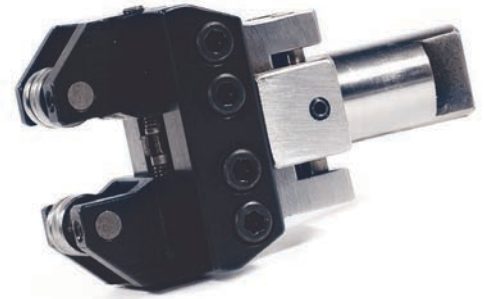


TOOLING  
SCREW MACHINE



## KNURLING TOOL HOLDERS

Slaters Tools' straddle-type Knurl Holders increase machine life and save on set-up time and maintenance costs. These Knurl Tool Holders come in either a cross-slide or end-slide configuration. Adaptor blocks allow the holders to fit most makes, models, and sizes of machines. Holder assemblies are designed to compensate for any slight misalignment with the centerline of the spindle. Size control is made easy through simultaneous adjusting of both knurl roll holders. There is no extra expense for tooling since these tool holders use standard, commercially available knurl rolls.

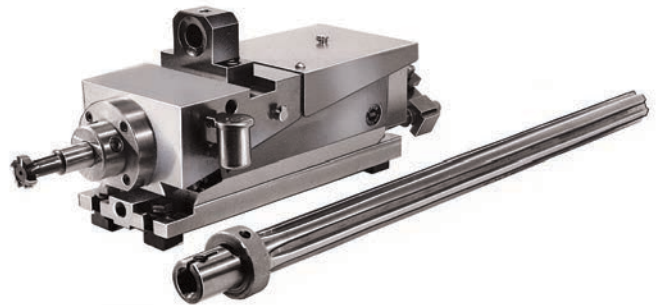


## RECESS TOOL HOLDERS

Slaters Tools offers Recess Tool Holders, Recess Tool Blanks and Recess Attachments for various types of screw machines. Recess Tool Holders are available in different styles and sizes depending on your machine make, model, and size.

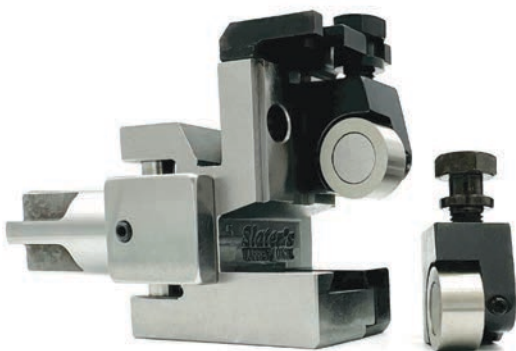
## SHAFT-DRIVEN ATTACHMENTS

Screw machines are highly efficient and cost effective. No other machine can produce the quantity and variety of small parts for such a low cost as a screw machine. Specific attachments can increase productivity while optimizing the screw machine's efficiency. Attachments on the standard screw machine allow for shorter lead-times and tighter tolerances. The extended capability that Slaters Tools' attachments offer, allows screw machines to accommodate more complex workpieces.



## SHAVING TOOL HOLDERS

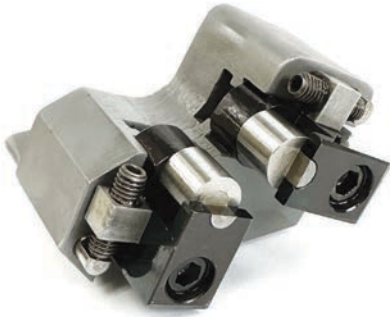
Slaters Tools offers Shaving Tool Holders, Shaving Tool Blanks, Shaving Roll Rests and other accessories for various types of machines. Shaving will produce round diameters on size within +/- .0005. With these shaving tools, contours can be produced that would otherwise only be possible by tracing. By its nature, shaving can almost always be completed in fewer revolutions than an end-working operation. Shaving also has its built-in diameter controls; it does not rely on exact cross slide stroke length for accuracy, and to a certain extent, it can compensate for index or spindle errors.





## SKIVING TOOLING

Skiving Tool Holders from Slater Tools are for single & multiple spindle automatics and turret lathes. Make your toughest cuts within seconds. Obtain exceptionally smooth skiving finishes and quicker tool resharpening with easy tool removal. Slater Tools' Skiving Tooling is manufactured to have what it takes to uphold performance. Slater Tools' shave tool blanks may also be used as skive tool blanks.

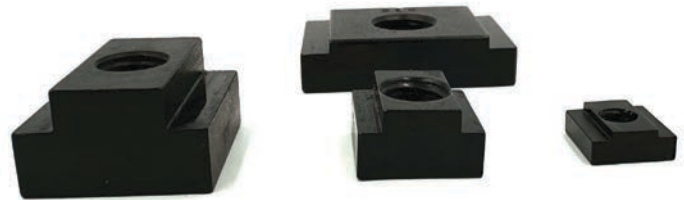


## SUPPORTS

It is recommended to support any workpiece that is long in relation to its diameter. In order to prevent the workpiece from moving under the cut, use Slater Tools' supports. All Slater Tools supports come with rolls and pins, and replacement parts are also available. Supports are available for Acme, New Britain, Cone, Warner & Swasey, and Wickman machines.

## T-SLOT NUTS

It is vital to have strong T-Slot nuts to secure tooling to your screw machine. Slater Tools supplies the same standard and dovetail nuts used with our robust screw machine tooling as replacement parts for your machine.

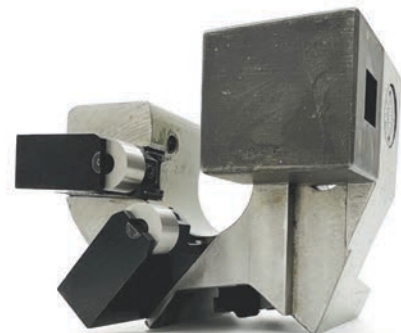


## TURNING KNEE

Available for most end-slide positions in plain, reversible, or angular 45 degrees. The Turning Knee uses standard tool bit tooling. Turning Knee Reversible tool bits can changeover for use in multiple positions. Turning Knees are available for most types of screw machines including Acme, New Britain, Cone, Warner & Swasey, and Wickman Machines. For flat, angular or radius base, please specify your machine make and model.

## TURNING ROLL TURNER

Support and turn your screw machine part simultaneously. Slater Tools' Turning Roll Turners are available for most end-slide positions. Either flat, angular or radius bases are available for Acme, New Britain, Cone, Warner & Swasey, and Wickman machines. These Turning Roll Turners use standard tool bit tooling. With this tool, you are able to support parts ahead of or behind the cut.



SCREW MACHINE  
TOOLING



44725 Trinity Drive, Clinton Township, MI 48038 USA

www.slatertools.com (586) 465-5000



## Rotary Broach Tooling

Page 6



## Punch Broach Tooling

Page 44



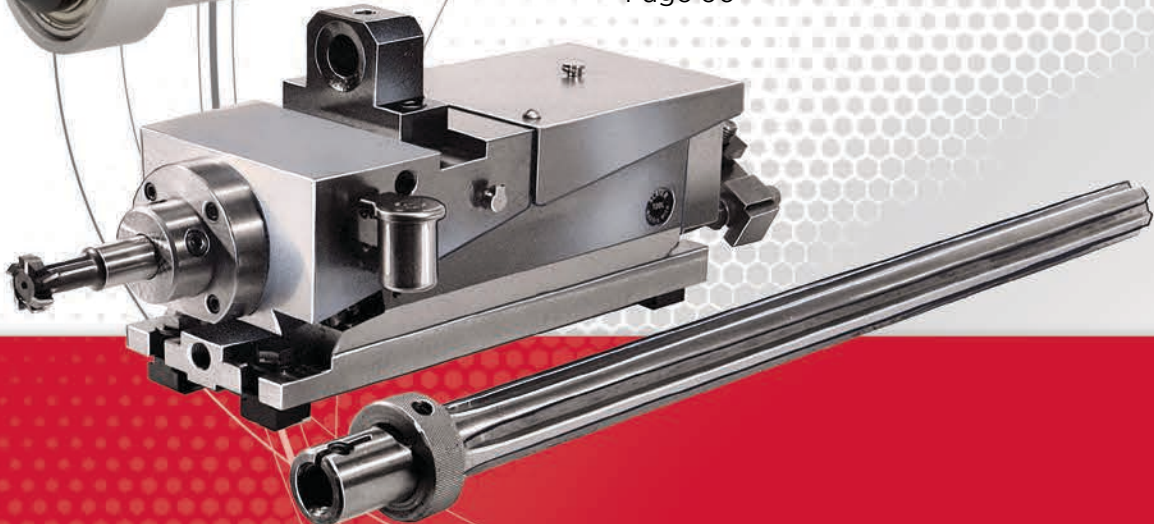
## Go/NoGo Gages

Page 52



## Spring Live Centers

Page 56



## Screw Machine Tooling

Page 60