

ROTARY/PUNCH BROACHE





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Internal Rotary/Punch Broaches



HEXAGONAL ROTARY/PUNCH BROACHES .315 SHANK - AMERICAN

| EDP | Hex | Depth | OAL | Price |
|-----------------------------|--------|--------|--------|---------|
| No. | Size | of Cut | | Each |
| 66002 | .051″ | 5/64" | 1-1/4″ | \$48.10 |
| 66004 | 1/16" | 3/32″ | 1-1/4″ | 48.10 |
| 66005 | 5/64" | 7/64″ | 1-1/4″ | 48.10 |
| 66006 | 3/32″ | 9/64" | 1-1/4″ | 48.10 |
| 66007 | 7/64″ | 5/32" | 1-1/4″ | 48.10 |
| 66008 | 1/8″ | 3/16" | 1-1/4″ | 48.10 |
| 66009 | 9/64" | 7/32″ | 1-1/4″ | 48.10 |
| 66010 | 5/32" | 1/4″ | 1-1/4″ | 48.10 |
| 66012 | 3/16" | 9/32″ | 1-1/4″ | 48.10 |
| 66014 | 7/32″ | 11/32″ | 1-1/4″ | 48.10 |
| 66016 | 1/4″ | 3/8″ | 1-1/4″ | 48.10 |
| 66018 | 9/32″ | 3/8″ | 1-1/2″ | 63.50 |
| 66020 | 5/16" | 3/8″ | 1-1/2″ | 63.50 |
| 66022 | 11/32″ | 7/16″ | 1-1/2″ | 63.50 |
| 66024 | 3/8″ | 1/2″ | 1-1/2″ | 65.50 |
| 66026 | 13/32″ | 1/2″ | 1-1/2″ | 65.50 |
| 66028 | 7/16″ | 1/2″ | 1-1/2″ | 65.50 |
| 66030 | 15/32" | 1/2″ | 1-1/2″ | 65.50 |
| Add \$10.00 for tin coating | | | | |

HEXAGONAL ROTARY/PUNCH BROACHES .315 SHANK - METRIC

| EDP No. | Hex Size | Depth of Cut | OAL | Price Each |
|-----------------------------|-------------|-----------------|--------|---------------|
| 662013 | 1.3mm | 3/32″ | 1-1/4″ | \$48.10 |
| 662015 | 1.5mm | 3/32″ | 1-1/4″ | 48.10 |
| 66202 | 2mm | 7/64″ | 1-1/4″ | 48.10 |
| 662025 | 2.5mm | 5/32" | 1-1/4″ | 48.10 |
| 66203 | 3mm | 3/16″ | 1-1/4″ | 48.10 |
| 66204 | 4mm | 1/4″ | 1-1/4″ | 48.10 |
| 66205 | 5mm | 5/16" | 1-1/4″ | 48.10 |
| 66206 | 6mm | 3/8″ | 1-1/4″ | 48.10 |
| 66207 | 7mm | 3/8″ | 1-1/2″ | 64.50 |
| 66208 | 8mm | 3/8″ | 1-1/2″ | 64.50 |
| 66209 | 9mm | 3/8″ | 1-1/2″ | 64.50 |
| 66210 | 10mm | 1/2″ | 1-1/2″ | 64.50 |
| 66211 | 11mm | 1/2″ | 1-1/2″ | 64.50 |
| 66212 | 12mm | 1/2″ | 1-1/2″ | 64.50 |
| Add \$10.00 for tin coating | | | | |

| COB | ALT | HE) | KAG | ONAL | ROTARY/I | PUNCH | BROACH | ES |
|------|-----|-----|-----|-------|-----------------|-------|--------|----|
| .315 | SHA | NK | - M | ETRIC | | | | |

| EDP No. | Hex Size | Across Flats | Depth of Cut | OAL | Price Each |
|------------|-------------|-----------------|-----------------|--------|---------------|
| 66202-M42 | 2mm | .081 | 7/64″ | 1-1/4″ | \$62.00 |
| 662025-M42 | 2.5mm | .101 | 5/32″ | 1-1/4″ | 62.00 |
| 66203-M42 | 3mm | .120 | 3/16″ | 1-1/4″ | 62.00 |
| 662035-M42 | 3.5mm | .139 | 3/16″ | 1-1/4″ | 62.00 |
| 66204-M42 | 4mm | .160 | 1/4″ | 1-1/4″ | 62.00 |
| 662045-M42 | 4.5mm | .179 | 1/4" | 1-1/4″ | 62.00 |

| HEXAGONAL ROTARY/PUNCH BROACHES .500 SHANK - AMERICAN | | | | |
|--|-------------|-----------------|--------|---------------|
| EDP No. | Hex Size | Depth of Cut | OAL | Price Each |
| 66106 | 3/32″ | 9/64″ | 1-1/2″ | \$53.50 |
| 66107 | 7/64″ | 5/32" | 1-1/2″ | 53.50 |
| 66108 | 1/8″ | 3/16″ | 1-1/2″ | 53.50 |
| 66109 | 9/64" | 7/32″ | 1-1/2″ | 53.50 |
| 66110 | 5/32" | 1/4″ | 1-1/2″ | 53.50 |
| 66112 | 3/16" | 9/32″ | 1-1/2″ | 53.50 |
| 66114 | 7/32″ | 9/32″ | 1-1/2″ | 53.50 |
| 66116 | 1/4″ | 3/8″ | 1-1/2″ | 53.50 |
| 66118 | 9/32″ | 7/16″ | 1-1/2″ | 53.50 |
| 66120 | 5/16" | 1/2″ | 1-1/2″ | 53.50 |
| 66122 | 11/32" | 9/16" | 1-1/2″ | 53.50 |
| 66124 | 3/8″ | 9/16" | 1-1/2″ | 53.50 |
| 66126 | 13/32" | 5/8″ | 2″ | 75.50 |
| 66128 | 7/16″ | 5/8″ | 2″ | 75.50 |
| 66130 | 15/32" | 5/8″ | 2″ | 75.50 |
| 66132 | 1/2″ | 5/8″ | 2″ | 75.50 |
| 66134 | 17/32″ | 5/8″ | 2″ | 75.50 |
| 66136 | 9/16" | 5/8″ | 2″ | 75.50 |
| 66138 | 19/32" | 5/8″ | 2″ | 78.75 |
| 66140 | 5/8″ | 3/4″ | 2″ | 78.75 |
| 66142 | 21/32" | 3/4″ | 2″ | 80.85 |
| 66144 | 11/16″ | 7/8″ | 2″ | 80.85 |
| 66146 | 23/32″ | 7/8″ | 2″ | 83.25 |
| 66148 | 3/4" | 7/8″ | 2″ | 83.25 |

HEXAGONAL ROTARY/PUNCH BROACHES .500 SHANK - METRIC

| EDP No. | Hex Size | Depth of Cut | OAL | Price Each |
|------------|-------------|-----------------|--------|---------------|
| 66302 | 2mm | 5/32″ | 1-1/2″ | \$53.50 |
| 663025 | 2.5mm | 5/32" | 1-1/2″ | 53.50 |
| 66303 | 3mm | 3/16" | 1-1/2″ | 53.50 |
| 66304 | 4mm | 1/4″ | 1-1/2″ | 53.50 |
| 66305 | 5mm | 5/16" | 1-1/2″ | 53.50 |
| 66306 | 6mm | 3/8″ | 1-1/2″ | 53.50 |
| 66307 | 7mm | 1/2″ | 1-1/2″ | 53.50 |
| 66308 | 8mm | 1/2″ | 1-1/2″ | 53.50 |
| 66309 | 9mm | 1/2″ | 1-1/2″ | 53.50 |
| 66310 | 10mm | 9/16" | 1-1/2″ | 53.50 |
| 66311 | 11mm | 9/16" | 2″ | 75.50 |
| 66312 | 12mm | 5/8″ | 2″ | 75.50 |
| 66313 | 13mm | 5/8″ | 2″ | 75.50 |
| 66314 | 14mm | 5/8″ | 2″ | 75.50 |
| 66315 | 15mm | 5/8″ | 2″ | 75.50 |
| 66316 | 16mm | 5/8″ | 2″ | 80.85 |
| 66317 | 17mm | 7/8″ | 2″ | 80.85 |
| 66318 | 18mm | 7/8″ | 2″ | 83.25 |
| 66319 | 19mm | 7/8″ | 2″ | 83.25 |

HEXAGONAL ROTARY/PUNCH BROACHES .750 SHANK - AMERICAN

| EDP No. | Hex Size | Depth of Cut | OAL | Price Each |
|------------|-------------|-----------------|--------|---------------|
| 66524 | 3/8″ | 1/2″ | 2-1/2″ | \$70.95 |
| 66528 | 7/16″ | 1/2″ | 2-1/2″ | 70.95 |
| 66532 | 1/2″ | 1/2″ | 2-1/2″ | 102.00 |
| 66536 | 9/16" | 3/4″ | 2-1/2″ | 102.75 |
| 66540 | 5/8" | 3/4″ | 2-1/2″ | 102.75 |
| 66548 | 3/4" | 7/8″ | 2-3/4″ | 108.25 |
| 66556 | 7/8″ | 7/8″ | 2-3/4" | 108.25 |
| 66564 | 1″ | 7/8″ | 2-3/4″ | 115.95 |
| | | | | |

SQUARE ROTARY/PUNCH BROACHES .315 SHANK - AMERICAN

| EDP No. | Square Size | Depth of Cut | OAL | Price Each |
|------------|----------------|-----------------|--------|---------------|
| 68004 | 1/16″ | 1/8″ | 1-1/4″ | \$48.10 |
| 68006 | 3/32" | 9/64" | 1-1/4″ | 48.10 |
| 68008 | 1/8″ | 3/16" | 1-1/4″ | 48.10 |
| 68010 | 5/32" | 1/4″ | 1-1/4″ | 48.10 |
| 68012 | 3/16" | 9/32″ | 1-1/4″ | 48.10 |
| 68014 | 7/32″ | 11/32″ | 1-1/4″ | 48.10 |
| 68016 | 1/4″ | 3/8″ | 1-1/2″ | 64.50 |
| 68018 | 9/32" | 3/8″ | 1-1/2″ | 64.50 |
| 68020 | 5/16" | 3/8″ | 1-1/2″ | 64.50 |
| 68022 | 11/32" | 3/8″ | 1-1/2″ | 64.50 |
| 68024 | 3/8″ | 3/8″ | 1-1/2″ | 64.50 |
| | | | | |

SQUARE ROTARY/PUNCH BROACHES .500 SHANK - AMERICAN

| EDP No. | Square Size | Depth of Cut | OAL | Price Each |
|------------|----------------|-----------------|--------|---------------|
| 68106 | 3/32″ | 9/64″ | 1-1/2″ | \$56.95 |
| 68108 | 1/8″ | 3/16″ | 1-1/2″ | 56.95 |
| 68110 | 5/32" | 1/4″ | 1-1/2″ | 56.95 |
| 68112 | 3/16″ | 9/32″ | 1-1/2″ | 56.95 |
| 68114 | 7/32″ | 11/32" | 1-1/2″ | 56.95 |
| 68116 | 1/4″ | 3/8″ | 1-1/2″ | 56.95 |
| 68118 | 9/32″ | 7/16″ | 1-1/2″ | 56.95 |
| 68120 | 5/16" | 1/2″ | 1-1/2″ | 56.95 |
| 68122 | 11/32″ | 9/16″ | 1-1/2″ | 78.75 |
| 68124 | 3/8″ | 5/8″ | 2″ | 78.75 |
| 68128 | 7/16″ | 5/8″ | 2″ | 78.75 |
| 68132 | 1/2″ | 5/8″ | 2″ | 78.75 |
| 68136 | 9/16" | 3/4″ | 2″ | 83.25 |
| 68140 | 5/8″ | 7/8″ | 2″ | 83.25 |

SQUARE ROTARY/PUNCH BROACHES .750 SHANK - AMERICAN

| EDP No. | Square Size | Depth of Cut | OAL | Price Each |
|------------|----------------|-----------------|--------|---------------|
| 68532 | 1/2″ | 5/8″ | 2-1/2" | \$124.50 |
| 68536 | 9/16" | 3/4″ | 2-3/4" | 124.50 |
| 68540 | 5/8″ | 3/4″ | 2-3/4" | 128.95 |
| 68548 | 3/4″ | 7/8″ | 2-3/4" | 128.95 |

Rotary Broach Holders

| FOR BROACH | IES WITH .31 | 5 DIAMETER SHAN | KS | |
|-------------|---------------|-----------------|--------------|--------------------|
| EDP NO. | OAL | SHANK DIA | SHANK LENGTH | BROACH SHANK DEPTH |
| P-67040 | 3-27/64 | 5/8 | 1-1/2″ | 9/16 |
| 1-070405 | 5-55/04 | 5/4 | 2 | 5/10 |
| FOR BROACHE | S WITH .500 E | DIAMETER SHANKS | | |
| EDP NO. | OAL | SHANK DIA | SHANK LENGTH | BROACH SHANK DEPTH |
| P-67048 | 4-17/32 | 3/4 | 2" | .742 |
| P-67064 | 4-17/32 | 1" | 2" | .742 |
| P-67068 | 5-17/32 | 1-1/4 | 3" | .742 |
| P-67072 | 5-17/32 | 1-1/2 | 3" | .742 |
| FOR BROACHE | S WITH .750 D | NAMETER SHANKS | | |
| EDP NO. | OAL | SHANK DIA | SHANK LENGTH | BROACH SHANK DEPTH |
| P-67072HDS | 7-9/16 | 1-1/2 | 3" | 1 250 |
| P-67076HD | 7-9/16 | 1-3/4 | 3" | 1.250 |

- CALL FOR PRICING ----



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Applications

ROTARY/PUNCH BROACHES can be used in a variety of machines to cut polygons in blind holes: Any type of CNC or manual turning, milling, drilling or screw machine. The practical forming length of rotary/punch broaching is usually up to 1-1/2 times the size of the broach (measured across flats).

- **ROTARY BROACH HOLDERS:** For optimal tool life in large production settings these broaches are used in Rotary Broach Holders. **Holders and broaches are sold separately and available from stock for immediate delivery.** These holders are for use on any type CNC or manual turning, milling, drilling or screw machine. The holder has an internal live spindle, which holds the end cutting broach tool. The centerline of the cutting tool is offset at 1° from the centerline of the work piece. This causes the broach to wobble creating a shearing effect as the broach is advanced into the work piece or vise versa as described below:
- **BROACHING A ROTATING WORK PIECE:** In a turning or screw machine, the holder is mounted stationary while its internal live spindle and the broach rotates after contact with the rotating work piece (Diagram A). At the appropriate feed, the work piece is "sheared" by the pressure of the broach through a wobbling type action producing the polygon shape desired.
- **BROACHING A STATIONARY WORK PIECE:** In a milling or drilling machine, the holder is mounted into and rotates with the machine spindle while its internal live spindle along with the broach remains stationary upon contact with the stationary work piece (Diagram B). While the machine spindle is rotating, the broach's pressure shears the polygon shape into the work piece (wobbling type action).
- **PUNCHING VERSUS ROTARY BROACHING:** Many applications can be achieved without the rotary broach holder. For the purpose of merely punching a polygon into an existing pilot hole, these broaches have successfully been used with universal machining methods.







Diagram B

Use Recommendations

- **PART PREPARATION:** The diameter of the pre-drilled hole should be 1-2% larger than the measurement across the flats on the broach. Drill the hole as deep as possible for chip clearance. Countersink with a 90° lead chamfer slightly larger than the largest dimension of the broach face (distance across points).
- **CENTERING THE BROACH:** The most critical component in running these tools is having the broach centered as close as possible to the centerline of the work piece. Improper centering will cause uneven hole configurations, oversize holes, spiraling, and excessive cutter/holder wear. It is necessary to align the end of the broach tool to the centerline of the work piece diameter by means of adjusting the screws located on the sides of the holder. Alignment instructions are included with purchase of the tool holder.
- SPEEDS & FEEDS: Rotational speed (RPM) has very little effect on cutting speed and tool life. We recommend starting at 1200 RPM with a feed rate of .016 times the size of the broach in inches for a feed rate in IPR units. For example the feed rate for a 1/4" rotary/punch broach would be .016 x .250 = .004"/rev.
- **COOLANT:** The amount of heat generated is minimal. Normal coolant or cutting oil should be applied on the tip of the broaching tool prior to contacting the work piece and not inside of the work piece pilot hole. Trapped fluid may not be able to escape, causing inability to broach to full depth.
- **BROACH TOOL MATERIAL:** Broaches are customarily manufactured from M-2 high-speed steel. This material provides the required edge toughness for standard operations, which do not generate enough heat to effect tool life in machining most metals. However, for broaching materials such as ductile iron, tool steel, stainless steels, titanium alloys, or nickel-cobalt alloys, a cobalt or PM-4 powdered metal broach would be recommended for optimal tool life. Coatings are also available.



YOU CAN SUCCESSFULLY BROACH THESE SHAPES & OTHERS WITH HASSAY SAVAGE TOOLS



FAX QUOTE REQUEST FORM TO 413–863–2714 BROACH REQUIREMENTS

| Size/Shape | | Tolerance +/ | |
|---------------------------|----------|-------------------------|--|
| Depth of Cut | | Material to be Machined | |
| Desired Broach Shank Size | | | |
| Type of Machine | | Type of Holder | |
| CONTACT INFORM | /IATION: | | |
| Contact Name | | | |
| Company Name | | | |
| Address | | | |
| Phone # | Fax # | E-mail | |
| | | | |

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