

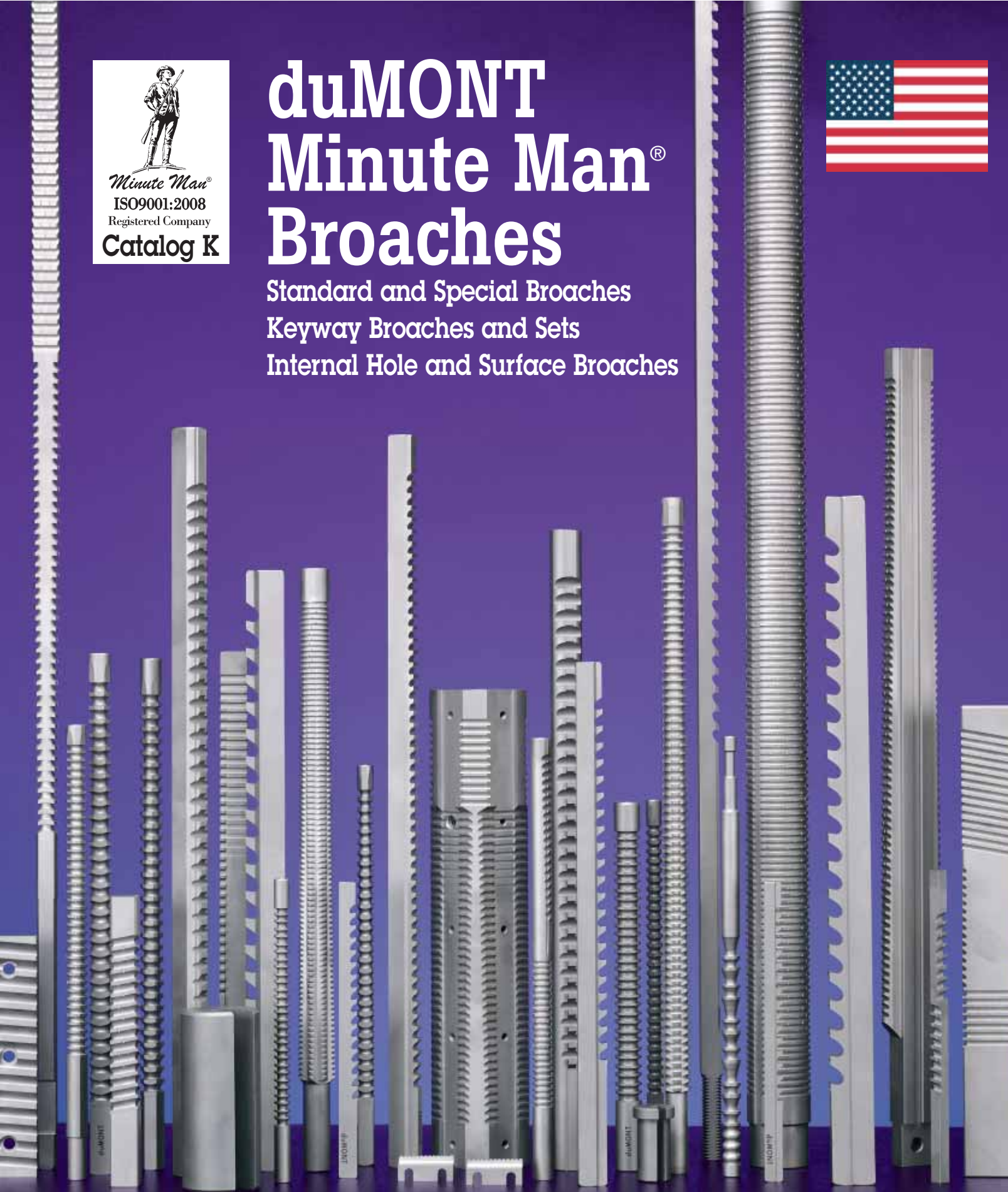


Minute Man®
ISO9001:2008
Registered Company
Catalog K

duMONT Minute Man® Broaches



Standard and Special Broaches
Keyway Broaches and Sets
Internal Hole and Surface Broaches



The duMONT Company, Greenfield, Massachusetts
www.dumont.com



The duMONT Company

A Reputation for Excellence



The duMONT Company, has been designing and manufacturing Precision Broaches since 1945 – Broaches recognized all over the world for quality, durability, and engineering detail.

We are the largest supplier of Push-Type Broaches in America, offering Broaches to a wide variety of businesses through a vast national and international distribution network. Our record of design ingenuity, fast delivery, and courteous follow-up is unsurpassed.

Materials

All duMONT Broaches are manufactured of the finest quality high speed steel. We are equipped to fabricate from a variety of grades to meet your specifications. Contact your industrial distributor or the duMONT Engineering Department for details.

Call Your Industrial Distributor

Your industrial distributor is your best source for Minute Man® Broaches. If your regular distributor does not carry duMONT products call us and we will be happy to give you the name of your nearest duMONT distributor. For special technical assistance call the duMONT Engineering Department at 413-773-3674 or 800-628-9648.

Fast Delivery

An order for stock items placed by your industrial distributor with us by 2PM Eastern Standard Time will almost always be shipped on the same working day.

Warning

Cutting tools may shatter. Eye protection should be worn wherever and whenever cutting tools are being used.

Material Safety Data Sheet

Available on request or at www.dumont.com.

General Ordering Information

When ordering stock Minute Man® Broaches from your distributor please specify EDP No., size, and description to ensure proper fulfillment.

Transportation

All shipments are made via United Parcel Service where weight limitations allow. Express shipments, both surface and air, are available at your request. Shipments are F.O.B. Greenfield, MA unless otherwise stated.

Prices

Please contact us for current pricing or refer to current price list for prices on all stock items. Prices are subject to change without notice.

TiN or TiAlN Coating

All standard items are available with coatings from stock or short delivery. Please contact factory for details.

Ordering Special Broaches

Let Us Meet Your Special Broach Requirements

duMONT Special Broaches can be ordered from your industrial distributor. Before ordering a Special Broach, check to see if a standard item will serve your needs. Using standard items means off-the-shelf delivery and substantially lower cost. When standard items are not appropriate, we would be pleased to design and manufacture a Broach to meet your specific needs. See pp. 20–21 for more information on duMONT Special Broaches.

What We Need To Know

A fully dimensioned drawing of the finished part, casting, forging, or Broach would be most helpful. When a part print is unavailable, the following information should be provided:

1. Description of Cut (Size/Shape/Tolerance)
2. Length of Cut
3. Type of Material to be Broached
4. Size and Shape of Hole or Surface to be Broached (For cast holes, give minimum hole size, including draft and fillet radii, if any)
5. For Keyway Broaches Give:
 - a. Minimum Bore Size
 - b. Depth of Keyway Across Bore
 - c. Width of Keyway
 - d. Tolerance
6. Type of Broaching Machine (Push or Pull/Tonnage/Ram Travel/Daylight Opening)
7. Number of Pieces to Broach



The duMONT Company

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Table of Contents

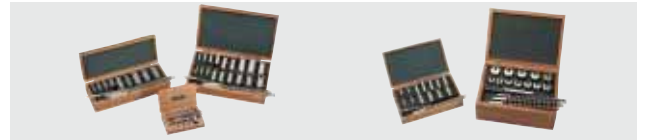
See Facing Page for General Information



MADE in the USA

2-6 Broach Sets

duMONT packages the most popular combinations of Keyway Broaches and Bushings in attractive wooden cases, with all necessary Shims included. On hand when you need them for general maintenance or short run production.



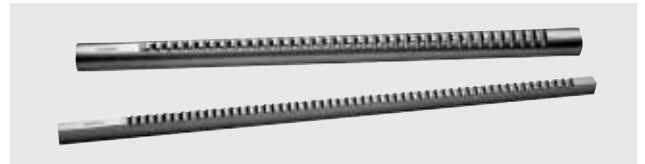
7-10 Keyway Broaches/Bushings/Shims

Individual Broaches, Bushings, and Shims fabricated to precision tolerances in a wide range of inch and metric sizes. For specific applications, short run production, general maintenance, or for replacements in Minute Man® Broach Sets.



11-12 One-Pass & Production Keyway Broaches

duMONT's One-Pass Broaches offer a cost-effective way to perform short production runs without the need for shims. duMONT's Production Broaches are the fastest way to accomplish high volume production with extreme accuracy cutting keyways in a single pass without Shims or Bushings.



13 Keyseating Broaches, Type AF and AFS

For superior broaching with Hansford-Davis keyseating machines Models 4, 5, and 15. Type AF sizes up to 1 inch and 25mm and Type AFS sizes up to 1 1/2 inch are in stock. Other inch and metric sizes are readily available.



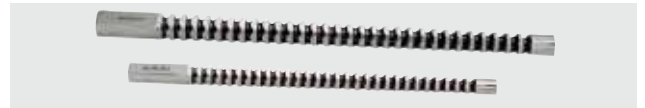
14-15 Pull Type Production Keyway Broaches

A full line of Industry Standard 500 and 600 Series and 5M and 6M Series Keyway Broaches are available.



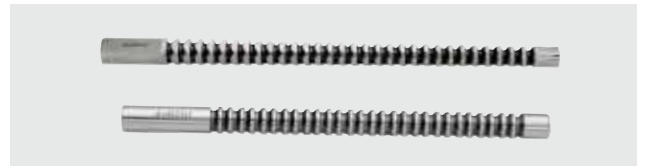
16 Square Broaches

Standard Square Broaches in the most popular American Standard sizes. Proven design and quality materials ensure superior performance and longer tool life.



17 Full Square and Round Broaches

Full Square Broaches leave no radii on the flats of the broached teeth generating a true square. Round Broaches cut Round holes with far greater accuracy than other methods. All Round Broaches are furnished with variable pitch for greater precision and reduced wear.



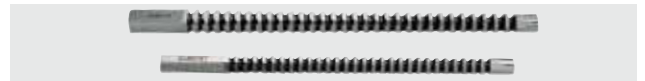
18 Hexagon Broaches

Broach precision Hexagon holes with duMONT Hexagon Broaches. Choose from a wide range of stock sizes or take advantage of our extensive capability to design and engineer broaches to your specifications.



19 Metric Square and Hexagon Broaches

Most popular Metric size Square and Hexagon Broaches available from stock.



20-21 Special Broaches

Special Broaches to almost any specification in Push or Pull-Types. We can manufacture from your part prints or custom-design for your applications. All types of Keyway, Internal hole, and Surface Broaches in both inch and metric sizes are available.



22-24 Engineering Section

25 Presses

Keyway Broach Sets

$1/16$ through $3/8$ inch sizes

Applications:

- Short Run Production
- General Maintenance



All Minute Man® Broach Sets are furnished in handsome varnished wood boxes, and come complete with Precision Broaches, slotted Bushings, and necessary Shims.

No. 00 Precision Set

The most common combinations for small keyways and bores.
3 Broaches and 5 Bushings = 15 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|-------------------|------------------------|--|
| $1/16, 3/32, 1/8$ | A | $1/4, 5/16, 3/8, 7/16, 1/2$ |
| EDP No. | 11101 Std 11301 TiN | collared bushings only collared bushings only |

No. 10 Standard Set

Our best selling Broach Set.
4 Broaches and 9 Bushings = 18 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|------------------------|--|
| $1/8, 3/16$ | B | $1/2, 5/8, 3/4, 7/8$ |
| $1/4, 3/8$ | C | $1, 1 1/8, 1 1/4, 1 3/8, 1 1/2$ |
| EDP No. | 11104 Std 11304 TiN | collared bushings only collared bushings only |

No. 10A Standard Set

Same as No. 10 Set, but for sixteenth-sized bores.
4 Broaches and 9 Bushings = 18 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|------------------------|--|
| $1/8, 3/16$ | B | $9/16, 11/16, 13/16$ |
| $1/4, 3/8$ | C | $15/16, 1 1/16, 1 3/16, 1 5/16, 1 7/16, 1 9/16$ |
| EDP No. | 11108 Std 11308 TiN | collared bushings only collared bushings only |

No. 30 Standard Set

A great starter set.
3 Broaches and 9 Bushings = 15 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|------------------------|--|
| $1/8$ | B | $1/2, 5/8, 3/4$ |
| $3/16, 1/4$ | C | $7/8, 1, 1 1/8, 1 1/4, 1 3/8, 1 1/2$ |
| EDP No. | 11112 Std 11312 TiN | collared bushings only collared bushings only |

No. 30A Standard Set

Same as No. 30 Set, but for sixteenth-sized bores.
3 Broaches and 9 Bushings = 15 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|------------------------|--|
| $1/8$ | B | $9/16, 11/16, 13/16$ |
| $3/16, 1/4$ | C | $15/16, 1 1/16, 1 3/16, 1 5/16, 1 7/16, 1 9/16$ |
| EDP No. | 11115 Std 11315 TiN | collared bushings only collared bushings only |

Specials

All standard items are available with **TiAIN** coating from stock or short delivery. Please contact factory for details.

Keyway Broach Sets

1/8 through 3/8 inch sizes

Applications:

- Short Run Production
- General Maintenance



All Minute Man® Broach Sets are furnished in handsome varnished wood boxes, and come complete with Precision Broaches, slotted Bushings, and necessary Shims.

No. 10-10A Combination Set

Combines 10 and 10A Sets. Features all bore sizes in 1/16 inch increments for keyways 1/8 to 3/8 inches.

4 Broaches and 18 Bushings = 36 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|---|
| 1/8 | B | 1/2, 9/16, 5/8, 11/16, |
| 3/16 | B | 3/4, 13/16, 7/8 |
| 1/4 | C | 15/16, 1, 1 1/16, 1 1/8, 1 3/16, |
| 3/8 | C | 1 1/4, 1 5/16, 1 3/8, 1 7/16, 1 1/2, 1 9/16 |
| EDP No. | 11120 Std | collared bushings only |
| | 11320 TiN | collared bushings only |

No. 20 Combination Set

Same as No. 10-10A Combination Set, but adds a 5/16 inch keyway for 11 extra combinations.

5 Broaches and 18 Bushings = 47 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|----------------------------------|
| 1/8 | B | 1/2, 9/16, 5/8, 11/16, |
| 3/16 | B | 3/4, 13/16, 7/8 |
| 1/4 | C | 15/16, 1, 1 1/16, 1 1/8, 1 3/16, |
| 5/16 | C | 1 1/4, 1 5/16, 1 3/8, |
| 3/8 | C | 1 7/16, 1 1/2, 1 9/16 |
| EDP No. | 11121 Std | collared bushings only |
| | 11321 TiN | collared bushings only |

No. 30-30A Combination Set

Combines 30 and 30A Sets. Features all bore sizes in 1/16 inch increments.

3 Broaches and 18 Bushings = 30 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|---|
| 1/8 | B | 1/2, 9/16, 5/8, 11/16, 3/4, 13/16 |
| 3/16 | C | 7/8, 15/16, 1, 1 1/16, 1 1/8, 1 3/16, |
| 1/4 | C | 1 1/4, 1 5/16, 1 3/8, 1 7/16, 1 1/2, 1 9/16 |
| EDP No. | 11124 Std | collared bushings only |
| | 11324 TiN | collared bushings only |

Specials

All standard items are available with **TiAIN** coating from stock or short delivery. Please contact factory for details.

Keyway Broach Sets

$\frac{5}{16}$ through $\frac{3}{4}$ inch sizes

Applications:

- Short Run Production
- General Maintenance



No. 40A Set

The most common keyway combinations for medium-sized keyways and bores.

4 Broaches and 8 Bushings = 32 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|-----------------------------|--------------|--|
| $\frac{5}{16}, \frac{3}{8}$ | D | $1\frac{1}{2}, 1\frac{5}{8}, 1\frac{3}{4}, 1\frac{7}{8}$, |
| $\frac{7}{16}, \frac{1}{2}$ | D | $2, 2\frac{1}{8}, 2\frac{1}{4}, 2\frac{1}{2}$ |
| EDP No. | 11127 Std | plain bushings only |
| | 11327 TiN | plain bushings only |

No. 40 Set

Same as No. 40A Set, but for sixteenth-sized bores.

4 Broaches and 8 Bushings = 32 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|-----------------------------|--------------|--|
| $\frac{5}{16}, \frac{3}{8}$ | D | $1\frac{7}{16}, 1\frac{9}{16}, 1\frac{11}{16}, 1\frac{13}{16}$, |
| $\frac{7}{16}, \frac{1}{2}$ | D | $1\frac{15}{16}, 2\frac{3}{16}, 2\frac{7}{16}, 2\frac{15}{16}$ |
| EDP No. | 11129 Std | plain bushings only |
| | 11329 TiN | plain bushings only |

No. 40 $\frac{1}{2}$ A Heavy Duty Set

The most common keyway combinations for large keyways and bores.

2 Broaches and 6 Bushings = 12 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|--|
| $\frac{5}{8}$ | E | $2\frac{3}{8}, 2\frac{1}{2}, 2\frac{5}{8}$, |
| $\frac{3}{4}$ | E | $2\frac{3}{4}, 2\frac{7}{8}, 3$ |
| EDP No. | 11131 Std | plain bushings only |
| | 11331 TiN | plain bushings only |

No. 40 $\frac{1}{2}$ Heavy Duty Set

Same as No. 40 $\frac{1}{2}$ A Set, but for sixteenth-sized bores.

2 Broaches and 6 Bushings = 12 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|--|
| $\frac{5}{8}$ | E | $2\frac{5}{16}, 2\frac{7}{16}, 2\frac{9}{16}$, |
| $\frac{3}{4}$ | E | $2\frac{11}{16}, 2\frac{13}{16}, 2\frac{15}{16}$ |
| EDP No. | 11133 Std | plain bushings only |
| | 11333 TiN | plain bushings only |

Specials

All standard items are available with **TiAlN** coating from stock or short delivery. Please contact factory for details.

Keyway Broach Sets

1/8 through 3/4 inch sizes

Applications:

- Virtually all standard broaching operations – our most complete set



No. 50 Heavy Duty Set

Includes the most common keyway combinations for medium and large keyways.

3 Broaches and 17 Bushings = 29 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|--|
| 1/2 | D | 2, 2 ¹ / ₁₆ , 2 ¹ / ₈ , 2 ³ / ₁₆ , 2 ¹ / ₄ |
| 5/8 | E | 2 ⁵ / ₁₆ , 2 ³ / ₈ , 2 ⁷ / ₁₆ , 2 ¹ / ₂ , 2 ⁹ / ₁₆ , 2 ⁵ / ₈ , |
| 3/4 | E | 2 ¹¹ / ₁₆ , 2 ³ / ₄ , 2 ¹³ / ₁₆ , 2 ⁷ / ₈ , 2 ¹⁵ / ₁₆ , 3 |
| EDP No. | 11135 Std | plain bushings only |
| | 11335 TiN | plain bushings only |

No. 100 Heavy Duty Combination Set

The most complete Minute Man® Broach Set available; including all popular combinations without duplication. This set is furnished in three handsome varnished wood boxes for convenient handling and storage, and comes with Broaches, slotted Bushings, and necessary Shims.

9 Broaches and 44 Bushings = 102 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|--|
| 1/8 | B | 1/2, 9/16, 5/8, 11/16, |
| 3/16 | B | 3/4, 13/16, 7/8 |
| 1/4 | C | 1 ⁵ / ₁₆ , 1, 1 ¹ / ₁₆ , 1 ¹ / ₈ , 1 ³ / ₁₆ , 1 ¹ / ₄ , |
| 5/16 | C | 1 ⁵ / ₁₆ , 1 ³ / ₈ , 1 ⁷ / ₁₆ , 1 ¹ / ₂ , 1 ⁹ / ₁₆ |
| 3/8 | D | 1 ⁷ / ₁₆ , 1 ¹ / ₂ , 1 ⁹ / ₁₆ , 1 ⁵ / ₈ , 1 ¹¹ / ₁₆ , |
| 7/16 | D | 1 ³ / ₄ , 1 ¹³ / ₁₆ , 1 ⁷ / ₈ , 1 ¹⁵ / ₁₆ , 2, |
| 1/2 | D | 2 ¹ / ₁₆ , 2 ¹ / ₈ , 2 ³ / ₁₆ , 2 ¹ / ₄ |
| 5/8 | E | 2 ⁵ / ₁₆ , 2 ³ / ₈ , 2 ⁷ / ₁₆ , 2 ¹ / ₂ , 2 ⁹ / ₁₆ , 2 ⁵ / ₈ , |
| 3/4 | E | 2 ¹¹ / ₁₆ , 2 ³ / ₄ , 2 ¹³ / ₁₆ , 2 ⁷ / ₈ , 2 ¹⁵ / ₁₆ , 3 |
| EDP No. | 11136 Std | collared B and C bushings, plain D and E bushings |
| | 11336 TiN | collared B and C bushings, plain D and E bushings |

Specials

All standard items are available with **TiAlN** coating from stock or short delivery. Please contact factory for details.

Metric Keyway Broach Sets

2mm through 18mm (I.S.O.)

Applications:

- Short Run Production
- General Maintenance



No. 60 Metric Set

The most common metric keyway combination for small keyways and bores.

2 Broaches and 3 Bushings = 6 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|--------------------------------|
| 2mm | A | 6, 8, 10 |
| 3mm | A | |
| EDP No. | 44497 Std | collared bushings only |
| | 44397 TiN | collared bushings only |

No. 70 Metric Set

Our most popular metric broach set.

4 Broaches and 13 Bushings = 26 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|--------------------------------|
| 4mm | B1 | 12, 14, |
| 5mm | B1 | 15, 16 |
| 6mm | C | 18, 19, 20, 22, |
| 8mm | C | 24, 25, 26, 28, 30 |
| EDP No. | 44498 Std | collared bushings only |
| | 44398 TiN | collared bushings only |

No. 80 Metric Set

The most common metric keyway combination for medium-sized keyways and bores.

3 Broaches and 12 Bushings = 36 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|--------------------------------|
| 10mm | D | 32, 34, 35, 36, |
| 12mm | D | 38, 40, 42, 44, |
| 14mm | D | 45, 46, 48, 50 |
| EDP No. | 44499 Std | plain bushings only |
| | 44399 TiN | plain bushings only |

No. 90 Metric Set

The most common metric keyway combination for large keyways and bores.

2 Broaches and 8 Bushings = 16 Keyway combinations.

| Keyway Sizes | Broach Style | Bushing Diameters (bore sizes) |
|----------------|--------------|--------------------------------|
| 16mm | E | 52, 54, 55, 56, |
| 18mm | E | 58, 60, 62, 65 |
| EDP No. | 44500 Std | plain bushings only |
| | 44300 TiN | plain bushings only |

Specials

All standard items are available with **TiAlN** coating from stock or short delivery. Please contact factory for details.

Keyway Broaches

1/16 through 1 1/2 inch sizes

Applications:

- Short Run Production
- General Maintenance



Stock Keyway Broaches

Broaches are supplied with necessary Shims unless otherwise noted. For extra or replacement Shims see the table below.

| Std EDP No. | TiN EDP No. | TiAlN EDP No. | Broach Size | Tolerances | Broach Dimensions | Shims Req'd. | Length of Cut* Min. & Max. | | Pressure Req'd. for Max. L/C* |
|-------------|-------------|---------------|-------------|-----------------|-------------------|--------------|-------------------------------|---------|-------------------------------|
| 22201 | 22301 | 22801 | 1/16-A | .0625 - .0635 | 1/8 x 5 | 0 | 13/64 | 1 1/8 | 390 lbs. |
| 22202 | 22302 | 22802 | 3/32-A | .0938 - .0948 | 1/8 x 5 | 0 | 13/64 | 1 1/8 | 780 |
| 22203 | 22303 | 22803 | 1/8-A | .1252 - .1262 | 1/8 x 5 | 1 | 13/64 | 1 1/8 | 650 |
| 22204 | 22304 | 22804 | 3/32-B | .0938 - .0948 | 3/16 x 6 3/4 | 0 | 19/64 | 1 11/16 | 930 |
| 22205 | 22305 | 22805 | 1/8-B | .1252 - .1262 | 3/16 x 6 3/4 | 1 | 19/64 | 1 11/16 | 720 |
| 22206 | 22306 | 22806 | 5/32-B | .1564 - .1574 | 3/16 x 6 3/4 | 1 | 19/64 | 1 11/16 | 1320 |
| 22207 | 22307 | 22807 | 3/16-B | .1877 - .1887 | 3/16 x 6 3/4 | 1 | 19/64 | 1 11/16 | 1860 |
| 22208 | 22308 | 22808 | 3/16-C | .1877 - .1887 | 3/8 x 11 3/4 | 1 | 25/64 | 2 1/2 | 1540 |
| 22209 | 22309 | 22809 | 1/4-C | .2502 - .2512 | 3/8 x 11 3/4 | 1 | 25/64 | 2 1/2 | 2520 |
| 22210 | 22310 | 22810 | 5/16-C | .3127 - .3137 | 3/8 x 11 3/4 | 2 | 25/64 | 2 1/2 | 3960 |
| 22211 | 22311 | 22811 | 3/8-C | .3755 - .3765 | 3/8 x 11 3/4 | 2 | 25/64 | 2 1/2 | 4340 |
| 22212 | 22312 | 22812 | 5/16-D | .3127 - .3137 | 9/16 x 13 7/8 | 2 | 1 | 6 | 8000 |
| 22213 | 22313 | 22813 | 3/8-D | .3755 - .3765 | 9/16 x 13 7/8 | 2 | 1 | 6 | 7000 |
| 22214 | 22314 | 22814 | 7/16-D | .4380 - .4390 | 9/16 x 13 7/8 | 3 | 1 | 6 | 9400 |
| 22215 | 22315 | 22815 | 1/2-D | .5006 - .5016 | 9/16 x 13 7/8 | 3 | 1 | 6 | 9800 |
| 10142 | 10342 | 10842 | 9/16-D | .5631 - .5641 | 9/16 x 13 7/8 | 4 | 1 | 6 | 8900 |
| 22216 | 22316 | 22816 | 5/8-E | .6260 - .6270 | 3/4 x 15 1/2 | 4 | 1 | 6 | 9600 |
| 22217 | 22317 | 22817 | 3/4-E | .7515 - .7525 | 3/4 x 15 1/2 | 5 | 1 | 6 | 11900 |
| 22218 | 22318 | 22818 | 7/8-F | .8765 - .8775 | 1 x 20 1/4 | 6 | 1 | 6 | 9800 |
| 22219 | 22319 | 22819 | 1-F | 1.0015 - 1.0025 | 1 x 20 1/4 | 7 | 1 | 6 | 11100 |
| 10171 | | | 1 1/8 | 1.1265 - 1.1275 | 1 1/8 x 20 1/4 | 8 | 1 | 6 | 14750 |
| 10172 | | | 1 1/4 | 1.2520 - 1.2530 | 1 1/4 x 20 1/4 | 9 | 1 1/2 | 8 | 22100 |
| 10173 | | | 1 3/8 | 1.3770 - 1.3780 | 1 3/8 x 20 1/4 | 10** | 1 1/2 | 8 | 23500 |
| 10174 | | | 1 1/2 | 1.5020 - 1.5030 | 1 1/2 x 20 1/4 | 11** | 1 1/2 | 8 | 26500 |

*Based on mild steel

**Shims are not supplied with these Broaches

Extra Shims

Extra Shims are provided in necessary Shim Sets only. For Broaches larger than 1 1/4" progressive Shims are available as special items. Please specify EDP No. when ordering extra or replacement Shims. Shims correspond to Broach size, not to Bushing type.

| EDP No. | Broach Size | #/Set | Shim Thickness |
|---------|-------------|-------|----------------|
| 22250 | 1/8-A | 1 | .031 |
| 22252 | 1/8-B | 1 | .031 |
| 22253 | 5/32-B | 1 | .042 |
| 22254 | 3/16-B | 1 | .050 |
| 22255 | 3/16-C | 1 | .050 |
| 22256 | 1/4-C | 1 | .0625 |

| EDP No. | Broach Size | #/Set | Shim Thickness |
|---------|-------------|-------|----------------|
| 22257 | 5/16-C | 2 | .055 |
| 22258 | 3/8-C | 2 | .0625 |
| 22259 | 5/16-D | 2 | .056 |
| 22260 | 3/8-D | 2 | .0625 |
| 22261 | 7/16-D | 3 | .056 |
| 22262 | 1/2-D | 3 | .0625 |
| 22269 | 9/16-D | 4 | .056 |

| EDP No. | Broach Size | #/Set | Shim Thickness |
|---------|-------------|-------|----------------|
| 22263 | 5/8-E | 4 | .0625 |
| 22264 | 3/4-E | 5 | .0625 |
| 22265 | 7/8-F | 6 | .0625 |
| 22266 | 1-F | 7 | .0625 |
| 22267 | 1 1/8 | 8 | .0625 |
| 22268 | 1 1/4 | 9 | .0625 |

For Broaches larger than 1 1/4" Progressive Shims are available as special items.

Specials

We are fully equipped to manufacture Special Keyway Broaches not listed above. **TiN or TiAlN coatings** are available. Please contact factory for details.

Keyway Bushings

Bushing Styles A through F

Applications:

- To use Keyway Broaches in various bore sizes



Keyway Bushings

duMONT Keyway Bushings enable the operator to use individual Keyway Broaches in a variety of bore sizes. Both Bushings and Broaches are designated by a letter which signifies the width of the Keyway Broach and Bushing opening. For proper fit, use Bushings with the same letter designation as the Broach being used – i.e. “A” Bushings with “A” Broaches, “B” Bushings with “B” Broaches, etc.

A Bushings for A Broaches

| Dia. | Length | EDP No. Collared Only |
|------|--------|-----------------------|
| 1/4 | 1 1/8 | 33301 |
| 5/16 | 1 1/8 | 33302 |
| 3/8 | 1 1/8 | 33303 |
| 7/16 | 1 1/8 | 33304 |
| 1/2 | 1 1/8 | 33305 |

B Bushings for B Broaches

| Dia. | Length | EDP No. Collared Only |
|-------|---------|-----------------------|
| 1/2 | 1 11/16 | 33313 |
| 9/16 | 1 11/16 | 33314 |
| 5/8 | 1 11/16 | 33315 |
| 11/16 | 1 11/16 | 33316 |
| 3/4 | 1 11/16 | 33317 |
| 13/16 | 1 11/16 | 33318 |
| 7/8 | 1 11/16 | 33319 |

C Bushings for C Broaches

| Dia. | Length | EDP No. Collared Only |
|--------|--------|-----------------------|
| 3/4 | 2 1/2 | 33334 |
| 13/16 | 2 1/2 | 33335 |
| 7/8 | 2 1/2 | 33336 |
| 15/16 | 2 1/2 | 33337 |
| 1 | 2 1/2 | 33338 |
| 1 1/16 | 2 1/2 | 33339 |
| 1 1/8 | 2 1/2 | 33340 |
| 1 3/16 | 2 1/2 | 33341 |
| 1 1/4 | 2 1/2 | 33342 |
| 1 5/16 | 2 1/2 | 33343 |
| 1 3/8 | 2 1/2 | 33344 |
| 1 7/16 | 2 1/2 | 33345 |
| 1 1/2 | 2 1/2 | 33346 |
| 1 9/16 | 2 1/2 | 33347 |

D Bushings for D Broaches

| Dia. | Length | EDP No. Plain Only |
|---------|--------|--------------------|
| 1 7/16 | 4 | 33348 |
| 1 1/2 | 4 | 33349 |
| 1 9/16 | 4 | 33350 |
| 1 5/8 | 4 | 33351 |
| 1 11/16 | 4 | 33352 |
| 1 3/4 | 4 | 33353 |
| 1 13/16 | 5 | 33354 |
| 1 7/8 | 5 | 33355 |
| 1 15/16 | 5 | 33356 |
| 2 | 5 | 33357 |
| 2 1/16 | 5 | 33358 |
| 2 1/8 | 5 | 33359 |
| 2 3/16 | 5 | 33360 |
| 2 1/4 | 5 | 33361 |
| 2 5/16 | 5 | 33362 |
| 2 3/8 | 6 | 33363 |
| 2 7/16 | 6 | 33364 |
| 2 1/2 | 6 | 33365 |
| 2 9/16 | 6 | 33366 |
| 2 5/8 | 6 | 33367 |
| 2 11/16 | 6 | 33368 |
| 2 3/4 | 6 | 33369 |
| 2 13/16 | 6 | 33370 |
| 2 7/8 | 6 | 33371 |
| 2 15/16 | 6 | 33372 |
| 3 | 6 | 33373 |



E Bushings for E Broaches

| Dia. | Length | EDP No. Plain Only |
|---------|--------|--------------------|
| 2 5/16 | 6 | 33374 |
| 2 3/8 | 6 | 33375 |
| 2 7/16 | 6 | 33376 |
| 2 1/2 | 6 | 33377 |
| 2 9/16 | 6 | 33378 |
| 2 5/8 | 6 | 33379 |
| 2 11/16 | 6 | 33380 |
| 2 3/4 | 6 | 33381 |
| 2 13/16 | 6 | 33382 |
| 2 7/8 | 6 | 33383 |
| 2 15/16 | 6 | 33384 |
| 3 | 6 | 33385 |
| 3 1/16 | 6 | 33386 |
| 3 1/8 | 6 | 33387 |
| 3 3/16 | 6 | 33388 |
| 3 1/4 | 6 | 33389 |
| 3 5/16 | 6 | 33390 |
| 3 3/8 | 6 | 33391 |
| 3 7/16 | 6 | 33392 |
| 3 1/2 | 6 | 33393 |
| 3 9/16 | 6 | 33394 |
| 3 5/8 | 6 | 33395 |
| 3 11/16 | 6 | 33396 |
| 3 3/4 | 6 | 33397 |
| 3 13/16 | 6 | 33398 |
| 3 7/8 | 6 | 33399 |
| 3 15/16 | 6 | 33400 |
| 4 | 6 | 33401 |

F Bushings for F Broaches

| Dia. | Length | EDP No. Plain Only |
|---------|--------|--------------------|
| 3 1/16 | 6 | 33500 |
| 3 1/8 | 6 | 33501 |
| 3 3/16 | 6 | 33502 |
| 3 1/4 | 6 | 33503 |
| 3 5/16 | 6 | 33504 |
| 3 3/8 | 6 | 33505 |
| 3 7/16 | 6 | 33506 |
| 3 1/2 | 6 | 33507 |
| 3 9/16 | 6 | 33508 |
| 3 5/8 | 6 | 33509 |
| 3 11/16 | 6 | 33510 |
| 3 3/4 | 6 | 33511 |
| 3 13/16 | 6 | 33512 |
| 3 7/8 | 6 | 33513 |
| 3 15/16 | 6 | 33514 |
| 4 | 6 | 33515 |
| 4 1/16 | 6 | 33516 |
| 4 1/8 | 6 | 33517 |
| 4 3/16 | 6 | 33518 |
| 4 1/4 | 6 | 33519 |
| 4 5/16 | 6 | 33520 |
| 4 3/8 | 6 | 33521 |
| 4 7/16 | 6 | 33522 |
| 4 1/2 | 6 | 33523 |
| 4 9/16 | 6 | 33524 |
| 4 5/8 | 6 | 33525 |
| 4 11/16 | 6 | 33526 |
| 4 3/4 | 6 | 33527 |
| 4 13/16 | 6 | 33528 |
| 4 7/8 | 6 | 33529 |
| 4 15/16 | 6 | 33530 |
| 5 | 6 | 33531 |

Specials

We are fully equipped to manufacture Special Bushings not listed above. Please contact factory for details.

Metric Keyway Broaches

2mm through 45mm (I.S.O.)

Applications:

- Short Run Production
- General Maintenance



Stock Keyway Broaches

Broaches are supplied with necessary Shims unless otherwise noted. For extra or replacement Shims see the table below.

| Std EDP No. | TiN EDP No. | TiAlN EDP No. | Broach Size mm | Tolerances (Decimal Equiv.) | Broach Dimensions in Inches | Standard Millimeter Keys | Shims Req'd. | Length of Cut* Min. & Max. | | Pressure Req'd. for Max. L/C* |
|-------------|-------------|---------------|----------------|-----------------------------|-----------------------------|--------------------------|--------------|----------------------------|---------|-------------------------------|
| 44401 | 44301 | 44801 | 2-A | .0782 - .0791 | 1/8 x 5 | 2 x 2 | 0 | 13/64 | 1 1/8 | 720 lbs. |
| 44402 | 44302 | 44802 | 3-A | .1176 - .1185 | 1/8 x 5 | 3 x 3 | 1 | 13/64 | 1 1/8 | 650 |
| 44403 | 44303 | 44803 | 4-B1 | .1569 - .1579 | 1/4 x 6 3/4 | 4 x 4 | 1 | 19/64 | 1 11/16 | 1140 |
| 44404 | 44304 | 44804 | 5-B1 | .1963 - .1972 | 1/4 x 6 3/4 | 5 x 5 | 1 | 19/64 | 1 11/16 | 1860 |
| 44405 | 44305 | 44805 | 5-C | .1963 - .1972 | 3/8 x 11 3/4 | 5 x 5 | 1 | 25/64 | 2 1/2 | 1470 |
| 44406 | 44306 | 44806 | 6-C | .2356 - .2366 | 3/8 x 11 3/4 | 6 x 6 | 1 | 25/64 | 2 1/2 | 2100 |
| 10232 | 10332 | 10832 | 7-C | .2749 - .2763 | 3/8 x 11 3/4 | 7 x 6 | 1 | 25/64 | 2 1/2 | 2900 |
| 44407 | 44307 | 44807 | 8-C | .3143 - .3155 | 3/8 x 11 3/4 | 8 x 7 | 2 | 25/64 | 2 1/2 | 3680 |
| 44408 | 44308 | 44808 | 10-D | .3930 - .3942 | 9/16 x 13 7/8 | 10 x 8 | 2 | 1 | 6 | 6500 |
| 44409 | 44309 | 44809 | 12-D | .4716 - .4730 | 9/16 x 13 7/8 | 12 x 8 | 2 | 1 | 6 | 8400 |
| 44410 | 44310 | 44810 | 14-D | .5503 - .5517 | 9/16 x 13 7/8 | 14 x 9 | 2 | 1 | 6 | 11100 |
| 44411 | 44311 | 44811 | 16-E | .6290 - .6304 | 3/4 x 15 1/2 | 16 x 10 | 3 | 1 | 6 | 9400 |
| 44412 | 44312 | 44812 | 18-E | .7078 - .7092 | 3/4 x 15 1/2 | 18 x 11 | 3 | 1 | 6 | 10600 |
| 44413 | 44313 | 44813 | 20-F | .7864 - .7880 | 1 x 20 1/4 | 20 x 12 | 3 | 1 | 6 | 8800 |
| 44414 | 44314 | 44814 | 22-F | .8651 - .8667 | 1 x 20 1/4 | 22 x 14 | 4 | 1 | 6 | 9400 |
| 44415 | 44315 | 44815 | 24-F | .9439 - .9455 | 1 x 20 1/4 | 24 x 14 | 5 | 1 | 6 | 10600 |
| 44494 | 44394 | 44894 | 25-F | .9832 - .9848 | 1 x 20 1/4 | 25 x 14 | 4 | 1 | 6 | 12300 |
| 10233 | | | 28 | 1.1025 - 1.1035 | 1 1/8 x 20 1/4 | 28 x 16 | 5 | 1 | 6 | 12000 |
| 10234 | | | 32 | 1.2600 - 1.2610 | 1 1/4 x 20 1/4 | 32 x 18 | 5 | 1 1/2 | 8 | 20600 |
| 10235 | | | 36 | 1.4175 - 1.4185 | 1 7/16 x 20 1/4 | 36 x 20 | 7** | 1 1/2 | 8 | 24200 |
| 10236 | | | 40 | 1.5753 - 1.5760 | 1 9/16 x 20 1/4 | 40 x 22 | 7** | 1 1/2 | 8 | 22500 |
| 10237 | | | 45 | 1.7718 - 1.7728 | 1 3/4 x 20 1/4 | 45 x 25 | 8** | 1 1/2 | 8 | 27200 |

*Based on mild steel

**Shims are not supplied with these Broaches

Extra Shims

Extra Shims are provided in necessary Shim Sets only. For Broaches larger than 32mm, progressive Shims are available as special items. Please specify EDP No. when ordering extra or replacement Shims. Shims correspond to Broach Size, not to Bushing type.

| EDP No. | Broach Size mm | #/Set | Shim Thickness |
|---------|----------------|-------|----------------|
| 44480 | 3-A | 1 | .031 |
| 44481 | 4-B1 | 1 | .038 |
| 44482 | 5-B1 | 1 | .050 |
| 44483 | 5-C | 1 | .047 |
| 44484 | 6-C | 1 | .0625 |
| 44577 | 7-C | 1 | .0625 |
| 44485 | 8-C | 2 | .050 |

| EDP No. | Broach Size mm | #/Set | Shim Thickness |
|---------|----------------|-------|----------------|
| 44486 | 10-D | 2 | .056 |
| 44487 | 12-D | 2 | .056 |
| 44488 | 14-D | 2 | .0625 |
| 44489 | 16-E | 3 | .056 |
| 44490 | 18-E | 3 | .056 |

| EDP No. | Broach Size mm | #/Set | Shim Thickness |
|---------|----------------|-------|----------------|
| 44491 | 20-F | 3 | .0625 |
| 44492 | 22-F | 4 | .056 |
| 44493 | 24-F | 5 | .0625 |
| 44496 | 25-F | 4 | .056 |
| 44478 | 28 | 5 | .056 |
| 44479 | 32 | 5 | .0625 |

For Broaches larger than 32mm Progressive Shims are available as special items.

Specials

We are fully equipped to manufacture Special Keyway Broaches not listed above. **TiN or TiAlN coatings** are available. Please contact factory for details.

Metric Keyway Bushings

Bushing Styles A through F

Applications:

- To use metric Keyway Broaches in various metric bore sizes



Metric Keyway Bushings

duMONT Metric Keyway Bushings enable the operator to use individual Metric Keyway Broaches in a variety of bore sizes. Both Bushings and Broaches are designated by a letter which signifies the width of the Keyway Broach and Bushing opening. For proper fit, use Bushings with the same letter designation as the Broach being used i.e. Metric "A" Bushings with Metric "A" Broaches, Metric "B1" Bushings with Metric "B1" Broaches, etc.

A Bushings for A Broaches

| Dia. mm | Dec. Equiv. | EDP No. Collared Only |
|---------|-------------|-----------------------|
| 6 | .2362 | 44501 |
| 8 | .315 | 44431 |
| 10 | .3937 | 44432 |
| 12 | .4724 | 44502 |
| 15 | .5905 | 44503 |

D Bushings for D Broaches

| Dia. mm | Dec. Equiv. | EDP No. Plain Only |
|---------|-------------|--------------------|
| 32 | 1.2598 | 44449 |
| 34 | 1.3386 | 44450 |
| 35 | 1.3779 | 44451 |
| 36 | 1.4173 | 44452 |
| 38 | 1.4961 | 44453 |
| 40 | 1.5748 | 44454 |
| 42 | 1.6535 | 44455 |
| 44 | 1.7323 | 44456 |
| 45 | 1.7716 | 44457 |
| 46 | 1.8110 | 44458 |
| 48 | 1.8898 | 44459 |
| 50 | 1.9685 | 44460 |
| 52 | 2.0472 | 44461 |
| 54 | 2.1260 | 44462 |
| 56 | 2.2047 | 44463 |

B1 Bushings for B1 Broaches

| Dia. mm | Dec. Equiv. | EDP No. Collared Only |
|---------|-------------|-----------------------|
| 12 | .4724 | 44433 |
| 14 | .5512 | 44434 |
| 15 | .5905 | 44504 |
| 16 | .6299 | 44435 |
| 17 | .6693 | 44505 |
| 18 | .7087 | 44436 |
| 19 | .7480 | 44506 |

E Bushings for E Broaches

| Dia. mm | Dec. Equiv. | EDP No. Plain Only |
|---------|-------------|--------------------|
| 52 | 2.0472 | 44464 |
| 54 | 2.1260 | 44465 |
| 55 | 2.1653 | 44466 |
| 56 | 2.2047 | 44467 |
| 58 | 2.2835 | 44468 |
| 60 | 2.3622 | 44469 |
| 62 | 2.4409 | 44470 |
| 63 | 2.4803 | 44471 |
| 64 | 2.5197 | 44472 |
| 65 | 2.5590 | 44473 |
| 66 | 2.5984 | 44474 |
| 68 | 2.6772 | 44475 |
| 70 | 2.7559 | 44476 |
| 72 | 2.8346 | 44477 |

C Bushings for C Broaches

| Dia. mm | Dec. Equiv. | EDP No. Collared Only |
|---------|-------------|-----------------------|
| 18 | .7087 | 44437 |
| 19 | .7480 | 44438 |
| 20 | .7874 | 44439 |
| 22 | .8661 | 44440 |
| 24 | .9449 | 44441 |
| 25 | .9842 | 44442 |
| 26 | 1.0236 | 44443 |
| 28 | 1.1024 | 44444 |
| 30 | 1.1811 | 44445 |
| 32 | 1.2598 | 44446 |
| 34 | 1.3386 | 44447 |
| 35 | 1.3779 | 44507 |
| 36 | 1.4173 | 44448 |

F Bushings for F Broaches

| Dia. mm | Dec. Equiv. | EDP No. Plain Only |
|---------|-------------|--------------------|
| 75 | 2.9527 | 44540 |
| 80 | 3.1496 | 44541 |
| 85 | 3.3464 | 44542 |
| 90 | 3.5433 | 44543 |
| 95 | 3.7401 | 44544 |
| 100 | 3.9370 | 44545 |
| 105 | 4.1338 | 44546 |
| 110 | 4.3307 | 44547 |
| 115 | 4.5275 | 44548 |
| 120 | 4.7244 | 44549 |

Specials

We are fully equipped to manufacture Special Bushings not listed above. Please contact factory for details.

One-Pass Broaches

1/8 through 3/8 inch sizes
3mm through 14mm (I.S.O.)

Applications:

- High Speed Operation
- Accurate Small Run Production



One-Pass Keyway Broaches

duMONT Minute Man® One-Pass Keyway Broaches are designed for smaller production runs of identical keyways in varying bores. Used with the appropriate Bushing size (American Standard or Metric) and Style (see pages 8 and 10) to cut to full width and depth in one-pass, no shimming required. Reminder – Broach and Bushing Style must match – “A” Broaches with “A” Bushings, “B” Broaches with “B” Bushings, etc. A special chamfering feature that will deburr the keyway while it is being broached is also available.

TiN or TiAlN coatings available.

Stock One-Pass Broaches – Inch

| EDP No. | Broach Size | Broach Dimensions | Tooth Pitch | Length of Cut* Min. & Max. | | Pressure Req'd. for Max. L/C* |
|---------|-------------|---------------------------------------|-------------|-------------------------------|---------------------------------|-------------------------------|
| 55507 | 1/8-B | 3/16 x 10 ³ / ₄ | 1/4 | 19/64 | 1 ¹¹ / ₁₆ | 800 lbs. |
| 55508 | 5/32-B | 3/16 x 10 ³ / ₄ | 1/4 | 19/64 | 1 ¹¹ / ₁₆ | 1450 |
| 55509 | 3/16-B | 3/16 x 10 ³ / ₄ | 1/4 | 19/64 | 1 ¹¹ / ₁₆ | 2050 |
| 55501 | 1/8-C | 3/8 x 14 ¹ / ₈ | 9/32 | 19/64 | 2 | 900 |
| 55502 | 5/32-C | 3/8 x 14 ¹ / ₈ | 9/32 | 19/64 | 2 | 1360 |
| 55503 | 3/16-C | 3/8 x 17 | 9/32 | 19/64 | 2 | 1570 |
| 55504 | 1/4-C | 3/8 x 17 | 9/32 | 19/64 | 2 | 2560 |
| 55505 | 5/16-C | 3/8 x 18 ¹ / ₂ | 9/32 | 19/64 | 2 | 3900 |
| 55506 | 3/8-C | 3/8 x 18 ¹ / ₂ | 9/32 | 19/64 | 2 | 5300 |

*Based on mild steel

Stock One-Pass Broaches – Metric

| EDP No. | Broach Size mm | Broach Dimensions | Tooth Pitch | Length of Cut* Min. & Max. | | Pressure Req'd. for Max. L/C* |
|---------|----------------|--------------------------------------|-------------|-------------------------------|-------------------------------|-------------------------------|
| 55510 | 3-A | 1/8 x 7 ³ / ₄ | 3/16 | 13/64 | 1 | 675 lbs. |
| 55511 | 4-B1 | 1/4 x 10 ³ / ₄ | 1/4 | 3/8 | 1 ⁵ / ₈ | 1550 |
| 55512 | 5-B1 | 1/4 x 10 ³ / ₄ | 1/4 | 3/8 | 1 ⁵ / ₈ | 2430 |
| 55513 | 6-C | 3/8 x 17 | 9/32 | 3/8 | 1 ³ / ₄ | 2240 |
| 55514 | 8-C | 3/8 x 18 ¹ / ₂ | 5/16 | 3/8 | 2 | 3485 |
| 55515 | 10-D | 9/16 x 24 | 3/8 | 25/64 | 2 | 3410 |
| 55516 | 12-D | 9/16 x 24 | 3/8 | 25/64 | 2 | 4220 |
| 55517 | 14-D | 9/16 x 24 | 3/8 | 25/64 | 2 | 5670 |

*Based on mild steel

Specials

We are fully equipped to manufacture Special One-Pass Broaches to your specifications. A special chamfering feature that will deburr the keyway while it is being broached is also available. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.

Production Keyway Broaches

Push-Type Keyway Broaches

Applications:

- High Speed Operation
- Accurate Long Run Production



Production Broach Construction



Shoulders and back are form-ground to fit bore. These 3 supporting surfaces extend the full length of the broach.

Production Keyway Broaches

Minute Man® Production Keyway Broaches offer maximum speed and accuracy in production runs of identical bores, using either hydraulic or hand-operated presses. These Broaches are self-supporting – no Shims or Bushings are required.

Stock Production Keyway Broaches

Production Keyway Broaches are designed for large production runs of identical keyways with identical bores. No Shims or Bushings required. A special chamfering feature that will deburr the keyway while it is being broached is also available. **TiN or TiAlN coatings available.**

| EDP No. | Keyway Width | Body Diameter | A Dimension | Broach Length | Tooth Pitch | Length of Cut* Min. & Max. | | Pressure Req'd for Max. L/C* |
|---------|--------------|---------------|----------------|--------------------------------|-------------|-------------------------------|-------------------------------|------------------------------|
| 55520 | 1/16 | 3/16 | .224 | 5 ⁵ / ₈ | 3/16 | 13/64 | 1 | 390 lbs. |
| 55521 | 1/16 | 1/4 | .287 | 6 ³ / ₁₆ | 3/16 | 13/64 | 1 | 390 |
| 55522 | 1/8 | 3/8 | .437 | 8 ¹ / ₂ | 1/4 | 17/64 | 1 ¹ / ₄ | 850 |
| 55523 | 1/8 | 1/2 | .565 | 11 ³ / ₄ | 3/8 | 25/64 | 2 ¹ / ₂ | 1440 |
| 55524 | 1/8 | 9/16 | .630 | 11 ³ / ₄ | 3/8 | 25/64 | 2 ¹ / ₂ | 1440 |
| 55525 | 1/8 | 5/8 | .693 | 11 ³ / ₄ | 3/8 | 25/64 | 2 ¹ / ₂ | 1440 |
| 55526 | 3/16 | 5/8 | .716 | 14 ³ / ₄ | 3/8 | 25/64 | 2 ¹ / ₂ | 2170 |
| 55528 | 3/16 | 3/4 | .844 | 14 ³ / ₄ | 3/8 | 25/64 | 2 ¹ / ₂ | 2170 |
| 55530 | 3/16 | 7/8 | .970 | 14 ³ / ₄ | 3/8 | 25/64 | 2 ¹ / ₂ | 2170 |
| 55532 | 1/4 | 1 | 1.121 | 18 | 3/8 | 25/64 | 2 ¹ / ₂ | 2870 |
| 55533 | 4mm | 10mm | 11.9mm .468 | 12 | 9/32 | 19/64 | 1 ⁷ / ₈ | 1550 |

*Based on mild steel

Specials

We are fully equipped to manufacture Special Production Style Broaches to your specifications. A special chamfering feature that will deburr the keyway while it is being broached is also available. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.

Keyseating Broaches

1/16 through 1 1/2 inch sizes
2mm through 25mm (I.S.O.)

Applications:

- For Hansford Davis Keyseating machine Modes 4, 5, and 15



Stock Keyseating Broaches, Type AF

Minute Man® Keyseating Broaches feature superior tooth design and are ground to precision keyway tolerances. Sizes for cutting the most common keyway widths are available. **TiN or TiAlN coatings available.**

Type AF Inch

| EDP No. | Broach Size | Overall Length | Tooth Height | Tooth Pitch |
|---------|-------------|----------------|--------------|-------------|
| 55550 | 1/16* | 16 | 3/8 | 3/8 |
| 55551 | 3/32* | 16 | 3/8 | 3/8 |
| 55552 | 1/8* | 16 | 7/16 | 3/8 |
| 55553 | 5/32 | 16 | 1/2 | 3/8 |
| 55554 | 3/16 | 16 | 9/16 | 3/8 |
| 55555 | 1/4 | 16 | 3/4 | 3/8 |
| 55556 | 1/4 | 20 | 3/4 | 3/8 |
| 55557 | 5/16 | 16 | 7/8 | 17/32 |
| 55558 | 5/16 | 20 | 7/8 | 17/32 |
| 55559 | 3/8 | 16 | 7/8 | 17/32 |
| 55560 | 3/8 | 20 | 7/8 | 17/32 |
| 55561 | 7/16 | 20 | 1 | 17/32 |
| 55562 | 1/2 | 20 | 1 | 17/32 |
| 55563 | 9/16 | 20 | 1 | 17/32 |
| 55564 | 5/8 | 20 | 1 | 17/32 |
| 55565 | 3/4 | 20 | 1 | 17/32 |
| 55566 | 7/8 | 20 | 1 | 17/32 |
| 55567 | 1 | 20 | 1 | 17/32 |

*Reinforced body width 3/16" thick

Stock Keyseating Broaches, Type AFS

Staggered Tooth AFS Type Keyseating Broaches provide a stagger tooth design, promoting an efficient cut. **TiN or TiAlN coatings available.**

Type AFS Inch

| EDP No. | Broach Size | Overall Length | Tooth Height | Tooth Pitch |
|---------|-------------|----------------|--------------|-------------|
| 55601 | 3/8 | 20 | 1 | 17/32 |
| 55602 | 3/8 | 20 | 1 1/2 | 3/4 |
| 55603 | 7/16 | 20 | 1 | 17/32 |
| 55604 | 1/2 | 20 | 1 | 17/32 |
| 55605 | 9/16 | 20 | 1 | 17/32 |
| 55606 | 5/8 | 20 | 1 | 17/32 |
| 55607 | 3/4 | 20 | 1 | 17/32 |
| 55608 | 7/8 | 20 | 1 | 17/32 |
| 55609 | 1 | 20 | 1 | 17/32 |
| 55610 | 1 1/8 | 20 | 1 3/4 | 3/4 |
| 55611 | 1 1/4 | 20 | 1 3/4 | 3/4 |
| 55612 | 1 1/2 | 20 | 1 3/4 | 3/4 |

Specials

We are fully equipped to manufacture Special Keyseating Broaches not listed above. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.



Type AF Metric Standard (I.S.O.)

| EDP No. | Broach Size | Overall Length | Tooth Height | Tooth Pitch |
|---------|-------------|----------------|--------------|-------------|
| 55570 | 2mm* | 16 | 3/8 | 3/8 |
| 55571 | 3mm* | 16 | 7/16 | 3/8 |
| 55572 | 4mm | 16 | 1/2 | 3/8 |
| 55573 | 5mm | 16 | 9/16 | 3/8 |
| 55574 | 6mm | 16 | 3/4 | 3/8 |
| 55575 | 6mm | 20 | 3/4 | 3/8 |
| 55576 | 7mm | 16 | 7/8 | 17/32 |
| 55577 | 7mm | 20 | 7/8 | 17/32 |
| 55578 | 8mm | 16 | 7/8 | 17/32 |
| 55579 | 8mm | 20 | 7/8 | 17/32 |
| 55580 | 9mm | 16 | 7/8 | 17/32 |
| 55581 | 9mm | 20 | 7/8 | 17/32 |
| 55582 | 10mm | 20 | 7/8 | 17/32 |
| 55583 | 11mm | 20 | 1 | 17/32 |
| 55584 | 12mm | 20 | 1 | 17/32 |
| 55585 | 13mm | 20 | 1 | 17/32 |
| 55586 | 14mm | 20 | 1 | 17/32 |
| 55587 | 15mm | 20 | 1 | 17/32 |
| 55588 | 16mm | 20 | 1 | 17/32 |
| 55589 | 17mm | 20 | 1 | 17/32 |
| 55590 | 18mm | 20 | 1 | 17/32 |
| 55591 | 19mm | 20 | 1 | 17/32 |
| 55592 | 20mm | 20 | 1 | 17/32 |
| 55593 | 22mm | 20 | 1 | 17/32 |
| 55594 | 24mm | 20 | 1 | 17/32 |
| 55595 | 25mm | 20 | 1 | 17/32 |

*Reinforced body width 3/16" thick

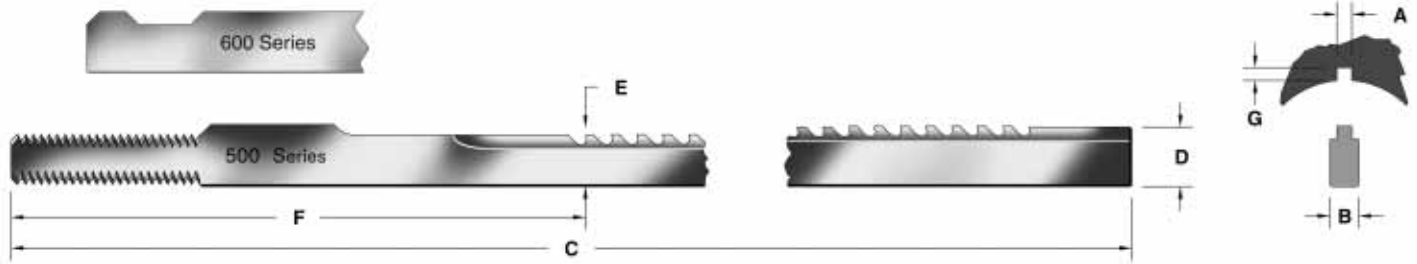
Pull-Type Keyway Broaches

Industry Standard 500 and 600 Series

1/16 through 1 inch sizes

Applications:

- For high volume production pull-type machines



Industry Standard 500 and 600 Series

duMONT Minute Man® offers the most common American Standard (1/16–1") Pull-Type Keyway Broaches for use in high volume production. Available either as Industry Standard 500 Series with threaded pull end or 600 Series with notched pull end.

| EDP No. 500 Series | EDP No. 600 Series | A Nom. Dim. | Decimal Dim.† | Min. Hole Size | Min. Length Cut# | Max. Length Cut* | B | C | D | E | F | G | No. of Cuts | Thread Size |
|--------------------------|--------------------------|-------------------|------------------|----------------------|------------------------|------------------------|--------|----|-------|-------|----------------------|------|-------------------|----------------|
| 10501 | 10601 | 1/16 | .0635 | 3/8 | 3/8 | 1 1/4 | .1552 | 20 | .313 | .271 | 7 ¹³ /16 | .042 | 1 | 1/4 - 20 |
| 10502 | 10602 | 3/32 | .0948 | 7/16 | 1/2 | 1 1/2 | .1865 | 24 | .367 | .309 | 8 1/4 | .058 | 1 | 5/16 - 18 |
| 10503 | 10603 | 3/32 | .0948 | 9/16 | 5/8 | 2 1/2 | .2490 | 33 | .491 | .433 | 10 | .058 | 1 | 3/8 - 16 |
| 10504 | 10604 | 1/8 | .1260 | 1/2 | 1/2 | 1 1/2 | .2490 | 30 | .438 | .364 | 9 | .074 | 1 | 3/8 - 16 |
| 10505 | 10605 | 1/8 | .1260 | 11/16 | 5/8 | 2 1/2 | .3115 | 33 | .594 | .520 | 10 | .074 | 1 | 1/2 - 13 |
| 10506 | 10606 | 5/32 | .1572 | 19/32 | 1/2 | 1 1/2 | .2490 | 30 | .525 | .436 | 9 | .089 | 1 | 3/8 - 16 |
| 10507 | 10607 | 5/32 | .1572 | 23/32 | 5/8 | 2 1/2 | .3115 | 33 | .625 | .536 | 10 | .089 | 1 | 1/2 - 13 |
| 10508 | 10608 | 3/16 | .1885 | 11/16 | 5/8 | 2 1/2 | .3740 | 36 | .581 | .476 | 10 | .105 | 1 | 1/2 - 13 |
| 10509 | 10609 | 3/16 | .1885 | 7/8 | 11/16 | 3 1/2 | .3740 | 36 | .796 | .691 | 10 ¹¹ /16 | .105 | 1 | 1/2 - 13 |
| 10510 | 10610 | 7/32 | .2198 | 11/16 | 5/8 | 2 1/2 | .3740 | 33 | .557 | .437 | 10 | .120 | 1 | 1/2 - 13 |
| 10511 | 10611 | 7/32 | .2198 | 15/16 | 11/16 | 3 1/2 | .3740 | 42 | .813 | .693 | 11 ¹ /16 | .120 | 1 | 1/2 - 13 |
| 10512 | 10612 | 1/4 | .2510 | 3/4 | 5/8 | 2 1/2 | .3740 | 36 | .612 | .476 | 10 | .136 | 1 | 1/2 - 13 |
| 10513 | 10613 | 1/4 | .2510 | 1 | 11/16 | 4 | .4990 | 45 | .877 | .741 | 12 | .136 | 1 | 5/8 - 11 |
| 10514 | 10614 | 1/4 | .2510 | 1 3/8 | 7/8 | 6 | .6240 | 51 | 1.250 | 1.114 | 13 ³ /4 | .136 | 1 | 3/4 - 10 |
| 10515 | 10615 | 9/32 | .2828 | 7/8 | 11/16 | 4 | .4990 | 42 | .716 | .564 | 11 ⁵ /8 | .152 | 1 | 5/8 - 11 |
| 10516 | 10616 | 9/32 | .2828 | 1 1/4 | 7/8 | 6 | .4990 | 51 | 1.093 | .941 | 13 ¹ /2 | .152 | 1 | 5/8 - 11 |
| 10517 | 10617 | 5/16 | .3140 | 1 1/16 | 11/16 | 4 | .4990 | 45 | .908 | .741 | 12 | .167 | 1 | 5/8 - 11 |
| 10518 | 10618 | 5/16 | .3140 | 1 5/16 | 7/8 | 6 | .4990 | 51 | 1.158 | .991 | 13 ³ /4 | .167 | 1 | 5/8 - 11 |
| 10519 | 10619 | 3/8 | .3765 | 1 1/16 | 11/16 | 4 | .4990 | 45 | .938 | .739 | 12 | .199 | 1 | 5/8 - 11 |
| 10520 | 10620 | 3/8 | .3765 | 1 5/16 | 7/8 | 6 | .4990 | 54 | 1.189 | .990 | 13 ¹ /2 | .199 | 1 | 5/8 - 11 |
| 10521 | 10621 | 7/16 | .4390 | 1 9/16 | 11/16 | 4 | .6240 | 48 | 1.390 | 1.160 | 12 | .230 | 1 | 3/4 - 10 |
| 10522 | 10622 | 7/16 | .4390 | 1 3/4 | 1 | 8 | .6240 | 48 | 1.611 | 1.496 | 15 ⁵ /8 | .230 | 2 | 3/4 - 10 |
| 10523 | 10623 | 1/2 | .5015 | 1 1/2 | 11/16 | 4 | .6240 | 48 | 1.312 | 1.051 | 12 | .261 | 1 | 3/4 - 10 |
| 10524 | 10624 | 1/2 | .5015 | 1 9/16 | 1 | 8 | .6240 | 48 | 1.377 | 1.246 | 16 ¹ /2 | .261 | 2 | 3/4 - 10 |
| 10525 | 10625 | 9/16 | .5645 | 1 11/16 | 11/16 | 4 | .6865 | 54 | 1.438 | 1.146 | 11 ¹³ /16 | .292 | 1 | 1 - 8 |
| 10526 | 10626 | 9/16 | .5645 | 1 5/8 | 1 | 8 | .6865 | 51 | 1.391 | 1.245 | 16 | .292 | 2 | 1 - 8 |
| 10527 | 10627 | 9/16 | .5645 | 1 15/16 | 1 1/8 | 12 | .8740 | 60 | 1.641 | 1.495 | 20 | .292 | 2 | 1 - 8 |
| 10528 | 10628 | 5/8 | .6270 | 1 7/8 | 11/16 | 4 | .7490 | 60 | 1.625 | 1.301 | 12 | .324 | 1 | 1 - 8 |
| 10529 | 10629 | 5/8 | .6270 | 1 15/16 | 1 | 8 | .8740 | 54 | 1.657 | 1.495 | 16 ³ /8 | .324 | 2 | 1 - 8 |
| 10530 | 10630 | 5/8 | .6270 | 1 15/16 | 1 1/8 | 12 | .8740 | 60 | 1.657 | 1.495 | 20 | .324 | 2 | 1 - 8 |
| 10531 | 10631 | 3/4 | .7520 | 1 15/16 | 11/16 | 4 | .8740 | 60 | 1.625 | 1.239 | 12 | .386 | 1 | 1 - 8 |
| 10532 | 10632 | 3/4 | .7520 | 2 1/16 | 1 | 8 | .9990 | 60 | 1.688 | 1.495 | 16 ¹ /4 | .386 | 2 | 1 1/4 - 7 |
| 10533 | 10633 | 3/4 | .7520 | 2 1/16 | 1 1/8 | 12 | .9990 | 60 | 1.688 | 1.560 | 20 | .386 | 3 | 1 1/4 - 7 |
| 10534 | 10634 | 7/8 | .8770 | 2 1/4 | 11/16 | 4 | 1.1240 | 63 | 1.875 | 1.426 | 12 ³ /8 | .449 | 1 | 1 1/4 - 7 |
| 10535 | 10635 | 7/8 | .8770 | 2 1/8 | 1 | 8 | 1.1240 | 63 | 1.719 | 1.494 | 15 ³ /4 | .449 | 2 | 1 1/4 - 7 |
| 10536 | 10636 | 7/8 | .8770 | 2 1/8 | 1 1/8 | 12 | 1.1240 | 63 | 1.719 | 1.569 | 20 | .449 | 3 | 1 1/4 - 7 |
| 10537 | 10637 | 1 | 1.0020 | 2 1/4 | 5/8 | 2 1/2 | 1.2490 | 63 | 1.750 | 1.239 | 10 ¹ /2 | .511 | 1 | 1 1/2 - 6 |
| 10538 | 10638 | 1 | 1.0020 | 2 1/4 | 7/8 | 6 | 1.2490 | 63 | 1.750 | 1.494 | 14 ¹ /4 | .511 | 2 | 1 1/2 - 6 |
| 10539 | 10639 | 1 | 1.0020 | 2 1/4 | 1 1/8 | 12 | 1.2490 | 63 | 1.750 | 1.580 | 20 | .511 | 3 | 1 1/2 - 6 |

† Tolerance - Based on +/- .0005 # Minimum length of part recommended to prevent part from dropping in between broach teeth *Based on mild steel

Specials

We are fully equipped to manufacture Special Pull-Type Keyway Broaches to your specifications. A special chamfering feature that will deburr the keyway while it is being broached is also available. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.

Pull-Type Keyway Broaches

Industry Standard 5M and 6M Series
2mm through 25mm (I.S.O.)

Applications:

• For high volume production
pull-type machines



Industry Standard Metric 5M and 6M Series

duMONT Minute Man® offers the most common Metric (2–25mm) Pull-Type Keyway Broaches for use in high volume production. Available either as Industry Standard 5M Series with threaded pull end or 6M Series with notched pull end. See image page 14.

| EDP No. 5M Series | EDP No. 6M Series | A Nom. Dim. | Decimal Dim.† | Min. Hole Size | Min. Length Cut# | Max. Length Cut* | B | C | D | E | F | G | No. of Cuts | Thread Size |
|-------------------------|-------------------------|-------------------|------------------|----------------------|------------------------|------------------------|----------------|------------|----------------|----------------|-----------------|--------------|-------------------|----------------|
| 10561 | 10661 | 2 | .0792 | 9 .354 | 9.5 3/8 | 31.8 1 1/4 | 3.942 .1552 | 508 20 | 7.95 .313 | 6.60 .260 | 197 7 3/4 | 1.35 .053 | 1 | 1/4 - 20 |
| 10562 | 10662 | 3 | .1186 | 11 .433 | 12.7 1 1/2 | 38 1 1/2 | 4.737 .1865 | 610 24 | 9.32 .367 | 7.49 .295 | 197 7 3/4 | 1.83 .072 | 1 | 5/16 - 18 |
| 10563 | 10663 | 4 | .1581 | 13 .512 | 12.7 1 1/2 | 38 1 1/2 | 6.325 .249 | 838 33 | 11.13 .438 | 8.81 .347 | 229 9 | 2.31 .091 | 1 | 3/8 - 16 |
| 10564 | 10664 | 4 | .1581 | 13 .512 | 15.9 5/8 | 63.5 2 1/2 | 6.325 .249 | 915 36 | 11.07 .436 | 8.76 .345 | 254 10 | 2.31 .091 | 1 | 3/8 - 16 |
| 10565 | 10665 | 5 | .1974 | 14 .551 | 14.3 9/16 | 44.5 1 3/4 | 7.91 .3115 | 915 36 | 11.07 .436 | 8.18 .322 | 248 9 3/4 | 2.89 .114 | 1 | 1/2 - 13 |
| 10566 | 10666 | 5 | .1974 | 23 .906 | 15.9 5/8 | 76.2 3 | 9.5 .374 | 1067 42 | 20.65 .813 | 17.75 .699 | 279 11 | 2.89 .114 | 1 | 1/2 - 13 |
| 10567 | 10667 | 6 | .2368 | 18 .709 | 15.9 5/8 | 63.5 2 1/2 | 9.5 .374 | 915 36 | 15.54 .612 | 11.96 .471 | 254 10 | 3.58 .141 | 1 | 1/2 - 13 |
| 10568 | 10668 | 6 | .2368 | 26 1.024 | 17.5 1 1/16 | 102 4 | 12.67 .499 | 1143 45 | 22.28 .877 | 18.69 .736 | 305 12 | 3.58 .141 | 1 | 5/8 - 11 |
| 10569 | 10669 | 8 | .3157 | 27 1.063 | 17.5 1 1/16 | 102 4 | 12.67 .499 | 1143 45 | 23.06 .908 | 18.77 .739 | 305 12 | 4.29 .169 | 1 | 5/8 - 11 |
| 10570 | 10670 | 8 | .3157 | 33 1.299 | 22.2 7/8 | 152 6 | 12.67 .499 | 1295 51 | 29.41 1.158 | 25.12 .989 | 353 13 7/8 | 4.29 .169 | 1 | 5/8 - 11 |
| 10571 | 10671 | 10 | .3944 | 27 1.063 | 17.5 1 1/16 | 102 4 | 12.67 .499 | 1143 45 | 23.27 .916 | 18.77 .739 | 305 12 | 4.49 .177 | 1 | 5/8 - 11 |
| 10572 | 10672 | 10 | .3944 | 36 1.417 | 22.2 7/8 | 152 6 | 15.85 .624 | 1295 51 | 31.75 1.250 | 27.25 1.073 | 353 13 7/8 | 4.49 .177 | 1 | 3/4 - 10 |
| 10573 | 10673 | 12 | .4733 | 39 1.535 | 17.5 1 1/16 | 102 4 | 15.85 .624 | 1219 48 | 34.06 1.341 | 29.46 1.160 | 302 11 7/8 | 4.60 .181 | 1 | 3/4 - 10 |
| 10574 | 10674 | 12 | .4733 | 39 1.535 | 25.4 1 | 203 8 | 15.85 .624 | 1524 60 | 34.06 1.341 | 29.46 1.160 | 406 16 | 4.60 .181 | 1 | 3/4 - 10 |
| 10575 | 10675 | 14 | .5520 | 40 1.575 | 17.5 1 1/16 | 102 4 | 17.44 .6865 | 1372 54 | 34.39 1.354 | 29.11 1.146 | 295 11 5/8 | 5.28 .208 | 1 | 1 - 8 |
| 10576 | 10676 | 14 | .5520 | 44 1.732 | 25.4 1 | 203 8 | 19.02 .749 | 1524 60 | 38.33 1.509 | 33.04 1.301 | 400 15 3/4 | 5.28 .208 | 1 | 1 - 8 |
| 10577 | 10677 | 16 | .6308 | 47 1.850 | 17.5 1 1/16 | 102 4 | 19.02 .749 | 1524 60 | 41.28 1.625 | 35.46 1.396 | 305 12 | 5.82 .229 | 1 | 1 - 8 |
| 10578 | 10678 | 16 | .6308 | 48 1.890 | 28.6 1 1/8 | 305 12 | 22.2 .874 | 1524 60 | 41.28 1.625 | 38.35 1.510 | 508 20 | 5.82 .229 | 2 | 1 - 8 |
| 10579 | 10679 | 18 | .7095 | 48 1.890 | 17.5 1 1/16 | 102 4 | 22.2 .874 | 1524 60 | 41.28 1.625 | 35.26 1.388 | 305 12 | 6.02 .237 | 1 | 1 - 8 |
| 10580 | 10680 | 18 | .7095 | 51 2.008 | 28.6 1 1/8 | 305 12 | 25.37 .999 | 1524 60 | 42.88 1.688 | 39.85 1.569 | 513 20 3/16 | 6.02 .237 | 2 | 1 1/4 - 7 |
| 10581 | 10681 | 20 | .7884 | 56 2.205 | 17.5 1 1/16 | 102 4 | 28.55 1.124 | 1600 63 | 47.63 1.875 | 40.94 1.612 | 302 11 7/8 | 6.68 .263 | 1 | 1 1/4 - 7 |
| 10582 | 10682 | 20 | .7884 | 53 2.087 | 28.6 1 1/8 | 305 12 | 28.55 1.124 | 1600 63 | 43.66 1.719 | 40.31 1.587 | 503 19 13/16 | 6.68 .263 | 2 | 1 1/4 - 7 |
| 10583 | 10683 | 22 | .8672 | 57 2.244 | 17.5 1 1/16 | 102 4 | 28.55 1.124 | 1600 63 | 47.63 1.875 | 40.39 1.590 | 302 11 7/8 | 7.24 .285 | 1 | 1 1/4 - 7 |
| 10584 | 10684 | 22 | .8672 | 53 2.087 | 28.6 1 1/8 | 305 12 | 28.55 1.124 | 1600 63 | 43.66 1.719 | 40.03 1.576 | 503 19 13/16 | 7.24 .285 | 2 | 1 1/4 - 7 |
| 10585 | 10685 | 25 | .9853 | 56 2.205 | 17.5 1 1/16 | 102 4 | 31.72 1.249 | 1600 63 | 44.45 1.750 | 36.98 1.456 | 270 10 5/8 | 7.47 .294 | 1 | 1 1/2 - 6 |
| 10586 | 10686 | 25 | .9853 | 56 2.205 | 28.6 1 1/8 | 305 12 | 31.72 1.249 | 1600 63 | 44.45 1.750 | 40.72 1.603 | 508 20 | 7.47 .294 | 2 | 1 1/2 - 6 |

† Tolerance - Based on +/- .0005 # Minimum length of part recommended to prevent part from dropping in between broach teeth *Based on mild steel

Specials

We are fully equipped to manufacture Special Pull-Type Keyway Broaches to your specifications. A special chamfering feature that will deburr the keyway while it is being broached is also available. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.

Square Push Broaches

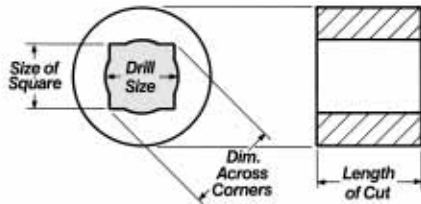
1/8 through 1 inch square

Applications:

- Drives, jigs, fixtures, and other square broaching operations



Dimensions of Standard Square Broach Holes



Dimensions of Standard Square Broach Holes

Square Push Broaches

duMONT Minute Man® Standard Square Broaches are designed to generate in one-pass a Standard Square hole in a previously cast or drilled round hole. Standard Square Broaches begin in an oversized pilot hole and generate the square hole while leaving small radii on the flats. Available from stock in the most common American Standard sizes (1/8–1").

TiN or TiAlN coatings available.

Stock Standard Square Broaches

| EDP No. | Square Size | Tolerances | Broach Length | Pilot† Diameter | Drill Size | Dimension Across Corners | Tooth Pitch | Length of Cut* Min. & Max. | Pressure Req'd. for Max.L/C* |
|---------|-------------|----------------|---------------|-----------------|------------|--------------------------|-------------|----------------------------|------------------------------|
| 66601 | 1/8 | .1255 - .1265 | 4 1/8 | .1285 | No. 30 | .1750 - .1770 | 1/8 | 3/16 1/2 | 700 lbs. |
| 66602 | 5/32 | .1565 - .1575 | 5 1/8 | .1590 | No. 21 | .2180 - .2200 | 5/32 | 1/4 1/2 | 600 |
| 66603 | 3/16 | .1880 - .1890 | 5 9/16 | .1935 | No. 10 | .2620 - .2640 | 5/32 | 1/4 5/8 | 1080 |
| 66604 | 7/32 | .2190 - .2200 | 6 3/8 | .2280 | No. 1 | .3060 - .3080 | 3/16 | 1/4 3/4 | 1410 |
| 66605 | 1/4 | .2505 - .2515 | 6 1/2 | .2656 | 17/64 | .3510 - .3530 | 3/16 | 1/4 3/4 | 1740 |
| 66606 | 9/32 | .2815 - .2825 | 7 3/4 | .2969 | 19/64 | .3930 - .3950 | 7/32 | 5/16 1 | 2130 |
| 66607 | 5/16 | .3130 - .3140 | 7 7/8 | .3281 | 21/64 | .4370 - .4390 | 7/32 | 3/8 1 | 2100 |
| 66608 | 11/32 | .3440 - .3450 | 9 3/8 | .3594 | 23/64 | .4830 - .4850 | 1/4 | 3/8 1 1/4 | 3480 |
| 66609 | 3/8 | .3755 - .3765 | 9 3/8 | .3906 | 25/64 | .5240 - .5260 | 1/4 | 3/8 1 1/4 | 3720 |
| 66610 | 13/32 | .4065 - .4075 | 10 5/8 | .4219 | 27/64 | .5690 - .5710 | 9/32 | 1/2 1 3/8 | 4080 |
| 66611 | 7/16 | .4380 - .4390 | 10 7/8 | .4531 | 29/64 | .6110 - .6130 | 5/16 | 1/2 1 3/8 | 4500 |
| 66612 | 15/32 | .4690 - .4700 | 12 | .5000 | 1/2 | .6570 - .6590 | 5/16 | 1/2 1 3/8 | 4000 |
| 66613 | 1/2 | .5005 - .5015 | 12 | .5312 | 17/32 | .6990 - .7010 | 5/16 | 1/2 1 3/8 | 4500 |
| 66614 | 9/16 | .5630 - .5640 | 14 3/4 | .5938 | 19/32 | .7870 - .7890 | 3/8 | 1/2 1 1/2 | 5700 |
| 66615 | 5/8 | .6260 - .6270 | 16 5/16 | .6562 | 21/32 | .8730 - .8750 | 7/16 | 5/8 1 5/8 | 5920 |
| 66616 | 11/16 | .6885 - .6895 | 17 3/4 | .7500 | 3/4 | .9630 - .9650 | 7/16 | 5/8 1 5/8 | 4800 |
| 66617 | 3/4 | .7510 - .7520 | 17 3/4 | .8125 | 13/16 | 1.0450 - 1.0470 | 7/16 | 5/8 1 5/8 | 5940 |
| 66618 | 7/8 | .8765 - .8775 | 22 3/4 | .9375 | 15/16 | 1.2270 - 1.2290 | 7/16 | 5/8 2 | 9200 |
| 66619 | 1 | 1.002 - 1.0030 | 24 1/8 | 1.0938 | 1 3/32 | 1.4030 - 1.4050 | 7/16 | 5/8 2 | 9200 |

†Tolerances-Basic minus .0005-.001 inches *Based on mild steel

Specials

We are fully equipped to manufacture Special Square Broaches not listed above to your specifications. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.

Full Square Push Broaches

³/₁₆ through ¹/₂ inch full square

Round Push Broaches

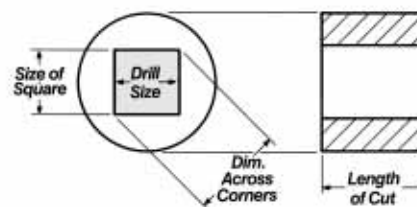
¹/₄ through 1 inch round

Applications:

- Drives, jigs, and fixtures
- Sizing and finishing



Dimensions of Full Square Broach Holes



Dimensions of Standard Square Broach Holes

Full Square Broaches

duMONT Minute Man® Full Square Broaches are designed to generate in one-pass a Full Square hole in a previously cast or drilled round hole. The Broach leaves no radii on the flats of the broached piece and the pilot diameter equals the finished full square size. **TiN or TiAlN coatings available.**

Stock Full Square Broaches

| EDP No. | Full Square Size | Tolerances (Dec. Equiv.) | Broach Length | Pilot Diameter† | Drill Size | Dimension Across Corners | Tooth Pitch | Length of Cut* Min. & Max. | Pressure Req'd. for Max. LOC* |
|---------|------------------------------|--------------------------|--------------------------------|------------------------------|------------------------------|--------------------------|------------------------------|--|-------------------------------|
| 66403 | ³ / ₁₆ | .1880 - .1890 | 6 | ³ / ₁₆ | ³ / ₁₆ | .2630 - .2650 | ¹ / ₈ | ³ / ₁₆ ¹ / ₂ | 870 lbs. |
| 66405 | ¹ / ₄ | .2505 - .2515 | 8 ¹ / ₂ | ¹ / ₄ | ¹ / ₄ | .3510 - .3530 | ⁵ / ₃₂ | ¹ / ₄ ⁵ / ₈ | 1310 |
| 66407 | ⁵ / ₁₆ | .3130 - .3140 | 10 ¹ / ₂ | ⁵ / ₁₆ | ⁵ / ₁₆ | .4390 - .4410 | ³ / ₁₆ | ⁵ / ₁₆ ⁷ / ₈ | 1895 |
| 66409 | ³ / ₈ | .3755 - .3765 | 13 ¹ / ₈ | ³ / ₈ | ³ / ₈ | .5260 - .5280 | ⁷ / ₃₂ | ⁵ / ₁₆ 1 | 2410 |
| 66411 | ⁷ / ₁₆ | .4385 - .4395 | 14 ¹ / ₄ | ⁷ / ₁₆ | ⁷ / ₁₆ | .6140 - .6160 | ⁷ / ₃₂ | ⁵ / ₁₆ 1 | 3090 |
| 66413 | ¹ / ₂ | .5005 - .5015 | 14 ³ / ₄ | ¹ / ₂ | ¹ / ₂ | .7010 - .7030 | ¹ / ₄ | ³ / ₈ 1 | 3860 |

†Tolerances-Basic minus .0005-.001 inches *Based on mild steel

Round Broaches

duMONT Minute Man® Round Broaches are designed to generate in one-pass a precision round hole in a previously cast, drilled or reamed round hole. These Internal Hole Broaches are ideal for precise tolerances, sizing and finish for those applications demanding precision and finish. Broaches are finished with variable pitch teeth and available in American Standard sizes (¹/₄-1"). A burnishing section can be furnished. Metric sizes available upon request.

TiN or TiAlN coatings available.



Stock Round Broaches

| EDP No. | Nominal Diameter | Tolerances | Broach Length | Pilot† Diameter | Drill Size | Length of Cut* Min. & Max. | Pressure Req'd. for Max. L/C* |
|---------|------------------------------|-----------------|--------------------------------|-----------------|-------------------------------|--|-------------------------------|
| 77730 | ¹ / ₄ | .2505 - .2510 | 5 ⁷ / ₈ | .2344 | ¹⁵ / ₆₄ | ⁵ / ₁₆ ³ / ₄ | 840 lbs. |
| 77731 | ⁵ / ₁₆ | .3130 - .3135 | 5 ⁷ / ₈ | .2469 | ¹⁹ / ₆₄ | ⁵ / ₁₆ ³ / ₄ | 1050 |
| 77732 | ³ / ₈ | .3755 - .3760 | 6 ⁷ / ₈ | .3594 | ²³ / ₆₄ | ³ / ₈ 1 | 1440 |
| 77733 | ⁷ / ₁₆ | .4380 - .4385 | 6 ⁷ / ₈ | .4219 | ²⁷ / ₆₄ | ³ / ₈ 1 | 1680 |
| 77734 | ¹ / ₂ | .5005 - .5010 | 8 | .4844 | ³¹ / ₆₄ | ¹ / ₂ ¹ / ₄ | 2240 |
| 77736 | ⁵ / ₈ | .6255 - .6260 | 8 ¹ / ₂ | .6094 | ³⁹ / ₆₄ | ¹ / ₂ ¹ / ₄ | 2500 |
| 77738 | ³ / ₄ | .7505 - .7510 | 9 ¹ / ₈ | .7344 | ⁴⁷ / ₆₄ | ⁵ / ₈ ¹ / ₂ | 3720 |
| 77740 | ⁷ / ₈ | .8755 - .8765 | 9 ¹ / ₄ | .8594 | ⁵⁵ / ₆₄ | ⁵ / ₈ ¹ / ₂ | 4340 |
| 77742 | 1 | 1.0005 - 1.0015 | 10 ¹ / ₄ | .9844 | ⁶³ / ₆₄ | ⁵ / ₈ ¹ / ₄ | 4970 |

†Tolerance-Basic minus .0005-.001 inches for standard drilled hole *Based on mild steel

Specials

We are fully equipped to manufacture Special Full Square Broaches and Special Round Broaches not listed above to your specifications. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.

Hexagon Push Broaches

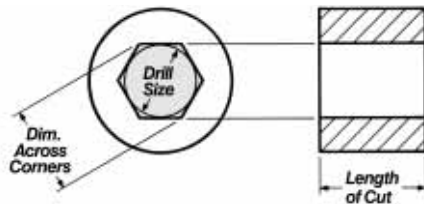
1/8 through 1 inch hex sizes

Applications:

- Drives, jigs, fixtures, and other hexagonal broaching operations



Dimensions of Standard Hexagon Broach Holes



Hexagon Broaches

duMONT Minute Man® Hexagon Broaches are designed to generate in one-pass a Hexagon hole in a previously cast or drilled round hole. Available from stock in the most common American Standard sizes (1/8–1").

TiN or TiAlN coatings available.

Stock Hexagon Broaches

| EDP No. | Hex Size | Tolerances | Broach Length | Pilot† Diameter | Drill Size | Dimension Across Corners | Tooth Pitch | Length of Cut* Min. & Max. | Pressure Req'd. for Max. L/C* |
|---------|----------|-----------------|---------------|-----------------|------------|--------------------------|-------------|----------------------------|-------------------------------|
| 77701 | 1/8 | .1255 - .1265 | 4 1/8 | 1/8 | 1/8 | .1445 - .1455 | 1/8 | 3/16 3/8 | 200 lbs. |
| 77702 | 5/32 | .1565 - .1575 | 4 15/16 | 5/32 | 5/32 | .1800 - .1815 | 1/8 | 1/4 1/2 | 300 |
| 77703 | 3/16 | .1880 - .1890 | 5 1/16 | 3/16 | 3/16 | .2160 - .2180 | 5/32 | 1/4 5/8 | 560 |
| 77704 | 7/32 | .2190 - .2200 | 5 3/8 | 7/32 | 7/32 | .2500 - .2520 | 5/32 | 1/4 3/4 | 775 |
| 77705 | 1/4 | .2505 - .2515 | 6 | 1/4 | 1/4 | .2870 - .2890 | 3/16 | 1/4 3/4 | 1025 |
| 77706 | 9/32 | .2815 - .2825 | 7 1/4 | 9/32 | 9/32 | .3230 - .3250 | 3/16 | 5/16 1 | 1290 |
| 77707 | 5/16 | .3130 - .3140 | 7 3/4 | 5/16 | 5/16 | .3590 - .3610 | 7/32 | 3/8 1 | 1510 |
| 77708 | 11/32 | .3440 - .3450 | 7 3/4 | 11/32 | 11/32 | .3950 - .3970 | 7/32 | 3/8 1 1/4 | 2280 |
| 77709 | 3/8 | .3755 - .3765 | 8 1/2 | 3/8 | 3/8 | .4310 - .4330 | 7/32 | 3/8 1 1/4 | 2400 |
| 77710 | 13/32 | .4065 - .4075 | 9 5/8 | 13/32 | 13/32 | .4670 - .4690 | 1/4 | 1/2 1 3/8 | 2790 |
| 77711 | 7/16 | .4380 - .4390 | 10 1/2 | 7/16 | 7/16 | .5040 - .5060 | 1/4 | 1/2 1 3/8 | 2700 |
| 77712 | 15/32 | .4690 - .4700 | 11 7/8 | 15/32 | 15/32 | .5390 - .5410 | 9/32 | 1/2 1 3/8 | 2700 |
| 77713 | 1/2 | .5005 - .5015 | 11 7/8 | 1/2 | 1/2 | .5750 - .5770 | 9/32 | 1/2 1 3/8 | 3025 |
| 77714 | 9/16 | .5630 - .5640 | 13 3/4 | 9/16 | 9/16 | .6480 - .6500 | 5/16 | 1/2 1 5/8 | 4800 |
| 77715 | 5/8 | .6260 - .6270 | 16 1/4 | 5/8 | 5/8 | .7200 - .7220 | 3/8 | 5/8 2 | 5400 |
| 77716 | 11/16 | .6885 - .6895 | 16 3/4 | 11/16 | 11/16 | .7920 - .7940 | 3/8 | 5/8 2 | 6000 |
| 77717 | 3/4 | .7510 - .7520 | 17 1/4 | 3/4 | 3/4 | .8650 - .8670 | 3/8 | 5/8 2 | 6960 |
| 77718 | 7/8 | .8765 - .8775 | 18 1/2 | 7/8 | 7/8 | 1.0080 - 1.0100 | 3/8 | 5/8 2 | 8400 |
| 77719 | 1 | 1.0020 - 1.0030 | 19 3/4 | 1 | 1 | 1.1520 - 1.1540 | 3/8 | 5/8 2 | 11100 |

†Tolerances-Basic minus .0005-.001 inches *Based on mild steel

Specials

We are fully equipped to manufacture Special Hexagon Broaches not listed above. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.

Metric Square

4mm through 25mm square (I.S.O.)

Hexagon Broaches

4mm through 25mm hex (I.S.O.)

Applications:

- Metric drives, jigs, fixtures, and other square and hexagonal broaching operations



Stock Metric Standard Square Broaches

TiN or TiAlN coatings available.

| EDP No. | Square Size mm | Tolerances (Dec. Equiv.) | Broach Length | Pilot† Diameter | Drill Size mm | Dimension Across Corners | Tooth Pitch | Length of Cut* Min. & Max. | | Pressure Req'd. for Max. L/C* |
|---------|----------------|--------------------------|--------------------|-----------------|---------------|--------------------------|-------------|----------------------------|------------------|-------------------------------|
| 66630 | 4 | .1575 - .1580 | 5 ^{1/8} | .1614 | 4,1 | .2205 - .2220 | 5/32 | 1/4 | 1/2 | 480 lbs. |
| 66631 | 5 | .1968 - .1973 | 6 ^{1/2} | .2047 | 5,2 | .2765 - .2780 | 5/32 | 1/4 | 1/2 | 800 |
| 66632 | 6 | .2362 - .2370 | 6 ^{11/16} | .2519 | 6,4 | .3300 - .3320 | 3/16 | 1/4 | 3/4 | 1300 |
| 66633 | 7 | .2756 - .2764 | 7 ^{3/4} | .2913 | 7,4 | .3850 - .3870 | 7/32 | 3/8 | 1 | 1800 |
| 66634 | 8 | .3150 - .3158 | 7 ^{7/8} | .3307 | 8,4 | .4400 - .4420 | 7/32 | 3/8 | 1 | 2300 |
| 66639 | 9 | .3543 - .3551 | 9 ^{3/8} | .3701 | 9,4 | .4970 - .4990 | 1/4 | 3/8 | 1 ^{1/4} | 3500 |
| 66635 | 10 | .3937 - .3945 | 10 ^{1/4} | .4094 | 10,4 | .5530 - .5550 | 1/4 | 3/8 | 1 ^{1/4} | 3600 |
| 66636 | 12 | .4724 - .4732 | 12 | .5039 | 12,8 | .6620 - .6640 | 5/16 | 1/2 | 1 ^{3/8} | 4200 |
| 66637 | 14 | .5512 - .5520 | 14 ^{3/4} | .5826 | 14,8 | .7730 - .7750 | 3/8 | 1/2 | 1 ^{1/2} | 5600 |
| 66638 | 16 | .6302 - .6310 | 16 ^{5/16} | .6614 | 16,8 | .8790 - .8810 | 7/16 | 5/8 | 1 ^{5/8} | 6000 |
| 66640 | 18 | .7090 - .7097 | 17 ^{7/8} | .7716 | 19,6 | .9930 - .9950 | 7/16 | 5/8 | 1 ^{5/8} | 5200 |
| 66641 | 20 | .7874 - .7882 | 20 ^{7/8} | .8504 | 21,6 | 1.1030 - 1.1050 | 7/16 | 5/8 | 1 ^{5/8} | 6600 |
| 66642 | 22 | .8663 - .8671 | 22 ^{3/4} | .9291 | 23,6 | 1.2130 - 1.2150 | 7/16 | 5/8 | 2 | 8900 |
| 66643 | 24 | .9453 - .9460 | 24 | 1.0079 | 25,6 | 1.3230 - 1.3250 | 7/16 | 5/8 | 2 | 9200 |
| 66644 | 25 | .9845 - .9852 | 24 ^{1/8} | 1.0630 | 27,0 | 1.3790 - 1.3810 | 7/16 | 5/8 | 2 | 9200 |

†Tolerances-Basic minus .0005-.001 inches *Based on mild steel Refer to the diagram on page 16 for dimensions of standard Square Broach holes



Stock Metric Hexagon Broaches

TiN or TiAlN coatings available.

| EDP No. | Hexagon Size mm | Tolerances (Dec. Equiv.) | Broach Length | Pilot† Diameter | Drill Size mm | Dimension Across Corners | Tooth Pitch | Length of Cut* Min. & Max. | | Pressure Req'd. for Max. L/C* |
|---------|-----------------|--------------------------|--------------------|-----------------|---------------|--------------------------|-------------|----------------------------|------------------|-------------------------------|
| 77750 | 4 | .1575 - .1580 | 4 ^{15/16} | .1575 | 4,0 | .1810 - .1825 | 1/8 | 1/4 | 1/2 | 300 lbs. |
| 77751 | 5 | .1968 - .1973 | 5 ^{3/8} | .1968 | 5,0 | .2260 - .2275 | 5/32 | 1/4 | 3/4 | 775 |
| 77752 | 6 | .2362 - .2370 | 6 | .2362 | 6,0 | .2710 - .2730 | 3/16 | 1/4 | 3/4 | 1025 |
| 77753 | 7 | .2756 - .2764 | 7 ^{1/4} | .2756 | 7,0 | .3170 - .3190 | 3/16 | 1/4 | 1 | 1290 |
| 77754 | 8 | .3150 - .3158 | 7 ^{3/4} | .3150 | 8,0 | .3620 - .3640 | 7/32 | 3/8 | 1 | 1510 |
| 77759 | 9 | .3545 - .3555 | 8 ^{1/2} | .3543 | 9,0 | .4090 - .4110 | 7/32 | 3/8 | 1 ^{1/4} | 2300 |
| 77755 | 10 | .3937 - .3945 | 9 ^{5/8} | .3937 | 10,0 | .4530 - .4550 | 1/4 | 1/2 | 1 ^{3/8} | 2790 |
| 77756 | 12 | .4724 - .4732 | 11 ^{7/8} | .4724 | 12,0 | .5430 - .5450 | 9/32 | 1/2 | 1 ^{3/8} | 2700 |
| 77757 | 14 | .5512 - .5520 | 13 ^{3/4} | .5512 | 14,0 | .6350 - .6370 | 5/16 | 1/2 | 1 ^{5/8} | 4800 |
| 77758 | 16 | .6302 - .6310 | 16 ^{1/4} | .6299 | 16,0 | .7250 - .7270 | 3/8 | 5/8 | 2 | 5400 |
| 77760 | 18 | .7092 - .7097 | 16 ^{3/4} | .7087 | 18,0 | .8170 - .8190 | 3/8 | 5/8 | 2 | 6400 |
| 77761 | 20 | .7876 - .7886 | 17 ^{5/8} | .7874 | 20,0 | .9050 - .9070 | 3/8 | 5/8 | 2 | 7200 |
| 77762 | 22 | .8664 - .8674 | 18 ^{1/2} | .8661 | 22,0 | .9990 - 1.0010 | 3/8 | 5/8 | 2 | 8200 |
| 77763 | 24 | .9450 - .9460 | 19 ^{1/2} | .9449 | 24,0 | 1.0890 - 1.0910 | 3/8 | 5/8 | 2 | 9700 |
| 77764 | 25 | .9845 - .9855 | 19 ^{3/4} | .9842 | 25,0 | 1.1350 - 1.1370 | 3/8 | 5/8 | 2 | 11000 |

†Tolerances-Basic minus .0005-.001 inches *Based on mild steel Refer to the diagram on page 18 for dimensions of Hexagonal Broach holes

Specials

We are fully equipped to manufacture Special Metric Square and Hexagon Broaches not listed above. All standard items are available with **TiN or TiAlN coatings** from stock or short delivery. Please contact factory for details.

Special Broaches

Push and Pull Types

Applications:

- Virtually any broaching operation
- Short and long-run production



Capabilities

The duMONT Company, is a leading specialist in the design and manufacture of Broaches for industrial applications. Along with the extensive assortment of Stock Broaches listed in this catalog, we offer rapid delivery of Special Broaches custom-designed for your application or manufactured from your prints.

We are fully equipped to manufacture both Standard and Special Broaches in either Push or Pull Styles, including all types of Keyway, Internal Hole, and Surface Broaches. Special features, such as chamfering or deburring for one-pass operation are readily available. All duMONT Special Broaches are manufactured of the highest quality high-speed steel.

duMONT's engineering staff has years of experience designing Special Broaches to replace time-consuming and costly machining operations. Whenever possible we will meet your Special Broach requirements by modifying an existing Stock Broach, thereby reducing both the cost and delivery time ordinarily associated with ordering Specials. With our extensive stock and expertise in designing and manufacturing specials, we are able to serve our customers as a single complete source for all of their broaching needs.

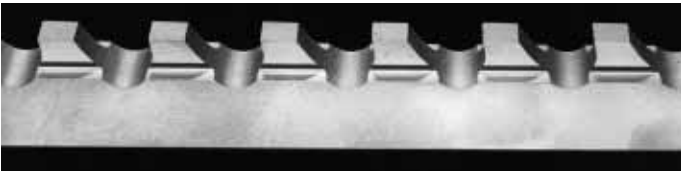
TiN or TiAlN Coating Available.

Special Broaches

Push and Pull Types

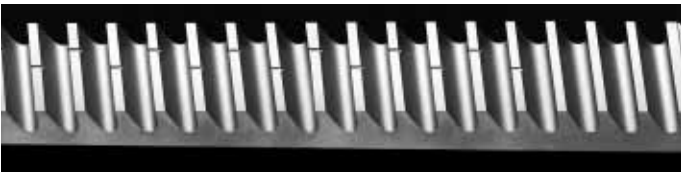
Applications:

- Virtually any broaching operation
- Short and long-run production



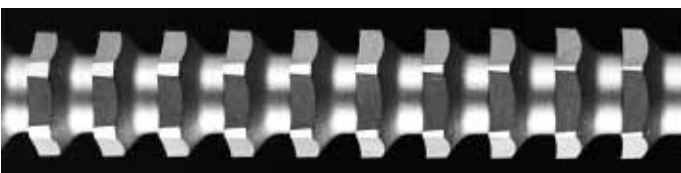
Keyway Broaches

duMONT manufactures Special Keyway Broaches in either Push or Pull Type in both American Standard and Metric Sizes. Special Application Multi-pass Push Keyway Broaches, and One-Pass Keyway Broaches which require the appropriate guide Bushing can often be manufactured from an existing blank for quick delivery. One-Pass Push Keyway Broaches are also available in a self-guiding Production Style that require no guide Bushing. Both One-Pass Push-Type styles as well as their Pull-Type counterparts are available with a special chamfer feature that will deburr the keyway bore interface. Double-Keyway and Keyseating Broaches are also available. Pull-Type Broaches are available with a variety of pull ends – Threaded, Notched, Pin, and Automatic to name a few.



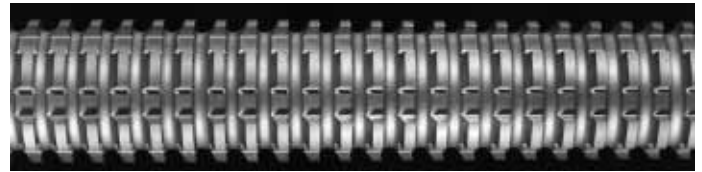
Surface Broaches

Surface Broaches are available as either individual Broaches or as inserts for broaching flat surfaces, irregular shapes, external forms, concave or convex surfaces, serrations, cam shaped, corner squaring, and dovetails.



Internal Hole Broaches

Internal Hole Broaches in Push and Pull-Type including Square, Hexagon, Round, D-Hole, Double-D, Rectangular, Inverted Keyway, and irregularly shaped Broaches are all readily available. Broaches for Burnishing, Sizing and Combination or Cut and Finish applications are also manufactured as either Push or Pull-Type. Pull-Type Broaches are available with a variety of pull ends – Threaded, Notched, Pin, and Automatic to name a few.



Spline Broaches

Spline Broaches specifically designed and manufactured for your application, duMONT offers straight sided, Involute Spline, and Serration Broaches in both Push or Pull-Type designs. Due to the complex nature of these tools a customer part print is required. Pull-Type Broaches are available with a variety of pull ends – Threaded, Notched, Pin, and Automatic to name a few.

Let Us Meet Your Special Broach Requirements

duMONT Special Broaches can be ordered from your industrial distributor. Check to see if a standard item will serve your needs, before ordering a Special Broach. Using standard items means off-the-shelf delivery and substantially lower cost. When standard items are not appropriate, we would be pleased to design and manufacture a Broach to meet your specific needs.

What We Need To Know

A fully dimensioned drawing of the finished part, casting, forging, or broach would be most helpful. When a part print is unavailable, the following information should be provided:

1. Description of Cut (Size/Shape/Tolerance)
2. Length of Cut
3. Type of Material to be Broached
4. Size and Shape of Hole or Surface to be Broached
(For cast holes, give minimum hole size, including draft and fillet radii, if any)
5. For Keyway Broaches Give:
 - a. Minimum Bore Size
 - b. Depth of Keyway Across Bore
 - c. Width of Keyway
 - d. Tolerance
6. Type of Broaching Machine (Push or Pull/Tonnage/Ram Travel/Daylight Opening)
7. Number of Pieces to Broach

Engineering Section

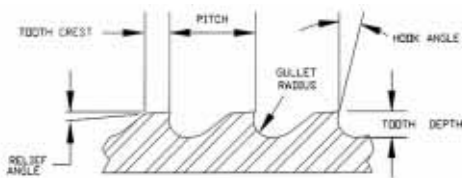
How to Use Minute Man® Broaches

- Standard Push Broaching Procedures
- Broaching Basics

Standard Broaching Procedures

duMONT Minute Man® Broaches are designed for fast, accurate, and convenient broaching with arbor or hydraulic presses. A study of the Broaching Procedures presented in this section will familiarize the operator with proper broaching procedures and troubleshooting practices. Following proper broaching fundamentals, paying attention to technique and Broach maintenance will help prevent drifting, deflection and even breakage while providing greater efficiencies in the cutting of your parts. If you have a specific question or problem, contact our Engineering Department at 413-773-3674 / 800-628-9648 or by email at info@dumont.com.

Broaching Basics



Warning Information

Cutting tools may shatter or break, therefore **eye protection should be worn wherever and whenever cutting tools are being used.** Government Regulations require use of safety glasses and other appropriate safety equipment at all times in the vicinity of cutting tool use.

Workpiece Material

duMONT Minute Man® stock Broaches can be used on a variety of workpiece materials, it is not practical to Broach material having a Rockwell hardness higher than Rc35. When broaching **Iron** or **Steel** use the standard Broach as supplied. **Brass** and **Free Machining Bronze** may require stoning of a slight land on the top of the teeth to prevent drifting (pulling into the work). Special Broaches are designed and engineered to provide the correct tooth form, pitch and rake angles for the material specified.

Length of Cut

duMONT Minute Man® Broaches are designed to be used in operations where a minimum of two teeth are engaged at all times. Tooth engagement is required to maintain a smooth cutting action promoting a clean finish. The chip generated during the cutting process must be contained within the gullet of the tooth to avoid binding of the tool. This could cause potential damage to the Broach, the workpiece and injury to the operator. Appropriate chip load allows for smooth cutting, and improved tool life. All individual stock Broaches have recommended Minimum and Maximum Length of Cut guidelines which should be followed. The required force necessary to achieve the Maximum Length of Cut is also provided with the individual Broach specifications. Workpieces may be stacked to establish the Minimum Length of Cut, or to improve the efficiencies of the operation as long as Maximum Length of Cut is not exceeded. Proper nesting and clamping of stacked parts is vital when this approach is taken. The Maximum Length of Cut with Push-Type Keyway Broaches should not exceed the length of the Bushing

being used. **Reminder:** "A" Style Broaches are used with "A" Style Bushings, "B" Style Broaches with "B" Style Bushings, etc. duMONT Minute Man® Special Push-Type and Pull-Type Broaches often can be designed to accommodate your specific length of cut requirements.

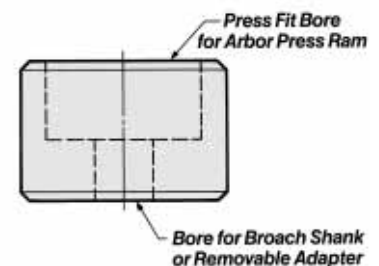
Set-Up & Alignment

Successful broaching begins with proper Set-up, and Alignment of the Broach, workpiece and ram. Attention to these details will provide a stable workpiece, and prevent drifting, deflection or even breakage caused by misalignment. The workpiece must be solidly fixed or nested perfectly square with the baseplate and ram face. Make sure all square and parallel surfaces on the face of the ram and baseplate remain true. It is essential to maintain a rigid set-up at all times and caution should be taken when stacking parts to maintain the integrity of the set-up. Never attempt to exceed the Broach's specified Maximum Length of Cut. At the beginning of a cut, be sure the Broach is centered under the ram. Proper alignment is important. After the Broach starts to cut, back off pressure on the ram to allow the Broach to center itself, if not in perfect alignment. If Broach moves out of alignment after starting cut, back off the pressure on the ram and align the broach itself. Repeat this procedure during successive cuts. This will assure a perfectly straight broached hole.

Suggestions for a drifting or "hogging" Push-Type Keyway Broach:

1. Reverse workpiece or turn Broach so teeth face toward the back of the press.
2. Let the Bushing protrude above the workpiece to give more support to the back of the Broach, thereby helping to keep it aligned. If a collared Bushing is used, place it upside down under the workpiece.

Ram Adapter Use



Ram Adapters are used for broaching applications that require Round, Special Shapes such as Oval, D-Holes and Rectangular as well as Square, and Hexagon Broaches 1/4" and 6mm or smaller. A Ram Adapter would also be recommended in situations where an extraordinary high degree of accuracy is required. These Adapters are also referred to as rear guides and provide support and guidance for the Broach at the shank end, minimizing the possibility of deflection or breakage. When an

Engineering Section

How to Use Minute Man® Broaches

Adapter is used as a rear guide for the Broach, the hole in the Ram Adapter must be in alignment with the pilot hole in the workpiece. It is important a Ram Adapter provides a tight, true fit to both the press ram and to the Broach shank. An adapter may also be used to allow the shanks of smaller Internal Hole Broaches to be gripped to avoid deflection and breakage.

Cutting Fluids & Lubrication

Broach lubrication is crucial to tool life and the quality of the finish produced. Lubrication enables chips to slide freely and curl in the tooth gullets minimizing frictional heat. This cuts down on Broach wear and prevents build up on the cutting edge of the teeth. Push-Type Keyway Broaches, regardless of the material to be broached, require lubrication on the back side of the Broach in order to reduce friction. Proper lubrication will increase Broach life and produce a cleaner finish.

Various materials require different lubricants. duMONT Minute Man® recommends the following:

Mild Steel – A good quality cutting oil or water soluble coolant brushed on the teeth and back side of the Broach.

Tough Steels such as Nickel Alloys – A good grade of a sulfur based cutting oil.

Brass – Typically is broached dry.

Bronze – Works well with an oil or soluble oil.

Cast Iron – Is almost always broached dry but requires lubrication for the backside of the Broach.

Aluminum – Straight Kerosene may be used but special lubricants are available.

You may wish to contact your cutting fluid dealer for additional recommendations and availability.

Coatings Available

duMONT Minute Man® Broaches are available with TiN, and TiAlN coatings. The coatings provide enhanced performance for specific applications, delivering greater value and tool life on your more challenging materials. .

TiN – provides increased lubricity and wear resistance when broaching abrasive materials such as Fiberglass and some Aluminum Alloys.

TiAlN – offers significant increase in surface hardness (Rc low 90's). Applications would include broaching in most Stainless Steels, Alloy Steels, and harder materials.

Broach Re-sharpening

Broaches, regardless of type, should never be used when dull. The use of a dull Broach may result in poor finish or cause drifting, damage to the teeth or breakage. Correct and timely re-sharpening will increase Broach life and quality of parts. The necessity to sharpen a Broach is dependent on numerous factors; material, tolerance, and required finish, etc.

A number of conditions indicate the need for sharpening:

- Poor finish, tears, galling, etc. on the workpiece.
- Cutting edges showing signs of rollover and teeth dull to the touch.
- When using a Hydraulic Press, the pressure gage showing an increase in pressure required to complete the cut.

- Standard Push Broaching Procedures
- Broach Re-sharpening

- Nicks, gouges, etc. in the teeth from improper handling.
- Broach sticking in the workpiece, pick-up on tops of teeth.
- Holes gauging undersize.

duMONT Minute Man® offers expert Broach re-sharpening services, with the goal to restore the cutting edges of the Broach to its original condition. Broaches returned for this service are each individually examined and specific regrind instructions are generated for the reconditioning of the tool. Broaches exhibiting excessive wear are evaluated to insure a re-sharpening is appropriate or if it is time to consider replacing the tool. The re-sharpening process is a precision operation, under or over sharpening will produce unsatisfactory results. Removing too much material in the re-sharpening process can dramatically reduce tool life. Improper re-sharpening can result in a departure from original tooth form, creating under sized parts, compromised cutting action and potentially causing irreparable damage. Correct sharpening ensures satisfactory production in terms of time efficiency, conformance to specifications and finish. duMONT Minute Man® is fully equipped to provide expert re-sharpening services. We need to evaluate the Broach, to insure it is able to be adequately reconditioned. Based on this examination a quote for re-sharpening would be provided.

Broaching with Keyway Sets or Individual Broaches



Use of Individual Push-Type Keyway Broaches or Keyway Broaches from a Broach Set requires the use of a Bushing and Shim(s). The Bushing size and Style are determined by the bore diameter of the workpiece as well as the Style of Broach to be used. "A" Style Broaches are used with "A" Style Bushings, "B" Style Broaches with "B" Style Bushings, etc. The smallest Broaches cut in one pass and require no Shim. Multiple pass Keyway Broaches are furnished with all necessary Shim(s) unless otherwise noted. A Shim is required to compensate for the thickness removed following a Keyway Broach's cutting pass. The addition of a Shim to the bottom of the bushing's slot serves to move the Broach forward towards its standard finished cutting depth. Subsequent passes require the stacking of Shims.

1. Select the right Bushing for the bore (sizes are plainly marked) and insert in the bore of work.
2. Insert Broach (which is also plainly marked for size) into the Bushing slot and check alignment.
3. Place this assembly in the press.
4. Lubricate.

Engineering Section

How to Use Minute Man® Broaches

- Standard Push Broaching Procedures
- Troubleshooting

5. Apply pressure to the Broach – back off pressure on Ram to allow the Broach to center itself if not in perfect alignment – reapply pressure to push Broach through the work.
6. Clean Broach using a stiff brush to remove chips from cutting section.
7. Insert Shim and repeat steps 3 thru 6 as required to obtain exact keyway depth.

Broaching with One-Pass Keyway Broaches

Broaching with One-Pass Keyway Broaches requires the use of a Bushing. The Bushing size and Style are determined by the bore diameter of the workpiece as well as the Style of Broach to be used. "A" Style Broaches are used with "A" Style Bushings, "B" Style Broaches with "B" Style Bushings, etc. No Shims are required. The Broach cuts to full width and depth in one pass.



1. Select the right Bushing for the bore (sizes are plainly marked) and insert in the bore of work.
2. Insert Broach (which is also plainly marked for size) for the desired width of keyway into the Bushing slot and check alignment.
3. Place this assembly in the press.
4. Lubricate.
5. Apply pressure to the Broach – back off pressure on Ram to allow the Broach to center itself, if not in perfect alignment – reapply pressure to push Broach through the work.
6. Clean Broach using a stiff brush to remove chips from cutting section.
7. Repeat steps 2 thru 6 for subsequent parts.

Broaching with Production Keyway Broaches

Broaching with Production Style Keyway Broaches requires no Shims or Bushings. The back and shoulders of the Broach are ground to fit the diameter of the bore, supporting and guiding itself while cutting the keyway in one pass



1. Select desired Broach and insert pilot into bore of part.
2. Lubricate.
3. Apply pressure to the Broach – back off pressure on Ram to allow the Broach to center itself, if not in perfect alignment – reapply pressure to push Broach through the work.
4. Clean Broach using a stiff brush to remove chips from cutting section.
5. Repeat steps 2 thru 4 for subsequent parts.

Broaching with Internal Hole Broaches

Broaching with Internal Hole Broaches requires no Shims or Bushings. Round, Square, Hexagon and many Special Shapes are designed to finish in one pass, in cast or drilled bores requiring a through hole finish. The starting hole must be drilled square with the face of the work. Square and Hexagon Broaches, 1/4" and 6mm or smaller, should be gripped by the shank in an adapter to prevent deflection and breakage.



1. Pilot Holes: Properly drilled pilot holes are essential for a true and clean cut. Never use a dull or poorly sharpened drill to make pilot holes.
2. Select desired Broach. Confirm the bore of workpiece is equal to pilot diameter of broach. (The use of a ram adapter is advised with all Round, Oval, D-hole Broaches, and for Square and Hexagon Broaches 1/4" and 6mm or smaller).
3. Insert pilot into bore of part.
4. Ram Speed: Always use

proper ram speed to prevent chatter marks and edge wear. (See *Metals Handbook* – Vol. 3 "Machining".)

5. Lubricate.
6. Apply pressure to the Broach – back off pressure on Ram to allow the Broach to center itself, if not in perfect alignment – reapply pressure to push Broach through the work.
7. Clean Broach using a stiff brush to remove chips from cutting section.
8. Repeat steps 3 thru 7 for subsequent parts.

Troubleshooting

duMONT Minute Man® aims to make your broaching experience efficient, effective and trouble free. Most broaching failures (poor finish, drifting, deflection, breakage, chatter marks, or edge wear) can be attributed to deficiencies in alignment, lubrication, Broach sharpness, tooth configuration or design, material hardness, and incorrect broaching speed or pressure as detailed in this section. If you have specific questions or problems not covered on these pages, contact our Engineering Department.

The duMONT Company

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413-773-8430
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www.dumont.com



duMONT Arbor Presses

3 and 5 Ton Models

Applications:

- Easy-to-operate manual broaching machines for use with most duMONT Broaches

Arbor Presses

duMONT Minute Man® Arbor Presses are easy to operate Manual Broaching Machines designed for Push Broaching with Keyways and Internal Hole Broaches. These Hand Operated Presses are available in 3 and 5 Ton Models and provide the pressure required to Push Broaches through the work piece.

Both Arbor Presses provide these essential features:

- Ratchet operation with compound leverage for minimum operator effort.
- Pawl between lever and pinion permits positioning lever for most convenient reach and pull.
- Counter weight returns lever to upright rest position.
- Ram positioned by handwheel reduces travel, tests Broach alignment, supports the Broach and workpiece assembly.
- Round ram with rack teeth cut to center concentrates force along the center line to avoid cramping.
- Rugged table machined square with ram, and slotted for Broach drop-through.

Please contact factory for details.



Arbor Press Specifications

| EDP No. | Press Size | Takes Diameters Up To | Height Over Plate | Leverage | Height Overall | Pressure | Takes Broaches | Shipping Weight |
|---------|-------------------------|-----------------------|----------------------------------|----------|-----------------|----------|----------------|-----------------|
| 88810 | No. 2-R | 12" | 17 ¹ / ₄ " | 45-1 | 32" | 3 ton | A-B-B1-C | 220 lbs. |
| 88811 | No. 3-R | 21" | 20 ¹ / ₂ " | 55-1 | 35" | 5 ton | A-B-B1-C-D | 517 |
| 88812 | STAND for No. 2-R Press | | — | — | 22" x 19" x 32" | | | 85 |
| 88813 | STAND for No. 3-R Press | | — | — | 26" x 20" x 32" | | | 117 |

Warranty

The duMONT Company, warrants to original equipment manufacturers, distributors and industrial and commercial users of its products that each new product manufactured or supplied by The duMONT Company, shall be free from defects in material and workmanship. The duMONT Company, obligation under this warranty is limited to furnishing without additional charge a replacement or, at its option, repairing or issuing credit for any product which shall within one year from the date of sale be returned freight prepaid to the plant designated by The duMONT Company, representative and which upon inspection is determined by The duMONT Company, to be defective in materials or workmanship. Complete information as to operating conditions, machine setup, and application of cutting fluid should accompany any product returned for inspection. The provisions of this warranty shall not apply to any duMONT Company, product which has been subjected to misuse, improper operating conditions, machine setup or application of cutting fluid or which has been repaired or

altered if such repair or alteration in the judgment of The duMONT Company, would adversely affect performance of the product. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The duMONT Company, shall have no liability or responsibility on any claim of any kind, whether in contract, tort or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery or use of any product sold hereunder, in excess of the cost of replacement or repair as provided herein. IN NO EVENT SHALL The duMONT Company, BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. The duMONT Company, makes no other warranty, expressed or implied, except as set forth above; and The duMONT Company, neither assumes nor authorizes any other person or entity to assume for it any other obligation or liability in connection with any of its products.

Warning

Cutting tools may shatter or break, therefore **eye protection should be worn wherever and whenever cutting tools are being used.** Government Regulations require use of safety glasses and other appropriate safety equipment at all times in the vicinity of cutting tool use.

