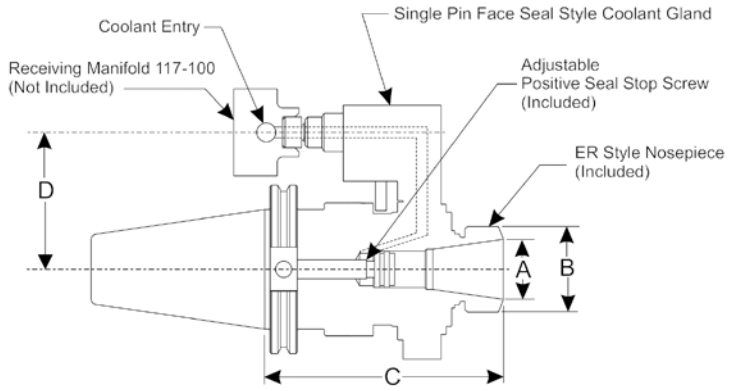
# CFT GEORGE WHALLEY CO.

# COOLANT-FED TOOLING & SYSTEMS

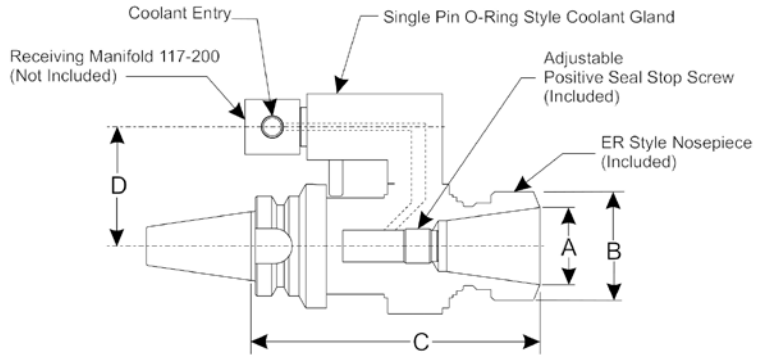
## V-FLANGE ER COLLET CHUCK SINGLE PIN FACE SEAL ROTARY COOLANT GLAND

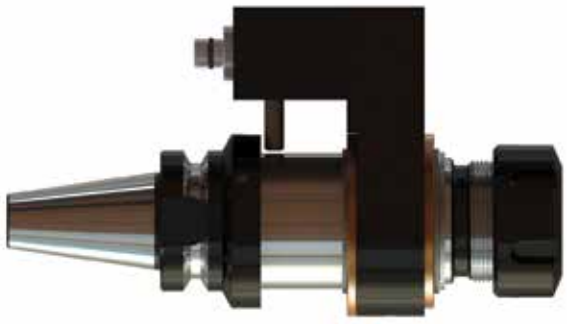



| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B DIAMETER (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | | | |
| C40-ER32-SPFS-5 | .080 - .787 | ER 32 | 1.97 | 5.50 | 2.559 | A1-9789T | 100 PSI | 1000 PSI | 3300 | 585-912 | 112-706 |
| **50 V-FLANGE** | | | | | | | | | | | |
| C50-ER32-SPFS-5 | .080 - .787 | ER 32 | 1.97 | 5.50 | 3.150 | A1-0189T | 100 PSI | 1000 PSI | 3300 | 585-912 | 112-706 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and pressure ranges are not a guarantee of performance.** The life & performance of the units depends on the following conditions.
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure & Volume.
**All units require coolant at all speeds.**

## BT ER COLLET CHUCK SINGLE PIN ROTARY COOLANT GLAND



| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B DIAMETER (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FACE SEAL PIN** | | | | | | | | | | | |
| BT30-ER32-SPFS-5 | .080 - .787 | ER 32 | 1.97 | 5.25 | 1.969 | A1-800 | 100 PSI | 1000 PSI | 3500 | 585-912 | 112-706 |
| **O-RING SEAL PIN** | | | | | | | | | | | |
| BT30-ER32-SPOR-5 | .080 - .787 | ER 32 | 1.97 | 5.25 | 1.969 | V519 | 100 PSI | 1000 PSI | 3500 | 585-912 | 112-706 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and pressure ranges are not a guarantee of performance.** The life & performance of the units depends on the following conditions.
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure & Volume.
**All units require coolant at all speeds.**

# CATALOG GUIDE

| | |
|---|---|
|  | Brand new product offerings. |
|  | *Visit our website at www.cftsystems.com for technical information and our latest product offerings.* |
|  | *Expanded offering of an existing product line in either sizes and/or coatings.* |
|  | For hole concentricity we recommend using Series 605 Spotting Drill, see page 14. |
|  | We offer drill resharpening and reconditioning for most of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information. |
| **** Outgoing Items*** | These products will be discontinued as a standard, stocked, catalog item and may no longer be offered when inventory is depleted. Please contact a CFT George Whalley Company representative for further assistance and/or questions regarding outgoing parts. These parts may be available as special order items. |
| Non-Stocked Items | Products highlighted are currently not standard, stocked catalog items. Please check availability at time of order. |
| ^ : | Product does not conform to ANSI specifications. Request further information if needed. |

## LIABILITY

Any warranty implied by law, including warranties of merchantability or fitness for a particular purpose, are hereby disclaimed and excluded. No representative or person is authorized to give any other warranty or to assume for CFT George Whalley Company. CFT George Whalley Company will not be liable for any incidental or consequential damages. The products illustrated in this catalog are protected by United States and foreign patents, patents pending, and applied for. We have attempted to publish this catalog error free, however, we recommend inspection of tool dimensions prior to use. In addition, dimensions shown reflect current manufacturing standards and CFT George Whalley Company reserves the right to make changes, without notice, to incorporate design improvements.

**WARNING:**
**CUTTING TOOLS MAY SHATTER! ALWAYS USE EYE PROTECTION & SAFE GUARDS IN THE AREA OF THEIR USE.**

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## TABLE OF CONTENTS

## HURRICANE • COOLANT FED

NEW

SERIES: 919

SIZES
1/8"-9/16"
INCH

High Performance, Solid Carbide, (5X) drill. Designed for ultra performance drilling in a broad range of materials, including mild steel, alloy steel, stainless steel, and super alloys. This solid carbide coolant drill combined with our advanced Ultra-Bronze coating makes this your drill of choice.

| MATERIAL | BRIGHT | DARK | ULTRA-BRONZE |
|---|---|---|---|
| SOLID CARBIDE | | | ● |

**SPECIFICATIONS**

Helix: 30°
Point: 142°
Web: Constant Rolled Heel

| DIAMETER | | SHANK (IN.) | OAL (IN.) | FLUTE LENGTH (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| INCH | DECIMAL | | | | |
| 1/8 | 0.1250 | 1/8 | 3.00 | 1.125 | 919-01250 |
| 9/64 | 0.1406 | 5/32 | 3.15 | 1.260 | 919-01406 |
| 5/32 | 0.1562 | 5/32 | 3.15 | 1.260 | 919-01562 |
| 11/64 | 0.1719 | 3/16 | 3.23 | 1.500 | 919-01719 |
| 3/16 | 0.1875 | 3/16 | 3.23 | 1.500 | 919-01875 |
| 13/64 | 0.2031 | 15/64 | 3.23 | 1.580 | 919-02031 |
| 7/32 | 0.2187 | 15/64 | 3.23 | 1.580 | 919-02187 |
| 15/64 | 0.2344 | 15/64 | 3.23 | 1.580 | 919-02344 |
| 1/4 | 0.2500 | 1/4 | 3.30 | 1.740 | 919-02500 |
| 17/64 | 0.2656 | 5/16 | 3.58 | 1.890 | 919-02656 |
| 9/32 | 0.2812 | 5/16 | 3.58 | 1.890 | 919-02812 |
| 19/64 | 0.2969 | 5/16 | 3.58 | 1.890 | 919-02969 |
| 5/16 | 0.3125 | 5/16 | 3.58 | 1.890 | 919-03125 |
| 21/64 | 0.3281 | 25/64 | 4.06 | 2.170 | 919-03281 |
| 11/32 | 0.3438 | 25/64 | 4.06 | 2.170 | 919-03438 |
| 23/64 | 0.3594 | 25/64 | 4.06 | 2.170 | 919-03594 |
| 3/8 | 0.3750 | 25/64 | 4.06 | 2.170 | 919-03750 |
| 25/64 | 0.3906 | 25/64 | 4.06 | 2.170 | 919-03906 |
| 13/32 | 0.4062 | 15/32 | 4.72 | 2.360 | 919-04062 |
| 27/64 | 0.4219 | 15/32 | 4.72 | 2.360 | 919-04219 |
| 7/16 | 0.4375 | 15/32 | 4.72 | 2.600 | 919-04375 |
| 15/32 | 0.4688 | 15/32 | 4.72 | 2.600 | 919-04688 |
| 31/64 | 0.4844 | 1/2 | 4.75 | 2.830 | 919-04844 |
| 1/2 | 0.5000 | 1/2 | 4.75 | 2.830 | 919-05000 |
| 33/64 | 0.5156 | 35/64 | 5.28 | 3.030 | 919-05156 |
| 35/64 | 0.5469 | 35/64 | 5.28 | 3.030 | 919-05469 |
| 9/16 | 0.5625 | 5/8 | 5.51 | 3.150 | 919-05625 |

## TECHNICAL TIPS

We offer drill resharpening and reconditioning for all of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information.

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

**HURRICANE • HIGH PERFORMANCE • SOLID CARBIDE • (5X) DRILL • METRIC • STRAIGHT SHANK • ULTRA-BRONZE COATED**

## HURRICANE • COOLANT FED

NEW

SERIES: **M919**

SIZES
3.0-14.0 MM

High Performance, Solid Carbide, (5X) metric drill. Designed for ultra performance drilling in a broad range of materials, including mild steel, alloy steel, stainless steel, and super alloys. This solid carbide coolant drill combined with our advanced Ultra-Bronze coating makes this your drill of choice.

| MATERIAL | BRIGHT | DARK | ULTRA-BRONZE |
|---|---|---|---|
| SOLID CARBIDE | | | ● |

**SPECIFICATIONS**

Helix: 30°
Point: 142°
Web: Constant Rolled Heel

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | OAL (MM) | FLUTE LENGTH (MM) | PART NUMBER |
|---|---|---|---|---|---|
| 3.0 | 0.1181 | 3.0 | 75 | 24 | M919-01181 |
| 3.2 | 0.1260 | 4.0 | 80 | 32 | M919-01260 |
| 3.3 | 0.1299 | 4.0 | 80 | 32 | M919-01299 |
| 3.4 | 0.1339 | 4.0 | 80 | 32 | M919-01339 |
| 3.5 | 0.1378 | 4.0 | 80 | 32 | M919-01378 |
| 3.7 | 0.1457 | 4.0 | 80 | 32 | M919-01457 |
| 3.8 | 0.1496 | 4.0 | 80 | 32 | M919-01496 |
| 4.0 | 0.1575 | 4.0 | 80 | 32 | M919-01575 |
| 4.2 | 0.1654 | 5.0 | 82 | 38 | M919-01654 |
| 4.5 | 0.1772 | 5.0 | 82 | 38 | M919-01772 |
| 4.6 | 0.1811 | 5.0 | 82 | 38 | M919-01811 |
| 4.8 | 0.1890 | 5.0 | 82 | 38 | M919-01890 |
| 4.9 | 0.1929 | 5.0 | 82 | 38 | M919-01929 |
| 5.0 | 0.1968 | 5.0 | 82 | 38 | M919-01968 |
| 5.1 | 0.2008 | 6.0 | 82 | 40 | M919-02008 |
| 5.2 | 0.2047 | 6.0 | 82 | 40 | M919-02047 |
| 5.3 | 0.2087 | 6.0 | 82 | 40 | M919-02087 |
| 5.4 | 0.2126 | 6.0 | 82 | 40 | M919-02126 |
| 5.5 | 0.2165 | 6.0 | 82 | 40 | M919-02165 |
| 5.7 | 0.2244 | 6.0 | 82 | 40 | M919-02244 |
| 5.8 | 0.2283 | 6.0 | 82 | 40 | M919-02283 |
| 5.9 | 0.2323 | 6.0 | 82 | 40 | M919-02323 |
| 6.0 | 0.2362 | 6.0 | 82 | 40 | M919-02362 |
| 6.1 | 0.2402 | 8.0 | 91 | 48 | M919-02402 |
| 6.2 | 0.2441 | 8.0 | 91 | 48 | M919-02441 |
| 6.3 | 0.2480 | 8.0 | 91 | 48 | M919-02480 |
| 6.4 | 0.2520 | 8.0 | 91 | 48 | M919-02520 |
| 6.5 | 0.2559 | 8.0 | 91 | 48 | M919-02559 |
| 6.8 | 0.2667 | 8.0 | 91 | 48 | M919-02677 |
| 6.9 | 0.2717 | 8.0 | 91 | 48 | M919-02717 |
| 7.0 | 0.2756 | 8.0 | 91 | 48 | M919-02756 |
| 7.2 | 0.2835 | 8.0 | 91 | 48 | M919-02835 |
| 7.4 | 0.2913 | 8.0 | 91 | 48 | M919-02913 |

Non-Stocked Items

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | OAL (MM) | FLUTE LENGTH (MM) | PART NUMBER |
|---|---|---|---|---|---|
| 7.5 | 0.2953 | 8.0 | 91 | 48 | M919-02953 |
| 7.6 | 0.2992 | 8.0 | 91 | 48 | M919-02992 |
| 7.7 | 0.3031 | 8.0 | 91 | 48 | M919-03031 |
| 7.8 | 0.3071 | 8.0 | 91 | 48 | M919-03071 |
| 8.0 | 0.3150 | 8.0 | 91 | 48 | M919-03150 |
| 8.1 | 0.3189 | 10.0 | 103 | 55 | M919-03189 |
| 8.2 | 0.3228 | 10.0 | 103 | 55 | M919-03228 |
| 8.3 | 0.3268 | 10.0 | 103 | 55 | M919-03268 |
| 8.5 | 0.3346 | 10.0 | 103 | 55 | M919-03346 |
| 8.8 | 0.3465 | 10.0 | 103 | 55 | M919-03465 |
| 8.9 | 0.3504 | 10.0 | 103 | 55 | M919-03504 |
| 9.0 | 0.3543 | 10.0 | 103 | 55 | M919-03543 |
| 9.2 | 0.3622 | 10.0 | 103 | 55 | M919-03622 |
| 9.25 | 0.3642 | 10.0 | 103 | 55 | M919-03642 |
| 9.3 | 0.3661 | 10.0 | 103 | 55 | M919-03661 |
| 9.5 | 0.3740 | 10.0 | 103 | 55 | M919-03740 |
| 9.7 | 0.3819 | 10.0 | 103 | 55 | M919-03819 |
| 9.8 | 0.3858 | 10.0 | 103 | 55 | M919-03858 |
| 10.0 | 0.3937 | 10.0 | 103 | 55 | M919-03937 |
| 10.2 | 0.4016 | 12.0 | 120 | 60 | M919-04016 |
| 10.5 | 0.4134 | 12.0 | 120 | 60 | M919-04134 |
| 11.0 | 0.4331 | 12.0 | 120 | 60 | M919-04331 |
| 11.2 | 0.4409 | 12.0 | 120 | 66 | M919-04409 |
| 11.5 | 0.4527 | 12.0 | 120 | 66 | M919-04527 |
| 11.7 | 0.4606 | 12.0 | 120 | 66 | M919-04606 |
| 12.0 | 0.4724 | 12.0 | 120 | 66 | M919-04724 |
| 12.1 | 0.4764 | 14.0 | 126 | 72 | M919-04764 |
| 12.5 | 0.4921 | 14.0 | 126 | 72 | M919-04921 |
| 12.8 | 0.5039 | 14.0 | 126 | 72 | M919-05039 |
| 13.0 | 0.5118 | 14.0 | 126 | 72 | M919-05118 |
| 13.5 | 0.5315 | 14.0 | 134 | 77 | M919-05315 |
| 13.7 | 0.5394 | 14.0 | 134 | 77 | M919-05394 |
| 14.0 | 0.5512 | 14.0 | 134 | 77 | M919-05512 |

Non-Stocked Items

## TECHNICAL TIPS

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## HURRICANE • HIGH PERFORMANCE • SOLID CARBIDE • (7X) DRILL • STRAIGHT SHANK • ULTRA-BRONZE COATED

### HURRICANE • COOLANT FED

NEW

SERIES: 920

SIZES
1/8"-1/2" INCH

High Performance, Solid Carbide, (7X) drill. Designed for ultra performance drilling in a broad range of materials, including mild steel, alloy steel, stainless steel, and super alloys. This solid carbide coolant drill combined with our advanced Ultra-Bronze coating makes this your drill of choice.

| MATERIAL | BRIGHT | DARK | ULTRA-BRONZE |
|---|---|---|---|
| SOLID CARBIDE | | | ● |

SPECIFICATIONS
Helix: 30°
Point: 142°
Web: Constant Rolled Heel

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK INCH | OAL INCH | FLUTE LENGTH INCH | PART NUMBER |
|---|---|---|---|---|---|
| 1/8 | 0.1250 | 1/8 | 3.500 | 1.500 | 920-01250 |
| 9/64 | 0.1406 | 5/32 | 3.625 | 1.750 | 920-01406 |
| 5/32 | 0.1562 | 5/32 | 3.625 | 1.750 | 920-01562 |
| 11/64 | 0.1719 | 3/16 | 3.940 | 1.750 | 920-01719 |
| 3/16 | 0.1875 | 3/16 | 3.940 | 1.750 | 920-01875 |
| 13/64 | 0.2031 | 15/64 | 3.940 | 2.000 | 920-02031 |
| 7/32 | 0.2187 | 15/64 | 3.940 | 2.000 | 920-02187 |
| 15/64 | 0.2344 | 15/64 | 3.940 | 2.000 | 920-02344 |
| 1/4 | 0.2500 | 1/4 | 4.310 | 2.250 | 920-02500 |
| 17/64 | 0.2656 | 5/16 | 4.310 | 2.375 | 920-02656 |
| 9/32 | 0.2812 | 5/16 | 4.625 | 2.750 | 920-02812 |
| 19/64 | 0.2969 | 5/16 | 4.625 | 2.750 | 920-02969 |

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK INCH | OAL INCH | FLUTE LENGTH INCH | PART NUMBER |
|---|---|---|---|---|---|
| 5/16 | 0.3125 | 5/16 | 4.625 | 2.750 | 920-03125 |
| 21/64 | 0.3281 | 25/64 | 5.000 | 3.150 | 920-03281 |
| 11/32 | 0.3438 | 25/64 | 5.000 | 3.150 | 920-03438 |
| 23/64 | 0.3594 | 25/64 | 5.312 | 3.340 | 920-03594 |
| 3/8 | 0.3750 | 25/64 | 5.312 | 3.340 | 920-03750 |
| 25/64 | 0.3906 | 25/64 | 5.312 | 3.340 | 920-03906 |
| 13/32 | 0.4062 | 15/32 | 5.875 | 3.625 | 920-04062 |
| 27/64 | 0.4219 | 15/32 | 5.875 | 3.625 | 920-04219 |
| 7/16 | 0.4375 | 15/32 | 6.100 | 4.000 | 920-04375 |
| 15/32 | 0.4688 | 15/32 | 6.100 | 4.000 | 920-04688 |
| 31/64 | 0.4844 | 1/2 | 6.299 | 4.132 | 920-04844 |
| 1/2 | 0.5000 | 1/2 | 6.299 | 4.132 | 920-05000 |

## HURRICANE • HIGH PERFORMANCE • SOLID CARBIDE • (7X) DRILL • METRIC • STRAIGHT SHANK • ULTRA-BRONZE COATED

### HURRICANE • COOLANT FED

NEW

SERIES: M920

SIZES
3.0-12.0 MM

High Performance, Solid Carbide, (7X) metric drill. Designed for ultra performance drilling in a broad range of materials, including mild steel, alloy steel, stainless steel, and super alloys. This solid carbide coolant drill combined with our advanced Ultra-Bronze coating makes this your drill of choice.

| MATERIAL | BRIGHT | DARK | ULTRA-BRONZE |
|---|---|---|---|
| SOLID CARBIDE | | | ● |

SPECIFICATIONS
Helix: 30°
Point: 142°
Web: Constant Rolled Heel

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK MM | OAL MM | FLUTE LENGTH MM | PART NUMBER |
|---|---|---|---|---|---|
| 3.0 | 0.1181 | 3.0 | 81 | 33 | M920-01181 |
| 3.2 | 0.1260 | 4.0 | 92 | 44 | M920-01260 |
| 3.3 | 0.1299 | 4.0 | 92 | 44 | M920-01299 |
| 3.4 | 0.1339 | 4.0 | 92 | 44 | M920-01339 |
| 3.5 | 0.1378 | 4.0 | 92 | 44 | M920-01378 |
| 3.7 | 0.1457 | 4.0 | 92 | 44 | M920-01457 |
| 3.8 | 0.1496 | 4.0 | 92 | 44 | M920-01496 |
| 4.0 | 0.1575 | 4.0 | 92 | 44 | M920-01575 |
| 4.2 | 0.1654 | 5.0 | 100 | 45 | M920-01654 |
| 4.5 | 0.1772 | 5.0 | 100 | 45 | M920-01772 |
| 4.6 | 0.1811 | 5.0 | 100 | 45 | M920-01811 |
| 4.8 | 0.1890 | 5.0 | 100 | 45 | M920-01890 |
| 4.9 | 0.1929 | 5.0 | 100 | 45 | M920-01929 |
| 5.0 | 0.1968 | 5.0 | 100 | 45 | M920-01968 |
| 5.1 | 0.2008 | 6.0 | 100 | 51 | M920-02008 |
| 5.2 | 0.2047 | 6.0 | 100 | 51 | M920-02047 |
| 5.3 | 0.2087 | 6.0 | 100 | 51 | M920-02087 |
| 5.4 | 0.2126 | 6.0 | 100 | 51 | M920-02126 |
| 5.5 | 0.2165 | 6.0 | 100 | 51 | M920-02165 |
| 5.7 | 0.2244 | 6.0 | 100 | 51 | M920-02244 |
| 5.8 | 0.2283 | 6.0 | 100 | 51 | M920-02283 |
| 5.9 | 0.2323 | 6.0 | 100 | 51 | M920-02323 |
| 6.0 | 0.2362 | 6.0 | 100 | 51 | M920-02362 |
| 6.1 | 0.2402 | 8.0 | 109 | 60 | M920-02402 |
| 6.2 | 0.2441 | 8.0 | 109 | 60 | M920-02441 |
| 6.3 | 0.2480 | 8.0 | 109 | 60 | M920-02480 |
| 6.4 | 0.2520 | 8.0 | 109 | 60 | M920-02520 |
| 6.5 | 0.2559 | 8.0 | 109 | 60 | M920-02559 |
| 6.8 | 0.2667 | 8.0 | 109 | 60 | M920-02677 |
| 6.9 | 0.2717 | 8.0 | 109 | 60 | M920-02717 |

Non-Stocked Items

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK MM | OAL MM | FLUTE LENGTH MM | PART NUMBER |
|---|---|---|---|---|---|
| 7.0 | 0.2756 | 8.0 | 109 | 60 | M920-02756 |
| 7.2 | 0.2835 | 8.0 | 118 | 70 | M920-02835 |
| 7.4 | 0.2913 | 8.0 | 118 | 70 | M920-02913 |
| 7.5 | 0.2953 | 8.0 | 118 | 70 | M920-02953 |
| 7.6 | 0.2992 | 8.0 | 118 | 70 | M920-02992 |
| 7.7 | 0.3031 | 8.0 | 118 | 70 | M920-03031 |
| 7.8 | 0.3071 | 8.0 | 118 | 70 | M920-03071 |
| 8.0 | 0.3150 | 8.0 | 118 | 70 | M920-03150 |
| 8.1 | 0.3189 | 10.0 | 127 | 80 | M920-03189 |
| 8.2 | 0.3228 | 10.0 | 127 | 80 | M920-03228 |
| 8.3 | 0.3268 | 10.0 | 127 | 80 | M920-03268 |
| 8.5 | 0.3346 | 10.0 | 127 | 80 | M920-03346 |
| 8.8 | 0.3465 | 10.0 | 127 | 80 | M920-03465 |
| 8.9 | 0.3504 | 10.0 | 127 | 80 | M920-03504 |
| 9.0 | 0.3543 | 10.0 | 127 | 80 | M920-03543 |
| 9.2 | 0.3622 | 10.0 | 136 | 85 | M920-03622 |
| 9.25 | 0.3642 | 10.0 | 136 | 85 | M920-03642 |
| 9.3 | 0.3661 | 10.0 | 136 | 85 | M920-03661 |
| 9.5 | 0.3740 | 10.0 | 136 | 85 | M920-03740 |
| 9.7 | 0.3819 | 10.0 | 136 | 85 | M920-03819 |
| 9.8 | 0.3858 | 10.0 | 136 | 85 | M920-03858 |
| 10.0 | 0.3937 | 10.0 | 136 | 85 | M920-03937 |
| 10.2 | 0.4016 | 12.0 | 149 | 93 | M920-04016 |
| 10.5 | 0.4134 | 12.0 | 149 | 93 | M920-04134 |
| 11.0 | 0.4331 | 12.0 | 149 | 93 | M920-04331 |
| 11.2 | 0.4409 | 12.0 | 155 | 102 | M920-04409 |
| 11.5 | 0.4527 | 12.0 | 155 | 102 | M920-04527 |
| 11.7 | 0.4606 | 12.0 | 155 | 102 | M920-04606 |
| 12.0 | 0.4724 | 12.0 | 155 | 102 | M920-04724 |

Non-Stocked Items

## HIGH PERFORMANCE JOBBER LENGTH • SOLID CARBIDE • TiN COATED • STRAIGHT SHANK

### SERIES 910 • COOLANT-FED

SERIES: **910**

SIZES

3/16"-1/2" INCH

High performance, C2 10% Micro Grain Carbide drill with helical coolant holes designed for deep holes 5x diameter. Successfully drills stainless such as 304 and 315, nickel alloy materials, cast iron aluminum and some carbon steels. Increase production with higher speed/feed rates and decreased cycle times.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| C2 MICROGRAIN | | | ● |

**SPECIFICATIONS**

Helix: 30° Standard
Point: 135° S point
Web: Standard

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| * 3/16 | 0.1875 | 0.1875 | 1-5/8 | 2-3/4 | 910-01875 |
| * 13/64 | 0.2031 | 0.2031 | 1-3/4 | 3 | 910-02031 |
| * 7/32 | 0.2187 | 0.2187 | 1-3/4 | 3 | 910-02187 |
| * 15/64 | 0.2344 | 0.2344 | 2 | 3-1/4 | 910-02344 |
| * 1/4 | 0.2500 | 0.2500 | 2 | 3-1/4 | 910-02500 |
| * 17/64 | 0.2656 | 0.2656 | 2-1/8 | 3-1/2 | 910-02656 |
| * 9/32 | 0.2812 | 0.2812 | 2-1/8 | 3-1/2 | 910-02812 |
| * 19/64 | 0.2969 | 0.2969 | 2-3/8 | 3-3/4 | 910-02969 |
| * 5/16 | 0.3125 | 0.3125 | 2-3/8 | 3-3/4 | 910-03125 |
| * 21/64 | 0.3281 | 0.3281 | 2-1/2 | 4 | 910-03281 |
| * 11/32 | 0.3438 | 0.3438 | 2-1/2 | 4 | 910-03438 |
| * 23/64 | 0.3594 | 0.3594 | 2-3/4 | 4-1/4 | 910-03594 |

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA.(IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| *3/8 | 0.3750 | 0.3750 | 2-3/4 | 4-1/4 | 910-03750 |
| *25/64 | 0.3906 | 0.3906 | 2-7/8 | 4-1/2 | 910-03906 |
| *13/32 | 0.4062 | 0.4062 | 2-7/8 | 4-1/2 | 910-04062 |
| * 27/64 | 0.4219 | 0.4219 | 2-7/8 | 4-1/2 | 910-04219 |
| * 7/16 | 0.4375 | 0.4375 | 2-7/8 | 4-1/2 | 910-04375 |
| * 29/64 | 0.4531 | 0.4531 | 3 | 4-3/4 | 910-04531 |
| * 15/32 | 0.4688 | 0.4688 | 3 | 4-3/4 | 910-04688 |
| *31/64 | 0.4844 | 0.4844 | 3 | 4-3/4 | 910-04844 |
| *1/2 | 0.5000 | 0.5000 | 3 | 4-3/4 | 910-05000 |

** Outgoing Items*

** Outgoing Items*

## HIGH PERFORMANCE JOBBER LENGTH • SOLID CARBIDE • TiAlN COATED • STRAIGHT SHANK

### SERIES 911 • COOLANT-FED

SERIES: **911**

SIZES

3/16" - 1/2" INCH

High performance, C5 tough steel grade carbide with helical coolant holes for deep holes 5x diameter. Designed with a special shaped chisel edge for drilling tough low carbon steel applications at high speeds while maintaining accuracy, straightness and finish. Increase production with higher speed/feed rates and decreased cycle times.

| MATERIAL | BRIGHT | DARK | TiAlN |
|---|---|---|---|
| C5 MICROGRAIN | | | ● |

**SPECIFICATIONS**

Helix: 30° Standard
Point: 135° S point
Web: Standard

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| * 3/16 | 0.1875 | 0.1875 | 1-5/8 | 2-3/4 | 911-01875 |
| * 13/64 | 0.2031 | 0.2031 | 1-3/4 | 3 | 911-02031 |
| * 7/32 | 0.2187 | 0.2187 | 1-3/4 | 3 | 911-02187 |
| * 15/64 | 0.2344 | 0.2344 | 2 | 3-1/4 | 911-02344 |
| * 1/4 | 0.2500 | 0.2500 | 2 | 3-1/4 | 911-02500 |
| * 17/64 | 0.2656 | 0.2656 | 2-1/8 | 3-1/2 | 911-02656 |
| * 9/32 | 0.2812 | 0.2812 | 2-1/8 | 3-1/2 | 911-02812 |
| * 19/64 | 0.2969 | 0.2969 | 2-3/8 | 3-3/4 | 911-02969 |
| * 5/16 | 0.3125 | 0.3125 | 2-3/8 | 3-3/4 | 911-03125 |
| * 21/64 | 0.3281 | 0.3281 | 2-1/2 | 4 | 911-03281 |
| * 11/32 | 0.3438 | 0.3438 | 2-1/2 | 4 | 911-03438 |

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| * 23/64 | 0.3593 | 0.3594 | 2-3/4 | 4-1/4 | 911-03594 |
| * 3/8 | 0.3750 | 0.3750 | 2-3/4 | 4-1/4 | 911-03750 |
| * 25/64 | 0.3906 | 0.3906 | 2-7/8 | 4-1/2 | 911-03906 |
| * 13/32 | 0.4062 | 0.4062 | 2-7/8 | 4-1/2 | 911-04062 |
| * 27/64 | 0.4219 | 0.4219 | 2-7/8 | 4-1/2 | 911-04219 |
| * 7/16 | 0.4375 | 0.4375 | 2-7/8 | 4-1/2 | 911-04375 |
| * 29/64 | 0.4531 | 0.4531 | 3 | 4-3/4 | 911-04531 |
| * 15/32 | 0.4688 | 0.4688 | 3 | 4-3/4 | 911-04688 |
| * 31/64 | 0.4844 | 0.4844 | 3 | 4-3/4 | 911-04844 |
| * 1/2 | 0.5000 | 0.5000 | 3 | 4-3/4 | 911-05000 |

** Outgoing Items*

** Outgoing Items*



## HIGH PERFORMANCE JOBBER LENGTH • METRIC • SOLID CARBIDE • TiN COATED • STRAIGHT SHANK

### SERIES M910 • COOLANT-FED

SERIES: **M910**

SIZES

4.0-11.0 MM

High performance, C2 10% Micro Grain Carbide drill with helical coolant holes designed for deep holes 5x diameter. Successfully drills stainless such as 304 and 315, nickel alloy materials, cast iron aluminum and some carbon steels. Increase production with higher speed/feed rates and decreased cycle times.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| C2 MICROGRAIN | | | ● |

**SPECIFICATIONS**

Helix: 30° Standard
Point: 135° S point
Web: Standard

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|---|
| * 4.00 | 0.1575 | 6.0 | 36 | 74 | M910-01575 |
| * 4.50 | 0.1772 | 6.0 | 36 | 74 | M910-01772 |
| * 4.80 | 0.1890 | 6.0 | 44 | 82 | M910-01890 |
| * 5.00 | 0.1968 | 6.0 | 44 | 82 | M910-01968 |
| * 5.50 | 0.2165 | 6.0 | 44 | 82 | M910-02165 |
| * 5.80 | 0.2283 | 6.0 | 44 | 82 | M910-02283 |
| * 6.00 | 0.2362 | 6.0 | 44 | 82 | M910-02362 |
| * 6.50 | 0.2559 | 8.0 | 53 | 91 | M910-02559 |
| * 6.80 | 0.2677 | 8.0 | 53 | 91 | M910-02677 |
| * 7.00 | 0.2756 | 8.0 | 53 | 91 | M910-02756 |
| * 7.50 | 0.2953 | 8.0 | 53 | 91 | M910-02953 |
| * 7.80 | 0.3071 | 8.0 | 53 | 91 | M910-03071 |

** Outgoing Items*

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|---|
| * 8.00 | 0.3150 | 8.0 | 53 | 91 | M910-03150 |
| * 8.50 | 0.3346 | 10.0 | 61 | 103 | M910-03346 |
| * 8.80 | 0.3465 | 10.0 | 61 | 103 | M910-03465 |
| * 9.00 | 0.3543 | 10.0 | 61 | 103 | M910-03543 |
| * 9.50 | 0.3740 | 10.0 | 61 | 103 | M910-03750 |
| * 9.80 | 0.3858 | 10.0 | 61 | 103 | M910-03858 |
| * 10.00 | 0.3937 | 10.0 | 61 | 103 | M910-03937 |
| * 10.20 | 0.4016 | 12.0 | 71 | 118 | M910-04016 |
| * 10.50 | 0.4134 | 12.0 | 71 | 118 | M910-04134 |
| * 10.80 | 0.4252 | 12.0 | 71 | 118 | M910-04252 |
| * 11.00 | 0.4331 | 12.0 | 71 | 118 | M910-04331 |

** Outgoing Items*

## HIGH PERFORMANCE JOBBER LENGTH • METRIC • SOLID CARBIDE • TiAlN COATED • STRAIGHT SHANK

### SERIES M911 • COOLANT-FED

SERIES: **M911**

SIZES

4.0-11.0 MM

High performance, C5 tough steel grade carbide with helical coolant holes for deep holes 5x diameter. Designed with a special shaped chisel edge for drilling tough low carbon steel applications at high speeds while maintaining accuracy, straightness and finish. Increase production with higher speed/feed rates and decreased cycle times.

| MATERIAL | BRIGHT | DARK | TiAlN |
|---|---|---|---|
| C5 MICROGRAIN | | | ● |

**SPECIFICATIONS**

Helix: 30° Standard
Point: 135° S point
Web: Standard

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|---|
| * 4.00 | 0.1575 | 6.0 | 36 | 74 | M911-01575 |
| * 4.50 | 0.1772 | 6.0 | 36 | 74 | M911-01772 |
| * 4.80 | 0.1890 | 6.0 | 44 | 82 | M911-01890 |
| * 5.00 | 0.1968 | 6.0 | 44 | 82 | M911-01968 |
| * 5.50 | 0.2165 | 6.0 | 44 | 82 | M911-02165 |
| * 5.80 | 0.2283 | 6.0 | 44 | 82 | M911-02283 |
| * 6.00 | 0.2362 | 6.0 | 44 | 82 | M911-02362 |
| * 6.50 | 0.2559 | 8.0 | 53 | 91 | M911-02559 |
| * 6.80 | 0.2677 | 8.0 | 53 | 91 | M911-02677 |
| * 7.00 | 0.2756 | 8.0 | 53 | 91 | M911-02756 |
| * 7.50 | 0.2953 | 8.0 | 53 | 91 | M911-02953 |
| * 7.80 | 0.3071 | 8.0 | 53 | 91 | M911-03071 |

** Outgoing Items*

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|---|
| * 8.00 | 0.3150 | 8.0 | 53 | 91 | M911-03150 |
| * 8.50 | 0.3346 | 10.0 | 61 | 103 | M911-03346 |
| * 8.80 | 0.3465 | 10.0 | 61 | 103 | M911-03465 |
| * 9.00 | 0.3543 | 10.0 | 61 | 103 | M911-03543 |
| * 9.50 | 0.3740 | 10.0 | 61 | 103 | M911-03750 |
| * 9.80 | 0.3858 | 10.0 | 61 | 103 | M911-03858 |
| * 10.00 | 0.3937 | 10.0 | 61 | 103 | M911-03937 |
| * 10.20 | 0.4016 | 12.0 | 71 | 118 | M911-04016 |
| * 10.50 | 0.4134 | 12.0 | 71 | 118 | M911-04134 |
| * 10.80 | 0.4252 | 12.0 | 71 | 118 | M911-04252 |
| * 11.00 | 0.4331 | 12.0 | 71 | 118 | M911-04331 |

** Outgoing Items*

## HIGH PERFORMANCE EXTENDED LENGTH TWIST DRILL • SOLID CARBIDE/ULTRA-GOLD COATED/TWO FLUTE PARABOLIC • COMMON SHANK

### SERIES 912 • COOLANT-FED

NEW

SERIES: 912

SIZES

3/16" - 17/32"
INCH

The Helical Wear Resistant (HWR) point is self-centering, eliminating the need for center drilling and is a low torque, free chip forming design with excellent edge retention when combined with this unique flute form. The parabolic flute eliminates the necessity of "pecking" to clear chips while allowing for much longer useful tool life in regrinding. The combination of unique flute and point configuration provides up to 2.5 times the strength of conventional drill designs. Recommended for non-ferrous materials such as aluminum and aluminum alloys, free machining stainless steel, steel and cast iron and composites.

| MATERIAL | BRIGHT | DARK | ULTRA GOLD |
|---|---|---|---|
| Solid Carbide | | | ● |

**SPECIFICATIONS**

Helix: 30°-40° Variable
Point: 142° HWR
Web: Parabolic

| TOOL DIAMETER | | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| INCH | DECIMAL | | | | |
| 3/16 | 0.1875 | 0.2500 | 4 | 6 | 912-01875 |
| 13/64 | 0.2031 | 0.2500 | 4 | 6 | 912-02031 |
| 7/32 | 0.2188 | 0.2500 | 4 | 6 | 912-02188 |
| 15/64 | 0.2344 | 0.2500 | 4 | 6 | 912-02344 |
| 1/4 | 0.2500 | 0.2500 | 4 | 6 | 912-02500 |
| 17/64 | 0.2656 | 0.3750 | 4 | 6 | 912-02656 |
| 9/32 | 0.2812 | 0.3750 | 4 | 6 | 912-02812 |
| 19/64 | 0.2969 | 0.3750 | 4 | 6 | 912-02969 |
| 5/16 | 0.3125 | 0.3750 | 4 | 6 | 912-03125 |
| 21/64 | 0.3281 | 0.3750 | 4 | 6 | 912-03281 |
| 11/32 | 0.3438 | 0.3750 | 4 | 6 | 912-03438 |
| 23/64 | 0.3594 | 0.3750 | 4 | 6 | 912-03594 |
| 3/8 | 0.3750 | 0.3750 | 4 | 6 | 912-03750 |
| 25/64 | 0.3906 | 0.5000 | 4 | 6 | 912-03906 |
| 13/32 | 0.4062 | 0.5000 | 4 | 6 | 912-04062 |
| 27/64 | 0.4219 | 0.5000 | 4 | 6 | 912-04219 |
| 7/16 | 0.4375 | 0.5000 | 4 | 6 | 912-04375 |
| 29/64 | 0.4531 | 0.5000 | 4 | 6 | 912-04531 |
| 15/32 | 0.4688 | 0.5000 | 4 | 6 | 912-04688 |
| 31/64 | 0.4844 | 0.5000 | 4 | 6 | 912-04844 |
| 1/2 | 0.5000 | 0.5000 | 4 | 6 | 912-05000 |
| 33/64 | 0.5156 | 0.6250 | 4 | 6 | 912-05156 |
| 17/32 | 0.5312 | 0.6250 | 4 | 6 | 912-05312 |

## HIGH PERFORMANCE EXTENDED LENGTH TWIST DRILL • SOLID CARBIDE/ULTRA-GOLD COATED/THREE FLUTE PARABOLIC • COMMON SHANK

### SERIES 914 • COOLANT-FED

NEW

SERIES: 914

SIZES

3/16" - 17/32"
INCH

Designed for a broad spectrum of materials from aluminum, brass, bronze and cast iron to stainless and hardened steels. This design generally provides for a rounder and straighter hole with closer hole tolerances and better hole wall finishes than most conventional two flute drills. Our special 150° point cuts all the way to the center which will allow the drill to start immediately without "walking" while providing excellent chip formation without tearing at or near the center like most other manufacturers' three lip points.

| MATERIAL | BRIGHT | DARK | ULTRA GOLD |
|---|---|---|---|
| Solid Carbide | | | ● |

**SPECIFICATIONS**

Helix: 30°-40° Variable
Point: 150° 3 Flute
Web: Standard

| TOOL DIAMETER | | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| INCH | DECIMAL | | | | |
| 3/16 | 0.1875 | 0.2500 | 4 | 6 | 914-01875 |
| 13/64 | 0.2031 | 0.2500 | 4 | 6 | 914-02031 |
| 7/32 | 0.2188 | 0.2500 | 4 | 6 | 914-02188 |
| 15/64 | 0.2344 | 0.2500 | 4 | 6 | 914-02344 |
| 1/4 | 0.2500 | 0.2500 | 4 | 6 | 914-02500 |
| 17/64 | 0.2656 | 0.3750 | 4 | 6 | 914-02656 |
| 9/32 | 0.2812 | 0.3750 | 4 | 6 | 914-02812 |
| 19/64 | 0.2969 | 0.3750 | 4 | 6 | 914-02969 |
| 5/16 | 0.3125 | 0.3750 | 4 | 6 | 914-03125 |
| 21/64 | 0.3281 | 0.3750 | 4 | 6 | 914-03281 |
| 11/32 | 0.3438 | 0.3750 | 4 | 6 | 914-03438 |
| 23/64 | 0.3594 | 0.3750 | 4 | 6 | 914-03594 |
| 3/8 | 0.3750 | 0.3750 | 4 | 6 | 914-03750 |
| 25/64 | 0.3906 | 0.5000 | 4 | 6 | 914-03906 |
| 13/32 | 0.4062 | 0.5000 | 4 | 6 | 914-04062 |
| 27/64 | 0.4219 | 0.5000 | 4 | 6 | 914-04219 |
| 7/16 | 0.4375 | 0.5000 | 4 | 6 | 914-04375 |
| 29/64 | 0.4531 | 0.5000 | 4 | 6 | 914-04531 |
| 15/32 | 0.4688 | 0.5000 | 4 | 6 | 914-04688 |
| 31/64 | 0.4844 | 0.5000 | 4 | 6 | 914-04844 |
| 1/2 | 0.5000 | 0.5000 | 4 | 6 | 914-05000 |
| 33/64 | 0.5156 | 0.6250 | 4 | 6 | 914-05156 |
| 17/32 | 0.5312 | 0.6250 | 4 | 6 | 914-05312 |

## SERIES 916 • COOLANT-FED / SERIES M916 (METRIC) • COOLANT-FED

| SERIES: 916 | SERIES: M916 |
|---|---|
| SIZES | SIZES |
| 3/16" - 1/2" INCH | 5.0 - 11.0 MM |

10% Micro-grain Solid Carbide. High performance solid carbide drill designed for drilling in stainless steels and high temperature alloy materials. 142 high performance point in conjunction with the AlTiN coating improves chip clearance and extends tool life in these difficult to machine materials. Common shank sizes for use with Shrink-Fit ® and other precision toolholders. Depths to 5x diameter.

| MATERIAL | BRIGHT | DARK | AlTiN |
|---|---|---|---|
| Solid Carbide | | | ● |

**SPECIFICATIONS**

Helix: 27° Standard
Point: 142° HP
Web: Standard

### SERIES 916 • COOLANT-FED

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| 3/16 | 0.1875 | 0.1875 | 1-5/8 | 2-3/4 | 916-01875 |
| 13/64 | 0.2031 | 0.2344 | 1-3/4 | 3 | 916-02031 |
| 7/32 | 0.2187 | 0.2500 | 1-3/4 | 3 | 916-02187 |
| 15/64 | 0.2344 | 0.2500 | 2 | 3-1/4 | 916-02344 |
| 1/4 | 0.2500 | 0.2500 | 2 | 3-1/4 | 916-02500 |
| 17/64 | 0.2656 | 0.3125 | 2-1/8 | 3-1/2 | 916-02656 |
| 9/32 | 0.2812 | 0.3125 | 2-1/8 | 3-1/2 | 916-02812 |
| 19/64 | 0.2969 | 0.3125 | 2-3/8 | 3-3/4 | 916-02969 |
| 5/16 | 0.3125 | 0.3125 | 2-3/8 | 3-3/4 | 916-03125 |
| 21/64 | 0.3281 | 0.3750 | 2-1/2 | 4 | 916-03281 |
| 11/32 | 0.3438 | 0.3750 | 2-1/2 | 4 | 916-03438 |
| 23/64 | 0.3594 | 0.3750 | 2-3/4 | 4-1/4 | 916-03594 |
| 3/8 | 0.3750 | 0.3750 | 2-3/4 | 4-1/4 | 916-03750 |
| 25/64 | 0.3906 | 0.4375 | 2-7/8 | 4-1/2 | 916-03906 |
| 13/32 | 0.4062 | 0.4375 | 2-7/8 | 4-1/2 | 916-04062 |
| 27/64 | 0.4219 | 0.4375 | 2-7/8 | 4-1/2 | 916-04219 |
| 7/16 | 0.4375 | 0.4375 | 2-7/8 | 4-1/2 | 916-04375 |
| 29/64 | 0.4531 | 0.5000 | 3 | 4-3/4 | 916-04531 |
| 15/32 | 0.4688 | 0.5000 | 3 | 4-3/4 | 916-04688 |
| 31/64 | 0.4844 | 0.5000 | 3 | 4-3/4 | 916-04844 |
| 1/2 | 0.5000 | 0.5000 | 3 | 4-3/4 | 916-05000 |

### SERIES M916 (METRIC) • COOLANT-FED

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|---|
| 5.00 | 0.1968 | 6.0 | 44 | 82 | M916-01968 |
| 5.50 | 0.2165 | 6.0 | 44 | 82 | M916-02165 |
| 5.80 | 0.2283 | 6.0 | 44 | 82 | M916-02283 |
| 6.00 | 0.2362 | 6.0 | 44 | 82 | M916-02362 |
| 6.50 | 0.2559 | 8.0 | 53 | 91 | M916-02559 |
| 6.80 | 0.2677 | 8.0 | 53 | 91 | M916-02677 |
| 7.00 | 0.2756 | 8.0 | 53 | 91 | M916-02756 |
| 7.50 | 0.2953 | 8.0 | 53 | 91 | M916-02953 |
| 7.80 | 0.3071 | 8.0 | 53 | 91 | M916-03071 |
| 8.00 | 0.3150 | 8.0 | 53 | 91 | M916-03150 |
| 8.50 | 0.3346 | 10.0 | 61 | 103 | M916-03346 |
| 8.80 | 0.3465 | 10.0 | 61 | 103 | M916-03465 |
| 9.00 | 0.3543 | 10.0 | 61 | 103 | M916-03543 |
| 9.50 | 0.3740 | 10.0 | 61 | 103 | M916-03740 |
| 9.80 | 0.3858 | 10.0 | 61 | 103 | M916-03858 |
| 10.00 | 0.3937 | 10.0 | 61 | 103 | M916-03937 |
| 10.20 | 0.4016 | 12.0 | 67 | 117 | M916-04016 |
| 10.50 | 0.4134 | 12.0 | 71 | 118 | M916-04134 |
| 11.00 | 0.4331 | 12.0 | 71 | 118 | M916-04331 |

## TECHNICAL TIPS

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

### REQUIRED FOR SPEED AND FEED INFORMATION:

- Material being drilled
- Rockwell (Rc) or Brinell (Bhn) Hardness
- Diameter and Depth of Hole
- Vertical or Horizontal Orientation
- Coolant Pressure of the Machine Tools Coolant Pump
- Type of Tool Holders being used (i.e., Collet Chuck)

# HIGH PERFORMANCE EXTENDED LENGTH TWIST DRILL • SOLID CARBIDE/AlTiN COATED • COMMON SHANK

## SERIES 917 • COOLANT-FED / SERIES M917 (METRIC) • COOLANT-FED



| SERIES: 917 | SERIES: M917 |
|---|---|
| SIZES | SIZES |
| 3/16" - 1/2" INCH | 5.0 - 11.0 MM |

10% Micro-grain Solid Carbide. High performance solid carbide drill designed for drilling in stainless steels and high temperature alloy materials. 142 high performance point in conjunction with the AlTiN coating improves chip clearance and extends tool life in these difficult to machine materials. Common shank sizes for use with Shrink-Fit ® and other precision toolholders. Depths to 7x diameter. Slotted coolant entry.

| MATERIAL | BRIGHT | DARK | AlTiN |
|---|---|---|---|
| Solid Carbide | | | ● |

**SPECIFICATIONS**

Helix: 30° Standard
Point: 142°
Web: Standard

## SERIES 917 • COOLANT-FED

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| 3/16 | 0.1875 | 0.1875 | 1-13/16 | 3-7/8 | 917-01875 |
| 7/32 | 0.2187 | 0.2344 | 2-1/8 | 4-13/64 | 917-02187 |
| 15/64 | 0.2344 | 0.2344 | 2-1/8 | 4-13/64 | 917-02344 |
| 1/4 | 0.2500 | 0.2500 | 2-1/4 | 4-3/8 | 917-02500 |
| 17/64 | 0.2656 | 0.3125 | 2-17/32 | 5 | 917-02656 |
| 9/32 | 0.2812 | 0.3125 | 2-17/32 | 5 | 917-02812 |
| 19/64 | 0.2969 | 0.3125 | 2-13/16 | 5 | 917-02969 |
| 5/16 | 0.3125 | 0.3125 | 2-13/16 | 5 | 917-03125 |
| 21/64 | 0.3281 | 0.3750 | 3-1/8 | 5-25/32 | 917-03281 |
| 11/32 | 0.3438 | 0.3750 | 3-1/8 | 5-25/32 | 917-03438 |
| 3/8 | 0.3750 | 0.3750 | 3-3/8 | 5-25/32 | 917-03750 |
| 25/64 | 0.3906 | 0.4375 | 3-11/16 | 6-3/4 | 917-03906 |
| 13/32 | 0.4062 | 0.4375 | 3-11/16 | 6-3/4 | 917-04062 |
| 27/64 | 0.4219 | 0.4375 | 3-15/16 | 6-3/4 | 917-04219 |
| 7/16 | 0.4375 | 0.4375 | 3-15/16 | 6-3/4 | 917-04375 |
| 1/2 | 0.5000 | 0.5000 | 4-1/2 | 7 | 917-05000 |

## SERIES M917 (METRIC) • COOLANT-FED

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|---|
| 5.00 | 0.1968 | 5.0 | 45 | 98 | M917-01968 |
| 5.50 | 0.2165 | 6.0 | 50 | 107 | M917-02165 |
| 6.00 | 0.2362 | 6.0 | 55 | 107 | M917-02362 |
| 6.50 | 0.2559 | 8.0 | 62 | 127 | M917-02559 |
| 7.00 | 0.2756 | 8.0 | 67 | 127 | M917-02756 |
| 7.50 | 0.2953 | 8.0 | 73 | 127 | M917-02953 |
| 8.00 | 0.3150 | 8.0 | 73 | 127 | M917-03150 |
| 8.50 | 0.3346 | 10.0 | 78 | 147 | M917-03346 |
| 9.00 | 0.3543 | 10.0 | 83 | 147 | M917-03543 |
| 9.50 | 0.3740 | 10.0 | 91 | 147 | M917-03740 |
| 10.00 | 0.3937 | 10.0 | 91 | 147 | M917-03937 |
| 10.50 | 0.4134 | 12.0 | 102 | 171 | M917-04134 |
| 11.00 | 0.4331 | 12.0 | 102 | 171 | M917-04331 |

## COMMON MACHINING EQUATIONS

| | |
|---|---|
| **SFM =** | **RPM X Dia. / 3.82** |
| **RPM =** | **3.82 x SFM / Dia.** |
| **IPM =** | **IPT x No. Teeth x RPM** |
| **IPT =** | **IPM / (No. Teeth x RPM)** |
| **IPR =** | **IPM / RPM** |

**SFM:** SURFACE FEET PER MINUTE
**RPM:** REVOLUTIONS PER MINUTE
**IPM:** INCHES PER MINUTE
**IPT:** INCHES PER TOOTH
**IPM:** INCHES PER REVOLUTION

## TECHNICAL TIPS

We offer drill resharpening and reconditioning for all of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information.


Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## HIGH PERFORMANCE JOBBER LENGTH TWIST DRILL • SOLID CARBIDE • COMMON SHANK/AlTiN COATED

### SERIES 918 • COOLANT-FED / SERIES M918 (METRIC) • COOLANT-FED

| SERIES: 918 | SERIES: M918 |
|---|---|
| SIZES | SIZES |
| 3/16" - 1/2" INCH | 6.00 - 11.00 MM |

10% Micro-grain Solid Carbide. High performance solid carbide drill with double margin and 18 degree helix designed for drilling in gray and ductile cast iron and other ferrous materials. 142 high performance point and helix design, in conjunction with the AlTiN coating, allows greater strength, and extends tool life in these applications. Common shank sizes for use with Shrink-Fit ® and other precision toolholders. Depths to 5x diameter.

| MATERIAL | BRIGHT | DARK | AlTiN |
|---|---|---|---|
| Solid Carbide | | | ● |

**SPECIFICATIONS**

Helix: 18° Double Margin
Point: 142° S point
Web: Standard

### SERIES 918 • COOLANT-FED

| TOOL DIAMETER | | SHANK | FLUTE | OAL | PART |
|---|---|---|---|---|---|
| INCH | DECIMAL | DIA. (IN.) | LENGTH (IN.) | (IN.) | NUMBER |
| 3/16 | 0.1875 | 0.1875 | 1-3/8 | 3-27/64 | 918-01875 |
| 7/32 | 0.2187 | 0.2344 | 1-11/16 | 3-45/64 | 918-02187 |
| 15/64 | 0.2344 | 0.2344 | 1-11/16 | 3-45/64 | 918-02344 |
| 1/4 | 0.2500 | 0.2500 | 1-3/4 | 3-7/8 | 918-02500 |
| 17/64 | 0.2656 | 0.3125 | 2 | 4-5/16 | 918-02656 |
| 9/32 | 0.2812 | 0.3125 | 2-3/16 | 4-5/16 | 918-02812 |
| 19/64 | 0.2969 | 0.3125 | 2-3/16 | 4-5/16 | 918-02969 |
| 5/16 | 0.3125 | 0.3125 | 2-3/16 | 4-5/16 | 918-03125 |
| 21/64 | 0.3281 | 0.3750 | 2-3/8 | 4-61/64 | 918-03281 |
| 11/32 | 0.3438 | 0.3750 | 2-5/8 | 4-61/64 | 918-03438 |
| 3/8 | 0.3750 | 0.3750 | 2-5/8 | 4-61/64 | 918-03750 |
| 25/64 | 0.3906 | 0.4375 | 2-7/8 | 5-47/64 | 918-03906 |
| 13/32 | 0.4062 | 0.4375 | 3-1/16 | 5-47/64 | 918-04062 |
| 27/64 | 0.4219 | 0.4375 | 3-1/16 | 5-47/64 | 918-04219 |
| 7/16 | 0.4375 | 0.4375 | 3-1/16 | 5-47/64 | 918-04375 |
| 1/2 | 0.5000 | 0.5000 | 3-1/4 | 5-7/8 | 918-05000 |

### SERIES M918 (METRIC) • COOLANT-FED

| TOOL DIAMETER | | SHANK | FLUTE | OAL | PART |
|---|---|---|---|---|---|
| MM | DECIMAL | DIA. (MM) | LENGTH (MM) | (MM) | NUMBER |
| 6.00 | 0.2362 | 6.0 | 42 | 94 | M918-02362 |
| 7.00 | 0.2756 | 8.0 | 52 | 110 | M918-02756 |
| 8.00 | 0.3150 | 8.0 | 56 | 110 | M918-03150 |
| 8.50 | 0.3346 | 10.0 | 62 | 126 | M918-03346 |
| 9.00 | 0.3543 | 10.0 | 70 | 126 | M918-03543 |
| 9.50 | 0.3740 | 10.0 | 70 | 126 | M918-03740 |
| 10.00 | 0.3937 | 10.0 | 70 | 126 | M918-03937 |
| 11.00 | 0.4331 | 12.0 | 78 | 146 | M918-04331 |

## HIGH PERFORMANCE JOBBER LENGTH TWIST DRILL • H.S. COBALT ASP 30 POWDERED METAL/HARDLUBE COATED • FAST SPIRAL, PARABOLIC FLUTE

### SERIES 609 • COOLANT-FED

| SERIES: 609 | SERIES: 609 |
|---|---|
| SIZES | SIZES |
| 5/32" - 1/2" INCH | 4.0 - 12.50 MM |

Performs similar to carbide, but is more suitable for a wider range of materials and machine tools. The hardlube treatment with tungsten carbide is excellent for chip evacuation, extending tool life and cutting edge durability. Manufactured with cobalt for longer life and consistent performance. 135 degree split point is suitable for drilling aluminum, tough alloys, standard alloys, stainless steel and tool steel.

| MATERIAL | BRIGHT | DARK | HARDLUBE |
|---|---|---|---|
| ASP 30 | | | ● |

**SPECIFICATIONS**

Helix: 32° Parabolic
Point: 135° Split Point
Web: Heavy

| TOOL DIAMETER | | SHANK | FLUTE | OAL | PART |
|---|---|---|---|---|---|
| INCH/MM | DECIMAL | DIA. (IN.) | LENGTH (IN.) | (IN.) | NUMBER |
| 5/32 | 0.1562 | 0.1562 | 1-3/4 | 4-1/4 | 609-01562 |
| 4.00 MM | 0.1575 | 0.1575 | 1-3/4 | 4-1/4 | 609-01575 |
| 11/64 | 0.1718 | 0.1718 | 1-3/4 | 4-1/4 | 609-01718 |
| 3/16 | 0.1875 | 0.1875 | 1-3/4 | 4-1/4 | 609-01875 |
| 13/64 | 0.2031 | 0.2031 | 1-3/4 | 4-1/4 | 609-02031 |
| 5.50 MM | 0.2165 | 0.2165 | 1-3/4 | 4-1/4 | 609-02165 |
| 6.00 MM | 0.2362 | 0.2362 | 1-3/4 | 4-1/4 | 609-02362 |
| 1/4 | 0.2500 | 0.2500 | 1-3/4 | 4-1/4 | 609-02500 |
| 6.50 MM | 0.2559 | 0.2559 | 1-7/8 | 4-3/8 | 609-02559 |
| 17/64 | 0.2656 | 0.2656 | 1-7/8 | 4-3/8 | 609-02656 |
| "I" | 0.2720 | 0.2720 | 2 | 4-1/2 | 609-02720 |
| 9/32 | 0.2812 | 0.2812 | 2 | 4-1/2 | 609-02812 |
| 19/64 | 0.2968 | 0.2968 | 2 | 4-1/2 | 609-02968 |
| 5/16 | 0.3125 | 0.3125 | 2-3/16 | 4-3/4 | 609-03125 |
| 8.00 MM | 0.3150 | 0.3150 | 2-1/4 | 4-3/4 | 609-03150 |
| 21/64 | 0.3281 | 0.3281 | 2-1/4 | 4-3/4 | 609-03281 |

| TOOL DIAMETER | | SHANK | FLUTE | OAL | PART |
|---|---|---|---|---|---|
| INCH/MM | DECIMAL | DIA. (IN.) | LENGTH (IN.) | (IN.) | NUMBER |
| 8.50 MM | 0.3346 | 0.3346 | 2-3/8 | 4-7/8 | 609-03346 |
| 11/32 | 0.3437 | 0.3437 | 2-3/8 | 4-7/8 | 609-03437 |
| 23/64 | 0.3593 | 0.3593 | 2-1/2 | 5 | 609-03593 |
| "U" | 0.3680 | 0.3680 | 2-5/8 | 5-1/8 | 609-03680 |
| 3/8 | 0.3750 | 0.3750 | 2-5/8 | 5-1/8 | 609-03750 |
| 25/64 | 0.3906 | 0.3906 | 2-3/4 | 5-3/8 | 609-03906 |
| 13/32 | 0.4062 | 0.4062 | 2-7/8 | 5-1/2 | 609-04062 |
| 27/64 | 0.4218 | 0.4218 | 3 | 5-5/8 | 609-04218 |
| 7/16 | 0.4375 | 0.4375 | 3 | 5-5/8 | 609-04375 |
| 29/64 | 0.4531 | 0.4531 | 3-1/8 | 5-3/4 | 609-04531 |
| 15/32 | 0.4687 | 0.4687 | 3-1/4 | 5-7/8 | 609-04687 |
| 12.00 MM | 0.4724 | 0.4724 | 3-3/8 | 6 | 609-04724 |
| 31/64 | 0.4843 | 0.4843 | 3-3/8 | 6 | 609-04843 |
| 12.50 MM | 0.4921 | 0.4921 | 3-1/2 | 6 | 609-04921 |
| 1/2 | 0.5000 | 0.5000 | 3-1/2 | 6 | 609-05000 |

## SPOTTING DRILL • COBALT • STRAIGHT SHANK

### SERIES 605 • COOLANT-FED

EXPANDED

SERIES: 605

SIZES
1/4" - 1"
INCH

High performance spot drill designed to prevent work hardening conditions caused by lack of lubrication at the drill point on tough or hard materials. Provides fast accurate spotting and single operation centering and chamfering. Match spot drill and follow-up drill point angles to reduce chance of chipping the follow-up drill during initial penetration. Zero body clearance prohibits drilling beyond point angle.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | | ● |

SPECIFICATIONS
Helix: 22º-24º Standard
Point: 90º, 120º, 135º, 145º
Web: Standard

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. (IN) | FLUTE LENGTH (IN) | OAL (IN) | 90° POINT PART NUMBER | 120° POINT PART NUMBER | 135° POINT PART NUMBER | 145° POINT PART NUMBER |
|---|---|---|---|---|---|---|---|---|
| 1/4 | 0.2500 | 0.2500 | 3/4 | 2-1/2 | 605A-0250 | 605B-0250 | 605C-0250 | ***605D-0250** |
| 3/8 | 0.3750 | 0.3750 | 1-1/8 | 3-1/8 | 605A-0375 | 605B-0375 | 605C-0375 | ***605D-0375** |
| 1/2 | 0.5000 | 0.5000 | 1-3/8 | 3-3/4 | 605A-0500 | 605B-0500 | 605C-0500 | ***605D-0500** |
| 5/8 | 0.6250 | 0.6250 | 1-5/8 | 4-3/8 | 605A-0625 | 605B-0625 | 605C-0625 | ***605D-0625** |
| 3/4 | 0.7500 | 0.7500 | 1-7/8 | 5 | 605A-0750 | 605B-0750 | 605C-0750 | ***605D-0750** |
| 1 | 1.0000 | 1.0000 | 2-1/4 | 6 | 605A-1000 | 605B-1000 | 605C-1000 | ***605D-1000** |

***Expanded Offering**

## STUB LENGTH • HIGH SPEED • STRAIGHT SHANK

### SERIES 803 • COOLANT-FED

SERIES: 803

SIZES
9/32"-1"
INCH

General purpose drill works well in materials ranging from soft to medium hard materials. Suitable for both horizontal and vertical drilling. Notched point provides good chip formation when the proper speeds and feeds are applied. Flute web is constant with rolled heel providing maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

SPECIFICATIONS
Helix: 22º-24º Standard
Point: 118º Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 9/32 | 0.2812 | 2-1/2 | 4-1/2 | 803-011 |
| 19/64 | 0.2969 | 2-1/2 | 4-1/2 | 803-012 |
| 5/16 | 0.3125 | 2-1/2 | 4-1/2 | 803-013 |
| 21/64 | 0.3281 | 2-1/2 | 4-1/2 | 803-014 |
| 11/32 | 0.3438 | 2-1/2 | 4-1/2 | 803-015 |
| 23/64 | 0.3594 | 2-1/2 | 4-1/2 | 803-016 |
| 3/8 | 0.3750 | 2-1/2 | 4-1/2 | 803-017 |
| 25/64 | 0.3906 | 3 | 5 | 803-018 |
| 13/32 | 0.4062 | 3 | 5 | 803-019 |
| 27/64 | 0.4219 | 3 | 5 | 803-020 |
| 7/16 | 0.4375 | 3 | 5 | 803-021 |
| 29/64 | 0.4531 | 3-1/2 | 5-1/2 | 803-022 |
| 15/32 | 0.4688 | 3-1/2 | 5-1/2 | 803-023 |
| 31/64 | 0.4844 | 3-1/2 | 5-1/2 | 803-024 |
| 1/2 | 0.5000 | 3-1/2 | 5-1/2 | 803-025 |
| 33/64 | 0.5156 | 4 | 6 | 803-026 |
| 17/32 | 0.5312 | 4 | 6 | 803-027 |
| 35/64 | 0.5469 | 4 | 6 | 803-028 |
| 9/16 | 0.5625 | 4 | 6 | 803-029 |
| 37/64 | 0.5781 | 4-1/2 | 6-1/2 | 803-030 |
| 19/32 | 0.5938 | 4-1/2 | 6-1/2 | 803-031 |
| 39/64 | 0.6094 | 4-1/2 | 6-1/2 | 803-032 |
| 5/8 | 0.6250 | 4-1/2 | 6-1/2 | 803-033 |
| 41/64 | 0.6406 | 5 | 7 | 803-034 |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 21/32 | 0.6562 | 5 | 7 | 803-035 |
| 43/64 | 0.6719 | 5 | 7 | 803-036 |
| 11/16 | 0.6875 | 5 | 7 | 803-037 |
| 45/64 | 0.7031 | 5 | 7 | 803-038 |
| 23/32 | 0.7188 | 5 | 7 | 803-039 |
| 47/64 | 0.7344 | 5 | 7 | 803-040 |
| 3/4 | 0.7500 | 5 | 7 | 803-041 |
| 49/64 | 0.7656 | 5 | 7 | 803-042 |
| 25/32 | 0.7812 | 5 | 7 | 803-043 |
| 51/64 | 0.7969 | 5 | 7 | 803-044 |
| 13/16 | 0.8125 | 5 | 7 | 803-045 |
| 53/64 | 0.8281 | 5 | 7 | 803-046 |
| 27/32 | 0.8438 | 5 | 7 | 803-047 |
| 55/64 | 0.8594 | 5 | 7 | 803-048 |
| 7/8 | 0.8750 | 5 | 7 | 803-049 |
| 57/64 | 0.8906 | 5 | 7 | 803-050 |
| 29/32 | 0.9062 | 5 | 7 | 803-051 |
| 59/64 | 0.9219 | 5 | 7 | 803-052 |
| 15/16 | 0.9375 | 5 | 7 | 803-053 |
| 61/64 | 0.9531 | 5 | 7 | 803-054 |
| 31/32 | 0.9688 | 5 | 7 | 803-055 |
| 63/64 | 0.9844 | 5 | 7 | 803-056 |
| 1 | 1.0000 | 5 | 7 | 803-057 |

• For coolant entry specifications, see page 18.

• Specify finish when ordering where applicable

## STUB LENGTH • PARABOLIC • HIGH SPEED • STRAIGHT SHANK

### SERIES 303 • COOLANT-FED

EXPANDED

SERIES: 303
SIZES
1/18"-19/64"
INCH

Parabolic style drill performs exceptionally well in aluminum and in most other materials. The 32° helix has excellent shearing action. Higher helix also assists chip flow in the vertical position. Parabolic design gives maximum chip room and lift in deep hole drilling. Split point design is self centering and provides accurate hole locations. **For tough materials and machining applications Ultra-Bronze coating is now available.**

| MATERIAL | BRIGHT | ULTRA-BRONZE | TiN |
|---|---|---|---|
| HSS | • | • | • |

| SPECIFICATIONS | |
|---|---|
| Helix: | 32° Parabolic |
| Point: | 118° Split |
| Web: | Standard |

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| 1/8 | 0.1250 | 0.1250 | 1-1/2 | 3-1/2 | 303-001 |
| 9/64 | 0.1406 | 0.1406 | 1-1/2 | 3-1/2 | 303-002 |
| 5/32 | 0.1562 | 0.1562 | 1-1/2 | 3-1/2 | 303-003 |
| 11/64 | 0.1719 | 0.1719 | 1-3/4 | 3-3/4 | 303-004 |
| 3/16 | 0.1875 | 0.1875 | 1-3/4 | 3-3/4 | 303-005 |
| 13/64 | 0.2031 | 0.2031 | 1-3/4 | 3-3/4 | 303-006 |

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| 7/32 | 0.2188 | 0.2187 | 1-3/4 | 3-3/4 | 303-007 |
| 15/64 | 0.2344 | 0.2344 | 1-3/4 | 3-3/4 | 303-008 |
| 1/4 | 0.2500 | 0.2500 | 1-3/4 | 3-3/4 | 303-009 |
| 17/64 | 0.2656 | 0.2656 | 2 | 4 | 303-010 |
| 9/32 | 0.2812 | 0.2812 | 2 | 4 | 303-011 |
| 19/64 | 0.2969 | 0.2969 | 2 | 4 | 303-012 |

• For coolant entry specifications, see page 18.

## STUB LENGTH • METRIC • PARABOLIC •COBALT • TiN COATED • CNC SHANK

### SERIES M604 • COOLANT-FED

SERIES: M604
SIZES
5.0 - 14.0
MM

Cobalt parabolic style drill with versatile CNC shank works well in most materials and is an outstanding performer in harder materials. Excellent substitute when machines do not have the proper speed and feed for carbide. Parabolic design provides maximum chip room. The stubby length of these drills makes them sturdy.Furnished titanium nitride coated.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSCO | | | • |

| SPECIFICATIONS | |
|---|---|
| Helix: | 32° Parabolic |
| Point: | 135° Notch |
| Web: | Standard |

| TOOL DIAMETER MM | TOOL DIAMETER DECIMAL | SHANK DIA. (MM) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|---|
| 5.0 | 0.1968 | 6 | 44 | 82 | M604-0050 |
| 5.5 | 0.2165 | 6 | 44 | 82 | M604-0055 |
| 6.0 | 0.2362 | 6 | 44 | 82 | M604-0060 |
| 6.5 | 0.2559 | 8 | 53 | 91 | M604-0065 |
| 6.8 | 0.2677 | 8 | 53 | 91 | M604-0068 |
| 7.0 | 0.2756 | 8 | 53 | 91 | M604-0070 |
| 7.5 | 0.2953 | 8 | 53 | 91 | M604-0075 |
| 7.8 | 0.3071 | 8 | 53 | 91 | M604-0078 |
| 8.0 | 0.3150 | 8 | 53 | 91 | M604-0080 |
| 8.5 | 0.3346 | 10 | 61 | 103 | M604-0085 |
| 9.0 | 0.3543 | 10 | 61 | 103 | M604-0090 |
| 9.5 | 0.3740 | 10 | 61 | 103 | M604-0095 |
| 10.0 | 0.3937 | 10 | 61 | 103 | M604-0100 |
| 10.2 | 0.4016 | 12 | 71 | 118 | M604-0102 |
| 10.5 | 0.4134 | 12 | 71 | 118 | M604-0105 |
| 11.0 | 0.4331 | 12 | 71 | 118 | M604-0110 |
| 11.5 | 0.4528 | 12 | 71 | 118 | M604-0115 |
| 12.0 | 0.4724 | 12 | 71 | 118 | M604-0120 |
| 12.5 | 0.4921 | 14 | 77 | 124 | M604-0125 |
| 13.0 | 0.5118 | 14 | 77 | 124 | M604-0130 |
| 13.5 | 0.5315 | 14 | 77 | 124 | M604-0135 |
| 14.0 | 0.5512 | 14 | 77 | 124 | M604-0140 |

• Specify finish when ordering where applicable

## SERIES 804 • COOLANT-FED

SERIES: **804**

SIZES
1/8" - 1-1/2"
INCH

General purpose drill works well in materials ranging from soft to medium hard. Suitable for both horizontal and vertical drilling. Notched point provides good chip formation when the proper speeds and feeds are applied. The 22° - 24° helix has constant web thickness with rolled heel providing maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 22°-24° Standard
Point: 118° Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 1/8 | 0.1250 | 2-3/8 | 4-3/4 | 804-001 |
| 9/64 | 0.1406 | 2-5/8 | 5 | 804-002 |
| 5/32 | 0.1562 | 2-5/8 | 5 | 804-003 |
| 11/64 | 0.1719 | 2-7/8 | 5-1/4 | 804-004 |
| 3/16 | 0.1875 | 2-7/8 | 5-1/4 | 804-005 |
| 13/64 | 0.2031 | 3-1/8 | 5-1/2 | 804-006 |
| 7/32 | 0.2188 | 3-1/8 | 5-1/2 | 804-007 |
| 15/64 | 0.2344 | 3-3/8 | 5-3/4 | 804-008 |
| 1/4 | 0.2500 | 3-3/8 | 5-3/4 | 804-009 |
| 17/64 | 0.2656 | 3-5/8 | 6 | 804-010 |
| 9/32 | 0.2812 | 3-5/8 | 6 | 804-011 |
| 19/64 | 0.2969 | 3-7/8 | 6-1/4 | 804-012 |
| 5/16 | 0.3125 | 3-7/8 | 6-1/4 | 804-013 |
| 21/64 | 0.3281 | 4-1/8 | 6-1/2 | 804-014 |
| 11/32 | 0.3438 | 4-1/8 | 6-1/2 | 804-015 |
| 23/64 | 0.3594 | 4-1/4 | 6-3/4 | 804-016 |
| 3/8 | 0.3750 | 4-1/4 | 6-3/4 | 804-017 |
| 25/64 | 0.3906 | 4-3/8 | 7 | 804-018 |
| 13/32 | 0.4062 | 4-3/8 | 7 | 804-019 |
| 27/64 | 0.4219 | 4-5/8 | 7-1/4 | 804-020 |
| 7/16 | 0.4375 | 4-5/8 | 7-1/4 | 804-021 |
| 29/64 | 0.4531 | 4-7/8 | 7-1/2 | 804-022 |
| 15/32 | 0.4688 | 4-7/8 | 7-1/2 | 804-023 |
| 31/64 | 0.4844 | 5 | 7-3/4 | 804-024 |
| 1/2 | 0.5000 | 5 | 7-3/4 | 804-025 |
| 33/64 | 0.5156 | 5-1/4 | 8 | 804-026 |
| 17/32 | 0.5313 | 5-1/4 | 8 | 804-027 |
| 35/64 | 0.5469 | 5-3/8 | 8-1/4 | 804-028 |
| 9/16 | 0.5625 | 5-3/8 | 8-1/4 | 804-029 |
| 37/64 | 0.5781 | 5-5/8 | 8-1/2 | 804-030 |
| 19/32 | 0.5938 | 5-5/8 | 8-1/2 | 804-031 |
| 39/64 | 0.6094 | 5-3/4 | 8-3/4 | 804-032 |
| 5/8 | 0.6250 | 5-3/4 | 8-3/4 | 804-033 |
| 41/64 | 0.6406 | 5-7/8 | 9 | 804-034 |
| 21/32 | 0.6563 | 5-7/8 | 9 | 804-035 |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 43/64 | 0.6719 | 6 | 9-1/4 | 804-036 |
| 11/16 | 0.6875 | 6 | 9-1/4 | 804-037 |
| 45/64 | 0.7031 | 6-3/16 | 9-1/2 | 804-038 |
| 23/32 | 0.7188 | 6-3/16 | 9-1/2 | 804-039 |
| 47/64 | 0.7344 | 6-3/8 | 9-3/4 | 804-040 |
| 3/4 | 0.7500 | 6-3/8 | 9-3/4 | 804-041 |
| 49/64 | 0.7656 | 6-1/2 | 9-7/8 | 804-042 |
| 25/32 | 0.7812 | 6-1/2 | 9-7/8 | 804-043 |
| 51/64 | 0.7969 | 6-5/8 | 10 | 804-044 |
| 13/16 | 0.8125 | 6-5/8 | 10 | 804-045 |
| 53/64 | 0.8281 | 6-3/4 | 10-1/4 | 804-046 |
| 27/32 | 0.8438 | 6-3/4 | 10-1/4 | 804-047 |
| 55/64 | 0.8594 | 7 | 10-1/2 | 804-048 |
| 7/8 | 0.8750 | 7 | 10-1/2 | 804-049 |
| 57/64 | 0.8906 | 7 | 10-5/8 | 804-050 |
| 29/32 | 0.9062 | 7 | 10-5/8 | 804-051 |
| 59/64 | 0.9219 | 7 | 10-3/4 | 804-052 |
| 15/16 | 0.9375 | 7 | 10-3/4 | 804-053 |
| 61/64 | 0.9531 | 7-1/8 | 10-7/8 | 804-054 |
| 31/32 | 0.9688 | 7-1/8 | 10-7/8 | 804-055 |
| 63/64 | 0.9844 | 7-3/16 | 11 | 804-056 |
| 1 | 1.0000 | 7-3/16 | 11 | 804-057 |
| 1-1/32 | 1.0313 | 7-5/16 | 11-1/8 | 804-058 |
| 1-1/16 | 1.0625 | 7-3/8 | 11-1/4 | 804-059 |
| 1-3/32 | 1.0938 | 7-5/8 | 11-1/2 | 804-060 |
| 1-1/8 | 1.1250 | 7-7/8 | 11-3/4 | 804-061 |
| 1-5/32 | 1.1563 | 8 | 11-7/8 | 804-062 |
| 1-3/16 | 1.1875 | 8-1/8 | 12 | 804-063 |
| 1-7/32 | 1.2188 | 8-1/8 | 12-1/8 | 804-064 |
| 1-1/4 | 1.2500 | 8-1/2 | 12-1/2 | 804-065 |
| 1-5/16 | 1.3125 | 9-1/4 | 14-1/4 | 804-066 |
| 1-3/8 | 1.3750 | 9-1/2 | 14-1/2 | 804-067 |
| 1-7/16 | 1.4375 | 9-5/8 | 14-3/4 | 804-068 |
| 1-1/2 | 1.5000 | 9-7/8 | 15 | 804-069 |

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

## SERIES 805 • COOLANT-FED

SERIES: **805**

SIZES

5/16"- 1-1/2" INCH

General purpose slow spiral drill works best in horizontal applications on materials ranging from soft to hard. 14° slow spiral produces uninterrupted chip flow and increases edge strength. Notch point provides good chip formation when the proper speeds and feeds are applied.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

| | |
|---|---|
| Helix: | 14° Slow |
| Point: | 118° Notch |
| Web: | Standard |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 5/16 | 0.3125 | 3-7/8 | 6-1/4 | 805-013 |
| 21/64 | 0.3281 | 4-1/8 | 6-1/2 | 805-014 |
| 11/32 | 0.3438 | 4-1/8 | 6-1/2 | 805-015 |
| 23/64 | 0.3594 | 4-1/4 | 6-3/4 | 805-016 |
| 3/8 | 0.3750 | 4-1/4 | 6-3/4 | 805-017 |
| 25/64 | 0.3906 | 4-3/8 | 7 | 805-018 |
| 13/32 | 0.4062 | 4-3/8 | 7 | 805-019 |
| 27/64 | 0.4219 | 4-5/8 | 7-1/4 | 805-020 |
| 7/16 | 0.4375 | 4-5/8 | 7-1/4 | 805-021 |
| 29/64 | 0.4531 | 4-7/8 | 7-1/2 | 805-022 |
| 15/32 | 0.4688 | 4-7/8 | 7-1/2 | 805-023 |
| 31/64 | 0.4844 | 5 | 7-3/4 | 805-024 |
| 1/2 | 0.5000 | 5 | 7-3/4 | 805-025 |
| 33/64 | 0.5156 | 5-1/4 | 8 | 805-026 |
| 17/32 | 0.5312 | 5-1/4 | 8 | 805-027 |
| 35/64 | 0.5469 | 5-3/8 | 8-1/4 | 805-028 |
| 9/16 | 0.5625 | 5-3/8 | 8-1/4 | 805-029 |
| 37/64 | 0.5781 | 5-5/8 | 8-1/2 | 805-030 |
| 19/32 | 0.5938 | 5-5/8 | 8-1/2 | 805-031 |
| 39/64 | 0.6094 | 5-3/4 | 8-3/4 | 805-032 |
| 5/8 | 0.6250 | 5-3/4 | 8-3/4 | 805-033 |
| 41/64 | 0.6406 | 5-7/8 | 9 | 805-034 |
| 21/32 | 0.6562 | 5-7/8 | 9 | 805-035 |
| 43/64 | 0.6719 | 6 | 9-1/4 | 805-036 |
| 11/16 | 0.6875 | 6 | 9-1/4 | 805-037 |
| 45/64 | 0.7031 | 6-3/16 | 9-1/2 | 805-038 |
| 23/32 | 0.7188 | 6-3/16 | 9-1/2 | 805-039 |
| 47/64 | 0.7344 | 6-3/8 | 9-3/4 | 805-040 |
| 3/4 | 0.7500 | 6-3/8 | 9-3/4 | 805-041 |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 49/64 | 0.7656 | 6-1/2 | 9-7/8 | 805-042 |
| 25/32 | 0.7812 | 6-1/2 | 9-7/8 | 805-043 |
| 51/64 | 0.7969 | 6-5/8 | 10 | 805-044 |
| 13/16 | 0.8125 | 6-5/8 | 10 | 805-045 |
| 53/64 | 0.8281 | 6-3/4 | 10-1/4 | 805-046 |
| 27/32 | 0.8438 | 6-3/4 | 10-1/4 | 805-047 |
| 55/64 | 0.8594 | 7 | 10-1/2 | 805-048 |
| 7/8 | 0.8750 | 7 | 10-1/2 | 805-049 |
| 57/64 | 0.8906 | 7 | 10-5/8 | 805-050 |
| 29/32 | 0.9062 | 7 | 10-5/8 | 805-051 |
| 59/64 | 0.9219 | 7 | 10-3/4 | 805-052 |
| 15/16 | 0.9375 | 7 | 10-3/4 | 805-053 |
| 61/64 | 0.9531 | 7-1/8 | 10-7/8 | 805-054 |
| 31/32 | 0.9688 | 7-1/8 | 10-7/8 | 805-055 |
| 63/64 | 0.9844 | 7-3/16 | 11 | 805-056 |
| 1 | 1.0000 | 7-3/16 | 11 | 805-057 |
| 1-1/32 | 1.0313 | 7-5/16 | 11-1/8 | 805-058 |
| 1-1/16 | 1.0625 | 7-3/8 | 11-1/4 | 805-059 |
| 1-3/32 | 1.0938 | 7-5/8 | 11-1/2 | 805-060 |
| 1-1/8 | 1.1250 | 7-7/8 | 11-3/4 | 805-061 |
| 1-5/32 | 1.1562 | 8 | 11-7/8 | 805-062 |
| 1-3/16 | 1.1875 | 8-1/8 | 12 | 805-063 |
| 1-7/32 | 12.188 | 8-1/8 | 12-1/8 | 805-064 |
| 1-1/4 | 1.2500 | 8-1/2 | 12-1/2 | 805-065 |
| 1-5/16 | 1.3125 | 9-1/4 | 14-1/4 | 805-066 |
| 1-3/8 | 1.3750 | 9-1/2 | 14-1/2 | 805-067 |
| 1-7/16 | 1.4375 | 9-5/8 | 14-3/4 | 805-068 |
| 1-1/2 | 1.5000 | 9-7/8 | 15 | 805-069 |

• For coolant entry specifications, see page 18.
• Specify finish when ordering where applicable

## TECHNICAL TIPS

We offer drill resharpening and reconditioning for all of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information.


Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## TAPER LENGTH • COBALT • STRAIGHT SHANK

### SERIES 601 • COOLANT-FED

SERIES: **601**

SIZES
3/8"-1"
INCH

Heavy duty cobalt drill designed for use in abrasive or hard materials where speed is not the primary consideration. Heavy web thickness makes this drill extremely sturdy in these tough materials. Does not work well in aluminum or soft steels. Split point design is self centering and provides accurate hole locations.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSCO | ● | | |

**SPECIFICATIONS**

Helix: 22° -24° Standard
Point: 135° Split
Web: Heavy

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH.(IN.) | OAL (IN.) | OLD PART NUMBER | NEW PART NUMBER |
|---|---|---|---|---|---|
| 3/8 | 0.3750 | 4-1/4 | 6-3/4 | C804-017 | 601-03750 |
| 25/64 | 0.3906 | 4-3/8 | 7 | C804-018 | 601-03906 |
| 13/32 | 0.4062 | 4-3/8 | 7 | C804-019 | 601-04062 |
| 27/64 | 0.4219 | 4-5/8 | 7-1/4 | C804-020 | 601-04219 |
| 7/16 | 0.4375 | 4-5/8 | 7-1/4 | C804-021 | 601-04375 |
| 29/64 | 0.4531 | 4-7/8 | 7-1/2 | C804-022 | 601-04531 |
| 15/32 | 0.4688 | 4-7/8 | 7-1/2 | C804-023 | 601-04688 |
| 31/64 | 0.4844 | 5 | 7-3/4 | C804-024 | 601-04844 |
| 1/2 | 0.5000 | 5 | 7-3/4 | C804-025 | 601-05000 |
| 33/64 | 0.5156 | 5-1/4 | 8 | C804-026 | 601-05156 |
| 17/32 | 0.5312 | 5-1/4 | 8 | C804-027 | 601-05312 |
| 35/64 | 0.5469 | 5-3/8 | 8-1/4 | C804-028 | 601-05469 |
| 9/16 | 0.5625 | 5-3/8 | 8-1/4 | C804-029 | 601-05625 |
| 37/64 | 0.5781 | 5-5/8 | 8-1/2 | C804-030 | 601-05781 |
| 19/32 | 0.5938 | 5-5/8 | 8-1/2 | C804-031 | 601-05938 |
| 39/64 | 0.6094 | 5-3/4 | 8-3/4 | C804-032 | 601-06094 |
| 5/8 | 0.6250 | 5-3/4 | 8-3/4 | C804-033 | 601-06250 |
| 41/64 | 0.6406 | 5-7/8 | 9 | C804-034 | 601-06406 |
| 21/32 | 0.6562 | 5-7/8 | 9 | C804-035 | 601-06562 |
| 43/64 | 0.6719 | 6 | 9-1/4 | C804-036 | 601-06719 |
| 11/16 | 0.6875 | 6 | 9-1/4 | C804-037 | 601-06875 |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | OLD PART NUMBER | NEW PART NUMBER |
|---|---|---|---|---|---|
| 45/64 | 0.7031 | 6-3/16 | 9-1/2 | C804-038 | 601-07031 |
| 23/32 | 0.7188 | 6-3/16 | 9-1/2 | C804-039 | 601-07188 |
| 47/64 | 0.7344 | 6-3/8 | 9-3/4 | C804-040 | 601-07344 |
| 3/4 | 0.7500 | 6-3/8 | 9-3/4 | C804-041 | 601-07500 |
| 49/64 | 0.7656 | 6-1/2 | 9-7/8 | C804-042 | 601-07656 |
| 25/32 | 0.7812 | 6-1/2 | 9-7/8 | C804-043 | 601-07821 |
| 51/64 | 0.7968 | 6-5/8 | 10 | C804-044 | 601-07968 |
| 13/16 | 0.8125 | 6-5/8 | 10 | C804-045 | 601-08125 |
| 53/64 | 0.8281 | 6-3/4 | 10-1/4 | C804-046 | 601-08281 |
| 27/32 | 0.8438 | 6-3/4 | 10-1/4 | C804-047 | 601-08438 |
| 55/64 | 0.8593 | 7 | 10-1/2 | C804-048 | 601-08593 |
| 7/8 | 0.8750 | 7 | 10-1/2 | C804-049 | 601-08750 |
| 57/64 | 0.8906 | 7 | 10-5/8 | C804-050 | 601-08906 |
| 29/32 | 0.9062 | 7 | 10-5/8 | C804-051 | 601-09062 |
| 59/64 | 0.9218 | 7 | 10-3/4 | C804-052 | 601-09218 |
| 15/16 | 0.9375 | 7 | 10-3/4 | C804-053 | 601-09375 |
| 61/64 | 0.9531 | 7-1/8 | 10-7/8 | C804-054 | 601-09531 |
| 31/32 | 0.9687 | 7-1/8 | 10-7/8 | C804-055 | 601-09687 |
| 63/64 | 0.9843 | 7-3/16 | 11 | C804-056 | 601-09843 |
| 1 | 1.0000 | 7-3/16 | 11 | C804-057 | 601-10000 |

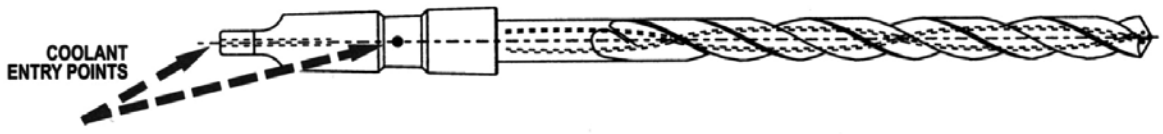
- For coolant entry specifications, see page below.
- Specify finish when ordering where applicable

## COOLANT ENTRY SPECIFICATIONS

### STRAIGHT SHANK


Sizes **under 1/2"** have Cupped End Coolant Entry
Sizes **1/2" through 3/4"** have 1/8 NPT Tapped Coolant Entry
Sizes **49/64" through 1-1/4"** have 1/4 NPT Tapped Coolant Entry
Sizes **1-9/32" through 1-3/8"** have 3/8 NPT Tapped Coolant Entry

### TAPER SHANK




The George Whalley Company standard length taper shank coolant-fed twist drills are normally furnished with side and tang end coolant entry. However, if end entry is an absolute requirement, please specify when ordering.

## LONG LENGTH • SMALL DIAMETER • HIGH SPEED • STRAIGHT SHANK

### SERIES 806 • COOLANT-FED

SERIES: **806**

SIZES

1/8" - 1/2" INCH

General purpose drill works well in materials ranging from soft to medium hard materials. Suitable for both horizontal and vertical drilling. Notched point provides good chip formation when the proper speeds and feeds are applied. The 22° - 24° helix has constant web thickness with rolled heel providing maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 22°-24° Standard
Point: 118° Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 1/8 | 0.1250 | 3-5/8 | 6 | 806-001 |
| 9/64 | 0.1406 | 4 | 6-3/8 | 806-002 |
| 5/32 | 0.1562 | 4 | 6-3/8 | 806-003 |
| 11/64 | 0.1719 | 4-3/8 | 6-3/4 | 806-004 |
| 3/16 | 0.1875 | 4-3/8 | 6-3/4 | 806-005 |
| 13/64 | 0.2031 | 4-3/4 | 7-1/8 | 806-006 |
| 7/32 | 0.2188 | 4-3/4 | 7-1/8 | 806-007 |
| 15/64 | 0.2344 | 5-1/8 | 7-1/2 | 806-008 |
| 1/4 | 0.2500 | 5-1/8 | 7-1/2 | 806-009 |
| 17/64 | 0.2656 | 5-1/2 | 7-7/8 | 806-010 |
| 9/32 | 0.2812 | 5-1/2 | 7-7/8 | 806-011 |
| 19/64 | 0.2969 | 5-7/8 | 8-1/4 | 806-012 |
| 5/16 | 0.3125 | 5-7/8 | 8-1/4 | 806-013 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 21/64 | 0.3281 | 6-1/4 | 8-5/8 | 806-014 |
| 11/32 | 0.3438 | 6-1/4 | 8-5/8 | 806-015 |
| 23/64 | 0.3594 | 6-3/8 | 8-7/8 | 806-016 |
| 3/8 | 0.3750 | 6-3/8 | 8-7/8 | 806-017 |
| 25/64 | 0.3906 | 6-5/8 | 9-1/4 | 806-018 |
| 13/32 | 0.4062 | 6-5/8 | 9-1/4 | 806-019 |
| 27/64 | 0.4219 | 7 | 9-5/8 | 806-020 |
| 7/16 | 0.4375 | 7 | 9-5/8 | 806-021 |
| 29/64 | 0.4531 | 7-3/8 | 10 | 806-022 |
| 15/32 | 0.4688 | 7-3/8 | 10 | 806-023 |
| 31/64 | 0.4844 | 7-1/2 | 10-1/4 | 806-024 |
| 1/2 | 0.5000 | 7-1/2 | 10-1/4 | 806-025 |

• For coolant entry specifications, see page 18.

## TAPER LENGTH • METRIC • HIGH SPEED • STRAIGHT SHANK

### SERIES M804 • COOLANT-FED

SERIES: **M804**

SIZES

3.0 -13.0 MM

General purpose metric drill for use in soft to medium hard materials. Suitable for both horizontal and vertical applications. Higher helix assists chip flow in the vertical position. Notch point provides good chip formation when the proper speeds and feeds are applied

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | | ● |

**SPECIFICATIONS**

Helix: 34° Fast
Point: 118° Notch
Web: Standard

| DIAMETER (MM) | DECIMAL (IN.) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|
| 3.0 | 0.1181 | 66 | 100 | M804-0030 |
| 3.3 | 0.1299 | 69 | 106 | M804-0033 |
| 3.5 | 0.1378 | 73 | 112 | M804-0035 |
| 4.0 | 0.1575 | 78 | 119 | M804-0040 |
| 4.2 | 0.1654 | 78 | 119 | M804-0042 |
| 4.5 | 0.1772 | 82 | 126 | M804-0045 |
| 5.0 | 0.1968 | 87 | 132 | M804-0050 |
| 5.5 | 0.2165 | 91 | 139 | M804-0055 |
| 6.0 | 0.2362 | 91 | 139 | M804-0060 |
| 6.5 | 0.2559 | 97 | 148 | M804-0065 |
| 6.8 | 0.2677 | 102 | 156 | M804-0068 |
| 7.0 | 0.2756 | 102 | 156 | M804-0070 |

| DIAMETER (MM) | DECIMAL (IN.) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|
| 7.5 | 0.2953 | 102 | 156 | M804-0075 |
| 8.0 | 0.3150 | 109 | 165 | M804-0080 |
| 8.5 | 0.3346 | 109 | 165 | M804-0085 |
| 9.0 | 0.3543 | 115 | 175 | M804-0090 |
| 9.5 | 0.3740 | 115 | 175 | M804-0095 |
| 10.0 | 0.3937 | 121 | 184 | M804-0100 |
| 10.2 | 0.4016 | 121 | 184 | M804-0102 |
| 10.5 | 0.4134 | 121 | 184 | M804-0105 |
| 11.0 | 0.4331 | 128 | 195 | M804-0110 |
| 11.5 | 0.4528 | 128 | 195 | M804-0115 |
| 12.0 | 0.4724 | 134 | 205 | M804-0120 |
| 13.0 | 0.5118 | 134 | 205 | M804-0130 |

• Meets DIN 34 Specifications

• Specify finish when ordering where applicable

## LONG LENGTH • SMALL DIAMETER • COBALT • STRAIGHT SHANK

### SERIES 602 • COOLANT-FED

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSCO | • | | • |

SERIES: 602

SIZES
1/8"-1/2"
INCH

Heavy duty cobalt drill designed for use in abrasive or hard materials where speed is not the primary consideration. Heavy web thickness makes this drill extremely sturdy in these tough materials. Does not work well in aluminum or soft steels. Split point design is self centering and provides accurate hole locations.

**SPECIFICATIONS**
Helix: 22° -24° Standard
Point: 135° Split
Web: Heavy

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | OLD PART NUMBER | PART NUMBER |
|---|---|---|---|---|---|
| 1/8 | 0.1250 | 3-5/8 | 6 | C806-001 | 602-01250 |
| 9/64 | 0.1406 | 4 | 6-3/8 | C806-002 | 602-01406 |
| 5/32 | 0.1562 | 4 | 6-3/8 | C806-003 | 602-01562 |
| 11/64 | 0.1719 | 4-3/8 | 6-3/4 | C806-004 | 602-01719 |
| 3/16 | 0.1875 | 4-3/8 | 6-3/4 | C806-005 | 602-01875 |
| 13/64 | 0.2031 | 4-3/4 | 7-1/8 | C806-006 | 602-02031 |
| 7/32 | 0.2188 | 4-3/4 | 7-1/8 | C806-007 | 602-02188 |
| 15/64 | 0.2344 | 5-1/8 | 7-1/2 | C806-008 | 602-02344 |
| 1/4 | 0.2500 | 5-1/8 | 7-1/2 | C806-009 | 602-02500 |
| 17/64 | 0.2656 | 5-1/2 | 7-7/8 | C806-010 | 602-02656 |
| 9/32 | 0.2812 | 5-1/2 | 7-7/8 | C806-011 | 602-02812 |
| 19/64 | 0.2969 | 5-7/8 | 8-1/4 | C806-012 | 602-02969 |
| 5/16 | 0.3125 | 5-7/8 | 8-1/4 | C806-013 | 602-03125 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | OLD PART NUMBER | PART NUMBER |
|---|---|---|---|---|---|
| 21/64 | 0.3281 | 6-1/4 | 8-5/8 | C806-014 | 602-03281 |
| 11/32 | 0.3438 | 6-1/4 | 8-5/8 | C806-015 | 602-03438 |
| 23/64 | 0.3594 | 6-3/8 | 8-7/8 | C806-016 | 602-03594 |
| 3/8 | 0.3750 | 6-3/8 | 8-7/8 | C806-017 | 602-03750 |
| 25/64 | 0.3906 | 6-5/8 | 9-1/4 | C806-018 | 602-03906 |
| 13/32 | 0.4062 | 6-5/8 | 9-1/4 | C806-019 | 602-04062 |
| 27/64 | 0.4219 | 7 | 9-5/8 | C806-020 | 602-04219 |
| 7/16 | 0.4375 | 7 | 9-5/8 | C806-021 | 602-04375 |
| 29/64 | 0.4531 | 7-3/8 | 10 | C806-022 | 602-04531 |
| 15/32 | 0.4688 | 7-3/8 | 10 | C806-023 | 602-04688 |
| 31/64 | 0.4844 | 7-1/2 | 10-1/4 | C806-024 | 602-04844 |
| 1/2 | 0.5000 | 7-1/2 | 10-1/4 | C806-025 | 602-05000 |

• For coolant entry specifications, see page 18.

## EXTRA LENGTH • 7" FLUTE • PARABOLIC • HIGH SPEED • STRAIGHT SHANK

### SERIES 307 • COOLANT-FED

EXPANDED

| MATERIAL | BRIGHT | ULTRA-BRONZE | TiN |
|---|---|---|---|
| HSS | • | • | • |

SERIES: 307

SIZES
1/8" - 3/4"
INCH

Parabolic style drill performs exceptionally well in aluminum and in most other materials. The 32° helix has excellent shearing action. Higher helix also assists chip flow in the vertical position. Parabolic design gives maximum chip room and lift in deep hole drilling. Split point design is self centering and provides accurate hole locations. For tough machining applications Ultra-Bronze coating is available.

**SPECIFICATIONS**
Helix: 32° Parabolic
Point: 118° Split
Web: Standard

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. | FLUTE LENGTH | OAL | PART NUMBER |
|---|---|---|---|---|---|
| ***1/8** | **0.1250** | **0.1250** | **7** | **10** | **307-001** |
| ***9/64** | **0.1406** | **0.1406** | **7** | **10** | **307-002** |
| ***5/32** | **0.1563** | **0.1563** | **7** | **10** | **307-003** |
| ***11/64** | **0.1719** | **0.1719** | **7** | **10** | **307-004** |
| ***3/16** | **0.1875** | **0.1875** | **7** | **10** | **307-005** |
| ***13/64** | **0.2031** | **0.2031** | **7** | **10** | **307-006** |
| ***7/32** | **0.2188** | **0.2188** | **7** | **10** | **307-007** |
| ***15/64** | **0.2344** | **0.2344** | **7** | **10** | **307-008** |
| 1/4 | 0.2500 | 0.2500 | 7 | 10 | 307-009 |
| 17/64 | 0.2656 | 0.2656 | 7 | 10 | 307-010 |
| 9/32 | 0.2812 | 0.2812 | 7 | 10 | 307-011 |
| 19/64 | 0.2969 | 0.2969 | 7 | 10 | 307-012 |
| 5/16 | 0.3125 | 0.3125 | 7 | 10 | 307-013 |
| 21/64 | 0.3281 | 0.3281 | 7 | 10 | 307-014 |
| 11/32 | 0.3437 | 0.3437 | 7 | 10 | 307-015 |
| 23/64 | 0.3594 | 0.3594 | 7 | 10 | 307-016 |
| 3/8 | 0.3750 | 0.3750 | 7 | 10 | 307-017 |
| 25/64 | 0.3906 | 0.3906 | 7 | 10 | 307-018 |
| 13/32 | 0.4062 | 0.4062 | 7-3/4 | 10-3/4 | 307-019S |
| 27/64 | 0.4219 | 0.4219 | 7 | 10 | 307-020 |

| TOOL DIAMETER INCH | TOOL DIAMETER DECIMAL | SHANK DIA. | FLUTE LENGTH | OAL | PART NUMBER |
|---|---|---|---|---|---|
| 7/16 | 0.4375 | 0.4375 | 7 | 10 | 307-021 |
| 29/64 | 0.4531 | 0.4531 | 7 | 10 | 307-022 |
| 15/32 | 0.4688 | 0.4688 | 7 | 10 | 307-023 |
| 31/64 | 0.4844 | 0.4688 | 7 | 10 | 307-024 |
| 1/2 | 0.5000 | 0.5000 | 7 | 10 | 307-025 |
| 33/64 | 0.5156 | 0.5156 | 7 | 10 | 307-026 |
| 17/32 | 0.5312 | 0.5312 | 7 | 10 | 307-027 |
| 35/64 | 0.5469 | 0.5469 | 7 | 10 | 307-028 |
| 9/16 | 0.5625 | 0.5625 | 7 | 10 | 307-029 |
| 37/64 | 0.5781 | 0.5781 | 7 | 10 | 307-030 |
| 19/32 | 0.5937 | 0.5937 | 7 | 10 | 307-031 |
| 39/64 | 0.6094 | 0.6094 | 7 | 10 | 307-032 |
| 5/8 | 0.6250 | 0.6250 | 7 | 10 | 307-033 |
| 41/64 | 0.6406 | 0.6406 | 7 | 10 | 307-034 |
| 21/32 | 0.6562 | 0.6562 | 7 | 10 | 307-035 |
| 43/64 | 0.6719 | 0.6719 | 7 | 10 | 307-036 |
| 11/16 | 0.6875 | 0.6875 | 7 | 10 | 307-037 |
| 45/64 | 0.7031 | 0.7031 | 7 | 10 | 307-038 |
| 23/32 | 0.7188 | 0.7188 | 7 | 10 | 307-039 |
| 47/64 | 0.7344 | 0.7344 | 7 | 10 | 307-040 |
| 3/4 | 0.7500 | 0.7500 | 7 | 10 | 307-041 |

***Expanded Offering**

• Specify finish when ordering where applicable

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.



## EXTRA LENGTH • 9" FLUTE • HIGH SPEED • STRAIGHT SHANK

### SERIES 808 • COOLANT-FED

SERIES: 808
SIZES
3/16" - 1-1/16"
INCH

General purpose drill works well in materials ranging from soft to medium hard. Suitable for both horizontal and vertical drilling. Notched point provides good chip formation when the proper speeds and feeds are applied. The 22° to 24° helix has constant web thickness with rolled heel providing maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 22° -24° Standard
Point: 118° Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 3/16 | 0.1875 | 9 | 12 | 808-006 |
| 13/64 | 0.2031 | 9 | 12 | 808-007 |
| 7/32 | 0.2188 | 9 | 12 | 808-008 |
| 15/64 | 0.2344 | 9 | 12 | 808-009 |
| 1/4 | 0.2500 | 9 | 12 | 808-010 |
| 17/64 | 0.2656 | 9 | 12 | 808-011 |
| 9/32 | 0.2812 | 9 | 12 | 808-012 |
| 19/64 | 0.2969 | 9 | 12 | 808-013 |
| 5/16 | 0.3125 | 9 | 12 | 808-014 |
| 21/64 | 0.3281 | 9 | 12 | 808-015 |
| 11/32 | 0.3438 | 9 | 12 | 808-016 |
| 23/64 | 0.3594 | 9 | 12 | 808-017 |
| 3/8 | 0.3750 | 9 | 12 | 808-018 |
| 25/64 | 0.3906 | 9 | 12 | 808-019 |
| 13/32 | 0.4062 | 9 | 12 | 808-020 |
| 27/64 | 0.4219 | 9 | 12 | 808-021 |
| 7/16 | 0.4375 | 9 | 12 | 808-022 |
| 29/64 | 0.4531 | 9 | 12 | 808-023 |
| 15/32 | 0.4688 | 9 | 12 | 808-024 |
| 31/64 | 0.4844 | 9 | 12 | 808-025 |
| 1/2 | 0.5000 | 9 | 12 | 808-026 |
| 33/64 | 0.5156 | 9 | 12 | 808-027 |
| 17/32 | 0.5312 | 9 | 12 | 808-028 |
| 35/64 | 0.5469 | 9 | 12 | 808-029 |
| 9/16 | 0.5625 | 9 | 12 | 808-030 |
| 37/64 | 0.5781 | 9 | 12 | 808-031 |
| 19/32 | 0.5938 | 9 | 12 | 808-032 |
| 39/64 | 0.6094 | 9 | 12 | 808-033 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 5/8 | 0.6250 | 9 | 12 | 808-034 |
| 41/64 | 0.6406 | 9 | 12 | 808-035 |
| 21/32 | 0.6562 | 9 | 12 | 808-036 |
| 43/64 | 0.6719 | 9 | 12 | 808-037 |
| 11/16 | 0.6875 | 9 | 12 | 808-038 |
| 45/64 | 0.7031 | 9 | 12 | 808-039 |
| 23/32 | 0.7188 | 9 | 12 | 808-040 |
| 47/64 | 0.7344 | 9 | 12 | 808-041 |
| 3/4 | 0.7500 | 9 | 12 | 808-042 |
| 49/64 | 0.7656 | 9 | 12 | 808-043 |
| 25/32 | 0.7812 | 9 | 12 | 808-044 |
| 51/64 | 0.7969 | 9 | 12 | 808-045 |
| 13/16 | 0.8125 | 9 | 12 | 808-046 |
| 53/64 | 0.8281 | 9 | 12 | 808-047 |
| 27/32 | 0.8438 | 9 | 12 | 808-048 |
| 55/64 | 0.8594 | 9 | 12 | 808-049 |
| 7/8 | 0.8750 | 9 | 12 | 808-050 |
| 57/64 | 0.8906 | 9 | 12 | 808-051 |
| 29/32 | 0.9062 | 9 | 12 | 808-052 |
| 59/64 | 0.9219 | 9 | 12 | 808-053 |
| 15/16 | 0.9375 | 9 | 12 | 808-054 |
| 61/64 | 0.9531 | 9 | 12 | 808-055 |
| 31/32 | 0.9688 | 9 | 12 | 808-056 |
| 63/64 | 0.9844 | 9 | 12 | 808-057 |
| 1 | 1.0000 | 9 | 12 | 808-059 |
| 1-1/32 | 1.0313 | 9 | 12 | 808-060 |
| 1-1/16 | 1.0625 | 9 | 12 | 808-061 |

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## TECHNICAL TIPS

We offer drill resharpening and reconditioning for all of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information.

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## EXTRA LENGTH • 9" FLUTE • COBALT • STRAIGHT SHANK

### SERIES 603 • COOLANT-FED

SERIES: **603**

SIZES

5/16" - 1-1/16" INCH

Heavy duty cobalt drill designed for use in abrasive or hard materials where speed is not the primary consideration. Heavy web thickness makes this drill extremely sturdy in these tough materials. Does not work well in aluminum or soft steels. Split point design is self centering and provides accurate hole locations.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSCO | ● | | ● |

**SPECIFICATIONS**

Helix: 22º -24º Standard
Point: 135º Split
Web: Heavy

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | OLD PART NO. | PART NUMBER |
|---|---|---|---|---|---|
| 5/16 | 0.3125 | 9 | 12 | C808-014 | 603-03125 |
| 21/64 | 0.3281 | 9 | 12 | C808-015 | 603-03281 |
| 11/32 | 0.3437 | 9 | 12 | C808-016 | 603-03437 |
| 23/64 | 0.3593 | 9 | 12 | C808-017 | 603-03593 |
| 3/8 | 0.3750 | 9 | 12 | C808-018 | 603-03750 |
| 25/64 | 0.3906 | 9 | 12 | C808-019 | 603-03906 |
| 13/32 | 0.4062 | 9 | 12 | C808-020 | 603-04062 |
| 27/64 | 0.4219 | 9 | 12 | C808-021 | 603-04219 |
| 7/16 | 0.4375 | 9 | 12 | C808-022 | 603-04375 |
| 29/64 | 0.4531 | 9 | 12 | C808-023 | 603-04531 |
| 15/32 | 0.4688 | 9 | 12 | C808-024 | 603-04688 |
| 31/64 | 0.4844 | 9 | 12 | C808-025 | 603-04844 |
| 1/2 | 0.5000 | 9 | 12 | C808-026 | 603-05000 |
| 33/64 | 0.5156 | 9 | 12 | C808-027 | 603-05156 |
| 17/32 | 0.5312 | 9 | 12 | C808-028 | 603-05312 |
| 35/64 | 0.5469 | 9 | 12 | C808-029 | 603-05469 |
| 9/16 | 0.5625 | 9 | 12 | C808-030 | 603-05625 |
| 37/64 | 0.5781 | 9 | 12 | C808-031 | 603-05781 |
| 19/32 | 0.5938 | 9 | 12 | C808-032 | 603-05938 |
| 39/64 | 0.6094 | 9 | 12 | C808-033 | 603-06094 |
| 5/8 | 0.6250 | 9 | 12 | C808-034 | 603-06250 |
| 41/64 | 0.6406 | 9 | 12 | C808-035 | 603-06406 |
| 21/32 | 0.6562 | 9 | 12 | C808-036 | 603-06562 |
| 43/64 | 0.6719 | 9 | 12 | C808-037 | 603-06719 |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | OLD PART NO. | PART NUMBER |
|---|---|---|---|---|---|
| 11/16 | 0.6875 | 9 | 12 | C808-038 | 603-06875 |
| 45/64 | 0.7031 | 9 | 12 | C808-039 | 603-07031 |
| 23/32 | 0.7188 | 9 | 12 | C808-040 | 603-07188 |
| 47/64 | 0.7344 | 9 | 12 | C808-041 | 603-07344 |
| 3/4 | 0.7500 | 9 | 12 | C808-042 | 603-07500 |
| 49/64 | 0.7656 | 9 | 12 | C808-043 | 603-07656 |
| 25/32 | 0.7812 | 9 | 12 | C808-044 | 603-07812 |
| 51/64 | 0.7968 | 9 | 12 | C808-045 | 603-07968 |
| 13/16 | 0.8125 | 9 | 12 | C808-046 | 603-08125 |
| 53/64 | 0.8281 | 9 | 12 | C808-047 | 603-08281 |
| 27/32 | 0.8437 | 9 | 12 | C808-048 | 603-08437 |
| 55/64 | 0.8593 | 9 | 12 | C808-049 | 603-08593 |
| 7/8 | 0.8750 | 9 | 12 | C808-050 | 603-08750 |
| 57/64 | 0.8906 | 9 | 12 | C808-051 | 603-08906 |
| 29/32 | 0.9062 | 9 | 12 | C808-052 | 603-09062 |
| 59/64 | 0.9218 | 9 | 12 | C808-053 | 603-09218 |
| 15/16 | 0.9375 | 9 | 12 | C808-054 | 603-09375 |
| 61/64 | 0.9531 | 9 | 12 | C808-055 | 603-09531 |
| 31/32 | 0.9687 | 9 | 12 | C808-056 | 603-09687 |
| 63/64 | 0.9843 | 9 | 12 | C808-057 | 603-09843 |
| 1 | 1.0000 | 9 | 12 | C808-059 | 603-10000 |
| 1-1/32 | 1.0312 | 9 | 12 | C808-060 | 603-10312 |
| 1-1/16 | 1.0625 | 9 | 12 | C808-061 | 603-10625 |

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.


Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## SERIES 710 • COOLANT-FED

SERIES: 710

SIZES

5/16" - 1-3/8" INCH

General purpose drill works well in materials ranging from soft to medium hard. Suitable for both horizontal and vertical drilling. Notched point provides good chip formation when the proper speeds and feeds are applied. The 22º to 24º helix has constant web thickness with rolled heel providing maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 22º -24º Standard
Point: 118º Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 5/16 | 0.3125 | 10 | 13-1/2 | 710-014A |
| 21/64 | 0.3281 | 10 | 13-1/2 | 710-015A |
| 11/32 | 0.3438 | 10 | 13-1/2 | 710-016A |
| 23/64 | 0.3594 | 10 | 13-1/2 | 710-017A |
| 3/8 | 0.3750 | 10 | 13-1/2 | 710-018A |
| 25/64 | 0.3906 | 10 | 13-1/2 | 710-019A |
| 13/32 | 0.4062 | 10 | 13-1/2 | 710-020A |
| 27/64 | 0.4219 | 10 | 13-1/2 | 710-021A |
| 7/16 | 0.4375 | 10 | 13-1/2 | 710-022A |
| 29/64 | 0.4531 | 10 | 13-1/2 | 710-023A |
| 15/32 | 0.4688 | 10 | 13-1/2 | 710-024A |
| 31/64 | 0.4844 | 10 | 13-1/2 | 710-025A |
| 1/2 | 0.5000 | 10 | 13-1/2 | 710-026A |
| 33/64 | 0.5156 | 10 | 13-1/2 | 710-027A |
| 17/32 | 0.5312 | 10 | 13-1/2 | 710-028A |
| 35/64 | 0.5469 | 10 | 13-1/2 | 710-029A |
| 9/16 | 0.5625 | 10 | 13-1/2 | 710-030A |
| 37/64 | 0.5781 | 10 | 13-1/2 | 710-031A |
| 19/32 | 0.5938 | 10 | 13-1/2 | 710-032A |
| 39/64 | 0.6094 | 10 | 13-1/2 | 710-033A |
| 5/8 | 0.6250 | 10 | 13-1/2 | 710-034A |
| 41/64 | 0.6406 | 10 | 13-1/2 | 710-035A |
| 21/32 | 0.6562 | 10 | 13-1/2 | 710-036A |
| 43/64 | 0.6719 | 10 | 13-1/2 | 710-037A |
| 11/16 | 0.6875 | 10 | 13-1/2 | 710-038A |
| 45/64 | 0.7031 | 10 | 13-1/2 | 710-039A |
| 23/32 | 0.7188 | 10 | 13-1/2 | 710-040A |
| 47/64 | 0.7344 | 10 | 13-1/2 | 710-041A |
| 3/4 | 0.7500 | 10 | 13-1/2 | 710-042A |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 49/64 | 0.7656 | 10 | 13-1/2 | 710-043A |
| 25/32 | 0.7812 | 10 | 13-1/2 | 710-044A |
| 51/64 | 0.7969 | 10 | 13-1/2 | 710-045A |
| 13/16 | 0.8125 | 10 | 13-1/2 | 710-046A |
| 53/64 | 0.8281 | 10 | 13-1/2 | 710-047A |
| 27/32 | 0.8438 | 10 | 13-1/2 | 710-048A |
| 55/64 | 0.8594 | 10 | 13-1/2 | 710-049A |
| 7/8 | 0.8750 | 10 | 13-1/2 | 710-050A |
| 57/64 | 0.8906 | 10 | 13-1/2 | 710-051A |
| 29/32 | 0.9062 | 10 | 13-1/2 | 710-052A |
| 59/64 | 0.9219 | 10 | 13-1/2 | 710-053A |
| 15/16 | 0.9375 | 10 | 13-1/2 | 710-054A |
| 61/64 | 0.9531 | 10 | 13-1/2 | 710-055A |
| 31/32 | 0.9688 | 10 | 13-1/2 | 710-056A |
| 63/64 | 0.9844 | 10 | 13-1/2 | 710-057A |
| 1 | 1.0000 | 10 | 13-1/2 | 710-059A |
| 1-1/32 | 1.0313 | 10 | 13-1/2 | 710-060A |
| 1-1/16 | 1.0625 | 10 | 13-1/2 | 710-061A |
| 1-3/32 | 1.0938 | 10 | 15 | 710-062A |
| 1-1/8 | 1.1250 | 10 | 15 | 710-063A |
| 1-5/32 | 1.1562 | 10 | 15 | 710-064A |
| 1-3/16 | 1.1875 | 10 | 15 | 710-065A |
| 1-7/32 | 1.2188 | 10 | 15 | 710-066A |
| 1-1/4 | 1.2500 | 10 | 15 | 710-067A |
| 1-9/32 | 1.2812 | 10 | 15 | 710-068A |
| 1-5/16 | 1.3125 | 10 | 15 | 710-069A |
| 1-11/32 | 1.3438 | 10 | 15 | 710-070A |
| 1-3/8 | 1.3750 | 10 | 15 | 710-071A |

- For coolant entry specifications, see page 18.

Note : Drill bushing or starter hole recommended when drilling under 3/8 diameter

- Specify finish when ordering where applicable
- Where coatings are not shown by each product, we offer the following coatings: TiN, TiALN, TiCN, HARDLUBE, ULTRAGOLD and ULTRA-BRONZE.

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## EXTRA LENGTH • 12" FLUTE • HIGH SPEED • STRAIGHT SHANK

### SERIES 712 • COOLANT-FED

SERIES: 712

SIZES

5/16" - 1-3/8" INCH

General purpose drill works well in materials ranging from soft to medium hard. Suitable for both horizontal and vertical drilling. Notched point provides good chip formation when the proper speeds and feeds are applied. The 22° to 24° helix has constant web thickness with rolled heel providing maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 22° -24° Standard
Point: 118° Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 5/16 | 0.3125 | 12 | 16 | 712-014 |
| 21/64 | 0.3281 | 12 | 16 | 712-015 |
| 11/32 | 0.3438 | 12 | 16 | 712-016 |
| 23/64 | 0.3594 | 12 | 16 | 712-017 |
| 3/8 | 0.3750 | 12 | 16 | 712-018 |
| 25/64 | 0.3906 | 12 | 16 | 712-019 |
| 13/32 | 0.4062 | 12 | 16 | 712-020 |
| 27/64 | 0.4219 | 12 | 16 | 712-021 |
| 7/16 | 0.4375 | 12 | 16 | 712-022 |
| 29/64 | 0.4531 | 12 | 16 | 712-023 |
| 15/32 | 0.4688 | 12 | 16 | 712-024 |
| 31/64 | 0.4844 | 12 | 16 | 712-025 |
| 1/2 | 0.5000 | 12 | 16 | 712-026 |
| 33/64 | 0.5156 | 12 | 16 | 712-027 |
| 17/32 | 0.5312 | 12 | 16 | 712-028 |
| 35/64 | 0.5469 | 12 | 16 | 712-029 |
| 9/16 | 0.5625 | 12 | 16 | 712-030 |
| 37/64 | 0.5781 | 12 | 16 | 712-031 |
| 19/32 | 0.5938 | 12 | 16 | 712-032 |
| 39/64 | 0.6094 | 12 | 16 | 712-033 |
| 5/8 | 0.6250 | 12 | 16 | 712-034 |
| 41/64 | 0.6406 | 12 | 16 | 712-035 |
| 21/32 | 0.6562 | 12 | 16 | 712-036 |
| 43/64 | 0.6719 | 12 | 16 | 712-037 |
| 11/16 | 0.6875 | 12 | 16 | 712-038 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 45/64 | 0.7031 | 12 | 16 | 712-039 |
| 23/32 | 0.7188 | 12 | 16 | 712-040 |
| 47/64 | 0.7344 | 12 | 16 | 712-041 |
| 3/4 | 0.7500 | 12 | 16 | 712-042 |
| 25/32 | 0.7812 | 12 | 16 | 712-044 |
| 13/16 | 0.8125 | 12 | 16 | 712-046 |
| 27/32 | 0.8438 | 12 | 16 | 712-048 |
| 55/64 | 0.8594 | 12 | 16 | 712-049 |
| 7/8 | 0.8750 | 12 | 16 | 712-050 |
| 29/32 | 0.9062 | 12 | 16 | 712-052 |
| 15/16 | 0.9375 | 12 | 16 | 712-054 |
| 31/32 | 0.9688 | 12 | 16 | 712-056 |
| 1 | 1.0000 | 12 | 16 | 712-059 |
| 1-1/32 | 1.0313 | 12 | 16 | 712-060 |
| 1-1/16 | 1.0625 | 12 | 16 | 712-061 |
| 1-3/32 | 1.0938 | 12 | 18 | 712-062 |
| 1-1/8 | 1.1250 | 12 | 18 | 712-063 |
| 1-5/32 | 1.1562 | 12 | 18 | 712-064 |
| 1-3/16 | 1.1875 | 12 | 18 | 712-065 |
| 1-7/32 | 1.2188 | 12 | 18 | 712-066 |
| 1-1/4 | 1.2500 | 12 | 18 | 712-067 |
| 1-9/32 | 1.2812 | 12 | 18 | 712-068 |
| 1-5/16 | 1.3125 | 12 | 18 | 712-069 |
| 1-11/32 | 1.3438 | 12 | 18 | 712-070 |
| 1-3/8 | 1.3750 | 12 | 18 | 712-071 |

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

Note : Drill bushing or starter hole recommended when drilling under 3/8" diameter

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## TECHNICAL TIPS

We offer drill resharpening and reconditioning for all of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information.

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## EXTRA LENGTH • 18" FLUTE • HIGH SPEED • STRAIGHT SHANK

### SERIES 718 • COOLANT-FED

SERIES: 718

SIZES
5/16"-1"
INCH

General purpose drill works well in materials ranging from soft to medium hard. Suitable for both horizontal and vertical drilling. Notched point provides good chip formation when the proper speeds and feeds are applied. The 22° to 24° helix has constant web thickness with rolled heel providing maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 22° -24° Standard
Point: 118° Notch
Web: Standard

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| *** 5/16** | **0.3125** | **18** | **21** | **718-014** |
| *** 21/64** | **0.3281** | **18** | **21** | **718-015** |
| *** 11/32** | **0.3438** | **18** | **21** | **718-016** |
| *** 23/64** | **0.3594** | **18** | **21** | **718-017** |
| 3/8 | 0.3750 | 18 | 21 | 718-018 |
| *** 25/64** | **0.3906** | **18** | **21** | **718-019** |
| *** 13/32** | **0.4062** | **18** | **21** | **718-020** |
| *** 27/64** | **0.4219** | **18** | **21** | **718-021** |
| 7/16 | 0.4375 | 18 | 21 | 718-022 |
| 29/64 | 0.4531 | 18 | 21 | 718-023 |
| 15/32 | 0.4688 | 18 | 21 | 718-024 |
| 31/64 | 0.4844 | 18 | 21 | 718-025 |
| 1/2 | 0.5000 | 18 | 21 | 718-026 |
| 33/64 | 0.5156 | 18 | 21 | 718-027 |
| 17/32 | 0.5312 | 18 | 21 | 718-028 |
| 35/64 | 0.5469 | 18 | 21 | 718-029 |
| 9/16 | 0.5625 | 18 | 21 | 718-030 |
| 37/64 | 0.5781 | 18 | 21 | 718-031 |
| 19/32 | 0.5938 | 18 | 21 | 718-032 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 39/64 | 0.6094 | 18 | 21 | 718-033 |
| 5/8 | 0.6250 | 18 | 21 | 718-034 |
| 41/64 | 0.6406 | 18 | 21 | 718-035 |
| 21/32 | 0.6562 | 18 | 21 | 718-036 |
| 43/64 | 0.6719 | 18 | 21 | 718-037 |
| 11/16 | 0.6875 | 18 | 21 | 718-038 |
| 45/64 | 0.7031 | 18 | 21 | 718-039 |
| 23/32 | 0.7188 | 18 | 21 | 718-040 |
| 47/64 | 0.7344 | 18 | 21 | 718-041 |
| 3/4 | 0.7500 | 18 | 21 | 718-042 |
| 25/32 | 0.7812 | 18 | 21 | 718-044 |
| 13/16 | 0.8125 | 18 | 21 | 718-046 |
| 27/32 | 0.8438 | 18 | 21 | 718-048 |
| 7/8 | 0.8750 | 18 | 21 | 718-050 |
| 29/32 | 0.9062 | 18 | 21 | 718-052 |
| 15/16 | 0.9375 | 18 | 21 | 718-054 |
| 31/32 | 0.9688 | 18 | 21 | 718-056 |
| 1 | 1.0000 | 18 | 21 | 718-059 |

**** Outgoing Items***

- For coolant entry specifications, see page 18.

Note : Drill bushing or starter hole recommended when drilling under 3/8" diameter

## EXTRA LENGTH • 21" FLUTE • HIGH SPEED • STRAIGHT SHANK

### SERIES 721 • COOLANT-FED

SERIES: 721

SIZES
5/16"- 47/64"
INCH

General purpose drill works well in materials ranging from soft to medium hard. Suitable for both horizontal and vertical drilling. Notched point provides good chip formation when the proper speeds and feeds are applied. The 22° to 24° helix has constant web thickness with rolled heel providing maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 22° - 24° Standard
Point: 118° Notch
Web: Standard

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| *** 5/16** | **0.3125** | **21** | **24** | **721-014** |
| *** 21/64** | **0.3281** | **21** | **24** | **721-015** |
| *** 11/32** | **0.3438** | **21** | **24** | **721-016** |
| *** 23/64** | **0.3594** | **21** | **24** | **721-017** |
| *** 3/8** | **0.3750** | **21** | **24** | **721-018** |
| *** 25/64** | **0.3906** | **21** | **24** | **721-019** |
| *** 13/32** | **0.4062** | **21** | **24** | **721-020** |
| *** 27/64** | **0.4219** | **21** | **24** | **721-021** |
| *** 7/16** | **0.4375** | **21** | **24** | **721-022** |
| *** 29/64** | **0.4531** | **21** | **24** | **721-023** |
| *** 15/32** | **0.4688** | **21** | **24** | **721-024** |
| *** 31/64** | **0.4844** | **21** | **24** | **721-025** |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| *** 9/16** | **0.5625** | **21** | **24** | **721-030** |
| *** 37/64** | **0.5781** | **21** | **24** | **721-031** |
| *** 19/32** | **0.5938** | **21** | **24** | **721-032** |
| *** 39/64** | **0.6094** | **21** | **24** | **721-033** |
| *** 5/8** | **0.6250** | **21** | **24** | **721-034** |
| *** 41/64** | **0.6406** | **21** | **24** | **721-035** |
| *** 21/32** | **0.6562** | **21** | **24** | **721-036** |
| *** 43/64** | **0.6719** | **21** | **24** | **721-037** |
| *** 11/16** | **0.6875** | **21** | **24** | **721-038** |
| *** 45/64** | **0.7031** | **21** | **24** | **721-039** |
| *** 23/32** | **0.7188** | **21** | **24** | **721-040** |
| *** 47/64** | **0.7344** | **21** | **24** | **721-041** |

**** Outgoing Items***

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

Note : Drill bushing or starter hole recommended when drilling under 3/8" diameter

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## STUB LENGTH • CARBIDE TIPPED • PARABOLIC • STRAIGHT SHANK

### SERIES 903 • COOLANT-FED

SERIES: 903

SIZES

5/16"-1" INCH

Parabolic style carbide tipped drill that works well in non-ferrous materials and some steel and stainless steel applications. Helical point gives it a self centering start. Carbide is C2 micrograin for top performance. Constant web with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| C2 MICROGRAIN | • | | • |

**SPECIFICATIONS**

Helix: 22° -24° Parabolic
Point: 135° Helical
Web: Standard

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 5/16 | 0.3125 | 2-1/2 | 4-1/2 | 903-013 |
| 21/64 | 0.3281 | 2-1/2 | 4-1/2 | 903-014 |
| 11/32 | 0.3438 | 2-1/2 | 4-1/2 | 903-015 |
| 23/64 | 0.3594 | 2-1/2 | 4-1/2 | 903-016 |
| 3/8 | 0.3750 | 2-1/2 | 4-1/2 | 903-017 |
| 25/64 | 0.3906 | 3 | 5 | 903-018 |
| 13/32 | 0.4062 | 3 | 5 | 903-019 |
| 27/64 | 0.4219 | 3 | 5 | 903-020 |
| 7/16 | 0.4375 | 3 | 5 | 903-021 |
| 29/64 | 0.4531 | 3-1/2 | 5-1/2 | 903-022 |
| 15/32 | 0.4688 | 3-1/2 | 5-1/2 | 903-023 |
| 31/64 | 0.4844 | 3-1/2 | 5-1/2 | 903-024 |
| 1/2 | 0.5000 | 3-1/2 | 5-1/2 | 903-025 |
| 33/64 | 0.5156 | 4 | 6 | 903-026 |
| 17/32 | 0.5312 | 4 | 6 | 903-027 |
| 35/64 | 0.5469 | 4 | 6 | 903-028 |
| 9/16 | 0.5625 | 4 | 6 | 903-029 |
| 37/64 | 0.5781 | 4-1/2 | 6-1/2 | 903-030 |
| 19/32 | 0.5938 | 4-1/2 | 6-1/2 | 903-031 |
| 39/64 | 0.6094 | 4-1/2 | 6-1/2 | 903-032 |
| 5/8 | 0.6250 | 4-1/2 | 6-1/2 | 903-033 |
| ***41/64** | ***0.6406** | ***5** | ***7** | ***903-034** |
| ***21/32** | ***0.6562** | ***5** | ***7** | ***903-035** |
| ***47/64** | ***0.7344** | ***5** | ***7** | ***903-040** |
| ***3/4** | ***0.7500** | ***5** | ***7** | ***903-041** |
| ***13/16** | ***0.8125** | ***5** | ***7** | ***903-045** |
| ***15/16** | ***0.9375** | ***5** | ***7** | ***903-053** |
| ***1** | ***1.0000** | ***5** | ***7** | ***903-057** |

**** Outgoing Items***

• For coolant entry specifications, see page 18.

## STUB • TAPER LENGTH • EXTRA LENGTH • METRIC • CARBIDE TIP • STRAIGHT SHANK

SERIES: M903
SERIES: M905
SERIES: M908

SIZES

9.5 - 24.5 MM

Carbide tipped drill designed for non-ferrous materials such as aluminum and cast iron. Can be used in other materials such as steel but in steel applications performance may not be consistent. Double angle point increases the margin life. Carbide is C2 micrograin for top performance. Constant web with rolled heel provides maximum chip clearance. For coolant entry specifications, see page 18.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| C2 MICROGRAIN | • | | • |

**SPECIFICATIONS**

Helix: 22° -24° Standard
Point: 118°/90° Double Angle
Web: Standard

### SERIES M905 • TAPER LENGTH • METRIC

| DIAMETER (MM) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 10.2 | 0.4016 | 4-3/8 | 7 | M905-115 |
| 10.5 | 0.4134 | 4-5/8 | 7-1/4 | M905-125 |
| 12.2 | 0.4803 | 5 | 7-3/4 | M905-135 |
| 13.8 | 0.5433 | 5-3/8 | 8-1/4 | M905-155 |
| ***14.2** | ***0.5591** | ***5-3/8** | ***8-1/4** | ***M905-165** |
| ***17.0** | ***0.6693** | ***6** | ***9-1/4** | ***M905-175** |
| ***19.0** | ***0.7480** | ***6-3/8** | ***9-3/4** | ***M905-185** |
| ***24.0** | ***0.9449** | ***7-1/8** | ***10-7/8** | ***M905-195** |

**** Outgoing Items***

### SERIES M903 • STUB LENGTH • METRIC

| DIAMETER (MM) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 13.8 | 0.5433 | 4-3/8 | 7-1/4 | M903-110 |
| 16.7 | 0.6575 | 3-3/4 | 6-1/2 | M903-115 |

### SERIES M908 •EXTRA LENGTH • METRIC

| DIAMETER (MM) | DECIMAL (IN.) | FLUTE LENGTH (MM) | OAL (MM) | PART NUMBER |
|---|---|---|---|---|
| 9.5 | 0.3740 | 8 | 10-1/2 | M908-105 |
| 9.5 | 0.3740 | 9-1/2 | 11-1/2 | M908-110 |
| 9.5 | 0.3740 | 12-1/2 | 14-1/2 | M908-115 |
| 11.5 | 0.4528 | 8 | 11 | M908-120 |
| 12.2 | 0.4803 | 7 | 10-1/2 | M908-125 |
| 13.8 | 0.5433 | 8-1/2 | 11-1/2 | M908-130 |
| 16.0 | 0.6299 | 9-1/4 | 12 | M908-135 |
| 16.8 | 0.6614 | 9 | 12 | M908-140 |
| 17.0 | 0.6693 | 9-1/2 | 12-3/4 | M908-145 |
| 19.0 | 0.7480 | 9 | 12 | M908-150 |
| 24.5 | 0.9646 | 9 | 12 | M908-155 |

• Specify finish when ordering where applicable



## TAPER LENGTH • CARBIDE TIP • STRAIGHT SHANK

### SERIES 905 • COOLANT-FED

SERIES: **905**

SIZES

5/16" - 1"
INCH

Carbide tipped drill designed for non-ferrous materials such as aluminum and cast iron. Can be used in other materials such as steel but in steel applications performance may not be consistent. Double angle point increases the margin life. Carbide is C2 micrograin for top performance. Constant web with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| C2 MICROGRAIN | ● | | ● |

**SPECIFICATIONS**

Helix: 22° -24° Standard
Point: 118°/90° Double Angle
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| 5/16 | 0.3125 | 3-7/8 | 6-1/4 | 905-013 |
| 21/64 | 0.3281 | 4-1/8 | 6-1/2 | 905-014 |
| 11/32 | 0.3438 | 4-1/8 | 6-1/2 | 905-015 |
| 23/64 | 0.3594 | 4-1/4 | 6-3/4 | 905-016 |
| 3/8 | 0.3750 | 4-1/4 | 6-3/4 | 905-017 |
| 25/64 | 0.3906 | 4-3/8 | 7 | 905-018 |
| 13/32 | 0.4062 | 4-3/8 | 7 | 905-019 |
| 27/64 | 0.4219 | 4-5/8 | 7-1/4 | 905-020 |
| 7/16 | 0.4375 | 4-5/8 | 7-1/4 | 905-021 |
| 29/64 | 0.4531 | 4-7/8 | 7-1/2 | 905-022 |
| 15/32 | 0.4688 | 4-7/8 | 7-1/2 | 905-023 |
| 31/64 | 0.4844 | 5 | 7-3/4 | 905-024 |
| 1/2 | 0.5000 | 5 | 7-3/4 | 905-025 |
| 33/64 | 0.5156 | 5-1/4 | 8 | 905-026 |
| 17/32 | 0.5312 | 5-1/4 | 8 | 905-027 |
| 35/64 | 0.5469 | 5-3/8 | 8-1/4 | 905-028 |
| 9/16 | 0.5625 | 5-3/8 | 8-1/4 | 905-029 |
| 37/64 | 0.5781 | 5-5/8 | 8-1/2 | 905-030 |
| 19/32 | 0.5938 | 5-5/8 | 8-1/2 | 905-031 |
| 39/64 | 0.6094 | 5-3/4 | 8-3/4 | 905-032 |
| 5/8 | 0.6250 | 5-3/4 | 8-3/4 | 905-033 |
| 41/64 | 0.6406 | 5-7/8 | 9 | 905-034 |
| 21/32 | 0.6562 | 5-7/8 | 9 | 905-035 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| *43/64 | 0.6719 | 6 | 9-1/4 | 905-036 |
| *11/16 | 0.6875 | 6 | 9-1/4 | 905-037 |
| *45/64 | 0.7031 | 6-3/16 | 9-1/2 | 905-038 |
| *23/32 | 0.7188 | 6-3/16 | 9-1/2 | 905-039 |
| *47/64 | 0.7344 | 6-3/8 | 9-3/4 | 905-040 |
| *3/4 | 0.7500 | 6-3/8 | 9-3/4 | 905-041 |
| *49/64 | 0.7656 | 6-1/2 | 9-7/8 | 905-042 |
| *25/32 | 0.7812 | 6-1/2 | 9-7/8 | 905-043 |
| *51/64 | 0.7969 | 6-5/8 | 10 | 905-044 |
| *13/16 | 0.8125 | 6-5/8 | 10 | 905-045 |
| *53/64 | 0.8281 | 6-3/4 | 10-1/4 | 905-046 |
| *27/32 | 0.8438 | 6-3/4 | 10-1/4 | 905-047 |
| *55/64 | 0.8594 | 7 | 10-1/2 | 905-048 |
| *7/8 | 0.8750 | 7 | 10-1/2 | 905-049 |
| * 57/64 | 0.8906 | 7 | 10-5/8 | 905-050 |
| * 29/32 | 0.9062 | 7 | 10-5/8 | 905-051 |
| * 1 | 1.0000 | 7-3/16 | 11 | 905-057 |

** Outgoing Items*

• For coolant entry specifications, see page 18.

## EXTRA LENGTH • CARBIDE TIP • 9" FLUTE • STRAIGHT SHANK

### SERIES 908 • COOLANT-FED

SERIES: **908**

SIZES

5/8" - 1"
INCH

Carbide tipped drill designed for non-ferrous materials such as aluminum and cast iron. Can be used in other materials such as steel but in steel applications performance may not be consistent. Double angle point increases the margin life. Carbide is C2 micrograin for top performance. Constant web with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| C2 MICROGRAIN | ● | | ● |

**SPECIFICATIONS**

Helix: 22° -24° Standard
Point: 118°/90° Double Angle
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| *5/8 | 0.6250 | 9 | 12 | 908-034 |
| *41/64 | 0.6406 | 9 | 12 | 908-035 |
| *21/32 | 0.6562 | 9 | 12 | 908-036 |
| *47/64 | 0.7344 | 9 | 12 | 908-041 |
| *3/4 | 0.7500 | 9 | 12 | 908-042 |

** Outgoing Items*

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | PART NUMBER |
|---|---|---|---|---|
| *25/32 | 0.7812 | 9 | 12 | 908-044 |
| *13/16 | 0.8125 | 9 | 12 | 908-046 |
| *7/8 | 0.8750 | 9 | 12 | 908-050 |
| *61/64 | 0.9531 | 9 | 12 | 908-055 |
| *1 | 1.0000 | 9 | 12 | 908-058 |

** Outgoing Items*

• For coolant entry specifications, see page 18.
• Specify finish when ordering where applicable

## STANDARD LENGTH • HIGH SPEED • TAPER SHANK

### SERIES 802 • COOLANT-FED

SERIES: **802**

SIZES

3/16" - 2" INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 32° - 34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 3/16 | 0.1875 | 2-1/2 | 5-3/4 | 1 | 802-101 |
| 13/64 | 0.2031 | 2-3/4 | 6 | 1 | 802-102 |
| 7/32 | 0.2188 | 2-3/4 | 6 | 1 | 802-103 |
| 15/64 | 0.2344 | 2-7/8 | 6-1/8 | 1 | 802-104 |
| 1/4 | 0.2500 | 3-3/8 | 6-5/8 | 1 | 802-001 |
| 17/64 | 0.2656 | 3-5/8 | 6-7/8 | 1 | 802-002 |
| 9/32 | 0.2812 | 3-5/8 | 6-7/8 | 1 | 802-003 |
| 19/64 | 0.2969 | 3-7/8 | 7-1/8 | 1 | 802-004 |
| 5/16 | 0.3125 | 3-7/8 | 7-1/8 | 1 | 802-005 |
| 5/16 | 0.3125 | 3-7/8 | 7-3/4 | 2 | 802-005A |
| 21/64 | 0.3281 | 4-1/8 | 8 | 2 | 802-006 |
| 21/64 | 0.3281 | 4-1/8 | 8-3/4 | 3 | 802-006A |
| 11/32 | 0.3438 | 4-1/8 | 8 | 2 | 802-007 |
| 11/32 | 0.3438 | 4-1/8 | 8-3/4 | 3 | 802-007A |
| 23/64 | 0.3594 | 4-1/4 | 8-1/8 | 2 | 802-008 |
| 23/64 | 0.3594 | 4-1/4 | 8-7/8 | 3 | 802-008A |
| 3/8 | 0.3750 | 4-1/4 | 8-1/8 | 2 | 802-009 |
| 3/8 | 0.3750 | 4-1/4 | 8-7/8 | 3 | 802-009A |
| 25/64 | 0.3906 | 4-3/8 | 8-1/4 | 2 | 802-010 |
| 25/64 | 0.3906 | 4-3/8 | 9 | 3 | 802-010A |
| 13/32 | 0.4062 | 4-3/8 | 8-1/4 | 2 | 802-011 |
| 13/32 | 0.4062 | 4-3/8 | 9 | 3 | 802-011A |
| 27/64 | 0.4219 | 4-5/8 | 8-1/2 | 2 | 802-012 |
| 27/64 | 0.4219 | 4-5/8 | 9-1/4 | 3 | 802-012A |
| 7/16 | 0.4375 | 4-5/8 | 8-1/2 | 2 | 802-013 |
| 7/16 | 0.4375 | 4-5/8 | 9-1/4 | 3 | 802-013A |
| 29/64 | 0.4531 | 4-7/8 | 8-3/4 | 2 | 802-014 |
| 29/64 | 0.4531 | 4-7/8 | 9-1/2 | 3 | 802-014A |
| 15/32 | 0.4688 | 4-7/8 | 8-3/4 | 2 | 802-015 |
| 15/32 | 0.4688 | 4-7/8 | 9-1/2 | 3 | 802-015A |
| 31/64 | 0.4844 | 4-3/8 | 9 | 2 | 802-016 |
| 31/64 | 0.4844 | 4-3/8 | 9 | 3 | 802-016A |
| 1/2 | 0.5000 | 4-3/8 | 9 | 3 | 802-017 |
| 1/2 | 0.5000 | 4-3/8 | 9 | 2 | 802-017A |
| 33/64 | 0.5156 | 4-5/8 | 9-1/4 | 3 | 802-018 |
| 33/64 | 0.5156 | 4-3/4 | 8-5/8 | 2 | 802-018A |
| 17/32 | 0.5312 | 4-5/8 | 9-1/4 | 3 | 802-019 |
| 35/64 | 0.5469 | 4-7/8 | 9-1/2 | 3 | 802-020 |
| 9/16 | 0.5625 | 4-7/8 | 9-1/2 | 3 | 802-021 |
| 37/64 | 0.5781 | 4-7/8 | 9-1/2 | 3 | 802-022 |
| 19/32 | 0.5938 | 4-7/8 | 9-1/2 | 3 | 802-023 |
| 39/64 | 0.6094 | 4-7/8 | 9-1/2 | 3 | 802-024 |
| 5/8 | 0.6250 | 4-7/8 | 9-1/2 | 3 | 802-025 |
| 41/64 | 0.6406 | 5-1/8 | 9-3/4 | 3 | 802-026 |
| 21/32 | 0.6562 | 5-1/8 | 9-3/4 | 3 | 802-027 |
| 43/64 | 0.6719 | 5-3/8 | 10 | 3 | 802-028 |
| 11/16 | 0.6875 | 5-3/8 | 10 | 3 | 802-029 |
| 45/64 | 0.7031 | 5-3/8 | 10-1/4 | 3 | 802-030 |
| 23/32 | 0.7188 | 5-5/8 | 10-1/4 | 3 | 802-031 |
| 47/64 | 0.7344 | 5-7/8 | 10-1/2 | 3 | 802-032 |
| ***47/64** | ***0.7344** | ***5-7/8** | ***9-5/8** | ***2** | ***802-032A** |
| *3/4* | *0.7500* | *5-7/8* | *10-1/2* | *3* | *802-033* |
| *49/64* | *0.7656* | *6* | *10-5/8* | *3* | *802-034* |
| *25/32* | *0.7812* | *6* | *10-5/8* | *3* | *802-035* |
| *51/64* | *0.7969* | *6-1/8* | *10-3/4* | *3* | *802-036* |
| *13/16* | *0.8125* | *6-1/8* | *10-3/4* | *3* | *802-037* |
| *53/64* | *0.8281* | *6-1/8* | *10-3/4* | *3* | *802-137* |
| *27/32* | *0.8438* | *6-1/8* | *10-3/4* | *3* | *802-138* |
| *55/64* | *0.8594* | *6-1/8* | *10-3/4* | *3* | *802-139* |

**** Outgoing Items***

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 7/8 | 0.8750 | 6-1/8 | 10-3/4 | 3 | 802-038 |
| 57/64 | 0.8906 | 6-1/8 | 10-3/4 | 3 | 802-039 |
| 29/32 | 0.9062 | 6-1/8 | 10-3/4 | 3 | 802-040 |
| 59/64 | 0.9219 | 6-1/8 | 10-3/4 | 3 | 802-041 |
| 15/16 | 0.9375 | 6-1/8 | 10-3/4 | 3 | 802-042 |
| 61/64 | 0.9531 | 6-3/8 | 11 | 3 | 802-043 |
| 31/32 | 0.9688 | 6-3/8 | 11 | 3 | 802-044 |
| 63/64 | 0.9844 | 6-3/8 | 11 | 3 | 802-045 |
| 1 | 1.0000 | 6-3/8 | 11 | 3 | 802-046 |
| 1-1/32 | 1.0313 | 6-1/2 | 11-1/8 | 3 | 802-047 |
| 1-1/16 | 1.0625 | 6-5/8 | 11-1/4 | 3 | 802-048 |
| 1-1/16 | 1.0625 | 6-5/8 | 12-1/4 | 4 | 802-048A |
| 1-3/32 | 1.0938 | 6-7/8 | 12-1/2 | 4 | 802-049 |
| 1-1/8 | 1.1250 | 7-1/8 | 12-3/4 | 4 | 802-050 |
| 1-5/32 | 1.1562 | 7-1/4 | 12-7/8 | 4 | 802-051 |
| 1-3/16 | 1.1875 | 7-3/8 | 13 | 4 | 802-052 |
| 1-7/32 | 1.2188 | 7-1/2 | 13-1/8 | 4 | 802-053 |
| 1-1/4 | 1.2500 | 7-7/8 | 13-1/2 | 4 | 802-054 |
| 1-9/32 | 1.2812 | 8-1/2 | 14-1/8 | 4 | 802-055 |
| 1-5/16 | 1.3125 | 8-5/8 | 14-1/4 | 4 | 802-056 |
| 1-11/32 | 1.3438 | 8-3/4 | 14-3/8 | 4 | 802-057 |
| 1-3/8 | 1.3750 | 8-7/8 | 14-1/2 | 4 | 802-058 |
| 1-13/32 | 1.4062 | 9 | 14-5/8 | 4 | 802-059 |
| 1-7/16 | 1.4375 | 9-1/8 | 14-3/4 | 4 | 802-060 |
| 1-15/32 | 1.4688 | 9-1/4 | 14-7/8 | 4 | 802-061 |
| 1-1/2 | 1.5000 | 9-3/8 | 15 | 4 | 802-062 |
| 1-9/16 | 1.5625 | 9-5/8 | 15-1/4 | 4 | 802-063 |
| 1-5/8 | 1.6250 | 10 | 15-5/8 | 4 | 802-064 |
| 1-11/16 | 1.6875 | 10-1/8 | 15-3/4 | 4 | 802-065 |
| 1-3/4 | 1.7500 | 10-1/8 | 16 | 4 | 802-066 |
| 1-13/16 | 1.8125 | 10-1/8 | 17-1/8 | 5 | 802-067 |
| 1-7/8 | 1.8750 | 10-3/8 | 17-3/8 | 5 | 802-068 |
| 1-15/16 | 1.9375 | 10-3/8 | 17-3/8 | 5 | 802-069 |
| 2 | 2.0000 | 10-3/8 | 17-3/8 | 5 | 802-070 |

### LARGE DIAMETER

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| ***2-1/32** | ***2.0312** | ***10-1/4** | ***17-3/8** | ***5** | ***802-090** |
| ***2-1/16** | ***2.0625** | ***10-1/4** | ***17-3/8** | ***5** | ***802-091** |
| ***2-1/8** | ***2.1250** | ***10-1/4** | ***17-3/8** | ***5** | ***802-092** |
| ***2-3/16** | ***2.1875** | ***10-1/4** | ***17-3/8** | ***5** | ***802-093** |
| ***2-1/4** | ***1.2500** | ***10-1/8** | ***17-3/8** | ***5** | ***802-094** |
| ***2-5/16** | ***2.3125** | ***10-1/8** | ***17-3/8** | ***5** | ***802-095** |
| ***2-3/8** | ***2.3750** | ***10-1/8** | ***17-3/8** | ***5** | ***802-096** |
| ***2-7/16** | ***2.4375** | ***11-1/4** | ***18-3/4** | ***5** | ***802-097** |
| ***2-1/2** | ***2.5000** | ***11-1/4** | ***18-3/4** | ***5** | ***802-098** |
| ***2-9/16** | ***2.5625** | ***11-7/8** | ***19-1/2** | ***5** | ***802-099** |
| ***2-5/8** | ***2.6250** | ***11-7/8** | ***19-1/2** | ***5** | ***802-100** |
| ***2-11/16** | ***2.6875** | ***12-3/4** | ***20-3/8** | ***5** | ***802-201** |
| ***2-3/4** | ***2.7500** | ***12-3/4** | ***20-3/8** | ***5** | ***802-202** |
| ***2-13/16** | ***2.8125** | ***13-3/8** | ***21-1/8** | ***5** | ***802-203** |
| ***2-7/8** | ***2.8750** | ***13-3/8** | ***21-1/8** | ***5** | ***802-204** |
| ***2-15/16** | ***2.9375** | ***14** | ***21-3/4** | ***5** | ***802-205** |
| ***3** | ***3.0000** | ***14** | ***21-3/4** | ***5** | ***802-206** |
| ***3-1/16** | ***3.0625** | ***14-5/8** | ***24-1/2** | ***5** | ***802-207** |
| ***3-1/8** | ***3.1250** | ***14-5/8** | ***24-1/2** | ***5** | ***802-208** |

**** Outgoing Items***

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable



## SERIES 807 • COOLANT-FED

SERIES: **807**

SIZES

1/4" - 3/4"
INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 32° -34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| *1/4 | 0.2500 | 7 | 10-7/8 | 2 | 807-001 |
| *1/4 | 0.2500 | 7 | 11-5/8 | 3 | 807-001A |
| *17/64 | 0.2656 | 7 | 10-7/8 | 2 | 807-002 |
| *17/64 | 0.2656 | 7 | 11-5/8 | 3 | 807-002A |
| *9/32 | 0.2812 | 7 | 10-7/8 | 2 | 807-003 |
| *9/32 | 0.2812 | 7 | 11-5/8 | 3 | 807-003A |
| *19/64 | 0.2969 | 7 | 10-7/8 | 2 | 807-004 |
| *19/64 | 0.2969 | 7 | 11-5/8 | 3 | 807-004A |
| *5/16 | 0.3125 | 7 | 10-7/8 | 2 | 807-005 |
| *5/16 | 0.3125 | 7 | 11-5/8 | 3 | 807-005A |
| *21/64 | 0.3281 | 7 | 10-7/8 | 2 | 807-006 |
| *21/64 | 0.3281 | 7 | 11-5/8 | 3 | 807-006A |
| *11/32 | 0.3438 | 7 | 10-7/8 | 2 | 807-506 |
| *11/32 | 0.3438 | 7 | 11-5/8 | 3 | 807-506A |
| *23/64 | 0.3594 | 7 | 10-7/8 | 2 | 807-007 |
| *23/64 | 0.3594 | 7 | 11-5/8 | 3 | 807-007A |
| *3/8 | 0.3750 | 7 | 10-7/8 | 2 | 807-008 |
| *3/8 | 0.3750 | 7 | 11-5/8 | 3 | 807-008A |
| *25/64 | 0.3906 | 7 | 10-7/8 | 2 | 807-009 |
| *25/64 | 0.3906 | 7 | 11-5/8 | 3 | 807-009A |
| *13/32 | 0.4062 | 7 | 10-7/8 | 2 | 807-010 |
| *13/32 | 0.4062 | 7 | 11-5/8 | 3 | 807-010A |
| *27/64 | 0.4219 | 7 | 10-7/8 | 2 | 807-011 |
| *27/64 | 0.4219 | 7 | 11-5/8 | 3 | 807-011A |
| *7/16 | 0.4375 | 7 | 10-7/8 | 2 | 807-012 |
| *7/16 | 0.4375 | 7 | 11-5/8 | 3 | 807-012A |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| *29/64 | 0.4531 | 7 | 10-7/8 | 2 | 807-013 |
| *29/64 | 0.4531 | 7 | 11-5/8 | 3 | 807-013A |
| *15/32 | 0.4688 | 7 | 10-7/8 | 2 | 807-014 |
| *15/32 | 0.4688 | 7 | 11-5/8 | 3 | 807-014A |
| *31/64 | 0.4844 | 7 | 11-5/8 | 3 | 807-015 |
| *1/2 | 0.5000 | 7 | 11-5/8 | 3 | 807-016 |
| *33/64 | 0.5156 | 7 | 11-5/8 | 3 | 807-017 |
| *17/32 | 0.5312 | 7 | 11-5/8 | 3 | 807-018 |
| *35/64 | 0.5469 | 7 | 11-5/8 | 3 | 807-019 |
| *9/16 | 0.5625 | 7 | 11-5/8 | 3 | 807-020 |
| *37/64 | 0.5781 | 7 | 11-5/8 | 3 | 807-021 |
| *19/32 | 0.5938 | 7 | 11-5/8 | 3 | 807-022 |
| *39/64 | 0.6094 | 7 | 11-5/8 | 3 | 807-023 |
| *5/8 | 0.6250 | 7 | 11-5/8 | 3 | 807-024 |
| *41/64 | 0.6406 | 7 | 11-5/8 | 3 | 807-025 |
| *21/32 | 0.6562 | 7 | 11-5/8 | 3 | 807-026 |
| *43/64 | 0.6719 | 7 | 11-5/8 | 3 | 807-027 |
| *11/16 | 0.6875 | 7 | 11-5/8 | 3 | 807-028 |
| *45/64 | 0.7031 | 7 | 11-5/8 | 3 | 807-029 |
| *23/32 | 0.7188 | 7 | 11-5/8 | 3 | 807-030 |
| *23/32 | 0.7188 | 7 | 10-7/8 | 2 | 807-030A |
| *47/64 | 0.7344 | 7 | 11-5/8 | 3 | 807-031 |
| *3/4 | 0.7500 | 7 | 11-5/8 | 3 | 807-032 |

*** Outgoing Items**

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

Note : Drill bushing or starter hole recommended when drilling under 3/8 diameter

## TECHNICAL TIPS

We offer drill resharpening and reconditioning for all of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information.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## EXTRA LENGTH • 9" FLUTE • HIGH SPEED • TAPER SHANK

### SERIES 809 • COOLANT-FED

SERIES: **809**
SIZES
25/64" - 1-1/16" INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**
Helix: 32° -34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 25/64 | 0.3906 | 9 | 12-7/8 | 2 | 809-009 |
| 25/64 | 0.3906 | 9 | 13-5/8 | 3 | 809-009A |
| 13/32 | 0.4062 | 9 | 12-7/8 | 2 | 809-010 |
| 13/32 | 0.4062 | 9 | 13-5/8 | 3 | 809-010A |
| 27/64 | 0.4219 | 9 | 12-7/8 | 2 | 809-011 |
| 27/64 | 0.4219 | 9 | 13-5/8 | 3 | 809-011A |
| 7/16 | 0.4375 | 9 | 12-7/8 | 2 | 809-012 |
| 7/16 | 0.4375 | 9 | 13-5/8 | 3 | 809-012A |
| 29/64 | 0.4531 | 9 | 12-7/8 | 2 | 809-013 |
| 29/64 | 0.4531 | 9 | 13-5/8 | 3 | 809-013A |
| 15/32 | 0.4688 | 9 | 12-7/8 | 2 | 809-014 |
| 15/32 | 0.4688 | 9 | 13-5/8 | 3 | 809-014A |
| 31/64 | 0.4844 | 9 | 13-5/8 | 3 | 809-015 |
| 1/2 | 0.5000 | 9 | 13-5/8 | 3 | 809-016 |
| 33/64 | 0.5156 | 9 | 13-5/8 | 3 | 809-017 |
| 17/32 | 0.5312 | 9 | 13-5/8 | 3 | 809-018 |
| 35/64 | 0.5469 | 9 | 13-5/8 | 3 | 809-019 |
| 9/16 | 0.5625 | 9 | 13-5/8 | 3 | 809-020 |
| 37/64 | 0.5781 | 9 | 13-5/8 | 3 | 809-021 |
| 19/32 | 0.5938 | 9 | 13-5/8 | 3 | 809-022 |
| 39/64 | 0.6094 | 9 | 13-5/8 | 3 | 809-023 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 5/8 | 0.6250 | 9 | 13-5/8 | 3 | 809-024 |
| 41/64 | 0.6406 | 9 | 13-5/8 | 3 | 809-025 |
| 21/32 | 0.6562 | 9 | 13-5/8 | 3 | 809-026 |
| 43/64 | 0.6719 | 9 | 13-5/8 | 3 | 809-027 |
| 11/16 | 0.6875 | 9 | 13-5/8 | 3 | 809-028 |
| 45/64 | 0.7031 | 9 | 13-5/8 | 3 | 809-029 |
| 23/32 | 0.7188 | 9 | 13-5/8 | 3 | 809-030 |
| 47/64 | 0.7344 | 9 | 13-5/8 | 3 | 809-031 |
| 3/4 | 0.7500 | 9 | 13-5/8 | 3 | 809-032 |
| 49/64 | 0.7656 | 9 | 13-5/8 | 3 | 809-033 |
| 25/32 | 0.7812 | 9 | 13-5/8 | 3 | 809-034 |
| 13/16 | 0.8125 | 9 | 13-5/8 | 3 | 809-035 |
| 27/32 | 0.8438 | 9 | 13-5/8 | 3 | 809-036 |
| 7/8 | 0.8750 | 9 | 13-5/8 | 3 | 809-037 |
| 29/32 | 0.9062 | 9 | 13-5/8 | 3 | 809-038 |
| 15/16 | 0.9375 | 9 | 13-5/8 | 3 | 809-039 |
| 31/32 | 0.9688 | 9 | 13-5/8 | 3 | 809-040 |
| 1 | 1.0000 | 9 | 13-5/8 | 3 | 809-041 |
| 1-1/32 | 1.0313 | 9 | 13-5/8 | 3 | 809-042 |
| 1-1/16 | 1.0625 | 9 | 13-5/8 | 3 | 809-043 |

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## COMMON MACHINING EQUATIONS

| | |
|---|---|
| **SFM =** | **RPM X Dia. / 3.82** |
| **RPM =** | **3.82 x SFM / Dia.** |
| **IPM =** | **IPT x No. Teeth x RPM** |
| **IPT =** | **IPM / (No. Teeth x RPM)** |
| **IPR =** | **IPM / RPM** |

**SFM:** SURFACE FEET PER MINUTE
**RPM:** REVOLUTIONS PER MINUTE
**IPM:** INCHES PER MINUTE
**IPT:** INCHES PER TOOTH
**IPM:** INCHES PER REVOLUTION

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## EXTRA LENGTH • 10" FLUTE • HIGH SPEED • TAPER SHANK

## SERIES 810 • COOLANT-FED

SERIES: **810**

SIZES

25/64" - 1-1/4" INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 32° -34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 25/64 | 0.3906 | 10 | 13-7/8 | 2 | 810-009 |
| 25/64 | 0.3906 | 10 | 14-5/8 | 3 | 810-009A |
| 13/32 | 0.4062 | 10 | 13-7/8 | 2 | 810-010 |
| 13/32 | 0.4062 | 10 | 14-5/8 | 3 | 810-010A |
| 27/64 | 0.4219 | 10 | 13-7/8 | 2 | 810-011 |
| 27/64 | 0.4219 | 10 | 14-5/8 | 3 | 810-011A |
| 7/16 | 0.4375 | 10 | 13-7/8 | 2 | 810-012 |
| 7/16 | 0.4375 | 10 | 14-5/8 | 3 | 810-012A |
| 29/64 | 0.4531 | 10 | 13-7/8 | 2 | 810-013 |
| 29/64 | 0.4531 | 10 | 14-5/8 | 3 | 810-013A |
| 15/32 | 0.4688 | 10 | 13-7/8 | 2 | 810-014 |
| 15/32 | 0.4688 | 10 | 14-5/8 | 3 | 810-014A |
| 31/64 | 0.4844 | 10 | 14-5/8 | 3 | 810-015 |
| 1/2 | 0.5000 | 10 | 14-5/8 | 3 | 810-016 |
| 33/64 | 0.5156 | 10 | 14-5/8 | 3 | 810-017 |
| 17/32 | 0.5312 | 10 | 14-5/8 | 3 | 810-018 |
| 35/64 | 0.5469 | 10 | 14-5/8 | 3 | 810-019 |
| 9/16 | 0.5625 | 10 | 14-5/8 | 3 | 810-020 |
| 37/64 | 0.5781 | 10 | 14-5/8 | 3 | 810-021 |
| 19/32 | 0.5938 | 10 | 14-5/8 | 3 | 810-022 |
| 39/64 | 0.6094 | 10 | 14-5/8 | 3 | 810-023 |
| 5/8 | 0.6250 | 10 | 14-5/8 | 3 | 810-024 |
| 41/64 | 0.6406 | 10 | 14-5/8 | 3 | 810-025 |
| 21/32 | 0.6562 | 10 | 14-5/8 | 3 | 810-026 |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 43/64 | 0.6719 | 10 | 14-5/8 | 3 | 810-027 |
| 11/16 | 0.6875 | 10 | 14-5/8 | 3 | 810-028 |
| 45/64 | 0.7031 | 10 | 14-5/8 | 3 | 810-029 |
| 23/32 | 0.7188 | 10 | 14-5/8 | 3 | 810-030 |
| 47/64 | 0.7344 | 10 | 14-5/8 | 3 | 810-031 |
| 3/4 | 0.7500 | 10 | 14-5/8 | 3 | 810-032 |
| 49/64 | 0.7656 | 10 | 14-5/8 | 3 | 810-033 |
| 25/32 | 0.7812 | 10 | 14-5/8 | 3 | 810-034 |
| 13/16 | 0.7968 | 10 | 14-5/8 | 3 | 810-035 |
| 27/32 | 0.8438 | 10 | 14-5/8 | 3 | 810-036 |
| 7/8 | 0.8750 | 10 | 14-5/8 | 3 | 810-037 |
| 29/32 | 0.9062 | 10 | 14-5/8 | 3 | 810-038 |
| 15/16 | 0.9375 | 10 | 14-5/8 | 3 | 810-039 |
| 31/32 | 0.9688 | 10 | 14-5/8 | 3 | 810-040 |
| 1 | 1.0000 | 10 | 14-5/8 | 3 | 810-041 |
| 1-1/32 | 1.0313 | 10 | 14-5/8 | 3 | 810-042 |
| 1-1/16 | 1.0625 | 10 | 14-5/8 | 3 | 810-043 |
| 1-1/16 | 1.0625 | 10 | 15-7/8 | 4 | 810-043A |
| 1-3/32 | 1.0938 | 10 | 15-7/8 | 4 | 810-044 |
| 1-1/8 | 1.1250 | 10 | 15-7/8 | 4 | 810-045 |
| 1-5/32 | 1.1562 | 10 | 15-7/8 | 4 | 810-046 |
| 1-3/16 | 1.1875 | 10 | 15-7/8 | 4 | 810-047 |
| 1-7/32 | 1.2188 | 10 | 15-7/8 | 4 | 810-048 |
| 1-1/4 | 1.2500 | 10 | 15-7/8 | 4 | 810-049 |

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## TECHNICAL TIPS

### REQUIRED FOR SPEED AND FEED INFORMATION:

- Material being drilled
- Rockwell (Rc) or Brinell (Bhn) Hardness
- Diameter and Depth of hole
- Vertical or Horizontal Orientation
- Coolant Pressure of the Machine Tools Coolant Pump
- Type of Tool Holders being used (i.e., Collet Chuck)


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## EXTRA LENGTH • 12" FLUTE • HIGH SPEED • TAPER SHANK

### SERIES 812 • COOLANT-FED

SERIES: **812**

SIZES

25/64" - 2" INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TIN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 32° -34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 25/64 | 0.3906 | 12 | 15-7/8 | 2 | 812-009 |
| 25/64 | 0.3906 | 12 | 16-5/8 | 3 | 812-009A |
| 13/32 | 0.4062 | 12 | 15-7/8 | 2 | 812-010 |
| 13/32 | 0.4062 | 12 | 16-5/8 | 3 | 812-010A |
| 27/64 | 0.4219 | 12 | 15-7/8 | 2 | 812-011 |
| 27/64 | 0.4219 | 12 | 16-5/8 | 3 | 812-011A |
| 7/16 | 0.4375 | 12 | 15-7/8 | 2 | 812-012 |
| 7/16 | 0.4375 | 12 | 16-5/8 | 3 | 812-012A |
| 29/64 | 0.4531 | 12 | 15-7/8 | 2 | 812-013 |
| 29/64 | 0.4531 | 12 | 16-5/8 | 3 | 812-013A |
| 15/32 | 0.4688 | 12 | 15-7/8 | 2 | 812-014 |
| 15/32 | 0.4688 | 12 | 16-5/8 | 3 | 812-014A |
| 31/64 | 0.4844 | 12 | 16-5/8 | 3 | 812-015 |
| 1/2 | 0.5000 | 12 | 16-5/8 | 3 | 812-016 |
| 33/64 | 0.5156 | 12 | 16-5/8 | 3 | 812-017 |
| 17/32 | 0.5312 | 12 | 16-5/8 | 3 | 812-018 |
| 35/64 | 0.5469 | 12 | 16-5/8 | 3 | 812-019 |
| 9/16 | 0.5625 | 12 | 16-5/8 | 3 | 812-020 |
| 37/64 | 0.5781 | 12 | 16-5/8 | 3 | 812-021 |
| 19/32 | 0.5938 | 12 | 16-5/8 | 3 | 812-022 |
| 39/64 | 0.6094 | 12 | 16-5/8 | 3 | 812-023 |
| 5/8 | 0.6250 | 12 | 16-5/8 | 3 | 812-024 |
| 41/64 | 0.6406 | 12 | 16-5/8 | 3 | 812-025 |
| 21/32 | 0.6562 | 12 | 16-5/8 | 3 | 812-026 |
| 43/64 | 0.6719 | 12 | 16-5/8 | 3 | 812-027 |
| 11/16 | 0.6875 | 12 | 16-5/8 | 3 | 812-028 |
| 45/64 | 0.7031 | 12 | 16-5/8 | 3 | 812-029 |
| 23/32 | 0.7188 | 12 | 16-5/8 | 3 | 812-030 |
| 47/64 | 0.7344 | 12 | 16-5/8 | 3 | 812-031 |
| 3/4 | 0.7500 | 12 | 16-5/8 | 3 | 812-032 |
| 49/64 | 0.7656 | 12 | 16-5/8 | 3 | 812-033 |
| 25/32 | 0.7812 | 12 | 16-5/8 | 3 | 812-034 |
| 13/16 | 0.8125 | 12 | 16-5/8 | 3 | 812-035 |
| 27/32 | 0.8438 | 12 | 16-5/8 | 3 | 812-036 |
| 7/8 | 0.8750 | 12 | 16-5/8 | 3 | 812-037 |
| 29/32 | 0.9062 | 12 | 16-5/8 | 3 | 812-038 |
| 15/16 | 0.9375 | 12 | 16-5/8 | 3 | 812-039 |
| 31/32 | 0.9688 | 12 | 16-5/8 | 3 | 812-040 |
| 1 | 1.0000 | 12 | 16-5/8 | 3 | 812-041 |
| 1-1/32 | 1.0313 | 12 | 16-5/8 | 3 | 812-042 |
| 1-1/16 | 1.0625 | 12 | 16-5/8 | 3 | 812-043 |
| 1-3/32 | 1.0938 | 12 | 16-5/8 | 4 | 812-044 |
| 1-1/8 | 1.1250 | 12 | 17-7/8 | 4 | 812-045 |
| 1-5/32 | 1.1562 | 12 | 17-7/8 | 4 | 812-046 |
| 1-3/16 | 1.1875 | 12 | 17-7/8 | 4 | 812-047 |
| 1-7/32 | 1.2188 | 12 | 17-7/8 | 4 | 812-048 |
| 1-1/4 | 1.2500 | 12 | 17-7/8 | 4 | 812-049 |
| 1-9/32 | 1.2812 | 12 | 17-7/8 | 4 | 812-050 |
| 1-5/16 | 1.3125 | 12 | 17-7/8 | 4 | 812-051 |
| 1-11/32 | 1.3438 | 12 | 17-7/8 | 4 | 812-052 |
| 1-3/8 | 1.3750 | 12 | 17-7/8 | 4 | 812-053 |
| 1-13/32 | 1.4062 | 12 | 17-7/8 | 4 | 812-054 |
| 1-7/16 | 1.4375 | 12 | 17-7/8 | 4 | 812-055 |
| 1-15/32 | 1.4687 | 12 | 17-7/8 | 4 | 812-056 |
| 1-1/2 | 1.5000 | 12 | 17-7/8 | 4 | 812-057 |
| 1-9/16 | 1.5625 | 12 | 19 | 4 | 812-058 |
| 1-5/8 | 1.6250 | 12 | 19 | 4 | 812-059 |
| 1-11/16 | 1.6875 | 12 | 19 | 4 | 812-060 |
| 1-3/4 | 1.7500 | 12 | 19 | 4 | 812-061 |
| 1-13/16 | 1.8125 | 12 | 19 | 5 | 812-085 |
| 1-7/8 | 1.8750 | 12 | 19 | 5 | 812-086 |
| 1-15/16 | 1.9375 | 12 | 19 | 5 | 812-087 |
| 2 | 2.0000 | 12 | 19 | 5 | 812-062 |

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable.

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.



## EXTRA LENGTH • 14" FLUTE • HIGH SPEED • TAPER SHANK

### SERIES 814 • COOLANT-FED

SERIES: **814**

SIZES

27/64" - 2" INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TIN |
|---|---|---|---|
| HSS | • | • | • |

| SPECIFICATIONS | |
|---|---|
| Helix: | 32° -34° Spiral |
| Point: | 118° Notch |
| Web: | Standard |

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 27/64 | 0.4219 | 14 | 17-7/8 | 2 | 814-011 |
| 7/16 | 0.4375 | 14 | 17-7/8 | 2 | 814-012 |
| 7/16 | 0.4375 | 14 | 18-5/8 | 3 | 814-012A |
| 29/64 | 0.4531 | 14 | 17-7/8 | 2 | 814-013 |
| 29/64 | 0.4531 | 14 | 18-5/8 | 3 | 814-013A |
| 15/32 | 0.4688 | 14 | 17-7/8 | 2 | 814-014 |
| 15/32 | 0.4688 | 14 | 18-5/8 | 3 | 814-014A |
| 31/64 | 0.4844 | 14 | 18-5/8 | 3 | 814-015 |
| 1/2 | 0.5000 | 14 | 18-5/8 | 3 | 814-016 |
| 33/64 | 0.5156 | 14 | 18-5/8 | 3 | 814-017 |
| 17/32 | 0.5312 | 14 | 18-5/8 | 3 | 814-018 |
| 35/64 | 0.5469 | 14 | 18-5/8 | 3 | 814-019 |
| 9/16 | 0.5625 | 14 | 18-5/8 | 3 | 814-020 |
| 37/64 | 0.5781 | 14 | 18-5/8 | 3 | 814-021 |
| 19/32 | 0.5938 | 14 | 18-5/8 | 3 | 814-022 |
| 39/64 | 0.6094 | 14 | 18-5/8 | 3 | 814-023 |
| 5/8 | 0.6250 | 14 | 18-5/8 | 3 | 814-024 |
| 41/64 | 0.6406 | 14 | 18-5/8 | 3 | 814-025 |
| 21/32 | 0.6562 | 14 | 18-5/8 | 3 | 814-026 |
| 43/64 | 0.6719 | 14 | 18-5/8 | 3 | 814-027 |
| 11/16 | 0.6875 | 14 | 18-5/8 | 3 | 814-028 |
| 45/64 | 0.7031 | 14 | 18-5/8 | 3 | 814-029 |
| 23/32 | 0.7188 | 14 | 18-5/8 | 3 | 814-030 |
| 47/64 | 0.7344 | 14 | 18-5/8 | 3 | 814-031 |
| 3/4 | 0.7500 | 14 | 18-5/8 | 3 | 814-032 |
| 49/64 | 0.7656 | 14 | 18-5/8 | 3 | 814-033 |
| 25/32 | 0.7812 | 14 | 18-5/8 | 3 | 814-034 |
| 13/16 | 0.8125 | 14 | 18-5/8 | 3 | 814-035 |
| 27/32 | 0.8438 | 14 | 18-5/8 | 3 | 814-036 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 7/8 | 0.8750 | 14 | 18-5/8 | 3 | 814-037 |
| 29/32 | 0.9062 | 14 | 18-5/8 | 3 | 814-038 |
| 15/16 | 0.9375 | 14 | 18-5/8 | 3 | 814-039 |
| 31/32 | 0.9688 | 14 | 18-5/8 | 3 | 814-040 |
| 1 | 1.0000 | 14 | 18-5/8 | 3 | 814-041 |
| 1-1/32 | 1.0313 | 14 | 18-5/8 | 3 | 814-042 |
| 1-1/16 | 1.0625 | 14 | 18-5/8 | 3 | 814-043 |
| 1-3/32 | 1.0938 | 14 | 19-7/8 | 4 | 814-044 |
| 1-1/8 | 1.1250 | 14 | 19-7/8 | 4 | 814-045 |
| 1-5/32 | 1.1562 | 14 | 19-7/8 | 4 | 814-046 |
| 1-3/16 | 1.1875 | 14 | 19-7/8 | 4 | 814-047 |
| 1-7/32 | 1.2188 | 14 | 19-7/8 | 4 | 814-048 |
| 1-1/4 | 1.2500 | 14 | 19-7/8 | 4 | 814-049 |
| 1-9/32 | 1.2812 | 14 | 19-7/8 | 4 | 814-050 |
| 1-5/16 | 1.3125 | 14 | 19-7/8 | 4 | 814-051 |
| 1-11/32 | 1.3438 | 14 | 19-7/8 | 4 | 814-052 |
| 1-3/8 | 1.3750 | 14 | 19-7/8 | 4 | 814-053 |
| 1-13/32 | 1.4062 | 14 | 19-7/8 | 4 | 814-054 |
| 1-7/16 | 1.4375 | 14 | 19-7/8 | 4 | 814-055 |
| 1-15/32 | 1.4687 | 14 | 19-7/8 | 4 | 814-056 |
| 1-1/2 | 1.5000 | 14 | 19-7/8 | 4 | 814-057 |
| 1-9/16 | 1.5625 | 14 | 21 | 4 | 814-058 |
| 1-5/8 | 1.6250 | 14 | 21 | 4 | 814-059 |
| 1-11/16 | 1.6875 | 14 | 21 | 4 | 814-060 |
| 1-3/4 | 1.7500 | 14 | 21 | 4 | 814-061 |
| 1-13/16 | 1.8125 | 14 | 21 | 5 | 814-085 |
| 1-7/8 | 1.8750 | 14 | 21 | 5 | 814-086 |
| 1-15/16 | 1.9375 | 14 | 20-1/2 | 5 | 814-087 |
| 2 | 2.0000 | 14 | 21 | 5 | 814-062 |

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## TECHNICAL TIPS

We offer drill resharpening and reconditioning for all of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information.


Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## EXTRA LENGTH • 17" FLUTE • HIGH SPEED • TAPER SHANK

### SERIES 817 • COOLANT-FED

SERIES: **817**

SIZES
7/16" - 2"
INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | ● | ● | ● |

**SPECIFICATIONS**

Helix: 32° -34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER INCH | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| 7/16 | 0.4375 | 17 | 20-7/8 | 2 | 817-012 |
| 7/16 | 0.4375 | 17 | 21-5/8 | 3 | 817-012A |
| 29/64 | 0.4531 | 17 | 20-7/8 | 2 | 817-013 |
| 29/64 | 0.4531 | 17 | 21-5/8 | 3 | 817-013A |
| 15/32 | 0.4688 | 17 | 20-7/8 | 2 | 817-014 |
| 15/32 | 0.4688 | 17 | 21-518 | 3 | 817-014A |
| 31/64 | 0.4844 | 17 | 21-5/8 | 3 | 817-015 |
| 1/2 | 0.5000 | 17 | 21-5/8 | 3 | 817-016 |
| 33/64 | 0.5156 | 17 | 21-5/8 | 3 | 817-017 |
| 17/32 | 0.5312 | 17 | 21-5/8 | 3 | 817-018 |
| 35/64 | 0.5469 | 17 | 21-5/8 | 3 | 817-019 |
| 9/16 | 0.5625 | 17 | 21-5/8 | 3 | 817-020 |
| 37/64 | 0.5781 | 17 | 21-5/8 | 3 | 817-021 |
| 19/32 | 0.5938 | 17 | 21-5/8 | 3 | 817-022 |
| 39/64 | 0.6094 | 17 | 21-5/8 | 3 | 817-023 |
| 5/8 | 0.6250 | 17 | 21-5/8 | 3 | 817-024 |
| 41/64 | 0.6406 | 17 | 21-5/8 | 3 | 817-025 |
| 21/32 | 0.6562 | 17 | 21-5/8 | 3 | 817-026 |
| 43/64 | 0.6719 | 17 | 21-5/8 | 3 | 817-027 |
| 11/16 | 0.6875 | 17 | 21-5/8 | 3 | 817-028 |
| 45/64 | 0.7031 | 17 | 21-5/8 | 3 | 817-029 |
| 23/32 | 0.7188 | 17 | 21-5/8 | 3 | 817-030 |
| 47/64 | 0.7344 | 17 | 21-5/8 | 3 | 817-031 |
| 3/4 | 0.7500 | 17 | 21-5/8 | 3 | 817-032 |
| 49/64 | 0.7656 | 17 | 21-5/8 | 3 | 817-033 |
| 25/32 | 0.7812 | 17 | 21-5/8 | 3 | 817-034 |
| 13/16 | 0.8125 | 17 | 21-5/8 | 3 | 817-035 |
| 27/32 | 0.8438 | 17 | 21-5/8 | 3 | 817-036 |
| 7/8 | 0.8750 | 17 | 21-5/8 | 3 | 817-037 |
| 29/32 | 0.9062 | 17 | 21-5/8 | 3 | 817-038 |
| 15/16 | 0.9375 | 17 | 21-5/8 | 3 | 817-039 |
| 31/32 | 0.9688 | 17 | 21-5/8 | 3 | 817-040 |
| 1 | 1.0000 | 17 | 21-5/8 | 3 | 817-041 |
| 1-1/32 | 1.0313 | 17 | 21-5/8 | 3 | 817-042 |
| ***1-1/16** | ***1.0625** | ***17** | ***21-5/8** | ***3** | ***817-043** |
| ***1-1/16** | ***1.0625** | ***17** | ***22-7/8** | ***4** | ***817-043A** |
| ***1-3/32** | ***1.0938** | ***17** | ***22-7/8** | ***4** | ***817-044** |
| ***1-1/8** | ***1.1250** | ***17** | ***22-7/8** | ***4** | ***817-045** |
| ***1-5/32** | ***1.1562** | ***17** | ***22-7/8** | ***4** | ***817-046** |
| ***1-3/16** | ***1.1875** | ***17** | ***22-7/8** | ***4** | ***817-047** |
| ***1-7/32** | ***1.2188** | ***17** | ***22-7/8** | ***4** | ***817-048** |
| ***1-1/4** | ***1.2500** | ***17** | ***22-7/8** | ***4** | ***817-049** |
| ***1-9/32** | ***1.2812** | ***17** | ***22-7/8** | ***4** | ***817-050** |
| ***1-5/16** | ***1.3125** | ***17** | ***22-7/8** | ***4** | ***817-051** |
| ***1-11/32** | ***1.3438** | ***17** | ***22-7/8** | ***4** | ***817-052** |
| ***1-3/8** | ***1.3750** | ***17** | ***22-7/8** | ***4** | ***817-053** |
| ***1-13/32** | ***1.4062** | ***17** | ***22-7/8** | ***4** | ***817-054** |
| ***1-7/16** | ***1.4375** | ***17** | ***22-7/8** | ***4** | ***817-055** |
| ***1-15/32** | ***1.4687** | ***17** | ***22-7/8** | ***4** | ***817-056** |
| ***1-1/2** | ***1.5000** | ***17** | ***22-7/8** | ***4** | ***817-057** |
| ***1-9/16** | ***1.5625** | ***17** | ***24** | ***4** | ***817-058** |
| ***1-5/8** | ***1.6250** | ***17** | ***24** | ***4** | ***817-059** |
| ***1-11/16** | ***1.6875** | ***17** | ***24** | ***4** | ***817-060** |
| ***1-3/4** | ***1.7500** | ***17** | ***24** | ***4** | ***817-061** |
| ***1-13/16** | ***1.8125** | ***17** | ***24** | ***5** | ***817-085** |
| ***1-15/16** | ***1.9375** | ***17** | ***24** | ***5** | ***817-087** |
| ***2** | ***2.0000** | ***17** | ***24** | ***5** | ***817-062** |

**** Outgoing Items***

- For coolant entry specifications, see page 18.
- Specify finish when ordering where applicable

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## TECHNICAL TIPS

We offer drill resharpening and reconditioning for all of our Drills. We also offer a variety of specialized drill points for specific applications. Please contact us for further information.

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## EXTRA LENGTH • 19" FLUTE • HIGH SPEED • TAPER SHANK

### SERIES 819 • COOLANT-FED

SERIES: 819
SIZES
7/16"-2"
INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | • | • | |

**SPECIFICATIONS**
Helix: 32° -34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| * 7/16 | 0.4375 | 19 | 22-7/8 | 2 | 819-012 |
| * 7/16 | 0.4375 | 19 | 23-5/8 | 3 | 819-012A |
| * 29/64 | 0.4531 | 19 | 22-7/8 | 2 | 819-013 |
| * 29/64 | 0.4531 | 19 | 23-5/8 | 3 | 819-013A |
| * 15/32 | 0.4688 | 19 | 22-7/8 | 2 | 819-014 |
| * 15/32 | 0.4688 | 19 | 23-5/8 | 3 | 819-014A |
| * 31/64 | 0.4844 | 19 | 23-5/8 | 3 | 819-015 |
| * 1/2 | 0.5000 | 19 | 23-5/8 | 3 | 819-016 |
| * 35/64 | 0.5469 | 19 | 23-5/8 | 3 | 819-019 |
| * 37/64 | 0.5781 | 19 | 23-5/8 | 3 | 819-021 |
| * 19/32 | 0.5938 | 19 | 23-5/8 | 3 | 819-022 |
| * 39/64 | 0.6094 | 19 | 23-5/8 | 3 | 819-023 |
| * 43/64 | 0.6719 | 19 | 23-5/8 | 3 | 819-027 |
| * 45/64 | 0.7031 | 19 | 23-5/8 | 3 | 819-029 |
| * 23/32 | 0.7188 | 19 | 23-5/8 | 3 | 819-030 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| * 47/64 | 0.7344 | 19 | 23-5/8 | 3 | 819-031 |
| * 3/4 | 0.7500 | 19 | 23-5/8 | 3 | 819-032 |
| * 49/64 | 0.7656 | 19 | 23-5/8 | 3 | 819-033 |
| * 25/32 | 0.7812 | 19 | 23-5/8 | 3 | 819-034 |
| * 13/16 | 0.8125 | 19 | 23-5/8 | 3 | 819-035 |
| * 7/8 | 0.8750 | 19 | 23-5/8 | 3 | 819-037 |
| * 29/32 | 0.9062 | 19 | 23-5/8 | 3 | 819-038 |
| * 31/32 | 0.9688 | 19 | 23-5/8 | 3 | 819-040 |
| * 1-5/32 | 1.1562 | 19 | 24-7/8 | 4 | 819-046 |
| * 1-1/4 | 1.2500 | 19 | 24-7/8 | 4 | 819-049 |
| * 1-15/32 | 1.4688 | 19 | 24-7/8 | 4 | 819-056 |
| * 1-9/16 | 1.5625 | 19 | 26 | 4 | 819-058 |
| * 1-5/8 | 1.6250 | 19 | 26 | 4 | 819-059 |
| * 1-3/4 | 1.7500 | 19 | 26 | 4 | 819-061 |
| * 2 | 2.0000 | 19 | 26 | 5 | 819-062 |

*** Outgoing Items**

For hole concentricity we recommend using **Series 605 Spotting Drill**, see page 14.

## SUPER LENGTH • HIGH SPEED • TAPER SHANK

### SERIES 822 • COOLANT-FED • 22" FLUTE

SERIES: 822
SIZES
3/4"-1-1/8"
INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | • | • | |

**SPECIFICATIONS**
Helix: 32° -34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| * 3/4 | 0.7500 | 22 | 26-5/8 | 3 | 822-032 |
| * 7/8 | 0.8750 | 22 | 26-5/8 | 3 | 822-037 |
| * 1-1/8 | 1.1250 | 22 | 27-5/8 | 4 | 822-045 |

*** Outgoing Items**

## SUPER LENGTH • HIGH SPEED • TAPER SHANK

### SERIES 724 • COOLANT-FED • 24" Flute

SERIES: 724
SIZES
11/16"-1-15/16"
INCH

General purpose drill works well in most all materials. Suitable for both horizontal and vertical drilling. Taper shank allows the tool to quickly adapt to drill presses or special drilling machines. Notched point provides good chip formation when the proper speeds and feeds are applied. Constant web thickness with rolled heel provides maximum chip clearance.

| MATERIAL | BRIGHT | DARK | TiN |
|---|---|---|---|
| HSS | • | • | |

**SPECIFICATIONS**
Helix: 32° -34° Spiral
Point: 118° Notch
Web: Standard

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| * 11/16 | 0.6875 | 24 | 28-3/4 | 3 | 724-028 |
| * 3/4 | 0.7500 | 24 | 28-5/8 | 3 | 724-032 |
| * 7/8 | 0.8750 | 24 | 28-5/8 | 3 | 724-037 |

| DIAMETER (IN.) | DECIMAL (IN.) | FLUTE LGTH. (IN.) | OAL (IN.) | M.T. | PART NUMBER |
|---|---|---|---|---|---|
| * 1-1/2 | 1.5000 | 24 | 29-5/8 | 4 | 724-057 |
| * 1-15/16 | 1.9375 | 24 | 31 | 5 | 724-087 |

*** Outgoing Items**

• For coolant entry specifications, see page 18. • Specify finish when ordering where applicable.

## HIGH PERFORMANCE END MILL • THREE FLUTE/SOLID CARBIDE/ULTRA GOLD COATING • STRAIGHT SHANK

### SERIES 921 CORNER RADIUS ROUGHER • COOLANT-FED

- 35° helix
- Suitable for most materials
- Designed for profiling, slotting and end cutting

NEW

| PART NUMBER | TOOL DIAMETER | | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | CORNER RADIUS |
|---|---|---|---|---|---|---|
| | INCH | DECIMAL | | | | |
| 921-02500 | 1/4 | 0.2500 | 0.2500 | 3/4 | 2-1/2 | 0.015-0.020 |
| 921-03750 | 3/8 | 0.3750 | 0.3750 | 1 | 2-1/2 | 0.015-0.020 |
| 921-05000 | 1/2 | 0.5000 | 0.5000 | 1 | 3 | 0.030-0.035 |
| 921-07500 | 3/4 | 0.7500 | 0.7500 | 1-1/2 | 4 | 0.030-0.035 |

### SERIES 922 FINISHER • COOLANT-FED

- 35° helix
- Suitable for most materials
- Designed for slotting, pocketing and finishing

NEW

| PART NUMBER | TOOL DIAMETER | | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) |
|---|---|---|---|---|---|
| | INCH | DECIMAL | | | |
| 922-02500 | 1/4 | 0.2500 | 0.2500 | 3/4 | 2-1/2 |
| 922-03750 | 3/8 | 0.3750 | 0.3750 | 1 | 2-1/2 |
| 922-05000 | 1/2 | 0.5000 | 0.5000 | 1-1/4 | 3 |
| 922-07500 | 3/4 | 0.7500 | 0.7500 | 1-5/8 | 4 |

## HIGH PERFORMANCE END MILL • FOUR INDIVIDUAL FLUTES • SOLID CARBIDE • PROPRIETARY SIX COAT FINISH

### HURRICANE™ SERIES 923 CORNER RADIUS • COOLANT-FED

- 35° to 38° helix
- Synchronized cutting action eliminates vibration
- Recommended for stainless steels, high temperature alloys, cast iron, low carbon steels as well as tool & die steels.

NEW

| PART NUMBER | TOOL DIAMETER | | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) | CORNER RADIUS |
|---|---|---|---|---|---|---|
| | INCH | DECIMAL | | | | |
| 923-02500 | 1/4 | 0.2500 | 0.2500 | 3/4 | 2-1/2 | 0.015-0.020 |
| 923-03750 | 3/8 | 0.3750 | 0.3750 | 1 | 2-1/2 | 0.015-0.020 |
| 923-05000 | 1/2 | 0.5000 | 0.5000 | 1 | 3 | 0.015-0.020 |
| 923-06250 | 5/8 | 0.6250 | 0.6250 | 1-1/2 | 4 | 0.025-0.030 |
| 923-07500 | 3/4 | 0.7500 | 0.7500 | 1-1/2 | 4 | 0.030-0.035 |

### HURRICANE™ SERIES 924 SQUARE CORNER • COOLANT-FED

- 35° to 38° helix
- Synchronized cutting action eliminates vibration
- Recommended for stainless steels, high temperature alloys, cast iron, low carbon steels as well as tool & die steels.

NEW

| PART NUMBER | TOOL DIAMETER | | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) |
|---|---|---|---|---|---|
| | INCH | DECIMAL | | | |
| 924-02500 | 1/4 | 0.2500 | 0.2500 | 3/4 | 2-1/2 |
| 924-03750 | 3/8 | 0.3750 | 0.3750 | 1 | 2-1/2 |
| 924-05000 | 1/2 | 0.5000 | 0.5000 | 1 | 3 |
| 924-06250 | 5/8 | 0.6250 | 0.6250 | 1-1/2 | 4 |
| 924-07500 | 3/4 | 0.7500 | 0.7500 | 1-1/2 | 4 |

• For coolant thru milling chuck holders see our holder section, page 37.

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## HURRICANE™ SERIES 925 • BALL NOSE • COOLANT-FED

Tool designed to minimize the effects of harmonics while machining to maximize tool life and metal removal rates. The solid carbide Hurricane™ Series 925 Ball Nose End Mill has four individually designed flutes that work together to reduce vibration.

- Designed to rough and finish in one operation
- Capable of machining intricate aerospace parts without changing tools during multiple-axis machining
- 4 Individually designed flutes
- Variable helix
- Variable index
- Variable rake
- Right hand spiral
- Right hand cut
- Center cutting
- Superior core strength
- h6 Shank tolerance
- Multi layer coating with terrific levels of oxidation resistance and hot hardness
- Outstanding frictional properties

| PART NUMBER | TOOL DIAMETER | | SHANK DIA. (IN.) | FLUTE LENGTH (IN.) | OAL (IN.) |
|---|---|---|---|---|---|
| | INCH | DECIMAL | | | |
| 925-02500 | 1/4 | 0.2500 | 0.2500 | 3/4 | 2-1/2 |
| 925-03750 | 3/8 | 0.3750 | 0.3750 | 1 | 3 |
| 925-05000 | 1/2 | 0.5000 | 0.5000 | 1-1/4 | 3 |
| 925-06250 | 5/8 | 0.6250 | 0.6250 | 1-1/2 | 3-1/2 |
| 925-07500 | 3/4 | 0.7500 | 0.7500 | 1-1/2 | 4 |

## CHUCKING REAMERS • M42 COBALT STEEL • STRAIGHT SHANK

### SERIES 607 • COOLANT-FED

SERIES: **607**
SIZES
5/16"-1"
INCH

- One Coolant Hole Per Flute
- Staggered Coolant Holes for Maximum Strength
- For Thru or Blind Holes
- M42 Cobalt High Speed Steel
- Straight Flute
- R.H. Cut

| • TOLERANCES • | | |
|---|---|---|
| 5/16" - 1/2" dia. | 17/32" - 5/8" dia. | 21/32" - 1" dia. |
| + .0002"/-.0000" | + .0003"/-.0000" | +.0005"/-.0000" |

| DIA. INCH | DECIMAL (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK DIA. (IN.) | PART NUMBER |
|---|---|---|---|---|---|---|
| 5/16 | 0.3125 | 6 | 1-1/2 | 6 | 0.2792 | 607-013 |
| 11/32 | 0.3438 | 6 | 1-1/2 | 6 | 0.2792 | 607-015 |
| 3/8 | 0.3750 | 6 | 1-3/4 | 7 | 0.3105 | 607-017 |
| 13/32 | 0.4062 | 6 | 1-3/4 | 7 | 0.3105 | 607-019 |
| 7/16 | 0.4375 | 6 | 1-3/4 | 7 | 0.3750 | 607-021 |
| 15/32 | 0.4688 | 6 | 1-3/4 | 7 | 0.3750 | 607-023 |
| 1/2 | 0.5000 | 6 | 2 | 8 | 0.4355 | 607-025 |
| 17/32 | 0.5312 | 6 | 2 | 8 | 0.4355 | 607-027 |
| 9/16 | 0.5625 | 6 | 2 | 8 | 0.4355 | 607-029 |
| 19/32 | 0.5938 | 6 | 2 | 8 | 0.4355 | 607-031 |
| 5/8 | 0.6250 | 6 | 2-1/4 | 9 | 0.5620 | 607-033 |
| 21/32 | 0.6562 | 8 | 2-1/4 | 9 | 0.6520 | 607-035 |

| DIA. INCH | DECIMAL (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK DIA. (IN.) | PART NUMBER |
|---|---|---|---|---|---|---|
| 11/16 | 0.6875 | 8 | 2-1/4 | 9 | 0.5620 | 607-037 |
| 23/32 | 0.7188 | 8 | 2-1/4 | 9 | 0.5620 | 607-039 |
| 3/4 | 0.7500 | 8 | 2-1/2 | 9-1/2 | 0.6245 | 607-041 |
| 25/32 | 0.7812 | 8 | 2-1/2 | 9-1/2 | 0.6245 | 607-043 |
| 13/16 | 0.8125 | 8 | 2-1/2 | 9-1/2 | 0.6245 | 607-045 |
| 27/32 | 0.8438 | 8 | 2-1/2 | 9-1/2 | 0.6245 | 607-047 |
| 7/8 | 0.8750 | 8 | 2-5/8 | 10 | 0.7495 | 607-049 |
| 29/32 | 0.9062 | 8 | 2-5/8 | 10 | 0.7495 | 607-051 |
| 15/16 | 0.9375 | 8 | 2-5/8 | 10 | 0.7495 | 607-053 |
| 31/32 | 0.9688 | 8 | 2-5/8 | 10 | 0.7495 | 607-055 |
| 1 | 1.0000 | 8 | 2-3/4 | 10-1/2 | 0.8745 | 607-057 |
| 21/32 | 0.6562 | 8 | 2-1/4 | 9 | 0.6520 | 607-035 |

## CHUCKING REAMERS • SPECIAL DECIMAL SIZE • M42 COBALT STEEL • STRAIGHT SHANK

### SERIES S607 • COOLANT-FED

SERIES: **S607**
SIZES
0.2969"-0.9999"
INCH

- M42 Cobalt High Speed Steel
- Staggered Coolant Holes for Maximum Strength
- One Coolant Hole Per Flute
- Straight Flute
- For Thru or Blind Holes
- R.H. Cut

| • TOLERANCES • | | |
|---|---|---|
| .2969"-.4999" dia. | .5001"-.6249" dia. | .6251"-.999" dia. |
| + .0002"/-.0000" | + .0003"/-.0000" | +.0005"/-.0000" |

| DECIMAL RANGE (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK DIA. (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| 0.2969-0.3125 | 6 | 1-1/2 | 6 | 0.2792 | S607-*-01 |
| 0.3126-0.3437 | 6 | 1-1/2 | 6 | 0.2792 | S607-*-02 |
| 0.3439-0.3749 | 6 | 1-3/4 | 7 | 0.3105 | S607-*-03 |
| 0.3751-0.4061 | 6 | 1-3/4 | 7 | 0.3105 | S607-*-04 |
| 0.4063-0.4374 | 6 | 1-3/4 | 7 | 0.3730 | S607-*-05 |
| 0.4376-0.4687 | 6 | 1-3/4 | 7 | 0.3750 | S607-*-06 |
| 0.4689-0.4999 | 6 | 2 | 8 | 0.4355 | S607-*-07 |
| 0.5001-0.5311 | 6 | 2 | 8 | 0.4355 | S607-*-08 |
| 0.5313-0.5624 | 6 | 2 | 8 | 0.4355 | S607-*-09 |
| 0.5626-0.5937 | 6 | 2 | 8 | 0.4355 | S607-*-10 |
| 0.5938-0.6249 | 6 | 2-1/4 | 9 | 0.5620 | S607-*-11 |
| 0.6251-0.6561 | 8 | 2-1/4 | 9 | 0.5620 | S607-*-12 |

| DECIMAL RANGE (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK DIA. (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| 0.6563-0.6874 | 8 | 2-1/4 | 9 | 0.5620 | S607-*-13 |
| 0.6876-0.7187 | 8 | 2-1/4 | 9 | 0.5620 | S607-*-14 |
| 0.7189-0.7499 | 8 | 2-1/2 | 9-1/2 | 0.6245 | S607-*-15 |
| 0.7501-0.7811 | 8 | 2-1/2 | 9-1/2 | 0.6245 | S607-*-16 |
| 0.7813-0.8124 | 8 | 2-1/2 | 9-1/2 | 0.6245 | S607-*-17 |
| 0.8126-0.8437 | 8 | 2-1/2 | 9-1/2 | 0.6245 | S607-*-18 |
| 0.8439-0.8749 | 8 | 2-5/8 | 10 | 0.7495 | S607-*-19 |
| 0.8751-0.9061 | 8 | 2-5/8 | 10 | 0.7495 | S607-*-20 |
| 0.9062-0.9374 | 8 | 2-5/8 | 10 | 0.7495 | S607-*-21 |
| 0.9376-0.9687 | 8 | 2-5/8 | 10 | 0.7495 | S607-*-22 |
| 0.9689-0.9999 | 8 | 2-3/4 | 10-1/2 | 0.8745 | S607-*-23 |

Note : When ordering Series S607 reamers, specify the exact decimal size required in the place where the asterisk is shown.
For example, to order a 0.6820 diameter reamer use S607-6820-13.

**Additional Specifications for SERIES 607 & S607 - End Entry Feeds:**
0.2969" to 0.6249" , Cupped End Coolant Entry • 0.6251" to 0.7187", 1/8 NPT Tapped Coolant Entry • 0.7501" to 0.9999", 1/4 NPT Tapped Coolant Entry

## CHUCKING REAMERS • C-2 CARBIDE TIPPED • STRAIGHT SHANK

### SERIES 606 • COOLANT-FED

SERIES: 606
SIZES
9/16"-1-1/16"
INCH

- One Coolant Hole Per Flute
- Staggered Coolant Holes for Maximum Strength
- Straight Flute
- R.H. Cut

| • TOLERANCES • | |
|---|---|
| 9/16" - 5/8" dia. | 11/16" - 1" dia. |
| + .0003"/-.0000" | +.0005"/-.0000" |

| DIA. (IN.) | DECIMAL (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK DIA. (IN.) | PART NUMBER |
|---|---|---|---|---|---|---|
| *9/16 | 0.5625 | 6 | 2 | 8 | 7/16 | 606-029 |
| *19/32 | 0.5938 | 6 | 2 | 8 | 7/16 | 606-031 |
| *5/8 | 0.6250 | 6 | 2-1/4 | 9 | 9/16 | 606-033 |
| *21/32 | 0.6562 | 6 | 2-1/4 | 9 | 9/16 | 606-035 |
| *11/16 | 0.6875 | 6 | 2-1/4 | 9 | 9/16 | 606-037 |
| *23/32 | 0.7188 | 6 | 2-1/4 | 9 | 9/16 | 606-039 |
| *3/4 | 0.7500 | 6 | 2-1/2 | 9-1/2 | 5/8 | 606-041 |
| *25/32 | 0.7812 | 6 | 2-1/2 | 9-1/2 | 5/8 | 606-043 |

** Outgoing Items*

| DIA. (IN.) | DECIMAL (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK DIA. (IN.) | PART NUMBER |
|---|---|---|---|---|---|---|
| *13/16 | 0.8125 | 6 | 2-1/2 | 9-1/2 | 5/8 | 606-045 |
| *27/32 | 0.8438 | 6 | 2-1/2 | 9-1/2 | 5/8 | 606-047 |
| *7/8 | 0.8750 | 6 | 2-5/8 | 10 | 3/4 | 606-049 |
| *29/32 | 0.9062 | 6 | 2-5/8 | 10 | 3/4 | 606-051 |
| *15/16 | 0.9875 | 8 | 2-5/8 | 10 | 3/4 | 606-053 |
| *31/32 | 0.9688 | 8 | 2-5/8 | 10 | 3/4 | 606-055 |
| *1 | 1.0000 | 8 | 2-3/4 | 10-1/2 | 7/8 | 606-057 |
| *1-1/16 | 1.0625 | 8 | 2-3/4 | 10-1/2 | 7/8 | 606-059 |

** Outgoing Items*

## CHUCKING REAMERS • SPECIAL DECIMAL SIZE • C-2 CARBIDE TIPPED • STRAIGHT SHANK

### SERIES S606 • COOLANT-FED

SERIES: S606
SIZES
0.5469"-1.0625"
INCH

- One Coolant Hole Per Flute
- Staggered Coolant Holes for Maximum Strength
- Straight Flute
- R.H. Cut

| • TOLERANCES • | |
|---|---|
| .5469" - .6562" dia. | .6563" - 1.0625" dia. |
| + .0003"/-.0000" | +.0005"/-.0000" |

| DECIMAL RANGE (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK DIA. (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| *0.5469-0.5625 | 6 | 2 | 8 | 7/16 | S606-*-01 |
| *0.5626-0.5938 | 6 | 2 | 8 | 7/16 | S606-*-02 |
| *0.5939-0.6250 | 6 | 2-1/4 | 9 | 9/16 | S606-*-03 |
| *0.6251-0.6562 | 6 | 2-1/4 | 9 | 9/16 | S606-*-04 |
| *0.6563-0.6875 | 6 | 2-1/4 | 9 | 9/16 | S606-*-05 |
| *0.6876-0.7188 | 6 | 2-1/4 | 9 | 9/16 | S606-*-06 |
| *0.7189-0.7500 | 6 | 2-1/2 | 9-1/2 | 5/8 | S606-*-07 |
| *0.7501-0.7812 | 6 | 2-1/2 | 9-1/2 | 5/8 | S606-*-08 |

** Outgoing Items*

| DECIMAL RANGE (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK DIA. (IN.) | PART NUMBER |
|---|---|---|---|---|---|
| *0.7813-0.8125 | 6 | 2-1/2 | 9-1/2 | 5/8 | S606-*-09 |
| *0.8126-0.8438 | 6 | 2-1/2 | 9-1/2 | 5/8 | S606-*-10 |
| *0.8439-0.8750 | 6 | 2-5/8 | 10 | 3/4 | 3606-*-11 |
| *0.8751-0.9062 | 6 | 2-5/8 | 10 | 3/4 | S606-*-12 |
| *0.9063-0.9375 | 8 | 2-5/8 | 10 | 3/4 | S606-*-13 |
| *0.9376-0.9688 | 8 | 2-5/8 | 10 | 3/4 | S606-*-14 |
| *0.9689-1.0000 | 8 | 2-3/4 | 10-1/2 | 7/8 | S606-*-15 |
| *1.0001-1.0625 | 8 | 2-3/4 | 10-1/2 | 7/8 | S606-*-16 |

** Outgoing Items*

Note : When ordering Series S606 reamers, specify the exact decimal size required in the place where the asterisk is shown.
For example, to order a 0.5470 diameter reamer use S606-5470-01.

**Additional Specifications for SERIES 606 & S606 - End Entry Feeds:**
0.5469" to 0.6249" , Cupped End Coolant Entry • 0.6251" to 0.7187", 1/8 NPT Tapped Coolant Entry • 0.7501" to 1.0625", 1/4 NPT Tapped Coolant Entry

## HEAT EXCHANGER REAMERS • M42 COBALT STEEL • TAPER SHANK

### SERIES 608• COOLANT-FED

SERIES: **608**

SIZES
9/16"-1-1/16"
INCH

- Staggered coolant holes for maximum strength
- Dual Coolant Entry : Removable tang end plug or side entry morse taper
- Left hand spiral flutes for ease of chip ejection & excellent finish
- Designed for deep hole applications
- M42 Cobalt High Speed
- 15º Left-Hand Spiral
- R.H.Cut
- Two coolant holes per flute

**• TOLERANCES •**

| 9/16" - 5/8" dia. | 21/32" - 1" dia. | 1-1/16" dia. |
|---|---|---|
| + .0003"/-.0001" | + .0005"/-.0000" | +.0006"/-.0002" |

| DIA. (IN.) | DECIMAL (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK | PART NUMBER |
|---|---|---|---|---|---|---|
| 9/16 | 0.5625 | 6 | 6 | 14 | 3MT | 608-021 |
| 19/32 | 0.5938 | 6 | 6 | 14 | 3MT | 608-023 |
| 5/8 | 0.6250 | 6 | 6 | 14 | 3MT | 608-025 |
| 21/32 | 0.6562 | 8 | 6 | 14 | 3MT | 608-027 |
| 11/16 | 0.6875 | 8 | 6 | 14 | 3MT | 608-029 |
| 23/32 | 0.7188 | 8 | 6 | 14 | 3MT | 608-031 |
| 3/4 | 0.7500 | 8 | 6 | 14 | 3MT | 608-033 |
| 25/32 | 0.7812 | 8 | 6 | 14 | 3MT | 608-035 |

| DIA. (IN.) | DECIMAL (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK | PART NUMBER |
|---|---|---|---|---|---|---|
| 13/16 | 0.8125 | 8 | 6 | 14 | 3MT | 608-037 |
| 27/32 | 0.8438 | 8 | 6 | 14 | 3MT | 608-039 |
| 7/8 | 0.8750 | 8 | 6 | 14 | 3MT | 608-041 |
| 29/32 | 0.9062 | 8 | 6 | 14 | 3MT | 608-043 |
| 15/16 | 0.9375 | 8 | 6 | 14 | 3MT | 608-045 |
| 31/32 | 0.9688 | 8 | 6 | 14 | 3MT | 608-047 |
| 1 | 1.0000 | 8 | 6 | 14 | 3MT | 608-049 |
| 1-1/16 | 1.0625 | 8 | 6 | 14 | 3MT | 608-051 |

## HEAT EXCHANGER REAMERS • SPECIAL DECIMAL SIZE • M42 COBALT STEEL • TAPER SHANK

### SERIES S608 • COOLANT-FED

SERIES: **S608**

SIZES
0.5469"-1.0625"
INCH

- Dual Coolant Entry : Removable tang end plug or side entry morse taper
- Left hand spiral flutes for ease of chip ejection & excellent finish
- Designed for deep hole applications
- Staggered coolant holes for maximum strength
- M42 Cobalt High Speed
- 15º Left-Hand Spiral
- R.H.Cut
- Two coolant holes per flute

**• TOLERANCES •**

| .5469"-.6562" dia. | .6563"-1.0000 dia. | 1.001"-1.0625" dia. |
|---|---|---|
| + .0003"/-.0001" | + .0005"/-.0000" | +.0006"/-.0002" |

| DECIMAL RANGE (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK | PART NUMBER |
|---|---|---|---|---|---|
| 0.5469-0.5625 | 6 | 6 | 14 | 3MT | S608-*-01 |
| 0.5626-0.5938 | 6 | 6 | 14 | 3MT | S608-*-02 |
| 0.5939-0.6250 | 6 | 6 | 14 | 3MT | S608-*-03 |
| 0.6251-0.6562 | 8 | 6 | 14 | 3MT | S608-*-04 |
| 0.6563-0.6875 | 8 | 6 | 14 | 3MT | S608-*-05 |
| 0.6876-0.7188 | 8 | 6 | 14 | 3MT | S608-*-06 |
| 0.7189-0.7500 | 8 | 6 | 14 | 3MT | S608-*-07 |
| 0.7501-0.7812 | 8 | 6 | 14 | 3MT | S608-*-08 |

| DECIMAL RAN GE (IN.) | NO. OF FLUTES | FLUTE (IN.) | OAL (IN.) | SHANK | PART NUMBER |
|---|---|---|---|---|---|
| 0.7813-0.8125 | 8 | 6 | 14 | 3MT | S608-*-09 |
| 0.8126-0.8438 | 8 | 6 | 14 | 3MT | S608-*-10 |
| 0.8439-0.8750 | 8 | 6 | 14 | 3MT | S608-*-11 |
| 0.8751-0.9062 | 8 | 6 | 14 | 3MT | S608-*-12 |
| 0.9063-0.9375 | 8 | 6 | 14 | 3MT | S608-*-13 |
| 0.9376-0.9688 | 8 | 6 | 14 | 3MT | S608-*-14 |
| 0.9689-1.0000 | 8 | 6 | 14 | 3MT | S608-*-15 |
| 1.0001-1.0625 | 8 | 6 | 14 | 3MT | S608-*-16 |

Note : When ordering Series S608 reamers, specify the exact decimal size required in the place where the asterisk is shown.
For example, to order a 0.5469 diameter reamer use S608-5469-01.

## T-SLOT CUTTERS • SUPER COBALT STEEL



### SERIES 810

Patent No. 3,597,817

SERIES: **810**
SIZES
3/8"-1-1/2"
INCH

Because of the greater speed and feed capabilities, production rates when cutting T-slots are improved from 2 to 5 times.

The coolant pressure forces chips ahead of the cutter. Since the cutter need not be backed out to remove impact chips, a T-slot can be cut in one pass.

With coolant brought right to the cutting edge, the tool is kept cool at all times, extending its life. This also lubricates the cutting edge to eliminate galling, to minimize recutting chips and to facilitate chip removal.

The final result is a T-slot with a better finish and closer tolerances, produced more quickly with less wear on the tool.

| PART NUMBER | OLD PART NUMBER | BOLT SIZE (IN.) | DIAMETER OF CUTTER (IN.) | THICKNESS OF CUTTER (IN.) | DIAMETER OF NECK (IN.) | OVERALL LENGTH (IN.) | SHANK DIA. (IN.) | UNDERCUT LENGTH (IN.) | NO. FLUTES |
|---|---|---|---|---|---|---|---|---|---|
| * 810-001 | OTC-3 | 3/8 | 25/32 | 21/64 | 13/32 | 3-1/4 | 3/4 | 55/64 | 6 |
| * 810-002 | OTC-4 | 1/2 | 31/32 | 25/64 | 17/32 | 3-7/16 | 3/4 | 63/64 | 6 |
| * 810-003 | OTC-5 | 5/8 | 1-1/4 | 31/64 | 21/32 | 3-15/16 | 1 | 1-9/64 | 6 |
| * 810-004 | OTC-6 | 3/4 | 1-15/32 | 5/8 | 25/32 | 4-7/16 | 1 | 1-1/2 | 8 |
| * 810-005 | OTC-7 | 1 | 1-27/32 | 53/64 | 1-1/32 | 4-13/16 | 1-1/4 | 1-43/64 | 8 |
| * 810-006 | OTC-8 | 1-1/4 | 2-7/32 | 1-3/32 | 1-7/32 | 5-3/8 | 1-1/4 | 1-31/32 | 8 |
| * 810-007 | OTC-9 | 1-1/2 | 2-21/32 | 1-11/32 | 1-17/32 | 5-29/32 | 1-1/4 | 2-1/8 | 10 |

** Outgoing Items*

## SPECIAL COOLANT-FED CUTTING TOOLS

Our experienced tooling engineers will provide quotes on special tooling per your specifications. Some of the more popular materials and special tools are listed below. Fax your special tooling requests to us at (216) 481-9966 or e-mail them to: sales@cftsystems.com

***MATERIALS***

- •High Speed
- •Cobalt
- •Solid Carbide
- •Carbide Tipped

***SPECIAL TOOLS***

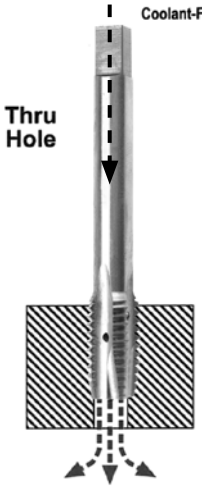
- •Porting Tools
- •Combination Tools
- •Step Drills
- •Fluted Milling Tools
- •Forming Tools
- •Dovetail Cutters
- •Conventional & Special Shanks

## COOLANT-FED TAPS FOR THRU HOLE • MEDIUM HOOK • SPIRAL POINT PLUG

### Medium Hook for the following material groups:

**Medium & Low Carbon Steel to 23 Rc, Ductile Iron, Brass, Bronze, & Thermo Plastic**

Note: Standard Thru Hole Application Taps are designed to flush chips from the work hole per angled coolant holes along the tap flutes. This flushing / cooling action removes chips from the lead thread of the tap keeping chips from hindering the cutting action of the tap.




### Thru Hole - Spiral Point

Note : Other surface treatments available upon request.

| SIZE | THREAD LIMIT | NO. OF FLUTES | PART NO. PLUG CHAMFER |
|---|---|---|---|
| 1/4-20 NC | H-3 | 3 | 325-025M |
| 1/4-28 NF | H-3 | 3 | 325-045M |
| 5/16-18 NC | H-3 | 3 | 331-025M |
| 5/16-24 NF | H-3 | 3 | 331-045M |
| 3/8-16 NC | H-3 | 3 | 337-025M |
| 3/8-24 NF | H-3 | 3 | 337-045M |
| 7/16-14 NC | H-3 | 4 | 343-025M |
| 7/16-20 NF | H-3 | 4 | 343-045M |
| 1/2-13 NC | H-3 | 4 | 350-025M |
| 1/2-20 NF | H-3 | 4 | 350-045M |

| SIZE | THREAD LIMIT | NO. OF FLUTES | PART NO. PLUG CHAMFER |
|---|---|---|---|
| 9/16-12 NC | H-3 | 4 | 356-025M |
| 9/16-18 NF | H-3 | 4 | 356-045M |
| 5/8-11 NC | H-3 | 4 | 362-025M |
| 5/8-18 NF | H-3 | 4 | 362-045M |
| 3/4-10 NC | H-3 | 4 | 375-025M |
| 3/4-16 NF | H-3 | 4 | 375-045M |
| 7/8-9 NC | H-4 | 4 | 387-025M |
| 7/8-14 NF | H-4 | 4 | 387-045M |
| 1”-8 NC | H-4 | 4 | 399-025M |
| 1”-12 NF | H-4 | 4 | 399-045M |

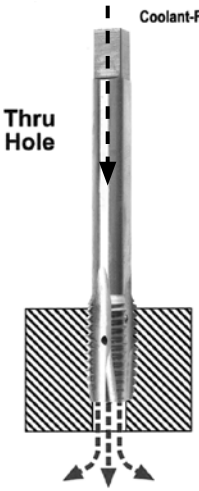
• Premium High Speed Steel - Bright Finish • See Tapping Systems beginning on page 148 for Tap Holders & Adapters

## COOLANT-FED TAPS FOR THRU HOLE • HIGH HOOK • SPIRAL POINT PLUG

### High Hook for the following material groups:

**Stainless, Titanium, Monel, Aluminum Alloys, Copper, Manganese Bronze, Magnesium, & Zinc**

Note: Standard Thru Hole Application Taps are designed to flush chips from the work hole per angled coolant holes along the tap flutes. This flushing / cooling action removes chips from the lead thread of the tap keeping chips from hindering the cutting action of the tap.




### Thru Hole - Spiral Point

Note : Other surface treatments available upon request.

| SIZE | THREAD LIMIT | NO. OF FLUTES | PART NO. PLUG CHAMFER |
|---|---|---|---|
| 1/4-20 NC | H-3 | 3 | 325-025H |
| 1/4-28 NF | H-3 | 3 | 325-045H |
| 5/16-18 NC | H-3 | 3 | 331-025H |
| 5/16-24 NF | H-3 | 3 | 331-045H |
| 3/8-16 NC | H-3 | 3 | 337-025H |
| 3/8-24 NF | H-3 | 3 | 337-045H |
| 7/16-14 NC | H-3 | 4 | 343-025H |
| 7/16-20 NF | H-3 | 4 | 343-045H |
| 1/2-13 NC | H-3 | 4 | 350-025H |
| 1/2-20 NF | H-3 | 4 | 350-045H |

| SIZE | THREAD LIMIT | NO. OF FLUTES | PART NO. PLUG CHAMFER |
|---|---|---|---|
| 9/16-12 NC | H-3 | 4 | 356-025H |
| 9/16-18 NF | H-3 | 4 | 356-045H |
| 5/8-11 NC | H-3 | 4 | 362-025H |
| 5/8-18 NF | H-3 | 4 | 362-045H |
| 3/4-10 NC | H-3 | 4 | 375-025H |
| 3/4-16 NF | H-3 | 4 | 375-045H |
| 7/8-9 NC | H-4 | 4 | 387-025H |
| 7/8-14 NF | H-4 | 4 | 387-045H |
| 1”-8 NC | H-4 | 4 | 399-025H |
| 1”-12 NF | H-4 | 4 | 399-045H |

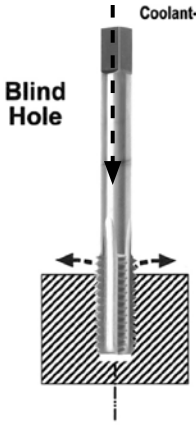
• Premium High Speed Steel - Bright Finish • See Tapping Systems beginning on page 148 for Tap Holders & Adapters

## COOLANT-FED TAPS FOR BLIND HOLE • MEDIUM HOOK • 4 FLUTE BOTTOM

### Medium Hook for the following material groups:

**Medium & Low Carbon Steel to 23 Rc, Ductile Iron, Brass, Bronze, & Thermo Plastic**

Note: Standard Blind Hole Application Taps are designed to evacuate chips along the flutes from the blind hole. These taps have a thru hole in the center, where the coolant forces the chips out through the flutes of the tap in order to keep chips from hindering the cutting action of the tap.




### Blind Hole - 4 Flute

Note : Other surface treatments available upon request.

| SIZE | THREAD LIMIT | PART NO. PLUG CHAMFER | PART NO. BOTTOM CHAMFER | SIZE | THREAD LIMIT | PART NO. PLUG CHAMFER | PART NO. BOTTOM CHAMFER |
|---|---|---|---|---|---|---|---|
| 1/4-20 NC | H-3 | 325-125M | 325-120M | 9/16-12 NC | H-3 | 356-125M | 356-120M |
| 1/4-28 NF | H-3 | 325-145M | 325-140M | 9/16-18 NF | H-3 | 356-145M | 356-140M |
| 5/16-18 NC | H-3 | 331-125M | 331-120M | 5/8-11 NC | H-3 | 362-125M | 362-120M |
| 5/16-24 NF | H-3 | 331-145M | 331-140M | 5/8-18 NF | H-3 | 362-145M | 362-140M |
| 3/8-16 NC | H-3 | 337-125M | 337-120M | 3/4-10 NC | H-3 | 375-125M | 375-120M |
| 3/8-24 NF | H-3 | 337-145M | 337-140M | 3/4-16 NF | H-3 | 375-145M | 375-140M |
| 7/16-14 NC | H-3 | 343-125M | 343-120M | 7/8-9 NC | H-4 | 387-125M | 387-120M |
| 7/16-20 NF | H-3 | 343-145M | 343-140M | 7/8-14 NF | H-4 | 387-145M | 387-140M |
| 1/2-13 NC | H-3 | 350-125M | 350-120M | 1”-8 NC | H-4 | 399-125M | 399-120M |
| 1/2-20 NF | H-3 | 350-145M | 350-140M | 1”-12 NF | H-4 | 399-145M | 399-140M |

• Premium High Speed Steel - Bright Finish • See Tapping Systems beginning on page 148 for Tap Holders & Adapters

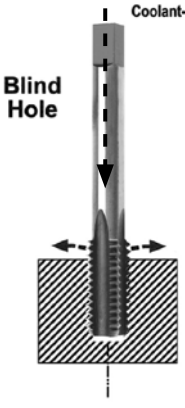


## COOLANT-FED TAPS FOR BLIND HOLES • HIGH HOOK • 4 FLUTE BOTTOM

### High Hook for the following material groups:

**Stainless, Titanium, Monel, Aluminum Alloys, Copper, Manganese Bronze, Magnesium, & Zinc**

Note: Standard Blind Hole Application Taps are designed to evacuate chips along the flutes from the blind hole. These taps have a thru hole in the center, where the coolant forces the chips out through the flutes of the tap in order to keep chips from hindering the cutting action of the tap.




### Blind Hole - 4 Flute

Note : Other surface treatments available upon request.

| SIZE | THREAD LIMIT | PART NO. PLUG CHAMFER | PART NO. BOTTOM CHAMFER | SIZE | THREAD LIMIT | PART NO. PLUG CHAMFER | PART NO. BOTTOM CHAMFER |
|---|---|---|---|---|---|---|---|
| 1/4-20 NC | H-3 | 325-125H | 325-120H | 9/16-12 NC | H-3 | 356-125H | 356-120H |
| 1/4-28 NF | H-3 | 325-145H | 325-140H | 9/16-18 NF | H-3 | 356-145H | 356-140H |
| 5/16-18 NC | H-3 | 331-125H | 331-120H | 5/8-11 NC | H-3 | 362-125H | 362-120H |
| 5/16-24 NF | H-3 | 331-145H | 331-140H | 5/8-18 NF | H-3 | 362-145H | 362-140H |
| 3/8-16 NC | H-3 | 337-125H | 337-120H | 3/4-10 NC | H-3 | 375-125H | 375-120H |
| 3/8-24 NF | H-3 | 337-145H | 337-140H | 3/4-16 NF | H-3 | 375-145H | 375-140H |
| 7/16-14 NC | H-3 | 343-125H | 343-120H | 7/8-9 NC | H-4 | 387-125H | 387-120H |
| 7/16-20 NF | H-3 | 343-145H | 343-140H | 7/8-14 NF | H-4 | 387-145H | 387-140H |
| 1/2-13 NC | H-3 | 350-125H | 350-120H | 1”-8 NC | H-4 | 399-125H | 399-120H |
| 1/2-20 NF | H-3 | 350-145H | 350-140H | 1”-12 NF | H-4 | 399-145H | 399-140H |

• Premium High Speed Steel - Bright Finish • See Tapping Systems beginning on page 148 for Tap Holders & Adapters

## STANDARD PLUG & BOTTOM TAP DIMENSIONS

| SIZE (IN.) | METRIC SIZE | OVERALL LENGTH (IN.) | THREAD LENGTH (IN.) | SQUARE LENGTH (IN.) | SHANK DIA. (IN.) | OIL HOLE (IN.) |
|---|---|---|---|---|---|---|
| 1/4 | M6 | 2-1/2 | 5/8 | 5/16 | 0.255 | 0.040 |
| 5/16 | M8 | 2-23/32 | 11/16 | 3/8 | 0.318 | 0.052 |
| 3/8 | M10 | 2-15/16 | 3/4 | 7/16 | 0.381 | 0.063 |
| 7/16 | - | 3-5/32 | 7/8 | 13/32 | 0.323 | 0.070 |
| 1/2 | M12 | 3-3/8 | 15/16 | 7/16 | 0.367 | 0.081 |
| 9/16 | - | 3-19/32 | 1 | 1/2 | 0.429 | 0.094 |
| 5/8 | - | 3-13/16 | 1-3/32 | 9/16 | 0.480 | 0.102 |
| 3/4 | - | 4-1/4 | 1-7/32 | 11/16 | 0.590 | 0.126 |
| 7/8 | - | 4-11/16 | 1-11/32 | 3/4 | 0.697 | 0.141 |
| 1 | - | 5-1/8 | 1-1/2 | 13/16 | 0.800 | 0.161 |

# CFT GEORGE WHALLEY CO.

## can provide a full range of special coolant-fed taps to meet your tapping requirements.

### OUR CAPABILITIES INCLUDE:

- SPECIAL PREMIUM STEEL
- SPECIAL DIAMETER & PITCHES
- METRICS
- RIGHT & LEFT HAND
- STRAIGHT FLUTE
- PIPE TAPS
- EXTENSION TAPS
- PULLEY TAPS
- BLUE PRINT SPECIALS
- FULL RANGE OF SURFACE TREATMENTS

### PLEASE SPECIFY:

1. NOMINAL DIAMETER (inch or metric)
2. NUMBER OF THREADS PER INCH (or metric pitch)
3. CLASS OF FIT OR PITCH DIAMETER TOLERANCE
4. DIRECTION OF CUT (right or left hand)
5. TYPE OF TAP (straight flute)
6. STYLE (taper, plug or bottoming)
7. COOLANT PASSAGE (thru center of tap)
8. MATERIAL TO BE TAPPED

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

Please Note: For many special application coolant-fed taps we can best serve you when provided with a sample part, blue print and a sample of the tap you are currently using.

## TAP DRILL SIZE CHART - STOCK SIZE DRILLS

| TAP | TAP DRILL | DECIMAL EQUIVALENT OF TAP DRILL | THEORETICAL % OF THREAD | TAP | TAP DRILL | DECIMAL EQUIVALENT OF TAP DRILL | THEORETICAL % OF THREAD |
|---|---|---|---|---|---|---|---|
| 1/4-20 | 9 | 0.1960 | 83 | 7/16-20 | W | 0.3860 | 79 |
| | 8 | 0.1990 | 79 | | 25/64 | 0.3906 | 72 |
| | 7 | 0.2010 | 75 | | X | 0.3970 | 62 |
| | 13/64 | 0.2031 | 72.5 | 1/2-13 | 27/64 | 0.4219 | 78 |
| | 6 | 0.2040 | 71 | | 7/16 | 0.4375 | 63 |
| | 5 | 0.2055 | 69 | 1/2-20 | 29/64 | 0.4531 | 72 |
| | 4 | 0.2090 | 63 | 9/16-12 | 15/32 | 0.4688 | 87 |
| 1/4-28 | 3 | 0.2130 | 80 | | 31/64 | 0.4844 | 72 |
| | 7/32 | 0.2188 | 67 | 9/16-18 | 1/2 | 0.5000 | 87 |
| | 2 | 0.2210 | 63 | | 33/64 | 0.5156 | 65 |
| 5/16-18 | F | 0.2570 | 77 | 5/8-11 | 17/32 | 0.5312 | 79 |
| | G | 0.2610 | 71 | | 35/64 | 0.5469 | 66 |
| | 17/64 | 0.2656 | 65 | 5/8-18 | 9/16 | 0.5625 | 87 |
| | H | 0.2660 | 64 | | 37/64 | 0.5781 | 65 |
| 5/16-24 | H | 0.2660 | 86 | 3/4-10 | 41/64 | 0.6406 | 84 |
| | I | 0.2720 | 75 | | 21/32 | 0.6562 | 72 |
| | J | 0.2770 | 66 | 3/4-16 | 11/16 | 0.6875 | 77 |
| 3/8-16 | 5/16 | 0.3125 | 77 | 7/8-9 | 49/64 | 0.7656 | 76 |
| | O | 0.3160 | 73 | | 25/32 | 0.7812 | 65 |
| | P | 0.3230 | 64 | 7/8-14 | 51/64 | 0.7969 | 84 |
| 3/8-24 | 21/64 | 0.3281 | 87 | | 13/16 | 0.8125 | 67 |
| | Q | 0.3320 | 79 | 1”-8 | 55/64 | 0.8594 | 87 |
| | R | 0.3390 | 67 | | 7/8 | 0.8750 | 77 |
| 7/16-14 | T | 0.3580 | 86 | | 57/64 | 0.8906 | 67 |
| | 23/64 | 0.3594 | 84 | | 29/32 | 0.9062 | 58 |
| | U | 0.3680 | 75 | 1”-12 | 29/32 | 0.9062 | 87 |
| | 3/8 | 0.3750 | 67 | | 59/64 | 0.9219 | 72 |
| | V | 0.3770 | 65 | | 15/16 | 0.9375 | 58 |



## TAP DRILL SIZE FORMULAS

**DRILLED HOLE SIZE** = MAJOR DIAMETER OF THREAD - $\frac{(0.01299 \times \text{AMOUNT OF \% OF FULL THREAD})}{\text{(THREADS PER INCH)}}$

**% of FULL THREAD** = THREADS PER INCH X $\frac{\text{(MAJOR DIA OF THREAD - TAP DRILL DIAMETER)}}{0.01299}$

## SUGGESTED PROCESS FOR TAPPING DIFFICULT TO MACHINE MATERIALS

When tapping difficult to machine materials (such as Inconel, 17-4 pH Stainless, and Hastelloy), the following processing has been used to insure consistency of the final threads and longer tap life:

***1. Drill the hole using a slightly undersized tap drill.***

***2. Bore the hole to the largest allowable diameter to achieve specified percentage of thread, using a 2 flute end mill***

***3. Tap the hole.***

**While this adds an extra step to the process, this has been used successfully and may be a viable option**
**Be sure to check our website at www.cftsystems.com for more technical information**

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

GEORGE WHALLEY COMPANY

*Everything Coolant-Fed*

# COATED THROW-AWAY SPADE DRILL INSERTS AND HOLDERS

- ***ULTRA HIGH PERFORMANCE COATINGS***
- ***IMPROVED PRODUCTIVITY***
- ***BROADER RANGE OF APPLICATIONS***
- ***COOLANT THRU HOLDERS***

Discover our new line of Coated Throw-Away Spade Drill Inserts and Holders. Our inserts are manufactured with ultra high performance coatings which allow for higher speeds & feeds, longer tool life, reduced machining time and improved productivity. Our combination of materials and multi-layered coatings provide for a broader range of applications subsequently reducing your inventory. All of our inserts and holders are competitively priced. We have a large inventory of products in stock now and available for immediate delivery.

# SERIES & SIZES

## SPADE DRILL INSERT AVAILABILITY

| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL M04 | | | SUPER COBALT T15 | | PREMIUM COBALT M48 | | CARBIDE K20 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| Y | 3/8"-27/64" | | 0.374 - 0.433 | | | | • | • | • | • | • | • |
| | | 9.5MM - 11MM | | | | | • | • | | | | |
| Z | 7/16"-1/2" | | 0.437 - 0.500 | | | | • | • | • | • | • | • |
| | | 11.5MM - 12.5MM | | | | | • | • | | | | |
| 0 | 33/64"-11/16" | | 0.511 - 0.689 | | | | • | • | • | • | • | • |
| | | 13MM - 17.5MM | | | | | • | • | | | | |
| 1 | 45/64"-15/16" | | 0.703 - 0.944 | • | • | • | • | • | • | • | • | • |
| | | 18MM - 24MM | | | | | • | • | | | | |
| 2 | 31/32"-1-3/8" | | 0.968 - 1.378 | • | • | • | • | • | | | • | • |
| | | 26MM - 35MM | | | | | • | • | | | | |
| 3 | 1-13/32"-1-7/8" | | 1.406 - 1.875 | • | • | • | • | • | | | | |
| | | 36MM - 47MM | | | | | • | • | | | | |
| 4 | 1-29/32"-2-9/16" | | 1.889 - 2.562 | • | • | • | • | • | | | | |
| | | 48MM - 65MM | | | | | | | | | | |
| 5 | 2-1/2"-3" | | 2.500 - 3.000 | • | • | • | | | | | | |
| | | 64MM - 76MM | | | | | | | | | | |
| 6 | 3-1/32"-3-1/2" | | 3.031 - 3.500 | • | • | • | | | | | | |
| | | 78MM - 88MM | | | | | | | | | | |
| 7 | 3-17/32"-4" | | 3.531 - 4.000 | • | • | • | | | | | | |
| | | 90MM - 100MM | | | | | | | | | | |
| 8 | 4-1/64"-4-1/2" | | 4.015 - 4.500 | • | • | • | | | | | | |
| | | 106MM - 114MM | | | | | | | | | | |

## SPADE DRILL HOLDER AVAILABILITY

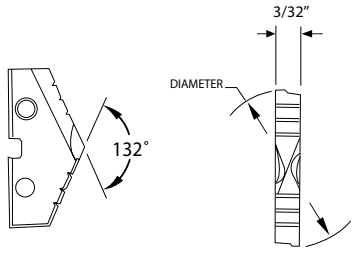
| INSERT SERIES | A SIZE RANGE | B OVERALL LENGTH | C MAX DEPTH | D FLUTE LENGTH | E SHANK DIA. | F SHANK LENGTH | G PIPE TAP |
|---|---|---|---|---|---|---|---|
| **SHORT LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE** | | | | | | | |
| Y TO 3 | 0.375" - 1.875" | 4-13/32" - 10" | 1-1/4" - 4-3/4" | 2-1/32" - 6" | 3/4" - 1-1/2" | 2-3/8" - 4" | 1/8" - 1/4" |
| **STANDARD LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE** | | | | | | | |
| Y TO 0.5 | 0.375" - 0.687" | 5-17/32" - 5-11/16" | 2-3/8"- 2-1/2" | 3-5/32"- 3-5/16" | 3/4" | 2-3/8" | 1/8" |
| **INTERMEDIATE LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE** | | | | | | | |
| 1 TO 3 | 0.703" - 1.875" | 8-7/8" - 11-3/4" | 4-5/8"- 6-1/2" | 5-7/8"- 7-3/4" | 1"- 1-1/2" | 3"- 4" | 1/8"-1/4" |

## COATING CODES & APPLICATIONS

| | | | | |
|---|---|---|---|---|
| TiN | ST | Titanium Nitride | Color - **Yellow / Gold** | Effective Abrasion Wear and Good Lubricity. |
| TiAlN | SA | Titanium Aluminum Nitride | Color - **Violet Gray** | High Temperature and Outstanding Wear Resistance. |
| TiCN | SC | Titanium Carbo Nitride | Color - **Blue Gray** | Outstanding Wear Resistance. |
| Ultra-TiN | SU | Ultra-TiN | Color - **Deep Gold** | High Lubricity, High Temperature and Outstanding Wear Resistance. |
| Life-Coat | SL | Life-Coat | Color - **Violet Gray** | Phenomenal Lubricity, High Temperature and Outstanding Wear Resistance. |

## SPADE DRILL INSERTS • SERIES Y

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| Y | 3/8"-27/64" | | 0.3740 - 0.4331 | | | | • | • | • | • | • | • |
| | | 9.5MM - 11MM | | | | | • | • | | | | |

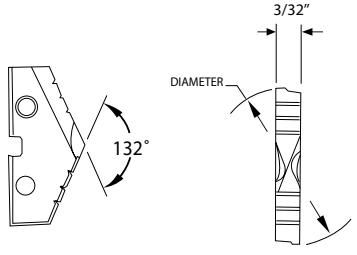



NEW

| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life- Coat |
| Y | | 9.5MM | 0.3740 | | | | SU001 | SL001 | | | | |
| | 3/8" | | 0.3750 | | | | SU002 | SL002 | SU043 | SL043 | SU462 | SL462 |
| | | 9.8MM | 0.3858 | | | | SU003 | SL003 | | | | |
| | 25/64" | | 0.3906 | | | | SU004 | SL004 | SU045 | SL045 | SU464 | SL464 |
| | | 10MM | 0.3937 | | | | SU005 | SL005 | | | | |
| | | 10.2MM | 0.4016 | | | | SU006 | SL006 | | | | |
| | 13/32" | | 0.4063 | | | | SU007 | SL007 | SU048 | SL048 | SU467 | SL467 |
| | | 10.5MM | 0.4134 | | | | SU008 | SL008 | | | | |
| | 27/64" | | 0.4219 | | | | SU009 | SL009 | SU050 | SL050 | SU469 | SL469 |
| | | 10.8MM | 0.4252 | | | | SU010 | SL010 | | | | |
| | | 11MM | 0.4331 | | | | SU011 | SL011 | | | | |

## SPADE DRILL INSERTS • SERIES Z

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| Z | 7/16"-1/2" | | 0.4375 - 0.5000 | | | | • | • | • | • | • | • |
| | | 11.5MM - 12.5MM | | | | | • | • | | | | |

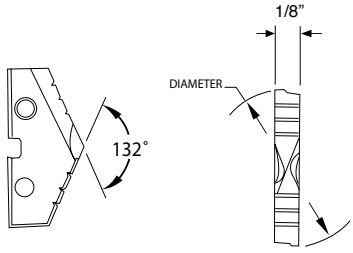



NEW

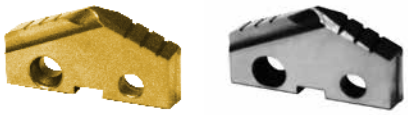
| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life- Coat |
| Z | 7/16" | | 0.4375 | | | | SU012 | SL012 | SU053 | SL053 | SU472 | SL472 |
| | | 11.5MM | 0.4528 | | | | SU013 | SL013 | | | | |
| | 29/64" | | 0.4531 | | | | SU014 | SL014 | SU055 | SL055 | SU474 | SL474 |
| | 15/32" | | 0.4688 | | | | SU015 | SL015 | SU056 | SL056 | SU475 | SL475 |
| | | 12MM | 0.4724 | | | | SU016 | SL016 | | | | |
| | 31/64" | | 0.4844 | | | | SU017 | SL017 | SU058 | SL058 | SU477 | SL477 |
| | | 12.5MM | 0.4921 | | | | SU018 | SL018 | | | | |
| | 1/2" | | 0.5000 | | | | SU019 | SL019 | SU060 | SL060 | SU479 | SL479 |

## SPADE DRILL INSERTS • SERIES 0

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 0 | 33/64"-11/16" | | 0.5118 - 0.6890 | | | | • | • | • | • | • | • |
| | | 13MM - 17.5MM | | | | | • | • | | | | |



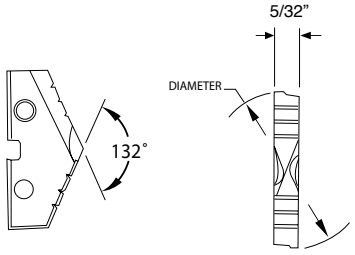




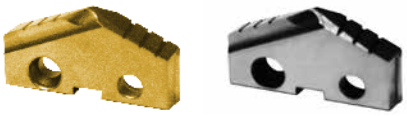
| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra- TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 0 | | 13MM | 0.5118 | | | | SU020 | SL020 | | | | |
| | 33/64" | | 0.5156 | | | | SU021 | SL021 | SU062 | SL062 | SU481 | SL481 |
| | 17/32" | | 0.5313 | | | | SU022 | SL022 | SU063 | SL063 | SU482 | SL482 |
| | | 13.5MM | 0.5315 | | | | SU023 | SL023 | | | | |
| | 35/64" | | 0.5469 | | | | SU024 | SL024 | SU065 | SL065 | SU484 | SL484 |
| | | 14MM | 0.5512 | | | | SU025 | SL025 | | | | |
| | 9/16" | | 0.5625 | | | | SU026 | SL026 | SU067 | SL067 | SU486 | SL486 |
| | | 14.5MM | 0.5709 | | | | SU027 | SL027 | | | | |
| | 37/64" | | 0.5781 | | | | SU028 | SL028 | SU069 | SL069 | SU488 | SL488 |
| | | 15MM | 0.5906 | | | | SU029 | SL029 | | | | |
| | 19/32" | | 0.5938 | | | | SU030 | SL030 | SU071 | SL071 | SU490 | SL490 |
| | 39/64" | | 0.6094 | | | | SU031 | SL031 | SU072 | SL072 | SU491 | SL491 |
| | | 15.5MM | 0.6102 | | | | SU032 | SL032 | | | | |
| | 5/8" | | 0.6250 | | | | SU033 | SL033 | SU074 | SL074 | SU493 | SL493 |
| | | 16MM | 0.6299 | | | | SU034 | SL034 | | | | |
| | 41/64" | | 0.6406 | | | | SU035 | SL035 | SU076 | SL076 | SU495 | SL495 |
| | | 16.5MM | 0.6496 | | | | SU036 | SL036 | | | | |
| | 21/32" | | 0.6563 | | | | SU037 | SL037 | SU078 | SL078 | SU497 | SL497 |
| | | 17MM | 0.6693 | | | | SU038 | SL038 | | | | |
| | 43/64" | | 0.6719 | | | | SU039 | SL039 | SU080 | SL080 | SU499 | SL499 |
| | 11/16" | | 0.6875 | | | | SU040 | SL040 | SU081 | SL081 | SU500 | SL500 |
| | | 17.5MM | 0.6890 | | | | SU041 | SL041 | | | | |

## SPADE DRILL INSERTS • SERIES 1

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 1 | 45/64"-15/16" | | 0.7031 - 0.9449 | • | • | • | • | • | • | • | • | • |
| | | 18MM - 24MM | | | | | • | • | | | | |



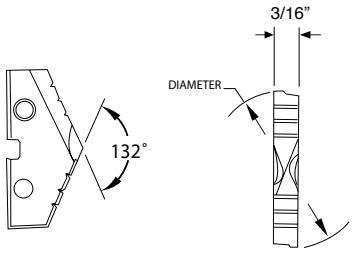




| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life- Coat |
| 1 | 45/64" | | 0.7031 | | | | SU136 | SL136 | | SL189 | | SL502 |
| | | 18MM | 0.7087 | | | | SU137 | SL137 | | | | |
| | 23/32" | | 0.7188 | | | | SU138 | SL138 | | SL191 | | SL504 |
| | | 18.5MM | 0.7283 | | | | SU139 | SL139 | | | | |
| | 47/64" | | 0.7344 | | | | SU140 | SL140 | | SL193 | | SL506 |
| | | 19MM | 0.7480 | | | | SU141 | SL141 | | | | |
| | 3/4" | | 0.7500 | | SA089 | | SU142 | SL142 | | SL195 | | SL508 |
| | 49/64" | | 0.7656 | | SA090 | | SU143 | SL143 | | | | SL509 |
| | | 19.5M | 0.7677 | | | | SU144 | SL144 | | | | |
| | 25/32" | | 0.7813 | | SA092 | | SU145 | SL145 | | | | SL511 |
| | | 20MM | 0.7874 | | | | SU146 | SL146 | | | | |
| | 51/64" | | 0.7969 | | SA094 | | SU147 | SL147 | | | | SL513 |
| | | 20.5MM | 0.8071 | | | | SU148 | SL148 | | | | |
| | 13/16" | | 0.8125 | | SA096 | | SU149 | SL149 | | | | SL515 |
| | | 21MM | 0.8268 | | | | SU150 | SL150 | | | | |
| | 27/32" | | 0.8438 | | SA098 | | SU151 | SL151 | | | | SL517 |
| | 55/64" | | 0.8594 | | SA099 | | SU152 | SL152 | | | | SL518 |
| | | 22MM | 0.8661 | | | | SU153 | SL153 | | | | |
| | 7/8" | | 0.8750 | | SA101 | | SU154 | SL154 | | | | SL520 |
| | 57/64" | | 0.8906 | | SA102 | | SU155 | SL155 | | | | SL521 |
| | | 23MM | 0.9055 | | | | SU156 | SL156 | | | | |
| | 29/32" | | 0.9063 | | SA104 | | SU157 | SL157 | | | | SL523 |
| | 59/64" | | 0.9219 | | SA105 | | SU158 | SL158 | | | | SL524 |
| | 15/16" | | 0.9375 | | SA106 | | SU159 | SL159 | | | | SL525 |
| | | 24MM | 0.9449 | | | | SU160 | SL160 | | | | |

## SPADE DRILL INSERTS • SERIES 2

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra- TiN | Life-Coat | Ultra- TiN | Life- Coat | Ultra- TiN | Life- Coat |
| 2 | 31/32"-1-3/8" | | 0.9688 - 1.3780 | • | • | • | • | • | | | • | • |
| | | 26MM - 35MM | | | | | • | • | | | | |

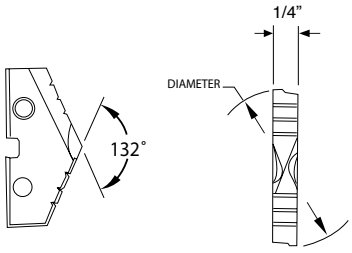




| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 2 | 31/32" | | 0.9688 | ST108 | SA108 | SC108 | SU161 | SL161 | | | | SL527 |
| | 63/64" | | 0.9844 | | | | SU162 | SL162 | | | | SL528 |
| | 1" | | 1.0000 | ST110 | SA110 | SC110 | SU163 | SL163 | | | | SL529 |
| | 1-1/64" | | 1.0156 | ST111 | SA111 | SC111 | SU164 | SL164 | | | | SL530 |
| | | 26MM | 1.0236 | | | | SU165 | SL165 | | | | |
| | 1-1/32" | | 1.0313 | ST113 | SA113 | SC113 | SU166 | SL166 | | | | SL532 |
| | 1-3/64" | | 1.0469 | ST114 | SA114 | SC114 | SU167 | SL167 | | | | SL533 |
| | 1-1/16" | | 1.0625 | ST115 | SA115 | SC115 | SU168 | SL168 | | | | SL534 |
| | | 27MM | 1.0630 | | | | SU169 | SL169 | | | | |
| | 1-3/32" | | 1.0938 | ST117 | SA117 | SC117 | SU170 | SL170 | | | | SL536 |
| | | 28MM | 1.1024 | | | | SU171 | SL171 | | | | |
| | 1-7/64" | | 1.1094 | ST119 | SA119 | SC119 | SU172 | SL172 | | | | SL538 |
| | 1-1/8" | | 1.1250 | ST120 | SA120 | SC120 | SU173 | SL173 | | | | SL539 |
| | | 29MM | 1.1417 | | | | SU174 | SL174 | | | | |
| | 1-5/32" | | 1.1563 | ST122 | SA122 | SC122 | SU175 | SL175 | | | | SL541 |
| | | 30MM | 1.1811 | | | | SU176 | SL176 | | | | |
| | 1-3/16" | | 1.1875 | ST124 | SA124 | SC124 | SU177 | SL177 | | | | SL543 |
| | 1-7/32" | | 1.2188 | ST125 | SA125 | SC125 | SU178 | SL178 | | | | SL544 |
| | | 31MM | 1.2205 | | | | SU179 | SL179 | | | | |
| | 1-1/4" | | 1.2500 | ST127 | SA127 | SC127 | SU180 | SL180 | | | | SL546 |
| | | 32MM | 1.2598 | | | | SU181 | SL181 | | | | |
| | 1-9/32" | | 1.2813 | ST129 | SA129 | SC129 | SU182 | SL182 | | | | SL548 |
| | | 33MM | 1.2992 | | | | SU183 | SL183 | | | | |
| | 1-5/16" | | 1.3125 | ST131 | SA131 | SC131 | SU184 | SL184 | | | | SL550 |
| | | 34MM | 1.3386 | | | | SU185 | SL185 | | | | |
| | 1-11/32" | | 1.3438 | ST133 | SA133 | SC133 | SU186 | SL186 | | | | SL552 |
| | 1-3/8" | | 1.3750 | ST134 | SA134 | SC134 | SU187 | SL187 | | | | SL553 |
| | | 35MM | 1.3780 | | | | SU188 | SL188 | | | | |

## SPADE DRILL INSERTS • SERIES 3

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 3 | 1-13/32"-1-7/8" | | 1.4063- 1.8750 | • | • | • | • | • | | | | |
| | | 36MM - 47MM | | | | | • | • | | | | |

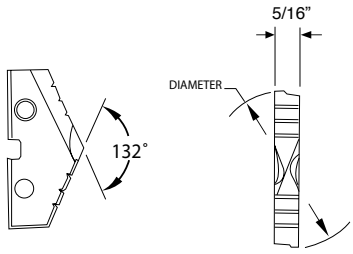




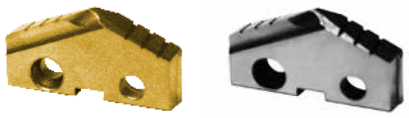
| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 3 | 1-13/32" | | 1.4063 | ST242 | SA242 | SC242 | SU310 | SL310 | | | | |
| | | 36MM | 1.4173 | | | | SU311 | SL311 | | | | |
| | 1-7/16" | | 1.4375 | ST244 | SA244 | SC244 | SU312 | SL312 | | | | |
| | | 37MM | 1.4567 | | | | SU313 | SL313 | | | | |
| | 1-15/32" | | 1.4688 | ST246 | SA246 | SC246 | SU314 | SL314 | | | | |
| | | 38MM | 1.4961 | | | | SU315 | SL315 | | | | |
| | 1-1/2" | | 1.5000 | ST248 | SA248 | SC248 | SU316 | SL316 | | | | |
| | 1-17/32" | | 1.5313 | ST249 | SA249 | SC249 | SU317 | SL317 | | | | |
| | | 39MM | 1.5354 | | | | SU318 | SL318 | | | | |
| | 1-9/16" | | 1.5625 | ST251 | SA251 | SC251 | SU319 | SL319 | | | | |
| | | 40MM | 1.5748 | | | | | | | | | |
| | 1-19/32" | | 1.5938 | ST253 | SA253 | SC253 | SU321 | SL321 | | | | |
| | | 41MM | 1.6142 | | | | | | | | | |
| | 1-5/8" | | 1.6250 | ST255 | SA255 | SC255 | SU323 | SL323 | | | | |
| | | 42MM | 1.6535 | | | | | | | | | |
| | 1-21/32" | | 1.6563 | ST257 | SA257 | SC257 | SU325 | SL325 | | | | |
| | 1-11/16" | | 1.6875 | ST258 | SA258 | SC258 | SU326 | SL326 | | | | |
| | | 43MM | 1.6929 | | | | | | | | | |
| | 1-23/32" | | 1.7188 | ST260 | SA260 | SC260 | SU328 | SL328 | | | | |
| | | 44MM | 1.7323 | | | | | | | | | |
| | 1-3/4" | | 1.7500 | ST262 | SA262 | SC262 | SU330 | SL330 | | | | |
| | | 45MM | 1.7717 | | | | | | | | | |
| | 1-25/32" | | 1.7813 | ST264 | SA264 | SC264 | SU332 | SL332 | | | | |
| | | 46MM | 1.8110 | | | | | | | | | |
| | 1-13/16" | | 1.8125 | ST266 | SA266 | SC266 | SU334 | SL334 | | | | |
| | 1-27/32" | | 1.8438 | ST267 | SA267 | SC267 | SU335 | SL335 | | | | |
| | | 47MM | 1.8504 | | | | | | | | | |
| | 1-7/8" | | 1.8750 | ST269 | SA269 | SC269 | SU337 | SL337 | | | | |

## SPADE DRILL INSERTS • SERIES 4

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 4 | 1-29/32"-2-9/16" | | 1.8898- 2.5625 | • | • | • | • | • | | | | |
| | | 48MM - 65MM | | | | | | | | | | |



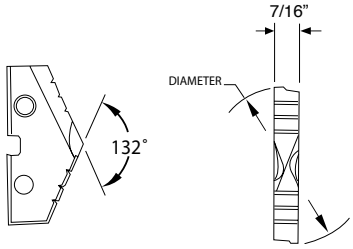




| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| | | 48MM | 1.8898 | | | | | | | | | |
| | 1-29/32" | | 1.9063 | ST271 | SA271 | SC271 | SU339 | SL339 | | | | |
| | | 49MM | 1.9291 | | | | | | | | | |
| | 1-15/16" | | 1.9375 | ST273 | SA273 | SC273 | SU341 | SL341 | | | | |
| | | 50MM | 1.9685 | | | | | | | | | |
| | 1-31/32" | | 1.9688 | ST275 | SA275 | SC275 | SU343 | SL343 | | | | |
| | 2" | | 2.0000 | ST276 | SA276 | SC276 | SU344 | SL344 | | | | |
| | | 51MM | 2.0079 | | | | | | | | | |
| | 2-1/32" | | 1.0313 | ST278 | SA278 | SC278 | SU346 | SL346 | | | | |
| | 2-3/64" | | 2.0469 | ST279 | SA279 | SC279 | SU347 | SL347 | | | | |
| | 2-1/16" | | 2.0625 | ST280 | SA280 | SC280 | SU348 | SL348 | | | | |
| | | 53MM | 2.0866 | | | | | | | | | |
| | 2-3/32" | | 2.0938 | ST282 | SA282 | SC282 | SU350 | SL350 | | | | |
| | 2-1/8" | | 2.1250 | ST283 | SA283 | SC283 | SU351 | SL351 | | | | |
| | | 54MM | 2.1260 | | | | | | | | | |
| | 2-5/32" | | 2.1563 | ST285 | SA285 | SC285 | SU353 | SL353 | | | | |
| | | 55MM | 2.1654 | | | | | | | | | |
| | 2-3/16" | | 2.1875 | ST287 | SA287 | SC287 | SU355 | SL355 | | | | |
| | | 56MM | 2.2047 | | | | | | | | | |
| 4 | 2-7/32" | | 2.2188 | ST289 | SA289 | SC289 | SU357 | SL357 | | | | |
| | | 57MM | 2.2441 | | | | | | | | | |
| | 2-1/4" | | 2.2500 | ST291 | SA291 | SC291 | SU359 | SL359 | | | | |
| | 2-9/32" | | 2.2813 | ST292 | SA292 | SC292 | SU360 | SL360 | | | | |
| | | 58MM | 2.2835 | | | | | | | | | |
| | 2-5/16" | | 2.3125 | ST294 | SA294 | SC294 | SU362 | SL362 | | | | |
| | | 59MM | 2.3228 | | | | | | | | | |
| | 2-11/32" | | 2.3438 | ST296 | SA296 | SC296 | SU364 | SL364 | | | | |
| | | 60MM | 2.3622 | | | | | | | | | |
| | 2-3/8" | | 2.3750 | ST298 | SA298 | SC298 | SU366 | SL366 | | | | |
| | | 61MM | 2.4016 | | | | | | | | | |
| | 2-13/32" | | 2.4063 | ST300 | SA300 | SC300 | SU368 | SL368 | | | | |
| | 2-7/16" | | 2.4375 | ST301 | SA301 | SC301 | SU369 | SL369 | | | | |
| | | 62MM | 2.4409 | | | | | | | | | |
| | 2-15/32" | | 2.4688 | ST303 | SA303 | SC303 | SU371 | SL371 | | | | |
| | | 63MM | 2.4803 | | | | | | | | | |
| | 2-1/2" | | 2.5000 | ST305 | SA305 | SC305 | SU373 | SL373 | | | | |
| | | 64MM | 2.5197 | | | | | | | | | |
| | 2-17/32" | | 2.5313 | ST307 | SA307 | SC307 | SU375 | SL375 | | | | |
| | | 65MM | 2.5591 | | | | | | | | | |
| | 2-9/16" | | 2.5625 | ST309 | SA309 | SC309 | SU377 | SL377 | | | | |

## SPADE DRILL INSERTS • SERIES 5

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 5 | 2-1/2"-3" | | 2.5000 - 3.0000 | • | • | • | | | | | | |
| | | 64MM - 76MM | | | | | | | | | | |

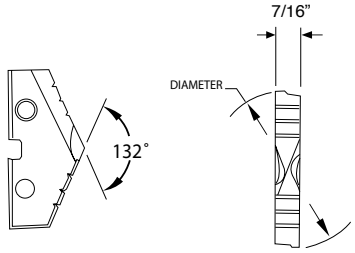




| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life- Coat |
| 5 | 2-1/2" | | 2.5000 | ST378 | SA378 | SC378 | | | | | | |
| | | 64MM | 2.5197 | | | | | | | | | |
| | 2-17/32" | | 2.5313 | ST380 | SA380 | SC380 | | | | | | |
| | 2-9/16" | | 2.5625 | ST381 | SA381 | SC381 | | | | | | |
| | 2-19/32" | | 2.5938 | ST382 | SA382 | SC382 | | | | | | |
| | | 66MM | 2.5984 | | | | | | | | | |
| | 2-5/8" | | 2.6250 | ST384 | SA384 | SC384 | | | | | | |
| | 2-21/32" | | 2.6563 | ST385 | SA385 | SC385 | | | | | | |
| | | 68MM | 2.6772 | | | | | | | | | |
| | 2-11/16" | | 2.6875 | ST387 | SA387 | SC387 | | | | | | |
| | 2-23/32" | | 2.7188 | ST388 | SA388 | SC388 | | | | | | |
| | 2-3/4" | | 2.7500 | ST389 | SA389 | SC389 | | | | | | |
| | | 70MM | 2.7559 | | | | | | | | | |
| | 2-25/32" | | 2.7813 | ST391 | SA391 | SC391 | | | | | | |
| | 2-13/16" | | 2.8125 | ST392 | SA392 | SC392 | | | | | | |
| | | 72MM | 2.8346 | | | | | | | | | |
| | 2-27/32" | | 2.8438 | ST394 | SA394 | SC394 | | | | | | |
| | 2-7/8" | | 2.8750 | ST395 | SA395 | SC395 | | | | | | |
| | 2-29/32" | | 2.9063 | ST396 | SA396 | SC396 | | | | | | |
| | | 74MM | 2.9134 | | | | | | | | | |
| | 2-15/16" | | 2.9375 | ST398 | SA398 | SC398 | | | | | | |
| | 2-31/32" | | 2.9688 | ST399 | SA399 | SC399 | | | | | | |
| | | 76MM | 2.9921 | | | | | | | | | |
| | 3" | | 3.0000 | ST401 | SA401 | SC401 | | | | | | |

## SPADE DRILL INSERTS • SERIES 6

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 6 | 3-1/32"-3-1/2" | | 3.0313 - 3.5000 | • | • | • | | | | | | |
| | | 78MM - 88MM | | | | | | | | | | |

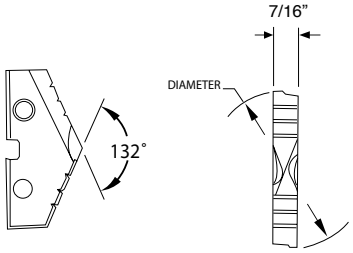




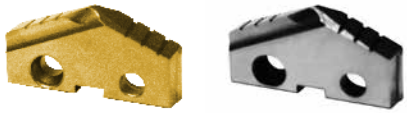
| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 6 | 3-1/32" | | 3.0313 | ST402 | SA402 | SC402 | | | | | | |
| | 3-1/16" | | 3.0625 | ST403 | SA403 | SC403 | | | | | | |
| | | 78MM | 3.0709 | | | | | | | | | |
| | 3-3/32" | | 3.0938 | ST405 | SA405 | SC405 | | | | | | |
| | 3-1/8" | | 3.1250 | ST406 | SA406 | SC406 | | | | | | |
| | | 80MM | 3.1496 | | | | | | | | | |
| | 3-5/32" | | 3.1563 | ST408 | SA408 | SC408 | | | | | | |
| | 3-3/16" | | 3.1875 | ST409 | SA409 | SC409 | | | | | | |
| | 3-7/32" | | 3.2188 | ST410 | SA410 | SC410 | | | | | | |
| | | 82MM | 3.2283 | | | | | | | | | |
| | 3-1/4" | | 3.2500 | ST412 | SA412 | SC412 | | | | | | |
| | 3-9/32" | | 3.2813 | ST413 | SA413 | SC413 | | | | | | |
| | | 84MM | 3.3071 | | | | | | | | | |
| | 3-5/16" | | 3.3125 | ST415 | SA415 | SC415 | | | | | | |
| | 3-11/32" | | 3.3438 | ST416 | SA416 | SC416 | | | | | | |
| | 3-3/8" | | 3.3750 | ST417 | SA417 | SC417 | | | | | | |
| | | 86MM | 3.3858 | | | | | | | | | |
| | 3-13/32" | | 3.4063 | ST419 | SA419 | SC419 | | | | | | |
| | 3-7/16" | | 3.4375 | ST420 | SA420 | SC420 | | | | | | |
| | | 88MM | 3.4646 | | | | | | | | | |
| | 3-15/32" | | 3.4688 | ST422 | SA422 | SC422 | | | | | | |
| | 3-1/2" | | 3.5000 | ST423 | SA423 | SC423 | | | | | | |

## SPADE DRILL INSERTS • SERIES 7

| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 7 | 3-17/32"-4" | | 3.5313 - 4.0000 | • | • | • | | | | | | |
| | | 90MM - 100MM | | | | | | | | | | |



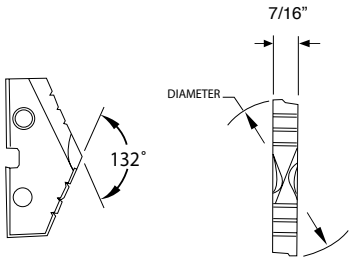




| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life- Coat |
| 7 | 3-17/32" | | 3.5313 | ST424 | SA424 | SC424 | | | | | | |
| | | 90MM | 3.5433 | | | | | | | | | |
| | 3-9/16" | | 3.5625 | ST426 | SA426 | SC426 | | | | | | |
| | 3-19/32" | | 3.5938 | ST427 | SA427 | SC427 | | | | | | |
| | | 92MM | 3.6220 | | | | | | | | | |
| | 3-5/8" | | 3.6250 | ST429 | SA429 | SC429 | | | | | | |
| | 3-21/32" | | 3.6563 | ST430 | SA430 | SC430 | | | | | | |
| | 3-11/16" | | 3.6875 | ST431 | SA431 | SC431 | | | | | | |
| | | 94MM | 3.7008 | | | | | | | | | |
| | 3-23/32" | | 3.7188 | ST433 | SA433 | SC433 | | | | | | |
| | 3-3/4" | | 3.7500 | ST434 | SA434 | SC434 | | | | | | |
| | | 96MM | 3.7795 | | | | | | | | | |
| | 3-25/32" | | 3.7813 | ST436 | SA436 | SC436 | | | | | | |
| | 3-13/16" | | 3.8125 | ST437 | SA437 | SC437 | | | | | | |
| | 3-27/32" | | 3.8438 | ST438 | SA438 | SC438 | | | | | | |
| | | 98MM | 3.8583 | | | | | | | | | |
| | 3-7/8" | | 3.8750 | ST440 | SA440 | SC440 | | | | | | |
| | 3-29/32" | | 3.9063 | ST441 | SA441 | SC441 | | | | | | |
| | | 100MM | 3.9370 | | | | | | | | | |
| | 3-15/16" | | 3.9375 | ST443 | SA443 | SC443 | | | | | | |
| | 3-31/32" | | 3.9688 | ST444 | SA444 | SC444 | | | | | | |
| | 4" | | 4.0000 | ST445 | SA445 | SC445 | | | | | | |

## SPADE DRILL INSERTS • SERIES 8

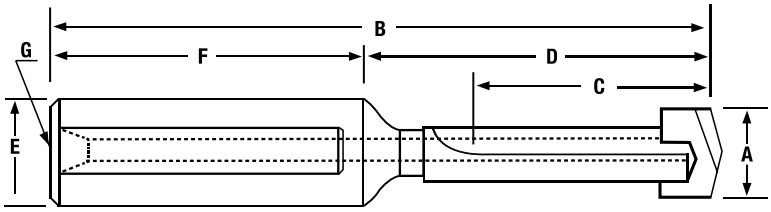
| SERIES SUMMARY | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 8 | 4-1/64"-4-1/2" | | 4.0156 - 4.5000 | • | • | • | | | | | | |
| | | 106MM - 114MM | | | | | | | | | | |





| SERIES | DIAMETER SIZES | | | HIGH SPEED STEEL | | | SUPER COBALT | | PREMIUM COBALT | | CARBIDE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | M04 | | | T15 | | M48 | | K20 | |
| | INCH | METRIC | DECIMAL | TiN | TiAlN | TiCN | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat | Ultra-TiN | Life-Coat |
| 8 | 4-1/64" | | 4.0156 | ST446 | SA446 | SC446 | | | | | | |
| | 4-1/16" | | 4.0625 | ST447 | SA447 | SC447 | | | | | | |
| | 4-3/32" | | 4.0938 | ST448 | SA448 | SC448 | | | | | | |
| | 4-1/8" | | 4.1250 | ST449 | SA449 | SC449 | | | | | | |
| | | 106MM | 4.1732 | | | | | | | | | |
| | 4-3/16" | | 4.1875 | ST451 | SA451 | SC451 | | | | | | |
| | 4-1/4" | | 4.2500 | ST452 | SA452 | SC452 | | | | | | |
| | | 108MM | 4.2520 | | | | | | | | | |
| | 4-5/16" | | 4.3125 | ST454 | SA454 | SC454 | | | | | | |
| | | 110MM | 4.3307 | | | | | | | | | |
| | 4-3/8" | | 4.3750 | ST456 | SA456 | SC456 | | | | | | |
| | | 112MM | 4.4094 | | | | | | | | | |
| | 4-7/16" | | 4.4375 | ST458 | SA458 | SC458 | | | | | | |
| | | 114MM | 4.4882 | | | | | | | | | |
| | 4-1/2" | | 4.5000 | ST460 | SA460 | SC460 | | | | | | |

## SHORT LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE





| INSERT SERIES | PART NUMBER | A SIZE RANGE | B OVERALL LENGTH | C MAX. DEPTH | D PROJECTION | E SHANK DIAMETER | F SHANK LENGTH | G PIPE TAP |
|---|---|---|---|---|---|---|---|---|
| Y | SH-220Y0S-075L | 0.375" - 0.421" | 4-13/32" | 1-1/4" | 2-1/32" | 3/4" | 2-3/8" | 1/8" |
| Z | SH-220Z0S-075L | 0.437" - 0.500" | 4-13/32" | 1-1/4" | 2-1/32" | 3/4" | 2-3/8" | 1/8" |
| 0 | SH-22000S-075L | 0.515" - 0.687" | 4-9/16" | 1-3/8" | 2-3/16" | 3/4" | 2-3/8" | 1/8" |
| 0.5 | SH-22005S-075L | 0.609" - 0.687" | 4-9/16" | 1-3/8" | 2-3/16" | 3/4" | 2-3/8" | 1/8" |
| 1 | SH-22010S-075L | 0.703" - 0.937" | 6-7/8" | 2-5/8" | 3-7/8" | 3/4" | 3" | 1/8" |
| 1 | SH-22010S-100L | 0.703" - 0.937" | 6-7/8" | 2-5/8" | 3-7/8" | 1" | 3" | 1/8" |
| 1.5 | SH-22015S-075L | 0.859" - 0.937" | 6-7/8" | 2-5/8" | 3-7/8" | 3/4" | 3" | 1/8" |
| 1.5 | SH-22015S-100L | 0.859" - 0.937" | 6-7/8" | 2-5/8" | 3-7/8" | 1" | 3" | 1/8" |
| 2 | SH-22020S-100L | 0.968" - 1.375" | 8" | 3-3/8" | 4-1/2" | 1" | 3-1/2" | 1/8" |
| 2 | SH-22020S-125L | 0.968" - 1.375" | 8" | 3-3/8" | 4-1/2" | 1-1/4" | 3-1/2" | 1/8" |
| 2.5 | SH-22025S-100L | 1.187" - 1.375" | 8" | 3-3/8" | 4-1/2" | 1" | 3-1/2" | 1/8" |
| 2.5 | SH-22025S-125L | 1.187" - 1.375" | 8" | 3-3/8" | 4-1/2" | 1-1/4" | 3-1/2" | 1/8" |
| 3 | SH-22030S-125L | 1.406" - 1.875" | 10" | 4-3/4" | 6" | 1-1/4" | 4" | 1/4" |
| 3 | SH-22030S-150L | 1.406" - 1.875" | 10" | 4-3/4" | 6" | 1-1/2" | 4" | 1/4" |

## STANDARD LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE

| INSERT SERIES | PART NUMBER | A SIZE RANGE | B OVERALL LENGTH | C MAX. DEPTH | D PROJECTION | E SHANK DIAMETER | F SHANK LENGTH | G PIPE TAP |
|---|---|---|---|---|---|---|---|---|
| Y | SH-240Y0S-075L | 0.375" - 0.421" | 5-17/32" | 2-3/8" | 3-5/32" | 3/4" | 2-3/8" | 1/8" |
| Z | SH-240Z0S-075L | 0.437" - 0.500" | 5-17/32" | 2-3/8" | 3-5/32" | 3/4" | 2-3/8" | 1/8" |
| 0 | SH-24000S-075L | 0.515" - 0.687" | 5-11/16" | 2-1/2" | 3-5/16" | 3/4" | 2-3/8" | 1/8" |
| 0.5 | SH-24005S-075L | 0.609" - 0.687" | 5-11/16" | 2-1/2" | 3-5/16" | 3/4" | 2-3/8" | 1/8" |

## INTERMEDIATE LENGTH - STRAIGHT SHANK HOLDERS - STRAIGHT FLUTE

| INSERT SERIES | PART NUMBER | A SIZE RANGE | B OVERALL LENGTH | C MAX. DEPTH | D PROJECTION | E SHANK DIAMETER | F SHANK LENGTH | G PIPE TAP |
|---|---|---|---|---|---|---|---|---|
| 1 | SH-23010S-100L | 0.703" - 0.937" | 8-7/8" | 4-5/8" | 5-7/8" | 1" | 3" | 1/8" |
| 1.5 | SH-23015S-100L | 0.859" - 0.937" | 8-7/8" | 4-5/8" | 5-7/8" | 1" | 3" | 1/8" |
| 2 | SH-23020S-125L | 0.968" - 1.375" | 10" | 5-3/8" | 6-1/2" | 1-1/4" | 3-1/2" | 1/8" |
| 2.5 | SH-23025S-125L | 1.187" - 1.375" | 10" | 5-3/8" | 6-1/2" | 1-1/4" | 3-1/2" | 1/8" |
| 3 | SH-23030S-150L | 1.406" - 1.875" | 11-3/4" | 6-1/2" | 7-3/4" | 1-1/2" | 4" | 1/4" |

## COATING CODES AND APPLICATIONS

| | | | | |
|---|---|---|---|---|
| **TiN** | ST | Titanium Nitride | Color - Yellow / Gold | Effective Abrasion Wear and Good Lubricity. |
| **TiAlN** | SA | Titanium Aluminum Nitride | Color - Violet Grey | High Temperature and Outstanding Wear Resistance. |
| **TiCN** | SC | Titanium Carbo Nitride | Color - Blue Grey | Outstanding Wear Resistance. |
| **Ultra-Tin** | SU | Ultra-Tin | Color - Deep Gold | High Lubricity, High Temperature, and Outstanding Wear Resistance. |
| **Life-Coat** | SL | Life-Coat | Color - Violet Grey | Phenomenal Lubricity, High Temperature, and Outstanding Wear Resistance. |

## INTERCHANGEABILITY

| GEORGE WHALLEY COMPANY COATINGS | | | INSERT SUBSTRATE | INTERCHANGES |
|---|---|---|---|---|
| **TiN** | ST | Titanium Nitride | M4 | TiN |
| **TiAlN** | SA | Titanium Aluminum Nitride | M4 | TiAlN |
| **TiCN** | SC | Titanium Carbo Nitride | M4 | TiCN |
| **Ultra-Tin** | SU | Ultra-Tin | T15 / M48 / K20 | TiN, TiAlN, TiCN |
| **Life-Coat** | SL | Life-Coat | T15 / M48 / K20 | TiN, TiAlN, TiCN, AM200™ |



**• The performance of George Whalley Company coatings listed, should meet or exceed those coatings listed as interchanges**

• AM200™ is a trademark of Allied Machine & Engineering Corp.

## HOLDER CODING

**Example:**

**S H - 2 2 0 Y 0 S - 0 7 5 L**

**SH** = Holder

**2** = Drill

**20** = Short
**30** = Intermediate
**40** = Standard

**Y0** = Insert Series
**Z0**
**00**
**05**
**10**
**15**
**20**
**25**
**30**

**S** = Straight Flute

**075** = 0.75 (3/4") Shank
**100** = 1.00 (1") Shank
**125** = 1.25 (1 1/4") Shank
**150** = 1.50 (1 1/2") Shank

**L** = Straight Shank

## COATED THROW-AWAY SPADE DRILL INSERT SPEED & FEED GUIDELINE

| Material | Material Hardness BHN | Insert Substrate | HIGH SPEED STEEL | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SFM Coatings | | | | | Feed | | | | | | |
| | | | M4 | | | T15, M48 | | 0.375 to 0.500 | 0.501 to 0.687 | 0.688 to 0.937 | 0.938 to 1.375 | 1.376 to 1.875 | 1.876 to 2.562 | 2.563 to 4.500 |
| | | | TiN | TiCN | TiAlN | Ultra-TiN | Life-Coat | | | | | | | |
| **Free Machining Steel 1117, 1215, 12L14, etc.** | 100 - 150 | M4 & T15 | 200 | 260 | 280 | 290 | 320 | 0.007 | 0.010 | 0.013 | 0.016 | 0.020 | 0.023 | 0.028 |
| | 151 - 200 | M4 & T15 | 180 | 235 | 260 | 270 | 300 | 0.007 | 0.010 | 0.013 | 0.016 | 0.020 | 0.023 | 0.028 |
| | 201 - 250 | M4 & T15 | 160 | 210 | 240 | 250 | 280 | 0.006 | 0.010 | 0.013 | 0.016 | 0.020 | 0.023 | 0.028 |
| **Low Carbon Steel 1010, 1020, 1144, etc.** | 85 - 125 | M4 & T15 | 170 | 220 | 250 | 260 | 280 | 0.006 | 0.009 | 0.012 | 0.015 | 0.019 | 0.023 | 0.027 |
| | 126 - 175 | M4 & T15 | 160 | 210 | 240 | 250 | 270 | 0.006 | 0.009 | 0.012 | 0.015 | 0.019 | 0.023 | 0.027 |
| | 176 - 225 | M4 & T15 | 150 | 195 | 225 | 230 | 250 | 0.005 | 0.008 | 0.010 | 0.014 | 0.018 | 0.021 | 0.024 |
| | 226 - 275 | M4 & T15 | 140 | 180 | 210 | 220 | 230 | 0.005 | 0.008 | 0.010 | 0.014 | 0.018 | 0.021 | 0.024 |
| **Medium Carbon Steel 1040, 1050, 1140, etc.** | 125 - 175 | M4 & T15 | 160 | 210 | 240 | 250 | 270 | 0.006 | 0.009 | 0.012 | 0.015 | 0.019 | 0.023 | 0.027 |
| | 176 - 225 | M4 & T15 | 150 | 195 | 225 | 230 | 250 | 0.005 | 0.008 | 0.010 | 0.014 | 0.018 | 0.021 | 0.024 |
| | 226 - 275 | M4 & T15 | 140 | 180 | 210 | 220 | 230 | 0.005 | 0.008 | 0.010 | 0.014 | 0.018 | 0.021 | 0.024 |
| | 276 - 325 | T15 & M48 | -- | -- | -- | 195 | 220 | 0.004 | 0.007 | 0.009 | 0.012 | 0.016 | 0.019 | - |
| **Alloy Steel 4140, 5140, 8620, etc.** | 125 - 175 | M4 & T15 | 150 | 195 | 210 | 220 | 230 | 0.006 | 0.008 | 0.010 | 0.014 | 0.017 | 0.019 | 0.022 |
| | 176 - 225 | M4 & T15 | 140 | 180 | 195 | 200 | 210 | 0.005 | 0.008 | 0.010 | 0.014 | 0.017 | 0.019 | 0.022 |
| | 226 - 275 | M4 & T15 | 130 | 170 | 180 | 190 | 200 | 0.005 | 0.007 | 0.010 | 0.014 | 0.017 | 0.019 | 0.022 |
| | 276 - 325 | T15 & M48 | -- | -- | -- | 170 | 190 | 0.004 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 | - |
| | 326 - 375 | T15 & M48 | -- | -- | -- | 155 | 170 | 0.003 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 | - |
| **High strength Alloy 4340, 4330V, 300M, etc.** | 225 - 300 | T15 & M48 | -- | -- | -- | 110 | 115 | 0.005 | 0.007 | 0.009 | 0.010 | 0.014 | 0.017 | - |
| | 301 - 350 | T15 & M48 | -- | -- | -- | 85 | 90 | 0.004 | 0.007 | 0.009 | 0.010 | 0.014 | 0.017 | - |
| | 351 - 400 | M48 | -- | -- | -- | 70 | 70 | 0.003 | 0.006 | 0.008 | 0.009 | 0.012 | 0.015 | - |
| **Structural Steel A36, A285, A526, etc.** | 100 - 150 | M4 & T15 | 140 | 180 | 200 | 210 | 210 | 0.006 | 0.010 | 0.012 | 0.014 | 0.018 | 0.021 | - |
| | 151 - 250 | M4 & T15 | 120 | 155 | 170 | 180 | 175 | 0.005 | 0.009 | 0.010 | 0.012 | 0.016 | 0.019 | - |
| | 251 - 350 | T15 & M48 | -- | -- | -- | 140 | 150 | 0.004 | 0.008 | 0.009 | 0.010 | 0.014 | 0.017 | - |
| **High Temperature Alloy Hastelloy B, Inconel 600, etc.** | 140 - 220 | T15 & M48 | -- | -- | -- | 40 | 40 | 0.003 | 0.007 | 0.008 | 0.010 | 0.012 | 0.015 | - |
| | 221 - 310 | M48 | -- | -- | -- | 35 | 35 | 0.003 | 0.006 | 0.007 | 0.008 | 0.010 | 0.012 | - |
| **Stainless Steel 303, 416, 420, 17-4PH, etc.** | 135 - 185 | M4 & T15 | 75 | 95 | 105 | 110 | 110 | 0.006 | 0.008 | 0.009 | 0.011 | 0.014 | 0.016 | 0.020 |
| | 186 - 275 | M4 & T15 | 60 | 80 | 90 | 95 | 95 | 0.005 | 0.007 | 0.008 | 0.010 | 0.012 | 0.014 | 0.018 |
| **Tool Steel H13, H21, A4, etc.** | 150 - 200 | T15 | -- | -- | -- | 110 | 115 | 0.004 | 0.006 | 0.008 | 0.010 | 0.012 | 0.015 | 0.017 |
| | 201 - 250 | T15 & M48 | -- | -- | -- | 90 | 100 | 0.004 | 0.006 | 0.008 | 0.010 | 0.012 | 0.015 | - |
| **Aluminum** | 30 | M4 & T15 | 600 | 750 | 850 | 870 | -- | 0.008 | 0.013 | 0.016 | 0.020 | 0.022 | 0.025 | 0.025 |
| | 180 | M4 & T15 | 300 | 400 | 450 | 470 | -- | 0.008 | 0.013 | 0.016 | 0.018 | 0.022 | 0.025 | 0.025 |
| **Cast Iron Gray, Ductile, Nodular** | 120 - 150 | M4 & T15 | 170 | 220 | 250 | 260 | 270 | 0.007 | 0.012 | 0.016 | 0.020 | 0.024 | 0.027 | 0.030 |
| | 151 - 200 | M4 & T15 | 150 | 195 | 225 | 230 | 250 | 0.006 | 0.011 | 0.014 | 0.018 | 0.022 | 0.025 | 0.028 |
| | 201 - 220 | M4 & T15 | 130 | 170 | 195 | 200 | 215 | 0.006 | 0.009 | 0.012 | 0.016 | 0.018 | 0.021 | 0.024 |
| | 221 - 260 | T15 & M48 | -- | -- | -- | 165 | 175 | 0.005 | 0.007 | 0.009 | 0.012 | 0.014 | 0.017 | - |
| | 261 - 320 | T15 & M48 | -- | -- | -- | 135 | 145 | 0.004 | 0.006 | 0.007 | 0.009 | 0.012 | 0.014 | - |

- **These speeds and feeds are offered as guidelines. Equipment, horsepower, rigidity, fixturing, coolant volume and pressure, and material conditions will affect results.**
- **Overall conditions may require adjustment, up or down, to achieve the best performance.**
- **When using extended length toolholders reduce the speeds and feeds as depths increase.**

## COATED THROW-AWAY SPADE DRILL INSERT SPEED & FEED GUIDELINE

| Material | Material Hardness BHN | CARBIDE | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Insert Substrate | SFM Coatings | | Feed | | | | |
| | | | Ultra-TiN | Life-Coat | 0.375 to 0.500 | 0.501 to 0.687 | 0.688 to 0.937 | 0.938 to 1.375 | 1.376 to 1.875 |
| **Free Machining Steel 1117, 1215, 12L14, etc.** | 100 - 150 | K20 | 420 | 470 | 0.008 | 0.012 | 0.015 | 0.018 | 0.021 |
| | 151 - 200 | K20 | 360 | 410 | 0.007 | 0.011 | 0.014 | 0.016 | 0.019 |
| | 201 - 250 | K20 | 340 | 380 | 0.006 | 0.010 | 0.013 | 0.015 | 0.017 |
| **Low Carbon Steel 1010, 1020, 1144, etc.** | 85 - 125 | K20 | 390 | 440 | 0.008 | 0.010 | 0.013 | 0.017 | 0.019 |
| | 126 - 175 | K20 | 340 | 380 | 0.007 | 0.010 | 0.013 | 0.016 | 0.018 |
| | 176 - 225 | K20 | 310 | 350 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 |
| | 226 - 275 | K20 | 270 | 300 | 0.005 | 0.009 | 0.012 | 0.015 | 0.017 |
| **Medium Carbon Steel 1040, 1050, 1140, etc.** | 125 - 175 | K20 | 340 | 380 | 0.007 | 0.010 | 0.013 | 0.016 | 0.018 |
| | 176 - 225 | K20 | 310 | 350 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 |
| | 226 - 275 | K20 | 270 | 300 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 |
| | 276 - 325 | K20 | 230 | 260 | 0.005 | 0.008 | 0.011 | 0.014 | 0.016 |
| **Alloy Steel 4140, 5140, 8620, etc.** | 125 - 175 | K20 | 325 | 260 | 0.007 | 0.010 | 0.013 | 0.016 | 0.018 |
| | 176 - 225 | K20 | 300 | 330 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 |
| | 226 - 275 | K20 | 270 | 300 | 0.006 | 0.009 | 0.012 | 0.015 | 0.017 |
| | 276 - 325 | K20 | 250 | 270 | 0.005 | 0.008 | 0.011 | 0.014 | 0.016 |
| | 326 - 375 | K20 | 220 | 240 | 0.004 | 0.007 | 0.010 | 0.013 | 0.015 |
| **High strength Alloy 4340, 4330V, 300M, etc.** | 225 - 300 | K20 | 200 | 210 | 0.006 | 0.009 | 0.010 | 0.012 | 0.015 |
| | 301 - 350 | K20 | 180 | 190 | 0.005 | 0.008 | 0.009 | 0.011 | 0.014 |
| | 351 - 400 | K20 | 160 | 170 | 0.004 | 0.007 | 0.008 | 0.010 | 0.012 |
| **Structural Steel A36, A285, A526, etc.** | 100 - 150 | K20 | 310 | 330 | 0.008 | 0.011 | 0.014 | 0.016 | 0.018 |
| | 151 - 250 | K20 | 250 | 260 | 0.006 | 0.010 | 0.012 | 0.014 | 0.016 |
| | 251 - 350 | K20 | 230 | 240 | 0.005 | 0.009 | 0.011 | 0.012 | 0.014 |
| **High Temperature Alloy Hastelloy B, Inconel 600, etc.** | 140 - 220 | K20 | 105 | 110 | 0.004 | 0.007 | 0.009 | 0.011 | 0.013 |
| | 221 - 310 | K20 | 85 | 90 | 0.004 | 0.006 | 0.008 | 0.010 | 0.012 |
| **Stainless Steel 303, 416, 420, 17-4PH, etc.** | 135 - 185 | K20 | 210 | 220 | 0.007 | 0.009 | 0.012 | 0.014 | 0.016 |
| | 186 - 275 | K20 | 160 | 170 | 0.006 | 0.008 | 0.011 | 0.012 | 0.014 |
| **Tool Steel H13, H21, A4, etc.** | 150 - 200 | K20 | 220 | 230 | 0.004 | 0.007 | 0.009 | 0.011 | 0.013 |
| | 201 - 250 | K20 | 170 | 180 | 0.004 | 0.007 | 0.009 | 0.011 | 0.013 |
| **Aluminum** | 30 | K20 | 1500 | -- | 0.010 | 0.015 | 0.018 | 0.020 | 0.022 |
| | 180 | K20 | 1000 | -- | 0.009 | 0.013 | 0.016 | 0.018 | 0.020 |
| **Cast Iron Gray, Ductile, Nodular** | 120 - 150 | K20 | 460 | 475 | 0.008 | 0.012 | 0.015 | 0.019 | 0.023 |
| | 151 - 200 | K20 | 400 | 455 | 0.007 | 0.011 | 0.013 | 0.017 | 0.021 |
| | 201 - 220 | K20 | 360 | 410 | 0.006 | 0.009 | 0.012 | 0.015 | 0.018 |
| | 221 - 260 | K20 | 310 | 340 | 0.005 | 0.008 | 0.011 | 0.013 | 0.015 |
| | 261 - 320 | K20 | 270 | 325 | 0.004 | 0.007 | 0.010 | 0.011 | 0.013 |



- **These speeds and feeds are offered as guidelines. Equipment, horsepower, rigidity, fixturing, coolant volume and pressure, and material conditions will affect results.**
- **Overall conditions may require adjustment, up or down, to achieve the best performance.**
- **When using extended length toolholders reduce the speeds and feeds as depths increase.**

## MATERIAL AND COATING PERFORMANCE RECOMMENDATIONS

| Material | Material Hardness | HIGH SPEED STEEL M4 | | | SUPER COBALT T15 | |
|---|---|---|---|---|---|---|
| | BHN | TiN | TiCN | TiAlN | Ultra-TiN | Life-Coat |
| Free Machining Steel 1117, 1215, 12L14, etc. | 100 - 150 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 151 - 200 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 201 - 250 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| Low Carbon Steel 1010, 1020, 1144, etc. | 85 - 125 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 126 - 175 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 176 - 225 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 226 - 275 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| Medium Carbon Steel 1040, 1050, 1140, etc. | 125 - 175 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 176 - 225 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 226 - 275 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 276 - 325 | | | | ★★☆☆☆ | ★★★☆☆ |
| Alloy Steel 4140, 5140, 8620, etc. | 125 - 175 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 176 - 225 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 226 - 275 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 276 - 325 | | | | ★★☆☆☆ | ★★★☆☆ |
| | 326 - 375 | | | | ★★☆☆☆ | ★★★☆☆ |
| High Strength Alloy 4340, 4330V, 300M, etc. | 225 - 300 | | | | ★★☆☆☆ | ★★★☆☆ |
| | 301 - 350 | | | | ★★☆☆☆ | ★★★☆☆ |
| | 351 - 400 | | | | | |
| Structural Steel A36, A285, A526, etc. | 100 - 150 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 151 - 250 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 251 - 350 | | | | ★★☆☆☆ | ★★★☆☆ |
| High Temperature Alloy Hastelloy B, Inconel 600, etc. | 140 - 220 | | | | ★★☆☆☆ | ★★★☆☆ |
| | 221 - 310 | | | | | |
| Stainless Steel 303, 416, 420, 17-4PH, etc. | 135 - 185 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 186 - 275 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| Tool Steel H13, H21, A4, etc. | 150 - 200 | | | | ★★★★☆ | ★★★★★ |
| | 201 - 250 | | | | ★★☆☆☆ | ★★★☆☆ |
| Aluminum | 30 | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ | |
| | 180 | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ | |
| Cast Iron Gray, Ductile, Nodular | 120 - 150 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 151 - 200 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 201 - 220 | ★☆☆☆☆ | ★★☆☆☆ | ★★★☆☆ | ★★★★☆ | ★★★★★ |
| | 221 - 260 | | | | ★★☆☆☆ | ★★★☆☆ |
| | 261 - 320 | | | | ★★☆☆☆ | ★★★☆☆ |

**• These materials and coating performance recommendations are offered as guidelines. Equipment, horsepower, rigidity, fixturing, coolant volume and pressure, and material conditions will affect results.**

## MATERIAL AND COATING PERFORMANCE RECOMMENDATIONS

| Material | Material Hardness | PREMIUM COBALT M48 | | CARBIDE K20 | |
|---|---|---|---|---|---|
| | BHN | Life-Coat | Life-Coat | Ultra-TiN | Life-Coat |
| Free Machining Steel 1117, 1215, 12L14, etc. | 100 - 150 | | | ★★★★☆ | ★★★★★ |
| | 151 - 200 | | | ★★★★☆ | ★★★★★ |
| | 201 - 250 | | | ★★★★☆ | ★★★★★ |
| Low Carbon Steel 1010, 1020, 1144, etc. | 85 - 125 | | | ★★★★☆ | ★★★★★ |
| | 126 - 175 | | | ★★★★☆ | ★★★★★ |
| | 176 - 225 | | | ★★★★☆ | ★★★★★ |
| | 226 - 275 | | | ★★★★☆ | ★★★★★ |
| Medium Carbon Steel 1040, 1050, 1140, etc. | 125 - 175 | | | ★★★★☆ | ★★★★★ |
| | 176 - 225 | | | ★★★★☆ | ★★★★★ |
| | 226 - 275 | | | ★★★★☆ | ★★★★★ |
| | 276 - 325 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| Alloy Steel 4140, 5140, 8620, etc. | 125 - 175 | | | ★★★★☆ | ★★★★★ |
| | 176 - 225 | | | ★★★★☆ | ★★★★★ |
| | 226 - 275 | | | ★★★★☆ | ★★★★★ |
| | 276 - 325 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| | 326 - 375 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| High Strength Alloy 4340, 4330V, 300M, etc. | 225 - 300 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| | 301 - 350 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| | 351 - 400 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| Structural Steel A36, A285, A526, etc. | 100 - 150 | | | ★★★★☆ | ★★★★★ |
| | 151 - 250 | | | ★★★★☆ | ★★★★★ |
| | 251 - 350 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| High Temperature Alloy Hastelloy B, Inconel 600, etc. | 140 - 220 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| | 221 - 310 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| Stainless Steel 303, 416, 420, 17-4PH, etc. | 135 - 185 | | | ★★★★★ | ★★★★★ |
| | 186 - 275 | | | ★★★★★ | ★★★★★ |
| Tool Steel H13, H21, A4, etc. | 150 - 200 | | | ★★★★☆ | ★★★★★ |
| | 201 - 250 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| Aluminum | 30 | | | ★★★★★ | |
| | 180 | | | ★★★★★ | |
| Cast Iron Gray, Ductile, Nodular | 120 - 150 | | | ★★★★☆ | ★★★★★ |
| | 151 - 200 | | | ★★★★☆ | ★★★★★ |
| | 201 - 220 | | | ★★★★☆ | ★★★★★ |
| | 221 - 260 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |
| | 261 - 320 | ★★★★☆ | ★★★★★ | ★★★★☆ | ★★★★★ |

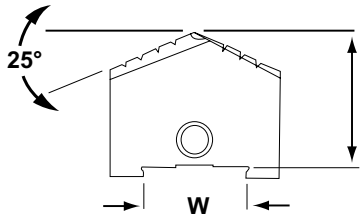
| M4 | T15 | M48 | K20 | TiN | TiCN | TiAlN | Ultra-TiN | Life-Coat |
|---|---|---|---|---|---|---|---|---|
| General Purpose HSS | Heavy cuts in difficult materials | Temp. resistant for high feeds & speeds | Wear resistant w / cutting edge strength | Effective Abrasion Wear and good lubricity | Outstanding wear resistance | High temp. and outstanding wear resistance | High lubricity, high temperature and outstanding wear resistance | Phenomenal lubricity, high temperature, and out-standing wear resistance |

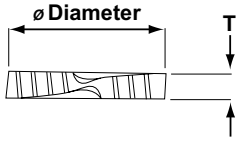
★☆☆☆☆ Good
★★☆☆☆ Very Good
★★★☆☆ Better
★★★★☆ Exceptional
★★★★★ Best

SPADE BLADES & HOLDERS

## SPADE DRILL BLADES • SERIES MS, A

• Premium CPM-M4 material, better wear resistance, greater tool life. • Positive lip geometry, reduces horsepower, providing better shearing action.
• Available off the shelf in TiN coating, for quicker delivery and service. • Shorter projection for better penetration rates.
• Will work with your existing spade drill blade holders.



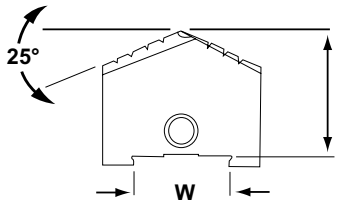

| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| **MS**<br>L=0.843<br>T=0.125<br>W=0.562 | 0.6720 | 43/64 | *SB-0672MS | *SB-0672MS-T |
| | 0.6870 | 11/16 | *SB-0687MS | *SB-0687MS-T |
| | 0.7180 | 23/32 | *SB-0718MS | *SB-0718MS-T |
| | 0.7500 | 3/4 | *SB-0750MS | *SB-0750MS-T |
| | 0.7810 | 25/32 | *SB-0781MS | *SB-0781MS-T |
| | 0.8120 | 13/16 | *SB-0812MS | *SB-0812MS-T |
| | 0.8430 | 27/32 | *SB-0843MS | *SB-0843MS-T |
| | 0.8750 | 7/8 | *SB-0875MS | *SB-0875MS-T |
| | 0.9060 | 29/32 | *SB-0906MS | *SB-0906MS-T |
| | 0.9370 | 15/16 | *SB-0937MS | *SB-0937MS-T |
| | 0.9680 | 31/32 | *SB-0968MS | *SB-0968MS-T |
| | 1.0000 | 1 | *SB-1000MS | *SB-1000MS-T |

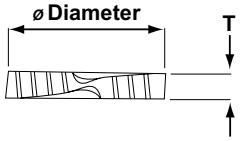
** Outgoing Items*

| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| **A**<br>L=0.937<br>T=0.187<br>W=0.750 | 0.9680 | 31/32 | *SB-0968A | *SB-0968A-T |
| | 1.0000 | 1 | *SB-1000A | *SB-1000A-T |
| | 1.0310 | 1-1/32 | *SB-1031A | *SB-1031A-T |
| | 1.0620 | 1-1/16 | *SB-1062A | *SB-1062A-T |
| | 1.0930 | 1-3/32 | *SB-1093A | *SB-1093A-T |
| | 1.1250 | 1-1/8 | *SB-1125A | *SB-1125A-T |
| | 1.1560 | 1-5/32 | *SB-1156A | *SB-1156A-T |
| | 1.1870 | 1-3/16 | *SB-1187A | *SB-1187A-T |
| | 1.2180 | 1-7/32 | *SB-1218A | *SB-1218A-T |
| | 1.2500 | 1-1/4 | *SB-1250A | *SB-1250A-T |
| | 1.2810 | 1-9/32 | *SB-1281A | *SB-1281A-T |
| | 1.3120 | 1-5/16 | *SB-1312A | *SB-1312A-T |
| | 1.3430 | 1-11/32 | *SB-1343A | *SB-1343A-T |
| | 1.3750 | 1-3/8 | *SB-1375A | *SB-1375A-T |

** Outgoing Items*

• Premium CPM-M4 material, better wear resistance, greater tool life. • Positive lip geometry, reduces horsepower, providing better shearing action.
• Available off the shelf in TiN coating, for quicker delivery and service. • Shorter projection for better penetration rates.
• Will work with your existing spade drill blade holders.




| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| **B**<br>L=1.125<br>T=0.281<br>W=1.062 | 1.2500 | 1-1/4 | *SB-1250B | *SB-1250B-T |
| | 1.2810 | 1-9/32 | *SB-1281B | *SB-1281B-T |
| | 1.3120 | 1-5/16 | *SB-1312B | *SB-1312B-T |
| | 1.3430 | 1-11/32 | *SB-1343B | *SB-1343B-T |
| | 1.3750 | 1-3/8 | *SB-1375B | *SB-1375B-T |
| | 1.4060 | 1-13/32 | *SB-1406B | *SB-1406B-T |
| | 1.4370 | 1-7/16 | *SB-1437B | *SB-1437B-T |
| | 1.4680 | 1-15132 | *SB-1468B | *SB-1468B-T |
| | 1.5000 | 1-1/2 | *SB-1500B | *SB-1500B-T |
| | 1.5310 | 1-17/32 | *SB-1531B | *SB-1531B-T |
| | 1.5620 | 1-9/16 | *SB-1562B | *SB-1562B-T |
| | 1.5930 | 1-19/32 | *SB-1593B | *SB-1593B-T |
| | 1.6250 | 1-5/8 | *SB-1625B | *SB-1625B-T |
| | 1.6560 | 1-21/32 | *SB-1656B | *SB-1656B-T |
| | 1.6870 | 1-11/16 | *SB-1687B | *SB-1687B-T |
| | 1.7180 | 1-23/32 | *SB-1718B | *SB-1718B-T |
| | 1.7500 | 1-3/4 | *SB-1750B | *SB-1750B-T |

** Outgoing Items*

| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| **C**<br>L=1.562<br>T=0.312<br>W=1.250 | 1.5000 | 1-1/2 | *SB-1500C | *SB-1500C-T |
| | 1.5310 | 1-17/32 | *SB-1531C | *SB-1531C-T |
| | 1.5620 | 1-9/16 | *SB-1562C | *SB-1562C-T |
| | 1.5930 | 1-19/32 | *SB-1593C | *SB-1593C-T |
| | 1.6250 | 1-5/8 | *SB-1625C | *SB-1625C-T |
| | 1.6560 | 1-21/32 | *SB-1656C | *SB-1656C-T |
| | 1.6870 | 1-11/16 | *SB-1687C | *SB-1687C-T |
| | 1.7180 | 1-23/32 | *SB-1718C | *SB-1718C-T |
| | 1.7500 | 1-3/4 | *SB-1750C | *SB-1750C-T |
| | 1.7810 | 1-25/32 | *SB-1781C | *SB-1781C-T |
| | 1.8120 | 1-13/16 | *SB-1812C | *SB-1812C-T |
| | 1.8430 | 1-27132 | *SB-1843C | *SB-1843C-T |
| | 1.8750 | 1-7/8 | *SB-1875C | *SB-1875C-T |
| | 1.9060 | 1-29/32 | *SB-1906C | *SB-1906C-T |
| | 1.9370 | 1-15/16 | *SB-1937C | *SB-1937C-T |
| | 1.9680 | 1-31/32 | *SB-1968C | *SB-1968C-T |
| | 2.0000 | 2 | *SB-2000C | *SB-2000C-T |
| | 2.0310 | 2-1/32 | *SB-2031C | *SB-2031C-T |
| | 2.0620 | 2-1/16 | *SB-2062C | *SB-2062C-T |
| | 2.0930 | 2-3/32 | *SB-2093C | *SB-2093C-T |
| | 2.1250 | 2-1/8 | *SB-2125C | *SB-2125C-T |
| | 2.1560 | 2-5/32 | *SB-2156C | *SB-2156C-T |
| | 2.1870 | 2-3/16 | *SB-2187C | *SB-2187C-T |
| | 2.2180 | 2-7/32 | *SB-2218C | *SB-2218C-T |
| | 2.2500 | 2-1/4 | *SB-2250C | *SB-2250C-T |
| | 2.2810 | 2-9/32 | *SB-2281C | *SB-2281C-T |
| | 2.3120 | 2-5/16 | *SB-2312C | *SB-2312C-T |
| | 2.3430 | 2-11/32 | *SB-2343C | *SB-2343C-T |
| | 2.3750 | 2-3/8 | *SB-2375C | *SB-2375C-T |

** Outgoing Items*

## SPADE DRILL BLADES • SERIES D

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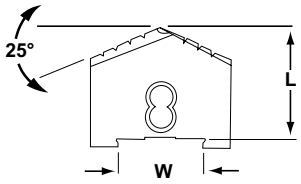
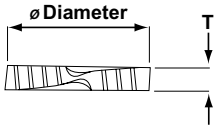
• Will work with your existing spade drill blade holders.



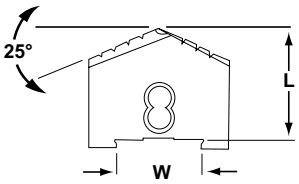



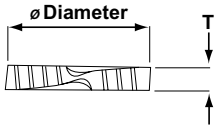

| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| **D**<br>L=2.000<br>T=0.375<br>W=1.750 | 2.0000 | 2 | *SB-2000D | *SB-2000D-T |
| | 2.0310 | 2-1/32 | *SB-2031D | *SB-2031D-T |
| | 2.0620 | 2-1/16 | *SB-2062D | *SB-2062D-T |
| | 2.0930 | 2-3/32 | *SB-2093D | *SB-2093D-T |
| | 2.1250 | 2-1/8 | *SB-2125D | *SB-2125D-T |
| | 2.1560 | 2-5/32 | *SB-2156D | *SB-2156D-T |
| | 2.1870 | 2-3/16 | *SB-2187D | *SB-2187D-T |
| | 2.2180 | 2-7/32 | *SB-2218D | *SB-2218D-T |
| | 2.2500 | 2-1/4 | *SB-2250D | *SB-2250D-T |
| | 2.2810 | 2-9/32 | *SB-2281D | *SB-2281D-T |
| | 2.3120 | 2-5/16 | *SB-2312D | *SB-2312D-T |
| | 2.3430 | 2-11/32 | *SB-2343D | *SB-2343D-T |
| | 2.3750 | 2-3/8 | *SB-2375D | *SB-2375D-T |
| | 2.4060 | 2-13/32 | *SB-2406D | *SB-2406D-T |
| | 2.4370 | 2-7/16 | *SB-2437D | *SB-2437D-T |
| | 2.4680 | 2-15/32 | *SB-2468D | *SB-2468D-T |
| | 2.5000 | 2-1/4 | *SB-2500D | *SB-2500D-T |
| | 2.5310 | 2-17/32 | *SB-2531D | *SB-2531D-T |
| | 2.5620 | 2-9/16 | *SB-2562D | *SB-2562D-T |
| | 2.5930 | 2-19/32 | *SB-2593D | *SB-2593D-T |
| | 2.6250 | 2-5/8 | *SB-2625D | *SB-2625D-T |
| | 2.6560 | 2-21/32 | *SB-2656D | *SB-2656D-T |
| | 2.6870 | 2-11/16 | *SB-2687D | *SB-2687D-T |
| | 2.7180 | 2-23/32 | *SB-2718D | *SB-2718D-T |
| | 2.7500 | 2-3/4 | *SB-2750D | *SB-2750D-T |
| | 2.7810 | 2-25/32 | *SB-2781D | *SB-2781D-T |
| | 2.8120 | 2-13/16 | *SB-2812D | *SB-2812D-T |
| | 2.8430 | 2-27/32 | *SB-2843D | *SB-2843D-T |
| | 2.8750 | 2-7/8 | *SB-2875D | *SB-2875D-T |

** Outgoing Items*

## SPADE DRILL BLADES • SERIES E

• Premium CPM-M4 material, better wear resistance, greater tool life. • Positive lip geometry, reduces horsepower, providing better shearing action.
• Available off the shelf in TiN coating, for quicker delivery and service. • Shorter projection for better penetration rates.
• Will work with your existing spade drill blade holders.



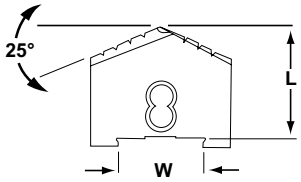



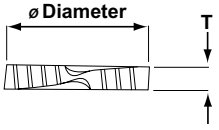

| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| E<br>L=2.375<br>T=0.437<br>W=2.062 | 2.5000 | 2-1/2 | *SB-2500E | *SB-2500E-T |
| | 2.5310 | 2-17/32 | *SB-2531E | *SB-2531E-T |
| | 2.5620 | 2-9/16 | *SB-2562E | *SB-2562E-T |
| | 2.5930 | 2-19/32 | *S8-2593E | *SB-2593E-T |
| | 2.6250 | 2-5/8 | *SB-2625E | *SB-2625E-T |
| | 2.6560 | 2-21/32 | *SB-2656E | *SB-2656E-T |
| | 2.6870 | 2-11/16 | *SB-2687E | *SB-2687E-T |
| | 2.7180 | 2-23/32 | *SB-2718E | *SB-2718E-T |
| | 2.7500 | 2-3/4 | *SB-2750E | *SB-2750E-T |
| | 2.7810 | 2-25/32 | *SB-2781E | *SB-2781E-T |
| | 2.8120 | 2-13/16 | *SB-2812E | *SB-2812E-T |
| | 2.8430 | 2-27/32 | *SB-2843E | *SB-2843E-T |
| | 2.8750 | 2-7/8 | *SB-2875E | *SB-2875E-T |
| | 2.9060 | 2-29/32 | *SB-2906E | *SB-2906E-T |
| | 2.9370 | 2-15/16 | *SB-2937E | *SB-2937E-T |
| | 2.9680 | 2-31/32 | *SB-2968E | *SB-2968E-T |
| | 3.0000 | 3 | *SB-3000E | *SB-3000E-T |
| | 3.0310 | 3-1/32 | *SB-3031E | *SB-3031E-T |
| | 3.0620 | 3-1/16 | *SB-3062E | *SB-3062E-T |
| | 3.0930 | 3-3/32 | *SB-3093E | *SB-3093E-T |
| | 3.1250 | 3-1/8 | *SB-3125E | *SB-3125E-T |
| | 3.1560 | 3-5/32 | *SB-3156E | *SB-3156E-T |
| | 3.1870 | 3-3/16 | *SB-3187E | *SB-3187E-T |
| | 3.2180 | 3-7/32 | *SB-3218E | *SB-3218E-T |
| | 3.2500 | 3-1/4 | *SB-3250E | *SB-3250E-T |
| | 3.2810 | 3-9/32 | *SB-3281E | *SB-3281E-T |
| | 3.3120 | 3-5/16 | *SB-3312E | *SB-3312E-T |
| | 3.3430 | 3-11/32 | *SB-3343E | *SB-3343E-T |
| | 3.3750 | 3-3/8 | *SB-3375E | *SB-3375E-T |

** Outgoing Items*

## SPADE DRILL BLADES • SERIES F, G

• Premium CPM-M4 material, better wear resistance, greater tool life. • Positive lip geometry, reduces horsepower, providing better shearing action.
• Available off the shelf in TiN coating, for quicker delivery and service. • Shorter projection for better penetration rates.
• Will work with your existing spade drill blade holders.




| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| **F**<br>L=2.875<br>T=0.500<br>W=2.625 | 3.0000 | 3 | *SB-3000F | *SB-3000F-T |
| | 3.0310 | 3-1/32 | *SB-3031F | *SB-3031F-T |
| | 3.0620 | 3-1/16 | *SB-3062F | *SB-3062F-T |
| | 3.0930 | 3-3/16 | *SB-3093F | *SB-3093F-T |
| | 3.1250 | 3-1/8 | *SB-3125F | *SB-3125F-T |
| | 3.1560 | 3-5/32 | *SB-3156F | *SB-3156F-T |
| | 3.1870 | 3-3/16 | *SB-3187F | *SB-3187F-T |
| | 3.2180 | 3-7/32 | *SB-3218F | *SB-3218F-T |
| | 3.2500 | 3-1/4 | *SB-3250F | *SB-3250F-T |
| | 3.2810 | 3-9/32 | *SB-3281F | *SB-3281F-T |
| | 3.3120 | 3-5/16 | *SB-3312F | *SB-3312F-T |
| | 3.3430 | 3-11/32 | *SB-3343F | *SB-3343F-T |
| | 3.3750 | 3-3/8 | *SB-3375F | *SB-3375F-T |
| | 3.4060 | 3-13/32 | *SB-3406F | *SB-3406F-T |
| | 3.4370 | 3-7/16 | *SB-3437F | *SB-3437F-T |
| | 3.4680 | 3-15/32 | *SB-3468F | *SB-3468F-T |
| | 3.5000 | 3-1/2 | *SB-3500F | *SB-3500F-T |
| | 3.5310 | 3-17/32 | *SB-3531F | *SB-3531F-T |
| | 3.5620 | 3-9/16 | *SB-3562F | *SB-3562F-T |
| | 3.5930 | 3-19/32 | *SB-3593F | *SB-3593F-T |
| | 3.6250 | 3-5/8 | *SB-3625F | *SB-3625F-T |
| | 3.6560 | 3-21/32 | *SB-3656F | *SB-3656F-T |
| | 3.6870 | 3-11/16 | *SB-3687F | *SB-3687F-T |
| | 3.7180 | 3-23/32 | *SB-3718F | *SB-3718F-T |
| | 3.7500 | 3-3/4 | *SB-3750F | *SB-3750F-T |
| | 3.7810 | 3-25/32 | *SB-3781F | *SB-3781F-T |
| | 3.8120 | 3-13/16 | *SB-3812F | *SB-3812F-T |
| | 3.8430 | 3-27/32 | *SB-3843F | *SB-3843F-T |
| | 3.8750 | 3-7/8 | *SB-3875F | *SB-3875F-T |

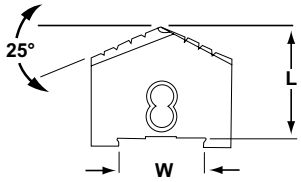
** Outgoing Items*

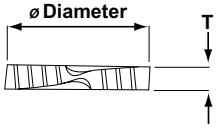
| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| **G**<br>L=3.375<br>T=0.625<br>W=3.062 | 3.5000 | 3-1/2 | *SB-3500G | *SB-3500G-T |
| | 3.5310 | 3-17/32 | *SB-3531G | *SB-3531G-T |
| | 3.5620 | 3-9/16 | *SB-3562G | *SB-3562G-T |
| | 3.5930 | 3-19/32 | *SB-3593G | *SB-3593G-T |
| | 3.6250 | 3-5/8 | *SB-3625G | *SB-3625G-T |
| | 3.6560 | 3-21/32 | *SB-3656G | *SB-3656G-T |
| | 3.6870 | 3-11/16 | *SB-3687G | *SB-3687G-T |
| | 3.7180 | 3-23/32 | *SB-3718G | *SB-3718G-T |
| | 3.7500 | 3-3/4 | *SB-3750G | *SB-3750G-T |
| | 3.7810 | 3-25/32 | *SB-3781G | *SB-3781G-T |
| | 3.8120 | 3-13/16 | *SB-3812G | *SB-3812G-T |
| | 3.8430 | 3-27/32 | *SB-3843G | *SB-3843G-T |
| | 3.8750 | 3-7/8 | *SB-3875G | *SB-3875G-T |
| | 3.9060 | 3-29/32 | *SB-3906G | *SB-3906G-T |
| | 3.9370 | 3-15/16 | *SB-3937G | *SB-3937G-T |
| | 3.9680 | 3-31/32 | *SB-3968G | *SB-3968G-T |
| | 4.0000 | 4 | *SB-4000G | *SB-4000G-T |
| | 4.0620 | 4-1/16 | *SB-4062G | *SB-4062G-T |
| | 4.1250 | 4-1/8 | *SB-4125G | *SB-4125G-T |
| | 4.1870 | 4-3/16 | *SB-4187G | *SB-4187G-T |
| | 4.2500 | 4-1/4 | *SB-4250G | *SB-4250G-T |
| | 4.3120 | 4-5/16 | *SB-4312G | *SB-4312G-T |
| | 4.3750 | 4-3/8 | *SB-4375G | *SB-4375G-T |

** Outgoing Items*

## SPADE DRILL BLADES • SERIES H

- Premium CPM-M4 material, better wear resistance, greater tool life. • Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service. • Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.



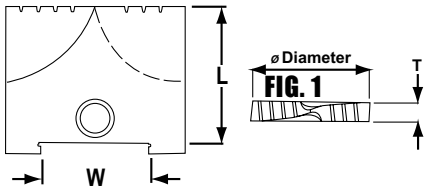



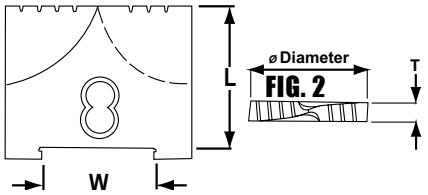

| SERIES | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | UNCOATED BLADES PART NUMBER | TiN COATED BLADES PART NUMBER |
|---|---|---|---|---|
| **H**<br>L=3.688<br>T=0.687<br>W=3.500 | *4.0000* | *4* | **SB-4000H* | **SB-4000H-T* |
| | *4.0620* | *4-1/16* | **SB-4062H* | **SB-4062H-T* |
| | *4.1250* | *4-1/8* | **SB-4125H* | **SB-4125H-T* |
| | *4.1870* | *4-3/16* | **SB-4187H* | **SB-4187H-T* |
| | *4.2500* | *4-1/4* | **SB-4250H* | **SB-4250H-T* |
| | *4.3120* | *4-5/16* | **SB-4312H* | **SB-4312H-T* |
| | *4.3750* | *4-3/8* | **SB-4375H* | **SB-4375H-T* |
| | *4.4370* | *4-7/16* | **SB-4437H* | **SB-4437H-T* |
| | *4.5000* | *4-1/2* | **SB-4500H* | **SB-4500H-T* |
| | *4.5620* | *4-9/16* | **SB-4562H* | **SB-4562H-T* |
| | *4.6250* | *4-5/8* | **SB-4625H* | **SB-4625H-T* |
| | *4.6870* | *4-11/16* | **SB-4687H* | **SB-4687H-T* |
| | *4.7500* | *4-3/4* | **SB-4750H* | **SB-4750H-T* |
| | *4.8120* | *4-13/16* | **SB-4812H* | **SB-4812H-T* |
| | *4.8750* | *4-7/8* | **SB-4875H* | **SB-4875H-T* |
| | *4.9370* | *4-15/16* | **SB-4937H* | **SB-4937H-T* |
| | *5.0000* | *5* | **SB-5000H* | **SB-5000H-T* |
| | *5.1250* | *5-1/8* | **SB-5125H* | **SB-5125H-T* |
| | *5.2500* | *5-1/4* | **SB-5250H* | **SB-5250H-T* |
| | *5.3750* | *5-3/8* | **SB-5375H* | **SB-5375H-T* |
| | *5.5000* | *5-1/2* | **SB-5500H* | **SB-5500H-T* |
| | *5.6250* | *5-5/8* | **SB-5625H* | **SB-5625H-T* |
| | *5.7500* | *5-3/4* | **SB-5750H* | **SB-5750H-T* |
| | *5.8750* | *5-7/8* | **SB-5875H* | **SB-5875H-T* |
| | *6.0000* | *6* | **SB-6000H* | **SB-6000H-T* |
| | *6.1250* | *6-1/8* | **SB-6125H* | **SB-6125H-T* |
| | *6.2500* | *6-1/4* | **SB-6250H* | **SB-6250H-T* |
| | *6.3750* | *6-3/8* | **SB-6375H* | **SB-6375H-T* |
| | *6.5000* | *6-1/2* | **SB-6500H* | **SB-6500H-T* |
| | *6.6250* | *6-5/8* | **SB-6625H* | **SB-6625H-T* |
| | *6.7500* | *6-3/4* | **SB-6750H* | **SB-6750H-T* |
| | *6.8750* | *6-7/8* | **SB-6875H* | **SB-6875H-T* |
| | *7.0000* | *7* | **SB-7000H* | **SB-7000H-T* |
| | *7.1250* | *7-1/8* | **SB-7125H* | **SB-7125H-T* |
| | *7.2500* | *7-1/4* | **SB-7250H* | **SB-7250H-T* |
| | *7.3750* | *7-3/8* | **SB-7375H* | **SB-7375H-T* |

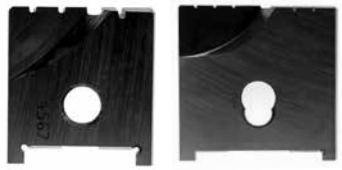
**** Outgoing Items***

## SPADE DRILL BLADES • FLAT BOTTOM MS, A, B, C, D SERIES

• Premium CPM-M4 material, better wear resistance, greater tool life. • Positive lip geometry, reduces horsepower, providing better shearing action.
• Available off the shelf in TiN coating, for quicker delivery and service. • Shorter projection for better penetration rates.
• Will work with your existing spade drill blade holders.



| SERIES MS L=0.843 T=0.125 W=0.562 FIG. 1 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *0.7500* | *3/4* | **FB-0750MS* |
| | *0.8120* | *13/16* | **FB-0812MS* |
| | *0.8750* | *7/8* | **FB-0875MS* |
| | *0.9370* | *15/16* | **FB-0937MS* |
| | *1.0000* | *1* | **FB-1000MS* |

** Outgoing Items*

| SERIES A L=0.937 T=0.187 W=0.750 FIG. 1 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *1.0000* | *1* | **FB-1000A* |
| | *1.0620* | *1-1/16* | **FB-1062A* |
| | *1.1870* | *1-3/16* | **FB-1187A* |

** Outgoing Items*

| SERIES B L=1.125 T=0.281 W=1.062 FIG. 1 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *1.0000* | *1* | **FB-1000B* |
| | *1.0620* | *1-1/16* | **FB-1062B* |
| | *1.1250* | *1-1/8* | **FB-1125B* |
| | *1.1870* | *1-3/16* | **FB-1187B* |
| | *1.2500* | *1-1/4* | **FB-1250B* |
| | *1.3120* | *1-5/16* | **FB-1312B* |
| | *1.4370* | *1-7/16* | **FB-1437B* |

** Outgoing Items*

| SERIES C L=1.562 T=0.312 W=1.250 FIG. 2 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *1.8120* | *1-13/16* | **FB-1812C* |

** Outgoing Items*

| SERIES D L=2.000 T=0.375 W=1.750 FIG. 2 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *2.1250* | *2-1/8* | **FB-2125D* |
| | *2.1870* | *2-3/16* | **FB-2187D* |
| | *2.3120* | *2-5/16* | **FB-2312D* |
| | *2.3750* | *2-3/8* | **FB-2375D* |
| | *2.4370* | *2-7/16* | **FB-2437D* |
| | *2.5000* | *2-1/2* | **FB-2500D* |

** Outgoing Items*

## SPADE DRILL BLADES • FLAT BOTTOM E, F, G, H SERIES



- Premium CPM-M4 material, better wear resistance, greater tool life. • Positive lip geometry, reduces horsepower, providing better shearing action.
- Available off the shelf in TiN coating, for quicker delivery and service. • Shorter projection for better penetration rates.
- Will work with your existing spade drill blade holders.

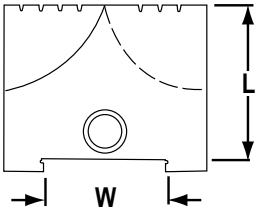
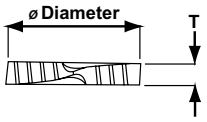



FIG. 1



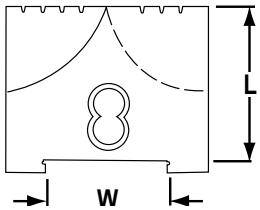
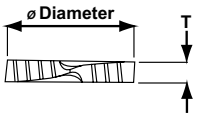
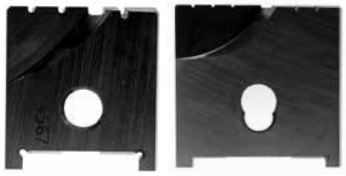




FIG. 2



| SERIES E L=2.375 T=0.437 W=2.062 FIG. 2 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *2.5620* | *2-9/16* | **FB-2562E* |
| | *2.6250* | *2-5/8* | **FB-2625E* |
| | *2.8120* | *2-13/16* | **FB-2812E* |
| | *2.8750* | *2-7/8* | **FB-2875E* |
| | *3.0000* | *3* | **FB-3000E* |

** Outgoing Items*

| SERIES F L=2.875 T=0.500 W=2.625 FIG. 2 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *3.1250* | *3-1/8* | **FB-3125F* |
| | *3.1870* | *3-3/16* | **FB-3187F* |
| | *3.3120* | *3-5/16* | **FB-3312F* |
| | *3.4370* | *3-7/16* | **FB-3437F* |

** Outgoing Items*

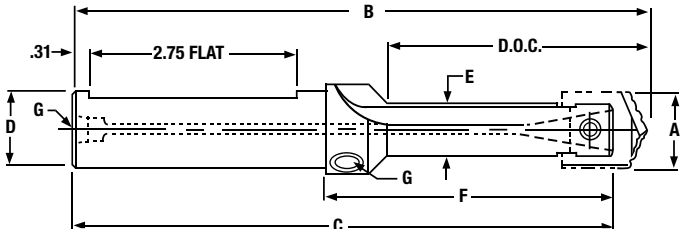
| SERIES G L=3.375 T=0.625 W=3.062 FIG. 2 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *3.5620* | *3-9/16* | **FB-3562G* |
| | *3.6250* | *3-5/8* | **FB-3625G* |
| | *3.6870* | *3-11/16* | **FB-3687G* |
| | *3.7500* | *3-3/4* | **FB-3750G* |
| | *3.8120* | *3-13/16* | **FB-3812G* |
| | *3.8750* | *3-7/8* | **FB-3875G* |
| | *3.9370* | *3-15/16* | **FB-3937G* |
| | *4.0000* | *4* | **FB-4000G* |

** Outgoing Items*

| SERIES H L=3.688 T=0.687 W=3.500 FIG. 2 | DECIMAL DIA. (IN.) | FRACTION DIA. (IN.) | PART NUMBER |
|---|---|---|---|
| | *4.1250* | *4-1/8* | **FB-4125H* |
| | *4.6250* | *4-5/8* | **FB-4625H* |
| | *4.7500* | *4-3/4* | **FB-4750H* |

** Outgoing Items*

## SPADE BLADE HOLDERS •MINI SERIES • STRAIGHT SHANK • COOLANT : END ENTRY & SIDE ENTRY




### STANDARD

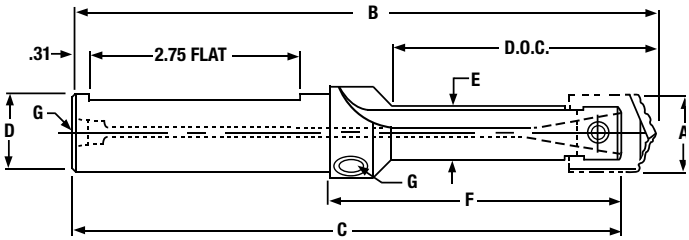
•Spade blades sold separately, beginning on page 64.

| PART NUMBER | SERIES | A RANGE | B | C | D SHANK DIA. | E BODY DIA. | D.O.C. MAX. | F | G |
|---|---|---|---|---|---|---|---|---|---|
| SHORT SERIES | | | | | | | | | |
| * SBH-MS-001 | MS | 0.672 to 1.000 | 7-15/32 | 7-3/16 | 1.000 | 0.650 | 3-1/8 | 3-13/16 | 1/8-27 NPT |
| MEDIUM SERIES | | | | | | | | | |
| * SBH-MS-003 | MS | 0.672 to 1.000 | 9-15/32 | 9-3/16 | 1.000 | 0.650 | 5-1/8 | 5-13/16 | 1/8-27 NPT |
| LONG SERIES | | | | | | | | | |
| * SBH-MS-005 | MS | 0.672 to 1.000 | 11-15/32 | 11-3/16 | 1.000 | 0.650 | 7-1/8 | 7-13/16 | 1/8-27 NPT |

** Outgoing Items*

• One pass drilling • No pecking cycle needed • No lost time for chip removal • Chip breakers built into spade blades results in small “C” shaped chips • Longer tool life • Less heat damage with coolant • Less friction through better lubrication

## SPADE BLADE HOLDERS •MINI SERIES • HEAVY DUTY • STRAIGHT SHANK • COOLANT : END ENTRY & SIDE ENTRY

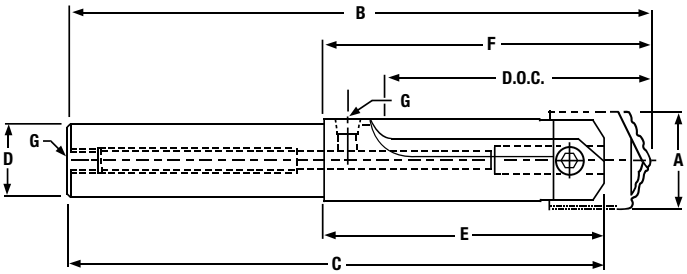



### HEAVY DUTY

•Spade blades sold separately, beginning on page 64.

| PART NUMBER | SERIES | A RANGE | B | C | D SHANK DIA. | E BODY DIA. | D.O.C. MAX. | F | G |
|---|---|---|---|---|---|---|---|---|---|
| MEDIUM SERIES | | | | | | | | | |
| * SBH-MS-004 | MS | 0.812 to 1.000 | 9-15/32 | 9-3/16 | 1.000 | 0.687 | 5-1/8 | 5-13/16 | 1/8-27 NPT |
| LONG SERIES | | | | | | | | | |
| * SBH-MS-006 | MS | 0.812 to 1.000 | 11-15/32 | 11-3/16 | 1.000 | 0.687 | 7-1/8 | 7-13/16 | 1/8-27 NPT |

** Outgoing Items*




## SHORT SERIES

•Spade blades sold separately, beginning on page 64.

| PART NUMBER | SERIES | A | B | C | D | E | D.O.C. MAX. | F | G |
|---|---|---|---|---|---|---|---|---|---|
| * 801-003 | **A | 31/32 to 1-3/8 | 6-13/16 | 6-1/2 | 1 | 3 | 2-7/8 | 3-5/16 | 1/8 NPT |
| * 801-005 | B | 1-1/4 to 1-3/4 | 7-3/4 | 7-1/2 | 1 | 3-1/2 | 3-1/4 | 3-3/4 | 1/8 NPT |
| * 801-006 | B | 1-1/4 to 1-3/4 | 7-3/4 | 7-1/2 | 1-1/2 | 3-1/2 | 3-1/4 | 3-3/4 | 1/8 NPT |
| * 801-009 | D | 2 to 2-7/8 | 8-5/8 | 8 | 1-1/2 | 4 | 4-1/8 | 4-5/8 | 1/4 NPT |
| * 801-010 | D | 2 to 2-7/8 | 8-5/8 | 8 | 1-3/4 | 4 | 4-1/8 | 4-5/8 | 1/4 NPT |
| * 801-011 | E | 2-1/2 to 3-3/8 | 9-13/16 | 9 | 1-3/4 | 5 | 5-3/8 | 5-13/16 | 1/4 NPT |
| * 801-012 | E | 2-1/2 to 3-3/8 | 9-13/16 | 9 | 2 | 5 | 5-3/8 | 5-13/16 | 1/4 NPT |
| * 801-013 | F | 3 to 3-7/8 | 11 | 10 | 2 | 6 | 6-1/2 | 7 | 3/8 NPT |
| * 801-014 | F | 3 to 3-7/8 | 11 | 10 | 2-1/2 | 6 | 6-1/2 | 7 | 3/8 NPT |
| * 801-115 | G | 3-1/2 to 4-1/2 | 12-7/16 | 11 | 3 | 6 | 7 | 7-7/16 | 1/2 NPT |

** Outgoing Items*

## LONG SERIES

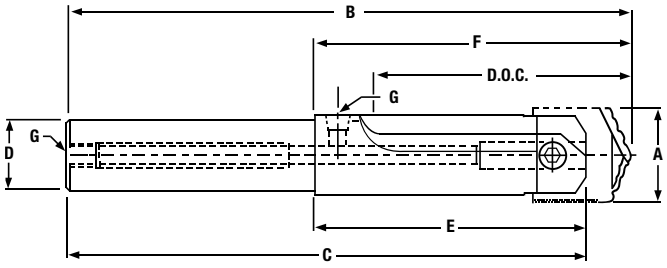
•Spade blades sold separately, beginning on page 64.

| PART NUMBER | SERIES | A | B | C | D | E | D.O.C. MAX. | F | G |
|---|---|---|---|---|---|---|---|---|---|
| * 801-015 | AA | 31/32 to 1-3/8 | 11-3/4 | 11-1/4 | 1 | 7-3/4 | 7-3/4 | 8-1/4 | 1/8 NPT |
| * 801-016 | AA | 31/32 to 1-3/8 | 11-3/4 | 11-1/4 | 1-1/2 | 7-3/4 | 7-3/4 | 8-1/4 | 1/8 NPT |
| * 801-017 | **A | 31/32 to 1-3/8 | 11-9/16 | 11-1/4 | 1 | 7-3/4 | 7-5/8 | 8-1/16 | 1/8 NPT |
| * 801-018 | **A | 31/32 to 1-3/8 | 11-9/16 | 11-1/4 | 1-1/2 | 7-3/4 | 7-5/8 | 8-1/16 | 1/8 NPT |
| * 801-019 | B | 1-1/4 to 1-3/4 | 12-3/8 | 12-1/8 | 1-1/4 | 8-1/8 | 7-7/8 | 8-3/8 | 1/8 NPT |
| * 801-020 | B | 1-1/4 to 1-3/4 | 12-3/8 | 12-1/8 | 1-1/2 | 8-1/8 | 7-7/8 | 8-3/8 | 1/8 NPT |
| * 801-021 | C | 1-1/2 to 2-3/8 | 12-15/16 | 12-1/2 | 1-1/2 | 8-1/2 | 8-1/2 | 8-15/16 | 1/8 NPT |
| * 801-023 | E | 2-1/2 to 3-3/8 | 15-1/16 | 14-1/4 | 2 | 10-1/4 | 10-5/8 | 11-1/16 | 1/4 NPT |
| * 801-025 | G | 3-1/2 to 4-1/2 | 19-15/16 | 18-1/2 | 3 | 13-1/2 | 14-1/2 | 14-15/16 | 1/2 NPT |
| * 801-026 | H | 4 to 8 | 23-1/16 | 21-1/2 | 3 | 15-1/2 | 16-5/8 | 17-1/16 | 1/2 NPT |

** Outgoing Items*

**Note : “A” series holders accept blades 3/16” thick. For blades 1/4” thick, order holders series “AA”

## SPADE BLADE HOLDERS • STRAIGHT SHANK • COOLANT : END ENTRY & SIDE ENTRY



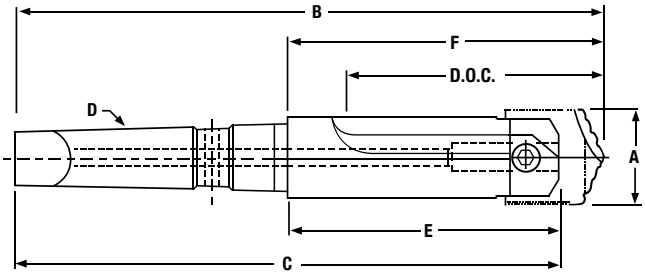

### EXTRA LONG SERIES

•Spade blades sold separately, beginning on page 64.

| PART NUMBER | SERIES | A | B | C | D | E | D.O.C. MAX. | F | G |
|---|---|---|---|---|---|---|---|---|---|
| * 801-127 | A | 31/32 to 1-3/8 | 14-9/16 | 14-3/4 | 1-1/2 | 11-1/4 | 11-1/8 | 11-9/16 | 1/8 NPT |
| * 801-128 | B | 1-1/4 to 1-3/4 | 15-1/2 | 15-1/4 | 1-1/2 | 11-1/4 | 11 | 11-1/2 | 1/8 NPT |
| * 801-129 | C | 1-1/2 to 2-3/8 | 17-7/16 | 17 | 1-1/2 | 13 | 13 | 13-7/16 | 1/8 NPT |
| * 801-130 | D | 2 to 2-7/8 | 17-1/2 | 17 | 1-3/4 | 13 | 13-1/8 | 13-1/2 | 1/4 NPT |
| * 801-131 | E | 2-1/2 to 3-3/8 | 18-13/16 | 18 | 2 | 14 | 14-3/8 | 14-13/16 | 1/4 NPT |

** Outgoing Items*

## SPADE BLADE HOLDERS •TAPER SHANK • COOLANT : SIDE ENTRY ON MORSE TAPER




### SHORT SERIES

•Spade blades sold separately, beginning on page 64.

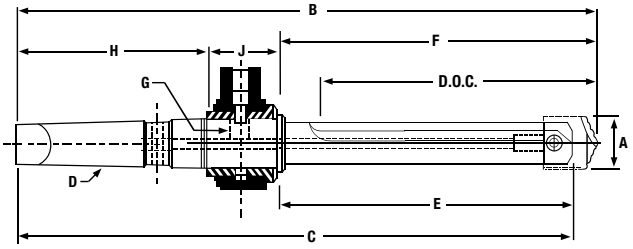
| PART NUMBER | SERIES | A | B | C | D | E | D.O.C. MAX. | F |
|---|---|---|---|---|---|---|---|---|
| * 801-027 | AA | 31/32 to 1-3/8 | 7-3/8 | 6-7/8 | #3 | 3 | 3-1/8 | 3-1/2 |
| * 801-028 | **A | 31/32 to 1-3/8 | 7-3/16 | 6-7/8 | #3 | 3 | 2-7/8 | 3-5/16 |
| * 801-029 | B | 1-1/4 to 1-3/4 | 8-5/8 | 8-3/8 | #4 | 3-1/2 | 3-1/4 | 3-3/4 |
| * 801-030 | C | 1-1/2 to 2-3/8 | 8-13/16 | 8-3/8 | #4 | 3-1/2 | 3-1/2 | 3-15/16 |
| * 801-031 | D | 2 to 2-7/8 | 9-1/2 | 8-7/8 | #4 | 4 | 4-1/8 | 4-5/8 |
| * 801-032 | E | 2-1/2 to 3-3/8 | 11-15/16 | 11-1/8 | #5 | 5 | 5-3/8 | 5-13/16 |

** Outgoing Items*

**Note : “A” series holders accept blades 3/16” thick. For blades 1/4” thick, order holders series “AA”

## SPADE BLADE HOLDERS TAPER SHANK • COOLANT: SIDE ENTRY • PROVISION FOR OPTIONAL ROTARY COOLANT GLAND

**Spade blade holders DO NOT include Rotary Coolant Glands. To order Rotary Coolant Glands, see pages 112-113.**




### SHORT SERIES

•Spade blades sold separately, beginning on page 64.

*OPTIONAL*

| PART NUMBER | SERIES | A | B | C | D MT | E | D.O.C. MAX. | F | G | H | J | ROTARY COOLANT GLAND |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 801-036 | A | 31/32 to 1-3/8 | 10-1/16 | 9-3/4 | #4 | 3 | 2-7/8 | 3-5/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-037 | B | 1-1/4 to 1-3/4 | 10-1/2 | 10-1/4 | #4 | 3-1/2 | 3-1/4 | 3-3/4 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-038 | C | 1-1/2 to 2-3/8 | 11-3/16 | 10-3/4 | #4 | 4 | 4 | 4-7/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-039 | D | 2 to 2-7/8 | 11-7/8 | 11-1/4 | #4 | 4-1/2 | 4-5/8 | 5-1/8 | 3/8 NPT | 4-7/8 | 1-7/8 | CGH2-1500 |
| * 801-040 | E | 2-1/2 to 3-3/8 | 14-3/16 | 13-3/8 | #5 | 5 | 5-3/8 | 5-13/16 | 3/8 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| * 801-041 | F | 3 to 3-7/8 | 14-7/8 | 13-7/8 | #5 | 5-1/2 | 6 | 6-1/2 | 3/8 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| * 801-043 | H | 4 to 8 | 20-1/8 | 18-9/16 | #6 | 7 | 8-1/8 | 8-9/16 | 1/2 NPT | 8-9/16 | 3 | CGH2-2562 |

** Outgoing Items*

### MEDIUM SERIES

•Spade blades sold separately, beginning on page 64.

*OPTIONAL*

| PART NUMBER | SERIES | A | B | C | D MT | E | D.O.C. MAX. | F | G | H | J | ROTARY COOLANT GLAND |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 801-044 | AA | 31/32 to 1-3/8 | 15 | 14-1/2 | #4 | 7-3/4 | 7-3/4 | 8-1/4 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-045 | **A | 31/32 to 1-3/8 | 14-13/16 | 14-1/2 | #4 | 7-3/4 | 7-5/8 | 8-1/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-046 | B | 1-1/4 to 1-3/4 | 15-1/8 | 14-7/8 | #4 | 8-1/8 | 7-7/8 | 8-3/8 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-047 | C | 1-1/2 to 2-3/8 | 15-11/16 | 15-1/4 | #4 | 8-1/2 | 8-1/2 | 8-15/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-048 | D | 2 to 2-7/8 | 16-13/16 | 16-3/16 | #4 | 9-1/4 | 9-3/8 | 9-7/8 | 3/8 NPT | 4-7/8 | 2-1/16 | CGH2-1500 |
| * 801-049 | E | 2-1/2 to 3-3/8 | 19-7/16 | 18-5/8 | #5 | 10-1/4 | 10-1/2 | 11-1/16 | 3/8 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| * 801-050 | F | 3 to 3-7/8 | 21-1/8 | 20-1/8 | #5 | 11-3/4 | 12-1/4 | 12-3/4 | 3/8 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| * 801-051 | G | 3-1/2 to 4-1/2 | 23-5/16 | 21-7/8 | #5 | 13-1/2 | 14-1/2 | 14-15/16 | 3/8NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| * 801-052 | H | 4 to 8 | 28-5/8 | 27-1/16 | #6 | 15-1/2 | 16-5/8 | 17-1/16 | 1/2 NPT | 8-9/16 | 3 | CGH2-2562 |

** Outgoing Items*

**Note : "A" series holders accept blades 3/16" thick. For blades 1/4" thick, order holders series "AA"

### LONG SERIES

•Spade blades sold separately, beginning on page 64.

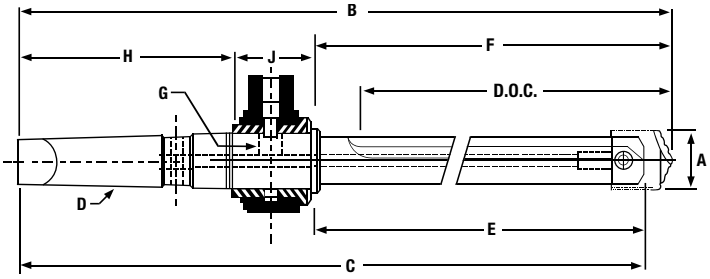
*OPTIONAL*

| PART NUMBER | SERIES | A | B | C | D MT | E | D.O.C. MAX. | F | G | H | J | ROTARY COOLANT GLAND |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 801-145 | A | 31/32 to 1-3/8 | 18-5/16 | 18 | #4 | 11-1/4 | 11-1/8 | 11-9/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-146 | B | 1-1/4 to 1-3/4 | 18-1/4 | 18 | #4 | 11-1/4 | 11 | 11-1/2 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-147 | C | 1-1/2 to 2-3/8 | 20-3/16 | 19-3/4 | #4 | 13 | 13 | 13-7/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| * 801-148 | D | 2 to 2-7/8 | 20-9/16 | 19-15/16 | #4 | 13 | 13-1/8 | 13-5/8 | 3/8 NPT | 4-7/8 | 2-1/16 | CGH2-1500 |
| * 801-149 | E | 2-1/2 to 3-3/8 | 23-3/16 | 22-3/8 | #5 | 14 | 14-3/8 | 14-13/16 | 318 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |

** Outgoing Items*

## SPADE BLADE HOLDERS • TAPER SHANK • COOLANT: SIDE ENTRY • PROVISION FOR OPTIONAL ROTARY COOLANT GLAND

• Spade blade holders DO NOT include Rotary Coolant Glands. To order Rotary Coolant Glands, see pages 112-113.




### EXTRA LONG SERIES

•Spade blades sold separately, beginning on page 64.

*OPTIONAL*

| PART NUMBER | SERIES | A | B | C | D MT | E | D.O.C. MAX. | F | G | H | J | ROTARY COOLANT GLAND |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *801-053 | AA | 31/32 to 1-3/8 | 22-1/4 | 21-3/4 | #4 | 15 | 15-1/8 | 15-1/2 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| *801-054 | **A | 31/32 to 1-3/8 | 22-1/16 | 21-3/4 | #4 | 15 | 14-7/8 | 15-5/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| *801-055 | B | 1-1/4 to 1-3/4 | 22 | 21-3/4 | #4 | 15 | 14-3/4 | 15-1/4 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| *801-056 | C | 1-1/2 to 2-3/8 | 25-3/16 | 24-3/4 | #4 | 18 | 18 | 18-7/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| *801-057 | D | 2 to 2-7/8 | 25-9/16 | 24-15/16 | #4 | 18 | 18-1/8 | 18-5/8 | 3/8 NPT | 4-7/8 | 2-1/16 | CGH2-1500 |
| *801-058 | E | 2-1/2 to 3-3/8 | 29-3/16 | 28-3/8 | #5 | 20 | 20-3/8 | 20-13/16 | 3/8 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| *801-059 | F | 3 to 3-7/8 | 29-3/8 | 28-3/8 | #5 | 20 | 20-1/2 | 21 | 3/8 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| *801-061 | H | 4 to 8 | 37-1/8 | 35-9/16 | #6 | 24 | 25-1/8 | 25-9/16 | 1/2 NPT | 8-9/16 | 3 | CGH2-2562 |

** Outgoing Items*

**Note : "A" series holders accept blades 3/16" thick. For blades 1/4" thick, order holders series "AA"

### SUPER LONG SERIES

•Spade blades sold separately, beginning on page 64.

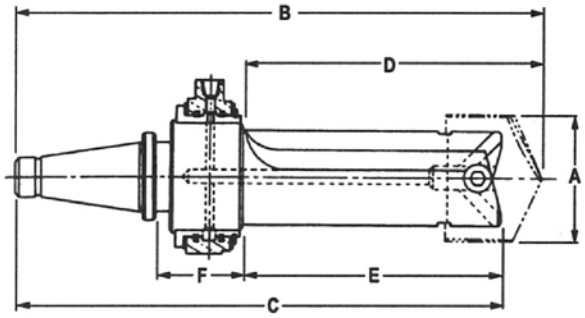
*OPTIONAL*

| PART NUMBER | SERIES | A | B | C | D MT | E | D.O.C. MAX. | F | G | H | J | ROTARY COOLANT GLAND |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *801-062 | A | 31/32 to 1-3/8 | 28-1/16 | 27-3/4 | #4 | 21 | 20-7/8 | 21-5/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| *801-063 | B | 1-1/4 to 1-3/4 | 29 | 28-3/4 | #4 | 22 | 21-3/4 | 22-1/4 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| *801-064 | C | 1-1/2 to 2-3/8 | 33-3/16 | 32-3/4 | #4 | 26 | 26 | 26-7/16 | 1/4 NPT | 4-7/8 | 1-7/8 | CGH2-1250 |
| *801-065 | D | 2 to 2-7/8 | 35-9/16 | 34-15/16 | #4 | 28 | 28-1/8 | 28-5/8 | 3/8 NPT | 4-7/8 | 2-1/16 | CGH2-1500 |
| *801-067 | F | 3 to 3-7/8 | 42-3/8 | 41-3/8 | #5 | 33 | 33-1/2 | 34 | 3/8 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| *801-068 | G | 3-1/2 to 4-1/2 | 46-13/16 | 45-3/8 | #5 | 37 | 38 | 38-7/16 | 3/8 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| *801-069 | H | 4 to 8 | 49-15/16 | 48-3/8 | #5 | 40 | 41-1/8 | 41-9/16 | 1/2 NPT | 6-1/8 | 2-1/4 | CGH2-2000 |
| *801-070 | H | 4 to 8 | 53-1/8 | 51-9/16 | #6 | 40 | 41-1/8 | 41-9/16 | 1/2 NPT | 8-9/16 | 3 | CGH2-2562 |

** Outgoing Items*

## SPADE BLADE HOLDERS • 50 NMTB • TAPER SHANK • COOLANT: SIDE ENTRY• PROVISION FOR OPTIONAL ROTARY COOLANT GLAND

• Spade blade holders DO NOT include Rotary Coolant Glands. To order Rotary Coolant Glands, see pages 112-113.




*OPTIONAL*

•Spade blades sold separately, beginning on page 64.

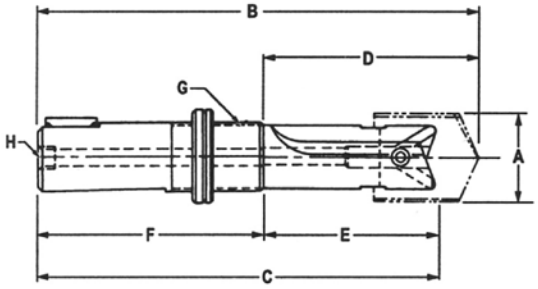


| PART NUMBER | SERIES | A | B | C | D | E | F | ROTARY COOLANT GLAND |
|---|---|---|---|---|---|---|---|---|
| *801-200 | AA | 31/32 to 1-3/8 | 17-3/4 | 16-5/8 | 8 | 8-1/2 | 3-21/32 | CGH2-2562 |
| *801-201 | **A | 31/32 to 1-3/8 | 17-9/16 | 16-5/8 | 8 | 8-5/16 | 3-21/32 | CGH2-2562 |
| *801-202 | B | 1-1/4 to 1-3/4 | 17-3/4 | 16-5/8 | 8 | 8-1/2 | 3-21/32 | CGH2-2562 |
| *801-204 | D | 2 to 2-7/8 | 20-3/8 | 18-3/8 | 10 | 11-1/8 | 3-21/32 | CGH2-2562 |
| *801-205 | E | 2-1/2 to 3-3/8 | 20-9/16 | 18-3/16 | 10 | 11-5/16 | 3-21/32 | CGH2-2562 |
| *801-206 | F | 3 to 3-7/8 | 21-15/16 | 19-1/16 | 11 | 12-7/16 | 3-29/32 | CGH2-4250 |
| *801-208 | H | 4 to 8 | 23-9/16 | 19-7/8 | 12 | 14-1/16 | 3-29/32 | CGH2-4250 |

** Outgoing Items*

**Note : "A" series holders accept blades 3/16" thick. For blades 1/4" thick, order holders series "AA"

## SPADE BLADE HOLDERS • AUTOMOTIVE SERIES• COOLANT: END ENTRY




•Spade blades sold separately, beginning on page 64.

| PART NUMBER | SERIES | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|
| *801-210 | A | 31/32 to1-3/8 | 12-7/16 | 11-1/2 | 6-7/16 | 5-1/2 | 6 | 1-3/8-12 | 1/8 NPT |
| *801-211 | B | 1-1/4 to 1-3/4 | 12-5/8 | 11-1/2 | 6-5/8 | 5-1/2 | 6 | 1-3/8-12 | 1/8 NPT |
| *801-212 | C | 1-1/2 to 2-3/8 | 13-1/16 | 11-1/2 | 7-1/16 | 5-1/2 | 6 | 1-3/8-12 | 1/8 NPT |
| *801-213 | D | 2 to 2-7/8 | 13-1/2 | 11-1/2 | 7-1/2 | 5-1/2 | 6 | 1-7/8-12 | 1/4 NPT |
| *801-214 | E | 2-1/2 to 3-3/8 | 13-7/8 | 11-1/2 | 7-7/8 | 5-1/2 | 6 | 1-7/8-12 | 1/4 NPT |
| *801-215 | F | 3 to 3-7/8 | 14-3/8 | 11-1/2 | 8-3/8 | 5-1/2 | 6 | 1-7/8-12 | 3/8 NPT |
| *801-216 | G | 3-1/2 to 4-1/2 | 14-7/8 | 11-1/2 | 8-7/8 | 5-1/2 | 6 | 1-7/8-12 | 1/2 NPT |
| *801-217 | H | 4 to 8 | 15-3/16 | 11-1/2 | 9-3/16 | 5-1/2 | 6 | 1-7/8-12 | 1/2 NPT |

** Outgoing Items*

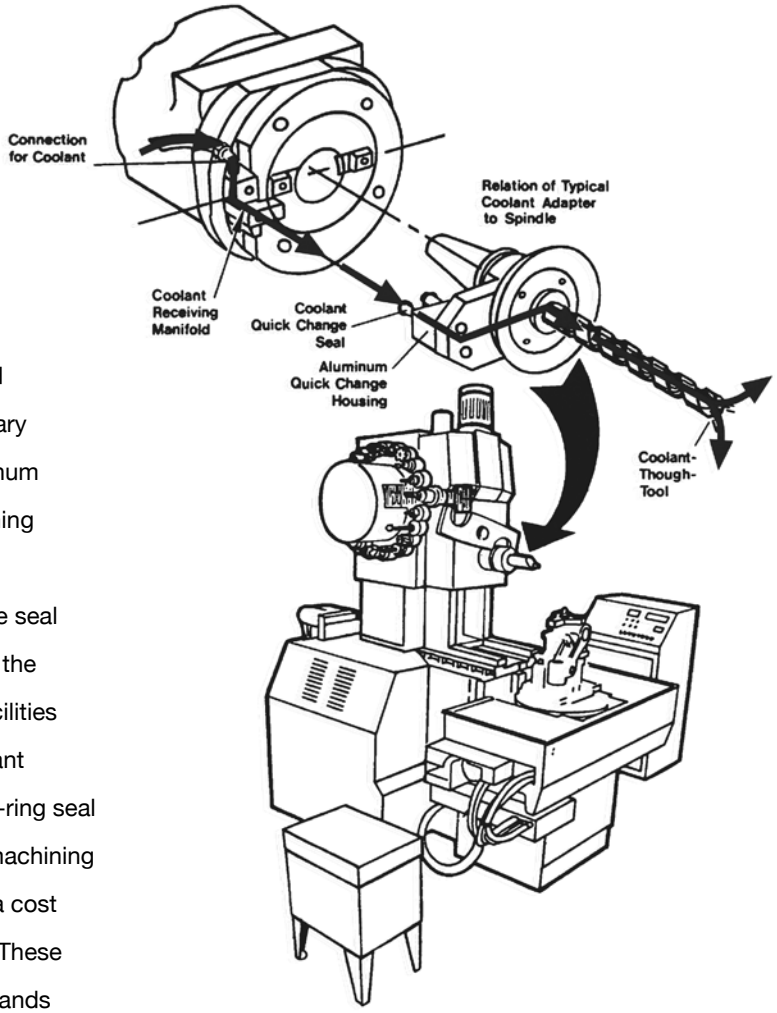
# ADVANTAGES AND INTRODUCTION TO AUTOMATIC TOOL CHANGE COOLANT RETROFIT SYSTEMS

| | |
|---|---|
| **TOOLHOLDER VARIETY** | Our selection of standard holders includes V-Flange and BT Shanks. The types of holders available include single and double angle collet chucks, end mill holders, morse taper and ABS® modular holders. Special application holders can be designed to meet your specifications. |
| **TOOLHOLDER VERSATILITY** | The same toolholder may be used for:<br>1. Automatic rotary induced coolant operation<br>2. Manual rotary induced coolant operation. |
| **MAXIMUM CLEARANCE** | Our compact design allows for trouble free tool change operations as well as maximum tool pocket clearance. |
| **EASY MAINTENANCE** | Simplicity of design and ease of assembly and disassembly allows for quick, economical maintenance. |
| **ADAPTABILITY** | The ATC Retrofit System can be easily adapted to most domestic and imported machines and is interchangeable with most competitive tooling systems. |
| **TOOLHOLDER POSITIONING** | ATC toolholders are equipped with a fully adjustable orientation ring. |
| **TOOL EFFICIENCY** | The light weight of the adapter and coolant gland allows for maximum cutting tool weight. |
| **PROLONG TOOL LIFE** | Cutting tool life is increased by applying coolant-thru-the-tool to prevent heat at the cutting edge, thus reducing premature tool chipping and tool breakage. |
| **IMPROVED PRODUCTION** | Coolant-thru-the-tool allows for increased speeds and feeds, improving surface finish and overall performance. |
| **VALUE** | Point for point, feature for feature, the CFT George Whalley Company ATC System for coolant-fed tooling, is the most economically priced and easily adapted system available. |

## INTRODUCTION TO AUTOMATIC TOOL CHANGE (ATC) RETROFIT SYSTEM

The CFT George Whalley Co. Automatic Tool Change (ATC) Retrofit System is available to users of CNC machining centers with magazine or matrix-type tool storage features. The ATC Retrofit System eliminates the need for manual loading of coolant-fed tooling when high speed unattended operation is desired.

The ATC Retrofit System consists of a specially designed coolant-thru-the-tool holder assembled with an ATC Rotary Coolant Gland. The gland, which is mounted in an aluminum base assembly, is a uniquely designed bronze wear bushing incorporated with a special double seal only found in the CFT George Whalley Co. ATC Rotary Coolant Gland. The seal is self-lubricating, high heat and wear resistant making it the rotary coolant gland of choice in many manufacturing facilities throughout the metal working industry. ATC Rotary Coolant Glands are supplied in face seal and single or dual pin O-ring seal configurations, designed to fit many of today's popular machining centers. The Manual ATC Style Rotary Coolant Gland is a cost effective alternative when evaluating machine feasibility. These glands can be upgraded easily to ATC Rotary Coolant Glands without having to purchase new toothholders.

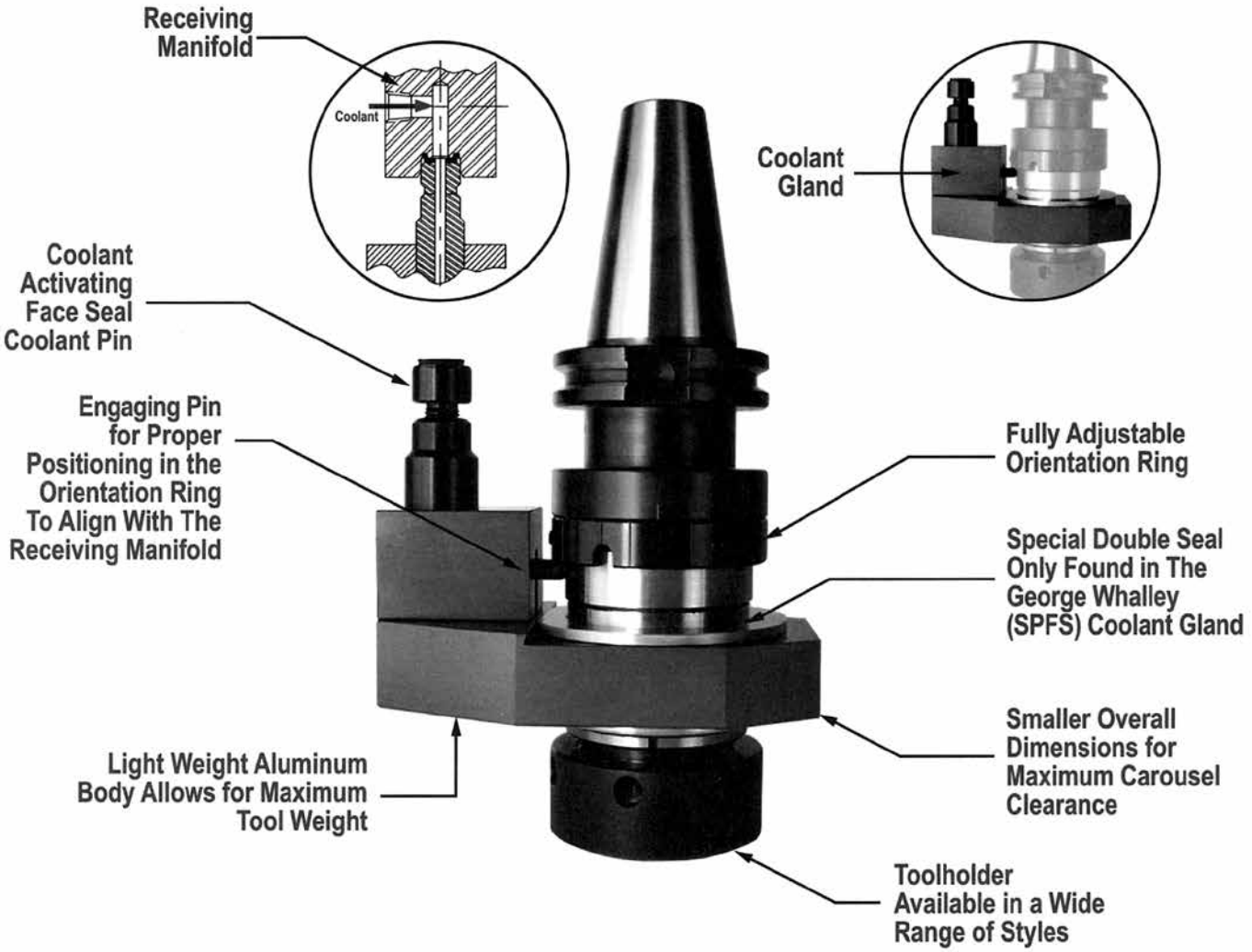





## REQUIREMENTS FOR RETROFITTING

- **SUFFICIENT CLEARANCE IN TOOL CAROUSEL AND TOOL TRANSFER ARM AREAS.**
- **PROPER FILTERED AND PRESSURIZED COOLANT SUPPLY TO SERVE AUXILIARY MANIFOLD AT SPINDLE FACE.**
- **COOLANT FILTRATION AND PUMPING SYSTEM CAPABLE OF PRODUCING THE VOLUME AND PRESSURE NECESSARY FOR TYPES OF TOOLS BEING USED.**
- **PROPER MATCHING OF THE SPINDLE SPECIFICATIONS TO THE CORRECT HOLDER AND GLAND.**
- **CNC CONTROLS ABLE TO OPERATE COOLANT FLOW TO THE AUXILIARY MANIFOLD.**
- **APPROPRIATE SHIELDING OF THE MACHINE TO HANDLE COOLANT FLOW WITHOUT SPLASHING.**

## SINGLE PIN FACE SEAL (SPFS) • AUTOMATIC TOOL CHANGE (ATC) ROTARY COOLANT GLAND ASSEMBLY




## COOLANT GLAND SELECTION

**The Single Pin Face Seal (SPFS) Rotary Coolant Gland is the newest and most popular of the CFT George Whalley Company ATC Coolant Gland assemblies. It is interchangeable with most foreign and domestic automatic tool change systems.**

**The Single Pin Face Seal (SPFS) Coolant Gland is used when your CNC machine spindle accepts a toolholder with a Cat 40, 45, 50 V-Flange or BT40, BT50 shank.**

### TOOLHOLDER SELECTION

- To order V-Flange Holders with (SPFS) Rotary Coolant Glands see pages 90-93.
- To order BT Shank Holders with (SPFS) Rotary Coolant Glands see pages 93-94.

*General Operating Recommendations For All Coolant Glands See Page 88*

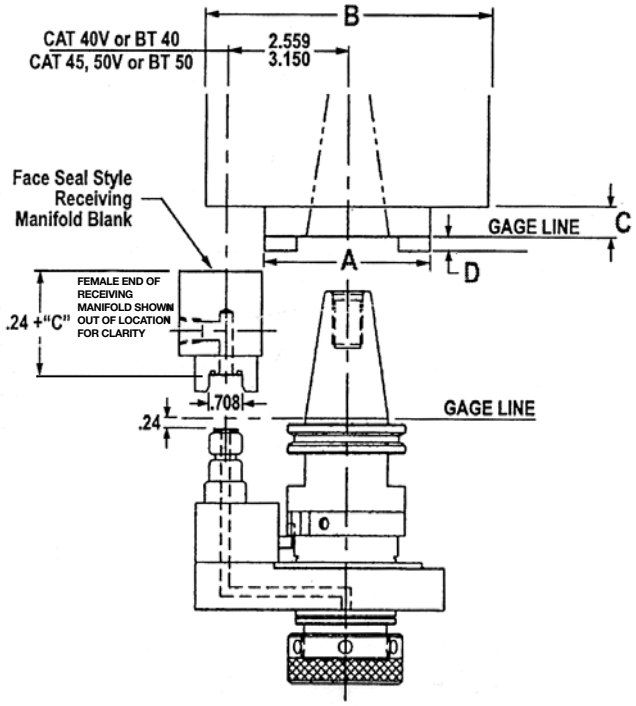
### RECEIVING MANIFOLD SELECTION AND SET-UP INFORMATION

The (SPFS) Coolant Gland requires the installation of a (SPFS) Receiving Manifold to activate the system (see next page).

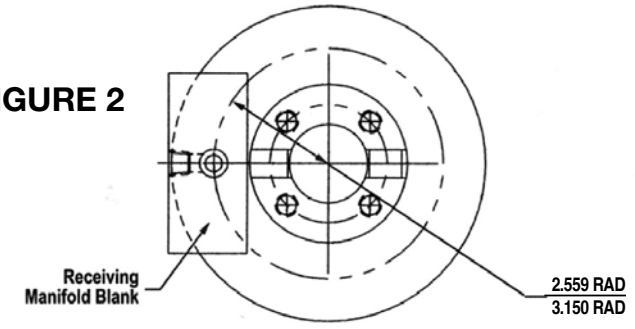
## (SPFS) RECEIVING MANIFOLD SET-UP DIMENSIONS

Single Pin Face Seal Style Manifold (Figure 1) showing how a Receiving Manifold is mounted to the spindle cover of the machine.

### FIGURE 1




### FIGURE 2




Spindle face **(Figure 2)** showing where the Receiving Manifold must be mounted. A radius of 2.559 must be maintained for CAT 40V or BT 40 shanks. A radius of 3.150 must be maintained for CAT 45, 50V or BT 50 shanks.

## SINGLE PIN FACE SEAL RECEIVING MANIFOLD BLANK

Interchangeable with most foreign and domestic manufacturers CAT 40, 45, 50V or BT 40 and BT 50 shanks.

### ORDERING OPTIONS (Figure 3)

1. Purchase (SPFS) Manifold Blank (Part No. 117-100) and you alter to suit your machine requirements.

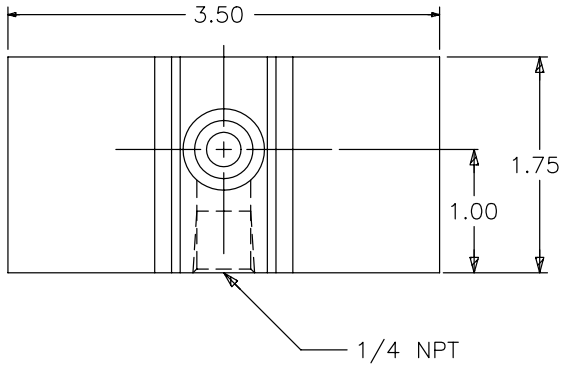
2. Purchase (SPFS) Manifold Blank and have The George Whalley Company custom machine your Manifold Blank to suit your requirements by filling out the information listed below. Pricing and delivery will be quoted after receipt of this information.

Using **Figure 1** and **Figure 2**, please supply the following information for modifications on the Receiving Manifold Block

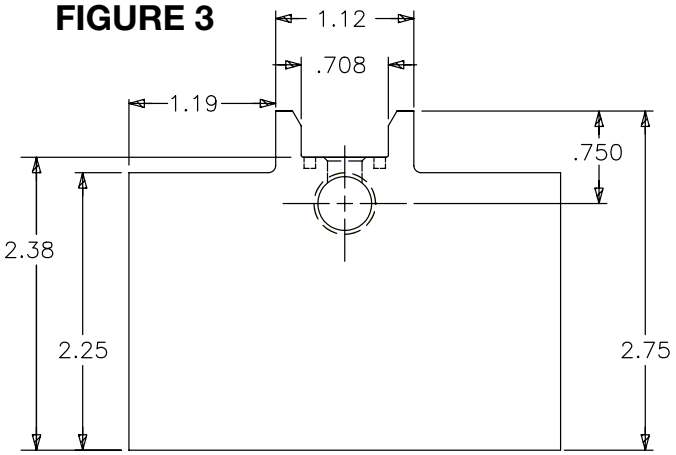
**Machine Spindle Taper**
*(check one)*

**A**
**B**
**C**
**D**

- ☐ CAT 40V
- ☐ BT 40
- ☐ CAT 45V
- ☐ CAT 50V
- ☐ BT 50



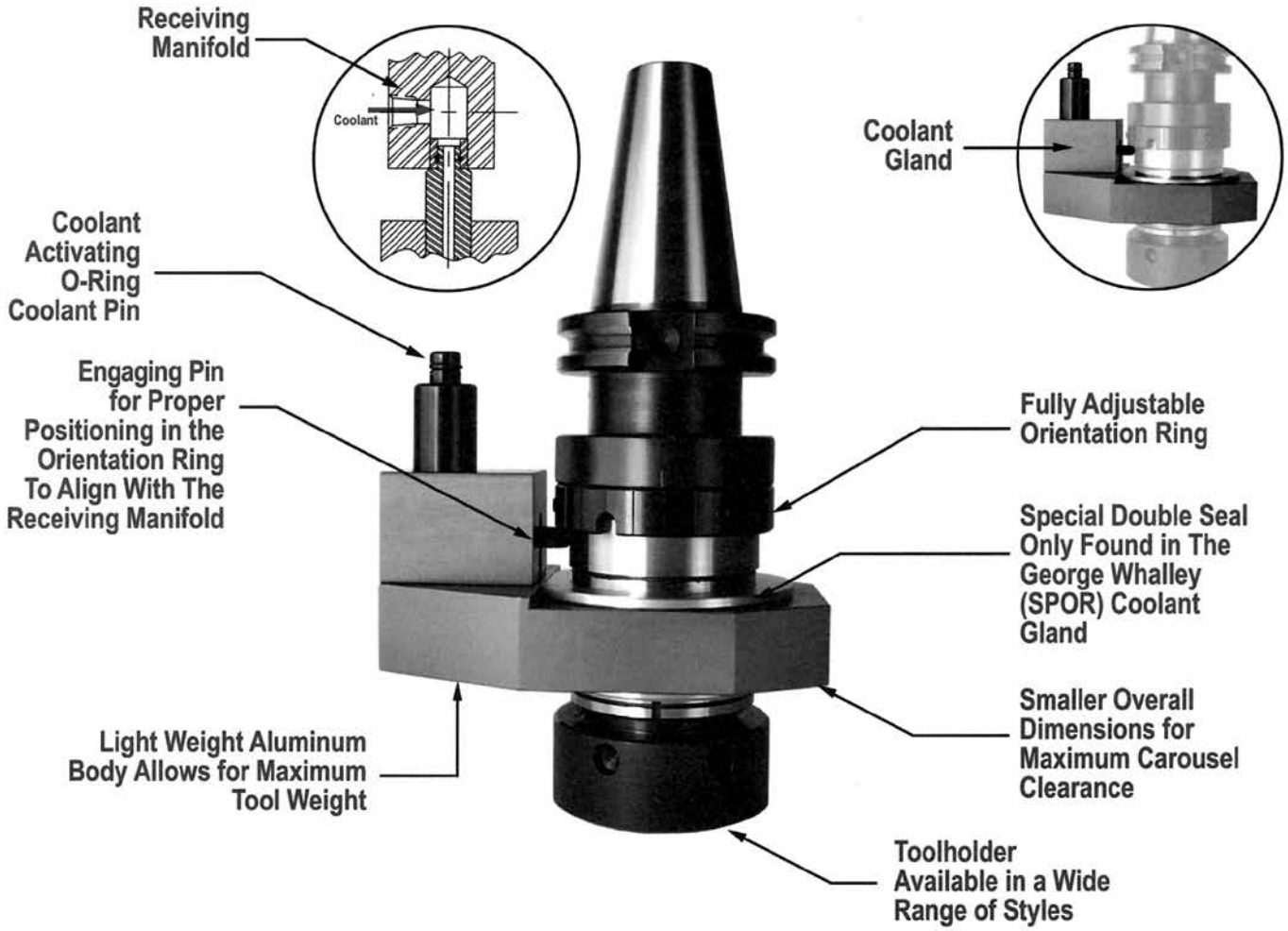

### FIGURE 3




Shown are the basic dimensions of the Receiving Manifold Blank **BEFORE** modification.

| PART NUMBER | DESCRIPTION |
|---|---|
| 117-100 | Single Pin Face Seal (SPFS) Receiving Manifold Blank |

## SINGLE PIN O-RING (SPOR) • AUTOMATIC TOOL CHANGE (ATC) ROTARY COOLANT GLAND ASSEMBLY




## COOLANT GLAND SELECTION

**The Single Pin O-Ring (SPOR) Rotary Coolant Gland of the CFT George Whalley Company offers excellent radial location for the best engagement of the Coolant Pin into the Receiving Manifold.**

**The Single Pin O-Ring (SPOR) Coolant Gland is used when your CNC machine spindle accepts a toolholder with a Cat 40 V-Flange or BT40 shank.**

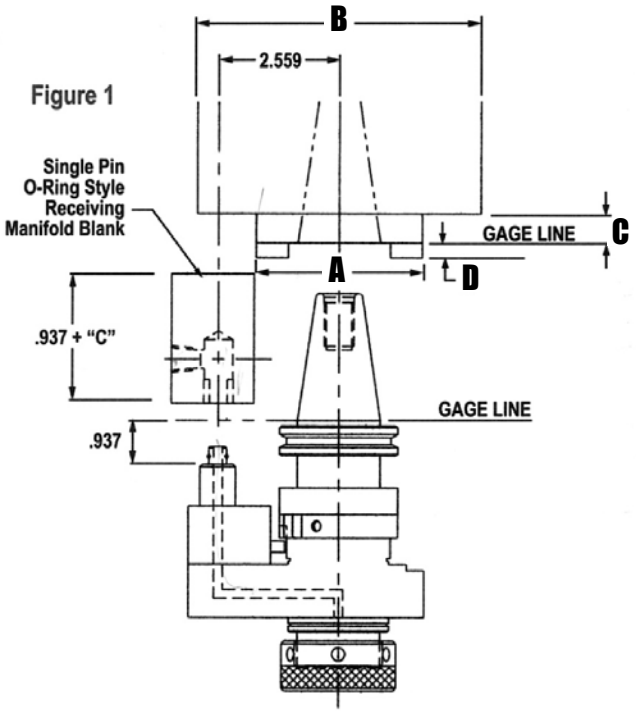
• To order V-Flange Holders with (SPOR) Rotary Coolant Glands see pages 95-97.
• To order BT Shank Holders with (SPOR) Rotary Coolant Glands see pages 97-98.
The (SPOR) Coolant Gland requires the installation of a (SPOR) Receiving Manifold to activate the system (see next page).

*General Operating Recommendations For All Coolant Glands See Page 88*

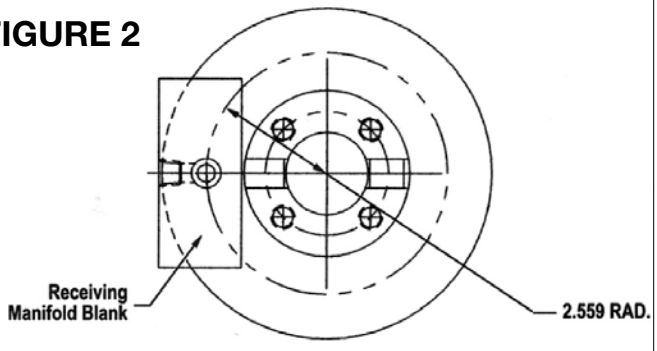
## (SPOR) RECEIVING MANIFOLD SET-UP DIMENSIONS

Single Pin O-Ring Seal Style Manifold **(Figure 1)** showing how a Receiving Manifold is mounted to the spindle cover of the machine.

## FIGURE 1




## FIGURE 2




Spindle face **(Figure 2)** showing where the Receiving Manifold must be mounted. A radius of 2.559 must be maintained for CAT 40V or BT 40 shanks.

## SINGLE PIN O-RING RECEIVING MANIFOLD BLANK

For CAT 40 V or BT 40 shanks

### ORDERING OPTIONS (Figure 3)

1. Purchase (SPOR) Manifold Blank (Part No.117-200) and you alter to suit your machine requirements.

2. Purchase (SPOR) Manifold Blank and have The George Whalley Company custom machine your Manifold Blank to suit your requirements by filling out the information listed below. Pricing and delivery will be quoted after receipt of this information.

Using and , please supply the following information for modifications on the Receiving Manifold Block

**Machine Spindle Taper**
*(check one)*

- ☐ CAT 40V
- ☐ BT 40

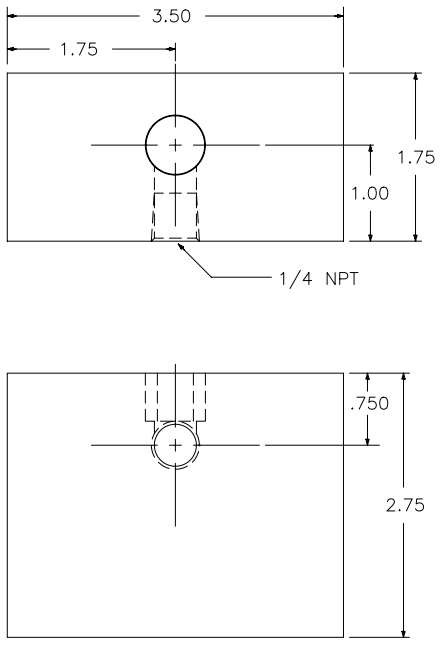
**A** _____

**B** _____

**C** _____

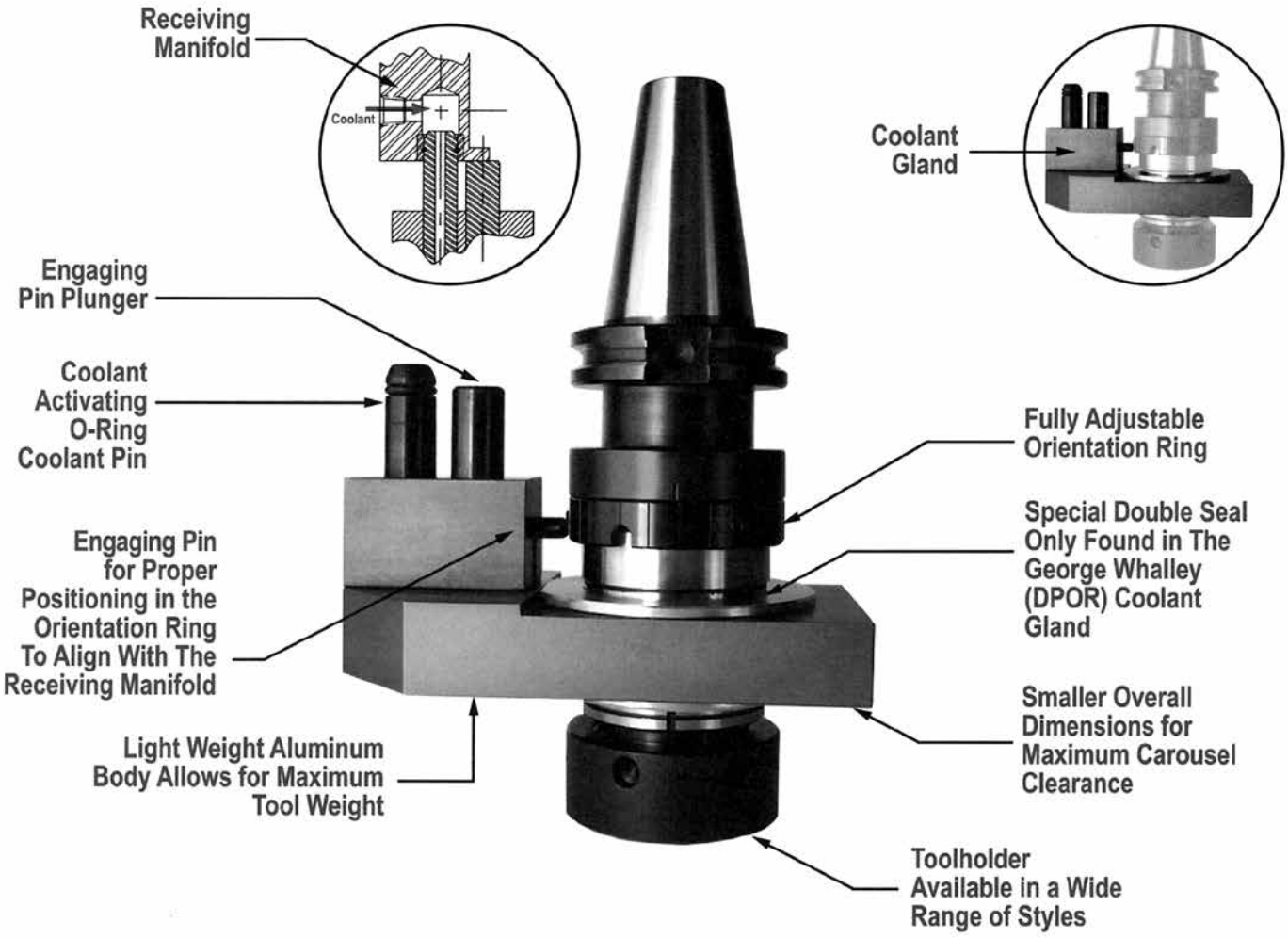
**D** _____

## FIGURE 3




Shown are the basic dimensions of the Receiving Manifold Blank BEFORE modification.

| PART NUMBER | DESCRIPTION |
|---|---|
| 117-200 | Single Pin O-Ring (SPOR) Receiving Manifold Blank |




## COOLANT GLAND SELECTION

**The Dual Pin O-Ring (DPOR) Rotary Coolant Gland of the CFT George Whalley Company offers minimum as well as maximum coolant pressure capabilities. It also provides the best radial location for the proper engagement of the Coolant Pin to the Receiving Manifold.**

**The Dual Pin O-Ring (DPOR) Coolant Gland is used when your CNC machine spindle accepts a toolholder with a Cat 45, 50 V-Flange, BT50 or K&T 200/300 Series. (K&T by special request)**

### TOOLHOLDER SELECTION

- To order V-Flange Holders with (DPOR) Rotary Coolant Glands see pages 99-101.
- To order BT Shank Holders with (DPOR) Rotary Coolant Glands see pages 103-104.
- To order K&T Holders with (DPOR) Rotary Coolant Glands see page 102.

### RECEIVING MANIFOLD

The (DPOR) Coolant Gland requires the installation of a (DPOR) Receiving Manifold to activate the system (see next page).

*General Operating Recommendations For All Coolant Glands See Page 88*

## (DPOR) RECEIVING MANIFOLD SET-UP DIMENSIONS

Dual Pin O-Ring Style Manifold **(Figure 1)** showing how a Receiving Manifold is mounted to the spindle cover of the machine.

**FIGURE 1**

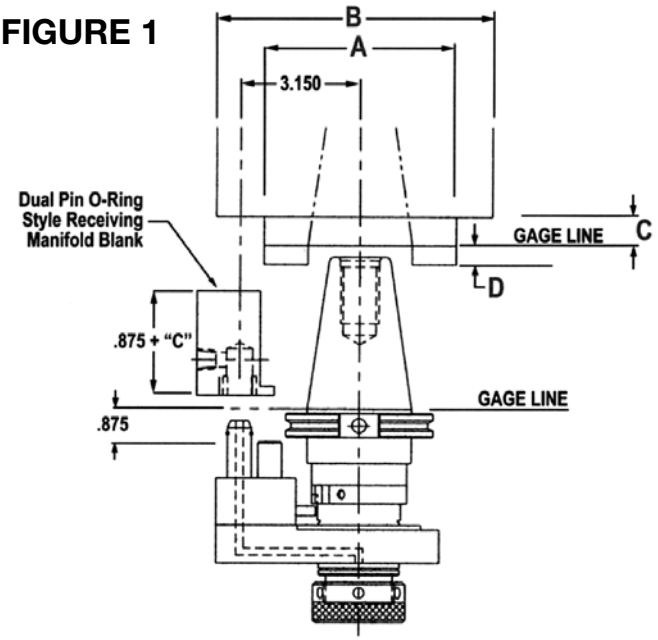
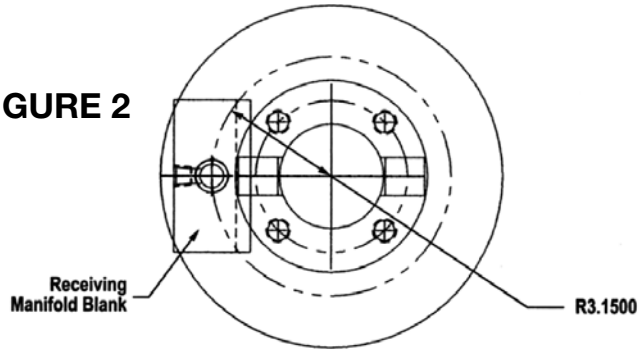



**FIGURE 2**




Spindle face **(Figure 2)** showing where the Receiving Manifold must be mounted. A radius of 3.150 must be maintained for CAT 45V, 50V or BT 50 shanks.

## DUAL PIN O-RING RECEIVING MANIFOLD BLANK

For CAT 45, CAT 50V, or BT 50 shanks

### ORDERING OPTIONS (Figure 3)

1. Purchase (DPOR) Manifold Blank (Part No.117-300) and you alter to suit your machine requirements.

2. Purchase (DPOR) Manifold Blank and have The George Whalley Company custom machine your Manifold Blank to suit your requirements by filling out the information listed below. Pricing and delivery will be quoted after receipt of this information.

Using **Figure 1** and **Figure 2**, please supply the following information for modifications on the Receiving Manifold Block

**A** _____

**B** _____

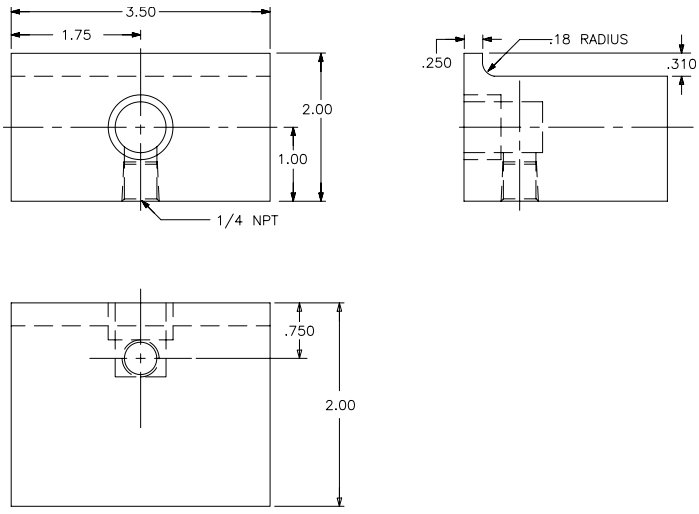
**C** _____

**D** _____

**Machine Spindle Taper**
*(check one)*

- ☐ CAT 45
- ☐ CAT 50V
- ☐ BT 50

**FIGURE 3**




Shown are the basic dimensions of the Receiving Manifold Blank BEFORE modification.

| PART NUMBER | DESCRIPTION |
|---|---|
| 117-300 | Dual Pin O-Ring (DPOR) Receiving Manifold Blank |

- **Designed for preliminary manual applications.**
- **Upgrade to an Automatic Coolant Gland Assembly without purchasing another holder.**
- **For use on CNC machines with CAT 40, 45, 50V and BT 40, BT 50 shanks.**

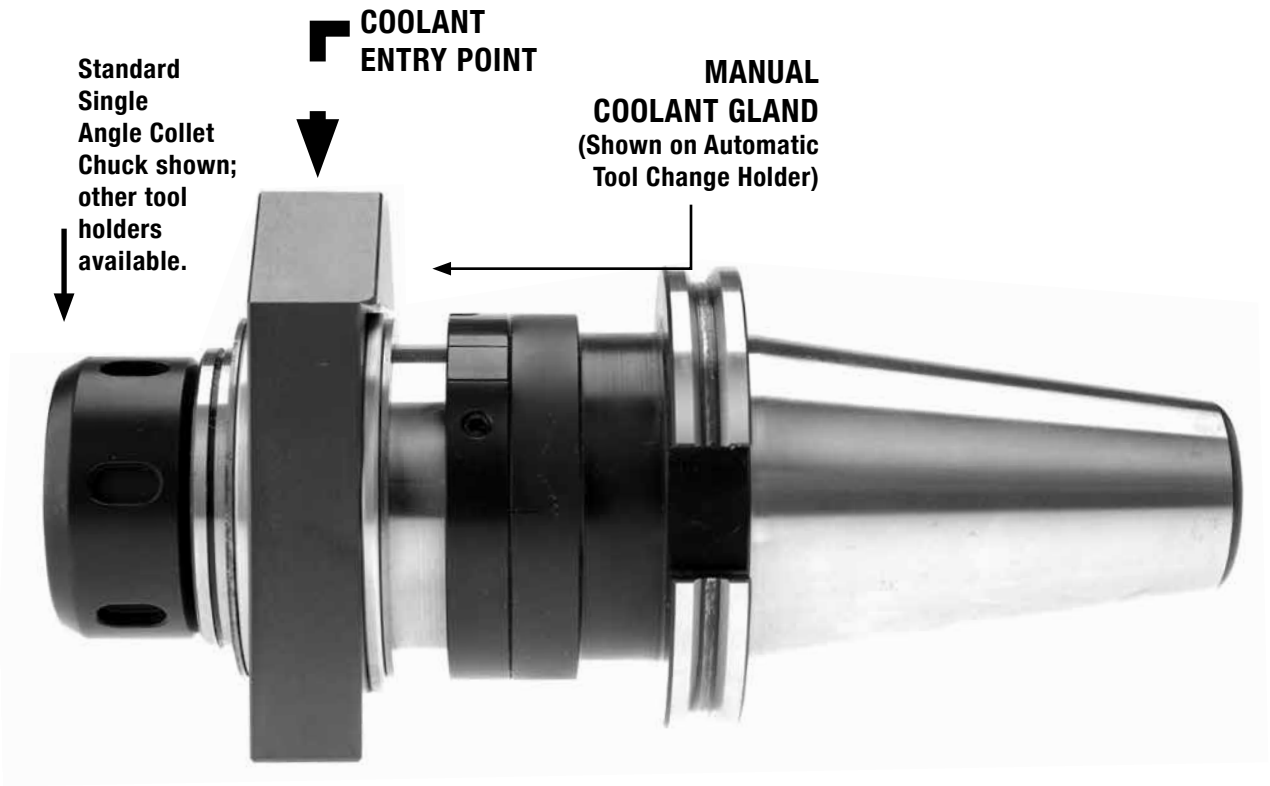
Toolholders can be utilized with a Manual Rotary Coolant Gland if the automatic tool change function is not required.

The Manual Rotary Coolant Gland is an economical means for proving out coolant-thru-the-tool processing.

The Manual Rotary Gland can also be used on Manual Machines with auxiliary coolant.

## TOOLHOLDER SELECTION

• To order V-Flange Holders with Manual (MG) Rotary Coolant Glands see pages 104-106.
• To order BT Shank Holders with Manual (MG) Rotary Coolant Glands see pages 107-108.




*General Operating Recommendations For All Coolant Glands See Page 88.*

## INSTALLING THE RECEIVING MANIFOLD & COOLANT SYSTEM FOR AUTOMATIC CHANGING OF COOLANT-FED TOOLS

**It is necessary to have the receiving block, tool holder and coolant gland assembly before the start of installation. The make and design of your particular machine will indicate which three modes of receiving block installations will best serve your operation. CFT George Whalley Company attempts to maintain records on specifications for machine tools. We cannot be responsible for changes or improvements to your particular machine tool and therefore must ask that you carefully review all specifications which we may provide. Use the following suggested procedure and double check each step of the installation.**

**Note: These instructions are to be followed after modification of Receiving Manifold Blank have been made to suit your machine.**

1. Orient the spindle to the tool change position.
2. Load the automatic tool holder and gland assembly to the spindle. Observe the area where the receiving manifold is to be located. If there are any bolts, pins, or fasteners in this area, remove them at this time. Temporarily mark the location where the Receiving Manifold is to be mounted.
3. Remove the automatic tool holder assembly and receiving manifold from the machine. Thoroughly clean the manifold locating surface and the marked area to contain the manifold. Use lacquer thinner or solvent to clean oil or dirt from the mating surfaces.
4. Apply a generous coating of any brand of super type glue to the receiving manifold and mating surface to contain the manifold. Re-check spindle orient location at this time. Load the gland assembly to the machine along with the receiving manifold. The spring pressure of the gland assembly will hold the receiving manifold in place. Allow a proper time for the glue to set and adhere.
5. Remove the gland assembly from the spindle.
6. Use the existing mounting holes in the receiving manifold as a template to locate the matching holes on the machine member. Drill and tap holes as required. Drill dowel pin holes.
7. Re-assemble the coolant gland to the machine. Do not securely tighten the mounting bolts.
8. Re-load the gland assembly to the spindle allowing the receiving manifold and mating machine member to each find its ideal location. Secure all bolts. Ream the dowel pin holes and install the dowel pins.

*See pages 80-85 for Receiving Manifold mounting information and dimensions.*



## TWO PIECE CONSTRUCTION TOOLHOLDERS AS SEEN ON PAGES 92, 93, AND 101.

The Two Piece Construction Holder with matching coolant gland assembly (shown on pages 92, 93, and 101) is designed to adapt large shank tooling to the CFT George Whalley Company automatic tool change system. The system consists of the following three units:

1. **Shank Assembly** -The shank assembly has a #50 Cat. V-Flange taper with a #40 internal taper and two drive keys.
2. **Head Assembly** -The head assembly has a #40 taper shank and two drive slots. Straight bore or collet style front ends are available.
3. **Coolant Gland** - The coolant gland is located on the head assembly and automatically connects and disconnects from the receiving manifold which is mounted in proximity to the machine spindle.

The head and shank assemblies are located by drive and slot keys. The head and shank are fastened together by a draw screw. Concentricity is the same as one piece holders, approximately 0.0005” at the toolholder face.

1. Check to see that you have a receiving manifold properly installed on your machine and connected to its coolant system.
2. If you have a face seal adjustable coolant pin make sure it is adjusted for appropriate length to release the Activating Pin. Be sure that the set screw on top pin is locked.
3. Adjust orientation ring on toolholder to suit manifold location.
4. Tighten orientation ring screws in position, place coolant holder and gland in tool carousel and run slowly through tool change cycle, making sure of clearance at all points.
5. Follow Break In and Operating Recommendations (listed below).
6. After completion of break in procedure, you may bring the tool holder up to speed.

**CAUTION! Should gland show signs of overheating, stop operations and consult detailed operating instructions.**

## BREAK IN AND OPERATING RECOMMENDATIONS FOR AUTOMATIC AND MANUAL TOOL CHANGE COOLANT GLANDS

**In order to assure proper lubrication, even wear, and proper seating, high RPM glands should be broken in at 100 RPM for 3 minutes with coolant introduced at a pressure and volume between 100 PSI and 500 PSI to prevent overloading seals. Repeat procedure at 500 RPM for 3 minutes, and again at 1000 RPM. After break in procedure is complete, units may be run at pressure between 100 PSI and 1000 PSI.**

**For maximum life and performance of these coolant glands and seals the following conditions are recommended:**

1. Coolant filtration: 30 to 50 micron minimum; 5 micron optimum
2. Proper type & viscosity of coolant: preferably a good water soluble synthetic with good lubrication and heat dissipation under pressure.
3. Coolant pressure: minimum of 100 lbs. coolant pressure at high R.P.M's (1800 SFM or more based on I.D. dimension of coolant gland or O.D. bearing diameter of tool holder). Maximum pressure of 1000 PSI
4. Coolant volume must be sufficient to properly lubricate cutting tool as recommended by its manufacturer. The combination of volume and pressure can not exceed the coolant orifice delivery capability of your tool or premature gland failure may result due to excessive heat build up.

**CAUTION! All coolant glands require coolant at all speeds.**

**CAUTION! Operating RPM up to 1800 SFM based on the I.D. size of coolant gland or O.D. bearing diameter of toolholder.**

## SPECIAL APPLICATION ROTARY COOLANT GLAND ASSEMBLIES


FIGURE 1


FIGURE 2


FIGURE 3

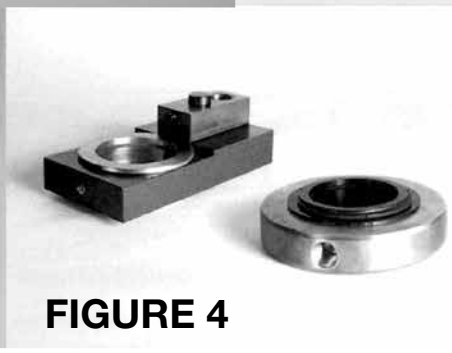


FIGURE 4

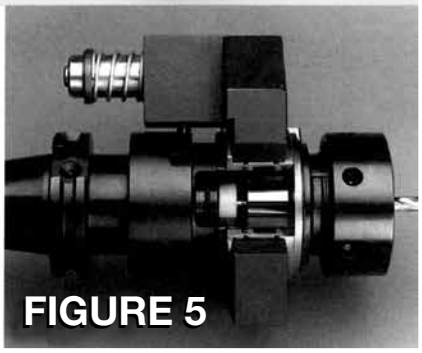


FIGURE 5

AUTO TOOL CHANGE: ATC

*SEE PAGE 110 FOR SPECIAL APPLICATION ROTARY COOLANT GLAND ASSEMBLY QUESTIONNAIRE.*

**FIGURE 1** -HSK Shank tooling with high speed coolant gland

**FIGURE 2** -Various Style Coolant Gland Assemblies, Manifolds and Convertible Adapter Coolant Pin

-Can be supplied for 40, 45, 50, and 60 taper V-Flange or BT Style Shanks

**FIGURE 3** -Coolant Gland With High Pressure Sealing Device

**FIGURE 4** -Low Profile Coolant Gland Assembly and Special 2 Piece Flexible Rotary Gland

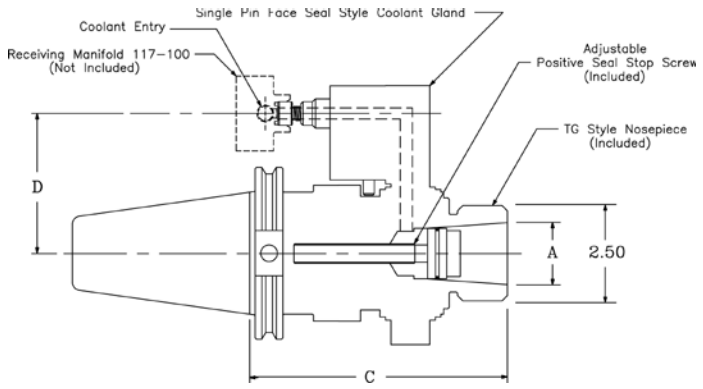
**FIGURE 5** -Special Coolant Gland With Unique Internal Sealing Adaptation

**CFT George Whalley Company will design and develop Automatic Coolant Systems to meet your requirements. The following is a partial list of some of the more popular machines our engineering staff has designed systems for:**

- **Bohle**
- **Cincinnati -Milacron**
- **Giddings & Lewis**
- **Hitachi -Seiki**
- **Kearney & Trecker**
- **LeBlonde -Makino**
- **Mazak**
- **Mitsubishi**
- **Mori Seiki**
- **Niigata**
- **Osaka Kiko (OKK)**
- **Toshiba**
- **Toyoda**
- **Hillyer**
- **Maho**

Visit our website at **www.cftsystems.com** for technical information and our latest product offerings.

## V-FLANGE SINGLE ANGLE COLLET CHUCK • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND




**TG STYLE COLLETS**
See Page 146

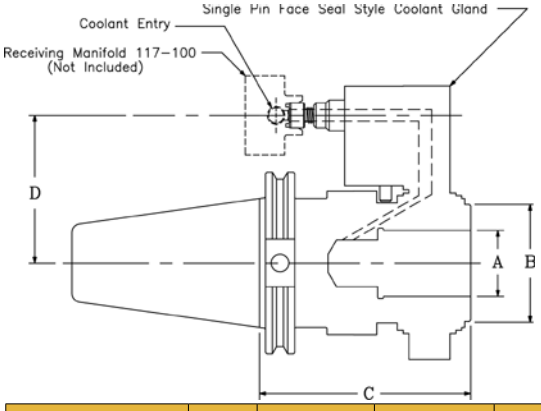
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIAMETER (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | | | | |
| C40-TG10-SPFS-6 | 0.094 - 1.000 | TG 100 | 2.50 | 6.00 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 116-004 | 585-916 | 112-001 |
| ***45 V-FLANGE*** | | | | | | | | | | | | |
| ****C45-TG10-SPFS-6*** | ***0.094 - 1.000*** | ***TG 100*** | ***2.50*** | ***6.00*** | ***3.150*** | ***AI-9989S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***116-001*** | ***585-920*** | ***112-001*** |
| **50 V-FLANGE** | | | | | | | | | | | | |
| C50-TG10-SPFS-6 | 0.094 - 1.000 | TG 100 | 2.50 | 6.00 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 116-001 | 585-920 | 112-001 |

**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE END MILL HOLDERS • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND



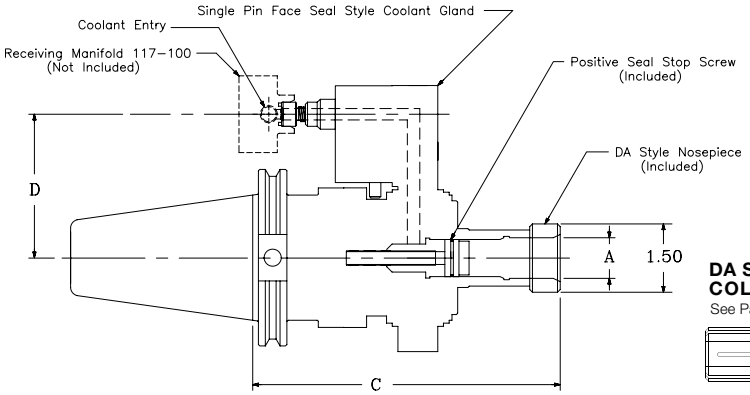

| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | COOLANT STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | | |
| C40-EM75-SPFS-6 | 0.750 | 1.312 | 5.50 | 2.559 | AI-9789V | 100 PSI | 1000 PSI | 4000 | NONE | 585-904 |
| C40-EM10-SPFS-6 | 1.000 | 1.625 | 5.50 | 2.559 | AI-9789T | 100 PSI | 1000 PSI | 3300 | NONE | 585-912 |
| ^C40-EM12-SPFS-5 | 1.250 | 2.125 | 4.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 105-005 | 585-916 |
| ***45 V-FLANGE*** | | | | | | | | | | |
| ****C45-EM75-SPFS-5*** | ***0.750*** | ***1.312*** | ***4.50*** | ***3.150*** | ***AI-0189Y*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***NONE*** | ***585-904*** |
| ****C45-EM10-SPFS-5*** | ***1.000*** | ***1.625*** | ***4.50*** | ***3.150*** | ***AI-0189T*** | ***100 PSI*** | ***1000 PSI*** | ***3300*** | ***NONE*** | ***585-912*** |
| ***^*C45-EM12-SPFS-5*** | ***1.250*** | ***2.500*** | ***4.50*** | ***3.150*** | ***AI-9989S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***105-003*** | ***585-920*** |
| ***^*C45-EM15-SPFS-5*** | ***1.500*** | ***2.500*** | ***4.50*** | ***3.150*** | ***AI-9989S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***105-003*** | ***585-920*** |
| **50 V-FLANGE** | | | | | | | | | | |
| C50-EM75-SPFS-6 | 0.750 | 1.312 | 5.50 | 3.150 | AI-0189Y | 100 PSI | 1000 PSI | 4000 | NONE | 585-904 |
| C50-EM10-SPFS-6 | 1.000 | 1.625 | 5.50 | 3.150 | AI-0189T | 100 PSI | 1000 PSI | 3300 | NONE | 585-912 |
| ^C50-EM12-SPFS-5 | 1.250 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 105-004 | 585-920 |
| ^C50-EM15-SPFS-5 | 1.500 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 105-004 | 585-920 |
| ^C50-EM20-SPFS-7 | 2.000 | 3.187 | 6.50 | 3.150 | AR-0689Z | 100 PSI | 1000 PSI | 1800 | 105-010 | 585-922 |

**** Outgoing Items***

^ - Socket set screw location does not conform to ANSI specification. Request information if set screw location is critical

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE DOUBLE ANGLE COLLET CHUCK • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND




**DA STYLE COLLETS**
See Page147.

•See page 111 for positive seal stop screw.

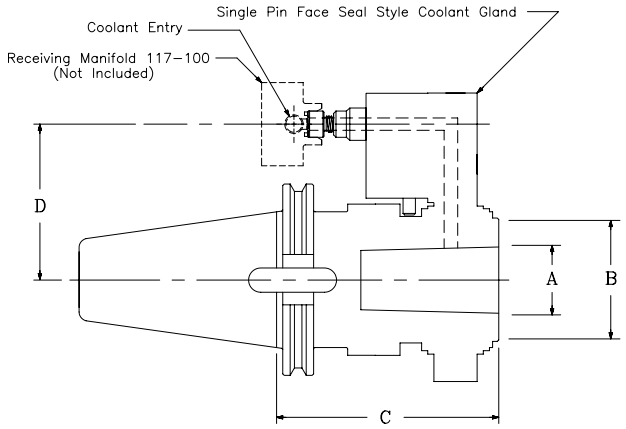
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIAMETER (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***40 V-FLANGE*** | | | | | | | | | | | |
| ****C40-DA18-SPFS-7*** | ***0.047 - 0.750*** | ***DA 180*** | ***1.50*** | ***7.00*** | ***2.559*** | ***AI-9789V*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***585-904*** | ***112-019*** |

**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE MORSE TAPER HOLDERS • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND





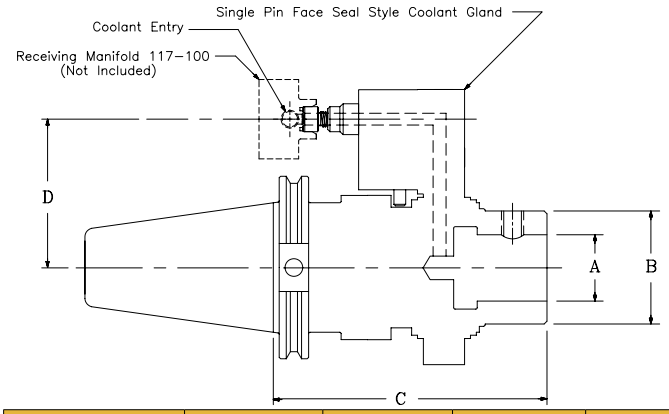

Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | |
| C40-MT3-SPFS-5 | MT3 | 2.125 | 4.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C40-MT3-SPFS-5A | MT3 | 1.312 | 4.50 | 2.559 | AI-9789V | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C40-MT4-SPFS-5 | MT4 | 2.125 | 4.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C40-MT4-SPFS-5A | MT4 | 1.312 | 4.50 | 2.559 | AI-9789V | 100 PSI | 1000 PSI | 4000 | 585-904 |
| ***45 V-FLANGE*** | | | | | | | | | |
| ****C45-MT3-SPFS-5*** | ***MT3*** | ***2.500*** | ***4.50*** | ***3.150*** | ***AI-9989S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| ****C45-MT3-SPFS-5A*** | ***MT3*** | ***1.312*** | ***4.50*** | ***3.150*** | ***AI-0189Y*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***585-904*** |
| ****C45-MT4-SPFS-5*** | ***MT4*** | ***2.500*** | ***4.50*** | ***3.150*** | ***AI-9889S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| ****C45-MT4-SPFS-5A*** | ***MT4*** | ***1.312*** | ***4.50*** | ***3.150*** | ***AI-0189Y*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***585-904*** |
| **50 V-FLANGE** | | | | | | | | | |
| C50-MT3-SPFS-5 | MT3 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-MT3-SPFS-5A | MT3 | 1.312 | 4.50 | 3.150 | AI-0189Y | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C50-MT4-SPFS-5 | MT4 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-MT4-SPFS-5A | MT4 | 1.312 | 4.50 | 3.150 | AI-0189Y | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C50-MT5-SPFS-5 | MT5 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |

**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE ABS® STYLE HOLDERS • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND




| ASSEMBLY PART NUMBER | A ABS® CONNECTION | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | |
| C40-ABS40-SPFS-6 | ABS 40 | 1.625 | 5.25 | 2.559 | AI-9789T | 100 PSI | 1000 PSI | 3300 | 585-912 |
| C40-ABS50-SPFS-6 | ABS 50 | 2.125 | 5.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 585-916 |
| ***45 V-FLANGE*** | | | | | | | | | |
| ****C45-ABS40-SPFS-6*** | ***ABS 40*** | ***1.625*** | ***5.25*** | ***3.150*** | ***AI-0189T*** | ***100 PSI*** | ***1000 PSI*** | ***3300*** | ***585-912*** |
| ****C45-ABS50-SPFS-6*** | ***ABS 50*** | ***2.125*** | ***5.50*** | ***3.150*** | ***AI-9989X*** | ***100 PSI*** | ***1000 PSI*** | ***3000*** | ***585-916*** |
| ****C45-ABS63-SPFS-6*** | ***ABS 63*** | ***2.500*** | ***5.62*** | ***3.150*** | ***AI-9989S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| **50 V-FLANGE ^** | | | | | | | | | |
| C50-ABS40-SPFS-6 | ABS 40 | 1.625 | 5.25 | 3.150 | AI-0189T | 100 PSI | 1000 PSI | 3300 | 585-912 |
| C50-ABS50-SPFS-6 | ABS 50 | 2.125 | 5.50 | 3.150 | AI-9989X | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C50-ABS63-SPFS-5 | ABS 63 | 2.500 | 5.75 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |

**** Outgoing Items***

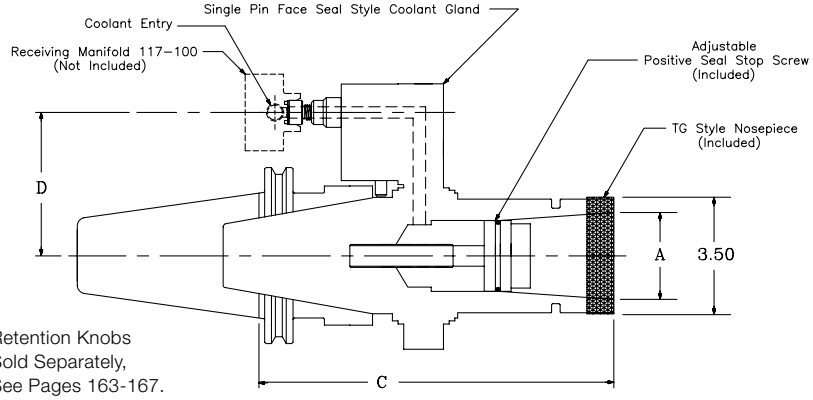
^ - ABS 80 & 100 holders available by special quotation on 50 V-Flange units.

*ABS® is registered trademark of KOMET.*

• Please refer to the Modular Tooling Section on pages 140-143 for Modular Adapters

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE 2 PIECE SINGLE ANGLE COLLET CHUCK • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

**TG STYLE COLLETS**
See Page 146.

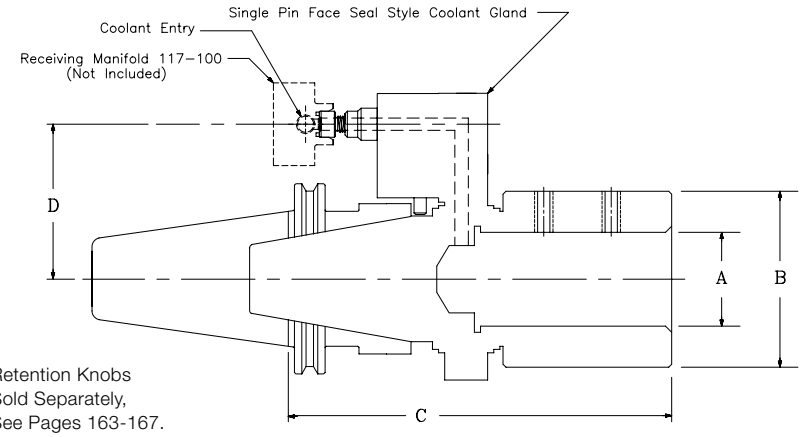
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **50 V-FLANGE** | | | | | | | | | | | |
| C50-TG15-2P-SPFS-9 | 0.500 - 1.500 | TG 150 | 3.50 | 8.38 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 | 112-002 |

• Especially designed to suit large shanked tools in a CNC carousel with limited space. • Utilizes standard coolant gland assemblies.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE 2 PIECE END MILL HOLDERS • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

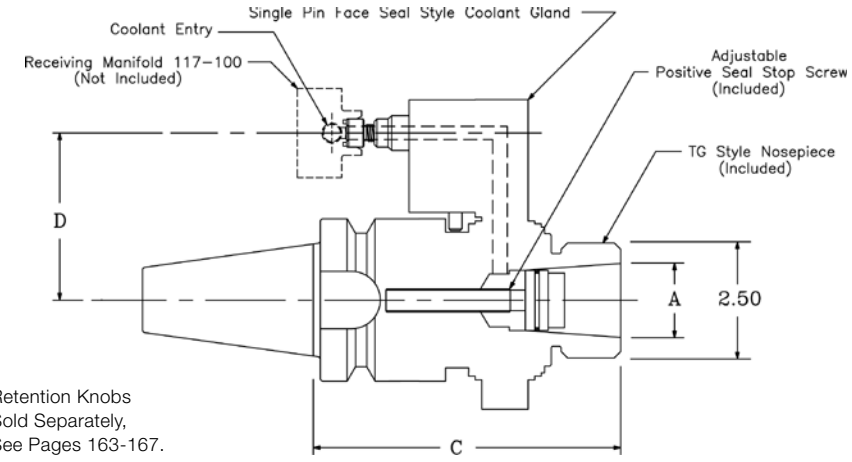
| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **50 V-FLANGE** | | | | | | | | | |
| C50-EM17-2P-SPFS-9 | 1.750 | 3.750 | 8.25 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-EM20-2P-SPFS-9 | 2.000 | 3.750 | 8.25 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-EM22-2P-SPFS-9 | 2.250 | 4.000 | 8.25 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-EM25-2P-SPFS-9 | 2.500 | 4.000 | 8.25 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |

• Especially designed to suit large shanked tools in a CNC carousel with limited space. • Utilizes standard coolant gland assemblies.

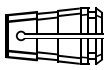
(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## BT SINGLE ANGLE COLLET CHUCK • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.



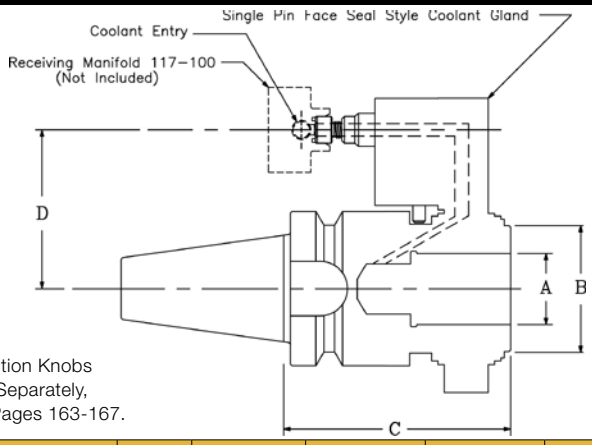
**TG STYLE COLLETS**
See Page 146.

•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | | | | | |
| BT40-TG10-SPFS-6 | 0.094 - 1.000 | TG 100 | 2.50 | 5.25 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 116-004 | 585-916 | 112-001 |
| **BT 50** | | | | | | | | | | | | |
| BT50-TG10-SPFS-6 | 0.094 - 1.000 | TG 100 | 2.50 | 5.25 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 116-001 | 585-920 | 112-001 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## BT END MILL HOLDERS • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND



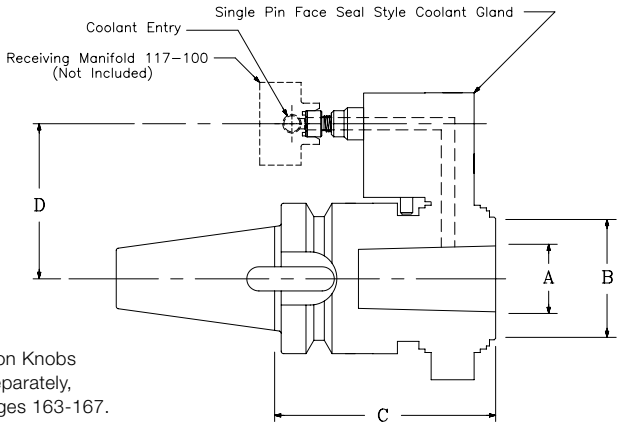

Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A I.D. (IN.) | CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | COOLANT STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | | | |
| BT40-EM75-SPFS-6 | 0.750 | 1.312 | 5.50 | 2.559 | AI-9789V | 100 PSI | 1000 PSI | 4000 | 105-007 | 585-904 |
| BT40-EM10-SPFS-5 | 1.000 | 2.125 | 4.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 105-007 | 585-916 |
| ^BT40-EM12-SPFS-5 | 1.250 | 2.125 | 4.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 105-007 | 585-916 |
| **BT 50** | | | | | | | | | | |
| BT50-EM10-SPFS-5 | 1.000 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |
| ^BT50-EM12-SPFS-5 | 1.250 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |
| ^BT50-EM15-SPFS-5 | 1.500 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |

^ - Socket set screw location does not conform to ANSI specification. Request information if set screw location is critical

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## BT MORSE TAPER HOLDERS • SINGLE PIN FACE SEAL ROTARY COOLANT GLAND

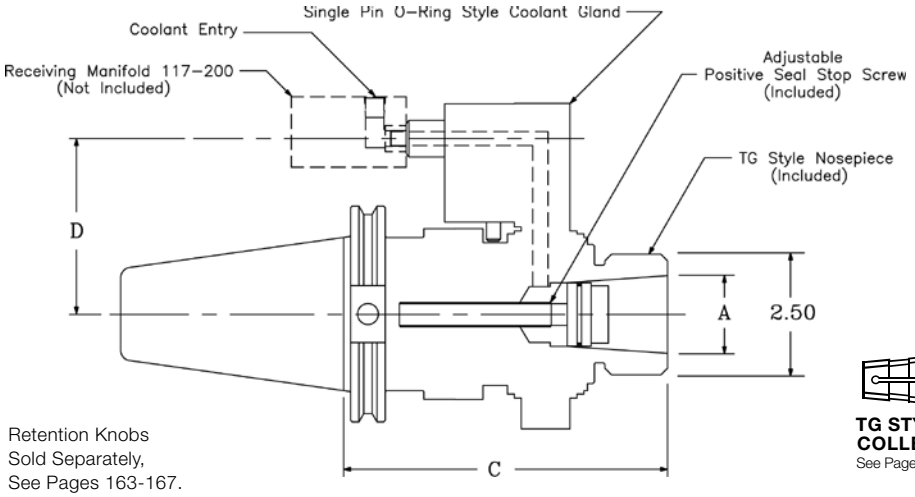



Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A MORSE TAPER | CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | | |
| BT40-MT2-SPFS-5 | MT2 | 2.125 | 4.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 585-916 |
| BT40-MT3-SPFS-5 | MT3 | 2.125 | 4.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 585-916 |
| BT40-MT4-SPFS-5 | MT4 | 2.125 | 4.50 | 2.559 | AI-9889N | 100 PSI | 1000 PSI | 3000 | 585-916 |
| **BT 50** | | | | | | | | | |
| BT50-MT3-SPFS-5 | MT3 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| BT50-MT4-SPFS-5 | MT4 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| BT50-MT5-SPFS-5 | MT5 | 2.500 | 4.50 | 3.150 | AI-9989S | 100 PSI | 1000 PSI | 2500 | 585-920 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE SINGLE ANGLE COLLET CHUCK • SINGLE PIN O-RING ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

**TG STYLE COLLETS**
See Page 146.

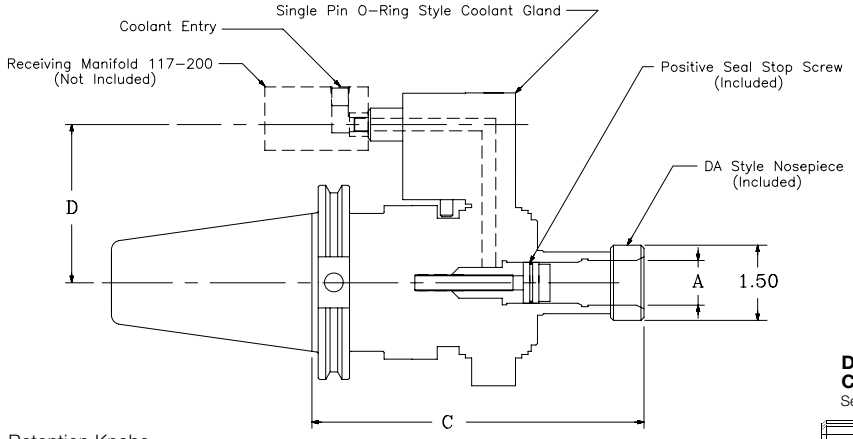
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | | | | |
| C40-TG10-SPOR-6 | 0.094 - 1.000 | TG 100 | 2.50 | 6.00 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 116-004 | 585-916 | 112-001 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

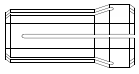


## V-FLANGE DOUBLE ANGLE COLLET CHUCK • SINGLE PIN O-RING ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

**DA STYLE COLLETS**
See Page 147.



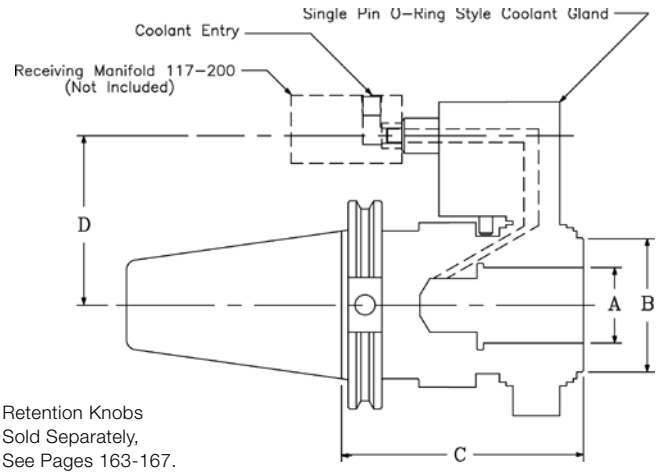
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT NCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***40 V-FLANGE*** | | | | | | | | | | | |
| ****C40-DA18-SPOR-7*** | ***0.047 - 0.750*** | ***DA 180*** | ***1.50*** | ***7.00*** | ***2.559*** | ***V-7419B*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***585-904*** | ***112-019*** |

**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE END MILL HOLDERS • SINGLE PIN O-RING ROTARY COOLANT GLAND



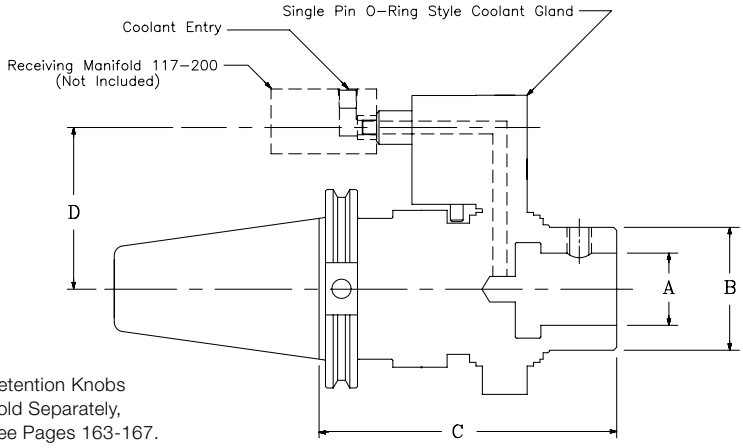

Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A I.D. (IN.) | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | COOLANT STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | | |
| C40-EM75-SPOR-6 | 0.750 | 1.312 | 5.50 | 2.559 | V-7419B | 100 PSI | 1000 PSI | 4000 | NONE | 585-904 |
| C40-EM10-SPOR-6 | 1.000 | 1.625 | 5.50 | 2.559 | V-7419J | 100 PSI | 1000 PSI | 3300 | NONE | 585-912 |
| ^C40-EM12-SPOR-5 | 1.250 | 2.125 | 4.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 105-005 | 585-916 |

^ - Socket set screw location does not conform to ANSI specification. Request information if set screw location is critical

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE ABS® STYLE HOLDERS • SINGLE PIN O-RING ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

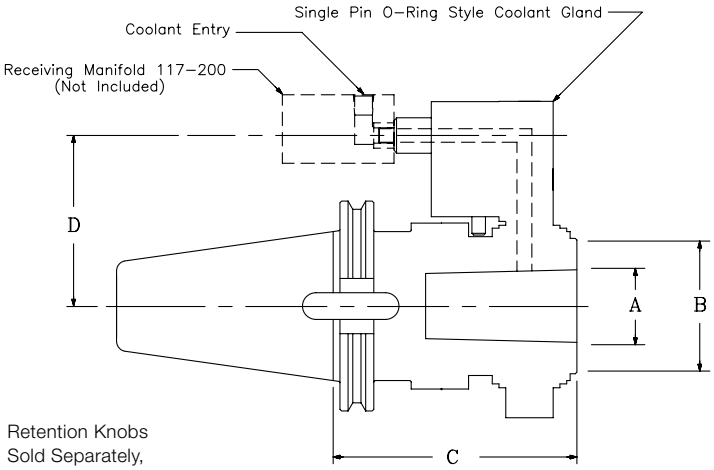
| ASSEMBLY PART NUMBER | A ABS® CONNECTION | B CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE(1) | MAXIMUM COOLANT PRESSURE(2) | MAXIMUM SPEED (RPM)(3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | |
| C40-ABS40-SPOR-6 | ABS 40 | 1.625 | 5.25 | 2.559 | V-7419J | 100 PSI | 1000 PSI | 3300 | 585-912 |
| C40-ABS50-SPOR-6 | ABS 50 | 2.125 | 5.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 585-916 |

• Please refer to the Modular Tooling Section on pages 140-143 for Modular Adapters

*ABS® is a registered trademark of KOMET.*

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE MORSE TAPER HOLDERS • SINGLE PIN O-RING ROTARY COOLANT GLAND



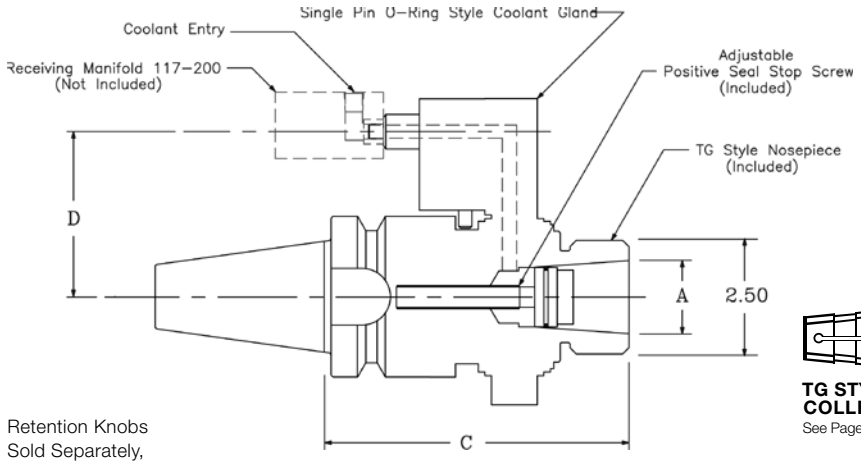

Retention Knobs
Sold Separately,
See Pages 163-167.

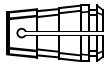
| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | |
| C40-MT3-SPOR-5 | MT3 | 2.125 | 4.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C40-MT3-SPOR-5A | MT3 | 1.312 | 4.50 | 2.559 | V-7419B | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C40-MT4-SPOR-5 | MT4 | 2.125 | 4.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C40-MT4-SPOR-5A | MT4 | 1.312 | 4.50 | 2.559 | V-7419B | 100 PSI | 1000 PSI | 4000 | 585-904 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

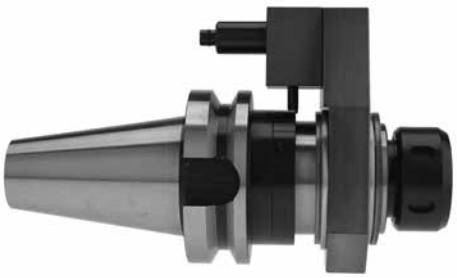


## BT SINGLE ANGLE COLLET CHUCK • SINGLE PIN O-RING ROTARY COOLANT GLAND



**TG STYLE COLLETS**
See Page 146.



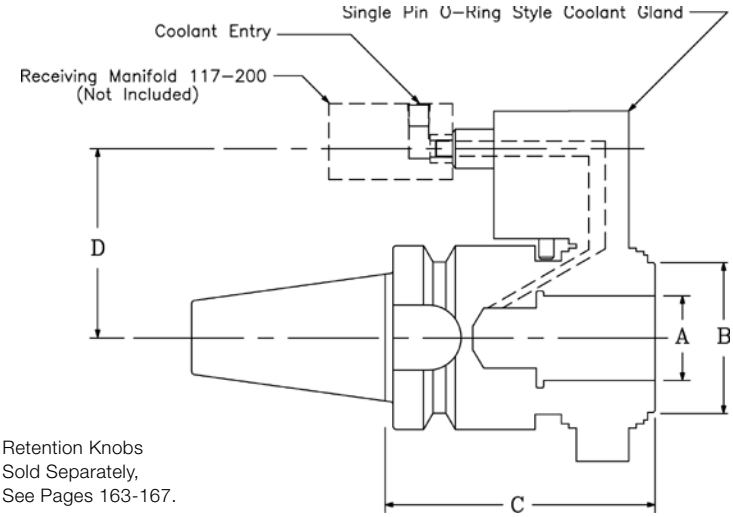
Retention Knobs
Sold Separately,
See Pages 163-167.

•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | | | | | |
| BT40-TG10-SPOR-6 | 0.094 - 1.000 | TG 100 | 2.50 | 5.25 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 116-004 | 585-916 | 112-001 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## BT END MILL HOLDERS • SINGLE PIN O-RING ROTARY COOLANT GLAND



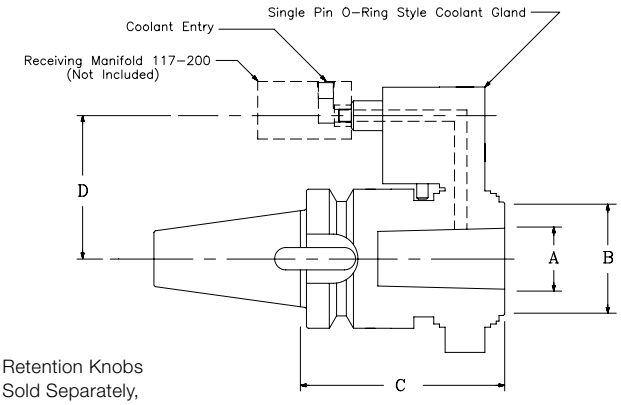

Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | COOLANT STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | | | |
| BT40-EM75-SPOR-6 | 0.750 | 1.312 | 5.50 | 2.559 | V-7419B | 100 PSI | 1000 PSI | 4000 | 105-007 | 585-904 |
| BT40-EM10-SPOR-5 | 1.000 | 2.125 | 4.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 105-007 | 585-916 |
| ^BT40-EM12-SPOR-5 | 1.250 | 2.125 | 4.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 105-007 | 585-916 |

^ - Socket set screw location does not conform to ANSI specification. Request information if set screw location is critical.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## BT MORSE TAPER HOLDERS • SINGLE PIN O-RING ROTARY COOLANT GLAND

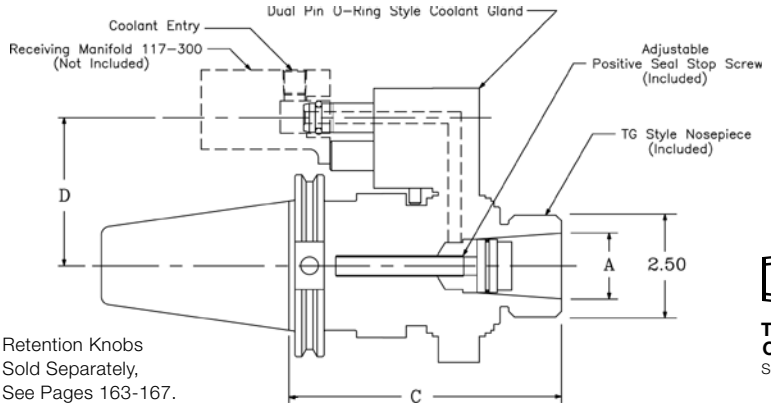



Retention Knobs
Sold Separately,
See Pages 163-167.

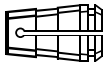
| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT GLAND (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | | |
| BT40-MT2-SPOR-5 | MT2 | 2.125 | 4.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 585-916 |
| BT40-MT3-SPOR-5 | MT3 | 2.125 | 4.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 585-916 |
| BT40-MT4-SPOR-5 | MT4 | 2.125 | 4.50 | 2.559 | V-7419M | 100 PSI | 1000 PSI | 3000 | 585-916 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE SINGLE ANGLE COLLET CHUCK • DUAL PIN O-RING ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.



**TG STYLE COLLETS**
See Page 146.

•See page 111 for positive seal stop screw.

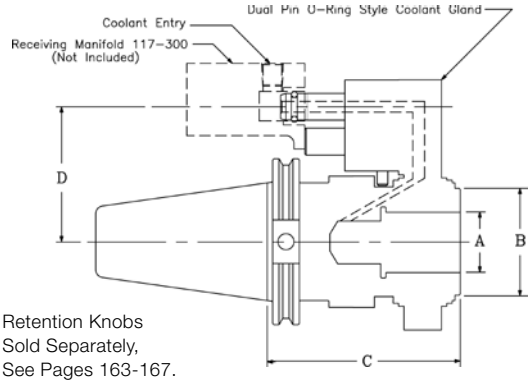
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIAMETER (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **45 V-FLANGE** | | | | | | | | | | | | |
| ***C45-TG10-DPOR-6** | ***0.094 - 1.000*** | ***TG 100*** | ***2.500*** | ***6.00*** | ***3.150*** | ***E-7353S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***116-001*** | ***585-920*** | ***112-001*** |
| **50 V-FLANGE** | | | | | | | | | | | | |
| C50-TG10-DPOR-6 | 0.094 - 1.000 | TG 100 | 2.500 | 6.00 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 116-001 | 585-920 | 112-001 |

**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## V-FLANGE END MILL HOLDERS • DUAL PIN O-RING ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

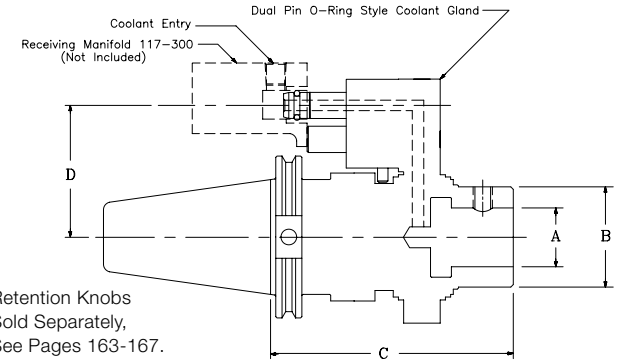
| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | COOLANT STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| ***45 V-FLANGE*** | | | | | | | | | | |
| ***C45-EM75-DPOR-5** | ***0.750*** | ***1.312*** | ***4.50*** | ***3.150*** | ***E-7353B*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***NONE*** | ***585-904*** |
| ***C45-EM10-DPOR-5** | ***1.000*** | ***1.625*** | ***4.50*** | ***3.150*** | ***E-7353D*** | ***100 PSI*** | ***1000 PSI*** | ***3300*** | ***NONE*** | ***585-912*** |
| ***^C45-EM12-DPOR-5** | ***1.250*** | ***2.500*** | ***4.50*** | ***3.150*** | ***E-7353S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***105-003*** | ***585-920*** |
| ***^C45-EM15-DPOR-5** | ***1.500*** | ***2.500*** | ***4.50*** | ***3.150*** | ***E-7353S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***105-003*** | ***585-920*** |
| **50 V-FLANGE** | | | | | | | | | | |
| C50-EM75-DPOR-6 | 0.750 | 1.312 | 5.50 | 3.150 | E-7353B | 100 PSI | 1000 PSI | 4000 | NONE | 585-904 |
| C50-EM10-DPOR-6 | 1.000 | 1.625 | 5.50 | 3.150 | E-7353D | 100 PSI | 1000 PSI | 3300 | NONE | 585-912 |
| *^C50-EM12-DPOR-5* | *1.250* | *2.500* | *4.50* | *3.150* | *E-7353S* | *100 PSI* | *1000 PSI* | *2500* | *105-004* | *585-920* |
| *^C50-EM15-DPOR-5* | *1.500* | *2.500* | *4.50* | *3.150* | *E-7353S* | *100 PSI* | *1000 PSI* | *2500* | *105-004* | *585-920* |

**** Outgoing Items***

^ - Socket set screw location does not conform to ANSI specification. Request information if set screw location is critical.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE ABS® STYLE HOLDERS • DUAL PIN O-RING ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A ABS® CONNECTION | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| ***45 V-FLANGE*** | | | | | | | | | |
| ****C45-ABS40-DPOR-6*** | ***ABS 40*** | ***1.625*** | ***5.25*** | ***3.150*** | ***E-7353D*** | ***100 PSI*** | ***1000 PSI*** | ***3300*** | ***585-912*** |
| ****C45-ABS50-DPOR-6*** | ***ABS 50*** | ***2.125*** | ***5.50*** | ***3.150*** | ***E-7353X*** | ***100 PSI*** | ***1000 PSI*** | ***3000*** | ***585-916*** |
| ****C45-ABS63-DPOR-6*** | ***ABS 63*** | ***2.500*** | ***5.62*** | ***3.150*** | ***E-7353S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| **50 V-FLANGE ^** | | | | | | | | | |
| C50-ABS40-DPOR-6 | ABS 40 | 1.625 | 5.25 | 3.150 | E-7353D | 100 PSI | 1000 PSI | 3300 | 585-912 |
| C50-ABS50-DPOR-6 | ABS 50 | 2.125 | 5.50 | 3.150 | E-7353X | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C50-ABS63-DPOR-5 | ABS 63 | 2.500 | 5.75 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |

**** Outgoing Items***

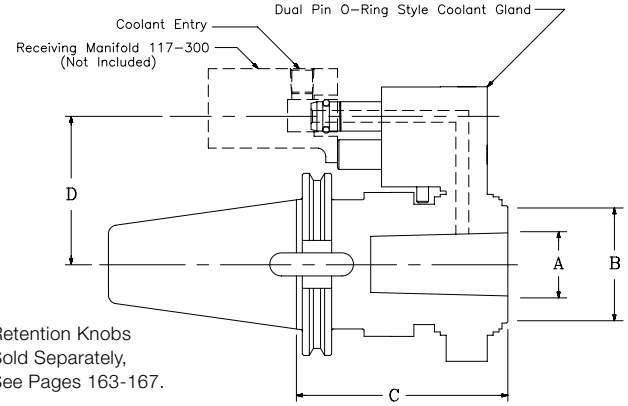
^ - ABS 80 & ABS 100 holders available by special quotation on 50 V-Flange units.

*ABS® is a registered trademark of KOMET.*

• Please refer to the Modular Tooling Section on pages 140-143 for Modular Adapters

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE MORSE TAPER HOLDERS • DUAL PIN O-RING ROTARY COOLANT GLAND



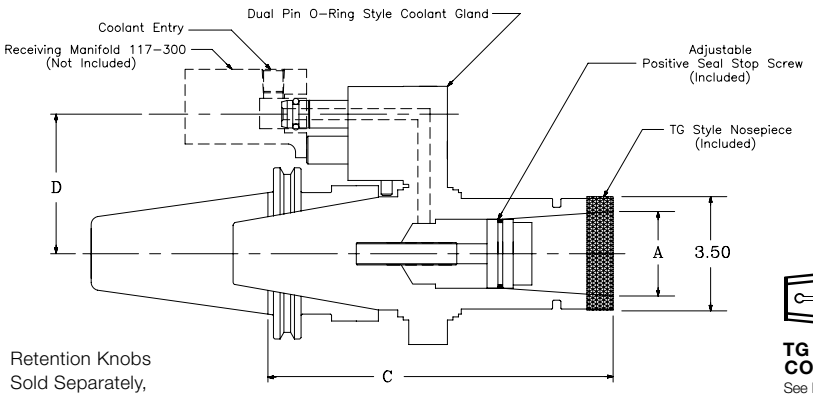

Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| ***45 V-FLANGE*** | | | | | | | | | |
| ****C45-MT3-DPOR-5*** | ***MT3*** | ***2.500*** | ***4.50*** | ***3.150*** | ***E-7353S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| ****C45-MT3-DPOR-5A*** | ***MT3*** | ***1.312*** | ***4.50*** | ***3.150*** | ***E-7353B*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***585-904*** |
| ****C45-MT4-DPOR-5*** | ***MT4*** | ***2.500*** | ***4.50*** | ***3.150*** | ***E-7353S*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| ****C45-MT4-DPOR-5A*** | ***MT4*** | ***1.312*** | ***4.50*** | ***3.150*** | ***E-7353B*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***585-904*** |
| ***50 V-FLANGE*** | | | | | | | | | |
| C50-MT3-DPOR-5 | MT3 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-MT3-DPOR-5A | MT3 | 1.312 | 4.50 | 3.150 | E-7353B | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C50-MT4-DPOR-5 | MT4 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-MT4-DPOR-5A | MT4 | 1.312 | 4.50 | 3.150 | E-7353B | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C50-MT5-DPOR-5 | MT5 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |

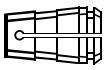
**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE 2 PIECE SINGLE ANGLE COLLET CHUCK • DUAL PIN O-RING ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.



**TG STYLE COLLETS**
See Page 146.

•See page 111 for positive seal stop screw.

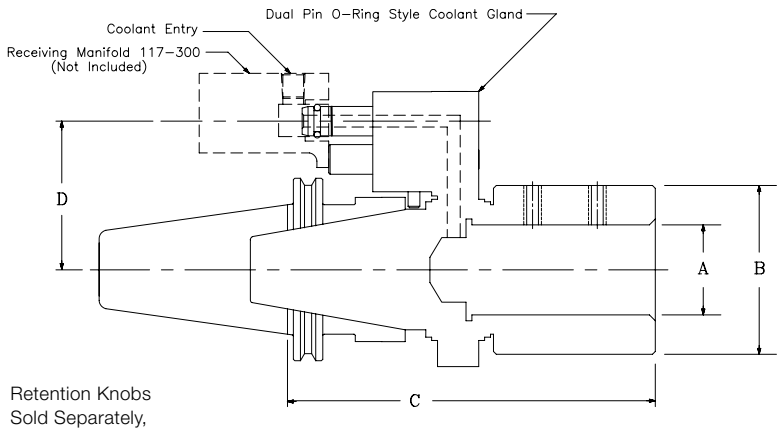
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **50 V-FLANGE** | | | | | | | | | | | |
| C50-TG15-2P-DPOR-9 | 0.500 - 1.500 | TG 150 | 3.50 | 8.38 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 | 112-002 |

• Especially designed to suit large shanked tools in a CNC carousel with limited space. • Utilizes standard coolant gland assemblies.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## V-FLANGE 2 PIECE END MILL HOLDERS • DUAL PIN O-RING ROTARY COOLANT GLAND



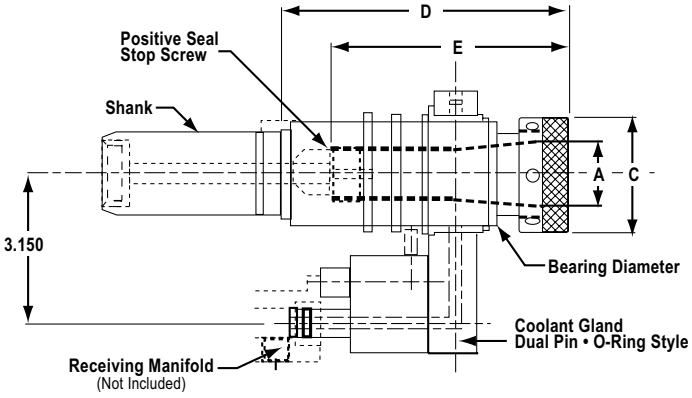

Retention Knobs
Sold Separately,
See Pages 163-167.

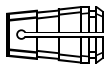
| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **50 V-FLANGE** | | | | | | | | | |
| C50-EM17-2P-DPOR-9 | 1.750 | 3.750 | 8.25 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-EM20-2P-DPOR-9 | 2.000 | 3.750 | 8.25 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-EM22-2P-DPOR-9 | 2.250 | 4.000 | 8.25 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-EM25-2P-DPOR-9 | 2.500 | 4.000 | 8.25 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |

• Especially designed to suit large shanked tools in a CNC carousel with limited space. • Utilizes standard coolant gland assemblies.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## KEARNEY & TRECKER SINGLE ANGLE COLLET CHUCK • DUAL PIN O-RING ROTARY COOLANT GLAND



**TG STYLE COLLETS**
See Page 146.

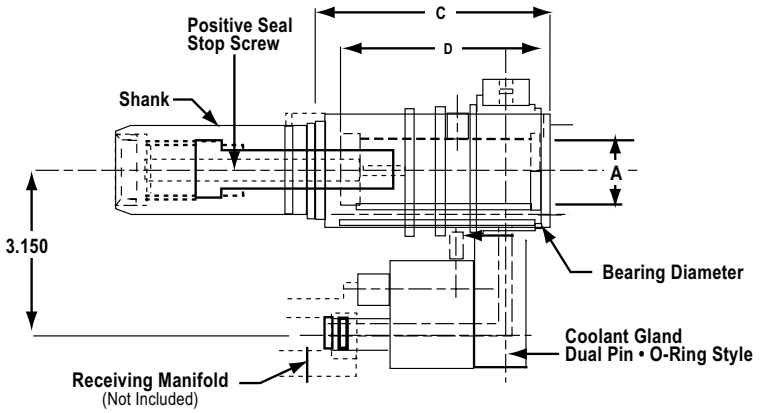
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | BEARING DIA. (IN.) | C CLEARANCE (IN.) | D PROJ. (IN.) | E MAX DEPTH (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | POSITIVE SEAL STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *200 SERIES* | | | | | | | | | | | | |
| **KT200-TG10-DPOR-6P* | *0.094 - 1.000* | *TG 100* | *2.125* | *2.50* | *6.00* | *5.50* | *E-7353X* | *100 PSI* | *1000 PSI* | *104-001* | *585-916* | *112-001* |
| *300 SERIES* | | | | | | | | | | | | |
| **KT300-TG10-DPOR-6P* | *0.094 - 1.000* | *TG 100* | *2.500* | *2.50* | *6.00* | *5.50* | *E-7353S* | *100 PSI* | *1000 PSI* | *102-003* | *585-920* | *112-001* |

**** Outgoing Items***

• All Kearney & Trecker holders are furnished with coolant stop screws, location keys and code ring locknuts

(1),(2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended. PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance. The life and performance of the units depends on the following conditions:**
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## KEARNEY & TRECKER END MILL HOLDERS • DUAL PIN O-RING ROTARY COOLANT GLAND



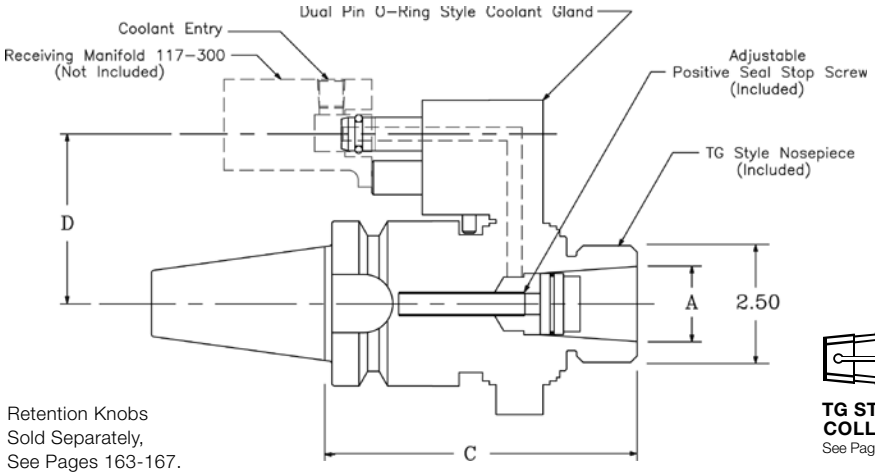

| ASSEMBLY PART NUMBER | A BORE (IN.) | BEARING DIA. (IN) | C PROJ. (IN) | D MAX DEPTH (IN) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | COOLANT STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| *200 SERIES* | | | | | | | | | |
| **KT200-EM12-DPOR-5* | *1.25* | *2.125* | *4.50* | *4.00* | *E-7353X* | *100 PSI* | *1000 PSI* | *105-001* | *585-916* |
| *300 SERIES* | | | | | | | | | |
| **KT300-EM12-DPOR-5* | *1.25* | *2.500* | *4.50* | *4.00* | *E-7353S* | *100 PSI* | *1000 PSI* | *105-002* | *585-920* |
| **KT300-EM15-DPOR-5* | *1.50* | *2.500* | *4.50* | *4.00* | *E-7353S* | *100 PSI* | *1000 PSI* | *105-002* | *585-920* |

**** Outgoing Items***

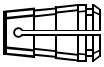
• All Kearney & Trecker holders are furnished with coolant stop screws, location keys and code ring locknuts

(1),(2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended.
PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance. The life and performance of the units depends on the following conditions:**
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## BT SINGLE ANGLE COLLET CHUCK • DUAL PIN O-RING ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.



**TG STYLE COLLETS**
See Page 146.

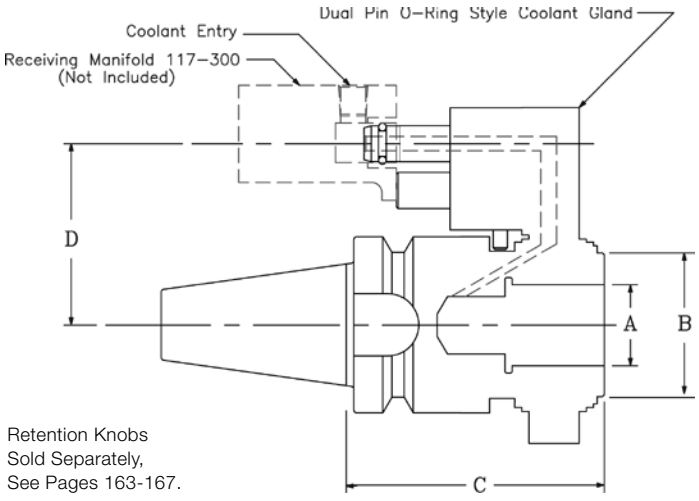
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT 50** | | | | | | | | | | | | |
| BT50-TG10-DPOR-6 | 0.094 - 1.000 | TG 100 | 2.500 | 5.25 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 116-001 | 585-920 | 112-001 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## BT END MILL HOLDERS • DUAL PIN O-RING ROTARY COOLANT GLAND



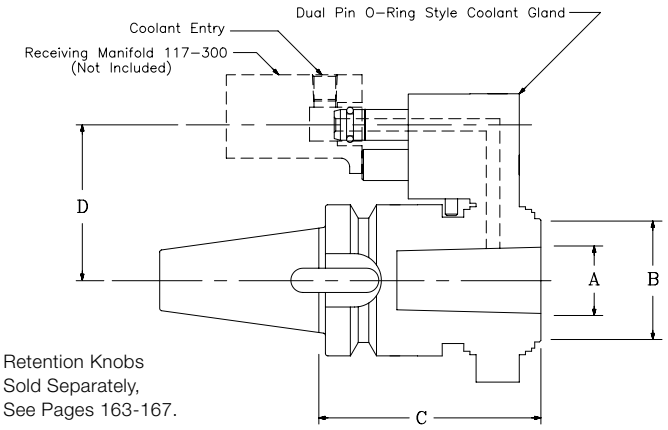

Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | COOLANT STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| **BT 50** | | | | | | | | | | |
| BT50-EM10-DPOR-5 | 1.000 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |
| ^BT50-EM12-DPOR-5 | 1.250 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |
| ^BT50-EM15-DPOR-5 | 1.500 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |

^ - Socket set screw location does not conform to ANSI specification. Request information if set screw location is critical.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## BT MORSE TAPER HOLDERS • DUAL PIN O-RING ROTARY COOLANT GLAND

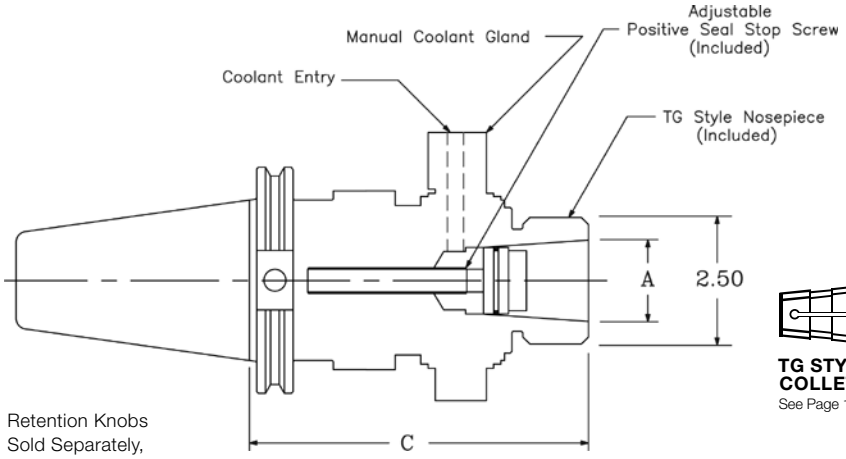



Retention Knobs
Sold Separately,
See Pages 163-167.

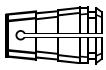
| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | D CTR TO CTR (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **BT 50** | | | | | | | | | |
| BT50-MT3-DPOR-5 | MT3 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| BT50-MT4-DPOR-5 | MT4 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |
| BT50-MT5-DPOR-5 | MT5 | 2.500 | 4.50 | 3.150 | E-7353S | 100 PSI | 1000 PSI | 2500 | 585-920 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE SINGLE ANGLE COLLET CHUCK • MANUAL ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.



**TG STYLE COLLETS**
See Page 146.

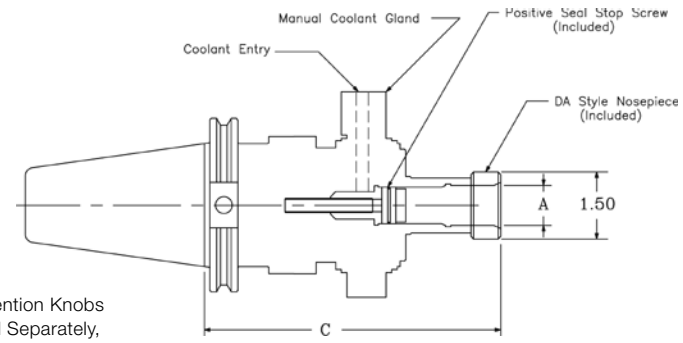
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | | | |
| C40-TG10-MG-6 | 0.094 - 1.000 | TG 100 | 2.50 | 6.00 | 587-102 | 100 PSI | 1000 PSI | 3000 | 116-004 | 585-916 | 112-001 |
| **45 V-FLANGE** | | | | | | | | | | | |
| ***C45-TG10-MG-6** | ***0.094 - 1.000*** | ***TG 100*** | ***2.50*** | ***6.00*** | ***587-106*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***116-001*** | ***585-920*** | ***112-001*** |
| **50 V-FLANGE** | | | | | | | | | | | |
| C50-TG10-MG-6 | 0.094 - 1.000 | TG 100 | 2.50 | 6.00 | 587-106 | 100 PSI | 1000 PSI | 2500 | 116-001 | 585-920 | 112-001 |

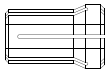
**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE DOUBLE ANGLE COLLET CHUCK • MANUAL ROTARY COOLANT GLAND




Retention Knobs Sold Separately, See Pages 163-167.



**DA STYLE COLLETS**
See Page 147.

•See page 111 for positive seal stop screw.

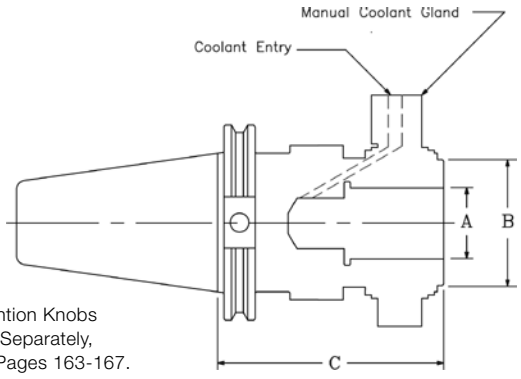
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | | |
| ***C40-DA18-MG-7** | *0.047 - 0.750* | *DA 180* | *1.50* | *7.00* | *587-100* | *100 PSI* | *1000 PSI* | *4000* | *585-904* | *112-019* |

**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

AUTO TOOL CHANGE: ATC

## V-FLANGE END MILL HOLDERS • MANUAL ROTARY COOLANT GLAND




Retention Knobs Sold Separately, See Pages 163-167.

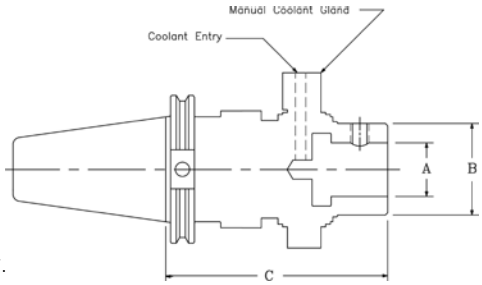
| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | COOLANT STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | | |
| C40-EM75-MG-6 | 0.750 | 1.312 | 5.50 | 587-100 | 100 PSI | 1000 PSI | 4000 | NONE | 585-904 |
| C40-EM10-MG-6 | 1.000 | 1.625 | 5.50 | 587-101 | 100 PSI | 1000 PSI | 3300 | NONE | 585-912 |
| ^C40-EM12-MG-5 | 1.250 | 2.125 | 4.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 105-005 | 585-916 |
| ***45 V-FLANGE*** | | | | | | | | | |
| ***C45-EM75-MG-5** | *0.750* | *1.312* | *4.50* | *587-104* | *100 PSI* | *1000 PSI* | *4000* | *NONE* | *585-904* |
| ***C45-EM10-MG-5** | *1.000* | *1.625* | *4.50* | *587-105* | *100 PSI* | *1000 PSI* | *3300* | *NONE* | *585-912* |
| ^***C45-EM12-MG-5** | *1.250* | *2.500* | *4.50* | *587-106* | *100 PSI* | *1000 PSI* | *2500* | *105-003* | *585-920* |
| ^***C45-EM15-MG-5** | *1.500* | *2.500* | *4.50* | *587-106* | *100 PSI* | *1000 PSI* | *2500* | *105-003* | *585-920* |
| **50 V-FLANGE** | | | | | | | | | |
| C50-EM75-MG-6 | 0.750 | 1.312 | 5.50 | 587-104 | 100 PSI | 1000 PSI | 4000 | NONE | 585-904 |
| C50-EM10-MG-6 | 1.000 | 1.625 | 5.50 | 587-105 | 100 PSI | 1000 PSI | 3300 | NONE | 585-912 |
| ^*C50-EM12-MG-5* | *1.250* | *2.500* | *4.50* | 587-106 | *100 PSI* | *1000 PSI* | *2500* | *105-004* | *585-920* |
| ^*C50-EM15-MG-5* | *1.500* | *2.500* | *4.50* | 587-106 | *100 PSI* | *1000 PSI* | *2500* | *105-004* | *585-920* |
| ^*C50-EM20-MG-7* | *2.000* | *3.187* | *6.50* | 587-107 | *100 PSI* | *1000 PSI* | *1800* | *105-010* | *585-922* |

**** Outgoing Items***

^ - Socket set screw location does not conform to ANSI specification. Request information if set screw location is critical.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE ABS®STYLE HOLDERS • MANUAL ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A ABS® CONNECTION | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | |
| C40-ABS40-MG-6 | ABS 40 | 1.625 | 5.25 | 587-101 | 100 PSI | 1000 PSI | 3300 | 585-912 |
| C40-ABS50-MG-6 | ABS 50 | 2.125 | 5.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 585-916 |
| ***45 V-FLANGE*** | | | | | | | | |
| ****C45-ABS40-MG-6*** | ***ABS 40*** | ***1.625*** | ***5.25*** | ***587-105*** | ***100 PSI*** | ***1000 PSI*** | ***3300*** | ***585-912*** |
| ****C45-ABS50-MG-6*** | ***ABS 50*** | ***2.125*** | ***5.50*** | ***587-103*** | ***100 PSI*** | ***1000 PSI*** | ***3000*** | ***585-916*** |
| ****C45-ABS63-MG-6*** | ***ABS 63*** | ***2.500*** | ***5.62*** | ***587-106*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| **50 V-FLANGE ^** | | | | | | | | |
| C50-ABS40-MG-6 | ABS 40 | 1.625 | 5.25 | 587-105 | 100 PSI | 1000 PSI | 3300 | 585-912 |
| C50-ABS50-MG-6 | ABS 50 | 2.125 | 5.50 | 587-103 | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C50-ABS63-MG-5 | ABS 63 | 2.500 | 5.75 | 587-106 | 100 PSI | 1000 PSI | 2500 | 585-920 |

**** Outgoing Items***

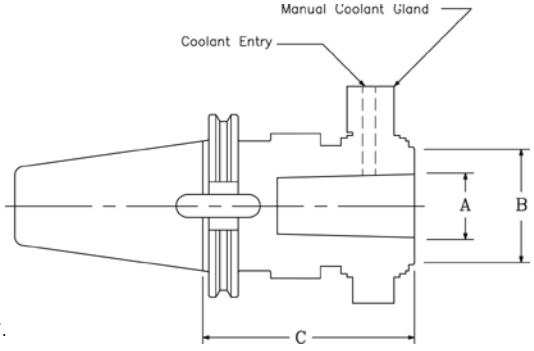
^ - ABS 80 & ABS 100 holders available by special quotation on 50 V-Flange units.

*ABS® is a registered trademark of KOMET.*

• Please refer to the Modular Tooling Section on pages 140-143 for Modular Adapters

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE MORSE TAPER HOLDERS • MANUAL ROTARY COOLANT GLAND



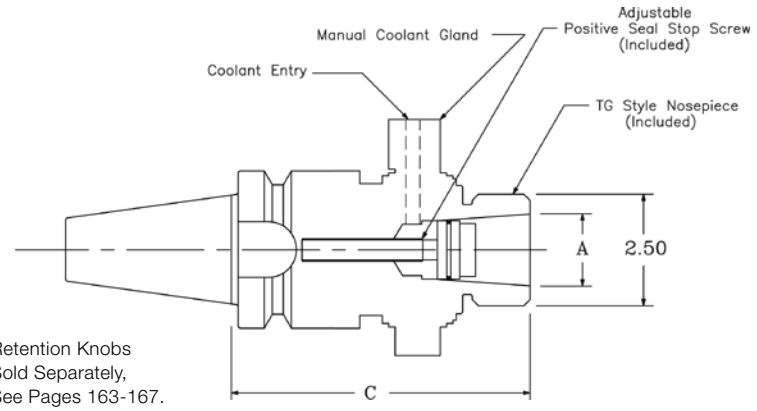

Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|
| **40 V-FLANGE** | | | | | | | | |
| C40-MT3-MG-5 | MT3 | 2.125 | 4.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C40-MT3-MG-5A | MT3 | 1.312 | 4.50 | 587-100 | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C40-MT4-MG-5 | MT4 | 2.125 | 4.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 585-916 |
| C40-MT4-MG-5A | MT4 | 1.312 | 4.50 | 587-100 | 100 PSI | 1000 PSI | 4000 | 585-904 |
| ***45 V-FLANGE*** | | | | | | | | |
| ****C45-MT3-MG-5*** | ***MT3*** | ***2.500*** | ***4.50*** | ***587-106*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| ****C45-MT3-MG-5A*** | ***MT3*** | ***1.312*** | ***4.50*** | ***587-104*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***585-904*** |
| ****C45-MT4-MG-5*** | ***MT4*** | ***2.500*** | ***4.50*** | ***587-106*** | ***100 PSI*** | ***1000 PSI*** | ***2500*** | ***585-920*** |
| ****C45-MT4-MG-5A*** | ***MT4*** | ***1.312*** | ***4.50*** | ***587-104*** | ***100 PSI*** | ***1000 PSI*** | ***4000*** | ***585-904*** |
| **50 V-FLANGE** | | | | | | | | |
| C50-MT3-MG-5 | MT3 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-MT3-MG-5A | MT3 | 1.312 | 4.50 | 587-104 | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C50-MT4-MG-5 | MT4 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 585-920 |
| C50-MT4-MG-5A | MT4 | 1.312 | 4.50 | 587-104 | 100 PSI | 1000 PSI | 4000 | 585-904 |
| C50-MT5-MG-5 | MT5 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 585-920 |

**** Outgoing Items***

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## BT SINGLE ANGLE COLLET CHUCK • MANUAL ROTARY COOLANT GLAND




Retention Knobs Sold Separately, See Pages 163-167.

**TG STYLE COLLETS**
See Page 146.

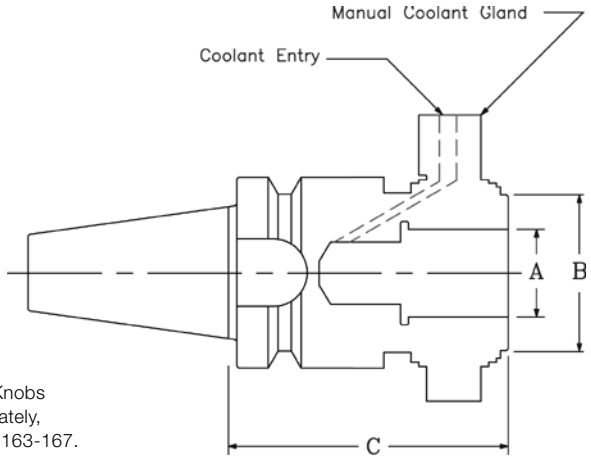
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | CLEARANCE DIA. (IN.) | C PROJ. (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | | | | |
| BT40-TG10-MG-6 | 0.094 - 1.000 | TG 100 | 2.50 | 5.25 | 587-102 | 100 PSI | 1000 PSI | 3000 | 116-004 | 585-916 | 112-001 |
| **BT 50** | | | | | | | | | | | |
| BT50-TG10-MG-6 | 0.094 - 1.000 | TG 100 | 2.50 | 5.25 | 587-106 | 100 PSI | 1000 PSI | 2500 | 116-001 | 585-920 | 112-001 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at pressures below 1000 PSI.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

AUTO TOOL CHANGE: ATC

## BT END MILL HOLDERS • MANUAL ROTARY COOLANT GLAND



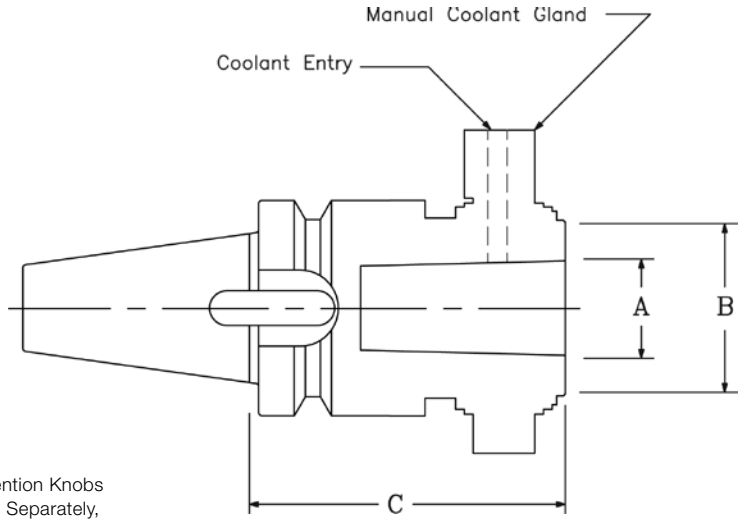

Retention Knobs Sold Separately, See Pages 163-167.

| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE DIA. (IN.) | C PROJ. (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | COOLANT STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | | |
| BT40-EM75-MG-6 | 0.750 | 1.312 | 5.50 | 587-100 | 100 PSI | 1000 PSI | 4000 | 105-007 | 585-904 |
| BT40-EM10-MG-5 | 1.000 | 2.125 | 4.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 105-007 | 585-916 |
| ^BT40-EM12-MG-5 | 1.250 | 2.125 | 4.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 105-007 | 585-916 |
| **BT 50** | | | | | | | | | |
| BT50-EM10-MG-5 | 1.000 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |
| ^BT50-EM12-MG-5 | 1.250 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |
| ^BT50-EM15-MG-5 | 1.500 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 105-006 | 585-920 |

^ - Socket set screw location does not conform to ANSI specification. Request information if set screw location is critical.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at pressures below 1000 PSI.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## BT MORSE TAPER HOLDERS • MANUAL ROTARY COOLANT GLAND




Retention Knobs
Sold Separately,
See Pages 163-167.

| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE DIA. (IN.) | C PROJECTION (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|
| **BT 40** | | | | | | | | |
| BT40-MT2-MG-5 | MT2 | 2.125 | 4.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 585-916 |
| BT40-MT3-MG-5 | MT3 | 2.125 | 4.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 585-916 |
| BT40-MT4-MG-5 | MT4 | 2.125 | 4.50 | 587-102 | 100 PSI | 1000 PSI | 3000 | 585-916 |
| **BT 50** | | | | | | | | |
| BT50-MT3-MG-5 | MT3 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 585-920 |
| BT50-MT4-MG-5 | MT4 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 585-920 |
| BT50-MT5-MG-5 | MT5 | 2.500 | 4.50 | 587-106 | 100 PSI | 1000 PSI | 2500 | 585-920 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 1000 PSI. Higher speeds may be achieved at pressures below 1000 PSI.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## ATC GLAND SPECIFICATIONS AND REPAIR PARTS

| ATC GLAND PART NUMBER | BEARING DIAMETER (IN.) | MAXIMUM SPEED (RMP) | MINIMUM PRESSURE (PSI) | MAXIMUM PRESSURE (PSI) | SEAL KIT PART NUMBER |
|---|---|---|---|---|---|
| **SPFS-STYLE** | | | | | |
| AI-0189T (45/50V) | 1.625 | 3300 | 100 | 1000 | 585-912 |
| AI-0189Y (45/50V) | 1.312 | 4000 | 100 | 1000 | 585-904 |
| AI-9789V (40V) | 1.312 | 4000 | 100 | 1000 | 585-904 |
| AI-9789T (40V) | 1.625 | 3300 | 100 | 1000 | 585-912 |
| AI-9889N (40V) | 2.125 | 3000 | 100 | 1000 | 585-916 |
| AI-9989S (45/50V) | 2.500 | 2500 | 100 | 1000 | 585-920 |
| AI-9989X (45/50V) | 2.125 | 3300 | 100 | 1000 | 585-916 |
| AR-0689Z (45/50V) | 3.187 | 1800 | 100 | 1000 | 585-922 |
| **SPOR-STYLE** | | | | | |
| V7419B (40V) | 1.312 | 4000 | 100 | 1000 | 585-904 |
| V7419J (40V) | 1.625 | 3300 | 100 | 1000 | 585-912 |
| V7419M (40V) | 2.125 | 3000 | 100 | 1000 | 585-916 |
| **DPOR-STYLE** | | | | | |
| E7353B (45/50V) | 1.312 | 4000 | 100 | 1000 | 585-904 |
| E7353D (45/50V) | 1.625 | 3300 | 100 | 1000 | 585-912 |
| E7353X (45/50V) | 2.125 | 3000 | 100 | 1000 | 585-916 |
| E7353S (45/50V) | 2.500 | 2500 | 100 | 1000 | 585-920 |
| **MANUAL-STYLE** | | | | | |
| 587-100 (40V) | 1.312 | 4000 | 100 | 1000 | 585-904 |
| 587-101 (40V) | 1.625 | 3300 | 100 | 1000 | 585-912 |
| 587-102 (40V) | 2.125 | 3000 | 100 | 1000 | 585-916 |
| 587-103 (45/50V) | 2.125 | 3000 | 100 | 1000 | 585-916 |
| 587-104 (45/50V) | 1.312 | 4000 | 100 | 1000 | 585-904 |
| 587-105 (45/50V) | 1.625 | 3300 | 100 | 1000 | 585-912 |
| 587-106 (45/50V) | 2.500 | 2500 | 100 | 1000 | 585-920 |
| 587-107 (45/50V) | 3.187 | 1800 | 100 | 1000 | 585-922 |



**FACE SEAL REPAIR KIT FOR SPFS-STYLE GLANDS**
Kit includes (24) Face seal washers and Two-part Epoxy Adhesive: Order 100-001.

**SPOR-STYLE GLANDS - SPARE O-RING FOR PIN**
Order 001-039

**DPOR-STYLE GLANDS - SPARE O-RING FOR PIN**
Order 001-038

We offer Repair and Reconditioning services for our ATC glands. Please call us at **1.800.600.2248** for an RGA Number to return the unit to us. We will inspect the unit and forward a quote for the repair to you promptly!

## SPECIAL APPLICATION ROTARY COOLANT GLAND ASSEMBLY QUESTIONNAIRE

**For a custom adaptation to suit your machining center, please fill out this questionnaire & fax to (1-216-481-9966) or email to sales@coolantfedtooling.com.**

**We will respond promptly to your request for quotation.**

*COMPANY* _____

*ADDRESS* _____

*PHONE* _____ *FAX* _____ *CONTACT* _____

*INDICATE YOUR GEORGE WHALLEY DISTRIBUTOR OR CONTACT* _____

### *MACHINE SPECIFICATIONS :*

*1. All possible data, including manufacturer's name, model name, model number, serial number and whether vertical or horizontal?*

_____

_____

*2. Machine horsepower?* _____

### *MACHINE LIMITATIONS*

*1. For purposes of positioning the tool holder and coolant gland in proper relation to the machine spindle, advise what means of orientation is used?*

*A. Drive key* _____

*B. Drive slot* _____

*C. Other* _____

*2. What is the weight limitation of the holder?*

*A. With the cutting tool* _____

*B. Without the cutting tool* _____

*3. What is the maximum length clearance of the holder?* _____

*A. With the cutting tool* _____

*B. Witout the cutting tool* _____

*4. What is the centerline distance on the tool carousel for maximum tool diameter?* _____

### *SPINDLE*

*1. What is the maximum R.P.M. of the machine spindle?*

*2. What is the R.P.M. requirement for the tool being used in this application?*

_____

_____

*3. What is the inside taper (bore) of the spindle (i.e. 30, 35, 40, 45, 50, 60 V-Flange or BT, etc.)* _____

*4. What is the bolt circle diameter on the face of the spindle?* _____

_____

*5. What is the thread size and spacing og the bolts in the spindle bolt circle?*

_____

_____

### *HOLDER*

*1. What types of cutting tools will be used? (Indicate shank specifications for each.)* _____

*2. Specify type of holder required:* _____

*A. End Mill (Bore size)* _____

*B. Collet Chuck (Capacity)* _____

*C. Morse Taper* _____

*D. Other* _____

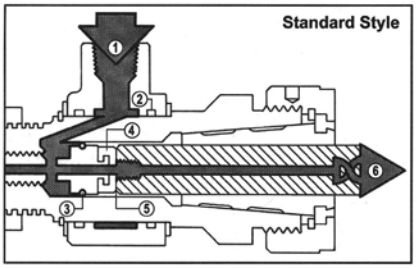
## POSITIVE SEAL ADJUSTMENT STOP SCREWS

**IMPORTANT!**
**COLLET CHUCK USERS PLEASE READ**

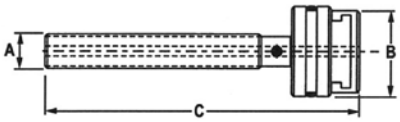
The introduction of CFT George Whalley Company's positive seal adjustment stop screws provides a solution to a major problem in coolant-fed machining operations. Coolant-fed cutting tools are able to deliver coolant to the cutting edge to assist cooling and chip ejection but this advantage can be seriously reduced when leakage at the stop screw decreases the coolant flow and pressure. The various standard adjustment stop screws generally in use in the machining industry for adjusting cutting tool length have basic disadvantages when used with coolant-fed tools. Steel stop screws have no sealing capability and are of little use in coolant-fed operations. Industry standard nylon capped steel stop screws provide a coolant seal where the tool shank meets the nylon cap but considerable leakage and loss of coolant pressure occurs around the screw threads. Solid nylon stop screws can provide a solution to this problem however they tend to be subject to wear when frequent tool adjustments are required. CFT George Whalley Co. can provide all of the proceeding stop screws to interchange with industry standard holders. We strongly recommend our exclusive positive seal stop screw which will eliminate leakage and will handle necessary pressures to allow peak performance to the cutting tool. CFT George Whalley Company's positive seal adjustment stop screw also has the advantage of using fine screw threads for finer tool length adjustment. The illustrations and text which follow explain their use and capability.

## STANDARD POSITIVE SEAL ADJUSTMENT STOP SCREWS

These stop screws are designed exclusively for use with CFT George Whalley Company's positive seal style collet chucks. For information on which collet chucks accept these stop screws please see tool holders section of catalog.

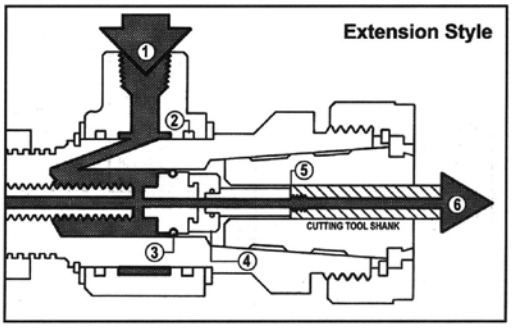



**1.** Coolant is delivered through the coolant gland pipe thread orifice in rotary inducer style holders or coolant passage through the axis of stop screw in coolant-thru-the-spindle holders.
**2.** Rotary inducer style holders have seals at the gland bearing surface to prevent coolant leakage. **3.** Coolant enters the tool holder chamber where an O-ring seal prevents coolant loss around the outside diameter of stop screw head. A coolant cross hole in the neck of the stop screw then admits coolant for delivery to the cutting tool. **4.** At the location where the cutting tool shank end meets the stop screw face, a nylon cap prevents leakage. **5.** The nylon extension meets the end of the cutting tool shank, inside the single angle collet, for tool length adjustment and to seal against coolant leakage.
**6.** Coolant flows out through the cutting tool at maximum available pressure for cooling and chip ejection.




| PART NUMBER | OLD PART NO. | (A) THREAD SIZE | B | C |
|---|---|---|---|---|
| 104-001 | 851-001P | 1/2-20 LH | 1.135 | 3.750 |
| 104-002 | 851-002P | 7/16-20 LH | 0.825 | 3.750 |
| 104-003 | 851-003P | 7/16-20 LH | 1.135 | 3.750 |
| 104-004 | 851-004P | 7/16-20 LH | 1.135 | 2.250 |
| 104-005 | 851-005P | 7/16-20 LH | 1.135 | 2.750 |
| 104-006 | 851-006P | 5/8-18 LH | 1.665 | 1.750 |
| 104-007 | 851-007P | 5/8-18 LH | 1.665 | 3.375 |
| 104-008 | 851-008P | 5/8-18 LH | 1.665 | 2.250 |
| 104-009 | 851-009P | 7/16-20 LH | 0.825 | 2.250 |

## EXTENSION STYLE POSITIVE SEAL ADJUSTMENT STOP SCREWS

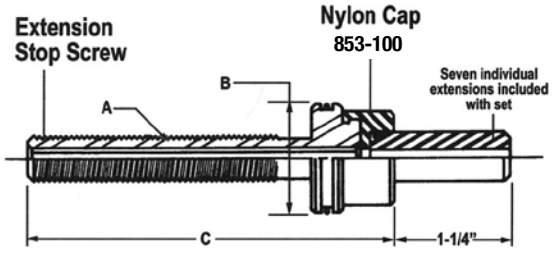



These stop screws are designed to prevent coolant leakage between the stop screw face and the shank of short shanked cutting tools. An extension is projected into the bore of the collet for sealing and tool length adjustment. For use in collet chucks which use TG10 and TG15 series single angle collets.
**1.** Coolant is delivered through the coolant gland pipe thread orifice in rotary inducer style holders or coolant passage through the axis of stop screw in coolant-thru-the-spindle holders.
**2.** Rotary inducer style holders have seals at the gland bearing surface to prevent coolant leakage.
**3.** Coolant enters the tool holder chamber where an 0-ring seal prevents coolant loss around the outside diameter of stop screw head. A coolant cross hole in the neck of the stop screw then admits coolant for delivery to the cutting tool.
**4.** Nylon cap is mounted to the positive seal stop screw to accept nylon extensions. These nylon extensions are manufactured slightly un dersize to provide clearance for insertion into the rear end of the single angle collet without interfering with collet grip. Where the nylon extension is inserted in the nylon cap, an O-ring is provided to prevent leakage.
**5. The nylon extension meets the end of the cutting tool shank, inside the single angle collet, for tool length adjustment and to seal against coolant leakage.**
**6.** Coolant flows out through the cutting tool at maximum available pressure for cooling and chip ejection.



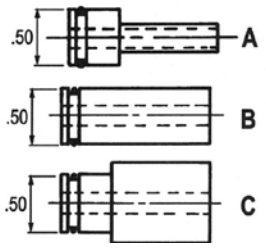
## EXTENSION STYLE STOP SCREW SETS

Each extension stop screw set listed includes **one extension stop screw** and one each of the **seven extensions** listed below.




| PART NUMBER | OLD PART NUMBER | (A) THREAD SIZE | B APPROX. | C APPROX. |
|---|---|---|---|---|
| 116-001 | 851-011P | 1/2-20 LH | 1.135 | 3.75 |
| 116-002 | 851-013P | 7/16-20 LH | 1.135 | 3.75 |
| 116-003 | 851-014P | 7/16-20 LH | 1.135 | 2.25 |
| 116-004 | 851-015P | 7/16-20 LH | 1.135 | 2.75 |

## EXTENSION STYLE POSITIVE SEAL STOP SCREWS

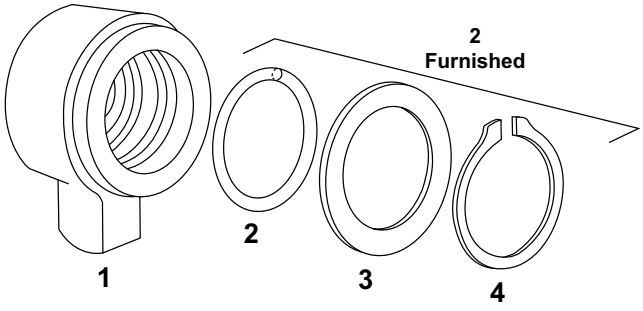


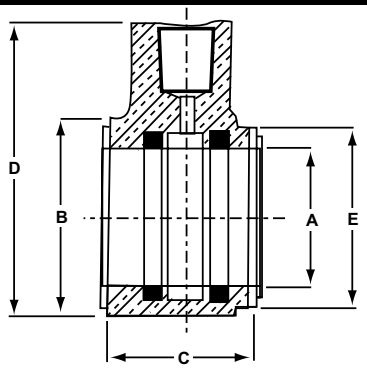

| STYLE | PART NUMBER | OLD PART NUMBER | DIA. |
|---|---|---|---|
| A | 106-001 | 853-010 | 0.250 |
| A | 106-002 | 853-012 | 0.312 |
| A | 106-003 | 853-014 | 0.375 |
| A | 106-004 | 853-016 | 0.437 |
| B | 106-005 | 853-018 | 0.500 |
| C | 106-006 | 853-020 | 0.620 |
| C | 106-007 | 853-022 | 0.750 |

Rotary Coolant Collars are designed in three styles -Standard RPM (CGS), High RPM (CGH) and 2 Piece High RPM (CGH2) for manual and transfer type machines. Specifically designed for applications where space is at a minimum.

Rotary Coolant Collars are used in many special applications. If you have a special requirement, please call your local Representative or our factory.

## ROTARY COOLANT COLLARS • STANDARD RPM



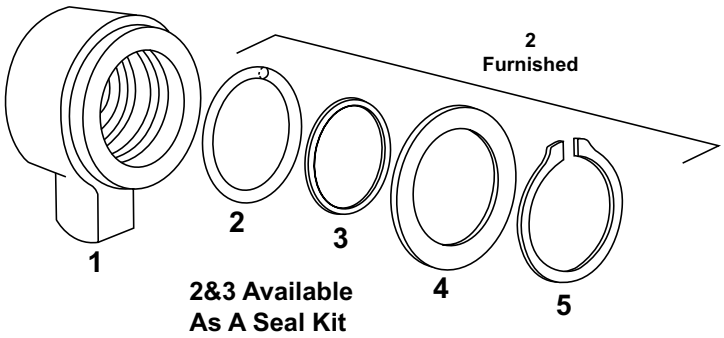



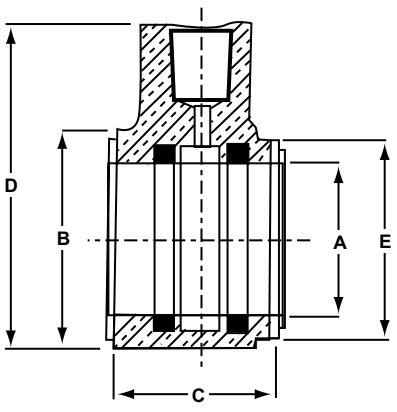

| ASSEMBLY PART NUMBER | A I.D. (IN.) | B O.D. (IN.) | C WIDTH (IN.) | D OAL (IN.) | E SHIELD I.D. (IN.) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | O-RING PART NUMBER (2 PCS INCLUDED) | THRUST WASHER (2 PCS INCLUDED) | SNAP RING (2 PCS INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CGS-0937 | 0.937 | 1.375 | 1.250 | 2.250 | 1.375 | 100 PSI | 750 PSI | 1300 | 001-001 | 403-001 | 001-201 |
| CGS-1250 | 1.250 | 1.750 | 1.250 | 2.750 | 1.625 | 100 PSI | 750 PSI | 1100 | 001-002 | 403-002 | 001-202 |
| CGS-1625 | 1.625 | 2.375 | 1.500 | 3.125 | 2.187 | 100 PSI | 750 PSI | 1000 | 001-003 | 403-003 | 001-204 |
| CGS-2250 | 2.250 | 3.000 | 1.625 | 3.875 | 2.875 | 100 PSI | 750 PSI | 600 | 001-004 | 403-004 | 001-205 |
| CGS-2750 | 2.750 | 4.000 | 1.562 | 4.875 | 3.937 | 100 PSI | 750 PSI | 500 | 001-005 | 403-005 | 001-206 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to O-Rings.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.** Oil Mist may be utilized with these units at very low RPM.

## ROTARY COOLANT COLLARS • HIGH RPM

General Operating Recommendations For All Rotary Coolant Collars See Page 114.

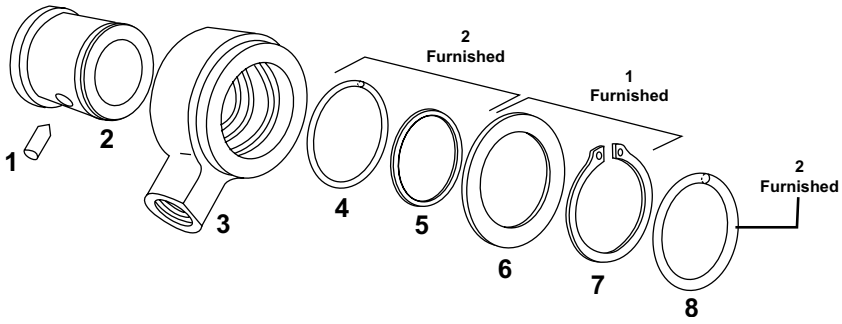


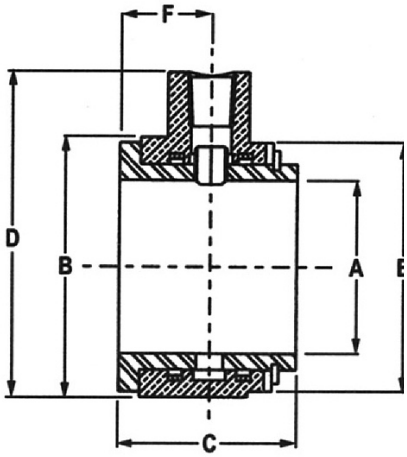




| ASSEMBLY PART NUMBER | A I.D. (IN.) | B O.D. (IN.) | C WIDTH (IN.) | D OAL (IN.) | E SHIELD I.D. (IN.) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | THRUST WASHER (2 PCS INCLUDED) | SNAP RING (2 PCS INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CGH-0937 | 0.937 | 1.375 | 1.250 | 2.250 | 1.375 | 100 PSI | 750 PSI | 5000 | 403-001 | 001-201 | SK-0937 |
| CGH-1250 | 1.250 | 1.750 | 1.250 | 2.750 | 1.625 | 100 PSI | 750 PSI | 4000 | 403-002 | 001-202 | SK-1250 |
| CGH-1500 | 1.500 | 2.312 | 1.500 | 3.125 | 2.187 | 100 PSI | 750 PSI | 3600 | 403-013 | 001-203 | SK-1500 |
| CGH-1625 | 1.625 | 2.312 | 1.500 | 3.125 | 2.187 | 100 PSI | 750 PSI | 3300 | 403-003 | 001-204 | SK-1625 |
| CGH-2250 | 2.250 | 3.000 | 1.625 | 3.875 | 2.875 | 100 PSI | 750 PSI | 2800 | 403-004 | 001-205 | SK-2250 |
| CGH-2750 | 2.750 | 4.000 | 1.562 | 4.875 | 3.937 | 100 PSI | 750 PSI | 2200 | 403-005 | 001-206 | SK-2750 |
| CGH-3500 | 3.500 | 5.500 | 1.562 | 5.500 | - | 100 PSI | 1000 PSI | 1500 | 403-006 | 001-207 | SK-3500 |
| CGH-4000 | 4.000 | 6.000 | 1.750 | 6.000 | - | 100 PSI | 1000 PSI | 1400 | 866-027 | 001-208 | SK-4000 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750/1000 PSI. Higher speeds may be achieved at pressures below 1000 PSI.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## ROTARY COOLANT COLLARS • 2 PIECE HIGH RPM



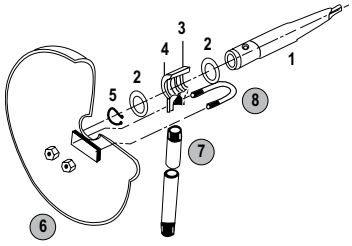

**Dimensions**

| ASSEMBLY PART NUMBER | OLD PART NUMBER | A I.D. (IN.) | B O.D. (IN.) | C WIDTH (IN.) | D OAL (IN.) | E SHIELD I.D. (IN.) | F CTR (IN.) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | THRUST WASHER (2 PCS INCLUDED) | SNAP RING (2 PCS INCLUDED) | MATING SHANK O-RING (2 PCS INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CGH2-1250 | 801-081 | 1.250 | 2.187 | 1.594 | 3.125 | 2.187 | 0.8750 | 100 PSI | 750 PSI | 4000 | 403-007 | 001-204 | 001-121 | SK2-1250 |
| CGH2-1500 | 801-082 | 1.500 | 2.187 | 1.812 | 3.125 | 2.187 | 0.9687 | 100 PSI | 750 PSI | 3600 | 103-008 | 001-208 | 001-007 | SK2-1500 |
| CGH2-2000 | 801-083 | 2.000 | 3.000 | 2.062 | 3.812 | 2.875 | 1.0000 | 100 PSI | 750 PSI | 3100 | 103-009 | 001-209 | 001-021 | SK2-2000 |
| CGH2-2000A | 801-090 | 2.000 | 3.000 | 1.875 | 3.750 | - | 0.8750 | 100 PSI | 750 PSI | 3100 | 403-009 | 001-209 | 001-021 | SK2-2000 |
| CGH2-2500 | 801-091 | 2.500 | 4.000 | 1.938 | 4.750 | - | 0.9375 | 100 PSI | 750 PSI | 2500 | 403-010 | 001-210 | 001-022 | SK2-2500 |
| CGH2-2562 | 801-084 | 2.562 | 4.062 | 2.312 | 5.000 | 3.312 | 1.1250 | 100 PSI | 750 PSI | 2200 | 403-014 | 001-215 | 001-022 | SK2-2562 |
| CGH2-4250 | 801-085 | 4.250 | 6.000 | 3.000 | 7.125 | - | 1.5000 | 100 PSI | 1000 PSI | 1100 | 866-875 | 001-216 | 001-027 | SK2-4250 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## PLASTIC SPLASH SHIELD ASSEMBLIES



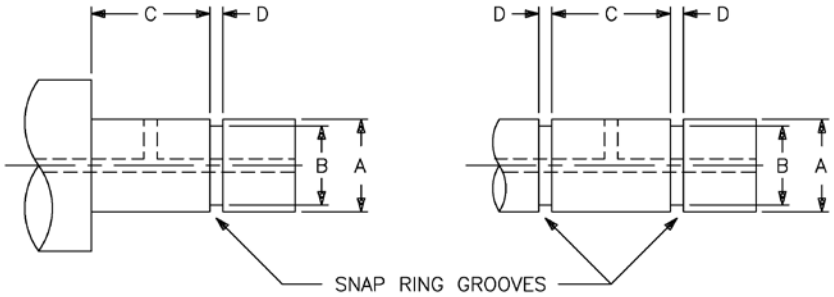

| STANDARD RPM COOLANT GLAND | HIGH RPM COOLANT GLAND | (6) PLASTIC SHIELD 9-5/8 OD X 1-1/2 LG | SHIELD INSIDE DIAMETER | (7) COOLANT TORQUE BAR 3/8-18 NPT X 11" | (8) U-BOLT ASSEMBLY |
|---|---|---|---|---|---|
| CGS-0937 | CGH-0937 | 846-001 | 1-3/8 | 869-001TB | 874-001UB |
| CGS-1250 | CGH-1250 | 846-002 | 1-5/8 | 869-001TB | 874-001UB |
| CGS-1625 | CGH-1500 | 846-003 | 2-3/16 | 869-001TB | 874-001UB |
| CGS-2250 | CGH-2250 | 846-004 | 2-7/8 | 869-001TB | 874-001UB |
| CGS-2750 | CGH-2750 | 846-005 | 3-15/16 | 869-001TB | 874-001UB |

**ASSEMBLY & PARTS DIAGRAM FOR STANDARD ROTARY COOLANT GLAND**

1. Tool holder shank
2. Thrust washers (2)
3. Coolant inducer rings -apply grease or bearing lubricant
4. O-rings (2) -apply grease or bearing lubricant
5. Snap ring
6. Shield Assembly
7. 3/8 D.E. Pipe Nipple
8. U-bolt & washer assembly*

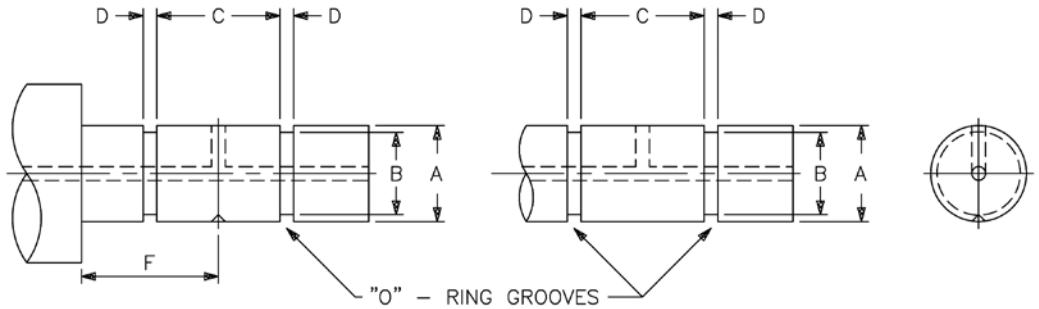
**CAUTION: (1)** All holders with coolant glands (rotary coolant inducers) must have torque arm (pipe nipple) secured to prevent coolant hose interference with machine operation. **(2)** Rotary coolant assemblies are not designed to operate without coolant. **(3)** Torque arm centerline to be perpendicular to spindle centerline to maximize seal life.

## SHANK MOUNTING SPECIFICATIONS FOR THE GEORGE WHALLEY CO. STANDARD AND HIGH RPM ONE-PIECE ROTARY COOLANT GLANDS




| A SHANK O.D. | B SNAP RING GROOVE O.D. | C GLAND BEARING WIDTH | D SNAP RING WIDTH | FOR USE WITH COOLANT GLAND NUMBER |
|---|---|---|---|---|
| 0.9360/0.9340 | 0.8790/0.8850 | 1.380/1.385 | 0.046/0.048 | CGH/CGS - 0937 |
| 1.249/1.247 | 1.172/1.180 | 1.380/1.385 | 0.056/0.060 | CGH/CGS - 1250 |
| 1.624/1.622 | 1.524/1.534 | 1.630/1.635 | 0.068/0.072 | CGH/CGS - 1625 |
| 2.249/2.247 | 2.114/2.126 | 1.815/1.820 | 0.086/0.091 | CGH/CGS - 2250 |
| 2.749/2.747 | 2.596/2.608 | 1.755/1.760 | 0.103/0.108 | CGH/CGS - 2750 |
| 3.499/3.497 | 3.310/3.322 | 1.815/1.820 | 0.103/0.108 | CGH - 3500 |
| 3.999/3.997 | 3.786/3.798 | 2.002/2.006 | 0.120/0.125 | CGH - 4000 |

## SHANK MOUNTING SPECIFICATIONS FOR THE GEORGE WHALLEY CO. HIGH RPM TWO-PIECE ROTARY COOLANT GLANDS




| A SHANK O.D. | B O-RING GROOVE O.D. | C GLAND BEARING WIDTH | D O-RING WIDTH | F SET SCREW POINT LOCATION | FOR USE WITH COOLANT GLAND NUMBER |
|---|---|---|---|---|---|
| 1.249/1.247 | 1.135 | 1.000 | 0.090/0.094 | 0.906 | CGH2 - 0937 |
| 1.499/1.497 | 1.380 | 1.000 | 0.090/0.094 | 1.000 | CGH2 - 1250 |
| 1.999/1.997 | 1.885 | 1.250 | 0.090/0.094 | 1.063 | CGH2 - 1625 |
| 2.561/2.559 | 2.375 | 1.500 | 0.138/0.142 | 1.188 | CGH2 - 2250 |
| 4.249/4.247 | 4.025 | 1.500 | 0.175/0.185 | 1.531 | CGH2 - 2750 |
| 1.999/1.997 | 1.885 | 1.250 | 0.090/0.094 | 0.906 | 801 - 083A |
| 2.449/2.497 | 2.390 | 1.500 | 0.090/0.094 | 0.969 | 801 - 091 |

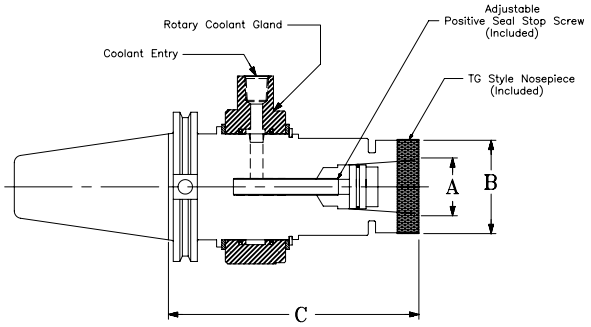
## BREAK IN AND OPERATING RECOMMENDATIONS FOR AUTOMATIC AND MANUAL TOOL CHANGE COOLANT GLANDS

**In order to assure proper lubrication, even wear, and proper seating, high RPM glands should be broken in at 100 RPM for 3 minutes with coolant introduced at a pressure and volume between 100 PSI and 500 PSI to prevent overloading seals. Repeat procedure at 500 RPM for 3 minutes, and again at 1000 RPM. After break in procedure is complete, units may be run at pressures between 100 PSI and 750/1000 PSI.**

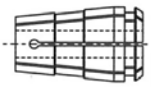
**For maximum life and performance of these coolant glands and seals the following conditions are recommended:**

1. Coolant filtration: 30 to 50 micron minimum; 5 micron optimum
2. Proper type & viscosity of coolant: preferably a good water soluble synthetic with good lubrication and heat dissipation under pressure.
3. Coolant pressure: minimum of 100 lbs. coolant pressure at high R.P.M's (1800 SFM or more based on I.D. dimension of coolant gland or O.D. bearing diameter of tool holder). Maximum pressure of 750/1000 PSI.
4. Coolant volume must be sufficient to properly lubricate cutting tool as recommended by its manufacturer. The combination of volume and pressure can not exceed the coolant orifice delivery capability of your tool or premature gland failure may result due to excessive heat build up.

## V-FLANGE SINGLE ANGLE COLLET CHUCKS WITH POSITIVE SEAL ADJUSTING STOP SCREW AND ROTARY COOLANT COLLARS




**TG Style Collets**
See page 146.



•See page 111 for positive seal stop screw.

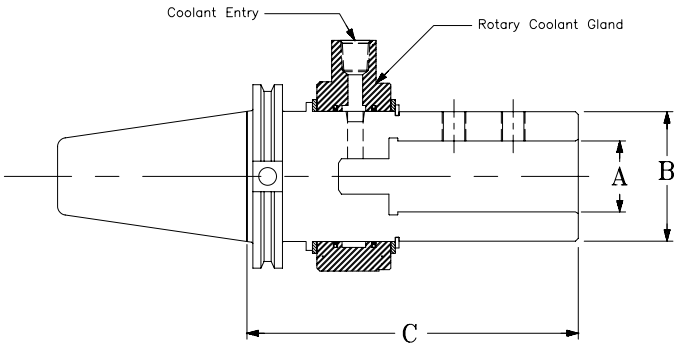
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C PROJ. (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **50 V-FLANGE** | | | | | | | | | | | |
| C50-TG10-CGH-7P | 0.094 - 1.000 | TG 100 | 2.50 | 7.00 | CGH-2250 | 100 PSI | 750 PSI | 2800 | SK-2250 | 116-001 | 112-001 |
| C50-TG15-CGH-8P | 0.500 - 1.500 | TG 150 | 3.50 | 8.00 | CGH-2750 | 100 PSI | 750 PSI | 2200 | SK-2750 | - | 112-002 |

• See pages 112-114 for Rotary Coolant Collars information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE END MILL HOLDERS WITH HIGH RPM ROTARY COOLANT GLANDS






Retention Knobs
Sold Separately,
See Pages 163-167.

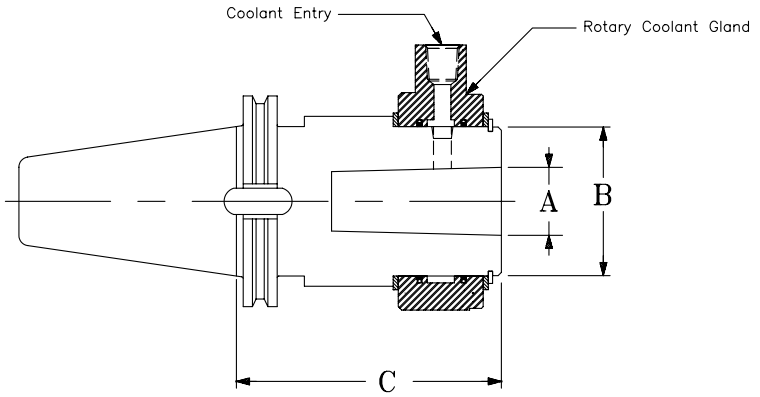
| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE (IN.) | C PROJECTION (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|
| **50 V-FLANGE** | | | | | | | | |
| C50-EM12-CGH-7 | 1.250 | 2.75 | 7.00 | CGH-2750 | 100 PSI | 750 PSI | 2200 | SK-2750 |
| C50-EM15-CGH-7 | 1.500 | 2.75 | 7.00 | CGH-2750 | 100 PSI | 750 PSI | 2200 | SK-2750 |
| C50-EM17-CGH-7 | 1.750 | 3.50 | 7.00 | CGH-3500 | 100 PSI | 1000 PSI | 1500 | SK-3500 |
| C50-EM20-CGH-7 | 2.000 | 3.50 | 7.00 | CGH-3500 | 100 PSI | 1000 PSI | 1500 | SK-3500 |
| C50-EM22-CGH-7 | 2.250 | 4.00 | 7.00 | CGH-4000 | 100 PSI | 1000 PSI | 1400 | SK-4000 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750/1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

• See pages 112-114 for Rotary Coolant Gland information

**• For CAT 40 End Mill Holders please see bottom of page 105. (Manual ATC End Mill Holders)**

## V-FLANGE MORSE TAPER HOLDERS WITH HIGH RPM ROTARY COOLANT GLAND




**With High RPM Rotary Coolant Glands**

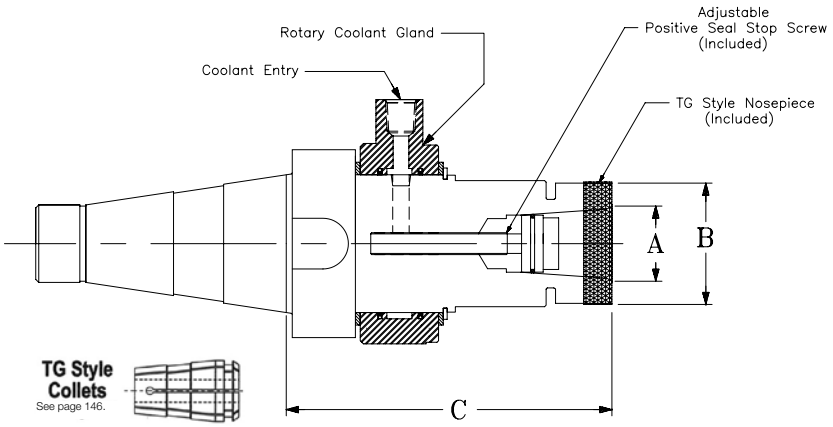
| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE (INCHES) | C PROJECTION (INCHES) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|
| *45 V-FLANGE* | | | | | | | | |
| **C45-MT4-CGH-4* | *MT 4* | *1.62* | *3.18* | *CGH-1625* | *100 PSI* | *750 PSI* | *3300* | *SK-1625* |
| *50 V-FLANGE* | | | | | | | | |
| **C50-MT4-CGH-4* | *MT 4* | *1.62* | *3.38* | *CGH-1625* | *100 PSI* | *750 PSI* | *3300* | *SK-1625* |
| **C50-MT5-CGH-5* | *MT 5* | *2.75* | *4.25* | *CGH-2750* | *100 PSI* | *750 PSI* | *2200* | *SK-2750* |

**** Outgoing Items***

• See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## NMTB TAPER SHANK • SINGLE ANGLE COLLET CHUCKS WITH POSITIVE SEAL ADJUSTING STOP SCREW AND ROTARY COOLANT GLAND



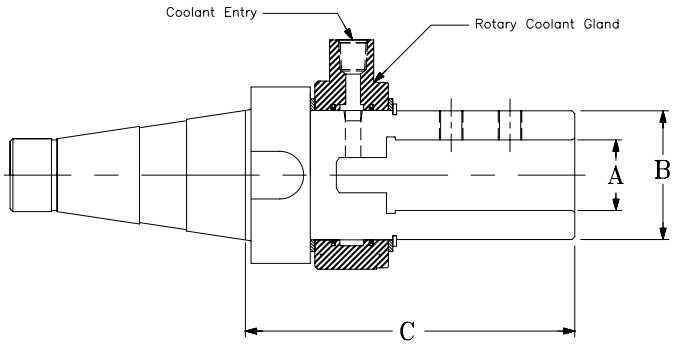

•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C PROJ. (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **40 NMTB** | | | | | | | | | | | |
| N40-TG10P-7 | 0.094 - 1.000 | TG 100 | 2.50 | 6.25 | CGH-2250 | 100 PSI | 750 PSI | 2800 | SK-2250 | 116-002 | 112-001 |
| N40-TG15P-7 | 0.500 - 1.500 | TG 150 | 3.50 | 6.25 | CGH-2750 | 100 PSI | 750 PSI | 2200 | SK-2750 | - | 112-002 |
| **50 NMTB** | | | | | | | | | | | |
| N50-TG10P-7 | 0.094 - 1.000 | TG 100 | 2.50 | 6.25 | CGH-2250 | 100 PSI | 750 PSI | 2800 | SK-2250 | 116-002 | 112-001 |
| N50-TG15P-7 | 0.500 - 1.500 | TG 150 | 3.50 | 6.25 | CGH-2750 | 100 PSI | 750 PSI | 2200 | SK-2750 | - | 112-002 |

• See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## NMTB TAPER SHANK • END MILL HOLDERS WITH ROTARY COOLANT GLAND




| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE (IN.) | C PROJECTION (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|
| ***30 NMTB*** | | | | | | | | |
| ****N30-EM75-4*** | ***0.750*** | ***2.25*** | ***3.88*** | ***CGH-1625*** | ***100 PSI*** | ***750 PSI*** | ***3300*** | ***SK-1625*** |
| **40 NMTB** | | | | | | | | |
| N40-EM10-4 | 1.000 | 2.25 | 3.88 | CGH-2250 | 100 PSI | 750 PSI | 2800 | SK-2250 |
| **50 NMTB** | | | | | | | | |
| N50-EM75-5 | 0.750 | 2.25 | 4.75 | CGH-2250 | 100 PSI | 750 PSI | 2800 | SK-2250 |
| N50-EM12-7 | 1.250 | 2.75 | 7.00 | CGH-2750 | 100 PSI | 750 PSI | 2200 | SK-2750 |
| N50-EM15-7 | 1.500 | 2.75 | 7.00 | CGH-2750 | 100 PSI | 750 PSI | 2200 | SK-2750 |
| N50-EM17-7 | 1.750 | 3.50 | 7.00 | CGH-3500 | 100 PSI | 1000 PSI | 1500 | SK-3500 |
| N50-EM20-7 | 2.000 | 3.50 | 7.00 | CGH-3500 | 100 PSI | 1000 PSI | 1500 | SK-3500 |
| N50-EM22-7 | 2.250 | 4.75 | 7.00 | CGH-4000 | 100 PSI | 1000 PSI | 1400 | SK-4000 |
| N50-EM25-7 | 2.500 | 4.75 | 7.00 | CGH-4000 | 100 PSI | 1000 PSI | 1400 | SK-4000 |
| N50-EM30-10 | 3.000 | 4.75 | 9.00 | CGH-4000 | 100 PSI | 1000 PSI | 1400 | SK-4000 |

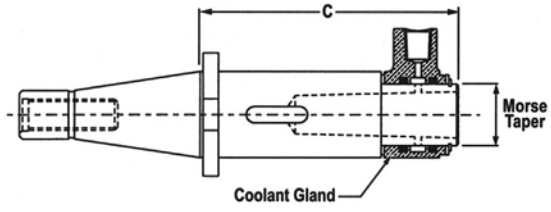
**** Outgoing Items***

• NMTB End Mill Holders are supplied with set screws. • See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750/1000 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## NMTB TAPER SHANK • MORSE TAPER HOLDERS WITH HIGH RPM ROTARY COOLANT GLAND



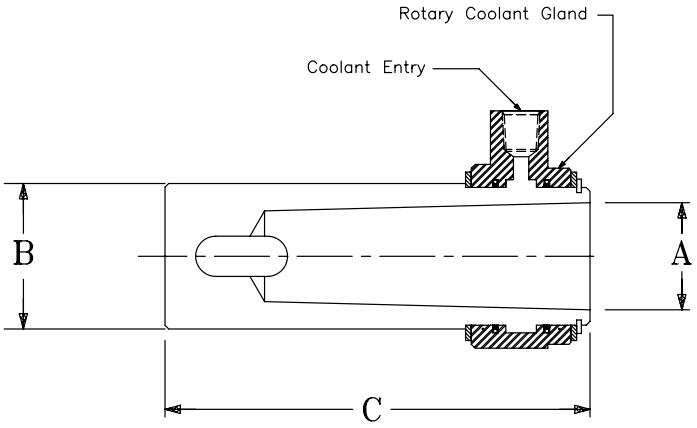

| ASSEMBLY PART NUMBER | A MORSE TAPER | C PROJECTION (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|
| ***40 NMTB*** | | | | | | | |
| ****N40-MT2-CGH-4*** | ***MT 2*** | ***4.00*** | ***CGH-0937*** | ***100 PSI*** | ***750 PSI*** | ***5000*** | ***SK-0937*** |
| ****N40-MT3-CGH-4*** | ***MT 3*** | ***4.87*** | ***CGH-1250*** | ***100 PSI*** | ***750 PSI*** | ***4000*** | ***SK-1250*** |
| ***50 NMTB*** | | | | | | | |
| ****N50-MT3-CGH-5*** | ***MT 3*** | ***5.38*** | ***CGH-1250*** | ***100 PSI*** | ***750 PSI*** | ***4000*** | ***SK-1250*** |
| ****N50-MT4-CGH-3*** | ***MT 4*** | ***3.12*** | ***CGH-1625*** | ***100 PSI*** | ***750 PSI*** | ***3300*** | ***SK-1625*** |
| ****N50-MT5-CGH-3*** | ***MT 5*** | ***3.50*** | ***CGH-2250*** | ***100 PSI*** | ***750 PSI*** | ***2800*** | ***SK-2250*** |
| ****N50-MT5-CGH-7*** | ***MT 5*** | ***7.25*** | ***CGH-2250*** | ***100 PSI*** | ***750 PSI*** | ***2800*** | ***SK-2250*** |

**** Outgoing Items***

• See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

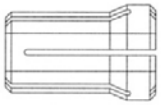
## STRAIGHT SHANK • MORSE TAPER HOLDERS WITH ROTARY COOLANT GLAND



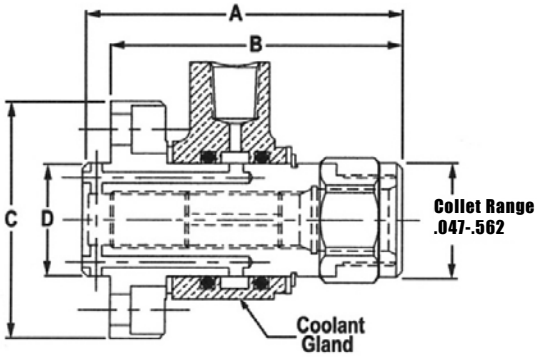

| ASSEMBLY PART NUMBER | A MORSE TAPER | B SHANK DIA. (IN.) | C OAL (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|
| SS12-MT2-CGH-4 | MT 2 | 1.250 | 4.00 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| SS12-MT3-CGH-6 | MT 3 | 1.250 | 5.75 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| SS12-MT4-CGH-6 | MT 4 | 1.250 | 5.75 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| SS15-MT2-CGH-4 | MT 3 | 1.500 | 4.00 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| SS15-MT3-CGH-6 | MT 4 | 1.500 | 5.75 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## FACE MOUNTED DOUBLE ANGLE COLLET CHUCK WITH HIGH RPM ROTARY COOLANT GLAND FOR USE WITH DRILL SPEEDER



**DA Style Collets**
See page 147.



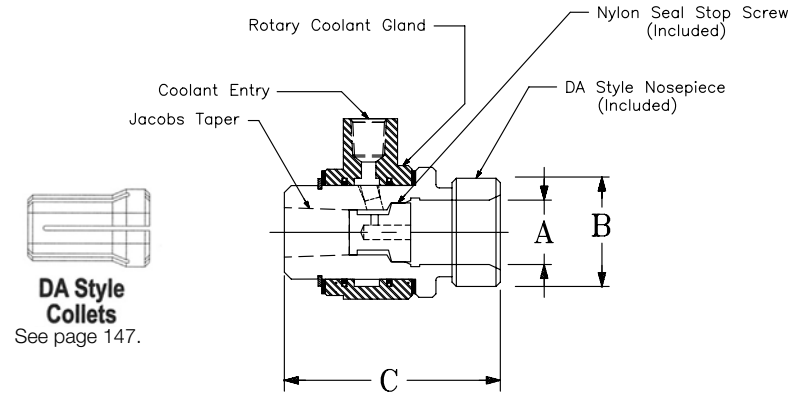

| ASSEMBLY PART NUMBER | A OAL (IN.) | B PROJ. (IN.) | C DIA. (IN.) | D DIA. (IN.) | MAX. SCREW ADJUST (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| ***FM-DA10-4** | *3.937* | *3.625* | *2.625* | *1.250* | *1.25* | *CGH-1250* | *100 PSI* | *750 PSI* | *4000* | *SK-1250* |

**** Outgoing Items***

- Holders use DA10 collets • See pages 112-114 for Rotary Coolant Gland information.
- Furnished with High RPM Coolant Gland and Nylon Seal Stop Screw

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## JACOBS TAPER MOUNT • DOUBLE ANGLE COLLET CHUCKS WITH ROTARY COOLANT GLAND






**DA Style Collets**
See page 147.

| ASSEMBLY PART NUMBER | JACOBS TAPER SIZE | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C OAL (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | NYLON SEAL STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ** JT2-DA10-CGH-2* | *2* | *0.047 - 0.562* | *DA 100* | *1.56* | *2.88* | *CGH-0937* | *100 PSI* | *750 PSI* | *5000* | *110-001* | *SK-0937* | *112-018* |
| ** JT33-DA18-CGH-2* | *33* | *0.047 - 0.750* | *DA 180* | *1.62* | *3.53* | *CGH-1250* | *100 PSI* | *750 PSI* | *4000* | *110-002* | *SK-1250* | *112-019* |

**** Outgoing Items***

### Arbors to Adapt Jacobs Taper Collet Chucks to Machine Spindles

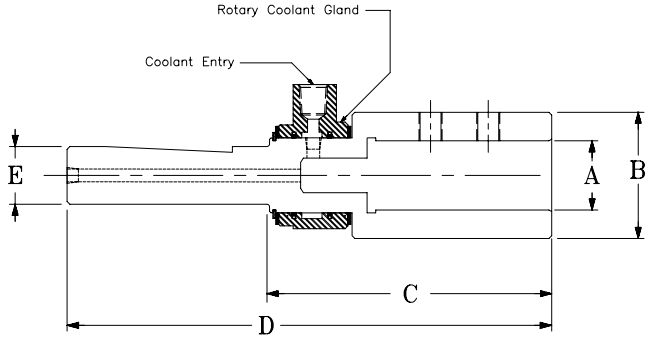
| MACHINE SHANK | JACOBS TAPER | PART NUMBER | JACOBS TAPER | PART NUMBER | MACHINE SHANK | JACOBS TAPER | PART NUMBER | JACOBS TAPER | PART NUMBER |
|---|---|---|---|---|---|---|---|---|---|
| MORSE TAPER #1 | 2 | 831-201 | 33 | 831-301 | R-8 BRIDGEPORT | 2 | 831-207 | 33 | 831-305 |
| MORSE TAPER #2 | 2 | 831-202 | 33 | 831-302 | 1/2" STRAIGHT SHANK | 2 | 831-208 | 33 | 831-306 |
| MORSE TAPER #3 | 2 | 831-203 | 33 | 831-303 | 5/8" STRAIGHT SHANK | 2 | 831-209 | 33 | 831-307 |
| MORSE TAPER #4 | 2 | 831-204 | 33 | 831-304 | 3/4" STRAIGHT SHANK | 2 | 831-210 | 33 | 831-308 |
| MORSE TAPER #5 | 2 | 831-205 | - | - | 1" STRAIGHT SHANK | 2 | 831-211 | 33 | 831-309 |
| BROWN & SHARPE #7 | 2 | 831-206 | - | - | | | | | |

• For applications where additional reach and maximum tool adjustments are needed • For replacement nylon seals, see page 158 • See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## STRAIGHT SHANK • END MILL HOLDERS WITH HIGH RPM ROTARY COOLANT GLAND

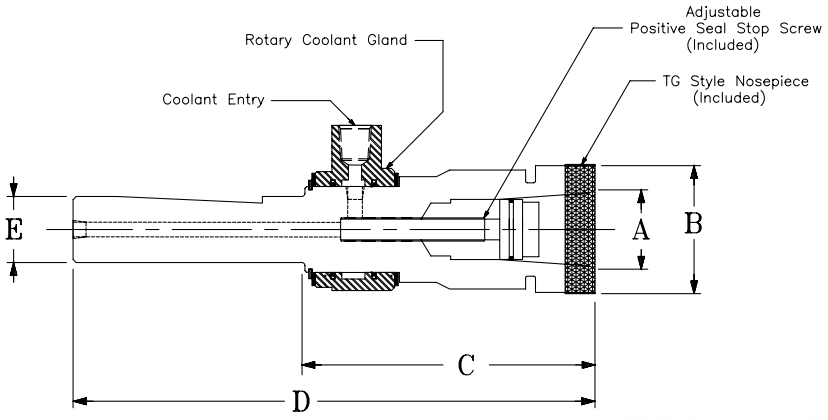



| ASSEMBLY PART NUMBER | A I.D. (IN.) | B CLEARANCE (IN.) | C PROJECTION (IN.) | D OAL (IN.) | E SHANK DIA. (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| SS12-EM62-CGH-5 | 0.625 | 1.87 | 4.38 | 9.06 | 1.25 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| SS12-EM75-CGH-5 | 0.750 | 2.00 | 4.62 | 9.31 | 1.25 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| SS12-EM10-CGH-5 | 1.000 | 2.25 | 4.75 | 9.44 | 1.25 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| SS12-EM12-CGH-6 | 1.250 | 2.50 | 5.13 | 9.81 | 1.25 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| SS12-EM15-CGH-6 | 1.500 | 2.75 | 5.13 | 9.81 | 1.25 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |

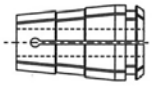
• To be used in most Straight Shank tooling applications -Gun Drills, Carbide Indexable Drills, Spade Drills, etc.• Triple entry design -(1) with coolant gland, (2) without coolant gland, (3) coolant-thru-the-spindle and stationary tool applications, thru entry on side of gland bearing surface • See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## STRAIGHT SHANK • SINGLE ANGLE COLLET CHUCKS WITH ROTARY COOLANT GLAND AND POSITIVE STOP SCREW




**TG Style Collets**
See page 146.



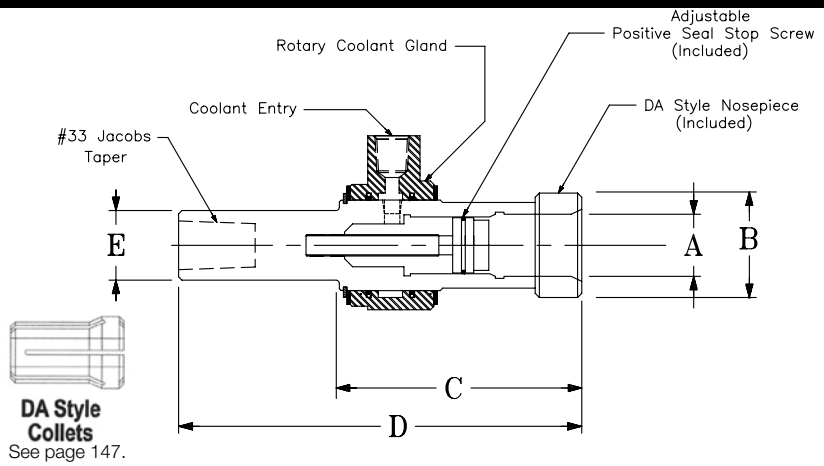
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C PROJ. (IN.) | D OAL (IN.) | E SHANK DIA. (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS12-TG10-CGH-10 | 0.094 - 1.000 | TG 100 | 2.50 | 4.81 | 9.50 | 1.25 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 | 116-002 | 112-001 |
| SS15-TG10-CGH-10 | 0.094 - 1.000 | TG 100 | 2.50 | 4.81 | 9.50 | 1.50 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 | 116-002 | 112-001 |

• Triple entry design -(1) with coolant gland, (2) without coolant gland, (3) coolant-thru-the-spindle and stationary tool applications, thru entry on side of gland bearing surface.
• See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## STRAIGHT SHANK / JACOBS TAPER MOUNT • DOUBLE ANGLE COLLET CHUCK WITH POSITIVE SEAL STOP SCREW AND HIGH RPM ROTARY COOLANT GLAND




**DA Style Collets**
See page 147.

•See page 111 for positive seal stop screw.

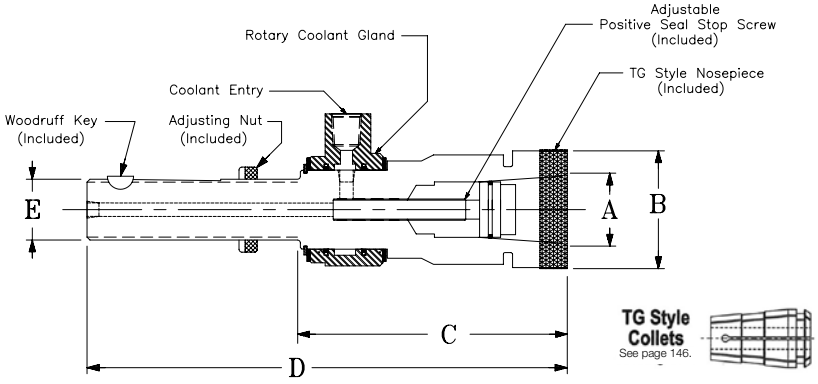
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C PROJ. (IN.) | D OAL (IN.) | E SHANK DIA. (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *^*SS10-JT33-DA18-CGH-4* | *0.047 - 0.750* | *DA 180* | *1.62* | *3.75* | *5.75* | *1.00* | *CGH-1250* | *100 PSI* | *750 PSI* | *4000* | *SK-1250* | *112-019* |

**** Outgoing Items*** ^ - Shank does not conform to ANSI specifications.

• Designed to provide additional reach and maximum tool adjustment with use of our positive seal stop screw • Single entry design requires that this chuck be used with coolant gland for coolant-thru-the-tool operations • Maximum adjustment of stop screw is 5/8" • See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## AUTOMOTIVE ADJUSTABLE SHANK • SINGLE ANGLE COLLET CHUCK HOLDERS WITH ROTARY COOLANT GLAND




•See page 111 for positive seal stop screw.

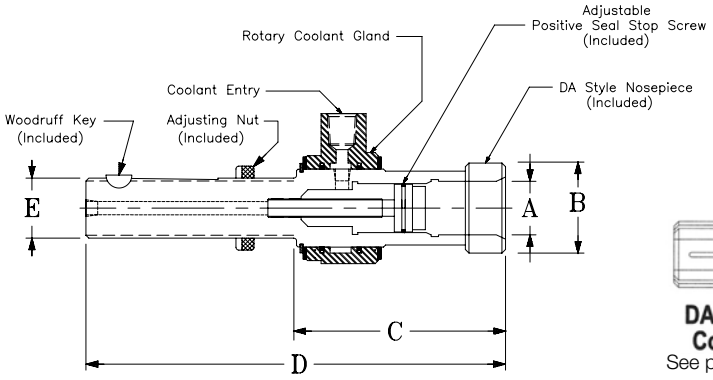
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C PROJ. (IN.) | D OAL (IN.) | E SHANK | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AA106-TG10-CGH-5 | 0.094 - 1.000 | TG 100 | 2.50 | 4.62 | 8.25 | 1-1/16 - 12 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 | - | 112-001 |
| AA137-TG10-CGH-5 | 0.094 - 1.000 | TG 100 | 2.50 | 4.81 | 8.94 | 1-3/8 - 12 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 | 116-004 | 112-001 |
| AA187-TG10-CGH-5 | 0.094 - 1.000 | TG 100 | 2.50 | 5.00 | 9.87 | 1-7/8 - 12 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 | 116-004 | 112-001 |

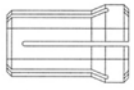
• Dual Entry design allows use without gland for coolant-thru-the-spindle applications • See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at pressures below 1000 PSI.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions: Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## AUTOMOTIVE ADJUSTABLE SHANK • DOUBLE ANGLE COLLET CHUCK HOLDERS WITH ROTARY COOLANT GLAND



DA Style
Collets
See page 147.

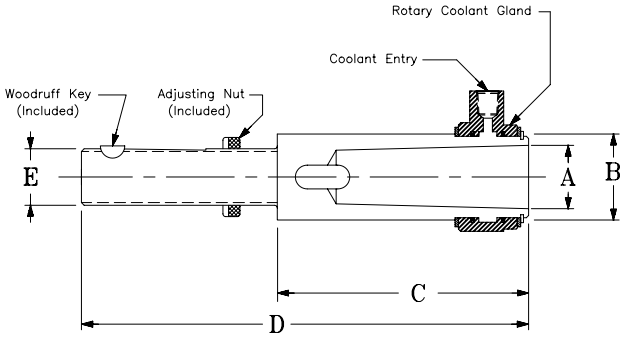
•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C PROJ. (IN.) | D OAL (IN.) | E SHANK | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | POSITIVE SEAL STOP SCREW (INCLUDED) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUD-ED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AA75-DA18-CGH-4 | 0.047 - 0.750 | DA 180 | 1.62 | 3.50 | 7.12 | 3/4 - 12 | CGH-1250 | 100 PSI | 750 PSI | 4000 | 104-009 | SK-1250 | 112-019 |
| AA87-DA18-CGH-4 | 0.047 - 0.750 | DA 180 | 1.62 | 3.50 | 7.12 | 7/8 - 12 | CGH-1250 | 100 PSI | 750 PSI | 4000 | 104-009 | SK-1250 | 112-019 |
| AA10-DA18-CGH-5 | 0.047 - 0.750 | DA 180 | 1.62 | 5.31 | 9.03 | 1" - 12 | CGH-1250 | 100 PSI | 750 PSI | 4000 | 104-002 | SK-1250 | 112-019 |
| AA10-DA18-CGH-4 | 0.047 - 0.750 | DA 180 | 1.62 | 3.81 | 7.44 | 1-1/16 - 12 | CGH-1250 | 100 PSI | 750 PSI | 4000 | 104-002 | SK-1250 | 112-019 |

• Dual Entry design allows use without gland for coolant-thru-the-spindle applications • See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## AUTOMOTIVE ADJUSTABLE SHANK • MORSE TAPER HOLDERS WITH ROTARY COOLANT GLAND

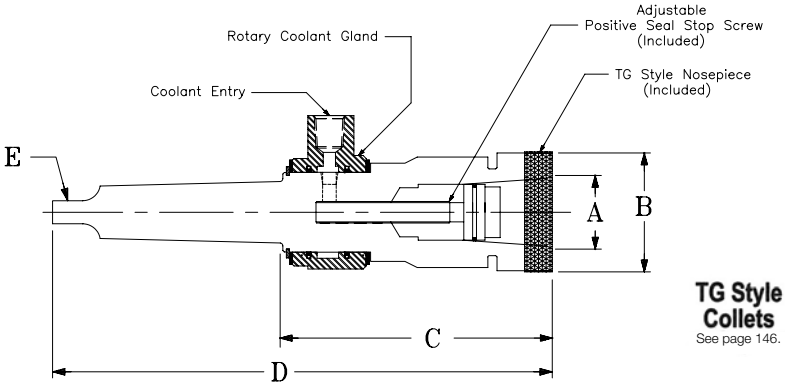



| ASSEMBLY PART NUMBER | A MORSE TAPER | B CLEARANCE (IN.) | C PROJECTION (IN.) | D OAL (IN.) | E SHANK | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| AA75-MT2-CGH-3 | 2 | 0.937 | 3.50 | 6.00 | 3/4 - 12 | CGH-0937 | 100 PSI | 750 PSI | 5000 | SK-0937 |
| AA88-MT2-CGH-2 | 2 | 0.937 | 2.00 | 5.62 | 7/8 - 12 | CGH-0937 | 100 PSI | 750 PSI | 5000 | SK-0937 |
| AA10-MT3-CGH-4 | 3 | 1.250 | 3.62 | 7.25 | 1" - 12 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| AA106-MT2-CGH-3 | 2 | 0.937 | 3.00 | 6.62 | 1-1/16 - 12 | CGH-0937 | 100 PSI | 750 PSI | 5000 | SK-0937 |
| AA106-MT3-CGH-4 | 3 | 1.250 | 4.00 | 7.62 | 1-1/16 - 12 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| AA137-MT3-CGH-2 | 3 | 1.250 | 2.00 | 6.62 | 1-3/8 - 12 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| AA137-MT4-CGH-2 | 4 | 1.625 | 2.00 | 6.62 | 1-3/8 - 12 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| AA188-MT3-CGH-2 | 3 | 1.625 | 2.00 | 7.62 | 1-7/8 - 12 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| AA188-MT4-CGH-2 | 4 | 1.625 | 2.00 | 7.62 | 1-7/8 - 12 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |

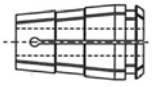
• See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## MORSE TAPER SHANK • SINGLE ANGLE STYLE COLLET CHUCKS WITH NYLON CAP POSITIVE SEAL STOP SCREW AND ROTARY COOLANT GLAND




**TG Style Collets**
See page 146.



•See page 111 for positive seal stop screw.

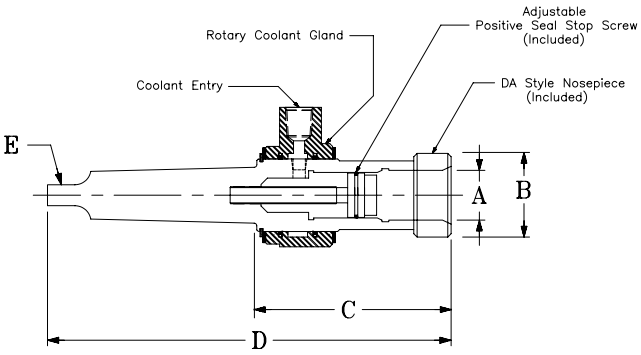
| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C PROJ. (IN.) | D OAL (IN.) | E MORSE TAPER | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | OPTIONAL EXTENSION STYLE STOP SCREW (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MT3-TG10-CGH-6P | 0.094 - 1.000 | TG 100 | 2.50 | 5.50 | 9.37 | MT 3 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 | 116-002 | 112-001 |
| MT4-TG10-CGH-6P | 0.094 - 1.000 | TG 100 | 2.50 | 5.50 | 10.37 | MT 4 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 | 116-002 | 112-001 |
| ***MT5-TG15-CGH-7P** | ***0.500 - 1.500*** | ***TG 150*** | ***3.50*** | ***6.25*** | ***12.37*** | ***MT 5*** | ***CGH-2750*** | ***100 PSI*** | ***750 PSI*** | ***2200*** | ***SK-2750*** | **-** | ***112-002*** |
| ***MT6-TG15-CGH-7P** | ***0.500 - 1.500*** | ***TG 150*** | ***3.50*** | ***6.25*** | ***14.81*** | ***MT 6*** | ***CGH-2750*** | ***100 PSI*** | ***750 PSI*** | ***2200*** | ***SK-2750*** | **-** | ***112-002*** |

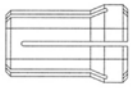
**** Outgoing Items***

• See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

# MORSE TAPER SHANK • DOUBLE ANGLE COLLET CHUCKS WITH NYLON CAP POSITIVE SEAL STOP SCREW AND ROTARY COOLANT GLAND



**DA Style Collets**
See page 147.

•See page 111 for positive seal stop screw.

| ASSEMBLY PART NUMBER | A RANGE (IN.) | COLLET SERIES | B CLEARANCE (IN.) | C PROJ. (IN.) | D OAL (IN.) | E MORSE TAPER | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) | POSITIVE SEAL STOP SCREW (NOT INCLUDED) | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *MT2-DA18-CGH-6P | 0.047 - 0.750 | DA 180 | 1.62 | 5.31 | 8.44 | 2 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 | 104-002 | 112-019 |
| *MT3-DA18-CGH-6P | 0.047 - 0.750 | DA 180 | 1.62 | 5.31 | 9.18 | 3 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 | 104-002 | 112-019 |
| *MT4-DA18-CGH-6P | 0.047 - 0.750 | DA 180 | 1.62 | 5.31 | 10.18 | 4 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 | 104-002 | 112-019 |

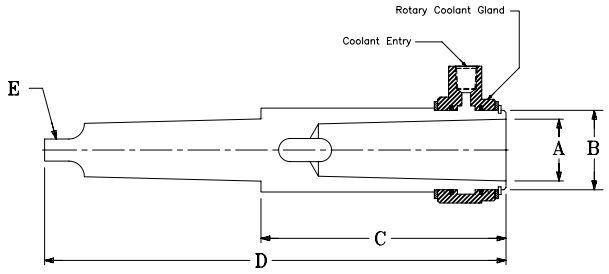
***** Outgoing Items**

• See pages 112-114 for Rotary Coolant Gland information.

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**



## MORSE TAPER SHANK TO MORSE TAPER HOLDERS WITH ROTARY COOLANT GLAND



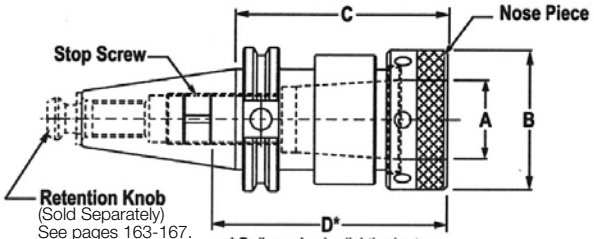

**Splash Shield Assembly Included With Holder.**
See page 113, for assembly instructions.

| ASSEMBLY PART NUMBER * | OLD PART NUMBER | A INTERIOR TAPER | E SHANK TAPER | B CLEARANCE (IN.) | C PROJECTION (IN.) | D OAL (IN.) | COOLANT GLAND (INCLUDED) | MINIMUM COOLANT PRESSURE (1) | MAXIMUM COOLANT PRESSURE (2) | MAXIMUM SPEED (RPM) (3) | REPLACEMENT SEAL KIT PART NUMBER (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MT2-MT2-CGH-4 | 840-001 | MT 2 | MT 2 | 0.94 | 3.87 | 7.00 | CGH-0937 | 100 PSI | 750 PSI | 5000 | SK-0937 |
| MT2-MT3-CGH-4 | 840-005 | MT 2 | MT 3 | 0.94 | 3.87 | 7.75 | CGH-0937 | 100 PSI | 750 PSI | 5000 | SK-0937 |
| MT2-MT4-CGH-5 | 840-006 | MT 2 | MT 4 | 0.94 | 3.94 | 8.81 | CGH-0937 | 100 PSI | 750 PSI | 5000 | SK-0937 |
| MT2-MT5-CGH-5 | 840-007 | MT 2 | MT 5 | 0.94 | 4.12 | 10.25 | CGH-0937 | 100 PSI | 750 PSI | 5000 | SK-0937 |
| MT3-MT3-CGH-5 | 840-002 | MT 3 | MT 3 | 1.25 | 4.81 | 8.68 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| MT3-MT4-CGH-5 | 840-008 | MT 3 | MT 4 | 1.25 | 4.87 | 9.75 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| MT3-MT5-CGH-5 | 840-009 | MT 3 | MT 5 | 1.25 | 4.87 | 11.00 | CGH-1250 | 100 PSI | 750 PSI | 4000 | SK-1250 |
| MT4-MT4-CGH-6 | 840-003 | MT 4 | MT 4 | 1.62 | 5.81 | 10.68 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| MT4-MT5-CGH-6 | 840-010 | MT 4 | MT 5 | 1.62 | 5.81 | 8.44 | CGH-1625 | 100 PSI | 750 PSI | 3300 | SK-1625 |
| MT5-MT5-CGH-8 | 840-004 | MT 5 | MT 5 | 2.25 | 7.19 | 13.31 | CGH-2250 | 100 PSI | 750 PSI | 2800 | SK-2250 |
| MT5-MT6-CGH-8 | 840-011 | MT 5 | MT 6 | 2.25 | 7.38 | 15.94 | CGH-2250 | 100 PSI | 750 PSI | 2800 | SK-2250 |

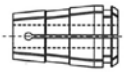
*** - Standard RPM Coolant Glands also available. Subsititute "CGS" for "CGH" in Assembly Part Numbers listed above.**

(1), (2) - These are recommended pressures. Lower coolant pressures may be utilized at very slow RPM's. Pressures above recommended PSI may cause internal damage to seals.
(3) - Recommended Maximum RPM at Maximum 750 PSI. Higher speeds may be achieved at lower pressures.
**These RPM and Pressure ranges are not a guarantee of performance.** The life and performance of the units depends on the following conditions:
Proper Filtration - Proper Type & Viscosity of Coolant - Coolant Pressure and Volume.
**All units require coolant at all speeds.**

## V-FLANGE SINGLE ANGLE COLLET CHUCKS




TG Style Collets
See page 146.



| PART NO. W/ STOP SCREW | PART NO. W/ COOLANT SEAL STOP SCREW | OLD PART NO. W/ COOLANT SEAL STOP SCEW | A RANGE | COLLET SERIES | B DIA. | C PROJ. | D MAX. | NOSE PIECE | STOP SCREW | COOLANT SEAL SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 V-FLANGE | | | | | | | | | | | |
| C40-TG10-300 | C40-TG10C-300 | 940-503(C) | 0.093-1.000 | TG100 | 2.50 | 3.00 | 3.72 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C40-TG10-500 | C40-TG10C-500 | 940-505(C) | 0.093-1.000 | TG100 | 2.50 | 5.00 | 5.72 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C40-TG10-600 | C40-TG10C-600 | | 0.093-1.000 | TG100 | 2.50 | 6.00 | 7.25 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C40-TG10-650 | C40-TG10C-650 | 940-506(C) | 0.093-1.000 | TG100 | 2.50 | 6.50 | 7.22 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C40-TG15-488 | C40-TG15C-488 | | 0.500-1.500 | TG150 | 3.50 | 4.88 | 4.31 | 111-TG15S | 101-013 | 102-013 | 112-002 |
| 45 V-FLANGE | | | | | | | | | | | |
| * C45-TG10-300 | C45-TG10C-300 | 945-503(C) | 0.093-1.000 | TG100 | 2.50 | 3.00 | 4.25 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C45-TG10-400 | C45-TG10C-400 | 945-504(C) | 0.093-1.000 | TG100 | 2.50 | 4.00 | 5.25 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C45-TG10-550 | C45-TG10C-550 | 945-506A(C) | 0.093-1.000 | TG100 | 2.50 | 5.50 | 6.00 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C45-TG10-600 | C45-TG10C-600 | 945-506(C) | 0.093-1.000 | TG100 | 2.50 | 6.00 | 7.25 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C45-TG10-750 | C45-TG10C-750 | 945-508A(C) | 0.093-1.000 | TG100 | 2.50 | 7.50 | 6.00 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C45-TG15-300 | C45-TG15C-300 | 945-553(C) | 0.500-1.500 | TG150 | 3.50 | 3.00 | 4.25 | 111-TG15S | 101-007 | 102-007 | 112-002 |
| * C45-TG15-400 | C45-TG15C-400 | 945-554(C) | 0.500-1.500 | TG150 | 3.50 | 4.00 | 5.25 | 111-TG15S | 101-007 | 102-007 | 112-002 |
| * C45-TG15-600 | C45-TG15C-600 | 945-556(C) | 0.500-1.500 | TG150 | 3.50 | 6.00 | 7.25 | 111-TG15S | 101-007 | 102-007 | 112-002 |
| * C45-TG15-800 | C45-TG15C-800 | 945-558(C) | 0.500-1.500 | 1G150 | 3.50 | 8.00 | 9.25 | 111-TG15S | 101-007 | 102-007 | 112-002 |
| 50 V-FLANGE | | | | | | | | | | | |
| * C50-TG10-300 | C50-TG10C-300 | 950-502(C) | 0.093-1.000 | TG100 | 2.50 | 3.00 | 4.75 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| C50-TG10-350 | C50-TG10C-350 | 950-503(C) | 0.093-1.000 | TG100 | 2.50 | 3.50 | 5.25 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| C50-TG10-550 | C50-TG10C-550 | 950-505(C) | 0.093-1.000 | TG100 | 2.50 | 5.50 | 7.25 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * C50-TG10-750 | C50-TG10C-750 | 950-507(C) | 0.093-1.000 | TG100 | 2.50 | 7.50 | 9.25 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| C50-TG15-300 | C50-TG15C-300 | 950-552(C) | 0.500-1.500 | TG150 | 3.50 | 3.00 | 4.50 | 111-TG15S | 101-007 | 102-007 | 112-002 |
| * C50-TG15-350 | C50-TG15C-350 | 950-553(C) | 0.500-1.500 | TG150 | 3.50 | 3.50 | 5.00 | 111-TG15S | 101-007 | 102-007 | 112-002 |
| * C50-TG15-550 | C50-TG15C-550 | 950-555(C) | 0.500-1.500 | TG150 | 3.50 | 5.50 | 7.00 | 111-TG15S | 101-007 | 102-007 | 112-002 |
| * C50-TG15-750 | C50-TG15C-750 | 950-557(C) | 0.500-1.500 | TG150 | 3.50 | 7.50 | 9.00 | 111-TG15S | 101-007 | 102-007 | 112-002 |

** Outgoing Items*

• Supplied with nosepiece and standard stop screw

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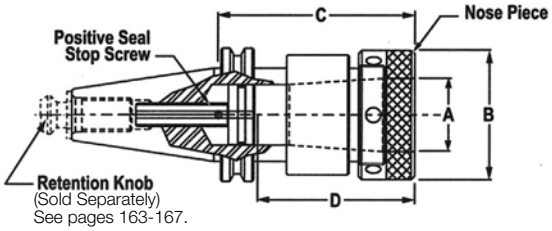
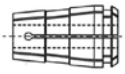
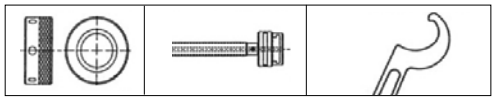
## V-FLANGE SINGLE ANGLE COLLET CHUCKS WITH POSITIVE SEAL STOP SCREWS




TG Style Collets
See page 146.





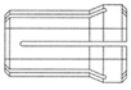
| PART NUMBER | OLD PART NO. | A RANGE | COLLET SERIES | B. DIA. | C PROJ. | D MAX. | NOSE PIECE | POSITIVE SEAL STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| 40 V-FLANGE | | | | | | | | | |
| C40-TG10P-400 | 940-504P | 0.093-1.00 | TG100 | 2.50 | 4.00 | 4.31 | 111-TG10S | 104-004 | 112-001 |
| 45 V-FLANGE | | | | | | | | | |
| * C45-TG10P-400 | 945-504P | 0.093-1.00 | TG100 | 2.50 | 4.00 | 4.31 | 111-TG10S | 104-005 | 112-001 |
| * C45-TG15P-400 | 945-554P | 0.500-1.50 | TG150 | 3.50 | 4.00 | 4.75 | 111-TG15S | 104-008 | 112-002 |
| 50 V-FLANGE | | | | | | | | | |
| C50-TG10P-400 | 950-504P | 0.093-1.00 | TG100 | 2.50 | 4.00 | 4.56 | 111-TG10S | 104-005 | 112-001 |
| * C50-TG15P-400 | 950-554P | 0.500-1.50 | TG150 | 3.50 | 4.00 | 4.75 | 111-TG15S | 104-008 | 112-002 |

*** Outgoing Items**

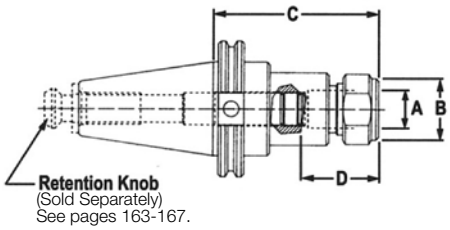
- Industry standard Single Angle Collet Chucks with the added feature of Positive Seal Fine Adjustment Stop Screws
- Supplied with nosepiece and stop screw

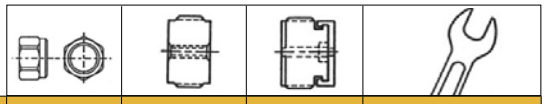
## V-FLANGE DOUBLE ANGLE COLLET CHUCKS





DA Style Collets
See page 147.



| PART NO. W/ STOP SCREW | PART NO. W/ COOLANT SEAL STOP SCREW | A RANGE | COLLET SERIES | B. DIA. | C PROJ. | D MAX. | NOSE PIECE | STOP SCREW | COOLANT SEAL SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 V-FLANGE | | | | | | | | | | |
| * C40-DA18-295 | C40-DA18C-295 | 0.047-0.750 | DA180 | 1.69 | 2.95 | 2-3/8 | 111-DA18 | 101-002 | 102-002 | 112-019 |
| * C40-DA18-400 | C40-DA18C-400 | 0.047-0.750 | DA180 | 1.69 | 4.00 | 3-3/8 | 111-DA18 | 101-002 | 102-002 | 112-019 |

*** Outgoing Items**

- Supplied with nosepiece and stop screw

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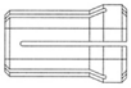
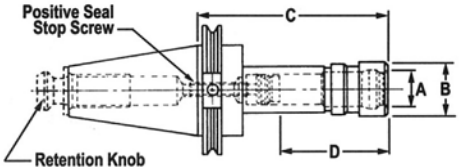
## V-FLANGE DOUBLE ANGLE COLLET CHUCKS WITH POSITIVE SEAL STOP SCREW



DA Style Collets
See pages 147.



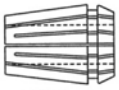
See pages 163-167.

| PART NUMBER | OLD PART NO. | A RANGE | COLLET SERIES | B DIA. | C PROJ. | D MAX. | NOSE PIECE | STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|
| 40 V-FLANGE | | | | | | | | | |
| * C40-DA18P-6 | 940-589 | 0.047-0.750 | DA180 | 1.50 | 6.00 | 3.50 | 111-DA18 | 104-002 | 112-019 |
| 50 V-FLANGE | | | | | | | | | |
| * C50-DA18P-6 | 950-589 | 0.047-0.750 | DA180 | 1.50 | 6.00 | 4.50 | 111-DA18 | 104-002 | 112-019 |

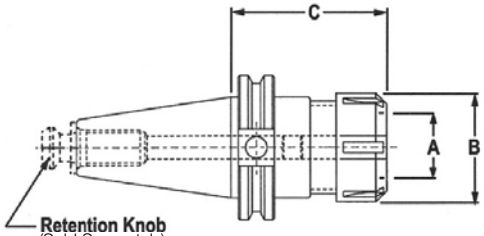
** Outgoing Items*

- Supplied with nosepiece and stop screw

## V-FLANGE ER COLLET CHUCKS



ER Style Collets
See page 145.



See pages 163-167.

| PART NUMBER | A RANGE | COLLET SERIES | B DIA. | C PROJ. | NOSE PIECE | OPTIONAL STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|
| 40 V-FLANGE | | | | | | | |
| C40-ER16-400 | 0.020-0.393 | ER16 | 1.109 | 4 | 115-015 | 101-023 | 112-102 |
| C40-ER20-400 | 0.040-0.511 | ER20 | 1.344 | 4 | 115-016 | 101-023 | 112-103 |
| C40-ER32-400 | 0.080-0.787 | ER32 | 1.968 | 4 | 115-017 | 101-024 | 112-106 |
| * C40-ER32-600 | 0.080-0.787 | ER32 | 1.968 | 6 | 115-017 | 101-024 | 112-106 |
| 50 V-FLANGE | | | | | | | |
| * C50-ER16-400 | 0.020-0.393 | ER16 | 1.109 | 4 | 115-015 | 101-023 | 112-102 |
| * C50-ER16-600 | 0.020-0.393 | ER16 | 1.109 | 6 | 115-015 | 101-023 | 112-102 |
| * C50-ER20-400 | 0.040-0.511 | ER20 | 1.344 | 4 | 115-016 | 101-023 | 112-103 |
| C50-ER32-400 | 0.080-0.787 | ER32 | 1.968 | 4 | 115-017 | 101-024 | 112-106 |
| * C50-ER32-600 | 0.080-0.787 | ER32 | 1.968 | 6 | 115-017 | 101-024 | 112-106 |

** Outgoing Items*

- Precision gripping within 0.0003”
- Threaded through holes for backup screws and coolant
- Greater precision allows for improved tool life and precise machine tolerances
- Supplied with nosepiece
- For optional stop screws see page 156

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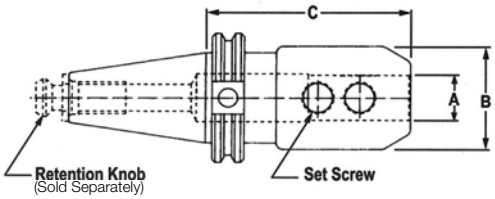
## V-FLANGE END MILL HOLDERS



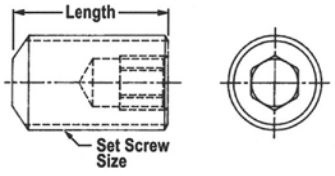

| PART NUMBER | OLD PART NO. | A I.D. | B DIA. | C PROJ. | SET SCREW SIZE |
|---|---|---|---|---|---|
| 40 V-FLANGE | | | | | |
| * C40-EM12-300 | | 0.125 | 1.00 | 3.00 | 6-32 |
| C40-EM18-250 | | 0.187 | 0.69 | 2.50 | 6-32 |
| * C40-EM25-250 | | 0.250 | 0.69 | 2.50 | 1/4-28 |
| C40-EM31-250 | | 0.312 | 1.00 | 2.50 | 1/4-28 |
| C40-EM37-250 | | 0.375 | 1.00 | 2.50 | 3/8-24 |
| * C40-EM37-450 | | 0.375 | 1.00 | 4.50 | 3/8-24 |
| C40-EM50-175 | | 0.500 | 1.75 | 1.75 | 7/16-20 |
| * C40-EM50-462 | | 0.500 | 1.25 | 4.62 | 7/16-20 |
| * C40-EM50-662 | | 0.500 | 1.25 | 6.62 | 7/16-20 |
| C40-EM62-175 | | 0.625 | 1.75 | 1.75 | 9/16-18 |
| C40-EM62-300 | | 0.625 | 1.50 | 3.00 | 9/16-18 |
| * C40-EM62-338 | 940-620 | 0.625 | 1.75 | 3.38 | 1/2-13 |
| * C40-EM62-575 | | 0.625 | 1.62 | 5.75 | 9/16-18 |
| C40-EM75-175 | | 750.0 | 1.75 | 1.75 | 5/8-18 |
| C40-EM75-300 | | 0.750 | 1.75 | 3.00 | 5/8-18 |
| C40-EM75-338 | 940-750 | 0.750 | 1.75 | 3.38 | 5/8-11 |
| * C40-EM75-575 | | 0.750 | 1.75 | 5,75 | 5/8-18 |
| * C40-EM87-338 | 940-870 | 0.875 | 1.75 | 3.38 | 5/8-11 |
| C40-EM10-300 | | 1.000 | 1.95 | 3.00 | 3/4-16 |
| * C40-EM10-338 | 940-100 | 1.000 | 2.12 | 3.38 | 5/8/11 |
| C40-EM10-400 | | 1.000 | 2.25 | 4.00 | 3/4-16 |
| C40-EM12-200 | | 1.250 | 2.25 | 2.00 | 3/4-16 |
| * C40-EM12-425 | 940-120 | 1.250 | 2.50 | 4.25 | 3/4-16 |
| * C40-EM12-625 | | 1.250 | 2.50 | 6.25 | 3/4-16 |
| C40-EM15-462 | 940-150 | 1.500 | 2.75 | 4.62 | 3/4-16 |
| 45 V-FLANGE | | | | | |
| * C45-EM37-225 | 945-370 | 0.375 | 1.50 | 2.25 | 3/8-16 |
| * C45-EM37-300 | 945-370A | 0.375 | 1.50 | 3.00 | 3/8-16 |
| * C45-EM37-250 | | 0.375 | 1.00 | 2.50 | 3/8-24 |
| * C45-EM50-300 | 945-500 | 0.500 | 1.50 | 3.00 | 3/8-16 |
| * C45-EM50-262 | | 0.500 | 1.38 | 2.62 | 7/16-20 |
| * C45-EM62-300 | 945-620 | 0.625 | 1.50 | 3.00 | 1/2-13 |
| * C45-EM62-375 | | 0.625 | 1.62 | 3.75 | 9/16-18 |
| * C45-EM75-300 | 945-750 | 0.750 | 2.00 | 3.00 | 5/8-11 |
| * C45-EM75-375 | 945-750A | 0.750 | 1.75 | 3.75 | 5/8-11 |
| * C45-EM87-375 | 945-870 | 0.875 | 2.00 | 3.75 | 5/8-11 |
| * C45-EM10-400 | 945-100 | 1.000 | 2.50 | 4.00 | 3/4-16 |
| * C45-EM12-400 | 945-120 | 1.250 | 2.62 | 4.00 | 3/4-16 |
| * C45-EM15-462 | 945-150 | 1.500 | 2.75 | 4.62 | 3/4-16 |
| * C45-EM15-400 | | 1.500 | 2.62 | 4.00 | 3/4-16 |
| * C45-EM20-525 | 945-200E | 2.000 | 3.75 | 5.25 | 1-14 |

** Outgoing Items*

| PART NUMBER | OLD PART NO. | A I.D. | B DIA. | C PROJ. | SET SCREW SIZE |
|---|---|---|---|---|---|
| 50 V-FLANGE | | | | | |
| C50-EM18-250 | | 0.187 | 0.69 | 2.50 | 6-32 |
| C50-EM25-250 | | 0.250 | 0.69 | 2.50 | 1/4-28 |
| C50-EM31-250 | | 0.312 | 1.00 | 2.50 | 1/4-28 |
| * C50-EM37-300 | 950-370 | 0.375 | 1.50 | 3.00 | 3/8-24 |
| C50-EM37-450 | | 0.375 | 1.00 | 4.50 | 3/8-24 |
| * C50-EM50-300 | 950-500 | 0.500 | 1.50 | 3.00 | 7/16-20 |
| C50-EM50-462 | | 0.500 | 1.38 | 4.62 | 7/16-20 |
| C50-EM62-375 | | 0.625 | 1.62 | 3.75 | 9/16-18 |
| C50-EM75-400 | 950-750 | 0.750 | 2.50 | 4.00 | 5/8-18 |
| * C50-EM75-575 | | 0.750 | 1.75 | 5.75 | 5/8-18 |
| * C50-EM87-400 | 950-870 | 0.875 | 2.50 | 4.00 | 5/8-18 |
| C50-EM87-375 | | 0.875 | 2.00 | 3.75 | 5/8-18 |
| C50-EM10-400 | | 1.000 | 2.25 | 4.00 | 3/4-16 |
| * C50-EM10-262 | | 1.000 | 2.75 | 2.62 | 3/4-16 |
| * C50-EM10-600 | 950-106 | 1.000 | 2.25 | 6.00 | 3/4-16 |
| * C50-EM10-800 | 950-108 | 1.000 | 2.25 | 8.00 | 3/4-16 |
| * C50-EM12-400 | 950-120 | 1.250 | 2.50 | 4.00 | 3/4-16 |
| * C50-EM12-600 | | 1.250 | 2.50 | 6.00 | 3/4-16 |
| C50-EM15-400 | | 1.500 | 2.75 | 4.00 | 3/4-16 |
| * C50-EM20-562 | | 2.000 | 3.75 | 5.62 | 1-14 |
| * C50-EM20-762 | 950-208 | 2.000 | 3.75 | 7.62 | 1-14 |

** Outgoing Items*

## End Mill Holder Set Screws




| SET SCREW SIZE | LENGTH | PART NUMBER |
|---|---|---|
| 6-32 | 1/4 | 001-801 |
| * 1/4-28 | 1/4 | 001-803 |
| * 3/8-16 | 5/16 | 001-804 |
| * 3/8-24 | 5/16 | 001-805 |
| * 7/16-20 | 3/8 | 001-807 |
| * 1/2-13 | 3/8 | 001-808 |
| * 9/16-18 | 1/2 | 001-811 |
| * 5/8-11 | 1/2 | 001-812 |
| * 5/8-18 | 1/2 | 001-813 |
| * 3/4-16 | 5/8 | 001-815 |
| * 1-14 | 7/8 | 001-817 |

** Outgoing Items*

- Same holder used for both coolant-thru-the-spindle and non coolant-fed applications
- Holders supplied with set screws

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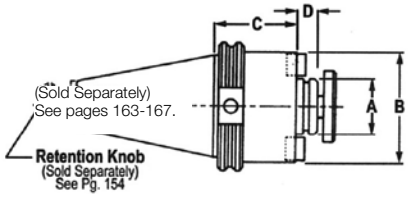
STANDARD TOOLHOLDERS

## V-FLANGE SHELL MILL HOLDERS • COOLANT-FED AND NON COOLANT-FED




| PART NUMBER | OLD PART NUMBER | A PILOT DIA. | B DIA. | C PROJ. | D | ARBOR SCREW | DRIVE KEY / PIN |
|---|---|---|---|---|---|---|---|
| 40 V-FLANGE • NON COOLANT-FED | | | | | | | |
| * C40-SM50-138 | | 0.50 | 1.75 | 1.38 | 0.560 | 200-001 | 201-001 |
| * C40-SM50-350 | | 0.50 | 1.75 | 3.50 | 0.560 | 200-001 | 201-001 |
| * C40-SM75-138 | | 0.75 | 1.75 | 1.38 | 0.680 | 200-002 | 201-002 |
| * C40-SM75-350 | | 0.75 | 1.75 | 3.50 | 0.680 | 200-002 | 201-002 |
| * C40-SM10-100 | | 1.00 | 2.19 | 1.00 | 0.680 | 200-003 | 201-003 |
| * C40-SM10-200 | 940-010 | 1.00 | 2.19 | 2.06 | 0.680 | 200-003 | 201-003 |
| * C40-SM10-400 | | 1.00 | 2.19 | 4.00 | 0.680 | 200-003 | 201-003 |
| * C40-SM12-200 | 940-025 | 1.25 | 2.75 | 2.12 | 0.680 | 200-005 | 201-004 |
| * C40-SM12-400 | | 1.25 | 2.75 | 4.00 | 0.680 | 200-005 | 201-004 |
| * C40-SM15-250 | | 1.50 | 3.62 | 2.50 | 0.940 | 200-007 | 201-005 |
| * C40-SM15-400 | | 1.50 | 3.62 | 4.00 | 0.940 | 200-007 | 201-005 |
| 40 V-FLANGE • COOLANT-FED | | | | | | | |
| * C40-SM10C-194 ** | 940-011 | 1.00 | 2.75 | 1.94 | 1.437 | 200-003 | 201-003 |
| * C40-SM12C-343 ** | 940-026 | 1.25 | 4.50 | 3.43 | 1.437 | 200-005 | 201-004 |
| 45 V-FLANGE • NON COOLANT-FED | | | | | | | |
| * C45-SM50-150 | | 0.50 | 1.56 | 1.50 | 0.560 | 200-001 | 201-001 |
| * C45-SM75-150 | | 0.75 | 1.94 | 1.50 | 0.680 | 200-002 | 201-002 |
| * C45-SM10-200 | | 1.00 | 2.44 | 2.00 | 0.680 | 200-003 | 201-003 |
| * C45-SM10-225 | 945-010 | 1.00 | 2.00 | 2.25 | 0.680 | 200-005 | 201-003 |
| * C45-SM12-225 | 945-025 | 1.25 | 2.88 | 2.25 | 0.680 | 200-005 | 201-004 |
| * C45-SM12-212 | 945-025A | 1.25 | 2.75 | 2.12 | 0.680 | 200-005 | 201-004 |
| * C45-SM15-240 | | 1.50 | 3.94 | 2.40 | 0.940 | 200-007 | 201-005 |
| * C45-SM15-250 | 945-056 | 1.50 | 3.80 | 2.50 | 0.940 | 200-007 | 201-005 |
| * C45-SM15-245 | 945-056A | 1.50 | 3.94 | 2.45 | 0.940 | 200-007 | 201-005 |
| * C45-SM15-400 | | 1.50 | 3.94 | 4.00 | 0.940 | 200-007 | 201-005 |
| * C45-SM15-405 | 945-058 | 1.50 | 3.80 | 4.05 | 0.940 | 200-007 | 201-005 |
| * C45-SM20-212 | | 2.00 | 4.44 | 2.12 | 0.940 | 200-009 | 201-006 |
| 45 V-FLANGE • COOLANT-FED | | | | | | | |
| * C45-SM10C-200 ** | 945-011 | 1.00 | 2.25 | 2.00 | 1.437 | 200-003 | 201-003 |
| * C45-SM12C 343 ** | 945-026 | 1.25 | 2.87 | 3.43 | 1.437 | 200-005 | 201-004 |
| * C45-SM15C-400 ** | 945-057 | 1.50 | 3.80 | 4.00 | 1.437 | 200-007 | 201-005 |
| 50 V-FLANGE • NON COOLANT-FED | | | | | | | |
| * C50-SM50-150 | | 0.50 | 1.56 | 1.50 | 0.560 | 200-001 | 201-001 |
| * C50-SM50-200 | 950-050 | 0.50 | 1.25 | 2.00 | 0.560 | 200-001 | 200-001 |
| * C50-SM50-550 | | 0.50 | 1.56 | 5.50 | 0.560 | 200-001 | 201-001 |
| * C50-SM75-150 | | 0.75 | 1.94 | 1.50 | 0.680 | 200-002 | 201-002 |
| * C50-SM75-350 | | 0.75 | 1.94 | 3.50 | 0.680 | 200-002 | 201-002 |
| * C50-SM10-200 | 950-010 | 1.00 | 2.75 | 2.00 | 0.680 | 200-003 | 201-003 |
| * C50-SM10-400 | 950-012 | 1.00 | 2.75 | 4.00 | 0.680 | 200-003 | 201-003 |
| * C50-SM12-225 | 950-025 | 1.25 | 2.87 | 2.25 | 0.680 | 200-005 | 201-004 |
| * C50-SM12-550 | | 1.25 | 2.75 | 5.50 | 0.940 | 200-005 | 201-004 |
| * C50-SM15-240 | | 1.50 | 3.94 | 2.40 | 0.940 | 200-007 | 201-005 |
| * C50-SM15-245 | 950-056 | 1.50 | 3.80 | 2.45 | 0.940 | 200-007 | 201-005 |
| * C50-SM15-400 | | 1.50 | 3.94 | 4.00 | 0.940 | 200-007 | 201-005 |
| * C50-SM15-405 | 950-058 | 1.50 | 3.80 | 4.05 | 0.940 | 200-007 | 201-005 |
| * C50-SM15-600 | | 1.50 | 3.94 | 6.00 | 0.940 | 200-007 | 201-005 |
| * C50-SM15-605 | 950-059 | 1.50 | 3.80 | 6.05 | 0.940 | 200-007 | 201-005 |
| * C50-SM20-240 | 950-200 | 2.00 | 4.44 | 2.40 | 0.940 | 200-009 | 201-006 |
| * C50-SM20-400 | | 2.00 | 4.44 | 4.00 | 0.940 | 200-009 | 201-006 |
| * C50-SM20-600 | | 2.00 | 4.44 | 6.00 | 0.940 | 200-009 | 201-006 |
| * C50-SM25-240 | | 2.50 | 4.88 | 2.40 | 0.940 | 200-009 | 201-006 |

** Outgoing Items*

• Shell Mill Holders are supplied with drive keys and arbor screws

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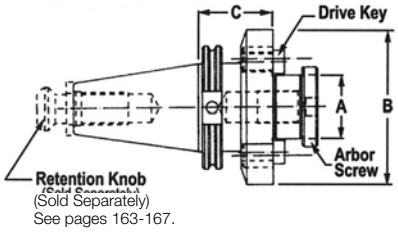
**Coolant-Fed**
** Designed for Coolant-Fed Milling Cutter

## V-FLANGE FACE MILL HOLDERS • 4 MOUNTING HOLES

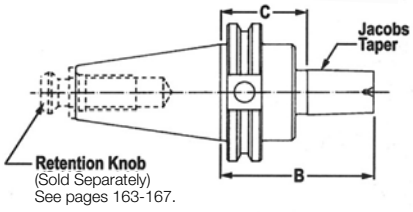



| PART NUMBER | A PILOT DIA. | B DIA. | C PROJ. | ARBOR SCREW NO. | DRIVE KEY/PIN |
|---|---|---|---|---|---|
| 45 V-FLANGE | | | | | |
| * C45-FM20-212 | 2.0 | 4.87 | 2.12 | 200-009 | 201-006 |
| * C45-FM20-400 | 2.0 | 4.87 | 4.00 | 200-009 | 201-006 |
| * C45-FM20-600 | 2.0 | 4.87 | 6.00 | 200-009 | 201-006 |
| 50 V-FLANGE | | | | | |
| * C50-FM20-240 | 2.0 | 4.87 | 2.40 | 200-011 | 201-007 |
| * C50-FM20-400 | 2.0 | 4.87 | 4.00 | 200-011 | 201-007 |
| * C50-FM20-600 | 2.0 | 4.87 | 6.00 | 200-011 | 201-007 |
| * C50-FM25-240 | 2.5 | 4.87 | 2.40 | 200-011 | 201-007 |
| * C50-FM25-400 | 2.5 | 4.87 | 4.00 | 200-011 | 201-007 |
| * C50-FM25-600 | 2.5 | 4.87 | 6.00 | 200-011 | 201-007 |

** Outgoing Items*

- Holders have (4) mounting holes with 5/8-11 threads on a 4" bolt circle

## V-FLANGE JACOBS TAPER HOLDERS




| PART NUMBER | OLD PART NUMBER | J.T. SIZE | B PROJ. | C PROJ. |
|---|---|---|---|---|
| 40 V-FLANGE | | | | |
| * C40-JT1-215 | | 1 | 2.15 | 1.49 |
| * C40-JT2-243 | | 2 | 2.43 | 1.56 |
| * C40-JT3-281 | | 3 | 2.81 | 1.59 |
| * C40-JT4-325 | 940-334 | 4 | 3.25 | 1.59 |
| * C40-JT5-338 | 940-335 | 5 | 3.38 | 1.50 |
| * C40-JT6-359 | 940-336 | 6 | 3.59 | 1.59 |
| * C40-JT33-250 | 940-332 | 33 | 2.50 | 1.50 |
| * C40-JT33-259 | | 33 | 2.59 | 1.59 |
| 45 V-FLANGE | | | | |
| * C45-JT1-237 | 945-331 | 1 | 2.37 | 1.37 |
| * C45-JT1-215 | | 1 | 2.15 | 1.49 |
| * C45-JT2-243 | | 2 | 2.43 | 1.56 |
| * C45-JT3-275 | 945-333 | 3 | 2.75 | 1.53 |
| * C45-JT3-281 | | 3 | 2.81 | 1.59 |
| * C45-JT4-325 | | 4 | 3.25 | 1.59 |
| * C45-JT6-259 | | 6 | 2.59 | 1.59 |
| * C45-JT33-259 | | 33 | 2.59 | 1.59 |

** Outgoing Items*

| PART NUMBER | OLD PART NUMBER | J.T. SIZE | B PROJ. | C PROJ. |
|---|---|---|---|---|
| 50 V-FLANGE | | | | |
| * C50-JT1-215 | | 1 | 2.15 | 1.49 |
| * C50-JT2-243 | | 2 | 2.43 | 1.56 |
| * C50-JT3-280 | 950-333 | 3 | 2.80 | 1.59 |
| * C50-JT3-281 | | 3 | 2.81 | 1.59 |
| * C50-JT4-325 | 950-334 | 4 | 3.25 | 1.59 |
| * C50-JT5-338 | 950-335 | 5 | 3.38 | 1.50 |
| * C50-JT6-259 | 950-336 | 6 | 2.59 | 1.59 |
| * C50-JT33-259 | 950-332 | 33 | 2.59 | 1.59 |

** Outgoing Items*



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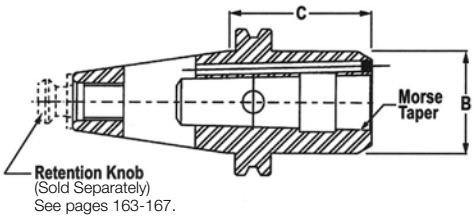
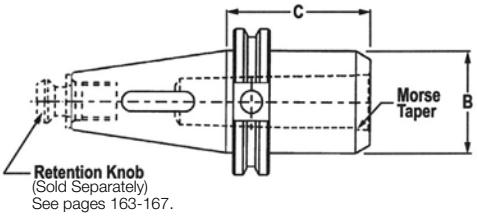
## V-FLANGE MORSE TAPER HOLDERS • DUAL AND END ENTRY

### Dual Entry




### End Entry




### Dual Entry

| PART NUMBER | OLD PART NO. | M.T. SIZE | B DIA. | C PROJ. |
|---|---|---|---|---|
| 40 V-FLANGE | | | | |
| C40-MT2-175D | 940-022 | 2 | 1.75 | 1.75 |
| C40-MT3-250D | 940-033 | 3 | 1.75 | 2.50 |
| C40-MT4-350D | 940-044 | 4 | 2.00 | 3.50 |
| 45 V-FLANGE | | | | |
| * C45-MT2-150D | 945-022 | 2 | 2.25 | 1.50 |
| * C45-MT3-231D | 945-033 | 3 | 2.25 | 2.31 |
| * C45-MT4-318D | 945-044 | 4 | 2.25 | 3.18 |
| * C45-MT5-475D | 945-055 | 5 | 2.63 | 4.75 |
| 50 V-FLANGE | | | | |
| C50-MT2-200D | 950-022 | 2 | 1.25 | 2.00 |
| C50-MT3-250D | 950-033 | 3 | 1.62 | 2.50 |
| C50-MT4-338D | 950-044 | 4 | 2.00 | 3.37 |
| C50-MT5-475D | 950-055 | 5 | 2.75 | 4.75 |

*** Outgoing Items**

• Dual Entry style provides cool ant-thru-the-spindle to tang end of tooling or directly to side of tooling taper.

### End Entry

| PART NUMBER | OLD PART NO. | M.T. SIZE | B DIA. | C PROJ. |
|---|---|---|---|---|
| 40 V-FLANGE | | | | |
| C40-MT1-175E | | 1 | 1.00 | 1.75 |
| C40-MT2-175E | 940-002 | 2 | 1.75 | 1.75 |
| C40-MT2-219E | | 2 | 1.25 | 2.19 |
| C40-MT3-250E | 940-003 | 3 | 1.75 | 2.50 |
| C40-MT3-275E | | 3 | 1.75 | 2.75 |
| C40-MT4-350E | 940-004 | 4 | 2.00 | 3.50 |
| C40-MT4-356E | | 4 | 2.00 | 3.56 |
| 45 V-FLANGE | | | | |
| * C45-MT2-150E | 945-002 | 2 | 2.25 | 1.50 |
| * C45-MT3-231E | 945-003 | 3 | 2.25 | 2.31 |
| * C45-MT4-318E | 945-004 | 4 | 2.25 | 3.18 |
| * C45-MT5-475E | 945-005 | 5 | 2.63 | 4.75 |
| 50 V-FLANGE | | | | |
| C50-MT2-200E | 950-002 | 2 | 1.25 | 2.00 |
| C50-MT3-250E | 950-003 | 3 | 1.62 | 2.50 |
| C50-MT4-337E | 950-004 | 4 | 2.00 | 3.37 |
| C50-MT5-475E | 950-005 | 5 | 2.75 | 4.75 |

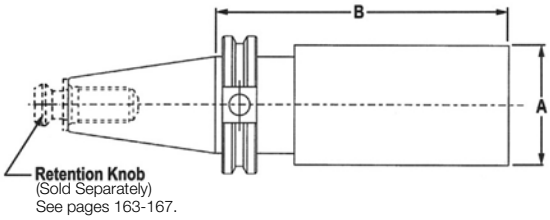
*** Outgoing Items**

• End Entry provides coolant-thru-the-spindle to tang end of tooling only. (Will work for non-coolant applications)

## V-FLANGE BORING BAR BLANKS

| PART NUMBER | OLD PART NO. | A DIA. | B PROJ. |
|---|---|---|---|
| 40 V-FLANGE | | | |
| C40-BB4-11 | | 3.88 | 11.00 |
| 45 V-FLANGE | | | |
| * C45-BB4-64 | 945-778B | 4.00 | 6.40 |
| * C45-BB4-110 | 945-779B | 4.00 | 11.00 |
| 50 V-FLANGE | | | |
| C50-BB4-11 | 950-778B | 3.88 | 11.00 |
| C50-BB6-07 | 950-780B | 6.12 | 7.00 |
| C50-BB4-17 | 950-778B/S | 4.00 | 17.00 |

*** Outgoing Items**




• 28-32 RC Body

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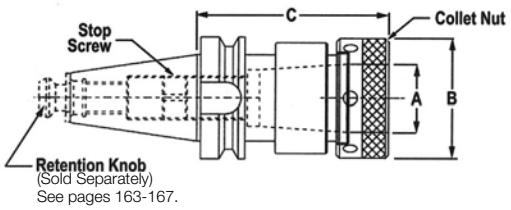
## BT SINGLE ANGLE COLLET CHUCKS

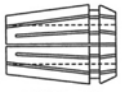



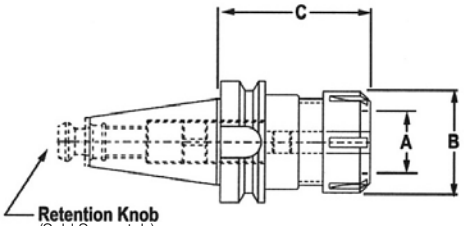

| PART NO. WITH STOP SCREW | OLD PART NO. | PART NO. W/ COOLANT SEAL STOP SCREW | OLD PART NO. | A RANGE | COLLET SERIES | B DIA. | C PROJ. | NOSE PIECE | STOP SCREW | COOLANT SEAL SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BT 40 | | | | | | | | | | | |
| * BT40-TG10-350 | BT940-503 | BT40-TG10C-350 | BT940-503C | 0.093-1.00 | TG100 | 2.5 | 3.5 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * BT40-TG10-550 | - | BT40-TG10C-550 | - | 0.093-1.00 | TG100 | 2.5 | 5.5 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| BT 50 | | | | | | | | | | | |
| * BT50-TG10-350 | BT950-503 | BT50-TG10C-350 | BT950-503C | 0.093-1.00 | TG100 | 2.5 | 3.5 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * BT50-TG10-600 | BT950-505 | BT50-TG10C-600 | BT950-505C | 0.093-1.00 | TG100 | 2.5 | 6.0 | 111-TG10S | 101-003 | 102-003 | 112-001 |
| * BT50-TG15-350 | B1950-533 | BT50-TG15C-350 | BT950-533C | 0.500-1.50 | TG150 | 3.5 | 3.5 | 111-TG15S | 101-014 | 102-007 | 112-002 |

** Outgoing Items*

- Supplied with nosepiece and stop screw

## BT • ER COLLET CHUCKS




| PART NUMBER | A RANGE | COLLET SERIES | B DIA. | C PROJ. | NOSE PIECE | STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|
| BT 40 | | | | | | | |
| * BT40-ER20-393 | 0.040-0.511 | ER20 | 1.344 | 3.937 | 115-009 | 101-023 | 112-103 |
| * BT40-ER32-400 | 0.080-0.787 | ER32 | 1.968 | 4.000 | 115-006 | 101-024 | 112-106 |
| BT 50 | | | | | | | |
| * BT50-ER20-393 | 0.040-0.511 | ER20 | 1.344 | 3.937 | 115-009 | 101-023 | 112-103 |
| * BT50-ER32-400 | 0.040-0.787 | ER32 | 1.968 | 4.000 | 115-006 | 101-024 | 112-106 |

** Outgoing Items*

- Precision gripping within 0.0003”
- Threaded through holes for backup screws and coolant
- Greater precision allows for improved tool life and precise machine tolerances
- Supplied with nosepiece
- For optional stop screws see page 156

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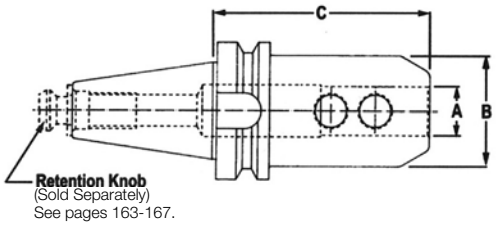
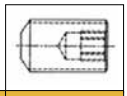
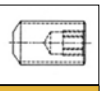
## BT END MILL HOLDERS





| PART NUMBER | OLD PART NO. | A I.D. | B DIA. | C PROJ. | SET SCREW SIZE |
|---|---|---|---|---|---|
| BT 40 | | | | | |
| BT40-EM37-250 | BT940-370 | 0.375 | 1.12 | 2.50 | 3/8-24 |
| * BT40-EM37-400 | | 0.375 | 1.12 | 4.00 | 3/8-24 |
| BT40-EM50-175 | | 0.500 | 1.75 | 1.75 | 7/16-20 |
| * BT40-EM50-250 | BT940-500 | 0.500 | 1.50 | 2.50 | 7/16-20 |
| BT40-EM50-400 | | 0.500 | 1.50 | 4.00 | 7/16-20 |
| BT40-EM62-250 | BT940-620 | 0.625 | 1.62 | 2.50 | 9/16-18 |
| * BT40-EM62-400 | | 0.625 | 1.62 | 4.00 | 9/16-18 |
| * BT40-EM75-250 | BT940-750 | 0.750 | 1.75 | 2.50 | 5/8-18 |
| BT40-EM75-400 | | 0.750 | 1.75 | 4.00 | 5/8-18 |
| * BT40-EM87-350 | | 0.875 | 2.17 | 3.50 | 5/8-18 |
| * BT40-EM10-175 | | 1.000 | 2.38 | 1.75 | 3/4-16 |
| BT40-EM10-350 | BT940-100 | 1.000 | 2.38 | 3.50 | 3/4-16 |
| BT40-EM12-350 | BT940-120 | 1.250 | 2.50 | 3.50 | 3/4-16 |
| BT40-EM15-450 | | 1.500 | 2.75 | 4.50 | 3/4-16 |

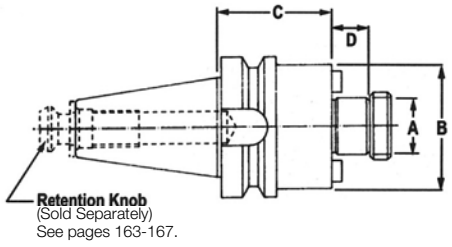
*** Outgoing Items**

| PART NUMBER | OLD PART NO. | A I.D. | B DIA. | C PROJ. | SET SCREW SIZE |
|---|---|---|---|---|---|
| BT 50 | | | | | |
| * BT50-EM37-300 | | 0.375 | 1.12 | 3 | 3/8-24 |
| * BT50-EM50-300 | BT950-500 | 0.500 | 1.50 | 3 | 7/16-20 |
| * BT50-EM50-600 | | 0.500 | 1.50 | 6 | 7/16-20 |
| * BT50-EM62-300 | BT950-620 | 0.625 | 1.62 | 3 | 9/16-18 |
| * BT50-EM62-600 | | 0.625 | 1.62 | 6 | 9/16-18 |
| * BT50-EM75-300 | BT950-750 | 0.750 | 1.75 | 3 | 5/8-18 |
| * BT50-EM75-600 | | 0.750 | 1.75 | 6 | 5/8-18 |
| * BT50-EM87-400 | BT950-870 | 0.875 | 2.00 | 4 | 5/8-18 |
| * BT50-EM10-400 | BT950-100 | 1.000 | 2.25 | 4 | 3/4-16 |
| * BT50-EM10-600 | | 1.000 | 2.25 | 6 | 3/4-16 |
| * BT50-EM12-400 | BT950-120 | 1.250 | 2.69 | 4 | 3/4-16 |
| * BT50-EM12-600 | | 1.250 | 2.69 | 6 | 3/4-16 |
| * BT50-EM15-400 | | 1.500 | 2.88 | 4 | 3/4-16 |
| * BT50-EM20-500 | BT950-200E | 2.000 | 3.62 | 5 | 1-14 |

*** Outgoing Items**

- End mill holders are supplied with set screws
- See page 127 for additional set screws

## BT SHELL MILL HOLDERS




| PART NUMBER | OLD PART NUMBER | A PILOT DIA. | B. DIA. | C PROJ. | D | ARBOR SCREW | DRIVE KEY / PIN |
|---|---|---|---|---|---|---|---|
| BT 40 | | | | | | | |
| BT40-SM75-175 | B1940-075 | 0.75 | 1.73 | 1.75 | 0.68 | 200-001 | 201-002 |
| BT40-SM10-175 | BT940-010 | 1.00 | 2.19 | 1.75 | 0.68 | 200-003 | 201-003 |
| BT40-SM12-200 | BT940-025 | 1.25 | 2.75 | 1.75 | 0.68 | 201-005 | 201-004 |
| BT40-SM15-212 | 8T940-050 | 1.50 | 3.62 | 1.75 | 0.94 | 200-007 | 201-005 |
| BT 50 | | | | | | | |
| * BT50-SM10-175 | BT950-010 | 1.00 | 2.19 | 1.75 | 0.68 | 200-003 | 201-003 |
| * BT50-SM12-175 | BT950-025 | 1.25 | 2.19 | 1.75 | 0.68 | 200-005 | 201-004 |
| * BT50-SM15-175 | BT950-056 | 1.50 | 3.62 | 1.75 | 0.94 | 200-007 | 201-005 |
| * BT50-SM20-300 | BT950-220 | 2.00 | 4.88 | 3.00 | 0.94 | 200-009 | 201-006 |

*** Outgoing Items**

- Shell Mill Holders are supplied with drive keys and arbor screws

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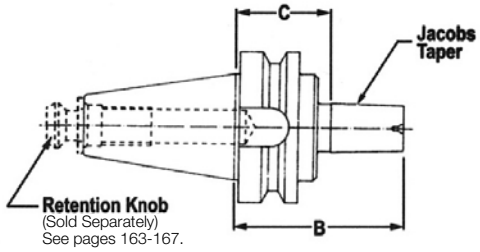
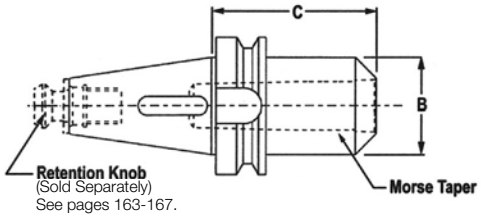
## BT JACOBS TAPER HOLDERS




| PART NUMBER | J.T. SIZE | B SIZE | C PROJ. |
|---|---|---|---|
| BT 40 | | | |
| * BT40-JT2-264 | 2 | 2.645 | 1.77 |
| * BT40-JT3-298 | 3 | 2.989 | 1.77 |
| * BT40-JT6-277 | 6 | 2.770 | 1.77 |
| * BT40-JT33-277 | 33 | 2.770 | 1.77 |

** Outgoing Items*

## BT MORSE TAPER HOLDERS • END ENTRY




| PART NUMBER | M.T. SIZE | B DIA. | C PROJ. |
|---|---|---|---|
| BT 40 | | | |
| * BT40-MT2-177 | 2 | 1.27 | 1.77 |
| * BT40-MT3-295 | 3 | 1.58 | 2.95 |
| * BT40-MT4-374 | 4 | 1.97 | 3.74 |
| BT 50 | | | |
| * BT50-MT2-236 | 2 | 1.27 | 2.36 |
| * BT50-MT3-295 | 3 | 1.58 | 2.95 |
| * BT50-MT4-374 | 4 | 1.97 | 3.74 |
| * BT50-MT5-413 | 5 | 2.25 | 4.13 |

** Outgoing Items*

• End Entry provides coolant-thru-the-spindle to tang end of tooling only. (Will work for non-coolant applications)

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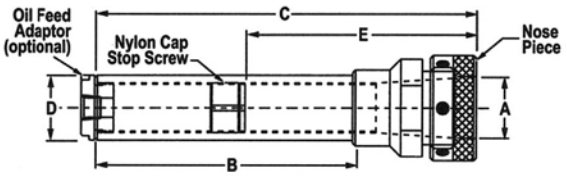
## STRAIGHT SHANK • SINGLE ANGLE COLLET CHUCKS

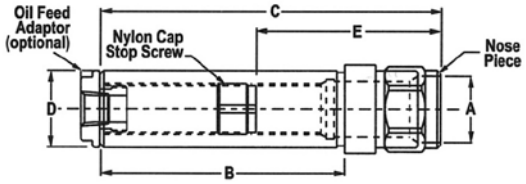



TG Style Collets
See page 146.

| PART NUMBER | OLD PART NO. | A RANGE | COLLET SERIES | B SHANK LGTH. | C OAL | D SHANK DIA. | E MAX. | OPTIONAL OIL FEED ADAPTER | NOSE PIECE | NYLON CAP STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| STRAIGHT SHANK | | | | | | | | | | | |
| SS15-TG10-9 | 830-004 | 0.093-1.000 | TG100 | 6.00 | 8.87 | 1.50 | 7.94 | 108-003 | 111-TG10S | 102-003 | 112-001 |
| SS20-TG15-12 | 830-005 | 0.500-1.500 | TG150 | 8.00 | 11.69 | 2.00 | 11.00 | 108-004 | 111-TG15S | 102-004 | 112-002 |

- Supplied with nosepiece and stop screw
- Oil feed adapter not standard, available upon request

## STRAIGHT SHANK • DOUBLE ANGLE COLLET CHUCKS



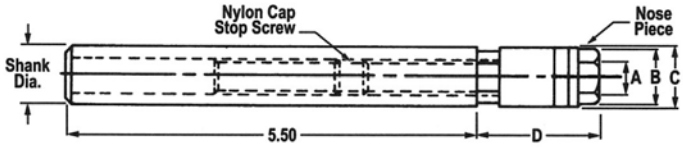

DA Style Collets
See page 147.

| PART NUMBER | OLD PART NO. | A RANGE | COLLET SERIES | B SHANK LGTH. | C OAL | D SHANK DIA. | E MAX. | OPTIONAL OIL FEED ADAPTER | NOSE PIECE | NYLON CAP STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| STRAIGHT SHANK | | | | | | | | | | | |
| ** SS10-DA18-7* | *830-001* | *0.047-0.750* | *DA180* | *4.00* | *6.375* | *1.00* | *5.69* | *108-001* | *111-DA18* | *102-001* | *112-018* |
| ** SS12-DA18-8* | *830-002* | *0.047-0.750* | *DA180* | *6.00* | *7.625* | *1.25* | *6.94* | *108-002* | *111-DA18* | *102-002* | *112-019* |
| ** SS15-DA18-8* | *830-003* | *0.047-0.750* | *DA180* | *6.00* | *7.625* | *1.50* | *6.94* | *108-002* | *111-DA18* | *102-002* | *112-019* |

**** Outgoing Items***

- Supplied with nosepiece and stop screw
- Oil feed adapter not standard, available upon request

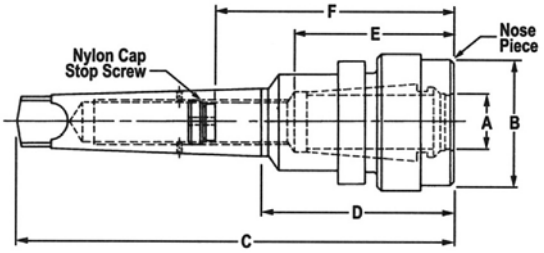
## STRAIGHT SHANK • DOUBLE ANGLE COLLET EXTENSIONS (SLIM LINE)



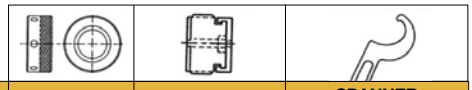

DA Style Collets
See page 147.

| PART NO. NON- COOLANT | PART NO. WITH COOLANT SCREW | A RANGE | COLLET SERIES | B | C | D APPROX. | SHANK DIA. | NOSE PIECE | NON-COOLANT STOP SCREW | COOLANT STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| STRAIGHT SHANK | | | | | | | | | | | |
| SS50-DA30-S7 | SS50-DA30C-S7 | 0.031-0.250 | DA300 | 1/2 Hex | 0.562 | 1.312 | 0.50 | 111-SDA30 | 101-022 | 103-010 | 112-014 |
| SS75-DA20-S8 | SS75-DA20C-S8 | 0.047-0.390 | DA200 | 11/16 Hex | 0.812 | 1.687 | 0.75 | 111-SDA20 | 101-005 | 102-005 | 112-015 |
| SS10-DA10-S8 | SS10-DA10C-S8 | 0.047-0.560 | DA100 | 7/8 Hex | 1.062 | 1.812 | 1.00 | 111-SDA10 | 101-006 | 102-006 | 112-017 |
| SS12-DA18-S8 | SS12-DA18C-S8 | 0.047-0.750 | DA180 | 1-1/4 Hex | 1.437 | 1.812 | 1.25 | 111-SDA18 | 101-002 | 102-002 | 112-018 |

## MORSE TAPER SINGLE ANGLE COLLET CHUCK WITH COOLANT CROSS HOLE




TG Style Collets
See page 146.

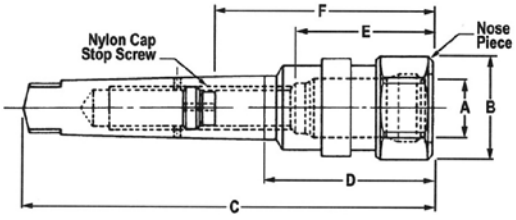


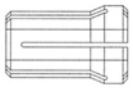
| PART NUMBER | OLD PART NUMBER | M.T. SIZE | A RANGE | COLLET SERIES | B DIA. | C OAL | D PROJ. | E DEPTH | F MAX. | NOSE PIECE | NYLON CAP STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ** MT4-TG10-312* | *832-003* | *4* | *0.09-1.00* | *TG10* | *2.50* | *7.75* | *3.12* | *2.59* | *3.75* | *111-TG10S* | *102-002* | *112-001* |

**** Outgoing Items***

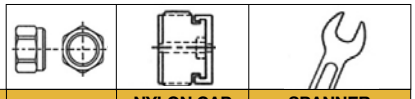
- Holders furnished with Nylon Stop Screw. Coolant crosshole location to industry standard for Taper Shank Oil Hole Twist Drills

## MORSE TAPER DOUBLE ANGLE COLLET CHUCK WITH COOLANT CROSS HOLE



DA Style Collets
See page 147.

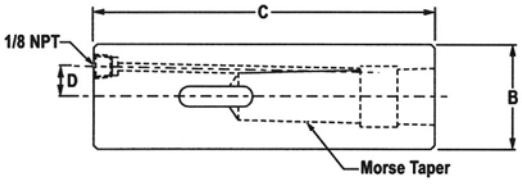


| PART NUMBER | OLD PART NO. | M.T. SIZE | A RANGE | COLLET SERIES | B | C OAL | D PROJ. | E DEPTH | F MAX. | NOSE PIECE | NYLON CAP STOP SCREW | SPANNER WRENCH (NOT INCLUDED) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ** MT2-DA10-212* | *829-002* | *2* | *0.046-0.562* | *DA100* | *1-1/4 Hex* | *5.06* | *2.12* | *1.72* | *2.25* | *111-DA10* | *102-006* | *112-018* |
| ** MT3-DA10-168* | *829-003* | *3* | *0.046-0.562* | *DA100* | *1-1/4 Hex* | *5.38* | *1.68* | *1.72* | *2.25* | *111-DA10* | *102-013* | *112-018* |
| ** MT2-DA18-238* | *832-001* | *2* | *0.046-0.750* | *DA180* | *1-1/2 Hex* | *5.38* | *2.38* | *2.00* | *2.75* | *111-DA18* | *102-005* | *112-019* |
| ** MT3-DA18-238* | *832-002* | *3* | *0.046-0.750* | *DA180* | *1-1/2 Hex* | *6.06* | *2.38* | *2.00* | *2.50* | *111-DA18* | *102-002* | *112-019* |
| ** MT4-DA18-175* | *832-004* | *4* | *0.046-0.750* | *DA180* | *1-1/2 Hex* | *6.38* | *1.75* | *-* | *2.25* | *111-DA18* | *102-002* | *112-019* |

**** Outgoing Items***

- Holders furnished with Nylon Stop Screw. Coolant crosshole location to industry standard for Taper Shank Oil Hole Twist Drills

## STRAIGHT SHANK • MORSE TAPER HOLDERS



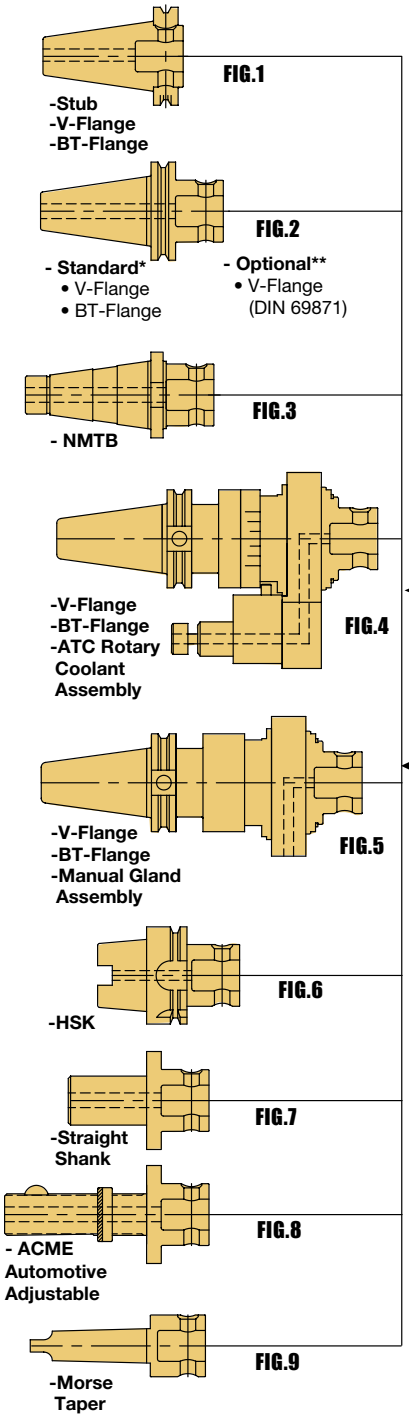

| PART NUMBER | OLD PART NUMBER | M.T. SIZE | B DIA. | C OAL | D LOCATION |
|---|---|---|---|---|---|
| **STRAIGHT SHANK** | | | | | |
| SS15-MT1-4C | 847-001 | 1 | 1.50 | 4.00 | 0.47 |
| SS15-MT2-4C | 847-002 | 2 | 1.50 | 4.00 | 0.47 |
| SS17-MT3-6C | 847-003 | 3 | 1.75 | 5.75 | 0.50 |
| SS17-MT4-6C | 847-004 | 4 | 1.75 | 5.75 | 0.59 |
| SS25-MT5-7C | 847-005 | 5 | 2.50 | 7.00 | 0.88 |

# MODULAR TOOLHOLDERS

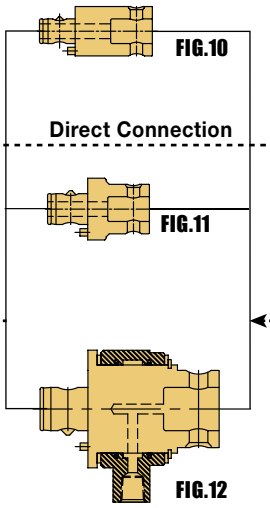
# INTERCHANGEABLE MODULAR TOOLHOLDING SYSTEM - OVERVIEW

NEW

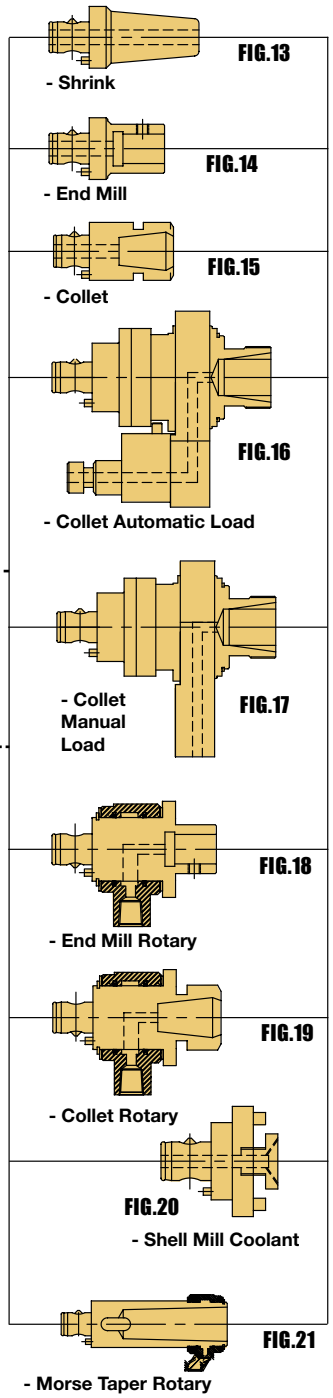
## MODULAR SHANKS



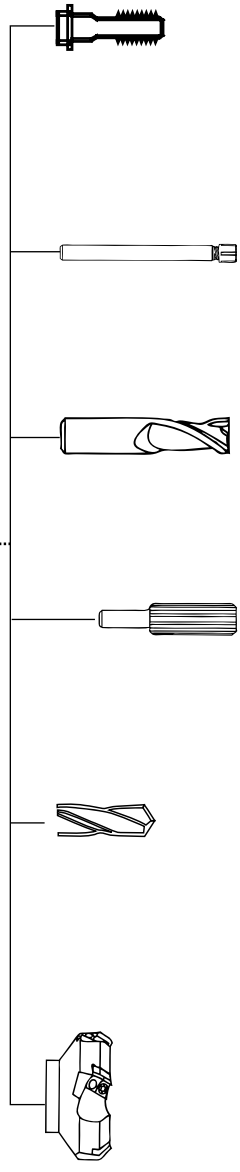

## EXTENSIONS & REDUCERS




## TOOLHOLDERS




## TOOLS



*Through Spindle Coolant ** Through Flange Coolant

[1]Available beginning on page 90.

Coming Soon! Figures 3, 6, 7, 8, 9, 12, 13, 16, 17, 18, 19, 20, 21.

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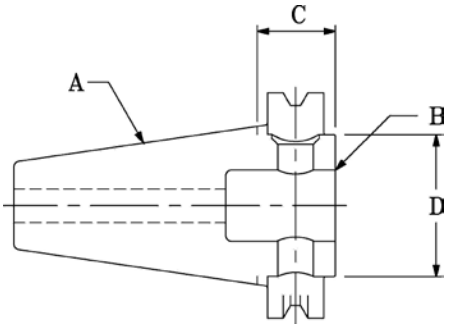
## MODULAR HOLDERS STUB PROJECTION

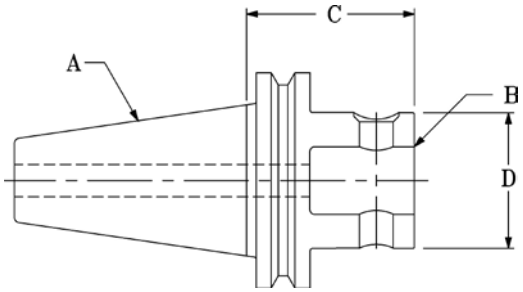




| PART NUMBER | EDP NUMBER | A SHANK | B ABS® NUMBER | C PROJECTION (MM) | D CLEARANCE (MM) |
|---|---|---|---|---|---|
| MBT40-A25-STUB | M0051 | BT 40 | 25 | 27.5 | 25 |
| MBT40-A32-STUB | M0053 | BT 40 | 32 | 27.5 | 32 |
| MBT40-A40-STUB | M0055 | BT 40 | 40 | 27.5 | 40 |
| MBT40-A50-STUB | M0057 | BT 40 | 50 | 50.5 | 50 |
| MBT40-A63-STUB | M0059 | BT 40 | 63 | 55 | 63 |
| MBT50-A32-STUB | M0071 | BT 50 | 32 | 38.5 | 32 |
| MBT50-A40-STUB | M0073 | BT 50 | 40 | 38.5 | 40 |
| MBT50-A50-STUB | M0075 | BT 50 | 50 | 38.5 | 50 |
| MBT50-A63-STUB | M0077 | BT 50 | 63 | 38.5 | 63 |
| MBT50-A80-STUB | M0079 | BT 50 | 80 | 75 | 80 |
| MBT50-A100-STUB | M0081 | BT 50 | 100 | 90 | 100 |
| MC40-A25-STUB | M0001 | CAT 40 | 25 | 22.5 | 25 |
| MC40-A32-STUB | M0003 | CAT 40 | 32 | 22.5 | 32 |
| MC40-A40-STUB | M0005 | CAT 40 | 40 | 22.5 | 40 |
| MC40-A50-STUB | M0007 | CAT 40 | 50 | 58 | 52 |
| MC40-A63-STUB | M0009 | CAT 40 | 63 | 65 | 63 |
| MC50-A32-STUB | M0021 | CAT 50 | 32 | 22.5 | 32 |
| MC50-A40-STUB | M0023 | CAT 50 | 40 | 22.5 | 40 |
| MC50-A50-STUB | M0025 | CAT 50 | 50 | 45 | 50 |
| MC50-A63-STUB | M0027 | CAT 50 | 63 | 50 | 63 |
| MC50-A80-STUB | M0029 | CAT 50 | 80 | 70 | 80 |
| MC50-A100-STUB | M0031 | CAT 50 | 100 | 100 | 100 |

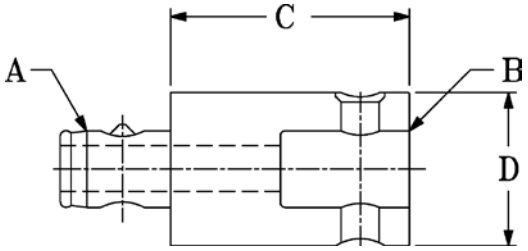
## MODULAR HOLDERS STANDARD PROJECTION

NEW



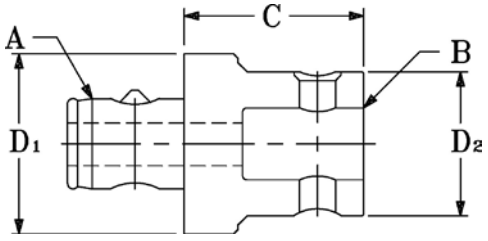

| PART NUMBER | EDP NUMBER | A SHANK | B ABS® NUMBER | C PROJECTION (MM) | D CLEARANCE (MM) |
|---|---|---|---|---|---|
| MBT40-A25-060 | M0061 | BT 40 | 25 | 60 | 25 |
| MBT40-A32-060 | M0063 | BT 40 | 32 | 60 | 32 |
| MBT40-A40-060 | M0065 | BT 40 | 40 | 60 | 40 |
| MBT40-A50-060 | M0067 | BT 40 | 50 | 60 | 50 |
| MBT40-A63-070 | M0069 | BT 40 | 63 | 70 | 63 |
| MBT50-A32-070 | M0083 | BT 50 | 32 | 70 | 32 |
| MBT50-A40-070 | M0085 | BT 50 | 40 | 70 | 40 |
| MBT50-A50-070 | M0087 | BT 50 | 50 | 70 | 50 |
| MBT50-A63-080 | M0089 | BT 50 | 63 | 80 | 63 |
| MBT50-A80-100 | M0091 | BT 50 | 80 | 100 | 80 |
| MBT50-A100-110 | M0093 | BT 50 | 100 | 110 | 100 |
| MC40-A25-060 | M0011 | CAT 40 | 25 | 60 | 25 |
| MC40-A32-060 | M0013 | CAT 40 | 32 | 60 | 32 |
| MC40-A40-060 | M0015 | CAT 40 | 40 | 60 | 40 |
| MC40-A50-075 | M0017 | CAT 40 | 50 | 75 | 50 |
| MC40-A63-090 | M0019 | CAT 40 | 63 | 90 | 63 |
| MC50-A32-060 | M0033 | CAT 50 | 32 | 60 | 32 |
| MC50-A40-060 | M0035 | CAT 50 | 40 | 60 | 40 |
| MC50-A50-060 | M0037 | CAT 50 | 50 | 60 | 50 |
| MC50-A63-080 | M0039 | CAT 50 | 63 | 80 | 63 |
| MC50-A80-100 | M0041 | CAT 50 | 80 | 100 | 80 |
| MC50-A100-125 | M0043 | CAT 50 | 100 | 125 | 100 |

## MODULAR EXTENSIONS



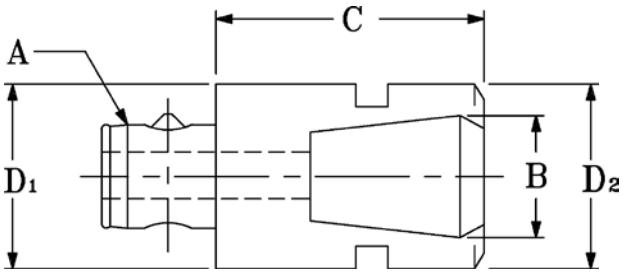

| PART NUMBER | EDP NUMBER | A ABS® NUMBER | B ABS® NUMBER | C LENGTH (MM) | D CLEARANCE (MM) |
|---|---|---|---|---|---|
| MA25-045-A25 | M0201 | 25 | 25 | 45 | 25 |
| MA25-060-A25 | M0202 | 25 | 25 | 60 | 25 |
| MA32-050-A32 | M0222 | 32 | 32 | 50 | 32 |
| MA32-070-A32 | M0223 | 32 | 32 | 70 | 32 |
| MA40-040-A40 | M0241 | 40 | 40 | 40 | 40 |
| MA40-060-A40 | M0242 | 40 | 40 | 60 | 40 |
| MA40-090-A40 | M0243 | 40 | 40 | 90 | 40 |
| MA50-050-A50 | M0261 | 50 | 50 | 50 | 50 |
| MA50-065-A50 | M0262 | 50 | 50 | 65 | 50 |
| MA50-100-A50 | M0263 | 50 | 50 | 100 | 50 |
| MA63-060-A63 | M0281 | 63 | 63 | 60 | 63 |
| MA63-085-A63 | M0282 | 63 | 63 | 85 | 63 |
| MA63-125-A63 | M0283 | 63 | 63 | 125 | 63 |
| MA80-070-A80 | M0301 | 80 | 80 | 70 | 80 |
| MA80-085-A80 | M0302 | 80 | 80 | 85 | 80 |
| MA80-125-A80 | M0303 | 80 | 80 | 125 | 80 |
| MA100-085-A100 | M0321 | 100 | 100 | 85 | 100 |
| MA100-125-A100 | M0322 | 100 | 100 | 125 | 100 |

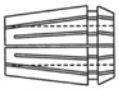
## MODULAR REDUCERS




| PART NUMBER | EDP NUMBER | A ABS® NUMBER | B ABS® NUMBER | C LENGTH (MM) | D1 CLEARANCE (MM) | D2 CLEARANCE (MM) |
|---|---|---|---|---|---|---|
| MA32-040-A25 | M0401 | 32 | 25 | 40 | 32 | 25 |
| MA40-040-A25 | M0421 | 40 | 25 | 40 | 40 | 25 |
| MA40-040-A32 | M0422 | 40 | 32 | 40 | 40 | 32 |
| MA50-050-A25 | M0441 | 50 | 25 | 50 | 50 | 25 |
| MA50-050-A32 | M0442 | 50 | 32 | 50 | 50 | 32 |
| MA50-050-A40 | M0443 | 50 | 40 | 50 | 50 | 40 |
| MA63-060-A25 | M0461 | 63 | 25 | 60 | 63 | 25 |
| MA63-060-A32 | M0462 | 63 | 32 | 60 | 63 | 32 |
| MA63-060-A40 | M0463 | 63 | 40 | 60 | 63 | 40 |
| MA63-060-A50 | M0464 | 63 | 50 | 60 | 63 | 50 |
| MA80-060-A32 | M0481 | 80 | 32 | 60 | 80 | 32 |
| MA80-060-A40 | M0482 | 80 | 40 | 60 | 80 | 40 |
| MA80-060-A50 | M0483 | 80 | 50 | 60 | 80 | 50 |
| MA80-060-A63 | M0484 | 80 | 63 | 60 | 80 | 63 |
| MA100-080-A40 | M0501 | 100 | 40 | 80 | 100 | 40 |
| MA100-080-A50 | M0502 | 100 | 50 | 80 | 100 | 50 |
| MA100-080-A63 | M0503 | 100 | 63 | 80 | 100 | 63 |
| MA100-080-A80 | M0504 | 100 | 80 | 80 | 100 | 80 |

NEW



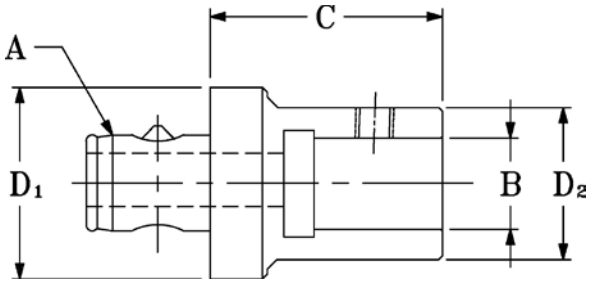



ER Style Collets
See page 145.

| PART NUMBER | EDP NUMBER | A ABS® NUMBER | COLLET STYLE | COLLET RANGE | C PROJECTION (MM) | D1 CLEARANCE (MM) | D2 CLEARANCE MM |
|---|---|---|---|---|---|---|---|
| MA25-ER16-040 | M0601 | 25 | ER 16 | 0.5mm - 10.0mm | 40 | 25 | 28 |
| MA32-ER16-040 | M0611 | 32 | ER 16 | 0.5mm - 10.0mm | 40 | 32 | 28 |
| MA32-ER20-053 | M0612 | 32 | ER 20 | 1.0mm - 13.0mm | 53 | 32 | 34 |
| MA40-ER16-040 | M0621 | 40 | ER 16 | 0.5mm - 10.0mm | 40 | 40 | 28 |
| MA40-ER20-053 | M0622 | 40 | ER 20 | 1.0mm - 13.0mm | 53 | 40 | 34 |
| MA40-ER25-062 | M0623 | 40 | ER 25 | 1.0mm - 16.0mm | 62 | 40 | 42 |
| MA50-ER16-040 | M0631 | 50 | ER 16 | 0.5mm - 10.0mm | 40 | 50 | 28 |
| MA50-ER20-053 | M0632 | 50 | ER 20 | 1.0mm - 13.0mm | 53 | 50 | 34 |
| MA50-ER25-062 | M0633 | 50 | ER 25 | 1.0mm - 16.0mm | 62 | 50 | 42 |
| MA50-ER32-070 | M0634 | 50 | ER 32 | 2.0mm - 20.0mm | 70 | 50 | 50 |
| MA63-ER16-040 | M0641 | 63 | ER 16 | 0.5mm - 10.0mm | 40 | 63 | 28 |
| MA63-ER20-053 | M0642 | 63 | ER 20 | 1.0mm - 13.0mm | 53 | 63 | 34 |
| MA63-ER25-062 | M0643 | 63 | ER 25 | 1.0mm - 16.0mm | 62 | 63 | 42 |
| MA63-ER32-070 | M0644 | 63 | ER 32 | 2.0mm - 20.0mm | 70 | 63 | 50 |
| MA63-ER40-079 | M0645 | 63 | ER 40 | 3.0mm - 26.0mm | 79 | 63 | 63 |
| MA80-ER16-040 | M0651 | 80 | ER 16 | 0.5mm - 10.0mm | 40 | 80 | 28 |
| MA80-ER20-053 | M0652 | 80 | ER 20 | 1.0mm - 13.0mm | 53 | 80 | 34 |
| MA80-ER25-062 | M0653 | 80 | ER 25 | 1.0mm - 16.0mm | 62 | 80 | 42 |
| MA80-ER32-070 | M0654 | 80 | ER 32 | 2.0mm - 20.0mm | 70 | 80 | 50 |
| MA80-ER40-079 | M0655 | 80 | ER 40 | 3.0mm - 26.0mm | 79 | 80 | 63 |

## MODULAR END MILL (METRIC)

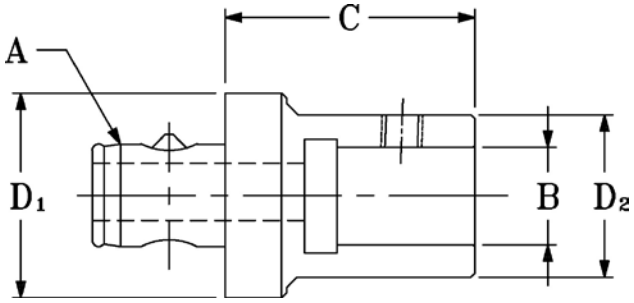
NEW




| PART NUMBER | EDP NUMBER | A ABS® NUMBER | B BORE SIZE | C PROJECTION (MM) | D1 CLEARANCE (MM) | D2 CLEARANCE (MM) |
|---|---|---|---|---|---|---|
| MA25-EM06MM-055 | M0801 | 25 | 6 mm | 55 | 25 | 25 |
| MA25-EM08MM-055 | M0802 | 25 | 8 mm | 55 | 25 | 28 |
| MA25-EM10MM-060 | M0803 | 25 | 10 mm | 60 | 25 | 35 |
| MA32-EM06MM-055 | M0901 | 32 | 6 mm | 55 | 32 | 25 |
| MA32-EM08MM-055 | M0902 | 32 | 8 mm | 55 | 32 | 28 |
| MA32-EM10MM-060 | M0903 | 32 | 10 mm | 60 | 32 | 35 |
| MA32-EM12MM-065 | M0904 | 32 | 12 mm | 65 | 32 | 42 |
| MA40-EM06MM-055 | M1001 | 40 | 6 mm | 55 | 40 | 25 |
| MA40-EM08MM-055 | M1002 | 40 | 8 mm | 55 | 40 | 28 |
| MA40-EM10MM-060 | M1003 | 40 | 10 mm | 60 | 40 | 35 |
| MA40-EM12MM-065 | M1004 | 40 | 12 mm | 65 | 40 | 42 |
| MA40-EM16MM-070 | M1005 | 40 | 16 mm | 70 | 40 | 48 |
| MA50-EM06MM-055 | M1101 | 50 | 6 mm | 55 | 50 | 25 |
| MA50-EM08MM-055 | M1102 | 50 | 8 mm | 55 | 50 | 28 |
| MA50-EM10MM-060 | M1103 | 50 | 10 mm | 60 | 50 | 35 |
| MA50-EM12MM-065 | M1104 | 50 | 12 mm | 65 | 50 | 42 |
| MA50-EM16MM-070 | M1105 | 50 | 16 mm | 70 | 50 | 48 |
| MA50-EM20MM-075 | M1106 | 50 | 20 mm | 75 | 50 | 52 |
| MA50-EM25MM-075 | M1107 | 50 | 25 mm | 75 | 50 | 65 |
| MA63-EM06MM-055 | M1201 | 63 | 6 mm | 55 | 63 | 25 |
| MA63-EM08MM-055 | M1202 | 63 | 8 mm | 55 | 63 | 28 |
| MA63-EM10MM-060 | M1203 | 63 | 10 mm | 60 | 63 | 35 |
| MA63-EM12MM-065 | M1204 | 63 | 12 mm | 65 | 63 | 42 |
| MA63-EM16MM-070 | M1205 | 63 | 16 mm | 70 | 63 | 48 |
| MA63-EM20MM-075 | M1206 | 63 | 20 mm | 75 | 63 | 52 |
| MA63-EM25MM-080 | M1207 | 63 | 25 mm | 80 | 63 | 65 |
| MA80-EM16MM-070 | M1305 | 80 | 16 mm | 70 | 80 | 48 |
| MA80-EM20MM-075 | M1306 | 80 | 20 mm | 75 | 80 | 52 |
| MA80-EM25MM-080 | M1307 | 80 | 25 mm | 80 | 80 | 65 |
| MA80-EM32MM-090 | M1308 | 80 | 32 mm | 90 | 80 | 72 |

## MODULAR END MILL (INCH)

NEW




| PART NUMBER | EDP NUMBER | A ABS® NUMBER | B BORE SIZE | C PROJECTION (MM) | D1 CLEARANCE (MM) | D2 CLEARANCE (MM) |
|---|---|---|---|---|---|---|
| MA25-EM0.250-055 | M0851 | 25 | 0.250 | 55 | 25 | 25 |
| MA25-EM0.312-055 | M0852 | 25 | 0.312 | 55 | 25 | 28 |
| MA25-EM0.375-060 | M0853 | 25 | 0.375 | 60 | 25 | 35 |
| MA32-EM0.250-055 | M0951 | 32 | 0.250 | 55 | 32 | 25 |
| MA32-EM0.312-055 | M0952 | 32 | 0.312 | 55 | 32 | 28 |
| MA32-EM0.375-060 | M0953 | 32 | 0.375 | 60 | 32 | 35 |
| MA32-EM0.500-065 | M0954 | 32 | 0.500 | 65 | 32 | 42 |
| MA40-EM0.250-055 | M1051 | 40 | 0.250 | 55 | 40 | 25 |
| MA40-EM0.312-055 | M1052 | 40 | 0.312 | 55 | 40 | 28 |
| MA40-EM0.375-060 | M1053 | 40 | 0.375 | 60 | 40 | 35 |
| MA40-EM0.500-065 | M1054 | 40 | 0.500 | 65 | 40 | 42 |
| MA40-EM0.625-070 | M1055 | 40 | 0.625 | 70 | 40 | 48 |
| MA50-EM0.250-055 | M1151 | 50 | 0.250 | 55 | 50 | 25 |
| MA50-EM0.312-055 | M1152 | 50 | 0.312 | 55 | 50 | 28 |
| MA50-EM0.375-060 | M1153 | 50 | 0.375 | 60 | 50 | 35 |
| MA50-EM0.500-065 | M1154 | 50 | 0.500 | 65 | 50 | 42 |
| MA50-EM0.625-070 | M1155 | 50 | 0.625 | 70 | 50 | 48 |
| MA50-EM0.750-075 | M1156 | 50 | 0.750 | 75 | 50 | 52 |
| MA50-EM1.000-075 | M1157 | 50 | 1.000 | 75 | 50 | 65 |
| MA63-EM0.250-055 | M1251 | 63 | 0.250 | 55 | 63 | 25 |
| MA63-EM0.312-055 | M1252 | 63 | 0.312 | 55 | 63 | 28 |
| MA63-EM0.375-060 | M1253 | 63 | 0.375 | 60 | 63 | 35 |
| MA63-EM0.500-065 | M1254 | 63 | 0.500 | 65 | 63 | 42 |
| MA63-EM0.625-070 | M1255 | 63 | 0.625 | 70 | 63 | 48 |
| MA63-EM0.750-075 | M1256 | 63 | 0.750 | 75 | 63 | 52 |
| MA63-EM1.000-080 | M1257 | 63 | 1.000 | 80 | 63 | 65 |
| MA80-EM0.500-065 | M1354 | 80 | 0.500 | 65 | 80 | 42 |
| MA80-EM0.625-070 | M1355 | 80 | 0.625 | 70 | 80 | 48 |
| MA80-EM0.750-075 | M1356 | 80 | 0.750 | 75 | 80 | 52 |
| MA80-EM1.000-080 | M1357 | 80 | 1.000 | 80 | 80 | 65 |
| MA80-EM1.250-090 | M1358 | 80 | 1.250 | 90 | 80 | 72 |

## COLLET SETS

**Single Angle Collet Sets**

| COLLET SERIES | SIZES | PART NUMBER |
|---|---|---|
| **TG 100** | 3/8-1 x 16ths | STG10-111 |
| | 1/8-1 x 16ths | STG10-115 |
| | 3/8-1 x 32nds | STG10-121 |
| | 3/32-1 x 32nds | STG10-130 |
| | 3/8-1 x 64ths | STG10-141 |
| | 3/32-1 x 64ths | STG10-159 |
| **TG 150** | 3/4-1-1/2 x 16ths | STG15-113 |
| | 1/2-1-1/2 x 16ths | STG15-117 |
| | 3/4-1-1/2 x 32nds | STG15-125 |
| | 1/2-1-1/2 x 32nds | STG15-133 |
| | 3/4-1-1/2 x 64ths | STG15-149 |
| | 1/2-1-1/2 x 64ths | STG15-165 |

**Double Angle Collet Sets**

| COLLET SERIES | SIZES | PART NUMBER |
|---|---|---|
| **DA 300** | 1/16-1/4 x 32nds | SDA30-107 |
| | 3/64-1/4 x 64ths | SDA30-114 |
| **DA 200** | 1/8-3/8 x 32nds | SDA20-109 |
| | 1/16-3/8 x 64ths | SDA20-121 |
| | 1/8-3/8 x 64ths | SDA20-117 |
| **DA 100** | 1/8-7/16 x 16ths | SDA10-108 |
| | 1/4-9/16 x 64ths | SDA10-121 |
| | 1/16-9/16 x 64ths | SDA10-133 |
| | 1/8-9/16 x 32nds | SDA10-115 |
| | 1/8-9/16 x 64ths | SDA10-129 |
| **DA 180** | 1/4-3/4 x 16ths | SDA18-109 |
| | 1/8-3/4 x 32nds | SDA18-121 |
| | 1/8-3/4 x 64ths | SDA18-141 |
| | 1/4-3/4 x 32nds | SDA18-117 |
| | 1/4-3/4 x 64ths | SDA18-133 |

**ER Collet Sets**

| COLLET SERIES | SIZES | PART NUMBER |
|---|---|---|
| **ER 16** | (0.020 - 0.393) x 0.040 | SER16-040 |
| **ER 20** | (0.040 - 0.511) x 0.040 | SER20-040 |
| **ER 32** | (0.080 - 0.787) x 0.040 | SER32-040 |

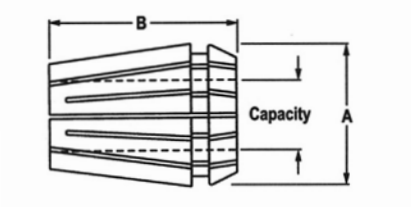
**Sealed ER Coolant Collet Sets**

| COLLET SERIES | SIZES | PART NUMBER |
|---|---|---|
| **ER 16** | (0.120 - 0.393) x 0.040 | SER16-040C |
| **ER 20** | (0.120 - 0.511) x 0.040 | SER20-040C |
| **ER 32** | (0.120 - 0.787) x 0.040 | SER32-040C |

• All collet sets include wooden tray

## SEALED ER COOLANT STYLE COLLETS

A revolutionary high precision front sealing collet with 0.04" collapsibility that will turn any collet chuck into a coolant-fed tool for high pressure coolant supply up to 1338 P.S.I.




| COLLET | A | B | COLLET CAPACITY |
|---|---|---|---|
| ER16 | 0.669 | 1.062 | 0.020-0.393 |
| ER20 | 0.826 | 1.220 | 0.040-0.511 |
| ER32 | 1.299 | 1.574 | 0.080-0.787 |

| CAPACITY | | | ER 16 PART NUMBER | ER 20 PART NUMBER | ER 32 PART NUMBER |
|---|---|---|---|---|---|
| INCH | DECIMAL | MM RANGE | | | |
| 1/8 | (0.120 - 0.160) | 4.0-3.0 | ER16-040C | ER20-040C | ER32-040C |
| 3/16 | (0.160 - 0.200) | 5.0-4.0 | ER16-050C | ER20-050C | ER32-050C |
| 7/32 | (0.200 - 0.236) | 6.0-5.0 | ER16-060C | ER20-060C | ER32-060C |
| 1/4 | (0.236 - 0.275) | 7.0-6.0 | ER16-070C | ER20-070C | ER32-070C |
| 5/16 | (0.275 - 0.315) | 8.0-7.0 | ER16-080C | ER20-080C | ER32-080C |
| 11/32 | (0.315 - 0.354) | 9.0-8.0 | ER16-090C | ER20-090C | ER32-090C |
| 3/8 | (0.354 - 0.393) | 10.0-9.0 | ER16-100C | ER20-100C | ER32-100C |
| 13/32 | (0.393 - 0.433) | 11.0-10.0 | - | ER20-110C | ER32-110C |
| 7/16 | (0.433 - 0.472) | 12.0-11.0 | - | ER20-120C | ER32-120C |
| 1/2 | (0.472 - 0.511) | 13.0-12.0 | - | ER20-130C | ER32-130C |
| 17/32 | (0.511 - 0.551) | 14.0-13.0 | - | - | ER32-140C |
| 9/16 | (0.551 - 0.590) | 15.0-14.0 | - | - | ER32-150C |
| 5/8 | (0.590 - 0.629) | 16.0-15.0 | - | - | ER32-160C |
| 21/32 | (0.629 - 0.669) | 17.0-16.0 | - | - | ER32-170C |
| 11/16 | (0.669 - 0.708) | 18.0-17.0 | - | - | ER32-180C |
| 3/4 | (0.708 - 0.750) | 19.0-18.0 | - | - | ER32-190C |
| 25/32 | (0.750 - 0.787) | 20.0-19.0 | - | - | ER32-200C |

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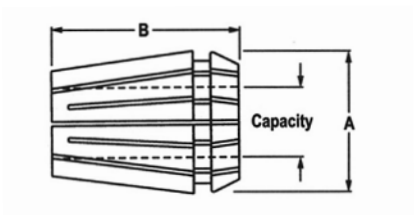
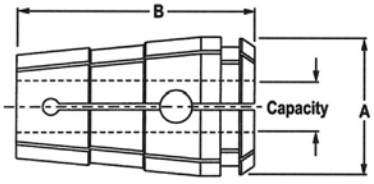
## ER STYLE COLLETS




| COLLET | A | B | COLLET CAPACITY |
|---|---|---|---|
| ER16 | 0.669 | 1.062 | 0.020-0.393 |
| ER20 | 0.826 | 1.220 | 0.040-0.511 |
| ER32 | 1.299 | 1.574 | 0.080-0.787 |

| CAPACITY | | MM RANGE | ER 16 PART NO. | ER 20 PART NO. | ER 32 PART NO. |
|---|---|---|---|---|---|
| INCH | (DECIMAL) | | | | |
| 1/32 | (0.020 - 0.040) | 1.0-0.5 | ER16-010 | - | - |
| 1/16 | (0.040 - 0.080) | 2.0-1.0 | ER16-020 | ER20-020 | - |
| 3/32 | (0.080 - 0.120) | 3.0-2.0 | ER16-030 | ER20-030 | ER32-030 |
| 1/8 | (0.120 - 0.160) | 4.0-3.0 | ER16-040 | ER20-040 | ER32-040 |
| 3/16 | (0.160 - 0.200) | 5.0-4.0 | ER16-050 | ER20-050 | ER32-050 |
| 7/32 | (0.200 - 0.236) | 6.0-5.0 | ER16-060 | ER20-060 | ER32-060 |
| 1/4 | (0.236 - 0.275) | 7.0-6.0 | ER16-070 | ER20-070 | ER32-070 |
| 5/16 | (0.275 - 0.315) | 8.0-7.0 | ER16-080 | ER20-080 | ER32-080 |
| 11/32 | (0.315 - 0.354) | 9.0-8.0 | ER16-090 | ER20-090 | ER32-090 |
| 3/8 | (0.354 - 0.393) | 10.0-9.0 | ER16-100 | ER20-100 | ER32-100 |
| 13/32 | (0.393 - 0.433) | 11.0-10.0 | - | ER20-110 | ER32-110 |
| 7/16 | (0.433 - 0.472) | 12.0-11.0 | - | ER20-120 | ER32-120 |
| 1/2 | (0.472 - 0.511) | 13.0-12.0 | - | ER20-130 | ER32-130 |
| 17/32 | (0.511 - 0.551) | 14.0-13.0 | - | - | ER32-140 |
| 9/16 | (0.551 - 0.590) | 15.0-14.0 | - | - | ER32-150 |
| 5/8 | (0.590 - 0.629) | 16.0-15.0 | - | - | ER32-160 |
| 21/32 | (0.629 - 0.669) | 17.0-16.0 | - | - | ER32-170 |
| 11/16 | (0.669 - 0.708) | 18.0-17.0 | - | - | ER32-180 |
| 3/4 | (0.708 - 0.750) | 19.0-18.0 | - | - | ER32-190 |
| 25/32 | (0.750 - 0.787) | 20.0-19.0 | - | - | ER32-200 |

## SINGLE ANGLE TGNP STYLE COLLETS




| COLLET | A | B | COLLET CAPACITY |
|---|---|---|---|
| TGNP10 | 1.379 | 2.375 | 0.375-1.000 |

| CAPACITY (INCHES) | DECIMAL (INCHES) | TGNP 100 | |
|---|---|---|---|
| | | PART NO. | OLD PART NO. |
| 3/8 | 0.375 | TGNP10-0375 | 501-024 |
| 1/2 | 0.500 | TGNP10-0500 | 501-032 |
| 5/8 | 0.625 | TGNP10-0625 | 501-040 |
| 3/4 | 0.750 | TGNP10-0750 | 501-048 |
| 7/8 | 0.875 | TGNP10-0875 | 501-056 |
| 1 | 1.000 | TGNP10-1000 | 501-064 |

• These collets have the same features as the Single Angle TG Style Collets with the added benefit of “non-pullout” for positive drive and axial retention.

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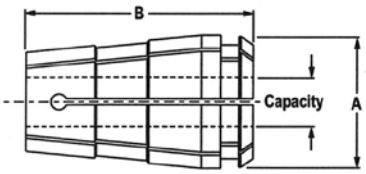
## SINGLE ANGLE TG STYLE COLLETS




| COLLET | A | B | COLLET CAPACITY |
|---|---|---|---|
| TG100 | 1.379 | 2.375 | 0.094-1.000 |
| TG150 | 2.001 | 3.000 | 0.500-1.500 |

| CAPACITY (INCHES) | DECIMAL (INCHES) | TG100 PART NO. | TG100 OLD PART NO. | TG150 PART NO. | TG150 OLD PART NO. |
|---|---|---|---|---|---|
| 3/32 | 0.094 | TG10-0094 | 500-006 | - | - |
| 7/64 | 0.109 | TG10-0109 | 500-007 | - | - |
| 1/8 | 0.125 | TG10-0125 | 500-008 | - | - |
| 9/64 | 0.141 | TG10-0141 | 500-009 | - | - |
| 5/32 | 0.153 | TG10-0156 | 500-010 | - | - |
| 11/64 | 0.172 | TG10-0172 | 500-011 | - | - |
| 3/16 | 0.188 | TG10-0188 | 500-012 | - | - |
| 13/64 | 0.203 | TG10-0203 | 500-013 | - | - |
| 7/32 | 0.219 | TG10-0219 | 500-014 | - | - |
| 15/64 | 0.234 | TG10-0234 | 500-015 | - | - |
| 1/4 | 0.250 | TG10-0250 | 500-016 | - | - |
| 17/64 | 0.266 | TG10-0266 | 500-017 | - | - |
| 9/32 | 0.281 | TG10-0281 | 500-018 | - | - |
| 19/64 | 0.297 | TG10-0297 | 500-019 | - | - |
| 5/16 | 0.312 | TG10-0312 | 500-020 | - | - |
| 21/64 | 0.328 | TG10-0328 | 500-021 | - | - |
| 11/32 | 0.344 | TG10-0344 | 500-022 | - | - |
| 23/64 | 0.359 | TG10-0359 | 500-023 | - | - |
| 3/8 | 0.375 | TG10-0375 | 500-024 | - | - |
| 25/64 | 0.391 | TG10-0391 | 500-025 | - | - |
| 13/32 | 0.406 | TG10-0406 | 500-026 | - | - |
| 27/64 | 0.422 | TG10-0422 | 500-027 | - | - |
| 7/16 | 0.438 | TG10-0438 | 500-028 | - | - |
| 29/64 | 0.453 | TG10-0453 | 500-029 | - | - |
| 15/32 | 0.469 | TG10-0469 | 500-030 | - | - |
| 31/64 | 0.484 | TG10-0484 | 500-031 | - | - |
| 1/2 | 0.500 | TG10-0500 | 500-032 | TG15-0500 | 550-032 |
| 33/64 | 0.516 | TG10-0516 | 500-033 | TG15-0516 | 550-033 |
| 17/32 | 0.531 | TG10-0531 | 500-034 | TG15-0531 | 550-034 |
| 35/64 | 0.547 | TG10-0547 | 500-035 | TG15-0547 | 550-035 |
| 9/16 | 0.563 | TG10-0562 | 500-036 | TG15-0562 | 550-036 |
| 37/64 | 0.578 | TG10-0578 | 500-037 | TG15-0578 | 550-037 |
| 19/32 | 0.594 | TG10-0594 | 500-038 | TG15-0594 | 550-038 |
| 39/64 | 0.609 | TG10-0609 | 500-039 | TG15-0609 | 550-039 |
| 5/8 | 0.625 | TG10-0625 | 500-040 | TG15-0625 | 550-040 |
| 41/64 | 0.641 | TG10-0641 | 500-041 | TG15-0641 | 550-041 |
| 21/32 | 0.656 | TG10-0656 | 500-042 | TG15-0656 | 550-042 |
| 43/64 | 0.672 | TG10-0672 | 500-043 | TG15-0672 | 550-043 |
| 11/16 | 0.688 | TG10-0688 | 500-044 | TG15-0688 | 550-044 |
| 45/64 | 0.703 | TG10-0703 | 500-045 | TG15-0703 | 550-045 |
| 23/32 | 0.719 | TG10-0719 | 500-046 | TG15-0719 | 550-046 |
| 47/64 | 0.734 | TG10-0734 | 500-047 | TG15-0734 | 550-047 |
| 3/4 | 0.750 | TG10-0750 | 500-048 | TG15-0750 | 550-048 |
| 49/64 | 0.766 | TG10-0766 | 500-049 | TG15-0766 | 550-049 |
| 25/32 | 0.781 | TG10-0781 | 500-050 | TG15-0781 | 550-050 |
| 51/64 | 0.797 | TG10-0797 | 500-051 | TG15-0797 | 550-051 |

| CAPACITY (INCHES) | DECIMAL (INCHES) | TG100 PART NO. | TG100 OLD PART NO. | TG150 PART NO. | TG150 OLD PART NO. |
|---|---|---|---|---|---|
| 13/16 | 0.812 | TG10-0812 | 500-052 | TG15-0812 | 550-052 |
| 53/64 | 0.828 | TG10-0828 | 500-053 | TG15-0828 | 550-053 |
| 27/32 | 0.844 | TG10-0844 | 500-054 | TG15-0844 | 550-054 |
| 55/64 | 0.859 | TG10-0859 | 500-055 | TG15-0859 | 550-055 |
| 7/8 | 0.875 | TG10-0875 | 500-056 | TG15-0875 | 550-056 |
| 57/64 | 0.890 | TG10-0891 | 500-057 | TG15-0891 | 550-057 |
| 29/32 | 0.906 | TG10-0906 | 500-058 | TG15-0906 | 550-058 |
| 59/64 | 0.922 | TG10-0922 | 500-059 | TG15-0922 | 550-059 |
| 15/16 | 0.937 | TG10-0938 | 500-060 | TG15-0938 | 550-060 |
| 61/64 | 0.953 | TG10-0953 | 500-061 | TG15-0953 | 550-061 |
| 31/32 | 0.969 | TG10-0968 | 500-062 | TG15-0968 | 550-062 |
| 63/64 | 0.984 | TG10-0984 | 500-063 | TG15-0984 | 550-063 |
| 1 | 1.000 | TG10-1000 | 500-064 | TG15-1000 | 550-064 |
| 1-1/64 | 1.016 | - | - | TG15-1016 | 550-065 |
| 1-1/32 | 1.031 | - | - | TG15-1031 | 550-066 |
| 1-3/64 | 1.469 | - | - | TG15-1047 | 550-067 |
| 1-1/16 | 1.062 | - | - | TG15-1062 | 550-068 |
| 1-5/64 | 1.078 | - | - | TG15-1078 | 550-069 |
| 1-3/32 | 1.094 | - | - | TG15-1094 | 550-070 |
| 1-7/64 | 1.106 | - | - | TG15-1109 | 550-071 |
| 1-1/8 | 1.125 | - | - | TG15-1125 | 550-072 |
| 1-9/64 | 1.141 | - | - | TG15-1141 | 550-073 |
| 1-5/32 | 1.156 | - | - | TG15-1156 | 550-074 |
| 1-11/64 | 1.172 | - | - | TG15-1172 | 550-075 |
| 1-3/16 | 1.187 | - | - | TG15-1187 | 550-076 |
| 1-13/64 | 1.203 | - | - | TG15-1203 | 550-077 |
| 1-7/32 | 1.219 | - | - | TG15-1219 | 550-078 |
| 1-15/64 | 1.234 | - | - | TG15-1234 | 550-079 |
| 1-1/4 | 1.250 | - | - | TG15-1250 | 550-080 |
| 1-17/64 | 1.265 | - | - | TG15-1266 | 550-081 |
| 1-9/32 | 1.281 | - | - | TG15-1281 | 550-082 |
| 1-19/64 | 1.297 | - | - | TG15-1297 | 550-083 |
| 1-5/16 | 1.312 | - | - | TG15-1312 | 550-084 |
| 1-21/64 | 1.328 | - | - | TG15-1328 | 550-085 |
| 1-11/32 | 1.344 | - | - | TG15-1344 | 550-086 |
| 1-23/64 | 1.359 | - | - | TG15-1359 | 550-087 |
| 1-3/8 | 1.375 | - | - | TG15-1375 | 550-088 |
| 1-25/64 | 1.391 | - | - | TG15-1391 | 550-089 |
| 1-13/32 | 1.406 | - | - | TG15-1406 | 550-090 |
| 1-27/64 | 1.422 | - | - | TG15-1422 | 550-091 |
| 1-7/16 | 1.438 | - | - | TG15-1438 | 550-092 |
| 1-29/64 | 1.453 | - | - | TG15-1453 | 550-093 |
| 1-15/32 | 1.469 | - | - | TG15-1469 | 550-094 |
| 1-31/64 | 1.484 | - | - | TG15-1484 | 550-095 |
| 1-1/2 | 1.500 | - | - | TG15-1500 | 550-096 |

- Designed to produce accurate and powerful gripping of the cutting tool
- Provides maximum rigidity, thus extending the life of your cutting tools
- Interchangeable with most manufacturer's Single Angle Collets for maximum flexibility

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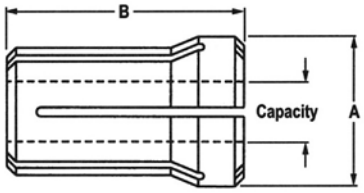
## DOUBLE ANGLE DA STYLE COLLETS




| COLLET | A | B | COLLET CAPACITY |
|---|---|---|---|
| DA100 | 0.769 | 1.44 | 0.046-0.563 |
| DA180 | 1.035 | 1.62 | 0.046-0.750 |
| DA200 | 0.539 | 1.18 | 0.046-0.391 |
| DA300 | 0.375 | 1.00 | 0.031-0.250 |

| CAPACITY (INCHES) | DECIMAL (INCHES) | DA 10 | | DA 18 | | DA 20 | | DA 30 | |
|---|---|---|---|---|---|---|---|---|---|
| | | PART NO. | OLD PART NO. | PART NO. | OLD PART NO. | PART NO. | OLD PART NO. | PART NO. | OLD PART NO. |
| 1/32 | 0.031 | - | - | - | - | - | - | DA30-0031 | 539-002 |
| 3/64 | 0.046 | DA10-0047 | 509-003 | DA18-0047 | 589-003 | DA20-0047 | 529-003 | DA30-0047 | 539-003 |
| 1/16 | 0.062 | DA10-0062 | 509-004 | DA18-0062 | 589-004 | DA20-0062 | 529-004 | DA30-0062 | 539-004 |
| 5/64 | 0.078 | DA10-0078 | 509-005 | DA18-0078 | 589-005 | DA20-0078 | 529-005 | DA30-0078 | 539-005 |
| 3/32 | 0.094 | DA10-0094 | 509-006 | DA18-0094 | 589-006 | DA20-0094 | 529-006 | DA30-0094 | 539-006 |
| 7/64 | 0.109 | DA10-0109 | 509-007 | DA18-0109 | 589-007 | DA20-0109 | 529-007 | DA30-0109 | 539-007 |
| 1/8 | 0.125 | DA10-0125 | 509-008 | DA18-0125 | 589-008 | DA20-0125 | 529-008 | DA30-0125 | 539-008 |
| 9/64 | 0.141 | DA10-0141 | 509-009 | DA18-0141 | 589-009 | DA20-0141 | 529-009 | DA30-0141 | 539-009 |
| 5/32 | 0.156 | DA10-0156 | 509-010 | DA18-0156 | 589-010 | DA20-0156 | 529-010 | DA30-0156 | 539-010 |
| 11/64 | 0.172 | DA10-0172 | 509-011 | DA18-0172 | 589-011 | DA20-0172 | 529-011 | DA30-0172 | 539-011 |
| 3/16 | 0.187 | DA10-0188 | 509-012 | DA18-0188 | 589-012 | DA20-0188 | 529-012 | DA30-0188 | 539-012 |
| 13/64 | 0.203 | DA10-0203 | 509-013 | DA18-0203 | 589-013 | DA20-0203 | 529-013 | DA30-0203 | 539-013 |
| 7/32 | 0.219 | DA10-0219 | 509-014 | DA18-0219 | 589-014 | DA20-0219 | 529-014 | DA30-0219 | 539-014 |
| 15/64 | 0.234 | DA10-0234 | 509-015 | DA18-0234 | 589-015 | DA20-0234 | 529-015 | DA30-0234 | 539-015 |
| 1/4 | 0.250 | DA10-0250 | 509-016 | DA18-0250 | 589-016 | DA20-0250 | 529-016 | DA30-0250 | 539-016 |
| 17/64 | 0.265 | DA10-0266 | 509-017 | DA18-0266 | 589-017 | DA20-0266 | 529-017 | - | - |
| 9/32 | 0.281 | DA10-0281 | 509-018 | DA18-0281 | 589-018 | DA20-0281 | 529-018 | - | - |
| 19/64 | 0.297 | DA10-0297 | 509-019 | DA18-0297 | 589-019 | DA20-0297 | 529-019 | - | - |
| 5/16 | 0.312 | DA10-0312 | 509-020 | DA18-0312 | 589-020 | DA20-0312 | 529-020 | - | - |
| 21/64 | 0.328 | DA10-0328 | 509-021 | DA18-0328 | 589-021 | DA20-0328 | 529-021 | - | - |
| 11/32 | 0.344 | DA10-0344 | 509-022 | DA18-0344 | 589-022 | DA20-0344 | 529-022 | - | - |
| 23/64 | 0.359 | DA10-0359 | 509-023 | DA18-0359 | 589-023 | DA20-0359 | 529-023 | - | - |
| 3/8 | 0.375 | DA10-0375 | 509-024 | DA18-0375 | 589-024 | DA20-0375 | 529-024 | - | - |
| 25/64 | 0.391 | DA10-0391 | 509-025 | DA18-0391 | 589-025 | DA20-0391 | 529-025 | - | - |
| 13/32 | 0.406 | DA10-0406 | 509-026 | DA18-0406 | 589-026 | - | - | - | - |
| 27/64 | 0.422 | DA10-0422 | 509-027 | DA18-0422 | 589-027 | - | - | - | - |
| 7/16 | 0.438 | DA10-0438 | 509-028 | DA18-0438 | 589-028 | - | - | - | - |
| 29/64 | 0.453 | DA10-0453 | 509-029 | DA18-0453 | 589-029 | - | - | - | - |
| 15/32 | 0.469 | DA10-0469 | 509-030 | DA18-0469 | 589-030 | - | - | - | - |
| 31/64 | 0.484 | DA10-0484 | 509-031 | DA18-0484 | 589-031 | - | - | - | - |
| 1/2 | 0.500 | DA10-0500 | 509-032 | DA18-0500 | 589-032 | - | - | - | - |
| 33/64 | 0.515 | DA10-0516 | 509-033 | DA18-0516 | 589-033 | - | - | - | - |
| 17/32 | 0.531 | DA10-0531 | 509-034 | DA18-0531 | 589-034 | - | - | - | - |
| 35/64 | 0.547 | DA10-0547 | 509-035 | DA18-0547 | 589-035 | - | - | - | - |
| 9/16 | 0.563 | DA10-0562 | 509-036 | DA18-0562 | 589-036 | - | - | - | - |
| 37/64 | 0.578 | - | - | DA18-0578 | 589-037 | - | | | |
| 19/32 | 0.594 | - | - | DA18-0594 | 589-038 | - | - | - | - |
| 39/64 | 0.609 | - | - | DA18-0609 | 589-039 | - | - | - | - |
| 5/8 | 0.625 | - | - | DA18-0625 | 589-040 | - | - | - | - |
| 41/64 | 0.640 | - | - | DA18-0641 | 589-041 | - | - | - | - |
| 21/32 | 0.656 | - | - | DA18-0656 | 589-042 | - | - | - | - |
| 43/64 | 0.672 | - | - | DA18-0672 | 589-043 | - | - | - | - |
| 11/16 | 0.687 | - | - | DA18-0688 | 589-044 | - | - | - | - |
| 45/64 | 0.703 | - | - | DA18-0703 | 589-045 | - | - | - | - |
| 23/32 | 0.719 | - | - | DA18-0719 | 589-046 | - | - | - | - |
| 47/64 | 0.734 | - | - | DA18-0734 | 589-047 | - | - | - | - |
| 3/4 | 0.750 | - | - | DA18-0750 | 589-048 | - | - | - | - |

- Designed for flexibility over a wide range of sizes
- Interchangeable with most manufacturer's Double Angle Collets

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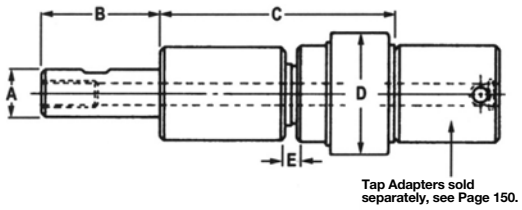
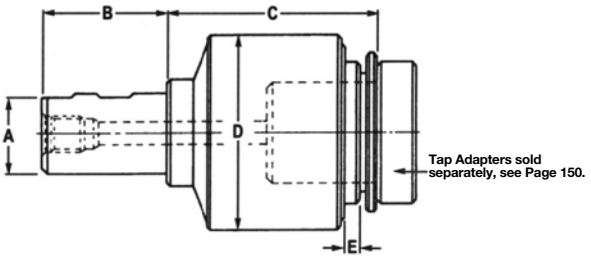
## STRAIGHT SHANK • QUICK CHANGE TENSION AND COMPRESSION TAP HOLDERS • COOLANT-THRU-THE-SPINDLE TYPE




Standard Capacity #10 thru 1-3/4



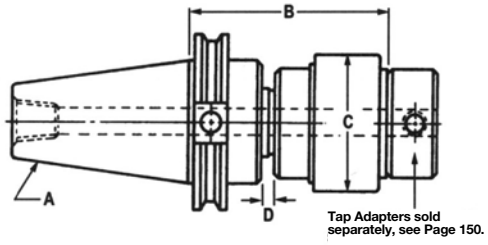

Large Capacity 3/4 thru 2-1/2

| PART NUMBER | A SHANK | TAP CAPACITY | B | C PROJ. | D BODY O.D. | E TEN./COMP. | TAP ADAPTER STYLE |
|---|---|---|---|---|---|---|---|
| * 886-001N | 1.25 | #10 thru 1-3/4 | 2.50 | 5.00 | 2.450 | 0.560/0.120 | #1 & #1A |
| * 886-002 | 2.00 | 3/4 thru 2-1/2 | 2.25 | 4.75 | 4.125 | 0.750/0.250 | #4 |

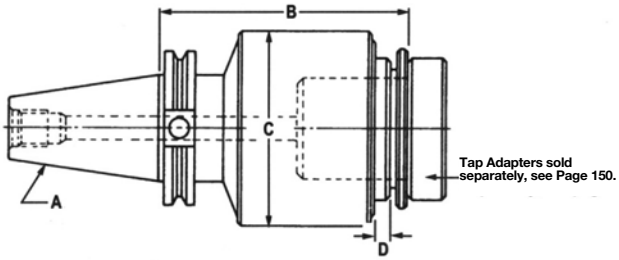
** Outgoing Items*

• These Tap Holders can normally handle up to 600 P.S.I. of actual coolant pressure without effecting tension control. Should your application exceed this limit, please consult The George Whalley Company before use.

## V-FLANGE AND BT SHANK • QUICK CHANGE TENSION & COMPRESSION TAP HOLDERS • COOLANT-THRU-THE-SPINDLE TYPE




Standard Capacity #10 thru 1-3/4




Large Capacity 3/4 thru 2-1/2

| PART NUMBER | A SHANK | TAP CAPACITY | B PROJ. | C BODY O.D. | D TEN./COMP. | TAP ADAPTER STYLE |
|---|---|---|---|---|---|---|
| * 886-003N | 40VF | #10-1-3/4 | 4.65 | 2.450 | 0.56/0.120 | #1 & 1A |
| * BT886-003N | 40BT | #10-1-3/4 | 4.77 | 2.450 | 0.56/0.120 | #1 & 1A |
| * 886-006N | 45VF | #10-1-3/4 | 3.84 | 2.450 | 0.56/0.120 | #1 & 1A |
| * BT886-006N | 45BT | #10-1-3/4 | 4.70 | 2.450 | 0.56/0.120 | #1 & 1A |
| * 886-007N | 50VF | #10-1-3/4 | 3.84 | 2.450 | 0.56/0.120 | #1 & 1A |
| * BT886-007N | 50BT | #10-1-3/4 | 3.90 | 2.450 | 0.56/0.120 | #1 & 1A |
| * 886-004 | 45VF | 3/4-2-1/2 | 5.25 | 4.125 | 0.75/0.250 | #4 |
| * 886-005 | 50VF | 3/4-2-1/2 | 5.25 | 4.125 | 0.75/0.250 | #4 |
| * 886-008** | 45VF | #10-1-3/8 | 5.75 | 2.310 | 0.56/0.120 | #2 & 3 |

** Outgoing Items*

** Holder has axial float on all tap sizes and torque control thru 3/4" tap size.

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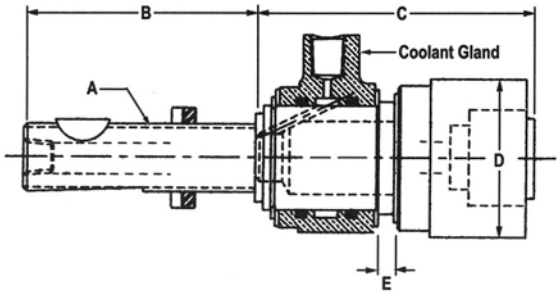
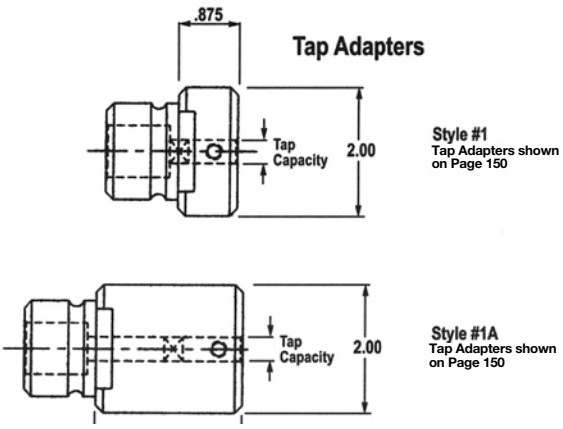
## AUTOMOTIVE ADJUSTABLE SHANK • QUICK CHANGE TENSION AND COMPRESSION TAP HOLDERS WITH HIGH RPM COOLANT GLAND



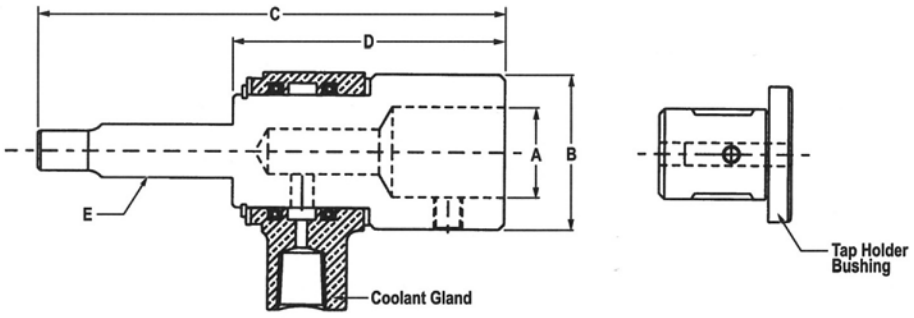

| PART NUMBER | A SHANK | TAP CAPACITY | B | C PROJ. | D BODY DIA. | E TEN./COMP. | COOLANT GLAND |
|---|---|---|---|---|---|---|---|
| * 886-305 | 1-1/16-12 Acme | #10-1-3/4 | 3.625 | 6.5 | 2.45 | 0.56/0.120 | CGH-2250 |
| * 886-307 | 1-3/8-12 Acme | #10-1-3/4 | 4.750 | 7.0 | 2.45 | 0.56/0.120 | CGH-2250 |

** Outgoing Items*

- Dual entry design of this Tap Driver allows for use without coolant gland for coolant-thru-the-spindle operations.
- Tap Adapters sold separately, see page 150.

## ROTARY INDUCER TYPE TAP HOLDERS

**To retrofit non coolant-thru-the-spindle equipment for use with coolant fed taps.**




| PART NUMBER | A BUSHING | TAP RANGE | B | C | D | E TAP SIZE | E SHANK DIA. | COOLANT GLAND |
|---|---|---|---|---|---|---|---|---|
| * 873-001 | 5/8 | #10 thru 1/8 pipe | 1-1/4 | 4-1/2 | 2-1/2 | 5/8 | 0.480 | CGS-0937 |
| * 873-002 | 1 | #10 thru 1/2 pipe | 1-3/4 | 5.00 | 3.00 | 3/4 | 0.590 | CGS-1250 |
| * 873-003 | 1-1/4 | 3/8 thru 3/4 pipe | 2.00 | 5-9/16 | 3.00 | 1-1/4 | 0.800 | CGS-1250 |
| * 873-004 | 1-1/2 | 1/2 thru 1" pipe | 2-7/16 | 6-7/8 | 3-5/8 | 1-1/2 | 1.233 | CGS-1625 |

** Outgoing Items*

- Tap Holders are furnished with coolant glands
- Tap Holders bushings are optional, see page 151 for more information

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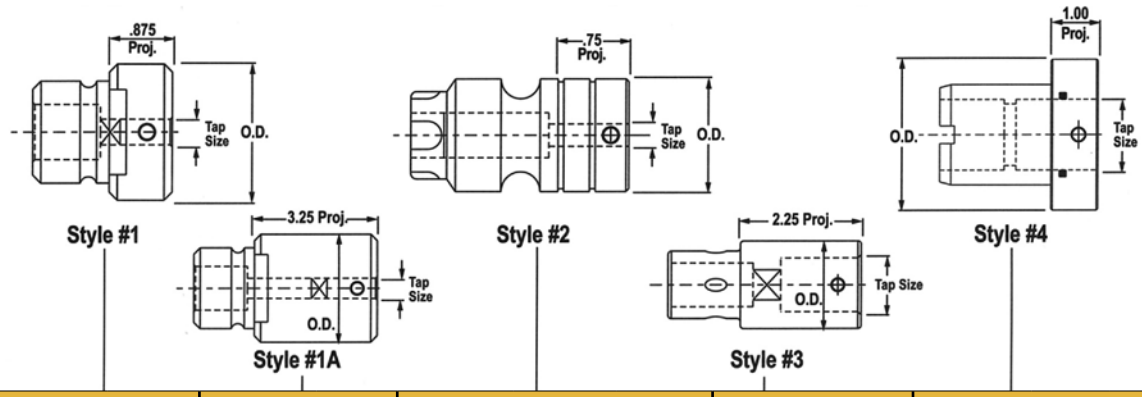
TAPPING SYSTEMS

## QUICK CHANGE TAP ADAPTERS




| TAP SIZE | STYLE #1 | | STYLE #1 A | | STYLE #2 | | | STYLE #3 | | STYLE #4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PART NO. | O.D. | PART NO. | O.D. | PART NO. | O.D. | PROJ. | PART NO. | O.D. | PART NO. | O.D. | PROJ. |
| * #10 | 886-010 | 2.00 | - | - | 886-500 | 1.250 | 0.75 | - | - | - | - | - |
| * 1/4 | 886-025 | 2.00 | - | - | 886-502 | 1.250 | 0.75 | - | - | - | - | - |
| * 5/16 | 886-031 | 2.00 | - | - | 886-504 | 1.250 | 0.75 | - | - | - | - | - |
| * 3/8 | 886-037 | 2.00 | - | - | 886-506 | 1.250 | 0.75 | - | - | - | - | - |
| * 7/16 | 886-043 | 2.00 | - | - | 886-508 | 1.250 | 0.75 | - | - | - | - | - |
| * 1/2 | 886-050 | 2.00 | - | - | 886-510 | 1.250 | 0.75 | - | - | - | - | - |
| * 5/8 | 886-062 | 2.00 | - | - | 886-512 | 1.250 | 0.75 | - | - | - | - | - |
| * 3/4 | 886-075 | 2.00 | - | - | 886-514 | 1.250 | 0.75 | - | - | 886-175 | 3.20 | 1.00 |
| * 7/8 | 886-087 | 2.00 | - | - | 886-516 | 1.250 | 0.75 | - | - | 886-187 | 3.20 | 1.00 |
| * 15/16 | - | - | - | - | - | - | - | - | - | 886-194 | 3.20 | 1.00 |
| * 1 | 886-099 | 2.00 | - | - | 886-518 | 1.250 | 0.75 | - | - | 886-200 | 3.20 | 1.00 |
| * 1-1/16-1-1/8 | - | - | 886-125 | 2.000 | - | - | - | 886-520 | 1.61 | 886-201 | 3.20 | 1.00 |
| * 1-3/16-1-1/4 | - | - | 886-131 | 2.000 | - | - | - | 886-522 | 1.61 | 886-203 | 3.20 | 1.00 |
| * 1-5/16-1-3/8 | - | - | 886-137 | 2.250 | - | - | - | 886-524 | 1.61 | 886-205 | 3.20 | 1.00 |
| * 1-7/16-1-1/2 | - | - | 886-143 | 2.375 | - | - | - | - | - | 886-207 | 3.20 | 1.00 |
| * 1-5/8 | - | - | 886-149 | 2.375 | - | - | - | - | - | 886-209 | 3.20 | 1.00 |
| * 1-3/4 | - | - | 886-155 | 2.500 | - | - | - | - | - | 886-401 | 3.20 | 1.00 |
| * 1-7/8 | - | - | - | - | - | - | - | - | - | 886-402 | 3.20 | 1.00 |
| * 2 | - | - | - | - | - | - | - | - | - | 886-403 | 3.20 | 1.00 |
| * 2-1/8 | - | - | - | - | - | - | - | - | - | 886-409 | 3.20 | 3.10 |
| * 2-1/4 | - | - | - | - | - | - | - | - | - | 886-410 | 3.20 | 3.10 |
| * 2-3/8 | - | - | - | - | - | - | - | - | - | 886-411 | 3.20 | 3.10 |
| * 2-1/2 | - | - | - | - | - | - | - | - | - | 886-412 | 3.20 | 3.10 |
| * 1/16NPT | 886-106 | 2.00 | - | - | 886-526 | 1.250 | 0.75 | - | - | - | - | - |
| * 1/8NPT | 886-101 | 2.00 | - | - | 886-528 | 1.250 | 0.75 | - | - | - | - | - |
| * 1/4NPT | 886-102 | 2.00 | - | - | 886-530 | 1.250 | 0.75 | - | - | - | - | - |
| * 3/8NPT | 886-103 | 2.00 | - | - | 886-532 | 1.250 | 0.75 | - | - | - | - | - |
| * 1/2NPT | 886-104 | 2.00 | - | - | 886-534 | 1.250 | 0.75 | - | - | 886-408 | 3.20 | 1.00 |
| * 3/4NPT | 886-105 | 2.00 | - | - | - | - | - | 886-536 | 1.61 | 886-404 | 3.20 | 1.00 |
| * 1NPT | - | - | 886-110 | 2.500 | - | - | - | 886-538 | 1.61 | 886-405 | 3.20 | 1.00 |
| * 1-1/4NPT | - | - | 886-111 | 2.500 | - | - | - | - | - | 886-406 | 3.20 | 1.00 |
| * 1-1/2NPT | - | - | - | - | - | - | - | - | - | 886-407 | 3.20 | 1.00 |
| * 2NPT | - | - | - | - | - | - | - | - | - | 886-413 | 3.20 | 3.10 |

** Outgoing Items*

Proj. indicates projection of tap driver from face of tapping unit

• Tap Adapters shown on this page are designed for use with specific Coolant-Thru-The-Spindle Tap Holders, shown on pages 148 and 149. Check the style indicated for your unit before ordering.

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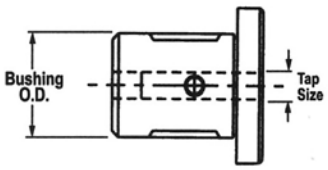
## TAP HOLDER BUSHINGS FOR USE WITH ROTARY INDUCER TYPE TAP HOLDERS

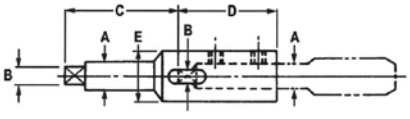



• To be used with Tap Holders shown on page 149.

| TAP SIZE | BUSHING O.D. | | | |
|---|---|---|---|---|
| | 5/8" | 1" | 1-1/4" | 1-1/2" |
| * #10 | 869-001 | 872-001 | - | - |
| * #12 | 869-002 | 872-002 | - | - |
| * 1/4 | 869-003 | 872-003 | - | - |
| * 5/16 | 869-004 | 872-004 | - | - |
| * 3/8 | 869-005 | 872-005 | 874-001 | - |
| * 7/16 | 869-006 | 872-006 | 874-002 | - |
| * 1/2 | 869-007 | 872-007 | 874-003 | 875-001 |
| * 9/16 | - | 872-008 | 874-004 | 875-002 |
| * 5/8 | - | 872-009 | 874-005 | 875-003 |
| * 3/4 | - | 872-010 | 874-006 | 875-004 |
| * 7/8 | - | - | 874-007 | 875-005 |
| * 1 | - | - | 874-008 | 875-006 |
| * 1-1/8 | - | - | 874-009 | 875-007 |
| * 1-1/4 | - | - | 874-010 | 875-008 |
| * 1-3/8 | - | - | 874-011 | 875-009 |
| * 1-1/2 | - | - | - | 875-010 |
| * 1-5/8 | - | - | - | 875-011 |
| * 1/8 Pipe S.S. | 869-008 | 872-011 | 874-012 | 875-012 |
| * 1/8 Pipe L.S. | - | 872-012 | 874-013 | 875-013 |
| * 1/4 Pipe | - | 872-013 | 874-014 | 875-014 |
| * 3/8 Pipe | - | 872-014 | 874-015 | 875-015 |
| * 1/2 Pipe | - | 872-015 | 874-016 | 875-016 |
| * 3/4 Pipe | - | - | 874-017 | 875-017 |
| * 1 Pipe | - | - | - | 875-018 |

** Outgoing Items*

## QUICK-TAP EXTENSIONS WITH POSITIVE TAP DRIVE




| PART NUMBER | TAP SIZE | A SHANK | B TAP SQUARE | C | D | E BODY DIA. |
|---|---|---|---|---|---|---|
| 878-101 | #0-#6 | 0.141 | 0.110 | 2 | 1.00 | 0.44 |
| 878-102 | #8 | 0.168 | 0.131 | 2 | 1.00 | 0.44 |
| 878-103 | #10 | 0.194 | 0.152 | 2 | 1.00 | 0.44 |
| 878-104 | 1/4 | 0.255 | 0.191 | 2 | 1.12 | 0.62 |
| 878-105 | 5/16 | 0.318 | 0.238 | 2 | 1.12 | 0.62 |
| 878-106 | 3/8 | 0.381 | 0.286 | 2 | 1.25 | 0.75 |
| 878-107 | 7/16 | 0.323 | 0.242 | 2 | 1.25 | 0.75 |
| 878-108 | 1/2 | 0.367 | 0.275 | 2 | 1.25 | 0.75 |
| 878-109 | 9/16 | 0.429 | 0.322 | 3 | 1.38 | 0.75 |
| 878-110 | 5/8 | 0.480 | 0.360 | 3 | 1.62 | 0.88 |



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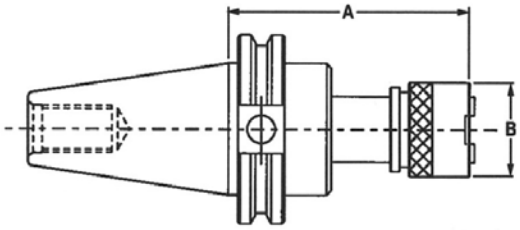
## V-FLANGE RIGID TAP HOLDERS • BILZ STYLE • NON COOLANT-FED

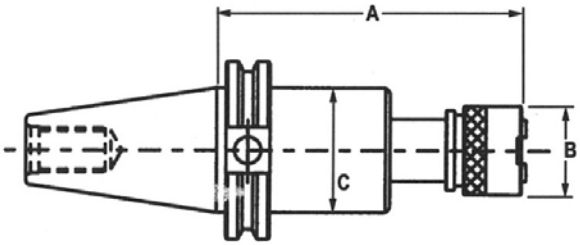



- Utilizes popular Bilz style quick change collet system
- Tap and tap size may be changed in seconds
- Precision ground components provide smooth action
- Extended lengths available upon request
- Made in the U.S.A.
- See pages 154 and 155 for Tap Adapter information

| PART NUMBER | ADAPT SIZE | A PROJ. | B DIA. |
|---|---|---|---|
| ** C40-RT1-275* | *# 1* | *2.75* | *1.25* |
| ** C40-RT2-356* | *# 2* | *3.56* | *1.96* |
| ** C50-RT1 -275* | *# 1* | *2.75* | *1.25* |
| ** C50-RT2-356* | *# 2* | *3.56* | *1.96* |
| ** C50-RT3-488* | *# 3* | *4.88* | *2.83* |

**** Outgoing Items***

## V-FLANGE TENSION & COMPRESSION TAP HOLDERS • BILZ STYLE • NON COOLANT-FED




| PART NUMBER | ADAPTER SIZE | TAP SIZE RANGE | A PROJ. | B DIA. | C DIA. |
|---|---|---|---|---|---|
| ** C40-TC1-425* | *# 1* | *0 to 9/16 HT 1/8 PT* | *4.25* | *1.25* | *2.25* |
| ** C40-TC2-563* | *# 2* | *0 to 7/8 HT 1/8-1/2 PT* | *5.63* | *1.96* | *2.00* |
| ** C50-TC1-400* | *# 1* | *0 to 9/16 HT 1/8 PT* | *4.00* | *1.25* | *2.75* |
| ** C50-TC2-475* | *# 2* | *0 to 7/8 HT 1/8 to 1/2 PT* | *4.75* | *1.96* | *2.75* |
| ** C50-TC3-619* | *# 3* | *13/16 to 1-3/8 HT 3/4 to 1PT* | *6.19* | *2.83* | *2.75* |

**** Outgoing Items***

- Quick change -push back on the holder sleeve and the adapter with tool is removable
- Press on the end of the adapter nose and the tool is removable -all in a few seconds
- Smooth stroke-even under full torque load, the tension-compression stroke is full and free
- Interchangeability -our adapter and holders are interchangeable with Universal -Bilz quick change holders and adapters
- See pages 154 and 155 for Tap Adapter information

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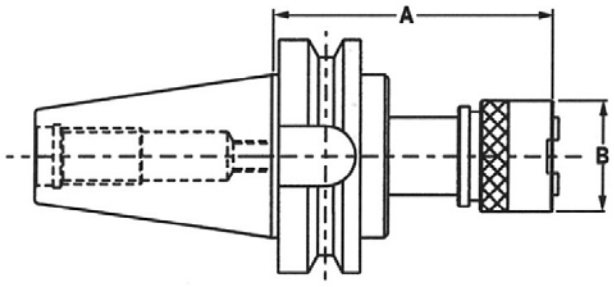
## BT RIGID TOOLING TAP HOLDERS • BILZ STYLE • NON COOLANT-FED

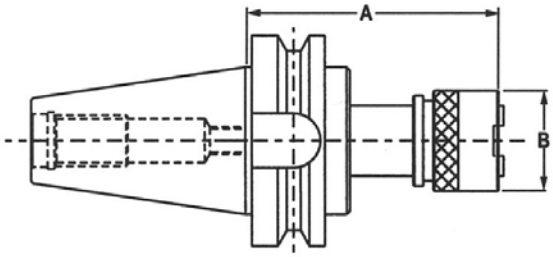



| A PART NUMBER | ADAPT SIZE | A PROJ. | B DIA. |
|---|---|---|---|
| * BT40-RT1-275 | # 1 | 2.75 | 1.25 |
| * BT40-RT2-356 | # 2 | 3.56 | 1.96 |
| * BT50-RT1-288 | # 1 | 2.88 | 1.25 |
| * BT50-RT2-369 | # 2 | 3.69 | 1.96 |
| * BT50-RT3-500 | # 3 | 5.00 | 2.83 |

** Outgoing Items*

- Utilizes popular Bilz style quick change collet system
- Tap and tap size may be changed in seconds
- Precision ground components provide smooth action
- Extended lengths available upon request
- Made in the U.S.A.
- See pages 154 and 155 for Tap Adapter information

## BT TENSION & COMPRESSION TAP HOLDERS • BILZ STYLE • NON COOLANT-FED




0.88 Tension / 0.38 Compression

| PART NUMBER | ADAPTER SIZE | TAP SIZE RANGE | A PROJ. | B DIA. |
|---|---|---|---|---|
| * BT40-TC1-488 | #1 | 0-9/16 HT to 1/8 PT | 4.88 | 1.25 |
| * BT40-TC2-562 | #2 | 0-7/8 HT to 1/8-1/2 PT | 5.62 | 1.96 |
| * BT50-TC1-475 | #1 | 0-9/16 HT to 1/8 PT | 4.75 | 1.25 |
| * BT50-TC2-550 | #2 | 0-7/8 HT to 1/8-1/2 PT | 5.50 | 1.96 |
| * BT50-TC3-694 | #3 | 13/16 - 1-3/8 HT to 3/4 to 1 PT | 6.94 | 2.83 |

** Outgoing Items*

- Quick change -push back on the holder sleeve and the adapter with tool is removable
- Press on the end of the adapter nose and the tool is removable -all in a few seconds
- Smooth stroke-even under full torque load, the tens compression stroke is full and free
- Interchangeability -our adapter and holders are interchangeable with Universal -Bilz quick change holders and adapters
- See pages 154 and 155 for Tap Adapter information



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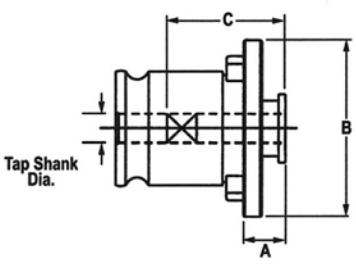
## BILZ STYLE • TAP ADAPTERS




| ADAPTER SIZE | TAP RANGE | PART NUMBER | TAP SIZE | SHANK SIZE | A PROJ. | B DIA. | C DEPTH |
|---|---|---|---|---|---|---|---|
| #1 | 0" to 9/16" HAND TAP | * 81-#0-6 | 0-6 | 0.141 | 0.28 | 1.18 | 0.85 |
| | | * 81-#8 | 8 | 0.168 | 0.28 | 1.18 | 0.92 |
| | | * 81-#10 | 10 | 0.194 | 0.28 | 1.18 | 0.92 |
| | | * 81-#12 | 12 | 0.220 | 0.28 | 1.18 | 0.95 |
| | | * 81-025 | 14 & 1/4 | 0.255 | 0.28 | 1.18 | 0.95 |
| | | * 81-031 | 5/16 | 0.318 | 0.28 | 1.18 | 0.98 |
| | | * 81-037 | 3/8 LS | 0.381 | 0.28 | 1.18 | 1.05 |
| | | * 81-043 | 7/16 | 0.323 | 0.28 | 1.18 | 1.06 |
| | | * 81-050 | 1/2 | 0.367 | 0.28 | 1.18 | 1.11 |
| | | * 81-056 | 9/16 | 0.429 | 0.28 | 1.18 | 1.17 |
| | 1/8" SS & LS PIPE TAP | * 81-012PSS | 1/8 PSS | 0.313 | 0.28 | 1.18 | 1.05 |
| | | * 81-012PLS | 1/8 PLS | 0.437 | 0.28 | 1.18 | 1.05 |
| #2 | 0" TO 7/8" HAND TAP | * 82-#0-6 | 0-6 | 0.141 | 0.32 | 1.88 | 0.85 |
| | | * 82-#8 | 8 | 0.168 | 0.32 | 1.88 | 0.92 |
| | | * 82-#10 | 10 | 0.194 | 0.32 | 1.88 | 0.92 |
| | | * 82-#12 | 12 | 0.220 | 0.32 | 1.88 | 0.95 |
| | | * 82-025 | 14 & 1/4 | 0.255 | 0.32 | 1.88 | 0.95 |
| | | * 82-031 | 5/16 | 0.318 | 0.43 | 1.88 | 1.49 |
| | | * 82-037 | 3/8 LS | 0.381 | 0.43 | 1.88 | 1.56 |
| | | * 82-043 | 7/16 | 0.323 | 0.43 | 1.88 | 1.59 |
| | | * 82-050 | 1/2 | 0.367 | 0.43 | 1.88 | 1.62 |
| | | * 82-056 | 9/16 | 0.429 | 0.43 | 1.88 | 1.68 |
| | | * 82-062 | 5/8 | 0.480 | 0.43 | 1.88 | 1.74 |
| | | * 82-068 | 11/16 | 0.542 | 0.43 | 1.88 | 1.81 |
| | | * 82-075 | 3/4 | 0.590 | 0.43 | 1.88 | 1.87 |
| | | * 82-081 | 13/16 | 0.652 | 0.43 | 1.88 | 1.87 |
| | | * 82-087 | 7/8 | 0.697 | 0.43 | 1.88 | 1.93 |
| | 1/8" SS & LS 1/4" to 1/2" PIPE TAP | * 82-012PSS | 1/8 PSS | 0.313 | 0.35 | 1.88 | 1.49 |
| | | * 82-012PLS | 1/8 PLS | 0.437 | 0.35 | 1.88 | 1.05 |
| | | * 82-025P | 1/4P | 0.562 | 0.35 | 1.88 | 1.18 |
| | | * 82-037P | 3/8P | 0.700 | 0.35 | 1.88 | 1.24 |
| | | * 82-050P | 1/2P | 0.687 | 0.35 | 1.88 | 1.37 |
| #3 | 13/16" to 1-3/8" HAND TAP | * 83-081 | 13/16 | 0.652 | 0.55 | 2.75 | 2.42 |
| | | * 83-087 | 7/8 | 0.697 | 0.55 | 2.75 | 2.48 |
| | | * 83-093 | 15/16 | 0.760 | 0.55 | 2.75 | 2.48 |
| | | * 83-1000 | 1 | 0.800 | 0.55 | 2.75 | 2.54 |
| | | * 83-1012 | 1-1/8 | 0.896 | 0.55 | 2.75 | 2.61 |
| | | * 83-1025 | 1-1/4 | 1.021 | 0.55 | 2.75 | 2.73 |
| | | * 83-1037 | 1-3/8 | 1.108 | 0.55 | 2.75 | 2.79 |
| | 3/4" to 1" PIPE TAP | * 83-075P | 3/4P | 0.906 | 0.43 | 2.75 | 1.55 |
| | | * 83-1000P | 1P | 1.125 | 0.43 | 2.75 | 1.68 |

** Outgoing Items*

• Tap Adapters shown on this page are designed for use with Tap Holders shown on pages 152 and 153.

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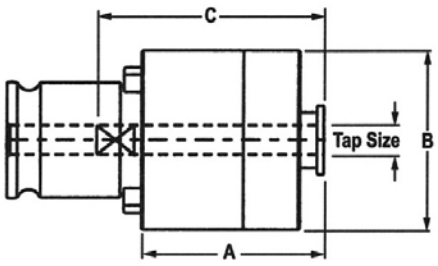
## BILZ STYLE • TORQUE CONTROL • TAP ADAPTERS




| ADAPTER SIZE | TAP RANGE | PART NUMBER | TAP SIZE | A PROJ. | B DIA. | C DEPTH | TORQUE FT. LBS. |
|---|---|---|---|---|---|---|---|
| #1 | 0" to 9/16" HAND TAP | * 91-#0-6 | 0-6 | 0.98 | 1.26 | 0.85 | 1.1 |
| | | * 91-#8 | 8 | 0.98 | 1.26 | 0.92 | 1.7 |
| | | * 91-#10 | 10 | 0.98 | 1.26 | 0.92 | 2.2 |
| | | * 91-#12 | 12 | 0.98 | 1.26 | 0.95 | 2.5 |
| | | * 91-025 | 1/4 | 0.98 | 1.26 | 0.95 | 4.3 |
| | | * 91-031 | 5/16 | 0.98 | 1.26 | 0.98 | 7.2 |
| | | * 91-037 | 3/8 | 0.98 | 1.26 | 1.05 | 10.8 |
| | | * 91-043 | 7/16 | 0.98 | 1.26 | 1.08 | 17.0 |
| | | * 91-050 | 1/2 | 0.98 | 1.26 | 1.11 | 25.0 |
| | | * 91-056 | 9/16 | 0.98 | 1.26 | 1.06 | 29.0 |
| | 1/8" PIPE TAP | * 91-012PSS | 1/8 SS | 0.98 | 1.26 | 1.05 | 29.0 |
| | | * 91-012PLS | 1/8 LS | 0.98 | 1.26 | 1.05 | 7.0 |
| #2 | 5/16" to 7/8" HAND TAP | * 92-031 | 5/16 | 1.34 | 1.97 | 1.49 | 7.2 |
| | | * 92-037 | 3/8 | 1.34 | 1.97 | 1.56 | 10.8 |
| | | * 92-043 | 7/16 | 1.34 | 1.97 | 1.59 | 17.0 |
| | | * 92-050 | 1/2 | 1.34 | 1.97 | 1.62 | 25.0 |
| | | * 92-056 | 916 | 1.34 | 1.97 | 1.68 | 29.0 |
| | | * 92-062 | 5/8 | 1.34 | 1.97 | 1.74 | 36.0 |
| | | * 92-068 | 11/16 | 1.34 | 1.97 | 1.81 | 40.0 |
| | | * 92-068 | 11/16 | 1.34 | 1.97 | 1.81 | 40.0 |
| | | * 92-075 | 3/4 | 1.34 | 1.97 | 1.87 | 53.0 |
| | | * 92-081 | 13/16 | 1.34 | 1.97 | 1.87 | 57.0 |
| | | * 92-087 | 7/8 | 1.34 | 1.97 | 1.93 | 69.0 |
| | 1/4" to 1/2" PIPE TAP | * 92-025P | 1/4P | 1.34 | 1.97 | 1.18 | 11.0 |
| | | * 92-037P | 3/8P | 1.34 | 1.97 | 1.24 | 14.0 |
| | | * 92-050P | 1/2P | 1.34 | 1.97 | 1.37 | 32.0 |
| #3 | 13/16" to 1-3/8" HAND TAP | * 93-081 | 13/16 | 1.77 | 2.83 | 2.42 | 57.0 |
| | | * 93-087 | 7/8 | 1.77 | 2.83 | 2.48 | 69.0 |
| | | * 93-093 | 15/16 | 1.77 | 2.83 | 2.48 | 76.0 |
| | | * 93-1000 | 1 | 1.77 | 2.83 | 2.54 | 94.0 |
| | | * 93-1012 | 1-1/8 | 1.77 | 2.83 | 2.61 | 126.0 |
| | | * 93-1025 | 1-1/4 | 1.77 | 2.83 | 2.73 | 144.0 |
| | | * 93-1037 | 1-3/8 | 1.77 | 2.83 | 2.79 | 188.0 |
| | 1/2" to 1" PIPE TAP | * 93-050P | 1/2P | 1.77 | 2.83 | 1.55 | 32.0 |
| | | * 93-075P | 3/4P | 1.77 | 2.83 | 1.55 | 42.0 |
| | | * 93-1000P | 1P | 1.77 | 2.83 | 1.68 | 81.0 |

* Outgoing Items

TAPPING SYSTEMS

• Tap Adapters shown on this page are designed for use with Tap Holders shown on pages 152 and 153.

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## SOLID STEEL STOP SCREW

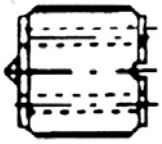
Note: When coolant-thru-the-tool is not necessary, these screws can also be used as a standard Backup or Adjusting Screw

| PART NUMBER | OLD PART NO. | THREAD SIZE |
|---|---|---|
| 101-001 | 855-001 | 3/4-16 L.H. |
| 101-002 | 855-002 | 13/16-16 L.H. |
| 101-003 | 855-003 | 1-1/8-16 L.H. |
| 101-004 | 855-004 | 1-1/4-12 L.H. |
| 101-005 | 855-005 | 7/16-20 L.H. |
| 101-006 | 855-006 | 5/8-18 L.H. |
| 101-007 | 855-007 | 1-5/8-12 L.H. |
| 101-008 | 855-008 | 1-3/8-12 L.H. |
| 101-009 | 855-009 | 7/8-14 L.H. |
| 101-010 | 855-010 | 15/16-16 L.H. |
| 101-011 | 855-012 | 3/8-24 L.H. |

| PART NUMBER | OLD PART NO. | THREAD SIZE |
|---|---|---|
| 101-012 | 855-013 | 9/16-18 L.H. |
| 101-013 | - | 1-3/8-16 L.H. |
| 101-014 | - | 1-5/8-16 L.H. |
| 101-015 | - | 1-1/4-16 L.H. |
| 101-016 | - | 7/16-16 L.H. |
| 101-017 | - | 5/8-16 L.H. |
| 101-018 | - | 9/16-16 L.H. |
| 101-019 | - | 7/8-16 L.H. |
| 101-020 | - | 11/16-16 L.H. |
| 101-021 | - | 1/2-16 L.H. |

## ER SOLID STEEL COOLANT STYLE STOP SCREW

Note: When coolant-thru-the-tool is not necessary, these screws can also be used as a standard Backup or Adjusting Screw



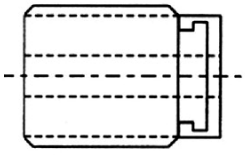
| PART NUMBER | OLD PART NO. | THREAD SIZE |
|---|---|---|
| 101-023 | - | M12 x 1.75 |
| 101-024 | - | M12 x 1.50 |
| * 101-025 | - | M12 x 1.75 |

| PART NUMBER | OLD PART NO. | THREAD SIZE |
|---|---|---|
| * 101-026 | - | M12 x 1.5 |
| * 101-027 | - | M12 x 2.0 |
| * 101-028 | - | M12 x 2.0 |

*** Non-Coolant Solid**

## NYLON CAP STOP SCREW

Note: These screws are steel with a nylon cap to seal against the end of a recessed drill.

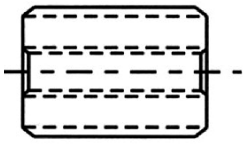


| PART NUMBER | OLD PART NO. | THREAD SIZE |
|---|---|---|
| 102-001 | 851-001 | 3/4-16 L.H. |
| 102-002 | 851-002 | 13/16-16 L.H. |
| 102-003 | 851-003 | 1-1/8-16 L.H. |
| 102-004 | 851-004 | 1-1/4-12 L.H. |
| 102-005 | 851-005 | 7/16-20 L.H. |
| 102-006 | 851-006 | 5/8-18 L.H. |

| PART NUMBER | OLD PART NO. | THREAD SIZE |
|---|---|---|
| 102-007 | 851-007 | 1-5/8-12 L.H. |
| 102-008 | 851-008 | 1-3/8-12 L.H. |
| 102-009 | 851-009 | 7/8-14 L.H. |
| 102-010 | 851-010 | 15/16-16 L.H. |
| 102-011 | 851-012 | 3/8-24 L.H. |
| 102-012 | 851-013 | 9/16-18 L.H. |

## SOLID NYLON STOP SCREW

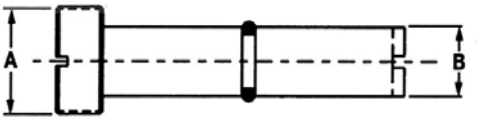
Note: These screws are solid teflon designed for leak-proof sealing of threads whenever minimum in and out adjustment is necessary.



| PART NUMBER | OLD PART NO. | THREAD SIZE |
|---|---|---|
| 103-001 | 851-101 | 3/4-16 L.H. |
| 103-002 | 851-102 | 13/16-16 L.H |
| 103-003 | 851-103 | 1-1/8-16 L.H. |
| 103-004 | 851-104 | 1-1/4-12 L.H. |
| 103-005 | 851-105 | 7/16-20 L.H. |
| 103-006 | 851-106 | 5/8-18 L.H. |

| PART NUMBER | OLD PART NO. | THREAD SIZE |
|---|---|---|
| 103-007 | 851-107 | 1-5/8-12 L.H. |
| 103-008 | 851-108 | 1-3/8-12 L.H. |
| 103-009 | 851-109 | 7/8-14 L.H. |
| 103-010 | 851-110 | 5/16-24 L.H. |
| 103-011 | 851-111 | 15/1-16 L.H. |
| 103-012 | 851-112 | 3/8-24 L.H. |

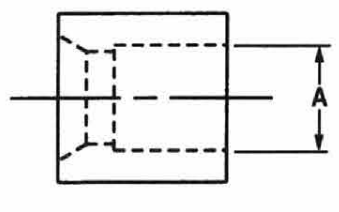
## END MILL HOLDER COOLANT STOP SCREW




| PART NO. | OLD PART NO. | (A) THREAD SIZE | B |
|---|---|---|---|
| 105-001 | 854-001 | 1-1/8-12 L.H. | 0.745 |
| 105-002 | 854-002 | 1-1/8-16 L.H. | 0.745 |
| 105-003 | 854-003 | 3/4-10 R.H. | 0.365 |
| 105-004 | 854-004 | 1-8 R.H. | 0.490 |

| PART NO. | OLD PART NO. | (A) THREAD SIZE | B |
|---|---|---|---|
| 105-005 | 854-005 | 5/8-11 R.H. | 0.365 |
| 105-006 | 854-006 | M24X3 L.H. | 0.490 |
| 105-007 | 854-008 | M16X2 L.H. | 0.365 |
| 105-010 | - | 1-8 R.H. | 0.490 |

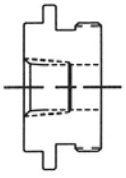
## COOLANT SEAL ADAPTER




Note: These solid nylon adapters should be used for straight tools 15/64" or smaller for maximum leakage control.

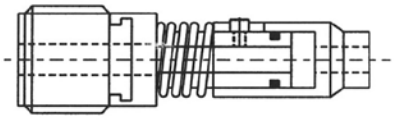
| PART NUMBER | OLD PART NO. | A I.D. |
|---|---|---|
| 107-001 | 853-001 | 0.125 |
| 107-002 | 853-002 | 0.140 |
| 107-003 | 853-003 | 0.156 |
| 107-004 | 853-004 | 0.171 |
| 107-005 | 853-005 | 0.187 |
| 107-006 | 853-006 | 0.203 |
| 107-007 | 853-007 | 0.218 |
| 107-008 | 853-008 | 0.234 |

## REAR OIL FEED ADAPTERS



| PART NUMBER | OLD PART NO. | SIZE |
|---|---|---|
| 108-001 | 852-001 | 3/4-16 L.H. |
| 108-002 | 852-002 | 13/16-16 L.H. |
| 108-003 | 852-003 | 1-1/8-16 L.H. |
| 108-004 | 852-004 | 1-1/4-12 L.H. |
| 108-005 | 852-005 | 1-5/8-12 L.H. |

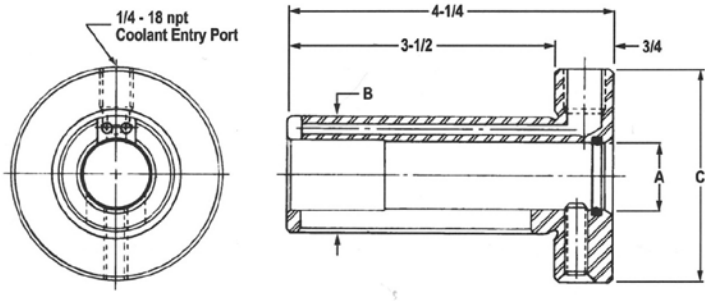
## EXTENDED STOP SCREW FOR USE WITH END MILLS



Note: This stop screw must be used in conjunction with a non-pullout end mill collet to assure proper seal.

| PART NUMBER | OLD PART NO. | THREAD | END MILL RANGE |
|---|---|---|---|
| 109-001 | 600-001 | 1-1/8-16 L.H. | 1/2-5/8 |
| 109-002 | 600-002 | 1-1/8-16 L.H. | 3/4-1 |
| 109-003 | 600-003 | 1-5/8-16 L.H. | 1/2-5/8 |
| 109-004 | 600-004 | 1-5/8-16 L.H. | 3/4-1 |
| 109-005 | 600-005 | 1-5/8-16 L.H. | 1-1/4 -1-1/2 |
| 109-006 | 600-006 | 1-1/4-12 L.H. | 1-1/4 -1-1/2 |
| 109-007 | 600-007 | 1-3/8-12 L.H. | 1-1/4 -1-1/2 |

## COOLANT-FED LATHE BUSHING

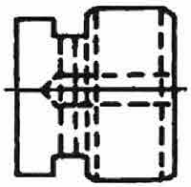



Note: These coolant-fed lathe bushings adapt easily to any lathe, allowing the use of a variety of coolant-fed tooling in machines that currently lack rear entry coolant capabilities. The coolant enters thru a coolant entry port, travels parallel to the bushing and flows to the end of the cutting tool. (Most commonly used with spade drills and indexable drills.)

| PART NUMBER | A | B | C |
|---|---|---|---|
| 948-005 | 0.750 | 1.4995 | 2-3/4 |
| 948-010 | 0.875 | 1.4995 | 2-3/4 |
| 948-015 | 1.000 | 2.4995 | 3-3/8 |
| 948-020 | 1.000 | 1.9995 | 3-1/8 |
| 948-025 | 1.250 | 1.9995 | 3-1/8 |
| 948-030 | 1.250 | 2.4995 | 3-3/8 |
| 948-035 | 1.500 | 1.9995 | 3-3/8 |
| 948-040 | 1.500 | 2.4995 | 3-3/8 |
| 948-045 | 1.750 | 2.4995 | 3-7/8 |
| 948-050 | 2.000 | 2.4995 | 3-7/8 |

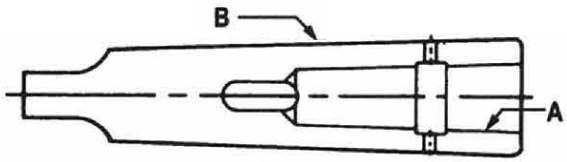
| PART NUMBER | A | B | C |
|---|---|---|---|
| M948-005 | 0.7874 (20mm) | 1.2593 | 2-3/4 |
| M948-010 | 0.7874 (20mm) | 1.4995 | 2-3/4 |
| M948-015 | 0.9842 (25mm) | 1.9995 | 3-1/8 |
| M948-020 | 0.9842 (25mm) | 2.4995 | 3-3/8 |
| M948-025 | 1.2598 (32mm) | 1.9680 | 3-1/8 |
| M948-030 | 1.2598 (32mm) | 1.9995 | 3-1/8 |
| M948-035 | 1.2598 (32mm) | 2.4995 | 3-3/8 |
| M948-040 | 1.5748 (40mm) | 1.9680 | 3-3/8 |
| M948-045 | 1.5748 (40mm) | 1.9995 | 3-3/8 |
| M948-050 | 1.5748 (40mm) | 2.4995 | 3-3/8 |
| M948-055 | 1.9685 (50mm) | 2.4995 | 3-7/8 |
| M948-060 | 0.7874 (20mm) | 1.2500 | 2-3/4 |

## NYLON SEAL FOR JACOBS TAPER, DOUBLE ANGLE COLLET CHUCKS



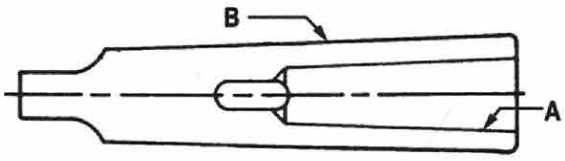
| PART NUMBER | OLD PART NUMBER | DESCRIPTION |
|---|---|---|
| 110-001 | 831-012 | Fits JT2-DA10-CGS-2 |
| 110-002 | 831-013 | Fits JT33-DA18-CGS-2 |

## MORSE TAPER REDUCING SLEEVE WITH COOLANT CROSS HOLES



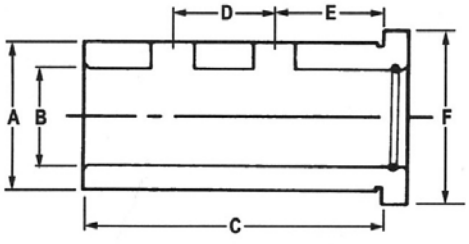

| PART NUMBER | (A) INSIDE TAPER | (B) OUTSIDE TAPER |
|---|---|---|
| 842-001 | 1 | 2 |
| 842-002 | 1 | 3 |
| 842-003 | 2 | 3 |
| 842-004 | 2 | 4 |
| 842-005 | 3 | 4 |
| 842-006 | 2 | 5 |
| 842-007 | 3 | 5 |
| 842-008 | 4 | 5 |

## MORSE TAPER REDUCING SLEEVE WITHOUT COOLANT CROSS HOLES




| PART NUMBER | (A) INSIDE TAPER | (B) OUTSIDE TAPER |
|---|---|---|
| 843-001 | 3 | 4 |
| 843-002 | 3 | 5 |
| 843-003 | 4 | 5 |

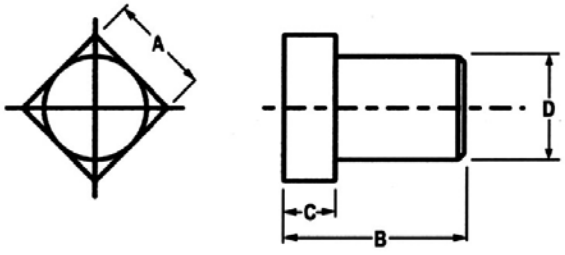
## END MILL REDUCING COOLANT BUSHING




| PART NUMBER | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| *949-010 | 2 | 1-3/4 | 3-3/8 | 1-3/8 | 1-3/8 | 2-1/4 |
| *949-012 | 2 | 1-1/2 | 3-3/8 | 1-3/8 | 1-3/8 | 2-1/4 |
| *949-014 | 2 | 1-1/4 | 3-3/8 | 1-3/8 | 1-3/8 | 2-1/4 |
| *949-016 | 2 | 1.000 | 3-3/8 | 1-3/8 | 1-3/8 | 2-1/4 |
| *949-018 | 1-1/2 | 1-1/2 | 3 | 1-1/8 | 1 | 1-3/4 |
| *949-020 | 1-1/2 | 1.000 | 3 | 1-1/8 | 1 | 1-3/4 |
| *949-0787 | 1-1/4 | 0.787 | 3 | 1 | 1-1/8 | 1-5/8 |
| *949-0984 | 1-1/4 | 0.984 | 3 | 1 | 1-1/8 | 1-1/2 |
| *949-1259 | 1-1/2 | 1.259 | 3 | 1 | 1-1/8 | 2 |
| *949-1579 | 2 | 1.579 | 3-3/8 | 1-3/8 | 1-3/8 | 2-3/8 |
| *949-0748 | 1-1/4 | 0.748 | 3 | 1 | 1-1/8 | 1-1/2 |

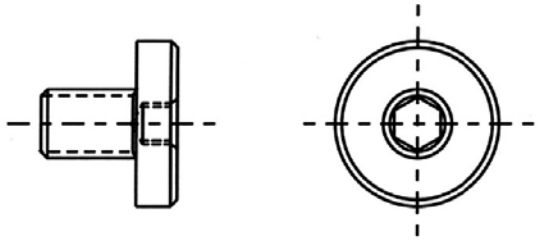
** Outgoing Items*

## DRIVE KEYS FOR SHELL MILL HOLDERS




| PART NUMBER | SIZE | A | B | C | D |
|---|---|---|---|---|---|
| 201-001 | 0.500 | 0.250 | 0.50 | 0.12 | 0.2510 |
| 201-002 | 0.750 | 0.312 | 0.53 | 0.15 | 0.3135 |
| 201-003 | 1.000 | 0.375 | 0.68 | 0.18 | 0.3760 |
| 201-004 | 1.250 | 0.500 | 0.88 | 0.25 | 0.5010 |
| 201-005 | 1.500 | 0.625 | 1.06 | 0.31 | 0.6260 |
| 201-006 | 2.000 | 0.750 | 1.12 | 0.38 | 0.7510 |
| 201-007 | 2.500 | 1.000 | 1.38 | 0.50 | 1.0015 |

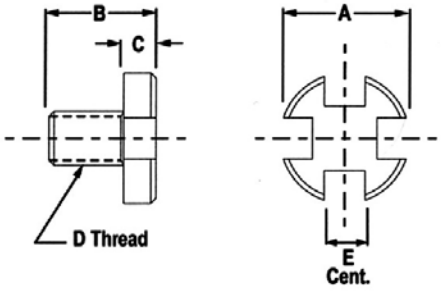
## ARBOR SCREW FOR SHELL MILL HOLDERS



| PART NUMBER | OLD PART NUMBER | PILOT DIA. | SIZE THREAD | OAL |
|---|---|---|---|---|
| 200-001 | 959-001 | 0.50 | 1/4-28 | 0.75 |
| 200-002 | 959-002 | 0.75 | 3/8-24 | 0.94 |
| 200-003 | 959-003 | 1.00 | 1/2-20 | 1.12 |
| * 200-004 | 959-103 | 1.00 | 1/2-20 | 1.87 |
| 200-005 | 959-004 | 1.25 | 5/8-18 | 1.25 |
| * 200-006 | 959-104 | 1.25 | 5/8-18 | 2.00 |
| 200-007 | 959-005 | 1.50 | 3/4-16 | 1.50 |
| * 200-008 | 959-105 | 1.50 | 3/4-16 | 2.00 |
| 200-009 | 959-006 | 2.00 | 1”-14 | 1.68 |
| * 200-010 | 959-106 | 2.00 | 1”-14 | 2.18 |
| 200-011 | 959-007 | 2.50 | 1”-14 Head | 3.12 |
| * 200-012 | 959-107 | 2.50 | 1”-14 Head | 2.18 |

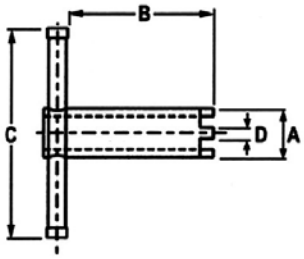
*Note: Longer length screws needed when Coolant Style Shell Mills are used with Non-Coolant Shell Mill Adapters.

## SLOTTED CAP SCREWS FOR SHELL MILL ARBORS



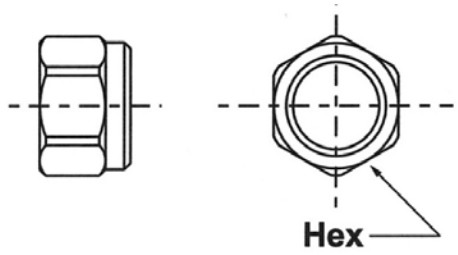

| PART NUMBER | OLD PART NO. | A | B | C | D | E |
|---|---|---|---|---|---|---|
| 113-001 | 959-042 | 0.62 | 0.75 | 0.25 | 1/4-28 | 0.38 |
| 113-002 | 959-043 | 0.88 | 0.94 | 0.31 | 3/8-24 | 0.56 |
| 113-003 | 959-044 | 1.18 | 1.12 | 0.31 | 1/2-20 | 0.88 |
| 113-004 | 959-045 | 1.50 | 1.25 | 0.31 | 5/8-18 | 0.94 |
| 113-005 | 959-046 | 1.88 | 1.50 | 0.38 | 3/4-16 | 1.18 |
| 113-006 | 959-047 | 2.50 | 1.68 | 0.38 | 1-14 | 1.68 |
| 113-007 | 959-048 | 3.12 | 1.68 | 0.38 | 1-14 | 1.68 |

## WRENCHES FOR SLOTTED CAP SCREWS



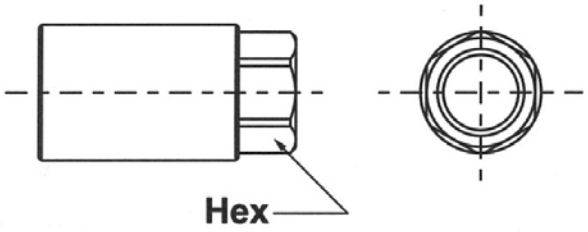

| PART NUMBER | OLD PART NO. | A | B | C | D |
|---|---|---|---|---|---|
| 114-001 | 959-049 | 0.62 | 2.25 | 4 | 0.18 |
| 114-002 | 959-050 | 0.88 | 2.03 | 5 | 0.25 |
| 114-003 | 959-051 | 1.18 | 2.18 | 6 | 0.31 |
| 114-004 | 959-052 | 1.50 | 2.38 | 7 | 0.38 |
| 114-005 | 959-053 | 1.88 | 2.50 | 7 | 0.50 |
| 114-006 | 959-054 | 2.50 | 2.50 | 7 | 0.62 |

## COMPRESSION NOSEPIECE FOR DOUBLE ANGLE COLLET CHUCKS



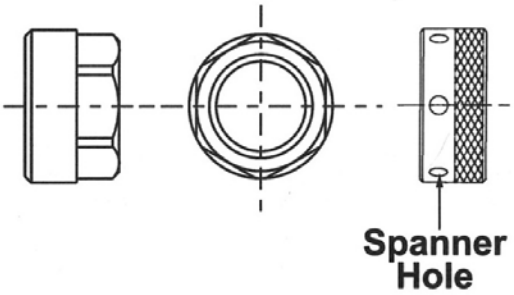

| PART NUMBER | OLD PART NUMBER | SIZE |
|---|---|---|
| 111-DA10 | 509-100 | 1-1/4 Hex |
| 111-DA18 | 589-189 | 1-1/2 Hex |

## COMPRESSION NOSEPIECE FOR STRAIGHT SHANK COLLET EXTENSIONS



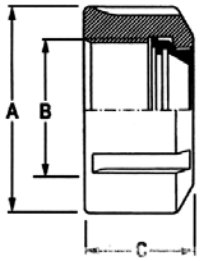

| PART NUMBER | OLD PART NUMBER | SIZE |
|---|---|---|
| 111-SDA30 | 961-539 | 1/2 Hex |
| 111-SDA20 | 961-529 | 11/16 Hex |
| 111-SDA10 | 961-509 | 7/8 Hex |
| 111-SDA18 | 961-589 | 1-3/16 Hex |

## COMPRESSION NOSEPIECE FOR SINGLE ANGLE COLLET CHUCKS




| PART NUMBER | OLD PART NUMBER | SIZE |
|---|---|---|
| 111-TG10H | 500-101 | 2-1/4 Hex |
| 111-TG10S | 500-100 | 2-1/2 Spanner |
| 111-TG15S | 550-150 | 3-1/2 Spanner |

## ER CLAMPING NUT




| PART NUMBER | TYPE | A | B | C |
|---|---|---|---|---|
| 115-015 | ER 16 | 1.109 | M22 X 1.5 | 0.672 |
| 115-016 | ER 20 | 1.344 | M25 X 1.5 | 0.750 |
| 115-017 | ER 32 | 1.968 | M40 X 1.5 | 0.875 |

## SPANNER WRENCHES

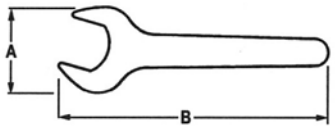

Pin Style


Adjustable Hook

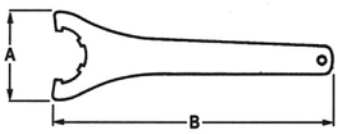

Hook

| PART NUMBER | OLD PART NUMBER | SIZE | STYLE |
|---|---|---|---|
| 112-001 | 959-458 | 2-1/2 | Pin |
| 112-002 | 959-461 | 3-1/4 | Pin |
| 112-003 | 959-472 | 1-1/4 to 3 | Adj. Hook |
| 112-004 | 959-462 | 4-1/2 | Pin |
| 112-010 | 959-471 | 3/4 to 2 | Adj. Hook |
| 112-011 | 959-474 | 2 to 4-1/2 | Adi. Hook |

## ER-WRENCH



ER-16 / ER-20



ER-32

| PART NUMBER | TYPE | A | B |
|---|---|---|---|
| 112-102 | ER 16 | 1.656 | 5.500 |
| 112-103 | ER 20 | 2.375 | 5.312 |
| 112-106 | ER 32 | 2.937 | 9.875 |

## COMMON MACHINING EQUATIONS

| | |
|---|---|
| **SFM =** | **RPM X Dia. / 3.82** |
| **RPM =** | **3.82 x SFM / Dia.** |
| **IPM =** | **IPT x No. Teeth x RPM** |
| **IPT =** | **IPM / (No. Teeth x RPM)** |
| **IPR =** | **IPM / RPM** |

**SFM:** SURFACE FEET PER MINUTE
**RPM:** REVOLUTIONS PER MINUTE
**IPM:** INCHES PER MINUTE
**IPT:** INCHES PER TOOTH
**IPM:** INCHES PER REVOLUTION

## NOTES:

## RETENTION KNOB SOCKETS

**CAUTION:** Retention knobs are manufactured to the specifications of the machine tool builder and any deviation from this could cause serious problems. Retention knobs are not normally interchangeable and failure to use the correct configuration can cause the toolholder to slip from the spindle which can result in serious damage. Retention knob fractures may occur from several factors, some of which are: improper knob configuration, mis-aligned machines, metal fatigue due to use, dropped tools, over torquing etc. Unless parts are ordered to a specific drawing or catalog number, we suggest you furnish a drawing of the part, make model number and serial number of the equipment requiring the knob.

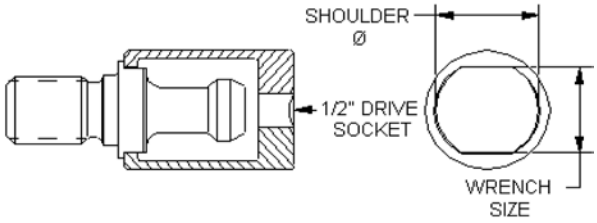
EXPANDED

| RETENTION KNOB SOCKETS | | |
|---|---|---|
| PART NUMBER | MAXIMUM FLAT (IN.) | MAXIMUM TORQUE FT-LB |
| •WRKS30 | 0.535 | 40 |
| •WRKS30M | 0.511 | 40 |
| •WRKS30D | 0.556 | 40 |
| WRKS40 | 0.755 | 85 |
| WRKS40M | 0.711 | 85 |
| WRKS45 | 1.004 | 100 |
| WRKS45M | 0.950 | 100 |
| WRKS50 | 1.255 | 110 |
| WRKS50M | 1.185 | 110 |

• Note: WRKS30, WRKS30M and WRKS30D are 3/8" Drive Sockets

### Read carefully when selecting a Socket.

**LIFE TIME GUARANTEE**
**MADE IN THE USA**
**SAVES TIME**
**SOCKETS HAVE 1/2" DRIVE**
**IDEAL TIGHTNESS IS ACHIEVED**



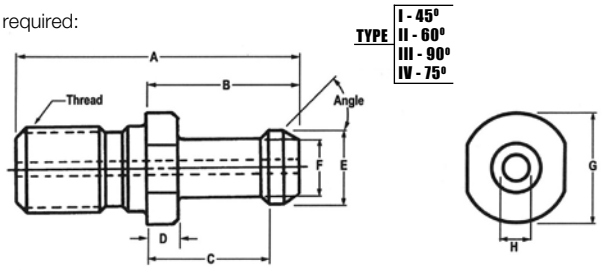

Sockets aid in the installation and removal of Retention Knobs. Ideal tightness is achieved, without rounding off the corners of the Retention Knob.
**Note: Some Retention Knobs have mixed standards. Check the shoulder and Wrench Sizes carefully when selecting a Socket to fit other Retention Knobs not listed above.**

## RETENTION KNOBS, SPECIAL ORDERS

When ordering retention knobs not shown in the above listings, the following information is required:

1. Machine tool manufacturer
2. Model number and serial number
3. Sample retention knob (if available)
4. Drawing complete with critical dimensions as shown in the sample sketch.

**Note: This sketch of a Japanese style knob can be used for reference when requesting quotations of identifying knobs, all dimension shown are critical for proper fit.**

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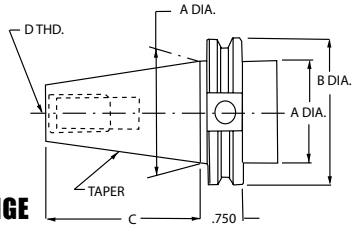
## LIABILITY

Any warranty implied by law, including warranties of merchantability or fitness for a particular purpose, are hereby disclaimed and excluded. No representative or person is authorized to give any other warranty or to assume for CFT George Whalley Co. CFT George Whalley Co. will not be liable for any incidental or consequential damages. The products illustrated in this catalog are protected by United States and foreign patents, patents pending, and applied for. We have attempted to publish this catalog error free, however, we recommend inspection of tool dimensions prior to use. In addition, dimensions shown reflect current manufacturing standards and CFT George Whalley Co. reserves the right to make changes, without notice, to incorporate design improvements.

**WARNING:**
**CUTTING TOOLS MAY SHATTER! ALWAYS WEAR EYE PROTECTION IN THE AREA OF THEIR USE.**

## CV FLANGE RETENTION KNOBS

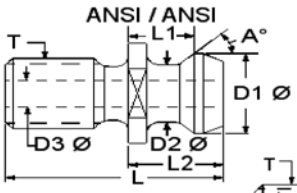
EXPANDED



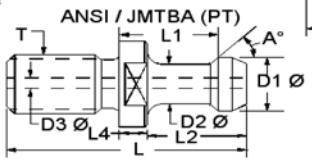

CV FLANGE

### CV FLANGE SHANK DIMENSIONS

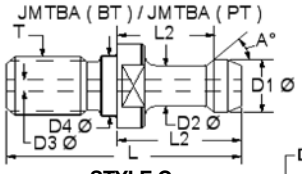
| TAPER | A | B | C | D |
|---|---|---|---|---|
| 30 | 1.250 | 1.812 | 1.875 | 1/2-13 |
| 40 | 1.750 | 2.500 | 2.687 | 5/8-11 |
| 45 | 2.250 | 3.250 | 3.250 | 3/4-10 |
| 50 | 2.750 | 3.875 | 4.000 | 1-8 |
| 60 | 4.250 | 5.500 | 6.375 | 1 1/4-7 |



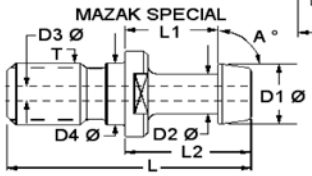

STYLE A



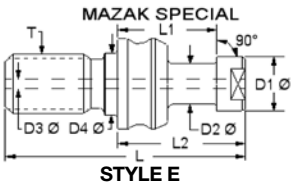

STYLE B




STYLE C




STYLE D



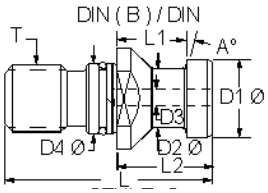

STYLE E

| GW NO. | DESCRIPTION | STYLE | T | A | D1 | D2 | D3 | D4 | L | L1 | L2 | SOCKET |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CV-30** | | | **TOOL SHANK CV-30** | | | | | | | | | |
| WRK11111 | 30E-A-P / A-45-.320C | H | 0.500-13 | 45 | 0.5200 | 0.3850 | 0.1870 | 0.5120 | 1.2720 | 0.3200 | 0.4600 | WRKS30 |
| **CV-40** | | | **TOOL SHANK CV-40** | | | | | | | | | |
| WRK11122 | 40E-A / A-45-.440(C.281) | H | 0.625-11 | 45 | 0.7400 | 0.4900 | 0.2810 | 0.6360 | 1.6250 | 0.4400 | 0.6400 | WRKS40 |
| WRK11123 | 40E-A / A-45-.440 | H | 0.625-11 | 45 | 0.7400 | 0.4900 | N/A | 0.6360 | 1.6250 | 0.4400 | 0.6400 | WRKS40 |
| WRK11314 | BOSTON DIGITAL | SPEC | 0.625-11 | 15 | 0.5000 | 0.3100 | N/A | N/A | 1.5000 | 0.5930 | 0.7500 | N/A |
| WRK12622 | 40E-A / PT-45-1.000 | A | 0.625-11 | 45 | 0.5880 | 0.3920 | N/A | N/A | 2.2650 | 1.0000 | 1.2650 | WRKS40M |
| WRK17122 | 40E-A / PT-45-1.139 | A | 0.625-11 | 45 | 0.5940 | 0.4060 | N/A | N/A | 2.2500 | 1.1390 | 1.4380 | WRKS40M |
| WRK17123 | 40E-A / PT-45-1.139(C.157) | A | 0.625-11 | 45 | 0.5940 | 0.4060 | 0.1570 | N/A | 2.2500 | 1.1390 | 1.4380 | WRKS40 |
| WRK31114 | 40E-BT (A) / PT-45-.988 | C | 0.625-11 | 45 | 0.5890 | 0.3920 | N/A | 0.6360 | 2.2500 | 0.9880 | 1.2640 | WRKS40 |
| WRK31114A | 40E-BT (A) / PT-60-.988 | C | 0.625-11 | 60 | 0.5890 | 0.3920 | N/A | 0.6360 | 2.2500 | 0.9880 | 1.2640 | WRKS40 |
| WRK31114B | 40E-BT (A) / PT-90-.988 | C | 0.625-11 | 90 | 0.5890 | 0.3920 | N/A | 0.6360 | 2.2500 | 0.9880 | 1.2640 | WRKS40 |
| WRK31114B-P | 40E-A / PT-90-.988 | B | 0.625-11 | 90 | 0.5890 | 0.3920 | N/A | N/A | 2.1250 | 0.9880 | 1.2640 | WRKS40 |
| WRK31222 | 40E-BT / SP-90-.777 | D | 0.625-11 | 90 | 0.5890 | 0.3880 | N/A | 0.6250 | 2.0370 | 0.7770 | 1.0530 | WRKS40 |
| WRK31226 | 40E (A) / A-45-.440(C.281) | H | 0.625-11 | 45 | 0.7400 | 0.4900 | 0.2810 | 0.6405 | 1.6240 | 0.4400 | 0.6400 | WRKS40 |
| WRK31226-H | 40E (A) / A-45-.440 | H | 0.625-11 | 45 | 0.7400 | 0.4900 | N/A | 0.6405 | 1.6240 | 0.4400 | 0.6400 | WRKS40 |
| WRK31514 | 40E-BT (A) / PT-45-.988(C.200) | C | 0.625-11 | 45 | 0.5890 | 0.3920 | 0.2000 | 0.6360 | 2.2500 | 0.9880 | 1.2640 | WRKS40 |
| WRK31614 | 40E-A (A) / PT-45-.7066(C.079) | A | 0.625-11 | 45 | 0.4310 | 0.2740 | 0.0790 | N/A | 1.8890 | 0.7066 | 0.9035 | WRKS40 |
| WRK31616 | 40E-A / I(A)-15-.792 | I | 0.625-11 | 15 | 0.7460 | 0.5490 | N/A | 0.6406 | 2.0080 | 0.7920 | 1.0280 | WRKS40 |
| WRK31617 | 40E-A (A)-O / I(A)-15-.792(C.236) | I | 0.625-11 | 15 | 0.7460 | 0.5490 | 0.2360 | 0.6406 | 2.0080 | 0.7920 | 1.0280 | WRKS40 |
| WRK31814A | 40E-BT / PT-60-.988(C.138) | C | 0.625-11 | 60 | 0.5890 | 0.3920 | 0.1380 | 0.6360 | 2.2500 | 0.9880 | 1.2640 | WRKS40 |
| WRK32114 | 40E-A /.124 / PT-45-.988 | C | 0.625-11 | 45 | 0.5880 | 0.3920 | 0.6360 | 0.6360 | 2.1250 | 0.9880 | 1.2640 | WRKS40 |
| WRK32114A | 40E-A /.124 / PT-60-.988 | C | 0.625-11 | 60 | 0.5880 | 0.3920 | 0.6360 | 0.6360 | 2.1250 | 0.9880 | 1.2640 | WRKS40 |
| WRK32114B | 40E-A /.124 / PT-90-.988 | C | 0.625-11 | 90 | 0.5880 | 0.3920 | 0.6360 | 0.6360 | 2.1250 | 0.9880 | 1.2640 | WRKS40 |
| WRK32114-C | 40E-A /.124 / PT-45-.988(C.187) | C | 0.625-11 | 45 | 0.5880 | 0.3920 | 0.1870 | 0.6360 | 2.1240 | 0.9880 | 1.2640 | WRKS40 |
| WRK32130 | 40E-A-OP /.124 / PT-45-.988(C.187)-OID | C | 0.625-11 | 45 | 0.5880 | 0.3920 | 0.1870 | 0.6406 | 2.1240 | 0.9880 | 1.2640 | WRKS40 |
| WRK32414B | 40E-BT / PT-90-.707 | C | 0.625-11 | 90 | 0.5890 | 0.3920 | N/A | 0.6360 | 1.9700 | 0.7070 | 0.9840 | WRKS40 |
| * WRK32716 | 40E-A-OP / A-45-.440(C.160) | J | 0.625-11 | 45 | 0.7400 | 0.4900 | 0.1600 | 0.6406 | 1.6240 | 0.4400 | 0.6400 | WRKS40 |
| ** WRK32750 | 40E-A-OP / A-45-.440(C.160) | J | 0.625-11 | 45 | 0.7400 | 0.4900 | 0.1600 | 0.6406 | 1.6240 | 0.4400 | 0.6400 | WRKS40 |
| WRK32751 | 40E-BT / PT-60-.481 | H | 0.625-11 | 60 | 0.5880 | 0.3920 | N/A | 0.6406 | 1.7320 | 0.4810 | 0.7570 | WRKS40 |
| WRK32914 | 40E-BT (BT) / I(A)-15-.9035(C.281) | I | 0.625-11 | 15 | 0.7460 | 0.5490 | 0.2810 | 0.6406 | 2.1260 | 0.9035 | 1.1397 | WRKS40 |
| WRK35030 | 40E-BT(A) / PT-90-.988(C224) | C | 0.625-11 | 90 | 0.5890 | 0.3920 | 0.2240 | 0.6406 | 2.2500 | 0.9880 | 1.2640 | WRKS40 |
| WRK51025 | 40E-I ( A ) / I(B)-45-.433(C281) | H | 0.625-11 | 45 | 0.7400 | 0.5040 | 0.2810 | 0.6406 | 1.7579 | 0.4389 | 0.6456 | WRKS40 |
| WRK71123 | 40E-A / D(A)-15-.7874(C.236) | F | 0.625-11 | 15 | 0.7470 | 0.5490 | 0.2360 | 0.6406 | 2.0040 | 0.7874 | 1.0240 | WRKS40 |
| WRK71125 | 40E-A / D(A)-15-.7874 | F | 0.625-11 | 15 | 0.7470 | 0.5490 | N/A | 0.6406 | 2.0040 | 0.7874 | 1.0240 | WRKS40 |
| WRK75022 | 40E-A / D(A)-15-.7874(C.236)-O | F | 0.625-11 | 15 | 0.7470 | 0.5490 | 0.2360 | 0.6406 | 1.8800 | 0.7874 | 1.0240 | WRKS40 |

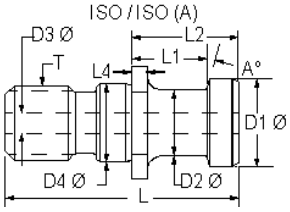
* 8mm Counterbore on inside of thread stud.
** 6mm Counterbore on inside of thread stud.

## CV FLANGE RETENTION KNOBS

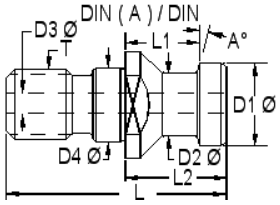
EXPANDED



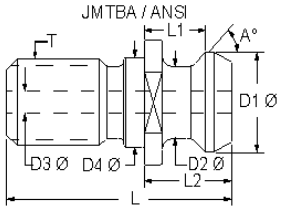
STYLE G



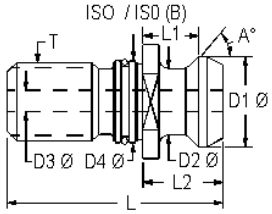
STYLE I



STYLE F



STYLE H



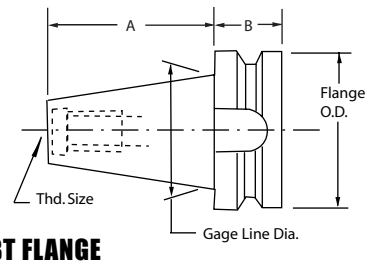
STYLE J

| GW NO. | SMART DESCRIPTION | STYLE | T | A | D1 | D2 | D3 | D4 | L | L1 | L2 | SOCKET |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CV-45** | | | **TOOL SHANK CT-45** | | | | | | | | | |
| WRK11133 | 45E-A / A-45-.580(C.375) | H | 0.750-10 | 45 | 0.9400 | 0.6050 | 0.3750 | 0.7610 | 1.9720 | 0.5800 | 0.8200 | WRKS45 |
| WRK11135 | 45E-A / A-45-.580 | H | 0.750-10 | 45 | 0.9400 | 0.6050 | N/A | 0.7610 | 1.9720 | 0.5800 | 0.8200 | WRKS45 |
| [1]WRK17136 | 45E-A / S-90-1.000 | E | 0.750-10 | 90 | 0.8120 | 0.5620 | N/A | N/A | 2.1200 | 1.0000 | 1.2000 | N/A |
| WRK31116 | 45E-BT / BT-45-1.228 | C | 0.750-10 | 45 | 0.7460 | 0.5490 | N/A | 0.7610 | 2.7700 | 1.2280 | 1.5830 | WRKS45 |
| WRK31116A | 45E-BT / BT-60-1.228 | C | 0.750-10 | 60 | 0.7460 | 0.5490 | N/A | 0.7610 | 2.7700 | 1.2280 | 1.5830 | WRKS45 |
| WRK31116B | 45E-BT / BT-90-1.228 | C | 0.750-10 | 90 | 0.7460 | 0.5490 | N/A | 0.7610 | 2.7700 | 1.2280 | 1.5830 | WRKS45 |
| WRK71134 | 45E-A / D(A)-15-.906(C.375) | F | 0.750-10 | 15 | 0.9040 | 0.6670 | 0.3750 | 0.7610 | 2.1700 | 0.9055 | 1.1810 | WRKS45M |
| WRK71136 | 45E-A / D(A)-15-.906 | F | 0.750-10 | 15 | 0.9040 | 0.6670 | N/A | 0.7610 | 2.1700 | 0.9055 | 1.1810 | WRKS45M |
| **CV-50** | | | **TOOL SHANK CV-50** | | | | | | | | | |
| WRK11143 | 50E-A / A-45-.700(C.500) | H | 1.000-8 | 45 | 1.1400 | 0.8200 | 0.5000 | 1.0260 | 2.5750 | 0.7000 | 1.0000 | WRKS50 |
| WRK11144 | 50E-A / A-45-.700(C.468) | H | 1.000-8 | 45 | 1.1400 | 0.8200 | 0.4680 | 1.0260 | 2.5750 | 0.7000 | 1.0000 | WRKS50 |
| WRK11146 | 50E-A / A-45-.700 | H | 1.000-8 | 45 | 1.1400 | 0.8200 | N/A | 1.0260 | 2.5750 | 0.7000 | 1.0000 | WRKS50 |
| WRK13744 | 50E-A / SP-40-1.025 | LUCAS | 1.000-8 | 40 | 0.8480 | 0.4980 | N/A | N/A | 2.9600 | 1.0250 | 1.5500 | N/A |
| WRK17144 | 50E-A / A-45-.700(C.468) | A | 1.000-8 | 45 | 1.1400 | 0.8200 | 0.4680 | N/A | 2.3000 | 0.7000 | 1.0000 | WRKS50M |
| WRK31118 | 50E-BT / PT-45-1.384 | C | 1.000-8 | 45 | 0.9030 | 0.6680 | N/A | 1.0260 | 3.3500 | 1.3840 | 1.7780 | WRKS50 |
| WRK31118A | 50E-BT / PT-60-1.384 | C | 1.000-8 | 60 | 0.9030 | 0.6680 | N/A | 1.0260 | 3.3500 | 1.3840 | 1.7780 | WRKS50 |
| WRK31118B | 50E-BT / PT-90-1.384 | C | 1.000-8 | 90 | 0.9030 | 0.6680 | N/A | 1.0260 | 3.3500 | 1.3840 | 1.7780 | WRKS50 |
| WRK31118B-P | 50E-A / PT-90-1.384 | B | 1.000-8 | 90 | 0.9030 | 0.6680 | N/A | N/A | 3.0800 | 1.3840 | 1.7780 | WRKS50 |
| WRK31118D | 50E-A / PT-45-1.384(C.312) | C | 1.000-8 | 45 | 0.9030 | 0.6680 | 0.3120 | 1.0260 | 3.0800 | 1.3840 | 1.7780 | WRKS50 |
| WRK31138A | 50E-BT / PT-60-1.376 | C | 1.000-8 | 60 | 0.9030 | 0.6680 | N/A | 1.0260 | 3.3530 | 1.3760 | 1.7700 | WRKS50 |
| WRK31244A | 50E-BT / M2-90-1.384 | E | 1.000-8 | 90 | 0.9080 | 0.6680 | N/A | 1.0260 | 3.3500 | 1.3840 | 1.7790 | WRKSS40 |
| WRK31246 | 50E-BT / A-45-.700(C.390)-OF | H | 1.000-8 | 45 | 1.1400 | 0.8200 | 0.3900 | 1.0260 | 2.3000 | 0.7000 | 1.0000 | WRKS50M |
| WRK31251A | 50E-A / A-45-.700(C.390)-OID | H | 1.000-8 | 45 | 1.1400 | 0.8200 | 0.3900 | 1.0303 | 2.3030 | 0.7000 | 1.0000 | WRKS50M |
| WRK31645 | 50E-BT / PT-45-1.384(C.390) | C | 1.000-8 | 45 | 0.9030 | 0.6680 | 0.3900 | 1.0260 | 3.3550 | 1.3840 | 1.7780 | WRKS50 |
| WRK31647 | 50E-BT-OP / PT-45-1.384(C.236) | C | 1.000-8 | 45 | 0.9030 | 0.6680 | 0.2360 | 1.0260 | 3.3550 | 1.3840 | 1.7780 | WRKS50 |
| WRK31647H | 50E-BT-OP / PT-45-1.384(C.236)-OID | C | 1.000-8 | 45 | 0.9030 | 0.6680 | 0.2360 | 1.0260 | 3.3550 | 1.3840 | 1.7780 | WRKS50 |
| WRK31844A | 50E-BT / PT-60-1.384(C.335) | C | 1.000-8 | 60 | 0.9030 | 0.6680 | 0.3350 | 1.0260 | 3.3550 | 1.3840 | 1.7780 | WRKS50 |
| WRK32129 | 50E-BT-OP / PT-90-1.384(C.118)-O | C | 1.000-8 | 90 | 0.9030 | 0.6680 | 0.2360 | 1.0260 | 3.3530 | 1.3840 | 1.7780 | WRKS50 |
| WRK32418B | 50E-A / PT-90-.903 | B | 1.000-8 | 90 | 0.9420 | 0.7060 | N/A | N/A | 2.5190 | 0.9030 | 1.2180 | WRKS50M |
| WRK32419B | 50E-A / PT-90-.903(C.250) | B | 1.000-8 | 90 | 0.9420 | 0.7060 | 0.2500 | N/A | 2.5190 | 0.9030 | 1.2180 | WRKS50M |
| WRK32420B | 50E-A / PT-90-.903(C.315) | B | 1.000-8 | 90 | 0.9420 | 0.7060 | 0.3150 | N/A | 2.5190 | 0.9030 | 1.2180 | WRKS50M |
| WRK32749 | 50E-A-OP / PT-60-1.384(C.236) | C | 1.000-8 | 60 | 0.9030 | 0.6680 | 0.2360 | 1.0232 | 3.3530 | 1.3840 | 1.7780 | WRKS50 |
| WRK34218B | 50E-BT / PT-90-1.384(C.250) | C | 1.000-8 | 90 | 0.9030 | 0.6680 | 0.2500 | 1.0260 | 3.3500 | 1.3840 | 1.7780 | WRKS50 |
| WRK51041(86) | 50E-A / I(A)-15-.9901 | I | 1.000-8 | 15 | 1.1000 | 0.8250 | N/A | 1.0301 | 2.9110 | 0.9822 | 1.3365 | WRKS50 |
| WRK51047 | 50E-A / I(B)-45-.7069(C.468) | I | 1.000-8 | 45 | 1.1400 | 0.7660 | 0.4680 | N/A | 2.5839 | 0.7069 | 1.0049 | WRKS50 |
| WRK51644 | 50E-A / SP-.141R-1.260 | SPECIAL | 1.000-8 | .141R. | 0.7850 | 0.6310 | N/A | N/A | 2.8610 | 1.2659 | 1.5609 | N/A |
| WRK51648 | 50E-A / SP-.141R-2.260 | SPECIAL | 1.000-8 | .141R. | 0.7850 | 0.6310 | N/A | N/A | 3.8610 | 2.2659 | 2.5609 | N/A |
| WRK71145 | 50E-A / D(A)-15-.984(C.468) | F | 1.000-8 | 15 | 1.1010 | 0.8250 | 0.4680 | 1.0301 | 2.9140 | 0.9840 | 1.3380 | WRKS50M |
| WRK71147 | 50E-A / D(A)-15-.984 | F | 1.000-8 | 15 | 1.1010 | 0.8250 | N/A | 1.0301 | 2.9140 | 0.9840 | 1.3380 | WRKS50M |
| **CV-60** | **SMART DESCRIPTION** | | **TOOL SHANK CV-60** | | | | | | | | | |
| WRK11155 | 60E-A / A -45-1.080(C.500) | A | 1.250-7 | 45 | 1.4600 | 1.0450 | 0.5000 | N/A | 3.2000 | 1.0800 | 1.5000 | N/A |

• [1] Manufactured without Pilot.

## BT FLANGE RETENTION KNOBS

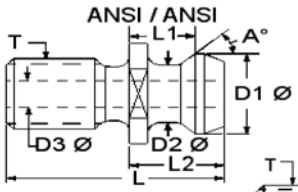
EXPANDED



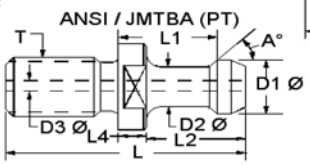

BT FLANGE

### BT FLANGE SHANK DIMENSIONS

| TAPER | GAGE LINE | A LG. | B LG. | FLANGE O.D. | THD. SIZE |
|---|---|---|---|---|---|
| 30 | 1.250 | 1.985 | 0.787 | 1.811 | M12 X 1.75 |
| 35 | 1.500 | 2.299 | 0.866 | 2.087 | M12 X 1.75 |
| 40 | 1.750 | 2.654 | 0.984 | 2.480 | M16 x 2.00 |
| 45 | 2.250 | 3.378 | 1.181 | 3.346 | M20 x 2.50 |
| 50 | 2.750 | 4.126 | 1.378 | 3.937 | M24 x 3.00 |




STYLE A

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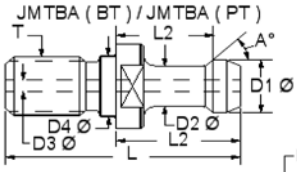
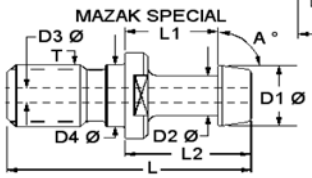
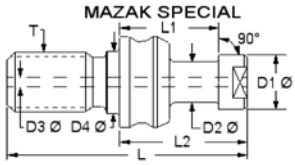



STYLE C




STYLE D

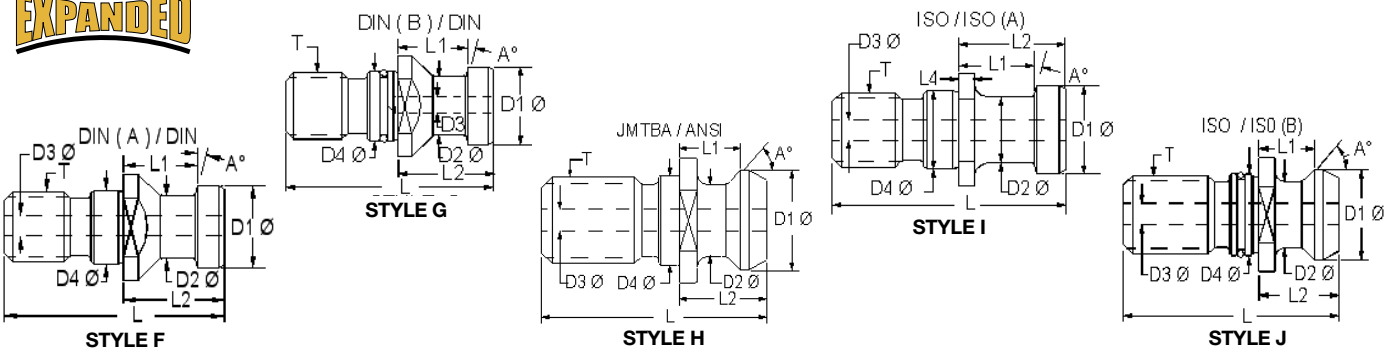



STYLE E

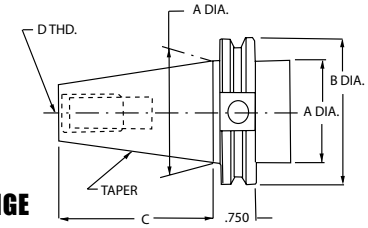
| GW NO. | DESCRIPTION | STYLE | T | A | D1 | D2 | D3 | D4 | L | L1 | L2 | SOCKET |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BT-30** | | | **TOOL SHANK BT-30** | | | | | | | | | |
| WRK31109 | 30M-BT / PT-45-.707 | C | M12X1.75 | 45 | 0.4310 | 0.2740 | N/A | 0.4918 | 1.6900 | 0.7070 | 0.9040 | WRKS30M |
| WRK31109A | 30M-BT / PT-60-.707 | C | M12X1.75 | 60 | 0.4310 | 0.2740 | N/A | 0.4918 | 1.6900 | 0.7070 | 0.9040 | WRKS30M |
| WRK31109B | 30M-BT / PT-90-.707 | C | M12X1.75 | 90 | 0.4310 | 0.2740 | N/A | 0.4918 | 1.6900 | 0.7070 | 0.9040 | WRKS30M |
| WRK31109C | 30M-BT / PT-45-.707(C.110) | C | M12X1.75 | 45 | 0.4310 | 0.2740 | 0.1100 | 0.4918 | 1.6900 | 0.7070 | 0.9040 | WRKS30M |
| WRK32621 | 30M-JIS / P-15-.7224(C.156) | C | M12X1.75 | 15 | 0.4720 | 0.3130 | 0.1560 | 0.4918 | 1.6930 | 0.7224 | 0.9194 | WRKS30M |
| **BT-35** | | | **TOOL SHANK BT-35** | | | | | | | | | |
| WRK31111 | 35M-BT / PT-45-.884 | C | M12X1.75 | 45 | 0.5100 | 0.3320 | N/A | 0.5114 | 1.8870 | 0.8840 | 1.1000 | N/A |
| WRK31111A | 35M-BT / PT-60-.884 | C | M12X1.75 | 60 | 0.5100 | 0.3330 | N/A | 0.5114 | 1.8870 | 0.8840 | 1.1000 | N/A |
| WRK32328 | 35M-BT / PT-45-.634 | C | M12X1.75 | 45 | 0.4080 | 0.3130 | N/A | 0.5111 | 1.4170 | 0.6340 | 0.7870 | WRKS30D |
| WRK32611 | 35M-BT / PT-45-.884 | C | M12X1.75 | 45 | 0.5380 | 0.3480 | N/A | 0.5105 | 2.0900 | 0.8840 | 1.1000 | N/A |
| WRK32613 | 35M-BT / PT-90-.7067 | C | M12X1.75 | 90 | 0.5490 | 0.3130 | N/A | 0.4918 | 1.7700 | 0.7067 | 0.9040 | N/A |
| WRK32614 | 35M-BT / PT-60-.884 | C | M12X1.75 | 60 | 0.5380 | 0.3480 | N/A | 0.4918 | 2.0870 | 0.8840 | 1.1000 | N/A |
| **BT-40** | | | **TOOL SHANK BT-40** | | | | | | | | | |
| WRK11126 | 40M-BT / A-45-.552 | H | M16X2.00 | 45 | 0.7400 | 0.4900 | N/A | 0.6689 | 1.6120 | 0.5520 | 0.7520 | WRKS40 |
| WRK11126A | 40M-BT / A-45-.552(C.281) | H | M16X2.00 | 45 | 0.7400 | 0.4900 | 0.281 | 0.6689 | 1.7360 | 0.5520 | 0.7520 | WRKS40 |
| WRK17126 | 40M-BT / PT-45-1.251 | C | M16X2.00 | 45 | 0.5920 | 0.4040 | N/A | 0.6689 | 2.5340 | 1.2510 | 1.5500 | WRKS40M |
| WRK17127 | 40M-BT / PT-45-1.251(C.141) | C | M16X2.00 | 45 | 0.5920 | 0.4040 | 0.141 | 0.6689 | 2.5340 | 1.2510 | 1.5500 | WRKS40M |
| WRK31113 | 40M-BT / PT-45-1.100 | C | M16X2.00 | 45 | 0.5890 | 0.3920 | N/A | 0.6690 | 2.3600 | 1.1000 | 1.3760 | WRKS40 |
| WRK31113A | 40M-BT / PT-60-1.100 | C | M16X2.00 | 60 | 0.5890 | 0.3920 | N/A | 0.6690 | 2.3600 | 1.1000 | 1.3760 | WRKSS40 |
| WRK31113B | 40M-BT / PT-90-1.100 | C | M16X2.00 | 90 | 0.5890 | 0.3920 | N/A | 0.6690 | 2.3600 | 1.1000 | 1.3760 | WRKS40 |
| WRK31113D | 40M-BT / PT-45-1.100(C.197) | C | M16X2.00 | 45 | 0.5890 | 0.3920 | 0.197 | 0.6690 | 2.3600 | 1.1000 | 1.3760 | WRKS40 |
| WRK31113E | 40M-BT / PT-60-1.100(C.197) | C | M16X2.00 | 60 | 0.5890 | 0.3920 | 0.197 | 0.6690 | 2.3600 | 1.1000 | 1.3760 | WRKS40 |
| WRK31113F | 40M-BT / PT-90-1.100(C.197) | C | M16X2.00 | 90 | 0.5890 | 0.3920 | 0.197 | 0.6690 | 2.3600 | 1.1000 | 1.3760 | WRKS40 |
| WRK32912 | 40M-BT / I(A)-15-.9035 | I | M16X2.00 | 15 | 0.7460 | 0.5490 | N/A | 0.6690 | 2.1260 | 0.9035 | 1.1397 | WRKS40 |
| WRK32913 | 40M-BT / I(A)-15-.9035(C.281) | I | M16X2.00 | 15 | 0.7460 | 0.5490 | 0.281 | 0.6690 | 2.1260 | 0.9035 | 1.1397 | WRKS40 |
| **BT-45** | | | **TOOL SHANK BT-45** | | | | | | | | | |
| WRK31115 | 45M-BT / PT-45-1.218 | C | M20X2.50 | 45 | 0.7460 | 0.5490 | N/A | 0.8264 | 2.7560 | 1.2180 | 1.5730 | WRKS45M |
| WRK31115A | 45M-BT / PT-60-1.218 | C | M20X2.50 | 60 | 0.7460 | 0.5490 | N/A | 0.8264 | 2.7560 | 1.2180 | 1.5730 | WRKS45M |
| WRK31115B | 45M-BT / PT-90-1.218 | C | M20X2.50 | 90 | 0.7460 | 0.5490 | N/A | 0.8264 | 2.7560 | 1.2180 | 1.5730 | WRKS45M |

## BT FLANGE RETENTION KNOBS

EXPANDED




| GW NO. | SMART DESCRIPTION | STYLE | T | A | D1 | D2 | D3 | D4 | L | L1 | L2 | SOCKET |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT-50 | | | TOOL SHANK BT-50 | | | | | | | | | |
| WRK11144A | 50M-A / A-45-.700(C.468) | H | M24X3.00 | 45 | 1.1400 | 0.8200 | 0.4680 | 0.9839 | 2.5800 | 0.7000 | 1.0000 | WRKS50 |
| WRK11148 | 50M-A-P / A-45-.700 | H | M24X3.00 | 45 | 1.1400 | 0.8200 | N/A | 0.9839 | 2.5800 | 0.7000 | 1.0000 | WRKS50 |
| WRK11148A | 50M-A-P / A-45-.700(C.468) | H | M24X3.00 | 45 | 1.1400 | 0.8200 | 0.4680 | 0.9839 | 2.5800 | 0.7000 | 1.0000 | WRKS50 |
| WRK31117 | 50M-BT / PT-45-1.376 | C | M24X3.00 | 45 | 0.9030 | 0.6680 | N/A | 0.9839 | 3.3500 | 1.3760 | 1.7700 | WRKS50M |
| WRK31117A | 50M-BT / PT-60-1.376 | C | M24X3.00 | 60 | 0.9030 | 0.6680 | N/A | 0.9839 | 3.3500 | 1.3760 | 1.7700 | WRKS50M |
| WRK31117B | 50M-BT / PT-90-1.376 | C | M24X3.00 | 90 | 0.9030 | 0.6680 | N/A | 0.9839 | 3.3500 | 1.3760 | 1.7700 | WRKS50M |
| WRK31246A | 50M-A / A-45-.700(C.390)-OF | H | M24X3.00 | 45 | 1.1400 | 0.8200 | 0.3900 | 0.9839 | 2.5800 | 0.7000 | 1.0000 | WRKS50M |
| WRK31643 | 50M-BT / PT-45-1.376(C.236) | C | M24X3.00 | 45 | 0.9030 | 0.6680 | 0.2360 | 0.9839 | 3.3500 | 1.3760 | 1.7700 | WRKS50M |
| WRK31652 | 50M-I-O / PT-45-1.384(C.236) | C | M24X3.00 | 45 | 0.9030 | 0.6680 | 0.2360 | 0.9839 | 3.3580 | 1.3840 | 1.7780 | WRKS50M |
| WRK31843 | 50M-BT / PT-60-1.376(C.312) | C | M24X3.00 | 60 | 0.9030 | 0.6680 | 0.3120 | 0.9839 | 3.3500 | 1.3760 | 1.7700 | WRKS50M |
| WRK34217B | 50M-BT / PT-90-1.376(C.250) | C | M24X3.00 | 90 | 0.9030 | 0.6680 | 0.2500 | 0.9839 | 3.3500 | 1.3760 | 1.7700 | WRKS50M |




DIN / ISO FLANGE

### DIN / ISO FLANGE SHANK DIMENSIONS

| TAPER | A | B | C | D |
|---|---|---|---|---|
| 30 | 1.250 | 1.967 | 1.876 | M12 X 1.75 |
| 40 | 1.750 | 2.500 | 2.687 | M16 X 2.00 |
| 45 | 2.250 | 3.248 | 3.250 | M20 X 2.50 |
| 50 | 2.750 | 3.837 | 4.000 | M24 X 3.00 |

| GW NO. | DESCRIPTION | STYLE | T | A | D1 | D2 | D3 | D4 | L | L1 | L2 | SOCKET |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | TOOL SHANK 40 | | | | | | | | | |
| WRK11122A | 40M-BT ( I ) / A-45-.440(C.281) | H | M16X2.00 | 45 | 0.7400 | 0.4900 | 0.2810 | 0.6689 | 1.6240 | 0.4400 | 0.6400 | WRKS40 |
| WRK11125 | 40M-A ( I ) / A-45-.440 | H | M16X2.00 | 45 | 0.7400 | 0.4900 | N/A | 0.6689 | 1.6240 | 0.4400 | 0.6400 | WRKS40 |
| WRK35000V | 40M-BT( I ) / PT-45-.988 | C | M16X2.00 | 45 | 0.5890 | 0.3920 | N/A | 0.6689 | 2.3660 | 0.9880 | 1.2640 | WRKS40 |
| WRK35026 | 40M-BT( I ) / PT-60-.988 | C | M16X2.00 | 60 | 0.5890 | 0.3920 | N/A | 0.6689 | 2.3660 | 0.9880 | 1.2640 | WRKS40 |
| WRK35038 | 40M-BT( I ) / PT-90-.988 | C | M16X2.00 | 90 | 0.5890 | 0.3920 | N/A | 0.6689 | 2.3660 | 0.9880 | 1.2640 | WRKS40 |
| WRK51022 | 40M-I ( I ) / I(A)-15-.787(C.236) | I | M16X2.00 | 15 | 0.7460 | 0.5490 | 0.2360 | 0.6690 | 2.1250 | 0.7874 | 1.0245 | WRKS40 |
| WRK51024 | 40M-I / I(B)-45-.433 | H | M16X2.00 | 15 | 0.7460 | 0.5490 | N/A | 0.6690 | 2.1250 | 0.7874 | 1.0245 | WRKS40 |
| WRK51026 | 40M-I ( I ) / I(A)-15-.787 | I | M16X2.00 | 15 | 0.7460 | 0.5490 | N/A | 0.6690 | 2.1250 | 0.7874 | 1.0245 | WRKS40 |
| WRK71122 | 40M-D / D(A)-15-.787(C.236) | F | M16X2.00 | 15 | 0.7468 | 0.5492 | 0.2360 | 0.6682 | 2.1360 | 0.7870 | 1.0236 | WRKS40 |
| WRK71124 | 40M-D / D(A)-15-.787 | F | M16X2.00 | 15 | 0.7468 | 0.5492 | N/A | 0.6680 | 2.1360 | 0.7870 | 1.0236 | WRKS40 |
| | | | TOOL SHANK 45 | | | | | | | | | |
| WRK51033 | 45M-I / I(A)-15-.906(C.375) | I | M20X2.50 | 15 | 0.9036 | 0.6673 | 0.3750 | 0.8265 | 2.5590 | 0.9055 | 1.1811 | WRKS45 |
| WRK51037 | 45M-I / I(A)-15-.906 | I | M20X2.50 | 15 | 0.9036 | 0.6673 | N/A | 0.8265 | 2.5590 | 0.9055 | 1.1811 | WRKS45 |
| | | | TOOL SHANK 50 | | | | | | | | | |
| WRK35048B | 50M-I / PT-90-1.384 | C | M24X3.00 | 90 | 0.9030 | 0.6680 | N/A | 0.9830 | 3.3530 | 1.3840 | 1.7780 | WRK50S |
| WRK71144 | 50M-D / D(A)-15-.984(C.468) | F | M24X3.00 | 15 | 1.1010 | 0.8250 | 0.4680 | 0.9830 | 2.9200 | 0.9840 | 1.3380 | WRKS50M |
| WRK71146 | 50M-D / D(A)-15-.984 | F | M24X3.00 | 15 | 1.1010 | 0.8250 | N/A | 0.9830 | 2.9200 | 0.9840 | 1.3380 | WRKS50M |

P: 800.600.2248
F: 216.481.9966

P: 800.600.2248
F: 216.481.9966

| PART NUMBER | PG. |
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## TERMS & CONDITIONS OF SALE

All Prices are subject to change without notice

### 1. ORDERING INFORMATION

Standard Tools
When ordering standard tools, please provide the part number listed in this catalog. Also, be sure to include any additional specifications required for optional coatings.

Special Tools
When ordering special tools, please supply a print of the desired tool or holder or give a detailed, accurate description along with necessary dimensions and specifications.

Minimum Order: $25

### 2. DELIVERY

All prices are F.O.B Fairport Harbor, OH, in U.S. dollars. All special shipping (Air Freight, etc.) will be sent freight collect.

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Since title and right of possession passes to the customer upon delivery to the carrier, any claims for damaged shipments must be made to the carrier.

### 4. TERMS

1%, 10 Days, Net 30

### 5. RETURN POLICY

A. Orders for special tooling cannot be canceled or returned.
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**WARNING:**
**CUTTING TOOLS MAY SHATTER! ALWAYS USE EYE PROTECTION & SAFE GUARDS IN THE AREA OF THEIR USE.**

# METRIC CONVERSION CHART
# FRACTIONS, DECIMALS AND MILLIMETERS

| DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES |
|---|---|---|---|---|---|---|---|---|---|
| 97 | .0059 | 58 | .0420 | 27 | .1440 | H | .2660 | 17/32 | .5312 |
| .15mm | .0059 | 57 | .0430 | 3.7mm | .1457 | 6.8mm | .2677 | 13.5mm | .5315 |
| 96 | .0063 | 1.1mm | .0433 | 26 | .1470 | 6.9mm | .2717 | 35/64 | .5469 |
| .16mm | .0063 | 1.15mm | .0453 | 3.75mm | .1476 | I | .2720 | 14.0mm | .5512 |
| 95 | .0067 | 56 | .0465 | 25 | .1495 | 7.0mm | .2756 | 9/16 | .5625 |
| .17mm | .0067 | 3/64 | .0469 | 3.8mm | .1496 | J | .2770 | 14.5mm | .5709 |
| 94 | .0071 | 1.2mm | .0472 | 24 | .1520 | 7.1mm | .2795 | 37/64 | .5781 |
| .18mm | .0071 | 1.25mm | .0492 | 3.9mm | .1535 | K | .2810 | 15.0mm | .5906 |
| 93 | .0075 | 1.3mm | .0512 | 23 | .1540 | 9/32 | .2812 | 19/32 | .5938 |
| .19mm | .0075 | 55 | .0520 | 5/32 | .1562 | 7.2mm | .2835 | 39/64 | .6094 |
| 92 | .0079 | 1.35mm | .0531 | 22 | .1570 | 7.25mm | .2854 | 15.5mm | .6102 |
| .20mm | .0079 | 54 | .0550 | 4.0mm | .1575 | 7.3mm | .2874 | 5/8 | .6250 |
| 91 | .0083 | 1.4mm | .0551 | 21 | .1590 | L | .2900 | 16.0mm | .6299 |
| .21mm | .0083 | 1.45mm | .0571 | 20 | .1610 | 7.4mm | .2913 | 41/64 | .6406 |
| 90 | .0087 | 1.5mm | .0591 | 4.1mm | .1614 | M | .2950 | 16.5mm | .6496 |
| .22mm | .0087 | 53 | .0595 | 4.2mm | .1654 | 7.5mm | .2953 | 21/32 | .6562 |
| 89 | .0091 | 1.55mm | .0610 | 19 | .1660 | 19/64 | .2969 | 17.0mm | .6693 |
| .23mm | .0091 | 1/16 | .0625 | 4.25mm | .1673 | 7.6mm | .2992 | 43/64 | .6719 |
| .24mm | .0094 | 1.6mm | .0630 | 4.3mm | .1693 | N | .3020 | 11/16 | .6875 |
| 88 | .0095 | 52 | .0635 | 18 | .1695 | 7.7mm | .3031 | 17.5mm | .6890 |
| .25mm | .0098 | 1.65mm | .0650 | 11/64 | .1719 | 7.75mm | .3051 | 45/64 | .7031 |
| 87 | .0100 | 1.7mm | .0669 | 17 | .1730 | 7.8mm | .3071 | 18.0mm | .7087 |
| .26mm | .0102 | 51 | .0670 | 4.4mm | .1732 | 7.9mm | .3110 | 23/32 | .7188 |
| 86 | .0105 | 1.75mm | .0689 | 16 | .1770 | 5/16 | .3125 | 18.5mm | .7283 |
| .27mm | .0106 | 50 | .0700 | 4.5mm | .1772 | 8.0mm | .3150 | 47/64 | .7344 |
| 85 | .0110 | 1.8mm | .0709 | 15 | .1800 | O | .3160 | 19.0mm | .7480 |
| .28mm | .0110 | 1.85mm | .0728 | 4.6mm | .1811 | 8.1mm | .3189 | 3/4 | .7500 |
| .29mm | .0114 | 49 | .0730 | 14 | .1820 | 8.2mm | .3228 | 49/64 | .7656 |
| 84 | .0115 | 1.9mm | .0748 | 13 | .1850 | P | .3230 | 19.5mm | .7677 |
| .30mm | .0118 | 48 | .0760 | 4.7mm | .1850 | 8.25mm | .3248 | 25/32 | .7812 |
| 83 | .0120 | 1.95mm | .0768 | 4.75mm | .1870 | 8.3mm | .3268 | 20.0mm | .7874 |
| 82 | .0125 | 5/64 | .0781 | 3/16 | .1875 | 21/64 | .3281 | 51/64 | .7969 |
| .32mm | .0126 | 47 | .0785 | 4.8mm | .1890 | 8.4mm | .3307 | 20.5mm | .8071 |
| 81 | .0130 | 2.0mm | .0787 | 12 | .1890 | Q | .3320 | 13/16 | .8125 |
| .34mm | .0134 | 2.05mm | .0807 | 11 | .1910 | 8.5mm | .3346 | 21.0mm | .8268 |
| 80 | .0135 | 46 | .0810 | 4.9mm | .1929 | 8.6mm | .3386 | 53/64 | .8281 |
| .35mm | .0138 | 45 | .0820 | 10 | .1935 | R | .3390 | 27/32 | .8438 |
| .36mm | .0142 | 2.1mm | .0827 | 9 | .1960 | 8.7mm | .3425 | 21.5mm | .8465 |
| 79 | .0145 | 2.15mm | .0846 | 5.0mm | .1969 | 11/32 | .3438 | 55/64 | .8594 |
| .38mm | .0150 | 44 | .0860 | 8 | .1990 | 8.75mm | .3445 | 22.0mm | .8661 |
| 1/64 | .0156 | 2.2mm | .0866 | 5.1mm | .2008 | 8.8mm | .3465 | 7/8 | .8750 |
| .40mm | .0157 | 2.25mm | .0886 | 7 | .2010 | S | .3480 | 22.25mm | .8760 |
| 78 | .0160 | 43 | .0890 | 13/64 | .2031 | 8.9mm | .3504 | 22.5mm | .8858 |
| .42mm | .0165 | 2.3mm | .0906 | 6 | .2040 | 9.0mm | .3543 | 57/64 | .8906 |
| .44mm | .0173 | 2.35mm | .0925 | 5.2mm | .2047 | T | .3580 | 23.0mm | .9055 |
| .45mm | .0177 | 42 | .0935 | 5 | .2055 | 9.1mm | .3583 | 29/32 | .9062 |
| 77 | .0180 | 3/32 | .0938 | 5.25mm | .2067 | 23/64 | .3594 | 59/64 | .9219 |
| .46mm | .0181 | 2.4mm | .0945 | 5.3mm | .2087 | 9.2mm | .3622 | 23.5mm | .9252 |
| .48mm | .0189 | 41 | .0960 | 4 | .2090 | 9.25mm | .3642 | 15/16 | .9375 |
| .50mm | .0197 | 2.45mm | .0965 | 5.4mm | .2126 | 9.3mm | .3661 | 24.0mm | .9449 |
| 76 | .0200 | 40 | .0980 | 3 | .2130 | U | .3680 | 61/64 | .9531 |
| 75 | .0210 | 2.5mm | .0984 | 5.5mm | .2165 | 9.4mm | .3701 | 24.5mm | .9646 |
| .55mm | .0217 | 39 | .0995 | 7/32 | .2188 | 9.5mm | .3740 | 31/32 | .9688 |
| 74 | .0225 | 38 | .1015 | 5.6mm | .2205 | 3/8 | .3750 | 25.0mm | .9843 |
| .60mm | .0236 | 2.6mm | .1024 | 2 | .2210 | V | .3770 | 63/64 | .9844 |
| 73 | .0240 | 37 | .1040 | 5.7mm | .2244 | 9.6mm | .3780 | 1 | 1.0000 |
| 72 | .0250 | 2.7mm | .1063 | 5.75mm | .2264 | 9.7mm | .3819 | 25.5mm | 1.0039 |
| .65mm | .0256 | 36 | .1065 | 1 | .2280 | 9.75mm | .3839 | 1-1/64 | 1.0156 |
| 71 | .0260 | 2.75mm | .1083 | 5.8mm | .2283 | 9.8mm | .3858 | 26.0mm | 1.0236 |
| .70mm | .0276 | 7/64 | .1094 | 5.9mm | .2323 | W | .3860 | 1-1/32 | 1.0312 |
| 70 | .0280 | 35 | .1100 | A | .2340 | 9.9mm | .3898 | 26.5mm | 1.0433 |
| 69 | .0292 | 2.8mm | .1102 | 15/64 | .2344 | 25/64 | .3906 | 1-3/64 | 1.0469 |
| .75mm | .0295 | 34 | .1110 | 6.0mm | .2362 | 10.0mm | .3937 | 1-1/16 | 1.0625 |
| 68 | .0310 | 33 | .1130 | B | .2380 | X | .3970 | 27.0mm | 1.0630 |
| 1/32 | .0312 | 2.9mm | .1142 | 6.1mm | .2402 | Y | .4040 | 1-5/64 | 1.0781 |
| .80mm | .0315 | 32 | .1160 | C | .2420 | 13/32 | .4062 | 27.5mm | 1.0827 |
| 67 | .0320 | 3.0mm | .1181 | 6.2mm | .2441 | Z | .4130 | 1-3/32 | 1.0938 |
| 66 | .0330 | 31 | .1200 | D | .2460 | 10.5mm | .4134 | 28.0mm | 1.1024 |
| .85mm | .0335 | 3.1mm | .1220 | 6.25mm | .2461 | 27/64 | .4219 | 1-7/64 | 1.1094 |
| 65 | .0350 | 1/8 | .1250 | 6.3mm | .2480 | 11.0mm | .4331 | 28.5mm | 1.1220 |
| .90mm | .0354 | 3.2mm | .1260 | E | .2500 | 7/16 | .4375 | 1-1/8 | 1.1250 |
| 64 | .0360 | 3.25mm | .1280 | 1/4 | .2500 | 11.5mm | .4528 | 1-9/64 | 1.1406 |
| 63 | .0370 | 30 | .1285 | 6.4mm | .2520 | 29/64 | .4531 | 29.0mm | 1.1417 |
| .95mm | .0374 | 3.3mm | .1299 | 6.5mm | .2559 | 15/32 | .4688 | 1-5/32 | 1.1562 |
| 62 | .0380 | 3.4mm | .1339 | F | .2570 | 12.0mm | .4724 | 29.5mm | 1.1614 |
| 61 | .0390 | 29 | .1360 | 6.6mm | .2598 | 31/64 | .4844 | 1-11/64 | 1.1719 |
| 1.0mm | .0394 | 3.5mm | .1378 | G | .2610 | 12.5mm | .4921 | 30.0mm | 1.1811 |
| 60 | .0400 | 28 | .1405 | 6.7mm | .2638 | 1/2 | .5000 | 1-3/16 | 1.1875 |
| 59 | .0410 | 9/64 | .1406 | 17/64 | .2656 | 13.0mm | .5118 | 30.5mm | 1.2008 |
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