COGSDILL TOOL PRODUCTS, INC.

Recessing

Automatic Recessing

GENERATING HEADS &
PRECISION CHAMFERING

GROOVING

RECESSING

FACING & CHAMFERING

FAST

ACCURATE

REPEATABLE

Cogsdill

ENGINEERED SPECIALTY TOOLING SOLUTIONS

FOR THE WORLDWIDE MACHINE TOOL INDUSTRIES

In 1914 Stuart A. Cogsdill set up shop in Detroit as a cutting tool regrinding and repair service. He soon began designing and manufacturing special tools for early automotive pioneers such as Henry Ford and the Dodge brothers, who relied on Cogsdill to develop innovative tooling solutions for tough manufacturing problems.

Currently owned and operated by the second and third generation of Stuart Cogsdill's descendants, Cogsdill offers its 21st century customers the same commitment that inspired its founder: we will develop and build innovative tooling solutions for your tough manufacturing problems.

Cogsdill has two operating units, one in the United States and one in the United Kingdom:

- **Cogsdill Tool Products, Inc. of Camden, South Carolina, USA** – corporate headquarters
- **Cogsdill-Nuneaton Ltd. of Nuneaton, England** – subsidiary of Cogsdill Tool Products

TOOLMAKERS SINCE 1914

Recessing

Automatic Recessing

GENERATING HEADS & PRECISION CHAMFERING

contents

Automatic Recessing

Cogsdill offers the widest array of standard tooling and the broadest range of solutions for precision grooving, recessing, and internal and external facing and chamfering.

We will design and manufacture a complete tooling package for your application, including Automatic Recessing **heads, cutters and pilots. The wide variety of standard recessing heads described in this catalog are available from stock to suit most applications and machines. Special recessing heads can be designed and manufactured for unusual applications.**

GREATER ACCURACY, SHORTER CYCLE TIME, LOWER COST

Cogsdill Automatic Recessing Tools will save you time and money. Cycle time is reduced from minutes or hours to ***seconds***. The ***precision is built into the head*** so that grooves and recesses can be machined with ***exceptional accuracy and repeatability***. The ***Automatic Recessing*** head changes the operational direction by 90° (i.e., axial spindle motion is converted to radial cutter movement). Recessing operations can be performed on a variety of machines, even on a drill press.

SUPERIOR CRAFTSMANSHIP

All moving parts in our recessing heads are hardened and precision ground to ensure lasting accuracy and low maintenance costs. Close tolerances virtually eliminate “backlash” during retraction, for accurate size on groove width as well as depth. All sliding surfaces have large, hardened, load-bearing areas for long life and durability.

SUPERIOR CONSTRUCTION

Compression of the head between the machine spindle and the workpiece or jig plate actuates a sliding inclined wedge mechanism, thereby extending the cutter. Groove depth can be machined with great accuracy.

The cutter retracts radially prior to axial withdrawal of the tool from the bore, for accurate control of groove width. This design also results in a constant linear relationship between spindle movement and cutter movement. The straight-line movement of the cutter makes cutter regrinding easier.

AR Recessing Head

ARX Recessing Head

ARSP Recessing Head

Nobur®JA-2000 Tool

Nobur®JA Tool

Cutaway view of parts machined using Cogsdill Automatic Recessing Tools. Grooves and recesses are machined with exceptional accuracy and repeatability.

Automatic Recessing Quick Reference

TOOL SELECTION CHART

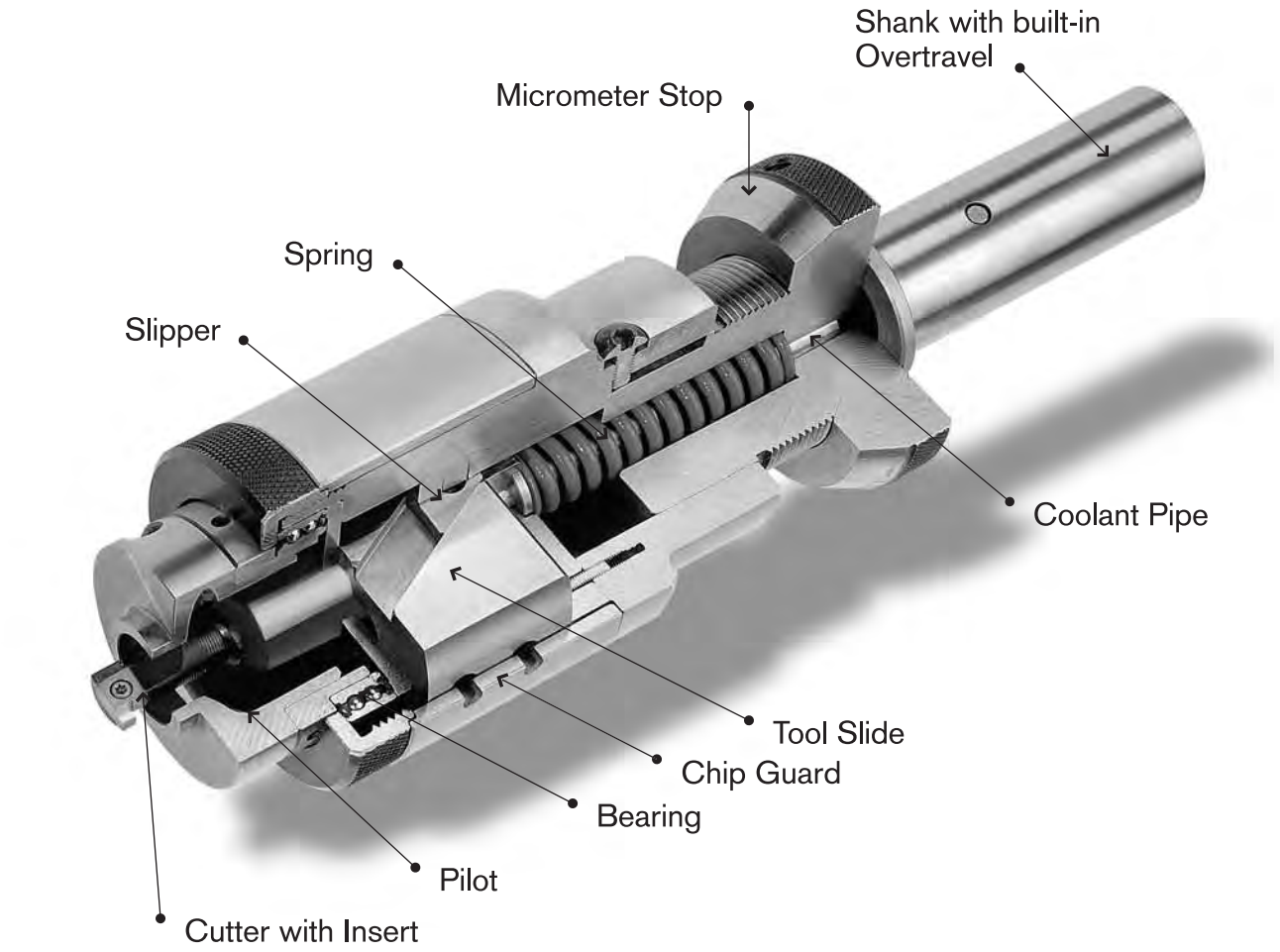
Cogsdill Automatic Recessing heads are stocked in four basic categories, including the AR series and our Nobur® recessing heads. Head models are available to suit most applications and machining set-ups. The chart below provides a brief overview of each head type, and identifies the types of machines to which each head is suited.

HEAD TYPE & DESCRIPTION NOTE: See photos on previous page	MACHINE TYPE							
	DRILL PRESS	JIG BORE	MILLING MACHINE	CNC MACHINE	TOOL LATHE	TURRET LATHE	SCREW MACHINE	SPECIAL PURPOSE
AR Automatic Recessing Pilots off workpiece or jig plate. Micrometer stop controls depth of cut. Tool adjustment controls axial location. Through-shank coolant and overtravel shanks are standard.	■	■	■	■	■	■	■	■
ARSP Automatic Recessing — Short Pilot Short, compact design. For applications with work length restrictions. Minimal overall length. Pilots off workpiece. Micrometer stop controls depth of cut. Tool adjustment controls axial location. Through-tool coolant and overtravel shanks are standard.				■	■	■	■	■
ARX Automatic Recessing — External For external grooving. Pilots off workpiece. Micrometer stop controls depth of cut. Tool adjustment is controlled within the fitted tooling. Overtravel shanks are standard.	■		■	■		■	■	■
Nobur®JA and JA-2000 Deep-Hole Recessing For deep-bore recessing and grooving. Pilot-supported cutting action. Micrometer-stop adjustment. Multiple grooves, chamfers, or metering lands. Back-chamfering and facing of deep bores.	■	■	■	■	■	■		■

Operating Principle

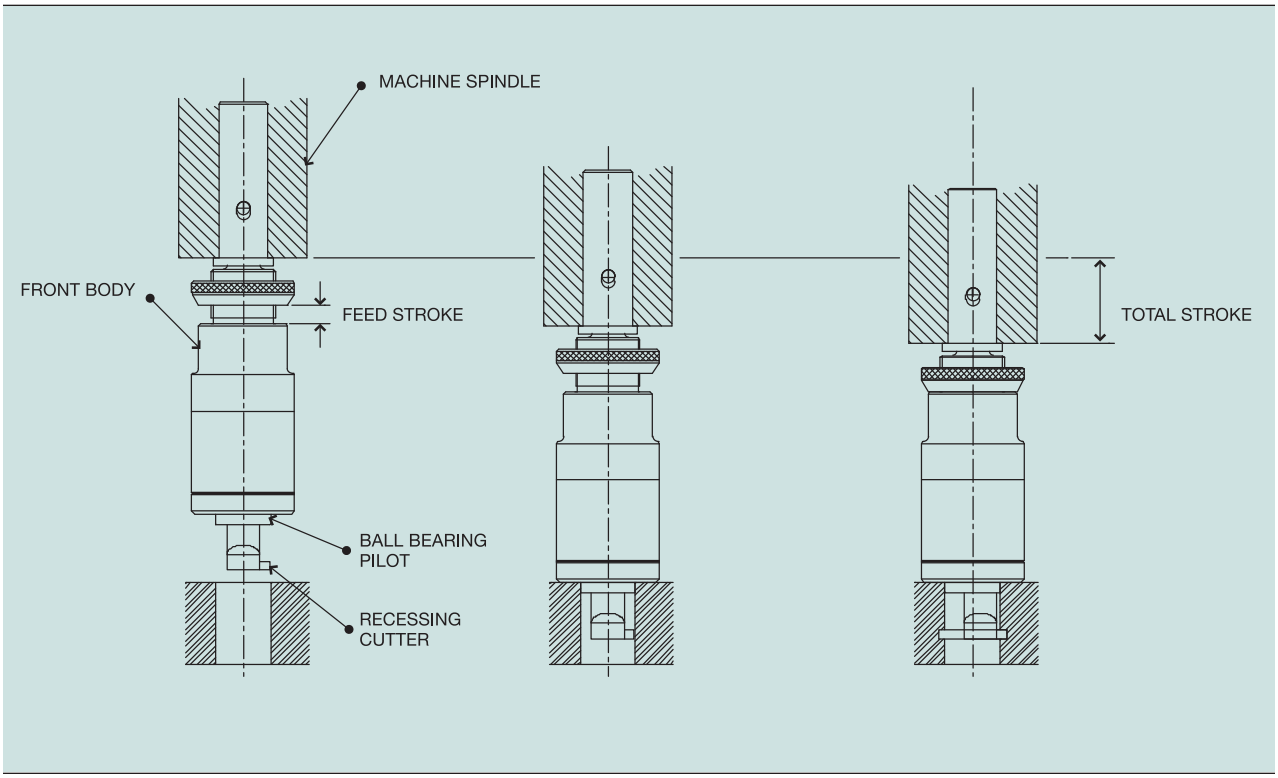
The AR Series Automatic Recessing Tool is made up of three basic components: head, cutter, and pilot. The head is usually standard and consists of shank and tool body. All cutters and pilots are manufactured to suit your application.

AR16 Recessing Head



Operating Principle

Illustrated below is the basic operating principle for AR, ARSP and ARX Recessing Heads. The head type shown below is the AR model.



1 Approach Stroke

The tool is rotating in a machine spindle. The spindle is lowered, and the tool moves into position.

2 Feed Stroke

The pilot is located in the bore against the face of the workpiece. Downward pressure causes compression of the recessing head, thereby actuating the slide mechanism which feeds the cutter out radially into the work.

3 End of Feed Stroke

The correct depth of cut is obtained when the micrometer stop bottoms against the front body, making it impossible to continue the cut. Groove location is controlled by the tool adjustment system on the shank end of the cutter.

When the spindle is retracted, pressure is relieved, and the tool is withdrawn from the bore. The cutter retracts and returns to its starting position. The piloted bearing absorbs both thrust and rotation. It remains stationary in the bore of the workpiece, under load, until the cutter is fully retracted, thereby preventing scoring of the workpiece.

AR Recessing Head

General purpose tool for use on:

AR16

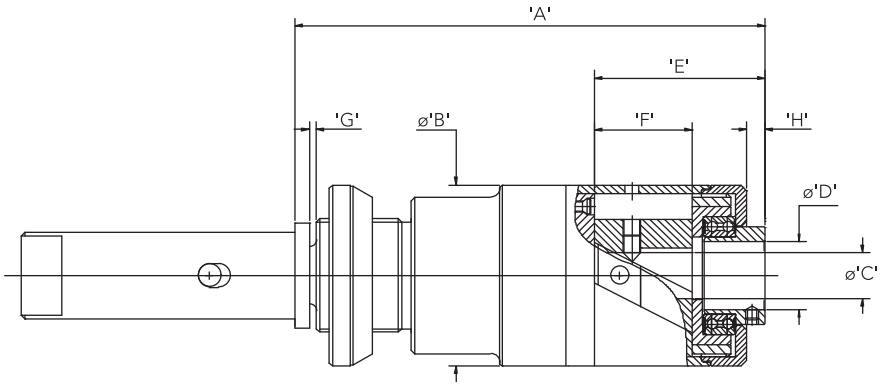
- Drill presses
- Jig boring machines
- Milling machines
- CNC machines
- Tool lathes
- Turret lathes
- Horizontal boring machines
- Screw machines
- Special purpose machines

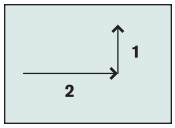
Features:

- Pilots off workpiece or jig plate
- Micrometer stop controls depth of cut
- Tool adjustment controls axial location
- Through-shank coolant is standard
- Overtravel shanks are standard

Specifications

AR Recessing Head





The ***Feed Ratio*** is the ratio of spindle to radial cutter movement

INCH [METRIC]

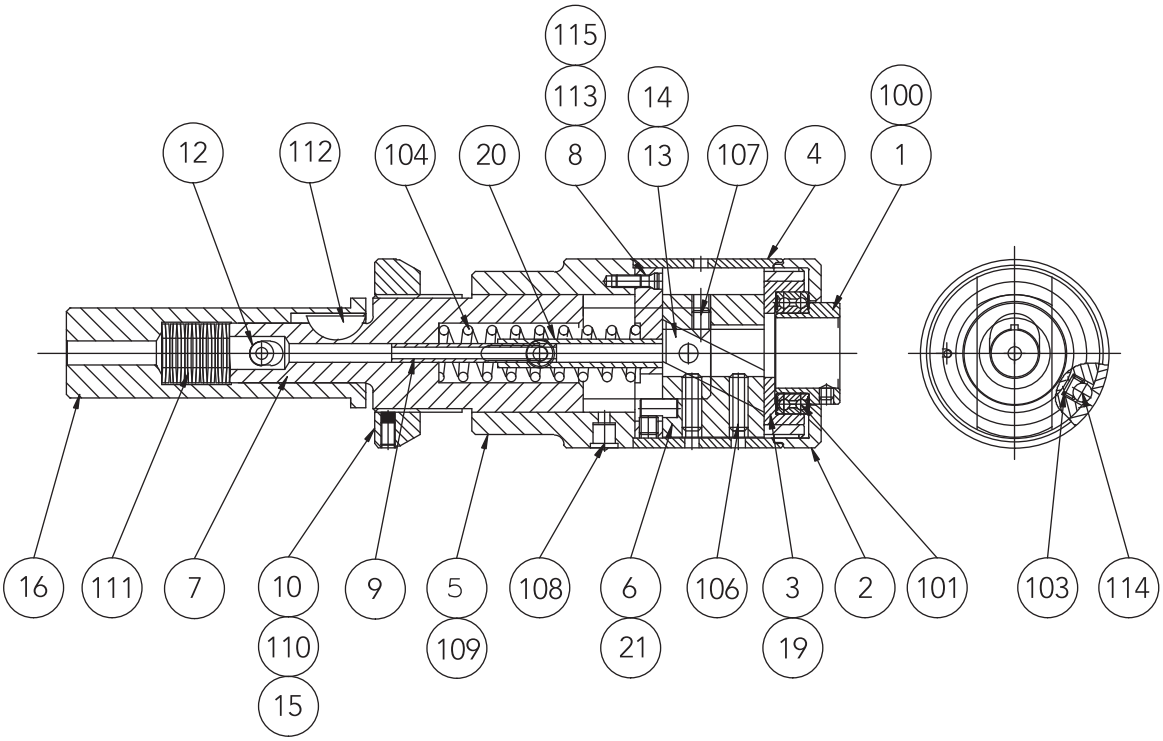
HEAD TYPE	APPROX. CAPACITY RANGE *	MAXIMUM CUTTER TRAVEL	SHANKS **	(A) FREE LENGTH	(B) TOOL BODY	(C) CUTTER SHANK	(D) MASTER PILOT	(E) REF MIN CUTTER LENGTH	(F) BORE DEPTH	(G) OVERTRAVEL	(H) REF TO FRONT NUT
AR10	0.216 [5.5] 0.984 [25.0]	0.197 [5.0]	0.750in/20mm	4.083 [103.70]	ø1.58 [ø40.0]	ø0.394 [ø10.0]	ø0.591 [ø15.0]	1.48 [37.6]	0.85 [21.60]	0.06 [1.5]	0.157 [4.0]
			No 2 MT	4.894 [124.32]							
AR16	0.590 [15.0] 1.772 [45.0]	0.276 [7.0]	1.000in/25mm	5.547 [140.90]	ø2.56 [ø65.0]	ø0.630 [ø16.0]	ø1.416 [ø36.0]	2.03 [51.5]	1.19 [30.23]	0.06 [1.5]	0.187 [4.76]
			No 3 MT	5.796 [147.23]							
AR20	0.866 [22.0] 2.362 [60.0]	0.394 [10.0]	1.500in/40mm	6.591 [167.40]	ø3.15 [ø80.0]	ø0.787 [ø20.0]	ø1.772 [ø45.0]	2.43 [61.8]	1.46 [37.08]	0.12 [3.0]	0.224 [5.70]

* The capacity range shown is ***not*** intended as an absolute limitation. The maximum diameter shown in the chart is defined as the suggested maximum groove diameter, dependent upon cutting forces, and intended for the sake of comparison only.

** Heads with CAT, ISO, SK, and BT shanks are subject to quotation. The use of side-lock holders is suggested.

Bill of Materials

AR Recessing Head



1 Master Pilot
2 Front Nut
3 Back Plate
4 Chip Guard
5 Front Body
6 Toolslide
7 Rear Body
8 Spring Plate
9 Coolant Pipe
10 Micrometer Nut
12 Over-rider Dowel
13 Slipper
14 Slipper Pin
15 Copper Pad
16 Shank
19 Back Plate Dowel
20 Spring Plate Pipe
21 Centralising Pin
100 Set Screw
101 Double Angular Contact Bearing
103 Spring
104 Spring
106 Tool Clamp Screw
107 Tool Adjust Screw
108 Oiler
109 Retaining Screw
110 Micrometer Screw
111 Disc Springs
112 Key
113 Torx Screw
114 Ball Bearing
115 Centralising Screw

ARSP Short-Pilot Head

Short, compact design for use on:

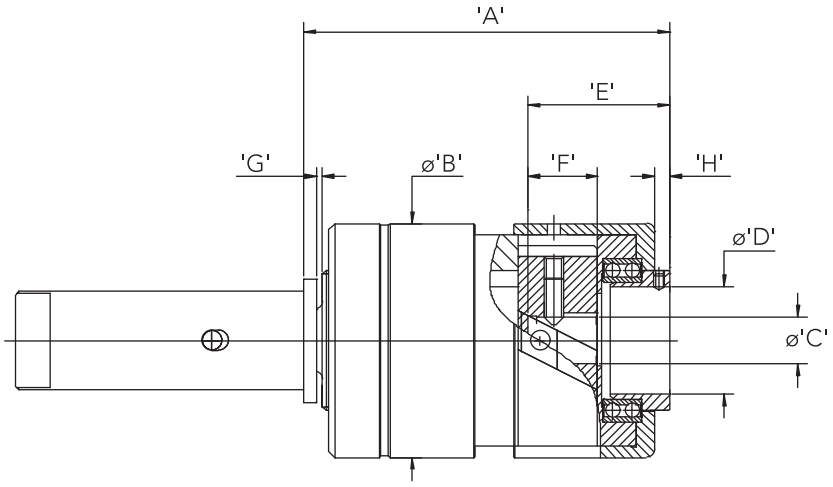
- CNC machining centers
- Turret lathes
- Tool lathes
- Screw machines
- Special purpose machines

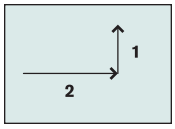
Features:

- For applications with work length restrictions
- Minimal overall length
- Pilots off workpiece
- Micrometer stop controls depth of cut
- Tool adjustment controls axial location
- Through-tool coolant
- Overtravel shanks are standard

Specifications

ARSP Short-Pilot Head





The ***Feed Ratio*** is the ratio of spindle to radial cutter movement

INCH [METRIC]

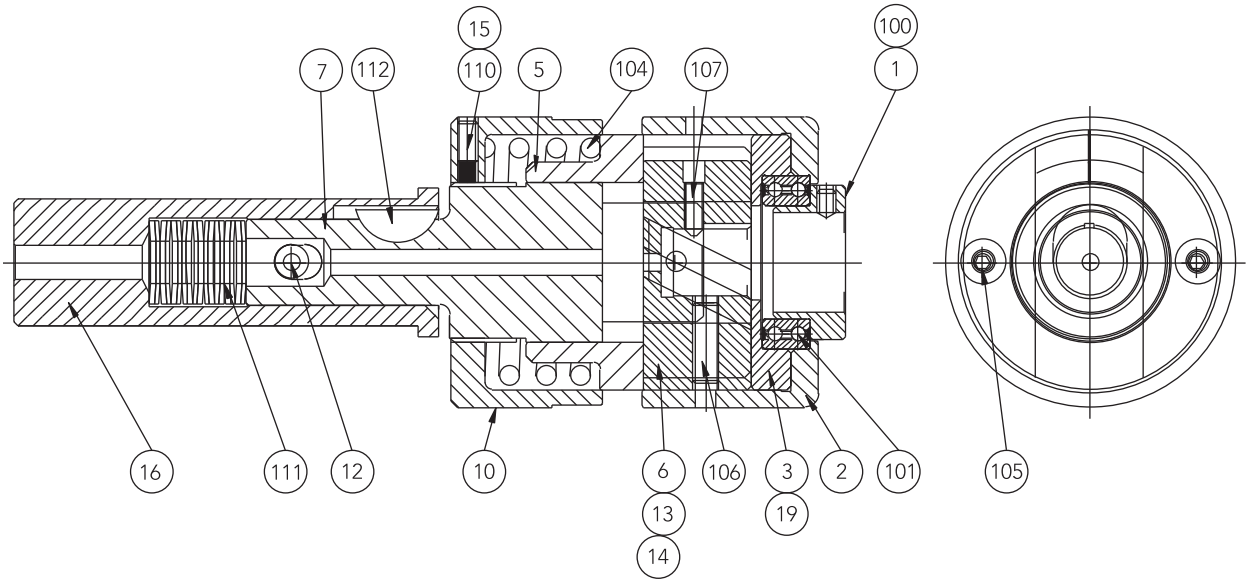
HEAD TYPE	APPROX. CAPACITY RANGE *	MAXIMUM CUTTER TRAVEL	SHANKS **	(A) FREE LENGTH	(B) TOOL BODY	(C) CUTTER SHANK	(D) MASTER PILOT	(E) REF MIN CUTTER LENGTH	(F) BORE DEPTH	(G) OVERTRAVEL	(H) REF TO FRONT NUT
ARSP1	0.216 [5.5] – 0.984 [25.0]	0.118 [3.0]	0.750in/20mm	2.510 [63.75]	ø1.70 [ø43.25]	ø0.394 [ø10.0]	ø0.591 [ø15.0]	1.09 [27.6]	0.63 [16.0]	0.06 [1.5]	0.160 [4.05]
			No 2 MT	3.322 [84.37]							
ARSP2	0.590 [15.0] – 1.772 [45.0]	0.197 [5.0]	1.000in/25mm	3.699 [93.95]	ø2.36 [ø60.0]	ø0.472 [ø12.0]	ø1.091 [ø27.7]	1.44 [36.5]	0.81 [20.5]	0.06 [1.5]	0.158 [4.00]
			No 3 MT	3.948 [100.28]							

* The capacity range shown is ***not*** intended as an absolute limitation. The maximum diameter shown in the chart is defined as the suggested maximum groove diameter, dependent upon cutting forces, and intended for the sake of comparison only.

** Heads with CAT, ISO, SK, and BT shanks are subject to quotation. The use of side-lock holders is suggested.

Bill of Materials

ARSP Short-Pilot Head



1 Master Pilot

2 Front Shell

3 Back Plate

5 Front Body

6 Toolslide

7 Rear Body

10 Micrometer Nut

12 Over-rider Dowel

13 Slipper

14 Slipper Pin

15 Copper Pad

16 Shank

19 Back Plate Dowel

100 Set Screw

101 Double Angular Contact Bearing

104 Spring

105 Head Screw

106 Tool Clamp Screw

107 Tool Adjust Screw

110 Micrometer Screw

111 Disc Springs

112 Key

ARX External Head

TOOL SHOWN WITH TAPER SHANK HOLDER

External grooving tool for use on:

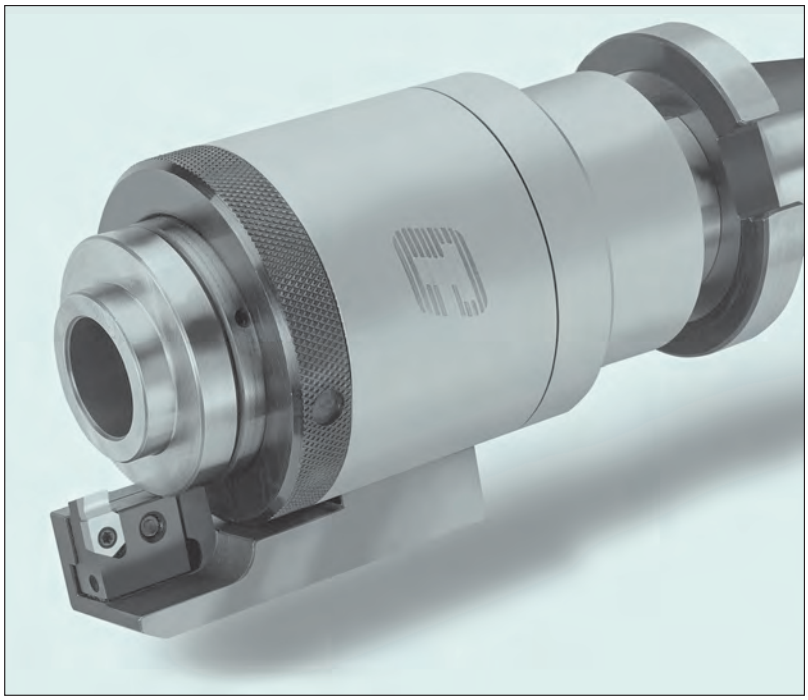
- Drill presses
- Milling machines
- CNC machines
- Turret lathes
- Screw machines
- Special purpose machines

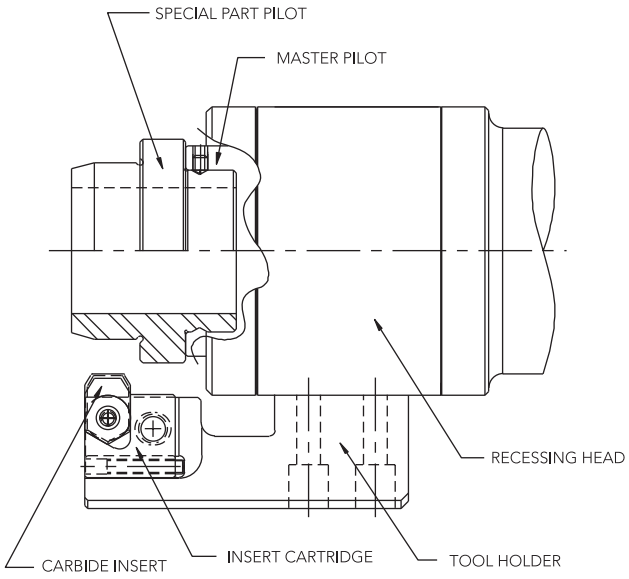
Features:

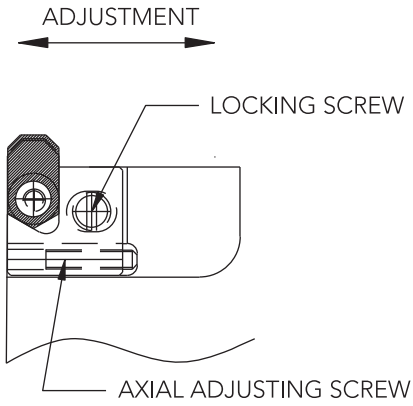
- Pilots off workpiece
- Micrometer stop controls depth of cut
- Tool adjustment is controlled within the fitted tooling
- Overtravel shanks are standard
- Optional balance block available with two-slot chip guard for high-speed applications

ARX Tooling Components

ARX toolholder, cartridge, and insert are shown below.
Replaceable carbide inserts are used where applications permit.



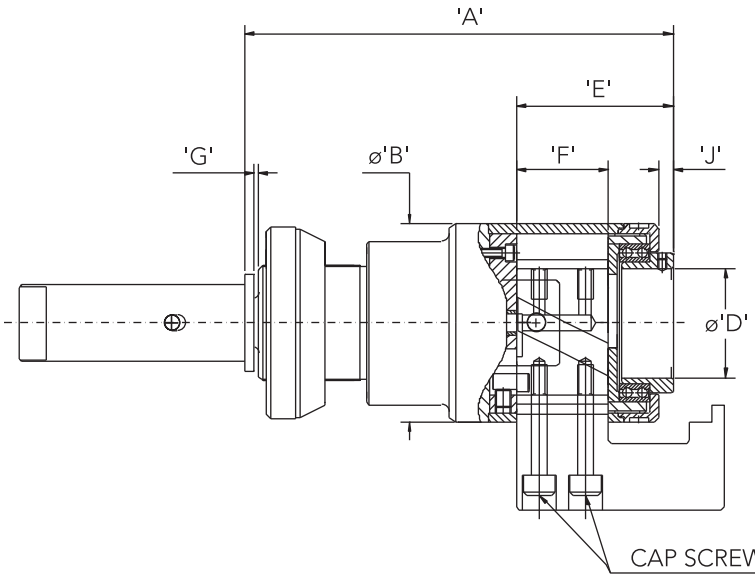


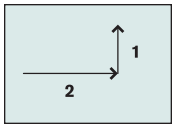


Drawing depicts adjustment of groove location, as measured from the end of the part.

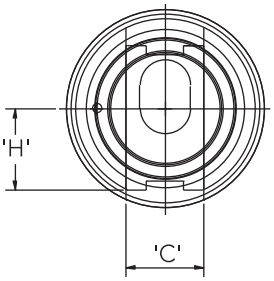
ARX toolholders, insert cartridges, and carbide inserts are made to order from standard blanks. Part pilots are designed and manufactured to suit the application; the master pilot is part of the recessing head.

ARX External Head





The ***Feed Ratio*** is the ratio of spindle to radial cutter movement



INCH [METRIC]

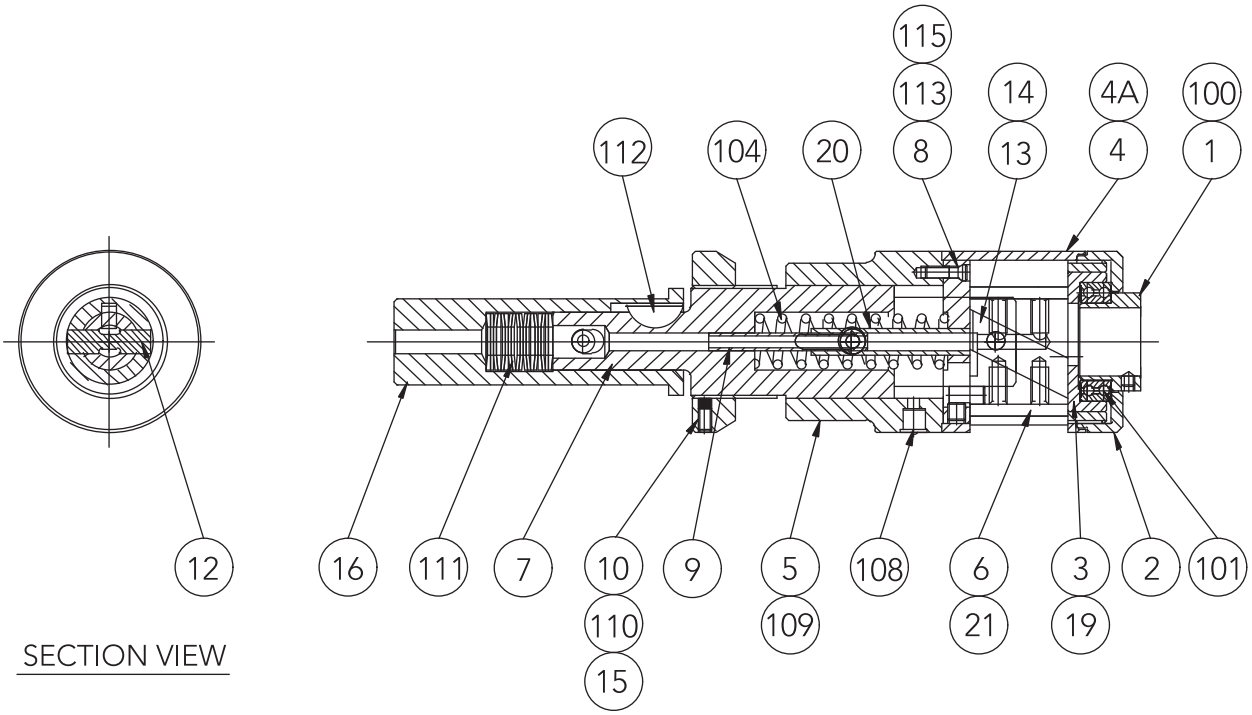
HEAD TYPE	CAPACITY RANGE * PART DIAMETER	CAPACITY RANGE * GROOVE LOCATION	MAXIMUM CUTTER TRAVEL	SHANKS**	(A) FREE LENGTH	(B) TOOL BODY	(C) CUTTER SHANK	(D) MASTER PILOT	(E) REF MIN CUTTER LENGTH	(F) BORE DEPTH	(G) OVER TRAVEL	(H) MOUNTING	(J) REF TO FRONT NUT
ARX10	0.157–0.787 [4.0–20.0]	UP TO 1.250 [31.75]	0.197 [5.0]	0.750in/20mm	4.083 [103.70]	ø1.58 [ø40.0]	0.625 [15.88]	ø0.591 [ø15.0]	1.48 [37.6]	0.85 [21.60]	0.06 [1.5]	0.636 [16.16]	0.157 [4.0]
				No 2 MT	4.894 [124.32]								
ARX16	0.630–1.654 [16.0–42.0]	UP TO 1.375 [34.93]	0.276 [7.0]	1.000in/25mm	5.547 [140.90]	ø2.56 [ø65.0]	1.000 [25.40]	ø1.416 [ø36.0]	2.03 [51.5]	1.19 [30.23]	0.06 [1.5]	1.048 [26.63]	0.187 [4.76]
				No 3 MT	5.796 [147.23]								
ARX20	0.866–2.992 [22.0–76.0]	UP TO 1.500 [38.10]	0.394 [10.0]	1.500in/40mm	6.591 [167.40]	ø3.15 [ø80.0]	1.250 [31.75]	ø1.772 [ø45.0]	2.43 [61.8]	1.46 [37.08]	0.12 [3.0]	1.294 [32.87]	0.224 [5.70]

* The capacity range shown is ***not*** intended as an absolute limitation. It defines the normal range when using standard components. The diameter range represents the approximate part diameter. The groove location is the approximate distance to the groove measured from the end of the part.

** Heads with CAT, ISO, SK, and BT shanks are subject to quotation. The use of side-lock holders is suggested.

Bill of Materials

ARX External Head



1 Master Pilot

2 Front Nut

3 Back Plate

4 Standard Chip Guard

4A Two Slot Chip Guard

5 Front Body

6 Toolslide

7 Rear Body

8 Spring Plate

9 Coolant Pipe

10 Micrometer Nut

12 Over-rider Dowel

13 Slipper

14 Slipper Pin

15 Copper Pad

16 Shank

19 Back Plate Dowel

20 Spring Plate Pipe

21 Centralising Pin

100 Set Screw

101 Double Angular Contact Bearing

104 Spring

108 Oiler

109 Retaining Screw

110 Micrometer Screw

111 Disc Springs

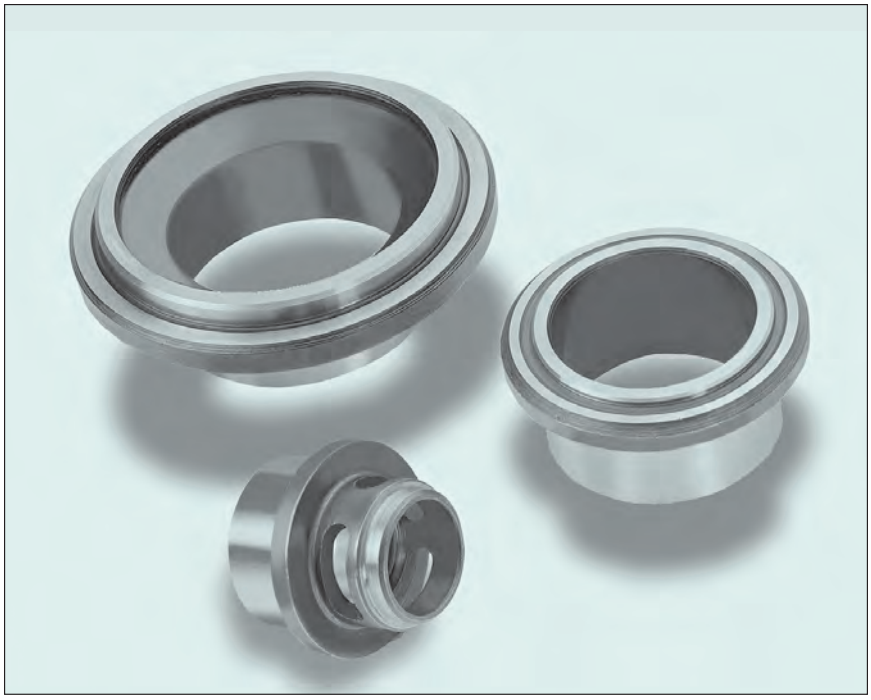
112 Key

113 Torx Screw

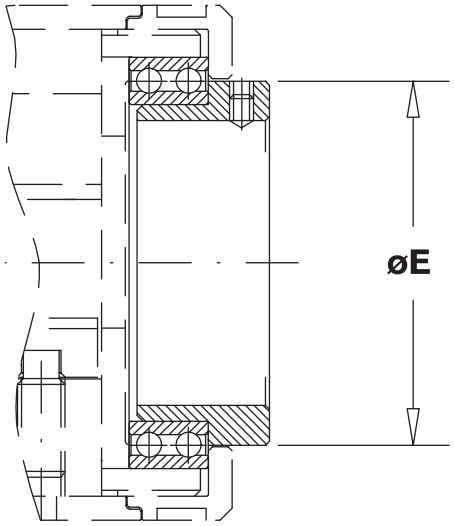
115 Centralizing Screw

Pilots

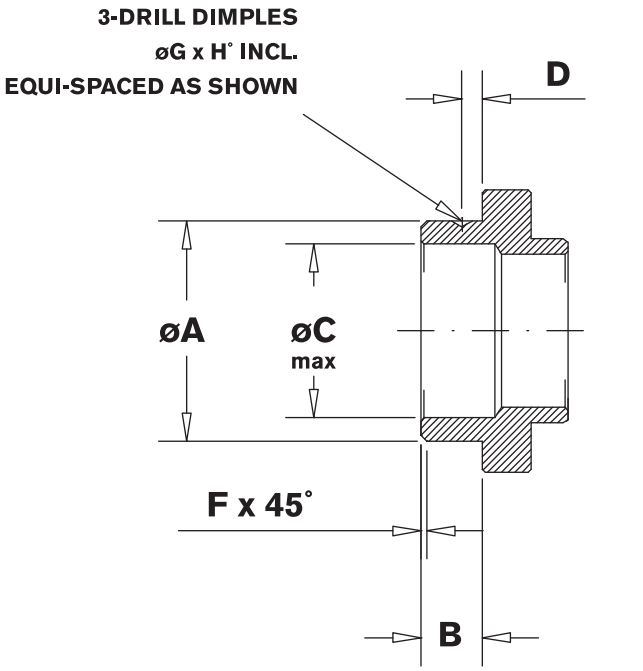
Pilots are required to locate and stabilize the recessing head in the component bore. All pilots are manufactured to suit the application. Although the basic design and dimensions are standardized as shown on the following page, the locating diameter of the pilot is designed specifically for your component. Part pilots are retained in the master pilot by three retaining screws.



MASTER PILOT



PART PILOT



Note: If machine lacks internal coolant capability, part pilot must be designed with coolant windows

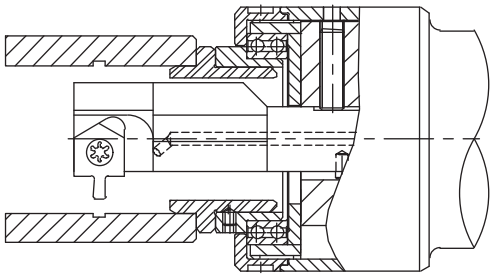
INCH [METRIC]

HEAD PILOTS	(ØA) -.0003 [-0.008]	(B)	(ØC) MAX	(D) -.005 [-0.13]	(ØE) -.005 [-0.13]	(F)	(G)	(H)
ARSP-1	.5904 [14.995]	.394 [10.00]	.472 [12.00]	.098 [2.50]	.909 [23.10]	.394 [1.00]	.138 [3.50]	120°
ARSP-2	1.0896 [27.675]	.551 [14.00]	.969 [24.60]	.098 [2.50]	1.409 [35.80]	.394 [1.00]	.138 [3.50]	120°
AR10 ARX10	.5904 [14.995]	.500 [12.70]	.472 [12.00]	.100 [2.55]	.844 [21.45]	.394 [1.00]	.138 [3.50]	120°
AR16 ARX16	1.415 [35.95]	.551 [14.00]	1.295 [32.90]	.130 [3.30]	1.811 [46.00]	.394 [1.00]	.138 [3.50]	120°
AR20 ARX20	1.772 [44.99]	.748 [19.00]	1.63 [41.4]	.148 [3.75]	2.299 [58.40]	.394 [1.00]	.177 [4.50]	120°

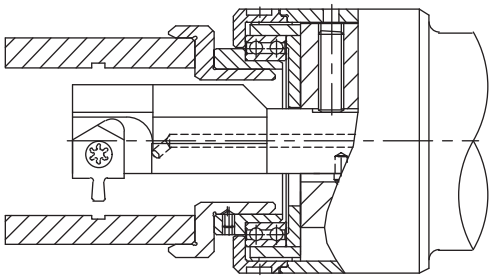
ALL UNSPECIFIED DIMENSIONAL TOLERANCES ARE ±0.005 [0.13]

Piloting Methods

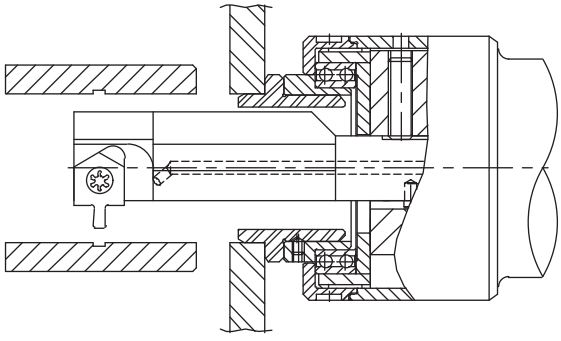
Pilots on I.D. and stops on face of component.



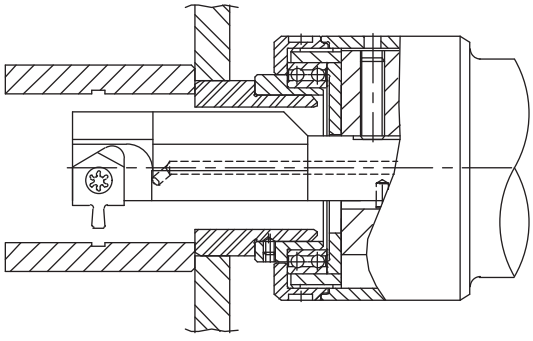
Pilots on O.D. and stops on face of component.



Pilots and stops on fixture plate.



Pilots on fixture plate and stops on face of component.



Toolholders, Cutters, Inserts

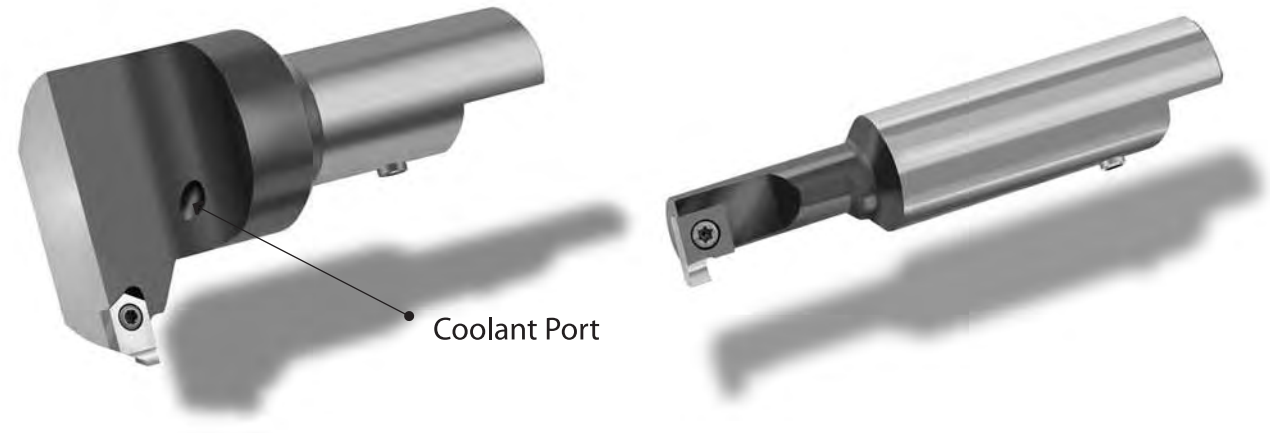
AR Series
AUTOMATIC RECESSING

Toolholders are designed to suit the application. The basic design of the toolholder is standardized as shown on the following page, but the diameter and length of the holder is designed to suit your component.

Toolholders with replaceable inserts are used where application parameters permit. As a general rule, toolholders for holes 9/16 inch (approx. 14.5mm) and larger utilize replaceable inserts. Cutters for smaller diameters are usually of brazed-carbide or high-speed steel construction.

Our improved toolholder design allows fast and easy incremental adjustment of axial groove location without removing the toolholder from the head.

Many inserts can be manufactured from standard blanks as shown on the following page. Toolholders and inserts can be designed for back-chamfers, thread reliefs, multiple grooves, and special groove geometries; submit a part print and request a quotation. Toolholders can be designed with an internal coolant port where required
(see example below).

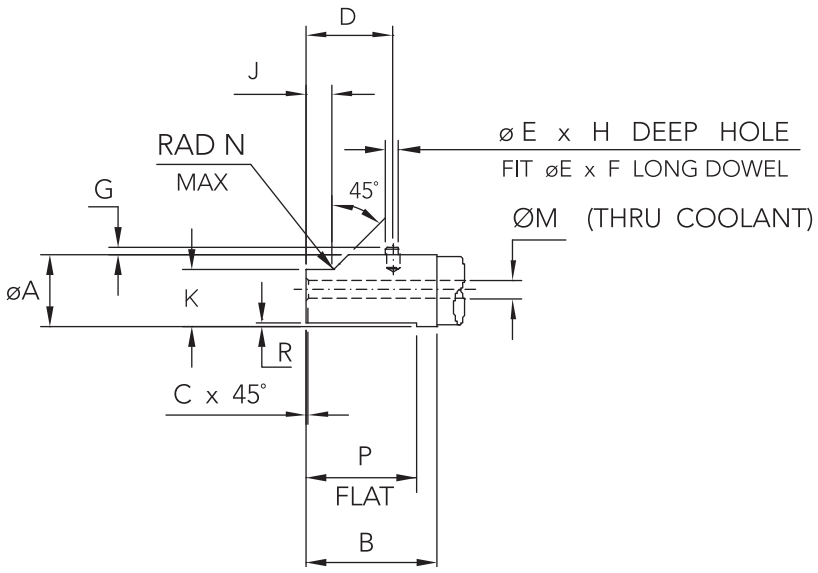


Our improved toolholder design allows fast and easy incremental adjustment of axial groove location without removing the toolholder from the head.

(See the set-up and operation sections that follow for more information)

Specifications

TOOLHOLDER

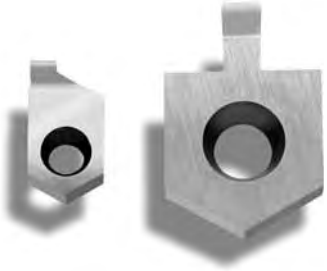


METRIC [INCH]

HEAD TYPE	(A)	(B)	(C)	(D)	(E)	(F)	(G) h11	(H)	(J)	(K)	ø(M)	(N) max	(P)	(R)
ARSP–1	10.00 [0.394]	12.70 [0.500]	0.50 [0.020]	9.00 [0.354]	1.50 [0.059]	3.00 [0.118]	0.70 [0.028]	2.30 [0.091]	3.35 [0.132]	8.00 [0.315]	3.00 [0.118]	0.50 [0.020]	9.50 [0.374]	0.70 [0.028]
ARSP–2	12.00 [0.472]	17.25 [0.679]	0.50 [0.020]	12.50 [0.492]	3.00 [0.118]	5.00 [0.197]	1.60 [0.063]	3.40 [0.134]	5.75 [0.226]	9.50 [0.374]	3.00 [0.118]	0.50 [0.020]	15.50 [0.610]	0.80 [0.031]
AR10	10.00 [0.394]	20.80 [0.819]	0.50 [0.020]	15.25 [0.600]	1.50 [0.059]	3.00 [0.118]	0.80 [0.031]	2.20 [0.087]	6.70 [0.264]	7.75 [0.305]	3.00 [0.118]	0.50 [0.020]	19.00 [0.748]	0.70 [0.028]
AR16	16.00 [0.630]	29.50 [1.161]	0.50 [0.020]	19.50 [0.768]	3.00 [0.118]	5.00 [0.197]	1.60 [0.063]	3.40 [0.134]	6.10 [0.240]	12.50 [0.492]	4.00 [0.157]	0.50 [0.020]	26.50 [1.043]	0.80 [0.031]
AR20	20.00 [0.787]	36.30 [1.429]	0.50 [0.020]	25.40 [1.000]	5.00 [0.197]	6.00 [0.236]	1.75 [0.069]	4.25 [0.167]	10.00 [0.394]	15.50 [0.610]	5.00 [0.197]	0.50 [0.020]	33.30 [1.311]	1.00 [0.039]

AR Series Replaceable Inserts

Standard insert blanks



Replaceable carbide inserts are used where applications permit. Special or intricate geometries are available.

Set-up

There are four basic steps to the set-up of AR Series Automatic Recessing heads.
(Set-up procedures differ somewhat for internal and external heads.)

1 Install pilot

For all head types, the pilot must be installed in the head. The pilot will fit either directly into the sealed bearing or into a master pilot for quick and easy tool changes.

2 Install cutter/toolholder

The cutter normally comes in three different styles:

- High-speed steel cutter
- Tungsten carbide brazed-tip cutters
- Replaceable-insert toolholders

For **internal recessing heads**, install the cutter in the head with the cutting edge pointing in the direction of cut (i.e., in the direction of toolslide movement). The cutter is clamped and fixed in position by two set screws in the head. The cutter must be positioned radially in the head so that the cutting edge will be on center as the tool moves out to cut. This is facilitated by the use of a key in the cutter shank, which automatically aligns the cutting edge on center.

For **external recessing heads**, install the toolblock onto the toolslide and secure in place with two caphead screws. An adjustable cartridge is fitted to the toolblock and held in place by a buttonhead screw. An inexpensive, replaceable insert is fitted to this cartridge and secured in place by an insert screw. The cutting edge of the insert is automatically aligned on center as the toolblock is secured to the head.

3 Set cutter projection from pilot

For all head types, the projection of the cutter from the pilot must be set properly in order to achieve accurate groove location.

For **internal recessing heads**, groove location is controlled by the tool adjustment set screw, which is located in the toolslide. The tool adjustment screw is accessed through a hole in the chip guard on the front shell. Insert the toolholder until it bottoms out in the toolslide. Tighten tool adjustment screw and move cutter out until the set dimension (between cutter and pilot) is achieved. Then lock the cutter in place by tightening the locking set screws.

For **external recessing heads**, groove location is controlled by a set screw in the end of the adjustable cartridge that is mounted on the toolblock. Once the groove location is set, lock the cartridge in place with the buttonhead locking screw.

(continued)

4 Depth of cut/tool travel

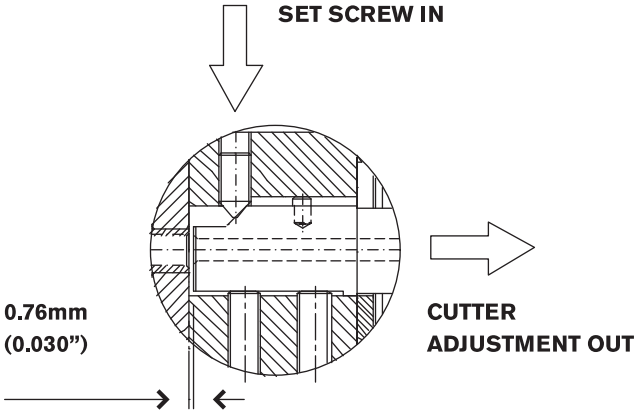
For all head types, depth of cut is controlled by a micrometer nut that allows the head to pre-set off the machine. The standard tool feed ratio for all heads is 2:1 (i.e., the ratio of spindle to radial cutter movement).

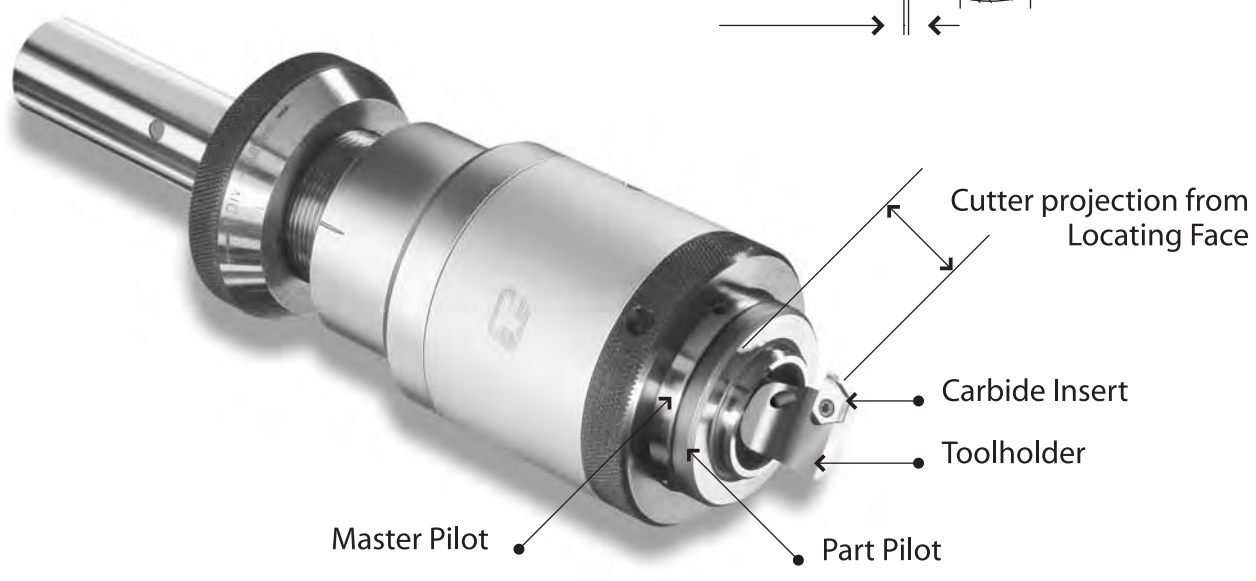
Refer to the drawing supplied with the tool for the set-up dimension. If the drawing is unavailable, follow this procedure: Add the depth of cut (the distance from the I.D. of the bore to the bottom of the groove) to the clearance between the cutter and the I.D of the bore. Multiply this figure by the feed ratio (i.e., multiply by 2 for standard feed ratio) in order to arrive at the distance to set the micrometer nut from the front body. This distance should be set using gauge blocks or by fine-tuning the micrometer nut position manually to achieve the desired groove depth.

HEX WRENCHES REQUIRED FOR ADJUSTING AR HEADS

HEAD TYPE	MICROMETER NUT SCREW	INSERT TOOL HOLDER (LENGTH ADJ.)	MASTER PILOT
AR10	1.5mm	2.0mm	1.5mm
AR16	3.0mm	3.0mm	1.5mm
AR20	4.0mm	4.0mm	2.0mm
ARSP-1	1.5mm	1.5mm	1.5mm
ARSP-2	2.5mm	2.5mm	1.5mm

Approximate adjustment gap for all internal recessing heads, when tool is in set position.





Speeds & Feeds

Please refer to the charts below for ***speed and feed recommendations*** for specific material types. The charts are intended as a guide or starting point; the actual speed and feed used will depend on a number of factors, including type of machine, condition of machine spindle, rigidity of fixturing, type of coolant used or dry cutting, tool length, cutter geometry, interrupted cut, etc.

INCH

MATERIAL	CUTTING SPEED (FT/MIN)		FEED RATE (INCHES/REV)		TOP RAKE (DEGREES)	
	HSS	Carbide	HSS	Carbide	HSS	Carbide
Aluminum	200—300	400—700	.002—.005	.002—.005	10—15	8—12
Brass	100—200	200—525	.002—.005	.002—.005	0—3	0—3
Bronze	50—130	100—400	.002—.005	.002—.005	3—5	3—5
Cast Iron	50—90	100—180	.002—.004	.002—.005	0—3	0—3
Copper	100—200	200—400	.002—.004	.002—.005	10—15	8—12
Magnesium	200—300	400—700	.004—.006	.004—.006	10—15	8—12
Malleable Cast Iron	50—90	100—200	.002—.004	.003—.005	0—3	0—3
Resin (Plastic)	70—135	160—400	.004—.006	.004—.006	10—15	8—12
Free Cutting Steel	70—100	100—230	.002—.004	.003—.005	5—10	4—8
Annealed Steel	50—70	100—200	.002—.004	.003—.005	5—8	3—6
Wrought Steel	35—70	85—220	.002—.003	.003—.004	5—8	3—6
Alloy Steel	35—70	85—220	.002—.003	.003—.004	4—6	3—6
Tool Steel	35—50	85—150	.001—.002	.002—.003	4—6	3—6
Monel & Stainless	85—135	150—250	.001—.003	.002—.004	10—20	8—12

METRIC

MATERIAL	CUTTING SPEED (M/MIN)		FEED RATE (MM/REV)		TOP RAKE (DEGREES)	
	HSS	Carbide	HSS	Carbide	HSS	Carbide
Aluminum	60—90	120—210	0,05—0,13	0,05—0,13	10—15	8—12
Brass	30—60	60—160	0,05—0,13	0,05—0,13	0—3	0—3
Bronze	15—40	30—120	0,05—0,13	0,05—0,13	3—5	3—5
Cast Iron	15—25	30—55	0,05—0,10	0,05—0,13	0—3	0—3
Copper	30—60	60—120	0,05—0,10	0,05—0,13	10—15	8—12
Magnesium	60—90	120—210	0,10—0,15	0,10—0,15	10—15	8—12
Malleable Cast Iron	15—25	30—60	0,05—0,10	0,08—0,13	0—3	0—3
Resin (Plastic)	20—40	50—120	0,10—0,15	0,10—0,15	10—15	8—12
Free Cutting Steel	20—30	30—70	0,05—0,10	0,08—0,13	5—10	4—8
Annealed Steel	15—20	30—60	0,05—0,10	0,08—0,13	5—8	3—6
Wrought Steel	10—20	25—65	0,05—0,08	0,08—0,10	5—8	3—6
Alloy Steel	10—20	25—65	0,05—0,08	0,08—0,10	4—6	3—6
Tool Steel	10—15	25—45	0,03—0,05	0,05—0,08	4—6	3—6
Monel & Stainless	25—40	45—75	0,03—0,08	0,05—0,10	10—20	8—12

(continued)

Coolant

Regarding the use of **coolant**, follow normal machine shop procedures for the cutter material and the material to be machined.

Lubrication

1 We recommend a water resistant grease for use in these heads. **Kluber Altemp Q NB50** has been thoroughly tested and found to perform exceptionally well – it is the only grease we recommend. It should be applied to all moving parts and surfaces when the head is disassembled for cleaning and maintenance, or if the head will be stored for extended periods. Disassembly and cleaning should be done periodically.

2 To lubricate the heads during use, apply **Kluber Altemp Q NB50** grease through the external oilers or grease fittings on the head. This should be done on a weekly basis, or more frequently if necessary. Lubrication frequency can vary depending on the working environment, operational speed, coolant used, and number of cycles. **Remember, adequate lubrication is vital to long head life and trouble-free performance.**

3 A high-pressure hand pump lube gun is available from Cogsdill to make routine maintenance easy. (Ref. Part No. **CN-D24**)

Other Non-Stocked and Special Recessing Solutions

AR-S

A variation of the AR head for use on CNC machining or turning centers. No micrometer stop for depth control. Depth of cut is controlled by “Z” axis; axial adjustment is controlled by tool adjustment. Through-tool coolant.

ARX-S

A variation of the ARX head for use on CNC machining or turning centers. No micrometer stop for depth control. Depth of cut is controlled by “Z” axis; axial adjustment is controlled by tool adjustment.

ARJ

Designed to run in a rotating bushing mounted in a jig plate. Exceptional rigidity, especially at high cutting speeds. Micrometer stop controls depth of cut. Through-tool coolant.

ARXJ

For machining grooves or forms in larger bores or for other special applications. Rigid support in heavy cuts. Micrometer stop controls depth of cut. Axial location controlled by adjustable thrust housing. Through-tool coolant.

Inquire about these and other non-stocked and special Recessing tool designs. Submit a completed Application Data Sheet (shown at the end of this catalog) to request a quotation, or contact our Customer Service Department for more information.

Nobur® JA Recessing Head

For deep bore recessing and grooving.
A tool for use on:

- Drill presses
- Jig boring machines
- Milling machines
- CNC machines
- Tool or turret lathes
- Horizontal boring machines
- Special purpose machines

Features:

- In-bore pilot supports cutter along its entire length – eliminates tool deflection; ensures concentricity through rigid cutting action
- Micrometer-stop adjustment
- Multiple grooves, chamfers, or metering lands
- O-ring and retaining ring grooves
- Relief grooves and tube sheet grooves
- Back-chamfering and facing of deep bores

Nobur® JA2000 Recessing Head

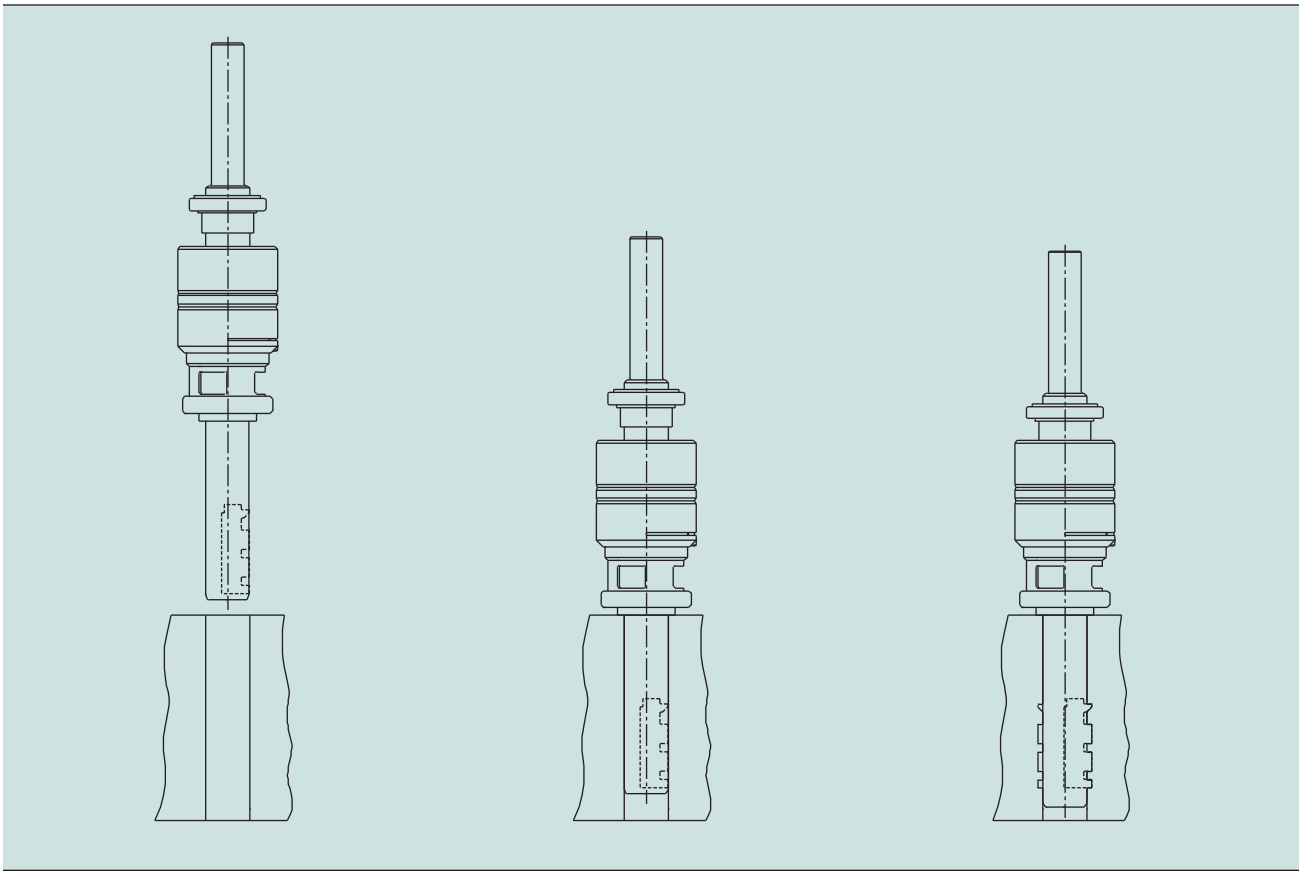
For deep bore recessing and grooving.
Designed for heavier cuts than the regular JA.
Innovative internal coolant system directs coolant to cutting edges for improved chip evacuation, longer tool life, better tool function, and improved repeatability.
For use on machines with internal coolant capability. *

Features:

- Same in-bore pilot support and micrometer-stop adjustment as the regular JA
- Capable of wider cuts than the regular JA in some applications
- Extremely durable high-load precision dual bearings for long life
- Easy disassembly and reassembly for maintenance
- Overtravel units available upon request

* JA2000 Recessing Heads can be ordered in a Side-Port model for use on machines that do not have through-spindle coolant capability. Through-shank coolant is standard; specify side-port coolant if desired.

Operating Principle



1 Approach Stroke

The Nobur® JA tool is rotating in a machine spindle. The spindle is lowered. The tool approaches entry into the bore.

2 Feed Stroke

The pilot is located in the bore, stopping against the face of the workpiece. Downward travel of the machine spindle compresses the tool so that the cutter feeds out radially into the surface of the workpiece. The pilot rigidly supports the cutter along its entire length to eliminate deflection and ensure concentricity.

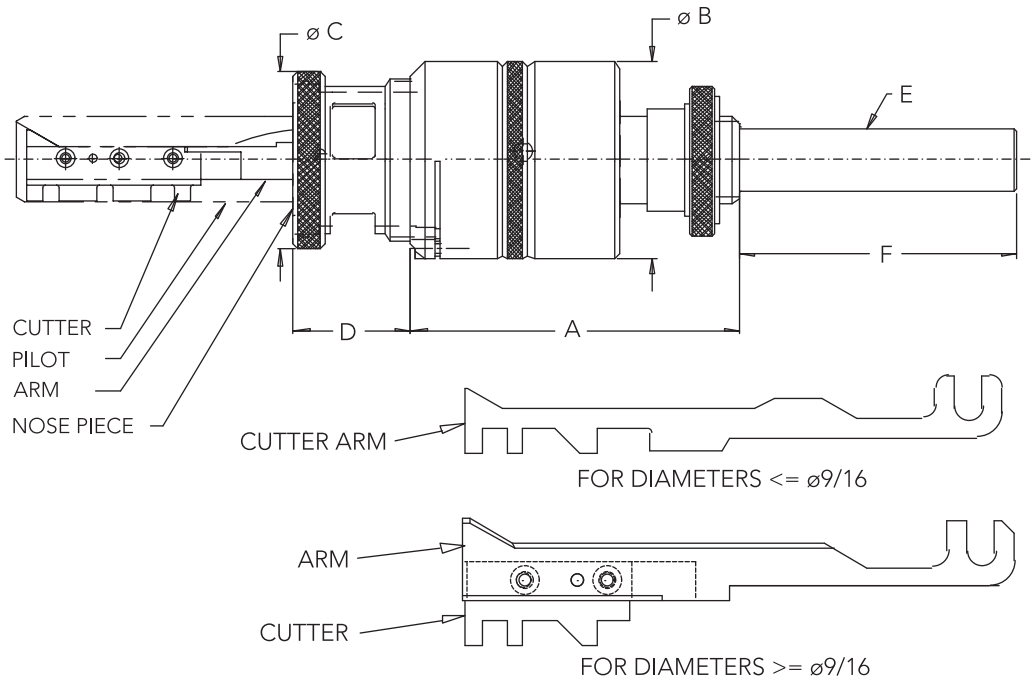
3 End of Feed Stroke

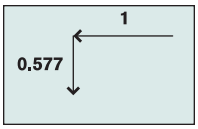
Radial depth of cut is obtained when the micrometer-stop nut bottoms out. Groove location is controlled by the adjusting stop-collar, which moves the nosepiece up or down to position the cutter arm for accurate groove location.

Specifications

Nobur® JA Series

AUTOMATIC RECESSING
DEEP HOLE





The ***Feed Ratio*** is the ratio of spindle to radial cutter movement

HEAD TYPE	CAPACITY [1] in	CAPACITY [1] mm	(A) FREE in	(A) FREE mm	(B) in	(B) mm	(C) in	(C) mm	(D) MAXIMUM in	(D) MAXIMUM mm	(D) MINIMUM in	(D) MINIMUM mm	(E) SHANKS [2]	(F) in	(F) mm
JA	0.25 1.85	6.300 47.10	3.82	97.00	2.28	57.90	2.06	52.30	2.24	56.90	1.24	31.50	3/4" straight [3] 1"–12 acme 1-1/16"–12 acme #2 morse taper #3 morse taper	3.25 3.63 3.63 3.19 3.88	82.60 92.20 92.20 81.00 98.60
JA2000	0.25 1.85	6.300 47.10	4.43	112.5	3.36	85.40	3.00	76.20	1.53	38.90	1.03	26.20	1" straight [4]	3.00	76.20

1 Capacity means the suggested maximum groove diameter. Dependent upon cutting forces and bore diameter. Stated capacity is for steel.

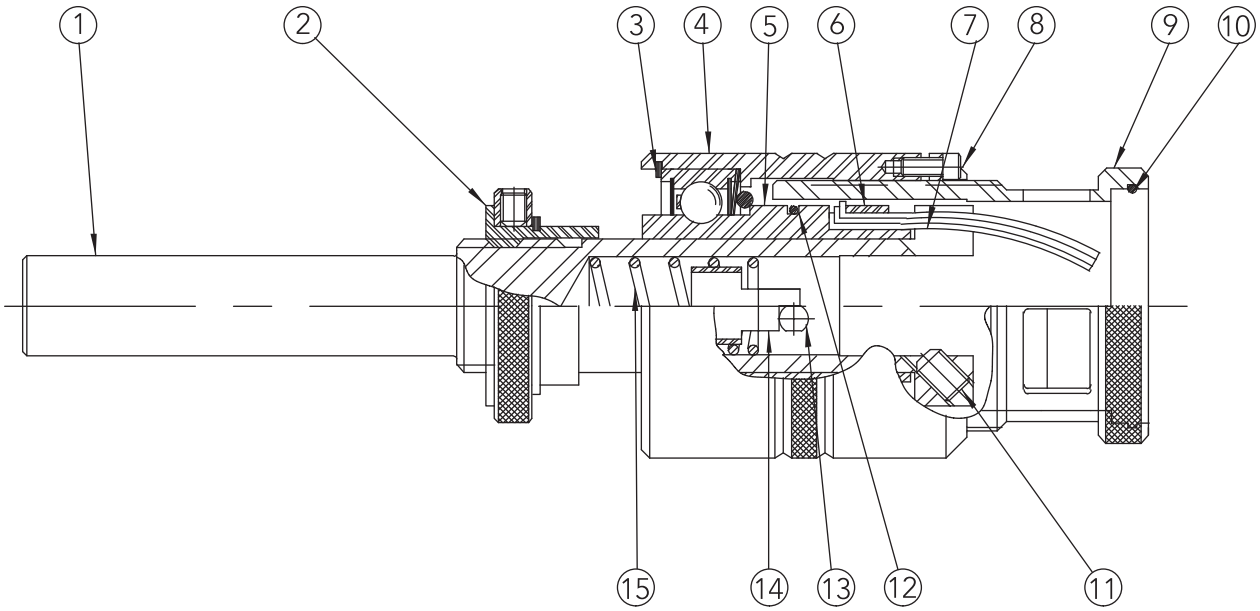
2 Shank is included with head. Shanks other than shown can be supplied upon request.

3 Supplied with through-tool coolant.

4 Through-shank coolant is standard; specify side-port coolant if desired.

Bill of Materials

Nobur® JA Recessing Head



1 Body Holder

2 Adjustment Nut Assembly

3 Snap Ring

4 Housing-Bearing Stop Collar

5 Bearing Assembly

6 Collar Hub Mounting

7 Leaf Spring (Quantity 3)

8 Screw Locking-Housing

9 Stop Collar-Adjustment

10 Retainer Ring-Insert

11 Lock Screw

12 Retainer Loop

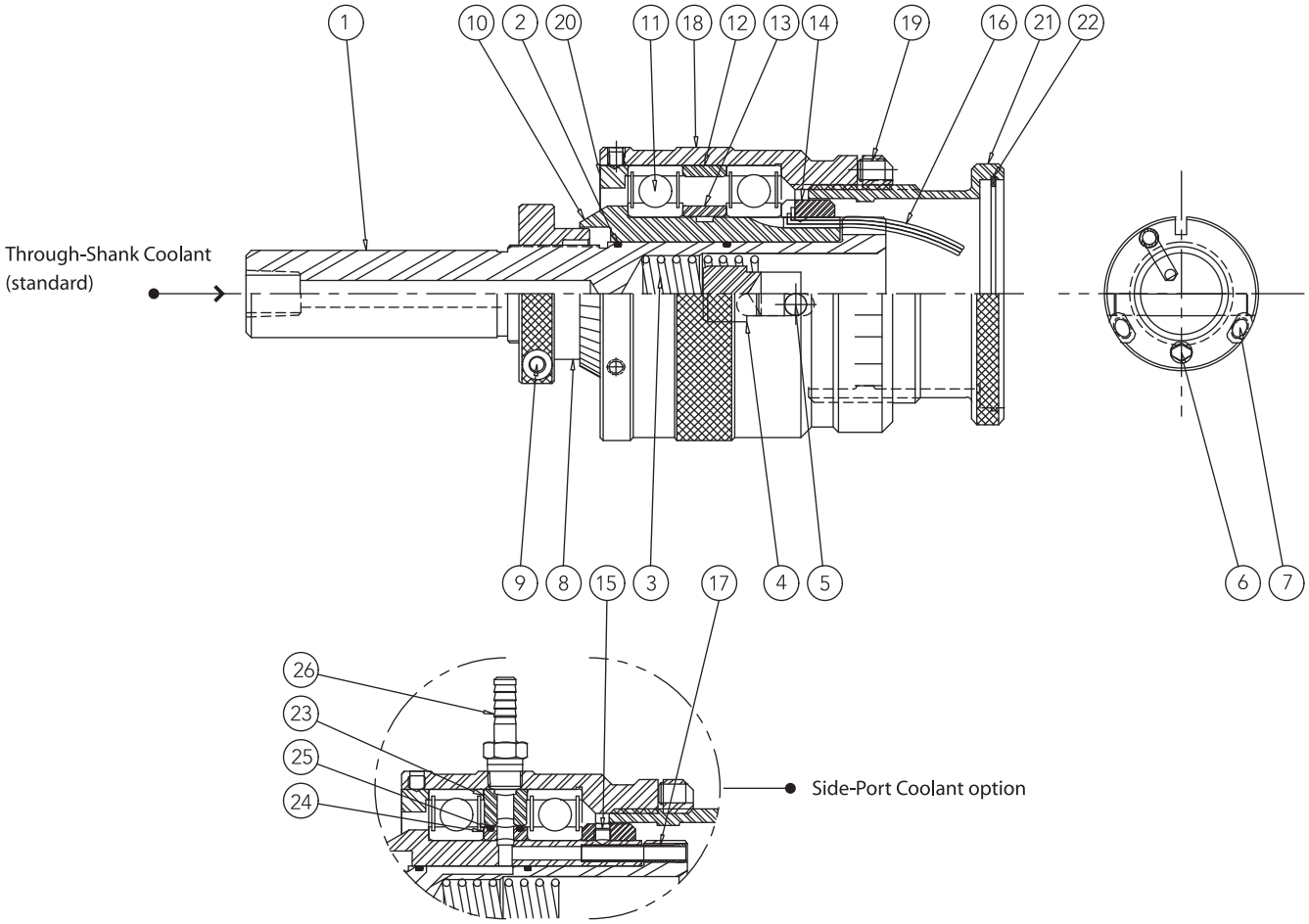
13 Pin

14 Spacer/Bushing/ Spring

15 Compression Spring Return

Bill of Materials

Nobur® JA2000 Recessing Head



NOTE: **Coolant location can be changed in the field; consult Sales Department.**

1 Spindle
2 O-Ring
3 Compression Spring
4 Spacer Bushing
5 Pin
6 Drive Pin
7 Flat Point Set Screw
8 Stop Nut
9 Socket Head Cap Screw
10 Bearing Sleeve
11 Ball Bearing
12 Outer Bearing Spacer
13 Inner Bearing Spacer
14 Bearing Collar
15 Cone Point Screw
16 Leaf Spring
17 Coolant Tube
18 Housing
19 Flat Point Set Screw
20 Bearing Retainer
21 Stop Collar
22 Retaining Ring
Details 23 thru 27 optional
23 Outer Bearing Spacer
24 Inner Bearing Spacer
25 O-Ring
26 Coolant Nipple
27 Pipe Plug **(not shown)**

Set-up

Cogsdill Nobur® JA tools are easily set. Since the precision feed motion is built into the head, only two adjustments are required in order to properly set up a tool for operation. Occasionally, compensating adjustments might be required if there is an error in the initial settings, or to compensate for cutter wear. However, by following the steps prescribed below, it will be easy to attain the initial set-up.

1 Set front stop collar

This setting determines the position of the groove(s) relative to the face of the part, or other surface from which the tool actuates. Simply adjust the threaded stop collar, measuring from the face of the collar to the top corner of the cutter until the correct distance is established (refer to photo **A**). Once set, the locking screw on the outer tool body should be tightened.

A

2 Set the groove diameter to be cut

On manually fed machines, this setting is established by adjusting the threaded diameter stop nut at the rear of the tool body. Because the cutter motion is radial, the groove cut diameter can be measured by using a micrometer to measure directly across the pilot and cutting edge when the head is compressed (refer to photo **B**). Since the pilot is .002 in. (0.05mm) under the smallest bore diameter, the cutter should project from the pilot for a distance equal to the required depth of cut. An alternative setting method is to measure the projection of the cutter using a surface plate indicator relative to the centerline of the bore.

Setting the groove diameter for machines with power feed requires that the diameter stop nut be backed away (toward the rear of the tool) so that it becomes non-operative. Tools with Acme-threaded shanks do not have the diameter stop nut. The automatic feed on the machine is then set to produce the cutter projection required to cut the desired groove diameter. Preset holders and gauges may also be used to establish the spindle travel limits.

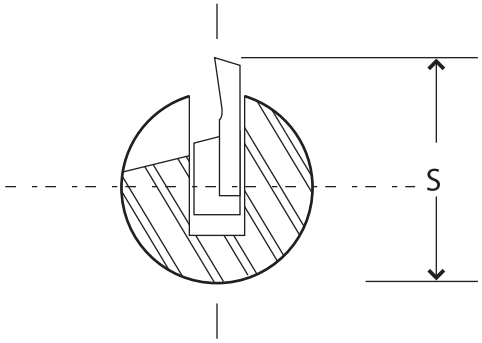
Since cutter deflection is eliminated due to the support of the cutter by the arm and pilot, no compensation is required. Once the above settings are verified, the tool is ready to use. However, please remember that variations in bore diameter can cause groove dimensions to vary. A variation of .001 in. (0.02mm) in bore diameter can result in a .002 in. (0.05mm) variation in groove diameter. Therefore, bore tolerances must be limited to less than 1/2 of the tolerance required for the groove diameter. If this tolerance requirement presents a problem, it might be necessary to pilot the tool in a fixture instead of piloting in the bore. The diagram on the following page shows how to measure a tool to cut a specific diameter.

B

(continued)

Diameter Setting Methods

BY MICROMETER

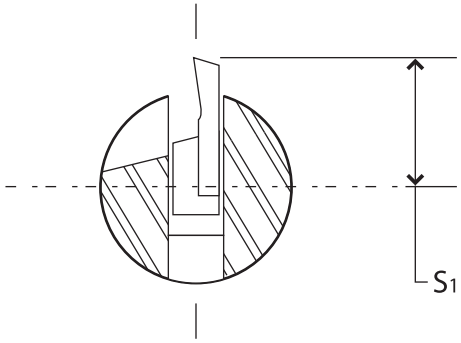


$$S = \frac{\text{Groove Dia.} + \text{Bore Dia.}}{2}$$

OR

$$S = \frac{\text{Groove Dia.} + \text{Pilot Dia.}}{2} + .002$$

BY INDICATOR



$$S_1 = \frac{\text{Groove Dia.}}{2} + .002$$

In order to measure for a specific groove cut diameter, the tool must be actuated to the limit setting by compressing the actuating assembly against the diameter stop nut. The nominal clearance between the pilot diameter and the minimum bore diameter is .002" (.05mm).

Tool Operation

Cogsdill Nobur® JA Recessing tools operate automatically as axial spindle travel is converted into radial cutter travel within the head. The pilot enters the bore and the stop collar contacts the front of the part. Continued spindle travel results in corresponding cutter travel which is rigidly supported within the part for extreme accuracy. A sealed bearing between the tool body and the stop collar prevents marking of the workpiece.

Radial cutter advancement is approximately 1/2 of spindle travel. Depth of cut is precisely controlled by an adjustable diameter stop nut located on the back end of the tool. A feed rate of .003–.005 IPR (0.08–0.13mm) is generally used.

Upon completion of the cut, tool withdrawal feed should be at the cutting feed rate until the stop collar no longer contacts the part. This will ensure that the cutter has fully retracted into the pilot before the tool is withdrawn from the part.

Tool Lubrication

In applications where water soluble or synthetic coolants are used, we recommend that, when the machine and tool are idle, the tool be removed from the spindle and immersed in oil to keep it lubricated and to prevent rusting of the internal mechanism.

Precision Chamfering

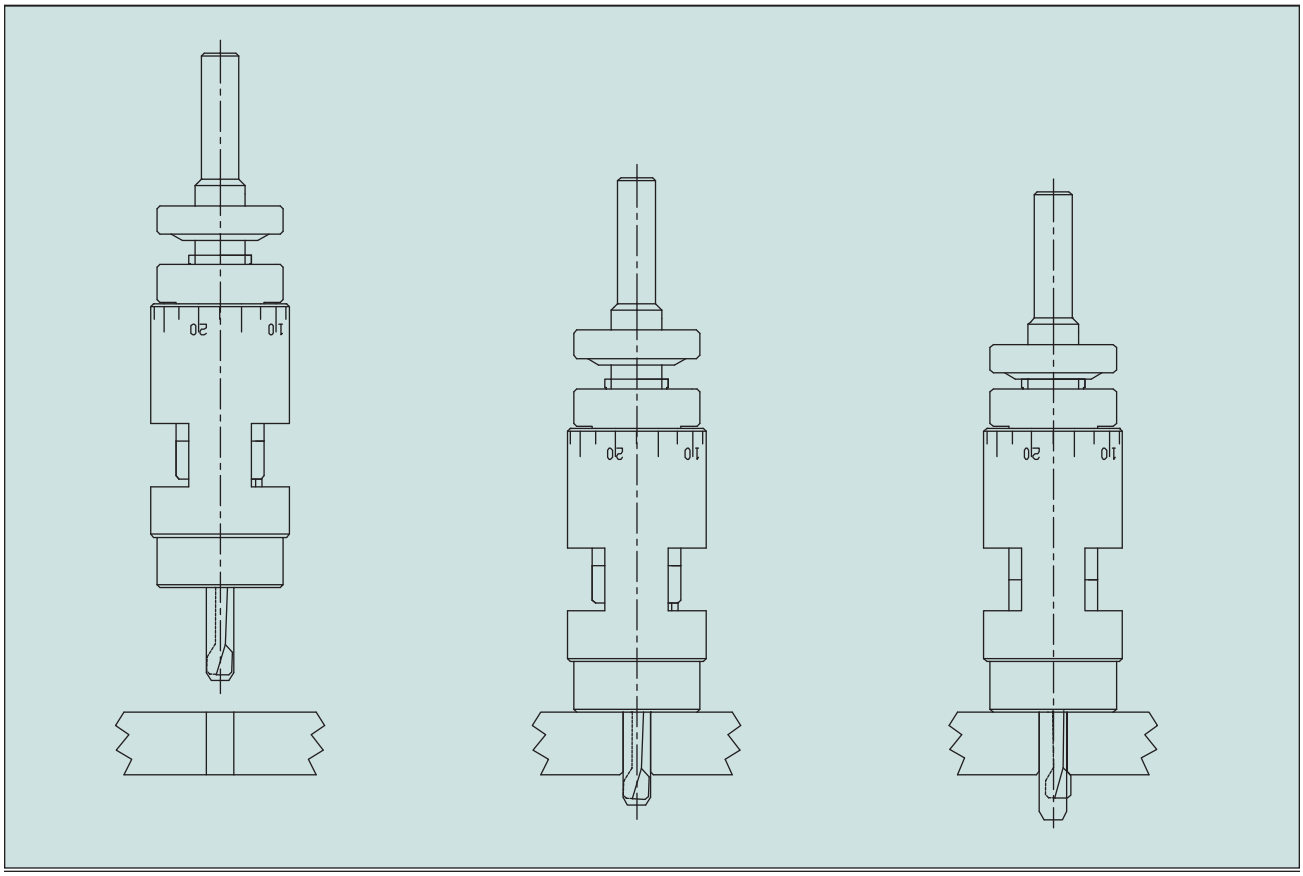
Nobur® JB Automatic Back-Chamfering Tool

For back-chamfering or deburring on drill presses, CNC machines, tool or turret lathes, multi-spindle machines and jig boring machines.

- **Consistently accurate back-chamfering, deburring, and back-countersinking operations**
- **Pilots in hole for precise concentricity**
- **Rigid support of the cutter virtually eliminates deflection**
- **Micrometer-stop adjustment**
- **Standard pilots and cutters for hole sizes from 3/16 to 3/4” (4.75 to 19.05mm)**
- **Special pilots and cutters available upon request**

Operating Principle

Illustrated below is the basic operating principle for the Nobur® JB Automatic Back-Chamfering tool.



1 Approach Stroke

The Nobur® JB tool is rotating in a machine spindle. The spindle is lowered to bring the tool into position to enter the bore.

2 Feed Stroke

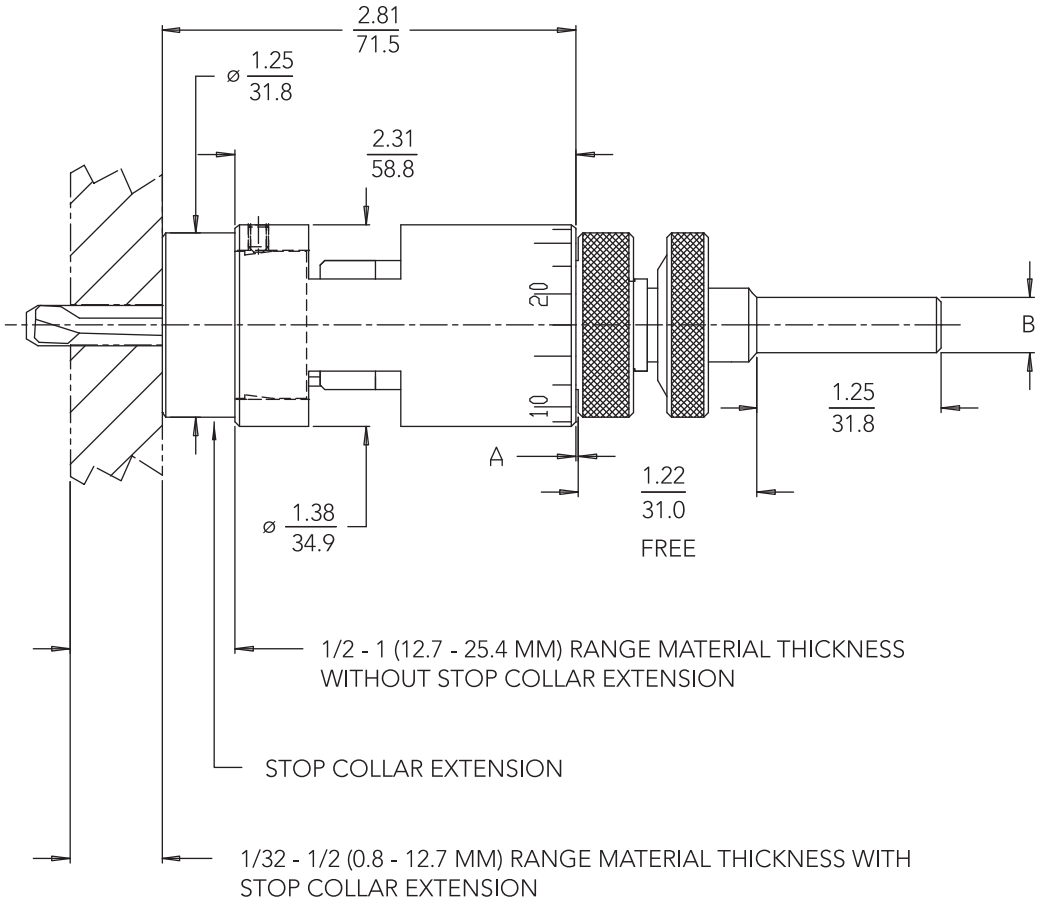
The pilot locates in the bore, stopping against the face of the workpiece. As the spindle continues to travel, the tool is compressed so that the cutter feeds out radially into the work. The cutter is rigidly supported in the bore by the pilot to eliminate deflection and ensure concentricity.

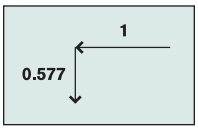
3 End of Feed Stroke

Radial depth of cut is obtained when the micrometer-stop nut bottoms out. Chamfer location is controlled by rotation of the stop collar, which moves the stop collar extension up or down to position the cutter for accurate chamfer location.

Specifications

Nobur® JB Series
AUTOMATIC BACK-CHAMFERING





The ***Feed Ratio*** is the ratio of vertical to horizontal movement. The ***Maximum Feed Stroke*** is 0.38 in. (9.4mm)

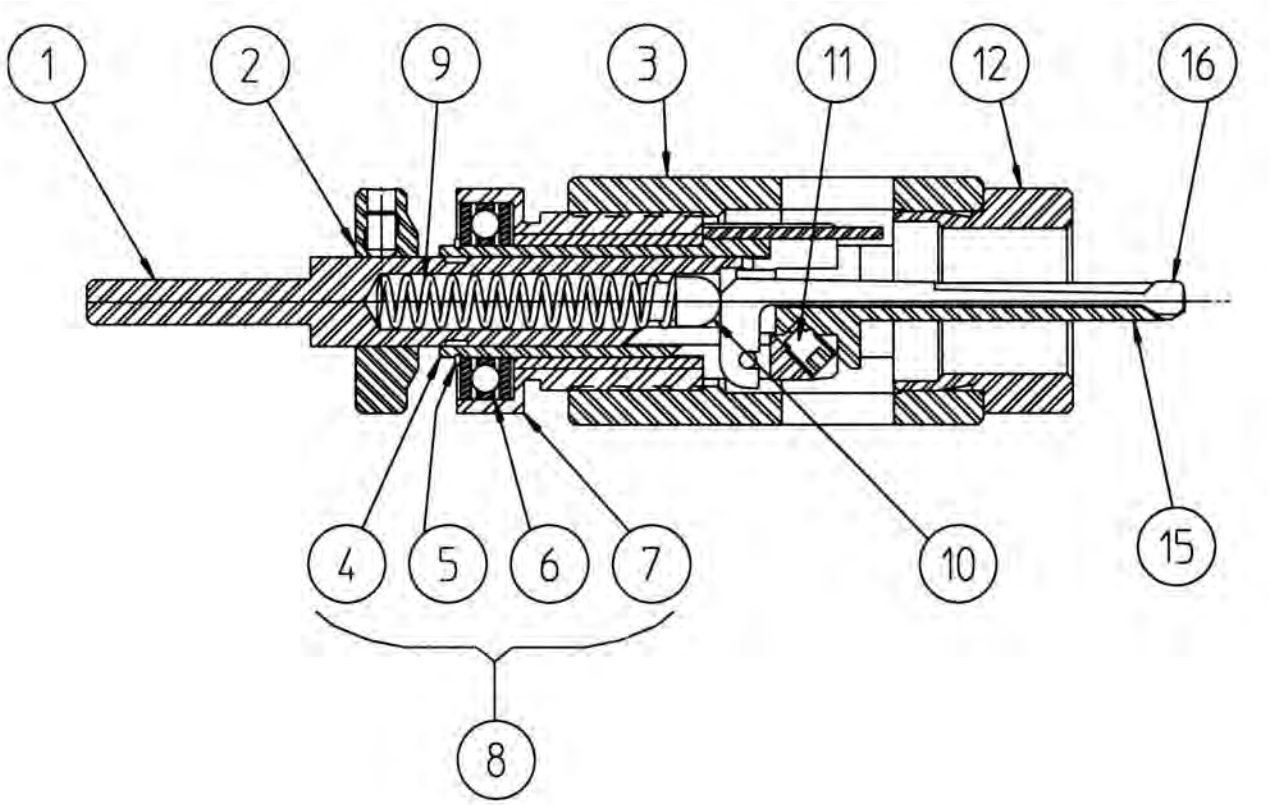
INCH [METRIC]

CAPACITY *		(A) MAX.		(B) SHANKS **
IN	MM	IN	MM	STRAIGHT SHANKS
0.88	22.4	0.78	19.8	1/4 3/8 w/tang

* Capacity means the suggested maximum chamfer diameter. Dependent upon cutting forces and bore diameter. Stated capacity is for steel.

** Shank is included with head. Shanks other than shown can be supplied upon request.

Bill of Materials

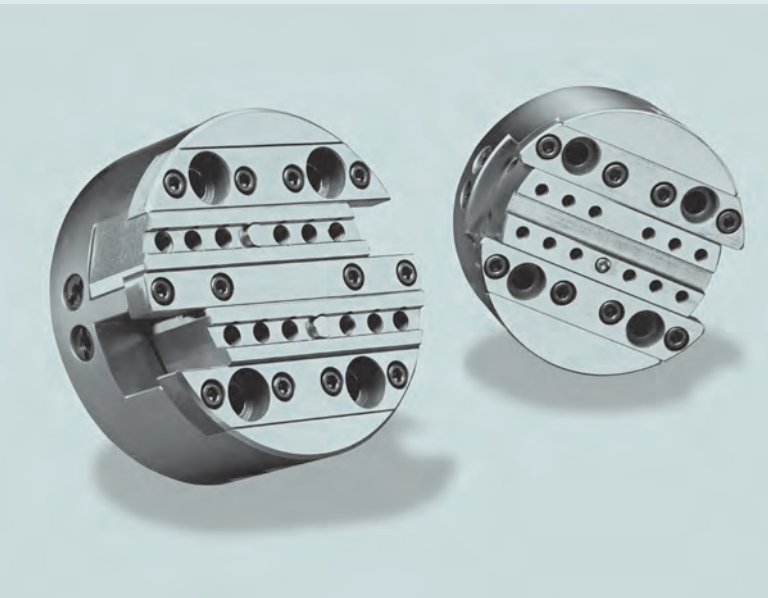


1 Body Holder
2 Stop Nut
3 Stop Collar
4 Keyed Transport Sleeve
5 Retaining Ring
6 Ball Thrust Bearing
7 Bearing Cage
8 Transport Assembly
9 Compression Spring
10 Ball (19/64) diameter
11 Pilot Retaining Screw
12 Stop Collar Extension
15 Pilot
16 Blade

Generating Heads

For facing, recessing, boring, and contouring. Multiple operations can be performed faster, more economically, with better quality, and at one spindle location. Used on special-purpose machines and other high production machinery, including transfer lines and dial machines.

- **Single or double-slide models are available, designed for feed-out or feed-in**
- **Sizes from 100 to 250mm (3.937 to 9.842 in.) in diameter**
- **Drawbar actuation- no need to pilot in part or fixture**
- **Unique actuator design- smooth, accurate motion for precise repeatability**
- **Internal mechanism manufactured to exacting tolerances- backlash is virtually eliminated**
- **All moving parts are hardened and precision ground for lasting accuracy**
- **Built-in lubeways and easily accessible grease fittings**
- **Equipped with through-tool auto lube capability**
- **Special lightweight slides are available (optional) for higher cutting speeds and shorter cycle times- tooling can be balanced**



Custom-designed top tooling is mounted in qualified holes on the toolslide. Standard inserts are used for most applications. Special head designs and special form cutters are available.

Cogsdill generating heads are designed to work on machines where the tool slide stroke is controlled by a drawbar. The drawbar can produce finite, accurate movements in the tool slide(s), allowing the head to perform accurate machining operations. Drawbars can either push or pull on the actuator, and may be controlled by CNC, hydraulic, or mechanical action.

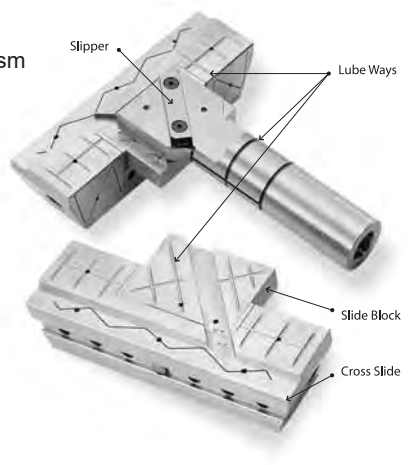
Operations such as **boring, turning, facing, chamfering, and form cutting** can be easily performed. Generating heads can often be made to **perform multiple operations in a single pass** – this provides for optimum efficiency and performance in your machining operations.

Cogsdill generating heads are made from the highest quality materials, to exacting quality standards. Our engineers have built in quality features that ensure durability and consistent accuracy. These high-quality features include hardened and ground components, multiple grease fittings with internal lube ways, and anti-friction coatings on wear surfaces.

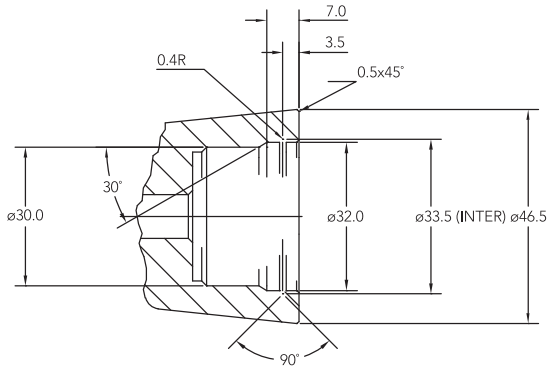
Operating Principle

The method of operation incorporated in all Cogsdill generating heads is based on the principal of a sliding inclined wedge. This actuation mechanism produces smooth, linear cutter movement with little or no backlash.

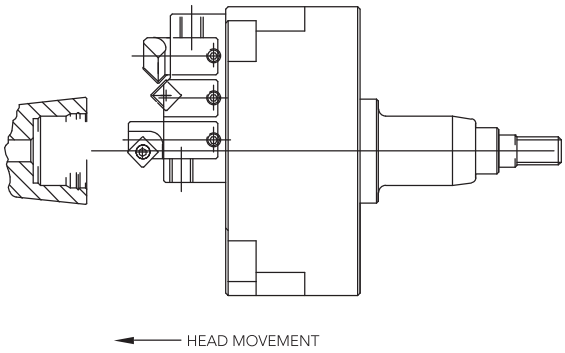
Cogsdill generating heads can be utilized on a variety of drawbar-equipped machines such as transfer lines, rotary transfer (dial type) machines, and other special purpose machines. The heads can be mounted on virtually any spindle that has a drawbar. Cogsdill can provide a complete tooling package for new machines, as well as for retrofitting an existing machine.



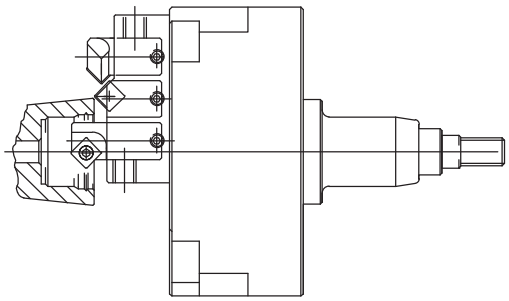
Generating Head sliding inclined wedge mechanism and lubeways



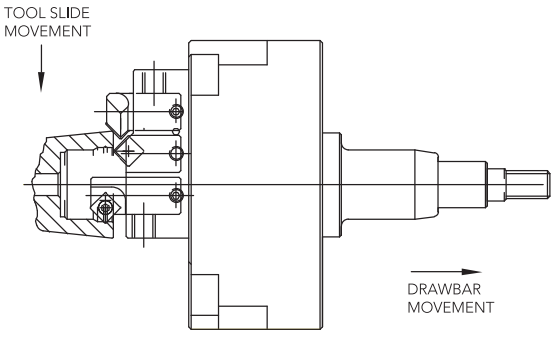
This typical component requires three machining operations: a face, an I.D. groove, and an O.D. chamfer. All operations will be completed at one station with one pass of the Cogsdill generating head. Drawbar stroke on the machine will control cutter movement.



1 The part is in position. The rotating machine spindle moves the generating head toward the part to begin the operation sequence. The drawbar and cross slide are in the home position.



2 The head is now in position. The drawbar begins to pull, causing the cross slide and cutters to move radially across the part as the cutting stroke begins. The face is cut first, followed by the I.D. groove, and then the O.D. chamfer.



3 The head is now at full drawbar stroke, and the cuts have been completed. The drawbar is then pushed back to the home position, thereby retracting the cutters. The spindle then retracts and the head is pulled away from the part and returned to the position shown in step one.

Features & Options

Cogsdill generating heads are available as standard products in single-slide and double-slide models, ranging in diameter from 100mm to 250mm (approximately 4 to 10 inches). The head type used generally depends on the operation(s) being performed and the speed at which the head is run. Top tooling packages can be designed by our engineers to suit individual requirements. Specially designed heads are available when required to meet unique part requirements or production challenges.

Auto-lube

Our auto-lube feature enhances the longevity of the generating head by ensuring that all parts are consistently lubricated. Every Cogsdill generating head comes with auto-lubrication capability as a standard feature. Lubrication is fed to the head through the drawbar and actuator shaft. This feature can add many thousands of cycles to the life of the head, while eliminating the need to perform manual lubrication on a daily basis. Installation is easy on machines with spindles that have through-lube capability.

Most commercial auto-lube systems installed on machines are more than adequate for use with Cogsdill generating heads. The heads are usually lubricated automatically several times per shift, depending on the type of lubrication system available. When used in conjunction with an oil mist system (ISO68 grade oil), the flow rate is usually adjusted to a moderately low setting. For specific questions regarding the auto-lube feature, please consult with our engineering group.

Lubrication Recommendations

All heads may be manually lubricated via grease fittings in the main body if a through-lube system is not available on your machine. If these heads are not used with an automatic lubrication system, it is necessary to manually lubricate them **at least** weekly. More frequent lubrication may be necessary depending on the operational speed, type of coolant used, rapid cycling, and other factors. **Kluber Altemp Q NB50** has been thoroughly tested and found to perform exceptionally well – it is the only grease we recommend. Using a grease gun, inject one or two pumps of grease into each grease fitting.

Remember, adequate lubrication is vital to long head life and trouble-free performance.

It is also recommended that **Kluber Altemp Q NB50** grease be applied to all moving parts and surfaces when the head is disassembled for maintenance and cleaning, or if the head is to be stored for extended periods.

(Note: if the head is being used with an oil mist automatic lube system, do not use the Kluber grease during disassembly and cleaning. Instead, use the same recommended ISO68 oil that is fed through the lube system. It is important not to mix the oil and grease – only one type of lubrication should be used at any one time.)

A high-pressure hand pump gun is available from Cogsdill to make routine maintenance easy. (Ref. Part No. **CN-D24**)

Actuation Ratios

The standard actuation ratio for our heads is based on a 40-degree actuation angle. Slide travels for the standard actuation ratio are shown in the specification charts on the following pages.

Special actuation ratios are available to accommodate unique applications (e.g., when an extremely short tool stroke is required). Please consult with our engineering group when a non-standard ratio is required.

Adapter Plates

The bolt pattern in Cogsdill generating heads will fit a variety of spindles. However, when using a standard head, it may be necessary to use an adapter plate to mount the head due to different bolt patterns in the head and spindle. Cogsdill can design and manufacture adapter plates, when needed, to ensure accurate mounting of the head on any spindle. Special bolt patterns can also be built into specially designed heads.

Top Tooling Packages/Counterbalance Weights

Cogsdill can provide full top tooling packages for your application. Standard ISO / ANSI inserts are used where possible. Special form inserts are supplied where required.

When using a double-slide head, the slides move in opposing directions. This allows the head to be balanced by mounting a counterbalance to the slide opposite the one with the cutting tool. The weight moves proportionately to the cutting edge, thus producing a balanced cut. (In double-slide applications where tooling is mounted on both slides, the tooling can be balanced.) Balance is particularly important as the size of the head, or the rotational speed, increases. The head can be dynamically balanced to a specific cut diameter and speed. (Single-slide heads are generally not balanced).

(continued)

Drawbar Force Requirements

The drawbar force required to actuate the generating head is dependent upon three variable but interrelated factors:

- Size of generating head
- Spindle speed or cycle time requirement
- Weight of top tooling

As the size of the head increases, so does the required drawbar force. Cycle time requirements can also directly affect the spindle speed. In some cases, the use of high strength aluminum alloy cross slide(s) and/or top tooling may be necessary to keep the drawbar force requirements within the operational limits of the machine (see next section below).

Due to variations in top tooling weight, it is difficult to predict the actual drawbar force required to operate a generating head in a given application until a thorough layout is completed. When submitting a generating head application for quotation, please provide the following information in addition to part prints and general machine specifications:

- Spindle speed range available for your machine
- Desired cycle time (if known) for the operation(s) to be performed
- Drawbar actuation method (i.e. mechanical, CNC, or hydraulic) and force available

Our engineering department will recommend the appropriate generating head, and will quote a complete tooling package to suit your requirements.

Lightweight Cross Slides and Top Tooling

When application requirements demand head operation at higher than normal speeds, Cogsdill engineers can specify a special lightweight, high strength, aluminum alloy for manufacturing cross slides and some top tooling. The use of this alloy reduces the rotational mass of the head, allowing the tool to be run at higher speeds without significantly affecting the drawbar force requirement for actuating the head.

Requests for Quotation

All quote requests should be submitted through our customer service department.

While most heads sold are standard heads, each application tends to be unique. In order for our engineers to prepare a formal and complete quotation, we need to know as much as possible about your application. In order to assure that we have the necessary data for quoting, please submit the following:

- A copy of the Application Data Sheet in the back of this catalog, filled out as completely as possible (material type, operations required, how the parts will be fixtured, etc.).
- A complete part drawing, and machine and spindle data. Please include spindle speed range, drawbar actuation method, and available drawbar force (if known).

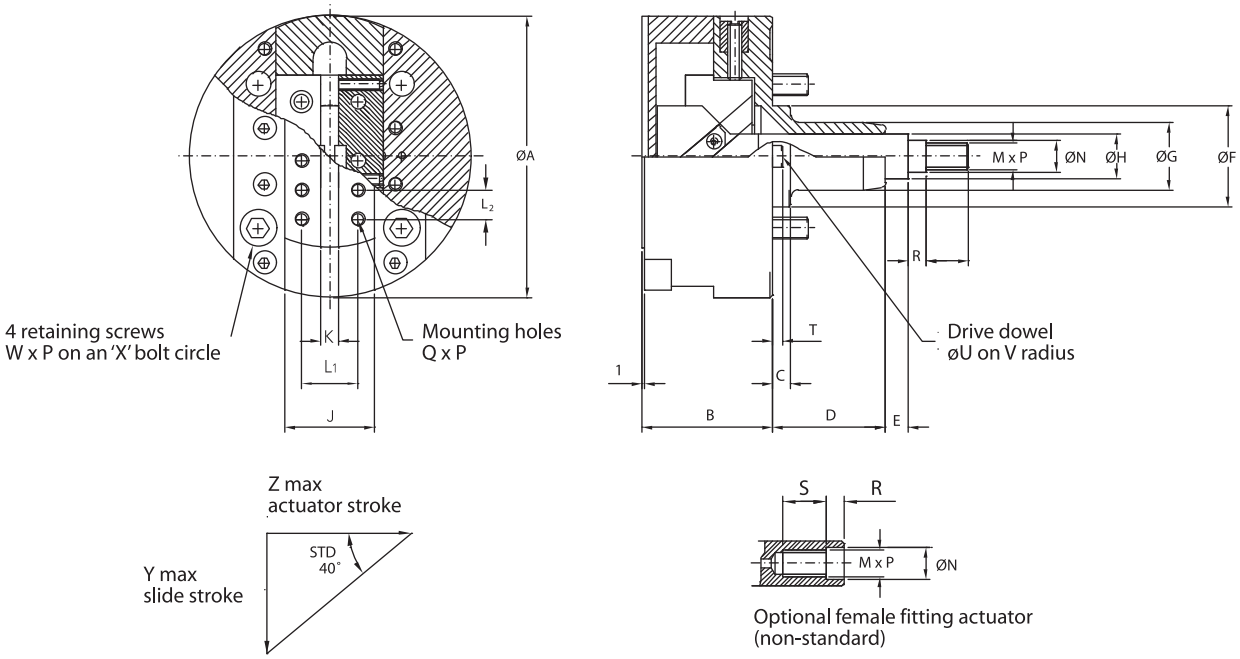
Other important information includes:

- Does the application require a head that feeds in or feeds out?
- What actuation ratio is required (if known)? (If unknown, our engineers will gladly make recommendations.)
- Single or double slide?
- What type of drawbar fitting? (I.e. male or female, thread size and pitch. Male is standard, female is available on request.)
- Is through-lube capability available on the machine spindle?
- What is your production volume requirement?
- What is the desired machining cycle time for the operations involved (if known)?

Our customer service personnel will be pleased to assist you in answering questions about your application.

Specifications

Single-Slide Head



INCH [METRIC]

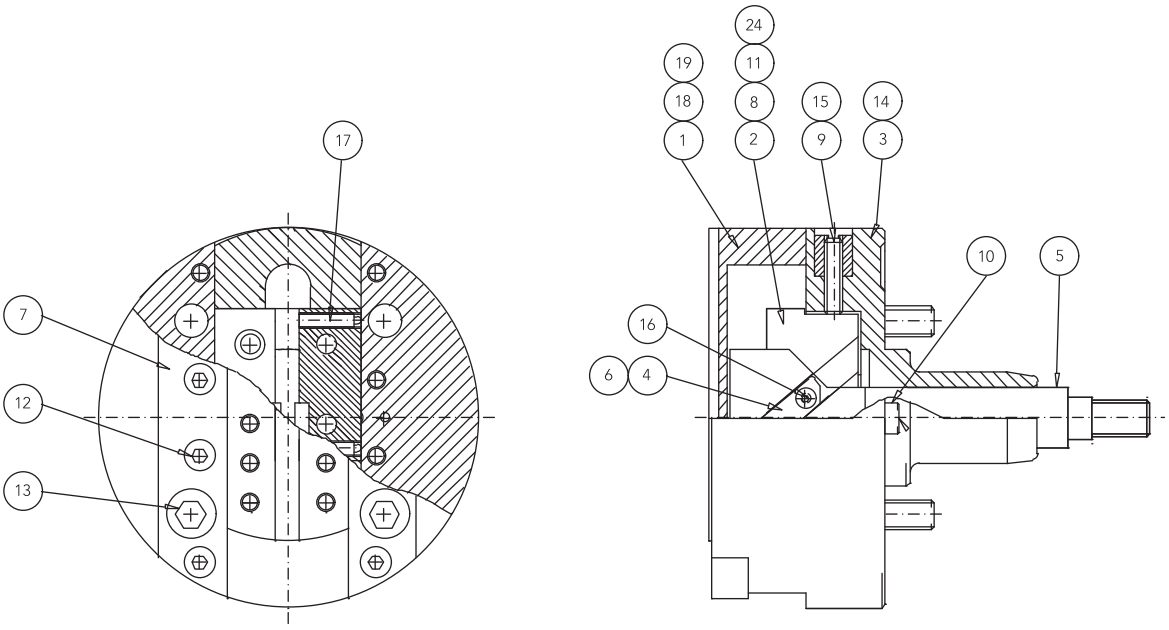
HEAD TYPE	(A)	(B)	(C)	(D)	(E)	(F^{h5})	(G)	(H)	(J)	(K^{H7} x DP)	(L_1)	(L_2)
CN**100SA**	3.937 [100]	1.969 [50]	0.236 [6]	1.772 [45]	0.394 [10]	1.260 [32]	0.984 [25]	0.630 [16]	1.181 [30]	0.315 x 0.118 [8 x 3]	0.669 [17]	0.433 [11]
CN**125SA**	4.921 [125]	2.283 [58]	0.315 [8]	1.969 [50]	0.394 [10]	1.772 [45]	1.181 [30]	0.787 [20]	1.575 [40]	0.315 x 0.118 [8 x 3]	0.984 [25]	0.512 [13]
CN**160SA**	6.300 [160]	2.756 [70]	0.374 [9.5]	2.362 [60]	0.394 [10]	3.937 [100]	1.378 [35]	0.984 [25]	1.969 [50]	0.394 x 0.157 [10 x 4]	1.181 [30]	0.630 [16]
CN**200SA**	7.874 [200]	3.346 [85]	0.472 [12]	2.756 [70]	0.394 [10]	5.315 [135]	1.969 [50]	1.260 [32]	2.756 [70]	0.472 x 0.157 [12 x 4]	1.772 [45]	0.787 [20]
CN**250SA**	9.843 [250]	3.937 [100]	0.591 [15]	3.543 [90]	0.394 [10]	6.300 [160]	1.969 [50]	1.260 [32]	3.543 [90]	0.472 x 0.157 [12 x 4]	2.362 [60]	0.787 [20]

INCH [METRIC]

HEAD TYPE	(M x P/LH)	(N^{h7})	(Q x P)	(R)	(S)	(T)	(U^{m5})	(V)	(W x P)	(X)	(Y)	(Z)
CN**100SA**	M10 x 1.0	0.472 [12]	M5 x 0.8	0.315 [8]	0.669 [17]	0.197 [5]	0.315 [8]	1.575 [40]	M8 x 1.25	2.756 [70]	0.669 [17]	0.795 [20.2]
CN**125SA**	M12 x 1.5	0.551 [14]	M6 x 1.0	0.315 [8]	0.748 [19]	0.236 [6]	0.394 [10]	1.969 [50]	M10 x 1.50	3.543 [90]	0.866 [22]	1.031 [26.2]
CN**160SA**	M16 x 1.5	0.709 [18]	M8 x 1.25	0.394 [10]	0.984 [25]	0.256 [6.5]	0.472 [12]	2.559 [65]	M12 x 1.75	4.724 [120]	1.181 [30]	1.406 [35.7]
CN**200SA**	M16 x 1.5	0.709 [18]	M10 x 1.5	0.394 [10]	0.984 [25]	0.394 [10]	0.630 [16]	3.346 [85]	M12 x 1.75	6.300 [160]	1.575 [40]	1.878 [47.7]
CN**250SA**	M16 x 1.5	0.709 [18]	M12 x 1.75	0.394 [10]	0.984 [25]	0.472 [12]	0.787 [20]	3.937 [100]	M16 x 2.0	7.480 [190]	1.969 [50]	2.346 [59.6]

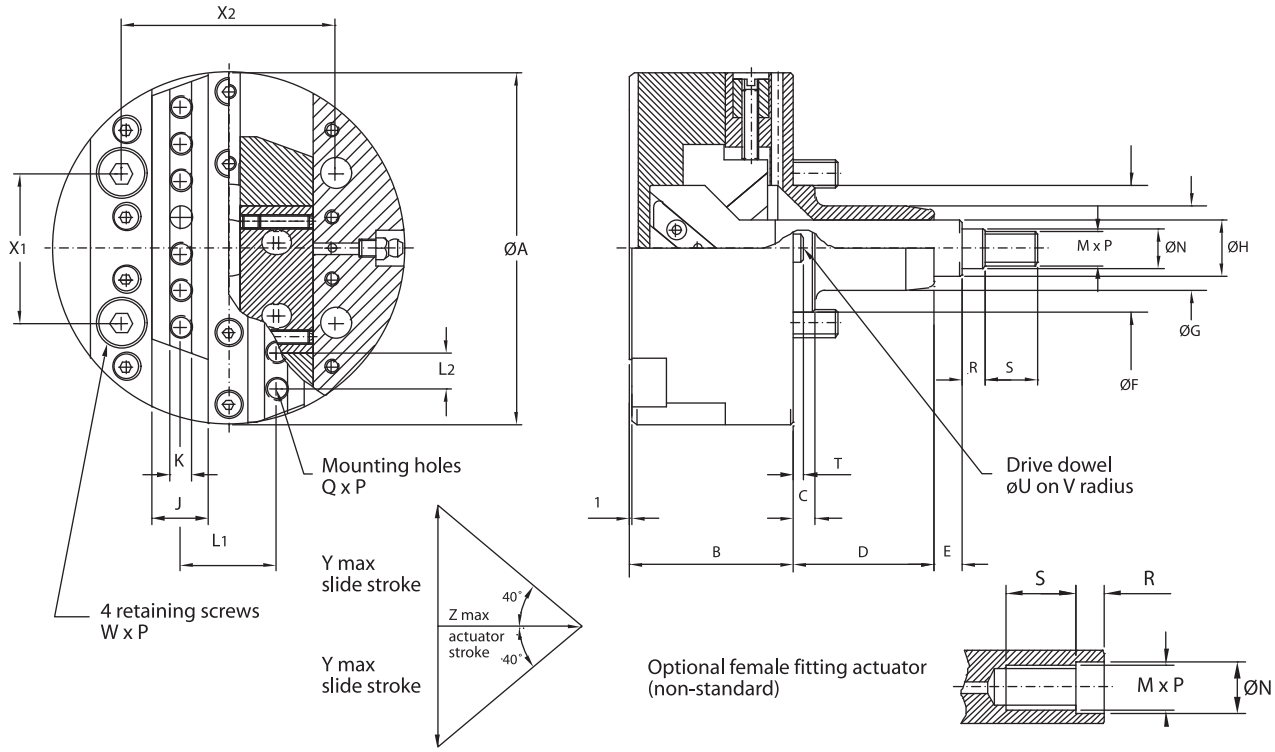
Bill of Materials

Single-Slide Head



1 Cross-slide
2 Slide Block
3 Body
4 Key
5 Actuator
6 Key
7 Keeper Plate
8 Slide Block
9 Locknut
10 Drive Dowel
11 Lock Screw
12 Caphead Screw
13 Caphead Screw
14 Grease Nipple
15 Dog Point Screw
16 Head Screw
17 Spring Plunger
18 Wiper
19 Location Dowel
24 Spring Washer

Double-Slide Head



INCH [METRIC]

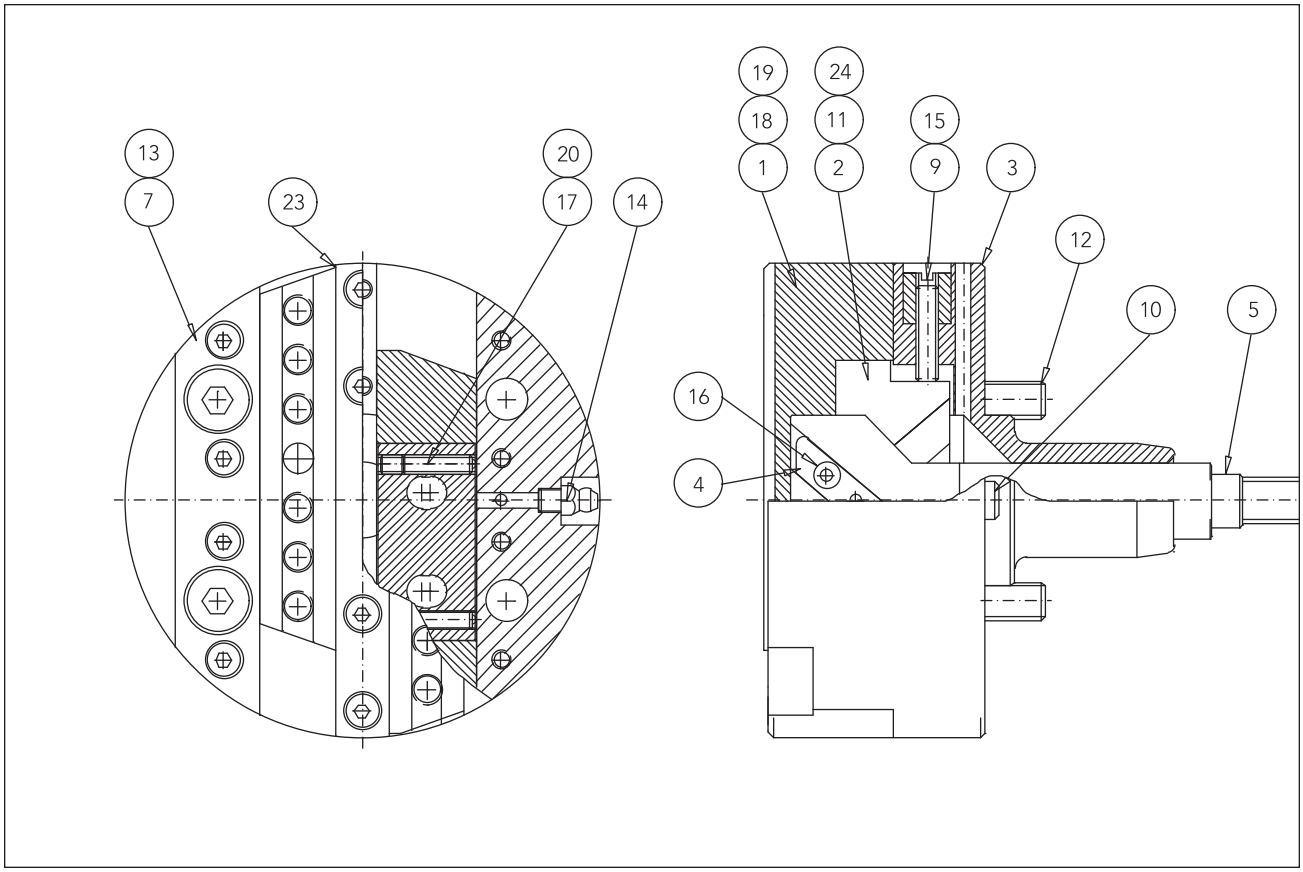
HEAD TYPE	(A)	(B)	(C)	(D)	(E)	(F^{h5})	(G)	(H)	(J)	(K^{H7} x DP)	(L_1)	(L_2)
CN**100DA**	3.937 [100]	1.969 [50]	0.236 [6]	1.772 [45]	0.394 [10]	1.260 [32]	0.984 [25]	0.630 [16]	0.630 [16]	0.236 x 0.118 [6 x 3]	1.102 [28]	0.394 [10]
CN**125DA**	4.921 [125]	2.283 [58]	0.315 [8]	1.969 [50]	0.394 [10]	1.772 [45]	1.181 [30]	0.787 [20]	0.787 [20]	0.315 x 0.118 [8 x 3]	1.339 [34]	0.512 [13]
CN**160DA**	6.300 [160]	2.756 [70]	0.374 [9.5]	2.362 [60]	0.394 [10]	3.937 [100]	1.378 [35]	0.984 [25]	0.984 [25]	0.315 x 0.118 [8 x 3]	1.772 [45]	0.630 [16]
CN**200DA**	7.874 [200]	3.346 [85]	0.472 [12]	2.756 [70]	0.394 [10]	5.315 [135]	1.969 [50]	1.260 [32]	1.260 [32]	0.315 x 0.118 [8 x 3]	2.126 [54]	0.787 [20]
CN**250DA**	9.843 [250]	3.937 [100]	0.591 [15]	3.543 [90]	0.394 [10]	6.300 [160]	1.969 [50]	1.260 [32]	1.772 [45]	0.394 x 0.157 [10 x 4]	2.756 [70]	0.787 [20]

INCH [METRIC]

HEAD TYPE	(M x P/LH)	(N^{h7})	(Q x P)	(R)	(S)	(T)	(U^{m5})	(V)	(W x P)	(X_1)	(X_2)	(Y)	(Z)
CN**100DA**	M10 x 1.0	0.472 [12]	M6 x 1.0	0.315 [8]	0.669 [17]	0.197 [5]	0.315 [8]	1.575 [40]	M8 x 1.25	1.811 [46]	2.441 [62]	0.669 [17]	0.795 [20.2]
CN**125DA**	M12 x 1.5	0.551 [14]	M8 x 1.25	0.315 [8]	0.748 [19]	0.236 [6]	0.394 [10]	1.969 [50]	M10 x 1.5	2.087 [53]	2.992 [76]	0.866 [22]	1.031 [26.2]
CN**160DA**	M16 x 1.5	0.709 [18]	M8 x 1.25	0.394 [10]	0.984 [25]	0.256 [6.5]	0.472 [12]	2.559 [65]	M12 x 1.75	2.520 [64]	3.937 [100]	1.181 [30]	1.406 [35.7]
CN**200DA**	M16 x 1.5	0.709 [18]	M8 x 1.25	0.394 [10]	0.984 [25]	0.394 [10]	0.630 [16]	3.346 [85]	M12 x 1.75	4.016 [102]	4.409 [112]	1.575 [40]	1.878 [47.7]
CN**250DA**	M16 x 1.5	0.709 [18]	M10 x 1.5	0.394 [10]	0.984 [25]	0.472 [12]	0.787 [20]	3.937 [100]	M16 x 2.0	5.000 [127]	5.984 [152]	1.969 [50]	2.346 [59.6]

Bill of Materials

Double-Slide Head



1 Cross-slide
2 Slide Block
3 Body
4 Key
5 Actuator
7 Keeper Plate
9 Locknut
10 Drive Dowel
11 Lock Screw
12 Caphead Screw
13 Caphead Screw
14 Grease Nipple
15 Dog Point Screw
16 Head Screw
17 Spring Plunger
18 Wiper
19 Location Dowel
20 Set Screw
23 Keeper Plate
24 Spring Washer

Application Data Sheet

To ensure that the correct tool is furnished for your particular application, please photocopy, complete this data sheet, and enclose it with your order or request for quotation. This is a requirement for ALL recessing applications, including internal and external facing, chamfering, and back-spot facing, as well as grooving.

Date

Quote No.

Customer Information

Customer

Address

City State Zip

Attn

Phone Fax

Sales Agent/Distributor

Application Specifications

1 Machine make/type

2 Shank style

If shank is threaded for retention knob or drawbar, specify thread size

3 Groove diameter **(B)** **4** Groove width **(W)**

5 Groove to face dimension **(L)**

6 Bore diameter **(A)** / Groove depth **(D)**

7 Is surface finish required in groove? If yes, specify

8 Material Type and condition

9 Are there any restrictions? Length Diameter Rotating

If there is a weight limit, please specify Used in a tool changer? Yes No

10 Is tool running: Horizontal Vertical Stationary

11 Is recessing tool to be used with a fixture? Yes No

If yes, full layout drawings must be attached or sketched

12 How is part to be held or clamped?

13 What type of feed will be used? Hand Power

14 Desired coolant feed: External Internal through spindle

Internal with rotating collar

15 If SPC or CPK applies, please specify

(continued on next page)

Application Data Sheet

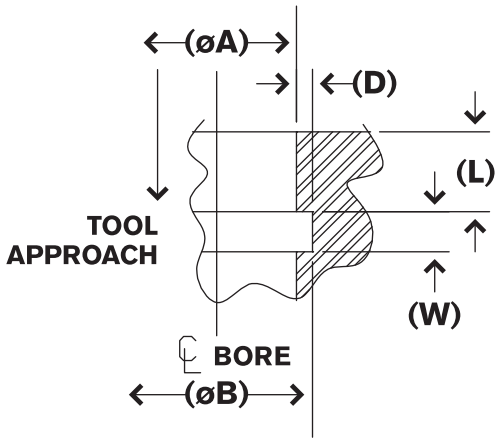
(continued)

Additional Comments

IMPORTANT

PART PRINT OR DETAILED SKETCH MUST BE SUPPLIED

Please indicate location of grooves or recesses, dimensions, tolerances, and direction of tool approach. In multiple groove applications, supply **(L)**, **(W)** and **(B)** dimensions for each groove.



FAX
803 438 5263

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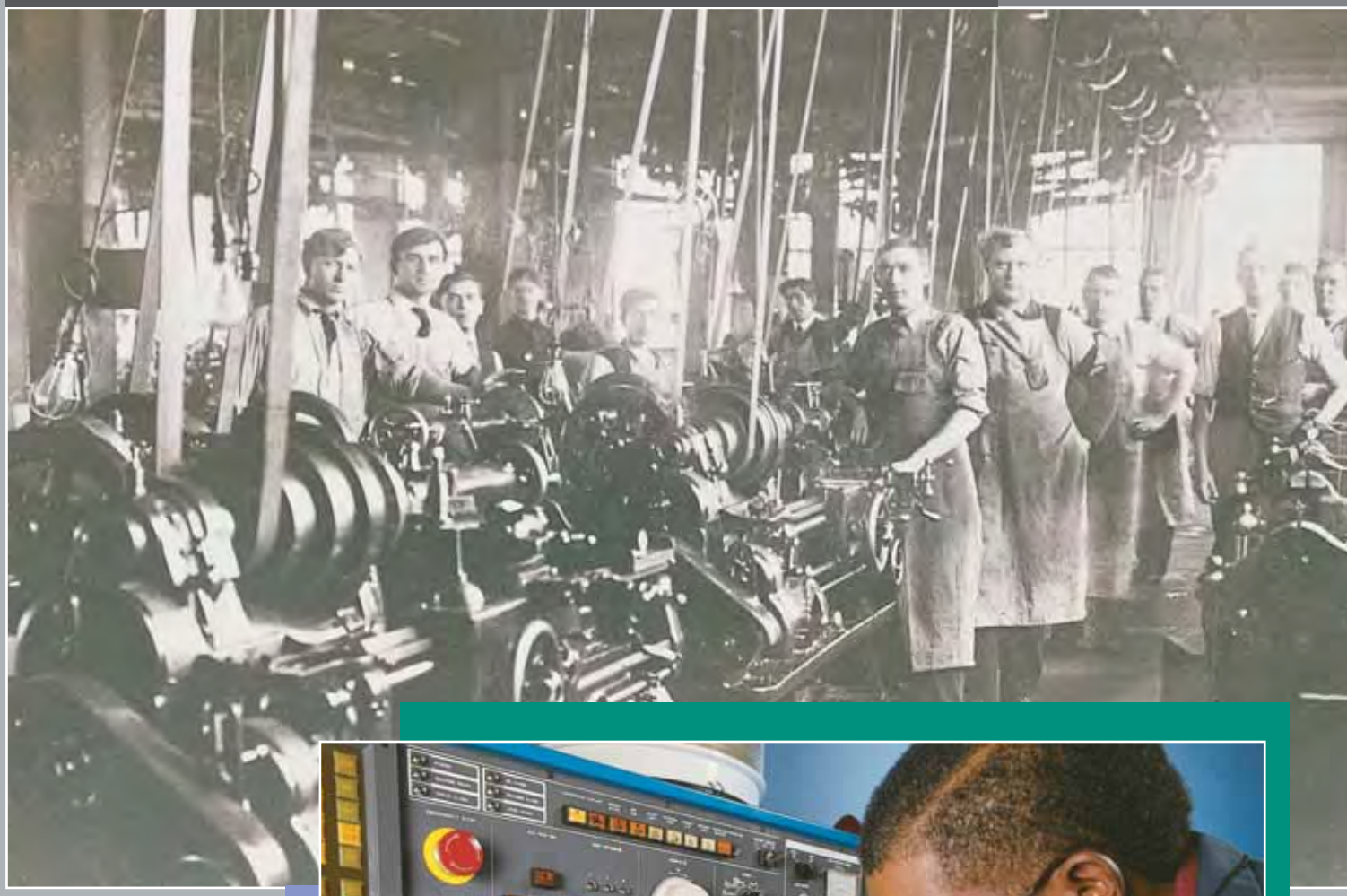
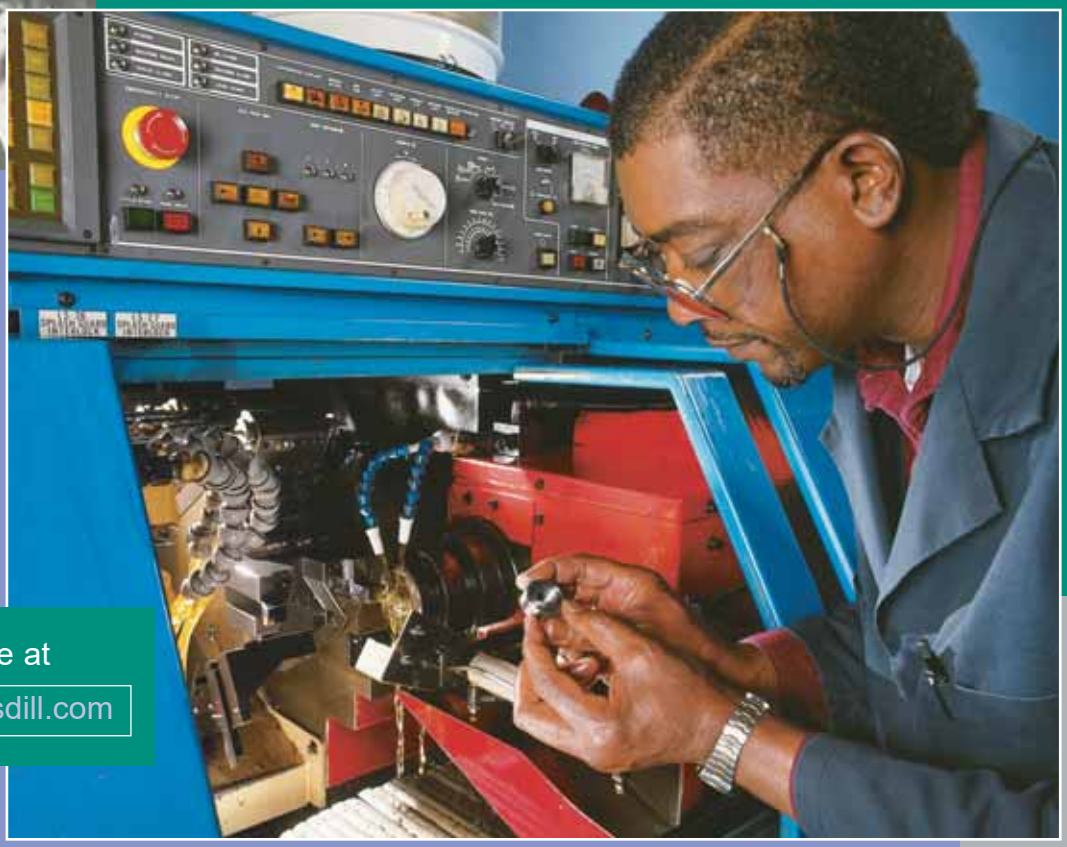
Cogsdill Tool Products, Inc.
P.O. Box 7007
Camden SC 29021-7007
Attn: Sales Department

COGSDILL TOOL PRODUCTS, INC.

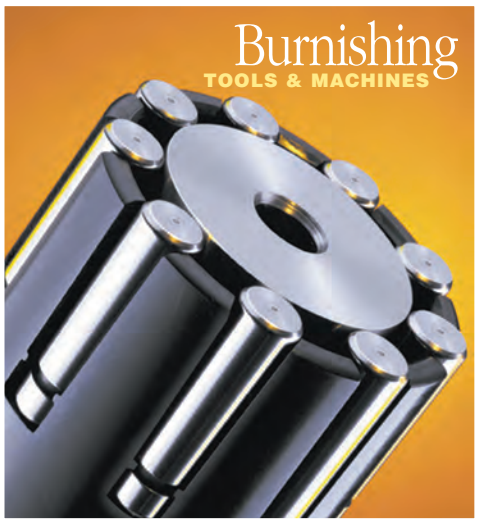
toolmakers since 1914

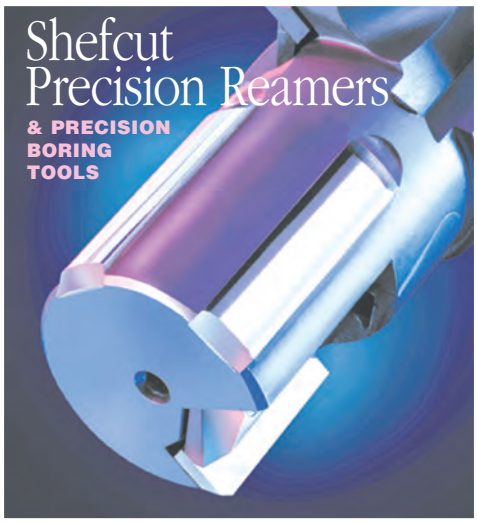


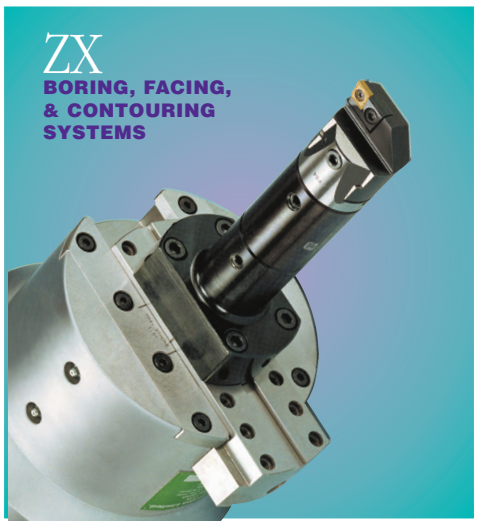


visit our web site at

www.cogsdill.com







FOR ADDITIONAL INFORMATION

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Camden, SC USA 29021-7007
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Fax (803) 438-5263
www.cogsdill.com
cogsdill@cogsdill.com

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