

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 except ARJ, 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.

For ARXJ heads, install a fixed cartridge onto the end of the toolslide and secure in place with caphead screws. Replaceable inserts can be fixed to this cartridge with insert screws. The cutting edge is automatically aligned on center as the cartridge is secured in the head.



3 Set cutter projection from pilot

For all head types except ARJ and ARXJ, 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.

For ARJ and ARXJ heads, groove location is controlled by an adjustable thrust housing on the externally threaded front body. ARJ heads have both the tool adjustment screw and the adjustable thrust housing for infinite cutter control.

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4 Depth of cut/tool travel

For all head types except AR-S and ARX-S (short length heads), 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).

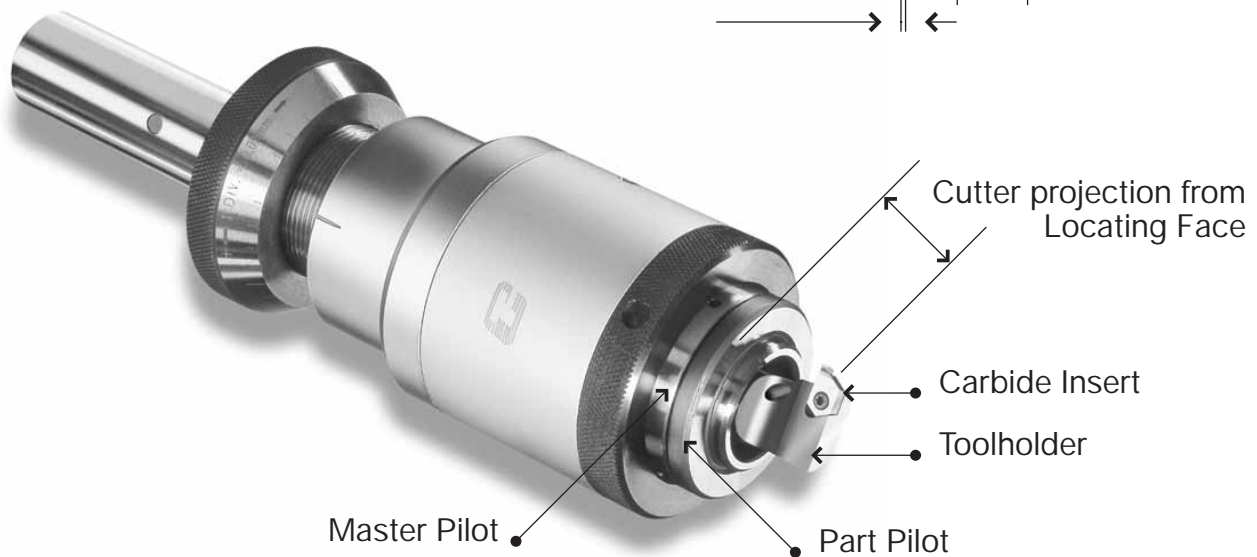
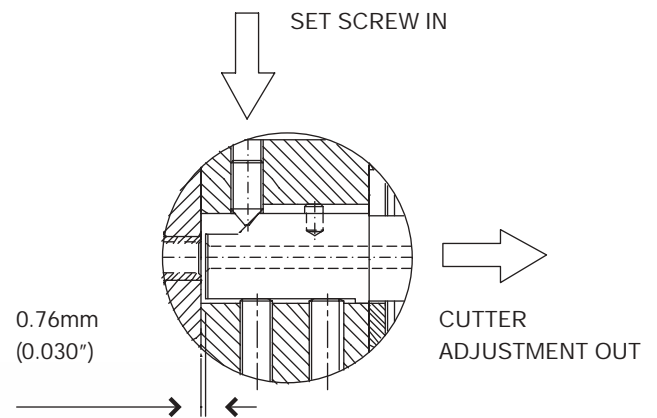
Refer to the drawing supplied with the tool for the set-up dimension. If the drawing is unavailable, follow this procedure: Add the depth of cut (the distance from the I.D. of the bore to the bottom of the groove) to the clearance between the cutter and the I.D of the bore. Multiply this figure by the 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.

For AR-S and ARX-S (short length) heads, the depth of cut is controlled by the Z-axis of the CNC machining center.

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

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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)