Set-up

Cogsdill Nobur® JA/JC 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.

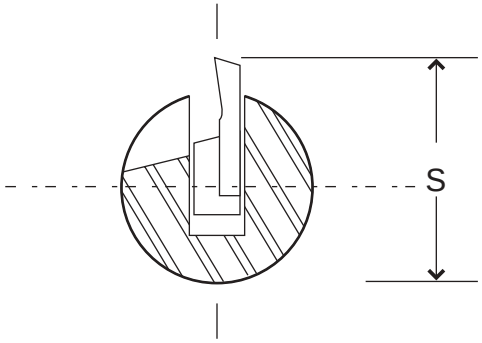
Since cutter deflection is eliminated due to the support of the cutter by the arm and pilot, no compensation is required. Once the above settings are verified, the tool is ready to use. However, please remember that variations in bore diameter can cause groove dimensions to vary. A variation of .001 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 page 53 shows how to measure a tool to cut a specific diameter.

B

(continued)

Diameter Setting Methods

BY MICROMETER

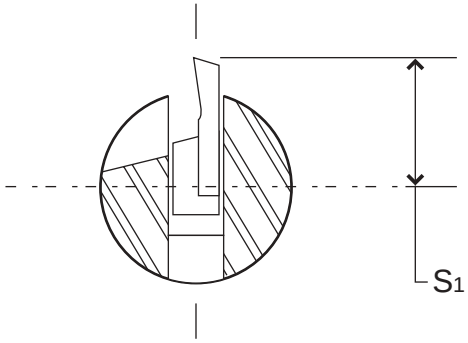


$$S = \frac{\text{Groove Dia.} + \text{Bore Dia.}}{2}$$

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/JC 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.