

DO-IT-YOURSELF INSTRUCTIONS FOR DRAWBAR ASSEMBLY

PARTS LIST

This "KIT" consists of a drawbar head blank, with the spline pre-machined and hardened, and a drawbar rod blank, with a hardened grooved pin, to pin the head and rod together, after they are machined by you.

Each kit will have a drawbar head, as shown below:
Drawbar Head #601-96 1.06 Diameter X 11.100 Long
#601-99 .875 Diameter X 10.100 Long

Each kit will also have a drawbar rod, ONE of the following:
#602-96 .438 Dia X 22.000 Long (7/16-20, R-8)
#602-98 .500 Dia X 29.000 Long (1/2-12, T-30)
#602-99 .625 Dia X 30.700 Long (5/8-11, T-40)
#602M-99 M16 X 2.00 X 30.700 Long(T-40)

Each kit will also have a hardened grooved pin:
Grooved Pin #604-02 3/16 Diameter X ¾ Long

MEASURING YOUR MACHINE

These parts will allow you to make a drawbar for the machine that you are fitting a Power Drawbar to. The next steps are necessary to get the information required to make the drawbar assembly for a correct fit.

1. Move the quill of the machine to fully retracted position. (If this is an NC/CNC machine, move the quill up to the normal Z-home position) Lock the quill in this position.
2. Scribe a line on the existing drawbar head, flush with the bearing retainer plate on the top of the machine head. **IT IS VERY IMPORTANT THAT THIS IS EXACTLY FLUSH!** (If your machine does NOT have a drawbar now, measure the distance from the top of the bearing retainer plate to the top of the spindle, where a drawbar would normally sit, using a depth mic or dial caliper)
3. Remove the drawbar from the machine, with the washer (if there is one). Remove the washer and save for later use.
4. Measure the distance from the scribed line on the drawbar head to the end of the drawbar head, where it was resting on the top of the spindle, or washer. **DO NOT INCLUDE THE THICKNESS OF THE WASHER IN THIS DIMENSION.** Record this length as the "A" dimension.
5. Next, measure the pilot diameter of the existing drawbar, and record this as the "C" diameter. Measure the length of the pilot diameter, and record it as the "B" dimension. (It is possible that your machine does not have a pilot diameter below the drawbar head, where the rod portion of the drawbar goes into the spindle. If this is the case, record the "B" length as zero.)
6. Finally, measure the length of the long end of the drawbar, from the end of the thread to the end of the drawbar head without the washer. Record this length as the "E".

DRAWBAR HEAD MACHINING

1. Calculate the overall length of the head by adding the following:
"A" Length: _____
+
"B" Length: _____
+
Spline Head: 1.0 (allows for .050 clearance)
=
TOTAL: _____ (Overall Length) +/- .010
2. Cut off the head length to dimension calculated above.
3. Drill, bore, and ream a hole in the end of the blank. Hold the depth to 1.81 minimum and hold the diameter to .4220+/- .0005 (for the R-8 and 30 Taper drawbars) or to .4990+/- .0005 (for the 40 Taper drawbars).
NOTE: If the overall head length is shorter than 3.250 please contact the factory.
4. Turn the pilot diameter to the same size as the existing drawbar "C" diameter, to length "B". There should be a .005/.015 radius in the corner.
5. Deburr all sharp corners/edges.

ONE STOP WORKHOLDING

www.kurtworkholding.com

DRAWBAR ASSEMBLY

DRAWBAR ROD MACHINING

1. Calculate the overall length of the rod by adding the following:

$$\begin{array}{r}
 \text{"E" Length} \underline{\hspace{2cm}} \\
 - \\
 \text{"B" Length} \underline{\hspace{2cm}} \\
 + \\
 \text{Press fit length } 1.750 \\
 = \\
 \text{TOTAL} \underline{\hspace{2cm}} \pm .010
 \end{array}$$

2. Cut off the unthreaded end of the rod to the rod length dimension calculated above.

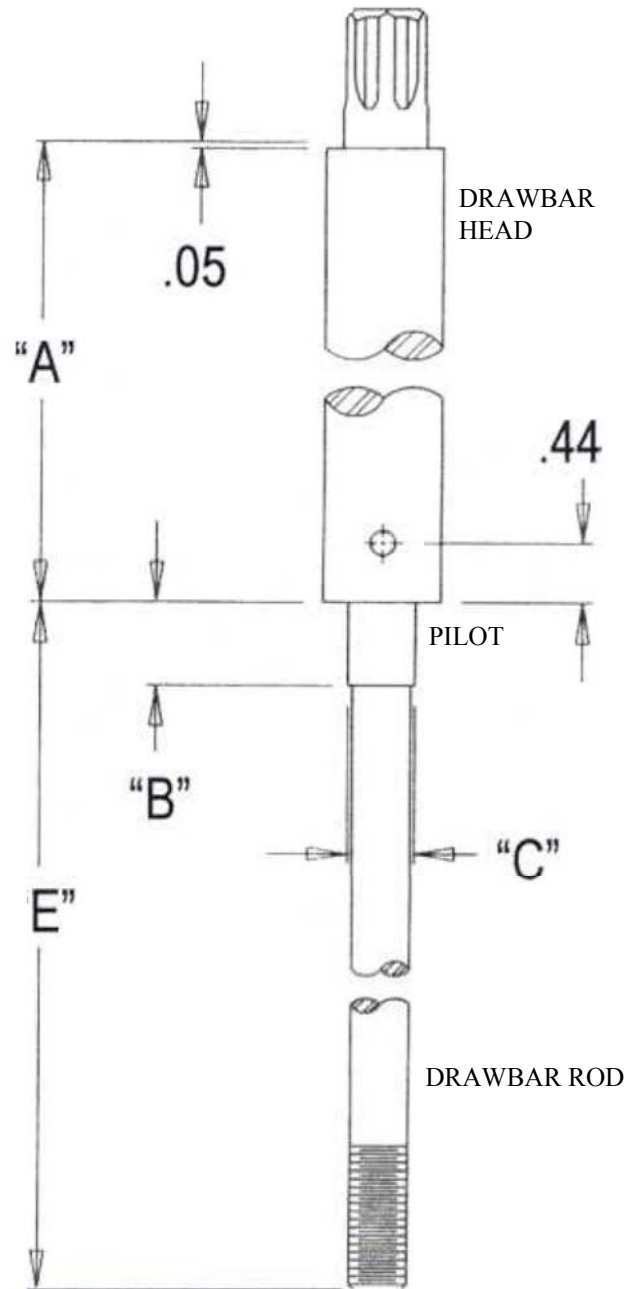
NOTE: If the overall length of the drawbar HEAD was shorter than 3.250, the turned length will be shorter. Please consult the factory before cutting and turning this part, too.

3. Turn a portion of the end that was cut off to .0007/.0013 larger than the hole that was put in the drawbar head to a length of 1.750 \pm .010. The radius of the tool used to turn this should be .005-.015
NOTE: This amount of press fit is very important. If there is too much press, the drawbar rod will not go fully into the head without bending something. If there is too little press, the rod will rotate inside the head and prematurely fail, as either the rod will break at the pin or the pin itself will shear. It is usually desirable to turn the first 1/4 inch to .002/.004 smaller than the hole to permit easier assembly by aligning the parts to be assembled.
4. Deburr all sharp corners/edges.

DRAWBAR ASSEMBLY

1. Press the drawbar rod into the drawbar head until the end of the head pilot diameter is even with the turned portion of the drawbar rod.
2. Measure up 7/16 (.44) from the end of the drawbar head that the rod was pressed into. Centerdrill, drill, and ream a 3/16 (.1875) diameter cross-hole thru the assembly in the 7/8 diameter portion of the head.
3. Deburr the hole on both sides.
4. Press the #604-02 grooved pin into this hole, small end first, until the head of the pin is flush to slightly below the surface of the rod.

The Drawbar Assembly is finished! See the installation instructions in the booklet that accompanied the kit for the rest of the information needed to complete the installation.



If you have any problems or questions, please contact us at:
 Kurt Manufacturing Company
 Industrial Products Division
 9445 East River Road NW
 Minneapolis, MN 55433
 Phone: 763-574-8309 Toll free (US only) 1-877-226-7823
 Fax: 763-574-8313 Toll free (US only) 1-877-226-7828
 Web Address: www.kurtworkholding.com

ONE STOP WORKHOLDING

www.kurtworkholding.com