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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 the threads rolled and hardened. It also contains 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 (1/2-13, T-30)
#602-99 .625 Dia. X 30.700 Long (5/8-11, T-40)
#602M-98 M12 X 1.75 X 29.000 Long (T-30)
#602M-99 M16 X 2 X 30.700 Long (T-40)

Each kit will also have a hardened grooved pin:

Grooved Pin #604-02 3/16 Diameter X 3/4 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, again **WITHOUT** the washer. Record this length as "E".

DRAWBAR HEAD MANUFACTURING

- 1 Calculate the overall length of the head by adding the following:
"A" length _____

plus
"B" length _____

plus
Spline head
1.000 (allows for .050 clearance)

TOTAL (Overall Length)
2. Cut off the head length to dimension calculated above, with a +/- .010 tolerance.
3. Drill, bore and ream a hole in the end of the blank, holding the depth to 1.81 minimum, holding the diameter to .4220+/- .0005 (for the R-8 and 30 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.

DRAWBAR ROD MACHINING



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

"E" Length _____
Minus

"B" Length _____
Plus
Press fit length 1.750

TOTAL

2. Cut off the unthreaded end of the rod, to the rod length dimension calculated above, with a +/- .010 tolerance.

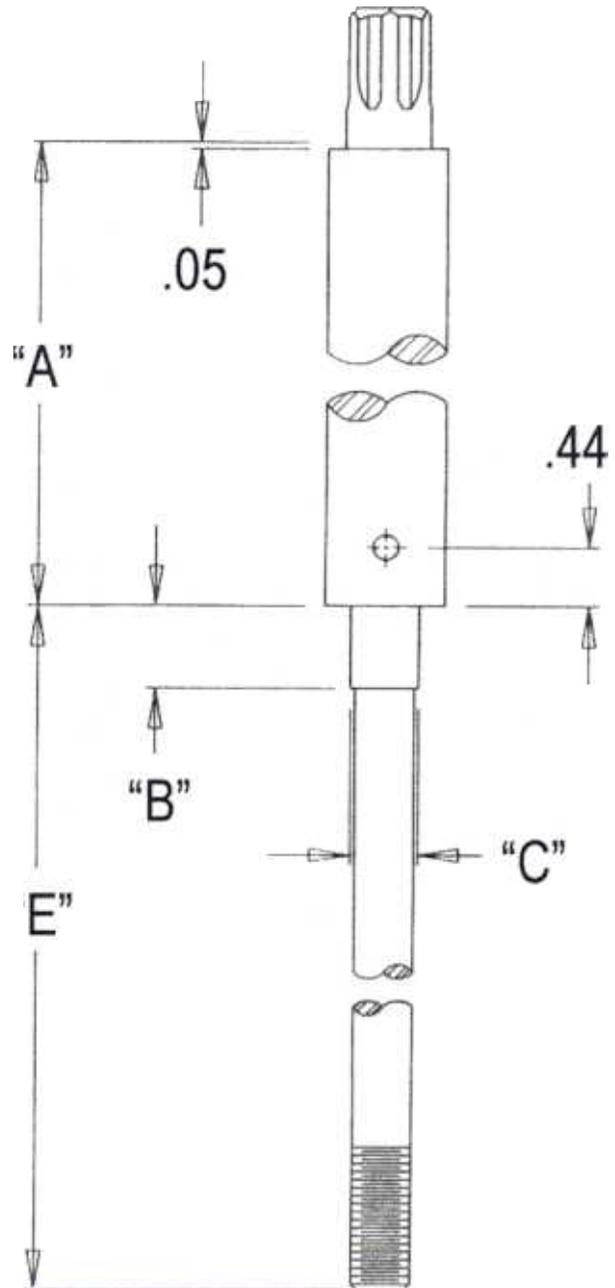
NOTE: If the overall length of the drawbar HEAD was shorter than 3.250 the turned length will be shorter. Please consult the factory before cutting and turning this part too.

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 +/- .010. The radius of the tool used to turn this should be .005/- .015 max. 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 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 1-800-328-2565, or at 1-763-572-4424.
Fax: 612-623-3902 Web Address: www.kurt.com

Part #DBKIT-95 08/01