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9445 East River Road NW
Minneapolis, MN 55433

kurtworkholding.com

Phone: 877-226-7823
Fax: 877-226-7828

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Automatic Power Drawbar Assembly

Operating Instructions Manual



ENGLISH

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Drawbar Data

Use this to fill out information about your drawbar for quick reference.

Purchase Date: _____ - _____ - _____

Purchase Order: _____

Purchased From: _____

Delivery Date: _____

Serial No.: _____

Note:

Make sure to register your warranty online at kurtworkholding.com



**Thank you for your purchase!
If you have any feedback or questions.**

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Miscellaneous information:

1. If Drawbar rod does not fit through the top of your machine it may need to be turned to .875" dia. On some machines the 1.060" dia. is too large.
2. Always use a synthetic air tool oil in FRL.
3. Always have pin in spindle on R8 collet machines to keep collet from turning.
4. Always have pin in spindle on R8 collet machines to keep collet from turning.
5. General maintenance once a month should include greasing threads on drawbar and area where washer rests. Make sure FRL is working properly with 1-2 drops every 5 to 10 cycles.
6. One cycle is in and out once. Also check to make sure no screws have vibrated loose. If any have retighten as needed.

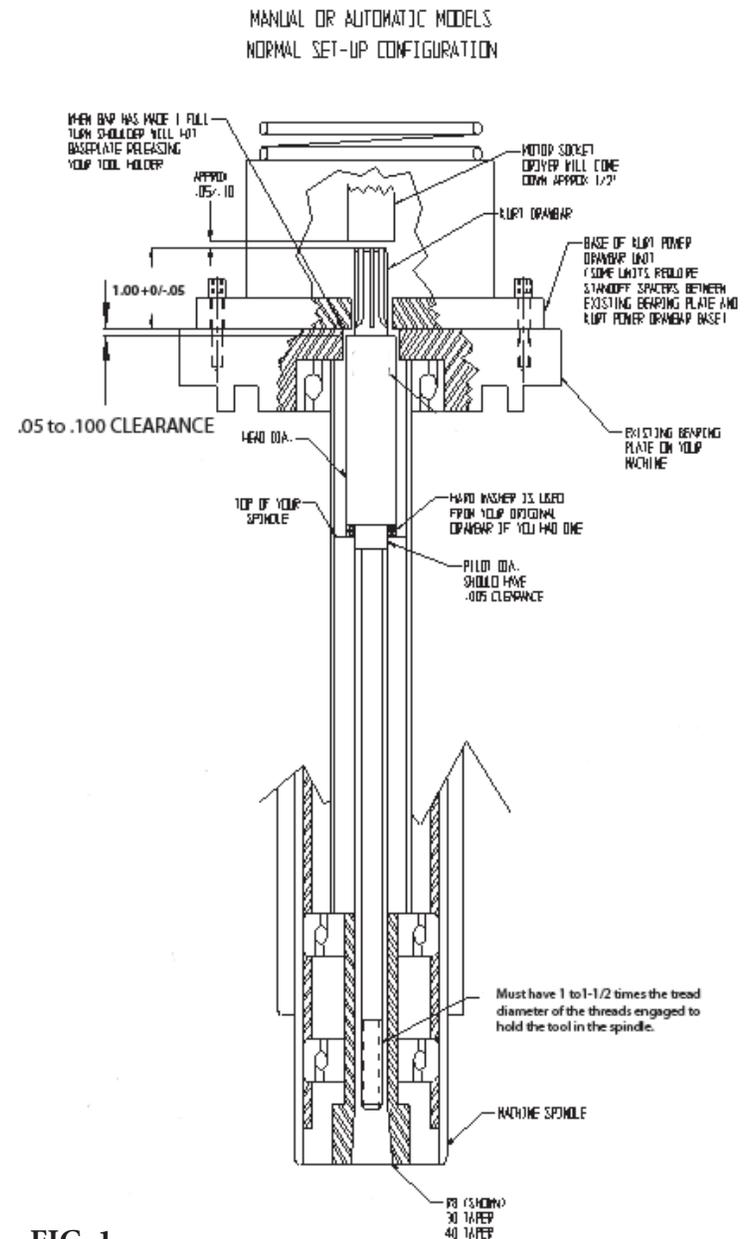


FIG. 1

Step 2 Installing the Power Head

1. A tool holder should be in your spindle, hand tighten from Step 1 process number 6. This allows the drawbar to center itself in the spindle.
2. Place the Pneumatic Motor Assembly on top of the bearing plate of machine. Make sure the air regulator on motor is facing the operator. Check to see that the regulator on motor is fully open which is (8) on dial.
Note: Some installations require risers between the bearing plate and the power head assembly. See page 12 for assembly instructions.
3. Align the mounting slots in the base of the assembly with the existing threaded holes in the bearing plate. Install the (3) 1/4-20 x 3/4" or M6 x 20mm with lock washers. Snug bolts with your fingers lightly.
Note: Some installations require to drill and tap your own 1/4-20 holes in the bearing plate.
4. Push down lightly on the motor until it engages with the spline of the Drawbar. Engage and disengage the motor several times to make sure the unit goes up and down freely. Now hold down on the motor and tighten the (3) 1/4 or M6 bolts around the base. Recheck after tightening to make sure operation is still free.

Drawbar turns but tool does not tighten properly

1. Does air supply to motor stay above 80 PSI while making tool change?
2. Do you have a washer between drawbar and spindle and is it well greased a washer and on drawbar threads? This is very important due to friction reducing clamping forces.
3. Is sheer pin in drawbar broken or missing?
4. Are threads in collet or on drawbar stripped?
5. Are you holding arm or push buttons in for three seconds after tool seats?
6. With soapy water check airlines for leaks. Sometimes an airline will get pinched and a small hole will be cut in airline. Be sure airline and fittings are checked.
7. If you are using a R8 collet and tool slips in the holder hold the IN button for 3 seconds to allow tool to tighten in spindle.
8. Make sure drawbar rod did not bottom out in tool holder.

Motor runs all the time:

1. Airline from FRL is connected to wrong fitting on automatic drawbar.
2. Butterfly has skipped past roll pin on arm. Manual Drawbar only.
3. Sometimes one of the plungers in motor will stick in the in position.

Tool seems to be sticking or stuck In spindle:

1. Make sure threads and washer have grease on them.
2. Have you got .050" to .100" space between drawbar and motor mounting plate?
3. Check air pressure to machine. 90 PSI min. into FRL and 80 PSI min. out FRL.
4. On automatic models the upper control block may need to be cleaned. Turn off air supply and remove from motor. Clean thoroughly and replace. **Note:** Stud on piston goes to motor. O-rings are made of 50 Buna if you need to replace them.
5. Over oiling or under oiling the motor could also cause tool to stick as motor loses power.
6. On Automatic model try reversing the airline into IN/OUT ports to see if it makes any difference. If it does a O-ring may have been cut or a chip may have gotten into the IN/OUT block. A disassemble and cleaning of IN/OUT block may be necessary.

Troubleshooting Guide

Motor does not run:

1. Is main air supply to machine turned on and at least 90 PSI?
2. Is air regulator set to at least 80 PSI?
3. Is dial on motor set to (8) all the way open? Turn C.C.W. to open.
4. If you think the air motor is oil locked do the following.
 - A) Disconnect air supply.
 - B) One at a time, remove air hoses blow out & replace. Make sure hoses are pushed securely back into fittings.
 - C) Disassemble upper control block (on automatic only) and remove excess oil and re-assemble.
 - D) Run motor manually by depressing buttons on motor or using butterfly.
 - E) Re-connect the air supply and turn on air.
 - F) Adjust the lubricator for minimum oil flow. You should just be able to see a drop forming during operation, to allow 1 drop per 5-10 cycles. 1 cycle is equal to 1 in and 1 out.
5. Did you remember to push in on the green safety button on side of switch?
6. On manual model did the butterfly skip past the roll pin?

Motor turns but nothing Happens to Drawbar:

1. Is spindle all the way up and in the locked position or at machine home?
2. Has socket fallen off end of motor?
3. Are splines broken or stripped from end of drawbar?

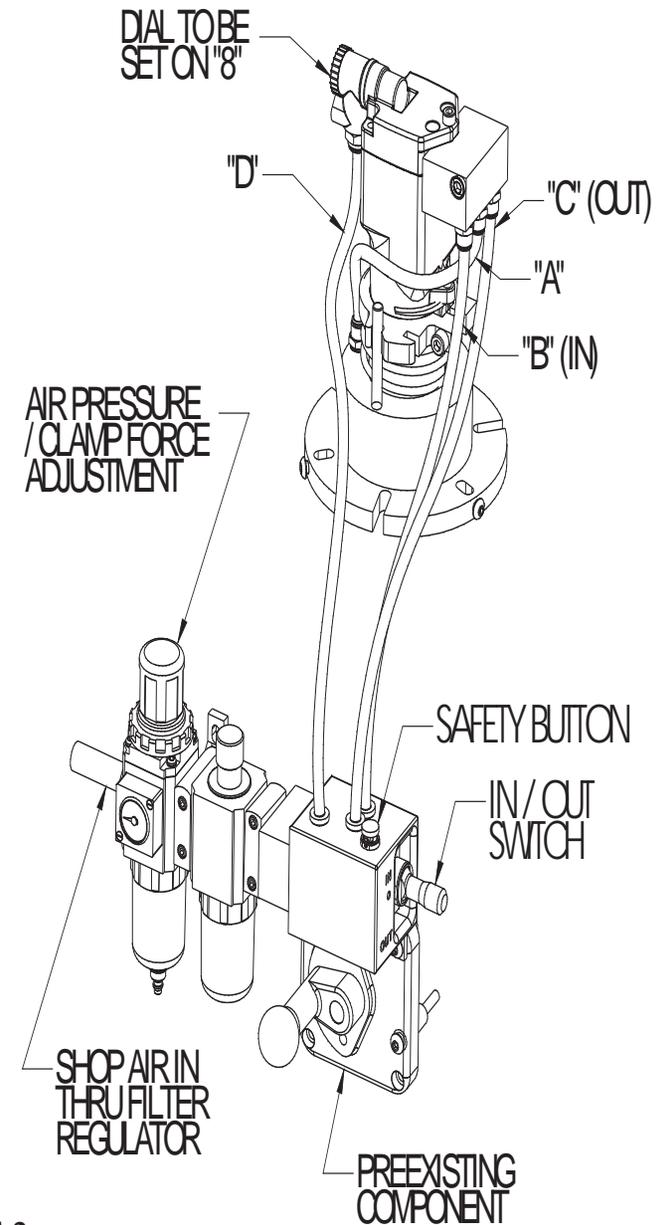
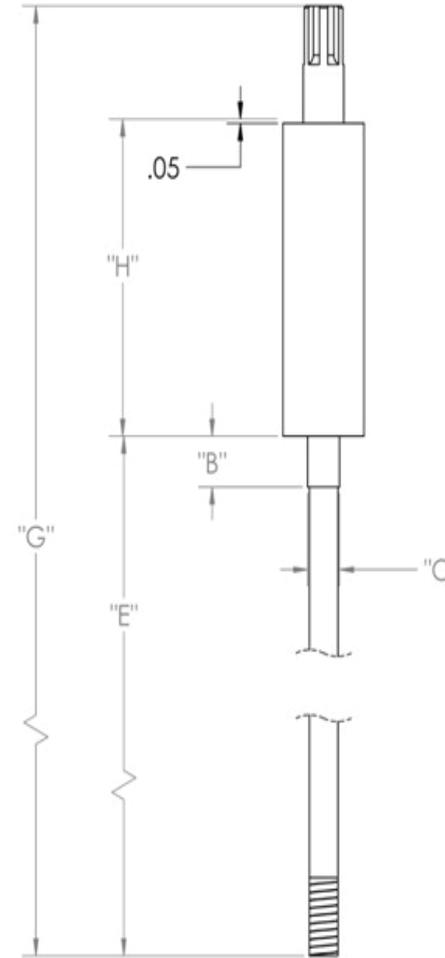


FIG.2

Installing the IN-OUT Safty switch

1. Attach the mounting bracket to the bottom of the IN-OUT Safty switch using (2) #10-32 X 3/8 Flat head cap screw
2. Mount the IN/OUT safty switch with attached “FRL” (filter/regulator lubricator) to your machine. In most cases this would be on the left-hand side of the machine where the power feed selector lever is located.
 - Remove the (2) upper SHCS from the powerfeed selector cover on your machine. Install (2) #10-24 x 7/8 or M5X 20mm BHCS through the mounting bracket, feed selector cover and into the machine.
 - On some machines it may be necessary to space the IN/OUT-Safty switch away from the machine.
 - Included in the hardware kit are (2) optional 1.00” spacers and (2) #10-24X1-7/8 “ or M5 x 45mm BHCS. SEE FIGURE 3
3. Hook up the air lines from the switch to the air motor and from the “FRL” as required. See figure 2.
4. Fill the oil sight glass on the “FRL” with the air tool oil provided with your kit. **Note:** Always use air tool oil only.
5. The collet drive pin in the R-8 spindle or drive keys on 30 and 40 taper spindles must be in place. This prevents the tool from turning during the “IN” and “OUT” operation.
Caution: Serious injury could occur if the tool is allowed to rotate while holding in your hand.
6. Before hooking up the air supply to the machine, make sure it is free of condensation. Also, make sure the air supply to the machine is at 90-PSI. During a tool change the air pressure must not drop below 80-PSI.
7. Connect the “FRL” to the air supply (fitting not included) and turn up to no less than 90-PSI on the gage. Close the oil supply knob completely. While cycling the unit slowly open the supply knob until you have on drop of oil per every 5 to 10 tool change cycles. **Note:** One cycle is equal to a tool in and out one time.
8. When the power drawbar unit is functioning properly install the top cover onto the air motor assembly. Tighten the three button head cap screws on the lower part of the cover. You are now ready to run the unit.
9. Turn the main power back on for the machine.



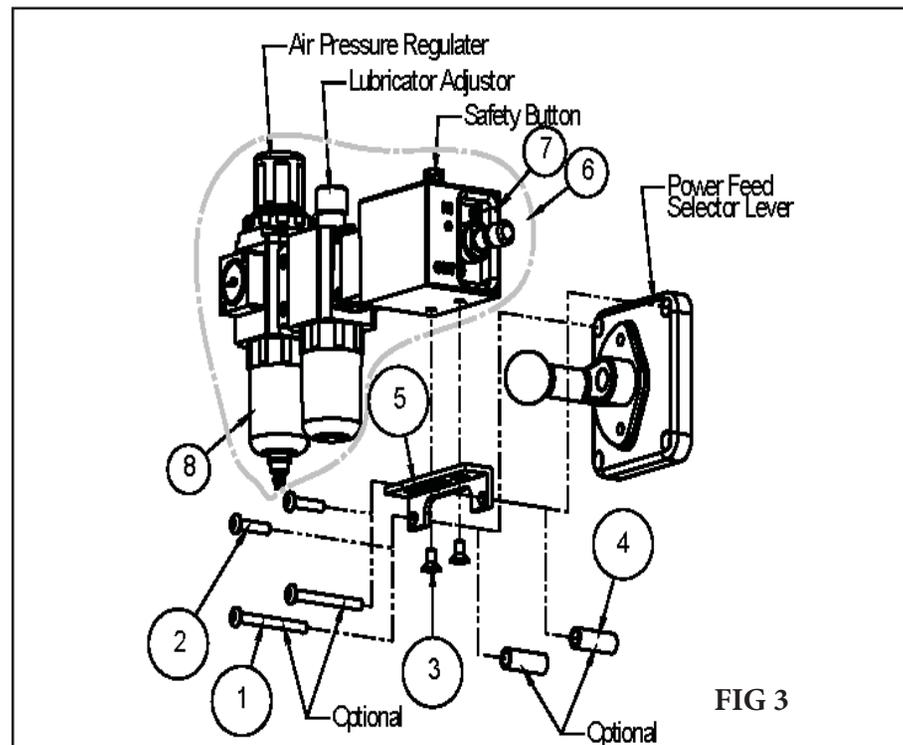
Drawbar Rod Machining

- Calculate the overall length of the rod by adding the following:
 E length = _____
 minus B length = _____
 plus Press fit length 1.750
 Total _____
- Cut off the unthreaded end of the end to the rod length dim. calculated above with a +/- .010 tolerance.
NOTE:If 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 also.
- 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-.015max. This amount of press fit is very important. If there is too much press the rod 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.
- Deburr all sharp corner and edges.

Drawbar Assembly

- 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.
- Measure up 7/16(.44) from the end of the drawbar head that the rod was pressed into. Using a center drill, cross drill and ream a 3/16 (.1875) dia. hole thru the assembly in the 7/8 dia. portion of the head.
- Deburr the hole on both sides.
- Press the 604-02 grooved pin into the 3/16 dia hole, small end first until the head of the pin is flush to slightly below the surface of the rod.

Power Drawbar Pneumatic Switch Assembly



Automatic Power Drawbar Pneumatic Switch Assembly Parts List

ITEM#	PART#	DESCRIPTION	QTY.
1	03-0132	SBHCS 10-24 x 1.875 LG	2
2	03-0123	SBHCS 10-24 x .875 LG	2
3	03-0021	FHCS 10-32 x .375 LG	2
4	398-03	Spacer	2
5	309-00	Mounting Bracket.	1
6	102-01A	In-Out Safety switch assembly w/FRL	1

In/Out Safety Switch Assembly Components (Item 6)

ITEM#	PART#	DESCRIPTION	QTY.
7	102-04A	Pnumatic Switch	1
8	312-06	Air Pressure Regulator with Lubricator Adjustor	1

Power Drawbar 101-02 Parts List

ITEM#	PART#	DESCRIPTION	QTY.
1	202-03	Upper Block	1
2	201-00	Shuttle Piston	1
*3	225-01	O-Ring, #008, 70 BN, Moly	2
4	227-02	Plug, 1/8 NPT Brass	1
5	226-01	Fitting, 1/8 NPT (PUSH IN)	4
6	224-02	Slave Piston	2
*7	325-01	O-Ring, #010, 50 BN, Moly	4
8	00-0259	SHCS, #10-32 X 3/4	1
9	212-1000	Impact Wrench	1
10	226-02	Fitting, 1/4 NPT (PUSH IN)	1
11	00-1293	SHCS, 1/4-20 X 1.00 Long	1
12	204-01	Clamp	1
13	210-00	Piston Spring	1
14	04-0049	Guide Rod	2
15	205-01	Cylinder	1
*16	225-03	O-Ring, -225, 70 BN	1
17	203-01	Piston	1
*18	225-04	O-Ring, -228, 70 BN	1
19	208-00	Socket	1
20	219-0075	Air Tube, 7.5 in. Long	1
21	400-10	Universal Base	1
22	00-1286	SHCS 14-20 x .50 LG	4
**23	502-01	Cover, One Piece	1
24	03-0123	Screw, BHCS 10-24 x 1/4	3
25	06-3010	Lock Washer	4

*Not shown in drawing.

** Cover not Included in Assembly.

Drawbar Head Manufacturing

- Calculate the overall length of the head by adding the following:
 H length = _____
 plus B length = _____
 Spline Head
 1.0 (allows for .050 clearance)

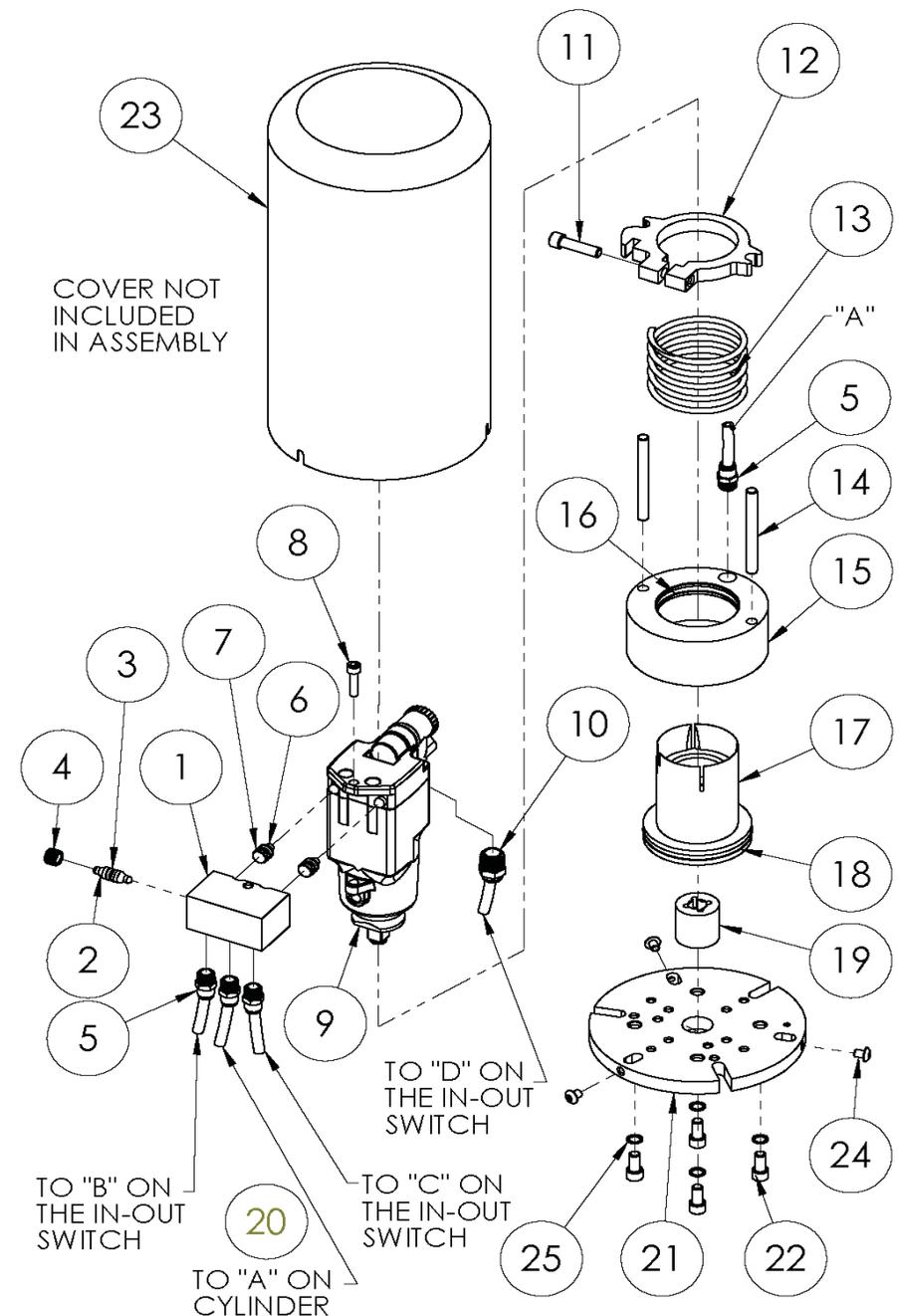
 Total _____ Overall length
- Cut off the lead length to the dimension calculated above with a +/- .010 tolerance.
- Drill, bore and ream a hole in the end of the blank. Holding the depth to 1.81 minimum holding the dia. to .4220 +/- .0005 for the R8 and 30 taper drawbars and .4990 +/- .0005 for the 40 taper drawbars.
NOTE: If the overall head length is shorter than 3.250 please contact the factory.
- Turn the pilot diameter to the same size as the existing drawbar "C" dia. to length "B". There should be a .005/.015 radius in the corner.
- Deburr all sharp corners and edges.

Measuring Your Machine

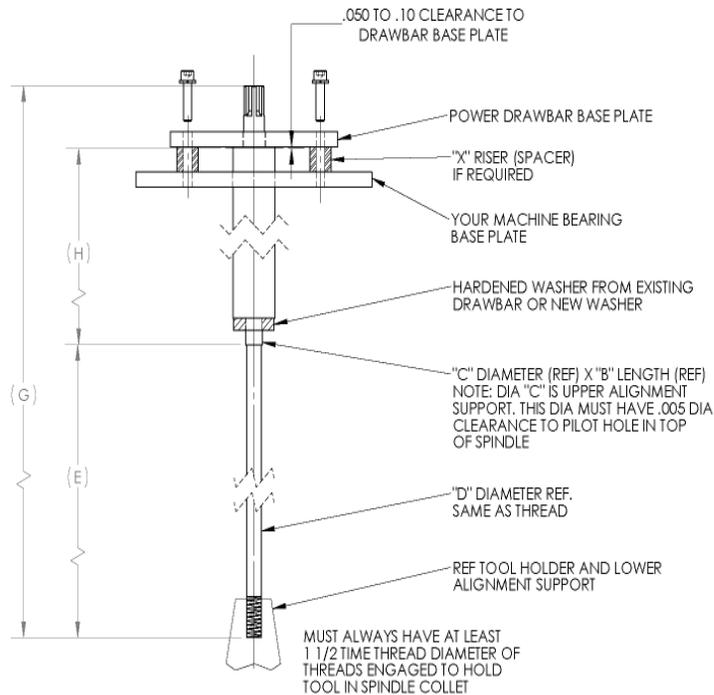
The following steps are required by you to get the necessary information to make the drawbar assembly fit correctly.

1. Move the quill of the machine to the fully retracted position. (If this is a 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.
NOTE: 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 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 it for later use.
4. Measure the distance from the scribe 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 "H" 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 the length as the "E" dimension.

Power Drawbar 101-02 Drawing



Riser installation requirements



NOTES:

1. .050 DIM APPLIES WHEN QUILL IS ALL THE WAY UP OR IN THE TOOL CHANGE POSITION
2. WHEN MOUNTING BASE PLATE TO THE BEARING PLATE, HAND TIGHTEN A TOOL IN THE SPINDLE, THIS WILL STRAIGHTEN UP THE BAR THEN LOOSEN THE 3 CAP SCREWS AND PUSH THE ASSEMBLY UP AND DOWN UNTIL THE UNIT FEELS CENTERED TO DRAWBAR. THEN TIGHTEN UP THE 3 SHCS
3. AIR PRESSURE MUST BE AT 80 PSI DURING TOOL CHANGE
4. SET OIL DROP TO ONE DROP PER (5-10) TOOL CHANGES (TOOL CHANGE = IN AND OUT ONE TIME.
5. APPLY GREASE (WHITE MOLY) FROM HARDWARE KIT AND TO HARDENED WASHER, SOCKET END AND THREADS BEFORE USE.
6. IN SOME CASES YOU WILL WANT TO TURN THE BRAKE LEVER UP GETTING IT OUT OF THE WAY. (REMOVE PIN IN BRAKE HANDLE AND TURN 180 DEGREES AND REPLACE PIN TO HOLD BRAKE)

Do It Yourself instruction for Drawbar Rod Assembly

Parts included in the kit:

Drawbar Head blanks	601-96	1.06" dia. x 11.100" long
	601-99	.875" dia. x 11.100" long
Drawbar Rod blanks	602-96	.438 dia. x 22.00long R8
	602-98	.500 dia. x 29.00long T30
	602-99	.625 dia. x 30.70long T40
Each kit will also contain a hardened grooved pin.	604-02	3/16 dia. x 3/4long pin

The "Do It Yourself" drawbar kit will have the necessary items to create the drawbar you require. The head blanks will have the pre-machined and hardened spline end. The Rod will be the specified thread size for the tooling you are using. Also included is a hardened and grooved pin for you to pin the head and rod together after you machine them.