



# LBM-1500

## 5-in Line Boring Machine

### Operating Manual

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## ABOUT US

Superior Portable Machine Tools (SPR) is your go-to source for specialty tools and equipment in the Oil and Gas, Mining, Heavy Construction, Shipbuilding, Aerospace, Defense, and Power Generation industries. With a strong presence across locations in the US and Canada, as well as a global network of dealers, we proudly offer a comprehensive range of cutting-edge machinery. From portable line boring machines and auto bore welders to linear/gantry and rotary milling machines, our lineup covers all your needs. We also provide top-of-the-line Aggressive® clamshells (pipe cutters), ID/OD flange facers, end-prep bevelers, and weld isolation and test plugs. Additionally, our expertise extends to the production and maintenance of heat exchangers, condensers, and boilers through our partnership with Maus Italia. SPR's engineering group is ready to customize existing products or create tailor-made solutions from scratch, and we excel in precision grinding and tooling services, offering a wide assortment of custom and standard tool bits.

We go above and beyond by providing value-added engineering, comprehensive training programs, and unwavering operational support. Rest assured, we prioritize the highest health, safety, and environmental standards in the industry. Our extensive experience in service, deep understanding of equipment requirements, and unwavering dedication to customer satisfaction are the pillars of our commitment to delivering exceptional equipment and unmatched customer care.



**WARNING:**

SPR is committed to continued product improvement; therefore, the machine you received may be slightly different than the one described herein. This manual and the information provided is a basic guideline for our customers. SPR will do its best to ensure that the information and procedures contained in this manual are correct and up-to-date. Superior cannot guarantee that the information and procedures contained herein are correct for all applications or situations.

The contents of this manual are subject to change without notice. It is the obligation of the user to read all information in this manual, become familiar with the equipment to be used, and exercise the utmost care in equipment operation. **Do not make any modifications to this equipment. Any modifications will void all warranty claims, as well as increase the risk of injury or harm.** Do not operate this equipment if all parts are not functioning at 100% efficiency. Notify us immediately for any needed repairs.



***Note: SPR will supply all repair and replacement parts necessary for maintenance and operation of this machine. For repair, service, or additional information, please locate repair and replacement part description/part numbers within the O&M manual in the exploded view section and contact us for ordering.***

**USA**

Superior Plant Rentals LLC.  
350 Dowdy Road, Gonzales, LA 70737 | Phone: 225.647.7771

Superior Plant Rentals LLC.  
1530 Live Oak Street, Webster, TX 77598 | Phone: 281.554.9400

Superior Plant Rentals LLC.  
5450 Avenue A, Bldg. 1, Beaumont TX 77705 | Phone: 409.853.4382

Superior Plant Rentals LLC.  
1745 N. Lexington Blvd., Corpus Christi, TX 78409 | Phone: 361.541.5900

Superior Plant Rentals LLC.  
2030 Gladwick St., Unit B, Rancho Dominguez, CA 90220 | Phone: 310.356.6105

Superior Plant Rentals LLC.  
3958 Airway Drive, Rock Hill, SC 29732 | Phone: 803.659.9822

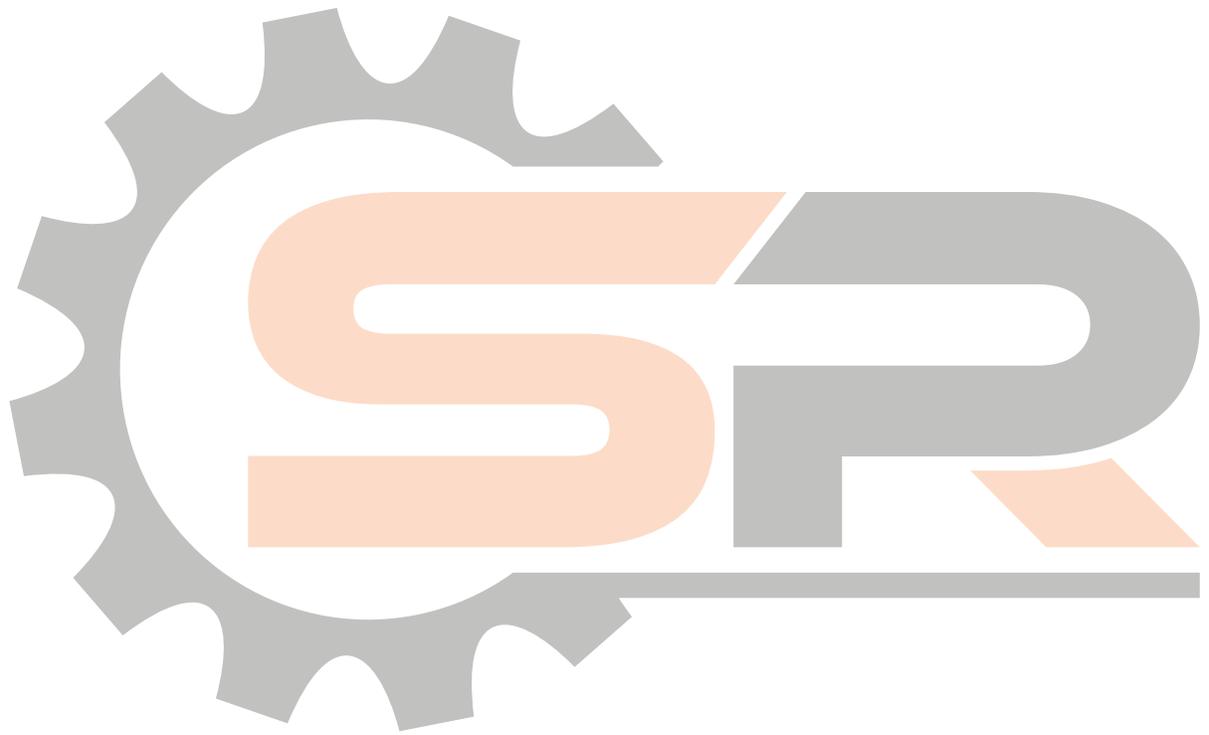
Superior Plant Rentals LLC.  
8001 Hwy 90, Moss Point, MS 39562 | Phone: 251.370.8039

**INTERNATIONAL**

SPR York Portable Machine Tools  
1641 17th Ave, Campbell River, BC, Canada, V9W 4L5 | Phone: 250.286.6400

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# SUPERIOR

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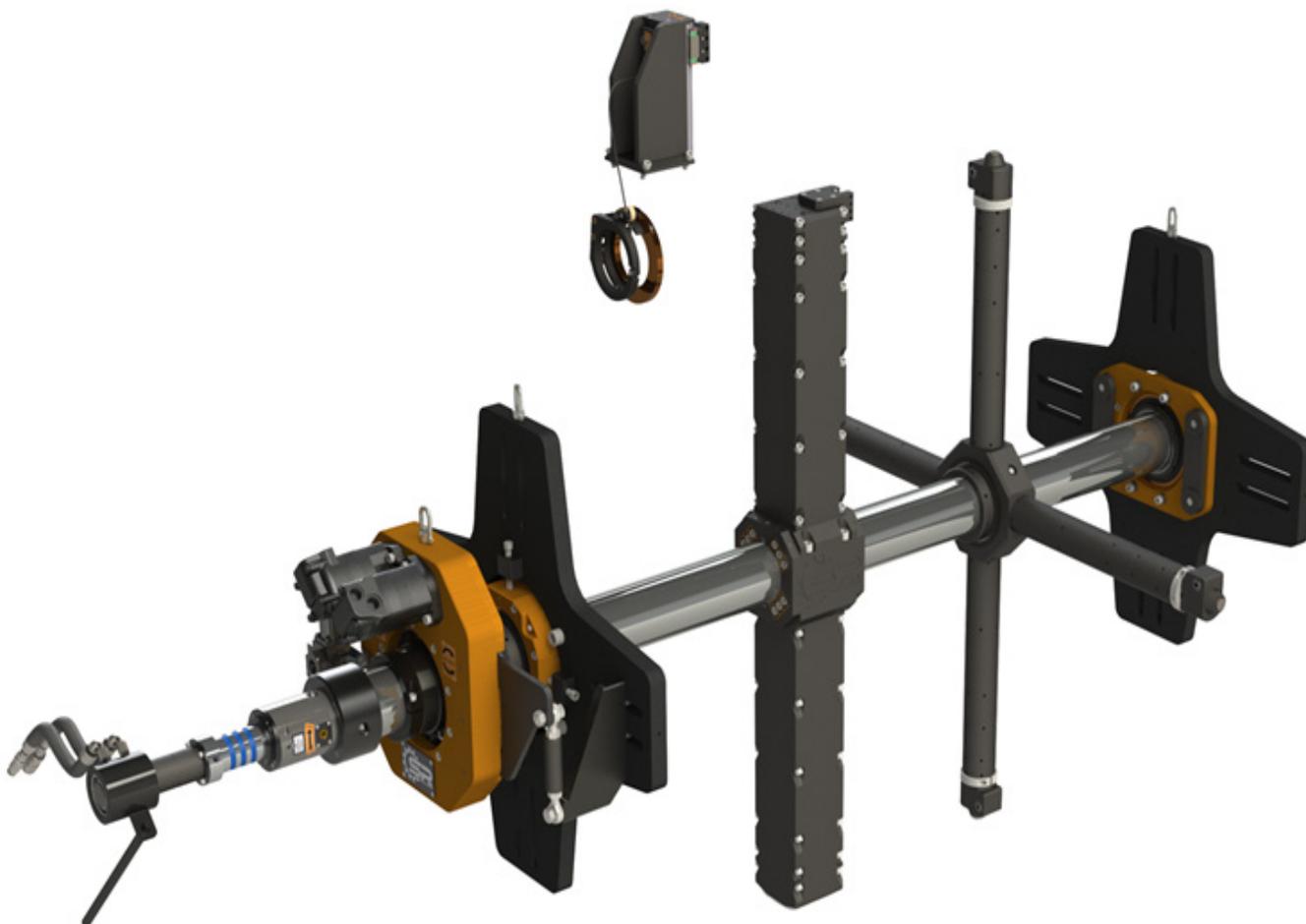
## 1. INTRODUCTION

This manual contains information necessary for the setup, operation, maintenance, shipping, and storage of your LBM-1500. The manual must be read in its entirety to familiarize yourself with the LBM-1500 before attempting to setup or operate the machine. Failure to do so may result in injury to the operator or damage to the LBM-1500.

### RECEIPT AND INSPECTION

Upon receiving your LBM-1500, you must:

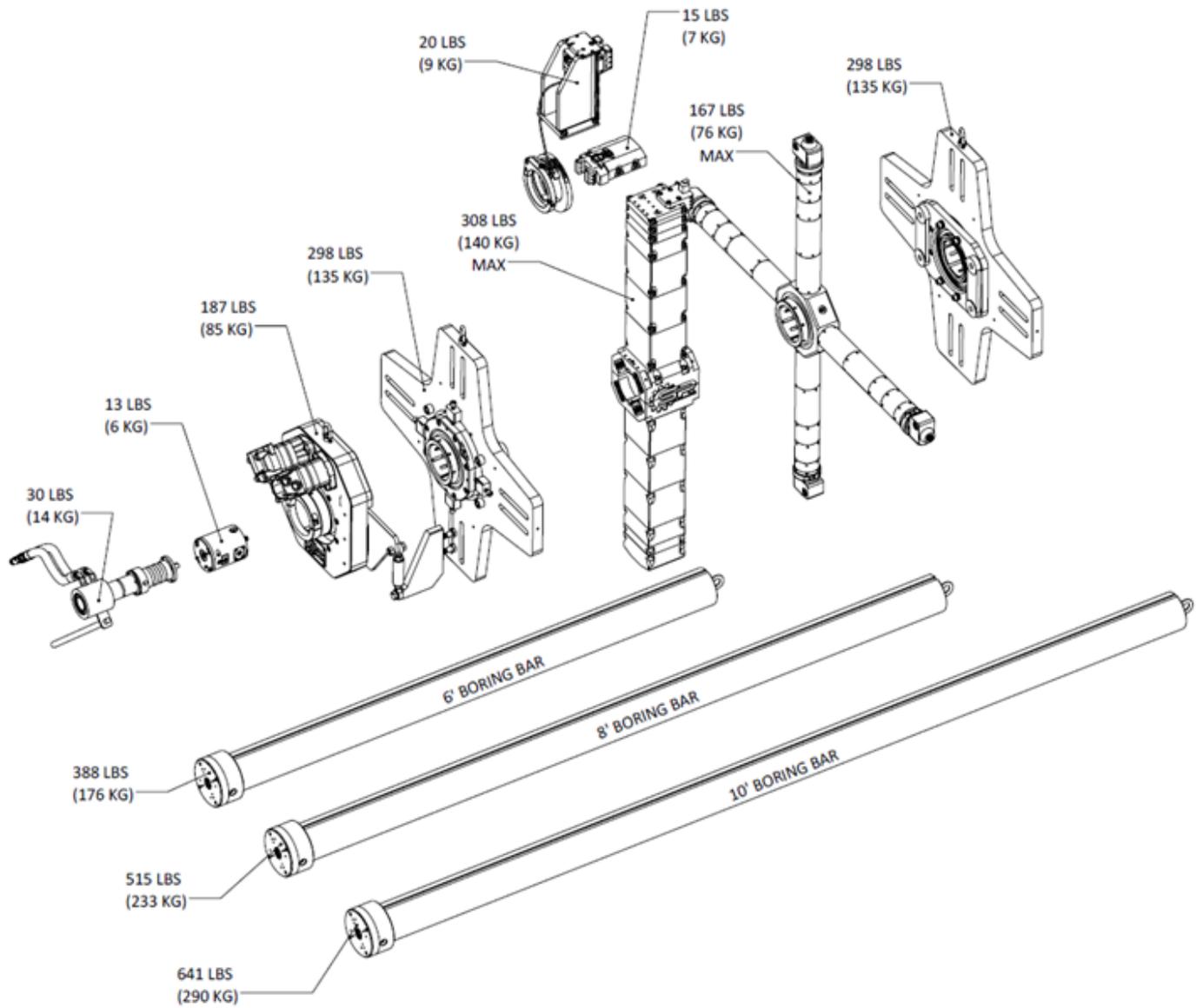
1. Inspect the machine for shipping damage.
2. Inspect all the components for damage.
3. If any components are missing, or if you have questions regarding your LBM-1500, please contact an SPR location nearest you immediately.



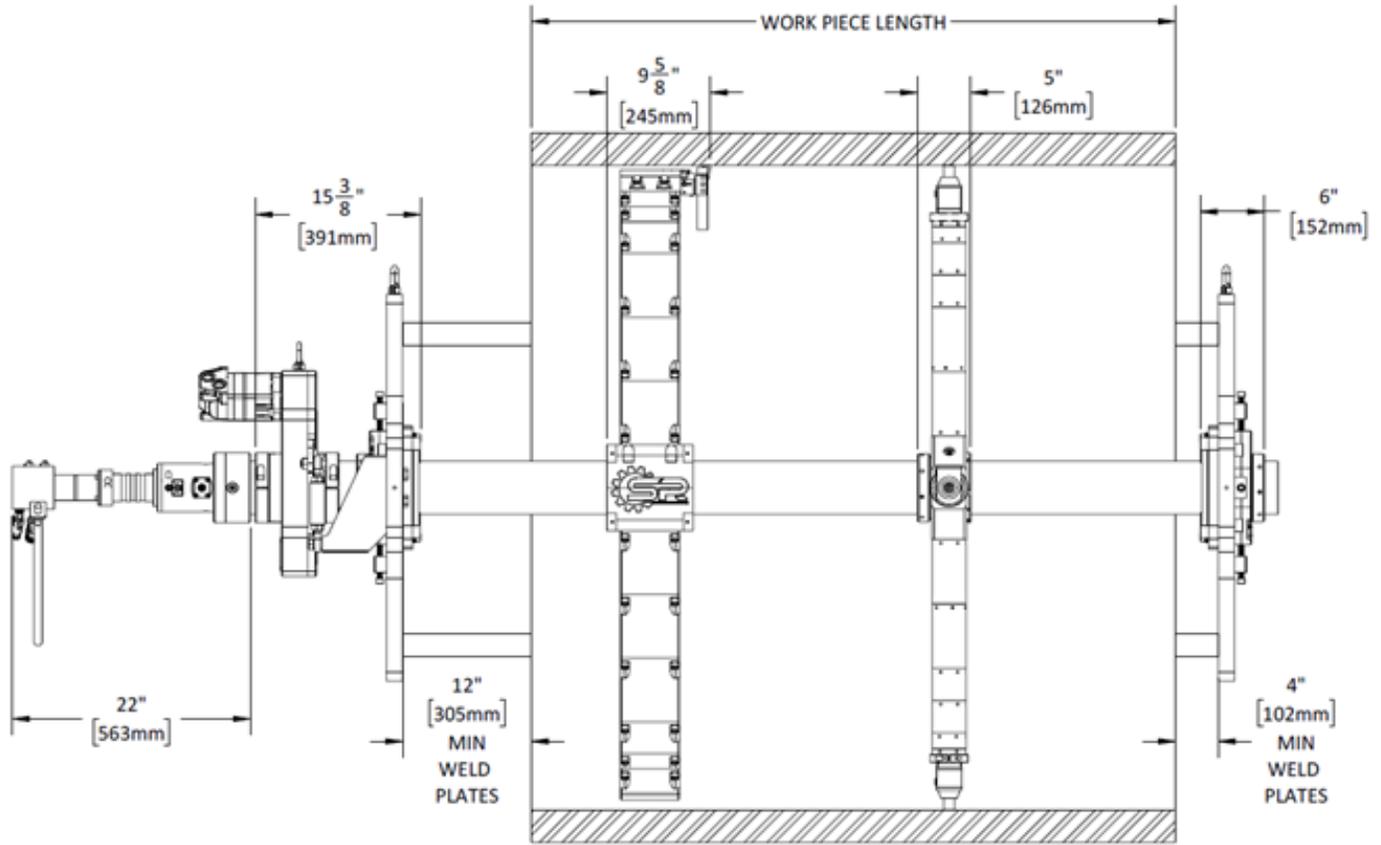
## 2. SPECIFICATIONS CHART

12-36 General	
Bar Diameter	5 in (127 mm)
Boring Tool Range	10.5 - 60 in (267 - 1524 mm)
Facing Tool Range	10.5 – 60 in (267– 1524 mm)
Min Facing Tool Swing Diameter	31.5 in (800 mm)
Machine Weight	See component weight below
Powered Boring Feed	0 - .4 in/min (0 – 10 mm/min)
Rapid Feed (Cordless Drill) 10mm Drive*	0 – 60 in/min (0 – 1524 mm/min)
Facing Tool Feed	0 - .2 in/min (0 – 5 mm/min)
Bar RPM (High Speed)	0-64 rpm
Bar RPM (Low Speed)	0-32 rpm
Facing Tool Feed	0-.022 in/rev (0-.56 mm/rev)
<b>Internal Bearing Range</b>	<b>19.25 – 60 in (489 – 1524 mm)</b>
20 HP Hydraulic Power Unit	
HPU Weight	1450 lbs (660 kg) + 180 lbs oil
HPU Shipping Weight	1600 lbs (730 kg)
Voltage	480V 3-phase
Oil Type	AW46
Oil Volume	~30 Gallons (113 Litres)

### 3. SUB-ASSEMBLY WEIGHTS

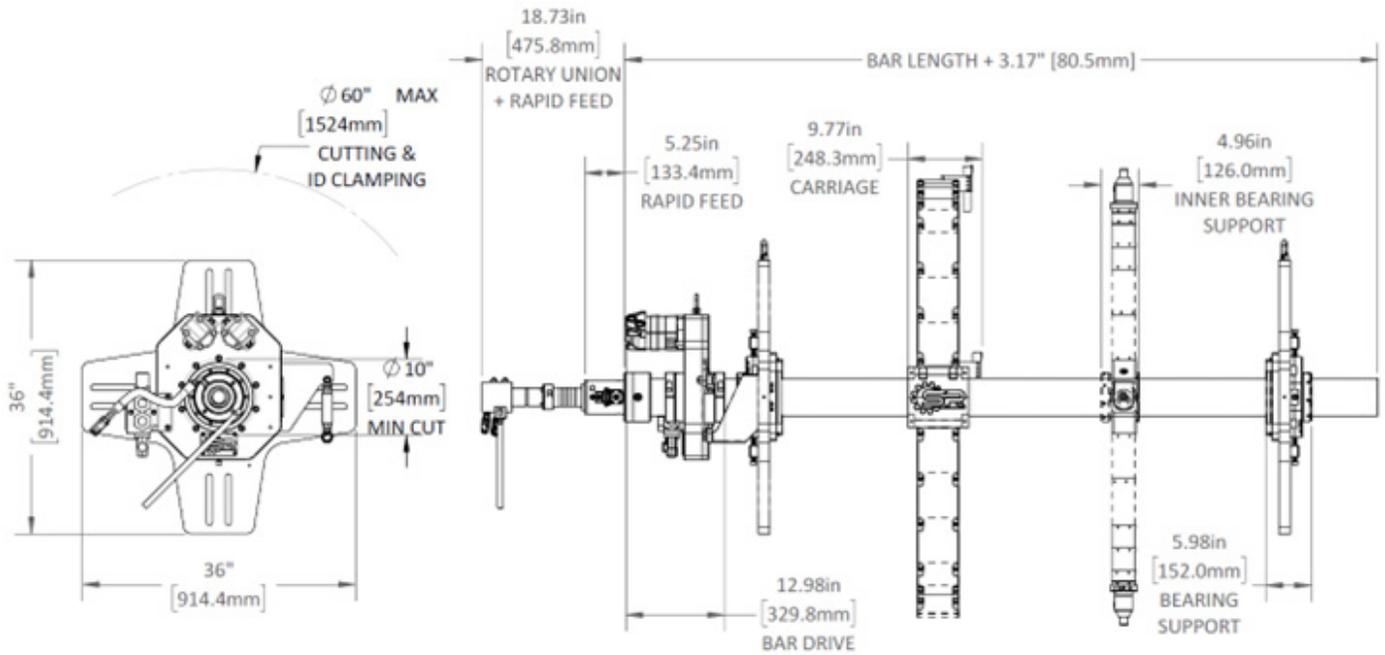


## 4. DETERMINING REQUIRED BAR LENGTH



BAR LENGTH REQUIRED =  $37\text{-}3/8"$  (950MM) = WORK PIECE LENGTH  
 TOTAL LENGTH = BAR LENGTH + 22" (559MM)

## 5. GENERAL DIMENSIONS



## 6. SAFETY PRECAUTIONS

The customer shall ensure that only people thoroughly trained in safe work procedures operate this machine. Safe working procedures are required when operating rotating machine tools. The misuse of this machine could result in severe injury or death.

Before operating this machine, read the entire operating manual. Inspect machine, hoses, and accessories for any damage.



**WARNING!** DO NOT leave machine unattended while in operation.



**WARNING!** Beware of pinch points. Keep all body parts clear of the machine while it is running.



**WARNING!** This machine is exceptionally powerful. Press the E-stop, disconnect the power supply from the machine and unplug all equipment prior to adjusting or servicing.



**WARNING!**  
**MOVING PARTS.**

Keep hands, loose clothing, and hair away from rotating or moving parts. Disconnect the air supply from the machine and unplug all equipment prior to adjusting or servicing. If electric, remove power from the machine prior to adjusting or servicing.



**WARNING! ELECTRICAL SHOCK.**

Possible shock if not handled properly.



**WARNING! KEEP DRY.**

Keep all equipment and components away from any water source.



**WARNING! EYE PROTECTION.**

Eye protection must be worn while operating or working near powered equipment.



**WARNING! EAR PROTECTION.**

Ear protection should be worn while operating or working near loud equipment.



**WARNING! FOOT PROTECTION.**

Foot protection must be worn while operating or working near heavy equipment.

## 7. MACHINE SPECIFIC SAFETY PRECAUTIONS

### Hydraulic Power Unit (HPU) Pendant E-stop Reset

Always press the E-stop on the pendant before working on the machine. This will shut down the motor on the Hydraulic Power Unit.

To reset the machine, first make sure both feed and rotation buttons on the pendant are set to neutral, reset the E-stop and then hit the green start button on the Hydraulic Power Unit.



**WARNING!** The HPU motor will not start up if E-stop is pressed or if either toggle switches are in a non-neutral position.

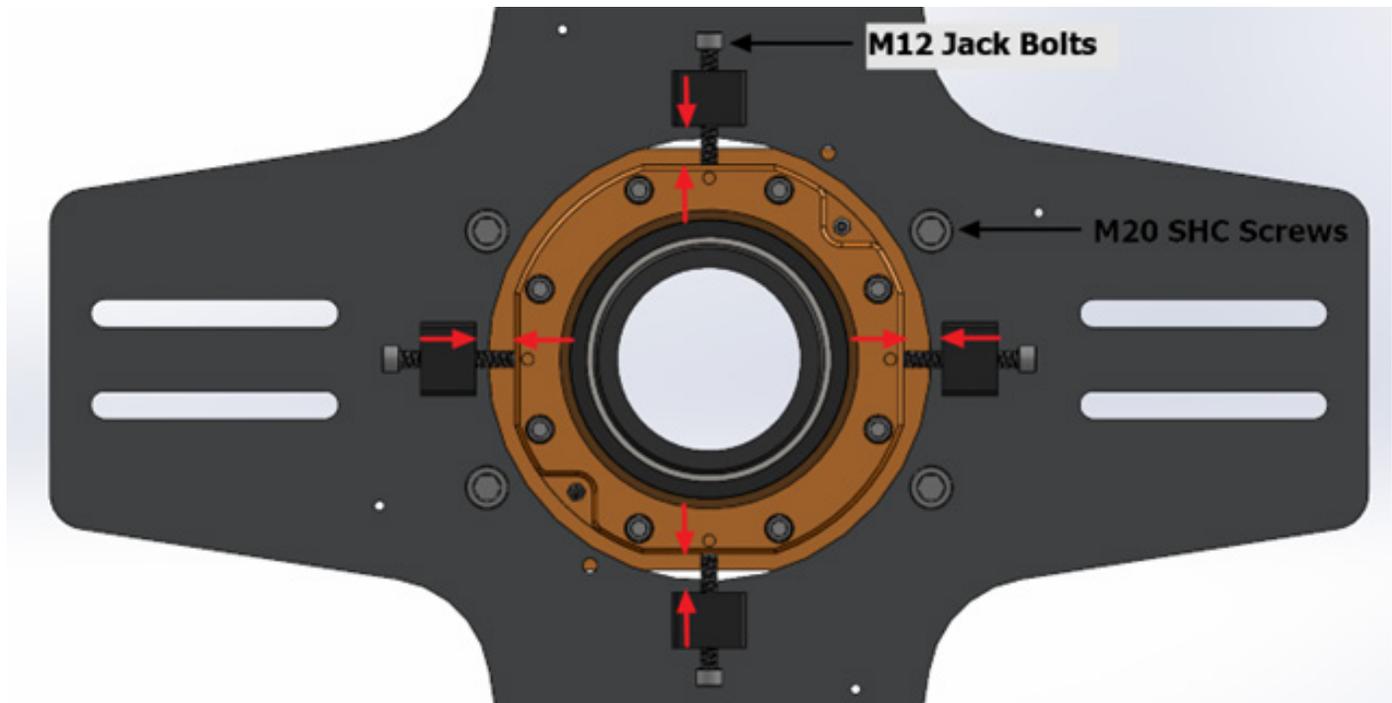
**Both toggles switches must be in Neutral position prior to starting HPU.**



## 8. MACHINE SETUP

### 8.1 Centering Bearings on Bearing Interface Assemblies

Ensure the bearings are positioned centrally on the interface plates to maintain maximum adjustment for dialing in the bar. Using a tape measure or calipers, measure the distance between the bearing plates, loosen the M20 SHC Screws slightly and adjust the M12 Jack Bolts until all four gaps shown below with red arrows are within 1/16in [2mm]. Finally tighten all four M20 SHC Screws.



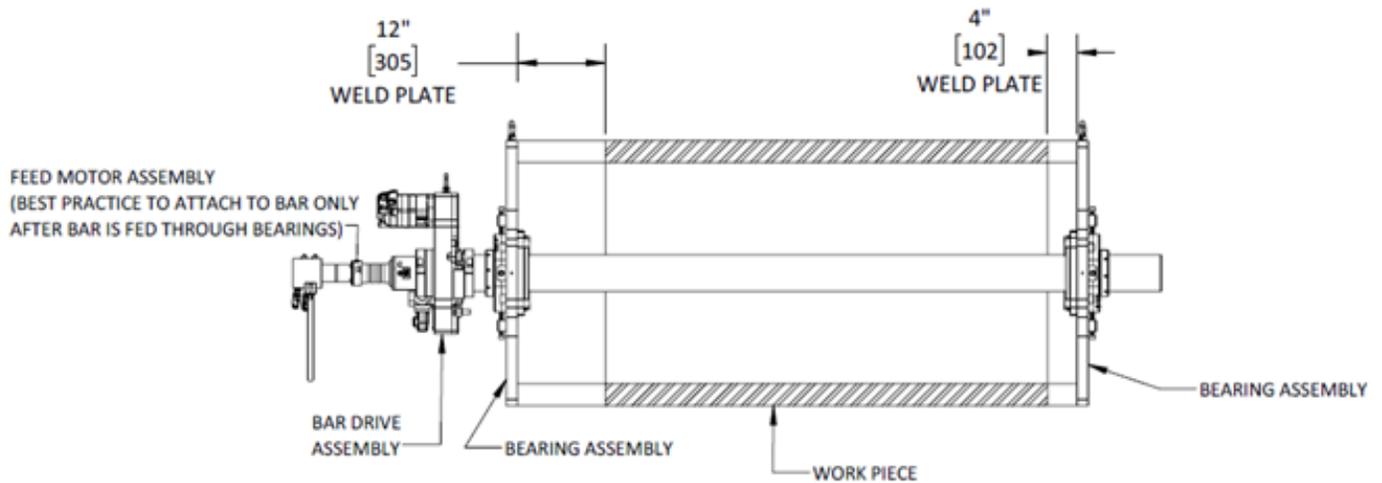
### 8.2 Choose the Position of Bar Drive Assembly and Feed Motor Assembly

This machine is easiest to set up if the Bar Drive Assembly can be mounted on the opposite end from the Feed Motor Assembly, as it can be mounted after sliding the bar through (See orientations image below). Additionally, if the Bar Drive Assembly is put on after the bar, the bar can be turned by hand during the Dialing-In process.

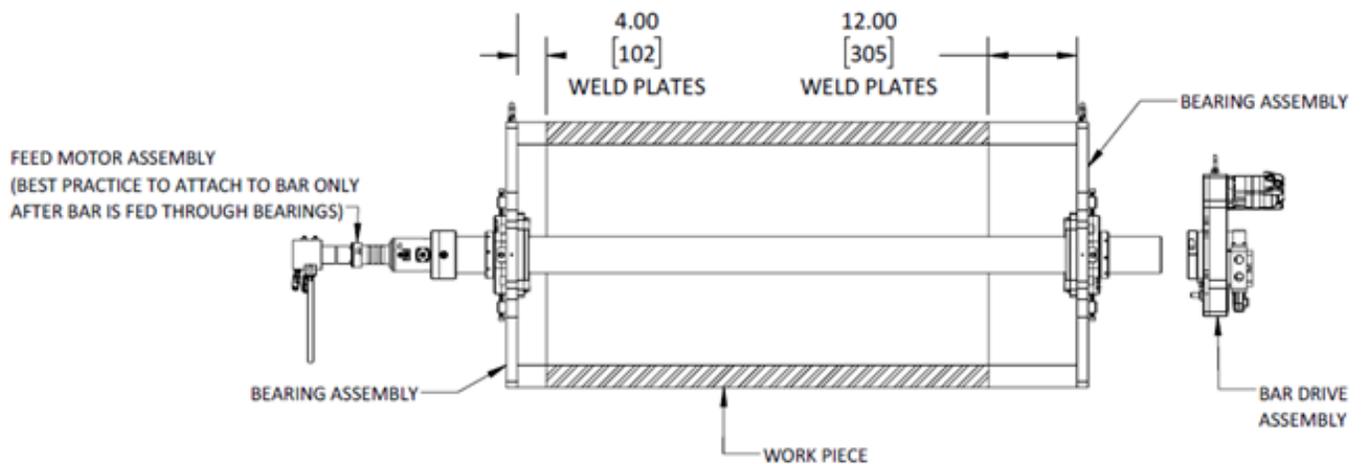
If this is not possible the Bar Drive Assembly will need to be assembled on the bar before sliding the bar through the Bearing Assembly (See orientation image below).

Choose which end of the work piece the Bar Drive Assembly and Feed Motor Assembly will go on. Clearance around the machine will often dictate this decision.

### ASSEMBLY FOR BAR DRIVE AND FEED MOTOR ON SAME SIDE



### ASSEMBLY FOR BAR DRIVE AND FEED MOTOR ON OPPOSITE SIDE

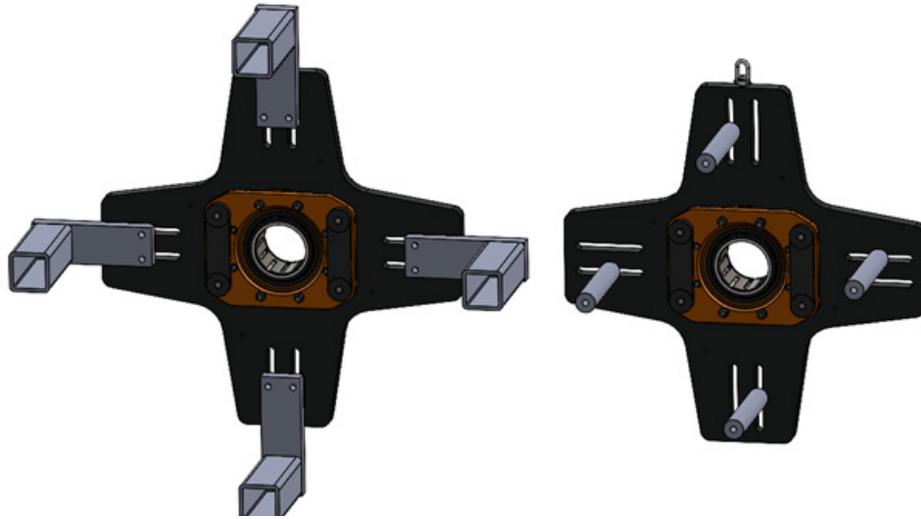


## 8.3 Choosing Standoffs

For bores less than 32in (812mm), 4 single piece weld plates (stand-offs) can be used per end. These need to be a minimum of 12in (300mm) long on the end of the bar where the tool is being adjusted and 4in (100mm) on the opposite end.

These could be made from 2in (50mm) steel round bar with an M16 (5/8in) tapped hole in the end, or for more rigidity larger rectangular bar that would accommodate two tapped holes per piece. It is easiest to bolt these weld plates to the Bearing Assemblies first prior to welding to the work piece.

For bores larger than 32in (812mm) L-shaped weld plates (stand-offs) will have to be fabricated to support the Bearing Assemblies. These will dictate the rigidity of the machine and heavier walled tube sections are recommended, as shown below.



## 8.4 Attaching External Bearings to Work Piece

Attach External Bearing Assemblies to either end of the work piece, using the threaded weld plates (stand-offs) selected in the step above.

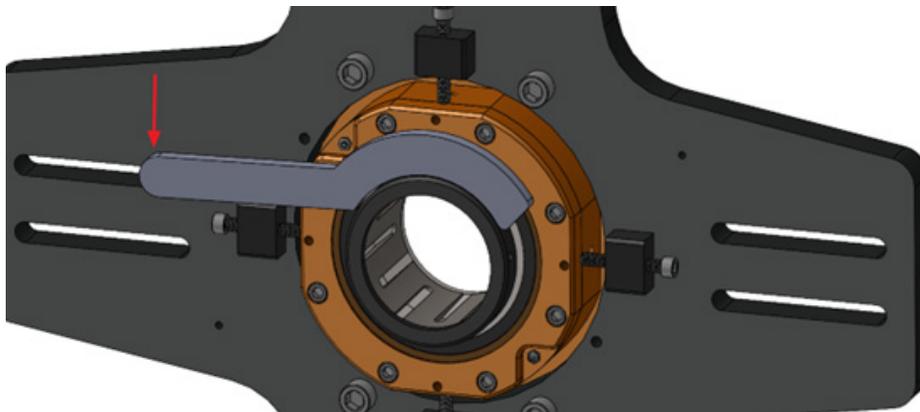
To ensure rigidity, the bar should ideally not span more than 60in (1524mm) between bearings, so an internal bearing should be used on longer spans. See internal bearing section below to determine which legs to use for given diameter ranges.

The side that the tool will be fed into the bore from (and adjusted from) will require 12in [300mm] weld plates (stand-offs), in order to have space to bring the carriage completely out of the bore for adjustment. The Tail Support Bearing should have weld plates (stand-offs) that are at least 4in (100mm), in order to have the tool clear the bore.

In certain circumstances it may not be possible to use a second External Bearing Assembly, so an Internal Bearing Assembly should be used.

## 8.5 Adjust Bearing Nuts to Open the Collet

Loosen the bearing nuts on each External Bearing Assembly to loosen the collet and allow the bar to move through freely.



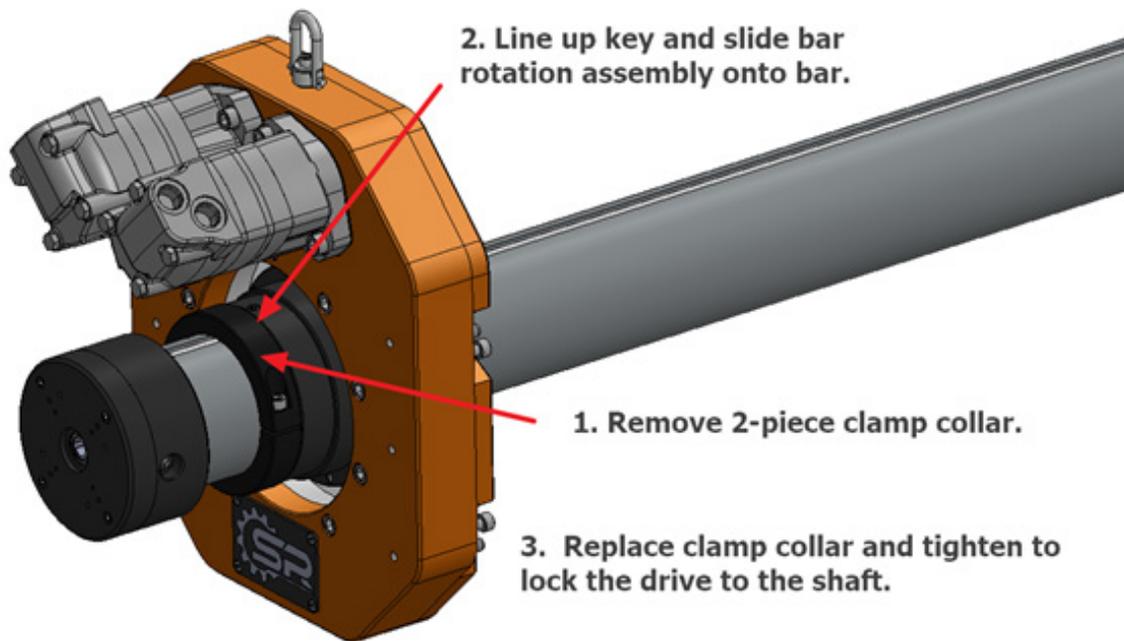
## 8.6 Attach the Bar Drive Assembly to the Bar



QUICK  
TIPS

It's generally easier to dial in the bore without the Bar Drive Assembly or Carriage attached, as the bar can be turned by hand, but sometimes this isn't possible and the Hydraulic Power Unit will be needed to rotate the bar.

If the Bar Drive Assembly and Feed Motor Assembly are being mounted on the same side, put the Bar Drive Assembly onto the bar now. Carefully line up the keys on the Bar Drive Assembly with the key slots on the bar and slide onto the bar to the desired position. Tighten the shaft collar to lock it to the bar.



## 8.7 Slide the Bar into the Bearings

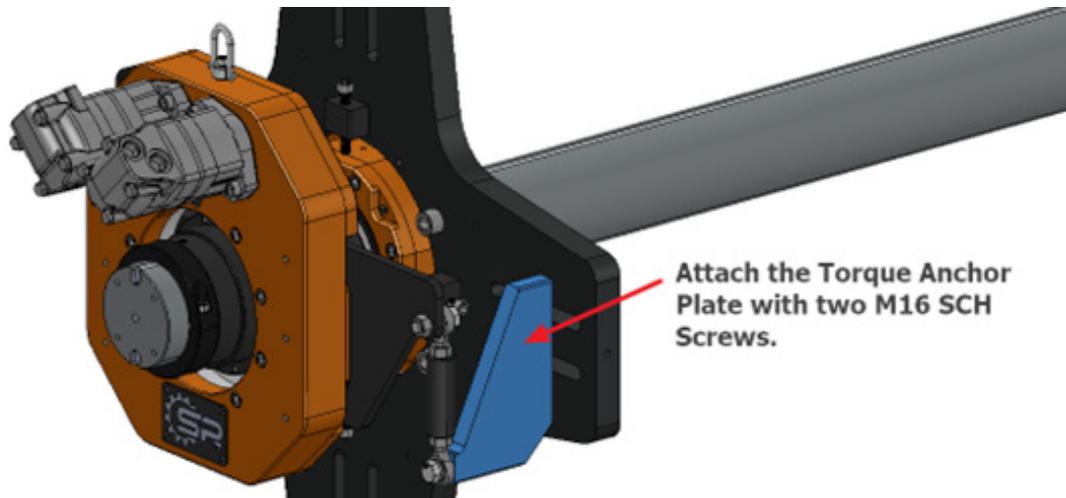
Carefully slide the bar into the bearings on both ends of the machine. Lightly oiling the bar will help the bar slide through more easily.

## 8.8 Positioning the bar.

Position the bar, keeping in mind that there is 22in of clearance required for mounting the Rapid Feed Assembly and the Feed Motor Assembly on the end of the bar.

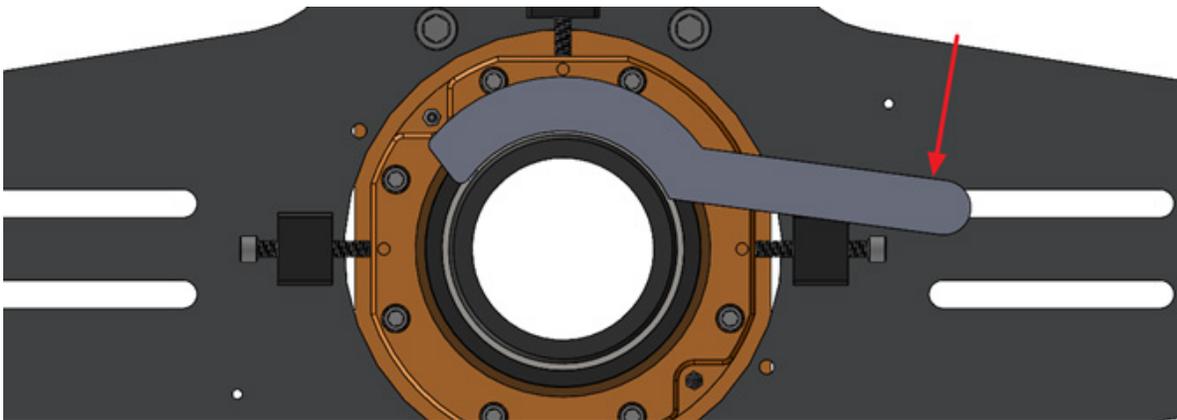
## 8.9 Secure the Bar Drive Assembly to the Bearing Assembly

Secure the Bar Drive Assembly to the Bearing Assembly, to prevent it from rotating, with the Torque Anchor Plate using two M16 SCH Screws.



### 8.10 Lock the Bearings onto the Bar

Lock the bar to the bearings by turning the bearing nuts clockwise using a spanner. Hand tight is acceptable for horizontal applications.



### 8.11 Dialing in the Bar

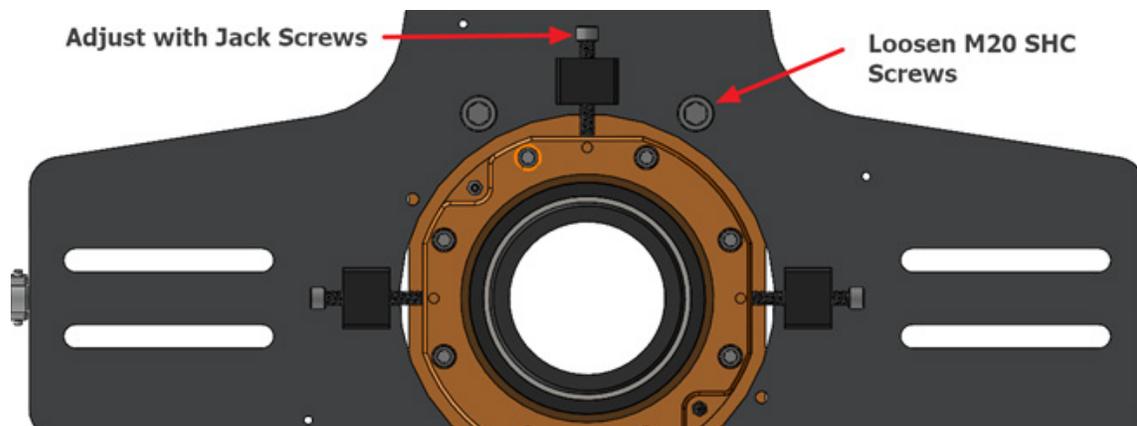
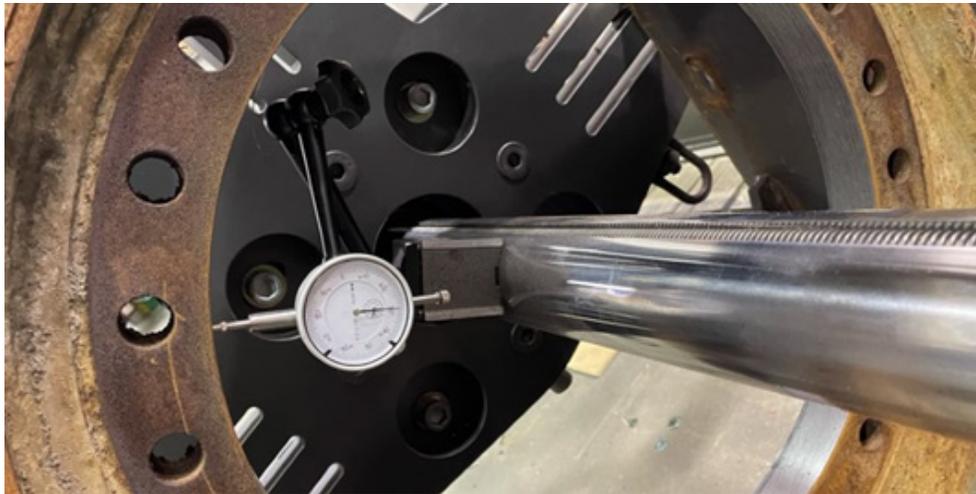
Make sure all four Jack Bolts are contacting the bearing plate, so that it cannot move. Using a dial indicator with a magnetic stand, attach it to the bar in line with one end of the bore. Rotate the bar to sweep the bore. Slightly loosen the M20 SCH Screws holding on the bearing plate, such that the plate will slide when adjusting the Jack Bolts. Adjust the Jack Bolts until the dial sweeps concentrically with the bore. Repeat on the opposite end. Adjusting one end will affect the opposite end, so adjust each end iteratively, until both ends are concentric.



**QUICK  
TIPS**

Tip: Using two magnetic based dial indicators make this process much easier.

Finally, tighten up the four M20 SCH Screws on each bearing plate to prevent further movement.



## 8.12 Attach the Bar Drive Assembly

If the Bar Drive Assembly is being mounted on the opposite end of the Feed Motor Assembly, slide it onto the bar now, as per step 6.

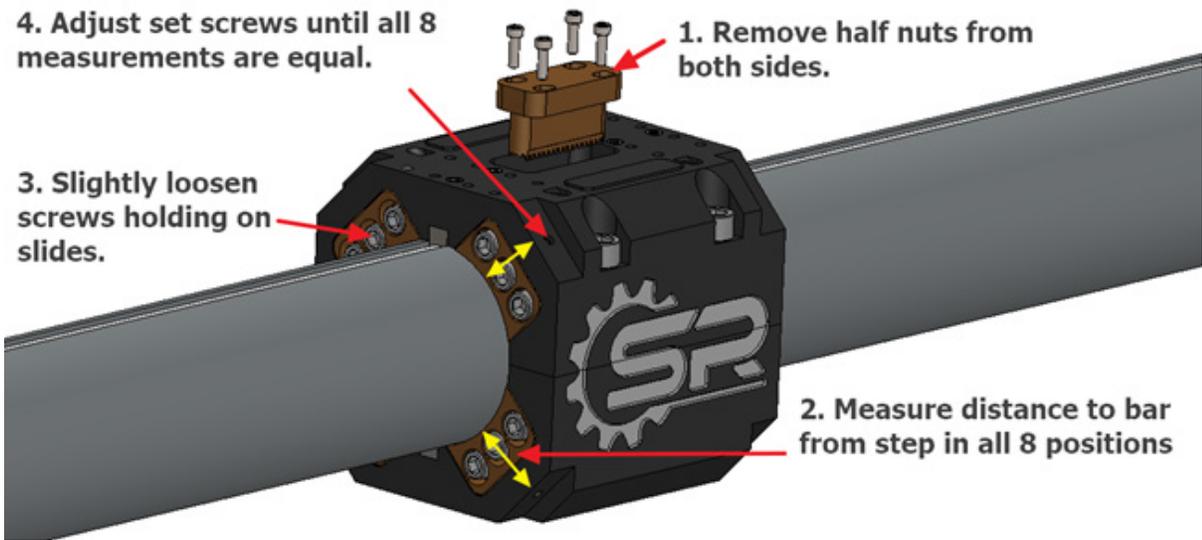
## 8.13 Mounting the Carriage

Remove the two bronze half nuts from each half of the carriage. Place the two halves of the carriage on the bar and secure the two halves of the carriage with the two M16 SHC Screws per side.

The carriage has four adjustable bronze bushings per side. Measure the height from the step in the carriage to the bar and adjust these with the setscrews until they are all equal (see image below).

Once equal distance from the bar, adjust these setscrews the same amount until the carriage barely slides by hand with little play.

Tighten the bushing screws and replace the half nuts.

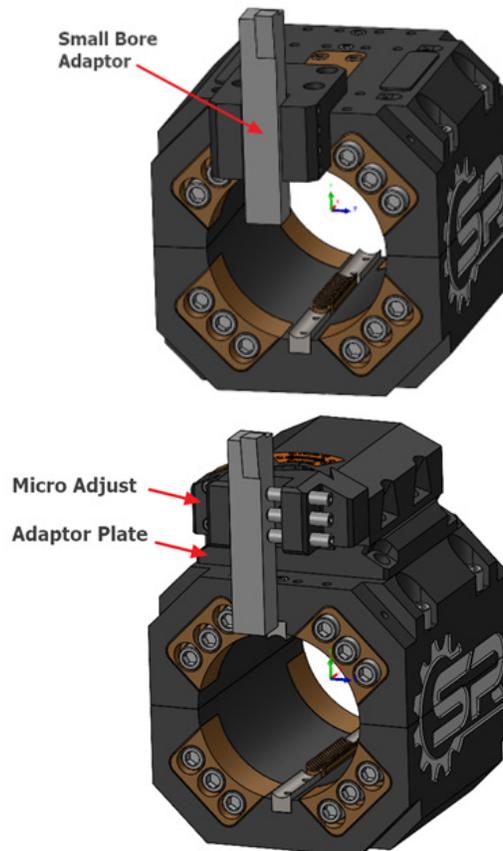


### 8.14 Choosing Carriage Spacers for Bore Size.

Add the spacer blocks required to produce the desired boring range as per the table below. For bore sizes of 10.5-14.5in (270-370mm) use the Small Bore Adaptor. For all other bores use the Micro Adjust and Adaptor Plate.

Important: The dial on the Micro Adjust refers to thousands of an inch on the diameter, not the radius.

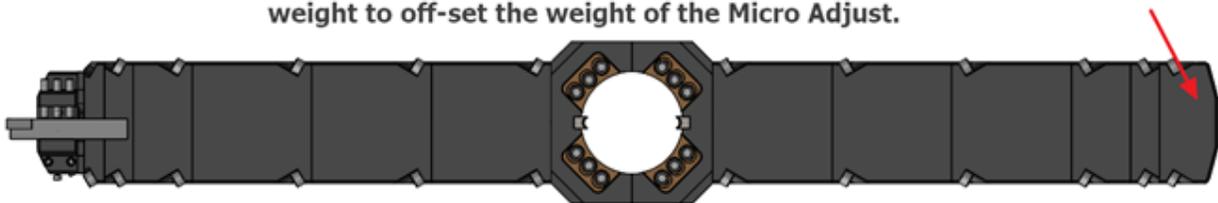
Bore Diameter Range				Spacers and Adaptors				
Min Bore (in)	Max Bore (in)	Min Bore (mm)	Max Bore (mm)	1.5in (38mm) Per Side	3in (75mm) Per Side	6in (150mm) Per Side	Small Bore Adaptor	Micro Adjust and Adaptor
10.5	14.5	267	368				1	
14.5	19	368	483					1
19	22	483	559	1				1
22	25	559	635		1			1
25	28	635	711	1	1			1
28	31	711	787			1		1
31	34	787	864	1		1		1
34	37	864	940		1	1		1
37	40	940	1016	1	1			1
40	43	1016	1092			2		1
43	46	1092	1168	1		2		1
46	49	1168	1245		1	2		1
49	52	1245	1321	1	1	1		1
52	55	1321	1397			3		1
55	58	1397	1473	1		3		1
58	61	1473	1549		1	3		1



## 8.15 Build Counter Weight

After stacking and fastening all the spacers, match the same number on the opposite side as a counter weight, using the counter weight block to offset the micro adjust.

Match spacers on opposite side and add the counter weight to off-set the weight of the Micro Adjust.



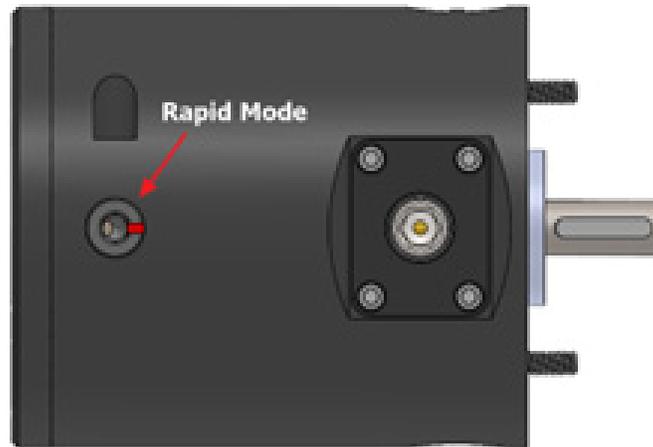
## 8.16 Check Play in Spacer Stack

Mount a dial gauge on something rigid and put the tip against the end of the carriage stack and check the play. If more than a few thou, adjust the bronze sliders on the carriage to remove the play.



**WARNING!** Do not overtighten the carriage as this will cause it not to feed.

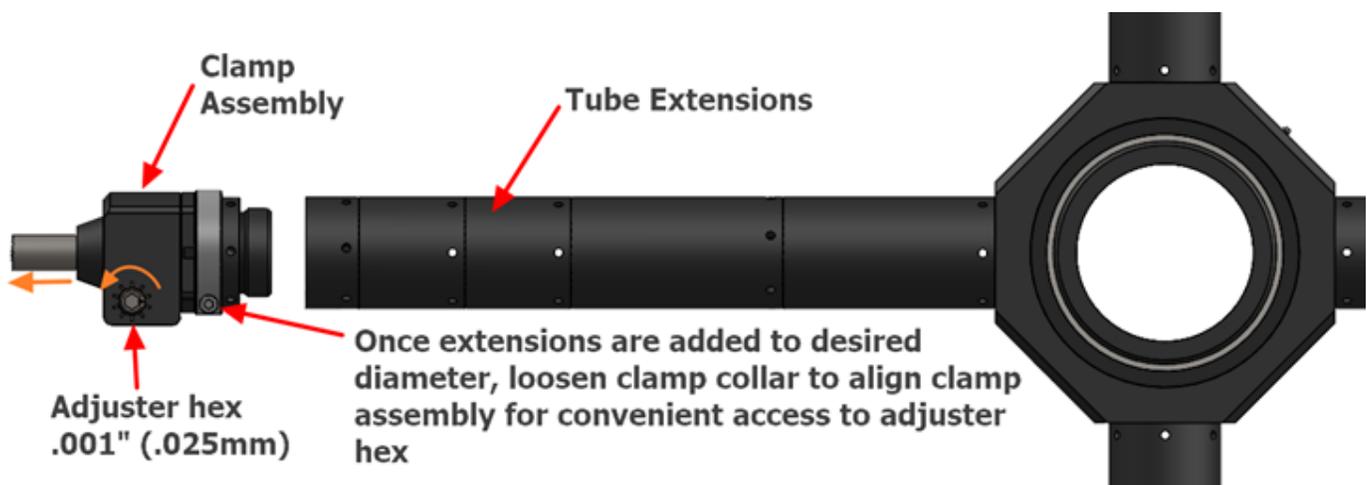
To test the tightness of the bronze sliders, after each adjustment switch the Rapid Feed Assembly to the rapid position and check with a 10mm hex key that the carriage feeds smoothly by hand without too much force. If its difficult to feed the bronze bushings while holding the long end of the hex key, the bushings are too tight and need to be loosened.



## 8.17 Internal Bearing Assembly

For spans between Bearing Assemblies of more than 60in (1524mm) use an Internal Bearing Assembly to achieve sufficient rigidity.

The Internal Bearing Assembly has a minimum bore size of 19.25in and radial adjustment of ~1.8in (46mm). Each tick on the Clamp Assembly represents .001in (.025mm). Turning the 10mm hex Counter Clockwise extends the support outwards.



Slide the Internal Bearing onto the shaft. Using the table below build out the bearing for the desired diameter. When screwing Tube Extensions together, they only need to be hand tight. Two stubbed screw drivers are provided to twist them apart on disassembly.

Finish with the Clamp Assembly. Orient the clamp assembly by loosening the shaft collar and twisting the assembly to align such that the 10mm adjustment hex is facing down the bore to a convenient location for adjustment.

Bore Diameter Range				Spacers and Adaptors			
Min Bore (in)	Max Bore (in)	Min Bore (mm)	Max Bore (mm)	1.5in (38mm) Per Arm	3in (75mm) Per Arm	6in (150mm) Per Arm	Clamp Assembly
19.25	22.25	489	565				1
22.25	25.25	565	641	1			1
25.25	28.25	641	718		1		1
28.25	31.25	718	794	1	1		1
31.25	34.25	794	870			1	1
34.25	37.25	870	946	1		1	1
37.25	40.25	946	1022		1	1	1
40.25	43.25	1022	1099	1	1	1	1
43.25	46.25	1099	1175			2	1
46.25	49.25	1175	1251	1		2	1
49.25	52.25	1251	1327		1	2	1
52.25	55.25	1327	1403	1	1	2	1
55.25	58.25	1403	1480		2	2	1
58.25	60	1480	1524	1	2	2	1

## 8.18 Micro Adjust Assembly

The micro adjust boring head provides the ability to diametrically adjust the cutting tool up to 1.25 in (32mm) in .001in (.025mm) increments.

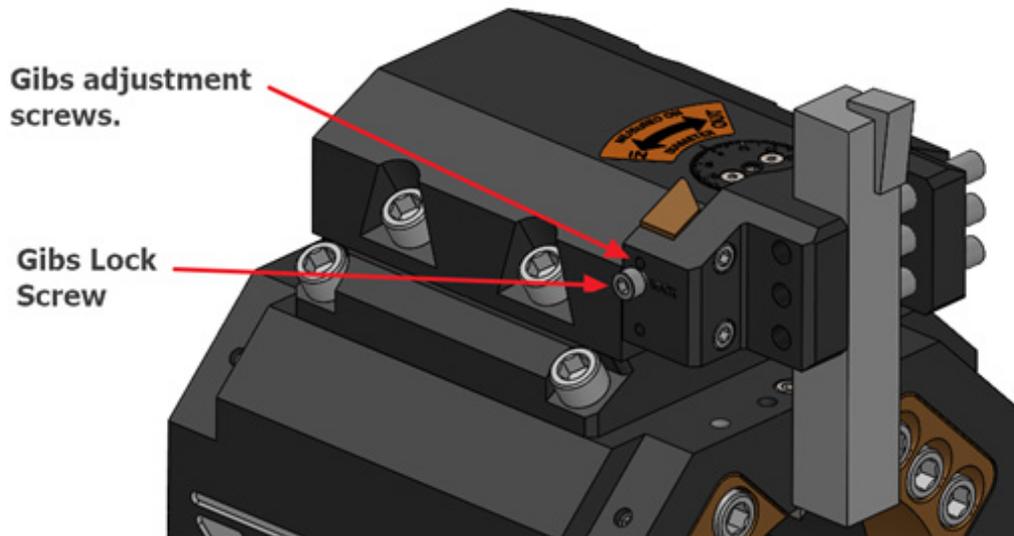
Simply unlock the sliding dovetail with a hex key in the screw labelled LOCK. Then adjust the dial on the top to the desired depth. Lock the sliding dovetail to secure using the same LOCK setscrew. You can mount the whole boring head 180° for cutting in both directions (forward or reverse). To remove play out of the gibs adjust two additional set-screws.



**WARNING!** The rapid feed represents .001in of diametral adjustment, not the radial. For radial double the number.

Insert Holder: DTG NR 16 4D or equivalent

Insert: TNMG220408MP TT5080 or equivalent



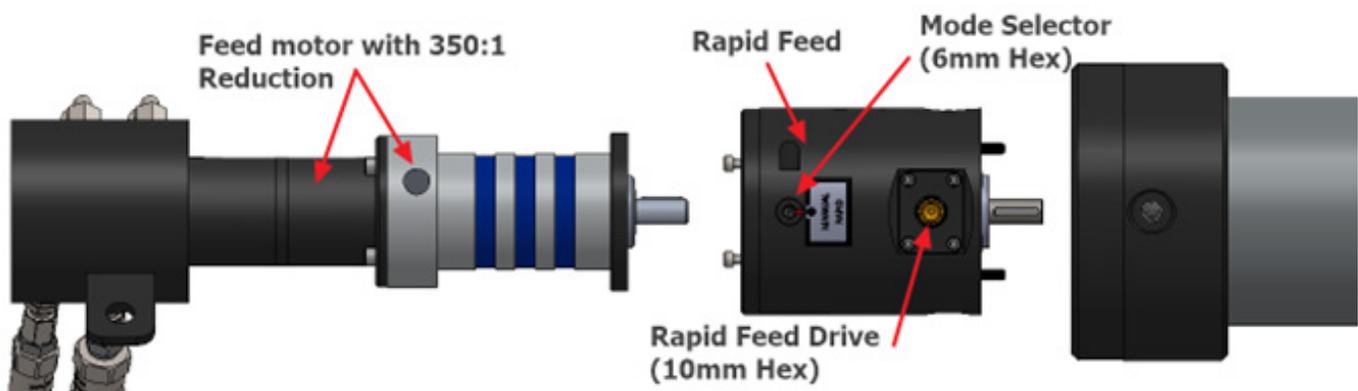
### Rapid Feed and Feed Motor Assembly

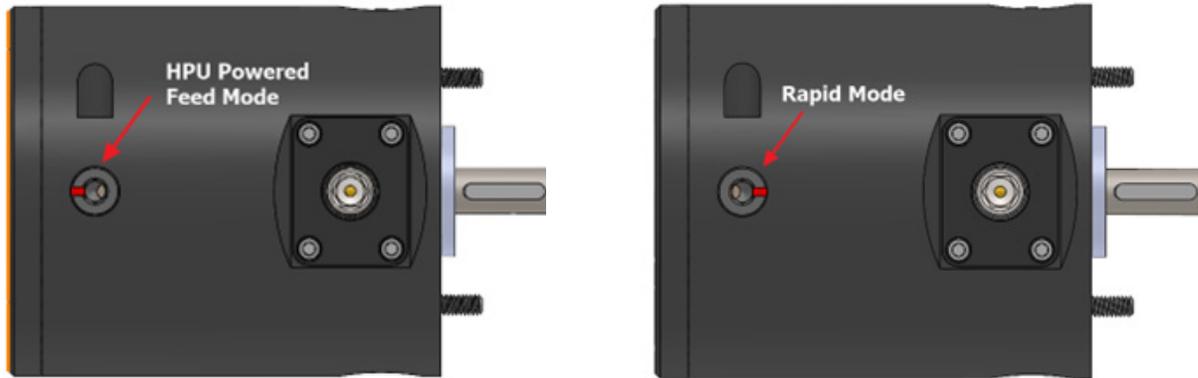
The Rapid Feed and Feed Motor Assembly will typically be left connected together, however the Rapid Feed Assembly can be removed if required by spatial constraints, and the feed motor assembly can be assembled directly to the Bar Assembly.

**Caution:** The rapid feed assembly has a slip clutch built into it, but if it is not used, and the carriage is run into an end-stop position, the shear pin in the Bar Assembly will break and need to be replaced. See Shear Pin Replacement section on how to do this.

To position the carriage more quickly, using a 6mm hex key switch the Rapid Feed assembly to Rapid Mode such that the tick is pointing towards the work piece. Using the 10mm driver bit provided in a cordless drill on low speed, carefully position the carriage.

**Caution:** Driving the carriage into an end-stop while rapid feeding can break the 1/8in brass shear pin, which will then need to be replaced. See Shear Pin Replacement section to fix this.





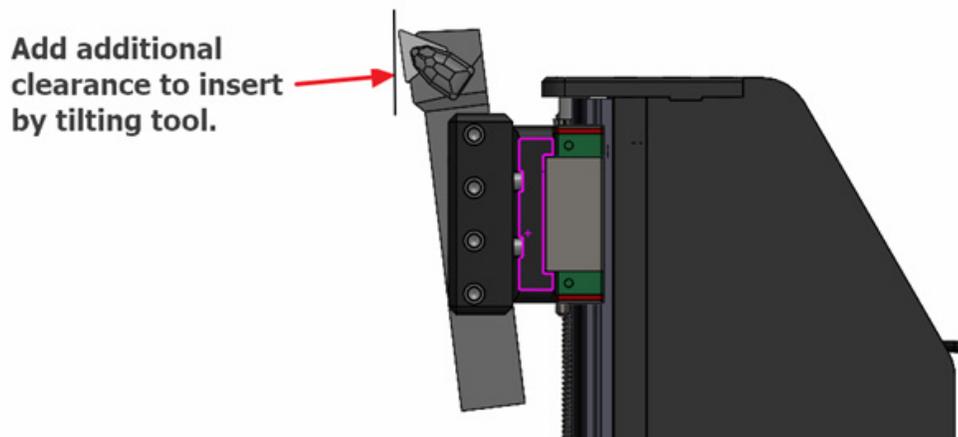
## 8.19 Facing Tool

The facing tool has 8in (200mm) of travel that can be positioned with spacers to face from 10.5-60in (286-1524mm). It has a minimum swing diameter of 31.5in (790mm).

The provided Sandvik DTGNR 16 4D insert holder has a 1 degree relief, which results in a  $\sim$ .015in gap from the top to the bottom of the insert. If more relief is required for a specific facing application the insert holder can be tilted forward up to 5-10 degrees, or a different style insert holder with a greater relief angle can be used.

DCLNR 16 4D = -5 Degree Relief

DDQNR 16 4D = -17.5 Degree Relief

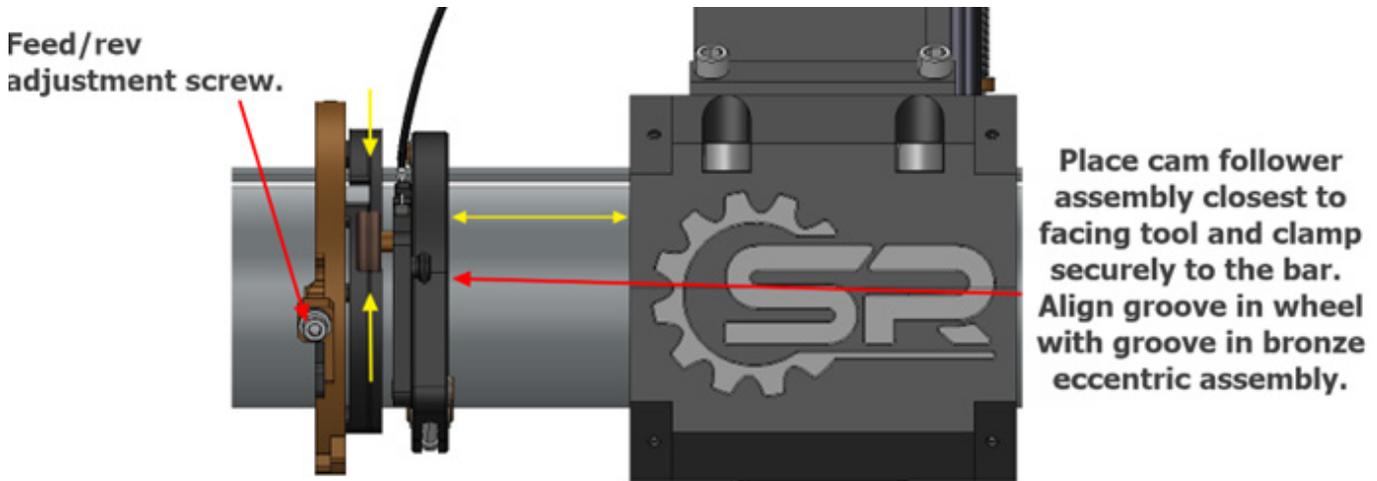


To set up the facing tool, choose the spacer set required to achieve the desired facing range. Counter weight the opposite side with equivalent spacers for smooth rotation.

Clamp the bronze Eccentric Assembly around the bar, and the Cam Follower Assembly to the bar, positioning the Cam Follower Assembly **closest to the facing tool**, and secure the cable so it won't catch on anything while rotating.

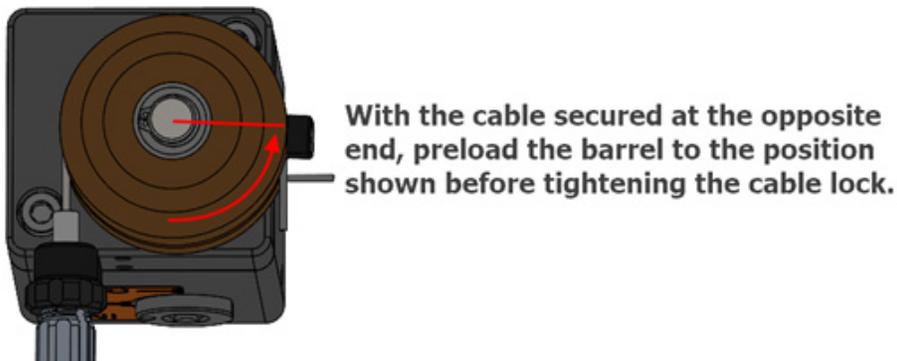
Minimize the number of curves in the cable for smoothest transfer of power.

The cables are standard bicycle shifting cables (not brake cables). Extras are provided to be cut to any



length and replacements can be purchased from any bike shop.

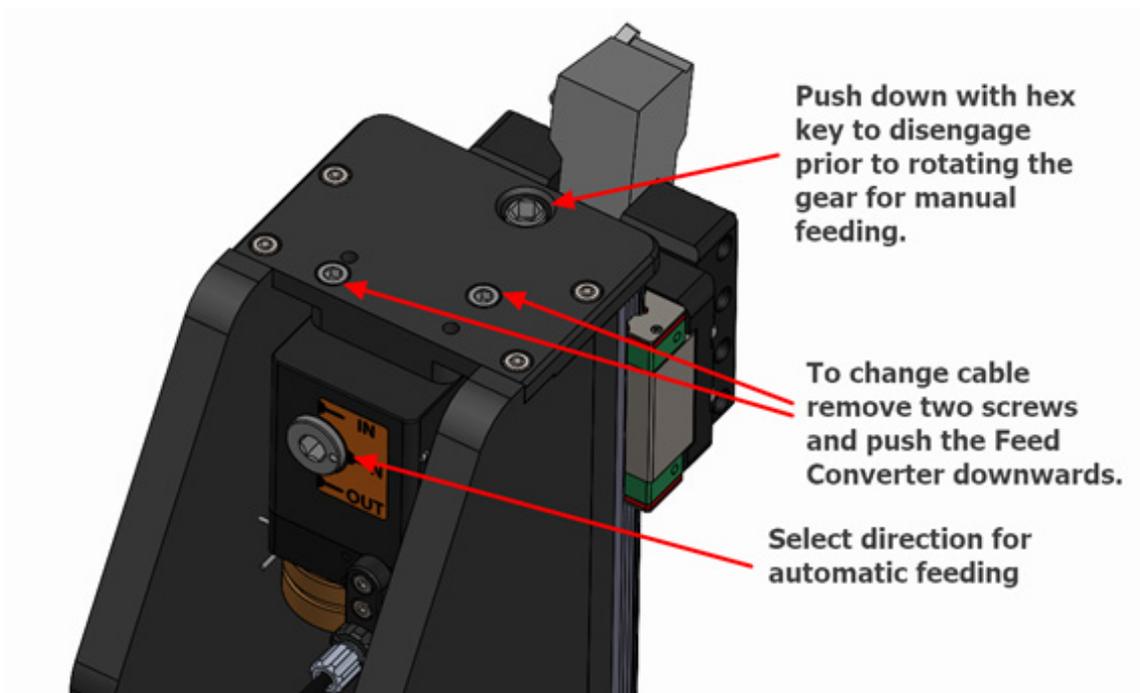
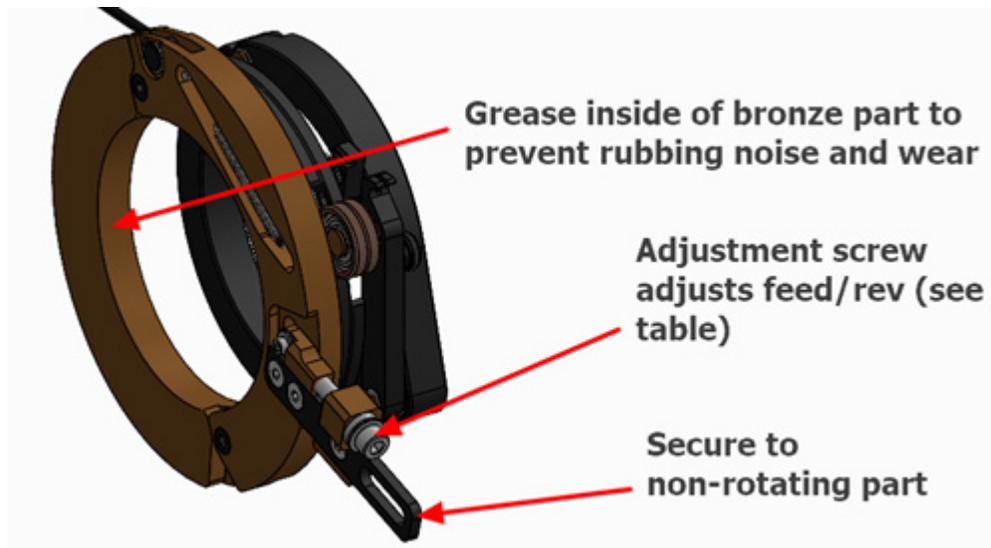
If replacing the cable, secure the end of the cable with the barrel on the Cam Follower assembly. Remove the Feed Converter (shown below) from the Facing Tool Head. While tensioning the cable end, rotate against the spring counter clockwise 90 degrees to the position shown below prior to clamping the cable on the barrel.



The bronze Eccentric assembly needs to be secured to a non-rotating component prevented from rotating and should be secured. This assembly will rub on the bar, so greasing this area can prevent rubbing noises.

The adjustment screw (shown below) adjusts the feed per rev. Turn this screw clockwise until it bottoms out. This puts it at max feed. Use the table below to adjust to other feed rates.

# Turns in from Max Out	Feed/Rev (in)	Feed/Rev (mm)
0	0.022	0.56
1	0.018	0.46
2	0.015	0.38
3	0.013	0.33
4	0.01	0.25
5	0.007	0.18
6	0.005	0.13
7	0.003	0.08
8	0.001	0.03



## 9. MACHINE OPERATION

### 9.1 Hydraulic Power Unit (HPU) and Pendant

Once the machine is set up, connect the five hydraulic hoses to both the feed and rotation motors, and plug in the pendant which controls the machine.

Make sure the E-stop is not pressed and the Feed and Rotation toggle switches are both in the neutral stop position and turn on the main power switch on the HPU and press the green start button.

Feed direction – Forward is defined as moving away from the Feed Motor Assembly.

Rotation - Clockwise is defined as the clockwise direction when facing the logo plate on the Bar Drive Assembly.



**WARNING!** Always hit the E-stop when working on the machine.



## 9.2 Feeds and Speeds

The bar rotation and carriage feed are controlled on the pendant. The table below shows the approximate speeds and feeds relative to the dial numbers on the pendant.

**Pendant Feed and RPM**

Feed		
Dial	in/min	mm/min
1	0.00	0.0
2	0.04	1.0
3	0.09	2.2
4	0.12	3.0
5	0.15	3.8
6	0.18	4.6
7	0.23	5.8
8	0.30	7.5
9	0.36	9.0
10	0.37	9.4

Rotation Lo Speed	
Dial	RPM
1	0
2	4
3	6
4	9
5	13
6	18
7	22
8	27
9	31
10	32

Rotation Hi Speed	
Dial	RPM
1	3
2	8
3	13
4	19
5	26
6	34
7	44
8	56
9	62
10	64

\*All values are approximate

To achieve an approximate Feed/Rev use the following table.

**Pendant Feed/Rev Estimator**

in/rev	RPM							
	8	13	19	26	34	44	56	62
0.002	1.5	1.75	2	2	2.5	3	3.5	4
0.004	1.75	2.25	2.5	3.5	4	5	6.5	7
0.006	2.25	3	3.5	4.5	6	7.25	9	10
0.010	3	4.25	5.5	7	9	X	X	X
0.015	4	5.75	7.5	10	X	X	X	X
Approximate Dial Position for Feed Knob								

\*All values are approximate

## 9.3 Boring

For all bores over 14.5in (368mm), use the Micro Adjust Assembly. See set-up section for further details of setting it up.

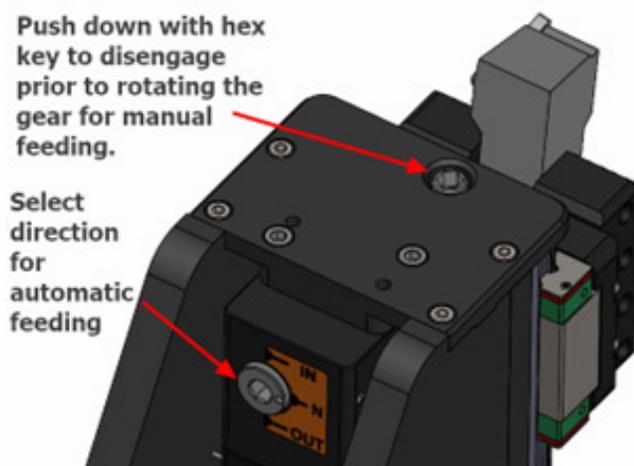
Retract the Insert Holder to a position less than the bore diameter and move the carriage inside the bore. Leaving some travel on the Micro Adjust, loosen the set-screws and touch the Insert Holder against the bore. Feed the carriage out of the bore and using the Micro Adjust Assembly extend the tool to the depth of cut, remembering that the Micro Adjust measures .001in per tick on the diameter, not the radius. Double the number of ticks for the radial value.

## 9.4 Facing

Mount the facing tool as outlined in the set-up section.

To cut a face follow the steps outlined below.

1. If the bore has not already been turned, run a dial indicator around the bore to find the point where the bore radius is the smallest, as this will be the point of the deepest cut.
2. At this point set the starting position by positioning the Facing Tool Carriage and Insert Holder radially using manual positioning hex on the top of the facing tool until its just inside the bore. Pressing down on the hex with the hex key prior to disengage it with the gear. When released it will pop back up once the gear teeth align.
3. Run a dial indicator around the face to find the point where the face protrudes the most.
4. At this location, position the facing tool with the pendant feed along the bores axis to determine the desired depth of cut. This should be done with a dial indicator between the bar and the carriage.
5. Choose a feed direction of the Feed Converter.
6. Set the feed per rev on the adjustment screw. To do this turn the screw clockwise outwards until it bottoms out, which puts it at max feed. Turn it inwards the number of rev's corresponding to the feed/rev in table below.



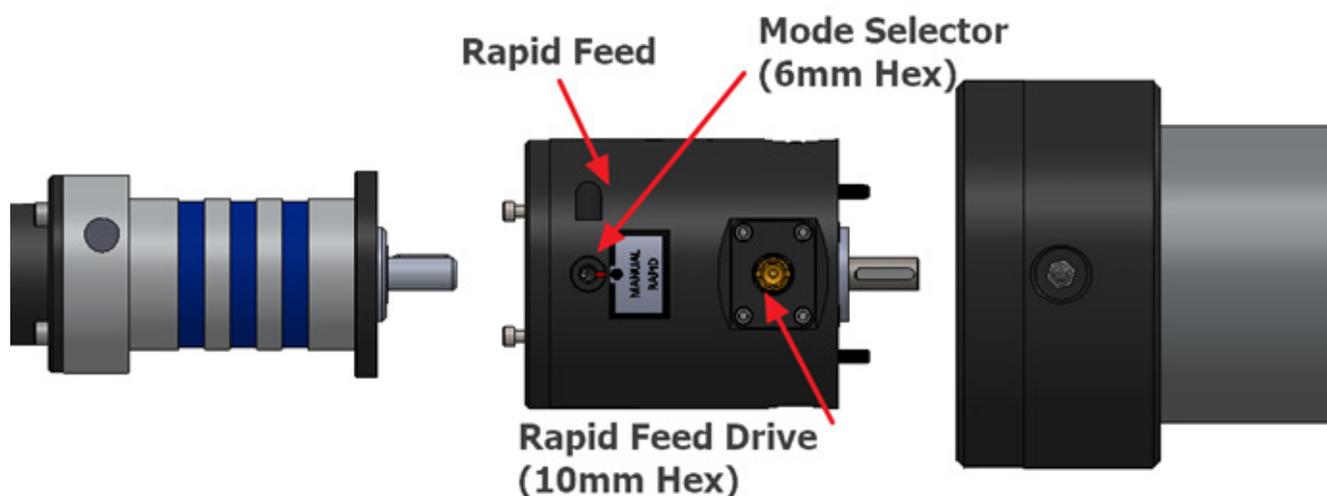
# Turns in from Max Out	Feed/Rev (in)	Feed/Rev (mm)
0	0.022	0.56
1	0.018	0.46
2	0.015	0.38
3	0.013	0.33
4	0.010	0.25
5	0.007	0.18
6	0.005	0.13
7	0.003	0.08
8	0.001	0.03

## 9.5 Rapid Feed and Clutch

To position the carriage more quickly, using a 6mm hex key switch the Rapid Feed assembly to Rapid Mode such that the tick is pointing towards the work piece. Using the 10mm driver bit provided in a cordless drill on low speed, carefully position the carriage.

**Caution:** Driving the carriage into an end-stop while rapid feeding can break the 1/8in brass shear pin, which will then need to be replaced. See Shear Pin Replacement section to fix this.

**Slip Clutch:** There is a slip clutch within the Rapid Feed Assembly, but it only engaged when power feeding. The rapid feed mode bypasses the clutch. The clutch should break away above 10-12 Nm of torque and will protect other components if the carriage is crashed. If the clutch is run continuously for a long period of time the clutch components may wear or melt and will require replacement.

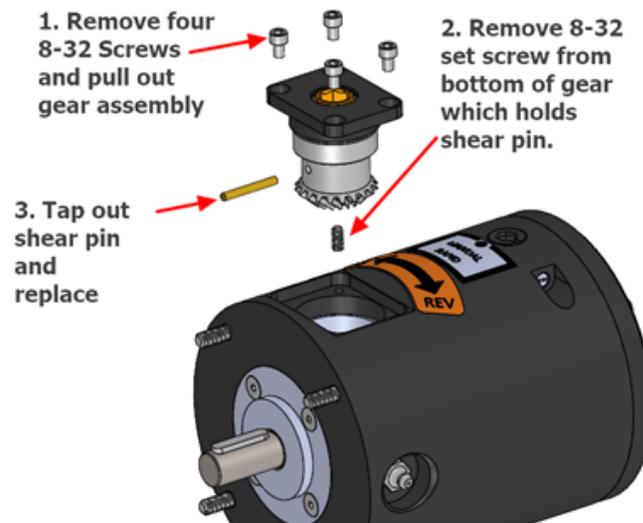


## 10. SHEAR PIN REPLACEMENT

This machine has two shear pins. One in the rapid feed that will only break while feeding with the 10mm hex key. The second is in the gearbox on the end of the bar and will likely only break when power feeding.

### 9.1 Rapid Feed Shear Pin

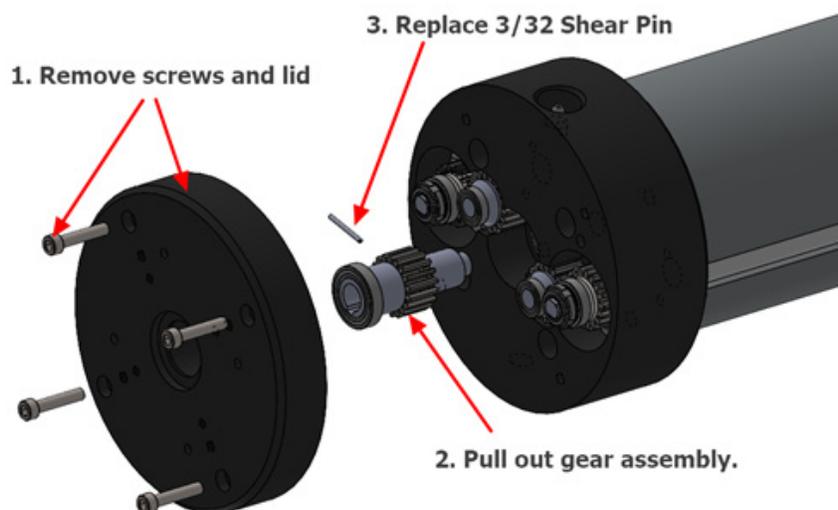
To replace the shear pin in the Rapid Feed Assembly, remove the four screws and pull out the drive assembly. Replace with 1/8 x 1in Brass Shear Pin included in tool box or <https://www.mcmaster.com/8859K53/>



### 9.2 Boring Bar Shear Pin

To remove the Boring Bar Shear Pin, remove the front screws and plate with a 3/16 hex key. Remove the middle gear assembly. Loosen the rear setscrew holding in the shear pin and tap out the shear pin. Replace with a 3/32 x 1in 2024 Alum Shear Pin included in the tool box, or with <https://www.mcmaster.com/9061K37-9061K371/>

Make sure the pin does not sit above the minor diameter of the gear teeth and file if necessary.



## 11. TROUBLESHOOTING

### 10.1 HPU Not Turning On

- Check HPU is connected to Power
- Check HPU power lever is turned to on
- Check E-stop on Pendant isn't pressed
- Check both toggles on Pendant are in their neutral stop position
- Press Green Start Button on HPU

### 10.2 Bar not rotating

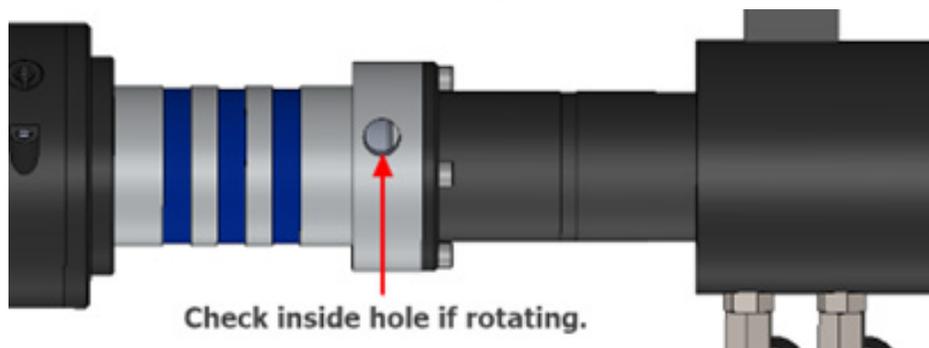
- Check if HPU is powered up and the motor is running
- Check Hydraulic hoses are connected to motor
- Check if HPU Motor-to-Pump coupler is connected under orange plate.

### 10.3 Carriage not Feeding

- Check Rapid feed mode switch in correct position



- Check Hoses are connected.
- Put dial indicator on carriage as it feeds slowly and doesn't always look like its feeding.
- Check if Hydraulic motor is turning (look through hole in adaptor bracket to see if rotating)



- If motor is turning and carriage is not feeding, check shear pin in the end of the bar. See shear-pin replacement section

## 12. MAINTENANCE

### 12.1 Bearings

Both Internal and External bearing assemblies as well as the Bar Drive Assembly have grease ports and should be greased every 100-200 hours of use.

### 12.2 Leadscrews

Leadscrews should be lightly oiled at each use and chips should be vacuumed out. Alternatively running the rapid feed on the bar without the carriage attached will auger the chips away from feed housing and out the end of the bar.

### 12.3 Seals

Visually inspect all seals at each use.

### 12.4 Bar

Lightly oil before use to allow it to slide easily into bearings.

### 12.5 General

Always clean chips from moving parts and oil steel parts to prevent corrosion.

## 13. WARRANTY

Superior Plant Rentals, LLC (SPR) warrants that the equipment manufactured by it will: (i) conform to SPR's written specifications and descriptions, and (ii) be free from substantial defects in design, materials, and workmanship for a period of one year from date of shipment to the original buyer, or six months from date of placing in service by buyer, whichever date is earlier.

During this period, if any equipment is proved to SPR's satisfaction to be defective, SPR will, at our sole and absolute discretion, and as SPR's sole warranty liability and buyer's sole remedy, repair, replace, or credit buyer's account for any equipment that fails to conform to the warranties, provided that: (i) SPR is notified in writing within 10 days following discovery of such failure with a detailed explanation of any alleged deficiencies; (ii) SPR is given a reasonable opportunity to investigate all claims; and (iii) SPR's examination of such equipment confirms the alleged deficiencies and that the deficiencies were not caused by accident, misuse, neglect, improper use, unauthorized alteration, repair, or improper testing.

Shipping cost of the alleged defective equipment to SPR is to buyer's account. However, if SPR agrees that the equipment is defective, then pursuant to this warranty, SPR will reimburse buyer its shipping cost to return the equipment to SPR.

The warranty against defects does not apply to: (1) consumable components or ordinary wear items, and (2) use of the equipment with equipment, components, or parts not specified or supplied by SPR or contemplated under the equipment documentation.

The following actions will void the one-year warranty:

1. Repairs or attempted repairs have been made by persons other than SPR personnel, or authorized service repair personnel;
2. Repairs are required because of normal wear;
3. The tool has been abused or involved in an accident;
4. There is evidence of misuse such as overloading of the tool beyond its rated capacity, use after partial failure, or use with improper accessories.
5. Damage to the motor due to lack of oiler/mister while tool was in use (pending motor type).

**NO OTHER WARRANTY IS VALID**



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