



KNOWLEDGE BASE

Article Type: Instructions

Front-end Rebuild, for Models, 22HF, 16HF, 1600 machines

Description:

Instructions on “How to” properly remove and rebuild the Front-end section of the 22HF, 16HF, and 1600 block machines.

WARNING

Never work on, clean or service this unit, control panel or any machine or open or remove any protective cover, guard, grate, door, or maintenance panel until the power or energy sources has been turned off, locked out / tagged out, and all moving parts have come to a complete stop and or blocked to prevent movement. Machinery is dangerous - avoid personal injury and or death by following manufacture, Local, and OHSА safety procedures. Contact Columbia Machine for safety decals, guards, horns and beacons.

Columbia[®]

FRONT END REBUILD INSTRUCTIONS



FOR USE ON MODEL 22, 16, 1600, AND PIT MACHINES

PRESENTED BY: COLUMBIA MACHINE SERVICE DEPARTMENT

part # 388.2.2

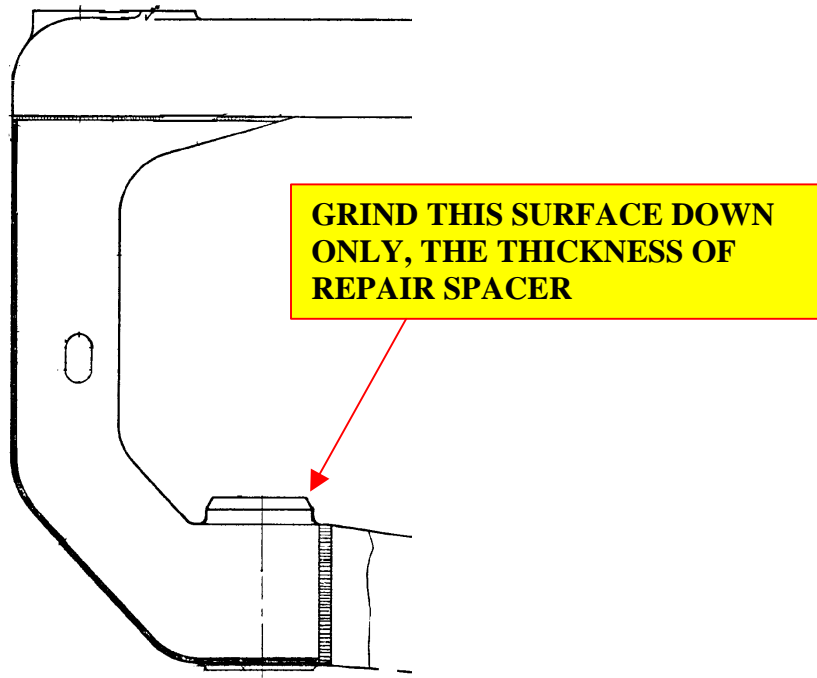
Steps and procedure for installing your new Front End Rebuild Kit.

□ *Differences on your pit machine*

The information outlined in this instruction packet will work for both floor level machines and pit machines, however there are some differences that you should know about.

The main issue is the Stripper Beam. The hole located on the bottom of the beam where the Guide Tube passes through needs to be inspected for wear. The wear you are looking for is on the top of the hole. If the Guide Tube has come loose at any time during production it will move up and down causing the Guide Tube to hammer into the bored hole. Once this has happened the Guide Tube can not be held tightly in the Stripper Beam. In the rebuild kit there is a repair ring that is included for repairing the damage to this hole. PART # C1002.9 for model 10 and 22, and C1606.14 for model 16. The way you use the repair ring is to take a grinder and grind off the old raised area on the stripper beam. Once the area has been ground off, slide the repair ring onto the new guide tube and install Guide Tube into Stripper Beam. Now install lock nuts and tighten with spanner.

The other difference is the bushings, one is located on the top of Guide Tube like the floor level and the other one is located on the bottom of Guide Tube held in by the bottom lock nut.



- ***Step one***
Remove Mold Box and Head Assembly.
- ***Step two***
Remove Pallet Table Assembly.
- ***Step three***
Remove Green Conveyor from the front of the block machine. This will give you clear access to the front-end assembly. There are two types of conveyors: Tilt up and Fixed (bolted in).
- ***Step four***
Lower Stripper Beam until it is resting on one 8-inch block placed under middle of beam. Remove both lock nuts from Stripper Cylinders. Using selector switch, lower Stripper Cylinders all the way. Now lower Compression Beam to its lowest point.
- ***Step five***
SAFETY – Turn off pump, lock-out/tag-out pumps, and machine. FOLLOW YOUR COMPANYS LOCK-OUT/TAG-OUT PROCEDURE YOU CAN REFER TO YOUR OWNERS MANUAL FOR THIS INFORMATION.
- ***Step six***
Remove the four bolts at the bottom of the Shaker Shaft, now loosen and remove the four bolts that are holding the Parallel Bars (springs) to the side of the Machine. This will allow you to remove the Shaker Shaft, Die Support, and Parallel Bars (springs) as one piece. Repeat this step on other side. With the Shaker shafts removed you should inspect the rubber boots on the Vibrator, they can be replaced very easily at this time.
- ***Step seven***
Having the Stripper Beam up 8 inches will allow access for the removal of the bolt on the Main Shaft that holds the Lower Bushings. These may or may not fall out at this time. Repeat this step on other side.
- ***Step eight***
Disconnect air hose from Compression Beam.
- ***Step nine***
Now loosen jam nuts on Cylinder Shaft. Now retighten jam nuts together and use them to unscrew the Compression Cylinder Shaft from the bottom of the Air Stroke assembly. Lift up on the Air Stroke assembly to make sure they are free.

❑ **Step ten**

Remove the Compression Beam and Guide Bars. If you have the clearance over your machine, lift the Beam and Main Shafts off in one piece.

❑ **Step eleven**

Loosen all of the bolts, but remove only 12 bolts at this time. Remove three bolts from each corner Guide Tube Bracket holding Beam to face of machine. Hook up a crane to the Beam and remove all bolts from Brackets. This will allow you to lift the Stripper Beam assembly off in one piece.

❑ **Step twelve**

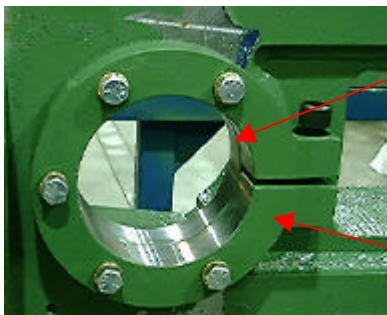
Once both Beams have been removed from machine they need to be inspected. When inspecting the Compression Beam pay close attention to the Air Stroke assembly. This assembly may also need to be rebuilt with Bushings and Guide Shafts. The Beam has one other key spot to look at: this is the hole where the Main Guide Bar slides through the Beam. Both holes should be cleaned thoroughly and check the condition of the bore. The Four Square Headed bolts in the front of the beam should also be removed and cleaned. These bolts are a Special Hardened Type. (Part number 100207.10.56) replace any broken or damaged bolts.

❑ **Step thirteen**

Now the Stripper Beam can be inspected. Make sure the top of the beam is flat. The areas to inspect are the pallet table mounting area, the height stop, and cylinder mount area. If the Beam is showing signs of wear due to Pallet Table, Cylinders, or Height Stops coming loose you should have the beam machined. When having a beam machined you can only remove .031", this should be removed from both machined surfaces at the top of beam not just one. Thoroughly clean and inspect all four bore locations. Replace any broken or damaged bolts.



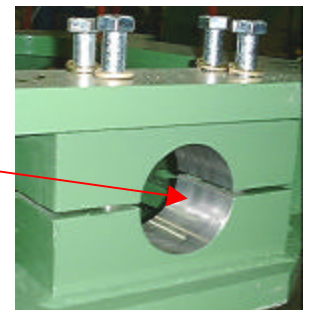
THESE ARE THE AREAS THAT CAN BE MACHINED



BORE IN TOP OF BEAM

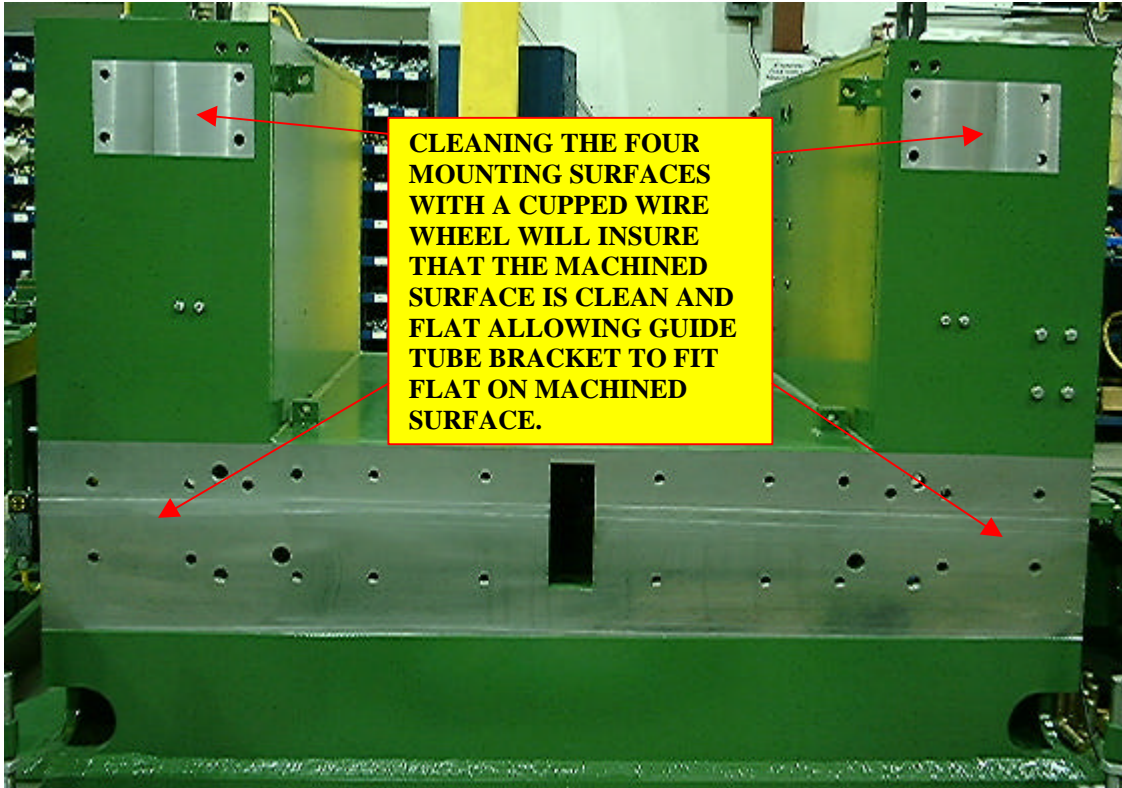
TUBE CLAMP

CLAMPING BORE AT THE BOTTOM OF STRIPPER BEAM



❑ **Step fourteen**

With the Front of the Machine removed, the Face can now be cleaned and prepped for re-installation of the Stripper Beam. Cleaning of the machined surfaces can be done with a Cupped Wire Wheel used on a D/A grinder. This will remove any rust, paint, etc. without damaging the Machined Surface.



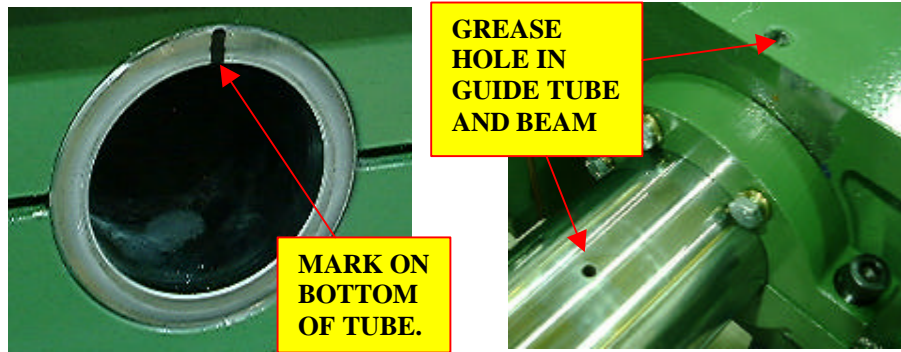
❑ **Step fifteen**

Re-assembling the Stripper Beam. Place the Stripper Beam on its back. This should be done with a crane or forklift. Once the Beam is on its back, lift it up and place three old head assemblies this will get the Beam up off the floor to work on it. Now you can start putting the Beam together. First locate the four Guide Tube Brackets remove any paint from mounting surface. Then install the Eight Seals into the Guide Tube Brackets as shown.



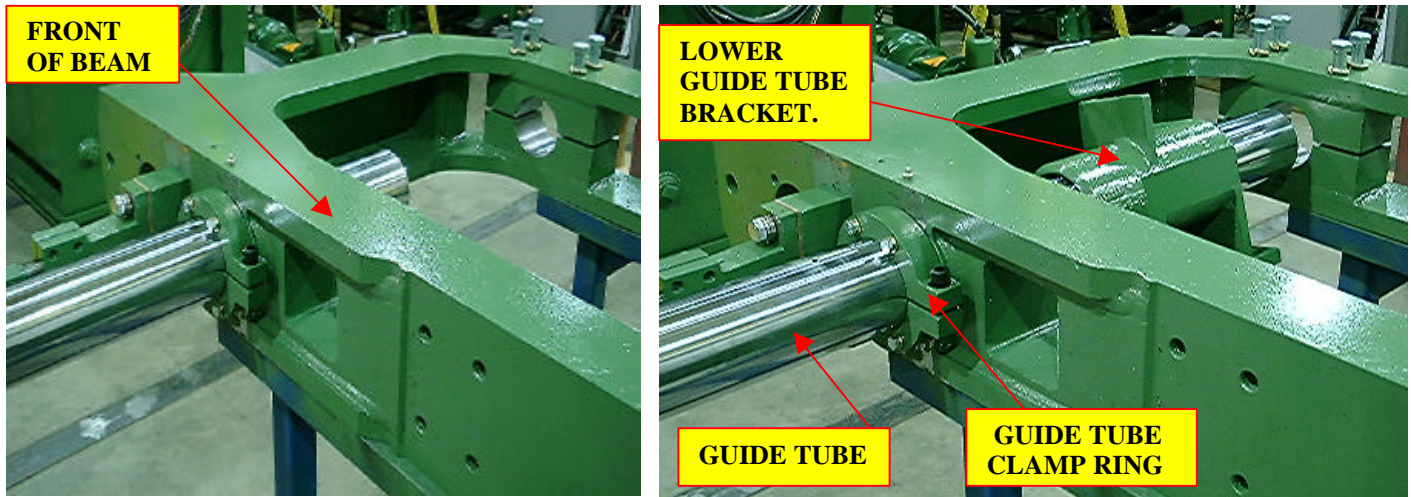
❑ **Step sixteen**

Now inspect the Guide Tubes for rust and dents. Located approximately in the middle of Guide Tube is a Grease Hole. Mark the bottom of Guide Tube with a felt pen as shown to find hole on final step. Install the Guide Tube by sliding Guide Tube into top hole on Stripper Beam. This should be a very snug fit.



❑ **Step seventeen**

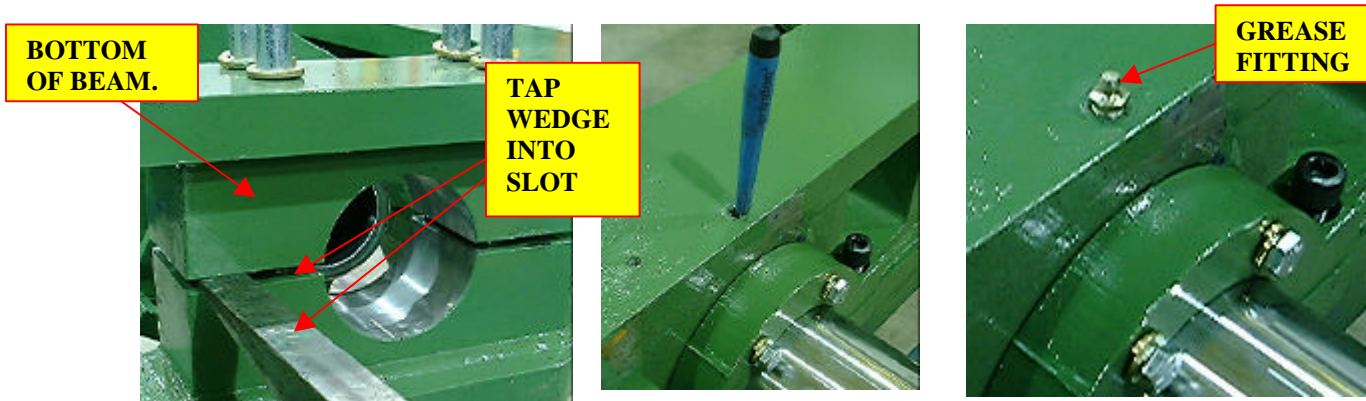
Once Guide Tube has been started into Stripper Beam, push it through about 6-8 inches and stop. This will allow you to install the lower Guide Tube Bracket by sliding it onto Guide Tube. Pay special attention to these brackets because they are cut away to clear the Vibrator Base once Stripper Beam is installed.



❑ **Step eighteen**

Before the Guide Tube can be pushed the remainder of the way through the Stripper Beam you will need to use a wedge or chisel to open the clamp Area at the bottom of the Stripper Beam. Now you can slide the Guide Tube all

the way through and into position. Make sure the Guide Tube is only pushed flush with the bottom of the Stripper Beam, this will insure the Grease Hole in Guide Tube and the Grease Hole in the Stripper Beam line up and will take grease. Using a Small Screwdriver, you can insure alignment of holes. Now install the Grease Fittings.



Tighten the four bolts at bottom of the Stripper Beam, then tighten the five Clamp Ring bolts, and last, tighten the Allen bolt. This will complete one Guide Tube and Lower Guide Tube Bracket installation. Use these same steps for installing the Guide Tube and Guide Tube Bracket on the other side.

□ **Step nineteen**

Next install the Upper Guide Tube Bracket by sliding it onto Guide Tube. Locate the Upper Guide Tube Bushing. Prior to installing it, put a small amount of grease on the O-ring area. Now slide the Bushing into the Guide Tube. You may need to tap the Bushing into position. This can be done by use of a rubber soft hammer only. Be careful not to damage the Bushing Lip. Once the Bushing is bottomed out against the Guide Tube. Apply an ample amount of Loctite #242 on the thread area. Then thread Upper Bushing lock nut onto Guide Tube by hand. After lock nut has been bottomed out against Bushing, tighten lock nut with spanner wrench supplied with kit. When tightening lock nut, give the Spanner 4 or 5 good hard raps with a 3-5 lbs. rubber hammer. Photos below.

Spanner wrench shipped with your kit PART # C1619.1

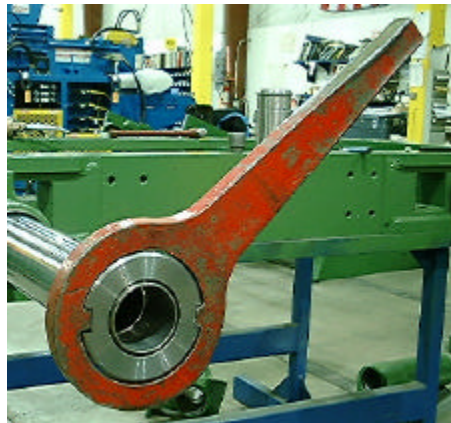
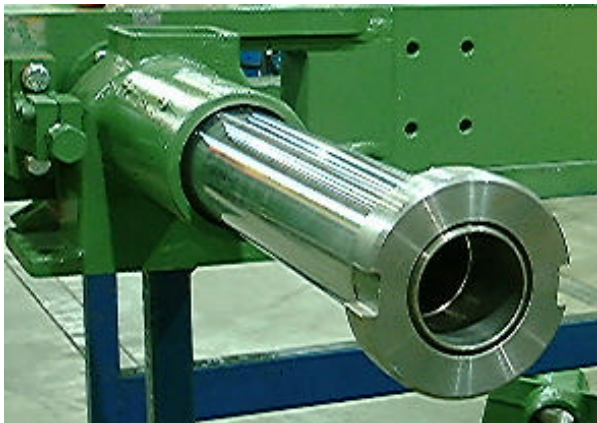
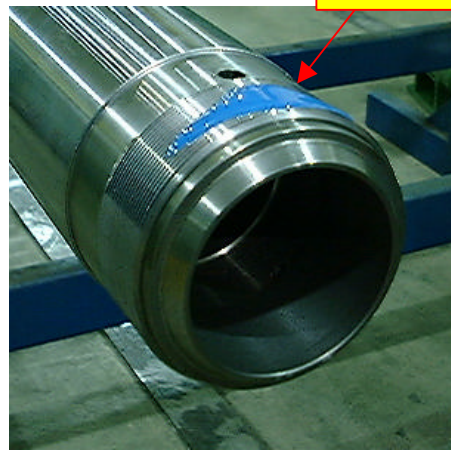




GREASE ON
BUSHING O-RING



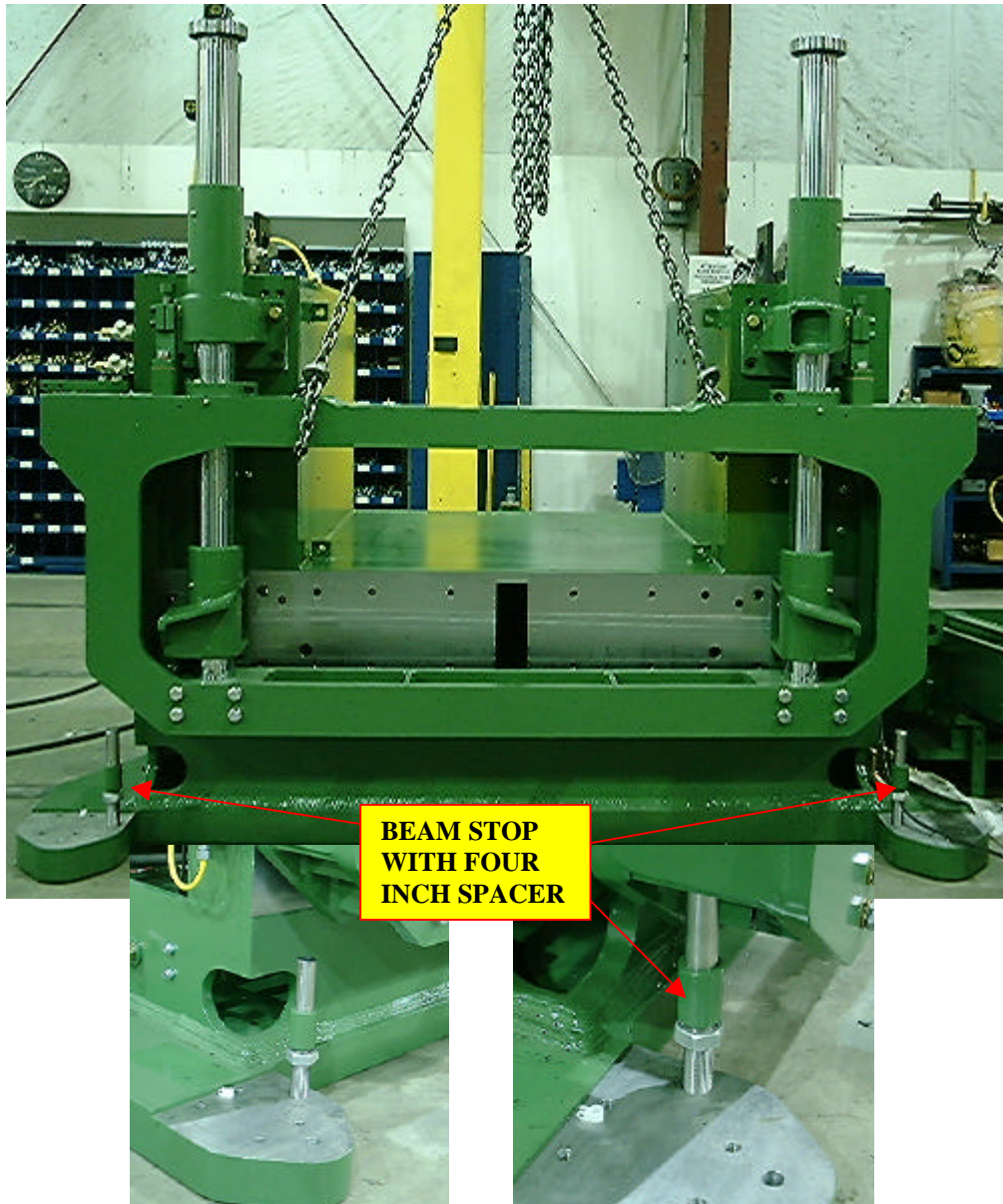
LOCTITE #242



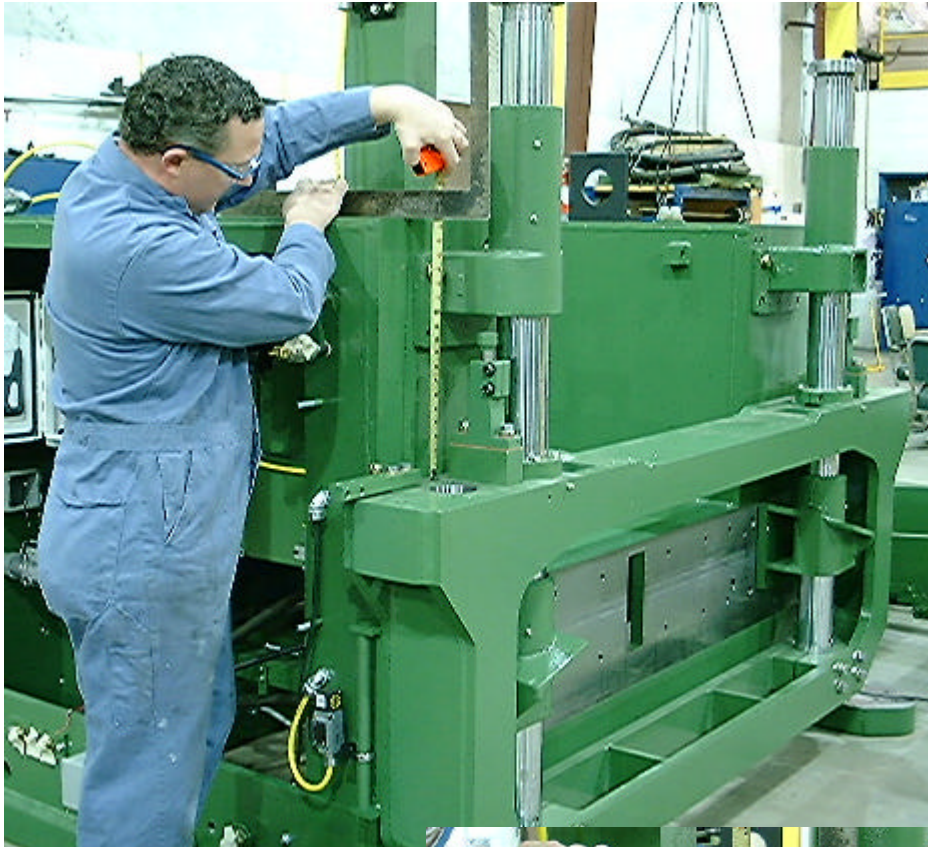
□ **Step twenty**

Now both Beams should be ready for re-installation. Start by lifting the Stripper Beam off the stands and place it up right using a crane or folk lift. Once the Stripper Beam is up right, you can maneuver it in front of the Block Machine Box. After the Stripper Beam is in front of the box, lift it up (with crane or forklift) so you can install bolts into the four Guide Tube

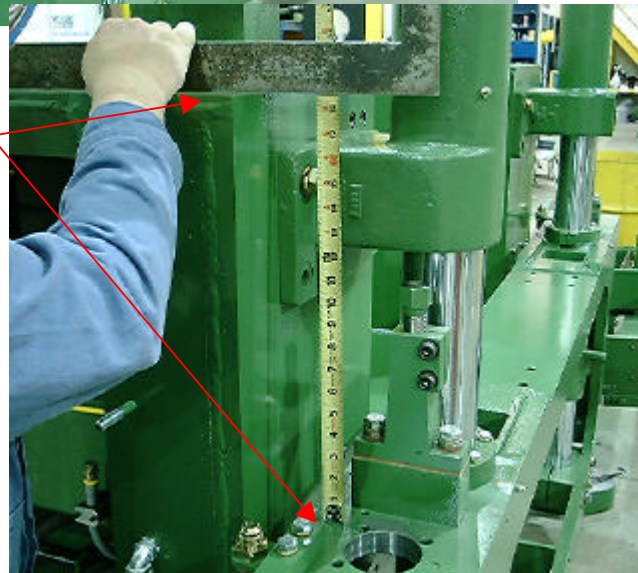
Mounting Brackets. These bolts should be installed and slightly tightened, so the Stripper Beam can be moved for leveling. Lower the Stripper Beam onto the Stripper Beam Stops, this will help level the Stripper Beam. By using these Beam Stops as jacking screws, level the Stripper Beam from the left side to the right side.



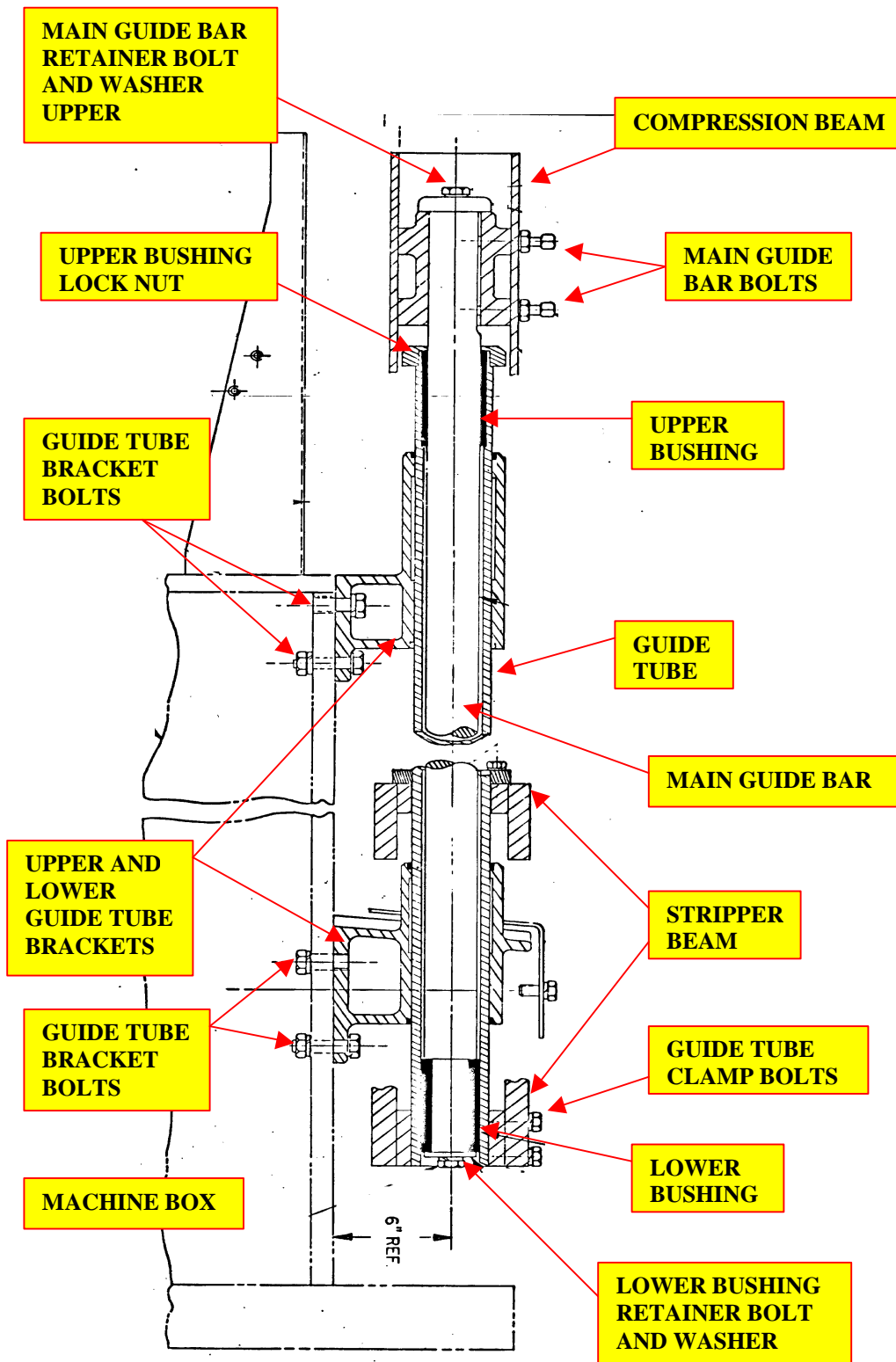
A measurement should be taken from the left side to the right side on the top surface of the Stripper Beam. This should be done with a tape measure and a framing square. The top of the Machine Box and the top of the Stripper Beam need to be cleaned so your measurement is accurate.



**TOP MACHINED SURFACE
OF BOX AND BEAM**



Once both measurements are the same, start tightening the Guide Tube mounting Bracket bolts. Tighten only two of the bolts on each Bracket at this time. Once this has been done, re-check the measurement of the Stripper Beam to ensure that it didn't move. Finally tighten all remaining bolts and re-check the measurement of the Stripper Beam, now lift beam up and down to ensure there is no binding. Finally torque all bolts to the proper specifications listed on the next page.



THE BOLTS THAT NEED TO BE TORQUED ARE AS FOLLOWS:

- **Main Guide Bar Retainer bolt**
 MODEL 22 (266 foot pounds)
 MODEL 16, 1600 (644 foot pounds)

- ❑ **Main Guide Bar bolts**
MODEL 22, 16, 1600 (212 foot pounds)
- ❑ **Guide Tube Bracket bolts**
MODEL 22 (187 foot pounds on fine bolts with nuts)
(113 foot pounds for coarse bolts going into castings)
MODEL 16, 1600 (315 foot pounds on fine bolts with nuts)
(200 foot pounds for coarse bolts going into casting)
- ❑ **Guide Tube Clamp bolts**
MODEL 22 (150 foot pounds)
MODEL 16, 1600 (266 foot pound)
- ❑ **Lower Bushing Retainer bolt**
MODEL 22 (266 foot pounds)
MODEL 16, 1600 (644 foot pounds)



- ❑ ***Step twenty one***
Installation of the Compression Beam and Main Guide Bars is next. Lift the Compression Beam with a crane or forklift so the Compression Beam is over the Stripper Beam and Guide Tubes. Start lowering the Compression Beam

down slowly and guide the Main Guide Bars into the Guide Tubes. It may be necessary to gently rock the Compression Beam from Side to Side if the Guide Bars are getting bound up. (WD-40 can be applied for lube). Before dropping Main Guide Bar, mark the top of the washer mounted to the Main Guide Bar with a felt pen to identify the flat area of the Main Guide Bar. Once the Compression Beam is set down on the Rubber Beam Stops, you can loosen the Main Guide Bar bolt and allow the Main Guide Bar to free fall into place. Now you can install the Lower Bushings. These Bushings should be installed with the grooves machined on the side facing up. Install bolt and Special Washer. At this time, make sure Main Guide Bar is orientated with felt pen mark facing Guide Bar bolts on front of Compression Beam. Now, tighten the four Main Guide Bar bolts and torque them. Re-install Shaker Shafts and use the jigs to insure proper alignment of vibrator components. Now, hook up all the hydraulic hoses and air to the head. The front end should be greased before moving the beams, also grease all other fittings on machine.

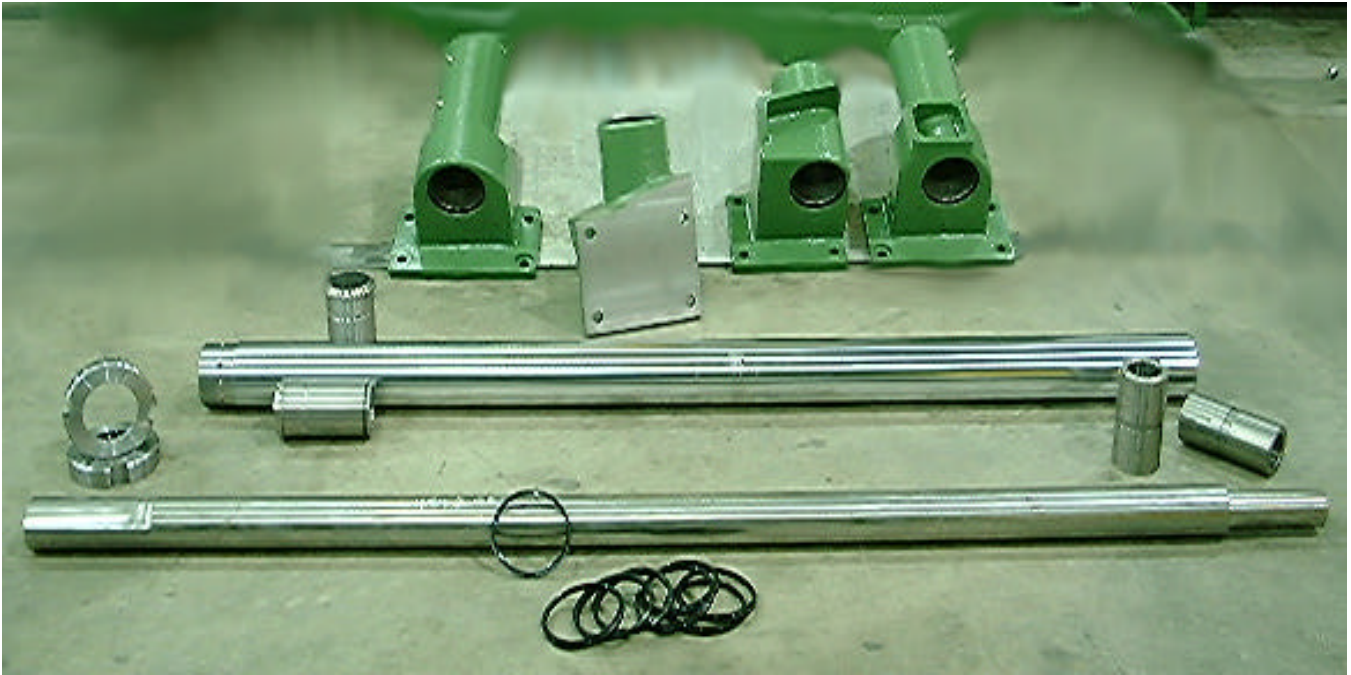
□ ***Step twenty two***

Once the beams and all other front-end components have been installed check all bolts to make sure they are tight and properly torqued. After pre start-up check is done, close the main hydraulic valve to machine. Start the pump. After the pump is running, open the main valve slightly so the oil is regulated. With the valve slightly opened, walk around the machine checking for leaks, if none are found you can start moving the beams up and down. Move each beam up and down about 15 times; this will help eliminate air from the hydraulic system. While moving the beam watch for hydraulic leaks. You should also look at the smear of grease around the Guide Tubes, it should be uniform and not show signs of dry areas or heavy gray marks this will indicate misalignment of guide tube brackets. The beams will move at a slow speed due to the main valve being only slightly opened. After the beams have been moved up and down several times, and there are no leaks, you can now open the main valve all the way and make final adjustments.

□ ***Final step***

Re-install the pallet table into the machine. Next re-install mold and head assembly, now maneuver the conveyor back in front of the machine. Once all these steps have been followed you have completed your front-end rebuild. If you have any questions during this process please call. Columbia Machine, Inc. Service Department at 1-800-628-4065

Parts included in your front end rebuild kit



1. (8) Seals.
2. (2) Upper guide tube brackets.
3. (2) Lower guide tube brackets.
4. (2) Upper bushings.
5. (2) Lower bushings.
6. (2) Upper bushing lock nuts.
7. (2) Guide tubes.
8. (2) Main guide bars.
9. (12) Grease fittings.