

**KNOWLEDGE BASE**Article Type: **Instructions**

Vibrator Shakershaft and Upper Vibrator Components Troubleshooting for: Models 22HF, 16HF, 1600.

Description:

Instructions on “How to” properly setup and align Upper Vibrator components, Shakershaft, Die Supports, Guide Bars. For Models 22HF, 16HF, and 1600 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 OHSAs safety procedures. Contact Columbia Machine for safety decals, guards, horns and beacons.

VIBRATOR / SHAKERSHAFT TROUBLESHOOTING & SETUP INSTRUCTIONS

If you have Bolts backing off or breaking at the hold down collar to the eccentric vibrator foot.

1. Bolts not torque to proper specification.
2. If the bolts have backed off allowing the shaker shaft to hammer up and down on the eccentric foot of the vibrator this can caused the bolts fail. Check to make sure this is not the case.
3. When removing the shaker shaft from the eccentric foot the concrete material build up around the hold down collar and the shaker shaft must be cleaned and the hold down collar must be freed up from the shaker shaft so that when you install new bolts you get an even pull down on all side of the hold down collar to set the right tension holding the shaker shaft to the eccentric foot. This can only be accomplished if the hold down collar is free to move up and down on the shaker shaft.
4. It is always advised to complete a full inspection and check for correct height dimensions both sides of the machine from the top of the eccentric foot to the bottom of the die support. (See height dimensions attached). Check other components before installing the bolts in the hold down collar. Make sure you apply some Ant seize on each of the bolts. If you are not sure of these dimensions or if they are not the same from side to side then it's suggested to break the nuts loose on the complete upper vibrator components and start from scratch.



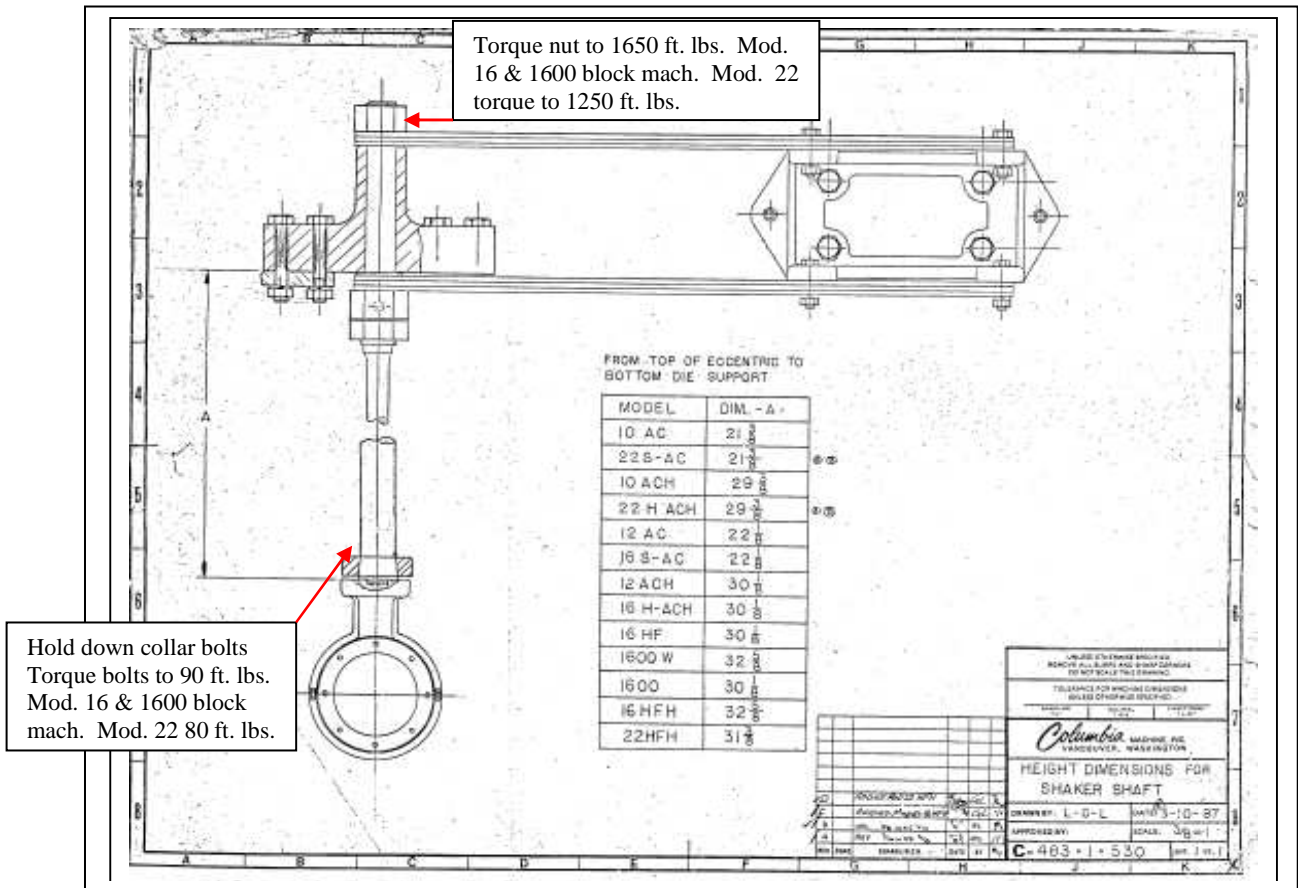
Shaker shaft and hold down collar are covered in material which with the damages to the vibrator you would also have damages to the shaker shaft button on the bottom. Because of these damages the shaker shaft must be replaced.



Damages to eccentric foot are evidence the bolts had backed off allowing the shaker shaft to hammer and eventually breaking the bolts.

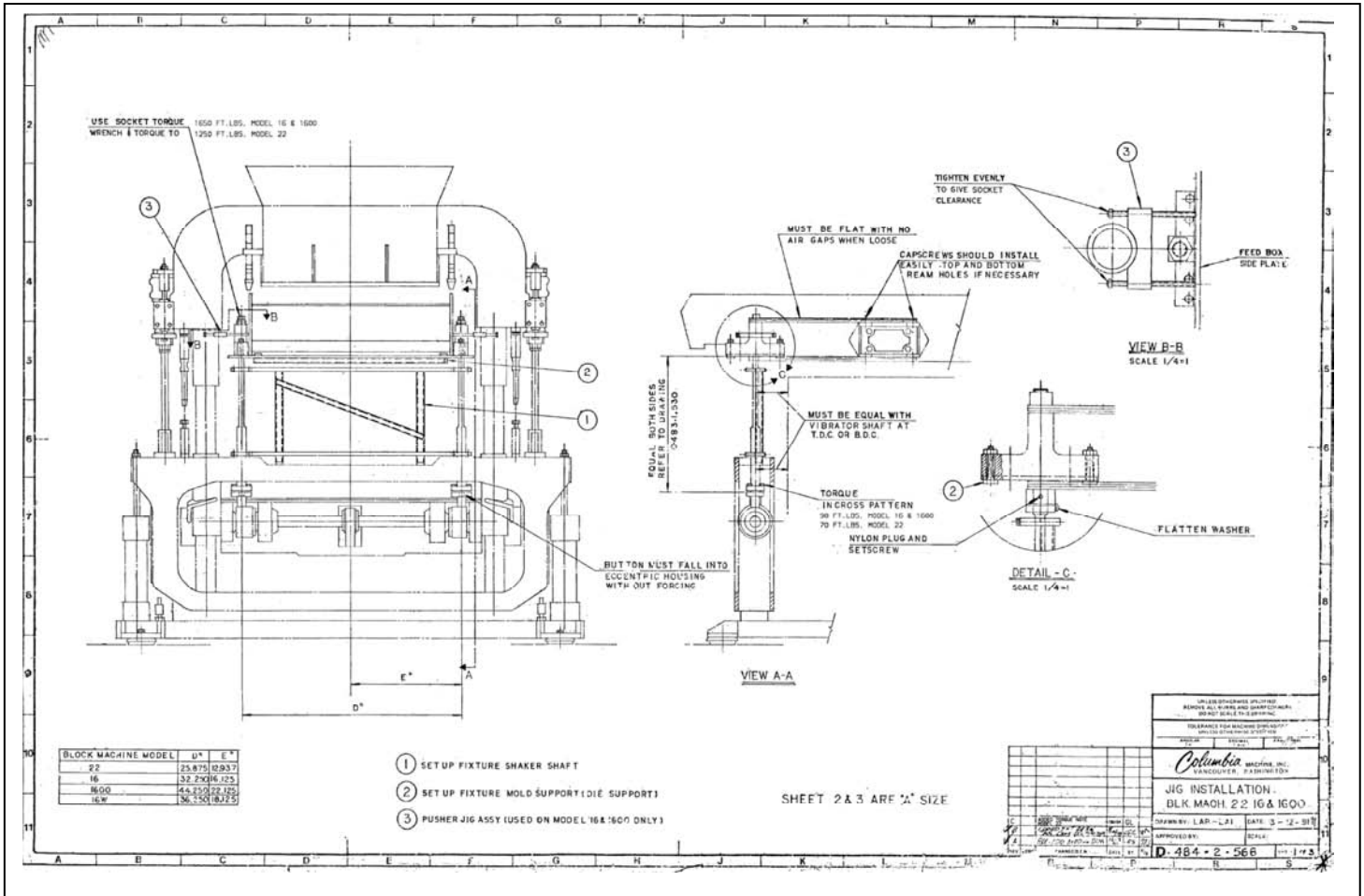
In the event you are installing a new vibrator assembly I would suggest removing the complete upper vibrator assembly. If the components are in good condition and at the height from the top of the eccentric foot to the bottom of the die supports are set correctly (see attached documents) you can remove the hold down collar bolts and upper die support assembly by removing the four bolts that retain the parallel bars in the back against the feed box. You will also need to support the feed drawer as you will need to remove the front feed box rails in order to remove the upper vibrator assemblies in one piece. Once you have removed upper die supports you can clean the bottoms of the shaker shafts of concrete build up and turn the shaker shaft upside down so that you can break the hold down collar loose from the shaker shaft and also check to make sure the hold down collar is not flush with the bottom of the shaker shaft as this will not allow the hold down collar to clamp the shaker shaft to the

eccentric foot. To break the hold down collar loose this can be accomplished by use a piece of pipe large enough to go over the bottom of the shaker shaft and tall enough so that you can support a block of wood on top of the pipe without contacting the bottom of the shaker shaft. Using the block of wood placed on top of the section of pipe strike the block of wood held against the pipe driving the hold down collar free of the shaker shaft. Also inspect the hold down collar to insure they are not cracked and are in good condition.



After you have the upper die support assembly cleaned and installed back on the machine install the bolts, lockwashers & nuts back in the parallel bars at the rear supports against the feed box on both sides, but do not lock the bolts down at this time. Install the feed box side rails that the feed drawer wheels ride on. If you have loosened up the nuts on the upper vibrator components and need to set your heights install the shaker shafts in the eccentric feet and just start the bolts in by hand to hold the shaker shafts in place. Again follow the height adjustments for setting the heights from the eccentric feet to the bottom of the die support (see attached document for height settings). Height adjustments should be made using the lower large nut on the shaker shaft. Also you should have both your die support fixture and shaker shaft fixture to complete the alignment. (See attached documents)

When installing upper vibrator components you must use all set up fixtures to insure both the die supports are set and held in the correct position and the shaker shafts are held true and at the correct height dimension shown on drawing below 484.2.566. Follow all torques specs for you given machine model.

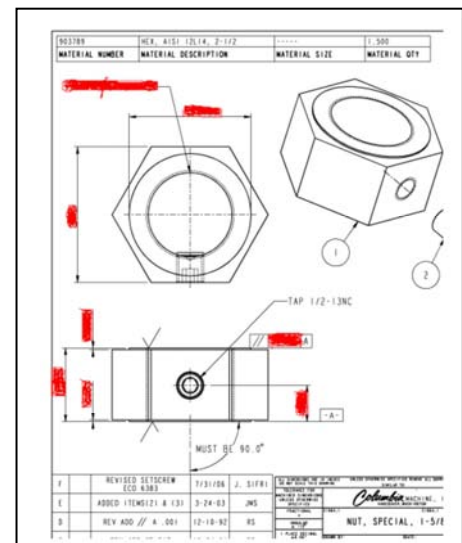
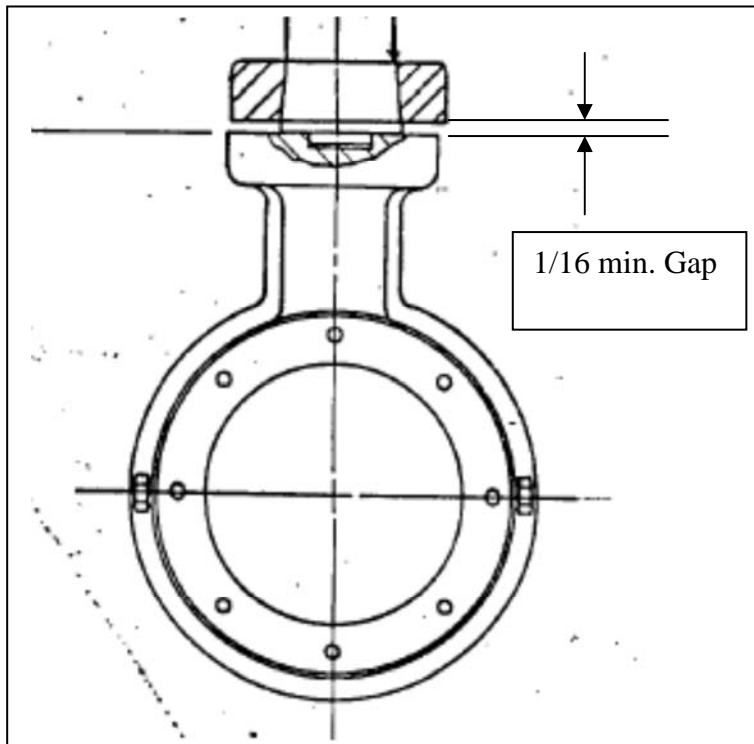


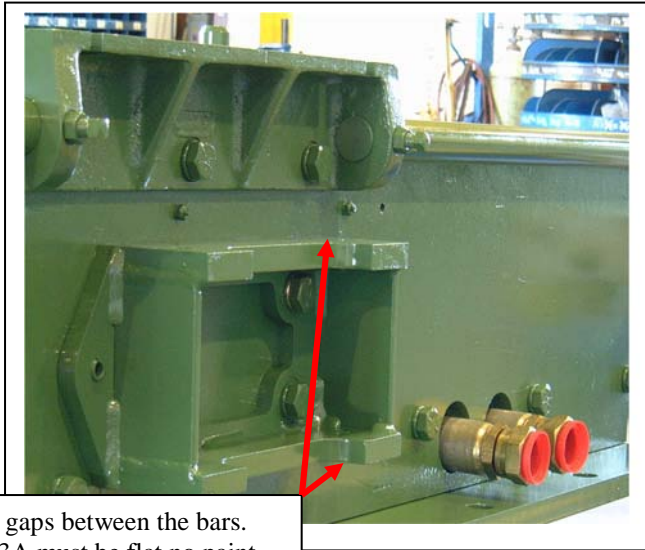
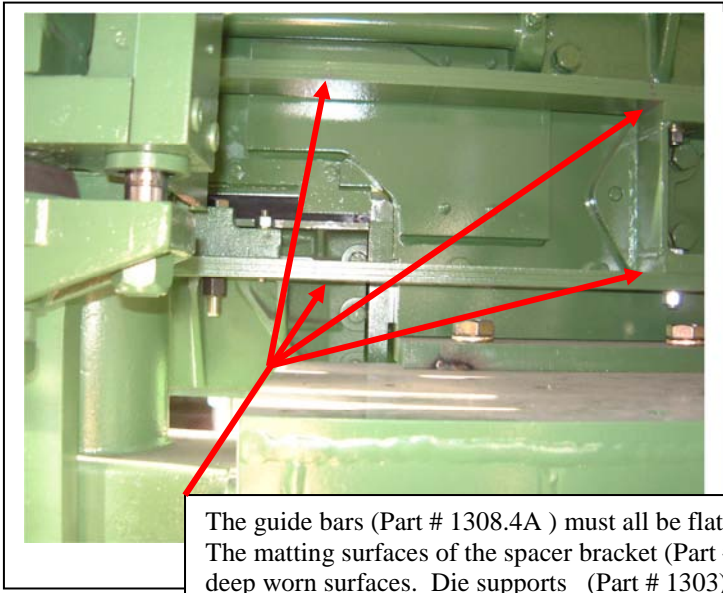
NOTE: It is also advised to clean all tapped holes to insure the threads are clean and not damaged in the eccentric feet. Make sure you use some antiseize lubricate the bolts prior to installing in the eccentric foot, but do not tighten at this time.

After you have your heights adjusted both sides, but not torque down install the alignment fixtures to hold both the die supports and shaker shafts in true alignment. This will require you to remove the pallet table assembly so that the shaker shaft fixture can be installed. With fixtures installed lock down the bolts and nuts on the parallel bars at the rear and again check your height dimension to insure heights have not changed. Tighten down the top nut to about 150 ft. lbs. and check dimensions if good continue to torque nut down to about 600 ft. lbs. and recheck height dimension and if good complete final torque on mod. 16 and 1600 to a torque of 1650 ft. lbs. and on model 22 block machines 1100 ft. lbs. Again check dimension height and if good look down lower lock nut, but don't bend the washer

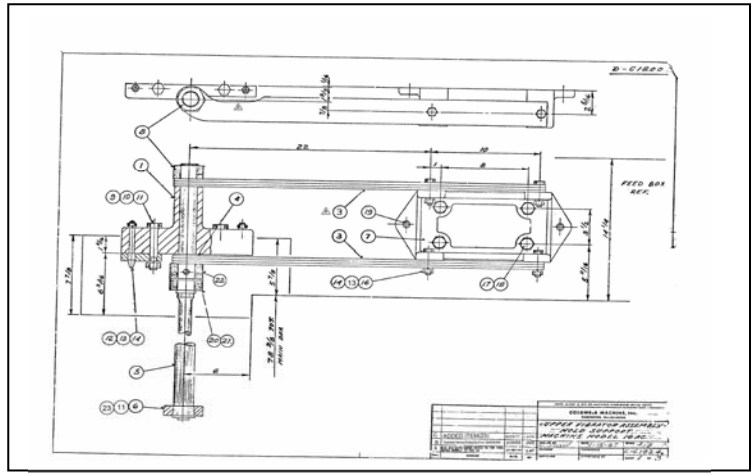
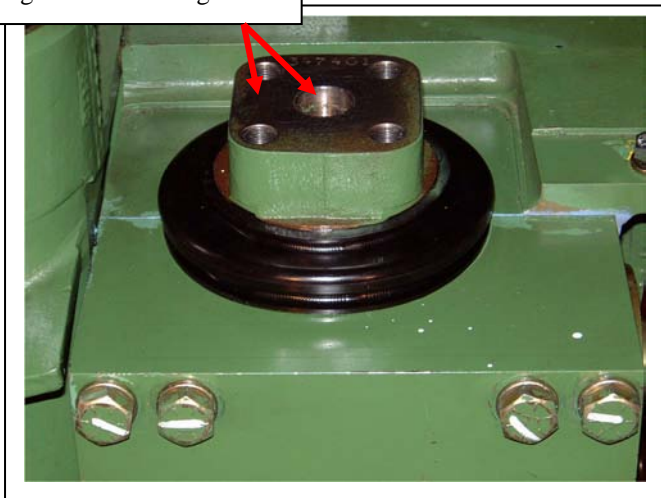
flanges over opposed top and bottom nut until all alignments have been completed. Insert uhmw and set screw and lock down on lower larger nut. (See attached document).

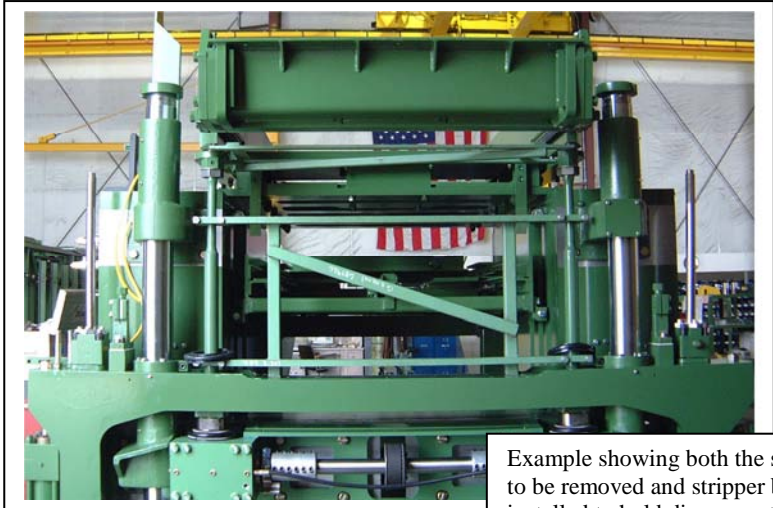
To confirm shaker shaft bottom pin alignment to eccentric foot remove the shaker shaft fixture and die support fixture first. Then using a large hook bar or crow bar across the main box setting the bar under the die support lift the shaker shaft up out of the pocket just enough to see it come up out of the eccentric foot and then lower it back down. The shaker shaft should lift up and set back down in the pocket without forcing the shaker shaft. (Make sure you are lifting straight up with the bar). If the shaker shaft springs to either side or front to back and you cannot get the shaker shaft pin to set back down without forcing it you can loosen the bolts in the rear of the parallel bar on that side and see if this allows the shaft to align. Again you also may need to install the fixture again and lock the bolts down. If you continue to have problems with the alignment you may be required to loosen up the upper nut on the shaker shaft and turn the shaft slightly which will require readjustment of the lower nuts. If all checks out then with the shaker shafts seated on the eccentric feet install bolts in the hold down collar and using a cross hatch pattern begin to draw down the bolts. This will require three torque settings starting with 30 ft. lbs. you may need to continue three to four times using this setting again using the cross hatch pattern until you can put the torque wrench on each of the 4 bolts and when you apply torque the torque wrench clicks to the specified torque setting without the bolt drawing down more. Move to the next torque setting of 60 ft. lbs. and again follow the same sequence. Again set the torque to 90 ft. lbs. (Mod. 16 & 1600 block machines) and following the same sequence cross hatch pattern and torque to final specs. Once you have completed the torque on these bolts you should have at a minimum of 1/16" inches gap between the eccentric foot and the hold down collar. If the hold down collar is in full contact with the eccentric foot then the hold down collar will not hold the shaker shaft tight against the eccentric foot causing failure to the vibrator and upper vibrator components. It will be necessary to stop at this time and replace the hold down collar or both collar and shaker shaft.





The guide bars (Part # 1308.4A) must all be flat and no gaps between the bars. The matting surfaces of the spacer bracket (Part # C1213A must be flat no paint deep worn surfaces. Die supports (Part # 1303) must also be in very good condition with a good flat surface for the mold to mount to and the eccentric vibrator foot must be flat good tapped holes and center align hole must be good.

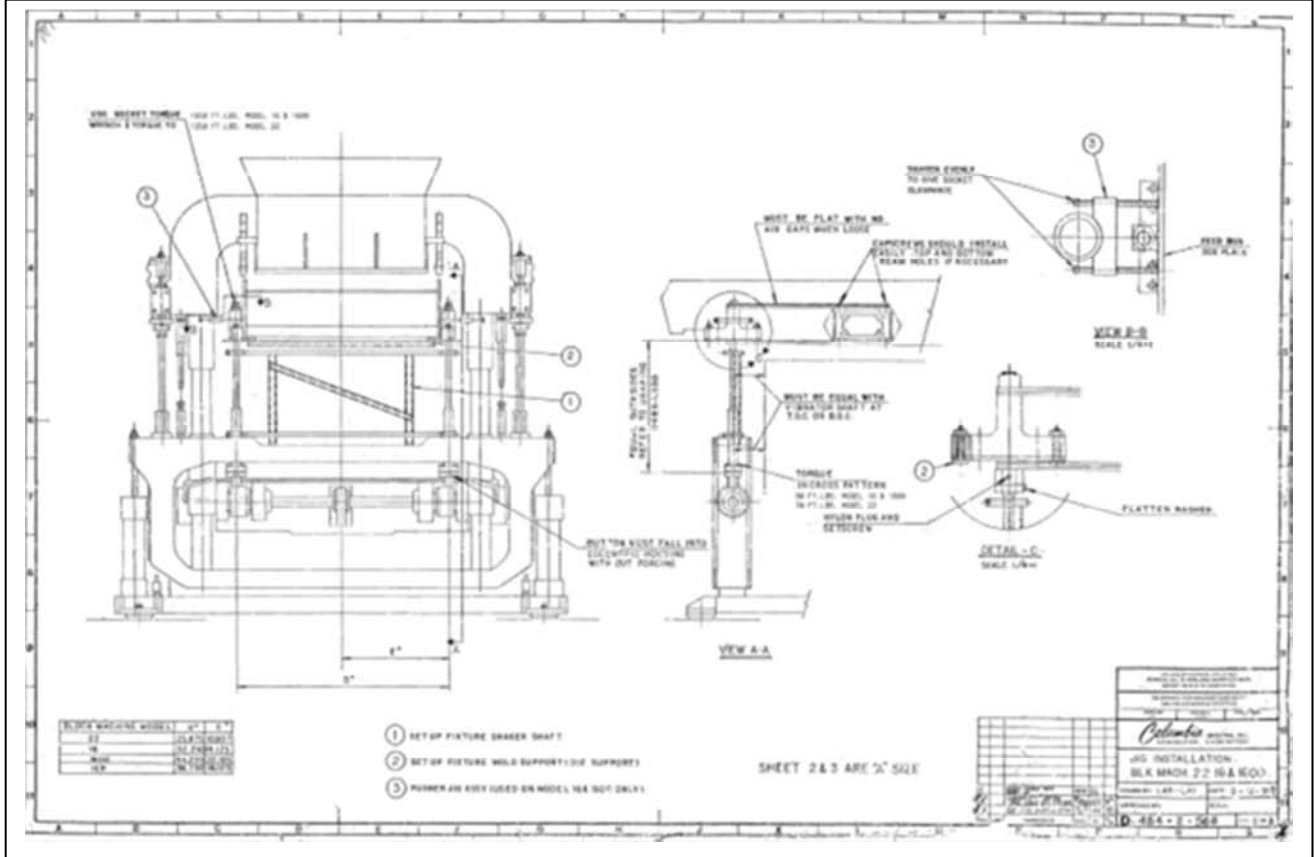




Example showing both the shaker shaft fixture installed. Remember the pallet table needs to be removed and stripper beam setting on lower beam stops. Upper die support fixture installed to hold die support alignment. Follow the directions on pages 2, & 3 on print 484.2.566 for proper assembly procedures. See below.

484.2.566 PAGE 2 & 3 INSTRUCTIONS FOR UPPER VIBRATOR INSTALLATION & ALIGNMENT
 INSTRUCTIONS FOR MODELS 22HF, 16HF & 1600HF
 CONCRETE PRODUCTS MACHINES

PAGE 1





**INSTRUCTIONS FOR FRONT END ALIGNMENT
OF MOLD VIBRATION COMPONENTS FOR
MODEL 22HF, 16HF AND 1600
CONCRETE PRODUCTS MACHINES**

MACHINE ASSEMBLY STATUS

1. Beams and columns installed
2. Stripper and compression cylinders installed
3. Hydraulics installed
4. Vibrator shaft assembly installed
5. Feed box assembly installed
6. Paliet table assembly NOT installed

Conform to the following assembly procedure to properly install the mold vibration components.

1. Pre-assemble shaker shafts with bottom plate, die support, parallel bars, spacers, and nuts as per assembly drawing.
2. Install shaker shaft assemblies. Leave, and fasteners for parallel bars and fasteners for bottom plate finger tight.
3. Parallel bars should be flat within specifications on drawing. Re-straighten if necessary.
4. Bolts for parallel bars should install easily without interference. Ream holes if necessary.
5. Measuring from top machined surface of eccentric housing to bottom machined surface of die support. Adjust height of die supports according to assembly drawing. It is most critical that left hand and right hand dimensions are equal. Jam bottom two (2) nuts together at this setting.
6. Install die support jig.
7. Install shaker shaft jig. Note that bottom feed of jig must rest securely on main beam in it's down position.

(SHEET 1 IS "D" SIZE)

UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS AND SHARP CORNERS DO NOT SCALE THIS DRAWING				MACHINE, INC. VANCOUVER WASHINGTON	
TOLERANCE FOR MACHINE DIMENSIONS UNLESS OTHERWISE SPECIFIED				INSTRUCTIONS FOR FRONT END ALIGNMENT OF MOLD VIBRATION COMPONENTS FOR MODEL 22HF, 16HF, AND 1600 CONCRETE PRODUCTS MACHINES	
ANGULAR $\pm 1/2$	DECIMAL ± 0.10	FRACTIONAL $\pm 1/32$		Drawn By GLEN A LONG	Date 3-18-93
				Approved By	Scale
Rev	Change/DCN	Date	By	M/F	A-184-2-566
					sht 2 of 3

138747			
<ol style="list-style-type: none"> 8. Securely tighten all jig fasteners. 9. Securely tighten parallel bar fasteners. 10. Using a straight edge held horizontally against the front face of both shaker shafts, measure from the face of the box to the straight edge in a top and lower position to assure the shaker shafts are now parallel to the machined surface of the box 11. Using the proper jig, move the feed box side plate away from the top shaker shaft nut to install a socket. Using a torque multi-pier torque the top nut to 1650 FT.LBS. MODEL 16 & 1600 1250 FT.LBS. MODEL 22 12. Repeat step #11 for the opposite side. 13. Remove the shaker shaft jig. 14. Remove the fasteners for the bottom plates. 15. Using a jack or other means, raise the die support jig straight up so the shaker shafts come out of the eccentric housings. Observe that the shaker shafts raise straight up and can be lowered straight back down without interference. If the bottom of a shaker shaft strings out and will not set back into the eccentric housing properly, repeat this procedure. 16. If alignment is correct, re-install bottom plate fasteners and torque to proper specification in a crossing pattern. 17. Remove die support jig. 18. Install nylon plug and setscrew in shaker shaft nuts directly below die support. 19. Flatten washer between lower two nuts; up against flat or upper nut in one place and down against flat or lower nut in one place. 20. Re-tighten all fasteners after run-in test. (SHEET 1 IS "D" SIZE) 			
UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS AND SHARP CORNERS DO NOT SCALE THIS DRAWING			
TOLERANCE FOR MACHINE DIMENSIONS UNLESS OTHERWISE SPECIFIED			
ANGULAR ±1/2	DECIMAL ±010	FRACTIONAL ±1/32	INSTRUCTIONS FOR FRONT END ALIGNMENT OF MOLD VIBRATION COMPONENTS FOR MODEL 22HF, 16HF, AND 1600 CONCRETE PRODUCTS MACHINES
A ADDED TORQUE NOTE FOR MODEL 22		4/30/04	GL
Rev	Change/DCN	Date	By M/F
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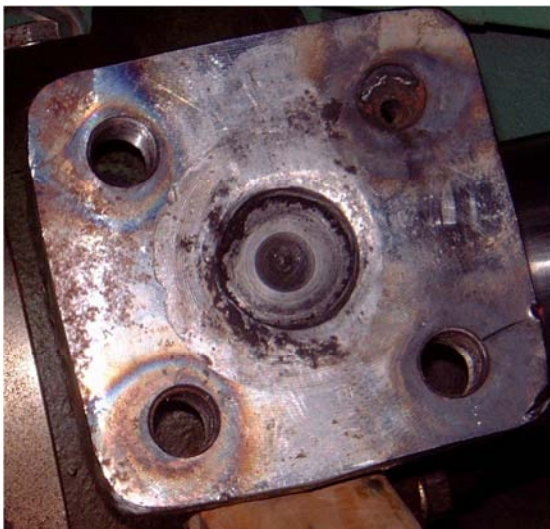
Inspect parts prior to installing if worn or damaged replace with new.



(2) each Upper top nut, (2) each Jam nut, (2) each nut special w/hex allen screw & Nylon insert. (2) each not shown Spacer washers, (2) each not shown special washer locks. See your parts book for the specific part numbers to your machine



Guide bars must be in good condition flat and straight. These must stack on top of one another without any gaps between the bars. Worn, chipped, bent guide bars must be replaced.



Vibrator half shaft eccentric foot shown on far left is damaged indicating shaker shaft was not held tight against vibrator foot. Vibrator must be inspected on both sides and replaced with new. Photo on right is new vibrator half shaft installed. Make sure surface is clean and run a tap in each of the tapped holes. Center hole must be clean and top surface clean no nicks.



Safety beam stops

SAFETY FIRST: Always follow your safety guidelines for system lockout/tagout of electrical panels and hydraulic system.

Compression Beam Stops for floor level machines, model 22, 16, & 1600. The beam stops are a positive stop between the compression beam and stripper beam which in the event of either loss of hydraulics, failure of the compression beam cylinder, P.O. check valve or P.O. counterbalance valve, the beam stops will maintain beam in the up position.

If you continue to have set up problems please contact Columbia Machine CP Service Department (1-800-628-4065) ext. 367