KNOWLEDGE BASE

Article Type: Instructions

CPM Vibrator assembly – Shaft to Base install, for Models, 30, 40, 50 and 60.

Description:

Instructions on "How to" properly install a new vibrator half-shaft assembly into the vibrator base. Inspection of components, how to maintain, lube pump inspection, and vibrator gearbox inspection

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 OHSA safety procedures. Contact Columbia Machine for safety decals, guards, horns and beacons.

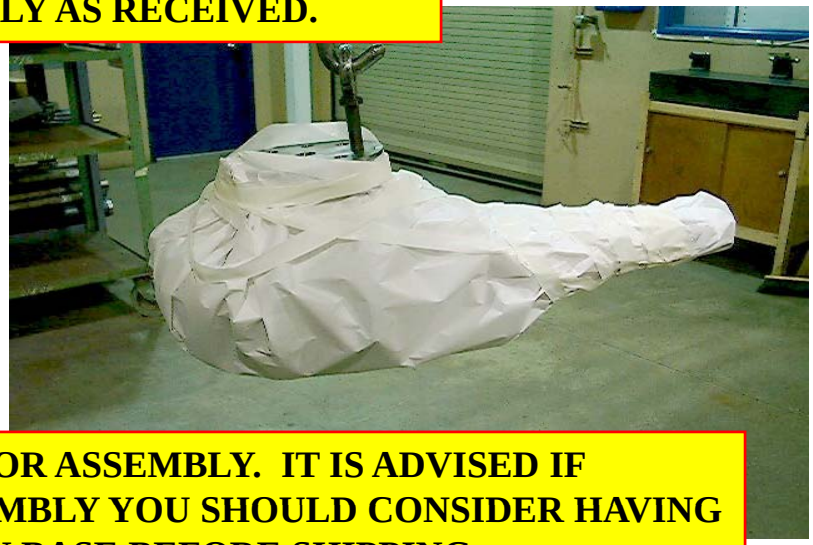
How to assemble a CPM vibrator shaft to base

We will be going over the assembly and inspection of components used on your CPM vibrator assembly. First, we will start at the vibrator base and work our way to an installed and running unit, and show how to maintain it.

First, the base of the vibrator is a very important foundation that houses the bearings and shafts, and mounts them to the machine base. After receiving a new base it should be uncrated and inspected for any damage, if you see any damage report it at once to the Columbia CP Service department. The following steps should be followed when reusing an old base, as well as new base.

When inspecting the base, look over the bore were the bearing sits, this area should be cleaned with, a soft cloth and degreaser or solvent, to remove paint and grease from journals. These bearing surfaces need to be free of scratches, nicks, and dings. Note: If reusing existing base, clean off all old loc-tite, be careful not to scratch these bearing surfaces.

SHAFT ASSEMBLY AS RECEIVED.



NEW BASES READY FOR CLEAN AND PREP, AND FOR ASSEMBLY. IT IS ADVISED IF YOU'RE ORDERING BOTH BASE AND SHAFT ASSEMBLY YOU SHOULD CONSIDER HAVING COLUMBIA MACHINE FULLY ASSEMBLE SHAFT IN BASE BEFORE SHIPPING.

The following information will help you understand the inspection and installation of a new half shaft, using your old base. This install will cover the CPM series 30,40,50,and 60 machines.

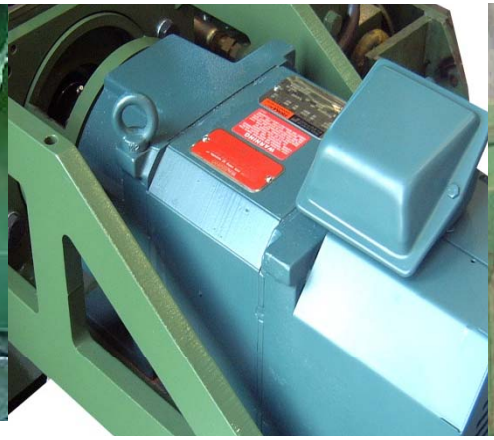
NOTE: CPM 30 has it's own length shaft with .90 throw. Part # 673.300.2 (half shaft only).
The CPM 40/50 along with same older CPM60's share the same longer shaft assemblies, also using .90 throw. Part # 675.300.99
The new CPM 60's have there own long shaft with .80 throw. Part # 675.300.102
The seal kit Part # 675.1300.300.98 will fit all CPM vibrators.

We will start with the vibrator base inspection and work our way up to installing the complete vibrator shaft assembly in the machine.

The vibrator base is a very important foundation that houses the bearings and shaft assemblies, while providing a sealed compartment to protect bearings and oil from contaminants, and mounts them to the machine.

When reusing a vibrator base it is very important to inspect the bearing journals surfaces, if there is any roughness on this surface the base is no good and should be replaced, also look over the boot seal ring for damage.

The photos throughout this presentation will help you with not only making a good sound evaluation of the use of your old base but other components that are assembled or attached to the vibrator assemblies. Installing a vibrator half shaft in a bad base will shorten their life, plus most importantly it will void the warranty. If you have any question please contact the Columbia Machines Service department for more details.

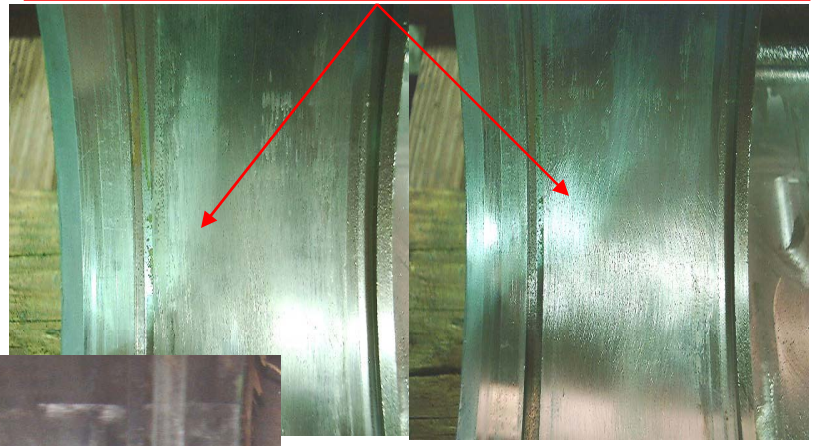



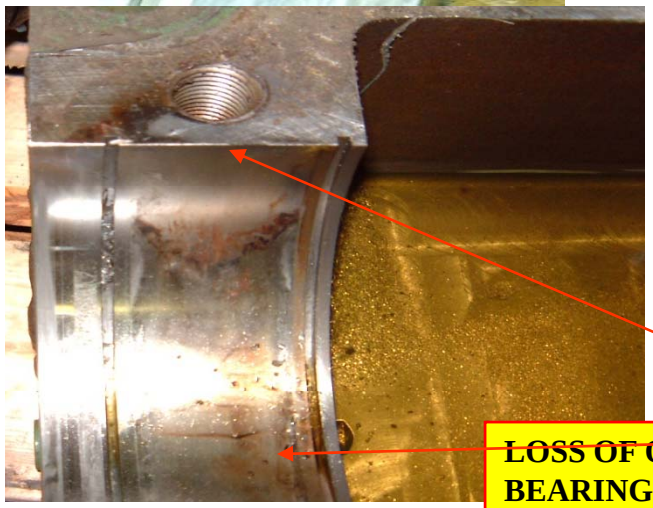
NOTE: When ordering a new vibrator with shaft ask for it to be pre-assembled so it can be installed in one piece.

If you're using the old base here are recommended areas to look over. You should inspect the bearing journal surfaces, if there is any roughness to this surface then the base is no good and needs to be replaced. If it shows signs like the pictures below, then the base is bad and should be replaced.

DENTS IN BEARING JOURNAL RENDERS BASE USELESS. THESE DENTS WILL CAUSE THE BEARING TO NOT BE HELD TO SPEC AND WILL CAUSE OVER HEATING.

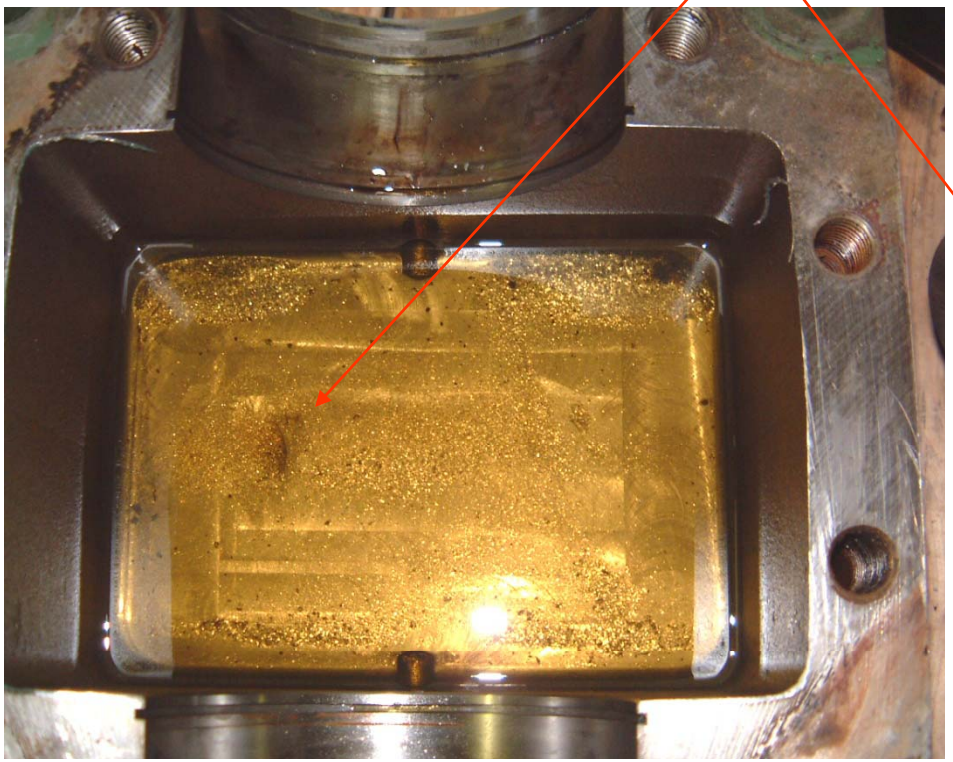
LOC-TITE APPLIED IN BASE FRAME BEARING JOURNALS.
THIS SHOWS TO MUCH LOC-TITE. THIS MUST BE CLEANED THROUGHLY USING SCOTCH BRIGHT PAD FOR BEST CLEANING ALONG WITH BRAKE CLEAN OR ACETONE.

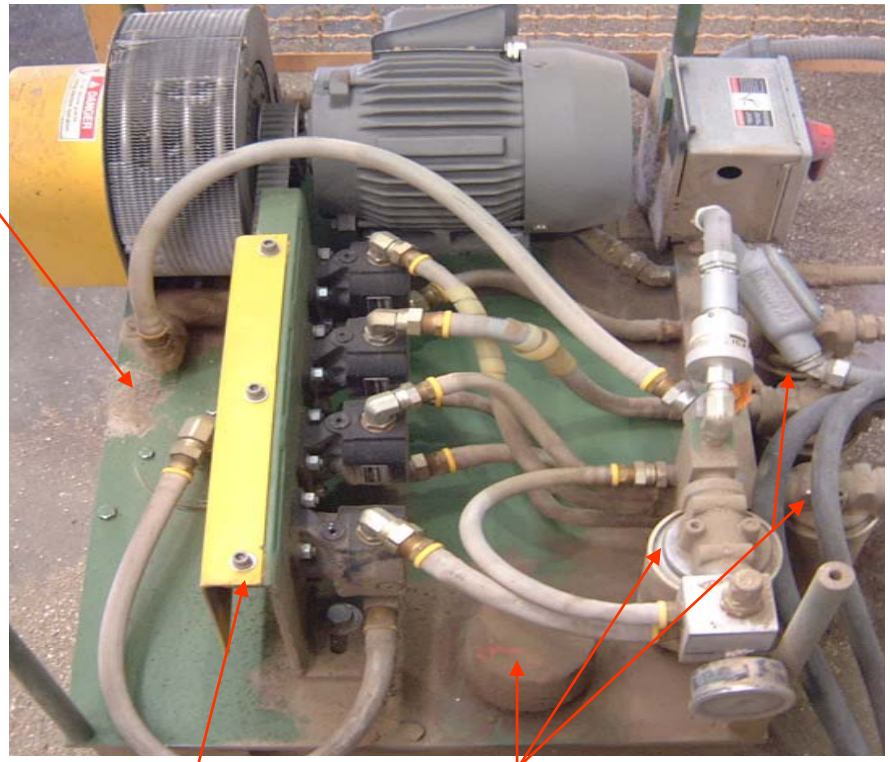




LOSS OF OIL PRESSURE TO VIBRATOR ,OVERHEATS BEARINGS, CAUSING TOTAL FAILURE OF BEARINGS AND DAMAGES TO BEARING JOURNALS.

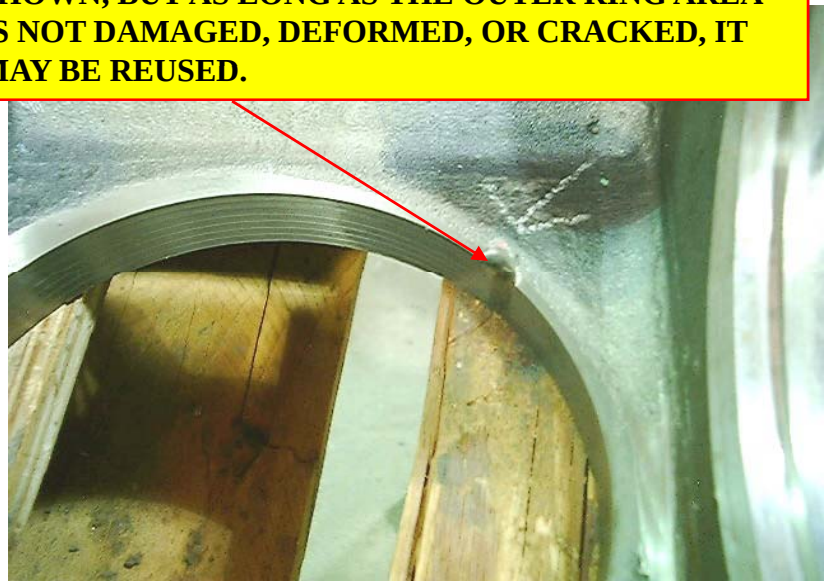
WITH CONTAMINATION (BRASS, METAL) FOUND IN THE BASE, IT SHOULD BE NOTED THAT ALL HYDRAULIC LINES FROM THE VIBRATOR LUBE PUMP TO THE VIBRATORS, AND INCLUDING THE LUBE PUMP, MUST BE FLUSHED AND CLEANED, REPLACE OIL FILTERS, BREATHER AND OIL WITH NEW. DON'T FORGET TO CHECK THE BELT AND ALL HOSES AND FITTINGS LOCATED ON THE PUMP. (COMPLETE CLEANING OF VIBRATOR LUBE PUMP AND HOSES MUST BE DONE WITH ANY VIBRATOR FAILURE, OIL LEAKAGE, HOSE FAILURE, OVERHEATING TO INCLUDE; FILTER CHANGES AND BREATHER PROBLEMS / LUBE PUMP .)

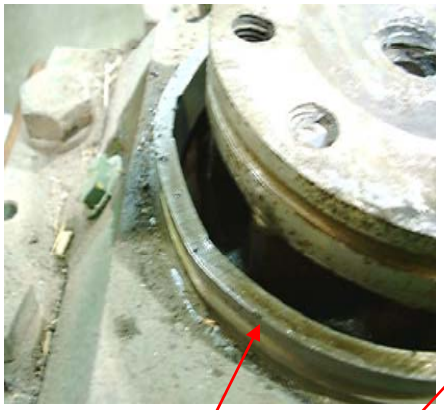


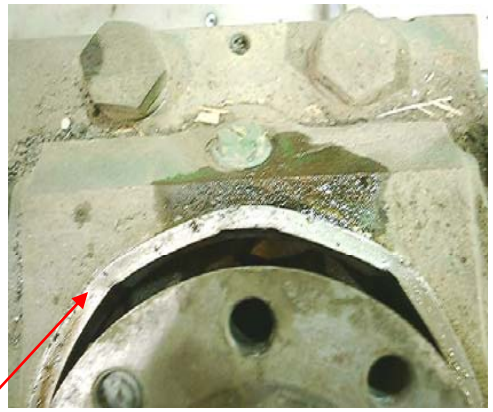


LUBE PUMP TANK LID MUST BE REMOVED AND OIL DRAINED, AND TANK CLEANED THROUGHLY. REPLACE PICK UP SUCTION FILTER WITH NEW. USE RTV BLUE SILICONE AROUND THE EDGE OF THE TANK BEFORE REPLACING THE LID. BEFORE INSTALLING NEW FILTERS, MAKE SURE YOU FILL FILTERS WITH CLEAN HYDRAULIC OIL. CLEAN UNIT THROUGHLY ON THE OUTSIDE AS WELL.

SMALL NICK OR WEAR IN SEAL BOOT RING SHOWN, BUT AS LONG AS THE OUTER RING AREA IS NOT DAMAGED, DEFORMED, OR CRACKED, IT MAY BE REUSED.

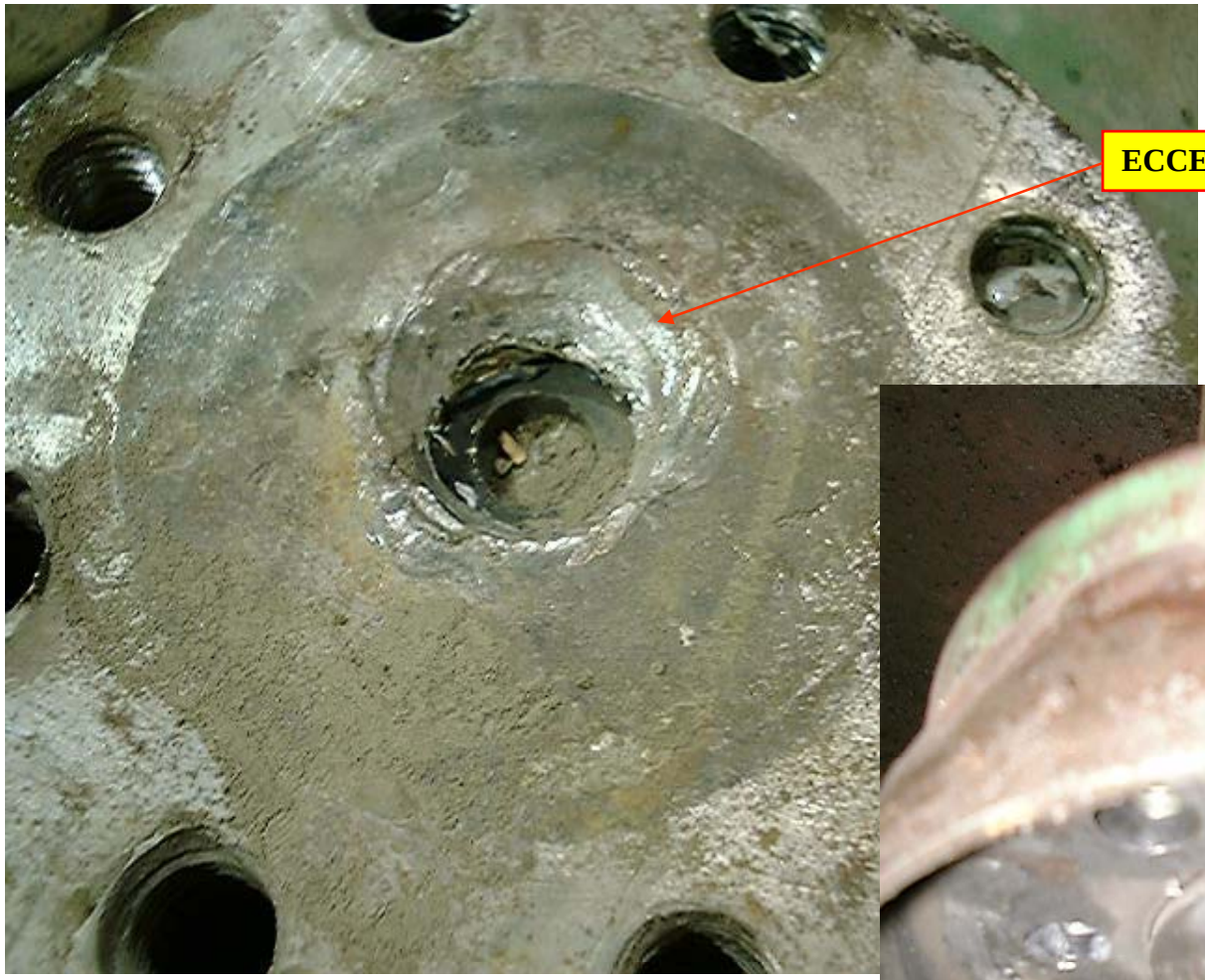




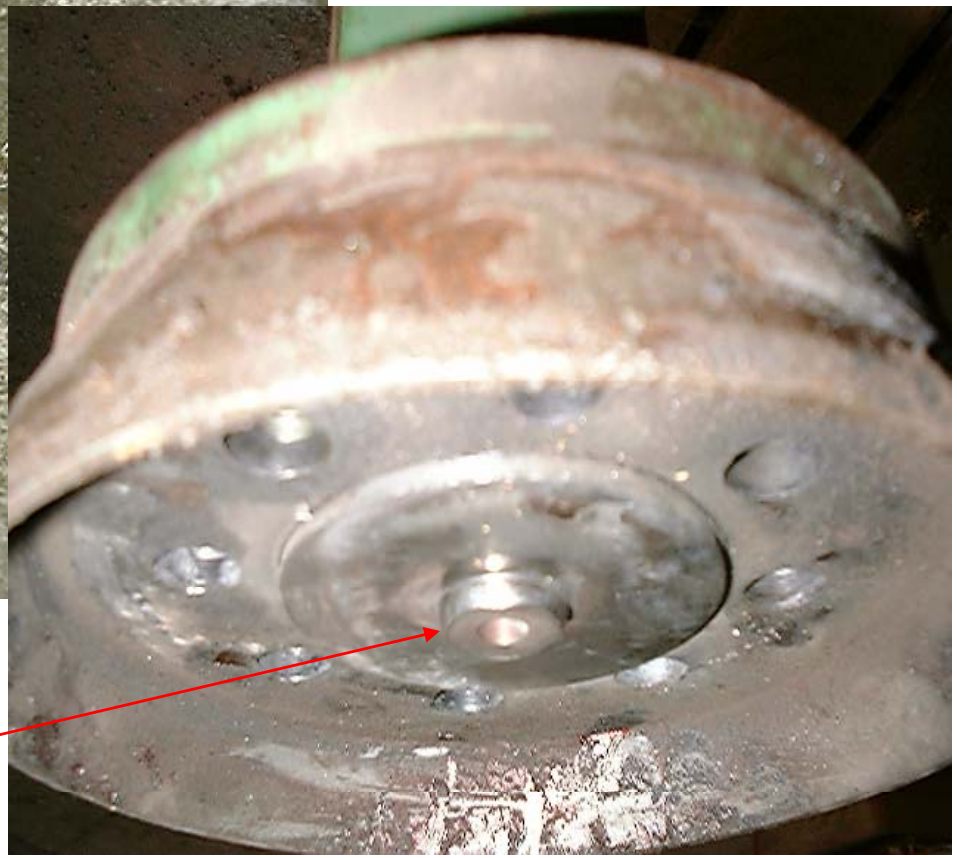


BAD BEARINGS, SHAFT OR ECCENTRIC HOUSING CAUSES DAMAGE TO BASE. CHECK FOR OTHER DAMAGES THAT MAY HAVE LED TO THIS TYPE OF FAILURE.

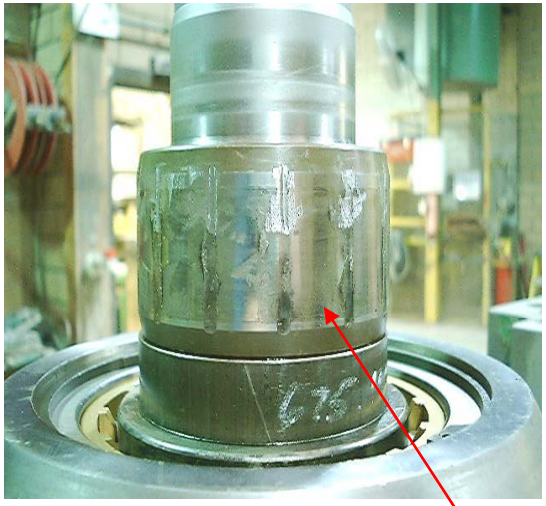
WHEN DAMAGES ARE NOTICED TAKE EXTRA TIME IN CHECKING OTHER COMPONENT PART THAT MAY HAVE CAUSED FAILURE. NOTICE BROKEN SHAFT.

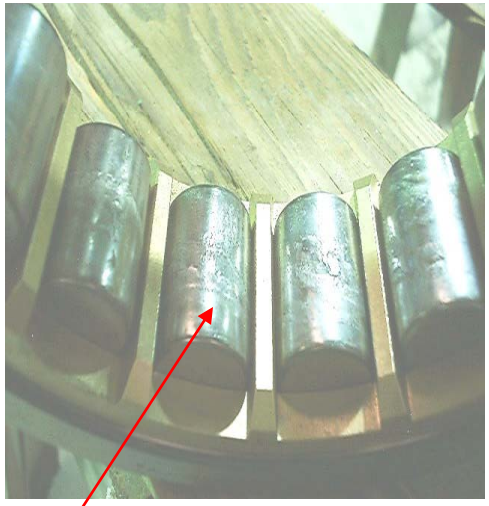


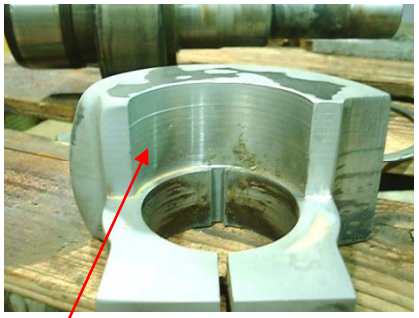
ECCENTRIC FOOT AREA DAMAGES .



SHAKER SHAFT CLAMP PLATE NOT HELD DOWN FIRMLY TO ECCENTRIC FOOT. BOLTS EITHER NOT TORQUED CORRECTLY TO SPECS OR BROKEN BOLTS CAUSING HAMMERING EFFECT THAT WOULD LEAD TO VIBRATOR FAILURE .





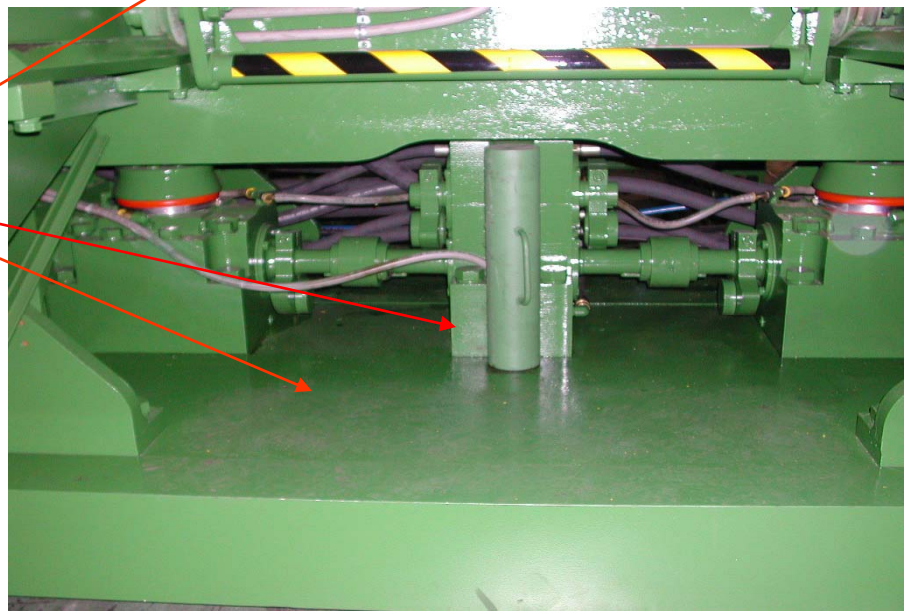


PITTED BEARING RACE AND BEARING. POSSIBLE CONTAMINATION OR MISS ALIGNMENT.

OTHER ITEMS THAT SHOULD BE CONSIDERED FOR INSPECTION. WORN COUNTERWEIGHTS, WORN OR DEFORMED KEY-WAYS ON SHAFT ASSEMBLY BOTH VIBRATOR AND GEARBOX. WORN OR DAMAGED COUPLINGS.

ADDITIONAL ITEMS THAT SHOULD BE CONSIDERED FOR INSPECTION.

INSPECT YOUR SHAKER SHAFTS, DIE SUPPORTS, GEAR BOX SHAFTS, WORN GEABOX COUNTER WEIGHTS AND MACHINE BASE.



BEFORE YOU REMOVE THE CAP FROM THE BASE, MAKE SURE YOU HAVE LOCATED MATCH POINTS FOR PROPER OREINTATION OF CAP TO BASE WHEN REASSEMBLING. IF YOU CANNOT FIND THE MACH POINTS MAKE SURE YOU EITHER STAMP BOTH WITH NUMBERS OR USING A CENTER PUNCH MARK THE CAP AND BASE.

How to assemble a CPM vibrator shaft to base

Cleaning the bearing journals is very important. As you will see even a new base needs to be cleaned and inspected.
Before cleaning, take a piece of 240 grit sandpaper and remove sharp edges on base and caps as shown in photo one and two. Clean base after sanding.

SAND ONLY (4) PLACES IN THESE AREAS BOTH BASE AND CAP.

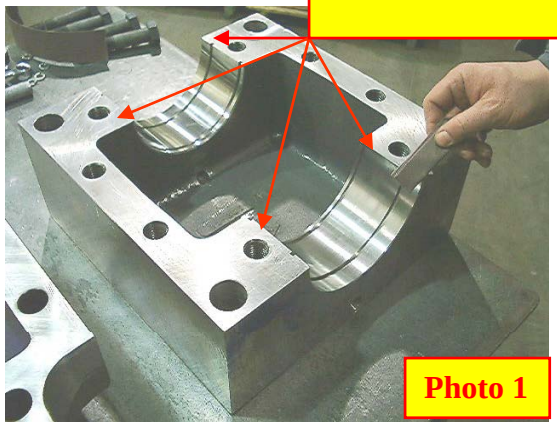


Photo 1

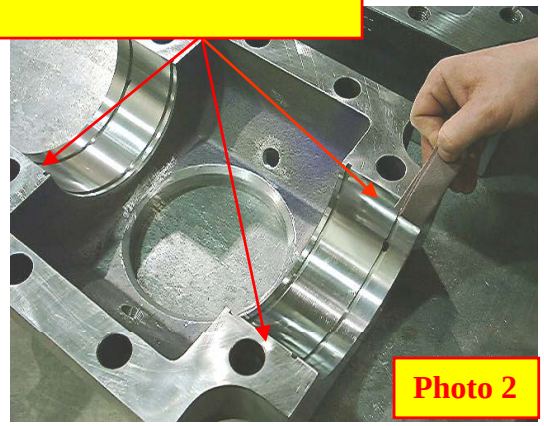
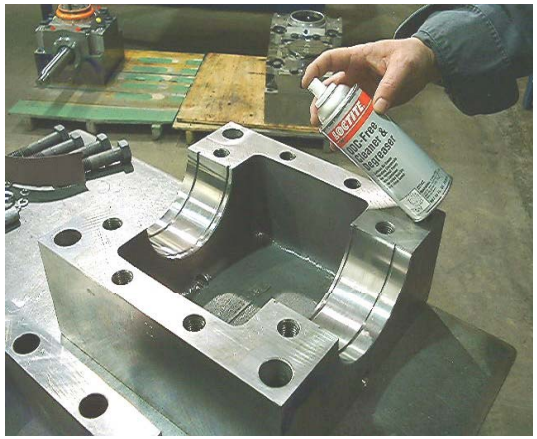
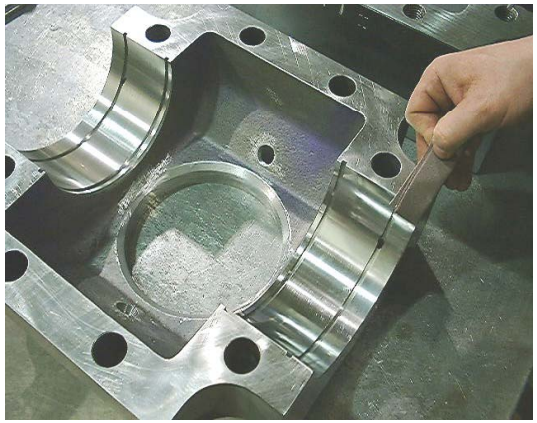
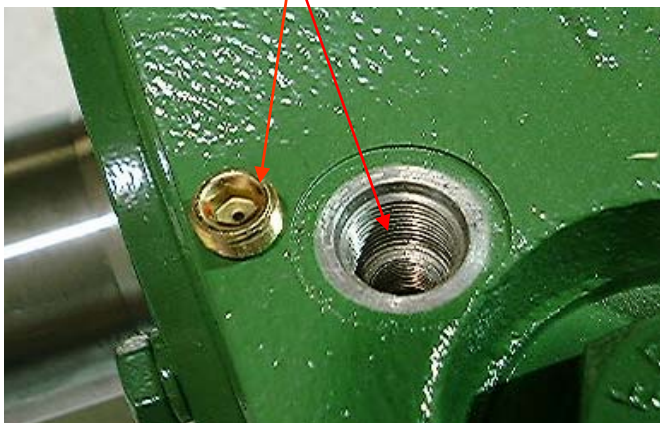
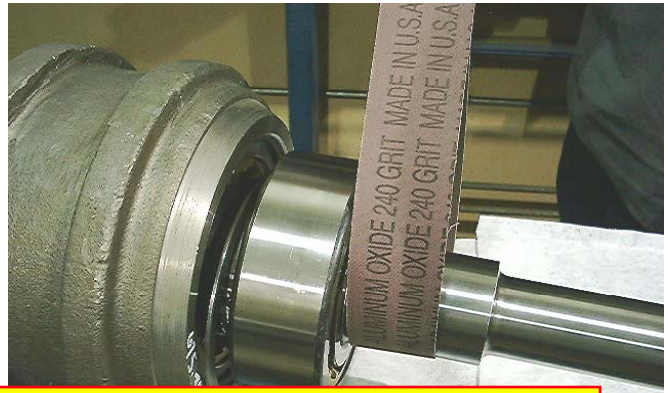


Photo 2



WITH BOTH BASE AND CAP CLEANED, MAKE SURE THAT YOU CLEAN INJECTOR BEARING JOURNALS. USING AIR , BLOW THROUGH EACH INJECTOR HOLE LOCATED IN THE TOP CAP AREA TO INSURE NO CONTAMINATION IS LEFT IN THE HOLES TO THE BEARING JOURNALS. CHECK ORFICE PLUG AS WELL.

UPON REMOVING SHAFT ASSEMBLY FROM BOX CHECK FOR ANY DAMAGES. REMOVE PAPER AND AGAIN INSPECT SHAFT FOR ANY SCRATCHES OR NICKS. BE CAREFULL TO KEEP BEARINGS FROM SLIPPING OFF THE RACE. COMPLETE YOUR INSPECTION SHAFT SEAL AREA MAY NEED LIGHT SANDING PREPERATIION USING 240 GRIT SANDPAPER. APPLY SOME TAPE TO OUTSIDE OF BEARING TO HELP KEEP CONTAMINANTS FROM ENTERING BEARING. CLEAN ASSEMBLY ONCE AGAIN BEFORE INSTALLING IN BASE.

When reusing parts from old vibrator shaft assembly they should be checked thoroughly. Replace all worn or damaged parts. PARTS THAT CAN BE REUSED, ONLY IF IN GOOD CONDITION: couplings, counter-weights, center shaft split couplingt, seal plates, seal plate and shaft keys.

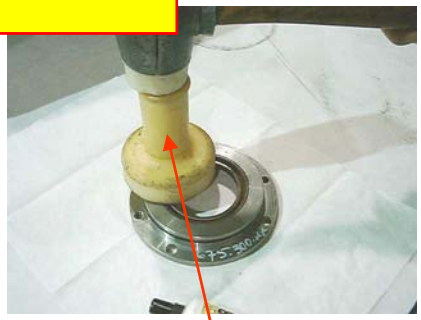
PARKER O-RING LUBE, LOC-TITE 609, LOC-TITE CLEANER DEGREASER.

O-RINGS & SEALS

SEAL RING INSIDE

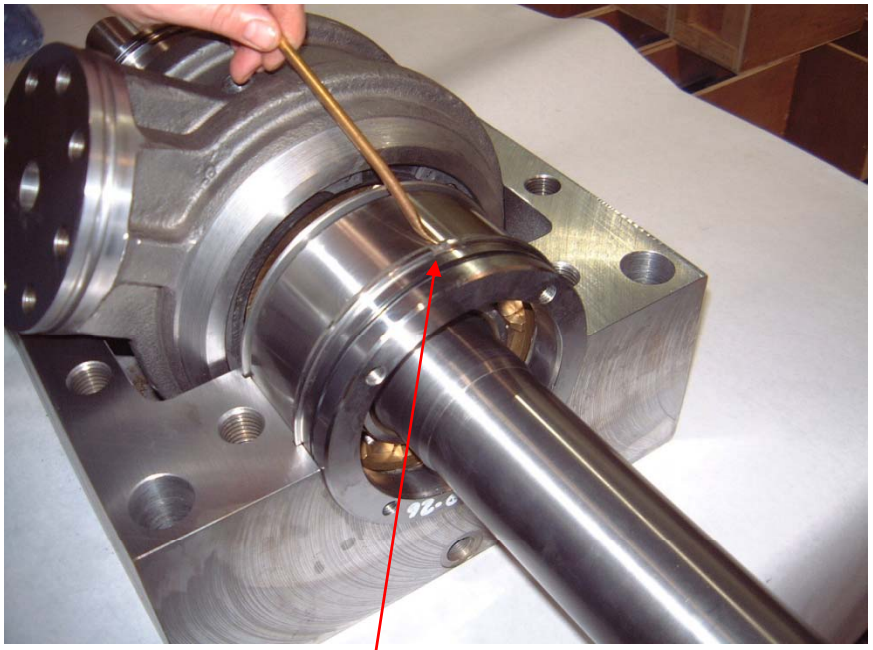
SEAL RING OUTSIDE

USING PARKER O-RING LUBE APPLY A LIBERAL AMOUNT TO BOTH O-RING AND SEAL BEFORE INSTALLING ON SEAL PLATES.



INSTALL SEALS WITH A SEAL DRIVER TO PREVENT DAMAGE .

APPLY A LIBERAL AMOUNT OF PARKER O-RING LUBE TO O-RING PRIOR TO INSTALLING IN LOWER BASE.

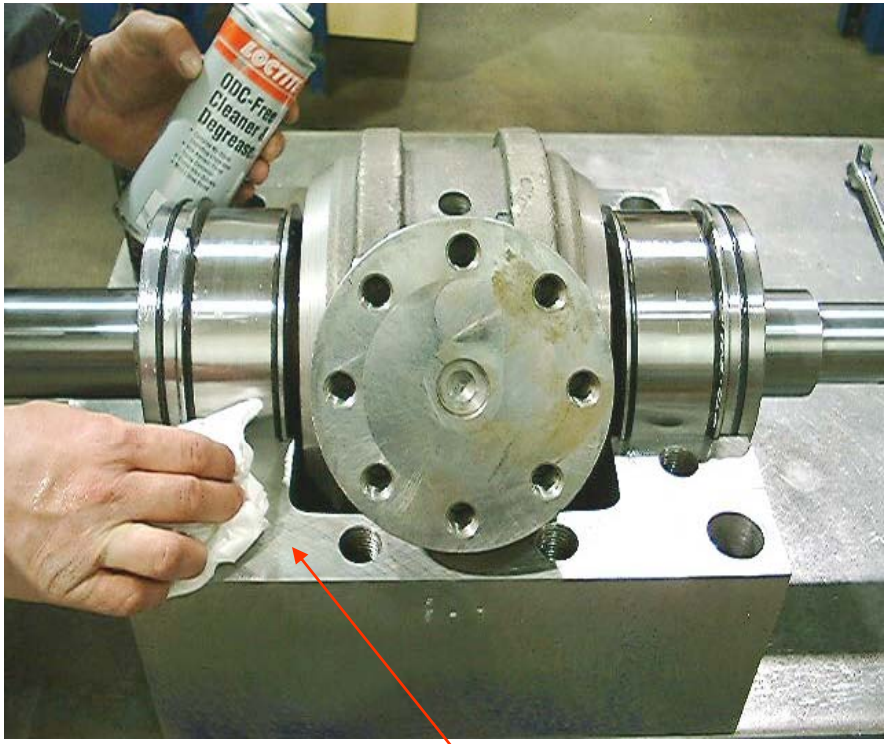


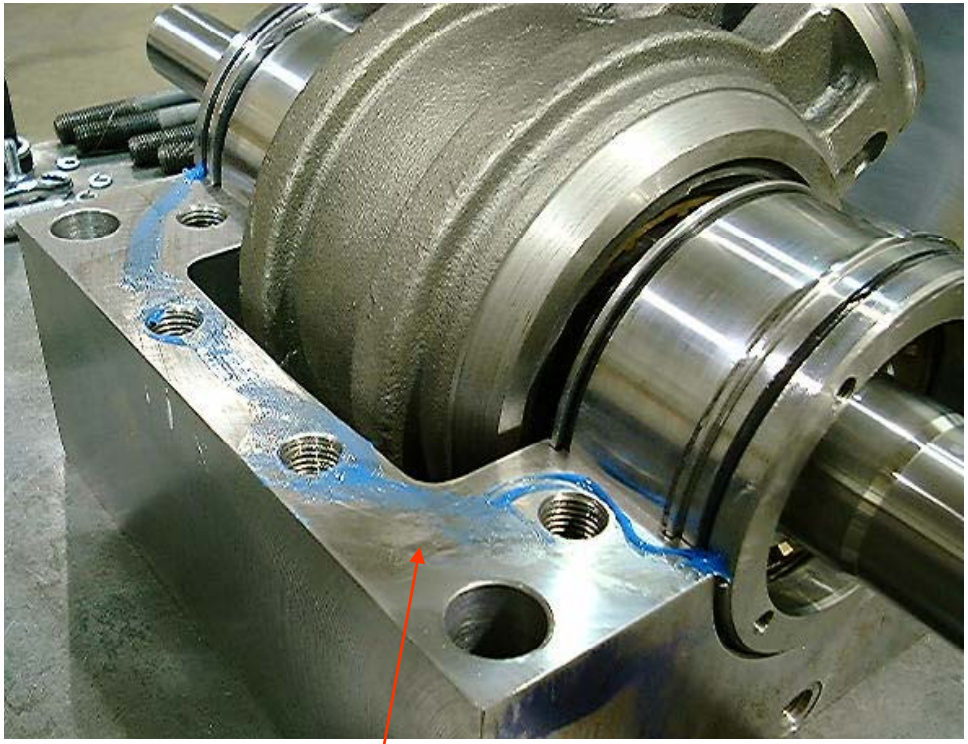
MAKE SURE NOTCH IS IN THE UP POSITION

TAKE YOUR TIME INSTALLING EACH OF THE SEAL PLATES IN THE BASE AS NOT TO DAMAGE THE O-RING. MAKE SURE THE NOTCH IS ALSO IN THE UP POSTION TO INSURE PROPER ALIGNMENT AND OILING OF THE BEARINGS.

INSTALL SHAFT ASSEMBLY IN BASE MAKING SURE RETAINTER RINGS SLIDE INTO GROVES. MAKE SURE SHAFT IS FIRMLY SEATED.

WITH THE SHAFT ASSEMBLY INSTALL, YOU ARE READY TO INSTALL THE INSIDE SEAL HOUSING. MAKE SURE YOU USE A LIBERAL AMOUNT OF 0-RING LUBE TO O-RING AND SEAL HOUSING. GENTLY SLIDE HOUSING OVER SHAFT AND ALLOW SEAL HOUSING TO SEAT IN LOCATING GROVE. DO NOT FORCE O-RING.

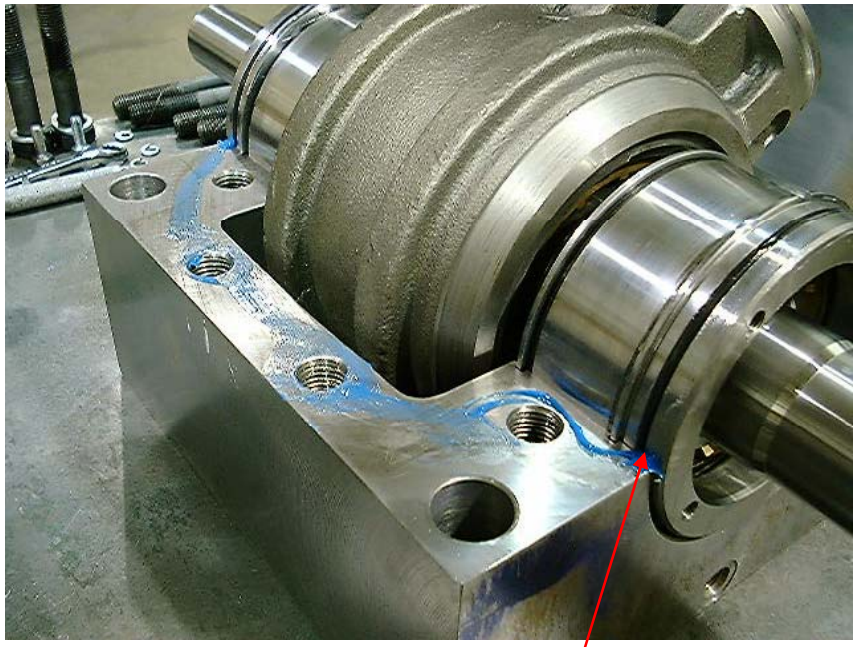




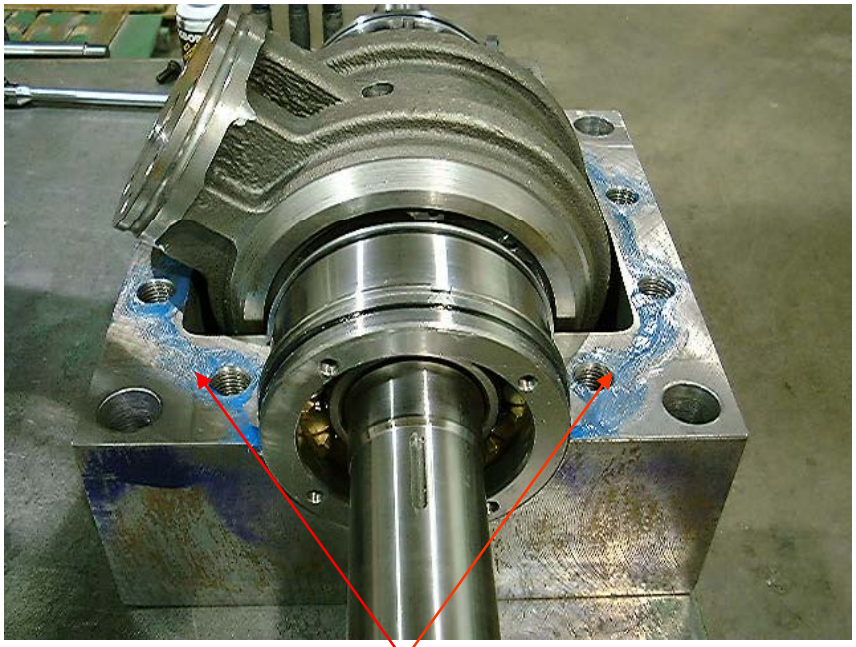
CLEAN BASE AREA WHERE TOP CAP WILL SET, ALSO CLEAN OFF EXTRA O-RING LUBE.

APPLY RTV BLUE SILICONE SEALER. DO NOT USE TOO MUCH OR IT WILL ENTER THE VIBRATOR ASSEMBLY.

USING RTV BLUE SILICONE SEALER APPLY AROUND BASE BEFORE INSTALLING TOP CAP. MAKE SURE YOU APPLY A LITTLE EXTRA AROUND THE 0-RING TO HELP INSURE A GOOD SEAL.



APPLY A LITTLE EXTRA RTV SILICONE IN THIS AREA AROUND THE O-RING.



USE YOUR FINGER TO SPREAD RTV SILICONE OUT ON BASE

USING YOUR LOCTITE CLEANER DEGREASER CLEAN BEARING RACE AND APPLY A VERY THIN AMOUNT OF LOCTITE 609 ABOUT 3 INCHES LONG. THE WIDTH SHOULD BE ABOUT 1/32.

DURING THE VIBRATOR REBUILDING PROCESS IT IS HIGHLY ADVISED THAT YOU SPEND THE EXTRA TIME AND CARE MAKING SURE ALL COMPONENTS ARE IN GOOD CONDITION WITH NO DAMAGES TO BEARING JOURNALS, SCRATCHES, NICKS, HEAT CHECKING, ETC. THE INVESTMENT NOT ONLY WITH THE COST OF THE SHAFT ASSEMBLY BUT DOWN TIME REPAIRS ADD ADDITIONAL COST.
DON'T TAKE SHORT CUTS AT THIS TIME JUST TO GET THE MACHINE BACK UP AND RUNNING.

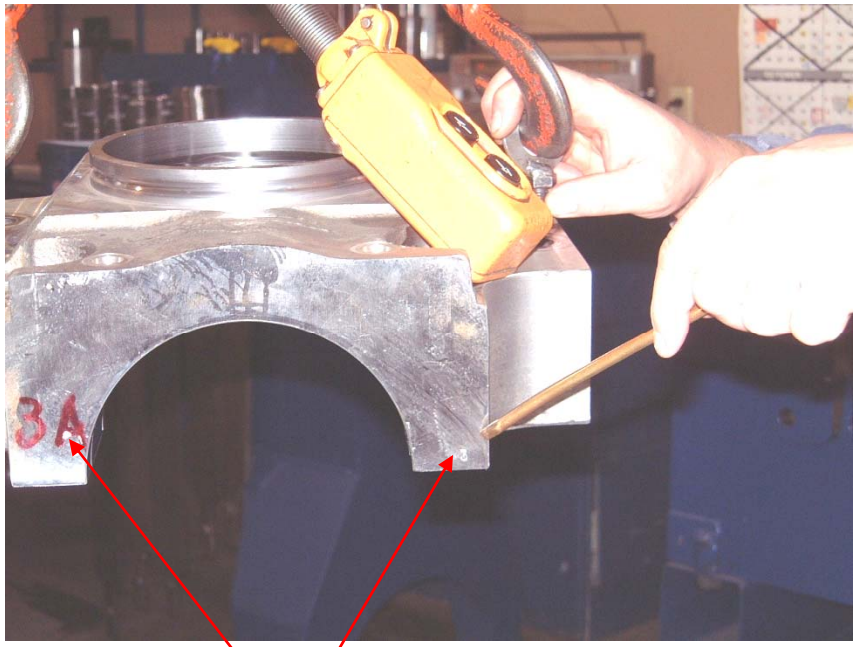
AGAIN GO OVER CAP MAKING SURE ALL INJECTOR PORTS HAVE BEEN CLEANED, AND BLOWN OUT WITH AIR. CHECK BEARING JOURNALS AND BOOT SEAL AREAS TO INSURE CAP IS READY FOR INSTALLATION TO BASE.

BEARING RETAINER RING GROVE AND OIL PORTS CLEANED.

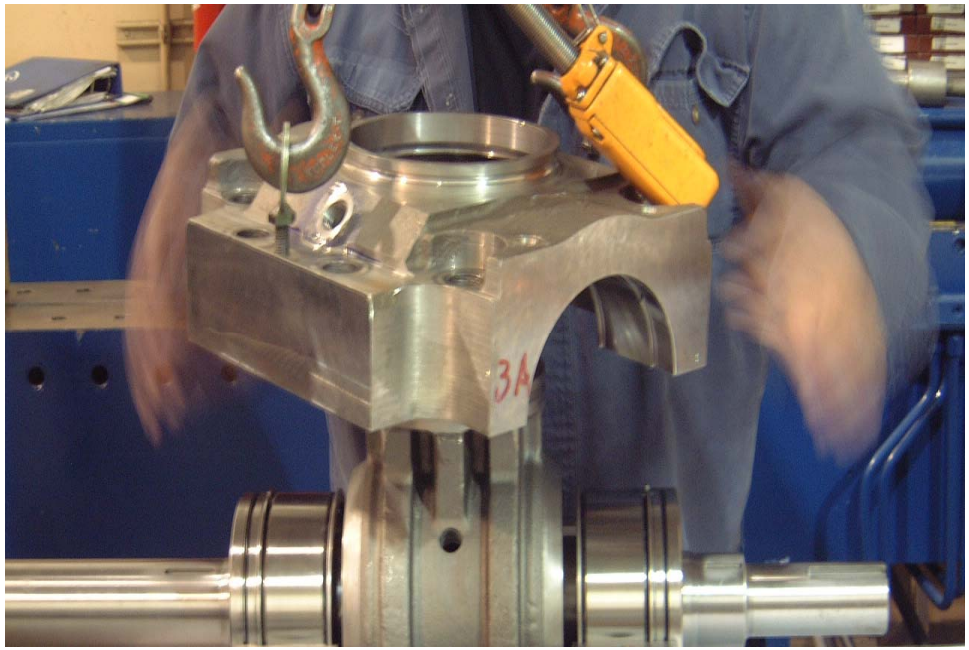
VIBRATOR CAP INSTALLATION

IT IS BEST TO USE LIFTING EYES ON BOTH SIDES OF THE CAP WHEN INSTALLING ON BASE. THIS WILL HELP INSURE CAP GOES DOWN EQUALLY OVER THE ECCENTRIC FOOT AND BEARINGS TO THE MATING SURFACE OF THE BASE..

After seal plate is installed, apply a coat of o-ring lube to o-ring seal on both end plate and seal plate, this will help prevent pinching of o-ring when installed. Set end plate aside for now we'll install it shortly. Wipe the bearing journals one more time to insure they are clean (use NO loctite at this time). Now lift the half shaft assembly and place it in the base very carefully, this will take two people so seal plate and retainer rings can be positioned in their grooves. The retainer rings can be moved in place after shaft is set but we recommend doing on install. Once shaft assembly, seal plate, and retainer rings are in place, install end plate.

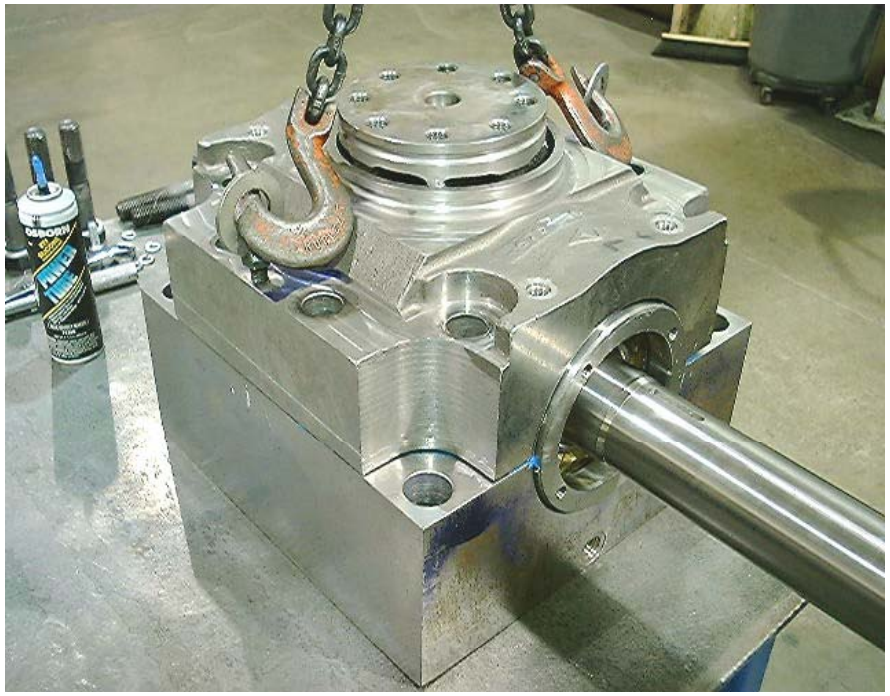


MAKE SURE THAT THE MATCH POINTS ON THE CAP AND BASE ARE ALIGNED WITH ONE ANOTHER



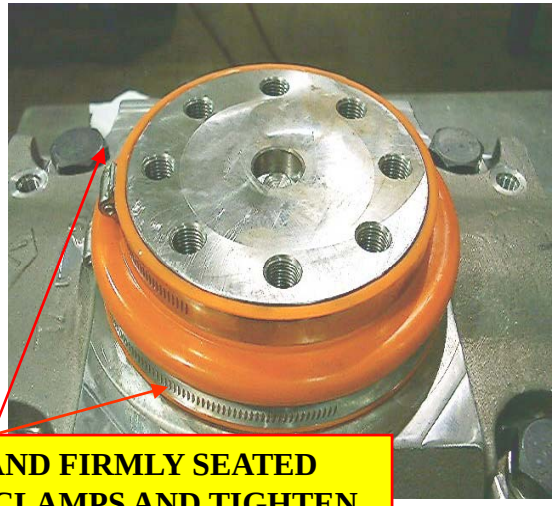
YOU MAY NEED TO ROTATE THE CAP, END FOR END, FOR PROPER ALIGNMENT.

BRING CAP DOWN SLOWLY KEEPING IT LEVEL WITH THE BASE. GUIDE CAP DOWN OVER SEAL HOUSINGS AND O-RINGS AS CAP IS SEATED TO BASE THERE SHOULD BE NO ROCKING OF CAP TO BASE. IF SO YOU MAY NEED TO LIFT CAP TO INSURE THAT YOU HAVE NOT PINCHED O-RING BETWEEN CAP AND BASE. ONCE YOU ARE ASSURED CAP IS DOWN PUSH DOWN FIRMLEY TO SEAT CAP TO BASE.



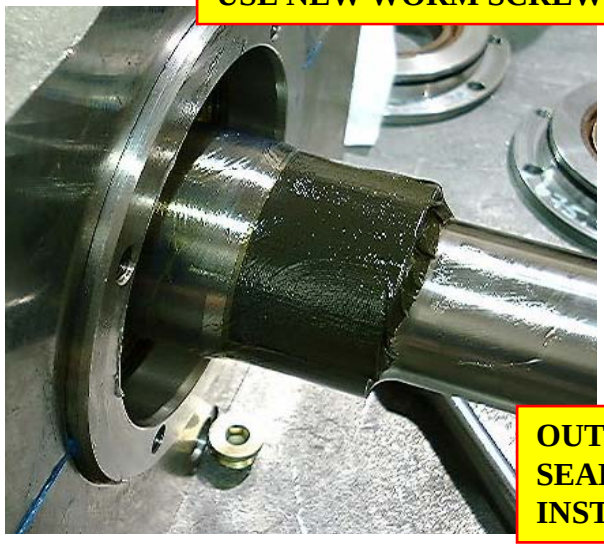
WITH THE CAP INSTALLED INSERT ALL LOCKWASHERS AND BOLTS. STARTING FROM THE INSIDE BOLTS (USING A CROSS HATCH PATTERN) SNUG ALL BOLTS DOWN BUT DO NOT TORQUE AT THIS TIME. ROTATE SHAFT OVER MAKING SURE IT ROTATES FREELY.

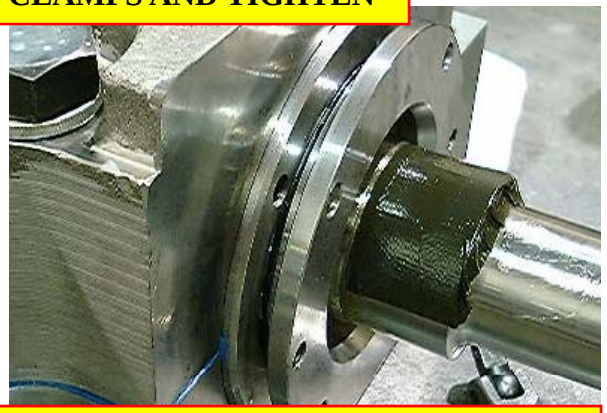
OUTSIDE SEAL RING INSTALLATION. WITH THE SEAL RING READY FOR INSTALLATION CLEAN SHAFT, APPLY DUCT TAPE AROUND SHAFT AND KEY-WAY, TO HELP KEEP FROM DAMAGING SEAL AS IT IS SLID ONTO SHAFT. APPLY A LIBERAL AMOUNT OF PARKER O-RING LUBE AROUND SHAFT AND DUCT TAPE FOR A SMOOTH INSTALLATION OF THE SEAL RING. ONCE SEAL RING IS STARTED INTO INSIDE SEAL RING AND O-RING IS JUST AGAINST SEAL PLATE INSTALL LOCKWASHER AND BOLT (USING A CROSS HATCH PATTERN) SNUG BOLTS DOWN UNTIL OUTSIDE SEAL RING HAS MADE CONTACT WITH INSIDE SEAL RING. BE CAREFULL NOT TO USE TOO MUCH FORCE AS TO ROTATE INSIDE SEAL RING, AS THIS COULD EITHER DAMAGE OUTSIDE SEAL O-RING OR BREAK RTV SEAL BETWEEN BASE AND TOP.



WITH BOOT INSTALLED AND FIRMLY SEATED USE NEW WORM SCREW CLAMPS AND TIGHTEN

O-RING AND SEAL ASSEMBLY SHOULD BE READY FOR INSTALLATION.





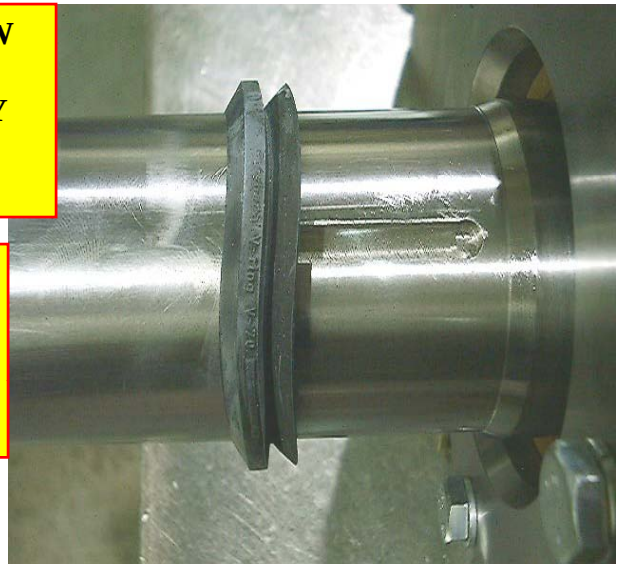
OUTSIDE SEAL RING; O-RINGS AND SEAL ASSEMBLY, READY FOR INSTALLATION.

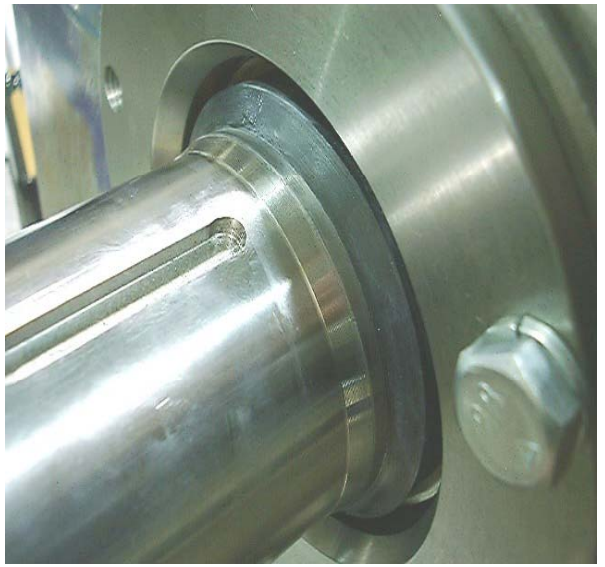
USING THE TORQUE SEQUENCE BELOW TORQUE BOLTS IN THREE EQUAL TORQUE SETTINGS.

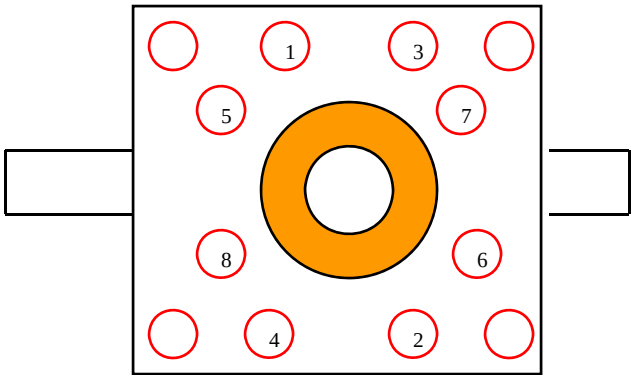
DON'T FORGET TO INSTALL YOUR NEW DUST COVERS ON BOTH ENDS OF THE VIBRATOR ASSEMBLY. AGAIN, IT MAY BE NECESSARY TO APPLY SOME DUCT TAPE OVER THE KEY-WAY.

CAP TO BASE BOLTS TORQUE TO 350 FT. LBS.

VIBRATOR BASE TO MACHINE BASE BOLTS (30 MM) 1120 FT. LBS.

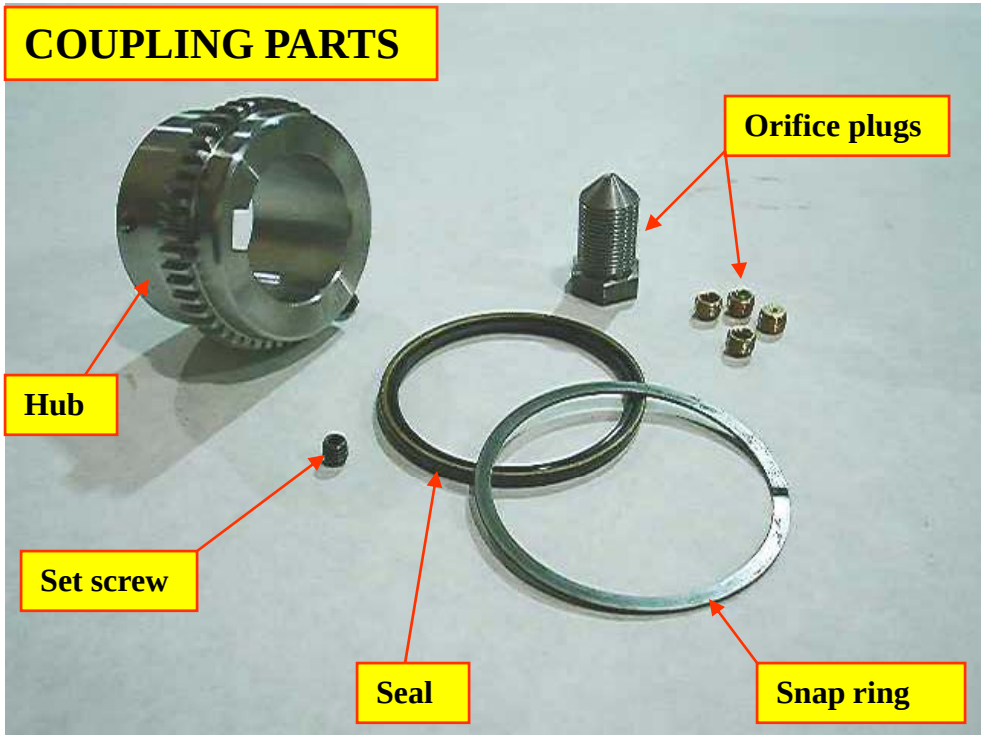






TORQUE SEQUENCE

INSTALLING COUPLERS ON CPM VIBRATORS AND GEAR BOX



PARTS NEEDED

When installing new couplings on your CPM.
• Two complete timed couplings. Each coupling will have the following parts.

Two hubs
Two seals
Two snap rings
One outer shell *(Not shown)*
Six 5/16 x 5/16 set screws per coupling

NOTE: If you are installing new vibrators make sure they have new cleaned orifice plugs installed. Orifice plugs are shown for reference only and should be installed in new vibrators. With existing vibrators orifices should be cleaned before operating.

TOOLS NEEDED

- Allen wrench
- Straight edge
- 100 grit emery cloth
- Hand file

Loctite used on coupler to shaft (609 or 675) green in color.
The set screws will use (242) blue in color.

Steps for Installing Couplings on a CPM Machine

- Clean and inspect vibrator and gear box shafts
- Unpack couplings and inspect for match marking and necessary set screws,seals,snap ring.
- Remove snap ring and set screws.
- Hand fit new keys to key-ways. (NEVER REUSE OLD KEYS).

Dry fitting hubs:

Slide one hub of coupling on vibrator shaft and the other hub on the gear box shaft. It my be necessary to sand or file the key-way slot or the bore so the hub will slide on by hand. Make sure NOT to over-size the bore, these hubs should fit tight but should NEVER be forced on or hammered in place. Remove hub and key and set aside.

- Install your vibrators using the vibrator installation and aligning process. Once this is completed now you can start installing the couplings.
- Clean the shafts and coupling hubs with Loctite or equal type of cleaner.
- Use 609 for 70 degree and colder and 675 for 70 degree and higher. 675 is the best all around for both hot or cold weather. 609 has 10 min working time 675 has 20 min working time.
- Install counter weights on the vibrator shafts.
- Install snap ring and seal on one side and the shell. Slide the other snap ring and seal installed on the other shaft before installing the second hub.
- Once everything is clean, cover the bottom of key-way slot with Loctite (675) and install key.
- Apply a coat of 675 Loctite to entire shaft, it may be necessary to spread Loctite with your finger around the shaft, only in the area where the hub will be placed.
- Now slide the hub onto the shaft so the hub end is even with the vibrator shaft end.
- Use 242 Loctite in set screw holes. Install set screw in key-way hole first, then install one set screw in the deep hole at 90° from key.
- Leave the second set screw out at this time.

Place the gear box in machine and align the shafts.

- Align the shafts by placing the gear box in it's approximate position. Best coupling performance is obtained when the alignment is checked with a dial indicator.

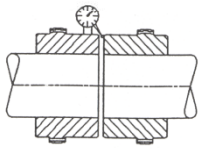


Figure 1.

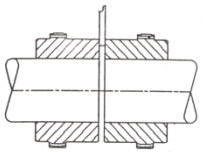


Figure 2.

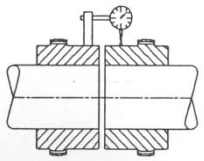


Figure 3.

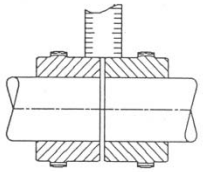


Figure 4.

NOTE: Always rotate the hub on which the indicator is mounted.

- **Angular Alignment.**
  Check by mounting indicator on the body of one hub and placing the pointer on the end face of the other hub. (See fig. 1.) Adjust gear box until the best alignment is obtained. As an alternate method, insert a feeler gage between the hubs at four points approximately 90 Deg. apart and adjust the gear box. (See fig. 2.)

B. Parallel Alignment.

Mount the indicator on the body of one hub and place the pointer on the body of the other hub. (See fig. 3.) Adjust gear box until the indicator reads the same at four points approximately 90 Deg. Apart As an alternate method, place a straight edge across one hub body and adjust the gear box until the straight edge rests squarely on the other hub body. (See Fig. 4.) This should be done at 90 Deg. intervals around the hubs.

- After gear box has been pushed in place and aligned and bolts torqued, slide shell over the first hub and line up with the second hub using the key-ways as a guide to make sure shafts are timed (in line with each other). Pushing the shell all the way over now install the seal. Using a small bladed screwdriver push the seal into place. After seal is seated now install the snap ring, once installed use the small screwdriver to seat snap ring in groove.
- Finally install the second set screw. This is left out so the seal is not damaged when sliding it in place.

Removal of coupling hub. Install a gear puller for pulling hub off shaft, apply pressure. It will be necessary to use heat. ONLY heat the hub to brake the bond of the Loctite. Heat in one spot of hub only, once you hear it pop you should
be able to use the gear puller and pull the hub off the shaft. **Removal not shown.**

STEP 1 **Clean shaft**

STEP 2 **Install counter weight**

STEP 3 **Install snap ring and seal**

STEP 4 **Use 675 loctite in key-way**

STEP 5 Install key into key-way

STEP 6 Apply 675 loctite to shaft and key

STEP 7 Install hub so it is flush with end of shaft

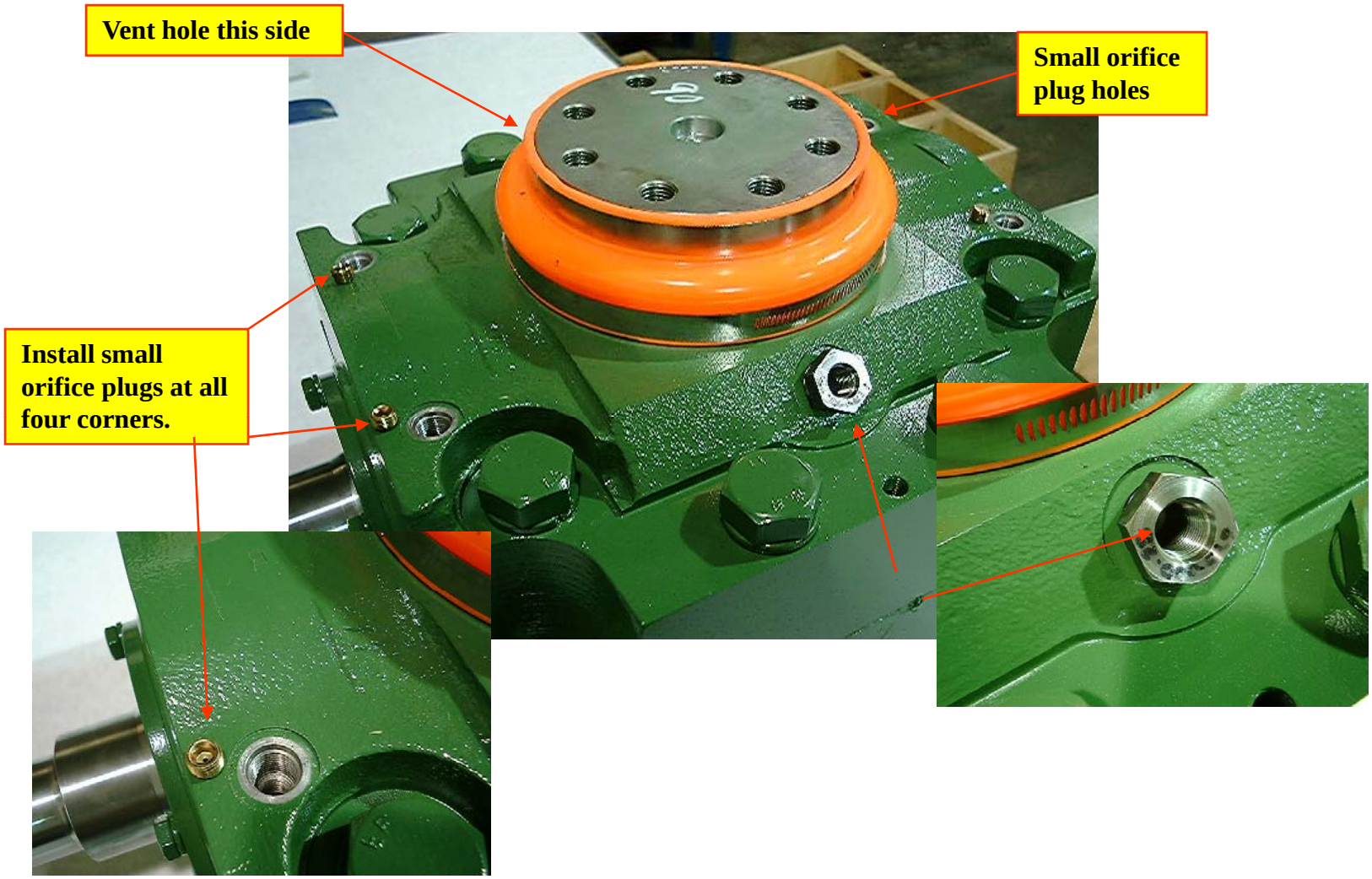
STEP 8 Apply 242 Blue loctite to set screw and hole in key-way, and install this set screw first

Set screw installed

STEP 9 Install first set in other hole using 242 blue loctite

STEP 9A Loctite

STEP 10 After sliding seal into place on the hub install second set screw with 242 loctite

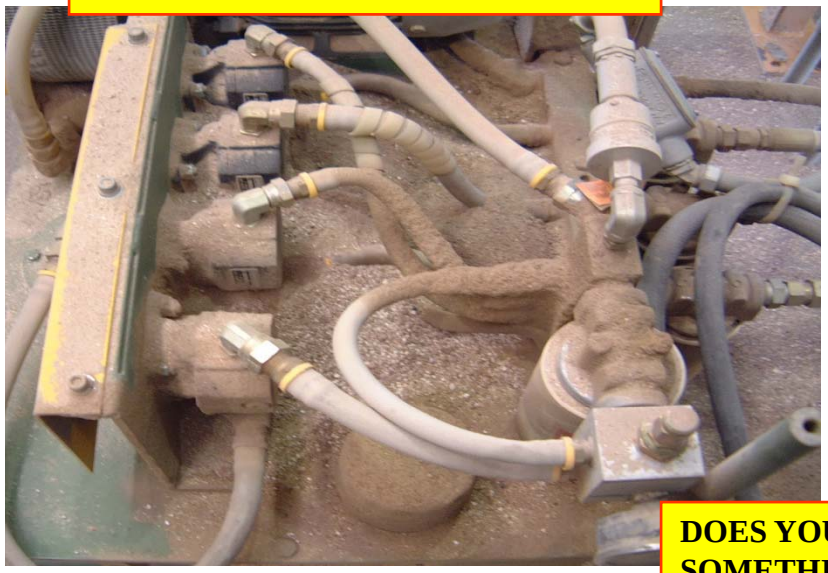


When installing new vibrators make sure that the orifice plugs have been cleaned and installed in all five places. There are four small orifice plugs one at each corner and one large one in the center. We will only be using two of the small orifice plugs for incoming oil and cover the others with permanent O-ring plugs.

LUBE PUMP

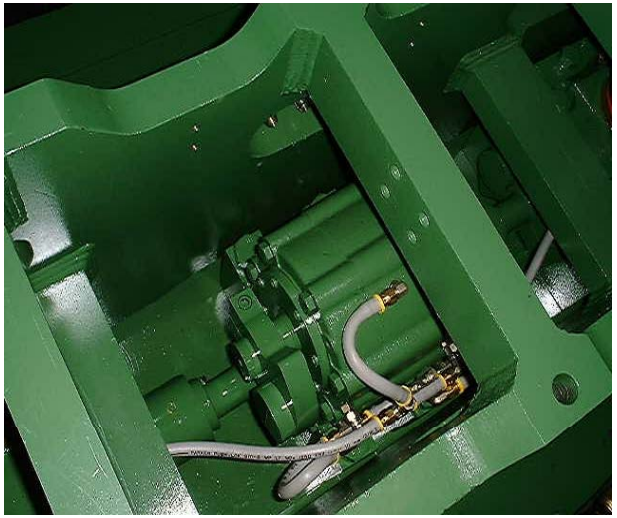
DRAIN OIL FROM TANK. REMOVE TANK COVER AND INSPECT TOP ASSEMBLY FOR REPAIRS .

BEFORE REMOVING TANK LID, INSPECT ALL HOSES FOR DAMAGES, REPLACE IF NEEDED. CHECK ALL FITTINGS FOR TIGHTNESS. CHECK DRIVE BELT FOR WEAR, REPLACE IF NEEDED. REPLACE ALL FILTERS. FILL NEW FILTERS WITH CLEAN OIL BEFORE INSTALLING. CLEAN HEAT EXCHANGER. ONCE REPAIRS HAVE BEEN COMPLETED, REMOVE TANK LID. ON THE BOTTOM OF THE TANK LID IS THE SUCTION FILTER, THIS MUST BE REPLACE. CLEAN TANK OF ALL CONTAMINATES. APPLY A LIBERAL AMOUNT OF BLUE RTV SILCONE SEALER TO TANK FLANGE PRIOR TO INSTALLING LID. INSTALL ALL BOLTS AND TIGHTEN. REMOVE EXCESS RTV FROM AROUND SEAL. FILL WITH FILTERED AW 46 OIL TO HIGH LEVEL OF THE SIGHT GAUGE.

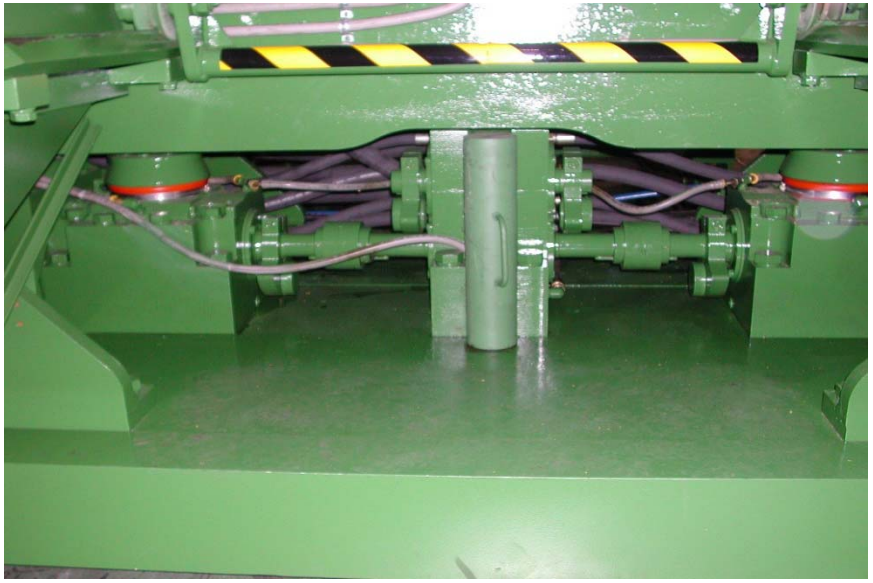


DOES YOUR TANK LOOK SOMETHING LIKE THIS?

GEAR BOX INSPECTION



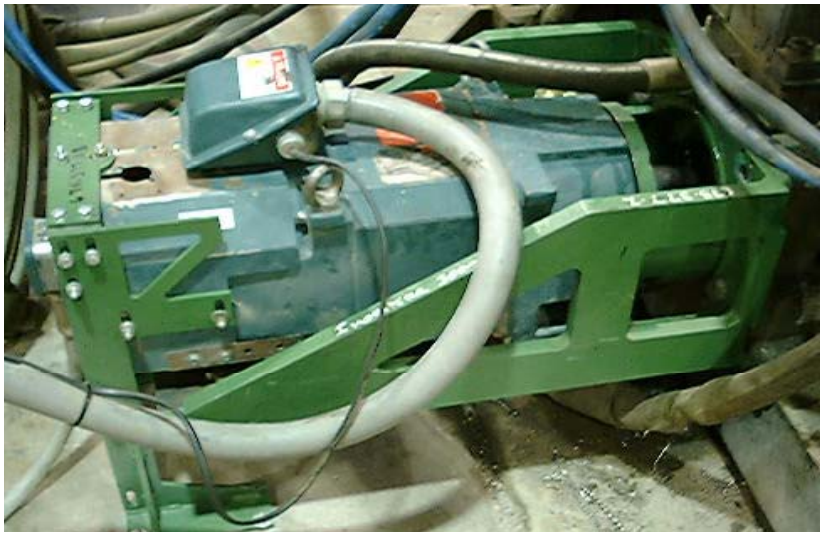
INSPECTION SHOULD INCLUDE THE FOLLOWING. CONDITION OF COUNTERWEIGHTS, SEALS (TOP AND BOTTOM) AND DUST SEALS. SHAFT KEY-WAYS IN GOOD CONDITION? ALL FITTINGS, O-RING, HOSES CHECKED. GEARBOX SHAFTS ROTATE FREELY?



TWO TYPES OF DRIVES

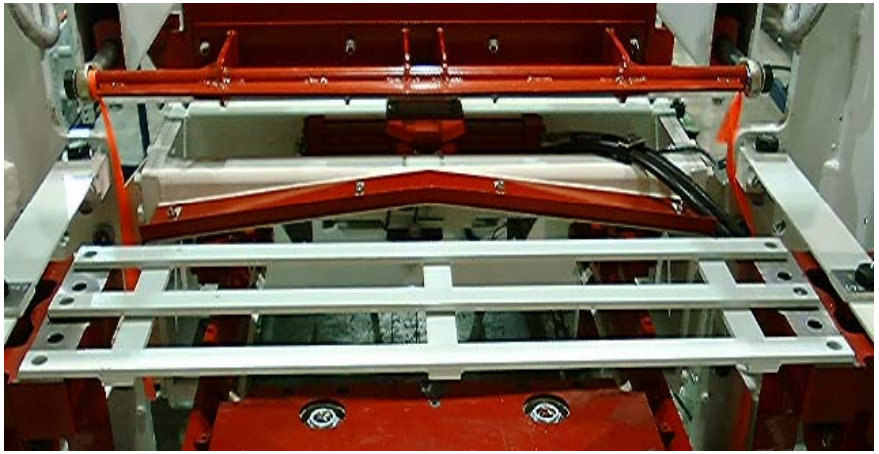
HYDROSTATIC DRIVE / VFD

INSPECTION SHOULD INCLUDE THE FOLLOWING. HYDROSTATIC DRIVE MOTOR AND COUPLING. VFD DRIVE SHAFT KEY-WAY AND COUPLER. ALSO INSPECT MOTOR PLATES TO INSURE PROPER ALIGNMENT. USE CORRECT ALIGNMENT TOOL FOR YOUR APPLICATION.



TOOLS REQUIRED FOR REPLACING VIBRATOR ASSEMBLY

THE FOLLOWING FIXTURES ARE NEEDED FOR VIBRATOR REPLACEMENT AND ALIGNMENT.



Die Support Jig:

Part number:

CPM30	673.190.2
CPM40/50	675.100.148
CPM60	676.100.4

Vibrator Jig: Used to set proper spacing of vibrator eccentrics.

Part number:

CPM30	673.190.3
CPM40/50	675.100.67
CPM60	676.100.5

(Continued next page)

TOOLS REQUIRED FOR REPLACING VIBRATOR ASSEMBLY

THE FOLLOWING FIXTURES ARE NEEDED FOR VIBRATOR REPLACEMENT AND ALIGNMENT.

Jack-Shaft and Couplings:.

Part number:

CPM30	673.190.4
CPM40/50	674.100.25
CPM60	676.100.13

Vibrator Shaft Alignment Tool:

Part number:

675.300.105 (New Style)

Consult Columbia Service for correct tool for your machine

Vibrator Shaft Alignment Tool: (VFD's Only)

Part number: 675.377.15SP

TOOLS REQUIRED FOR REPLACING VIBRATOR ASSEMBLY

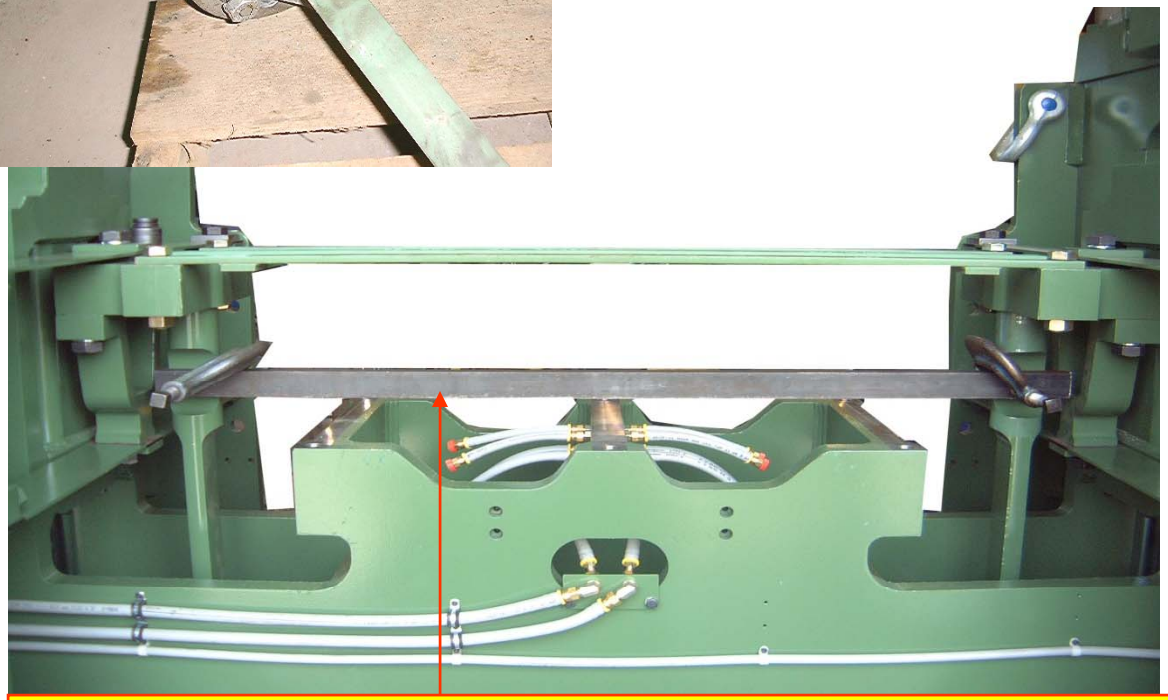
THE FOLLOWING FIXTURES AND TOOLS ARE NEEDED FOR VIBRATOR REPLACEMENT AND ALIGNMENTS.

SAFETY BEAM STOPS

THE TWO PICTURES ABOVE ARE ALIGNING TOOLS NEEDED TO ALIGN THE DIE SUPPORTS ONCE THE VIBRATOR ASSEMBLY IS INSTALLED. TOOLS REQUIRED DEPENDON YOUR SPECIFIC MACHINE; STARRETT STRAIGHT EDGES, MAGNETS, AND INSIDE FILLER GAUGE. ADDITIONLLY YOU SHOULD HAVE A TORQUE WRENCH CAPABLE OF 600 FT LBS. TORQUE MULTIPLIER 4X1 CAPABLE OF UP TO 2000 FOOT POUNDS AND ASSORTMENT OF METRIC SOCKETS AND WRENCHES

INSTALLING NEW SHAKER SHAFT OR BOTH

A WORN SHAKER SHAFT OR CLAMP PLATE CAN CAUSE VIBRATOR FAILURE, ALONG WITH OTHER MACHINE COMPONENT FAILURES



WHEN REPLACING SHAKER SHAFTS, TO HELP KEEP SHAKER SHAFTS ALIGNED, USE A SECTION OF COLD ROLL FLAT BAR 2x3 LONG ENOUGH TO ATTACH BETWEEN BOTH SHAKER SHAFTS. CLAMP TO FLAT AREA AT TOP OF SHAKER SHAFT WITH C-CLAMPS. MAKE SURE THAT THE EDGES OF THE FLAT BAR HAVE BEEN SANDED DOWN SO THAT NO SHARP EDEGES ARE AGAINST THE SHAKER SHAFT. ON THE BACK SIDE WHERE THE CLAMP SETS AGAINST THE SHAKER SHAFT, INSERT A COUPLE PIECES OF BANDING BETWEEN CLAMP AND SHAKER SHAFT.

VIBRATOR INSTALLATION

VIBRATOR INSTALLATION. MAKE SURE BASE AREA IS THROUGHLY CLEANED BEFORE REMOVING PARTS. THIS WILL MAKE THE INSTALLATION GO MUCH SMOOTHER.

VIBRATOR INSTALLATION

VIEW VIBRATOR INSTALLATION VIDEO.