KNOWLEDGE BASE

Article Type: Instructions

CPM 30, 40, 50, 60 machines, "Rebuilding the Center Gearbox" Vibrator Components

Description:

Instructions on "How to" properly rebuild and replace seals on the Vibrator Center Gearbox, used on CPM 30, 40, 50 & 60 machines.

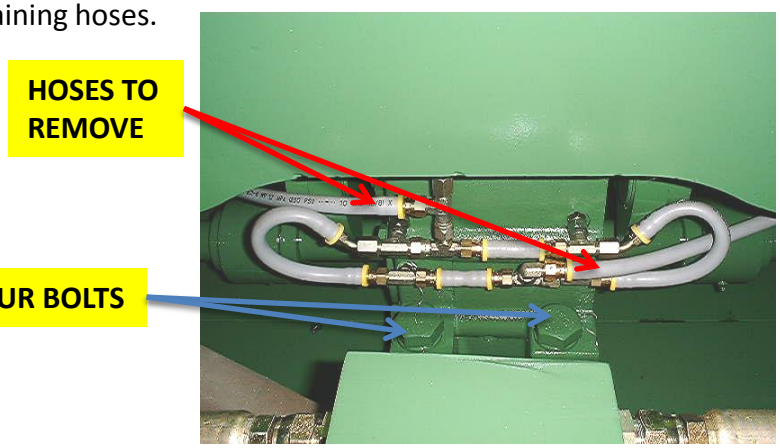
WARNING

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

REBUILDING AND SEAL INSTALL INSTRUCTIONS ON CPM CENTER GEARBOX FOR VIBRATION SYSTEM

To remove the gearbox from the machine please follow these steps.

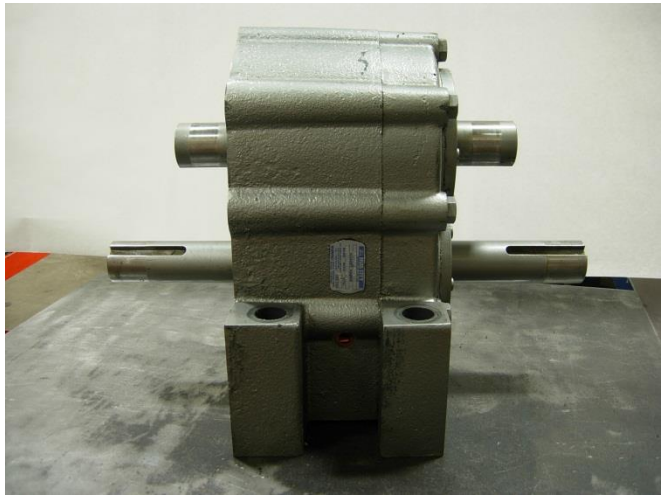
- Block/support the stripper beam in the most upward position for safety and so gearbox will pass underneath.
- Turn machine off and lock and tag out all pumps and main power.
- Disconnect oil lines and cap remaining hoses.

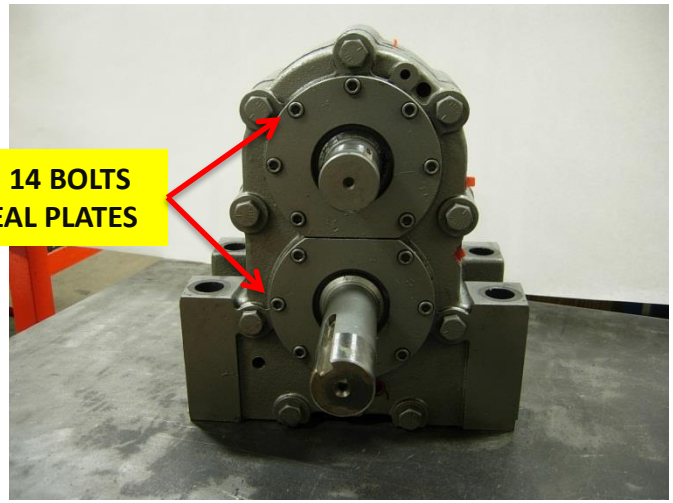


- Remove the inner most snap ring from each vibrator to gearbox couplings outer sleeve/shell.
- Slide outer sleeve/shell towards the vibrator.
- Remove the four (4) mounting bolts, on the hose side you will need to remove hoses and fittings to access bolts.
- Slide gearbox assembly forward for lifting, use a lifting strap around the top shaft and counter weight.

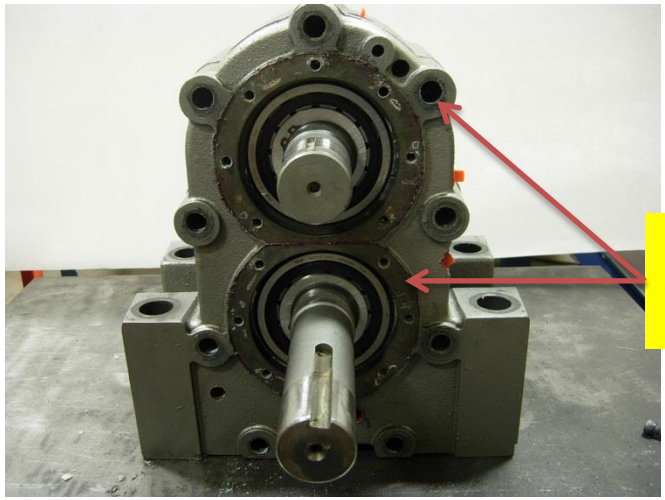
FIRST WE WILL TALK ABOUT REPLACING THE SHAFT SEALS

- With the gearbox removed and placed on a sturdy work bench we can now dis-assemble.
- Remove the counter weights from top shaft.
- Remove the coupling hubs from main shaft. NOTE: Proceed by using a gear puller, apply a little grease to center hole in shaft, secure fingers of puller to hub, tighten puller screw and apply load. Now, use a torch, heat one spot of the hub (NOT complete hub), once you hear a pop from the hub breaking loose remove heat, use puller to remove hub.

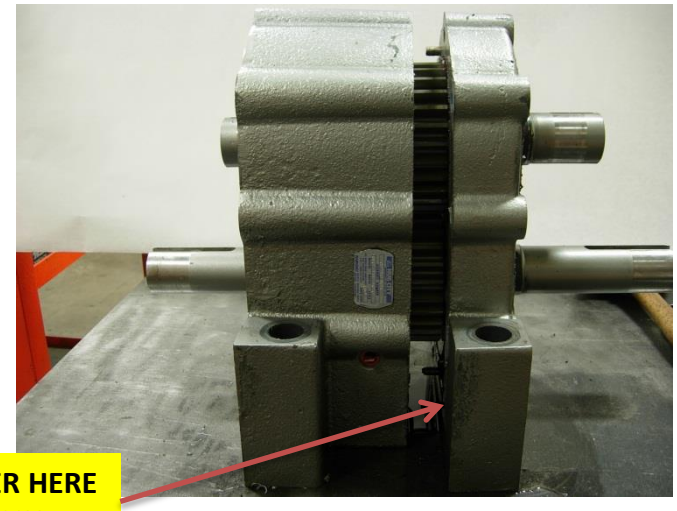




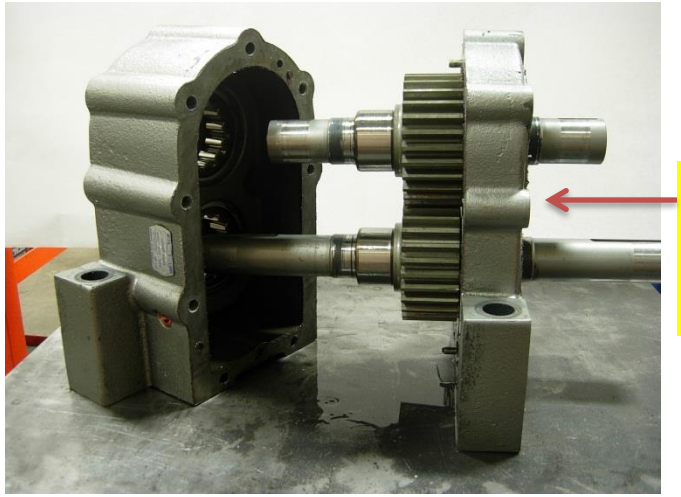
- With fourteen (14) seal plate bolts removed, **using caution:** remove seal plates from housing.
- Next remove the nine (9) bolts holding two pieces housing halves together.
- Using rubber hammer bump the two halves apart. (as shown below, next page)



BOLTS AND SEAL PLATES REMOVED

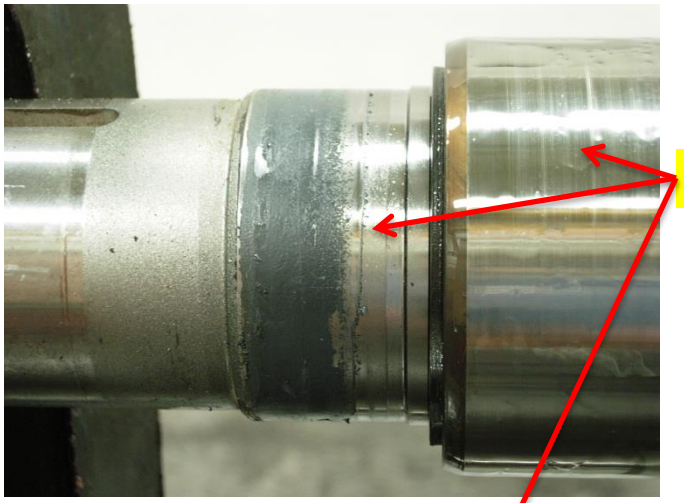


RUBBER HAMMER HERE BOTH SIDE EQUALLY

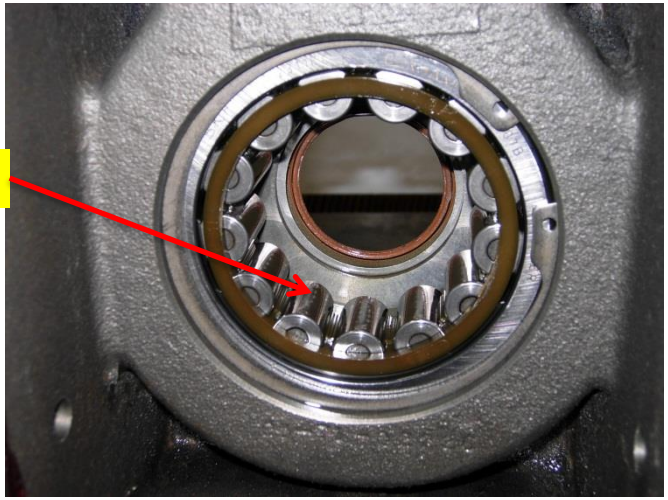


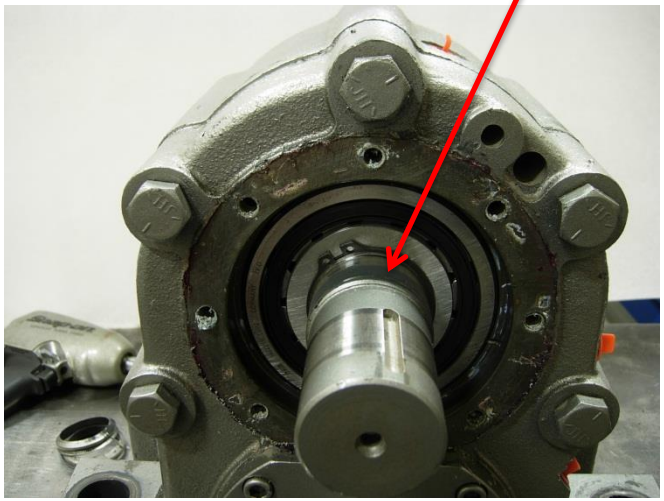
SLIDE HOUSINGS APART, SHAFTS WILL STAY WITH THINNER HALF

- When sliding the two halves away from each other the shafts will stay in the thinner housing half. At this time, lean thinner side and rest on shaft for inspection.
- Inspect shafts for damage at seal area along with bearings and bearing races. If no damage is detected, move forward with rebuild/seal install. **Items to inspect for:** Grooves in shaft, rough bearings, pits in bearing surfaces, damage to coupling area on shaft ends.

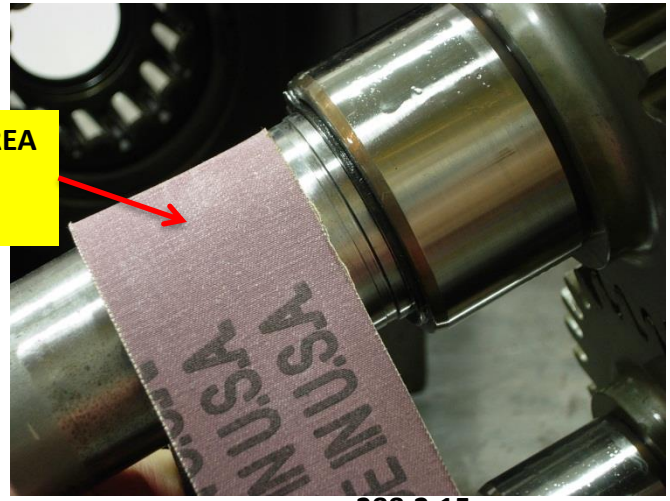


AREAS TO INSPECT

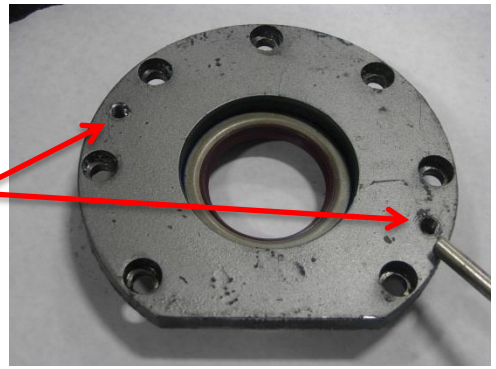




POLISH SEAL AREA OF SHAFT WITH 400+ GRIT

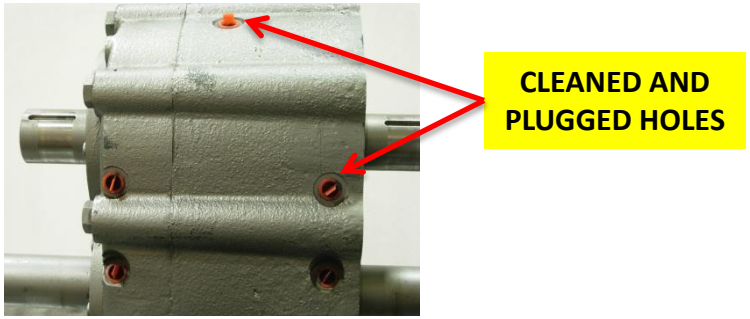


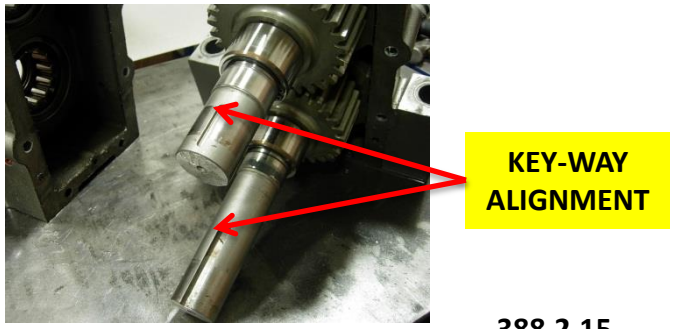
- Remove old seals from both seal plates and from main housing half.
- After seals have been removed from seal plates we can drill and tap holes for easy removal next time. These holes need to located between two of the mounting holes as shown 180 degrees apart.
- Clean seal plates front and back, clean both mating surfaces of gearbox housing.
- Install new seals in both seal plates and housing, along with new O-rings.



Now the gearbox is ready to for re-assembly

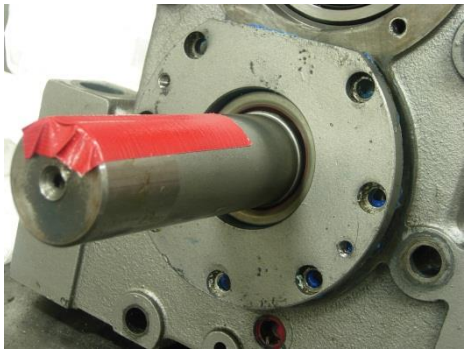
- Clean all orifice plugs and ports, plug to keep clean.
- Cover key-way slots with duct tape for seal protection.
- Apply thin layer of RTV silicone to mating surface only. Oil lip seals and O-rings with light oil.
- Install seal plates on thinner half.
- Apply blue 242 OR 243 Loctite to threads and tighten in criss-cross pattern to 31 foot pounds.
- Make sure key-ways on both shafts are facing up, in time (as shown below).
- Apply a thin layer of RTV silicone to matting surface of large housing and stand up.
- Oil the lip seals with light oil.
- Place smaller side with shaft up right in line with large housing and push the two halves together. **Use CAUTION :** as shafts pass through seals. Align haves with dowel pins.
- Apply blue 242 OR 243 Loctite to threads and install the 9 housing bolts and tighten from center out in criss-cross pattern to 75 foot pounds.
- **CAUTION : When storing, grease shafts and fill gearbox with AW 46 oil to prevent corrosion.**

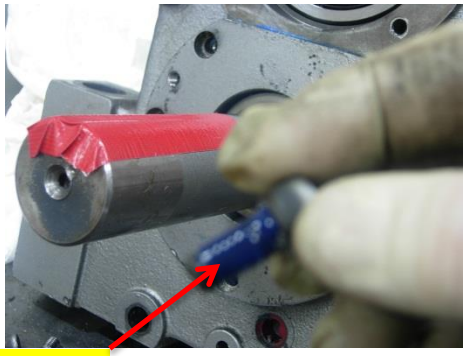




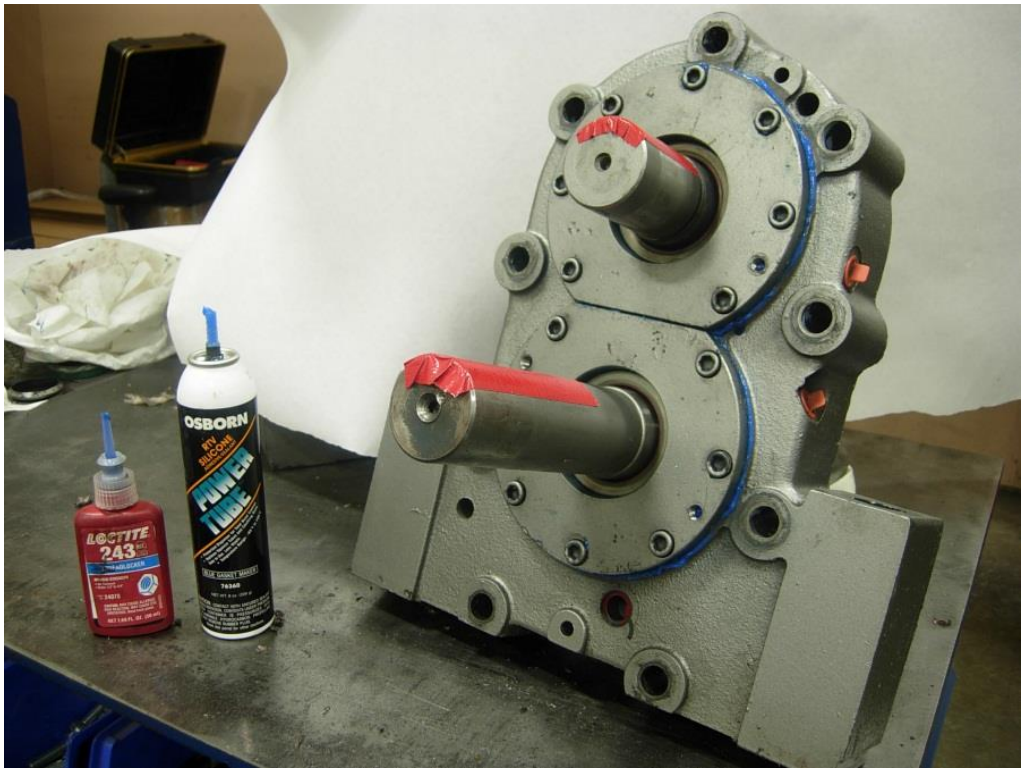
SILICONE AREA

OIL HERE





LOCTITE
ON BOLTS



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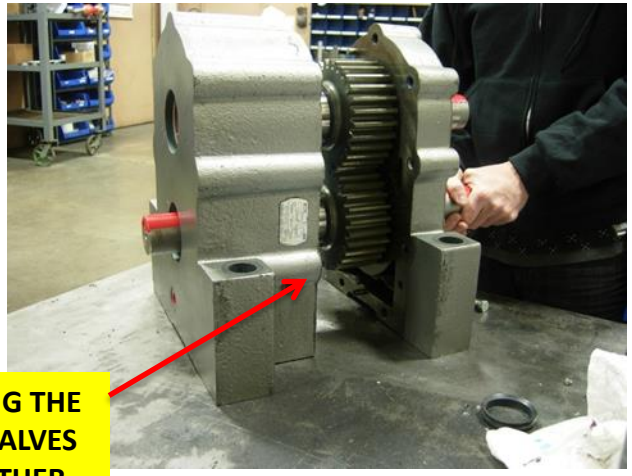
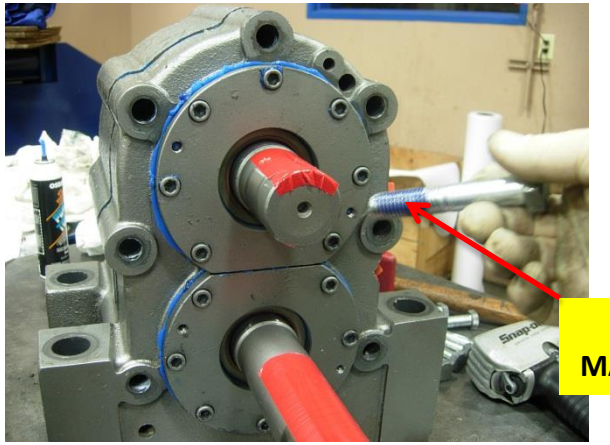
SILICONE FILM



PUSHING THE TWO HALVES TOGETHER



LOCTITE MAIN CASE BOLTS

COMPLETE GEARBOX READY TO USE OR STORE