

Overhaul Procedure for Hardi Pump



Attention: Always wear proper safety equipment! (Chemical resistant gloves and Eye Protection)

Attention: Thoroughly clean the exterior of the pump and drain the pump of any remaining fluid!

1. Remove the bolts that attach the valve chamber(s) and remove the covers and old valves (500, 600, 320, 1200, & 1300 Series Pumps)
2. Remove the bolts that attach the diaphragm covers or the diaphragm/valve covers (360 & 460 Series Pumps)
3. Remove the old valves and o-rings and discard them. **Note:** Do not use old valves or o-rings when overhauling pump; they will not make a proper seal!
4. Clean all the heads, covers, and valve chambers thoroughly of any rust or build up. Make sure that the machined lip of the diaphragm cover is clean to allow proper seal.
5. Un-bolt the diaphragms from the connecting rods and discard all diaphragms.
6. Remove the diaphragm backing discs and inspect the pump.
 1. Check the crankshaft for sufficient grease.
 2. Look for any signs of excessive wear or internal damage.
 3. The connecting rods will have side to side movement, but no up and down play.
 4. If up & down movement is present then further tear down is necessary, go to step-7. If connecting rods are in good shape then skip to step-14.

Note: Use steps 7-13 if connecting rod wear/damage is detected.

Attention: When removing the connecting rods from a 600, 320, 1200, or 1300 series pump make special note of wear each connecting rod was removed from the shaft.

7. The pump housing splits into two separate portions. Remove the bolts that hold the pump housing together. Depending on the series of pump there are 2 or 3 bolts.
8. In order to separate the housing on the larger pumps place a socket on the rear of the crankshaft just large enough to cover the grease zert. Using a dead blow hammer strike the socket in order to separate the two housings. Once a gap is created carefully pry the two portions of the housing apart.
9. Remove and inspect the connecting rods (they should be smooth). If any grooves, chips, or cracks are detected then the rods will need to be replaced.
10. Continue to tap on the rear of the crankshaft until it can be removed from the housing.

11. Rotate and check all bearings, if they are loose or have any rough or worn spots replace them. Using a press remove the bearings and replace any that are damaged. **Note:** Pack the bearings with a lithium based grease.
12. Reinstall the crankshaft using a dead blow hammer leaving a ¼" of the rear carrier bearing showing.
13. Set the pump with the PTO-Shaft end facing up and install the connecting rods. Tap the crank shaft the rest of the way in and re-install the housing.
14. Install the diaphragm backing disc and new diaphragms with the bolt and retaining washer, make sure the lip of the washer points away from the diaphragm.
15. Rotate the shaft so that the diaphragm is in the up position and torque the connecting bolt to the correct lbf-ft. **Note:** Refer to 'Pump Torque Specifications' for lbf-ft.
16. If this is a 360 or 460 series pump then install the o-rings around the valves and lubricate the o-rings and metal surfaces with vegetable oil. **Warning:** Do not use a petroleum based product it will damage the seals! **Note:** 360 & 460 series pumps have two white check valves; these valves must be placed in the 10 & 2 o'clock position on the suction side of the pump.
17. Lubricate the machined area of the diaphragm cover/valve cover and diaphragm with vegetable oil.
18. Make sure the diaphragm is in the up position and torque the diaphragm cover/valve cover to the correct lbf-ft. **Note:** Refer to 'Pump Torque Specifications' for lbf-ft.
19. If this is a 500, 600, 320, 1200, or 1300 series pump install the o-rings on the valves and lubricate the o-rings and metal surfaces with vegetable oil. Re-install the valve chamber(s) and torque to the correct specifications. **Warning:** Do not use a petroleum based product it will damage the seals!



Pump Torque Specifications

<i>Pump</i>	Diaphragm	Diaphragm cover	Valve cover	Valve chamber
<i>500</i>	19 lbf-ft	38 lbf-ft		38 lbf-ft
<i>600</i>	19 lbf-ft	38 lbf-ft		38 lbf-ft
<i>320</i> <i>321</i>	60 lbf-ft	60 lbf-ft		38 lbf-ft
<i>1200</i> <i>1300</i>	60 lbf-ft	60 lbf-ft		60 lbf-ft
<i>361</i> <i>363</i>	60 lbf-ft		60 lbf-ft.	
<i>461</i> <i>463</i>	75 lbf-ft		75 lbf-ft	

A tolerance of - 0 to + 20 % is allowed