

Pump Maintenance

General

PACKING EXTRACTION KIT P/N Z09-00028
COMPLETE TOOL KIT P/N Z09-00021

OIL LEVEL

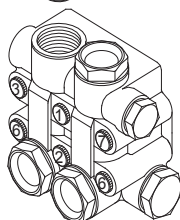
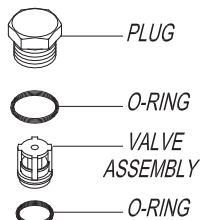
CHECK THE OIL LEVEL BY UNSCREWING DIPSTICK.
THE LEVEL SHOULD BE BETWEEN THE 2 MARKS.

OIL LEVEL IS ALSO SHOWN IN THE
ROUND INDICATOR.



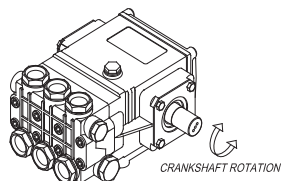
Valve Service

1. Remove the plugs holding the valve assemblies.
2. Remove and discard o-rings from the plugs. Clean plugs with solvent or soap and water. Allow to dry.
3. Using needle nose pliers, fingers, or hook shaped tool, remove the valve assemblies from the head. Remove and discard the o-rings from the valve assemblies and/or head. Examine each valve assembly and discard damaged parts. Refer to the PUMP BREAKDOWN for part numbers of any replacement items.
4. Clean any accumulated debris from the valve cavities and flush with water.
5. Wash the valve assemblies in clean water and rinse. While still wet, test each valve assembly by sucking on the valve seat. A properly sealing valve will allow a good vacuum to be developed and maintained, while a malfunctioning valve will not. Good valve assemblies should be set aside for installation in step 7.
6. Malfunctioning valve assemblies must be replaced.
7. Lubricate a new o-ring with the pump crankcase oil and install into valve cavity in the head. Install a good valve assembly into the cavity as illustrated.
8. Lubricate a new o-ring with pump crankcase oil and place on a plug cleaned in step 2 above.
9. Install a plug into the pump head. Tighten plug by hand.
10. Torque the plug to the value indicated in the TORQUE section of the pump specifications.
11. Repeat steps 7 through 11 for remaining valve assemblies.



Head Removal

1. Remove the cap screws holding the pump head to the crankcase. A metric tool is required for this step. Be careful not to lose the washer on each cap screw.
2. Remove the head by rotating the crankshaft and tapping the head away from the crankcase with a soft mallet. Keep rear surface of the head parallel to the front surface of the crankcase to prevent binding on the plungers.
3. Once the head is removed, protect the plungers from damage.



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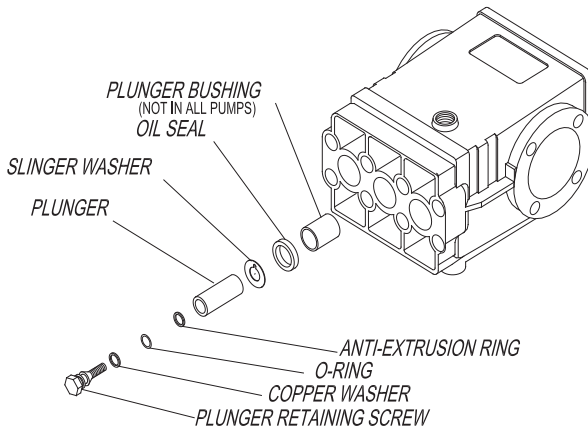
Plunger Service

1. Remove pump head per HEAD REMOVAL.
2. Remove any packings and retainers left on the plungers by pulling them straight off.
3. Examine each plunger, looking for a smooth surface free of any scoring, cracks, or pitting. Any defective plungers should be removed per PLUNGER REMOVAL.
4. Discard and replace any defective plungers.
5. Reinstall the plunger per PLUNGER INSTALLATION.
6. Reinstall head per HEAD INSTALLATION.

Plunger Removal

NOTE: When the plunger screw is removed, it is important to install new o-ring, anti-extrusion, and copper washers.

1. When the plunger screw is removed, it is important to install a new o-ring, anti-extrusion, and copper washers.
2. Remove the plunger retaining screw by turning counterclockwise. Remove and replace copper washer.
3. Remove and discard o-ring and anti-extrusion ring from retainer screw.
4. Remove the plunger from the cross head and examine it for cracks, scoring, or pitting.
5. Remove and discard copper plunger washer, clean with solvent and allow to dry.



Plunger Installation

1. Install the copper plunger washer onto the cross head.
2. Slide the plunger onto the crosshead.
3. Lubricate an o-ring with crankcase oil and install into the groove on the plunger screw. Install the anti-extrusion ring into the groove next to the o-ring. NOTE: The o-ring should be nearest the screw head and the anti-extrusion ring nearest the threads.
4. Apply a drop of thread sealant to the threads of the retainer screw.
5. Thread the plunger retainer screw into the cross head making sure the copper flat washer is installed onto the screw.
6. Torque the plunger retainer screw to the value indicated in the torque section of the pump specifications.

Packing Service

1. Remove the head per PUMP HEAD REMOVAL.
2. Remove any packings and female adapters left on the plungers by pulling them straight off. Insert proper packing extractor onto the extractor hammer. Insert packing extractor and tool through the packings and adapters remaining in the head. Tighten the hammer and remove the remaining items in the head. Remove packings and o-rings from adapters. Discard the o-rings and packings.
3. Clean the packing canities in the head and rinse with clean water.
4. Clean exposed plungers. Clean male and female adapters with soap and water and allow it to dry.
5. Examine male and female adapters, discard worn items. Trial fit the female adapters into the head checking for binding or damage. Discard and replace damaged items
6. Lubricate packing cavities in the head and all packings and adapters with pump crankcase oil.
7. Lay head on the bench with packing cavities up. Install one male adapter in each cavity with the flat side down.
8. Install one v-packing into each cavity with the lips pointing down. A packing insertion tool of the appropriate size is recommended for this operation.
9. Install the re-stop with the lips pointing down.
10. Install a front female adapter into each cavity with the flat side up. Make certain the adapter goes all the way down into the cavity.
11. Install the low pressure packing with the flat side down.
12. Install the rear female adapter into each cavity with the lips pointing down.
13. Lubricate o-rings with pump crankcase oil and install one into the groove of each adapter.
14. Install one adapter and o-ring into each cavity with the flat side up. Each adapter and o-ring assembly should push into the head to approximately 1/16 inch of being flush with the surface of the head. Only hand pressure should be required to perform this operation. This step is VERY IMPORTANT. If the rear female adapter does not fit is obtained, proceed to step 16. If a proper fit is not obtained, remove the female adapters from the offending cavity and reinstall items per steps 8 through 15.
15. Install head per HEAD INSTALLATION.

