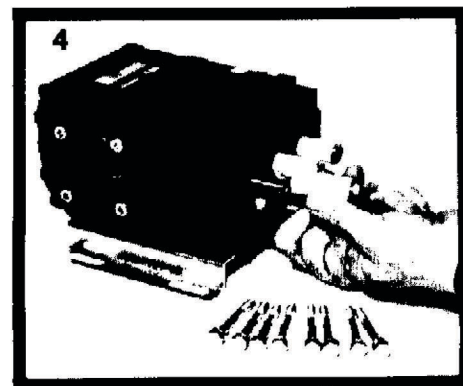
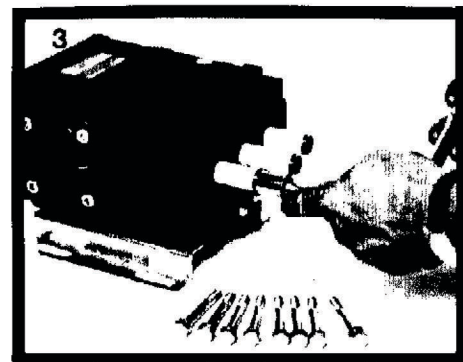
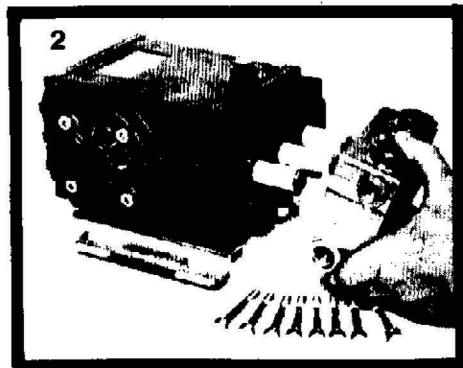
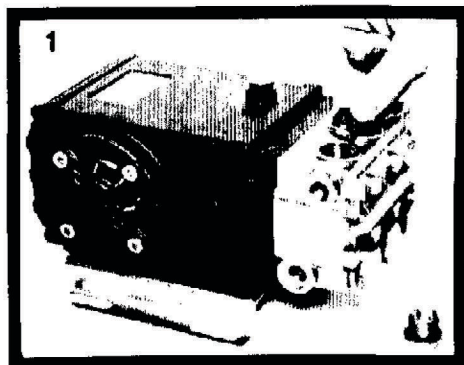


SERVICING & TROUBLE SHOOTING



PROCEDURE FOR SERVICING PUMPS



The Valve Assemblies

Photo 1

- 1) All inlet and discharge valves can be serviced without disrupting the inlet or discharge plumbing. The inlet and discharge valves are the identical in all models.
- 2) To service any valve, remove valve cap and extract valve assembly.
- 3) Examine o-rings and replace if there is any evidence of cuts, abrasions, or distortion.
- 4) Remove valve assembly (retainer, spring, valve, valve seat) from valve cavity.
- 5) Remove o-ring from valve cavity.
- 6) Only one valve kit is necessary to repair all the valves in the pump. The kit includes new o-rings, valve seat, poppet, spring and retainer, all pre-assembled.
- 7) Inspect manifold for wear or damage.
- 8) Install new o-ring in valve cavity.
- 9) Insert assembly into valve cavity.
- 10) Replace valve cap and torque to specifications.

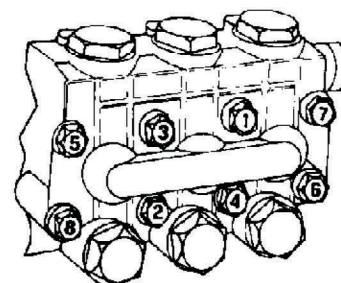
Removing Manifold Head

Photo 2

- 1) Remove the fasteners retaining head.
- 2) Separate head from crankcase. NOTE: It may be necessary to rotate crankshaft or tap head lightly with rawhide mallet to loosen. CAUTION: When sliding head from crankcase use caution not to damage plungers.
- 3) The V-packing assemblies may come off with the head. At this point, examine plungers. Plunger surfaces should be smooth and free from scoring, pitting, or cracks; if not, replace.
- 4) Reinstall manifold head and torque to specifications per sequence described below.

TORQUE SEQUENCE FOR TIGHTENING HEAD

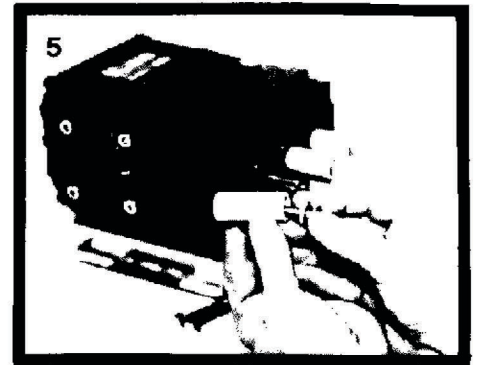
Install all head bolts fingertight. Torque to 10 foot pounds in sequence as shown, then retorque to specifications, again, in sequence shown.



Replacing Plungers

Photo 3, 4 and 5

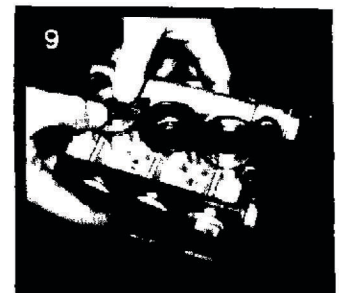
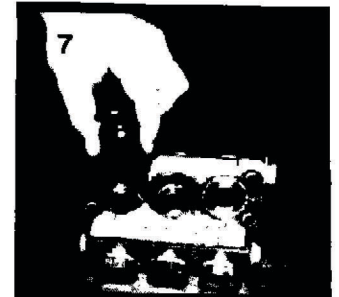
- 1) Remove stainless steel piston screw and plunger from piston rod.
- 2) If slinger washer comes off with plunger, be certain this is replaced before new plunger is installed.
- 3) Separate piston screw from plunger.
- 4) Install new o-ring and teflon backup-ring on piston screw.
NOTE: A film of grease on the outside of the o-rings insures a better installation.
- 5) Apply removable anaerobic thread sealant to threads of piston screw and carefully press piston screw into plunger.
- 6) Slide new plunger over the piston guide and torque to specifications.



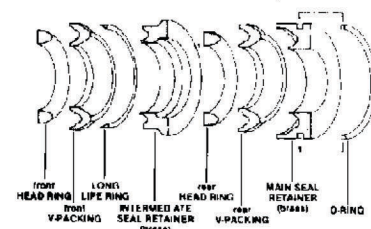
Replacing V-Packings

Photo 6, 7, 8 and 9

- 1) Remove manifold from crankcase.
- 2) Insert proper extractor collet through main seal retainer. Tighten collet and extract retainers, v-packings and head rings.
- 3) Place proper Insertion tool in cylinder and install front head ring, v-packing and long life ring and press firmly into cylinder until they will go no further using proper insertion tool.
- 4) Insert intermediate seal retainer, pressing it firmly into cylinder until it will go no further using proper insertion tool. Install rear head ring, v-packing and main seal retainer into cylinder in order shown and press firmly into cylinder. Be careful not to cut o-ring.
- 5) Repeat this sequence for each cylinder.
- 6) Coat each plunger with grease and carefully remount manifold. Torque head to specifications.



TYPICAL GENERAL PUMP
PACKING CROSS SECTION





TROUBLE SHOOTING

PROBLEM	CAUSE	REMEDY
Pulsation.	Valve stuck open.	Check all valves, remove foreign matter.
	Worn nozzle.	Replace nozzle, use proper size.
	Belt slippage.	Tighten or replace; use correct belt.
	Air leak in inlet plumbing.	Disassemble, reseal and reassemble.
Low Pressure.	Relief valve stuck, partially plugged or improperly adjusted valve seat worn.	Clean, adjust relief valve; check for worn and dirty valve seats. Kit available.
	Inlet suction strainer clogged or improperly sized.	Clean. Use adequate size. Check more frequently.
	Worn packing. Abrasives in pumped fluid or severe cavitation. Inadequate water.	Install proper filter. Suction at inlet manifold must be limited to lifting less than 20 feet of water or -8.5 PSI vacuum.
	Fouled or dirty inlet or discharge valves.	Clean inlet and discharge valve assemblies.
	Worn inlet, discharge valve blocked or dirty.	Replace worn valves, valve seats and/or discharge hose.
	Leaky discharge hose.	
Pump runs extremely rough, pressure very low.	Restricted inlet or air entering the inlet plumbing.	Proper size inlet plumbing; check for air tight seal.
	Inlet restrictions and/or air leaks. Stuck inlet or discharge valve.	Replace worn cup or cups, clean out foreign material, replace worn valves.
Water leakage from under manifold. Slight Leakage.	Worn packing.	Install new packing.
	Cracked plunger.	Replace plunger(s).
Oil leak between crankcase and pumping section.	Worn crankcase piston rod seals. O-rings on plunger retainer worn.	Replace crankcase piston rod seals. Replace O-rings.
Oil leaking in the area of crankshaft.	Worn crankshaft seal or improperly installed oil seal O-ring.	Remove oil seal retainer and replace damaged O-ring and/or seals.
	Bad bearing.	Replace bearing and any spacer or cover damaged by heat.
Excessive play in the end of the crankshaft pulley.	Worn main bearing from excessive tension on drive belt.	Replace crankcase bearing and/or tension drive belt.
Water in crankcase.	May be caused by humid air condensing into water inside the crankcase.	Change oil intervals. Use General Pump SAE 30 nondetergent oil.
	Worn packing and/or piston rod sleeve, O-rings on plunger retainer worn.	Replace packing. Replace O-rings.
	Cracked plunger.	Replace plunger(s).
Oil leaking from underside of crankcase.	Worn crankcase piston rod seals.	Replace seals.
	Scored piston rod.	Replace piston rod.
Oil leaking at the rear portion of the crankcase.	Damaged crankcase, rear cover O-ring, drain plug O-ring; or sight glass O-ring.	Replace cover O-ring, drain plug O-ring, or sight glass O-ring.
Loud knocking noise in pump.	Pulley loose on crankshaft.	Check key and tighten set screw.
	Broken or worn bearing or rod(s).	Replace bearing or rod(s).
	Valve stuck open or shut, or not opening enough.	Replace bad valve.
Frequent or premature failure of the packing.	Scored, damaged or worn plunger.	Replace plungers.
	Overpressure to inlet manifold.	Reduce inlet pressure.
	Abrasive material in the fluid being pumped.	Install proper filtration on pump inlet plumbing.
	Excessive pressure and/or temperature of fluid being pumped.	Check pressures and fluid inlet temperature; be sure they are within specified range.
	Overpressure of pumps.	Reduce pressure.
	Running pump dry.	Do not run pump without water.
	Upstream chemical injection.	Use downstream chemical injection.

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