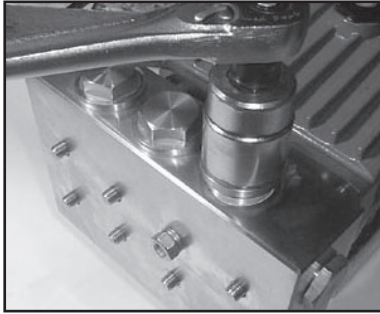
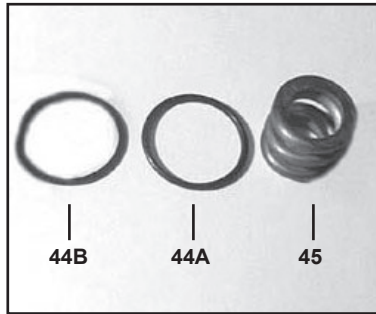

LP470 REPAIR INSTRUCTIONS

NOTE: Always take time to lubricate all metal and non-metal parts with a light film of oil before reassembling. This step will help ensure proper fit, at the same time protecting the pump non-metal parts (elastomers) from cutting and scoring.

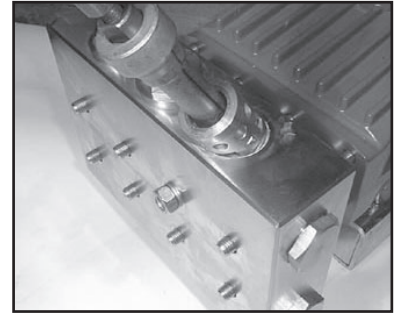
TO CHECK VALVES



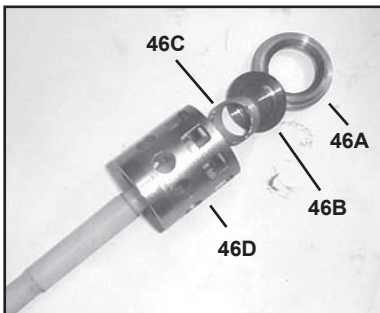
- 1) Loosen and remove tension plugs (48) with a 36mm socket wrench.



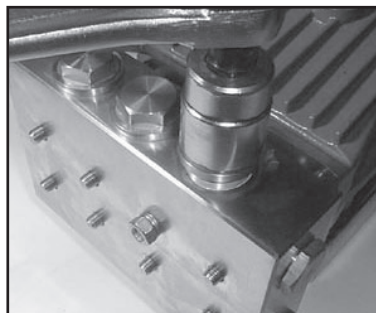
- 2) Remove the support ring (44B), O-ring (44A), and tension spring (45).



- 3) Take out discharge valve assemblies (46) by pulling them upwards out of the valve casing (43) with a snap-ring tongs or any other pull-off device. Then remove inlet valves in the same way.



- 4) Loosen valve seats (46A) and valve spring (46C) from spacer pipe (46D) by lightly hitting the valve plate (46B) with a plastic stick. Check sealing surface and replace worn parts. Reassemble with new O-rings (44A) if possible and oil them before installing.

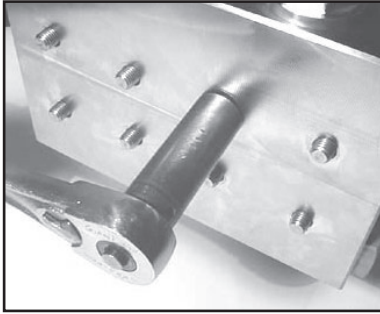


- 5) Tighten up tension plugs (48) to 107 ft.-lbs. (145 Nm).

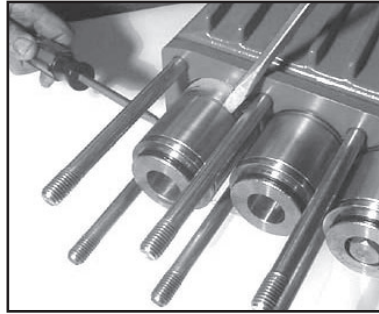
LP470 REPAIR INSTRUCTIONS

NOTE: Always take time to lubricate all metal and non-metal parts with a light film of oil before reassembling. This step will help ensure proper fit, at the same time protecting the pump non-metal parts (elastomers) from cutting and scoring.

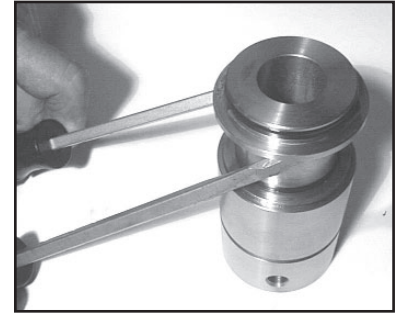
TO CHECK SEALS AND PLUNGER PIPE



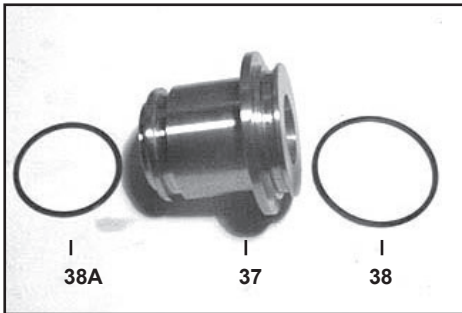
6) Loosen the 8 nuts (49A) with a 19mm socket and pull off valve casing (43) to the front.



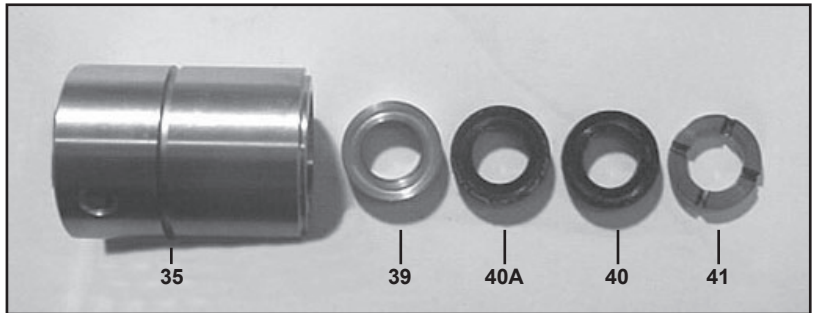
7) Remove the seal sleeve (35) from the manifold and/or crankcase.



8) Remove seal case (37) from seal sleeve (35).

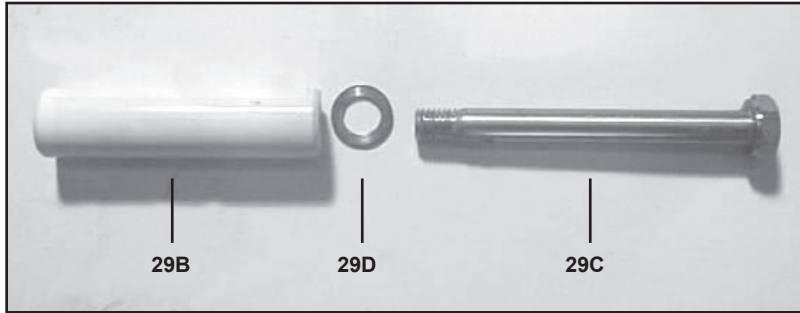


9) Check O-rings (38 & 38A) on seal case (37).



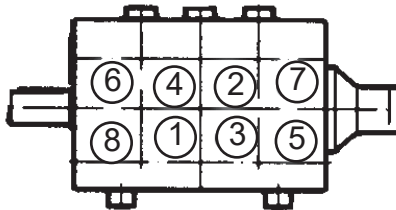
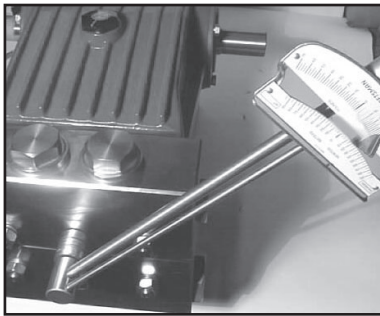
10) Remove the pressure ring (39), sleeves (40 & 40A), and support ring (41) from the seal sleeve. Remove the pressure spring (42). Examine seals carefully and replace if worn. Clean surfaces of seal sleeves (35) which come in contact with the crankcase (1) and sealing surfaces of valve casing (43).

LP470 REPAIR INSTRUCTIONS



11) Check plunger surface (29B). If plunger pipe is worn out, loosen tension screws (29C) with a 15mm socket and pull off plunger pipe to the front. Clean front surface of plunger (29B) thoroughly. Apply a small drop of locktite to tension screw. Put a **new** crush washer (29D) onto tension screw. Put a thin coat of glue (Loctite) on the ring (or ceramic plunger side) and tighten screw to 22 ft.-lbs. (30 NM).

12) Replace complete seal sleeve (35)/seal case (37) assembly into crankcase (1). Make sure that the weep hole points downward. **Note: To replace the oil seals (31), you will need to disassemble the gear end (see instructions on next page).**



13) Place entire manifold/seal sleeve assembly over the studs and push firmly until seated against the crankcase.

14) Tighten hex nuts (49A) in a crosswise pattern (shown above) to 59 ft.-lbs. (80 Nm).

LP470 REPAIR INSTRUCTIONS

TO DISMANTLE GEAR END

After removing valve casing (43) and plunger pipe (29B), drain the oil. Remove the gear cover (4) and both bearing covers (14). Loosen connecting rod screws (24A) and push the front of the connecting rod (24) forward as far as possible into the crosshead guide.

IMPORTANT! Connecting rods (24) are marked for identification. Do not twist connecting rod halves. Connecting rod is to be reinstalled in the same position on shaft journals.

Turning the crankshaft (22) slightly, hit it out carefully to the side with a rubber hammer.

IMPORTANT! Do not bend the connecting rod (24) shanks. Check crankshaft (22) and connecting rod (24) surfaces, radial shaft seals (15) and taper roller bearings (20).

To remove the oil seals (31) use a wooden rod and sharply hit down on the oil seals from the crankcase (1). Note: when replacing the oil seals, apply a small amount of locktight to the outside edges of each oil seal before re-inserting them into the crankcase.

To Reassemble

Using a soft tool, press in the outer bearing ring until the outer edge lines up with the outer edge of the bearing hole. Remove bearing cover (14) together with radial shaft seal (15) and o-ring (16). Fit crankshaft (22) through bearing hole on the opposite side. Press in outer bearing and tighten it inwards with the bearing cover, keeping the crankshaft in vertical position and turning slowly so that the taper rollers of the bearings touch the edge of the outer bearing ring. Adjust axial bearing clearance to at least 0.1mm and maximum 0.15mm by placing fitting discs (20A and 20B) under the bearing cover.

IMPORTANT! After assembly has been completed, the crankshaft should turn easily with very little clearance. Tighten connecting rod screws (24) to 22 ft.-lbs. (30 Nm). Re-assemble the fluid end (see instructions on previous pages).

LP470 TORQUE SPECIFICATIONS

<u>Position</u>	<u>Item#</u>	<u>Description</u>	<u>Lubrication Info</u>	<u>Torque Amount</u>
1	07759	Crankcase	Molykote Cu-Paste	
6	05943	Oil Sightglass with Dipstick	Loctite 572	30 ft.-lbs. (40 Nm)
10	01010	Cylinder Screw		18 ft.-lbs. (25 Nm)
12	07109	Plug		30 ft.-lbs. (40 Nm)
17	07114	Hexagon Screw		18 ft.-lbs. (25 Nm)
24	13340	Inner Hex Screw, Connecting Rod		22 ft.-lbs. (30 Nm)
29C	13007	Tension Screw, Plunger	Loctite 243	22 ft.-lbs. (30 Nm)
31	07133	Oil Seal	Loctite 403	
48	06077	Plug, Discharge		107 ft.-lbs. (145 Nm)
49	07754	Stud Bolt	Loctite 648	
49A	07158	Hexagon Nut, Stud Bolts		59 ft.-lbs. (80 Nm)

Pump Mounting Selection Guide

<p>Bushings 06496 - 35 mm H Bushing</p>
<p>Pulley & Sheaves 07165 - 12.75" Cast Iron - 4 gr. AB Section</p>
<p>Rails 07357 - Plated Steel Channel Rails (L=11.75"x W=1.88"x H=3.00")</p>