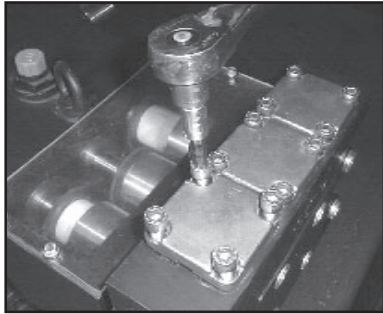


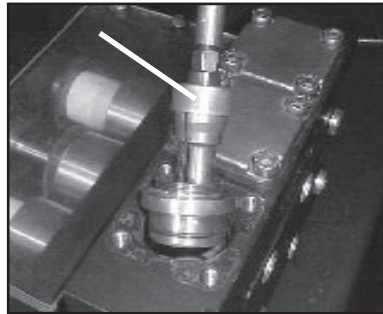
BP6150 REPAIR INSTRUCTIONS

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) Unscrew inner hexagon screws (56A), remove plug (56) and pressure spring (54).

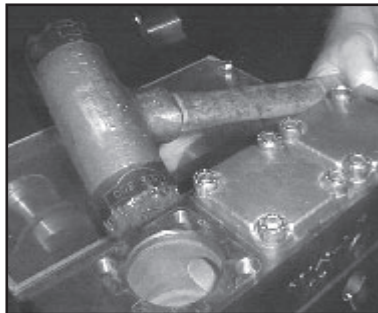


- 2) Using either a pin spanner or pliers, take out complete discharge valve (52), tension spring (53) and suction valve (51). The spring tension cap (51D/52D) is screwed together with valve seat (51A/52A). Remove spring tension cap, remove spring (51C/52C) and valve plate (51B/52B). The seal ring (51E/52E) is snapped onto the valve plate. Check sealing surfaces and o-rings (51F/52F/57). Replace worn parts.

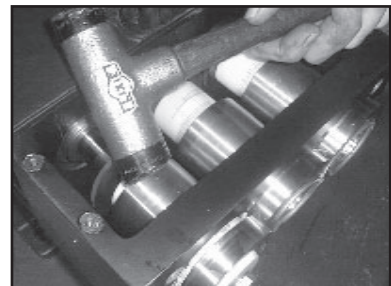
TO CHECK SEALS AND PLUNGER PIPES



- 3) Unscrew inner hexagon screws (49).



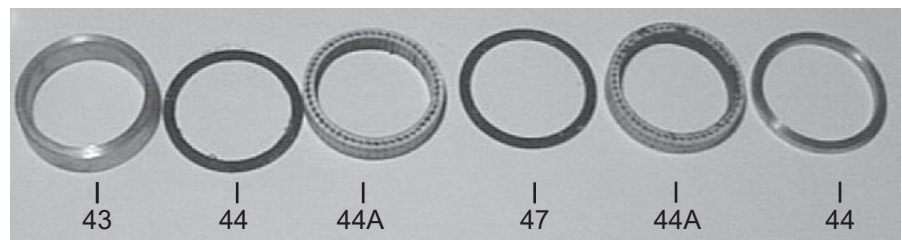
- 4) With a rubber mallet, tap the back of the pump head until it is removed with the seal case (41).



- 5) Remove seal sleeves (40) from the fittings in the crankcase, by tapping seal sleeve (40) out of the crankcase with a rubber mallet.



- 6) Take tension spring (42) out of seal sleeve (40).

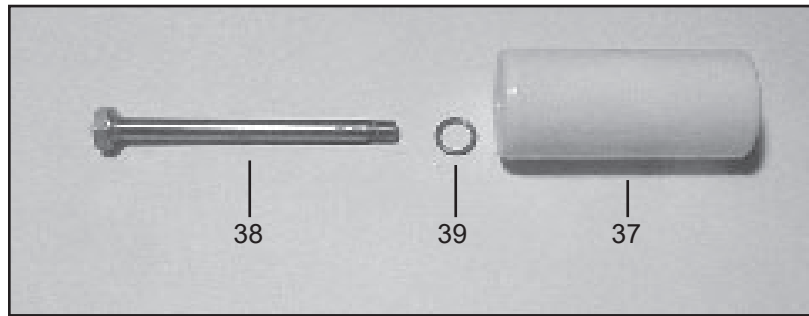
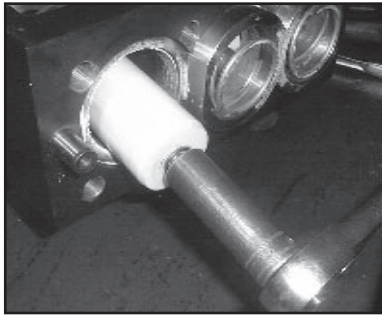


- 7) Remove seal unit (43, 44, 44A, 47) from seal sleeve. Examine packing rings (44A) and guide ring (43). Remove seal case (41) from valve casing and check O-rings (41A). Replace worn part, apply silicon grease on seals and O-rings before installing.

BP6150 REPAIR INSTRUCTIONS

IMPORTANT: The seal unit (43, 44, 44A, 47) is tensioned by a spring (42). To achieve a long seal life, the unit is tensioned in such a way that a small amount of leakage can occur. This helps to lubricate and cool the seal. A seal change is only then necessary when leakage increases considerably, in turn causing flow and pressure to fall.

TO CHECK PLUNGER PIPE



IMPORTANT: If plunger pipe (37) is worn, tap the tension screw (38) lightly with a plastic hammer beforehand to loosen the glue on the threads of the tension screw. Then screw out tension screw and remove the plunger pipe from centering sleeve (36). Cover the threads of the tension screw lightly with loc-tite and put the new plunger pipe onto the centering sleeve. Install a new copper ring (39) between the tension screw and plunger pipe, and tighten tension screw to 30 ft-lbs. (40 Nm).

IMPORTANT: Care must be taken that no glue gets between the plunger pipe (37) and the centering sleeve (36). The plunger pipe should not be strained by excessive tightening of the tension screw or through damage to front surface of plunger, otherwise it will probably break.

MOUNTING VALVE CASING

- 8) Check O-rings on seal case (41). Clean mounting surfaces of the seal cases as well as sealing surfaces in valve casing (50). Put seal cases in the centering holes of the valve casing, then push valve casing carefully onto centering studs (49C) Tighten inner hexagon screw (49) at 103 ft-lbs. (140 Nm)

IMPORTANT: Need to check torque on item (49) bi-weekly.

TO DISASSEMBLE GEAR

- 9) Take out plungers and seal sleeves as described above. Drain oil. After removing the circlip ring (33B), lever out seal retainer (33) with a screwdriver. Check seals (32, 33A) and surface of cross-heads.
- 10) Remove crankcase cover (4). Remove inner hexagon screw of connecting rod (24).

IMPORTANT: Connecting rods are marked for identification. Do not twist connecting rod halves. Connecting rods should be reinstalled in the original position and orientation on the crankshaft journals.

- 11) Check surfaces of connecting rod (24) and crankshaft (22).
- 12) Push in connecting rod halves with crosshead as far as possible into crosshead guide. Unscrew hexagon screws (10) on both sides.
- 13) Remove bearing cover (14) and press out crankshaft. In doing so, pay careful attention not to bend connecting rods.

IMPORTANT: Seal (32A) must always be installed so that the seal-lip on the inside diameter faces the oil. Possible axial float of the seal adapter (33) is compensated by use of shims (33C).

- 14) Reassemble in reverse order. Regulate axial bearing clearance - minimum 0.1mm, maximum 0.15mm - by means of fitting discs (20A). The crankshaft should turn easily and with little clearance. Tighten inner hexagon screws at 30 ft-lbs. (40 Nm).

IMPORTANT: Connecting rod must be able to be slightly moved sidewise on the crankshaft journals.