

## BP7170/BP7171 Repair Instructions

### To Check Valves

Remove plugs (58). For BP7171, remove items 54-56. Using valve removal tool (07662), lift the complete discharge valve assembly (52) and suction valve assembly (51) from the valve casing (50).

**Dismantling Valves (BP7170):** the spring tension cap (51E, 52E) is screwed together with valve seat (51A, 52A). Remove spring tension cap, remove spring (51D, 52D) and valve plate (51C, 52C). The seal ring (51F, 52F) is snapped onto the valve plate. Examine sealing surfaces, o-rings (51B/52B/56A/56G) and support rings (56B). Replace worn parts. Glue in valve seats with Hylomar.

**Dismantling Suction Valves (BP7171):** the spring tension cap (51G) is screwed together with valve seat (51A). Remove spring tension cap and remove spring (51E) and valve plate (51D). The seal ring (51C) is snapped on to the valve plate. The guide sleeve (51F) is clipped into the spring tension cap. The guide ring (51B) is pushed into the valve seat from below.

**Disassemble discharge valves (BP7171)** (52) like the suction valves. Check sealing surfaces and o-rings (51H/52H/52J/52K/57). Replace worn parts. Glue in valve seats with Hylomar or Permatex.

### Checking Seals and Plunger Pipes

Remove hexagon nut (49A) and take the pump head (50) off to the front. The intermediate casing (48) will either stay on the valve casing or on the crankcase (1).

**Important!** Pay attention to avoid any injury due to the heavy weight of the parts when removing these from the stud screws (49). If necessary, secure the valve casing by supporting it with wooden blocks or using a hoist. Pry intermediate casing (48) off the valve casing or crankcase with two screwdrivers (use the slots in the intermediate casing).

Examine seals and replace if necessary. The seal cases (38) normally remain in the valve casing (50) when this is separated from the intermediate casing. Remove spacer sleeves (39) and seal units (40/41/42/43) from the intermediate casing and examine them. Take adjusting rings (45) together with pressure sleeves (44) out of the crankcase. Unscrew these items and clean.

**Important!** Screw the pressure sleeve and adjusting ring into each other so that the adjusting ring is in alignment with the top of the pressure sleeve. Then put the parts back into the crankcase (1).

### To Check Seals

Remove seal cases (38) from valve casing (50) and check o-rings (38A). Replace worn parts. Coat seals and o-rings with silicone grease before refitting.

**Important!** Mounting surfaces of the crankcase and intermediate casing must be clean and free of damage. The components must lie exactly and evenly on one another. The same exactness applies for all centring positions within the crankcase, intermediate and valve casing.

**Important!** Seal unit (40, 41, 42, 43) can only be fitted after intermediate casing (48) has been mounted on the drive. The seal unit is then mounted on to the plunger pipe and pushed into the intermediate casing using a sleeve or the spacer sleeve.

**Important!** The seal unit (40-43) is tensioned by spacer sleeve (39). To achieve long seal service life, the tension on the seal unit allows for a small amount of leakage which helps lubricate and cool the seals. If leakage increases, the spiral rings can be tightened by turning the pressure sleeve (44) in its seal sleeve (40) a little to the right. Grease the spiral rings (41) via the lubricating nipple (47). If necessary, replace the spiral rings (41) together with support ring (42). It is only necessary to change seals should leakage considerably increase, in turn causing the flow and pressure to fall.

### To Check Plunger Pipes

**Important!** If the plunger pipe (36B) is worn, tap the tension screw (36C) lightly with a plastic hammer beforehand to loosen the glue on the threads of the tension screw. Then screw out tension screw (36C) and remove the plunger pipe from plunger connection (36A).

## BP7170/BP7171 Repair Instructions

Using the tension screw, put the new plunger pipe together with a new copper ring (36D) on to the plunger connection. Cover the threads on the tension screw lightly with bonding agent and tighten at 30 ft.-lbs. (40 Nm).

**Important!** Glue must never come between the plunger pipe (36B) and the plunger connection (36A). Deformation of the plunger pipe due to excessive tightening of the tension screw or dirt or damage on the front surface can cause the plunger pipe to fracture.

### Mounting the Valve Casing

Check mounting and sealing surfaces of the crankcase (1), intermediate casing (48) and valve casing (50), and clean where necessary. Put seal cases (38) in the centring holes of the valve casing, then push the valve casing carefully onto the centring studs (50A). Tighten hexagon nuts (49) at 59 ft.-lbs. 103 ft.-lbs. (140 Nm) for BP7170 and (80 Nm) for BP7171.

### To Dismantle Gear

Take out plunger and seal sleeves as described above. Drain oil. After removing the circlip ring (33B), pry out seal retainer (33) with a screwdriver. Check seals (32, 32A, 33A) and crosshead surfaces. Screw off crankcase cover (4). Remove fitting screws on the connecting rods (24).

**Important!** Do not twist the connecting rod halves. The connecting rods are marked for identification and must be refitted onto the shaft journals in the exact original position. Check surfaces of connecting rod and crankshaft (22). Push connecting rod halves together with the crosshead as far as possible into the crosshead guide. Remove one bearing cover and push the crankshaft out, taking care not to bend any connecting rods.

**Important!** Seal (32A) must always be fitted so that the seal-lip on the inside diameter faces the oil. Possible axial float of the seal adaptor (33) to be compensated with shims (33C). Reassembly in reverse order. Adjust axial play on the crankshaft with shims (20A) of size min. 0.1mm max. 0.15mm. The shaft should turn easily with little clearance. Tighten fitting screws (24) to 30 ft.-lbs. (40 Nm).

**Important!** A little clearance must exist to enable slight sideward movement of the connecting rod on its journal.

<b>Preventative Maintenance Check-List &amp; Recommended Spare Parts List</b>						
Oil Level/Quality	X					
Oil Leaks	X					
Water Leaks	X					
Belts, Pulley		X				
Plumbing		X				
<b>Recommended Spare Parts</b>						
Oil Change p/n 1154			X	X		
Seal Spare Parts (1 kit/pump) (Page 7 for kit list)					X	
Oil Seal Kit (1 kit/pump) (Page 7 for kit list)					X	
Valve Kit (1 kit/pump) (Page 7 for kit list)						X