GP8145 & GP8148 PUMP REPAIR INSTRUCTIONS

To Check Valves

Loosen screws (58) and lift off the discharge casing (50B). Take out the pressure springs (57). Pull out the assembled valves (51 and 52) with the fitting tool.
Dismantling valves: the spring tension cap (51A, 52A) is screwed together with the valve seat (51B or 52B). Remove the spring tension cap, take out the springs (51E, 52E) and valve plate (51C, 52 C). check the sealing surfaces and O-rings (51D/F, 52D/F).
Replace the worn parts.
Coat the threads of the valve seat with silicon grease or molycote anti-seize Cu-7439 when reassembling. Before refitting the valves, clean the sealing surfaces in the casing and check for any damage. Tighten screws (58) at 133 ft-lbs (180 NM). Check the torque tension after 8-10 operating hours.

To Check Seals and Plunger Pipe

Remove the hexagon nuts (49A) and then remove the pump head and seal case (38) from the crankcase (1). If necessary, carefully tap the valve casing (50) past the centering stud (50A) using a rubber hammer.
IMPORTANT: if necessary, support the pump head by resting it on wooden blocks or using a pulley.
Remove the tension screws (36C) and take the seal sleeve (39) and all other mounted parts out of the drive.
Pull the plunger pipe out of the seal assembly and check for any damage. Lever seal rings (40) and sleeves (42) out of the seal sleeve with a screwdriver.
IMPORTANT: Be careful not to damage seal sleeves (39) and pressure ring (41). Check the inner diameter of the pressure ring for wear and if necessary replace together with seals (40 & 42). Clean all parts. New parts should be lightly coated with silicon grease before installation
Insert the seal unit (40, 41, 42, 43) into the sleeve. Push the ceramic plunger carefully through the seals from the crankcase side. If necessary, the seals can be held tightly using a suitable pipe support held on the other side of the seal sleeve.
Take out the seal case (38) from the valve casing (50) and check O-Rings (38A). If necessary, secure two screwdrivers in the front O-Ring groove to extract the seal casing from the valve casing. Coat seals with silicon grease before reinstalling.
IMPORTANT: Mounting surfaces of the crankcase and must be clean and free of damage. The components must lie exactly and evenly with one another. The same exactness applies for all centering positions in the crankcase, pressure, and valve casing.
Coat the seal sleeve lightly with anti-corrosive grease (e.g. molycote no. Cu-7439) in its fitted area towards the crankcase. Insert seal sleeves into their crankcase fittings. Coat the threads of the tension screw (36C) lightly with thread glue and insert it together with a new copper ring (36D) through the ceramic pipe. Turn the pump per hand until the plunger (25) rests against the plunger pipe. Tighten the tension screw at 30 ft-lbs (40 NM).
IMPORTANT: Thread glue must never come between the plunger pipe (36B) and centering sleeve (36E). Overtensioning of the plunger pipe by excessive tightening of the tension screw and/or dirt damage on the mounting surfaces can lead to plunger pipe breakage.
Insert the seal tension spring (45) and O-ring (39A) into the seal sleeve (39).
Mounting Valve Casing:
Put seal cases (38) in the centering holes of the valve casing, and then push the valve casing carefully on to the centering studs (50A).
Tighten the hexagon screws (49A) evenly in a crosswise pattern at 266 ft-lbs (360 NM).
IMPORTANT: The torque tension on the screws (49A) must be checked after 8-10 operating hours; the pump must be at zero pressure. After this, the tension should be checked at a regular interval of every 200 operating hours.

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To Dismantle Crankcase Gear

Take out plungers and seal sleeves as described above, and drain the oil by taking off the plug (12). After removing the clip ring (33B), lever out the seal retainer (33) with a screwdriver. Open the hose adaptor (K11).
Remove the gear cover (K3) and remove the cooling vane plate (K1) by unscrewing the screws (K4). Remove the conrod screws (24).
IMPORTANT: Connecting rods are marked for identification. Do not twist con rod halves or interchange them. When reassembling, the conrods must be fitted in their exact original position on the crankshaft journals.
Push conrod halves together with the crosshead as far as possible into the crosshead guide.
Remove the bearing cover (14) and remove the shims (21A/B).

To Dismantle Reduction Gear

Remove screws (67). Press off gear cover (66) by screwing two screws into both thread bores. Remove screw (72) and take off fitting disc (69). Remove the cogwheel from the shaft with a removal tool. Using a rubber hammer, tap out the crankshaft towards bearing cover (14).
Check surfaces on the conrods (24), crankshaft (22), and crossheads (25). Check the surfaces of the crosshead guides in the crankcase for any unevenness.
Reassemble in reverse order. Thread the crankshaft in from the bearing cover side until the bearing rests cleanly in the outer ring on flange (19).
Press the outer ring from bearing (20) and using shims (21A/B), adjust the bearing to be free of play. To achieve this, add shims, screw on cover (14), and turn the crankshaft until it can no longer be turned by hand.

Then remove the shim and try to turn the crankshaft. A crankshaft that can be too easily turned may cause damage later to the bearing and conrods due to wobble movements in the conical bearing shells.
Mount conrod halves in their exact position and tighten at 37 ft-lbs (50 NM).
IMPORTANT: Connecting rods must be able to move slightly sideways on the stroke journals.

To Mount Reduction Gear

Heat ball bearings (75 and 74) before pressing them on to the pinion. Press the cogwheel slightly on to the crankshaft so that the pinion (69) together with the bearing (74) can still be inserted. Move the pinion (69) against the cogwheel and make them mate perfectly when mounting. Then carefully tap the cogwheel and the pinion simultaneously on to the crankshaft and into the bearing seat.
Fit the fitting disc (69) and secure the screw (72) with Loctite.
Fit the seal (76) on to the cylindrical pins (68).
Push the gear cover 966) carefully on to the bearing (75). Make sure that the radial shaft seal (73) does not get damaged during fitting on to the pinion.
Mount the cooling plate (K1) and gear cover (K3) with their respective seals (K2). When assembling the cooling circuit line, make sure that the oil cooler connection (K7) is always joined to the upper connection (K3) of the gear cover.
IMPORTANT: Before operating again, turn the reduction gear shaft by hand at least four full turns to make sure the gear is correctly aligned.