HYDRAULIC PUMP

Nine pistons reciprocate in rotary barrels. As the swash plate rotates, the angle of tilt on the swash plate determine the amount of compression and extension of the pistons. As the pistons retract, a vacuum is created allowing the hydraulic oil flow into the pistons (pumping chamber). With continued rotation of the swash plate, the pistons extend forcing the hydraulic fluid in the pistons out of the hydraulic pump into the system. The angle of the swash plate controls the pressure and flow of hydraulic fluid out of the pressure port of the hydraulic pump.

The angle of the swash plate is controlled by the pressure compensator. The pressure compensator consists of a hydraulic valve that is spring loaded to set the swash plate to maximum displacement on start up. As the system pressure increases, a load sense control returns from the main control valve. This load sensing signal (pressure) overcomes the spring tension, setting the swash plate for minimum displacement. The pump compensator control reduces the pump output to only the volume required to maintain a preset maximum pressure. Maximum delivery occurs when pressure is less than the compensator setting.

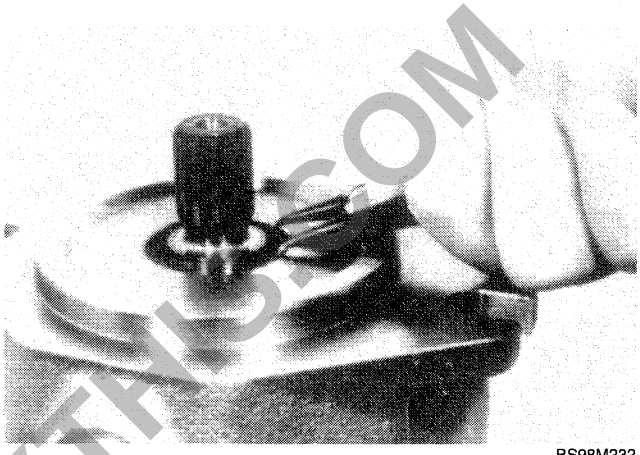
Removal

1. Tag and disconnect the hydraulic hoses from the pump. Put caps on all of the fittings. Be careful so that the inlet hose is not damaged during removal.
2. Remove the capscrews that hold the pump housing to the mounting.
3. Remove the pump from the Telescopic Handler.

NOTE: *Worn or damaged shaft seals are the most common failure in the hydraulic pump. The following procedures are for replacement of a worn or damaged shaft seal.*

Remove/Replace Shaft Seal

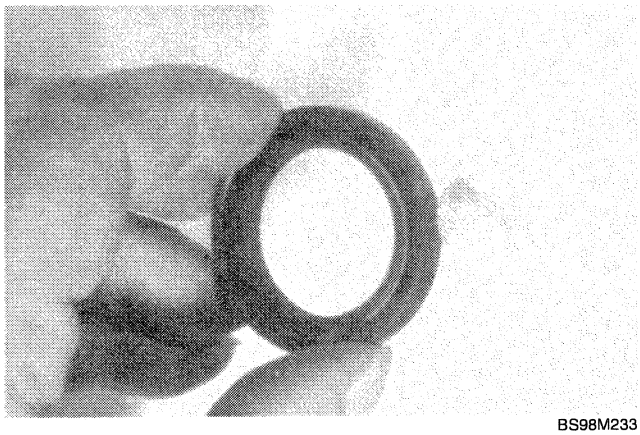
STEP 1



BS98M232

Remove the snap ring from the drive shaft end of the pump housing.

STEP 2



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Remove the shaft seal and check the shaft seal surface inside housing for damage, debris, or corrosion.

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STEP 3



STEP 5





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689G Telescopic Handler Service Manual
7-88730

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Section

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ENGINE AND TRANSMISSION REMOVAL AND INSTALLATION

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Section

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STEERING SELECTOR VALVE

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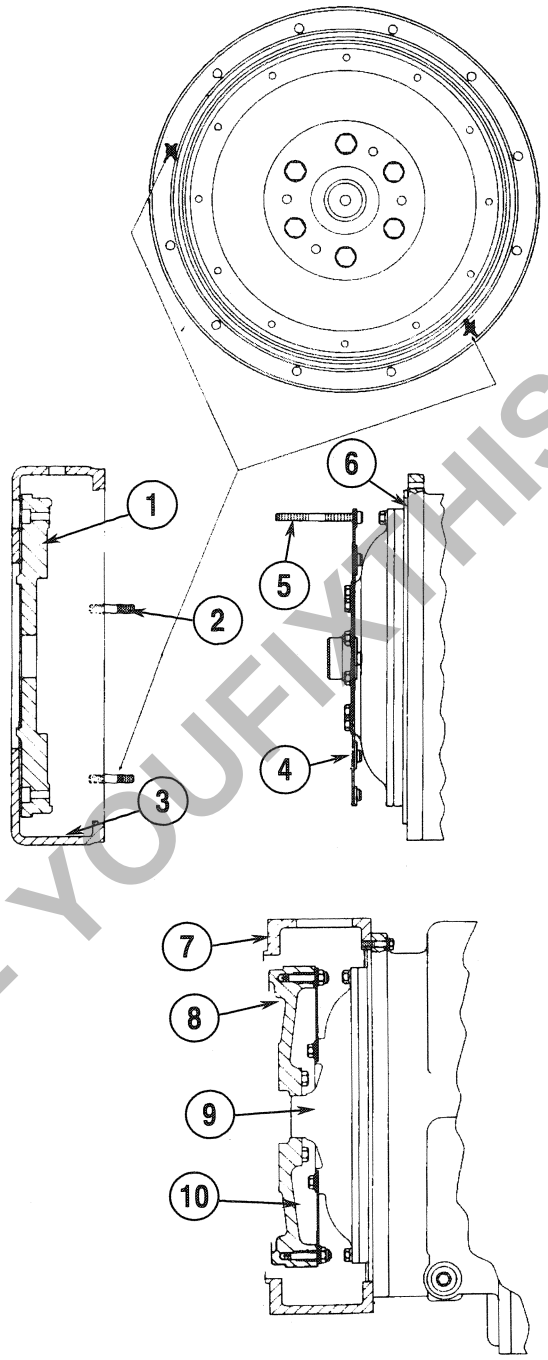
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FLYWHEEL AND FLYWHEEL HOUSING ALIGNMENT STUDS



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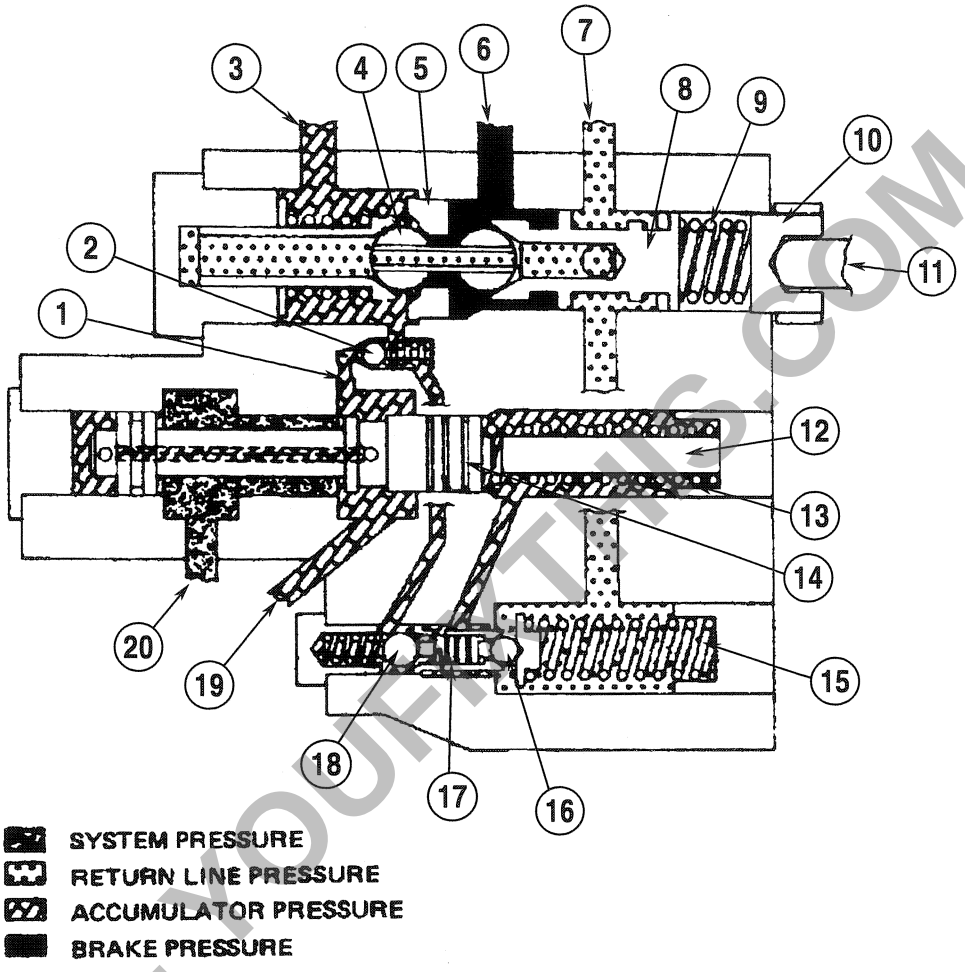
1. FLYWHEEL
2. ALIGNING STUDS
3. FLYWHEEL HOUSING
4. DRIVE PLATE
5. STUD
6. CONVERTER HOUSING
7. *FLYWHEEL HOUSING*
8. FLYWHEEL
9. INPELLER COVER
10. INTERMEDIATE DRIVE PLATES

Figure 6-1

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ACCUMULATOR BEING CHARGED - BRAKES APPLIED (BRAKE ACCUMULATOR OPERATION)



BS98M214

1. ORIFICE
2. CHECK VALVE
3. ACCUMULATOR PRESSURE
4. BALL VALVE
5. BALL VALVE SEAT
6. BRAKES
7. RETURN
8. PLUNGER
9. PRESSURE REGULATING SPRING
10. PISTON
11. TO BRAKE PEDAL
12. SPOOL STOP
13. CHARGING VALVE SPRING
14. CHARGING VALVE SPOOL
15. PILOT VALVE SPRING
16. UPPER LIMIT CHECK BALL
17. PILOT VALVE SPOOL
18. LOWER LIMIT CHECK BALL
19. PRESSURE PORT
20. TO POWER STEERING

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Section

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HYDRAULICS

HOW IT WORKS

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Disassembly of the Boom Lift Cylinders

See Figure 8-2.

1. Remove the set screw (21) from head (14). Use a wrench to remove head (14) from the tube.
2. Slide the piston and rod assembly from the tube assembly (19).
3. Remove the set screw (11) and nylon plug (13) from the piston (12).
4. Pull the piston (12) from the rod (2).
5. Remove the piston seal (7) and piston ring (6) from the piston assembly. Remove the rod O-ring (4) from the piston end of the rod (20). Remove the wiper (1), rod seal (5), and wear ring (8) from the bore of the head (14). Remove the O-ring (2) and back-up ring (3) from the outside diameter of the head (14).

Cleaning and Inspection of the Boom Lift Cylinders

Clean all parts of the cylinder with solvent. Use compressed air to dry the parts. Make sure that the passages in the piston are clean.

Use a light to inspect the bore of the cylinder tube for scratches, corrosion, scoring, dents, or other damage. Look for metal particles or dirt in the cylinder tube.

Inspect the rod for scratches, scoring, corrosion, dents, or other damage. Make sure that the rod is not bent.

Inspect the wear rings for signs of contamination or wear. If contamination is indicated, find the source of the particles and correct the problem. Make sure that all the contaminated oil is removed from the Telescopic Handler.

Assembly of the Boom Lift Cylinders

See Figure 8-2.

1. Lubricate the parts of the rod and piston with hydraulic oil before assembly into the tube. Install the O-ring (2), back-up ring (3) in the groove on the head (14). Install wear ring (8), seal (5) and the wiper (1) into the bore of the head (14).
2. Install the O-ring seal (4) in the groove on the rod (20). Install seal (7) and ring (6) on the piston.
3. Thread the piston (12) on the rod. Install nylon plug (13) and set screw (11).
4. Carefully install the rod and piston assembly into the tube assembly (19). Make sure that the lips of the seals are not damaged during installation. Carefully push each part of the lip into the tube. When all parts of the lip are started into the tube, push the rod fully into the tube.
5. Install the head (14) in the tube (19). Hold the tube and tighten the head using a spanner wrench. Install set screw (21).

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REMOVAL AND INSTALLATION OF BOOM COMPONENTS

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