

SPECIFICATIONS

Oil temperature for the tests	Needle in the gauge for Oil Temp must be in the center of the green area on the gauge
Charging pump pressure	
Engine at low idle	65 psi (448 kPa) minimum in neutral
Engine at 2000 rpm (r/min)	130 psi (896 kPa) minimum in neutral
Cooling system pressure	
Engine at 2000 rpm (r/min)	25 psi (172 kPa) or less
Type of oil	Case TCH Fluid
Alternate oil	Type C-3 transmission and hydraulic fluid. Type C-2 transmission and hydraulic fluid, such as Tenneco Hytrans fluid. Automatic transmission fluid Type A, such as Dexron.
Oil capacity (approximate)	
Power shuttle	2-1/4 U.S. quarts (2.1 litres)
Torque converter	5-1/2 U.S. quarts (5.2 litres)
Total system	9 U.S. quarts (8.5 litres)

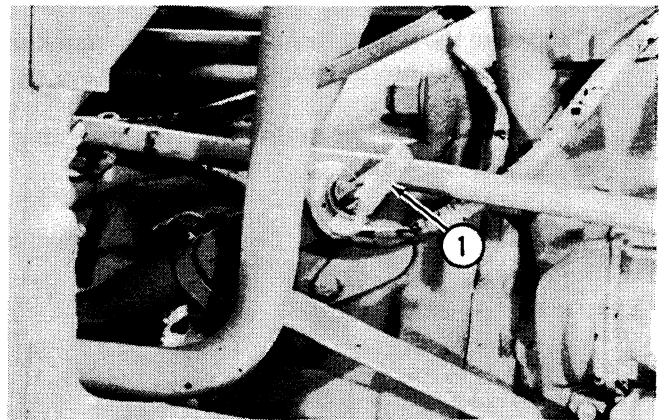
MAINTENANCE AND SERVICE

Oil Level Check

Check the level of the oil in the power shuttle every 10 hours of operation or each day, whichever occurs first.

1. Park the machine on a level surface.
2. Apply the parking brake.
3. Put the transmission control lever in fourth gear.
4. Put the power shuttle control lever in the Forward position.
5. Run the engine at full throttle. If the machine moves, see Section 7106 and adjust the parking brake.
6. Run the engine at full throttle for 40 seconds. Then put the power shuttle control lever in neutral.
7. Continue to run the engine at full throttle for 10 seconds.
8. Decrease the engine speed to low idle.
9. Repeat steps 4 through 8 until the needle in the gauge for Oil Temp is in the center of the green area on the gauge.
10. Run the engine at low idle with the power shuttle control lever in neutral for approximately 10 seconds.
11. Continue to run the engine at low idle. See Figure 1. Check the level of the oil in the power shuttle.

12. The level of the oil in the power shuttle must be between the add and the full marks on the dipstick.
13. Add oil as necessary.



1. Dipstick

Figure 1

Oil Change

Change the oil in the power shuttle and clean the suction screen every 1000 hours of operation or every year, whichever occurs first.

1. Do steps 1 through 9 under Oil Level Check.
2. Stop the engine.
3. The oil must be drained from the torque converter and from the oil pan on the power shuttle. There is a rubber plug on the bottom of the torque converter housing.

4. The torque converter and power shuttle hold approximately 8 U.S. quarts (7.6 litres) of oil.
5. Put a drain pan under the drain plug in the power shuttle.
6. Remove the drain plug and drain the oil from the power shuttle.
7. Put a drain pan under the rubber plug in the torque converter housing.
8. Remove the rubber plug. Turn the engine manually until the plug on the torque converter can be seen through the hole in the torque converter housing.
9. Remove the drain plug from the torque converter and drain the oil from the torque converter.
10. Remove the oil pan from the power shuttle.
11. Remove the suction screen. Remove and discard the O-ring from the tube on the suction screen.
12. Clean the suction screen in cleaning solvent and dry with compressed air.
13. Remove all gasket material from the oil pan and the bottom of the power shuttle.
14. Put form-in-place gasket material on mounting flange of the oil pan.
15. Install a new O-ring on the tube on the suction screen.
16. Install the suction screen in the power shuttle.
17. Install the oil pan.
18. Install the drain plugs in the torque converter and in the oil pan for the power shuttle.
19. Have 8 U.S. quarts (7.6 litres) of the oil specified on page 6202-3 ready to be installed in the power shuttle.
20. Install 3 U.S. quarts (2.8 litres) of oil in the power shuttle.
21. Start the engine and run the engine at low idle. Immediately install the remainder of the oil in the power shuttle.
22. Make sure that the transmission control lever is in neutral.
23. Move the power shuttle control lever from the Forward position to the Reverse position and back to the Forward position several times to fill all passages in the power shuttle.
24. See Oil Level Check and check the level of the oil in the power shuttle.

OPERATION

General Information

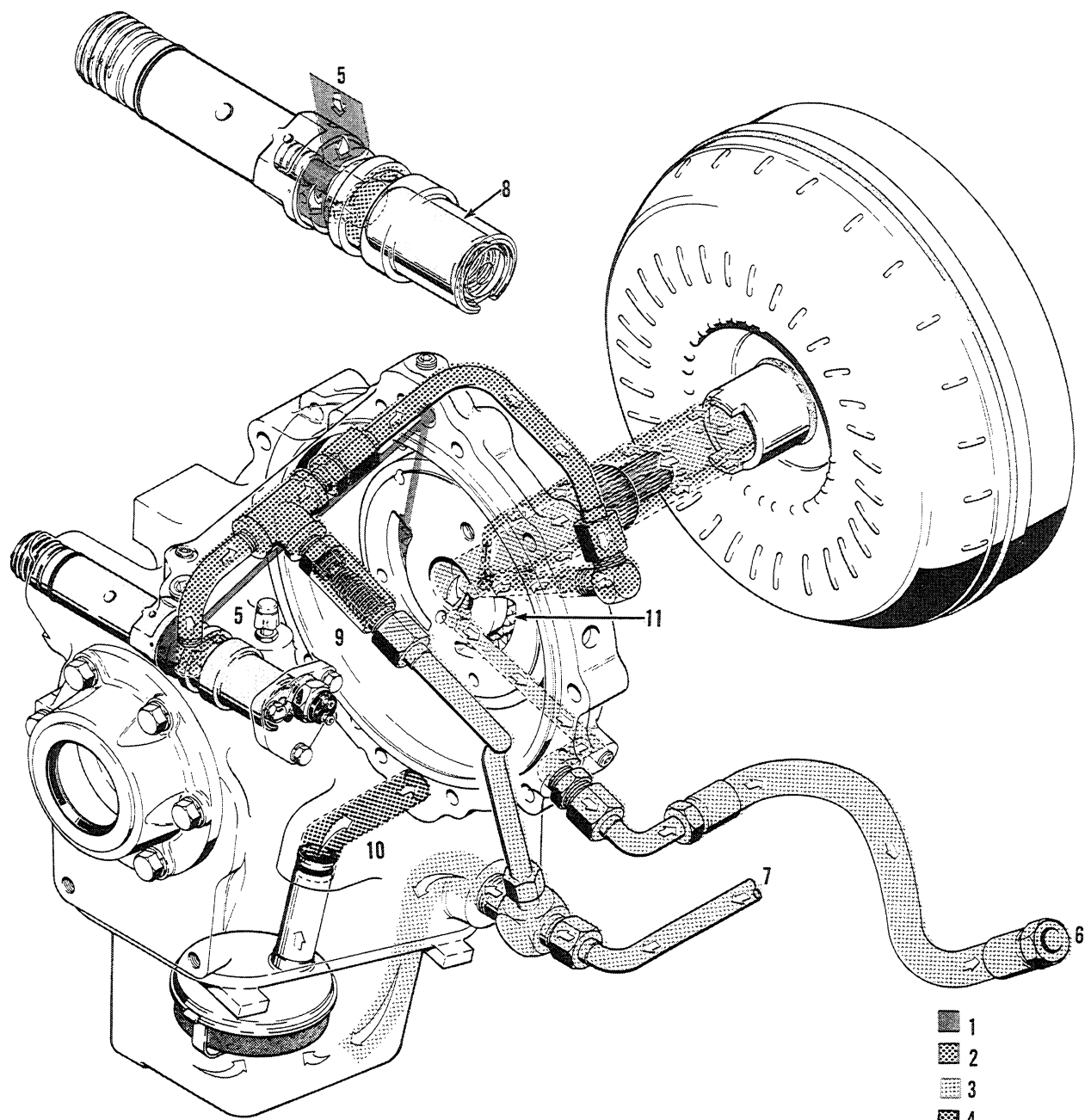
See Figure 2.

The power shuttle lets the operator change the direction of machine movement without completely stopping the machine. Before you make a shift, decrease the engine speed to less than 1500 rpm (r/min) to prevent damage to the power shuttle.

The power shuttle receives power from the engine through the torque converter. The power shuttle uses multiple disc forward or reverse clutches and a pinion cage and output shaft assembly to send the power to the drive shaft.

The forward and reverse clutches are operated by the oil flow from the charging pump in the power shuttle. The oil flow from the charging pump is controlled by a control valve and a pressure regulator piston. The pressure regulator piston, which is in the control valve spool, keeps the correct amount of pressure in the charging circuit.

Oil from the charging pump flows through internal passages to the control valve. The oil flows through holes in the control valve spool and pushes the pressure regulator piston. As the pressure in the charging circuit increases, the pressure regulator piston moves to open a hole in the control valve spool. The pressure regulator piston continues to open or close the hole as necessary to keep the correct pressure in the charging circuit. The oil not needed to lubricate the parts of the power shuttle or to engage a clutch flows from the hole in the control valve spool to the relief valve. The relief valve releases oil as necessary to keep the correct amount of pressure on the oil flowing to the torque converter. The oil which is released through the relief valve returns to the oil pan of the power shuttle. The oil which is returning from the torque converter flows through the front bearing on the input shaft to the oil cooler in the bottom of the radiator of the machine. From the oil cooler, the oil flows to the oil pan of the power shuttle.



- 1. PUMP FLOW
- 2. TO TORQUE CONVERTER
- 3. FROM TORQUE CONVERTER
- 4. SUCTION OIL

- 5. FROM CHARGING PUMP
- 6. TO OIL COOLER
- 7. FROM OIL COOLER
- 8. PRESSURE REGULATOR PISTON

- 9. RELIEF VALVE
- 10. TO CHARGING PUMP
- 11. CHARGING PUMP

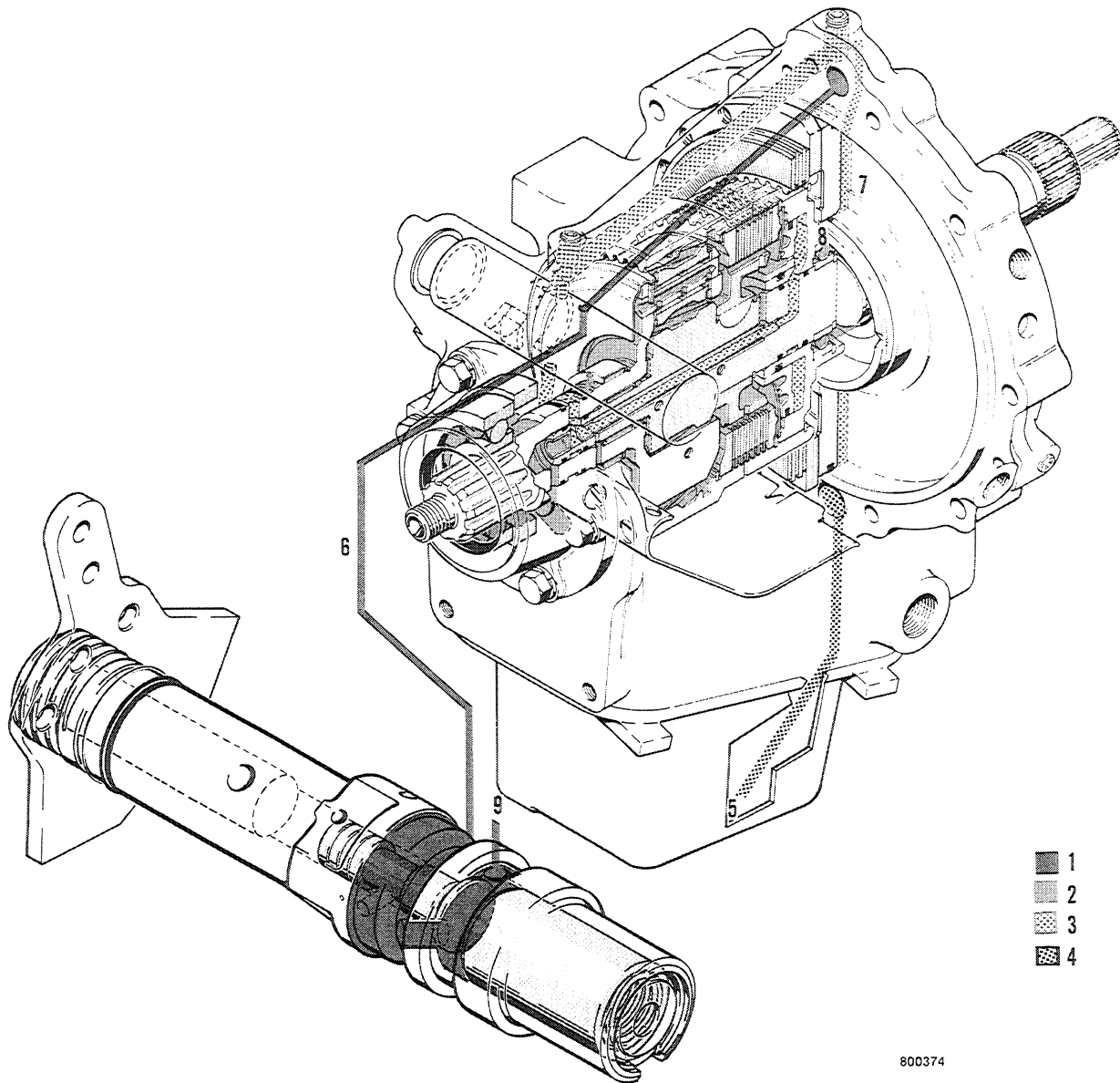
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Figure 2 - Oil Flow to and from Torque Converter

Power Shuttle in Neutral

See Figure 3. When the control valve is in neutral, oil cannot flow to the forward or reverse

clutches. Oil continues to flow to the torque converter and through lubrication passages as shown in Figure 2.



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1. PUMP FLOW
2. LUBRICATION OIL
3. STATIC OIL
4. SUCTION OIL

5. TO CHARGING PUMP
6. FROM CHARGING PUMP
7. REVERSE CLUTCH

8. FORWARD CLUTCH
9. TO TORQUE CONVERTER

Figure 3 - Oil Flow in Neutral