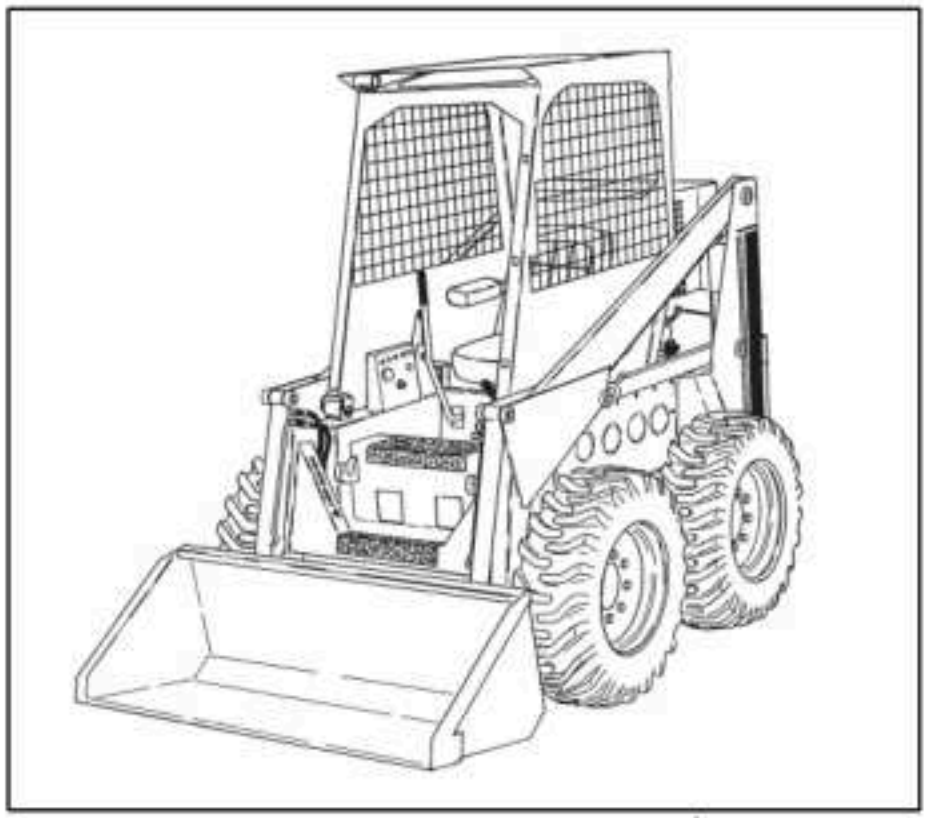
700

720

721

722

Service Manual



MELROE
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4. Remove the nuts that hold the pedal assembly in place, and lift the pedal assembly out.

5. Remove the floor plate and foot guard parts.

6. Remove the control valve linkage rods from the control valve assembly.

7. Disconnect the hydraulic lines from the control valve and put covers on the open ends.

8. Remove the bolt which hold the control valve in place.

9. LIft the control valve out through the front of the loader.

2–10.3 To Disassemble The Control Valve (Fig. 2–27)

1. Clean the control valve assembly thoroughly with solvent. Put it on a clean surface for disassembly.

2. Put a mark on each valve section (1, 2, 3, 4 etc.) to identify them for assembly.

3. Remove the nuts from the three thru bolts which hold the valve sections together (Fig. 2–27).

4. Remove each section by sliding it off the thru bolts. Use a soft hammer, if necessary, to break the seal between sections. Remove the O–rings. Clean the machined surface of each section.

5. If a valve section is to be disassembled, place it in a vise. Be careful not to clamp the machined surface in the vise.

NOTE: Only disassemble one valve section at a time to prevent the mixing of parts.

6. Remove the bonnet from the back of the section (Fig. 2–28, Item 1).

NOTE: When disassembling the lift valve section, remove the snap ring from the float detent rod at the end of the bonnet. The detent rod must be in place with the spool assembly or the four steel balls will fall out of their holes. A restrictor is also located in the *B* (rear) tubeline opening, on top of the valve section (Item 2).

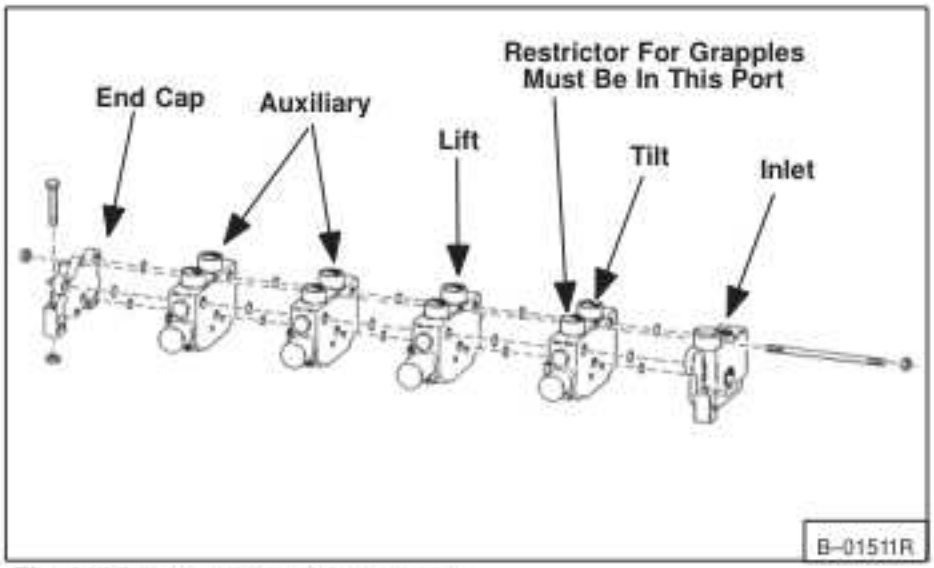


Fig. 2–27 Control Valve Breakdown – Gresen

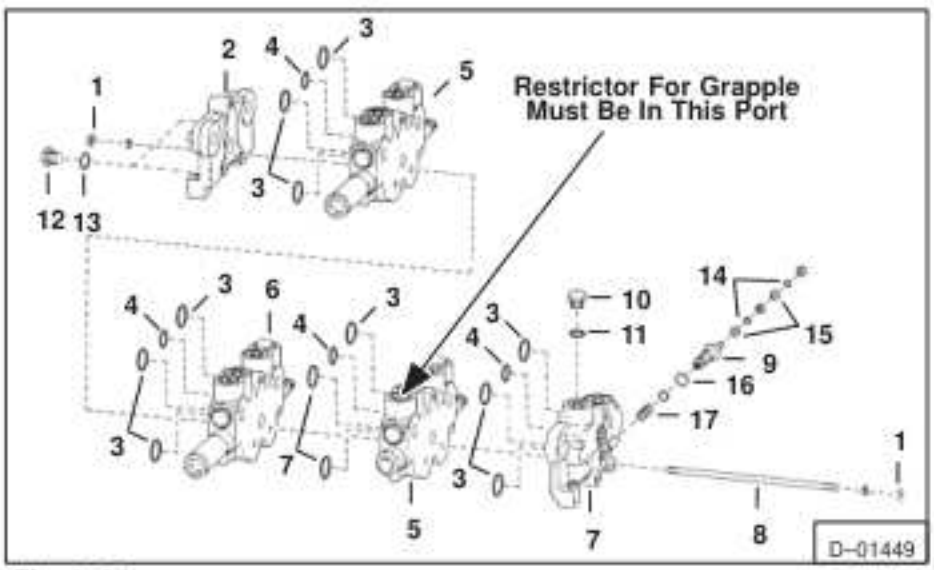


Fig. 2–27a Control Valve Breakdown – Parker–Hannilin

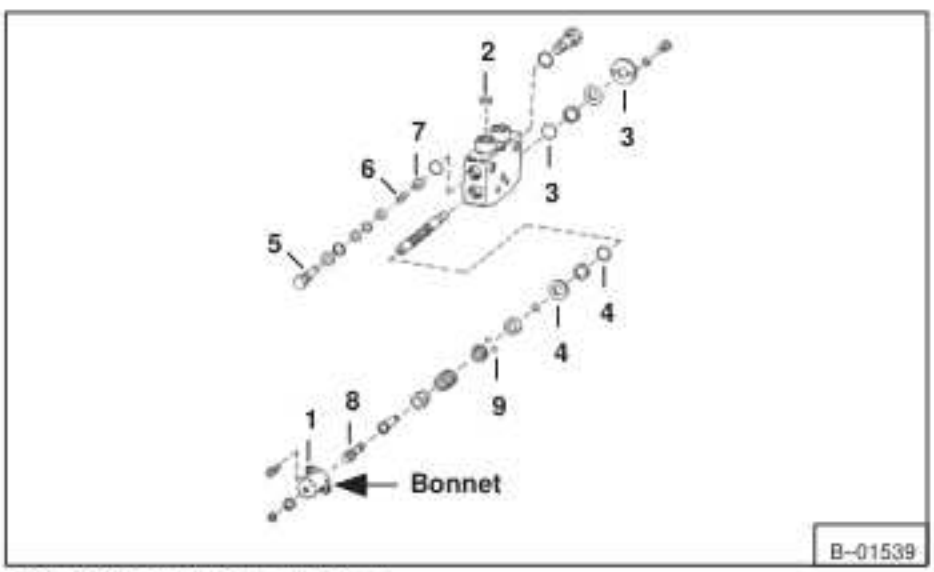


Fig. 2–28 Lift Valve Section – Gresen

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3 HYDROSTATIC DRIVE SYSTEM

3–1 CIRCUIT DESCRIPTION (Fig. 3–1)

The by–pass valve holds the fluid at the 10 micron filter above 50 PSI. The pressure sender on the filter base gives warning to the operator (*Trans–Filt* Light) if the pressure is low.

A small quantity of this fluid is used to keep the hydrostatic pump and motor circuits full of oil. This fluid enters the circuit through the replenishing valves (Fig. 3–2 & Fig. 3–3).

The remainder of the fluid goes out through the charge relief valve, and back to the hydraulic system. A fluid temperature sending switch is located under the front hydrostatic pump (722 only). It gives warning to the operator (*Trans–Filt* Light) if the hydraulic oil becomes too hot.

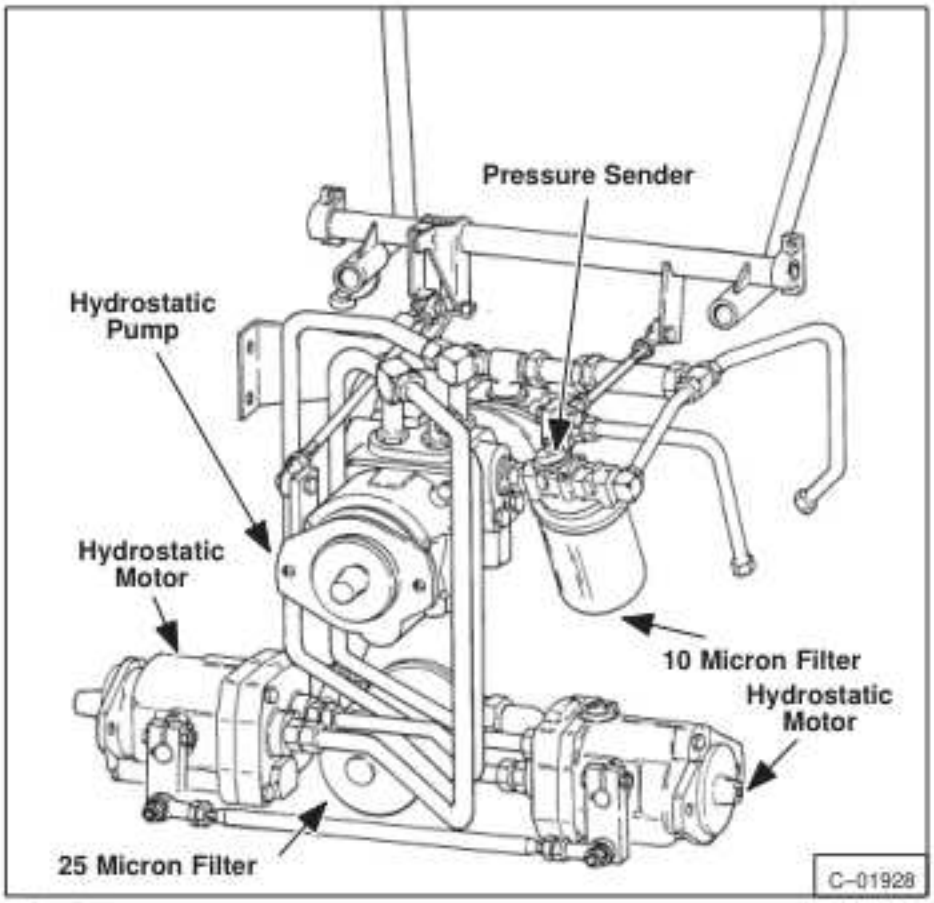


Fig. 3–1 Hydrostatic Transmission Circuitry

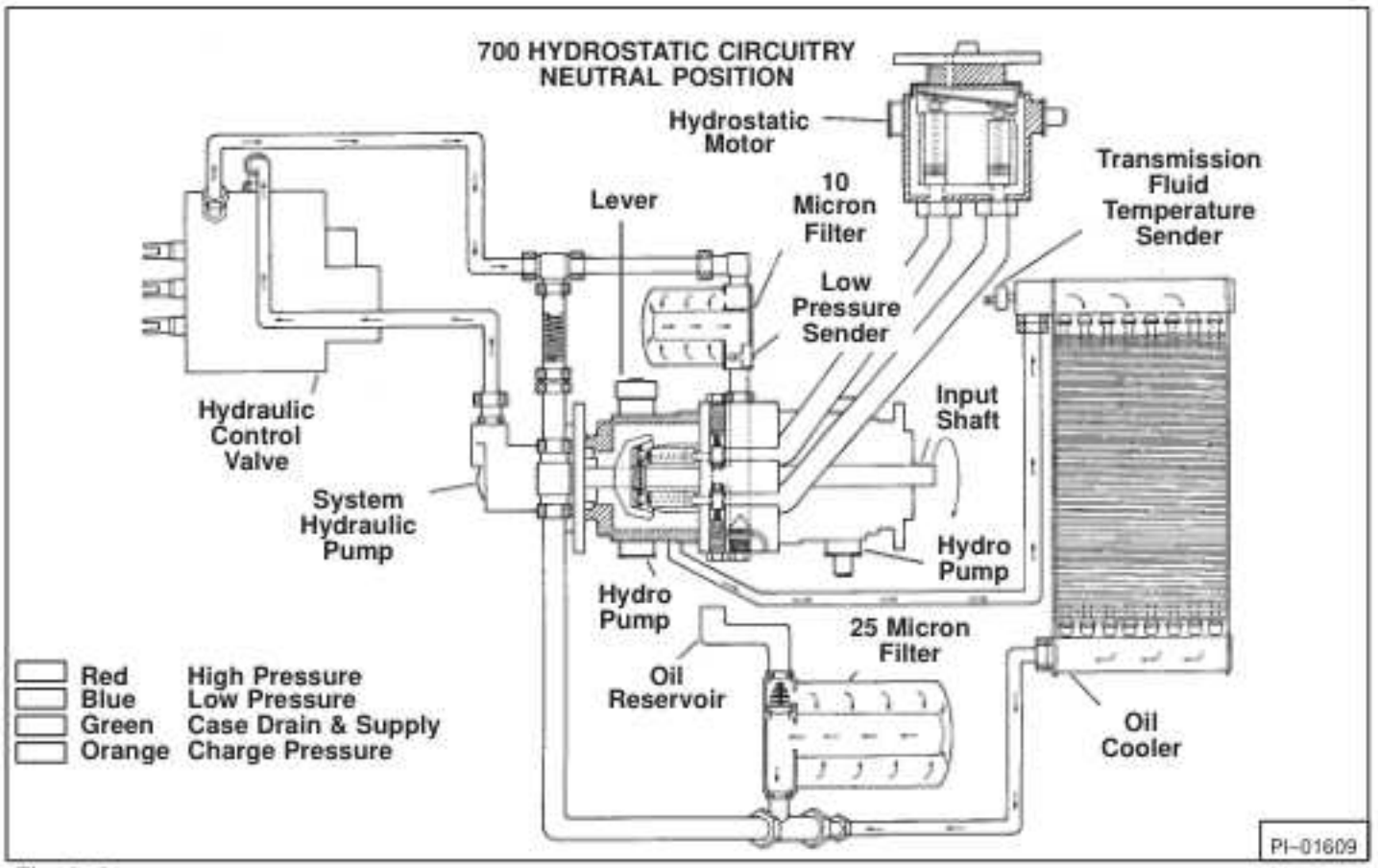


Fig. 3–2 Hydrostatic Circuitry – Neutral

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7B–1 TROUBLESHOOTING THE ENGINE

PROBLEM	CAUSE	CORRECTION
Engine will not turn over with the starter.	Battery has lost its charge.	Charge battery. Check the functions of charging system.
	Loose battery connection.	Clean battery connections and cables. Tighten the clamps.
	Loose starter connections.	Tighten the connections.
	Defect in starter switch.	Make replacement of switch.
	Circuit breaker has opened in the instrument panel.	Circuit breaker will auto–reset. Check for damaged wiring.
	Broken or disconnected wiring harness.	Connect or make replacement of wiring.
	Defective starter or solenoid.	Repairs as needed.
Engine fails to start or is difficult to start.	Wrong starting procedure.	Refer to *Starting Procedure* in the Bobcat Owner's Manual.
	No fuel in the tank.	Add fuel. Remove air from fuel system.
	Air cleaner is dirty.	Service the air cleaner.
	Fuel tank vent in cap has restriction.	Remove the cap and clean vent.
	Fuel line has air leak or dirt, or water.	Correct as required.
	Damaged fuel lift pump.	Make replacement of pump if needed.
	Hydraulic–hydrostatic load on engine.	Place all controls in neutral and warm oil reservoir during very low temperatures.
	Defect in fuel injection system.	Check and make repairs as needed.
	Crankcase oil is thick.	Use engine oil of correct viscosity. (See Oil Specification Chart.)
Engine misses, runs irregularly or stops.	Fuel injection set wrong.	Check timing.
	Dirty fuel mixture, or restriction in fuel filter or vent.	Clean as required.
	Poor compression.	Check for loose cylinder head screws.
	Water in the fuel.	Make replacement of fuel.

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8B–1.6 Lubrication System

Oil Pressure ..... 28.5 psi (196,5 kPa) at 1500 RPM
End Clearance in Oil Pump Gear ..... 0.004 (0,1 mm)

Check oil level after every 8 hours of operation. (Check oil every 4 hours on new engine during the first 50 hours of operation.)

Oil level must be maintained between the *ADD* and *FULL* mark on the dipstick. Use a good quality detergent motor oil that meets the API service classification CC.

Use oil of proper SAE viscosity for expected temperature conditions at the time of starting, not for the highest temperature expected during the working day. See chart on page 8B–2.

8B–1.7 Torque Specifications (Deutz Engine)

ITEM	PRELOADING	TIGHTENING	TOTAL
Cylinder Head Bolt s	21.5 ft.–lbs. (29 Nm)	30° 60° 60°	150°
Injector Hold Down	21.5 ft.–lbs. (29 Nm)	60° 60°	120°
Connecting Rod	21.5 ft.–lbs. (29 Nm)	30° 60°	90°
Camshaft Flange	–	– – –	25 ft.–lbs. (34 Nm)
Bearing Support	21.5 ft.–lbs. (29 Nm)	30° 30° –	60°
Blower Mounting Bolts	–	– – –	25 ft.–lbs. (34 Nm)
V–Belt Pulley	21.5 ft.–lbs. (29 Nm)	90° – –	90°
Intake Manifold	–	– – –	11 ft.–lbs. (15 Nm)
Crankshaft Gear	21.5 ft.–lbs. (29 Nm)	30° 30° –	60°
Oil Suction Pipe	–	– – –	36 ft.–lbs. (49 Nm)
Flywheel	21.5 ft.–lbs. (29 Nm)	60° 30° –	90°
Rocker Arm Bolts	21.5 ft.–lbs. (29 Nm)	45° – –	45°
Balance Weight	21.5 ft.–lbs. (29 Nm)	30° 30° –	60°

8B–1.8 Special Tools (Deutz)

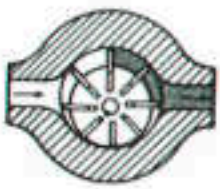
100020	Compression checking tool
100030	Compression checking tool
101900	Angle of turn gauge for head bolts
101910	Angle of turn gauge for other bolts
110030	Tool for nozzle removal (use with 150800)
121100	Valve spring tool
122100	Valve service tools
122230	Valve service tools
122800	Valve service tools
122970	Valve service tools
123310	Valve service tools
123830	Valve service tools
124020	Valve service tools
130300	Piston ring tool
130510	Piston ring compressor
131000	Wrist pin mandrel
139000	Heater for piston
141000	Puller for end cover and gears
143620	Tool for installing camshaft bearings
150010	Tool for reconditioning cylinder face on crankcase
150800	Puller tool

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valve 11 allows excess pressure from cold operation or the lift arms being lowered quickly for the fluid to go to the inlet of the hydraulic pump 9 . There is a protective orifice at the inlet of the filter 12 to protect it from a surge of fluid. The filter 12 is a 10 micron filter with a low pressure switch 13 in the outlet side of the filter 12 .

The fluid from the filter 12 moves to the hydrostatic pumps 8 and activates the high pressure relief valves 6 and the charge relief valve 5 . The function of the charge relief valve 5 is to open and port the extra fluid through the hydrostatic pumps 8 for the case drain.



The high pressure relief valves 6 are also replenishing valves which allow fluid into the hydrostatic pumps 8 and hydrostatic motors 1 for cooling, lubrication and replenishing. This fluid is called "charge" fluid. There is more charge fluid than is needed by the hydrostatic pumps 8 , some of charge fluid goes to the charge relief valve 5 to fully open it and allow it to go to case drain. Also some fluid not needed by the hydrostatic pumps 8 and motors 1 will be pushed through the by-pass valve 11 and to the hydraulic pump 9 . When the hydrostatic pump 8 are in neutral position, the charge fluid keeps the replenishing part of the high pressure relief valves 6 open to supply charge fluid to the hydrostatic pumps 8 and to the hydrostatic motors 1 . This fluid becomes the "drive loop" fluid.





There are two hydrostatic pumps 8 and two hydrostatic motors 1 . One pump and one motor work together as a pair to drive one one side of the loader. The other pump and motor work as a pair to drive the opposite side of the loader.

When the steering levers are moved, the swashplates in the hydrostatic pumps 8 are angled and the fluid is forced out of the pressure side of the hydrostatic pumps 8 to the hydrostatic motors 1 . This flow of fluid is called "drive pressure". Drive pressure is much higher than charge pressure causing the high pressure relief valves 6 to close allowing the flow of fluid to go to the hydrostatic motors 1 .



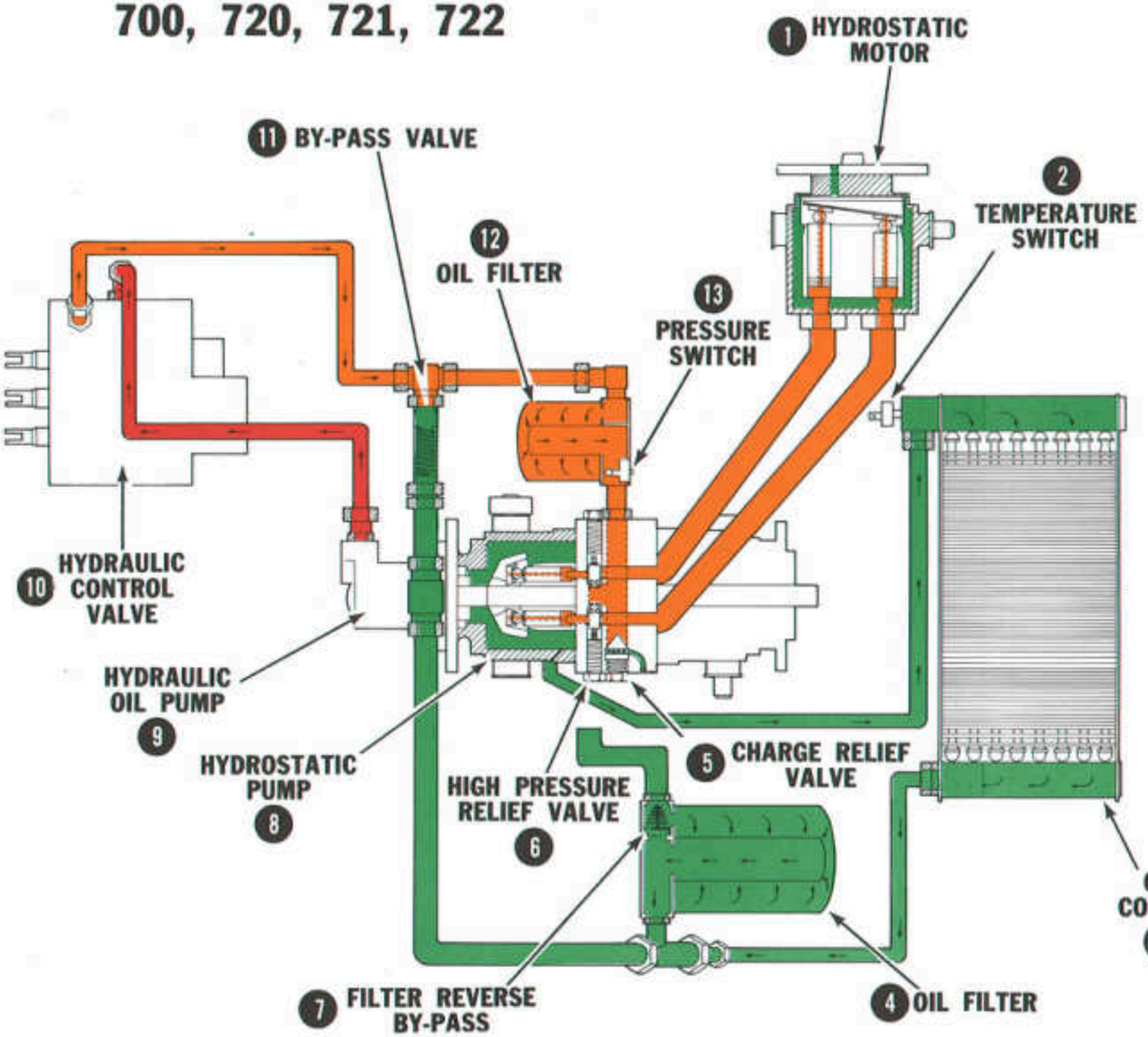
When the loader is driven with the bucket down, into a pile of dirt,

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HYDROSTATIC FLOW CHART

Neutral

700, 720, 721, 722



PI-2515

1. HYDROSTATIC MOTOR
2. TEMPERATURE SWITCH, 225°F [108°C]
3. OIL COOLER
4. OIL FILTER, 25 Micron
5. CHARGE RELIEF VALVE, 45 PSI [310 kPa]
6. HIGH PRESSURE RELIEF VALVE, 4500 PSI [31027 kPa]
7. FILTER REVERSE BY-PASS, 3 PSI [20 kPa]
8. HYDROSTATIC PUMP
9. HYDRAULIC OIL PUMP, 700-720 10.6 GPM [40,1 L/m] at 2500 RPM, 721 10 GPM [37,9 L/m] at 2400 RPM, 722 10.6 GPM [40,1 L/m] at 2500 RPM
10. HYDRAULIC CONTROL VALVE
11. BY-PASS VALVE, 55 - 80 PSI [379 - 551 kPa]
12. OIL FILTER, 10 Micron
13. PRESSURE SWITCH, 22 PSI [151 kPa]

RED - - - - - - - High Pressure
BLUE - - - - - - Low Pressure
GREEN - - - - - Case Drain & Reservoir
ORANGE - - - -Charge Pressure

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