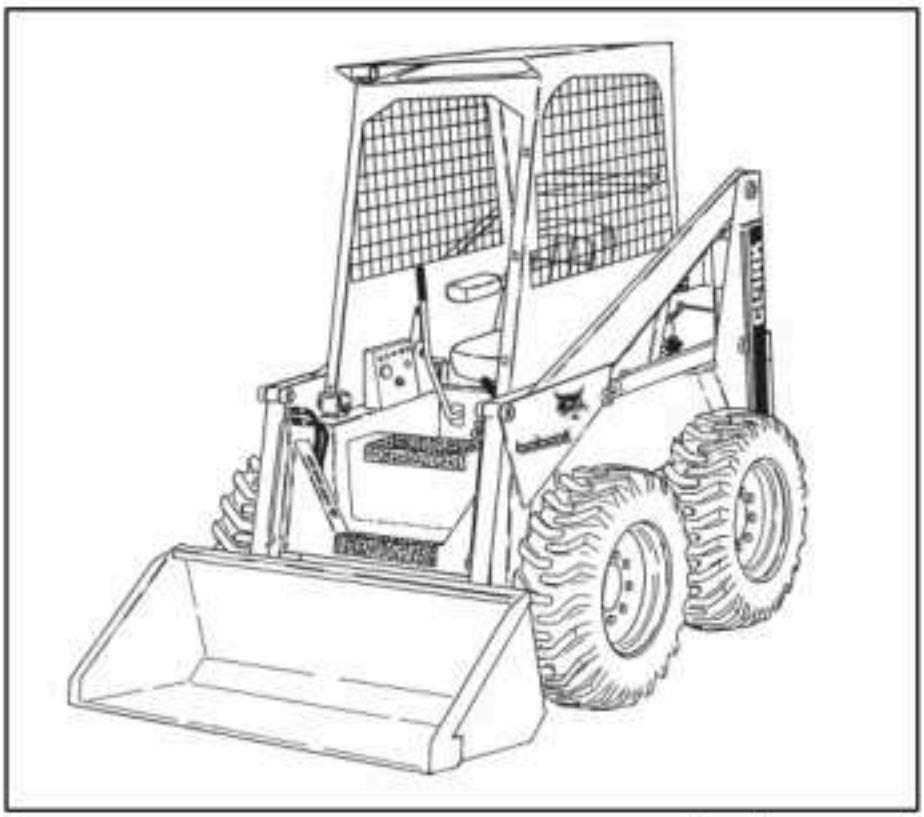
825

Service Manual



MELROE
INGERSOLL-RAND

6549899(12–83)

Printed in U.S.A.

bobcat

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FORWARD

This manual provides instruction for proper routine service and adjustment of the Bobcat, and detailed overhaul instructions of the power train, loader hydraulic/hydrostatic system and general mainframe components.

Refer to the Owner's Manual for general operating instructions (Starting Procedure, Daily Checks, Bucket Operation, Minor Maintenance, etc.).

A general inspection of the following items should be made whenever the machine has undergone service or repair:

1. Check hydraulic fluid level, engine oil level and fuel supply.
2. Inspect for any sign of fuel, oil or hydraulic fluid leaks.
3. Lubricate the machine.
4. Check battery condition, electrolyte level and cables.
5. Inspect air cleaner system for damage or leaks. Check element and make replacement, if necessary.
6. Check alternator drive belt for condition and tension.
7. Check for loose drive chains by lifting the rear of the machine and turning the rear wheels by hand.
8. Check tires for wear and pressure.
9. Check the Bob–Tach attachment for condition. Inspect the wedges for damage or wear.
10. Inspect safety items for condition (ROPS Guard, Seat Belt, Safety Treads, Lights, etc.).
11. Make a visual inspection for loose or broken parts or connections.
12. Operate the loader; checking all functions.

Advise the owner if any of the above items are in need of repair.

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2–4 GEAR PUMP

2–4.1 Testing

1. Disconnect the gear box. (See Fig. 3–25, Page 3–15.)
2. Tilt ROPS forward.
3. Remove transmission housing cover.
4. Connect Y–90 to the outlet of the pump. (See Fig. 2–4.)
5. Lower ROPS until steering levers are centered.
6. Turn the pressure control valve on the tester fully out (counterclockwise).
7. Start engine and run at low RPM.

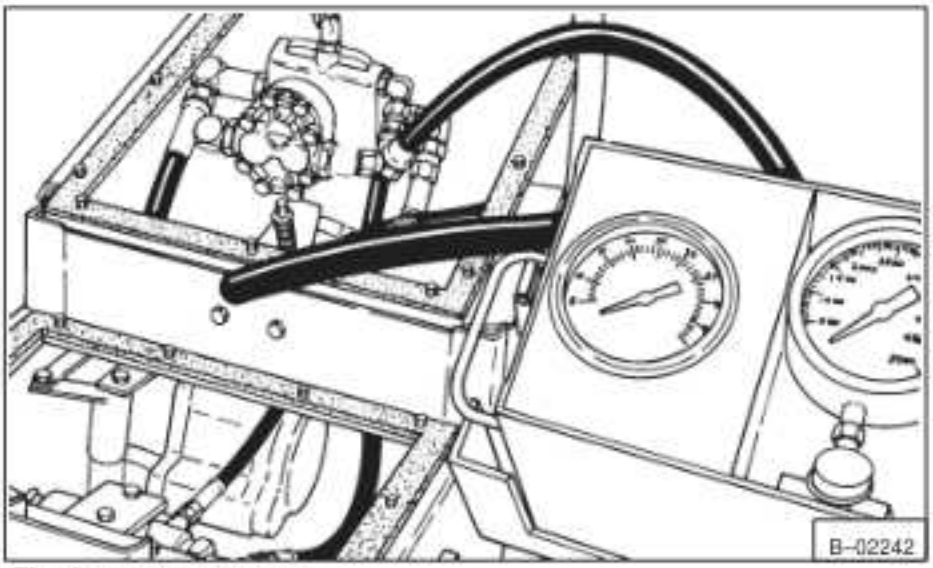


Fig. 2–4 Testing Gear Pump

⚠ WARNING

Loader must not be run with ROPS in raised position.

W–2304–0298

NOTE: With the tester connected this way, there is no relief valve in the hydraulic circuit. Closing the pressure control valve fast can cause very high pressure and damage the pump. Turn the knob very slowly as the pressure begins to increase. Do not go over 2200 PSI.

8. Increase engine RPM to maximum.
9. Turn the pressure control valve slowly until the pressure is 2100 PSI. Correct flow is 12.5 GPM.
10. If an indication of 12.5 GPM and/or 2100 PSI is not present, check for air leaks. If, after checking for air leaks, there is still not 12.5 GPM at 2100 PSI, remove and make pump repairs.

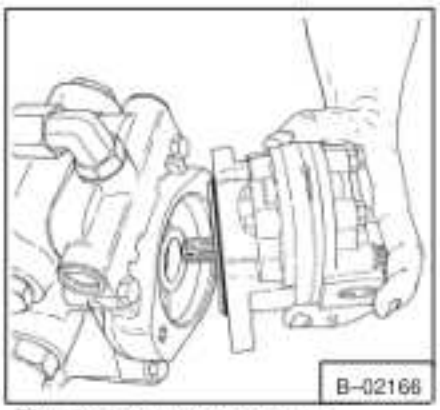


Fig. 2–5 Removing Gear Pump

2–4.2 Removal

1. Tilt the ROPS forward.
2. Remove transmission case cover.
3. Remove hydraulic lines and protect them with poly bags.
4. Remove two fastening bolts and remove pump assembly (See Fig. 2–5). Do not force anything between the two surfaces. Use a soft hammer to loosen the pump, if necessary.

Reverse the above procedure to install. Tighten the fastening bolts to 33 ft–lbs. torque.

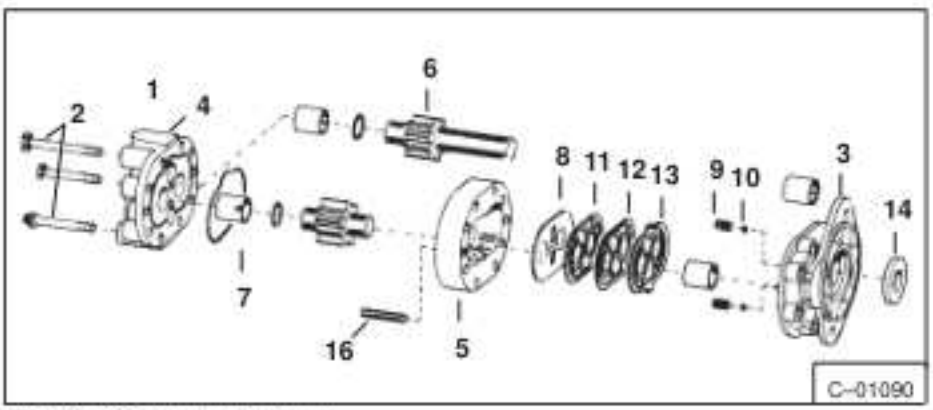


Fig. 2–6 Gear Pump Breakdown

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4–9 INSTALLATION OF AXLE SPROCKET

Install the axle sprockets after the axle is installed in the loader.

To install the axle sprockets:

1. Install the axle sprocket (Fig. 4–27, Item 1).
2. Install the axle nut and tighten the nut until there is no end play to the axle (Fig. 4–27, Item 2).
3. Hit the end of the axle and check for end play.
4. Tighten the axle nut to the nearest hole on the axle nut that will align with the hole in the axle and remove end play from the axle.
5. Install the lock bolt and nut (Fig. 4–27, Item 3 & 4). Tighten the nut to 55–70 in.–lbs. (6,2 – 7,9 Nm).

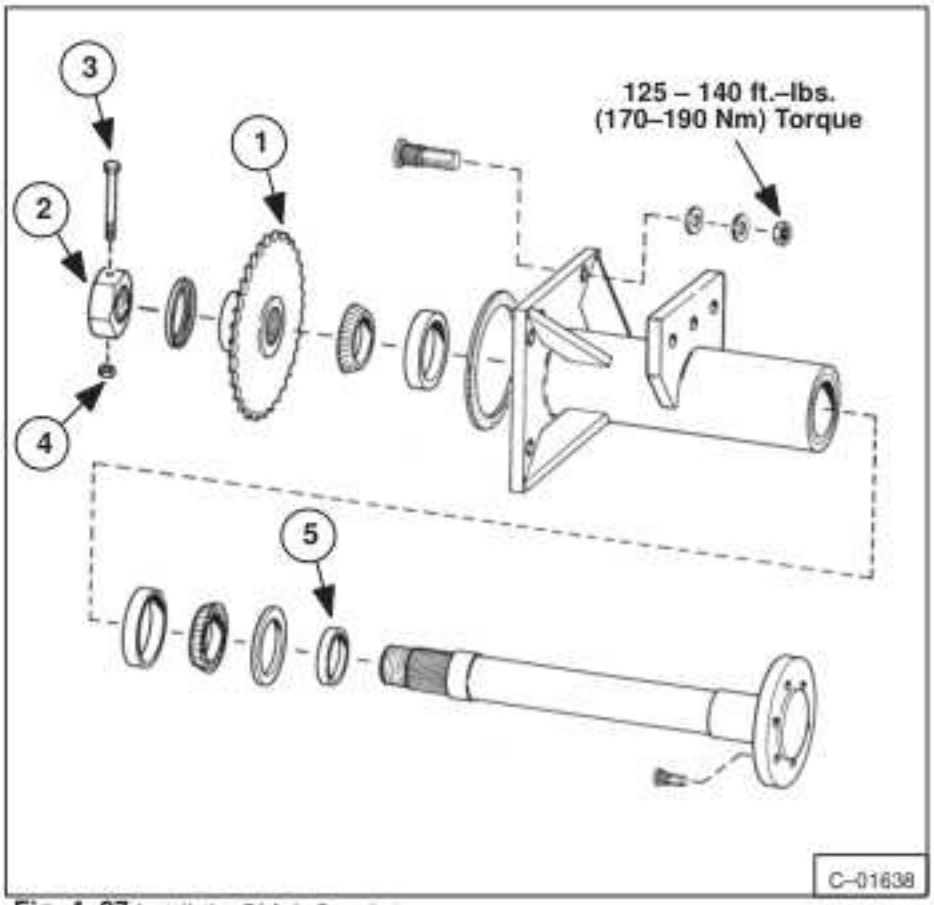


Fig. 4–27 Installation Of Axle Sprocket

4–10 PARK BRAKE REMOVAL

1. Lift the lift arms and install cylinder stops (Fig. 4–2).
2. Tilt the ROPS enclosure.
3. Clean area thoroughly.
4. Remove transmission cover.
5. Before removal of the left brake, remove the steering linkage. Brake linkage rod and hydraulic oil pickup tube.

   Before removal of the right brake, remove steering linkage and steering arm from the pump. Remove the brake linkage rod.
6. Remove shoulder screws from the case and lift out brake assembly. Use caution not to drop the actuator lever from the bottom of the brake assembly (Fig. 4–28).

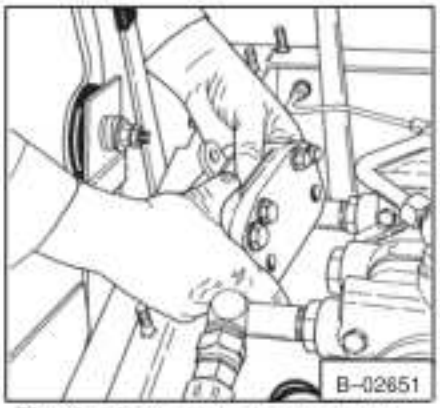


Fig. 4–28 Removing Brake Assembly

Reverse the above steps to install the brake.

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4. Using the valve guide bore as a pilot once again press the insert in with the insert driver, this tool is shown fully dimensioned in Figure 7–13. Steady pressure should be given with either a hand or a hydraulic press. The purpose of the insert driver is to get squareness when the insert is being pressed in.

NOTE: The insert must not be driven by hammer and lubrication must not be used.

5. Visually inspect to be sure that the insert has been pressed fully in (flush with the bottom of the recess).
6. Cut the valve seat at an included angle of 90° (which will give the normal 45° seat) until the valve head depth reaches the minimum limit which is given on page 8–3. Lightly lap the valve to its new seat.

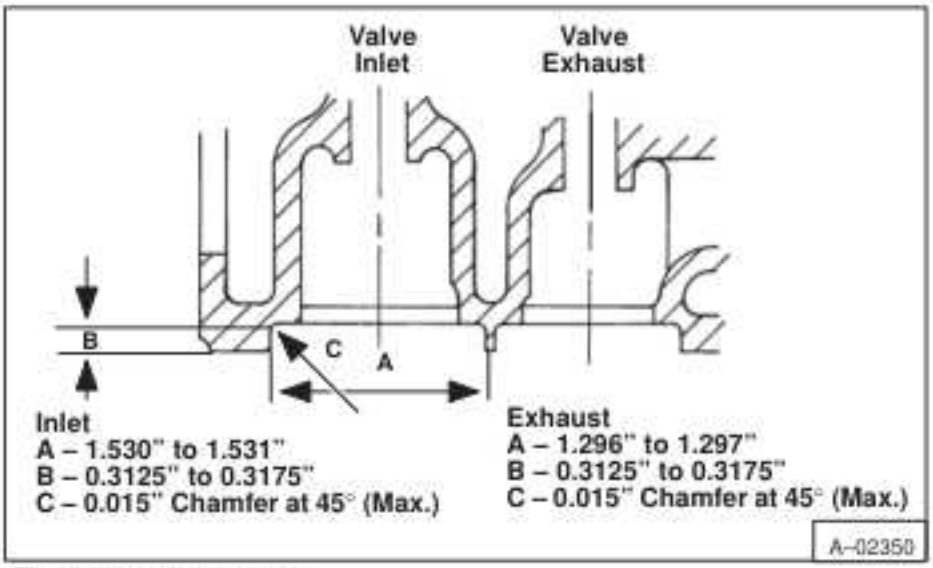


Fig. 7–12 Valve Insert Detail

INSERT DRIVER (Fig. 7–13)

Inlet Dimensions	Exhaust Dimensions
A. – 2.750 inch	A. – 2.750 inch
B. – 2.0 inch	B. – 2.0 inch
C. – 0.750 inch	C. – 0.750 inch
D. – 0.309 to 0.310 inch	D. – 0.309 – 0.310 inch
E. – 0.0625 inch at 45°	E. – 0.0625 inch at 45°
F. – 0.0625 inch at 45°	F. – 0.0625 inch at 45°
G. – 0.0312 inch Radius	G. – 0.03125 inch Radius
H. – 1.238 to 1.239 inch	H. – 1.018 to 0.019 inch
J. – 0.222 to 0.225 inch	J. – 0.222 to 0.225 inch
K. – 1.523 to 1.533 inch	K. 1.287 to 1.297 inch

7–3.10 To Disassemble The Rocker Shaft Assembly

1. Remove the snap rings from each end of the rocker shaft.
2. Withdraw the rocker levers, springs and support brackets from the rocker shaft.
3. Unscrew the oil feed pipe from the connector and remove the connector. (When refitting this feed pipe, it should be noted that the end of the pipe locates the connector position on the shaft.)

After disassembly, thoroughly wash all parts in clean solvent. Inspect the rocker bushings and shaft for wear. The rocker levers should be an easy fit on the rocker shaft without loose side play.

If any rocker lever bushings have bad seizure onto the rocker shaft, the bushings will have worked loose in their locations. Each rocker lever should be checked and if any looseness is present, make a replacement of both lever and bushing.

New rocker levers are supplied complete with bushing fitted and reamed to size.

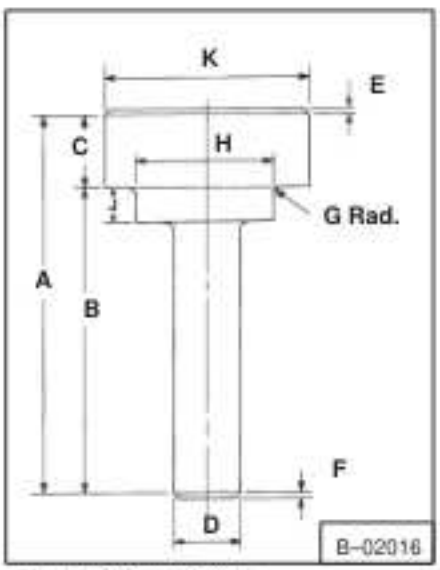
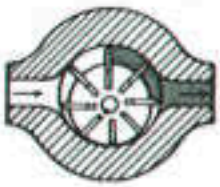


Fig. 7–13 Insert Driver

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becomes to hot. Also a by-pass valve (9) which allows the flow of fluid to go around the oil cooler (8) for cold operation. The by-pass valve (9) also protects the oil cooler (8) from a sudden increase of pressure from the control valve (20). From the oil cooler (8) the fluid flows into a "tee" fitting. Normal fluid flow is through the primary 10 Micron filter (5). But if the 10 Micron filter (5) becomes plugged, the fluid flow will be restricted causing back pressure and will open the in-line filter by-pass valve (4) and the flow of fluid will go to the 25 Micron filter outlet (2).



(Chart # PI-2512, 2513)

The fluid flows from the 10 Micron filter (5) goes past the restrictor valve (18) and into the secondary 10 Micron filter (5). From the secondary 10 Micron filter (5) the fluid flows into the geroter charge pump (19). Because there is more fluid flow than is needed to supply the geroter charge pump (19), there is back pressure and the relief valve (3) limits the amount of back pressure. Also the restrictor valve (18) will remove some of the fluid flow for cooling. If the primary 10 Micron filter (5) becomes plugged, the restrictor valve (18) will become a pick-up tube and will supply fluid for the geroter charge pump (19) and prevent cavitation and damage to the hydrostatic system. From the geroter charge pump (19) the fluid is forced into each hydrostatic pump (13).



There are two (2) hydrostatic pumps (13) and two (2) hydrostatic motors (6). One (1) hydrostatic pump and one (1) hydrostatic motor work together as a pair to drive on one side of the loader. The other pump and motor work as a pair to drive the opposite side of the loader.



In neutral the fluid flows through the charge check valves (15) and into the hydrostatic pumps (13) and the hydrostatic motors (6) rotating groups for cooling, lubrication and replenishing.

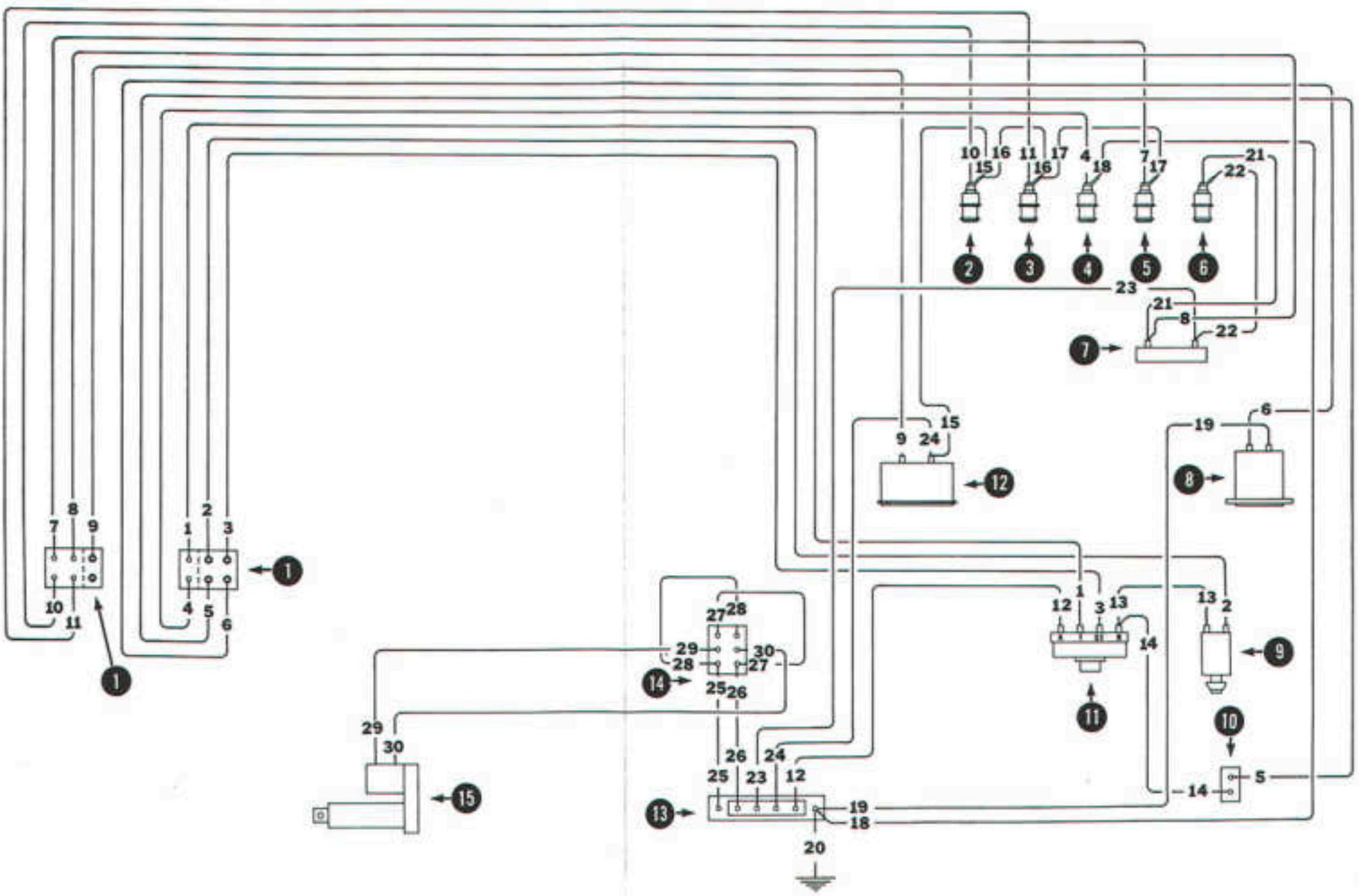
When the hydrostatic pumps (13) swashplates are angled in either direction the fluid flow becomes high pressure fluid and causes the check valves (15) to close. The hydrostatic pumps (13) flow is forced to the hydrostatic motors (6) and causes the hydrostatic motors (6) to turn. This flow of fluid is called "drive pressure". Low pressure fluid from the hydrostatic motors (6) returns to the hydrostatic pumps (13) to be used again.



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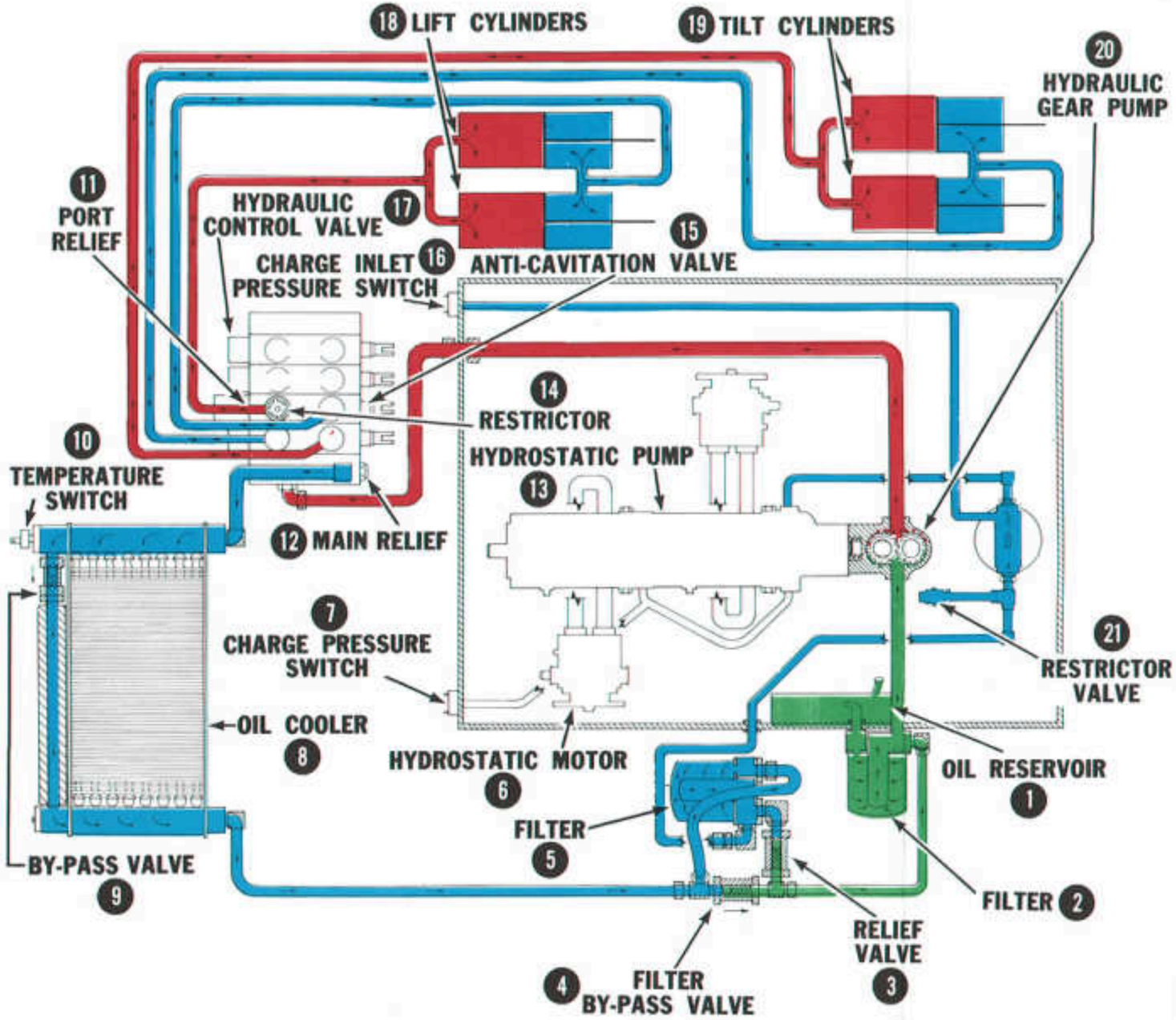
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OVERHEAD GUARD WIRING DIAGRAM (825)



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HYDRAULIC FLOW CHART
825



1. OIL RESERVOIR, System Cap.: 27 Gal. [102, L]
2. FILTER, 25 Micron
3. RELIEF VALVE, 15-25 PSI [103-172 kPa]
4. FILTER BY-PASS VALVE, 55-65 PSI [379-448 kPa]
5. FILTER, 10 micron
6. HYDROSTATIC MOTOR
7. CHARGE PRESS. SWITCH, 55-65 PSI [379-448 kPa]
8. OIL COOLER
9. BY-PASS VALVE, Early-65 PSI [448 kPa], Current-20 PSI [137 kPa]
10. TEMPERATURE SWITCH, 225°F [108°C]
11. PORT RELIEF
12. MAIN RELIEF, 2100-2150 PSI [14479-14824 kPa]
13. HYDROSTATIC PUMP
14. RESTRICTOR
15. ANTI-CAVITATION VALVE
16. CHARGE INLET PRESSURE SWITCH, 4 PSI [28 kPa]
17. HYDRAULIC CONTROL VALVE
18. LIFT CYLINDERS
19. TILT CYLINDERS
20. HYDRAULIC GEAR PUMP, 12.5 GPM [47,3 L/m] at Rated RPM
21. RESTRICTOR VALVE

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

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