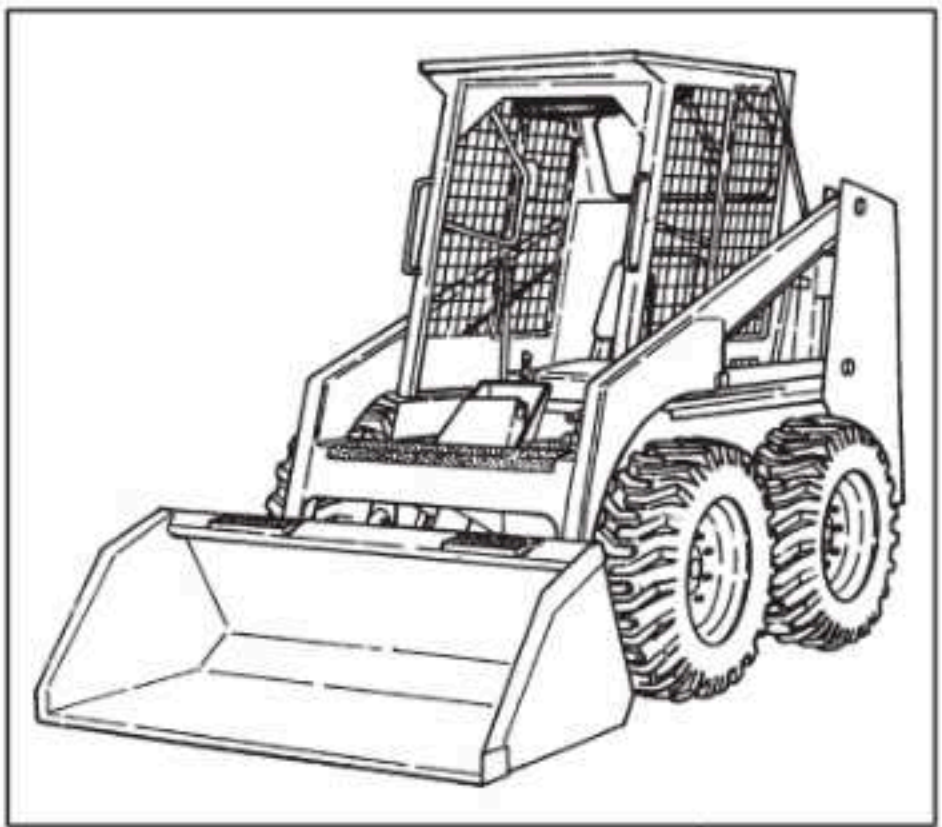
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Service Manual

540 (S/N 501011999 & Below)
543 (S/N 501111999 & Below)



MELROE
INGERSOLL-RAND

6566181 (11-81)

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bobcat

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FOREWORD

This Service Manual gives the instructions for correct servicing, adjustment and overhauling of the Bobcat loader Hydraulic/Hydrostatic System, Drive System, Main Frame, Electrical System and Engine Service.

Make reference to the Operator's Manual for operating instructions (Starting, Daily Checks, Loader Operation, etc.).

A general inspection of the following items must be made when the Bobcat loader has had service or repair.

1. Check hydraulic/hydrostatic fluid level, engine oil level and fuel supply.
2. Inspect for any sign of fuel, oil or hydraulic fluid leaks.
3. Lubricate the loader.
4. Check the condition of the battery(ies) and the cables.
5. Inspect the air cleaner system for damage or leaks.
6. Check the warning lights to see if they light.
7. Check the tires for wear and pressure.
8. Check the Bob–Tach for wear and see if the wedges are damaged.
9. Check the safety items for condition (Operator Guard, Seat Belt, Seat Bar, Safety Signs (Decals), Safety Treads, etc.).
10. Make an inspection for loose or broken parts or connections.
11. Operate the loader, checking all functions.

Check the above items. If any are in need of repair or adjustment, contact the owner.

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⚠ WARNING

DO NOT service the Bobcat loader without instructions or taking the necessary safety precautions. Before working on the loader, see the warnings and instructions at the beginning of this Service Manual. After making the repair or adjustment, always check the function of the loader. Failure to obey warnings may cause injury or death.

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7B ENGINE SERVICE–543 LOADER (ISUZU)

7B–1 TROUBLESHOOTING

The following troubleshooting chart is provided as an assistance in locating and correcting problems which are most common. Many of the recommended procedures must be done by authorized Bobcat Service Personnel only.

PROBLEM	CAUSE
Slow cranking speed.	1, 2, 3, 4
Engine will not start.	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 31, 32, 33
Difficult to start.	5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 24, 29, 31, 32, 33
No power from the engine.	8, 9, 10, 11,12, 13, 14, 18, 19, 20, 21, 22, 23, 24, 25, 26, 28, 29, 31, 32, 33
Engine is mis–firing.	8, 9, 10, 12, 13, 14, 16, 18, 19, 20, 25, 26, 28, 29, 31, 32, 33
Too much fuel consumption.	11, 13, 14, 16, 18, 20, 22, 23, 24, 25, 27, 28, 29, 31, 32, 33
Black exhaust.	11, 13, 14, 16, 18, 19, 20, 22, 24, 25, 27, 28, 29, 31, 32, 33
Blue/White Exhaust.	4, 16, 18, 19, 20, 25, 27, 31, 33, 34, 44, 53
Low oil pressure.	4, 35, 36, 37, 38, 39, 41, 42, 43, 55
Engine knocking.	9, 14, 16,18, 19, 22, 26, 28, 29, 31, 33, 35, 44, 45, 56
Engine running rough.	7, 8, 9, 10, 11, 12, 13, 14, 16, 20, 21, 23, 26, 28, 29, 30, 33, 44, 56
Vibration.	13, 14, 20, 23, 25, 26, 29, 30, 33, 44, 47
High oil pressure.	4, 37, 40
Overheating.	11, 13, 14, 16, 18, 19, 24, 25, 44, 46, 48, 49, 51
Too much crankcase pressure.	25, 31, 33, 34, 44, 52
Poor compression.	11, 19, 25, 28, 29, 31, 32, 33, 34, 45, 56
Start and stop.	10, 11, 12

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9. Install the air shrouding in the loader and install the plate in the air shrouding (Fig. 7B–41).

10. Install the support brackets and tighten the bolts (both sides) (Fig. 7B–40).

11. Install the radiator hose on the thermostat housing and the radiator (Fig. 7B–39) and tighten the clamps.

12. Install the other radiator hose to the radiator and tighten the clamp (Fig. 7B–38).

13. Connect the throttle linkage to the fuel injection pump.

14. Install the bolts which hold the hydrostatic pump and engine together and tighten to 65–70 ft.–lbs. (88–95 Nm) torque.

15. Connect the ground wire, alternator wires and the engine harness connector.

16. Install the blower housing (See Paragraph 7B–3.4).

17. Install the battery (See Paragraph 6–3.3, Page 6–4).

18. Install the rear door (See Paragraph 5–4, Page 5–9).

19. Lower the operator guard (See Paragraph 5–1.2, Page 5–1).

20. Remove the jackstands from under the loader frame.

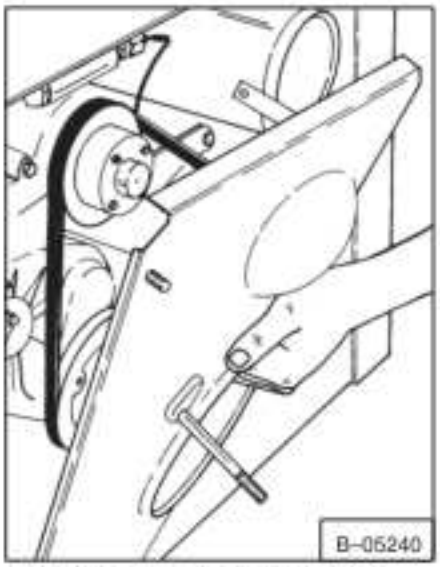


Fig. 7B–48 Installing Mounting Plate

7B–3.4.Installing the Blower Housing

1. Install the mounting plate on the engine (7B–48).

2. Install the bolt for the mounting plate at the right side of the engine and tighten (Fig. 7B–49).

3. Install the bolts and nuts for the mounting plate and tighten.

4. Install the blower fan on the crankshaft sheave (Fig. 7B–51).

5. Install the bolts in the blower fan and tighten (Fig. 7B–52).

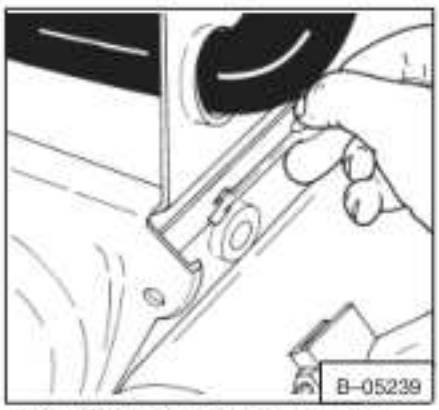


Fig. 7B–49 Mounting Plate Side Bolt

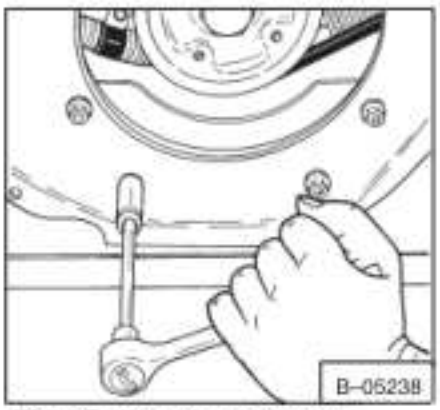


Fig. 7B–50 Mounting Plate Bolts

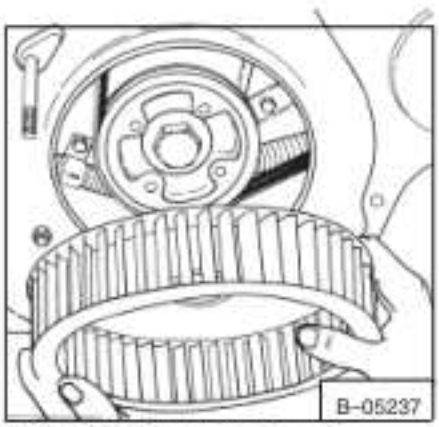


Fig. 7B–51 Installing Blower Fan

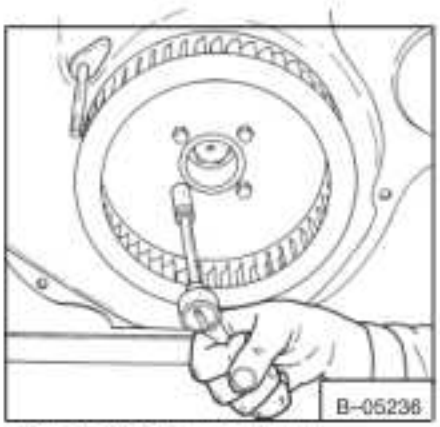


Fig. 7B–52 Blower Fan Bolts

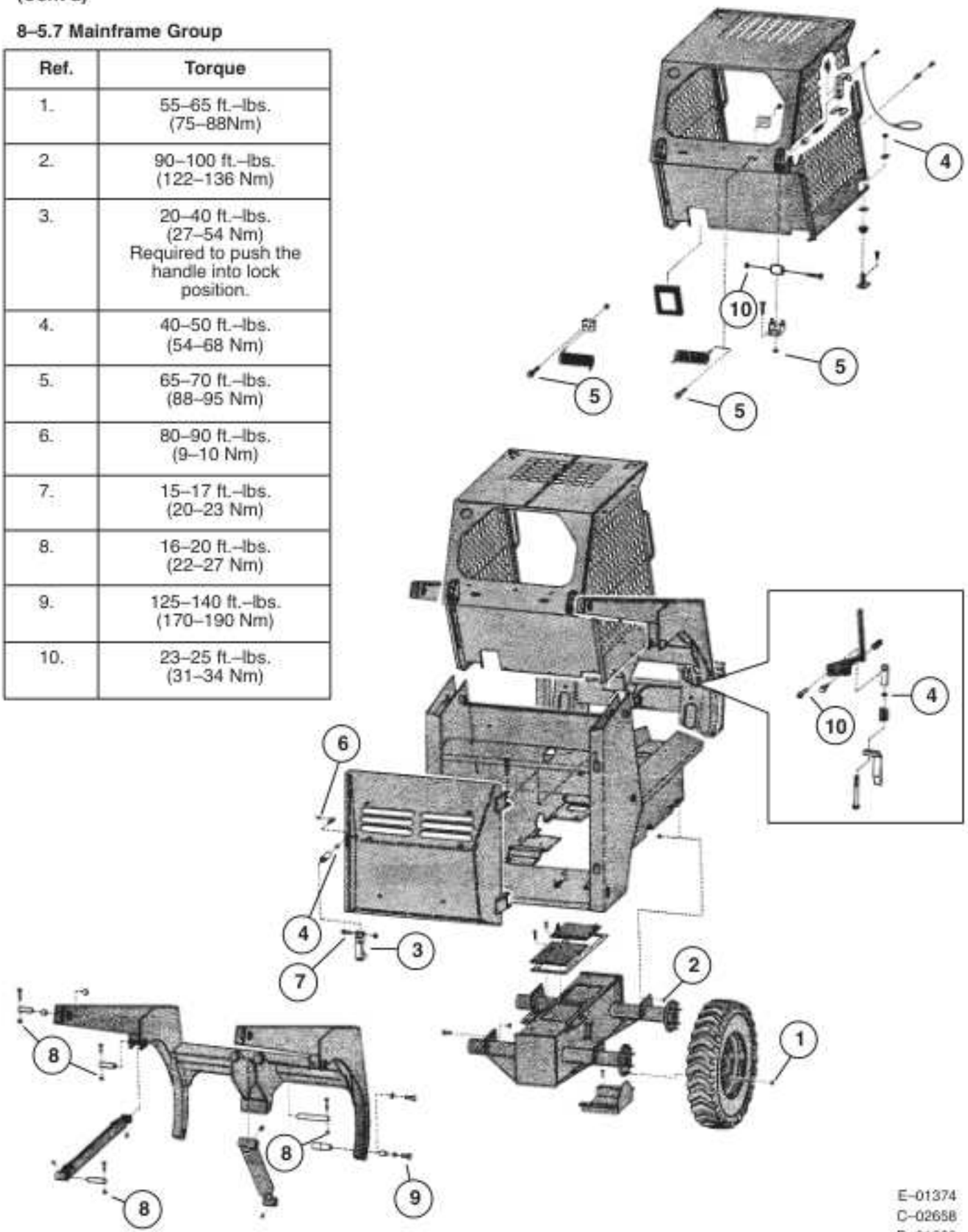
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8–5 TORQUE SPECIFICATIONS (Cont'd)

8–5.7 Mainframe Group

Ref.	Torque
1.	55–65 ft.–lbs. (75–88Nm)
2.	90–100 ft.–lbs. (122–136 Nm)
3.	20–40 ft.–lbs. (27–54 Nm) Required to push the handle into lock position.
4.	40–50 ft.–lbs. (54–68 Nm)
5.	65–70 ft.–lbs. (88–95 Nm)
6.	80–90 ft.–lbs. (9–10 Nm)
7.	15–17 ft.–lbs. (20–23 Nm)
8.	16–20 ft.–lbs. (22–27 Nm)
9.	125–140 ft.–lbs. (170–190 Nm)
10.	23–25 ft.–lbs. (31–34 Nm)



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ROPS WIRING DIAGRAM

WIRE LEGEND

#'s	COLOR	GAUGE
1	White	16
2	Orange	12
3	Black	16
4	Black	16
5	Orange	16
6	Orange and Yellow	16
7	Light Blue	16
8	Purple	18
9	Yellow	18
10	Orange and Green	16
11	Yellow and Black	18
12	White and Purple	18
13	Light Blue and Black	16
14	Purple	18
15	Yellow	18
16	Black	16
17	Black	16
18	Black	16
19	Black	16
20	Orange and Black	16
21	Yellow	16
22	Purple	16
23	White	16
24	Light Blue	16
25	Red	16
26	Orange (Not Used)	16
27	Grey (Not Used)	16
28	Brown (Not Used)	16
29	Orange	16
30	Orange	16
31	White and Orange	16
32	Orange and Dark Blue	16
33	Orange	18
34	Orange	18
35	Orange	18
36	Dark Green and Yellow	16
37	Orange	18
38	Black	16
39	Orange and Black	16
40	Orange and Dark Blue	16
41	Orange and Dark Blue	16
42	Dark Blue and White	16
43	Pink	16
44	Brown	16
45	Dark Blue	16
46	Dark Blue	16
47	Black	16
48	Brown	16
49	Brown	16
50	Black	16

PARTS LEGEND

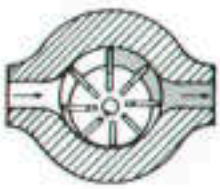
1. ROPS Harness Connector
2. ROPS Ground
3. Fuel Sender (631)
4. Back-up Alarm (Optional)
5. Rear Lamp
6. Tail Lamp
7. Left Flasher Lamp (Optional)
8. Left Front Lamp
9. Wiper (Optional)
10. Flasher (Optional)
11. Right Front Lamp
12. Right Flasher Lamp (Optional)
13. Hourmeter
14. Light Switch
15. Access Fuse
16. Wiper Switch (Optional)
17. Fuel Gauge (631)
18. Transmission Warning Lamp
19. Engine Warning Lamp
20. Voltmeter
21. Ignition Fuse
22. Ignition Switch
23. Glow Plug Indicator (533 Only)
24. Shut-down Module (Optional)

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The fluid which goes to the "Tee" fitting on the control valve (11) will go two places, one is through the protective orifice (12) into the oil cooler (13) and to the bypass valve (3) in the port block (2). The hydraulic filter (15) has a bypass valve (14) to allow fluid flow when it cannot go through the filter element (plugged).

Chart # E-1292R, E-1291R



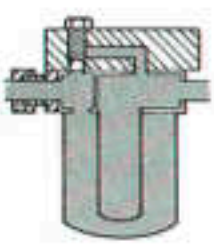
When the fluid gets to the hydrostatic pumps (16), it activates the replenishing function of the high pressure relief valves (3). As the pressure increases the replenishing valves (3) open and let fluid into the hydrostatic pumps (16), for replenishing, lubrication and cooling. This fluid is called "charge fluid". The hydrostatic pumps (16) do not need the full volume of the charge fluid so there is extra fluid. This extra fluid goes to the charge relief valve (2) and through the other side of the "Tee" fitting to the charge bypass valve (5). When the pressure reaches the setting of the charge bypass valve (5) it opens and lets this extra fluid go back to the inlet to the hydraulic pump (6).



There are two hydrostatic pumps (16) and two hydrostatic motors (9). One pump and one motor work together as a pair to drive one side of the machine. The other pump and motor work as a pair to drive the opposite side of the machine.



When the replenishing valves (3) open and charge fluid goes into the hydrostatic pumps (16), the flow becomes "drive loop fluid". When the steering levers are in neutral, the hydrostatic pumps (16) and the hydrostatic motors (9) are not working but do have charge pressure. When the steering levers are moved, the swashplates in the hydrostatic pumps (16) are angled and fluid is pumped out of the pressure side of the hydrostatic pumps (16) to the hydrostatic motors (9). This flow of fluid is called "drive pressure". Drive pressure is much higher than charge pressure causing the high pressure replenishing valves (3) to close allowing the flow of fluid to go to the hydrostatic motors (9).



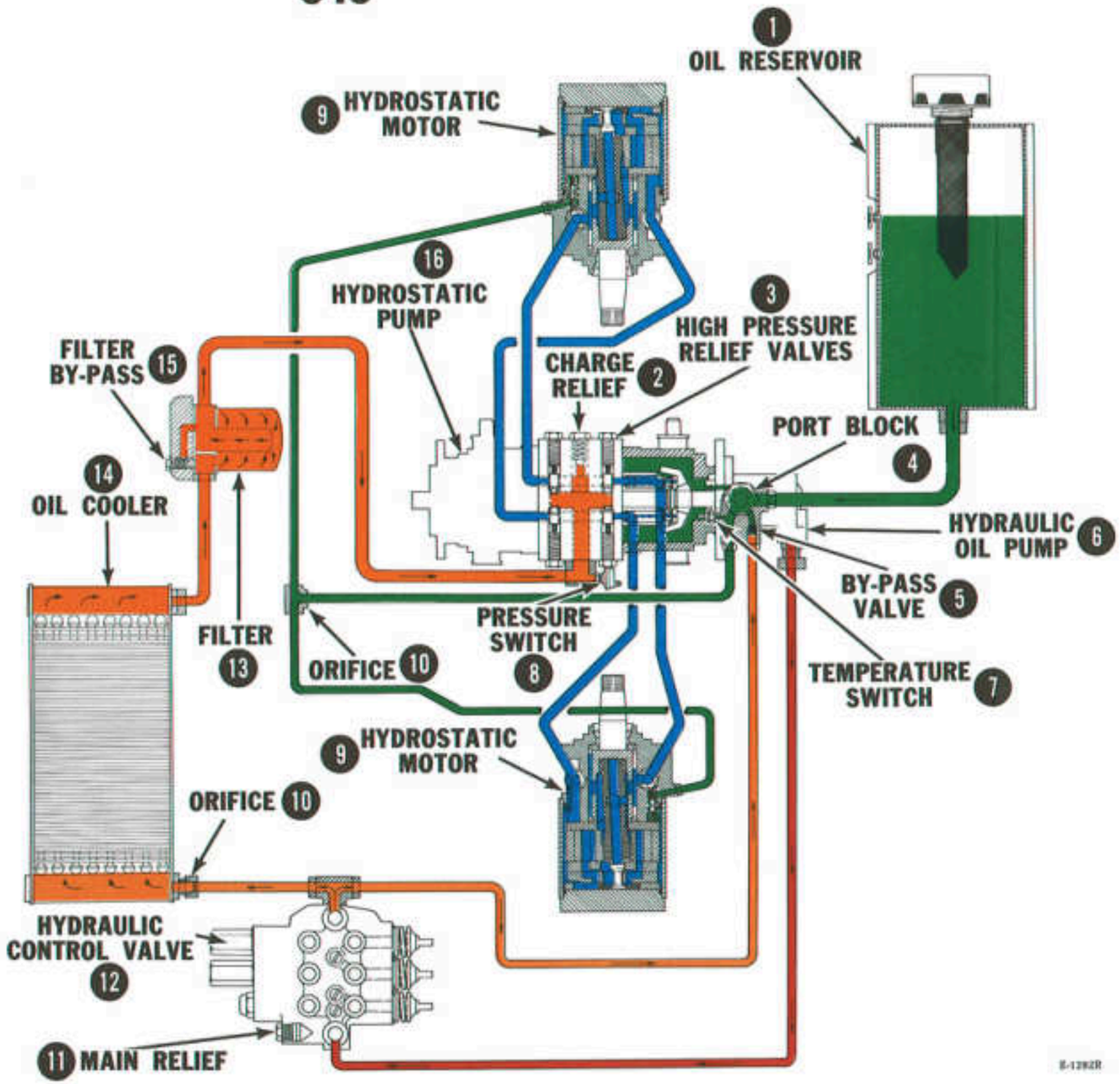
When the machine is driven with the bucket down, into a pile of dirt, there is resistance causing high pressure fluid in the drive loop. There

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HYDROSTATIC FLOW CHART

Neutral Position (Closed Center System)

540
543



1. OIL RESERVOIR, System Cap.: 6 Gal. [23 L], Working Cap.: 4 Gal [15 L]
2. CHARGE RELIEF, 45-65 PSI [310-448 kPa]
3. HIGH PRESS. RELIEF VALVES, 3000 PSI [20685 kPa]
4. PORT BLOCK
5. BY-PASS VALVE, 78 - 96 PSI [537 - 662 kPa]
6. HYDRAULIC OIL PUMP, 8.3 GPM [31,4 L/m] at 2500 RPM
7. TEMPERATURE SWITCH, 220-232°F [104-111°C]
8. PRESSURE SWITCH, 23-27 PSI [158-186 kPa]
9. HYDROSTATIC MOTOR
10. ORIFICE
11. MAIN RELIEF, (1575-1675 PSI [10859-11549 kPa] Measured at Aux. Quick Couplers)
12. HYDRAULIC CONTROL VALVE
13. FILTER, 10 Micron
14. OIL COOLER
15. FILTER BY-PASS, 72 PSI [496 kPa]
16. HYDROSTATIC PUMP

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

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