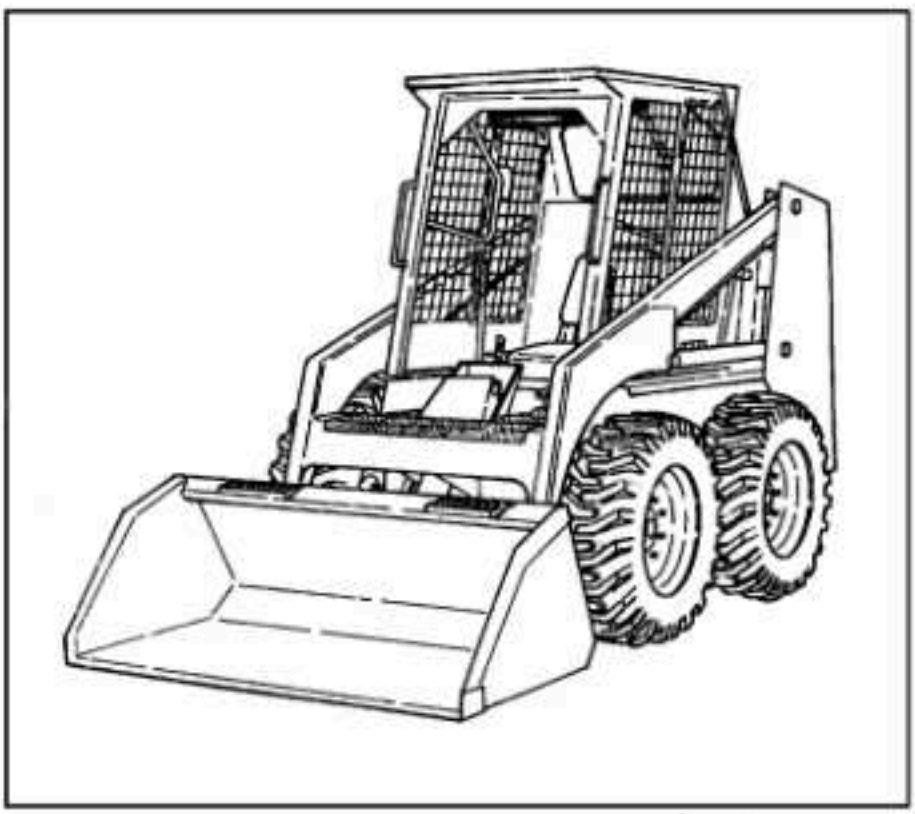
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Service Manual



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FORWARD

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 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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PREVENTIVE MAINTENANCE

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6 ELECTRICAL SYSTEM

6–1 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
Battery has a low charge.	1, 2, 3, 4, 5
Alternator will not charge.	1, 2, 5, 9
Starter will not turn the engine.	2, 3, 4, 6, 7, 8

KEY TO CORRECT THE CAUSE
1. Alternator belt is loose or damaged.
2. Battery connections are dirty or loose.
3. Battery is damaged.
4. The ground connection is not making a good contact.
5. The alternator is damaged.
6. The engine is locked.
7. The starter is damaged.
8. The wiring or the solenoid is damaged.
9. *Open* diode in wiring.

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2. To find the maximum wear measure inside diameter of the cylinder liner in three different locations (Fig. 7C–87). The inside diameter specification on the cylinder liner is 3.3465 – 3.3473 inches (85 – 85,022 mm), with an allowable wear limit of +0.0059 inch (+0,15 mm).

3. When the cylinder has more wear than the specifications, bore and hone the cylinder to 0.0197 inch (0,5 mm) until the oversize diameter is correct (See Specifications Page 8C–4).

NOTE: Make sure you use the correct oversize pistons and rings.

4. When the cylinder wear is more than the wear limit replace the cylinder liner. These are dry cylinder liners.

5. Remove the cylinder liners.

6. Clean and put oil in the holes of the engine block.

7. Clean and put oil on the outside of the cylinder liners.

8. Install the cylinder liners into the engine block with the inside and outside diameter chamfered end down. The top of the liners must be even with the top of the engine block machined surface.

9. After installation, bore and hone the cylinder to standard size (See Specifications Page 8C–4).

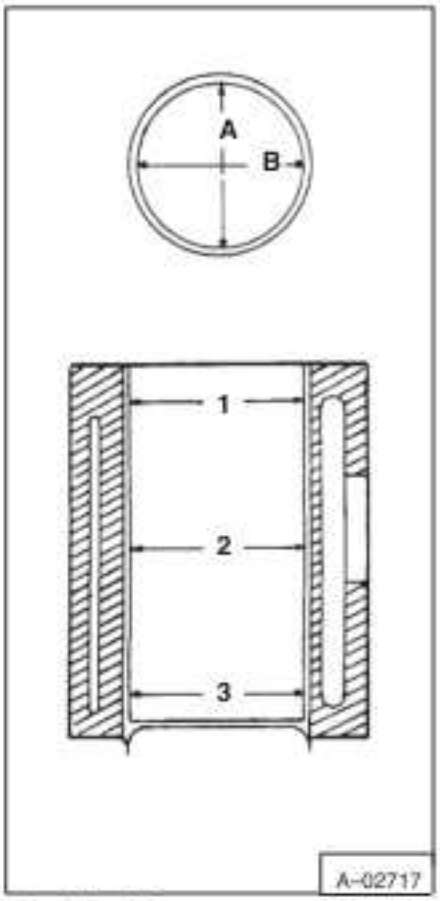


Fig. 7C–87 Cylinder Measuring Points

7C–5.8 Servicing The Oil Pump

1. Use a feeler gauge to check the clearance between the inner and outer rotor (Fig. 7C–88).

2. The clearance for the inner rotor is 0.0039 – 0.0063 inch (0,099 – 0,0160 mm). The allowable wear limit is 0.0079 inch (0,2 mm).

3. Use a feeler gauge to check the clearance between the outer rotor and the body of the oil pump (Fig. 7C–89).

4. The clearance for the outer rotor is 0.0043 – 0.0075 inch (0,11 – 0,19 mm).

5. At rated engine speed, the oil pressure is 42 – 56 PSI (294,2 – 392,2 kPa) and must not be any lower than 35 PSI (245,2 kPa).

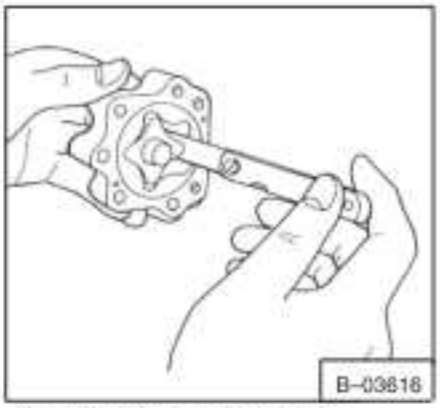


Fig. 7C–88 Checking Clearance

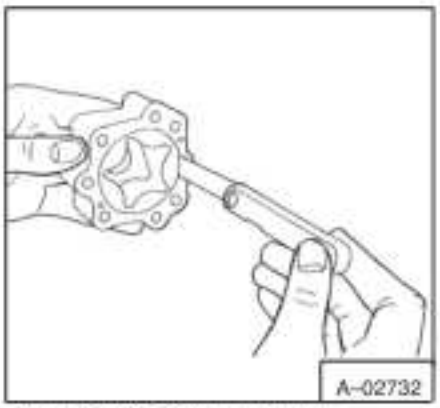


Fig. 7C–89 Checking Clearance

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640–12
Revision Number
7 August 1989
Date

SERVICE MANUAL REVISION

ROUTE TO ATTENTION

PARTS MANAGER	☐
SERVICE MANAGER	☒
SALES MANAGER	☐

AFFECTING:

Product BOBCAT LOADER

Model 641, 642, 643

Manual No. 6566135 (10–86)

NOTICE Insert This Sheet With The Above Listed Manual For Future Reference.

This is a revision to the Service Manual (6566135). Remove the old pages and install the revised pages as shown below:

TAKE OUT	PUT IN
Operator Guard Wiring Diagram	Cab Wiring Diagram (P/N 6566808) (Printed April 1988)
Engine Wiring Diagram 641 & 741	Cab Wiring Diagram (P/N 6566807) (Printed April 1988)
Engine Wiring Diagram 642 & 742	Engine Wiring Diagram (P/N 6566809) (Printed April 1988)
Engine Wiring Diagram 643	Engine Wiring Diagram (P/N 6566810) (Printed April 1988)
Operator Cab Wiring Diagram 6566807 (Printed Sept. 1983)	Engine Wiring Diagram (P/N 6566811) (Printed April 1988)
Engine Wiring Diagram #6566791 (Printed Sept. 1983)	
Engine Wiring Diagram #6566790 (Printed Sept. 1983)	
Engine Wiring Diagram #6566792 (Printed Sept. 1983)	

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FLUID FLOW EXPLANATION

The fluid flows by gravity from the reservoir (1) to the port block (12) which is located inside the right fender. Return fluid from the oil cooler by-pass valve (12) joins with the fluid from the oil cooler (32) and hydrostatic pump (6) through the bearing of the pump (6) and supplies fluid to the hydraulic pump (5).

The hydraulic pump (5) is driven by a shaft through the hydrostatic pumps (6). The fluid goes from the hydraulic pump (5) to the hydraulic control valve (26).

The control valve (26) has an adjustable relief valve (24). When all three spools of the control valve are in the neutral position, the fluid goes through the control valve (26) and to the oil cooler (31). If one of the spools is activated, the fluid goes out the respective port and to either the base end, or the rod end of the cylinder(s) (15) (17). ALSO SEE OPTIONAL BUCKET POSITIONING SYSTEM OPERATION. As the fluid goes into one end of the cylinder(s) (16) (17), the fluid from the other side of the cylinder flows back into the control valve (26). When the cylinder(s) (16) (17) reach the end of the stroke, the fluid pressure reaches the setting of the relief valve (24), it will open and let the fluid by-pass the hydraulic circuit (internally) and go back to the oil cooler (31). When the spool goes back to neutral position, then there is fluid available for the other sections of the control valve (26). Two sections of the control valve (26) can be used at the same time if the main relief valve (24) is not open.

The fluid flows from the oil cooler (31) through the filter (28) to the center section of the hydrostatic pumps (6). This fluid is called "charge supply fluid". In the center section of the pumps (6) the fluid is against two high pressure relief/replenishing valves (9), two replenishing valves (7) and the charge relief valve (8). When the fluid gets to the pumps (6) it activates the high pressure relief/replenishing valves (9) and replenishing valve (7). The replenishing valves (7) (9) open and let fluid into the pumps (6) for replenishing, lubrication and cooling. The pumps (6) do not need the full volume of fluid flow so there is extra fluid. This extra fluid goes to the charge relief valve (8)

There are two hydrostatic pumps (6) and hydrostatic motors (4). One pump and one 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.

When the steering levers are in neutral, the pumps (6) and the motors (4) are not working, but do have charge pressure. When the steering levers are moved, the swashplates in the pumps (6) are angled and the fluid is forced out of the pressure side of the pumps (6) and to the motors (4).

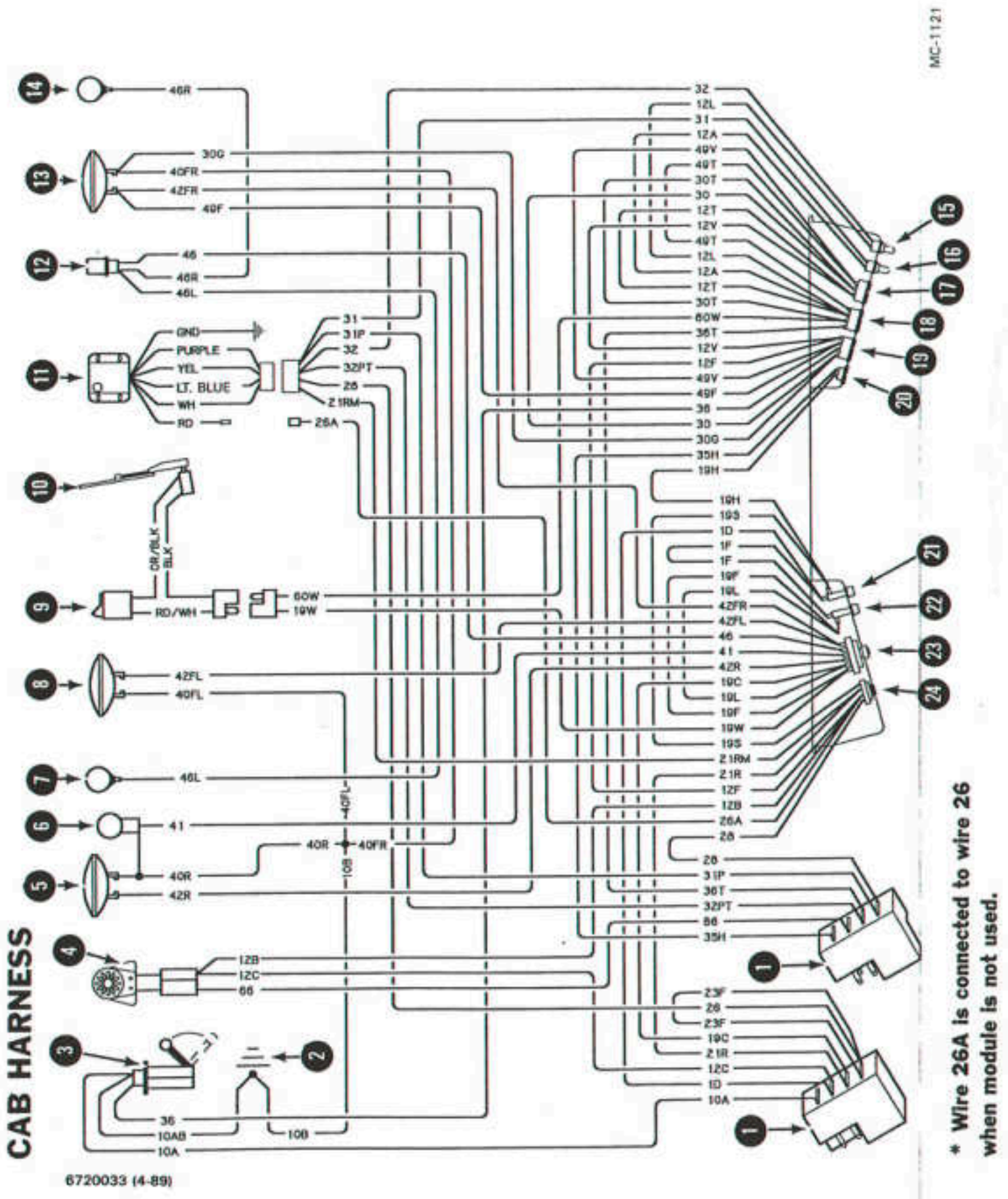
This flow of fluid is called "drive pressure fluid". Drive pressure is much higher than charge pressure causing the replenishing valves (7) (9) to close, allowing the flow of fluid to go to the motors (4). There are four replenishing valves (7) (9), two for each pump (6). One

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CAB WIRING DIAGRAM (P/N 6720033)

640, 740

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HYDRAULIC / HYDROSTATIC FLOW CHART

For Model

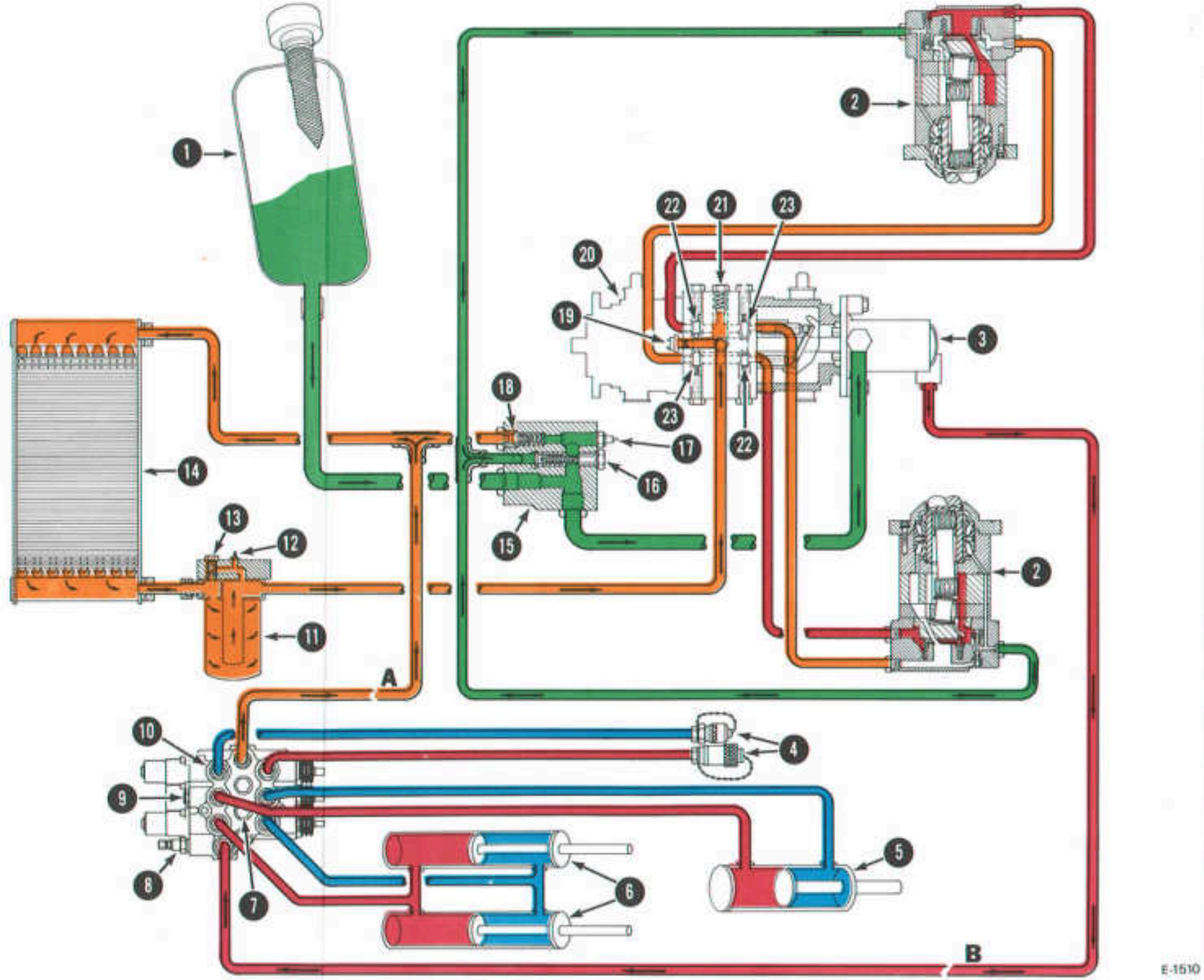
641 (Starting With S/N 13209)
642 (Starting With S/N 13524)
642B (Starting With S/N 25000)
643 (Starting With S/N 13406)

Chart # 6570266 (Printed April 1989)

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

NOTE
Chart shows oil flow in Forward Drive Position and with Hydraulic Cylinders Partially Extended. For Hydraulic/ Hydrostatic System Operation, refer to Sheet 2 of this publication.

NOTE
Refer to Chart #6570287 for machines equipped with optional Bucket Positioning Valve. Reference "A" and "B" indicate location of hydraulic circuitry connection.



E-1510

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