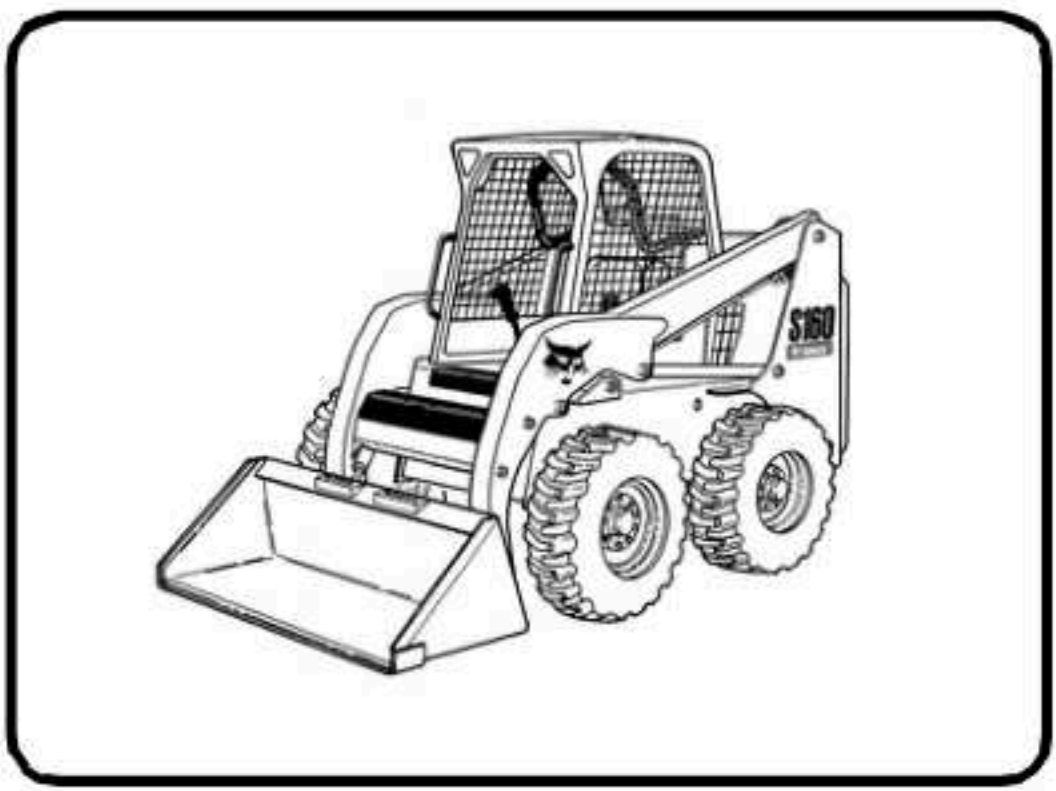
Bobcat

Service Manual
S160 Skid-Steer Loader

S/N 529960001 & Above
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EQUIPPED WITH BOBCAT INTERLOCK CONTROL SYSTEM (BICS)

6987034 (5-08)

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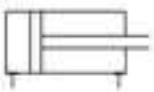
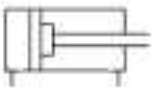
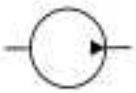
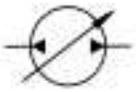
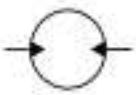
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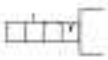
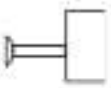
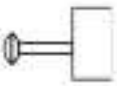
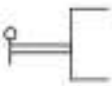
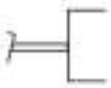
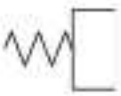
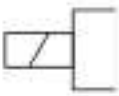
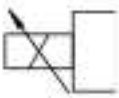
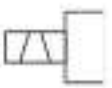
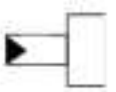
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Glossary Of Hydraulic / Hydrostatic Symbols (Cont'd)

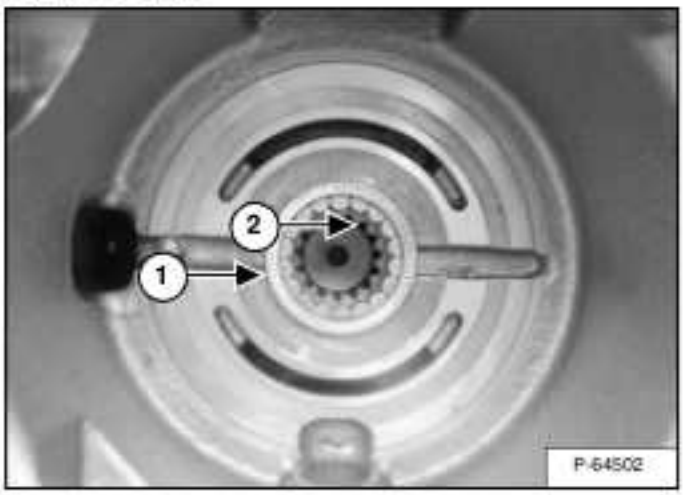
SYMBOL	DESCRIPTION
	CYLINDER: Equipment to convert hydraulic energy into linear energy and in which the fluid pressure operates alternately in both directions (forward and backward strokes).
	DOUBLE ACTING HYDRAULIC CYLINDER, UNEQUAL DISPLACEMENT - With single piston rod.
	DOUBLE ACTING HYDRAULIC CYLINDER, UNEQUAL DISPLACEMENT and CUSHION ON ONE END - With single piston rod.
	PUMP: To convert mechanical energy into hydraulic energy.
	FIXED CAPACITY DISPLACEMENT HYDRAULIC PUMP - With one direction of flow.
	VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDRAULIC PUMP - With two directions of flow (bidirectional).
	MOTOR: To convert hydraulic energy into rotary mechanical energy.
	FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDRAULIC MOTOR - With two directions of flow (bidirectional.

SYMBOL	DESCRIPTION
	CONTROL MECHANISMS
	CONTROL VALVE WITH DETENT (Holds Valve in Position) - device for maintaining a given position (mechanical).
	CONTROL VALVE ACTIVATED BY A PULL BUTTON (manual).
	CONTROL VALVE ACTIVATED BY A PUSH-PULL BUTTON (manual).
	CONTROL VALVE ACTIVATED BY A LEVER (manual).
	CONTROL VALVE ACTIVATED BY A PEDAL (manual).
	CONTROL VALVE WITH SPRING RETURN (mechanical).
	CONTROL VALVE ACTIVATED BY AN ELECTRIC SOLENOID (electrical).
	CONTROL VALVE ACTIVATED BY A PROPORTIONAL ELECTRICAL SOLENOID (electrical).
	CONTROL VALVE ACTIVATED BY DUAL ELECTRICAL SOLENOID (electrical).
	CONTROL VALVE ACTIVATED BY PILOT PRESSURE (indirect control, pilot actuated by application of pressure).

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Disassembly and Assembly (Cont'd)

Figure 30-51-79



Bearings (Item 1) **[Figure 30-51-79]** in case housing are replaced by using a press and bearing driver.

Inspect center coupler (Item 2) **[Figure 30-51-79]**.

Mechanical Neutral Adjustment

The pump mechanical neutral adjustment sets the position of the servo piston and pump swashplate relative to the hydraulic controller. This procedure should be followed if the hydrostatic pump has been disassembled for servicing the servo piston and the setting has been disrupted.

Place the loader on jackstands. (See Procedure on Page 10-10-1.)

⚠ WARNING

Put jackstands under the front axles and rear corners of the frame before running the engine for service. Failure to use jackstands can allow the machine to fall or move and cause injury or death.

W-2017-0286

Raise the lift arms, and install an approved lift arm support device. (See Installing on Page 10-20-1.)

Raise the operator cab. (See Raising on Page 10-30-2.)

Connect the remote start tool. (See REMOTE START TOOL KIT -MEL1563 on Page 10-60-1.)

Disconnect the swashplate angle sensors in the electrical harness. This prevents unwanted swashplate movement error codes from occurring during adjustments. Disconnecting the sensors does not have to be done directly at the sensor, follow the harness back to find an accessible connector to disconnect.

Disconnect the speed sensors located on the top of the motor carriers. This prevents uncommanded wheel movement error codes from occurring during adjustments.

⚠ WARNING

Hydraulic fluid escaping under pressure can have sufficient force to enter a person's body by penetrating the skin. This can cause serious injury and possible death if proper medical treatment by a physician familiar with this injury is not received immediately.

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Gauge Pressure Related Troubleshooting

Normal compressor suction (low side) and discharge (high side) pressure at ambient temperatures of 86-96 degrees F (30-38 degrees C) and compressor speed of approximately 2000 RPM are:

High pressure side pressure: 210-265 PSI

Low pressure side pressure: 15-33 PSI

As a rule of thumb, the high side pressure will be around eight times greater than the low side pressure.

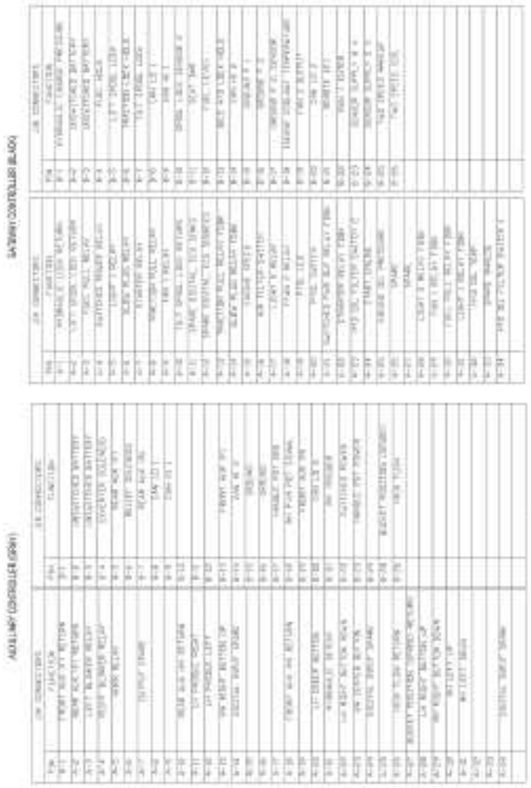
Possible Cause	Inspection	Solution
Low pressure side too high.	The low pressure side pressure normally becomes too high when the high pressure side pressure is too high. As this is explained below, the following inspection is only used when the low pressure side is too high.	
1. Expansion valve opens too far.	Frost is present on the suction hose.	Replace expansion valve.
2. Defective compressor.	The high and low pressure side gauge pressures equalize when the compressor is engaged.	Replace compressor.
Low pressure side Too low.		
1. Low refrigerant charge.	The high side pressure will be low and bubbles may be present in sight glass on receiver drier.	Repair any leaks and recharge the refrigerant to the correct level.
2. Clogged or closed expansion valve.	The expansion valve's inlet side is frosted. Moisture or other Contaminants can be the cause.	Clean or replace the expansion Valve.
3. Restriction between drier and expansion valve.	Frost on the line between drier and expansion valve. A Negative low pressure reading may be shown.	Flush system or replace hose.
High pressure side Too high.		
1. Poor condenser performance.	Dirty or clogged condenser fins. Condenser fans not Operating.	Clean fins, and/or repair the fan.
2. Excessive refrigerant.	The high pressure side pressure will be high.	Use refrigerant recovery equipment to capture excess refrigerant. Charge to the correct refrigerant level.
3. Excessive oil charge.	The high pressure side will be high.	Evacuate system. Remove oil from condenser and compressor. Measure oil from compressor and add correct oil charge back into compressor. Flush system with nitrogen. Replace drier.
4. Air in system.	Pressure is high on both high and low sides.	Evacuate and recharge with Refrigerant.
5. Restriction in drier, condenser or high pressure line.	High pressure side will be high, and low pressure side will be low.	Evacuate and flush system replacing defective parts.
High pressure side Too low.		
1. Low refrigerant charge.	The high side pressure will be low and bubbles may be present in sight glass on receiver drier.	Repair any leaks and recharge the refrigerant to the correct level.

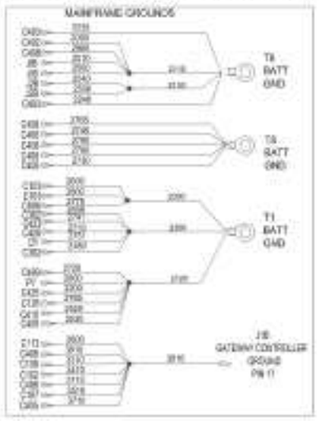
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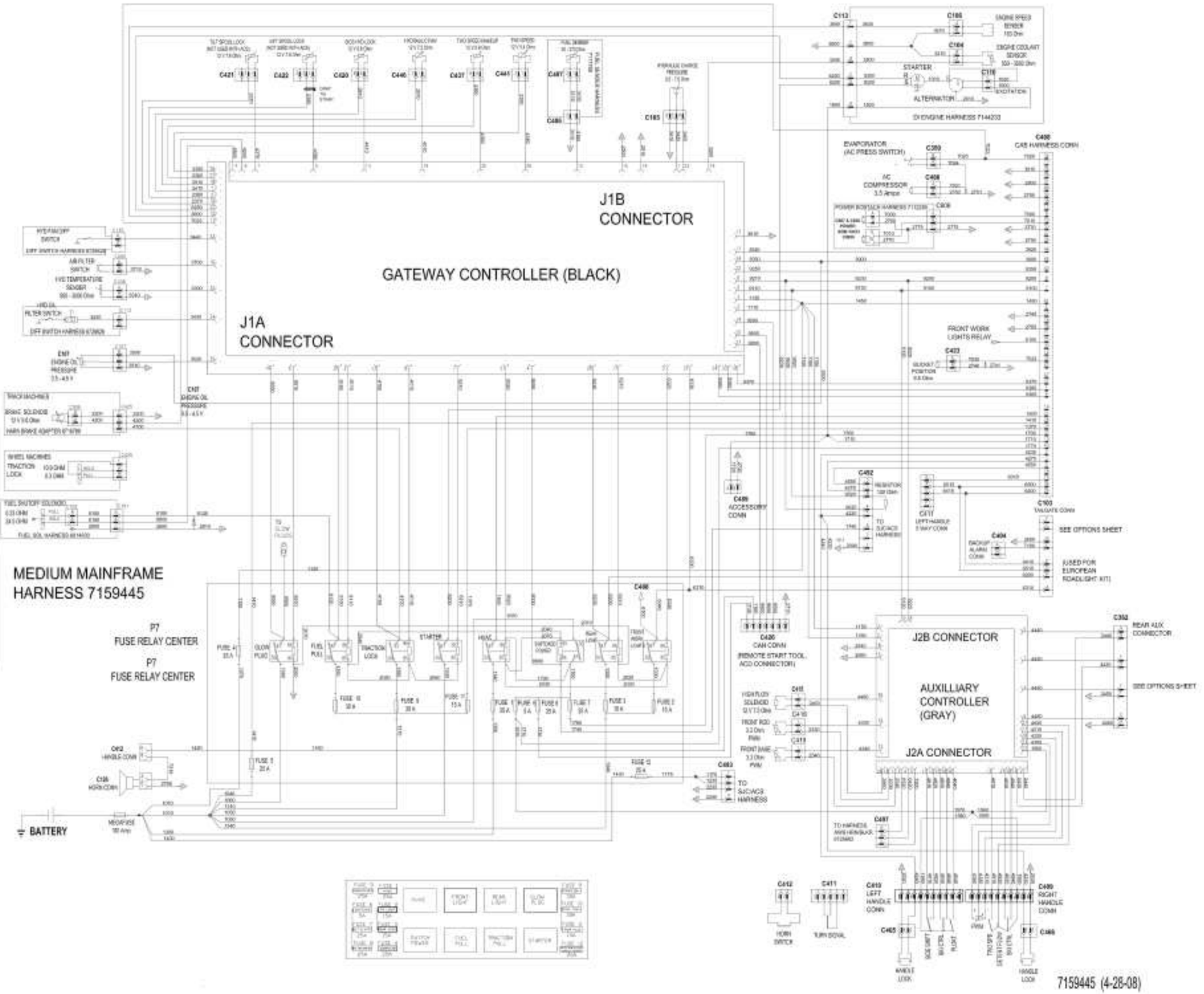
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