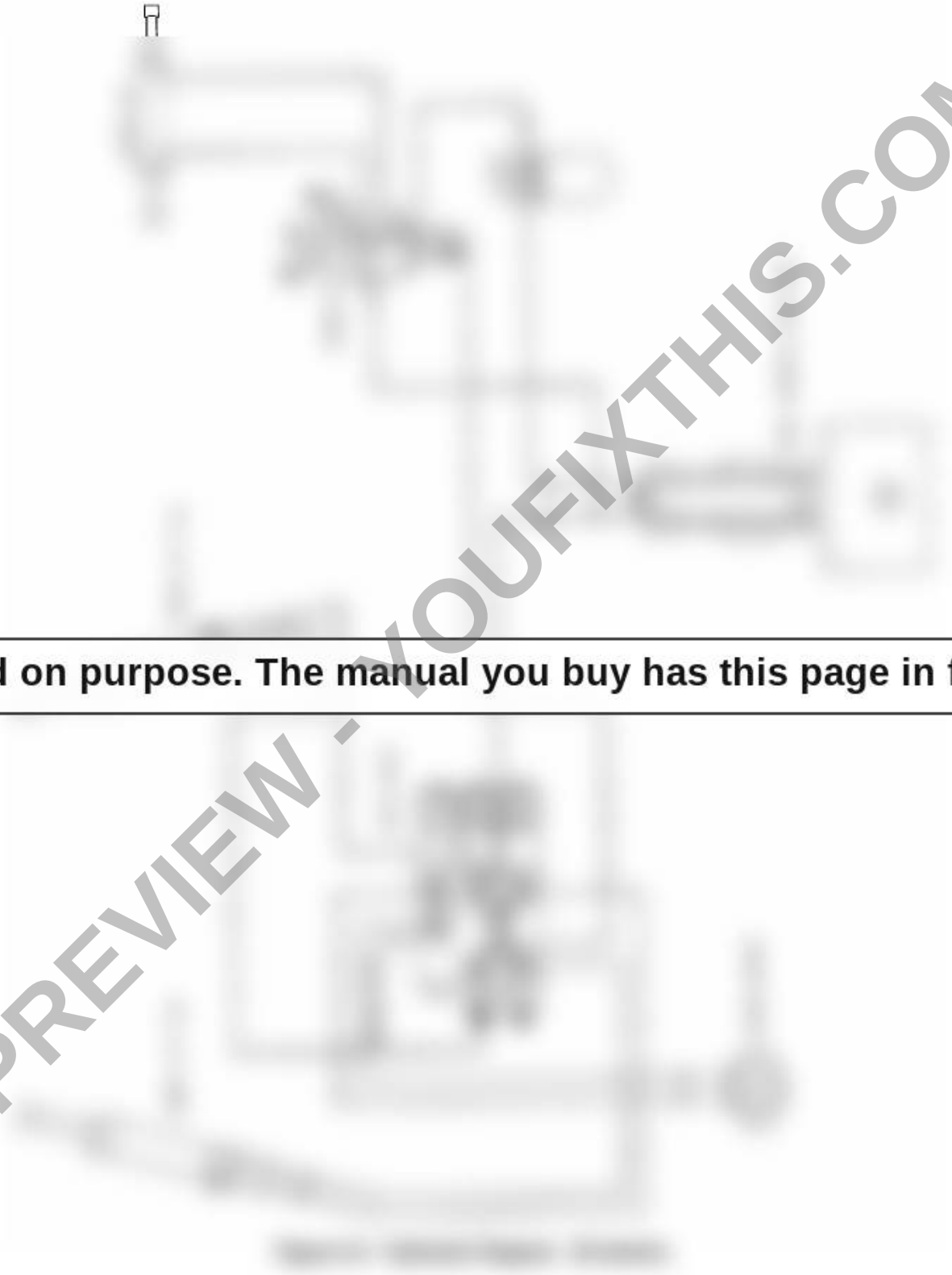


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2.10 CYLINDER REPAIR.

NOTE: *The following are general procedures that apply to all of the cylinders on this machine. Procedures that apply to a specific cylinder will be so noted.*

Disassembly.

⚠ IMPORTANT

DISASSEMBLY OF THE CYLINDER SHOULD BE PERFORMED ON A CLEAN WORK SURFACE IN A DIRT FREE WORK AREA.

1. Connect a suitable auxiliary hydraulic power source to the cylinder port block fitting.

⚠ WARNING

DO NOT FULLY EXTEND CYLINDER TO THE END OF STROKE. RETRACT CYLINDER SLIGHTLY TO AVOID TRAPPING PRESSURE.

2. Operate the hydraulic power source and extend the cylinder. Shut down and disconnect the power source. Adequately support the cylinder rod, if applicable.
3. If applicable, remove the cartridge type holding valve, manual descent valve, and fittings from the port block. Discard o-rings.
4. Place the cylinder barrel into a suitable holding fixture. Tap around outside of cylinder head retainer with a suitable hammer to shatter loctite.

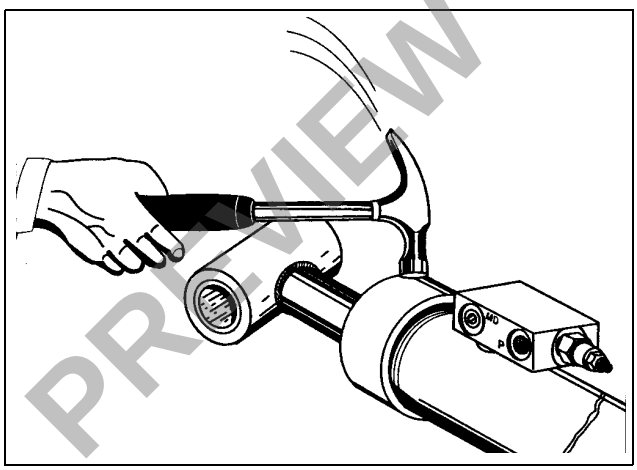


Figure 2-12. Removal of Cylinder Retainer.

5. Using a suitable chain wrench, loosen the cylinder head retainer, if applicable, and/or cylinder head gland, and remove from cylinder barrel.

NOTE: *Steer cylinder has cylinder head retainer at both ends. Remove both retainers.*

6. Attach a suitable pulling device to the cylinder rod port block end or cylinder rod end, as applicable.

⚠ IMPORTANT

EXTREME CARE SHOULD BE TAKEN WHEN REMOVING THE CYLINDER ROD, HEAD AND PISTON. AVOID PULLING THE ROD OFF CENTER, WHICH COULD CAUSE DAMAGE TO THE PISTON AND CYLINDER BARREL SURFACES.

7. With the barrel clamped securely, apply pressure to the rod pulling device and carefully withdraw the complete rod assembly from the cylinder barrel.

⚠ CAUTION

ONCE THE HEAD GLAND HAS CLEARED THE CYLINDER CASE MOUTH, THE ROD MUST BE SUPPORTED CLOSE TO THE CYLINDER CASE PRIOR TO THE PISTON BEING PULLED PAST THE CYLINDER CASE THREADS, AND/OR THE PISTON AND PISTON SEALS.

NOTE: *Step (8) applies to the steer cylinder.*

8. Remove the remaining head gland from the barrel if you have not already done so.
9. Using suitable protection, clamp the cylinder rod in a vise or similar holding fixture as close to the piston as possible.
10. Remove the set screw(s) if applicable, and nut which attach the piston and spacer(s), if applicable, to the rod, and remove piston and spacers. Discard self locking set screws.

NOTE: *Step (11) applies to the slave leveling and master cylinders. (Cylinders built from 12/94 to present)*

11. Remove the set screw, and nut which attach the piston and spacer to the rod. Using a suitable nylon strap wrench loosen piston and remove piston and spacers. Discard self locking set screws

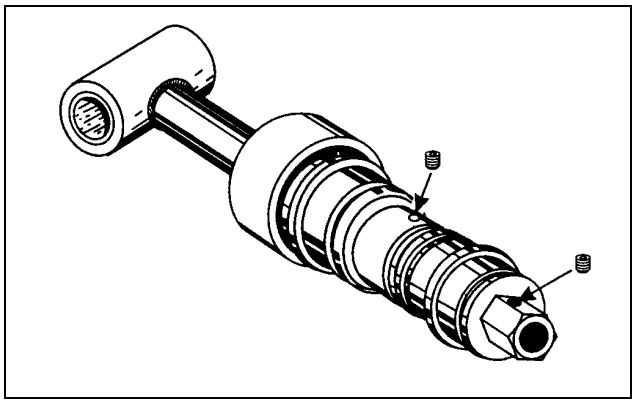


Figure 2-13. Removal of Set Screws.

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Table 3-1.Platform Assembly - Troubleshooting

TROUBLESHOOTING CHART		
TROUBLE	**PROBABLE CAUSE**	**REMEDY**
PLATFORM LEVELING SYSTEM.		
Automatic leveling inoperative. (35/n35/n40/45 electric)		
	Hydraulic system oil low.	Replenish oil as necessary.
	Dual check valves dirty/inoperative.	Clean or replace as necessary.
	Restricted or broken hydraulic line or fitting on slave cylinder or main lift cylinder.	Clean, repair, or replace line or fitting.
	Worn seal(s) in slave level or main lift cylinder.	Replace seal(s).
	Counterbalance valve in slave cylinder defective.	Replace counterbalance valve.
	Slave level or main lift cylinder not functioning properly.	Repair or replace cylinder.
Platform will not maintain level attitude.		
	Counterbalance valve on slave leveling cylinder improperly adjusted or not functioning properly.	Replace valve.
	Worn seal(s) in slave level or main lift cylinder.	Replace seal(s).
	Damaged slave level or main lift cylinder.	Repair or replace cylinder.
No response to platform leveling controls.		
	Level control switch inoperative.	Repair or replace control switch lever. Run systems test
	Hydraulic system oil low.	Replenish oil as necessary.
	System orifice plugged/dirty.	Clean orifice.
	Restricted or broken hydraulic line or fitting.	Clean, repair, or replace line or fitting.
	Control valve not functioning properly.	Repair or replace valve.
	No electric to control valve.	See proper wiring diagram. Run systems test
	Slave cylinder not functioning properly.	Repair or replace pump.
	Main proportional valve in-operative	Run systems test
	Incorrect personality settings	check settings

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SECTION 1. SPECIFICATIONS

1.1 CAPACITIES

Tires - G 78 - 15, Load Range E, 10 Ply Rating, 80 psi (5.5

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Table 2-3.PREVENTIVE MAINTENANCE AND INSPECTION SCHEDULE

AREA	INTERVAL					
PLATFORM AND BOOMS	**DAILY**	**WEEKLY**	**MONTHLY**	**3 MONTH**	**6 MONTH**	**YEARLY**
1. Platform Gate	1, 4		12			
2. Platform	1, 4					
3. Platform Rotator	12	5, 11	8			
4. Footswitch	1, 11					
5. Controller	1, 11					
6. Switches	1, 11					
7. Placards and Decals	1, 2					
8. Control Tags	1, 2					
9. Hoses and Cables	1	4, 5, 8				
10. Pins			8			
11. Bushings			8			
12. Wear Pads			8			
13. Cylinders		1, 5, 6, 13				
TURNTABLE						
1. Gauges/Ground Controls	1, 2, 11					
2. Valves	1, 11	5				
3. Hydraulic Hoses	1	5				
4. Shields	1					
5. Limits Switches	1, 7					
6. Placards and Decals	1, 2					
7. Swing Bearing		1		9, 12		
8. Swing Motor		1, 5, 6	8			
CHASSIS						
1. Batteries	3	5				
2. Wheel and Tire Assemblies	1	8, 9, 15				
3. Drive Motors		1, 5, 6				
4. Drive Torque Hubs *		1, 5, 6		3		
5. Drive Brakes		1, 5, 6				
6. Hydraulic Pump/Motor	1	5				
7. Steer Components	1	4, 6	8			
8. Front Axle Pin	1		8			

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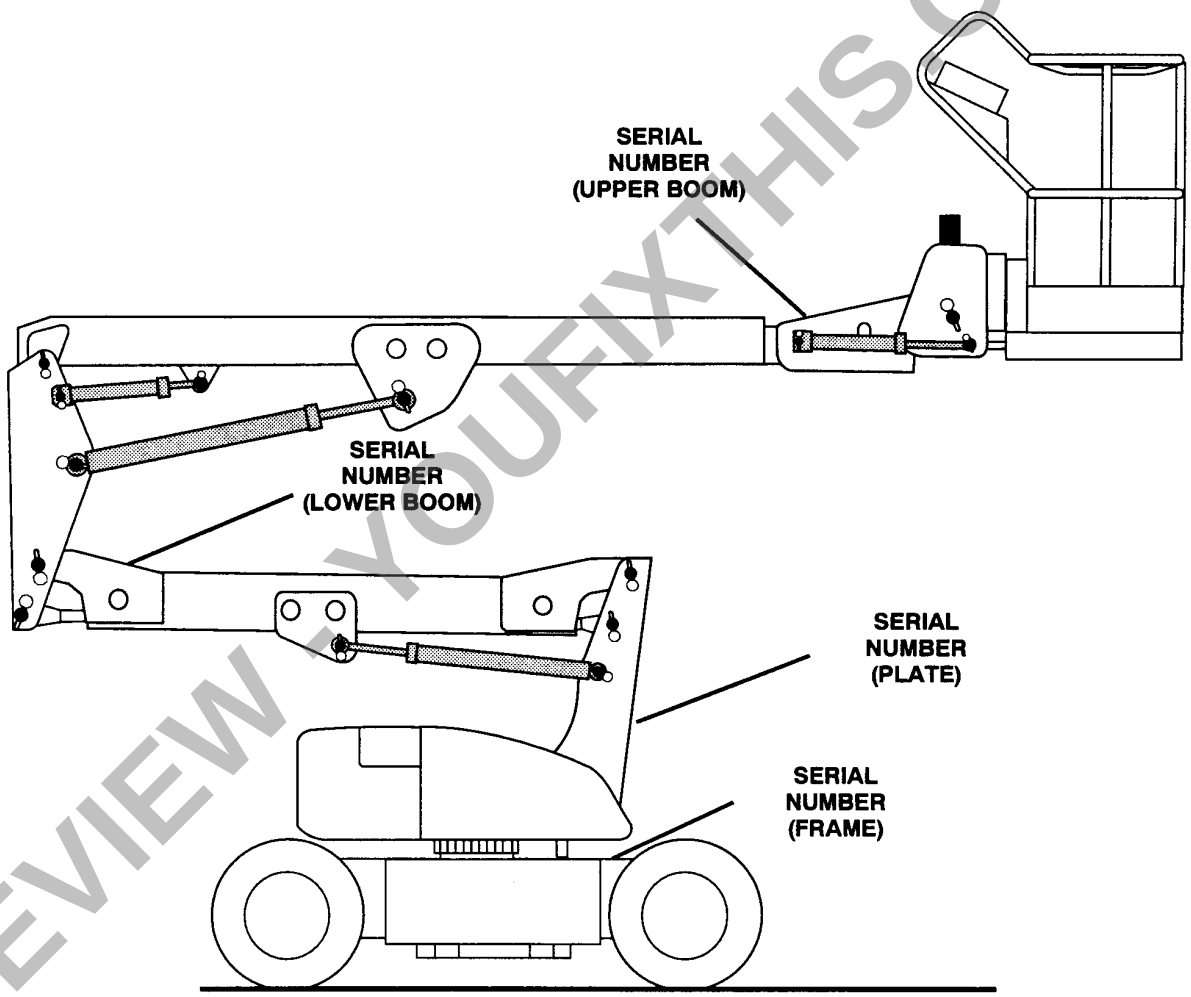


Figure 1-9. Serial Number Locations - 35/n35 electric. (Sheet 2 of 3).

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⚠ WARNING

WHEN WORKING ON THE UPPER BOOM LIFT CYLINDER RAISE THE UPPER BOOM TO HORIZONTAL AND PLACE A BOOM PROP APPROXIMATELY 1 INCH 2.54 CM BELOW THE MAIN BOOM. REFER TO FIG. 2-11. IF WORKING ON LOWER BOOM LIFT CYLINDER, RAISE LOWER BOOM HALFWAY, FULLY ELEVATE UPPER BOOM AND ATTACH OVERHEAD CRANE TO THE UPRIGHT FOR SUPPORT, LEAVING APPROXIMATELY 1 INCH 2.54 CM OF SLACK IN CHAIN OR SLING FOR TEST PURPOSES.

2. When working on the platform slave cylinder, stroke platform slave level cylinder forward until platform sits at a 45 degree angle.
3. After completing the above, shut down hydraulic system and allow machine to sit for 10-15 minutes. This is done to relieve pressure in the hydraulic lines. Carefully remove hydraulic hoses from appropriate cylinder port block.
4. There will be initial weeping of hydraulic fluid, which can be caught in a suitable container. After the initial discharge, there should not be any further leakage from the ports. If leakage continues at a rate of 6-8 drops per minute or more, the following cylinder repairs must be made. If the retract port is leaking, the piston is leaking, the piston seals are defective and must be replaced. If the extend port is leaking, the counterbalance is defective and must be replaced.
5. To check piston seals, carefully remove the counterbalance valve from the retract port. After initial discharge there should not be any further leakage from the ports. If leakage occurs at a rate of 6-8 drops per minute or more, the piston seals are defective and must be replaced.
6. If no repairs are necessary or when repairs have been made, carefully reconnect hydraulic hoses to the appropriate ports.
7. Remove boom prop/overhead crane, activate hydraulic system and run cylinder through complete cycle to check for leaks and operation.

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2.16 SWING BEARING.

Turntable Bearing Mounting Bolt Condition Check.

NOTE: *This check is designed to replace the existing bearing bolt torque checks on JLG Lifts in service. This check must be performed after the first 50 hours of machine operation and every 600 hours of machine operation thereafter. If during this check any bolts are found to be missing or loose, replace missing or loose bolts with new bolts and torque to the value specified in the torque chart, after lubricating the bolt threads with loctite #271. After replacing and torquing bolt or bolts recheck all existing bolts for looseness.*

1. Check the frame to bearing. Attach bolts as follows:
   a. Elevate the fully retracted boom to 70 degrees (full elevation).
   b. At the positions indicated on Figure 2-30. try and insert the.0015" feeler gauge between the bolt head and hardened washer at the arrow indicated position.
   c. Assure that the.0015" feeler gauge will not penetrate under the bolt head to the bolt shank.
   d. Swing the turntable 90 degrees, and check some selected bolts at the new position.
   e. Continue rotating the turntable at 90 degrees intervals until a sampling of bolts have been checked in all quadrants.
2. Check the turntable to bearing. Attach bolts as follows:
   a. Elevate the fully retracted boom to 70 degrees (full elevation).
   b. At the positions indicated on Figure 2-30. try and insert the.0015" feeler gauge between the bolt head and hardened washer at the arrow indicated position.
   c. Lower the boom to horizontal and fully extend the boom.
   d. At the position indicated on Figure 2-30. try and insert the.0015" feeler gauge between the bolt head and hardened washer at the arrow indicated position.

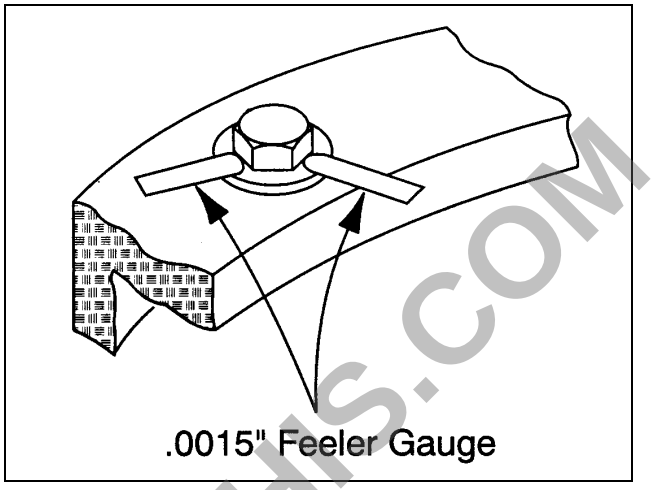


Figure 2-30. Swing Bearing Feeler Gauge Check.

Wear Tolerance.

1. 30 electric - With the boom positioned over the side of the machine, the Upper Boom fully elevated and Lower Boom stowed, (See Figure 2-31 a.), using a magnetic base dial indicator, measure and record the distance between the swing bearing and turntable. (See Figure 2-32.)

   35/n35 electric - With the boom positioned over the side of the machine, the Upper Boom horizontal with telescope fully extended and Lower Boom fully elevated, (See Figure 2-31 a.), using a magnetic base dial indicator, measure and record the distance between the swing bearing and turntable. (See Figure 2-32.)

   40/n40/45 electric - With the boom positioned over the side of the machine, the Upper Boom horizontal with telescope fully extended and Mid/Lower Boom stowed, (See Figure 2-31 a.), using a magnetic base dial indicator, measure and record the distance between the swing bearing and turntable. (See Figure 2-32.)
2. 30 electric - At the same point, with the boom positioned over the side of the machine, the Upper Boom horizontal and the Lower Boom fully elevated, (See Figure 2-31 b.) using a magnetic base dial indicator, measure and record the distance between the swing bearing and turntable (See Figure 2-32).

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Table 3-2.Boom Assembly - Troubleshooting

BOOM ELEVATION SYSTEM.		
No response to lift control switch.		
	Lift control switch inoperative.	Repair or replace control switch.Run systems test
	Lift cylinder holding valve inoperative.	Repair or replace holding valve.
	Electrical malfunction.	See wiring diagram. Run systems test.
	Hydraulic system oil low.	Replenish oil as necessary.
	Restricted or broken supply line on valve bank or hydraulic pump.	Clean or replace line.
	Control valve not functioning properly.	Repair or replace valve.
	Lift cylinder not functioning properly.	Repair or replace cylinder.
	Hydraulic pump not functioning properly.	Repair or replace pump.
	Dump valve (bypass) not operating.	Determine cause and repair or replace valve.
Boom will not raise.		
	Load capacity exceeded (personnel or equipment on platform).	Reduce load.(Refer to capacity placard.)
	Hydraulic system oil low.	Replenish oil as necessary.
	Electrical failure to valves.	See proper wiring diagram. Run systems test.
	Restricted or broken hydraulic line or fitting.	Clean, repair, or replace line or fitting.
	Control valve not functioning properly.	Repair or replace valve.
	Pressure relief valve not functioning properly.	Re-adjust or replace valve.
	Lift cylinder not functioning properly.	Repair or replace cylinder.
	Motor/Pump does not respond when LIFT control switch is moved to UP position.	Refer to Electrical Diagram and/or Electrical System Troubleshooting Chart. Run systems test.
	Binding lift cylinder or boom pivot pin.	Repair or replace cylinder or pin.
	Bypass valve (dump) not functioning.	Repair or replace valve.
Boom will not lower.		
	See: Boom will not raise.	
	Pressure relief valve not functioning properly.	Re-adjust or replace valve.
	Holding valve not functioning properly.	Re-adjust or replace valve.

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