PROBLEM	POSSIBLE CAUSE
Engine overheats-stop engine immediately	Excessive dirt on cooling system Engine belt broken Defective injector nozzles Incorrect fuel pump calibration Blocked cooling air flow
Low engine oil pressure	Low engine oil level Defective oil pressure switch Leaks from lubrication system
Engine makes excessive noise	Drive belt squeal Intake air/exhaust leaks Excessive valve clearance Fault turbocharger

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NOTE: Case Corporation reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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Section

1002

1002

GENERAL SPECIFICATIONS AND TORQUES

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Section

2002

ENGINE TROUBLESHOOTING

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SAFETY INFORMATION

SAFETY ALERT SYMBOL

This is the Safety Alert Symbol. When you see this symbol in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

Understanding Signal Words

A signal word - WARNING - is used with the safety-alert symbol.

DANGER, WARNING, or CAUTION safety labels are located near specific hazards.

NOTE labels are for general information.

DANGER

DANGER IS USED TO INDICATE THE PRESENCE OF A HAZARD WHICH WILL CAUSE SEVERE PERSONAL INJURY OR DEATH IF THE WARNING IS IGNORED.

WARNING:

WARNING IS USED TO INDICATE THE PRESENCE OF A HAZARD WHICH CAN CAUSE SEVERE INJURY OR DEATH IF THE WARNING IS IGNORED.

CAUTION

CAUTION IS USED TO INDICATE THE PRESENCE OF A HAZARD WHICH WILL OR CAN CAUSE PERSONAL INJURY, OR PROPERTY DAMAGE IF THE WARNING IS IGNORED.

NOTE

NOTE is used to notify people of installation, operation, or maintenance information which is important but not hazard related.

General Safety Guidelines

Accidents are caused by failure to follow simple, fundamental safety rules and precautions. Most accidents can be avoided by paying attention, using common sense, and following instructions.

WARNING: *Improper maintenance can be hazardous.*

Read and understand SECTION 1 - SAFETY AND GENERAL INFORMATION before performing any maintenance, service, or repairs. M622

Study the operator's manual and service manual before starting, operating, maintaining, fueling, or servicing the 686G and 686G XR Telescopic Handlers.

Keep hands and fingers from between small parts. Wear protective gear such as safety glasses, heavy gloves, and safety shoes.

No unauthorized person should be allowed to operate, service, or maintain this telescopic handler. Do not perform any work on the equipment that is unauthorized.

Read and understand all unit mounted safety labels before starting, operating, maintaining, fueling, or servicing this unit.

WARNING: *Unexpected machine motion or moving parts can cut or crush.*

Shutdown the engine before working on the machine. M621

Always make sure that the parking brake is set and the engine is shut down before starting any maintenance or service procedures.

Disconnect the negative battery terminal and tag all controls according to OSHA requirements to warn that work is in progress.

Always wear proper safety equipment as required for the job. Consult your supervisor for specific job related safety equipment requirements.

Do not wear rings, watches, jewelry, or loose or hanging apparel, such as ties, torn clothing, scarves, unbuttoned or unzipped jackets, or anything else that could possibly get caught up in moving parts. Long hair must be tied back or otherwise secured.

Keep the maintenance area clean and dry. Remove water or oil slicks immediately.

Be sure all mechanics tools are in good condition. Do not use tools that are extremely worn out, rounded out, mushroomed, or loose. Always wear safety glasses with side shields.

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686G/686GXR TELESCOPIC HANDLERS
Service Manual
7-89650

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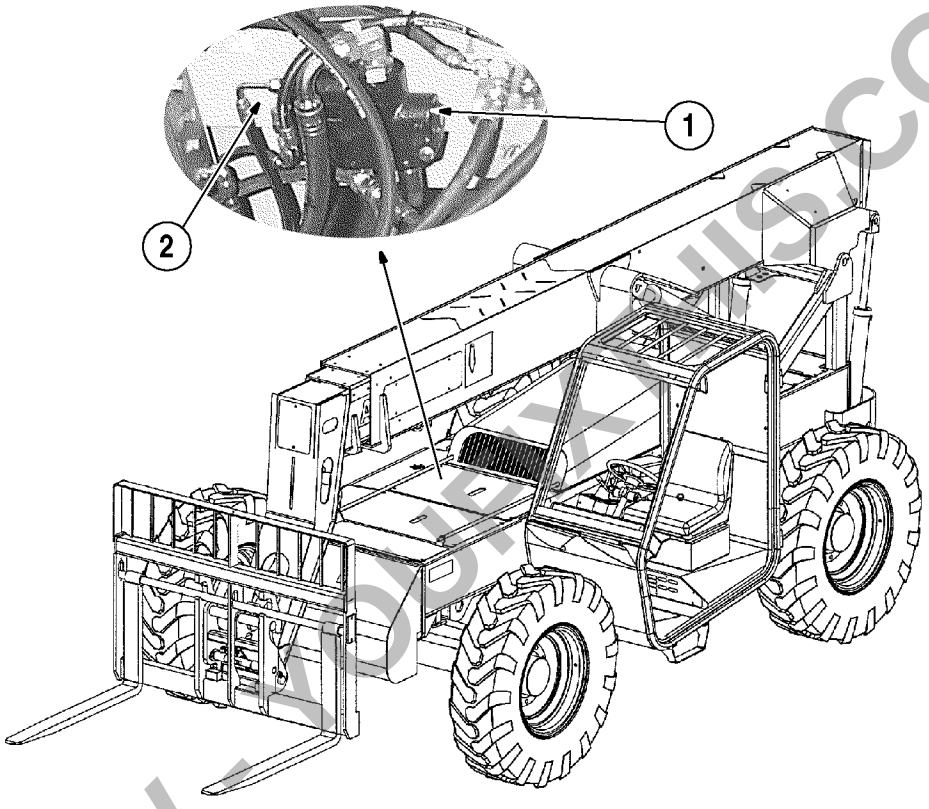
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STEERING PRIORITY VALVE

The steering priority valve (1) controls the flow of hydraulic oil and ensures that there is always an ample supply of hydraulic oil to operate the steering and brake systems when the engine is running. When these system requirements are met, hydraulic oil is allowed to flow to the rest of the system.



BS98N066

1. STEERING PRIORITY VALVE
2. RELIEF VALVE

Steering Priority Valve

Priority Valve Replacement

Except for replacement of the relief valve (2), the priority valve is non-serviceable. The entire priority valve must be replaced if other repairs become necessary.

1. Park the machine on a firm level surface and stop the engine.
2. Remove the deck plate to access the priority valve (1).
3. Clean all parts thoroughly to prevent system contamination.
4. Tag hoses and connectors for reassembly.
5. Disconnect the hoses and remove the valve.
6. Install the new priority valve and reconnect the hoses.
7. Start the engine and operate the steering and brakes to purge air from the system and check for leaks.
8. Add hydraulic oil to the hydraulic tank as necessary to bring level to sight gauge on the hydraulic tank.
9. Install the deck plate.

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Section

7003

7003

BRAKE SYSTEM

REMOVAL AND INSTALLATION OF

COMPONENTS

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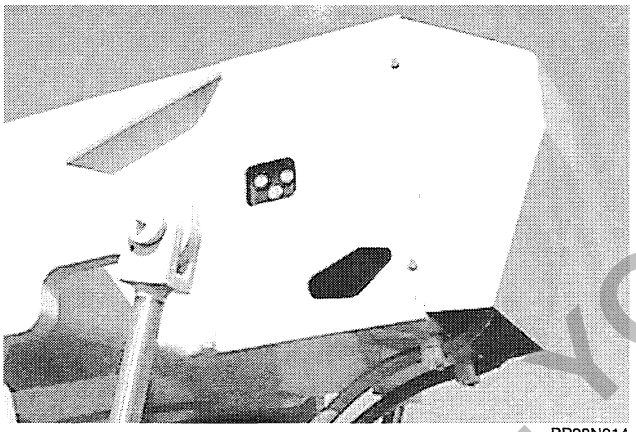
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14. Install bleeder plugs (19) and tighten to 20 to 27 Nm (15 to 20 lb-ft).
15. Install the crowd cylinder in the boom as described in Section 9, Boom.
16. Dispose of used hydraulic oil in accordance with local regulations.
17. Start the machine, allow system pressure to build then, extend and retract the boom to purge air from the system.

Crowd Cylinder Counterbalance Valve Replacement

1. Park the machine on a firm level surface, lower the boom so that the carriage is resting on the ground, stop the engine.
2. Remove the rear boom cover (1).



1. REAR BOOM COVER

BP98N014

Rear Boom Cover

NOTE: *Be sure to have a container, rags, and absorbent material available to capture hydraulic fluid. Dispose of used hydraulic fluid in accordance with established local procedures. Do not allow hydraulic fluid to enter soil.*

3. Crack the counterbalance valve (3) open to relieve pressure.
4. Remove counterbalance valve.
5. Install new counterbalance valve and tighten to 203 to 217 Nm (150 to 160 lb-ft).

Tilt Compensation Cylinder Seal Kit Replacement

1. Remove the tilt compensation cylinder as described in Section 9, Boom.
2. Drain hydraulic fluid and thoroughly clean all dirt or other foreign substance from openings, particularly at the head.
3. Remove set screw (13) and nylon plug (12) from head cap (14).
4. Use a spanner wrench to remove cylinder head cap (14).
5. Extend rod (6) until piston (2) bottoms-out against head (8). Gently tap the piston against the head to drive the head out of the tube assembly (7).
6. Place the rod with the piston and head attached on a work bench.
7. Remove locknut (1), piston (2), and static O-ring (18).
8. Remove head (8).
9. Remove and discard all old seals and rings. Clean all parts thoroughly and inspect for wear and damage.
10. Coat new seals, rings and wiper with hydraulic oil and install them in the head.

CAUTION: *Be extremely careful to avoid damaging the seals and wiper during installation. Damage could result in by-pass leakage.*

11. Be sure head (8) is oriented correctly and carefully slide the head onto the rod assembly (6).
12. Coat the new piston seals and rings with hydraulic oil and install them on piston (16).
13. Place new static O-ring (18) on rod assembly (6). Be sure the piston is correctly oriented and slide it onto the rod. Install locknut (1) and tighten to 509 to 610 Nm (375 to 450 lb-ft).
14. Be sure the piston and rings are coated with hydraulic oil and carefully slide the piston and rod assembly into tube assembly (7). Be especially careful as the seals pass over the threaded portion of the tube assembly and the rod port to be sure the seals are not nicked or cut.

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