

## 9 . TROUBLESHOOTING

### 1. ENGINE SYSTEM

Trouble symptom	Probable cause	Remedy
Oil pressure warning lamp fails to go out.	<ul style="list-style-type: none"> <li>• Low oil level in oil pan.</li> <li>• Oil filter element clogged.</li> <li>• Loose or worn oil pipe joint leaks oil.</li> </ul>	<ul style="list-style-type: none"> <li>• Add oil.</li> <li>• Replace element.</li> <li>• Check and repair.</li> </ul>
Radiator pressure valve spouts steam.	<ul style="list-style-type: none"> <li>• Lack of cooling water or water leakage.</li> <li>• Loosen fan belt.</li> <li>• Dust and scale accumulated in cooling system.</li> </ul>	<ul style="list-style-type: none"> <li>• Add water or repair.</li> <li>• Adjust belt.</li> <li>• Change water and clean the interior of cooling system.</li> </ul>
Water temp gauge indicates red range, on right.	<ul style="list-style-type: none"> <li>• Radiator fin clogged or fin damaged.</li> <li>• Thermostat or water temp gauge faulty.</li> <li>• Radiator filler cap loosening.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean or repair.</li> <li>• Replace</li> <li>• Retighten cap or replace packing.</li> </ul>
Water temp gauge indicates red range, on left.	<ul style="list-style-type: none"> <li>• Thermostat faulty.</li> <li>• Water temperature gauge faulty.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace</li> <li>• Replace</li> </ul>
Engine fails to start.	<ul style="list-style-type: none"> <li>• Lack of fuel.</li> <li>• Air mixed in fuel system.</li> <li>• Fuel injection pump or nozzle defective.</li> <li>• Starting motor rotates slowly.</li> <li>• Engine compression insufficient.</li> <li>• Valve clearance out of adjustment.</li> </ul>	<ul style="list-style-type: none"> <li>• Refill fuel.</li> <li>• Bleed air.</li> <li>• Replace.</li> <li>• See "Electrical system."</li> <li>• Contact dealer</li> <li>• Adjust clearance</li> </ul>
Engine emits whitish or bluish smoke.	<ul style="list-style-type: none"> <li>• Excessive quantity of oil in oil pan.</li> <li>• Poor quality of fuel.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce oil quantity.</li> <li>• Replace with specified fuel.</li> </ul>
Abnormal sound heard. (Fuel combustion or mechanical sound)	<ul style="list-style-type: none"> <li>• Poor quality of fuel.</li> <li>• Overheating</li> <li>• Muffler interior damaged.</li> <li>• Excessively large valve clearance.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace with specified fuel.</li> <li>• See Symptom "Radiator pressure valve spouts steam".</li> <li>• Replace</li> <li>• Adjust clearance.</li> </ul>

## 2. ELECTRICAL SYSTEM

Trouble symptom	Probable cause	Remedy
Lamps dimming even at maximum engine speed.	• Faulty wiring.	• Check for loose terminal and disconnected wire.
Lamps flicker during engine operation.	• Improper belt tension.	• Adjust belt tension.
Charge lamp does not light during normal engine operation.	• Charge lamp defective. • Faulty wiring.	• Replace. • Check and repair.
Alternator makes abnormal sounds.	• Alternator defective.	• Replace
Starting motor fails to run.	• Faulty wiring. • Insufficient battery voltage.	• Check and repair. • Recharge battery.
Starting motor pinion repeats going in and out.	• Insufficient battery voltage.	• Recharge battery.
Excessively low starting motor speed.	• Insufficient battery voltage. • Starting motor defective.	• Recharge battery. • Replace
Starting motor comes to a stop before engine starts up.	• Faulty wiring. • Insufficient battery voltage.	• Check and repair. • Recharge battery.
Heater signal does not become red. * Heater functions only when the coolant temperature is below 0 °C	• Faulty wiring. • Glow plug damaged.	• Check and repair. • Replace
Engine oil pressure warning lamp does not light when engine is stopped (with starting switch left in "ON" position).	• Caution lamp defective. • Caution lamp switch defective.	• Replace • Replace

### 3. TORQUE FLOW SYSTEM

Trouble symptom	Probable cause	Remedy
<p>1. Excessive oil temperature rise</p> <p>1) Torque converter</p>        <p>2) Transmission</p>	<ul style="list-style-type: none"> <li>• Improper oil level.</li> <li>• Impeller interfering with surroundings.</li> <li>• Stator and free wheel malfunctioning.</li> <li>• Air sucked in.</li> <li>• Water intruding into transmission case</li> <li>• Bearing worn or seizing.</li> <li>• Gauge malfunctioning.</li> <li>• Clutch dragging.</li> <li>• Bearing worn or seized.</li> </ul>	<ul style="list-style-type: none"> <li>• Check oil level. Add or drain oil as necessary.</li> <li>• After draining oil from oil tank and transmission, check and replace interfering parts.</li> <li>• Check engine (stalling) speed. If necessary, replace.</li> <li>• Check the inlet side joint or pipe. If necessary, retighten joint or replace gasket.</li> <li>• Check drained oil. If necessary, change oil.</li> <li>• Disassemble, inspect, repair or replace.</li> <li>• Check and, if necessary, replace.</li> <li>• Check to see whether or not truck moves even when transmission is placed in neutral position. If so, replace clutch plate.</li> <li>• Disassemble, check and replace.</li> </ul>
<p>2. Noise operation</p> <p>1) Torque converter</p>        <p>2) Transmission</p>	<ul style="list-style-type: none"> <li>• Cavitation produced.</li> <li>• Flexible plate damaged.</li> <li>• Bearing damaged or worn.</li> <li>• Gear damaged.</li> <li>• Impeller interfering with surroundings.</li> <li>• Bolt loosening.</li> <li>• Spline worn.</li> <li>• Noise gear pump operation.</li> <li>• Dragging caused by seizing clutch.</li> <li>• Bearing worn or seizing.</li> <li>• Gear damaged.</li> <li>• Bolt loosening.</li> <li>• Spline worn.</li> </ul>	<ul style="list-style-type: none"> <li>• Change oil, replace parts leaking air.</li> <li>• Listen to rotating sound at lowspeed operation. If necessary, repack flexible plate.</li> <li>• Disassemble, check and replace.</li> <li>• Disassemble, check and replace.</li> <li>• Check impeller or check drained oil for mixing of foreign matter. If necessary, change oil.</li> <li>• Disassemble and check. If necessary, retighten or replace.</li> <li>• Disassemble, check and replace.</li> <li>• Disassemble, check and replace.</li> <li>• Check to see whether or not truck moves even when transmission is in neutral position. If so, replace clutch plate.</li> <li>• Disassemble, check and replace</li> <li>• Disassemble, check and replace</li> <li>• Disassemble, check and retighten or replace</li> <li>• Disassemble, check and replace</li> </ul>

Trouble symptom	Probable cause	Remedy
3.Low output power 1) Torque converter	<ul style="list-style-type: none"> <li>• Insufficient hydraulic pressure : <ul style="list-style-type: none"> <li>- Low oil level.</li> <li>- Air sucked in.</li> </ul> </li> <li>- Oil filter clogging.</li> <li>- Oil pump worn. (Low delivery flow)</li> <li>- Regulator valve coil spring fatigued.</li> <li>- Control valve spool malfunctioning.</li> <li>- Piston or O-ring worn.</li> <li>• Stator free wheel cam damaged.</li> </ul>	<ul style="list-style-type: none"> <li>- Check oil level and add oil</li> <li>- Check joints and pipes. If necessary, retighten joint or replace packing.</li> <li>- Check and replace</li> <li>- Check oil pressure. If necessary replace pump.</li> <li>- Check spring tension. If necessary, replace.</li> <li>- Disassemble, check and repair or replace.</li> <li>- Disassemble, check measure and replace.</li> <li>- Check stalling speed. (Increased engine load will cause excessive drop of stalling speed.)</li> <li>- Check oil temperature rise. If any, replace free wheel.</li> </ul>
2) Transmission	<ul style="list-style-type: none"> <li>• Flexile plate deformed</li> <li>• Stator free wheel seizing.</li> <li>• Impeller damaged for interfering with the surroundings.</li> <li>• Use of poor quality of oil or arising of air bubbles. <ul style="list-style-type: none"> <li>- Air sucked in from inlet side.</li> </ul> </li> <li>- Low torque converter oil pressure accelerates generation of air bubbles.</li> <li>- Oil mixing with water.</li> <li>- Inching rod out of adjustment.</li> <li>• Clutch slipping <ul style="list-style-type: none"> <li>- Lowering of weight.</li> <li>- Piston ring or O-ring worn.</li> </ul> </li> <li>- Clutch piston damaged.</li> <li>- Clutch plate seizing or dragging.</li> </ul>	<ul style="list-style-type: none"> <li>- Replace flexible plate</li> <li>- Check temperature plate. (No-load will cause temperature rise)</li> <li>- Replace free wheel if a drop of starting output is found.</li> <li>- Check drained oil for foreign matter. If any, change oil.</li> <li>- Check and change oil.</li> <li>- Check joints and pipes. If necessary, retighten joint or replace packing.</li> <li>- Check oil pressure.</li> <li>- Check drained oil and change oil.</li> <li>- Check and adjust.</li> <li>- Check oil pressure.</li> <li>- Disassemble, check, measure and replace.</li> <li>- Disassemble, check and replace.</li> <li>- Check to see whether or not truck moves even when transmission is in neutral position. If so, replace.</li> </ul>



Trouble symptom	Probable cause	Remedy
5. Power is not transmitted (Continue)	<ul style="list-style-type: none"> <li>• Foreign matter intruding into oil passage to clutch.</li> <li>• Shaft spline worn.</li> </ul>	<ul style="list-style-type: none"> <li>• Disassemble, check and repair or replace.</li> <li>• Disassemble, check and replace.</li> </ul>
6. Oil leakage (Transmission and torque converter)	<ul style="list-style-type: none"> <li>• Oil leaks from oil seal.</li> <li>• Oil leaks from case joining surfaces.</li> <li>• Oil leaks from joint or pipe.</li> <li>• Oil leaks from drain plug.</li> <li>• Oil leaks from a crack.</li> </ul>	<ul style="list-style-type: none"> <li>• Disassemble and check for wear of seal lips and mating sliding surfaces (pump boss, coupling etc.) Replace oil seal, pump boss, coupling, etc.</li> <li>• Check and retighten or replace packing.</li> <li>• Check and repair or replace gasket.</li> <li>• Check and retighten or gasket.</li> <li>• Check and replace cracked part.</li> </ul>

## 4. STEERING SYSTEM

Trouble symptom	Probable cause	Remedy
1. Steering wheel drags.	<ul style="list-style-type: none"> <li>• Low oil pressure.</li> <li>• Bearing faulty.</li> <li>• Spring spool faulty.</li> <li>• Reaction plunger faulty.</li> <li>• Ball-and-screw assembly faulty.</li> <li>• Sector shaft adjusting screw excessively tight.</li> <li>• Gears poorly meshing.</li> <li>• Flow divider coil spring fatigued.</li> </ul>	<ul style="list-style-type: none"> <li>• Check locknut. Repair.</li> <li>• Clean or replace.</li> <li>• Clean or replace.</li> <li>• Replace.</li> <li>• Clean or replace.</li> <li>• Adjust.</li> <li>• Check and correct meshing.</li> <li>• Replace.</li> </ul>
2. Steering wheel fails to return smoothly.	<ul style="list-style-type: none"> <li>• Bearing faulty.</li> <li>• Reaction plunger faulty.</li> <li>• Ball-and-screw assy faulty.</li> <li>• Gears poorly meshing.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean or replace.</li> <li>• Replace.</li> <li>• Clean or replace.</li> <li>• Check and correct meshing.</li> </ul>
3. Steering wheel turns unsteadily. Steering system makes abnormal sound or vibration.	<ul style="list-style-type: none"> <li>• Locknut loosening.</li> <li>• Metal spring deteriorated.</li> <li>• Gear backlash out of adjustment.</li> <li>• Air in oil circuit.</li> </ul>	<ul style="list-style-type: none"> <li>• Retighten.</li> <li>• Replace.</li> <li>• Adjust.</li> <li>• Bleed air.</li> </ul>
4. Abnormal sound heard when steering wheel is turned fully	<p>Valve</p> <ul style="list-style-type: none"> <li>• Faulty. (Valve fails to open.)</li> </ul> <p>Piping</p> <ul style="list-style-type: none"> <li>• Pipe (from pump to power steering cylinder) dented or clogged.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust valve set pressure and check for specified oil pressure.</li> <li>• Repair or replace.</li> </ul>
5. Piping makes abnormal sounds.	<p>Oil pump</p> <ul style="list-style-type: none"> <li>• Lack of oil.</li> <li>• Oil inlet pipe sucks air.</li> <li>• Insufficient air bleeding.</li> </ul>	<ul style="list-style-type: none"> <li>• Add oil.</li> <li>• Repair.</li> <li>• Bleed air completely.</li> </ul>
6. Valve or valve unit makes abnormal sounds.	<p>Oil pump</p> <ul style="list-style-type: none"> <li>• Oil inlet pipe sucks air.</li> </ul> <p>Valve</p> <ul style="list-style-type: none"> <li>• Faulty. (Unbalance oil pressure)</li> </ul> <p>Piping</p> <ul style="list-style-type: none"> <li>• Pipe (from pump to power steering) dented or clogged.</li> <li>• Insufficient air bleeding.</li> </ul>	<ul style="list-style-type: none"> <li>• Repair or replace.</li> <li>• Adjust valve set pressure and check specified oil pressure.</li> <li>• Repair or replace.</li> <li>• Bleed air completely.</li> </ul>
7. Insufficient or variable oil flow.	<ul style="list-style-type: none"> <li>• Flow control valve orifice clogged.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean.</li> </ul>
8. Insufficient or variable discharge pressure.	<p>Piping</p> <ul style="list-style-type: none"> <li>• Pipe (from tank to pipe) dented or clogged.</li> </ul>	<ul style="list-style-type: none"> <li>• Repair or replace.</li> </ul>

## 5. BRAKE SYSTEM

Trouble symptom	Probable cause	Remedy
1. Insufficient braking force	<ul style="list-style-type: none"> <li>• Hydraulic system leaks oil.</li> <li>• Hydraulic system sucks air.</li> <li>• Disk worn.</li> <li>• Brake valve malfunctioning</li> <li>• Hydraulic system clogged</li> </ul>	<ul style="list-style-type: none"> <li>• Repair and add oil.</li> <li>• Bleed air.</li> <li>• Replace</li> <li>• Repair or replace.</li> <li>• Clean.</li> </ul>
2. Brake acting unevenly. (Truck is turned to one side during braking.)	<ul style="list-style-type: none"> <li>• Tires unequally inflated.</li> <li>• Brake out of adjustment.</li> <li>• Disk surface roughened.</li> <li>• Wheel bearing out of adjustment.</li> <li>• Hydraulic system clogged.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust tire pressure.</li> <li>• Adjust.</li> <li>• Repair by polishing or replace.</li> <li>• Adjust or replace.</li> <li>• Clean.</li> </ul>
3. Brake trailing.	<ul style="list-style-type: none"> <li>• Pedal has no play.</li> <li>• Piston cup faulty.</li> <li>• Brake valve return port clogged.</li> <li>• Hydraulic system clogged.</li> <li>• Wheel bearing out of adjustment.</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust.</li> <li>• Replace.</li> <li>• Clean.</li> <li>• Clean.</li> <li>• Adjust or replace.</li> </ul>
4. Overheat	<ul style="list-style-type: none"> <li>• Cooling oil insufficient.</li> <li>• Cooling system malfunctioning.</li> <li>• Excessive braking.</li> </ul>	<ul style="list-style-type: none"> <li>• Add.</li> <li>• Repair or replace.</li> <li>• Use engine brake.</li> </ul>



## 6. HYDRAULIC SYSTEM

Trouble symptom	Probable cause	Remedy
1. Large fork lowering speed.	<ul style="list-style-type: none"> <li>• Seal inside control valve defective.</li> <li>• Oil leaks from joint or hose.</li> <li>• Seal inside cylinder defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace spool or valve body.</li> <li>• Replace.</li> <li>• Replace packing.</li> </ul>
2. Large spontaneous tilt of mast.	<ul style="list-style-type: none"> <li>• Tilting backward : Check valve defective.</li> <li>• Tilting forward : Tilt lock valve defective.</li> <li>• Oil leaks from joint or hose.</li> <li>• Seal inside cylinder defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean or replace.</li> <li>• Clean or replace.</li> <li>• Replace.</li> <li>• Replace seal.</li> </ul>
3. Slow fork lifting or slow mast tilting.	<ul style="list-style-type: none"> <li>• Lack of hydraulic oil.</li> <li>• Hydraulic oil mixed with air.</li> <li>• Oil leaks from joint or hose.</li> <li>• Excessive restriction of oil flow on pump suction side.</li> <li>• Relief valve fails to keep specified pressure.</li> <li>• Poor sealing inside cylinder.</li> <li>• High hydraulic oil viscosity.</li> <li>• Mast fails to move smoothly.</li> <li>• Oil leaks from lift control valve spool.</li> <li>• Oil leaks from tilt control valve spool.</li> </ul>	<ul style="list-style-type: none"> <li>• Add oil.</li> <li>• Bleed air.</li> <li>• Replace.</li> <li>• Clean filter.</li> <li>• Adjust relief valve.</li> <li>• Replace packing.</li> <li>• Change to SAE10W, class CF engine oil.</li> <li>• Adjust roll to rail clearance.</li> <li>• Replace spool or valve body.</li> <li>• Replace spool or valve body.</li> </ul>
4. Hydraulic system makes abnormal sounds.	<ul style="list-style-type: none"> <li>• Excessive restriction of oil flow pump suction side.</li> <li>• Gear or bearing in hydraulic pump defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean filter.</li> <li>• Replace gear or bearing.</li> </ul>
5. Control valve lever is locked	<ul style="list-style-type: none"> <li>• Foreign matter jammed between spool and valve body.</li> <li>• Valve body defective.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean.</li> <li>• Tighten body mounting bolts uniformly.</li> </ul>
6. High oil temperature.	<ul style="list-style-type: none"> <li>• Lack of hydraulic oil.</li> <li>• High hydraulic oil viscosity.</li> <li>• Oil filter clogged.</li> </ul>	<ul style="list-style-type: none"> <li>• Add oil.</li> <li>• Change to SAE10W, class CF engine oil.</li> <li>• Clean filter.</li> </ul>

## 7. MAST AND FORK

### 1) MAST

Problem	Cause	Remedy
Forks fail to lower.	<ul style="list-style-type: none"> <li>Deformed mast or carriage.</li> </ul>	<ul style="list-style-type: none"> <li>Disassemble, repair or replace.</li> </ul>
Fork fails to elevate	<ul style="list-style-type: none"> <li>Faulty hydraulic equipment.</li> <li>Deformed mast assembly.</li> </ul>	<ul style="list-style-type: none"> <li>See troubleshooting hydraulic pump and cylinders in section 6, hydraulic system.</li> <li>Disassemble mast and replace damaged parts or replace complete mast assembly.</li> </ul>
Slow lifting speed and insufficient handling capacity.	<ul style="list-style-type: none"> <li>Faulty hydraulic equipment.</li> <li>Deformed mast assembly.</li> </ul>	<ul style="list-style-type: none"> <li>See troubleshooting hydraulic pump and cylinders in section 6, hydraulic system.</li> <li>Disassemble mast and replace damaged parts or replace complete mast assembly.</li> </ul>
Mast fails to lift smoothly.	<ul style="list-style-type: none"> <li>Deformed masts or carriage.</li> <li>Faulty hydraulic equipment.</li> <li>Damaged load and side rollers.</li> <li>Unequal chain tension between LH &amp; RH sides.</li> <li>LH &amp; RH mast inclination angles are unequal. (Mast assembly is twisted when tilted)</li> </ul>	<ul style="list-style-type: none"> <li>Disassembly, repair or replace.</li> <li>See Troubleshooting Hydraulic Cylinders, pump and control valve in section 6, hydraulic system.</li> <li>Replace.</li> <li>Adjust chains.</li> <li>Adjust tilt cylinder rods.</li> </ul>
Abnormal noise is produced when mast is lifted and lowered.	<ul style="list-style-type: none"> <li>Broken load roller bearings.</li> <li>Broken side roller bearings.</li> <li>Deformed masts.</li> <li>Bent lift cylinder rod.</li> <li>Deformed carriage.</li> <li>Broken sheave bearing.</li> </ul>	<ul style="list-style-type: none"> <li>Replace.</li> <li>Replace.</li> <li>Disassemble, repair or replace.</li> <li>Replace.</li> <li>Replace.</li> <li>Replace.</li> </ul>
Abnormal noise is produced during tilting operation.	<ul style="list-style-type: none"> <li>Insufficient lubrication of anchor pin, or worn bushing and pin.</li> <li>Bent tilt cylinder rod.</li> </ul>	<ul style="list-style-type: none"> <li>Lubricate or replace.</li> <li>Replace.</li> </ul>

## 2) FORKS

Problem	Cause	Remedy						
Abrasion	Long-time operations causes the fork to wear and reduces the thickness of the fork. Inspection for thickness is needed. · Wear limit : Must be 90% of fork thickness	If the measured value is below the wear limit, replace fork.						
Distortion	Forks are bent out of shape by a number of reasons such as overloading, glancing blows against walls and objects, and picking up load unevenly. · Difference in fork tip height <table border="1"><thead><tr><th>Fork length (mm)</th><th>Height difference (mm)</th></tr></thead><tbody><tr><td>equal or below 1500</td><td>3</td></tr><tr><td>above 1500</td><td>6</td></tr></tbody></table>	Fork length (mm)	Height difference (mm)	equal or below 1500	3	above 1500	6	If the measured value exceeds the allowance, replace fork.
Fork length (mm)	Height difference (mm)							
equal or below 1500	3							
above 1500	6							
Fatigue	Fatigue failure may result from the fatigue crack even though the stress to fork is below the static strength of the fork. Therefore, a daily inspection should be done. · Crack on the fork heel. · Crack on the fork weldments.	Repair fork by expert. In case of excessive distortion, replace fork.						