## 1. ENGINE SYSTEM

| Trouble symptom | Probable cause | Remedy |
|---|---|---|
| Oil pressure caution lamp fails to go out. | · Low oil level in oil pan.<br>· Oil filter element clogged.<br>· Loose or worn oil pipe joint leaks oil. | · Add oil.<br>· Replace element.<br>· Check and repair. |
| Radiator pressure valve spouts steam. | · Lack of cooling water or water leakage.<br>· Loosen fan belt.<br>· Dust and scale accumulated in, cooling system. | · Add water or repair.<br>· Adjust belt.<br>· Change water and clean the interior of cooling system. |
| Water temp gauge indicates red range, on right. | · Radiator fin clogged or fin damaged.<br>· Thermostat or water temp gauge faulty.<br>· Radiator filler cap loosening. | · Clean or repair.<br>· Replace<br>· Retighten cap or replace packing. |
| Water temp gauge indicates red range, on left. | · Thermostat faulty.<br>· Water temperature gauge faulty. | · Replace<br>· Replace |
| Engine fails to start. | · Lack of fuel.<br>· Air mixed in fuel system.<br>· Fuel injection pump or nozzle defective.<br>· Starting motor rotates slowly.<br>· Engine compression insufficient.<br>· Valve clearance out of adjustment. | · Addfuel.<br>· Repair.<br>· Replace.<br>· See " Electrical system."<br>· Adjust clearance |
| Engine emits whitish or bluish smoke. | · Excessive quantity of oil in oil pan.<br>· Poor quality of fuel. | · Reduce oil quantity.<br>· Replace with specified fuel. |
| Engine emits blackish smoke. | · Air cleaner element clogged. | · Clean or replace element. |
| Irregular fuel feeding sound heard. | · Fuel feed pump faulty. | · Replace pump. |
| Abnormal sound heard.<br>(Fuel combustion or mechanical sound) | · Poor quality of fuel.<br>· Overheating<br>· Muffler interior damaged.<br>· Excessively large valve clearance. | · Replace with specified fuel.<br>· See Symptom "Radiator pressure valve spouts steam".<br>· Replace<br>· Adjust clearance. |

## 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 du -ring normal engine operation. | · Charge lamp defective.<br>· Faulty wiring. | · Replace.<br>· Check and repair. |
| Alternator makes abnormal sounds. | · Alternator defective. | · Replace |
| Starting motor fails to run. | · Faulty wiring.<br>· Insufficient battery voltage. | · Check and repair.<br>· Recharge battery. |
| Starting motor pinion repeats going in and out. | · Insufficient battery voltage. | · Recharge battery. |
| Excessively low starting motor speed. | · Insufficient battery voltage.<br>· Starting motor defective. | · Recharge battery.<br>· Replace |
| Starting motor comes to a stop before engine starts up. | · Faulty wiring.<br>· Insufficient battery voltage. | · Check and repair.<br>· Recharge battery. |
| Heater signal does not become red. | · Faulty wiring.<br>· Glow plug damaged. | · Check and repair.<br>· Replace |
| Engine oil pressure caution lamp does not light when engine is stopped (with starting switch left in"ON" position). | · Caution lamp defective.<br>· Caution lamp switch defective. | · Replace<br>· Replace |

## 3. TORQUE FLOW SYSTEM

| Trouble symptom | Probable cause | Remedy |
|---|---|---|
| **1. Excessive oil temperature rise** | | |
| 1) Torque converter | · Improper oil level. | · Check oil level. Add or drain oil as necessary. |
| | · Impeller interfering with surroundings. | · After draining oil from oil tank and transmission, check and replace interfering parts. |
| | · Stator and free wheel malfunctioning. | · Check engine (stalling) speed. If necessary, replace. |
| | · Air sucked in. | · Check the inlet side joint or pipe. If necessary, retighten joint or replace gasket. |
| | · Water intruding into transmission case. | · Check drained oil. If necessary, change oil. |
| | · Bearing worn or seizing. | · Disassemble, inspect, repair or replace. |
| | · Gauge malfunctioning. | · Check and, if necessary, replace. |
| 2) Transmission | · Clutch dragging. | · Check to see whether or not machine moves even when transmission is placed in neutral position. If so, replace clutch plate. |
| | · Bearing worn or seized. | · Disassemble, check and replace. |
| **2. Noise operation** | | |
| 1) Torque converter | · Cavitation produced. | · Change oil, replace parts leaking air. |
| | · Flexible plate damaged. | · Listen to rotating sound at lowspeed operation. If necessary, replace flexible plate. |
| | · Bearing damaged or worn. | · Disassemble, check and replace. |
| | · Gear damaged. | · Disassemble, check and replace. |
| | · Impeller interfering with surroundings. | · Check impeller or check drained oil for mixing of foreign matter. If necessary, change oil. |
| | · Bolt loosening. | · Disassemble and check. If necessary, retighten or replace. |
| | · Spline worn. | · Disassemble, check and replace. |
| | · Noise gear pump operation. | · Disassemble, check and replace. |
| 2) Transmission | · Dragging caused by seizing clutch. | · Check to see whether or not machine moves even when transmission is in neutral position. If so, replace clutch plate. |
| | · Bearing worn or seizing. | · Disassemble, check and replace |
| | · Gear damaged. | · Disassemble, check and replace |
| | · Bolt loosening. | · Disassemble, check and retighten or replace |
| | · Spline worn. | · Disassemble, check and replace |

| Trouble symptom | Probable cause | Remedy |
|---|---|---|
| **3. Low output power** | | |
| 1) Torque converter | · Insufficient hydraulic pressure : | |
| | - Low oil level. | - Check oil level and add oil |
| | - Air sucked in. | - Check joints and pipes. If necessary, retighten joint or replace packing. |
| | - Oil filter clogging. | - Check and replace |
| | - Oil pump worn. (Low delivery flow) | - Check oil pressure. If necessary replace pump. |
| | - Regulator valve coil spring fatigued. | - Check spring tension. If necessary, replace. |
| | - Control valve spool malfunctioning. | - Disassemble, check and repair or replace. |
| | - Piston or O-ring worn. | - Disassemble, check measure and replace. |
| | · Stator free wheel cam damaged. | - Check stalling speed. (Increased engine load will cause excessive drop of stalling speed.) |
| | | - Check oil temperature rise. If any, replace free wheel. |
| | · Stator free wheel seizing. | - Check temperature plate. (No-load will cause temperature rise) |
| | | - Replace free wheel if a drop of starting output is found. |
| | · Impeller damaged for interfering with the surroundings. | - Check drained oil for foreign matter. If any, change oil. |
| 2) Transmission | · Flexile plate deformed | · Replace flexible plate |
| | · Use of poor quality of oil or arising of air bubbles. | - Check and change oil. |
| | - Air sucked in from inlet side. | - Check joints and pipes. If necessary, retighten joint or replace packing. |
| | - Low torque converter oil pressure accelerates generation of air bebbles. | - Check oil pressure. |
| | - Oil mixing with water. | - Check drained oil and change oil. |
| | - Inching rod out of adjustment. | - Check and adjust. |
| | · Clutch slipping | |
| | - Lowering of power. | - Check oil pressure. |
| | - Piston ring or O-ring worn. | - Disassemble, check, measure and replace. |
| | - Clutch piston damaged. | - Disassemble, check and replace. |
| | - Clutch plate seizing or dragging. | - Check to see whether or not machine moves even when transmission is in neutral position. If so, replace. |

| Trouble symptom | Probable cause | Remedy |
|---|---|---|
| **4. Unusual oil pressure** | | |
| 1) Oil pressure is high | · Control valve malfunctioning. | (1)Check for spool operation. If necessary, replace valve.<br>(2)Check for clogging of small hole in valve body. If necessary, clean or repair. |
| | · Cold weather. (high oil viscosity) | · When atmospheric temp is below freezing point (when normal oil pressure is recovered if heated to 60~80˚C), change oil. |
| | · Use of improper oil. | · Check and change oil. |
| 2) Oil pressure is low | · Gear pump malfunctioning (worn). | · Disassemble, check and replace. |
| | · Oil leaks excessively :<br>(1) Control valve oil spring defective. | · Check spring tension (see spring specification). If necessary replace. |
| | (2) Control valve spool defective. | · Disassemble, check, and repair or replace valve. |
| | · Air sucked in. | · Check joints and pipes. If necessary, retighten joint or replace packing. |
| | · Low oil level. | · Check oil level and add oil. |
| | · Oil filter clogging. | · Check and replace. |
| 3) Transmission | · Oil leaks excessively. | · Disassemble, check (piston ring and O-ring for wear and other defects), and replace. |
| **5. Power is not transmitted** | | |
| 1) Torque converter | · Clutch plate damaged. | · Check for damage by listening to abnormal sounds at a low converter speed and replace. |
| | · Low oil level. | · Check oil level and add oil |
| | · Oil pump driving system faulty. | · Disassemble and check for wear of pump gear, shaft and spline. Replace defective parts. |
| | · Shaft broken. | · Check and replace. |
| | · Lack of oil pressure. | · Check oil pump gear for wear and for oil suction force. If necessary, replace pump. |
| 2) Transmission | · Low oil level. | · Check oil level and add oil. |
| | · Inching valve and link lever improperly positioned. | · Check measure and adjust. |
| | · Forward/reverse spool and link lever improperly positioned. | · Check and adjust. |
| | · Clutch fails to disengage :<br>(1) Clutch case piston ring defective. | · Disassemble, check and replace |
| | (2) Main shaft plug slipping out. | · Disassemble, check and repair or replace |
| | · Clutch seizing. | · Check to see whether or not machine moves even then transmission is in neutral position. If so, replace. |
| | · Shaft broken off. | · Disassemble, check(main shaft, etc.), and replace. |
| | · Clutch drum damaged (spring groove). | · Disassemble, check and replace. |
| | · Clutch snap ring broken. | · Disassemble, check and repair or replace. |

| Trouble symptom | Probable cause | Remedy |
|---|---|---|
| **5. Power is not transmitted** (Continue) | · Foreign matter intruding into oil passage to clutch.<br>· Shaft spline worn. | · Disassemble, check and repair or replace.<br>· Disassemble, check and replace. |
| **6. Oil leakage** (Transmission and torque converter) | · Oil leaks from oil seal. | · Disassemble and check for wear of seal lips and mating sliding surfaces (pump boss, coupling etc.) Replace oil seal, pump boss, coupling, etc. |
| | · Oil leaks from case joining surfaces. | · Check and retighten or replace packing. |
| | · Oil leaks from joint or pipe. | · Check and repair or replace gasket. |
| | · Oil leaks from drain plug. | · Check and retighten or gasket. |
| | · Oil leaks from a crack. | · Check and replace cracked part. |

## 4. STEERING SYSTEM

| Trouble symptom | Probable cause | Remedy |
|---|---|---|
| 1. Steering wheel drags. | · Low oil pressure.<br>· Bearing faulty.<br>· Spring spool faulty.<br>· Reaction plunger faulty.<br>· Ball-and-screw assembly faulty.<br>· Sector shaft adjusting screw excessively tight.<br>· Gears poorly meshing.<br>· Flow divider coil spring fatigued.<br>· Brake valve spool malfunctioning. | · Check locknut. Repair.<br>· Clean or replace.<br>· Clean or replace.<br>· Replace.<br>· Clean or replace.<br>· Adjust.<br>· Check and correct meshing.<br>· Replace.<br>· Clean or replace. |
| 2. Steering wheel fails to return smoothly. | · Bearing faulty.<br>· Reaction plunger faulty.<br>· Ball-and-screw assy faulty.<br>· Gears poorly meshing. | · Clean or replace.<br>· Replace.<br>· Clean or replace.<br>· Check and correct meshing. |
| 3. Steering wheel turns unsteadily.<br>Steering system makes abnormal sound or vibration. | · Locknut loosening.<br>· Metal spring deteriorated.<br>· Gear backlash out of adjustment.<br>· Locknut loosening.<br>· Air in oil circuit. | · Retighten.<br>· Replace.<br>· Adjust.<br>· Retighten.<br>· Bleed air. |
| 4. Abnormal sound heard when steering wheel is turned fully | Valve<br>· Faulty. (Valve fails to open.)<br>Piping<br>· Pipe (from pump to power steering cylinder) dented or clogged. | · Adjust valve set pressure and check for specified oil pressure.<br>· Repair or replace. |
| 5. Piping makes abnormal sounds. | Oil pump<br>· Lack of oil.<br>· Oil inlet pipe sucks air.<br>· Insufficient air bleeding. | · Add oil.<br>· Repair.<br>· Bleed air completely. |
| 6. Valve or valve unit makes abnormal sounds. | Oil pump<br>· Oil inlet pipe sucks air.<br>Valve<br>· Faulty. (Unbalance oil pressure)<br>Piping<br>· Pipe (from pump to power steering) dented or clogged.<br>· Insufficient air bleeding. | · Repair or replace.<br>· Adjust valve set pressure and check specified oil pressure.<br>· Repair or replace.<br>· Bleed air completely. |
| 7. Insufficient or variable oil flow. | · Flow control valve orifice clogged. | · Clean. |
| 8. Insufficient or variable discharge pressure. | Piping<br>· Pipe (from tank to pipe) dented or clogged. | · Repair or replace. |

## 5. BRAKE SYSTEM

| Trouble symptom | Probable cause | Remedy |
|---|---|---|
| 1. Insufficient braking force | · Hydraulic system leaks oil.<br>· Hydraulic system has air in line.<br>· Friction plate worn.<br>· Brake valve or brake piston mal-functioning.<br>· Hydraulic system clogged. | · Repair and add oil.<br>· Bleed air.<br>· Replace.<br>· Repair or replace.<br>· Clean. |
| 2. Brake acting unevenly. (Machine is turned to one side during braking.) | · Tires unequally inflated.<br>· Brake out of adjustment.<br>· Friction plate worn.<br>· Disc worn or damaged (distortion or rusting).<br>· Piston in axle mal-functioning.<br>· Hydraulic system clogged. | · Adjust tire pressure.<br>· Adjust(Refer to service manual).<br>· Replace.<br>· Replace.<br>· Repair or replace.<br>· Clean. |
| 3. Brake trailing. | · Pedal has no play.<br>· Piston in axle mal-functioning.<br>· Return spring damaged.<br>· Parking brake fails to return or out of adjustment.<br>· Brake valve return port clogged.<br>· Hydraulic system clogged. | · Adjust.<br>· Repair or replace.<br>· Relace.<br>· Repair or adjust.<br>· Clean.<br>· Clean. |
| 4. Brake chirps | · Brake trailing.<br>· Piston fails to return.<br>· Friction plate worn. | · See 3. Brake trailing.<br>· Replace.<br>· Replace. |
| 5. Brake noise | · Incorrect axle oil.<br>· Oil change interval passed.<br>· Friction plate worn. | · Replace with approved oil.<br>· Replace.<br>· Replace. |
| 6. Large pedal stroke | · Brake out of adjustment.<br>· Hydraulic line sucking air.<br>· Oil leaks from hydraulic line, or lack of oil.<br>· Friction plate worn. | · Adjust.<br>· Bleed air.<br>· Check and repair or add oil.<br>· Replace. |
| 7. Pedal dragging. | · Twisted push rod caused by improperly fitted brake valve.<br>· Brake valve seal faulty.<br>· Flow control valve orifice clogged.<br>· Lack of grease on pivot | · Adjust.<br>· Replace.<br>· Clean or replace.<br>· Add grease |

## 6. HYDRAULIC SYSTEM

| Trouble symptom | Probable cause | Remedy |
|---|---|---|
| 1. Large fork lowering speed. | · Seal inside control valve defective.<br>· Oil leaks from joint or hose.<br>· Seal inside cylinder defective. | · Replace spool or valve body.<br>· Replace.<br>· Replace packing. |
| 2. Large spontaneous tilt of mast. | · Tilting backward : Check valve defective.<br>· Tilting forward : tilt lock valve defective.<br>· Oil leaks from joint or hose.<br>· Seal inside cylinder defective. | · Clean or replace.<br>· Clean or replace.<br>· Replace.<br>· Replace seal. |
| 3. Slow fork lifting or slow mast tilting. | · Lack of hydraulic oil.<br>· Hydraulic oil mixed with air.<br>· Oil leaks from joint or hose.<br>· Excessive restriction of oil flow on pump suction side.<br>· Relief valve fails to keep specified pressure.<br>· Poor sealing inside cylinder.<br>· High hydraulic oil viscosity.<br>· Mast fails to move smoothly.<br>· Oil leaks from lift control valve spool.<br>· Oil leaks from tilt control valve spool. | · Add oil.<br>· Bleed air.<br>· Replace.<br>· Clean filter.<br>· Adjust relief valve.<br>· Replace packing.<br>· Change to SAE10W, class CF engine oil.<br>· Adjust roll to rail clearance.<br>· Replace spool or valve body.<br>· Replace spool or valve body. |
| 4. Hydraulic system makes abnormal sounds. | · Excessive restriction of oil flow pump suction side.<br>· Gear or bearing in hydraulic pump defective. | · Clean filter.<br>· Replace gear or bearing. |
| 5. Control valve lever is locked | · Foreign matter jammed between spool and valve body.<br>· Valve body defective. | · Clean.<br>· Tighten body mounting bolts uniformly. |
| 6. High oil temperature. | · Lack of hydraulic oil.<br>· High oil viscosity.<br>· Oil filter clogged. | · Add oil.<br>· Change to SAE10W, class CF engine oil.<br>· Clean filter. |