9. TROUBLESHOOTING

1. ENGINE SYSTEM

Trouble symptom	Probable cause	Remedy
Oil pressure warning lamp fails to go out.	 Low oil level in oil pan. Oil filter element clogged. Loose or worn oil pipe joint leaks oil. 	Add oil. Replace element. Check and repair.
Radiator pressure valve spouts steam.	 Lack of cooling water or water leakage. Loosen fan belt. Dust and scale accumulated in cooling system. 	Add water or repair.Adjust belt.Change water and clean the interior of cooling system.
Water temp gauge indicates red range, on right.	 Radiator fin clogged or fin damaged. Thermostat or water temp gauge fau lty. Radiator filler cap loosening. 	Clean or repair.ReplaceRetighten cap or replace packing.
Water temp gauge indicates red range, on left.	Thermostat faulty. Water temperature gauge faulty.	· Replace · Replace
Engine fails to start.	 Lack of fuel. Air mixed in fuel system. Fuel injection pump or nozzle defective. Starting motor rotates slowly. Engine compression insufficient. Valve clearance out of adjustment. 	 Refill fuel. Bleed air. Replace. See " Electrical system." Contact dealer Adjust clearance
Engine emits whitish or bluish smoke.	· Excessive quantity of oil in oil pan. · Poor quality of fuel.	Reduce oil quantity. Replace with specified fuel.
Abnormal sound heard. (Fuel combustion or mechanical sound)	 Poor quality of fuel. Overheating Muffler interior damaged. Excessively large valve clearance. 	 Replace with specified fuel. See Symptom "Radiator pressure valve spouts steam". Replace 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. 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 enigne 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	
Excessive oil temperature rise	· Improper oil level.	· Check oil level. Add or drain oil as
1) Torque converter	· Impeller interfering with surroundings.	necessary. After draining oil from oil tank and transmission, check and replace
	· Stator and free wheel malfunctioning.	interfering parts. · Check enigne (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 caseBearing worn or seizing.	Check drained oil. If necessary, change oil. Disassemble, inspect, repair or repla-
		ce.
2) Transmission	Gauge malfunctioning. Clutch dragging.	 Check and, if necessary, replace. Check to see whether or not truck moves even when transmission is placed in neutral position. If so, replace clutch plate.
	· Bearing worn or seized.	· Disassemble, check and replace.
Noise operation Torque converter	Cavitation produced. Flexible plate damaged.	Change oil, replace parts leaking air. Listen to rotating sound at lowspeed operation. If necessary, repacle flex-
	Bearing damaged or worn. Gear damaged. Impeller interfering with surroundings.	 ible plate. Disassemble, check and replace. Disassemble, check and replace. Check impeller or check drained oil for mixing of foreign matter.
	· Bolt loosening.	If necessary, change oil. Disassemble and check. If necessary, retighten or repalce.
2) Transmission	Spline worn.Noise gear pump operation.Dragging caused by seizing clutch.	 Disassemble, check and replace. Disassemble, check and replace. Check to see whether or not truck moves even when transmission is in neutral position. If so, replace clutch plate.
	Bearing worn or seizing.Gear damaged.Bolt loosening.	Disassemble, check and replace Disassemble, check and replace Disassemble, check and retighten or
	· Spline worn.	replace · Disassemble, check and replace

Trouble symptom	Probable cause	Remedy
3.Low output power 1) Torque converter	Insufficient hydraulic pressure : Low oil level. Air sucked in.	Check oil level and add oil Check joints and pipes. If necessary, retighten joint or repla-
	 Oil filter clogging. Oil pump worn. (Low delivery flow) Regulator valve coil spring fatigued. Control valve spool malfunctioning. 	ce packing. Check and replace Check oil pressure. If necessary replace pump. Check spring tension. If necessary, replace. 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.
2) Transmission	Flexile plate deformed Stator free wheel seizing.	If any, replace free wheel. Replace flexible plate 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. Use of poor quality of oil or arising of air bubbles. Air sucked in from inlet side. 	 Check drained oil for foreign matter. If any, change oil. Check and change oil. Check joints and pipes. If necessary, retighten joint or replace packing. Check oil pressure.
	 Low torque converter oil pressure accelerates generation of air bebbles. Oil mixing with water. Inching rod out of adjustment. 	Check drained oil and change oil. Check and adjust.
	Clutch slippingLowering of weight.Piston ring or O-ring worn.	Check oil pressure. Disassemble, check, measure and replace. Disassemble, check, and replace.
	Clutch piston damaged.Clutch plate seizing or dragging.	 Disassemble, check and replace. Check to see whether or not truck moves even when transmission is in neutral position. If so, replace.

Trouble symptom	Probable cause	Remedy	
4.Unusual oil pressure		(4) Oh a allafan an a al a a a a l'a	
1) Oil pressure is high	· Control valve malfunctioning.	(1)Check for spool operation. If necessary, replace valve.	
		(2)Check for clogging of small hole in	
		valve body. If necessary, clean or	
	Cold weather (high all viaceaity)	repair.	
	· Cold weather. (high oil viscosity)	When atmospheric temp is below freezing point	
		(when normal oil pressure is recover-	
		ed if heated to 60 ~ 80°C), change	
	· Use of improper oil.	oil. Check and change oil.	
2) Oil pressure is low	· Gear pump malfunctioning(worn).	· Disassemble, check and replace.	
	· Oil leaks excessively :		
	(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 re	
	· Air sucked in.	place valve. Check joints and pipes. If necessary,	
	All Sucked III.	retighten joint or replace packing.	
	· Low oil level.	· Check oil level and add oil.	
O) Transmission	· 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 ab-	
		normal sounds at a low converter sp-	
	· Low oil level.	eed and replace. Check oil level and add oil	
	· Oil pump driving system faulty.	· Disassemble and check for wear of	
		pump gear, shaft and spline.	
	· Shaft broken.	Replace defective parts. Check and replace.	
	· Lack of oil pressure.	Check oil pump gear for wear and for	
		oil suction force.	
2) Transmission	· Low oil level.	If necessary, replace pump. · Check oil level and add oil.	
	Inching valve and link lever improper-	· Check measure and adjust.	
	ly positioned.	,	
	· Forward/reverse spool and link lever improperly positioned.	· Check and adjust.	
	Clutch fails to disengage :		
	(1)Clutch case piston ring defective.	· Disassemble, check and replace	
	(2)Main shaft plug slipping out.	Disassemble, check and repair or re-	
	· Clutch seizing.	place Check to see whether or not truck	
		moves even then transmission is in	
	Chaft broken off	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 re-	
		place.	

Trouble symptom	Probable cause	Remedy
5. Power is not transmitted (Continue)	Foreign matter intruding into oil passage to clutch.Shaft spline worn.	Disassemble, check and repair or replace.Disassemble, check and replace.
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. Oil leaks from joint or pipe. Oil leaks from drain plug.	Check and retighten or replace packing. Check and repair or replace gasket.
	Oil leaks from drain plug.Oil leaks from a crack.	Check and retighten or gasket. Check and replace cracked part.

4. STEERING SYSTEM

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

5. BRAKE SYSTEM

Trouble symptom	Probable cause	Remedy	
Insufficient braking force	 Hydraulic system leaks oil. Hydraulic system sucks air. Disk worn. Brake valve malfunctioning Hydraulic system clogged 	 Repair and add oil. Bleed air. Replace Repair or replace. Clean. 	
Brake acting unevenly. (Truck is turned to one side during braking.)	 Tires unequally inflated. Brake out of adjustment. Disk surface roughened. Wheel bearing out of adjustment. Hydraulic system clogged. 	Adjust tire pressure.Adjust.Repair by polishing or replace.Adjust or replace.Clean.	
3. Brake trailing.	 Pedal has no play. Piston cup faulty. Brake valve return port clogged. Hydraulic system clogged. Wheel bearing out of adjustment. 	· Adjust. · Replace. · Clean. · Clean. · Adjust or replace.	
4. Overheat	Cooling oil insufficient. Cooling system malfunctioning. Excessive braking.	Add. Repair or replace. Use engine brake.	

6. HYDRAULIC SYSTEM

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

7. MAST AND FORK

1) MAST

Problem	Cause	Remedy	
Forks fail to lower.	· Deformed mast or carriage.	· Disassemble, repair or replace.	
Fork fails to elevate	Faulty hydraulic equipment. Deformed mast assembly.	 See troubleshooting hydraulic pump and cylinders in section 6, hydraulic system. Disassemble mast and replace damaged parts or replace complete mast assembly. 	
Slow lifting speed and insufficient handling capacity.	Faulty hydraulic equipment. Deformed mast assembly.	 See troubleshooting hydraulic pump and cylinders in section 6, hydraulic system. Disassemble mast and replace 	
	Deloimed mast assembly.	damaged parts or replace complete mast assembly.	
Mast fails to lift smoothly.	Deformed masts or carriage.Faulty hydraulic equipment.	 Disassembly, repair or replace. See Troubleshooting Hydraulic Cylinders, pump and control valve in section 6, hydraulic system. 	
	 Damaged load and side rollers. Unequal chain tension between LH & RH sides. 	· Replace. · Adjust chains.	
	 LH & RH mast inclination angles are unequal. (Mast assembly is twisted when tilted) 	· Adjust tilt cylinder rods.	
Abnormal noise is produced	· Broken load roller bearings.	· Replace.	
when mast is lifted and lowered.	· Broken side roller bearings.	· Replace.	
	· Deformed masts.	· Disassemble, repair or replace.	
	Bent lift cylinder rod.	· Replace.	
	Deformed carriage. Draken change having	· Replace.	
	Broken sheave bearing.	· Replace.	
Abnormal noise is produced during tilting operation.	Insufficient lubrication of anchor pin, or worn bushing and pin.	· Lubricate or replace.	
	· Bent tilt cylinder rod.	· Replace.	

2) FORKS

Problem	Caus	se	Remedy
Abrasion	Long-time operations causes the fork to		If the measured value is below the
	wear and reduces the	thickness of the	wear limit, replace fork.
	fork.		
	Inspection for thickness	ss is needed.	
	· Wear limit : Must be	e 90% of fork	
	thicknes	SS	
Distortion	Forks are bent out of	shape by a	If the measured value exceeds the
	number of reasons su	ıch as overloading,	allowance, replace fork.
	glancing blows agains	st walls and	
	objects, and picking u	p load unevenly.	
	· Difference in fork tip height		
	Fork length Height (mm) difference (mm)		
	equal or below 1500 3		
	above 1500	6	
Fatigue	Fatigue failure may re		Repair fork by expert.
	fatigue crack even though the stress to		In case of excessive distortion,
	fork is below the static strength of the		replace fork.
	fork. Therefore, a daily inspection		
	should be done.		
	· Crack on the fork h	eel.	
	· Crack on the fork w	eldments.	