













TROUBLESHOOTING

1. TROUBLESHOOTING ON PANEL:

Symptom	Indication	Possible causes	Solutions	
Shut down		<ul style="list-style-type: none"> - Defective AVR - Engine starting under load. 	<ul style="list-style-type: none"> - Repair or replace. - Reduce load when starting. 	
		<ul style="list-style-type: none"> - Defective AVR - Engine starting under load. - No supply phase to control system. 	<ul style="list-style-type: none"> - Repair or replace. - Reduce load when starting. - Check electrical circuit to control system. 	
		<ul style="list-style-type: none"> - Faulty governor - Oscillation load 	<ul style="list-style-type: none"> - Repair or replace. - Check load. 	
		<ul style="list-style-type: none"> - Faulty governor - Oscillation load - Lack of fuel - Defective fuel solenoid - No AC supply to controller 	<ul style="list-style-type: none"> - Repair or replace - Reduce load - Check fuel supply system - Repair or replace - Check wire connections 	
		Short circuit	- Short circuit in electrical system	- Repair
			- After engine overloaded for 30 seconds	- Readjust appropriate load
			<ul style="list-style-type: none"> - Press "Emergency stop" - Defective "E - stop" - Defective electrical circuit to "E stop" 	<ul style="list-style-type: none"> - Reset - Replace - Check and repair
			See "low oil pressure"	
			See "high coolant temperature"	
Overload		<ul style="list-style-type: none"> - Engine overloaded - Defective CT 	<ul style="list-style-type: none"> - Reduce load - Replace 	
Alarm		<ul style="list-style-type: none"> - Defective alternator - Faulty belt or belt tensioner - Defective battery - Use improper battery 	<ul style="list-style-type: none"> - Repair or replace - Replace - Replace - Replace proper type of battery 	
		<ul style="list-style-type: none"> - Defective DC alternator - Improper type of battery 	<ul style="list-style-type: none"> - Repair or replace - Use proper battery 	

2. TROUBLESHOOTING:

Troubles	Possible causes	Solutions
Crankshaft hard to turn or will not turn	<ul style="list-style-type: none"> - High obstacle for turning - Engine starting under load - Electrical faulty in starting circuit - Low battery output - Faulty starter motor 	<ul style="list-style-type: none"> - Check for jam of moving parts (crankcase, fan, etc) - Remove load - Check and repair starting circuit - Fully charged for battery - Check and replace as require
Engine cranks but hard to start or will not start	<ul style="list-style-type: none"> - No fuel - Fuel filter plugged or full of water - Water, dirt or air in fuel line - Faulty injection pump or nozzles - Engine under loaded - Low starter speed - Crankcase oil level too high type of oil too heavy - Injection pump out of time - Improper type of fuel - Faulty injection pump solenoid valve 	<ul style="list-style-type: none"> - Check fuel in tank and manual shut-off valves - Drain water from filter or replace fuel filter - Drain, flush, fill and bleed system - See your authorized servicing dealer - Remove load - Check battery output - Adjust proper oil level and use oil of correct viscosity - Adjust injection timing - Use proper type of fuel - Replace
Engine knocks	<ul style="list-style-type: none"> - Low engine oil level - Injection pump out of time - Engine overheated - Low coolant temperature - Air in fuel system - Faulty injection pump and nozzles - Valves clearance too large - Faulty injection pump solenoid valve 	<ul style="list-style-type: none"> - Add lube oil - Adjust proper injection timing - See "High coolant temperature" - See "Low coolant temperature" - Bleed fuel system - Check and repair - Adjust proper valve clearance - Replace
Turbo-charger -Abnormal running noises	<ul style="list-style-type: none"> - Turbo-charger contaminated - Faulty turbo-charger 	<ul style="list-style-type: none"> - Remove and clean - Check for bearings and rotor

Troubles	Possible causes	Solutions
High coolant temperature	<ul style="list-style-type: none"> - Low coolant level - Engine overloaded - Defective temperature gauge or sender - Faulty water pump - Defective thermostat - Cooling system needs flushing - Air in cooling system - Low engine oil level - Faulty radiator cap - Use improper type of lube oil - Stretched poly-vee belt or defective belt tensioner 	<ul style="list-style-type: none"> - Add enough coolant - Reduce load - Test and replace if necessary - Repair or replace - Test, clean or replace as require - Flush cooling system - Check all pipe joints. Bleed cooling system - Add enough lube oil - Replace - Use proper lube oil - Check automatic belt tensioner and check belt for stretching - Replace as require
Low coolant temperature	<ul style="list-style-type: none"> - Defective temperature gauge or sender - Defective thermostat 	<ul style="list-style-type: none"> - Test and replace if necessary - Remove and check thermostat
Low lube oil pressure	<ul style="list-style-type: none"> - Defective temperature gauge or sender - Low lube oil level - Fuel in lube oil - Improper type of lube oil - Clogged oil filter - Faulty oil pump - Relief valve faulty 	<ul style="list-style-type: none"> - Test and replace if necessary - Add enough lube oil - Solution leakage and replace - Use proper lube oil - Replace - Repair or replace if necessary - Examine and clean pressure relief valve
High lube oil pressure	<ul style="list-style-type: none"> - Defective temperature gauge or sender - Low engine temperature - High oil viscosity - Relief valve faulty 	<ul style="list-style-type: none"> - Test and replace if necessary - Reheat appropriate engine - Use oil of correct viscosity - Examine and clean pressure relief valve

Troubles	Possible causes	Solutions
Abnormal high lube oil level	<ul style="list-style-type: none"> - Leak fuel into lube oil - Leak water into lube oil 	<ul style="list-style-type: none"> - Check gaskets at injection pump, nozzles - Check cylinder head gasket, cracks at crankcase, liner and cylinder jacket gasket
High lube oil temperature	<ul style="list-style-type: none"> - Clogged or dirty oil filter - High engine temperature 	<ul style="list-style-type: none"> - Replace - See "High coolant temperature"
High lube oil consumption	<ul style="list-style-type: none"> - Crankcase lube oil too light - piston, cylinder and piston rings are worn out - Lube oil leaks - Defective turbo-charge - Restricted crankcase vent tube 	<ul style="list-style-type: none"> - Use lube oil of correct viscosity - Replace - Check for leaks in lines, gaskets, and drain plug - Check and repair - Clean vent tube
High fuel consumption	<ul style="list-style-type: none"> - Improper type of fuel - Pistons, cylinders, and piston rings are worn out - Fuel leaks - Logged or dirty air cleaner - Engine overloaded - Low engine temperature - Faulty injection nozzles - Improper valves clearance - Defective turbo-charge - Engine out of time 	<ul style="list-style-type: none"> - Use proper type of fuel - Replace - Check for leaks fuel - Service air leaner - Reduce load - Check thermostat - Check and adjust - Check and adjust - Check and repair - Reset timing
Engine emits white smoke or turquoise	<ul style="list-style-type: none"> - Water in fuel - Mix steam on intake air - Coolant leaks into combustion - Supply load when low engine temperature 	<ul style="list-style-type: none"> - Drain water from fuel filter - Repair - Check cylinder head gasket - Cracks on cylinder head, cylinder liner - Remove load and reheat proper engine

Troubles	Possible causes	Solutions
	<ul style="list-style-type: none"> - Improper type of fuel - Lube oil in combustion - High lube oil level 	<ul style="list-style-type: none"> - Use proper fuel - Check piston-cylinder units - Drain for appropriate lube oil level
Engine emits black or grey exhaust smoke	<ul style="list-style-type: none"> - Engine overloaded - Faulty injection pump and nozzles - Piston-cylinder units are worn out - Turbo-charge not functioning - Clogged or dirty air cleaner - Engine out of time - Exhaust restricted - Faulty injection pump solenoid valve 	<ul style="list-style-type: none"> - Reduce load - Check and adjust correctly - Check and replace as require - Check and repair - Service air cleaner - Reset timing - Check and correct exhaust restriction - Replace
Low pressure	<ul style="list-style-type: none"> - Damageable cyl-head gasket - Piston rings wear out - Faulty EX an IN valves - Improper valves clearance 	<ul style="list-style-type: none"> - Replace - Replace - Clean or replace as require - Adjust proper valves clearance
Lack of power or engine speed reduce when supply load	<ul style="list-style-type: none"> - Engine overloaded - Faulty injection pump and nozzles - Clogged and dirty fuel filter - Below normal engine temperature - Intake air restriction - Improper valves cleacrance - Exhaust restricted - Cylinder, piston rings wear out - Faulty injection pump solenoid valve - Faulty engine governor 	<ul style="list-style-type: none"> - Reduce load - Remove, clean and repair - Replace - Remove and check thermostat - Service air cleaner. Check turbo-charge and air cooler - Adjust correct valves cleacrance - Check and correct exhaust restriction - Replace - Replace - Repair