

SECTION 6: TROUBLESHOOTING

6.1 GENERAL INFORMATION

The information contained in this section has been compiled from years' worth of information gathered from the field. It contains symptoms and usual causes for the most common types of problems that may occur. All available data concerning the trouble should be systematically analyzed before undertaking any repairs or component replacement.

A visual inspection is worth performing for almost all problems and may avoid unnecessary additional damage to the machine. The procedures which can be performed in the least amount of time and with the least amount of removal or disassembly of parts, should be performed first. Adherence to a routine maintenance regimen will minimize the occurrence of many common problems. Refer to **Table 5A: Routine Maintenance Schedule**, for a typical maintenance regimen program.

Although Vanair® strives to anticipate situations that may occur during the operation life of the machine package, the Troubleshooting Guide may not cover all possible situations. Be aware that additional troubleshooting information may be found in other sources such as the Engine Operation Manual. Should the situation remain unresolved after exhausting available sources, contact the Vanair Service Department at:

Toll Free: (800) 526-8817
Phone: (219) 879-5100
Service: (844) VAN-SERV
(844) 826-7378
Service Fax: (219) 879-5335

⚠ WARNING

Before starting, performing maintenance, or replacing parts, relieve the entire system pressure by opening the air tank drain/vent valve, which will vent all pressure to the atmosphere.

⚠ WARNING

DO NOT operate any of the Cap-Start functions if there is a known unsafe condition. Disable the equipment by disconnecting it from its power source. Install a lock-out tag to identify the equipment as inoperable to other personnel to prevent accidental application.

NOTE

When contacting the Vanair Service Department, please have machine serial number on hand to quickly expedite service. See *Figure 6-1* for machine serial plate location.

Machine serial number also displays on instrument panel at start-up, on the hours screen.

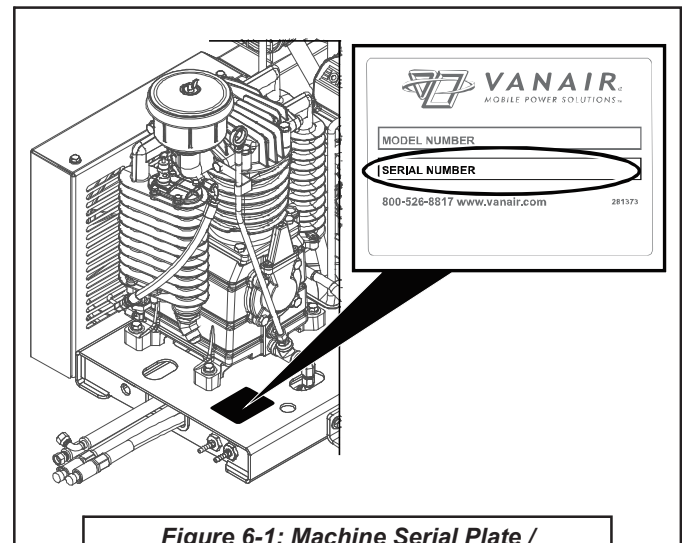


Figure 6-1: Machine Serial Plate / Serial Number Location

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Fault/Malfunction	Possible Cause	Corrective Action
ENGINE [‡]		
<i>For additional information concerning the engine, consult the Engine Operation Manual</i>		
NOTE: The engine is equipped with performance level monitoring via the engine ECU. During event of a fault occurrence, a diagnostic code is stored in the fault memory. This fault code can be used to help determine system malfunctioning. Refer to Section 6.4A, Engine Fault Codes for additional information as well as a list of codes.		
Engine will not crank	Faulty battery connection.	Check for proper battery connections and battery charge.
	Battery out of power	Recharge or replace battery.
	Engine fuse blown or faulty	Check engine fuse: Consult Figure 5-9A (Kohler) or Figure 5-9B (Honda) , and/or the Engine Operation Manual.
	Faulty starter connection	Check for proper electrical connections at starter.
	Faulty starter	Replace.
	Faulty starter solenoid	Replace.
	Engine seized	Replace.
Engine will crank, but not start	Low fuel and/or oil supply	Check fuel level. Check engine oil level; refer to Table 5A, Key No. 2 . Replenish as necessary. Consult the Engine Operation Manual for additional information.
	Wrong fuel type fill	Use only clean, automotive grade gasoline—do not use E85, etc. Refer to Engine Operation Manual for information on engine fuel type to use.
	Pinched fuel line	Replace or reroute if necessary.
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to Table 5A, Key No. 9A (Kohler) or 9B (Honda) , and the Engine Operation Manual.
	Low battery voltage	Recharge or replace if necessary.
		Loose connections; tighten connections.
		Dirty connections; clean connections.
	Fuel pump faulty	Fuel pump fuse blown; replace fuse. Consult Section 5.5, Servicing the System Fuses and Control Relays , and/or consult the Engine Operation Manual.
	Restricted engine air filter	Check that the air cleaner element and pre-cleaner are clean and all components are properly secured (Table 5A, Key Nos. 12A or 12B). Clean or replace as necessary.
	Defective oil pressure switch	Check continuity, and replace Kohler® Oil Sentry Protection switch, if necessary (refer to Engine Operation Manual).
Remove wire—if it runs, the switch is faulty.		
Blown engine fuse	Check continuity, and replace if necessary. Consult Figure 5-9A (Kohler) or Figure 5-9B (Honda) , and/or the Engine Operation Manual.	
Poor ground connection	Check and clean/renew connection.	
[‡] Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact the Engine manufacturer.		
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6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED) [‡]		
Engine will crank, but not start (continued)	Fouled spark plug	Check spark plug; clean or replace if necessary. Refer to Engine Operation Manual.
	Broken or faulty wiring	Check harness connections and wiring condition (refer to machine wiring diagram).
	Blown system fuse	Check system fuse; replace if necessary. Refer to Section 5.5, Servicing the System Fuses and Control Relays.
Improper Control Operation: Engine does not speed up	Throttle solenoid stuck	Check throttle solenoid. Replace if necessary.
		Check throttle relay; replace if necessary. Refer to Section 5.5, Servicing the System Fuses and Control Relays.
	Faulty throttle solenoid	Check throttle solenoid; replace if necessary.
		Check throttle relay; replace if necessary. Refer to Section 5.5, Servicing the System Fuses and Control Relays.
	Governor stuck	Free governor and lubricate if necessary.
	Faulty pressure switch	Check; replace if necessary.
	Faulty relay	Check; replace if necessary.
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to Table 5A, Key No. 9A (Kohler) or 9B (Honda) , and the Engine Operation Manual.
	Blown system fuse	Check system fuse; replace if necessary. Refer to Section 5.5, Servicing the System Fuses and Control Relays.
	Broken or faulty wiring	Check harness connections and wiring condition (refer to machine wiring diagram).
Improper Control Operation: Pressure switch	Frozen water in switch	Thaw system.
	Connection failed	Check connection to switch; repair if necessary.
Improper Control Operation: Engine does not slow down	Leak in control line	Check for leaks; replace line if necessary.
	Unloader valve(s) sticking or faulty	Valves may need to be cleaned, rebuilt or replaced. Consult the Vanair Service Department for compressor maintenance instructions.
	Pressure control out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting the Cut-in / Cut-out Pressure.
	Throttle solenoid stuck or disconnected	Check throttle solenoid. Reconnect if disconnected, or replace if necessary.
	Throttle solenoid stuck or disconnected (continued)	Check throttle relay; replace if necessary. Refer to Section 5.5, Servicing the System Fuses and Control Relays.
	Broken or faulty wiring	Check harness connections and wiring condition (refer to machine wiring diagram).

[‡] Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact the Engine manufacturer.

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Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED) [‡]		
Improper Control Operation: Engine does not slow down (continued)	Faulty pressure switch	Check; replace if necessary.
	Faulty relay	Check; replace if necessary.
	Blown system fuse	Check system fuse; replace if necessary. Refer to Section 5.5, Servicing the System Fuses and Control Relays .
Engine overheats	Located too close to obstruction	Move further from obstruction, or move obstructing obstacle(s).
	Restricted engine oil filter	Replace engine oil filter. Refer to Table 5A, Key Nos. 9A (Kohler) or 9B (Honda) . Also refer to the Engine Operation Manual.
	Restricted cooling air in or out	Clean engine intake grill; also refer to the Engine Operation Manual.
	Low oil level	Check engine oil level; refer to Table 5A, Key No. 2 . Replenish as necessary. Also refer to the Engine Operation Manual.
	Restricted engine air filter	Check that the air cleaner element and pre-cleaner are clean and all components are properly secured. Clean or replace as necessary. Refer to Table 5A, Key Nos. 12A (Kohler) or 12B (Honda) . Also refer to the Engine Operation Manual.
	Engine oil cooler plugged	Clear debris/dirt from cooler core/flush shroud. Refer to the Engine Operation Manual.
	RPM's too high	Adjust setting.
	Demand too high	Check requirements; adjust demand level accordingly.
Engine stops during operation	Low oil level	Check engine oil level; refer to Table 5A, Key No. 2 . Replenish as necessary. Also refer to the Engine Operation Manual.
	Low fuel	Check fuel level. Fill as necessary.
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to Table 5A, Key No. 9A (Kohler) or 9B (Honda) , and the Engine Operation Manual.
	Wrong fuel type	Use only clean, automotive grade gasoline—do not use E85, etc. Refer to Engine Operation Manual for information on engine fuel type to use.
	Restricted engine air filter	Replace.
	Fuel pump faulty	Check battery/electrical connection.
	Restricted cooling air in or out	Clean engine intake grill; also refer to the Engine Operation Manual.
	Fouled spark plug	Check spark plug; clean or replace if necessary. Refer to Engine Operation Manual.
	Blown engine fuse	Check continuity, and replace if necessary. Consult Figure 5-9A (Kohler) or Figure 5-9B (Honda) , and/or the Engine Operation Manual.
	Dead battery	Check voltage; recharge or replace.
	Demand too high	Check requirements; adjust demand level accordingly.

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Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED) [‡]		
Engine stops during operation (continued)	Faulty charge system	Check; replace if necessary.
Gradual loss of engine power	Contaminated fuel	Drain and replace fuel supply.
	Restricted engine air filter	Check that the air cleaner element and pre-cleaner are clean and all components are properly secured. Clean or replace as necessary. Refer to Table 5A, Key Nos. 12A (Kohler) or 12B (Honda) . Also refer to the Engine Operation Manual.
	Wrong fuel type	Use only clean, automotive grade gasoline—do not use E85, etc. Refer to Engine Operation Manual for information on engine fuel type to use.
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to Table 5A, Key No. 9A (Kohler) or 9B (Honda) , and the Engine Operation Manual.
	Vapor lock	Machine overheating. Allow to cool. Refer to “ Engine overheats ” section in this Troubleshooting Guide.
	Fouled spark plug	Check spark plug; clean or replace if necessary. See Engine Operation Manual.
	Demand too high	Check requirements; adjust demand level accordingly.
COMPRESSOR		
Compressor slows down	Belt(s) slipping	Re-tension or replace belts. Refer to Section 5.4.3 .
	Engine slowing	Refer to Engine portion of the Troubleshooting Section, and the Engine Operation Manual.
Severe vibration	Mounting loose	Secure mounting.
	Loose compressor flywheel	Secure flywheel.
Internal compressor / internal engine knocking noise [‡]	Loose valve assembly	Tighten valve bolt and lock nut.
	Piston hits cylinder cover	Consult the Vanair Service Department.
	Worn connecting rod bearing.	Replace bearing.
Compressor will not build up pressure	Worn valve plate	Valves may need to be cleaned, rebuilt or replaced. Consult the Vanair® Service Department for compressor maintenance instructions (valves, rings, gaskets are available).
	Reed valves have lost their temper	Valves may need to be cleaned, rebuilt or replaced. Consult the Vanair Service Department for compressor maintenance instructions. Kits (valves, rings, gaskets) and are available.
	Obstructed or restricted intake air flow	Check for obstructions (frame, body, etc.) to air filter vents. Replace air filter if necessary; Refer to Table 5A, Key No. 17 .
	Belt worn or broken	Replace belt. Refer to Section 5.4.3 for belt service information.
[‡] Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact the Engine manufacturer.		
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Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Compressor will not build up pressure (continued)	Dirt on the valve plate	Valves may need to be cleaned, rebuilt or replaced. Consult the Vanair Service Department for compressor maintenance instructions. Kits (valves, rings, gaskets) and are available.
	Leaks from safety valve	Repair or replace safety valve.
	Leaks from bolt holes	Tighten the nuts even with packing (gasket).
	Uneven valve seat surface	Remove and lap the surface.
	Excessive blow by on piston rings	Replace with new ones. Consult the Vanair® Service Department for compressor maintenance instructions. Ring kit is available.
	Bad packing (gasket too thick)	Replace packing (gasket). Consult the Vanair Service Department for compressor maintenance instructions. Gasket kit is available.
	Compressor system is not receiving enough operating power	If running more than one function simultaneously, turn off competing function.
	Air demand too high	Check for leaks and take corrective action.
		Check air tools for wear, damage, or malfunctions. Replace or repair.
		Improve duty cycle.
	Pressure control out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting the Cut-in / Cut-out Pressure.
	Compressor capacity too low to accommodate demand	Add additional air tank.
	Obstructed or restricted intake air flow	Check for obstructions (frame, body, etc.) to air filter vents. Replace air filter if necessary; Refer to Table 5A, Key No. 17.
	Unloader valve(s) sticking or faulty	Valves may need to be cleaned, rebuilt or replaced. Consult the Vanair Service Department for compressor maintenance instructions.
	Pressure relief valve not operating properly	Replace if necessary.
	Belt(s) slipping	Re-tension or replace belts. Refer to Section 5.4.3.
	Engine governor stuck	Free governor and lubricate if necessary. Consult the Engine Operation Manual.
	Leak in air system	Inspect air system for leaks; correct.
	Faulty throttle solenoid	Check throttle solenoid; replace if necessary.
		Check throttle relay; replace if necessary. Refer to Section 5.5, Servicing the System Fuses and Control Relays.
Service valve is open	Close service valve.	
Pressure gauge is malfunctioning	Check pressure gauge function/control line routing: adjust, repair or replace as necessary.	
	Check for proper operation with an auxiliary air source. Replace if necessary.	
<i>Continued on next page</i>		

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Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Compressor will not build up pressure (continued)	Discharge piping leaks	Tighten connections; replace faulty piping.
	Internal compressor damage	Refer to Table 7A: Recommended Spare Parts List for available compressor rebuild kits. For additional assistance, contact the Vanair Service Department.
Slipping of belts	Working pressure too high	Lower working pressure.
	Improper belt tension	Adjust belt tension. Consult Section 5.4.3 .
	Oil on belt(s)	Clean belt(s), sheave and pulley treads.
	Worn belt(s)	Replace with new ones. Consult Section 5.4.3 .
Inaccuracy of pressure gauge	Pressure gauge damaged	Replace.
Excessive moisture in the compressed air	Moisture accumulating in air tank	Drain water from air tank. Refer to Section 5.4.4 .
Compressor system over-pressures and/or relief valve opens	Damaged/kinked control line	Check line for damage (wear, kinks, etc.). Re-route, re-tie or replace if necessary.
	Restriction in control line	Clean if soiled; if ice is present, clear and remove.
	Control line connections are not properly seated/poor connection quality	Check lines for proper seating/ensure line ends have been cut cleanly and are square (DO NOT use wire cutters: use a loom cutting tool or a clean, sharp razor blade).
	Pilot valve out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting the Cut-in / Cut-out Pressure .
	Defective safety valve	Replace safety valve.
	Pressure gauge is malfunctioning	Check for proper operation with an auxiliary air source. Replace if necessary.
		Check pressure gauge function/control line routing: adjust, repair or replace as necessary.
Unloader sticking	Free unloader. Replace if necessary.	
No service air output	If equipped, OSHA valve/velocity fuse, not functioning properly	Reset or replace OSHA (service) valve.
	Pinched or plugged service line.	Alleviate kink or remove line obstacle.
System operating pressure below specified minimum	Air demand too high	Check air tools for wear, damage, or malfunctions. Replace or repair.
	Compressor capacity too low to accommodate demand	Substitute larger capacity compressor system.
	Pilot valve out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting the Cut-in / Cut-out Pressure .
	Clogged compressor air filter	Replace air filter if necessary; Refer to Table 5A, Key No. 17 .
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Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
System operating pressure below specified minimum (continued)	System leaks or is damaged	Inspect for leaks. Repair and/or replace damaged parts as necessary.
	Incorrect input speed	Reduce load. Refer to Section 5.4.2, Adjusting the Engine Speed .
	Pressure switch set too low/malfunction	Adjust pressure switch setting. Refer to Section 5.4.1, Adjusting the Cut-in / Cut-out Pressure . Replace if switch continues to deviate from setting.
	Input rpm too low	Adjust to proper setting.
	Pilot valve stuck open	Check valve; clean or replace if necessary.
	Unloader sticking	Free unloader. Replace if necessary.
Excess amount of oil in air discharge	Compressor oil level too high	Check oil level and drain to proper level if necessary. Refer to Table 5A, Key Nos. 8 and 10 . Do not overfill.
	Worn piston ring	Replace; consult Vanair® Service Department for piston ring and cylinder maintenance procedures. Note that compressor unit may need to be replaced.
Excessive oil consumption	Worn piston ring	Replace; consult Vanair Service Department for piston ring and cylinder maintenance procedures. Note that compressor unit may need to be replaced.
	Worn piston	Replace; consult Vanair Service Department for piston ring and cylinder maintenance procedures. Note that compressor unit may need to be replaced.
	Worn cylinder	Replace; consult Vanair Service Department for piston ring and cylinder maintenance procedures. Note that compressor unit may need to be replaced.
CHARGE / START SYSTEM		
Battery charger behaves erratically	Connection cables or receptacles are soiled/contaminated	Check for soiled, contaminated, damaged or loose receptacle connections.
		Untwist and/or straighten out any suspected cable tensions. Carefully wipe off any contaminants to receptacle connectors before re-connecting. Replace any worn or damaged cables or receptacles. Contact Vanair Mfg., Inc. Service Department if behavior persists.
No DC output	Blown fuse	Replace the fuse. Refer to Section 5.5, Servicing The System Fuses and Control Relays .
	Loose or faulty wiring	Check wiring: Loose—secure; faulty—replace.
	Faulty regulator	Replace.
	Serpentine belt out of position or malfunctioning	Re-situate and adjust belt tension, or replace belt if necessary. Consult Section 5.4.3 .
	Faulty relay	Check; replace if necessary.
Continued on next page		

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
CHARGE / START SYSTEM (CONTINUED)		
No DC output (continued)	Faulty contactor	Check; replace if necessary.
Display not working	Loose or faulty wiring	Check wiring: Loose—secure; faulty—replace.
Connection fault	Loose cable connection	Check and clean cable connection.
	Poor clamp connection	Clean clamp and Terminal and reattach clamp securely.
	Faulty battery	Replace Battery With a New Battery (Do not try to force the Cap•Start to charge faulty battery).
	Cables not connected	Check and clean all cable connections.
	Clamps are reversed	Check clamps to make sure they are correctly attached to Battery.
	Jumper cables not connected	Check cables and make sure they are connected properly.
Voltage fault	Battery is below minimum required sensing voltage	Check cables and connections to make sure they are correct. Use override switch to enable charging/start function.
	Clamps are touching each other	Separate and Isolate clamps so they are not touching. Use a piece of non-conductive rubber if needed to keep clamps apart in tight quarters.
	Jumper cables have short	Replace jumper cables with new cables.
	Internal wiring has short	Consult Vanair® Service Department.
Vehicle fails to start	Extreme cold / vehicle battery frozen	Wait until the Cap•Start has charged batteries to minimum vehicle starting voltage and try again. Consult professional mechanic.
	Batteries are below minimum starting voltage of vehicle	Wait a few minutes for the Cap•Start to charge batteries and try again
Vehicle fails to start after third (3 rd) try	One or more batteries are faulty	Change batteries.
	Vehicle has unknown issues	Consult professional mechanic.
	Batteries below minimum starting voltage	Wait until the Cap•Start has charged batteries to minimum vehicle starting voltage and try again.
Sparks occur from clamps	Polarity reversed while using override	Turn Mode Selector switch to OFF and correct cables to correct polarity.
	Poor connection	Clear terminals and reconnect.

6.3 EXTREME CONDITION OPERATION

When operating in extreme humidity, cold or hot conditions, dusty environments, or at high altitudes, extra attention should be given to any indication that could lead to a serious problem. Engine power and compressor air output will be reduced at high altitude or hot ambient temperatures.

Machine review and maintenance check schedules should be more frequent than the normal suggestions given in the **Table 5A, Routine Maintenance Table**, in **Section 5**.

Become acquainted with the situation-adjusted operation approaches given in this section before operating the power system package in any type of extreme ambient condition. For additional operation information consult the Engine Operation Manual.

6.3.1 COLD WEATHER OPERATION

Consult the information in **Table 6.3A** for preventative and/or repair measures. The Cap•Start can be more difficult to start in cold weather. Once the engine is started, the air density becomes larger and the intake efficiency also becomes higher. More output can be expected in cold areas.

When the temperature is very low, extra care must be taken regarding fuel and oil changes in their viscosity, freezing of water contained in the piping, or of water adhering on the filter.

6.3.2 HIGH TEMPERATURE OPERATION

Consult the information in **Table 6.3B** for preventative and/or repair measures. Reduce load duty cycle to less than 60% when operating in ambient temperatures above 104°F (40°C).

Extra care should be taken to keep the engine and air compressor clean and to not restrict the air flow around the unit. Consult the Engine Operation Manual for fuel, lubrication oil and cooling requirements under extreme temperatures.

When operating the machine in high temperature areas, precautions should be taken to prevent overheating. At the minimum, all vents, including air passage ways around the vents, should be free of debris and dirt.

The operator should be aware that high temperatures can influence engine performance, which can directly effect some machine function capacity outputs.

TABLE 6.3A - COLD WEATHER OPERATION

SYMPTOM	CAUSE	PREVENTION / CORRECTIVE ACTION
Water freezes in the fuel line Lubrication oil viscosity increases	<p>WATER</p> <p>Water in the fuel can freeze at temperatures below 32°F (0°C), blocking fuel lines.</p> <p>At an extremely cold temperature, the viscosity of lubrication oil may increase and the torque of starter may exceed its permissible value, hindering proper starting.</p>	<ul style="list-style-type: none"> • Park the vehicle or equipment indoors when not in use. • Use a block heater. • Maintain the battery; this will make it easier to start a diesel engine in cold weather. • In below zero temperatures a fuel line deicer product may need to be used. • Check the fuel filter regularly to insure that it contains no water. • Vanair Reciprocating Oil is suitable for use from -40°F to 110°F (-40°C to 43°C). • For additional engine precautions, consult the Engine Operation Manual. • Vanair® recommends installation of the cold weather heater option kit. Consult Table 3A in Section 3 for cold weather kit option. • Keep the fuel tank full to prevent condensation from forming inside the tank and lessen the chances of water getting in the fuel line. • Refer to the Engine Operation Manual for engine cold weather oil recommendations.

TABLE 6.3B - HIGH TEMPERATURE OPERATION

SYMPTOM	CAUSE	PREVENTION / CORRECTIVE ACTION
Overheating/high compartment temperatures Diminished engine performances	High ambient temperatures, confined spaces, soundproof cases and other reasons. Among these the most important factor is the temperature of the intake and cooling air.	<ul style="list-style-type: none"> • Extra care should be taken to keep the engine and air compressor clean and to not restrict the air flow around the unit. • Consult the Engine Operation Manual for fuel, lubrication oil and cooling requirements under extreme temperatures. • At the minimum, all coolers, including air passage ways around the coolers, should be free of debris and dirt. The fan, driven by the engine, is designed to run continuously to assure a constant flow of cooling air. • If high ambient overheating occurs, reduce the duty cycle. <p>The operator should be aware that high temperatures can influence engine performance, which can directly effect some machine function capacity outputs.</p>

6.3.3 HIGH DUST CONTENT OPERATION

Consult the information in **Table 6.3C** for preventative and/or repair measures. When the machine is to be used in continuously dusty environments, special care must be taken with the engine's air cleaner, compressor air cleaner, and compressor oil cooler.

6.3.4 HIGH ALTITUDE OPERATION

Engine horsepower will decrease by 3.5% for every 1,000 feet above sea level. At high altitude overall unit performance will deteriorate, and care will need to be taken not to overload the engine.

6.4 DIAGNOSTIC CODES

The fault code(s) can be accessed in order to help determine what portion of the system is malfunctioning.

- **MACHINES WITH KOHLER ENGINE:** The 4-digit fault codes available are listed in **Table 6.4A**.
- **MACHINES WITH HONDA ENGINES:** The ERROR fault codes available are listed in **Table 6.4B**.

TABLE 6.3C - HIGH DUST CONTENT OPERATION

SYMPTOM	CAUSE	PREVENTION / CORRECTIVE ACTION
Overheating System contamination Stalling	Machine components exposed to frequent or constant dust interaction, can result in diminished system performance, or machine cessation.	<ul style="list-style-type: none"> • The intake air must be cleaned with the air cleaner—inspect the air filter frequently for dust build-up and replace as needed. • Ensure that the oil cooler fins are kept clean to prevent overheating. • If the machine is not being used for an extended period of time, an additional precaution, such as covering the machine with a tarp, will help to keep the inside of the machine free of dust particle accumulation. • For extreme cases of high dust content environments, machine fluids may need to be replaced at more frequent intervals. Adjust maintenance schedule accordingly.

TABLE 6.4A - DIAGNOSTIC CODES - KOHLER [‡]

FAULT	CONNECTION OR FAILURE DESCRIPTION	FAULT	CONNECTION OR FAILURE DESCRIPTION
0031	Oxygen Sensor Heater Circuit High Voltage	0172	Minimum Adaptation Limit Exceeded
0032	Oxygen Sensor Heater Circuit Low Voltage	0174	Lean Fuel Condition at High Load (Open Loop)
0107	Manifold Absolute Pressure Sensor Circuit Low Voltage or Open	0201	Injector 1 Circuit Malfunction
0108	Manifold Absolute Pressure Sensor Circuit High Voltage	0202	Injector 2 Circuit Malfunction
0112	Intake Air Temperature Sensor Circuit Low Voltage	0230	Fuel Pump Module Circuit Low Voltage or Open
0113	Intake Air Temperature Sensor Circuit High Voltage or Open	0232	Fuel Pump Module Circuit High Voltage
0117	Coolant/Oil Temperature Sensor Circuit Low Voltage	0336	Crankshaft Position Sensor Noisy Signal
0118	Coolant/Oil Temperature Sensor Circuit High Voltage or Open	0337	Crankshaft Position Sensor No Signal
0122	Throttle Position Sensor Circuit Low Voltage or Open	0351	Cylinder 1 Ignition Coil Malfunction
0123	Throttle Position Sensor Circuit High Voltage	0352	Cylinder 2 Ignition Coil Malfunction
0131	Oxygen Sensor 1 Circuit Low Voltage, or Open	0562	System Voltage Low
0132	Oxygen Sensor 1 Circuit High Voltage	0563	System Voltage High
0171	Maximum Adaptation Limit Exceeded	61	End of Code Transmission

[‡] Consult the Kohler Engine Operation Manual for further details.

TABLE 6.4B: DIAGNOSTIC CODES - HONDA [‡]

FAULT	DESCRIPTION	NOTES	TROUBLESHOOTING	MANUALLY ACTIVATE
ERROR E1	REVERSE POLARITY	Means the positive and negative clamps are reversed	Check clamps. Ensure positive clamp is on positive terminal and negative clamp is on the negative terminal.	NO
ERROR E2	TIME LIMIT EXCEEDED	Re-activate desired mode to continue	Cycle Key on and off.	NO
ERROR E3	HIGH ENGINE OIL TEMPERATURE DETECTED	Engine oil temp is too high	Check temp switch voltage to ensure switch is not faulty. Check fluid level Ensure engine fan is free of debris.	NO
ERROR E6	NO AMPERAGE DRAW DETECTED	Battery internals may be damaged	Ensure correct connections before proceeding. Turn on accessory circuit, fan, radio to provide amp draw.	YES
ERROR E7	SHORTED CABLES DETECTED	Verify all connections before proceeding	Manual activation could result in damage if connections are incorrect	YES
ERROR E10	BATTERY VOLTAGE TOO LOW	Check connections	Verify appropriate system voltage before proceeding	YES
ERROR E11	BATTERY VOLTAGE TOO HIGH	Manual activation is not possible	Check that you are in the correct mode (12V or 24V) for the receiving vehicle	NO
ERROR E12	CHECK CONNECTIONS, OPEN CABLES DETECTED	Cap-start cannot detect any battery/vehicle voltage	Check Clamps to ensure connections. Measure battery voltage with multimeter	YES
ERROR E13	CAPSTART SYSTEM VOLTAGE TOO HIGH	An internal voltage regulation fault may have occurred.	If problem repeats call Vanair Service at 1-844-VAN-SERV	NO
ERROR E14	LOW ENGINE OIL PRESSURE DETECTED	Indicates low engine oil, engine failure, or engine oil pressure switch failure	Check engine oil immediately	NO
ERROR E15	CABLES DISCONNECTED DURING OPERATION	Check clamp connections	If clamps are connected properly see manual activation procedure.	YES

[‡] Consult the Honda Engine Operation Manual for further details.