

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 **Section 5.3, Maintenance Schedule Table** for a typical maintenance regimen program.

Although Vanair® strives to anticipate situations that may occur during the operation life of the machine package, the **Troubleshoot-**

ing Guide may not cover all possible situations. Be aware that additional troubleshooting information may be found in other sources such as the Engine Owner's Manual. Should the situation remain unresolved after exhausting available sources, contact your local dealer or the Vanair Service Department.



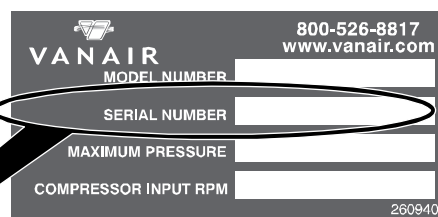
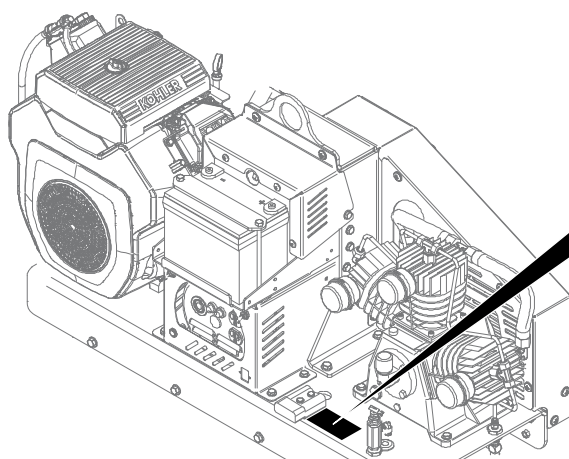
WARNING

DO NOT operate any of the Air N Arc 150 Series machine's 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.



WARNING

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



NOTE

When contacting the Service Department, please have machine serial number on hand to quickly expedite service.

Figure 6-1: Machine Package Serial Number Plate Location

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE		
<i>For additional information concerning the engine, consult the Engine Owner's Manual</i>		
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 the Engine Owner's Manual).
	Engine seized	Replace engine.
	Faulty starter	Replace starter.
	Faulty starter connection	Check for proper electrical connections at starter.
	Poor ground connection	Check and clean/renew connection.
	Faulty starting solenoid	Replace solenoid.
Engine will crank, but not start	Low fuel and/or oil supply	Check fuel gauge. Check engine oil level; replenish as necessary. Refer to the Engine Owner's Manual for additional information on engine maintenance.
	Pinched fuel line	Replace or reroute if necessary.
	Plugged fuel filter	Replace if necessary. Refer to the Engine Owner's Manual for additional information on engine maintenance.
	Low battery voltage	Recharge or replace if necessary.
		Loose connections; tighten connections.
		Dirty connections; clean connections.
	Plugged engine air filter	Replace engine air filter. Refer to Engine Owner's Manual.
	Poor ground connection	Check and clean/renew connection.
	Faulty spark plug	Check spark plug and replace if necessary. See Engine Owner's Manual.
	Engine choke not operating properly	Check engine choke position.
	Faulty starter motor (slow crank)	Replace starter.
	Carburetor faulty	Repair or replace carburetor.
Improper Control Operation: Engine does not speed up	Throttle solenoid stuck	Check throttle solenoid. Replace if necessary.
		Check throttle relay; replace if necessary.
	Governor stuck	Free governor and lubricate if necessary.
Continued on next page		

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)		
Improper Control Operation: Engine does not speed up (cont.)	Fuel filter partly plugged	Replace fuel filter. Refer to the Engine Owner's Manual.
	Faulty pilot valve	Readjust or replace pilot valve.
	Faulty pressure switch	Replace pressure switch.
Improper Control Operation: Engine does not slow down	Leak in control line	Check for leaks; replace line if necessary.
	Pilot valve out of adjustment or malfunctioning	Pressure settings may need to be reset.
	Faulty pressure switch	Replace pressure switch.
	Throttle solenoid stuck	Check throttle solenoid. Replace if necessary. Check throttle relay; replace if necessary.
	Governor stuck	Free governor and lubricate if necessary.
Engine overheats	Located too close to obstruction.	Move further from obstruction.
	Low oil level	Check engine oil level; Refer to the Engine Owner's Manual; replenish as necessary.
	Restricted cooling air in or out	Clean engine intake grill.
	RPMs too fast	Adjust speed.
Engine stops during operation	Low oil level	Check engine oil level; Refer to the Engine Owner's Manual; replenish as necessary.
	Low fuel	Check fuel gauge. Fill as necessary.
	Engine overloaded	Reduce demand/Turn off one function.
	Engine idle set too low	Adjust idle to proper speed.
	Fouled spark plug	Check spark plug and replace if necessary. Refer to the Engine Owner's Manual.
Engine will not throttle up for various functions	Faulty throttle solenoid	Check throttle solenoid; replace if necessary.
		Check throttle relay; replace if necessary.
	Blown system fuse	Check system fuse; replace if necessary.
	Faulty pilot valve	Replace pilot valve.
	Faulty pressure switch	Replace pressure switch.
Gradual loss of engine power	Contaminated fuel	Drain and replace fuel supply.
	Wrong fuel type fill	Use only gasoline—do not use E85, etc. Refer to Engine Owner's Manual for information on engine fuel type to use.
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6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)		
Gradual loss of engine power (continued)	Engine air filter contaminated	Check air filter. Replace if necessary (refer to the Engine Owner's Manual).
	Fuel filter contaminated	Check fuel filter. Refer to the Engine Owner's Manual for additional information on engine maintenance.
	Vapor lock	Machine overloading. Allow to cool.
		Refer to "Engine overheats" section in this Troubleshooting Guide.
	Fouled spark plug	Check spark plug and replace if necessary. Refer to Engine Owner's Manual.
	Engine choke not operating properly.	Check engine choke position.
	Carburetor faulty	Repair or replace carburetor.
Fuel pump weak	Replace fuel pump.	
COMPRESSOR		
Compressor overheats	Low compressor oil level	Check oil level and refill to proper level if necessary.
	Obstructed or restricted intake air flow	Check for obstructions (frame, body, etc.) to air filter vents. Replace air filter if necessary.
	Unloader valve(s) sticking or faulty	Clean or rebuild/replace.
	Dirty compressor, head, cylinder or intercooler	Clean with compressed air.
	Operating pressure too high.	Reduce operating pressure.
	Incorrect oil being used.	Drain and replace oil.
	Compressor cycle too long. (Proper cycle is 50-60% on Stop/Start operation and 75-80% on continuous run operation.	Allow for longer rest period between cycles.
Compressor will not build up pressure	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.
Continued on next page		

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Compressor will not build up pressure (continued)	Drain cock open	Close drain cock.
	Pilot valve out of adjustment or malfunctioning	Pressure settings may need to be reset. Refer to Section 5.5.1, Adjusting Compressor Cut-in / Cut-out Pressure.
	Obstructed or restricted intake air flow	Check for obstructions (frame, body, etc.) to air filter vents. Replace air filter if necessary.
	Belt(s) slipping or broken	Re-situate and adjust belt tension, or replace belt if necessary. Consult Section 5.5.3, Replacing and Re-tensioning the Compressor and/or Generator Drive Belts.
	Engine governor stuck	Free governor and lubricate if necessary. Consult the Engine Owner's Manual.
	Unloader valve(s) sticking or faulty	Clean or rebuild/replace.
	Pressure relief valve not operating properly	Replace if necessary.
	Leak in air system	Inspect air system for leaks.
	Faulty throttle solenoid	Check throttle solenoid; replace if necessary.
		Check throttle relay; replace if necessary.
	Input rpm too low	Adjust to proper setting.
	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.
	Compressor incorrectly sized	Match task requirements within the compressor specification range.
	Head gasket leaking	Replace head gasket.
	Dirty or plugged inter-cooler tubes	Remove and clean inter-cooler tubes.
	Worn or defective compressor valves	Replace worn parts.
	Worn piston, worn out rings	Replace worn parts.
<i>Continued on next page</i>		

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Excessive moisture in the compressed air	Moisture accumulating in air tank	Drain water from air tank. Refer to Section 5.3, Maintenance Schedule Table , and Section 7.15A - 7.15C, Installation and Dimension Diagram .
	Excessive compressor heat	Allow compressor to cool down.
Compressor system over-pressures	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.
	Unloaders stuck	Lubricate
	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.
	Defective safety valve	Replace safety valve.
No service air output	If equipped, OSHA valve/velocity fuse, not functioning properly	Reset or replace OSHA valve.
	Belt(s) not adjusted properly, worn or slipping/belt broken	Belt(s) out of position or malfunctioning. Consult Section 5.5.3, Replacing and Retensioning the Compressor and/or Generator Drive Belts .
	Bad discharge check valve	Replace check valve.
Low service air output	Clogged compressor air filter	Check air filter. Replace if necessary.
	Pilot valve sticking	Replace pilot valve.
	Incorrect compressor speed	Adjust speed.
	Discharge OSHA check valve	Replace check valve.
	Unloaders stuck	Repair or replace unloaders.
<i>Continued on next page</i>		

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Excess amount of oil in air discharge	Compressor oil level too high	The correct oil level is the half-way mark on the sight glass with the compressor shut down, and the machine on a level surface. Drain excess oil to correct level.
	Compressor overheated/air pressure rpms regulated too high	Adjust air pressure rpms.
	Restricted air filter	Clean or replace air filter.
	Improper oil viscosity	Drain and replace oil.
	Worn piston rings	Replace piston rings.
Water in crankcase Oil breaking up Oil gets dirty; rusty valve or cylinder	Cycle too short; compressor does not operate long enough to vaporize condensed moisture during compression.	Allow for a longer operating cycle.
	Compressor operating outside in cold conditions or inlet filter not protected against weather.	Provide adequate protection against extreme weather conditions. Refer to Section 6.3, Extreme Condition Operation .
	System pressure leaking back through check valve when compressor is stopped	Check and replace/check valve, if necessary.
	Wrong oil being used	Drain and replace with proper oil.
Excessive vibration	Loose compressor, motor, engine or guard	Tighten components.
	Excessive discharge pressure	Reduce operating pressure.
	Compressor not level	Level compressor.
	Wrong oil being used	Drain and replace with proper oil.
	Loose flywheel, drive pulley or drive belts	Tighten loose components and check belts.
	Worn rods, wrist pin or main bearings	Check and replace worn parts.
Compressor knocks	Compressor valves loose or broken	Check and replace worn or broken valves.
	Inspect check valve; it may knock at low pressures	Remove and clean check valve.
	Bearing failure	Replace compressor.
<i>Continued on next page</i>		

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Compressor uses too much oil	Clogged inlet filter	Clean inlet filter or replace, if necessary.
	Wrong oil being used; wrong viscosity	Drain and replace oil.
	Oil level too high	Fill compressor with oil to proper level.
	Crankcase breather valve malfunction	Replace crankcase breather.
	Compressor runs unloaded too long	Increase load or stop compressor when not needed. Check for air leaks.
	Compressor operating outside in cold conditions or inlet filter not protected against weather	Provide adequate protection against extreme weather conditions. Refer to Section 6.3, Extreme Condition Operation .
	Worn piston rings	Replace piston rings.
	Piston rings not seated	See Piston rings not seated instructions, below.
	Ample time not allowed for new rings to seat	Allow 100 hours of normal operation for new rings to seat.
WELDER		
Welder and/or battery charger behave erratically	Connection cables or receptacles are soiled/contaminated	Check for twisted cables and/or soiled/contaminated 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 the Vanair Service Department if behavior persists.
	Welding function is not drawing enough operating power	If running more than one function simultaneously, turn off competing function.
No welder output Display not working	Fuse at welder field blown	Replace the welder field fuse.
	Loose or faulty wiring	Check wiring: If loose, secure; if faulty, replace.
	Bad welder	Replace welder.
Lights do not turn off	Battery charge low	Flip AC generator switch to bring engine to high rpm, and charge battery.
<i>Continued on next page</i>		

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
AC GENERATOR		
No AC generator output	Circuit breaker tripped	Reset the circuit breaker.
	Capacitor failure	Replace capacitor.
	Loose or faulty wiring	Check wiring: Loose—secure; faulty—replace.
	Generator faulty	Replace generator.
Low AC voltage	Engine speed too low for demand	Adjust speed control. Refer to the Engine Owner's Manual.
	Capacitor failure	Replace capacitor.
	Wrong capacitor	Replace with higher rating cap.
High AC voltage	Engine speed too high for demand	Adjust speed control. Refer to the Engine Owner's Manual.
	Wrong capacitor	Replace with lower rating capacitor.

6.3 EXTREME CONDITION OPERATION

When operating in extreme hot or cold conditions, extra attention should be given to any indications that could lead to a serious problem. Machine review and maintenance check schedules should be more frequent than the normal suggestions given in **Section 5.3, Maintenance Schedule Table**.

Become familiar with the alternative operation procedures given in this section before operating the power system package in any type of extreme ambient conditions.

6.3.1 COLD WEATHER OPERATION

Additional care should be taken under consideration when operating the package in extreme cold weather environments or ambient temperatures.

Run machine with no load at full speed using the generator switch to warm up the machine (Refer to **Section 4, Figure 4-2 [A2]**).

6.3.1.1 ENGINE OPERATION

The standard recommendation of 10W-30 engine oil is suitable for temperatures down to -5°F. If temperatures are consistently below 30°F, it is recommended that 5W-30 oil be used. If temperatures are below -25°F, a high-performance, fully synthetic oil, such as AMSOIL 5W-30 should be used, which is suitable to temperatures of -55°F.

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.

Drain the moisture from the tank when it is warm from extended operation.

NOTE

Ethanol blended fuels, such as E85, are prohibited for use with the Kohler engine. **DO NOT** use ethanol-based fuels. Consult **Section 2, Specifications** of this manual and the Engine Owner's Manual for acceptable fuel specifications.

NOTE

For additional information on engine operation, consult the Engine Operator's Manual.

6.3.2 HIGH TEMPERATURE OPERATION

The standard recommendation of 10W-30 engine oil is suitable for operation in temperatures up to 110°F (43.3°C).

Extra care should be taken to keep the engine and air compressor clean and to not restrict the air flow around the unit.

6.3.3 HIGH ALTITUDE OPERATION

Engine horsepower will decrease by 3.5% for every 1,000 feet. increase in altitude. At high altitude overall unit performance will deteriorate, and care will need to be taken not to overload the engine by using more than one function of the unit.