SECTION 7: TROUBLESHOOTING

7.1 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 6.3, 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 **Troubleshooting Guide** (**Section 7.3**) may not cover all possible situations. Be aware that additional troubleshooting information may be found in other sources such as the Engine Operator's Manual. Should the situation remain unresolved after exhausting available sources, contact the Vanair® Service Department at:

Phone: 800-526-8817 (toll free)

Phone: 219-879-5100, ext. 400

Fax: 219-879-5335

www.vanair.com

NOTE

When contacting the Vanair Service Department, please have machine serial number on hand to quickly expedite service. See *Figure 7-1* for machine serial plate location.

⚠ WARNING

DO NOT operate any of the Air N Arc 200 Series All-In-One Power System'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.

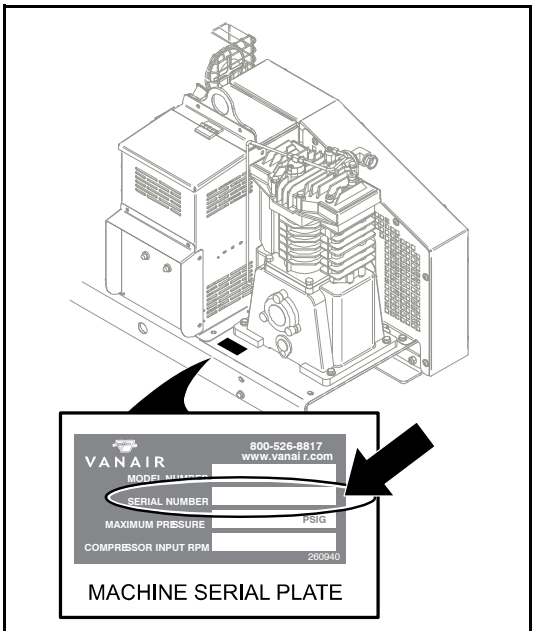

Figure 7-1: Machine Serial Plate Location

7.2 A NOTE ON CONDENSATION DUE TO COMPRESSION

Liquid water occurs naturally in air lines as a result of compression. Moisture vapor in ambient air is concentrated when pressurized, and condenses when cooled in downstream air piping.

Compressed air dryers reduce water vapor concentration and prevent liquid water formation in compressed air lines. Dryers are necessary companion to air filters, aftercoolers, and automatic tank drains for improving the productivity of compressed air systems.

Water and water vapor removal increases the efficiency of air operated equipment, reduces contamination and rusting, increases service life of pneumatic equipment and tools, and prevents air line freeze ups. For assistance in dealing with water and water vapor removal, consult Vanair.®

7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE[I]		
For additional information concerning the engine, consult the Engine Operator's Manual		
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: See **Section 6.6, Servicing the System Fuses and Circuit Breakers**, and/or consult the Engine Operator's Manual.
	Faulty starter connection	Check for proper electrical connections at starter.
Engine will crank, but not start	Low fuel and/or oil supply	Check fuel gauge. Check engine oil level; refer to **Section 6.5.9.2, Checking the Engine Oil**. Replenish as necessary. Consult the Engine Operator's Manual for additional information.

Continued on next page

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

7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)		
Engine will crank, but not start (continued)	Wrong fuel type fill	Use only clean, automotive grade gasoline—do not use E85, etc. Refer to Engine Operator's 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 **Section 6.5.9.4, Replacing the In-line Fuel Filters**, and the Engine Operator's Manual.
	Low battery voltage	Recharge or replace if necessary.
		Loose connections; tighten connections.
		Dirty connections; clean connections.
	Restricted engine air filter	Check that the air cleaner element and precleaner are clean and all components are properly secured (**Section 6.5.9.1, Air Filter Maintenance**). Clean or replace as necessary.
	Defective oil pressure switch	Check continuity, and replace Kohler® Oil Sentry Protection switch, if necessary (refer to Engine Operator's Manaul).
		Remove wire—if it runs, the switch is faulty.
	Blown fuse	Check continuity, and replace if necessary. See **Section 6.6, Servicing the System Fuses and Circuit Breakers**, and/or consult the Engine Operator's Manual.
	Poor ground connection	Check and clean/renew connection.
	Fouled spark plug	Check spark plug and replace if necessary. Refer to Engine Operator's Manual.
	Engine choke not operating properly	Check engine choke position. Refer to Engine Operator's Manual.
	Broken or faulty wiring	Check harness connections and wiring condition.

Continued on next page

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7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)		
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 6.6, Servicing the System Fuses and Circuit Breakers**.
	Faulty throttle solenoid	Check throttle solenoid; replace if necessary.
		Check throttle relay; replace if necessary. Refer to **Section 6.6, Servicing the System Fuses and Circuit Breakers**.
	Governor stuck	Free governor and lubricate if necessary.
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to **Section 6.5.9.4, Replacing the In-line Fuel Filters**, and the Engine Operator's Manual.
	Unloader valve(s) sticking or faulty	Refer to ***Section 6.5.3, Unloader Valve Maintenance***, to clean or rebuild/replace.
	Blown system fuse	Check system fuse; replace if necessary. Refer to **Section 6.6, Servicing the System Fuses and Circuit Breakers**.
	Broken or faulty wiring	Check harness connections and wiring condition.
Improper Control Operation: Engine does not slow down	Leak in control line	Check for leaks; replace line if necessary.
	Pressure control out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult ***Section 6.5.5, Adjusting the Cut-in / Cut-out Pressure***.
	Unloader valve(s) sticking or faulty	Refer to ***Section 6.5.3, Unloader Valve Maintenance***, to clean or rebuild/replace.
	Defective oil pressure switch	Check continuity, and replace Kohler® Oil Sentry Protection switch, if necessary (refer to Engine Operator's Manaul).
	Throttle solenoid stuck	Check throttle solenoid. Replace if necessary.

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7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)		
Improper Control Operation: Engine does not slow down (continued)	Throttle solenoid stuck (continued)	Check throttle relay; replace if necessary. Refer to **Section 6.6, Servicing the System Fuses and Circuit Breakers**.
	Broken or faulty wiring	Check harness connections and wiring condition.
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 **Section 6.5.9.3, Replacing the Engine Oil**. Also refer to the Engine Operator's Manual.
	Low oil level	Check engine oil level; refer to ***Section 6.5.9.2, Checking the Engine Oil***. Replenish as necessary. Also refer to the Engine Operator's Manual.
	Restricted engine air filter	Check that the air cleaner element and precleaner are clean and all components are properly secured. Clean or replace as necessary. Refer to Engine Operator's Manual.
	Restricted cooling air in or out	Clean engine intake grill. refer to **Section 6.5.9.5, Engine Cooler Maintenance**.
	Engine oil cooler plugged	Clear debris/dirt from cooler core/flush shroud. Refer to **Section 6.5.9.5, Engine Cooler Maintenance**, and the Engine Operator's Manual.
Engine stops during operation	Low oil level	Check engine oil level; refer to ***Section 6.5.9.2, Checking the Engine Oil***. Replenish as necessary. Consult the Engine Operator's Manual for additional information.
	Low fuel	Check fuel gauge. Fill as necessary.
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to **Section 6.5.9.4, Replacing the In-line Fuel Filters**, and the Engine Operator's Manual.

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7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)		
Engine stops during operation (continued)	Wrong fuel type fill	Use only clean, automotive grade gasoline—do not use E85, etc. Refer to Engine Operator's Manual for information on engine fuel type to use.
	Restricted engine air filter	Replace.
	Restricted cooling air in or out	Clean engine intake grill. refer to **Section 6.5.9.5, Engine Cooler Maintenance**.
	Fouled spark plug	Check spark plug and replace if necessary. Refer to Engine Operator's Manual.
Gradual loss of engine power	Contaminated fuel	Drain and replace fuel supply.
	Wrong fuel type fill	Use only clean, automotive grade gasoline—do not use E85, etc. Refer to Engine Operator's Manual for information on engine fuel type to use.
	Engine air filter contaminated	Check air filter. Replace if necessary (refer to the Engine Operator's Manual).
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to **Section 6.5.9.4, Replacing the In-line Fuel Filters**, and the Engine Operator's Manual.
	Vapor lock	Machine overloading. Allow to cool.
		Refer to **"Engine overheats"** section in this Troubleshooting Guide.
	Defective oil pressure switch	Check continuity, and replace Kohler® Oil Sentry Protection switch, if necessary (refer to Engine Operator's Manaul).
	Fouled spark plug	Check spark plug and replace if necessary. See Engine Operator's Manual.
	Engine choke not operating properly.	Check engine choke position.
COMPRESSOR		
Flywheel rotation slows down	Belt(s) slipping	Re-tension or replace belts.
Severe vibration	Bent crankshaft	Remove and replace. Contact Vanair for details.

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7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Abnormal noise	Loose valve assembly	Tighten valve bolt and lock nut.
	Piston hits cylinder cover	Check piston & rod assembly for excessive wear.
	Worn connecting rod bearing.	Replace bearing.
Compressor overheats	Low compressor oil level	Check oil level and refill to proper level if necessary. Refer to ***Section 6.5.2, Compressor Oil Maintenance***. **Do not** overfill.
	Obstructed or restricted intake air flow	Check for obstructions (frame, body, etc.) to air filter vents. Replace air filter if necessary. Refer to ***Section 6.5.1, Compressor Air Filter***.
	Unloader valve(s) sticking or faulty	Refer to ***Section 6.5.3, Unloader Valve Maintenance***, to clean or rebuild/replace.
Compressor will not build up pressure	Worn valve plate	Repair or replace valve plate.
	Valve springs have lost their temper	Replace valve springs.
	Dirt on the valve plate	Remove and clean it.
	Leaks from safety valve	Repair or replace safety valve.
	Leaks from bolt holes	Tighten the nuts even with packing.
	Uneven valve seat surface	Remove and lap the surface.
	Excessive blow by on piston rings	Replace with new ones.
	Bad packing (gasket too thick)	Replace packing (gasket).
	Excessive air leaks	Eliminate air leaks.
	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.
	Pressure control out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult ***Section 6.5.5, Adjusting the Cut-in / Cut-out Pressure***.

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7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
	COMPRESSOR (CONTINUED)	
Compressor will not build up pressure (continued)	Compressor capacity too low to accommodate demand	Substitute larger capacity compressor system.
	Obstructed or restricted intake air flow	Check for obstructions (frame, body, etc.) to air filter vents. Replace air filter if necessary. Refer to ***Section 6.5.1, Compressor Air Filter***.
	Belt(s) slipping	Re-situate and adjust belt tension, or replace belt if necessary. Consult ***Section 6.5.7, Replacing and Re-tensioning the Compressor and/or Generator Drive Belts***, and its sub-sections.
	Engine governor stuck	Free governor and lubricate if necessary. Consult the Engine Operator's Manual.
	Unloader valve(s) sticking or faulty	Refer to ***Section 6.5.3, Unloader Valve Maintenance***, to 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. Refer to **Section 6.6, Servicing the System Fuses and Circuit Breakers**.
	Service valve is open	Close service valve.
	Pressure gauge is malfunctioning	Check pressure gauge function/control line routing: adjust, repair or replace as necessary.
	Pressure gauge is malfunctioning (continued)	Check for proper operation with an auxiliary air source. Replace if necessary.
	Discharge piping leaks	Tighten connections; replace faulty piping.
Slipping of belts	Working pressure too high	Lower working pressure.
	Improper belt tension.	Adjust belt tension. Consult ***Section 6.5.7, Replacing and Re-tensioning the Compressor and/or Generator Drive Belts***, and its sub-sections.

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7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Slipping of belts (continued)	Worn belt	Replace with new ones.
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 6.5.8, Draining the Air Tank***.
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 (refer to ***Appendix A, Hose Installation Guide*** for assistance in running or checking hose lines).
	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 6.5.5, Adjusting the Cut-in / Cut-out Pressure***.
	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(s) out of position or malfunctioning. Consult ***Section 6.5.7, Replacing and Re-tensioning the Compressor and/or Generator Drive Belts***, and its sub-sections.
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.

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7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
System operating pressure below specified minimum (continued)	Pressure control out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult ***Section 6.5.5, Adjusting the Cut-in / Cut-out Pressure***.
System operating pressure below specified minimum (continued)	System leaks or is damaged	Inspect for leaks. Repair and/or replace damaged parts as necessary. Use **Section 9, Illustrated Parts List** to visually confirm/ identify any part that needs to be replaced before ordering part.
	Pressure switch set too low/ malfunction	Adjust pressure switch setting. Refer to ***Section 6.5.5, Adjusting the Cut-in / Cut-out Pressure***. Replace if switch continues to deviate from setting.
	Input rpm too low	Adjust to proper setting.
	Clogged compressor air filter	Check air filter. Replace if necessary; refer to ***Section 6.5.1, Compressor Air Filter***.
	Incorrect engine speed	Reduce load. Refer to ***Section 6.5.6***.
	Pilot valve stuck open	Check valve; clean or replace if necessary.
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. Consult ***Section 6.5.2, Compressor Oil Maintenance***.
Excessive oil consumption	Worn piston ring	Replace; consult Vanair® Service Department for pison ring and cylinder maintenance procedures.
	Worn piston	Replace; consult Vanair Service Department for pison ring and cylinder maintenance procedures.
	Worn cylinder	Replace; consult Vanair Service Department for pison ring and cylinder maintenance procedures.
DC GENERATOR		
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.

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7.3 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
DC GENERATOR (CONTINUED)		
Welder and/or battery charger behave erratically (continued)	Connection cables or receptacles are soiled/contaminated (continued)	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.
	Welding function is not drawing enough operating power	If running more than one function simultaneously, turn off competing function.
No welder output	Fuse at welder field blown	Replace the welder field fuse. Refer to **Section 6.6, Servicing the System Fuses and Circuit Breakers**.
Display not working	Loose or faulty wiring	Check wiring: Loose—secure; faulty—replace.
Lights do not turn off	Battery charge low	Flip AC generator switch to bring engine to high rpm, and charge battery.
AC GENERATOR		
No AC generator output	Serpentine belt out of position or malfunctioning	Re-situate and adjust belt tension, or replace belt if necessary. Consult ***Section 6.5.7, Replacing and Re-tensioning the Compressor and/or Generator Drive Belts***, and its sub-sections.
	Loose or faulty wiring	Check wiring: Loose—secure ; faulty—replace.
	Circuit breaker blown	Replace the circuit breaker. Refer to **Section 6.6, Servicing the System Fuses and Circuit Breakers**.
Low AC voltage	Engine speed too low for demand	Adjust speed control. Consult ***Section 6.5.6, Adjusting the Engine Speed***, and the Engine Operator's Manual.
High AC voltage	Engine speed too high for demand	Adjust speed control. Consult ***Section 6.5.6, Adjusting the Engine Speed***, and the Engine Operator's Manual.