

SECTION 7: MAINTENANCE

7.1 GENERAL

A good maintenance program is the key to long compressor life. Below is a program that when adhered to, should keep the compressor in top operating condition. See Section 8.7, Parts Replacement and Adjustment Procedures for a detailed description of specific compressor system components.

WARNING: DO NOT remove caps, plugs and/or other components when compressor is running or pressurized. Stop compressor and relieve all internal pressure before doing so.

7.2 DAILY OPERATION

Prior to starting the compressor, it is necessary to check the fluid level in the sump. Should the level be low, simply add the necessary amount. If the addition of fluid becomes too frequent, a simple problem has developed which is causing this excessive loss. See the Troubleshooting Section (8.8) under Excessive Fluid Consumption for a probable cause and remedy.

After a routine start has been made, observe the instrument panel gauge and be sure it monitors the correct reading for that particular phase of operation. After the compressor has warmed up, it is recommended that a general check on the overall compressor and instrument panel be made to assure that the compressor is running properly. Also check the air filter maintenance indicators (if provided).

7.3 MAINTENANCE AFTER INITIAL 50 HOURS OF OPERATION

After the initial 50 hours of operation, a few maintenance requirements are needed to rid the system of any foreign materials. Perform the following maintenance operations to prevent unnecessary future problems.

1. Change the oil filter element.
2. Drain and refill air/oil receiver sump.
3. Inspect intake air filter (change if necessary)

7.4 MAINTENANCE EVERY 500 HOURS OR ANNUALLY.

IMPORTANT - It may be necessary to change at earlier intervals if oil has water contamination or if compressor is operated in poor/dirty environment.

1. Change the oil filter element.
2. Drain and refill air/oil receiver sump.
3. Replace intake air filter.
4. Annually replace separator element (located in air-oil sump).
5. Inspect exterior of front mounted oil cooler, clean if necessary.

7.5 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

COMPRESSOR FLUID CHANGE PROCEDURE

Warm-up compressor for 5 to 10 minutes to warm the fluid. Shut the compressor off and relieve all internal pressure before proceeding. Drain the fluid sump by removing the plug at the bottom of the sump tank. Change the compressor fluid and replace the fluid filter element. For element replacement see procedure for servicing the fluid filter in this section. Fill the sump with fluid according to specifications in Section 3.

COMPRESSOR FLUID FILTER ELEMENT REPLACEMENT

1. Using a strap wrench, remove the old element and gasket.
2. Clean the gasket seating surface.
3. Apply a light film of fluid to the new gasket.
4. Hand tighten the new element until the new gasket is seated in the gasket groove.

5. Continue tightening the element by hand an additional 1/2 to 3/4" turn.
6. Restart the compressor and check for leaks.

CAUTION: To minimize the possibility of filter element rupture, it is important that only replacement elements identified with the Vanair name, logo and appropriate part number be used. DO NOT use substitute elements. This is due to the fact that such substitution may have inadequate or questionable working pressure ratings.

AIR FILTER MAINTENANCE

Refer to Figure 7-1. The air filter supplied with your compressor is a two-stage system which offers more than adequate filtration. The air filter should be inspected periodically to maintain maximum compressor protection and filter service life. These inspections should be made:

1. Inspect the air transfer duct work between the air filter and compressor unit to be sure all clamps and joints are tight and there are no cracks in the ducting.

2. The air filter mounting clamps and bolts must be tight to hold the air cleaner securely.
3. Check the rain cap to make sure it is sealing 360(around the air cleaner body.
4. Inspect for dents and damage to the air filter. The end cap (dust cap) of the filter is removable and should be emptied of dirt particles every 100 hours.
5. Check the filter more frequently if used under extreme conditions. The air filter element is a cleanable type and should be serviced in accordance with the following instructions.

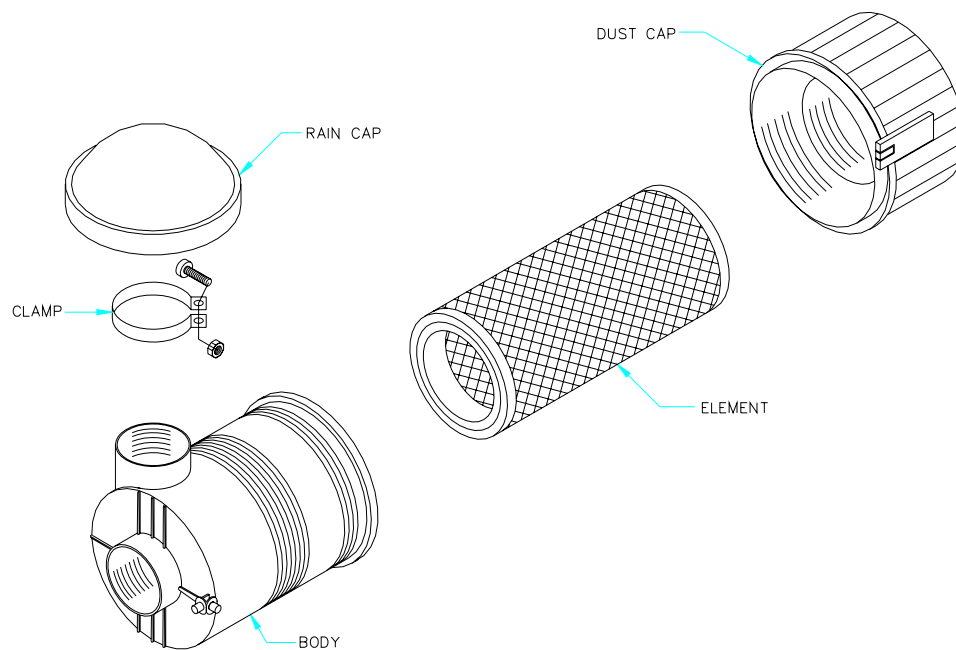


Figure 7-1

ELEMENT REPLACEMENT (P/N: 264266)

1. Loosen the clamp which secures the rain cap to the body and remove the cap.
2. Remove the rubber baffle from inside the dust cap and empty all dirt particles.
3. Unscrew the wingnut from the center post to loosen the element and remove.
4. Clean the body and dust cap with a clean damp cloth inside and out. DO NOT

BLOW DIRT OUT WITH COMPRESSED AIR!

5. At this time clean or replace the element (Part No. 264266). Cleaning instructions follow.
6. Install the element back into the body and replace the wingnut. Tighten securely.
7. Replace the rubber baffle into the dust cap and attach the cap to the body.
8. Re-tighten the clamp to secure the filter.

AIR FILTER ELEMENT CLEANING

The air filter element is cleanable by using compressed air. The maximum amount of times that an element should be cleaned is six (6) times; however, the element should be used no longer than a period of one (1) year without changing.

Prior to cleaning an element, check the element for damage. Damaged elements must be replaced.

When cleaning an element, never exceed the maximum allowable pressures for compressed air (30 psi).

Do not strike the element against any hard surface to dislodge dust. This will damage the sealing surfaces and possibly rupture the element. Never (blow) dirt out of the interior of the filter housing. This may introduce dust downstream of the filter. Instead, use a clean damp cloth. Do not oil the elements.

CLEANING THE ELEMENT WITH COMPRESSED AIR

When cleaning the element with compressed air, never let the air pressure exceed 30 psi.

Reverse flush the element by directing the compressed air up and down the pleats in the filter media from the (clean side) of the element. Continue reverse flushing until all dust is removed. Should any oil or greasy dirt remain on the filter surface the element should then be replaced. When the element is satisfactorily cleaned, inspect

thoroughly prior to installation. (See Element Inspection)

ELEMENT INSPECTION

1. Place a bright light inside the element to inspect for damage or leak holes. Concentrated light will shine through the element and disclose any holes.
2. Inspect all gaskets and gasket contact surfaces of the housing. Should faulty gaskets be evident, correct the condition immediately.
3. If the clean element is to be stored for later use, it must be stored in a clean container.
4. After the element has been installed, inspect and tighten, if necessary, all air inlet connections prior to resuming operation.

SEPARATION ELEMENT REPLACEMENT

Refer to Figure 7-2. When fluid carry-over is evident after the fluid return line orifice as well as the blowdown valve diaphragm have been inspected and found to be in satisfactory condition, separator element replacement (P/N 260017-001) is necessary. Follow the procedure explained below.

1. Remove all piping connected to the sump cover to allow removal (return line, service line, etc.).
2. Remove the fluid return line from the fitting in the cover.
3. Remove the eight (8) 1/2 - 13 cover bolts and lock washers and lift the cover from the sump.
4. Remove the separator element.
5. Scrape the old gasket material from the cover and the flange on the sump. Be sure to keep all scrapings from falling inside tank.
6. Install the element with bonded gaskets, making sure the staples in the gaskets come in contact with the metal surface of the bolt ring and cover. **DO NOT** use gasket sealer as it can insulate the staples causing the element not to be properly grounded for operation.
7. Replace the sump cover and bolts. Run the cover bolts in finger tight, then gradually tighten in a crisscross pattern in 4 to 5 steps. **ALWAYS** tighten the bolts alternately at opposite sides of the cover. **NEVER** tighten bolts adjacent to each other. Torque bolts to 55 to 75 Ft. lbs.
8. Reconnect all piping.
9. Clean the fluid return line and clear the orifice prior to restarting the compressor.

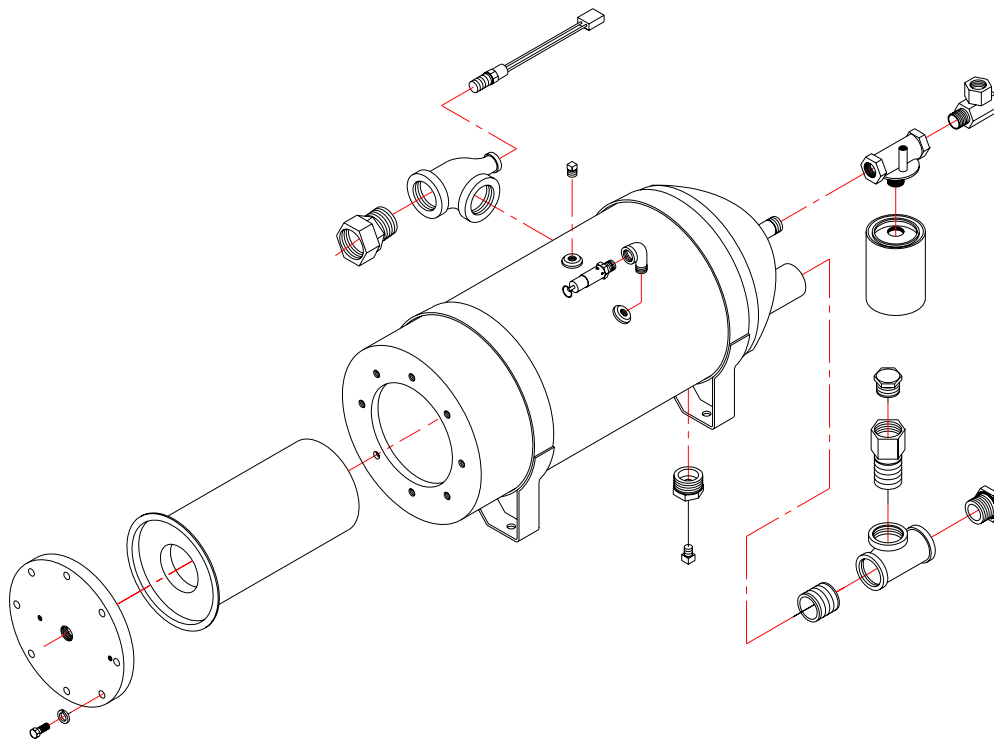


Figure 7-2

7.6 TROUBLESHOOTING

The information contained in the Troubleshooting chart has been compiled from field report data and factory experience. It contains symptoms and usual causes for the described problems. However **DO NOT** assume that these are the only problems that may occur. All available data concerning the trouble should be systematically analyzed before undertaking any repairs or component replacement procedures.

A detailed visual inspection is worth performing for almost all problems. Doing so may prevent damage to the compressor. Always remember to:

1. Check for loose wiring.
2. Check for damaged piping.
3. Check for parts damaged by heat or an electrical short circuit, usually noticeable by discoloration or a burnt odor.

Should your problem persist after making the recommended check, consult your nearest Vanair representative or Vanair Manufacturing, Inc.

FAULT/MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
Compressor shuts down with air demand present	Compressor discharge temperature switch is open: cooling air flow is insufficient	Clean cooler and check for proper ventilation
	Low fluid sump level	Add fluid
	Dirty compressor fluid filter	Change element
	Electric fan/switch inoperative	Repair/replace
	Defective discharge temperature switch	Check for a short or open circuit to the engine fuel solenoid
	Control relay tripped on the instrument panel	Reset relay and check for cause (over temperature or over pressure)
Compressor will not build up full discharge pressure	Air demand is too high	Check service lines for leaks or open valves
	Dirty air filter	Check the filter and change the element if required
	Pressure regulator out of adjustment	Adjust the regulator per control adjustment instructions in the Maintenance Section
	Defective pressure regulator	Check diaphragm and replace if required
Improper unloading with an excessive pressure build-up causing pressure relief valve to open	Incorrect compressor speed	Check and adjust to proper speed
	Pressure regulating valve is set too high	Readjust
	Control system leak causing loss of pressure signal	Check control lines

FAULT/MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
Improper unloading with an excessive pressure build-up causing pressure relief valve to open	Defective pressure regulating valve	Repair valve
	Inlet valve jammed	Free or replace valve
	Defective pressure relief valve	Replace pressure relief valve
Insufficient air delivery	Plugged element	Replace separator element
	Plugged air filter	Replace
	Plugged air/fluid separator	Replace separator element, change compressor fluid and fluid filter
	Defective pressure regulator	Adjust or repair
	Engine speed too low	Adjust engine speed
Excessive compressor fluid consumption	Clogged return line	Clear orifice
	Check valve stuck	Open valve
	Defective blowdown valve	Replace valve
	Lubrication system leak	Check all pipes, connections and components
	Separator element damaged or malfunctioning	Change separator element
	Fluid sump over filled	Drain to proper level
Compressor overheating	Dirty fluid cooler core	Clean core
	Plugged fluid cooler tube (internal)	Clean tube
	Low sump fluid level	Fill
	Plugged compressor fluid filter	Change element
	Electric fan not functioning	Check wires, fan motor and fan switch for faulty parts and replace: check for proper ground