

# **VAN AIR SYSTEMS**

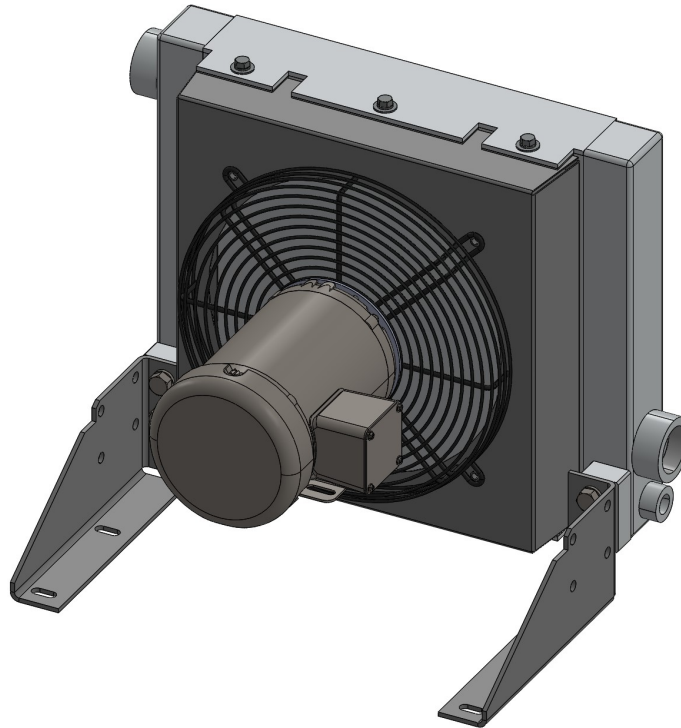
**INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS**

## **AIR-COOLED AFTERCOOLER**

**FOR COMPRESSED AIR SYSTEMS**

**MODELS AC-65 thru AC-125**

**(ALL VOLTAGES)**



### **WARNING**

**READ ALL INFORMATION IN THIS MANUAL BEFORE BEGINNING INSTALLATION OR OPERATION OF THE AFTERCOOLER.**

**BEFORE STARTING INSTALLATION AND/OR MAINTENANCE PROCEDURES, TURN OFF THE MAIN POWER TO THE AFTERCOOLER AND COMPLETELY DEPRESSURIZE THE UNIT TO PREVENT PERSONAL INJURY.**

**DO NOT REMOVE, REPAIR, OR REPLACE ANY ITEM ON THIS UNIT WHILE IT IS PRESSURIZED.**

**NEVER OPERATE THIS AFTERCOOLER ABOVE THE RATED OPERATING CONDITIONS. OPERATION ABOVE SPECIFIED CONDITIONS WILL RESULT IN DECREASED PERFORMANCE, POSSIBLE DAMAGE TO THE UNIT AND/ OR PERSONAL INJURY.**

**NEVER OPERATE THIS AFTERCOOLER IF THERE IS A LEAK IN THE CORE. IMMEDIATELY TAKE THE UNIT OUT OF SERVICE AND FIX OR REPLACE THE CORE.**

**NEVER REMOVE THE FAN GUARD WHILE THE AFTERCOOLER IS OPERATING. CONTACT WITH THE ROTATING FAN BLADES MAY RESULT IN SERIOUS PERSONAL INJURY.**

**1.1 HANDLING THE AFTERCOOLER**

**CAUTION**

**NEVER LIFT THE AFTERCOOLER BY THE CORE.**

**WHEN MOVING OR LIFTING THE UNIT, PROTECT THE CORE FROM ACCIDENTAL DAMAGE.**

Take extreme care when unpacking, moving or installing. The core is exposed and damage to the core or fins may render the unit inoperable.

**1.2 STORAGE INSTRUCTIONS**

The unit should be stored indoors and covered with a tarpaulin to keep it clean. The location should be free from corrosive gasses and extreme humidity, which will cause damage to the unit.

If outside storage is required, the unit **MUST BE** adequately covered to prevent rain or snow from accumulating on the after-cooler. The unit must be placed on a paved surface to keep it out of standing water and mud.

**1.3 EQUIPMENT CHECK**

Inspect the aftercooler for any damage that may have occurred during shipment. Inspect all items shipped with the unit.

**IF THE UNIT HAS SHIPPING DAMAGE:**

- (1) Notify carrier immediately**
- (2) DO NOT operate the unit before consulting factory**

**SPECIFICATIONS**

**SECTION 2**

**2.1 SPECIFICATIONS**

**WEIGHT**

- AC-65 ..... 40 LBS
- AC-105 .....45 LBS
- AC-125 ..... 55 LBS

**DIMENSIONS .....See Section 3.2**

**INLET/OUTLET CONNECTIONS**

- AC-65 ..... 1" NPT (F)
- AC-105 ..... 1-1/2" NPT (F)
- AC-125..... 1-1/2" NPT (F)

**MAXIMUM WORKING PRESSURE**

ALL MODELS .....250 PSIG

**MAXIMUM WORKING TEMPERATURE**

ALL MODELS .....350°F

**MATERIALS OF CONSTRUCTION**

- CABINET .....Steel with baked enamel finish
- SHROUD .....Painted Steel
- FAN GUARD.....Steel with baked enamel finish
- FAN.....Aluminum hub Polypropylene blades
- CORE .....Brazen aluminum bar & plate
- MOTOR .....TEFC

**MOTOR SPECIFICATIONS AND DATA**

See Wiring Diagram, Figure 5 on page 6.

**FAN DATA (AMBIENT AIR FLOW)**

- AC-65 & AC-105 ..... 800 SCFM
- AC-125.....1425 SCFM

**ELECTRICAL REQUIREMENTS**

- AC-65-6 ..... 115/230-1-60, 3.0 FLA
- AC-65-7 .....208-230/460-3-60, 1.4 FLA
- AC-105-6 ..... 115/230-1-60, 3.0 FLA
- AC-105-7 .....208-230/460-3-60, 1.4 FLA
- AC-125-6 ..... 115/230-1-60, 3.7 FLA
- AC-125-7 .....208-230/460-3-60, 2.2 FLA

**MAXIMUM CAPACITY (SCFM)**

Rated capacities are based on the following conditions: Inlet and approach temperature at inlet pressures 80 to 125 PSIG.

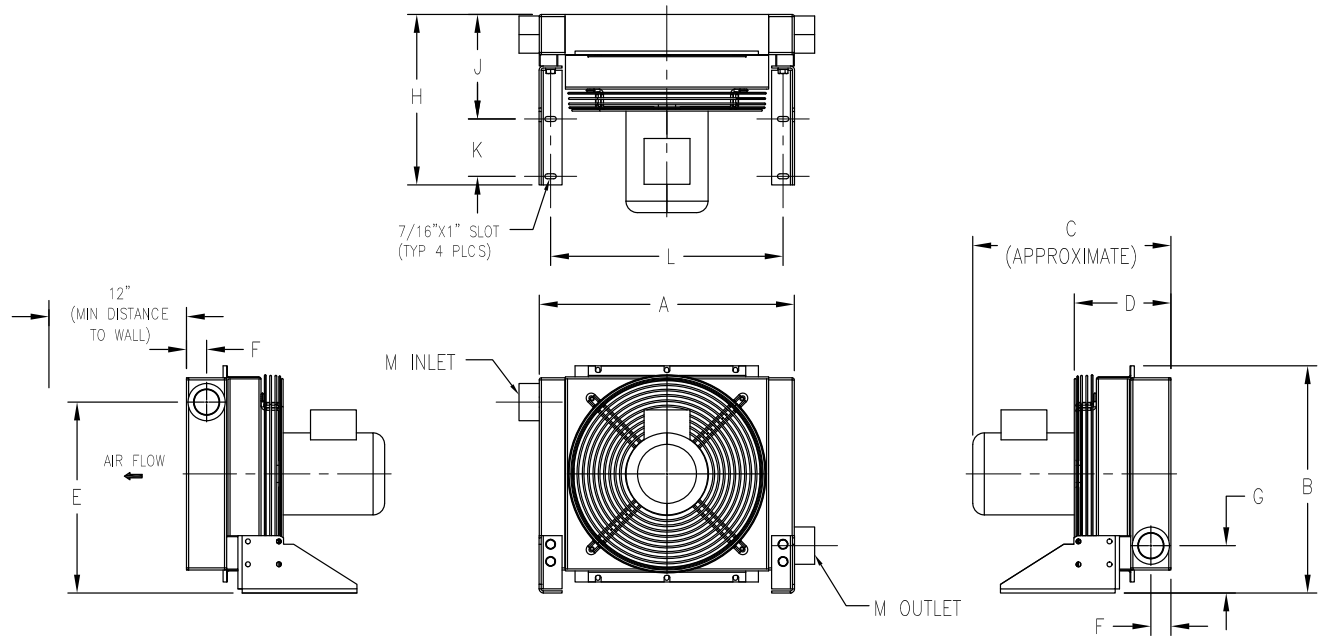
**Approach Temperature:** The number of degrees above the ambient temperature to which the aftercooler reduces the compressed air. A higher approach does **not** mean better performance.

INLET TEMP.	150°F				200°F				250°F				300°F				350°F			
	5	10	15	20	5	10	15	20	5	10	15	20	5	10	15	20	5	10	15	20
MODEL																				
AC-65	29	61	87	101	26	56	69	82	24	45	62	74	21	37	51	61	19	34	45	54
AC-105	56	112	158	180	51	105	126	149	47	85	116	138	40	71	97	114	37	67	85	101
AC-125	109	216	296	337	97	204	241	280	90	166	223	265	77	138	189	220	72	130	166	196

**MAXIMUM PRESSURE DROP LESS THAN 3 PSI.**

\* Maximum ratings restricted by pressure drop: actual thermal capacities are higher.

2.2 DIMENSIONS AND COMPONENT LOCATIONS



MODEL	A	B	C	D	E	F	G	H	J	K	L	M IN/OUT
AC-65	16.00"	14.12"	13.81"	5.94"	12.00"	0.63"	6.81"	12.63"	6.88"	5.00"	13.88"	1" NPT
AC-105	15.87"	14.12"	15.13"	7.31"	12.00"	1.31"	5.50"	14.00"	8.25"	5.00"	13.88"	1-1/2" NPT
AC-125	19.75"	46.50"	16.25"	7.31"	16.00"	1.31"	5.50"	14.00"	8.25"	5.00"	17.75"	1-1/2" NPT

3.1 LOCATION

**CAUTION**

**DO NOT LOCATE THIS AFTERCOOLER WHERE PERSONNEL MAY CONTACT THE INLET PIPING UNLESS THE UNIT IS PROTECTED BY WARNING SIGNS AND/OR A BARRIER. DURING NORMAL OPERATION, THE INLET PIPING MAY BECOME EXTREMELY HOT (150°F TO 400°F). CONTACT MAY RESULT IN SERIOUS PERSONAL INJURY.**

**DO NOT INSTALL THIS UNIT IN AN ENVIRONMENT OF CORROSIVE GASES OR CHEMICALS. MAKE SURE THAT THE MATERIALS USED IN THIS UNIT (listed on page 2) ARE COMPATIBLE WITH THE ATMOSPHERIC CONDITIONS.**

The aftercooler should be located far enough away from the compressor so that there are no vibrations transmitted from the compressor. **A FLEXIBLE HOSE MUST BE INSTALLED IN THE PIPING TO VALIDATE THE WARRANTY AND TO PREVENT DAMAGE TO THE AFTERCOOLER FROM VIBRATION IN THE PIPING!** REFERENCE Section 3.3 for instructions.

The location should be level and capable of supporting the aftercooler and all components and piping to be installed. The aftercooler must be level to allow proper drainage of fluids from the outlet manifold.

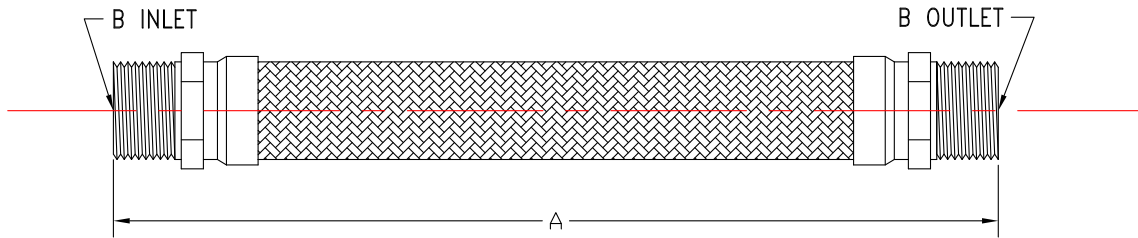
The aftercooler must be installed at least 1 foot from walls or obstructions. It is important for the unit to have an adequate air supply for cooling at all times. If more than one unit is to be installed in the same area, allow at least 1 foot between them.

Aftercoolers equipped with a TEFC motor can be installed indoors or outdoors. If the unit is to be installed outdoors or in an area where ambient temperatures can fall below 38°F, precautions must be made to prevent freeze-up and damage to the unit. The drain lines and separator must be heat traced and/or insulated and the unit should be protected from the wind, REFERENCE Section 3.5 for details.

3.2 MOUNTING THE UNIT

After selecting the proper location as outlined above, the aftercooler should be mounted to the installation surface. Mounting holes are provided on the leg support braces. Reference Section 2.2 for mounting hole locations and dimensions. Use hardware (not supplied) sized for the mounting holes.

FIGURE 3A FLEXIBLE HOSE



			DIMENSIONS			MAXIMUM WORKING PRESSURE		
MODEL	HOSE	PART NO.	A	B	WEIGHT	70°F	300°F	400°F
AC-65	FH-1	83-0735	12"	1" NPT	2.0 LBS	525 PSIG	460 PSIG	435 PSIG
AC-105 & AC-125	FH-1-1/2	83-0736	16"	1-1/2" NPT	3.0 LBS	450 PSIG	395 PSIG	370 PSIG

3.3 FLEXIBLE HOSE INSTALLATION

**IMPORTANT**  
 A FLEXIBLE HOSE MUST BE INSTALLED BETWEEN THE COMPRESSOR AND AFTERCOOLER TO VALIDATE THE WARRANTY ON THE AFTERCOOLER.

The flexible hose must be installed perpendicular to the direction of vibration from the compressor.

If a flexible hose was not ordered with the aftercooler, one can be ordered from your Van Air distributor. Figure 3A lists the hose required for each aftercooler model.

If the aftercooler is to be installed in an existing piping system, clean the piping to remove accumulated dirt, pipe scale, oil, and other contaminants before installing the unit.

A properly sized pressure relief valve should be installed after the compressor and before any block valves. The relief valve should be installed in compliance with all applicable federal, state, and local codes.

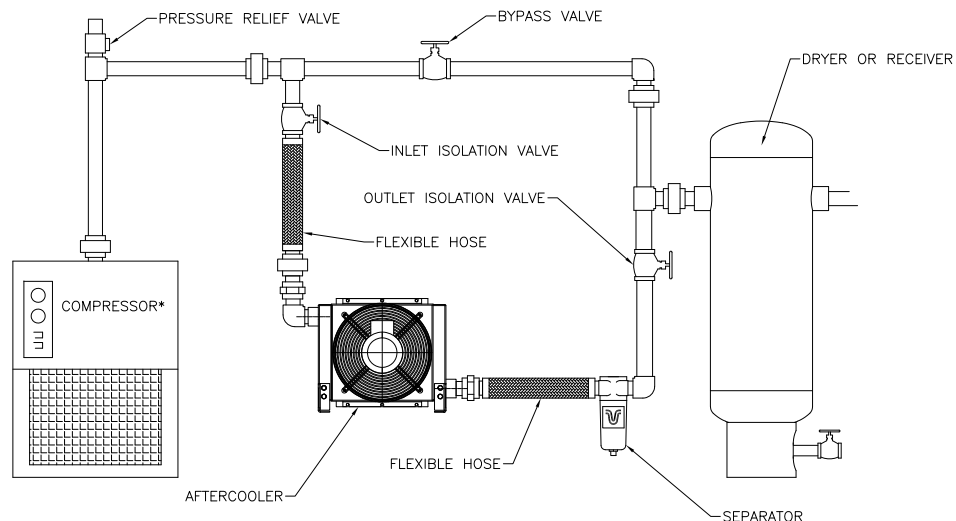
To isolate the aftercooler for maintenance, install bypass piping around the aftercooler and separator (if installed). Reference Figure 3B.

3.4 PIPING INSTALLATION

**CAUTION**  
 ALL PIPING MUST BE ADEQUATELY SUPPORTED AND ISOLATED FROM VIBRATION. EXCESSIVE STRESS OR VIBRATION IN THE PIPING WILL CAUSE DAMAGE TO THE AFTERCOOLER CORE.  
 TO ENSURE PROPER OPERATION, MAKE SURE THAT THE INLET AND OUTLET PIPING ARE CORRECTLY CONNECTED TO THE UNIT. REFERENCE FIGURE 2.2.

Connect the inlet piping to the inlet of the aftercooler, reference Section 2.2 for location. Make sure that the flexible hose is properly installed before the aftercooler inlet. Provide supports wherever necessary to prevent stress on the aftercooler. Supports should be installed close to the inlet and outlet manifolds. Use either overhead or stiff-leg type supports.

FIGURE 3B RECOMMENDED INSTALLATION



\* WARNING: IF THE COMPRESSOR IS RECIPROCATING, A PULSATION TANK OR RECEIVER TANK MUST BE INSTALLED BETWEEN THE COMPRESSOR AND AFTERCOOLER.

**3.5 FREEZE PROTECTION**

If the aftercooler is to be installed in a location where ambient temperatures may fall below 38°F, heat tracing and/or insulation must be used on the outlet piping to the separator, the separator, and the drain piping. The aftercooler must be protected from the direct wind, i.e. a roof and/or walls.

The aftercooler should be turned off when ambient temperatures fall below 38°F.

**3.6 SEPARATOR INSTALLATION**

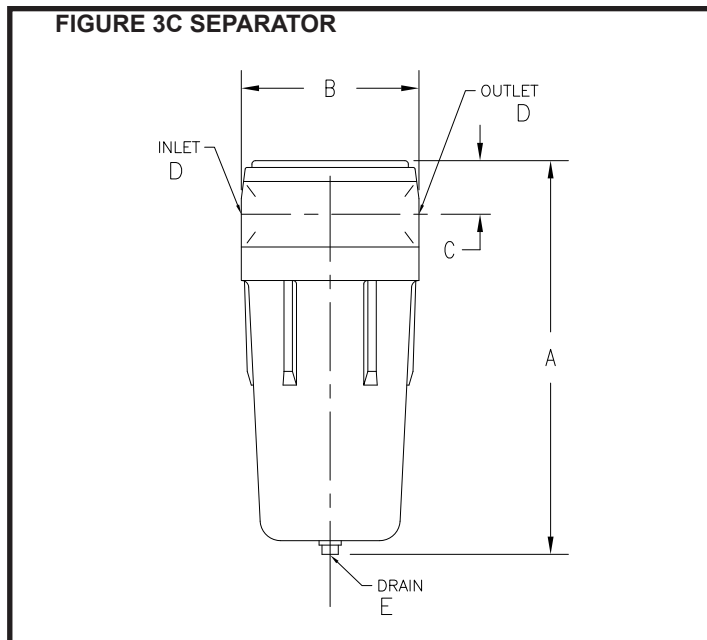
**CAUTION**

**IF THE SEPARATOR DRAIN IS TO BE CONNECTED INTO A REMOTE OR COMMON DRAIN LINE, MAKE SURE THAT IT IS VENTED.**

**THE DISCHARGE FROM THE SEPARATOR MAY CONTAIN COMPRESSOR LUBRICANTS. COMPLY WITH ALL REGULATIONS CONCERNING DISPOSAL OF SUCH FLUIDS.**

When the process air is cooled by the aftercooler, moisture condenses and accumulates in the outlet of the aftercooler. To efficiently remove this liquid from the air system, a separator with a FD-1 float drain must be installed immediately downstream of the aftercooler.

Install the separator as outlined in the Installation, Operation, and Maintenance Instructions supplied with the component. If a separator was not ordered with the aftercooler, one can be ordered from your VAN AIR distributor.



AFTERCOOLER	SEPARATOR	PART NO.	DRAIN	PART NO.
AC-65	S-10-AD	83-0744	FD-1	83-0751
AC-105 & AC-125	S-30-M	83-0746	FD-1	83-0751

MODEL	A	B	C	D	E	MWP (PSIG)	FLOW (SCFM)	
							MIN	MAX
S-10-AD	10.00"	3.35"	0.98"	1" NPT	1/8" NPT	200	11	120
S-30-M	17.00"	6.70"	2.00"	1-1/2" NPT	1/4" NPT	200	60	400

**3.7 ELECTRICAL CONNECTIONS**

**CAUTION**

**TURN OFF MAIN POWER SUPPLY BEFORE WIRING TO THE AFTERCOOLER.**

**MAKE SURE THAT ALL USER SUPPLIED WIRING IS PROPERLY SIZED TO HANDLE THE AMPERAGE REQUIRED BY THE AFTERCOOLER AND ANY ADDITIONAL EQUIPMENT. ALWAYS COMPLY WITH THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES.**

**IF THE AFTERCOOLER IS TO BE INSTALLED OUTDOORS OR IN AN EXTREMELY HUMID ATMOSPHERE, MAKE SURE THAT ALL WIRING AND COMPONENTS ARE PROPERLY RATED.**

**VERIFY THAT THE POWER SOURCE MATCHES THE AFTERCOOLER ELECTRICAL REQUIREMENTS BEFORE MAKING ANY CONNECTIONS. REFERENCE MOTOR DATA TAG FOR INFORMATION.**

**TO PREVENT POSSIBLE ELECTRICAL SHOCK, IT IS IMPORTANT THAT THIS UNIT IS PROPERLY GROUNDED.**

The aftercooler electrical requirements are listed on the equipment data tag and in Figure 2. If there are any discrepancies between the data tag and Figure 2, use the information on the tag.

Remove the cover from the electrical junction box on the aftercooler motor. Using the wiring diagram on the motor as reference, make the necessary wiring connections. Several ways to wire the unit are listed below. Make the connections for the pertinent application(s).

**1. DEDICATED POWER SUPPLY AND DISCONNECT**

Install a properly sized fused disconnect before the aftercooler. Make the necessary wire connections and re-install the junction box cover.

**2. INTERLOCKED WITH COMPRESSOR MOTOR STARTER**

The aftercooler can be interlocked with the air compressor starter. This allows the aftercooler to operate only when the air compressor is operating.

If a set of auxiliary, normally open contacts is available on the air compressor magnetic starter, make necessary wiring connections from the contacts to the aftercooler.

If a set of auxiliary contacts is not available, use a properly sized contactor. Wire the contactor's holding coil in parallel with the air compressor starter holding coil. Make the necessary wiring connections from the contactor to the aftercooler.

**3.7-1 FAN MOTOR ROTATION**

The rotation of the fan motor(s) is important. Units with 3 phase power should be checked for proper rotation after installation.

Energize the unit. Observe the rotation and air flow direction. referce Section 2.2 for air flow direction. If the air does not flow in the proper direction, turn off the unit and switch two of the main power legs.

**4.1 START UP**

Pressurize the compressed air system. If the aftercooler was interlocked with the compressor, the aftercooler will begin to operate immediately. If the aftercooler was wired on a separate electrical source, turn on the source.

Open the inlet and outlet isolation valves on the aftercooler (if installed). Close the bypass valve. The aftercooler is ready for operation.

**4.2 OPERATION**

The operation of the aftercooler is simple. The fan rotates, moving ambient air across the core. The ambient air flow cools the compressed air inside the core. The aftercooler will automatically operate as long as electrical power is supplied to the unit.

**4.3 SHUT DOWN**

To shut down the aftercooler, turn off the electrical power source. If the aftercooler was interlocked with the compressor, the aftercooler will automatically turn off with the compressor.

Open the bypass valve and close the inlet and outlet isolation valves (if installed).

Manually override the automatic drain on the separator to completely depressurize the aftercooler.

**5.0 MAINTENANCE INSTRUCTIONS****WARNING**

**BEFORE STARTING INSTALLATION OR MAINTENANCE PROCEDURES, TURN OFF ELECTRICAL POWER AND COMPLETELY DEPRESSURIZE THE UNIT. FAILURE TO HEED THIS WARNING MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR DAMAGE TO THE UNIT.**

**DO NOT REMOVE, REPAIR, OR REPLACE ANY ITEM ON THIS UNIT WHILE IT IS PRESSURIZED.**

**DO NOT REMOVE THE FAN GUARD WHILE THE AFTER-COOLER IS OPERATING. PERSONAL CONTACT WITH THE ROTATING FAN BLADE MAY RESULT IN SERIOUS PERSONAL INJURY.**

Inspect the aftercooler regularly for loose bolts and connections, rust and corrosion, and dirty or clogged heat transfer surfaces.

**SCHEDULED MAINTENANCE****MONTHLY**

- Clean exterior of the aftercooler core

**SEMI ANNUALLY**

- Grease motors that have alemite fittings. Apply 1 to 2 full strokes with a grease gun.

**YEARLY**

- Clean the interior of the aftercooler core

**5.1 CORE EXTERIOR CLEANING**

The outside of the core should be cleaned regularly. Accumulation of dirt and other contaminants such as oils will greatly reduce the efficiency of the aftercooler.

Normal accumulation of dirt can be removed by blowing the core off with compressed air. If the core becomes contaminated with oil-laden particles, the motor should be removed and the core can be cleaned with a non-flammable degreaser. Follow with hot water rinse and dry thoroughly. The core can also be steam cleaned. **Use extreme care when cleaning the core, as the aluminum fins can be easily damaged. DO NOT USE CAUSTIC CLEANERS.**

**CAUTION**

**NEVER USE SOLVENTS CONTAINING STRONG ACID OR ALKALINE BASES TO CLEAN THE CORE. DAMAGE TO THE CORE MAY OCCUR.**

**5.2 CORE INTERIOR CLEANING**

The inside of the core should be cleaned once a year to return the unit to full capacity. Excess lubricating fluids can build up on the inside of the core and greatly reduce the efficiency of the aftercooler.

Shut down the aftercooler per Section 4.3 and completely depressurize the unit. Disconnect the aftercooler from the air system.

The interior of the core can be cleaned by circulating a mild cleaning solution through the core to remove the deposits. In most cases, a mild alkaline solution such as OAKITE or equal is satisfactory. For extreme conditions, it may be necessary to use a weak solution of INHIBITED hydrochloric acid. Circulate the solution through the core until it is clean. Once the core is clean, thoroughly rinse the core to remove all traces of the cleaning solution before re-connecting to the air system. Always follow the instructions supplied with the cleaning agent.

All filters and separators should also be cleaned and serviced after the inside of the aftercooler has been cleaned.

**5.3 STORAGE**

Store the aftercooler in a dry location that maintains a constant temperature. The aftercooler should not be moved from a warm area to a cold area in order to minimize condensation inside the core.

For storage up to 6 months, drain the cooler and seal the openings.

For storage from 6 months to 24 months, flush the cooler with oil and seal the openings. Remove all protection oil from the aftercooler before connecting it to air system for operation.

For storage longer than 24 months, completely fill the cooler with oil and seal the openings. The cooler should be flushed, inspected, refilled with oil and sealed every 24 months during storage. Drain the aftercooler and remove all protection oil from the aftercooler before connecting it to air system for operation.



## 6.0 TROUBLESHOOTING

### 6.1 FAN MOTOR NOT OPERATING

**Power failure** - Check electrical power source. Check contactors, fuses, or disconnects. Check incoming wiring for damage. If aftercooler is interlocked with the compressor, check the compressor starter.

**Motor failure** - Check electrical power source. If power supply is okay, check the motor. Replace if necessary.

### 6.2 HIGH AFTERCOOLER OUTLET TEMPERATURES

**Fan motor not operating** - Reference Problem 1.

**Dirty core or restricted air flow** - Inspect the core for deposits of dirt and/or oils. If the core is contaminated, clean it as outlined in Sections 5.1 and 5.2. Check for obstructions around the aftercooler. Remove if present.

### 6.3 INCREASED LIQUID (WATER) CONTENT DOWNSTREAM OF THE AFTERCOOLER

**Plugged or damaged separator** - Check the separator for damage and proper drain operation. repair or replace as needed.

**Separator installed incorrectly** - If a separator was installed, check to make sure that it was installed properly. If no separator was installed downstream of the aftercooler, one should be installed to remove the liquid from the air system.

### 6.4 EXCESSIVE PRESSURE DROP ACROSS THE AFTERCOOLER

**Aftercooler core damaged or clogged** - Inspect the core for damage or blockage. If the core is damaged, repair or replace. If the core is plugged, flush it out as outlined in Section 5.2.

## REPLACEMENT PARTS

## SECTION 7

### 5.4 REPLACEMENT PARTS

MODEL	ELECTRIC MOTOR	FAN BLADE
AC-65-6	34-1017	26-9025
AC-65-7	34-1018	26-9025
AC-105-6	34-1017	26-9025
AC-105-7	34-1018	26-9025
AC-125-6	34-1019	26-9026
AC-125-7	34-1020	26-9026

### 5.5 HOW TO ORDER PARTS

To order parts contact your local VAN AIR representative, or the factory.

**When ordering parts, the following information is necessary:**

**Aftercooler model**  
**Aftercooler serial number**  
**Aftercooler part number**  
**Aftercooler voltage**

This information can be found on the data tag located on the aftercooler.

The Service Department can be reached by calling 888-606-9303 or faxing 814-774-3482.  
 Hours are 8:00 AM EST to 5:00 PM EST, M-F.

### SAFETY PRECAUTIONS

Safety is everybody's business and is based on your use of good common sense. All situations or circumstances cannot always be predicted and covered by established rules. Therefore, use your past experience, watch out for safety hazards and be cautious.

 <b>DANGER</b>	 <b>DANGER</b>	 <b>WARNING</b>	 <b>WARNING</b>
			
<p>DISCHARGE AIR USED FOR BREATHING WILL CAUSE SEVERE INJURY OR DEATH. CONSULT FILTRATION SPECIALIST FOR ADDITIONAL FILTRATION AND TREATMENT EQUIPMENT TO MEET HEALTH AND SAFETY REGULATIONS.</p>	<p>AIR AND OIL UNDER PRESSURE WILL CAUSE SEVERE PERSONAL INJURY OR DEATH. SHUT DOWN COMPRESSOR AND RELIEVE SYSTEM OF ALL PRESSURE BEFORE REMOVING VALVES, CAPS, PLUGS, FITTINGS, BOLTS AND FILTERS.</p>	<p>ELECTRICAL SHOCK FROM IMPROPER GROUNDING CAN CAUSE INJURY OR DEATH.</p> <p>GROUND UNIT AND RELATED EQUIPMENT ACCORDING TO NATIONAL ELECTRICAL CODE AND LOCAL REGULATIONS.</p>	<p>READ THE OPERATOR'S MANUAL BEFORE OPERATING OR SERVICING THIS UNIT. FAILURE TO ADHERE TO INSTRUCTIONS CAN RESULT IN SEVERE PERSONAL INJURY OR DEATH. REPLACEMENT MANUALS CAN BE DOWNLOADED AT <a href="http://www.vanairsystems.com">www.vanairsystems.com</a></p>