### TABLE 2: DETERMINING COMPRESSED AIR LINE SIZE

1. Calculate total product compressed air consumption (SCFM, SLPM).
2. Determine length of compressed air line required for connection to main supply.
3. Locate pipe length in left column and read to the right to find the compressed air requirements.
4. Locate pipe size at top of column.

<table>
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<th>1/2</th>
<th>3/4</th>
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**MAXIMUM AIRFLOW (SCFM) THROUGH PIPE AT 5 PSIG PRESSURE DROP (100 PSIG AND 70°F)**

**MAXIMUM AIRFLOW (SLPM) THROUGH PIPE AT 0.3 BAR PRESSURE DROP (6.9 BAR AND 21°C)**

Rubber hose maximum airflow rating: 1/2" I.D. rubber hose = 3/8" pipe; 3/4" I.D. rubber hose = 1/2" pipe
The Electric Vortex A/C enclosure cooler is designed to use filtered compressed air to cool industrial control enclosures without the use of any refrigerants. Hot air in the enclosure is vented to the surroundings through a built-in vent in the Electric Vortex A/C. Noise generated by the Electric Vortex A/C is comparable to normal speech levels. The Electric Vortex A/C is controlled by an electric thermostat to monitor and maintain the desired temperature in the enclosure. To operate, simply install on the enclosure, connect to the compressed air source and plug the power cord into either a 120 volt (models 70xxEB and 77xxEB) or a 240 volt (models 70xxEBF and 77xxEBF) power source. Set the thermostat to the desired temperature. If the set temperature is reached, the Electric Vortex A/C will automatically turn on and start cooling the enclosure.

COMPRESSED AIR SUPPLY

The compressed air supply must be filtered (5 micron maximum particle size) to remove water and dirt. A 5 micron filter is supplied for this purpose on models 77xxEB and 77xxEBF. If oil is present in the compressed air supply, a 0.01 micron coalescing filter is required. (See the filter recommendations given in Table 1.) If an oil removal filter is necessary, install it downstream of the 5 micron filter. Change the filter elements as needed (see Maintenance).

The appropriate size of compressed air supply line should be selected to ensure optimal performance of the Vortec product. Please refer to Table 2 to determine what supply line size is recommended for your application. Contact Vortec at 1-800-441-7475 for further assistance.

INTERNAL ENCLOSURE PRESSURE

The Electric Vortex A/C, when operating at 100 psig (6.9 bar) will maintain a positive internal enclosure pressure. When the Electric Vortex A/C is not cooling (when the thermostat senses acceptable temperatures), the Electric Vortex A/C is not pressurizing the enclosure.

INTRODUCTION

The only maintenance involved with the Electric Vortex A/C is recommendation to change the compressed air filter. The filter element should be changed when there is a noticeable decrease in performance or when the pressure drop across the filter exceeds 5 psig (0.3 bar). It is recommended to install pressure gauges in the piping before and after the compressed air filter so that the pressure drop can be monitored. The Electric Vortex A/C has no moving parts (except for the internal solenoid valve components).

If it is suspected that the compressed air filter has not been maintained after an extended period of operation, there may be dirt inside the Electric Vortex A/C. If the unit is not cooling sufficiently, there may be debris in the “generator” of the unit. To check, pull the 1/2” (13 mm) inside diameter vinyl tubing off the cold air muffler, remove the cold air muffler from the white nylon hex fitting and then unscrew the white hex fitting (cold air outlet) with a 1” (25 mm) wrench. (This is a nylon spacer, the O-Ring and the generator. (A red generator in the 7x15E models, a blue generator in the 7x25E models and a brown generator in 7x5E models.) Inspect the six slots in the generator and check if necessary. Dirty in the cavity in the Electric Vortex A/C that the generator was located in. Reassemble in reverse order of disassembly. Tighten the white nylon cold air outlet to 100 inch-pounds (11 newton-meters) torque. Be sure to supply clean (filtered to 5 micron) and oil free compressed air to the Electric Vortex A/C.

INSTALLATION

To maintain the UL Type 4 and 4X rating, the Electric Vortex A/C MUST be installed in one of the following configurations on a UL Type 4 or 4X enclosure:

- a. Top mounted in an upright orientation on a flat horizontal surface.
- b. Side mounted on a flat vertical surface of the enclosure, with the compressed air inlet pointing downward to the floor. If side mounted, locate the Electric Vortex A/C so that it is near the top of the enclosure.

1. Position the Electric Vortex A/C on the top or side of your enclosure so that there is sufficient clearance for the internal cold air ducting. Select the location from the diagram so that the entire mounting “footprint” of the Electric Vortex A/C is supported by the enclosure. (A 9-1/2” wide x 3-1/2” deep (241 mm wide x 89 mm deep) area.) Position the unit so that the metal shroud on the back is away from personnel, if possible. Also, position so that no internal enclosure components obstruct air flow near the unit’s vent air hole.

2. Cut a 1-15/16” (49 mm) diameter hole (1-1/2” knockout size) in the selected location on your enclosure. De-burr any sharp edges around this hole.

3. Install the large threaded portion of the Electric Vortex A/C into the hole of your enclosure, first by putting the cord-connected thermostat through the steel 1-1/2” electrical knockout (supplied in a separate bag of parts) and then push the power cord through the knockout.

4. Screw the 1-1/2” electrical knockout onto the threaded portion of the Electric Vortex A/C. Tighten this knockout securely to the fitting in the desired area of the enclosure.

5. Supply the compressed air filter (supplied in a separate bag of parts) and then push the filter through the knockout. Then push the power cord into the tubing to allow the cold air to escape. Use the nine self-adhesive tubing clips provided in the kit to mount the tubing to the desired area of the enclosure.

6. Mount the cord-connected thermostat in the desired location using the short length of 35 mm DIN rail provided. Typically it is best to position the thermostat near the top of the enclosure and the vent air hole in bottom of the Electric Vortex A/C. The DIN rail is supplied with double sided tape for easy installation. Clip the thermostat onto the DIN rail.

7. Plug the power cord into the appropriate electric supply inside the enclosure (120 volt AC for models 70xxEB and 77xxEBF or 240 volt AC for models 70xxEBF and 77xxEBF) power source. Set the thermostat to the desired temperature.

8. Connect the compressed air filter (supplied on 77xxEB and 77xxEBF models) to the compressed air inlet on the side of the Electric Vortex A/C with a short length of 3/8” pipe. Use a 1” (21 mm) wrench to hold the air inlet fitting on the side of the Electric Vortex A/C stationary while tightening the pipe connections. Install the compressed air filter as close as possible to the Electric Vortex A/C, in a location where the temperature does not exceed 125°F (52°C). If the Electric Vortex A/C is mounted on the side of the enclosure, then a 3/8” pipe elbow must also be used so the filter is positioned in a vertical orientation. Note the air flow direction arrow on top of the filter.

9. Connect the compressed air supply to the inlet of the compressed air filter. See “Compressed Air Supply”.

OPERATION

Maximum cooling capacity is created when the Electric Vortex A/C is operated at 100 psig (6.9 bar) or greater. However, do not operate at pressures above 150 psig (10.3 bar). Set the thermostat to the desired internal enclosure temperature (typically 90 to 104°F (32 to 40°C). Keep in mind that when the Electric Vortex A/C is cooling, it is also maintaining a slight positive pressure inside the enclosure. When it is not cooling, it is not maintaining a pressurized enclosure.