

## TROUBLESHOOTING

Insufficient cooling may be caused by the following:

1. Undersized compressed air line size.
2. Compressed air pressure at the product is too low.
3. Partial or complete blockage of internal compressed air paths, due to dirt.
4. Water vapor in the compressed air supply.
5. Loose cold air outlet fitting. This may occur if not tightened properly after being disassembled for cleaning.

If trouble persists, please contact nVent Hoffman for assistance, phone #763.422.2211.

## LIMITED WARRANTY

nVent Hoffman products will be replaced or repaired if found to be defective due to manufacture within one year from the date of invoice. nVent Hoffman makes no specific warranty of merchantability or warrant of fitness for a particular purpose.

**TABLE 1: FILTER RECOMMENDATIONS**

| FILTER AND REPLACEMENT PART ITEM NUMBERS |                    |                                   |
|--|--------------------|-----------------------------------|
| Hoffman Model #                          | Oil Removal Filter | Replacement Generator Kits (5 pc) |
| VA0916012                                | VC-OF17            | VAGK09                            |
| VA1516012                                | VC-OF17            | VAGK15                            |
| VA2516012                                | VC-OF25            | VAGK25                            |

**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.

| MAXIMUM AIRFLOW (SCFM) THROUGH PIPE AT 5 PSIG PRESSURE DROP (100 PSIG AND 70°F) |                                   |     |     |     |     |       |       |      |       |
|---|-----------------------------------|-----|-----|-----|-----|-------|-------|------|-------|
| Pipe Length (Feet)  | Pipe Size (Nominal) - Schedule 40 |     |     |     |     |       |       |      |       |
|   | 1/4                               | 3/8 | 1/2 | 3/4 | 1   | 1-1/4 | 1-1/2 | 2    | 2-1/2 |
| 10  | 29                                | 65  | 120 | 254 | 480 | 978   | 1483  | 2863 | 4536  |
| 20  | 21                                | 46  | 85  | 180 | 340 | 692   | 1049  | 2024 | 3208  |
| 30  | 17                                | 37  | 70  | 147 | 277 | 565   | 856   | 1653 | 2619  |
| 40  | 15                                | 32  | 60  | 127 | 240 | 489   | 792   | 1431 | 2268  |
| 50  | 13                                | 29  | 54  | 114 | 215 | 437   | 663   | 1280 | 2029  |
| 60  | 12                                | 26  | 49  | 104 | 196 | 399   | 606   | 1169 | 1852  |
| 70  | 11                                | 25  | 46  | 96  | 181 | 370   | 561   | 1082 | 1715  |
| 80  | 10                                | 23  | 43  | 90  | 170 | 346   | 524   | 1012 | 1604  |
| 90  | 10                                | 22  | 40  | 85  | 160 | 326   | 494   | 954  | 1512  |
| 100   | 9                                 | 21  | 38  | 80  | 152 | 309   | 469   | 905  | 1435  |

| MAXIMUM AIRFLOW (SLPM) THROUGH PIPE AT 0.3 BAR PRESSURE DROP (6.9 BAR AND 21°C) |                                   |      |      |      |       |       |       |       |        |
|---|-----------------------------------|------|------|------|-------|-------|-------|-------|--------|
| Pipe Length (Meters)  | Pipe Size (Nominal) - Schedule 40 |      |      |      |       |       |       |       |        |
|   | 1/4                               | 3/8  | 1/2  | 3/4  | 1     | 1-1/4 | 1-1/2 | 2     | 2-1/2  |
| 3   | 821                               | 1840 | 3396 | 7188 | 13584 | 27677 | 42117 | 81023 | 128369 |
| 6   | 594                               | 1302 | 2406 | 5094 | 9622  | 19584 | 29687 | 57279 | 90786  |
| 9   | 481                               | 1047 | 1981 | 4160 | 7839  | 15990 | 24225 | 46780 | 74188  |
| 12  | 425                               | 906  | 1698 | 3594 | 6792  | 13839 | 20999 | 40497 | 64184  |
| 15  | 368                               | 821  | 1528 | 3226 | 6085  | 12367 | 18763 | 36224 | 57421  |
| 18  | 340                               | 736  | 1387 | 2943 | 5547  | 11292 | 17150 | 33083 | 52412  |
| 21  | 311                               | 708  | 1302 | 2717 | 5122  | 10471 | 15877 | 30621 | 48535  |
| 24  | 283                               | 651  | 1217 | 2547 | 4811  | 9792  | 14829 | 28640 | 45393  |
| 27  | 269                               | 623  | 1132 | 2406 | 4528  | 9226  | 13980 | 26998 | 42790  |
| 31  | 255                               | 594  | 1075 | 2264 | 4302  | 8745  | 13273 | 25612 | 40611  |

Rubber hose maximum airflow rating: 1/2" I.D. rubber hose = 3/8" pipe; 3/4" I.D. rubber hose = 1/2" pipe



**HOFFMAN**

# OPERATION & SAFETY INSTRUCTIONS

## VORTEX A/C ENCLOSURE COOLER UL TYPE 12

Models VA0916012, VA1516012, VA2516012



**IMPORTANT**  
Please read all instructions BEFORE attempting to use this product

**nVent Hoffman**

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## GENERAL SAFETY CONSIDERATIONS

### **DANGER: COMPRESSED AIR COULD CAUSE DEATH, BLINDNESS OR INJURY.**

1. Do not operate a Vortex A/C at compressed air pressures above 150 psig (10.3 bar).
2. Do not operate a Vortex A/C at line temperatures above 110°F (43°C).
3. Avoid direct contact with compressed air.
4. Do not direct compressed air at any person.
5. When using compressed air, wear safety glasses with side shields.

### **Avvertissements pour Vortex A/C NEMA 12 Modèles VA0916012, VA1516012 et VA2516012:**

ATTENTION! Pour maintenir la norme UL Type 12: Lorsque monté sur la partie supérieure d'un boîtier, cet appareil doit être installé de façon à ce que l'entrée d'air comprimé est à l'horizontale. Lorsqu'il est monté sur le côté d'un boîtier, cet appareil doit être installé de sorte que l'entrée d'air comprimé est orientée vers le haut. Faire pivoter la prise-persiennes pour que l'ouverture de la prise-persiennes pointe vers le bas. Voir les instructions d'installation.

ATTENTION! Les surfaces extérieures de l'appareil peuvent être chaudes. Éviter le contact.

not pressuring the enclosure. If you desire a constant positive internal enclosure pressure, even when the Vortex A/C is not cooling, this may be accomplished by removing a set screw that is adjacent to the mechanical thermostat on the bottom of the unit. By removing this set screw with a 3/32" (2 mm) hex key), a small amount of air (3 cfm or 85 lpm) will pressurize the sealed enclosure to approximately 1.5" (38 mm) water column. This "pressurization air" will run continuously, regardless of the thermostat operation, until the set screw is re-installed.

## MAINTENANCE

The only maintenance involved with the Vortex A/C is normal element changes to the compressed air filter. The filter element should be changed when there is a noticeable decrease in performance or when pressure drop across the filter exceeds 5 psig (0.3 bar). The Vortex A/C has only one moving part (the mechanical thermostat/valve) which is not serviceable in the field. Do not disturb the setting of the thermostat. Evidence of tampering with the thermostat may void the warranty.

If it is suspected that the compressed air filter has not been maintained after an extended period of operation, there may be dirt in the Vortex A/C. If the Vortex A/C 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 outlet of the Vortex A/C and unscrew (with a 1" (25 mm) open end wrench) the cold air outlet. Remove the O-ring. Remove the white nylon washer(s). Then remove the red (model VA0916012) or the blue (model VA1516012) or the brown (model VA2516012) generator. Inspect the six slots in the generator for dirt and clean if necessary. Clean the cavity in the Vortex A/C that the generator was located in if necessary. Reassemble in reverse order. Tighten the 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 Vortex A/C.

## INSTALLATION

To maintain the UL Type 12 rating, the Vortex A/C MUST be installed in one of the following configurations on a UL Type 12 enclosure:

- a. Top mounted in an upright and vertical orientation, on a flat horizontal surface (as shown)
  - b. Side mounted, on a flat vertical surface of the enclosure, with the compressed air inlet pointing upward. When side mounted, rotate the aluminum louvered outlet on the back of the Vortex A/C so the louvers point downward to the floor.
1. Position the Vortex A/C on the top or side of your enclosure so that there is sufficient clearance for the internal mechanical thermostat and cold air outlet, and, so that the entire mounting "footprint" of the Vortex A/C is supported by the enclosure. (A 4-3/4" wide x 3-3/8" deep (121 mm wide x 86 mm deep) area). Position the unit so that the louvered outlet on the back of the Vortex A/C is away from personnel, if possible. Also, position so that no internal enclosure components obstruct air flow around the mechanical thermostat.
  2. Cut a 1-15/16" (49 mm) diameter hole (1-1/2" knockout size) in the selected location on the enclosure. De-burr any sharp edges around this hole.

3. Remove the 1-1/2" electrical locknut from the Vortex A/C. Insert the threaded portion of the Vortex A/C into the 1-15/16" (49 mm) hole in the enclosure. (Be careful not to damage the mechanical thermostat during installation.)
4. From inside the enclosure, screw the electrical locknut onto the threads of the Vortex A/C. Tighten the locknut securely to compress the 1/8" (3 mm) thick sealing gasket that is positioned between the enclosure and the Vortex A/C.
5. Determine a suitable location for the Cold Air Muffler inside the enclosure that is close to the cold air outlet of the Vortex A/C. (You will need a surface area of approximately 2" x 9" (50 mm x 229 mm) to mount the muffler. The Muffler can be mounted in any orientation, horizontal or vertical.) Using the supplied Muffler Mounting Clamp (with double sided tape), attach this Clamp at the desired location. Clean the mounting surfaces so that the double sided tape bonds securely. If desired, this Clamp can be permanently mounted to the enclosure using the supplied mounting hardware. Two 5/32" (4 mm) diameter holes positioned on 3/4" (19 mm) centers must be drilled to mount the Muffler Clamp. Use the plastic snap rivets to secure the Muffler Clamp to the panel.
6. Snap the Cold Air Muffler into the Mounting Clamp.
7. Cut a sufficient length of the 1/2" (13 mm) inside diameter vinyl tubing from the supplied VADK124X Cold Air Ducting Kit to connect the cold air outlet of the Vortex A/C to one of the hose barbs on the Cold Air Muffler. Attach this length of vinyl tubing so that it is free of sharp bends and kinks. Direction of cold air flow through the Muffler is not important.
8. Attach all (or a portion of) the remaining supplied vinyl tubing of the VADK124X Cold Air Ducting Kit to the opposite hose barb connection on the Cold Air Muffler. Holes can be punched or drilled into this 1/2" (13 mm) tubing to distribute the cold air evenly inside your enclosure, or, the entire cold air output can be directed to a heat sensitive component. If the end of the 1/2" (13 mm) vinyl tubing is plugged, at least sixteen 1/8" (3 mm) diameter holes should be punched 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.
9. Connect the compressed air filter (model VAAF15 or VAAF25) to the compressed air inlet on the side of the Vortex A/C with a length of 3/8" pipe. Install the compressed air filter as close as possible to the Vortex A/C, in a location where the temperature does not exceed 125°F (52°C). Allow the filter to hang at the side of the enclosure as shown in the installation drawing. Use a 13/16" (21 mm) wrench to hold the air fitting on the side of the Vortex A/C stationary while tightening the pipe connections. Note the air flow direction arrow on top of the filter.
10. Connect the compressed air supply to the inlet of the air filter. See "Compressed Air Supply."

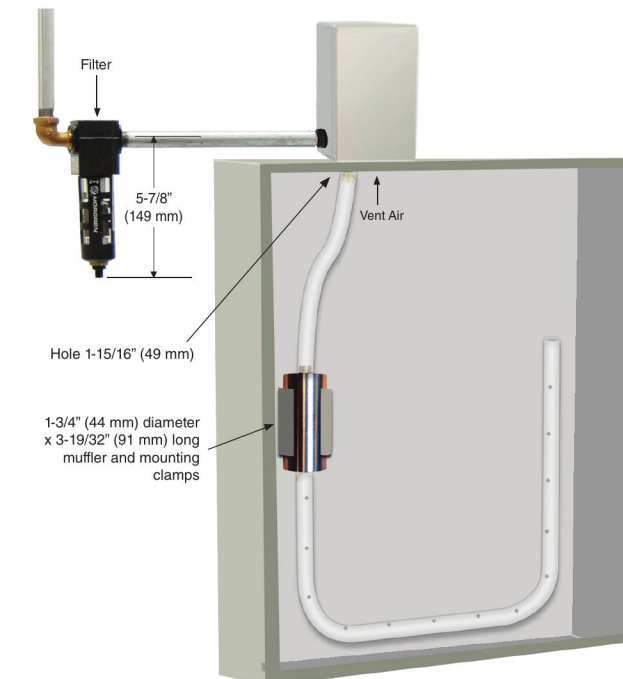
## OPERATION

Operate the Vortex A/C at 90 to 100 psig (6.2 to 6.9 bar) compressed air pressure. Do not operate at pressures above 150 psig (10.3 bar). Operation at pressures less than 90 psig (6.2 bar) and above 100 psig (6.9 bar) will effect the operation. When properly sized for the application, the Vortex A/C will maintain the internal enclosure temperature between 75-100°F (24-38°C).

Enclosure temperatures can momentarily reach 125°F (52°C) during initial start-up and after long periods of inactivity. Variations in heat load and compressed air conditions can effect thermostat operation. The mechanical thermostat will regulate an internal valve to minimize compressed air usage and maintain enclosure temperatures within the range specified. In some applications, the Vortex A/C may run continuously at lower air usage with the benefit of always keeping the enclosure under slight internal pressure. In other applications, the Vortex A/C may cycle on and off to maintain enclosure temperatures.

**NOTICE:** The thermostat's reaction to temperature change depends on several factors: the internal and external heat loads, enclosure size and proximity to the heat source. When the internal heat load is zero (or very low) and when external temperatures are below 50°F (10°C), the thermostat will take longer to react to air temperature increases. There will be a lag between the rising air temperature and when the thermostat reacts, which can result in temperatures inside the enclosure exceeding 125°F (52°C). When air and thermostat temperatures equalize, the reaction to temperature change is improved and the lag is minimized.

**CAUTION:** The louvered outlet on the back of the Vortex A/C becomes hot during operation and can remain hot for a period of time after the unit has cycled off. Note warning label precaution, and avoid direct contact with this area of the unit during or after operation.



## VORTEX A/C TYPE 12

(SHOWN TOP MOUNTED ON CUSTOMER'S ENCLOSURE)