SIZING THE SPARK ARRESTER VENT TO THE ProtEX Vortex A/C

The ProtEX Vortex A/C must be used in conjunction with an enclosure purge and pressurization system. The purge system must have a spark arrestor vent that allows the cold air flow (produced by the ProtEX Vortex A/C) and the pressurization air flow to safely escape the protected enclosure, without creating too little or too much pressure in the enclosure. Add the pressurization air flow to the cold air flow as found in the table below to determine the total air flow through the spark arrestor vent.

ProtEX Vortex A/C Cold Air Flow (at 6–6.9 bar (90–100 psig) operating pressure)

<table>
<thead>
<tr>
<th>Models</th>
<th>Cold Air Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>8115, 8115BSP</td>
<td>198 l/min/minute (7.9 l/min/minute)</td>
</tr>
<tr>
<td>8125, 8125BSP</td>
<td>396 l/min/minute (14 l/min/minute)</td>
</tr>
<tr>
<td>8135, 8135BSP</td>
<td>665 l/min/minute (23.5 l/min/minute)</td>
</tr>
</tbody>
</table>

Contact the purge system manufacturer or Vortec if assistance is needed in selecting the correct spark arrestor vent to allow proper purging and pressurization.

TROUBLESHOOTING

Insufficient compressed air flow can be caused by the following:

1. Undersized compressed air line size.
2. Insufficient cooling may be caused by the following:
   - Partial or complete blockage of internal compressed air path, due to dirt.
   - Water vapor in the compressed air supply.
   - Loose cold air outlet fitting. This may occur if not tightened properly after being disassembled for cleaning.
3. Compressed air pressure at the cooler is too low.

If trouble persists, please contact Vortec at 1-800-441-7475.

TABLE 1: FILTER RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>Oil Removal Filter</th>
<th>Replacement Generator Kits (5 pc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8115, 8115BSP</td>
<td>7015-48, 7038-48</td>
<td>206KGK-15H</td>
</tr>
<tr>
<td>8125, 8125BSP</td>
<td>7015-48, 7038-48</td>
<td>206KGK-25H</td>
</tr>
<tr>
<td>8135, 8135BSP</td>
<td>7015-54, 7035-54</td>
<td>206KGK-35H</td>
</tr>
</tbody>
</table>

TABLE 2: DETERMINING COMPRESSED AIR LINE SIZE

1. Calculate total product compressed air consumption (SLPM, SCFM).
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 (SLPM) THROUGH PIPE AT 0.3 BAR PRESSURE DROP (6.9 BAR AND 21°C)

<table>
<thead>
<tr>
<th>Pipe Size (Nominal)</th>
<th>1</th>
<th>1-1/4</th>
<th>1-1/2</th>
<th>2</th>
<th>2-1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8</td>
<td>185</td>
<td>235</td>
<td>275</td>
<td>355</td>
<td>425</td>
</tr>
<tr>
<td>1/2</td>
<td>215</td>
<td>275</td>
<td>325</td>
<td>425</td>
<td>505</td>
</tr>
<tr>
<td>3/4</td>
<td>255</td>
<td>325</td>
<td>385</td>
<td>505</td>
<td>625</td>
</tr>
<tr>
<td>1</td>
<td>315</td>
<td>395</td>
<td>465</td>
<td>625</td>
<td>795</td>
</tr>
<tr>
<td>1-1/4</td>
<td>375</td>
<td>475</td>
<td>565</td>
<td>795</td>
<td>995</td>
</tr>
<tr>
<td>1-1/2</td>
<td>435</td>
<td>545</td>
<td>645</td>
<td>995</td>
<td>1205</td>
</tr>
<tr>
<td>2</td>
<td>525</td>
<td>665</td>
<td>785</td>
<td>1205</td>
<td>1465</td>
</tr>
<tr>
<td>2-1/2</td>
<td>625</td>
<td>795</td>
<td>965</td>
<td>1465</td>
<td>1805</td>
</tr>
</tbody>
</table>

MAXIMUM AIRFLOW (SCFM) THROUGH PIPE AT 5 PSI PRESSURE DROP (100 PSIG AND 70°F)

<table>
<thead>
<tr>
<th>Pipe Size (Feet)</th>
<th>1</th>
<th>1-1/4</th>
<th>1-1/2</th>
<th>2</th>
<th>2-1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>1.5</td>
<td>1.9</td>
<td>2.3</td>
<td>3.0</td>
<td>3.8</td>
</tr>
<tr>
<td>3/8</td>
<td>2.2</td>
<td>2.8</td>
<td>3.4</td>
<td>4.2</td>
<td>5.0</td>
</tr>
<tr>
<td>1/2</td>
<td>2.9</td>
<td>3.7</td>
<td>4.4</td>
<td>5.4</td>
<td>6.4</td>
</tr>
<tr>
<td>3/4</td>
<td>3.6</td>
<td>4.4</td>
<td>5.2</td>
<td>6.4</td>
<td>7.6</td>
</tr>
<tr>
<td>1</td>
<td>4.4</td>
<td>5.3</td>
<td>6.2</td>
<td>7.6</td>
<td>9.0</td>
</tr>
<tr>
<td>1-1/4</td>
<td>5.2</td>
<td>6.3</td>
<td>7.4</td>
<td>9.0</td>
<td>10.5</td>
</tr>
<tr>
<td>1-1/2</td>
<td>6.0</td>
<td>7.4</td>
<td>8.6</td>
<td>10.5</td>
<td>12.0</td>
</tr>
<tr>
<td>2</td>
<td>7.8</td>
<td>9.4</td>
<td>10.9</td>
<td>12.0</td>
<td>14.0</td>
</tr>
<tr>
<td>2-1/2</td>
<td>9.6</td>
<td>11.3</td>
<td>13.0</td>
<td>14.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>

IMPORTANT

Please read all instructions BEFORE attempting to use this product

This equipment is suitable for use in Class I, Division 1, Groups A, B, C and D; Class II, Division 1, Groups F and G; Class III OR non-hazardous locations only

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

ELEVATED SURFACE TEMPERATURES

Because the ProtEX Vortex A/C operates using the vortex principle, hot exhaust air is generated and released at low pressure from the opening in the stainless steel shroud on the back of the unit. This exhaust air can reach temperatures up to 107°C (225°F) under normal conditions. (Normal conditions are compressed air inlet pressure of 6–6.9 bar (90–100 psig) and compressed air inlet temperature of 21°C (70°F)). The ProtEX Vortex A/C models can be operated at compressed air temperatures that do not exceed 49°C (120°F). The ProtEX Vortex A/C models have a Temperature Class of T3.

LIMITED WARRANTY AND PRODUCT REPLACEMENT

ProtEX Vortex A/C compressed air enclosure cooling products manufactured by ITW Air Management will be replaced or repaired if found to be defective due to manufacture within three years from the date of invoice. The entire ProtEX Vortex A/C should be replaced after 3 years of operation (date reflected as “Expiration Date” on the product label) as some internal components may lose their functionality and the unit may no longer function as intended. Refer to our website www.vortec.com for full warranty details and limitations. ITW Air Management makes no specific warranty of merchantability or warranty of fitness for a particular purpose.

LIMITED LIABILITY

TO THE EXTENT NOT PROHIBITED BY LAW, THE USER ACKNOWLEDGES THAT IN THE EVENT OF ANY LOSS OR DAMAGE TO ANY PROPERTY, PERSONAL INJURY OR DEATH RESULTING FROM USE OF THIS PRODUCT, ITW AIR MANAGEMENT CAN BE HELD LIABLE ONLY FOR THE AMOUNTS actually paid for the product, and further agrees to indemnify and hold harmless ITW AIR MANAGEMENT and its affiliates, officers, directors and employees from any and all liability, claims, demands, causes of action, losses or damages, to the extent not prohibited by law, whether based in contract, tort (including negligence), or otherwise, resulting or arising directly or indirectly from the use of, or inability to use, the product, including, without limitation, injury to persons or property caused by the fault of any such person, corporation or other entity or failure of any such person, corporation or other entity to conform to any expressed or implied warranties, or arising from the breach of any representation or warranty.

WARNING

The ProtEX Vortex A/C is intended to be used as a cooling and purging solution for hazardous environments. Use of these products in non-hazardous locations is not recommended.

WARNING

The use of unauthorized materials can significantly reduce the performance of this product.

PROHIBITED USES

Attempts to use the ProtEX Vortex A/C in a manner not intended or authorized by the manufacturer is strictly prohibited and will void any warranty or replacement arrangements.

APPLICATIONS

ProtEX Vortex A/C can be used for cooling and purging in various applications including but not limited to:

- Chemical processing
- Petroleum processing
- Pharmaceutical manufacturing
- Food processing
- Industrial cleaning
- Environmental monitoring

SAFETY INSTRUCTIONS

Please refer to www.vortec.com for detailed safety instructions before using this product.

Please contact your local ITW Air Management representative for assistance or product information.

This page is intended for use as a quick reference guide. For detailed information, please refer to the full manual available at www.vortec.com.

Contact the manufacturer or a qualified professional before attempting to use this product in any application.
The purge system must be selected based on the electrical ratings of the II, Division 1, Groups F and G and Class III hazardous locations, using that requires no electricity.ould result. The ProtEX Vortex A/C has a built-in mechanical thermostat to prevent over-pressurization of the enclosure.

- A Type Z purge system reduces the area classification within the purged enclosure from Div. 1 / Zone 1 to non-hazardous.

**SPECIFIC CONDITIONS OF USE**

1. When the equipment is to be used on an enclosure intended to be protected by a concept according to EN 60079-2, the pressurized air supply to the equipment must be of the same quality as that used to purge and pressurize the enclosure to which it is installed.

2. When the equipment is to be used on an enclosure intended to be pressurized with a concept other than a concept approved for use in ambient temperature between 10°C to 85°C (50°F to 175°F).

**MAINTENANCE**

- Incorporate Potential Electrical hazardous-clean only with a damp cloth.

- When installed, consideration shall be given to the guidance given in the National Electrical Code (NEC), Canadian Electrical Code (CEC), and applicable local codes (ex: NFPA 496).

**INTRODUCTION**

The ProtEX Vortex A/C is designed to cool industrial control cabinets located in Zone 1 and Zone 21 and Class I, Division I, Groups A, B, C and D; Class II, Division I, Groups F and G and Class III hazardous locations, using a concept according to EN 60079-2. The ProtEX Vortex A/C shall only be used in conjunction with a properly sized enclosure purge and pressurization system. The additional air introduced by the ProtEX Vortex A/C (the purge and pressurization system must be selected and supplied by the end user.)

**COMPRESSED AIR**

The compressed air system's intake must originate in a non-hazardous area. The compressed air piping must be fabricated from noncombustible material and must not be exposed to temperatures greater than 90°C (194°F). The compressed air system's intake must originate in a non-hazardous area.

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**OPERATION**

The enclosure that the ProtEX Vortex A/C is installed on MUST be purged and pressurized BEFORE the ProtEX Vortex A/C is operated. Ensure that the cool air flow does not impede the circulation of the purge air flow from the purge system. The only maintenance involved with the ProtEX Vortex A/C is normal air filter maintenance (see Maintenance).

Do not apply excessive heat or a flame to the mechanical thermostat to "test" it for operation, which will void the warranty.

**NOTICE:**

The thermostat's reaction to temperature change depends upon the internal and external heat loads, enclosure proximity and size. When the internal heat load is zero (or very low) and the external heat load is large 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 to the change. This lag will be from 2°C to 5°C (36°F to 9°F). When air and thermostat temperatures equalize, the reaction to temperature change becomes linear. This linear response is desirable, as the thermostat is approved for use in ambient temperature between 10°C to 85°C (50°F to 175°F).

**SPECIFIC CONDITIONS OF USE**

1. When the equipment is to be used on an enclosure intended to be protected by a concept according to EN 60079-2, the pressurized air supply to the equipment must be of the same quality as that used to purge and pressurize the enclosure to which it is installed.

2. When the equipment is to be used on an enclosure intended to be pressurized with a concept other than a concept approved for use in ambient temperature between 10°C to 85°C (50°F to 175°F).

**MAINTENANCE**

- Incorporate Potential Electrical hazardous-clean only with a damp cloth.

- When installed, consideration shall be given to the guidance given in the National Electrical Code (NEC), Canadian Electrical Code (CEC), and applicable local codes (ex: NFPA 496).

**INTRODUCTION**

The ProtEX Vortex A/C is designed to cool industrial control cabinets located in Zone 1 and Zone 21 and Class I, Division I, Groups A, B, C and D; Class II, Division I, Groups F and G and Class III hazardous locations, using a concept according to EN 60079-2. The ProtEX Vortex A/C shall only be used in conjunction with a properly sized enclosure purge and pressurization system. The additional air introduced by the ProtEX Vortex A/C (the purge and pressurization system must be selected and supplied by the end user.)

**COMPRESSED AIR**

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