

**TABLE 1: FILTER RECOMMENDATIONS**

| FILTER AND REPLACEMENT PART ITEM NUMBERS |                     |                    |                        |                                    |
|--|---------------------|--------------------|------------------------|------------------------------------|
| Vortec Model                             | 5 micron Air Filter | Oil Removal Filter | Magnetic Mounting Base | Replacement Generator Kits (5 pcs) |
| 611                                      | 701S-24A            | 701S-48            | -                      | 208GK-15H                          |
| 611-1                                    | 701S-24A            | 701S-48            | 620-26                 | 208GK-15H                          |
| 621                                      | 701S-24A            | 701S-48            | -                      | 208GK-25H                          |
| 621-1                                    | 701S-24A            | 701S-48            | 620-26                 | 208GK-25H                          |
| 631                                      | 701S-36A            | 701S-54            | -                      | 208GK-35H                          |
| 631-1                                    | 701S-36A            | 701S-54            | 620-26                 | 208GK-35H                          |

**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



# OPERATION & SAFETY INSTRUCTIONS

## ADJUSTABLE FROST FREE COLD AIR GUNS

Models 611, 611-1, 621, 621-1, 631, 631-1



**IMPORTANT**

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

**TW Air Management**

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## GENERAL SAFETY CONSIDERATIONS

### WARNING: COMPRESSED AIR COULD CAUSE DEATH, BLINDNESS OR INJURY

1. Do not operate the Frost Free Cold Air Gun at air pressures above 150 psig (10.3 Bar).
2. Do not operate the Frost Free Cold Air Gun 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.

## INTRODUCTION

A Frost Free Cold Air Gun is a device that converts filtered, 100 psig (6.9 Bar) compressed air into a cold airstream.

The Frost Free Cold Air Gun consumes 15-35 SCFM (425-990 SLPM) of compressed air and is perfect for a wide range of industrial spot cooling and dry machining applications.

## COMPRESSED AIR SUPPLY

The compressed air supply must be filtered to remove water and dirt using a 5 micron or smaller filter. Failure to use a filter may cause clogging (and freezing) of the compressed air paths inside the Vortec product. Filter recommendations are given in Table 1.

Filter elements must be changed on a regular basis. Frequency of change is determined by the condition of the compressed air supply. Filters should be installed in the compressed air supply line as close as possible to the Vortec product.

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.

When the desired cold air stream temperature is less than 32°F (0°C), a compressed air dryer may be necessary to prevent ice formation on the inside of the Vortec product.

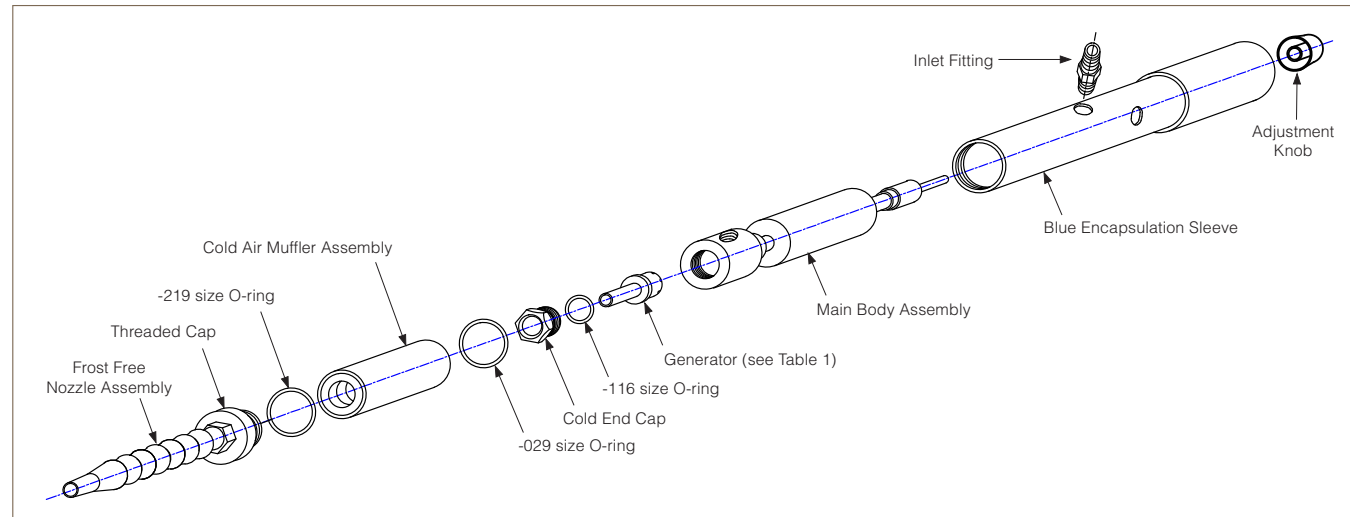
## INSTALLATION

A Frost Free Cold Air Gun can be installed by directly plumbing to the appropriately-sized hard piped compressed air source that does not exceed 150 psig (10.3 Bar).

## ADJUSTABLE COLD AIR GUN ASSEMBLY

(Drawings shown below are not to scale)

Model 611, 621 and 631



## OPERATION

To regulate the Frost Free Cold Air Gun temperature, turn the adjustment knob at the back of the Gun. Turning the knob counterclockwise will reduce the temperature and volume of the cold air stream. When operating the Frost Free Cold Air Gun at compressed air pressures below 100 psig (6.9 Bar), it is possible to open this valve too far so that there is no cold air flow. Turn the knob clockwise to increase the cold air flow and temperature.

Maximum cooling capacity (not the coldest temperature) occurs when there is a balance between cold air volume and cold air temperature drop. In other words, there must be an adequate volume of cold air at a reasonable cold temperature to achieve the maximum cooling effect. In normal operation, this will occur when the adjustment knob is turned 1/4 to 3/8 open (counterclockwise) from the full closed (clockwise) position.

## MAINTENANCE

The Frost Free Cold Air Gun has no moving parts (other than the adjustment knob), and requires only filtered compressed air for proper operation. The Frost Free Cold Air Gun can be disassembled for cleaning, if necessary, as shown above. If the Gun has been disassembled for cleaning, the Cold Cap must be reassembled tightly to ensure that the Generator seats tightly against the body assembly. A loose Cold Cap will reduce cooling capacity.

## TROUBLESHOOTING

Insufficient airflow may be caused by the following:

1. Undersized compressed air line size.
2. Compressed air pressure too low.
3. Partial or complete blockage of internal compressed air path, due to dirt. See Maintenance section for cleaning instructions; and Compressed Air Supply section for filter recommendations.
4. Insufficient compressed air volume.
5. Loose cold cap. This may occur if not tightened properly after disassembled for cleaning.

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

## LIMITED WARRANTY

Vortec compressed air products manufactured by ITW Air Management will be replaced or repaired if found to be defective due to manufacture defect within ten years from the date of invoice.

Refer to our website [www.vortec.com](http://www.vortec.com) for full warranty details and limitations. ITW Air Management makes no specific warranty merchantability or warrant of fitness to a particular purpose.