

# OPERATION & SAFETY INSTRUCTIONS

## VORTEX COOLERS



### IMPORTANT

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



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## GENERAL SAFETY CONSIDERATIONS

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

1. Do not operate the Cold Air Gun at air pressures above 150 psig (10.3 Bar).
2. Do not operate the 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 Vortex Cooler is designed to use filtered compressed air to cool industrial cabinets without the use of any refrigerants. An internal Vortex tube lowers the temperature and pressure of the compressed air supplied to the enclosure. Hot air in the cabinet is vented to the surroundings through a built in relief valve in the Vortex Cooler.

Vortex Coolers can be used with or without electric thermostats and solenoid valves.

### **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.

### **Installation and Operation**

**Type 4 or 4X** Vortex Coolers must be installed in a vertical orientation on a flat horizontal surface at the top of the cabinet.

**Type 12** Vortex Coolers should be installed in a vertical orientation on a flat horizontal surface at the top of the cabinet, or in a horizontal orientation on a flat vertical surface on the side of the cabinet.

Vents in the cabinets must be covered and sealed to ensure cooling efficiency and to keep out ambient air. When a thermostat is supplied with a Vortex Cooler system for Type 4/4X/12 enclosures, the thermostat can be easily readjusted using the temperature indicator dial. All wiring must be installed in an approved conduit.

## Installation Procedures:

1. **For Type 4 or 4X units:** Cut 1-15/16" (49 mm) (1-1/2" knockout size) hole(s) in the enclosure.  
**For Type 12 units:** Cut 1-1/8" (29 mm) (3/4" knockout size) hole(s) in the enclosure.
2. Insert Vortex Cooler(s) into cut-out(s) and secure with the locknut(s).
3. **For Type 4 or 4X units:** Attach the cold air muffler(s) to the outlet of the Vortex Cooler(s).
4. Perforate the ducting kit(s) with several 1/8" holes and secure to the interior of enclosure.
5. **For dual cooler units:** Attach the ducting kits to the cold outlets of the Vortex Coolers.  
**For all other models:** Attach the ducting kit(s) to the cold air muffler(s).
6. If installing a solenoid valve and thermostat, connect pipe from Vortex Cooler to solenoid valve, then pipe from solenoid valve to compressed air filter. The thermostat should be placed inside the enclosure cabinet, and connected to the solenoid valve with conduit.  
  
If not installing a solenoid valve and thermostat, connect piping from Vortex Cooler directly to compressed air filter. The compressed air filter and solenoid valve should be installed as close as possible to the Vortex Cooler, in a location where the temperature does not exceed 125 F (52 C).  
  
Conduit and compressed air pipe are not provided.
7. Connect the compressed air supply to the filter.

## Maintenance

Vortec Cooler systems have no moving parts and can be disassembled for cleaning.

## 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.

Insufficient cold air temperature may be caused by:

1. Compressed air line temperature too high.
2. Water vapor in the compressed air supply.
3. 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

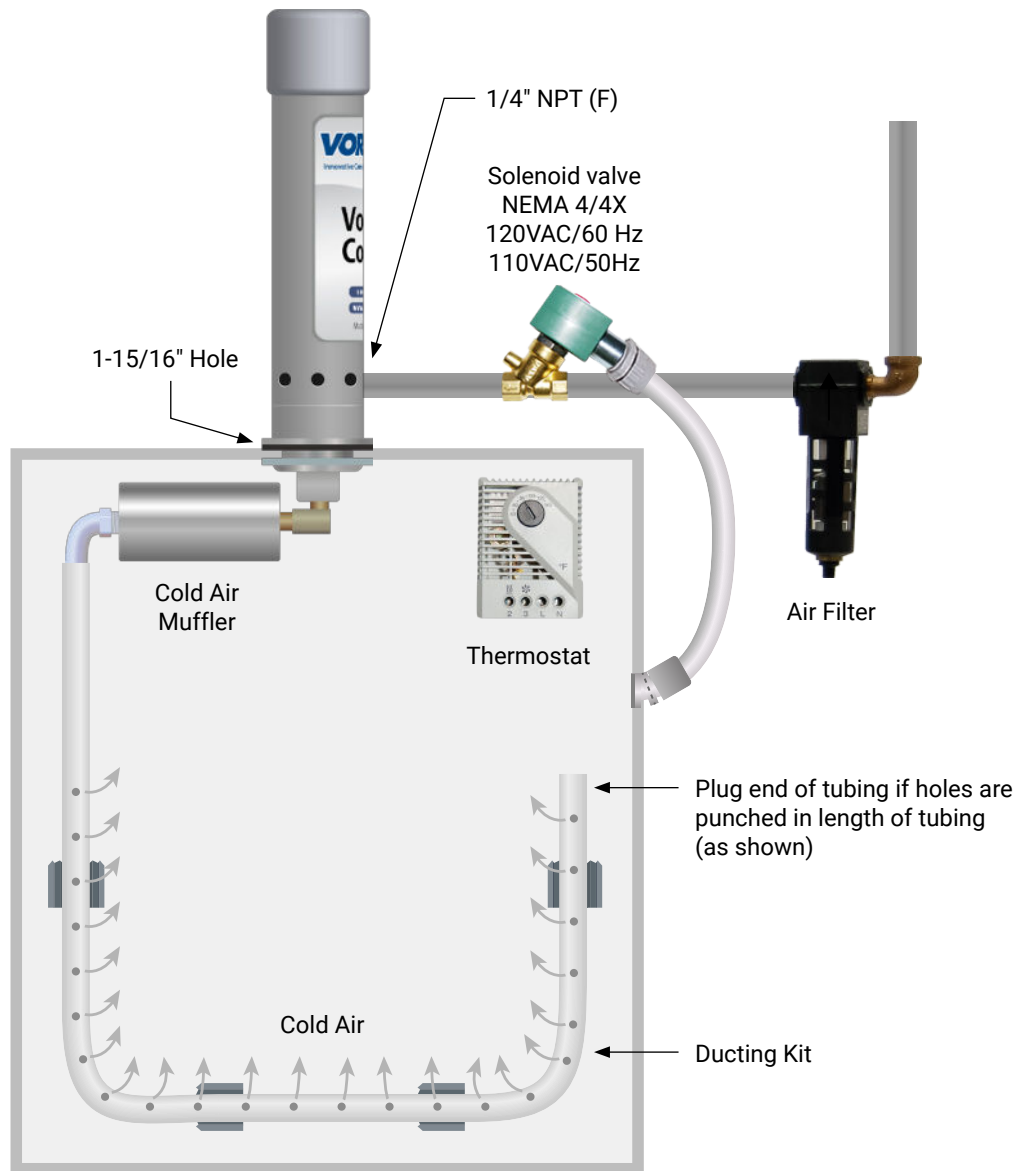
Vortec compressed air products manufactured by ITW Air Management will be replaced or repaired if found to be defective due to manufacture defect within ten years from the date of invoice.

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.

# Vortex Cooler Assembly – Type 4/4X, Single Cooler

(Drawings shown below are not to scale)

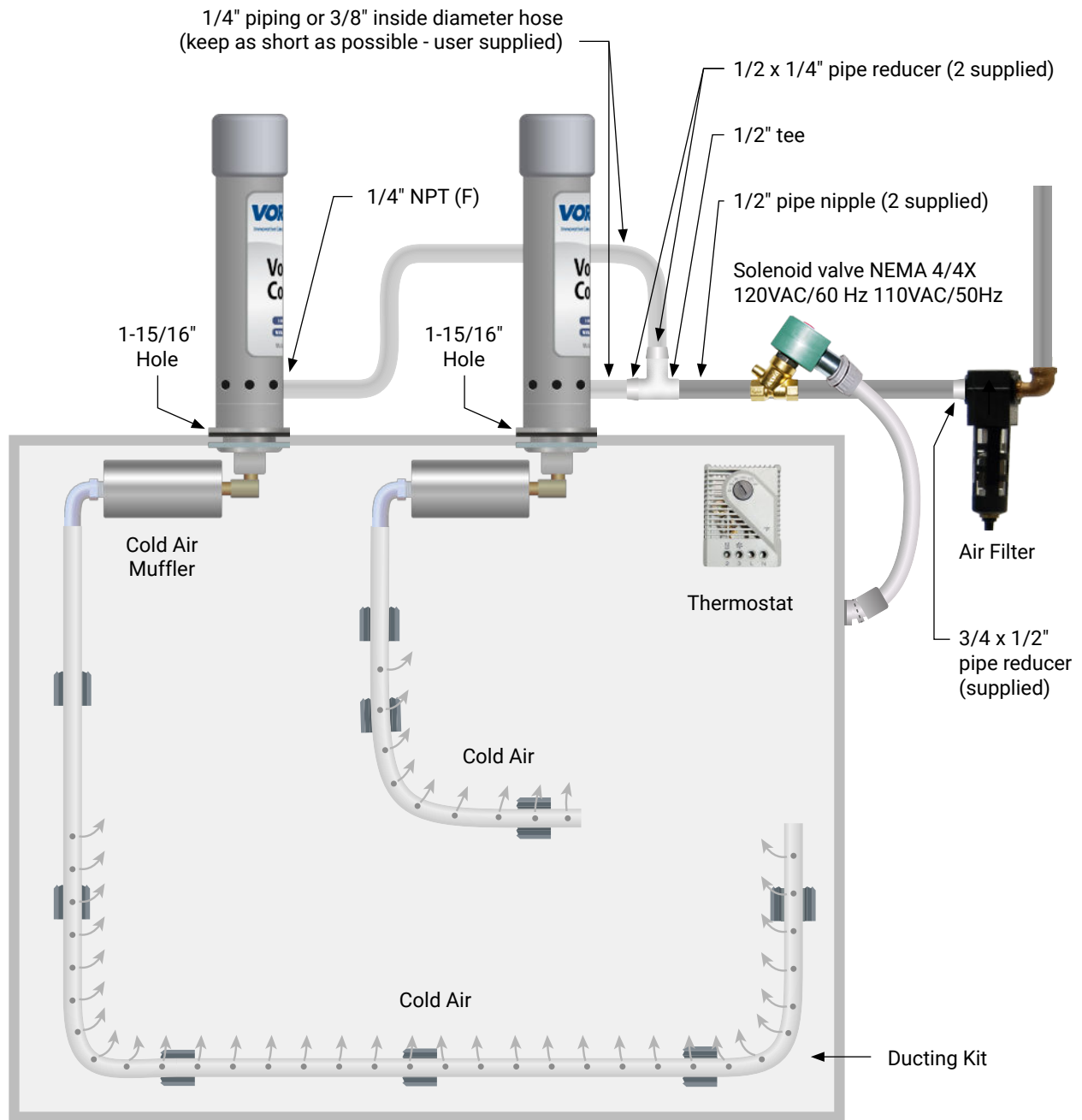
**Models 727, 727-15H, 727-35H, 737, 747, 787, 797, 787-35H, 797-35H, 727SS, 727SS-15H, 727SS-35H, 737SS, 747SS, 787SS, 797SS, 787SS-35H, 797SS-35H**



# Vortex Cooler Assembly - Type 4/4X, Dual Cooler

(Drawings shown below are not to scale)

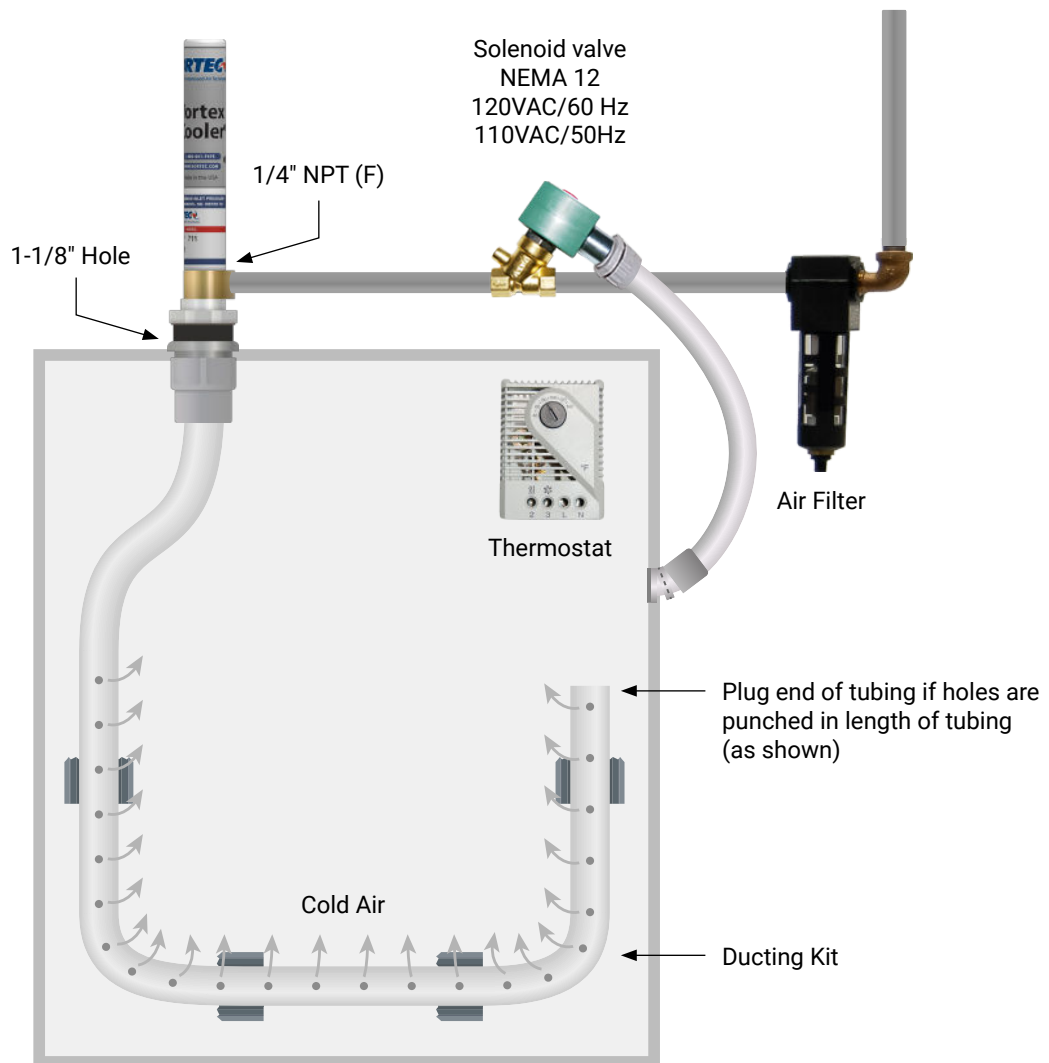
**Models 7875, 7975, 7875SS, 7975SS**



# Vortex Cooler Assembly - Type 12, Single Cooler

(Drawings shown below are not to scale)

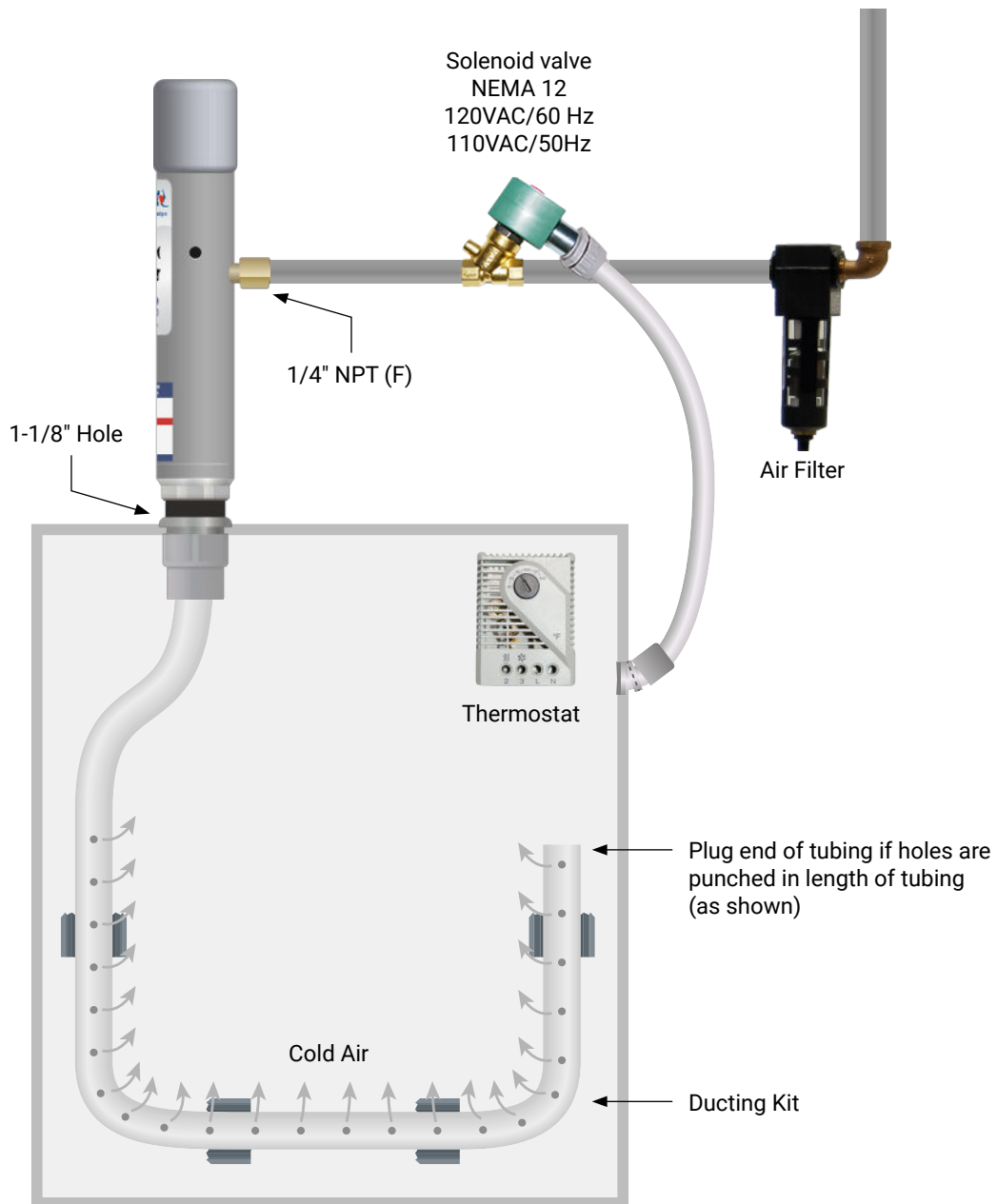
**Models 711, 750, 760**



# Vortex Cooler Assembly - Type 12, Single Cooler

(Drawings shown below are not to scale)

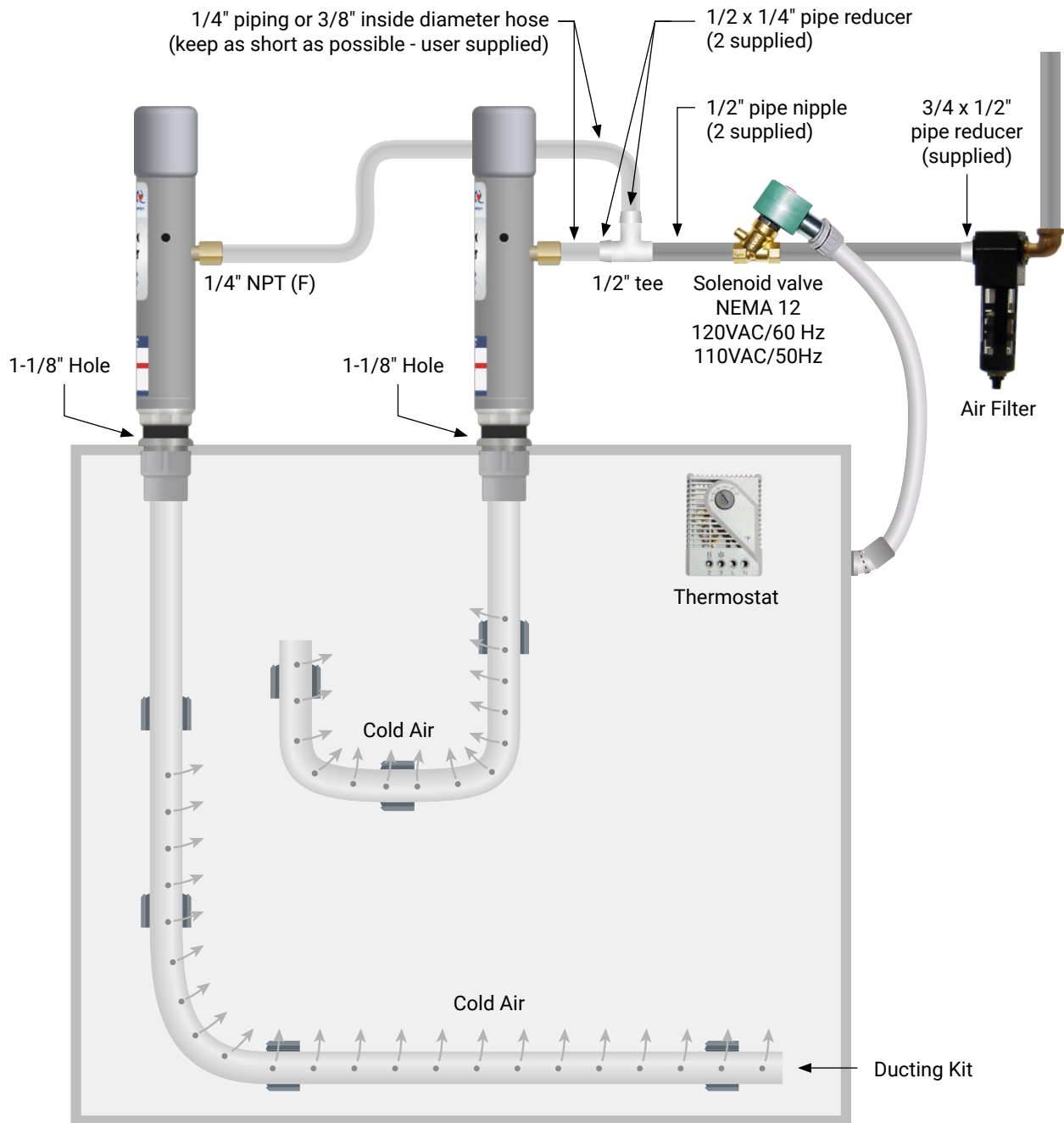
**Models 721, 730, 740, 780, 785, 790, 795**



# Vortex Cooler Assembly - Type 12, Dual Cooler

(Drawings shown below are not to scale)

## Models 7870, 7970





**Table 1: Filter Recommendations**

<b>FILTER AND REPLACEMENT PART ITEM NUMBERS</b>				
<b>Vortec Model</b>	<b>Oil Removal Filter</b>	<b>Valve and Thermostat Kit (120 VAC)</b>	<b>Valve and Thermostat Kit (240 VAC)</b>	<b>Replacement Generator Kits (5 pcs)</b>
727-15H, 737	701S-48	721T-70	721T-80	208GK-15H
727, 787	701S-48	721T-70	721T-80	208GK-25H
727-35H, 787-35H	701S-54	721T-100	721T-100	208GK-35H
747	701S-48	-	721T-80	208GK-15H
797	701S-48	-	721T-80	208GK-25H
797-35H	701S-54	-	721T-110	208GK-35H
727SS-15H, 737SS	701S-48	721T-70	721T-80	208GK-15H
727SS, 787SS	701S-48	721T-70	721T-80	208GK-25H
727SS-35H, 787SS-35H	701S-54	721T-100	721T-110	208GK-35H
747SS	701S-48	-	721T-80	208GK-15H
797SS	701S-48	-	721T-80	208GK-25H
797SS-35H	701S-54	-	721T-110	208GK-35H
7875, 7875SS	701S-54	721T-120	721T-130	208GK-35H
7975, 7975SS	701S-54	-	721T-130	208GK-35H
750, 711	701S-48	-	721T-80	106GK-8H
760, 711	701S-48	721T-70	721T-80	106GK-8H
740, 721-15H	701S-48	-	721T-80	208GK-15H
730, 721-15H	701S-48	721T-70	721T-80	208GK-15H
780, 721	701S-48	721T-70	721T-80	208GK-25H
790, 721	701S-48	-	721T-80	208GK-25H
785, 721-35H	701S-54	721T-100	721T-110	208GK-35H
795, 721-35H	701S-54	-	721T-110	208GK-35H
7870	701S-54	721T-120	721T-130	208GK-35H
7970	701S-54	-	721T-130	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