

SIZING THE SPARK ARRESTOR VENT TO THE HAZLOC VORTEX A/C

As stated in the introduction, the HazLoc 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 HazLoc 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.

HazLoc Vortex A/C Cold Air Flow (at 90 to 100 psig (6-7 bar) operating pressure)	
Model	Cold Air Flow (both cooling stages operating)
VHL50160	47 ft ³ /minute (1330 liters/minute)

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

OPERATION

It is recommended to operate the HazLoc Vortex A/C at 90 to 100 psig (6-7 bar) compressed air pressure. If compressed air pressure exceeds 100 psig (7 bar), regulate the pressure down to 90 to 100 psig (6-7 bar). Operation at pressures less than 90 psig (6 bar) and above 100 psig (7 bar) will effect the operation. When properly sized for the application, the HazLoc 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 HazLoc 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 HazLoc Vortex A/C may cycle on and off to maintain enclosure temperatures. When the HazLoc Vortex A/C is not cooling, the Check Valves close shutting off the air passage from the enclosure interior to the exterior and allowing the purge/pressurization system to maintain slight pressure in the enclosure. Do not apply excessive heat or a flame to the mechanical thermostats to “test” them for operation. Damage to the product may result not covered under the warranty.

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.

TROUBLESHOOTING

Insufficient cooling may be caused by the following:

- Undersized compressed air line size.
- Compressed air pressure at the product is too low.
- Partial or complete blockage of internal compressed air paths, due to dirt.
- Water vapor in the compressed air supply.
- Loose cold air outlet fitting(s). 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.

TABLE 1: FILTER RECOMMENDATIONS

FILTER AND REPLACEMENT PART ITEM NUMBERS		
Hoffman Model	Oil Removal Filter	Replacement Generator Kits (5 pc)
VHL50160	VC-OF25	VAGK25

TABLE 2: DETERMINING COMPRESSED AIR LINE SIZE

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

ELEVATED SURFACE TEMPERATURES

Because the HazLoc 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 225°F (107°C) under normal conditions. (Normal conditions are compressed air inlet pressure of 90 to 100 psig (6-7 bar) and compressed air inlet temperature of 70°F (21°C)). The HazLoc Vortex A/C models can be operated at compressed air temperatures that do not exceed 120°F (49°C). The HazLoc Vortex A/C models have a Temperature Class of T4.

TWO STAGE COOLING

Under normal operation, the first stage cooler (the cold air outlet that is nearest to the compressed air inlet) will activate first. This will either reduce the rate of temperature rise in the enclosure, or, it will begin to reduce the enclosure temperature, depending on the total heat load in the enclosure. If the total heat load is significant and the temperature continues to rise, the second stage cooler will activate, doubling the amount of cooling air. In locating the two Cold Air Ducting Kits, consideration should be given to the two stage cooling capability of the unit. The dual cold air outlets and Cold Air Ducting Kits provide for increased flexibility in directing refrigerated air into the enclosure. For example, the first stage cooler’s output could be directed at a primary source of heat within the enclosure (PLC’s, VFD’s, transformers, etc.) and the second stage ducting could be punched or drilled (as described earlier) and routed for overall cold air distribution throughout the enclosure.

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.



HOFFMAN

OPERATION & SAFETY INSTRUCTIONS

HAZLOC VORTEX A/C

Model VHL50160



IMPORTANT

Please read all instructions BEFORE attempting to use this product

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D; Class II, Division 2, Groups F and G; Class III OR non-hazardous locations only.

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