

At Hoffman, we believe in giving you a wide range of cooling options to meet your needs.

Our Vortex Cooling Systems generate chilled air without refrigerants or moving parts. These unique coolers use compressed air to generate a “vortex” that pulls air through the enclosure. Hot and cold airstreams are then separated to lower enclosure temperatures below ambient levels.

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Vortex Cooling Systems

Vortex Cooling Systems30



A Pentair Company

VORTEX COOLING SYSTEMS

Bulletin
MCL

Vortex Cooling Systems



Application

The compact size of VCool vortex cooling systems makes them ideally suited for small enclosures. Powered by compressed air (typically 100 psig, not to exceed 150 psig), VCool coolers generate chilled air without refrigerants or moving parts. These coolers provide exceptional reliability with minimal maintenance in even the most harsh or dirty environments.

Construction

- NEMA Type 4 and 12 models are aluminum
- NEMA Type 4X models are stainless steel
- All models include a 5-micron airline filter, 115V solenoid, thermostat, and a ducting kit to distribute cold air throughout the enclosure
- Thermostatically controlled to save energy by operating only when necessary
- Cooling capacities to 2500 BTU/Hr (733 W)

Finish

Brushed satin aluminum or stainless steel finish, depending on model.

Industry Standards

NEMA Type 4 Models:

Maintains UL/cUL Type 4 when properly installed on a UL/cUL Type 4 enclosure.

UL508, File Number E187045: Type 4

NEMA Type 4X Models:

Maintains UL/cUL Type 4X when properly installed on a UL/cUL Type 4X enclosure.

UL508, File Number E187045: Type 4X

NEMA Type 12 Models:

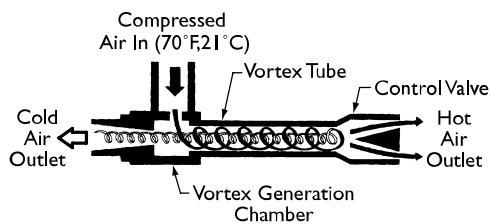
Maintains UL/cUL Type 12 when properly installed on a UL/cUL Type 12 enclosure.

UL508, File Number E187045: Type 12

Accessories (for the enclosure)

Can be installed on all enclosure product families.

Separate VCool accessories include in-line oil filter and 230V solenoid. See next page.



Vortex Tube Air Flow Schematic

How the VCool Vortex Cooling System Works

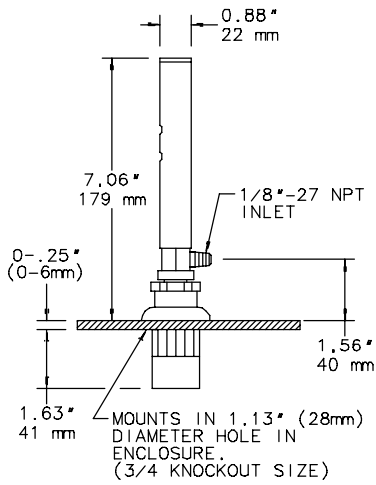
The VCool Vortex cooling system uses the principle of vortex cooling. A vortex occurs when a fluid (air) rotates around an axis, like a tornado.

A vortex tube creates a vortex from compressed air and then separates it into hot and cold airstreams.

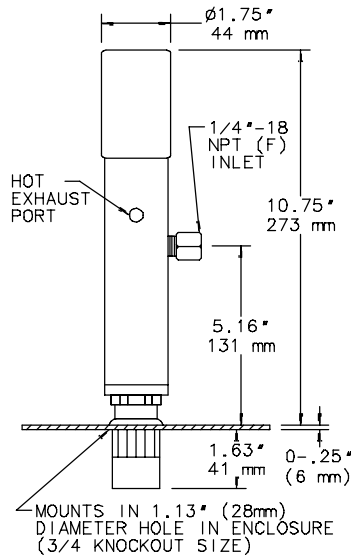
On entering the VCool tube, the compressed air flow first passes through a vortex generation chamber, which starts the air stream rotating. The air stream exiting the chamber rotates at speeds up to 1,000,000 rpm as it is forced along the inner walls of the tube towards the control valve. At the control valve a small portion of the air exits through a needle valve as hot exhaust. The remaining air is forced back through the center of the incoming air stream at a slower speed, where the slower-moving return air gives up heat energy to the faster-moving incoming air. The cooled return air then flows through the center of the vortex generation chamber and exits through the cold air exhaust port.

Vortex Cooling Systems

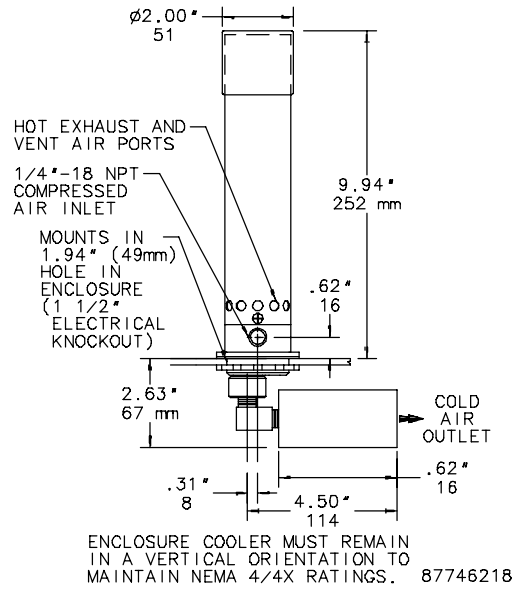
NEMA Type I2 - 400 BTU/hr



NEMA Type I2 - 900, 1500, 2500 BTU/hr



NEMA Type 4, 4X - 900, 1700, 2500 BTU/hr



Standard Sizes VC Series NEMA Type I2

Catalog Number	Cooling Capacity		Compressed Air Consumption		Noise Level db	Voltage	Frequency Hz	Material	Weight	
	BTU/hr	W	SCFM	l ³ /m					lbs	kg
VC0416012	400	117	8	227	69	115	50/60	Aluminum	5	2.27
VC0916012	900	264	15	425	80	115	50/60	Aluminum	6	2.72
VC1516012	1500	440	25	708	83	115	50/60	Aluminum	6	2.72
VC2516012	2500	733	35	991	90	115	50/60	Aluminum	6	2.72

Standard Sizes VC Series NEMA Type 4, 4X

Catalog Number	Cooling Capacity		Compressed Air Consumption		Noise Level db	Voltage	Frequency Hz	Material	Weight	
	BTU/Hr	W	SCFM	l ³ /m					lbs	kg
VC0916004	900	264	15	425	83	115	50/60	Aluminum	6	2.72
VC1716004	1700	440	25	708	86	115	50/60	Aluminum	6	2.72
VC2516004	2500	733	35	991	90	115	50/60	Aluminum	6	2.72
VC091604X	900	264	15	425	83	115	50/60	Stainless steel	6	2.72
VC171604X	1700	440	25	708	86	115	50/60	Stainless steel	6	2.72
VC251604X	2500	733	35	991	90	115	50/60	Stainless steel	6	2.72

Accessory Catalog Number	Description	Use with VCool Model Capacity
VCOF17	Oil filter	Up to 1700 BTU/hr
VCOF25	Oil filter	2500 BTU/hr
VCS230	230V solenoid	All

