

# Vortex Coolers



## Features

- Relief valves and seals built into the vortex coolers which enable the units to maintain the sealed nature of NEMA enclosures.
- No freon
- Small physical size
- Creates cool air without refrigerants (no CFCs, HCFCs)
- Exceptionally reliable - no moving parts and virtually no maintenance
- No fans
- Stainless steel construction
- All replacement generators fit any of the vortex coolers. No need to purchase a new cooler if you need to change your cooling capacity.
- 5-year warranty

## How vortex coolers create cold air

Compressed air is injected into the vortex tube at extremely high speeds and that creates a cyclone, or vortex, spinning a million revolutions per minute. Part of the air is forced to spin inward to the center and travels up a long tube where a valve turns the spinning column of air inside itself. The inside column of air gives up its heat to the outside column. The cold air is directed out the cold end of the Vortex Tube and the hot air is directed out the other end of the Vortex Tube. And since there are no moving parts there is little need for maintenance.

## Requirements

- Uses clean, dry, oil-free compressed air (80 to 100 PSIG / 70 degrees F or below) required to achieve published BTU/H ratings. Lower pressures and/or higher temperatures will reduce BTU/H rating
- A 5-micron water and particulate removal filter must be installed prior to any vortex cooler operation.
- An oil removal filter can be installed between the 5-micron filter and the Vortex Cooler if oil is present in the compressed air line.
- Thermostats, filters, regulators, and valves that work with Stratus Vortex Coolers are sold separately. Kits that include these items are listed later in this section.
- Operation above 100 PSIG is not recommended. The use of a pressure regulator will be necessary for higher pressures.



## Applications

Compressed air cooling is used where conventional enclosure cooling by air conditioners or heat exchangers is not possible. (Examples: Small to medium size enclosures, nonmetallic enclosures, and areas where the size of cooling devices is restricted)

## Mounting holes

- Mounts in a 3/4" electrical conduit knockout

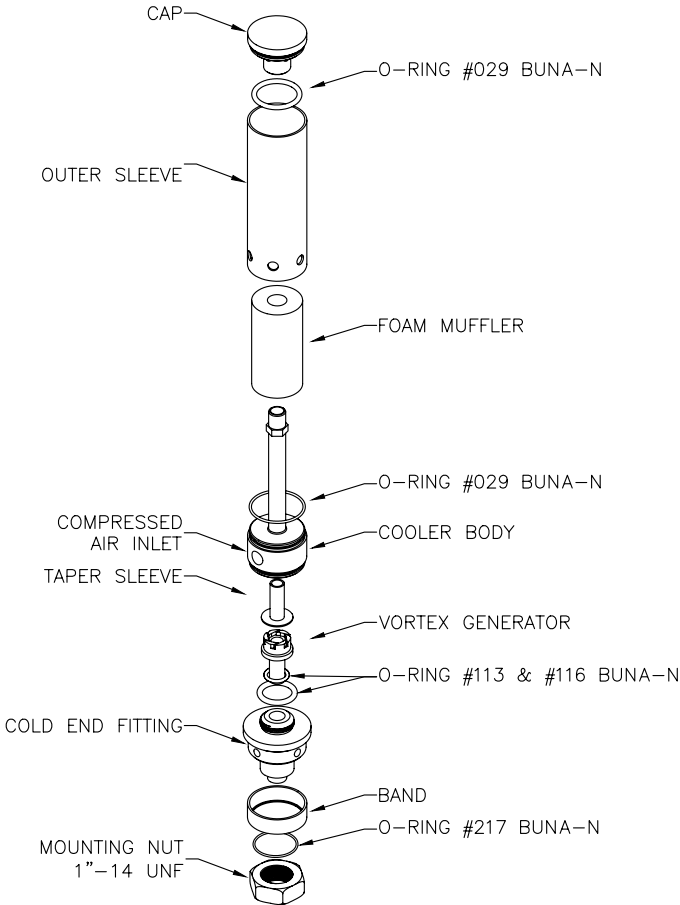
Part Type	Part Number	Price	Description	Capacity BTUH [W]	Air Consumption SCFM [SLPM]
<b>Vortex Coolers</b>	<b>TV08-005-4X</b>	\$270.00	Stratus vortex cooler, stainless steel body. For NEMA 4/4X/12 enclosures. Distribution tube and muffler included.	500 [147]	8 [227]
	<b>TV10-006-4X</b>	\$270.00	Stratus vortex cooler, stainless steel body. For NEMA 4/4X/12 enclosures. Distribution tube and muffler included.	600 [176]	10 [283]
	<b>TV15-010-4X</b>	\$270.00	Stratus vortex cooler, stainless steel body. For NEMA 4/4X/12 enclosures. Distribution tube and muffler included.	1000 [293]	15 [425]
	<b>TV25-018-4X</b>	\$270.00	Stratus vortex cooler, stainless steel body. For NEMA 4/4X/12 enclosures. Distribution tube and muffler included.	1800 [528]	25 [708]
	<b>TV35-025-4X</b>	\$270.00	Stratus vortex cooler, stainless steel body. For NEMA 4/4X/12 enclosures. Distribution tube and muffler included.	2500 [732]	35 [991]
<b>Replacement Generators</b>	<b>TV08-G</b>	\$7.00	Stratus vortex generator, replacement, polypropylene, white. Fits all Stratus TV series vortex cooler bodies.	500 [147]	8 [227]
	<b>TV10-G</b>	\$7.00	Stratus vortex generator, replacement, polypropylene, orange. Fits all Stratus TV series vortex cooler bodies.	600 [176]	10 [283]
	<b>TV15-G</b>	\$7.00	Stratus vortex generator, replacement, polypropylene, red. Fits all Stratus TV series vortex cooler bodies.	1000 [293]	15 [425]
	<b>TV25-G</b>	\$7.00	Stratus vortex generator, replacement, polypropylene, blue. Fits all Stratus TV series vortex cooler bodies.	1800 [528]	25 [708]
	<b>TV35-G</b>	\$7.00	Stratus vortex generator, replacement, polypropylene, yellow. Fits all Stratus TV series vortex cooler bodies.	2500 [732]	35 [991]

# Vortex Coolers

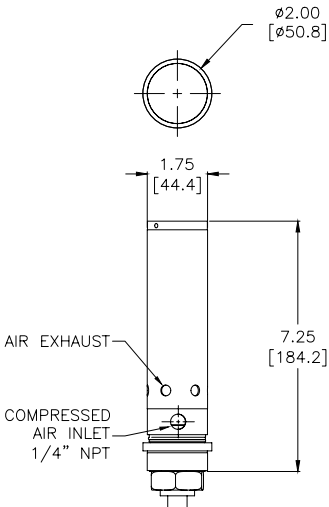


Part Type	Part Number	Price	Description
<b>Replacement Parts</b>	<b>TVACC-TS</b>	\$12.00	Stratus taper sleeve, replacement, brass. For all Stratus TV series vortex coolers.
	<b>TVACC-TUBE</b>	\$8.00	Stratus distribution tube, replacement, flexible PVC, 8ft. For all Stratus TV series vortex coolers.
	<b>TVACC-MUFFLER</b>	\$10.00	Stratus muffler, replacement, polypropylene. For all Stratus TV series vortex coolers.

## Assembly



## Dimensions in [mm]



# Thermostats, Filters and Valves for Stratus Vortex Coolers

Thermostats, Filters, and Valves for Stratus Vortex Coolers		
<b>Thermostats</b> <i>(See Small Thermostats for Enclosure Heaters, DIN Rail Mounted later in this section)</i>	<b>Part Number</b>	<b>Description</b>
	<b>011169-00</b>	Adjustable thermostat, normally open (close on rise), 32 to 140 deg. F setpoint range, 35mm DIN rail mount. For electrical enclosure climate control.
	<b>011160-00</b>	Adjustable thermostat, normally open (close on rise), 0 to 60 deg. C setpoint range, 35mm DIN rail mount. For electrical enclosure climate control.
<b>Filters **</b> <i>(See Pneumatics)</i>	<b>Part Number</b>	<b>Description</b>
	<b>AF-223-M</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, manual drain, polycarbonate bowl (no bowl guard) and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-22 series regulators and AL-22 series lubricators.
	<b>AF-223</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, semi-automatic drain, polycarbonate bowl (no bowl guard) and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-22 series regulators and AL-22 series lubricators.
	<b>AF-223-MD</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, manual drain, metal bowl with sight gauge and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-22 series regulators and AL-22 series lubricators.
	<b>AF-223-D</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, semi-automatic drain, metal bowl with sight gauge and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-22 series regulators and AL-22 series lubricators.
	<b>AFE-21 **</b>	NITRA replacement filter element, fiber, 5 micron, for AF-2 series filters or AFR-2 series filter / regulators. Needed for proper filtration on Vortex Coolers.
	<b>AF-323-M</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, manual drain, polycarbonate bowl (no bowl guard) and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-32 series regulators and AL-32 series lubricators.
	<b>AF-323</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, semi-automatic drain, polycarbonate bowl, metal bowl guard and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-32 series regulators and AL-32 series lubricators.
	<b>AF-323-A</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, automatic drain, polycarbonate bowl, metal bowl guard and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-32 series regulators and AL-32 series lubricators.
	<b>AF-323-MD</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, manual drain, metal bowl with sight gauge and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-32 series regulators and AL-32 series lubricators.
	<b>AF-323-D</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, semi-automatic drain, metal bowl with sight gauge and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-32 series regulators and AL-32 series lubricators.
	<b>AF-323-AD</b>	NITRA pneumatic particulate and moisture separation filter, 1/4 inch NPT female ports, replaceable 40 micron filter element, automatic drain, metal bowl with sight gauge and mounting bracket. Modular design enables easy field assembly with NITRA pneumatic AR-32 series regulators and AL-32 series lubricators.
	<b>AFE-31 **</b>	NITRA replacement filter element, fiber, 5 micron, for AF-3 series filters or AFR-3 series filter / regulators. Needed for proper filtration on Vortex Coolers.
	<b>Valves</b> <i>(See Pneumatics)</i>	<b>Part Number</b>
<b>DVD-2AC2A-24D</b>		NITRA pneumatic diaphragm valve, 2-way, 2-position, normally closed spring return valve with Viton seals, brass body, 1/4 inch NPT female ports, Cv=1.55, 24VDC single solenoid, 18mm DIN style wiring connector.
<b>DVD-2AC2A-120A</b>		NITRA pneumatic diaphragm valve, 2-way, 2-position, normally closed spring return valve with Viton seals, brass body, 1/4 inch NPT female ports, Cv=1.55, 120VAC single solenoid, 18mm DIN style wiring connector.
<b>DVD-2BC2A-24D</b>		NITRA pneumatic diaphragm valve, 2-way, 2-position, normally closed spring return valve with Viton seals, glass-filled nylon body, 1/4 inch NPT female ports, Cv=1.55, 24VDC single solenoid, 11mm DIN style wiring connector.
<b>DVD-2BC2A-120A</b>		NITRA pneumatic diaphragm valve, 2-way, 2-position, normally closed spring return valve with Viton seals, glass-filled nylon body, 1/4 inch NPT female ports, Cv=1.55, 120VAC single solenoid, 11mm DIN style wiring connector.
<b>** When purchasing filters for your Stratus Vortex Cooler, a 5-micron replacement filter element will need to be purchased, in addition to the AF-2xx or AF-3xx filter.</b>		

# Vortex Cooler Kits



## Features

- A complete kit for your vortex cooling applications.
- Includes the vortex cooler, filter/regulator, 5-micron replacement filter element, solenoid valve and adjustable thermostat.
- Adjustable thermostat has N.O. contacts, 32 to 140 degrees F temperature range with a 7 degree F switching differential.
- Kits are available in 500, 600, 1000, 1800, and 2500 BTUH capacities.
- 120VAC and 24VDC kits available.

## Important Installation Instructions

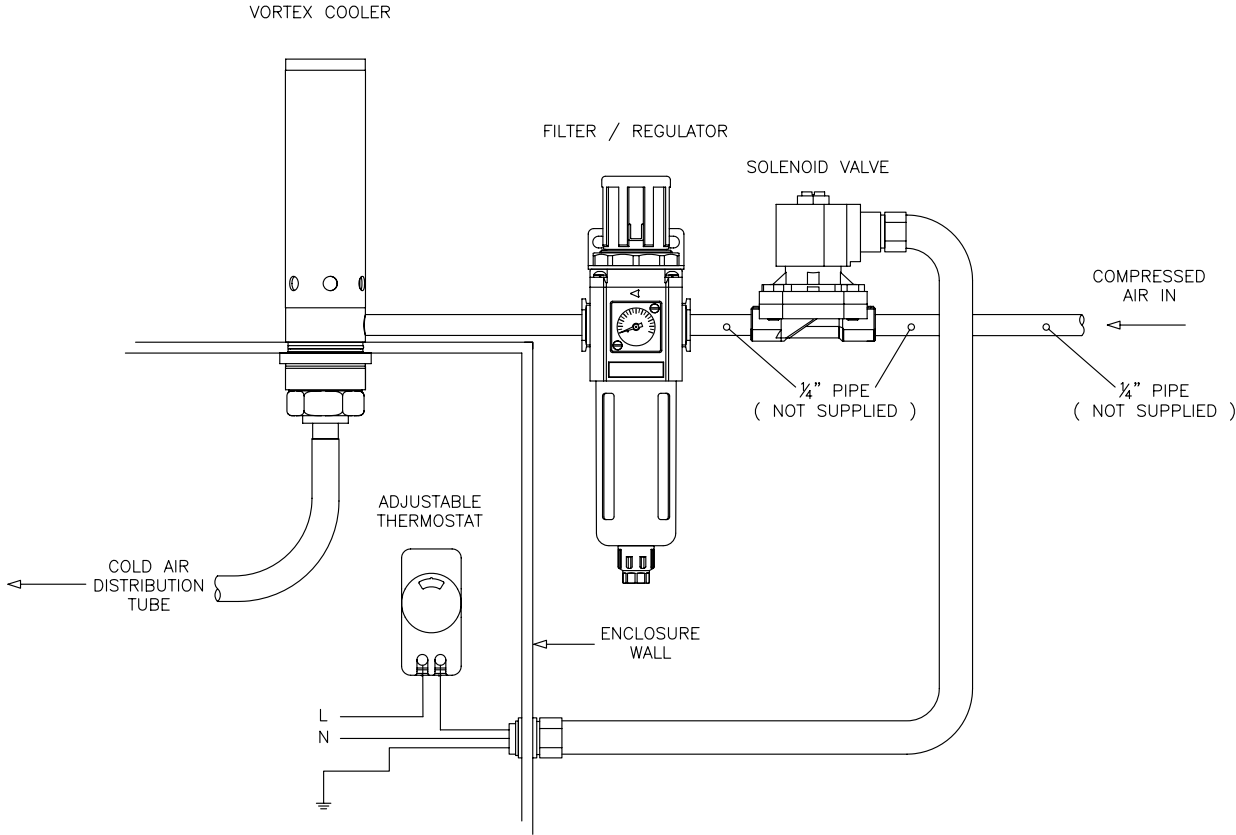
- Be sure to replace the 40-micron filter element in the filter/regulator with the 5-micron replacement filter. The 5-micron filter is required to separate harmful foreign matter from the air supply. This is required to maintain a clean supply of air to the cooler, allowing virtually maintenance-free operation.
- When installing components, it is important to locate the solenoid valve upstream of the filter/regulator. This assures there are no unnecessary flow restrictions to the cooler and allows the semi-automatic drain feature of the filter/regulator to work properly.
- All pneumatic components and the vortex cooler have 1/4" FNPT air inlets/ outlets. To be sure there is ample flow to the vortex cooler, all fittings and piping supplied to the components must be of the same size or larger. Smaller fittings, excessive turns (elbows, tees, etc), or use of plastic tubing fittings will reduce flow and affect the performance of the vortex cooler.
- Plastic tubing is not recommended as the fittings associated with tubing and tubing inside diameter can reduce airflow. Do not use "quick couplings" anywhere in the system as they create flow restrictions and your cooler will not perform correctly.
- Size your supply airline to the solenoid valve correctly. Up to 10' long runs will require a pipe size of at least 1/4" (3/8" for hoses). 10' to 50' long runs will require a pipe size of 3/8" (1/2" for hoses). 50' to 100' long runs will require a pipe size of 1/2" (5/8" for hoses).
- Maximum supply air pressure on this combination of components is 145psi.

Vortex Cooler Kits									
Kit Number	Price	Voltage	Capacity BTUH [W]	Air Consumption SCFM [SLPM]	Vortex Cooler Number	Solenoid Valve	Thermostat	Filter/ Regulator	5-micron Filter
<b>TVK08-005-4X-120A</b>	\$349.00	120VAC	500 [147]	8 [227]	TV08-005-4X	DVD-2BC2A-120A	011169-00	AFR-3233	AFE-31
<b>TVK10-006-4X-120A</b>	\$349.00	120VAC	600 [176]	10 [283]	TV10-006-4X	DVD-2BC2A-120A	011169-00	AFR-3233	AFE-31
<b>TVK15-010-4X-120A</b>	\$349.00	120VAC	1000 [293]	15 [425]	TV15-010-4X	DVD-2BC2A-120A	011169-00	AFR-3233	AFE-31
<b>TVK25-018-4X-120A</b>	\$349.00	120VAC	1800 [528]	25 [708]	TV25-018-4X	DVD-2BC2A-120A	011169-00	AFR-3233	AFE-31
<b>TVK35-025-4X-120A</b>	\$349.00	120VAC	2500 [732]	35 [991]	TV35-025-4X	DVD-2BC2A-120A	011169-00	AFR-3233	AFE-31
<b>TVK08-005-4X-24D</b>	\$349.00	24VDC	500 [147]	8 [227]	TV08-005-4X	DVD-2BC2A-24D	011169-00	AFR-3233	AFE-31
<b>TVK10-006-4X-24D</b>	\$349.00	24VDC	600 [176]	10 [283]	TV10-006-4X	DVD-2BC2A-24D	011169-00	AFR-3233	AFE-31
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<b>TVK35-025-4X-24D</b>	\$349.00	24VDC	2500 [732]	35 [991]	TV35-025-4X	DVD-2BC2A-24D	011169-00	AFR-3233	AFE-31
<b>Component Warranties</b>					<b>5-Year</b>	<b>1-Year</b>	<b>1-Year</b>	<b>2-Year</b>	<b>2-Year</b>

# Vortex Cooler Kits



## Vortex Cooler Kit Installation Example



# Industrial strength cooling options for your enclosure from AutomationDirect



- Both intake (FPI) and exhaust (FPO) fans are available.
- Exhaust fans and grilles available with air flaps or filters. Using air flaps on the exhaust reduces the number of filters to maintain.



## Filter Fan Kits

- Easy filter change
- Outer door lock for outdoor models
- Impact resistant
- Weather/UV resistant -f1
- Flammability Rating: UL94V-0
- Adhesive mounting for non-screw installation (except outdoor models)
- Low noise
- 120VAC and 24VDC models available

## Filter Fan Plus

- Easy filter change
- Hinged cover
- Impact resistant
- Weather/UV resistant-UL-f1
- Flammability Rating: UL94V-0
- Unique ratchet mechanism for no-screw installation
- Low noise
- 120, 230VAC and 12, 24, 48VDC models available

## Hose-Proof Filter Fan Hoods

- Stainless steel hood with food-grade silicone seal
- Fits all Stego Filter Fan and Filter Fan Plus fans and exhaust grilles (except outdoor Filter Fans)
- Maintains an enclosure's NEMA/UL Type 4 or 4X rating in washdown environments



## Fan Kits



- All models are 115V with an expected service life of 30,000 hours
- High-performance fan motors and finger guards
- Polycarbonate fire retardant plastic grilles, UL94-V0
- Durable, reusable filter mat included
- Patented "Click and Fit" system allows for rapid filter fan and exhaust filter installation without screws



# Industrial strength cooling options for your enclosure from AutomationDirect



## Heat Exchangers

- For NEMA 4 and 4X enclosures
- Closed loop cooling
- Energy efficient: uses approximately the same power as a filtered fan system
- 120VAC and 24VDC models available

## Air Conditioning Units

- For NEMA 12, 4, 4X type enclosures
- Digital temperature controller
- Active condensate evaporation system
- High unit efficiency
- Tough industrial construction
- Compressor protection system



Made  
in the  
USA



## Enclosure Vortex Coolers



- For NEMA 12, 4, 4X type enclosures
- Operates on compressed air
- Stainless steel construction
- No moving parts, no maintenance required
- Vortex coolers can be “resized” for changing applications by simply replacing the generator inside the cooler. No need to purchase a new unit
- Replacing the vortex generator takes minutes