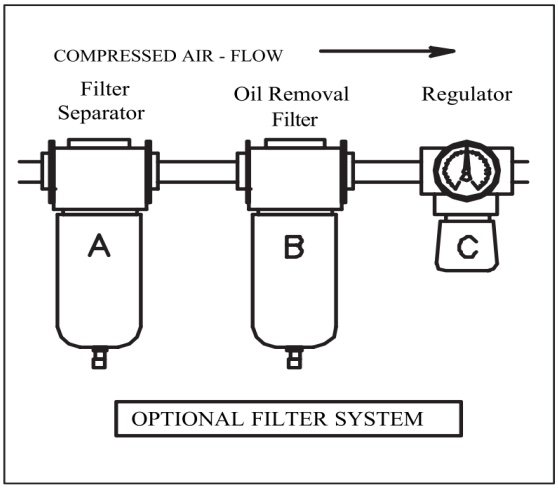
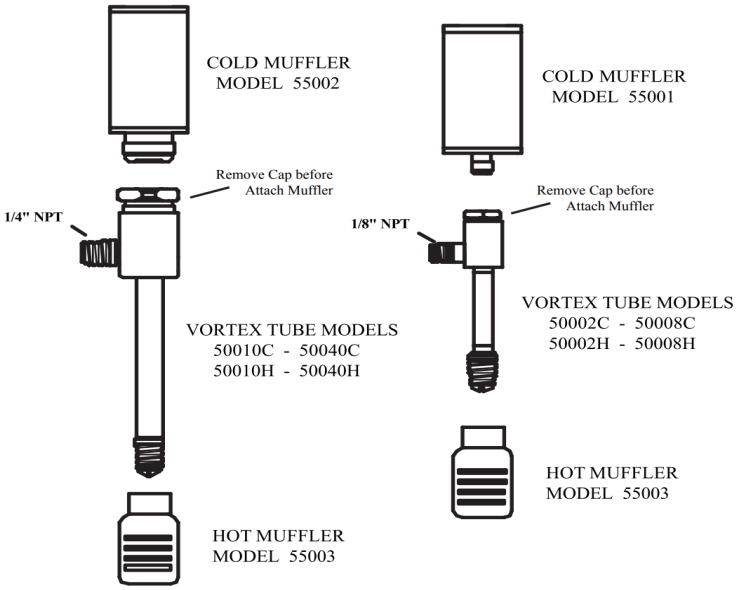
NEX FLOW
Leading Technology Into The Future

VORTEX TUBES -INSTALLATION AND MAINTENANCE INSTRUCTIONS





VORTEX TUBE INSTALLATION & MAINTENANCE

COMPRESSED AIR LINE SIZES

Compressed air lines should always be sized to hold pressure drops to a minimum. Do not use restrictive fittings such as quick connects as they can cause excessive line pressure drop.

For vortex tubes up to 8 SCFM:

10 foot run	10 to 50 foot run	50 to 100 foot run
1/8” pipe or ¼” hose	¼” pipe or 3/8” hose	¼” pipe or 3/8” hose

For vortex tubes from 10 to 40 SCFM:

10 foot run	10 to 50 foot run	50 to 100 foot run
1/4” pipe or 3/8” hose	3/8” pipe or 1/2” hose	1/2” pipe or 5/8” hose

For vortex tubes from 50 SCFM to 150 SCFM

10 foot run	10 to 50 foot run	50 to 100 foot run
1/2” pipe or 5/8” hose	3/4” pipe or 7/8” hose	1” pipe or 1-1/8” hose

COMPRESSED AIR SUPPLY

Use a supply line pressure of 80 to 100 PSIG (5.5 - 6.9 BAR) at the entry to the vortex tube. Vortex Tubes are rated in SCFM (SLPM) at 100 PSIG (6.9 BAR) supply pressure.

Maintain proper filtration and separation of dirt, moisture and oil from the compressed air supply with a minimum 25 micron or smaller (Nex Flow normally supplies 5 micron filters as an option) water removal filter. If there is a chance of oil, an oil removal filter is also recommended (Nex Flow normally supplies a 0.3 micron filter for oil removal).

Filters should be installed within 10 to 15' (3 to 4.6m) of each Vortex Tube.

By regulating pressure, the cooling produced can be matched to the application requirements. Reducing pressure reduces cooling effect.

Another method of temperature control is with on-off control. With this method you supply the Vortex Tube with full line pressure, usually 80 to 100 PSIG (5.6 to 6.2 bar), and then cycle the air on and off using a solenoid valve that is controlled by using a thermostat.

THE VORTEX TUBE APPLICATION

There is usually no particular use for the hot end of the vortex tube as there are more efficient ways to produce heat. The cold end however is applicable for all sorts of spot cooling and enclosure cooing applications. The more restriction you have at the cold end, the less the distance the cold air can be conveyed so keep connections adequately large.

When piping cold air into an enclosure, always ensure there is an opening or some vent to remove the displaced warmer air. Keep in mind that cold air falls, and hot air rises when piping into an enclosure so it is best to pipe in near the top and exhaust near the bottom.

SETTING THE VORTEX TUBE

Hot and cold air temperatures produced by a Vortex Tube are controlled by adjusting the slotted hot air exhaust valve at the hot end. Opening the valve reduces the cold end air flow and also makes the cold air temperature colder. Closing the valve increases the cold end air flow and raises the cold end exhaust temperature.

It is best to set the Vortex Tube temperature using a thermometer. To measure temperature accurately, it should be inserted into the cold muffler opening or into a piece of tubing that can be added to the cold end exhaust.

NOISE CONTROL

Normally, additional muffling is not required if the hot and cold air is ducted. Mufflers are available for both the hot and cold exhaust for all Vortex Tubes is required.

TROUBLESHOOTING & MAINTENANCE

If The Vortex Tube Does Not Perform as Expected, check the following:

1. Loose Cold Cap or Cold Muffler - A loose cold cap or cold muffler will cause poor performance. Make sure it is tight.

2. Inlet Pressure - Low inlet pressure supply will cause poor performance. Measure the pressure at the compressed air inlet of the Vortex Tube while it is operating. Restrictions in the compressed air supply line can cause excessive pressure drops and deteriorates performance.

3. Inlet Temperature - A Vortex Tube provides a temperature drop from supply air temperature. In some cases, the supply air is warmer than ambient air due to compressed air lines running across ceilings, near furnaces, direct sun, etc. In this case, the cold air may be warmer than anticipated and refrigeration effect may be reduced.

4. No Cold Flow – Adequate filtration is required to keep out loose moisture. If moisture does go inside as a result you may get temporary freezing inside the cortex tube, especially is operating at very low sub zero temperatures.

   Any one of the following will correct the problem:

   (a) Blow air (use an air gun) into the cold end with the Vortex Tube off.
   (b) Turn the Vortex Tube off for a few minutes. It will thaw.
   (c) Check filtration and improve to eliminate loose moisture or, if possible, use dry air with a dew point of -40° or less.

5. Back Pressure - The performance of a Vortex Tube deteriorates with back pressure on the cold air exhaust. If cold air ducting is used, the total cross-sectional area should be equal to or greater than the area of the Vortex Tube cold air exhaust.

If you have any questions or problems, please contact Nex Flow or their local representative,

NEX FLOW
Leading Technology Into The Future

USA & CANADA	INTERNATIONAL	INTERNET
Tel : 1-877-797-2777	+1 416 410-1313	www.nexflow.com
Fax : 1-877-797-2660	+1 416 410 1806	sales@nexflow.com