

FRIGID-X™ STAINLESS STEEL VORTEX TUBES

Frigid-X™ Low Cost Stainless Steel Vortex Tubes With All Metal Generators

What Are Vortex Tubes?

Vortex Tubes are devices that work on a standard compressed air supply. Air enters the vortex tube and literally splits the air flow into two parts - cold air at one end, and hot air at the other - all without any moving parts. An adjustable valve at the "hot" end controls the volume of the air flow, and the temperature exiting at the cold end. By adjusting the valve, you control the "cold fraction" which is the percentage of total input compressed air that exists at the cold end of the vortex tube. Inside the vortex tube is the interchangeable "generator" which can alter the air used in the vortex tube, and control the temperature ranges you wish to have at the cold and hot ends. There are several ranges of generators for compressed air capacity. There are also two basic types of generators - one to produce the extreme cold temperatures (maximum cold temperature out called the C generator) and one type to produce the maximum amount of cooling (maximum refrigeration called the H generator).



Nex Flow™ Frigid-X™ Vortex Tubes Are Best Because...

Nex Flow™ Frigid-X™ Vortex Tubes are constructed of stainless steel and use a generator and valve made of brass and sealed with viton o-rings to allow their use in the widest range of environments. Others use plastic generators and standard buna N o-rings and charge extra for brass and viton. The unique design and quality of materials used in Nex Flow™ Frigid-X™ Vortex Tubes will deliver years of maintenance-free operation.

Advantages and Applications

Advantages

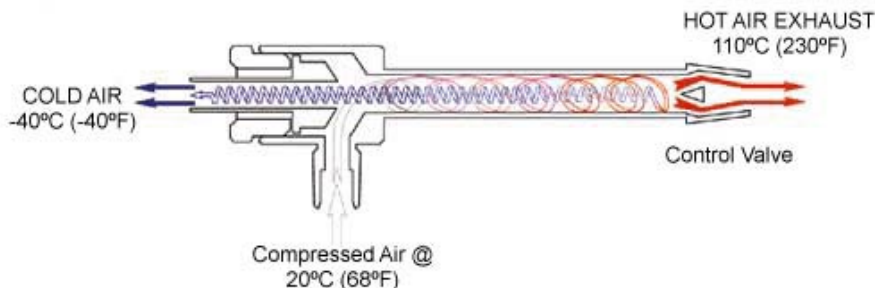
- No moving parts, reliable, maintenance free
- No coolant
- Compact and lightweight
- Low cost application
- Maintenance free units
- Instant cold air in environmental chambers
- No spark or explosion hazard
- Interchangeable generators

Applications

- Cool electronic and electrical controls
- Cool machine operations/tooling
- Cool CCTV cameras
- Set hot melt adhesives
- Cool soldered parts
- Cool gas samples
- Cool heat seals
- Cooling environmental chambers

How Does A Vortex Tube Work?

The Principle of a Vortex Tube



Compressed air, typically at 80-to 100 PSIG enters the vortex tube from the side at a tangent and enters through the generator into the tube, causing the air to spin. This air stream spins toward the hot end where some leaves the tube via the control valve. The remaining, spinning air travels back up the center of the tube. The inner spinning stream gives off heat energy to the outer stream (which leaves the tube at the hot end as hot air) and exits the vortex tube at the cold end as cooled air. The input air is literally split into hot and cold using no moving parts.

Leading Technology Into The Future
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Specifications

Approximate temperature drops (and rises) from inlet air temperature produced by a vortex tube set at various cold fractions. Assume constant inlet pressure and temperature.

Model	SCFM @ 100 PSIG inlet (SLPM @ 6.9 BAR)	Btu/hr. @ 100 PSIG (Watts @ 6.9 BAR)	Size
50002H	2 (57)	145 (42)	small
50004H	4 (142)	290 (85)	small
50008H	8 (226)	580 (170)	small
50010H	10 (283)	730 (214)	medium
50015H	15 (425)	1100 (322)	medium
50025H	25 (708)	1800 (527)	medium
50030H	30 (850)	2100 (615)	medium
50040H	40 (1133)	2900 (849)	medium

Model	SCFM @ 100 PSIG inlet (SLPM @ 6.9 BAR)	For Cold Temperature	Size
50002C	2 (57)	---	small
50004C	4 (142)	---	small
50008C	8 (226)	---	small
50010C	10 (283)	---	medium
50015C	15 (425)	---	medium
50025C	25 (708)	---	medium
50030C	30 (850)	---	medium
50040C	40 (1133)	---	medium

Temperature drop of cold air, °F (°C) in **Blue** Temperature rise of hot air, °F (°C) in **Red**

Pressure Supply

PSIG (BAR)

20 (1.4)

62 (34)

60 (33)

56 (31)

51 (28)

44 (24)

36 (20)

28 (16)

15 (8)

25 (14)

36 (20)

50 (28)

64 (26)

83 (46)

107 (59)

40 (2.8)

88 (48)

85 (46)

80 (42)

73 (39)

63 (34)

52 (28)

38 (20)

21 (11)

35 (18)

52 (28)

71 (38)

92 (50)

117 (62)

147 (80)

60 (4.1)

104 (57)

100 (55)

93 (51)

84 (46)

73 (40)

60 (33)

46 (25)

24 (14)

40 (22)

59 (33)

80 (44)

104 (57)

132 (73)

166 (92)

80 (5.5)

115 (63)

110 (62)

102 (56)

92 (51)

80 (45)

66 (36)

50 (28)

25 (14)

43 (24)

63 (35)

86 (47)

113 (63)

143 (80)

180 (100)

100 (6.9)

123 (68)

118 (65)

110 (61)

100 (55)

86 (48)

71 (39)

54 (30)

26 (14)

45 (25)

67 (37)

90 (50)

119 (66)

151 (84)

191 (106)

120 (8.4)

129 (72)

124 (69)

116 (64)

104 (58)

91 (50)

74 (41)

55 (31)

26 (14)

46 (26)

69 (38)

94 (52)

123 (68)

156 (86)

195 (108)

VORTEX TUBES - Dimensional Overview

