

# EXAIR<sup>®</sup> Corporation

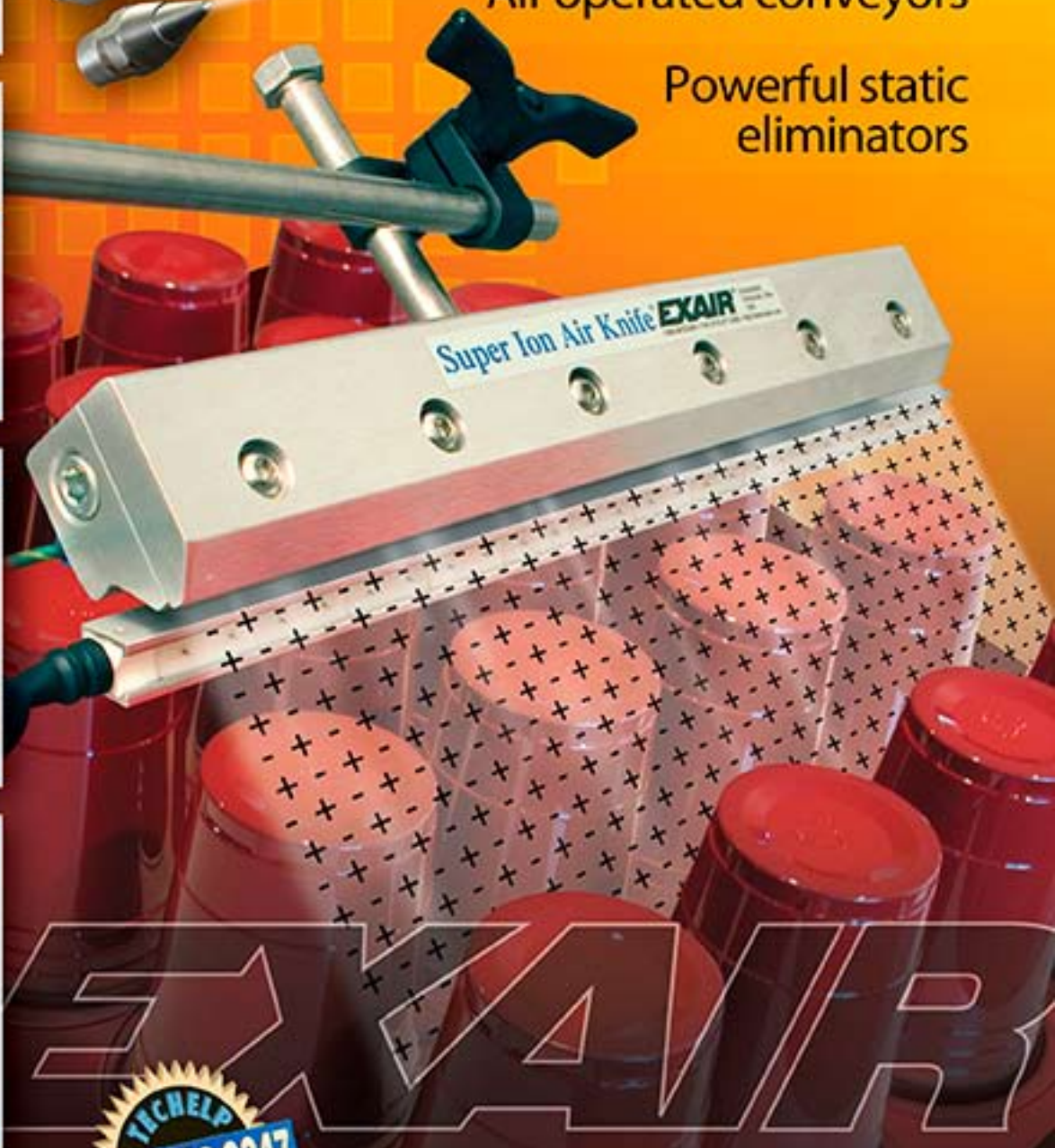
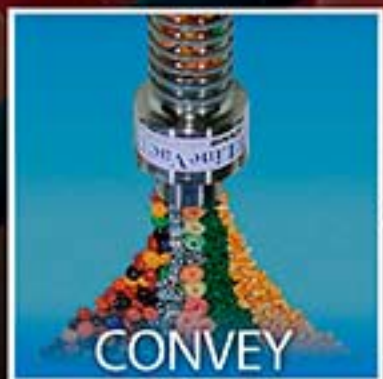
MANUFACTURING COMPRESSED AIR PRODUCTS  
FOR INDUSTRY SINCE 1983

Super Air Knife is surprisingly quiet

Cool electronic cabinets

Air operated conveyors

Powerful static  
eliminators




CATALOG NO. 21



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## Vortex Tubes

**Cold air to -50°F (-46°C)  
from your compressed  
air supply — with no  
moving parts!**



### What Is A Vortex Tube?

A low cost, reliable, maintenance free solution to a variety of industrial spot cooling problems. Using an ordinary supply of compressed air as a power source, vortex tubes create two streams of air, one hot and one cold, **with no moving parts**. Vortex tubes can produce:

- Temperatures from -50° to +260°F (-46° to +127°C)
- Flow rates from 1 to 150 SCFM (28 to 4248 SLPM)
- Refrigeration up to 10,200 Btu/hr. (2571 Kcal/hr.)

Temperatures, flows and refrigeration are adjustable over a wide range using the control valve on the hot end exhaust.

### Why EXAIR Vortex Tubes?

EXAIR Vortex Tubes are constructed of **stainless steel**. The wear resistance of stainless steel, as well as its resistance to corrosion and oxidation, assures that EXAIR Vortex Tubes will provide years of reliable, maintenance-free operation.



A 1/4 ton of refrigeration in the palm of your hand!

### Applications

- Cooling electronic controls
- Cooling machining operations
- Cooling CCTV cameras
- Setting hot melts
- Cooling soldered parts
- Cooling gas samples
- Electronic component cooling
- Cooling heat seals
- Cooling environmental chambers

### Advantages

- No moving parts
- No electricity or chemicals
- Small, lightweight
- Low cost
- Maintenance free
- Instant cold air
- Durable - stainless steel
- Adjustable temperature
- Interchangeable generators



A Model 3225 Vortex Tube keeps plastic dishwasher arms cool during ultrasonic welding.



Special high temperature vortex tubes keep a boroscope lens cool while inserted into a 1200°F boiler porthole.

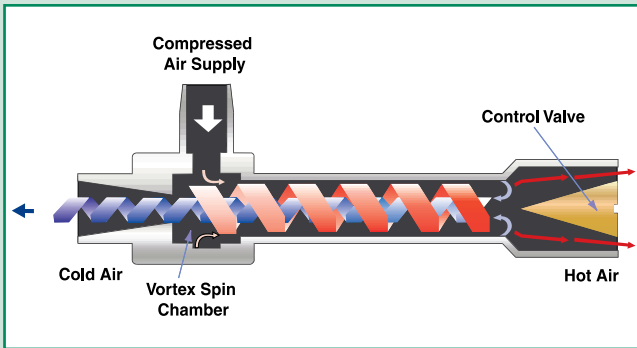


A Model 3215 Vortex Tube cools a die on a medical tube forming machine.



# Vortex Tubes

## How A Vortex Tube Works



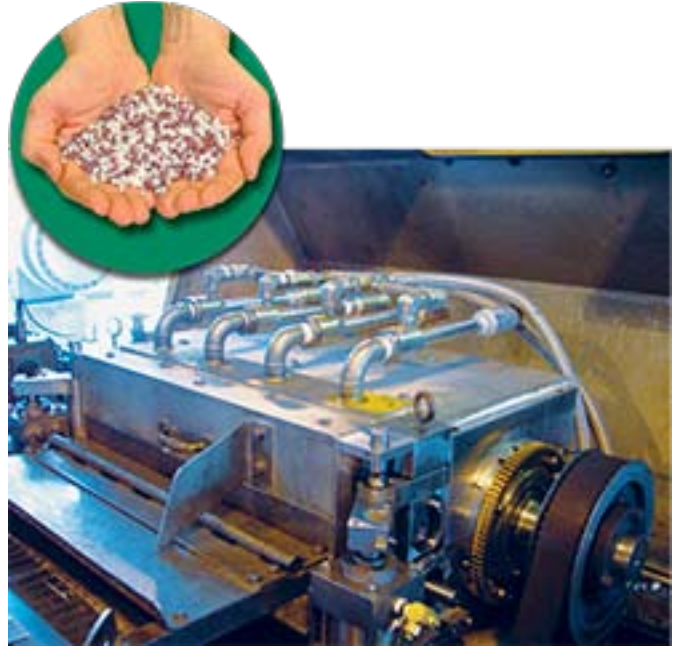
Compressed air, normally 80-100 PSIG (5.5 - 6.9 BAR), is ejected tangentially through a generator into the **vortex spin chamber**. At up to 1,000,000 RPM, this air stream revolves toward the hot end where some escapes through the **control valve**. The remaining air, still spinning, is forced back through the center of this outer vortex. The inner stream gives off kinetic energy in the form of heat to the outer stream and exits the vortex tube as **cold air**. The outer stream exits the opposite end as **hot air**. There is a detailed discussion of vortex tube history and theory later on page 105 in this section.

## Controlling Temperature And Flow In A Vortex Tube

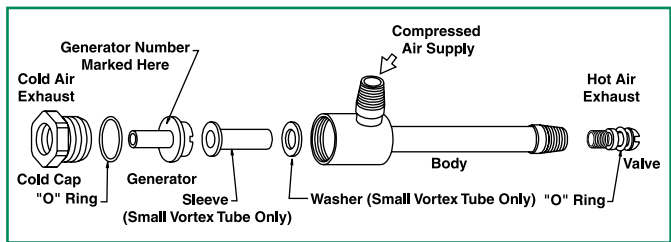
Cold airflow and temperature are easily controlled by adjusting the slotted valve in the hot air outlet. **Opening the valve reduces the cold airflow and the cold air temperature. Closing the valve increases the cold airflow and the cold air temperature.** The percentage of air directed to the cold outlet of the vortex tube is called the “cold fraction”. In most applications, a cold fraction of 80% produces a combination of cold flow rate and temperature drop that maximizes refrigeration, or Btu/hr. (Kcal/hr.), output of a vortex tube. While low cold fractions (less than 50%) produce lowest temperatures, cold airflow rate is sacrificed to achieve them.

Most industrial applications, i.e., process cooling, part cooling, chamber cooling, require maximum refrigeration and utilize the 3200 series Vortex Tube. Certain “cryogenic” applications, i.e., cooling lab samples, circuit testing, are best served by the 3400 series Vortex Tube.

Setting a vortex tube is easy. Simply insert a thermometer in the cold air exhaust and set the temperature by adjusting the valve at the hot end. **Maximum refrigeration (80% cold fraction) is achieved when cold air temperature is 50°F (28°C) below compressed air temperature.**



(4) Model 3250 Vortex Tubes cool the cutting knives in this pelletizer to prevent irregular shapes.



Model 3930 EXAIR Cooling Kit

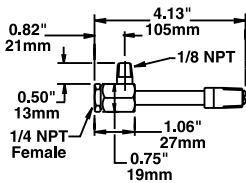
If you are unsure of your flow and temperature requirements, EXAIR recommends the purchase of an **EXAIR Cooling Kit**. It contains a vortex tube, cold air muffler, air line filter and all generators required to experiment with the full range of airflows and temperatures.

## Selecting The Right Vortex Tube

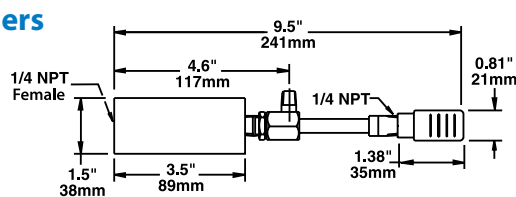
EXAIR Vortex Tubes are available in three sizes. Each size can produce a number of flow rates, as determined by a small internal part called a **generator**. If Btu/hr. (Kcal/hr.) requirements, or flow and temperature requirements are known, simply select the appropriate vortex tube according to the specification information shown below or the performance charts shown on the following page. Keep in mind that the **vortex generators are interchangeable**. If, for example, a Model 3215 Vortex Tube does not provide sufficient cooling, you need only change generators within the vortex tube to upgrade the flow rate from 15 to 25, 30 or 40 SCFM (425 to 708, 850 or 1133 SLPM). Generator part numbers are shown in the "Accessories" listing on page 106.

## Vortex Tube Dimensions

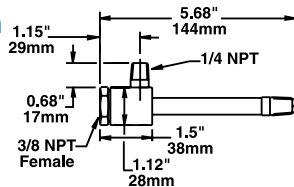
### Small



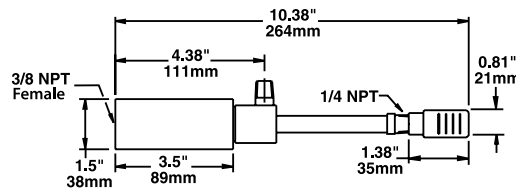
### With Mufflers



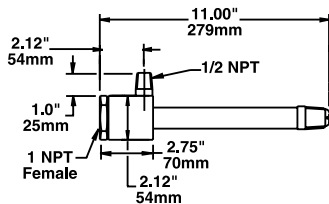
### Medium



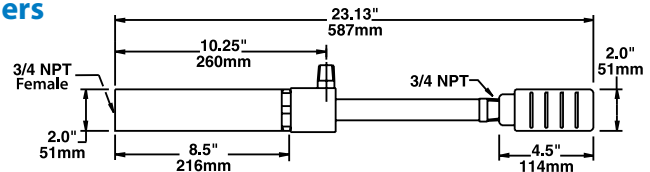
### With Mufflers



### Large



### With Mufflers



## Vortex Tube Specifications

3200 series Vortex Tubes optimize temperature drop and airflow to **produce maximum cooling power or Btu/hr. (Kcal/hr.)**. Specify 3200 series Vortex Tubes for most general cooling applications.

3200 Series Vortex Tube Specifications					
MODEL#	SCFM*	SLPM*	Btu/hr.**	Kcal/hr.**	SIZE
3202	2	57	135	34	Small
3204	4	113	275	69	Small
3208	8	227	550	139	Small
3210	10	283	650	164	Medium
3215	15	425	1000	252	Medium
3225	25	708	1700	428	Medium
3230	30	850	2000	504	Medium
3240	40	1133	2800	706	Medium
3250	50	1416	3400	857	Large
3275	75	2124	5100	1285	Large
3298	100	2832	6800	1714	Large
3299	150	4248	10,200	2570	Large

\*SCFM (SLPM) at 100 PSIG (6.9 BAR) Inlet Pressure  
 \*\*Btu/hr. (Kcal/hr.) Cooling Capacity at 100 PSIG (6.9 BAR)

3400 series Vortex Tubes provide **lowest cold air temperatures, but at low cold airflow (when less than a 50% cold fraction is used)**. Specify 3400 series Vortex Tubes only where temperatures below 0°F (-18°C) are desired.

3400 Series Vortex Tube Specifications					
MODEL#	SCFM*	SLPM*	Btu/hr.**	Kcal/hr.**	SIZE
3402	2	57	----	----	Small
3404	4	113	----	----	Small
3408	8	227	----	----	Small
3410	10	283	----	----	Medium
3415	15	425	----	----	Medium
3425	25	708	----	----	Medium
3430	30	850	----	----	Medium
3440	40	1133	----	----	Medium
3450	50	1416	----	----	Large
3475	75	2124	----	----	Large
3498	100	2832	----	----	Large
3499	150	4248	----	----	Large

\*SCFM (SLPM) at 100 PSIG (6.9 BAR) Inlet Pressure  
 \*\*Not Applicable. 3400 series Vortex Tubes are not normally used in air conditioning applications.

Vortex Tubes & Spot Cooling

# Vortex Tubes

## Vortex Tube Performance

The **Vortex Tube Performance Charts** below give approximate temperature drops (and rises) **from inlet air temperature** produced by a vortex tube set at each cold fraction. Assuming no fluctuation of inlet temperature or pressure, a vortex tube will reliably maintain temperature within  $\pm 1^\circ\text{F}$ .

Pressure Supply		Cold Fraction %					
PSIG	20	30	40	50	60	70	80
20	62	60	56	51	44	36	28
	15	25	36	50	64	83	107
40	88	85	80	73	63	52	38
	21	35	52	71	92	117	147
60	104	100	93	84	73	60	46
	24	40	59	80	104	132	166
80	115	110	102	92	80	66	50
	25	43	63	86	113	143	180
100	123	118	110	100	86	71	54
	26	45	67	90	119	151	191
120	129	124	116	104	91	74	55
	26	46	69	94	123	156	195

Numbers in shaded area give temperature drop of cold air,  $^\circ\text{F}$ .  
Numbers in white area give temperature rise of hot air,  $^\circ\text{F}$ .

Pressure Supply		Cold Fraction % (METRIC)					
BAR	20	30	40	50	60	70	80
1.4	34.4	33.3	31.1	28.3	24.4	20.0	15.6
	8.3	13.9	20.0	28.3	35.6	46.1	59.4
2	40.9	39.6	37.1	33.8	29.2	24.0	18.1
	9.8	16.4	24.0	33.3	42.6	54.6	69.5
3	50.4	48.7	45.7	41.6	36.0	29.7	21.9
	12.0	19.9	29.6	40.3	52.3	66.5	83.5
4	56.9	54.7	50.9	46.1	40.0	32.9	25.1
	13.2	21.9	32.4	43.9	57.1	72.5	91.2
5	61.6	59.0	54.8	49.4	43.0	35.4	26.9
	13.7	23.3	34.2	46.5	60.9	77.2	97.1
6	65.4	62.7	58.2	52.7	45.6	37.6	28.6
	14.1	24.3	35.8	48.6	63.9	81.0	102.1
7	68.6	65.8	61.4	55.7	48.0	39.6	30.0
	14.4	25.1	37.3	50.2	66.3	84.2	106.3
8	71.1	68.2	63.8	57.3	50.0	40.8	30.4
	14.4	25.4	38.1	51.8	67.9	86.1	107.9

Numbers in shaded area give temperature drop of cold air,  $^\circ\text{C}$ .  
Numbers in white area give temperature rise of hot air,  $^\circ\text{C}$ .

**Back Pressure:** The performance of a vortex tube deteriorates with back pressure on the cold air exhaust. Low back pressure, up to 2 PSIG (.1 BAR), will not change performance. 5 PSIG (.3 BAR) will change performance by approximately  $5^\circ\text{F}$  ( $2.8^\circ\text{C}$ ).

**Filtration:** The use of clean air is essential, and filtration of 25 microns or less is recommended. EXAIR filters contain a five micron element and are properly sized for flow.

**Inlet Air Temperature:** A vortex tube provides a temperature drop from supply air temperature (see Performance Charts above). Elevated inlet temperatures will produce a corresponding rise in cold air temperatures.

**Noise Muffling:** EXAIR offers mufflers for both the hot and cold air discharge. Normally, muffling is not required if the cold air is ducted.

**Regulation:** For best performance, use line pressures of 80 to 110 PSIG (5.5 to 7.6 BAR). Maximum pressure rating is 250 PSIG (17.2 BAR), minimum 20 PSIG (1.4 BAR).

## EXAIR Products Using Vortex Tubes

Over the years, the basic vortex tube has been used in virtually hundreds of industrial cooling applications. A few have become so popular as to warrant the development of an “applied product” designed to suit the specific application. These products include the Adjustable Spot Cooler, Mini Cooler, Cold Gun and Cabinet Coolers that can be found in the remainder of this catalog.

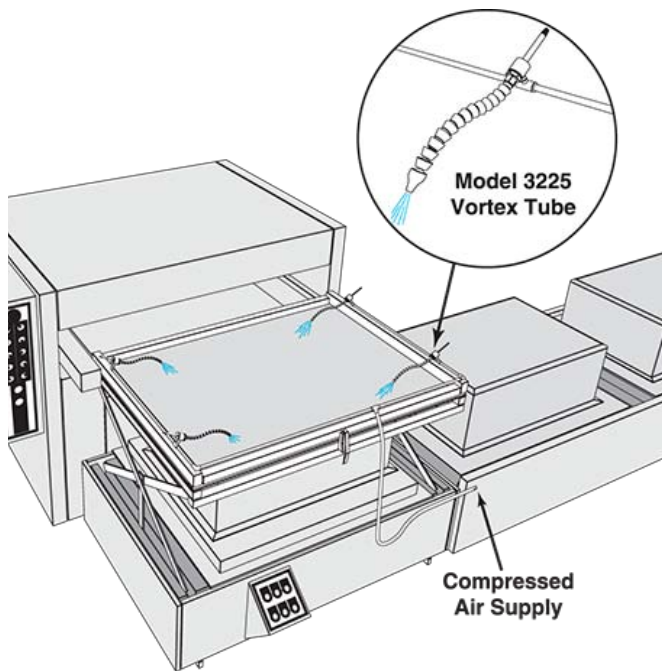
## High Temperatures

Vortex tubes for ambient temperatures above  $200^\circ\text{F}$  ( $93^\circ\text{C}$ ) are available. Contact an Application Engineer at 1-800-903-9247 for more details.

## Preset Vortex Tubes

EXAIR can provide vortex tubes preset to any combination of flow and temperature desired. To prevent tampering with the desired setting, a drilled orifice, that replaces the adjustable hot valve is available. For more information, please contact an Application Engineer.

## Cooling Vacuum Formed Parts



**The Problem:** A manufacturer of major appliances vacuum forms the plastic interior shell of refrigerators. The deep draw of the plastic and complex geometry left the four corners unacceptably thin. The corners

would tear during assembly or bulge when insulation was inserted between the shell and exterior housing, resulting in a high rejection rate.

**The Solution:** (4) Model 3225 Vortex Tubes were positioned to cool the critical corner areas just prior to forming the plastic sheet. By cooling these areas, less stretching of the plastic occurred which resulted in thicker corners.

**Comment:** Rejected parts become very costly, especially when expensive materials and slow process times are involved. The cold air from the vortex tube is just the solution for big problems like this one. It can supply “instant” cold air down to minus 50°F (-46°C) from an ordinary compressed air supply. Along with cooling other vacuum formed parts such as spas, bathtubs, tote pans and waste cans, it is ideal for cooling hot melts, ultrasonic welders, environmental chambers, etc.

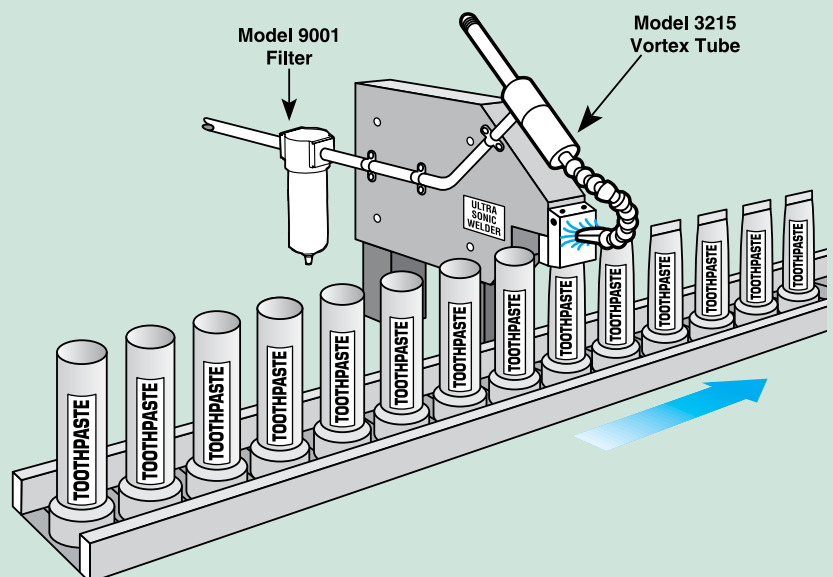
This is an ideal application for EXAIR’s new EFC, an electronic flow control for compressed air, shown on page 3. It reduces air consumption by turning on the compressed air for a preset length of time, when sensing the plastic sheet is in position.

## Cooling An Ultrasonic Weld

**The Problem:** A manufacturer of toothpaste seals the ends of plastic tubes with an ultrasonic welder prior to filling. As heat built up at the sealing jaw of the welder, release of the tubes was delayed. Tubes that were too hot would not seal resulting in a high rate of rejection.

**The Solution:** A Model 3215 Vortex Tube was used to direct cold air at the jaw of the welder. The cooling was transferred through the metal jaw to the tube seam while in the clamped position. **Process time was reduced and rejected tubes were eliminated.**

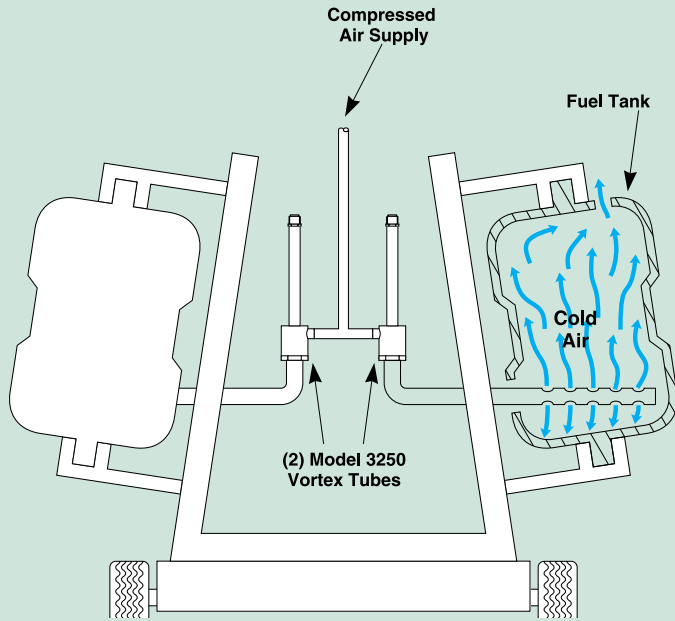
**Comment:** It amazes most people that the cooling from a small vortex tube can dramatically improve quality and throughput. The vortex tube is the low cost solution for cooling parts, chambers, heat seals and various processes. They’re easy to use, can be adjusted to produce cold air down to -50°F (-46°C) and have no moving parts to wear out.





# Vortex Tubes

## Cooling Blow Molded Fuel Tanks

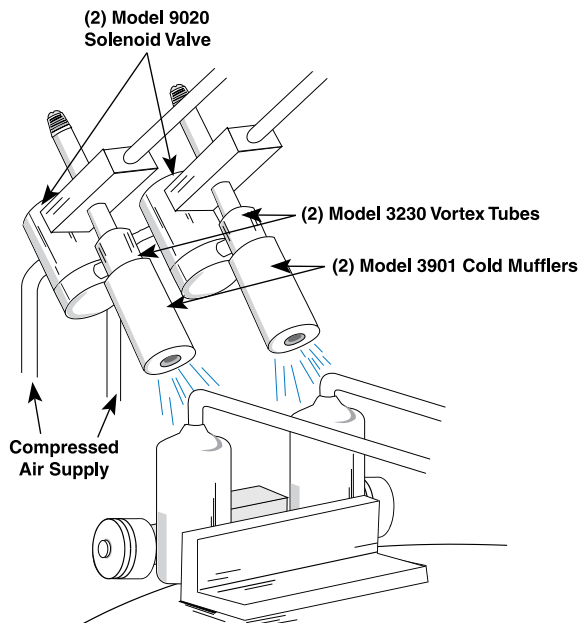


**The Problem:** Automobile fuel tanks are blow molded, then clamped to a fixture to prevent distortion during the cooling cycle. The cooling time of over 3 minutes required for each tank created a bottleneck in the production process.

**The Solution:** (2) Model 3250 Vortex Tubes were mounted to the cooling rack and connected to a compressed air line. Cold air produced by the vortex tubes was circulated inside the fuel tanks. **Cooling time was reduced from three minutes to two minutes for each tank, improving productivity by 33%.**

**Comment:** It's hard to imagine an application better suited to vortex cooling than this one. The vortex tubes' small size and light weight simplified mounting to the cooling rack. No moving parts assured reliability and maintenance-free operation in a hostile environment. Finally, the cold airstream was easily channeled to the fuel tank via the threaded cold air outlet. When the cooling problem includes the need for simplicity, reliability and compact design, a vortex tube is very often the best choice.

## Cooling Small Parts After Brazing



**The Problem:** Air conditioner parts assembled on an automatic brazing machine must be cooled to handling temperature prior to removal. The machine was capable of brazing up to four hundred pieces per hour. However, the time required for the parts to cool severely limited the production rate. Water cooling was unacceptable from the standpoint of both housekeeping and part contamination.

**The Solution:** (2) Model 3230 Vortex Tubes (with cold air mufflers installed) were used to blow cold air on the parts after the brazing cycle. The vortex tubes were set at an 80% cold airflow (cold fraction) to produce maximum refrigeration. **The parts were cooled from brazing temperature of 1450°F (788°C) to handling temperature of 120°F (49°C) within 20 seconds, allowing the machine to operate at its maximum production rate.**

**Comment:** Compared to conventional refrigeration or water cooling, vortex tubes offer a number of advantages: low cost, compact design, inherent reliability and cleanliness. These attributes make vortex tubes the cost effective choice for many small part cooling operations.

## A Phenomenon of Physics

The two questions we're most often asked about the vortex tube are, "How long has it been around?" and "How does the thing work?". Following is a brief history and theory of the vortex tube.

The vortex tube was invented quite by accident in 1928. George Ranque, a French physics student, was experimenting with a vortex-type pump he had developed when he noticed warm air exhausting from one end, and cold air from the other. Ranque soon forgot about his pump and started a small firm to exploit the commercial potential for this strange device that produced hot and cold air with no moving parts. However, it soon failed and the vortex tube slipped into obscurity until 1945 when Rudolph Hilsch, a German physicist, published a widely read scientific paper on the device.

Much earlier, the great nineteenth century physicist, James Clerk Maxwell, postulated that since heat involves the movement of molecules, we might someday be able to get hot and cold air from the same device with the help of a "friendly little demon" who would sort out and separate the hot and cold molecules of air.

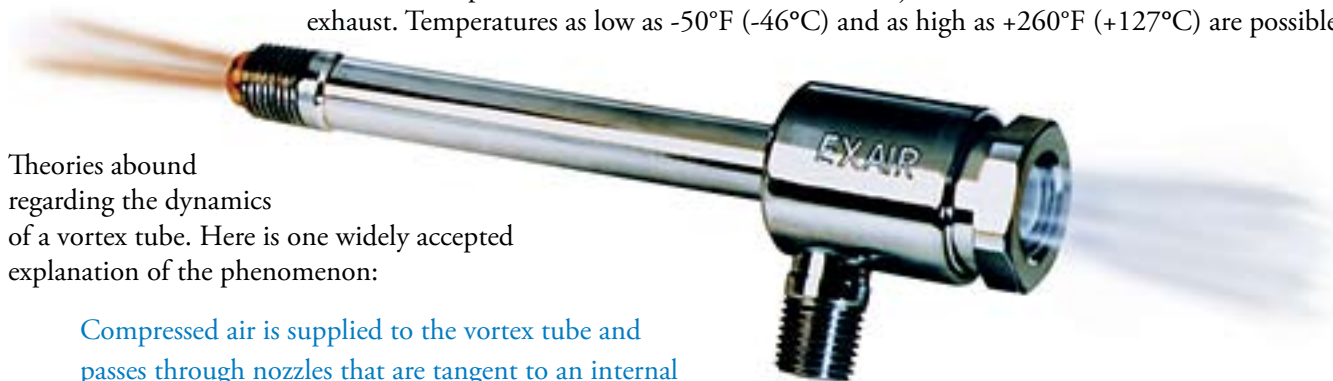
Thus, the vortex tube has been variously known as the "*Ranque Vortex Tube*", the "*Hilsch Tube*", the "*Ranque-Hilsch Tube*", and "*Maxwell's Demon*". By any name, it has in recent years gained acceptance as a simple, reliable and low cost answer to a wide variety of industrial spot cooling problems.

A vortex tube uses compressed air as a power source, has no moving parts, and produces hot air from one end and cold air from the other. The volume and temperature of these two airstreams are adjustable with a valve built into the hot air exhaust. Temperatures as low as -50°F (-46°C) and as high as +260°F (+127°C) are possible.

Theories abound regarding the dynamics of a vortex tube. Here is one widely accepted explanation of the phenomenon:

Compressed air is supplied to the vortex tube and passes through nozzles that are tangent to an internal counterbore. These nozzles set the air in a vortex motion. This spinning stream of air turns 90° and passes down the hot tube in the form of a spinning shell, similar to a tornado. A valve at one end of the tube allows some of the warmed air to escape. What does not escape, heads back down the tube as a second vortex inside the low-pressure area of the larger vortex. This inner vortex loses heat and exhausts through the other end as cold air.

While one airstream moves up the tube and the other down it, both rotate in the same direction at the same angular velocity. That is, a particle in the inner stream completes one rotation in the same amount of time as a particle in the outer stream. However, because of the principle of conservation of angular momentum, the rotational speed of the smaller vortex might be expected to increase. (The conservation principle is demonstrated by spinning skaters who can slow or speed up their spin by extending or drawing in their arms.) But in the vortex tube, the speed of the inner vortex remains the same. Angular momentum has been lost from the inner vortex. The energy that is lost shows up as heat in the outer vortex. Thus the outer vortex becomes warm, and the inner vortex is cooled.



# Vortex Tubes

## Vortex Tubes

Model #	Description
<b>EXAIR Cooling Kits include a vortex tube, all generators, cold muffler, fitting, tubing and clips to duct cold air, and filter separator.</b>	
<b>3908</b>	EXAIR Cooling Kit up to 550 Btu/hr. (139 Kcal/hr.), Small Size
<b>3930</b>	EXAIR Cooling Kit up to 2800 Btu/hr. (706 Kcal/hr.), Medium Size
<b>3998</b>	EXAIR Cooling Kit up to 10,200 Btu/hr. (2570 Kcal/hr.), Large Size
<b>3202</b>	Vortex Tube, 2 SCFM (57 SLPM), for max. refriger., 135 Btu/hr. (34 Kcal/hr.), Small Size
<b>3204</b>	Vortex Tube, 4 SCFM (113 SLPM), for max. refriger., 275 Btu/hr. (69 Kcal/hr.), Small Size
<b>3208</b>	Vortex Tube, 8 SCFM (227 SLPM), for max. refriger., 550 Btu/hr. (139 Kcal/hr.), Small Size
<b>3210</b>	Vortex Tube, 10 SCFM (283 SLPM), for max. refriger., 650 Btu/hr. (164 Kcal/hr.), Medium Size
<b>3215</b>	Vortex Tube, 15 SCFM (425 SLPM), for max. refriger., 1000 Btu/hr. (252 Kcal/hr.), Medium Size
<b>3225</b>	Vortex Tube, 25 SCFM (708 SLPM), for max. refriger., 1700 Btu/hr. (428 Kcal/hr.), Medium Size
<b>3230</b>	Vortex Tube, 30 SCFM (850 SLPM), for max. refriger., 2000 Btu/hr. (504 Kcal/hr.), Medium Size
<b>3240</b>	Vortex Tube, 40 SCFM (1133 SLPM), for max. refriger., 2800 Btu/hr. (706 Kcal/hr.), Medium Size
<b>3250</b>	Vortex Tube, 50 SCFM (1416 SLPM), for max. refriger., 3400 Btu/hr. (857 Kcal/hr.), Large Size
<b>3275</b>	Vortex Tube, 75 SCFM (2124 SLPM), for max. refriger., 5100 Btu/hr. (1285 Kcal/hr.), Large Size
<b>3298</b>	Vortex Tube, 100 SCFM (2832 SLPM), for max. refriger., 6800 Btu/hr. (1714 Kcal/hr.), Large Size
<b>3299</b>	Vortex Tube, 150 SCFM (4248 SLPM), for max. refriger., 10,200 Btu/hr. (2570 Kcal/hr.), Large Size
<b>3402</b>	Vortex Tube, 2 SCFM (57 SLPM), for max. cold temperature, Small Size
<b>3404</b>	Vortex Tube, 4 SCFM (113 SLPM), for max. cold temperature, Small Size
<b>3408</b>	Vortex Tube, 8 SCFM (227 SLPM), for max. cold temperature, Small Size
<b>3410</b>	Vortex Tube, 10 SCFM (283 SLPM), for max. cold temperature, Medium Size
<b>3415</b>	Vortex Tube, 15 SCFM (425 SLPM), for max. cold temperature, Medium Size
<b>3425</b>	Vortex Tube, 25 SCFM (708 SLPM), for max. cold temperature, Medium Size
<b>3430</b>	Vortex Tube, 30 SCFM (850 SLPM), for max. cold temperature, Medium Size
<b>3440</b>	Vortex Tube, 40 SCFM (1133 SLPM), for max. cold temperature, Medium Size
<b>3450</b>	Vortex Tube, 50 SCFM (1416 SLPM), for max. cold temperature, Large Size
<b>3475</b>	Vortex Tube, 75 SCFM (2124 SLPM), for max. cold temperature, Large Size
<b>3498</b>	Vortex Tube, 100 SCFM (2832 SLPM), for max. cold temperature, Large Size
<b>3499</b>	Vortex Tube, 150 SCFM (4248 SLPM), for max. cold temperature, Large Size

Vortex Tubes & Spot Cooling

 **Order Direct**  
**We Ship From Stock**  
[www.exair.com](http://www.exair.com) [techhelp@exair.com](mailto:techhelp@exair.com)

## Accessories and Components

Model #	Description
<b>3905</b>	Cold Muffler for 2 through 8 SCFM (57-227 SLPM) Vortex Tube, Small Size
<b>3901</b>	Cold Muffler for 10 through 40 SCFM (283-1133 SLPM) Vortex Tube, Medium Size
<b>3906</b>	Cold Muffler for 50 through 150 SCFM (1416-4248 SLPM) Vortex Tube, Large Size
<b>3903</b>	Hot Muffler for 2 through 40 SCFM (57-1133 SLPM) Vortex Tube, Small & Medium Size
<b>3907</b>	Hot Muffler for 50 through 150 SCFM (1416-4248 SLPM) Vortex Tube, Large Size
<b>3909</b>	Generator Kit for 2 through 8 SCFM (57-227 SLPM) Vortex Tube, Small Size
<b>3902</b>	Generator Kit for 10 through 40 SCFM (283-1133 SLPM) Vortex Tube, Medium Size
<b>3910</b>	Generator Kit for 50 through 150 SCFM (1416-4248 SLPM) Vortex Tube, Large Size
<b>Generator Kits ordered with a vortex tube include all generators for the specified tube. Permits setting the vortex tube for all capacities and styles.</b>	
<b>Generator Only —Specify capacity (SCFM) and style ("R" for max. refrigeration, "C" for max. cold temperature).</b>	
<b>Example:</b>	
<b>15-R = 15 SCFM Generator for max. refrigeration</b>	
<b>50-C = 50 SCFM Generator for max. cold temperature.</b>	
<b>9001</b>	Automatic Drain Filter Separator, 3/8 NPT, 65 SCFM (1841 SLPM)
<b>9032</b>	Automatic Drain Filter Separator, 1/2 NPT, 90 SCFM (2547 SLPM)
<b>9002</b>	Automatic Drain Filter Separator, 3/4 NPT, 220 SCFM (6230 SLPM)
<b>9005</b>	Oil Removal Filter, 3/8 NPT, 15-37 SCFM (425-1048 SLPM)
<b>9006</b>	Oil Removal Filter, 3/4 NPT, 50-150 SCFM (1415-4248 SLPM)
<b>9015</b>	Valve and Thermostat Kit, (120V, 50/60 Hz), 1/4 NPT, 40 SCFM (1133 SLPM)

**Other solenoid valves and thermostats available. Contact factory.**  
**Note: Flow ratings shown (SCFM) assume 100 PSIG (6.9 BAR) inlet pressure. At other pressures, flow is proportional to absolute inlet pressure.**



## Need A Control?



EXAIR's new EFC is an electronic flow control that limits compressed air use.  
 See page 3 for details.



## Adjustable Spot Cooler

**Cold air to -30°F (-34°C) from your compressed air supply for spot cooling!**



### What Is The Adjustable Spot Cooler?

A low cost, reliable, maintenance free solution to a variety of spot cooling problems. With the turn of a knob, you can set the temperature best suited to your application. **The Adjustable Spot Cooler provides a precise temperature setting from -30°F (-34°C) to room temperature.**

The Adjustable Spot Cooler incorporates a vortex tube that converts an ordinary supply of compressed air into cold air.

- It can produce temperatures from -30° to +70°F (-34° to +21°C)
- Parts included for flow rates of 15, 25, and 30 SCFM (425, 708 and 850 SLPM). 25 SCFM (708 SLPM) generator is factory installed.
- It can produce refrigeration up to 2000 Btu/hr. (504 Kcal/hr.)

A swivel magnetic base provides easy mounting and portability. Flexible tubing that holds its position directs the cold air. No moving parts or CFC's assures maintenance free operation.

### Why The Adjustable Spot Cooler?

The Adjustable Spot Cooler is quiet (less than 75 dBA), easily set with a thermometer and holds the temperature setting. It's ideal for applications where mist or liquid cooling can not be used due to part contamination or cost. Tolerances, product finish and production rates can improve dramatically.

The Adjustable Spot Cooler is available with either a single point or dual point hose kit. The single point system (Model 3825) is recommended for cooling a small surface like solder joints, hot melts or drilled plastics. The dual point system (Model 3925) is recommended when heat is generated over a larger surface area.



PVC hose is cooled at the exit of an extruder so it can be coiled immediately.



The Adjustable Spot Cooler replaces flood coolant and eliminates

#### Applications

- Adjusting thermostats
- Cooling solder
- Cooling machined plastics
- Setting hot melts
- Cooling welding horns
- Cooling molded plastics
- Electronic component cooling
- Cooling gas samples
- Cooling environmental chambers

#### Advantages

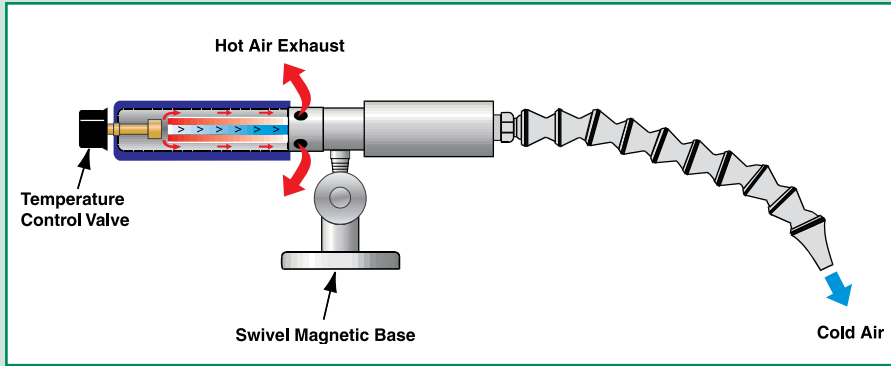
- No moving parts
- No electricity or chemicals
- Small, lightweight
- Low cost
- Maintenance free
- Instant cold air
- Quiet - less than 75 dBA
- Swivel magnetic base
- Interchangeable generator



The Adjustable Spot Cooler maintains critical tolerances on machined plastic parts.

# Adjustable Spot Cooler

## How The Adjustable Spot Cooler Works



The Adjustable Spot Cooler incorporates a vortex tube to convert an ordinary supply of compressed air into two low pressure streams, one hot and one cold. (For complete information on vortex tube operation, see page 100.) With the turn of a knob, the **temperature control valve** allows

some hot air to flow through a muffling sleeve and out the **hot air exhaust**. The opposite end provides a cold airstream that is muffled and discharged through the flexible hose, which directs it to the point of use. The **swivel magnetic base** provides easy mounting and portability.

## Specifications

Pressure Supply		Air Consumption		Sound Level
PSIG	BAR	SCFM	SLPM	dB(A)
100	6.9	15	425	72
100	6.9	*25	708	73
100	6.9	30	850	74

\* 25 SCFM (708 SLPM) generator is factory installed

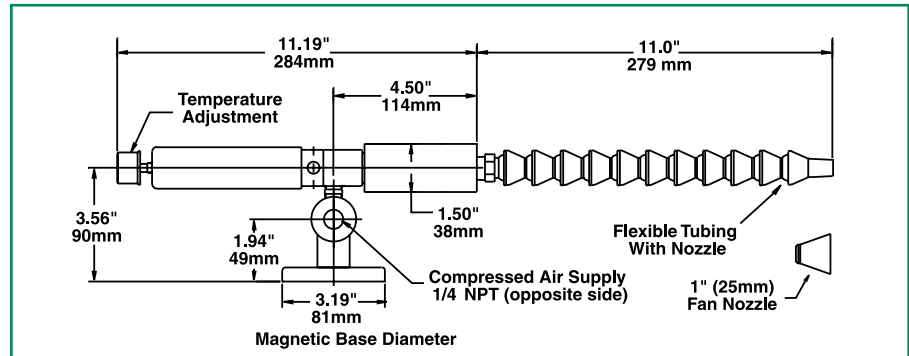


The Model 3825 Adjustable Spot Cooler can produce temperatures from -30° to +70°F (-34° to +21°C).



Electronic components stay cool during a soldering operation.

## Dimensions



## Adjusting the Spot Cooler

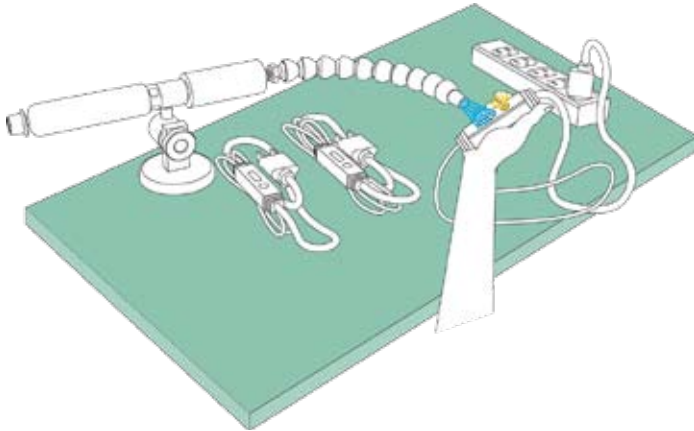
The Adjustable Spot Cooler System can produce a full range of airflows and temperatures as determined by the knob setting and a small internal part called a generator. The generators control the SCFM (SLPM) of air consumption and are easily interchangeable.

The Adjustable Spot Cooler has a 25 SCFM (708 SLPM) generator installed that produces up to 1,700 Btu/hr. (429 Kcal/hr.). If less cooling is desired, the 15 SCFM (425 SLPM) generator which delivers 1,000 Btu/hr. (252 Kcal/hr.) can be installed. If more cooling is needed, the 30 SCFM (850 SLPM) generator can be installed for up to 2,000 Btu/hr. (504 Kcal/hr.).

## Controlling the Cold Air

The Adjustable Spot Cooler gives instant cold air when filtered compressed air is supplied to it. Cycling on and off is a good way to save air. For on and off control, use a Model 9012 Manual Shutoff Valve. To turn the Adjustable Spot Cooler on with the machine, Model 9020 Solenoid Valve may be used and wired through the machine control switch. The new EFC electronic flow control shown on page 3 can also be used.

## Testing Heat Tape Thermostats



**The Problem:** A manufacturer of electrical heat tapes had a problem testing thermostats for accuracy. The heat tape is supposed to switch on when the outdoor temperature dips below 40°F to prevent pipes from freezing or ice from building up on a roof's edge. The liquid-tight thermostat of every tape had to be dipped into a bowl of ice water (thermometer checked at 36°F (2°C)) to make sure the

pilot light came on and the tape got warm. Summertime heat caused the water to heat up so quickly that more time was spent regulating the water temperature than testing thermostats.

**The Solution:** The water bath was replaced with a **Model 3825 Adjustable Spot Cooler**. Once set to their desired temperature of 36°F (2°C), it provided a stable temperature all day long without adjustment. Drying each heat tape was no longer required and testing was over in seconds.

**Comment:** The Adjustable Spot Cooler paid for itself in no time as a result of the increased productivity. In this case, **the company used the included 15 SCFM (425 SLPM) generator which minimized the compressed air use, costing only 23 cents per hour of continuous use!** When testing thermostats, cooling machined plastics, setting hot melts or controlling tolerances, the Adjustable Spot Cooler is the best choice.

## Adjustable Spot Cooler Systems



**Model 3825 Adjustable Spot Cooler System** includes the Adjustable Spot Cooler, single point hose kit with cone and fan nozzle, swivel magnetic base, filter separator, 15 and 30 SCFM (425 and 850 SLPM) generators. (25 SCFM/708 SLPM generator installed.)



**Model 3925 Adjustable Spot Cooler System** includes the Adjustable Spot Cooler, dual point hose kit with cone and fan nozzles, swivel magnetic base, filter separator, 15 and 30 SCFM (425 and 850 SLPM) generators. (25 SCFM/708 SLPM generator installed.)

(Adjustable Spot Cooler with dual point hose kit is recommended when heat is generated over a larger surface area.)

## Accessories and Components

Model #	Description
5901	Single Point Hose Kit (Included with 3825)
5902	Dual Point Hose Kit (Included with 3925)
9001	Auto Drain Filter Separator, 3/8 NPT, 65 SCFM (1841 SLPM) (Included with 3825 and 3925)
9005	Oil Removal Filter, 3/8 NPT, 15 - 37 SCFM (425 - 1048 SLPM)
9012	Manual Shutoff Valve, 1/4 NPT
9020	Solenoid Valve, (120V, 50/60 Hz), 1/4 NPT, 40 SCFM (1133 SLPM)

## Need A Control?



EXAIR's new EFC is an electronic flow control that limits compressed air use. See page 3 for details.



## Mini Cooler™

Cool small parts and tools with clean, cold air.

Prevent burning, melting or breakage.



### What Is The Mini Cooler?

A proven way to reduce downtime and increase productivity on a variety of operations involving small parts where heat is a problem. EXAIR's Mini Cooler produces a stream of 20°F (-7°C) cold air to prevent heat build-up. **The Mini Cooler is particularly effective on high speed operations to prevent burning, melting and heat related breakage.** Operation is quiet (76 dBA) and there are no moving parts to wear out.



See page 2 for complete details.

### Applications

- Small tool cooling
- Needle cooling
- Blade cooling
- Lens grinding

### Advantages

- Low cost
- Increases production rates
- Improves tolerances
- Quiet, compact



The Model 3808 Mini Cooler System prevents premature tool wear on a slotting operation.

### Mini Cooler

Model #	Description
3808	Mini Cooler System includes the Mini Cooler, swivel magnetic base, mini single point hose kit and manual drain filter

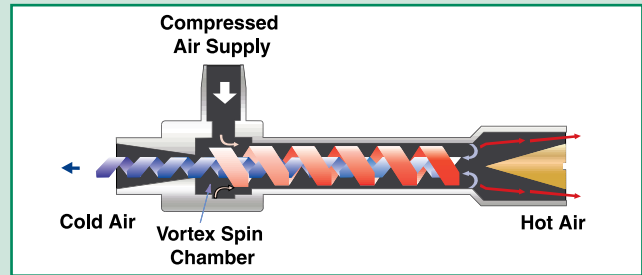


### Mini Cooler Specifications

Air Consumption		Temperature Out		Sound @ 3' (914mm)	
SCFM	SLPM	°F	°C	dBA	INLET
8	227	20	-7	76	1/4 NPT

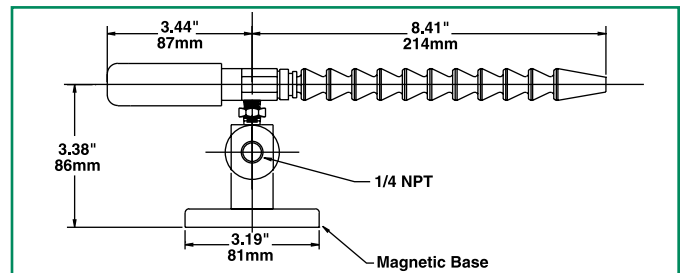
Supply air at 100 PSIG (6.9 BAR) & 70°F (21°C)

### How The Mini Cooler Works



The Mini Cooler incorporates a vortex tube to convert a small amount of compressed air into two low pressure streams, one moving within the other in opposite directions. The two airstreams exchange heat, producing cold air from one end of the tube and hot air from the other. A flexible hose directs the cold airstream at the surface to be cooled.

### Dimensions



### Accessories

Model #	Description
5904	Mini Cooler Hose Kit (Included with 3808)
5905	Mini Cooler Dual Point Hose Kit
9003	Manual Drain Filter Separator, 1/4 NPT (Included with 3808)
9012	Manual Shutoff Valve, 1/4 NPT

Vortex Tubes & Spot Cooling

# Silencing Mufflers and Accessories



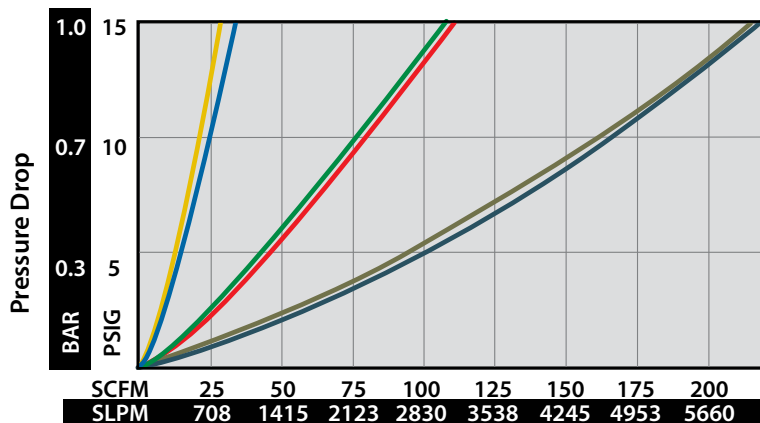
- Reduce work area noise
- Eliminates exhaust air oil mist
- High flow capacity
- Low back pressure
- Popular NPT sizes for easy retrofit for new and existing installations
- Prevents open dead end pressures

EXAIR Reclassifying Mufflers reduce the noise level produced by air exhausting from cylinders, valves and other air powered equipment. Per OSHA 1910.95, a worker must not be exposed to sound levels above 90 dBA for any eight hour shift of a 40 hour work week. The Reclassifying Mufflers help plants meet this OSHA requirement by reducing the sound to safe levels below 90 dBA. In most installations, the typical noise reduction is up to 35 dBA. The NPT male thread of the muffler can be installed directly into the exhaust port of the cylinder or valve.

Exhaust air from cylinders and valves often contain oil mists that can contaminate the worker's breathing air, affecting their health. Per OSHA 29 CFR 1910.10, a worker's cumulative exposure to oil mist must not exceed 4.32 PPM (particles per million) in any eight hour shift of a 40 hour work week. The patented wrap design of the removable element separates oil from the exhausted air so virtually no oil is released into the environment. Based on the intake of 50 PPM at 100 PSIG, the Reclassifying Mufflers reclassify and reduce the exhausted oil mist to .015 PPM. A reservoir where oil accumulates at the bottom of the Reclassifying Muffler can be drained by attaching a 1/4" tube.

Each Reclassifying Muffler is capable of passing a certain volume of air with minimal back pressure restriction so it doesn't interfere with the operation of the cylinder or valve. Two tools are provided below to help you choose the model best suited to your application. The "Flow vs. Pressure Drop" performance curves show the amount of back pressure that builds as flow through the muffler is increased. For cylinders, use the "Muffler Quick Pick" table that helps you select a model that provides minimum back pressure restriction based on the actual bore and stroke of your cylinder (based on an acceptable exhaust time of 0.5 seconds).

Flow vs. Pressure Drop



- Model 9070 1/8 NPT
- Model 9071 1/4 NPT
- Model 9072 3/8 NPT
- Model 9073 1/2 NPT
- Model 9074 3/4 NPT
- Model 9075 1 NPT
- Contact an Application Engineer for more information.

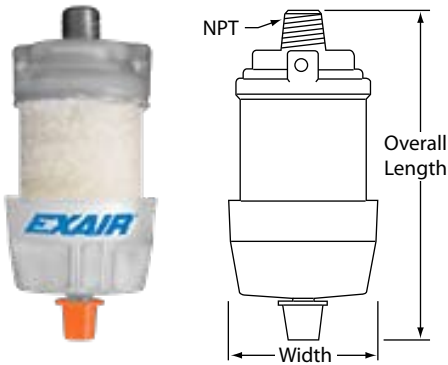
Muffler Quick Pick

Bore in.	Stroke - in.									
	3	6	9	12	18	24	30	36	42	48
.5										
1.0										
1.5										
2.0										
2.5										
3.0										
3.5										
4.0										
4.5										
5.0										
5.5										
6.0										

Muffler Needed To Exhaust In 1/2 Second For A Cylinder Charged To 100 PSIG

# Accessories

## Reclassifying Mufflers continued



Caution: Operations approaching 32°F (0°C) could result in freeze up due to moisture in the compressed air line.

Model #	Description		Overall Length	Width	NPT	Replacement Element #
9070	Reclassifying Muffler	in	3.13	1.63	1/8	900553
		mm	80	16	NPT	
9071	Reclassifying Muffler	in	3.13	1.63	1/4	
		mm	80	16	NPT	
9072	Reclassifying Muffler	in	4.75	2.44	3/8	900554
		mm	121	62	NPT	
9073	Reclassifying Muffler	in	4.75	2.44	1/2	
		mm	121	62	NPT	
9074	Reclassifying Muffler	in	6.25	3.31	3/4	900555
		mm	159	84	NPT	
9075	Reclassifying Muffler	in	6.25	3.31	1	
		mm	159	84	NPT	

## Straight-Through Mufflers



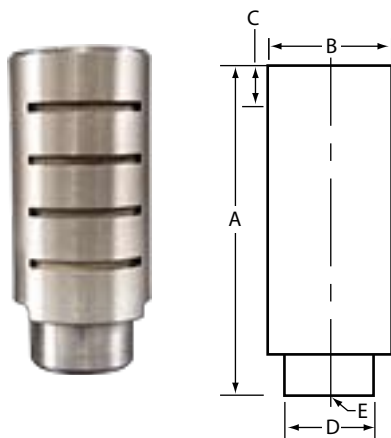
Caution: Operations approaching 32°F (0°C) could result in freeze up due to moisture in the compressed air line.

Straight-Through Silencing Mufflers are the low cost way to reduce exhaust air noise in a work area. The straight-through bore is designed for high flow applications, assuring minimal back pressure. Straight-Through Silencing Mufflers feature a corrosion-resistant aluminum outer shell lined with sound absorbing foam for better noise reduction. The NPT threads make them easy to install directly into the exhaust port of air cylinders, valves, venturi pumps, vortex tubes and other air driven equipment. The typical noise reduction is up to 20 dBA.

Model #	Description		A	B	C	D	E	Rated Flow
3905	Straight-Through Muffler	in	4	1.5	.5	1/4	1/4	22 SCFM
		mm	102	38	13	NPTM	NPTF	623 SLPM
3911	Straight-Through Muffler	in	4.13	1.5	.63	3/8	3/8	50 SCFM
		mm	105	38	16	NPTM	NPTF	1415 SLPM
3913	Straight-Through Muffler	in	9.75	2	.75	3/4	3/4	73 SCFM
		mm	248	51	19	NPTM	NPTF	2066 SLPM

Flow rated at 1/2 PSIG back pressure

## Heavy Duty Mufflers



Caution: Operations approaching 32°F (0°C) could result in freeze up due to moisture in the compressed air line.

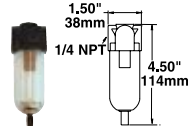
Heavy Duty Silencing Mufflers effectively reduce exhaust air noise. They are suitable for high flow applications where minimal back pressure is desired. Heavy Duty Silencing Mufflers feature a corrosion-resistant aluminum outer shell with an internal stainless steel screen that protects valves and cylinders from contamination that could enter through the exhaust ports. This also keeps contaminants such as rust from being ejected at high speed from the exhaust port. The NPT threads make them easy to install directly into the exhaust port of the cylinder or valve. The typical noise reduction is up to 14 dBA.

Model #	Description		A	B	C	D	E
3903	Heavy Duty Muffler	in	1.81	.81	.44	63	1/4
		mm	46	21	11	16	NPTF
3907	Heavy Duty Muffler	in	4.5	2	.75	1.5	3/4
		mm	114	51	19	38	NPTF

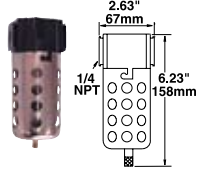


## Filter Separators

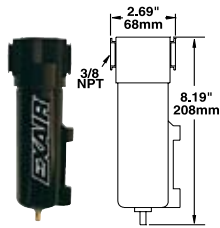
**Model 9003**



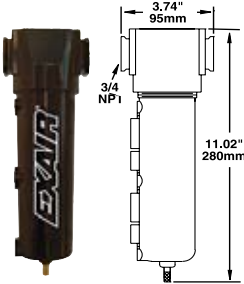
**Model 9004**



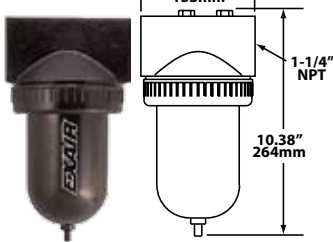
**Model 9001 & 9032**



**Model 9002**



**Model 9066**



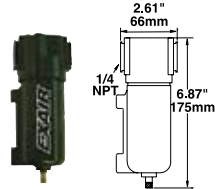
EXAIR's Filter Separators remove water, dirt and rust from your compressed air system. They prevent these contaminants from plugging or damaging the compressed air products. A filter separator should be installed prior to an oil removal filter, pressure regulator or valve.

The Model 9003 Manual Drain Filter has a polycarbonate bowl and a 20 micron element. A manual drain is used to empty the filter. Model 9001, 9002, 9004, 9032, and 9066 Automatic Drain Filter Separators have a metal bowl and a 5 micron filter element. An internal float automatically activates the drain when the bowl becomes full.

Model #	Description
<b>9003</b>	Manual Drain Filter Separator, 1/4 NPT, 27 SCFM (765 SLPM)
<b>9004</b>	Automatic Drain Filter Separator, 1/4 NPT, 43 SCFM (1218 SLPM)
<b>9001</b>	Automatic Drain Filter Separator, 3/8 NPT, 65 SCFM (1841 SLPM)
<b>9032</b>	Automatic Drain Filter Separator, 1/2 NPT, 90 SCFM (2548 SLPM)
<b>9002</b>	Automatic Drain Filter Separator, 3/4 NPT, 220 SCFM (6230 SLPM)
<b>9066</b>	Automatic Drain Filter Separator, 1-1/4 NPT, 400 SCFM (11327 SLPM)

## Oil Removal Filters

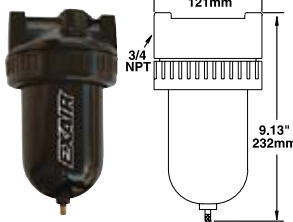
**Model 9027**



**Model 9005**



**Model 9006**

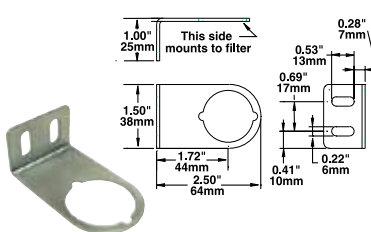


EXAIR's Model 9027, 9005 and 9006 Oil Removal Filters remove oil particulate that is typical of many compressed air systems. A .03 micron element is used to trap submicron particles. An internal float automatically activates the drain when full.

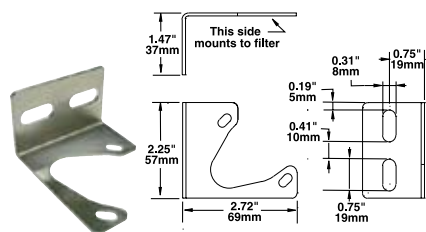
Model #	Description
<b>9027</b>	Oil Removal Filter, 1/4 NPT, 24 SCFM (680 SLPM)
<b>9005</b>	Oil Removal Filter, 3/8 NPT, 15 - 37 SCFM (425-1048 SLPM)
<b>9006</b>	Oil Removal Filter, 3/4 NPT, 50 - 150 SCFM (1415-4248 SLPM)

## Filter Mounting Brackets

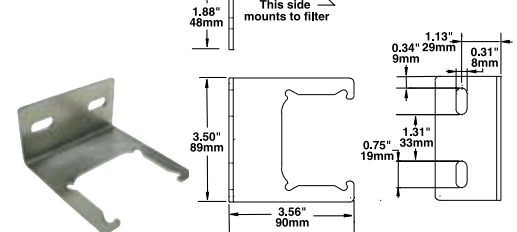
**Model 900395**



**Model 900396**



**Model 900397**



Model #	Description
<b>900395</b>	Mounting Bracket for Model 9003
<b>900396</b>	Mounting Bracket for Model 9001, 9004, 9005, 9027, and 9032
<b>900397</b>	Mounting Bracket for Model 9002

# Accessories

## Pressure Regulators

EXAIR's Model 9008, 9033, 9009 and 9067 Pressure Regulators permit easy selection of the operating pressure. A pressure gauge is included.

**Model 9008**



**Model 9033**



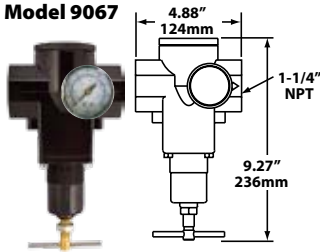
**Model 9009**



**Model 9011**

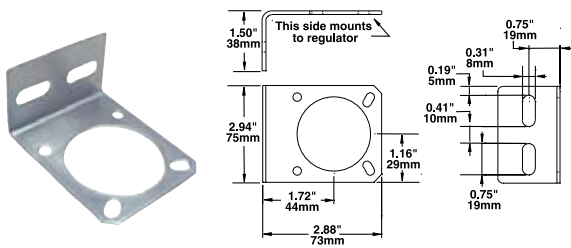


**Model 9067**



Model #	Description
9008	Pressure Regulator with Gauge, 1/4 NPT, 50 SCFM (1416 SLPM)
9033	Pressure Regulator with Gauge, 1/2 NPT, 100 SCFM (2832 SLPM)
9009	Pressure Regulator with Gauge, 3/4 NPT, 220 SCFM (6230 SLPM)
9067	Pressure Regulator with Gauge, 1-1/4 NPT, 600 SCFM (16990 SLPM)
9011	Pressure Gauge Only, 1/4 NPT, 0-160 PSI (0-11 BAR)

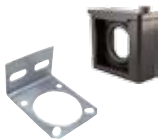
## Pressure Regulator Mtg Brackets



This optional mounting bracket fits Models 9008, 9033 and 9009 pressure regulators and includes the bracket and a locking ring.

Model #	Description
900398	Mounting Bracket for Model 9008, 9033 and 9009

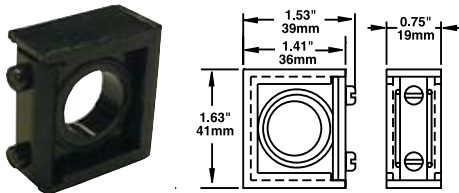
## Mounting and Coupling Kits



Model #	Description
9046	Mounting and Coupling Kit for Model 9001 Filter/Model 9008 Regulator and Model 9032 Filter/Model 9033 Regulator
9047	Mounting and Coupling Kit for Model 9002 Filter/Model 9009 Regulator
9048	Mounting and Coupling Kit for Model 9004 Filter/Model 9005 Oil Removal Filter

## Coupling Kits

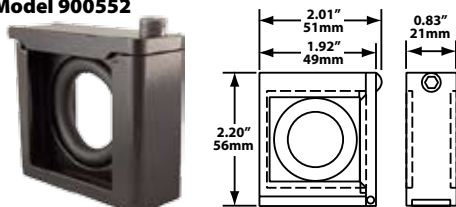
**Model 900394**



EXAIR's Coupling Kits are interlocking slides that couple the modular filters and pressure regulators together.

Model #	Description
900394	Fits auto drain filters and regulators with 1/4 NPT, 3/8 NPT, and 1/2 NPT threads
900552	Fits filters and regulators with 3/4 NPT threads

**Model 900552**



## Solenoid Valves



Solenoid Valves are available in a variety of flow rates and voltages. All models are UL Listed and are CE and RoHS compliant.



Model #	Description
<b>9018</b>	NEMA 4-4X Solenoid Valve, 110V-120V, 50/60Hz, 1/4 NPT, 40 SCFM (1133 SLPM)
<b>9020</b>	Solenoid Valve, 120V, 50/60Hz, 1/4 NPT, 40 SCFM (1133 SLPM)
<b>9021</b>	Solenoid Valve, 200-240V, 50/60Hz, 1/4 NPT, 40 SCFM (1133 SLPM)
<b>9024</b>	NEMA 4-4X Solenoid Valve, 240V, 50/60Hz, 1/4 NPT, 40 SCFM (1133 SLPM)
<b>9059</b>	NEMA 4-4X Solenoid Valve, 24VDC, 50/60Hz, 3/4 NPT, 40 SCFM (1133 SLPM)
<b>9031</b>	Solenoid Valve, 24VDC, 50/60Hz, 1/4 NPT, 40 SCFM (1133 SLPM)
<b>9034</b>	Solenoid Valve, 120V, 50/60Hz, 1/2 NPT, 100 SCFM (2832 SLPM)
<b>9035</b>	Solenoid Valve, 240V, 50/60Hz, 1/2 NPT, 100 SCFM (2832 SLPM)
<b>9058</b>	NEMA 4-4X Solenoid Valve, 24VDC, 50/60Hz, 1/2 NPT, 100 SCFM (2832 SLPM)
<b>9036</b>	Solenoid Valve, 120V, 50/60Hz, 3/4 NPT, 200 SCFM (5664 SLPM)
<b>9037</b>	Solenoid Valve, 240V, 50/60Hz, 3/4 NPT, 200 SCFM (5664 SLPM)
<b>9065</b>	Solenoid Valve, 24VDC, 50/60Hz, 1 NPT, 350 SCFM (9911 SLPM)

## Valves



Model #	Description
<b>9012</b>	Manual Valve, 1/4 NPT
<b>900340</b>	Manual Valve, 3/8 NPT
<b>900343</b>	Manual Valve, 1/2 NPT
<b>900346</b>	Manual Valve, 1 NPT

Model #	Description
<b>9040</b>	Foot Valve, 1/4 NPT

## Electronic Temperature Control™



**Model 9038** - 120VAC, 50/60 Hz  
**Model 9039** - 240VAC, 50/60 Hz

Temperature settings: 80 - 120°F (27 - 49°C)  
 Power supply current: 2mA  
 Sensor: 1K ohm platinum RTD  
 Sample rate: 2.5 readings/second  
 ETC enclosure:  
 UL508-4X  
 NEMA 4X, IP56  
 ABS/PC plastic  
 Max ambient temperature: 160°F (71°C)  
 Polycarbonate door: U94-V-0  
 Solenoid Valve: 1/4 NPT

EXAIR's ETC (Electronic Temperature Control) delivers precise temperature control for your enclosure. Temperature is maintained with an accuracy of  $\pm 1^\circ\text{F}$  of the dial setting. The digital readout monitors the internal temperature of the electrical enclosure and activates the solenoid valve (included) only when the temperature setting is exceeded.

## Swivel Fittings



EXAIR's Swivel Fittings make it easy to adjust the position of the Air Nozzles and Jets. The Swivel Fittings permit a movement of 25 degrees from the center axis for a total movement of 50 degrees. Type 303 Stainless Steel.

Model #	Description
<b>9052</b>	1/8 NPT Swivel Fitting
<b>9053</b>	1/4 NPT Swivel Fitting

## Thermostat

The adjustable thermostat is factory set at 95°F (35°C). It will normally hold  $\pm 2^\circ\text{F}$  (1°C) of the desired temperature setting. It is rated 120V, 50/60HZ and is UL Recognized, CSA Certified.



Model #	Description
<b>9017</b>	Thermostat



# Accessories

## Magnetic Bases

Model 9042



Model 9043



Magnetic bases are suited to applications where frequent movement of the air product is required. The powerful magnet permits horizontal or vertical mounting. A shutoff valve is provided that can be used to infinitely vary the force and flow.

Model #	Description
9029	One Outlet Swivel Magnetic Base with Shutoff Valve
9042	One Outlet Magnetic Base with Shutoff Valve
9043	Two Outlet Magnetic Base with Shutoff Valve

Model 9029

## Stay Set Hoses

For applications where frequent repositioning of air product is required, the Flexible Stay Set Hoses™ are ideal. Simply mount the hose in close proximity to the application and bend it. Since the hose has "memory", it will not creep or bend. It will always keep the aim until physically moved to the next position.

(1/4 NPT male fitting on one end, 1/8 NPT female on the other)

### Model # Description

9256	6" (152mm) 1/4 NPTM x 1/8 NPTF
9262	12" (305mm) 1/4 NPTM x 1/8 NPTF
9268	18" (457mm) 1/4 NPTM x 1/8 NPTF
9274	24" (610mm) 1/4 NPTM x 1/8 NPTF
9280	30" (762mm) 1/4 NPTM x 1/8 NPTF
9286	36" (914mm) 1/4 NPTM x 1/8 NPTF



(1/4 NPT male fitting on each end)

### Model # Description

9206	6" (152mm) 1/4 NPTM x 1/4 NPTM
9212	12" (305mm) 1/4 NPTM x 1/4 NPTM
9218	18" (457mm) 1/4 NPTM x 1/4 NPTM
9224	24" (610mm) 1/4 NPTM x 1/4 NPTM
9230	30" (762mm) 1/4 NPTM x 1/4 NPTM
9236	36" (914mm) 1/4 NPTM x 1/4 NPTM



## Hoses



### Conveying Hose

Model #	Description
Hose lengths are 10', 20', 30', 40' and 50'. Select the hose model number (diameter) and indicate the length with a dash. Example: A Model 6931-20 is 1" ID Hose x 20' long.	
6930-	Hose 3/4" ID
6931-	Hose 1" ID
6932-	Hose 1-1/4" ID
6933-	Hose 1-1/2" ID
6934-	Hose 2" ID



### Compressed Air Hose

Model #	Description
Compressed air hose (3/8" ID) is constructed of reinforced synthetic rubber to assure long life and protection against ozone, weathering, and temperatures up to 158°F (70°C). Includes a 1/4 NPT male brass fitting on each end. Hose lengths are 10', 20', 30', 40' and 50'. Indicate the length with a dash. Example: A Model 900061-30 is a 30' long compressed air hose.	
900061 -	Compressed Air Hose, 1/4 NPTM x 1/4 NPTM