

# Air Technology Vortex Cooling Range

Effective industrial cooling

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UK manufacturer of compressed air products that save energy, reduce noise levels and cool efficiently. Technical support is provided by our worldwide distributor network.

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Meech Air Technology Stainless Steel Vortex Tubes convert compressed air into two airflows, one extremely cold and the other extremely hot.



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The Meech Air Technology Experimental Kit combines a Meech Vortex Tube with a cold-end silencer and a length of flexible knuckle trunking.



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The Meech Air Technology Needle Cooler combines a small Vortex Tube with a hot-end silencer and length of flexible knuckle trunking.



## Small Vortex Tube 14-15

Meech Air Technology Stainless Steel Vortex Tubes convert compressed air into two airflows, one extremely cold and the other extremely hot.



## Small Coldstream Air Gun 14-15

Coldstream Air Guns from Meech Air Technology provide a cold airflow that is commonly used for spot cooling. Air flow exiting the cold end can be as much as 50°C below the compressed air temperature.

NOTE: 

- Actual results may not reflect figures published here.
- All Meech products are tested at factory settings.





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Wherever you are in the world, you'll find Meech hard at work, providing a wide range of businesses with technical expertise. From our headquarters and technical centre in the UK, our manufacturing subsidiary in the USA and sales offices in Belgium, Hungary, China, India and Singapore, we've got the world covered. In fact, our distribution network now covers over 50 countries, providing easy access to fully trained, carefully selected Meech distributors, who can provide in-depth support - wherever you are based.

All our distributors are specialists in compressed air and fully conversant with the application, operation and installation of Meech Air Technology products. This allows them to evaluate the best solution for each particular situation and understand how it will be integrated into the production environment.

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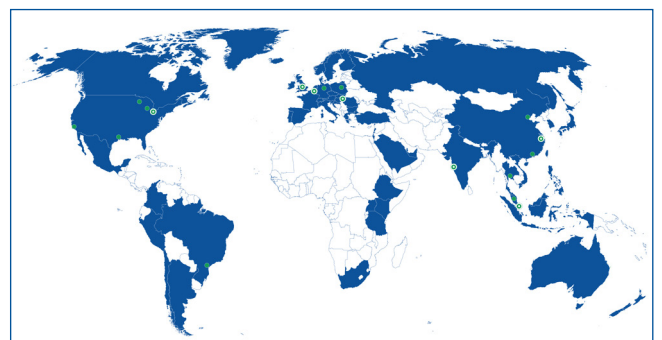
We also hold ATEX and UL "EX" approvals for use in hazardous environments. So, you can be sure you've chosen a solution and a company that will meet your own exacting standards.

## World leaders in web cleaning and static control

No-one knows the specialist fields of web cleaning and static control better than Meech, and the practical benefits can be seen at work. Unique design characteristics in each of our web cleaning systems, whether it is contact or non-contact, will help you to maximise the return on your investment.

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# Vortex Cooling: The Facts

## Meech Air Technology Vortex Cooling

The Meech Air Technology Vortex Cooling range is designed to provide a cold air source for any number of industrial applications.

Running solely on compressed air, Vortex Tube technology offers many advantages over traditional cooling methods. In addition to the size and versatility they have no moving parts, require no electricity and are maintenance free.

## What is a Vortex Tube?

The Vortex Tube was invented in 1933 by the French physicist Georges J. Ranque.

In simple terms the Vortex Tube is a mechanical device that separates compressed air into two air streams: one very hot and one very cold.

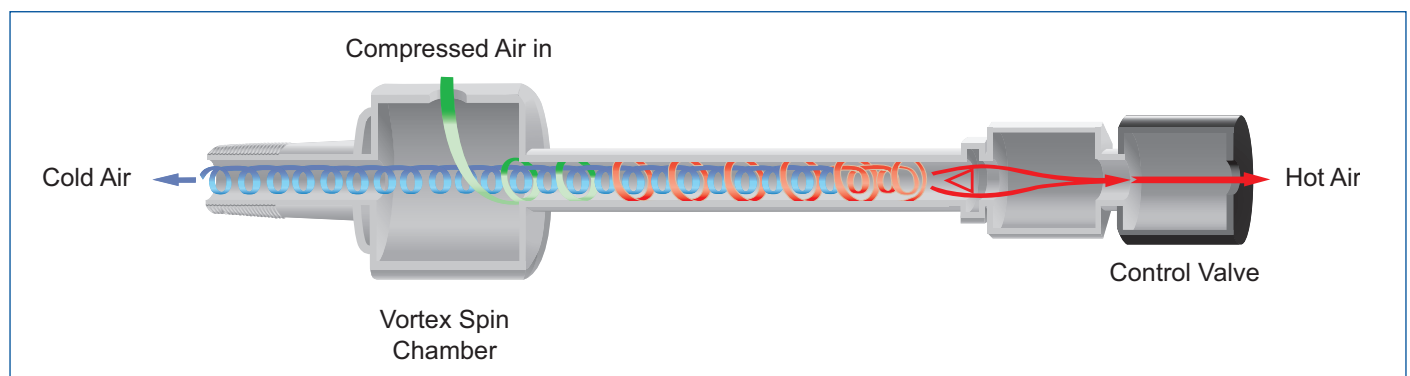
## Vortex Generators

The Vortex Tube generators control the air consumption and influence the achievable temperatures.

In total there are 8 generators, 4 x "high" cold fraction (H) and 4 x "low" cold fraction (L). The difference in "high" and "low" cold fraction is explained in more detail in the section "Cold Fraction" (page 7).

| High Fraction | Low Fraction | Air Consumption (cfm)  |
|---------------|--------------|------------------------|
| Yellow        | Green        | 10 (8 in Small Vortex) |
| Red           | White        | 15                     |
| Blue          | Grey         | 25                     |
| Brown         | Beige        | 35                     |

The generators work by allowing a proportion of air into the Vortex Tubes. The smaller the air consumption of the



A Vortex Tube will produce a drop in temperature up to 50°C below the compressed air temperature. This means you could easily reach temperatures of between -20 and -30°C at the cold end and 60 to 70°C at the hot end.

## The Vortex Cooling Range

The cooling range is made up of 5 different products.

- Small and Medium Vortex Tubes – Basic models used for general cooling applications.
- Cabinet Cooler – Provides a cold air source to stop industrial panels overheating.
- Small and Medium Coldstream Guns – Used for various spot cooling applications.
- Experimental Kit – Used in applications that require a range of temperatures.
- Needle Cooler – Designed for delicate cooling on small applications.

generator, the less air is allowed to enter the spin chamber. This also affects the volume of air exiting the Vortex Tube, a generator with a large air consumption will produce a large air flow, whilst a generator with a small air consumption will produce a smaller air flow.

The generators also influence achievable temperatures. The smaller generators will produce a colder temperature of air, whilst the larger generators will produce a hotter temperature of air. For example, a yellow generator will produce the coldest possible temperatures, but will also record the weakest air flow as it exits the Vortex Tube. The chart over the page show achievable temperatures at the cold end of the Vortex Tube.

This makes the choice of generator for each application very important; the correct generator will not only save you money, but also may make the application more efficient.



## Cabinet Cooling Sizing Guide

All Meech Cabinet Coolers are capable of cooling up to 2400 Btu/hr (703 Watts). However, optimising efficiency is still a vitally important factor. The following guide shows how to calculate which generator should be fitted in a Cabinet Cooler for it to be most efficient.

### Cooling Capacity

| Generator | Air Consumption |     | Cooling Capacity |        |
|-----------|-----------------|-----|------------------|--------|
|           | cfm             | lpm | W                | Btu/hr |
| Yellow    | 10              | 283 | 190              | 650    |
| Red       | 15              | 425 | 293              | 1000   |
| Blue      | 25              | 708 | 499              | 1700   |
| Brown     | 35              | 991 | 703              | 2400   |

To allow the most efficient generator to be selected you must calculate the total heat load in Btu/hr or Watts to which the cabinet is exposed. The total heat load is a combination of the heat transfer from outside, due to the ambient air temperature, into the cabinet, and the heat which is created internally.



temperature. For example; maximum ambient temp = 35°C, desired internal temp = 25°C, therefore the temp difference = 10°C (35°C - 25°C).

c) Using the Cooling Capacity conversion table below match the appropriate temperature to the corresponding heat load per m<sup>2</sup> figure.

### Cooling Capacity

| Temperature Difference °C | W/m <sup>2</sup> | Btu/hr/m <sup>2</sup> |
|---------------------------|------------------|-----------------------|
| 5                         | 9.2              | 31.3                  |
| 10                        | 19.7             | 67.3                  |
| 15                        | 31.6             | 107.8                 |
| 20                        | 44.9             | 153.0                 |
| 25                        | 59.4             | 202.6                 |
| 30                        | 75.3             | 256.9                 |

d) Calculate the heat load in the cabinet due to the external ambient temperature using the following formula:

External Heat Load = Temperature Difference (°C) x Exposed Cabinet Area (m<sup>2</sup>) x Heat Load per m<sup>2</sup> (Btu/hr/m<sup>2</sup> or W/ m<sup>2</sup>).

3. Add the internal heat load (1) to the external heat load (2) to give the total heat load.

## Calculating which Generator

1. Calculate the heat load created inside the cabinet.

Remember that equipment inside the cabinet will have an efficiency level; for example, a 2kW inverter drive that has a 95% efficiency will dissipate 100 watts (Watts x 3.41 = Btu/hr).

2. To calculate the heat load due to the ambient air temperature outside the cabinet you need to:

- Calculate the area of the cabinet that is exposed to ambient air in square metres.
- Calculate the temperature difference between the maximum surrounding ambient air and the desired internal

## Sizing Guide Example

A cabinet has an internal heat dissipation of 200 Watts. The desired internal temperature is 25°C. The ambient temperature outside the cabinet is 35°C. The cabinet has a surface area of 2.5m<sup>2</sup> exposed to the ambient air.

For a temperature difference of 10°C (35°C - 25°C) the conversion table gives you an external heat load of 19.7W/ m<sup>2</sup>. Therefore for 2.5m<sup>2</sup> exposed surface the heat load on the cabinet is 2.5m<sup>2</sup> x 19.7W/m<sup>2</sup> = 49.25W. Adding the internal heat dissipation of 200W gives us a total heat load of 249.25W. This is achievable using the red generator.

| Product Code | Product            | Generator Colour | Consumption in cfm (l/min) | Achievable Temperatures When Set at 70% Cold Fraction (°C) |
|--------------|--------------------|------------------|----------------------------|--|
| A21008       | Small Vortex Tube  | Green            | 8L (227)                   | -30  |
| A20008       | Small Vortex Tube  | Yellow           | 8H (227)                   | -29  |
| A21010       | Medium Vortex Tube | Green            | 10L (283)                  | -36  |
| A20010       | Medium Vortex Tube | Yellow           | 10H (283)                  | -35  |
| A21015       | Medium Vortex Tube | White            | 15L (425)                  | -34  |
| A20015       | Medium Vortex Tube | Red              | 15H (425)                  | -33  |
| A21025       | Medium Vortex Tube | Grey             | 25L (708)                  | -24  |
| A20025       | Medium Vortex Tube | Blue             | 25H (708)                  | -23  |
| A21035       | Medium Vortex Tube | Beige            | 35L (991)                  | -17  |
| A20035       | Medium Vortex Tube | Brown            | 35H (991)                  | -19  |

\*Achievable temperatures are a guide only, actual results may vary; Inlet air pressure 80psi (5.4Bar); Compressed Air Temp: 19 °C

# Vortex Cooling:

## Vortex Tube

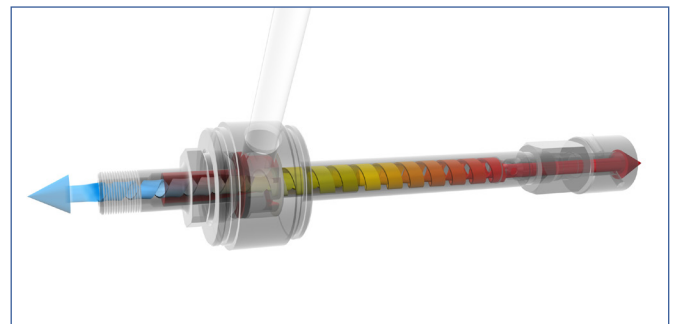


Meech Air Technology Vortex Tubes convert compressed air into two air flows, one very cold the other very hot. Temperature drops can be up to 50°C below the inlet compressed air temperature, whilst the hot air produced can be up to 50°C above the inlet air temperature.

Vortex Tubes are designed for use in industrial applications: they have no moving parts and require no maintenance.

### How they work

Compressed air enters the spin chamber tangentially. This causes the column of air inside the tube to rotate at a very high speed (up to 1 million rpm). The air on the outside of the column, moving very fast, has a lot of energy and is hot. The air at the centre of the column, moving relatively slowly, has little energy and is cold. The hot outer air is bled off at one end of the tube, and the cold inner air at the other. The percentage of the air exiting the cold end is called the cold fraction and is adjustable by a valve.



### Applications

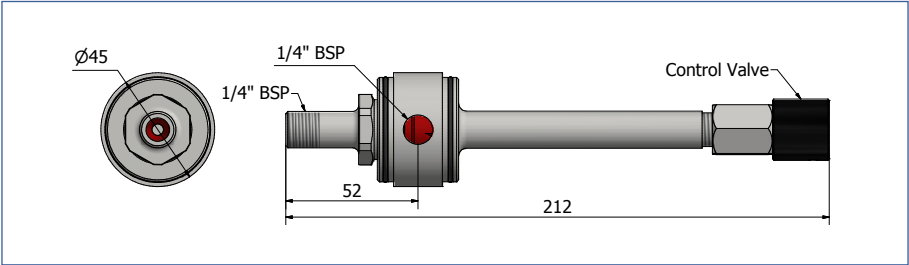
- **Spot Cooling**  
The cold air can be used to cool a specific area during drilling, cutting or soldering applications.
- **Ultrasonic Weld Cooling**  
Can be used to cool the material being welded or used to cool the cone at the end of the welder. In both circumstances the Vortex Tube stops issues associated with overheating.
- **Product Cooling**  
Vortex Tubes can be used to cool components or finished goods.
- **Machine Cooling**  
Vortex Tubes can be used to cool a specific area of a machine. Typically, this will be an area that regularly overheats and affects production.
- **Electronic cooling**  
Vortex Tubes can be used to cool electronic controls.



*Vortex Tube used to cool saw blade.*



Dimensions



Cold Fraction

The cold fraction is a percentage of input compressed air released through the cold end of the Vortex Tube.

The cold fraction is adjusted in two ways, either changing the generator (see page 4), or adjusting the control valve to exhaust more or less air (please note that the Cabinet Cooler and Non-adjustable Coldstream Gun do not include control valves).

There are two levels of cold fraction, high: Yellow (10 cfm), Red (15 cfm), Blue (25 cfm) and Brown (35 cfm) generators, and low Green (10 cfm), White (15 cfm), Grey (25 cfm) and Beige (35 cfm) generators. The 'high' cold fraction is where more than 50% of the air flow exits through the cold end. This setting will suit most industrial applications as it provides the most efficient cooling, although not the coldest temperatures.



The 'low' cold fraction is where less than 50% of the air flow exits through the cold end. This setting will provide the lowest air temperatures possible but will not be as efficient.

The chart to the right details the temperature changes that are achievable at various cold fraction settings and air pressure.

Vortex Tubes are factory calibrated to a cold fraction of 70%. This can be achieved by opening the control relief valve 2.5 turns from closed. From this point the control valve can be adjusted to allow more or less air to exit the cold end.

Vortex Tube Performance Chart:

| Inlet Air Pressure |     | Cold Fraction |     |     |     |     |     |     |
|--------------------|-----|---------------|-----|-----|-----|-----|-----|-----|
| psi                | bar | 20%           | 30% | 40% | 50% | 60% | 70% | 80% |
| 14.7               | 1   | 25            | 24  | 24  | 20  | 18  | 15  | 11  |
|                    |     | 6             | 10  | 15  | 20  | 26  | 33  | 43  |
| 29.4               | 2   | 35            | 34  | 32  | 29  | 25  | 21  | 15  |
|                    |     | 8             | 14  | 21  | 29  | 37  | 47  | 59  |
| 44.1               | 3   | 53            | 51  | 48  | 44  | 38  | 31  | 23  |
|                    |     | 12            | 21  | 31  | 43  | 55  | 71  | 87  |
| 58.8               | 4   | 56            | 54  | 50  | 45  | 39  | 32  | 24  |
|                    |     | 13            | 22  | 31  | 43  | 56  | 70  | 90  |
| 73.5               | 5   | 58            | 55  | 51  | 46  | 40  | 33  | 25  |
|                    |     | 13            | 22  | 32  | 43  | 58  | 72  | 91  |
| 88.2               | 6   | 59            | 57  | 53  | 48  | 41  | 34  | 26  |
|                    |     | 13            | 22  | 32  | 44  | 58  | 73  | 93  |
| 102.9              | 7   | 69            | 66  | 62  | 56  | 48  | 40  | 30  |
|                    |     | 14            | 24  | 35  | 49  | 64  | 80  | 105 |
| 117.6              | 8   | 70            | 67  | 63  | 57  | 49  | 41  | 32  |
|                    |     | 14            | 25  | 37  | 51  | 66  | 84  | 105 |

Figures in blue detail the achievable temperature drop in °C  
Figures in red detail the achievable temperature rise in °C

Vortex Tube Details

Vortex Tubes are available in two sizes (see page 14 for small vortex tube details), and each tube is supplied with an individual generator. Further generators can be purchased if required. Additionally, a range of silencers and fittings are available.

Technical Details

| Product Code       |                   | Product Description | Air Consumption (cfm) | Cooling Capacity in Btu/hr (Watts) |
|--------------------|-------------------|---------------------|-----------------------|------------------------------------|
| High Cold Fraction | Low Cold Fraction |                     |                       |                                    |
| A20010 (Yellow)    | A21010 (Green)    | Medium Vortex Tube  | 10                    | 650 (190)                          |
| A20015 (Red)       | A21015 (White)    | Medium Vortex Tube  | 15                    | 1,000 (293)                        |
| A20025 (Blue)      | A21025 (Grey)     | Medium Vortex Tube  | 25                    | 1,700 (499)                        |
| A20035 (Brown)     | A21035 (Beige)    | Medium Vortex Tube  | 35                    | 2,400 (703)                        |

# Vortex Cooling: Cabinet Cooler



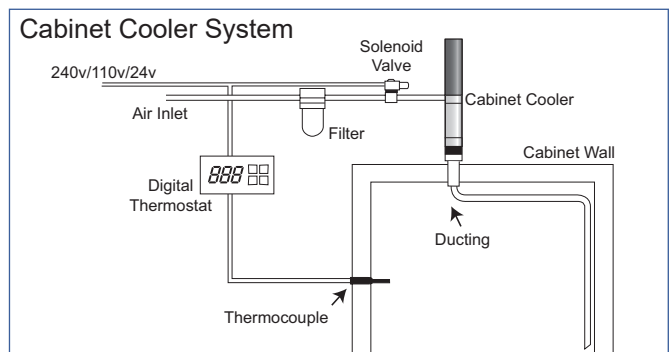
## Features and Benefits

- Innovative design – The small size allows installation into tight areas where space is an issue.
- No moving parts – No maintenance.
- Easy to install – Can be installed to any cabinet/panel walls, in any position.
- Adjustable – Comes with 4 generators (yellow, red, blue and brown) that will control the air volume and temperature.
- Manufactured in stainless steel – Hard wearing and suitable for use in many different environments.
- Safety features – Pressure relief valve to stop cabinet from over pressurising.
- Low noise – 73dBA with red generator at 80 psi (5.4 Bar).
- Cabinet Cooler System - Maximise efficiency.
- Prevents dust and ingress – Eliminates machine downtime.
- IP66 rated (NEMA 4X).
- Ex version suitable for installation in Category 2 (Zone 1), T4 locations.

The Meech Cabinet Cooler uses compressed air to provide a cold air source that stops industrial cabinets/panels or enclosures overheating. In addition, they also prevent ingress of contamination such as dust or moisture. Cabinet Coolers can be used with electrical thermostats and solenoid valves (Cabinet Cooler System). These will regulate the temperature within the cabinet and control the volume of compressed air entering the enclosure.

## How they work

The cold air produced by the Cabinet Cooler flows into the cabinet through the bulkhead fitting. The cold air is then directed to either a problem component or the bottom of the enclosure. The hot air created by the hot end the Vortex Tube is released to the atmosphere via a silencer. A sizing guide for the Cabinet Cooler can be found on page 5.



## Applications

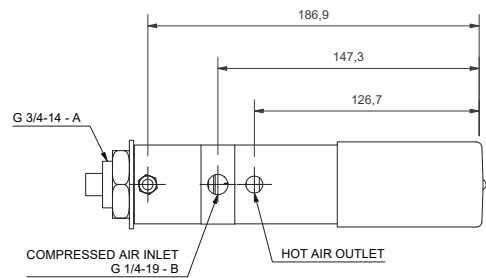
- **Industrial PC Cooling** - Cabinet Coolers can be used to cool most industrial enclosures in a variety of industries, including Automotive, Pharmaceutical and Food and Drink
- **CCTV Cooling** - Can be used to cool the area housing CCTV cameras, which can overheat.
- **Cooling Equipment on Marine Vessels** - The confined space and need to cool navigation equipment or computer management systems makes the Cabinet Cooler a perfect fit to be used on ships and marine vessels.
- **Machine Panel Cooling** - Cabinet Coolers can be used to cool many different types of control panels.
- **Cooling of LCD touch screens** - Operating temperatures of these screens can be high, which can affect other components within the panel. Cabinet Coolers can be used to reduce and maintain a working temperature.
- **Ex Applications** - For use in hazardous areas, where ATEX or IECEx certification is required.



EX Cabinet cooler fitted to an electrical panel.



## Dimensions



## Cabinet Cooler Systems

Meech Cabinet Cooling Systems comprise of a Cabinet Cooler unit, a set of four generators, ducting hose, solenoid valve and digital thermostat control.

The combination of solenoid valve and digital thermostat allows application specific set-up and minimises running costs of the system.

The digital thermostat (pictured below) is suitable for panel mounting and provides a constant display of the temperature inside the cabinet. The 'on' and 'off' temperature set points can be adjusted so that the Cabinet Cooler will run only when required.

For example, if the cabinet overheats when its internal temperature reaches 32°C, the digital thermostat can be set to turn the Cabinet Cooler on when the internal temperature reaches 29°C and off once it has cooled down to 25°C. This minimises running costs and gives peace of mind that the cabinet will not overheat.

Note: Cabinet Cooler System not available in Ex Version



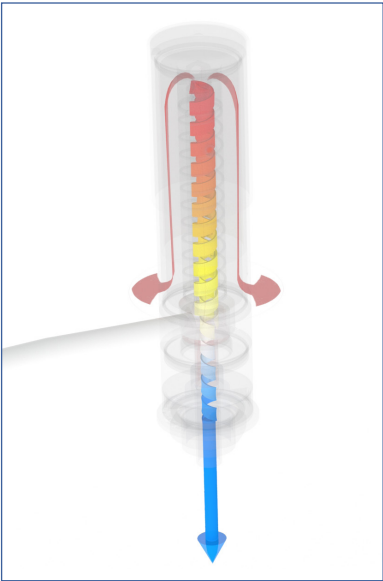
## Prevents Ingress of Contamination

The Cabinet Cooler is designed to run in a partially or completely sealed cabinet/panel, where the air entering creates a positive pressure. This positive pressure prevents any ambient dust, dirt or moisture from entering the cabinet/panel.

## Technical Details

| Product Code      | Product Description   | Grade | Air Consumption (cfm) | Cooling Capacity Btu/hr (W) |
|-------------------|-----------------------|-------|-----------------------|-----------------------------|
| A70025-SS303      | Cabinet Cooler Unit   | SS303 | 10-35cfm              | 650-2,400 (190-703)         |
| A70325-SS303-24V  | Cabinet Cooler System | SS303 | 10-35cfm              | 650-2,400 (190-703)         |
| A70325-SS303-240V | Cabinet Cooler System | SS303 | 10-35cfm              | 650-2,400 (190-703)         |
| A70325-SS303-110V | Cabinet Cooler System | SS303 | 10-35cfm              | 650-2,400 (190-703)         |
| A70025-SS316      | Cabinet Cooler Unit   | SS316 | 10-35cfm              | 650-2,400 (190-703)         |
| A70325-SS316-24V  | Cabinet Cooler System | SS316 | 10-35cfm              | 650-2,400 (190-703)         |
| A70325-SS316-240V | Cabinet Cooler System | SS316 | 10-35cfm              | 650-2,400 (190-703)         |
| A70325-SS316-110V | Cabinet Cooler System | SS316 | 10-35cfm              | 650-2,400 (190-703)         |
| A70025EX-SS303    | EX Cabinet Cooler     | EX    | 10-35cfm              | 650-2,400 (190-703)         |
| A70025EX-SS316    | EX Cabinet Cooler     | EX    | 10-35cfm              | 650-2,400 (190-703)         |

Dirt and dust free components inside cabinets/panels can reduce downtime and extend the life of the components. For safety reasons Cabinet Coolers feature a bladder valve that is designed to stop the cabinets/panels from over pressurising.



## Alternative to traditional cooling methods

The Meech Cabinet Cooler is a perfect replacement for traditional systems typically used to cool electronic cabinets/panels. The Cabinet Cooler also offers a number of distinct advantages including:

- Low initial investment
- Low installation/servicing cost
- Small footprint
- No maintenance costs/longer life

In addition, the Meech Cabinet Cooler can offer savings in excess of 40% p.a. over a 10 year period when compared to other panel cooling options.

# Vortex Cooling: Coldstream Air Gun



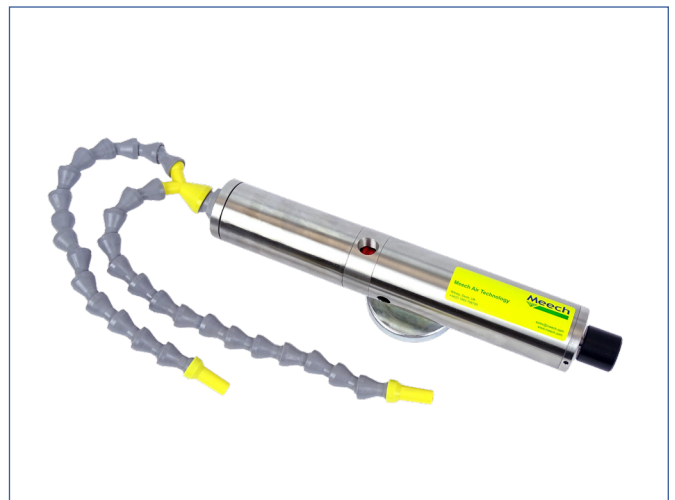
The Meech Coldstream Gun uses compressed air to provide a cold air source commonly used for spot cooling or cooling hard to reach areas. Available in adjustable and non-adjustable versions with a choice of knuckle trunking, the Coldstream Air Gun is capable of producing temperatures over 40°C below the compressed air temperature.

## Features and Benefits

- Innovative design – The use of silencers reduces noise levels meaning they can be used in most environments.
- No moving parts – No maintenance
- Easy to install – Includes a strong magnet that will secure it to any ferromagnetic surface.
- Adjustable – Comes with 4 generators (yellow, red, blue and brown) that will control the air volume and temperature (adjustable version also features a control valve used to adjust the cold fraction (see page 7).
- Manufactured in stainless steel – Hard wearing and suitable for use in many different environments.
- Low noise – 73dBA with red generator fitted at 80 psi (5.4 Bar).
- Two sizes – Small non-adjustable version also available (see page 15).

## How it works:

A Vortex Tube is encased within a hot and cold-end silencer. The cold air produced by the Vortex Tube is easily directed to the area to be cooled by use of knuckle trunking.



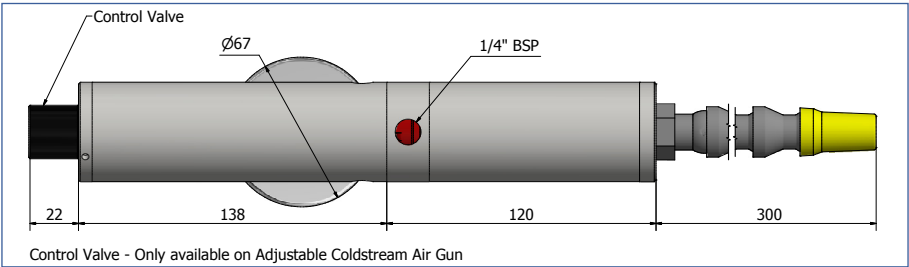
Adjustable Coldstream Air Gun used to cool drill.

## Applications

- **Ultrasonic Weld Cooling**  
Can be used to cool the seam of the material being welded or the cone at the end of the sonic welder.
- **Spot Cooling**  
The cold air can be used to cool a specific area during drilling, cutting or soldering applications.
- **Metalwork: Grinding**  
The Coldstream Gun will fit to any machine surface and can be used to cool a specific area.
- **Component Cooling**  
The Coldstream Gun is available with either one or two outlet hoses; making them ideal for cooling multiple areas at once.



## Dimensions



## Temperature Drop

The graph (below) shows the temperature drop that can be achieved by adjusting the control valve, available on the Adjustable Coldstream Gun. The graph shows the temperature drop for each of the high fraction generators when the control valve is set at various positions. Please note that as the air gets colder the air volume exiting the Coldstream Gun will decrease.

## Coldstream Gun Generators

All Coldstream Guns are supplied with a set of 4 high fraction generators (yellow, red, blue, brown). The red 15cfm generator is factory fitted as standard. The table below shows the cooling capacity of each generator.



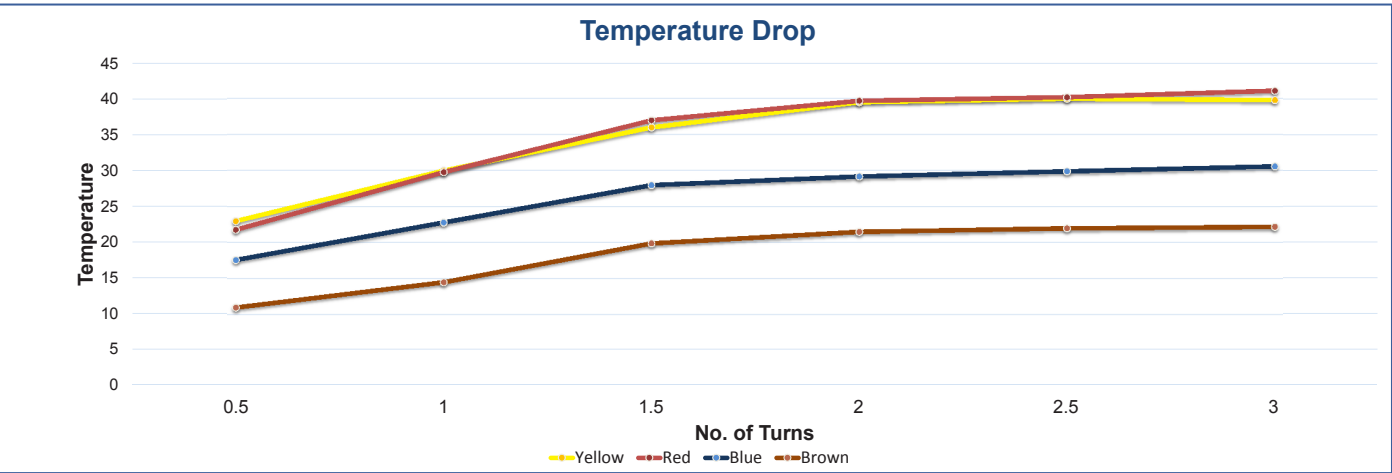
## Cooling Capacity

| Generator | Air Consumption |     | Cooling Capacity |        |
|-----------|-----------------|-----|------------------|--------|
|           | cfm             | lpm | W                | Btu/hr |
| Yellow    | 10              | 283 | 190              | 650    |
| Red       | 15              | 425 | 293              | 1000   |
| Blue      | 25              | 708 | 499              | 1700   |
| Brown     | 35              | 991 | 703              | 2400   |

## Temperature Drop

| Generator | No. of Turns |    |     |    |     |    |
|-----------|--------------|----|-----|----|-----|----|
|           | 0.5          | 1  | 1.5 | 2  | 2.5 | 3  |
| Yellow    | 23           | 30 | 36  | 40 | 42  | 43 |
| Red       | 22           | 29 | 35  | 39 | 41  | 42 |
| Blue      | 18           | 23 | 28  | 30 | 31  | 32 |
| Brown     | 11           | 15 | 20  | 22 | 23  | 24 |

Ambient temperature at 20°C; All temperature measured in °C



## Technical Details

| Product Code | Product Description                     | Hose        | Air Consumption (cfm) | Cooling Capacity in Btu/hr (W) |
|--------------|---|-------------|-----------------------|--------------------------------|
| A60015A      | Large Adjustable Coldstream Air Gun     | Single 1/2" | 10-35cfm              | 650-2,400 (190-703)            |
| A60015       | Large Non-Adjustable Coldstream Air Gun | Single 1/2" | 10-35cfm              | 650-2,400 (190-703)            |
| A60015AY     | Large Adjustable Coldstream Air Gun     | Double 1/4" | 10-35cfm              | 650-2,400 (190-703)            |
| A60015Y      | Large Non-Adjustable Coldstream Air Gun | Double 1/4" | 10-35cfm              | 650-2,400 (190-703)            |

# Vortex Cooling: Experimental Kit



The Meech Air Technology Experimental Kit combines a Meech Vortex Tube with a cold-end silencer and a length of flexible knuckle trunking. The Experimental Kit is available in two sizes and the flexible trunking can be used to direct the cold air flow.

The Experimental Kit includes all 8 Generates (both high and low fraction). This allows for the most flexible control of temperature and air consumption, perfect for any application that requires a range of cooling.

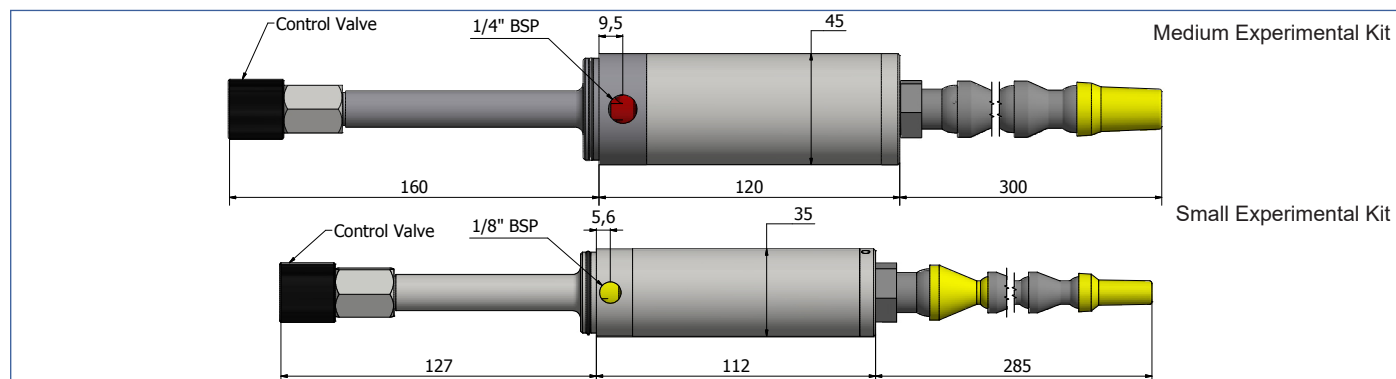
## Features and Benefits

- Innovative design – Hot and cold air can be as much as 50°C above or below the compressed air temperature.
- No moving parts – No maintenance.
- Easy to install – The standard fitting will connect to most existing air supplies.
- Adjustable – 8 generators allow for application specific set up and a range of temperatures.
- Manufactured in stainless steel – Hard wearing and suitable for many different environments.
- Knuckle trunking – Allows cold air to be directed to hard to reach areas.
- Low noise – Cold-end silencer reduces compressed air noise.
- Two sizes – Small and medium, for use in a variety of applications.

## Applications

- **Spot Cooling**  
Knuckle trunking can be used to direct cold air to a specific area. The addition of the silencer reduces the noise level for operators.
- **Product Cooling**  
The Experimental Kit with 8 generators allows for a range of temperatures to be reached and can be used to cool components or finished goods.
- **Cooling Injection Moulds**  
The Experimental Kit can be used to cool injection moulds, the range of generators helps to determine the ideal temperature.
- **Routing**  
Experimental Kits can be used to speed up routing. The cold air can be used to cool the router without leaving any residue.

## Dimensions



## Technical Details

| Product Code | Product Description     | Hose        | Air Consumption (cfm) | Cooling Capacity in Btu/hr (W) |
|--------------|-------------------------|-------------|-----------------------|--------------------------------|
| A20300       | Small Experimental Kit  | Single 1/4" | 8-10cfm               | 550-650 (161-190)              |
| A20400       | Medium Experimental Kit | Single 1/2" | 10-35cfm              | 650-2,400 (190-703)            |



# Vortex Cooling: Needle Cooler



The Meech Air Technology Needle Cooler combines a small Meech Vortex Tube with a hot-end silencer and a length of flexible knuckle trunking. The flexible trunking can be used to direct the cold air flow.

The Needle Cooler includes the Yellow (high fraction) and Green (low fraction) generators. This allows for the most flexible control of temperature and air consumption.

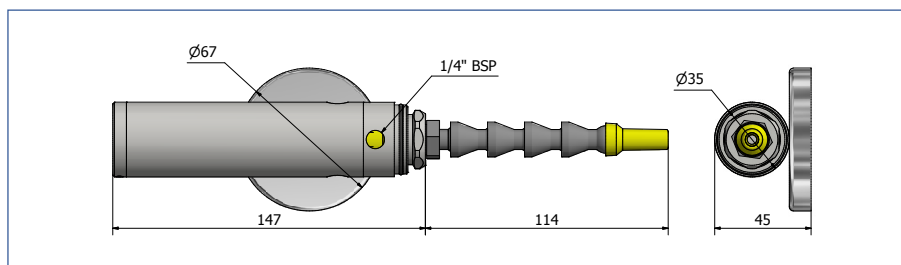
## Features and Benefits

- Innovative design – Hot and cold air can be as much as 50°C above or below the compressed air temperature.
- No moving parts – No maintenance
- Easy to install – The standard fitting will connect to most existing air supplies and is supplied with a strong magnet.
- Adjustable – Supplied with two generators designed for use with a small vortex tube, high fraction (yellow) 8cfm generator and low fraction (green) 8cfm generator.
- Manufactured in stainless steel – Hard wearing and suitable for many different environments.
- Knuckle trunking – Allows cold air to be directed to hard to reach areas.
- Low noise – Hot-end silencer reduces compressed air noise.

## Applications

- **Spot Cooling**  
Knuckle trunking can be used to direct cold air to a specific area.
- **Textiles**  
Small size makes it perfect for use in the textile industry to cool needles
- **Product Cooling**  
Perfect for applications requiring a small amount of cooling. The smaller generators reduce air consumption.
- **Flexible Cooling**  
Available with two flexible trunkings. Can be used to cool from different angles.

## Dimensions



## Technical Details

| Product Code | Product Description | Hose        | Air Consumption (cfm) | Cooling Capacity in Btu/hr (W) |
|--------------|---------------------|-------------|-----------------------|--------------------------------|
| A20503       | Needle Cooler       | Single 1/4" | 8cfm                  | 550 (161)                      |
| A20504       | Needle Cooler       | Double 1/4" | 8cfm                  | 550 (161)                      |

# Vortex Cooling:

## Small Vortex Tube



Like the medium version, the Meech Small Vortex Tube converts compressed air into two air flows, one very cold the other very hot. Temperature drops can be up to 50°C below the inlet compressed air temperature, whilst the hot air can be up to 50°C above the inlet air temperature.

Small Vortex Tubes are specially designed for smaller, more delicate applications that require less air flow. The Small Vortex Tube is supplied with either a yellow 8cfm high fraction generator, or a green 8cfm low fraction generator.

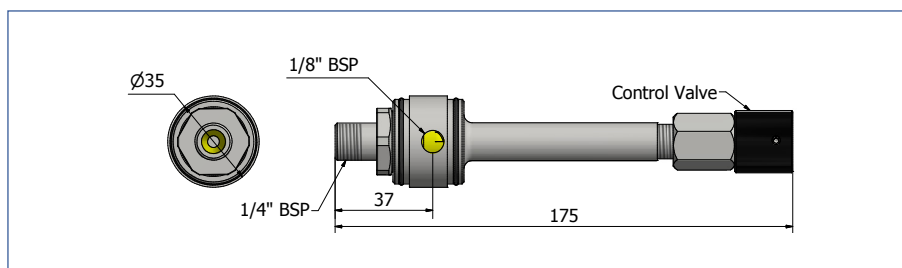
### Features & Benefits

- Innovative design – Provides both hot and cold air, which can be as much as 50°C above or below the air temperature.
- No moving parts – No maintenance.
- Easy to install – Standard 1/8" BSP fitting will connect to most existing air supplies. Small Vortex Tubes are also supplied with a standard 1/8" BSP to 6mm push fit adapter.
- Adjustable – Control valve allows temperature adjustment.
- Manufactured in stainless steel – Hard wearing and suitable for many different environments.
- Small – Specifically designed for smaller applications that require less air flow. Small Vortex Tubes will also have lower air consumption.

### Applications

- **Spot Cooling**  
The cold air can be used to cool a specific area during drilling, cutting or soldering applications.
- **Ultrasonic Weld Cooling**  
Can be used to cool the material being welded or used to cool the cone at the end of the welder. In both circumstances the Vortex Tube stops issues associated with overheating.
- **Product Cooling**  
Vortex Tubes can be used to cool components or finished goods.
- **Machine Cooling**  
Vortex Tubes can be used to cool a specific area of a machine. Typically, this will be an area that regularly overheats and affects production.
- **Electronic cooling**  
Vortex Tubes can be used to cool electronic controls.

### Dimensions



### Technical Details

| Product Code       |                   | Description       | Air Consumption (cfm) | Cooling Capacity in Btu/hr (W) |
|--------------------|-------------------|-------------------|-----------------------|--------------------------------|
| High Cold Fraction | Low Cold Fraction |                   |                       |                                |
| A20008 (yellow)    | A21008 (green)    | Small Vortex Tube | 8 cfm                 | 550 (161)                      |

# Vortex Cooling:

## Small Coldstream Air Gun



The Meech Small Coldstream Air Gun comprises of a small Vortex Tube, hot and cold-end silencers and a length of flexible knuckle trunking.

The Small Coldstream Air Gun is specially designed for smaller, more delicate applications that require less air flow. The Small Coldstream Air Gun is supplied with both the yellow 8cfm high fraction generator and the green 8cfm low fraction generator.

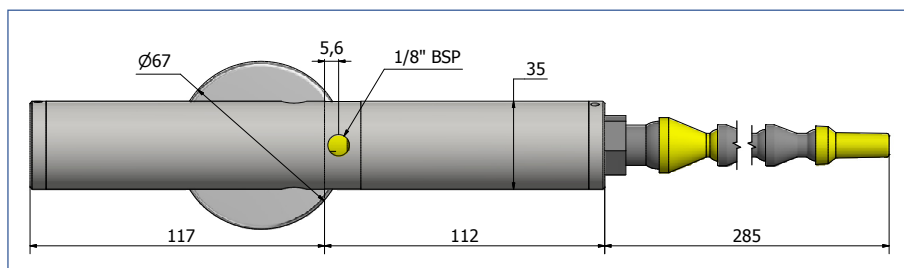
### Features and Benefits

- Innovative design – The use of silencers reduces noise levels meaning they can be used in most environments.
- No moving parts – No maintenance.
- Easy to install – Includes a strong magnet that will secure it to any ferromagnetic surface.
- Adjustable – Supplied with 2 generators (yellow and green) that will control the air volume and temperature (adjustable version also features a control valve used to adjust the cold fraction (see page 10).
- Manufactured in stainless steel – Hard wearing and suitable for use in many different environments.
- Low noise – Cold-end silencer reduces compressed air noise.
- Two sizes – Small and Medium (see page 10 for details).
- Knuckle trunking – Allows cold air to be directed to hard to reach areas.

### Applications

- **Ultrasonic Weld Cooling**  
Can be used to cool the seam of the material being welded or the cone at the end of the sonic welder.
- **Spot Cooling**  
The cold air can be used to cool a specific area during drilling, cutting or soldering applications.
- **Metalwork: Grinding**  
The Small Coldstream Air Gun will fit to any machine surface and can be used to cool a specific area.
- **Component Cooling**  
The Small Coldstream Air Gun is available with either one or two outlet hoses; making them ideal for cooling multiple areas at once.

### Dimensions



### Technical Details

| Product Code | Description           | Air Consumption (cfm) | Cooling Capacity in Btu/hr (W) |
|--------------|-----------------------|-----------------------|--------------------------------|
| A60008       | Small Cold Stream Gun | 8 cfm                 | 550 (161)                      |



## All you need, from the best in the business

Meech is also a leading provider of:

- **MAT Air Efficiency Range** - Industrial compressed air products that are energy efficient, reduce noise levels and cut costs.
- **Industrial Static Control Systems** – Eliminating unwanted static or creating a controlled static charge in industrial processes can increase productivity, reduce waste and enhance quality.
- **Web Cleaning Systems** – Typically used within the printing and packaging industries to remove contamination, improve print quality and increase productivity.
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