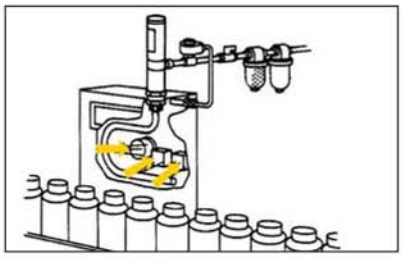
# Cabinet Cooler

Meech Air Technology Stainless Steel Cabinet Cooler Systems provide a cold air source to stop cabinets overheating and prevent ingress of contamination such as dust or moisture. When compared to fans that are commonly found in cabinets, Meech Cabinet Cooling Systems provide the ideal cooling solution.

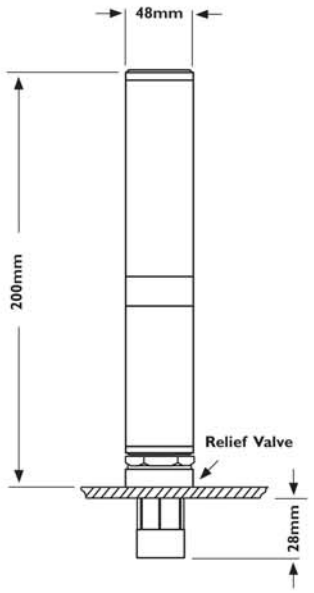
## APPLICATIONS:

- *Industrial PC cooling*
- *CCTV camera cooling*
- *Preventing moisture ingress*
- *Preventing dust ingress*
- *Machine control panel cooling*
- *Product chilling cabinets*



**Bottling Plant**
Meech Stainless Steel Control Cooling Systems allow easy washdown of these leak testing and production control cabinets in a bottling operation. IP cabinets can be sealed without concern for heat build up.

## DIMENSIONS:




**How it works:**
The Vortex Tube (see page 22) is at the heart of the Cabinet Cooler. The cold air produced by the vortex tube flows into the cabinet through the bulk head fitting and is then ducted to a known problem component or the centre of the cabinet. The hot air created by the opposite end of the vortex tube flows to atmosphere via a silencer.

## FEATURES AND BENEFITS:

| | | |
|---|---|---|
| No moving parts | - | Low maintenance |
| Stainless Steel | - | Suitable for harsh environments |
| Pressure relief valve | - | Prevents cabinet over pressurising |
| Digital thermostat and solenoid valve | - | Maximum efficiency |

## PRODUCT NUMBERS AND DESCRIPTIONS:

| | | |
|---|---|---|
| A70025 | - | 10-35cfm, Cabinet Cooler Unit |
| A70325-24V | - | 10-35cfm, 24V, Cabinet Cooler System |
| A70325-240V | - | 10-35cfm, 240V, Cabinet Cooler System |
| A70325-110V | - | 10-35cfm, 110V, Cabinet Cooler System |



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## CALCULATING YOUR CABINET COOLER:

Meech Cabinet Coolers are supplied with a set of four 'generators' allowing an efficient set up to be achieved (see sizing guide). The generators can easily be changed and are listed in the table below. The red generator is factory fitted as standard.

### 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.

| | Air Consumption | | Cooling Capacity | |
|---|---|---|---|---|
| Generator | 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.

### 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:

a) Calculate the area of the cabinet that is exposed to ambient air in square metres.

b) Calculate the temperature difference between the maximum surrounding ambient air and the desired internal 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 conversion table below select the appropriate heat load per $m^2$ figure.

| Temperature Difference °C | W/$m^2$ | Btu/hr/$m^2$ |
|---|---|---|
| 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 ($m^2$) x Heat Load per $m^2$ (Btu/hr/$m^2$ or W/$m^2$).

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

### 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 2.5$m^2$ exposed to the ambient air.

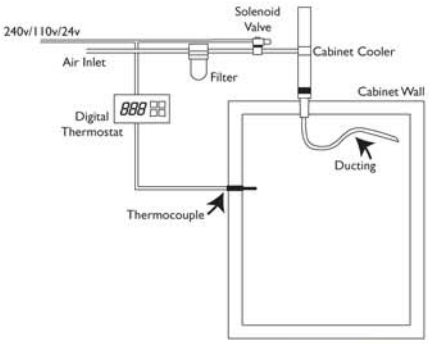
For a temperature difference of 10°C (35°C - 25°C) the conversion table gives you an external heat load of 19.7W/$m^2$. Therefore for 2.5$m^2$ exposed surface the heat load on the cabinet is 2.5$m^2$ x 19.7W/$m^2$ = 49.25W. Adding the internal heat dissipation of 200W gives us a total heat load of 249.25W.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

# Cabinet Cooler Systems

Meech Cabinet Cooling Systems comprise a cabinet cooler unit, 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) is suitable for panel mounting and provides a constant display of the temperature inside the cabinet. The 'on' and 'off' temperature set points of the thermostat can be adjusted so that the cabinet cooler can be set to 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.