

For the effective control of environmental air pressures in:

Pressurised Fire Escapes

Gas Fire Protection Systems



For the effective control of environmental air pressures in:-

- Pressurised fire escapes
- Gas Fire Protection Systems

*A range of styles and sizes to suit all requirements*

## Major Features

- Helps ensure a safe environment (BS.5588 pt.4)
- Maintenance Free
- Operates purely on pressure differential
- No electric or electronic parts
- Choice of non-standard colours
- Purpose built units to suit application
- Pressure Relief Vent/Curtain Fire Damper Combinations
- Bespoke Units

## Consultant Benefits

- Simple to specify
- Design Assistance
- Lowest lifetime costs
- Best 'In use' client satisfaction
- Good Designs

## Contractor Benefits

- Lowest installation costs
- Minimum commissioning costs
- Good Client Satisfaction

## End-User Benefits

- Simple to adjust
- Tamper-proof
- Maintenance Free

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# Air Pressure Relief Vent Selection

## Pressurised Stairwells

British Standard 5588 part 4 1998 gives designers the fundamental design parameters from which it is possible to calculate the volume of air which will be required to be vented whilst maintaining the stairwell pressure at 50 to 60 Pa.

In simple applications where an air pressure relief vent can vent directly into an open space, the full pressure differential can be controlled

Where a standard 165 mm duct depth unit can be fitted, divide the volume flow rate to be vented by the appropriate factor (see Table 1) to calculate the total length 'L' (mm) of air control blade required.

Take into consideration any physical restrictions the building might impose and calculate the number of air control blades ('n') you will require by dividing the total length 'L' into a number of equal length blades (each length 'wb').

Choose a single or multi-column frame matrix to suit the application.

Note: where site restrictions preclude the use of 200mm high air control blades, other air control blade sizes can be supplied for which the above flow factors do not apply. For information on alternatives contact apreco for design assistance.

Pa	Factor
20	464
35	614
50	734
60	804
75	899
100	1038
200	1469
300	1799
400	2077
500	2322

**Table 1.**  
Air Control Blade  
Flow Factors

## Integrity of Pressurised Stairwell Construction

The successful commissioning of a pressurised staircase depends heavily on the standard of construction of the stairwell itself. It is vital that all parties involved with a pressurised stairwell project fully understand the need to pay particular care to eliminating leaks from the fabric of the stairwell.

Due attention to this simple yet fundamental aspect will ensure that commissioning the system will proceed without problems.

## Worked Example

Select an air pressure relief vent to handle 7.5 m<sup>3</sup>/s with a pressure differential of 50 Pascals.

$$\begin{aligned} \text{i.e. Air Volume flow rate 'V'} &= 7500 \text{ l/s} \\ \text{Differential Pressure 'P'} &= 50 \text{ Pa} \\ \text{Flow Factor} &= 734 \text{ (Table 1)} \end{aligned}$$

$$\begin{aligned} \text{Therefore 'L'} &= 7500 / 734 * 1000 \\ &= 10218 \text{ mm} \end{aligned}$$

As the maximum length for this height of blade is 1000 mm, the minimum integral number of air control blades is therefore :

$$\begin{aligned} &= 10,218 / 1000 \\ &= 11 \text{ blades (rounded up)} \end{aligned}$$

'L' (10218 mm) divided into 11x blades gives a blade length 'wb' of 929mm. Round this up to next highest 25 mm increment i.e. 950mm.

A selection of an 11 row-single column unit would be a satisfactory selection for this application..

You can arrange the blades into single or double column units so if the application imposed a height restriction the blade length 'L' could be divided into 12 and arranged into a 6 row x 2 column matrix.

## Gas Fire Suppression Systems

Inert Gas Fire Suppression systems involve the rapid injection of large volumes of inert gas into a room to quench a fire. Without adequate means of venting the room or space, the pressures generated can reach dangerous levels and cause structural damage. Apreco pressure relief vents control the room pressure by allowing the air to escape and close when the discharge is complete, maintaining the dilution of the air and preventing re-ignition of the fire.

**WARNING** Where pressure relief vents are fitted in conjunction with any form of obstruction which will generate a dynamic pressure drop (e.g. ducting or louvres) the overall pressure drop through the system will be the sum of ALL the pressures drops. It will therefore be necessary to size pressure relief vents on lower pressure differentials where additional dynamic pressures drops are present to ensure that the maximum pressure drop is not exceeded. This will necessarily increase the size of the required pressure relief vent.

For units fitted to outside walls which need weather protection, we can supply special low pressure loss external louvres to provide the weather protection. We take this pressure loss into account when we are designing your pressure relief vent to ensure room pressures are kept within safe limits.

# Air Pressure Relief Vent

## Design Service

Why not take advantage of our design support and unit selection service. Send us a list of your pressure and flow requirements together with any other specification requirements and we will make your selections for you.

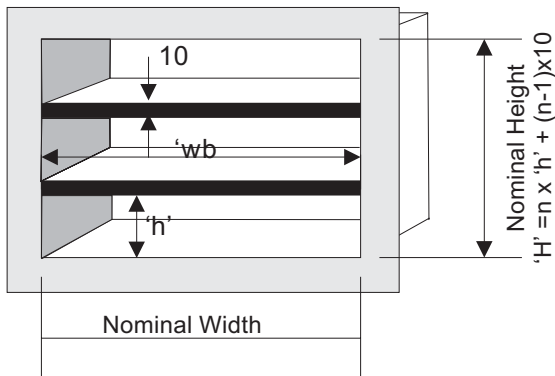


figure 1

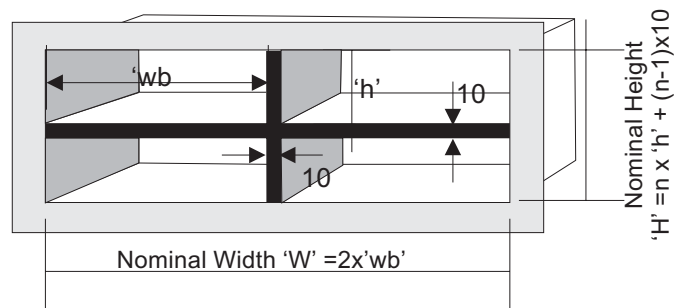
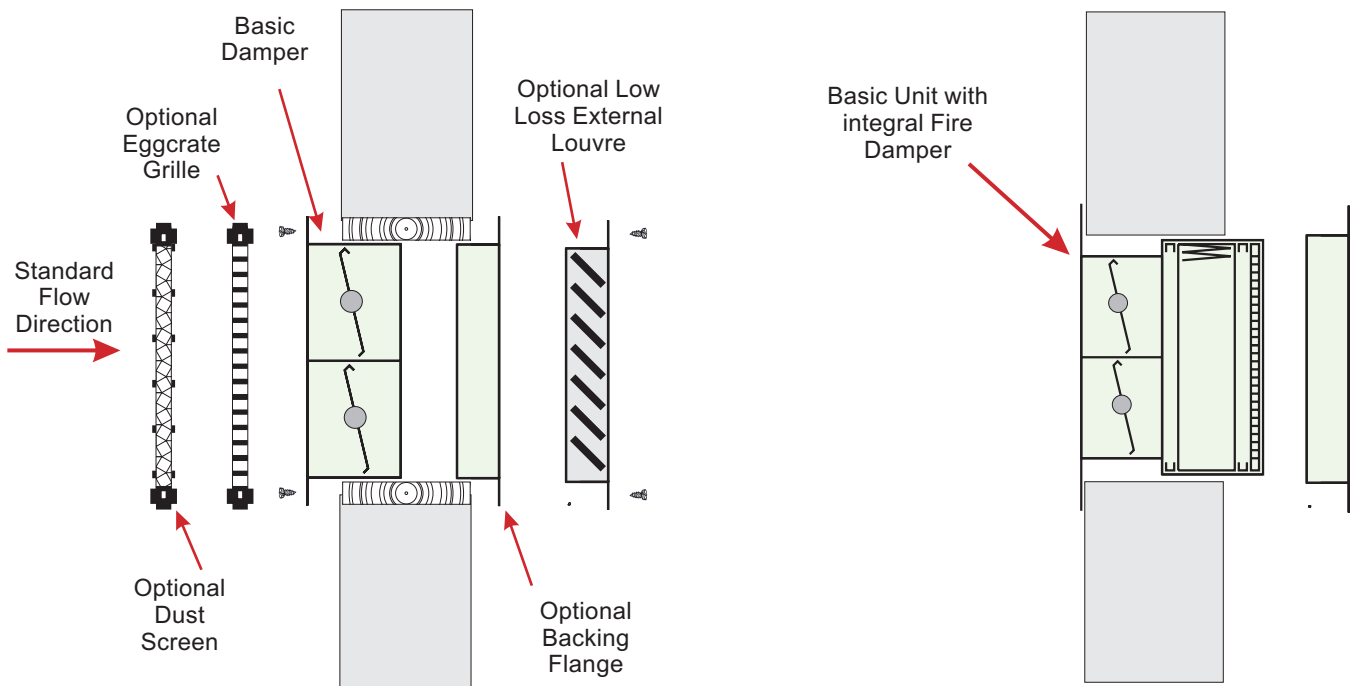


figure 2

Note: Air control blades not shown for clarity

## Air Pressure Relief Vent Options



### Options

- Eggcrate Grille
- Low Loss External Louvre
- Dust Screen
- Backing Flange

# General Specifications

Air Pressure Relief Vents	Standard	Options
Frame	Aluminium	Stainless Steel
Finish	Polyester Powder Coated White RAL9910	Brush Finish (Stainless Steel Frames) Colour Options on request
Air Control Blade	Brushed finished Stainless Steel	
Blade heights x Max Width	200mm x 1000mm wide	100 x 600, 300 x 100 150 x 850
Bearings	Sealed Stainless Steel	
Accuracy	+/- 2.5% of set pressure	
Fire Rated Units	Standard	Options
Damper Types	Curtain damper	Intumescent
Fire Rating	4 hour	
Damper Manufacturers	All leading manufacturers	
Activation	Fusible link	Electrically actuated
Outlet Screen	Egg Crate Grille	
Fire Duct	1.6mm Mild Steel - painted	
Finish	Polyester powder coated white RAL 9910	Colour Options on request
Maximum Stabiliser Width	1000mm	

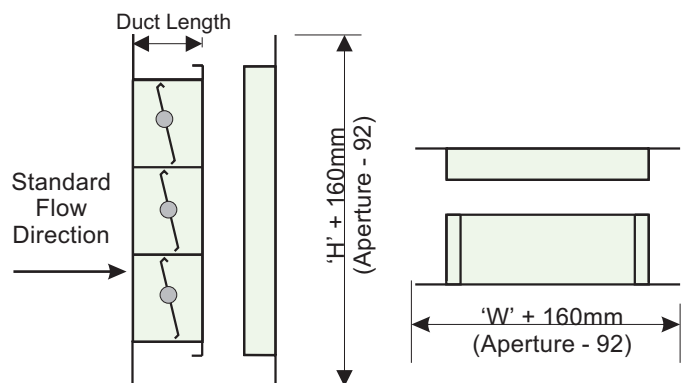
## Standard Frame Arrangements

### Standard APRV Type

Standard screw fixing style. Wide flanges enable direct screw fixing to masonry

Maximum nominal dimensions:

1000mm W x 2400mm H  
or 2000mm W x 1200mm H

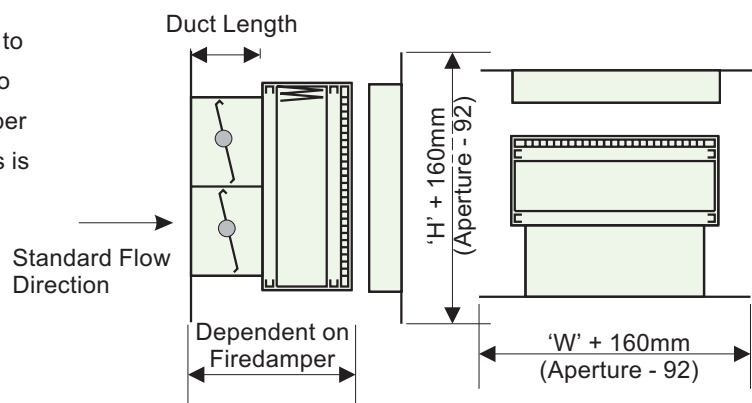


### APRV-Firedamper Type

A one-piece frame in powder coated steel with extension to house a standard fire damper. The frame can be built into the wall and provides room for the expansion of the damper in the event of a fire. A choice of proprietary fire dampers is available. Exhaust end of unit is finished off with an egg crate grille and backing flange.

Note: other styles available on request

[www.apreco.co.uk](http://www.apreco.co.uk)



For additional information on installation, operating and maintenance instructions in downloadable format, please visit our website.

Note: Specifiers must satisfy themselves that the materials used in the construction of the equipment are compatible with the environment in which they will be placed and do not pose a hazard or risk of injury. Where there is any doubt please refer to our technical department. Apreco operates a policy of continual product development. The information contained within this data sheet may therefore be subject to change without notice

Members of FETA - The Federation of Environmental Trade

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