

## *AERO Exhaust Roof and Inlet Wall ventilators*



### **Application**

The Uniquely designed high performance /high capacity series of slope and wall ventilation products provide the most efficient and cost effective means of day to day natural passive weatherproof ventilation all year round.

The Aero Ventilators are suitable of all types of general ventilation to meet OHS and environmental regulations .It is particularly important for industries when it is a requirement for continuous extraction due to excessive internal heat emissions or where high external solar heat loads are experienced .These buildings require exhaust and inlet ventilator for makeup air. These ventilators provide both and the ability to open or close via a series of control options.

These ventilators are also used in fire ventilation design providing an unrestricted path for smoke and hot gases reducing the spread of fire and damage

**Aero Exhaust Roof Ventilator** : ( AER ) is a High Performance / High Capacity heavy duty **roof** ventilator suitable for high wind and rain conditions . These units are available in various sizes (see chart below)

**Aero Inlet Wall Ventilator** : ( AIW ) is a High Performance / High Capacity heavy duty **wall** ventilator suitable for high wind and rain conditions . These units are available in various sizes (see chart below)

Material :Aluminium / Zinclaume / colorbond

Finishes : powder coated and anodising to various colours and warranties

### **Weight**

Colorbond / zincalume 15kg/m<sup>2</sup>

Aluminium 17 Kg/m<sup>2</sup>

### **Principle of Operation**

The ventilators are designed to operate with a variety of controls to suit any requirements and application. The weatherproof louvres manually or automatically open and close to exclude rain or minimise heat losses in the winter months

### **Performance/ design/ Manufacture**

The Aero ventilators boast having a very high aerodynamic free area with a coefficient of discharge of .8 This equates to greater than 80 % free area when compared to normal ventilators and louvre design and more than double the ventilation area that common type of ventilators provide . In fact the extraction rate is even increased further with external wind influences but doesn't rely only on this for performance.

The units are manufactured to comply with the requirements of the building code of Australia and Australian standards AS 2427/ AS2428 / AS2665 / AS 1668

### **Additional Testing**

Static load test to simulate 280km/hour

Durability test with over 50,000 open and closed operations representing 20 years of trouble free life cycle

## **Controls**

There are a range of controls

Automatic

Electric .      Roof Model    AER/E 240 or 24 volt linear actuators

                    Wall Model    AIW/E 240 or 24 volt linear actuators

Pneumatic :    Roof Model    AIR/P Type 1 Air to open spring to close

                    Roof Model    AIR/P Type 2 Air to close spring to open ( fail safe )

                    Wall Model    AIW/P Type 1 Air to open spring to close

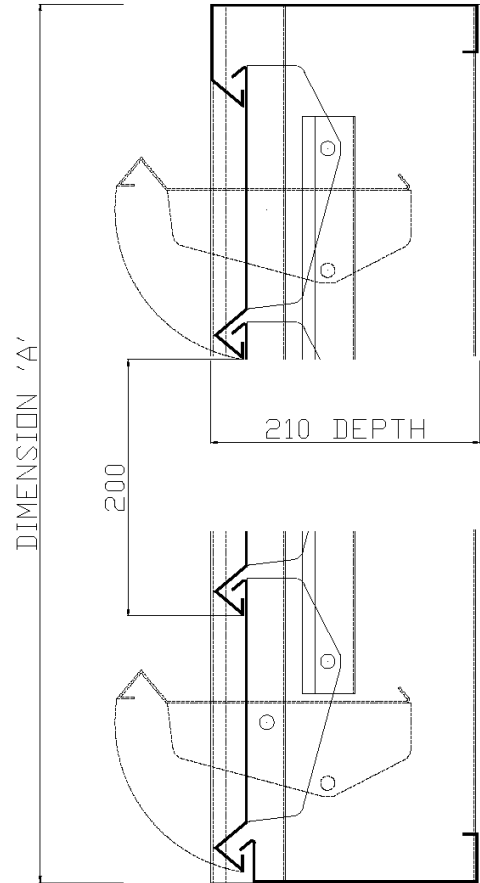
                    Wall Model    AIW/P Type 2 Air to close spring to open ( fail safe )

Fire Ventilator control panel ( over -ride operation and automatic function )

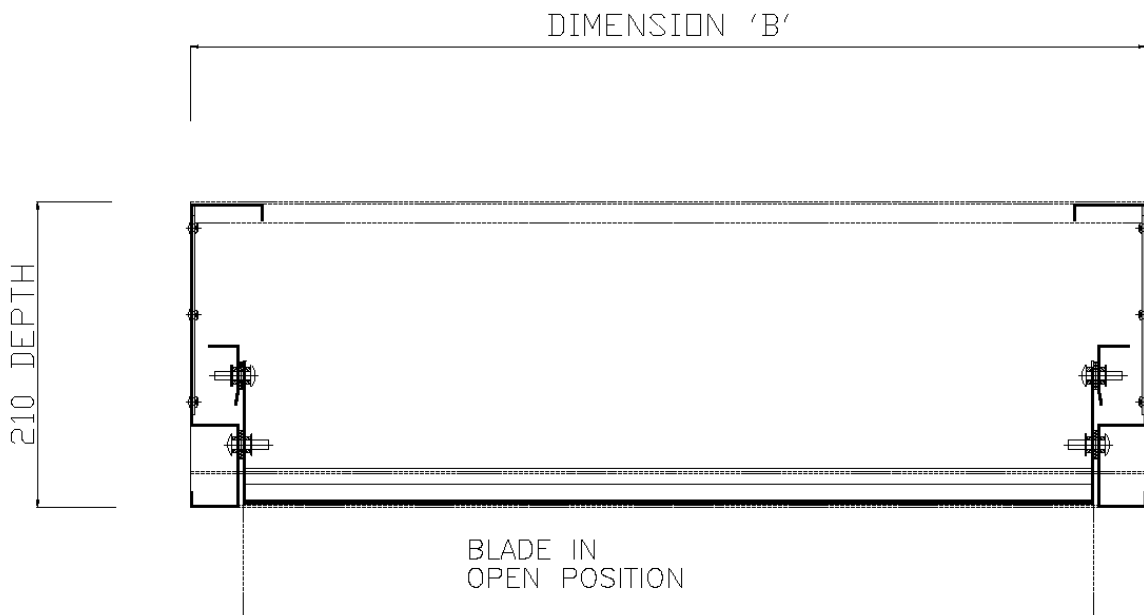
Comfort control panel : Includes rain detection / manual operation functions

Other controls are available on request ie cable and hand winder etc

# AERO INLET WALL VENTILATOR



AERO INLET WALL VENTILATOR  
SECTION VIEW



AERO INLET WALL VENTILATOR  
PLAN VIEW

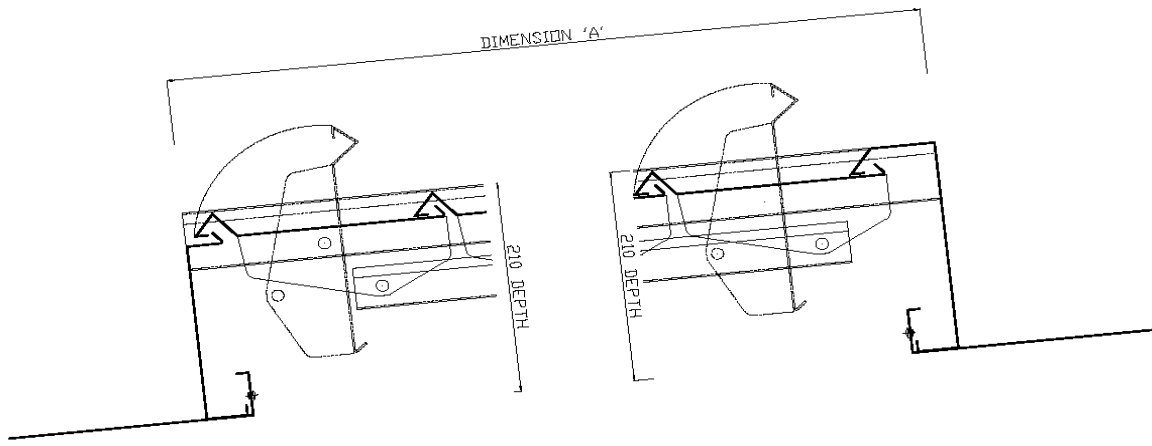
## Standard Heights and widths mm ( Free area M2 )

### Model AIW Inlet wall Ventilator

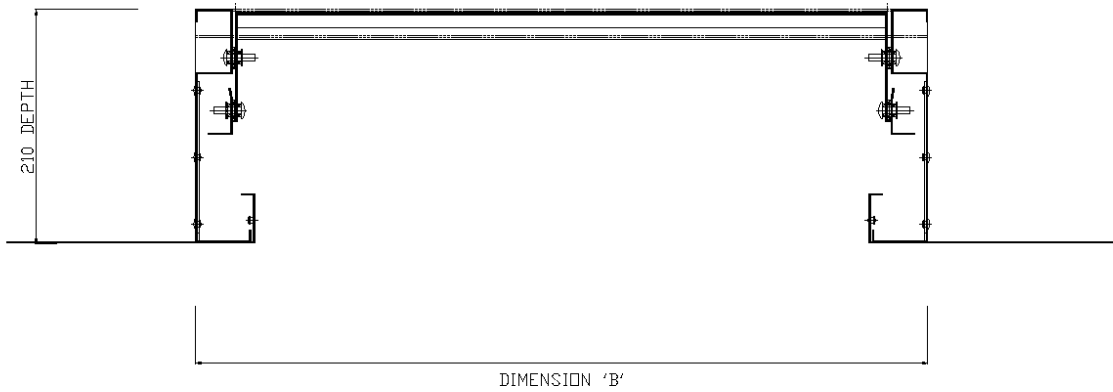
Height Dimension A mm	Width Dimension B mm			
	1100	1350	1600	No Blades
885	.79	.98	1.18	4
1085	.98	1.23	1.47	5
1285	1.18	1.48	1.78	6
1485	1.38	1.73	2.07	7
1685	1.58	1.98	2.37	8
1885	1.78	2.23	2.67	9
2085	1.98	2.48	2.97	10
2285	2.18	2.73	3.27	11
2485	2.39	2.98	3.57	12

Other sizes available on request

# AERO EXHAUST ROOF VENTILATOR



AERO EXHAUST ROOF VENTILATOR  
SIDE VIEW



AERO EXHAUST ROOF VENTILATOR  
PLAN VIEW

## Standard Heights and widths mm ( Free area M2 )

### Model AER Exhaust roof ventilator

Height Dimension A mm	Width Dimension B mm			
	1100	1350	1600	No Blades
885	.79	.98	1.18	4
1085	.98	1.23	1.47	5
1285	1.18	1.48	1.78	6
1485	1.38	1.73	2.07	7
1685	1.58	1.98	2.37	8
1885	1.78	2.23	2.67	9
2085	1.98	2.48	2.97	10
2285	2.18	2.73	3.27	11
2485	2.39	2.98	3.57	12

Other sizes available on request

#### Installation

The Aero Ventilators can be incorporated on any type or style of roof or wall whether it be parallel to the ridge , slop mounted or mid span to provide flexible positioning over exhaust or inlet openings. For information on design or dimensional fixing detail please contact your local Element Control Systems representative



#### Principle of operation

The two forces affecting the extraction efficiency and therefore the design of a natural ventilation system are the thermal currents within the building, and the wind. Of these two, the thermal currents, which are created by the heat from plant or personnel, or by solar heat transferred through the structure, are the predictable factor.

The force provided by the wind is less predictable, with the possibility of no wind at all on some of the hottest days, when ventilation requirements are greatest. Consequently, Element Control Systems ventilation design has placed emphasis on the use of thermal currents. This is achieved by providing the largest possible exhaust opening in relation to the overall size of the ventilator.

Although the ventilator is in no way dependant on wind power, wind will further increase the extraction rate of a engineered design.

#### Buoyancy

Buoyancy ventilation may be temperature-induced (stack ventilation) this relies on the increased buoyancy of the humid air as it warms to exhaust air from the space through a stack. The cool air supply to the space is pressurized by weight of the column of cool air above it. Buoyancy results from the difference in air density. The density of air depends on temperature and humidity (cool air is heavier than warm air at the same humidity and dry air is heavier than humid air at the same

temperature. Within a factory or commercial building, heat and humidity is given off by occupants and other internal sources. These are some of the factors which tend to make air rise. The stale, heated air escapes from openings in the ceiling or roof and permits fresh air to enter lower openings to replace it. Stack effect ventilation is an especially effective strategy in the summer months, when indoor/outdoor temperature difference is at a maximum.

### **Benefits**

At a time when power costs are escalating and CO2 emissions need to be controlled why would we not consider the nature's way of ventilation with **no cost** whilst helping to preserve our environment

Smart building design will also boost your employment productivity and **save you money**. **Human Productivity research by N.S Billington proved that productivity drops about 10% and the accident rate rises about 25% within every 5 degrees Celsius above 25 degree.**

**It is easy to calculate what a few days over 30 degree days and poor ventilation will do to your production**

**Element Control Systems offer unique and engineered design solutions with series of operable and fixed ventilation products for roof and wall applications.**



For further details including free design service please contact Element Control Systems

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