MODULE:

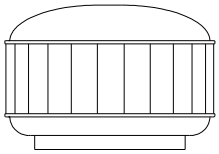
INDUSTRIAL PRODUCT RANGE:

what you'll learn in this module:

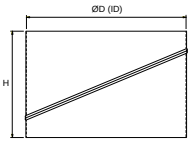
1. Basic Introduction:
2. Introducing The Hurricane Turbine Ventilator:
3. Hurricane:
4. Hurricane Turbine:
5. Hurricane Varipitch:
6. EX Throat
7. Hurricane Flashing:
8. Ventilator Base Types:
9. Hurricane S2 Turbine Ventilator:
10. Hurricane HI – Heavy Industrial:
11. Hurricane FR – Fire Rated:
12. Ecopower Hybrid Ventilator:
13. Hurricane Ecopower 400:
14. Hurricane Ecopower 600:
15. Hurricane Dampers:
16. EC Damper Grille:
17. Static Ventilator:
18. Tests And Standards/Preparing A Scheme:
19. Technical Data Sheet Register:
20. Quotation Process: Example:
21. How To Specify The Hurricane:
22. Hurricane Turbine Ventilator: The Choice:

THE PARTS OF AN INDUSTRIAL VENTILATOR:

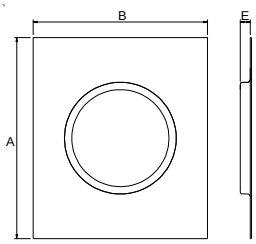
A **standard** complete Hurricane wind turbine or ecoPOWERhybrid ventilator consists of a Head and a standard varipitch throat and flashing (latter two items collectively called ‘the base’). If the varipitch cannot be used for whatever reason the base becomes known as a ‘special base’ and has separate pricing.



HEAD



VARIPITCH



FLASHING

PACKAGING OF HURRICANES:

- Please note that when receiving/ordering **standard** Hurricane ventilators vents from 100mm up to & including 500mm are packed fully in one carton. Vent sizes from 600mm up to & including 900mm you will receive 3 cartons per vent – one for the head, another for the varipitch throat and a third for the flashing.

INDUSTRIAL PRODUCTS:

1. **Hurricane Standard**
2. **Hurricane S2 (corrosive environments)**
3. **Hurricane 900 HI (harsh environments)**
4. **Hurricane FR (smoke release)**
5. **Hurricane BFR (bush fire rated)**
6. **Hurricane TS (environments subject to very fine dust/sand)**
7. **Hybrid Ecopower**
8. **Bases, Dampers & Grilles**

INTRODUCING THE HURRICANE™ TURBINE VENTILATOR:

Widely recognised as the most efficient and robust industrial ventilator available in the world today. Hurricane was the first industrial ventilator to incorporate vertical vane design which tests at University of Technology Sydney have shown to be superior in air handling capacity to the traditional spherical vane design ventilators. Its coefficient of flow is decidedly higher than comparable size spherical vane vents.

Hurricane was designed and manufactured in Australia. It has been sold since 1990 and although changes to bearing system have been undertaken the basic design has been unchanged. Over 200,000 have been installed in Australia and around the globe. It is suitable for industrial, commercial and community buildings, including schools. Throat sizes available include 100mm, 150mm, 300mm, 400mm, 450mm, 500mm, 600mm, 700mm, 800mm, and 900mm.

The wind driven Hurricane ventilator exhausts hot, stale air from buildings and allows it to be replaced at low level with fresh air at ambient temperature. The result is a much more pleasant and healthier working environment. It continues to work during the evenings to provide effective night purge.

MEETS THE HIGHEST OF STANDARDS

Manufactured from 5005 H24 marine grade equivalent aluminium, the Hurricane importantly has low weight and hence low starting torque. The Hurricane 300 has been tested by Construction Research Laboratories Inc, Miami, Florida and withstood a continuous gusting wind of 240km/hr without damage. It has also passed the requirements of the Low Speed Dynamic Rain Penetration Test (3L/m at 57.4km/hr). The larger size Hurricanes have been tested successfully to 198km/hr without failure.

MEETS A RANGE OF NEEDS

Hurricane vent is manufactured in varying ways to meet a wide range of special applications.

- 15 Year Performance Warranty.

From a company that has been in business since 1934.

- Cyclone Wind Load Test

Carried out by Construction Research Laboratories, Florida showed resistance to damage in wind speeds up to 241 kph (limit of test). Hurricane vent has Darwin Deemed To Comply Status. (Copy of report available on request).

- Test Of Two Wind-Driven Roof Ventilators to AS:4740

INSEARCH Limited tested Hurricane™ against the old design onion vent shape under conditions of the new Australian ventilation standard, AS4740:2000, Hurricane 400 achieved a 206% superior exhaust performance. This reflects the benefits of the new high torque vertical vane design. A copy of this test carried out by University of Technology is available on request.

- Dynamic Wind Load & Water Penetration Testing to AS2428.1

  CSIRO report no DTA 313 establishes that Hurricane vent achieves the onerous conditions of AS2428.1 (copy of report available on request).

- Fire-Rated Testing Of Hurricane™ H900FR to AS:1668.1-1998 4.8.1

  CSIRO tested the H900FR Hurricane™ to meets the conditions of AS1668.1 – 1998 Section 4.8.1.

HURRICANE:

DESCRIPTION

The world leading brand in industrial / commercial ventilation. The Hurricane vent has a unique vertical vane design which considerably increases the flow co-efficient over traditional spherical vane vent designs, which in turn enhances the Hurricane's performance. The use of an integrated double race top bearing system enables a 15 year warranty to be offered on the product.

TECHNICAL SPECIFICATIONS

Rated wind speed:

300mm - 243 km/hr
400mm – 900mm – 198 km/hr (limit of test capability

Throat sizes available:

100mm, 150mm, 300mm, 400mm, 450mm, 500mm, 600mm, 700mm, 800mm & 900mm

Technical features:

- Vertical Vane Design
- Purpose built top and bottom bearing system - propriety items.
- Bottom bearing system applicable to H700-H900 specially design for harsh temperature and sand conditions of Middle East. Triple seal. Dust proof outer race and high temperature grease (-40ºC to 180ºC)
- Higher extraction rates per size than its competitor ventilators
- Tested to meet the AS2050 Rain Penetration Test & wind load in excess of 198 km/h

Unique selling features:

- Fully constructed from 5005 grade Aluminium for light weight as well as long life
- Extensive range of sizes allows a large variety of applications
- Bases can be custom made to suit the roof pitch
- 15 year warranty
- Vertical vane technology

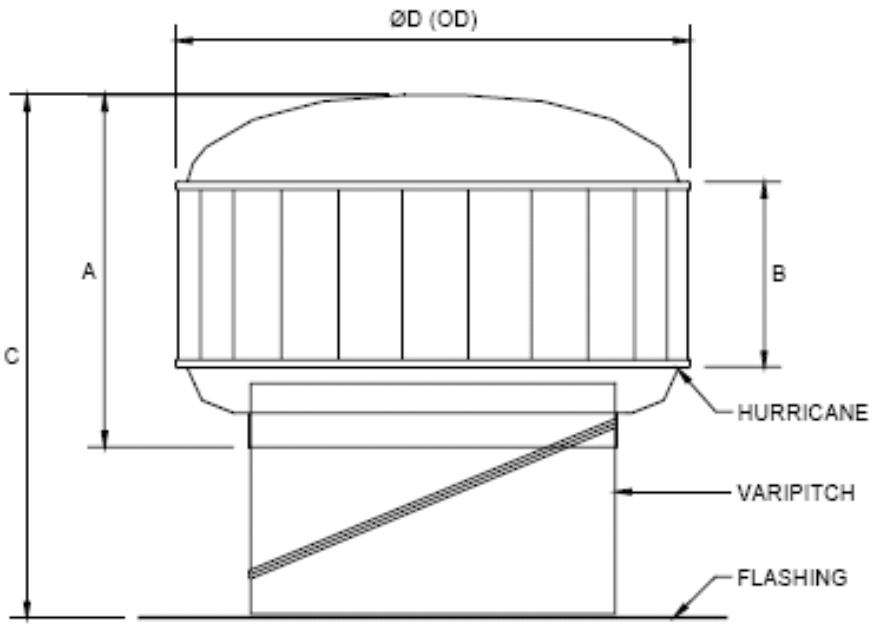
Market position:

- Market leader
- Renown for high performance, reliability, longevity, and low weight

Reseller features & benefits:

- Selected mill finish units held in stock
- Custom ordered units produced as required.
- Powder coating for up to 25 popular colours available on site.

COMPLETE STANDARD HURRICANE:



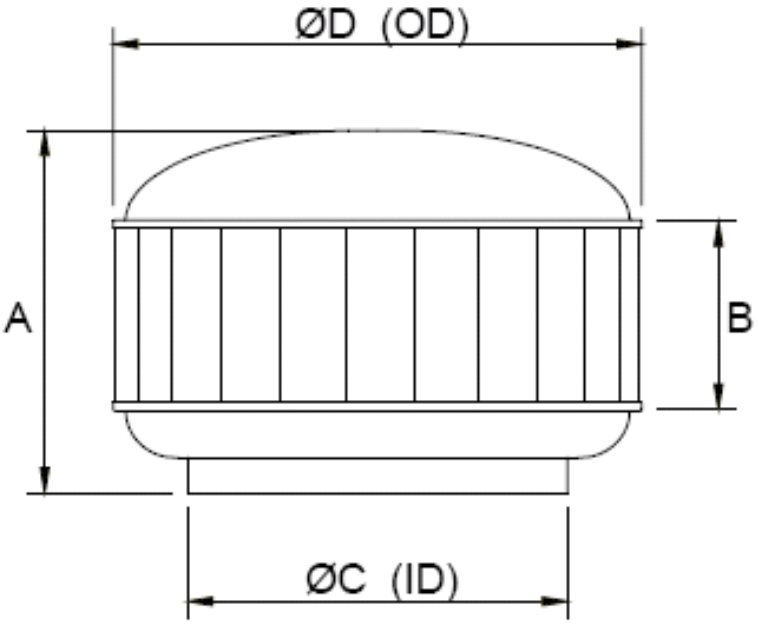
DIMENSIONS:

MODEL	A (mm)	B (mm)	C (mm)	D (mm)	Throat Area (mm)	Weight (kg)
H100	253	100	313	290	0.009	1.8
H150	283	125	363	332	0.010	2.4
H300	364	175	480	477	0.075	4.9
H400	389	205	564	561	0.132	6.3
H450	419	230	634	648	0.168	8.1
H500	459	265	700	702	0.205	9.2
H600	484	275	724	766	0.285	11.8
H700	556	320	796	876	0.390	15.8
H800	580	345	848	1003	0.501	20.6
H900	643	400	936	1096	0.632	24.1

Tolerances: Size +/- 2mm
Weight +/- 0.1kg

NOTE:

The Hurricane throat overlaps the Varipitch. The height listed above is with the maximum overlap (lowest overall height). Revolving the Varipitch to suit a roof slope also reduces its height.



DIMENSIONS:

MODEL	A (mm)	B (mm)	C (mm)	D (mm)	Throat Area (mm)	Weight (kg)
H100	253	100	313	290	0.009	1.3
H150	283	125	363	332	0.010	1.9
H300	364	175	480	477	0.075	3.7
H400	389	205	564	561	0.132	4.5
H450	419	230	634	648	0.168	6.2
H500	459	265	700	702	0.205	6.9
H600	484	275	724	766	0.285	8.1
H700	556	320	796	876	0.390	11.6
H800	580	345	848	1003	0.501	14.9
H900	643	400	936	1096	0.632	18.1

Tolerances: Size +/- 2mm
Weight +/- 0.1kg

SPECIFICATIONS:

Material: Turbine & throat: Aluminium 5005 H34
Shaft: Aluminium 2011 T3
Dome: Aluminium 1200 H0
Brackets: Aluminium 6060 T591
Spider (H600-H900 only): Zinc passivate plated mild steel
Shaft (H900 only): 303 Stainless Steel
Main bearing holder assembly: Glass Reinforced Nylon 6

Rotation Bearings: Main bearing: Double row ball bearing - BWF30-119Z
Spider bearing (H600-H900 only): Single row ball bearing – AS204

Wind Speed Rating: 205.2km/h (57m/s) – Performance level 1
(As per AS 4740:2000 Natural ventilators-Classifi cation and (Performance)

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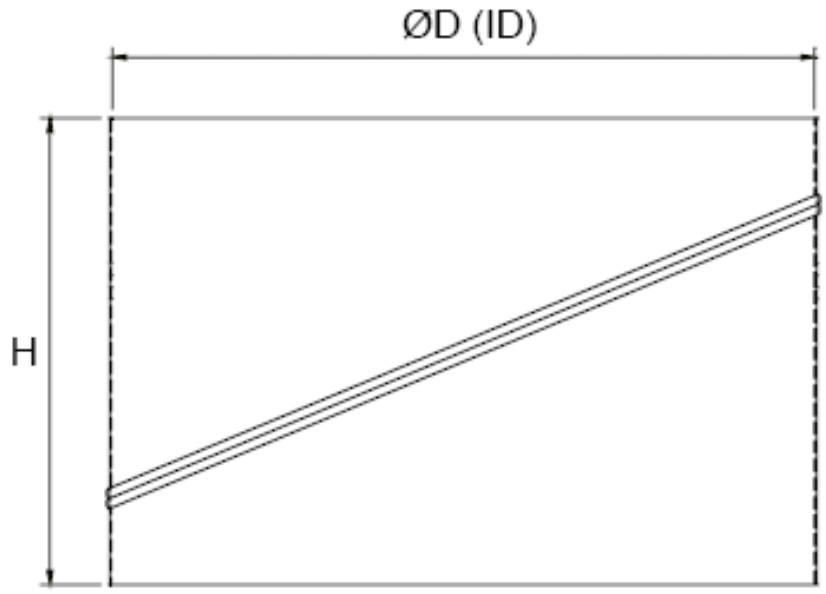
STANDARD HURRICANE VARIPITCH:



DIMENSIONS:

MODEL	H (mm)	D (mm)	Suit Roof Pitch	Weight (kg)
H100	110	103.5	0º - 45º	0.07
H150	130	152	0º - 45º	0.11
H300	190	305	0º - 45º	0.42
H400	250	405	0º - 45º	0.72
H450	290	457.5	0º - 45º	0.92
H500	315	506.5	0º - 45º	1.37
H600	340	597.5	0º - 45º	1.69
H700	340	699	0º – 22.5º	2.44
H800	365	795	0º – 22.5º	2.97
H900	390	895	0º – 22.5º	3.57

Tolerances: Size +/- 2mm
Weight +/- 0.02kg

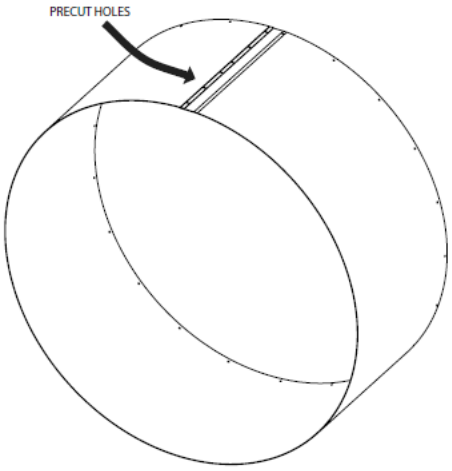
NOTE:

The Varipitch fits inside the throat of the Hurricane ventilator. Therefore the effective total height of the Varipitch is reduced by the overlap of the Hurricane throat. This overlap can vary from 50-110mm. Revolving the Varipitch to suit a roof slope also reduces its height.

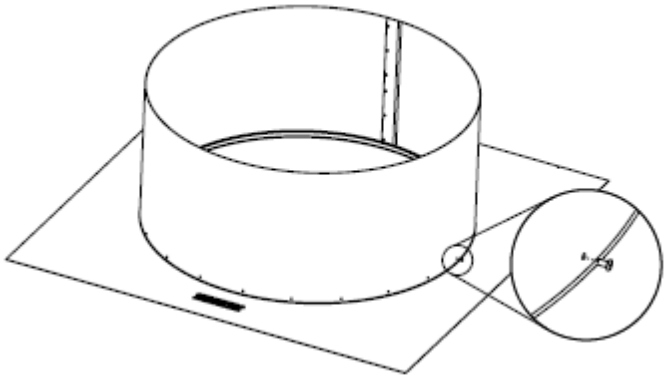
SPECIFICATIONS:

Material: Aluminium 5005 H34

EX THROAT:



The EX base arrives as a rolled circle of aluminium but with pre-drilled joining holes. Simply rivet the ends together on site to give a complete circular base.



After the flashing plate (or base plate) is installed, just place the EX base on to the flashing circular up stand with seam facing downslope. Then attach EX base to flashing up stand as per fixing instructions for varipitch and the entire base structure is ready to accept the vent head.

This base is a simple spigot style. It is cut using a laser machine to compensate for roof angles from zero to 7 degrees. It comes supplied as a wrapping of aluminium about 250 mm high and with holes at either end to enable on site riveting. The ends are simply riveted together to form the throat of the vent. It is located on the base with taller section directed up slope. After fixing to the flashing collar the vent head is placed on top**.**

Tolerances: Size +/- 2mm
Weight +/- 0.02kg

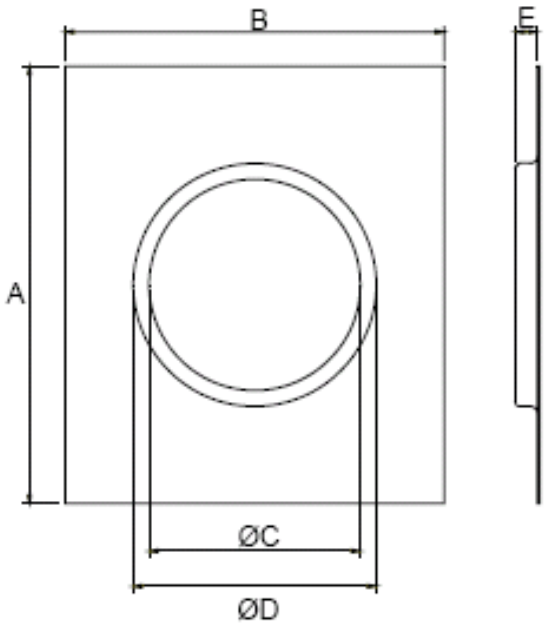
NOTE:

The EX fits inside the throat of the Hurricane ventilator. Therefore the effective total height of the EX is reduced by the overlap of the Hurricane throat. This overlap can vary from 50-110mm.

SPECIFICATIONS:

Material: Aluminium 5005 H34

STANDARD HURRICANE FLASHING:



DIMENSIONS:

MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (kg)
H100	430	430	90	100	22	0.40
H150	430	430	127	147	22	0.35
H300	600	500	275	300	22	0.80
H400	750	700	378	403	24	1.10
H450	750	700	425	454	24	1.00
H500	750	700	472	504	24	0.93
H600	1000	1000	572	594	24	2.05
H700	1000	1000	675	697	24	1.76
H800	1200	1200	770	794	24	2.75
H900	1200	1200	870	893	24	2.45

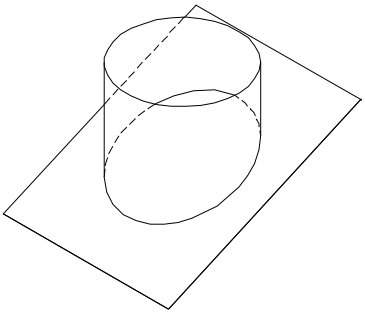
Tolerances: Size +/- 1mm
Weight +/- 0.5kg

SPECIFICATIONS:

Material: H100 & H150: Aluminium 5005 H0
H225 – H900: Aluminium 5005 H34

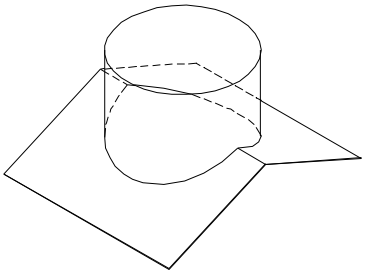
SPECIAL VENTILATOR BASE TYPES AVAILABLE:

It is strongly recommended that the varipitch throat or EX throat be used wherever possible. Special bases are made to exact angle and require extensive fabrication, which is expensive



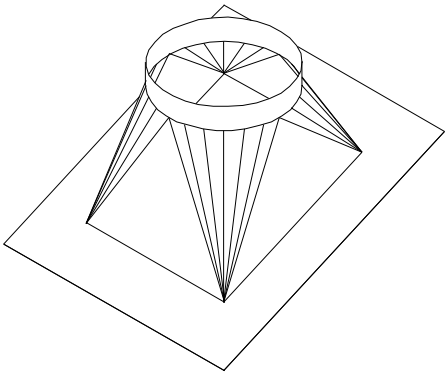
Type 1

Spigot Slope Type Base



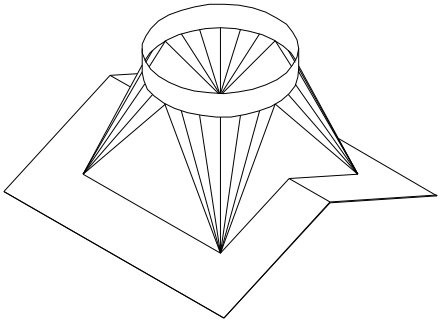
Type 2

Spigot Ridge Type Base



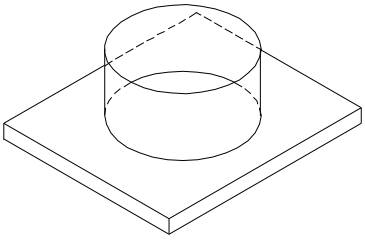
Type 3

Square-to-Round Slope Type Base



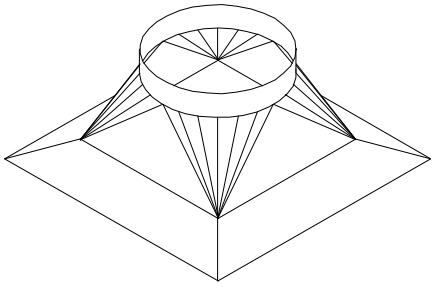
Type 4

Square-to-Round Ridge Type Base



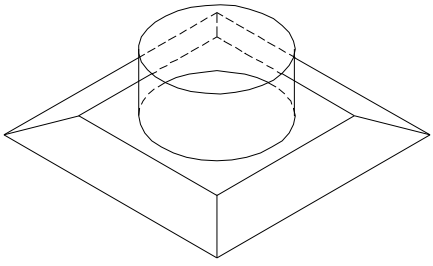
Type 5

Curb Mount Type Base



Type 6

Square-to-Round Pyramid Type Base



Type 7

Spigot Pyramid Base

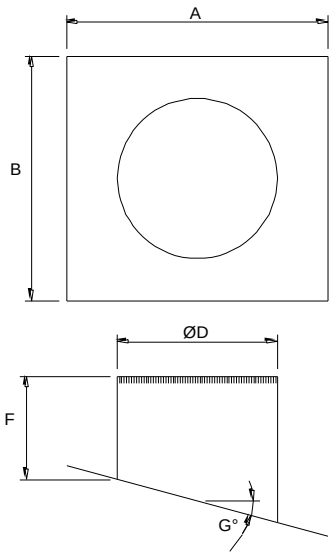
SPECIFICATION:

Material: All Aluminium.

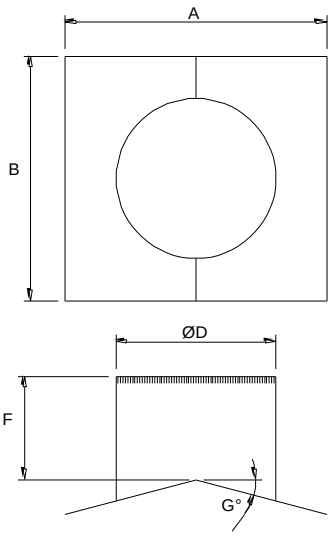
Sizes: The bases are custom made to suit the roof slope and the ventilator to be fitted to them.

Finish: Mill or Powdercoated.

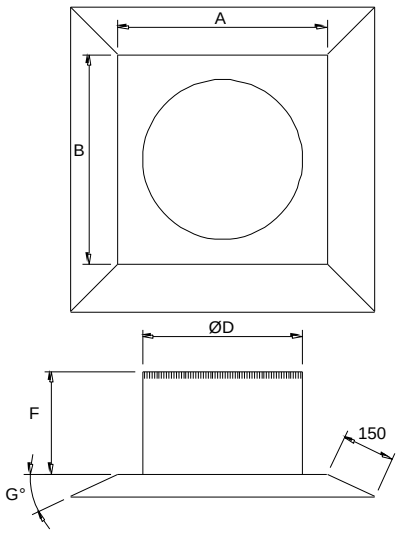
BASE DIMENSIONS TYPES 1, 2 & 7:



Type 1
Spigot Slope Base



Type 2
Spigot Ridge Base



Type 7
Spigot Pyramid Base

***Angle G is the roof slope in degrees**

Type 1 Spigot Slope Base

DIMENSION	H225	H300	H400	H450	H500	H600	H700	H800	H900
A	600	600	750	750	750	1000	1000	1200	1200
B	500	500	700	700	700	1000	1000	1200	1200
D	228	305	405	458	507	598	699	795	895
F	200	220	270	295	320	370	420	470	520

Type 2 Spigot Ridge Base

DIMENSION	H225	H300	H400	H450	H500	H600	H700	H800	H900
A	600	600	750	750	750	1000	1000	1200	1200
B	500	500	700	700	700	1000	1000	1200	1200
D	228	305	405	458	507	598	699	795	895
Fno damper	150	150	150	150	150	150	150	200	250
Fwith damper	200	220	270	295	320	370	420	470	520

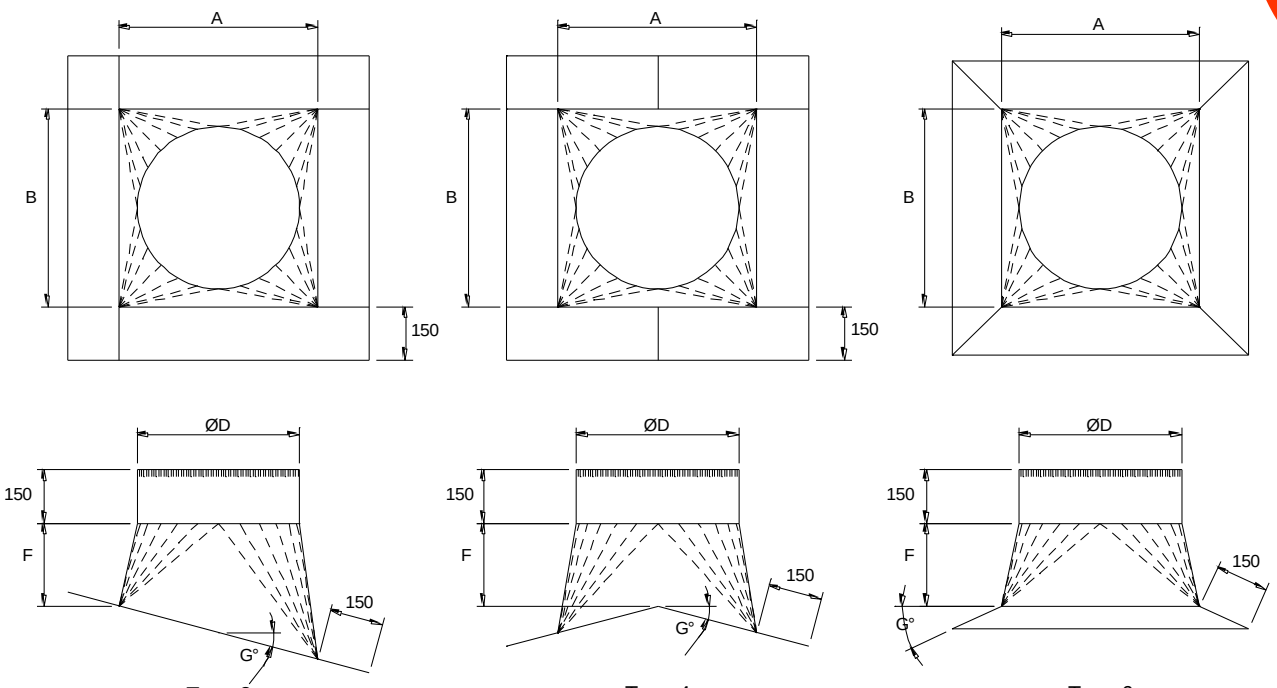
Type 2 Spigot Ridge Base

DIMENSION	H225	H300	H400	H450	H500	H600	H700	H800	H900
A	350	400	500	600	650	700	800	950	1050
B	350	400	500	600	650	700	800	950	1050
D	228	305	405	458	507	598	699	795	895
Fno damper	150	150	150	150	150	150	150	200	250
Fwith damper	200	220	270	295	320	370	420	470	520

SPECIFICATION:

Material: 1mm Aluminium.5005 H34
Finish: Mill or Powdercoated

BASE DIMENSIONS TYPES 3, 4 & 6:



Type 3
Square-to-Round Slope Base

Type 4
Square-to-Round Ridge Base

Type 6
Square-to-Round Pyramid Base

*Angle G is the roof slope in degrees.

Dimension	H300	H400	H450	H500	H600	H700	H800	H900
A	375	500	560	620	750	870	995	1120
B	375	500	560	620	750	870	995	1120
D	305	405	458	507	598	699	795	895
F	160	210	235	260	310	360	410	460

SPECIFICATION:

Material: 1mm Aluminium.5005 H34
Finish: Mill or Powdercoated

HURRICANE S2 TURBINE VENTILATOR:

APPLICATION:

The Hurricane™ S2 was specifically developed to help reduce the rate of oxidation and degradation of steel roofing over water storage reservoirs. This environment is very corrosive to nearly all standard ventilators.

PROBLEM:

Breakdown of steel roofing over water storage reservoirs is a major problem throughout the world, although more prone to occur in warmer climates. It is caused by constant evaporation and condensation of stored water and is particular severe if the water has been treated with chemicals or chlorine.

SOLUTION:

The Hurricane™ S2 is a purpose built Hurricane™ range which includes the H100, H150, H300, H400, H450, H500 and H600 vents, each containing a deflector located beneath the main bearing and no exposed bottom bearing. This bearing is located above the top plate of the vent to reduce exposure to harsh vapours. This ensures a longer life which is not possible with normal vents. The vents provide a constant flow of fresh air that limits the rate of condensation thereby ensuring a much longer roof life. Powder coat inside and out is performed to ensure water treatment chemicals cannot interact with aluminium. Stainless finish simply adds too much weight to a vent and reduces its capacity to response to wind.

WARRANTY:

The CSR Edmonds Hurricane™ S2 is warranted for this purpose for five (5) years.

SAVINGS:

Replacement of a steel roof over a water storage reservoir is a very expensive and cumbersome process. The Hurricane S2 is, in effect, and insurance against premature roof replacement for water storage reservoirs.

HURRICANE S2:

DESCRIPTION:

The Hurricane S2 was specifically developed to help reduce the rate of oxidation and degradation of steel roofing over water storage reservoirs. The units are powder coated inside and out, and contain a deflector flange located beneath the main bearing. This bearing is also located above the top plate of the vent to reduce exposure to harsh vapours. This ensures a longer life which is not possible with normal spherical shaped vents.

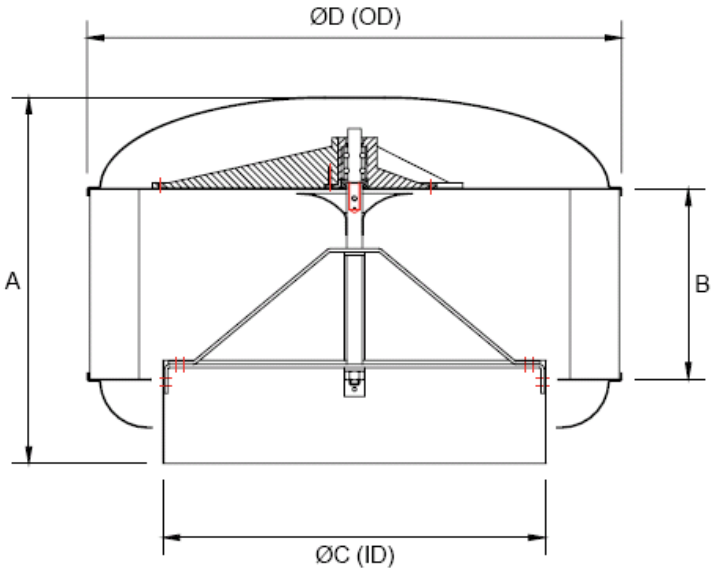
Technical specifications:
•Flow rate: As per Hurricane
•Rated wind speed: As per Hurricane
•Throat size: 100mm, 150mm, 300mm, 400mm, 450mm, 500mm & 600mm

Technical features
• Vent design allows long life span in harsh environments
• Bearing assembly is protected from harsh environments for improved life span
• Turbine powder coated on inside and outside surfaces as standard
• No exposed bottom bearing.

Unique Selling Features
• The unit has the potential of huge cost savings as it can reduce damage to water storage roof structures
• Can be used on a variety of application; Water Storage, Sewer Systems & Compost Toilets

Market Positioning
• A dedicated and long proven performer for reducing corrosion of roof structures over water storage reservoirs. Over 100 installations carried out on eastern coast of Australia over 10 years with no reported failures.

Reseller features & benefits
• Product made by special order only
• No stock carried.



DIMENSIONS:

MODEL	A (mm)	B (mm)	C (mm)	D (mm)	Throat Area (m^2)	Weight (kg)
H100	253	100	107	290	0.0090	1.4
H150	283	125	155	332	0.0189	2.0
H300	364	175	308	477	0.0745	3.8
H400	389	205	410	561	0.1320	4.6
H450	443	230	462	648	0.1676	6.3
H500	459	265	511	702	0.2051	7.0
H600	484	275	602	766	0.2846	8.1

Tolerances: Size +/- 2mm
Weight +/- 0.1kg

SPECIFICATIONS:

Material: Turbine & throat: Aluminium 5005 H34
Shaft: Aluminium 2011 T3
Dome: Aluminium 1200 H0
Deflector (Main Bearing shield): Aluminium 1200 H0
Brackets: Aluminium 6060 T591

Rotation Bearings: Main bearing: Double row ball bearing, Carbon Steel single shield

Wind Speed Rating: 198km/hr – Performance level 2
(As per AS 4740:2000 Natural ventilators-Classification and (Performance)

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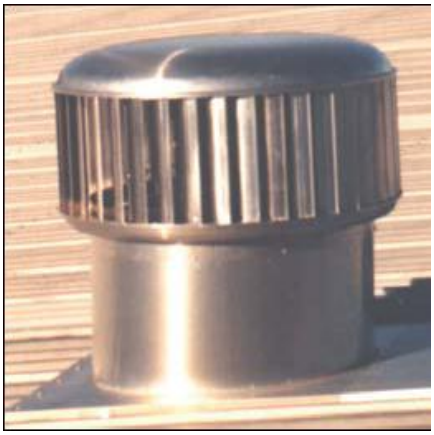
HURRICANE 900 HI- HEAVY INDUSTRIAL:



DESCRIPTION:

The Hurricane Heavy Industrial is designed for use in heavy industrial processes requiring removal of very large air volumes. Also where the air stream flowing through Hurricane contains high concentration levels of very corrosive compounds known to interfere with steel. Examples are metal processing plants such as copper refineries, some fertiliser plants or acid pickling plants

Technical specifications
- Flow rate: As per Hurricane H900
- Rated wind speed: N/A
- Throat size: 900mm

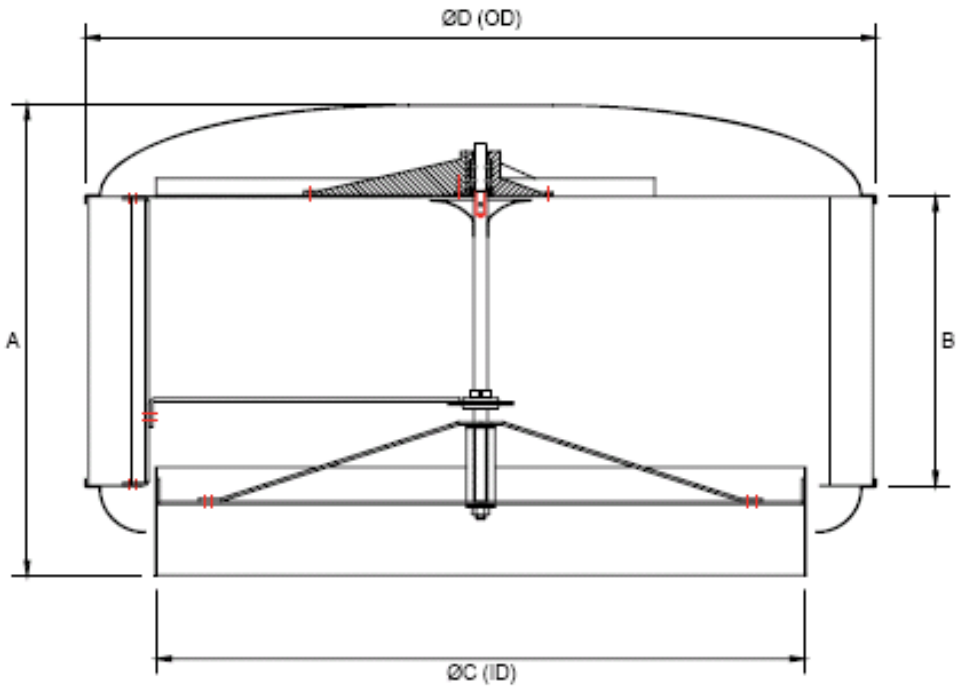
Technical features
- The units utilises a Stainless Steel shaft, main bearing flange & a Stainless steel double shield bottom bearing
- Unit can be powder coated with polyolefin powder coat protection
- Designed to handle fumes containing a pH <7 and >4

Unique Selling Features
- The ability to withstand harsh environments results in a longer product life span
- 15 year warranty available if Edmonds approves in writing

Market Position
- Niche: The Hurricane HI is designed to have a long life in harsh environments
- Large variety of applications including; Ceramic, Fertiliser & Sulphuric Acid Plants

Reseller features & benefits
- Product made by special order only
- No need to carry stock can be ordered when required

Competitive products
- IVR - Stainless Steel



DIMENSIONS:

MODEL	A (mm)	B (mm)	C (mm)	D (mm)	Throat Area (m^2)	Weight (kg)
H900HI	643	400	897	1096	0.6319	18.1

Tolerances: Size +/- 2mm
Weight +/- 0.1kg

SPECIFICATIONS:

Material: Turbine & throat: Aluminium 5005 H34
Shaft: 303 Stainless steel
Dome: Aluminium 1200 H0
Deflector (Main Bearing shield): Aluminium 1200 H0
Brackets: Aluminium 6060 T591
Spider: 304 Stainless Steel

Rotation Bearings: Main bearing: Double row ball bearing, Carbon Steel single shield
Spider bearing: Single row ball bearing, Stainless Steel double shield

Wind Speed Rating: 205.2km/h (57m/s) – Performance level 1
(As per AS 4740:2000 Natural ventilators-Classification and (Performance)

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HURRICANE FR – FIRE RATED:

HURRICANE 900FR:

Combining the benefits of constant ventilation with smoke release capacity.

Traditionally smoke release ventilation involves the use of large square or rectangular roof penetrations sealed from rain penetration by a lid. The lid is normally held under pressure by compressed gas struts and controlled by a fusable link. In the event of a fire, the heat and smoke cause the link to fracture and the lid to open thereby allowing smoke to escape.

The whole principal of smoke release is to improve visibility in the premises and to improve the chance of occupants successfully escaping the smoke filled environment.

Traditional smoke release vents are expensive to install and maintain. They serve no benefit UNLESS there is a serious fire. They also fail to react instantly to smoke and fire. There is a lag until conditions around the fusable link are sufficient to break the link.

The Hurricane 900FR is a turbine ventilator which uses special thermo-plastics and high temperature bearings to comply to AS1668,1-1998: The Use of Ventilation and Air Conditioning in Buildings Part 1: Fire and Smoke Control in Multi Compartment Buildings. Section 4.8 Smoke – Spill Fan.

The test requirements of AS1668.1 – (1998) 4.8.1 demanded that the H900 FR Hurricane Turbine Ventilator be subjected to:

- 120 minutes at 200°C
- 30 minutes at 300°C

and must maintain functionality at the end of the Test.

The H900FR was tested by the world renowned experts CSIRO – Manufacturing & Infrastructure Technology - and successfully achieved the following performance:

- Continued to operate for over 120 minutes at a temperature of at least 200°C
- Continued to operate for over 30 minutes at a temperature of at least 300°C
- Continued to operate for 60 minutes at a temperature of 350°C.
- Continued to operate for a further 60 minutes at a temperature of 400°C.

A complete copy of the test report is available.

BENEFITS OF THE H900FR.

The H900FR offers the following major benefits to building occupants, owners and insurers:

- Constant ventilation to improve the quality and comfort of air within a working environment.
- Instant exhaust of smoke in the event of a fire – no delay waiting for the fusing of a link.
- Cheaper capital, installation and maintenance costs – there are no maintenance costs for the H900FR.
- Increasing exhaust rates as a fire progresses due to higher stack pressures.
- A coefficient of discharge at ambient in excess of 0.55

HURRICANE FR:

DESCRIPTION:

The Hurricane FR is a purpose built Hurricane Ventilator designed to withstand extreme temperature and smoke production caused by building fires. The Hurricane HR utilises high temperature polymers as well as a stainless steel shaft that enable the vent to withstand temperatures in excess of 200° for 120 mins and the 300° for a further 30 mins. The test was conducted by the CSIRO to meet AS 1668.1-1998.

Technical specifications
- Flow rate: As per Hurricane H900
- Rated wind speed: N/A
- Throat size: 900mm

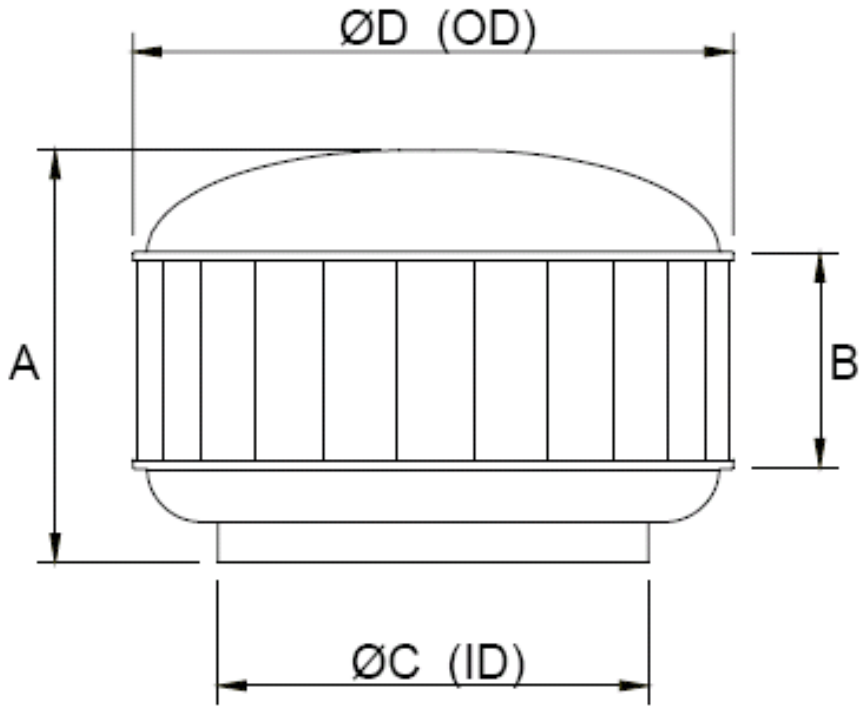
Technical features
- Bearing housing constructed from high temperature resistant polymers.
- Tested by the CSIRO to meet the requirements of AS1668.1 – (1998) 4.8.1

Unique Selling Features
- Fire Rated smoke relief ventilator that act as a turbine ventilator and smoke relief ventilator
- Constant ventilation to improve the quality and comfort of air within a working environment.
- Instant exhaust of smoke in the event of a fire – no delay waiting for the fusing of a link
- Cheaper capital, installation and maintenance costs – there are no maintenance costs for the H900FR.
- Increasing exhaust rates as a fire progresses due to higher stack pressures.

Market Position
- Niche: The Hurricane FR can take the place of the old fusible link style smoke relief ventilators

Reseller features & benefits
- Product made by special order only
- No need to carry stock can be ordered when required

Competitive products
- IVR



DIMENSIONS:

MODEL	A (mm)	B (mm)	C (mm)	D (mm)	Throat Area (m^2)	Weight (kg)
H900FR	643	400	897	1096	0.6319	18.3

Tolerances: Size +/- 2mm
Weight +/- 0.1kg

SPECIFICATIONS:

Material: Turbine & throat: Aluminium 5005 H34
Dome: Aluminium 1200 H0
Brackets: Aluminium 6060 T591
Spider: Zinc passivate plated mild steel
Shaft: 303 Stainless Steel
Main bearing holder assembly: Glass Reinforced Polyphenylene Sulphide (PPS)

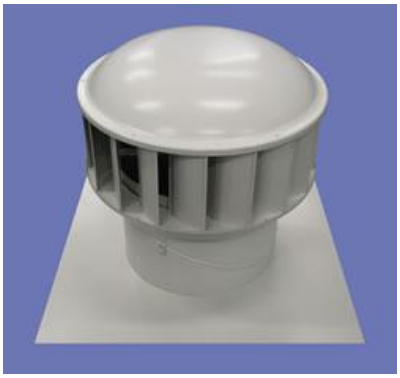
Rotation Bearings: Main bearing: Double row ball bearing - BWF30-119Z
Spider bearing (H600-H900 only): Single row ball bearing – AS204

Wind Speed Rating: 205.2km/h (57m/s) – Performance level 1
(As per AS 4740:2000 Natural ventilators-Classification and performance)

Fire Rating: Ability to operate for 120 minutes at 200oC
Ability to operate for 30 minutes at 300oC

(As per AS 1668.1-1998 Section 4.8.1 The use of ventilation and air conditioning in buildings, Part 1: Fire and smoke control in multi-compartment buildings)

ECOPOWER HYBRID VENTILATOR:



DESCRIPTION:

The world's first, true hybrid ventilator.
Combining reliability and performance.

CSR Edmonds manufacturer of the Hurricane® industrial ventilator, have developed a patented hybrid vent design that uses electronic commutating motor technology located in the top of the Hurricane® ventilator.

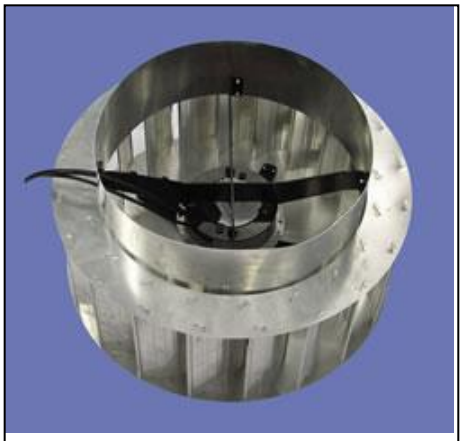
The design allows the vent to spin freely under wind load and provide the same exhaust rate as the traditional Hurricane vent. The free area of the throat is NOT impeded, unlike current vent/fan combinations. When required the vent can be powered which provides a huge boost to the flow rate, at an extraordinarily high efficiency; 110m3/hr/watt of energy – far more energy efficient than any conventional powered fan.

The guaranteed exhaust rate regardless of wind speed or 'stack effect' can be controlled by digital measurement of a range of physical properties or chemical entities including temperature, humidity, carbon dioxide, etc.

With a very low operational noise, the EcoPower is ideal for use in homes, offices or factories.

THE IMPORTANCE OF DEPENDABLE VENTILATION:

Ample research is available to show that adequate fresh air exchange is crucial for workers, students
and home occupants to perform at their best. A well designed ventilation scheme can:



'ecopower® utilises an electronic commutating (EC) motor installed in the head of the ventilator to enable motorised boost during periods of low wind speed or special ventilation needs.'

1. lower temperatures in homes and buildings during summer by cooling roof spaces and even removing trapped ceiling heat through ceiling grilles;

2. improve air quality by lowering impurity levels caused by human respiration and chemical emissions – mainly volatile organic compounds (VOCs) – from carpets, furniture, paints, cleaning products and the like. Long-term exposure to VOCs causes sick building syndrome, in which building occupants experience rising levels of eye, nose and throat irritation, headache and allergic reactions. Under requirements to maintain a safe working environment, many factories now need adequate fresh air exchange to remove gaseous, process emissions and/or heat build up.

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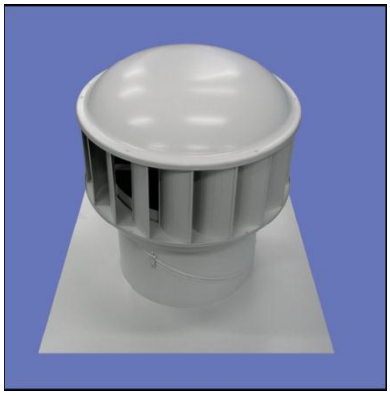
ECOPOWER HYBRID VENTILATOR:



TECHNICAL SPECIFICATIONS:

Flow rates & energy efficiencies under power:

Throat size (mm)	Max Exhaust Rate (m^3/hr)	Power (w)	Efficiency (m^3/hr/w)
100mm	140	12.8	11
150mm	198	10.0	20
400mm	2,400	68	35
600mm	4,250	116	37
900 mm	10,000	260	38

Flow rates under wind only : 12km/hr, ΔT = 10ºC, H = 9m :

Throat size (mm)	Flow Rate AS470:2000 (m^3/hr)
100mm	N/A
150mm	106
400mm	978
600mm	1572
900mm	4379

Rated wind speed: 198km/hr +

Technical features

• Does not rely on the wind, electric motor allows guaranteed extraction rate in all conditions
• Placement of the motor assembly in the vent design does not impede throat
• Very high levels of mechanical energy efficiency (see above)
• Very low operational noise

ECOPOWER HYBRID VENTILATOR:

Unique Selling Features
- Dependable ventilation that performs when required
- The highest levels of mechanical energy efficiency.
- Advanced German motor technology.
- Low noise
- No need for 3 phase power
- No need for support trimmers

Market Position
- New product on the market
- Highest quality German motor technology
- Revolution in sustainable energy vent technology

Reseller features & benefits
- Product is unique; no equivalent design is available from competitors, patent protected
- Large variety of applications including; Commercial, Industrial, Schools & Residential
- Large range of colours (see Hurricane colour chart)

Table 1.

ecopower® Model	Power Source	Weight of Head	Noise dB(A) @ 3m	RPM
EP100	6VDC	2.1kg	N/A	424
EP150	9VDC	2.5kg	N/A	410
EP400	200 – 277 V AC	10.7kg	46	313
EP600	200-277 VAC	18.0kg	49	235
EP900	240V AC	40.0kg	45.5	180

EXTRAORDINARY PERFORMANCE:

The ecopower® concept has demonstrated extraordinary energy efficiency under power load (Table 2). Exhaust rates per unit of energy are well above that achieved by comparable sized axial fans while noise levels are significantly lower.

Table 2.

ecopower® Model	Exhaust rate m^3/hr, $\Delta p=0$	Power (W)	Specific Flow Rate $m^3/hr.W$
EP100	99	3.6	27.5
EP150	198	10.0	19.8
EP400	2400	68	35
EP600	4280	116	37
EP900	10000	260	38

PERFORMANCE UNDER WIND POWER ALONE:

How does ecopower® perform under wind power alone compared with the standard Hurricane wind turbine? Results show that when ecopower® and standard Hurricane are tested to AS4740:2000 – Australian and New Zealand standard for Natural Ventilators that ecopower® **provides exhaust rates about 10% greater than standard Hurricane due to less throat blockage**.

BENEFITS OF ecopower®

ecopower® offers customers the following unique benefits:

- Optional powered ventilation without reducing the performance of wind exhaust levels (which occurs if a motor and fan blades are installed in the throat).
- Highest levels of energy efficiency for a mechancial device
- Much lower operational noise levels compared with similar capacity axial fan products.
- Dependable ventilation that performs when required.
- Advanced German motor technology.
- CSR Edmonds' vertical vane vent technology, which outperforms traditional spherical shape metal vents of the same throat diameter* in wind power mode.
- Lighter weight than comparable axial fans.
- Single phase (EP400, EP600 & EP900) and low voltage (EP100 & EP150) power, allows simpler electrical installation.

* Flow coefficient tests performed under AS4740:2000 by CSR Edmonds.

ECOPOWER HYBRID VENTILATOR:

IMPORTANCE OF ENERGY EFFICIENT SOLUTIONS

Growing environmental concerns demand that ventilation requirements be met by the most energy efficient means available.

Wind turbine ventilators can perform this function well, however for reliability they depend on favourable wind conditions, which are not always present when temperatures are extreme. They are, in effect, ‘slaves to the vagaries of wind’.

CSR Edmonds has developed and secured intellectual property rights for the world’s first true hybrid ventilator. The ecopower® is both a wind driven and motorised ventilator with the capacity to operate by wind alone or by both wind and electrical power simultaneously.

ecopower® – TRUE HYBRID VENTILATION:

ecopower® utilises an electronic commutating (EC) motor installed in the head of the ventilator to enable motorised boost during periods of low wind speed or special ventilation needs. The motor can be activated by any digital measure, such as temperature, humidity gas concentration level etc. The standard product is controlled manually by a switch (not included).

Unlike previous attempts to produce a hybrid mechanical/wind vent, ecopower® has no motor and fan blade in the throat of the vent. This is extremely important. Research using AS4740:2000 (Performance of Natural Ventilators) has shown clearly that any obstruction in the throat of a wind ventilator will greatly decrease vent performance under wind load. The level of flow reduction can be 40% or greater. Also, axial fans located in the throat of wind vents can produce significant noise levels. Ecopower® is one large direct drive centrifugal fan. The bearing system of the motor becomes the bearing system of the ventilator. This means that the vent can be free spinning under wind load or power activated as conditions require. The use of an EC motor ensures that the best energy efficiency features available are factored into the product design.

PRODUCT RANGE:

ecopower® is presently available as standard product in five sizes, viz. 100mm, 150mm, 400mm, 600mm and 900mm throat sizes.

APPLICATIONS OF ecopower®

The likely range of potential applications for ecopower® are unlimited but include:

- Remote Toilet Systems

Removal of gaseous by-products from hybrid, composting an chemical toilet systems. Already Gough Plastics, a very successful North Queensland manufacturer of remote toilet systems is using the ecopower® EP100 to reliably remove odours from their highly successful solar powered, hybrid toilet systems due to its:

1. dependable flow rate
2. long life
3. low maintenance
4. high corrosion resistance
5. high energy efficiency (crucial when relying on solar power).

SCHOOL CLASSROOMS

In many states of Australia it is Government policy to use various means of ventilation to improve classroom conditions during summer rather than rely on energy intensive air conditioning. However the performance of wind turbine ventilators is always subject to wind conditions. The use of wind turbines with fan power assist has been used but these products have lower wind turbine extract rates due to throat blockage and are significant power users. ecopower® will provide unimpeded wind performance with low energy power boost option. When used in conjunction with EC Damper Grilles, ecopower® provides a means of efficiently ventilating individual classrooms directly to freshen air and remove trapped heat.

The ecopower EP600 has been used on Alexandria Hills State High School, to replace the existing spherical shaped wind driven ventilators as the system was not performing to desired standards.

COOLING OF ELECTRONIC COMPONENTRY:

Rail authorities have trialled the use of ecopower® for cooling of electronics in signalling control cabinets to improve system reliability. Results to-date have been impressive with low energy usage a feature of ecopower®. A Substitute for Powered Ventilation Powered ventilators have been used for ventilation purposes in many factory and commercial applications. Although they may adequately achieve air movement requirements, they do so with;

1. High energy consumption and often the need to use 3 phase power

2. High noise levels often exceeding 60dB(A) @ 3m

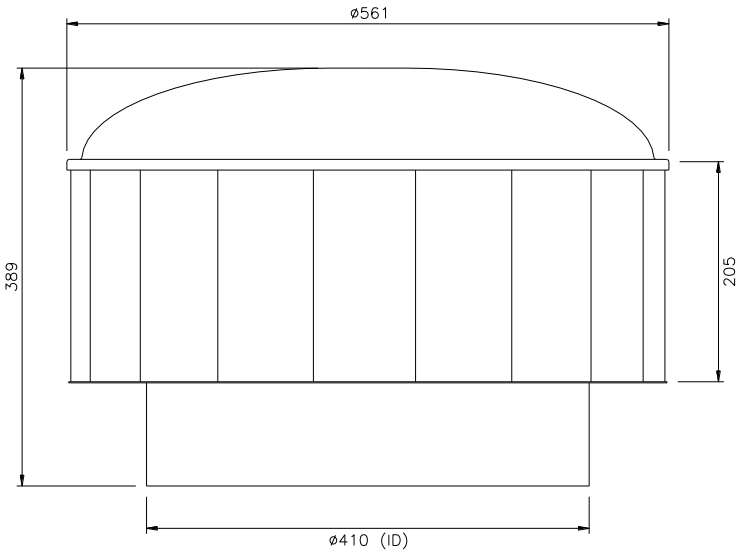
The ecopower® overcomes these limitations significantly by employing low speed, high energy efficient hybrid technology.

HOMES

Trials conducted by CSR Edmonds have shown very promising results for use of ecopower® technology in homes to remove heat.

In conjunction with proper insulation levels, this technology could significantly reduce energy usage for cooling in homes.

The following figure is an example of the heat removal rates of the Hurricane H400 & the ecopower® EP400 for varying ambient conditions. It shows the greater capacity of the ecopower® EP400 to remove heat compared with equivalent sized wind driven ventilators.



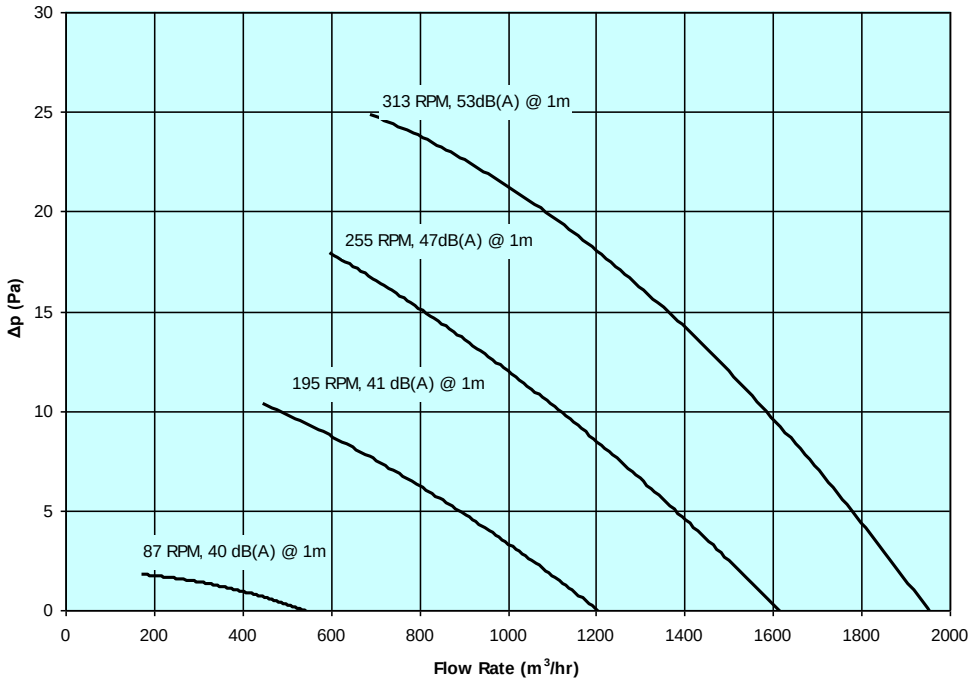
SPECIFICATIONS:

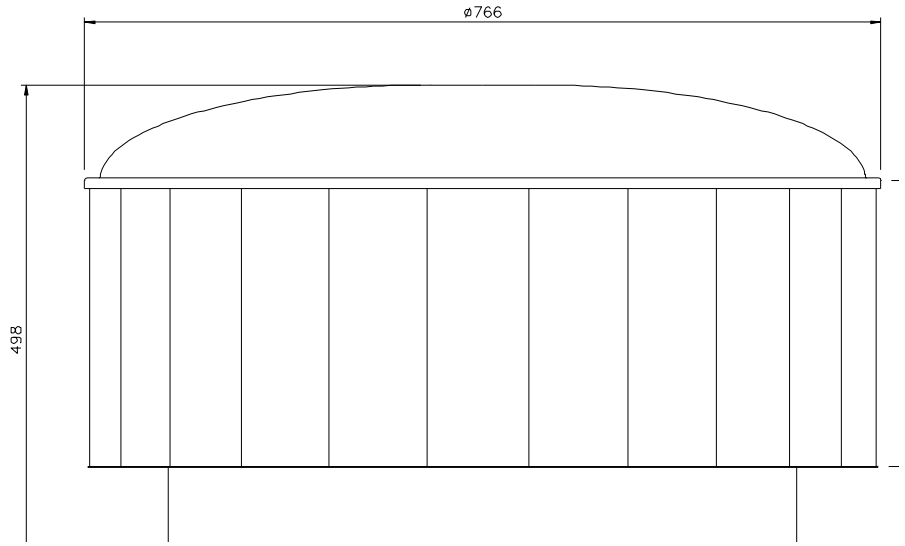
Material: Turbine & throat: Aluminium 5005 H34
Dome: Aluminium 1200 O
Brackets: Mild Steel (Powdercoated)

Weight: 10.7kg

Electrical: Electronic commutating (EC) motor
200-277V AC
Max. running current draw: 0.16A
Max. running power consumption: 68W
Specific flow rate (@ Δ p=0): 35m^3/hr/W

Performance Chart



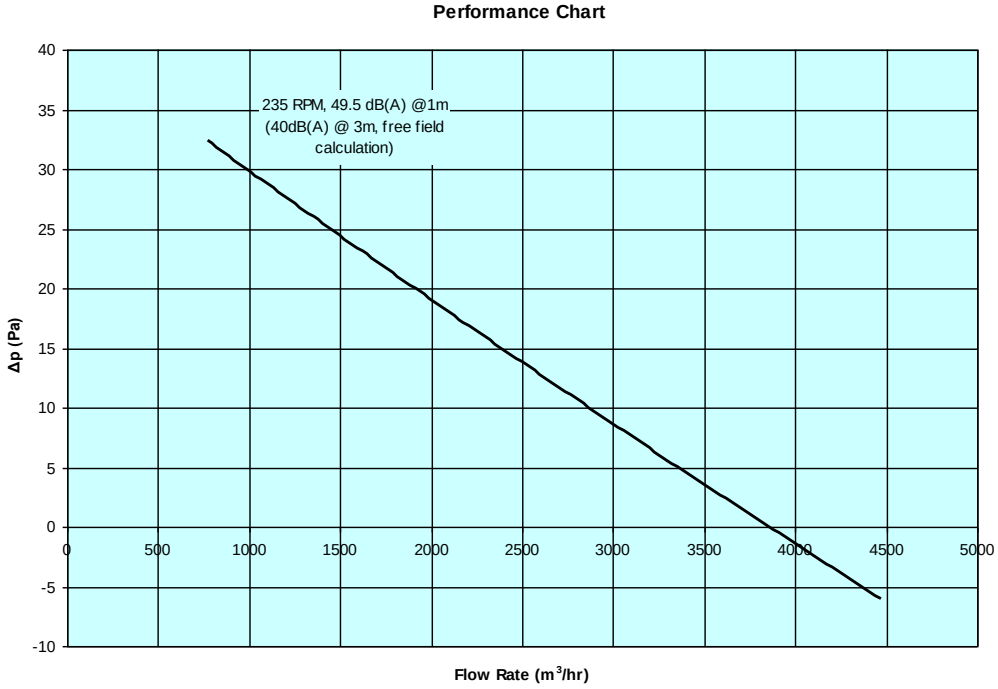


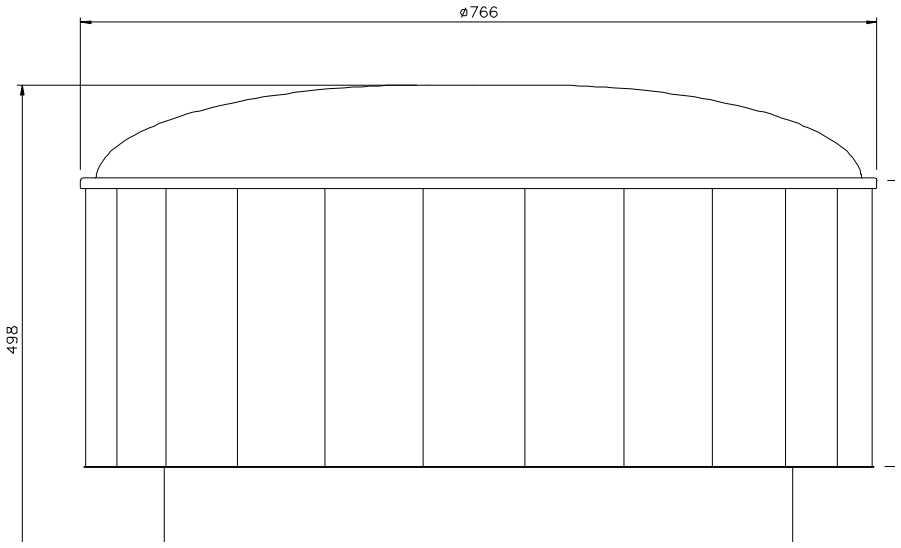
SPECIFICATIONS:

Material: Turbine & throat: Aluminium 5005 H34
Dome: Aluminium 1200 O
Brackets: Mild Steel (Powdercoated)

Weight: 18 kg

Electrical: Electronic commutating (EC) motor
200-277V AC
Max. running current draw: A
Max. running power consumption: 116 W
Specific flow rate (@ Δp=0): 45.3 m^3/hr/W





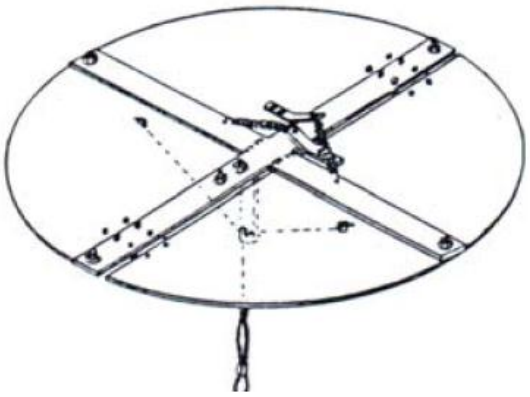
SPECIFICATIONS:

Material: Turbine & throat: Aluminium 5005 H34
Dome: Aluminium 1200 O
Brackets: Mild Steel (Powdercoated)

Weight: 40.0KG

Electrical: Electronic commutating (EC) motor
200-277V AC
Max. running current draw: 0.36A
Max. running power consumption: 260W
Specific flow rate (@ $\Delta p=0$): 38 m^3/hr/W

HURRICANE DAMPERS:



DESCRIPTION:

Edmonds produces two types of damper; a basic manual operated spring loaded damper with automatic opening device. (Type 1) and an automatic electronic damper with a geared motor with switching device (Type 5). They are designed to impede the throat of the ventilator, in effect turning the unit off.

Technical Specifications:
• Sizes: 300mm, 400mm, 450mm, 500mm, 600mm, 700mm, 800mm & 900mm

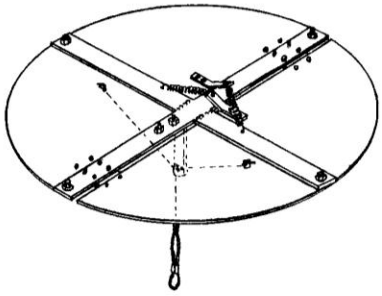
Technical Features:
• Type 1: Spring loaded cord operated manual type
• Type 5: 240v Electric motor operation unit, which is wired to a switch for easy control

Unique Selling Features:
• Allows the ventilator to be controlled; open when it is hot, closed when it is cool

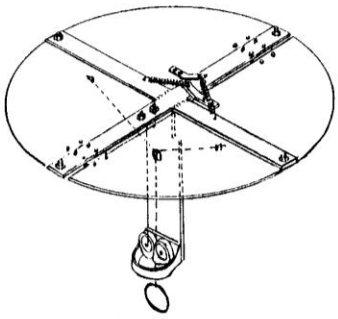
Market Position:
• Unique design, purpose built to suit the Hurricane product range

Reseller Features & Benefits:
• Product made by special order only
• No need to carry stock can be ordered when required

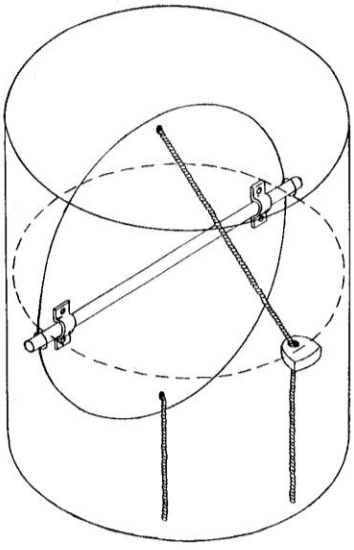
Competitive Products:
• No direct competitors



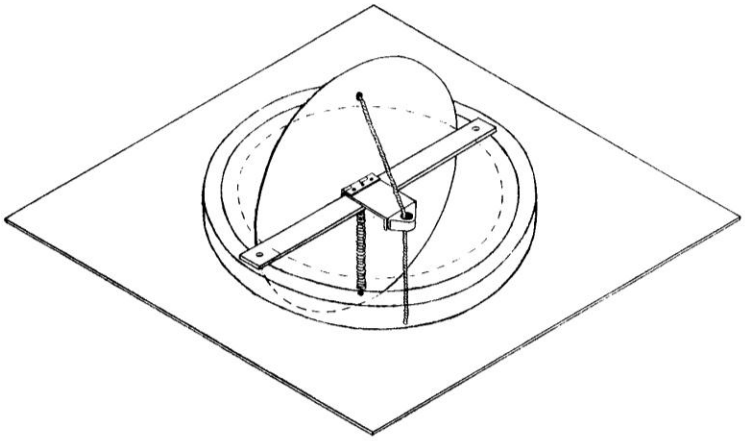
Type 1
Manual Butterfly Type Damper



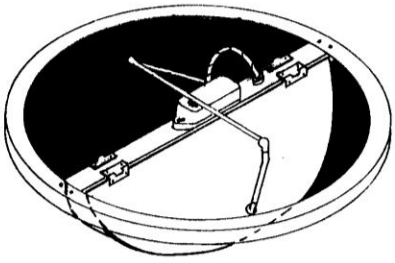
Type 2
Manual Butterfly Type Damper with Cam Cleat



Type 3
Manual Disc Type Spigot Damper



Type 4
Manual Disc Type Windmaster/SupaVent Damper

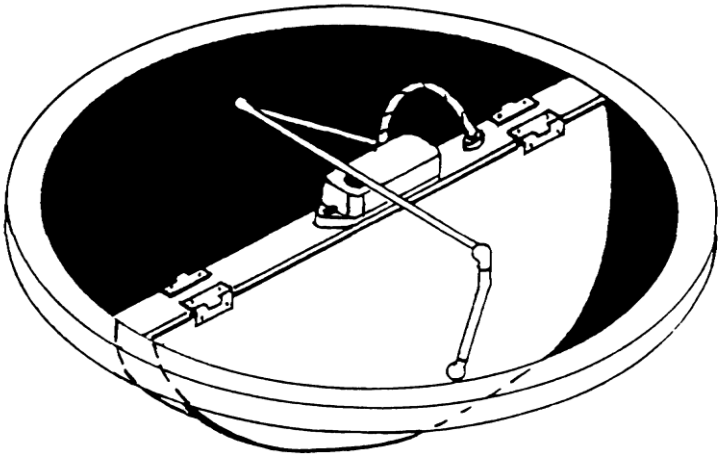


Type 5
Electric Butterfly Type Damper

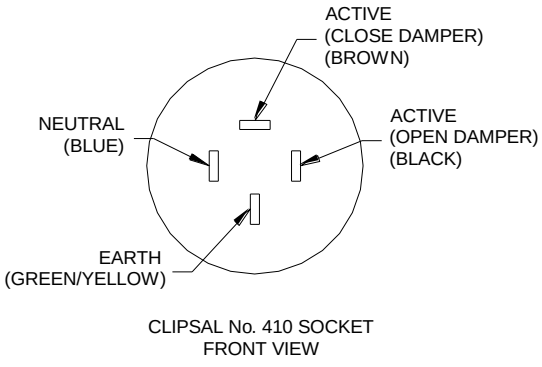
Type 6: (disc type electrical damper)

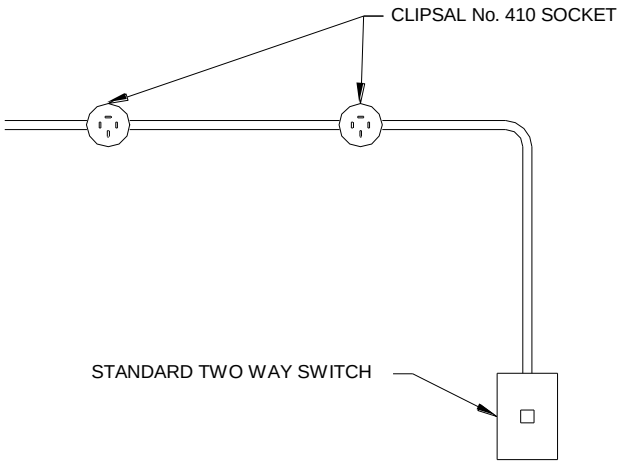
- Available in sizes 300, 400, 450mm
- Only available with special bases **not** varipitch or type 1 ex
- Roof pitch restrictions are the same as those of the respective base that it is to be fitted to
- Can only be supplied fitted to base and therefore may only be supplied with a special base
- 240VAC operation (two activities – one to open one to close)
- Supplied wired to 4 pin plug
- **Not** held in stock, orders only approx 10 working days

ELECTRICALLY OPERATED DAMPERS (type 5):



ELECTRICAL WIRING:





MOTOR SPECIFICATIONS:

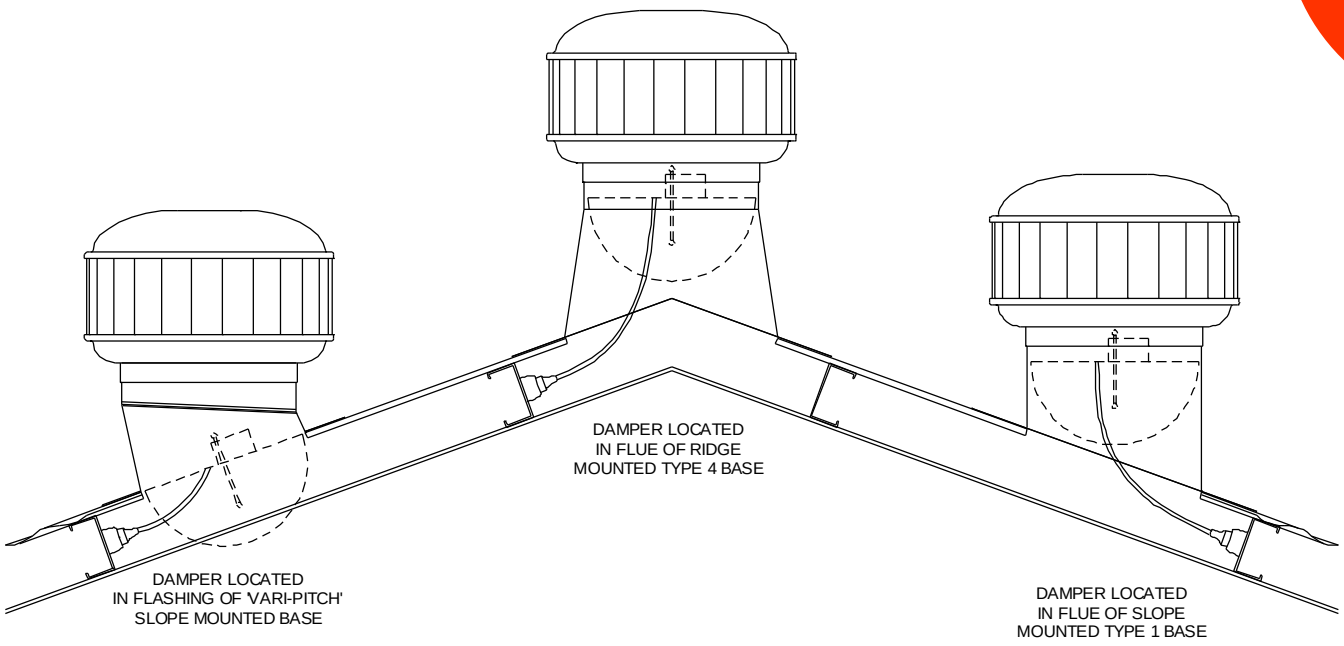
SIEMENS Landis & Staefa GDB331.1GM (models H300 – H600)
Torque: 5Nm
SIEMENS Landis & Staefa GLB331.1GM (models H700 – H900)
Torque: 10Nm

Common Specifications:
240Volt, 50Hz, 2VA
Operating time, open closed 150seconds
Motor Protection IP54

Sizes available to fit Edmonds Hurricane Turbine Ventilators from H300 to H900.

ELECTRICALLY OPERATED DAMPERS (type 5):

EXAMPLES OF 3 DIFFERENT BASES:

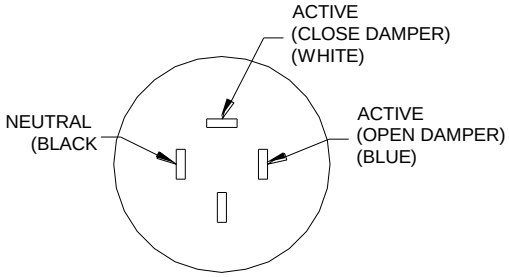


SPECIFICATION:

Edmonds Electrically Operated 'Butterfly' type dampers are manufactured from aluminium and are capable of being installed in slope or ridge mounted bases. The size of the dampers match the throat size of the Edmonds Hurricane Ventilator in which they are mounted.

Operation is by a 240Volt, 50Hz, 2VA motor [SIEMENS Landis & Staefa GDB331.1GM (models H300-H600) or GLB331.1GM (models H700-H900)] mounted internally above the damper and holding the damper in either the fully open or fully closed position. The dampers come complete with 1.5 metres of cable fitted with a Clipsal 439/4 four pin plug, ready to be plugged into a Clipsal 410 socket to be supplied and installed by an electrical contractor on site. The open and close switch wire is to be continuously energised from a 240V mains supply.

ELECTRICAL WIRING (PLUG):

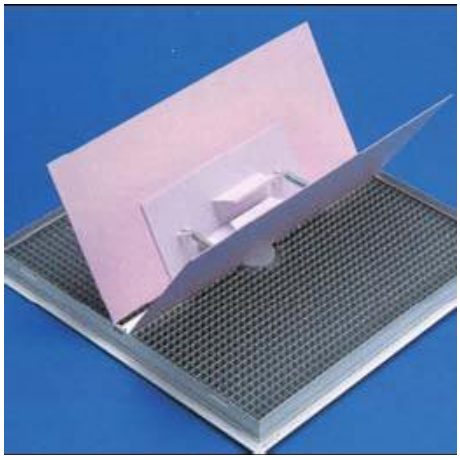


4 PIN MOTOR PLUG
FRONT VIEW

MOTOR SPECIFICATIONS:

SIEMENS Landis & Staefa GDB331.1GM
(**models H300 – H600 ONLY**)
5Nm
SIEMENS Landis & Staefa GLB331.1GM
(**models H700 – H900 ONLY**)
10Nm

EC DAMPER GRILLE:



DESCRIPTION:

A ceiling mounted, return air grille, with controllable flaps to regulate ventilation within a room. The EC Grille is available in two sizes. It is capable of operation from ground level.

Technical specifications
- Flow rate: N/A
- Rated wind speed: N/A
- Size: 400 x 400 mm, 600 x 600 mm

Technical features
- Cam operated damper fitted to the back of the unit to allow controllability
- 400 x 400 mm unit designed to be screwed in to ceiling
- 600 x 600 mm unit designed to fit into 1200 x 600 panel suspended ceilings

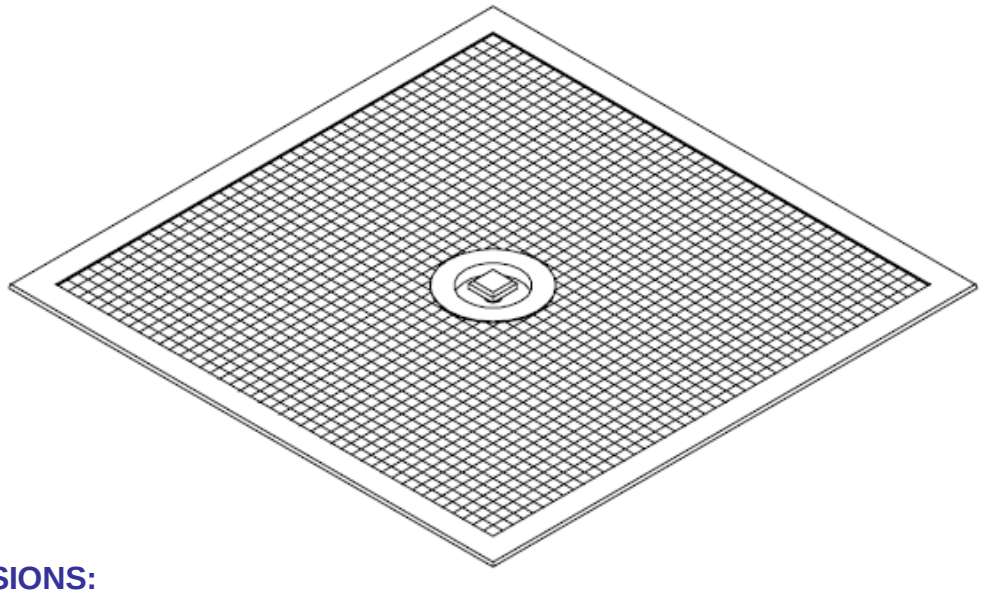
Unique Selling Features
- Can be opened and closed with ease to allow heat in a room to be expelled
- Available in two sizes for different ceiling types

Market Position
- Product ideally suited for application in any suspended or fixed ceiling
- Large variety of applications including; Commercial, Industrial & Schools

Reseller features & benefits
- Product available ex stock
- No need to carry stock can be ordered when required

Competitive products
- No direct competitors

EC DAMPER GRILLE:



DIMENSIONS:

MODEL	Overall Size (mm)	Opening Size (mm)	Grille Area (mm)	Overall Height (with damper open) (mm)	Throat Area (m^2)	Weight (kg)
H100	253	100	107	290	0.0090	1.4
H150	283	125	155	332	0.0189	2.0
H300	364	175	308	477	0.0745	3.8
H400	389	205	410	561	0.1320	4.6
H450	443	230	462	648	0.1676	6.3
H500	459	265	511	702	0.2051	7.0
H600	484	275	602	766	0.2846	8.1

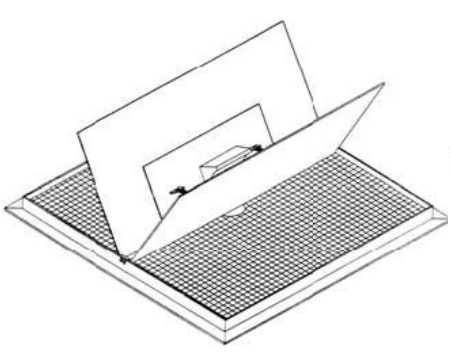
Tolerances: Size +/- 2mm
Weight +/- 0.1kg

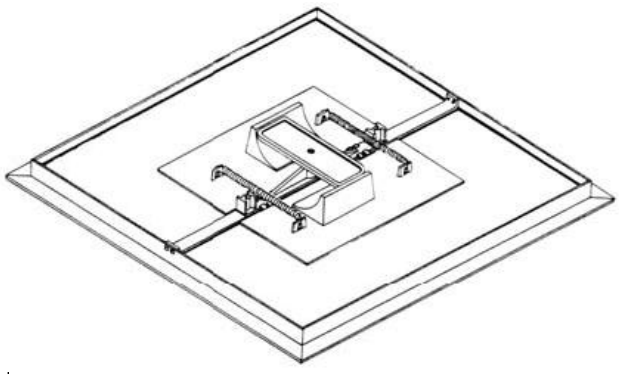
The 595 'lay-in' model fits 600 x 1200mm suspended ceiling grids.

SPECIFICATIONS:

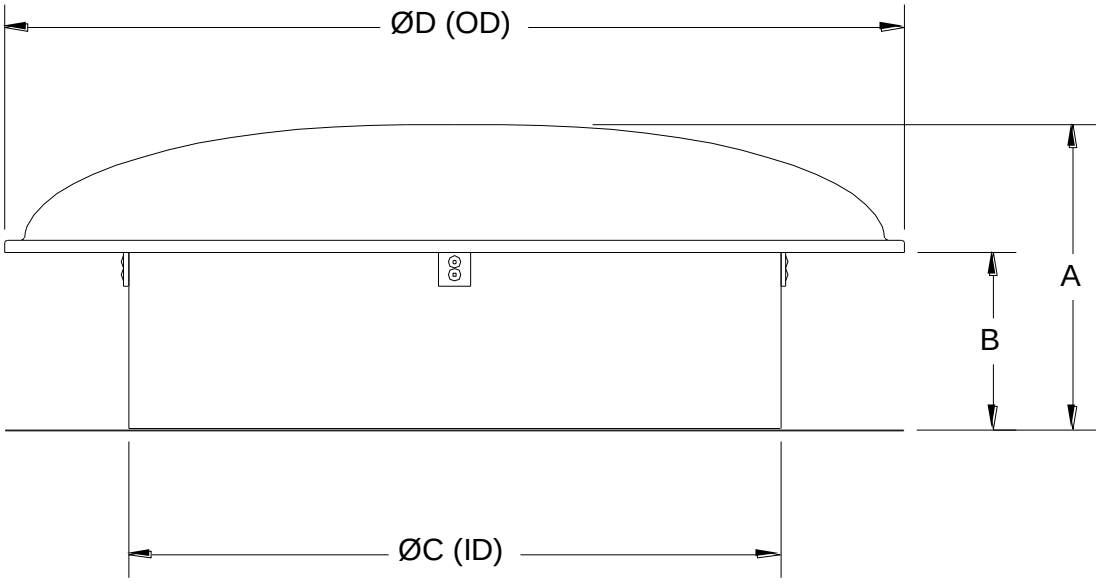
Material: Grille: Aluminium- Powder coated white
Damper: ASA & PVC Plastic

Operation: Rotate square knob anti-clockwise to open and clockwise to close.





STATIC VENTILATOR:



DIMENSIONS:

MODEL	A (mm)	B (mm)	ØC (mm)	ØD (mm)	Flashing Size (mm)	Throat Area (m^2)	Weight (kg)
150	161	79	152	253	430x430 (soft)	0.0189	0.7
300*	280	111	270	550	500x500 (soft)	0.0573	2.5
400	232	140	405	558	750x700	0.1288	2.6
500	240	140	506.5	699	750x700	0.2015	3.3
700	417	295	699	1003	1000x1000	0.3837	6.4

Tolerances: Size +/- 2mm
Weight +/- 0.1kg

*shape of 300 model varies from above drawing.

SPECIFICATIONS:

Description: Static air ventilator with integral bird screen
Material: All aluminium with polypropylene bird screen (300).

TESTS AND STANDARDS:

- **Rain Penetration**
- **Wind Load**
- **Heat Tolerance**
- **AS 4740:2000**
- Full Test results are available on request

SUPPORTED BY THE LATEST RESEARCH:

- CSR Edmonds has been the first entity in the world to establish test facilities in accordance with AS4740:2000 requirements. This initiative has enabled CSR Edmonds to fully evaluate vent performance across a wide spectrum of designs and materials.
- The results to date have shown:

  The Hurricane vertical vane design has flow coefficients up to 97.5% than comparable spherical shaped ventilators.

PREPARING A SCHEME:

Considerations:

- Air volume/shape
- Roof pitch
- Sources of make-up air
- Heat producing operations
- Air exchange rate
- Location of vents
- Installation
- Grilles

TECHNICAL DATA SHEET REGISTER:

DATE	TECHNICAL DATA SHEET	NUMBER	INITIAL
21/05/1998	Induct	1001	TA
22/05/1997	300mm Sewer Vent Educt	1002	DM
22/05/1997	225mm Sewer Vent Educt	1003	DM
22/05/1997	150mm Sewer Vent Educt	1004	DM
		1005	
26/04/2000	Ecofan Mounting Box	1006	TA
8/05/2000	Ecofan	1007	TA
17/05/2000	Packed Weight & Sizes (Domestic Products)	1008	TA
17/05/2000	Packed Weight & Sizes (Industrial Products)	1009	TA
10/02/1998	Electrically Operated EC Grille	1010	TA
1/05/1997	Electrically Operated Dampers	1011	NM
1/05/1997	Electrically Operated Dampers	1012	NM
10/02/2000	Electric Damper Plug Wiring	1013	TA
		1014	
17/06/1997	Ventilator Base Types	1015	TA
10/07/2000	Special Base Dimensions Types 1,2 & 7	1016	TA
10/07/2000	Special Base Dimensions Types 3,4 & 6	1017	TA
		1018	
12/06/1998	Damper Types	1019	TA
15/04/1998	EC Damper Grille	1020	TA
30/07/1998	Egg Crate Grille	1021	TA
30/07/1998	Dress Ring	1022	TA
4/10/2000	Aria IV Louvre (100mm)	1023	TA
12/03/1998	Solar Panel (with fixing straps)	1024	TA
22/08/2001	Static Ventilator	1025	TA
24/09/1998	EC Damper Grille Mounting Box	1026	TA
29/01/1999	Hurricane Ventilator	1027	TA
29/01/1999	Hurricane Varipitch	1028	TA
29/01/1999	Hurricane Flashing	1029	TA
13/04/1999	Hurricane, Varipitch & Flashing	1030	TA
15/04/1999	Suredraft Ventilator	1031	TA
1/12/1999	Maestro Ventilator	1032	TA

TECHNICAL DATA SHEET REGISTER:

DATE	TECHNICAL DATA SHEET	NUMBER	INITIAL
9/11/2000	Windmaster	1033	TA
9/11/2000	SuperWhirly	1034	TA
9/11/2000	TurboVentura	1035	TA
9/11/2000	SupaVent	1036	TA
22/11/2000	Vehicle Ventilator (GP Vent)	1037	TA
23/11/2000	Add-A-Fan	1038	TA
9/01/2001	Solabrite 300	1039	TA
18/01/2001	Whirly Mate	1040	TA
17/09/2001	Maestro Ventilator (Japanese Specification)	1041	TA
11/12/2001	Conical Adaptors	1042	TA
18/04/2002	Solabrite 400	1043	TA
8/05/2002	Tall Vane Hurricane Ventilator	1044	TA
8/10/2002	Roof Valve	1045	TA
11/11/2002	Hurricane S2 Ventilator	1046	TA
27/02/2003	Hurricane Heavy Industrial Ventilator	1047	TA
10/07/2003	Hurricane Titanium Ventilator	1048	TA
13/07/2004	Hurricane FR Fire Rated Ventilator	1049	TA
2/02/2005	Polyeave Vent	1050	TA
8/02/2005	Louvre - Standard	1051	RV
14/03/2005	Airmaster 300 x 300 4-way, 250mm duct	1052	RV
14/03/2005	Airmaster 300 x 300 4-way, 300mm duct	1053	RV
5/05/2005	Hurricane HI-O Ventilator	1054	RV
24/05/2005	Turbobeam	1055	TA
6/06/2006	Hurricane ecoPower 400	1056	TA
15/09/2006	Hurricane ecoPower 600	1057	TA

QUOTATION PROCESS: EXAMPLE

1. Establish requirement of enquiry eg. Heat relief OH&S, reduction of humidity levels, air exchange to dilute air born toxins/VOCS or fumes, supply specified quantity, supply & installation. The requirements determine the line of qualification that you will need to adopt.
2. Obtain accurate dimensions of premises Length x Width x Height = Volume.

   A set of plans may be required. You will encounter enquiries where only the volume of the premises is provided as the formula that we use is based on a ventilator being positioned on a roof approx, every 5 metres it is imperative that you obtain **all** of the measurements.
3. At this point we establish the amount of air changes that are required to achieve the desired effect. This can be achieved through a series of questions that will give a clear picture of the type of activities that are carried out on a day to day basis.

EXAMPLE:

Q: What is the general nature of the business etc?
A: A warehouse

Q: Describe the layout & contents of the warehouse.
A: The warehouse is divided up into areas' of storage (pallet racking), processing & dispatch.

Q: What kind of goods do the business store & process?
A: Spices

Q: Do you have any equipment that generates heat, or odours?
A: We have heat sealing machines; we repack the spices into various sizes.

Q: Do you have any forklifts? How many? What fuel do they use?
A: We have two forklifts, one is powered by gas and the other is electric.

Q: Are any vehicles driven into or parked in the warehouse overnight?
A: Yes, two trucks continually drive in, load up & leave & they are parked inside overnight for security reasons.

We have established a lot of valuable information in a very short space of time; we know that heat is generated by the repackaging process, forklifts and vehicles. The same three create odours and fumes. We also know that the pallet racking will reduce the movement of air.

The measurements of the warehouse are 35m (length) x 20m (width) x 8m (height) enter these measurements and the relative data wind speed, temp. difference, size of vent, ACH = air changes hour method preferably ZONE Ecopower size required air changes into the ventilation formula v2.1.

The formula will provide the amount of Hurricanes and Ecopowers to achieve the specified air changes, the flow coefficient and discharge coefficient rates of the vents and the option of the annual running costs of the Ecopower based on X hours per day.

The next step is to establish the source of make-up air, via roller doors, entry doors, windows, grilles etc, an additional source of make-up air may be required.

An inspection may be necessary to confirm the amount of air changes is sufficient to achieve the desired effect; and to avoid possible post installation problems.

A site inspection is necessary if installation is required and because of OH&S/Work Cover requirements the inspection is usually carried out by the approved installer. However if you are required to visit the site REFER to INDUSTRIAL VENTILATION SALES HANDBOOK for detailed recommendations.

In the situation where an inquirer who is not known to you requests the price to supply a particular size and quantity of vents, for example 6 X Hurricane 600; ask how the quantity and size of the ventilator were formulated. You may receive the answer something similar to “it sounds about right” this sounds alarm bells and the quotation service can be offered to the enquirer and the process begins.

Somewhere in the quotation process it may well be advisable to establish if there is a set budget for the work. The tendering process involves a greater attention to detail as the size and quantity of the ventilator, powder coating, dampers, ceiling grilles etc are often separated in the specs and sometimes overlooked.

SPECIFICATIONS:

The roof ventilators shall be CSR Edmonds Hurricane Turbine Ventilators as indicated in the drawings. They shall be manufactured from aluminium with vertical turbine vanes and incorporate the Tandaco Bearing System. The bases shall be vari-pitch or ridge mounting and dampers shall/shall not be provided. The ventilators shall be supported by a 15 year warranty as provided CSR Edmonds Dee Why NSW`Australia.

TABLE OF RECOMMENDED AIR CHANGES PER HOUR (Lower than often specified because Edmonds uses accurate flow rates based on AS4740 – not inflated flow rates)	
	General guide
Factory and workshop	3
Warehouses	2 to 3
Gymnasiums and squash courts	3
Assembly halls	3 - 4
Garages	5
Toilets	5
Laundries	8
Air change rates must perform to the local health departments code covering the type of installation	
Stables	Air rate is dependent upon the number of animals confined, but can vary
Piggeries	Between 10 to 50
Poultry Houses	Between 60

THE RIGHT CHOICE:

The installation of Hurricane Turbine Ventilators will provide an efficient and cost effective system of Natural Ventilation. Designed and manufactured in Australia for a harsh environment, the hurricane is suited for Industrial, commercial and community buildings, including schools, where its low starting torque provides ventilation for hot class rooms on virtually still days.

STANDARD HURRICANE WARRANTY = 15 YEARS
SPECIALISED HURRICANE WARRANTIES VARY

Manufactured from corrosion resistant aluminium, the Hurricane has been tested by Construction Research Laboratory Inc, Miami Florida and withstood a continuous gusting of 240km/hr without damage. The Dynamic Weather Resistance Tests (water penetration tests) were carried out by the CSIRO to AS2050.1989 and met the test requirements. The CSIRO were also commissioned to carry out the Dynamic wind load & water penetration tests AS2428.1.
The Hurricanes met the test requirements.

DYNAMICS OF THE HURRICANE TURBINE

A well designed turbine ventilator, like the Hurricane, takes advantage of the wind to create a positive flow through the throat of the ventilator. The wind influences the performances of the ventilator in two ways:

1. As the wind approaches and strikes the ventilator, it jumps, creating an area of low pressure on the leeward side of the turbine. This low pressure zone is fed by drawing air from the turbine, causing a continuous extraction of air from the building, and

2. As the turbine rotates, the centripetal forces associated with the rotation flinf air outwards from the tips of the vanes. Replacement air is drawn into the throat of the ventilator from the building causing continuous ventilation. The Hurricane will even rotate and exhaust in the absence of wind using the thermal currents developed within the building.