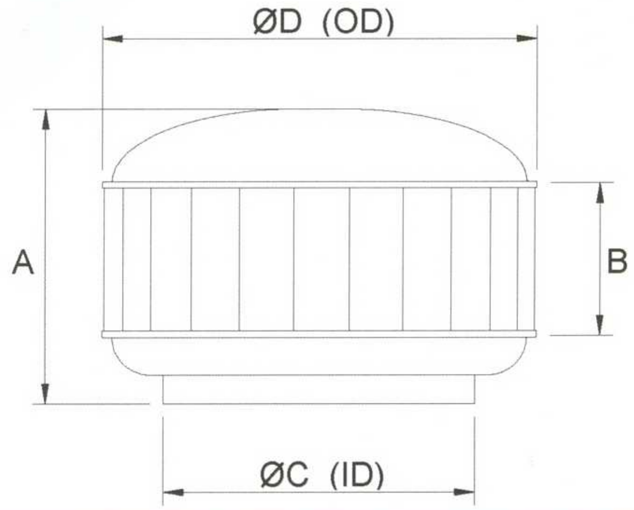
EDMONDS
Technologies for a Sustainable Future

DATA SHEET

HURRICANE™
TURBINE VENTILATORS



DIMENSIONS:

MODEL	A (mm)	B (mm)	ØC (mm)	ØD (mm)	Throat Area (m^2)	Weight (kg)
H100	253	100	107	290	0.0090	1.3
H150	283	125	155	332	0.0189	1.9
H300	364	175	308	477	0.0745	3.7
H400	389	205	410	561	0.1320	4.5
H450	419	230	462	648	0.1676	6.2
H500	459	265	511	702	0.2051	6.9
H600	484	275	602	766	0.2846	8.1
H700	556	320	705	876	0.3904	11.6
H800	580	345	799	1003	0.5014	14.9
H900	643	400	897	1096	0.6319	18.1

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

SPECIFICATIONS:

MATERIAL:
Turbine & throat: Aluminium 5005 H34
Shaft: Aluminium 2011 T3
Dome & skirt: Aluminium 1200 O
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-Classification and performance)

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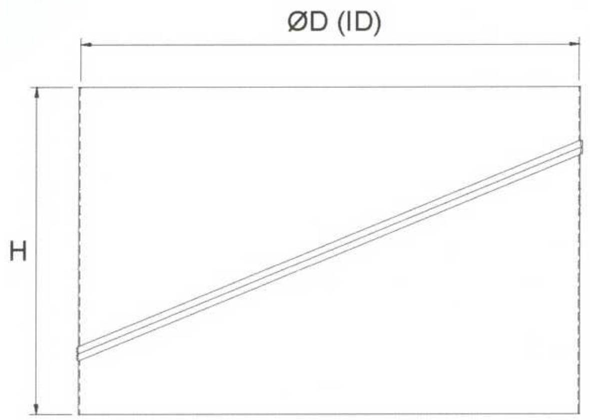

DIMENSIONS:

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

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

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

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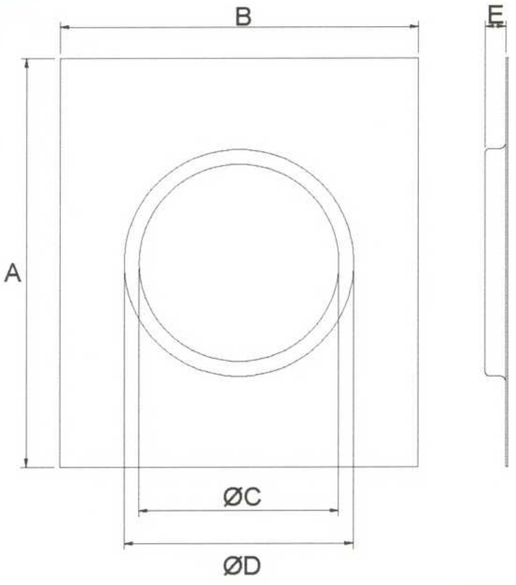

DIMENSIONS:

MODEL	A (mm)	B (mm)	ØC (mm)	ØD (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 +/- 2mm Weight +/- 0.1kg

SPECIFICATIONS:

MATERIAL: H100 & H150: Aluminium 5005 O
H300 – H900: Aluminium 5005 H34

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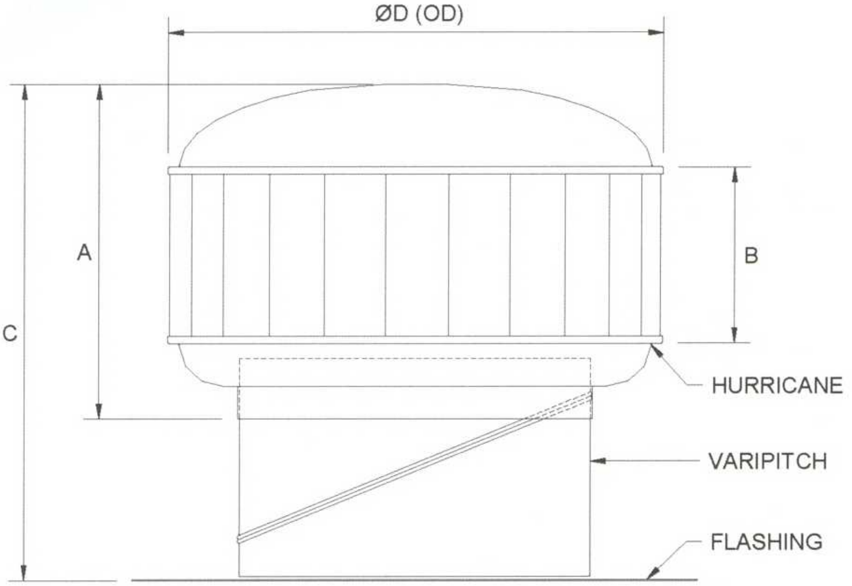

DIMENSIONS:

MODEL	A (mm)	B (mm)	C (mm)	ØD (mm)	Throat Area (m^2)	Weight (kg)
H100	253	100	313	290	0.009	1.8
H150	283	125	363	332	0.019	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.

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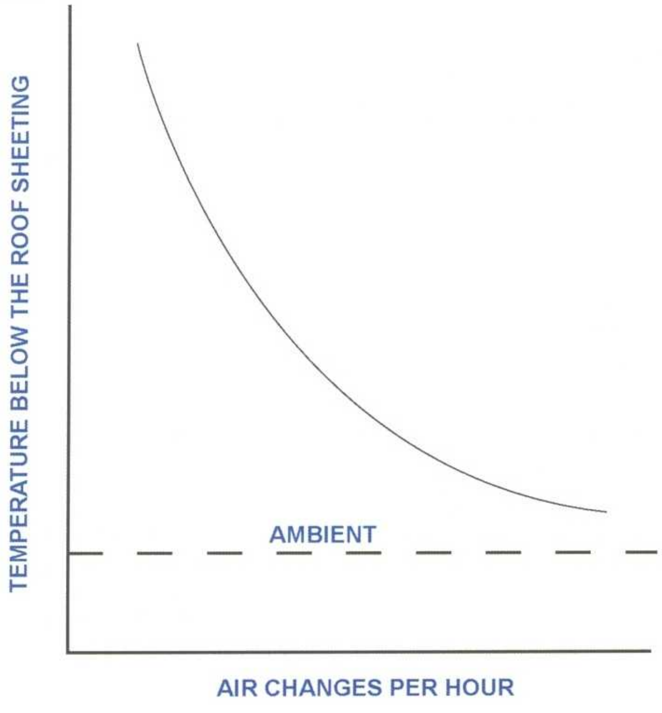
Some of the ASHRAE recommendations include:

TABLE 2.1 ACH recommendations by building type

Activity	Prescribed ACH
Factories and Workshops	5 to 10
Warehouses	5 to 8
Gymnasiums	5 to 10
Assembly Halls	10 to 15
Garages	10 to 15
Toilets	12 to 15
Laundries	12 to 20
Poultry Houses	10 to 50 (depends on density)

Ideally an air exchange rate for a particular project should be established on the basis of objectives and thermodynamic analysis. The heat load in the building from all sources (i.e. radiant energy, equipment, processes and machinery, lighting etc) should be determined and calculations undertaken on the number of dilutions per hour required from external air at given temperatures to reduce internal temperatures by the required amount. The resultant cooling curve will approximate that in figure 2.4. The closer the desire is to reduce average factory temperatures to near ambient, the higher the ACH. Clearly it becomes uneconomic to keep adding additional ventilation capacity beyond a point where the marginal improvements are inconsequential.

FIGURE 2.4 Cooling curve



2. OPERATION OF A VENTILATOR

2.1 Theory

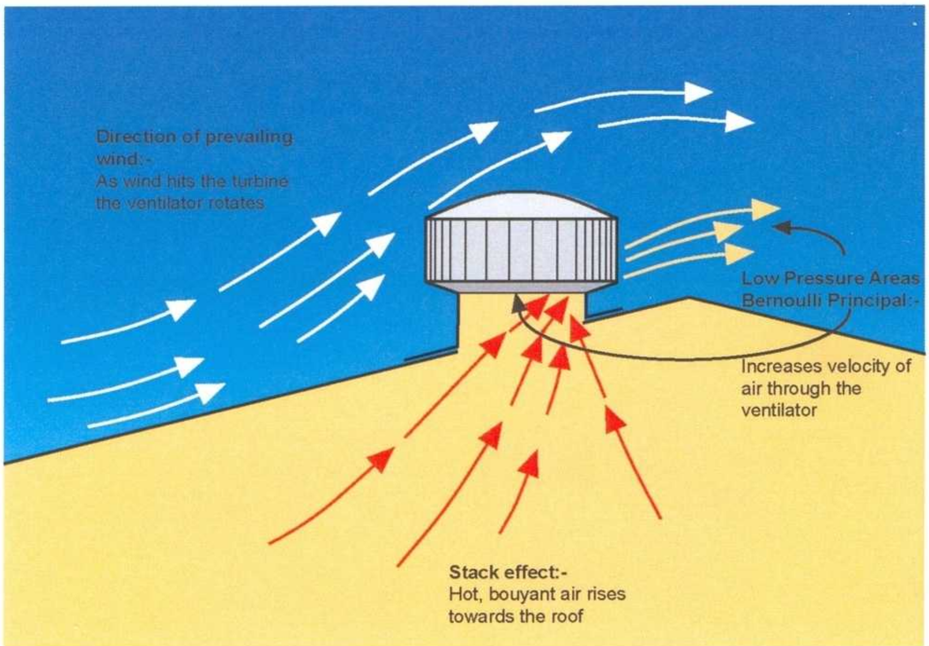
A wind driven ventilator will exhaust air by two different processes.

1. **Stack Effect:** Regardless of the spinning action, the area of the neck of the vent allows warm air to rise and pass out through the vanes. This action proceeds due to the density of air decreasing as temperature increases. Warm air rises and exerts a pressure, called 'stack effect'. The ability of a vent not to hinder this rising air is measured by its **discharge coefficient.** The higher the discharge coefficient of a vent of equivalent throat size, the higher is the exhaust rate due to stack effect. The discharge coefficient is influenced by internal blockages in the throat of the vent plus gaps between the vanes.

   The stack pressure is determined by the difference in temperature between that existing in the throat of the vent and that applying to fresh air entering the factory or warehouse plus the height of the 'stack'. The greater the temperature differential, the higher the stack pressure. Similarly, the greater the height, the higher the pressure.

2. **Siphoning Effect:** As a vent spins in the wind, a low pressure region is created on the leeward side. This phenomenon is known as the Bernoulli effect (see figure 2.1). This area of low pressure helps create a siphoning effect where the hot internal air of high pressure is sucked out and flows to the low pressure area. The efficiency of a vent to create this siphoning effect is measured by its **'flow coefficient'**. Edmonds vents have flow coefficients much higher than equivalent size spherical vane vents. The siphoning effect is influenced by vent design, weight of head and friction of bearing system.

FIGURE 2.1 Operation of a ventilator



Measurement of discharge and flow coefficients is possible using the apparatus and equations of AS4740:2000. Edmonds has established this test procedure for product evaluation and R&D purposes.