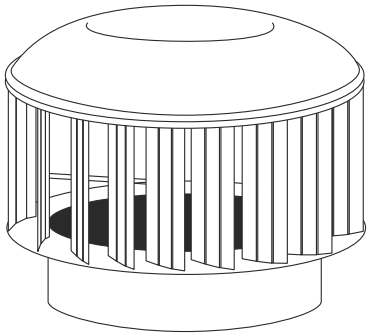
Industrial Turbine Ventilators

Product Data Sheet

ALSYNITE ONE

Alsynite One Industrial Turbine Ventilators are available in four sizes: 150mm, 300mm, 600mm and 900mm. They utilise the renewable energy of the wind to create a positive flow through the ventilator. Even the slightest wind speeds will cause the head to spin.



An area of low pressure is created on the leeward side of the vent and the air drawn out between the vanes on the head of the ventilator feeds this low pressure zone. This process allows for a continuous air flow through the vent.

The centripetal forces created by the rotation of the vent will expel the air outwards from the edge of the vanes and hot, stale air is replaced by cooler, fresh air from outside the building. This is known as ingress or make-up air. The make-up air inlet area should be 3 times that of the exhaust (throat) area.

Thermal currents and temperature differentials will also allow the ventilation process with the vent, even with no wind. The design principles that are utilised by the Alsynite One Industrial Turbine Ventilators have been used for over 30 years in New Zealand and Australia.

Industrial Turbine Ventilators

- Vertical vane technology for better performance at all wind speeds.
- Up to three times the exhaust capacity than round shaped ventilators.
- Light weight, high strength aluminium constructions means no rust.
- Performance without electricity.
- Year-round ventilation.
- High-precision, quality bearings.
- Larger exhaust openings for better ventilation results.
- 15 Year Warranty*

Ventilating a Building

For any ventilation system to work effectively there must also be an appropriate amount of inlets vents, relative to the amount of roof ventilators, to access the cooler and fresher air on the outside of the building.

The image below shows you the difference between a non-ventilated building (1), a ventilated building with insufficient inlets to allow fresh air into the building (2), and a properly ventilated building (3).

PLEASE NOTE To stop the possibility of water infiltrating through the vanes in either still or windy conditions, the vents must be installed with allowance for make-up air, not in wind shadows, and be horizontal. Make-up air inlet area should be 3 times that of the exhaust (throat) area. When dampers are installed the area calculated is 3 times that of the 12mm space around the closed damper.

Where problems have been encountered on rare occasions – water infiltration has been traced back to use of large vent capacities on buildings starved of sufficient make-up air supply, wherein vents can suck water up the side of the throat, and once it reaches the top of the throat it will be sprayed out by the forces of the rotating top. In this respect, it is easy at first to assume water is entering through the vanes. We are often not told that leakage occurs at night, when a building is typically tightly closed.

It is for this reason the use of remotely operated wall vents should be installed to work in conjunction with any systems with or without Dampers installed to the ventilators.

Particular caution should be applied with Gymnasium designs. These wall vents should remain partially open during winter months when the Vent dampers will be closed. This will allow for the make-up air to flow through the building at all times, eliminating potential for water ingress. On any roof with a low pitch, it is always advisable to ensure that a decent length throat is used on installation to maximise the distance between the Base and Vanes, this will help to avoid water rebound from the metal roof.

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SPECIFICATIONS

Part of Vent	Material
Vanes	Aluminium 5005 H34
Plates	Aluminium 5005 H34
Angle Adaptor	Aluminium 5005 H34
Flashing	Aluminium 5005 H34
Dome	Aluminium 1200 H0
Brackets	Aluminium 6060 T591
Tri-Bracket**	Powder coated Mild Steel
Shaft	304 Stainless Steel
Upper Bearing	Double row ball bearing - BWF30-119Z
Lower Bearing	Single row ball bearing - SB204-12C
Upper Bearing Assembly	Glass reinforced ASA
Upper Bearing Protector	Aluminium 1200 HO
Lower Bearing Protectors	304 Stainless Steel

**Tri-bracket & Lower Bearing only used on 900mm Vent

DIMENSIONS

Vent Type	AITV150	AITV300	AITV600	AITV900
Throat Area	0.018m^3	0.071m^3	0.283m^3	0.636m^3
Total Weight (kg)	2.5	5	12	25
Overall Diameter (mm)	332	480	770	1100
Overall Height (mm)	435	480	720	940
Throat Diameter (mm)	150	300	600	900
Flashing Size (mm)	400x400	500x600	900x900	1200x1200

IDEAL AIR CHANGES PER HOUR

Application	Air Changes per Hour
Factories & Warehouses	5 to 10
Gymnasiums	10 to 15
Assembly Halls	10 to 15
Toilets	10 to 15
Laundries	15 to 20
High Smell (e.g. Piggeries, Chicken Sheds, etc)	20 to 30

NOTE: recommended air changes depends on building usage

PERFORMANCE TABLE

Vent Type	AITV150	AITV300	AITV600	AITV900
Diameter	150mm	300mm	600mm	900mm
6km/hr	110	270	620	1560
12km/hour	210	480	1140	2700
16km/hr	280	620	1420	3460

Exhaust capacity: (L/sec) in following wind speeds

Damper for Wind Driven Ventilators

This Damper System is for use in Wind Driven Ventilators where the ventilation performance may need to be reduced at certain times. The system offers the ability to stop at any position whilst opening or closing.

There is a gap of approximately 12mm around the circumference of the damper blade to allow air flow through the ventilator at all times.

- Flap & Collar Material: 1mm Aluminium - 5005 H34
- Motor Specifications - 12DC - 50/60Hz - 2Nm
- Open Time: Approx. 15 seconds
- Close Time: Approx. 15 seconds
- Angle of Operation: 90 degrees. Functions: Open, Close or Stop
- Remote Systems: Learning - one remote can operate any number of dampers
- Transformer: Input 110-240V 50/60Hz
- Output 12V DC