

Clear Choice

ZerAx dual smoke fan set

DFS-CC-AZN-HT

Building & Industry

NOVENCO

SCHAKO Group



- Certified ZerAx® Ff300120 dual smoke fan sets
- Supplied as a single, pre-assembled unit for horizontal mounting
- Significantly reduced site installation times
- Eurovent 1/2 flange connection on both sides
- Tested and certified to BS EN 12101-3 in combination with variable speed drives
- CE-marking

Product

ZerAx® dual smoke fan sets in a duty-standby configuration for smoke exhaust operation. The compact design provides high airflow and pressure with reduced space requirements.

Application

Designed for smoke exhaust in all types of buildings. The fans are suitable for both standard-temperature ventilation and high-temperature smoke extract operation.

Construction

The fan units are available with impeller diameters from 630–900 mm. They are suitable for airflows up to 11.5 m³/s and static pressures up to 780 Pa, with total fan efficiencies above 80%.

The standard fans are designed for unheated, low-corrosive environments according to ISO 12944-2, corrosion category

C3. C4 and C5 executions are available on request.

ZerAx impeller

The compact ZerAx® impeller design provides high aerodynamic efficiency and allows smaller fan sizes for comparable airflow and pressure.

Fan performance is tested in accordance with EN ISO 5801 and AMCA 300.

Motor

The fans are fitted with energy-efficient IE3 asynchronous, flange-mounted motors for 3-phase, 400 V, 50 Hz supply and direct connection to a frequency converter.

Motor insulation is class H with IP55 protection.

Electric isolation

Electrical connections are made through external steel terminal boxes mounted on the fan casings.

Surface treatment

The standard execution meets corrosion category C3 according to ISO 12944-2 and is suitable for external installation without further treatment.

Temperature resistance

The dual smoke fan sets are tested and certified according to BS EN 12101-3 for smoke exhaust operation at 300°C for 120 minutes (F300120) in combination with variable speed drives.

Frequency converter

The fans are tested and approved for operation with frequency converters, allowing accurate system balancing during commissioning.

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Installation considerations

Whether the ZerAx fans are installed in ductwork or as part of other installations, minimum clearances to nearby objects in the airflow path must be maintained.

Sufficient free space at the inlet side must be provided to ensure smooth and undisturbed airflow.

Allow for clear areas to facilitate assembly and disassembly as well as maintenance.

If in doubt, please contact NOVENCO for technical advice.

Fan selection curves

The general performance curves are based on duty-standby operation, with one fan running and the other idling. The curves show fan performance at different speeds. At maximum speed, the absorbed power remains within the rated motor power.

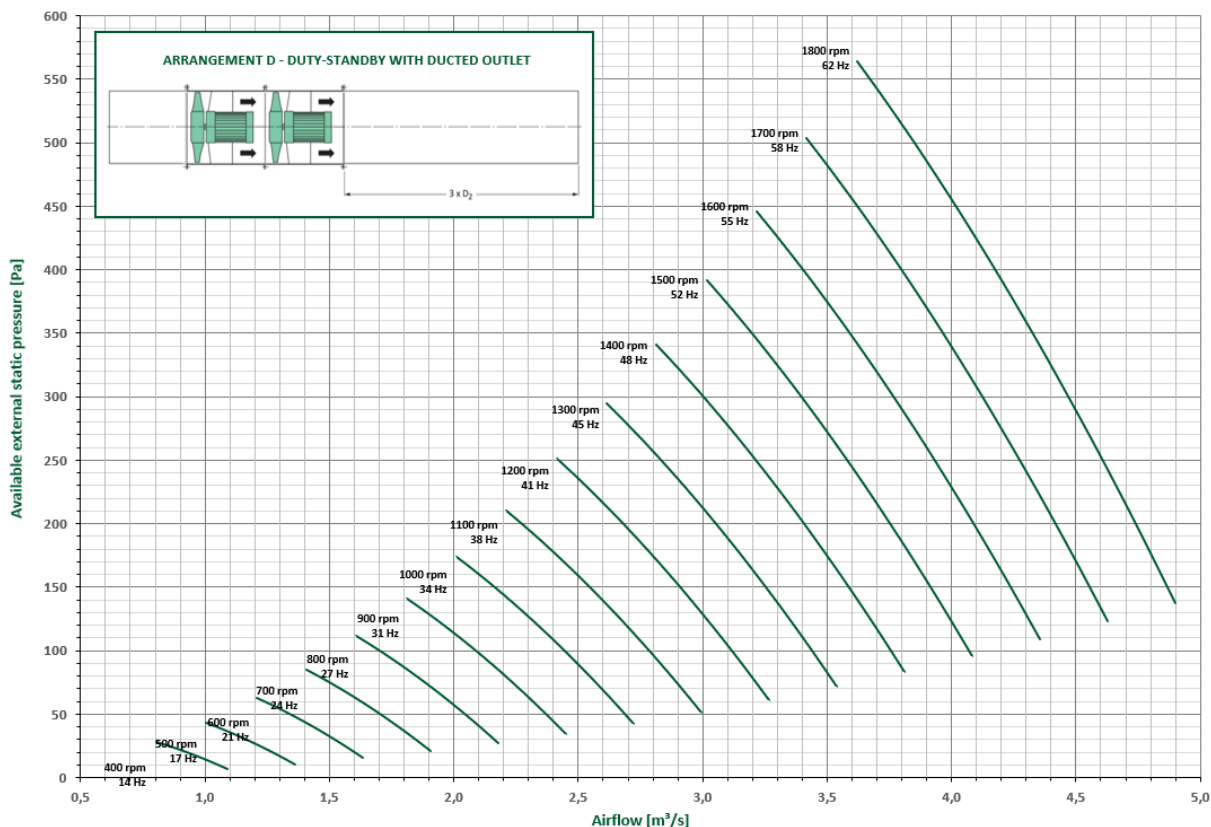
The specific performance curves apply to duty-standby smoke fan sets with frequency converters. The capacities

are based on installation type D (ducted inlet and outlet) in accordance with EN ISO 5801:2017.

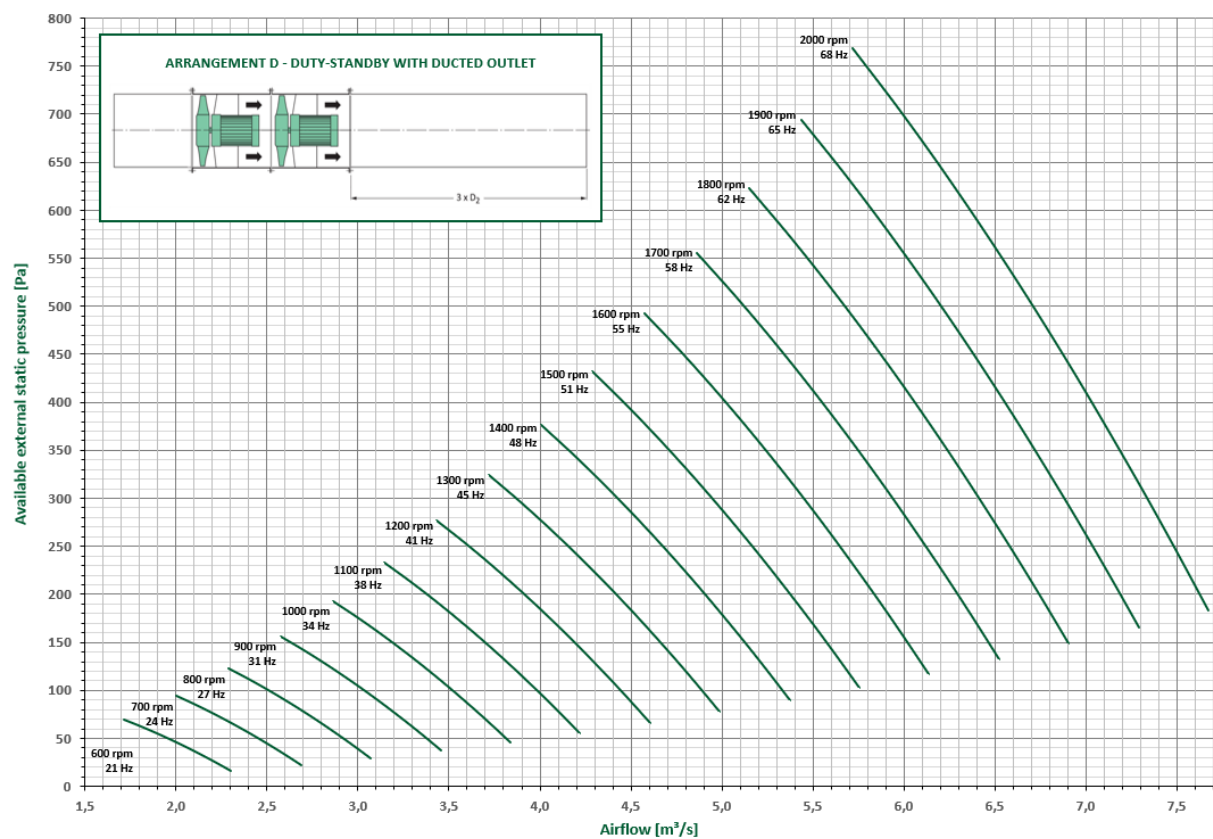
For other installation types, such as free outlet or diffusers, use the pressure correction factors given in the tables below.

The available external static pressure is based on an air density of $\rho = 1.20 \text{ kg/m}^3$.

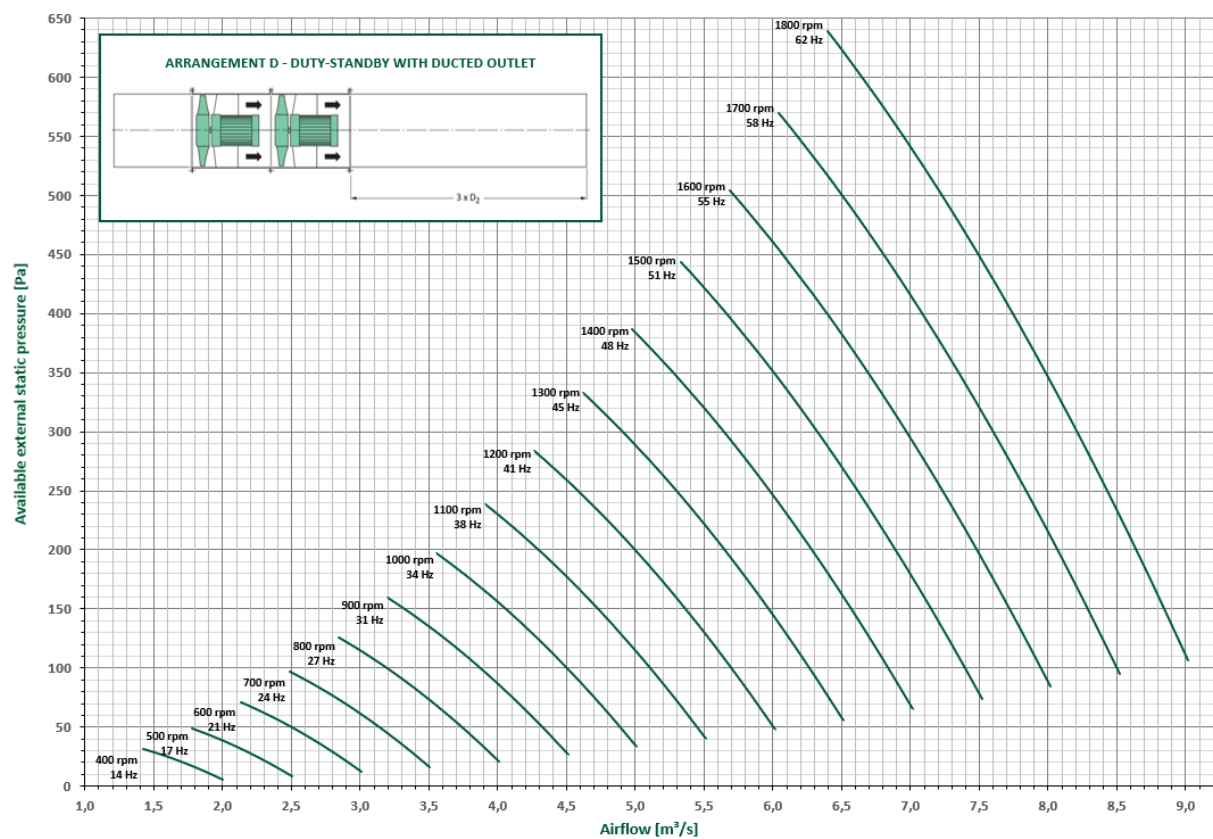
Fan performance curves AZN 630 F300 4 kW (30051736) duty-standby unit



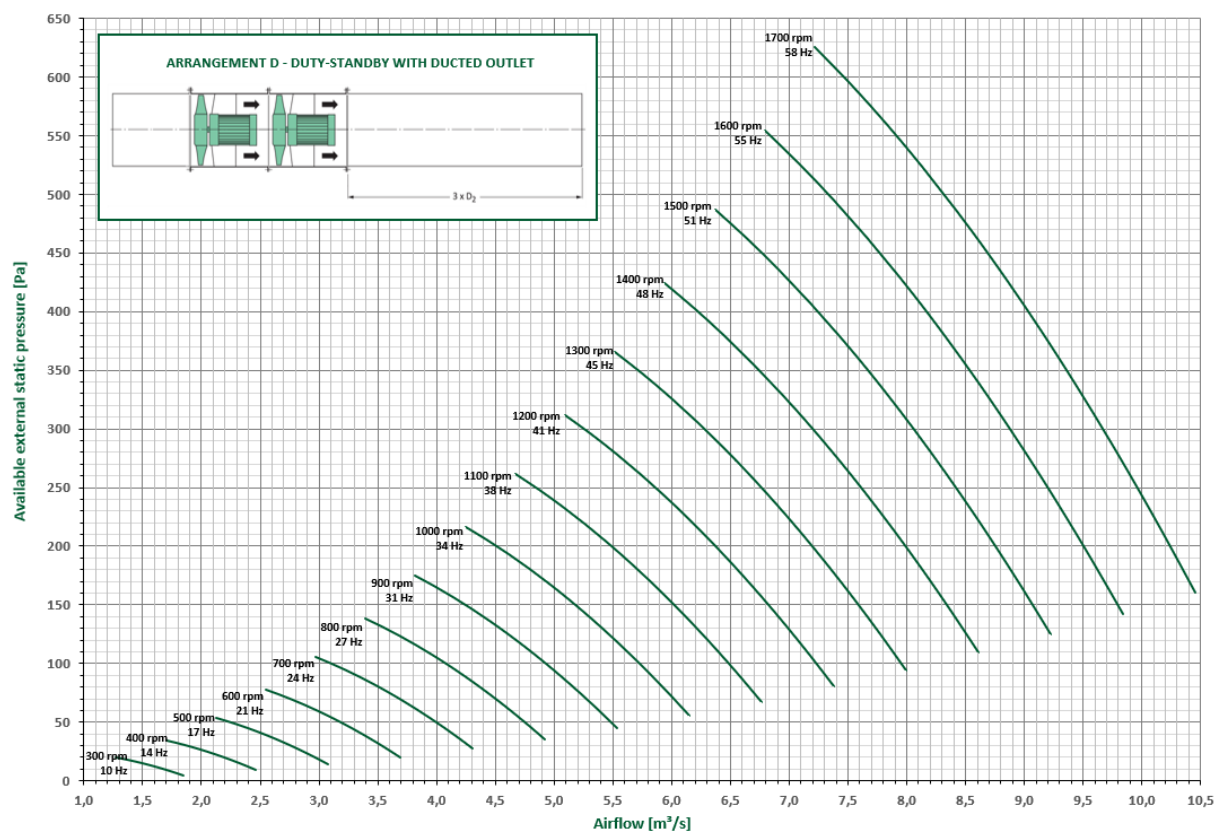
Fan performance curves AZN 710 F300 7,5 kW (30050945) duty-standby unit



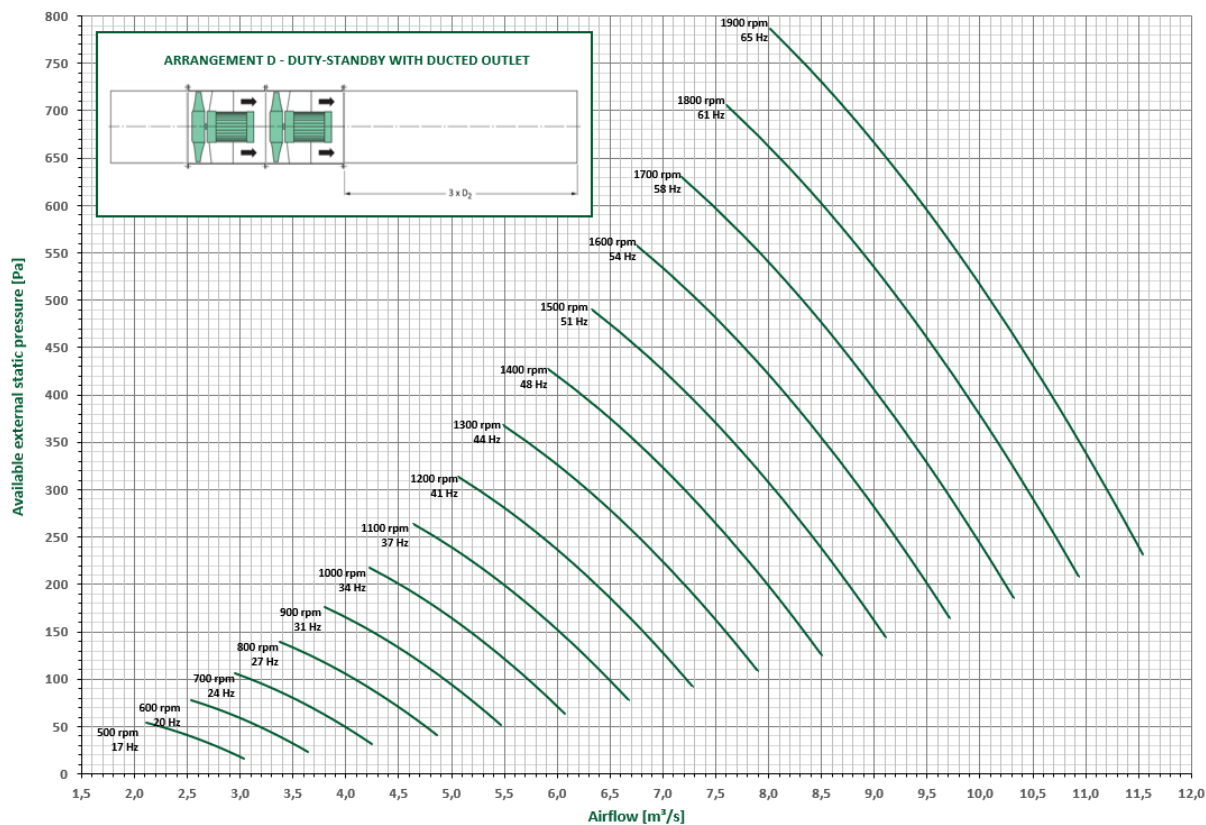
Fan performance curves AZN 800 F300 7,5 kW (30052729) duty-standby unit



Fan performance curves AZN 900 F300 7,5 kW (30056591) duty-standby unit



Fan performance curves AZN 900 F300 11 kW (30056562) duty-standby unit



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Correction factors for other installation types

The fan performance curves are based on duty-standby operation of the dual fan smoke sets with a ducted outlet. Installing these fan smoke sets with a free outlet (arrangement C) causes additional loss of dynamic pressure in the fan outlet.

By fitting a diffuser on the outlet, some of this dynamic pressure loss is recovered as static pressure.

To compensate for the different outlet configurations, the below correction factors (Cf) can be used.

Diameter [mm]	Duct area [m ²]	Free outlet	Short diffuser	Long diffuser
630	0,312	1,89	1,49	1,22
710	0,396	1,64	1,23	0,93
800	0,503	1,47	1,07	0,80
900	0,636	1,36	0,76	0,53

Calculation available static pressure

The static pressure for the selected installation type can be calculated as:

$$p_{\text{static,sel}} = p_{\text{static,arr.D}} - (C_f - 1) \times p_{\text{dyn, duct}}$$

Note that in case of an installation type with a diffuser with a correction factor < 1, the pressure recovery by the diffuser results in a higher available static pressure compared to the 3xD duct connection.

Calculation example AZN 710 with free outlet

Suppose the fan selection is for a required airflow of 6,5 m³/s. From the AZN 710 duty-standby fan performance curve, the maximum available static pressure for a duct connection (arr. D) is approx. 560 Pa at a density of 1,20 kg/m³.

The duct area of the AZN 710 is 0,396 m², which means that the dynamic duct pressure for this fan selection is:

$$P_{\text{dyn, duct}} = 0,5 \times \rho \times v_{\text{duct}}^2 = 0,5 \times \rho \times \left(\frac{Q}{A_{\text{duct}}} \right)^2 = 0,5 \times 1,20 \times \left(\frac{6,5}{0,396} \right)^2 = 162 \text{ Pa}$$

Using the correction factor Cf of 1,64 for the AZN 710 with a free outlet, the available static pressure becomes:

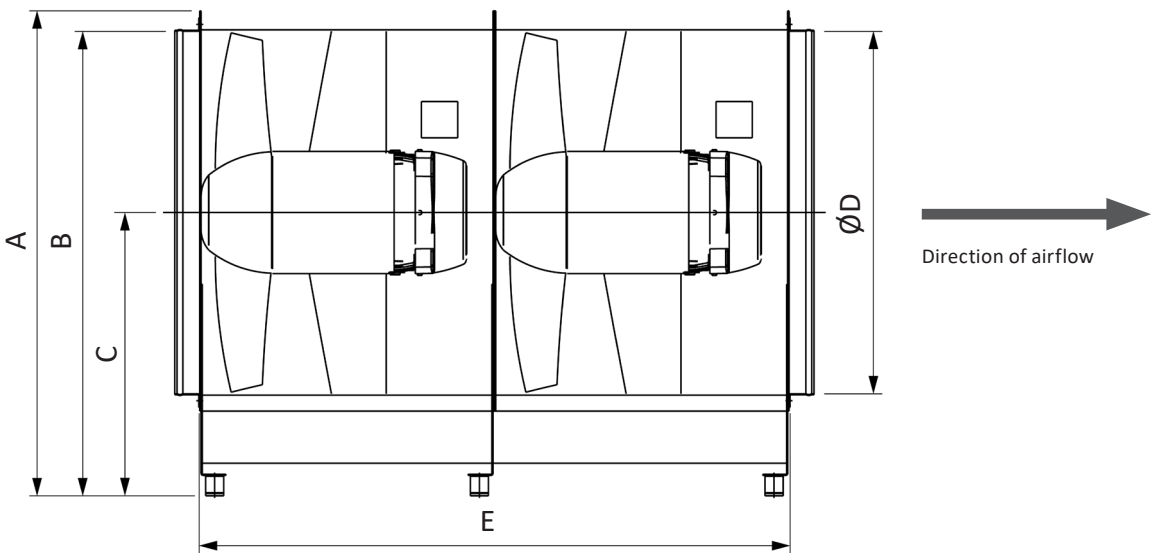
$$p_{\text{static,free outlet}} = p_{\text{static, arr.D}} - (C_f - 1) \times p_{\text{dyn, duct}} = 560 - 0,64 \times 162 = 456 \text{ Pa}$$

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Dimention and weights



Diameter	Motor [kW]	Item no.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Weight [kg]
630	4	30051736	885	840	525	630	1.300	290
710	7,5	30050945	975	930	575	710	1.300	460
800	7,5	30052729	1.070	1.025	625	800	1.300	470
900	7,5	30056591	1.225	1.175	725	900	1.300	480
900	11	30056562	1.225	1.175	725	900	1.650	550

Please note that dimensions and weight estimations are excluding base frame

Fan accessories

As standard, the ZerAx dual smoke fan sets are supplied as a ready assembled unit, including mounting feet, anti-vibration mounts with base plates and a baseframe for mounting on horizontal surfaces, such as rooftops.

The fan sets can be supplied with a range of options, which can increase the static pressure or achievable flow rate.

- Frequency converter and controls
- Inlet cone with wire guard
- Cylindrical fan mounted silencers
- Attenuation baffles
- Counter flanges
- Inlet and/or outlet flexible connection with duct spigots
- Outlet 45° discharge duct
- Outlet short/long (acoustic) diffusor
- Outlet wire guard
- Vibration sensor
- Thermal motor protection (PTC)
- Fan mounting frame with big foot system suitable for roof top installation

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Pre-assembled fan smoke set

The fan sets come delivered on a single standard sized pallet, and have a protective timber cover to allow the fan set to be lifted to the roof without needing further protection prior to installation. At time of installation, the fan simply needs to be turned on to a standard base frame, which is available on request as a standard item.

We carry a range of 5 different fan sets in stock, covering the vast majority of smoke ventilation system requirements.