

# CLEAR CHOICE ZERAX DUAL SMOKE FAN SETS DFS-CC-AZN-HT

- Certified ZerAx® 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.



Clear Choice Dual Smoke Fan Set

## DESCRIPTION

The high performance NOVENCO ZerAx® dual smoke fan sets are designed for operation during fires in all types of buildings. The units are tested and approved for smoke exhaust operation in combination with frequency converters to allow for the systems to be accurately balanced during commissioning.

ZerAx fans have smaller form factors than other fans, resulting in smaller fans for comparable airflows and pressures. Therefore, operational cost and space requirements can be reduced.

Available in three sizes, with impeller diameters ranging from 630-800 mm, the duty-standby dual fan units are suitable for operation up to 9 m<sup>3</sup>/s and static pressures up to 750 Pa with total fan efficiencies well above 80%.

The AZN fan units are designed for operation at standard temperatures as well as high temperature smoke extract operation. The ZerAx dual smoke fan sets are designed for operation in unheated low corrosive environments to corrosion category C3 in accordance

with ISO 12944-2 and are therefore suitable for external installation without requiring further treatment. Special execution for corrosion categories C4 and C5 is available on request.

The fan performance has been tested and verified in accordance with EN ISO 5801 and AMCA 300 by the largest laboratory in Northern Europe.

All dual smoke fan sets are high temperature tested and certified in accordance with BS EN 12101 part 3 for operation up to 300°C for 2 hours in combination with variable speed drives. The certification allows the use of variable speed-controlled smoke fans in the event of fires.

Energy-efficient, asynchronous IE3 flange mounted motors. Suitable for a 3-phase, 400V/50 Hz supply voltage and direct connection to a frequency converter. Insulation class H in accordance with IEC 34-5 with an IP55 protection class.

Electrical connections through steel terminal boxes, mounted on the outside of the fan casings.

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## Installation considerations:

Whether ZerAx fans are built into ducts or installed as part of other installations, minimum distances to nearby objects in the airflow path must be observed.

The space at the inlet side must be optimal to ensure a smooth and undisturbed airflow.

Allow for clear areas to facilitate assembly and disassembly as well as maintenance. If in doubt, please contact our experienced team of engineers.

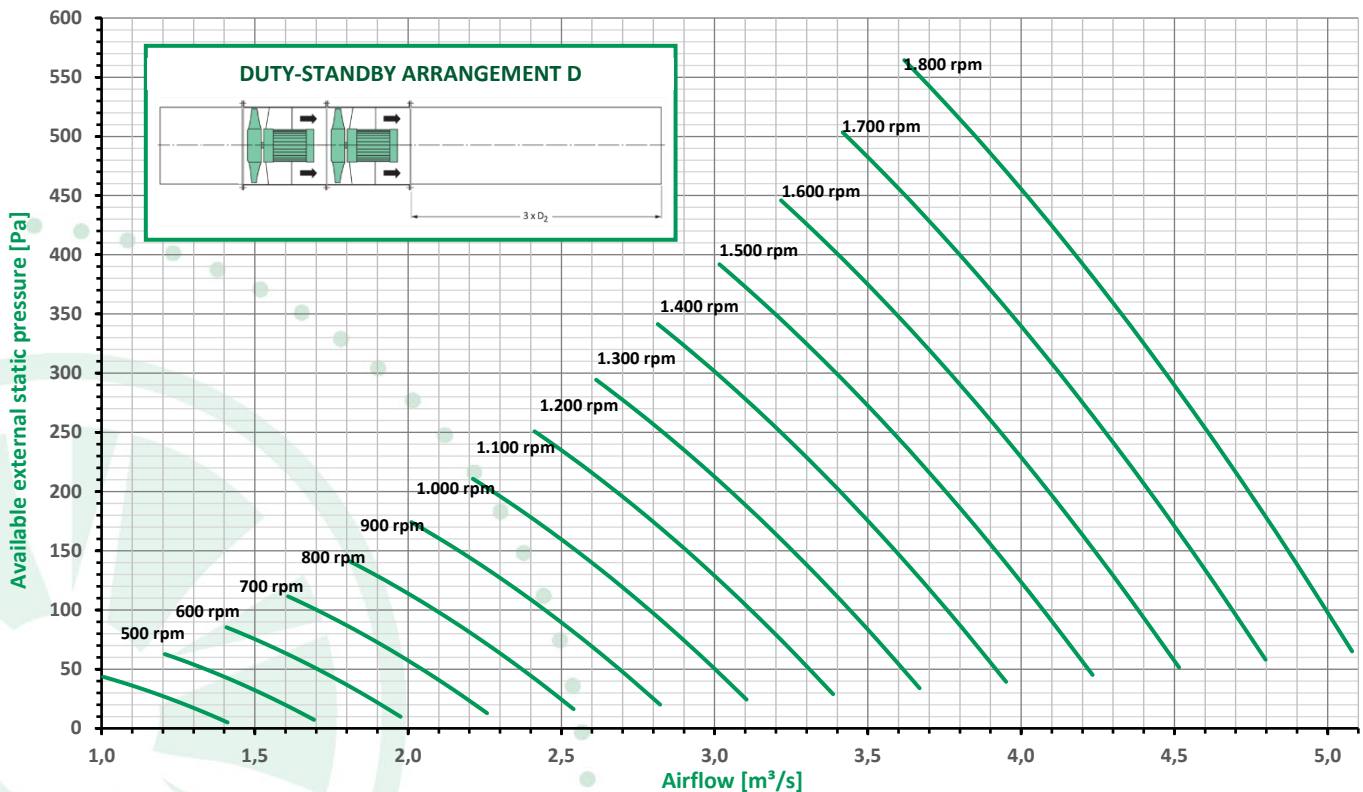
## FAN SELECTION CURVES

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

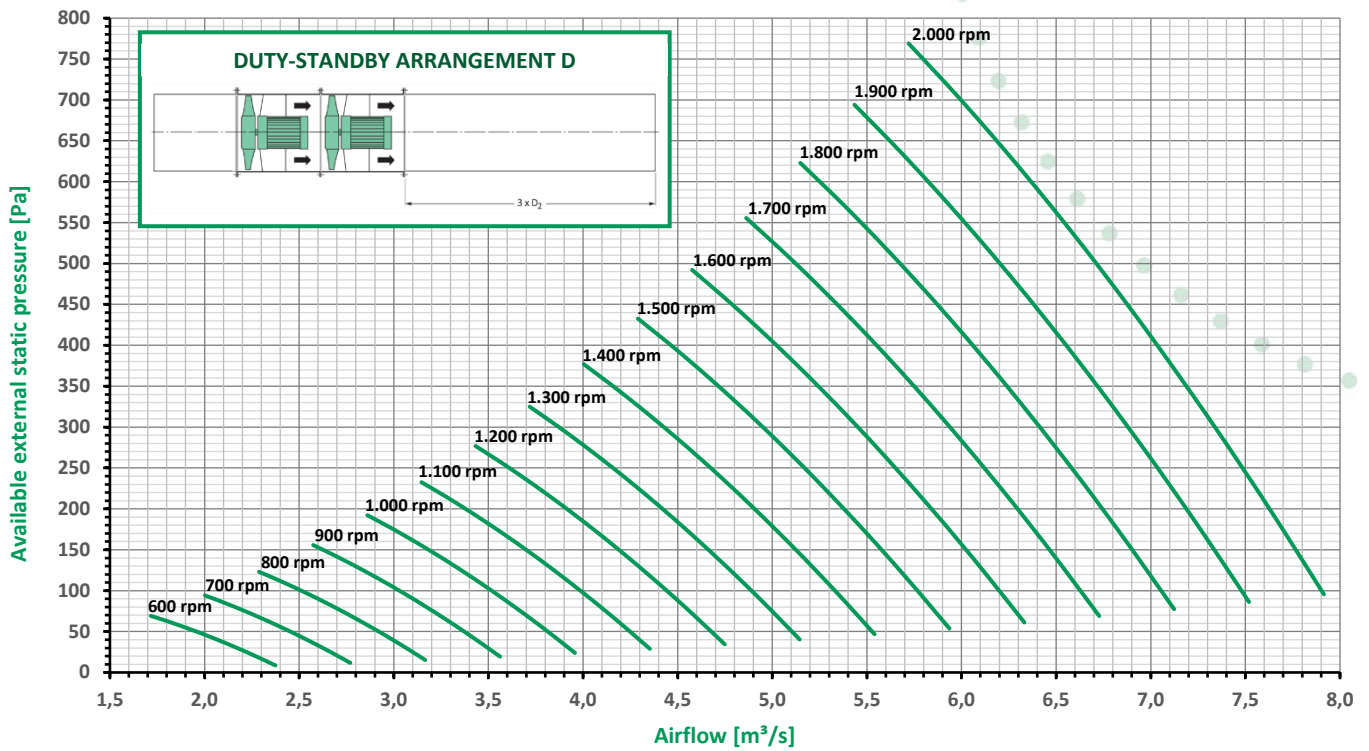
The specific curves are for duty-standby smoke fan sets with frequency converters, where the capacities are based on installation type D (ducted inlet and outlet) in accordance with EN ISO 5801:2017. Use the pressure correction factors in the below tables for other installation types, such as free outlet and diffusers.

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

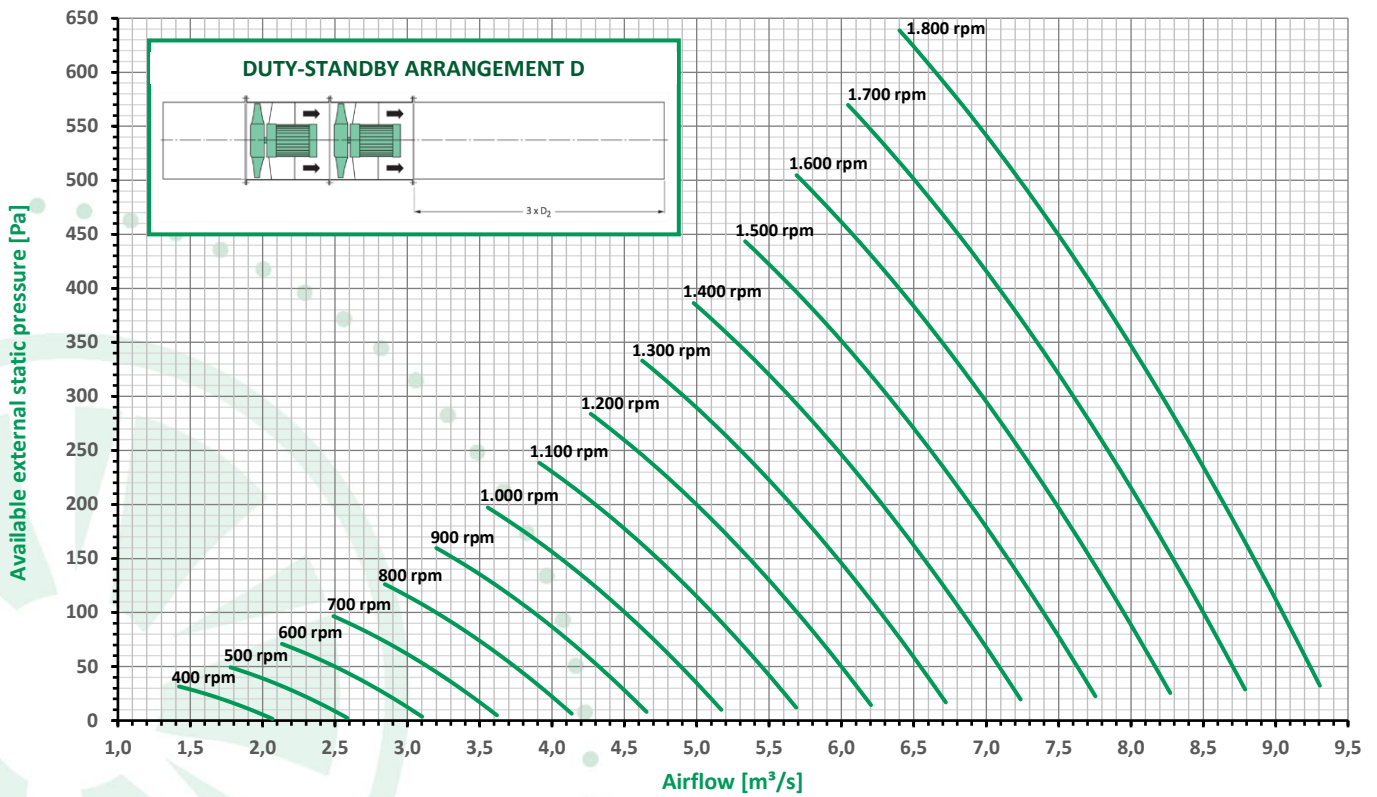
## FAN PERFORMANCE CURVES AZN 630 F300 4,0KW DUTY-STANDBY UNIT



FAN PERFORMANCE CURVES AZN 710 F300 7,5KW DUTY-STANDBY UNIT



FAN PERFORMANCE CURVES AZN 800 F300 7,5KW 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 ( $C_f$ ) can be used.

DIAMETER	DUCT AREA	FREE OUTLET	SHORT DIFFUSOR	LONG DIFFUSOR
[mm]	[m <sup>2</sup> ]	[-]	[-]	[-]
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

## CALCULATION AVAILABLE STATIC PRESSURE

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

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

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 m<sup>3</sup>/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/m<sup>3</sup>.

The duct area of the AZN 710 is 0.396 m<sup>2</sup>, which means that the dynamic duct pressure for this fan selection is:

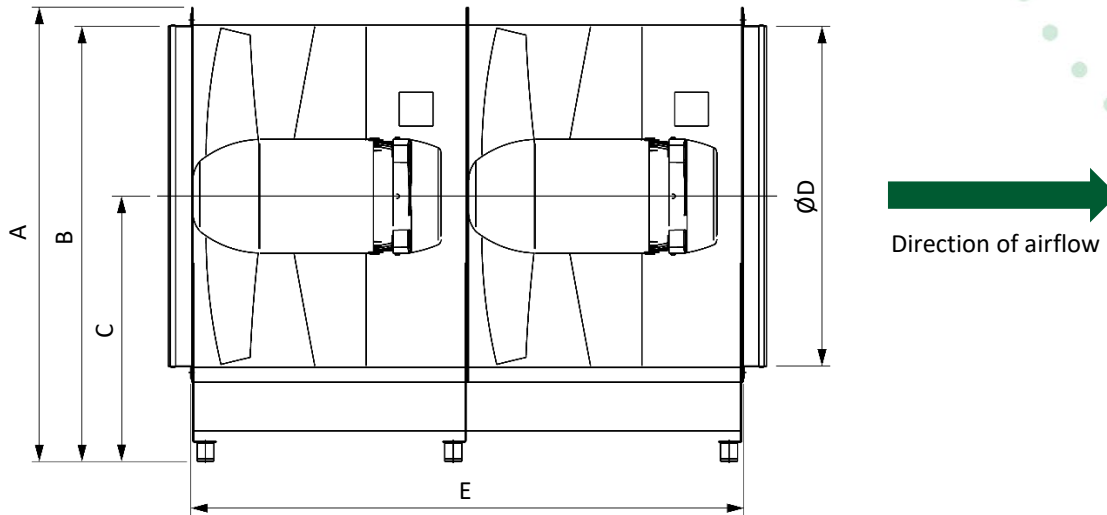
$$p_{dyn,duct} = 0.5 \cdot \rho \cdot v_{duct}^2 = 0.5 \cdot \rho \cdot \left(\frac{Q}{A_{duct}}\right)^2 = 0.5 \cdot 1.20 \cdot \left(\frac{6.5}{0.396}\right)^2 = 162 \text{ Pa}$$

Using the correction factor  $C_f$  of 1.64 for the AZN 710 with a free outlet, the available static pressure becomes:

$$p_{static,free outlet} = p_{static,arr.D} - (C_f - 1) \cdot p_{dyn,duct} = 560 - 0.64 \cdot 162 = 456 \text{ Pa}$$

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## DIMENSIONS AND WEIGHTS



DIAMETER	A	B	C	D	E	WEIGHT
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
630	931	886	571	630	1300	290
710	1021	976	621	710	1300	460
800	1116	1071	671	800	1300	470

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

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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 3 different fan sets in stock, covering the vast majority of smoke ventilation system requirements.

## MORE INFORMATION

For more information, please contact us.

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*Please note that all technical data mentioned is subject to change.*

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