

TGA CATALOGUE **2.0**

Fans for technical building services
(TGA) and smoke extraction.



INCLUSIVE
P-/Z Mounting package
and RDA/TSA



The professionals choice

Helios TGA

Air technology for professionals.



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Basic factors of SI-System to DIN EN 1301

Physical value	Einheit	
	Name	Short
Length	Metre	m
Mass	Kilogramme	kg
Time	Second	s
Electric current	Ampere	A
Temperature	Kelvin	K
Luminous intensity	Candela	cd
Amount of substance	Mol	mol

Air flow volume units

Unit symbol	Name of unit symbol	m³/s	m³/min	m³/h	l/h	l/s	ft³/s cu.ft/s	ft³/min cfm	gal/min (UK)	gal/min (US)
1 m³/s	cubikmetre/second	1	60	3600	3.6*10 ⁶	1000	35,31	2118,8	1,32*10 ⁴	1,587*10 ⁴
1 m³/min	cubikmetre/minute	0.01667	1	60	6.0*10 ⁴	16.667	0,5885	35,31	220	260
1 m³/h	cubikmetre/hour	2.778*10 ⁻⁴	0.01667	1	1000	0.2778	9,808*10 ⁻³	0,5886	3,667	4,403
1 l/h = 1 dm³/h	litre/hour	2.778*10 ⁻⁷	1.667*10 ⁻⁵	0.001	1	2.778*10 ⁻⁴	9,808*10 ⁻⁶	5,886*10 ⁻⁴	3,667*10 ⁻³	4,403*10 ⁻³
1 l/s = 1 dm³/s	litre/second	0.001	0.05999	3.5	3600	1	3,531*10 ⁻²	2,1188	13,198	15,8502
1 cu.ft/s	cubicfoot/second	2.932*10 ⁻²	1.6992	102	1.02*10 ⁵	28.3179	1	60	373,9	448,9
1 cfm	cubicfoot/minute	4.179*10 ⁻⁴	2.832*10 ⁻²	1.70	1.70*10 ³	0.47197	1,667*10 ⁻²	1	6,229	7480
1 gal/min (UK)	gallon/minute	7.577*10 ⁻⁵	4.546*10 ⁻³	2.728*10 ⁻¹	272.8	0.07577	2,675*10 ⁻³	0,1605	1	1,201
1 gal/min (US)	gallon/minute	6.302*10 ⁻⁵	3.846*10 ⁻³	2.271*10 ⁻¹	227.1	0.06309	2,227*10 ⁻³	0,1336	0,8328	1

Pressure units

Unit symbol	Name of unit symbol	Pa = N/m²	bar	mbar	kp/cm² = mmWs	kp/cm² = at	atm	Torr = mm Hg	lbf/in²	lbf/ft²	in Hg
1 Pa = 1 N/m²	pascal	1	0.00001	0.01	0.10197	0.00001	–	0.0075	0.00014	0.02089	0.00295
1 bar	bar	100000	1	1000	10197.2	1.01972	0.98692	750.062	14.5037	2088.54	29.53
1 mbar	millibar	100	0.001	1	10.197	0.00102	0.000987	0.750	0.01450	2.08854	0.02953
1 kp/cm² = 1 mm Ws	millimetre water column	98066.5	0.98067	980.66	10000	1	0.96784	735.559	14.2233	2048.16	28.959
1 kp/cm² = 1 at	techn. atmosphere	98066.5	0.98067	980.66	10000	1	0.96784	735.559	14.2233	2048.16	28.959
1 atm	physic. atmosphere	101325	1.01325	1013.25	10332.3	1.03323	1	760	14.696	2116.22	29.9213
1 torr = 1 mm Hg	millimetre mercury column	133.322	0.00133	1.3332	13.5951	0.00136	0.00132	1	0.01934	2.78449	0.03937
1 lbf/in²	pound-force per square inch	6894.76	0.06895	68.9476	703.07	0.07031	0.06805	51.7149	1	144	2.03602
1 lbf/ft²	pound-force per square foot	47.8803	0.00048	0.47880	4.88243	0.00048	0.00047	0.35913	0.00694	1	0.01414
1 in Hg	inch mercury column	3386.39	0.03386	33.8639	345.316	0.03453	0.03342	25.4	0.49115	70.7262	1
1 in H ₂ O	inch water colume	249	0.00249	2.4909	25.4	0.00254	–	1.8684	0.0315	5.2024	0.07366

Energy units

Units	J	MJ	kWh	MWh	kcal	Mcal	kg SKE	BTU
1 J = 1 Nm = 1 Ws	1	10 ⁻⁶	–	–	0.239*10 ⁻³	–	–	0.948*10 ⁻³
1 MJ = 10 ⁶ J	10 ⁶	1	0.278	–	239	–	0.034	948
1 kWh	3.6*10 ⁶	3.6	1	10 ⁻³	860	0.86	0.123	3414
1 MWh	–	3600	10 ³	1	–	860	123	3.414*10 ⁶
1 kcal	4187	–	1.163*10 ⁻³	–	1	10 ⁻³	–	3.97
1 Mcal	–	4.187	1.163	–	10 ⁶	1	0.143	3968
1 kg SKE	–	29.31	8.14	–	7000	7.0	1	27.8*10 ⁻³
1 BTU	1.05*10 ³	1.05*10 ⁻³	–	0.252	–	–	1	–

Important physical values and their relationship to the basic factors of the SI-System

Physical value	Definition	Short symbol	Relationship to the basic factors of the SI-System
Force	mass · acceleration	N (Newton)	$N = \frac{kg \cdot m}{s^2}$
Pressure	$\frac{force}{area}$	Pa (Pascal) $\frac{N}{mm^2}$	$Pa = \frac{N}{m^2} = \frac{kg \cdot m}{s^2 \cdot m^2}$ $\frac{N}{mm^2} = \frac{kg \cdot m}{s^2 \cdot 10^{-6} m^2}$
Work	force · distance	J (Joule)	$J = N \cdot m = \frac{kg \cdot m^2}{s^2}$
Power	$\frac{work}{time}$	W (Watt)	$W = \frac{J}{s} = \frac{N \cdot m}{s} = \frac{kg \cdot m^2}{s^3}$
Heat	energy	J (Joule)	$J = N \cdot m = \frac{kg \cdot m^2}{s^2}$
Thermal conductivity	$\frac{power}{distance \cdot temp. interval}$	$\frac{W}{m \cdot K}$	$\frac{W}{m \cdot K} = \frac{kg \cdot m^2}{s^3 \cdot m \cdot K}$
Specific heat capacity	$\frac{energy}{mass \cdot temperature interval}$	$\frac{J}{kg \cdot K}$	$\frac{J}{kg \cdot K} = \frac{kg \cdot m^2}{s^2 \cdot kg \cdot K}$
Electric charge	electric current · time	C (Coulomb)	$C = A \cdot s$
Voltage	$\frac{power}{electric charge}$	V (Volt)	$V = \frac{W}{A} = \frac{kg \cdot m^2}{A \cdot s^3}$

The required extract air or intake air volume of a room depends on the use and the contamination or odours that are created within it. A critical factor may also be the amount of heat that needs to be extracted.

The calculation of the air flow volume may be done using various criteria with the following equations and tables. In some cases, several ways of calculating should be used and the higher figure taken (e.g. restaurant: no of people – air changes per hour).

■ **Calculation of intake air flow volume per person**
(DIN EN 13779, as of 09.2007)

$$\dot{V} = n \cdot q_p \text{ [m}^3\text{/h]}$$

n: Number of people
q_p: Air change rate per person from table 1

■ **Calculation of air flow volume using the number of people**
(DIN EN 15251, as of 08.2007)

$$\dot{V} = n \cdot q_p + A \cdot q_B \text{ [m}^3\text{/h]}$$

n: Number of people
q_p: Air change rate per person [m³/h] from table 2
A: Floor area of the room [m²]
q_B: Air change rate with regard to the building emission [m³/h] from table 2

■ **Calculation of air flow volume using the amount of humidity**
To limit the moisture level in the air to a specific value.

$$\dot{V} = \frac{G}{(x_2 - x_1) \cdot \rho} \text{ [m}^3\text{/h]}$$

G: Amount of water gram/hour
x₂: Water content of extracted air g water / kg air
x₁: Water content of replacement air g water / kg air
ρ: Air density kg/m³ (at 20 °C, 1013 mbar = 1.2 kg/m³)

■ **Calculation of air flow volume using the heat to be extracted**
To limit the room temperature by removing the heat generated

$$\dot{V} = \frac{\dot{Q} \cdot 3600}{\rho \cdot c_p \cdot \Delta\theta} \text{ [m}^3\text{/h]}$$

Q̇: Required heat extraction kW
c_p: Specific heat capacity of air kJ/(kg · K) (Air at 20 °C: c_p ≈ 1)
Δθ: Temperature difference between intake and extract air °C
ρ: Air density kg/m³ (at 20 °C, 1013 mbar = 1.2 kg/m³ (1 kWh = 3600 kJ))

■ **Calculation of required heat to temper intake air**
To establish the heater rise for the air flow selected.

$$\dot{Q}_L = \frac{\dot{V} \cdot \rho \cdot c_p \cdot \Delta\theta}{3600} \text{ [kW]}$$

Q̇_L: Heater output kW
V̇: Air flow volume m³/h
ρ: Air density 1.2 kg/m³ (20 °C)
c_p: Spec. heat capacity kJ/(kg · K)
Δθ: emperature difference (K) between θ_i Room temperature and θ_a Outdoor temperature

$$\Delta\theta = \theta_i - \theta_a \text{ [K]}$$

Table 1 Outdoor airflow to DIN EN 13779

Category	Unit	Rate of outdoor air per person			
		Non-smoking area		Smoking area	
		Typical range	Default value	Typical range	Default value
IDA 1	m ³ /h*person	> 54	72	> 108	144
IDA 2	m ³ /h*person	36 – 54	45	72 – 108	90
IDA 3	m ³ /h*person	22 – 36	29	43 – 72	58
IDA 4	m ³ /h*person	> 22	18	> 43	36

*IDA = Indoor Air, Indoor air categories see table 3.

Table 2 Outdoor airflow to DIN EN 15251

Category	Air flow rate per person	Air flow for the pollution caused by building emission (m ³ /h*m ²)		
		very low-polluted building	low-polluted building	non low-polluted building
I	36	1,8	3,6	7,2
II	25	1,3	2,5	5
III	14	0,7	1,4	2,9

Table 3 Indoor air categories to DIN EN 15251

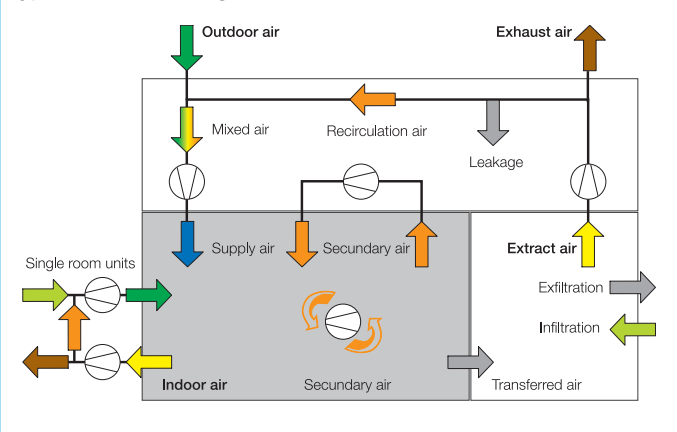
Category	Explanation
IDA I	High level of expectation and is recommended for spaces occupied by very sensitive and fragile persons with special requirements.
IDA II	Normal level of expectation and should be used for new buildings and renovations.
IDA III	An acceptable, moderate level of expectation and may be used for existing buildings.
IDA IV	Values outside the criteria for the above categories. This category should only be accepted for limited part of the year.

A classification into categories is made in other standards such as DIN EN 13779 as well, but this can be differently named. (e.g. 1,2,3...)

■ **Specification and abbreviations of types of air**
to DIN EN 13779/09.2007

No.	Type of air	Abbreviation	Colour	Definition
1	Outdoor air	ODA	Green	Air entering the system or opening from outdoors before any air treatment.
2	Supply air	SUP	Blue	Airflow entering the treated room, or air entering the system after any treatment.
3	Indoor air	IDA	Grey	Air in the treated room or zone.
4	Transferred air	TRA	Grey	Indoor air which passes from the treated room to another treated room.
5	Extract air	ETA	Yellow	The airflow leaving the treated room.
6	Recirculation air	RCA	Orange	Extract air that is returned to the air treatment system and reused as supply air.
7	Exhaust air	EHA	Brown	Airflow is charged to the atmosphere.
8	Secondary air	SEC	Orange	Airflow taken from a room and returned to the same room after any treatment.
9	Leakage	LEA	Grey	Unintended airflow through leakage paths in the system.
10	Infiltration	INF	Green	Leakage of air into building through leakage paths in elements of structure separating it from the outdoor air.
11	Exfiltration	EXF	Grey	Leakage of air out of the building through leakage paths in elements of structure separating it from the outdoor air.
12	Mixed air	MIA	with sep. colours	Air which contains two or more streams of air
1.1	Single room outdoor air	SRO	Green	Air entering the single room air handling unit or opening from outdoors before any air treatment.
2.1	Single room supply air	SRS	Blue	Airflow entering the treated room.
5.1	Single room extract air	SET	Yellow	The airflow leaving the treated room into a single room air handling unit.
7.1	Single room exhaust air	SEH	Brown	Airflow discharged to the atmosphere from a single room air handling unit.

Types of air according to DIN EN13779



Necessity of acoustics in ventilation technology

When planning and constructing ventilation systems the acoustic demands are as important/crucial as an ideal fluid engineering and comfort. Defective acoustics and poor installation can lead to serious faults and even total failure causing difficult or impossible repair. A careful planning of acoustics is essential for the proper operation of a system.

Systems without or poorly executed attenuators are unfortunately common practice and provide a bad reputation of ventilation systems for the users of buildings. Duty of manufacturers, planners and plant engineering is therefore required to confront these prejudices and to grant the acoustics a corresponding importance.

The noise level of a fan must be taken into consideration when designing a ventilation system. The affect of a sound source (fan) on the rooms that need ventilation and the neighbourhood can be estimated using the following information:

The noise is primarily created by the fan, possibly also by ducting, and other components like filters, heaters, shutters etc. If the air flow speed is too high this will result in whistling noises. A maximum air flow speed of 6 m/s is recommended and at the same time noise transmission by fan or other components must be reduced as much as possible when installing. The maximum noise emission recommendations should not be exceeded. Reduction in noise can be achieved by installing the noise source as far away as possible from inhabited area or by use of attenuators. Generally the noise level should be kept as low as possible at its source, that means selecting low noise fans.

To adapt a sound power level figure to what the human ear hears it can be converted into a sound pressure level. Stated with spherical sound level propagation (free-field conditions) the reduction can be calculated in relation to the distance from the noise source (figure 1). For an exact noise figure within a room the absorption capacity of the room is of much higher importance.

Sound emission levels affecting the neighbourhood.

The following recommended sound levels for neighbourhoods should not be exceeded.

Area	Emission dB(A) day/night	
Industrial (100%)	70	70
Industrial (mainly)	65	50
Industrial/residential	60	45
Residential (mainly)	55	40
Residential (100%)	50	35
Hospitals etc.	45	35

Noise levels for working environments

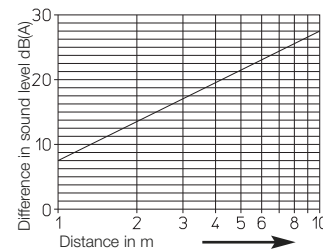
The following recommended sound levels should not be exceeded permanently:

Activity	dB(A)
Intellectual concentration	55
Computer and office work	70
Other areas	85
(Maximum deviation 5 dB)	
First aid, rest and recovery rooms	55

Table 4 Terms and Definitions

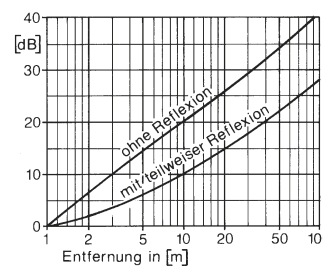
Terms	Definition
Sound	Mechanical oscillations of the particles of an elastic medium in a frequency range which we can perceive by our hearing. Sound needs therefore a medium to be able to spread out. One describes oscillations in the air as airborne sound, vibrations in solid bodies as a structure-borne sound
Tone	Is the oscillation (pressure change) sinusoidal, one speaks of a tone.
Complex tonal sound	Several individual tones produce a complex tonal sound.
Noise	Many mixed single notes that are not assignable to the human ear (one speaks of southing, typical e.g. leaves or water).
Noisiness	If the noise is annoying, one calls it noisiness.
Speed of sound	The speed of sound is the speed at which the sound spreads. It is approx. 340 m/s in the air and approx. 5,000 m/s in steel.
Sound power	The sound power describes the total energy that a source emits in the form of sound. The physical value is Watt. It is specified as sound power level. This is calculated by the following formula: $L_w = 10 \lg W/W_0$ [dB] $W_0 = 10^{-12}$ Watt
Sound pressure	The human eardrum can take up sound pressure in a very wide recording range. Due to the large range of the recording, the sound pressure (phy. unit PA = pressure) is converted by a logarithmic formula to a sound pressure level. This reference unit is dimensionless. It is specified similarly as the sound power level in decibel (dB). The human ear has range of 0 dB (threshold of hearing) to approx. 140 dB (threshold of noise pain).
Fan noises	Fan noises depend on a variety of different factors. Number of blades, blade shape, flow rate, differential pressure, circumferential speed, in- and outlet conditions, etc. Main sources are the broadband whirl noises due to the turbulent airflows. The fan noises are mostly within the range of 200 to 800 Hz, thus in the low frequency band. Fans are compared on the basis of the sound power level. The sound power level is a explicit acoustic measurement and identification contrary to the sound pressure level.
Motor noises	Motor noises are generated in the motor in particular by the ball bearings, cooling airflow as well as the varying magnetisation.
Throttle flaps	Throttle flaps and similar equipment can cause significant noise, especially in the closed condition.
Duct- and grille noises	Duct and grille noises originate in the air ducts by speed fluctuations and turbulence at sharp corners and edges, bends, T-pieces, grilles, etc., if the air has too high speeds (> 6 m/s) and by excitation of the duct walls to vibrations. Such noises have to be reduced by aerodynamically favourable design of the ducting.
Air outlet noises	Air outlet noises originate from the airflow at the outlet. The outlets should be designed not only in relation to the discharge speed but also particularly in terms of the acoustics. No rework is possible with a wrong design.

Figure 1
Difference between sound power and pressure level at a distance



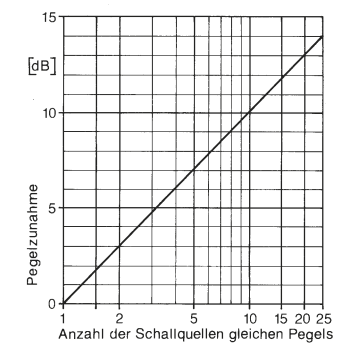
Example:
Sound power level of fan = 70 dB(A)
Sound pressure level at 1 m (freefield cond.) = 70 dB(A) less 8 = 62 dB(A)

Figure 2
Sound pressure level drop in relation to distance



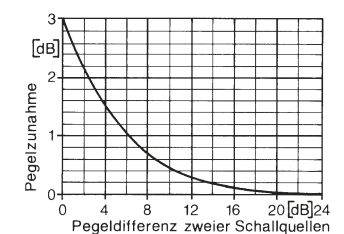
Example:
Sound pressure level at 1 m = 60 dB(A)
Sound pressure level in 5 m distance without reflection (freefield): less 15 = 45 dB(A)
with part reflection: less 5 = 55 dB(A)

Figure 3
Addition of several noise sources of equal intensity



Example: 10 noise sources of 60 dB(A)
Total noise level:
60 dB(A) + 10 dB = 70 dB(A)

Figure 4
Addition of several noise sources with different intensity



Example: 2 noise sources with 60 dB(A) and 64 dB(A)
Total noise level:
64 dB(A) + 1.5 dB = 65.5 dB(A)

Fan performance units

- Air flow volume \dot{V} [m³/h, m³/s]
- Total pressure $\Delta p_{\text{total}} = \Delta p_{\text{stat.}} + p_{\text{dyn.}}$ [Pa]
- Static pressure $\Delta p_{\text{stat.}} = \Delta p_{\text{total}} - p_{\text{dyn.}}$ [Pa]
- Dynamic pressure $p_{\text{dyn.}} = \rho/2 \cdot c^2$ [Pa]
- Shaft power P_w [W, kW]
- Nominal motor power P [W, kW]
- Sound power/pressure level L_{wA}, L_{pA} [dB(A)]

All figures were measured on a test chamber stand to DIN 24163 Pt. 2. The noise figures were measured in an acoustic room simulating spherical sound level propagation conforming to DIN 45635 Pt. 1. 2.

Performance curves

The characteristic of a fan is shown in form of a performance curve. In a performance curve the air flow volume is given in relation to a static pressure ($\Delta p_{\text{stat.}}$) or a total pressure ($\Delta p_{\text{tot.}}$).

System resistance curve

While the fan performance curve is determined on a standard test chamber, the performance curve of the system must be determined by the system planner. This is done by a pressure loss calculation for the duct system. As a characteristic for determining it is calculated with the maximum design air flow rate. The pressure of a system changes as a square of the changing air flow volume.

By this physical proportionality law different working points can be determined in the partial load behaviour in dependence of the design working point.

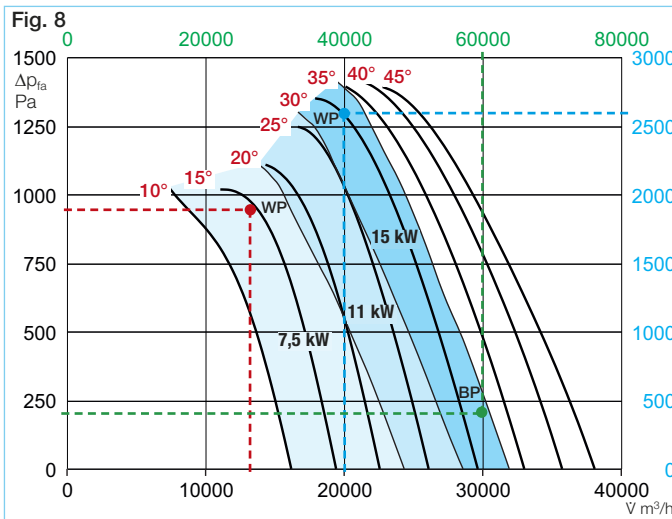
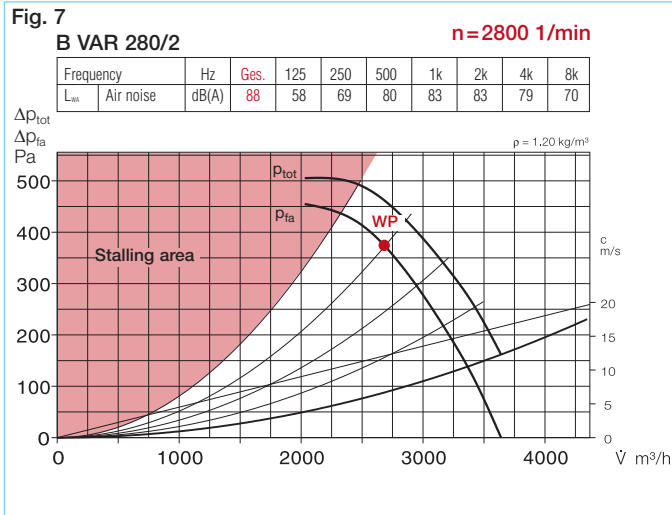
Working point

The working point (WP) is the meeting point between the fan's performance curve and the system's resistance curve.

Performance curve presentation

The fan performance curves of total pressure and static pressure are shown in the performance curve diagram of types VAR und B VAR. (Fig. 7).

For axial low and medium pressure fans AVD/B AVD and AMD/B AMD, the fan's performance can be adjusted to the required duty by changing the pitch angle (at standstill).



With B AVD F300/400 as well as AMD and B AMD (see Fig.8) the determination of the necessary motor power is carried out in dependence of the calculated working point (WP), which respectively lies in the intersection point between fan performance- and system resistance curve. The different motor powers are shown by different colour areas in the performance diagram. The fan selection therefore takes place on the basis of the working point. The pitch angle of the impeller blades and the motor power is variable with these fans, so that a highly energy-efficient operation at maximum investment cost savings will be achieved.

Example 1 to Fig. 8
 $\dot{V} = 12\,000 \text{ m}^3/\text{h}$
 $\Delta p_{fa} = 950 \text{ Pa}$
It follows: Pitch angle 14°
Motor power 7,50 kW

The performance diagrams of series AMD/B AMD and VAR/B VAR also have two additional scales (see Fig. 8) that enable the determination of the performance curve of two-stage (Z-) or parallel (P-) units.

P-unit

If two identical fans are operated parallel as a P-unit in a duct system, i.e. ordered side by side, the conveyed air flow doubles at constant pressure. This can be read off on green scale above of the performance diagrams.

Example 2 to Fig. 8
Fan layout P-unit:
 $\dot{V} = 60\,000 \text{ m}^3/\text{h}$
 $\Delta p_{fa} = 200 \text{ Pa}$
It follows: Pitch angle 33°
Motor power 15 kW

Z-unit

For operation (two-stage) of two identical fans in a duct system as a Z-unit, where the fans are arranged one behind the other the static pressure of both fans doubles at constant air flow. This can be read off on the blue scale next to the performance diagrams.

Example 3 to Fig. 8
Fan layout Z-unit:
 $\dot{V} = 20\,000 \text{ m}^3/\text{h}$
 $\Delta p_{fa} = 2600 \text{ Pa}$
It follows: Pitch angle 30°
Motor power 15 kW

Calculation of the required shaft power of a fan

$$P_{W1} = \frac{\dot{V} \cdot \Delta p_{\text{tot}}}{1000 \cdot \eta} \text{ [kW]}$$

Δp_{tot} = Total pressure increase [Pa]
 η = Efficiency of the fan
 \dot{V} = Air flow volume in [m³/s]

When using a pole-switching motor

Pole figure	Air flow volume $\frac{V_2}{V_1}$	Pressure $\frac{\Delta p_2}{\Delta p_1}$	Power $\frac{P_{W2}}{P_{W1}}$
n_1/n_2			
4/2	2	4	8
8/4			
12/6			
6/4	1,5	2,25	3,38
8/6	1,33	1,78	2,37

Fan laws

The performances of geometrically similar fan ranges can be calculated using the relations between fan speed, diameter and density.

Change in speed (R.P.M.):

$$\dot{V}_2 = \dot{V}_1 \cdot \frac{n_2}{n_1}; \Delta p_2 = \Delta p_1 \left(\frac{n_2}{n_1}\right)^2$$

$$P_{W2} = P_{W1} \left(\frac{n_2}{n_1}\right)^3$$

Change in diameter:

$$\dot{V}_2 = \dot{V}_1 \cdot \left(\frac{D_2}{D_1}\right)^3; \Delta p_2 = \Delta p_1 \left(\frac{D_2}{D_1}\right)^2$$

$$P_{W2} = P_{W1} \left(\frac{D_2}{D_1}\right)^5$$

Change in temperature / density:

$$V_1 = V_2 = \text{const.}$$

$$\frac{\Delta p_2}{\Delta p_1} = \frac{\rho_2}{\rho_1} = \frac{T_1}{T_2}$$

$$\Delta p_2 = \Delta p_1 \frac{\rho_2}{\rho_1} = \Delta p_1 \cdot \frac{T_1}{T_2} \text{ [Pa]}$$

$$P_{W2} = P_{W1} \frac{\rho_2}{\rho_1} = P_{W1} \frac{T_1}{T_2} \text{ [kW]}$$

T: Absolute temperature (T = 273+t) [°C]
t: Air flow temperature [°C]
Index 1: Original condition
Index 2: Modified condition

Use of a fan in different altitudes
Calculation of density:

$$\rho = \frac{p_a \text{ [hPa]} \cdot 100}{R_i \cdot T} \text{ [kg/m}^3\text{]}$$

p_a : Air pressure [hPa, mbar] figure 19
 R_i : Gas constant (air: 287 J/(kgK))

Two-stage operation with Z-unit

General

Two-stage means, that two identical high-pressure fans which are arranged one behind the other operate in-line in a joint duct system.

In this case the static pressure of both fans add up at constant air flow rate.

$$\begin{aligned} \dot{V} &= \text{const.} \\ \Delta p_{fa} &= p_{fa1} + p_{fa2} \end{aligned}$$

Operating modes (Fig. 11)

For simultaneous operation of both fans the performances corresponds to **curve ③** $\Delta p_{fa1} + \Delta p_{fa2}$.

For individual operation of one fan the performance curve is reduced to **curve ①** Δp_{fa1} or **curve ②** Δp_{fa2} . Via partial load control, use of pole-switching or controllable types the performance can be adjusted to variable operating conditions.

- Fan 1 runs and pushes air over 2 (**curve ①** Δp_{fa1})
- Fan 2 runs and pulls air over 1 (**curve ②** Δp_{fa2})
- Fans 1 + 2 run (**curve ③** $\Delta p_{fa1} + \Delta p_{fa2}$)

It must be taken into account that with individual operation the fan which is not in operation yields an additional resistance.

Performance curve 1

- ① Δp_1 Fan 1 in operation
- ② Δp_2 Fan 2 in operation
- ③ $\Delta p_1 + \Delta p_2$ Both fans 1 and 2 in operation

- 1 Working point of the system at two-stage operation (in-line)
- 2 Individual operation of fan 1 in the system
- 3 Individual operation of fan 2 in the system

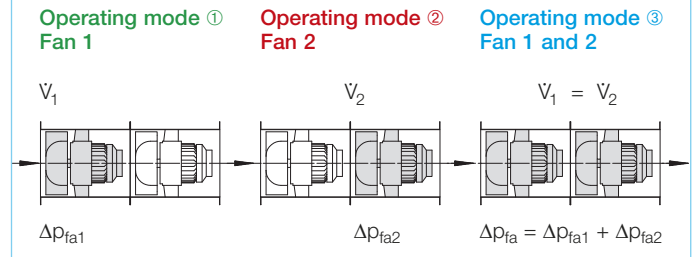
Speed control

For fans with pole changing (two speeds) it must be ensured that both fans are always running with the same speed

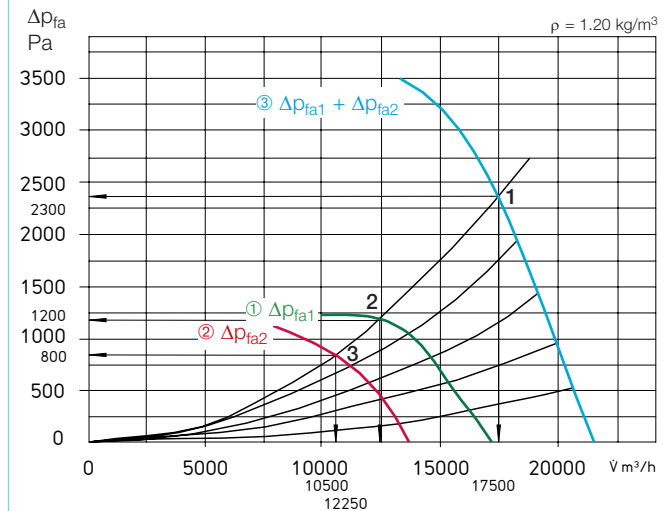
Note

If there is the request to a redundant operation of fans in the system, it must be considered with the two-stage connection (in-line), that a considerable resistance is caused by the non-operating fan. If fan 1 is blocked, for example, by a defect, it is not possible with an economical design that fan 2 still achieves the required working point. A Z-unit is therefore not suitable, if a redundant operation is required.

Fig. 11



Performance curve 1



Parallel operation with P-unit

General

Parallel operation means that two identical fans, which are arranged side by side operate in a joint duct system. In this case the air flow rates add up at constant pressure.

$$\begin{aligned} \Delta p_{fa} &= \text{konst.} \\ V &= V_1 + V_2 \end{aligned}$$

Operating modes (Fig. 12)

For simultaneous operation of both fans the performance corresponds to **curve ①** $V_1 + V_2$.

For individual operation of one fan the performance is reduced to **curve ②** V_1 bzw. V_2

Via partial load control, use of pole-switching or controllable types the performance can be adjusted to variable operating conditions.

It has to be taken into account that the fan performance adjusts according to the system performance curve (parabola). A doubling of the volume results only at constant pressure/resistance.

- Fans 1 and 2 run (**curves ①** $V_1 + V_2$)
- Fan 1 or 2 run (**curves ②** V_1 / V_2)

Note: During individual operation of one fan, the back draught shutter of the other not running fan closes automatically.

Performance curve 2

- ① $V_1 + V_2$ Both fans in operation
- ② V_1 / V_2 Fan V_1 or V_2 in operation

- 1 Working point of the system at parallel operation
- 2 Working point of the system with individual operation of fan 1 or fan 2
- 3 Possible working point at individual operating method. Not achievable in parallel operation

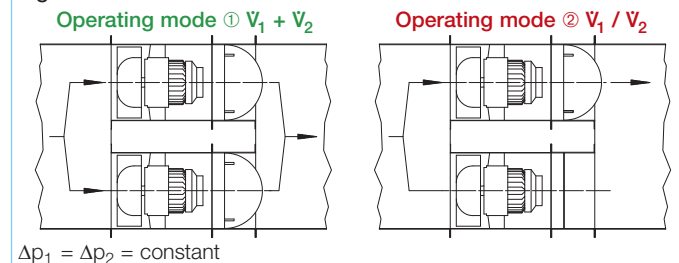
Speed control

For fans with pole changing (two speeds) it must be ensured that both fans are always running with the same speed.

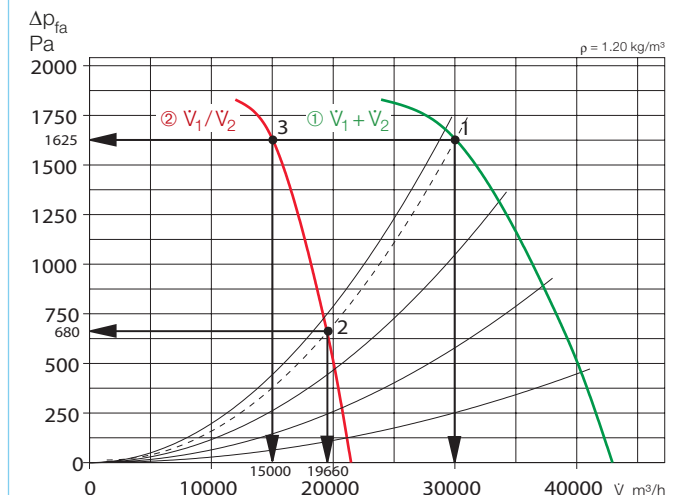
Note

If there is the request to a redundant operation of fans in the system, the parallel connection is therefore particularly suitable. A fan blocked due to a defect has no negative influence on the performance curve of the other fan in the parallel connection. As a result, the fans can be efficiently designed.

Fig. 12

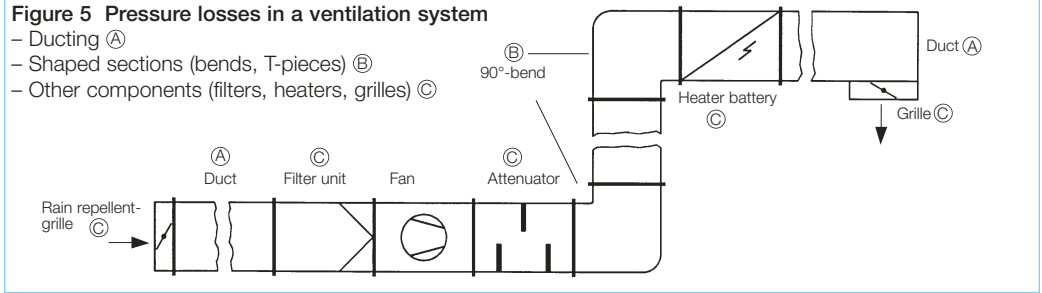


Performance curve 2



Pressure losses

Ventilation systems consist of various different components like: fan, bends, grilles, heat exchangers, filters etc. All these components have a resistance which needs to be considered to select a suitable fan. The pressure loss Δp_{stat} (static pressure) of the total system is calculated by adding all individual resistances (see figure 5).



Pressure drop in circular or rectangular ducting

$$\Delta \Sigma \Delta p = \Delta p_1/L \cdot L_1 + \Delta p_2/L \cdot L_2 + \dots \text{ [Pa]}$$

$\Delta p_{1,2,\dots}$: from table in figure 6 [Pa/m]
L: Length of ducting [m]
Equivalent diameter d_h

Equivalent diameter d_h

$$d_h = \frac{2 \cdot w \cdot h}{w + h} \text{ [mm]}$$

w: Width of ducting [mm]
h: Height of ducting [mm]
Equivalent diameter d_h

d_h for rectangular fans

b x h [cm]	d_h [mm]
30 x 15	200
40 x 20	260
50 x 25	330
60 x 30	375
60 x 35	400
70 x 40	500
80 x 50	600
100 x 50	650

Correction factor for roughness

$$\Delta p_R = \Delta p_{\epsilon=0} \cdot \text{Correction factor}$$

Pressure drop in shaped sections like bends, T-pieces, change in cross section area

$$\Sigma \Delta p_F = \Delta p_{F1} + \Delta p_{F2} + \dots \text{ [Pa]}$$

$$\Delta p_F = \zeta \cdot \frac{\rho}{2} \cdot c^2 \text{ [Pa]}$$

$\Delta p_{F1,2,\dots}$: from tables in figure 7-10 [Pa]
Equivalent diameter c: air flow velocity [m/s]
 ζ : pressure loss coefficient

Resistances of components

$$\Sigma P_{Agg} = \Delta p_{Agg1} + \Delta p_{Agg2} + \dots \text{ [Pa]}$$

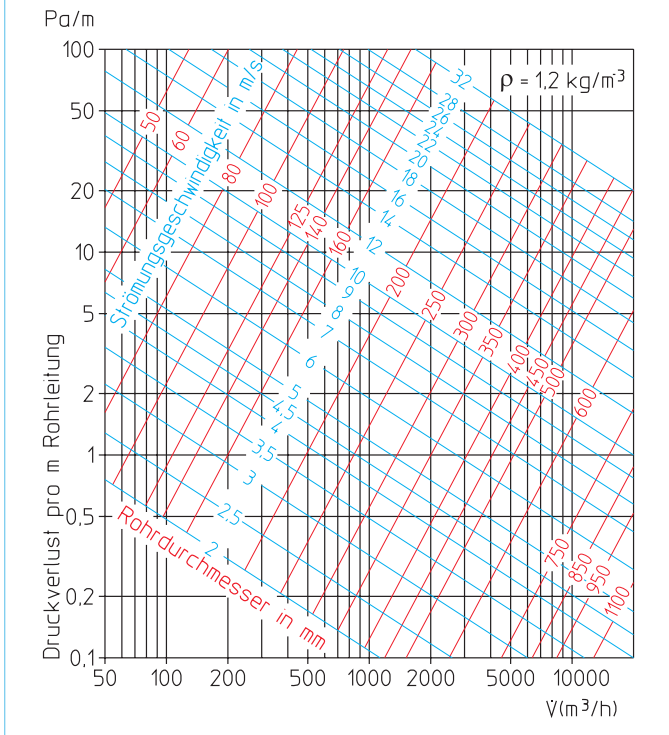
$\Delta p_{Com1,2,\dots}$: from table 5 or diagram

Velocity pressure at exhaust

$$\Delta p_d = \frac{\rho}{2} \cdot c^2 \text{ [Pa]}$$

ρ : Density [kg/m³]
(air at 20 °C, 1013 mbar = 1.2 kg/m³)
c: Air flow velocity [m/s]

Figure 6 Pressure losses Δp [Pa/m] (roughness $\epsilon = 0$)
 \dot{V} [m³/h], c [m/s], d [mm]



Correction factor for roughness ϵ of different materials

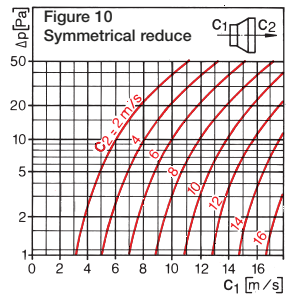
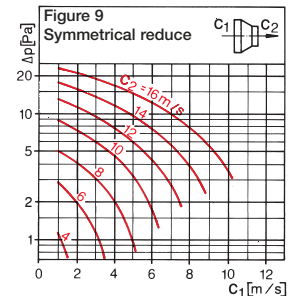
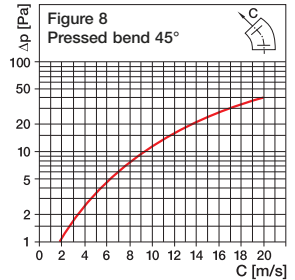
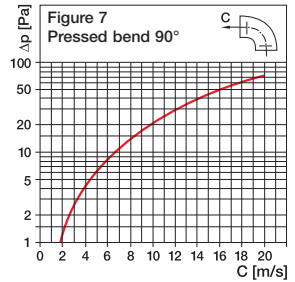
Metal ducting	1,5	Wooden ducting	1,5
Flexible ducting	7,0	Concrete ducting	2,0
Fibrated concrete ducting	1,5	Bricked ducting	3,0

Table 5 Resistances of components
(as a calculation guide)

Component	Resistance Δp component [Pa]
Grilles, gravity shutters, louvres*	20 - 40
Helios VK-shutters*	10 - 20
Heater batteries, heat exchangers*	100 - 150
Filter clean*	40 - 60
Filter dirty	250 - 300
Attenuator*	40 - 80
Valves*	10 - 200
Cyclone	500 - 750

* more accurate figures see product page

Resistances of shaped sections



Total resistance Calculation

$$\Delta p_{ges} = \text{A} + \text{B} + \text{C} + \text{D} \text{ [Pa]}$$

Air flow speed

$$c = \frac{\dot{V}}{A \cdot 3600} \text{ [m/s]}$$

A: Air flow cross section area [m²]
 \dot{V} : Air flow volume [m³/h]

■ General information

Smoke exhaust systems have the task to guarantee a smoke-free layer above the ground in the event of a fire. This should ensure visibility, enabling the evacuation of humans and animals, as well as an active fire-fighting by the fire department. In addition, emergency signs must be recognised also in panic. The creation of smoke-free areas reduces the risk of inhalation of toxic fire gases and the associated threat to life and limb. The temperature in the smoke-free layer should not exceed 70 °C.

According to DIN 18232 smoke and heat exhaust systems are divided into three categories:

- **NRA:** Natural smoke and heat exhaust systems
- **MRA:** Powered smoke and heat exhaust systems
- **RDA:** Smoke protection pressure systems

MRA: Powered smoke and heat exhaust systems

If the use of a natural smoke and heat exhaust system (NRA) is not possible due to structural conditions (e.g. multi-storey buildings, internal areas), a powered smoke and heat exhaust system (MRA) is used. With a powered smoke and heat exhaust system the smoke-gases are extracted by suitable fans.

Depending on the burning materials, highly toxic smoke is produced in a short time. The fire gas rises upwards in rooms on the basis of the principle of thermal lift to form a layer of smoke below the ceiling which spreads downward with the development of the fire. A powered smoke and heat exhaust system pursues the protection objective creating a smoke-free layer durably in the lower area. This enables the self-rescue of people in the building and carrying out rescue and fire-fighting measures by the fire department. Over sufficiently dimensioned vent openings (airflow speed < 1 m/s) enough fresh air is supplied in the lower building area due to the vacuum caused by the fire. Hence, in the ideal case the result is a balance between incoming air and smoke-gas extraction (see Fig.1).

■ Standards and guidelines

Dimensioning and requirements of smoke and heat exhaust systems are regulated in national and European standards (see Fig. 2).

■ Dimensioning of powered smoke and heat exhaust systems

The dimensioning of powered smoke and heat exhaust systems is specified in DIN 18232 part 5. Other dimensioning and layout variations are possible, if they are justified. Alternatively, for example the engineering method according to VDI 6019 sheet 2 can be used. It is advisable, to coordinate the methodology of the dimensioning of a powered smoke and heat exhaust system with the legally relevant authorities (fire safety experts, authorities, local fire department, etc) already in the planning phase. The following calculation steps below can be understood only as a suggestion. A final specification is to be met in compliance with the valid laws and norms according to the accompanying authority.

□ Dimensioning according to DIN 18232-5

A dimensioning according to DIN 18232-5 can be carried out if the area from which smoke is to be extracted concerns an extensive room with a clear height > 3 m. At first the dimensioning group has to be determined to the further dimensioning. This is a computational fire area, which depends on the fire development time and the fire propagation rate (see Tab.1).

The fire development time to be set is dependent on the temporal arrival of the fire brigade. It describes the time of the outbreak of the fire until the beginning of the fire-fighting. A time of 10 minutes is usually set. At very favourable conditions (plant fire brigade), the time can be reduced to 5 minutes. At unfavourable or really unusual circumstances the value has to be increased to 15 or 20 minutes.

The fire propagation rate depends on the flammability of the fire load. The average value is normally set here. Low fire propagation rates can be accepted for combustible substances in non-combustible packing. High fire propagation rates are to be set if there are substances with high flame propagation rate.

Fig.1 Equilibrium condition between supply air and extracted smoke-gases.

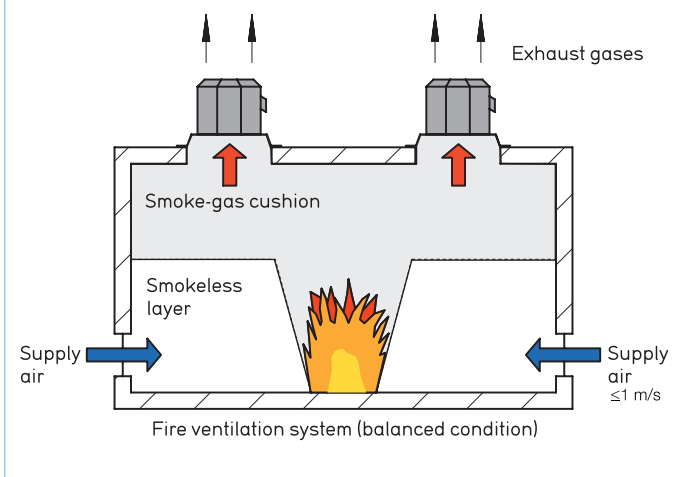


Fig. 2

German and European standards to DIN-publication for smoke and heat exhaust systems

German standards	European standards
DIN 18232 Smoke and heat control	EN 12101 Smoke and heat control
DIN 18232-1	EN 12101-1
<i>Terms, safety objectives</i>	<i>Specification for smoke barriers</i>
DIN 18232-2	EN 12101-2
<i>Natural smoke and heat exhaust system (NRA), requirements, design, installation</i>	<i>Specification for natural smoke and heat exhaust fans</i>
DIN 18232-2 / A1	EN 12101-2 Draft
<i>(Modifications)</i>	<i>Regulation for natural smoke and heat exhaust fans</i>
DIN 18232-4	EN 12101-3
<i>Heat exhaust systems(WA), test method</i>	<i>Specification for powered smoke and heat exhaust fans</i>
DIN 18232-5	EN 12101-3
<i>Powered smoke and heat exhaust system (MRA) requirements, dimensioning</i>	<i>(Revision1)</i>
DIN 18232-6	EN 12101-6
<i>Powered smoke and heat exhaust system (MRA)</i>	<i>Regulation for pressure differential systems, kits</i>
<i>Requirements to individual components, proof of suitability</i>	EN 12101-7
DIN 18232-7 Draft	<i>Smoke duct systems</i>
<i>Heat exhaust ventilators made of meltable materials, assessment procedure, installation</i>	EN 12101-8, Draft
	<i>Regulation for smoke control dampers</i>
	EN 12101-9, Draft
	<i>Control panels</i>

Table 1: Determination of design group of a MRA to DIN 18232

Applied fire development time in minutes	Fire propagation rate		
	particularly low	medium	particularly high
< 5	1	2	3
< 10	2	3	4
< 15	3	4	5
< 20	4	5	-

■ Determination of flow rate

The flow rate to be discharged for the smoke section (1 600 m²) shall be determined according to tables. The smoke extract flow rate is specified in dependence of the thickness of the smoke-free layer, energy release rate and design group.

The dimensioning distinguishes these two energy release rates:
 – 600 kW/m²
 – 300 kW/m² (see Tab. 2, page 10)
 These valves can be deviated from if there are proper reasons. In particular if other plume models are

used for the determination of smoke-gas or other energy release rates are to be set. The smoke-gas flow rate must be extracted by heat-resistant fans. For the operation the following types can be used:
 – Roof fans
 – Wall fans
 – Central fans

For smoke extraction the extraction locations are to be dimensioned and distributed properly.

A functional air vent opening is essential for efficient operation of powered smoke and heat extract system. The supply air must stream in close to the ground within the smoke-free layer. A low impulse flow is to be paid attention to particularly. Otherwise the result is a swirling smoke-gas cloud. During the planning attention is to be paid to the top edge of the air vent opening is at least 1.0 m below the smoke-gas cloud. If the air vent openings have the maximum width of 1.25 m, the minimum distance can be reduced to 0.5 m. If a free air flow is not possible, a powered supply air intake is to be realized. The incoming air velocity is specified in DIN 18232-5 with maximum 1 m/s. If the demand to DIN 18232-5 cannot be fulfilled with regard to the maximum incoming air velocity, the following compensations can be possible in agreement with the responsible expert:

- Installation of open-pored baffle plates
- Reduction or renunciation of fire loads in the air vent area
- Low active depth or effect of the air vent opening

Incoming supply air can negatively affect the flow pattern with high speed due to the induction effect on the plume, with the consequence of a washout (smoke entry into the smoke free zone) or even a collapse of the plume. Therefore an incoming air velocity of max. 0,5... 1,0 m/s is recommended. Supply air vents must be opened immediately after release of the MRA. Ensuring the automatic opening is accomplished by:

- Automatic opening mechanism
- Plant fire brigade
- Permanently present and trained personnel

The clear cross-section of the incoming air vent shall be determined by the following:

$$A_{\text{lichte}} = \frac{V_{\text{ab.masch}}}{w_{\text{zu}}} \quad [\text{m}^2]$$

A_{lichte} = clear surface area of opening [m²]
 $V_{\text{ab.masch}}$ = total extraction volume flow [m³/s]
 w_{zu} = inlet air velocity [m/s]

Smoke section areas

The DIN 18232-5 presupposes in their application that the rooms, which have to be smoke exhausted have a maximum floor space of 1 600 m². Larger rooms are to be divided by means of smoke aprons into max. 1 600 m² large smoke section areas. Increasing the flow rate of the smoke and heat exhaust fans the smoke section area can be increased up to 2 600 m². To do this the values indicated in the table 2 have to be increased by 10 % for each 100 m² started after 1 600 m².

Further design steps of DIN 18232-5

In table 3, the average smoke layer temperature (°C) can be read off, under consideration of the same parameters as in the procedure for the volume flow determination (table 2). This value is necessary for determining the number of extraction points, as well as for the possible flow rate correction procedure.

Table 4 represents the required temperature class of smoke and heat exhaust fans according to DIN EN 12101-3. Here are the same design parameters as shown in the table 2 and 3.

Flow rate correction procedure

In everyday practice for smoke extraction projects, the high smoke-gas volume flows confront all project parties with enormous challenges. If the effort for the project planning and layout of the smoke and heat exhaust fans is still relatively manageable, so determining the exact dimensions of the smoke extraction ducts as well as the determination of number and position of the air vent openings to be taken into account usually turns out to be more complex. The correction procedure for the reduction of the smoke-gas volume flows after table 2 specified in the standard can often provide the necessary remedy since it considers the actually occurring heat losses of the smoke layer. In a smoke extraction situation a high heat transmission occurs due to a high temperature difference between smoke layer and surrounding area. This loss of heat flow through the room surfaces touched by the smoke, causes a significant cooling of the smoke layer. A significant reduction in the smoke-gas volume results from the cooling of the smoke layer so that the requirements on the smoke-gas volume flow to be derived and temperature class of the smoke and heat exhaust products decline.

Table 2: Smoke-gas volume flow (m³/h) to be extracted per smoke reservoir (DIN 18232-5)

Height of smoke free layer	300 kW/m ²					600 kW/m ²				
	Dimensioning group									
	1	2	3	4	5	1	2	3	4	5
2 m	23000	38000	64000	112000	-	32000	56000	-	-	-
2,5 m	29000	46000	75000	128000	223000	38000	64000	112000	-	-
3 m	34000	55000	88000	145000	248000	44000	73000	124000	-	-
4 m	43000	72000	115000	184000	303000	58000	92000	152000	257000	448000
5 m	50000	85000	143000	229000	366000	71000	115000	183000	301000	511000
6 m	59000	96000	165000	276000	436000	84000	136000	218000	351000	581000
7 m	73000	105000	183000	311000	512000	93000	155000	256000	404000	657000
8 m	88000	121000	197000	342000	580000	109000	175000	286000	462000	738000
9 m	105000	143000	206000	368000	633000	127000	194000	316000	522000	825000
10 m	123000	166000	231000	387000	681000	149000	210000	345000	570000	916000

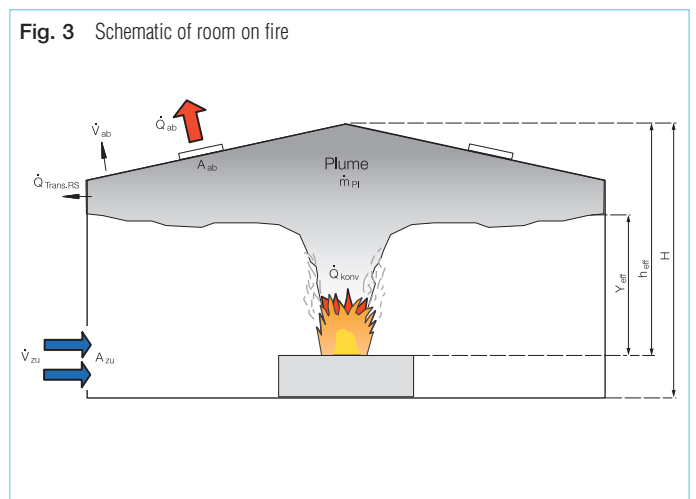
Table 3: Medium smoke-layer temperature T_{RS} in °C to DIN 18232-5

Height of smoke free layer	300 kW/m ²					600 kW/m ²				
	Dimensioning group									
	1	2	3	4	5	1	2	3	4	5
1 m	210	290	400	560	-	398	555	-	-	-
2 m	160	210	290	400	560	291	403	561	-	-
3 m	130	170	230	310	430	226	311	432	-	-
4 m	100	120	150	210	290	154	209	288	398	555
5 m	80	100	64,8	107	182	24,1	34,5	52,6	291	403
6 m	70	90	100	120	170	101	126	166	226	311
7 m	60	80	90	110	140	91	109	136	184	251
8 m	50	70	90	100	120	79	97	119	154	209
9 m	50	60	80	90	110	69	87	107	132	179
10 m	40	60	70	90	100	61	81	98	120	155

Table 4: Temperature classes of smoke and heat exhaust fans to DIN 18232-5

Height of smoke free layer	300 kW/m ²					600 kW/m ²				
	Dimensioning group									
	1	2	3	4	5	1	2	3	4	5
1 m	F400	F600	F842	-	-	F842	-	-	-	-
2 m	F300	F600	F600	F842	-	F600	F842	-	-	-
3 m	F300	F400	F600	F842	-	F400	F600	F842	-	-
4 m	F200	F300	F300	F400	F600	F300	F400	F600	F842	-
5 m	F200	F200	F300	F300	F600	F200	F300	F300	F600	F842
6 m	F200	F200	F200	F300	F400	F200	F200	F300	F400	F600
7 m	F200	F200	F200	F200	F300	F200	F200	F300	F300	F400
8 m	F200	F200	F200	F200	F300	F200	F200	F200	F300	F400
9 m	F200	F200	F200	F200	F200	F200	F200	F200	F200	F300
10 m	F200	F200	F200	F200	F200	F200	F200	F200	F200	F300

Fig. 3 Schematic of room on fire



The reduced flow rate in consideration of the heat losses is calculated after:

$$V_{RS, corrected} = V_{RS} \frac{T_{RS, corr}}{T_{RS}}$$

$$T_{RS} = \frac{(1-\delta)(T_{RS} - T_{\infty})}{1 + \frac{T_{RS}}{353,18 \cdot V_{RS} \cdot c_p} \sum U_i \cdot A_i} + T_{\infty}$$

$$\delta = 0,031 \cdot \sqrt[3]{A_R}$$

$$T_{RS} = (Value_{Tab.3}) + 273 \text{ K}$$

$$T_{\infty} = 293 \text{ K}$$

$$V_{RS} = \frac{m^3}{s}$$

$$c_p, Smoke = 1.010 \cdot \frac{J}{kg \text{ K}}$$

$$U_i = \frac{W}{m^2 \text{ K}}$$

- δ = radiation factor of smoke layer
- T_{RS} = medium smoke layer temperature as per table 3 (K), value
- T_{∞} = ambient- or supply air temperature [K] = 293 K
- V_{RS} = smoke-gas volume flow to be extracted as per table 2
- $c_p, Smoke$ = specific heat capacity of the smoke-gas
- U_i = thermal transmittance of building-element surface
- A_i = surface area of building-element (m²)
- A_R = surface area of smoke reservoir (m²)

Number of exhausts

All exhausts in a smoke extraction duct and direct operating smoke and heat exhaust fans (e.g. roof fans with direct inlet, wall fans) are to be understood as exhausts according to the standard. The number of necessary exhausts can be found in table 5. Here the maximum permissible smoke-gas volume flow (m³/h) can be read off under consideration of the smoke layer thickness and the medium smoke layer temperature. The thickness of the smoke layer at the exhaust results from figure 4, medium smoke layer temperature is shown in table 3. Intermediate values can be calculated using linear interpolation.

Minimum distances must be observed between the exhaust openings. The predefined distances refer to the distance of the respective outer edges. The minimum distance (m) is calculated after:

$$S_{min} \geq 0,015 \cdot \sqrt{V_i}$$

with:
 V_i = smoke-gas volume flow of exhaust (m³/h)

Smoke and heat exhaust fans

The requirements of smoke and heat exhaust fans are specified by the European product standard DIN EN 12101-3 (systems for the control of smoke and heat flows) All Helios smoke and heat exhaust fans are tested according to this test standard by a testing Institute accredited by the DIBt and have EC-certificate of conformity and a CE-marking. In addition, they have an application approval of the DIBt. The application approvals, issued by the Deutsches Institut für Bau-technik (DIBt), public-law institution, regulates in part II of the list of Technical Building Regulations the application of smoke and heat exhaust fans (see Table 6).

Installation of smoke and heat exhaust fans

The installation of fans is regulated according to VDMA standard sheet 24177 2009-12. There are three different installation types available.

- Installation of the fan outside the smoke zone and outside the building.
- Installation of the fan outside of the smoke section, inside of buildings in sufficiently ventilated room.
- Installation of the fan within the smoke zone.

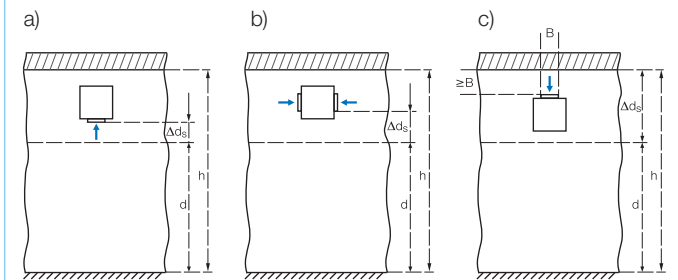
In principle, to compensate thermal expansion, smoke and heat exhaust fans must be connected to the ducting by temperature-resistant and flexible sleeves. Roof fans, which are mounted on roof base and wall fans without duct connection are excluded. The sleeves must have a verification of suitability. They must have the identical temperature category of the corresponding fan. The flexible sleeves must be fitted before and after the fan without any offset. An installation with offset has a considerable performance reduction and increase in noise. Flexible sleeves do not serve as adapters for any possible compensation of assembly inaccuracies.

Electrical connection, isolator switch, control

The supply with electrical energy of smoke and heat exhaust fans is described in different standards and building regulations:

- Basic document fire protection
- Model Building Regulation
- Building regulations of the federal states
- Model Conduit Systems Directive
- Reports of testing institutes
- General approval under building law
- European and national standards

Fig. 4 Smoke layer thickness at the exhaust openings



- a) Δd_s for downward exhaust opening
- b) Δd_s for horizontal exhaust opening
- c) Δd_s for upward exhaust opening

h = medium clear ceiling height from the floor to the lower edge of the roof or ceiling
 d = target height clearance from the floor to the lower edge of the smoke layer
 B = clear width of exhaust opening

Table 5: Maximum permissible smoke volume flow at the exhaust in m³/h to DIN 18232-5

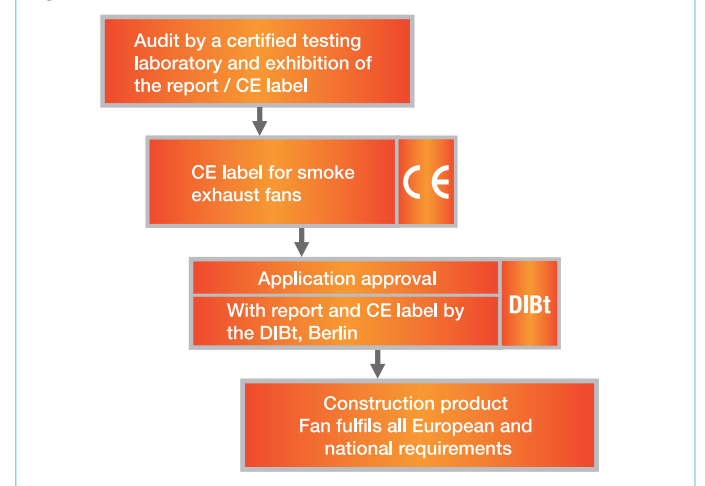
Smoke layer thickness, exhaust opening	Medium smoke layer temperatur in °C										
	50	100	150	200	250	300	350	400	500	550	600
0,5	1000	1300	1800	2000	2100	2400	2600	2900	3000	3050	3100
1	5000	7500	9000	10000	12000	15000	18000	19000	19500	20000	21000
1,5	15000	21000	28000	30000	38000	40000	41000	48000	50000	55000	60000
2	30000	42000	55000	65000	80000	90000	90000	95000	100000	105000	110000
2,5	50000	75000	100000	110000	135000	165000	170000	180000	200000	205000	210000
3	80000	110000	155000	195000	200000	225000	250000	260000	300000	305000	310000
3,5	125000	190000	220000	290000	300000	350000	370000	400000	450000	495000	500000
4	195000	260000	300000	400000	420000	500000	500000	550000	600000	700000	705000
5	300000	450000	550000	650000	750000	850000	900000	950000	1 Mio.	-	-

Table 6: Temperature classes of smoke and heat extract fans to DIN EN 12101-3

Category	F200	F300	F400	F600	F842
Temperature (°C)	200	300	400	600	842
Functional endurance (minimum), (min)	120	60	120	60	-

The national standards such as DIN and EN were taken into account in these categories.

Fig. 5 Building control requirements for smoke and heat exhaust fans



In principle, the energy supply of the smoke and heat exhaust fan must always be ensured in the case of fire. The functional endurance of cables and pipes must conform to the time classification of the fan. The power supply of the fan must be protected against mechanical damage. This can be made by the use of silicone or teflon-coated cables. The switchboard of the fan must be located outside the fire zone. Smoke and heat exhaust fans need to be, separate from the remaining network, electrical supply. The respective national law and possibly other public requirements regulate whether an additional securing of energy supply (emergency power) is necessary. A isolator switch must be provided for maintenance and repair work in the immediate vicinity of the fan. It has to be ensured that the isolator switch is not affected due to radiant heat (thermal encapsulation). It is permitted to install the isolator switch within a fire-resistant cooling air duct, if it is accessible via a fire-resistant inspection flap. Repair switch must be protected against unauthorized operation effectively (e.g. padlock, key-switch execution).

Smoke and heat exhaust fans can be used for normal ventilation of the building. The ventilation operation can be speed controlled. The speed control can be carried out by

- frequency inverter
- pole-switching motors (Dahlander winding or separate windings)

Due to motor insulation stress a sine filter is recommended because of occurring voltage peaks and voltage changes by regulation with a frequency inverter, as well as by increasing the insulation stress due to wire's inductivity and capacity.

No regulation of the fan by means of frequency inverter or other control devices may be carried out in the smoke and heat extraction situation. By release of the smoke and heat exhaust fan (case of fire) the following must be ensured:

- Activation of the fan
- Bridging the thermal and electrical control elements
- Operation in the projected speed
- Ensure the operation by preventing unauthorized switching off

Smoke extraction ducts

Wires for the smoke extraction are part of the building rules list A and therefore may require an approval of the building authorities. Smoke extraction ducts and their components must consist of non-combustible material of class A, DIN 4102-1.

Four different demands are made to smoke extraction ducts:

- Heat insulation (L90 to DIN 4102-6)
- Leak tightness (to DIN EN 12101-7)
- Load (to DIN 4102-4 and 6)
- Cross-section preservation (to DIN EN 12101-7)

Smoke extraction ducts within the fire zone

Criteria for load, tightness and for the preservation of the cross-section must be complied within the fire zone. The use of ducts made of sheet steel (with approval of the building authorities) is permitted.

Smoke extraction ducts within the building; outside the fire zone

Here are all four criteria to be observed. As a suitable thermal insulation calcium silicate ducts can be used.

Smoke extraction ducts outside the building

the criteria load, tightness and preservation of the cross-section are to be observed.

The use of ducts made of sheet steel (with approval of the building authorities) is permitted.

When planning has to be paid attention particularly on the outlet of smoke extraction ducts. The planning occurs according to the principle of MLÜAR 2005 point 5.1.2:

„Outside air- and exhaust air openings (outlets) of ventilation ducts from which smoke gases can be released into the atmosphere must be arranged or formed in such a way, that fire or smoke cannot be transferred in other storeys, fire zones, units, necessary staircases, to rooms between the necessary staircases and the exits to the outside or necessary corridors“.

Fig. 6 Fan outside of the smoke section and outside of the building

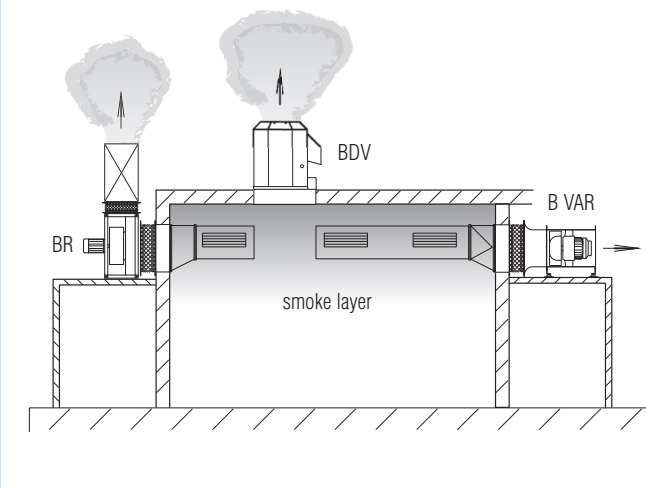


Fig. 7 Fan outside of the smoke section, inside of buildings in sufficiently ventilated room.

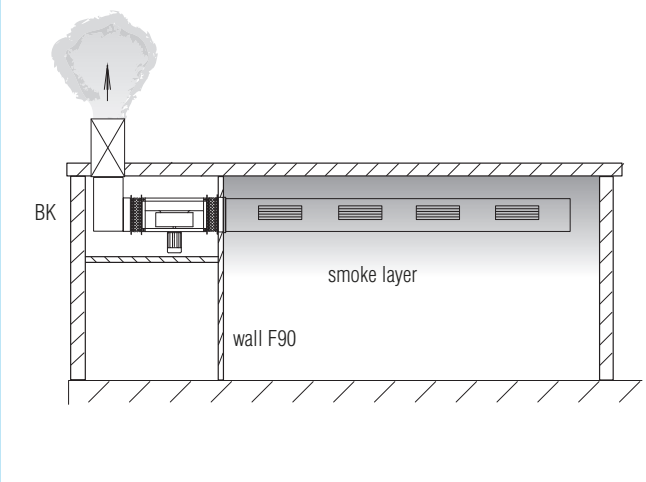
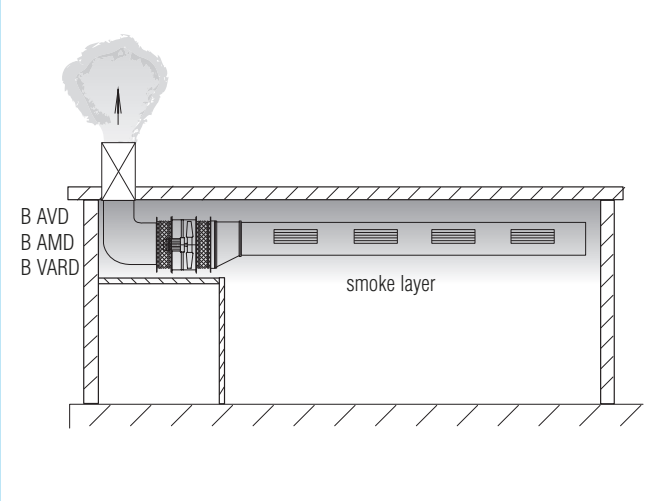


Fig. 8 Fan within the smoke section



This is deemed to be fulfilled by compliance with one of the following requirements:

1. Outlets must be at least 2,5 m away from windows, other outside wall openings and from outside wall openings with combustible building materials and relevant panels; this does not apply to the battering of ventilated facades.

A distance to windows and other similar openings in walls is not necessary, if these openings opposite to the outlets are protected by 1.5 metres from projecting, fire resistant (equivalent to the ceiling) components made of non-combustible building material.

The outlets of ventilation ducts above roof level must tower over components made of combustible building materials at least 1 m or be - horizontally measured - 1,5 m away from these. These distances are not required if these building materials are protected by the external surfaces of the ventilation ducts against fire danger up to a distance of at least 1.5 m (e.g. by an at least 5 cm thick layer of gravel or by at least 3 cm thick, tightly laid concrete slabs)."

■ Accessories of smoke and heat exhaust fans

All accessories and components, which are part of the smoke and heat exhaust system, must meet at least the identical temperature category of the corresponding smoke and heat exhaust fan. Here, a relevant test certificate under building law is necessary.

The components include e.g.:

- attenuators
- flexible sleeves
- anti vibration mounts
- back draught shutters
- inlet cone
- safety guard
- etc.

■ Maintenance and function control

Recurring maintenance and function testing is the responsibility of the user.

Smoke and heat exhaust fans must be kept constantly ready for operation and in good condition. The simple and safe maintenance and repair must be always guaranteed by an appropriate installation. The operational reliability and -readiness has to be checked twice a year. The maintenance has to be carried out every year. The specifications of the fan manufacturer must be observed.

■ Installation information for smoke and heat exhaust axial fans

The ideal installation (fig. 9) is made with an inflow- and outflow duct of $2,5 \times D$ ($D = \varnothing$ fan). Deviations from the ideal state of the installation, performances losses are possible.

Fig. 9 Functional installation configuration with inflow- and outflow duct of $2,5 \times D$ ($D = \varnothing$ fan)

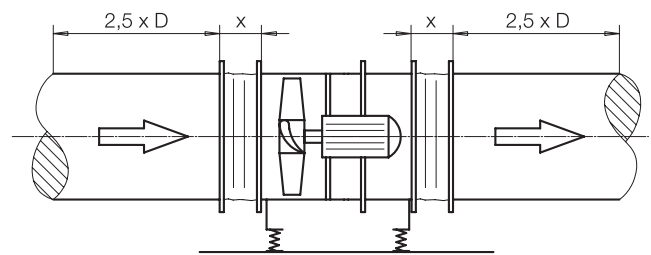


Fig. 10 a) Performance loss/noise increase
b) Improvement by use of inlet cone

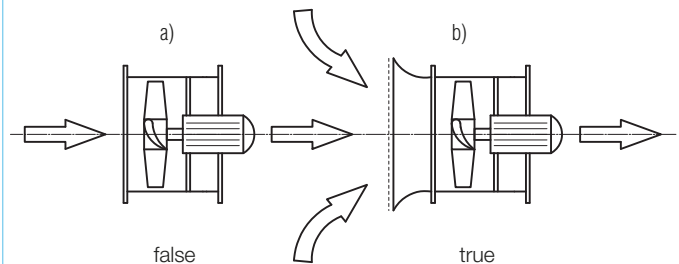


Fig. 11 a) Substantial performance losses, bad flow behavior, unfavourable weight distribution
b) A cone as well as a duct length of $2,5 \times D$ serve for improvement, center of gravity position between anti vibration mounts SDD

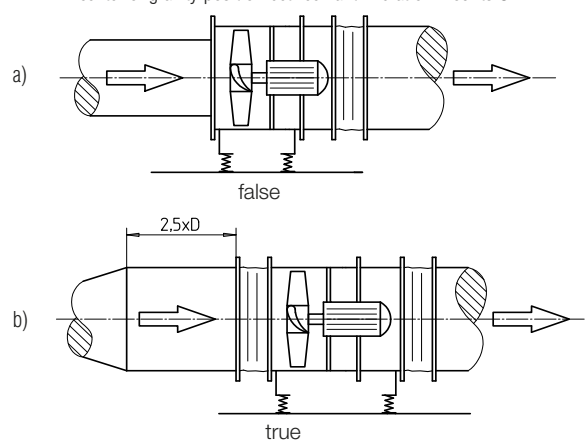
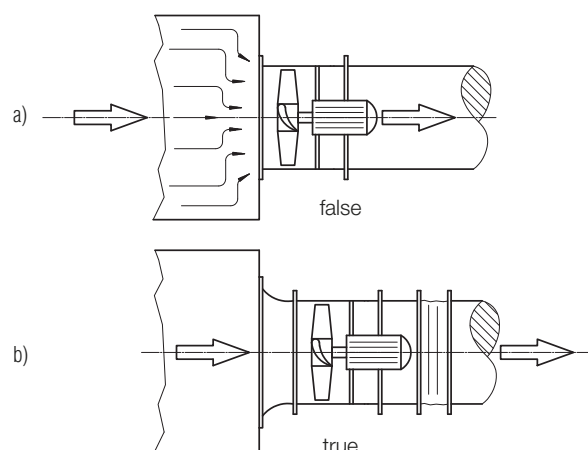


Fig. 12 a) Substantial performance losses, bad flow behavior.
b) With inlet cone, substantial improvement of inflow and noise behavior.



The successful series of AVD and B AVD are equipped with profiled blades that are factory-adjusted.

As a result, nearly any operating point in the range of 3 000 to 160 000 m³/h at an external pressure of 50 to 1 100 Pa can be achieved.

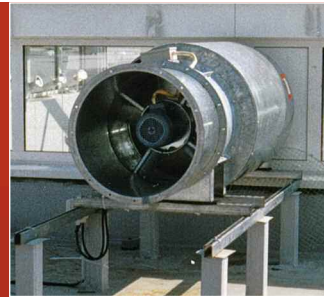
B AVD smoke and heat exhaust axial fans are used ideally for the car park smoke extraction in public buildings, hotels and shopping centres. When used in car parks they can also be combined as two-stage Z- or parallel P-units.

Essential advantages are:

- Aluminium impeller with nine profiled blades for high efficiency and high pressure rate.
- Compact design
- Simple installation
- Low noise and vibration during operation
- With DIBt technical approvals, CE-certified



Supply air fan AVD



AVD system technology



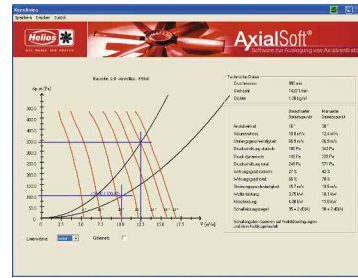
**Helios competence:
Axial fans, which achieve
every operating point.**

Program overview Helios low pressure axial fans:

- Axial fans in four designs and optionally with EC-drive technology, series program
See Helios main catalogue
- Axial fans for ventilation (air flow temperature from -30 to +40 °C) in the technical building equipment (TGA) \varnothing 710 to 1 000 mm, $V = 8\,000$ to $80\,000\text{ m}^3/\text{h}$.
Page 18 on

- Models for smoke and heat extraction according to DIN 12101-3 in temperature classes F 300 (120 minutes), F 400 (120 minutes) and F 600 (120 minutes).
Page 26 on

- Special solutions for the technical building equipment (TGA) and large axial fans from \varnothing 1 000 to 7 100 mm, air flow rate up to 2.2 million m^3/h , are produced according to customer demands.
Layout program
see www.AxialSoft.de



Is available for download under www.heliosventilatoren.de: AxialSoft for very easy selection of large axial fans.

Axial fan with air flow volume and up to $150\,000\text{ m}^3/\text{h}$ and upstream guide vane. Application: Realistic simulation of different air flow situations.



Axial fans of the type range AVD DL.. with an impeller diameter 3 150 mm. Complete output: approx. $3\text{ Mio. m}^3/\text{h}$. Use: In cooling towers of two permills.



Being one of the leading European fan producers Helios always impress their customers anew with their extraordinary standard range of axial fans covering all pressure and volume ranges.

Worldwide well-known users trust Helios axial fans for ventilation, heating, cooling and drying applications as well as in safety relevant applications like the smoke extraction.

Large fans from Helios have been used successfully over decades e.g. in cooling towers and condensers.

Application

- Versatile application in the TGA-ventilation technology, e.g. for car park ventilation, in smoke pressure systems, etc.
- For preventive fire protection to secure smoke and heat extraction.
- For applications with air flow temperatures of 300 °C for 120 minutes (F300) or 400 °C and 600 °C for 120 min (F400, F600).

Characteristics

Helios AVD and B AVD are low pressure axial series, that are characterized by a low operating noise, high efficiency and low vibration.

Models

- Wall fan AVD DK: Circular plate axial with inlet cone. Casing made from galvanised steel. Motor with terminal box and motor side guard.
- Cased axials HRF, AVD RK: Cylindrical duct with flanges on both ends. For direct in-line installation in ducting.
- B AVD smoke and heat exhaust fan: Cylindrical duct with flanges on both ends. For direct in-line installation in ducting.

Casing

Cylindrical duct with flanges on both ends (except AVD DK) from galvanised sheet steel to DIN 24155 PT3. For direct in-line installation in ducting.

Impeller

- Series AVD und HRF: High-performance characteristics with 5 or 7 profiled blades made from reinforced polymer. Operating range from -30 to +40 °C.
- Series B AVD: High-performance characteristics with 5 or 9 profiled blades from aluminium (F300, F400) or steel (F600). Dynamically balanced to DIN 1940-1, class G 6.3.

Motor

- Series AVD and HRF: Totally enclosed motor, protected to IP 54/ IP 54. Maintenance-free and radio suppressed. With tropicalized protection of windings.
- Series B AVD: Direct by IEC-three phase a.c. motor (Smoke Extraction Motors F300 or F400). Protection to IP 55. Insulation class H. External cable with sheathing. Depending on the installation situation, relubrication intervals or bearing replacements must be observed (see installation and operating instructions). Cable to the termi-

nal box with fire-resistant sheathing.

Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

Motor protection

- Series AVD: All types (except pole-switching and explosion-proof) have thermal contact or PTC resistors as standard and according to footnotes in the table to guard through following full motor protection units:
⁴⁾ MSA, Ref.-No. 1289 (for PTC resistor)
⁵⁾ M4, Ref.-No. 1571
 All other types are to be protected by a conventional circuit breaker on site.

- Series B AVD: The B AVD are to be protected by a conventional circuit breaker on site. This is to be bypassed or de-energized automatically in case of smoke and heat extraction.

Electrical connection

- Series AVD: Standard terminal box (protection to IP 55) from polymer.
- Series B AVD: Standard terminal box (protection to IP 55) in temperature-resistant execution.

Air flow temperature

- Series AVD: Suitable for ventilation from -30 °C to +40 °C continuous temperature.
- Series B AVD: Suitable for continuous operation for temperature from -20 °C to +40 °C. Suitable for smoke gase up to 300 °C/120 minutes (F300), 400 °C/120 minutes (F400) and 600 °C/120 minutes (F600).

Air performance

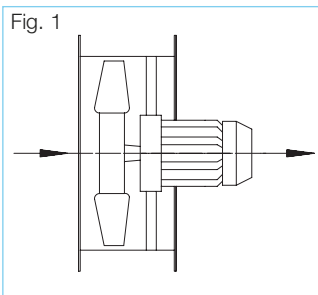
- The smoke and heat exhaust fans B AVD are manufactured with a bigger gap between casing and impeller. A reduced output of approx. 5 % during ventilation mode (cold operation +40 °C) is expected with the F300 types, approx. 10 % with the F400 types. In a smoke extraction situation the gap closes and leads to the performance curves mentioned in the product pages. This has to be taken into account when dimensioning.

Air flow direction

- Series AVD DK/RK: The blades are adjustable at standstill, so that ex-works (according order) an optimal adjustment to the operating point is

possible. The maximum pitch angle of each type (according to motor power) is specified in the table of the types on the product pages.

- By default, i.e. unless otherwise stated in the order the fans come in air flow direction B = pushing air over the motor (Fig. 1).



- Series AVD DK/RK and HRF: Are reversible using a reversing switch (accessories). For reverse air flow direction allow ~30 % loss in performance.
- Series B AVD:
 - With the types B AVD F300/400 the blades are adjustable at standstill, so that ex-works (according order) an optimal adjustment to the operating point is possible.
 - The B AVD F600 types are supplied with the pitch angle specified in the table of the types on the product pages.

Sound levels

- On the product pages above the performance curves are the spectrum figures and total sound power levels for different pitch angles indicated.

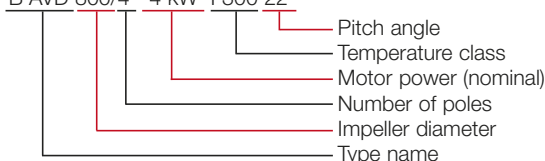
Certification

The smoke and heat exhaust fans B AVD were tested to DIN EN 12101-3.
 CE-approval:
 F300 : 0036 CPD RG 05 03
 F400 : 0036 CPD RG 05 06
 F600 : 0036 CPD RG 05 04
 With DIBt technical approval:
 F300 : Z-78.11-144
 F400 : Z-78.11-145
 F600 : Z-78.11-146

Order data

The desired pitch angle of the blades is mandatory when ordering.

Example:
 B AVD 800/4 4 kW F300 22°



■ Installation

□ Series AVD:

Suitable for installation in any position, however depending on usage perhaps consider condensation drainage holes.

□ Series B AVD:

Horizontal and vertical installation depending on the place of installation:

- Within the fire zone, without heat and sound insulation.
- Outside of the fire zone, within the building with heat and sound insulation L 90.
- Outside of the building without heat and sound insulation.

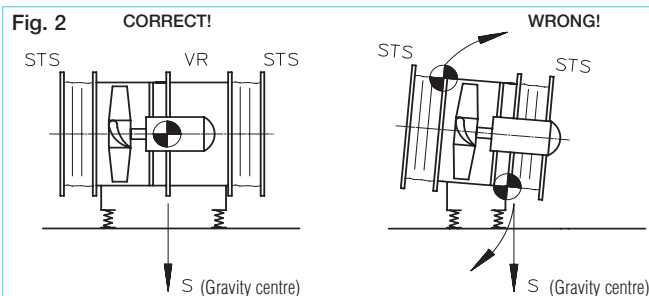
□ To avoid vibration transmission to building and ducting the use of anti vibration mounts (accessories SDD, SDZ) is highly recommended.

If installed outdoors, or in wet conditions or if installed with vertical motor shaft, this must be stated when ordering.

Compliance with the Federal, as well as the regional fire protection regulations.

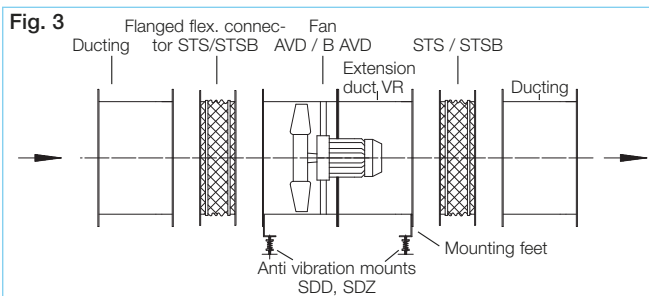
■ Duct installation (tilting)

To prevent a tilt-affinity during installation of axial fans with flanged flexible connectors on each side (STS, accessories), an extension duct (type VR, accessories) is to be provided (Fig. 2).



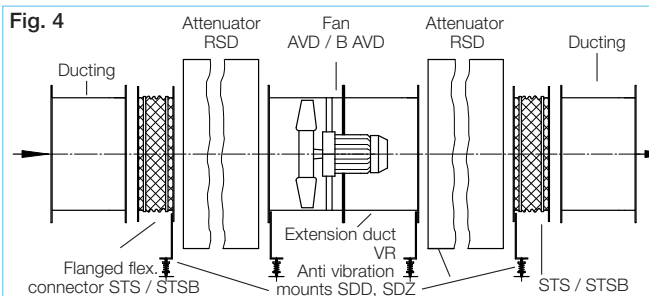
■ Duct installation (horizontal)

Arrangement of the mounting feet and anti vibration mounts (accessories) on both flange sides of the unit. Use of anti vibration mounts SDD for compression or SDZ for suspension (ceiling suspension). To prevent sound and vibration transmissions flanged flexible connectors STS (accessories) are to be provided on each side. (Fig. 3).



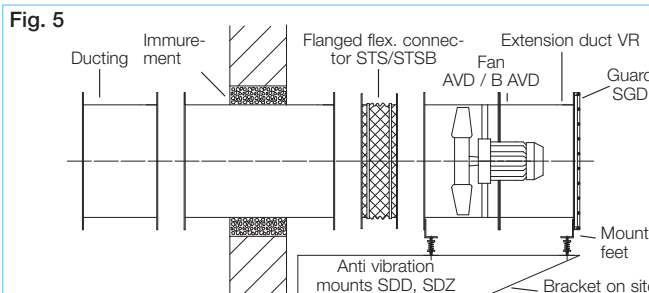
■ Duct installation with attenuator on each side

According to the local conditions brackets (to be provided on site) for fastening of the attenuators and to support the weight required. The intake attenuator must be fitted at the entrance, the outlet attenuator at the discharge with flanged flexible connectors (STS, STSB) (Fig. 4).



■ Wall installation (horizontal)

Onto a bracket (to be provided on site). Wall bushing with duct, immurement with mineral wool. Flanged flexible connectors on each side with extension duct VR and guard SG (Fig. 5).



■ Series B AVD F600

Impeller

High-performance characteristics with 5 profiled blades made of hot-dip galvanized steel. Welded, hot-dip galvanized steel impeller. Dynamically balanced to DIN 1940-1, class G 6.3 < 4.0 mm/s.

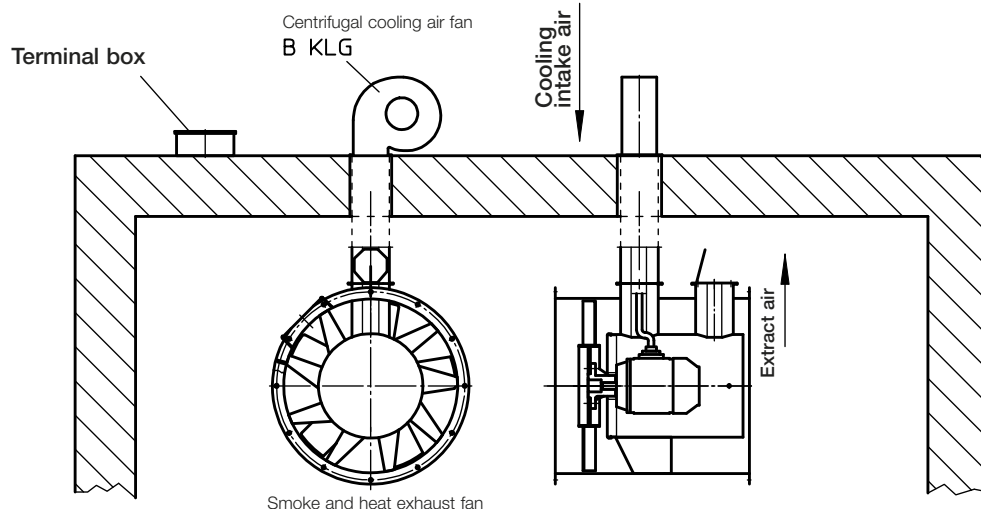
Centrifugal cooling air fan

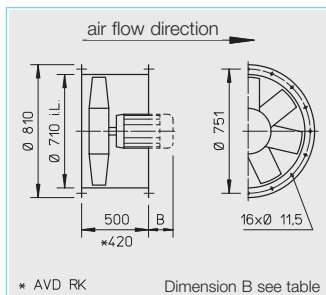
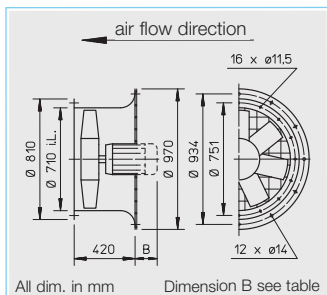
To ensure motor cooling the centrifugal cooling air fan B KLG (Fig. 6) is a necessary accessories. The cooling air fan is to be installed outside of the fire zone (smoke section) (Fig. 6).

Alternative external cooling air fan on request.

Minimum cooling air flow volume see accessories on page 147.

Fig. 6 Positioning in the fire zone



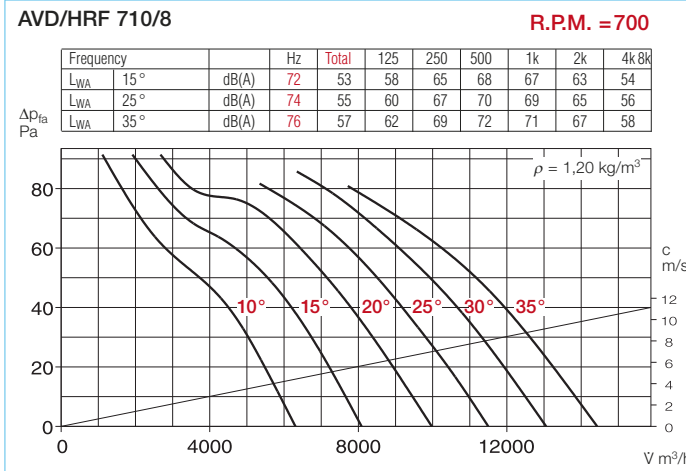
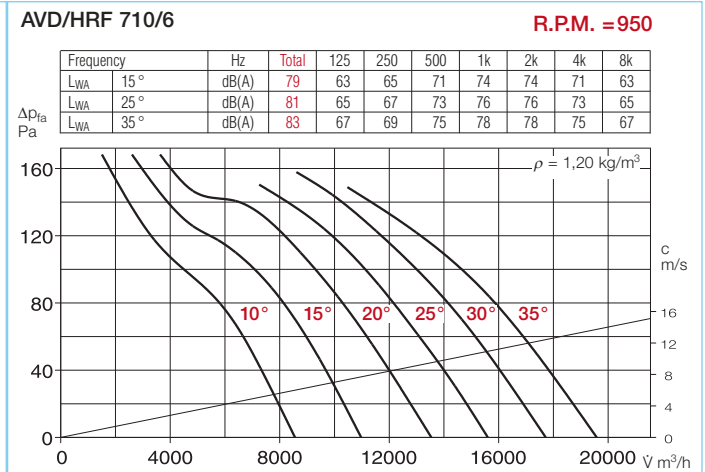
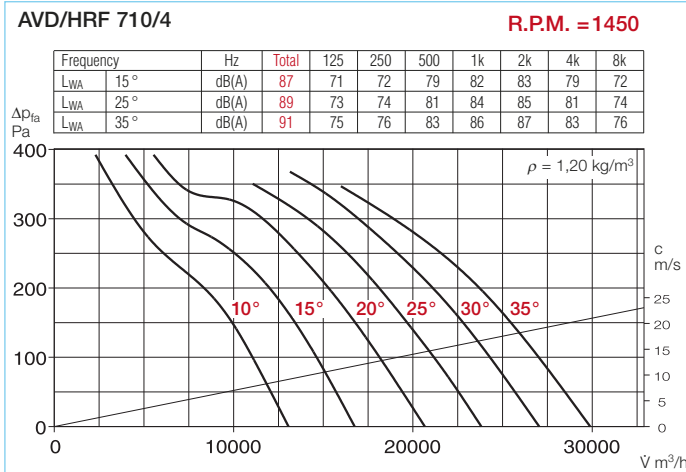


- **Specification**
- **Casing**
With motor support manufactured from galvanised sheet steel.
- **Impeller**
Highly efficient, profiled 5 or 7 blade impeller, dynamically balanced and manufactured from impact resistant polymers. Suitable for -30 to +60 °C

- **Pitch angle**
The pitch angle is adjustable at standstill and has to be stated when ordering. The max. pitch shown for each motor must not be exceeded.
- **Motor**
Totally enclosed motor, protected to IP 54/IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.
- **Motor protection**
All models (except pole switching and explosion proof) have thermal contacts or PTC resistors and according to footnotes in the table to guard through following full motor protection units:
¹⁾MD, Ref. No. 5849
²⁾MSA, Ref. No. 1289 (for PTC resistor)
³⁾M4, Ref. No. 1571
 All other models have to be protected by a conventional circuit breaker on site.
- **Guard**
Standard for AVD DK to DIN EN ISO 13857, galvanised or powder coated.
- **Electrical connection**
Terminals in motor cap (IP 54). HRF and AVD DK models are pre wired to an additional terminal box (IP 54) fitted externally on the casing. Explosion proof models may vary.
- **Speed control**
Some models are controllable by transformer controller (see table). All models (except explosion proof) are speed controllable by frequency inverter. The planned use of a frequency inverter without sine filter must be stated when ordering. This causes a change of the fan execution and if necessary additional costs.
- **Reversed operation**
All models are reversible when wired to a reversing switch. For reverse air flow direction allow for 1/3 loss in performance.
- **Installation**
Installation in any position. Ensure that the motor drainage holes face downwards
- **Dimensions**
Dimensions are shown above. Pole-switching and explosion proof models may vary. Note dimension B in table below.
- **Sound levels**
Sound power levels in dB(A) (spectrum and totals) are given above the performance curves.

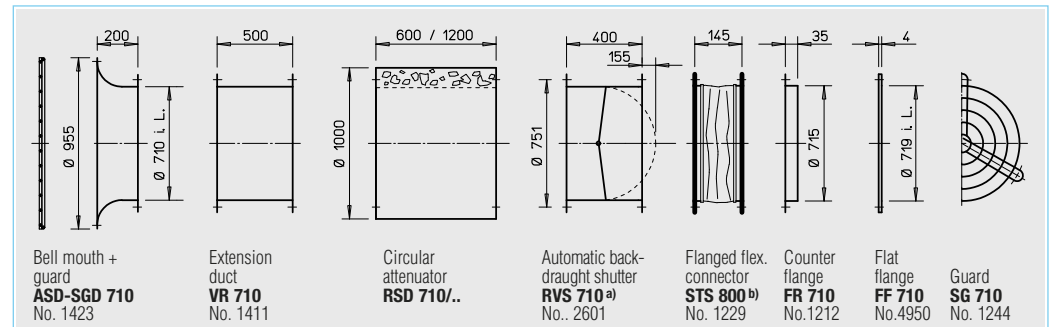
R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Max. pitch angle	Wiring diagram	Max. air flow temp.	Nominal weight (net)*	Fan type				Dim. B Motor protrusion mm	Transformer controller for 5 speed control	
									AVD DK incl. guard	Ref. No.	HRFD, AVD RK	Ref. No.		Type	Ref. No.
min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	ca. kg							
3 Phase motor, 400/690 Volt / 50 Hz, protection to IP 54															
700	13330	0,37	400	1,6/(1,6)	31	469	40	57,0	AVD DK 710/8/.. ¹⁾	5251	HRFD 710/8/.. ¹⁾	6930	95	RDS 2 ⁴⁾	1315
1440	26420	3,00	400	6,33	30	776	40	92,0	AVD DK 710/4/.. ²⁾	5258	HRFD 710/4/.. ²⁾	6937	190	—	—
2 speed motor, 3 Phase, 400 V / 3 ph. / 50 Hz, Y/Δ-motor, protection to IP 55															
775/920	13550/16090	0,43/0,75	400	1,2/2,2	28	520	40	55,0	AVD DK 710/6/6/.. ³⁾	5254	HRFD 710/6/6/.. ³⁾	6933	95	RDS 4 ⁴⁾	1316
775/930	15560/19170	0,71/1,30	400	2,1/3,5	35	520	40	60,0	AVD DK 710/6/6/.. ³⁾	5255	HRFD 710/6/6/.. ³⁾	6934	135	RDS 4 ⁴⁾	1316
1120/1365	16140/19670	0,95/1,55	400	2,1/3,7	20	520	40	60,0	AVD DK 710/4/4/.. ³⁾	5256	HRFD 710/4/4/.. ³⁾	6935	135	RDS 7 ⁴⁾	1578
1140/1370	19370/23280	1,5/2,2	400	3,5/5,9	26	520	40	75,0	AVD DK 710/4/4/.. ³⁾	5257	HRFD 710/4/4/.. ³⁾	6936	180	RDS 7 ⁴⁾	1578
2 speed motor, pole-switching, Dahlander-windings, 400 Volt / 3 ph. / 50 Hz, protection to IP 54															
Pole switch															
450/915	7800/16250	0,15/0,75	400	0,85/2,15	28	471	40	70,0	AVD DK 710/12/6/..	5260	HRFD 710/12/6/..	6939	135	PDA 12 ⁵⁾	5081
455/940	9375/19370	0,25/1,10	400	1,2/2,9	35	471	40	75,0	AVD DK 710/12/6/..	5261	HRFD 710/12/6/..	6940	180	PDA 12 ⁵⁾	5081
695/1420	10810/22090	0,50/2,00	400	1,6/4,8	23	471	40	82,0	AVD DK 710/8/4/..	5263	HRFD 710/8/4/..	6942	180	PDA 12 ⁵⁾	5081
700/1435	14155/29020	0,90/3,60	400	2,6/7,7	34	471	40	108,0	AVD DK 710/8/4/..	5264	AVD RK 710/8/4/..	6943	210	PDA 12 ⁵⁾	5081
Explosion proof E Exe II, 400/690 Volt / 3 ph. / 50 Hz, protection to IP 54, temperature class T1-T3															
700	10450	0,55	400	2,15	35	470	40	68,0	AVD DK 710/8 Ex/..	5270	HRFD 710/8 Ex/..	6948	125	not permitted	
930	13480	0,55	400	1,83	25	470	40	67,0	AVD DK 710/6 Ex/..	5272	HRFD 710/6 Ex/..	6949	95	not permitted	
930	16770	0,95	400	2,70	35	470	40	77,0	AVD DK 710/6 Ex/..	5273	HRFD 710/6 Ex/..	6950	135	not permitted	
1420	20540	2,00	400	4,65	25	470	40	82,0	AVD DK 710/4 Ex/..	5275	AVD RK 710/4 Ex/..	6951	180	not permitted	
1420	26160	3,60	400	8,10	35	498	40	102,0	AVD DK 710/4 Ex/..	5276	AVD RK 710/4 Ex/..	6952	200	not permitted	

¹⁾ to ³⁾ full motor protection unit, see description motor protection *Nominal weights for types ...DK and ...RK. For types HRF and HQ less 15 kg ⁴⁾ Incl. full motor protection

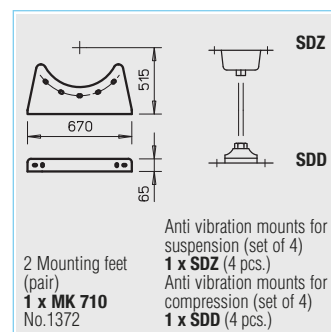


Accessories for cased axial fans – Specification see pages 146 on

Electronic controller for stepless control, Frequency inverter		Anti vibration mounts nominal size	
Type	Ref.No.	SDD /SDZ	Type
Type	Ref.No.	Type	Ref.No.
ESD 5 ⁴⁾	0501	..1/.1	1452/1454
FU-BS 8,0 ⁴⁾	5461	..2/.2	1453/1455
ESD 5 ⁴⁾	0501	..1/.1	1452/1454
ESD 5 ⁴⁾	0501	..1/.1	1452/1454
ESD 5 ⁴⁾	0501	..1/.1	1452/1454
ESD 11,5 ⁴⁾	0502	..1/.2	1452/1455
—	—	..1/.2	1452/1455
—	—	..1/.2	1452/1455
—	—	..2/.2	1453/1455
—	—	..2/.2	1453/1455
not permitted	..1/.2	1452/1455	
not permitted	..1/.2	1452/1455	
not permitted	..1/.2	1452/1455	
not permitted	..2/.2	1453/1455	
not permitted	..2/.2	1453/1455	

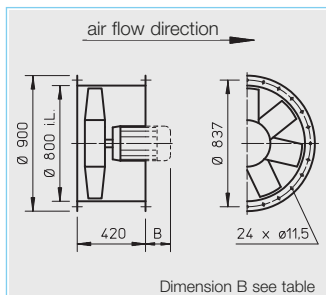
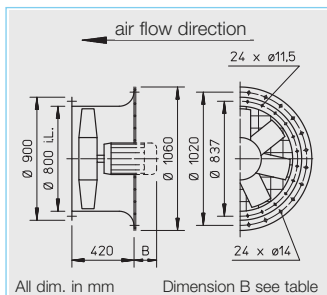


a) For motorised shutters see accessory pages b) Models for ex-proof fans see below



Information	Pages	Other accessories	Pages
Technical description	16 on	Accessory for explosion proof fans	
Design of systems	3 on		
Made to order designs		Flanged flexible connector STS 710 Ex	Ref.No. 2510
Alternative voltages, frequencies, protection classes, acid protection, high temperatures, air flow direction, aluminium cast impeller etc. are available on request.		Mounting accessories	146 on
		Attenuators	151
		Gas warning systems, circuitry and control technology	152 on
		Frequency inverter	162 on

⁵⁾ see product page for flush mounted version



- **Specification**
- **Casing**
With motor support manufactured from galvanised sheet steel.
- **Impeller**
Highly efficient, profiled 5 or 7 blade impeller, dynamically balanced and manufactured from impact resistant polymers. Suitable for -30 to +60 °C.
- **Pitch angle**
To achieve the optimum operating point a choice of pitch

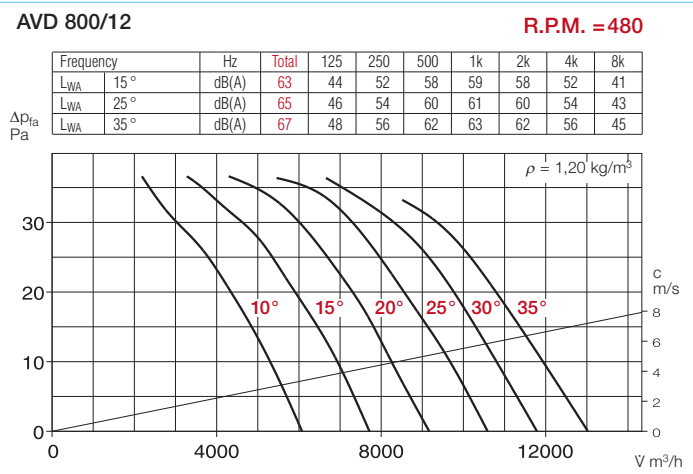
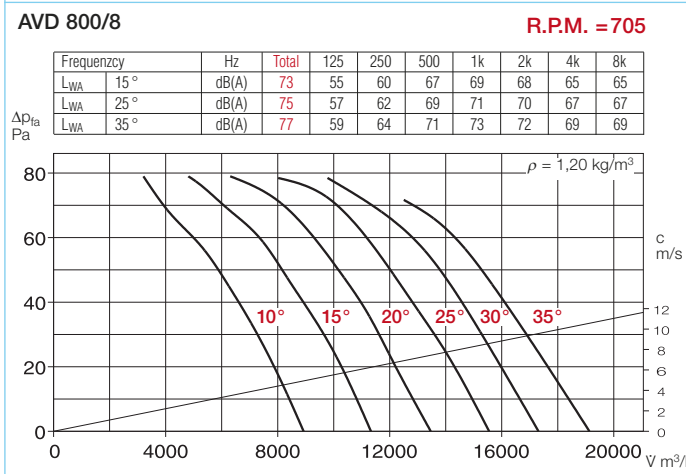
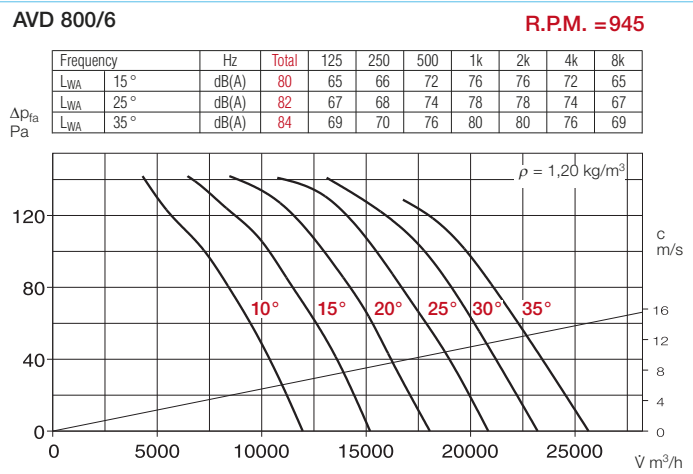
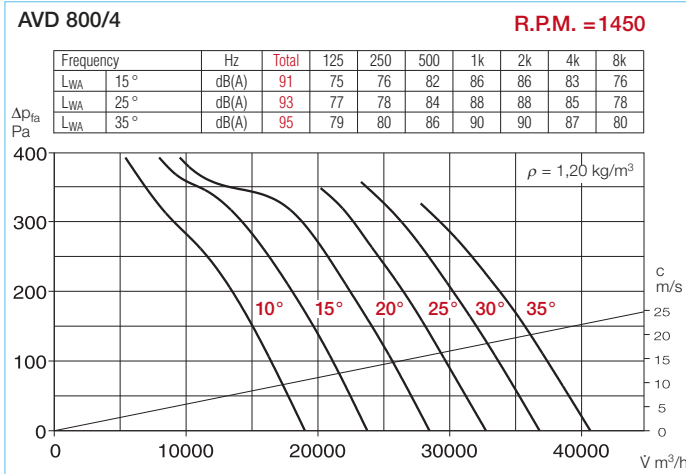
angles are available. Pitch angle is set during manufacture (to order). The matching motor is supplied and the maximum pitch angle shown must not be exceeded (see table below).

- **Motor**
Totally enclosed motor, protected to IP 54/IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.
- **Motor protection**
All models (except pole switching and explosion proof) have thermal contacts or PTC resistors and according to footnotes in the table to guard through following full motor protection units:
 - ⁴⁾MSA, Ref. No. 1289 (for PTC resistor)
 - ⁵⁾M4, Ref. No. 1571
 All other models have to be protected by a conventional circuit breaker on site.
- **Electrical connection**
Terminals in motor cap (IP 54).
- **Guard**
AVD DK models have hot dipped zinc plated motor side wire guard to DIN EN ISO 13857 as standard.

- **Speed control**
Some models are controllable by transformer controller (see table). All models (except explosion proof) are speed controllable by frequency inverter.
The planned use of a frequency inverter without sine filter must be stated when ordering. This causes a change of the fan execution and if necessary additional costs.
- **Reversed operation**
All models are reversible when wired to a reversing switch. For reverse air flow direction allow for 1/3 loss in performance.
- **Installation**
Installation in any position. Ensure that the motor drainage holes face downwards.
- **Dimensions**
Dimensions are shown above. Pole-switching and explosion proof models may vary. Note dimension B in table below.
- **Sound levels**
Sound power levels in dB(A) (spectrum and totals) are given above the performance curves.

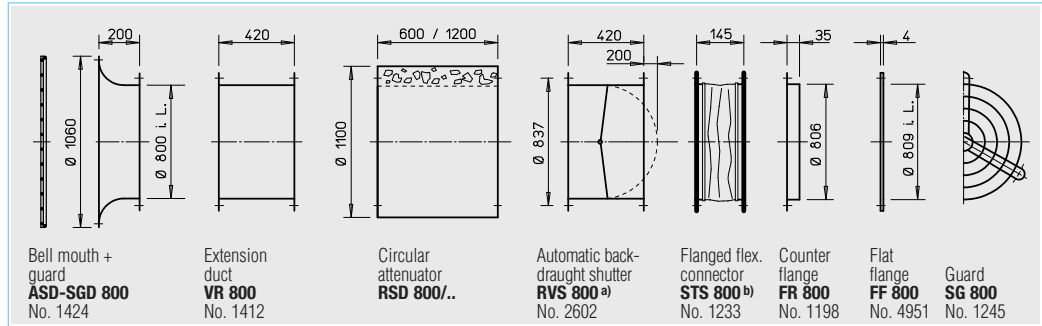
R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Max. pitch angle	Wiring diagram	Max. air flow temp.	Nominal weight (net)	Fan type				Dim. B Motor protrusion	Transformer controller for 5 speed control		
									AVD DK incl. guard	Ref. No.	AVD RK	Ref. No.		Type	Ref.No.	
min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	ca. kg					mm			
3 Phase motor, 400/690 Volt / 50 Hz, protection to IP 54																
695	17780	0,55	400	2,0	32	776	40	73	AVD DK 800/8/.. ⁴⁾	5305	AVD RK 800/8/.. ⁴⁾	6954	135	—	—	
1440	33450	4,00	400	8,23	26	776	40	103	AVD DK 800/4/.. ⁴⁾	5311	AVD RK 800/4/.. ⁴⁾	6960	240	—	—	
1450	39190	5,50	400	10,9	33	776	40	126	AVD DK 800/4/.. ⁴⁾	5312	AVD RK 800/4/.. ⁴⁾	6961	290	—	—	
2 speed motor, 3 Phase, 400 V / 3 ph. / 50 Hz, Y/Δ-motor, protection to IP 55																
580/685	15740/18590	0,40/0,67	400	1,0/2,9	35	520	40	86	AVD DK 800/8/8/.. ⁵⁾	5306	AVD RK 800/8/8/.. ⁵⁾	6955	180	RDS 4 ⁶⁾	1316	
775/920	15720/18670	0,43/0,75	400	1,2/2,2	22	520	40	70	AVD DK 800/6/6/.. ⁵⁾	5307	AVD RK 800/6/6/.. ⁵⁾	6956	125	RDS 4 ⁶⁾	1316	
755/930	19430/23930	0,71/1,32	400	2,1/3,5	32	520	40	98	AVD DK 800/6/6/.. ⁵⁾	5309	AVD RK 800/6/6/.. ⁵⁾	6958	180	RDS 4 ⁶⁾	1316	
2 speed motor, pole-switching, Dahlander-windings, 400 Volt / 3 ph. / 50 Hz, protection to IP 54																
450/900	8595/17190	0,12/0,55	400	0,6/1,6	20	471	40	80	AVD DK 800/12/6/.. ¹⁾	5316	AVD RK 800/12/6/.. ¹⁾	6965	135	PDA 12 ³⁾	5081	
455/940	10945/22610	0,25/1,10	400	1,2/2,9	29	471	40	88	AVD DK 800/12/6/.. ¹⁾	5317	AVD RK 800/12/6/.. ¹⁾	6966	180	PDA 12 ³⁾	5081	
455/950	12350/25780	0,33/2,00	400	1,9/5,0	35	471	40	98	AVD DK 800/12/6/.. ¹⁾	5318	AVD RK 800/12/6/.. ¹⁾	6967	290	PDA 12 ³⁾	5081	
695/1400	10020/20180	0,37/1,50	400	1,4/3,7	12	471	40	95	AVD DK 800/8/4/.. ¹⁾	5319	AVD RK 800/8/4/.. ¹⁾	6968	135	PDA 12 ³⁾	5081	
700/1435	15810/32410	0,90/3,60	400	3,4/8,0	25	471	40	103	AVD DK 800/8/4/.. ¹⁾	5320	AVD RK 800/8/4/.. ¹⁾	6969	210	PDA 12 ³⁾	5081	
715/1450	20110/40780	1,80/6,50	400	5,7/14,5	35	471	40	121	AVD DK 800/8/4/.. ¹⁾	5321	AVD RK 800/8/4/.. ¹⁾	6970	325	PDA 25	5060	
970/1440	15880/23580	0,75/2,10	400	2,3/4,6	15	473	40	95	AVD DK 800/6/4/.. ²⁾	5322	AVD RK 800/6/4/.. ²⁾	6971	180	PGWA 12 ³⁾	5083	
965/1435	19515/29020	1,00/3,00	400	2,9/6,6	21	473	40	116	AVD DK 800/6/4/.. ²⁾	5323	AVD RK 800/6/4/.. ²⁾	6972	210	PGWA 12 ³⁾	5083	
970/1450	27280/40780	2,20/6,00	400	5,6/12,5	35	473	40	128	AVD DK 800/6/4/.. ²⁾	5324	AVD RK 800/6/4/.. ²⁾	6973	325	PGWA 25	5061	
Explosion proof E Exe II, 400/690 Volt / 3 ph. / 50 Hz, protection to IP 54, temperature class T1-T3																
700	17190	0,55	400	2,15	32	470	40	81	AVD DK 800/8 Ex/..	5326	AVD RK 800/8 Ex/..	6974	135	not permitted		
930	20340	0,95	400	2,70	23	470	40	90	AVD DK 800/6 Ex/..	5329	AVD RK 800/6 Ex/..	6976	135	not permitted		
950	26710	1,90	400	4,70	35	470	40	118	AVD DK 800/6 Ex/..	5330	AVD RK 800/6 Ex/..	6977	210	not permitted		
1420	31900	3,60	400	8,10	24	498	40	115	AVD DK 800/4 Ex/..	5332	AVD RK 800/4 Ex/..	6978	210	not permitted		
1450	36820	5,00	400	10,00	30	498	40	143	AVD DK 800/4 Ex/..	5333	AVD RK 800/4 Ex/..	6979	290	not permitted		

¹⁾ Dahlander winding ²⁾ Separate windings ³⁾ see product page for flush mounted version ⁴⁾ and ⁵⁾ full motor protection unit, see description motor protection

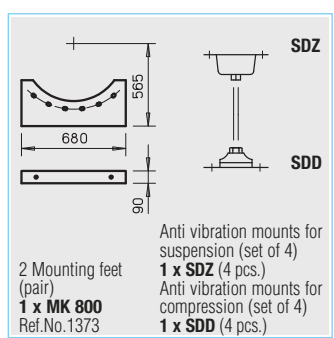


Electronic controller for stepless control, Frequency inverter		Anti vibration mounts nominal size	
Type	Ref.No.	Type	Ref.No.
FU-BS 2,5[®]	5459	..1/..2	1452/1455
FU-BS 10[®]	5462	..2/..2	1453/1455
FU-BS 14[®]	5463	..2/..2	1453/1455
ESD 5[®]	0501	..2/..2	1453/1455
ESD 5[®]	0501	..1/..2	1452/1455
ESD 5[®]	0501	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455

Accessories for cased axial fans – Specification see pages 146 on

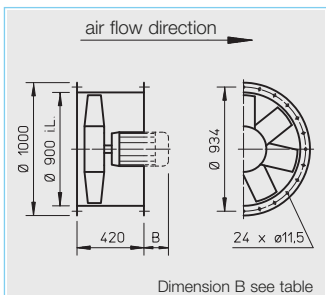
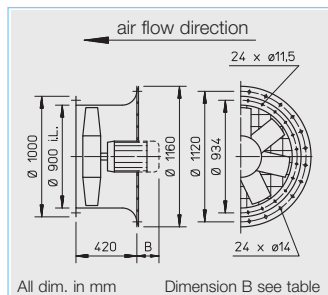


a) For motorised shutters see accessory pages b) Models for ex-proof fans see below



Information	Pages	Other accessories	Pages
Technical description	16 on	b) Accessory for explosion proof fans	
Design of systems	3 on	Flanged flexible connector STS 800 Ex	Ref.No. 2511
Made to order designs		Mounting accessories	146 on
Alternative voltages, frequencies, protection classes, acid protection, high temperatures, air flow direction, aluminium cast impeller etc. are available on request.		Attenuators	151
		Gas warning systems, circuitry and control technology	152 on
		Frequency inverter	162 on

® incl. full motor protection



■ Specification

□ **Casing**
With motor support manufactured from galvanised sheet steel.

□ **Impeller**
Highly efficient, profiled 5 or 7 blade impeller, dynamically balanced and manufactured from impact resistant polymers. Suitable for -30 to +60 °C.

□ **Pitch angle**
To achieve the optimum operating point a choice of pitch angles are available. Pitch angle is set during manufacture (to order). The matching motor is supplied and the maximum pitch angle shown must not be exceeded (see table below).

□ **Motor**
Totally enclosed motor, protected to IP 54/IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.

□ **Motor protection**
All models (except pole switching and explosion proof) have thermal contacts or PTC resistors and according to footnotes in the table to guard through following full motor protection units:
4)MSA, Ref. No. 1289 (for PTC resistor)
5)M4, Ref. No. 1571
All other models have to be protected by a conventional circuit breaker on site.

□ **Electrical connection**
Terminals in motor cap (IP 54).

□ **Guard**
AVD DK models have hot dipped zinc plated motor side wire guard to DIN EN ISO 13857 as standard.

□ **Speed control**
Some models are controllable by transformer controller (see table). All models (except explosion proof) are speed controllable by frequency inverter.

The planned use of a frequency inverter without sine filter must be stated when ordering. This causes a change of the fan execution and if necessary additional costs.

□ **Reversed operation**
All models are reversible when wired to a reversing switch. For reverse air flow direction allow for 1/3 loss in performance.

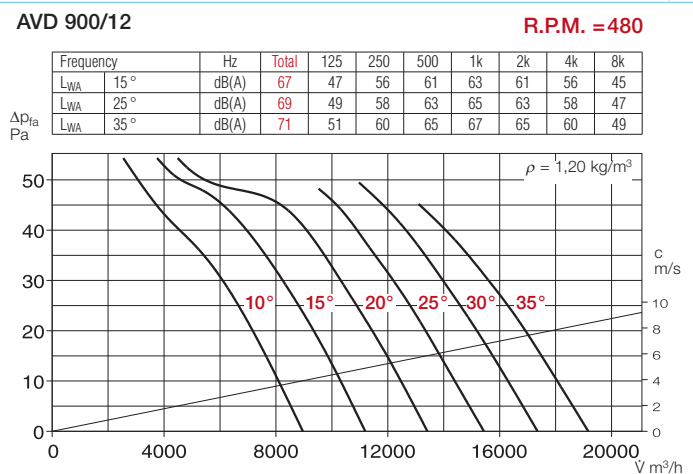
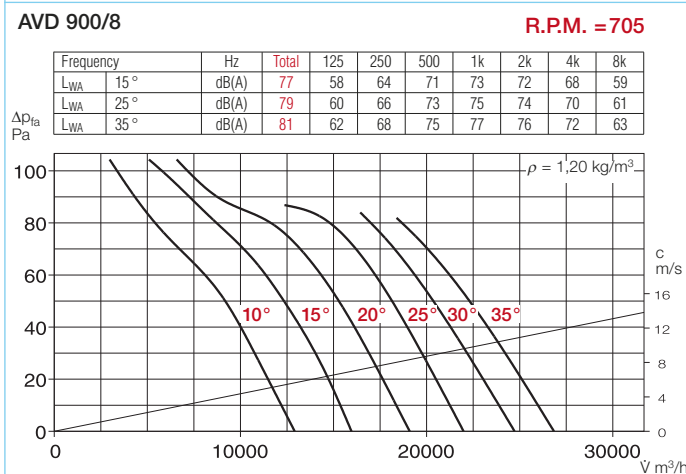
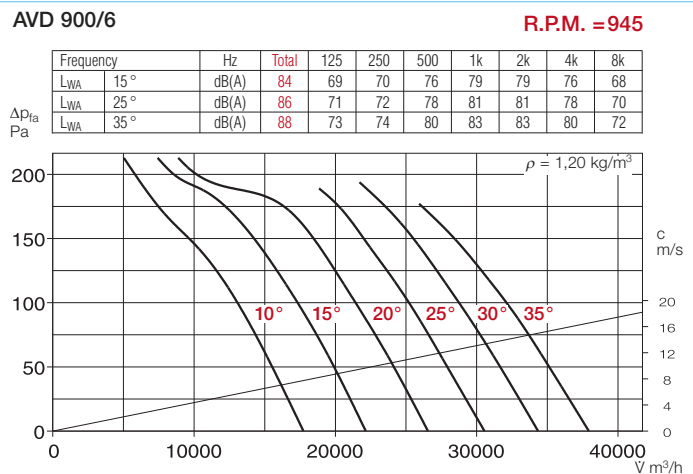
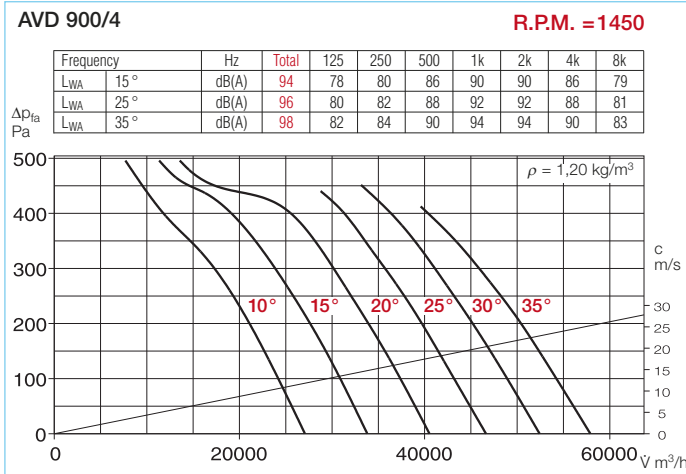
□ **Installation**
Installation in any position. Ensure that the motor drainage holes face downwards.

□ **Dimensions**
Dimensions are shown above. Pole-switching and explosion proof models may vary. Note dimension B in table below.

□ **Sound levels**
Sound power levels in dB(A) (spectrum and totals) are given above the performance curves.

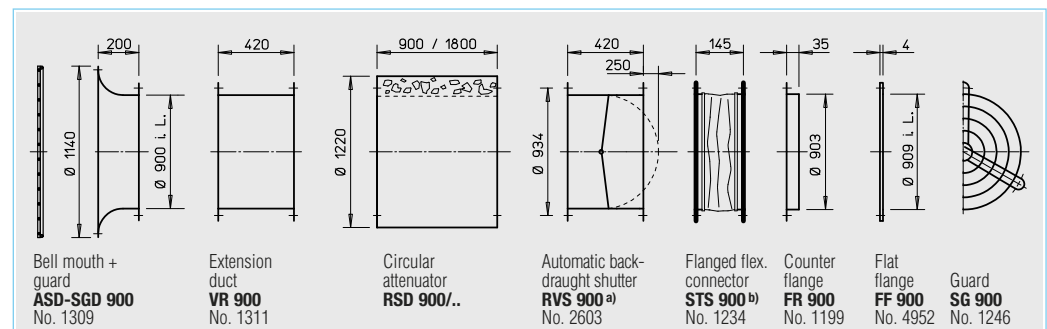
R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Max. pitch angle	Wiring diagram	Max. air flow temp.	Nominal weight (net)	Fan type				Dim. B Motor protrusion	Transformer controller for 5 speed control	
									AVD DK incl. guard	Ref. No.	AVD RK	Ref. No.		Type	Ref.No.
min ⁻¹	∇ m ³ /h	kW	V	A	°	No.	+°C	ca. kg					mm		
3 Phase motor, 400/690 Volt / 50 Hz, protection to IP 54															
695	19970	0,55	400	2,0	23	776	40	90	AVD DK 900/8/.. ⁴⁾	5364	AVD RK 900/8/.. ⁴⁾	6980	135	—	—
860	37300	3,00	400	6,84	34	776	40	137	AVD DK 900/6/.. ⁴⁾	5369	AVD RK 900/6/.. ⁴⁾	6985	290	—	—
1440	35030	4,00	400	8,23	16	776	40	120	AVD DK 900/4/.. ⁴⁾	5370	AVD RK 900/4/.. ⁴⁾	6986	220	—	—
1450	48995	7,50	400	14,5	27	776	40	157	AVD DK 900/4/.. ⁴⁾	5371	AVD RK 900/4/.. ⁴⁾	6987	325	—	—
1450	57720	11,00	400	21,6	34	776	40	246	AVD DK 900/4/.. ⁴⁾	5372	AVD RK 900/4/.. ⁴⁾	6988	430	—	—
2 speed motor, 3 Phase, 400 V / 3 ph. / 50 Hz, Y/Δ-motor, protection to IP 55															
580/685	18465/21810	0,40/0,67	400	1,0/2,9	27	520	40	105	AVD DK 900/8/8/.. ⁵⁾	5365	AVD RK 900/8/8/.. ⁵⁾	6981	180	RDS 4 ⁶⁾	1316
605/695	22400/25730	0,60/1,22	400	2,2/4,3	35	520	40	115	AVD DK 900/8/8/.. ⁵⁾	5366	AVD RK 900/8/8/.. ⁵⁾	6982	210	RDS 7 ⁶⁾	1578
755/930	18390/22660	0,71/1,32	400	2,1/3,5	19	520	40	90	AVD DK 900/6/6/.. ⁵⁾	5367	AVD RK 900/6/6/.. ⁵⁾	6983	180	RDS 4 ⁶⁾	1316
770/920	25990/31060	1,6/2,37	400	3,9/7,1	27	520	40	115	AVD DK 900/6/6/.. ⁵⁾	5368	AVD RK 900/6/6/.. ⁵⁾	6984	210	RDS 11 ⁶⁾	1332
2 speed motor, pole-switching, Dahlander-windings, 400 Volt / 3 ph. / 50 Hz, protection to IP 54															
455/940	11030/22790	0,25/1,10	400	1,2/2,9	16	471	40	105	AVD DK 900/12/6/.. ¹⁾	5376	AVD RK 900/12/6/.. ¹⁾	6992	180	PDA 12 ³⁾	5081
455/940	14995/30980	0,33/2,00	400	1,9/5,0	26	471	40	115	AVD DK 900/12/6/.. ¹⁾	5377	AVD RK 900/12/6/.. ¹⁾	6993	325	PDA 12 ³⁾	5081
455/950	18220/38040	0,70/3,20	400	2,5/6,7	35	471	40	140	AVD DK 900/12/6/.. ¹⁾	5378	AVD RK 900/12/6/.. ¹⁾	6994	325	PDA 12 ³⁾	5081
700/1435	18270/37450	1,10/4,50	400	3,8/10,5	18	471	40	120	AVD DK 900/8/4/.. ¹⁾	5379	AVD RK 900/8/4/.. ¹⁾	6995	290	PDA 12 ³⁾	5081
715/1450	22390/45410	1,80/6,50	400	5,7/14,5	24	471	40	148	AVD DK 900/8/4/.. ¹⁾	5380	AVD RK 900/8/4/.. ¹⁾	6996	325	PDA 25	5060
725/1440	29030/58660	3,50/12,50	400	9,1/25,5	35	471	40	191	AVD DK 900/8/4/.. ¹⁾	5381	AVD RK 900/8/4/.. ¹⁾	6997	430	—	—
950/1435	22145/33450	1,50/3,70	400	4,0/7,8	15	473	40	133	AVD DK 900/6/4/.. ²⁾	5382	AVD RK 900/6/4/.. ²⁾	6998	290	PGWA 12 ³⁾	5083
970/1450	28745/42970	2,20/6,00	400	5,6/12,5	22	473	40	190	AVD DK 900/6/4/.. ²⁾	5383	AVD RK 900/6/4/.. ²⁾	6999	325	PGWA 25	5061
975/1440	34470/50910	3,00/8,20	400	7,3/16,5	29	473	40	210	AVD DK 900/6/4/.. ²⁾	5384	AVD RK 900/6/4/.. ²⁾	6898	385	PGWA 25	5061
Explosion proof E Exe II, 400/690 Volt / 3 ph. / 50 Hz, protection to IP 54, temperature class T1-T3															
700	24470	0,95	400	2,75	27	470	40	110	AVD DK 900/8 Ex/..	5386	AVD RK 900/8 Ex/..	6899	180	not permitted	
725	28470	1,30	400	3,70	34	470	40	130	AVD DK 900/8 Ex/..	5387	AVD RK 900/8 Ex/..	6900	210	not permitted	
950	30550	1,90	400	4,70	25	470	40	135	AVD DK 900/6 Ex/..	5389	AVD RK 900/6 Ex/..	6901	210	not permitted	
950	38040	3,50	400	8,50	35	498	40	160	AVD DK 900/6 Ex/..	5390	AVD RK 900/6 Ex/..	6902	290	not permitted	
1450	46630	6,80	400	13,30	25	498	40	175	AVD DK 900/4 Ex/..	5392	AVD RK 900/4 Ex/..	6903	325	not permitted	
1465	55240	10,00	400	19,30	32	498	40	235	AVD DK 900/4 Ex/..	5393	AVD RK 900/4 Ex/..	6904	385	not permitted	

1) Dahlander winding 2) Separate windings 3) see product page for flush mounted version 4) and 5) full motor protection unit, see description motor protection

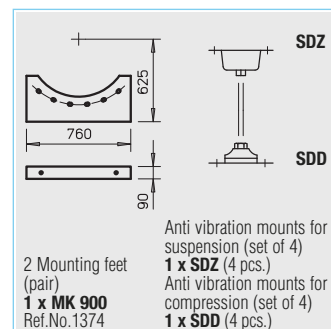


Electronic controller for stepless control, Frequency inverter		Anti vibration mounts nominal size	
Type	Ref.No.	Type	Ref.No.
FU-BS 2,5 ⁶⁾	5459	..2/..2	1453/1455
FU-BS 8,0 ⁶⁾	5461	..2/..2	1453/1455
FU-BS 10 ⁶⁾	5462	..2/..2	1453/1455
FU-CS 18 ⁶⁾	5469	..2/..2	1453/1455
FU-CS 22 ⁶⁾	5470	..3/..3	1367/1366
ESD 5 ⁶⁾	0501	..2/..2	1453/1455
ESD 5 ⁶⁾	0501	..2/..2	1453/1455
ESD 5 ⁶⁾	0501	..2/..2	1453/1455
ESD 11,5 ⁶⁾	0502	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..3/..3	1367/1366
—	—	..2/..2	1453/1455
—	—	..3/..3	1367/1366
—	—	..3/..3	1367/1366
not permitted	..2/..2	1453/1455	
not permitted	..2/..2	1453/1455	
not permitted	..2/..2	1453/1455	
not permitted	..2/..2	1453/1455	
not permitted	..2/..3	1453/1366	
not permitted	..3/..3	1367/1366	

Accessories for cased axial fans – Specification see pages 146 on

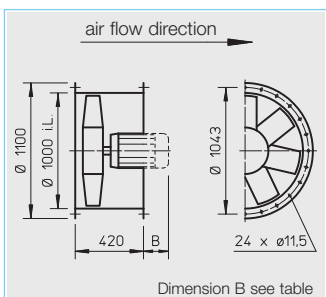
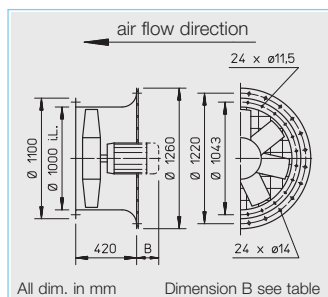


a) For motorised shutters see accessory pages b) Models for ex-proof fans see below



Information	Pages	Other accessories	Pages
Technical description	16 on	b) Accessory for explosion proof fans	
Design of systems	3 on		
Made to order designs		Flanged flexible connector STS 900 Ex Ref.No. 2512	
Alternative voltages, frequencies, protection classes, acid protection, high temperatures, air flow direction, aluminium cast impeller etc. are available on request.		Mounting accessories	146 on
		Attenuators	151
		Gas warning systems, circuitry and control technology	152 on
		Frequency inverter	162 on

⁶⁾ incl. full motor protection



■ Specification

□ Casing
With motor support manufactured from galvanised sheet steel.

□ Impeller
Highly efficient, profiled 5 blade impeller, dynamically balanced and manufactured from impact resistant polymers. Suitable for -30 to +60 °C.

□ Pitch angle
To achieve the optimum operating point a choice of pitch angles are available. Pitch angle is set during manufacture (to order). The matching motor is supplied and the maximum pitch angle shown must not be exceeded (see table below).

□ Motor
Totally enclosed motor, protected to IP 54/IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.

□ Motor protection
All models (except pole switching and explosion proof) have thermal contacts or PTC resistors and according to footnotes in the table to guard through following full motor protection units:
4)MSA, Ref. No. 1289 (for PTC resistor)
5)M4, Ref. No. 1571
All other models have to be protected by a conventional circuit breaker on site.

□ Electrical connection
Terminals in motor cap (IP 54).

□ Guard
AVD DK models have hot dipped zinc plated motor side wire guard to DIN EN ISO 13857 as standard

□ Speed control
Some models are controllable by transformer controller (see table). All models (except explosion proof) are speed controllable by frequency inverter.

The planned use of a frequency inverter without sine filter must be stated when ordering. This causes a change of the fan execution and if necessary additional costs.

□ Reversed operation
All models are reversible when wired to a reversing switch. For reverse air flow direction allow for 1/3 loss in performance.

□ Installation
Installation in any position. Ensure that the motor drainage holes face downwards.

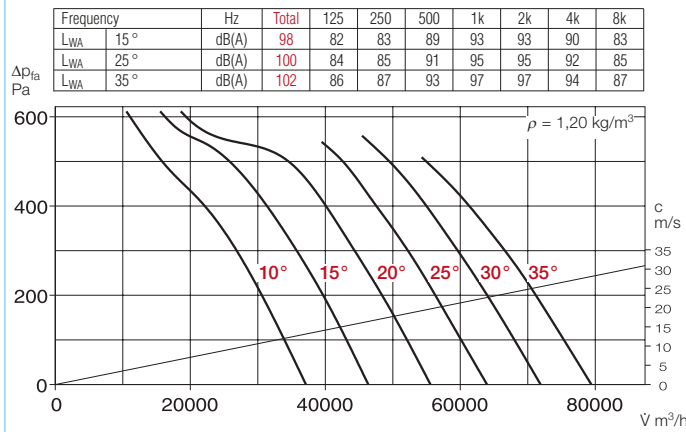
□ Dimensions
Dimensions are shown above. Pole-switching and explosion proof models may vary. Note dimension B in table below.

□ Sound levels
Sound power levels in dB(A) (spectrum and totals) are given above the performance curves.

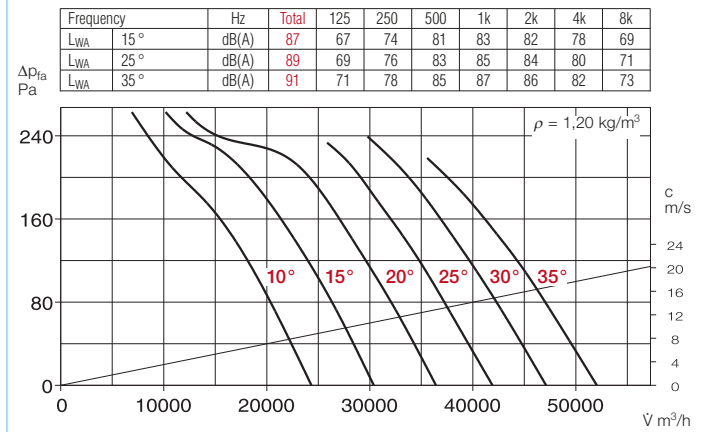
R.P.M.	Air flow volume (FID)	Motor-Motor power (nominal)	Voltage	Current at full load	Max. pitch angle	Wiring diagram	Max. air flow temp.	Nominal weight (net)	Fan type				Dim. B Motor protrusion	Transformer controller for 5 speed control		
									AVD DK incl. guard	Ref. No.	AVD RK	Ref. No.		Type	Ref.No.	
min ⁻¹	∑ m ³ /h	kW	V	A	°	No.	+°C	ca. kg					mm			
3 Phase motor, 400/690 Volt / 50 Hz, protection to IP 54																
705	32650	1,50	400	4,6	27	776	40	108	AVD DK 1000/8/.. ⁴⁾	5396	AVD RK 1000/8/.. ⁴⁾	5571	210	—	—	
710	39000	2,20	400	5,7	35	776	40	120	AVD DK 1000/8/.. ⁴⁾	5397	AVD RK 1000/8/.. ⁴⁾	5572	290	—	—	
950	39720	3,00	400	6,8	23	776	40	127	AVD DK 1000/6/.. ⁴⁾	5398	AVD RK 1000/6/.. ⁴⁾	5573	290	—	—	
960	46320	4,00	400	8,7	29	776	40	141	AVD DK 1000/6/.. ⁴⁾	5399	AVD RK 1000/6/.. ⁴⁾	5574	325	—	—	
960	52450	5,50	400	12,0	35	776	40	165	AVD DK 1000/6/.. ⁴⁾	5400	AVD RK 1000/6/.. ⁴⁾	5575	325	—	—	
1450	61460	11,00	400	21,6	23	776	40	220	AVD DK 1000/4/.. ⁴⁾	5401	AVD RK 1000/4/.. ⁴⁾	5576	430	—	—	
1450	71290	15,00	400	28,4	29	776	40	255	AVD DK 1000/4/.. ⁴⁾	5402	AVD RK 1000/4/.. ⁴⁾	5577	430	—	—	
1460	79440	18,50	400	34,4	34	776	40	210	AVD DK 1000/4/.. ⁴⁾	5403	AVD RK 1000/4/.. ⁴⁾	5578	520	—	—	
2 speed motor, 3 Phase, 400 V / 3 ph. / 50 Hz, Y/Δ-motor, protection to IP 55																
605/695	23700/27440	0,6/1,22	400	2,2/4,3	21	520	40	102	AVD DK 1000/8/8/.. ⁵⁾	5395	AVD RK 1000/8/8/.. ⁵⁾	5570	180	RDS 7 ⁶⁾	1578	
2 speed motor, pole-switching, Dahlander-windings, 400 Volt / 3 ph. / 50 Hz, protection to IP 54																
455/950	19020/39720	0,7/3,0	400	2,5/6,7	23	471	40	130	AVD DK 1000/12/6/.. ¹⁾	5404	AVD RK 1000/12/6/.. ¹⁾	5579	320	PDA 12 ³⁾	5081	
455/950	22065/46070	0,9/4,0	400	3,1/8,8	29	471	40	140	AVD DK 1000/12/6/.. ¹⁾	5405	AVD RK 1000/12/6/.. ¹⁾	5580	355	PDA 12 ³⁾	5081	
450/950	24715/52180	1,3/5,5	400	4,3/11,7	35	471	40	160	AVD DK 1000/12/6/.. ¹⁾	5406	AVD RK 1000/12/6/.. ¹⁾	5581	375	PDA 12 ³⁾	5081	
715/1440	27410/55210	2,2/9,0	400	5,3/18,0	20	471	40	165	AVD DK 1000/8/4/.. ¹⁾	5407	AVD RK 1000/8/4/.. ¹⁾	5582	385	PDA 25	5060	
715/1445	32325/65330	3,0/12,0	400	6,8/23,2	26	471	40	190	AVD DK 1000/8/4/.. ¹⁾	5408	AVD RK 1000/8/4/.. ¹⁾	5583	415	—	—	
720/1450	39545/79640	5,0/18,5	400	11,0/35,0	35	471	40	225	AVD DK 1000/8/4/.. ¹⁾	5409	AVD RK 1000/8/4/.. ¹⁾	5584	450	—	—	
975/1440	36140/53380	3,0/8,2	400	7,3/16,5	19	473	40	170	AVD DK 1000/6/4/.. ²⁾	5410	AVD RK 1000/6/4/.. ²⁾	5585	385	PGWA 25	5061	
975/1450	45150/67150	4,4/13,0	400	10,0/25,5	27	473	40	195	AVD DK 1000/6/4/.. ²⁾	5411	AVD RK 1000/6/4/.. ²⁾	5586	435	—	—	
980/1470	53825/80740	6,7/20,0	400	14,5/38,5	35	473	40	230	AVD DK 1000/6/4/.. ²⁾	5412	AVD RK 1000/6/4/.. ²⁾	5587	470	—	—	
Explosion proof E Exe II, 400/690 Volt / 3 ph. / 50 Hz, protection to IP 54, temperature class T1-T3																
700	30880	1,3	400	3,9	25	470	40	110	AVD DK 1000/8 Ex/..	5413	AVD RK 1000/8 Ex/..	5588	210	not permitted		
700	38450	2,6	400	6,5	35	470	40	125	AVD DK 1000/8 Ex/..	5414	AVD RK 1000/8 Ex/..	5589	290	not permitted		
955	43180	3,5	400	7,6	26	498	40	130	AVD DK 1000/6 Ex/..	5415	AVD RK 1000/6 Ex/..	5590	325	not permitted		
960	52730	6,6	400	13,8	35	498	40	155	AVD DK 1000/6 Ex/..	5416	AVD RK 1000/6 Ex/..	5591	400	not permitted		
1480	70160	15,0	400	27,5	28	498	40	200	AVD DK 1000/4 Ex/..	5417	AVD RK 1000/4 Ex/..	5592	430	not permitted		
1470	77600	17,5	400	34,0	33	498	40	225	AVD DK 1000/4 Ex/..	5418	AVD RK 1000/4 Ex/..	5593	470	not permitted		

1) Dahlander winding 2) Separate windings 3) see product page for flush mounted version 4) and 5) full motor protection unit, see description motor protection

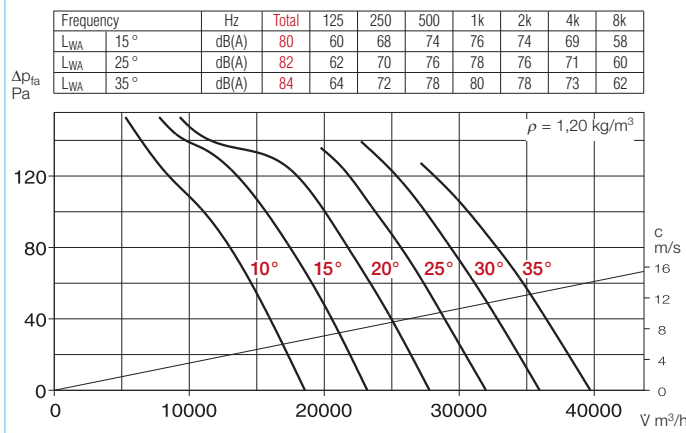
AVD 1000/4 R.P.M. = 1450



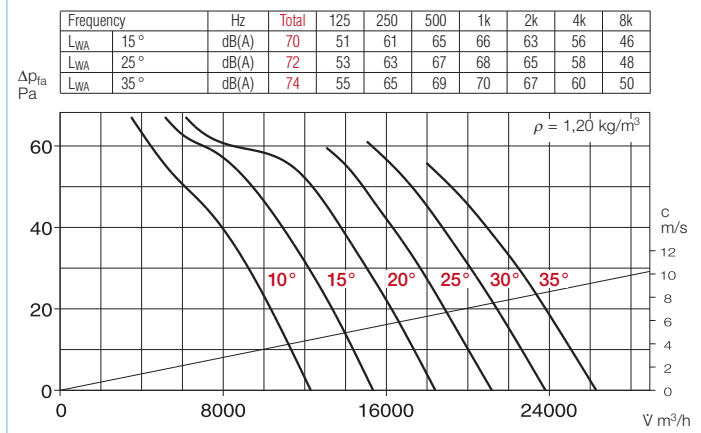
AVD 1000/6 R.P.M. = 950



AVD 1000/8 R.P.M. = 725

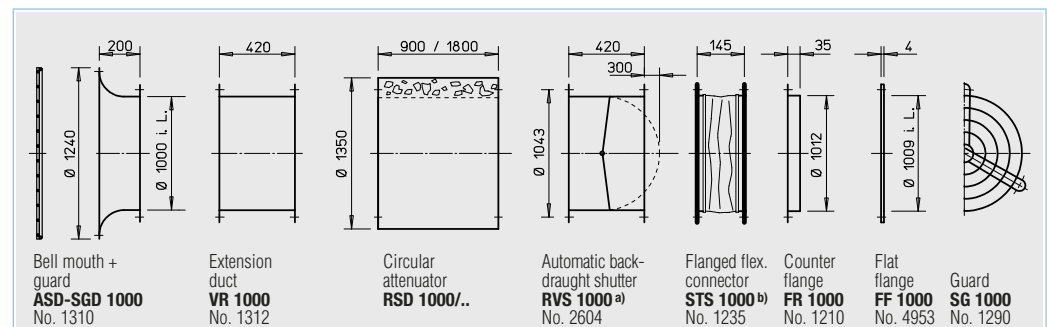


AVD 1000/12 R.P.M. = 480

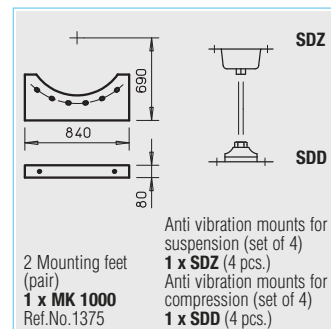


Electronic controller for stepless control, Frequency inverter		Anti vibration mounts nominal size	
Type	Ref.No.	Type	Ref.No.
FU-BS 5,0 ⁶⁾	5460	..2/..2	1453/1455
FU-BS 8,0 ⁶⁾	5461	..2/..2	1453/1455
FU-BS 8,0 ⁶⁾	5461	..2/..2	1453/1455
FU-BS 10 ⁶⁾	5462	..2/..2	1453/1455
FU-BS 14 ⁶⁾	5463	..2/..2	1453/1455
FU-CS 22 ⁶⁾	5470	..3/..3	1367/1366
FU-CS 32 ⁶⁾	5471	..3/..3	1367/1366
FU-CS 40 ⁶⁾	5472	..3/..3	1367/1366
ESD 5 ⁶⁾	0501	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..3/..3	1367/1366
—	—	..3/..3	1367/1366
—	—	..2/..2	1453/1455
—	—	..3/..3	1367/1366
—	—	..3/..3	1367/1366
not permitted	..2/..2	1453/1455	
not permitted	..2/..2	1453/1455	
not permitted	..2/..2	1453/1455	
not permitted	..2/..2	1453/1455	
not permitted	..3/..3	1367/1366	
not permitted	..3/..3	1367/1366	

Accessories for cased axial fans – Specification see pages 146 on

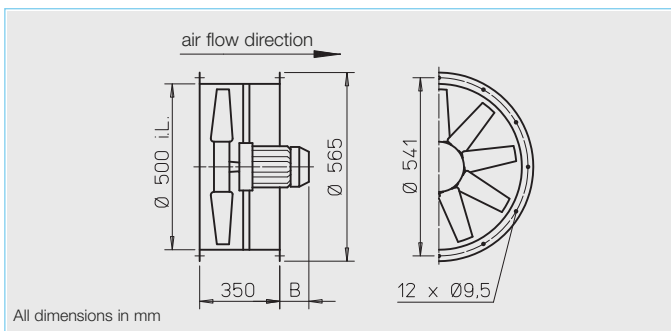


a) For motorised shutters see accessory pages b) Models for ex-proof fans see below



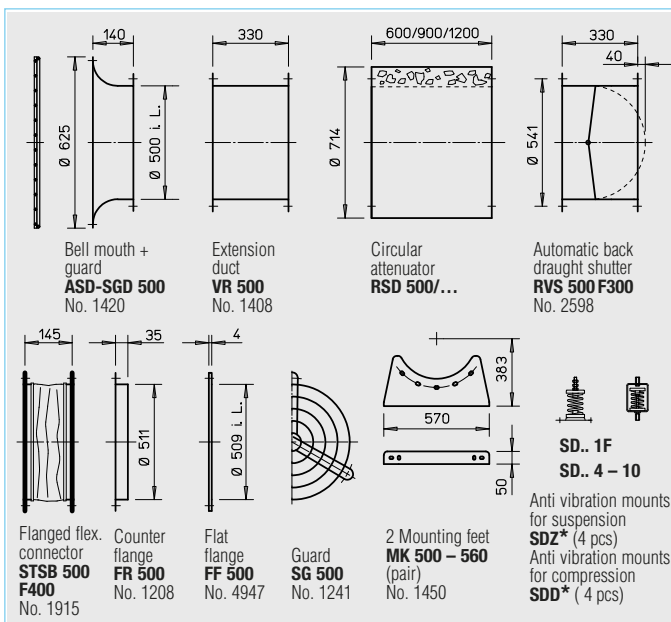
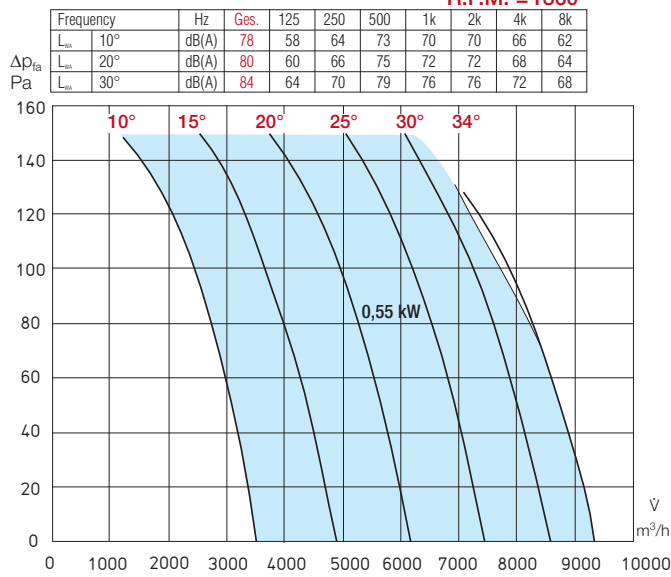
Information	Pages	Other accessories	Pages
Technical description	16 on	b) Accessory for explosion proof fans	
Design of systems	3 on	Flanged flexible connector STS 1000 Ex	Ref.No. 2513
Made to order designs		Mounting accessories	146 on
Alternative voltages, frequencies, protection classes, acid protection, high temperatures, air flow direction, aluminium cast impeller etc. are available on request.		Attenuators	151
		Gas warning systems, circuitry and control technology	152 on
		Frequency inverter	162 on

⁶⁾ incl. full motor protection



B AVD 500/4

R.P.M. = 1360



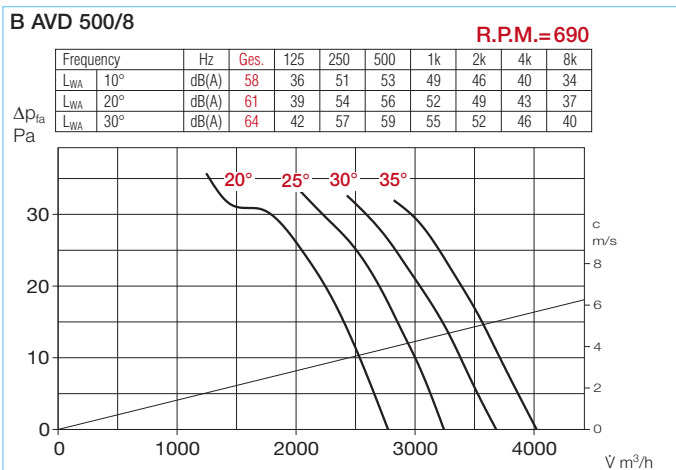
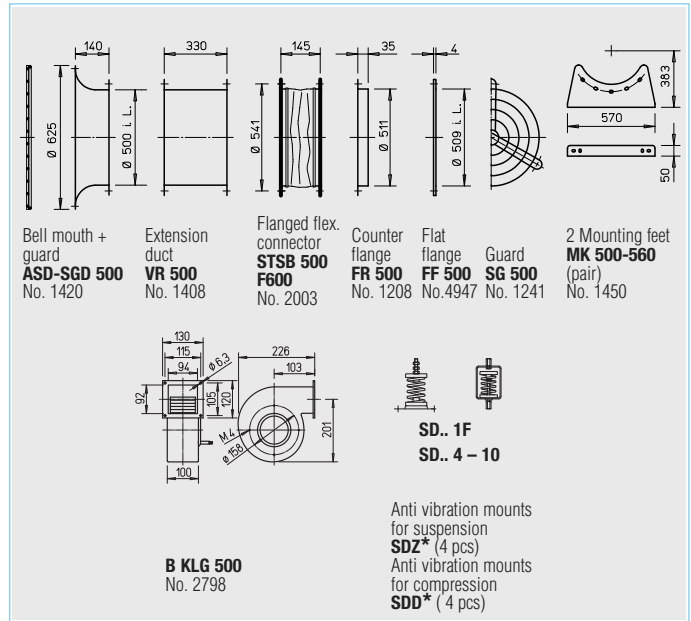
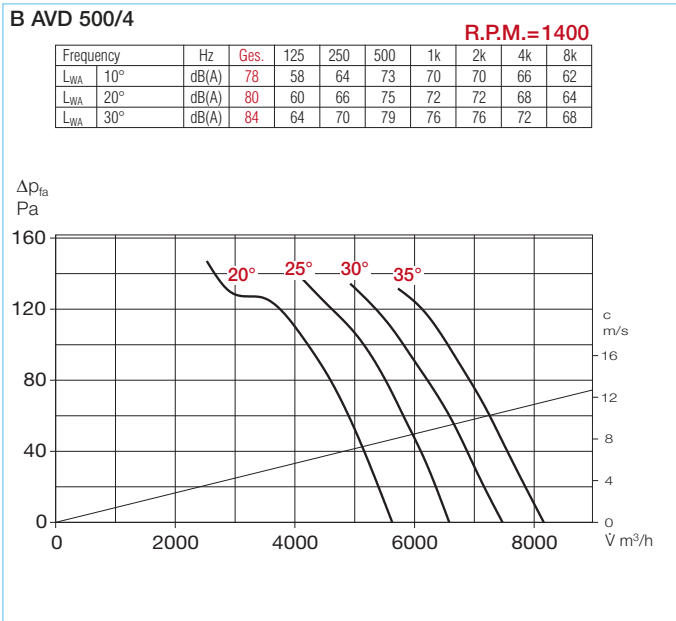
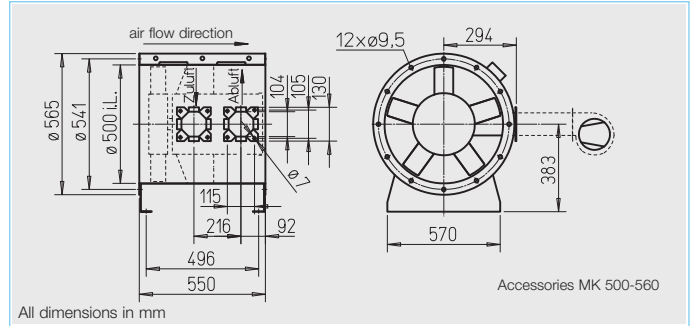
* Type assignment see table, last column

Information	Pages
Technical description	16 on
Design of systems	3 on
Accessories details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning system, circuitry and control technology	152 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Compression Type	Suspension Type		
F300 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 500/4 0,55 kW F300	2315	1410	9670	0,55	400	1,3	*	776	40 / 300	41	39		SDD 1F	1942	SDZ 1F	1943	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 500/8/4 0,2/0,8 kW F300	2319	690/1415	4730/9700	0,2/0,8	400	0,9/2,0	*	471	40 / 300	41	43	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
F400 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 500/4 0,55 kW F400	2401	1410	9670	0,55	400	1,3	*	776	40 / 400	41	39		SDD 1F	1942	SDZ 1F	1943	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 500/8/4 0,2/0,8 kW F400	2403	690/1415	4730/9700	0,2/0,8	400	0,9/2,0	*	471	40 / 400	41	43	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

* Pitch angle must be stated when ordering.

¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C). ³⁾ Flush mounted version see product page switches.

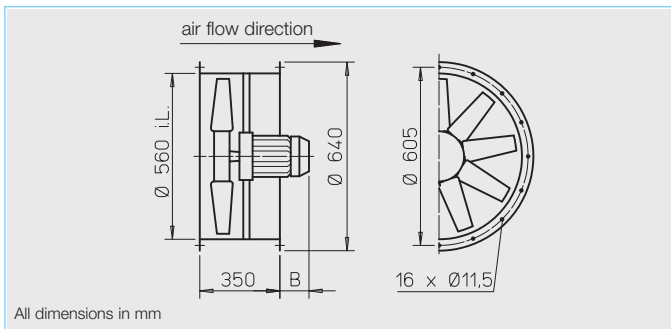


Information	Pages
Technical description	16 on
Design of systems	3 on
Accessory details	Pages
Mounting accessories	146 on
Centrifugal cooling fan	147
Attenuators	151
Gas warning systems, circuitry and control technology	152 on

* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.	Type	Ref.No.
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 500/4-20 F600	2804	1410	5660	0,55	400	1,27	20	776	40 / 600	-	64	SDD 1F	1942	SDZ 1F	1943		
B AVD 500/4-25 F600	2805	1410	6630	0,55	400	1,27	25	776	40 / 600	-	64	SDD 1F	1942	SDZ 1F	1943		
B AVD 500/4-30 F600	2806	1410	7520	0,55	400	1,27	30	776	40 / 600	-	64	SDD 1F	1942	SDZ 1F	1943		
B AVD 500/4-35 F600	2807	1410	8280	0,55	400	1,27	35	776	40 / 600	-	64	SDD 1F	1942	SDZ 1F	1943		
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 500/8/4-20 F600	2808	710/1440	2850/5790	0,15/0,6	400	0,76/1,76	20	471	40 / 600	-	66	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 500/8/4-25 F600	2809	710/1440	3340/6770	0,15/0,6	400	0,76/1,76	25	471	40 / 600	-	66	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 500/8/4-30 F600	2810	710/1440	3790/7680	0,15/0,6	400	0,76/1,76	30	471	40 / 600	-	66	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 500/8/4-35 F600	2811	710/1440	4170/8460	0,15/0,6	400	0,76/1,76	35	471	40 / 600	-	66	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

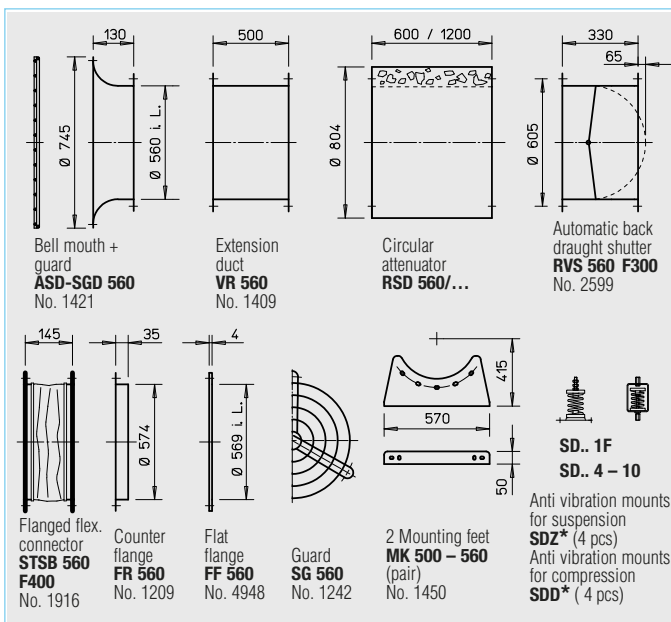
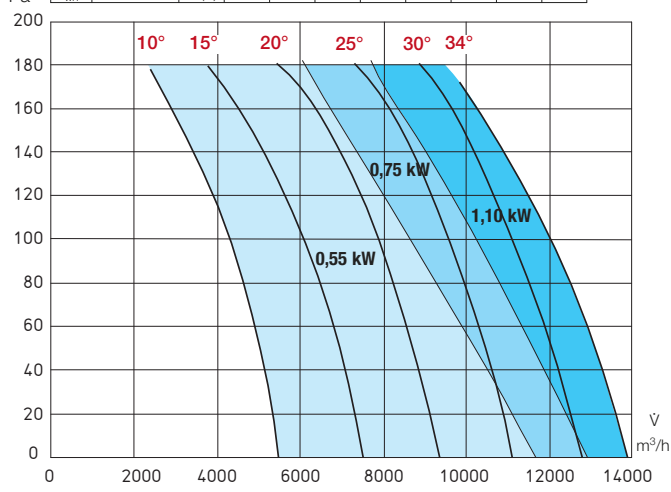
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.). ³⁾ Flush mounted version see product page switches.



B AVD 560/4

R.P.M. = 1380

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	80	60	66	75	72	72	68	64
L _{WA} 20°	dB(A)	83	63	69	78	75	75	71	67
L _{WA} 30°	dB(A)	87	67	73	82	79	79	75	71



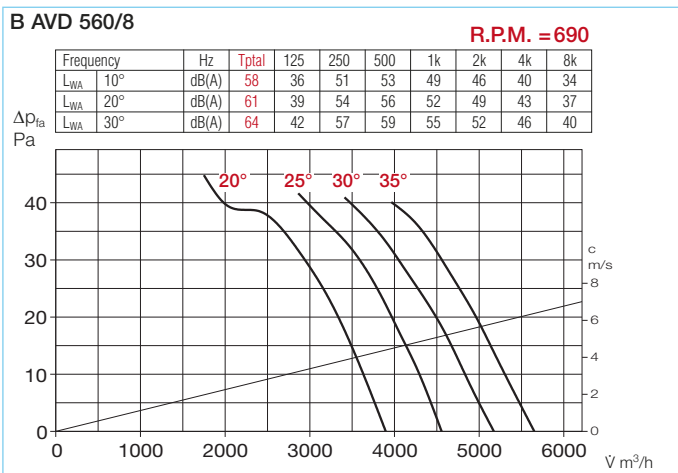
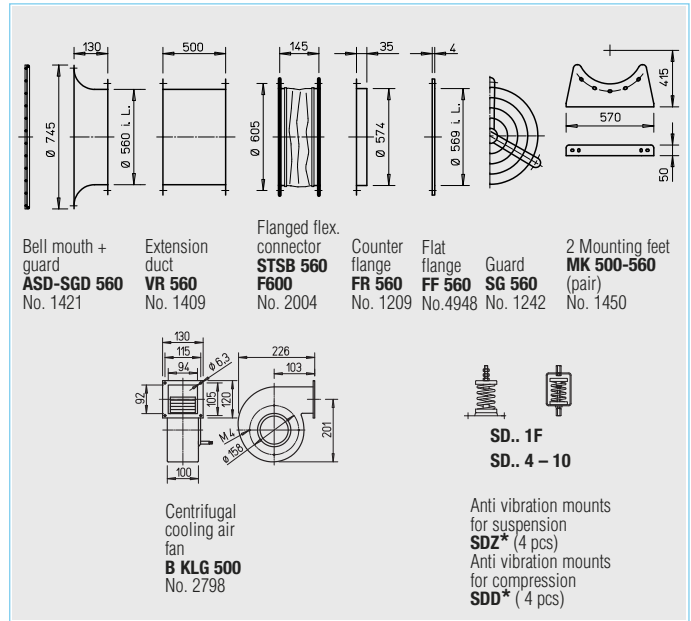
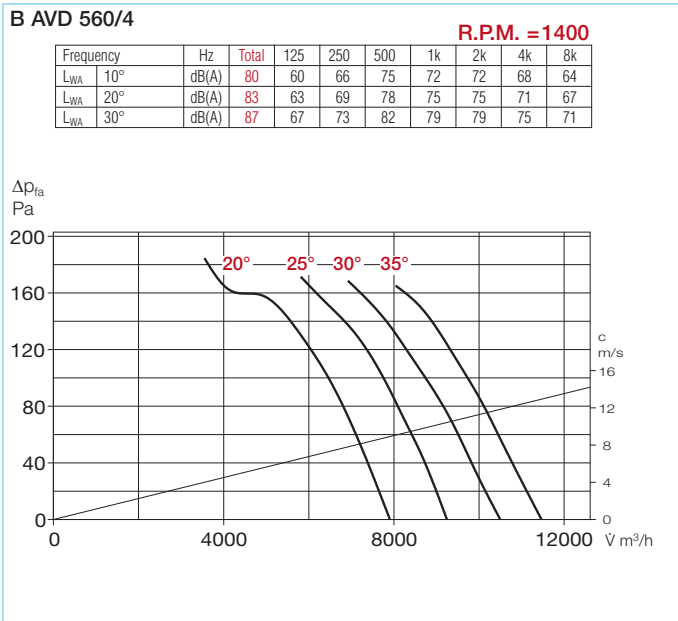
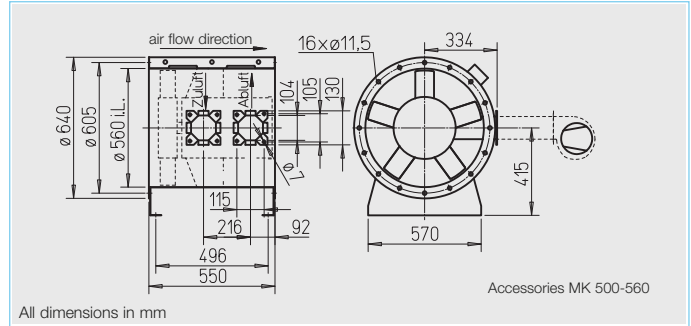
* Type assignment see table, last column

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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Compression	Suspension		
F300 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 560/4 0,55 kW F300	2525	1410	11890	0,55	400	1,3	*	776	40 / 300	41	43		SDD 1F	1942	SDZ 1F	1943	
B AVD 560/4 0,75 kW F300	2324	1410	12145	0,75	400	1,6	*	776	40 / 300	42	46		SDD 1F	1942	SDZ 1F	1943	
B AVD 560/4 1,1 kW F300	2325	1440	14510	1,1	400	2,4	*	776	40 / 300	51	52		SDD 1F	1942	SDZ 1F	1943	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54																	
B AVD 560/8/4 0,15/0,6 kW F300	2526	710/1440	6280/12740	0,15/0,6	400	0,8/1,8	*	471	40 / 300	41	48	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0,2/0,8 kW F300	2327	690/1415	6770/13870	0,2/0,8	400	0,9/2,0	*	471	40 / 300	41	48	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0,3/1,2 kW F300	2328	705/1430	7100/14400	0,3/1,2	400	1,3/2,9	*	471	40 / 300	59	53	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0,4/1,6 kW F300	2329	700/1420	7050/14300	0,4/1,6	400	1,7/3,8	*	471	40 / 300	84	56	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
F400 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 560/4 0,55 kW F400	2556	1410	11890	0,55	400	1,3	*	776	40 / 400	41	43		SDD 1F	1942	SDZ 1F	1943	
B AVD 560/4 0,75 kW F400	2406	1410	12145	0,75	400	1,6	*	776	40 / 400	42	46		SDD 1F	1942	SDZ 1F	1943	
B AVD 560/4 1,1 kW F400	2407	1440	14510	1,1	400	2,4	*	776	40 / 400	51	52		SDD 1F	1942	SDZ 1F	1943	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54																	
B AVD 560/8/4 0,15/0,6 kW F400	2557	710/1440	6280/12740	0,15/0,6	400	0,8/1,8	*	471	40 / 400	41	48	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0,2/0,8 kW F400	2409	690/1415	6770/13870	0,2/0,8	400	0,9/2,0	*	471	40 / 400	41	48	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0,3/1,2 kW F400	2410	705/1430	7100/14400	0,3/1,2	400	1,3/2,9	*	471	40 / 400	59	53	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0,4/1,6 kW F400	2411	700/1420	7050/14300	0,4/1,6	400	1,7/3,8	*	471	40 / 400	84	56	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

* Pitch angle must be stated when ordering.

¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C). ³⁾ Flush mounted version see product page switches.

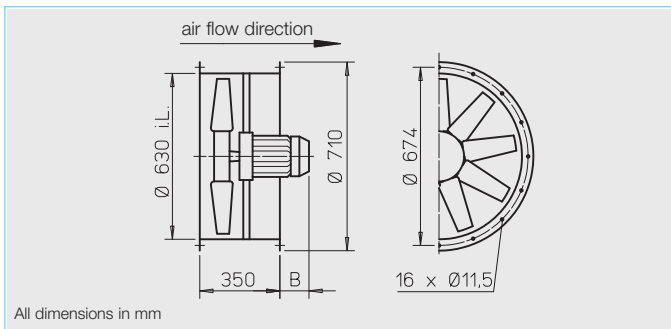


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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.		
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 560/4-20 F600	2819	1410	7960	0,55	400	1,27	20	776	40 / 600	-	71		SDD 1F	1942	SDZ 1F	1943	
B AVD 560/4-25 F600	2820	1410	9310	0,75	400	1,63	25	776	40 / 600	-	74		SDD 1F	1942	SDZ 1F	1943	
B AVD 560/4-30 F600	2821	1410	10570	0,75	400	1,63	30	776	40 / 600	-	74		SDD 1F	1942	SDZ 1F	1943	
B AVD 560/4-35 F600	2822	1440	11630	1,10	400	2,40	35	776	40 / 600	-	79		SDD 1F	1942	SDZ 1F	1943	
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 560/8/4-20 F600	2823	710/1440	4010/8130	0,15/0,6	400	0,76/1,76	20	471	40 / 600	-	73	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4-25 F600	2824	690/1415	4560/9340	0,2/0,8	400	0,88/1,99	25	471	40 / 600	-	73	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4-30 F600	2825	690/1415	5170/10610	0,2/0,8	400	0,88/1,99	30	471	40 / 600	-	73	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4-35 F600	2826	705/1430	5820/11800	0,3/1,2	400	1,29/2,92	35	471	40 / 600	-	75	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

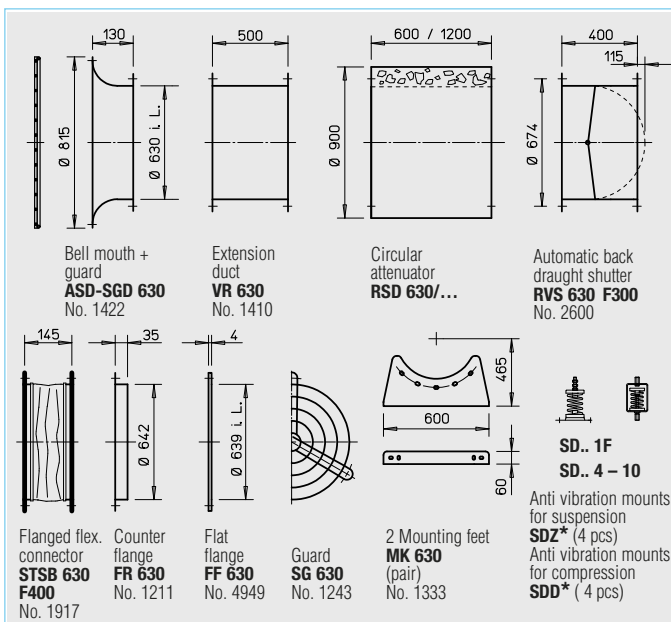
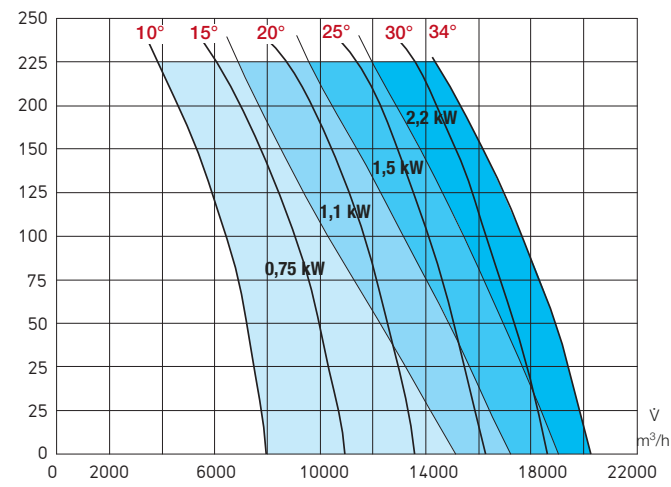
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.). ³⁾ Flush mounted version see product page switches.



B AVD 630/4

R.P.M. = 1410

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°		dB(A)	83	63	69	78	75	71	67
L _{WA} 20°		dB(A)	86	66	72	81	78	74	70
L _{WA} 30°		dB(A)	90	70	76	85	82	78	74



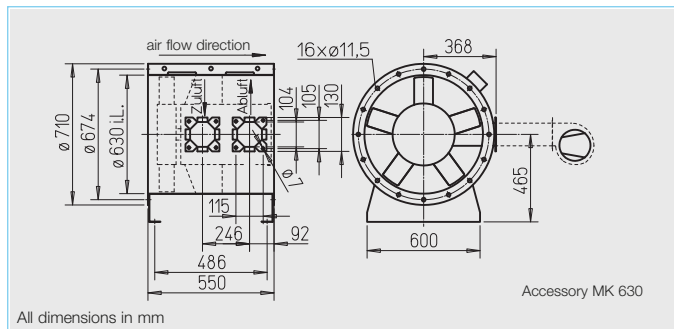
* Type assignment see table, last column

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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)		
												Type	Ref.No.	Compression	Suspension	
F300 3 Phase motor, 50 Hz, protection to IP 54																
B AVD 630/4 0,75 kW F300	2527	1410	15160	0,75	400	1,6	*	776	40 / 300	41	48		SDD 1F	1942	SDZ 1F	1943
B AVD 630/4 1,1 kW F300	2335	1440	15940	1,1	400	2,4	*	776	40 / 300	59	54		SDD 1F	1942	SDZ 1F	1943
B AVD 630/4 1,5 kW F300	2336	1440	19430	1,5	400	3,3	*	776	40 / 300	84	57		SDD 1F	1942	SDZ 1F	1943
B AVD 630/4 2,2 kW F300	2337	1425	22230	2,2	400	4,6	*	776	40 / 300	121	66		SDD 1F	1942	SDZ 1F	1943
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																
B AVD 630/8/4 0,2/0,8 kW F300	2338	690/1415	7420/15220	0,2/0,8	400	0,9/2,0	*	471	40 / 300	41	49	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AVD 630/8/4 0,3/1,2 kW F300	2339	705/1430	7800/15830	0,3/1,2	400	1,3/2,9	*	471	40 / 300	59	55	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AVD 630/8/4 0,4/1,6 kW F300	2528	700/1420	9520/19315	0,4/1,6	400	1,7/3,8	*	471	40 / 300	84	58	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AVD 630/8/4 0,55/2,2 kW F300	2340	700/1430	10040/20220	0,55/2,2	400	2,0/4,8	*	471	40 / 300	121	65	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
F400 3 Phase motor, 50 Hz, protection to IP 54																
B AVD 630/4 0,75 kW F400	2558	1410	15160	0,75	400	1,6	*	776	40 / 400	41	48		SDD 1F	1942	SDZ 1F	1943
B AVD 630/4 1,1 kW F400	2417	1440	15940	1,1	400	2,4	*	776	40 / 400	59	54		SDD 1F	1942	SDZ 1F	1943
B AVD 630/4 1,5 kW F400	2418	1440	19430	1,5	400	3,3	*	776	40 / 400	84	57		SDD 1F	1942	SDZ 1F	1943
B AVD 630/4 2,2 kW F400	2419	1425	22230	2,2	400	4,6	*	776	40 / 400	121	66		SDD 1F	1942	SDZ 1F	1943
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																
B AVD 630/8/4 0,2/0,8 kW F400	2420	690/1415	7420/15220	0,2/0,8	400	0,9/2,0	*	471	40 / 400	41	49	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AVD 630/8/4 0,3/1,2 kW F400	2421	705/1430	7800/15830	0,3/1,2	400	1,3/2,9	*	471	40 / 400	59	55	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AVD 630/8/4 0,4/1,6 kW F400	2559	700/1420	9520/19315	0,4/1,6	400	1,7/3,8	*	471	40 / 400	84	58	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AVD 630/8/4 0,55/2,2 kW F400	2422	700/1430	10040/20220	0,55/2,2	400	2,0/4,8	*	471	40 / 400	121	65	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943

* Pitch angle must be stated when ordering.

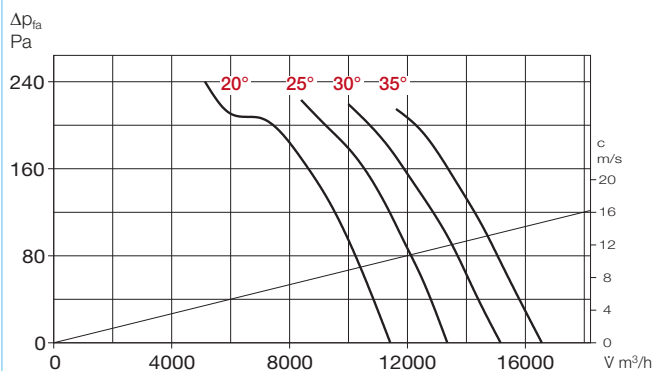
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C). ³⁾ Flush mounted version see product page switches.



B AVD 630/4

R.P.M. = 1420

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	83	63	69	78	75	75	71	67
L _{WA} 20°	dB(A)	86	66	72	81	78	78	74	70
L _{WA} 30°	dB(A)	90	70	76	85	82	82	78	74



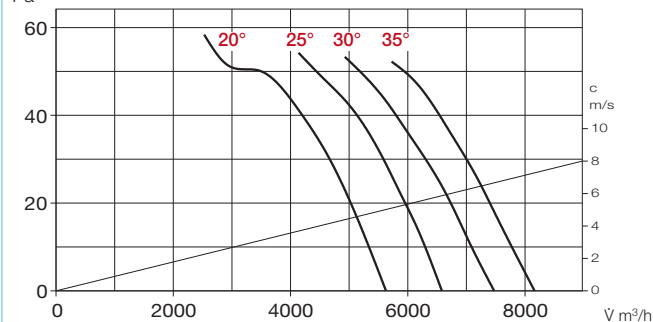
Bell mouth + guard ASD-SGD 630 No. 1422
Extension duct VR 630 No. 1410
Flanged flex. connector STSB 630 F600 No. 2005
Counter flange FR 630 No. 1211
Flat flange FF 630 No. 4949
Guard SG 630 No. 1243
2 Mounting feet MK 630 (pair) No. 1333

Centrifugal cooling air fan B KLG 500 No. 2798
SD.. 1F
SD.. 4 - 10
 Anti vibration mounts for suspension **SDZ*** (4 pcs)
 Anti vibration mounts for compression **SDD*** (4 pcs)

B AVD 630/8

R.P.M. = 700

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	83	63	69	78	75	75	71	67
L _{WA} 20°	dB(A)	86	66	72	81	78	78	74	70
L _{WA} 30°	dB(A)	90	70	76	85	82	82	78	74

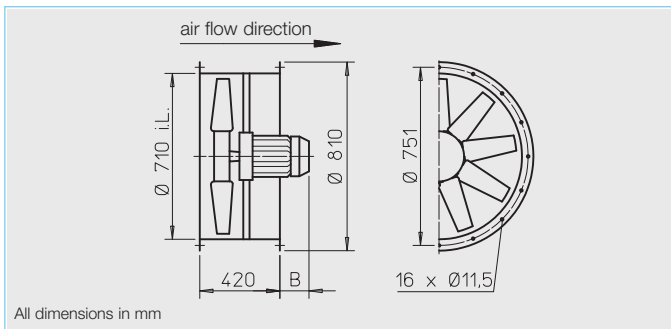


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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.	Type	Ref.No.
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 630/4-20 F600	2834	1440	11580	1,10	400	2,40	20	776	40 / 600	-	86	SDD 4	1944	SDZ 4	1945		
B AVD 630/4-25 F600	2835	1440	13540	1,10	400	2,40	25	776	40 / 600	-	86	SDD 4	1944	SDZ 4	1945		
B AVD 630/4-30 F600	2836	1440	15370	1,50	400	3,26	30	776	40 / 600	-	89	SDD 4	1944	SDZ 4	1945		
B AVD 630/4-35 F600	2837	1425	16740	2,20	400	4,64	35	776	40 / 600	-	98	SDD 4	1944	SDZ 4	1945		
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 630/8/4-20 F600	2838	705/1430	5670/11500	0,3/1,2	400	1,29/2,92	20	471	40 / 600	-	82	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 630/8/4-25 F600	2839	705/1430	6630/13450	0,3/1,2	400	1,29/2,92	25	471	40 / 600	-	82	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 630/8/4-30 F600	2840	700/1420	7470/15160	0,4/1,6	400	1,69/3,80	30	471	40 / 600	-	86	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 630/8/4-35 F600	2841	700/1430	8220/16800	0,55/2,2	400	2,00/4,84	35	471	40 / 600	-	92	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945

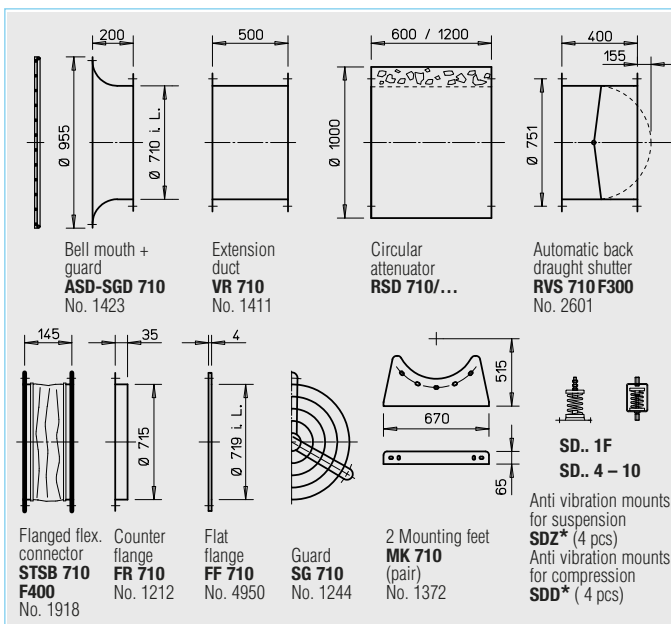
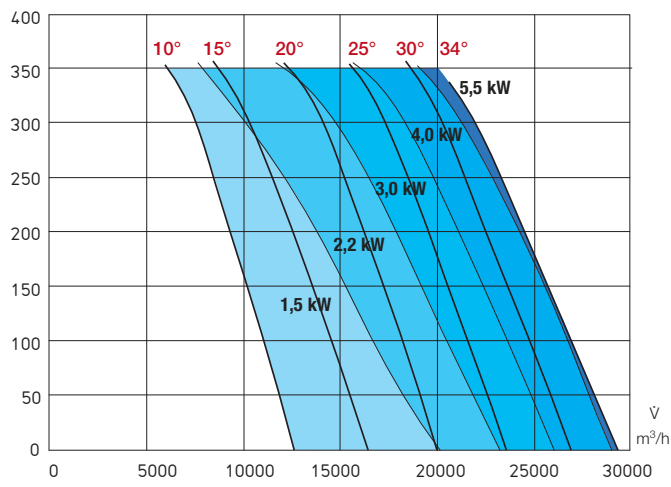
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.). ³⁾ Flush mounted version see product page switches.



B AVD 710/4

R.P.M. = 1430

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA}	10°	dB(A) 95	76	87	89	87	86	78	70
L _{WA}	20°	dB(A) 97	78	89	91	89	88	80	72
L _{WA}	30°	dB(A) 99	80	91	93	91	90	82	74



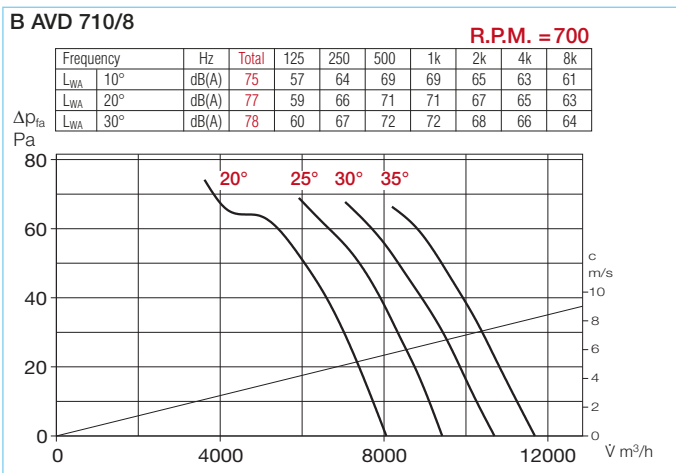
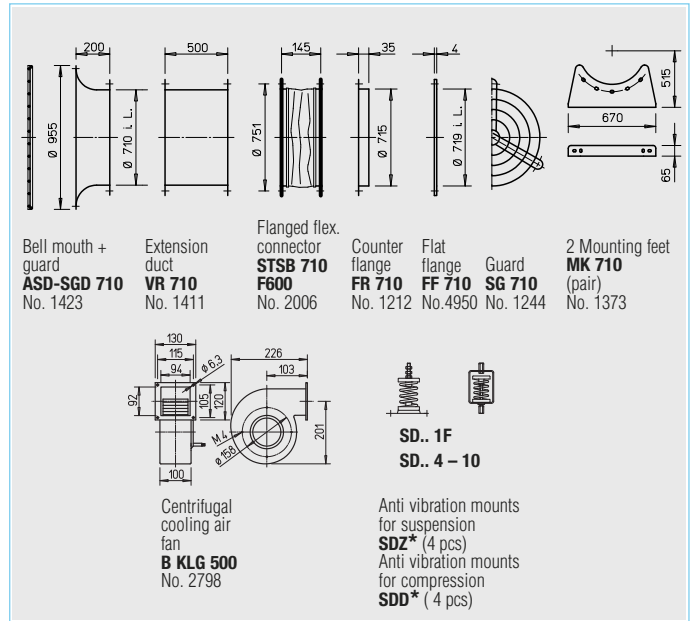
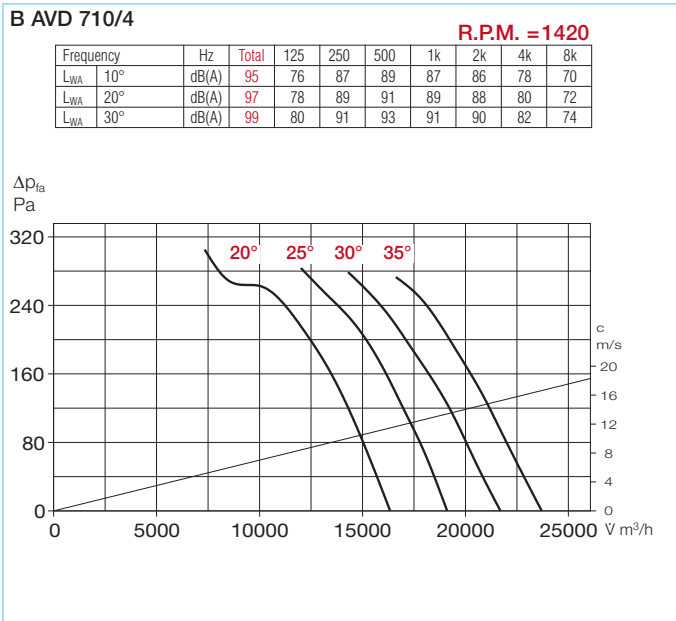
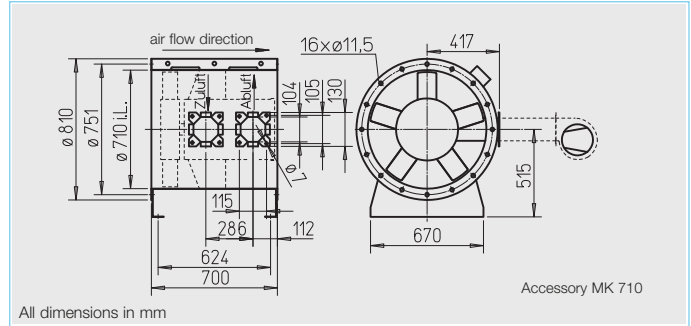
* Type assignment see table, last column

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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Compression Type	Suspension Type	Ref.No.	Ref.No.
F300 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 710/4 1,5 kW F300	2529	1440	19930	1,5	400	3,3	*	776	40 / 300	49	72		SDD 1F	1942	SDZ 1F	1943	
B AVD 710/4 2,2 kW F300	2343	1425	22870	2,2	400	4,6	*	776	40 / 300	86	80		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 3,0 kW F300	2344	1420	25670	3,0	400	6,2	*	776	40 / 300	86	83		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 4,0 kW F300	2345	1440	29190	4,0	400	8,1	*	776	40 / 300	103	92		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 5,5 kW F300	2346	1460	29700	5,5	400	10,5	*	776	40 / 300	142	117		SDD 4	1944	SDZ 4	1945	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 710/8/4 0,55/2,2 kW F300	2547	700/1430	9825/19930	0,55/2,2	400	2,0/4,8	*	471	40 / 300	86	80	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 710/8/4 0,7/2,8 kW F300	2347	690/1410	12130/24875	0,7/2,8	400	2,4/6,0	*	471	40 / 300	86	83	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 1,0/3,8 kW F300	2348	710/1440	14090/28080	1,0/3,8	400	2,8/8,3	*	471	40 / 300	103	93	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 1,3/5,0 kW F300	2349	730/1440	14900/29390	1,3/5,0	400	3,5/10,4	*	471	40 / 300	142	122	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
F400 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 710/4 1,5 kW F400	2569	1440	19930	1,5	400	3,3	*	776	40 / 400	49	72		SDD 1F	1942	SDZ 1F	1943	
B AVD 710/4 2,2 kW F400	2426	1425	22870	2,2	400	4,6	*	776	40 / 400	86	80		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 3,0 kW F400	2427	1420	25670	3,0	400	6,2	*	776	40 / 400	86	83		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 4,0 kW F400	2428	1440	29190	4,0	400	8,1	*	776	40 / 400	103	92		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 5,5 kW F400	2429	1460	29700	5,5	400	10,5	*	776	40 / 400	142	117		SDD 4	1944	SDZ 4	1945	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 710/8/4 0,55/2,2 kW F400	2572	700/1430	9825/19930	0,55/2,2	400	2,0/4,8	*	471	40 / 400	86	80	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 710/8/4 0,7/2,8 kW F400	2430	670/1410	12130/24875	0,7/2,8	400	2,4/6,0	*	471	40 / 400	86	83	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 1,0/3,8 kW F400	2431	710/1440	14090/28080	1,0/3,8	400	2,8/8,3	*	471	40 / 400	103	93	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 1,3/5,0 kW F400	2432	730/1440	14900/29390	1,3/5,0	400	3,5/10,4	*	471	40 / 400	142	122	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945

* Pitch angle must be stated when ordering.

¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C). ³⁾ Flush mounted version see product page switches.

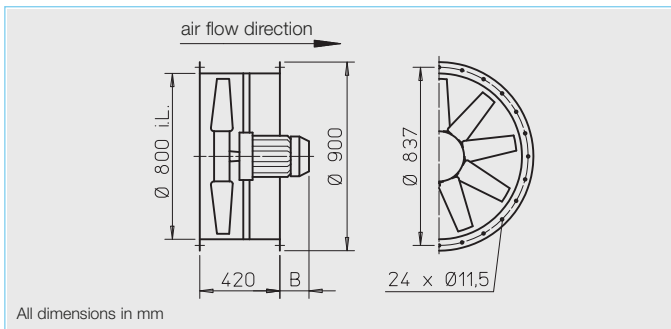


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Centrifugal cooling fan	147
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* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.	Type	Ref.No.
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 710/4-20 F600	2845	1425	16400	2,20	400	4,64	20	776	40 / 600	-	130		SDD 4	1944	SDZ 4	1945	
B AVD 710/4-25 F600	2846	1425	19180	2,20	400	4,64	25	776	40 / 600	-	130		SDD 4	1944	SDZ 4	1945	
B AVD 710/4-30 F600	2847	1420	21700	3,00	400	6,17	30	776	40 / 600	-	133		SDD 4	1944	SDZ 4	1945	
B AVD 710/4-35 F600	2848	1440	24220	4,00	400	8,12	35	776	40 / 600	-	141		SDD 5	1924	SDZ 5	1925	
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 710/8/4-20 F600	2849	700/1430	8060/16460	0,55/2,2	400	2,00/4,84	20	471	40 / 600	-	124	PDA 12³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4-25 F600	2850	700/1430	9420/19250	0,55/2,2	400	2,00/4,84	25	471	40 / 600	-	124	PDA 12³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4-30 F600	2851	690/1410	10540/21550	0,70/2,8	400	2,41/6,01	30	471	40 / 600	-	127	PDA 12³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4-35 F600	2852	710/1440	11940/24220	1,00/3,8	400	2,75/8,26	35	471	40 / 600	-	137	PDA 12³⁾	5081	SDD 5	1924	SDZ 5	1925

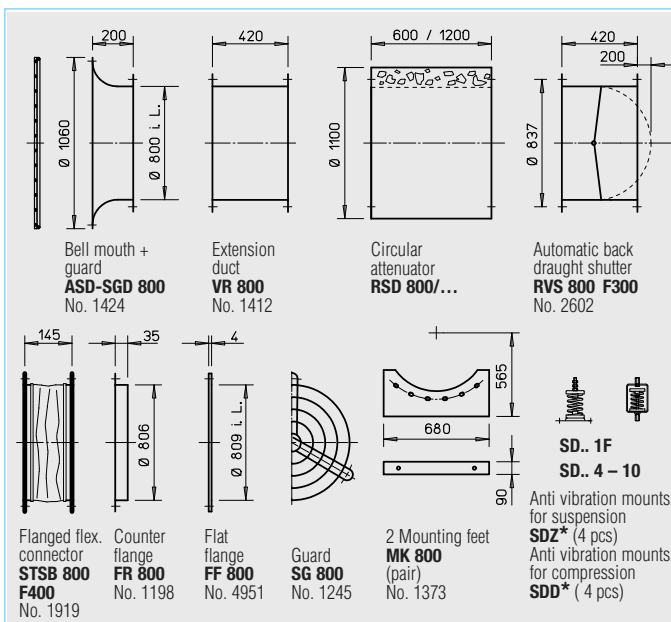
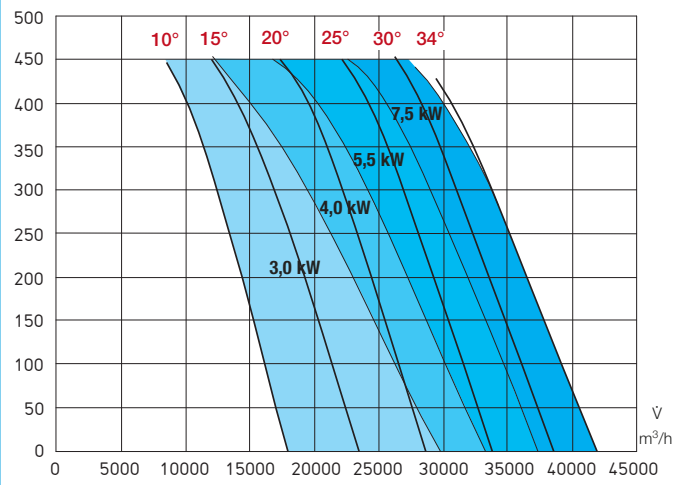
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.). ³⁾ Flush mounted version see product page switches.



B AVD 800/4

R.P.M. = 1430

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°		dB(A) 98	79	90	92	90	89	81	73
L _{WA} 20°		dB(A) 100	81	92	94	92	91	83	75
L _{WA} 30°		dB(A) 102	83	94	96	94	93	85	77



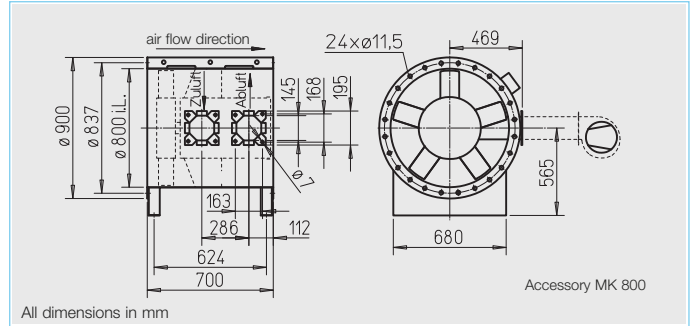
* Type assignment see table, last column

Information	Pages
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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Compression	Suspension	Type	Ref.No.
F300 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 800/4 3,0 kW F300	2352	1420	29890	3,0	400	6,1	*	776	40 / 300	86	89		SDD 4	1944	SDZ 4	1945	
B AVD 800/4 4,0 kW F300	2353	1440	32790	4,0	400	8,1	*	776	40 / 300	103	98		SDD 4	1944	SDZ 4	1945	
B AVD 800/4 5,5 kW F300	2354	1460	36860	5,5	400	10,5	*	776	40 / 300	142	123		SDD 4	1944	SDZ 4	1945	
B AVD 800/4 7,5 kW F300	2355	1455	42250	7,5	400	14,1	*	776	40 / 300	180	132		SDD 5	1924	SDZ 5	1925	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 800/8/4 0,7/2,8 kW F300	2356	690/1410	13790/28180	0,7/2,8	400	2,4/6,0	*	471	40 / 300	86	89	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 800/8/4 1,0/3,8 kW F300	2357	710/1440	15850/32150	1,0/3,8	400	2,8/8,3	*	471	40 / 300	103	103	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 800/8/4 1,3/5,0 kW F300	2358	730/1440	18630/36740	1,3/5,0	400	3,5/10,4	*	471	40 / 300	142	128	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 800/8/4 1,8/7,2 kW F300	2359	725/1430	21280/41960	1,8/7,2	400	4,6/14,4	*	471	40 / 300	180	140	PDA 25	5060	SDD 5	1924	SDZ 5	1925
F400 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 800/4 3,0 kW F400	2436	1420	29890	3,0	400	6,1	*	776	40 / 400	86	89		SDD 4	1944	SDZ 4	1945	
B AVD 800/4 4,0 kW F400	2437	1440	32790	4,0	400	8,1	*	776	40 / 400	103	98		SDD 4	1944	SDZ 4	1945	
B AVD 800/4 5,5 kW F400	2438	1460	36860	5,5	400	10,5	*	776	40 / 400	142	123		SDD 4	1944	SDZ 4	1945	
B AVD 800/4 7,5 kW F400	2439	1455	42250	7,5	400	14,1	*	776	40 / 400	180	132		SDD 5	1924	SDZ 5	1925	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 800/8/4 0,7/2,8 kW F400	2440	690/1410	13790/28180	0,7/2,8	400	2,4/6,0	*	471	40 / 400	86	89	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 800/8/4 1,0/3,8 kW F400	2441	710/1440	15850/32150	1,0/3,8	400	2,8/8,3	*	471	40 / 400	103	103	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 800/8/4 1,3/5,0 kW F400	2442	730/1440	18630/36740	1,3/5,0	400	3,5/10,4	*	471	40 / 400	142	128	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 800/8/4 1,8/7,2 kW F400	2443	725/1430	21280/41960	1,8/7,2	400	4,6/14,4	*	471	40 / 400	180	140	PDA 25	5060	SDD 5	1924	SDZ 5	1925

* Pitch angle must be stated when ordering.

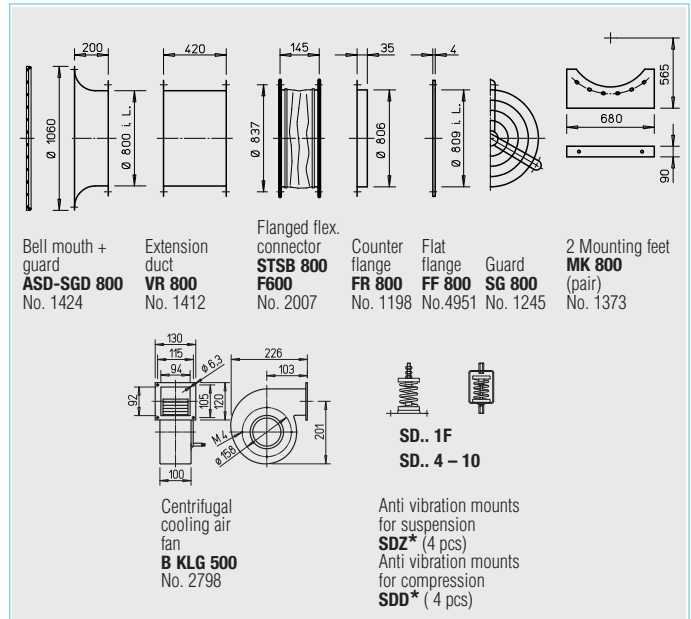
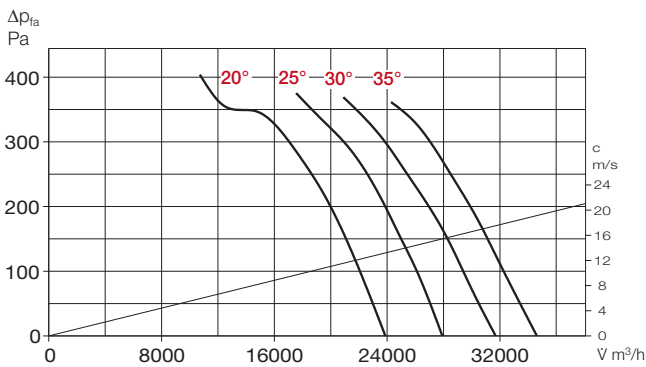
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C). ³⁾ Flush mounted version see product page switches.



B AVD 800/4

R.P.M. = 1450

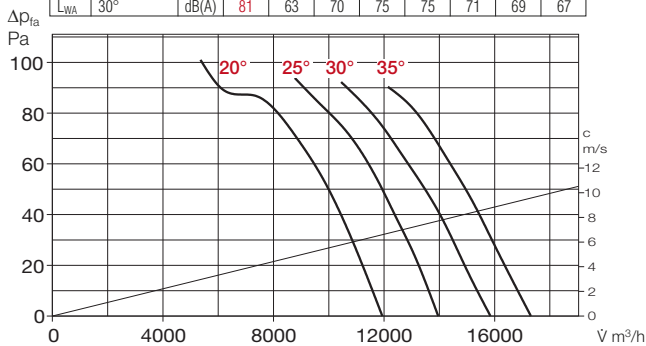
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	98	79	90	92	90	89	81	73
L _{WA} 20°	dB(A)	100	81	92	94	92	91	83	75
L _{WA} 30°	dB(A)	102	83	94	96	94	93	85	77



B AVD 800/8

R.P.M. = 725

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	78	60	67	72	72	68	66	64
L _{WA} 20°	dB(A)	80	62	69	74	74	70	68	66
L _{WA} 30°	dB(A)	81	63	70	75	75	71	69	67

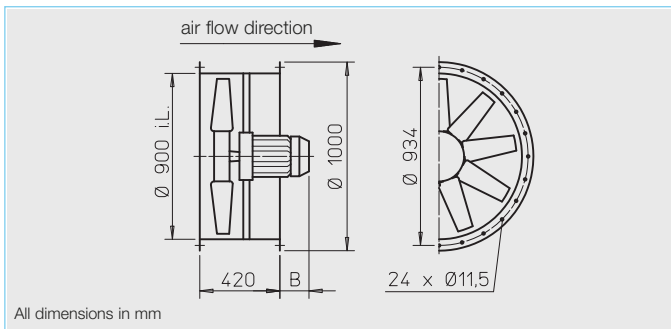


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* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.	Type	Ref.No.
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 800/4-20 F600	2855	1420	23380	3,00	400	6,17	20	776	40 / 600	-	151		SDD 5	1924	SDZ 5	1925	
B AVD 800/4-25 F600	2856	1440	27720	4,00	400	8,12	25	776	40 / 600	-	160		SDD 5	1924	SDZ 5	1925	
B AVD 800/4-30 F600	2857	1460	31920	5,50	400	6,09	30	776	40 / 600	-	181		SDD 5	1924	SDZ 5	1925	
B AVD 800/4-35 F600	2858	1455	35010	7,50	400	8,17	35	776	40 / 600	-	190		SDD 5	1924	SDZ 5	1925	
F600 2 speed motor, pole-switching (Dahlander winding Y/Y), 400 V / 3 ph / 50 Hz, protection to IP 54																	
B AVD 800/8/4-20 F600	2859	690/1410	11360/23210	0,7/2,8	400	2,41/6,01	20	471	40 / 600	-	145	PDA 12 ¹⁾	5081	SDD 5	1924	SDZ 5	1925
B AVD 800/8/4-25 F600	2860	710/1440	13670/27720	1,0/3,8	400	2,75/8,26	25	471	40 / 600	-	156	PDA 12 ¹⁾	5081	SDD 5	1924	SDZ 5	1925
B AVD 800/8/4-30 F600	2861	730/1440	15960/31400	1,3/5,0	400	3,50/10,4	30	471	40 / 600	-	187	PDA 12 ¹⁾	5081	SDD 5	1924	SDZ 5	1925
B AVD 800/8/4-35 F600	2862	725/1430	17440/34400	1,8/7,2	400	4,64/14,4	35	471	40 / 600	-	198	PDA 25	5060	SDD 5	1924	SDZ 5	1925

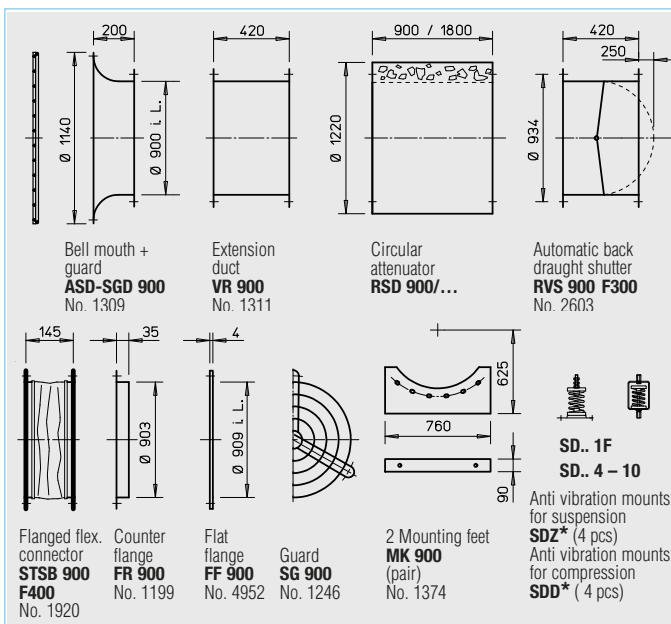
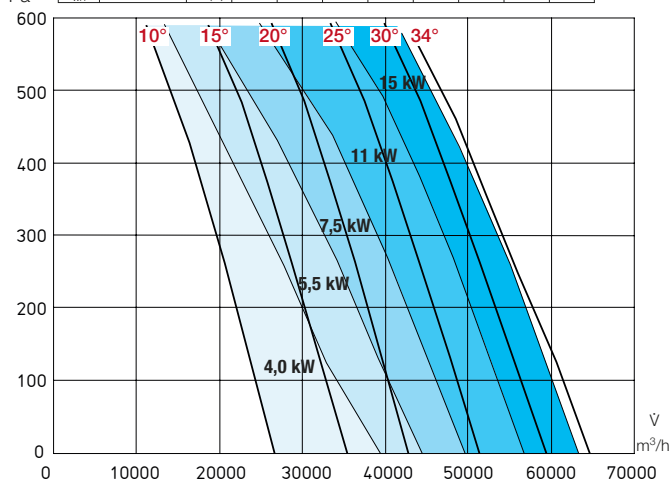
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.). ³⁾ Flush mounted version see product page switches.



B AVD 900/4

R.P.M. = 1470

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°		dB(A) 98	70	84	90	94	92	84	76
L _{WA} 20°		dB(A) 100	72	86	92	96	94	86	78
L _{WA} 30°		dB(A) 104	76	90	96	100	98	90	82



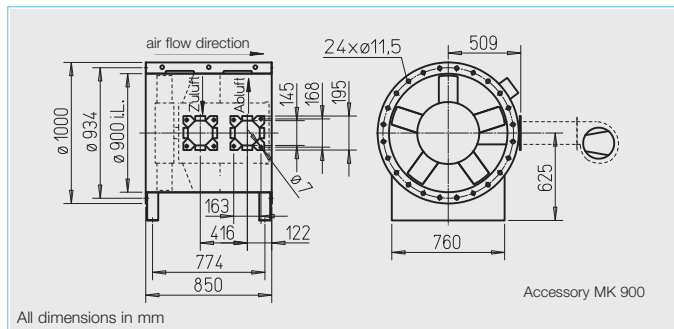
* Type assignment see table, last column

Information	Pages
Technical description	16 on
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Type	Ref.No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted	Anti vibration mounts (nominal size)						
													Compression		Suspension				
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	kg	Type	Ref.No.	Type	Ref.No.	Type	Ref.No.		
F300 3 Phase motor, 50 Hz, protection to IP 54																			
B AVD 900/4 4,0 kW F300	2548	1440	38455	4	400	8,1	*	776	40 / 300	228	124		SDD 4	1944	SDZ 4	1945			
B AVD 900/4 5,5 kW F300	2362	1460	44160	5,5	400	10,5	*	776	40 / 300	267	145		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 7,5 kW F300	2363	1455	48690	7,5	400	14,1	*	776	40 / 300	305	154		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 11 kW F300	2364	1470	56760	11,0	400	21,2	*	776	40 / 300	383	194		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 15 kW F300	2365	1465	63165	15,0	400	28,4	*	776	40 / 300	427	214		SDD 6	1926	SDZ 6	1927			
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																			
B AVD 900/8/4 1,0/3,8 kW F300	2549	710/1440	18500/37530	1,0/3,8	400	2,8/8,3	*	471	40 / 300	228	125	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945		
B AVD 900/8/4 1,3/5,0 kW F300	2366	730/1440	21370/42160	1,3/5,0	400	3,5/10,4	*	471	40 / 300	267	150	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 900/8/4 1,8/7,2 kW F300	2367	725/1430	24030/47390	1,8/7,2	400	4,6/14,4	*	471	40 / 300	305	169	PDA 25	5060	SDD 5	1924	SDZ 5	1925		
B AVD 900/8/4 3,0/11 kW F300	2368	725/1455	27990/56180	3,0/11,0	400	7,0/21,0	*	471	40 / 300	383	208	PDA 25	5060	SDD 5	1924	SDZ 5	1925		
B AVD 900/8/4 4,3/17 kW F300	2369	730/1475	31940/64540	4,3/17,0	400	12,7/33,4	*	471	40 / 300	449	251	PDA 25	5060	SDD 6	1926	SDZ 6	1927		
F400 3 Phase motor, 50 Hz, protection to IP 54																			
B AVD 900/4 4,0 kW F400	2573	1440	38455	4	400	8,1	*	776	40 / 400	228	124		SDD 4	1944	SDZ 4	1945			
B AVD 900/4 5,5 kW F400	2447	1460	44160	5,5	400	10,5	*	776	40 / 400	267	145		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 7,5 kW F400	2448	1455	48690	7,5	400	14,1	*	776	40 / 400	305	154		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 11 kW F400	2449	1470	56760	11,0	400	21,2	*	776	40 / 400	383	194		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 15 kW F400	2450	1465	63165	15,0	400	28,4	*	776	40 / 400	427	214		SDD 6	1926	SDZ 6	1927			
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																			
B AVD 900/8/4 1,0/3,8 kW F400	2574	710/1440	18500/37530	1,0/3,8	400	2,8/8,3	*	471	40 / 400	228	125	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945		
B AVD 900/8/4 1,3/5,0 kW F400	2452	730/1440	21370/42160	1,3/5,0	400	3,5/10,4	*	471	40 / 400	267	150	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 900/8/4 1,8/7,2 kW F400	2453	725/1430	24030/47390	1,8/7,2	400	4,6/14,4	*	471	40 / 400	305	169	PDA 25	5060	SDD 5	1924	SDZ 5	1925		
B AVD 900/8/4 3,0/11 kW F400	2454	725/1455	27990/56180	3,0/11,0	400	7,0/21,0	*	471	40 / 400	383	208	PDA 25	5060	SDD 5	1924	SDZ 5	1925		
B AVD 900/8/4 4,3/17 kW F400	2455	730/1475	31940/64540	4,3/17,0	400	12,7/33,4	*	471	40 / 400	449	251	PDA 25	5060	SDD 6	1926	SDZ 6	1927		

* Pitch angle must be stated when ordering.

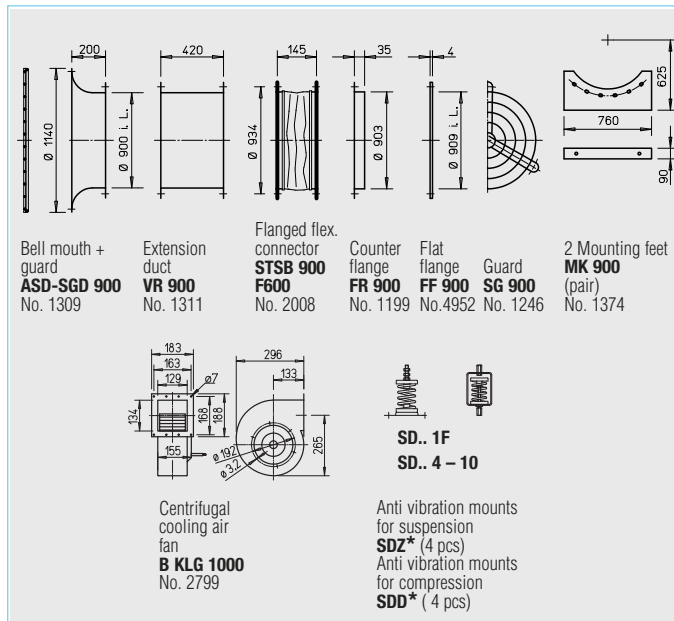
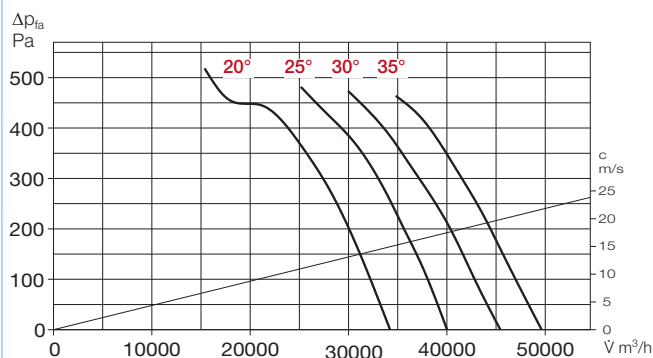
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C). ³⁾ Flush mounted version see product page switches.



B AVD 900/4

R.P.M. = 1460

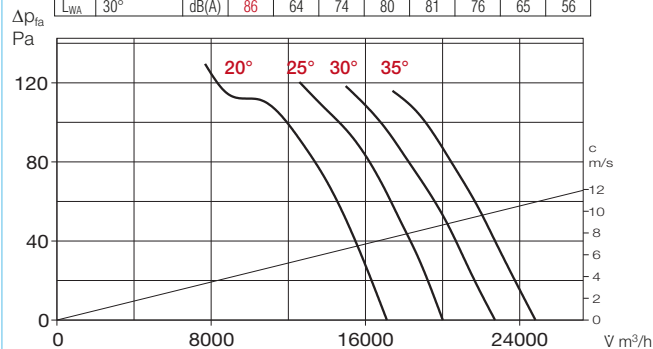
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	98	70	84	90	94	92	84	76
L _{WA} 20°	dB(A)	100	72	86	92	96	94	86	78
L _{WA} 30°	dB(A)	104	76	90	96	100	98	90	82



B AVD 900/8

R.P.M. = 730

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	80	58	68	74	75	70	59	50
L _{WA} 20°	dB(A)	82	60	70	76	77	72	61	52
L _{WA} 30°	dB(A)	86	64	74	80	81	76	65	56

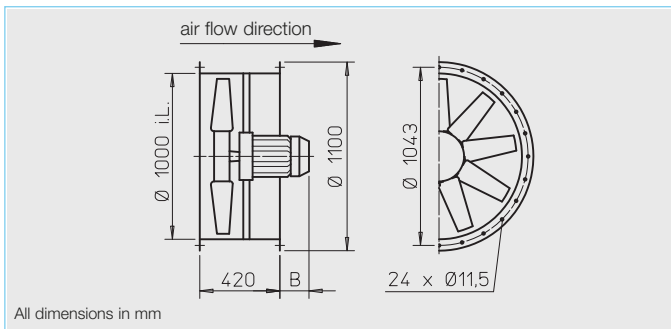


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* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.		
min ⁻¹ V m ³ /h kW V A ° No. +°C mm kg																	
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 900/4-20 F600	2865	1460	34220	5,50	400	10,50	20	776	40 / 600	-	210		SDD 5	1924	SDZ 5	1925	
B AVD 900/4-25 F600	2866	1455	39880	7,50	400	14,10	25	776	40 / 600	-	219		SDD 6	1926	SDZ 6	1927	
B AVD 900/4-30 F600	2867	1470	45750	11,0	400	21,20	30	776	40 / 600	-	252		SDD 6	1926	SDZ 6	1927	
B AVD 900/4-35 F600	2868	1465	50180	15,0	400	28,70	35	776	40 / 600	-	272		SDD 6	1926	SDZ 6	1927	
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 900/8/4-20 F600	2869	730/1440	17110/33760	1,3/5,0	400	3,50/10,4	20	471	40 / 600	-	216	PDA 12 ³⁾	5081	SDD 6	1926	SDZ 6	1927
B AVD 900/8/4-25 F600	2870	725/1430	19870/39200	1,8/7,2	400	6,64/14,4	25	471	40 / 600	-	227	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AVD 900/8/4-30 F600	2871	725/1455	22570/45290	3,0/11,0	400	7,00/21,0	30	471	40 / 600	-	266	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AVD 900/8/4-35 F600	2872	730/1475	25010/50530	4,3/17,0	400	12,7/33,4	35	471	40 / 600	-	309	PDA 25	5060	SDD 6	1926	SDZ 6	1927

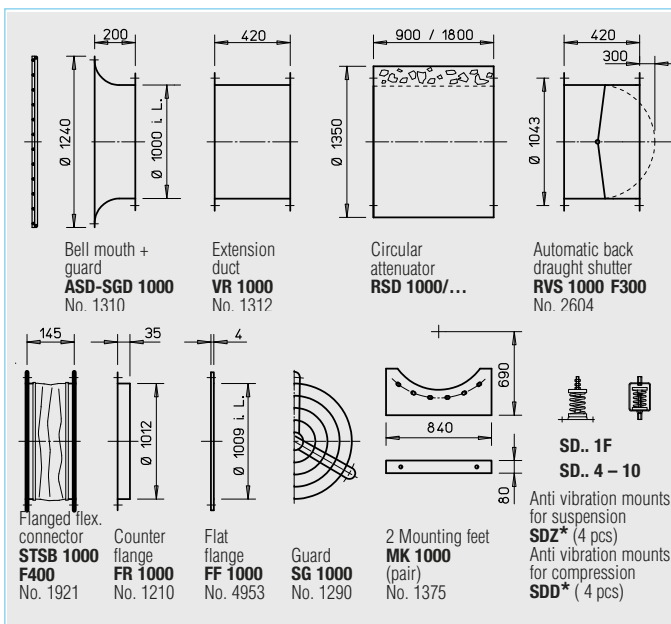
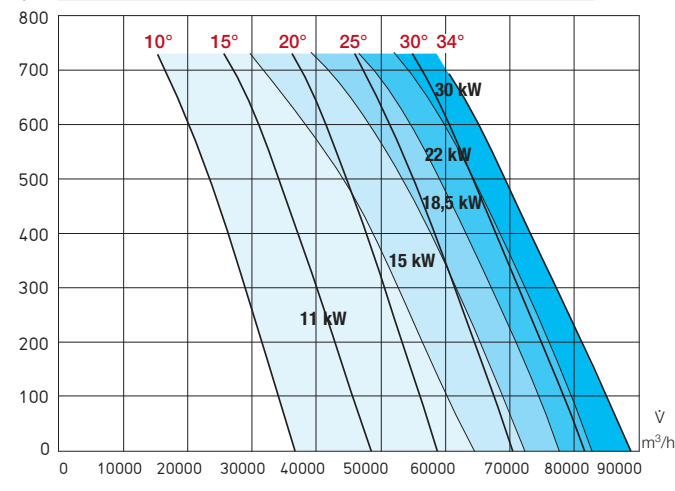
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.). ³⁾ Flush mounted version see product page switches.



B AVD 1000/4

R.P.M. = 1470

Frequency	Hz	Ges.	125	250	500	1k	2k	4k	8k	
L _{WA} 10°		dB(A)	101	73	87	93	97	95	87	79
L _{WA} 20°		dB(A)	103	75	89	95	99	97	89	81
L _{WA} 30°		dB(A)	107	79	93	99	103	101	93	85



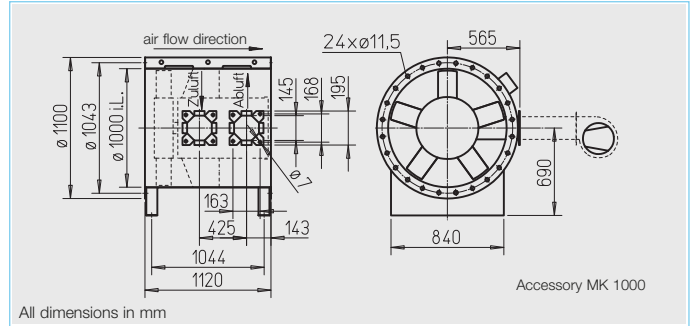
* Type assignment see table, last column

Information	Pages
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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Compression Type	Ref.No.	Suspension Type	Ref.No.
F300 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1000/4 11 kW F300	2372	1470	64460	11,0	400	21,2	*	776	40 / 300	383	203		SDD 5	1924	SDZ 5	1925	
B AVD 1000/4 15 kW F300	2373	1465	72120	15,0	400	28,7	*	776	40 / 300	427	223		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4 18,5 kW F300	2550	1465	77570	18,5	400	35,1	*	776	40 / 300	449	262		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4 22 kW F300	2375	1465	81210	22,0	400	40,5	*	776	40 / 300	487	284		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4 30 kW F300	2376	1470	88180	30,0	400	56,2	*	776	40 / 300	552	321		SDD 6	1926	SDZ 6	1927	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 1000/8/4 3,0/11 kW F300	2377	725/1455	31790/63800	3,0/11,0	400	7,0/21,0	*	471	40 / 300	383	217	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4 4,3/17 kW F300	2378	730/1475	36840/74440	4,3/17,0	400	12,7/33,4	*	471	40 / 300	449	260	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4 5,0/20 kW F300	2379	730/1470	39560/79660	5,0/20,0	400	14,1/38,6	*	471	40 / 300	487	275	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4 6,5/28 kW F300	2380	735/1480	44090/88770	6,5/28,0	400	18,0/52,0	*	471	40 / 300	552	334	PDA 63	1283	SDD 6	1926	SDZ 6	1927
F400 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1000/4 11 kW F400	2458	1470	64460	11,0	400	21,2	*	776	40 / 400	383	203		SDD 5	1924	SDZ 5	1925	
B AVD 1000/4 15 kW F400	2459	1465	72120	15,0	400	28,7	*	776	40 / 400	427	223		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4 18,5 kW F400	2611	1465	77570	18,5	400	35,1	*	776	40 / 400	449	262		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4 22 kW F400	2461	1465	81210	22,0	400	40,5	*	776	40 / 400	487	284		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4 30 kW F400	2462	1470	88180	30,0	400	56,2	*	776	40 / 400	552	321		SDD 6	1926	SDZ 6	1927	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 1000/8/4 3,0/11 kW F400	2464	725/1470	29180/58760	3,0/11,0	400	7,0/21,0	*	471	40 / 400	383	217	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4 4,3/17 kW F400	2465	730/1475	32370/65190	4,3/17,0	400	12,7/33,4	*	471	40 / 400	449	260	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4 5,0/20 kW F400	2466	730/1470	38070/75630	5,0/20,0	400	14,1/38,6	*	471	40 / 400	487	275	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4 6,5/28 kW F400	2467	735/1480	44650/89290	6,5/28,0	400	18,0/52,0	*	471	40 / 400	552	334	PDA 63	1283	SDD 6	1926	SDZ 6	1927

* Pitch angle must be stated when ordering.

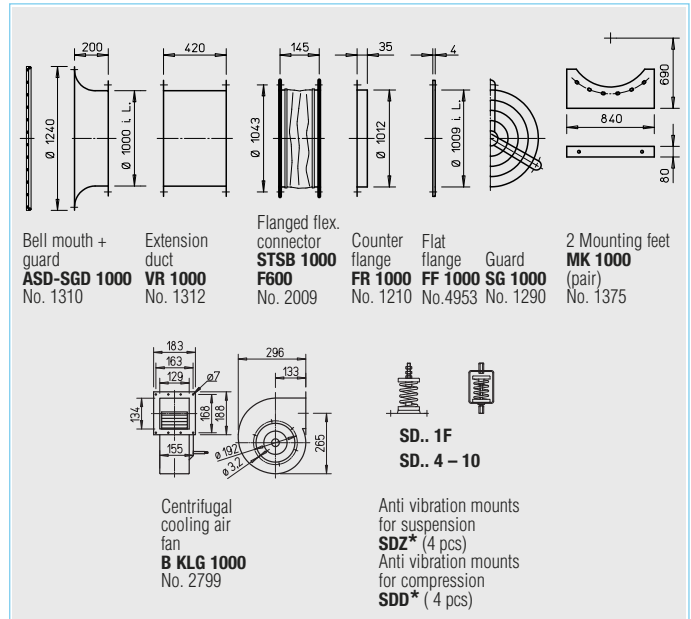
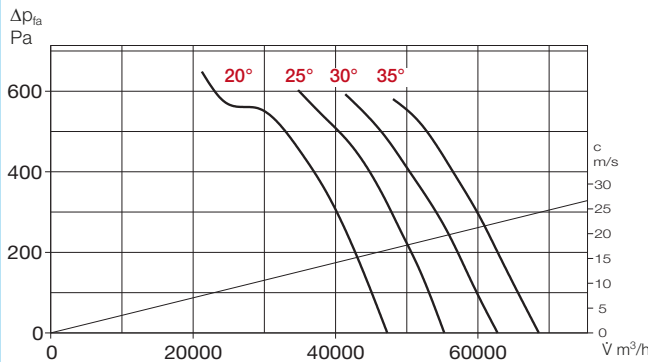
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C).



B AVD 1000/4

R.P.M. = 1470

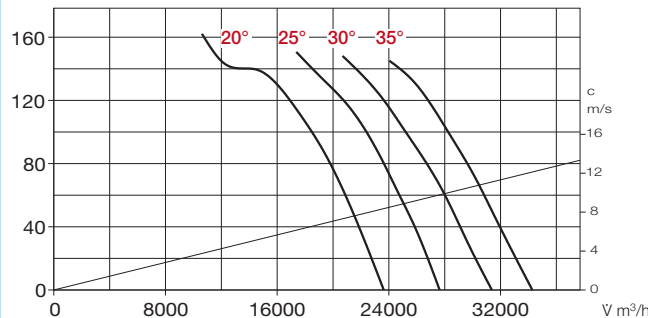
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	101	73	87	93	97	95	87	79
L _{WA} 20°	dB(A)	103	75	89	95	99	97	89	81
L _{WA} 30°	dB(A)	107	79	93	99	103	101	93	85



B AVD 1000/8

R.P.M. = 735

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	83	61	71	77	78	73	62	53
L _{WA} 20°	dB(A)	85	63	73	79	80	75	64	55
L _{WA} 30°	dB(A)	89	67	77	83	84	79	68	59

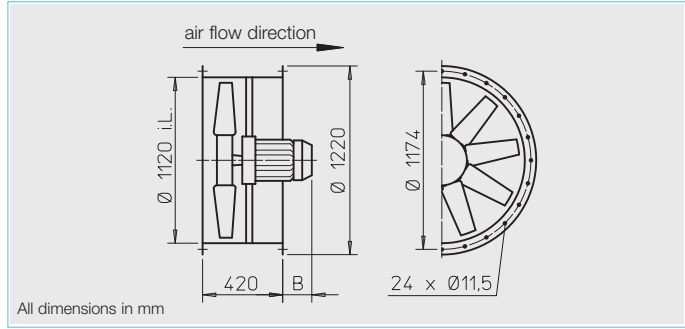


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* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.	Type	Ref.No.
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1000/4-20 F600	2875	1470	47270	11,0	400	21,20	20	776	40 / 600	-	314		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4-25 F600	2876	1465	55090	15,0	400	28,70	25	776	40 / 600	-	334		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4-30 F600	2877	1465	62550	15,0	400	28,70	30	776	40 / 600	-	334		SDD 6	1926	SDZ 6	1927	
B AVD 1000/4-35 F600	2878	1465	68840	22,0	400	40,50	35	776	40 / 600	-	395		SDD 6	1926	SDZ 6	1927	
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54																	
B AVD 1000/8/4-20 F600	2879	725/1455	23310/46780	3,0/11,0	400	7,0/21,0	20	471	40 / 600	-	328	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4-25 F600	2880	730/1475	27450/54460	4,3/17,0	400	12,7/33,4	25	471	40 / 600	-	371	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4-30 F600	2881	730/1475	31170/62980	4,3/17,0	400	12,7/33,4	30	471	40 / 600	-	371	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AVD 1000/8/4-35 F600	2882	730/1470	34300/69070	5,0/20,0	400	14,1/38,6	35	471	40 / 600	-	386	PDA 63	1283	SDD 6	1926	SDZ 6	1927

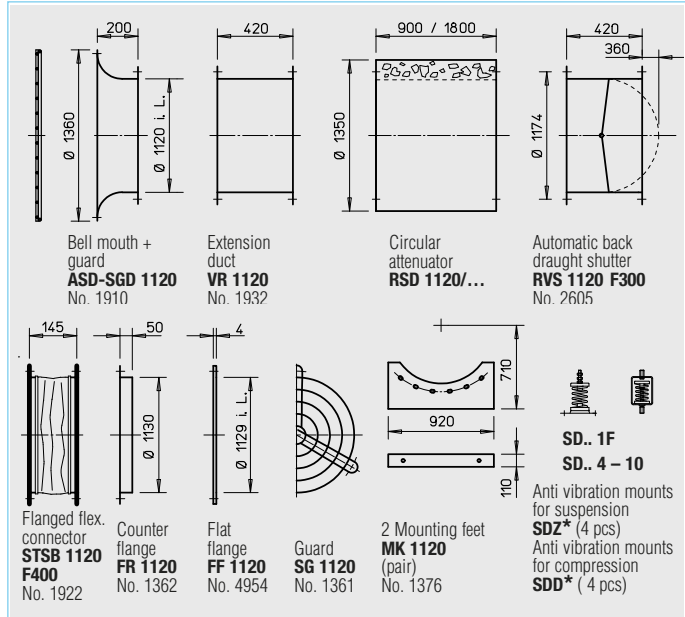
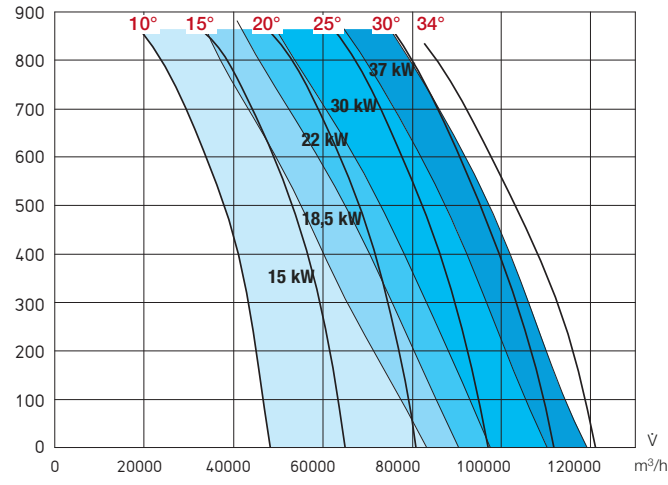
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.).



B AVD 1120/4

R.P.M. = 1480

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA} 10°		dB(A)	104	75	92	98	99	94	89	84
L _{WA} 20°		dB(A)	107	78	95	101	102	97	92	87
L _{WA} 30°		dB(A)	110	81	98	104	105	100	95	90



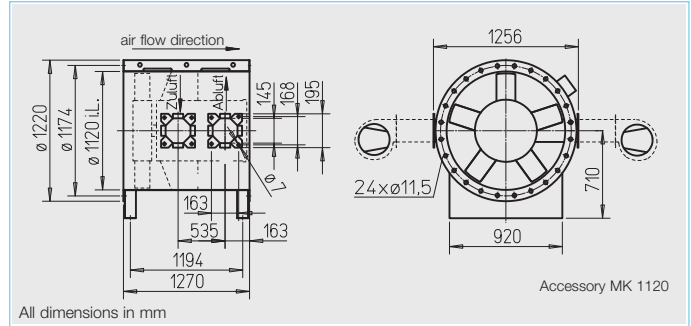
* Type assignment see table, last column

Information	Pages
Technical description	16 on
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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Compression	Suspension	Type	Ref.No.
F300 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1120/4 15 kW F300	2383	1465	83280	15,0	400	28,7	*	776	40 / 300	427	248		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 18,5 kW F00	2551	1465	90290	18,5	400	35,1	*	776	40 / 300	449	287		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 22 kW F300	2385	1465	96430	22,0	400	40,5	*	776	40 / 300	487	309		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 30 kW F300	2386	1470	109953	30,0	400	56,2	*	776	40 / 300	552	346		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 37 kW F300	2387	1475	119153	37,0	400	66,6	*	776	40 / 300	641	468		SDD 7	1928	SDZ 7	1929	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 1120/8/4 4,3/17 kW F300	2388	730/1475	42810/86500	4,3/17,0	400	12,7/33,4	*	471	40 / 300	449	285	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AVD 1120/8/4 5,0/20 kW F300	2389	730/1470	46300/93240	5,0/20,0	400	14,1/38,6	*	471	40 / 300	487	300	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AVD 1120/8/4 6,5/28 kW F300	2390	735/1480	53220/107160	6,5/28,0	400	18,0/52,0	*	471	40 / 300	552	359	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AVD 1120/8/4 9,2/37 kW F300	2391	740/1485	59780/119970	9,2/37,0	400	25,4/74,2	*	471	40 / 300	641	486	PDA 115	1352	SDD 7	1928	SDZ 7	1929
F400 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1120/4 15 kW F400	2470	1465	83280	15,0	400	28,7	*	776	40 / 400	427	248		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 18,5 kW F400	2612	1465	90290	18,5	400	35,1	*	776	40 / 400	449	287		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 22 kW F400	2472	1465	96430	22,0	400	40,5	*	776	40 / 400	487	309		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 30 kW F400	2473	1470	109953	30,0	400	56,2	*	776	40 / 400	552	346		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 37 kW F400	2474	1475	119153	37,0	400	66,6	*	776	40 / 400	641	468		SDD 7	1928	SDZ 7	1929	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 1120/8/4 4,3/17 kW F400	2475	730/1475	42810/86500	4,3/17,0	400	12,7/33,4	*	471	40 / 400	449	285	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AVD 1120/8/4 5,0/20 kW F400	2476	730/1470	46300/93240	5,0/20,0	400	14,1/38,6	*	471	40 / 400	487	300	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AVD 1120/8/4 6,5/28 kW F400	2477	735/1480	53220/107160	6,5/28,0	400	18,0/52,0	*	471	40 / 400	552	359	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AVD 1120/8/4 9,2/37 kW F400	2478	740/1485	59780/119970	9,2/37,0	400	25,4/74,2	*	471	40 / 400	641	486	PDA 115	1352	SDD 7	1928	SDZ 7	1929

* Pitch angle must be stated when ordering.

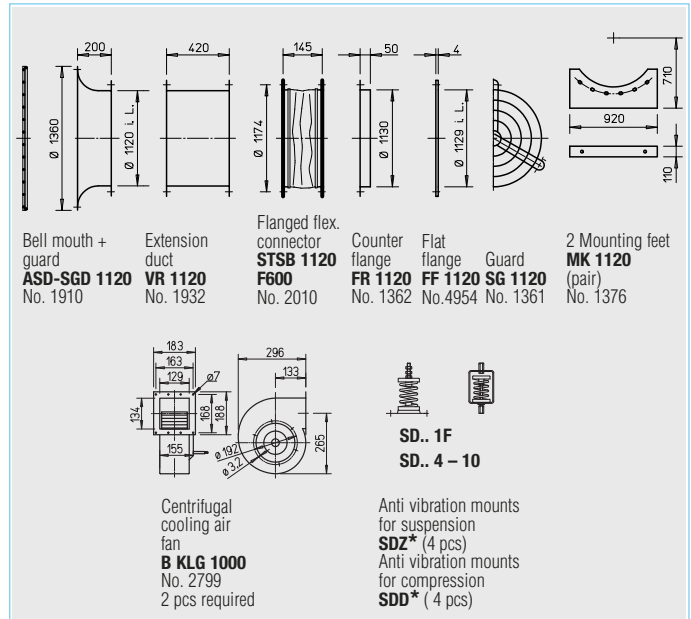
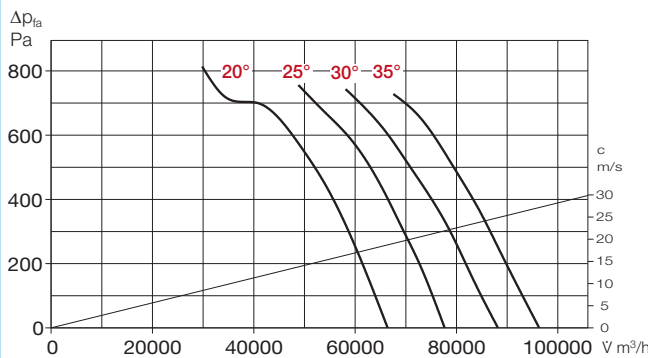
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C).



B AVD 1120/4

R.P.M. = 1470

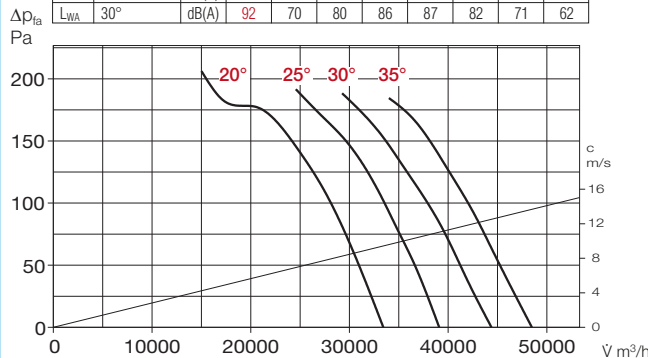
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L _{WA} 10°	dB(A)	104	75	92	98	99	94	89	84
L _{WA} 20°	dB(A)	107	78	95	101	102	97	92	87
L _{WA} 30°	dB(A)	110	81	98	104	105	100	95	90



B AVD 1120/8

R.P.M. = 740

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	85	63	73	79	80	75	64	55
L _{WA} 20°	dB(A)	88	66	76	82	83	78	67	58
L _{WA} 30°	dB(A)	92	70	80	86	87	82	71	62

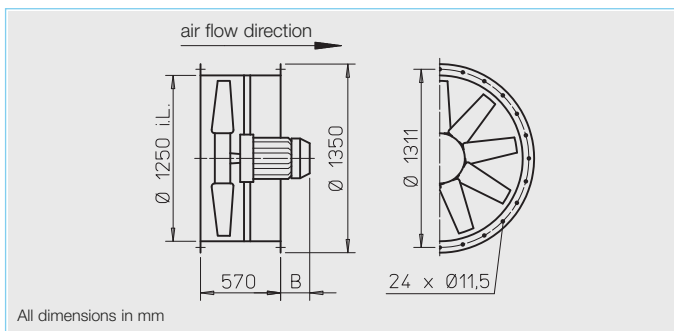


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* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.	Type	Ref.No.
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1120/4-20 F600	2885	1465	66180	18,5	400	35,10	20	776	40 / 600	-	446	SDD 7	1928	SDZ 7	1929		
B AVD 1120/4-25 F600	2886	1465	77390	22,0	400	40,50	25	776	40 / 600	-	468	SDD 7	1928	SDZ 7	1929		
B AVD 1120/4-30 F600	2887	1470	88180	30,0	400	56,20	30	776	40 / 600	-	504	SDD 7	1928	SDZ 7	1929		
B AVD 1120/4-35 F600	2888	1475	97370	37,0	400	66,60	35	776	40 / 600	-	624	SDD 8	1930	SDZ 8	1931		
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph / 50 Hz, protection to IP 54																	
B AVD 1120/8/4-20 F600	2889	730/1470	32980/66410	5,0/20,0	400	14,1/38,6	20	471	40 / 600	-	459	PDA 63	1263	SDD 7	1928	SDZ 7	1929
B AVD 1120/8/4-25 F600	2890	735/1480	38830/78190	6,5/28,0	400	18,0/52,0	25	471	40 / 600	-	517	PDA 63	1263	SDD 7	1928	SDZ 7	1929
B AVD 1120/8/4-30 F600	2891	735/1480	44090/88780	6,5/28,0	400	18,0/52,0	30	471	40 / 600	-	517	PDA 63	1263	SDD 7	1928	SDZ 7	1929
B AVD 1120/8/4-35 F600	2892	740/1485	48550/98030	9,2/37,0	400	25,4/74,2	35	471	40 / 600	-	642	PDA 115	1352	SDD 8	1930	SDZ 8	1931

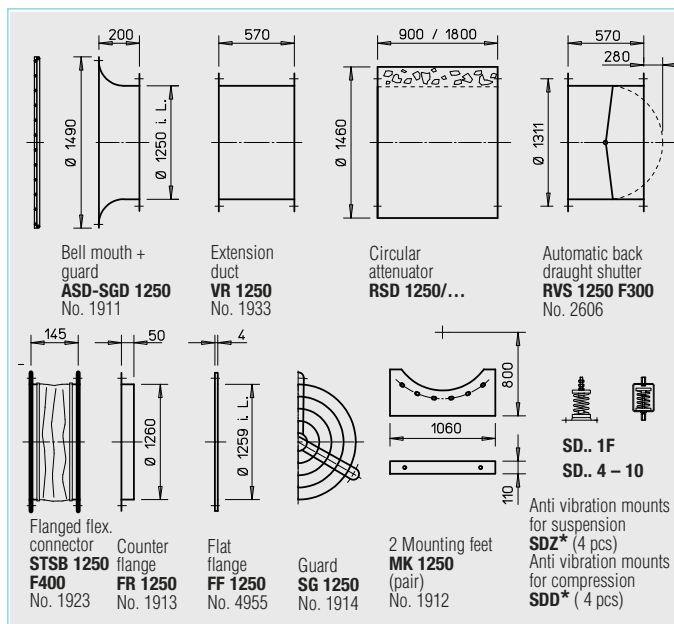
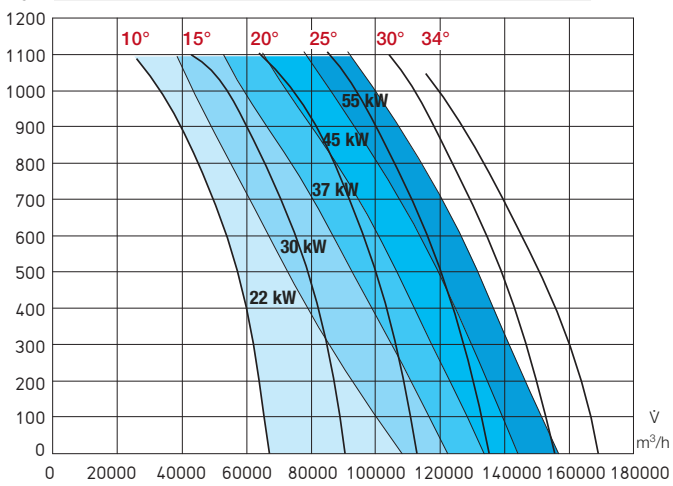
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.).



B AVD 1250/4

R.P.M. = 1485

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°		dB(A) 107	78	95	101	102	97	92	87
L _{WA} 20°		dB(A) 110	81	98	104	105	100	95	90
L _{WA} 30°		dB(A) 113	84	101	107	108	103	98	93



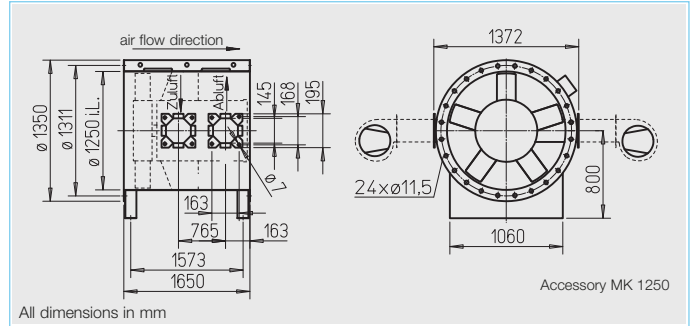
* Type assignment see table, last column

Information	Pages
Technical description	16 on
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Gas warning system, circuitry and control technology	152 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Compression Type	Ref.No.	Suspension Type	Ref.No.
F300 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1250/4 22 kW F300	2555	1465	105550	22,0	400	40,5	*	776	40 / 300	487	336		SDD 6	1926	SDZ 6	1927	
B AVD 1250/4 30 kW F300	2392	1470	114635	30,0	400	56,2	*	776	40 / 300	552	372		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 37 kW F300	2393	1475	132530	37,0	400	66,6	*	776	40 / 300	641	494		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 45 kW F300	2394	1475	142530	45,0	400	80,7	*	776	40 / 300	641	515		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 55 kW F300	2395	1475	155030	55,0	400	97,1	*	776	40 / 300	720	598		SDD 8	1930	SDZ 8	1931	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 1250/8/4 6,5/28 kW F300	2396	735/1480	57320/115410	6,5/28,0	400	18,0/52,0	*	471	40 / 300	487	384	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AVD 1250/8/4 9,2/37 kW F300	2397	740/1485	66490/133430	9,2/37,0	400	25,4/74,2	*	471	40 / 300	641	510	PDA 115	1352	SDD 7	1928	SDZ 7	1929
B AVD 1250/8/4 11,4/44 kW F300	2398	740/1480	70250/140500	11,0/44,0	400	27,2/80,2	*	471	40 / 300	641	577	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4 14,7/55 kW F300	2399	735/1480	77250/155560	14,7/55,0	400	36,5/100	*	471	40 / 300	720	604	PDA 115	1352	SDD 8	1930	SDZ 8	1931
F400 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1250/4 22 kW F400	2613	1465	105550	22,0	400	40,5	*	776	40 / 400	487	336		SDD 6	1926	SDZ 6	1927	
B AVD 1250/4 30 kW F400	2480	1470	114635	30,0	400	56,2	*	776	40 / 400	552	372		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 37 kW F400	2481	1475	132530	37,0	400	66,6	*	776	40 / 400	641	494		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 45 kW F400	2482	1475	142530	45,0	400	80,7	*	776	40 / 400	641	515		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 55 kW F400	2483	1475	155030	55,0	400	97,1	*	776	40 / 400	720	598		SDD 8	1930	SDZ 8	1931	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 1250/8/4 6,5/28 kW F400	2484	735/1480	57320/115410	6,5/28,0	400	18,0/52,0	*	471	40 / 400	487	384	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AVD 1250/8/4 9,2/37 kW F400	2485	740/1485	66490/133430	9,2/37,0	400	25,4/74,2	*	471	40 / 400	641	510	PDA 115	1352	SDD 7	1928	SDZ 7	1929
B AVD 1250/8/4 11,4/44 kW F400	2486	740/1480	70250/140500	11,0/44,0	400	27,2/80,2	*	471	40 / 400	641	577	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4 14,7/55 kW F400	2487	735/1480	77250/155560	14,7/55,0	400	36,5/100	*	471	40 / 400	720	604	PDA 115	1352	SDD 8	1930	SDZ 8	1931

* Pitch angle must be stated when ordering.

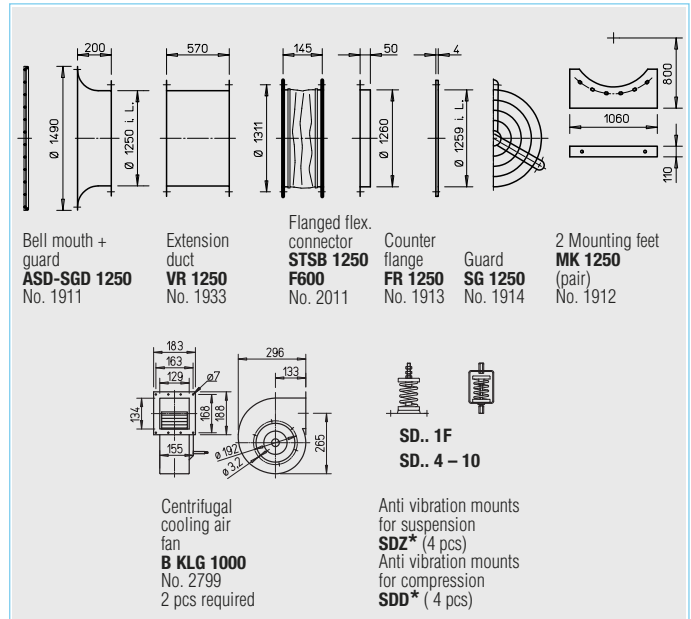
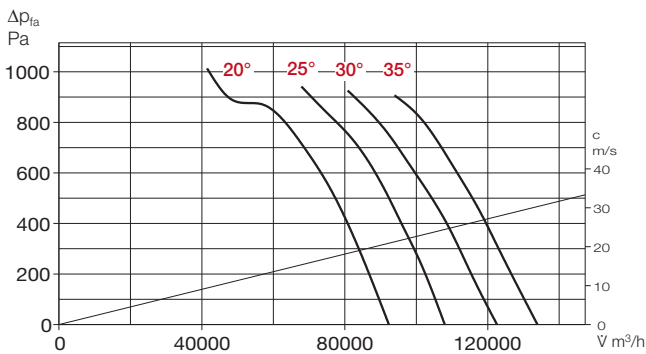
¹⁾ During ventilation / smoke extraction (nonrecurring 120 min. at 300 °C or 120 min. at 400 °C).



B AVD 1250/4

R.P.M. = 1470

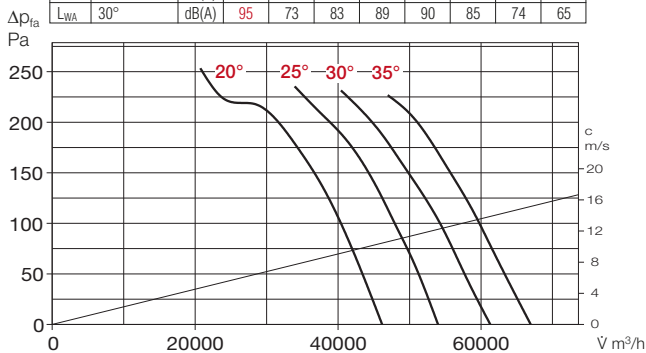
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°		dB(A) 107	78	95	101	102	97	92	87
L _{WA} 20°		dB(A) 110	81	98	104	105	100	95	90
L _{WA} 30°		dB(A) 113	84	101	107	108	103	98	93



B AVD 1250/8

R.P.M. = 735

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°		dB(A) 88	66	76	82	83	78	67	58
L _{WA} 20°		dB(A) 91	69	79	85	86	81	70	61
L _{WA} 30°		dB(A) 95	73	83	89	90	85	74	65



Information	Pages
Technical description	16 on
Design of systems	3 on
Accessory details	Pages
Mounting accessories	146 on
Centrifugal cooling fan	147
Attenuators	151
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* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power. (nominal)	Voltage	Current at full load	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts (nominal size)			
												Type	Ref.No.	Type	Ref.No.	Type	Ref.No.
F600 3 Phase motor, 50 Hz, protection to IP 54																	
B AVD 1250/4-20 F600	2893	1470	92320	30	400	56,20	20	776	40 / 600	-	595		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4-25 F600	2894	1475	108330	37	400	66,60	25	776	40 / 600	-	715		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4-30 F600	2895	1475	123000	45	400	80,70	30	776	40 / 600	-	736		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4-35 F600	2896	1480	135830	55	400	95,20	35	776	40 / 600	-	850		SDD 8	1930	SDZ 8	1931	
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B AVD 1250/8/4-20 F600	2897	735/1480	46160/92950	6,5/28,0	400	18,0/52,0	20	471	40 / 600	-	608	PDA 63	1283	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4-25 F600	2898	740/1485	54350/109060	9,2/37,0	400	25,4/74,2	25	471	40 / 600	-	733	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4-30 F600	2899	740/1480	61710/123420	11,0/44,0	400	27,2/80,2	30	471	40 / 600	-	798	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4-35 F600	2900	735/1480	67450/135830	14,7/55,0	400	36,5/100	35	471	40 / 600	-	823	PDA 115	1352	SDD 8	1930	SDZ 8	1931

¹⁾ During ventilation / smoke extraction (nonrecurring 120 min.).

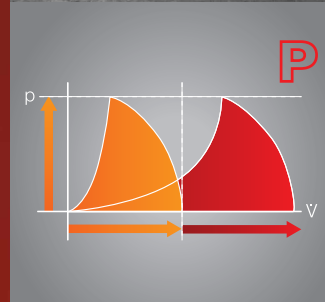
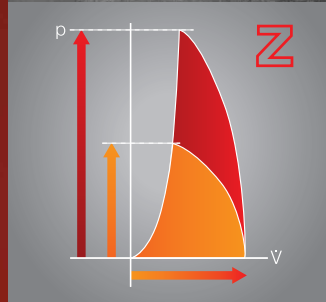
The Helios medium pressure axial fans are ideally suited for diverse fields of application in professional ventilation technology, like e.g. in ventilation systems for car parks, shopping malls and public buildings as well as smoke and heat exhaust fans and smoke protection pressure systems.

As two-stage, in-line Z- or parallel P-units they are ideal for use in car parks. Universal installation possibilities (horizontal and vertical positioning) provide for flexible use. As smoke and heat exhaust fan, the series B AMD is used within the fire zone, outside the fire zone (with heat and sound insulation L90), as well as outside the building.

The main advantages of medium pressure axial fans AMD and AMD B are:

- Aerodynamically profiled blades from high-strength aluminum alloy.
- Casing from sheet steel with surface protection.
- Guide vane from steel.
- Delivery ready for connection.
- Universal installation possibilities

For the fulfilment of versatile TGA-requirements with regard to pressure rise, flow rate, space requirements, the arrangement of two identical fans in a row (Z) or side by side (P) is ideal. Details see page 6 on.



Two-stage units

Parallel units



**Medium pressure axial fans.
Maximum performance for
diverse applications.**

With flow rates up to 113 000 m³/h and very high pressure figures till 1 400 Pa the medium pressure axial fan series correspond ideally to the varied standards of the professional TGA ventilation technology.

The AMD and B AMD types combine highest performance with efficient energy consumption. The factory adjustable, profiled blades made of aluminum cast alloy ensure precise adjustment to the respective operating point. An adjustment of the motor power to the respective project standards is easily possible with the help of the performance-related characteristic curve portrayal.

HELIOS medium pressure axial fans are available for ventilation at normal air flow temperatures from -20 °C to + 40 °C (AMD) or in the temperature classes F300 and F400 (B AMD) for use as mechanical smoke extraction systems (MRA). There are over 300 types in 12 sizes (sizes 315-1120) available.



■ **Application**

- Versatile application in the TGA-ventilation technology, e.g. for car park ventilation, in smoke pressure systems, etc.
- For preventive fire protection to secure smoke and heat extraction.
- For applications with air flow temperatures of 300 °C for 120 minutes and 400 °C for 120 minutes (F300 and F400).
- Suitable for continuous operation for temperature from -30 °C to +40 °C.

■ **Casing**

- Cylindrical duct with welded motor supporting plate and guide vane made of sheet steel. With flanges on both ends (except AVD DK) steel to DIN 24155 PT3. For direct in-line installation in ducting.
- Surface protection by powder coating RAL 7015 (grey).

■ **Impeller**

- Hub and blades from corrosion-resistant aluminum alloy.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Pitch angle of the blades adjustable and factory set according to the ordered, optimal operating point.

■ **Motor**

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct driven by IEC-three phase a.c. motor (Smoke Extraction Motors F300 or F400). Protection to IP 55. Insulation class H. External cable with sheathing. Depending on the installation situation, relubrication intervals or bearing replacements must be observed (see installation and operating instructions).

■ **Speed control**

Stepless (0-100 %) by use of frequency inverters (pole-switching models excluded). The planned use of a frequency inverter without sine filter must be stated when ordering. This causes a change of the fan execution and if necessary additional costs. If used as smoke and heat exhaust fan these switching devices on the on-site control are to be bridged.

■ **Motor protrusion**

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be

observed according to the type table.

■ **Motor protection**

- Series AMD: All types (pole-switching models excluded) are available with PTC-resistors, which are connected to the terminal box located on the outside of the casing (special execution). With that an effective motor protection by means of full motor protection unit (MSA, Ref. no. 1289, accessories) or frequency inverter (accessories) is possible. Models without PTC-resistors are to be protected by means of motor protection switch on site.
- Series B AMD: The B AMD types are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.

■ **Electrical connection**

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55) from aluminium diecasting, mounted on the outside of the casing.
- Terminal box is mounted with an permanently attached cable with fire-resistant protective sheathing.

■ **Air flow temperatures**

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

■ **Air flow direction**

- The fans come in air flow direction B = pushing air over the motor (Fig. 1).

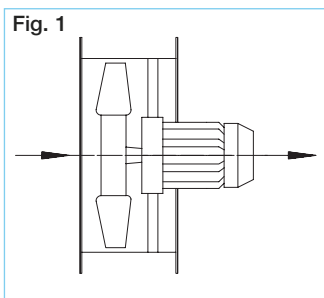


Fig. 1

■ **Sound levels**

- On the product pages above the performance curves are the spectrum figures and total sound

power levels for different pitch angles indicated.

■ **Order data**

The desired pitch angle of the blades is mandatory when ordering.

Example:

B AMD 355/2 1,5 kW F300 34°



■ **Certification**

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. Approved by the CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

■ **Selection of anti vibration mounts**

In order to reduce the vibrations caused by rotating components in the fan optimally the right selection of the anti vibration mounts is essential. The layout is based on the calculated weight of fan including accessories, which is to be damped. For this purpose, the individual weights of the components must be added.

□ Example 1:

B AMD 710/4 7,5 kW F300 with extension duct

1. Determining the weight to be damped

Weight B AMD 710/4	152 kg
Weight VR 710	21,5 kg
Total weight:	<u>173,5 kg</u>
2. Selection of anti vibration mounts (see page 150)
 - » up to 210 kg = **SDD 5**

□ Example 2:

B AMD 710/4 7,5 kW F300 as P-unit

1. Determining the weight to be damped

Weight B AMD 710/4	152 kg
Weight B AMD 710/4	152 kg
Weight MP-P 710	145 kg
Total weight:	<u>449 kg</u>
2. Selection of anti vibration mounts (see page 150)
 - » up to 580 kg = **SDD 7**

□ Example 3:

B AMD 710/4 7,5 kW F300 as Z-unit

1. Determining the weight to be damped

Weight B AMD 710/4	152 kg
Weight B AMD 710/4	152 kg
Weight MK 710	10,5 kg
Weight MP-Z 710	43 kg
Total weight:	<u>357,5 kg</u>
2. Selection of anti vibration mounts (see page 150)
 - » up to 400 kg = **SDD 6**

■ Installation

□ Horizontal and vertical installation depending on the place of installation:

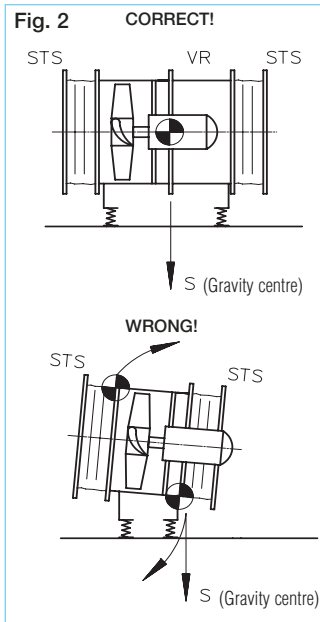
- Within the fire zone, without heat and sound insulation.
- Outside of the fire zone, within the building with heat and sound insulation L 90.
- Outside of the building without heat and sound insulation.

To avoid vibration transmission to building and ducting the use of anti vibration mounts (accessories SDD, SDZ) is highly recommended.

Compliance with the Federal, as well as the regional fire protection regulations.

□ Duct installation (tilting)

To prevent a tilt-affinity during installation of medium pressure axial fans with flanged flexible connectors on each side (STS, accessories), an extension duct (type VR, accessories) is to be provided (Fig. 2).



□ Duct installation (horizontal)

Arrangement of the mounting feet MK, accessories) and anti vibration mounts on both flange sides of the unit. Use of anti vibration mounts for compression (SDD, accessories) or for suspension (SDZ, accessories, for ceiling suspension). To prevent sound and vibration transmissions flanged flexible connectors STS (accessories) are to be provided on each side (Fig. 3).

□ Duct installation with attenuator on each side

According to the local conditions are brackets (to be provided on site) for fastening of the attenuators and to support the weight required. The intake attenuator must be fitted at the entrance, the outlet attenuator at the discharge with flanged flexible connectors (STS, STSB) (Fig. 4).

□ Wall installation (horizontal)

Onto a bracket (to be provided on site). Wall bushing with duct, immurement with mineral wool. Flanged flexible connectors (STS, accessories) on each side with extension duct (VR, accessories) and guard (SG, accessories) (Fig. 5).

■ **Two-stage and parallel units**
The versatile requirements with regard to pressure rise, flow rate and space requirements are fulfilled in the area of technical building equipment (TGA) often by two-stage Z- or parallel P-units. The Helios program offers suitable mounting packages for the respective units:

□ Two-stage unit / Mounting package MP-Z (Fig. 6)

Two fans connected in series ensure unrivalled power density and favourable installation with minimum space requirements. The two fans are arranged in a row and connected by means of extension ducts.

Mounting package MP-Z (Scope of delivery):

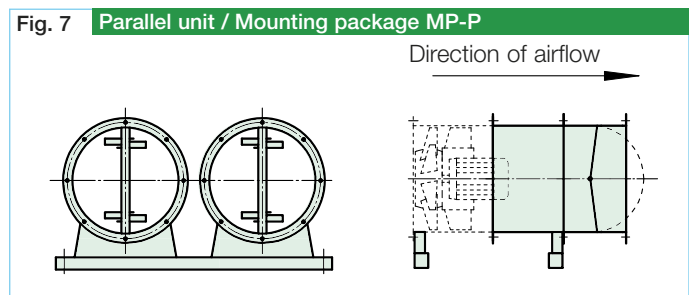
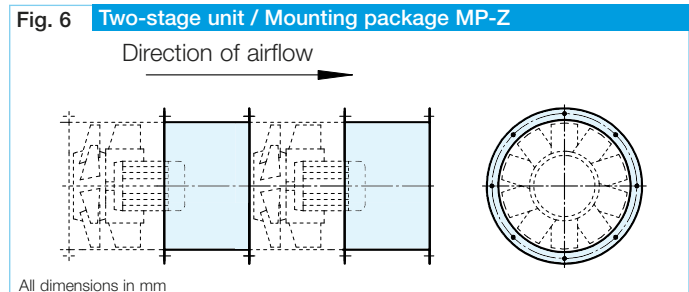
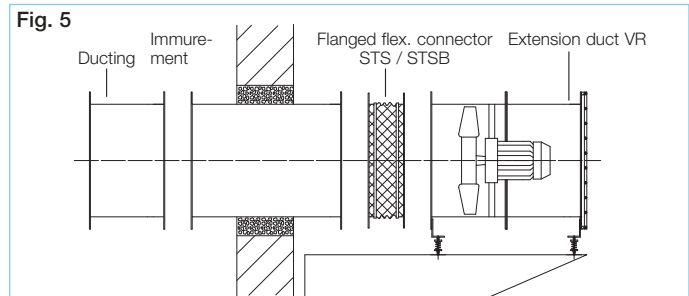
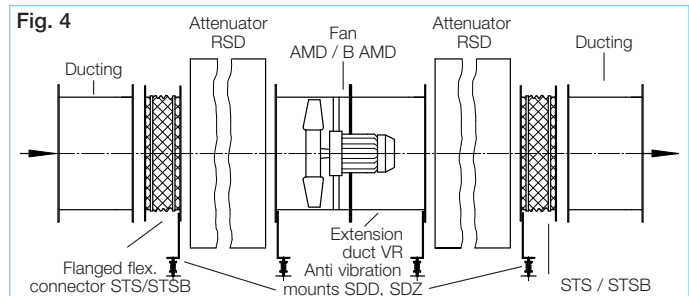
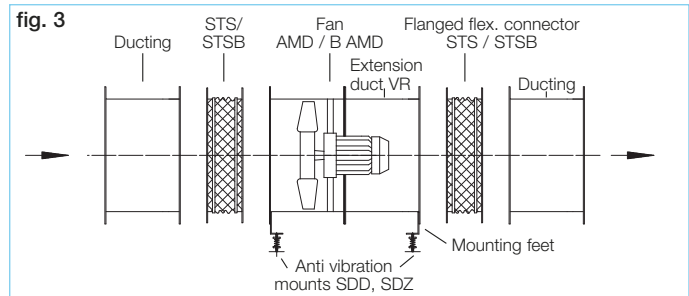
Extension ducts (2 pcs) incl. assembly kit (Hexagon head screws, -nuts, spring washers).

□ Parallel unit / Mounting package MP-P

Two parallel connected fans bring high flow rates at suitable pressure rate and fulfill especially the requirements for car park ventilation and smoke extraction. Two identical fans which are arranged side by side operate in a joint duct system.

Mounting package MP-P (Scope of delivery):

Extension ducts (2 pcs), back draught shutters (2 pcs), mounting feet (4 pcs), mounting bars (2 pcs), assembly kit (Hexagon head screws, -nuts, spring washers, washers and threaded plate).



■ Accessories	Pages
Design of systems	6 on
Z-/P-units	6 on
Mounting accessories	146 on
Attenuator	151
Speed control,	
Pole switch	152 on
Frequency inverter	162 on

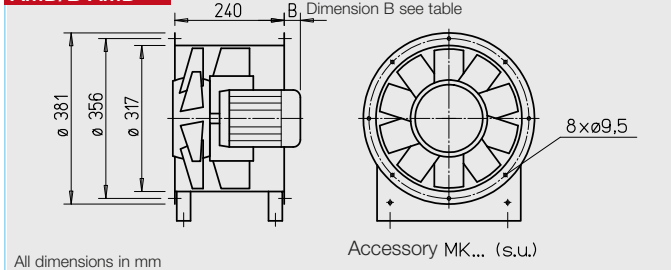


(Fig. incl. mounting feet (MK, accessories))

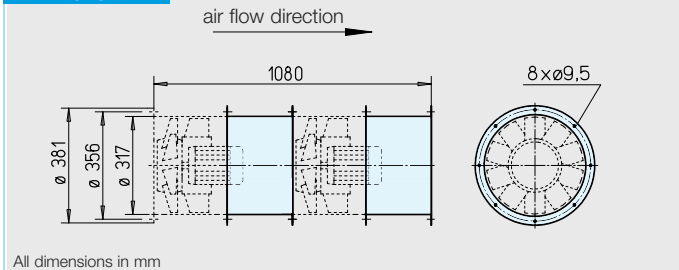
Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

AMD/B AMD



MP-Z 315



Application, casing, air flow direction, etc.
see page 46.

Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

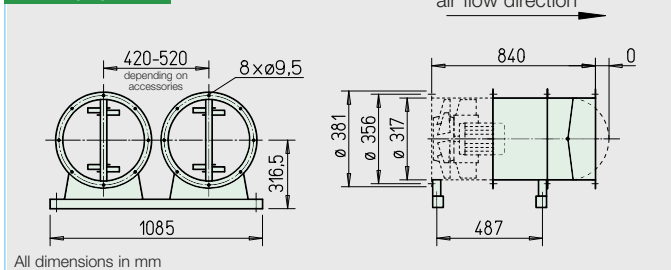
Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

MP-P 315

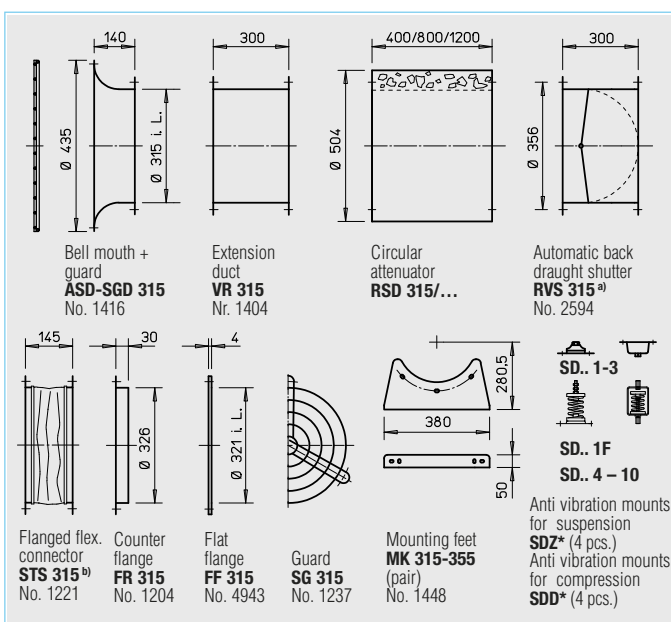


Mounting package MP-Z for two-stage Z-unit
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 7,5 kg

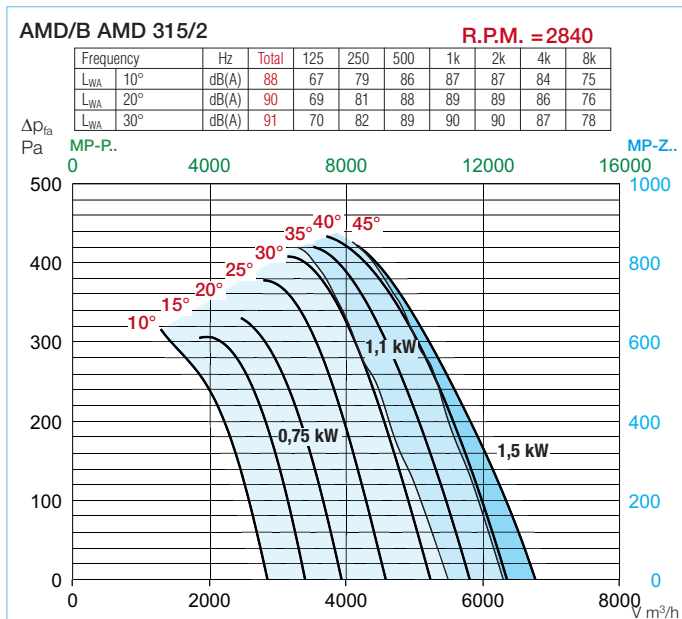
MP-Z 315 Ref. No. 4903

Mounting package MP-P for parallel P-unit
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs) and assembly kits.
Weight: 25 kg

MP-P 315 Ref. No. 4887



a) For motorised shutters, for ventilation operation, see accessory pages
b) Type for B AMD: STSB 315 F400, No. 14738 * Type assignment see table, last column



Information	Page
Technical description	46
Design of systems	3 on

Special executions	Pages
Special execution with inspection opening (additional price) on request.	
Special execution with PTC-resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch MSA, always specify when ordering.	

Accessory details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning systems, circuitry and control technology	152 on
Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch	Anti vibration mounts ⁴⁾				
												Compression		Suspension		
												Type	Ref. No.	Type	Ref. No.	
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 315/2 0,75 kW	3053	2875	5500	0,75	400	1,68	125	470	40	23	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
AMD 315/2 1,1 kW	3054	2875	6500	1,1	400	2,37	125	470	40	24	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
AMD 315/2 1,5 kW	3055	2890	6800	1,5	400	3,26	125	470	40	25	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
												Pole switch surface mounted				
AMD 315/4/2 0,17/0,75 kW	3056	1360/2825	2700/5500	0,17/0,75	400	0,64/1,83	125	471	40	27	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
AMD 315/4/2 0,25/0,95 kW	3057	1380/2825	3100/6300	0,25/0,95	400	0,84/2,29	125	471	40	29	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 315/2 0,75 kW F300	3332	2800	5300	0,75	400	1,58	103	498	40/300	23	–		SDD 1F	1942	SDZ 1F	1943
B AMD 315/2 1,1 kW F300	3333	2790	6300	1,1	400	2,32	103	498	40/300	25	–		SDD 1F	1942	SDZ 1F	1943
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
												Pole switch surface mounted				
B AMD 315/4/2 0,2/0,8 kW F300	3335	1400/2820	3200/5300	0,2/0,8	400	0,6/1,91	103	471	40/300	25	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 315/4/2 0,25/1,1 kW F300	3336	1390/2810	3400/6300	0,25/1,1	400	0,75/2,41	103	471	40/300	26	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 315/2 0,75 kW F400	3164	2800	5300	0,75	400	1,58	103	498	40/400	23	–		SDD 1F	1942	SDZ 1F	1943
B AMD 315/2 1,1 kW F400	3165	2790	6300	1,1	400	2,32	103	498	40/400	25	–		SDD 1F	1942	SDZ 1F	1943
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
												Pole switch surface mounted				
B AMD 315/4/2 0,2/0,8 kW F400	3177	1400/2820	3200/5300	0,2/0,8	400	0,6/1,91	103	471	40/400	25	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 315/4/2 0,25/1,1 kW F400	3178	1390/2810	3400/6300	0,25/1,1	400	0,75/2,41	103	471	40/400	26	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).
³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.
⁵⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

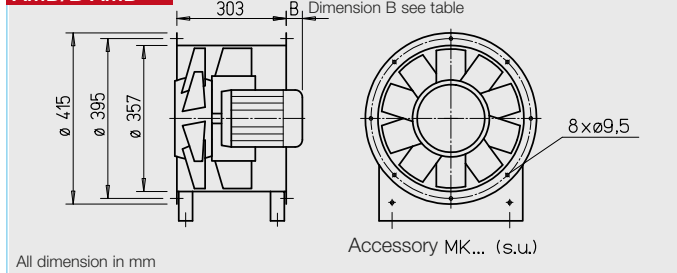


(Fig. incl. mounting feet (MK, accessories))

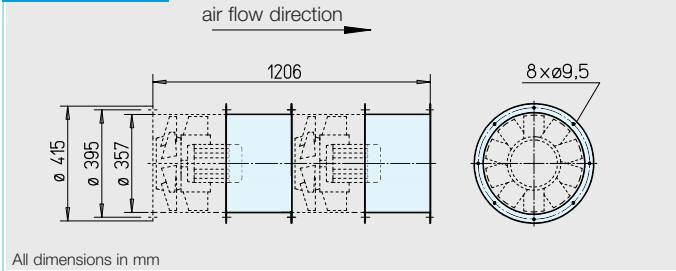
Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

AMD/B AMD



MP-Z 355



Application, casing, air flow direction, etc.
see page 46.

Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

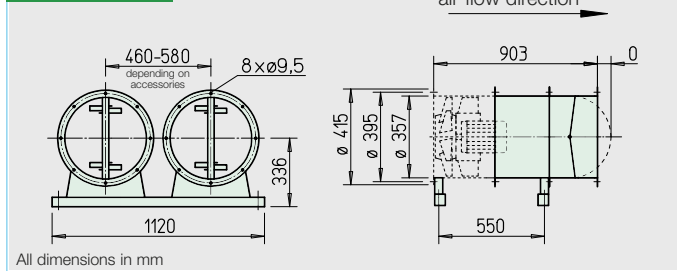
Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

MP-P 355



Mounting package MP-Z for two-stage Z-unit

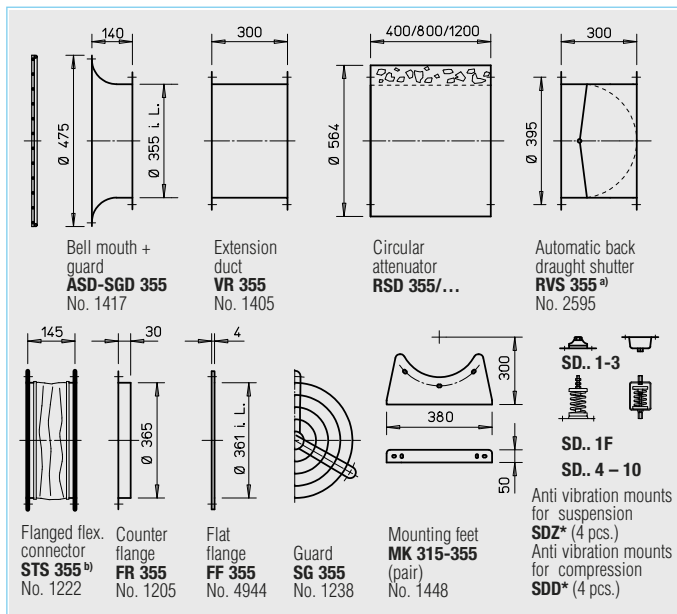
To arrange two identical fans in a row, for highest pressure rates. Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 8 kg

MP-Z 355 Ref. No. 4904

Mounting package MP-P for parallel P-unit

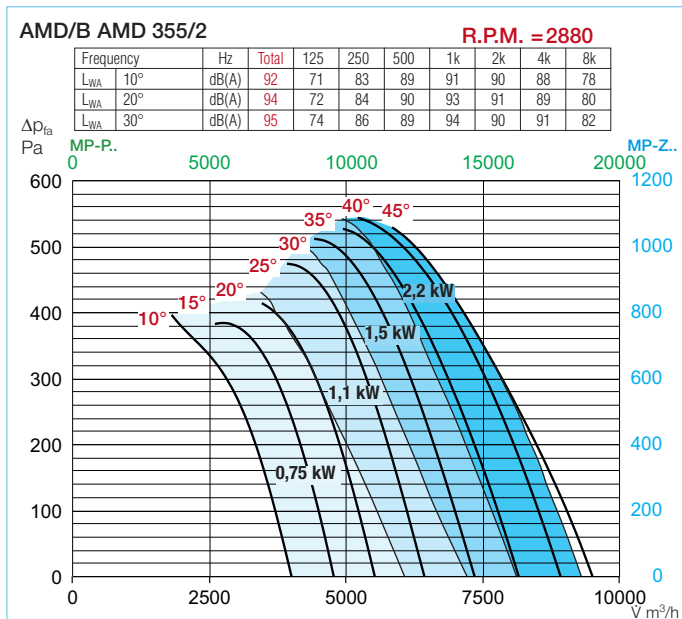
To arrange two identical fans side by side, for highest air flow rates. Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 27 kg

MP-P 355 Ref. No. 4888



a) For motorised shutters, for ventilation operation, see accessory pages

b) Type for B AMD: STSB 355 F400, No. 1474 * Type assignment see table, last column



Information	Page
Technical description	46
Design of systems	3 on

Special executions	Pages
Special execution with inspection opening (additional price) on request.	
Special execution with PTC-resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch MSA, always specify when ordering.	

Accessory details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning systems, circuitry and control technology	152 on
Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch	Anti vibration mounts ⁴⁾				
												min ⁻¹	V m ³ /h	kW	V	A
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 355/2 0,75 kW	3082	2880	5800	0,75	400	1,68	70	470	40	27	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
AMD 355/2 1,1 kW	3083	2840	6930	1,1	400	2,37	70	470	40	29	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
AMD 355/2 1,5 kW	3084	2890	8400	1,5	400	3,16	90	470	40	33	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
AMD 355/2 2,2 kW	3085	2890	9600	2,2	400	4,48	120	470	40	37	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
													Pole switch surface mounted			
AMD 355/4/2 0,17/0,75 kW	3086	1360/2825	2800/5800	0,17/0,75	400	0,64/1,83	70	471	40	31	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
AMD 355/4/2 0,25/0,95 kW	3087	1380/2825	3200/6500	0,25/0,95	400	0,84/2,29	70	471	40	33	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
AMD 355/4/2 0,3/1,4 kW	3088	1380/2840	4000/8100	0,3/1,4	400	0,82/3,33	90	471	40	38	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
AMD 355/4/2 0,4/1,9 kW	3093	1380/2840	4600/9300	0,4/1,9	400	1,07/4,14	120	471	40	46	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 355/2 0,75 kW F300	3337	2800	5600	0,75	400	1,58	59	498	40/300	28	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 1,1 kW F300	3338	2790	6800	1,1	400	2,32	59	498	40/300	29	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 1,5 kW F300	3339	2830	8300	1,5	400	3,14	59	498	40/300	33	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 2,2 kW F300	3340	2840	9500	2,2	400	4,58	68	498	40/300	36	–	–	SDD 1F	1942	SDZ 1F	1943
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
													Pole switch surface mounted			
B AMD 355/4/2 0,2/0,8 kW F300	3342	1400/2820	2900/5600	0,2/0,8	400	0,6/1,91	59	471	40/300	29	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0,25/1,1 kW F300	3343	1390/2810	3500/6800	0,25/1,1	400	0,75/2,41	59	471	40/300	30	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0,37/1,5 kW F300	3344	1440/2900	4200/8300	0,37/1,5	400	1,25/3,54	68	471	40/300	35	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0,5/2,2 kW F300	3345	1420/2850	4800/9500	0,5/2,2	400	1,54/4,63	93	471	40/300	37	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 355/2 0,75 kW F400	3179	2800	5600	0,75	400	1,58	59	498	40/400	28	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 1,1 kW F400	3180	2790	6800	1,1	400	2,32	59	498	40/400	29	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 1,5 kW F400	3181	2830	8300	1,5	400	3,14	59	498	40/400	33	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 2,2 kW F400	3182	2840	9500	2,2	400	4,58	68	498	40/400	36	–	–	SDD 1F	1942	SDZ 1F	1943
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
													Pole switch surface mounted			
B AMD 355/4/2 0,2/0,8 kW F400	3183	1400/2820	2900/5600	0,2/0,8	400	0,6/1,91	59	471	40/400	29	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0,25/1,1 kW F400	3184	1390/2810	3500/6800	0,25/1,1	400	0,75/2,41	59	471	40/400	30	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0,37/1,5 kW F400	3185	1440/2900	4200/8300	0,37/1,5	400	1,25/3,54	68	471	40/400	35	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0,5/2,2 kW F400	3186	1420/2850	4800/9500	0,5/2,2	400	1,54/4,63	93	471	40/400	37	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.

⁵⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

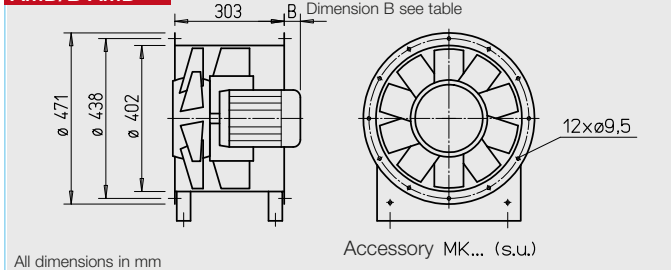


(Fig. incl. mounting feet (MK, accessories))

■ Certification

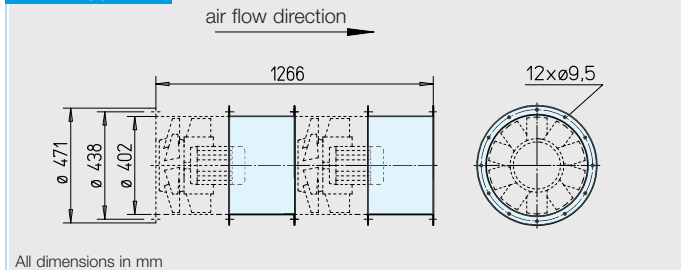
The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

AMD/B AMD



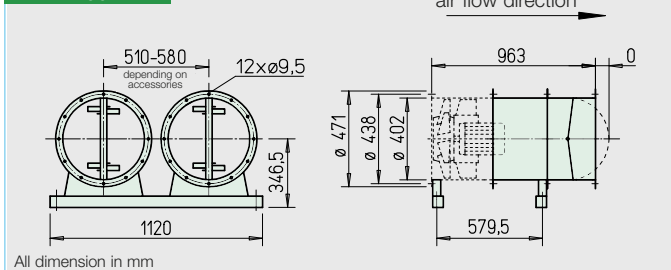
All dimensions in mm

MP-Z 400



All dimensions in mm

MP-P 400



All dimension in mm

■ Application, casing, air flow direction, etc.
see page 46.

■ Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

■ Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

■ Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

■ Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

■ Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

■ Mounting package MP-Z for two-stage Z-unit

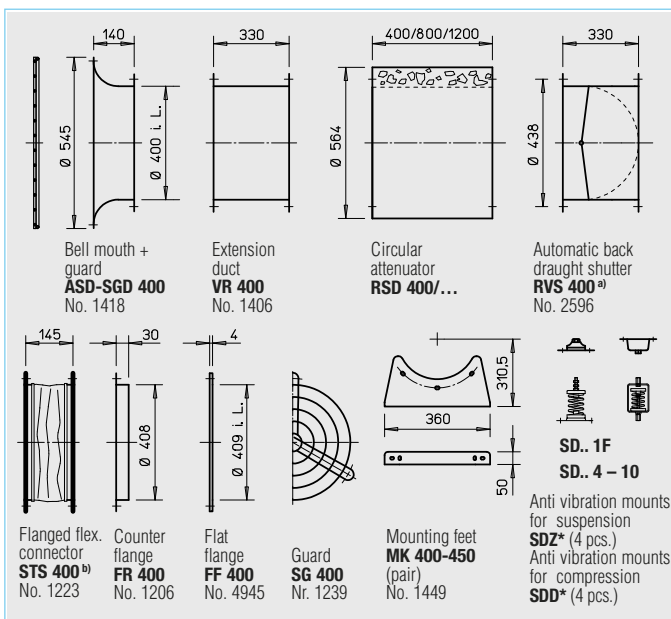
To arrange two identical fans in a row, for highest pressure rates. Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 12 kg

MP-Z 400 Ref. No. 4905

■ Mounting package MP-P for parallel P-unit

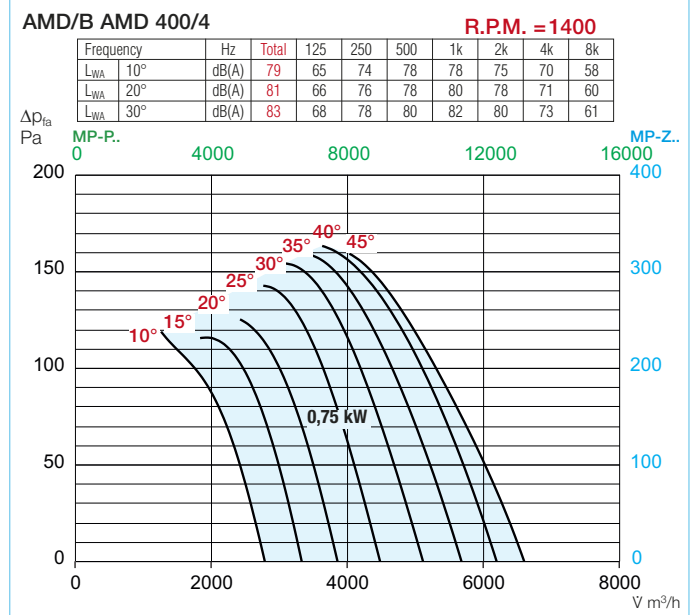
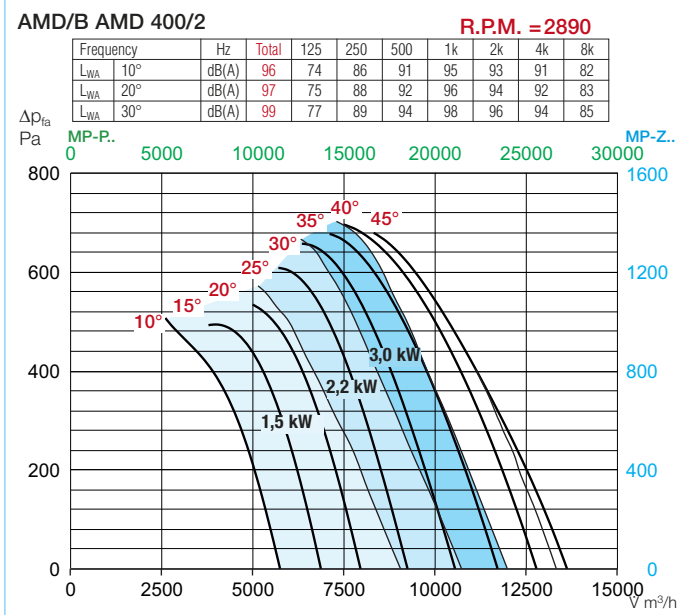
To arrange two identical fans side by side, for highest air flow rates. Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 35 kg

MP-P 400 Ref. No. 4889



a) For motorised shutters, for ventilation operation, see accessory pages

b) Type for B AMD: STSB 400 F400, No. 14743 * Type assignment see table, last column



Information	Page	Accessory details	Pages
Technical description	46	Mounting accessories	146 on
Design of systems	3 on	Attenuators	151
Special executions		Gas warning systems, circuitry and control technology	152 on
Special execution with inspection opening (additional price) on request. Special execution with resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch, always specify when ordering.		Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch		Anti vibration mounts ⁴⁾			
											Type	Ref. No.	Type	Ref. No.		
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 400/4 0,75 kW	3102	1400	6900	0,75	400	1,78	80	470	40	34	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
AMD 400/2 1,5 kW	3098	2890	8200	1,5	400	3,16	100	470	40	37	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
AMD 400/2 2,2 kW	3099	2890	10800	2,2	400	4,48	130	470	40	41	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
AMD 400/2 3 kW	3100	2891	12300	3	400	5,86	170	470	40	48	MSA ⁵⁾	1289	SDD 1	1452	SDZ 1	1454
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
Pole switch surface mounted																
AMD 400/4/2 0,4/1,9 kW	3101	1380/2840	4600/9500	0,4/1,9	400	1,07/4,14	130	471	40	45	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
AMD 400/4/2 0,65/2,5 kW	3104	1400/2840	5400/11200	0,65/2,5	400	1,76/5,06	170	471	40	55	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
AMD 400/4/2 0,8/3,1 kW	3105	1400/2880	6000/12400	0,8/3,1	400	2,11/6,27	170	471	40	55	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 400/4 0,75 kW F300	3350	1410	7000	0,75	400	1,63	59	498	40/300	32	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 1,5 kW F300	3346	2830	8500	1,5	400	3,14	78	498	40/300	37	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 2,2 kW F300	3347	2840	10600	2,2	400	4,58	103	498	40/300	40	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 3 kW F300	3348	2880	12300	3	400	5,92	140	498	40/300	48	–	–	SDD 1F	1942	SDZ 1F	1943
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
Pole switch surface mounted																
B AMD 400/4/2 0,37/1,5 kW F300	3349	1435/2900	4100/8400	0,37/1,5	400	1,25/3,54	78	471	40/300	39	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 400/4/2 0,5/2,2 kW F300	3351	1420/2845	5300/10600	0,5/2,2	400	1,54/4,63	103	471	40/300	41	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 400/4/2 0,8/3,1 kW F300	3352	1430/2890	6100/12300	0,8/3,1	400	1,99/6,2	140	471	40/300	52	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 400/4 0,75 kW F400	3195	1410	7000	0,75	400	1,63	59	498	40/400	32	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 1,5 kW F400	3188	2830	8500	1,5	400	3,14	78	498	40/400	37	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 2,2 kW F400	3189	2840	10600	2,2	400	4,58	103	498	40/400	40	–	–	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 3 kW F400	3190	2880	12300	3	400	5,92	140	498	40/400	48	–	–	SDD 1F	1942	SDZ 1F	1943
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
Pole switch surface mounted																
B AMD 400/4/2 0,37/1,5 kW F400	3191	1440/2900	4100/8400	0,37/1,5	400	1,25/3,54	78	471	40/400	39	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 400/4/2 0,5/2,2 kW F400	3196	1420/2840	5300/10600	0,5/2,2	400	1,54/4,63	103	471	40/400	41	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 400/4/2 0,8/3,1 kW F400	3197	1440/2890	6100/12300	0,8/3,1	400	1,99/6,2	140	471	40/400	52	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.

⁵⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

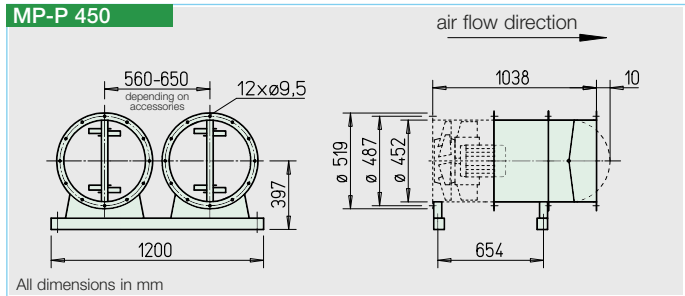
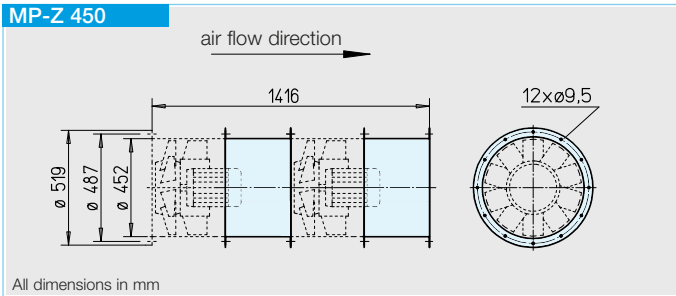
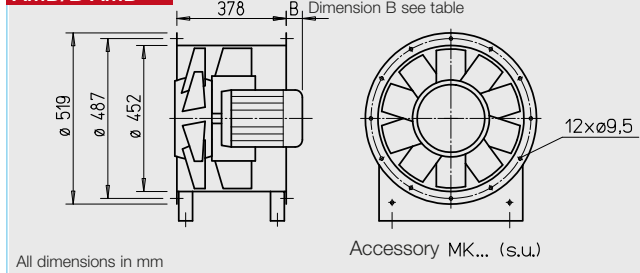


((Fig. incl. mounting feet (MK, accessories))

Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

AMD/B AMD



Application, casing, air flow direction, etc.
see page 46.

Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

Mounting package MP-Z for two-stage Z-unit

To arrange two identical fans in a row, for highest pressure rates.

Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 14 kg

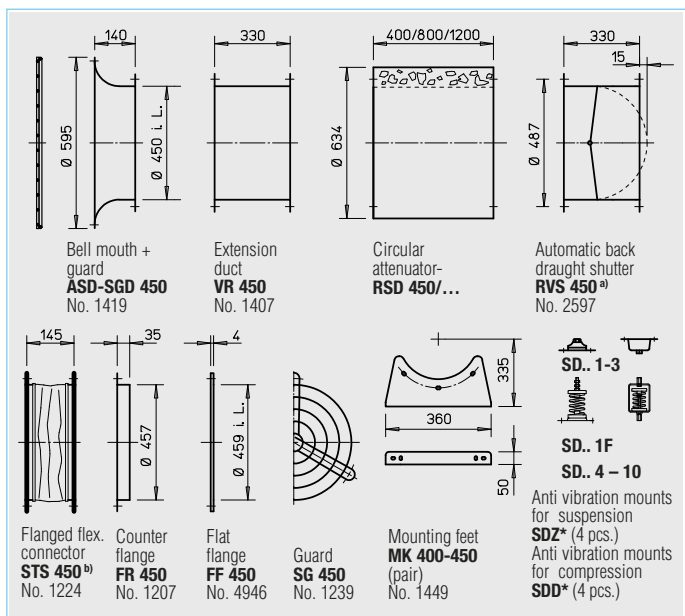
MP-Z 450 Ref. No. 4906

Mounting package MP-P for parallel P-unit

To arrange two identical fans side by side, for highest air flow rates.

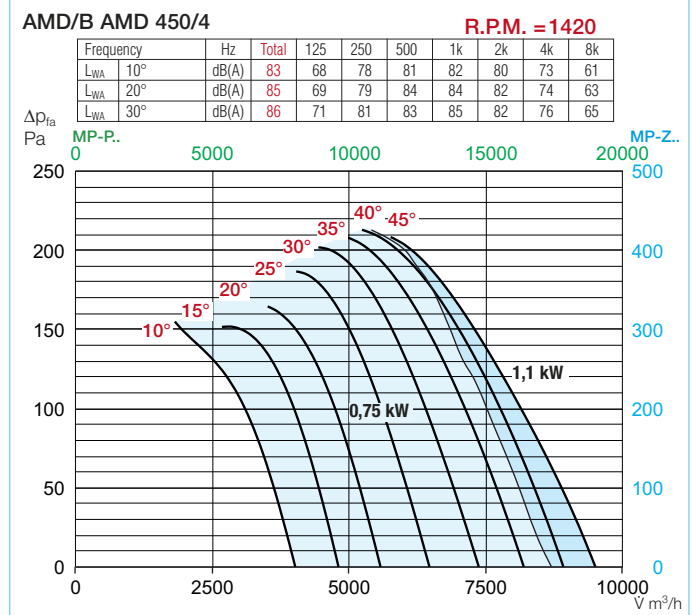
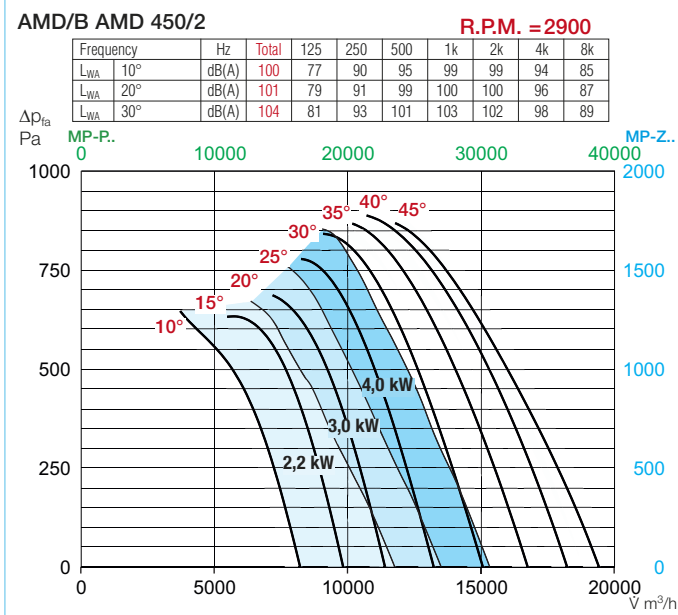
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 43 kg

MP-P 450 Ref. No. 4890



^{a)} For motorised shutters, for ventilation operation, see accessory pages

^{b)} Type for B AMD: STSB 450 F400, No. 14742 * Type assignment see table, last column



Information	Page	Accessory details	Pages
Technical description	46	Mounting accessories	146 on
Design of systems	3 on	Attenuators	151
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Special execution with inspection opening (additional price) on request. Special execution with resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch.		Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch		Anti vibration mounts ⁴⁾	
											Type	Ref. No.	Type	Ref. No.
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55		min ⁻¹	V m ³ /h	kW	V	A	mm	No.	+°C	ca. kg				
AMD 450/4 0,75 kW	3109	1400	9000	0,75	400	1,78	15	470	40	39	MSA ⁶⁾	1289	SDD 1	1452 SDZ 1 1454
AMD 450/4 1,1 kW	3110	1440	10200	1,1	400	2,53	40	470	40	43	MSA ⁶⁾	1289	SDD 1	1452 SDZ 1 1454
AMD 450/2 2,2 kW	3106	2890	10900	2,2	400	4,48	65	470	40	46	MSA ⁶⁾	1289	SDD 1	1452 SDZ 1 1454
AMD 450/2 3 kW	3107	2891	12400	3	400	5,86	105	470	40	53	MSA ⁶⁾	1289	SDD 1	1452 SDZ 1 1454
AMD 450/2 4 kW	3108	2914	15000	4	400 ⁵⁾	7,36	155	498	40	56	MSA ⁶⁾	1289	SDD 1	1452 SDZ 1 1454
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55														
AMD 450/4/2 0,65/2,5 kW	3121	1400/2840	5700/11700	0,65/2,5	400	1,76/5,06	40	471	40	60	PDA 12 ³⁾	5081	SDD 1	1452 SDZ 1 1454
AMD 450/4/2 0,8/3,1 kW	3111	1400/2880	6200/12400	0,8/3,1	400	2,11/6,27	65	471	40	60	PDA 12 ³⁾	5081	SDD 1	1452 SDZ 1 1454
AMD 450/4/2 1,1/4,4 kW	3113	1400/2890	7700/15800	1,1/4,4	400	2,68/8,8	155	471	40	66	PDA 12 ³⁾	5081	SDD 1	1452 SDZ 2 1455
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55														
B AMD 450/4 0,75 kW F300	3356	1410	9200	0,75	400	1,63	0	498	40/300	37	-	-	SDD 1F	1942 SDZ 1F 1943
B AMD 450/4 1,1 kW F300	3357	1440	9900	1,1	400	2,40	16	498	40/300	40	-	-	SDD 1F	1942 SDZ 1F 1943
B AMD 450/2 2,2 kW F300	3353	2840	11200	2,2	400	4,58	41	498	40/300	45	-	-	SDD 1F	1942 SDZ 1F 1943
B AMD 450/2 3 kW F300	3354	2880	12700	3	400	5,92	78	470	40/300	53	-	-	SDD 1F	1942 SDZ 1F 1943
B AMD 450/2 4 kW F300	3355	2870	15400	4	400 ⁵⁾	7,72	96	498	40/300	62	-	-	SDD 1F	1942 SDZ 1F 1943
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55														
B AMD 450/4/2 0,5/2,2 kW F300	3358	1420/2840	5600/11200	0,5/2,2	400	1,54/4,63	41	471	40/300	46	PDA 12 ³⁾	5081	SDD 1F	1942 SDZ 1F 1943
B AMD 450/4/2 0,8/3,1 kW F300	3359	1440/2890	6400/12700	0,8/3,1	400	1,99/6,2	78	471	40/300	57	PDA 12 ³⁾	5081	SDD 1F	1942 SDZ 1F 1943
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55														
B AMD 450/4 0,75 kW F400	3205	1410	9200	0,75	400	1,63	0	498	40/400	37	-	-	SDD 1F	1942 SDZ 1F 1943
B AMD 450/4 1,1kW F400	3206	1440	9900	1,1	400	2,4	16	498	40/400	40	-	-	SDD 1F	1942 SDZ 1F 1943
B AMD 450/2 2,2 kW F400	3198	2840	11200	2,2	400	4,58	41	498	40/400	45	-	-	SDD 1F	1942 SDZ 1F 1943
B AMD 450/2 3 kW F400	3199	2880	12700	3	400	5,92	78	498	40/400	53	-	-	SDD 1F	1942 SDZ 1F 1943
B AMD 450/2 4 kW F400	3200	2870	15400	4	400 ⁵⁾	7,72	96	498	40/400	62	-	-	SDD 1F	1942 SDZ 1F 1943
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55														
B AMD 450/4/2 0,5/2,2 kW F400	3207	1420/2840	5600/11200	0,5/2,2	400	1,54/4,63	41	471	40/400	46	PDA 12 ³⁾	5081	SDD 1F	1942 SDZ 1F 1943
B AMD 450/4/2 0,8/3,1 kW F400	3208	1440/2890	6400/12700	0,8/3,1	400	1,99/6,2	78	471	40/400	57	PDA 12 ³⁾	5081	SDD 1F	1942 SDZ 1F 1943

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).



Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

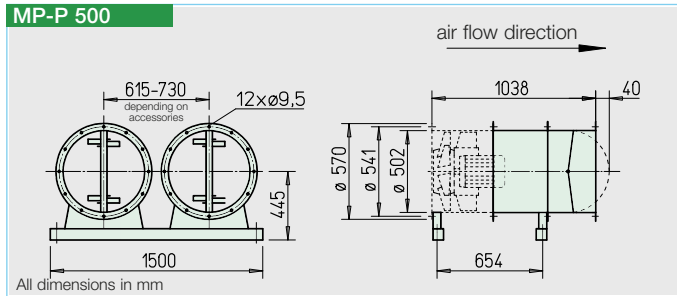
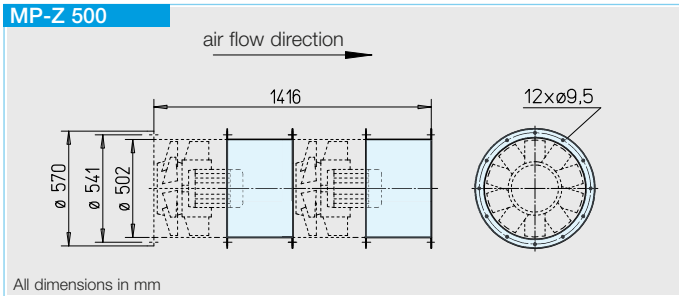
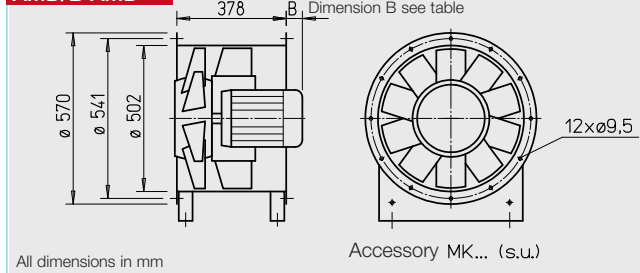
Information

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Special executions

see page 55.

AMD/B AMD



Application, casing, air flow direction, etc.
see page 46.

Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

Mounting package MP-Z for two-stage Z-unit

To arrange two identical fans in a row, for highest pressure rates.

Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 15 kg

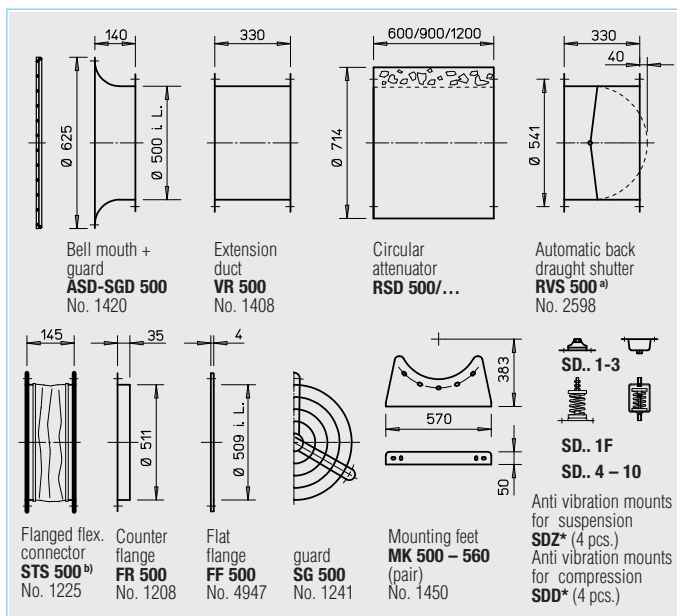
MP-Z 500 Ref. No. 4907

Mounting package MP-P for parallel P-unit

To arrange two identical fans side by side, for highest air flow rates.

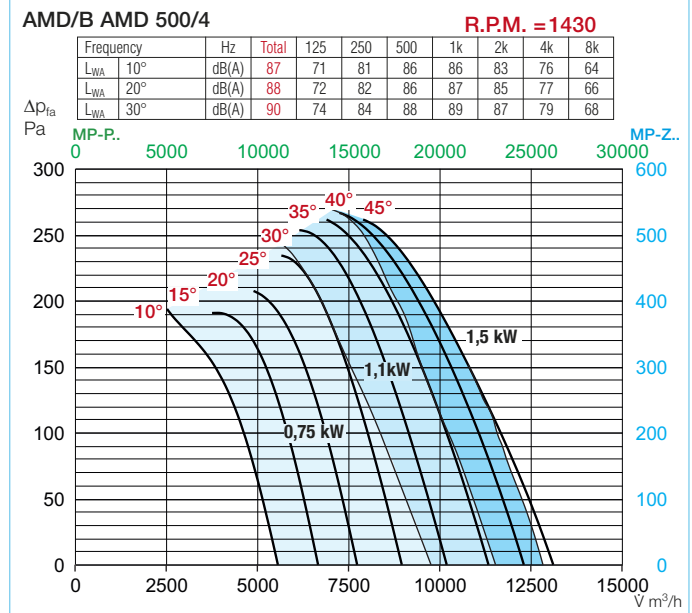
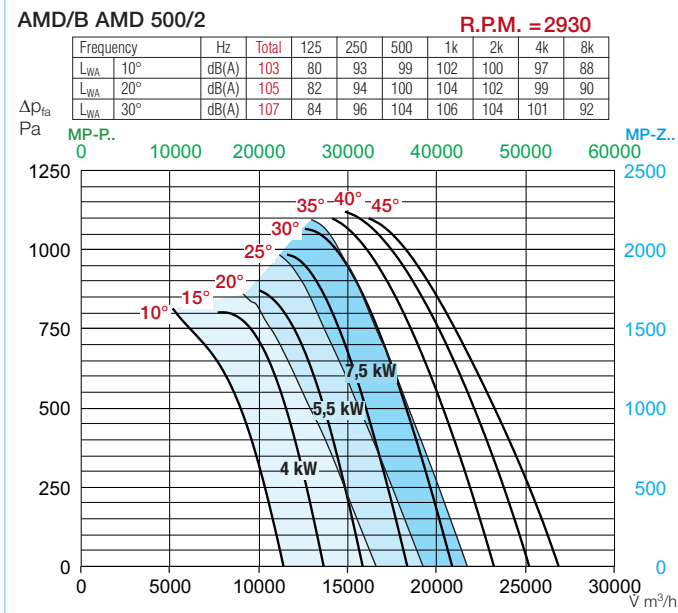
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 55 kg

MP-P 500 Ref. No. 4891



^{a)} For motorised shutters, for ventilation operation, see accessory pages

^{b)} Type for B AMD: STSB 500 F400, No. 1915 * Type assignment see table, last column



Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch	Anti vibration mounts ⁴⁾			
												Compression		Suspension	
		min ⁻¹	V m ³ /h	kW	V	A	mm	No.	+°C	ca. kg	Type Ref. No.	Type Ref. No.	Type Ref. No.	Type Ref. No.	
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
AMD 500/4 0,75 kW	3118	1400	9500	0,75	400	1,78	35	470	40	45	MSA ⁶⁾ 1289	SDD 1 1452	SDZ 1 1454		
AMD 500/4 1,1 kW	3119	1440	11600	1,1	400	2,53	60	470	40	48	MSA ⁶⁾ 1289	SDD 1 1452	SDZ 1 1454		
AMD 500/4 1,5 kW	3122	1445	13300	1,5	400	3,39	85	470	40	51	MSA ⁶⁾ 1289	SDD 1 1452	SDZ 1 1454		
AMD 500/2 4 kW	3115	2914	15700	4	400 ⁵⁾	7,36	175	498	40	62	MSA ⁶⁾ 1289	SDD 1 1452	SDZ 2 1455		
AMD 500/2 5,5 kW	3116	2937	17600	5,5	400 ⁵⁾	10,6	180	498	40	78	MSA ⁶⁾ 1289	SDD 1 1452	SDZ 2 1455		
AMD 500/2 7,5 kW	3117	2940	21600	7,5	400 ⁵⁾	13,9	220	498	40	83	MSA ⁶⁾ 1289	SDD 2 1453	SDZ 2 1455		
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55 Pole switch surface mounted															
AMD 500/8/4 0,22/1,0 kW	3275	690/1400	5700/11400	0,22/1,0	400	0,88/2,35	60	471	40	53	PDA 12 ³⁾ 5081	SDD 1 1452	SDZ 1 1454		
AMD 500/8/4 0,3/1,3 kW	3276	690/1400	6300/12700	0,3/1,3	400	1,18/3,1	85	471	40	56	PDA 12 ³⁾ 5081	SDD 1 1452	SDZ 1 1454		
AMD 500/4/2 1,4/5,9 kW	3273	1400/2900	9100/18600	1,4/5,9	400	3,33/11,3	180	471	40	98	PDA 12 ³⁾ 5081	SDD 2 1453	SDZ 2 1455		
AMD 500/4/2 2,0/8,0 kW	3274	1420/2900	10900/22600	2,0/8,0	400	4,52/14,9	220	471	40	109	PDA 25 5081	SDD 2 1453	SDZ 2 1455		
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
B AMD 500/4 0,75 kW F300	3363	1410	10100	0,75	400	1,63	18	498	40/300	43	–	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/4 1,1 kW F300	3364	1440	11700	1,1	400	2,4	37	498	40/300	49	–	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/4 1,5 kW F300	3365	1440	13300	1,5	400	3,26	62	498	40/300	58	–	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/2 4 kW F300	3360	2870	16100	4	400 ⁵⁾	7,72	117	498	40/300	68	–	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/2 5,5 kW F300	3361	2910	18100	5,5	400 ⁵⁾	10,5	153	498	40/300	72	–	SDD 4 1944	SDZ 4 1945		
B AMD 500/2 7,5 kW F300	3362	2910	21800	7,5	400 ⁵⁾	14,1	192	498	40/300	90	–	SDD 4 1944	SDZ 4 1945		
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55 Pole switch surface mounted															
B AMD 500/8/4 0,3/1,2 kW F300	3368	700/1430	5800/11700	0,3/1,2	400	1,95/2,92	62	471	40/300	50	PDA 12 ³⁾ 5081	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/8/4 0,55/2,2 kW F300	3369	700/1430	6500/13300	0,55/2,2	400	2,0/4,84	99	471	40/300	60	PDA 12 ³⁾ 5081	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/4/2 1,1/4,4 kW F300	3366	1440/2890	8200/16400	1,1/4,4	400	2,79/8,59	117	471	40/300	73	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945		
B AMD 500/4/2 2,0/8,0 kW F300	3367	1470/2930	11400/22700	2,0/8,0	400	4,83/15,3	153	471	40/300	97	PDA 25 5060	SDD 4 1944	SDZ 4 1945		
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
B AMD 500/4 0,75 kW F400	3213	1410	10100	0,75	400	1,63	18	498	40/400	43	–	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/4 1,1 kW F400	3214	1440	11700	1,1	400	2,4	37	498	40/400	49	–	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/4 1,5 kW F400	3215	1440	13300	1,5	400	3,26	62	498	40/400	58	–	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/2 4 kW F400	3210	2870	16100	4	400 ⁵⁾	7,72	117	498	40/400	68	–	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/2 5,5 kW F400	3211	2910	18100	5,5	400 ⁵⁾	10,5	153	498	40/400	72	–	SDD 4 1944	SDZ 4 1945		
B AMD 500/2 7,5 kW F400	3212	2910	21800	7,5	400 ⁵⁾	14,1	192	498	40/400	90	–	SDD 4 1944	SDZ 4 1945		
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55 Pole switch surface mounted															
B AMD 500/8/4 0,3/1,2 kW F400	3218	700/1430	5800/11700	0,3/1,2	400	1,95/2,92	62	471	40/400	50	PDA 12 ³⁾ 5081	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/8/4 0,55/2,2 kW F400	3219	700/1430	6500/13300	0,55/2,2	400	2,0/4,84	99	471	40/400	60	PDA 12 ³⁾ 5081	SDD 1F 1942	SDZ 1F 1943		
B AMD 500/4/2 1,1/4,4 kW F400	3216	1440/2890	8200/16400	1,1/4,4	400	2,79/8,59	117	471	40/400	73	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945		
B AMD 500/4/2 2,0/8,0 kW F400	3217	1470/2930	11380/22700	2,0/8,0	400	4,83/15,3	153	471	40/400	97	PDA 25 5060	SDD 4 1944	SDZ 4 1945		

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).



((Fig. incl. mounting feet (MK, accessories))

Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

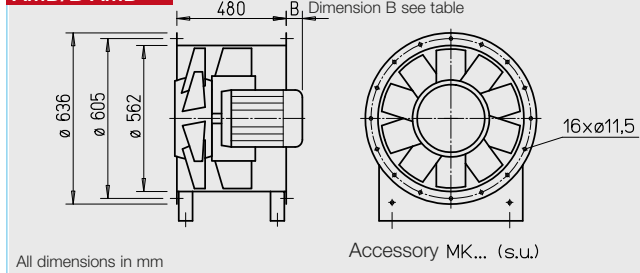
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Special executions

see page 55.

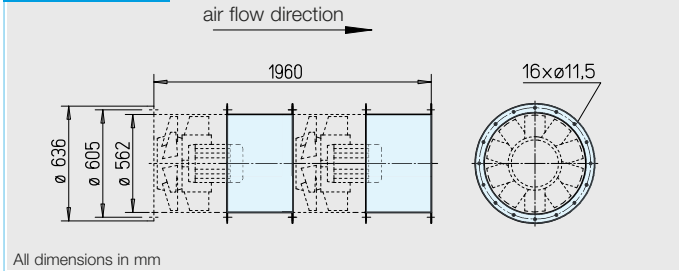
AMD/B AMD



All dimensions in mm

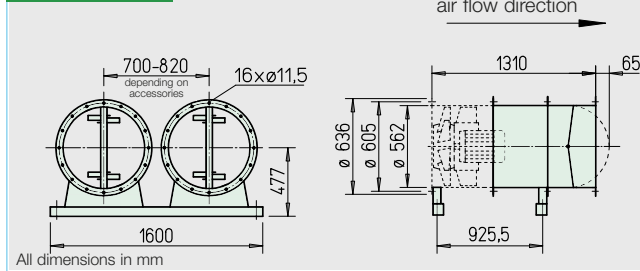
Accessory MK... (s.u.)

MP-Z 560



All dimensions in mm

MP-P 560



All dimensions in mm

Application, casing, air flow direction, etc.
see page 46.

Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

Mounting package MP-Z for two-stage Z-unit

To arrange two identical fans in a row, for highest pressure rates.

Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 32 kg

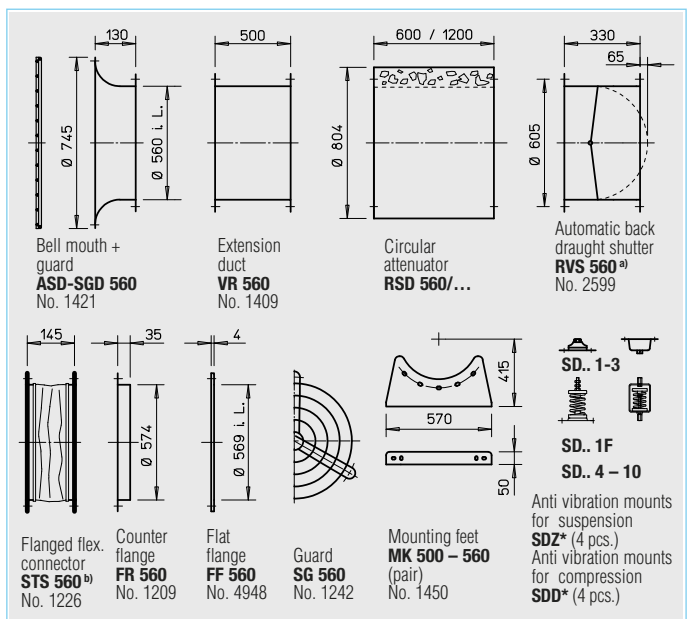
MP-Z 560 Ref. No. 4908

Mounting package MP-P for parallel P-unit

To arrange two identical fans side by side, for highest air flow rates.

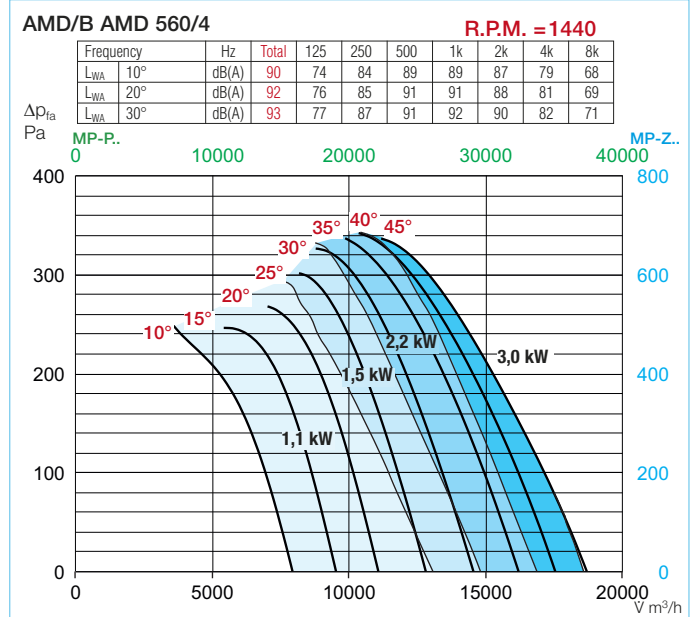
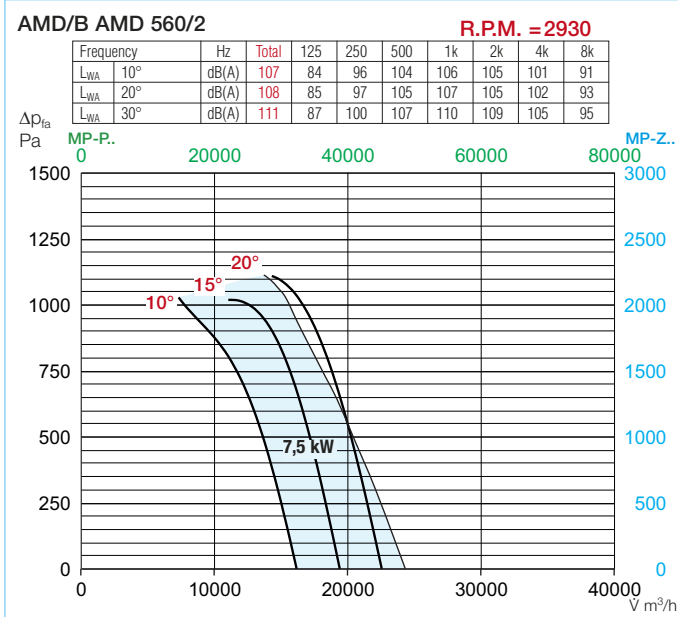
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs) and assembly kits. Weight: 82 kg

MP-P 560 Ref. No. 4892



^{a)} For motorised shutters, for ventilation operation, see accessory pages

^{b)} Type for B AMD: STSB 560 F400, No. 1916 * Type assignment see table, last column



Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch	Anti vibration mounts ⁴⁾				
												min ⁻¹	V m ³ /h	kW	V	A
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 560/4 1,1 kW	3281	1440	11900	1,1	400	2,53	0	470	40	58	MSA ⁶⁾ 1289	SDD 1	1452	SDZ 1	1454	
AMD 560/4 1,5 kW	3282	1445	14800	1,5	400	3,39	0	470	40	61	MSA ⁶⁾ 1289	SDD 1	1452	SDZ 2	1455	
AMD 560/4 2,2 kW	3285	1440	17600	2,2	400	4,64	40	470	40	71	MSA ⁶⁾ 1289	SDD 1	1452	SDZ 2	1455	
AMD 560/4 3 kW	3286	1440	19600	3	400	6,18	40	470	40	77	MSA ⁶⁾ 1289	SDD 1	1452	SDZ 2	1455	
AMD 560/2 7,5 kW	3279	2940	22000	7,5	400 ⁵⁾	13,9	100	498	40	93	MSA ⁶⁾ 1289	SDD 2	1453	SDZ 2	1455	
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
AMD 560/8/4 0,3/1,3 kW	3288	690/1400	6650/13290	0,3/1,3	400	0,88/3,35	0	471	40	66	PDA 12 ³⁾ 5081	SDD 1	1452	SDZ 2	1455	
AMD 560/8/4 0,55/2,0 kW	3272	690/1400	8150/16500	0,55/2,0	400	1,18/3,1	0	471	40	76	PDA 12 ³⁾ 5081	SDD 1	1452	SDZ 2	1455	
AMD 560/8/4 0,65/2,4 kW	3290	690/1420	8800/18200	0,65/2,4	400	2,68/4,97	40	471	40	76	PDA 12 ³⁾ 5081	SDD 1	1452	SDZ 2	1455	
AMD 560/4/2 2,0/8,0 kW	3287	1420/2900	11300/23200	2,0/8,0	400	4,52/14,9	100	471	40	119	PDA 25 5060	SDD 2	1453	SDZ 2	1455	
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 560/4 1,1 kW F300	3391	1440	11900	1,1	400	2,4	0	498	40/300	59	–	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 1,5 kW F300	3392	1440	14700	1,5	400	3,26	0	498	40/300	68	–	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 2,2 kW F300	3393	1420	17700	2,2	400	4,64	0	498	40/300	70	–	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 3 kW F300	3394	1420	19400	3	400	6,17	13	470	40/300	73	–	SDD 4	1944	SDZ 4	1945	
B AMD 560/2 7,5 kW F300	3389	2910	22600	7,5	400 ⁵⁾	14,1	67	498	40/300	100	–	SDD 4	1944	SDZ 4	1945	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
B AMD 560/8/4 0,4/1,6 kW F300	3396	700/1420	7300/14700	0,4/1,6	400	1,69/3,8	0	471	40/300	67	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/8/4 0,55/2,2 kW F300	3397	700/1430	8700/17700	0,55/2,2	400	2,0/4,84	13	471	40/300	70	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/8/4 0,7/2,8 kW F300	3398	690/1410	9400/19200	0,7/2,8	400	2,41/6,01	13	471	40/300	73	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 560/4/2 2/8 kW F300	3395	1470/2930	11700/23200	2,0/8,0	400	4,83/15,3	67	471	40/300	107	PDA 25 5060	SDD 4	1944	SDZ 4	1945	
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 560/4 1,1 kW F400	3222	1440	11900	1,1	400	2,4	0	498	40/400	59	–	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 1,5 kW F400	3223	1440	14700	1,5	400	3,26	0	498	40/400	68	–	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 2,2 kW F400	3224	1420	17700	2,2	400	4,64	0	498	40/400	70	–	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 3 kW F400	3225	1420	19400	3	400	6,17	13	470	40/400	73	–	SDD 4	1944	SDZ 4	1945	
B AMD 560/2 7,5 kW F400	3220	2910	22600	7,5	400 ⁵⁾	14,1	67	498	40/400	100	–	SDD 4	1944	SDZ 4	1945	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
B AMD 560/8/4 0,4/1,6 kW F400	3227	700/1420	7300/14700	0,4/1,6	400	1,69/3,8	0	471	40/400	67	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/8/4 0,55/2,2 kW F400	3228	700/1430	8700/17700	0,55/2,2	400	2,0/4,84	13	471	40/400	70	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/8/4 0,7/2,8 kW F400	3229	690/1410	9400/19200	0,7/2,8	400	2,41/6,01	13	471	40/400	73	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 560/4/2 2/8 kW F400	3226	1470/2930	11700/23200	2,0/8,0	400	4,83/15,3	67	471	40/400	107	PDA 25 5060	SDD 4	1944	SDZ 4	1945	

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

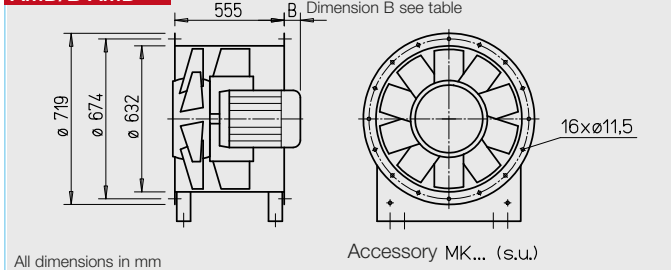


(Fig. incl. mounting feet (MK, accessories))

■ Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

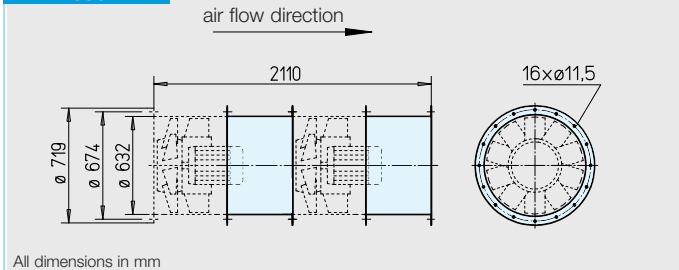
AMD/B AMD



All dimensions in mm

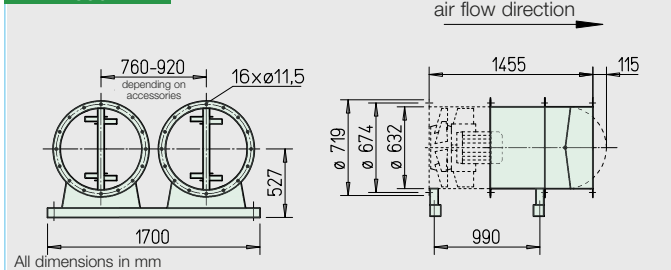
Accessory MK... (s.u.)

MP-Z 630



All dimensions in mm

MP-P 630



All dimensions in mm

■ Application, casing, air flow direction, etc.
see page 46.

■ Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

■ Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

■ Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

■ Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

■ Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

■ Mounting package MP-Z for two-stage Z-unit

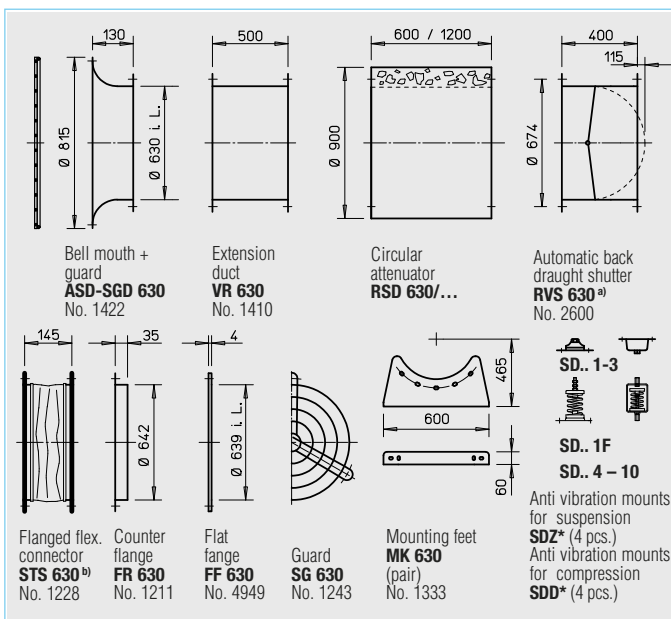
To arrange two identical fans in a row, for highest pressure rates. Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 36 kg

MP-Z 630 Ref. No. 4909

■ Mounting package MP-P for parallel P-unit

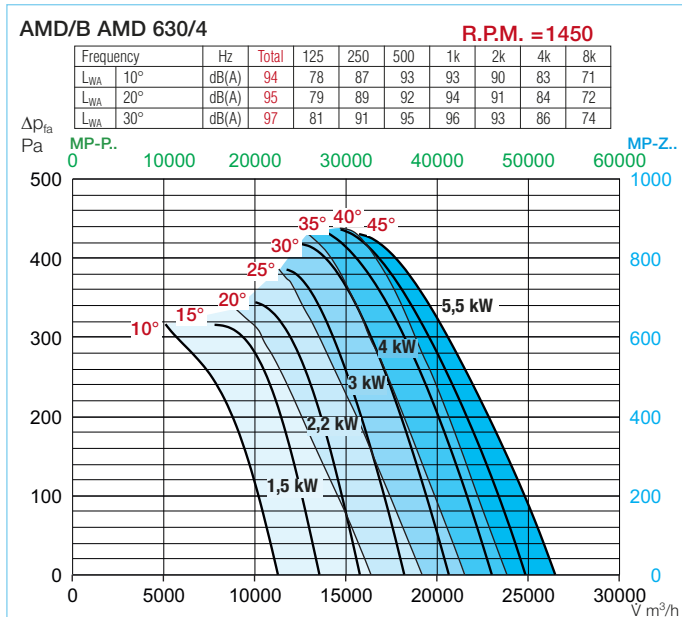
To arrange two identical fans side by side, for highest air flow rates. Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 110 kg

MP-P 630 Ref.-No. 4893



a) For motorised shutters, for ventilation operation, see accessory pages

b) Type for B AMD: STSB 630 F400, No. 1917 * Type assignment see table, last column



Information	Page
Technical description	46
Design of systems	3 on

Special executions	Pages
Special execution with inspection opening (additional price) on request.	
Special execution with PTC-resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch MSA, always specify when ordering.	

Accessory details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning systems, circuitry and control technology	152 on
Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch	Anti vibration mounts ⁴⁾				
												min ⁻¹	V m ³ /h	kW	V	A
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 630/4 1,5 kW	3291	1445	14400	1,5	400	3,39	0	470	40	74	MSA ⁶⁾ 1289	SDD 1	1452	SDZ 2	1455	
AMD 630/4 2,2 kW	3292	1440	18500	2,2	400	4,64	0	470	40	84	MSA ⁶⁾ 1289	SDD 2	1453	SDZ 2	1455	
AMD 630/4 3 kW	3293	1440	21400	3	400	6,18	0	470	40	90	MSA ⁶⁾ 1289	SDD 2	1453	SDZ 2	1455	
AMD 630/4 4 kW	3294	1445	25200	4	400 ⁵⁾	8,12	30	498	40	95	MSA ⁶⁾ 1289	SDD 2	1453	SDZ 2	1455	
AMD 630/4 5,5 kW	3295	1455	27700	5,5	400 ⁵⁾	10,9	40	498	40	105	MSA ⁶⁾ 1289	SDD 2	1453	SDZ 2	1455	
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
AMD 630/8/4 0,55/2,0 kW	3297	690/1400	8100/16700	0,55/2,0	400	1,18/3,1	0	471	40	89	PDA 12 ³⁾ 5081	SDD 2	1453	SDZ 2	1455	
AMD 630/8/4 0,9/3,2 kW	3298	700/1420	11000/21800	0,9/3,2	400	3,18/7,14	30	471	40	95	PDA 12 ³⁾ 5081	SDD 2	1453	SDZ 2	1455	
AMD 630/8/4 1,1/4,5 kW	3299	700/1440	13300/26500	1,1/4,5	400	3,57/9,32	40	471	40	121	PDA 12 ³⁾ 5081	SDD 2	1453	SDZ 2	1455	
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 630/4 1,5 kW F300	3399	1440	14400	1,5	400	3,26	0	498	40/300	81	–	SDD 4	1944	SDZ 4	1945	
B AMD 630/4 2,2 kW F300	3400	1420	18200	2,2	400	4,64	0	498	40/300	83	–	SDD 4	1944	SDZ 4	1945	
B AMD 630/4 3 kW F300	3401	1420	22100	3	400	6,17	0	470	40/300	86	–	SDD 4	1944	SDZ 4	1945	
B AMD 630/4 4 kW F300	3402	1440	26400	4	400 ⁵⁾	8,12	0	498	40/300	116	–	SDD 4	1944	SDZ 4	1945	
B AMD 630/4 5,5 kW F300	3403	1460	27700	5,5	400 ⁵⁾	10,5	11	498	40/300	83	–	SDD 4	1944	SDZ 4	1945	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
B AMD 630/8/4 0,4/1,6 kW F300	3404	700/1420	7700/15700	0,4/1,6	400	1,69/3,8	0	471	40/300	80	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 630/8/4 0,55/2,2 kW F300	3405	700/1430	9000/18200	0,55/2,2	400	2,0/4,84	0	471	40/300	86	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 630/8/4 0,7/2,8 kW F300	3406	690/1410	10500/21500	0,7/2,8	400	2,41/6,01	0	471	40/300	86	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 630/8/4 1/3,8 kW F300	3407	710/1440	12300/24800	1,0/3,8	400	2,75/8,26	0	471	40/300	96	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 630/8/4 1,3/5 kW F300	3408	730/1440	13717/27060	1,3/5,0	400	3,5/10,4	11	471	40/300	121	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 630/4 1,5 kW F400	3230	1440	14400	1,5	400	3,26	0	498	40/400	81	–	SDD 4	1944	SDZ 4	1945	
B AMD 630/4 2,2 kW F400	3231	1420	18200	2,2	400	4,64	0	498	40/400	83	–	SDD 4	1944	SDZ 4	1945	
B AMD 630/4 3 kW F400	3232	1420	22100	3	400	6,17	0	498	40/400	86	–	SDD 4	1944	SDZ 4	1945	
B AMD 630/4 4 kW F400	3233	1440	26400	4	400 ⁵⁾	8,12	0	498	40/400	116	–	SDD 4	1944	SDZ 4	1945	
B AMD 630/4 5,5 kW F400	3234	1460	27700	5,5	400 ⁵⁾	10,5	11	498	40/400	83	–	SDD 4	1944	SDZ 4	1945	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
B AMD 630/8/4 0,4/1,6 kW F400	3235	700/1420	7700/15700	0,4/1,6	400	1,7/3,8	0	471	40/400	80	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 630/8/4 0,55/2,2 kW F400	3236	700/1430	9000/18200	0,55/2,2	400	2,0/4,84	0	471	40/400	86	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 630/8/4 0,7/2,8 kW F400	3237	690/1410	10500/21500	0,7/2,8	400	2,41/6,01	0	471	40/400	86	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 630/8/4 1/3,8 kW F400	3238	710/1440	12220/24780	1,0/3,8	400	2,75/8,26	0	471	40/400	96	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 630/8/4 1,3/5 kW F400	3239	730/1440	13800/27100	1,3/5,0	400	3,5/10,4	11	471	40/400	121	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

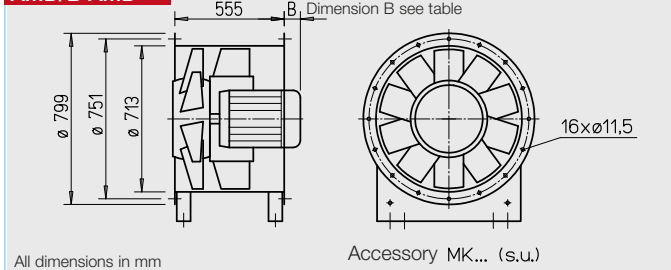


(Fig. incl. mounting feet (MK, accessories))

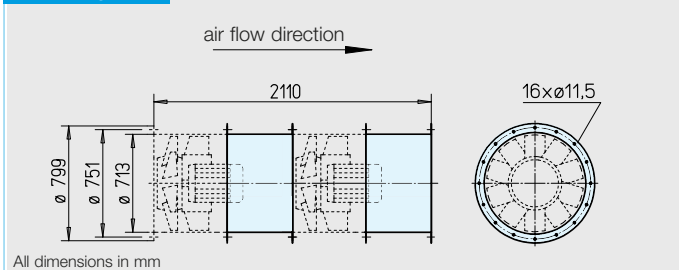
Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

AMD/B AMD



MP-Z 710



Application, casing, air flow direction, etc.
see page 46.

Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing..

Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

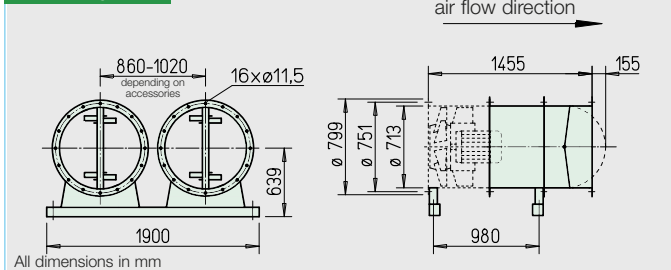
Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

MP-P 710



Mounting package MP-Z for two-stage Z-unit

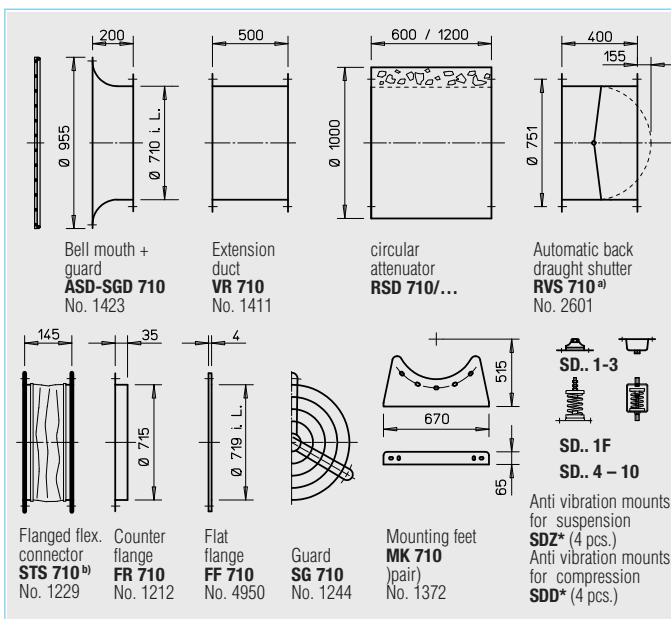
To arrange two identical fans in a row, for highest pressure rates. Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 43 kg

MP-Z 710 Ref. No. 4910

Mounting package MP-P for parallel P-unit

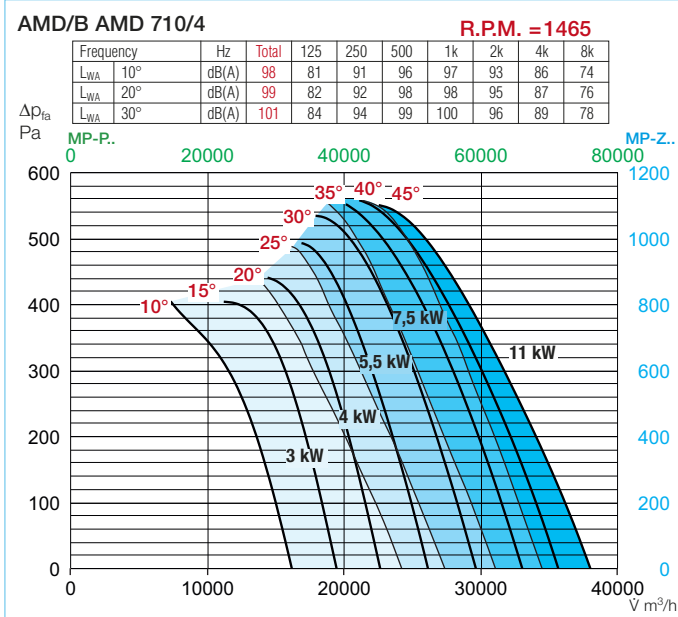
To arrange two identical fans side by side, for highest air flow rates. Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 145 kg

MP-P 710 Ref. No. 4894



^{a)} For motorised shutters, for ventilation operation, see accessory pages

^{b)} Type for B AMD: STSB 710 F400, No. 1918 * Type assignment see table, last column



Information	Page
Technical description	46
Design of systems	3 on

Special executions	Pages
Special execution with inspection opening (additional price) on request.	
Special execution with PTC-resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch MSA, always specify when ordering.	

Accessory details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning systems, circuitry and control technology	152 on
Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch		Anti vibration mounts ⁴⁾			
											Type	Ref. No.	Compression	Ref. No.	Suspension	Ref. No.
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 710/4 3 kW	3301	1440	23000	3	400	6,18	10	470	40	117	MSA ⁶⁾	1289	SDD 2	1453	SDZ 2	1455
AMD 710/4 4 kW	3302	1445	26600	4	400 ⁵⁾	8,12	60	498	40	122	MSA ⁶⁾	1289	SDD 2	1453	SDZ 2	1455
AMD 710/4 5,5 kW	3303	1455	31000	5,5	400 ⁵⁾	10,9	70	498	40	132	MSA ⁶⁾	1289	SDD 2	1453	SDZ 2	1455
AMD 710/4 7,5 kW	3304	1455	36200	7,5	400 ⁵⁾	14,5	110	498	40	144	MSA ⁶⁾	1289	SDD 2	1453	SDZ 2	1455
AMD 710/4 11 kW	3305	1460	39900	11	400 ⁵⁾	21	175	498	40	218	MSA ⁶⁾	1289	SDD 3	1367	SDZ 3	1366
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
Pole switch surface mounted																
AMD 710/8/4 0,9/3,2 kW	3306	700/1420	11100/23000	0,9/3,2	400	3,18/7,14	60	471	40	122	PDA 12 ³⁾	5081	SDD 2	1453	SDZ 2	1455
AMD 710/8/4 1,1/4,5 kW	3307	700/1440	13200/27500	1,1/4,5	400	3,57/9,32	70	471	40	148	PDA 12 ³⁾	5081	SDD 2	1453	SDZ 2	1455
AMD 710/8/4 1,5/6,3 kW	3308	700/1440	16700/34500	1,5/6,3	400	4,6/12,6	110	471	40	159	PDA 25	5060	SDD 2	1453	SDZ 2	1455
AMD 710/8/4 2,0/8,9 kW	3309	700/1440	18700/38900	2,0/8,9	400	5,25/17,8	175	471	40	228	PDA 25	5060	SDD 3	1367	SDZ 3	1366
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 710/4 3 kW F300	3420	1420	22300	3	400	6,17	0	498	40/300	113	–	–	SDD 4	1944	SDZ 4	1945
B AMD 710/4 4 kW F300	3421	1440	26600	4	400 ⁵⁾	8,12	5	498	40/300	122	–	–	SDD 4	1944	SDZ 4	1945
B AMD 710/4 5,5 kW F300	3422	1460	31400	5,5	400 ⁵⁾	10,5	41	498	40/300	143	–	–	SDD 5	1924	SDZ 5	1925
B AMD 710/4 7,5 kW F300	3423	1450	36300	7,5	400 ⁵⁾	14,1	80	498	40/300	152	–	–	SDD 5	1924	SDZ 5	1925
B AMD 710/4 11 kW F300	3424	1470	40800	11	400 ⁵⁾	21,2	158	498	40/300	185	–	–	SDD 5	1924	SDZ 5	1925
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
Pole switch surface mounted																
B AMD 710/8/4 0,7/2,8 kW F300	3507	690/1410	10700/21700	0,7/2,8	400	2,41/6,01	0	471	40/300	113	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AMD 710/8/4 1/3,8 kW F300	3508	710/1440	12300/24900	1,0/3,8	400	2,75/8,26	5	471	40/300	123	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AMD 710/8/4 1,3/5 kW F300	3509	730/1440	15300/30000	1,3/5,0	400	3,5/10,4	41	471	40/300	148	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 1,8/7,2 kW F300	3510	720/1430	18300/36000	1,8/7,2	400	4,64/14,4	78	471	40/300	160	PDA 25	5060	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 3/11 kW F300	3511	720/1450	19800/39600	3,0/11,0	400	7,0/21,0	158	471	40/300	199	PDA 25	5060	SDD 5	1924	SDZ 5	1925
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 710/4 3 kW F400	3240	1420	22300	3	400	6,17	0	498	40/400	113	–	–	SDD 4	1944	SDZ 4	1945
B AMD 710/4 4 kW F400	3241	1440	26600	4	400 ⁵⁾	8,12	5	498	40/400	122	–	–	SDD 4	1944	SDZ 4	1945
B AMD 710/4 5,5 kW F400	3243	1460	31400	5,5	400 ⁵⁾	10,5	41	498	40/400	143	–	–	SDD 5	1924	SDZ 5	1925
B AMD 710/4 7,5 kW F400	3244	1450	36300	7,5	400 ⁵⁾	14,1	41	498	40/400	152	–	–	SDD 5	1924	SDZ 5	1925
B AMD 710/4 11 kW F400	3245	1470	40800	11	400 ⁵⁾	21,2	158	498	40/400	185	–	–	SDD 5	1924	SDZ 5	1925
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
Pole switch surface mounted																
B AMD 710/8/4 0,7/2,8 kW F400	3246	690/1410	10700/21700	0,7/2,8	400	2,41/6,01	0	471	40/400	113	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AMD 710/8/4 1/3,8 kW F400	3247	710/1440	12300/24900	1,0/3,8	400	2,75/8,26	5	471	40/400	123	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AMD 710/8/4 1,3/5 kW F400	3248	730/1440	15300/30000	1,3/5,0	400	3,5/10,4	41	471	40/400	148	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 1,8/7,2 kW F400	3249	720/1430	18300/36000	1,8/7,2	400	4,64/14,4	78	471	40/400	160	PDA 25	5060	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 3/11 kW F400	3250	720/1450	19700/39540	3,0/11,0	400	7,0/21,0	158	471	40/400	199	PDA 25	5060	SDD 5	1924	SDZ 5	1925

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

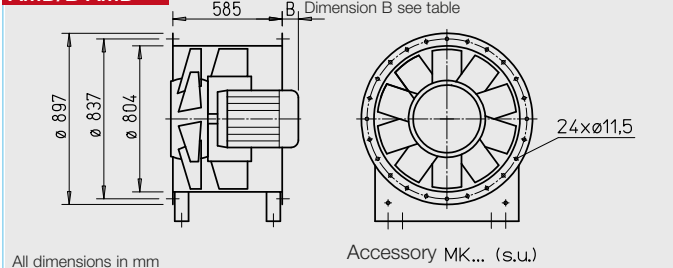


(Fig. incl. mounting feet (MK, accessories))

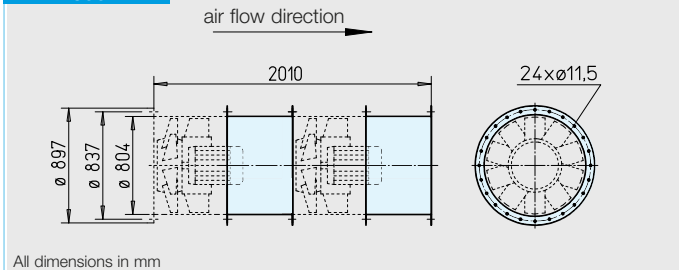
■ Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

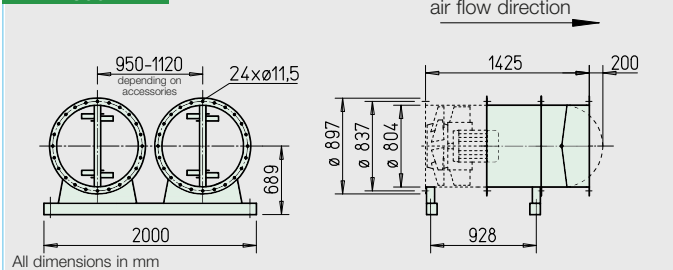
AMD/B AMD



MP-Z 800



MP-P 800



■ Application, casing, air flow direction, etc.
see page 46.

■ Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

■ Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

■ Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

■ Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

■ Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

■ Mounting package MP-Z for two-stage Z-unit

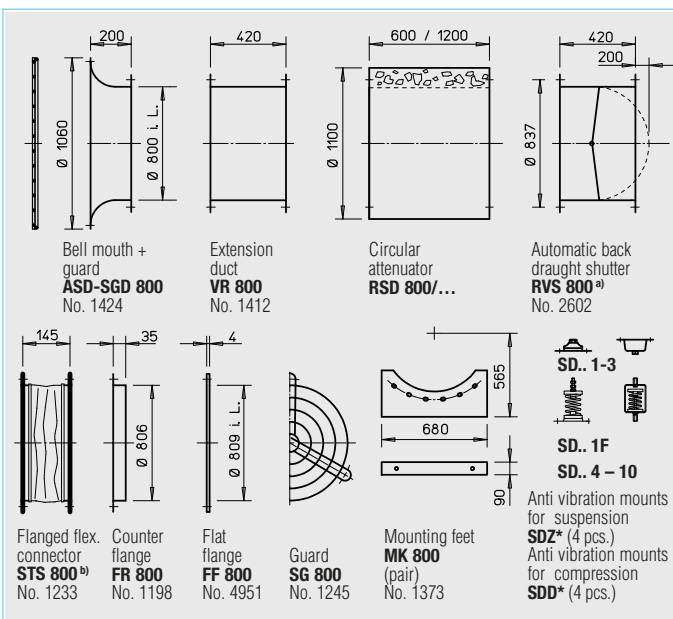
To arrange two identical fans in a row, for highest pressure rates. Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 60 kg

MP-Z 800 Ref. No. 4911

■ Mounting package MP-P for parallel P-unit

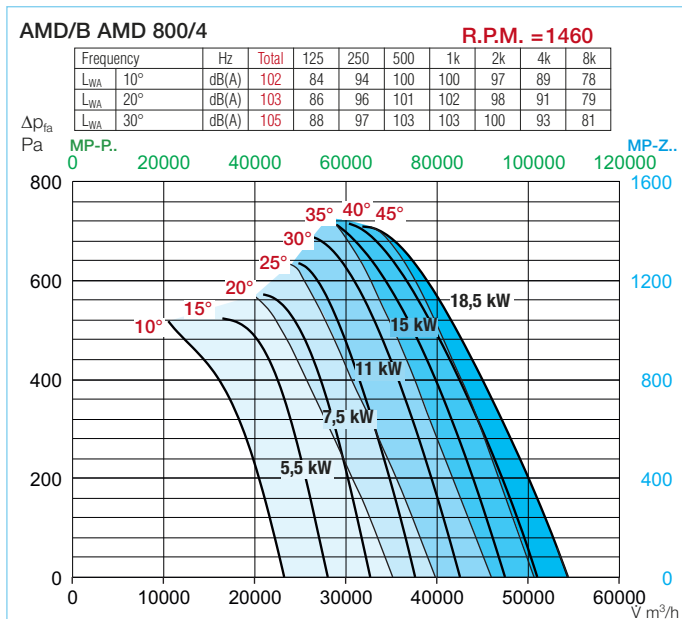
To arrange two identical fans side by side, for highest air flow rates. Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 205 kg

MP-P 800 Ref. No. 4895



^{a)} For motorised shutters, for ventilation operation, see accessory pages

^{b)} Type for B AMD: STSB 800 F400, No. 1919 * Type assignment see table, last column



Information	Page
Technical description	46
Design of systems	3 on

Special executions	Pages
Special execution with inspection opening (additional price) on request.	
Special execution with PTC-resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch MSA, always specify when ordering.	

Accessory details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning systems, circuitry and control technology	152 on
Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch	Anti vibration mounts ⁴⁾				
												min ⁻¹	V m ³ /h	kW	V	A
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 800/4 5,5 kW	3311	1455	33000	5,5	400 ⁵⁾	10,9	65	498	40	168	MSA ⁶⁾	1289	SDD 2	1453	SDZ 3	1366
AMD 800/4 7,5 kW	3312	1455	38400	7,5	400 ⁵⁾	14,5	100	498	40	180	MSA ⁶⁾	1289	SDD 2	1453	SDZ 3	1366
AMD 800/4 11 kW	3313	1460	47200	11	400 ⁵⁾	21,0	165	498	40	254	MSA ⁶⁾	1289	SDD 3	1367	SDZ 3	1366
AMD 800/4 15 kW	3314	1460	55100	15	400 ⁵⁾	28,1	210	498	40	264	MSA ⁶⁾	1289	SDD 3	1367	SDZ 3	1366
AMD 800/4 18,5 kW	3315	1470	57900	18,5	400 ⁵⁾	34,0	250	498	40	301	MSA ⁶⁾	1289	SDD 3	1367	SDZ 6	1927
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
AMD 800/8/4 1,5/6,3 kW	3316	700/1440	16500/33700	1,5/6,3	400	4,6/12,6	100	471	40	195	PDA 25	5060	SDD 3	1367	SDZ 3	1366
AMD 800/8/4 2,0/8,9 kW	3317	700/1440	21100/43600	2,0/8,9	400	5,25/17,8	165	471	40	264	PDA 25	5060	SDD 3	1367	SDZ 3	1366
AMD 800/8/4 2,7/12 kW	3318	710/1460	23800/49400	2,7/12	400	6,92/23,4	210	471	40	276	PDA 25	5060	SDD 3	1367	SDZ 3	1366
AMD 800/8/4 4,0/16 kW	3319	720/1460	27000/55600	4,0/16,0	400	10,6/30,9	250	471	40	301	PDA 63	1283	SDD 3	1367	SDZ 6	1927
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 800/4 5,5 kW F300	3514	1460	32900	5,5	400 ⁵⁾	10,5	34	498	40/300	179	–		SDD 5	1924	SDZ 5	1925
B AMD 800/4 7,5 kW F300	3515	1450	38600	7,5	400 ⁵⁾	14,1	73	498	40/300	188	–		SDD 5	1924	SDZ 5	1925
B AMD 800/4 11 kW F300	3516	1470	46000	11	400 ⁵⁾	21,2	151	498	40/300	221	–		SDD 6	1926	SDZ 6	1927
B AMD 800/4 15 kW F300	3517	1460	54800	15	400 ⁵⁾	28,7	196	498	40/300	241	–		SDD 6	1926	SDZ 6	1927
B AMD 800/4 18,5 kW F300	3518	1460	58500	18,5	400 ⁵⁾	35,1	217	498	40/300	280	–		SDD 6	1926	SDZ 6	1927
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
B AMD 800/8/4 1,3/5 kW F300	3519	730/1440	16700/32900	1,3/5,0	400	3,5/10,4	34	471	40/300	184	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AMD 800/8/4 1,8/7,2 kW F300	3520	730/1430	19600/38600	1,8/7,2	400	4,64/14,4	73	471	40/300	196	PDA 25	5060	SDD 5	1924	SDZ 5	1925
B AMD 800/8/4 3/11 kW F300	3521	730/1450	23000/46000	3,0/11,0	400	7,0/21,0	196	471	40/300	235	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AMD 800/8/4 4,3/17 kW F300	3522	730/1470	28400/57400	4,3/17,0	400	12,7/33,4	217	471	40/300	278	PDA 63	1283	SDD 6	1926	SDZ 6	1927
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 800/4 5,5 kW F400	3255	1460	32900	5,5	400 ⁵⁾	10,5	34	498	40/400	179	–		SDD 5	1924	SDZ 5	1925
B AMD 800/4 7,5 kW F400	3256	1450	38600	7,5	400 ⁵⁾	14,1	73	498	40/400	188	–		SDD 5	1924	SDZ 5	1925
B AMD 800/4 11 kW F400	3257	1470	46000	11	400 ⁵⁾	21,2	151	498	40/400	221	–		SDD 6	1926	SDZ 6	1927
B AMD 800/4 15 kW F400	3258	1460	54800	15	400 ⁵⁾	28,7	196	498	40/400	241	–		SDD 6	1926	SDZ 6	1927
B AMD 800/4 18,5 kW F400	3259	1460	58500	18,5	400 ⁵⁾	35,1	217	498	40/400	280	–		SDD 6	1926	SDZ 6	1927
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55													Pole switch surface mounted			
B AMD 800/8/4 1,3/5 kW F400	3260	730/1440	16700/32900	1,3/5,0	400	3,5/10,4	34	471	40/400	184	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AMD 800/8/4 1,8/7,2 kW F400	3261	720/1430	19600/38600	1,8/7,2	400	4,64/14,4	73	471	40/400	196	PDA 25	5060	SDD 5	1924	SDZ 5	1925
B AMD 800/8/4 3/11 kW F400	3262	720/1450	23000/46000	3,0/11,0	400	7,0/21,0	196	471	40/400	235	PDA 25	5060	SDD 6	1926	SDZ 6	1927
B AMD 800/8/4 4,3/17 kW F400	3263	730/1470	28400/57400	4,3/17,0	400	12,7/33,4	217	471	40/400	278	PDA 63	1283	SDD 6	1926	SDZ 6	1927

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

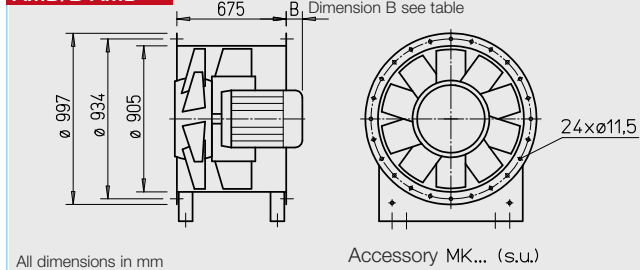


(Fig. incl. mounting feet (MK, accessories))

■ Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

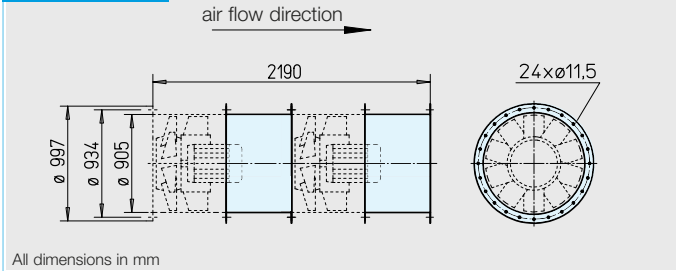
AMD/B AMD



All dimensions in mm

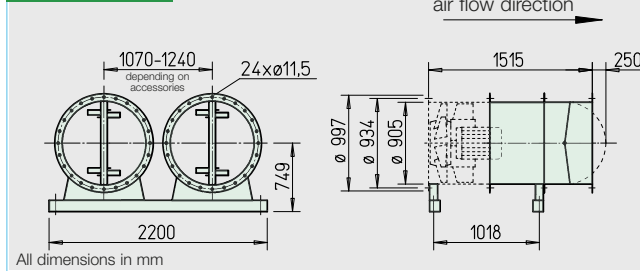
Accessory MK... (s.u.)

MP-Z 900



All dimensions in mm

MP-P 900



All dimensions in mm

■ Application, casing, air flow direction, etc.
see page 46.

■ Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

■ Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

■ Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

■ Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

■ Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

■ Mounting package MP-Z for two-stage Z-unit

To arrange two identical fans in a row, for highest pressure rates.

Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 68 kg

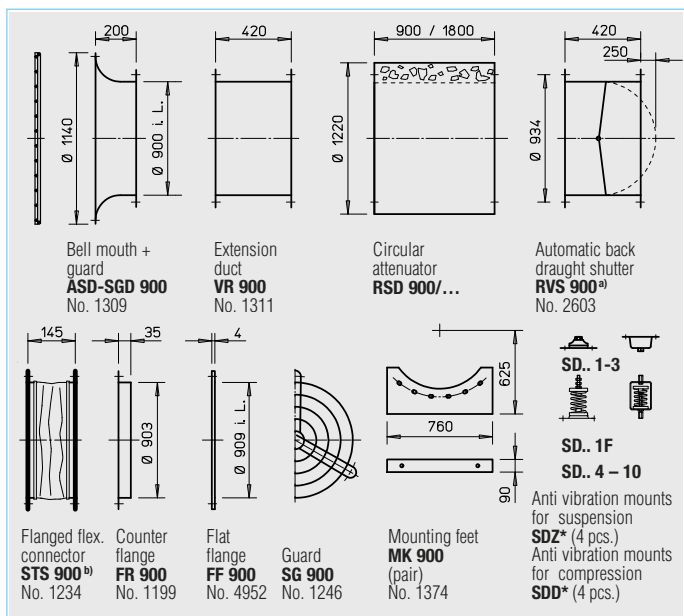
MP-Z 900 Ref. No. 4912

■ Mounting package MP-P for parallel P-unit

To arrange two identical fans side by side, for highest air flow rates.

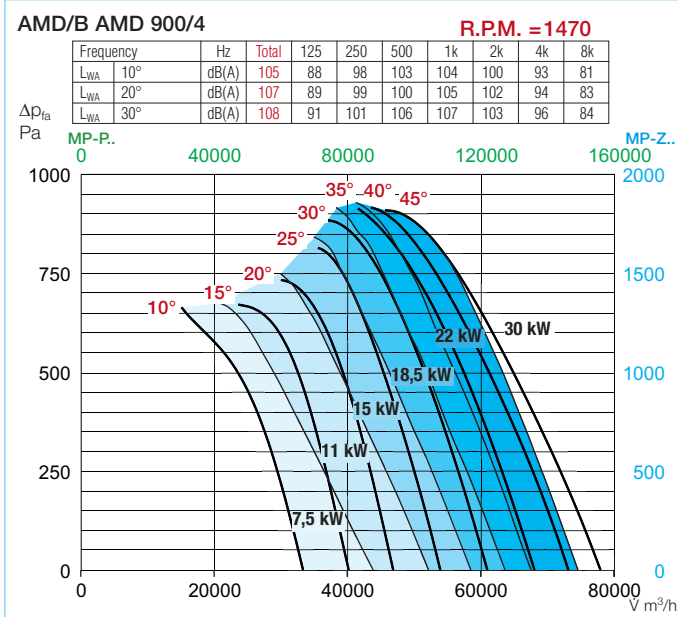
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 235 kg

MP-P 900 Ref. No. 4896



a) For motorised shutters, for ventilation operation, see accessory pages

b) Type for B AMD: STSB 900 F400, No. 1920 * Type assignment see table, last column



Information	Page
Technical description	46
Design of systems	3 on

Special executions	Pages
Special execution with inspection opening (additional price) on request.	
Special execution with PTC-resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch MSA, always specify when ordering.	

Accessory details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning systems, circuitry and control technology	152 on
Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch	Anti vibration mounts ⁴⁾				
												min ⁻¹	V m ³ /h	kW	V	A
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 900/4 7,5 kW	3322	1445	38600	7,5	400 ⁵⁾	14,5	50	776	40	211	MSA ⁶⁾ 1289	SDD 3	1367	SDZ 3	1366	
AMD 900/4 11 kW	3323	1460	48900	11	400 ⁵⁾	21,0	50	776	40	285	MSA ⁶⁾ 1289	SDD 3	1367	SDZ 3	1366	
AMD 900/4 15 kW	3324	1460	56500	15	400 ⁵⁾	28,1	110	776	40	295	MSA ⁶⁾ 1289	SDD 3	1367	SDZ 3	1366	
AMD 900/4 18,5 kW	3325	1470	64600	18,5	400 ⁵⁾	34,0	190	776	40	332	MSA ⁶⁾ 1289	SDD 3	1367	SDZ 6	1927	
AMD 900/4 22 kW	3326	1470	70400	22	400 ⁵⁾	40,2	230	776	40	347	MSA ⁶⁾ 1289	SDD 3	1367	SDZ 6	1927	
AMD 900/4 30 kW	3327	1470	80400	30	400 ⁵⁾	54,4	290	776	40	417	MSA ⁶⁾ 1289	SDD 3	1367	SDZ 7	1929	
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
													Pole switch surface mounted			
AMD 900/8/4 2,7/12 kW	3328	710/1460	25200/51500	2,7/12	400	6,92/23,4	110	777	40	307	PDA 25 5060	SDD 3	1367	SDZ 6	1927	
AMD 900/8/4 4,0/16 kW	3329	720/1460	29500/60500	4,0/16,0	400	10,6/30,9	190	777	40	332	PDA 63 1283	SDD 3	1367	SDZ 6	1927	
AMD 900/8/4 5,0/19,5 kW	3330	720/1470	33800/68700	5,0/19,5	400	12,7/36,6	230	777	40	347	PDA 63 1283	SDD 3	1367	SDZ 6	1927	
AMD 900/8/4 7,5/29 kW	3331	720/1480	38800/80400	7,5/29,0	400	18,6/54,0	290	777	40	412	PDA 63 1283	SDD 3	1367	SDZ 7	1929	
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 900/4 7,5 kW F300	3525	1450	38800	7,5	400 ⁵⁾	8,17	22	498	40/300	219	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 11 kW F300	3526	1470	49100	11	400 ⁵⁾	21,2	100	498	40/300	252	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 15 kW F300	3527	1460	55300	15	400 ⁵⁾	28,7	145	498	40/300	272	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 18,5 kW F300	3528	1460	64000	18,5	400 ⁵⁾	35,1	166	498	40/300	311	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 22 kW F300	3529	1460	71500	22	400 ⁵⁾	40,5	204	498	40/300	333	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 30 kW F300	3530	1470	80400	30	400 ⁵⁾	56,2	230	498	40/300	369	–	SDD 6	1926	SDZ 6	1927	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
													Pole switch surface mounted			
B AMD 900/8/4 3/11 kW F300	3535	720/1450	24500/49100	3,0/11,0	400	7,0/21,0	145	471	40/300	266	PDA 25 5060	SDD 6	1926	SDZ 6	1927	
B AMD 900/8/4 4,3/17 kW F300	3536	730/1470	30200/61000	4,3/17,0	400	12,7/33,4	166	471	40/300	309	PDA 63 1283	SDD 6	1926	SDZ 6	1927	
B AMD 900/8/4 5/20 kW F300	3537	720/1450	33800/67800	5,0/20,0	400	14,1/38,6	204	471	40/300	324	PDA 63 1283	SDD 6	1926	SDZ 6	1927	
B AMD 900/8/4 6,5/28 kW F300	3538	730/1480	38750/79700	6,5/28,0	400	18,0/52,0	230	471	40/300	382	PDA 63 1283	SDD 6	1926	SDZ 6	1927	
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 900/4 7,5 kW F400	3264	1450	38800	7,5	400 ⁵⁾	8,17	22	498	40/400	219	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 11 kW F400	3265	1470	49100	11	400 ⁵⁾	21,2	100	498	40/400	252	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 15 kW F400	3266	1460	55300	15	400 ⁵⁾	28,7	145	498	40/400	272	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 18,5 kW F400	3267	1460	64000	18,5	400 ⁵⁾	35,1	166	498	40/400	311	–	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 22 kW F400	3268	1460	71500	22	400 ⁵⁾	40,5	204	498	40/400	333	–	SDD 6	1926	SDZ 6	1927	
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
													Pole switch surface mounted			
B AMD 900/8/4 3/11 kW F400	3269	720/1450	24500/49100	3,0/11,0	400	7,0/21,0	145	471	40/400	266	PDA 25 5060	SDD 6	1926	SDZ 6	1927	
B AMD 900/8/4 4,3/17 kW F400	3270	730/1470	30200/61000	4,3/17,0	400	12,7/33,4	166	471	40/400	309	PDA 63 1283	SDD 6	1926	SDZ 6	1927	
B AMD 900/8/4 5/20 kW F400	3271	720/1450	33800/67800	5,0/20,0	400	14,1/38,6	204	471	40/400	324	PDA 63 1283	SDD 6	1926	SDZ 6	1927	

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

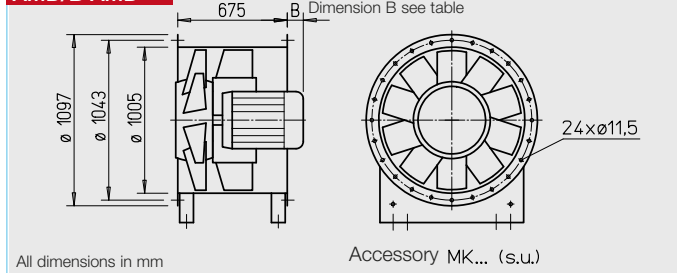


(Fig. incl. mounting feet (MK, accessories))

■ Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

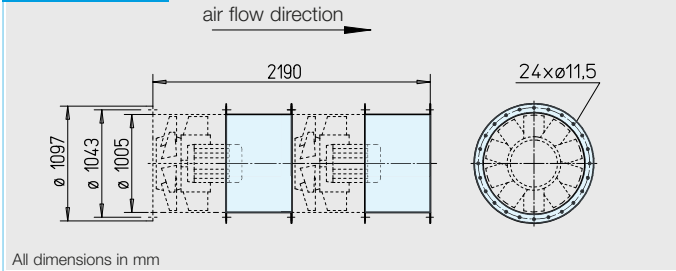
AMD/B AMD



All dimensions in mm

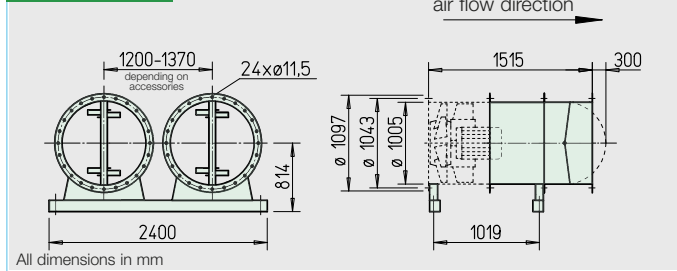
Accessory MK... (s.u.)

MP-Z 1000



All dimensions in mm

MP-P 1000



All dimensions in mm

■ Application, casing, air flow direction, etc.
see page 46.

■ Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

■ Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

■ Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

■ Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

■ Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

■ Mounting package MP-Z for two-stage Z-unit

To arrange two identical fans in a row, for highest pressure rates.

Scope of delivery: Extension ducts (2 pcs) and assembly kit. Weight: 75 kg

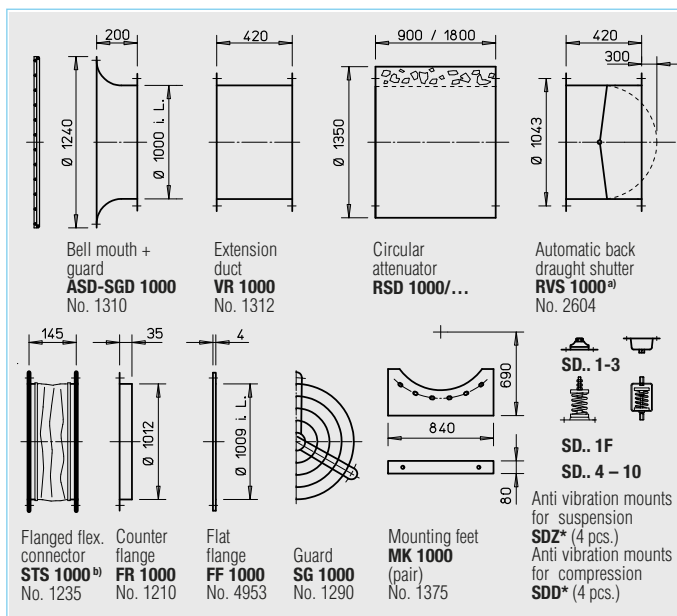
MP-Z 1000 Ref. No. 4913

■ Mounting package MP-P for parallel P-unit

To arrange two identical fans side by side, for highest air flow rates.

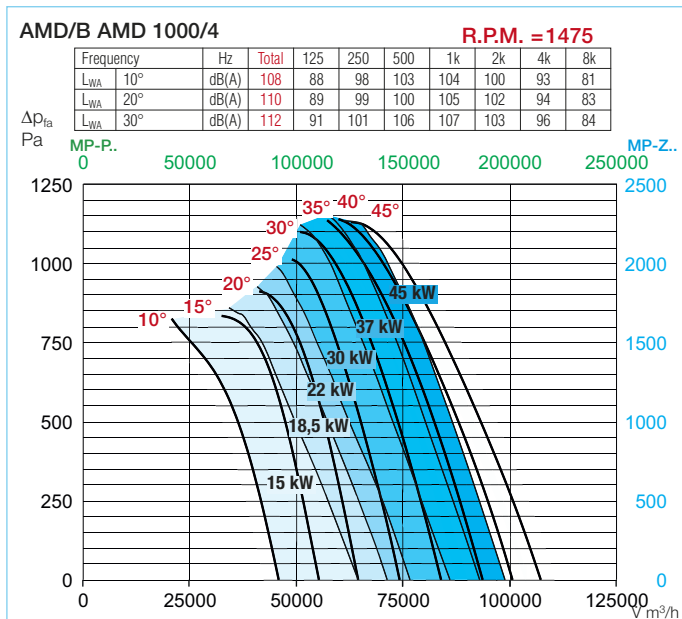
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits. Weight: 255 kg

MP-P 1000 Ref. No. 4897



a) For motorised shutters, for ventilation operation, see accessory pages

b) Type for B AMD: STSB 1000 F400, No. 1921 * Type assignment see table, last column



Information	Page
Technical description	46
Design of systems	3 on

Special executions	Pages
Special execution with inspection opening (additional price) on request.	
Special execution with PTC-resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch MSA, always specify when ordering.	

Accessory details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning systems, circuitry and control technology	152 on
Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch		Anti vibration mounts ⁴⁾			
											Type	Ref. No.	Type	Ref. No.		
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
AMD 1000/4 15 kW	3667	1460	64000	15	400 ⁵⁾	28,1	160	498	40	330	MSA ⁶⁾	1289	SDD 6	1926	SDZ 6	1927
AMD 1000/4 18,5 kW	3668	1460	71000	18,5	400 ⁵⁾	34,0	195	498	40	370	MSA ⁶⁾	1289	SDD 6	1926	SDZ 6	1927
AMD 1000/4 22 kW	3669	1470	77000	22	400 ⁵⁾	40,2	235	498	40	383	MSA ⁶⁾	1289	SDD 6	1926	SDZ 6	1927
AMD 1000/4 30 kW	3670	1470	86000	30	400 ⁵⁾	54,4	290	498	40	453	MSA ⁶⁾	1289	SDD 7	1928	SDZ 7	1929
AMD 1000/4 37 kW	3671	1480	93000	37	400 ⁵⁾	66,2	300	498	40	493	MSA ⁶⁾	1289	SDD 7	1928	SDZ 7	1929
AMD 1000/4 45 kW	3672	1480	99000	45	400 ⁵⁾	80,1	325	498	40	523	MSA ⁶⁾	1289	SDD 7	1928	SDZ 7	1929
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
												Pole switch surface mounted				
AMD 1000/8/4 4,0/16 kW	3674	720/1460	25200/51500	4,0/16,0	400	10,6/30,9	195	471	40	368	PDA 63	1283	SDD 6	1926	SDZ 6	1927
AMD 1000/8/4 5,0/19,5 kW	3675	720/1470	29500/60500	5,0/19,5	400	12,7/36,6	235	471	40	383	PDA 63	1283	SDD 6	1926	SDZ 6	1927
AMD 1000/8/4 7,5/29,5 kW	3676	720/1480	33800/68700	7,5/29,0	400	18,6/54,0	325	471	40	448	PDA 63	1283	SDD 7	1928	SDZ 7	1929
AMD 1000/8/4 9,5/40,0 kW	3677	720/1480	38800/80400	9,5/40,0	400	25,4/74,6	300	471	40	503	PDA 115	1352	SDD 7	1928	SDZ 7	1929
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 1000/4 15 kW F300	3630	1460	64000	15	400 ⁵⁾	28,7	150	498	40/300	308	–	–	SDD 6	1926	SDZ 6	1927
B AMD 1000/4 18,5 kW F300	3631	1460	71000	18,5	400 ⁵⁾	35,1	210	498	40/300	347	–	–	SDD 6	1926	SDZ 6	1927
B AMD 1000/4 22 kW F300	3632	1470	77000	22	400 ⁵⁾	40,5	210	498	40/300	369	–	–	SDD 6	1926	SDZ 6	1927
B AMD 1000/4 30 kW F300	3633	1470	86000	30	400 ⁵⁾	56,2	275	498	40/300	405	–	–	SDD 7	1928	SDZ 7	1929
B AMD 1000/4 37 kW F300	3634	1480	93000	37	400 ⁵⁾	66,6	325	498	40/300	525	–	–	SDD 7	1928	SDZ 7	1929
B AMD 1000/4 45 kW F300	3635	1480	99000	45	400 ⁵⁾	80,7	325	498	40/300	546	–	–	SDD 7	1928	SDZ 7	1929
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
												Pole switch surface mounted				
B AMD 1000/8/4 4,3/17 kW F300	3636	730/1470	24500/49100	4,3/17,0	400	12,7/33,4	170	471	40/300	345	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AMD 1000/8/4 5,0/20 kW F300	3637	720/1450	30200/61000	5,0/20,0	400	14,1/38,6	210	471	40/300	360	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AMD 1000/8/4 6,5/28 kW F300	3638	730/1480	33800/67800	6,5/28,0	400	18,0/52,0	275	471	40/300	418	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AMD 1000/8/4 9,2/37 kW F300	3639	740/1485	38750/79700	9,2/37,0	400	25,4/74,2	325	471	40/300	543	PDA 115	1352	SDD 7	1928	SDZ 7	1929
B AMD 1000/8/4 11/44 kW F300	3640	740/1480	33800/67800	11,0/44,0	400	27,2/80,2	325	471	40/300	608	PDA 115	1352	SDD 3	1367	SDZ 8	1931
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B AMD 1000/4 15 kW F400	3580	1460	64000	15	400 ⁵⁾	28,7	150	498	40/400	308	–	–	SDD 6	1926	SDZ 6	1927
B AMD 1000/4 18,5 kW F400	3581	1460	71000	18,5	400 ⁵⁾	35,1	210	498	40/400	347	–	–	SDD 6	1926	SDZ 6	1927
B AMD 1000/4 22 kW F400	3582	1470	77000	22	400 ⁵⁾	40,5	210	498	40/400	369	–	–	SDD 6	1926	SDZ 6	1927
B AMD 1000/4 30 kW F400	3583	1470	86000	30	400 ⁵⁾	56,2	275	498	40/400	405	–	–	SDD 7	1928	SDZ 7	1929
B AMD 1000/4 37 kW F400	3584	1480	93000	37	400 ⁵⁾	66,6	325	498	40/400	529	–	–	SDD 7	1928	SDZ 7	1929
B AMD 1000/4 45 kW F400	3585	1480	99000	45	400 ⁵⁾	80,7	325	498	40/400	546	–	–	SDD 7	1928	SDZ 7	1929
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
												Pole switch surface mounted				
B AMD 1000/8/4 4,3/17 kW F400	3597	730/1470	35000/70000	4,3/17,0	400	12,7/33,4	170	471	40/400	345	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AMD 1000/8/4 5,0/20 kW F400	3598	720/1450	32500/75000	5,0/20,0	400	14,1/38,6	210	471	40/400	360	PDA 63	1283	SDD 6	1926	SDZ 6	1927
B AMD 1000/8/4 6,5/28 kW F400	3599	730/1480	42500/85000	6,5/28,0	400	18,0/52,0	275	471	40/400	418	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AMD 1000/8/4 9,2/37 kW F400	3600	740/1485	46800/93700	9,2/37,0	400	25,4/74,2	325	471	40/400	543	PDA 115	1352	SDD 7	1928	SDZ 7	1929
B AMD 1000/8/4 11/44 kW F400	3601	740/1480	49200/98500	11,0/44,0	400	27,2/80,2	325	471	40/400	608	PDA 115	1352	SDD 3	1367	SDZ 8	1931

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

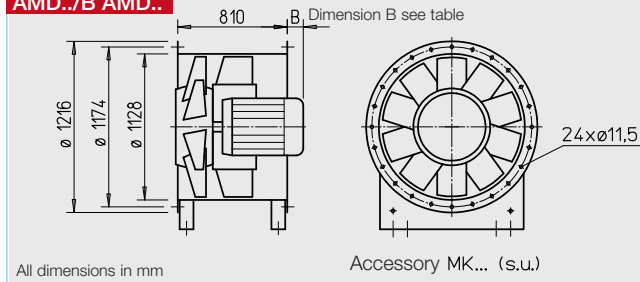


((Fig. incl. mounting feet (MK, accessories)

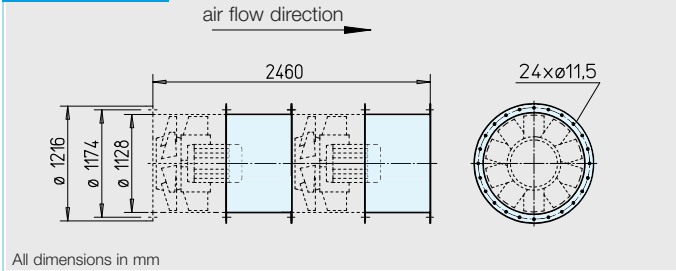
■ Certification

The smoke and heat exhaust fans B AMD were tested to DIN EN 12101-3., the DIBt approvals are applied. CE certificate of conformity 0036 CPD RG 05 13 (F300), 0036 CPD RG 05 14 (F400).

AMD../B AMD..



MP-Z 1120



■ Application, casing, air flow direction, etc.
see page 46.

■ Impeller

- Hub and blades in corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve highest efficiency and pressure rates in cooperation with the guide vane.
- Dynamically balanced to DIN ISO 1940-1, class 6.3 for low-vibration operation.
- The pitch angle of the blades is adjustable at standstill and factory set.

■ Motor

- Series AMD: Maintenance-free 3-phase a.c. standard motor, protection to IP 55, insulation class F.
- Series B AMD: Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Insulation class H. Fire-resistant external cable with sheathing..

■ Motor protrusion

- With some types, the motor casing projects beyond. Protrusion dimension B mm is to be observed according to the type table.

■ Motor protection

- The types are to be protected by means of motor protection switch on site. With the B AMD types this is to be bridged in case of smoke extraction.

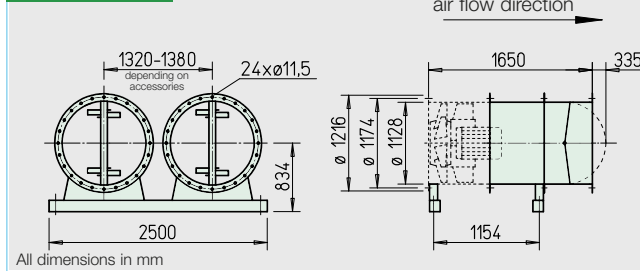
■ Electrical connection

- Series AMD: Standard terminal box (protection to IP 55) from polymer, mounted on the outside of the casing.
- Series B AMD: Standard terminal box (protection to IP 55, from aluminium diecasting), mounted on the outside of the casing.

■ Air flow temperatures

- Series AMD: Suitable for ventilation from -20 °C to +40 °C continuous temperature. Higher air flow temperatures for continuous operation on request.
- Series B AMD: Like series AMD, however, in addition for smoke extraction according to the temperature classification to 300 °C/120 minutes or 400 °C/120 minutes.

MP-P 1120

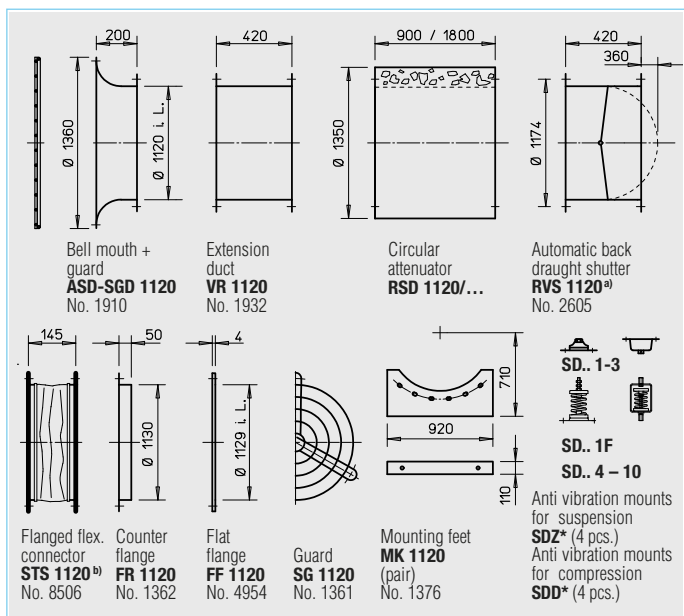


■ Mounting package MP-Z for two-stage Z-unit
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 85 kg

MP-Z 1120 Ref. No. 4914

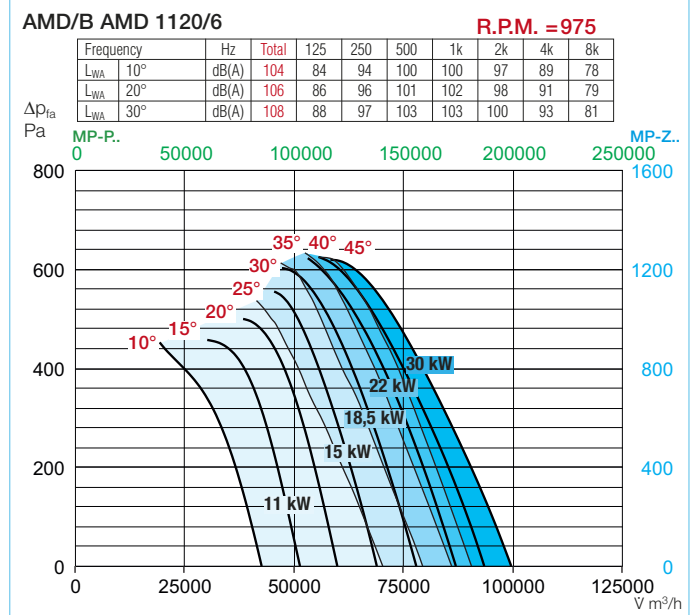
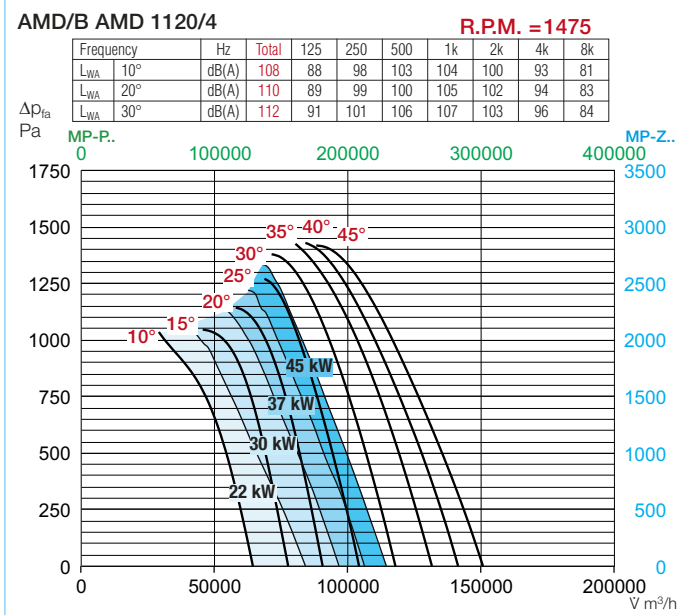
■ Mounting package MP-P for parallel P-unit
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 290 kg

MP-P 1120 Ref. No. 4898



a) For motorised shutters, for ventilation operation, see accessory pages

b) Type for B AMD: STSB 1120 F400, No. 1922 * Type assignment see table, last column



Information	Page
Technical description	46
Design of systems	3 on

Special executions	Pages
Special execution with PTC-resistors, which are connected to the terminal box located on the outside of the casing (additional price), essential for operation in connection with frequency inverter or full motor protection switch MSA.	

Accessory details	Pages
Mounting accessories	146 on
Attenuators	151
Gas warning systems, circuitry and control technology	152 on
Frequency inverter	162 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Dim. B Motor protrusion	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Full motor protection or pole switch	Anti vibration mounts ⁴⁾			
												Compression	Suspension		
												Type	Ref. No.	Type	Ref. No.
40° 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
AMD 1120/6 11 kW	3899	970	70000	11	400 ⁵⁾	22,9	25	498	40	402	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
AMD 1120/6 15 kW	3900	975	79000	15	400 ⁵⁾	29,8	100	498	40	433	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
AMD 1120/6 18,5 kW	3901	980	86000	18,5	400 ⁵⁾	36,4	150	498	40	471	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
AMD 1120/6 22 kW	3902	980	91000	22	400 ⁵⁾	42,0	150	498	40	486	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
AMD 1120/6 30 kW	3903	980	100000	30	400 ⁵⁾	56,2	190	498	40	552	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
AMD 1120/4 22 kW	3953	1470	84000	22	400 ⁵⁾	40,2	100	498	40	435	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
AMD 1120/4 30 kW	3954	1470	97000	30	400 ⁵⁾	54,4	150	498	40	505	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
AMD 1120/4 37 kW	3955	1480	106000	37	400 ⁵⁾	66,2	165	498	40	545	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
AMD 1120/4 45 kW	3956	1480	114000	45	400 ⁵⁾	80,1	190	498	40	575	MSA ⁶⁾ 1289	SDD 7	1928	SDZ 7	1929
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55												Pole switch surface mounted			
AMD 1120/8/4 4,0/16,0 kW	3924	700/1440	25200/51500	4,0/16,0	400	10,6/30,9	60	471	40	420	PDA 63 1283	SDD 7	1928	SDZ 7	1929
AMD 1120/8/4 5,0/19,5 kW	3925	700/1440	29500/60500	5,0/19,5	400	12,7/36,6	100	471	40	435	PDA 63 1283	SDD 7	1928	SDZ 7	1929
AMD 1120/8/4 7,5/29,5 kW	3926	720/1470	33800/68700	7,5/29,5	400	18,6/54,0	150	471	40	500	PDA 63 1283	SDD 7	1928	SDZ 7	1929
AMD 1120/8/4 9,5/40,0 kW	3927	720/1480	38800/80400	9,5/40,0	400	25,4/74,6	190	471	40	555	PDA 115 1352	SDD 7	1928	SDZ 7	1929
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
B AMD 1120/6 11 kW F400	3818	970	70000	11	400 ⁵⁾	22,0	15	498	40/300	371	–	SDD 7	1928	SDZ 6	1927
B AMD 1120/6 15 kW F400	3819	975	79000	15	400 ⁵⁾	27,9	75	498	40/300	409	–	SDD 7	1928	SDZ 6	1927
B AMD 1120/6 18,5 kW F400	3820	980	86000	18,5	400 ⁵⁾	35,7	140	498	40/300	449	–	SDD 7	1928	SDZ 6	1927
B AMD 1120/6 22 kW F400	3821	980	91000	22	400 ⁵⁾	42,3	140	498	40/300	467	–	SDD 7	1928	SDZ 6	1927
B AMD 1120/6 30 kW F400	3822	980	100000	30	400 ⁵⁾	54,2	230	498	40/300	594	–	SDD 7	1928	SDZ 6	1927
B AMD 1120/4 22 kW F400	3619	1470	84000	22	400 ⁵⁾	40,5	75	498	40/300	421	–	SDD 7	1928	SDZ 6	1927
B AMD 1120/4 30 kW F400	3620	1470	97000	30	400 ⁵⁾	56,2	140	498	40/300	457	–	SDD 7	1928	SDZ 6	1927
B AMD 1120/4 37 kW F400	3621	1480	106000	37	400 ⁵⁾	66,6	190	498	40/300	577	–	SDD 7	1928	SDZ 6	1927
B AMD 1120/4 45 kW F400	3622	1480	114000	45	400 ⁵⁾	80,7	190	498	40/300	598	–	SDD 3	1367	SDZ 8	1931
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55												Pole switch surface mounted			
B AMD 1120/8/4 4,3/17 kW F400	3962	730/1470	38000/76000	4,3/17,0	400	12,7/33,4	35	471	40/400	397	PDA 63 1283	SDD 6	1926	SDZ 6	1927
B AMD 1120/8/4 5,0/20 kW F400	3963	720/1450	41200/82500	5,0/20,0	400	14,1/38,6	75	471	40/400	412	PDA 63 1283	SDD 7	1928	SDZ 7	1929
B AMD 1120/8/4 6,5/28 kW F400	3964	730/1480	47200/95500	6,5/28,0	400	18,0/52,0	140	471	40/400	470	PDA 63 1283	SDD 7	1928	SDZ 7	1929
B AMD 1120/8/4 9,2/37 kW F400	3965	740/1485	53000/106000	9,2/37,0	400	25,4/74,2	190	471	40/400	595	PDA 115 1352	SDD 3	1367	SDZ 8	1931
B AMD 1120/8/4 11/44 kW F400	3966	720/1450	56500/113000	11,0/44,0	400	27,2/80,2	190	471	40/400	660	PDA 115 1352	SDD 3	1367	SDZ 8	1931

Pitch angle is mandatory when ordering. ¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

³⁾ Flush mounted version see product page switches. ⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150. ⁵⁾ Y/Δ starting.

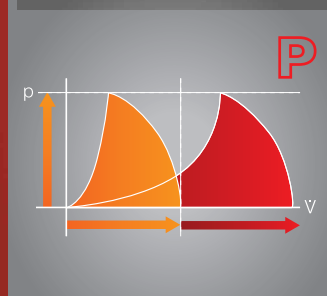
⁶⁾ Requires fan in special execution with PTC-resistors connected to the terminal box located on the outside of the casing (additional price).

Twin units TwinVent® VAR- and B VAR-fans in a two-stage or parallel compact design. Especially suitable for ventilation of underground car parks (car enactment and VDI 2053).

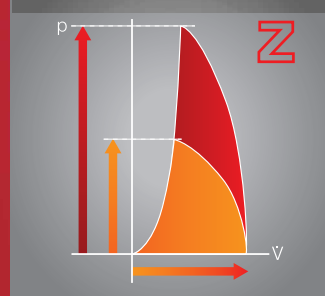
Details see pages 6 on

Parallel units P-VAR are advantageous, when large air flow volumes and high pressures are required in a compact design. The in-line airflow improves the efficiency of the total system, offers a considerable reduction of the required installation space and reduces the installation costs. The integrated automatic back draught shutters on the discharge prevent a backflow at partial load operation, standstill or failure of a fan.

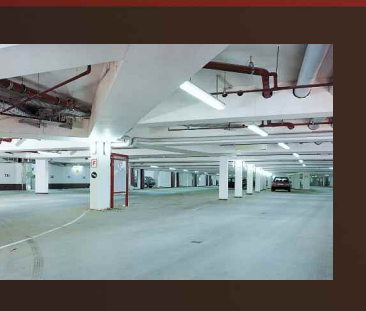
Two-stage TwinVent® Z-VAR are particularly versatile as "power units" with highest pressure rates in a compact design. Two mixed-flow fans in series with downstream guide vane ensure unrivalled power density and favorable installations with minimum space requirement.



Parallel units



Two-stage units



The RADAX ®-synergy for your success.

RADAX® VAR combines the pressure characteristics of centrifugal fans with axial air flow. The benefits are:

- Maximum power at minimum energy costs.
- Low sound levels.
- High pressure and airflow.
- Improving efficiency.
- Reduction of required installation space.
- Lower installation costs.
- Increases options at design stage.
- Energy conservation.

Das VAR series program:

■ **VAR for the ventilation mode**

- Sizes 225 to 630 mm
Helios main catalogue
- Sizes 710 to 1 000 mm
pages 92 on

■ **B VAR for smoke extraction to DIN 12101-3 for temperature ranges:**

- F300 from Ø 280-1 000 mm
pages 76 on
- F400 from Ø 500-1 000 mm
pages 86 on
- F600 from Ø 500-1 000 mm
pages 100 on

□ **All RADAX® B VAR-models with DIBt technical approval. The types are CE certified and are delivered ready for installation.**

■ **Two-stage and parallel units**
see on the left and pages 6 on



The aerodynamic improvement of fan impellers is the speciality of Helios.

In the compact casing the RADAX® impellers combine in an ideal way the advantages of axial and centrifugal fans and ensure high pressure at high air flow rates.

The complete VAR program includes single-stage, two-stage and parallel units, also for the smoke extraction.

■ **Application**

- Versatile application in the TGA-ventilation technology, e.g. for car park ventilation, in smoke pressure systems, etc.
- For preventive fire protection to secure smoke and heat extraction.
- For applications with air flow temperatures of 300° C for 120 minutes (F300) or 400° C and 600° C for 120 minutes (F400, F600).
- Suitable for continuous operation for temperature from -30 °C to +40 °C.

■ **Features**

RADAX® VAR and B VAR are series of high pressure cased fans combining the advantages of axial and centrifugal fans. The mixed flow impeller combined with the fixed guide vanes are designed to provide high air flows and pressures very efficiently.

■ **Casing**

Casing flanges on both sides to DIN 24155, Pt.3 with guide vanes and motor support made from galvanised steel.

■ **Impeller**

□ **Series VAR:**

Mixed flow impeller with 8 spacious curved blades made from hot-dip galvanised steel. Aluminium is available (additional price) on demand. VAR fans offer high efficiency, low operation noise, high corrosion resistance and low vibration operation through dynamical balance to DIN ISO 1940 Pt.1 - quality grade 6.3.

□ **Series B VAR:**

Mixed flow impeller with 8 spacious curved blades. Up to size 315 made from aluminium die casting. From size 355 made from hot-dip galvanised steel. B VAR fans offer high efficiency, low operation noise, high corrosion resistance and low vibration operation through dynamical balance to DIN ISO 1940 Pt.1 - quality grade 6.3

■ **Motor**

□ **Series VAR:**

Direct driven, maintenance free flange motor, totally enclosed with an aluminium casing and cooling fins, protected to IP 54. Sealed for life ball bearings with tropicalized protection of windings and radio suppression. Optional drainage holes made to order (please state installation position).

□ **Series B VAR:**

Direct driven by IEC-three phase a.c. motor (Smoke Extraction Motors F300 or F400). Protection to IP 55. Insulation class H. External cable with sheathing. Depending on the installation situation, relubrication intervals or bearing replacements must be observed (see installation and operating instructions).

■ **Motor protection**

□ **Series VAR:**

All models have thermal contacts or PTC resistors which must be connected to a motor protection unit (see type table). Models without thermal contacts must be protected by a conventional circuit breaker.

□ **Series B VAR:**

The B VAR types are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.

■ **Electrical connection**

Standard terminal box (protection to IP 55) from polymer (series VAR) or in temperature-resistant execution (series B VAR) mounted on the outside of the casing.

■ **Air flow temperatures**

VAR – suitable for ventilation to max. +40 °C continuous temperature.
B VAR – suitable for smoke extraction to 300 °C/120 minutes (F 300), 400 °C/120 minutes (F400) and 600 °C/120 minutes (F600).

■ **Air performance**

□ The smoke and heat exhaust fans B VAR are manufactured with a bigger gap between casing and impeller. A reduced output of approx. 5 % during ventilation mode (cold operation +40 °C) is expected with the F300 types, approx. 10 % with the F400 types. In a smoke extraction situation the gap closes and leads to the performance curves mentioned in the product pages. This has to be taken into account when dimensioning.

■ **Air flow direction**

The air flow of the fan cannot be reversed, however the fan is suitable for installation in any position. The correct direction of rotation and air flow are marked on the fan.

■ **Sound levels**

□ On the product pages above the performance curves are the spectrum figures and total pound power levels for different pitch angles indicated.

■ **Certification**

The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.

CE-approval:

F300 : 0036 CPD RG 05 01
F400 : 0036 CPD RG 05 05
F600 : 0036 CPD RG 05 02

With DIBt technical approval:

F300 : Z-78.11-147
F400 : Z-78.11.148
F600 : Z-78.11-149

■ **Installation**

□ **Series VAR:**

Installation in any position. Ensure that motor drainage holes (where used) face downwards. To avoid transmission of vibration between fan and building the use of anti vibration mounts is recommended (accessory).

□ **Series B VAR:**

Horizontal and vertical installation depending on the place of installation:

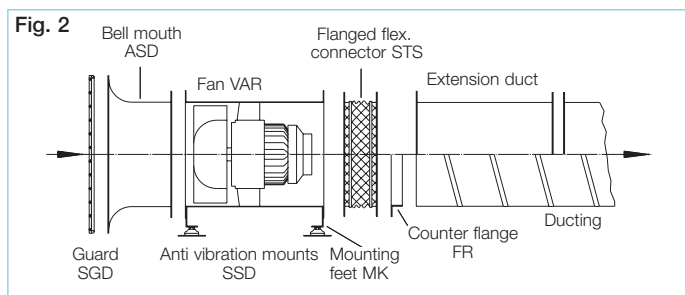
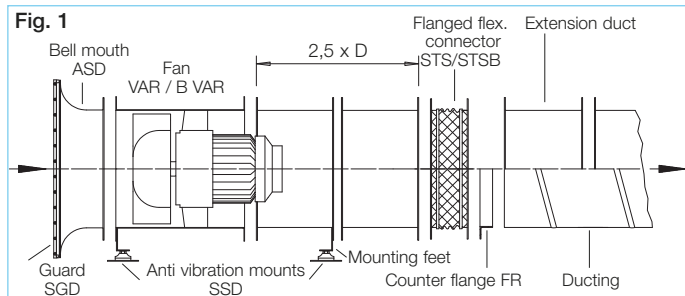
- Within the fire zone, without heat and sound insulation.
- Outside of the fire zone, within the building with heat and sound insulation L 90.
- Outside of the building without heat and sound insulation.

To avoid vibration transmission to building and ducting the use of anti vibration mounts (accessories SDD, SDZ) is highly recommended.

If installed outdoors, or in wet conditions or if installed with the vertical motor shaft, this must be stated when ordering.

■ **Compliance with the Federal, as well as the regional fire protection regulations.**

- To achieve the performance figures shown, a straight duct of 2,5 times the diameter in length downstream of the fan is required (and installed in ducting ideally the same upstream) (Fig.1).
- RADAX®-VAR can be installed in any position. Where motor condensate drainage is used, ensure the drain holes face downwards. For fans with larger motors the motor may protrude beyond the flange. In this case an extension duct (accessory VR...) is recommended to ensure the anti vibration mounts are equally loaded (Fig.1).
- **Horizontal installation**
Free intake, ducted on exhaust. Mounted on ceiling, wall or floor (Fig.2).



Horizontal installation with attenuator

Free intake with attenuator, ducted on exhaust. To reduce inlet and exhaust noise levels, attenuator can be fitted to both ends on the fan (Fig.3).

Ceiling void installation

Figure 4 shows an in-line duct installation. VAR fans can be mounted direct in the ceiling above the void. The casing is designed for straight in-line installation using the flanged ends (to DIN 24155, Bl.3).

Vertical installation

In-line wall mounted installation with attenuator on intake. The accessories should be fixed separately to ensure that the fan may be easily removed for maintenance.

Selection of anti vibration mounts

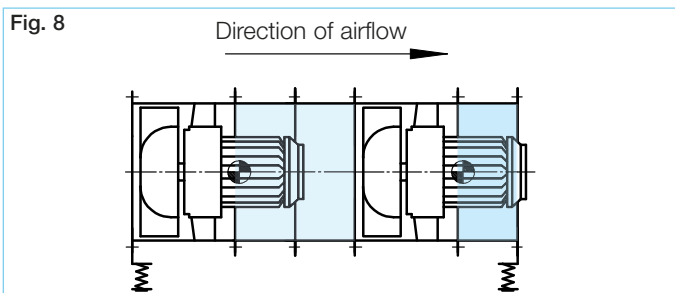
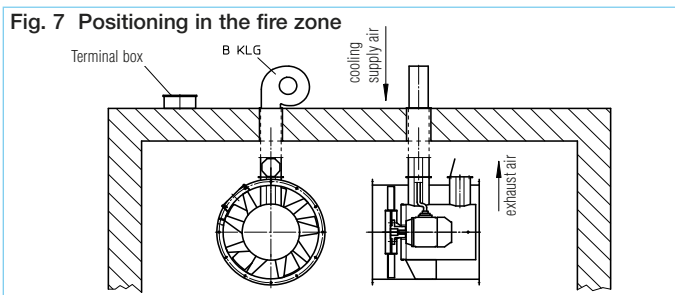
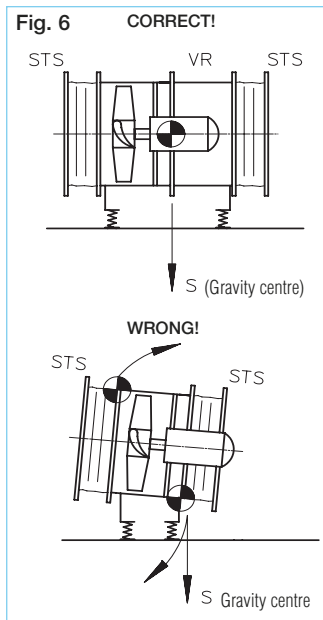
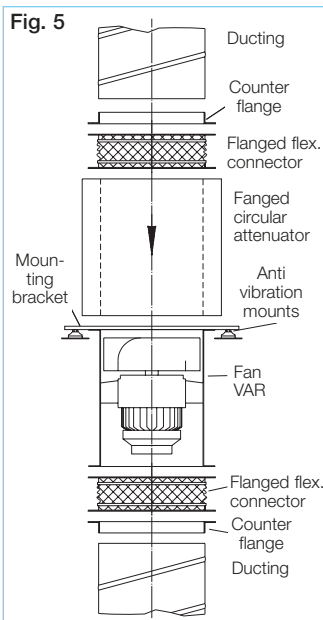
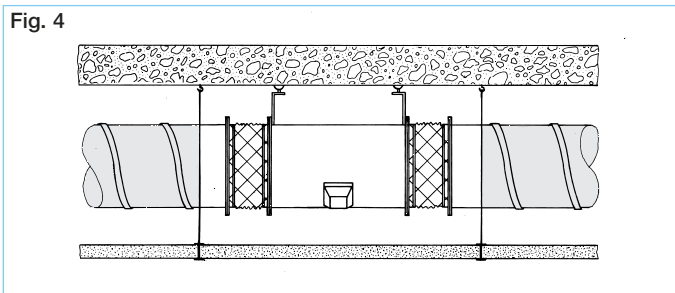
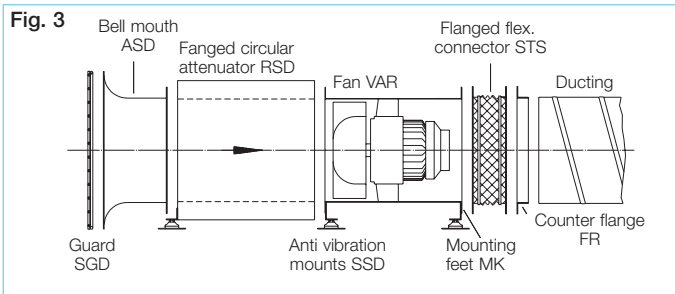
In order to reduce the vibrations caused by rotating components in the fan optimally the right selection of the anti vibration mounts is essential. The layout is based on the calculated weight of fan including accessories, which is to be damped. For this purpose, the individual weights of the components must be added.

Example:
B VAR 900/4 37 kW F300 as Z-unit

1) Determining the weight to be damped	
B VAR 900/4	533 kg
B VAR 900/4	533 kg
MP-Z 900	68 kg
VR 900	34 kg
MK 900	18 kg
Total weight	1186 kg

For types B VAR 900 and 1000 as well as for B VAR 500/2 and 500/4/2 there is an additional, separately ordered extension duct required.

- 2) Selection of anti vibration mounts (see page 150).
up to 1300 kg = SDD 9



Two-stage and parallel units
The versatile requirements with regard to pressure rise, flow rate and space requirements are fulfilled in the area of technical building equipment (TGA) often by two-stage Z- or parallel P-units. The Helios program offers suitable mounting packages for the respective units:

Two-stage unit / Mounting package MP-Z (Fig.6)

Two fans connected in series ensure unrivalled power density and favourable installation with minimum space requirements. The two fans are arranged in a row and connected by means of extension ducts.

Mounting package MP-Z (Scope of delivery):

Extension ducts (2 pcs) incl. assembly kit (Hexagon head screws, -nuts, spring washers).

Parallel unit / Mounting package MP-P

Two parallel connected fans bring high flow rates at suitable pressure rate and fulfill especially the requirements for car park ventilation and smoke extraction. Two identical fans which are arranged side by side operate in a joint duct system.

Mounting package MP-P (Scope of delivery):

Extension ducts (2 pcs), back draught shutters (2 pcs), mounting feet (4 pcs), mounting bars (2 pcs), assembly kit (Hexagon head screws, -nuts, spring washers, washers and threaded plate).

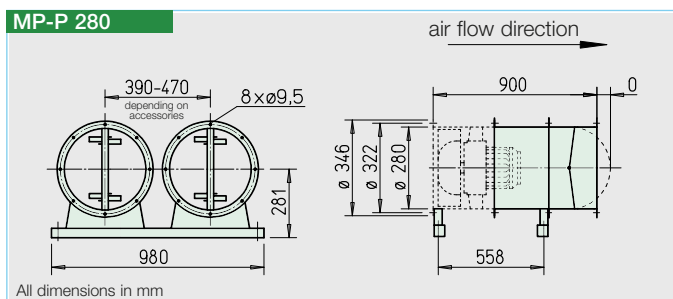
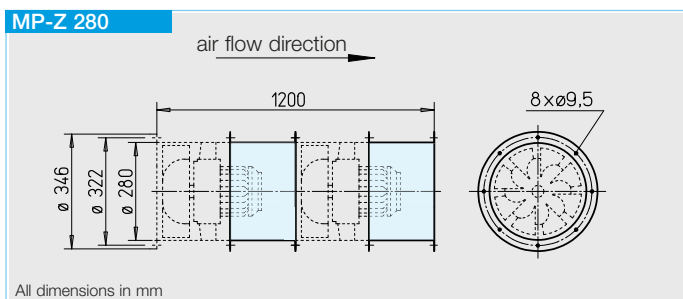
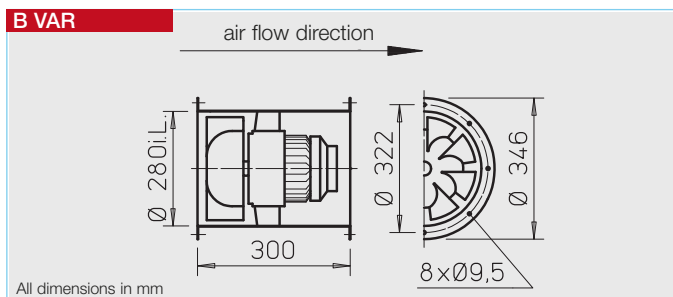
Series B VAR F600

Impeller

Specially designed impeller made from hot dip galvanized steel. Dynamically balanced to DIN 1940- Pt.1, quality grade G 6.3.

Centrifugal cooling air fan

To ensure motor cooling the centrifugal cooling air fan B KLG (Fig.7) is a necessary accessories. The cooling air fan is installed outside of the fire zone (smoke section) (Fig.7). Alternative external cooling air fan on request. Minimum cooling air flow volume see accessories on page 147.



- **Casing**
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.
- **Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from aluminium die casting.
- **Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- **Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- **Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- **Electrical connection**
Standard terminal box in temperature-resistant execution (protection to IP 54) mounted on the outside of the casing.
- **Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.
- **Sound levels**
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

■ **Mounting package MP-Z for two-stage Z-unit**
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 6,5 kg

MP-Z 280 Ref. No. 4902

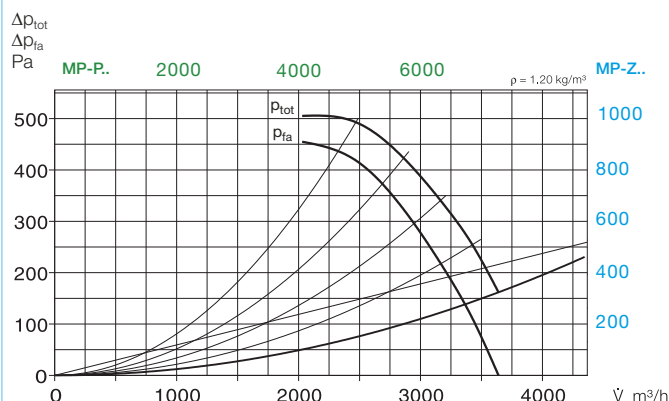
■ **Mounting package MP-P for parallel P-unit**
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 22 kg

MP-P 280 Ref. No. 4886

B VAR 280/2

R.P.M.= 2800

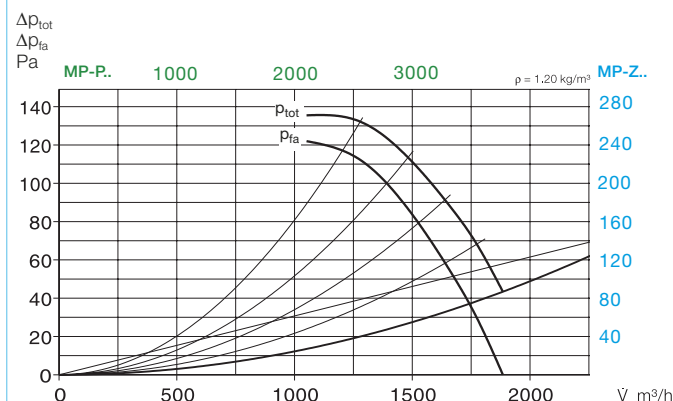
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA}	Air noise	dB(A)	88	58	69	80	83	79	70
L _{PA,4m}	Air noise	dB(A)	68	38	49	60	63	59	50



B VAR 280/4

R.P.M.= 1450

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA}	Air noise	dB(A)	72	48	62	66	69	66	59
L _{PA,4m}	Air noise	dB(A)	52	28	42	46	49	46	39



Certification

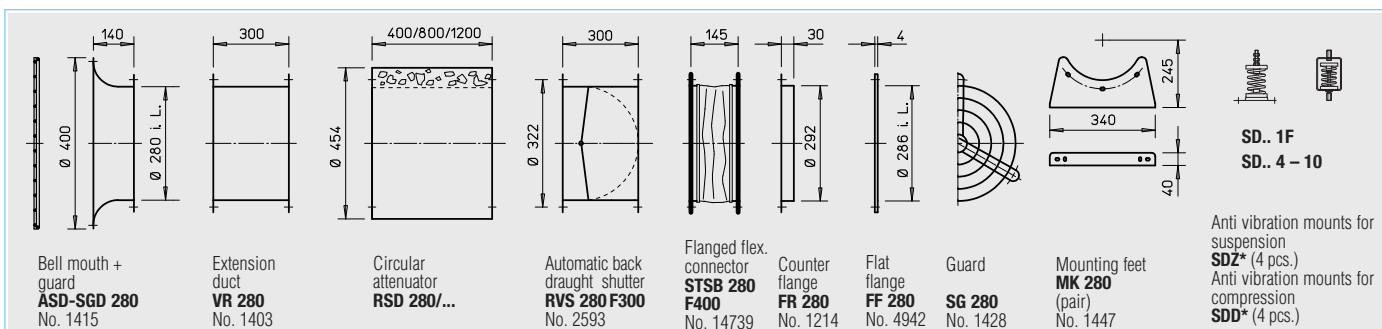
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
With DIBt technical approval:
F300 : Z-78.11-147

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Accessory details

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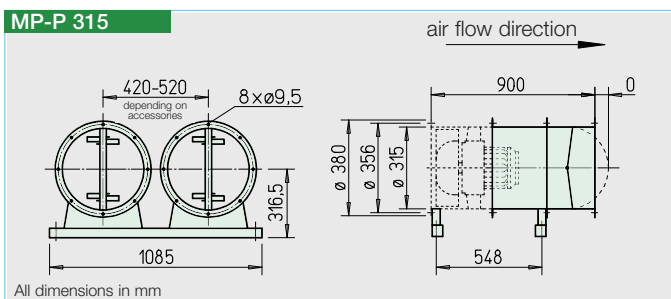
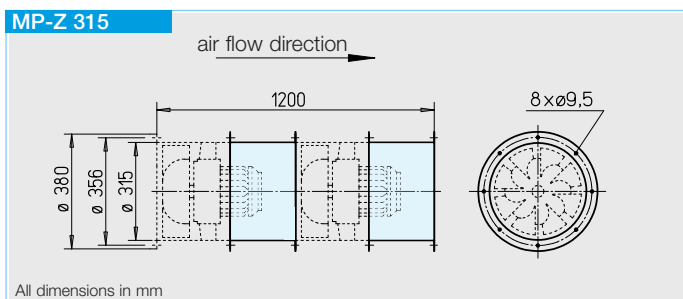
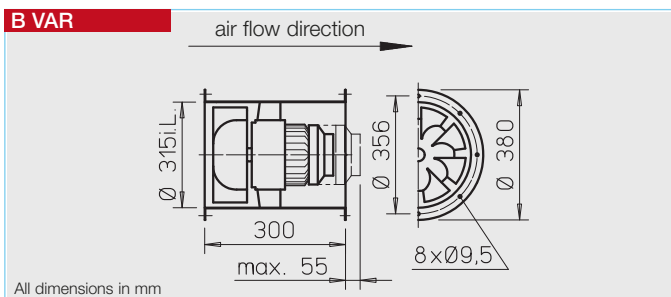
Accessories pages 146 on

* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted	Anti vibration mounts ⁴⁾				
											Compression		Suspension		
		min ⁻¹	V m ³ /h	kW	V	A	No.	°C	ca. kg	Type	Ref. No.	Type	Ref. No.		
F300 3 Phase motor, 50 Hz, protection to IP 54															
B VAR 280/2 F300	2300	2790	3700	1,10	400	2,32	776	40 ²⁾ / 300	23	—	—	SDD 1F	1942	SDZ 1F	1943
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54															
B VAR 280/4/2 F300	2301	1390/2810	1810/3700	0,25/1,1	400	0,75/2,41	471	40 ²⁾ / 300	24	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes). ³⁾ Flush mounted version see product page switches

⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.



- **Casing**
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.
- **Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from aluminium die casting.
- **Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- **Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- **Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- **Electrical connection**
Standard terminal box in temperature-resistant execution (protection to IP 54) mounted on the outside of the casing.
- **Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.
- **Sound levels**
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

■ **Mounting package MP-Z for two-stage Z-unit**
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 7,5 kg

MP-Z 315 Ref. No. 4903

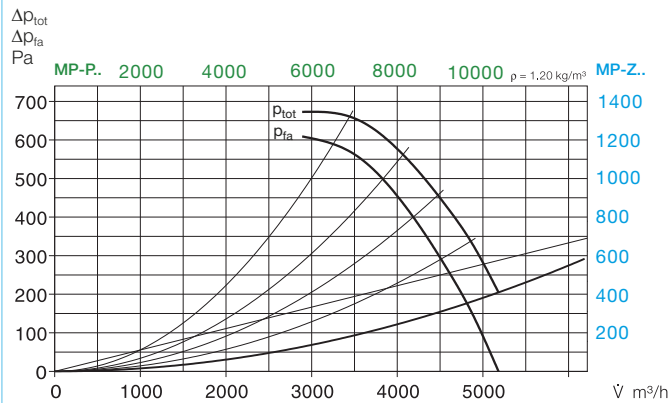
■ **Mounting package MP-P for parallel P-unit**
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 25 kg

MP-P 315 Ref. No. 4887

B VAR 315/2

R.P.M.=2800

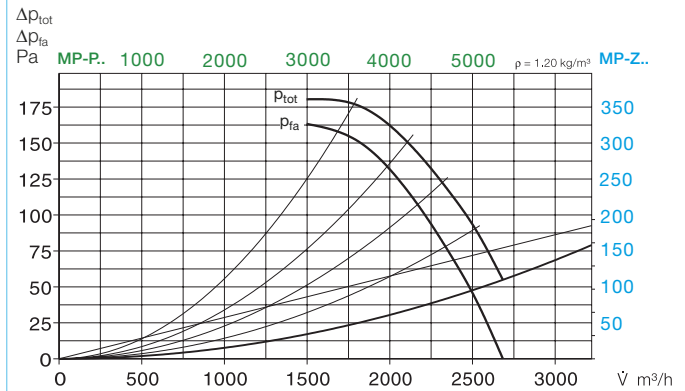
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	91	62	73	84	86	87	82	74
L _{PA,4m}	Air noise	dB(A)	71	42	53	64	66	67	62	54



B VAR 315/4

R.P.M.=1450

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	76	52	65	70	72	70	63	53
L _{PA,4m}	Air noise	dB(A)	56	32	45	50	52	50	43	33



Certification

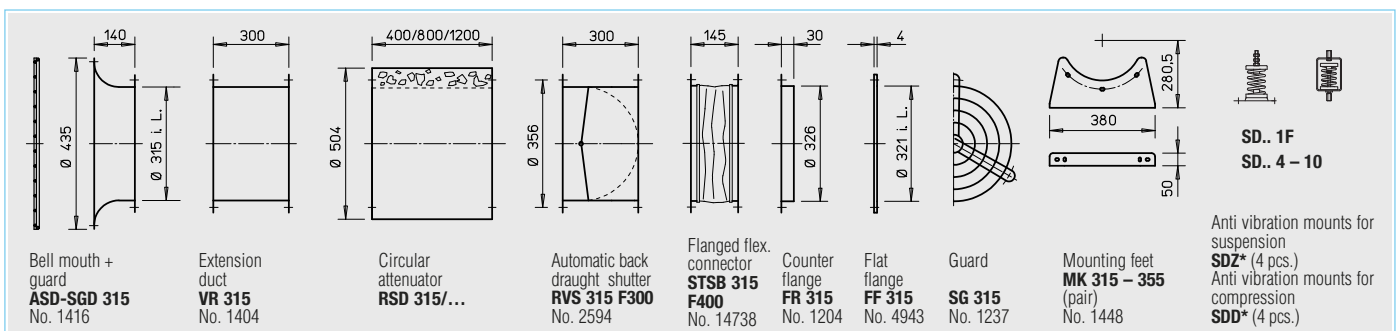
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
With DIBt technical approval:
F300 : Z-78.11-147

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* Type assignment see table, last column

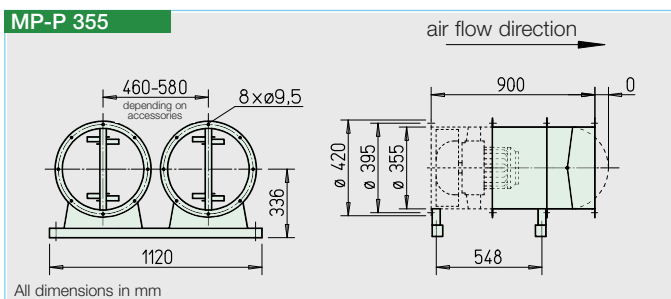
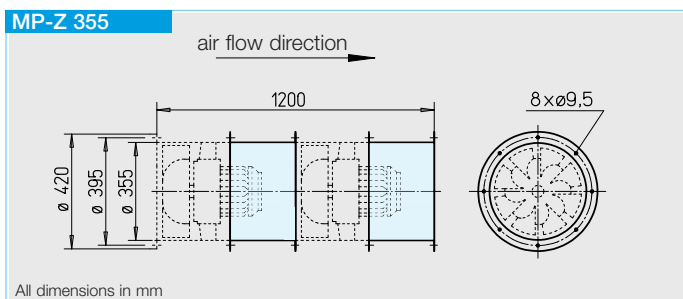
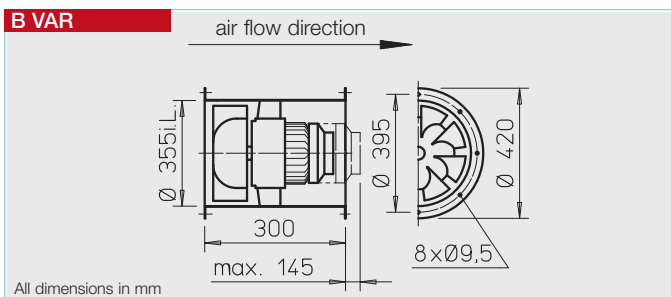
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts ⁴⁾			
										Type	Ref. No.	Type	Ref. No.	Type	Ref. No.
F300 3 Phase motor, 50 Hz, protection to IP 54															
B VARD 315/4 F300	2302	1410	2590	0,55	400	1,27	776	40 ²⁾ / 300	22	—	—	SDD 1F	1942	SDZ 1F	1943
B VARD 315/2 F300	2303	2790	5270	1,1	400	2,32	776	40 ²⁾ / 300	25	—	—	SDD 1F	1942	SDZ 1F	1943
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54															
B VARD 315/4/2 F300	2304	1390/2810	2590/5270	0,25/1,1	400	0,75/2,41	471	40 ²⁾ / 300	26	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.

³⁾ Flush mounted version see product page switches

⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.



- Casing**
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dipped galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box in temperature-resistant execution (protection to IP 54) mounted on the outside of the casing.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.
- Sound levels**
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

■ Mounting package MP-Z for two-stage Z-unit
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 8 kg

MP-Z 355 Ref. No. 4904

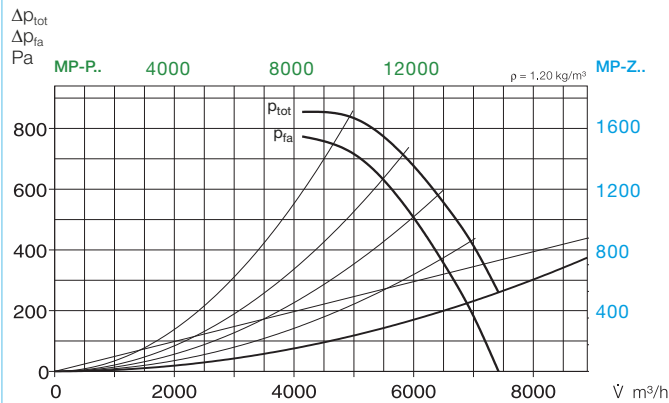
■ Mounting package MP-P for parallel P-unit
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 27 kg

MP-P 355 Ref. No. 4888

B VAR 355/2

R.P.M.=2800

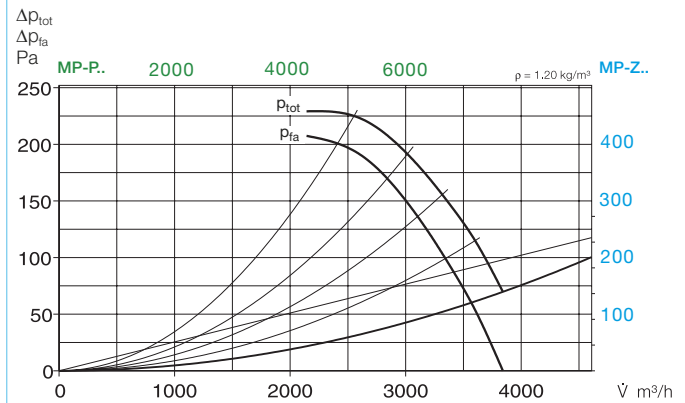
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA}	Air noise	dB(A)	95	65	76	88	90	86	77
L _{PA,4m}	Air noise	dB(A)	75	45	56	68	70	66	57



B VAR 355/4

R.P.M.=1450

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA}	Air noise	dB(A)	80	55	69	73	76	73	66
L _{PA,4m}	Air noise	dB(A)	60	35	49	53	56	53	46



Certification

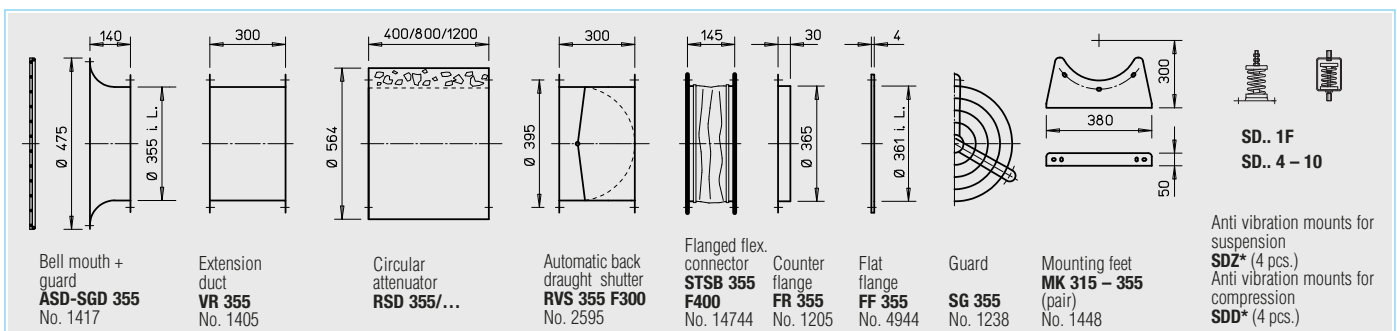
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
With DIBt technical approval:
F300 : Z-78.11-147

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* Type assignment see table, last column

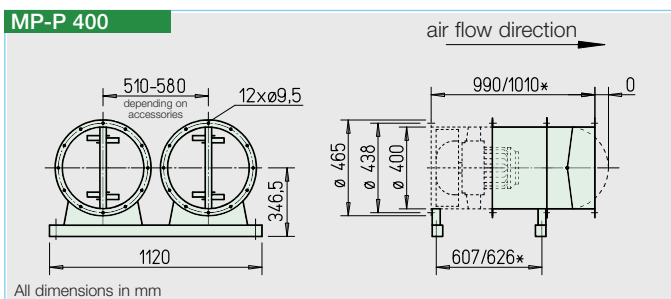
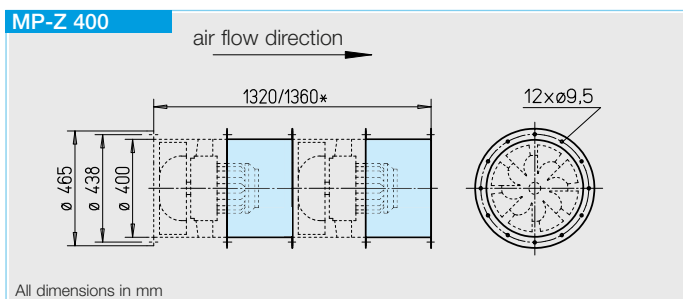
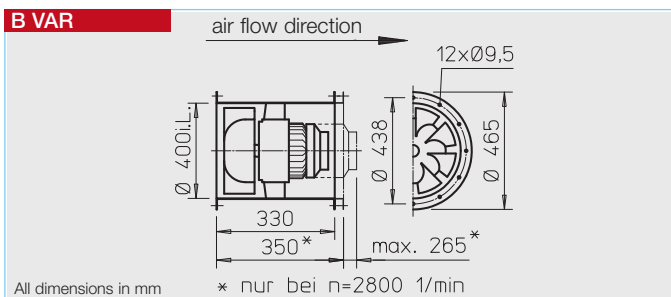
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted	Anti vibration mounts ⁴⁾				
											Compression		Suspension		
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref. No.	Type	Ref. No.	Type	Ref. No.
F300 3 Phase motor, 50 Hz, protection to IP 54															
B VARD 355/4 F300	2305	1410	3700	0,55	400	1,27	776	40 ²⁾ / 300	24	—	—	SDD 1F	1942	SDZ 1F	1943
B VARD 355/2 F300	2306	2840	7625	2,20	400	5,48	776	40 ²⁾ / 300	34	—	—	SDD 1F	1942	SDZ 1F	1943
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54															
B VARD 355/4/2 F300	2307	1435/2890	3750/7545	0,65/2,5	400	1,66/5,18	471	40 ²⁾ / 300	43	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.

³⁾ Flush mounted version see product page switches

⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.



- Casing**
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.
Type 400/2 with welded casing made from hot dip-galvanised steel.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box in temperature-resistant execution (protection to IP 54) mounted on the outside of the casing.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.
- Sound levels**
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

■ Mounting package MP-Z for two-stage Z-unit
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 12 kg

MP-Z 400 Ref. No. 4905

■ Mounting package MP-P for parallel P-unit
To arrange two identical fans side by side, for highest air flow rates.

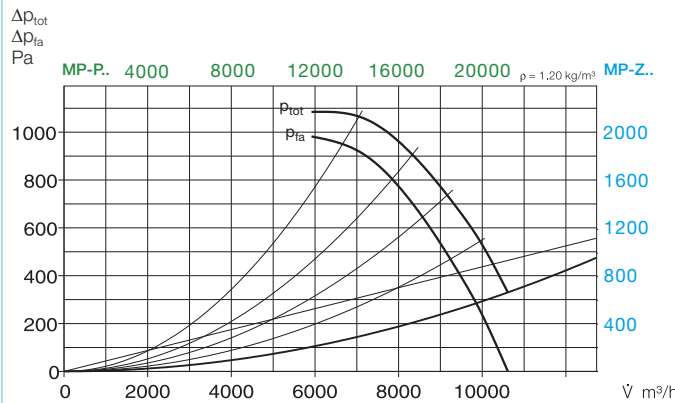
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 35 kg

MP-P 400 Ref. No. 4889

B VAR 400/2

R.P.M.=2800

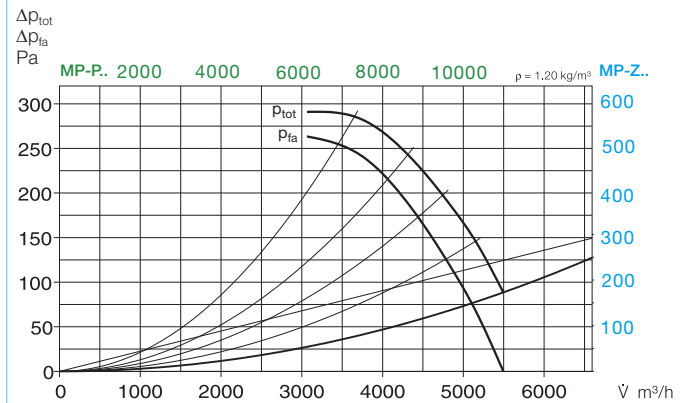
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	98	69	80	91	94	94	90	81
L _{PA,4m}	Air noise	dB(A)	78	49	60	71	74	70	61	



B VAR 400/4

R.P.M.=1450

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	83	59	72	77	79	77	70	60
L _{PA,4m}	Air noise	dB(A)	63	39	52	57	59	57	50	40



Certification

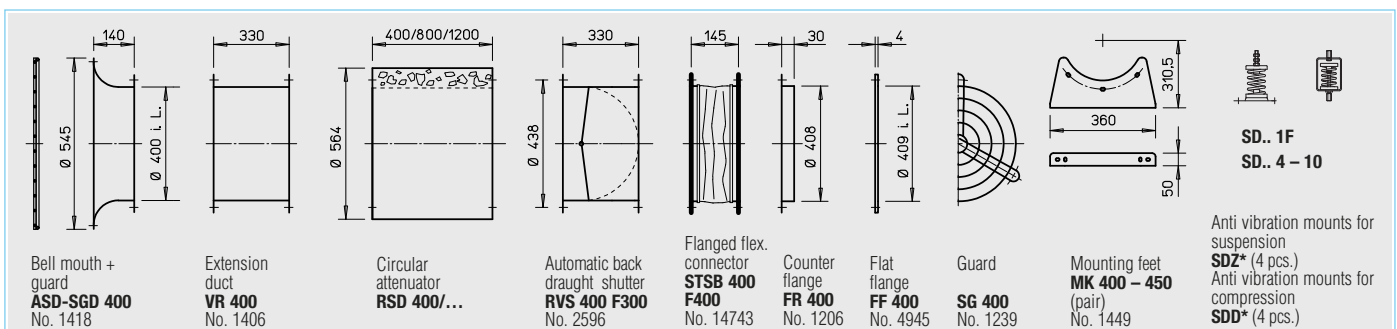
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
With DIBt technical approval:
F300 : Z-78.11-147

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Accessories pages 146 on

* Type assignment see table, last column

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts ⁴⁾				
										Type	Ref.No.	Compression		Suspension		
													Type	Ref. No.	Type	Ref. No.
F300 3 Phase motor, 50 Hz, protection to IP 54																
B VARD 400/4 F300	2308	1410	5300	0,55	400	1,27	776	40 ³ / 300	28	—	—	SDD 1F	1942	SDZ 1F	1943	
B VARD 400/2 F300	2309	2870	11010	4,00	400	7,72	776	40 ³ / 300	71	—	—	SDD 1F	1942	SDZ 4	1945	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																
B VARD 400/4/2 F300	2310	1440/2890	5450/10900	1,1/4,4	400	2,79/8,59	471	40 ³ / 300	76	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 4	1945	

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

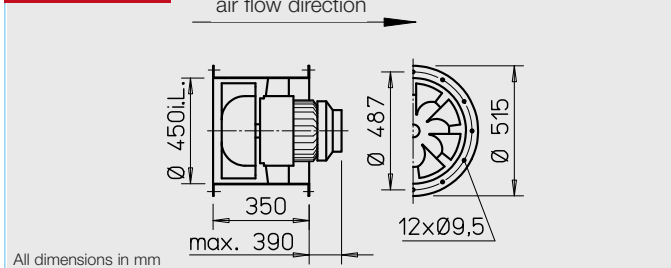
²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.

³⁾ Flush mounted version see product page switches

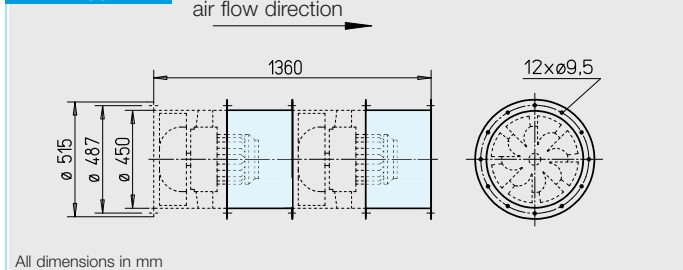
⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.



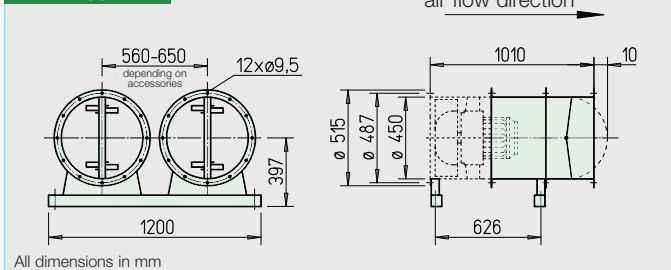
B VAR



MP-Z 450



MP-P 450



- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box in temperature-resistant execution (protection to IP 54) mounted on the outside of the casing.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.
- Sound levels**
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

■ Mounting package MP-Z for two-stage Z-unit
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 14 kg

MP-Z 450 Ref. No. 4906

■ Mounting package MP-P for parallel P-unit
To arrange two identical fans side by side, for highest air flow rates.

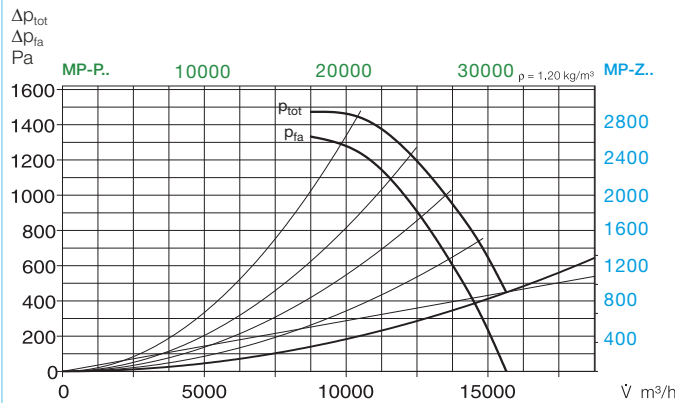
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 43 kg

MP-P 450 Ref. No. 4890

B VAR 450/2

R.P.M. = 2900

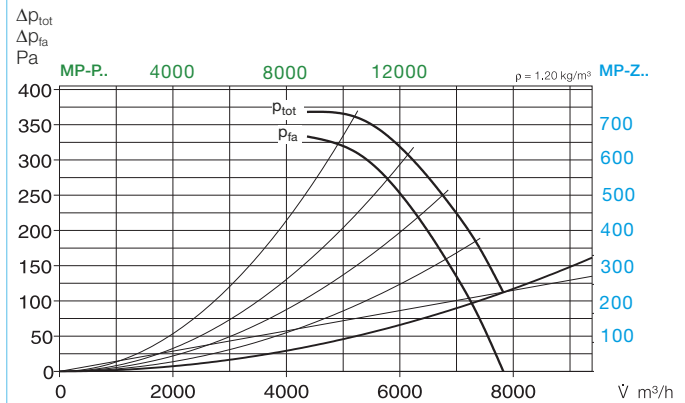
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	103	73	84	95	98	98	94	85
L _{PA,4m}	Air noise	dB(A)	83	53	64	75	78	78	74	65



B VAR 450/4

R.P.M. = 1450

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	87	62	76	81	83	80	74	64
L _{PA,4m}	Air noise	dB(A)	67	42	56	61	63	60	54	44



Certification

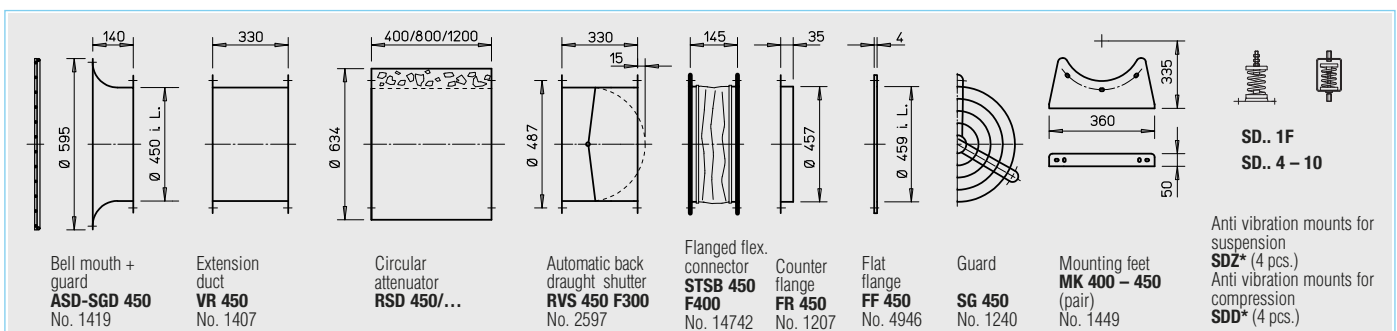
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
With DIBt technical approval:
F300 : Z-78.11-147

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Accessories pages 146 on

* Type assignment see table, last column

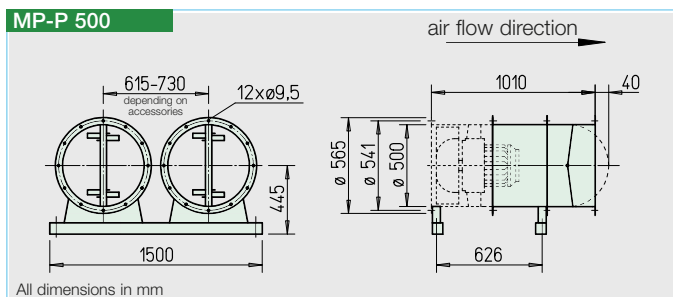
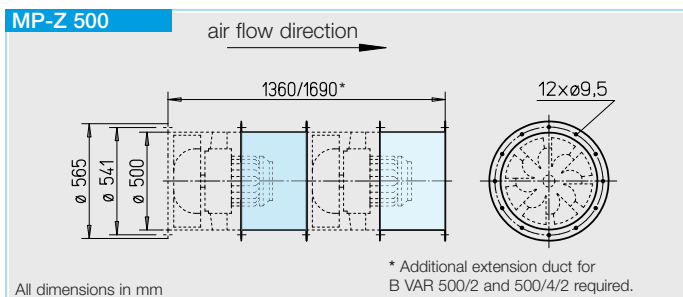
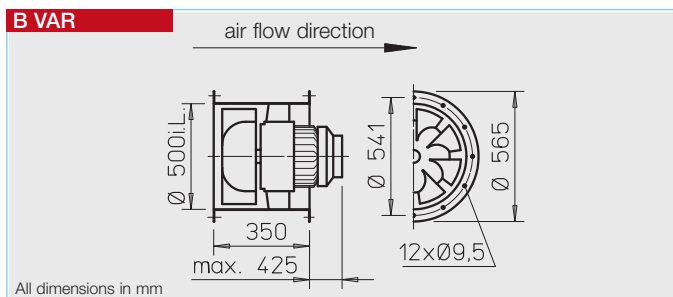
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts ⁴⁾				
										Type	Ref. No.	Compression		Suspension		
													Type	Ref. No.	Type	Ref. No.
F300 3 Phase motor, 50 Hz, protection to IP 54																
B VARD 450/4 F300	2311	1440	7600	1,1	400	2,4	776	40 ²⁾ / 300	58	—	—	SDD 1F	1942	SDZ 1F	1943	
B VARD 450/2 F300	2312	2910	15805	7,5	400	14,1	776	40 ²⁾ / 300	102	—	—	SDD 4	1944	SDZ 4	1945	
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54																
B VARD 450/4/2 F300	2313	1470/2930	7815/15765	2,0/8,0	400	4,83/15,3	471	40 ²⁾ / 300	106	PDA 25	5060	SDD 4	1944	SDZ 4	1945	

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.

³⁾ Flush mounted version see product page switches

⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.



- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box in temperature-resistant execution (protection to IP 54) mounted on the outside of the casing.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.
- Sound levels**
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

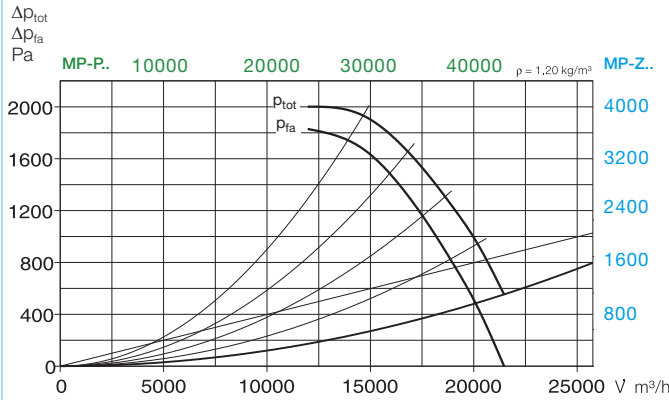
- Mounting package MP-Z for two-stage Z-unit**
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 15 kg
MP-Z 500 Ref. No. 4907
Additional extension duct for B VAR 500/2 and 500/4/2 required.
VR 500 Ref. No. 1408

- Mounting package MP-P for parallel P-unit**
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 55 kg
MP-P 500 Ref. No. 4891

B VAR 500/2

R.P.M.=2900

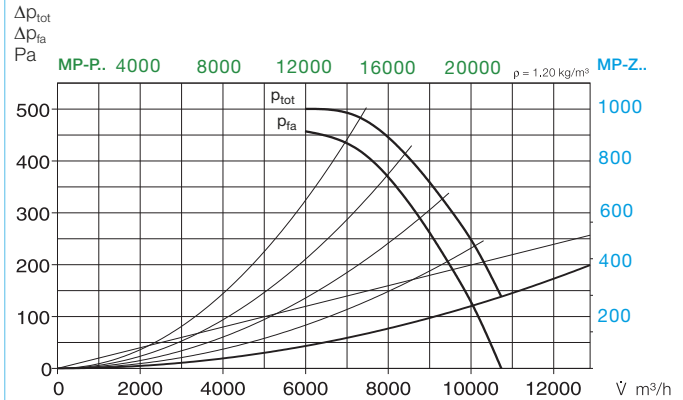
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	106	76	87	99	101	101	97	89
L _{PA,4m}	Air noise	dB(A)	86	56	67	79	81	81	77	69



B VAR 500/4

R.P.M.=1450

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	90	66	79	84	86	84	77	67
L _{PA,4m}	Air noise	dB(A)	70	46	59	64	66	64	57	47



Certification

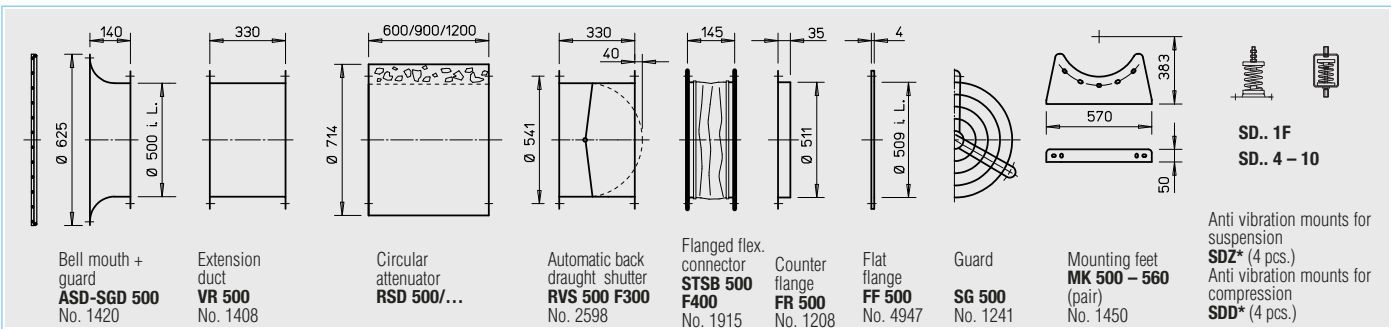
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
F400 : 0036 CPD RG 05 05
With DIBt technical approval:
F300 : Z-78.11-147
F400 : Z-78.11.148

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* Type assignment see table, last column

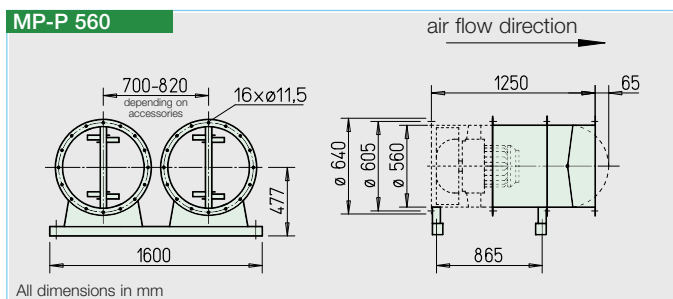
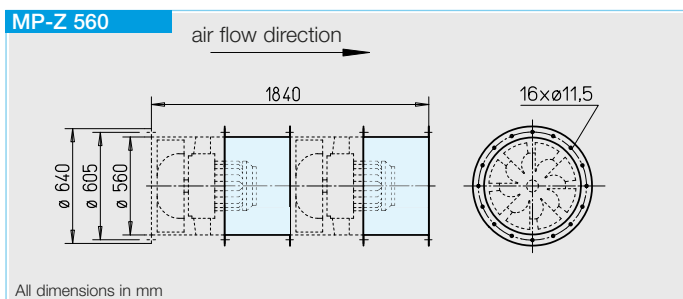
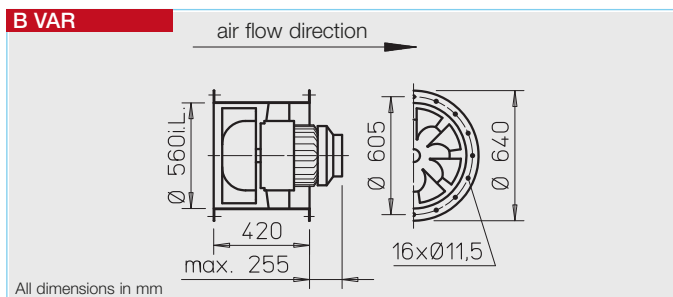
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts ⁴⁾			
										Type	Ref. No.	Compression		Suspension	
											Type	Ref. No.	Type	Ref. No.	
F300 3 Phase motor, 50 Hz, protection to IP 54															
B VARD 500/4 F300	2322	1440	10510	1,5	400	3,26	776	40 ²⁾ / 300	76	—	—	SDD 4	1944	SDZ 1F	1943
B VARD 500/2 F300	2296	2940	21760	15,0	400	27,6	776	40 ²⁾ / 300	168	—	—	SDD 5	1924	SDZ 5	1925
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54															
B VARD 500/8/4 F300	2323	700/1430	4960/10430	0,55/2,2	400	2,0/4,84	471	40 ²⁾ / 300	84	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 1F	1943
B VARD 500/4/2 F300	2299	1470/2950	10840/21760	4,0/16,0	400	9,75/30,5	471	40 ²⁾ / 300	191	PDA 25	5060	SDD 5	1924	SDZ 5	1925
F400 3 Phase motor, 50 Hz, protection to IP 54															
B VARD 500/4 F400	2404	1440	10510	1,5	400	3,26	776	40 ²⁾ / 400	76	—	—	SDD 4	1944	SDZ 1F	1943
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54															
B VARD 500/8/4 F400	2405	700/1430	4960/10430	0,55/2,2	400	2,0/4,84	471	40 ²⁾ / 400	84	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 1F	1943

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.

³⁾ Flush mounted version see product page switches

⁴⁾ With Z-P-design due to higher total weight, type assignment according to tables on page 150.



- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box in temperature-resistant execution (protection to IP 54) mounted on the outside of the casing.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.
- Sound levels**
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

■ Mounting package MP-Z for two-stage Z-unit for highest pressure rates.
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 32 kg

MP-Z 560 Ref. No. 4908

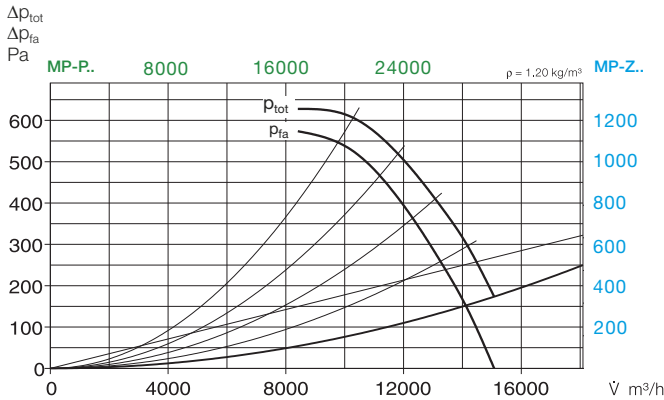
■ Mounting package MP-P for parallel P-unit for highest air flow rates.
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 82 kg

MP-P 560 Ref. No. 4892

B VAR 560/4

R.P.M.=1450

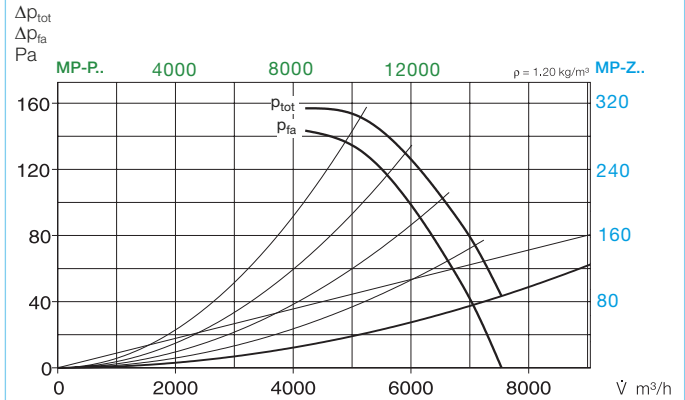
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	93	69	83	87	90	87	80	70
L _{PA,4m}	Air noise	dB(A)	73	49	63	67	70	67	60	50



B VAR 560/8

R.P.M.=725

Frequency	Hz	Ges.	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	76	61	68	72	72	66	58	51



Certification

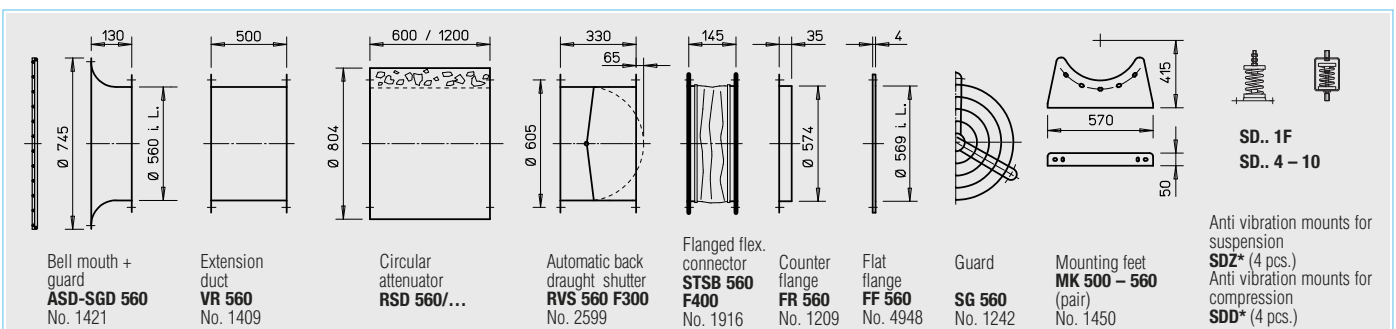
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
F400 : 0036 CPD RG 05 05
With DIBt technical approval:
F300 : Z-78.11-147
F400 : Z-78.11.148

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* Type assignment see table, last column

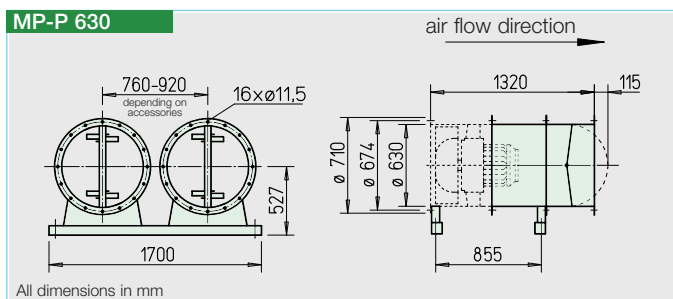
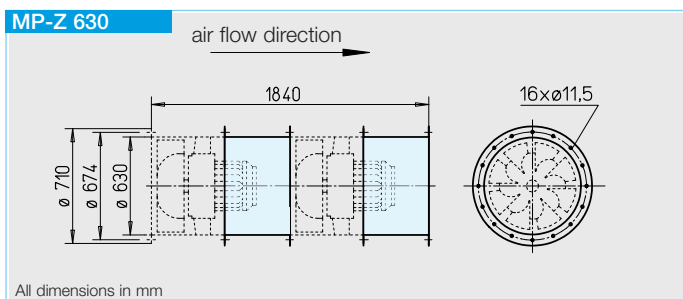
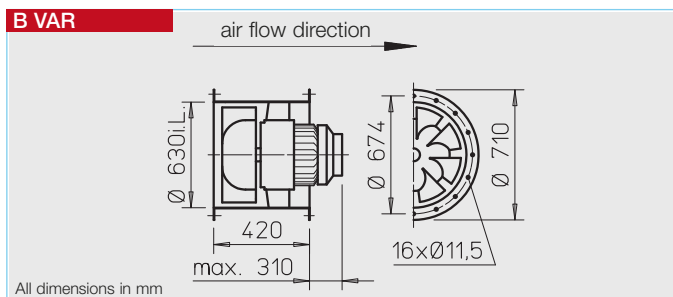
Type	Ref. No.	R.P.M.	Air flow volume (FID) ^d	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts ⁴⁾			
										Type	Ref. No.	Compression	Suspension		
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref. No.	Type	Ref. No.		
F300	3 Phase motor, 50 Hz, protection to IP 54														
B VAR 560/4 F300	2330	1420	14710	3,0	400	6,17	776	40 ²⁾ / 300	106	—	—	SDD 4	1944	SDZ 4	1945
F300	2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54														
B VAR 560/8/4 F300	2331	690/1410	7380/14970	0,7/2,8	400	2,41/6,01	471	40 ²⁾ / 300	106	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
F400	3 Phase motor, 50 Hz, protection to IP 54														
B VAR 560/4 F400	2412	1420	14710	3,0	400	6,17	776	40 ²⁾ / 400	106	—	—	SDD 4	1944	SDZ 4	1945
F400	2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54														
B VAR 560/8/4 F400	2413	690/1410	7380/14970	0,7/2,8	400	2,41/6,01	471	40 ²⁾ / 400	106	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.

³⁾ Flush mounted version see product page switches

⁴⁾ With Z-/P-design due to higher total weight, type assignment according to tables on page 150.



- ❑ **Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- ❑ **Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- ❑ **Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- ❑ **Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- ❑ **Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- ❑ **Electrical connection**
Standard terminal box in temperature-resistant execution (protection to IP 54) mounted on the outside of the casing.
- ❑ **Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.
- ❑ **Sound levels**
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

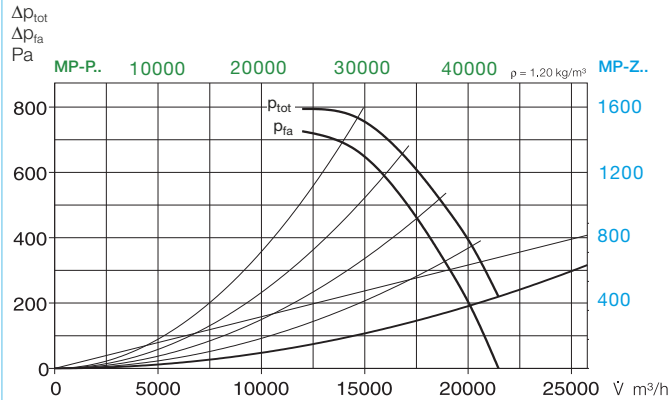
- **Mounting package MP-Z for two-stage Z-unit**
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 36 kg
MP-Z 630 Ref. No. 4909

- **Mounting package MP-P for parallel P-unit**
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 110 kg
MP-P 630 Ref. No. 4893

B VAR 630/4

R.P.M.=1450

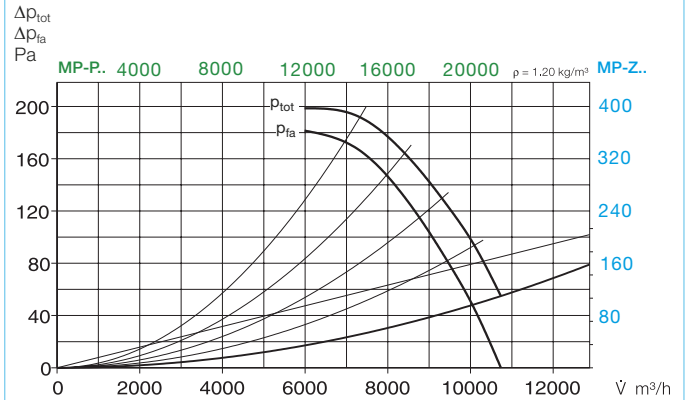
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	97	73	89	91	93	91	84	74
L _{PA,4m}	Air noise	dB(A)	77	53	69	71	73	71	64	54



B VAR 630/8

R.P.M.=725

Frequency	Hz	Ges.	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	80	65	71	76	75	70	62	55



Certification

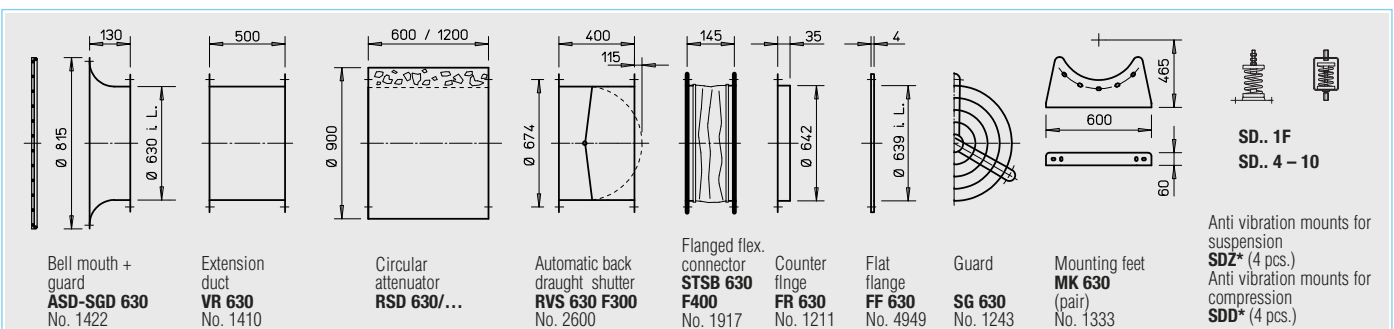
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
F400 : 0036 CPD RG 05 05
With DIBt technical approval:
F300 : Z-78.11-147
F400 : Z-78.11.148

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Accessory details	Pages
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* Type assignment see table, last column

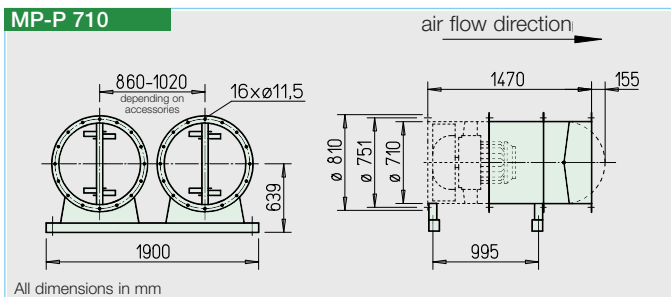
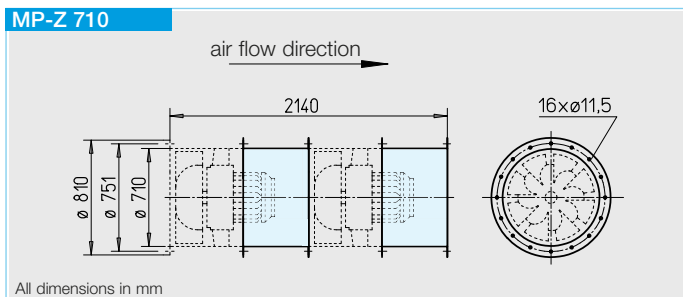
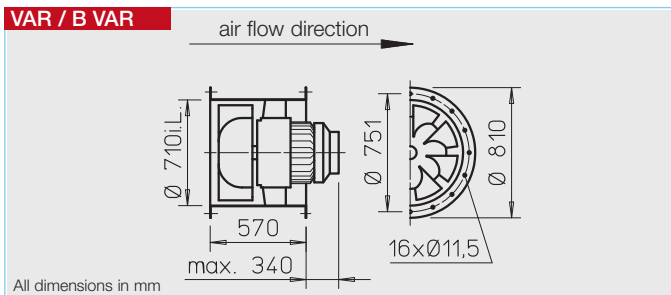
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts ⁴⁾					
										Type	Ref. No.	Compression	Suspension	Type	Ref. No.	Type	Ref. No.
F300 3 Phase motor, 50 Hz, protection to IP 54		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg								
B VARD 630/4 F300	2341	1460	21460	5,5	400	10,5	776	40 ²⁾ / 300	150	—	—	SDD 5	1924	SDZ 5	1925		
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B VARD 630/8/4 F300	2342	725/1430	10660/21460	1,8/7,2	400	4,64/14,4	471	40 ²⁾ / 300	167	PDA 25	5060	SDD 5	1924	SDZ 5	1925		
F400 3 Phase motor, 50 Hz, protection to IP 54																	
B VARD 630/4 F400	2423	1460	21460	5,5	400	10,5	776	40 ²⁾ / 400	150	—	—	SDD 5	1924	SDZ 5	1925		
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54																	
B VARD 630/8/4 F400	2424	725/1430	10660/21460	1,8/7,2	400	4,64/14,4	471	40 ²⁾ / 400	167	PDA 25	5060	SDD 5	1924	SDZ 5	1925		

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes).

²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.

³⁾ Flush mounted version see product page switches

⁴⁾ With Z-P-design due to higher total weight, type assignment according to tables on page 150.



- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor.

 - **Series VAR**
Totally enclosed, protected to IP 54. Optional drainage holes made to order (please state installation position).
 - **Series B VAR**
Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**

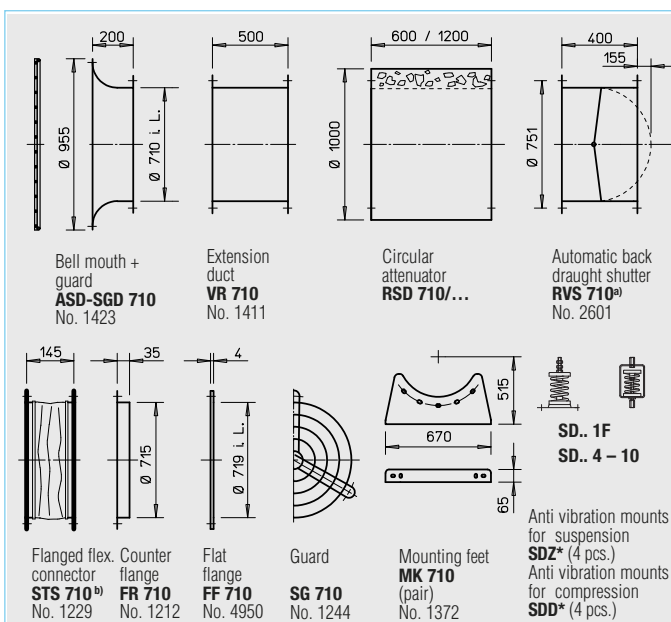
 - **Baureihe VAR**
All types (except explosion proof and pole-switching) have PTC resistors which must be connected to a motor protection unit (see type table). Models without PTC resistors must be protected by a conventional circuit breaker.
- **Series B VAR**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible.
- **Series VAR**
Ensure that motor drainage holes (where used) face downwards.
- **Series B VAR**
Suitable for installation within and outside the fire zone.
- Electrical connection**
Standard terminal box (protection to IP 55) from polymer (series VAR) or in temperature-resistant execution (series B VAR) mounted on the outside of the casing.
- Protection / Guard for B VAR**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.

■ Mounting package MP-Z for two-stage Z-unit
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 43 kg

MP-Z 710 Ref. No. 4910

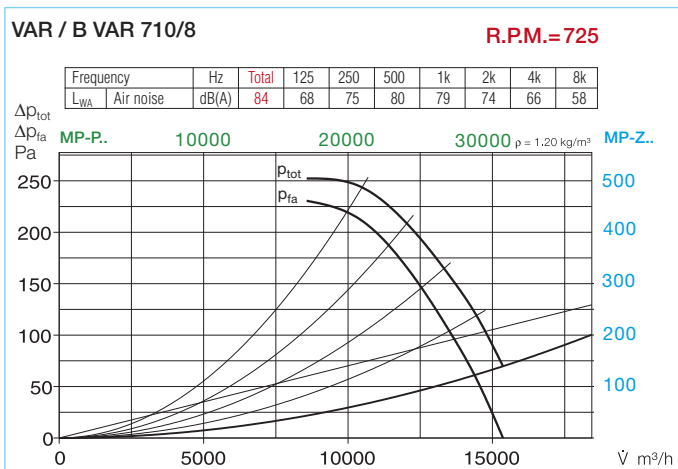
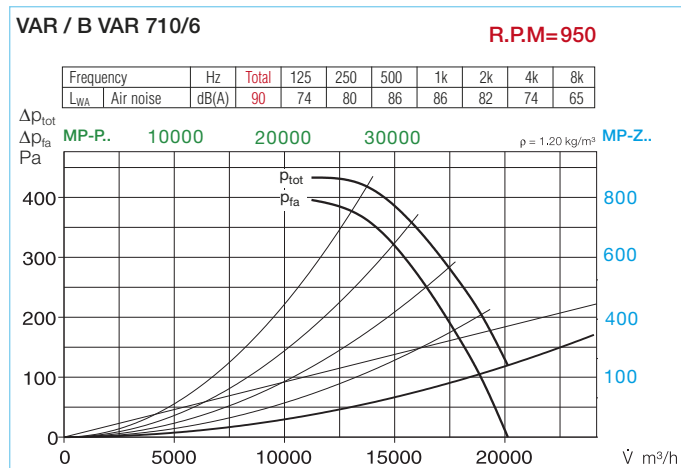
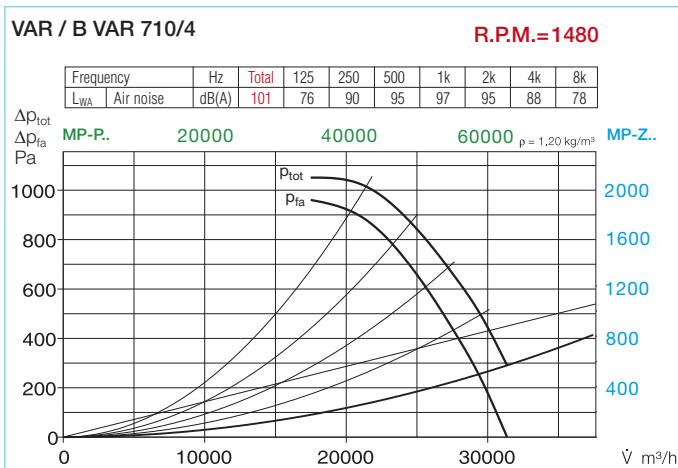
■ Mounting package MP-P for parallel P-unit
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 145 kg

MP-P 710 Ref.-No. 4894



^{a)} Motorised shutters, for ventilation mode, see accessory pages

^{b)} Type for B VAR: STSB 710 F400, No. 1918



Certification

The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
F400 : 0036 CPD RG 05 05
With DIBt technical approval:
F300 : Z-78.11-147
F400 : Z-78.11.148

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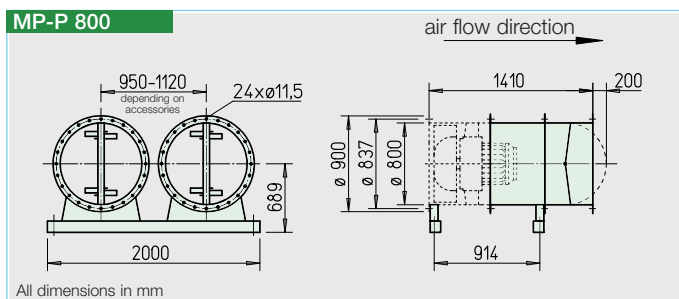
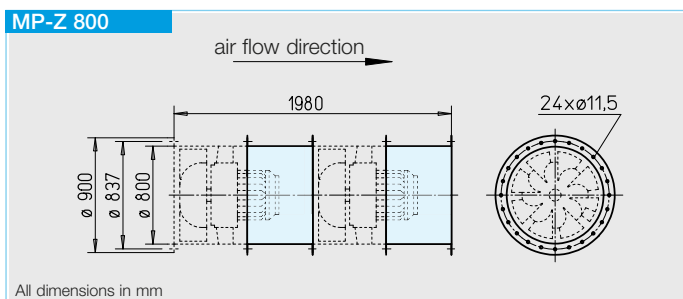
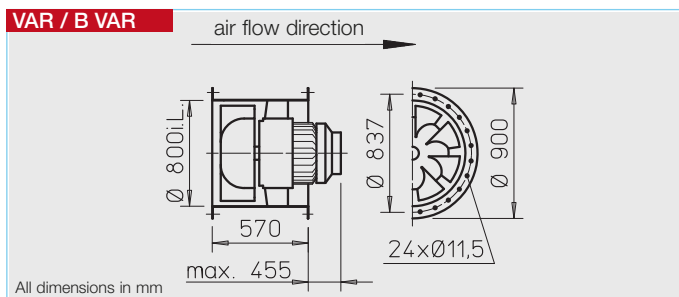
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Sound levels

Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	full load	Current	speed controlled	Wiring diagram	Maximum air flow temp. standard supply	air flow temp. speed controlled	Nominal weight (net) ⁴⁾	Frequency inverter Pole switch	Full motor protection unit using motor PTC-resistors	
		min ⁻¹	V m ³ /h	kW	V	A	A	No.	+°C	+°C	ca. kg	Type	Ref. No.	Type	Ref. No.
40° 3 Phase motor, 50 Hz, protection to IP 54															
VAR 710/4	6723	1450	31050	11,0	400	21,6/12,6	—	776	60	—	280,0	FU-CS 22 ²⁾	5470	MSA ³⁾	1289
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54															
VAR 710/8/4	6794	730/1470	15470/31160	3,00/11,00	400	8,90/24,0	—	471	60	—	230,0	PDA 25	5060	—	—
40° Explosion proof, E Exe II, 3 Phase motor, 50 Hz, temperature class T 3, protection to IP 54															
VAR 710/8 Ex ¹⁾	6724	680	14410	1,30	400	3,65	—	470	40	—	165,0	not permitted	—	not permitted	—
VAR 710/6 Ex ¹⁾	6725	955	20240	2,60	400	6,8/3,9	—	498	40	—	190,0	not permitted	—	not permitted	—
VAR 710/4 Ex ¹⁾	6726	1465	31050	10,00	400	19,3/11,2	—	498	40	—	255,0	not permitted	—	not permitted	—
F300 3 Phase motor, 50 Hz, protection to IP 54															
B VAR 710/4 F300	2350	1470	30940	11,00	400	21,2	—	776	40 / 300 ³⁾	—	230,0	—	—	—	—
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54															
B VAR 710/8/4 F300	2351	725/1455	15460/30940	3,0/11,0	400	7,0/21,0	—	471	40 / 300 ³⁾	—	230,0	PDA 25	5060	—	—
F400 3 Phase motor, 50 Hz, protection to IP 54															
B VAR 710/4 F400	2433	1470	30940	11,0	400	21,2	—	776	40 / 400 ³⁾	—	230,0	—	—	—	—
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54															
B VAR 710/8/4 F400	2434	725/1455	15460/30940	3,0/11,0	400	7,0/21,0	—	471	40 / 400 ³⁾	—	230,0	PDA 25	5060	—	—

¹⁾ A vibration monitoring shall be provided (on site) according to DIN EN 14986. ²⁾ incl. full motor protection unit & sine filter ³⁾ Smoke extraction (nonrecurring 120 minutes at 300 °C or 120 min. at 400 °C). ⁴⁾ Anti vibration mounts based on weight see page 150



- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor.
- Series VAR**
Totally enclosed, protected to IP 54. Optional drainage holes made to order (please state installation position).
- Series B VAR**
Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**

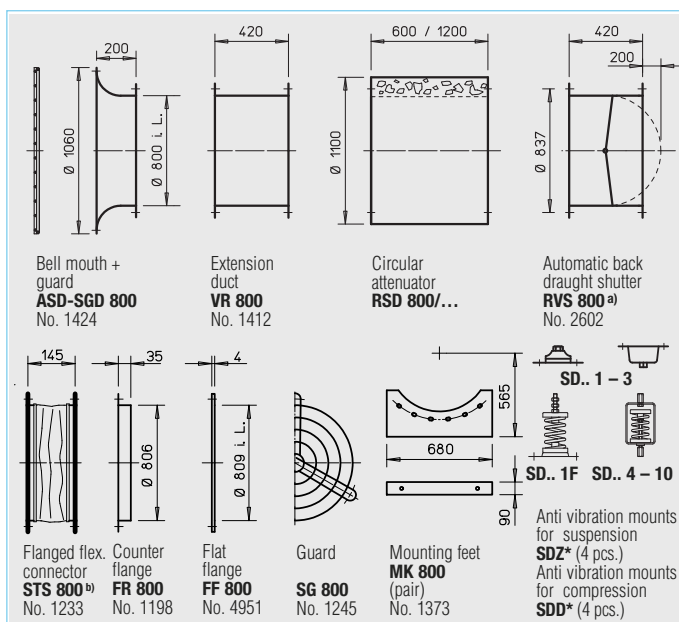
 - Baureihe VAR**
All types (except explosion proof and pole-switching) have PTC resistors which must be connected to a motor protection unit (see type table). Models without PTC resistors must be protected by a conventional circuit breaker.
- Series B VAR**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible.
- Series VAR**
Ensure that motor drainage holes (where used) face downwards.
- Series B VAR**
Suitable for installation within and outside the fire zone.
- Electrical connection**
Standard terminal box (protection to IP 55) from polymer (series VAR) or in temperature-resistant execution (series B VAR) mounted on the outside of the casing.
- Protection / Guard for B VAR**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.

■ Mounting package MP-Z for two-stage Z-unit
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 60 kg

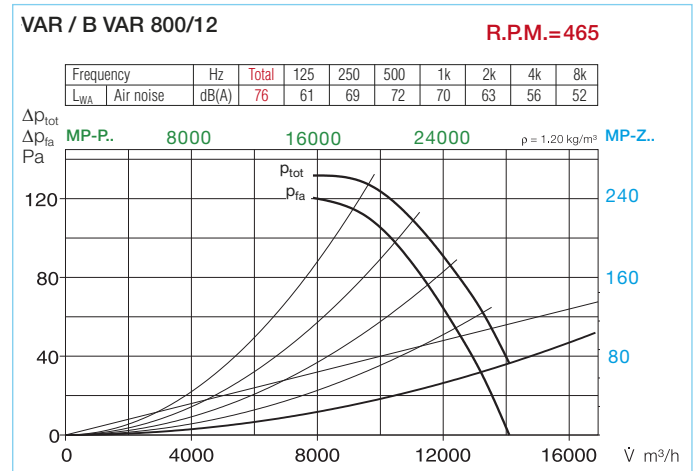
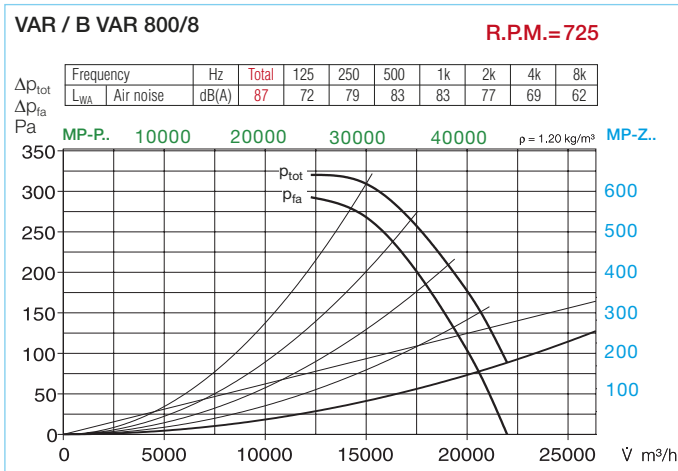
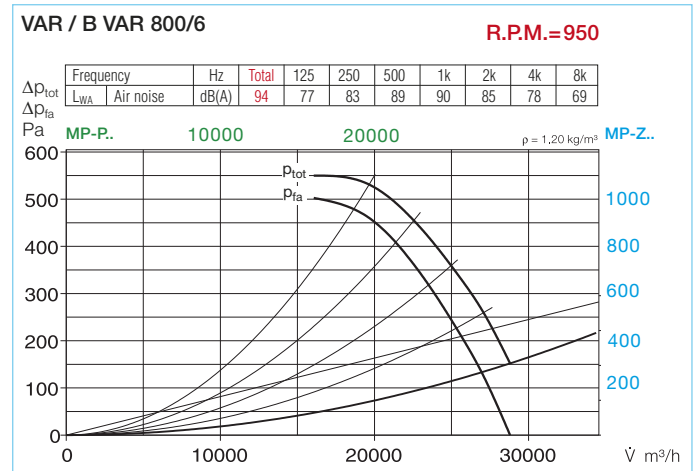
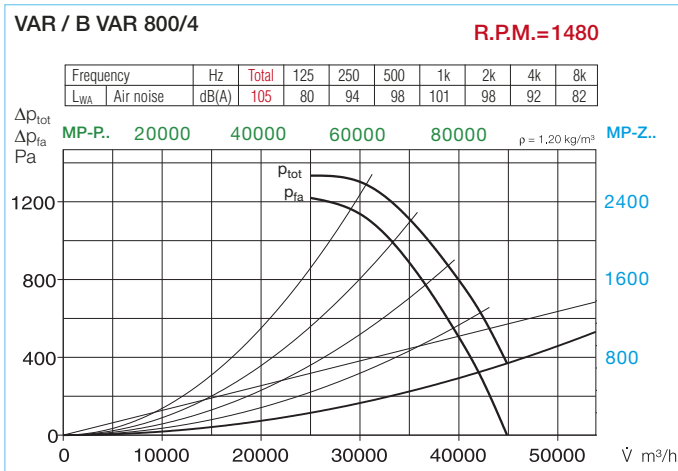
MP-Z 800 Ref. No. 4911

■ Mounting package MP-P for parallel P-unit
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 205 kg

MP-P 800 Ref. No. 4895



^{a)} Motorised shutters, for ventilation mode, see accessory pages
^{b)} Type for B VAR: STSB 800 F400, No. 1919



Certification

The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
F400 : 0036 CPD RG 05 05
With DIBt technical approval:
F300 : Z-78.11-147
F400 : Z-78.11.148

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Accessory details

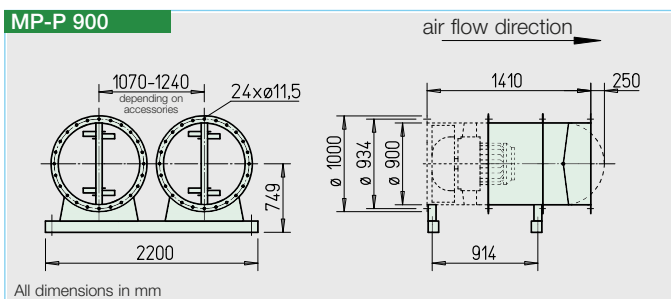
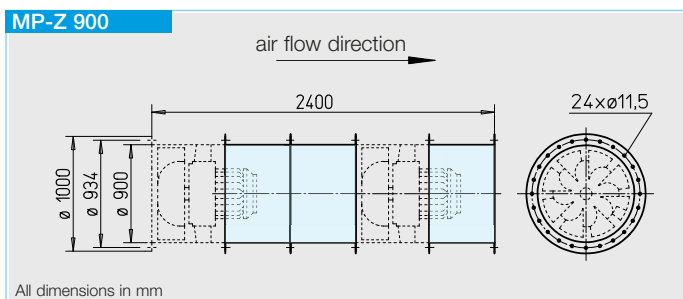
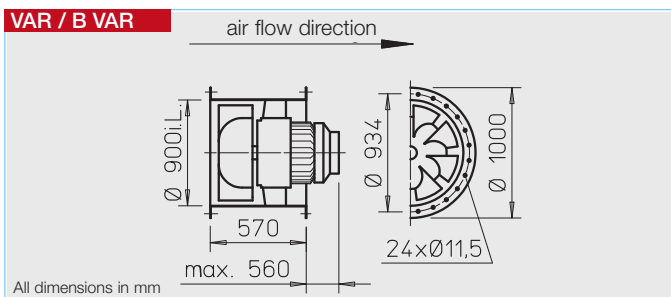
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Sound levels

Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

Type	Ref. No.	R.P.M.	Air flow volume (FID) ^d	Motor power (nominal)	Voltage	full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	air speed controlled	Nominal weight (net) ⁴⁾	Frequency inverter Pole switch	Full motor protection unit using motor PTC-resistors
		min ⁻¹	V m ³ /h	kW	V	A	A	No.	+°C	+°C	ca. kg	Type Ref. No.	Type Ref. No.
40° 3 Phase motor, 50 Hz, protection to IP 54													
VAR 800/4	6729	1460	44720	18,50	400	34,4/20	—	776	60	—	310,0	FU-CS 40²⁾ 5472	MSA 1289
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54												Pole switch	
VAR 800/8/4	6796	735/1470	22280/44570	5,50/20,00	400	12,0/40,0	—	471	60	—	325,0	PDA 63 1283	—
40° Explosion proof, E Exe II, 3 Phase motor, 50 Hz, temperature class T 3, protection to IP 54													
VAR 800/8 Ex¹⁾	6730	710	21530	2,60	400	6,6/3,8	—	470	40	—	240,0	not permitted	not permitted
VAR 800/6 Ex¹⁾	6731	970	29410	6,60	400	15,0/8,7	—	498	40	—	280,0	not permitted	not permitted
VAR 800/4 Ex¹⁾	6732	1475	44720	17,50	400	33,5/19,4	—	498	40	—	370,0	not permitted	not permitted
F300 3 Phase motor, 50 Hz, protection to IP 54													
B VAR 800/4 F300	2360	1465	44570	18,5	400	35,1	—	776	40 / 300 ³⁾	—	230,0	—	—
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54												Pole switch	
B VAR 800/8/4 F300	2361	740/1470	22430/44570	5,0/20,0	400	14,1/38,6	—	471	40 / 300 ³⁾	—	230,0	PDA 63 1283	—
F400 3 Phase motor, 50 Hz, protection to IP 54													
B VAR 800/4 F400	2444	1465	44570	18,5	400	35,1	—	776	40 / 400 ³⁾	—	230,0	—	—
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54												Pole switch	
B VAR 800/8/4 F400	2445	740/1470	22430/44570	5,0/20,0	400	14,1/38,6	—	471	40 / 400 ³⁾	—	230,0	PDA 63 1283	—

¹⁾ A vibration monitoring shall be provided (on site) according to DIN EN 14986. ²⁾ incl. full motor protection unit & sine filter ³⁾ During ventilation mode (higher air flow temperatures during continuous operation on request.) / smoke extraction (nonrecurring 120 minutes at 300 °C or 120 minutes at 400 °C). ⁴⁾ Anti vibration mounts based on weight see page 150

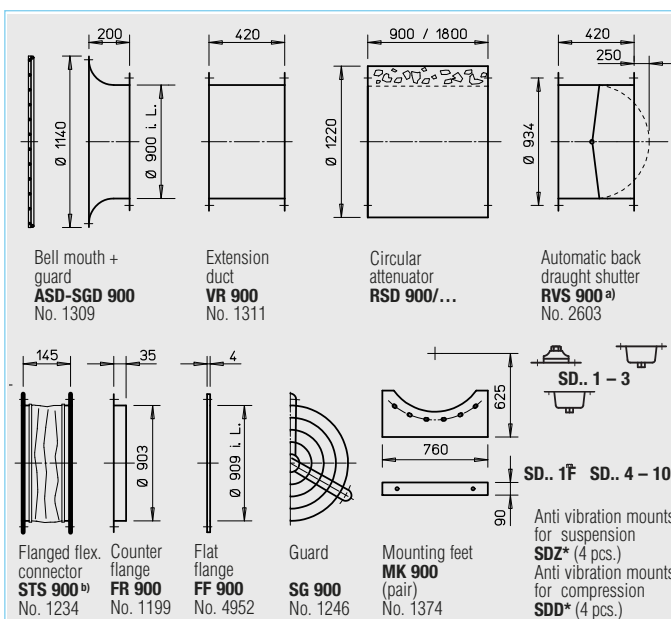


- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor.
- Series VAR**
Totally enclosed, protected to IP 54. Optional drainage holes made to order (please state installation position).
- Series B VAR**
Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**

 - Baureihe VAR**
All types (except explosion proof and pole-switching) have PTC resistors which must be connected to a motor protection unit (see type table). Models without PTC resistors must be protected by a conventional circuit breaker.
- Series B VAR**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible.
- Series VAR**
Ensure that motor drainage holes (where used) face downwards.
- Series B VAR**
Suitable for installation within and outside the fire zone.
- Electrical connection**
Standard terminal box (protection to IP 55) from polymer (series VAR) or in temperature-resistant execution (series B VAR) mounted on the outside of the casing.
- Protection / Guard for B VAR**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.

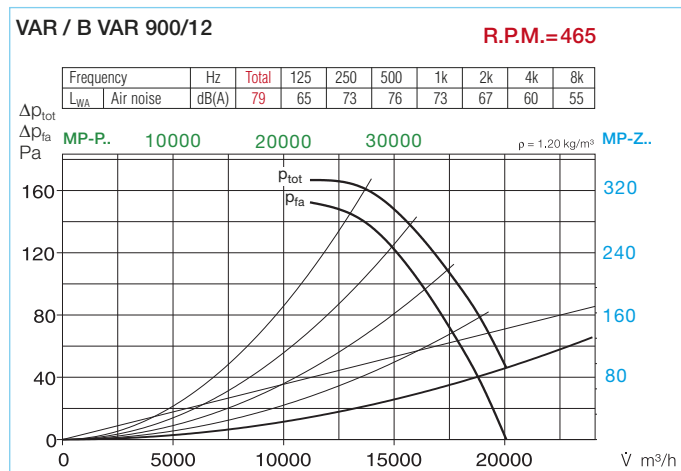
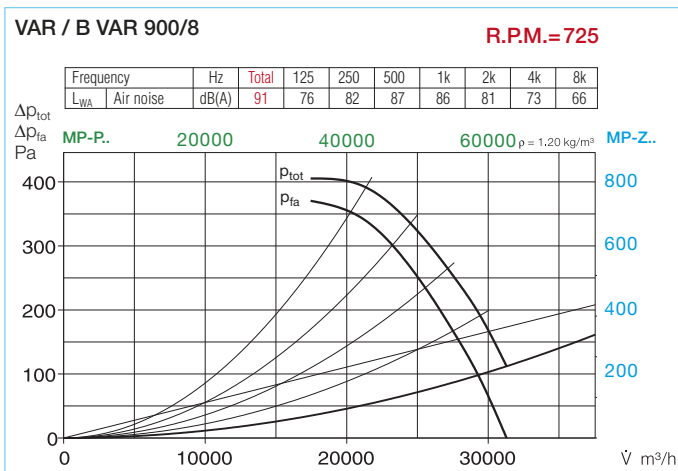
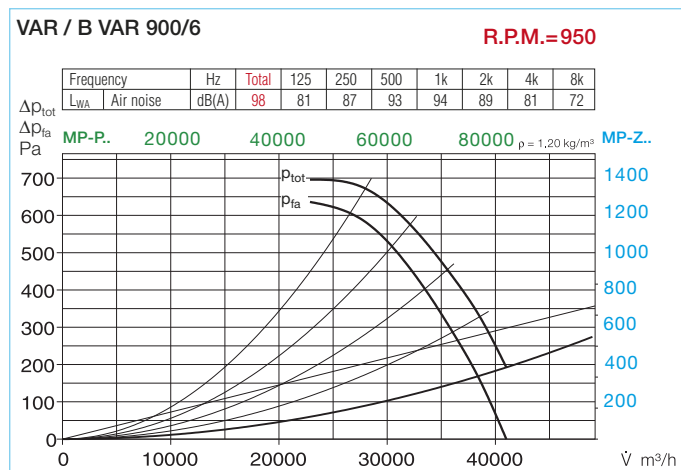
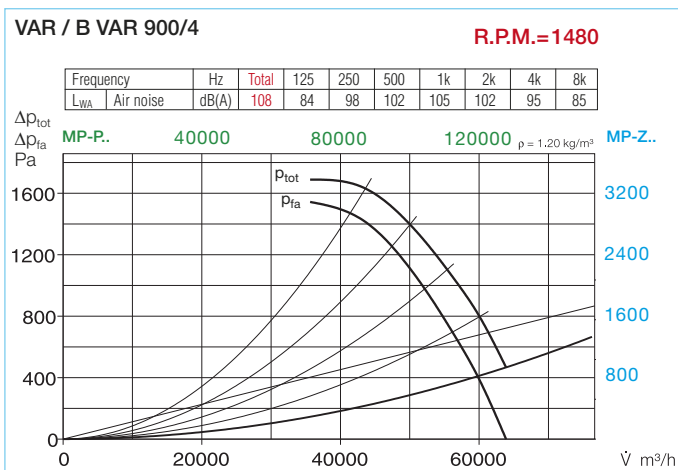
- Mounting package MP-Z for two-stage Z-unit**
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 68 kg
MP-Z 900 Ref.No. 4912
Additional extension duct required.
- VR 900** Ref.No. 1311

- Mounting package MP-P for parallel P-unit**
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 235 kg
MP-P 900 Ref.No. 4896



^{a)} Motorised shutters, for ventilation mode, see accessory pages

^{b)} Type for B VAR: STSB 900 F400, No. 1920 up to 2000 Pa



Certification

The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
F400 : 0036 CPD RG 05 05
With DIBt technical approval:
F300 : Z-78.11-147
F400 : Z-78.11.148

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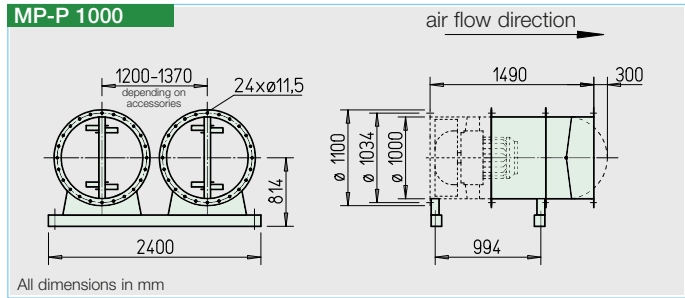
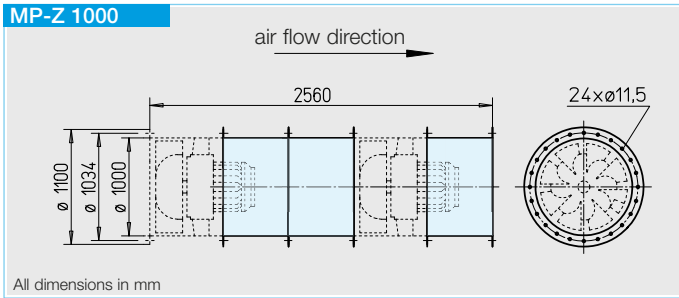
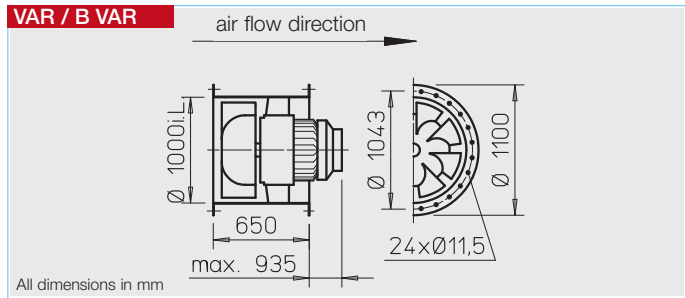
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Sound levels

Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net) ⁴⁾
		min ⁻¹	V m ³ /h	kW	V	A	A	No.	+°C	+°C	ca. kg
3 Phase motor, 50 Hz, protection to IP 54											
VAR 900/4	6743	1480	63890	37,00	400	73,0/42,2	—	498	60	—	500,0
2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54											
VAR 900/8/4	6800	730/1450	31510/62600	9,50/40,00	400	35,0/80,0	—	471	60	—	540,0
Explosion proof, E Exe II, 3 Phase motor, 50 Hz, temperature class T 3, protection to IP 54											
VAR 900/8 Ex¹⁾	6744	725	31300	4,80	400	11,8/6,8	—	498	40	—	325,0
VAR 900/6 Ex¹⁾	6745	980	42310	13,20	400	28,0/16,2	—	498	40	—	390,0
VAR 900/4 Ex¹⁾	6746	1475	63670	36,00	400	67,0/38,7	—	498	40	—	545,0
3 Phase motor, 50 Hz, protection to IP 54											
B VAR 900/4 F300	2370	1470	63460	37,0	400	66,6	—	776	40 / 300 ³⁾	—	533,0
2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54											
B VAR 900/8/4 F300	2371	740/1485	31730/63460	9,2/37,0	400	25,4/74,2	—	471	40 / 300 ³⁾	—	551,0
3 Phase motor, 50 Hz, protection to IP 54											
B VAR 900/4 F400	2456	1470	63460	37,0	400	66,6	—	776	40 / 400 ³⁾	—	533,0
2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54											
B VAR 900/8/4 F400	2457	740/1485	31730/63460	9,2/37,0	400	25,4/74,2	—	471	40 / 400 ³⁾	—	551,0

¹⁾ A vibration monitoring shall be provided (on site) according to DIN EN 14986. ²⁾ incl. full motor protection unit & sine filter ³⁾ During ventilation mode (higher air flow temperatures during continuous operation on request.) / smoke extraction (nonrecurring 120 minutes at 300 °C or 120 minutes at 400 °C). ⁴⁾ Anti vibration mounts based on weight see page 150

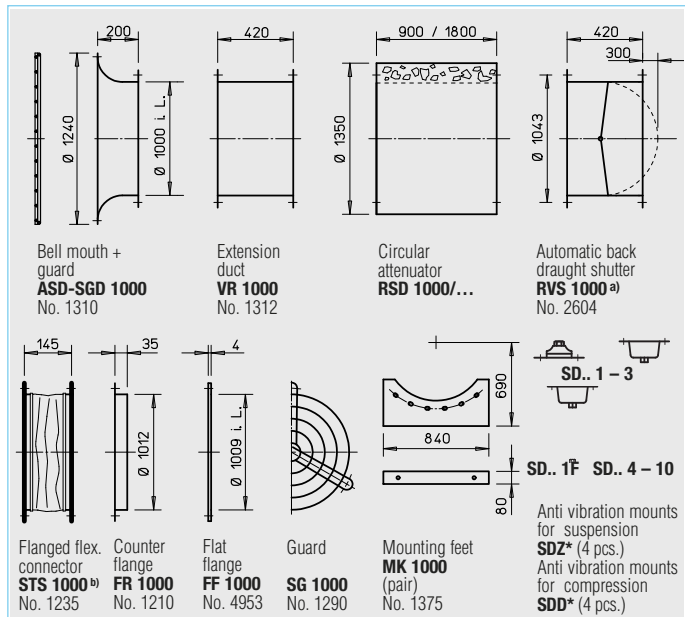


- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor.
- Series VAR**
Totally enclosed, protected to IP 54. Optional drainage holes made to order (please state installation position).
- Series B VAR**
Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**

 - Baureihe VAR**
All types (except explosion proof and pole-switching) have PTC resistors which must be connected to a motor protection unit (see type table). Models without PTC resistors must be protected by a conventional circuit breaker.
- Series B VAR**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible.
- Series VAR**
Ensure that motor drainage holes (where used) face downwards.
- Series B VAR**
Suitable for installation within and outside the fire zone.
- Electrical connection**
Standard terminal box (protection to IP 55) from polymer (series VAR) or in temperature-resistant execution (series B VAR) mounted on the outside of the casing.
- Protection / Guard for B VAR**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installation.

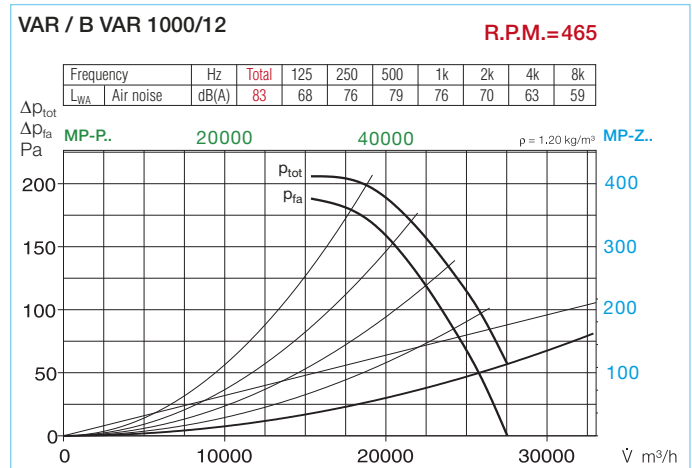
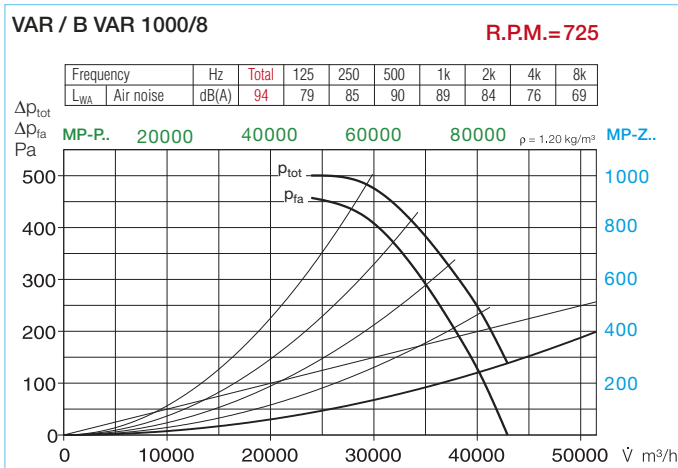
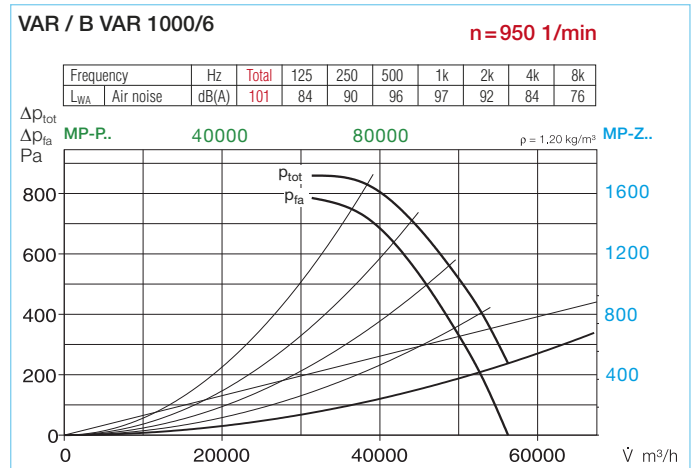
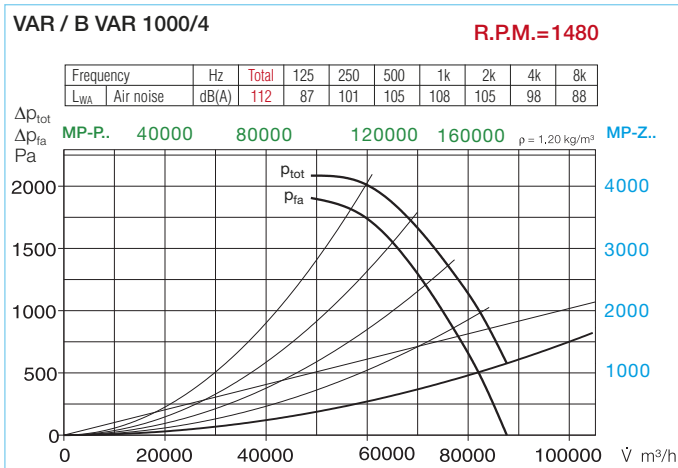
- Mounting package MP-Z for two-stage Z-unit**
To arrange two identical fans in a row, for highest pressure rates.
Scope of delivery: Extension ducts (2 pcs) and assembly kit.
Weight: 75 kg
MP-Z 1000 Ref.No. 4913
Additional extension duct required.
- VR 1000** Ref.No. 1312

- Mounting package MP-P for parallel P-unit**
To arrange two identical fans side by side, for highest air flow rates.
Scope of delivery: Extension ducts, back draught shutters, mounting bars (2 pcs), mounting feet (4 pcs) and assembly kits.
Weight: 255 kg
- MP-P 1000** Ref.No. 4897



^{a)} Motorised shutters, for ventilation mode, see accessory pages

^{b)} Type for B VAR: STSB 900 F400, No. 1920 up to 2000 Pa



Certification

The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 01
F400 : 0036 CPD RG 05 05
With DIBt technical approval:
F300 : Z-78.11-147
F400 : Z-78.11.148

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Sound levels

Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustic information on page 5.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	full load	Current speed controlled	Wiring diagram	Maximum standard supply	air flow temp. speed controlled	Nominal weight (net) ⁴⁾
		min ⁻¹	Ū m ³ /h	kW	V	A	A	No.	+°C	+°C	ca. kg
40° 3 Phase motor, 50 Hz, protection to IP 54											
VAR 1000/4	6750	1480	87640	55,00	400	106,0/61,3	—	498	60	—	660,0
40° 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54											
VAR 1000/8/4	6804	730/1450	43230/85860	17,00/68,00	400	48,0/126,0	—	471	60	—	870,0
40° Explosion proof, E Exe II, 3 Phase motor, 50 Hz, temperature class T 3, protection to IP 54											
VAR 1000/8 Ex ¹⁾	6751	735	43520	9,80	400	24,0/13,9	—	498	40	—	435,0
VAR 1000/6 Ex ¹⁾	6752	980	58030	16,50	400	34,0/19,7	—	498	40	—	485,0
VAR 1000/4 Ex ¹⁾	6753	1485	87940	58,00	400	105,0/60,7	—	498	40	—	780,0
F300 3 Phase motor, 50 Hz, protection to IP 54											
B VAR 1000/4 F300	2381	1470	87050	55,0	400	97,1	—	776	40 / 300 ³⁾	—	702,0
F300 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54											
B VAR 1000/8/4 F300	2382	735/1475	43525/87050	14,7/55,0	400	36,5/100,0	—	471	40 / 300 ³⁾	—	708,0
F400 3 Phase motor, 50 Hz, protection to IP 54											
B VAR 1000/4 F400	2468	1470	87050	55,0	400	97,1	—	776	40 / 400 ³⁾	—	702,0
F400 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 54											
B VAR 1000/8/4 F400	2469	735/1475	43525/87050	14,7/55,0	400	36,5/100,0	—	471	40 / 400 ³⁾	—	708,0

¹⁾ A vibration monitoring shall be provided (on site) according to DIN EN 14986. ²⁾ incl. full motor protection unit & sine filter ³⁾ During ventilation mode (higher air flow temperatures during continuous operation on request.) / smoke extraction (nonrecurring 120 minutes at 300 °C or 120 minutes at 400 °C). ⁴⁾ Anti vibration mounts based on weight see page 150

F600 – The temperature category for increased requirements.

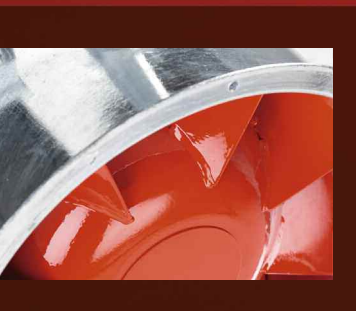
If particularly high requirements are made within the range of mechanical smoke extraction to projects like high fire loads, low ceiling heights or other unfavourable circumstances.

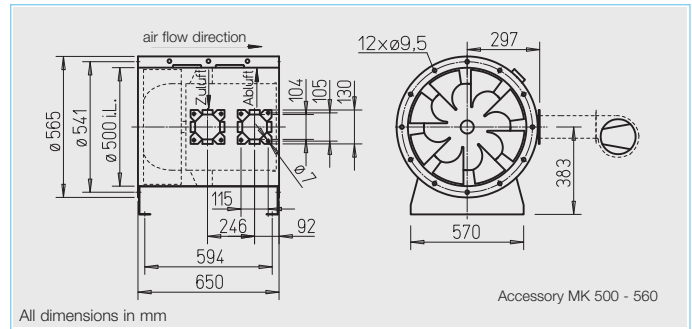
The Helios program includes the two - F600 series B AVD F600 with sizes 500-1250 and B VAR F600 in sizes 500 - 1000 mm.

Due to the large variety of types in finest gradations almost any project requirement is ideally solved. The F600 fans are suitable for installation within and outside of the fire zone. It can be installed in any position and this guarantees a flexible and demand-specific project

planning. The required cooling air to the fan drive is carried out via separate centrifugal cooling air fan(B KLG 500 and B KLG 1000, accessories, page 147).

As a perfect addition to the F600 program from Helios is the smoke exhaust control (EVS) in special F600 execution available, which regulates additionally the centrifugal cooling air fan.

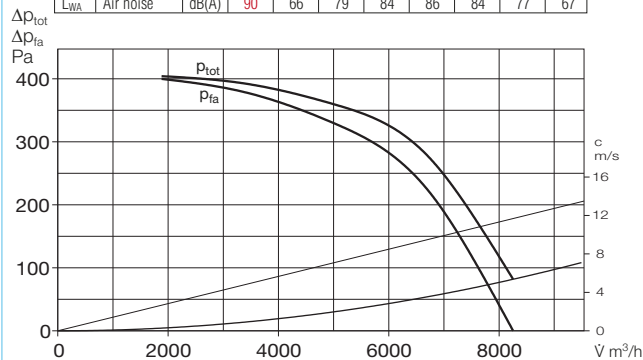




B VAR 500/4

R.P.M.=1420

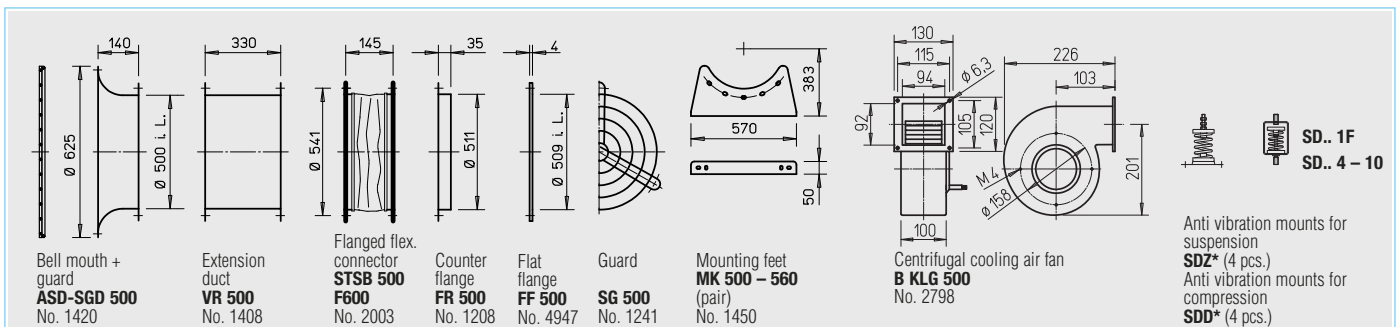
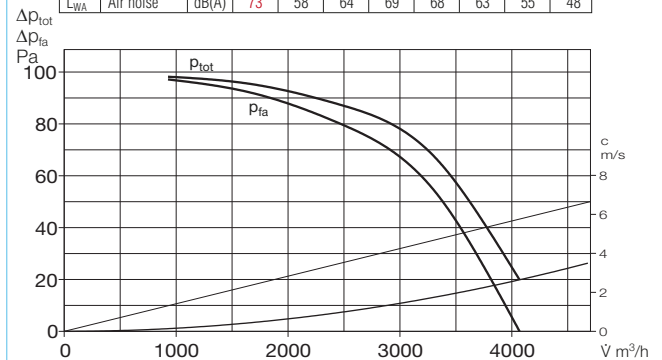
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA} Air noise		dB(A)	90	66	79	84	86	84	77	67



B VAR 500/8

R.P.M.=700

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA} Air noise		dB(A)	73	58	64	69	68	63	55	48



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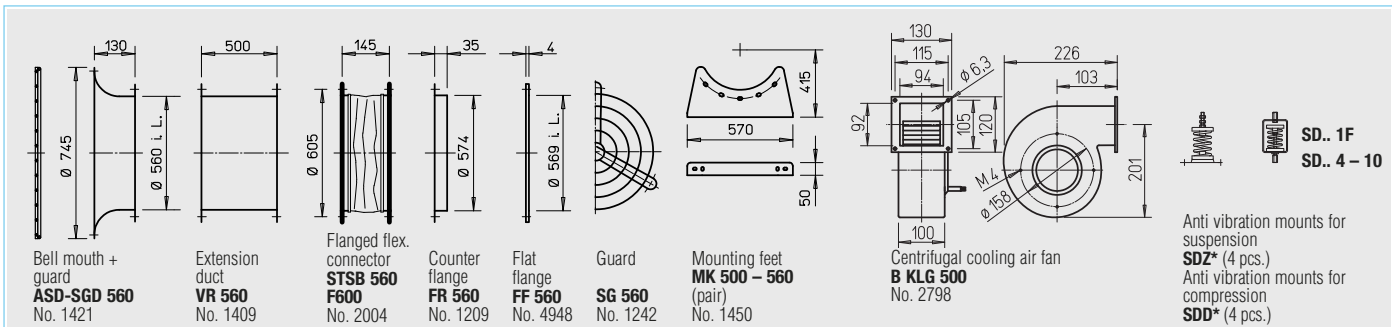
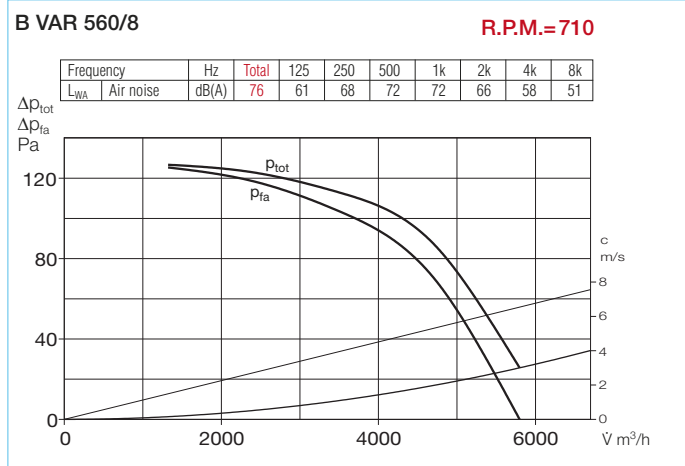
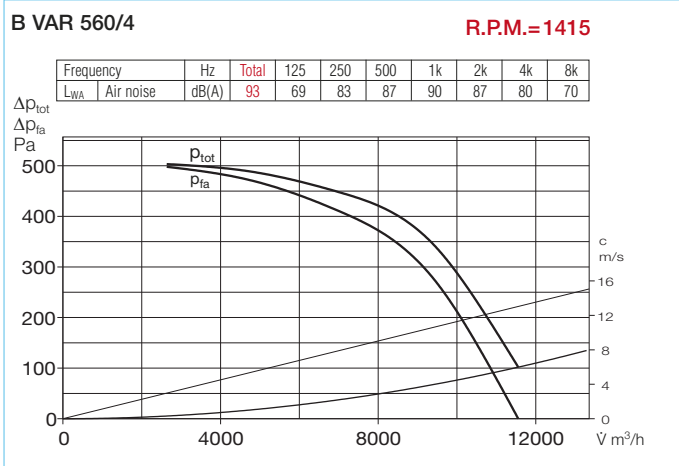
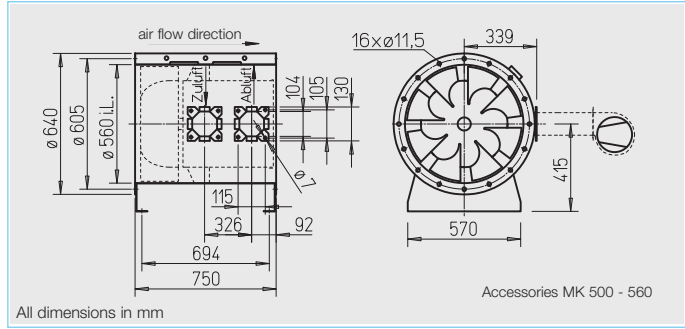
* Type assignment see table, last column

- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible. **Suitable for installation within and outside the fire zone.**
- Electrical connection**
Terminal box (IP 55) are fitted as standard for installation outside of the fire zone.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installer.
- Centrifugal cooling air fan**
To ensure the motor cooling the centrifugal cooling air fan B KLG is a necessary accessories. Alternative forced ventilation fan on request. Minimum cooling air flow $\dot{V} = 250 \text{ m}^3/\text{h}$.
- Certification**
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F600 : 0036 CPD RG 05 02
With DIBt technical approval:
F600 : Z-78.11-149

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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts				
										Type	Ref. No.	Compression		Suspension		
													Type	Ref. No.	Type	Ref. No.
F600 3 Phase motor, 50 Hz, protection to IP 55																
B VAR 500/4 F600	2813	1440	8370	1,50	400	3,26	776	40 ²⁾ / 600	93	—	—	SDD 4	1944	SDZ 4	1945	
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
B VAR 500/8/4 F600	2814	700/1430	4070/8310	0,55/2,2	400	2,0/4,84	471	40 ²⁾ / 600	96	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945	

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes). ²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request. ³⁾ Flush mounted version product page switches



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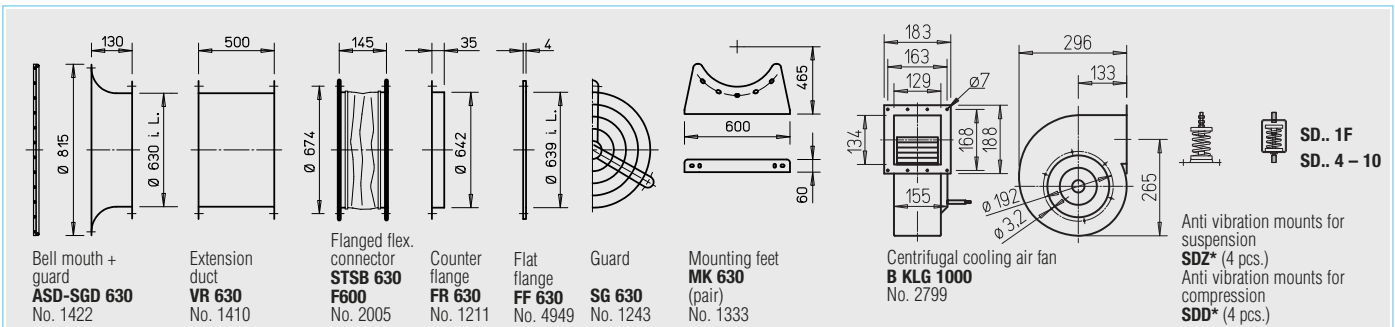
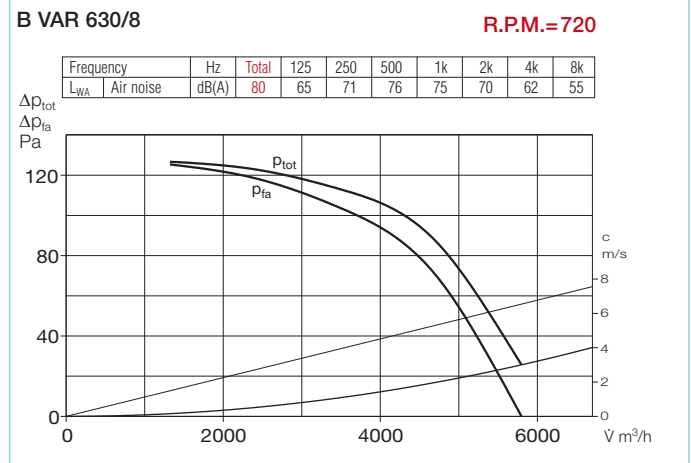
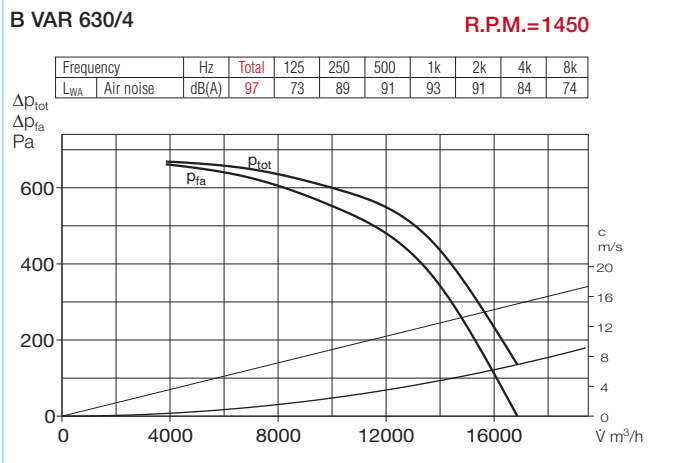
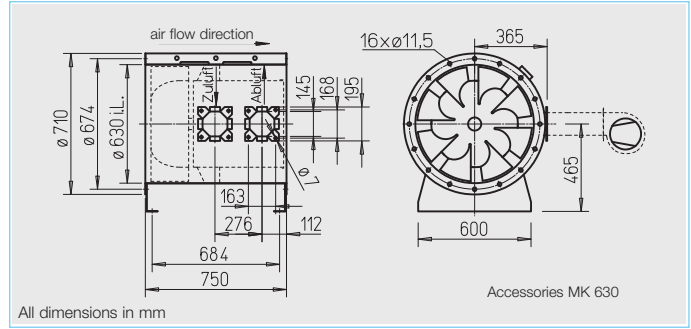
* Type assignment see table, last column

- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor suport, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible. **Suitable for installation within and outside the fire zone.**
- Electrical connection**
Terminal box (IP 55) are fitted as standard for installation outside of the fire zone.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installer.
- Centrifugal cooling air fan**
To ensure the motor cooling the centrifugal cooling air fan B KLG is a necessary accessories. Alternative forced ventilation fan on request. Minimum cooling air flow $\dot{V} = 340 \text{ m}^3/\text{h}$.
- Certification**
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F600 : 0036 CPD RG 05 02
With DIBt technical approval:
F600 : Z-78.11-149

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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted	Anti vibration mounts				
											Compression		Suspension		
		min ⁻¹	m^3/h	kW	V	A	No.	+°C	ca. kg	Type	Bestell-Nr.	Type	Bestell-Nr.	Type	Bestell-Nr.
F600 3 Phase motor, 50 Hz, protection to IP 55															
B VARD 560/4 F600	2828	1420	11470	3,0	400	6,17	776	40 ²⁾ / 600	129	—	—	SDD 4	1944	SDZ 4	1945
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55															
B VARD 560/8/4 F600	2829	710/1440	5800/11760	1,0/3,8	400	2,75/8,25	471	40 ²⁾ / 600	134	PDA 12³⁾	5081	SDD 5	1924	SDZ 5	1925

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes). ²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request. ³⁾ Flush mounted version product page switches



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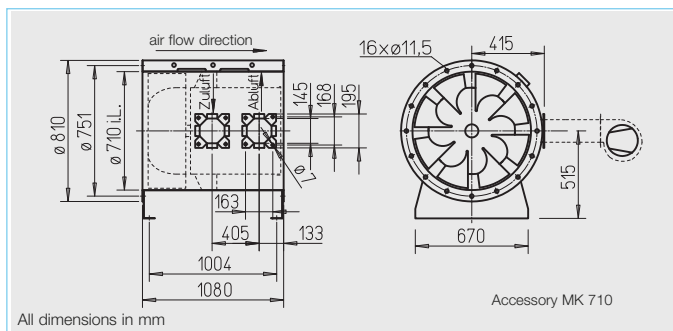
* Type assignment see table, last column

- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible. **Suitable for installation within and outside the fire zone.**
- Electrical connection**
Terminal box (IP 55) are fitted as standard for installation outside of the fire zone.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installer.
- Centrifugal cooling air fan**
To ensure the motor cooling the centrifugal cooling air fan B KLG is a necessary accessories. Alternative forced ventilation fan on request. Minimum cooling air flow $\dot{V} = 445 \text{ m}^3/\text{h}$.
- Certification**
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F600 : 0036 CPD RG 05 02
With DIBt technical approval:
F600 : Z-78.11-149

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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts			
										Type	Ref. No.	Compression		Suspension	
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref. No.	Type	Ref. No.	Type	Ref. No.
F600 3 Phase motor, 50 Hz, protection to IP 55															
B VAR D 630/4 F600	2843	1460	16980	5,5	400	10,5	776	40 ²⁾ / 600	179	—	—	SDD 5	1924	SDZ 5	1925
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55															
B VAR D 630/8/4 F600	2844	700/1430	8080/16740	1,8/7,2	400	4,64/14,4	471	40 ²⁾ / 600	196	PDA 25	5060	SDD 5	1924	SDZ 5	1925

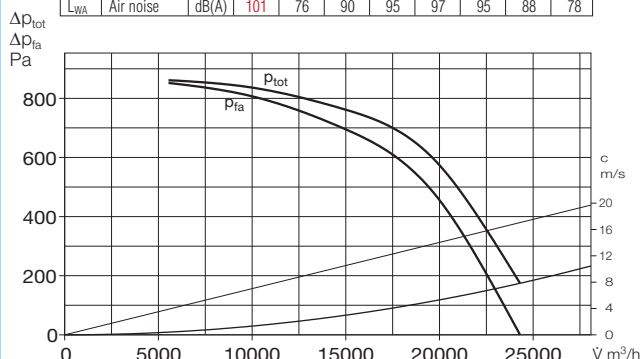
¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes). ²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.



B VAR 710/4

R.P.M.=1460

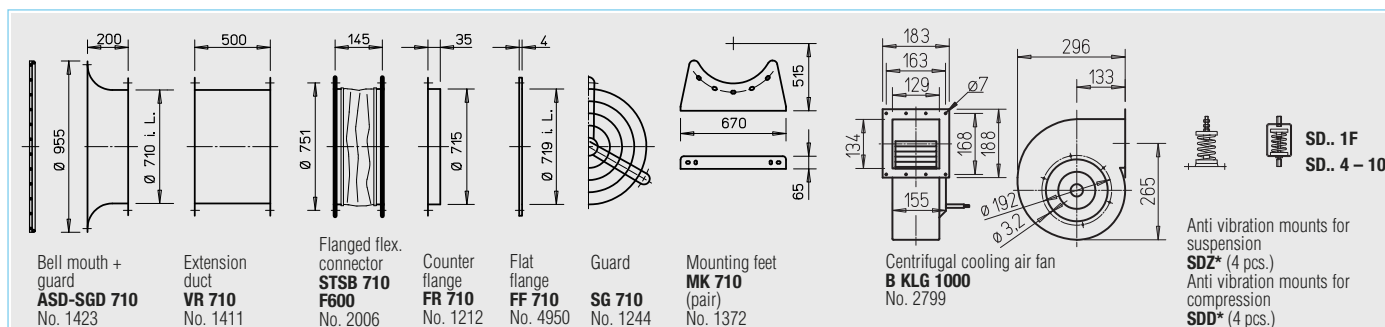
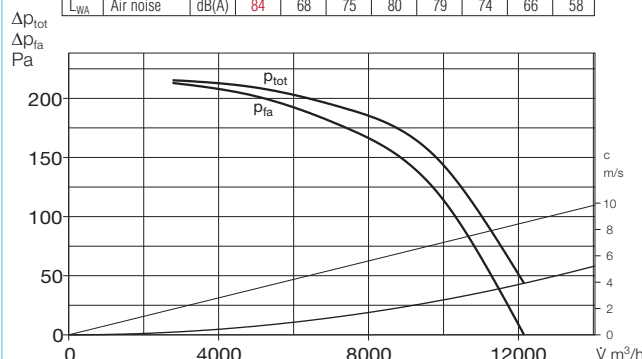
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	101	76	90	95	97	95	88	78



B VAR 710/8

R.P.M.=730

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	84	68	75	80	79	74	66	58



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* Type assignment see table, last column

Casing

Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor suport, hot dip-galvanised.

Impeller

Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.

Motor

Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.

Motor protection

For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.

Installation

In any position possible. **Suitable for installation within and outside the fire zone.**

Electrical connection

Terminal box (IP 55) are fitted as standard for installation outside of the fire zone.

Protection / Guard

Guard for impeller according to EN ISO 13857 is to be guaranteed by the installer.

Centrifugal cooling air fan

To ensure the motor cooling the centrifugal cooling air fan B KLG is a necessary accessories. Alternative forced ventilation fan on request. Minimum cooling air flow $\dot{V} = 565 \text{ m}^3/\text{h}$.

Certification

The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3. CE-approval: F600 : 0036 CPD RG 05 02 With DIBt technical approval: F600 : Z-78.11-149

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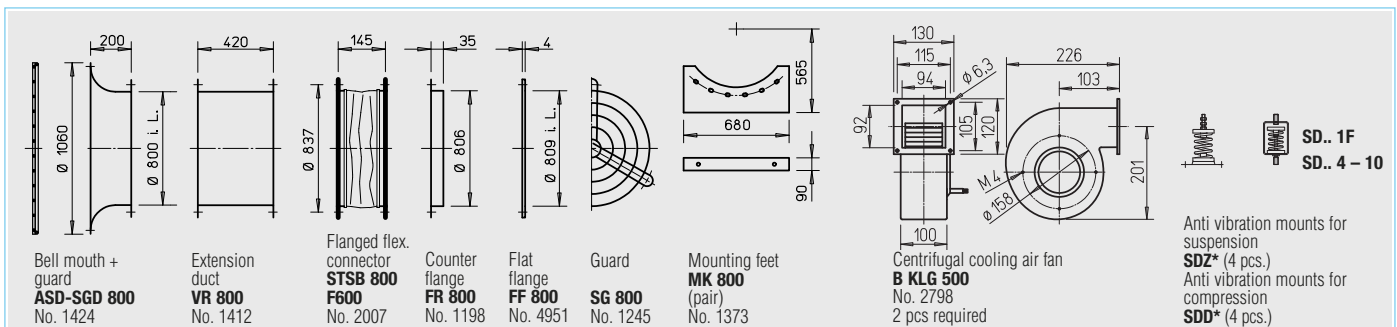
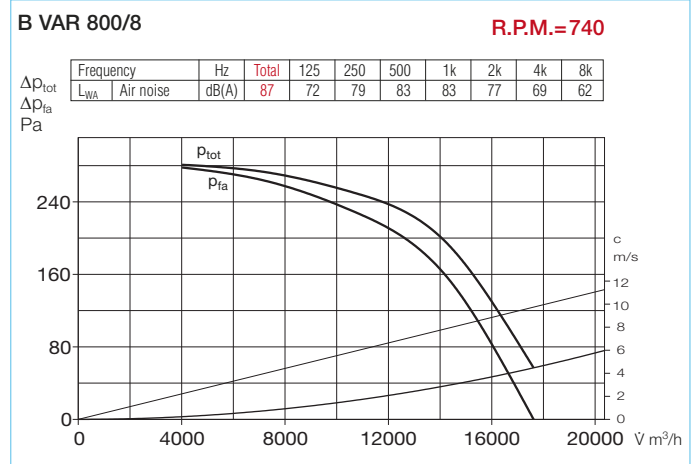
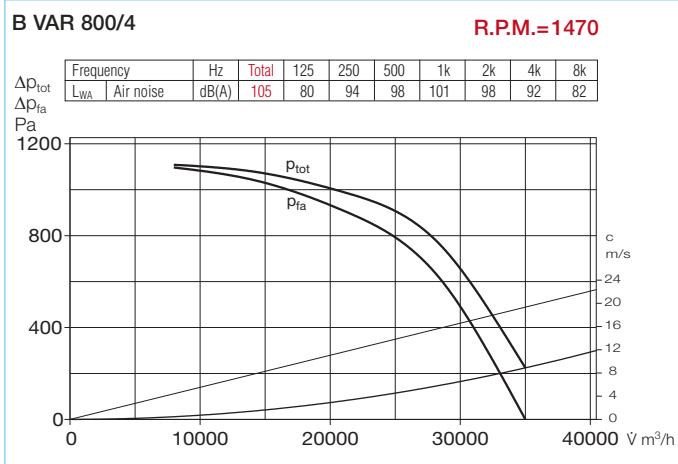
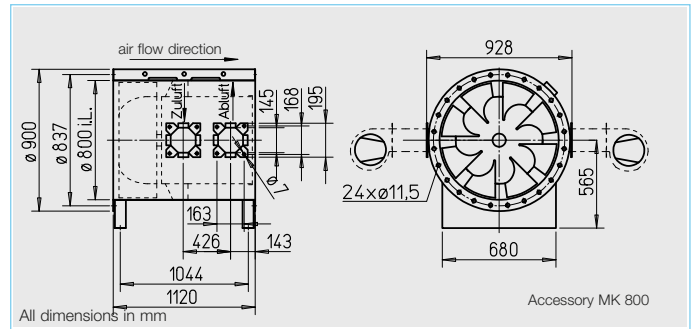
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Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted	Anti vibration mounts					
											Compression		Suspension			
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref.No.	Type	Ref.No.	Type	Ref.No.	
F600 3 Phase motor, 50 Hz, protection to IP 55																
B VARD 710/4 F600	2853	1470	24460	11,0	400	21,2	776	40 ²⁾ / 600	283	—	—	SDD 6	1926	SDZ 6	1927	
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
B VARD 710/8/4 F600	2854	725/1455	14250/24220	3,0/11,0	400	7,0/21,0	471	40 ²⁾ / 600	297	PDA 25	5060	SDD 6	1926	SDZ 6	1927	

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes). ²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.



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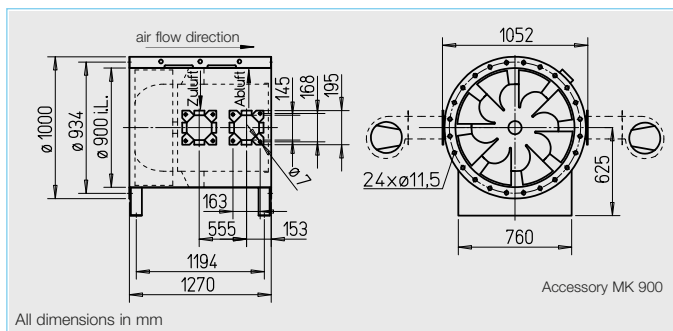
* Type assignment see table, last column

- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible. **Suitable for installation within and outside the fire zone.**
- Electrical connection**
Terminal box (IP 55) are fitted as standard for installation outside of the fire zone.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installer.
- Centrifugal cooling air fan**
To ensure the motor cooling the centrifugal cooling air fan B KLG is a necessary accessories. Alternative forced ventilation fan on request. Minimum cooling air flow $\dot{V} = 1000 \text{ m}^3/\text{h}$.
- Certification**
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F600 : 0036 CPD RG 05 02
With DIBt technical approval:
F600 : Z-78.11-149

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Type	Ref.No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts			
										Type	Ref. No.	Compression		Suspension	
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref. No.	Type	Ref. No.	Type	Ref. No.
F600 3 Phase motor, 50 Hz, protection to IP 55															
B VARD 800/4 F600	2863	1465	34880	18,5	400	35,1	776	40 ² /600	394	—	—	SDD 7	1928	SDZ 7	1929
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55															
B VARD 800/8/4 F600	2864	730/1470	17380/34760	5,0/20,0	400	14,1/38,6	471	40 ² /600	407	PDA 63	1283	SDD 7	1928	SDZ 7	1929

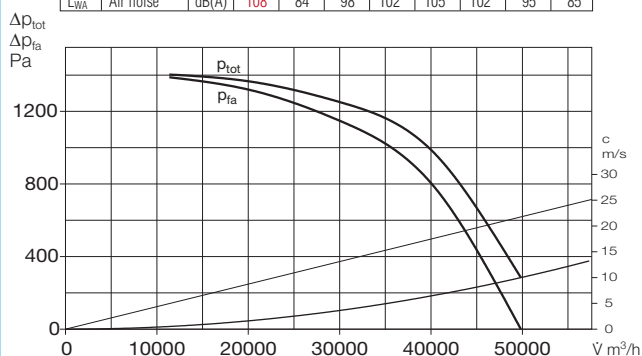
¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes). ²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.



B VAR 900/4

R.P.M.=1470

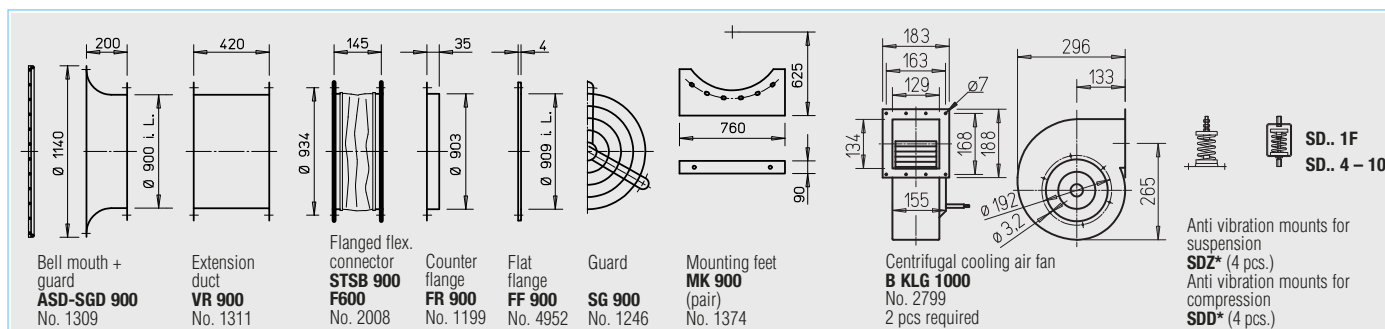
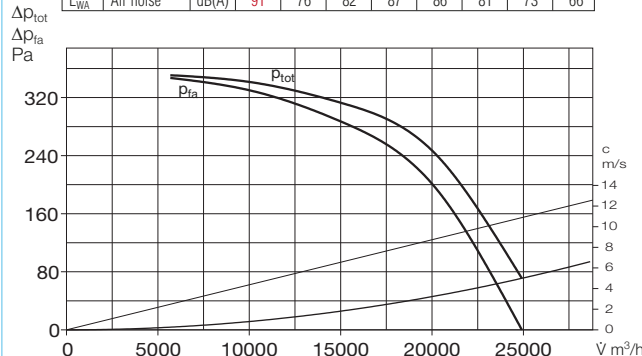
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA}	Air noise	dB(A)	108	84	98	102	105	95	85



B VAR 900/8

R.P.M.=735

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA}	Air noise	dB(A)	91	76	82	87	86	81	73



Accessories pages 146 on

- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor suport, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible. **Suitable for installation within and outside the fire zone.**

- Electrical connection**
Terminal box (IP 55) are fitted as standard for installation outside of the fire zone.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installer.
- Centrifugal cooling air fan**
To ensure the motor cooling the centrifugal cooling air fan B KLG is a necessary accessories. Alternative forced ventilation fan on request. Minimum cooling air flow $\dot{V} = 850 \text{ m}^3/\text{h}$.

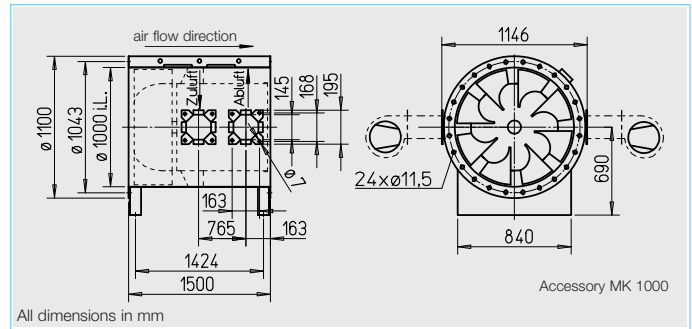
* Type assignment see table, last column

- Certification**
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F600 : 0036 CPD RG 05 02
With DIBt technical approval:
F600 : Z-78.11-149

Information	Pages
Technical description	47 on
Design of systems	3 on
Accessory details	Pages
Mounting accessories	146 on
Centrifugal cooling air fan	147
Attenuators	151
Gas warning systems, circuitry and control technology	152 on

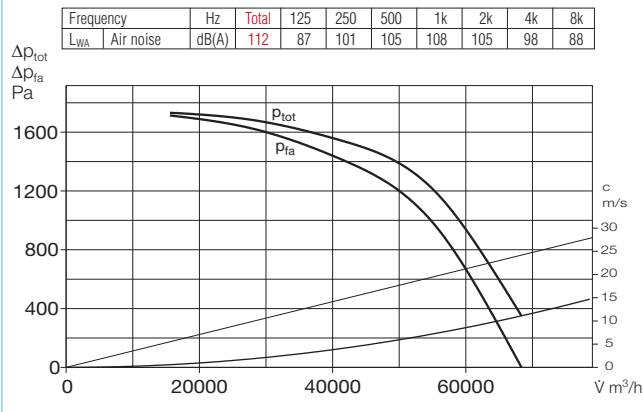
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted	Anti vibration mounts				
											Compression		Suspension		
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref.No.	Type	Ref.No.	Type	Ref.No.
F600 3 Phase motor, 50 Hz, protection to IP 55															
B VARD 900/4 F600	2873	1475	50000	37,0	400	66,6	776	40 ²⁾ / 600	630	—	—	SDD 8	1930	SDZ 8	1930
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55															
B VARD 900/8/4 F600	2874	740/1485	25080/50340	9,2/37,0	400	25,4/74,2	471	40 ²⁾ / 600	648	PDA 63	1283	SDD 8	1930	SDZ 8	1930

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes). ²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.



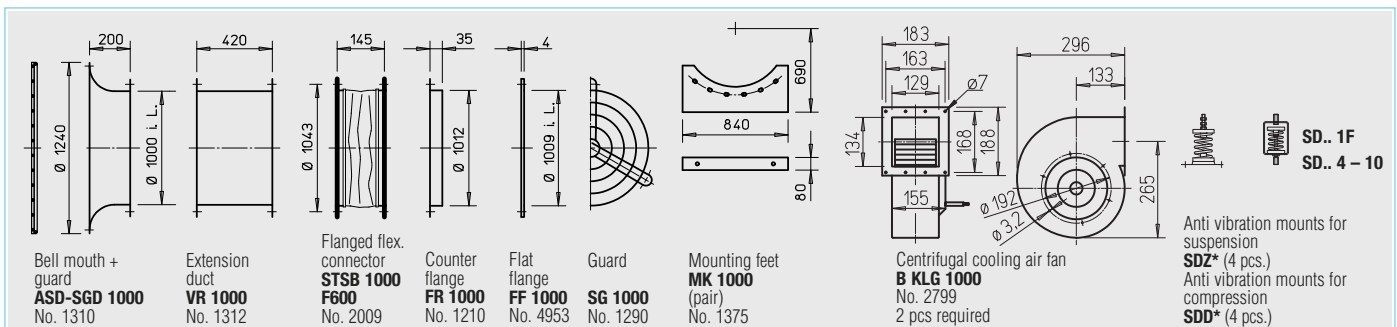
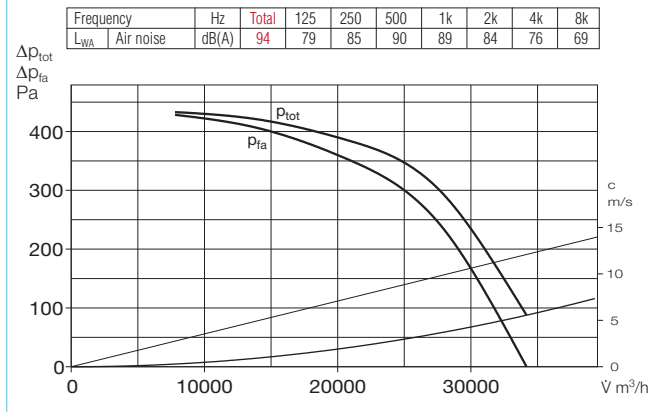
B VAR 1000/4

R.P.M.=1470



B VAR 1000/8

R.P.M.=735



Accessories pages 146 on

* Type assignment see table, last column

- Casing**
Manufactured with flanges on both sides to DIN 24155, Pt. 3. Welded construction, hot dip-galvanised. With welded guide vanes and motor support, hot dip-galvanised.
- Impeller**
Specially developed mixed-flow curved impeller, dynamically balanced, manufactured from hot dip-galvanised steel.
- Motor**
Direct driven by IEC-three phase a.c. motor. Protection to IP 55. Insulation class H. External cable with sheathing.
- Motor protection**
For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.
- Installation**
In any position possible. **Suitable for installation within and outside the fire zone.**
- Electrical connection**
Terminal box (IP 55) are fitted as standard for installation outside of the fire zone.
- Protection / Guard**
Guard for impeller according to EN ISO 13857 is to be guaranteed by the installer.
- Centrifugal cooling air fan**
To ensure the motor cooling the centrifugal cooling air fan B KLG is a necessary accessories. Alternative forced ventilation fan on request. Minimum cooling air flow $\dot{V} = 1000 \text{ m}^3/\text{h}$.
- Certification**
The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F600 : 0036 CPD RG 05 02
With DIBt technical approval:
F600 : Z-78.11-149

Information	Pages
Technical description	47 on
Design of systems	3 on
Accessory details	Pages
Mounting accessories	146 on
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Attenuators	151
Gas warning systems, circuitry and control technology	152 on

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current at full load	Wiring diagram	Max. air flow temp. ¹⁾	Nominal weight (net)	Pole switch surface mounted		Anti vibration mounts				
										Type	Ref. No.	Compression		Suspension		
													Type	Ref. No.	Type	Ref. No.
F600 3 Phase motor, 50 Hz, protection to IP 55																
B VARD 1000/4 F600	2883	1480	68820	55,0	400	95,2	776	40°/600	865	—	—	SDD 8	1930	SDZ 8	1930	
F600 2 speed motor, pole-switching (Dahlander winding Y/YY), 400 V / 3 ph./ 50 Hz, protection to IP 55																
B VARD 1000/8/4 F600	2884	735/1480	34180/68820	14,7/55,0	400	36,5/100,0	471	40°/600	838	PDA 115	1352	SDD 8	1930	SDZ 8	1930	

¹⁾ During ventilation / smoke extraction (nonrecurring 120 minutes). ²⁾ Higher air flow temperatures during continuous operation (ventilation mode) on request.

Smoke protection pressure- and stairway scavenging air systems guarantee smoke control in staircases, airlocks, fireman lifts and ante-rooms in case of fire. This enables the use of escape routes for people in the building and thus the safe exit of the building.

A smoke protection pressure system (RDA) generates a specified differential pressure between escape routes and adjacent building areas using a supply air fan. Whenever escaping persons open the doors, which lead into the smoke controlled escape route, a flow of fresh air originates from the supply air fan immediately. This prevents the smoke from entering the escape route.

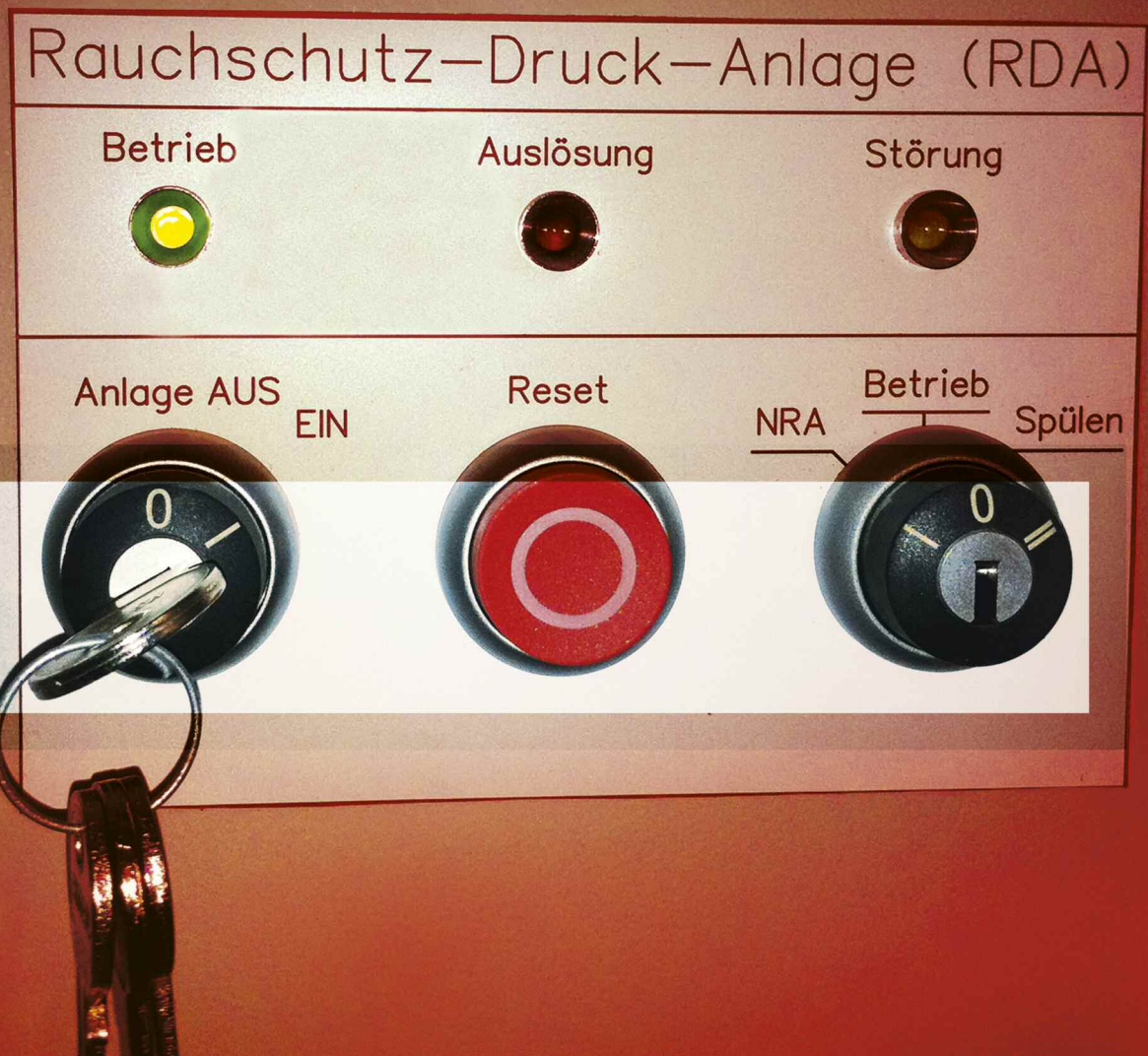


**Lifesaving protection of escape routes
through smoke protection pressure
systems.**

Even with opened doors, the smoke spreading is effectively prevented, so that the escape routes can be used without restrictions.

In addition to the smoke control of escape routes, the RDA also cares for a significant reduction in building damages caused by smoke. The added smoke-free access for the firefighters to the fire floor allows a fast and effective fire fighting.

Stairway scavenging air systems (TSA) provides ventilation of the entire stairwell by using a fan. The dilution and discharge of smoke gas generated reduces the smoke gas concentration and increase the chances for a quick and successful self rescue for the people in the building significantly.



Regulations and approval

DIN EN 12101-6 contains detailed explanations and specifications to smoke protection pressure systems (RDA). Additional requirements for smoke discharge, dilution of smoke and smoke control systems are included in the VDMA standard sheet 24188. Furthermore, the legal building guideline of the specific state building code respectively the high-rise building regulations are to be taken into account. In the planning phase the RDA has to be coordinated with the architect, the creator of the fire protection concept and the responsible approval authority. After the installation and adjustment an acceptance inspection by an expert is carried out. With handover of the system equipment the operator receives a onsite training. The functional safety in case of emergency is ensured by the annual maintenance and regular inspections.

Type of system

The VDMA 24188 standard sheet distinguishes five types of smoke control systems:

- 1) Natural smoke extraction
- 2) Scavenging air system without controlled pressure maintenance.
- 3) Scavenging air system with controlled pressure maintenance without guaranteed release in the storey.
- 4) Smoke protection pressure system with guaranteed release in the storey.
- 5) Smoke protection pressure system with guaranteed release in the storey and redundant operating mode and emergency power supply.

Depending on the escape route situation and building height the right system type is defined on the basis of flowcharts for standard cases.

Release of the system

Smoke protection pressure systems are put into operation automatically by smoke detectors. Per door, which leads to the escape route one smoke detector each is to be provided. In anterooms the smoke detector has to be installed in front of their entrance door. Additionally at least one push-button detector must be installed in the access area. The release also can be made by the fire alarm system of the building.

Scavenging of the stairwell

Directly after the release the RDA starts with scavenging the stairwell. For the supply air discharge an opening surface of

at least 1 m² is made in the stairwell head – e.g. by a RDA controlled light dome. Possibly penetrated smoke gases are so already diluted in the initial phase by the RDA and discharged from the stairwell. If exclusively a scavenging of the stairwell is requested a planning of a stairway scavenging air system (TSA) is useful. This supplies the stairwell with an air flow volume of more than 10 000 m³/h through which penetrated fire gases are diluted and discharged via the open dome light.

Overpressure build-up

After the initial scavenging a controlled overpressure must be built up between the stairwell and the fireman floor in order to ensure a smoke-free area. For this a defined air flow volume enters the stairwell by using a fan. For an equal air supply in the stairwell of high buildings, a supply air duct with air outlet grille must be provided in every third storey. Pressure sensors permanently measure the differential pressure in the stairwell. The RDA-control provides automatically the stabilization of the differential pressure in the stairwell and a door-opening force of less than 100 N (measured on the door handle) by means of a speed control. With the doors closed in the stairwell the differential pressure between stairwell and adjacent unit is at least 15 Pa. This differential pressure prevents penetrating from smoke into the stairwell through gaps around the door.

Flow of air through doors

If escaping people open the doors, thus a pressure balance occurs immediately between the escape route and area on fire. In order to prevent no smoke penetrating into the stairwell, fresh air must flow through the open door within the shortest time. For this fresh air is moved via supply air fan through the open door in the direction of the area on fire. To achieve the required air flow velocity through doors a controlled discharge opening (e.g. window with servo motor, shaft) in the unit affected by the fire must be created, which is controlled by the RDA-control. The air flow velocity to be maintained the door depends on the expected smoke gas temperature and the corresponding protection targets:

- Self rescue of persons $\geq 0,75$ m/s
- Firefighting support ≥ 2 m/s

Fireman lifts

Smoke protection pressure systems prevent through the build-up of a controlled overpressure the penetration of smoke gases in the elevator shaft of fireman lifts. In the fireman floor a louvered damper with a cross section of approx. 0,4 m² is opened by the RDA-control, so that a connection is made between elevator shaft and anteroom through which the supply air can flow out of the elevator shaft into the anteroom. If the door of the anteroom is opened in the case of fire, fresh air immediately flows through this with a velocity of at least 0,75 m/s. Therefore the complete fireman lift and its anterooms are held smoke-free by the RDA.

Estimation of the air flow rate

The layout of the right fan takes place in two steps via the determination of the necessary design air flow rate:

1) Air leakage rate

The air leakage rate is to be injected after the release consistently into the stairwell to be able to build up the necessary overpressure. Leakages by which the overpressure escapes into the stairwell are e.g., door gaps and leaking connections between windows and the brickwork. Since the determination of the leakages is often very difficult, leakages not taken into account are compensated by the inclusion of a factor of 1.5.

2) Air flow rate to ensure the required door-flow velocity

Depending on door size and flow velocity the required flow volume is determined.

The final design air flow rate results from the sum of the above mentioned two air flow rates plus a deviation limit of 15 % for flow losses. The supply air fan is laid out on the basis of this design air flow rate as well as the object-specific pressure losses.

Estimation of a complete RDA based on the example of the system on page 7, figure 1.

1. Air leakage rate in the stairwell:

T30 RS doors	
Front door	550 m ³ /h
Window	50 m ³ /h
External walls	
Internal walls	
Stairwell ceiling	350 m ³ /h
4x Overflow valves	100 m ³ /h

Σ Air leakage rates **1 050 m³/h**

+ Safety factor for undetected leak paths · 1,5

1 575 m³/h

+ Discharge via light dome 3 000 m³/h

Total air leakage rate **4 575 m³/h**

2. Air flow rate for door flow:

1x open door in safety stairwell, without necessary corridor (k = 1,8)

$$\dot{V}_L = k \cdot b \cdot h^{1,5} = 24 650 \text{ m}^3/\text{h}$$

3. Design air flow rate:

4 575 m³/h

+ 24 650 m³/h
29 225 m³/h

+ Safety factor for flow loss (+15 %) = **33 609 m³/h**

...which means: **RDA 35**

Helios Ventilation Systems

As a leading manufacturer of fans and ventilation systems Helios offers a wide range of products and fulfils in finest gradations all requirements on air flow rate and pressure. In the RDA and TSA service packages Helios medium pressure axial fans are used whose air flow rates are matched perfectly to smoke protection pressure- and stairway scavenging air systems. Modular designed system packages allow the individual adaptation to the project and thereby increase the planning flexibility and plant safety.

Helios Service

Helios offers a variety of services for the planning, implementation, start-up and approval of smoke protection pressure systems. Please contact us.

Overpressure ventilating of stairways – Smoke protection pressure system (RDA)

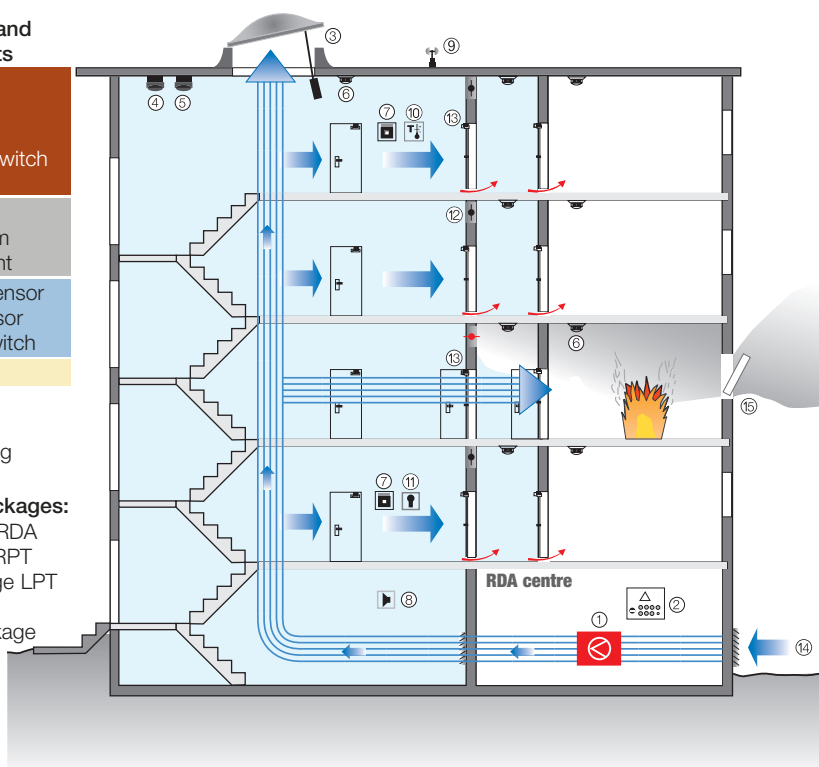
Fig. 1

RDA-packages and their components

- ① Supply air fan
- ② RDA-control
- ③ Light dome
- ④ Safety pressure switch
- ⑤ Pressure sensor
- ⑥ Smoke detector
- ⑦ Push button alarm
- ⑧ Siren/Flashing light
- ⑨ Wind- and rain sensor
- ⑩ Temperature sensor
- ⑪ Ventilation key switch
- ⑫ Overflow valve
- ⑬ Door closer
- ⑭ Supply air intake
- ⑮ Discharge opening

Legend – RDA-packages:

- Service package RDA
- Smoke package RPT
- Ventilation package LPT
- Accessories
- Redundancy package RDP: ① and ②



Smoke protection pressure system

Operating mode RDA

If smoke is detected in a unit the Helios RDA is released immediately and the stairwell is supplied through the supply air fan ① with fresh air. Through the opened light dome ③ in the stairwell head a constant flow through the stairwell takes place with fresh air to dilute and discharge possibly entered smoke gases. In addition, an overpressure builds up in the stairwell, which prevents penetration of smoke and thus ensures the smoke control of the escape routes. At the same time the RDA-control ② sends a signal to a servo motor, which opens a controlled discharge opening in the fireman floor. After the air has passed through the escape route and the opened door at a prescribed speed, it escapes through the controlled discharge opening to the outside. Fire gases are thereby held back also by a door opening ⑮, a smoke entry in the stairwell is effectively prevented.

Scavenging of stairways - Stairway scavenging air system (TSA)

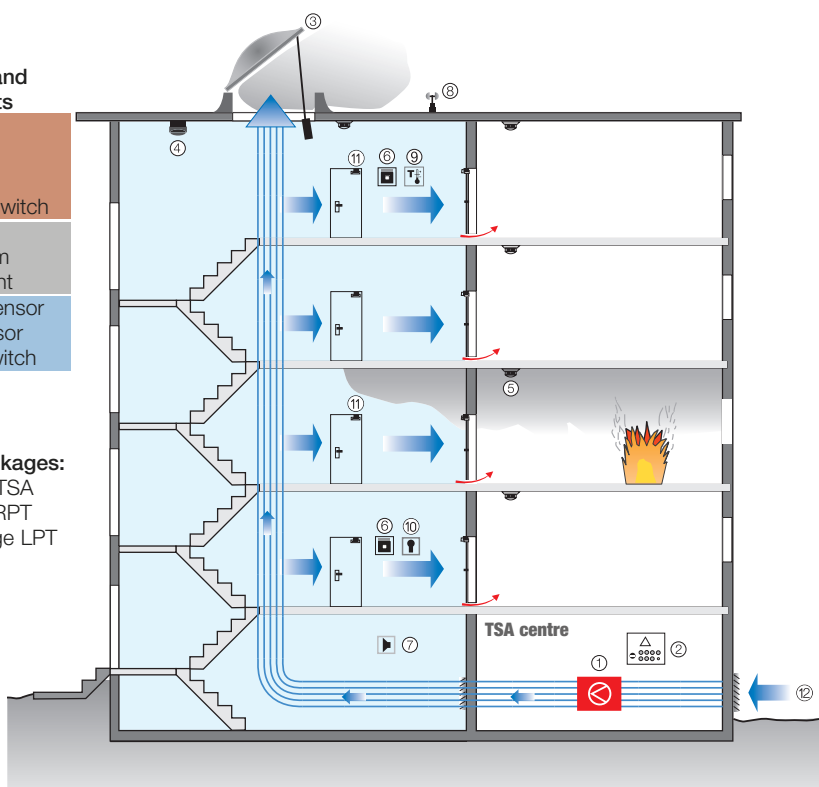
Fig. 2

TSA-packages and their components

- ① Supply air fan
- ② TSA-control
- ③ Light dome
- ④ Safeta pressure switch
- ⑤ Smoke detector
- ⑥ Push button alarm
- ⑦ Siren/Flashing light
- ⑧ Wind- and rain sensor
- ⑨ Temperature sensor
- ⑩ Ventilation key switch
- ⑪ Door closer
- ⑫ Supply air intake

Legend – TSA-packages:

- Service package TSA
- Smoke package RPT
- Ventilation package LPT



Stairway scavenging air system

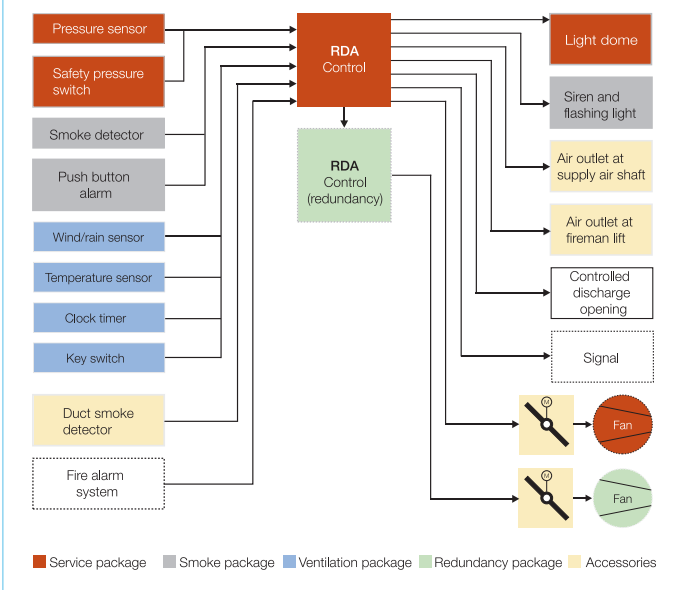
Operating mode TSA

If units are endangered by smoke the Helios TSA will be released e.g. by a smoke detector ⑤. After the immediate, complete opening of the light dome ③ in the stairwell head fresh air is transported into the stairwell via the supply air fan ①. The fresh air flows through the whole stairwell, dilutes at the same time the penetrated smoke gases and discharges them through the opened light dome ③ into the atmosphere. A constant air flow rate of about 10 000 m³ / h ensures significant reduction of smoke gas concentration in the scavenged stairwell.

RDA service package



System sketch RDA



Helios protection pressure systems RDA provide in the case of fire through overpressure build-up for the safe smoke control of stairwells, air locks, fireman lifts and their anterooms.

The complete RDA product range of Helios is made up of pre-configured packages with components coordinated on each other.

The modular system allows:

- The individual expansion and adaptation to almost all structural conditions and project requirements.
- A trouble-free planning, installation and start-up as well as a safe operation.

■ Description

■ Smoke protection pressure system with differential pressure regulation

By using a specially configured frequency inverter in combination with a powerful medium pressure axial fan and an innovative control technology, the Helios RDA meets all building regulations and normative requirements on the differential pressure regulation.

■ Scope of delivery/ Packages

The RDA scope of service is modularly structured in packages with coordinated components, which can be ordered individually:

■ Service package RDA

Contains the following as a basis of each RDA, in all objects required components:

- Medium pressure axial fan AMD. According to the table below in four sizes, depending on the required supply air flow volume.

- Light dome, colour white, RAL 9010. With 24 V spindle drive and heat-insulated 300 mm GFP-skylight base.
- Control cabinet with complete RDA control, including frequency inverter. Expandable with multiple functions using pre-configured modules, see table on right side.
- Safety pressure switch and pressure sensor for the differential pressure regulation.

■ Start-up

Complete adjustment and start-up of the smoke protection pressure system. Including service-, smoke- and if necessary ventilation- and redundancy package. On request support of the acceptance procedure.

RDA-IB Ref. No. 4966

■ Smoke package RPT

Includes the system elements, which are necessary for the alerting and activation of the system. (Description see next page).

■ Ventilation package LPT

For an ideal, demand-driven ventilation (Description see next page).

■ Redundancy package RDP

To fulfill the requirement of two independently operating fans and separate controls (Description see next page).

■ Note

As standard, the RDA control is powered by the battery integrated in the control cabinet during a power failure for at least 72 hours. During this time the light dome can be opened in case of fire for natural smoke extraction.

RDA Service package includes			a) Supply air fan, 3-phase motor, IP 55				b) Control cabinet			c) Light dome			Smoke package		Ventilation package		Redundancy package	
Type	Ref. No.	Air flow volume (max.)	Type	Motor power (nominal)	Voltage	Current at full load	Cabinet dimensions ¹⁾			Nominal dimensions	Lift	A effective	Type	Ref. No.	Type	Ref. No.	Type	Ref. No.
		m ³ /h	400 V, 50 Hz	kW	V	A	mm			mm	mm	m ²						
RDA 20	4996	20000	AMD 560/2	7,5	400/690	13,9	800x1000x300			1200x1200	500	1	RPT	4987	LPT	4986	RDP 20	4988
RDA 25	4997	25000	AMD 710/4	5,5	400/690	10,9	800x1000x300			1200x1200	500	1	RPT	4987	LPT	4986	RDP 25	4989
RDA 35	4998	35000	AMD 800/4	11	400/690	21,0	800x1000x300			1500x1500	500	1,3	RPT	4987	LPT	4986	RDP 35	4990
RDA 65	4999	65000	AMD 900/4	30	400/690	54,4	1000x1200x300			1500x1500	500	1,3	RPT	4987	LPT	4986	RDP 65	4991

Accessories for RDA..

Type	Volume control damper with 24 Volt servomotor			Volume control damper with guard for supply air duct			Volume control damper with guard for fireman lift*			Bell mouth with guard		Automatic back draught shutter		Extension duct		Flanged flexible connector		Anti vibration mounts SDD Comp./SDZ	
	Type	mm	Ref. No.	Type	Ref. No.	Type	Ref. No.	Type	No.	Type	No.	Type	No.	Type	No.	Type	No.	Type	Ref. No.
RDA 20	JK 130/60	1300x600	4975	JKG 70/50	4979	JKG 80/50*	4974	ASD-SGD 560	1421	RVS 560	2599	VR 560	1409	STS 560	1226	..2/..2	1453/1455		
RDA 25	JK 140/60	1400x600	4976	JKG 70/50	4979	JKG 80/50*	4974	ASD-SGD 710	1423	RVS 710	2601	VR 710	1411	STS 710	1229	..2/..2	1453/1455		
RDA 35	JK 150/80	1500x800	4977	JKG 70/50	4979	JKG 80/50*	4974	ASD-SGD 800	1424	RVS 800	2602	VR 800	1412	STS 800	1233	..3/..3	1367/1366		
RDA 65	JK 160/140	1600x1400	4978	JKG 70/50	4979	JKG 80/50*	4974	ASD-SGD 900	1309	RVS 900	2603	VR 900	1311	STS 900	1234	..3/..7	1367/1929		

* The fireman lift is a separate fire section. The installation of the damper JKG 80/50 must be coordinated in advance with the approval authorities or the fire protection planner.

¹⁾ When using the redundancy package, cabinet dimension on request.

System packages

Smoke package

RPT Ref.No. 4987

Contains the following components (1 piece each):

- Smoke detector,
- Push button alarm,
- Combined unit with siren and flashing light.

The package components are also available individually as accessories, see description right column.

Smoke package



Accessories

Smoke detector

RMR Ref.No. 4984

Smoke detector for the automatic activation of the system in case of smoke detection. Simple installation by bayonet lock and local test option.

Voltage 8-30 V DC
Standby current 50 µA
Dimensions mm Ø 105 x H 58



Ventilation package

LPT Ref.No. 4986

Extends the RDA function to the demand-driven ventilation mode (summer): With open dome light, the fan runs on low speed. Content of the package for activation of the ventilation mode (1 piece each):

- Key switch
- Temperature sensor
- Timer
- Wind- and rain sensor, stops the ventilation in bad weather and closes the dome light.

Ventilation package



Push button alarm

DKM Ref.No. 4985

Push button alarm for the manual activation of the system. Easy replaceable glass pane in the lockable casing.

Voltage 24V DC
Colour RAL 2011
Dimensions mm W 123 x H 123 x D 40



Redundancy package

RDP 20 Ref.No. 4988

RDP 25 Ref.No. 4989

RDP 35 Ref.No. 4990

RDP 65 Ref.No. 4991

Completes the RDA for appropriate building regulations requirements to a complete system with two independently operating supply air fans and separate power parts. Content of package (1 piece each):

- Medium pressure axial fan AMD. According to accompanying table in four sizes (depending on the required supply air rate).
- Power part integrated in control cabinet from service package.

Redundancy package



Siren/Flashing light

BLH Ref.No. 4983

Combined unit with xenon flashing light and volume-adjustable siren. Protected in impact resistant polymer casing, for ceiling and wall mounting.

Voltage 18-30 V DC
Rated current 170 mA
Sound level ca. 110 dB
Dimensions mm Ø 93 x H 120



Duct smoke detector

RMK Ref.No. 4982

Duct smoke detector for early detection of smoke gases in the supply air intake.

Voltage 12/24 V DC
Standby current 120 µA
Dimensions mm W 370 x H 128 x D 64



Connection options to RDA controls

Type	Quantity	Description
RMR	10 x	Smoke detector
RMK	1 x	Duct smoke sensor
AMD..	1 x	Medium pressure axial fan
DDR	1 x	Pressure sensor
BLH	1 x	Siren/Flashing light
DKM	10 x	Push button alarm
JKG..	2 x	Volume control damper with 24 V servomotor
LK..	1 x	Light dome with 24V spindle drive
DDB	1 x	Safety pressure switch
LPT	1 x	Ventilation package

Extension moduls for RDA controls (for integration in control cabinet)

Type	Ref.No.	Description
EM 1	4968	for 5 additional supply air dampers with 24V
EM 2	4969	for 20 additional smoke detectors RMR
EM 3	4970	for 10 additional push button alarm DKM
EM 4	4971	Additional output 24V DC, max. 4A (e.g. window in stairwell)
EM 5	4972	For the control of up to 20 free-swinging door closers
EM 6	4973	Selective damper control 24V (each floor)
EM 7	4940	Selective detector analysis (each floor)

Overflow valve

ÜV 200 Ref.No. 4981

Overflow valve DN 200 for pressure balance between the pressurized stairwell and its adjoining air locks. Pressure adjustment range 15-50 Pa
Required wall thickness min. 210 mm
Diameter mm Ø 200



Volume control damper with guard

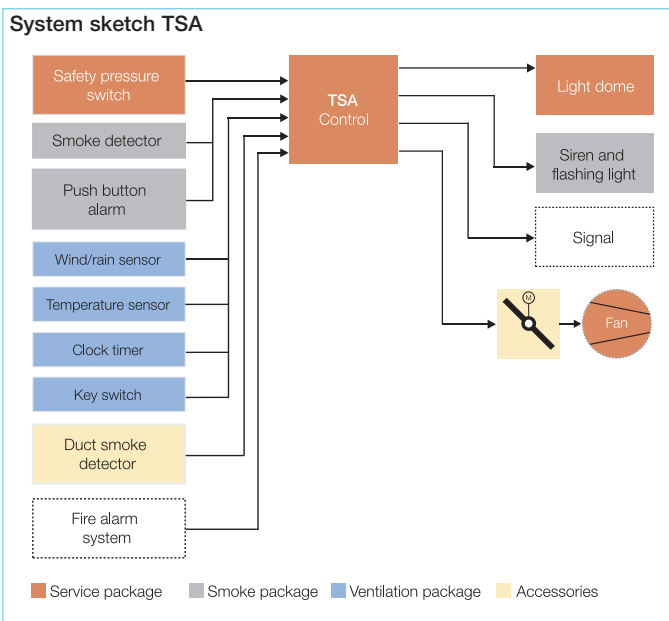
JKG 70/50 Ref.No. 4979

with 24V servo motor and safety guard for the supply air shaft. Dimensions mm W 700 x H 500 x D 120

JKG 80/50* Ref.No. 4974

with 24V servo motor and safety guard for fireman's lift shaft
Dimension mm W 800 x H 500 x D 120





Helios stairway scavenging air systems TSA, increase the chances of a quick and successful self rescue. In the case of fire with a significant dilution of the smoke gas concentration in stairwells, air locks, fireman lifts and their anterooms.

The complete TSA product range of Helios is made up of pre-configured packages with components coordinated on each other and includes additionally low noise system solutions. The modular system allows:

- The individual expansion and adaptation to almost all structural conditions and project requirements.
- A trouble-free planning, installation and start-up as well as a safe operation.

Description

Stairway scavenging air system TSA

The TSA supplies the stairwell in case of fire with a supply air flow volume of at least 10 000 m³/h. Thus the entered smoke gases are diluted and discharged through the open skylight in the stairwell head.

Scope of delivery/ Packages

The TSA scope of service is modularly structured in packages with coordinated components, which can be ordered individually:

Service package TSA

- Contains the following as a basis of each RDA, in all objects required components
- High performance medium pressure axial fan AMD with a supply air flow volume of at least 10 000 m³/h for air scavenging of the stairwell.
 - Light dome, colour white, RAL 9010. With 24 V spindle drive and heat-insulated 300 mm

GFP-skylight base.

- Control cabinet with complete TSA control. Expandable with multiple functions using pre-configured modules, see table on right side.
- Safety pressure switch to shut off the supply air fan at too high differential pressure.
- Altogether four service packages are available
 - Standard version TSA as well as silent version TSAS with lower sound power level.
 - Both types are optionally available as „L“-version with two-stage fan. This allows in combination with the ventilation package LPT an economic, demand-driven ventilation.

Ventilation function

Using appropriate control cabinet equipment and additional ventilation packages the TSA service packages "L" allow the manual and automatic stairwell ventilation, e.g. at high temperatures in summer.

Smoke package RPT

Includes the system elements, which are necessary for the alerting and activation of the system (Description see next page).

Ventilation package LPT

For an ideal, demand-driven ventilation of TSA-L and TSAS-L (Description see next page).

Start-up

Complete adjustment and start-up of the stairway scavenging air system. Including service-, smoke- and ventilation package. On request support of the acceptance procedure.

TSA-IB Ref.No. 4967

TSA Service package includes			a) Supply air fan				b) Control cabinet			c) Light dome			Smoke package		Ventilation package for TSA-L and TSAS-L	
Type	Ref. No.	Air flow volume (min.) m³/h	Type	Motor power (nominal) kW	Voltage V	Current at full load A	Cabinet dimensions mm	Nominal dimensions mm	Lift mm	A effective m²	Type	Ref.No.	Type	Ref.No.		
TSA	4992	10 000	AMD 450/2	3,0	230/400	5,86	600x600x210	1200x1200	500	1	RPT	4987	—	—		
TSA-L	4993	10 000	AMD 450/4/2	0,8/3,1	400	2,11/6,27	600x600x210	1200x1200	500	1	RPT	4987	LPT	4986		
TSAS	4994	10 000	AMD 560/4	2,2	230/400	4,64	600x600x210	1200x1200	500	1	RPT	4987	—	—		
TSAS-L	4995	10 000	AMD 560/8/4	0,65/2,4	400	2,68/4,97	600x600x210	1200x1200	500	1	RPT	4987	LPT	4986		

Accessories for TSA..													
Type	Volume control damper with 24 Volt servomotor			Bell mouth with guard		Automatic back draught shutter		Extension duct		Flanged flexible connector		Anti vibration mounts SDD Comp./SDZ Susp.	
Type	mm	Ref.No.	Type	Ref.No.	Type	Ref.No.	Type	Ref.No.	Type	Ref.No.	Type	Ref.No.	
TSA	JK 70/50	700x500	4965	ASD-SGD 450	1419	RVS 450	2597	VR 450	1407	STS 450	1224	..2/..2	1453/1455
TSA-L	JK 70/50	700x500	4965	ASD-SGD 450	1419	RVS 450	2597	VR 450	1407	STS 450	1224	..2/..2	1453/1455
TSAS	JK 70/50	700x500	4965	ASD-SGD 560	1421	RVS 560	2599	VR 560	1409	STS 560	1226	..3/..3	1367/1366
TSAS-L	JK 70/50	700x500	4965	ASD-SGD 560	1421	RVS 560	2599	VR 560	1409	STS 560	1226	..3/..7	1367/1929

■ System packages

Smoke package

RPT Ref.No. 4987

Contains the following components (1 piece each):

- Smoke detector,
- Push button alarm,
- Combined unit with siren and flashing light.

The package components are also available individually as accessories, see description right column.

Smoke package



■ Accessories

Smoke detector

RMR Ref.No. 4984

Smoke detector for the automatic activation of the system in case of smoke detection. Simple installation by bayonet lock and local test option.

Voltage 8-30 V DC
Standby current 50 µA
Dimensions mm Ø 105 x H 58



Ventilation package

LPT Ref.No. 4986

Extends the RDA function to the demand-driven ventilation mode (summer): With open dome light, the fan runs on low speed. Content of the package for activation of the ventilation mode (1 piece each):

- Key switch
- Temperature sensor
- Timer
- Wind- and rain sensor, stops the ventilation in bad weather and closes the dome light.

Ventilation package



Push button alarm

DKM Ref.No. 4985

Push button alarm for the manual activation of the system. Easy replaceable glass pane in the lockable casing.

Voltage 24V DC
Colour RAL 2011
Dimensions mm W 123 x H 123 x D 40



Siren/Flashing light

BLH Ref.No. 4983

Combined unit with xenon flashing light and volume-adjustable siren. Protected in impact resistant polymer casing, for ceiling and wall mounting.

Voltage 18-30 V DC
Rated current 170 mA
Sound level ca. 110 dB
Dimensions mm Ø 93 x H 120



■ Note

As standard, the RDA control is powered by the battery integrated in the control cabinet during a power failure for at least 72 hours. During this time the light dome can be opened in case of fire for natural smoke extraction.

Duct smoke detector

RMK Ref.No. 4982

Duct smoke detector for early detection of smoke gases in the supply air intake.

Voltage 12/24 V DC
Standby current 120 µA
Dimensions mm W 370 x H 128 x D 64



Connection options to TSA controls

Type	Quantity	Description
RMR	10 x	Smoke detector
RMK	1 x	Duct smoke detector
AMD..	1 x	Medium pressure axial fan
BLH	1 x	Siren/Flashing light
DKM	10 x	Push button alarm
JKG..	2 x	Volume control damper with 24 V servomotor
LK..	1 x	Light dome with 24 V spindle drive
DDB	1 x	Safety pressure switch
LPT	1 x	Ventilation package

Extension moduls for TSA controls (for integration in control cabinet)

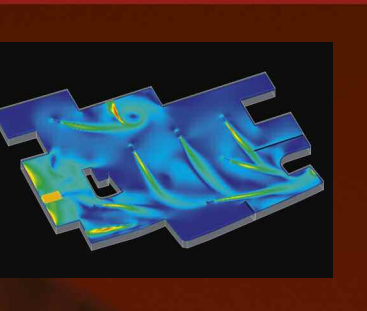
Type	Ref.No.	Description
EM 1	4968	for 5 additional supply air dampers with 24V
EM 2	4969	for 20 additional smoke detectors RMR
EM 3	4970	for 10 additional push button alarm DKM
EM 4	4971	Additional output 24V DC, max. 4A (e.g. window in stairwell)
EM 5	4972	for the control of up to 20 free-swinging door closers

The Helios jet fan program has been developed over a number of years and the ventilation technology has been incorporated in car park ventilation for decades.

Jet fans are used in car parks for daily ventilation and also for smoke extraction in case of fire. They carry out an impulse effect on the air due to the generated air jet.

Thus, it is a continuous air movement in each jet direction towards the central extract or the next impulse fan unit.

In contrast to a ducted car park ventilation system the use of jet fans allows the control of the air flow to ensure continued and effective ventilation in an emergency and life-saving smoke extraction.



**Compact. High thrust performance.
Easy to assemble. Jet fans IV.**

Helios fans come in axial and centrifugal design, they are light and compact.

Practical, integrated standard mounting rails for easy installation to the ceiling complement the lightweight aluminum construction ideal. Lowest sound emissions at maximum thrust performance 6-75 N also speak further for themselves.

Axial jet fans Type IVA / B IVA

Quiet and universal in application - setting standard in thrust and weight.

- Highly efficient axial impeller for multidirectional operation.
- \varnothing 315-400, thrust 6-67 N
- Optional in F300 and F400 (300 °C or 400 °C/120 minutes)

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Centrifugal jet fans Type IVR / B IVR

Slimline, compact, lightweight and powerful. Perfect, even in limited space.

- Highly efficient centrifugal impeller with backward curved blades.
- \varnothing 500-560, thrust 16-75 N
- Optional in F300 (300 °C/120 minutes)

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The future of car park ventilation is with Helios.

High quality, compact and extremely powerful jet fans for the ventilation and smoke extraction of car parks. Easy to install due to the low weight. Certified according to

DIN EN 12101-3 and approved by DIBt. Come with first class service during planning, set up and operation.

Axial jet fan
IVA and B IVA F300/F400

■ **Application**

- For the ventilation and smoke extraction of car parks..
- For applications with air flow temperatures of 300 °C for 120 minutes and 400 °C for 120 minutes (F300 and F400). Suitable for continuous operation for temperature to max. +40 °C.

■ **Casing**

- Duct casing from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with safety guard according to DIN EN 13857 and extract cone with adjustable guide vanes. Fully reversible types with adjustable guide vanes on both sides
- By polygon silencers on both sides. Casing from corrosion-resistant aluminium, completely acoustically lined inside with abrasion-proof mineral wool according to DIN 4102 (not inflammable), restrained by perforated steel sheet.

■ **Impeller**

- High efficient impeller for unidirectional or reversible operation.
- Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.
- With aerodynamically optimised impeller from corrosion-resistant aluminium alloy, adjustable at standstill.

■ **Motor**

- Series IVA:
Maintenance-free 3-phase a.c. standard motor, protection to IP 55. Connection cable (Ölflex SY-cable), external cable with metal sheathing.
- Series B IVA:
Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Fire-resistant external cable with sheathing.

■ **Motor protection**

For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.

■ **Electrical connection**

- Series IVA:
Terminal box from polymer fitted externally on casing as standard (IP 55).
- Series B IVA:
Terminal box from aluminium die-casting fitted externally on casing as standard (IP 55).

■ **Air flow temperatures**

- Series IVA:
Suitable for ventilation from -20 °C to +40 °C continuous temperature.
- Series B IVA:
Suitable for smoke gases to 300 °C/120 minutes (F300) or 400 °C/120 minutes (F400).

■ **Air flow direction**

Depending on the selected type an unidirectional as well as a 100 % reversible air flow direction is possible.

■ **Certification**

The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300: 0036 CPD RG 05 10
F400: 0036 CPD RG 05 11
DIBt approved

■ **Installation**

- Easy and safe installation by integrated standard mounting rails directly to the ceiling. Attaching the rails with only four fastening points.
- When installing a fan of series B IVAD temperature-resistant rawl plugs and screws (accessories, to be provided on site) are to be used.
- To avoid vibration transmission the use of anti vibration mounts is recommended.
- With girders or other suspensions the guide vane of the jet fan has to be adjusted. Thus, different distances can be realized to girders
- Compliance with national and regional fire protection regulations.

Centrifugal jet fan
IVR and B IVR F300

■ **Application**

- For the ventilation and smoke extraction of car parks..
- For applications with air flow temperatures of 300 °C (F300). Suitable for continuous operation for temperature to max. +40 °C.

■ **Casing**

Casing from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet cone. Permanently optimal surface protection by steel-powder coating.

■ **Impeller**

High efficient centrifugal impeller with backward curved blades from powder coated sheet steel. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.

■ **Motor**

- Series IVR:
Maintenance-free 3-phase a.c. standard motor, protection to IP 55. Connection cable (Ölflex SY-cable), external cable with metal sheathing.
- Series B IVR:
Direct by IEC-three phase a.c. motor in temperature-resistant execution. Protection to IP 55. Fire-resistant external cable with sheathing.

■ **Motor protection**

For effective motor protection the motors are to be protected by means of motor protection switch on site. In case of smoke extraction this must be bridged.

■ **Electrical connection**

- Series IVR:
Terminal box from polymer fitted externally on casing as standard (IP 55).
- Series B IVR:
Terminal box from aluminium die-casting fitted externally on casing as standard (IP 55).

■ **Air flow temperatures**

- Series IVR:
Suitable for ventilation from -20 °C to +40 °C continuous temperature.
- Series B IVR:
Suitable for smoke gases to 300 °C/120 minutes (F300)

■ **Certification**

The smoke and heat exhaust fans B VAR were tested to DIN EN 12101-3.
CE-approval:
F300 : 0036 CPD RG 05 12
DIBt approved

■ **Installation**

- Easy and safe installation by integrated standard mounting rails directly to the ceiling. Attaching the rails with only four fastening points.
- When installing a fan of series B IVRD temperature-resistant rawl plugs and screws (accessories, to be provided on site) are to be used.
- To avoid vibration transmission the use of anti vibration mounts is recommended.

■ Requirements for car park ventilation systems

- Each ventilation system must have at least two identical fans, which together provide the required total air flow volume with simultaneous operation. Explosion-proof fans are not required.
- Each fan of a powered supply or exhaust air system must be supplied by a dedicated circuit to which other systems may not be connected.
- Each final and auxiliary circuit of a powered supply and exhaust air system is to be carried out in such a way that an electrical fault does not cause failure of the entire ventilation system.
- If the ventilation system shall be operated with one fan from time to time, the fans must be connected in such a way that with failure of a fan the other switches on automatically.

■ Powered smoke and heat extraction

Sometimes the smoke and heat extraction is also prescribed in addition to the pure ventilation function.

- The demands of the GaVO in Germany with regard to the powered smoke and heat extraction have the following in common:
- Automatic switching on in case of smoke.
- Maximum stress temperature of 300 °C (F300)/1 hour.
- 10 air changes per hour.
- Functional endurance of the electrical cable systems from external fire at least 1 ½ hours.

■ Isolator switch and control

A use of isolator switches on smoke and heat exhaust fans is only permissible if it is secured

against unauthorized operation. This can be done through the use of key switches or by attaching a padlock. Furthermore, the terminal boxes of smoke and heat exhaust fans must be temperature resistant. The control equipment (cabinets) of smoke and heat exhaust fans may not be placed inside the garage, but are to be installed outside the fire risk areas.

■ Car park ventilation systems

The perfect ventilation solution in a car park consists of:

- Jet fans for development of a controlled air flow in the direction of the extract air unit, and for after-flow of the supply air.
- Central extract units for extraction of waste air at ambient temperature and/or smoke gas in case of fire.
- Supply air fans, if air supply via access ramp or other supply air openings is not sufficient.

■ Functionality in the ventilation mode

Through the generated wake turbulence indoor air is induced into the jet. Due to this induction effect and a mixture of indoor air the discharge flow rate of the fan increases by approx. tenfold to an effective total air flow rate.

Thus, a reliable and highly effective air purging of the car park is guaranteed. Dead zones – as in duct-guided conventional extract air systems – are avoided by the use of jet fans.

- Extract air fans discharge the waste air of the car park. The supply air enters passively via the entrance and exit alternatively by powered supply air fans.

- The number of fans, size and exact positioning is specific to the project taking into consideration the structural conditions such as, geometry girders, columns etc.
- Helios jet fans are available in axial and centrifugal design. Depending on structural conditions or ventilation system requirements thus different solutions can be realised

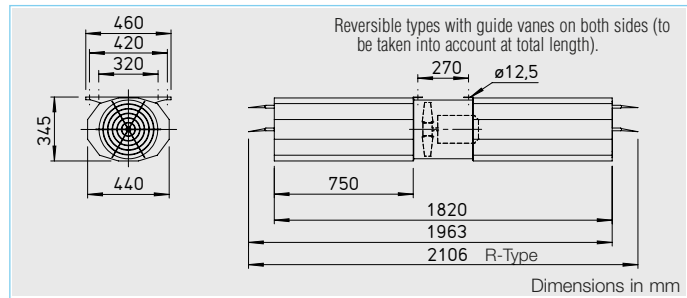
■ Functionality in case of fire

The jet fans IV from Helios are available in different temperature classes. If related to building law or regulatory requirements powered smoke and heat extraction is required, jet fans for a maximum ambient temperature of up to 40 °C are used. For use as smoke and heat exhaust fan the two temperature classes F300 (120 min.) and F400 (120 min.) are available.

- Whereas when designing smoke extraction for factories, assembly areas, sales outlets and non-residential buildings the aim is to provide an escape route keeping the smoke layer above head height. This cannot be achieved in car parks due to the low height of the ceiling (approx. 2.5 m) in order for people to escape in the event of a fire. It is therefore necessary to provide a low smoke or smoke free escape route.

Usually car parks are required to have fire alarm systems which monitor not only smoke within the car park but also offer a suitable control strategy which observes the impulse and smoke extraction fans in their operation. Their primary task is to prevent the spread of smoke and fumes effectively and to direct the smoke gases towards the main

extraction points depending on the design strategy the car parks can be kept smoke-free. By the use of reversible thrust impulse fans all fire locations may be dealt with.



High quality, powerful jet fan with optimal dimensions for minimum space. Suitable for ventilation of car parks with ambient temperature from up to 40 °C.

Special features

- Low noise emission.
- Maximum thrust
- Easy and fast to install due to the lightweight (aluminium construction)
- Direct driven, axial.
- Optionally fully reversible (model IVA..R..)

Casing

Duct casing from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with safety guard and extract cone with adjustable guide vanes. Fully reversible types with adjustable guide vanes on both sides (to be taken into account at total length).

Impeller

High efficient impeller for unidirectional or reversible operation. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.

Motor

IEC 3-phase standard motor, protection to IP 55.

Noise insulation

By polygon silencers on both sides. High quality casing from aluminium, completely acoustically lined inside with abrasion-proof mineral wool according to DIN 4102 (not inflammable), retained by perforated steel sheet.

Installation

Mounting rails integrated in series. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from polymer fitted externally on casing as standard (IP 55).

Assembly

During installation the federal, national, and local regulations and ordinances are to be observed.

Accessories

Anti vibration mounts for suspension (1 Set = 4 pcs.)

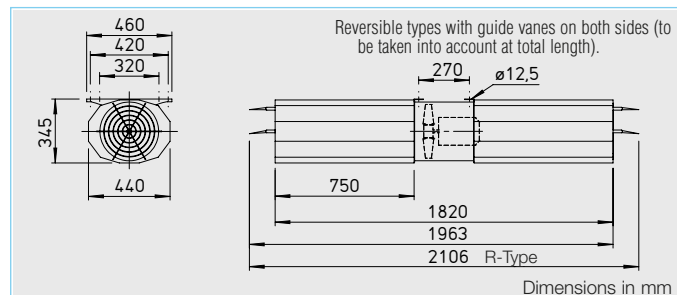
SDZ



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Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	reversible	Sound pressure level ¹⁾	Nominal motor power	Current full load	Current initial	Wiring diagram	Max. air flow temperature	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)	Ref.No.
		N	m/s	∇ m³/h	min ⁻¹		dB(A)	kW	A	A	No.	+°C	kg	Type	Ref.No.
3 Phase motor, 400 V, 50 Hz, protection to IP 55															
IVAD 315/2 R	4102	23	15,4	4400	2840	yes	59	1,10	2,4	16,6	498	40	37	SDZ 1	1454
IVAD 315/2	4110	25	15,9	4600	2840	no	58	1,10	2,4	16,6	498	40	37	SDZ 1	1454
Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55															
IVAD 315/4/2 R	4101	6/23	7,6/15,3	2200/4400	1380/2840	yes	39/59	0,25/0,95	0,9/2,3	4,6/17,2	471	40	42	SDZ 1	1454
IVAD 315/4/2	4109	6/24	7,9/15,8	2300/4500	1380/2840	no	39/58	0,25/0,95	0,9/2,3	4,6/17,2	471	40	42	SDZ 1	1454

¹⁾ Measured under freefield conditions in 45°, distance of 3 m



High quality, powerful jet fan with optimal dimensions for minimum space.

Suitable for ventilation respectively smoke extraction of car parks. Temperature range optional 300 °C/120 min. or 400 °C/120 min (for smoke extraction) respectively up to 40 °C at continuous operation.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to the lightweight (aluminium construction).
- Direct driven, axial.
- Optionally fully reversible (model IVA..R..).

Casing

Duct casing from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with safety guard and extract cone with adjustable guide vanes. Fully reversible types with adjustable guide vanes on

both sides (to be taken into account at total length).

Impeller

High efficient impeller for unidirectional or reversible operation. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3. With aerodynamically optimised impeller from corrosion-resistant aluminium alloy, adjustable at standstill.

Motor

IEC 3-phase standard motor in temperature-resistant execution, protection to IP 55.

Noise insulation

By polygon silencers on both sides. High quality casing from aluminium, completely acoustically lined inside with abrasion-proof mineral wool according to DIN 4102 (not inflammable), retained by perforated steel sheet.

Installation

Mounting rails integrated in series. They are attached directly to the ceiling by means of rawl

plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from aluminium die-casting fitted externally on casing as standard (IP 55). On site wiring by temperature-resistant cable.

Certification

- Tolerances according to DIN 2768
- Power measuring according to DIN 24163
- F300 + F400 tested according to DIN EN 12101-3:2002 CE certification no. 0036 CPD RG 05 10 (F300) CE certification no. 0036 CPD RG 05 11 (F400)
- DIBt approved

Accessories

Anti vibration mounts for suspension (1 Set = 4 pcs.)

SDZ 1 F

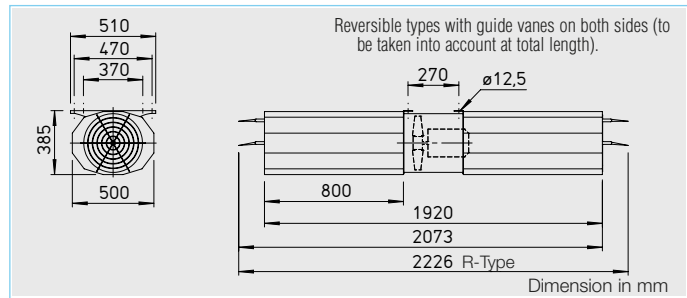


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Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	reversible	Sound pressure level ¹⁾	Nominal motor power	Current full load	Current initial	Wiring diagramm	Max. air flow temperature ²⁾	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)	Type	Ref.No.
		N	m/s	V m ³ /h	min ⁻¹		dB(A)	kW	A	A	No.	+°C	kg			
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B IVAD 315/2 R F300	4118	23	15,4	4400	2840	yes	59	1,10	2,5	17,2	498	40 / 300	41	SDZ 1 F	1943	
B IVAD 315/2 F300	4126	24	15,9	4600	2840	no	58	1,10	2,5	17,2	498	40 / 300	41	SDZ 1 F	1943	
F300 Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55																
B IVAD 315/4/2 R F300	4117	6/23	7,8/15,6	2300/4500	1410/2870	yes	40/60	0,25/0,95	0,9/2,3	4,9/17,4	471	40 / 300	40	SDZ 1 F	1943	
B IVAD 315/4/2 F300	4125	7/25	8,1/16,2	2300/4600	1410/2870	no	39/58	0,25/0,95	0,9/2,3	4,9/17,4	471	40 / 300	40	SDZ 1 F	1943	
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55																
B IVAD 315/2 R F400	4134	23	15,3	4400	2810	yes	59	1,10	2,3	13,9	498	40 / 400	42	SDZ 1 F	1943	
B IVAD 315/2 F400	4142	24	15,8	4500	2810	no	58	1,10	2,3	13,9	498	40 / 400	42	SDZ 1 F	1943	
F400 Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55																
B IVAD 315/4/2 R F400	4133	6/23	7,6/15,3	2200/4400	1390/2810	yes	39/59	0,25/1,10	0,8/2,4	2,9/14,4	471	40 / 400	43	SDZ 1 F	1943	
B IVAD 315/4/2 F400	4141	6/24	7,9/15,7	2300/4500	1390/2810	no	37/58	0,25/1,10	0,8/2,4	2,9/14,4	471	40 / 400	43	SDZ 1 F	1943	

¹⁾ Measured under freefield conditions in 45°, distance of 3 m

²⁾ In ventilation mode / Smoke exhaust (for at least 120 minutes)



High quality, powerful jet fan with optimal dimensions for minimum space. Suitable for ventilation of car parks with ambient temperature from up to 40 °C.

Special features

- Low noise emission.
- Maximum thrust
- Easy and fast to install due to the lightweight (aluminium construction)
- Direct driven, axial.
- Optionally fully reversible (model IVA..R..)

Casing

Duct casing from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with safety guard and extract cone with adjustable guide vanes. Fully reversible types with adjustable guide vanes on both sides (to be taken into account at total length).

Impeller

High efficient impeller for unidirectional or reversible operation. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.

Motor

IEC 3-phase standard motor, protection to IP 55.

Noise insulation

By polygon silencers on both sides. High quality casing from aluminium, completely acoustically lined inside with abrasion-proof mineral wool according to DIN 4102 (not inflammable), retained by perforated steel sheet.

Installation

Mounting rails integrated in series. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from polymer fitted externally on casing as standard (IP 55).

Assembly

During installation the federal, national, and local regulations and ordinances are to be observed.

Accessories

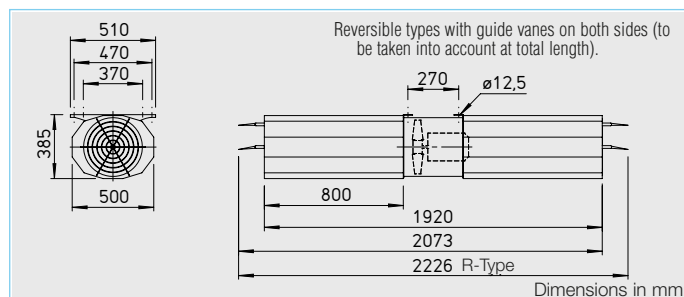
Anti vibration mounts for suspension (1 Set = 4 pcs.)

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Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	reversible	Sound pressure level ¹⁾ L _{Pa}	Nominal motor power	Current		Wiring diagram	Max. air flow temperature	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)	
									full load	initial				Type	Ref.No.
3 Phase motor, 400 V, 50 Hz, protection to IP 55															
IVAD 355/2 R	4105	38	17,7	6400	2890	yes	63	1,50	3,2	22,1	498	40	47	SDZ 1	1454
IVAD 355/2	4113	46	19,4	7000	2890	no	63	1,50	3,3	22,1	498	40	47	SDZ 1	1454
Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55															
IVAD 355/4/2 R	4104	10/37	8,7/17,4	3200/6300	1380/2840	yes	38/62	0,30/1,40	0,8/3,3	4,5/25	471	40	48	SDZ 1	1454
IVAD 355/4/2	4112	11/42	9,4/18,7	3400/6800	1380/2840	no	41/62	0,30/1,40	0,8/3,3	4,5/25	471	40	48	SDZ 1	1454

¹⁾ Measured under freefield conditions in 45°, distance of 3 m



High quality, powerful jet fan with optimal dimensions for minimum space.

Suitable for ventilation respectively smoke extraction of car parks. Temperature range optional 300 °C/120 min. or 400 °C/120 min (for smoke extraction) respectively up to 40 °C at continuous operation.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to the lightweight (aluminium construction).
- Direct driven, axial.
- Optionally fully reversible (model IVA..R..).

Casing

Duct casing from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet

with safety guard and extract cone with adjustable guide vanes. Fully reversible types with adjustable guide vanes on both sides (to be taken into account at total length).

Impeller

High efficient impeller for unidirectional or reversible operation. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3. With aerodynamically optimised impeller from corrosion-resistant aluminium alloy, adjustable at standstill.

Motor

IEC 3-phase standard motor in temperature-resistant execution, protection to IP 55.

Noise insulation

By polygon silencers on both sides. High quality casing from aluminium, completely acoustically lined inside with abrasion-

proof mineral wool according to DIN 4102 (not inflammable), retained by perforated steel sheet.

Installation

Mounting rails integrated in series. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from aluminium die-casting fitted externally on casing as standard (IP 55). On site wiring by temperature-resistant cable.

Certification

- Tolerances according to DIN 2768
- Power measuring according to DIN 24163
- F300 + F400 tested according to DIN EN 12101-3:2002 CE certification no. 0036 CPD RG 05 10 (F300) CE certification no. 0036 CPD RG 05 11 (F400)
- DIBt approved

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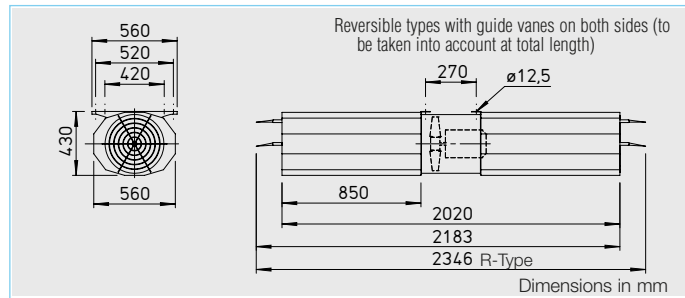
Anti vibration mounts 150

Gas warning systems 152 on

Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	reversible	Sound pressure level ¹⁾	Nominal motor power	Current		Wiring diagram	Max. air flow temperature ²⁾	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)	
									full load	initial				Type	Ref.No.
		N	m/s	∇ m ³ /h	min ⁻¹		dB(A)	kW	A	A	No.	+°C	kg		
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
B IVAD 355/2 R F300	4121	37	17,4	6300	2840	yes	62	1,50	3,3	22,8	498	40 / 300	51	SDZ 1 F	1943
B IVAD 355/2 F300	4129	44	19,0	6900	2840	no	63	1,50	3,3	22,8	498	40 / 300	51	SDZ 1 F	1943
F300 Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55															
B IVAD 355/4/2 R F300	4120	10/38	8,8/17,6	3200/6400	1430/2880	yes	41/62	0,30/1,40	1,1/3,1	6,0/23,7	471	40 / 300	53	SDZ 1 F	1943
B IVAD 355/4/2 F300	4128	11/44	9,5/19,0	3500/6900	1430/2880	no	41/63	0,30/1,40	1,1/3,1	6,0/23,7	471	40 / 300	53	SDZ 1 F	1943
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
B IVAD 355/2 R F400	4137	37	17,5	6400	2870	yes	62	1,50	3,1	21,1	498	40 / 400	54	SDZ 1 F	1943
B IVAD 355/2 F400	4145	45	19,2	7000	2870	no	63	1,50	3,1	21,1	498	40 / 400	54	SDZ 1 F	1943
F400 Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55															
B IVAD 355/4/2 R F400	4136	10/38	8,7/17,7	3200/6400	1440/2900	yes	41/62	0,37/1,50	1,3/3,5	5,6/23,0	471	40 / 400	52	SDZ 1 F	1943
B IVAD 355/4/2 F400	4144	12/46	9,7/19,4	3500/7000	1440/2900	no	41/64	0,37/1,50	1,3/3,5	5,6/23,0	471	40 / 400	52	SDZ 1 F	1943

¹⁾ Measured under freefield conditions in 45°, distance of 3 m

²⁾ In ventilation mode / Smoke exhaust (for at least 120 minutes)



High quality, powerful jet fan with optimal dimensions for minimum space. Suitable for ventilation of car parks with ambient temperature from up to 40 °C.

Special features

- Low noise emission.
- Maximum thrust
- Easy and fast to install due to the lightweight (aluminium construction)
- Direct driven, axial.
- Optionally fully reversible (model IVA..R..)

Casing

Duct casing from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with safety guard and extract cone with adjustable guide vanes. Fully reversible types with adjustable guide vanes on both sides (to be taken into account at total length).

Impeller

High efficient impeller for unidirectional or reversible operation. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.

Motor

IEC 3-phase standard motor, protection to IP 55.

Noise insulation

By polygon silencers on both sides. High quality casing from aluminium, completely acoustically lined inside with abrasion-proof mineral wool according to DIN 4102 (not inflammable), retained by perforated steel sheet.

Installation

Mounting rails integrated in series. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from polymer fitted externally on casing as standard (IP 55).

Assembly

During installation the federal, national, and local regulations and ordinances are to be observed.

Accessories

Anti vibration mounts for suspension (1 Set = 4 pcs.)

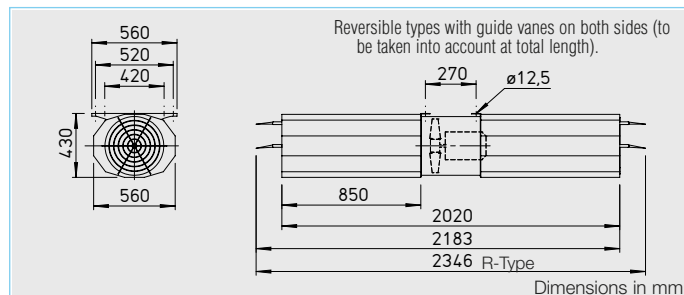
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SDZ



Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	reversible	Sound pressure level ¹⁾ L _{Pa}	Nominal motor power	Current		Wiring diagram	Max. air flow temperature	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)	
									full load	initial				Type	Ref.No.
3 Phase motor, 400 V, 50 Hz, protection to IP 55															
IVAD 400/2 R	4108	62	20,2	9200	2890	yes	67	2,20	4,5	31,4	498	40	59	SDZ 1	1454
IVAD 400/2	4116	67	21,1	9600	2890	no	66	2,20	4,5	31,4	498	40	59	SDZ 1	1454
Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55															
IVAD 400/4/2 R	4107	15/60	9,9/19,8	4500/9000	1400/2840	yes	43/66	0,65/2,50	1,9/5,3	10,2/39,4	471	40	73	SDZ 2	1455
IVAD 400/4/2	4115	17/65	10,4/20,7	4700/9400	1400/2840	no	44/65	0,65/2,50	1,9/5,3	10,2/39,4	471	40	73	SDZ 2	1455

¹⁾ Measured under freefield conditions in 45°, distance of 3 m



High quality, powerful jet fan with optimal dimensions for minimum space.

Suitable for ventilation respectively smoke extraction of car parks. Temperature range optional 300 °C/120 min. or 400 °C/120 min (for smoke extraction) respectively up to 40 °C at continuous operation.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to the lightweight (aluminium construction).
- Direct driven, axial.
- Optionally fully reversible (model IVA..R..).

Casing

Duct casing from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet

with safety guard and extract cone with adjustable guide vanes. Fully reversible types with adjustable guide vanes on both sides (to be taken into account at total length).

Impeller

High efficient impeller for unidirectional or reversible operation. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3. With aerodynamically optimised impeller from corrosion-resistant aluminium alloy, adjustable at standstill.

Motor

IEC 3-phase standard motor in temperature-resistant execution, protection to IP 55.

Noise insulation

By polygon silencers on both sides. High quality casing from aluminium, completely acoustically lined inside with abrasion-

proof mineral wool according to DIN 4102 (not inflammable), retained by perforated steel sheet.

Installation

Mounting rails integrated in series. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from aluminium die-casting fitted externally on casing as standard (IP 55). On site wiring by temperature-resistant cable.

Certification

- Tolerances according to DIN 2768
- Power measuring according to DIN 24163
- F300 + F400 tested according to DIN EN 12101-3:2002 CE certification no. 0036 CPD RG 05 10 (F300) CE certification no. 0036 CPD RG 05 11 (F400)
- DIBt approved

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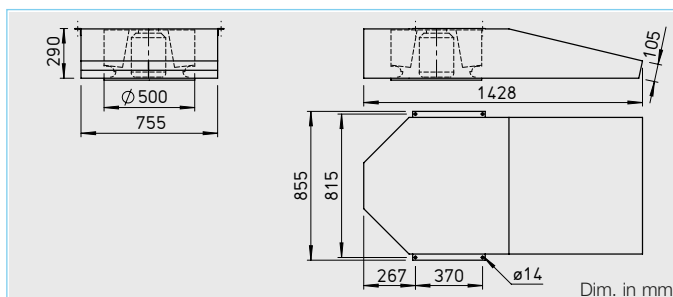
Anti vibration mounts 150

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Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	reversible	Sound pressure level ¹⁾	Nominal motor power	Current		Wiring diagram	Max. air flow temperature ²⁾	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)	
									full load	initial				Type	Ref.No.
		N	m/s	∇ m ³ /h	min ⁻¹		dB(A)	kW	A	A	No.	+°C	kg		
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
B IVAD 400/2 R F300	4124	60	19,9	9000	2840	yes	66	2,20	4,6	32,3	498	40 / 300	62	SDZ 1 F	1943
B IVAD 400/2 F300	4132	65	20,7	9400	2840	no	65	2,20	4,6	32,3	498	40 / 300	62	SDZ 1 F	1943
F300 Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55															
B IVAD 400/4/2 R F300	4123	15/57	9,7/19,4	4400/8800	1440/2890	yes	44/65	0,40/1,90	1,50/4,2	8,1/31,4	471	40 / 300	62	SDZ 1 F	1943
B IVAD 400/4/2 F300	4131	16/63	10,2/20,3	4600/9200	1440/2890	no	44/66	0,40/1,90	1,50/4,2	8,1/31,4	471	40 / 300	62	SDZ 1 F	1943
F400 3 Phase motor, 400 V, 50 Hz, protection to IP 55															
B IVAD 400/2 R F400	4140	55	19,1	8700	2840	yes	66	2,20	4,5	29,6	498	40 / 400	63	SDZ 1 F	1943
B IVAD 400/2 F400	4148	65	20,7	9400	2840	no	65	2,20	4,5	29,6	498	40 / 400	63	SDZ 1 F	1943
F400 Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55															
B IVAD 400/4/2 R F400	4139	15/60	9,9/19,9	4500/9000	1420/2850	yes	43/66	0,50/2,20	1,5/4,6	5,4/27,8	471	40 / 400	63	SDZ 1 F	1943
B IVAD 400/4/2 F400	4147	17/65	10,4/20,7	4700/9400	1420/2850	no	42/65	0,50/2,20	1,5/4,6	5,4/27,8	471	40 / 400	63	SDZ 1 F	1943

¹⁾ Measured under freefield conditions in 45°, distance of 3 m

²⁾ In ventilation mode / Smoke exhaust (for at least 120 minutes)



High quality, powerful jet fan with optimal dimensions for minimum space.

Suitable for ventilation of car parks with ambient temperature from up to 40 °C.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to the lightweight (aluminium construction)
- Direct driven, centrifugal.

Casing

Casing from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet cone. Permanently optimal surface protection by steel-powder coating.

Impeller

High efficient centrifugal impeller with welded, backward curved blades. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.

Motor

IEC 3-phase standard motor, protection to IP 55.

Installation

Assembly bracket integrated as standard. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from polymer fitted externally on casing as standard (IP 55).

Assembly

During installation the federal, national, and local regulations and ordinances are to be observed.

Accessories

Anti vibration mounts for suspension (1 Set = 4 pcs.)

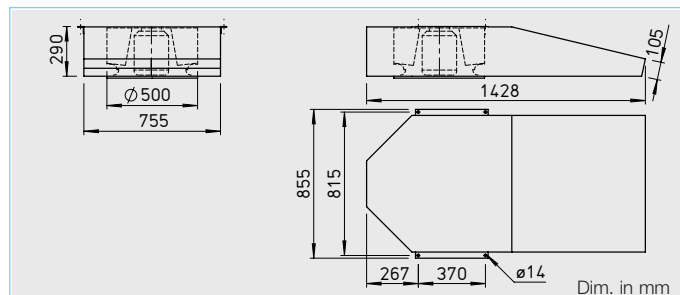
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Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	Sound pressure level ¹⁾	Nominal motor power	Current full load	Current initial	Wiring diagram	Max. air flow temperature	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)
		N	m/s	V m ³ /h	min ⁻¹	dB(A)	kW	A	A	No.	+°C	kg	Type Ref.No.
3 Phase motor, 400 V, 50 Hz, protection to IP 55													
IVRD 500/4	4149	43	21,3	6100	1440	73	1,50	3,3	20,5	498	40	63	SDZ 2 1455
Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55													
IVRD 500/8/4	4150	11/42	10,5/21,0	3000/6000	700/1420	55/73	0,40/1,60	1,7/3,8	5,4/21,7	471	40	61	SDZ 2 1455

¹⁾ Measured under freefield conditions in 45°, distance of 3 m



High quality, powerful jet fan with optimal dimensions for minimum space.

Suitable for ventilation respectively smoke extraction of car parks.

Temperature range 300 °C/120 min. (for smoke extraction) respectively up to 40 °C at continuous operation.

Special features

- Low noise emission
- Maximum thrust
- Easy and fast to install due to the lightweight (aluminium construction)
- Direct driven, centrifugal.

Casing

Casing from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet cone. Permanently optimal surface protection by steel-powder coating.

Impeller

High efficient centrifugal impeller with welded, backward curved blades. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.

Motor

IEC 3-phase standard motor in temperature-resistant execution, protection to IP 55.

Installation

Assembly bracket integrated as standard. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from aluminium die-casting fitted externally on casing as standard (IP 55). On site wiring by temperature-resistant cable.

Assembly

During installation the federal, national, and local regulations and ordinances are to be observed.

Certification

- Tolerances according to DIN 2768
- Power measuring according to DIN 24163
- F300 tested according to DIN EN 12101-3:2002 CE certification no. 0036 CPD RG 05 12
- DIBt approved

Accessories

Anti vibration mounts for suspension (1 Set = 4 pcs.)

SDZ 1 F

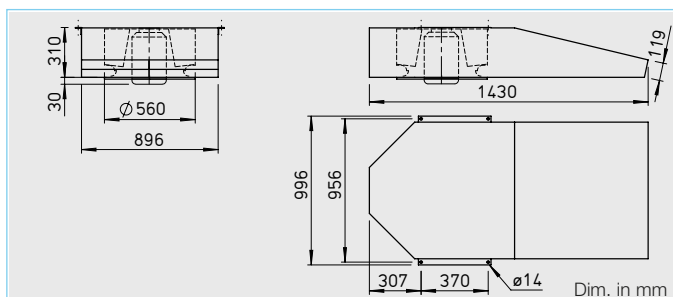


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Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	Sound pressure level ¹⁾	Nominal motor power	Current full load	Current initial	Wiring diagram	Max. air flow temperature ²⁾	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)
		N	m/s	∇ m ³ /h	min ⁻¹	dB(A)	kW	A	A	No.	+°C	kg	Type Ref.No.
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55													
B IVRD 500/4 F300	4155	42	21,0	6000	1420	73	1,50	3,3	20,5	498	40 / 300	63	SDZ 1 F 1943
F300 Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55													
B IVRD 500/8/4 F300	4156	11/42	10,5/21,0	3000/6000	700/1420	55/73	0,40/1,60	1,7/3,8	5,4/21,7	471	40 / 300	63	SDZ 1 F 1943

¹⁾ Measured under freefield conditions in 45°, distance of 3 m

²⁾ In ventilation mode / Smoke exhaust (for at least 120 minutes)



High quality, powerful jet fan with optimal dimensions for minimum space.

Suitable for ventilation of car parks with ambient temperature from up to 40 °C.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to the lightweight (aluminium construction)
- Direct driven, centrifugal.

Casing

Casing from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet cone. Permanently optimal surface protection by steel-powder coating.

Impeller

High efficient centrifugal impeller with welded, backward curved blades. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.

Motor

IEC 3-phase standard motor, protection to IP 55.

Installation

Assembly bracket integrated as standard. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from polymer fitted externally on casing as standard (IP 55).

Assembly

During installation the federal, national, and local regulations and ordinances are to be observed.

Accessories

Anti vibration mounts for suspension (1 Set = 4 pcs.)

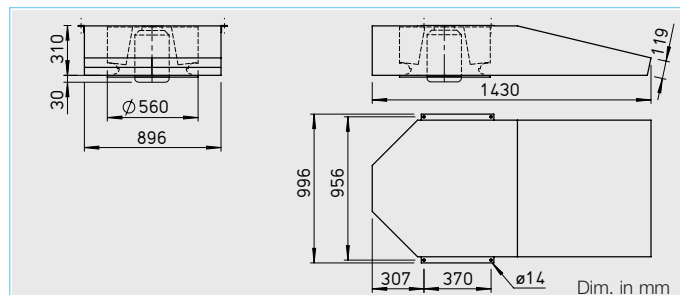
SDZ



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Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	Sound pressure level ¹⁾ L _{Pa}	Nominal motor power	Current		Wiring diagram	Max. air flow temperature	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)	
								full load	initial				Type	Ref.No.
3 Phase motor, 400 V, 50 Hz, protection to IP 55														
IVRD 560/4	4153	75	25,2	8900	1420	77	2,20	4,6	34	498	40	72	SDZ 2	1455
Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55														
IVRD 560/8/4	4154	16/61	11,9/22,6	3900/8000	700/1420	58/77	0,40/1,60	1,7/3,8	5,4/21,7	471	40	68	SDZ 2	1455

¹⁾ Measured under freefield conditions in 45°, distance of 3 m



High quality, powerful jet fan with optimal dimensions for minimum space.

Suitable for ventilation respectively smoke extraction of car parks.

Temperature range 300 °C/120 min. (for smoke extraction) respectively up to 40 °C at continuous operation.

Special features

- Low noise emission
- Maximum thrust
- Easy and fast to install due to the lightweight (aluminium construction)
- Direct driven, centrifugal.

Casing

Casing from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet cone. Permanently optimal surface protection by steel-powder coating.

Impeller

High efficient centrifugal impeller with welded, backward curved blades. Dynamically balanced according to DIN ISO 1940-1, balancing quality 6.3.

Motor

IEC 3-phase standard motor in temperature-resistant execution, protection to IP 55.

Installation

Assembly bracket integrated as standard. They are attached directly to the ceiling by means of rawl plugs (accessories, to be provided on site) at four fastening points. To avoid vibration transmission the use of anti vibration mounts is recommended (SDZ, accessories, see chart).

Electrical connection

Terminal box from aluminium die-casting fitted externally on casing as standard (IP 55). On site wiring by temperature-resistant cable.

Assembly

During installation the federal, national, and local regulations and ordinances are to be observed.

Certification

- Tolerances according to DIN 2768
- Power measuring according to DIN 24163
- F300 tested according to DIN EN 12101-3:2002 CE certification no. 0036 CPD RG 05 12
- DIBt approved

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Accessories

Anti vibration mounts for suspension (1 Set = 4 pcs.)



Type	Ref.No.	Thrust	Air flow speed	Max. air flow volume	R.P.M.	Sound pressure level ¹⁾	Nominal motor power	Current full load	Current initial	Wiring diagram	Max. air flow temperature ²⁾	Nominal weight ca.	Anti vibration mounts (1 set = 4 pcs.)
		N	m/s	∇ m³/h	min ⁻¹	dB(A)	kW	A	A	No.	+°C	kg	Type Bestell-Nr.
F300 3 Phase motor, 400 V, 50 Hz, protection to IP 55													
B IVRD 560/4 F300	4159	75	25,2	8900	1410	77	2,20	5,2	34	498	40 / 300	70	SDZ 1 F 1943
F300 Pole-switching, 2 speed motor, 3 ph., Dahlander-Windings Y/YY, 400 V, 50 Hz, protection to IP 55													
B IVRD 560/8/4 F300	4160	16/61	11,9/22,6	3900/8000	700/1420	58/77	0,40/1,60	1,7/3,8	5,4/21,7	471	40 / 300	70	SDZ 1 F 1943

¹⁾ Measured under freefield conditions in 45°, distance of 3 m

²⁾ In ventilation mode / Smoke exhaust (for at least 120 minutes)

The roof-mounted smoke and heat exhaust fans BDV are available from sizes of Ø 315 up to 710 mm and flow rates from 3 700 to 40 000 m³/h.

The vertical air outlet prevents damage of adjacent parts of the building in case of fire or by conveying polluted air. Due to the robust design, BDV-roof fans are ideal for use in harsh operating conditions.

All BDV models with DIBt technical approvals. The types are CE certified and are ready for connection.

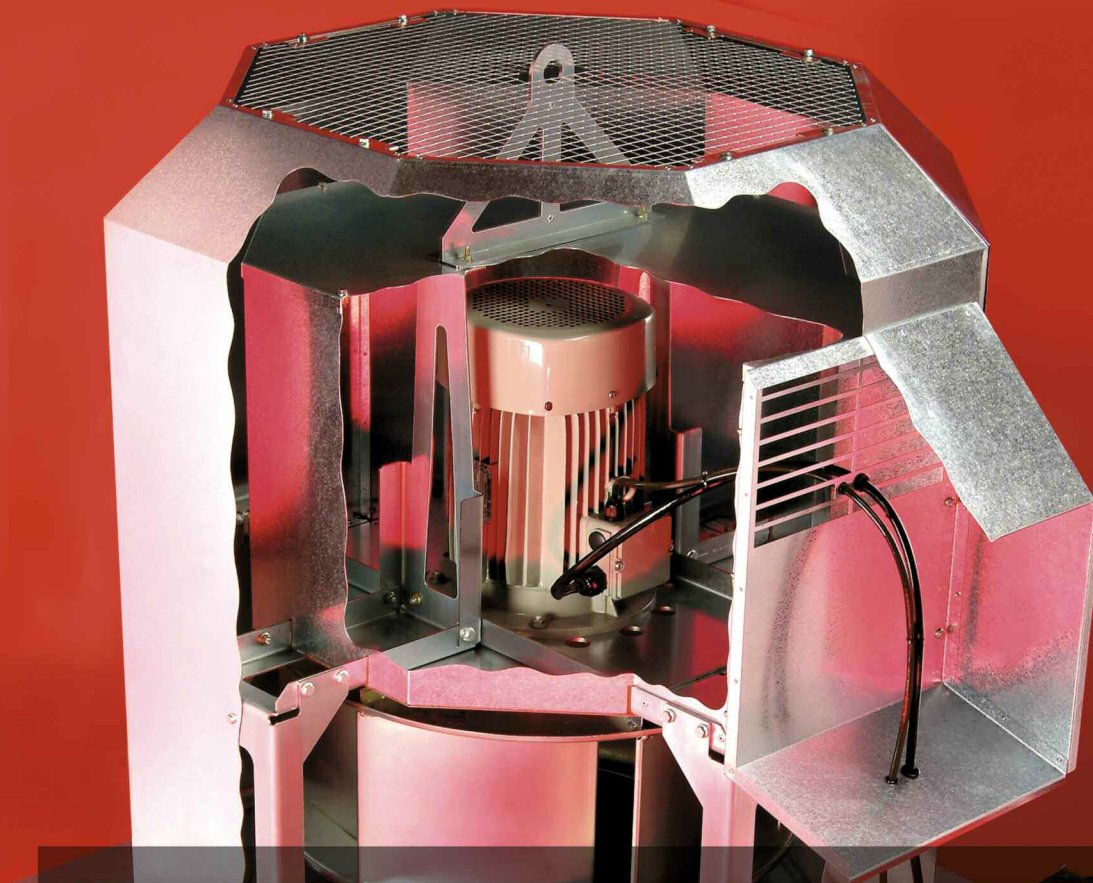
Easy positioning of the unit on site using the standard integrated eyebolt.

From the outside, easily accessible spacious terminal box.

A motor protection against thermal overload by integrated thermal- or PTC elements is standard equipment. Furthermore, the centrifugal impeller is equipped with special backvanes which enable efficient

supply of cooling air, thus preventing motor overheating in smoke control.

The wide range of accessories contains among other things purlin boxes, back draught shutters, flanged flexible connectors as well as speed controllers and motor full protection units.



Certified for temperature class F400 according to the European product and test standard DIN EN 12101-3, roof mounted-, in-line rectangular and centrifugal fans in preventive

fire protection guarantee a smoke and heat extraction. They allow air flow temperatures up to 400 °C/120 minutes or 100 °C for continuous operation. To ensure maximum safety

for buildings and people, all materials used in production are monitored by the German technical monitoring agency (TÜV) beyond.

The centrifugal smoke exhaust fans BK / BR for rectangular ducts and connections are ideal for applications with contaminated air and operating temperatures of 400 °C/120 minutes (smoke extraction mode) or 100 °C continuous operation, such as in foundries, commercial kitchens, etc.

In-line rectangular smoke exhaust fans F400 for rectangular ducts 40 x 20 cm to 140 x 70 cm

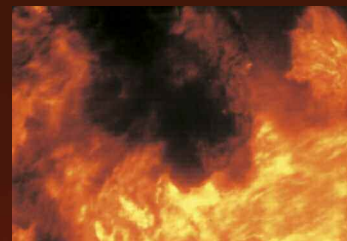
- Service friendly (cleaning) through swing-out motor and impeller unit.
- Compact design for direct installation in the duct course, without height offset.
- Flanged on both sides, with drill holes for connection of standard flanges.
- 21 types
 $\dot{V} = 1\,500 - 22\,000 \text{ m}^3/\text{h}$

Centrifugal smoke exhaust fans F400 for rectangular connection 30 x 15 cm to 67 x 36 cm

- Compact rectangular casing for easy, direct mounting on anti vibration mounts.
- Bell mouth shaped inlet, rectangular exhaust with drill holes for easy connection of standard flanges or ducts.
- 17 types
 $\dot{V} = 1\,500 - 11\,000 \text{ m}^3/\text{h}$



For smoke extraction from
all kinds of buildings





■ **Application/Use**

- For preventive fire protection to ensure the smoke and heat extraction for single rooms, corridors, escape routes or entire building
- Furthermore the prevention of "Flash-Overs".
- For applications with operating temperatures of 400 °C/120 minutes/F400 (smoke extraction mode), or in continuous operation up to 100 °C, such as in foundries, commercial kitchens etc.
- Versatile for general tasks in the field of ventilation-, air conditioning-, heat-, and drying technology.

■ **Air flow temperature**

- Temperature range 400 °C/120 minutes (smoke extraction mode) or 100 °C for continuous operation and an atmospheric temperature of -20 °C to +40 °C.

■ **Features**

- Vertical air outlet prevents damage of adjacent parts of the building in case of fire or by conveying polluted air.
- Easy connection of accessories on the intake through base plate with threaded bolts.
- Standard motor protection against thermal overload by integrated thermal or PTC elements.
- Robust design for harsh operating conditions.
- Supplied ready for installation, easy assembly
- High reliability by minimal maintenance.

■ **Casing**

- Made of galvanized sheet steel, for direct mounting on purlin box. Base plate with threaded bolt for connection of accessories on the intake.
- Architecture design.

■ **Impeller**

- Direct driven, backward curved, highly efficient centrifugal impeller from galvanised steel.
- Dynamically balanced to DIN ISO 1940 P.1 – class 6.3.
- High efficiency, low noise.

■ **Motor**

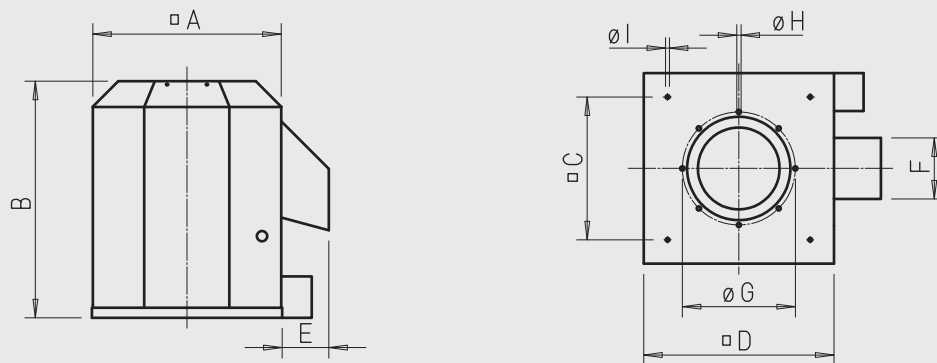
- Special motor for use in high ambient temperatures.
- Totally enclosed, fan cooled motor, protection to IP 55. Maintenance-free, sealed for life ball bearings.
- Tropical protection of windings, insulation class F.
- Motor outside of air stream, protected from it by thermal separation
- Air flow of motor cooling air through intake duct. Supply of cooling air through additional backvanes on the impeller.
- Execution according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 und VDE 0700 / DIN EN 60335-1.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Sound pressure case breakout	Power consumption Motor		Wiring diagram	Nominal weight (net)	Speed controller 5-step with motor full protection		Motor full protection device*to connect built-in thermal contacts	
		min ⁻¹			Vm ³ /h	dB(A) in 4 m			Power kW	Current A	No.	kg
1 Phase motor, 230 V, 50 Hz, capacitor motor, protection to IP 55												
BDVW 315/4 F400	7566	1450	3710	56	0,59	3,8	434	60	MWS 5¹⁾	1949	MW¹⁾	1579
BDVW 400/4 F400	7569	1390	6820	63	1,61	7,4	434	85	MWS 10¹⁾	1946	MW¹⁾	1579
3 Phase motor, 230/400 V, 50 Hz, protection to IP 55, with PTC-resistors												
Frequency inverter												
BDVD 315/4 F400	7567	1450	3710	57	0,59	1,5	776	55	FU-BS 2,5²⁾	5459	MSA	1289
BDVD 400/4 F400	7570	1440	7060	62	1,59	3,3	776	80	FU-BS 5,0²⁾	5460	MSA	1289

* When used as smoke exhaust fan these switching devices are to be bridged in the on-site control.

¹⁾ Motor full protection unit included

²⁾ Motor full protection unit and sine filter included



Dimensions in mm

Type	A	B	C	D	E	F	øG	øH	øI
BDVW 315/4	594	746	450	600	150	193,5	356	8x M8	12
BDVW 400/4	724	880	535	730	150	223,5	438	6x M8	12
BDVD 315/4	594	746	450	600	150	193,5	356	8x M8	12
BDVD 400/4	724	880	535	730	150	223,5	438	6x M8	12

Motor full protection

All models are equipped with thermal contacts or PTC-resistors, which are connected to the terminal box located on the outside of the casing and to be wired with the appropriate motor full protection unit (accessories).

Electrical connection

Standard terminal box (IP 66), outside on console. Interchangeable with isolator switch (accessories).

Voltage and frequency

Rated voltage and frequency are shown in the table. These also form the basis of the performance data.

Speed control

The 1-phase models are controllable by transformer controller, the 3-phase models by frequency inverter FU. The planned use of a frequency inverter without sine filter must be specified when ordering. It requires a change in the fan version and if necessary additional costs. Appropriate control and regulation units see data table and accessories program.

Installation/Mounting

For installation / mounting on horizontal roof surfaces or bases, outdoors. With standard, central lifting eye for easy positioning.

Protection / Guard

Fitted with a guard from galvanised steel on the discharge as standard. Prevents ingress of leaves, solids, and provides protection against accidental contact in accordance to DIN EN ISO 13857.

Sound level

Shown in the data table is the case breakout sound level as sound pressure level in dB(A) at 4 m (freefield conditions). Different installation conditions or disturbed inflow may increase noise levels

Certification

The smoke and heat exhaust fans BDV were tested to DIN EN 12101-3: 2002-06. CE-approval: F400 - 400°C / 120 minutes: 0036 CPD RG 05 07 With DIBt technical approval: Z-78.11-150

Accessories

Intake air accessories, such as back draught shutters, flanged flexible connectors and flanges can be attached to the existing threaded bolts in the base plate.

Important information

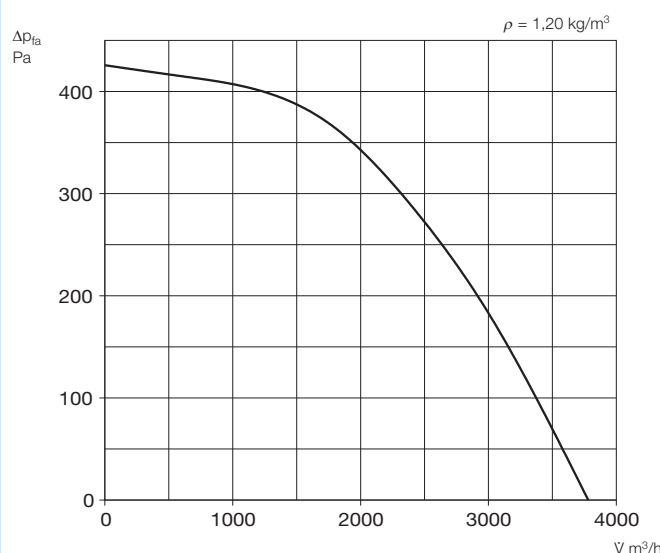
In case of fire the electrical supply is to be carried out fire-protected. Possible motor protection devices, control and regulating devices must be bridged automatically in case of fire (put out of operation) and the function at maximum fan speed must be guaranteed.

Design of systems Page 3 on

Accessories	Pages
Mounting accessories	146 on
controllers, switches	152 on

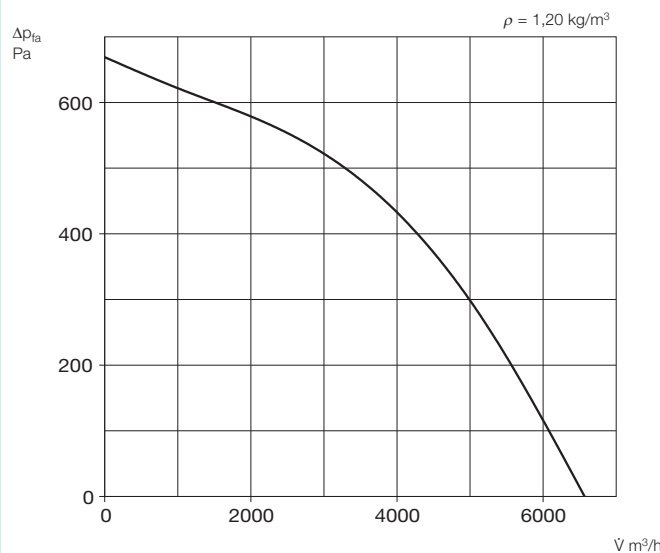
BDV.. 315/4

R.P.M. = 1450



BDV.. 400/4

R.P.M. = 1450





■ **Application/Use**

- For preventive fire protection to ensure the smoke and heat extraction for single rooms, corridors, escape routes or entire building
- Furthermore the prevention of "Flash-Overs".
- For applications with operating temperatures of 400 °C/120 minutes/F400 (smoke extraction mode), or in continuous operation up to 100 °C, such as in foundries, commercial kitchens etc.
- Versatile for general tasks in the field of ventilation-, air conditioning-, heat-, and drying technology.

■ **Air flow temperature**

- Temperature range 400 °C/120 minutes (smoke extraction mode) or 100 °C for continuous operation and an atmospheric temperature of -20 °C to +40° C.

■ **Features**

- Vertical air outlet prevents damage of adjacent parts of the building in case of fire or by conveying polluted air.
- Easy connection of accessories on the intake through base plate with threaded bolts.
- Standard motor protection against thermal overload by integrated thermal or PTC elements.
- Robust design for harsh operating conditions.
- Supplied ready for installation, easy assembly
- High reliability by minimal maintenance.

■ **Casing**

- Made of galvanized sheet steel, for direct mounting on purlin box. Base plate with threaded bolt for connection of accessories on the intake.
- Architecture design.

■ **Impeller**

- Direct driven, backward curved, highly efficient centrifugal impeller from galvanised steel.
- Dynamically balanced to DIN ISO 1940 P.1 – class 6.3.
- High efficiency, low noise.

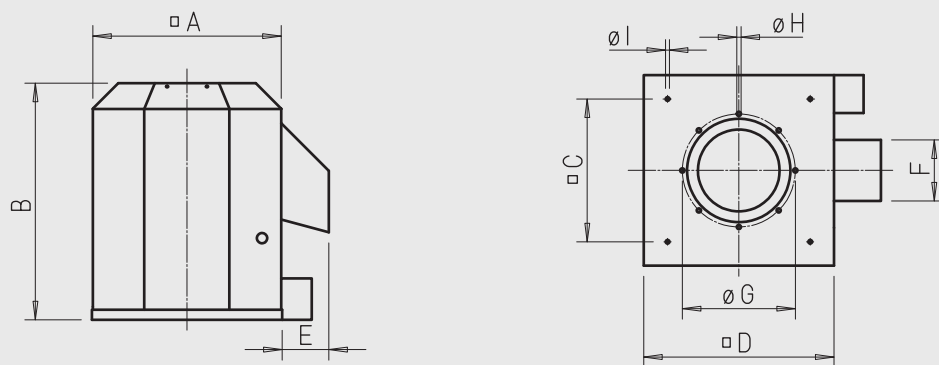
■ **Motor**

- Special motor for use in high ambient temperatures.
- Totally enclosed, fan cooled motor, protection to IP 55. Maintenance-free, sealed for life ball bearings.
- Tropical protection of windings, insulation class F.
- Motor outside of air stream, protected from it by thermal separation
- Air flow of motor cooling air through intake duct. Supply of cooling air through additional backvanes on the impeller.
- Execution according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 und VDE 0700 / DIN EN 60335-1.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Sound pressure case breakout	Power consumption		Wiring diagram	Nominal weight (net)	Frequency inverter* for 3-phase fans		Motor full protection device* to connect built-in PTC resistors	
					Power	Current			Type	Ref.No.	Type	Ref.No.
			min ⁻¹	Vm ³ /h	dB(A) in 4 m	kW	A	Nr.	kg			
3 Phase motor, 400/690 V, 50 Hz, protection to IP 55												
BDVD 500/4 F400	7571	1450	14440	72	4	8,5	776	155	FU-BS 10¹⁾	5462	MSA	1289
BDVD 560/4 F400	7572	1450	20920	75	7,5	15,4	776	200	FU-CS 18¹⁾	5469	MSA	1289
2 speed motor, pole-switching, (Dahlander winding Y/YY), 400 V / 3 ph. / 50 Hz												
Pole switch												
BDVD 500/8/4 F400	7579	700/1435	6970/14290	56/72	0,75/4	2,5/8,5	777	155	PDA 12	5081	MSA	1289
BDVD 560/8/4 F400	7580	705/1440	10170/20780	60/75	1,8/7,5	4,6/15,4	777	200	PDA 25	5060	MSA	1289

* When used as smoke exhaust fan these switching devices are to be bridged in the on-site control.

²⁾ Motor full protection unit and sine filter included



Dimensions in mm

Type	A	B	C	D	E	F	øG	øH	øI
BDVD 500/4	974	1074	750	980	200	316	541	6x M8	14
BDVD 500/8/4	974	1074	750	980	200	316	541	6x M8	14
BDVD 560/4	1024	1191	750	1030	200	396	605	8x M10	14
BDVD 560/8/4	1024	1191	750	1030	200	396	605	8x M10	14

Motor full protection

All models are equipped with thermal contacts or PTC-resistors, which are connected to the terminal box located on the outside of the casing and to be wired with the appropriate motor full protection unit (MSA, accessories).

Electrical connection

Standard terminal box (IP 66), outside on console. Interchangeable with isolator switch (accessories) with Ø 500 mm (with Ø 560 mm to be provided on site).

Voltage and frequency

Rated voltage and frequency are shown in the table. These also form the basis of the performance data.

Speed control

The 1-phase models are controllable by transformer controller, the 3-phase models by frequency inverter FU. The planned use of a frequency inverter without sine filter must be specified when ordering. It requires a change in the fan version and if necessary additional costs. Appropriate control and regulation units see data table and accessories program.

Installation/Mounting

For installation / mounting on horizontal roof surfaces or bases, outdoors. With standard, central lifting eye for easy positioning.

Protection / Guard

Fitted with a guard from galvanised steel on the discharge as standard. Prevents ingress of leaves, solids, and provides protection against accidental con-

tact in accordance to DIN EN ISO 13857.

Sound level

Shown in the data table is the case breakout sound level as sound pressure level in dB(A) at 4 m (freefield conditions). Different installation conditions or disturbed inflow may increase noise levels

Certification

The smoke and heat exhaust fans BDV were tested to DIN EN 12101-3: 2002-06. CE-approval: F400 - 400°C / 120 minutes: 0036 CPD RG 05 07 With DIBt technical approval: Z-78.11-150

Accessories

Intake air accessories, such as back draught shutters, flanged flexible connectors and flanges can be attached to the existing threaded bolts in the base plate.

Important information

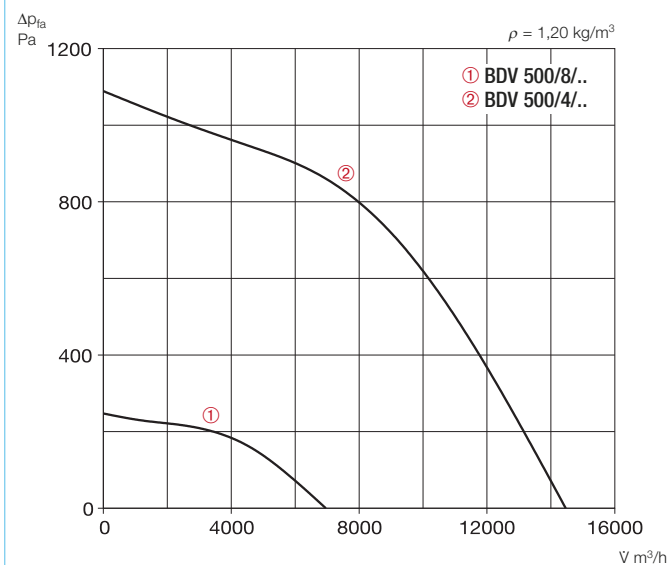
In case of fire the electrical supply is to be carried out fire-protected. Possible motor protection devices, control and regulating devices must be bridged automatically in case of fire (put out of operation) and the function at maximum fan speed must be guaranteed.

Design of systems Page 3 on

Accessories	Pages
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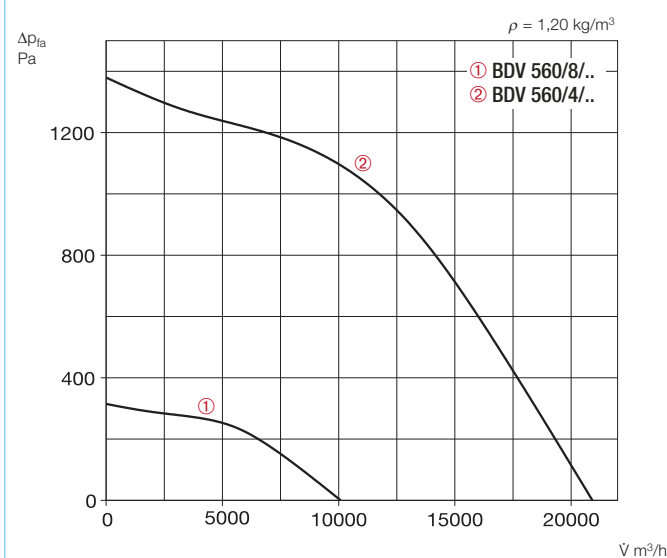
BDVD 500/..

R.P.M. = 1450



BDVD 560/..

R.P.M. = 1450





■ **Application/Use**

- For preventive fire protection to ensure the smoke and heat extraction for single rooms, corridors, escape routes or entire building.
- Furthermore the prevention of "Flash-Overs".
- For applications with operating temperatures of 400 °C/120 minutes/F400 (smoke extraction mode), or in continuous operation up to 100 °C, such as in foundries, commercial kitchens etc.
- Versatile for general tasks in the field of ventilation-, air conditioning-, heat-, and drying technology.

■ **Air flow temperature**

- Temperature range 400 °C/120 minutes (smoke extraction mode) or 100 °C for continuous operation and an atmospheric temperature of -20 °C to +40 °C.

■ **Features**

- Vertical air outlet prevents damage of adjacent parts of the building in case of fire or by conveying polluted air.
- Easy connection of accessories on the intake through base plate with threaded bolts.
- Standard motor protection against thermal overload by integrated thermal or PTC elements.
- Robust design for harsh operating conditions.
- Supplied ready for installation, easy assembly
- High reliability by minimal maintenance.

■ **Casing**

- Made of galvanized sheet steel, for direct mounting on purlin box. Base plate with threaded bolt for connection of accessories on the intake.
- Architecture design.

■ **Impeller**

- Direct driven, backward curved, highly efficient centrifugal impeller from galvanized steel.
- Dynamically balanced to DIN ISO 1940 P.1 – class 6.3.
- High efficiency, low noise.

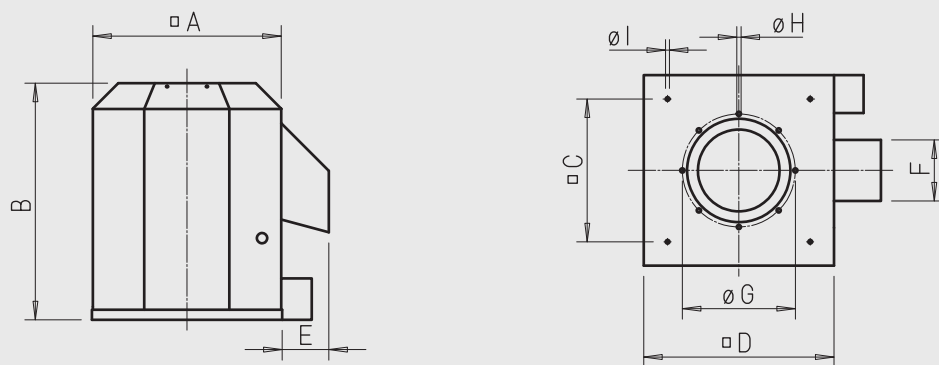
■ **Motor**

- Special motor for use in high ambient temperatures.
- Totally enclosed, fan cooled motor, protection to IP 55. Maintenance-free, sealed for life ball bearings.
- Tropical protection of windings, insulation class F.
- Motor outside of air stream, protected from it by thermal separation.
- Air flow of motor cooling air via intake duct. Supply of cooling air through additional backvanes on the impeller.
- Execution according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 und VDE 0700 / DIN EN 60335-1.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Sound pressure case breakout	Power consumption		Wiring diagram	Nominal weight (net)	Frequency inverter* for 3-phase fans		Motor full protection device* to connect built-in PTC resistors	
					Motor Power	Motor Current			Type	Ref.No.	Type	Ref.No.
min ⁻¹												
Vm ³ /h												
dB(A) in 4 m												
kW												
A												
No.												
kg												
3 Phase motor, 400/690 V, 50 Hz, protection to IP 55												
BDVD 630/4 F400	7573	1460	29980	82	15	30	776	325	FU-CS 32¹⁾	5471	MSA	1289
BDVD 710/4 F400	7574	1460	39740	86	22	43	776	420	FU-CS 50¹⁾	5473	MSA	1289
2 speed motor, pole-switching, (Dahlander winding Y/YY), 400 V / 3 ph. / 50 Hz												
Pole switch												
BDVD 630/8/4 F400	7581	715/1445	14780/29880	67/82	3,8/15	9,9/30	777	325	PDA 63	1283	MSA	1289
BDVD 710/8/4 F400	7582	720/1450	19540/39470	71/86	5,5/22	13/43	777	420	PDA 63	1283	MSA	1289

* When used as smoke exhaust fan these switching devices are to be bridged in the on-site control.

²⁾ Motor full protection unit and sine filter included



Dimensions in mm

Type	A	B	C	D	E	F	øG	øH	øI
BDVD 630/4	1144	1406	840	1150	250	452	674	8x M10	14
BDVD 630/8/4	1144	1406	840	1150	250	452	674	8x M10	14
BDVD 710/4	1294	1539	1050	1300	250	452	751	8x M10	14
BDVD 710/8/4	1294	1539	1050	1300	250	452	751	8x M10	14

Motor full protection

All models are equipped with thermal contacts or PTC-resistors, which are connected to the terminal box located on the outside of the casing and to be wired with the appropriate motor full protection unit (MSA, accessories).

Electrical connection

Standard terminal box (IP 65), outside on console. Interchangeable with isolator switch (accessories).

Voltage and frequency

Rated voltage and frequency are shown in the table. These also form the basis of the performance data.

Speed control

The 1-phase models are controllable by transformer controller, the 3-phase models by frequency inverter FU. The planned use of a frequency inverter without sine filter must be specified when ordering. It requires a change in the fan version and if necessary additional costs. Appropriate control and regulation units see data table and accessories program.

Installation/Mounting

For installation / mounting on horizontal roof surfaces or bases, outdoors. With standard, central lifting eye for easy positioning.

Protection / Guard

Fitted with a guard from galvanised steel on the discharge as standard. Prevents ingress of leaves, solids, and provides protection against accidental contact in accordance to DIN EN ISO 13857.

Sound level

Shown in the data table is the case breakout sound level as sound pressure level in dB(A) at 4 m (freefield conditions). Different installation conditions or disturbed inflow may increase noise levels

Certification

The smoke and heat exhaust fans BDV were tested to DIN EN 12101-3: 2002-06. CE-approval: F400 - 400°C / 120 minutes: 0036 CPD RG 05 07 With DIBt technical approval: Z-78.11-150

Accessories

Intake air accessories, such as back draught shutters, flanged flexible connectors and flanges can be attached to the existing threaded bolts in the base plate.

Important information

In case of fire the electrical supply is to be carried out fire-protected. Possible motor protection devices, control and regulating devices must be bridged automatically in case of fire (put out of operation) and the function at maximum fan speed must be guaranteed.

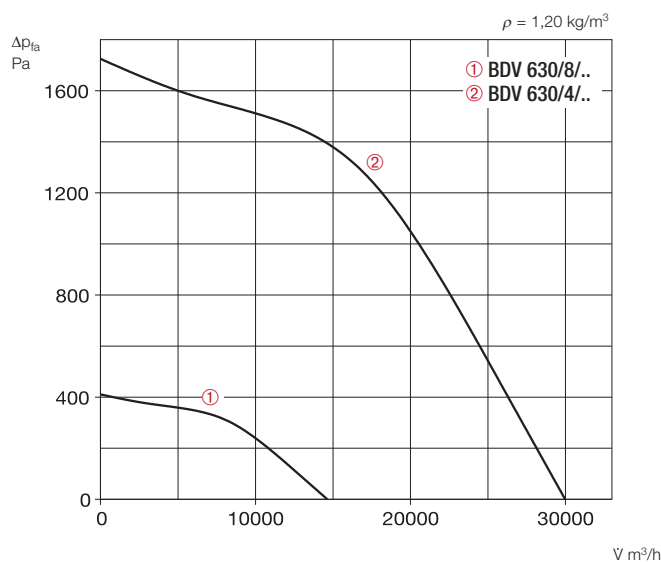
Design of systems Page 3 on

Accessories Pages

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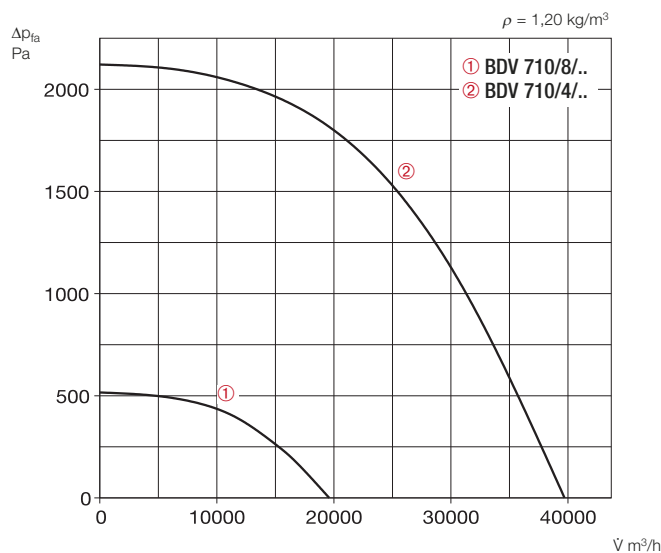
BDV.. 630/..

R.P.M. =1450



BDV.. 710/..

R.P.M. =1450





■ Application/Use

- For preventive fire protection to ensure the smoke and heat extraction from single rooms, corridors, escape routes or entire building. Furthermore the prevention of "Flash-Overs".
- For applications with operating temperatures of 400 °C/120 minutes/F400 (smoke extraction mode), or in continuous operation up to 100 °C, such as in foundries, commercial kitchens etc.
- Versatile for general tasks in the field of ventilation-, air conditioning-, heat-, and drying technology.
- For all industrial and commercial applications where the motor must be outside the air stream.
- Wherever easy access for cleaning and maintenance is required.
- Corresponds to VDI 2052: "Heat ventilation equipment for kitchens".

■ Air flow temperature

- Temperature range 400 °C/120 minutes (smoke extraction mode) or 100 °C for continuous operation. Motor ambient temperature of -20 °C to +40 °C.

■ Features

- Swing-out motor impeller unit for easy cleaning and maintenance. All parts are freely accessible.
- Robust design for harsh operating conditions..
- Speed control by voltage reduction.
- All three-phase models are equipped with two speeds as standard.
- Standard motor protection against thermal overload by integrated thermal contacts.
- Additional cooling wheel on the motor shaft for effective heat dissipation.
- Supplied ready for installation, easy assembly
- High reliability by minimal maintenance.

■ Casing

- Made of galvanized sheet steel. Rectangular, for direct installation in the ventilation duct. Inlet and outlet with holes for connection of standard flanges.
- Compact design for easy integration into ventilation ducts, without vertical offset.

■ Impeller

- Direct driven, backward curved, centrifugal impeller from galvanized steel.
- Dynamically balanced to DIN ISO 1940 P.1 – class 6.3.

■ Motor

- Special motor for use in high ambient temperatures.
- Totally enclosed, fan cooled motor, protection to IP 55. Maintenance-free, sealed for life ball bearings.
- Tropical protection of windings, insulation class F.
- Motor outside of air stream, protected from it by thermal separation.
- Additional impeller for atmospheric cooling.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Sound pressure case breakout	Power consumption		Wiring diagram	Nominal weight (net)	Speed controller 5-step		Motor full protection device*to connect built-in thermal contacts			
					min ⁻¹	Vm ³ /h			dB(A) in 4 m	kW	A	No.	kg	motor full protection
1 Phase motor, 230 V, 50 Hz, capacitor motor, protection to IP 55														
BKW 250/4/50/30	8552	1350	1550	45	0,16	0,80	563 ¹⁾	36	MWS 1,5 ⁵⁾	1947	TSW 1,5	1495	MW	1579
BKW 280/4/50/30	8555	1370	2170	48	0,16	0,82	563 ¹⁾	38	MWS 1,5 ⁵⁾	1947	TSW 1,5	1495	MW	1579
BKW 315/4/60/35	8558	1320	3470	52	0,42	2,00	563 ¹⁾	46	MWS 3 ⁵⁾	1948	TSW 3,0	1496	MW	1579
BKW 400/6/60/35	8557	915	2750	45	0,30	1,62	563 ¹⁾	57	MWS 3 ⁵⁾	1948	TSW 3,0	1496	MW	1579
BKW 400/4/60/35	8559	1420	4330	55	1,36	6,90	563 ¹⁾	58	MWS 7,5 ⁵⁾	1950	—	—	—	—
2 speed motor, 3 Phase, 400 V, 50 Hz, Y/Δ-motor, protection to IP 55														
BKD 225/2/2/40/20	8548	2080/2630	1500/1900	54/56	0,30/0,47	0,48/0,96	520 ²⁾	34	RDS 2	1315	TSD 1,5	1501	MD ³⁾	5849
BKD 250/2/2/50/30	8553	2180/2720	2810/3510	56/59	0,66/1,03	1,00/2,00	520 ²⁾	37	RDS 2	1315	TSD 3,0	1502	MD ³⁾	5849
BKD 280/2/2/50/30 ⁴⁾	8556	2160/2720	3450/4350	61/63	0,96/1,45	1,60/2,60	520 ²⁾	40	RDS 4	1316	TSD 5,5	1503	MD ³⁾	5849
BKD 400/4/4/60/35	8561	1080/1350	3340/4170	53/55	0,55/0,81	0,86/1,60	520 ²⁾	60	RDS 2	1315	TSD 3,0	1502	MD ³⁾	5849

* When used as smoke exhaust fan these switching devices are to be bridged in the on-site control.

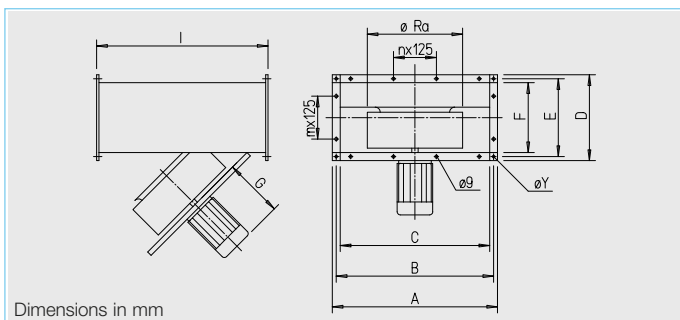
¹⁾ Wiring diagram SS-564

²⁾ Wiring diagram SS-565

³⁾ When operating on two-speed Type M is 4, No. 1571, is required.

⁴⁾ Use only for air flow temperatures up to +100 °C.

⁵⁾ Motor full protection unit included



Type	A	B	C	D	E	F	G	I	Ø Y
BKD 225/2/2/40/20	440	420	400	240	220	200	270	500	9
BKW 250/4/50/30	540	520	500	340	320	300	215	675	9
BKD 250/2/2/50/30	540	520	500	340	320	300	290	675	9
BKW 280/4/50/30	540	520	500	340	320	300	221	675	9
BKD 280/2/2/50/30	540	520	500	340	320	300	300	675	9
BKW 315/4/60/35	640	620	600	390	370	350	260	775	9
BKW 400/6/60/35	640	620	600	390	370	350	285	775	9
BKW 400/4/60/35	640	620	600	390	370	350	357	775	9
BKD 400/4/4/60/35	640	620	600	390	370	350	285	775	9

Execution according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 und VDE 0700 / DIN EN 60335-1.

Motor full protection

All models are equipped with thermal contacts, which are connected to the terminal board and to be wired with the appropriate motor full protection unit (accessories).

Electrical connection

Freely accessible terminal box (protection to IP 55) mounted on the motor. Consider swing-out range of motor impeller unit when cutting connecting cable to length.

Speed control

All models (1~ und 3~) are controllable by voltage reduction. Thereby optimum adjustment to the required operating point and the user needs possible. The models are assigned to a controller shown in the column "Transformer speed controller". All 2-speed models can be operated by speed controller DS 2, Ref.No. 1351 (accessories).

Installation/Mounting

For installation outside the temperature-critical/fire risk zones.

Installation in any position. Consider swing-out range and easy access to the motor- impeller-unit.

With application as a smoke and heat exhaust fan or in continuous operation at high temperatures, the motor may be mounted only horizontally in position with "motor pointing downwards".

Note:

When used as a smoke and heat exhaust fan this must be insulated in accordance with DIN 4102-4, if an impairment of the environment is to be expected by the casing temperature..

Protection/Guard

Protection against accidental contact with the impeller according to DIN EN ISO 13857 must be ensured.

Sound level

Shown in the data table is the case breakout sound level as sound pressure level in dB(A) at 4 m (freefield conditions). Different installation conditions or disturbed inflow may increase noise levels

Certification

The smoke and heat exhaust fans BDV were tested to DIN EN 12101-3: 2002-06.
CE-approval:
F400 - 400°C / 120 minutes:
0036 CPD RG 05 08
With DIBt technical approval:
Z-78.11-151

Important information

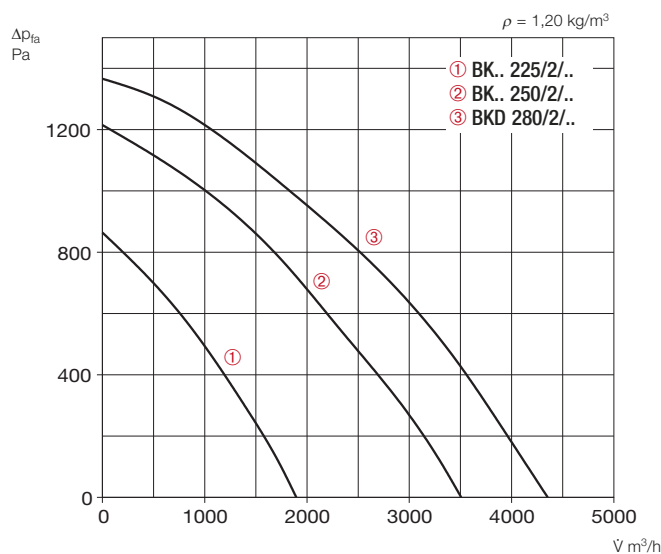
In case of fire the electrical supply is to be carried out fire-protected. Possible motor protection devices, control and regulating devices must be bridged automatically in case of fire (put out of operation) and the function at maximum fan speed must be guaranteed.

Design of systems Page 3 on

Accessories	Pages
Mounting accessories	146 on
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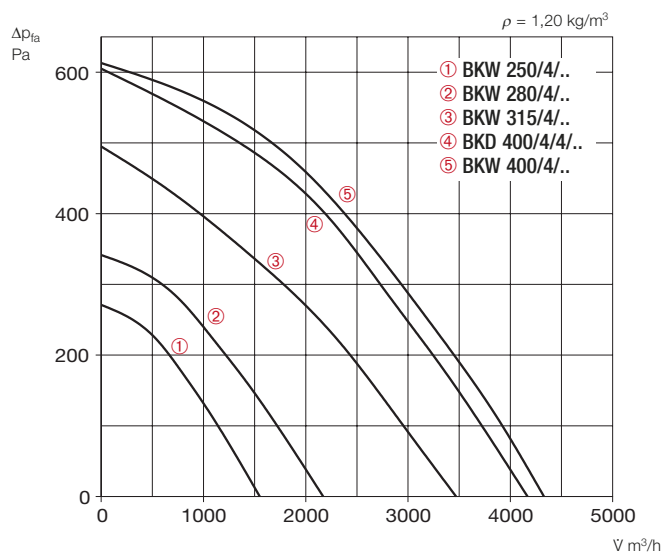
BK.. /2/..

R.P.M. = 2800



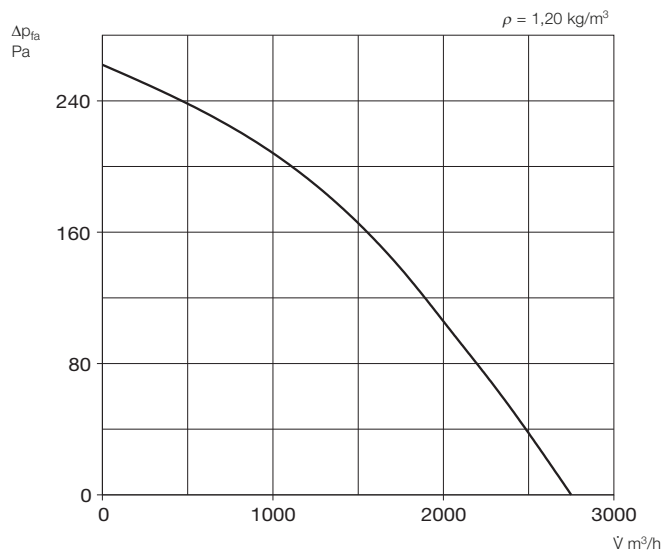
BK.. /4/..

R.P.M. = 1400



BK.. /6/..

R.P.M. = 900





■ **Application/Use**

- For preventive fire protection to ensure the smoke and heat extraction from single rooms, corridors, escape routes or entire building. Furthermore the prevention of "Flash-Overs".
- For applications with operating temperatures of 400 °C/120 minutes/F400 (smoke extraction mode), or in continuous operation up to 100 °C, such as in foundries, commercial kitchens etc.
- Versatile for general tasks in the field of ventilation-, air conditioning-, heat-, and drying technology..
- For all industrial and commercial applications where the motor must be outside the air stream.
- Wherever easy access for cleaning and maintenance is required.
- Corresponds to VDI 2052: "Heat ventilation equipment for kitchens".

■ **Air flow temperature**

- Temperature range 400 °C/120 minutes (smoke extraction mode) or 100 °C for continuous operation. Motor ambient temperature of -20 °C to +40 °C.

■ **Features**

- Swing-out motor impeller unit for easy cleaning and maintenance. All parts are freely accessible.
- Robust design for harsh operating conditions..
- Speed control by voltage reduction.
- All three-phase models are equipped with two speeds as standard.
- Standard motor protection against thermal overload by integrated thermal or PTC elements.
- Additional cooling wheel on the motor shaft for effective heat dissipation.
- Supplied ready for installation, easy assembly
- High reliability by minimal maintenance.

■ **Casing**

- Made of galvanized sheet steel. Rectangular, for direct installation in the ventilation duct. Inlet and outlet with holes for connection of standard flanges.
- Compact design for easy integration into ventilation ducts, without vertical offset.

■ **Impeller**

- Direct driven, backward curved, centrifugal impeller from galvanized steel.
- Dynamically balanced to DIN ISO 1940 P.1 – class 6.3.

■ **Motor**

- Special motor for use in high ambient temperatures.
- Totally enclosed, fan cooled motor, protection to IP 55. Maintenance-free, sealed for life ball bearings.
- Tropical protection of windings, insulation class F.
- Motor outside of air stream, protected from it by thermal separation.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Sound pressure case breakout	Power consumption		Wiring diagram	Nominal weight (net)	Speed controller 5-step				Motor full protection device* to connect built-in thermal contacts		
					min ⁻¹	Vm ³ /h			dB(A) in 4 m	kW	A	No.	kg	with motor full protection	without motor full protection
1 Phase motor, 230 V, 50 Hz, capacitor motor, protection to IP 55															
BKW 450/6/70/40	8562	870	4040	49	0,42	2,0	563 ¹⁾	85	MWS 3 ⁵⁾	1948	TSW 3,0	1496	MW	1579	
BKW 500/6/80/50	8564	810	5620	52	0,58	2,6	563 ¹⁾	105	MWS 3 ⁵⁾	1948	TSW 3,0	1496	MW	1579	
2 speed motor, 3 Phase, 400 V, 50 Hz, Y/Δ-motor, protection to IP 55															
BKD 450/4/4/70/40	8563	1170/1380	5440/6420	56/59	0,95/1,41	1,6/3,2	520 ²⁾	87	RDS 7 ⁵⁾	1578	TSD 5,5	1503	MD ⁴⁾	5849	
BKD 500/4/4/80/50	8550	1120/1370	8350/10210	58/62	1,50/2,10	2,5/4,2	520 ²⁾	108	RDS 7 ⁵⁾	1578	TSD 5,5	1503	MD ⁴⁾	5849	
BKD 560/6/6/80/50	8565	800/920	7490/8610	53/56	0,90/1,31	2,0/3,8	520 ²⁾	120	RDS 7 ⁵⁾	1578	TSD 5,5	1503	MD ⁴⁾	5849	
BKD 630/6/6/100/50	8566	860/950	9750/10770	57/59	1,78/2,20	3,8/6,3	520 ²⁾	150	RDS 7 ⁵⁾	1578	TSD 7,0	1504	MD ⁴⁾	5849	
3 Phase motor, 400 V, 50 Hz, protection to IP 55, with PTC resistors															
BKD 560/4/80/50	8551	1420	12770	65	4,80	8,5	776 ³⁾	142	—	—	—	—	MSA	1289	
BKD 630/4/100/50	8567	1450	16500	69	5,50	12,2	776 ³⁾	174	—	—	—	—	MSA	1289	
BKD 710/6/120/60	8568	950	15400	63	3,75	6,90	776 ³⁾	185	—	—	—	—	MSA	1289	
BKD 800/6/140/70	8554	950	21930	67	6,50	12,4	776 ³⁾	232	—	—	—	—	MSA	1289	

* When used as smoke exhaust fan these switching devices are to be bridged in the on-site control.

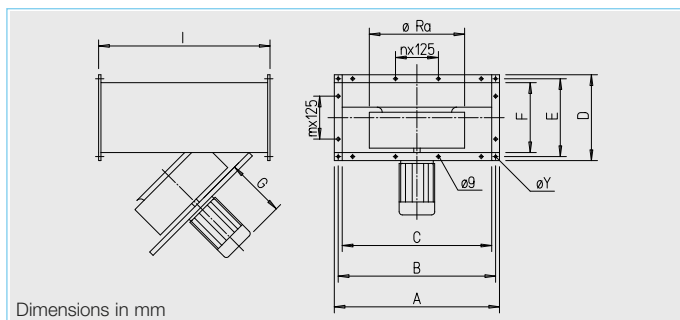
¹⁾ Wiring diagram SS-564

²⁾ Wiring diagram SS-565

³⁾ Wiring diagram SS-565.1

⁴⁾ When operating on two-speed Type M is 4, No. 1571, is required.

⁵⁾ Motor full protection unit included



Dimensions in mm

Type	A	B	C	D	E	F	G	I	ØY
BKW 450/6/70/40	740	720	700	440	420	400	273	850	9
BKD 450/4/4/70/40	740	720	700	440	420	400	323	850	9
BKW 500/6/80/50	840	820	800	540	520	500	273	1025	9
BKD 500/4/4/80/50	840	820	800	540	520	500	357	1025	9
BKD 560/6/6/80/50	840	820	800	540	520	500	357	1025	9
BKD 560/4/80/50	840	820	800	540	520	500	372	1025	9
BKD 630/6/6/100/50	1040	1020	1000	540	520	500	372	1075	9
BKD 630/4/100/50	1040	1020	1000	540	520	500	453	1075	9
BKD 710/6/120/60	1240	1220	1200	640	620	600	442	1200	9
BKD 800/6/140/70	1440	1420	1400	740	720	700	440	1300	9

- Additional impeller for atmospheric cooling
- Execution according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 und VDE 0700 / DIN EN 60335-1.

Motor full protection

- All models are equipped with thermal contacts or PTC resistors, which are connected to the terminal board and to be wired with the appropriate motor full protection unit (accessories).

Electrical connection

- Freely accessible terminal box (protection to IP 55) mounted on the motor. Consider swing-out range of motor impeller unit when cutting connecting cable to length.

Voltage and frequency

Rated voltage and frequency are shown in the table. These also form the basis of the performance data.

Speed control

Many models (1~ und 3~) are controllable by voltage reduction. Therby optimum adjustment to the required operating point and the user needs possible. The models are assigned to a controller shown in the column "Transformer speed controller". All 2-speed models can be operated by speed controller DS 2, Ref.No. 1351 (accessories).

Installation/Mounting

- For installation outside the temperature-critical/fire risk zones.
- Installation in any position. Consider swing-out range and easy access to the motor- impeller-unit.

- With application as a smoke and heat exhaust fan or in continuous operation at high temperatures, the motor may be mounted only horizontally in position with "motor pointing downwards".

Note:

When used as a smoke and heat exhaust fan this must be insulated in accordance with DIN 4102-4, if an impairment of the environment is to be expected by the casing temperature.

Protection/Guard

Protection against accidental contact with the impeller according to DIN EN ISO 13857 must be ensured.

Sound level

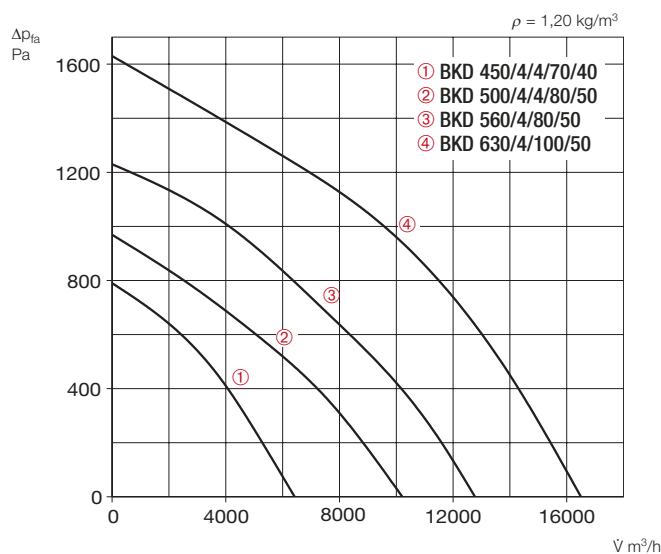
Shown in the data table is the case breakout sound level as sound pressure level in dB(A) at 4 m (freefield conditions). Different installation conditions or disturbed inflow may increase noise levels.

Certification

- The smoke and heat exhaust fans BDV were tested to DIN EN 12101-3: 2002-06.
CE-approval:
F400 - 400°C / 120 minutes:
0036 CPD RG 05 08
With DIBt technical approval:
Z-78.11-151

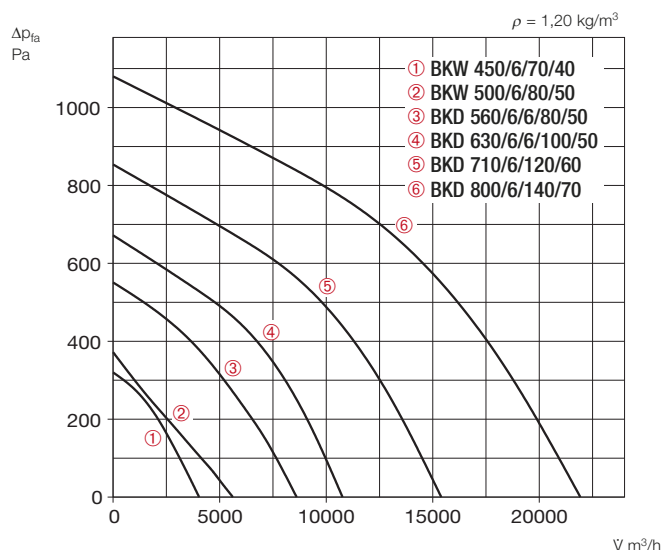
BK.. /4/..

R.P.M. = 1400



BK.. /6/..

R.P.M. = 900



Important information

In case of fire the electrical supply is to be carried out fire-protected. Possible motor protection devices, control and regulating devices must be bridged automatically in case of fire (put out of operation) and the function at maximum fan speed must be guaranteed.

Design of systems Page 3 on

Accessories Pages

Mounting accessories 146 on
controllers, switches 152 on



■ Application/Use

- For preventive fire protection to ensure the smoke and heat extraction from single rooms, corridors, escape routes or entire building. Furthermore the prevention of "Flash-Overs".
- For applications with operating temperatures of 400 °C/120 minutes/F400 (smoke extraction mode), or in continuous operation up to 100 °C, such as in foundries, commercial kitchens etc.
- Versatile for general tasks in the field of ventilation-, air conditioning-, heat-, and drying technology.
- Corresponds to VDI 2052: "Heat ventilation equipment for kitchens".

■ Air flow temperature

- Temperature range 400 °C/120 minutes (smoke extraction mode) or 100 °C for continuous operation. Motor ambient temperature of -20 °C to +40 °C.

■ Features

- Robust design for harsh operating conditions..
- Speed control by voltage reduction.
- All three-phase models are equipped with two speeds as standard.
- Standard motor protection against thermal overload by integrated thermal contacts.
- Additional cooling wheel on the motor shaft for effective heat dissipation.
- Compact design in rectangular casing simplifies installation.
- Supplied ready for installation, easy assembly
- High reliability by minimal maintenance.

■ Casing

- Made of galvanized sheet steel.
- Rectangular, for direct mounting on anti vibration mounts without brackets.
- With drill holes for any assembly position.
- Rectangular air outlet with holes for connecting flanges or ducts.
- Inflow via bell mouth with threaded holes for easy connection of standard flanges or pipes.

■ Impeller

- Direct driven, backward curved, centrifugal impeller from galvanized steel.
- Dynamically balanced to DIN ISO 1940 P.1 – class 6.3.
- High efficiency and low noise characteristics through aerodynamically shaped scroll casing.

■ Motor

- Special motor for use in high ambient temperatures.
- Totally enclosed, fan cooled motor, protection to IP 55. Maintenance-free, sealed for life ball bearings.
- Tropical protection of windings, insulation class F.
- Motor outside of air stream, protected from it by thermal separation.
- Additional impeller for atmospheric cooling
- Execution according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 und VDE 0700 / DIN EN 60335-1.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Sound pressure case breakout	Power consumption		Wiring diagram	Nominal weight (net)	Speed controller 5-step		Motor full protection device*			
					with motor full protection	without motor full protection			Type	Ref.No.	Type	Ref.No.		
		min ⁻¹	Vm ³ /h	dB(A) in 4 m	kW	A	No.	kg	Type	Ref.No.	Type	Ref.No.		
1 Phase motor, 230 V, 50 Hz, capacitor motor, protection to IP 55														
BRW 250/4/30/15	8570	1350	1550	45	0,16	0,80	563 ¹⁾	27	MWS 1,5 ⁵⁾	1947	TSW 1,5	1495	MW	1579
BRW 280/4/37/20	8572	1370	2170	48	0,16	0,82	563 ¹⁾	34	MWS 1,5 ⁵⁾	1947	TSW 1,5	1495	MW	1579
BRW 315/4/37/20	8574	1320	3470	52	0,42	2,00	563 ¹⁾	40	MWS 3 ⁵⁾	1948	TSW 3,0	1496	MW	1579
2 speed motor, 3 Phase, 400 V, 50 Hz, Y/Δ-motor, protection to IP 55														
BRD 225/2/2/30/15	8569	2080/2630	1500/1900	54/56	0,30/0,47	0,48/0,96	520 ²⁾	25	RDS 2 ⁵⁾	1315	TSD 1,5	1501	MD ³⁾	5849
BRD 250/2/2/30/15	8571	2180/2720	2810/3510	56/59	0,66/1,03	1,00/2,00	520 ²⁾	29	RDS 2 ⁵⁾	1315	TSD 3,0	1502	MD ³⁾	5849
BRD 280/2/2/37/20 ⁴⁾	8573	2160/2720	3450/4350	61/63	0,96/1,45	1,60/2,60	520 ²⁾	36	RDS 4 ⁵⁾	1316	TSD 5,5	1503	MD ³⁾	5849

* When used as smoke exhaust fan these switching devices are to be bridged in the on-site control.

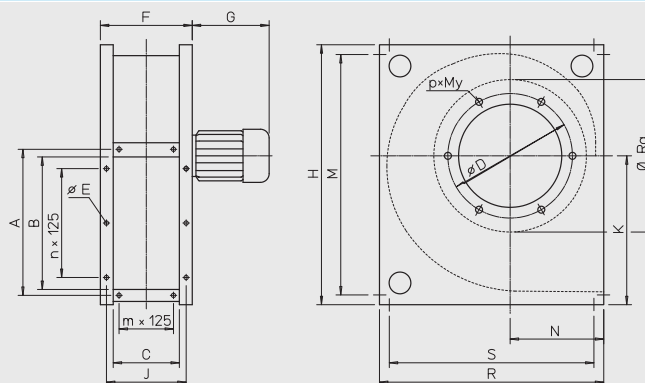
¹⁾ Wiring diagram SS-564

²⁾ Wiring diagram SS-565

³⁾ When operating on two-speed Type M is 4, No. 1571, is required.

⁴⁾ Use only for air flow temperatures up to +100 °C.

⁵⁾ Motor full protection unit included



Dimensions in mm

Type	A	B	C	øD	øE	F	G	H	J	K	M	N	R	S	p	Y	n	m
BRD 225/2/2/30/15	333	271	145	259	10	205	232	530	183	304	470	191	458	400	6	M6	2	1
BRW 250/4/30/15	333	305	156	286	10	211	187	597	183	340	552	215	515	470	6	M6	2	1
BRD 250/2/2/30/15	333	305	156	286	10	211	261	597	183	340	552	215	515	470	6	M6	2	1
BRD 280/2/2/37/20	398	344	180	322	10	254	261	674	228	385	600	242	580	520	8	M8	2	1
BRW 280/4/37/20	398	344	180	322	10	254	175	674	228	385	600	242	580	520	8	M8	2	1
BRW 315/4/37/20	398	366	201	356	10	261	234	715	228	410	665	260	620	570	8	M8	2	1

■ Motor full protection

All models are equipped with thermal contacts, which are connected to the terminal board and to be wired with the appropriate motor full protection unit (accessories).

■ Electrical connection

Freely accessible terminal box (protection to IP 55) mounted on the motor.

■ Voltage and frequency

Rated voltage and frequency are shown in the table. These also form the basis of the performance data.

■ Speed control

Many models (1~ und 3~) are controllable by voltage reduction. Therby optimum adjustment to the required operating point and the user needs possible. Appropriate control and regulation devices see data table and accessories. All three-phase types can be operated on two speeds (rpm). For this use controller DS 2, Ref.No. 1351 (accessories).

■ Installation/Mounting

In steps of 90 ° in any position.
 For installation outside the temperature-critical/fire risk zones.

Note:

When used as a smoke and heat exhaust fan this must be insulated in accordance with DIN 4102-4, if an impairment of the environment is to be expected by the casing temperature.

■ Protection/Guard

Protection against accidental contact with the impeller according to DIN EN ISO 13857 must

be ensured by installation.

Guard on inlet side available as accessories.

■ Sound level

Shown in the data table is the case breakout sound level as sound pressure level in dB(A) at 4 m (freefield conditions). Different installation conditions or disturbed inflow may increase noise levels.

■ Certification

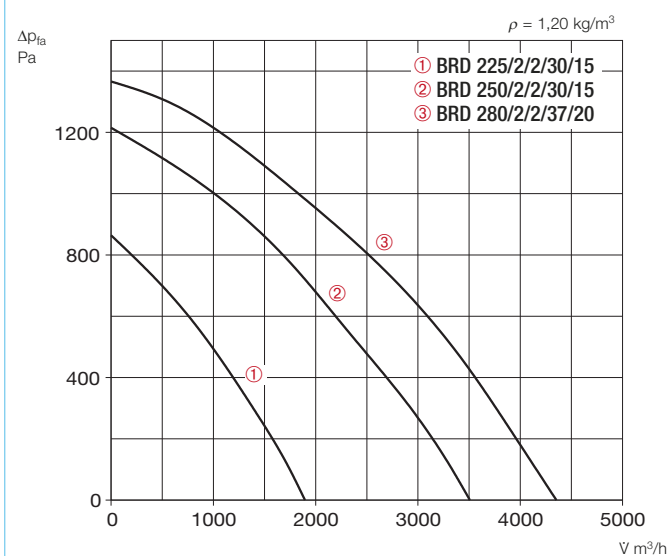
The smoke and heat exhaust fans BDV were tested to DIN EN 12101-3: 2002-06.
CE-approval:
F400 - 400°C / 120 minutes:
0036 CPD RG 05 09
With DIBt technical approval:
Z-78.11-151

■ Important information

In case of fire the electrical supply is to be carried out fire-protected. Possible motor protection devices, control and regulating devices must be bridged automatically in case of fire (put out of operation) and the function at maximum fan speed must be guaranteed.

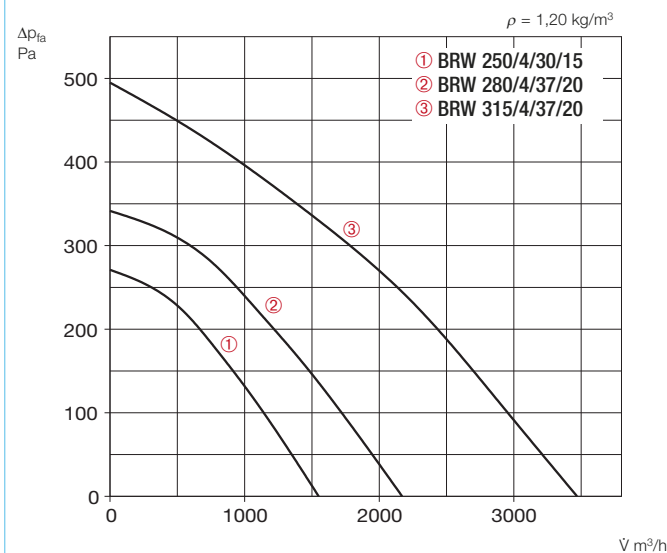
BR.. /2/..

R.P.M. = 2800



BR.. /4/..

R.P.M. = 1400





■ Application/Use

- For preventive fire protection to ensure the smoke and heat extraction from single rooms, corridors, escape routes or entire building. Furthermore the prevention of "Flash-Overs".
- For applications with operating temperatures of 400 °C/120 minutes/F400 (smoke extraction mode), or in continuous operation up to 100 °C, such as in foundries, commercial kitchens etc.
- Versatile for general tasks in the field of ventilation-, air conditioning-, heat-, and drying technology.
- Corresponds to VDI 2052: "Heat ventilation equipment for kitchens".

■ Air flow temperature

- Temperature range 400 °C/120 minutes (smoke extraction mode) or 100 °C for continuous operation. Motor ambient temperature of -20 °C to +40 °C.

■ Features

- Robust design for harsh operating conditions..
- Speed control by voltage reduction.
- All three-phase models are equipped with two speeds as standard.
- Standard motor protection against thermal overload by integrated thermal contacts.
- Additional cooling wheel on the motor shaft for effective heat dissipation.
- Compact design in rectangular casing simplifies installation.
- Supplied ready for installation, easy assembly
- High reliability by minimal maintenance.

■ Casing

- Made of galvanized sheet steel.
- Rectangular, for direct mounting on anti vibration mounts without brackets.
- With drill holes for any assembly position.
- Rectangular air outlet with holes for connecting flanges or ducts.
- Inflow via bell mouth with threaded holes for easy connection of standard flanges or pipes.

■ Impeller

- Direct driven, backward curved, centrifugal impeller from galvanized steel.
- Dynamically balanced to DIN ISO 1940 P.1 – class 6.3.
- High efficiency and low noise characteristics through aerodynamically shaped scroll casing.

■ Motor

- Special motor for use in high ambient temperatures.
- Totally enclosed, fan cooled motor, protection to IP 55. Maintenance-free, sealed for life ball bearings.
- Tropical protection of windings, insulation class F.
- Motor outside of air stream, protected from it by thermal separation.
- Additional impeller for atmospheric cooling
- Execution according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 und VDE 0700 / DIN EN 60335-1.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Sound pressure case breakout	Power consumption		Wiring diagram	Nominal weight (net)	Speed controller 5-step				Motor full protection device*to connect built-in thermal contacts	
					min ⁻¹	Vm ³ /h			dB(A) in 4 m	kW	A	No.	kg	motor full protection
1 Phase motor, 230 V, 50 Hz, capacitor motor, protection to IP 55														
BRW 400/6/45/25	8575	915	2750	45	0,30	1,62	563 ¹⁾	64	MWS 3 ⁴⁾	1948	TSW 3,0	1496	MW	1579
BRW 400/4/4/45/25	8593	1420	4330	55	1,36	6,90	563 ¹⁾	68	MWS 7,5 ⁴⁾	1950	—	—	—	—
BRW 450/6/50/27	8595	870	4040	49	0,42	2,00	563 ¹⁾	86	MWS 3 ⁴⁾	1948	TSW 3,0	1496	MW	1579
BRW 500/6/55/30	8597	810	5620	52	0,58	2,60	563 ¹⁾	110	MWS 3 ⁴⁾	1948	TSW 3,0	1496	MW	1579
2 speed motor, 3 Phase, 400 V, 50 Hz, Y/Δ-motor, protection to IP 55														
BRD 400/4/4/45/25	8594	1080/1350	3340/4170	53/55	0,55/0,81	0,86/1,60	520 ²⁾	68	RDS 2 ⁴⁾	1315	TSD 3,0	1502	MD ³⁾	5849
BRD 450/4/4/50/27	8596	1170/1380	5440/6420	56/59	0,95/1,41	1,60/3,20	520 ²⁾	88	RDS 7 ⁴⁾	1578	TSD 5,5	1503	MD ³⁾	5849
BRD 500/4/4/55/30	8560	1120/1370	8350/10210	58/62	1,50/2,10	2,50/4,20	520 ²⁾	113	RDS 7 ⁴⁾	1578	TSD 5,5	1503	MD ³⁾	5849
BRD 560/6/6/61/33	8598	800/920	7490/8610	53/56	0,90/1,31	2,00/3,80	520 ²⁾	142	RDS 7 ⁴⁾	1578	TSD 5,5	1503	MD ³⁾	5849
BRD 630/6/6/67/36	8599	860/950	9750/10770	57/59	1,78/2,20	3,80/6,30	520 ²⁾	190	—	—	—	—	—	—

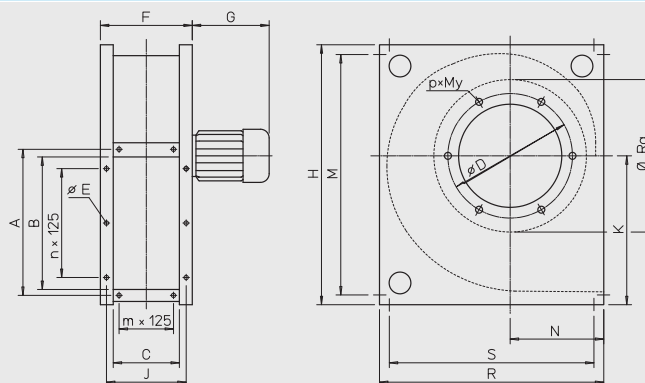
* When used as smoke exhaust fan these switching devices are to be bridged in the on-site control.

¹⁾ Wiring diagram SS-564

²⁾ Wiring diagram SS-565

³⁾ When operating on two-speed Type M is 4, No. 1571, is required

⁴⁾ Motor full protection unit included



Dimensions in mm

Type	A	B	C	ØD	ØE	F	G	H	J	K	M	N	R	S	p	Y	n	m
BR.. 400/././45/25	490	448	252	438	15	332	*	870	292	505	790	305	740	660	6	M8	3	1
BR.. 450/././50/27	530	491	277	487	15	352	286	955	312	550	855	340	820	720	6	M8	3	1
BRW 500/6/55/30	586	545	298	541	15	378	233	1038	338	598	938	365	885	755	6	M8	4	2
BRD 500/4/4/55/30	586	545	298	541	15	378	317	1038	338	598	938	365	885	755	6	M8	4	2
BRD 560/6/6/61/33	647	606	328	605	15	408	325	1135	368	655	1035	405	975	875	8	M10	4	2
BRD 630/6/6/67/36	712	670	355	674	15	435	332	1280	395	725	1180	485	1140	1040	8	M10	4	2

* 6-pole (BRW 400/6/45/25): 240 mm, 4-pole (BRW 400/4/45/25): 317 mm, 4-pole (BRD 400/4/4/45/25): 245 mm

Motor full protection

- All models are equipped with thermal contacts, which are connected to the terminal board and to be wired with the appropriate motor full protection unit (accessories).

Electrical connection

- Freely accessible terminal box (protection to IP 55) mounted on the motor.

Voltage and frequency

Rated voltage and frequency are shown in the table. These also form the basis of the performance data.

Speed control

Many models (1~ und 3~) are controllable by voltage reduction. Therby optimum adjustment to the required operating point and the user needs possible. Appropriate control and regulation devices see data table and accessories. All three-phase types can be operated on two speeds (rpm). For this use controller DS 2, Ref.No. 1351 (accessories).

Installation/Mounting

- In steps of 90 ° in any position.
- For installation outside the temperature-critical/fire risk zones.

Note:

When used as a smoke and heat exhaust fan this must be insulated in accordance with DIN 4102-4, if an impairment of the environment is to be expected by the casing temperature.

Protection/Guard

Protection against accidental contact with the impeller according to DIN EN ISO 13857 must

be ensured by installation.

Guard on inlet side available as accessories.

Sound level

Shown in the data table is the case breakout sound level as sound pressure level in dB(A) at 4 m (freefield conditions). Different installation conditions or disturbed inflow may increase noise levels.

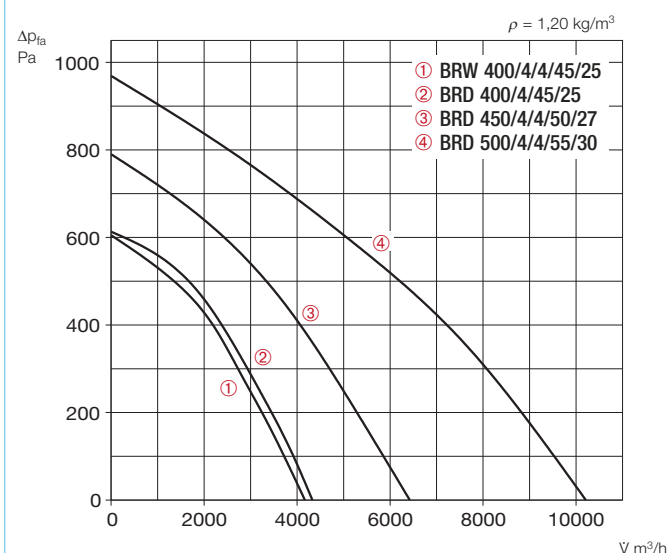
Certification

- The smoke and heat exhaust fans BDV were tested to DIN EN 12101-3: 2002-06. CE-approval: F400 - 400 °C/120 minutes: 0036 CPD RG 05 09 With DIBt technical approval: Z-78.11-151

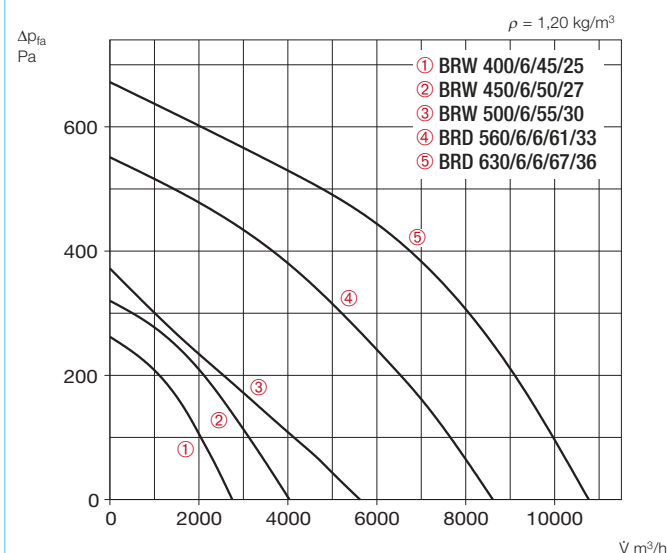
Important information

In case of fire the electrical supply is to be carried out fire-protected. Possible motor protection devices, control and regulating devices must be bridged automatically in case of fire (put out of operation) and the function at maximum fan speed must be guaranteed.

BR.. /4/.. R.P.M. = 1400



BR.. /6/.. R.P.M. = 900



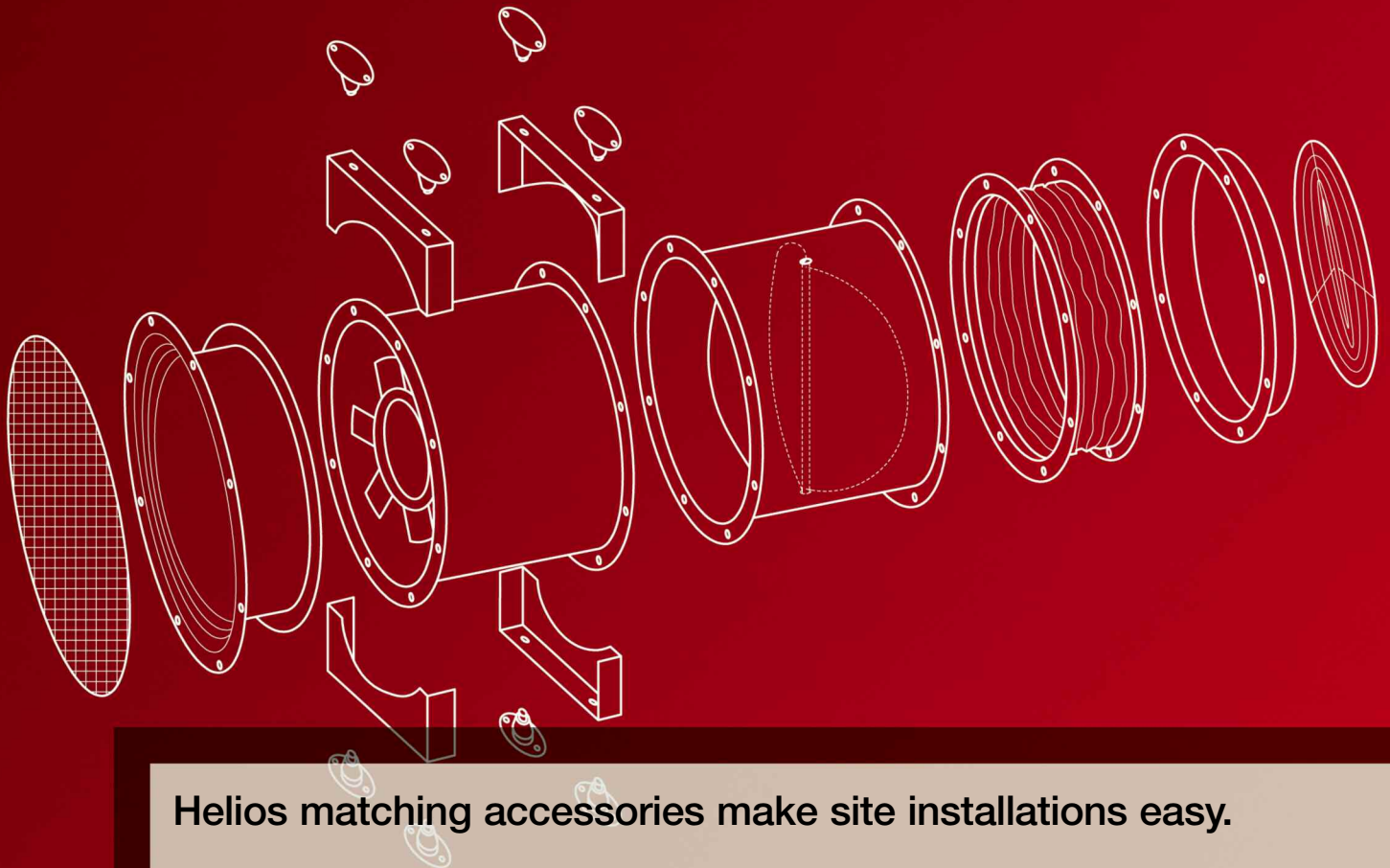
Helios supply a range of matching ancillaries, for all in-line fans, to suit your installation. From bell mouth inlets, electric backdraught shutters, anti vibration mounts and many more.

Simple installation with matched Helios accessories that reduce on site time and costs.

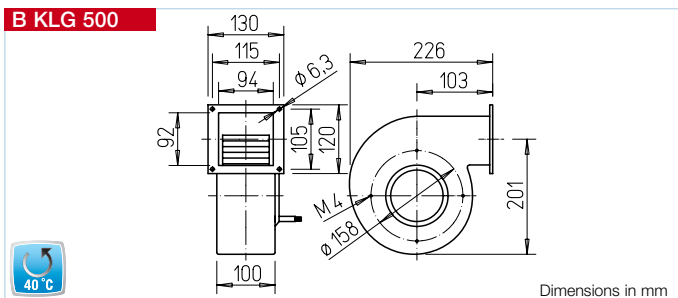
Our comprehensive range of accessories ensure that all installation needs are catered for.

In addition to the mounting accessories for smoke and heat exhaust fans there are further system components on the following pages.

- Grilles and shutters 148 on
- Attenuators 151
- Gas warning systems, smoke exhaust fan control, frequency inverters, speed controllers and switches 152 on



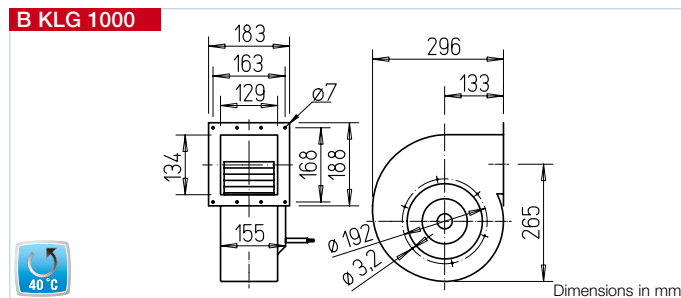
Helios matching accessories make site installations easy.



Centrifugal cooling air fan
with separat external thermal contact for smoke and heat exhaust fans F600 for motor ventilation.

In ventilation mode, an air flow monitor (SWE Type, No. 0065, accessories) to control the motor cooling is required.

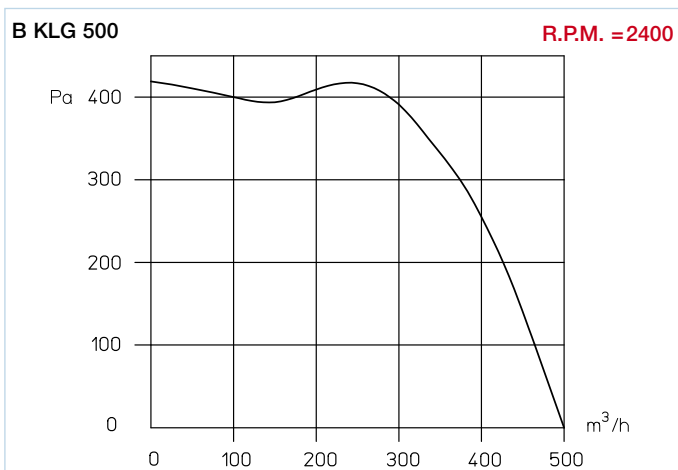
Technical data
For centrifugal cooling air fan
B KLG 500 **No. 2798**
Protection to IP44
Voltage 230 Volt
Frequency 50 Hz
Current 0,7 Amp.
Power 160 Watt
Max. ambient temperature 40 °C
Speed 2400 1/min
Air flow volume 500 m³/h



Centrifugal cooling air fan
with separat external thermal contact for smoke and heat exhaust fans F600 for motor ventilation.

In ventilation mode, an air flow monitor (SWE Type, No. 0065, accessories) to control the motor cooling is required.

Technical data
For centrifugal cooling air fan
B KLG 1000 **No. 2799**
Protection to IP44
Voltage 230 Volt
Frequency 50 Hz
Current 0,85 Amp.
Power 195 Watt
Max. ambient temperature 40 °C
Speed 1330 1/min
Air flow volume 960 m³/h



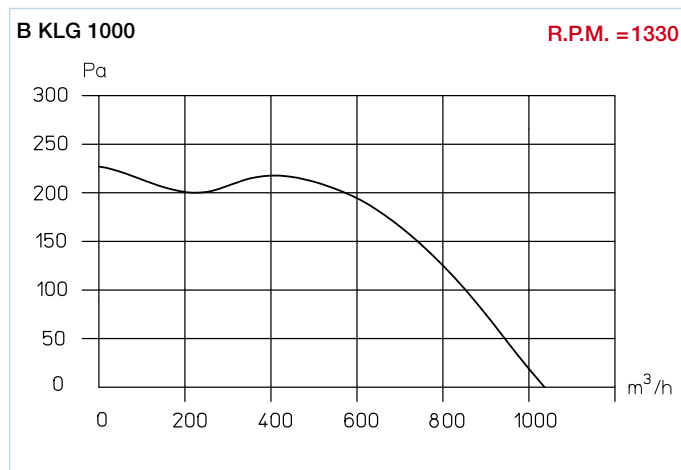
■ Selection table – Cooling air flow rate for B VAR..

Type	Fan	Air flow rate	Qty.	B VAR casing	still available
B VAR	B KLG	required, \dot{V} [m ³ /h]	pc	[Pa] ¹	Δp_{ex} [Pa] ²
500	500	250	1	95	314
560	500	340	1	175	187
630	1000	445	1	80	129
710	1000	565	1	125	73
800	500	700	2	190	160
900	1000	850	2	70	140
1000	1000	1000	2	100	106
1120	-	-	-	-	-
1250	-	-	-	-	-

Max cooling air temperature 40 °C

¹ Resistance in the fan/cooling system

² Available pressure at the discharge of cooling air fan



■ Selection table – Cooling air flow rate for B AVD..

Type	fan	Air flow rate	Qty.	B AVD casing	still available
B AVD	B KLG	required, \dot{V} [m ³ /h]	pc	[Pa] ¹	Δp_{ex} [Pa] ²
500	500	250	1	95	314
560	500	280	1	115	290
630	500	315	1	150	235
710	500	355	1	190	155
800	500	400	1	65	207
900	1000	450	1	80	129
1000	1000	500	1	100	106
1120	1000	875	2	75	135
1250	1000	1250	2	155	31

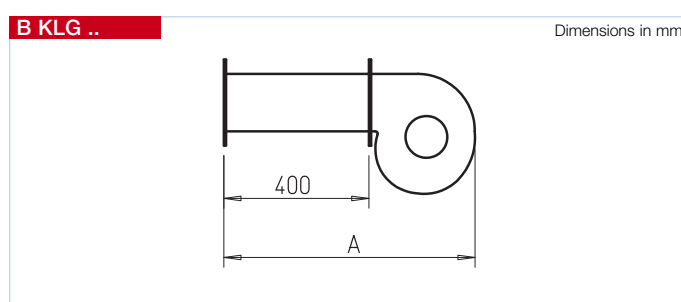
Max cooling air temperature 40 °C

¹ Resistance in the fan/cooling system

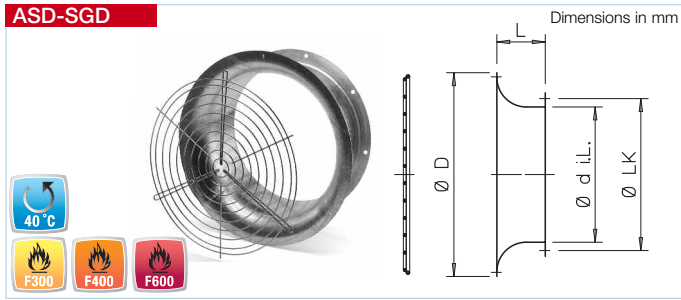
² Available pressure at the discharge of cooling air fan

■ Selection table – Cooling air fan B KLG.. for B VAR and B AVD

Type	Ø F600	B AVD Dim. A (mm)	B VAR Dim. A (mm)
B KLG 500	500	626	626
	560	626	626
	630	626	696
	710	626	696
	800	626	626
B KLG 1000	900	696	696
	1000	696	696
	1120	696	-
	1250	696	-



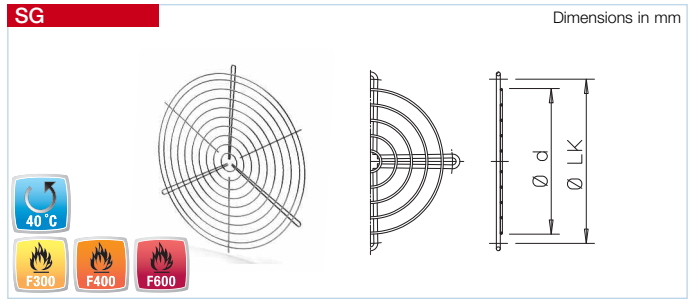
Classification, see table on the left.



Bell mouth + guard in optimum shape, with large inlet radius made from hot dipped galvanised steel. Dimensions and holes to match

fans and accessories to DIN 24155-2. Powder coated wire guard (zinc plated from Ø 800) giving protection to DIN EN ISO 13857.

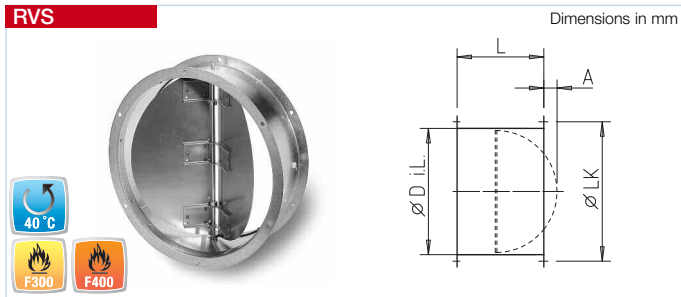
Type	Ref.No.	ø D	L	ø d i.L.	ø LK	Weight in kg
ASD-SGD 280	1415	400	140	280	322	3,2
ASD-SGD 315	1416	435	140	315	356	3,5
ASD-SGD 355	1417	475	140	355	395	4,0
ASD-SGD 400	1418	545	140	400	438	4,5
ASD-SGD 450	1419	595	140	450	487	5,7
ASD-SGD 500	1420	625	140	500	541	6,3
ASD-SGD 560	1421	745	130	560	605	7,0
ASD-SGD 630	1422	815	130	630	674	7,6
ASD-SGD 710	1423	955	200	710	751	19,5
ASD-SGD 800	1424	1060	200	800	837	22,3
ASD-SGD 900	1309	1140	200	900	934	25,0
ASD-SGD 1000	1310	1240	200	1000	1043	28,5
ASD-SGD 1120	1910	1360	200	1120	1174	39,0
ASD-SGD 1250	1911	1510	200	1250	1311	45,0



Guard SG to cover impeller opening. Powder coated in silvermetallic (zinc plated from Ø 800). Dimensions and accessories to

DIN 24155-2. Giving protection to DIN EN ISO 13857.

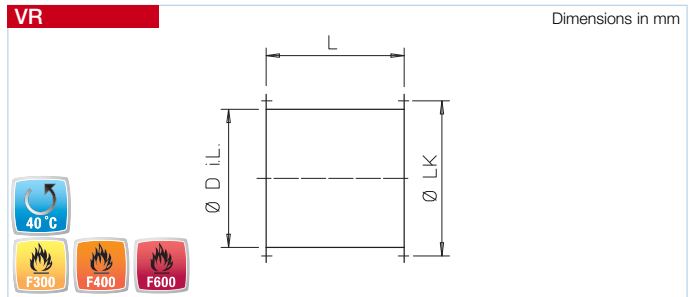
Type	Ref.No.	ø d	ø LK	Weight in kg	Number of fixing points
SG 280	1428	270	322	0,3	4
SG 315	1237	310	356	0,4	4
SG 355	1238	350	395	0,4	4
SG 400	1239	390	438	0,5	3
SG 450	1240	450	487	0,6	3
SG 500	1241	490	541	0,7	3
SG 560	1242	550	605	0,9	4
SG 630	1243	630	674	1,5	4
SG 710	1244	710	751	1,8	4
SG 800	1245	790	837	2,2	4
SG 900	1246	890	934	2,7	4
SG 1000	1290	990	1043	3,5	4
SG 1120	1361	1140	1147	6,5	4
SG 1250	1914	1270	1311	8,0	4



Automatic back draught shutter with spring closing¹⁾
Horizontal installation for air flow in any direction. Vertical for with air flow direction going upwards. Automatic opening on fan operation. Spring mechanism for closing. Closing force adjustable to

suit fan power and installation position. Spring mechanism outside the air flow. Shutters and casing manufactured from galvanised steel, ND 225-560 shutters made from aluminium. Flanges on both sides, drillings to DIN 24155, Pt. 2.

Type ²⁾	Ref.No.	ø D i.L.	L	A	ø LK	Weight in kg
RVS 280	2593	280	300	–	322	3,9
RVS 315	2594	315	300	–	356	4,3
RVS 355	2595	355	300	–	395	5,0
RVS 400	2596	400	330	–	438	7,2
RVS 450	2597	454	330	15	487	10,4
RVS 500	2598	504	330	40	541	11,7
RVS 560	2599	560	330	65	605	16,1
RVS 630	2600	630	400	115	674	19,5
RVS 710	2601	710	400	155	751	26,5
RVS 800	2602	800	420	200	837	37,3
RVS 900	2603	900	420	250	934	41,8
RVS 1000	2604	1000	420	300	1043	47,3
RVS 1120	2605	1120	420	335	1174	54,1
RVS 1250	2606	1250	570	250	1311	75,0



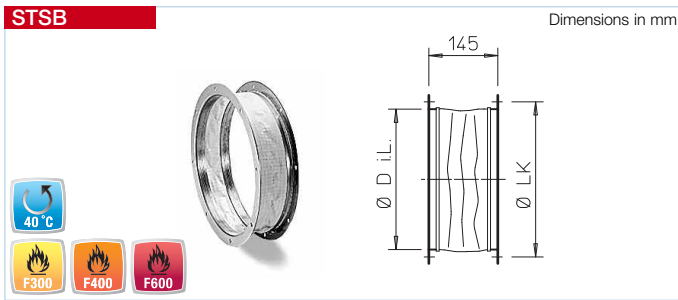
Extension duct VR
Ducting with flanges on both sides and holes to DIN 24155, Pt. 2. Manufactured from galvanised steel, to elongate the fan casing. For models where the motor

protrudes from the casing when installed into ducting. Avoids drops in performance at free extract.

Type	Ref.No.	ø D i.L.	L	ø LK	Weight in kg
VR 280	1403	280	300	322	3,2
VR 315	1404	315	300	356	3,5
VR 355	1405	355	300	395	4,0
VR 400	1406	400	330	438	6,0
VR 450	1407	454	330	487	9,0
VR 500	1408	504	330	541	10,0
VR 560	1409	560	500	605	14,0
VR 630	1410	630	500	674	15,5
VR 710	1411	710	500	751	21,5
VR 800	1412	800	420	837	31,0
VR 900	1311	900	420	934	34,0
VR 1000	1312	1000	420	1043	37,6
VR 1120	1932	1120	420	1174	42,1
VR 1250	1933	1250	570	1311	60,0

¹⁾ Pressure drop diagram and motor-operated version of RVM for ventilation mode (cold operation 40 °C) see Helios main catalog

²⁾ Ambient temperature –30 to +100 °C



Flanged flexible connector STSB
Flexible connector to be fitted between fan and ducting to reduce vibration transmission. Flexible sleeve consists of glass

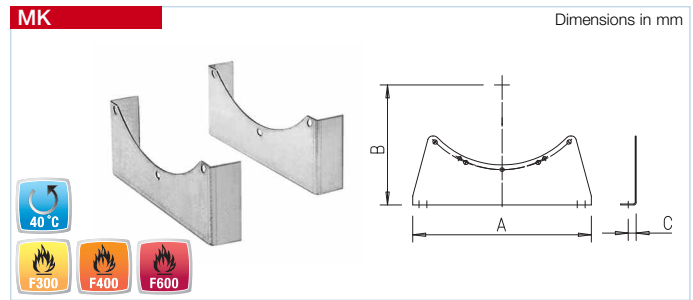
fibres (max. +600 °C) and has zinc plated metal counter or flat flanges fitted at both ends for F400 and F600. Dimensions to DIN 24155, Pt. 2. (Permissible operating temperature + point see table).

Type	Ref.No.	Type	No.	ND mm	Ø D i.L.	Ø LK	Weight in kg
F400		40°C					
STSB 280 F400	14739	STS 280	1231	280	288	322	1,5
STSB 315 F400	14738	STS 315	1221	315	322	356	1,8
STSB 355 F400	14744	STS 355	1222	355	361	395	2,3
STSB 400 F400	14743	STS 400	1223	400	404	438	2,5
STSB 450 F400	14742	STS 450	1224	450	453	487	3,8
STSB 500 F400	1915	STS 500	1225	500	507	541	3,4
STSB 560 F400	1916	STS 560	1226	560	570	605	4,5
STSB 630 F400	1917	STS 630	1228	630	638	674	4,6
STSB 710 F400	1918	STS 710	1229	710	711	751	7,0
STSB 800 F400	1919	STS 800	1233	800	801	837	7,5
STSB 900 F400	1920	STS 900	1234	900	898	934	7,5
STSB 1000 F400	1921	STS 1000	1235	1000	1004	1043	15,0
STSB 1120 F400	1922	STS 1120	8506	1120	1120	1174	16,5
STSB 1250 F400	1923			1250	1250	1311	19,0
F600							
STSB 500 F600	2003			500	507	541	3,4
STSB 560 F600	2004			560	570	605	4,5
STSB 630 F600	2005			630	638	674	4,6
STSB 710 F600	2006			710	711	751	7,0
STSB 800 F600	2007			800	801	837	7,5
STSB 900 F600	2008			900	898	934	7,5
STSB 1000 F600	2009			1000	1004	1043	15,0
STSB 1120 F600	2010			1120	1120	1174	16,5
STSB 1250 F600	2011			1250	1250	1311	19,0

Note

Flexible sleeves for ventilation mode (cold operation 40 °C) as well as temperature classes F300, F400, F600

on request



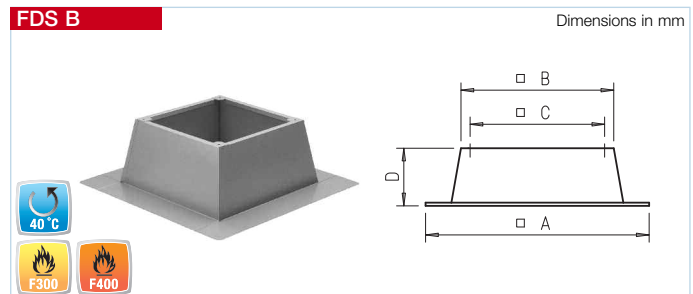
Mounting feet

To fix cased fans on ceiling, wall or floor. Made from galvanised sheet steel (till Ø 1000 mm) or hot dipped galvanised steel. Fixing holes fit casing flanges. Set includes a pair of feet, nuts and bolts.

Note:

If motors of high weight are installed, an extension duct (VR...) is recommended to move the centre of gravity within the mounting feet. Mount feet on the outer flange.

Type	Ref.No.	A	B	C	Weight in kg
MK 280	1447	340	227/245	20	1,7
MK 315-355	1448	380	281/300	25	2,2
MK 400-450	1449	360	311/335	25	2,6
MK 500-560	1450	570	383/415	25	5,3
MK 630	1333	600	465	30	8,5
MK 710	1372	670	515	35	10,5
MK 800	1373	680	565	35	16,0
MK 900	1374	760	625	35	18,0
MK 1000	1375	840	690	35	19,5
MK 1120	1376	920	710	35	28,5
MK 1250	1912	1060	800	35	37,0



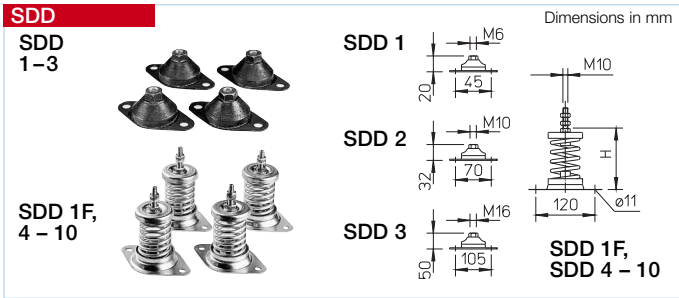
Flat roof base FDS B

For roof fans on flat roofs. From galvanised sheet steel with abrasion proof, sound and heat absorbing insulation. Check snow height per application

Installation:

To be installed above the ceiling opening (roof). Roof coating to be covered completely with felt and to be sealed with tar.

Type	Ref.No.	A in mm	B in mm	C in mm	D in mm
FDS B 315	6650	860	500	450	285
FDS B 400	6651	940	585	535	285
FDS B 500	6654	1160	800	750	285
FDS B 560	6654	1160	800	750	285
FDS B 630	6655	1325	965	840	285
FDS B 710	6652	1550	1190	1050	285

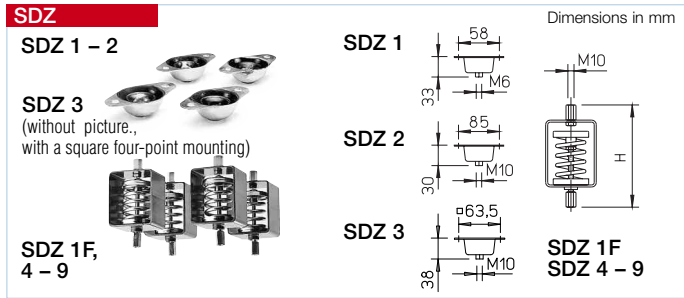


Anti vibration mounts for compression
To reduce noise and vibration transmission of fans installed on horizontal surfaces.

Rubber elements are suitable for temperatures up to max. +60 °C. Spring elements are suitable for higher temperatures above +60 °C (e.d. smoke extraction).

Type	Ref.No.	Max. fan weight kg	H Height in mm	Spring element	Contents 1 set = 4 pieces
SDD 1	1452	80	*		
SDD 1F	1942	70	112 – 82	●	
SDD 2	1453	180	*		
SDD 3	1367	750	*		
SDD 4	1944	130	112 – 86	●	
SDD 5	1924	210	112 – 86	●	
SDD 6	1926	400	112 – 80	●	
SDD 7	1928	580	112 – 82	●	
SDD 8	1930	900	112 – 82	●	
SDD 9	1934	1300	112 – 85	●	
SDD 10	1951	1800	112 – 88	●	

* shown in dimensional drawing

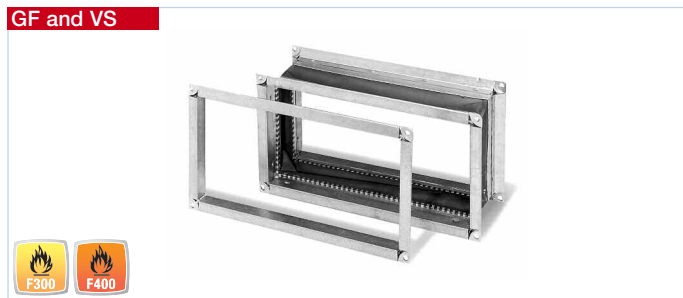


Anti vibration mounts for suspension to reduce noise and vibration transmission of fans installed hanging from ceilings. Specification as model SDD.

Important note for installation! Make sure that fan system is well balanced (centre of gravity of heavy motor may cause uneven loading of mounts).

Type	Ref.No.	Max. fan weight kg	H Height in mm	Spring element	Contents 1 set = 4 pieces
SDZ 1	1454	60	*		
SDZ 1F	1943	70	190 – 220	●	
SDZ 2	1455	160	*		
SDZ 3	1366	300	*		
SDZ 4	1945	130	190 – 216	●	
SDZ 5	1925	210	190 – 216	●	
SDZ 6	1927	400	190 – 221	●	
SDZ 7	1929	580	190 – 220	●	
SDZ 8	1931	900	190 – 220	●	
SDZ 9	1935	1300	190 – 217	●	

* shown in dimensional drawing

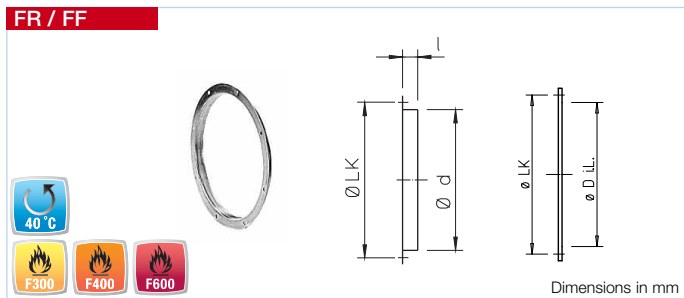


Counter flange GF
Designed for connecting rectangular fans and accessories to ducting. Flange frames are made of galvanised steel.

Connector VSB
With flange frames on both ends. To prevent vibration transmission and compensate small misalignments on site.

For in-line rectangular smoke exhaust fans BK..				Suitable for in-line rectangular smoke exhaust fan - nominal size mm
Counter flange GF Type	Ref.No.	Connector VSB Type	Ref.No.	
GF 40/20	6919	VSB 40/20 F400	6844	400 x 200
GF 50/30	6921	VSB 50/30 F400	6834	500 x 300
GF 60/35	6923	VSB 60/35 F400	6835	600 x 350
GF 70/40	6924	VSB 70/40 F400	6836	700 x 400
GF 80/50	6925	VSB 80/50 F400	6838	800 x 500
GF 100/50	6926	VSB 100/50 F400	6839	1000 x 500
GF 120/60	6845	VSB 120/60 F400	6842	1200 x 600
GF 140/70	6846	VSB 140/70 F400	6843	1400 x 700

For centrifugal smoke exhaust fan BR..				Centrifugal smoke exhaust fan - nominal size mm
Counter flange GFB Type	Ref.No.	Connector VSB Type	Ref.No.	
GFB 30/15	6820	VSB 30/15 F400	6827	225
GFB 30/15	6820	VSB 30/15 F400	6827	250
GFB 37/20	6821	VSB 37/20 F400	6828	280
GFB 45/25	6822	VSB 45/25 F400	6829	400
GFB 50/27	6823	VSB 50/27 F400	6830	450
GFB 55/30	6824	VSB 55/30 F400	6831	500
GFB 61/33	6825	VSB 61/33 F400	6832	560
GFB 67/36	6826	VSB 67/36 F400	6833	630



Counter flange FR / Flat flange FF
Made of galvanised steel. Dimensions and holes to match the fans and accessories to DIN 24155, Pt. 2.

Type	Ref.No.	Type	Ref.No.	ø LK	l	ø d	ø d i.L.	Weight in kg
FR 280	1214	FF 280	4942	322	30	292	286	0,9
FR 315	1204	FF 315	4943	356	30	326	321	1,0
FR 355	1205	FF 355	4944	395	30	365	361	1,1
FR 400	1206	FF 400	4945	438	30	408	409	1,2
FR 450	1207	FF 450	4946	487	35	457	459	1,3
FR 500	1208	FF 500	4947	541	35	511	509	1,5
FR 560	1209	FF 560	4948	605	35	574	569	2,1
FR 630	1211	FF 630	4949	674	35	642	639	2,3
FR 710	1212	FF 710	4950	751	35	715	719	3,1
FR 800	1198	FF 800	4951	837	35	806	809	3,9
FR 900	1199	FF 900	4952	934	35	903	909	4,4
FR 1000	1210	FF 1000	4953	1043	35	1012	1009	9,5
FR 1120	1362	FF 1120	4954	1174	50	1126	1129	11,0
FR 1250	1913	FF 1250	4955	1311	50	1256	1259	12,5

VSB = Temperatures resistance from -30 °C to +200 °C, 400 °C for 2 hours. Fire protection classification according to DIN 4102 A2 and NORM VI Q3.

■ Specification – Installation

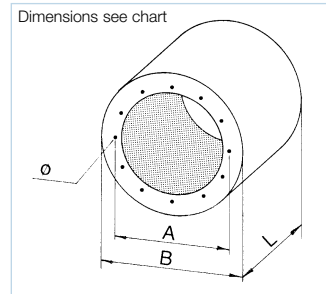
Casing made of galvanised steel, acoustically lined with high quality mineral wool covered with cloth to prevent erosion. Dimensions and tapped flange holes of all sizes fit fan's nominal diameter (R 20). Tapped holes in accordance to DIN 24155, Pt. 2.

■ Insertion loss

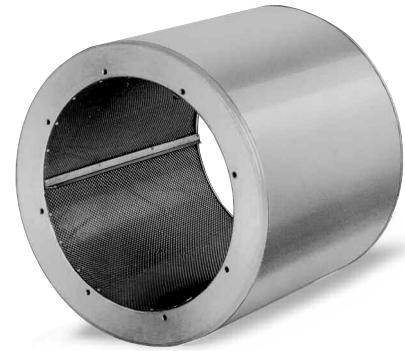
To increase the attenuation, several attenuators can be installed in-line.

■ Pressure drop

The resistance of the RSD attenuators is very low. When designing the system consider twice the pressure drop of rigid ducting.



RSD



Type Nominal-ø	Ref.No.	Basic length	L	Dimensions in mm			Hole ø	Nominal weight kg	Insertion loss level D _e dB							Average attenuation
				A	B				125	250	500	1000	2000	4000	8000	
RSD 280/ 400	8740	1	400	322	454	8 x M 8	10	4	5	8	14	9	8	6	8	
RSD 280/ 800	8741	2	800	322	454	8 x M 8	18	7	9	16	28	18	17	14	14	
RSD 280/1200	8742	3	1200	322	454	8 x M 8	25	9	12	23	37	23	20	16	18	
RSD 315/ 400	8743	1	400	356	504	8 x M 8	11	3	3	7	13	8	7	5	5	
RSD 315/ 800	8744	2	800	356	504	8 x M 8	19	6	8	14	26	16	12	9	12	
RSD 315/1200	8745	3	1200	356	504	8 x M 8	28	9	12	21	36	18	17	14	18	
RSD 355/ 400	8746	1	400	395	564	8 x M 8	13	3	4	7	11	7	6	4	6	
RSD 355/ 800	8747	2	800	395	564	8 x M 8	23	6	7	13	22	14	12	8	11	
RSD 355/1200	8748	3	1200	395	564	8 x M 8	33	8	11	17	29	18	15	10	17	
RSD 400/ 400	8749	1	400	438	564	12 x M 8	12	3	4	6	9	7	5	3	6	
RSD 400/ 800	8750	2	800	438	564	12 x M 8	21	6	6	12	18	13	12	8	9	
RSD 400/1200	8751	3	1200	438	564	12 x M 8	30	7	10	14	22	18	13	9	15	
RSD 450/ 400	8752	1	400	487	634	12 x M 8	17	4	5	8	10	8	7	5	8	
RSD 450/ 800	8753	2	800	487	634	12 x M 8	27	6	7	13	18	13	12	9	11	
RSD 450/1200	8754	3	1200	487	634	12 x M 8	38	8	10	18	23	17	14	10	15	
RSD 500/ 600	8755	1	600	541	714	12 x M 8	27	4	5	9	11	9	9	6	8	
RSD 500/ 900	8756	2	900	541	714	12 x M 8	36	6	8	14	16	13	13	9	12	
RSD 500/1200	8757	3	1200	541	714	12 x M 8	45	8	11	22	24	17	16	12	17	
RSD 560/ 600	8758	1	600	605	804	8 x M 10	32	3	5	9	9	8	8	6	8	
RSD 560/1200	8759	2	1200	605	804	8 x M 10	52	6	10	19	19	16	13	10	15	
RSD 630/ 600	8760	1	600	674	900	8 x M 10	44	3	5	8	8	8	7	5	8	
RSD 630/1200	8761	2	1200	674	900	8 x M 10	68	5	10	16	15	15	11	8	15	
RSD 710/ 600	8762	1	600	751	1000	8 x M 10	51	3	5	7	7	7	6	4	8	
RSD 710/1200	8763	2	1200	751	1000	8 x M 10	80	5	10	14	13	13	10	7	15	
RSD 800/ 600	8764	1	600	837	1100	12 x M 10	57	2	5	7	6	6	5	4	8	
RSD 800/1200	8765	2	1200	837	1100	12 x M 10	88	5	9	13	11	11	9	6	14	
RSD 900/ 900	8766	1	900	934	1220	12 x M 10	82	2	4	10	9	6	5	4	6	
RSD 900/1800	8767	2	1800	934	1220	12 x M 10	135	4	9	21	17	13	9	8	14	
RSD 1000/ 900	8768	1	900	1043	1350	12 x M 10	96	2	4	8	7	5	4	3	6	
RSD 1000/1800	8769	2	1800	1043	1350	12 x M 10	157	4	7	16	14	10	7	6	11	
RSD 1120/ 900	8770	1	900	1174	1350	12 x M 10	81	2	3	7	6	4	3	3	5	
RSD 1120/1800	8771	2	1800	1174	1350	12 x M 10	136	3	6	14	11	8	6	5	9	
RSD 1250/ 900	8772	1	900	1311	1460	12 x M 10	86	1	2	5	4	3	2	2	3	
RSD 1250/1800	8773	2	1800	1311	1460	12 x M 10	146	2	4	11	9	7	5	4	6	

Examples of gas warning systems (GWA)

1. Demand-oriented, economical ventilation.

The daily ventilation operation is controlled by the harmful gas detection (CO, NO₂, LPG), in which the control of the jet fans and central exhaust fans is carried out according to the maximum allowable pollutant concentration. Due to this demand-oriented ventilation single jet fans run at a low pollutant concentration with a low speed or are switched off by the control system. It is the same with the main exhaust fans.

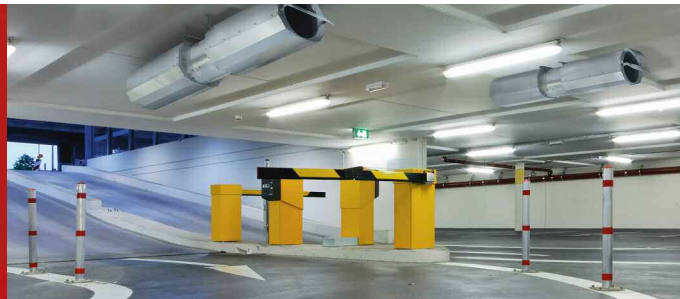
Compared to a conventional control technology, the operating costs of the car park ventilation system are therefore lowered considerably by controlled regulation, depending on the detected harmful gas.

2. Maximum thrust in operating condition „smoke extraction“.

If the ventilation system serves in addition also the powered smoke extraction, the use of a fire alarm system is required. Smoke detector (on site) locate the source of fire. The intelligent control logic of the GWA develops a control scenario from all

incoming messages and switches on demand-oriented the jet fans and central exhaust air fans. By this selective smoke extraction of the fire location and the specific smoke removal, smoke-free areas (primary protection aim) are created in the car park.

Thus, a safe escape and rapid evacuation from the danger zone is possible. Emergency services can start fast and safe with the rescue and firefighting.



**„Helios full-service“:
Car park control technology
and gas warning systems.**

NEW!

For the economic and safe operation of car park systems a modern control system and control technology is essential. The extensive Helios program offers a variety of system solutions that allow an individual adaptation to the object. With a variety of clever and unique features, the new gas warning systems meet (GWA) highest demands in terms of performance, power and cost efficiency.

At the heart of the gas warning system the controller with a sophisticated logic takes over the analysis of all incoming sensor signals (CO, NO₂, LPG) and issues commands to connected fans and reporting parts. Potential free relays and analog and digital inputs (e.g. fire alarm system) enable a wide variety of system applications. Freely configurable parameters and setpoints allow optimum adaptation to different ventilation and smoke extraction scenarios.

Additional, often costly programmable logic controllers (PLC) in the control cabinet can be omitted. The individual, almost unlimited variable use of GWA Helios controllers is the key to optimized, economical and energy-efficient car park ventilation and smoke extraction. The synergy between innovative measuring technology, control and regulation technology and most modern, high-performance fans makes Helios the technically leading supplier in the car park ventilation technology.



Also for car parks Helios offers, beside the ventilation technology, a complete product portfolio in the field of measuring, control and regulation technology.

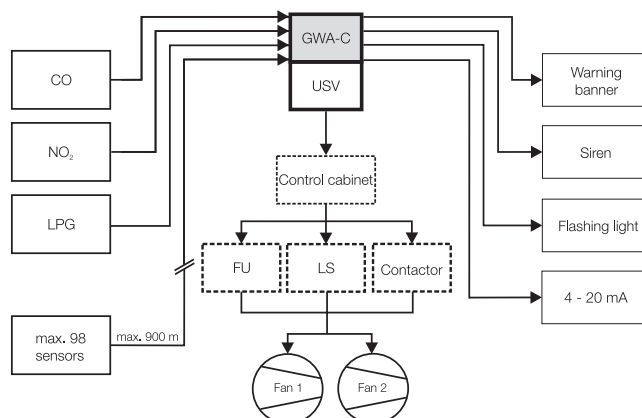
Digital or analog gas warning systems are available alternatively in a compact surface-mounted casing or for the control cabinet installation. The connection of car park fans is possible

without an additional external control devices. „All from a single source“. This makes Helios to a full-service partner for car park systems - from planning to purchase.

GWA



System sketch analog gas warning system GWA



The analog GWA gas warning system is particularly suitable for smaller car parks. The complete system consisting of controller, including uninterruptible power supply (UPS), power part, sensors as well as acoustic and visual signals will be configured according to the specific project requirements. The system components are available for cars with petrol, diesel and / or LPG motors (CO, NO₂, LPG). All components match to each other, which makes installation and start-up simply and smoothly.

Outstanding features

- Specific power parts (types .. LS, FU .. or - individually planned - GWA- LT, see accessories) allow the direct control of car park fans and make additional external controls needless and costly.
- Simple operation of the controller, equipped with LCD display via six entry keys.
- Comprehensive, easy to understand installation concept for all components.
- High system reliability through continuous sensor monitoring and error message on the LCD display.

Description

Casing

- Robust polymer casing (color RAL 7035) with transparent, hinged viewing windows.
- Cable entries to the plastic casing already exist.

Note

Controller and uninterruptible power supply (UPS) are available in surface-mounted casings (see dimensions in table). Optionally the components are also available for the control cabinet installation on request.

Scope of delivery

The analog controllers GWA-C are supplied in two units:

Controller (casing 1)

The sensors can be connected directly to the powerful analog controller GWA-C. Due to the expanability on up to 30 relays and two analog outputs nearly all system requirements are performable.

An external control of relays (e.g. fire alarm in the building) with simultaneous activation of warning banners and sirens is possible via the four digital inputs.

Three analog controllers (see table) are available as standard:

- GWA-C 4-5 (4 analog inputs, 5 relays)
- GWA-C 8-10 (8 analog inputs, 10 relays)
- GWA-C 12-15 (12 analog inputs, 15 relays)

On request, the controller is configurable with up to 98 analog inputs and up to 30 relay.

The power supply for the controller, sensors, warning banners and sirens is provided via the integrated 24 V power supply.

Uninterruptible power supply USV (casing 2)

Some countries an USV is required which guarantees the function of the gas warning system for the duration of one hour at power failure. Here, all electricity consumers (sensors, warning banners, sirens, etc.) of the system must be considered.

Note

The start-up of the complete gas warning system is made by the Helios service partner in accordance to project-related offer.

Power parts to control car park fans:

GWA-LT project-related System-specific power part (Ref.No. 8231, see on the right).

LS.. Page 158 Compact ventilation control for two fan units.

FU.. Page 162 Frequency inverter for 3-phase fans.

Type	Ref.No.	Max. current mains adaptor 24 Volt	Max. current USV 1h	Analog Inputs	Digital Inputs	Analog Outputs	Relays	Mains warning lamp	Potect-ion to	Weight controller ¹⁾	Weight USV ²⁾	Dimensions controller ¹⁾ (WxHxD)	Dimensions USV ²⁾ (WxHxD)
1~, 230 V, 50/60 Hz													
GWA-C 4-5	8200	2,2	1,22	4	4	2	5	ja	65	2,7	2,5	298x260x140	298x260x140
GWA-C 8-10	8201	4,5	4,32	8	4	2	10	ja	65	3,5	5,2	298x420x140	410x260x140
GWA-C 12-15	8202	4,5	4,32	12	4	2	15	ja	65	4,0	5,2	298x420x140	410x260x140

¹⁾ Casing 1 ²⁾ Casing 2

Sensors



- Sensors for detecting the concentration of pollutants in the ambient air. Calibration directly at the sensor. Easy start-up.

	CO-sensor for petrol motors Type	Ref.-No.	NO ₂ -sensor for diesel motors Type	Ref.No.	LPG-sensor for lique. gas motors Type	Ref.No.	Dim. in mm		
							width	height	depth
Surface-mount. polymer casing, IP 43	GWA-S CO K1	8203	GWA-S NO ₂ K1	8206	GWA-S LPG K1	8209	94	65	57
Surface-mount. polymer casing, IP 65	GWA-S CO K2	8204	GWA-S NO ₂ K2	8207	GWA-S LPG K2	8210	94	130	57
Surface-mount. stainless steel casing, IP 54	GWA-S CO VA	8205	GWA-S NO ₂ VA	8208	GWA-S LPG VA	8211	113	135	45
Technical data									
Measuring range	0-300 ppm		0-20 ppm		0-100% UEG				
Output signal	4-20 mA or 0-10 V		4-20 mA or 0-10 V		4-20 mA or 0-10 V				
Voltage	24 V DC		24 V DC		24 V DC				
Nominal current	22 mA		22 mA		35 mA				

- Opener for stainless steel sensor casing

Special tool to open the vandal-proof stainless steel casing
GWA-... VA.

GWA-S OE Ref.No. 8215

GWA-H



- Siren

Siren in impact-resistant polymer casing for wall / ceiling mounting. Tone and volume adjustable.

GWA-H Ref.No. 8217

Volume approx. 108 dB
Voltage 24 V DC
Nominal current approx. 68 mA
Dimensions mm Ø 93 x H 93

GWA-BL



- Flashing light

Flashing light in impact-resistant polymer casing for wall / ceiling mounting.

GWA-BL Ref.No. 8216

Voltage 24 V DC
Nominal current approx. 68 mA
Dimensions mm Ø 93 x H 65

GWA-WT



- Warning banner

Warning banner with yellow symbols corresponding to VDI 2053 (risk of poisoning, stop motor, exit the car park) on white background. Optional audible signal. Incl. terminal box, cable 1,8 m long.

GWA-WT 1 Ref.No. 8213

Voltage 24 V DC
Nominal current approx. 200 mA
Dimensions mm W 642 x H 203 x D 22

GWA-WT 1S No. 8214

With buzzer, volume approx. 87 dB
Voltage 24 V DC
Nominal current approx. 200 mA
Dimensions mm W 642 x H 203 x D 22

- Power part, project-related

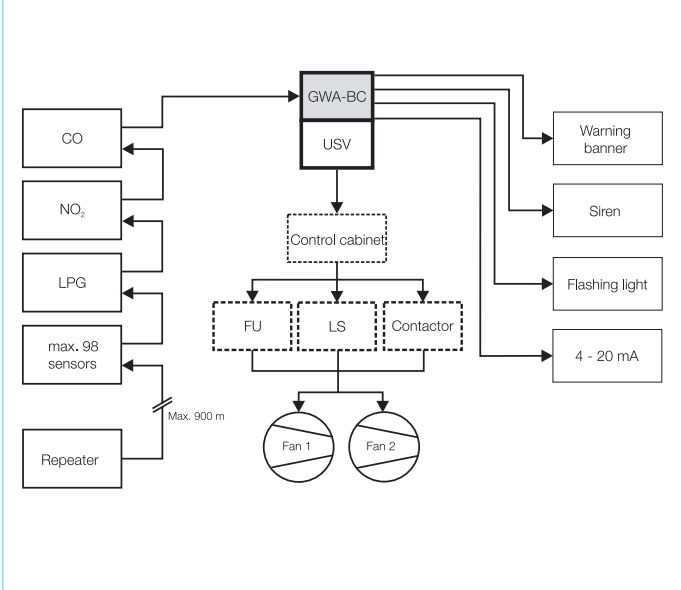
System-specific power part to control car park fans.

GWA-LT Ref.No. 8252

GWA-B



System sketch digital gas warning system GWA-B



The digital bus gas warning system GWA-B is particularly suitable for large car parks and connection to a central building control system.

The complete system consisting of controller, including uninterruptible power supply (UPS), power part, if necessary with repeater, gateway, sensors as well as acoustic and visual signals will be configured according to the specific project requirements. The system components are available for cars with petrol, diesel and / or LPG motors (CO, NO₂, LPG). All components match to each other, which makes installation and start-up simply and smoothly.

Note
Bus controller and uninterruptible power supply (UPS) are available in surface-mounted casings (see dimensions in table). Optionally the components are also available for the control cabinet installation on request.

- **Outstanding features**
 - Specific power parts (types .. LS, FU .. or - individually planned - GWA- LT, see accessories) allow the direct control of car park fans and make additional external controls needless and costly.
 - The sensors can communicate via RS485 bus
 - Simple operation of the controller, equipped with LCD display via six entry keys.
 - Comprehensive, easy to understand installation concept for all components.
 - High system reliability through continuous sensor monitoring and error message on the LCD display.

- **Description**
- **Casing**
 - Robust polymer casing (color RAL 7035) with transparent, hinged viewing windows.
 - Cable entries to the plastic casing already exist.

- **Scope of delivery**
The analog controllers GWA-BC are supplied in two units:

- **Controller (casing 1)**
Up to 98 sensors can be connected to the powerful bus controller GWA-BC. Due to the expandability on up to 30 relays and two analog outputs nearly all system requirements are performable.

An external control of relays (e.g. fire alarm in the building) with simultaneous activation of warning banners and sirens is possible via the four digital inputs.

- Two bus controllers (see table) are available as standard:
 - GWA-BC 8-10 (8 analog inputs, 10 relays)
 - GWA-BC 12-15 (12 analog inputs, 15 relays)
- On request, the controller is configurable with up to 30 relays.
- The power supply for the controller, sensors, warning banners and sirens is provided via the integrated 24 V power supply.

- **Uninterruptible power supply USV (casing 2)**
Some countries an USV is required which guarantees the function of the gas warning system for the duration of one hour at power failure. Here, all electricity consumers (sensors, warning banners, sirens, etc.) of the system must be considered.

Note
The start-up of the complete gas warning system is made by the Helios service partner in accordance to project-related offer.

Power parts to control car park fans:
GWA-LT project-related System-specific power part (Ref.No. 8231, see on the right).
LS.. Page 158 Compact ventilation control for two fan units.
FU.. Page 162 Frequency inverter for 3-phase fans.

Type	Ref.No.	Max. current mains adaptor 24 Volt	Max. current USV 1h	RS 485 Bus	Analog Inputs	Digital Inputs	Analog Outputs	Relays	Mains warning lamp	Protection to	Weight controller ²⁾	Weight USV ³⁾	Dimensions controller ²⁾ (WxHxD)	Dimensions USV ³⁾ (WxHxD)
		A	Ah		4-20 mA		4-20 mA			IP	kg	kg	mm	mm
1~, 230 V, 50/60 Hz														
GWA-BC 8-10	8240	4,5	4,32	ja	8 ¹⁾	4	2	10	ja	65	3,5	5,2	298x420x140	410x260x140
GWA-BC 12-15	8241	4,5	4,32	ja	12 ¹⁾	4	2	15	ja	65	4,5	5,2	298x570x140	410x260x140

¹⁾ Optionally usable with analog sensors

²⁾ Casing 1 ³⁾ Casing 2

Sensors



- Sensors for detecting the concentration of pollutants in the ambient air.
Calibration directly at the sensor. Easy start-up. Communication via RS 485 bus.

	CO-sensor for petrol motors		NO ₂ -sensor for diesel motors		LPG-sensor for lique. gas motors		Dim. in mm		
	Type	Ref.No.	Type	Ref.No.	Type	Ref.No.	width	height	depth
Surface-mount. polymer casing, IP 65	GWA-BS CO K1	8242	GWA-BS NO ₂ K1	8244	GWA-BS LPG K1	8246	94	65	57
Surface-mount. stainless steel casing, IP 54	GWA-BS CO VA	8243	GWA-BS NO ₂ VA	8245	GWA-BS LPG VA	8247	113	135	45

Technical data

	0-300 ppm	0-20 ppm	0-100% UEG
Measuring range	0-300 ppm	0-20 ppm	0-100% UEG
Output signal	4-20 mA or 0-10 V	4-20 mA or 0-10 V	4-20 mA or 0-10 V
Voltage	24 V DC	24 V DC	24 V DC
Nominal current	22 mA	22 mA	35 mA

- Opener for stainless steel sensor casing

Special tool to open the vandal-proof stainless steel casing
GWA-... VA.

GWA-S OE Ref.No. 8215

GWA-H



- Siren

Siren in impact-resistant polymer casing for wall / ceiling mounting.
Tone and volume adjustable.

GWA-H Ref.No. 8217

Volume approx. 108 dB
Voltage 24 V DC
Nominal current approx. 68 mA
Dimensions mm Ø 93 x H 93

- Bus gateway

For connection to the building control system, for mounting on top hat rail. The system states are monitored and displayed, there is no possibility of intervention.

– for LON-Bus

GWA-BG LON Ref.No. 8250

– for Modbus

GWA-BG Modbus Ref.No. 8251

GWA-BL



- Flashing light

Flashing light in impact-resistant polymer casing for wall / ceiling mounting.

GWA-BL Ref.No. 8216

Voltage 24 V DC
Nominal current approx. 68 mA
Dimensions mm Ø 93 x H 65

- Repeater

For bus line extension for a further 900 m or formation of spurs. In the repeater, the bus signal is amplified and the 24 V voltage supply is fed again.

In addition, the bus line is protected against failures and short circuits.

– Surface-mounted version

GWA-BR 24 V AP Ref.No. 8248

– Top hat rail version

GWA-BR 24 V Ref.No. 8249

GWA-WT



- Warning banner

Warning banner with yellow symbols corresponding to VDI 2053 (risk of poisoning, stop motor, exit the car park) on white background. Optional audible signal. Incl. terminal box, cable 1,8 m long.

GWA-WT 1 Ref.No. 8213

Voltage 24 V DC
Nominal current approx. 200 mA
Dimensions mm W 642 x H 203 x D 22

GWA-WT 1S No. 8214

With buzzer, volume approx. 87 dB
Voltage 24 V DC
Nominal current approx. 200 mA
Dimensions mm W 642 x H 203 x D 22

- Power part, project-related

System-specific power part to control car park fans.

GWA-LT Ref.No. 8252



Note
Custom control cabinets for large systems for car park ventilation available on request.

Car park ventilation control

The car park ventilation control of Helios was specifically developed to meet the requirements of a modern and efficient ventilation of car parks. Dangers are significantly lowered by the application of the Helios fans and the ventilation control LS to people by toxic gases like carbon monoxide (CO) and nitrogen dioxide (NO₂).

- Via the ventilation control LS two ventilators are operated and supervised according to the provisions of the car park regulations. Harmful substances resulting with the car park use are diluted and discharged by the air change stipulated by the respective valid car park regulation (GaVO).
- The LS monitors the control and load circuits, detects faults or power failures and switches over to the system still able to operate.
- In addition to the automatic mode, the fans also can be operated individually, together or to achieve the same fan running times alternately.
- For operation only of one fan the car park ventilation control LS is programmed in such a way that if it fails, the second fan automatically goes into operation and a fault signal is given.

Delivery program

Ventilation control	Control with smoke exhaust function	Switching mode	Phase	Voltage	Power range
LS-W	B LS-W	direct	1~	230 V	up to 4,0 kW
LS-D	B LS-D	direct	3~	400 V	up to 2,2 kW
LS-SD	B LS-SD	Y/Δ	3~	400 V	from 3,0 kW to 18,5 kW
LS-DA	B LS-DA	Y/YY	3~	400 V	up to 18,5 kW

Models with higher power on request.

Delivery program

The Helios program includes car park ventilation controls according to table below 1~ and 3~ models in different performance ranges for direct and star-delta starting, and with Dahlander connection for the fan operating at two different speeds. All models are optionally available with additional smoke exhaust function (B LS).

Ordering information

- When ordering the car park ventilation control, the following information is mandatory:
- Required control model
Car park ventilation control (LS) or car park control with additional smoke exhaust function (B LS).
 - Fan
The power range, switching mode and motor protection device of the car park ventilation control results from the type name of the fans (Helios Ref.No.) to be controlled.

Casing

Delivery is ready for use, installation and service friendly in a polymer casing (types up to 4 kW) or in stable control cabinet casing from sheet metal (types from 4 kW).

Operation

Mode of operation and fan sequence can be set using the rotary switch on the control panel. The running times of the connected fans can be programmed individually at the analog timer.

	Position	Function
□ Fan sequence	„1“	Fan 1 is switched on for operation. In case of failure switchover to fan 2.
	„2“	Fan 2 is switched on for operation. In case of failure switchover to fan 1.
	„1+2“	Both fans are switched on successively for operation.
	„1/2“	Both fans are alternately switched on for operation to achieve the same runtime.
	„Auto“	Selected fan sequence is controlled by the timer.
□ Mode	„Hand“	Fan operation is controlled by manually setting the rotary switch „Fan sequence“.
	„Aus-/Entriegeln“	The control is switched off. Failures are deleted..
□ Timer		The analog switch allows individual adjustment of the fan running times to the respective situation in the car park to be ventilated. For the corresponding control of programmed times the mode „Auto“ has to be chosen at the car park ventilation control. The shortest switching sequence of the timer is 20 minutes.

Display function

The operating status of the connected fans as well as the position of the intake-/extract air shutters takes place for each fan separately via LEDs. Fault signals and triggered fire dampers are indicated beside the acoustic warning via the optionally connectable siren also by LEDs on the control.

	Mode	Function
□ Damper OPEN	Green LED lights up	Intake or extract air damper is open, fan runs 30 seconds delayed.
	Green LED goes off	Intake or extract air damper is closed, fan is off.
□ Fan ON	Green LED lights up	Fan is in operation, respective intake or extract air damper is open.
	Green LED goes off	Fan is not in operation, respective intake and extract air damper is closed.
□ Error	Red LED flashes	Fan error.
□ Fire damper	Red LED lights up	Fire damper has triggered.

Car park ventilation control with smoke exhaust function B LS

If in addition to the ventilation mode and the associated reduction of the pollutant concentration requirements are made on the car park smoke extraction in case of fire, the car park ventilation control B LS with smoke exhaust function is the optimal solution.

- By connecting the smoke gas car park ventilation control B LS to a smoke detector line the smoke exhaust function is triggered automatically in the case of fire. For the manual triggering by car park users and fire brigade a push button alarm and a fireman's switch can be attached.
- After release of the smoke exhaust function all motor protective devices are bridged and the smoke exhaust fans are running at rated speed. For controls with Dahlander connection speed level 2 (maximum fan speed) is set automatically.
- An operation of F600 smoke exhaust fans with cooling air fan is not possible by the Helios smoke gas car park ventilation control.

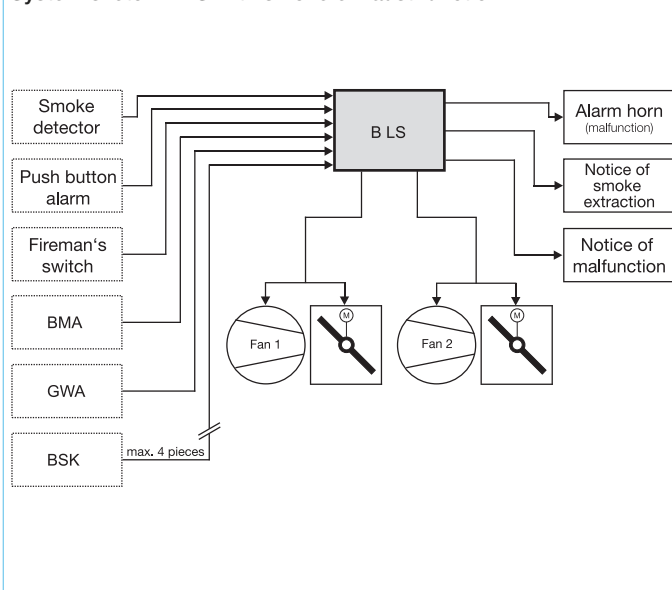
Note

- In accordance with valid car park regulations and VDI Guideline the ventilation system needs two fans, each of which provides at least 50 % of the total air flow volume. With fan failure, the remaining fan must be able to support 2/3 of the total air flow volume.
- The car park ventilation control LS and both fans are to be provided via separate electrical feeds.

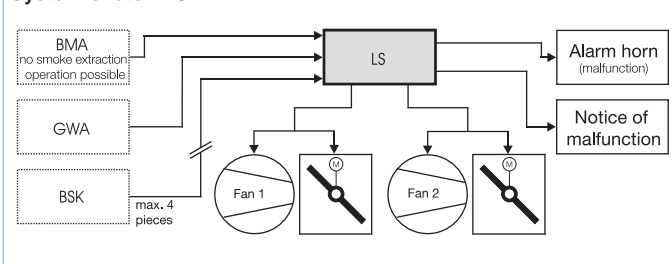
Operating and display panel

Function and operation of the Helios car park ventilation control are adjustable at the clearly arranged control and display panel, the front panel is well protected by a lockable cover against access by unauthorized persons.

System sketch B LS with smoke exhaust function



System sketch LS



Motor protection

- The motors of the connected fans are protected via the car park ventilation control by cut-off in case of overload. For motors with PTC thermistor or thermal contact, this can be connected to the terminal strip of the car park ventilation control. For motors without thermal contacts or PTCs the car park ventilation control has motor protection circuit breakers. With release of the motor protection device a fault signal is given, which can be unlocked after cause investigation by the rotary switch for the operating mode.
- For the smoke gas car park ventilation control B LS all motor protection devices are bridged in case of smoke extraction. The smoke exhaust function is ensured by this until the destruction of the fan.

Optional accessories

- RMR-R** Ref.No. 4486
Smoke detector with relay for automatic activation of the system at smoke detection.
- DKM** Ref.No. 4985
Push button alarm for die manual activation of the system.
- FWS 1** Ref.No. 8254
Fireman's switch to connect on-site DIN profile half cylinder.
- FWS 2** Ref.No. 8255
Fireman's switch (incl.LED) to connect on-site DIN profile half cylinder.
- GWA-H** Ref.No. 8218
Siren 230 V

Connection options

- **Input**
 - CO-warning system
 - Fire dampers
 - Fire alarm system (B LS)
 - Smoke detector (B LS) } 15 St.
 - Push button alarm (B LS) } 1 St.
 - Fireman's switch (B LS) } 1 St.
 - PTC resistor or thermal contact of fan
- **Output**
 - Floating or non-floating fault signal
 - Siren 230 V
 - Damper 230 V

Label

- Approval by TÜV
- CE

Technical data

Timer	24 h
Switching sequence	20 min.
Switching power	Damper 500 VA Siren 500 VA
Switching current	Damper max. 2 A Siren max. 2 A
Control fuse	12 V 0,5 A 230 V 2 A
Ambient temperature	-10 to +40 °C
Protection to	IP 54
Installation position	vertical

EVS


Note

One smoke exhaust fan can be connected and operated per EVS. On request smoke exhaust fan controls are also available for the connection of several smoke exhaust fans.

Smoke exhaust fan control

By generating low-smoke layers and areas Helios smoke exhaust fans allow the safe evacuation of people. For the control of the fans that are available in temperature classes F300, F400 and F600, the smoke exhaust fan control EVS was specifically designed.

EVS is particularly suitable for smoke extraction of small objects as well as individual fire areas and has a ventilation function in addition. This provides a significant improvement in the air quality in the normal operation by a regular air change.

Delivery program

The Helios program includes smoke exhaust fan controls according to table below 1~ and 3 ~ models in different performance ranges for direct and star-delta starting, and with Dahlander connection for the fan operating at two different speeds.

Delivery program and technical data

Type	Switching mode	Power consumption	Voltage	Ambient temperature
EVS-W	Direkt	up to 4,0 kW	230 V	0 to +40 °C
EVS-D	Direkt	up to 2,2 kW	400 V	0 to +40 °C
EVS-SD	Y/Δ	from 3,0 to 55 kW	400 V	0 to +40 °C
EVS-DA	Y/YY	up to 55 kW	400 V	0 to +40 °C

Ordering information

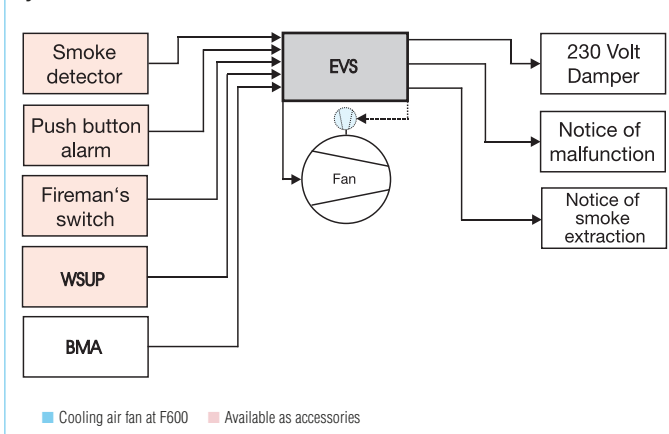
When ordering the smoke exhaust fan control, the following information is mandatory:

Smoke exhaust fan

The power range, switching mode and motor protection device of the smoke exhaust fan control results from the type name of the fans (Helios Ref.No.) to be controlled.

Casing and operation

The delivery of the EVS types up to 22 kW is in a light grey ISO casing (IP 54). The models from 30 kW are designed in a robust metal casing with a laterally mounted, lockable "Emergency Stop" main switch, which can be plumbed in the "ON" position. The front control and display panel allows the control of the individual functions with visual indication of the current operating conditions. Casing type of EVS for F600 with addition for cooling air fan and casing dimensions of the respective control on request.

System sketch EVS

Functions

The functionality of the Helios smoke exhaust fan control complies with the requirements of the VDMA standard sheet 24177. Via the control panel attached to the EVS casing the following control functions are adjustable:

Ready:

The smoke exhaust fan is switched off. The activation of the smoke extraction mode is carried out by EVS release over smoke detector, push button alarm or other external smoke extraction warning device.

Smoke extraction:

All motor protection devices of the smoke exhaust fan are bridged. After opening the damper by the EVS the smoke exhaust fan runs on the nominal speed. For controls with Dahlander connection speed level 2 (maximum fan speed) is set automatically.

ON (for 1-speed fan) or Level 1 and 2 (for 2-speed fan):

All motor protection devices for overload protection are activated. After opening the damper by the EVS the smoke exhaust fan runs in ventilation mode on the selected speed. The activation of the smoke extraction mode is carried out by EVS release over smoke detector, push button alarm or other external smoke extraction warning device.

Note

The installation of the EVS should be as close as practicable to the associated smoke exhaust fan, but outside the area from which smoke is to be extracted. The power supply for the EVS and the smoke exhaust fan must be installed function-preserving and directly connected to the low-voltage main distribution board.

■ Connection options

□ Input:

- Fire alarm system
- Smoke detector
- Push button alarm } ≥ 15 St.
- Fireman's switch 1 St.
- PTC resistor or thermal contact of smoke exhaust fan
- WSUP
- WSUP-S

□ Output:

- Smoke exhaust fan
- 230 V damper
- Smoke exhaust or fault signal over potential-free contact
- Cooling air fan for F600 smoke exhaust fan, flow control device included

■ Motor protection

In the ventilation mode the motor of smoke exhaust fan is protected by cut-off in case of overload. This motor protection is provided by the thermal contact or PTC resistor of the smoke exhaust fan, which is connected to the EVS.

If the motor of the smoke exhaust fan has no thermal contact or PTC resistor, then a motor protection relay in the EVS protects the engine from overload.

- For the smoke exhaust fan control EVS all motor protection devices are bridged in case of smoke extraction. The smoke exhaust function is ensured by this until the destruction of the fan.

■ EVS for F600 smoke exhaust fans

The motor cooling of Helios F600 smoke exhaust fans is carried out using separate cooling fans (KLG, accessories). These cooling air fans are also controlled by the EVS and monitored in the ventilation mode by flow control devices. The flow control devices are already installed in the EVS.

■ Customised solutions

Helios provides on request individual control cabinets and thus for each project the appropriate smoke exhaust fan control.

■ Label

- Approval by TÜV
- CE

■ Accessories

Smoke dedector

RMR-R Ref.No. 4486

Smoke detector with relay for automatic release of smoke exhaust funktion in case of smoke detection. Simple installation by bayonet lock.

Voltage 8-30 V DC
Standby current 50 μ A
Protection to IP 40
Dimensions mm \varnothing 127 x H 55



Push button alarm

DKM Ref.No. 4985

Push button alarm for the manual activation of the smoke exhaust system. Easy replaceable glass pane in the lockable casing. LED display:

Operation/Release/Error.
Voltage 24V DC
Colour RAL 2011
Dimension mm W 123 x H 123 x D 40



Fireman's switch

FWS 1 Ref.No. 8254

Fireman's switch to connect on-site DIN profile half cylinder. Priority circuit for the fire department to operate the smoke exhaust system. Adjustable operating conditions of the system: Ready/Smoke extraction/Off

FWS 2 Ref.No. 8255

with LED display: Overload/Ready/Smoke extraction
Voltage 24 V DC
Colour gray/red
Protection to IP 44
Dimensions mm W 125 x H 125 x D 70



Weekly autotimer

WSUP Ref.No. 9990

Digital autotimer with LCD display for automatic control of the smoke exhaust function of the EVS. Installation in dry surroundings.

Voltage 230 V, 1~, 50 Hz
Current 1 mA / 20 mV DC
Switching contact potential-free changeover,
250 V, 1~, 8 A $\cos \phi \approx 1$, μ -contact
Protection to / class IP 20 / II
Dimensions mm W 85 x H 85 x D 52
Installation AP casing, UP box
Temperature range -10 °C to +35 °C
Memory cells (switching time) 42
Wiring diagram SS-862



Weekly autotimer for installation in a control cabinet

WSUP-S Ref.No. 9577

Digital, with LCD display for automatic control of operational mode of the EVS according to the technical data.

Voltage 230 V, 1~, 50-60 Hz
Current 1 mA / 20 mV DC
Switching contact potential-free changeover
250 V, 1~, 16 A $\cos \phi \approx 1$
2 A $\cos \phi \approx 0,6$, μ -contact
Protection to / class IP 20 / II
Dimensions mm W 36 x H 93 x D 70
Installation DIN top hat rail mounting control cabinet
Temperature range -30 °C to +55 °C
Memory cells (switching time) 56
Wiring diagram SS-1038



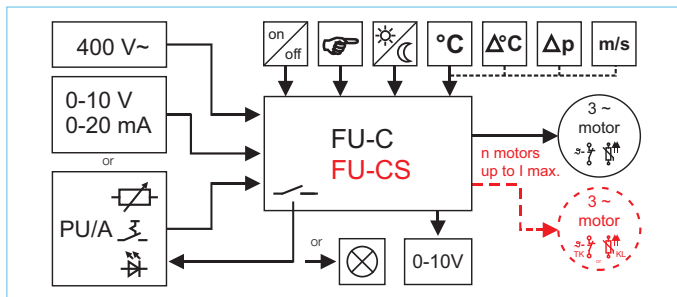
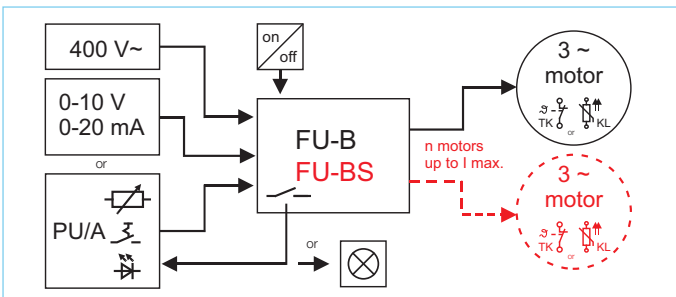
■ Note

Cooling air fan B KLG for F600 smoke exhaust fan 147 on

FU-B and FU-BS



FU-C and FU-CS



**Description
FU-B „Basic“**

- Frequency inverter FU-B in basic version without sine filter for the speed control of a single fan.
- The speed selection takes place via the 0-10 V control signal (e.g. potentiometer PU/PA, accessories).
- Cable length between FU-B and fan up to 10 m with shielded cable.
- The fan must be designed for operation with frequency inverter (EMC-compatible fan/motor, optional special version).
- The FU-B is fixed at its rated current.
- For FU-B operation (without sine filter) the frequency inverter capability must be specified when ordering the fan.

**Description
FU-BS „Basic-Sinus“**

- Frequency inverter FU-BS in basic version with integrated, all-pole effective sine filter.
- For speed control of one or more fans. The permitted number of fans results from the maximum FU current.
- The speed selection takes place via the 0-10 V control signal (e.g. potentiometer PU/PA, accessories).
- Cable length between FU-BS and fan over 10 m is possible:
- No additional EMC shielding of electrical cables required. The fans including motor need no special EMV precautions for the frequency inverter operation.
- The FU-BS is fixed at its rated current.
- When using the frequency inverter with integrated sine filter standard fans/motors are applicable.

**Description
FU-C „Comfort“**

- Frequency inverter FU-C in comfort version without sine filter for the speed control of a single fan.
- Including display and three operating buttons to adjust the fan and control parameters.
- Programming und control options via Modbus.
- With integrated, adequate control system for temperature, pressure and air velocity. The required sensors LDF 500, LGF 10, LT.. are available as accessories (see EUR EC page).
- The speed selection takes place via the 0-10 V control signal (e.g. potentiometer PU/PA, accessories) or entered directly at the display.
- Cable length and the ability for operation with frequency inverter see description for FU-B.
- For FU-C operation (without sine filter) the frequency inverter capability must be specified when ordering the fan.

**Description
FU-CS „Comfort-Sinus“**

- Frequency inverter FU-CS in comfort version with integrated, allpole effective sine filter.
- For speed control of one or more fans. The permitted number of fans results from the maximum FU current.
- Including display and three operating buttons to adjust the fan and control parameters.
- Programming und control options via Modbus.
- With integrated, adequate control system for temperature, pressure and air velocity. The required sensors LDF 500, LGF 10, LT.. are available as accessories (see EUR EC page)
- Speed selection, cable length, EMC precautions see description of FU BS.
- When using the frequency inverter with integrated sine filter standard fans/motors are applicable.

	FU-B and FU-BS
Analog inputs	1 x 0-10 V, Ri 100 kOhm, or 0-20 mA
Logic inputs	1 x digital 24V, release
Analog output	–
Relay output	1 x closer 250V/2A ind.
Supply for modules	1 x 10 V DC, 10 mA, 1 x 24 V DC, 70 mA
Motor temperature monitoring	Thermal contact or PTC

	FU-C and FU-CS
Analog inputs	2 x 0-10 V, Ri 100 kOhm or 0-20 mA, or KTY
Logic inputs	2 x digital 24V, function can be parameterized
Analog output	1 x 0-10 V DC, 10 mA
Relay output	2 x changeover 250V/2A ind.
Supply for modules	1 x 10 V DC, 10 mA (in the analog output), 1 x 24 V DC, 70 mA
Motor temperature monitoring	Thermal contact or PTC

■ General features

- Specially for the HLK usage of optimised inverter.
- Considerable energy savings through on demand fan speed.
- Specially designed for fans, resulting in minimum energy consumption and minimum noise production in partial load zone.
- Suitable for maintenance free three phase asynchronous motors of all sizes and performance levels.
- No power limitation if standard motors are used.
- Operation indication via potential free contact.
- Potentiometer power supply: 10 V DC / 10 mA for Poti with e.g. 10 kOhm
- Analog input for speed selection (0-10 V, 0(4)-20 mA), e.g. with potentiometer
- Protection against earth leakage and short circuit.
- Built-in electronic motor protection via thermal contacts or PTC.
- Control circuit galvanically separated.
- Protection against peak voltage.
- For installation in control cabinet.
- At ambient temperatures above 40 °C to 55 °C, a derating must be observed.

■ Type-specific features

- Basic types:
- Additional power supply: 24 V DC / 70 mA for control of digital inputs and additional external components.
- Sine types:
- Includes internal, all-pole effective sine filter.
 - For simple, subsequent expansion of existing ventilation systems.
- Comfort types:
- Programmable acceleration and deceleration times to reduce starting noise.
 - Additional power supply: 24 V DC / 120 mA for control of digital inputs and additional external components.
 - Simple adjustment and control of values via display.
 - Extensive diagnostic display in case of failure.
 - Speed setting directly on the device via the display.
 - Serial port RS 485 / Modbus-RTU.
 - Configurable, on-demand power adjustment.

■ Information

- Internal, all-pole effective sine filter (FU-..S)**
Filters the voltages between the individual phases and the phase voltage between phase and protective earth. Thus, the output voltage of the frequency inverter is purely sinusoidal and corresponds to the quality of a standard mains voltage.
- FI circuit breaker (all types)**
When using the frequency inverter in an area that requires a **FI circuit breaker**, this must be sensitive to universal current, Type B +, corresponding to 300 mA.
- EMC**
All FU types comply with the EMC Directive 2004/108/EC and the valid standards such as DIN EN 60335-1 and DIN EN 55001.1. Radio interference filters for compliance with the class B (residential area) are integrated.
For FU-B and FU-C the cable between fan and frequency inverter is to be shielded and can be up to 10 m long. Motor supply and temperature monitoring must be installed separately.

□ Rating motor current/frequency

When selecting a suitable frequency inverter, the max. motor current must be considered. If a number of fans are controlled the sum of all the individual currents must be taken. In order to avoid faults and breakdowns, a reserve of 10 % must be kept. The maximum frequency of 50 Hz must not be exceeded with standard fans, as the motor will overload and thus fail. An operation with higher frequency is available on request.

□ Motor protection

A maximum motor protection is achieved by monitoring (thermal contact/PTC), in which max. 6 PTC resistors in series can be connected to a device. An increase in the number of PTC is possible through the use of monitoring devices (MSA, accessories).

■ Accessories for all FU-types

PU 24/PA 24 No. 1736/1737
Speed potentiometer, for flush/surface mounted installation, LED 24 V, Poti 10 V/1,3-10 V

■ SU-3 10/SA-3 10

No. 4266/4267
Three step speed switch, for flush/surface mounted installation, 10 V / 1,7-10 V

■ WSUP

Ref.No. 9990
Weekly autotimer with LCD display, potential-free contact

■ WSUP-S

Ref.No. 9577
Weekly autotimer, potential-free contact, for DIN top hat rail

■ EDR

Ref.No. 1437
Electronic differential pressure controller
0-1000 Pa, 10-24 V/0-10 V

■ ETR

Ref.No. 1438
Electronic temperature controller
Temperature sensor,

■ EUR EC

Ref.No. 1347
Electronic universal controller
Sensor see EUR EC accessories

■ MSA

Ref.No. 1289
Motor full protection for PTC

■ General technical data

Mains voltage 3~, 208-480 V
Mains frequency 50/60 Hz
Output voltage 95 % von U_{Netz}
Output frequency 50 Hz
Protection to IP 54
Ambient temperature 0 to +40 °C
(-20° not de-energised)

Type	Ref.No.	Maximum power		Cable cross-sections from the mains and to motorCable	Wiring diagram	Dimensions			Nom. weight approx.	
		Output current	Motor			Height	Width	Depth		
		A	kW	mm ²	No.	mm	mm	mm	kg	
Basic version without sine filter for 3 ph. alternating current fans, 400 V, 50/60 Hz, protection to IP 54										
FU-B 3,6	5453	3,6	1,5	4 x 1,5 ¹⁾	1020	284	240	115	2,6	
FU-B 5,0	5454	5,0	2,2	4 x 1,5 ¹⁾	1020	302	250	196	4,6	
FU-B 8,5	5456	8,5	4,0	4 x 1,5 ¹⁾	1020	302	250	196	5,6	
FU-B 12	5457	12,0	5,5	4 x 1,5 ¹⁾	1020	302	250	196	5,7	
FU-B 17	5458	17,0	7,5	4 x 1,5 ¹⁾	1020	302	250	196	5,9	
Basic version with all-pole effective sine filter for 3 ph. alternating current fans, 400 V, 50/60 Hz, protection to IP 54										
FU-BS 2,5	5459	2,5	²⁾	4 x 1,5	1028	284	240	115	2,7	
FU-BS 5,0	5460	5,0	²⁾	4 x 1,5	1028	302	250	196	5,2	
FU-BS 8,0	5461	8,0	²⁾	4 x 1,5	1028	302	250	196	6,3	
FU-BS 10	5462	10,0	²⁾	4 x 1,5	1028	302	250	196	6,8	
FU-BS 14	5463	14,0	²⁾	4 x 1,5	1028	302	250	196	6,9	
Comfort version without sine filter for 3 ph. alternating current fans, 400 V, 50/60 Hz, protection to IP 54										
FU-C 4,2	5865	4,2	1,5	4 x 1,5 ¹⁾	1030	302	250	195,5	6,4	
FU-C 8,5	5868	8,5	4,0	4 x 1,5 ¹⁾	1030	302	250	195,5	7,3	
FU-C 12	5869	12,0	5,5	4 x 1,5 ¹⁾	1030	302	250	195,5	7,5	
FU-C 17	5870	17,0	7,5	4 x 2,5 ¹⁾	1030	302	250	195,5	7,5	
FU-C 25	5464	25,0	11	5 x 4,0 ¹⁾	1030	355	280	239	12,5	
FU-C 32	5465	32,0	15	4 x 6,0 ¹⁾	1030	524	386	283	24,5	
FU-C 39	5466	39,0	18,5	4 x 10,0 ¹⁾	1030	524	386	283	26,3	
FU-C 46	5467	46,0	22	4 x 10,0 ¹⁾	1030	524	386	283	26,3	
FU-C 62	5468	62,0	30	4 x 16,0 ¹⁾	1030	524	386	283	26,3	
Comfort version with all-pole effective sine filter for 3 ph. alternating current fans, 3~, 400 V, 50/60 Hz, protection IP 54										
FU-CS 2,5	5871	2,5	²⁾	4 x 1,5	1032	284	240	115	3,3	
FU-CS 8	5873	8,0	²⁾	4 x 1,5	1032	302	250	195,5	7,9	
FU-CS 10	5874	10,0	²⁾	4 x 1,5	1032	302	250	195,5	8,2	
FU-CS 14	5875	14,0	²⁾	4 x 1,5	1032	302	250	195,5	8,7	
FU-CS 18	5469	18,0	²⁾	4 x 2,5	1032	302	250	196	9,1	
FU-CS 22	5470	22,0	²⁾	5 x 4,0	1032	355	280	239	14,5	
FU-CS 32	5471	32,0	²⁾	4 x 6,0	1032	525	386	283	29,6	
FU-CS 40	5472	40,0	²⁾	4 x 10,0	1032	525	386	283	29,6	
FU-CS 50	5473	50,0	²⁾	4 x 16,0	1032	525	386	283	32,8	

¹⁾ max. 10 m shielded, motor power supply and motor protection laid separately ²⁾ For the design the max. current of all connected fans is relevant

■ **Universal controller EUR 6 C**
Electronic control automatic with power supply unit operating on the phase control principle.

□ **Operation**

For control of central ventilation systems or for stepless control of one or several speed controllable 1 ph. fans.

In domestic, commercial, industrial and agricultural applications.

□ **Control functions**

Simple and quick start-up of parameters via integrated "start-up wizard". Depending on the connected sensor a control can be carried out according to following control variables:

- **Manual speed control**, e.g. adjustable via keyboard
- **Temperature standard** (required accessory, temperature sensor LTR 40 or LTK 40)
- **Temperature with additional functions** hard-wired, (required accessory, temperature sensor LTR 40 or LTK 40)
- **Differential temperature control** (required accessory, temperature sensor LTR 40 or LTK 40)
- **Differential pressure standard** (required accessory, differential air pressure sensor LDF 500)
- **Differential pressure with outside temperature compensation** (required accessory, differential air pressure and temperature sensor LDF 500 and LTR 40 or LTK 40). Ideally used in central extract ventilation systems according to DIN 18017 in domestic applications.
- **Air velocity** (required accessory, air velocity sensor LGF 10)

The required sensor is to be ordered as accessory separately. The control ranges are freely adjustable within the sensor's range.

The aligned output voltage according to nominal value and current value is between 0 % (35 V) to 100 % (correspond to approx. 80 V – 230 V).

The selection of minimum and maximum values are possible.

- Main switch with positions: "0" = Controller off
- "1" = Automatic operation
- "230 V" = uncontrolled direct supply.

Inputs and outputs:

Outputs:

- 1 x motor connection based on phase control principle.
- 1 x analogue output 0–10 V control of e.g. a frequency inverter, shutter, EC-motor.

EUR 6 C



- 2 x voltage free relays, programmable, alarm, heating or status signals.

Inputs:

- 2 x sensor inputs, programmable on the particularly needed sensor type.
- Connection of thermal contacts for motor protection.

The whole system stops when a thermal contact trips. It must be restarted manually after the motor has cooled down.

- 2 x digital inputs, programmable to enable, external interference, limit on/off, switching night time mode, internal/external, automatic/manual, reset, max. speed on/off.

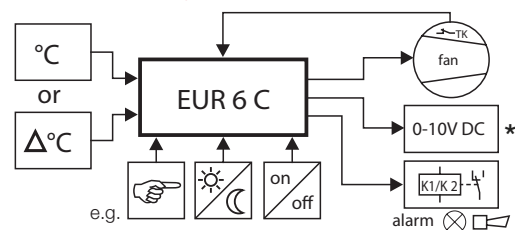
Settings

- Stepless selection of nominal values and control range
- Min./max. power (speed) limitation
- On/off switching of minimum air flow volume
- Setting for a switched output e.g. for a heater via programmable relay
- Stepless selection for alarm indication at over and under temperature, Output on display or additionally on relay
- Min. and max. shutter opening
- Reverse control functions
- Continuous control of ventilation dampers
- The setting is carried out through a dirt resistant membrane keyboard

□ **Display**

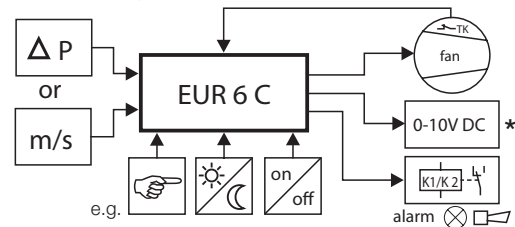
- Multi functions LC-display
- Numerical nominal and actual value display with scale
- Symbols (alarm, heater, selection)
- Bar graph/level indicator
- Text display for menu, status and fault indications

Mode 2.03: Temperature control with additional function
Mode 2.05: Differential temperature control



* e.g. for EC-Motor, shutter, frequency inverter

Mode 4.01: Differential pressure control
Mode 6.01: Air velocity control



* e.g. for EC-Motor, shutter, frequency inverter

EUR 6 C	Ref.No. 1321
Voltage	230 V, 1 ph., 50/60 Hz
max. current	6 A
Required minimum current	0.2 A
Controlled output voltage	0 – 100 %
Control range temperature	0 – 40 °C
Control range pressure	0 – 500 Pa
Control range velocity	0 – 10 m/s
Permitted ambient temperature	0 to +40 °C
Protection to	IP 54
Casing	Surface mounted installation, polymer, light gray
Dimensions mm	W 223 x H 200 x D 131
Weight	ca. 1,4 kg
Wiring diagram	SS-911

■ **Note**

Electronic speed controllers may produce motor humming. For noise critical applications transformer controllers to be used.

■ **Required accessories**

- LDF 500** Ref.No. 1322
Differential air pressure sensor
Range 0 – 500 Pa
- LGF 10** Ref.No. 1325
Air velocity sensor
Range 0 – 10 m/s
- LTA 40** Ref.No. 1336
Temperature sensor for outside
Range -20 to +60 °C
- LTK 40** Ref.No. 1324
Temperature sensor for in-duct installation
Range 0 to +40 °C
- LTR 40** Ref.No. 1323
Room temperature sensor
Range 0.5 to +40 °C

ESD



The Helios range of speed controllers offer a simple solution between fans and building management systems!

Common features

- Control via analogue 0-10 V input signal on the building site, electronic control system EUR 6 C or other control units.
- A number of different fans can be controlled by one controller up to its maximum load.
- Several controllers can be controlled in parallel by a building management system that allows the ventilation to be divided in several fans or fan units and therefore in several circuits.

Accessories for both ranges

An universal control unit with 10 V can be used if the fans are not controlled by a building management system.

EUR 6 C Ref. No. 1321

For specification see the page of electronic control system.

Specification ESD

Convenient, stepless, electronic speed controller for 3 ph. fans, which can be controlled via phase control through voltage lowering (except KVD.. Ex models).
The most modern technology by use of micro controllers.

Adjusting possibilities/Display

- On/off and stepless speed selection via rotary potentiometer.
- 0-10 V input. Thereby can be remote controlled by an external rotary potentiometer (22 kOhm).
- 3 ph. phase monitoring, Protection against phase failure.
- Smooth start-up function.
- Automatic minimum initial voltage 80 V.
- Fulfills EMV requirements class B, no need for shrouded wiring between unit and motor.
- LEDs as status and fault display.
- Integrated protection for electronics against overload.
- Motor full protection through monitoring the thermal contacts of motors.

Casing

- Polymer casing, light grey with wide cooling element.
- Can be used directly even in dirty areas (e.g. kitchen) through the protection to IP 65.

Model range

Type	Ref.No.	Output current	Power input	Wiring diagram	Dimensions			Cooling element width	Weight	Protection to
					H	W	D			
		A	kW	No.	mm	mm	mm	mm	kg	IP
For alternating current fans, 3 ph., 400 V, 50/60 Hz										
ESD 5	0501	5,0	2,2	831	160	115	165	23	1,5	65
ESD 11,5	0502	11,5	5,5	831	160	160	165	68	1,7	65

Transformer speed contr. MWS with motor full protection facility 1 ph. alternating current, 230 V

Five step speed controller with integrated tripping unit for 230 V, 1 ph. fans. To connect thermal contacts wired to the terminal box. A number of fans can be controlled up to the nominal load. If a thermal contact trips all fans will be disconnected. Step switch and control lamp included. Restarting via "0" position after interference or power cut off.

MWS



Type	Ref. No.	I max. A	Casing IP 54 made of	Dimensions in mm			Weight approx. kg
				W	H	D	
MWS 1,5	1947	1,5	Polymer	200	254	98	3,0
MWS 3	1948	3,0	Polymer	200	254	98	4,0
MWS 5	1949	5,0	Polymer	200	254	167	5,3
MWS 7,5	1950	7,5	Polymer	236	316	188	10,0
MWS 10	1946	10,0	Polymer	236	316	188	13,5

Connection according to wiring diagram No. SS-440.4

Transformer speed controller RDS with motor full protection facility 3 ph. alternating current, 400 V

Five step speed controller with integrated thermal contact tripping unit for 400 V, 3 ph. alternating current fans. To connect thermal contacts wired to the terminal box. A number of fans can be controlled up to the nominal load. If a thermal contact trips all fans will be disconnected. Step switch and control lamp included. Restarting via "0" position after interference or power cut off.

RDS



Type	Ref. No.	I max. A	Casing IP 54 made of	Dimensions in mm			Weight approx. kg
				W	H	D	
RDS 1	1314	1,0	Polymer	236	316	128	6,0
RDS 2	1315	2,0	Polymer	236	316	128	9,7
RDS 4	1316	4,0	Polymer	236	316	128	10,5
RDS 7	1578	7,0	Steel	300	300	150	21,0
RDS 11	1332	11,0	Steel	300	400	200	26,0

Designed to comply with VDE 0550, fully impregnated transformers in V switching. Max. permitted ambient temperature + 40 °C.

Wiring diagram-No. SS-139..

Transformer speed contr. TSW For one or more alternating current fans. 1 ph. alternating current, 230 V

Type	Ref. No.	I max. A	Dim. in mm		
			W	H	D
TSW 1,5	1495	1,5	154	200	79
TSW 3,0	1496	3,0	154	200	148

Wiring diagram

SS-960

TSW



Speed control transformer TSD As TSW, but for 3 phase fans. 3 ph. alternatin current, 400 V

Type	Ref. No.	I max. A	Dim. in mm		
			W	H	D
TSD 1,5	1501	1,5	200	254	167
TSD 3,0	1502	3,0	200	254	167
TSD 5,5	1503	5,5	300	300	150
TSD 7,0	1504	7,0	300	300	150

Wiring diagram

SS-436.2

TSD



Pole switches

- for separate windings PGWA
- for Dahlander windings PDA

For surface mounting

Surface mounted operation switch for pole-switching fans

Type	Ref.No.	Current	SS-No.
For separate windings			
PGWA 12	5083	AC 3/5,5 kW 12 A	345
PGWA 25	5061	AC 3/11 kW 25 A	345
For Dahlander windings			
PDA 12	5081	AC 3/5,5 kW 12 A	733 ¹⁾
PDA 25	5060	AC 3/11 kW 25 A	733 ¹⁾
PDA 63	1283	AC 3/37 kW 63 A	733 ¹⁾
PDA 115	1352	AC 3/65 kW 115 A	733 ¹⁾

¹⁾ For motors without TK: SS-732

Pole switches

- for separate windings PGWU
- for Dahlander windings PDU

For flush mounting

Flush mounted operation switch for pole changing fans.

Pole switch PGWU/PDU

Type	Ref.No.	Current	SS-No.
For separate windings			
PGWU 12	5084	AC 3/5,5 kW 12 A	345
For Dahlander windings			
PDU 12	5082	AC 3/5,5 kW 12 A	733 ¹⁾

¹⁾ For motors with thermal contacts; without TK: Connection to wiring diagram-No. SS-732

Reverse and pole switch

- for separate windings PWGW
- for Dahlander windings PWDA

For surface mounting

To switch speed and air flow direction of pole changing fans. Grey polymer casing.

PWG	Ref.No.	1281
For separate windings		
PWDA	Ref.No.	1282
For Dahlander windings		

To switch speed and air flow direction of pole changing fans. Grey polymer casing.

Speed reversing switches DS 2..

- for two speed three phase Y/Δ fans

- for two speed alternating current fans (SlimVent, RR)

DS 2	Ref.No.	1351
On/off and speed reversing switch for two speed three phase Y/Δ fans. Grey polymer casing for surface mounting.		

DS 2/2	Ref.No.	1267
On/off and speed reversing switch for two speed 1 ph. fans, RR and SlimVent SVR, SVS.		

Isolator switches RHS

RHS 3 + 1	Ref.No.	1594
Position "0" is lockable via padlock. Conforms to DIN EN 60204 T.1 / VDE 0113-1. Polymer casing for surface mounting. 3-pole isolator with additional terminals, for single speed and speed controlled fans.		

RHS 6 + 2	Ref.No.	1595
Position "0" is lockable via padlock. Conforms to DIN EN 60204 T.1 / VDE 0113-1. Polymer casing for surface mounting. 6-pole isolator with 2 additional terminals, for all pole changing fans..		

Technical data for all models

Voltage 400 V, 3 ph., 50/60 Hz
Protection to IP 65

Type	Dimensions mm			Weight kg
	W	H	D	
P.. 12	82	82	130	0,4
P.. 25	92	92	140	0,5

Technical data for both models

Voltage 400 V, 3 ph., 50/60 Hz
Protection to IP 30
Dim. mm Installation depth 87
Excess length 40
Cover plate 80 x 80
Delivery incl. flush mounting box
Weight approx. 0.2 kg

Technical data for both models

Voltage 400 V, 3 ph., 50/60 Hz
Current AC 3 / 7.5 kW
Protection to IP 55
Dimensions mm W 96 x H 105 x D 147
Weight approx. 0.5 kg
Wiring diagram-No. for PWGW SS-13
Wiring diagram-No. for PWDA SS-11

Technical data for both models

Voltage 400 V, 3 ph., 50/60 Hz
Current AC 3 / 5.5 kW / 12 A
Dimensions mm W 82 x H 82 x D 130
Weight approx. 0.4 kg
Protection to, DS 2 IP 65
Wiring diagram-No. for DS 2 SS-87

Protection to, DS 2/2 IP 54
Wiring diagram-No. for DS 2/2 SS-934

Technical data

Voltage 400 V, 3 ph., 50 Hz
Current
- Main contact AC 3 / 5.5 kW 12 A ind.
- Auxiliary contact AC 3 / 2.2 kW 4 A ind.
Protection to IP 54
Dimensions mm W 101 x H 126 x D 104
Weight approx. 0.35 kg
Wiring diagram-No. SS-505.2

Technical data

Voltage 400 V, 3 ph., 50/60 Hz
Current AC 3 / 5.5 kW
Protection to IP 65
Dimensions mm W 82 x H 82 x D 125
Weight approx. 0.3 kg
Wiring diagram-No. SS-505.3



■ Motor protection

Regulations and standards

The harmonised European standards and national installation directives require thermal overload protection for electric motors. This can be achieved in various ways and depends on the motor specification.

- Optimal protection is provided by thermal contacts ("TK" consecutively), which monitor the motor winding temperature. These contacts protect also the speed controlled motors.
- For low motor powers, the thermal contacts are wired in series with the motor windings, in other words, they are internally wired. This ensures an automatic function (resetting after cooling), without the operator reacting necessarily on the interference.
- For motors/fans with higher performances the leads of the thermal contacts or PTC thermistor-temperature sensor are wired to the terminal block and must be connected to the adjacent motor full protection/tripping units. Only under this condition is the warranty claim valid.
- Motors/fans without thermal monitoring elements in the windings (e. g. IEC norm motors) must be secured on all poles by a suitable motor protection switch.

For 1 ph. fans with thermal contact leads wired to the terminal block

Motor full protection switch MW

Operation and full protection unit in polymer casing for surface mounting or installation in fuse board (clamping assembly for support rail).



MW

Ref.No. 1579

On/off operation via push-button switch. Manual reset function interference.

Volt free auxiliary contact for connection of failure indication alarm.
230 V, 1 ph., 50/60 Hz, applicable from 80 V
Nominal current 0.4 to 10 A
Protection to IP 55 Weight approx. 0.5 kg
Dimensions mm W 80 x H 140 x D 95
Wiring diagram-No. SS-517

For 3 ph. fans with thermal contacts

Motor full protection switch MD

Operation and full protection unit in polymer casing for surface mounting or installation in fuse board (clamping assembly for support rail).



MD

Ref.No. 5849

On/off operation via push-button switch. Manual reset function interference.

Volt free auxiliary contact for connection of failure indication alarm.
400 V, 3 ph., 50/60 Hz, applicable from 80 V
Nominal current 0.1 to 25 A
Protection to IP 55 Weight approx. 0.5 kg
Dimensions mm W 80 x H 140 x D 95
Wiring diagram-No. SS-518

For pole changing 3 ph. fans with separate windings and thermal contacts

Motor full protection switch M 2

Switching and full protection unit in light grey polymer casing with control lamp for surface mounting.



M 2

Ref.No. 1292

If the thermal contact opens the motor disconnects from the supply. Restarting after interference via "0" position on the switch.

Voltage 400 V, 50/60 Hz
Power AC 3 / 5.5 kW
Nominal current approx. 12 A
Protection to IP 55 Weight approx. 1.0 kg
Dimensions mm W 170 x H 135 x D 115
Wiring diagram-No. SS-142

For pole changing 3 ph. fans with Dahlander windings and thermal contacts

Motor full protection switch M 3

Design and functions as M 2

For two speed 3 ph. fans with Y/Δ switching and thermal contacts

Motor full protection switch M 4

Design and function as M 3



M 3

Ref.No. 1293

As M 2, but suitable for pole changing 3 ph. fans with Dahlander windings and built-in thermal contacts.
Dimensions mm W 170 x H 135 x D 135
Wiring diagram-No. SS-143

M 4

Ref.No. 1571

As M 3, but suitable for two speed 3 ph. fans with Y/Δ switching and built-in thermal contacts.
Wiring diagram-No. SS-144

For 3 ph. fans with built-in positive temperature coefficient thermistors (PTC temperature sensors) for thermal motor protection. Specified for use in speed controlled, explosion proof fans.

Motor full protection switch MSA

Tripping unit with manual reset for 1 to 6, PTC thermistors wired in series.



MSA

Ref.No. 1289

For thermal protection of electric motors to DIN 44081 and 44082 (by guideline 94/9/EG (ATEX)). If the nominal response temperature in PTC thermistors reaches a set limit the built-in relay disconnects the motor. The fault is indicated by a light emitting diode. Restarting via pressing the "Reset" button or an external switch. Casing made of polymer, suitable for fuse board installation on support rail according to DIN EN 60715.

Voltage 230 V ± 15 %, 50/60 Hz
3 phase operation via contactor
Current at 230 V 3 A AC 15
Connection options 1 to 6 PTCs in series
Tested by Physikalisch-Technische Bundesanstalt, according to DIN EN 60079-14/ VDE 0165, DIN EN 60079-0/VDE 0170-1 or DIN EN 60079-10/VDE 0165 T. 101
Protection to IP 20 Weight approx. 0.2 kg
Dimensions mm W 35 x H 90 x D 58
Wiring diagram-No. SS-325.1

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The unsurpassed wide Helios program offers integrated complete solutions for diverse areas of application in ventilation-, heating-, cooling- and drying sectors. Innovative standard products are complemented with customised projects. Impeller diameters up to 7.10 m and flow rates up to 2.2 million m³/h underline the ventilation competency of the traditional brand Helios.

In addition, Helios makes often with unusual projects a name of itself. Whether with a simulator for prospective skydiver or the first artificially generated tornado with 22 m in height. Even with the indoor surfing Helios fans provide for the necessary stiff breeze with wind force from up to approx. 7 Beauforts. The sport has also top priority in the Helios Arena, the home stadium of Schwenningen's professional hockey team, "Wild Wings".

Special designs for every ventilation demands.



The core competencies of Helios include the production of special solutions that are developed according to specific individual requirements in dialogue with the customer.

The adjacent mobile fan units are hydraulically adjustable and produce up to 150 000 m³/h. A downstream guide vane provides a linear flow pattern and allows the realistic simulation of different flow situations.

Strong in safety-relevant application



For safety-related applications the Helios program contains smoke and heat exhaust as well as explosion-proof fans in all pressure and performance ranges.

The picture shows axial roof fans with each 1 800 mm in impeller diameter and a total capacity of 1.2 million m³/h. They ensure the heat extraction from transformer halls.



The professionals choice

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