

TGA Catalogue **3.0**

TGA



TGA Catalogue

Fans and systems for technical
building services



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B AMD Medium pressure smoke exhaust axial fans, F300, F400	44 ff.	FU Frequency inverter	192 f.	PWDA / PWGW Reverser and pole switch	196
B AVD Low pressure smoke exhaust axial fans, F300, F400, F600	14 ff., 26 ff.	FWS Fire brigade switch	130,183 ff.	RDA Smoke protection press. system	108 ff., 112 ff.
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■ Basic SI system parameters according to DIN EN 1301

Physical value	Unit	
	Name	Abbr.
Length	Metre	m
Mass	Kilogramme	kg
Time	Second	s
Electric current	Ampere	A
Temperature	Kelvin	K
Light intensity	Candela	cd
Amount of substance	Mole	mol

■ Air flow volume units

Unit symbol	Name of unit	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	Cubic metre/second	1	60	3600	3.6*10 ⁶	1000	35.31	2118.8	1.32*10 ⁴	1.587*10 ⁴
1 m³/min	Cubic metre/minute	0.01667	1	60	6.0*10 ⁴	16.667	0.5885	35.31	220	260
1 m³/h	Cubic metre/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	Cubic foot/second	2.932*10 ⁻²	1.6992	102	1.02*10 ⁵	28.3179	1	60	373.9	448.9
1 cfm	cubic foot/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	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	0.000295
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 column	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 parameters of the SI system

Physical value	Definition	Abbreviation	Relationship to the basic parameters of the SI system
Force	Mass · Acceleration	N (Newton)	$N = \frac{kg \cdot m}{s^2}$
Pressure	$\frac{Force}{Area}$	Pa (Pascal)	$Pa = \frac{N}{m^2} = \frac{kg \cdot m}{s^2 \cdot m^2}$
		$\frac{N}{mm^2}$	$\frac{N}{mm^2} = \frac{kg \cdot m}{s^2 \cdot 10^{-6} m^2}$
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	$\frac{Power}{Distance \cdot Temp. interval}$	$\frac{W}{m \cdot K}$	$\frac{W}{m \cdot K} = \frac{kg \cdot m^2}{s^3 \cdot m \cdot K}$
Specif. heat capacity	$\frac{Energy}{Mass \cdot Temp. interval}$	$\frac{J}{kg \cdot K}$	$\frac{J}{kg \cdot K} = \frac{kg \cdot m^2}{s^2 \cdot kg \cdot K}$
Electric charge	Electr. 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 air volume required for the supply and extract ventilation of a room depends heavily on the use, as well as the pollution and odour pollution. The air volume required can also be determined by the generated process heat in industrial and commercial plants.

The flow rate can be determined according to different criteria using the following formulas and tables. If multiple criteria can be used for the calculation, the higher figure should be taken.

■ Calculation of outside air flow rate per person
(DIN EN 13779, as of 09.2007)

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

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

■ Calculation of flow rate regarding the number of people
(DIN EN 15251, as of 08.2007)

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

n: Number of people
q_p: Ventilation rate per person [m³/h] from table 2
A: Floor area of the room [m²]
q_B: Ventilation rate in relation to the building emissions [m³/h] from table 2

■ Calculation of flow rate for humidity removal

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

G: Water volume g/h
x₂: Water content in extract air g water / kg air
x₁: Water content in supply air g water / kg air
ρ: Air density kg/m³ (air 20 °C, 1013 mbar = 1.2 kg/m³)

■ Calculation of flow rate for heat dissipation

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

Q̇: Heat output to be dissipated kW
c_p: Spec. heat capacity of air kJ/(kg · K) (air 20 °C: c_p ≈ 1)
Δθ: Temperature difference between fresh air and heated air K
ρ: Air density kg/m³ (air 20 °C, 1013 mbar = 1.2 kg/m³ (1 kWh = 3600 kJ))

■ Calculation of heat output for heating the outside air

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

Q̇_L: Ventilation/heat output kW
V̇: Flow rate m³/h
ρ: Air density 1.2 kg/m³ (20 °C)
c_p: Spec. heat capacity kJ/(kg · K)
Δθ: Temperature difference (K) between θ_i room temperature and θ_a outside air temperature

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

Table 1 Outside air flow rates according to DIN EN 13779

Category	Unit	Outside air flow rate per person			
		Non-smoking area		Smoking area	
		Usual range	Standard	Usual range	Standard
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, room air categories see table 3.

Table 2 Outside air flow rates according to DIN EN 15251

Category	Air flow per person	Air flow for pollution through building emissions (m ³ /h*m ²)		
		Very low-pollution building	Low-pollution building	Non-low-pollution 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 Room air categories according to DIN EN 15251

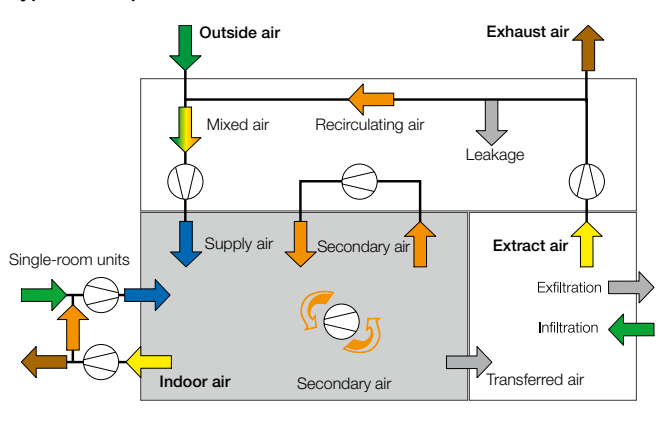
Category	Description
IDA I	High level of expectation and is recommended for spaces occupied by very sensitive and fragile persons with special requirements.
IDA II	Normal level of expectation. Recommended for new buildings and renovations.
IDA III	An acceptable, moderate level of expectation. May be used for existing buildings.
IDA IV	Values outside the criteria for the above categories. This category should only be used in exceptional cases.

There are also classifications into categories in other standards, such as DIN EN 13779, but these may have different names (e.g. 1, 2, 3...).

■ Definitions and abbreviations of different types of air according to DIN EN 13779/09.2007

No.	Type of air	Abbrev.	Colour	Definition
1	Outside 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 leak. paths in elements of struct. separating it from the outdoor air.
11	Exfiltration	EXF	Grey	Leakage of air out of the building through leak. paths in elem. of struct. separating it from the outdoor air.
12	Mixed air	MIA	v. colours	Air which contains two or more streams of air.
1.1	Outside air single room	SRO	Green	Air entering the single room air handling unit or opening from outdoors before any air treatment.
2.1	Supply air single room	SRS	Blue	Airflow entering the treated room.
5.1	Extract air single room	SET	Yellow	The airflow leaving the treated room into a single room air handling unit.
7.1	Exhaust air single room	SEH	Brown	Airflow discharged to the atmosphere from a single room air handling unit.

Types of air pursuant to DIN EN 13779



Necessity of acoustics in ventilation technology

When planning and constructing ventilation systems, the solution of acoustic problems and requirements is just as important and crucial as ideal flow technology and comfort. Deficient acoustics all too often result in serious planning and design defects and even "total losses", which are very difficult or impossible to subsequently repair. Therefore, the careful planning of the acoustics is essential for problem-free system operation.

Unfortunately, systems without or with incorrectly executed attenuators are common practice and give ventilation systems a bad reputation for users of buildings. It is the responsibility of the manufacturers, planners and plant engineers to oppose these prejudices and attach particular importance to the acoustics.

The noise level of a fan must be taken into consideration when designing a ventilation system. The noise impact of a sound source (fan) on the rooms to be ventilated and on the neighbourhood can be roughly calculated 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. Therefore, approx. 6 m/s should not be exceeded. The soundproof installation of the fan and components must also be taken into account. The maximum permissible noise emission values are regulated in relevant regulations (DIN 4109, VDI 4100) and must not be exceeded.

Noise reduction, i. e. sound power level reductions, is achieved through larger distances to the sound source, ducts, installations, ventilation grilles, etc., but above all by using attenuators. In general, the noises should be minimised at source as much as possible, i. e. select low-noise fans.

The sound power delivered from the fan at the air outlet must be converted to sound pressure for the sensitivity of the human ear. In relation to "freefield conditions", the reduction depending on distance can be seen in Fig. 1. The absorption capacity of the room is of major importance for the calculation in a room.

Noise level in the building neighbourhood (TA noise)

The industrial code defines the following maximum values:

Area	Emission value dB(A) day/night	
Purely commercial area	70	70
Primarily commercial area	65	50
Mixed area	60	45
Primarily residential area	55	40
Purely residential area	50	35
Spa area Hospitals	45	35

Noise level at workplace

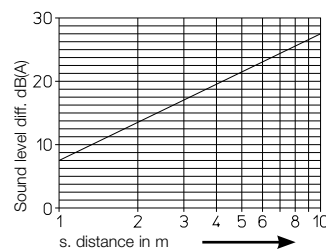
According to the specifications of the workplace ordinance, the following values as constant levels should not be exceeded:

Activity	dB(A)
Primarily intellectual activities	55
Mechanised office work	70
All other activities (max. permissible exceedance 5 dB)	85
Break, first-aid, standby and relaxation rooms	55

Table 4 Terms and definitions

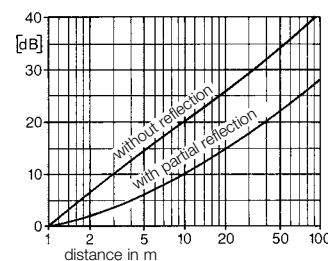
Term	Definition
Sound	Mechanical oscillations of the particles of an elastic medium in a frequency range which we can perceive by our hearing. Sound needs therefore a medium to be able to spread out. One describes oscillations in the air as airborne sound, vibrations in solid bodies as a structure-borne 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.

Fig. 1
Difference from sound power to sound pressure with distance



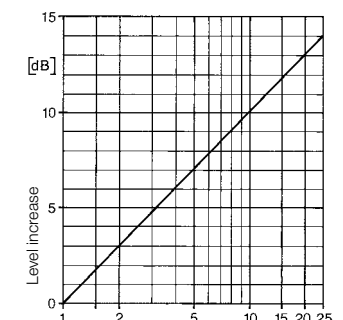
Example:
Fan sound power = 70 dB(A)
Sound pressure in 1 m distance (freefield) = 70 dB(A) - 8 = 62 dB(A)

Fig. 2
Sound pressure level reduction with distance



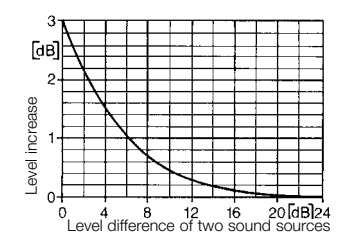
Example:
Sound pressure in 1 m distance = 60 dB(A)
Sound pressure in 5 m distance without reflection (freefield) - 15 = 45 dB(A)
with partial reflection - 5 = 55 dB(A)

Fig. 3
Addition of multiple sound sources of the same sound level



Number of sound sources of the same level
Example: 10 sound sources à 60 dB(A)
Total volume:
60 dB(A) + 10 dB(A) = 70 dB(A)

Fig. 4
Addition of multiple sound sources of different sound levels



Example: 2 sound sources 60 dB(A) and 64 dB(A)
Total volume:
64 dB(A) + 1.5 dB(A) = 65.5 dB(A)

Fan parameters

- Air flow volume \dot{V} [m³/h, m³/s]
- Total pressure increase $\Delta p_{tot} = \Delta p_{fa} + \Delta p_d$ [Pa]
- Static pressure increase $\Delta p_{fa} = \Delta p_{tot} - p_d$ [Pa]
- Dynamic pressure $p_d = \rho/2 \cdot c^2$ [Pa]
- Shaft power P_w [W, kW]
- Nominal motor power P [W, kW]
- Sound power/sound pressure level L_{WA}, L_{pA} [dB(A)]

The values were determined on a intake-side chamber test rig DIN EN ISO 5801. The noise measurements in the acoustic chamber or freefield conditions correspond to DIN 45635, pt.1 and pt.2.

Performance curve

The fan characteristics are shown in the form of a fan performance curve. The air flow volume is presented depending on static pressure (Δp_{fa}) or total pressure increase (Δp_{tot}) on the performance curve.

System performance curve

While the fan performance curve is determined on a standard test rig, the system performance curve must be determined by the system planner. This is carried out by means of a pressure loss calculation for the duct network. The maximum design flow rate is used as a parameter for the calculation. The system pressure loss is proportional to the square of the air flow volume. Different operating points in response to partial loads depending on the design operating point can be determined using this physical proportionality law.

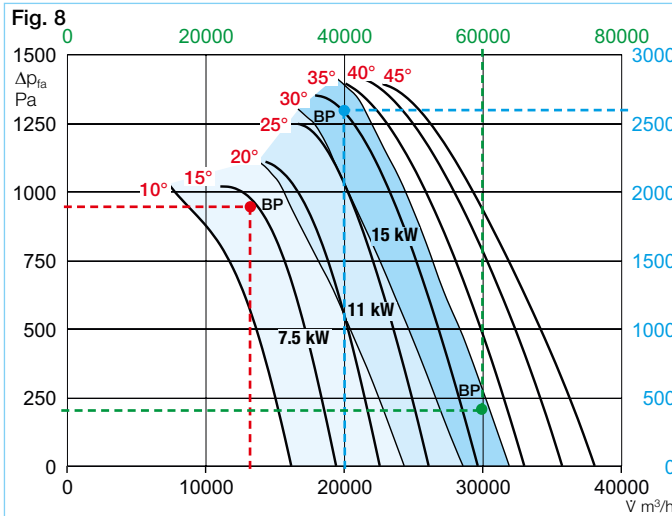
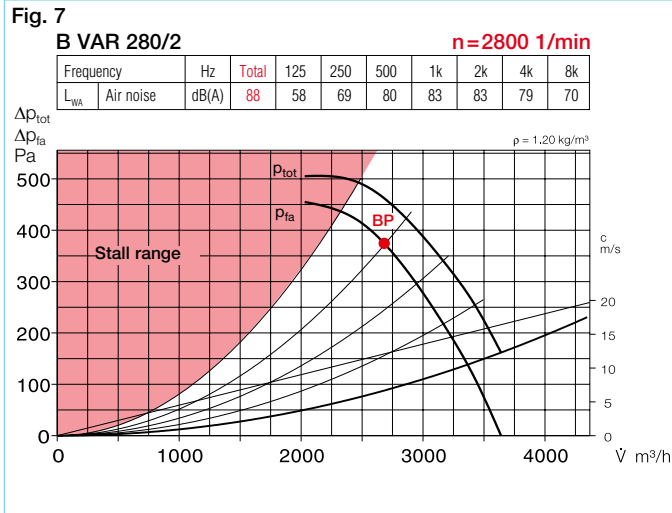
Operating point

The operating point (BP) of a fan is the intersection of the fan performance curve and the system performance curve.

Performance curve presentation

The fan performance curves, total pressure increase and static pressure increase are shown in the performance diagram for types VAR and B VAR (Fig. 7).

With regard to the low pressure and medium pressure axial fans AVD/B AVD and AMD/B AMD, the air flow volume and static pressure can be adjusted to the calculated operating point (Fig. 8) by changing the pitch angle of the impeller blades (adjustable in standstill).



With regard to B AVD F300/F400 as well as AMD and B AMD (Fig. 8), the calculation of the required motor output depends on the calculated operating point (BP), which lies on the intersection between the fan and system performance curves. The different motor outputs are presented by differently coloured areas on the performance diagram. The fan selection is therefore operating point-oriented. The pitch angle of the impeller blades and the motor output are variable for these fans, so that highly energy-efficient operation is achieved with maximum investment cost savings.

Example 1 for Fig. 8

Fan design
 $\dot{V} = 12,000 \text{ m}^3/\text{h}$
 $\Delta p_{fa} = 950 \text{ Pa}$
 Consequently: Pitch angle 14°
 Motor output 7.50 kW

Furthermore, the performance diagrams for series AMD/B AMD and VAR/B VAR also have two additional scales (Fig. 8), which enable the determination of the performance curves of two-stage (Z) and parallel (P) units.

P unit

If two identical fans are operated as a P unit in parallel in a ducting system, i.e. arranged side by side, the required air flow volume will double with a constant pressure increase. This can be seen from the green scale above the performance diagram.

Example 2 for Fig. 8

Fan design P unit:
 $= 60,000 \text{ m}^3/\text{h}$
 $\Delta p_{fa} = 200 \text{ Pa}$
 Consequently: Pitch angle 33°
 Motor output 15 kW

Z unit

If two identical fans are operated as a Z unit in two-stage, successive arrangement in a ducting system, the static pressure increase for both fans will double at a constant air flow volume, which can be seen from the blue scale next to the performance diagram.

Example 3 for Fig. 8

Fan design Z unit:
 $= 20,000 \text{ m}^3/\text{h}$
 $\Delta p_{fa} = 2,600 \text{ Pa}$
 Consequently: Pitch angle 30°
 Motor output 15 kW

Motor power at the fan shaft

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

Δp_{tot} = Total pressure increase [Pa]
 η = Fan efficiency
 \dot{V} = [m³/s]

Use of a pole-switching motor

Poles	Air flow volume	Pressure	Power
n_1/n_2	$\frac{\dot{V}_2}{\dot{V}_1}$	$\frac{\Delta p_2}{\Delta p_1}$	$\frac{P_{W2}}{P_{W1}}$
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

Conversions, affinity designations

The performance data for a geometrically similar fan series can be converted depending on speed, diameter and air density.

Change in speed:

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

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

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 density, temperature:

$$\dot{V}_1 = \dot{V}_2 = \text{const.}$$

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

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

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

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

Use of fan at greater geodetic height

Air density

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

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

Two-stage Z circuit

■ General information

The term two-stage (in series) refers to when two identical high-performance fans arranged successively are operating in the same ducting system. The static pressures of the two fans are added at a constant air flow volume.

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

■ Operating modes (Fig. 11)

When the two fans are operated simultaneously, the performance corresponds to curve ③ $\Delta p_{fa1} + \Delta p_{fa2}$

When a fan is operated individually, the performance reduces to curve ① Δp_{fa1} or curve ② Δp_{fa2} . The performance can be adjusted to variable operation conditions through partial load switching, the use of pole-switching or controllable types.

- Fan 1 runs and forces air over 2 (curve ① Δp_{fa1})
- Fan 2 runs and takes in 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 if a fan is operated individually, the deactivated fan will create 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 System operating point for two-stage operation (series).
 - 2 System operating point for individual operation of fan 1.
 - 3 System operating point for individual operation of fan 2.

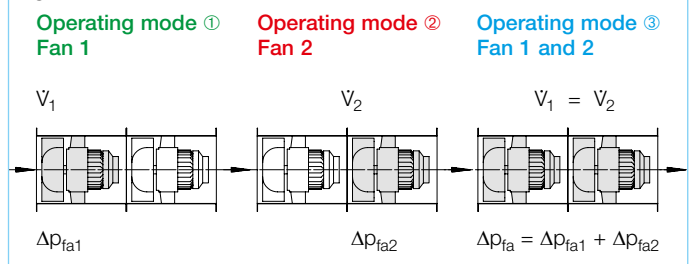
■ Speed change

With regard to fans with pole-switching (two speeds), it must be ensured that both fans are always operated at the same speed.

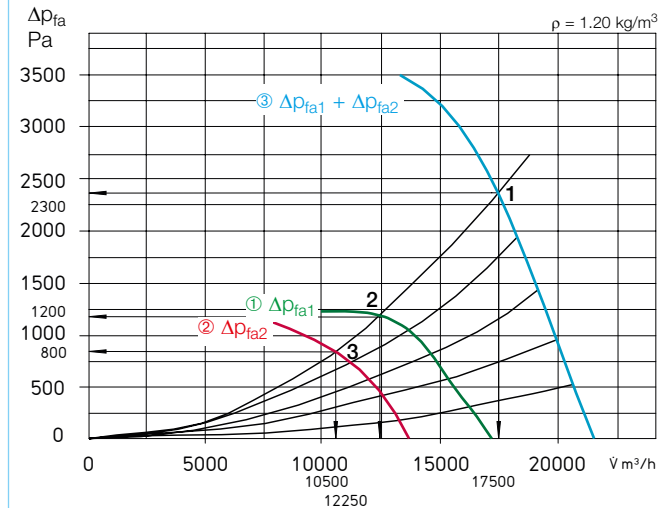
■ Note

If a system necessitates a redundant fan operating mode, it must be considered for a Z circuit that the deactivated fan will create considerable resistance in the system. For example, if fan 1 is blocked due to a defect, it is not possible that fan 2 will still reach the required operating point in an economical design. A Z circuit is therefore unsuitable if a redundant operating mode is required.

Fig. 11



Performance curve 1



Parallel P operation

■ General information

Parallel operation means that two identical fans arranged side by side are operating in the same duct system. The constant pressures of the two fans are added at a constant air flow volume.

$$\begin{aligned} \Delta p_{fa} &= \text{const.} \\ \dot{V} &= \dot{V}_1 + \dot{V}_2 \end{aligned}$$

■ Operating modes (Fig. 12)

When the two fans are operated simultaneously, the performance corresponds to curve ① $\dot{V}_1 + \dot{V}_2$. When a fan is operated individually, the performance reduces to curve ② \dot{V}_1 or \dot{V}_2 .

The performance can be adjusted to variable operation conditions through partial load switching, the use of pole-switching or controllable types. It must be ensured that the fan power adjusts according to the system performance curve (parabola). The volume will only double with constant pressure/resistance.

- Fans 1 and 2 run (curves ① $\dot{V}_1 + \dot{V}_2$)
- Fan 1 or 2 runs (curves ② \dot{V}_1 / \dot{V}_2)

Note: If a fan is operated individually, the backdraught shutter of the standing fan will automatically close.

■ Performance curve 2

- ① $\dot{V}_1 + \dot{V}_2$ both fans in operation
 - ② \dot{V}_1 / \dot{V}_2 Fan \dot{V}_1 or \dot{V}_2 in operation
- 1 System operating point for parallel operation.
 - 2 System operating point for individual operation of fan 1 or fan 2.
 - 3 Possible operating point for individual operation. Cannot be achieved for parallel operation.

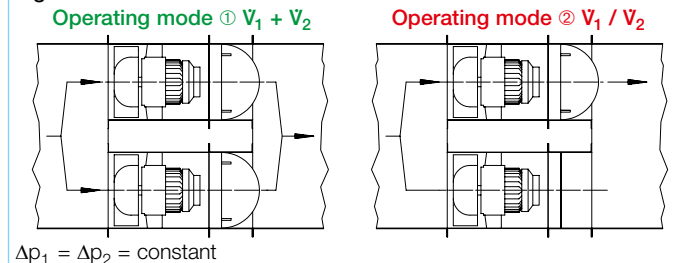
■ Speed change

With regard to fans with pole-switching (two speeds), it must be ensured that both fans are always operated at the same speed.

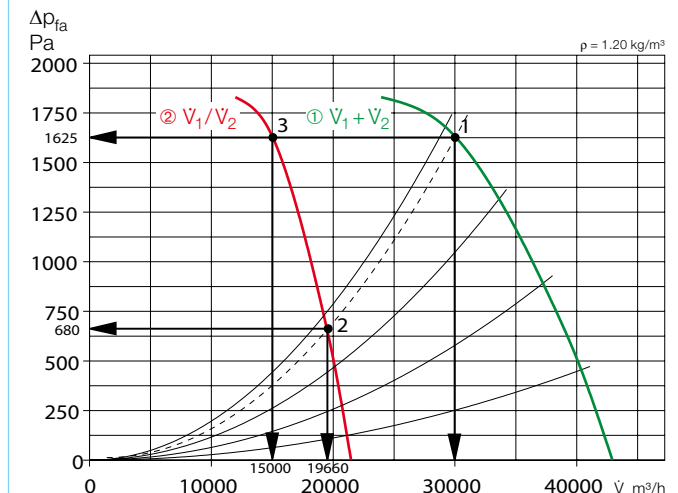
■ Note

If a system necessitates a redundant fan operating mode, a P circuit is particularly well suited for this. A blocked fan due to a defect has a negative impact on the performance curve of other fans in the P circuit. Thus, the fans can be designed economically.

Fig. 12



Performance curve 2



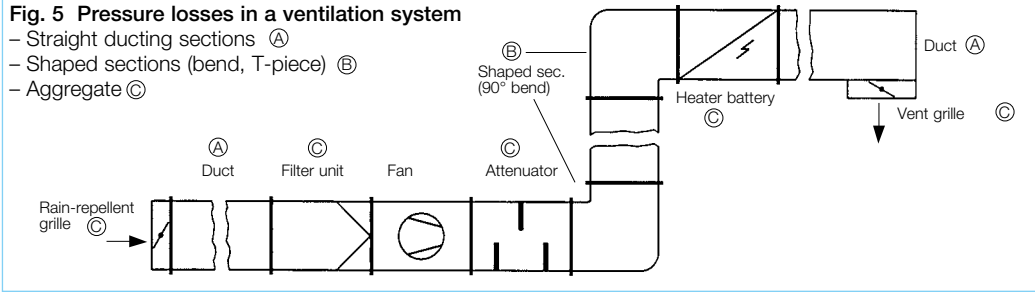
Pressure losses

Ventilation systems often consist of multiple components, such as fans, deflectors, grilles, heat exchangers, filters, etc.

All of these components cause pressure losses, which are crucial for the selection of the suitable fan. The pressure loss Δp_{fa} (static pressure difference) of the entire system is calculated by adding all individual resistances (see Fig. 5).

Fig. 5 Pressure losses in a ventilation system

- Straight ducting sections (A)
- Shaped sections (bend, T-piece) (B)
- Aggregate (C)



Pressure loss in duct sections

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

$\Delta p_{1,2,\dots}$: From the diagram Fig. 6 [Pa/m]
L: Duct length [m]
Auxiliary parameter d_h

Equivalent diameter d_h

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

b: Duct width [mm]
h: Duct height [mm]
Auxiliary parameter d_h

d_h for in-line rectangular fans

w 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 ϵ

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

Pressure loss in shaped sections e.g. bends, junctions, cross-sectional modifications

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

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

$\Delta p_{F1,2,\dots}$: From the diagrams Fig. 7-10 [Pa]
Aux. par. c: Flow speed [m/s]
 ζ : Pressure loss coefficient

Resistances from aggregates

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

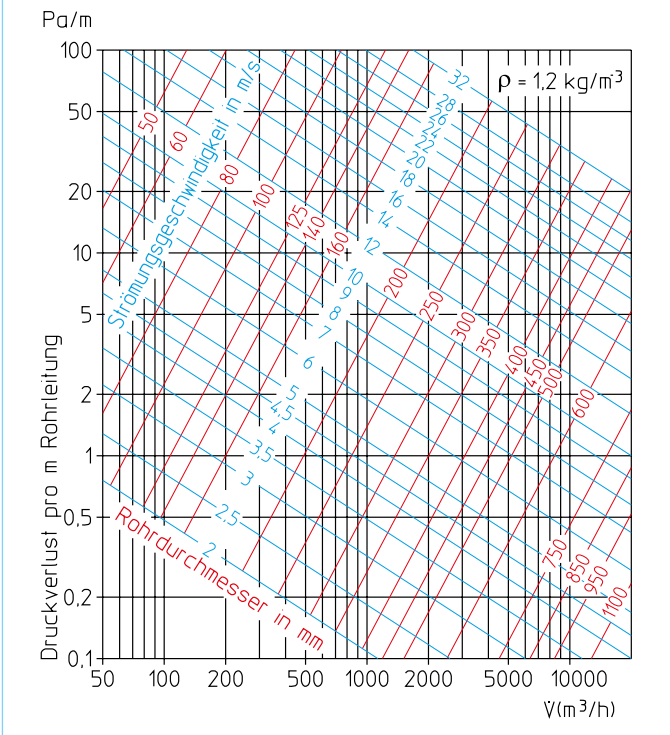
$\Delta p_{Agg1,2,\dots}$: From table 5 or diagram

Dynamic pressure at discharge section

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

ρ : Air density [kg/m³]
(air 20 °C, 1013 mbar = 1.2 kg/m³)
c: Flow speed [m/s]

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



Correction factor for roughness ϵ of different ducts

Folded sheet metal ducts	1.5	Wooden ducts	1.5
Flexible hoses	7.0	Concrete ducts	2.0
Fibre cement	1.5	Brick-lined ducts	3.0

Table 5 Resistances from aggregates
(for rough calculation)

Aggregate/component	Flow resistance Δp Aggregate [Pa]
Ventilation grille, automatic shutter, rain-repellent grille*	20 – 40
Helios VK shutter*	10 – 20
Heater battery, heat exchanger*	100 – 150
Filter clean*	40 – 60
contaminated	250 – 300
Attenuator*	40 – 80
Poppet valves*	10 – 200
Cyclones	500 – 750

* see product page for exact values

Total resistance Calculation process

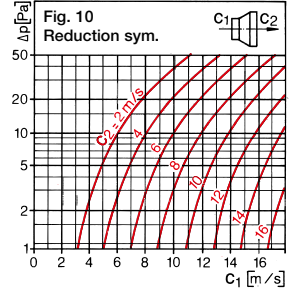
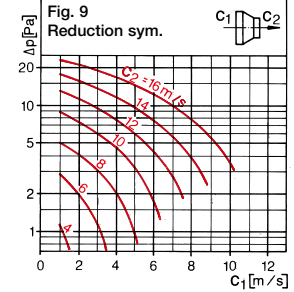
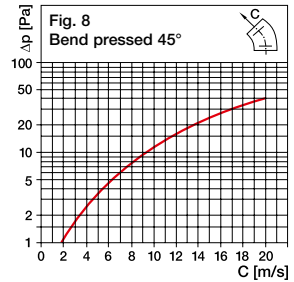
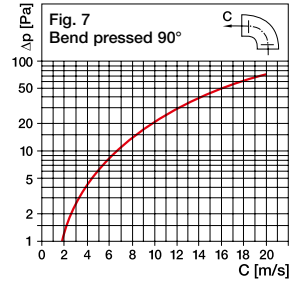
$\Delta p_{ges} = [A] + [B] + [C] + [D] \text{ [Pa]}$

Auxiliary parameters Flow rate

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

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

Resistances of shaped sections



■ General information

Smoke and heat exhaust systems have the task of ensuring a smoke-free layer above the ground in the event of a fire. This should ensure visibility to facilitate the evacuation of people and animals as well as active firefighting by the fire brigade. Furthermore, emergency signs must also be recognisable in panic situations.

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 two categories:

- **NRA:** Natural smoke and heat exhaust systems (18232-2)
- **MRA:** Powered smoke and heat exhaust systems (18232-5)

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 horizontally and vertically with the development of the fire. A powered smoke and heat exhaust system pursues the protection objective of creating a durable smoke-free layer in the lower area. This enables the self-rescue of people in the building as well as rescue and firefighting measures by the fire brigade. Sufficient fresh air is supplied via sufficiently dimensioned vent openings (airflow speed < 1 m/s) due to the extraction of fire gases the resulting vacuum in the lower building. Hence, the ideal result is a balance between incoming air and smoke gas extraction (see Fig.1).

■ Standards and guidelines

The 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 design 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 method of the dimensioning of a powered smoke and heat exhaust system with the relevant official authorities (fire safety experts, authorities, local fire brigade, etc.) in the planning phase. The following calculation steps should only be understood as a suggestion. The final specification should be carried out in compliance with the applicable laws and standards in accordance with the competent authority.

□ Dimensioning according to DIN 18232-5

A design according to DIN 18232-5 is possible if the area from which smoke is to be extracted is a large area with a clear height > 3 m. The dimensioning group must first be determined for further dimensioning. This concerns a calculational fire area which depends on the fire development time and the fire propagation rate (see Table 1).

The fire development time to be used is dependent on the arrival timing of the fire brigade. It describes the time from the outbreak of the fire until the beginning of the firefighting. A time of 10 minutes is usually used. In case of very favourable conditions (plant fire brigade), the time can be reduced to 5 minutes. In case of unfavourable or really unusual circumstances, the value has to be increased to 15 or 20 minutes. The period from the outbreak of the fire until the fire alarm is not used, since an automatic fire alarm system or constantly present and trained staff must be on-site for early fire detection.

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

■ Determination of flow rate

The flow rate to be discharged for the smoke section (1,600 m²) must be determined according to tables. The smoke extraction flow rate is specified depending on the thickness of the smoke-free layer, heat release rate and dimensioning group (see table 2, p.10).

The dimensioning distinguishes between two heat release rates:

- 600 kW/m²
- 300 kW/m²

These values can be deviated from if there are justifiable reasons. In

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

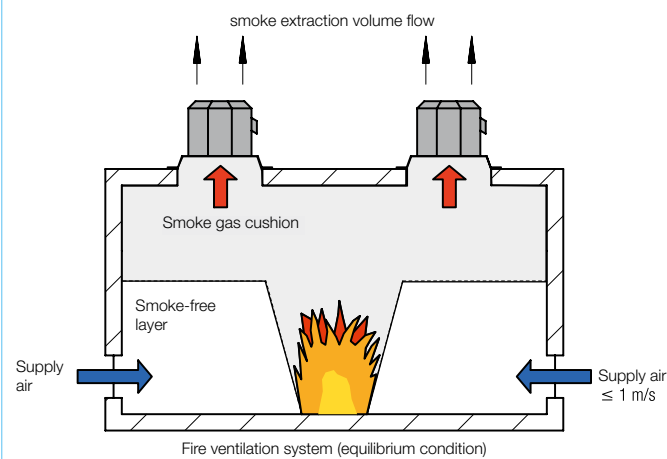


Fig. 2

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 <i>Terms, safety objectives</i>	EN 12101-1 <i>Specification for smoke barriers</i>
DIN 18232-2 <i>Natural smoke and heat exhaust system (NRA), requirements, design, installation</i>	EN 12101-2 <i>Specification for natural smoke and heat exhaust fans</i>
DIN 18232-4 <i>Heat exhaust systems (WA), test method</i>	EN 12101-3 <i>Specification for powered smoke and heat exhaust fans</i>
DIN 18232-5 <i>Powered smoke and heat exhaust system (MRA) requirements, dimensioning</i>	EN 12101-6 <i>Regulation for pressure differential systems, kits</i>
DIN 18232-7 <i>Heat exhaust fans made of meltable materials, assessment procedure, installation</i>	EN 12101-7 <i>Smoke duct systems</i>
	EN 12101-8 <i>Smoke control dampers</i>
	EN 12101-9, draft <i>Control panels</i>
	EN 12101-10 <i>Energy supply</i>

Table 1: Determination of MRA dimensioning group according to DIN 18232

Applicable 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	-

particular if other plume models are used for the determination of smoke-gas or other heat release rates are to be used.

The smoke-gas flow rate must be extracted by smoke extraction fans. The following types can be used:

- Roof-mounted fans
- Wall fans
- Central fans

The extraction locations must be dimensioned and distributed properly for smoke extraction.

A functional air vent opening is essential for efficient operation of a powered smoke and heat extract system. The supply air must stream in close to the ground within the smoke-free layer. A low-jet flow is essential. Otherwise the result is a swirling smoke-gas cushion. During the planning phase, it must be ensured that the top edge of the air vent opening is at least 1.0 m below the smoke-gas cushion. If the air vent openings have a 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 must be realised. The maximum incoming air speed of 1 m/s is specified in DIN 18232-5. If the requirement in DIN 18232-5 cannot be met with regard to the maximum incoming air speed, the following compensation measures are possible in agreement with the competent expert:

- Installation of porous deflector plates
- Reduction or foregoing of fire loads in the air vent area
- Low active depth or effect of the air vent opening

High-speed incoming supply air can negatively affect the flow pattern 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, a maximum incoming air speed of 0.5... 1.0 m/s is recommended. Supply air vent openings must be opened immediately after the MRA is triggered. Automatic opening is ensured by:

- Automatic opening mechanisms
- Plant fire brigade
- Constantly present and trained personnel

The clear cross-section of the incoming air vent opening is calculated according to the following formula:

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

A_{lichte} = free or clear opening area [m²]
 $V_{\text{ab.masch}}$ = Extraction volume [m³/s]
 w_{zu} = Supply air speed [m/s]

Smoke section areas

The application of DIN 18232-5 requires that the rooms, from which smoke is to be extracted, 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. The smoke section area can be increased up to 2,600 m² by increasing the flow rate of the smoke and heat exhaust fans. For this purpose, the values indicated in the table 2 have to be increased by 10 % for each 100 m² started after 1,600 m².

Further project planning steps in DIN 18232-5

The average smoke layer temperature (°C) can be seen in table 3 in consideration of the same parameters as in the procedure for the determination of volume flow (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 shows the required temperature class of the smoke and heat exhaust fans according to DIN EN 12101-3. The design parameters here are the same as those shown in tables 2 and 3.

Flow rate correction procedure

The high smoke-gas volume flows in everyday practice for smoke extraction projects pose enormous challenges for all project parties. If the effort for the project planning and design of the smoke and heat exhaust fans is still relatively manageable, the determination of the exact dimensions of the smoke extraction ducts, as well as the number and position of the air vent openings to be considered, is often more complicated. The correction procedure specified in the standard for the reduction of the smoke-gas volume flow rates according to table 2 can often provide the necessary remedy, since it considers the actual smoke layer heat losses. In a smoke extraction situation, a high heat transmission occurs due to the high temperature difference between the smoke layer and the surrounding area. This loss of heat flow through the room surfaces affected by the smoke causes the significant cooling of the smoke-gas cushion. The cooling of the smoke layer results in a significant reduction in the smoke-gas volume, which reduces the requirements for the smoke-gas volume flow to be discharged and temperature class of the smoke and heat exhaust products.

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

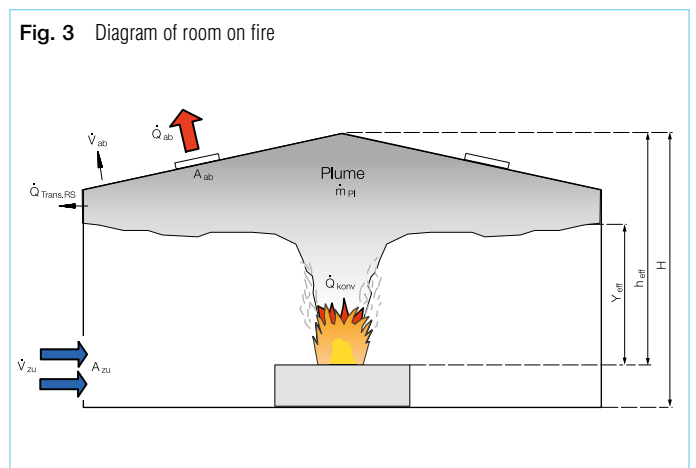
Height of smoke-free layer	300 kW/m ²					600 kW/m ²				
	Dimensioning group									
	1	2	3	4	5	1	2	3	4	5
2 m	23000	38000	64000	112000	-	32000	56000	-	-	-
2,5 m	29000	46000	75000	128000	223000	38000	64000	112000	-	-
3 m	34000	55000	88000	145000	248000	44000	73000	124000	-	-
4 m	43000	72000	115000	184000	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: Average smoke layer temperature T_{RS} in °C according 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	120	160	210	120	155	212	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 according 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	F400	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



The reduced flow rate in consideration of heat losses is calculated as follows:

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

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

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

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

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

$$V_{RS} \text{ in } \left[\frac{m^3}{s} \right]$$

$$c_{p, smoke} = 1.010 \cdot \frac{J}{kg K}$$

$$U_i \text{ in } \left[\frac{W}{m^2 K} \right]$$

- δ = Radiation factor of smoke layer
- T_{RS} = Average smoke layer temperature according to table 3 in absolute number (K), value
- T_{∞} = Ambient or supply air temperature [K] = 293 K
- V_{RS} = Smoke-gas volume flow to be discharged according to table 2
- $c_{p, smoke}$ = Specific heat capacity of the smoke-gas
- U_i = Heat transmission coefficient of the component in the smoke layer
- A_i = Surface area of the component in the smoke layer (m²)
- A_R = Surface area of smoke section (m²)

Number of extraction points

All extraction points 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 extraction points in the sense of the standard. The number of necessary extraction points can be found in table 5. The maximum permissible smoke-gas volume flow (in degrees C) can be seen here in consideration of the smoke layer thickness and the average smoke layer temperature. The thickness of the smoke layer at the extraction point is shown in Fig. 4 and the average smoke layer temperature is shown in table 3.

Minimum distances between the exhaust openings must be observed. The predefined distances refer to the distance to the respective outer edges. The minimum distance (S_{min}) is calculated as follows:

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

with:
 V_i = Smoke-gas volume flow of extraction point (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 (smoke and heat flow control systems). All Helios smoke and heat exhaust fans are tested according to this test standard by recognised testing body. The evidence is provided by the issuing of a certificate concerning the performance reliability and the CE marking with the associated declaration of performance, as well as the Installation and Operating Instructions. Furthermore, they are DIBt approved. The approvals are issued by the German Institute for Building Technology (DIBt).

Installation of smoke and heat exhaust fans

The installation of smoke and heat exhaust fans is regulated according to VDMA standard sheet 24177. There are three different installation types.

- Installation of the fan outside the smoke section 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 section.

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

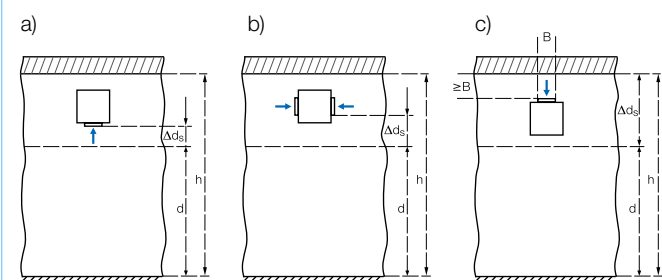
Electrical connection, isolator switch, control

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

- Basic document fire protection
- Model building regulation
- Federal State building regulations
- Model duct system guidelines
- Testing institute report
- General building approvals
- European and national standards

In principle, the energy supply to the smoke and heat exhaust fan must always be ensured in case of fire. The functional integrity of cables and ducts must conform to the time classification of the fan.

Fig. 4 Smoke layer thickness at the exhaust openings



- a) Δd_s for downward-facing exhaust openings
- b) Δd_s for horizontal exhaust openings
- c) Δd_s for upward-facing exhaust openings

h = Average 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 permitted smoke volume flow at the extraction point in m³/h according to DIN 18232-5

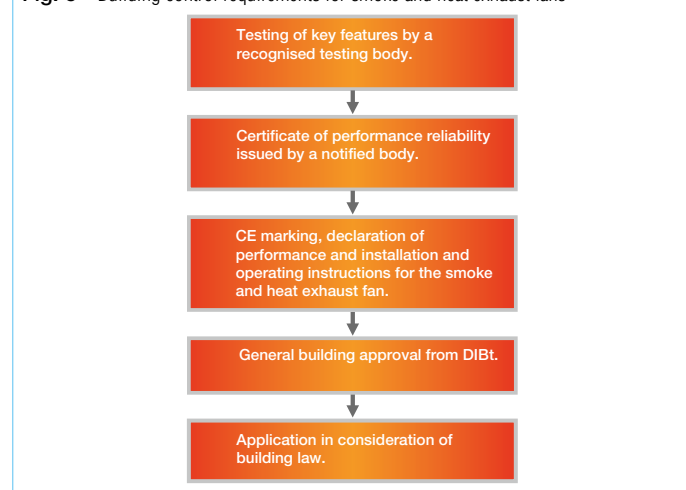
Smoke layer thickness at the exhaust opening	Average smoke layer temperature in °C										
	50	100	150	200	250	300	350	400	500	550	600
0.5	1000	1300	1800	2000	2100	2400	2600	2900	3000	3050	3100
1	5000	7500	9000	10000	12000	15000	18000	19000	19500	20000	21000
1.5	15000	21000	28000	30000	38000	40000	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 extraction fans according to DIN EN 12101-3

Category	F200	F300	F400	F600	F842
Temperature (°C)	200	300	400	600	842
Functional integrity (minimum), (minutes)	120	60	120	60	30

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

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



The power supply to the fan must be protected against mechanical damage. This can be ensured through the use of silicone or te-

flon-coated cables. The fan control unit must be located outside the fire zone. Smoke and heat exhaust fans require a separate power sup-

ply separate from the remaining power network. The respective national law and possibly other public requirements regulate whether the additional securing of the energy supply (emergency power) is necessary.

An isolator switch must be provided in the immediate vicinity of the fan for maintenance and repair work. It must be ensured that the isolator switch is not affected by radiant heat (thermal encapsulation). The isolator switch may be installed within a fire-resistant cooling air duct, if it is accessible via a fire-resistant inspection flap. Isolator switches must be effectively protected against unauthorized operation (e.g. padlock, key-switch design).

Smoke and heat exhaust fans with dual-use can be used for normal building ventilation. The ventilation operation can be speed-controlled. The speed control can be carried out by means of

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

A sine filter is recommended due to motor insulation demands on the basis of occurring voltage peaks and voltage changes when controlling with a frequency inverter, and due to increasing insulation demands on the basis of line inductances and capacities.

The fan must not be regulated by means of a frequency inverter or other control devices in a smoke and heat extraction situation if they were not part of the smoke and heat exhaust fan testing. When the smoke and heat exhaust fan is triggered (in case of fire), the following must be ensured:

- Activation of the fan
- Bridging of thermal and electrical control elements
- Operation in the planned speed
- Ensure operation by preventing unauthorised deactivation

Smoke extraction ducts

Smoke extraction ducts are part of Building Rules List A and therefore require a test certificate from the building authorities. Smoke extraction ducts and their components must consist of non-combustible materials of class A, DIN 4102-1.

- There are four different requirements for smoke extraction ducts:
- Thermal insulation (L90 according to DIN 4102-6)
 - Leak-tightness (according to DIN EN 12101-7)
 - Load capacity (according to DIN 4102-4 and 6)
 - Cross-section preservation (according to DIN EN 12101-7)

Smoke extraction ducts within the fire zone

The criteria for load capacity, leak-tightness and cross-section preservation must be met within the fire zone. The use of sheet steel ducts is permitted (with the building authority test certificate).

Smoke extraction ducts inside the building; outside the fire zone

All four criteria must be met here. Calcium silicate ducts can be used as suitable thermal insulation.

Smoke extraction ducts outside the building

The criteria for load capacity, leak-tightness and cross-section preservation must be met for smoke extraction ducts outside of the building. The use of sheet steel ducts is permitted (with the building authority test certificate).

During the planning phase, particular attention must be paid to the smoke extraction duct outlets. Planning takes place according to the principle of M-LÜAR 2005 section 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 pass through to other storeys, fire sections, building units, necessary stairways, rooms between the necessary stairways and external exits or exits to necessary corridors.”

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

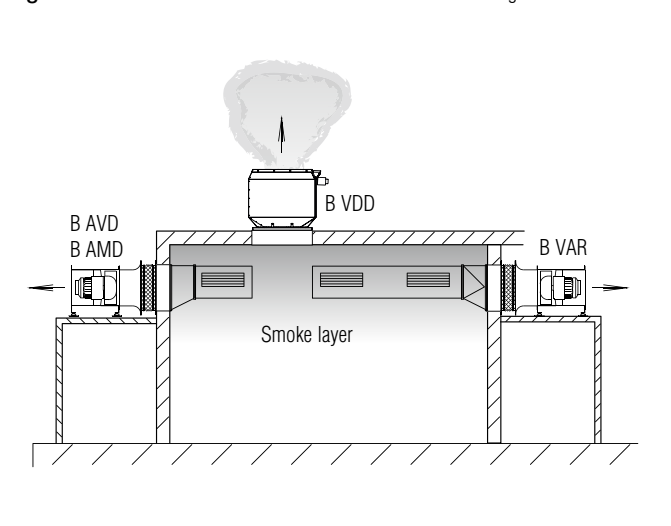


Fig. 7 Fans outside of smoke section, inside the building in sufficiently ventilated room

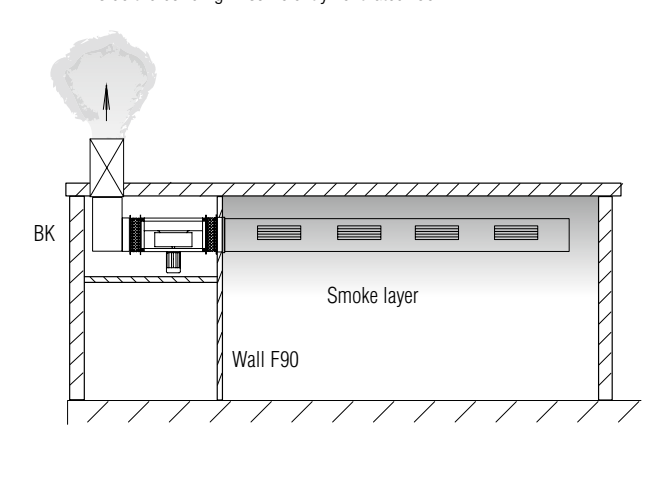
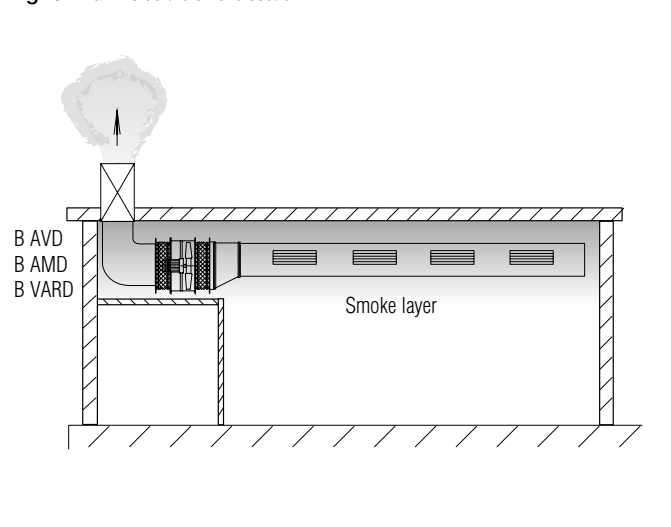


Fig. 8 Fan inside the smoke section



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

1. Outlets must be at least 2.5 m away from windows, other external wall openings and external walls with combustible building materials and corresponding cladding; this does not apply to the wooden battens on 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 m protruding, fire-resistant components made of non-combustible building material without openings. The ventilation duct outlets above roof level must tower at least 1 m over components made of combustible building materials or lie 1.5 m away from these horizontally. These distances are not required if these building materials are protected against fire risk by the external surfaces of the ventilation ducts 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)."

Smoke and heat exhaust fan accessories

All accessories and components which are part of the smoke and heat exhaust system must be in the same temperature category as the corresponding smoke and heat exhaust fan at least. For this purpose, a relevant building law test certificate is required.

For example, the components include:

- Attenuators
- Flexible connectors
- Anti-vibration mounts
- Backdraught shutters
- Inlet nozzles
- Guards

Maintenance and function control

Recurring maintenance and functional integrity testing is the responsibility of the user.

Smoke and heat exhaust fans must be kept constantly operational and in good condition. Simple and safe maintenance and repair must be always guaranteed by appropriate installation.

The operational reliability and readiness must be checked twice a year. Maintenance must be carried out every year. The fan manufacturer specifications must be observed.

Installation information for axial smoke and heat exhaust fans

The ideal installation state (Fig. 8) has an inflow and outflow duct of $2.5 \times D$ ($D = \varnothing$ fan). In case of deviations from the ideal installation state, performances losses are possible.

Attaching anti-vibration mounts

The centre of gravity of a fan is decisively determined by the positioning of the motor in the fan casing. Since the motor in in-line fans is only rarely placed centrally in the axial direction, these fans have a so-called motor protrusion and thus no centred centre of gravity. In order to enable the use of evenly loaded anti-vibration mounts for horizontal fan installation despite this motor protrusion, the fan casing may need to be extended with an extension duct on the side of the motor protrusion.

The mounting brackets and anti-vibration mounts must be positioned on the fan and extension duct so that the total weight is evenly distributed on the two mounting brackets and the four anti-vibration mounts (Fig. 10/11).

A level fan mounting surface must also be ensured when mounting the anti-vibration mounts. Anti-vibration mounts must only be used to a very limited extent to compensate for a vertical offset of the mounting surface, but never to compensate for a horizontal offset between the mounting bracket and the on-site substructure.

Fig. 9 Functional installation inflow and outflow with ducting, ducting section before and after the fan $2.5 \times D$ ($D =$ fan diameter)

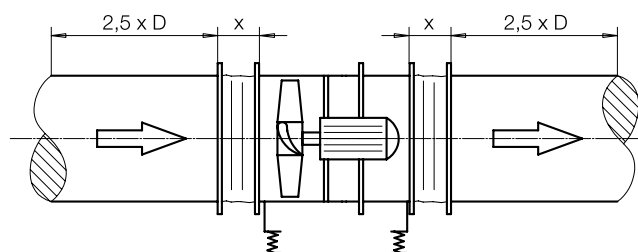


Fig. 10 a) Performance losses/sound level increase/unfavourable weight distribution
b) Improvement through inlet nozzle and extension duct

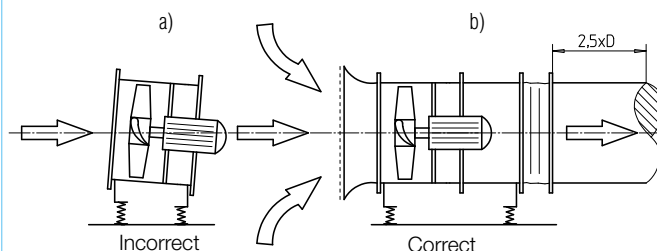


Fig. 11 a) Large performance losses, poor flow behaviour, unfavourable weight distribution.
b) A cone and inflow duct section of $2.5 \times D$ for improvement, centre of gravity between anti-vibration mounts SDD

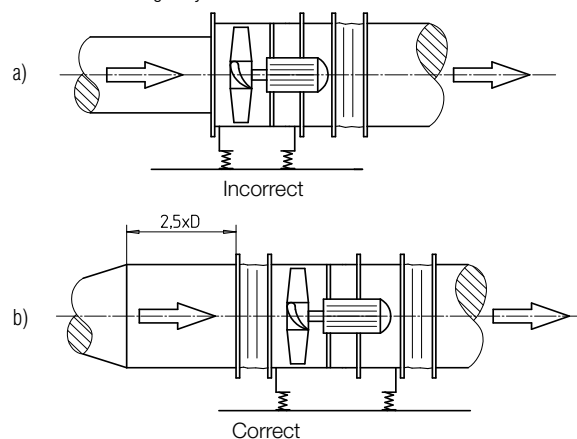
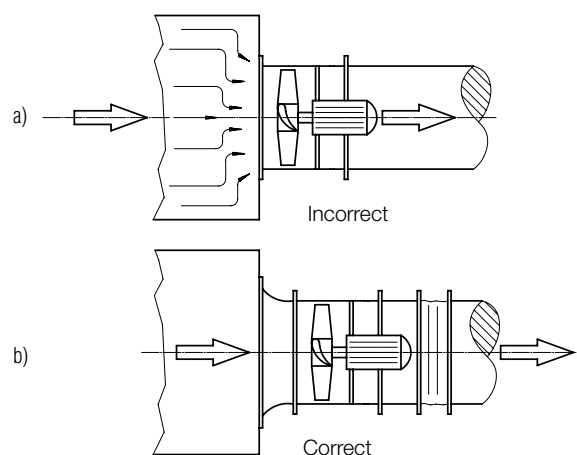


Fig. 12 a) Large performance loss, poor flow behaviour.
b) With inlet nozzle, considerable improvement of inflow and noise behaviour.



Axial fans, which achieve every operating point.



**CERTIFIED FOR
TEMPERATURE CLASSES
F300/F400/F600 according
to DIN EN 12101-3**



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

As a result, nearly any operating point in the range from 1,000 to 150,000 m³/h can be achieved at an external pressure of 50 to 1,100 Pa.

B AVD smoke and heat exhaust axial fans are ideal for car park smoke extraction hotels, shopping centres and public buildings.

Essential advantages:

- Aluminium impeller with nine profiled blades (F300/F400) for high efficiency and high pressure rating.
- Compact design.
- Simple installation.
- Low noise and vibration during operation.
- With DIBt technical approvals, CE-certified.

Special solutions

for technical building equipment (TGA) and large axial fans from Ø 1,000 to 7,100 mm, V. up to 2.2 million m³/h, are produced according to customer-specific requirements.





LOW PRESSURE AXIAL FANS

Product-specific information

16^f

Axial fans for ventilation (air flow temperature from -30 to +40 °C) in technical building equipment (TGA)

Ø 710 – 1 000 mm
V = 8 000 to 80 000 m³/h

18^{ff}



LOW PRESSURE SMOKE EXHAUST AXIAL FANS F300/F400

Product-specific information

16^f

Types for smoke and heat extraction according to DIN EN 12101-3 in temperature classes F300 (120 min.) and F400 (120 min.).

Ø 500 – 1 250 mm
V = 1 000 to 150 000 m³/h

26^{ff}



LOW PRESSURE SMOKE EXHAUST AXIAL FANS F600

Product-specific information

16^f

Types for smoke and heat extraction according to DIN 12101-3 in temperature class F600 (120 min.).

Ø 500 – 1 250 mm
V = 1 000 to 140 000 m³/h

27^{ff}

Application

- Versatile application in technical building equipment, e.g. for the ventilation of car parks or air-ports, etc.
- For preventive fire protection to secure smoke and heat extraction.
- For applications with air flow temperatures of 300 °C, 400 °C and 600 °C for 120 min. (F300, F400 and F600).

Characteristics

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

Design

- Built-in fan AVD DK:
Wall ring with inlet cone, casing made from galvanised steel, motor with terminal box and motor side guard.
- Duct fan AVD RK and HRF:
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

Duct casing made from galvanised steel. Flanges on both ends (except AVD DK) according to DIN 24155 pt. 3, for direct in-line installation in ducting.

Impeller

- Series AVD and HRF:
High-performance characteristics with 5 or 7 profiled blades made from polymer. Operating range from -30 °C to +40 °C.
- Series B AVD:
High-performance characteristics with 5 or 9 profiled blades made from aluminium (F300, F400) or steel (F600). dynamically balanced, balance quality G 6.3.

Motor

- For single-speed fans with a three-phase motor and a nominal motor power ≤ 2.20 kW, the connection for direct start-up is provided, fans with a nominal motor power ≥ 3.00 kW for star-delta start-up.
- Series AVD and HRF:
Totally enclosed motor IP55 or IP54. Maintenance-free and interference-free. Tropicalised winding with humidity protection impregnation.
- Series B AVD:
Direct through efficient IE3 three-phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class

IP55. Insulation class H. External cable with sheathing. Depending on the installation situation, re-lubrication intervals or bearing replacements must be observed (see Installation and Operating Instructions). Cable to the terminal box with fire-resistant sheathing.

Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

Motor protection

- Series AVD:
All types (except pole-switching and explosion-proof) have thermal contacts or PTC resistors as standard and must be protected by the following full motor protection devices pursuant to the footnotes in the tables:
MSA, Ref no. 1289 (for PTC temperature sensors)
M4, Ref no. 1571
All other types must be protected by a conventional circuit breaker on site.
- Series B AVD:
The B AVD types (except Dahlander) are equipped with PTC resistors as standard and must be protected by the following full motor protection devices pursuant to the footnotes in the tables:
MSA, Ref no. 1289 (for PTC temperature sensors)
This must be bridged in smoke extraction mode.

Electrical connection

- Series AVD:
Standard terminal box (protection class IP54) mounted on motor (type DK). Also on outside of duct for HRF. Deviations for explosion-proof types.
- Series B AVD:
Standard terminal box (protection class IP54) in temperature-resistant design.

Air flow temperature

- Series AVD:
Suitable for supply and extract ventilation from -30 °C to +40 °C continuous temperature.
- Series B AVD:
Can be used for continuous supply and extract ventilation operation from -20 °C to +40 °C.
Suitable for flue gases up to 300 °C/120 min. (F300), 400 °C/120 min. (F400) and 600 °C/120 min. (F600).

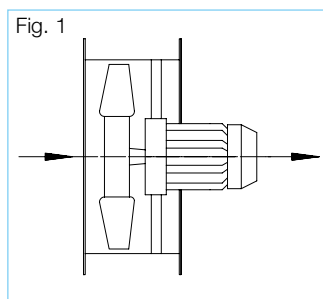
Air output

- The smoke and heat exhaust fans B AVD are manufactured with an increased gap between casing and impeller.

During ventilation mode (cold operation +40 °C), a reduced output of approx. 5 % is expected for the F300 types, and approx. 10 % for the F400 types. In a smoke extraction situation, the gap between casing and impeller will reduce. This results in the performance curves shown on the product pages. This must be taken into account when dimensioning.

Air flow direction

- Series AVD DK/RK:
The blades are adjustable at standstill, so that optimal adjustment to the operating point is possible ex works (in accordance with order). The maximum pitch angle of each type (according to motor power) is defined in the type table on the product pages.
- The fans are designed with airflow direction B = over motor (Fig. 1) as standard, i.e. no other indication in the order.



- Series AVD DK/RK and HRF:
Reversible using a reversing switch (Accessories). There is a performance reduction of ~30 % in the abnormal airflow direction.

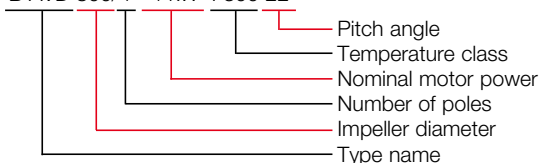
- Series B AVD:
- For types B AVD F300/F400, the blades are adjustable at standstill, so that optimal adjustment to the operating point is possible ex works (in accordance with order).
- The B AVD types F600 are supplied with the pitch angle specified in the type table on the product pages.

Order data

The desired blade pitch angle must be specified when ordering.

Example:

B AVD 800/4 4 kW F300 22°



Noise levels

- The sound power levels are indicated by means of frequency and as sum levels for different pitch angles above the performance curves on the product pages.

Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. Certificate of performance reliability:
F300: 0036-CPR-RG05-03
F400: 0036-CPR-RG05-06
F600: 0036-CPR-RG05-04
With DIBt technical approval:
F300: Z-78.11-144
F400: Z-78.11-145
F600: Z-78.11-146

■ 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.

□ Installation outdoors:

It must be ensured that no precipitation can penetrate into the smoke extraction fan.

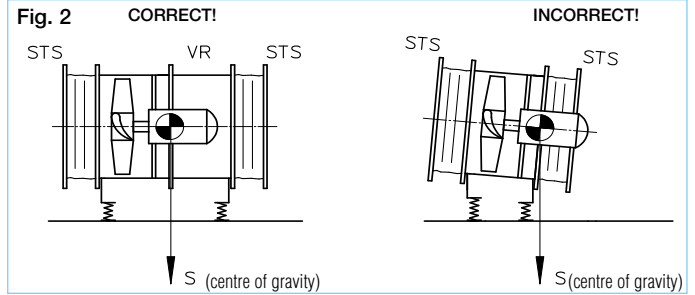
□ In order to prevent the transmission of vibrations, the use of anti-vibration mounts is recommended (Accessories).

If installed outdoors, in constantly moist or wet environments, or if installed with a vertical shaft, this must be stated when ordering.

□ Compliance with the specific fire protection regulations and guidelines.

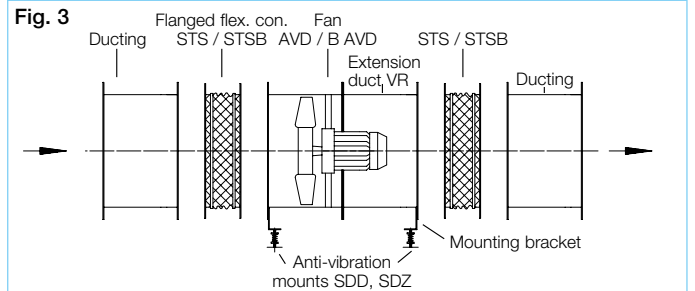
■ Duct installation (tilting)

In order to prevent the tendency to tilt during installation of the axial fans with flanged flexible connectors on each side (type STS, Accessories), and extension duct (type VR, Accessories) is provided (Fig. 2).



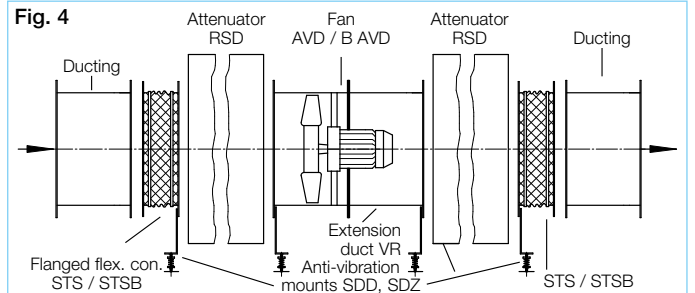
■ Duct installation (horizontal)

Arrangement of the mounting bracket and anti vibration mounts (Accessories) on both flange sides of the unit. Use of anti-vibration mounts SDD for pressure loading or SDZ for tensile loading (ceiling suspension). In order to prevent sound and vibration transmission, flanged flexible connectors STS (accessories) are to be provided on each side (Fig. 3).



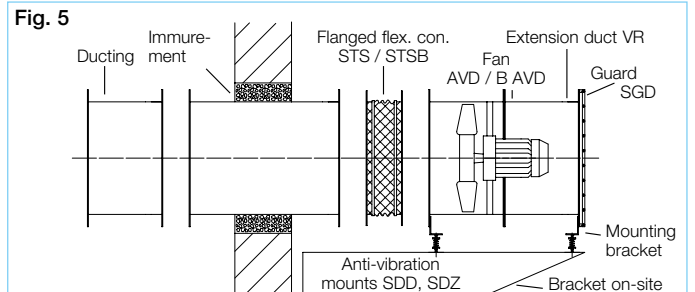
■ Duct installation with attenuator on inlet and outlet sides

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



■ Wall installation (horizontal)

On bracket (on site), wall bushing with pipe or duct, immurement with mineral wool. Flanged flexible connectors on both sides with extension duct VR and protection 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, balance quality $G 6.3 < 4.0 \text{ mm/s}$.

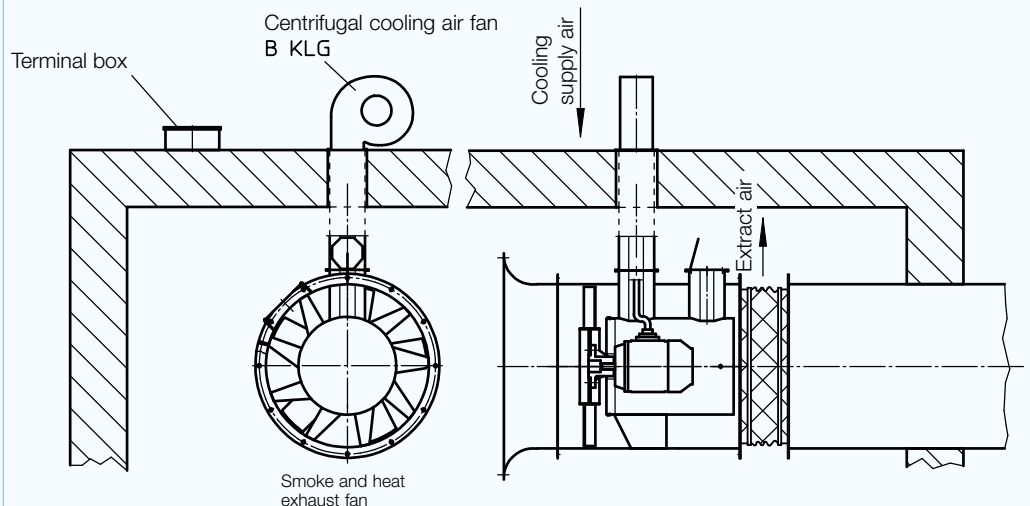
Centrifugal cooling air fan

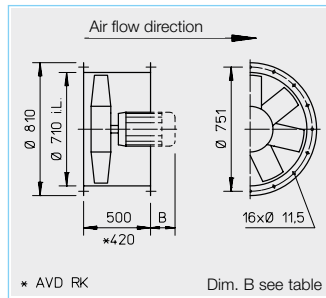
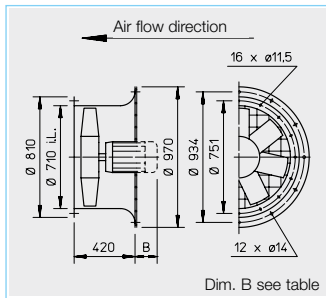
In order to ensure motor cooling, the centrifugal cooling air fan B KLG (Fig. 6) is a necessary accessory. The cooling air fan must be installed outside of the fire zone (smoke section) (Fig. 6).

Alternative forced ventilation fan upon request.

Minimum cooling air flow volume see Accessories on page 174.

Fig. 6 Positioning in the fire zone





■ **Description for all types**

□ **Casing**

With motor bracket made from galvanised sheet steel.

□ **Impeller**

High performance characteristics with 5 or 7 polymer blades, dynamically balanced.

□ **Pitch angle**

The impeller blades are adjustable (except explosion-proof) for optimal coverage of the operating point. The adjustment is carried out ex works (in accordance with order) and fixed. The motor allocation takes place using the maximum power pursuant to the information in the table below. The specified position must not be exceeded.

□ **Motor**

Totally enclosed motor IP55 or IP54. Maintenance-free and interference-free. Tropicalised winding with humidity protection impregnation.

□ **Motor protection**

All types (except pole switching and explosion proof) have thermal contacts or PTC resistors and must be protected by the following full motor protection devices pursuant to the footnotes in the tables:

- ¹⁾MD, Ref no. 5849
- ²⁾MSA, Ref no. 1289 (for PTC temperature sensors)
- ³⁾M4, Ref no. 1571

All other types must be protected by a conventional circuit breaker on site.

□ **Guard**

As standard for AVD DK according to DIN EN ISO 13857, galvanised or powder coated.

□ **Electrical connection**

Terminal box protection class IP54 mounted to motor (type DK). Also outside on duct for HRF. Explosion-proof types may vary.

□ **Speed control**

Some types are speed controllable voltage reduction, see column "Transformer speed controller". Controlled performance curves upon request.

All types are speed controllable by frequency inverter (except pole-switching and explosion-proof). The planned use of a frequency inverter without sine filter must be stated when ordering. This requires a change of fan design and possible additional costs.

□ **Reversed operation**

All types are reversible by means of a reversing switch. There is a performance reduction of 1/3 in the abnormal airflow direction.

□ **Installation**

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

□ **Dimensions**

Pole-switching and explosion-proof types may vary from adjacent information. Motor length may vary. Note protrusion dimension B.

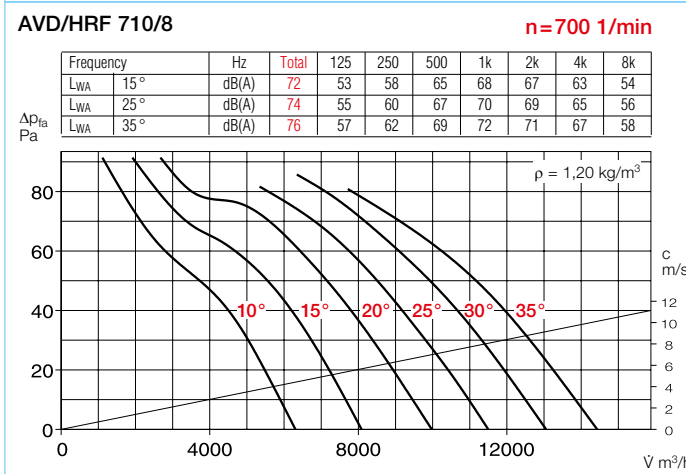
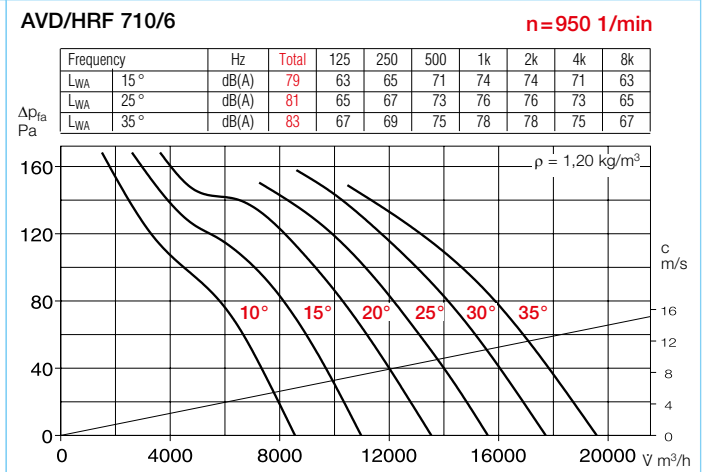
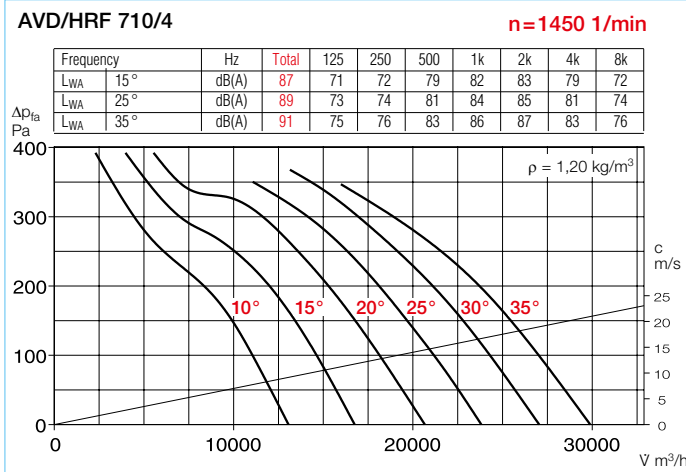
Speed min ⁻¹	Air flow volume (FID) V m ³ /h	Motor power (nom.) (*output) kW	Nominal voltage V	Power consumption (*control) A	Max. pitch angle °	Wiring diagram No.	Max. air flow temp. +°C	Weight net* ca. kg	Fan type				Dim. B Motor protrusion mm	Transformer controller for 5 speed pole switch	
									AVD DK incl. guard	Ref. no.	HRFD, AVD RK	Ref. no.		Type	Ref. no.
3 phase motor, 400 V, 50 Hz, squirrel-cage rotor, protection class IP54															
690	13330	0.29	400	0.9	20	469	40	42.0	AVD DK 710/8 ¹⁾	5251	HRFD 710/8 ¹⁾	6930	95	RDS 2 ⁴⁾	1315
1445	26420	3.00*	400/690	6.2*	30	776	40	73.0	AVD DK 710/4 ³⁾	5258	HRFD 710/4 ³⁾	6937	180	—	—
2 speed, 3 phase motor, 400 V, 50 Hz, Y/Δ circuit, protection class IP55															
730/890	13550/16090	0.43*/0.75*	400/400	1.1*/2.3*	25	520	40	40.0	AVD DK 710/6/6 ³⁾	5254	HRFD 710/6/6 ³⁾	6933	95	RDS 4 ⁴⁾	1316
940	19170	1.1*	230/400	5.1*	35	776	40	45.0	AVD DK 710/6 ³⁾	5255	HRFD 710/6 ³⁾	6934	135	—	—
1120/1360	16140/19670	0.95*/1.55*	400/400	2.4*/4.2*	20	520	40	45.0	AVD DK 710/4/4 ³⁾	5256	HRFD 710/4/4 ³⁾	6935	135	RDS 7 ⁴⁾	1578
1030/1340	19370/23280	1.5*/2.2*	400/400	3.0*/5.2*	26	520	40	60.0	AVD DK 710/4/4 ³⁾	5257	HRFD 710/4/4 ³⁾	6936	180	RDS 7 ⁴⁾	1578
Pole-switching, 2 speed, 3 phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP54															
685/1430	10810/22090	0.5*/2.0*	400/400	2.0*/4.7*	23	471	40	67.0	AVD DK 710/8/4	5263	HRFD 710/8/4	6942	180	PDA 12 ⁵⁾	5081
720/1440	14155/26200	0.9*/3.6*	400/400	2.9*/8.3*	30	471	40	93.0	AVD DK 710/8/4	5264	AVD RK 710/8/4	6943	210	PDA 12 ⁵⁾	5081
Explosion-proof Ex e II, 3 phase motor, 400 V, 50 Hz, protection class IP54, temperature class T1-T3															
700	10450	0.55*	400	2.20*	35	470	40	68.0	AVD DK 710/8 Ex	5270	HRFD 710/8 Ex	6948	125	not permitted	
930	13480	0.55*	400	1.80*	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	4.70*	25	470	40	82.0	AVD DK 710/4 Ex	5275	AVD RK 710/4 Ex	6951	180	not permitted	
1420	26160	3.60*	400/690	8.10*	35	498	40	102.0	AVD DK 710/4 Ex	5276	AVD RK 710/4 Ex	6952	200	not permitted	

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ up to ³⁾ full motor protection devices, see description "Motor protection"

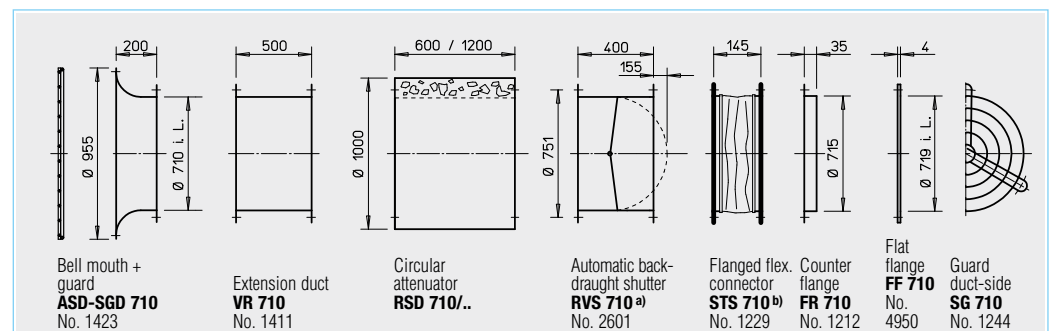
* Weights apply for types ..DK and ..RK, HRF less ca. 15 kg

⁴⁾ Incl. full motor protection

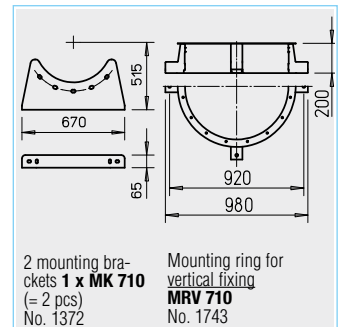


Accessories for HRF/AVD RK Description see page 175 ff.

Electronic speed controller, stepless frequency inverter		Anti vibration mounts Nominal size	
Type	Ref. no.	Type	Ref. no.
ESD 5 ⁴⁾	0501	..1/.1	1452/1454
		..2/.2	1453/1455
ESD 5 ⁴⁾	0501	..1/.1	1452/1454
		..1/.1	1452/1454
ESD 5 ⁴⁾	0501	..1/.1	1452/1454
ESD 11,5 ⁴⁾	0502	..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

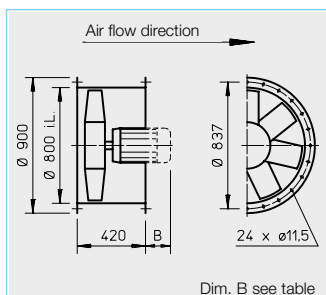
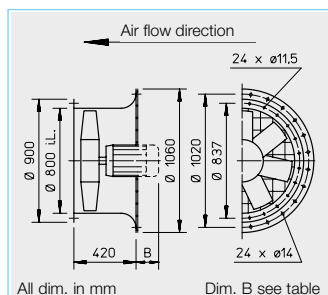


a) Motor-operated back-draught shutter see main Helios catalogue b) Types for explosion-proof fans see below



Information	Page	Other accessories	Page
Techn. description	16 f.	Access. for ex-proof fans	
Project planning information	3 ff.		
Special design		Flanged flexible connector	
Alternative voltage, protection class, air flow direction, higher air flow temperature, acid protection and impeller made from cast aluminium upon request.		Type STS 710 Ex Ref no. 2510	
		Mounting accessories	172 ff.
		Attenuators	179
		Gas warning systems, switch and control technology	182 ff.
		Frequency inverter	192 ff.

⁴⁾ Flush-mounted version see Switch product page



■ Description for all types

- **Casing**
With motor bracket made from galvanised sheet steel.
- **Impeller**
High performance characteristics with 5 or 7 polymer blades, dynamically balanced.
- **Pitch angle**
The impeller blades are adjustable (except explosion-proof) for optimal coverage of the operating point. The adjustment is carried out ex works (in accordance with order) and fixed. The motor allocation takes place using the maximum power pursuant to the information in the table below. The specified position must not be exceeded.

- **Motor**
Totally enclosed motor IP55 or IP54. Maintenance-free and interference-free. Tropicalised winding with humidity protection impregnation.
- **Motor protection**
All types (except pole switching and explosion proof) have thermal contacts or PTC resistors and must be protected by the following full motor protection devices pursuant to the footnotes in the tables:
⁴⁾MSA, Ref. no. 1289
 (for PTC temperature sensors)
⁵⁾M4, Ref. no. 1571
 All other types must be protected by a conventional circuit breaker on site.

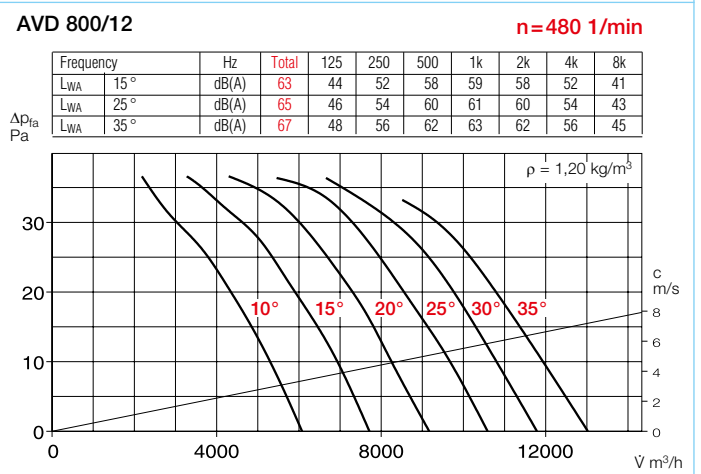
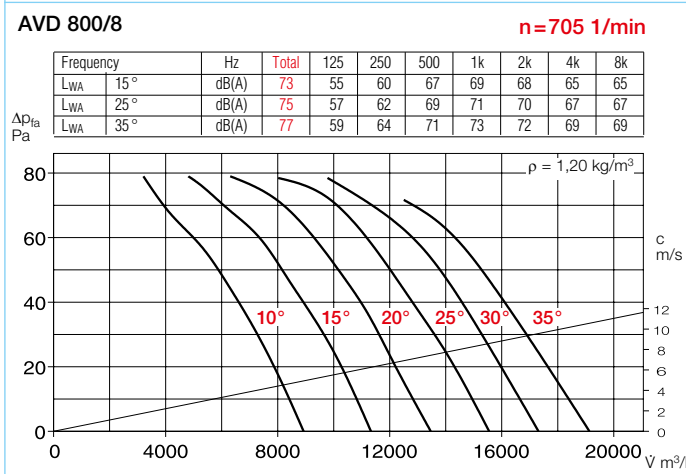
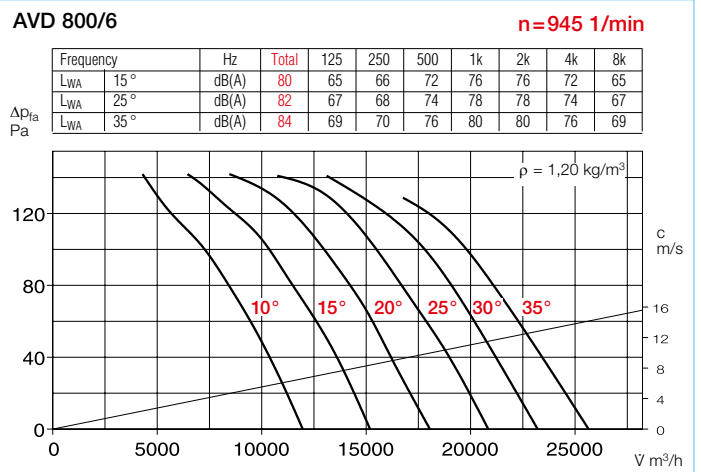
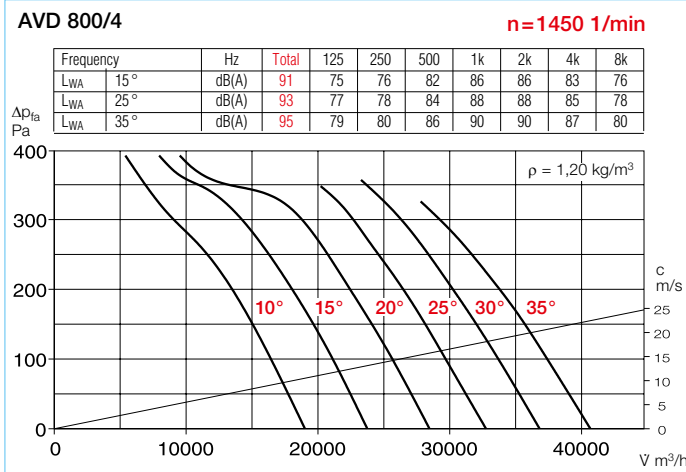
- **Electrical connection**
Terminal box protection class IP54 mounted to motor (type DK).
- **Guard**
According to DIN EN ISO 13857, hot-dip galvanised, as standard for AVD DK.
- **Speed control**
Some types are speed controllable voltage reduction, see column "Transformer speed controller". Controlled performance curves upon request. All types are speed controllable by frequency inverter (except pole-switching and explosion-proof). The planned use of a frequency inverter without sine filter must be stated when ordering. This requires a change of fan design and possible additional costs.

- **Reversed operation**
All types are reversible by means of a reversing switch. There is a performance reduction of 1/3 in the abnormal airflow direction.
- **Installation**
Installation in any position. Ensure that the motor drainage holes face downwards.
- **Dimensions**
Pole-switching and explosion-proof types may vary from adjacent information. Motor length may vary. Note protrusion dimension B.
- **Noise levels**
The sound power levels are indicated by means of frequency and as sum levels above the performance curves.

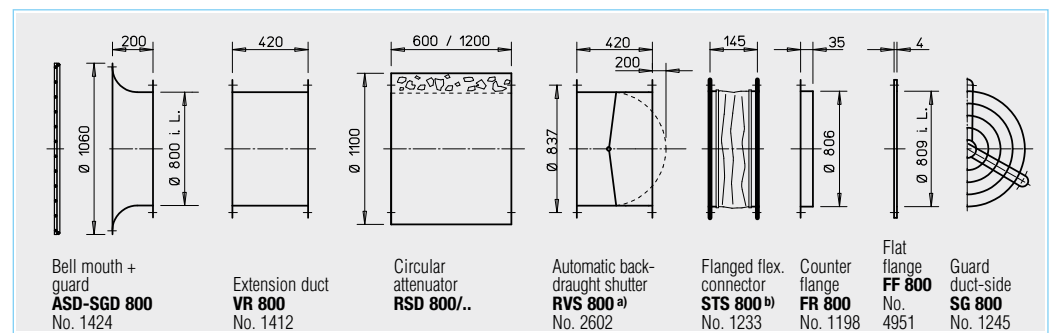
Speed min ⁻¹	Air flow volume (FID) V m ³ /h	Motor power (nom.) (*output) kW	Nominal voltage V	Power consumption (*control) A	Max. pitch angle °	Wiring diagram No.	Max. air flow temp. +°C	Weight net* ca. kg	Fan type				Dim. B Motor protrusion mm	Transformer controller for 5 speed pole switch	
									AVD DK incl. guard	Ref. no.	AVD RK	Ref. no.		Type	Ref. no.
3 phase motor, 50 Hz, squirrel-cage rotor, protection class IP54															
1445	33450	4.00*	400/690	8.3*	26	776	40	101	AVD DK 800/4 ⁴⁾	5311	AVD RK 800/4 ⁴⁾	6960	210	—	—
1450	39190	5.5*	400/690	11.0*	33	776(020)	40	115	AVD DK 800/4 ⁴⁾	5312	AVD RK 800/4 ⁴⁾	6961	290	—	—
2 speed, 3 phase motor, 400 V, 50 Hz, Y/Δ circuit, protection class IP55															
775/920	15720/18670	0.43*/0.75*	400/400	1.1*/2.3*	22	520	40	70	AVD DK 800/6/6 ⁵⁾	5307	AVD RK 800/6/6 ⁵⁾	6956	125	RDS 4	1316
														Pole switch	
Pole-switching, 2 speed, 3 phase motor, 50 Hz, protection class IP54															
695/1400	10020/20180	0.37*/1.5*	400/400	1.3*/3.7*	12	471	40	95	AVD DK 800/8/4 ¹⁾	5319	AVD RK 800/8/4 ¹⁾	6968	180	PDA 12 ³⁾	5081
Explosion-proof Ex e II, 3 phase motor, 50 Hz, protection class IP54, temperature class T1-T3															
700	17190	0.55*	400	2.2*	32	470	40	81	AVD DK 800/8 Ex	5326	AVD RK 800/8 Ex	6974	135	not permitted	
930	20340	0.95*	400	2.7*	23	470(020)	40	90	AVD DK 800/6 Ex	5329	AVD RK 800/6 Ex	6976	135	not permitted	
950	26710	1.9*	400	4.7*	35	470(020)	40	118	AVD DK 800/6 Ex	5330	AVD RK 800/6 Ex	6977	210	not permitted	
1420	31900	3.6*	400/690	8.1*	24	498	40	115	AVD DK 800/4 Ex	5332	AVD RK 800/4 Ex	6978	210	not permitted	
1450	36820	5.0*	400/690	10.4*	30	498	40	143	AVD DK 800/4 Ex	5333	AVD RK 800/4 Ex	6979	290	not permitted	

The flow volume and pressure increase information is required to determine the pitch angle.

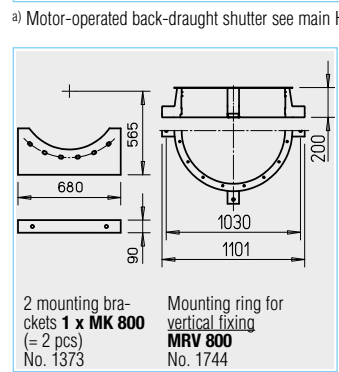
¹⁾ Dahlander winding ²⁾ Separate winding ³⁾ Flush-mounted version see Switch product page ⁴⁾ and ⁵⁾ Full motor protection devices, see description "Motor protection"



Accessories for AVD RK Description see page 175 ff.

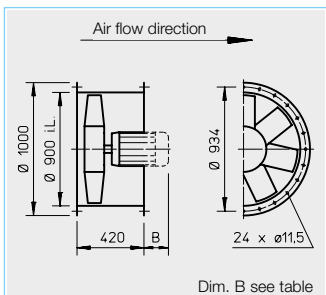
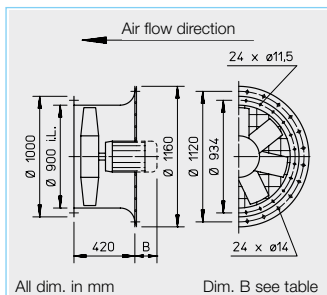


Electronic speed controller, stepless frequency inverter		Anti vibration mounts Nominal size	
Type	Ref. no.	Type	Ref. no.
ESD 11,5⁶⁾	0502	..2/..2	1453/1455
FU-CS 14⁶⁾	5875	..2/..2	1453/1455
ESD 5⁶⁾	0501	..1/..2	1452/1455
—	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455
not permitted	—	..2/..2	1453/1455



Information	Page	Other accessories	Page
Techn. description	16 f.	Access. for ex-proof fans	
Project planning information	3 ff.	Flanged flexible connector Type STS 800 Ex	Ref no. 2511
Special design		Mounting accessories	172 ff.
Alternative voltage, protection class, air flow direction, higher air flow temperature, acid protection and impeller made from cast aluminium upon request.		Attenuators	179
		Gas warning systems, switch and control technology	182 ff.
		Frequency inverter	192 ff.

⁶⁾ Including full motor protection



■ **Description for all types**

□ **Casing**
 With motor bracket made from galvanised sheet steel.

□ **Impeller**
 High performance characteristics with 5 or 7 polymer blades, dynamically balanced.

□ **Pitch angle**
 The impeller blades are adjustable (except explosion-proof) for optimal coverage of the operating point. The adjustment is carried out ex works (in accordance with order) and fixed. The motor allocation takes place using the maximum power pursuant to the information in the table below. The specified position must not be exceeded.

□ **Motor**
 Totally enclosed motor IP55 or IP54. Maintenance-free and interference-free. Tropicalised winding with humidity protection impregnation.

□ **Motor protection**
 All types (except pole switching and explosion proof) have thermal contacts or PTC resistors and must be protected by the following full motor protection devices pursuant to the footnotes in the tables:
⁴⁾MSA, Ref. no. 1289 (for PTC temperature sensors)
⁵⁾M4, Ref. no. 1571
 All other types must be protected by a conventional circuit breaker on site.

□ **Electrical connection**
 Terminal box protection class IP54 mounted to motor (type DK).

□ **Guard**
 According to DIN EN ISO 13857, hot-dip galvanised, as standard for AVD DK.

□ **Speed control**
 Some types are speed controllable voltage reduction, see column "Transformer speed controller". Controlled performance curves upon request. All types are speed controllable by frequency inverter (except pole-switching and explosion-proof). The planned use of a frequency inverter without sine filter must be stated when ordering. This requires a change of fan design and possible additional costs.

□ **Reversed operation**
 All types are reversible by means of a reversing switch. There is a performance reduction of 1/3 in the abnormal airflow direction.

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

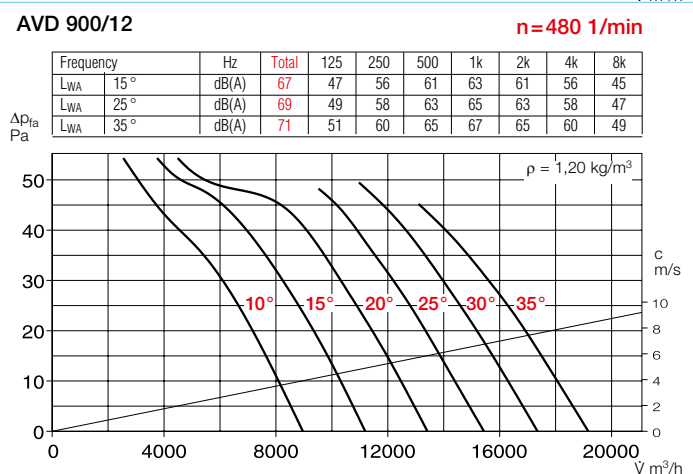
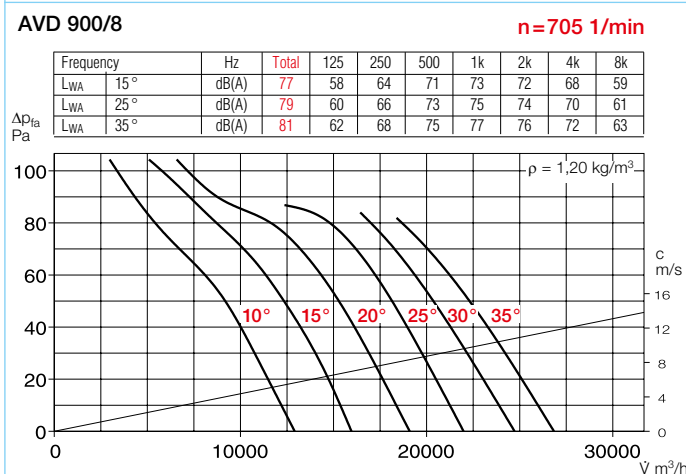
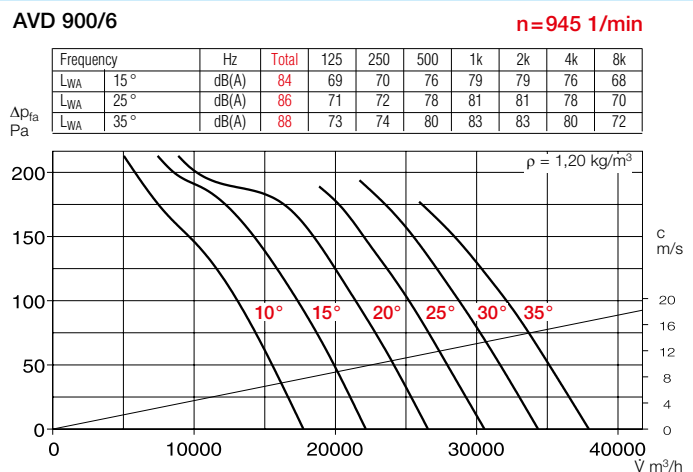
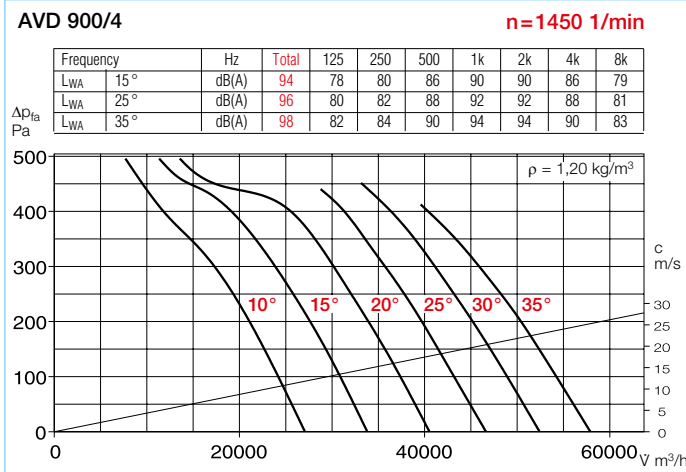
□ **Dimensions**
 Pole-switching and explosion-proof types may vary from adjacent information. Motor length may vary. Note protrusion dimension B.

□ **Noise levels**
 The sound power levels are indicated by means of frequency and as sum levels above the performance curves.

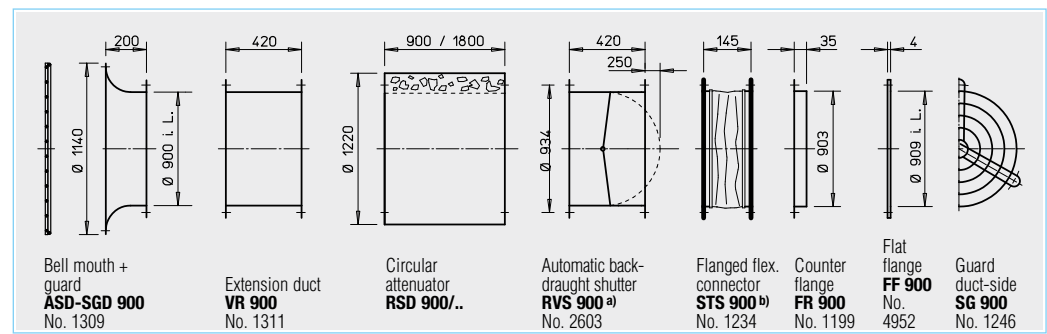
Speed min ⁻¹	Air flow volume (FID) V m ³ /h	Motor power (nom.) ("output") kW	Nominal voltage V	Power consumption (*control) A	Max. pitch angle °	Wiring diagram No.	Max. air flow temp. +°C	Weight net* ca. kg	Fan type				Dim. B Motor protrusion mm	Transformer controller for 5 speed pole switch	
									AVD DK incl. guard	Ref. no.	AVD RK	Ref. no.		Type	Ref. no.
3 phase motor, 50 Hz, squirrel-cage rotor, protection class IP54															
950	37300	3.0*	400/690	6.2*	34	776	40	130	AVD DK 900/6 ⁴⁾	5369	AVD RK 900/6 ⁴⁾	6985	290	—	—
1445	35030	4.0*	400/690	8.3*	16	776	40	118	AVD DK 900/4 ⁴⁾	5370	AVD RK 900/4 ⁴⁾	6986	210	—	—
1450	48995	7.5*	400/690	14.5*	27	776(030)	40	142	AVD DK 900/4 ⁴⁾	5371	AVD RK 900/4 ⁴⁾	6987	325	—	—
1470	57720	11.0*	400/690	20.0*	34	776(030)	40	186	AVD DK 900/4 ⁴⁾	5372	AVD RK 900/4 ⁴⁾	6988	385	—	—
2 speed, 3 phase motor, 400 V, 50 Hz, Y/Δ circuit, protection class IP55															
755/930	18390/22660	0.71*/1.32*	400/400	2.1*/4.0*	19	520	40	90	AVD DK 900/6/6 ⁵⁾	5367	AVD RK 900/6/6 ⁵⁾	6983	180	RDS 7 ⁶⁾	1578
770/920	25990/31060	1.38*/2.37*	400/400	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
Pole-switching, 2 speed, 3 phase motor, 50 Hz, protection class IP54															
700/1435	18270/37450	1.10*/4.50*	400/400	2.9*/9.6*	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*	400/400	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
Explosion-proof Ex e II, 3 phase motor, 50 Hz, protection class IP54, temperature class T1-T3															
700	24470	0.95*	400	2.8*	27	470	40	110	AVD DK 900/8 Ex	5386	AVD RK 900/8 Ex	6899	180	not permitted	
725	28470	1.30*	400	3.9*	34	470	40	130	AVD DK 900/8 Ex	5387	AVD RK 900/8 Ex	6900	210	not permitted	
950	30550	1.90*	400	4.7*	25	470	40	135	AVD DK 900/6 Ex	5389	AVD RK 900/6 Ex	6901	210	not permitted	
960	38040	3.50*	400/690	7.4*	35	498	40	160	AVD DK 900/6 Ex	5390	AVD RK 900/6 Ex	6902	290	not permitted	
1450	46630	6.80*	400/690	13.6*	25	498	40	175	AVD DK 900/4 Ex	5392	AVD RK 900/4 Ex	6903	325	not permitted	
1465	55240	10.00*	400/690	19.8*	32	498	40	235	AVD DK 900/4 Ex	5393	AVD RK 900/4 Ex	6904	385	not permitted	

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ Dahlander winding ²⁾ Separate winding ³⁾ Flush-mounted version see Switch product page ⁴⁾ and ⁵⁾ Full motor protection devices, see description "Motor protection"

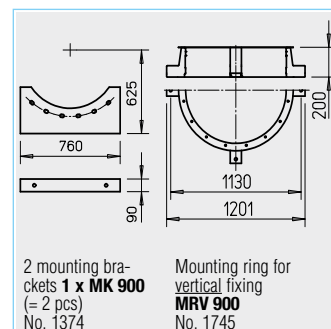


Accessories for AVD RK Description see page 175 ff.



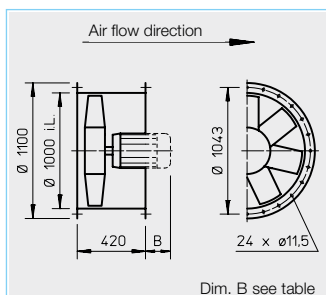
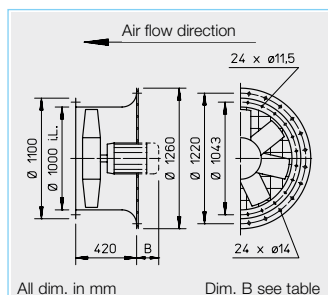
a) Motor-operated back-draught shutter see main Helios catalogue b) Types for explosion-proof fans see below

Electronic speed controller, stepless frequency inverter		Anti vibration mounts Nominal size	
Type	Ref. no.	Type	Ref. no.
FU-BS 8⁶⁾	5461	..2/.2	1453/1455
FU-BS 10⁶⁾	5462	..2/.2	1453/1455
FU-CS 18⁶⁾	5469	..2/.2	1453/1455
FU-CS 22⁶⁾	5470	..3/.3	1367/1366
—	—	..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/.3		1453/1366
not permitted	..3/.3		1367/1366



Information	Page	Other accessories	Page
Techn. description	16 f.	b) Access. for ex-proof fans	
Project planning information	3 ff.	Flanged flexible connector	
		Type STS 900 Ex	Ref no. 2512
Special design		Mounting accessories	172 ff.
Alternative voltage, protection class, air flow direction, higher air flow temperature, acid protection and impeller made from cast aluminium upon request.		Attenuators	179
		Gas warning systems, switch and control technology	182 ff.
		Frequency inverter	192 ff.

⁶⁾ Including full motor protection



Description for all types

Casing
 With motor bracket made from galvanised sheet steel.

Impeller
 High performance characteristics with 5 polymer blades, dynamically balanced.

Pitch angle
 The impeller blades are adjustable (except explosion-proof) for optimal coverage of the operating point. The adjustment is carried out ex works (in accordance with order) and fixed. The motor allocation takes place using the maximum power pursuant to the information in the table below. The specified position must not be exceeded.

Motor
 Totally enclosed motor IP55 or IP54. Maintenance-free and interference-free. Tropicalised winding with humidity protection impregnation.

Motor protection
 All types (except pole switching and explosion proof) have thermal contacts or PTC resistors and must be protected by the following full motor protection devices pursuant to the footnotes in the tables:

⁴⁾MSA, Ref. no. 1289
 (for PTC temperature sensors)

⁵⁾M4, Ref. no. 1571
 All other types must be protected by a conventional circuit breaker on site.

Electrical connection
 Terminal box protection class IP54 mounted to motor (type DK).

Guard
 According to DIN EN ISO 13857, hot-dip galvanised, as standard for AVD DK.

Speed control
 Some types are speed controllable voltage reduction, see column "Transformer speed controller". Controlled performance curves upon request. All types are speed controllable by frequency inverter (except pole-switching and explosion-proof). The planned use of a frequency inverter without sine filter must be stated when ordering. This requires a change of fan design and possible additional costs.

Reversed operation
 All types are reversible by means of a reversing switch. There is a performance reduction of 1/3 in the abnormal airflow direction.

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

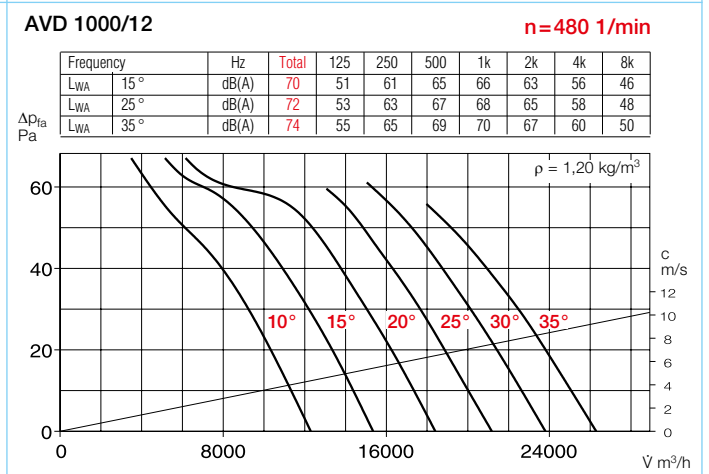
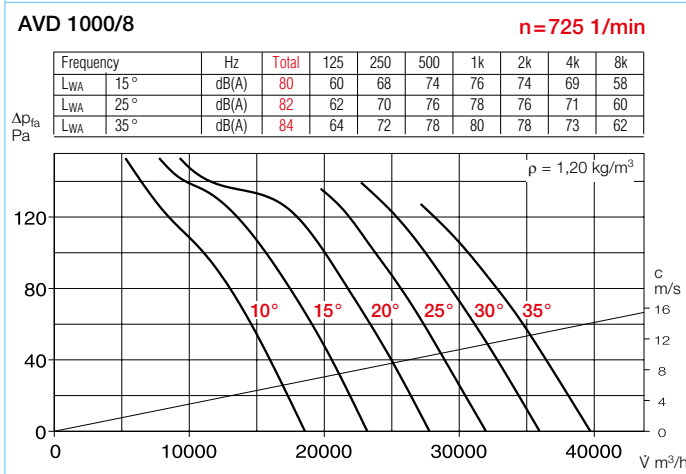
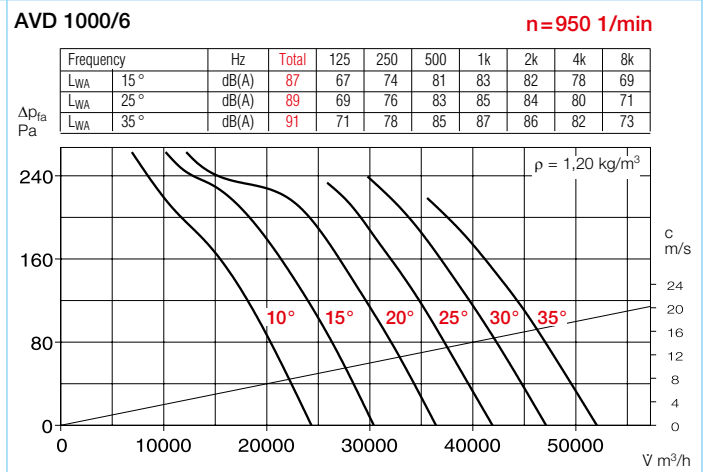
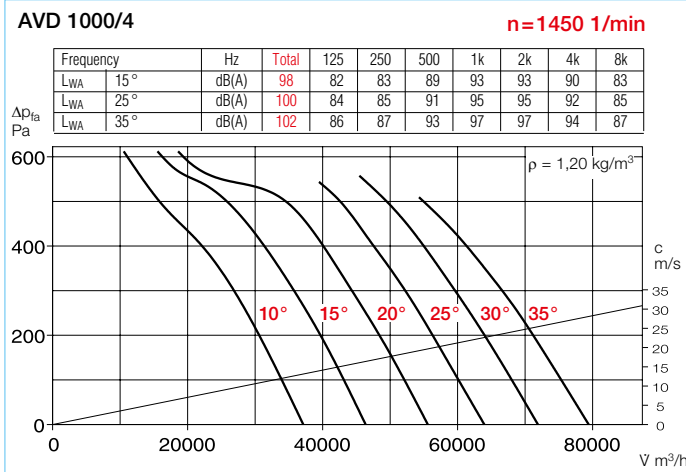
Dimensions
 Pole-switching and explosion-proof types may vary from adjacent information. Motor length may vary. Note protrusion dimension B.

Noise levels
 The sound power levels are indicated by means of frequency and as sum levels above the performance curves.

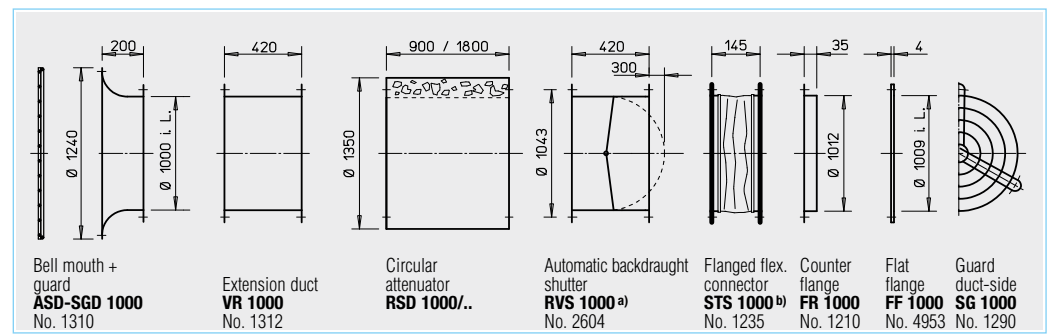
Speed min ⁻¹	Air flow volume (FID) V m ³ /h	Motor power (nom.) (output) kW	Nominal voltage V	Power consumption (*control) A	Max. pitch angle °	Wiring diagram No.	Max. air flow temp. +°C	Weight net* ca. kg	Fan type				Dim. B Motor protrusion mm	Transformer controller for 5 speed pole switch	
									AVD DK incl. guard	Ref. no.	AVD RK	Ref. no.		Type	Ref. no.
3 phase motor, 50 Hz, squirrel-cage rotor, protection class IP54															
950	39720	3.00*	400/690	6.2*	23	776	40	120	AVD DK 1000/6 ⁴⁾	5398	AVD RK 1000/6 ⁴⁾	5573	290	—	—
955	46320	4.00*	400/690	9.2*	29	776	40	127	AVD DK 1000/6 ⁴⁾	5399	AVD RK 1000/6 ⁴⁾	5574	325	—	—
955	52450	5.50*	400/690	12.4*	35	776	40	145	AVD DK 1000/6 ⁴⁾	5400	AVD RK 1000/6 ⁴⁾	5575	325	—	—
1470	61460	11.00*	400/690	20.0*	23	776	40	160	AVD DK 1000/4 ⁴⁾	5401	AVD RK 1000/4 ⁴⁾	5576	385	—	—
1470	71290	15.00*	400/690	26.0*	29	776(030)	40	195	AVD DK 1000/4 ⁴⁾	5402	AVD RK 1000/4 ⁴⁾	5577	430	—	—
1475	79440	18.50*	400/690	35.0*	34	776(030)	40	210	AVD DK 1000/4 ⁴⁾	5403	AVD RK 1000/4 ⁴⁾	5578	465	—	—
Pole-switching, 2 speed, 3 phase motor, 50 Hz, protection class IP54															
715/1440	27410/55210	2.2*/9.0*	400/400	7.2*/19.0*	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*	400/400	9.4*/25.0*	26	471	40	190	AVD DK 1000/8/4 ¹⁾	5408	AVD RK 1000/8/4 ¹⁾	5583	415	PDA 63	1283
Explosion-proof Ex e II, 3 phase motor, 50 Hz, protection class IP54, temperature class T1-T3															
960	43180	3.5*	400/690	7.4*	26	498	40	130	AVD DK 1000/6 Ex	5415	AVD RK 1000/6 Ex	5590	325	not permitted	—
960	52730	6.6*	400/690	13.4*	35	498	40	155	AVD DK 1000/6 Ex	5416	AVD RK 1000/6 Ex	5591	400	not permitted	—
1480	70160	15.0*	400/690	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*	400/690	33.0*	33	498	40	225	AVD DK 1000/4 Ex	5418	AVD RK 1000/4 Ex	5593	470	not permitted	—

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ Dahlander winding ²⁾ Separate winding ³⁾ Flush-mounted version see Switch product page ⁴⁾ and ⁵⁾ Full motor protection devices, see description "Motor protection"

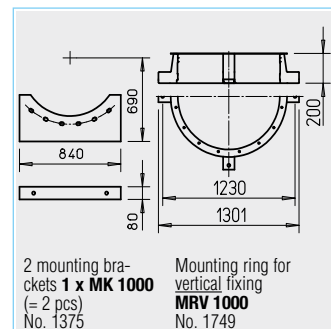


Accessories for AVD RK Description see page 175 ff.



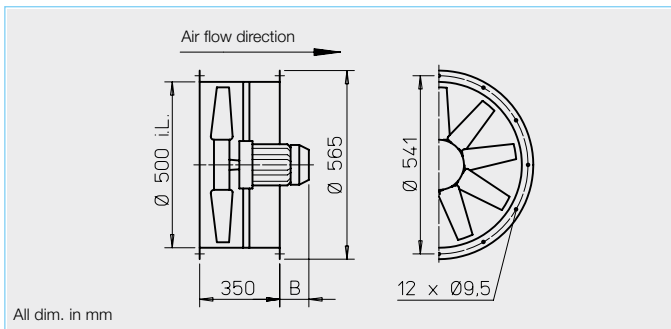
a) Motor-operated back-draught shutter see main Helios catalogue b) Types for explosion-proof fans see below

Electronic speed controller, stepless frequency inverter		Anti vibration mounts Nominal size	
Type	Ref. no.	Type	Ref. no.
FU-BS 8 ⁶⁾	5461	..2/..2	1453/1455
FU-BS 10 ⁶⁾	5462	..2/..2	1453/1455
FU-BS 10 ⁶⁾	5462	..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
—	—	..2/..2	1453/1455
—	—	..3/..3	1367/1366
—	—	..2/..2	1453/1455
—	—	..2/..2	1453/1455
—	—	..3/..3	1367/1366
—	—	..3/..3	1367/1366

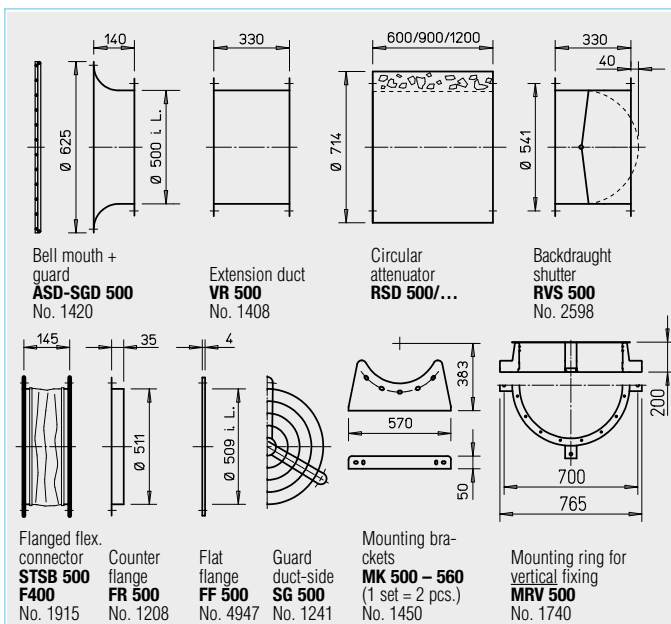
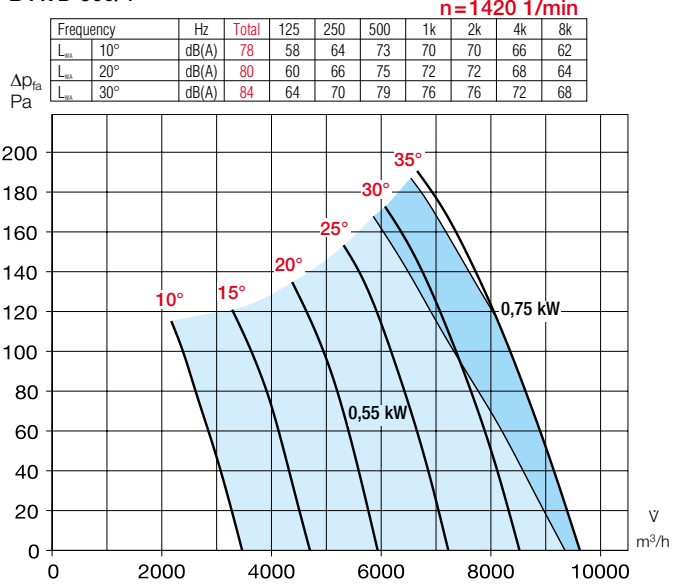


Information	Page	Other accessories	Page
Techn. description	16 f.	Access. for ex-proof fans	
Project planning information	3 ff.	Flanged flexible connector Type STS 1000 Ex	
Special design		Ref no. 2512	
Alternative voltage, protection class, air flow direction, higher air flow temperature, acid protection and impeller made from cast aluminium upon request.		Mounting accessories	172 ff.
		Attenuators	179
		Gas warning systems, switch and control technology	182 ff.
		Frequency inverter	192 ff.

⁶⁾ Including full motor protection



B AVD 500/4



■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. DIBt approval:
 F300: Z-78.11-144
 F400: Z-78.11-145
 Certificate of conformity:
 F300: 0036-CPR-RG05-03
 F400: 0036-CPR-RG05-06

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■ Accessory details Page

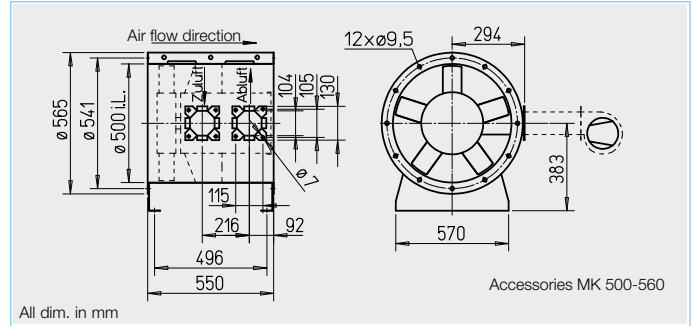
Mounting accessories 172 ff.
 Attenuators 180
 Gas warning systems, switch and control technology 182 ff.

Type	Ref no.	Speed	Air flow volume (FID)	Motor pow. nom. ("output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Pole switch surface-mounted		Anti-vibration mounts NG			
												Type	Ref no.	Pressure	Ref no.	Tensile	Ref no.
F300 3 phase motor, 50 Hz, protection class IP54		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg						
B AVD 500/4 0.55 kW F300	2315	1420	9360	0.55	400	1.23	*	776	40 / 300	41	36			SDD 1F	1942	SDZ 1F	1943
B AVD 500/4 0.75 kW F300	2316	1420	9360	0.75	400	1.62	*	776	40 / 300	41	38			SDD 1F	1942	SDZ 1F	1943
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 500/8/4 0.2/0.8 kW F300	2319	690/1415	4680/9360	0.2/0.8	400	0.88/1.99	*	471	40 / 300	41	39	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
F400 3 phase motor, 50 Hz, protection class IP54																	
B AVD 500/4 0.55 kW F400	2401	1420	9360	0.55	400	1.23	*	776	40 / 400	41	36			SDD 1F	1942	SDZ 1F	1943
B AVD 500/4 0.75 kW F400	2402	1420	9360	0.75	400	1.62	*	776	40 / 400	41	38			SDD 1F	1942	SDZ 1F	1943
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 500/8/4 0.2/0.8 kW F400	2403	690/1415	4680/9360	0.2/0.8	400	0.88/1.99	*	471	40 / 400	41	39	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

* The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).

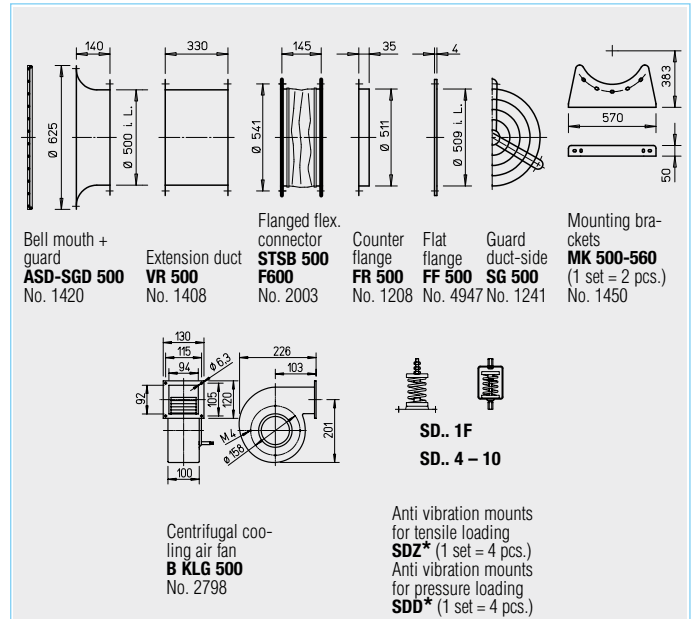
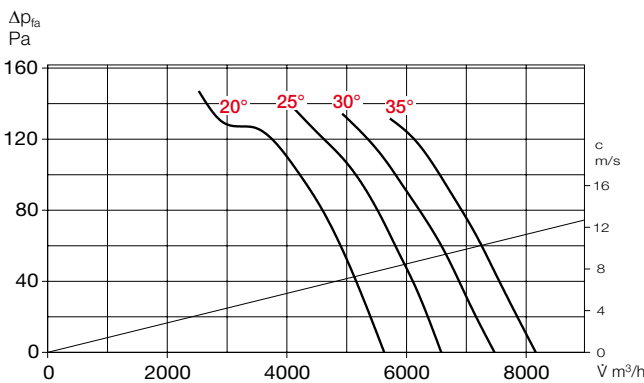
³⁾ Flush-mounted version see Switch product page.



B AVD 500/4

n=1400 1/min

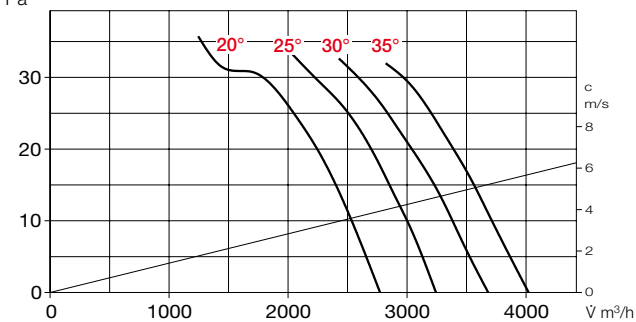
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	78	58	64	73	70	70	66	62
L _{WA} 20°	dB(A)	80	60	66	75	72	72	68	64
L _{WA} 30°	dB(A)	84	64	70	79	76	76	72	68



B AVD 500/8

n=690 1/min

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	58	36	51	53	49	46	40	34
L _{WA} 20°	dB(A)	61	39	54	56	52	49	43	37
L _{WA} 30°	dB(A)	64	42	57	59	55	52	46	40



■ Certification

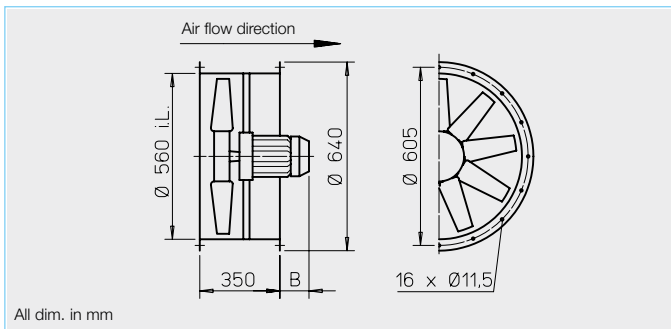
The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-146 Certificate of conformity: F600: 0036-CPR-RG05-04

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Techn. description	16 f.
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Mounting accessories	172 ff.
Centrif. cooling air fan	174
Gas warning systems, switch and control technology	182 f.

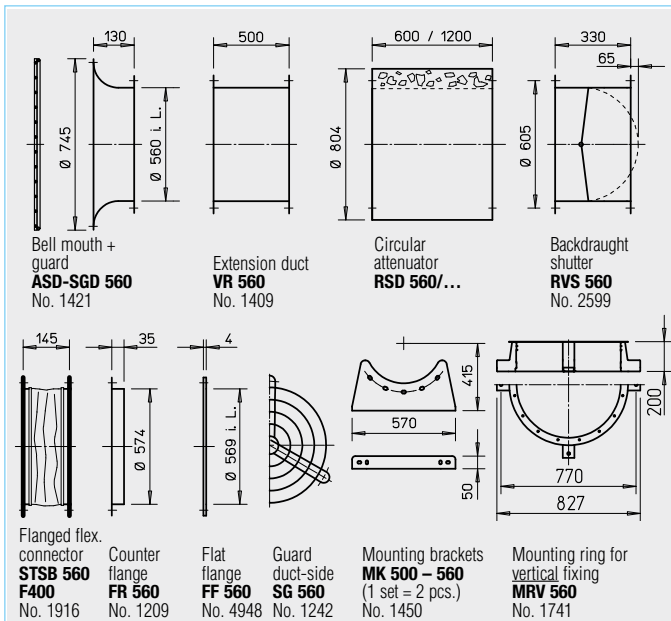
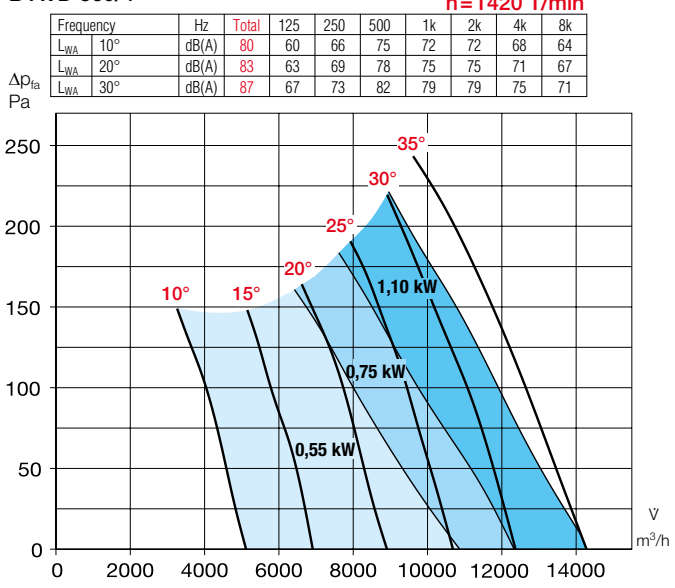
Type	Ref no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Pole switch surface-mounted		Anti-vibration mounts NG			
												Type	Ref no.	Pressure	Ref no.	Tensile	Ref no.
F600 3 phase motor, 50 Hz, protection class IP54																	
B AVD 500/4-20 F600	2804	1420	5660	0.55	400	1.23	20	776	40 / 600	—	64			SDD 1F	1942	SDZ 1F	1943
B AVD 500/4-25 F600	2805	1420	6630	0.55	400	1.23	25	776	40 / 600	—	64			SDD 1F	1942	SDZ 1F	1943
B AVD 500/4-30 F600	2806	1420	7520	0.55	400	1.23	30	776	40 / 600	—	64			SDD 1F	1942	SDZ 1F	1943
B AVD 500/4-35 F600	2807	1420	8280	0.55	400	1.23	35	776	40 / 600	—	64			SDD 1F	1942	SDZ 1F	1943
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
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⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.

³⁾ Flush-mounted version see Switch product page.



B AVD 560/4



■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-144 F400: Z-78.11-145 Certificate of conformity: F300: 0036-CPR-RG05-03 F400: 0036-CPR-RG05-06

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■ Accessory details Page

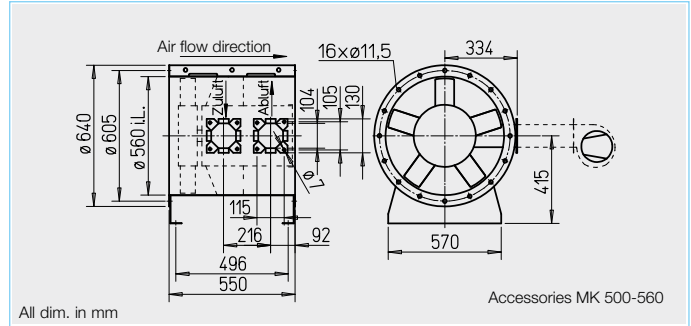
Mounting accessories 172 ff.
 Attenuators 180
 Gas warning systems, switch and control technology 182 ff

Type	Ref no.	Speed	Air flow volume (FID)	Motor pow. nom. (*output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Pole switch surface-mounted		Anti-vibration mounts NG			
												Type	Ref no.	Pressure	Tensile		
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref no.	Type	Ref no.		
F300 3 phase motor, 50 Hz, protection class IP54																	
B AVD 560/4 0.55 kW F300	2525	1420	10870	0.55	400	1.23	*	776	40 / 300	41	39			SDD 1F	1942	SDZ 1F	1943
B AVD 560/4 0.75 kW F300	2324	1420	12340	0.75	400	1.62	*	776	40 / 300	41	41			SDD 1F	1942	SDZ 1F	1943
B AVD 560/4 1.1 kW F300	2325	1455	14280	1.1	400	2.35	*	776	40 / 300	59	46			SDD 1F	1942	SDZ 1F	1943
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 560/8/4 0.15/0.6 kW F300	2526	710/1440	5570/11140	0.15/0.6	400	0.76/1.76	*	471	40 / 300	41	42	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0.2/0.8 kW F300	2327	690/1415	6380/12760	0.2/0.8	400	0.88/1.99	*	471	40 / 300	41	42	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0.3/1.2 kW F300	2328	705/1430	7140/14280	0.3/1.2	400	1.29/2.92	*	471	40 / 300	59	46	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0.4/1.6 kW F300	2329	700/1420	7140/14280	0.4/1.6	400	1.69/3.80	*	471	40 / 300	84	48	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
F400 3 phase motor, 50 Hz, protection class IP54																	
B AVD 560/4 0.55 kW F400	2556	1420	10870	0.55	400	1.23	*	776	40 / 400	41	39			SDD 1F	1942	SDZ 1F	1943
B AVD 560/4 0.75 kW F400	2406	1420	12340	0.75	400	1.62	*	776	40 / 400	41	41			SDD 1F	1942	SDZ 1F	1943
B AVD 560/4 1.1 kW F400	2407	1455	14280	1.1	400	2.35	*	776	40 / 400	59	46			SDD 1F	1942	SDZ 1F	1943
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 560/8/4 0.15/0.6 kW F400	2557	710/1440	5570/11140	0.15/0.6	400	0.76/1.76	*	471	40 / 400	41	42	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0.2/0.8 kW F400	2409	690/1415	6380/12760	0.2/0.8	400	0.88/1.99	*	471	40 / 400	41	42	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0.3/1.2 kW F400	2410	705/1430	7140/14280	0.3/1.2	400	1.29/2.92	*	471	40 / 400	59	46	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AVD 560/8/4 0.4/1.6 kW F400	2411	700/1420	7140/14280	0.4/1.6	400	1.69/3.80	*	471	40 / 400	84	48	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

* The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).

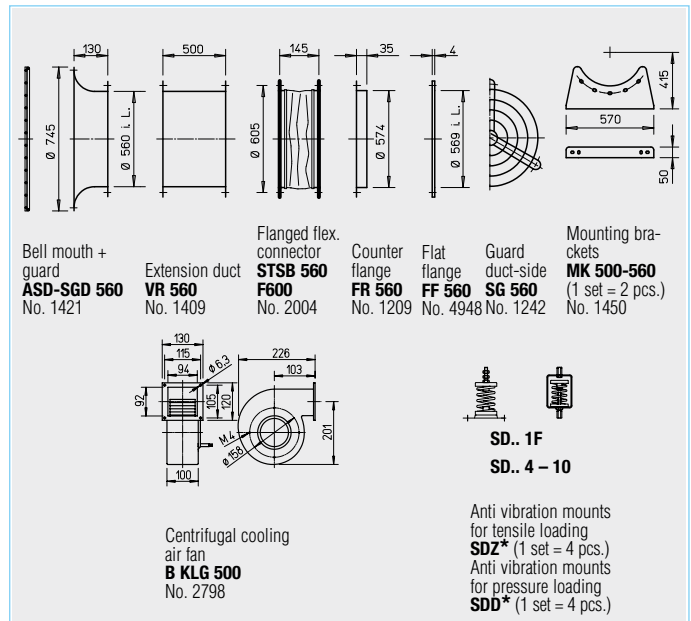
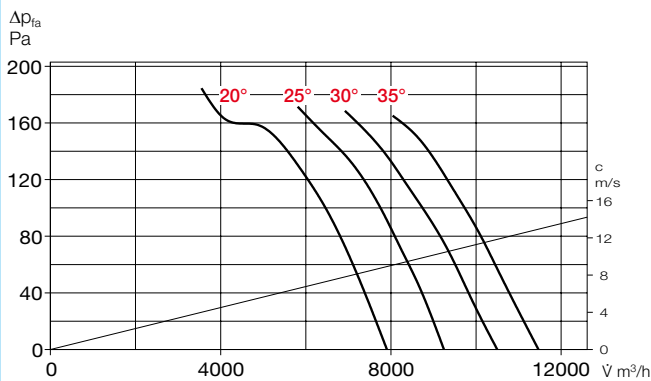
³⁾ Flush-mounted version see Switch product page.



B AVD 560/4

n=1400 1/min

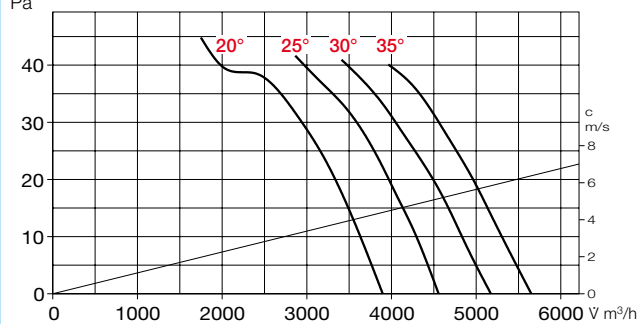
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	80	60	66	75	72	72	68	64
L _{WA} 20°	dB(A)	83	63	69	78	75	75	71	67
L _{WA} 30°	dB(A)	87	67	73	82	79	79	75	71



B AVD 560/8

n=690 1/min

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	65	43	58	60	56	53	47	41
L _{WA} 20°	dB(A)	68	46	61	63	59	56	50	44
L _{WA} 30°	dB(A)	71	49	64	66	62	59	53	47



■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3.
DIBt approval:
F600: Z-78.11-146
Certificate of conformity:
F600: 0036-CPR-RG05-04

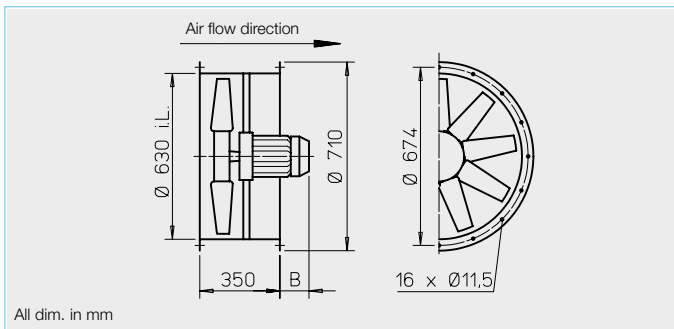
* Type assignment see table, last column

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Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Pole switch surface-mounted		Anti-vibration mounts NG			
												Type	Ref. no.	Pressure	Ref. no.	Tensile	Ref. no.
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
F600 3 phase motor, 50 Hz, protection class IP54																	
B AVD 560/4-20 F600	2819	1420	7960	0.55	400	1.23	20	776	40 / 600	—	71			SDD 1F	1942	SDZ 1F	1943
B AVD 560/4-25 F600	2820	1420	9310	0.75	400	1.62	25	776	40 / 600	—	74			SDD 1F	1942	SDZ 1F	1943
B AVD 560/4-30 F600	2821	1420	10570	0.75	400	1.62	30	776	40 / 600	—	74			SDD 1F	1942	SDZ 1F	1943
B AVD 560/4-35 F600	2822	1455	11630	1.10	400	2.35	35	776	40 / 600	—	79			SDD 1F	1942	SDZ 1F	1943
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
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⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.

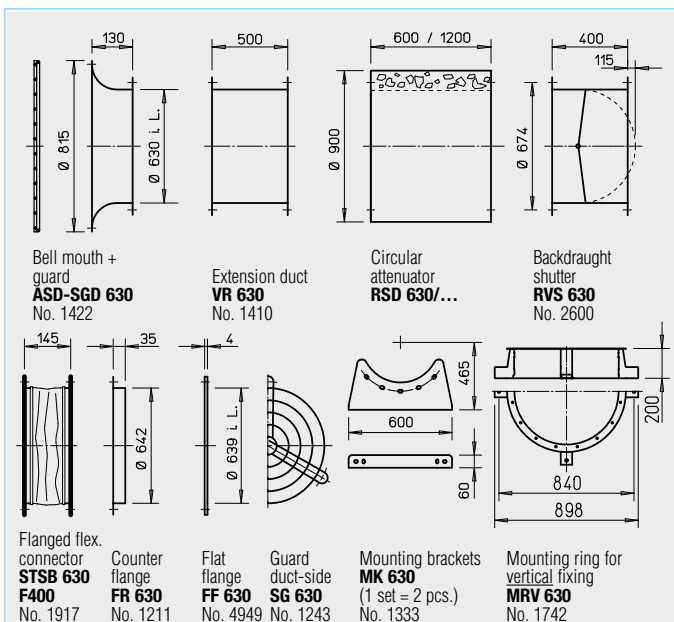
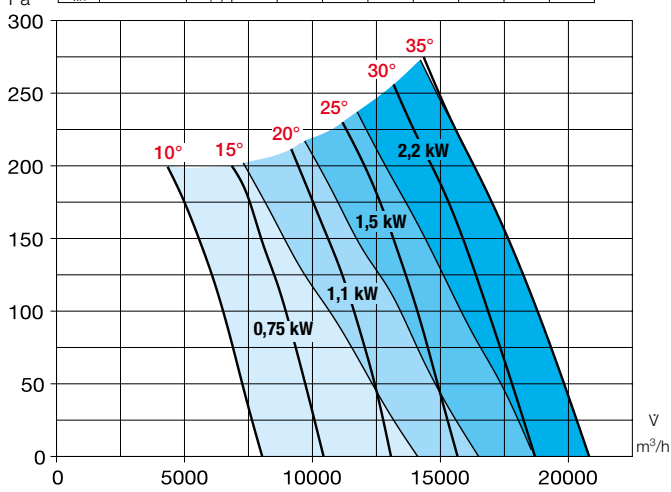
³⁾ Flush-mounted version see Switch product page.



B AVD 630/4

n=1420 1/min

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



■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-144 F400: Z-78.11-145 Certificate of conformity: F300: 0036-CPR-RG05-03 F400: 0036-CPR-RG05-06

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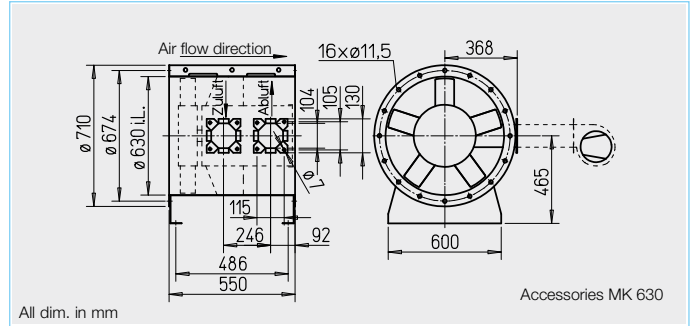
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Type	Ref no.	Speed	Air flow volume (FID)	Motor pow. nom. (*output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor prot-rusion	Weight net	Anti-vibration mounts NG						
												Pressure		Tensile				
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.	
F300 3 phase motor, 50 Hz, protection class IP54																		
B AVD 630/4 0.75 kW F300	2527	1420	14110	0.75	400	1.62	*	776	40 / 300	41	43		SDD 1F	1942	SDZ 1F	1943		
B AVD 630/4 1.1 kW F300	2335	1455	16500	1.1	400	2.35	*	776	40 / 300	59	48		SDD 1F	1942	SDZ 1F	1943		
B AVD 630/4 1.5 kW F300	2336	1450	18700	1.5	400	3.17	*	776	40 / 300	84	52		SDD 1F	1942	SDZ 1F	1943		
B AVD 630/4 2.2 kW F300	2337	1435	20810	2.2	400	4.56	*	776	40 / 300	121	61		SDD 1F	1942	SDZ 1F	1943		
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																		
B AVD 630/8/4 0.2/0.8 kW F300	2338	690/1415	7210/14420	0.2/0.8	400	0.88/1.99	*	471	40 / 300	41	44	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	
B AVD 630/8/4 0.3/1.2 kW F300	2339	705/1430	8510/17020	0.3/1.2	400	1.29/2.92	*	471	40 / 300	59	49	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	
B AVD 630/8/4 0.4/1.6 kW F300	2528	700/1420	9520/19040	0.4/1.6	400	1.69/3.80	*	471	40 / 300	84	50	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	
B AVD 630/8/4 0.55/2.2 kW F300	2340	700/1430	10410/20810	0.55/2.2	400	2.00/4.84	*	471	40 / 300	121	55	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	
F400 3 phase motor, 50 Hz, protection class IP54																		
B AVD 630/4 0.75 kW F400	2558	1420	14110	0.75	400	1.62	*	776	40 / 400	41	43		SDD 1F	1942	SDZ 1F	1943		
B AVD 630/4 1.1 kW F400	2417	1455	16500	1.1	400	2.35	*	776	40 / 400	59	48		SDD 1F	1942	SDZ 1F	1943		
B AVD 630/4 1.5 kW F400	2418	1450	18700	1.5	400	3.17	*	776	40 / 400	84	52		SDD 1F	1942	SDZ 1F	1943		
B AVD 630/4 2.2 kW F400	2419	1435	20810	2.2	400	4.56	*	776	40 / 400	121	61		SDD 1F	1942	SDZ 1F	1943		
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																		
B AVD 630/8/4 0.2/0.8 kW F400	2420	690/1415	7210/14420	0.2/0.8	400	0.88/1.99	*	471	40 / 400	41	44	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	
B AVD 630/8/4 0.3/1.2 kW F400	2421	705/1430	8510/17020	0.3/1.2	400	1.29/2.92	*	471	40 / 400	59	49	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	
B AVD 630/8/4 0.4/1.6 kW F400	2559	700/1420	9520/19040	0.4/1.6	400	1.69/3.80	*	471	40 / 400	84	50	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	
B AVD 630/8/4 0.55/2.2 kW F400	2422	700/1430	10410/20810	0.55/2.2	400	2.00/4.84	*	471	40 / 400	121	55	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	

* The flow volume and pressure increase information is required to determine the pitch angle.

1) For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).

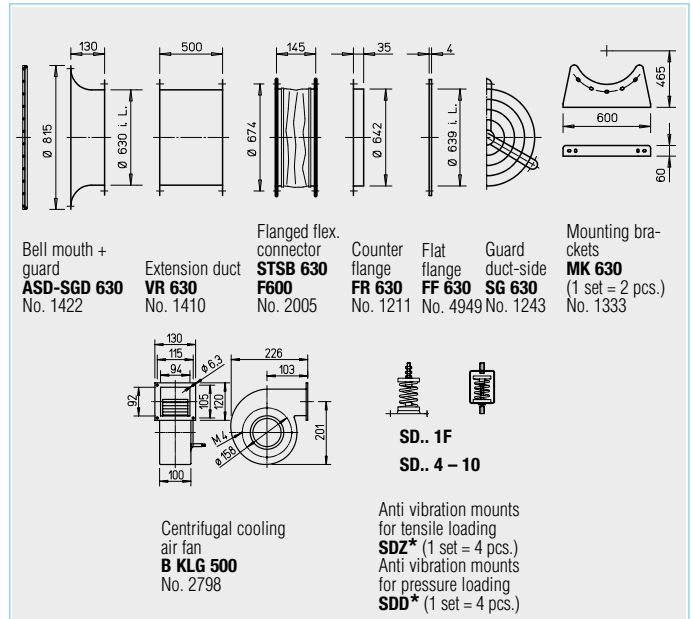
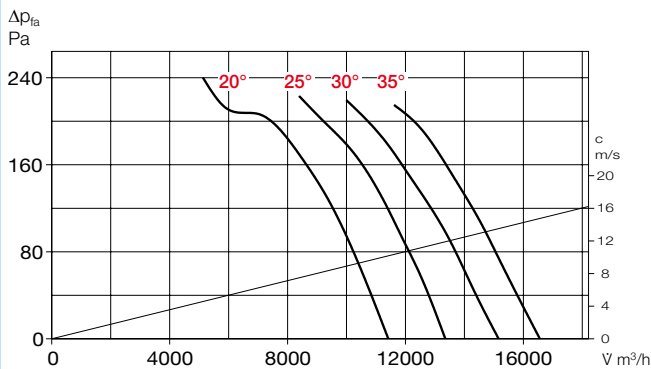
3) Flush-mounted version see Switch product page.



B AVD 630/4

n=1420 1/min

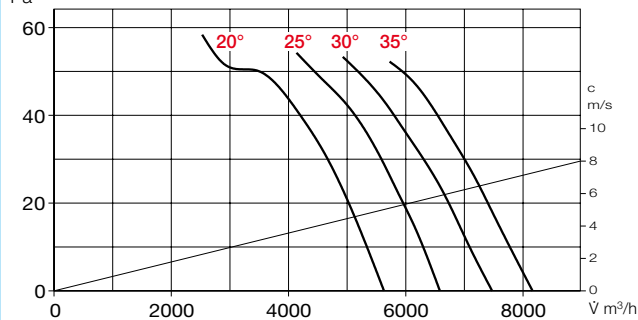
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	83	63	69	78	75	75	71	67
L _{WA} 20°	dB(A)	86	66	72	81	78	78	74	70
L _{WA} 30°	dB(A)	90	70	76	85	82	82	78	74



B AVD 630/8

n=700 1/min

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	68	46	61	63	59	56	50	44
L _{WA} 20°	dB(A)	71	49	64	66	62	59	53	47
L _{WA} 30°	dB(A)	74	52	67	69	65	62	56	50



■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-146 Certificate of conformity: F600: 0036-CPR-RG05-04

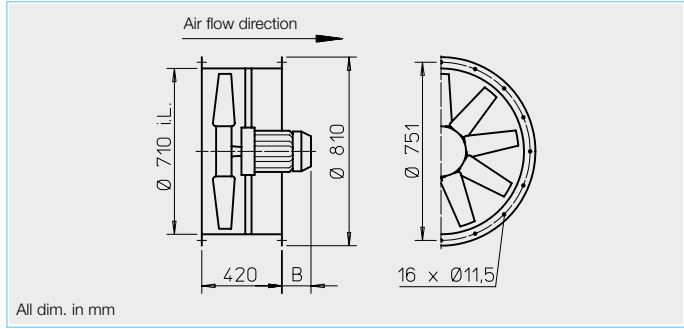
* Type assignment see table, last column

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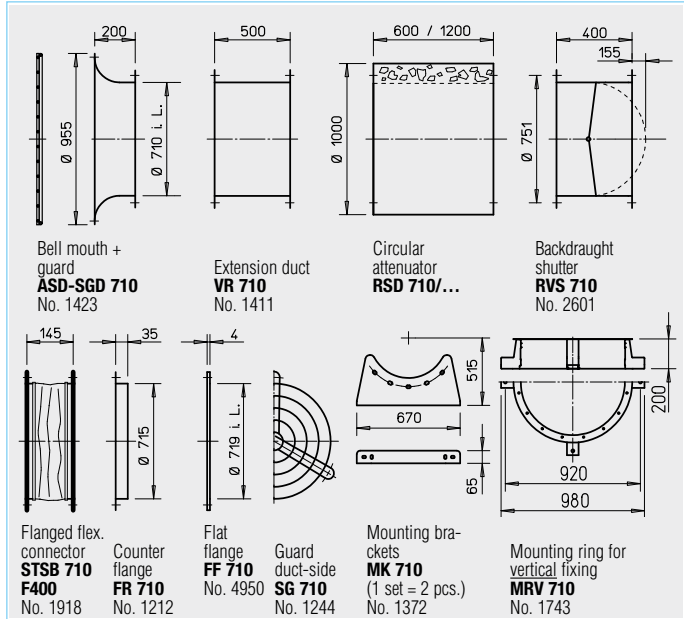
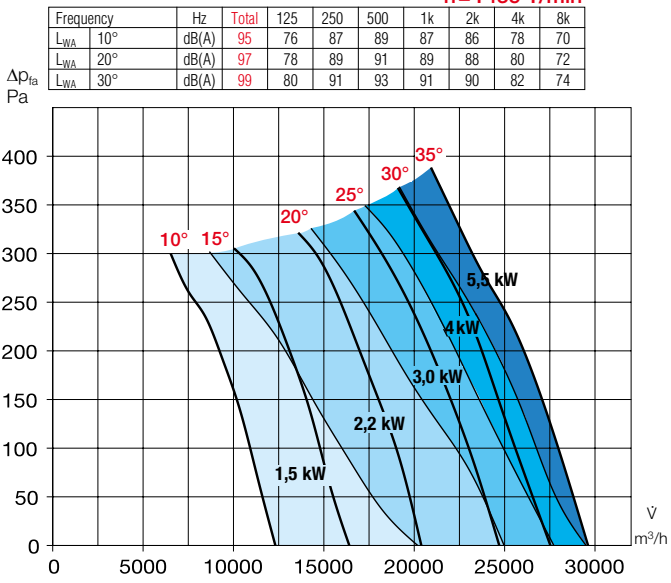
Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Anti-vibration mounts NG							
												Pressure		Tensile					
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.		
F600 3 phase motor, 50 Hz, protection class IP54																			
B AVD 630/4-20 F600	2834	1455	11580	1.10	400	2.35	20	776	40 / 600	—	86		SDD 4	1944	SDZ 4	1945			
B AVD 630/4-25 F600	2835	1455	13540	1.10	400	2.35	25	776	40 / 600	—	86		SDD 4	1944	SDZ 4	1945			
B AVD 630/4-30 F600	2836	1450	15370	1.50	400	3.17	30	776	40 / 600	—	89		SDD 4	1944	SDZ 4	1945			
B AVD 630/4-35 F600	2837	1435	16740	2.20	400	4.56	35	776	40 / 600	—	98		SDD 4	1944	SDZ 4	1945			
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																			
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⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.

³⁾ Flush-mounted version see Switch product page.



B AVD 710/4



Certification

DIN EN 12101-3 tested.
 DIBt approval:
 F300: Z-78.11-144
 F400: Z-78.11-145
 Certificate of conformity:
 F300: 0036-CPR-RG05-03
 F400: 0036-CPR-RG05-06

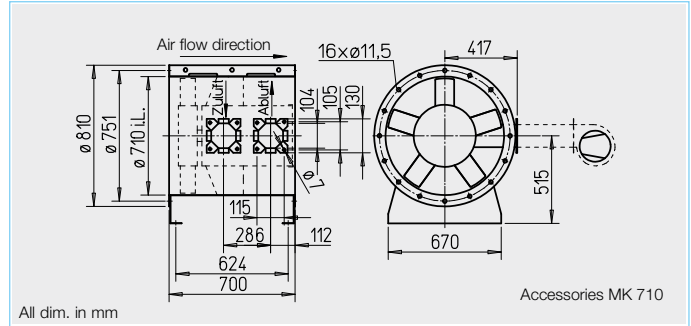
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Type	Ref no.	Speed	Air flow volume (FID)	Motor pow. nom. (*output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Pole switch surface-mounted		Anti-vibration mounts NG			
												Type	Ref no.	Pressure	Tensile		
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref no.	Type	Ref no.		
F300 3 phase motor, 50 Hz, protection class IP54																	
B AVD 710/4 1.5 kW F300	2529	1450	20190	1.5	400	3.17	*	776	40 / 300	49	67		SDD 1F	1942	SDZ 1F	1943	
B AVD 710/4 2.2 kW F300	2343	1435	24980	2.2	400	4.56	*	776	40 / 300	86	81		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 3.0 kW F300	2344	1440	27730	3.0	400	6.15	*	776	40 / 300	86	87		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 4.0 kW F300	2345	1450	29510	4.0	400	8.03	*	776	40 / 300	103	93		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 5.5 kW F300	2346	1460	29620	5.5	400	10.40	*	776	40 / 300	142	116		SDD 4	1944	SDZ 4	1945	
F300 Pole-switching, 2 speed (Dahlander winding YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 710/8/4 0.55/2.2 kW F300	2547	700/1430	12490/24980	0.55/2.2	400	2.00/4.84	*	471	40 / 300	86	76	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 0.7/2.8 kW F300	2347	690/1410	13460/26920	0.7/2.8	400	2.41/6.01	*	471	40 / 300	86	77	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 1.0/3.8 kW F300	2348	710/1440	14370/28740	1.0/3.8	400	2.75/8.26	*	471	40 / 300	103	94	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 1.3/5.0 kW F300	2349	730/1440	14810/29620	1.3/5.0	400	3.50/10.40	*	471	40 / 300	142	121	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
F400 3 phase motor, 50 Hz, protection class IP54																	
B AVD 710/4 1.5 kW F400	2569	1450	20190	1.5	400	3.17	*	776	40 / 400	49	67		SDD 1F	1942	SDZ 1F	1943	
B AVD 710/4 2.2 kW F400	2426	1435	24980	2.2	400	4.56	*	776	40 / 400	86	81		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 3.0 kW F400	2427	1440	27730	3.0	400	6.15	*	776	40 / 400	86	87		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 4.0 kW F400	2428	1450	29510	4.0	400	8.03	*	776	40 / 400	103	93		SDD 4	1944	SDZ 4	1945	
B AVD 710/4 5.5 kW F400	2429	1460	29620	5.5	400	10.4	*	776	40 / 400	142	116		SDD 4	1944	SDZ 4	1945	
F400 Pole-switching, 2 speed (Dahlander winding YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 710/8/4 0.55/2.2 kW F400	2572	700/1430	12490/24980	0.55/2.2	400	2.00/4.84	*	471	40 / 400	86	76	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 0.7/2.8 kW F400	2430	690/1410	13460/26920	0.7/2.8	400	2.41/6.01	*	471	40 / 400	86	77	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 1.0/3.8 kW F400	2431	710/1440	14370/28740	1.0/3.8	400	2.75/8.26	*	471	40 / 400	103	94	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AVD 710/8/4 1.3/5.0 kW F400	2432	730/1440	14810/29620	1.3/5.0	400	3.50/10.4	*	471	40 / 400	142	121	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945

** The flow volume and pressure increase information is required to determine the pitch angle.
¹⁾ For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).

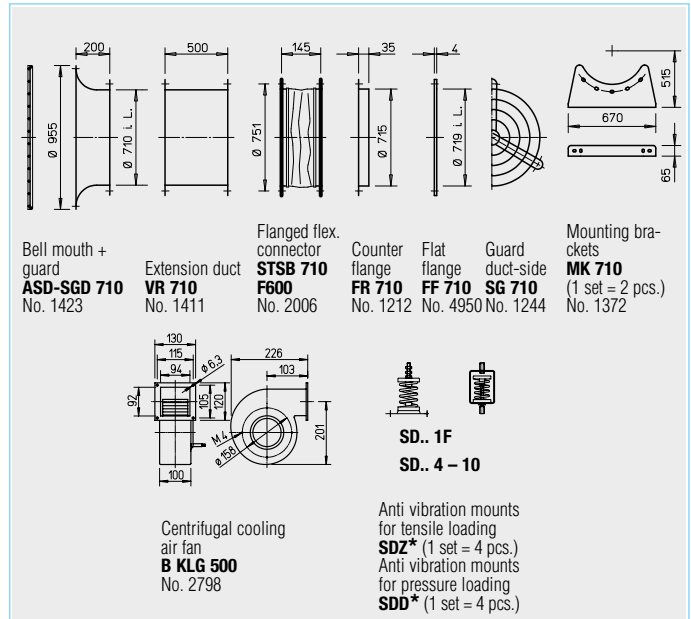
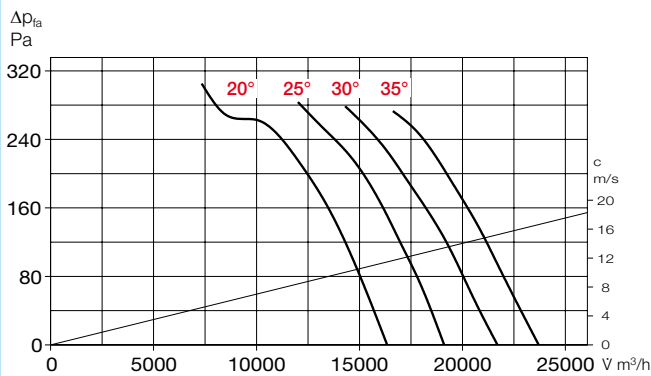
³⁾ Flush-mounted version see Switch product page.



B AVD 710/4

n=1420 1/min

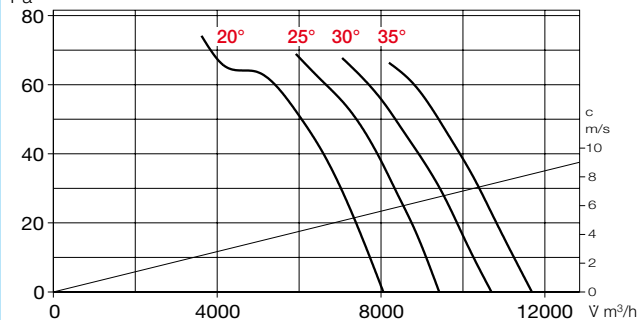
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	95	76	87	89	87	86	78	70
L _{WA} 20°	dB(A)	97	78	89	91	89	88	80	72
L _{WA} 30°	dB(A)	99	80	91	93	91	90	82	74



B AVD 710/8

n=700 1/min

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	75	57	64	69	69	65	63	61
L _{WA} 20°	dB(A)	77	59	66	71	71	67	65	63
L _{WA} 30°	dB(A)	78	60	67	72	72	68	66	64



■ Certification

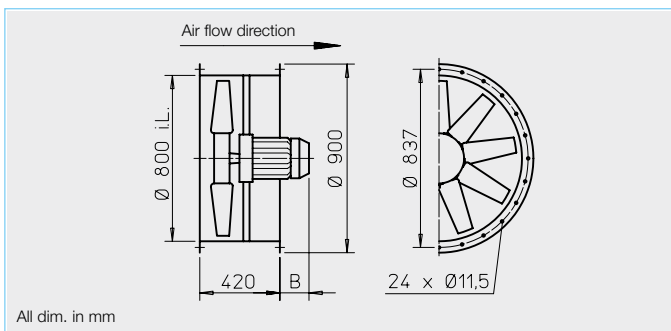
The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3.
DIBt approval:
F600: Z-78.11-146
Certificate of conformity:
F600: 0036-CPR-RG05-04

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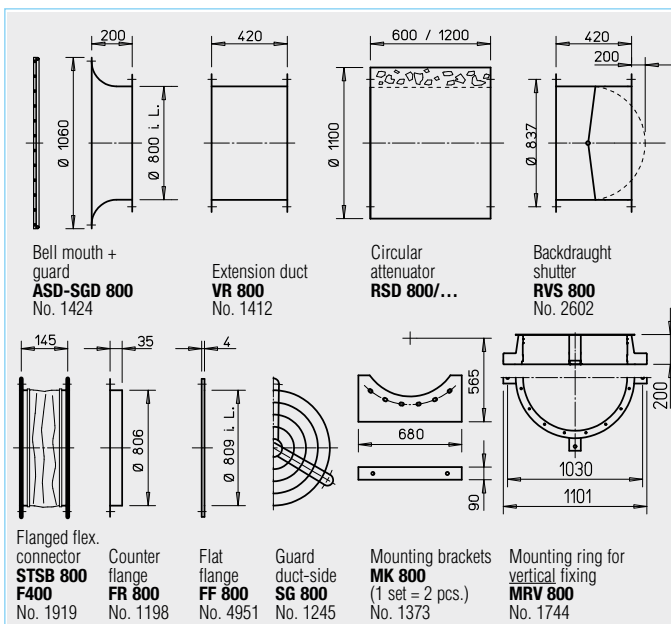
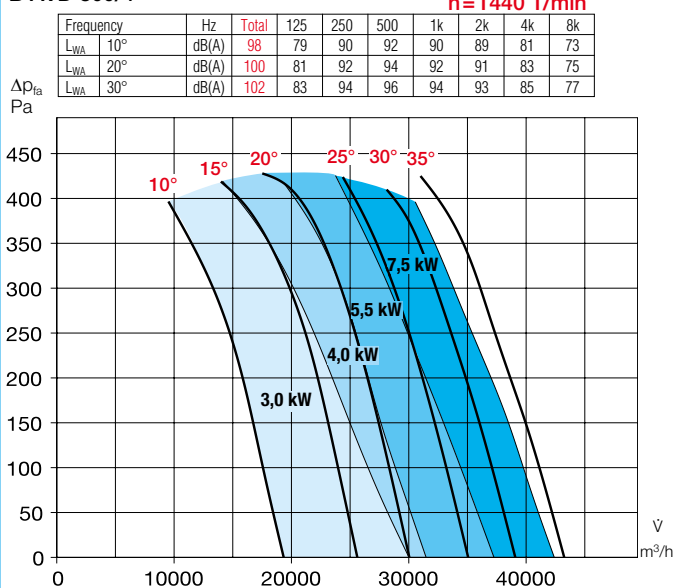
Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Anti-vibration mounts NG							
												Pressure		Tensile					
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.		
F600 3 phase motor, 50 Hz, protection class IP54																			
B AVD 710/4-20 F600	2845	1435	16400	2.20	400	4.56	20	776	40 / 600	—	130		SDD 4	1944	SDZ 4	1945			
B AVD 710/4-25 F600	2846	1435	19180	2.20	400	4.56	25	776	40 / 600	—	130		SDD 4	1944	SDZ 4	1945			
B AVD 710/4-30 F600	2847	1440	21700	3.00	400	6.15	30	776	40 / 600	—	133		SDD 4	1944	SDZ 4	1945			
B AVD 710/4-35 F600	2848	1450	24220	4.00	400	8.03	35	776	40 / 600	—	141		SDD 5	1924	SDZ 5	1925			
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																			
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 12 ³⁾	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 12 ³⁾	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 12 ³⁾	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 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		

¹⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.

³⁾ Flush-mounted version see Switch product page.



B AVD 800/4



■ Certification

The B AVD have been tested according to DIN EN 12101-3.
 DIBt approval:
 F300: Z-78.11-144
 F400: Z-78.11-145
 Certificate of conformity:
 F300: 0036-CPR-RG05-03
 F400: 0036-CPR-RG05-06

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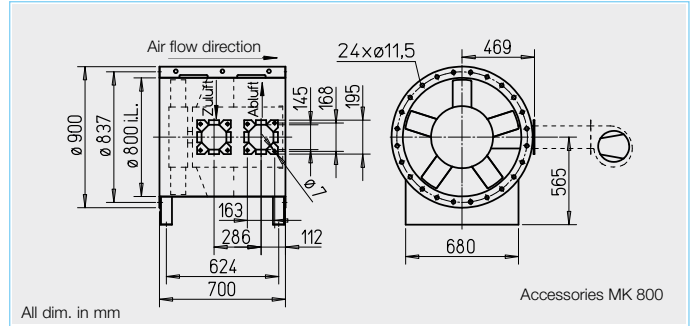
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Type	Ref no.	Speed	Air flow volume (FID)	Motor pow. nom. (*output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor prot-rusion	Weight net	Pole switch surface-mounted	Anti-vibration mounts NG						
													Pressure		Tensile				
		min ⁻¹	∑ m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.		
F300 3 phase motor, 50 Hz, protection class IP54																			
B AVD 800/4 3.0 kW F300	2352	1440	30020	3.0	400	6.15	*	776	40 / 300	211	89		SDD 5	1924	SDZ 5	1925			
B AVD 800/4 4.0 kW F300	2353	1450	31480	4.0	400	8.03	*	776	40 / 300	228	98		SDD 5	1924	SDZ 5	1925			
B AVD 800/4 5.5 kW F300	2354	1460	37300	5.5	400	10.40	*	776	40 / 300	267	126		SDD 5	1924	SDZ 5	1925			
B AVD 800/4 7.5 kW F300	2355	1460	42400	7.5	400	13.90	*	776	40 / 300	305	135		SDD 5	1924	SDZ 5	1925			
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																			
B AVD 800/8/4 0.7/2.8 kW F300	2356	690/1410	14440/28880	0.7/2.8	400	2.41/6.01	*	471	40 / 300	211	89	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 800/8/4 1.0/3.8 kW F300	2357	710/1440	15330/30660	1.0/3.8	400	2.75/8.26	*	471	40 / 300	228	103	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 800/8/4 1.3/5.0 kW F300	2358	730/1440	17960/35920	1.3/5.0	400	3.50/10.4	*	471	40 / 300	267	128	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 800/8/4 1.8/7.2 kW F300	2359	725/1430	20855/41710	1.8/7.2	400	4.64/14.4	*	471	40 / 300	305	140	PDA 25	5060	SDD 5	1924	SDZ 5	1925		
F400 3 phase motor, 50 Hz, protection class IP54																			
B AVD 800/4 3.0 kW F400	2436	1440	30020	3.0	400	6.15	*	776	40 / 400	211	89		SDD 5	1924	SDZ 5	1925			
B AVD 800/4 4.0 kW F400	2437	1450	31480	4.0	400	8.03	*	776	40 / 400	228	98		SDD 5	1924	SDZ 5	1925			
B AVD 800/4 5.5 kW F400	2438	1460	37300	5.5	400	10.40	*	776	40 / 400	267	126		SDD 5	1924	SDZ 5	1925			
B AVD 800/4 7.5 kW F400	2439	1460	42400	7.5	400	13.90	*	776	40 / 400	305	135		SDD 5	1924	SDZ 5	1925			
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																			
B AVD 800/8/4 0.7/2.8 kW F400	2440	690/1410	14440/28880	0.7/2.8	400	2.41/6.01	*	471	40 / 400	211	89	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 800/8/4 1.0/3.8 kW F400	2441	710/1440	15330/30660	1.0/3.8	400	2.75/8.26	*	471	40 / 400	228	103	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 800/8/4 1.3/5.0 kW F400	2442	730/1440	17960/35920	1.3/5.0	400	3.50/10.4	*	471	40 / 400	267	128	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 800/8/4 1.8/7.2 kW F400	2443	725/1430	20855/41710	1.8/7.2	400	4.64/14.4	*	471	40 / 400	305	140	PDA 25	5060	SDD 5	1924	SDZ 5	1925		

* The flow volume and pressure increase information is required to determine the pitch angle.

1) For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).

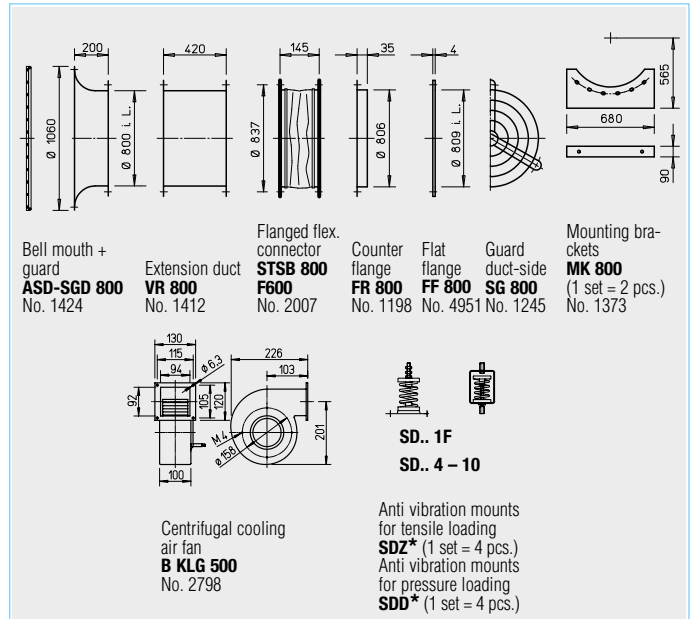
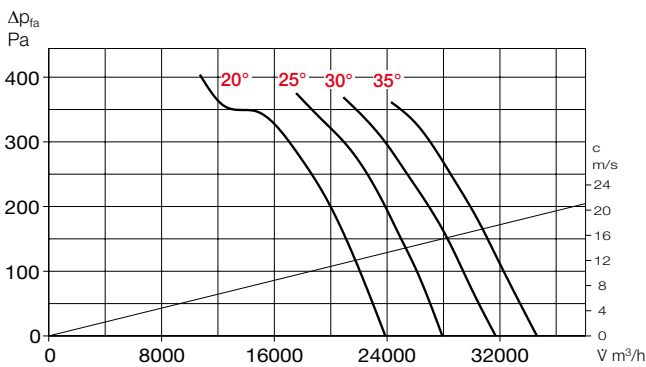
3) Flush-mounted version see Switch product page.



B AVD 800/4

n=1450 1/min

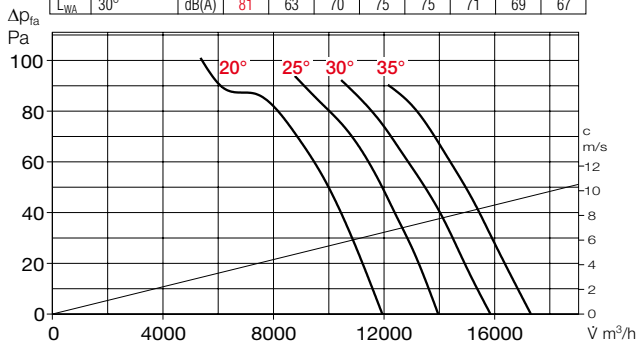
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	98	79	90	92	90	89	81	73
L _{WA} 20°	dB(A)	100	81	92	94	92	91	83	75
L _{WA} 30°	dB(A)	102	83	94	96	94	93	85	77



B AVD 800/8

n=725 1/min

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



■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-146 Certificate of conformity: F600: 0036-CPR-RG05-04

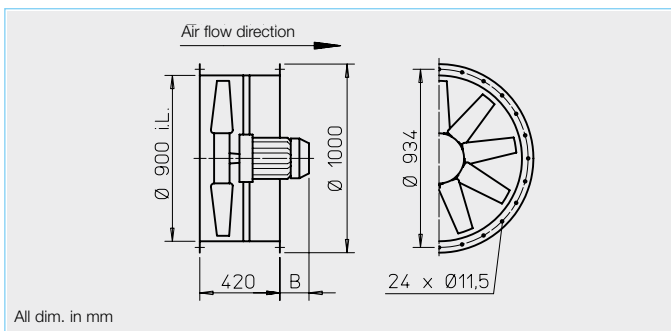
* Type assignment see table, last column

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Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Pole switch surface-mounted		Anti-vibration mounts NG			
												Type	Ref. no.	Pressure	Ref. no.	Tensile	Ref. no.
F600 3 phase motor, 50 Hz, protection class IP54																	
B AVD 800/4-20 F600	2855	1440	23380	3.00	400	6.15	20	776	40 / 600	—	151			SDD 5	1924	SDZ 5	1925
B AVD 800/4-25 F600	2856	1450	27720	4.00	400	8.03	25	776	40 / 600	—	160			SDD 5	1924	SDZ 5	1925
B AVD 800/4-30 F600	2857	1460	31920	5.50	400	10.40	30	776	40 / 600	—	181			SDD 5	1924	SDZ 5	1925
B AVD 800/4-35 F600	2858	1460	35010	7.50	400	13.90	35	776	40 / 600	—	190			SDD 5	1924	SDZ 5	1925
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
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 ³⁾	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 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AVD 800/8/4-30 F600	2861	730/1440	15960/31480	1.3/5.0	400	3.50/10.4	30	471	40 / 600	—	187	PDA 12 ³⁾	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⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.

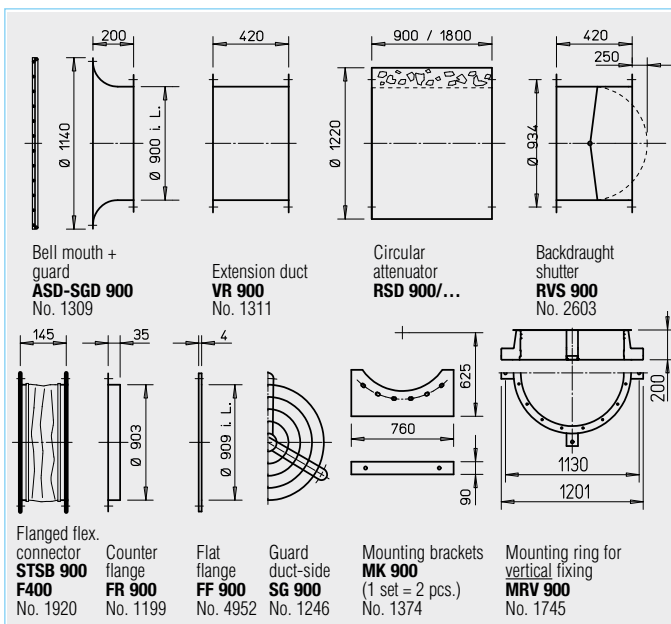
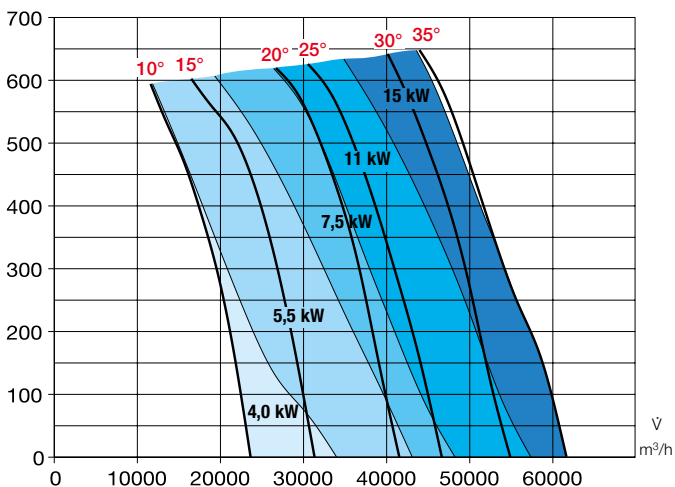
³⁾ Flush-mounted version see Switch product page.



B AVD 900/4

n=1450 1/min

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



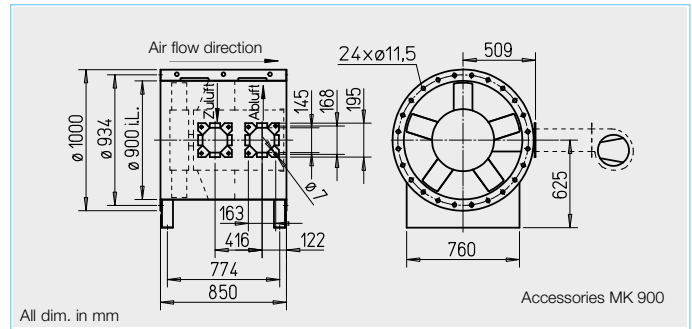
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Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor prot-rusion	Weight net	Pole switch surface-mounted	Anti-vibration mounts NG						
													Pressure		Tensile				
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.		
F300 3 phase motor, 50 Hz, protection class IP54																			
B AVD 900/4 4.0 kW F300	2548	1450	33990	4	400	8.03	*	776	40 / 300	228	124		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 5.5 kW F300	2362	1460	43100	5.5	400	10.4	*	776	40 / 300	267	145		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 7.5 kW F300	2363	1460	48240	7.5	400	13.9	*	776	40 / 300	305	156		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 11 kW F300	2364	1470	57380	11.0	400	20.9	*	776	40 / 300	383	206		SDD 6	1926	SDZ 6	1927			
B AVD 900/4 15 kW F300	2365	1465	61640	15.0	400	27.9	*	776	40 / 300	427	224		SDD 6	1926	SDZ 6	1927			
F300 Pole-switching, 2 speed (Dahlander winding/Y/Y), 3 phase motor 50 Hz, protection class IP54																			
B AVD 900/8/4 1.0/3.8 kW F300	2549	710/1440	16490/32980	1.0/3.8	400	2.75/8.26	*	471	40 / 300	228	125	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 900/8/4 1.3/5.0 kW F300	2366	730/1440	20760/41520	1.3/5.0	400	3.50/10.4	*	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	23390/46780	1.8/7.2	400	4.64/14.4	*	471	40 / 300	305	169	PDA 25	5060	SDD 6	1926	SDZ 6	1927		
B AVD 900/8/4 3.0/11 kW F300	2368	725/1455	28690/57380	3.0/11.0	400	7.0/21.0	*	471	40 / 300	383	208	PDA 25	5060	SDD 6	1926	SDZ 6	1927		
B AVD 900/8/4 4.3/17 kW F300	2369	730/1475	30820/61640	4.3/17.0	400	12.7/33.4	*	471	40 / 300	449	251	PDA 63	1283	SDD 6	1926	SDZ 6	1927		
F400 3 phase motor, 50 Hz, protection class IP54																			
B AVD 900/4 4.0 kW F400	2573	1440	33990	4	400	8.03	*	776	40 / 400	228	124		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 5.5 kW F400	2447	1460	43100	5.5	400	10.4	*	776	40 / 400	267	145		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 7.5 kW F400	2448	1460	48240	7.5	400	13.9	*	776	40 / 400	305	156		SDD 5	1924	SDZ 5	1925			
B AVD 900/4 11 kW F400	2449	1470	57380	11.0	400	20.9	*	776	40 / 400	383	206		SDD 6	1926	SDZ 6	1927			
B AVD 900/4 15 kW F400	2450	1465	61640	15.0	400	27.9	*	776	40 / 400	427	224		SDD 6	1926	SDZ 6	1927			
F400 Pole-switching, 2 speed (Dahlander winding/Y/Y), 3 phase motor 50 Hz, protection class IP54																			
B AVD 900/8/4 1.0/3.8 kW F400	2574	710/1440	16490/32980	1.0/3.8	400	2.75/8.26	*	471	40 / 400	228	125	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925		
B AVD 900/8/4 1.3/5.0 kW F400	2452	730/1440	20760/41520	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	23390/46780	1.8/7.2	400	4.64/14.4	*	471	40 / 400	305	169	PDA 25	5060	SDD 6	1926	SDZ 6	1927		
B AVD 900/8/4 3.0/11 kW F400	2454	725/1455	28690/57380	3.0/11.0	400	7.0/21.0	*	471	40 / 400	383	208	PDA 25	5060	SDD 6	1926	SDZ 6	1927		
B AVD 900/8/4 4.3/17 kW F400	2455	730/1475	30820/61640	4.3/17.0	400	12.7/33.4	*	471	40 / 400	449	251	PDA 63	1283	SDD 6	1926	SDZ 6	1927		

* The flow volume and pressure increase information is required to determine the pitch angle.

1) For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).

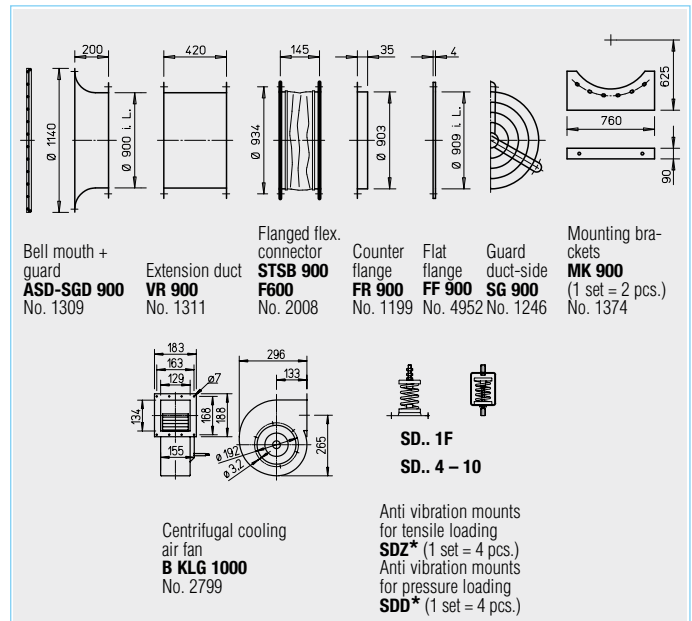
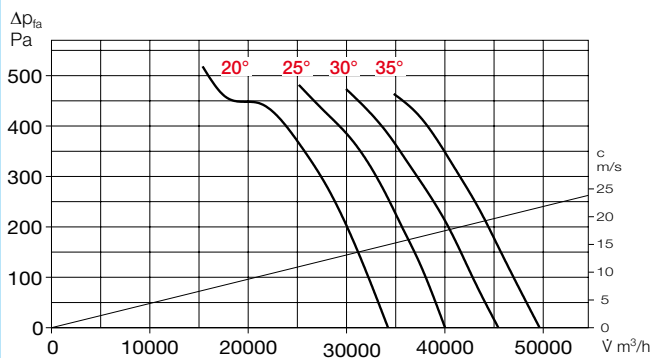
3) Flush-mounted version see Switch product page.



B AVD 900/4

n=1460 1/min

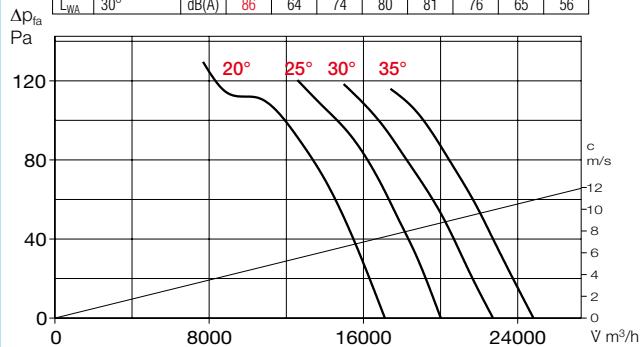
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	98	70	84	90	94	92	84	76
L _{WA} 20°	dB(A)	100	72	86	92	96	94	86	78
L _{WA} 30°	dB(A)	104	76	90	96	100	98	90	82



B AVD 900/8

n=730 1/min

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



■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-146 Certificate of conformity: F600: 0036-CPR-RG05-04

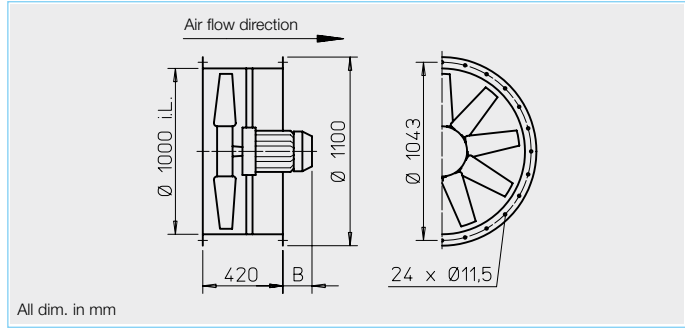
* Type assignment see table, last column

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Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Pole switch surface-mounted		Anti-vibration mounts NG			
												Type	Ref. no.	Pressure	Ref. no.	Tensile	Ref. no.
F600 3 phase motor, 50 Hz, protection class IP54		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
B AVD 900/4-20 F600	2865	1460	34220	5.50	400	10.40	20	776	40 / 600	—	210			SDD 5	1924	SDZ 5	1925
B AVD 900/4-25 F600	2866	1460	39880	7.50	400	13.90	25	776	40 / 600	—	219			SDD 6	1926	SDZ 6	1927
B AVD 900/4-30 F600	2867	1470	45750	11.0	400	20.90	30	776	40 / 600	—	252			SDD 6	1926	SDZ 6	1927
B AVD 900/4-35 F600	2868	1465	50180	15.0	400	27.90	35	776	40 / 600	—	272			SDD 6	1926	SDZ 6	1927
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
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 12³⁾	5081	SDD 6	1926	SDZ 6	1927
B AVD 900/8/4-25 F600	2870	725/1430	19870/39200	1.8/7.2	400	4.64/14.4	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

¹⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.

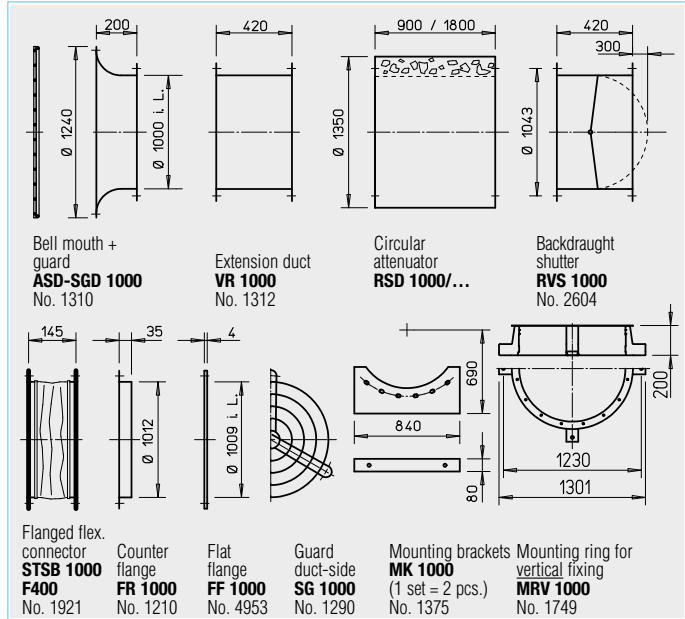
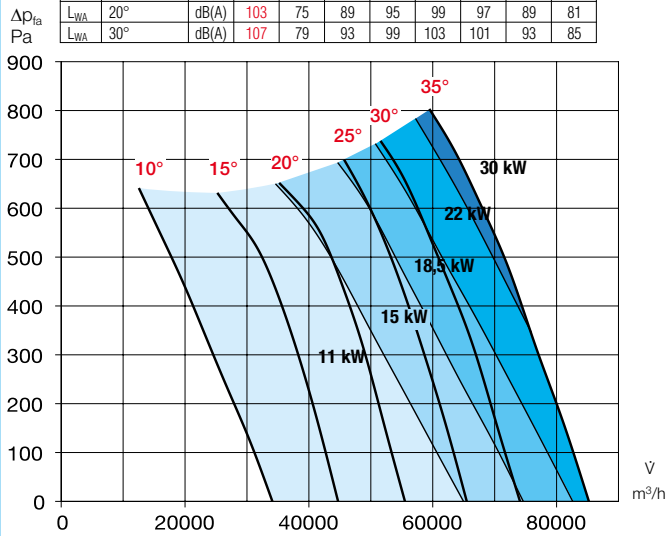
³⁾ Flush-mounted version see Switch product page.



B AVD 1000/4

n=1465 1/min

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



Certification

DIBt approval:
 F300: Z-78.11-144
 F400: Z-78.11-145
 Certificate of conformity:
 F300: 0036-CPR-RG05-03
 F400: 0036-CPR-RG05-06

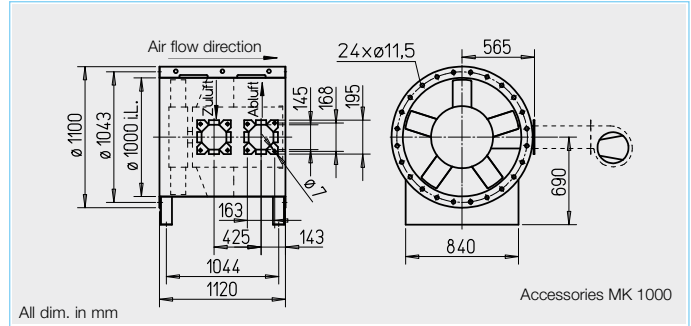
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Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. ("output")	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor prot-rusion	Weight net	Pole switch surface-mounted	Anti-vibration mounts NG					
													Pressure	Tensile	Pressure	Tensile		
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.	
F300 3 phase motor, 50 Hz, protection class IP54																		
B AVD 1000/4 11 kW F300	2372	1470	64980	11.0	400	20.9	*	776	40 / 300	383	206		SDD 6	1926	SDZ 6	1927		
B AVD 1000/4 15 kW F300	2373	1465	74630	15.0	400	27.9	*	776	40 / 300	427	228		SDD 6	1926	SDZ 6	1927		
B AVD 1000/4 18.5 kW F300	2550	1470	82610	18.5	400	35.1	*	776	40 / 300	449	261		SDD 6	1926	SDZ 6	1927		
B AVD 1000/4 22 kW F300	2375	1470	85220	22.0	400	41.0	*	776	40 / 300	487	278		SDD 6	1926	SDZ 6	1927		
B AVD 1000/4 30 kW F300	2376	1480	85220	30.0	400	57.1	*	776	40 / 300	552	322		SDD 7	1928	SDZ 7	1929		
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																		
B AVD 1000/8/4 3.0/11 kW F300	2377	725/1455	32490/64980	3.0/11.0	400	7.0/21.0	*	471	40 / 300	383	205	PDA 25	5060	SDD 6	1926	SDZ 6	1927	
B AVD 1000/8/4 4.3/17 kW F300	2378	730/1475	40190/80380	4.3/17.0	400	12.7/33.4	*	471	40 / 300	449	255	PDA 63	1283	SDD 6	1926	SDZ 6	1927	
B AVD 1000/8/4 5.0/20 kW F300	2379	730/1470	42610/85220	5.0/20.0	400	14.1/38.6	*	471	40 / 300	487	268	PDA 63	1283	SDD 6	1926	SDZ 6	1927	
B AVD 1000/8/4 6.5/28 kW F300	2380	735/1480	42610/85220	6.5/28.0	400	18.0/52.0	*	471	40 / 300	552	347	PDA 63	1283	SDD 7	1928	SDZ 7	1929	
F400 3 phase motor, 50 Hz, protection class IP54																		
B AVD 1000/4 11 kW F400	2458	1470	64980	11.0	400	20.9	*	776	40 / 400	383	206		SDD 6	1926	SDZ 6	1927		
B AVD 1000/4 15 kW F400	2459	1465	74630	15.0	400	27.9	*	776	40 / 400	427	228		SDD 6	1926	SDZ 6	1927		
B AVD 1000/4 18.5 kW F400	2611	1470	82610	18.5	400	35.1	*	776	40 / 400	449	261		SDD 6	1926	SDZ 6	1927		
B AVD 1000/4 22 kW F400	2461	1470	85220	22.0	400	41.0	*	776	40 / 400	487	276		SDD 6	1926	SDZ 6	1927		
B AVD 1000/4 30 kW F400	2462	1480	85220	30.0	400	57.1	*	776	40 / 400	552	322		SDD 7	1928	SDZ 7	1929		
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																		
B AVD 1000/8/4 3.0/11 kW F400	2464	725/1455	32490/64980	3.0/11.0	400	7.0/21.0	*	471	40 / 400	383	205	PDA 25	5060	SDD 6	1926	SDZ 6	1927	
B AVD 1000/8/4 4.3/17 kW F400	2465	730/1475	40190/80380	4.3/17.0	400	12.7/33.4	*	471	40 / 400	449	255	PDA 63	1283	SDD 6	1926	SDZ 6	1927	
B AVD 1000/8/4 5.0/20 kW F400	2466	730/1470	42610/85220	5.0/20.0	400	14.1/38.6	*	471	40 / 400	487	268	PDA 63	1283	SDD 6	1926	SDZ 6	1927	
B AVD 1000/8/4 6.5/28 kW F400	2467	735/1480	42610/85220	6.5/28.0	400	18.0/52.0	*	471	40 / 400	552	347	PDA 63	1283	SDD 7	1928	SDZ 7	1929	

* The flow volume and pressure increase information is required to determine the pitch angle.

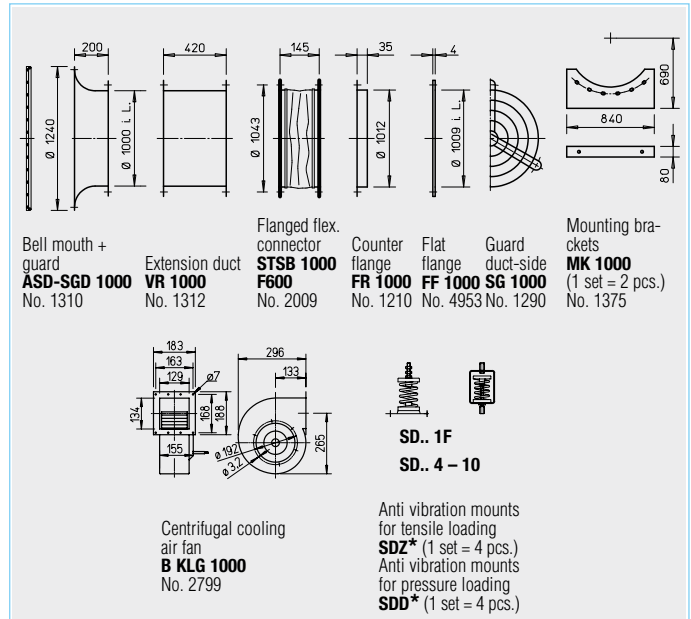
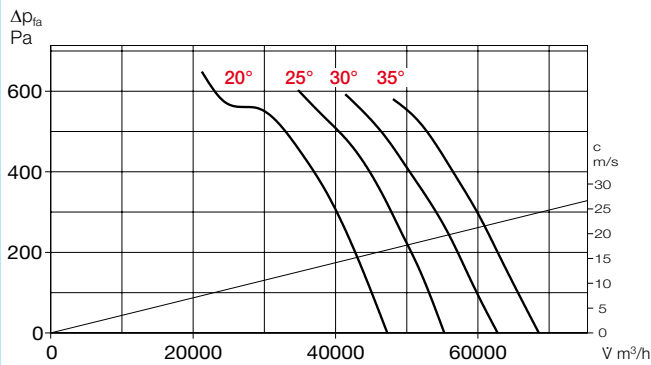
¹⁾ For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).



B AVD 1000/4

n=1470 1/min

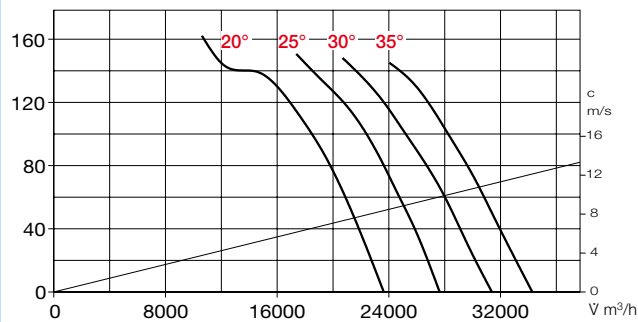
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	101	73	87	93	97	95	87	79
L _{WA} 20°	dB(A)	103	75	89	95	99	97	89	81
L _{WA} 30°	dB(A)	107	79	93	99	103	101	93	85



B AVD 1000/8

n=735 1/min

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



■ Certification

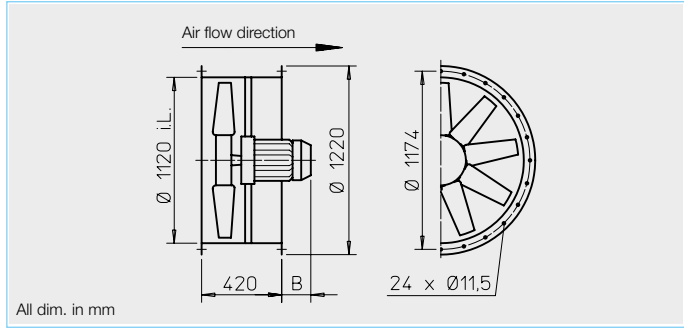
The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3.
DIBt approval:
F600: Z-78.11-146
Certificate of conformity:
F600: 0036-CPR-RG05-04

* Type assignment see table, last column

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Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Anti-vibration mounts NG							
												Pressure		Tensile					
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.		
F600 3 phase motor, 50 Hz, protection class IP54																			
B AVD 1000/4-20 F600	2875	1470	47270	11.0	400	20.90	20	776	40 / 600	—	314		SDD 6	1926	SDZ 6	1927			
B AVD 1000/4-25 F600	2876	1465	55090	15.0	400	27.90	25	776	40 / 600	—	334		SDD 6	1926	SDZ 6	1927			
B AVD 1000/4-30 F600	2877	1465	62550	15.0	400	27.90	30	776	40 / 600	—	334		SDD 6	1926	SDZ 6	1927			
B AVD 1000/4-35 F600	2878	1470	68840	22.0	400	41.00	35	776	40 / 600	—	395		SDD 6	1926	SDZ 6	1927			
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																			
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	27450/55460	4.3/17.0	400	12.7/33.4	25	471	40 / 600	—	371	PDA 63	1283	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 63	1283	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		

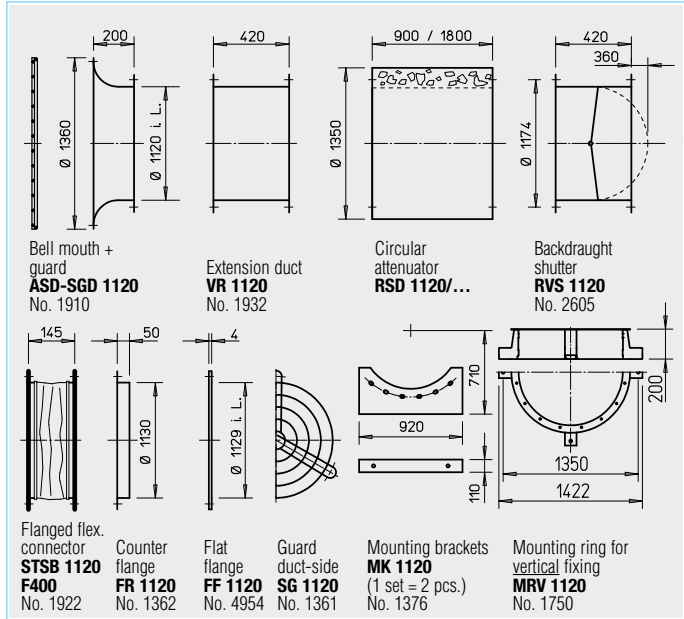
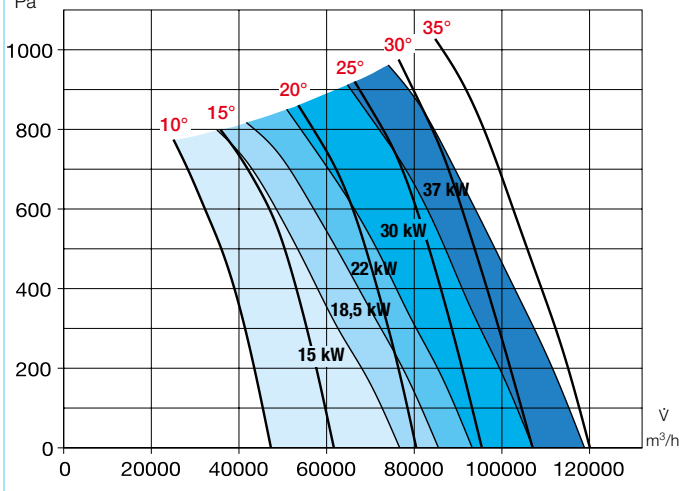
¹⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.



B AVD 1120/4

n = 1465 1/min

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



■ Certification

DIBt approval:
 F300: Z-78.11-144
 F400: Z-78.11-145
 Certificate of conformity:
 F300: 0036-CPR-RG05-03
 F400: 0036-CPR-RG05-06

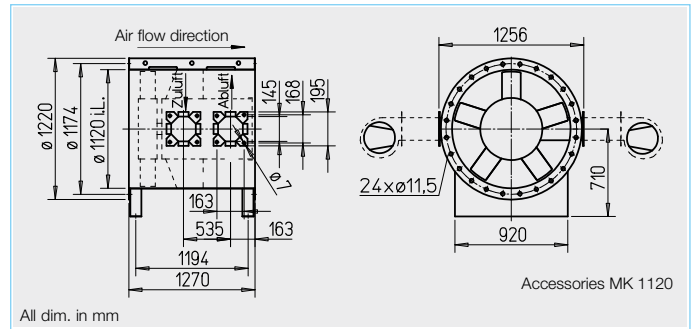
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Type	Ref. no.	Speed min ⁻¹	Air flow volume (FID) V m ³ /h	Motor pow. nom. ("output") kW	Nominal voltage V	Power consum. nom. A	Pitch angle °	Wiring diagram No.	Max. air flow temp. ¹⁾ +°C	Dim. B Motor prot- rusion mm	Weight net ca. kg	Pole switch surface-mounted Type	Anti-vibration mounts NG				
													Pressure		Tensile		
												Type	Ref. no.	Type	Ref. no.		
F300 3 phase motor, 50 Hz, protection class IP54																	
B AVD 1120/4 15 kW F300	2383	1465	76680	15.0	400	27.9	*	776	40 / 300	427	258		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 18.5 kW F300	2551	1470	85520	18.5	400	35.1	*	776	40 / 300	449	291		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 22 kW F300	2385	1470	93230	22.0	400	41.0	*	776	40 / 300	487	316		SDD 7	1928	SDZ 7	1929	
B AVD 1120/4 30 kW F300	2386	1480	107110	30.0	400	57.1	*	776	40 / 300	552	352		SDD 7	1928	SDZ 7	1929	
B AVD 1120/4 37 kW F300	2387	1480	118850	37.0	400	66.8	*	776	40 / 300	641	491		SDD 8	1930	SDZ 8	1931	
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 1120/8/4 4.3/17 kW F300	2388	730/1475	41550/83100	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	45640/91280	5.0/20.0	400	14.1/38.6	*	471	40 / 300	487	300	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AVD 1120/8/4 6.5/28 kW F300	2390	735/1480	51640/103280	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	59430/118860	9.2/37.0	400	25.4/74.2	*	471	40 / 300	604	486	PDA 115	1352	SDD 8	1930	SDZ 8	1931
F400 3 phase motor, 50 Hz, protection class IP54																	
B AVD 1120/4 15 kW F400	2470	1465	76680	15.0	400	27.9	*	776	40 / 400	427	258		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 18.5 kW F400	2612	1470	85520	18.5	400	35.1	*	776	40 / 400	449	291		SDD 6	1926	SDZ 6	1927	
B AVD 1120/4 22 kW F400	2472	1470	93230	22.0	400	41.0	*	776	40 / 400	487	316		SDD 7	1928	SDZ 7	1929	
B AVD 1120/4 30 kW F400	2473	1480	107110	30.0	400	57.1	*	776	40 / 400	552	352		SDD 7	1928	SDZ 7	1929	
B AVD 1120/4 37 kW F400	2474	1480	118850	37.0	400	66.8	*	776	40 / 400	641	491		SDD 8	1930	SDZ 8	1931	
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 1120/8/4 4.3/17 kW F400	2475	730/1475	41550/83100	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	45640/91280	5.0/20.0	400	14.1/38.6	*	471	40 / 400	487	300	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AVD 1120/8/4 6.5/28 kW F400	2477	735/1480	51640/103280	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	59430/118860	9.2/37.0	400	25.4/74.2	*	471	40 / 400	604	486	PDA 115	1352	SDD 8	1930	SDZ 8	1931

* The flow volume and pressure increase information is required to determine the pitch angle.

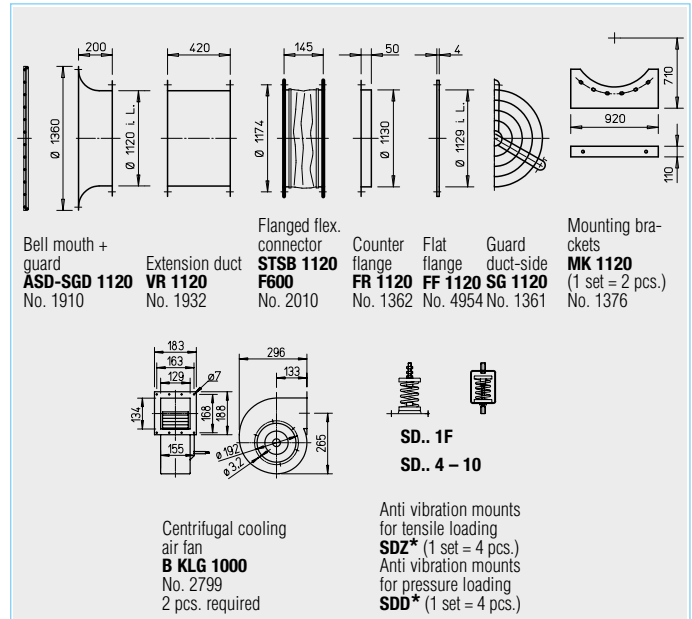
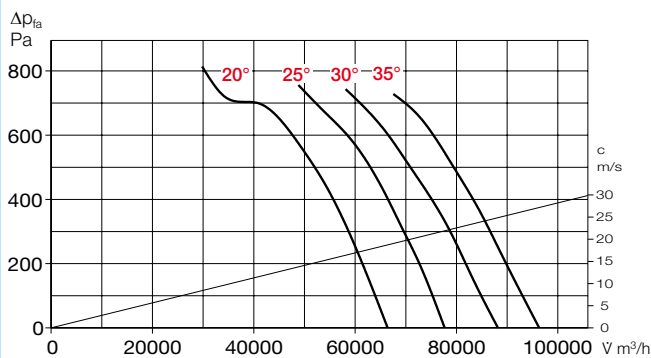
¹⁾ For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).



B AVD 1120/4

n=1470 1/min

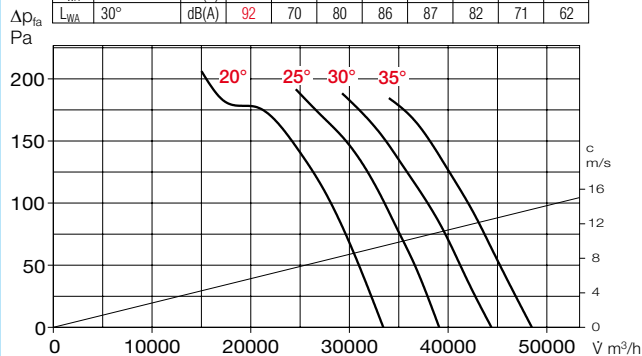
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°	dB(A)	104	75	92	98	99	94	89	84
L _{WA} 20°	dB(A)	107	78	95	101	102	97	92	87
L _{WA} 30°	dB(A)	110	81	98	104	105	100	95	90



B AVD 1120/8

n=740 1/min

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



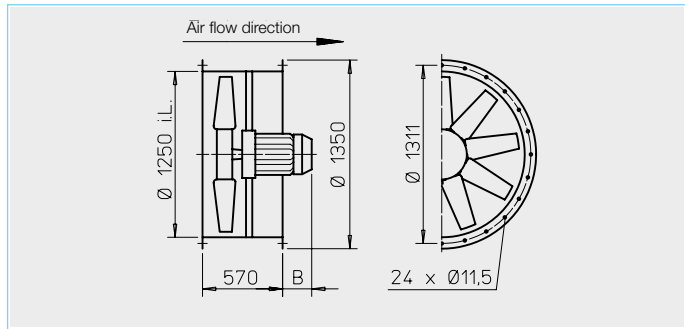
■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3.
DIBt approval:
F600: Z-78.11-146
Certificate of conformity:
F600: 0036-CPR-RG05-04

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Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Anti-vibration mounts NG							
												Pressure		Tensile					
		min ⁻¹	V m ³ /h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.		
F600 3 phase motor, 50 Hz, protection class IP54																			
B AVD 1120/4-20 F600	2885	1470	66180	18.5	400	35.10	20	776	40 / 600	—	446		SDD 7	1928	SDZ 7	1929			
B AVD 1120/4-25 F600	2886	1470	77390	22.0	400	41.00	25	776	40 / 600	—	468		SDD 7	1928	SDZ 7	1929			
B AVD 1120/4-30 F600	2887	1480	88180	30.0	400	57.10	30	776	40 / 600	—	504		SDD 7	1928	SDZ 7	1929			
B AVD 1120/4-35 F600	2888	1480	97370	37.0	400	66.80	35	776	40 / 600	—	624		SDD 8	1930	SDZ 8	1931			
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																			
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	48850/98030	9.2/37.0	400	25.4/74.2	35	471	40 / 600	—	642	PDA 115	1352	SDD 8	1930	SDZ 8	1931		

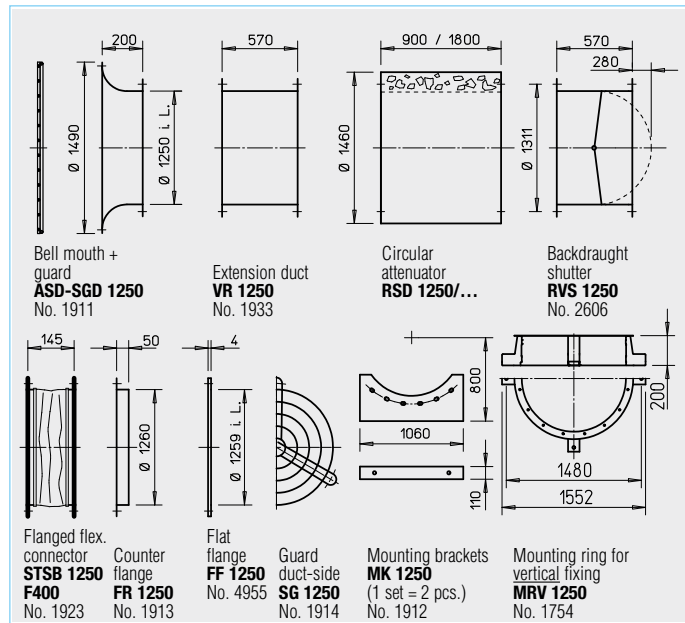
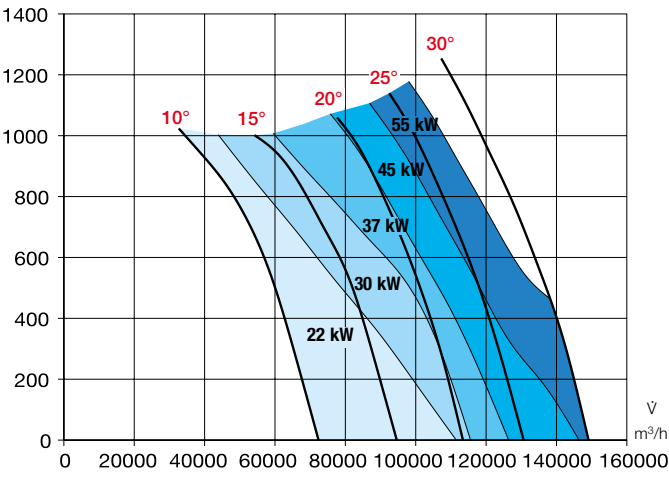
¹⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.



B AVD 1250/4

n=1470 1/min

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



■ Certification

DIBt approval:
 F300: Z-78.11-144
 F400: Z-78.11-145
 Certificate of conformity:
 F300: 0036-CPR-RG05-03
 F400: 0036-CPR-RG05-06

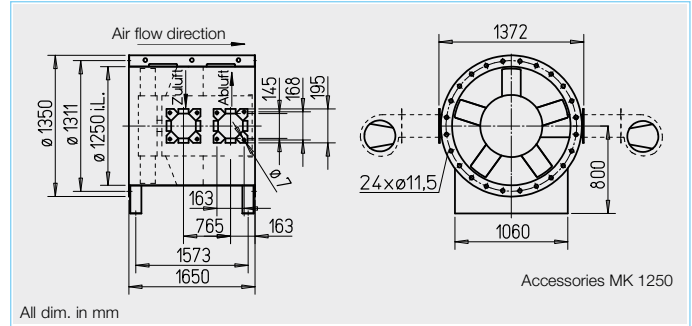
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Type	Ref no.	Speed	Air flow volume (FID)	Motor pow. nom. ("output")	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor prot-rusion	Weight net	Pole switch surface-mounted	Anti-vibration mounts NG				
													Pressure		Tensile		
		min ⁻¹	V m³/h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
F300 3 phase motor, 50 Hz, protection class IP54																	
B AVD 1250/4 22 kW F300	2555	1470	111520	22.0	400	41.0	*	776	40 / 300	487	335		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 30 kW F300	2392	1480	115590	30.0	400	57.1	*	776	40 / 300	552	378		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 37 kW F300	2393	1480	126420	37.0	400	66.8	*	776	40 / 300	641	517		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4 45 kW F300	2394	1475	146350	45.0	400	80.9	*	776	40 / 300	641	522		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4 55 kW F300	2395	1480	149140	55.0	400	98.6	*	776	40 / 300	720	641		SDD 8	1930	SDZ 8	1931	
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 1250/8/4 6.5/28 kW F300	2396	735/1480	56670/113340	6.5/28.0	400	18.0/52.0	*	471	40 / 300	552	384	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AVD 1250/8/4 9.2/37 kW F300	2397	740/1485	63210/126420	9.2/37.0	400	25.4/74.2	*	471	40 / 300	604	510	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4 11/44 kW F300	2398	740/1480	71870/143740	11.0/44.0	400	27.2/80.2	*	471	40 / 300	604	577	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4 14.7/55 kW F300	2399	735/1480	74570/149140	14.7/55.0	400	36.5/100	*	471	40 / 300	678	645	PDA 115	1352	SDD 8	1930	SDZ 8	1931
F400 3 phase motor, 50 Hz, protection class IP54																	
B AVD 1250/4 22 kW F400	2613	1470	111520	22.0	400	41.0	*	776	40 / 400	487	335		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 30 kW F400	2480	1480	115590	30.0	400	57.1	*	776	40 / 400	552	378		SDD 7	1928	SDZ 7	1929	
B AVD 1250/4 37 kW F400	2481	1480	126420	37.0	400	66.8	*	776	40 / 400	641	517		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4 45 kW F400	2482	1475	146350	45.0	400	80.9	*	776	40 / 400	641	522		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4 55 kW F400	2483	1480	149140	55.0	400	98.6	*	776	40 / 400	720	641		SDD 8	1930	SDZ 8	1931	
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
B AVD 1250/8/4 6.5/28 kW F400	2484	735/1480	56670/113340	6.5/28.0	400	18.0/52.0	*	471	40 / 400	552	384	PDA 63	1283	SDD 7	1928	SDZ 7	1929
B AVD 1250/8/4 9.2/37 kW F400	2485	740/1485	63210/126420	9.2/37.0	400	25.4/74.2	*	471	40 / 400	604	510	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4 11/44 kW F400	2486	740/1480	71870/143740	11.0/44.0	400	27.2/80.2	*	471	40 / 400	604	577	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4 14.7/55 kW F400	2487	735/1480	74570/149140	14.7/55.0	400	36.5/100	*	471	40 / 400	678	645	PDA 115	1352	SDD 8	1930	SDZ 8	1931

* The flow volume and pressure increase information is required to determine the pitch angle.

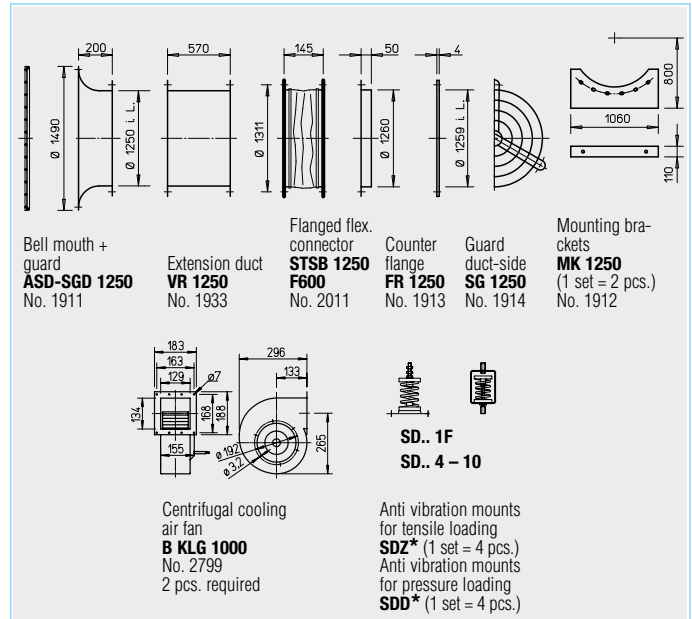
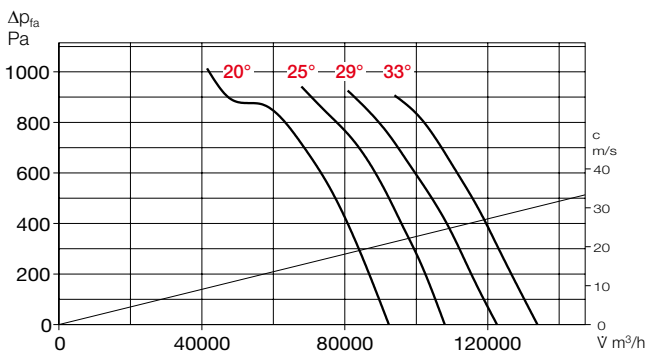
¹⁾ For ventilation operation / smoke extraction (one time 120 min. at 300 °C or 120 min. at 400 °C).



B AVD 1250/4

n = 1470 1/min

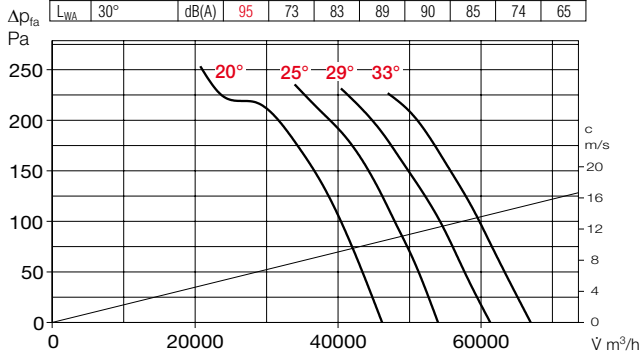
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k
L _{WA} 10°		dB(A) 107	78	95	101	102	97	92	87
L _{WA} 20°		dB(A) 110	81	98	104	105	100	95	90
L _{WA} 30°		dB(A) 113	84	101	107	108	103	98	93



B AVD 1250/8

n = 735 1/min

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



■ Certification

The smoke and heat exhaust fans B AVD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-146 Certificate of conformity: F600: 0036-CPR-RG05-04

Information	Page
Techn. description	16 ff.
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Type	Ref. no.	Speed	Air flow volume (FID)	Motor pow. nom. (output)	Nominal voltage	Power consum. nom.	Pitch angle	Wiring diagram	Max. air flow temp. ¹⁾	Dim. B Motor protrusion	Weight net	Anti-vibration mounts NG					
												Pressure		Tensile			
		min ⁻¹	V m³/h	kW	V	A	°	No.	+°C	mm	ca. kg	Type	Ref. no.	Type	Ref. no.		
F600 3 phase motor, 50 Hz, protection class IP54																	
B AVD 1250/4-20 F600	2893	1480	92320	30	400	57.10	20	776	40 / 600	—	595		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4-25 F600	2894	1480	108330	37	400	66.80	25	776	40 / 600	—	715		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4-29 F600	2895	1475	123000	45	400	80.90	29	776	40 / 600	—	736		SDD 8	1930	SDZ 8	1931	
B AVD 1250/4-33 F600	2896	1480	135830	55	400	98.60	33	776	40 / 600	—	850		SDD 8	1930	SDZ 8	1931	
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), 3 phase motor 50 Hz, protection class IP54																	
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 1250/8/4-29 F600	2899	740/1480	61710/123420	11.0/44.0	400	27.2/80.2	29	471	40 / 600	—	798	PDA 115	1352	SDD 8	1930	SDZ 8	1931
B AVD 1250/8/4-33 F600	2900	735/1480	67450/135830	14.7/55.0	400	36.5/100	33	471	40 / 600	—	823	PDA 115	1352	SDD 8	1930	SDZ 8	1931

¹⁾ For ventilation operation / smoke extraction (one time 120 Min.). ²⁾ Types SDZ not permitted for installation in fire zone.

Medium pressure axial fans offer top performance in a wide variety of applications.



The Helios medium pressure axial fans are ideally suited for various fields of application in professional ventilation technology, such as e.g. in smoke protection pressure systems, car park ventilation systems as well as ventilation and smoke extraction systems in airports, shopping centres and public buildings.

As two-stage, serial Z or parallel P units, they are ideal for use in car parks. Universal installation options (horizontal and vertical positioning) ensure flexible application. As a smoke extraction fan, series B AMD can be used within the fire zone,

outside the fire zone (with heat and sound insulation L90) and outside the building.

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

- Aerodynamically profiled blades made from high-strength aluminium alloy.
 - Sheet steel casing with surface protection.
 - Steel guide vane.
 - Delivery ready for connection.
 - Universal installation options.
 - High efficiency for low energy consumption.
- With flow rates up to 113,000 m³/h and very high pressure

WITH
EFFICIENT
IE3 MOTORS

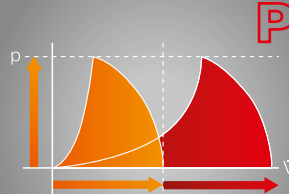
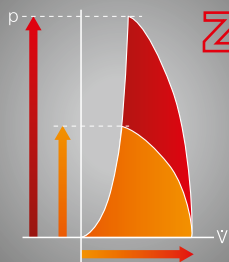
NEW



rates up to 1,400 Pa, the medium pressure axial fan series corresponds ideally to the varied requirements for professional TGA ventilation technology.

The AMD and B AMD types combine top performance with efficient energy consumption. The factory-adjustable, profiled blades made from aluminium casting alloy ensure the precise adjustment to the respective operating point. An adjustment of the motor power to the respective project requirements is easily possible with the help of the performance-related characteristic curve representation.





Two-stage units

Parallel units

The arrangement of two identical fans in a row (Z) or side by side (P) is ideal for fulfilling the wide-ranging TGA requirements in relation to pressure increases, flow output and space requirement.

For details see page 6 f.



MEDIUM PRESSURE AXIAL FANS
Product-specific information

MEDIUM PRESSURE SMOKE EXHAUST AXIAL FANS
Product-specific information

46^f

46^f

Helios medium pressure axial fans are available for ventilation at normal air flow temperature from -20 °C to +60 °C (types AMD).

Helios medium pressure smoke exhaust axial fans are available in temperature classes F300 and F400 (types B AMD) for use as smoke extraction fans in mechanical smoke extraction systems (MRA).

There are more than 100 types available in 12 sizes (BG 315-1120) with perfectly coordinated accessories.

There are more than 200 types available in 12 sizes (BG 315-1120) with perfectly coordinated accessories.

48^{ff}

48^{ff}

■ **Application**

- Versatile application in technical building equipment, e.g. for the supply and extract ventilation of car parks or airports, etc.
- In the permanent supply and extract ventilation operation from -20 °C to +60 °C air flow temperature.
- For preventive fire protection to secure smoke and heat extraction.
- For applications with air flow temperatures of 300 °C and 400 °C for 120 min. (F300 and F400).

■ **Casing**

- Duct casing with welded-in motor mounting plate and sheet steel guide vane. Pressed flanges on both sides according to DIN 24155, pt 3, for direct intermediate flanges in ducts.
- Surface protection through powder coating RAL 7015 (grey).

■ **Impeller**

- Hub and blades made from corrosion-resistant aluminium alloy.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Blade pitch angle is factory-adjustable corresponding to the ordered, optimal operating point.

■ **Motor**

- For single-speed fans with a three-phase motor and a nominal motor power ≤ 3.00 kW the connection for direct start-up is provided, fans with a nominal motor power ≥ 4.00 kW for star-delta start-up.
- Series AMD: Direct through efficient IE3 standard three-phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
 - Series B AMD: Direct through efficient IE3 three-phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. 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 %) using frequency inverters. The planned use of a frequency inverter without sine filter must be stated when ordering. This requires

a change of fan design and possible additional costs. When using as a smoke extraction fan, these switching devices in the on-site control system must be bridged in case of fire.

■ **Motor protrusion**

For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ **Motor protection**

- Series AMD and B AMD: All types have PTC resistors from the terminal box. Thus, effective motor protection is possible using full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).
- Series B AMD: For the smoke ventilation function, all motor protection devices and speed controllers (FU) for the smoke extraction fan must be bridged to achieve the required output and max. operating duration.

■ **Electrical connection**

- Series AMD: Standard plastic terminal box (protection class IP55), mounted on outside of fan casing.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted on outside of fan casing.
- Cable to the terminal box with fire-resistant sheathing.

■ **Air flow temperatures**

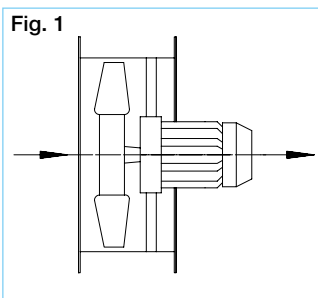
- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/ 120 min. or 400 °C/120 min.

■ **Noise levels**

The sound power levels are indicated by means of frequency and as sum levels for different pitch angles above the performance curves on the product pages.

■ **Air flow direction**

The fans are designed with airflow direction B = over motor (Fig. 1).



■ **Selection of anti-vibration dampers**

In order to optimally reduce the vibrations caused by rotating components in the fan, the correct selection of anti-vibration mounts is essential. Since duct fans frequently have motor protrusion, the centre of gravity is sometimes off centre in the axial direction. In order to enable the use of evenly loaded anti-vibration mounts for horizontal fan positioning despite this motor protrusion, it may be necessary to extend the fan casing on the motor protrusion side with an extension duct.

The design is based on the calculated weight of the fan including attachments to be vibration dampened. For this purpose, the individual net weights of the components must be added (see examples 1 to 3).

The allocation of the anti-vibration dampers to the fans in the type table already takes the additional weight of the mounting brackets and possible extension duct (see installation information) into account.

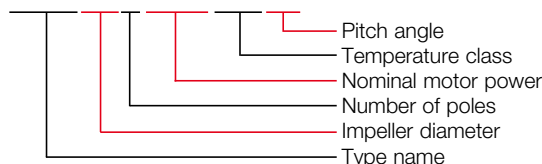
■ **Certification**

The smoke extraction fans B AMD have been tested according to DIN EN 12101-3. DIBt approval:
F300: Z-78.11-222
F400: Z-78.11-223
Certificate of performance reliability:
F300: 0036-CPR-RG05-13
F400: 0036-CPR-RG05-14

■ **Order data**

The desired blade pitch angle must be specified when ordering.

Example:
B AMD 355/2 1.5 kW F300 34°



■ **Calculation of total mass to be vibration-dampened**

- Example 1:
B AMD 710/4 7.5 kW F300 with duct extension

 1. Calculation of mass to be dampened

Weight B AMD 710/4	152 kg
Weight VR 710	21.5 kg
Weight MK 710	10.5 kg
Total weight:	<u>184 kg</u>
 2. Selection of anti-vibration mounts (see page 177)
» up to 210 kg = SDD 5

- Example 2:
B AMD 710/4 7.5 kW F300 as P unit

 1. Calculation of mass to be dampened

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 177)
» up to 520 kg = SDD 7

- Example 3:
B AMD 710/4 7.5 kW F300 as Z unit

 1. Calculation of mass to be dampened

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 177)
» up to 520 kg = SDD 7

■ 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 with protection against the weather and precipitation.
- In order to prevent the transmission of vibrations, the use of anti-vibration mounts is recommended (Accessories). Compliance with Federal and regional fire protection regulations.

□ Duct installation (tilting)

In order to prevent the tendency to tilt during installation of the axial fans with flanged flexible connectors on each side (type STS, Accessories), and extension duct (type VR, Accessories) is provided (Fig. 2).

□ Duct installation

Arrangement of the mounting bracket (type MK) for horizontal or mounting ring (type MRV) for vertical installation with anti-vibration mounts on the fan. Use of anti-vibration mounts SDD for pressure loading or SDZ for tensile loading (ceiling suspension). In order to prevent sound and vibration transmission, flanged flexible connectors STS (accessories) are to be provided on each side (Fig. 3).

□ Duct installation with attenuator on inlet and outlet sides

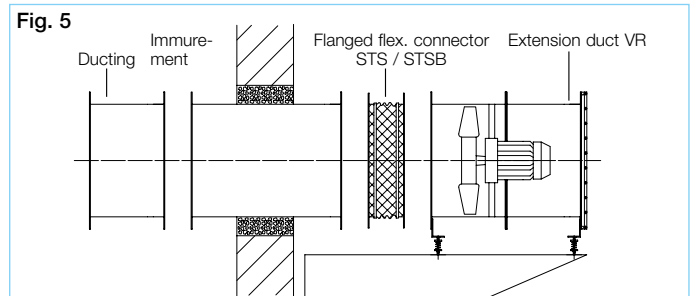
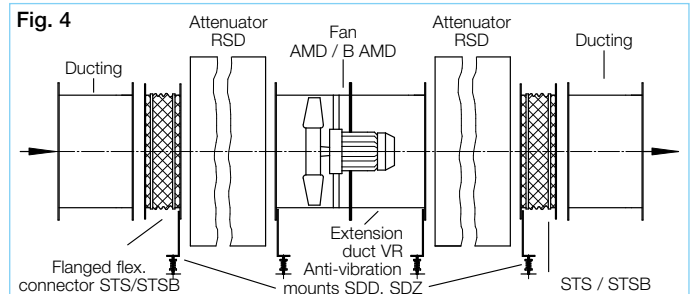
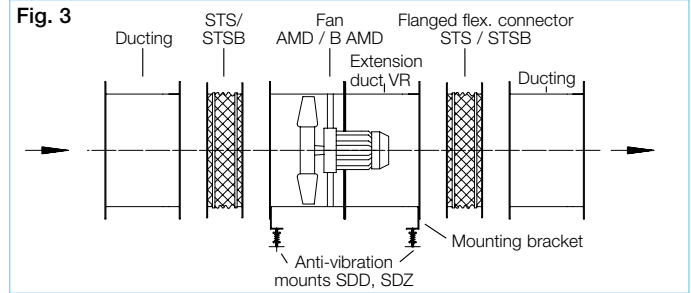
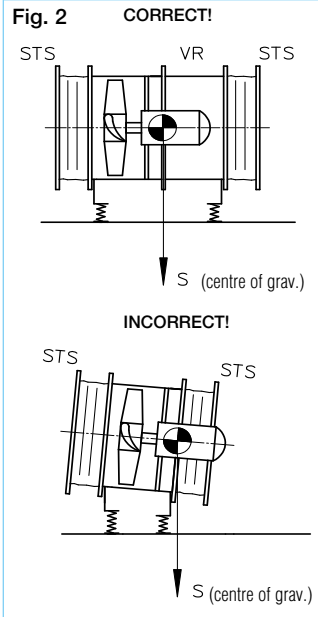
According to the local conditions, brackets (to be provided on site) are required for fastening the attenuators and supporting the weight. The intake attenuator must be fitted at the inlet, the outlet attenuator at the outlet with flanged flexible connectors (STS, STSB) (Fig. 4).

□ Wall installation (horizontal)

On bracket (on site), wall bushing with pipe or duct, immurement with mineral wool. Flanged flexible connectors (type STS, Accessories) on both sides with extension duct (type VR, Accessories) and protection guard (type SG, Accessories) (Fig. 5).

□ Outdoor installation

It must be ensured that no precipitation can penetrate into the fan.



■ Two-stage and parallel units

The wide-ranging requirements in relation to pressure increases, output and space requirement are often fulfilled in the area of technical building equipment (TGA) with two-stage Z or parallel P units. The Helios range offers suitable mounting packages for the respective units:

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

Two fans connected in series ensure high power density and advantageous installation due to the smallest space requirement. The two fans are arranged one behind the other and connected by means of extension ducts.

Mounting package MP-Z (scope of delivery):

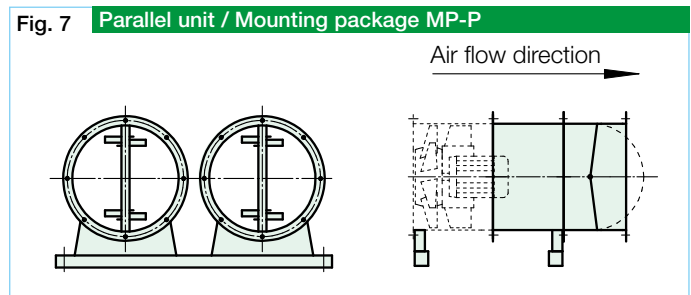
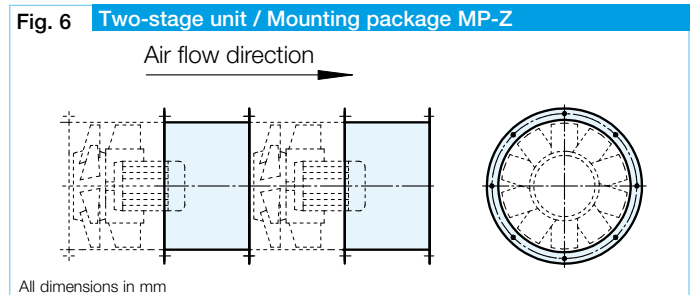
Extension ducts (2 pcs.) incl. assembly kit (hexagon screws, nuts, spring washers).

□ Parallel unit / mounting package MP-P

Two fans connected in parallel bring high flow rates with corresponding pressure ratings and they specifically meet the requirements for car park ventilation and smoke extraction. Two identical fans side by side operate in a joint duct system.

Mounting package MP-P (scope of delivery):

Extension ducts (2 St.), Backdraught shutter (2 pcs.), mounting bracket (4 pcs.) mounting rail (2 pcs.) assembly kit (hexagon screws, nuts, spring washers, washers and threaded plate).



Accessories	Page
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Z/P units	6f., 181
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Speed controllers, pole switches	196 ff.
Frequency inverters	192 f.

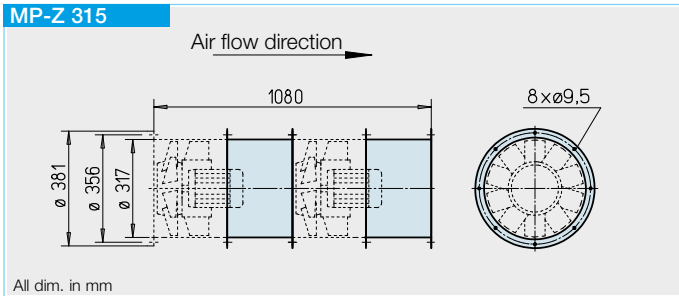
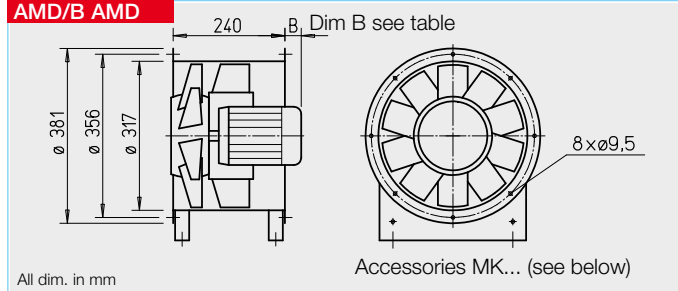


(Fig. incl. mounting bracket (type MK, Accessories))

■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3.
 DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

AMD/B AMD



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

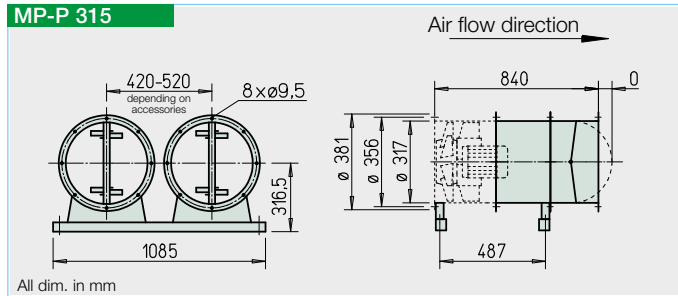
- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.



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

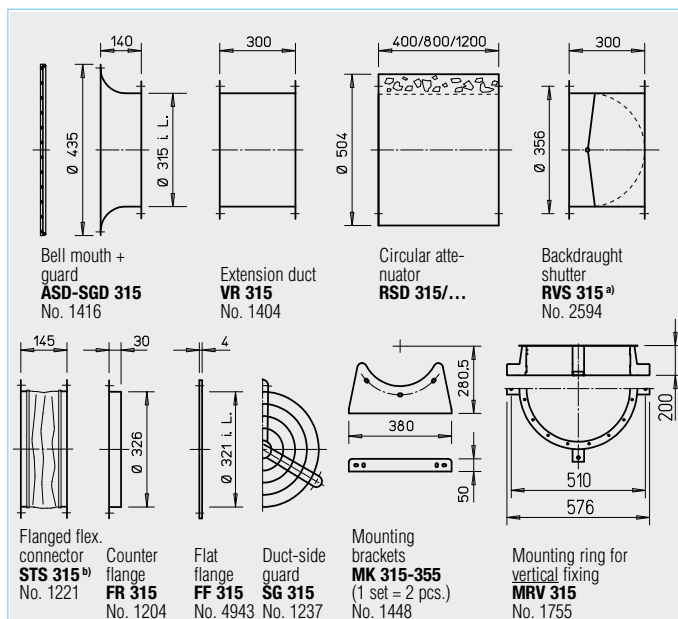
For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 7.5 kg

MP-Z 315 Ref no. 4903

■ Mounting package MP-P for parallel P unit

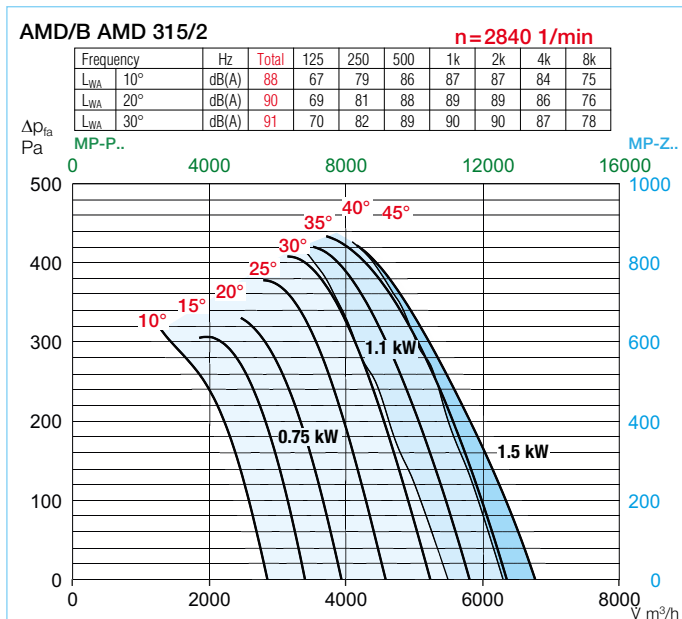
For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 25 kg

MP-P 315 Ref no. 4887



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

^{b)} Type for B AMD: STSB 315 F400, No. 14738



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Special design with inspection open. (add. cost) upon request.	

Accessory details	Page
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Type	Ref no.	Speed min ⁻¹	Nominal motor power (output) kW	Nominal voltage V	Nominal current A	Dim. B motor protrusion mm	Wiring diagram No.	max. air low temp. ¹⁾ °C	Net weight ca. kg	Full motor protection or pole switch Type Ref no.	Anti-vibration mounts ⁴⁾			
											Pressure Type Ref no.		Tensile Type Ref no.	
60° Three phase motor, 400 V, 50 Hz, protection class IP55														
AMD 315/2 0.75 kW	3053	2890	0.75	400	1.6	125	796	60	23	MSA 1289	SDD 1 1452	SDZ 1 1454		
AMD 315/2 1.1 kW	3054	2890	1.1	400	2.3	125	796	60	25	MSA 1289	SDD 1 1452	SDZ 1 1454		
AMD 315/2 1.5 kW	3055	2890	1.5	400	3.1	125	796	60	23	MSA 1289	SDD 1 1452	SDZ 1 1454		
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
											Surface-mounted pole switch			
AMD 315/4/2 0.17/0.75 kW	3056	1310/2835	0.17/0.75	400	0.8/1.9	125	777	60	27	PDA 12 ³⁾ 5081	SDD 1 1452	SDZ 1 1454		
AMD 315/4/2 0.25/0.95 kW	3057	1340/2835	0.25/0.95	400	0.9/2.3	125	777	60	29	PDA 12 ³⁾ 5081	SDD 1 1452	SDZ 1 1454		
F300 Three phase motor, 400 V, 50 Hz, protection class IP55														
B AMD 315/2 0.75 kW F300	3332	2890	0.75	400	1.6	103	776	60/300	26	—	SDD 1F 1942	SDZ 1F 1943		
B AMD 315/2 1.1 kW F300	3333	2890	1.1	400	2.3	103	776	60/300	27	—	SDD 1F 1942	SDZ 1F 1943		
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
											Surface-mounted pole switch			
B AMD 315/4/2 0.2/0.8 kW F300	3335	1400/2820	0.2/0.8	400	0.6/1.9	103	777	60/300	26	PDA 12 ³⁾ 5081	SDD 1F 1942	SDZ 1F 1943		
B AMD 315/4/2 0.25/1.1 kW F300	3336	1390/2810	0.25/1.1	400	0.8/2.5	103	777	60/300	27	PDA 12 ³⁾ 5081	SDD 1F 1942	SDZ 1F 1943		
F400 Three phase motor, 400 V, 50 Hz, protection class IP55														
B AMD 315/2 0.75 kW F400	3164	2890	0.75	400	1.6	103	776	60/400	26	—	SDD 1F 1942	SDZ 1F 1943		
B AMD 315/2 1.1 kW F400	3165	2890	1.1	400	2.3	103	776	60/400	27	—	SDD 1F 1942	SDZ 1F 1943		
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
											Surface-mounted pole switch			
B AMD 315/4/2 0.2/0.8 kW F400	3177	1400/2820	0.2/0.8	400	0.6/1.9	103	777	60/400	26	PDA 12 ³⁾ 5081	SDD 1F 1942	SDZ 1F 1943		
B AMD 315/4/2 0.25/1.1 kW F400	3178	1390/2810	0.25/1.1	400	0.8/2.5	103	777	60/400	27	PDA 12 ³⁾ 5081	SDD 1F 1942	SDZ 1F 1943		

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

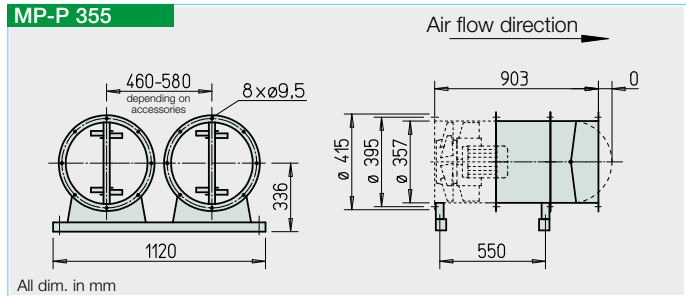
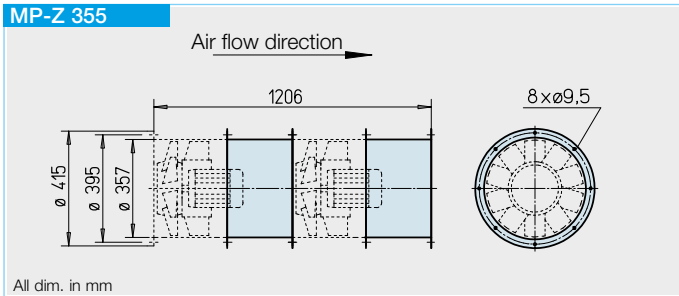
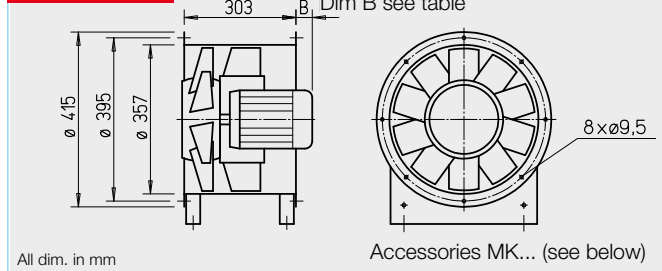


(Fig. incl. mounting bracket (type MK, Accessories))

■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-222 F400: Z-78.11-223 Certificate of performance reliability: F300: 0036-CPR-RG05-13 F400: 0036-CPR-RG05-14

AMD/B AMD



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

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

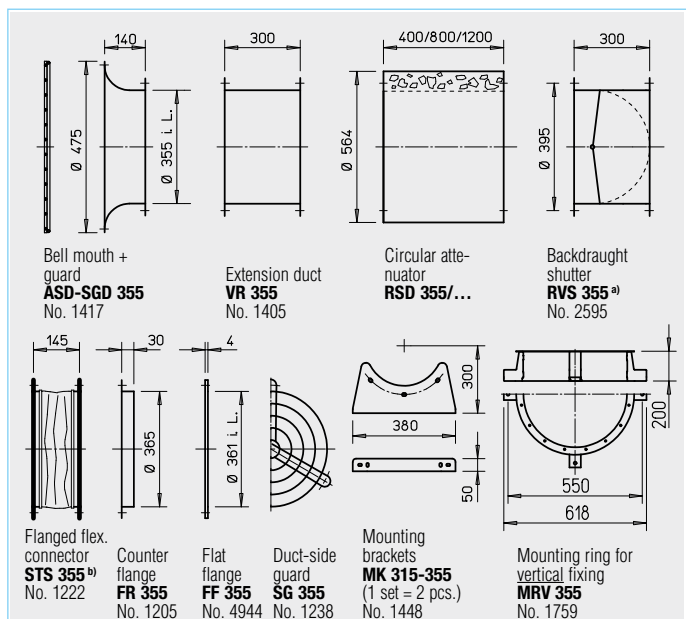
For arrangement of two identical fans in a row, for highest pressure ratings. Scope of delivery: Extension ducts (2 pcs.) and assembly kit. Weight: 8 kg

MP-Z 355 Ref no. 4904

■ Mounting package MP-P for parallel P unit

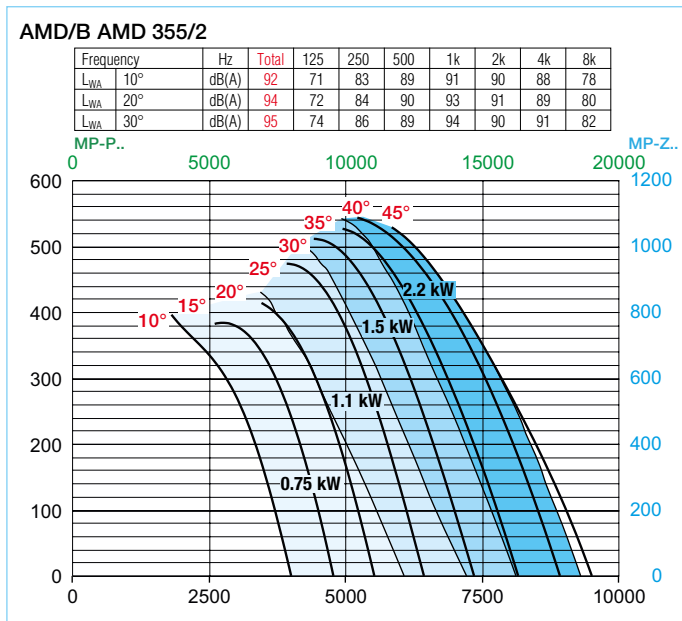
For arrangement of two identical fans side by side, for highest flow rates. Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits. Weight: 27 kg

MP-P 355 Ref no. 4888



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

^{b)} Type for B AMD: STSB 355 F400, No. 14744



Information	Page
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Special designs	Page
Special design with inspection open. (add. cost) upon request.	

Accessory details	Page
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Type	Ref no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾			
											Pressure	Tensile	Type	Ref no.
											Type	Ref no.	Type	Ref no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55														
AMD 355/2 0.75 kW	3082	2890	0.75	400	1.6	70	796	60	26	MSA 1289	SDD 1	1452	SDZ 1	1454
AMD 355/2 1.1 kW	3083	2890	1.1	400	2.3	70	796	60	26	MSA 1289	SDD 1	1452	SDZ 1	1454
AMD 355/2 1.5 kW	3084	2890	1.5	400	3.1	90	796	60	32	MSA 1289	SDD 1	1452	SDZ 1	1454
AMD 355/2 2.2 kW	3085	2890	2.2	400	4.3	120	796	60	36	MSA 1289	SDD 1	1452	SDZ 1	1454
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
											Surface-mounted pole switch			
AMD 355/4/2 0.17/0.75 kW	3086	1310/2835	0.17/0.75	400	0.8/1.9	70	777	60	30	PDA 12 ³⁾ 5081	SDD 1	1452	SDZ 1	1454
AMD 355/4/2 0.25/0.95 kW	3087	1340/2835	0.25/0.95	400	0.9/2.3	70	777	60	32	PDA 12 ³⁾ 5081	SDD 1	1452	SDZ 1	1454
AMD 355/4/2 0.37/1.4 kW	3088	1340/2850	0.37/1.4	400	1.1/3.1	90	777	60	37	PDA 12 ³⁾ 5081	SDD 1	1452	SDZ 1	1454
AMD 355/4/2 0.4/1.9 kW	3093	1390/2850	0.4/1.9	400	1.5/4.2	120	777	60	40	PDA 12 ³⁾ 5081	SDD 1	1452	SDZ 1	1454
F300 Three phase motor, 400 V, 50 Hz, protection class IP55														
B AMD 355/2 0.75 kW F300	3337	2890	0.75	400	1.6	59	776	60/300	29	—	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 1.1 kW F300	3338	2890	1.1	400	2.3	59	776	60/300	30	—	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 1.5 kW F300	3339	2890	1.5	400	3.1	59	776	60/300	35	—	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 2.2 kW F300	3340	2890	2.2	400	4.3	68	776	60/300	37	—	SDD 1F	1942	SDZ 1F	1943
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
											Surface-mounted pole switch			
B AMD 355/4/2 0.2/0.8 kW F300	3342	1400/2820	0.2/0.8	400	0.6/1.9	59	777	60/300	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	0.25/1.1	400	0.8/2.5	59	777	60/300	30	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0.37/1.5 kW F300	3344	1430/2875	0.37/1.5	400	1.2/3.6	68	777	60/300	35	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0.5/2.2 kW F300	3345	1420/2845	0.5/2.2	400	1.5/4.6	93	777	60/300	37	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
F400 Three phase motor, 400 V, 50 Hz, protection class IP55														
B AMD 355/2 0.75 kW F400	3179	2890	0.75	400	1.6	59	776	60/400	29	—	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 1.1 kW F400	3180	2890	1.1	400	2.3	59	776	60/400	30	—	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 1.5 kW F400	3181	2890	1.5	400	3.1	59	776	60/400	34	—	SDD 1F	1942	SDZ 1F	1943
B AMD 355/2 2.2 kW F400	3182	2890	2.2	400	4.3	68	776	60/400	36	—	SDD 1F	1942	SDZ 1F	1943
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
											Surface-mounted pole switch			
B AMD 355/4/2 0.2/0.8 kW F400	3183	1400/2820	0.2/0.8	400	0.6/1.9	59	777	60/400	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	0.25/1.1	400	0.8/2.5	59	777	60/400	30	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0.37/1.5 kW F400	3185	1430/2875	0.37/1.5	400	1.2/3.6	68	777	60/400	35	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943
B AMD 355/4/2 0.5/2.2 kW F400	3186	1420/2845	0.5/2.2	400	1.5/4.6	93	777	60/400	37	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

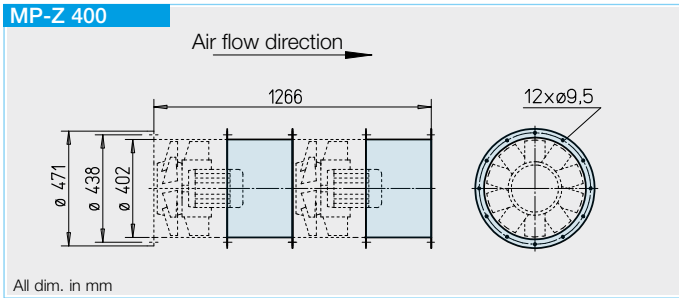
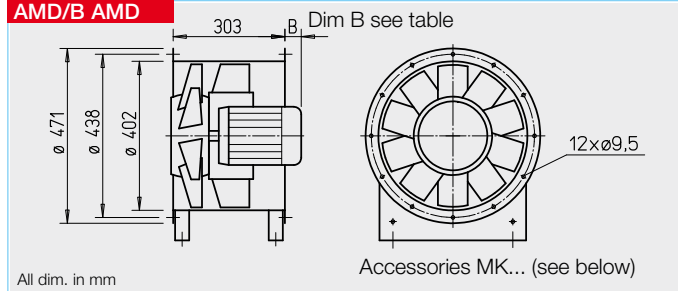


(Fig. incl. mounting bracket (type MK, Accessories))

■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-222 F400: Z-78.11-223 Certificate of performance reliability: F300: 0036-CPR-RG05-13 F400: 0036-CPR-RG05-14

AMD/B AMD



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

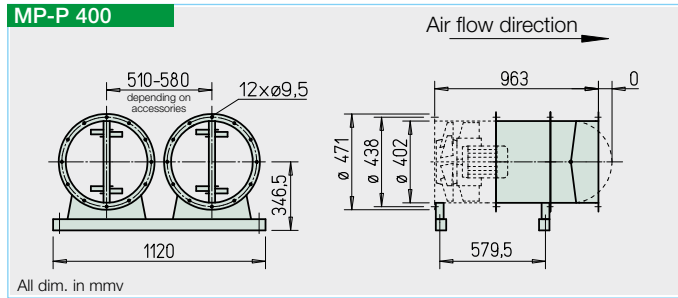
- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.



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

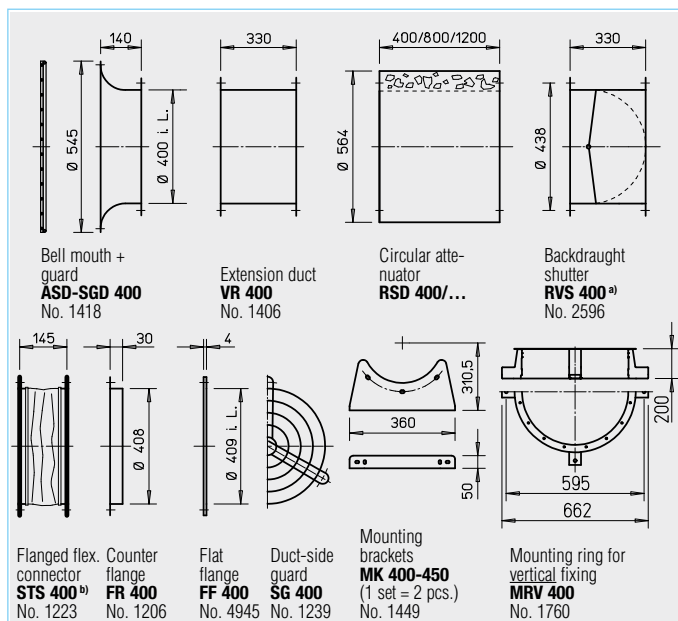
For arrangement of two identical fans in a row, for highest pressure ratings. Scope of delivery: Extension ducts (2 pcs.) and assembly kit. Weight: 12 kg

MP-Z 400 Ref no. 4905

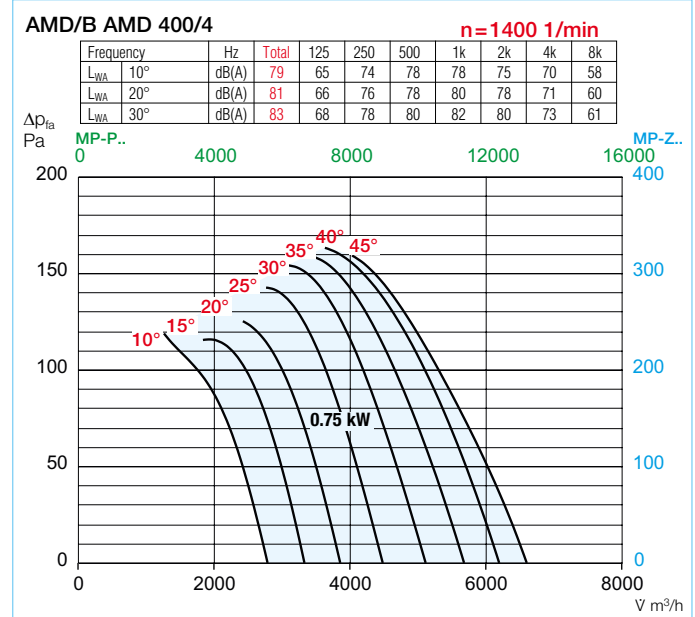
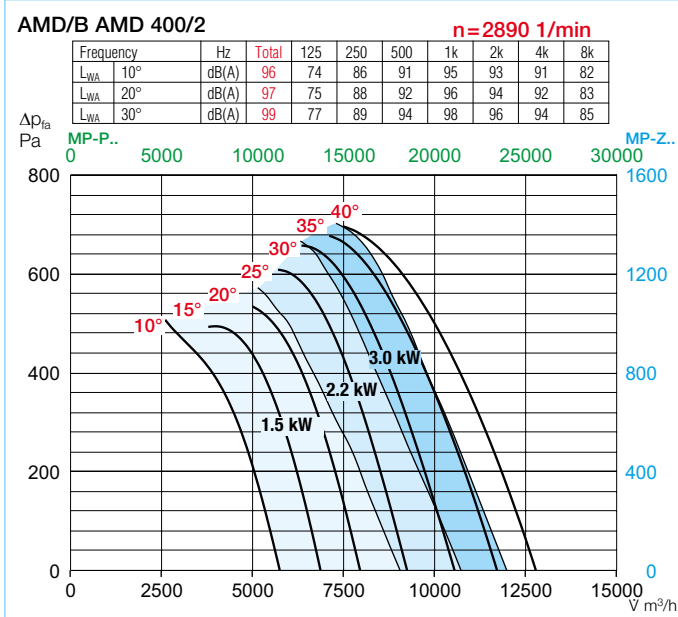
■ Mounting package MP-P for parallel P unit

For arrangement of two identical fans side by side, for highest flow rates. Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits. Weight: 35 kg

MP-P 400 Ref no. 4889



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue
^{b)} Type for B AMD: STSB 400 F400, No. 14743



Information	Page	Accessory details	Page
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Special designs		Gas warning systems, switch and control technology	182 ff.
Special design with inspection open. (add. cost) upon request.		Frequency inverters	192 f.

Type	Ref no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure	Tensile	Type	Ref no.	
60° Three phase motor, 400 V, 50 Hz, protection class IP55												Type	Ref no.	Type	Ref no.
AMD 400/4 0.75 kW	3102	1430	0.75	400	1.8	80	796	60	32	MSA 1289	SDD 1	1452	SDZ 1	1454	
AMD 400/2 1.5 kW	3098	2890	1.5	400	3.1	100	796	60	35	MSA 1289	SDD 1	1452	SDZ 1	1454	
AMD 400/2 2.2 kW	3099	2890	2.2	400	4.3	130	796	60	39	MSA 1289	SDD 1	1452	SDZ 1	1454	
AMD 400/2 3 kW	3100	2895	3	400	5.7	170	796	60	46	MSA 1289	SDD 1 ⁵⁾	1452	SDZ 1 ⁵⁾	1454	
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55												Surface-mounted pole switch			
AMD 400/4/2 0.4/1.9 kW	3101	1390/2850	0.4/1.9	400	1.5/4.2	130	777	60	43	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
AMD 400/4/2 0.65/2.5 kW	3104	1380/2855	0.65/2.5	400	2.0/5.0	170	777	60	46	PDA 12 ³⁾	5081	SDD 1 ⁵⁾	1452	SDZ 1 ⁵⁾	1454
AMD 400/4/2 0.8/3.1 kW	3105	1380/2860	0.8/3.1	400	2.1/6.1	170	777	60	46	PDA 12 ³⁾	5081	SDD 1 ⁵⁾	1452	SDZ 1 ⁵⁾	1454
F300 Three phase motor, 400 V, 50 Hz, protection class IP55												Type	Ref no.	Type	Ref no.
B AMD 400/4 0.75 kW F300	3350	1430	0.75	400	1.8	59	776	60/300	34	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 1.5 kW F300	3346	2890	1.5	400	3.1	78	776	60/300	38	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 2.2 kW F300	3347	2890	2.2	400	4.3	103	776	60/300	40	—	—	SDD 1F ⁵⁾	1942	SDZ 1F ⁵⁾	1943
B AMD 400/2 3 kW F300	3348	2895	3	400	5.7	139	776	60/300	49	—	—	SDD 1F ⁵⁾	1942	SDZ 1F ⁵⁾	1943
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55												Surface-mounted pole switch			
B AMD 400/4/2 0.37/1.5 kW F300	3349	1430/2875	0.37/1.5	400	1.2/3.6	78	777	60/300	38	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 400/4/2 0.5/2.2 kW F300	3351	1420/2845	0.5/2.2	400	1.5/4.6	103	777	60/300	40	PDA 12 ³⁾	5081	SDD 1F ⁵⁾	1942	SDZ 1F ⁵⁾	1943
B AMD 400/4/2 0.8/3.1 kW F300	3352	1430/2890	0.8/3.1	400	2.0/6.2	139	777	60/300	51	PDA 12 ³⁾	5081	SDD 1F ⁵⁾	1942	SDZ 1F ⁵⁾	1943
F400 Three phase motor, 400 V, 50 Hz, protection class IP55												Type	Ref no.	Type	Ref no.
B AMD 400/4 0.75 kW F400	3195	1430	0.75	400	1.8	59	776	60/400	33	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 1.5 kW F400	3188	2890	1.5	400	3.1	78	776	60/400	39	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 2.2 kW F400	3189	2890	2.2	400	4.3	103	776	60/400	39	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 400/2 3 kW F400	3190	2895	3	400	5.7	139	776	60/400	52	—	—	SDD 1F ⁵⁾	1942	SDZ 1F ⁵⁾	1943
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55												Surface-mounted pole switch			
B AMD 400/4/2 0.37/1.5 kW F400	3191	1430/2875	0.37/1.5	400	1.2/3.6	78	777	60/400	40	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 400/4/2 0.5/2.2 kW F400	3196	1420/2845	0.5/2.2	400	1.5/4.6	102	777	60/400	45	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 400/4/2 0.8/3.1 kW F400	3197	1430/2890	0.8/3.1	400	2.0/6.2	139	777	60/400	51	PDA 12 ³⁾	5081	SDD 1F ⁵⁾	1942	SDZ 1F ⁵⁾	1943

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181..

⁵⁾ Extension duct VR.. required over the motor protrusion.

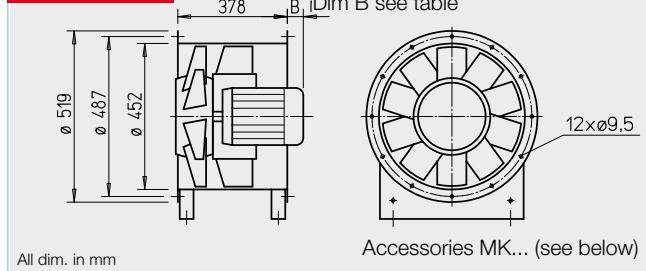


(Fig. incl. mounting bracket (type MK, Accessories))

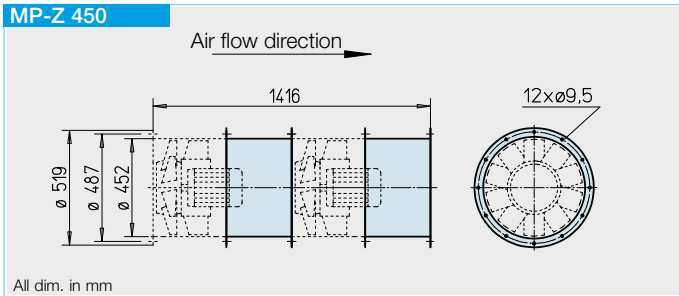
■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3.
 DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

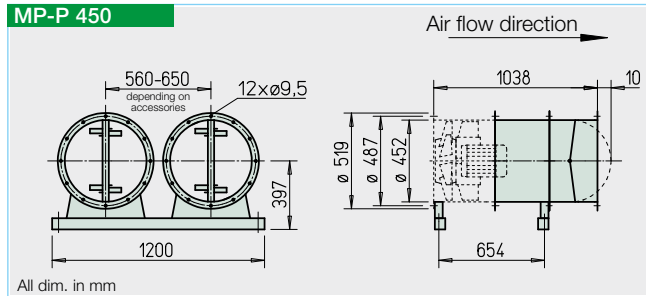
AMD/B AMD



All dim. in mm



All dim. in mm



All dim. in mm

■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

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

For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 14 kg

MP-Z 450

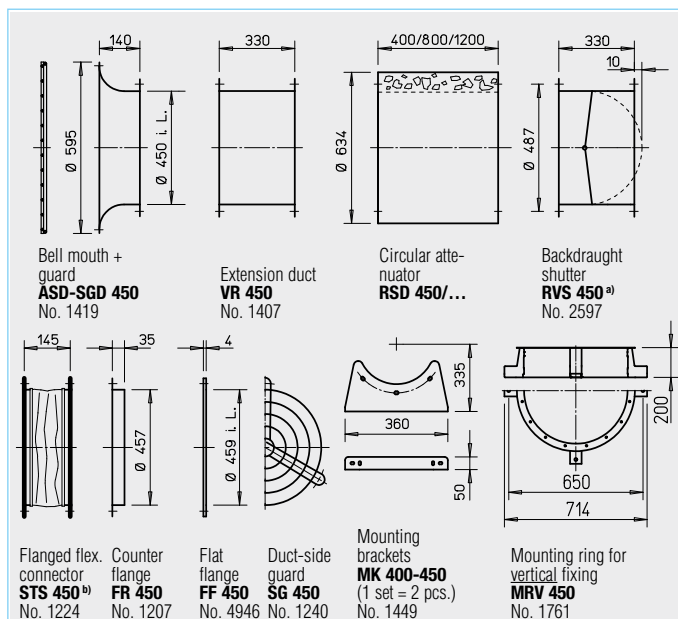
Ref no. 4906

■ Mounting package MP-P for parallel P unit

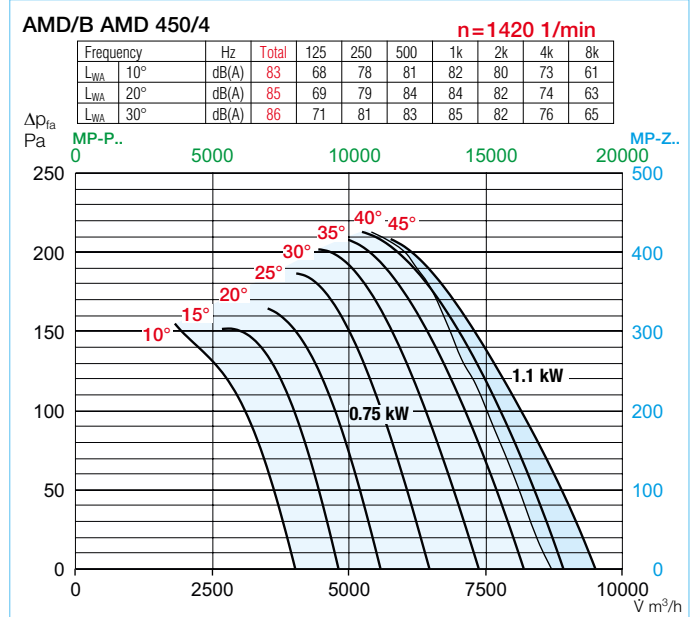
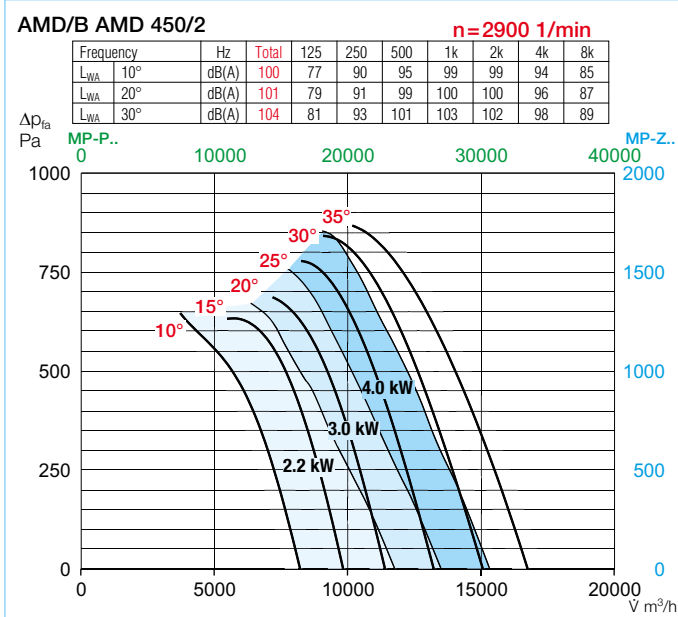
For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 43 kg

MP-P 450

Ref no. 4890



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue
^{b)} Type for B AMD: STSB 450 F400, No. 14742



Information	Page	Accessory details	Page
Techn. description	46	Mounting accessories	175 ff.
Project planning information	3 ff.	Attenuators	180
Special designs		Gas warning systems, switch and control technology	182 ff.
Special design with inspection open. (add. cost) upon request.		Frequency inverters	192 f.

Type	Ref. no.	Speed	Nominal motor pow (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure	Tensile	Type	Ref. no.	Type
60° Three phase motor, 400 V, 50 Hz, protection class IP55		min ⁻¹	kW	V	A	mm	No.	+°C	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
AMD 450/4 0.75 kW	3109	1430	0.75	400	1.8	15	796	60	40	MSA 1289		SDD 1	1452	SDZ 1	1454
AMD 450/4 1.1 kW	3110	1440	1.1	400	2.5	40	796	60	44	MSA 1289		SDD 1	1452	SDZ 1	1454
AMD 450/2 2.2 kW	3106	2890	2.2	400	4.3	65	796	60	47	MSA 1289		SDD 1	1452	SDZ 1	1454
AMD 450/2 3 kW	3107	2895	3	400	5.7	105	796	60	54	MSA 1289		SDD 1	1452	SDZ 1	1454
AMD 450/2 4 kW	3108	2910	4	400 ⁵⁾	7.4	155	776	60	57	MSA 1289		SDD 1	1452	SDZ 1	1454
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55											Surface-mounted pole switch				
AMD 450/4/2 0.65/2.5 kW	3121	1380/2855	0.65/2.5	400	1.9/5.0	40	777	60	61	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 2	1455
AMD 450/4/2 0.8/3.1 kW	3111	1380/2860	0.8/3.1	400	2.1/6.1	65	777	60	61	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 2	1455
AMD 450/4/2 1.1/4.4 kW	3113	1390/2860	1.1/4.4	400	3.0/8.7	155	777	60	67	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 2	1455
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 450/4 0.75 kW F300	3356	1430	0.75	400	1.8	0	776	60/300	42	—		SDD 1F	1942	SDZ 1F	1943
B AMD 450/4 1.1 kW F300	3357	1440	1.1	400	2.5	16	776	60/300	47	—		SDD 1F	1942	SDZ 1F	1943
B AMD 450/2 2.2 kW F300	3353	2890	2.2	400	4.3	41	776	60/300	48	—		SDD 1F	1942	SDZ 1F	1943
B AMD 450/2 3 kW F300	3354	2895	3	400	5.7	77	776	60/300	57	—		SDD 1F	1942	SDZ 1F	1943
B AMD 450/2 4 kW F300	3355	2910	4	400 ⁵⁾	7.4	95	776	60/300	68	—		SDD 1F	1942	SDZ 1F	1943
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55											Surface-mounted pole switch				
B AMD 450/4/2 0.5/2.2 kW F300	3358	1420/2845	0.5/2.2	400	1.5/4.6	41	777	60/300	48	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 450/4/2 0.8/3.1 kW F300	3359	1430/2890	0.8/3.1	400	2.0/6.2	77	777	60/300	59	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 450/4 0.75 kW F400	3205	1430	0.75	400	1.8	0	776	60/400	41	—		SDD 1F	1942	SDZ 1F	1943
B AMD 450/4 1.1 kW F400	3206	1440	1.1	400	2.5	16	776	60/400	48	—		SDD 1F	1942	SDZ 1F	1943
B AMD 450/2 2.2 kW F400	3198	2890	2.2	400	4.3	41	776	60/400	47	—		SDD 1F	1942	SDZ 1F	1943
B AMD 450/2 3 kW F400	3199	2895	3	400	5.7	77	776	60/400	60	—		SDD 1F	1942	SDZ 1F	1943
B AMD 450/2 4 kW F400	3200	2910	4	400 ⁵⁾	7.4	95	776	60/400	70	—		SDD 1F	1942	SDZ 1F	1943
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55											Surface-mounted pole switch				
B AMD 450/4/2 0.5/2.2 kW F400	3207	1420/2845	0.5/2.2	400	1.5/4.6	41	777	60/400	48	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 450/4/2 0.8/3.1 kW F400	3208	1430/2890	0.8/3.1	400	2.0/6.2	77	777	60/400	59	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.



(Fig. incl. mounting bracket (type MK, Accessories))

■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3. DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

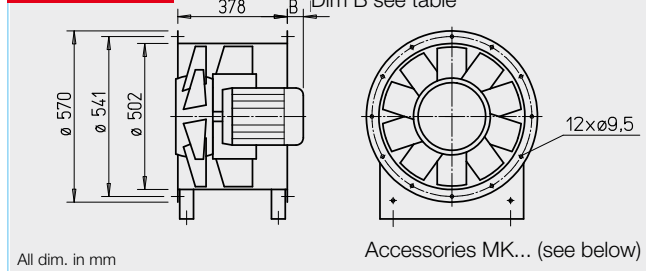
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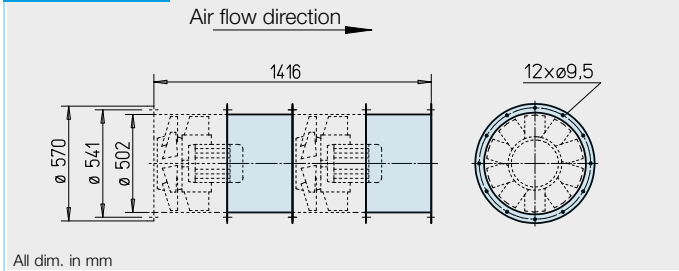
■ Special designs

Special design with inspection open. (add. cost) upon request.

AMD/B AMD



MP-Z 500



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

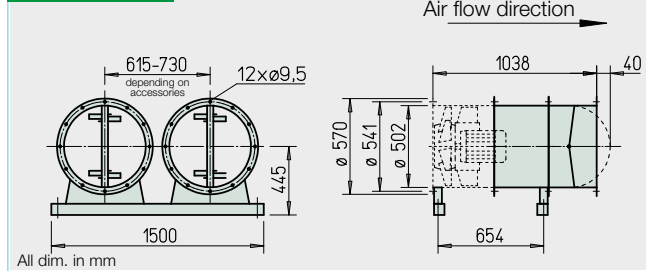
■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

MP-P 500



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

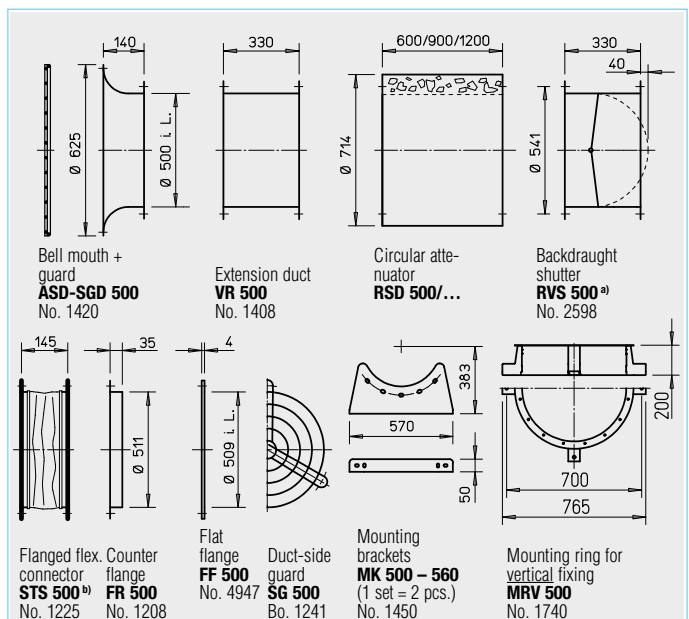
For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 15 kg

MP-Z 500 Ref no. 4907

■ Mounting package MP-P for parallel P unit

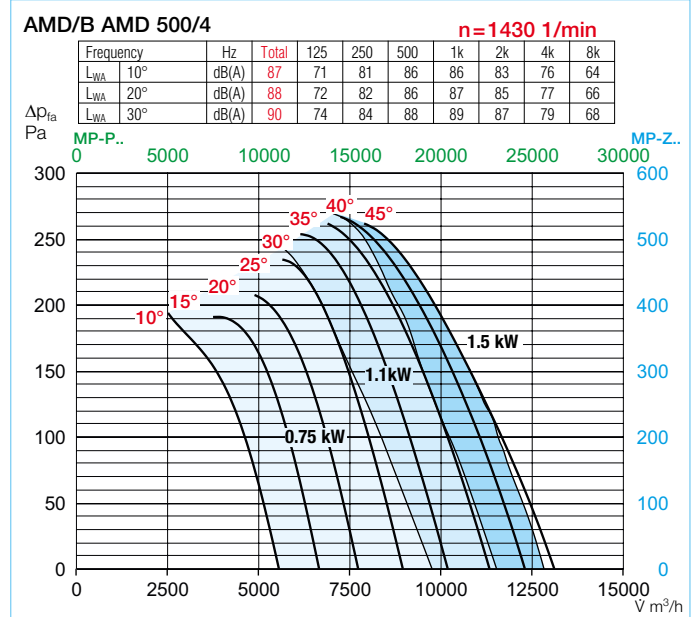
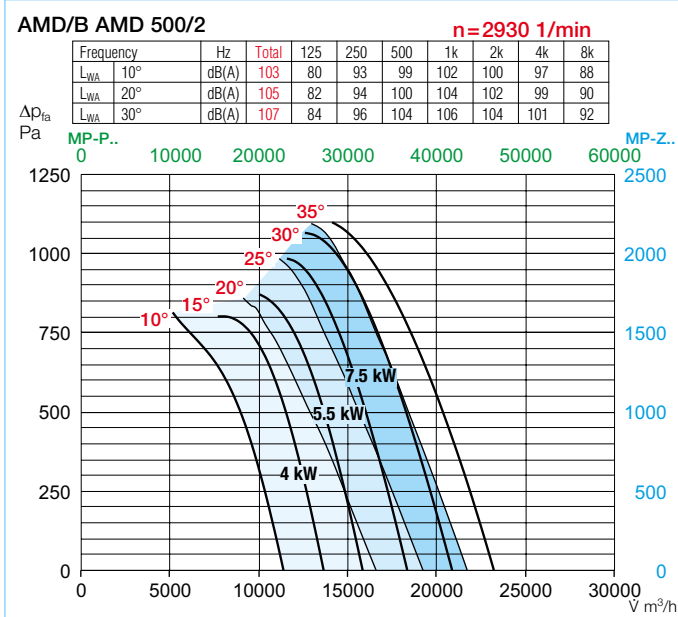
For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 55 kg

MP-P 500 Ref no. 4891



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

^{b)} Type for B AMD: STSB 500 F400, No. 1915



Type	Ref no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure	Tensile	Type	Ref no.	Type
		min ⁻¹	kW	V	A	mm	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55															
AMD 500/4 0.75 kW	3118	1430	0.75	400	1.8	35	796	60	46	MSA 1289	SDD 1	1452	SDZ 1	1454	
AMD 500/4 1.1 kW	3119	1440	1.1	400	2.5	60	796	60	50	MSA 1289	SDD 1	1452	SDZ 1	1454	
AMD 500/4 1.5 kW	3122	1420	1.5	400	3.3	85	796	60	53	MSA 1289	SDD 1	1452	SDZ 1	1454	
AMD 500/2 4 kW	3115	2910	4	400 ⁵⁾	7.4	175	776	60	83	MSA 1289	SDD 2	1453	SDZ 2	1455	
AMD 500/2 5.5 kW	3116	2940	5.5	400 ⁵⁾	10.1	180	776	60	97	MSA 1289	SDD 2 ⁶⁾	1453	SDZ 2 ⁶⁾	1455	
AMD 500/2 7.5 kW	3117	2930	7.5	400 ⁵⁾	14.1	220	776	60	102	MSA 1289	SDD 2 ⁶⁾	1453	SDZ 2 ⁶⁾	1455	
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
AMD 500/8/4 0.22/1.0 kW	3275	645/1390	0.22/1.0	400	0.9/2.4	60	777	60	55	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 1	1454
AMD 500/8/4 0.3/1.5 kW	3276	645/1390	0.3/1.5	400	1.1/3.0	85	777	60	58	PDA 12 ³⁾	5081	SDD 1	1452	SDZ 2	1455
AMD 500/4/2 1.4/5.9 kW	3273	1400/2900	1.4/5.9	400	3.6/11.4	180	777	60	118	PDA 12 ³⁾	5081	SDD 2 ⁶⁾	1453	SDZ 2 ⁶⁾	1455
AMD 500/4/2 2.0/8.0 kW	3274	1410/2900	2.0/8.0	400	4.7/14.9	220	777	60	129	PDA 25	5060	SDD 2 ⁶⁾	1453	SDZ 2 ⁶⁾	1455
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 500/4 0.75 kW F300	3363	1430	0.75	400	1.8	18	776	60/300	48	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 500/4 1.1 kW F300	3364	1440	1.1	400	2.5	37	776	60/300	54	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 500/4 1.5 kW F300	3365	1440	1.5	400	3.3	62	776	60/300	57	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 500/2 4 kW F300	3360	2910	4	400 ⁵⁾	7.4	116	776	60/300	93	—	—	SDD 4 ⁶⁾	1944	SDZ 4 ⁶⁾	1945
B AMD 500/2 5.5 kW F300	3361	2940	5.5	400 ⁵⁾	10.1	153	776	60/300	110	—	—	SDD 4 ⁶⁾	1944	SDZ 4 ⁶⁾	1945
B AMD 500/2 7.5 kW F300	3362	2930	7.5	400 ⁵⁾	14.1	192	776	60/300	118	—	—	SDD 5 ⁶⁾	1924	SDZ 5 ⁶⁾	1925
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
B AMD 500/8/4 0.3/1.2 kW F300	3368	715/1440	0.3/1.2	400	1.2/3.0	62	777	60/300	53	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 500/8/4 0.55/2.2 kW F300	3369	700/1430	0.55/2.2	400	2.0/4.8	98	777	60/300	63	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 500/4/2 1.1/4.4 kW F300	3366	1440/2890	1.1/4.4	400	2.8/8.6	116	777	60/300	94	PDA 12 ³⁾	5081	SDD 4 ⁶⁾	1944	SDZ 4 ⁶⁾	1945
B AMD 500/4/2 2.0/8.0 kW F300	3367	1470/2930	2.0/8.0	400	4.8/15.3	153	777	60/300	118	PDA 25	5060	SDD 5 ⁶⁾	1924	SDZ 5 ⁶⁾	1925
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 500/4 0.75 kW F400	3213	1430	0.75	400	1.63	18	776	60/400	47	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 500/4 1.1 kW F400	3214	1440	1.1	400	2.4	37	776	60/400	55	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 500/4 1.5 kW F400	3215	1440	1.5	400	3.26	62	776	60/400	57	—	—	SDD 1F	1942	SDZ 1F	1943
B AMD 500/2 4 kW F400	3210	2910	4	400 ⁵⁾	7.72	116	776	60/400	95	—	—	SDD 4 ⁶⁾	1944	SDZ 4 ⁶⁾	1945
B AMD 500/2 5.5 kW F400	3211	2940	5.5	400 ⁵⁾	10.6	153	776	60/400	111	—	—	SDD 4 ⁶⁾	1944	SDZ 4 ⁶⁾	1945
B AMD 500/2 7.5 kW F400	3212	2930	7.5	400 ⁵⁾	13.9	192	776	60/400	122	—	—	SDD 5 ⁶⁾	1924	SDZ 5 ⁶⁾	1925
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
B AMD 500/8/4 0.3/1.2 kW F400	3218	715/1430	0.3/1.2	400	1.29/2.92	62	777	60/400	53	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 500/8/4 0.55/2.2 kW F400	3219	700/1430	0.55/2.2	400	2.0/4.84	98	777	60/400	63	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943
B AMD 500/4/2 1.1/4.4 kW F400	3216	1440/2890	1.1/4.4	400	2.79/8.59	116	777	60/400	94	PDA 12 ³⁾	5081	SDD 4 ⁶⁾	1944	SDZ 4 ⁶⁾	1945
B AMD 500/4/2 2.0/8.0 kW F400	3217	1470/2930	2.0/8.0	400	4.83/15.3	153	777	60/400	118	PDA 25	5060	SDD 5 ⁶⁾	1924	SDZ 5 ⁶⁾	1925

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.

⁶⁾ Extension duct VR.. required over the motor protrusion.



(Fig. incl. mounting bracket (type MK, Accessories))

■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3.
 DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

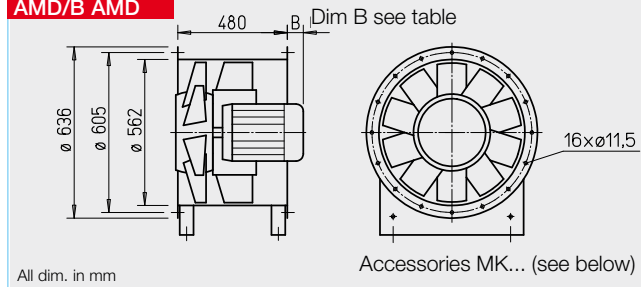
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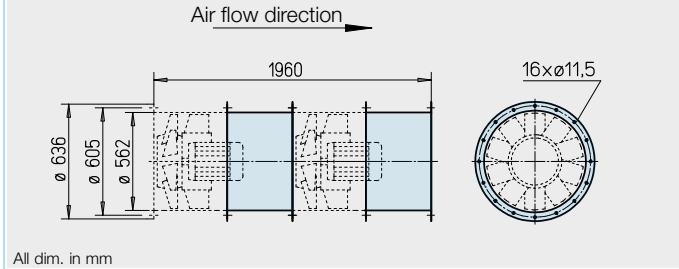
■ Special designs

Special design with inspection open. (add. cost) upon request.

AMD/B AMD



MP-Z 560



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

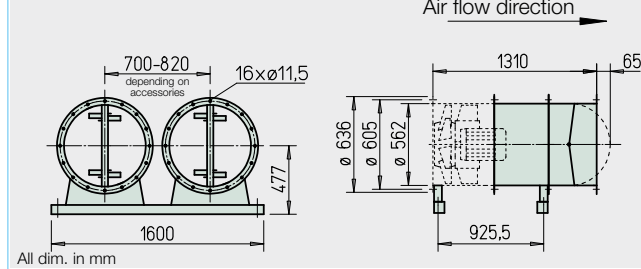
■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

MP-P 560



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

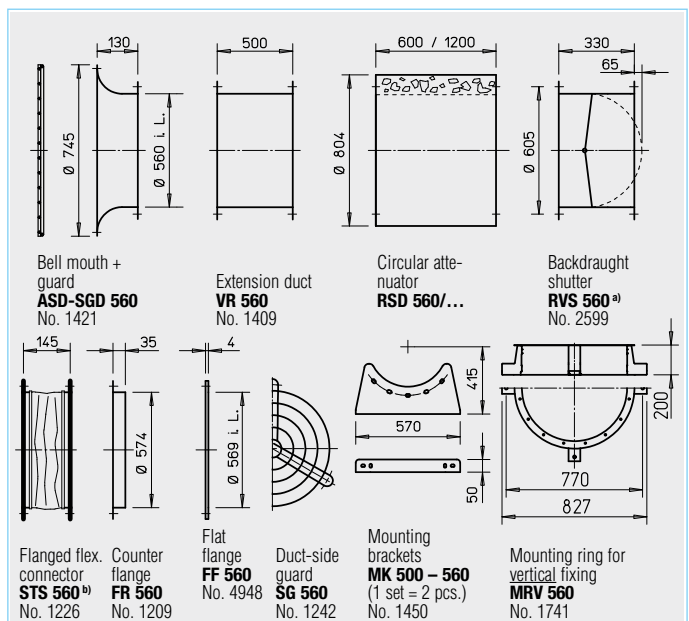
For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 32 kg

MP-Z 560 Ref no. 4908

■ Mounting package MP-P for parallel P unit

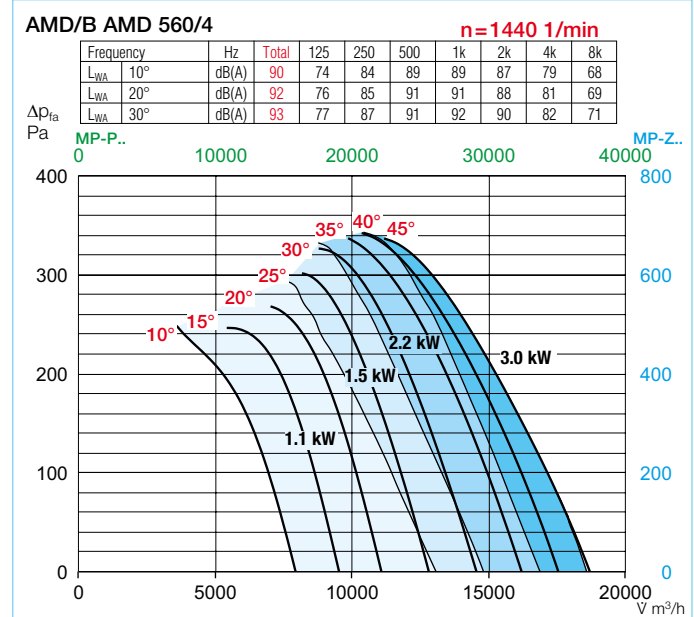
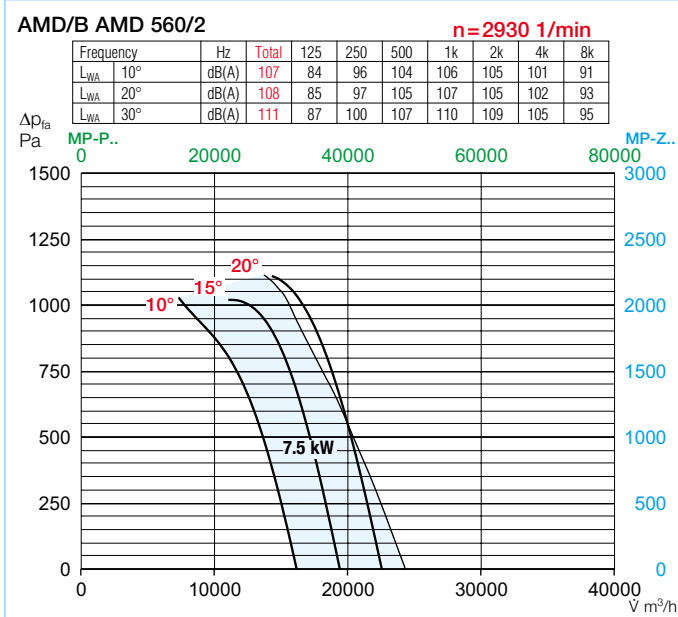
For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 82 kg

MP-P 560 Ref no. 4892



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

^{b)} Type for B AMD: STSB 560 F400, No. 1916



Type	Ref no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure	Tensile	Type	Ref no.	
		min ⁻¹	kW	V	A	mm	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55															
AMD 560/4 1.1 kW	3281	1440	1.1	400	2.5	0	796	60	61	MSA 1289	SDD 1	1452	SDZ 2	1455	
AMD 560/4 1.5 kW	3282	1440	1.5	400	3.3	0	796	60	64	MSA 1289	SDD 1	1452	SDZ 2	1455	
AMD 560/4 2.2 kW	3285	1455	2.2	400	4.5	40	796	60	74	MSA 1289	SDD 1	1452	SDZ 2	1455	
AMD 560/4 3 kW	3286	1455	3	400	6.0	40	796	60	80	MSA 1289	SDD 2	1453	SDZ 2	1455	
AMD 560/2 7.5 kW	3279	2930	7.5	400 ⁵⁾	14.1	100	776	60	123	MSA 1289	SDD 2	1453	SDZ 2	1455	
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
										Surface-mounted pole switch					
AMD 560/8/4 0.55/2.0 kW	3272	680/1410	0.55/2.0	400	2.0/4.5	0	777	60	79	PDA 12 ³⁾ 5081	SDD 2	1453	SDZ 2	1455	
AMD 560/8/4 0.65/2.4 kW	3290	680/1410	0.65/2.4	400	2.5/5.5	40	777	60	79	PDA 12 ³⁾ 5081	SDD 2	1453	SDZ 2	1455	
AMD 560/4/2 2.0/8.0 kW	3287	1410/2900	2.0/8.0	400	4.7/14.9	100	777	60	149	PDA 25 5060	SDD 2	1453	SDZ 2	1455	
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 560/4 1.1 kW F300	3391	1440	1.1	400	2.5	0	776	60/300	65	—	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 1.5 kW F300	3392	1440	1.5	400	3.3	0	776	60/300	68	—	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 2.2 kW F300	3393	1455	2.2	400	4.5	0	776	60/300	74	—	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 3 kW F300	3394	1455	3	400	6.0	12	776	60/300	77	—	SDD 4	1944	SDZ 4	1945	
B AMD 560/2 7.5 kW F300	3389	2930	7.5	400 ⁵⁾	14.1	67	776	60/300	140	—	SDD 5	1924	SDZ 5	1925	
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
										Surface-mounted pole switch					
B AMD 560/8/4 0.4/1.6 kW F300	3396	700/1440	0.4/1.6	400	1.7/4.0	0	777	60/300	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	0.55/2.2	400	2.0/4.8	12	777	60/300	74	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/8/4 0.7/2.8 kW F300	3398	710/1440	0.7/2.8	400	2.5/6.0	12	777	60/300	77	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 560/4/2 2/8 kW F300	3395	1470/2930	2.0/8.0	400	4.8/15.3	67	777	60/300	138	PDA 25 5060	SDD 5	1924	SDZ 5	1925	
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 560/4 1.1 kW F400	3222	1440	1.1	400	2.5	0	776	60/400	66	—	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 1.5 kW F400	3223	1440	1.5	400	3.3	0	776	60/400	68	—	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/4 2.2 kW F400	3224	1455	2.2	400	4.5	0	776	60/400	76	—	SDD 4	1944	SDZ 4	1945	
B AMD 560/4 3 kW F400	3225	1455	3	400	6.0	12	776	60/400	78	—	SDD 4	1944	SDZ 4	1945	
B AMD 560/2 7.5 kW F400	3220	2930	7.5	400 ⁵⁾	14.1	67	776	60/400	144	—	SDD 5	1924	SDZ 5	1925	
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
										Surface-mounted pole switch					
B AMD 560/8/4 0.4/1.6 kW F400	3227	700/1440	0.4/1.6	400	1.7/4.0	0	777	60/400	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	0.55/2.2	400	2.0/4.8	12	777	60/400	74	PDA 12 ³⁾ 5081	SDD 1F	1942	SDZ 1F	1943	
B AMD 560/8/4 0.7/2.8 kW F400	3229	710/1440	0.7/2.8	400	2.5/6.0	12	777	60/400	77	PDA 12 ³⁾ 5081	SDD 4	1944	SDZ 4	1945	
B AMD 560/4/2 2/8 kW F400	3226	1470/2930	2.0/8.0	400	4.8/15.3	67	777	60/400	138	PDA 25 5060	SDD 5	1924	SDZ 5	1925	

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.



(Fig. incl. mounting bracket (type MK, Accessories))

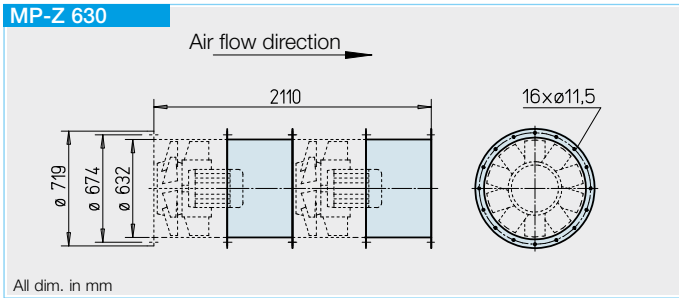
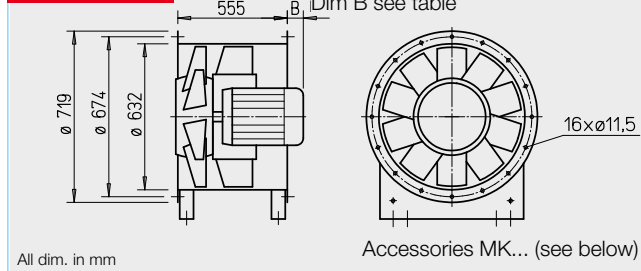
■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3. DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

■ Accessory details

Accessory details	Page
Mounting accessories	175 ff.
Attenuators	180
Gas warning systems, switch and control technology	182 ff.
Frequency inverters	192 f.

AMD/B AMD



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

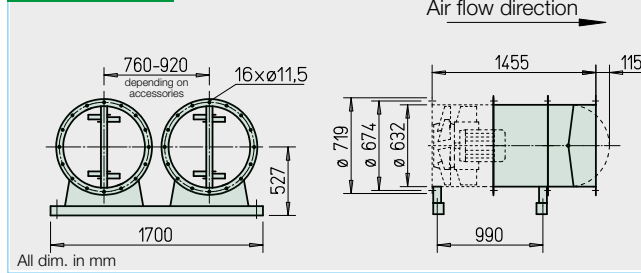
■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

MP-P 630



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

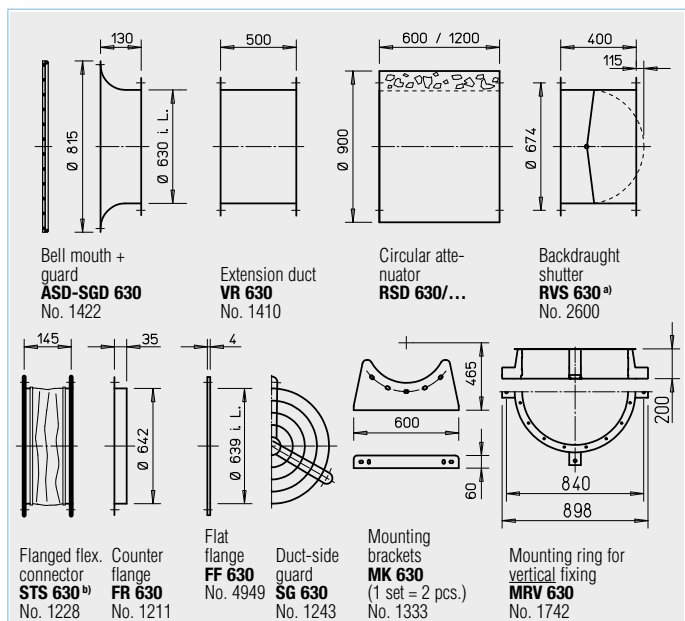
For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 36 kg

MP-Z 630 Ref no. 4909

■ Mounting package MP-P for parallel P unit

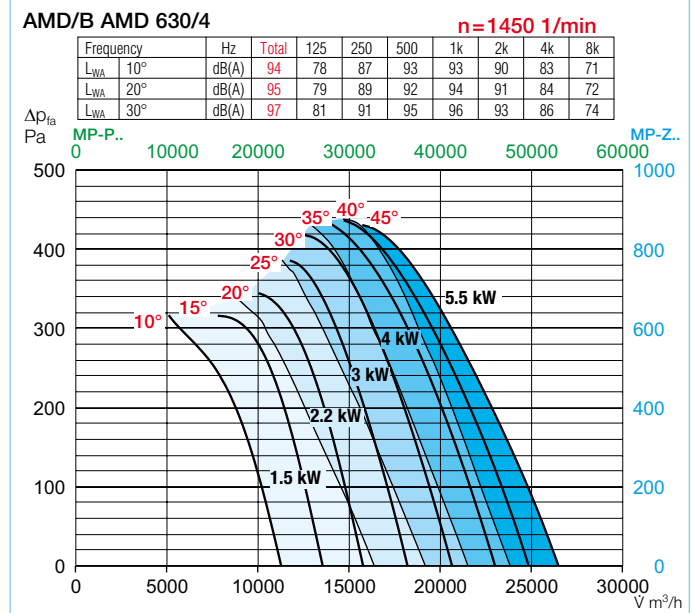
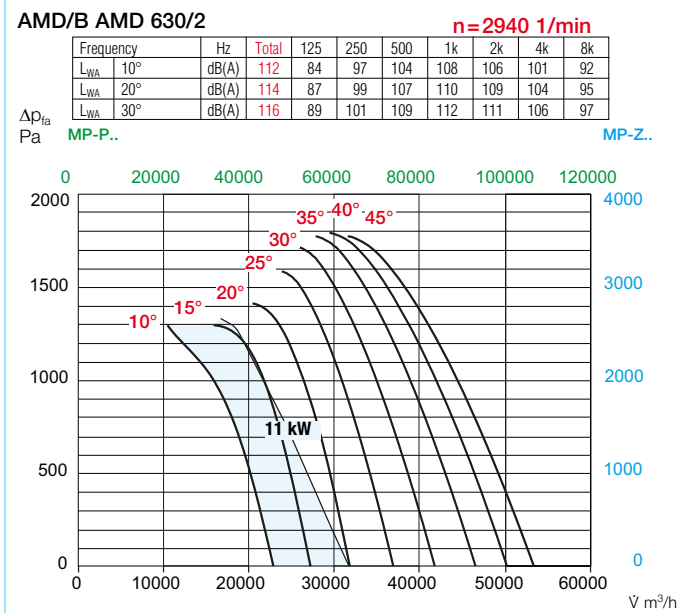
For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 110 kg

MP-P 630 Ref no. 4893



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

^{b)} Type for B AMD: STSB 630 F400, No. 1917



Information	Page	Special designs
Techn. description	46	Special design with inspection open. (add. cost) upon request.
Project planning information	3 ff.	

Type	Ref no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure	Tensile	Type	Ref no.	
		min ⁻¹	kW	V	A	mm	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55															
AMD 630/2 11 kW	3376	2945	11.0	400 ⁵⁾	20.0	145	776	60	210	MSA 1289	SDD 3 1367	SDZ 3 1366			
AMD 630/4 1.5 kW	3291	1440	1.5	400	3.3	0	796	60	84	MSA 1289	SDD 2 1453	SDZ 2 1455			
AMD 630/4 2.2 kW	3292	1455	2.2	400	4.5	0	796	60	84	MSA 1289	SDD 2 1453	SDZ 2 1455			
AMD 630/4 3 kW	3293	1455	3	400	6.0	0	796	60	99	MSA 1289	SDD 2 1453	SDZ 2 1455			
AMD 630/4 4 kW	3294	1500	4	400 ⁵⁾	7.4	30	776	60	94	MSA 1289	SDD 2 1453	SDZ 2 1455			
AMD 630/4 5.5 kW	3295	1470	5.5	400 ⁵⁾	10.7	40	776	60	115	MSA 1289	SDD 2 1453	SDZ 2 1455			
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/Y, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
AMD 630/8/4 0.55/2.0 kW	3297	680/1410	0.55/2.0	400	2.0/4.5	0	777	60	98	PDA 12 ³⁾ 5081	SDD 2 1453	SDZ 2 1455			
AMD 630/8/4 0.9/3.2 kW	3298	680/1420	0.9/3.2	400	3.2/7.1	30	777	60	104	PDA 12 ³⁾ 5081	SDD 2 1453	SDZ 2 1455			
AMD 630/8/4 1.1/4.5 kW	3299	680/1435	1.1/4.5	400	3.6/9.3	40	777	60	130	PDA 12 ³⁾ 5081	SDD 2 1453	SDZ 2 1455			
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 630/2 11 kW F300	5913	2945	11.0	400	20.0	128	776	60/300	195	—	SDD 6 1926	SDZ 6 1927			
B AMD 630/4 1.5 kW F300	3399	1440	1.5	400	3.3	0	776	60/300	88	—	SDD 4 1944	SDZ 4 1945			
B AMD 630/4 2.2 kW F300	3400	1455	2.2	400	4.5	0	776	60/300	93	—	SDD 4 1944	SDZ 4 1945			
B AMD 630/4 3 kW F300	3401	1455	3	400	6.0	0	776	60/300	96	—	SDD 4 1944	SDZ 4 1945			
B AMD 630/4 4 kW F300	3402	1460	4	400 ⁵⁾	7.9	0	776	60/300	110	—	SDD 4 1944	SDZ 4 1945			
B AMD 630/4 5.5 kW F300	3403	1470	5.5	400 ⁵⁾	10.7	11	776	60/300	125	—	SDD 5 1924	SDZ 5 1925			
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/Y, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
B AMD 630/8/4 0.4/1.6 kW F300	3404	700/1440	0.4/1.6	400	1.7/4.0	0	777	60/300	86	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945			
B AMD 630/8/4 0.55/2.2 kW F300	3405	700/1430	0.55/2.2	400	2.0/4.9	0	777	60/300	93	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945			
B AMD 630/8/4 0.7/2.8 kW F300	3406	710/1440	0.7/2.8	400	2.5/6.0	0	777	60/300	96	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945			
B AMD 630/8/4 1/3.8 kW F300	3407	710/1440	1.0/3.8	400	2.9/7.9	0	777	60/300	106	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945			
B AMD 630/8/4 1.3/5 kW F300	3408	735/1475	1.3/5.0	400	3.8/10.4	11	777	60/300	131	PDA 12 ³⁾ 5081	SDD 5 1924	SDZ 5 1925			
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 630/4 1.5 kW F400	3230	1440	1.5	400	3.3	0	776	60/400	88	—	SDD 4 1944	SDZ 4 1945			
B AMD 630/4 2.2 kW F400	3231	1455	2.2	400	4.5	0	776	60/400	95	—	SDD 4 1944	SDZ 4 1945			
B AMD 630/4 3 kW F400	3232	1455	3	400	6.0	0	776	60/400	97	—	SDD 4 1944	SDZ 4 1945			
B AMD 630/4 4 kW F400	3233	1460	4	400 ⁵⁾	7.9	0	776	60/400	110	—	SDD 4 1944	SDZ 4 1945			
B AMD 630/4 5.5 kW F400	3234	1470	5.5	400 ⁵⁾	10.7	11	776	60/400	127	—	SDD 5 1924	SDZ 5 1925			
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/Y, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
B AMD 630/8/4 0.4/1.6 kW F400	3235	700/1440	0.4/1.6	400	1.7/4.0	0	777	60/400	86	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945			
B AMD 630/8/4 0.55/2.2 kW F400	3236	700/1430	0.55/2.2	400	2.0/4.8	0	777	60/400	93	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945			
B AMD 630/8/4 0.7/2.8 kW F400	3237	690/1440	0.7/2.8	400	2.5/6.0	0	777	60/400	96	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945			
B AMD 630/8/4 1/3.8 kW F400	3238	710/1440	1.0/3.8	400	2.9/7.9	0	777	60/400	107	PDA 12 ³⁾ 5081	SDD 4 1944	SDZ 4 1945			
B AMD 630/8/4 1.3/5 kW F400	3239	735/1475	1.3/5.0	400	3.8/10.4	11	777	60/400	131	PDA 12 ³⁾ 5081	SDD 5 1924	SDZ 5 1925			

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.



(Fig. incl. mounting bracket (type MK, Accessories))

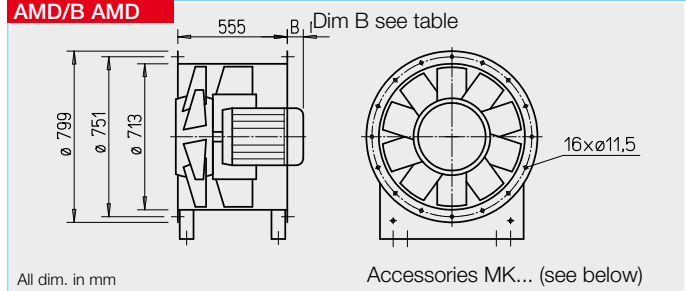
■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3. DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

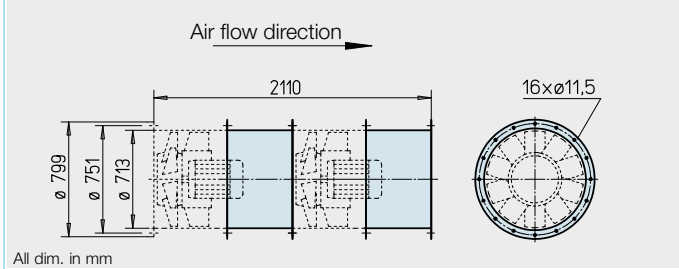
■ Accessory details Page

Mounting accessories	175 ff.
Attenuators	180
Gas warning systems, switch and control technology	182 ff.
Frequency inverters	192 f.

AMD/B AMD



MP-Z 710



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

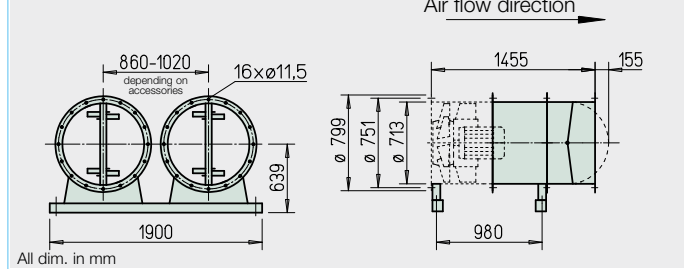
■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

MP-P 710



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

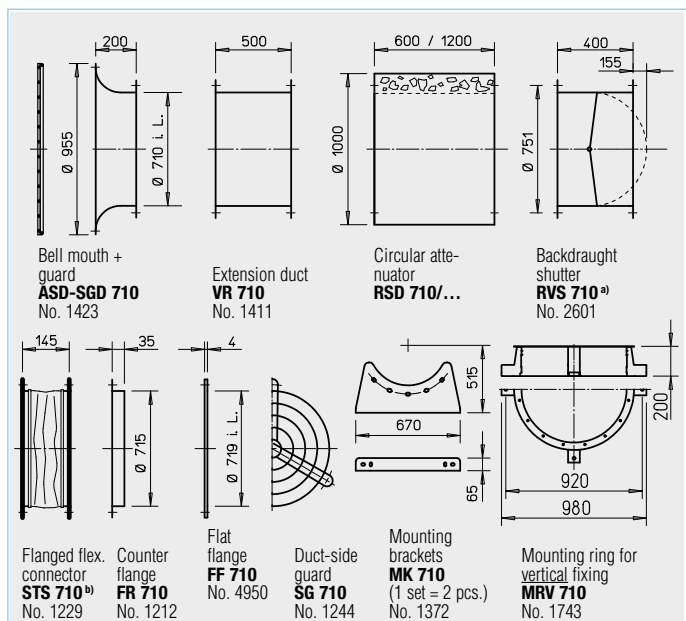
For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 43 kg

MP-Z 710 Ref no. 4910

■ Mounting package MP-P for parallel P unit

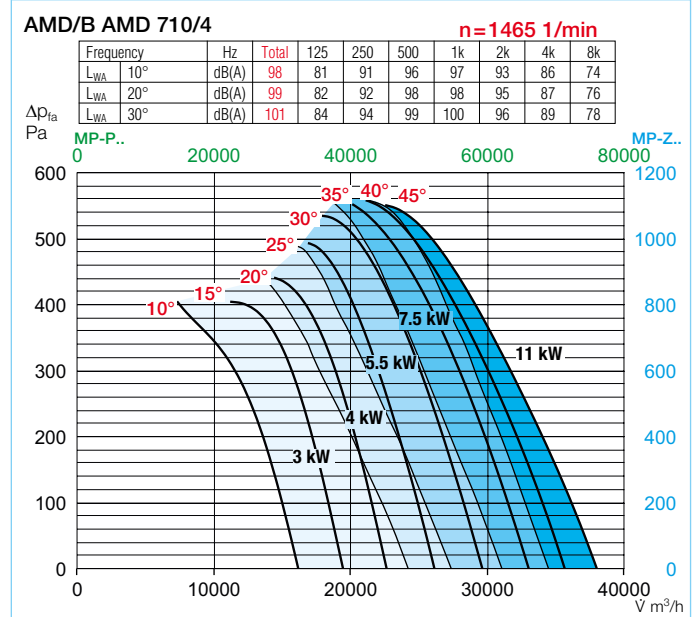
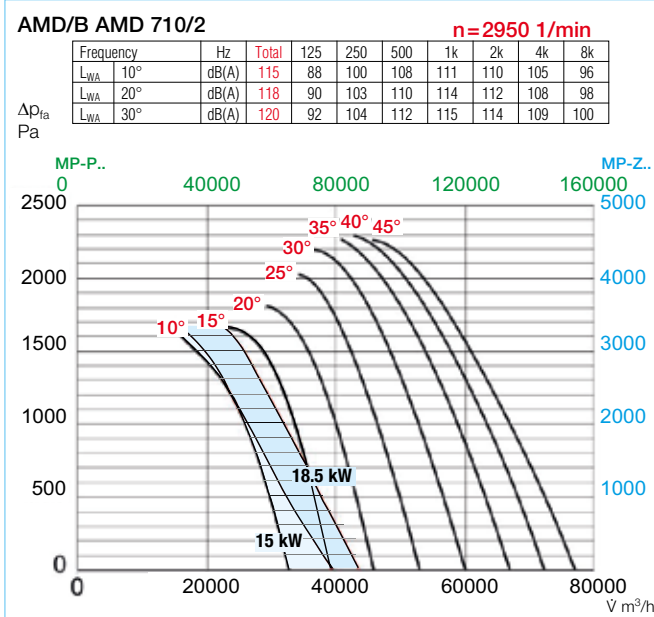
For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 145 kg

MP-P 710 Ref no. 4894



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

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



Type	Ref no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure		Tensile		
		min ⁻¹	kW	V	A	mm	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55															
AMD 710/2 15 kW	5863	2945	15	400 ⁵⁾	27.7	175	776	60	251	MSA 1289	SDD 3	1367	SDZ 3	1366	
AMD 710/2 18.5 kW	5883	2945	18.5	400 ⁵⁾	33.9	230	776	60	266	MSA 1289	SDD 3	1367	SDZ 3	1366	
AMD 710/4 3 kW	3301	1455	3	400	6.0	10	796	60	107	MSA 1289	SDD 2	1453	SDZ 2	1455	
AMD 710/4 4 kW	3302	1500	4	400 ⁵⁾	7.4	60	776	60	114	MSA 1289	SDD 2	1453	SDZ 2	1455	
AMD 710/4 5.5 kW	3303	1470	5.5	400 ⁵⁾	10.7	70	776	60	135	MSA 1289	SDD 2	1453	SDZ 2	1455	
AMD 710/4 7.5 kW	3304	1460	7.5	400 ⁵⁾	14.2	110	776	60	146	MSA 1289	SDD 2	1453	SDZ 2	1455	
AMD 710/4 11 kW	3305	1470	11	400 ⁵⁾	20.9	175	776	60	217	MSA 1289	SDD 3	1367	SDZ 3	1366	
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
											Surface-mounted pole switch				
AMD 710/8/4 0.9/3.2 kW	3306	680/1420	0.9/3.2	400	3.2/7.1	60	777	60	124	PDA 12 ³⁾	5081	SDD 2	1453	SDZ 2	1455
AMD 710/8/4 1.1/4.5 kW	3307	680/1435	1.1/4.5	400	3.6/9.3	70	777	60	150	PDA 12 ³⁾	5081	SDD 2	1453	SDZ 3	1366
AMD 710/8/4 1.5/6.3 kW	3308	680/1440	1.5/6.3	400	4.5/12.3	110	777	60	162	PDA 25	5060	SDD 2	1453	SDZ 3	1366
AMD 710/8/4 2.0/8.9 kW	3309	690/1450	2.0/8.9	400	5.3/17.8	175	777	60	227	PDA 25	5060	SDD 3	1367	SDZ 3	1366
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 710/2 15 kW F300	5914	2945	15.0	400	27.7	158	776	60/300	225	—	—	SDD 6	1926	SDZ 6	1927
B AMD 710/2 18.5 kW F300	5915	2945	18.5	400	33.9	224	776	60/300	273	—	—	SDD 6	1926	SDZ 6	1927
B AMD 710/4 3 kW F300	3420	1455	3	400	6.0	0	776	60/300	116	—	—	SDD 4	1944	SDZ 4	1945
B AMD 710/4 4 kW F300	3421	1460	4	400 ⁵⁾	7.9	4	776	60/300	130	—	—	SDD 5	1924	SDZ 5	1925
B AMD 710/4 5.5 kW F300	3422	1470	5.5	400 ⁵⁾	10.7	41	776	60/300	145	—	—	SDD 5	1924	SDZ 5	1925
B AMD 710/4 7.5 kW F300	3423	1460	7.5	400 ⁵⁾	14.2	80	776	60/300	152	—	—	SDD 5	1924	SDZ 5	1925
B AMD 710/4 11 kW F300	3424	1470	11	400 ⁵⁾	20.9	158	776	60/300	187	—	—	SDD 5	1924	SDZ 5	1925
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
											Surface-mounted pole switch				
B AMD 710/8/4 0.7/2.8 kW F300	3507	710/1440	0.7/2.8	400	2.5/6.0	0	777	60/300	116	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AMD 710/8/4 1/3.8 kW F300	3508	710/1440	1.0/3.8	400	2.9/7.9	4	777	60/300	126	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 1.3/5 kW F300	3509	735/1475	1.3/5.0	400	3.8/10.4	41	777	60/300	151	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 1.8/7.2 kW F300	3510	735/1475	1.8/7.2	400	5.3/15.0	80	777	60/300	164	PDA 25	5060	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 3/11 kW F300	3511	730/1470	3.0/11.0	400	7.0/21.7	158	777	60/300	200	PDA 25	5060	SDD 6	1926	SDZ 6	1927
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 710/4 3 kW F400	3240	1455	3	400	6.0	0	776	60/400	117	—	—	SDD 4	1944	SDZ 4	1945
B AMD 710/4 4 kW F400	3241	1460	4	400 ⁵⁾	7.9	4	776	60/400	130	—	—	SDD 5	1924	SDZ 5	1925
B AMD 710/4 5.5 kW F400	3243	1470	5.5	400 ⁵⁾	10.7	41	776	60/400	145	—	—	SDD 5	1924	SDZ 5	1925
B AMD 710/4 7.5 kW F400	3244	1460	7.5	400 ⁵⁾	14.2	80	776	60/400	152	—	—	SDD 5	1924	SDZ 5	1925
B AMD 710/4 11 kW F400	3245	1470	11	400 ⁵⁾	20.9	158	776	60/400	196	—	—	SDD 6	1926	SDZ 6	1927
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
											Surface-mounted pole switch				
B AMD 710/8/4 0.7/2.8 kW F400	3246	710/1440	0.7/2.8	400	2.5/6.0	0	777	60/400	116	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945
B AMD 710/8/4 1/3.8 kW F400	3247	710/1440	1.0/3.8	400	2.9/7.9	4	777	60/400	127	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 1.3/5 kW F400	3248	735/1475	1.3/5.0	400	3.8/10.4	41	777	60/400	151	PDA 12 ³⁾	5081	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 1.8/7.2 kW F400	3249	735/1475	1.8/7.2	400	5.3/15.0	80	777	60/400	164	PDA 25	5060	SDD 5	1924	SDZ 5	1925
B AMD 710/8/4 3/11 kW F400	3250	730/1470	3.0/11.0	400	7.0/21.7	158	777	60/400	200	PDA 25	5060	SDD 6	1926	SDZ 6	1927

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.

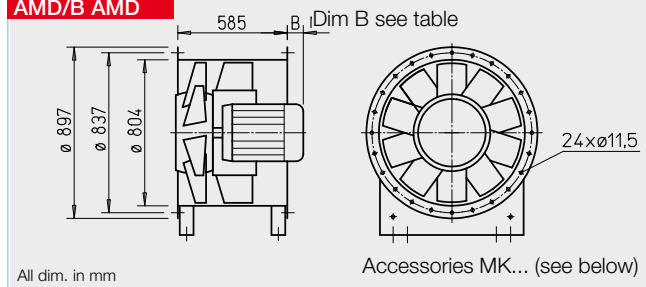


(Fig. incl. mounting bracket (type MK, Accessories))

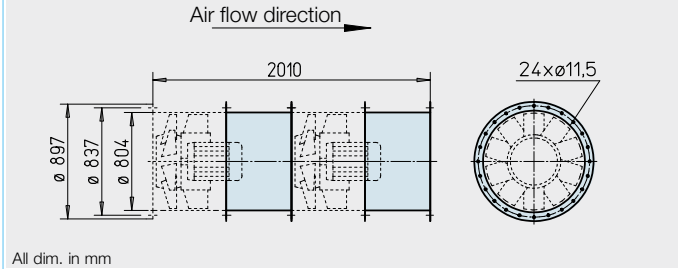
■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-222 F400: Z-78.11-223 Certificate of performance reliability: F300: 0036-CPR-RG05-13 F400: 0036-CPR-RG05-14

AMD/B AMD



MP-Z 800



■ Description, Installation, Casing, Air flow direction, etc. see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

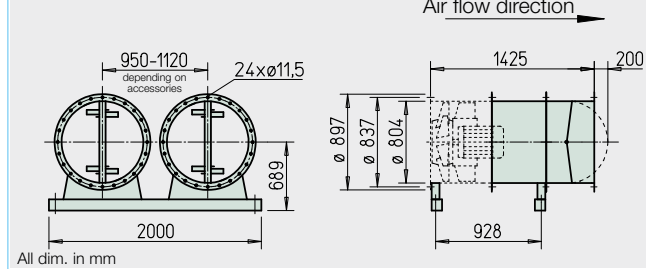
■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

MP-P 800



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

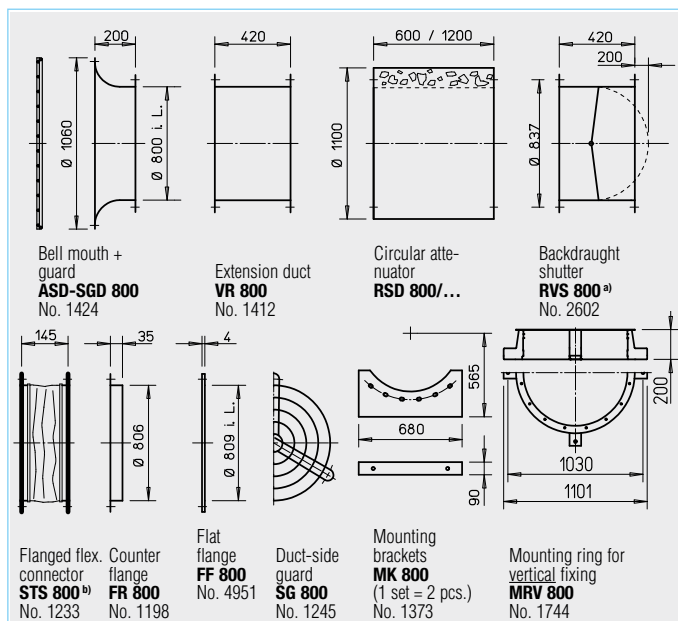
For arrangement of two identical fans in a row, for highest pressure ratings. Scope of delivery: Extension ducts (2 pcs.) and assembly kit. Weight: 60 kg

MP-Z 800 Ref no. 4911

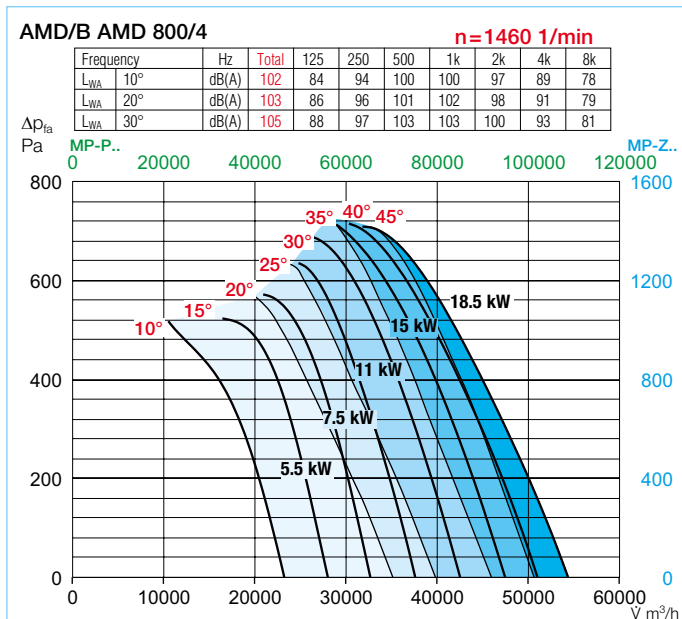
■ Mounting package MP-P for parallel P unit

For arrangement of two identical fans side by side, for highest flow rates. Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits. Weight: 205 kg

MP-P 800 Ref no. 4895



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue
^{b)} Type for B AMD: STSB 800 F400, No. 1919



Information	Page
Techn. description	46
Project planning information	3 ff.
Special designs	
Special design with inspection open. (add. cost) upon request.	

Accessory details	Page
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Type	Ref. no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure		Tensile		
		min ⁻¹	kW	V	A	mm	No.	+° C	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55															
AMD 800/4 5.5 kW	3311	1470	5.5	400 ⁵⁾	10.7	65	776	60	174	MSA 1289	SDD 3	1367	SDZ 3	1366	
AMD 800/4 7.5 kW	3312	1460	7.5	400 ⁵⁾	14.2	100	776	60	185	MSA 1289	SDD 3	1367	SDZ 3	1366	
AMD 800/4 11 kW	3313	1470	11	400 ⁵⁾	20.9	165	776	60	260	MSA 1289	SDD 3	1367	SDZ 3	1366	
AMD 800/4 15 kW	3314	1465	15	400 ⁵⁾	27.9	210	776	60	270	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 6 ⁶⁾	1927	
AMD 800/4 18.5 kW	3315	1470	18.5	400 ⁵⁾	35.1	250	776	60	290	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 6 ⁶⁾	1927	
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
											Surface-mounted pole switch				
AMD 800/8/4 1.5/6.3 kW	3316	680/1440	1.5/6.3	400	4.5/12.3	100	777	60	200	PDA 25 5060	SDD 3	1367	SDZ 3	1366	
AMD 800/8/4 2.0/8.9 kW	3317	690/1450	2.0/8.9	400	5.3/17.8	165	777	60	270	PDA 25 5060	SDD 3	1367	SDZ 3	1366	
AMD 800/8/4 2.7/12 kW	3318	700/1460	2.7/12	400	7.1/24.0	210	777	60	280	PDA 25 5060	SDD 3 ⁶⁾	1367	SDZ 6 ⁶⁾	1927	
AMD 800/8/4 4.0/16 kW	3319	720/1460	4.0/16.0	400	10.6/30.9	250	777	60	310	PDA 63 1283	SDD 3 ⁶⁾	1367	SDZ 7 ⁶⁾	1929	
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 800/4 5.5 kW F300	3514	1470	5.5	400 ⁵⁾	10.7	34	776	60/300	183	—	SDD 5	1924	SDZ 5	1925	
B AMD 800/4 7.5 kW F300	3515	1460	7.5	400 ⁵⁾	14.2	73	776	60/300	191	—	SDD 5	1924	SDZ 5	1925	
B AMD 800/4 11 kW F300	3516	1470	11	400 ⁵⁾	20.9	151	776	60/300	230	—	SDD 6	1926	SDZ 6	1927	
B AMD 800/4 15 kW F300	3517	1465	15	400 ⁵⁾	27.9	195	776	60/300	240	—	SDD 6 ⁷⁾	1926	SDZ 6 ⁶⁾	1927	
B AMD 800/4 18.5 kW F300	3518	1470	18.5	400 ⁵⁾	35.1	217	776	60/300	300	—	SDD 6 ⁷⁾	1926	SDZ 6 ⁶⁾	1927	
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
											Surface-mounted pole switch				
B AMD 800/8/4 1.3/5 kW F300	3519	735/1475	1.3/5.0	400	3.8/10.4	34	777	60/300	190	PDA 12 ³⁾ 5081	SDD 5	1924	SDZ 5	1925	
B AMD 800/8/4 1.8/7.2 kW F300	3520	735/1475	1.8/7.2	400	5.3/15.0	73	777	60/300	210	PDA 25 5060	SDD 6	1926	SDZ 6	1927	
B AMD 800/8/4 3/11 kW F300	3521	730/1470	3.0/11.0	400	7.0/21.7	195	777	60/300	240	PDA 25 5060	SDD 6 ⁶⁾	1926	SDZ 6 ⁶⁾	1927	
B AMD 800/8/4 4.3/17 kW F300	3522	730/1475	4.3/17.0	400	12.7/33.4	217	777	60/300	290	PDA 63 1283	SDD 6 ⁶⁾	1926	SDZ 6 ⁶⁾	1927	
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 800/4 5.5 kW F400	3255	1470	5.5	400 ⁵⁾	10.7	34	776	60/400	185	—	SDD 5	1924	SDZ 5	1925	
B AMD 800/4 7.5 kW F400	3256	1460	7.5	400 ⁵⁾	14.2	73	776	60/400	192	—	SDD 5	1924	SDZ 5	1925	
B AMD 800/4 11 kW F400	3257	1470	11	400 ⁵⁾	20.9	151	776	60/400	240	—	SDD 6	1926	SDZ 6	1927	
B AMD 800/4 15 kW F400	3258	1465	15	400 ⁵⁾	27.9	195	776	60/400	250	—	SDD 6 ⁶⁾	1926	SDZ 6 ⁶⁾	1927	
B AMD 800/4 18.5 kW F400	3259	1470	18.5	400 ⁵⁾	35.1	217	776	60/400	300	—	SDD 6 ⁶⁾	1926	SDZ 6 ⁶⁾	1927	
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
											Surface-mounted pole switch				
B AMD 800/8/4 1.3/5 kW F400	3260	735/1475	1.3/5.0	400	3.8/10.4	34	777	60/400	190	PDA 12 ³⁾ 5081	SDD 5	1924	SDZ 5	1925	
B AMD 800/8/4 1.8/7.2 kW F400	3261	735/1475	1.8/7.2	400	5.3/15.0	73	777	60/400	210	PDA 25 5060	SDD 6	1926	SDZ 6	1927	
B AMD 800/8/4 3/11 kW F400	3262	730/1470	3.0/11.0	400	7.0/21.7	195	777	60/400	240	PDA 25 5060	SDD 6 ⁶⁾	1926	SDZ 6 ⁶⁾	1927	
B AMD 800/8/4 4.3/17 kW F400	3263	730/1475	4.3/17.0	400	12.7/33.4	217	777	60/400	290	PDA 63 1283	SDD 6 ⁶⁾	1926	SDZ 6 ⁶⁾	1927	

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.

⁶⁾ Extension duct VR.. required over the motor protrusion.

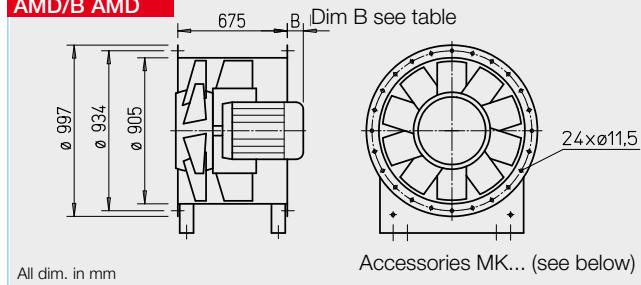


(Fig. incl. mounting bracket (type MK, Accessories))

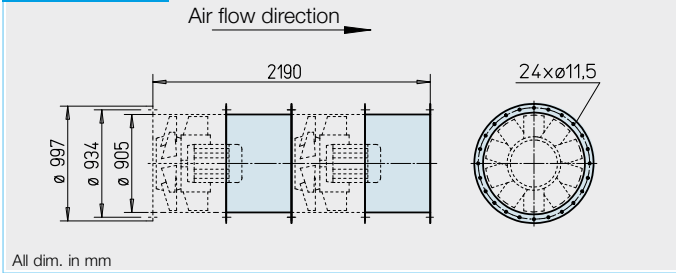
■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3.
 DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

AMD/B AMD



MP-Z 900



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

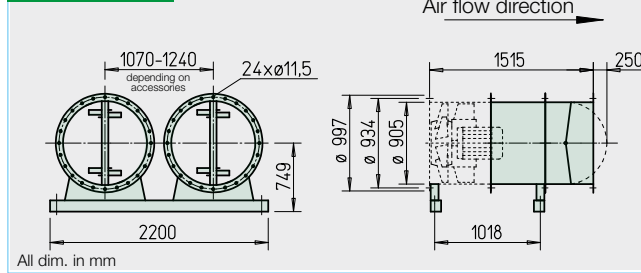
■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

MP-P 900



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

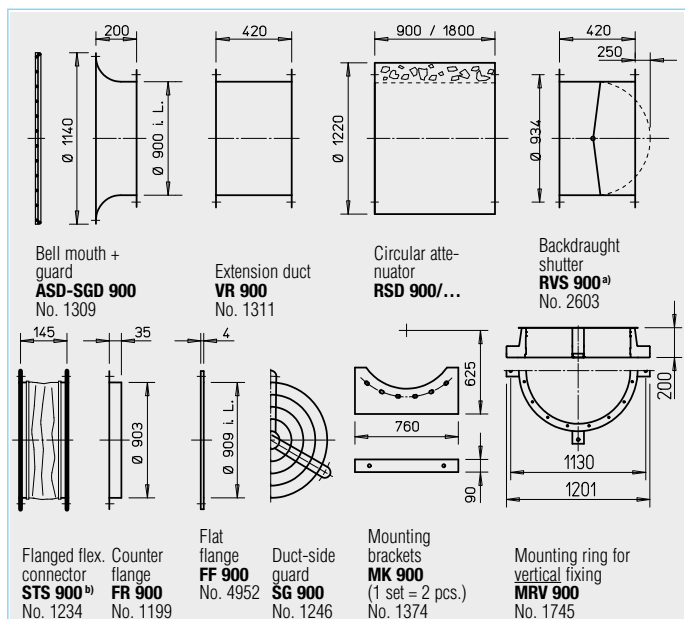
For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 68 kg

MP-Z 900 Ref no. 4912

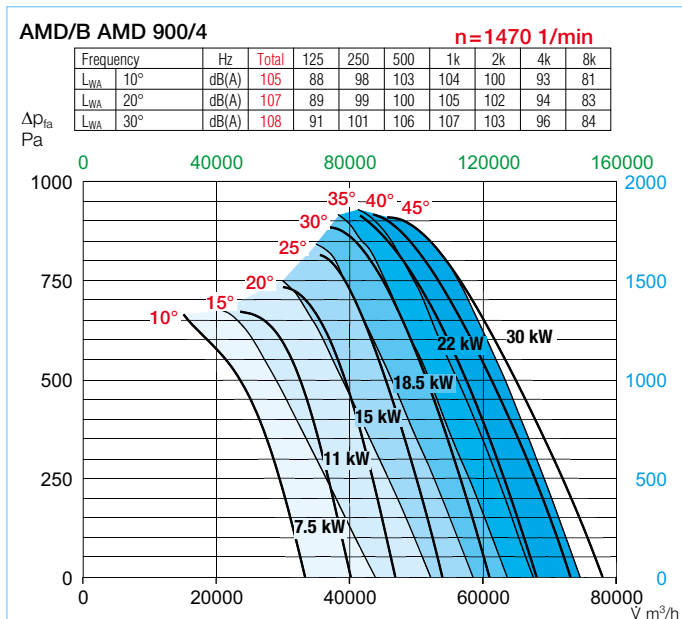
■ Mounting package MP-P for parallel P unit

For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 235 kg

MP-P 900 Ref no. 4896



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue
^{b)} Type for B AMD: STSB 900 F400, No. 1920



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Type	Ref no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure		Tensile		
		min ⁻¹	kW	V	A	mm	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55															
AMD 900/4 7.5 kW	3322	1460	7.5	400 ⁵⁾	14.2	50	776	60	240	MSA 1289	SDD 3	1367	SDZ 3	1366	
AMD 900/4 11 kW	3323	1470	11	400 ⁵⁾	20.9	50	776	60	310	MSA 1289	SDD 3	1367	SDZ 6	1927	
AMD 900/4 15 kW	3324	1465	15	400 ⁵⁾	27.9	110	776	60	320	MSA 1289	SDD 3	1367	SDZ 6	1927	
AMD 900/4 18.5 kW	3325	1470	18.5	400 ⁵⁾	35.1	190	776	60	340	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 900/4 22 kW	3326	1470	22	400 ⁵⁾	41.0	230	776	60	350	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 7 ⁶⁾	1929	
AMD 900/4 30 kW	3327	1480	30	400 ⁵⁾	57.1	290	776	60	410	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 7 ⁶⁾	1929	
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55												Surface-mounted pole switch			
AMD 900/8/4 2.7/12 kW	3328	700/1460	2.7/12	400	7.1/24.0	110	777	60	330	PDA 25 5060	SDD 3	1367	SDZ 6	1927	
AMD 900/8/4 4.0/16 kW	3329	720/1460	4.0/16.0	400	10.6/30.9	190	777	60	360	PDA 63 1283	SDD 3	1367	SDZ 7	1929	
AMD 900/8/4 5.0/19.5 kW	3330	720/1470	5.0/19.5	400	12.9/37.2	230	777	60	370	PDA 63 1283	SDD 3 ⁶⁾	1367	SDZ 7 ⁶⁾	1929	
AMD 900/8/4 7.5/29 kW	3331	720/1470	7.5/29.0	400	18.9/54.7	290	777	60	440	PDA 63 1283	SDD 3 ⁶⁾	1367	SDZ 7 ⁶⁾	1929	
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 900/4 7.5 kW F300	3525	1460	7.5	400 ⁵⁾	14.2	22	776	60/300	250	—	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 11 kW F300	3526	1470	11	400 ⁵⁾	20.9	100	776	60/300	280	—	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 15 kW F300	3527	1465	15	400 ⁵⁾	27.9	144	776	60/300	290	—	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 18.5 kW F300	3528	1470	18.5	400 ⁵⁾	35.1	166	776	60/300	350	—	SDD 7	1928	SDZ 7	1929	
B AMD 900/4 22 kW F300	3529	1470	22	400 ⁵⁾	41.0	204	776	60/300	360	—	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
B AMD 900/4 30 kW F300	3530	1480	30	400 ⁵⁾	57.1	230	776	60/300	420	—	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55												Surface-mounted pole switch			
B AMD 900/8/4 3/11 kW F300	3535	730/1470	3.0/11.0	400	7.0/21.7	144	777	60/300	290	PDA 25 5060	SDD 6	1926	SDZ 6	1927	
B AMD 900/8/4 4.3/17 kW F300	3536	730/1475	4.3/17.0	400	12.7/33.4	166	777	60/300	340	PDA 63 1283	SDD 7	1928	SDZ 7	1929	
B AMD 900/8/4 5/20 kW F300	3537	730/1470	5.0/20.0	400	14.1/38.6	204	777	60/300	350	PDA 63 1283	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
B AMD 900/8/4 6.5/28 kW F300	3538	735/1480	6.5/28.0	400	18.0/52.0	230	777	60/300	410	PDA 63 1283	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 900/4 7.5 kW F400	3264	1460	7.5	400 ⁵⁾	14.2	22	776	60/400	250	—	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 11 kW F400	3265	1470	11	400 ⁵⁾	20.9	100	776	60/400	290	—	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 15 kW F400	3266	1465	15	400 ⁵⁾	27.9	144	776	60/400	300	—	SDD 6	1926	SDZ 6	1927	
B AMD 900/4 18.5 kW F400	3267	1470	18.5	400 ⁵⁾	35.1	166	776	60/400	350	—	SDD 7	1928	SDZ 7	1929	
B AMD 900/4 22 kW F400	3268	1470	22	400 ⁵⁾	41.0	204	776	60/400	360	—	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55												Surface-mounted pole switch			
B AMD 900/8/4 3/11 kW F400	3269	730/1470	3.0/11.0	400	7.0/21.7	144	777	60/400	290	PDA 25 5060	SDD 6	1926	SDZ 6	1927	
B AMD 900/8/4 4.3/17 kW F400	3270	730/1475	4.3/17.0	400	12.7/33.4	166	777	60/400	340	PDA 63 1283	SDD 7	1928	SDZ 7	1929	
B AMD 900/8/4 5/20 kW F400	3271	730/1470	5.0/20.0	400	14.1/38.6	204	777	60/400	350	PDA 63 1283	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.

⁶⁾ Extension duct VR.. required over the motor protrusion.

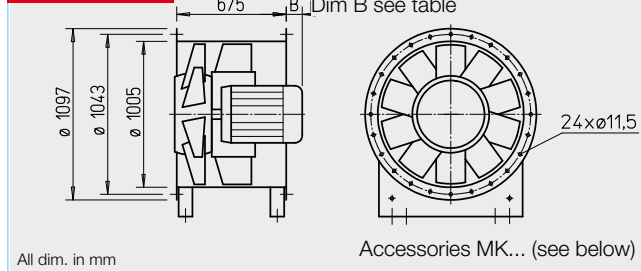


(Fig. incl. mounting bracket (type MK, Accessories))

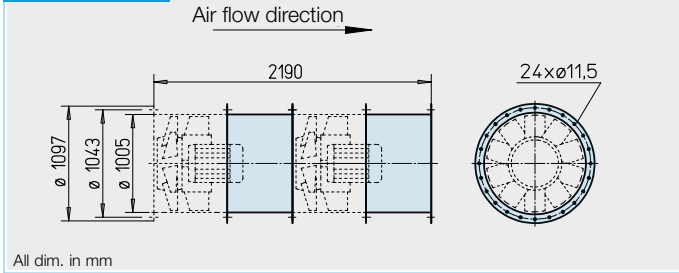
■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3.
 DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

AMD/B AMD



MP-Z 1000



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

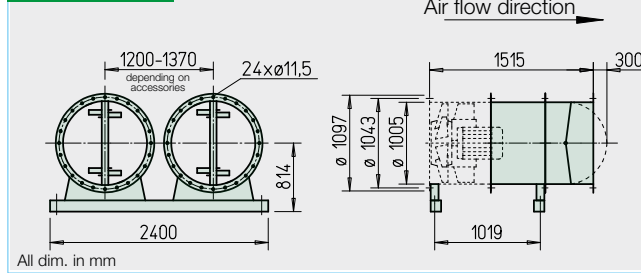
■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

MP-P 1000



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

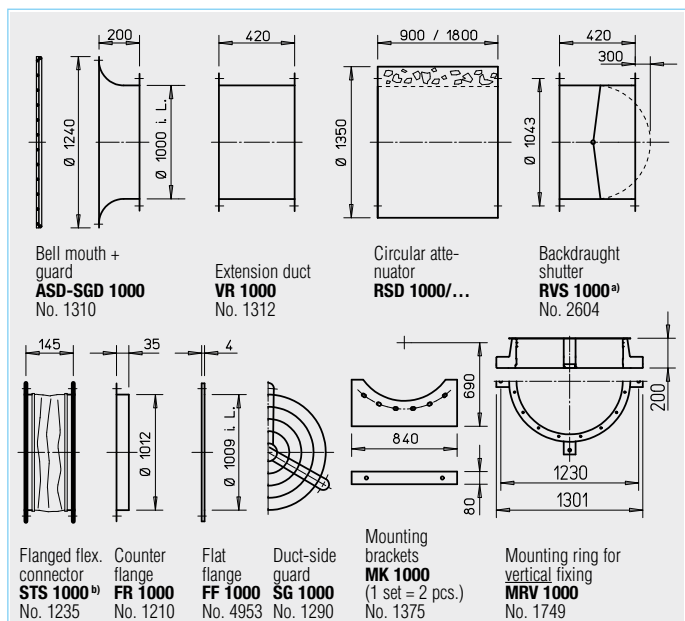
For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 75 kg

MP-Z 1000 Ref no. 4913

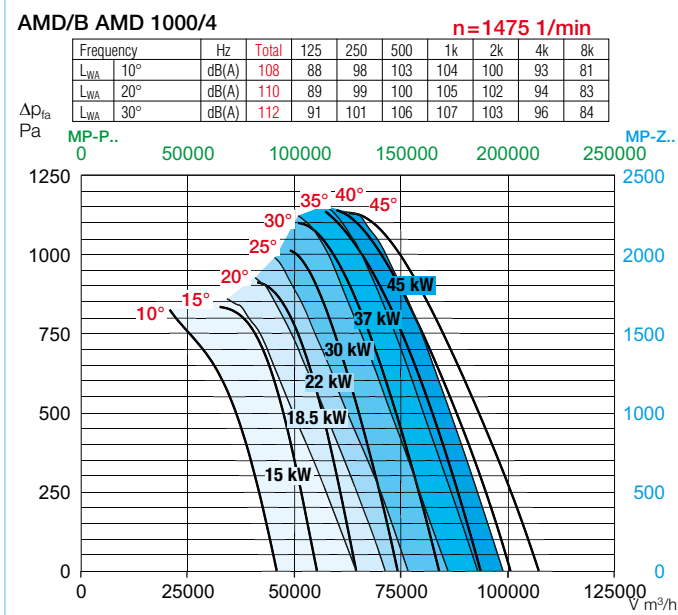
■ Mounting package MP-P for parallel P unit

For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 255 kg

MP-P 1000 Ref no. 4897



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue
^{b)} Type for B AMD: STSB 1000 F400, No. 1921



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Type	Ref no.	Speed	Nominal motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure		Tensile		
		min ⁻¹	kW	V	A	mm	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55															
AMD 1000/4 15 kW	3667	1465	15	400 ⁵⁾	27.9	160	776	60	360	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 1000/4 18.5 kW	3668	1470	18.5	400 ⁵⁾	35.1	195	776	60	370	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 1000/4 22 kW	3669	1470	22	400 ⁵⁾	41.0	235	776	60	390	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 1000/4 30 kW	3670	1480	30	400 ⁵⁾	57.1	290	776	60	450	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 7 ⁶⁾	1929	
AMD 1000/4 37 kW	3671	1480	37	400 ⁵⁾	66.8	300	776	60	460	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 7 ⁶⁾	1929	
AMD 1000/4 45 kW	3672	1475	45	400 ⁵⁾	80.9	325	776	60	490	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 8 ⁶⁾	1931	
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
AMD 1000/8/4 4.0/16 kW	3674	720/1460	4.0/16.0	400	10.6/30.9	195	777	60	390	PDA 63 1283	SDD 3	1367	SDZ 7	1929	
AMD 1000/8/4 5.0/19.5 kW	3675	720/1470	5.0/19.5	400	12.9/37.2	235	777	60	410	PDA 63 1283	SDD 3	1367	SDZ 7	1929	
AMD 1000/8/4 7.5/29.0 kW	3676	720/1470	7.5/29.5	400	18.9/54.7	325	777	60	470	PDA 63 1283	SDD 3 ⁶⁾	1367	SDZ 8 ⁶⁾	1931	
AMD 1000/8/4 9.5/40.0 kW	3677	725/1475	9.5/40.0	400	24.3/72.1	300	777	60	530	PDA 115 1352	SDD 3 ⁶⁾	1367	SDZ 8 ⁶⁾	1931	
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 1000/4 15 kW F300	3630	1465	15	400 ⁵⁾	27.9	150	776	60/300	330	—	SDD 6	1926	SDZ 6	1927	
B AMD 1000/4 18.5 kW F300	3631	1470	18.5	400 ⁵⁾	35.1	210	776	60/300	380	—	SDD 7	1928	SDZ 7	1929	
B AMD 1000/4 22 kW F300	3632	1470	22	400 ⁵⁾	41.0	210	776	60/300	390	—	SDD 7	1928	SDZ 7	1929	
B AMD 1000/4 30 kW F300	3633	1480	30	400 ⁵⁾	57.1	275	776	60/300	460	—	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
B AMD 1000/4 37 kW F300	3634	1480	37	400 ⁵⁾	66.8	325	776	60/300	560	—	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
B AMD 1000/4 45 kW F300	3635	1475	45	400 ⁵⁾	80.9	325	776	60/300	590	—	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
B AMD 1000/8/4 4.3/17 kW F300	3636	730/1475	4.3/17.0	400	12.7/33.4	170	777	60/300	370	PDA 63 1283	SDD 7	1928	SDZ 7	1929	
B AMD 1000/8/4 5.0/20 kW F300	3637	730/1470	5.0/20.0	400	14.1/38.6	210	777	60/300	390	PDA 63 1283	SDD 7	1928	SDZ 7	1929	
B AMD 1000/8/4 6.5/28 kW F300	3638	735/1480	6.5/28.0	400	18.0/52.0	275	777	60/300	450	PDA 63 1283	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
B AMD 1000/8/4 9.2/37 kW F300	3639	740/1485	9.2/37.0	400	25.4/74.2	325	777	60/300	570	PDA 115 1352	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
B AMD 1000/8/4 11/44 kW F300	3640	740/1480	11.0/44.0	400	27.2/84.1	325	777	60/300	630	PDA 115 1352	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 1000/4 15 kW F400	3580	1465	15	400 ⁵⁾	27.9	150	776	60/400	330	—	SDD 6	1926	SDZ 6	1927	
B AMD 1000/4 18.5 kW F400	3581	1470	18.5	400 ⁵⁾	35.1	210	776	60/400	390	—	SDD 7	1928	SDZ 7	1929	
B AMD 1000/4 22 kW F400	3582	1470	22	400 ⁵⁾	41.0	210	776	60/400	390	—	SDD 7	1928	SDZ 7	1929	
B AMD 1000/4 30 kW F400	3583	1480	30	400 ⁵⁾	57.1	275	776	60/400	460	—	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
B AMD 1000/4 37 kW F400	3584	1480	37	400 ⁵⁾	66.8	325	776	60/400	590	—	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
B AMD 1000/4 45 kW F400	3585	1475	45	400 ⁵⁾	80.9	325	776	60/400	590	—	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
B AMD 1000/8/4 4.3/17 kW F400	3597	730/1475	4.3/17.0	400	12.7/33.4	170	777	60/400	370	PDA 63 1283	SDD 7	1928	SDZ 7	1929	
B AMD 1000/8/4 5.0/20 kW F400	3598	730/1470	5.0/20.0	400	14.1/38.6	210	777	60/400	390	PDA 63 1283	SDD 7	1928	SDZ 7	1929	
B AMD 1000/8/4 6.5/28 kW F400	3599	735/1480	6.5/28.0	400	18.0/52.0	275	777	60/400	442	PDA 63 1283	SDD 7 ⁶⁾	1928	SDZ 7 ⁶⁾	1929	
B AMD 1000/8/4 9.2/37 kW F400	3600	740/1485	9.2/37.0	400	25.4/74.2	325	777	60/400	567	PDA 115 1352	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
B AMD 1000/8/4 11/44 kW F400	3601	740/1480	11.0/44.0	400	27.2/84.1	325	777	60/400	632	PDA 115 1352	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.

⁶⁾ Extension duct VR.. required over the motor protrusion.

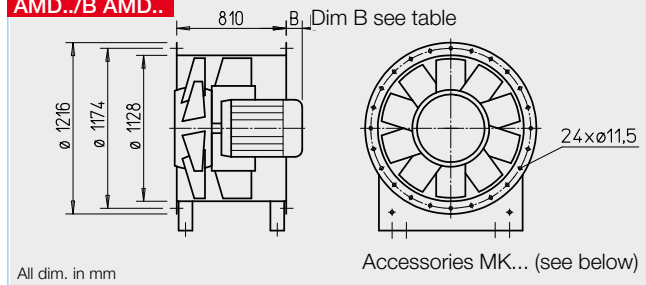


(Fig. incl. mounting bracket (type MK, Accessories))

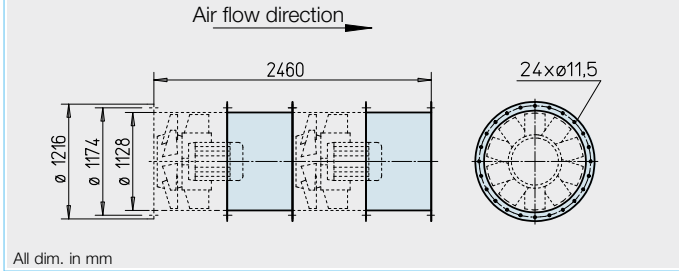
■ Certification

The smoke ventilation fans B AMD have been tested according to DIN EN 12101-3.
 DIBt approval:
 F300: Z-78.11-222
 F400: Z-78.11-223
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-13
 F400: 0036-CPR-RG05-14

AMD../B AMD..



MP-Z 1120



■ Description, Installation, Casing, Air flow direction, etc.
 see page 46.

■ Impeller

- Hub and blades made from corrosion-resistant aluminium alloy. Ten aerodynamically profiled blades achieve the highest level of efficiency and pressure ratings together with the guide vane.
- Dynamically balanced, quality class 6.3 for low-vibration operation.
- Blades can be steplessly adjusted in the factory.

■ Motor

- Series AMD: Direct through efficient IE3 standard three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55, insulation class F.
- Series B AMD: Direct through efficient IE3 three phase motor (smoke extraction motors F300 or F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. Fire-resistant external cable with sheathing.

■ Motor protrusion

- For some types, the motor protrudes over the casing. Protrusion dimension B in mm must be observed according to the type table.

■ Motor protection

- All types have PTC resistors from the terminal box. This must be bridged in smoke extraction mode for B AMD models.

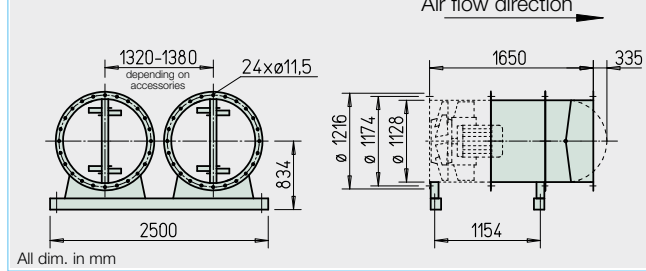
■ Electrical connection

- Series AMD: Standard plastic terminal box (protection class IP55), mounted to outside of duct.
- Series B AMD: Standard aluminium die-cast terminal box (protection class IP55), mounted to outside of duct.

■ Air flow temperatures

- Series AMD: Suitable for supply and extract ventilation from -20 °C to +60 °C continuous temperature. Types for higher air flow temperatures upon request.
- Series B AMD: Like series AMD, but also for smoke extraction according to the temperature classification up to 300 °C/120 min. and 400 °C/120 min.

MP-P 1120



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

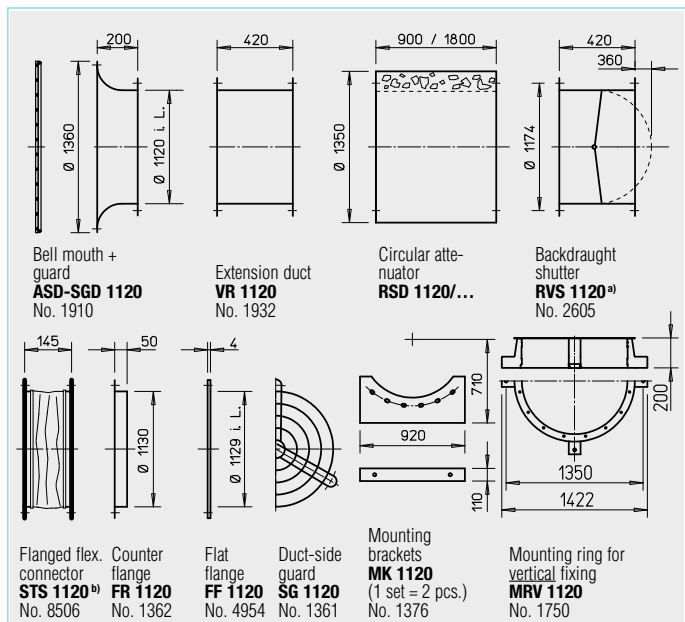
For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 85 kg

MP-Z 1120 Ref no. 4914

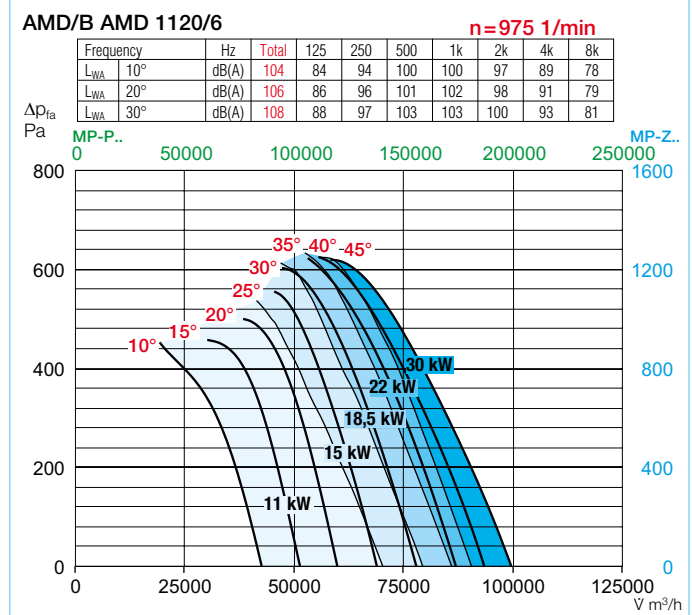
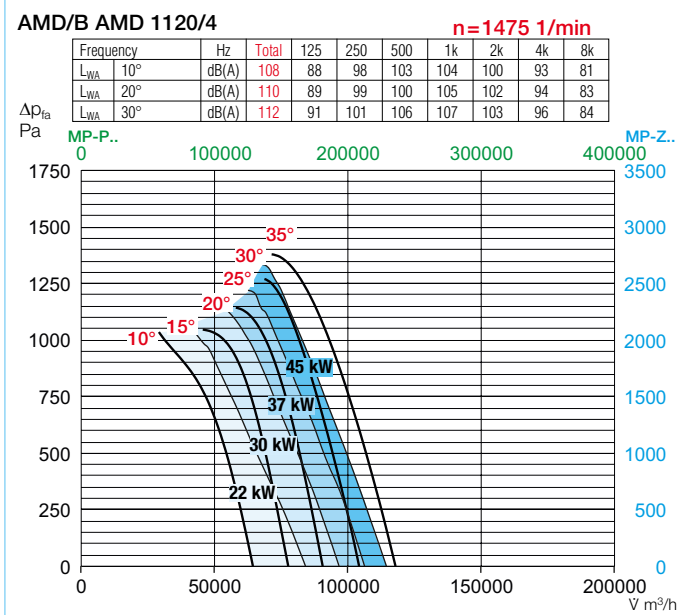
■ Mounting package MP-P for parallel P unit

For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 290 kg

MP-P 1120 Ref no. 4898



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue
^{b)} Type for B AMD: STSB 1120 F400, No. 1922



Information	Page
Techn. description	46
Project planning information	3 ff.

Special designs	Page
Special design with inspection open. (add. cost) upon request.	

Accessory details	Page
Mounting accessories	175 ff.
Attenuators	180
Gas warning systems, switch and control technology	182 ff.
Frequency inverters	192 f.

Type	Ref no.	Speed	Nom. motor power (output)	Nominal voltage	Nominal current	Dim. B motor protrusion	Wiring diagram	max. air low temp. ¹⁾	Net weight	Full motor protection or pole switch	Anti-vibration mounts ⁴⁾				
											Pressure	Tensile	Type	Ref no.	
		min ⁻¹	kW	V	A	mm	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
60° Three phase motor, 400 V, 50 Hz, protection class IP55															
AMD 1120/6 11 kW	3899	975	11	400 ⁵⁾	21.9	25	776	60	400	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 1120/6 15 kW	3900	975	15	400 ⁵⁾	28.2	100	776	60	430	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 1120/6 18.5 kW	3901	980	18.5	400 ⁵⁾	35.9	150	776	60	489	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 1120/6 22 kW	3902	980	22	400 ⁵⁾	42.4	150	776	60	508	MSA 1289	SDD 3	1367	SDZ 8	1931	
AMD 1120/6 30 kW	3903	985	30	400 ⁵⁾	56.0	190	776	60	544	MSA 1289	SDD 3	1367	SDZ 8	1931	
AMD 1120/4 22 kW	3953	1470	22	400 ⁵⁾	41.0	100	776	60	484	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 1120/4 30 kW	3954	1480	30	400 ⁵⁾	57.1	150	776	60	535	MSA 1289	SDD 3	1367	SDZ 7	1929	
AMD 1120/4 37 kW	3955	1480	37	400 ⁵⁾	66.8	165	776	60	592	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 8 ⁶⁾	1931	
AMD 1120/4 45 kW	3956	1475	45	400 ⁵⁾	80.9	190	776	60	614	MSA 1289	SDD 3 ⁶⁾	1367	SDZ 8 ⁶⁾	1931	
60° Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
AMD 1120/8/4 4.0/16.0 kW	3924	720/1460	4.0/16.0	400	10.6/30.9	60	777	60	405	PDA 63 1283	SDD 3	1367	SDZ 7	1929	
AMD 1120/8/4 5.0/19.5 kW	3925	720/1470	5.0/19.5	400	12.9/37.2	100	777	60	490	PDA 63 1283	SDD 3	1367	SDZ 7	1929	
AMD 1120/8/4 7.5/29.0 kW	3926	720/1470	7.5/29.5	400	18.9/54.7	150	777	60	535	PDA 63 1283	SDD 3	1367	SDZ 8	1931	
AMD 1120/8/4 9.5/40.0 kW	3927	725/1475	9.5/40.0	400	24.4/72.1	190	777	60	590	PDA 115 1352	SDD 3 ⁶⁾	1367	SDZ 8 ⁶⁾	1931	
F300 F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B AMD 1120/6 11 kW	5921/3818	975	11	400 ⁵⁾	21.9	9/15	776	60/400	395/400	—	SDD 7	1928	SDZ 7	1929	
B AMD 1120/6 15 kW	5922/3819	975	15	400 ⁵⁾	28.2	69/75	776	60/400	440/445	—	SDD 7	1928	SDZ 7	1929	
B AMD 1120/6 18.5 kW	5923/3820	980	18.5	400 ⁵⁾	35.9	134/140	776	60/400	470/475	—	SDD 7	1928	SDZ 7	1929	
B AMD 1120/6 22 kW	5924/3821	980	22	400 ⁵⁾	42.4	134/140	776	60/400	480/485	—	SDD 8	1930	SDZ 8	1931	
B AMD 1120/6 30 kW	5956/3822	985	30	400 ⁵⁾	56.0	223/230	776	60/400	635/640	—	SDD 8	1930	SDZ 8	1931	
B AMD 1120/4 22 kW	5986/3619	1470	22	400 ⁵⁾	41.0	69/75	776	60/400	455/460	—	SDD 7	1928	SDZ 7	1929	
B AMD 1120/4 30 kW	5988/3620	1480	30	400 ⁵⁾	57.1	134/140	776	60/400	498/503	—	SDD 8	1930	SDZ 8	1931	
B AMD 1120/4 37 kW	5989/3621	1480	37	400 ⁵⁾	66.8	223/190	776	60/400	635/640	—	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
B AMD 1120/4 45 kW	5990/3622	1475	45	400 ⁵⁾	80.9	223/190	776	60/400	670/675	—	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
F300 F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55 Surface-mounted pole switch															
B AMD 1120/8/4 4.3/17 kW	6030/3962	730/1475	4.3/17.0	400	12.7/33.4	31/35	777	60/400	432/437	PDA 63 1283	SDD 7	1928	SDZ 7	1929	
B AMD 1120/8/4 5.0/20 kW	6031/3963	730/1470	5.0/20.0	400	14.1/38.6	69/75	777	60/400	447/452	PDA 63 1283	SDD 7	1928	SDZ 7	1929	
B AMD 1120/8/4 6.5/28 kW	6037/3964	735/1480	6.5/28.0	400	18.0/52.0	134	777	60/400	505/510	PDA 63 1283	SDD 8	1930	SDZ 8	1931	
B AMD 1120/8/4 9.2/37 kW	6038/3965	740/1485	9.2/37.0	400	25.4/74.2	223	777	60/400	630/635	PDA 115 1352	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	
B AMD 1120/8/4 11/44 kW	6039/3966	740/1480	11.0/44.0	400	27.2/84.1	223	777	60/400	695/700	PDA 115 1352	SDD 8 ⁶⁾	1930	SDZ 8 ⁶⁾	1931	

The flow volume and pressure increase information is required to determine the pitch angle.

¹⁾ For ventilation / smoke extraction (once 120 min.).

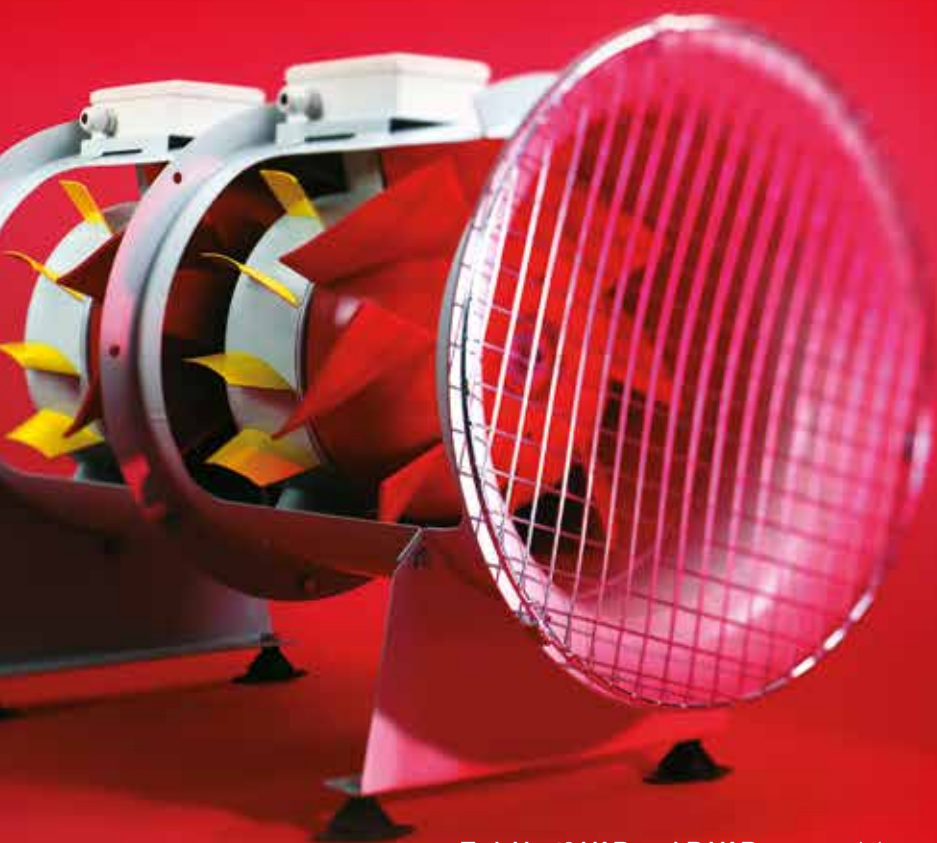
³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.

⁵⁾ Y/Δ start-up.

⁶⁾ Extension duct VR... required over the motor protrusion.

High pressure in-line fans.
RADAX® synergy.



TwinVent® VAR and B VAR fans in two-stage design or as parallel units. Particularly suitable for car park ventilation in accordance with the requirements in the Ordinance Governing Parking Facilities (GaVo) and VDI 2053. Certified for temperature classes F300/F400 DIN EN 12101-3.

Parallel units P-VAR are advantageous when large air flow volumes and high pressures are required in a compact design. The direct integration in the ducting system results in the considerable reduction of the required installation space, low-loss air flow

and the reduction of installation costs.

The integrated automatic back-draught shutters on the discharge side prevent backflow during partial load operation, standstill or fan failure.

Two-stage TwinVent® Z-VAR are particularly versatile as «power units» with the highest pressure rates in a compact design.

Two semi-axial fans connected in series with downstream guide vanes ensure unrivalled power density and advantageous installations with minimum space requirement.

WITH EFFICIENT IE3 MOTORS

NEW

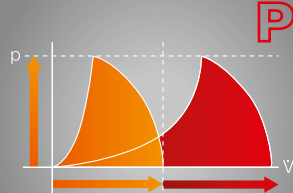
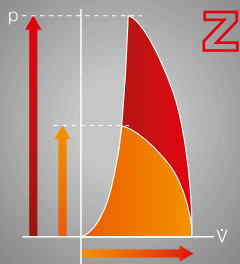


RADAX® VAR combines the performance characteristics of centrifugal fans with axial air flow.

This synergy leads to enormous benefits:

- Maximum power with minimum energy costs
- Low sound levels
- High pressure, high volume
- Improving efficiency
- Reduced space requirement
- Low installation costs
- Planning freedom
- energy saving





Two-stage units

Parallel units

The RADAX® impellers ideally combine the advantages of axial and centrifugal fans and ensure high pressure at high air flow rates in the compact casing.
The complete VAR range includes single-stage, two-stage and parallel units, also for smoke extraction.

See page 6 f.



HIGH PRESSURE SMOKE EXHAUST FANS
Product-specific information

74^{ff}

HIGH PRESSURE FANS
Product-specific information

74^{ff}

B VAR
for smoke extraction according to DIN 12101-3 in temperature classes:

– F300
Ø 280 to 1000 mm

76^{ff}

– F400
Ø 500 to 1000 mm

86^{ff}

– F600
Ø 500 to 1000 mm

100^{ff}

VAR
for ventilation operation

– Ø 225 to 630 mm

Helios
Main Catalogue

– Ø 710 to 1000 mm

92^{ff}

■ **Application**

- Versatile application in technical building equipment, e.g. for the supply and extract ventilation of car parks or airports, etc.
- In the permanent supply and extract ventilation operation from -30 °C to max. +60 °C air flow temperature.
- For preventive fire protection to secure smoke and heat extraction.
- For applications with air flow temperatures of 300 °C, 400 °C and 600 °C for 120 min. (F300, F400 and F600).

■ **Features**

RADAX® VAR and B VAR are high pressure in-line fan series, which ideally combine the characteristics of axial and centrifugal fans. The semi-axial impeller is coordinated with the fixed guide vane so that high pressure and flow rate performance is achieved with high efficiency.

■ **Casing**

Duct casing with flanges on both sides pursuant to DIN 24155, pt. 3 with integrated guide blading and galvanised steel motor support.

■ **Impeller**

□ **Series VAR:**

Semi-axial impeller with eight spatially curved blades made from hot-dip galvanised steel. Aluminium (additional cost) available upon request. High efficiency, low operating noise level, high corrosion-resistance, low-vibration operation due to dynamic balancing, quality class G 6.3.

□ **Series B VAR:**

Semi-axial impeller with eight spatially curved blades. Made from cast aluminium up to size 315. Made from hot-dip galvanised steel over size 355. High efficiency, low operating noise level, high corrosion-resistance, low-vibration operation due to dynamic balancing, quality class G 6.3.

■ **Motor**

For single-speed fans with a three-phase motor and a nominal motor power ≤ 2.20 kW the connection for direct start-up is provided, fans with a nominal motor power ≥ 3.00 kW for star-delta start-up.

□ **Series VAR:**

Direct through maintenance-free flange motor. Enclosed design IP54. Aluminium casing with cooling fins. interference-free, sealed ball bearings. Tropicalised winding with humidity protection impregnation. With condensation drain holes upon request, installation type specification necessary when ordering for this purpose.

□ **Series B VAR:**

Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. 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 types (except pole-switching and explosion-proof) have thermal contacts or PTC resistors as standard and must be protected by the following full motor protection devices pursuant to the footnotes in the tables: MSA, Ref no. 1289 (for PTC temperature sensors) M4, Ref no. 1571 All other types must be protected by a conventional circuit breaker on site

□ **Series B VAR:**

The B VAR types (except Dahlander) are equipped with PTC resistors as standard and must be protected by the following full motor protection devices pursuant to the footnotes in the tables: MSA, Ref no. 1289 (for PTC temperature sensors) This must be bridged in smoke extraction mode.

■ **Electrical connection**

Standard plastic terminal box (protection class IP54) (series VAR) or in temperature-resistant design (series B VAR), outside of duct.

■ **Air flow temperatures**

VAR – suitable for supply and extract ventilation up to max. +60 °C continuous temperature. B VAR – suitable for flue gases up to 300 °C/120 min. (F300), 400 °C/120 min. (F400) and 600 °C/120 min. (F600).

■ **Air output**

- The smoke and heat exhaust fans B VAR are manufactured with an increased gap between casing and impeller. During ventilation mode (cold operation +40 °C) a reduced output of approx. 5 % is expected for the F300 types and approx. 10 % for the F400 types. In a smoke extraction situation, the gap between casing and impeller will reduce. This results in the performance curves shown on the product pages. This must be taken into account when dimensioning.

■ **Air flow direction**

The air flow direction cannot be changed, however it can be determined by the installation type. The correct motor rotation direction and air flow direction is marked by arrows on the fan.

■ **Noise levels**

- The sound power levels are indicated by means of frequency and as sum levels for different pitch angles above the performance curves on the product pages.

■ **Certification**

Fire gas test according to DIN EN 12101-3
Certificate of performance reliability:
F300: 0036-CPR-RG05-01
F400: 0036-CPR-RG05-05
F600: 0036-CPR-RG05-02
With DIBt approval:
F300: Z-78.11-147
F400: Z-78.11-148
F600: Z-78.11-149

■ **Installation**

□ **Series VAR:**

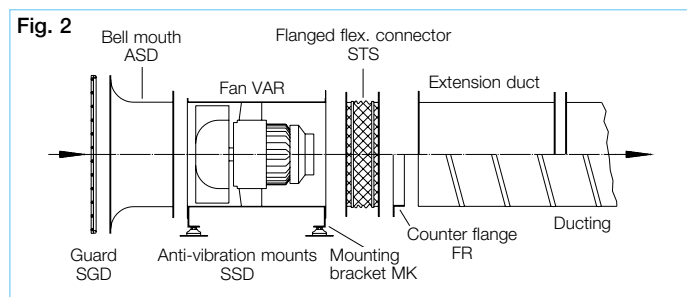
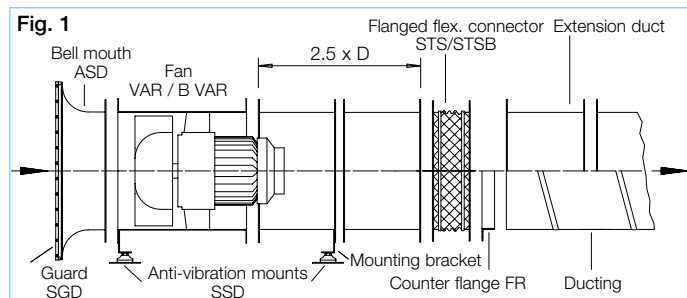
Suitable for installation in any position, however depending on usage perhaps consider condensation drainage holes. In order to prevent vibration transmission, the use of anti-vibration dampers is recommended (Accessories).

□ **Series B VAR:**

Horizontal and vertical installation depending on the installation site:

- 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. In order to prevent the transmission of vibrations, the use of anti-vibration mounts is recommended (Accessories). In case of outdoor installation or installation in constantly wet or damp environments, or in case of vertical shaft installation, this must be specified when ordering.

Compliance with Federal and regional fire protection regulations.
□ In order to achieve the specified performance values, a duct section with length = 2.5 x duct diameter is required with free outflow, as well as a corresponding duct section for duct installation (intake and discharge side) (Fig. 1).
□ RADAX® VAR and B VAR can be installed in any position; hole positioning must be considered for equipment with condensation drain holes. Large motors may protrude from the back and may cause uneven distribution due to the high weight. An extension duct (type VR, Accessories) is provided to move the centre of gravity (Fig. 1).



Horizontal installation

Free inlet, discharge side operation. Ceiling, wall or floor installation (Fig. 2).

Horizontal installation with attenuator

Free inlet, discharge side operation with attenuator. Circular attenuators can be flange connected to reduce intake and discharge side sound power levels (Fig. 3).

Ceiling suspension

Fig. 4 shows the typical installation in ventilation operation. The VAR systems can be installed on ceilings or walls by direct suspension without any addition to the wall. The duct casing with flanges on both sides (according to DIN 24155, pt.3) is for direct installation in the ducting.

Vertical installation

Integrated in the ducting with intake side attenuator. Wall installation. The elements must be suspended separately depending on the weights. For inspection, do not install fan with load distribution.

Selection of anti-vibration dampers (Fig. 8)

In order to optimally reduce the vibrations caused by rotating components in the fan, the correct selection of anti-vibration mounts is essential. The design is based on the calculated weight of the fan including attachments to be vibration dampened. For this purpose, the individual net weights of the components must be added.

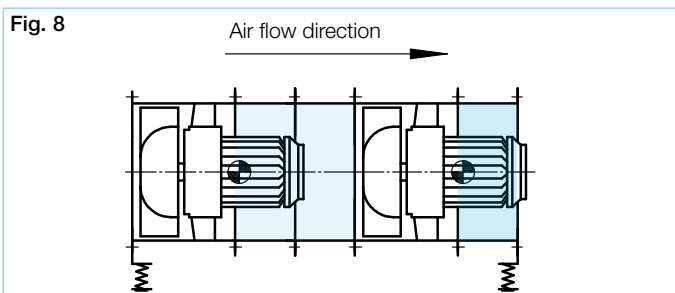
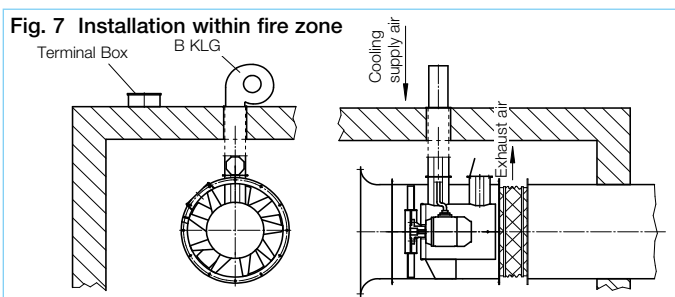
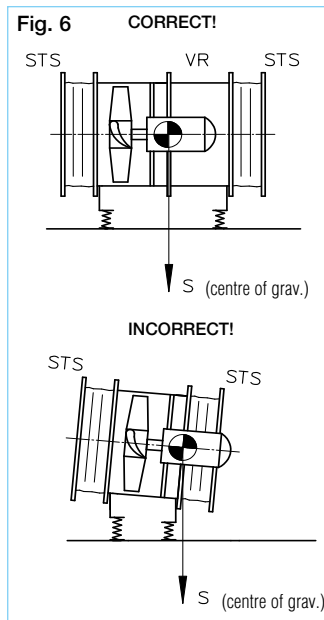
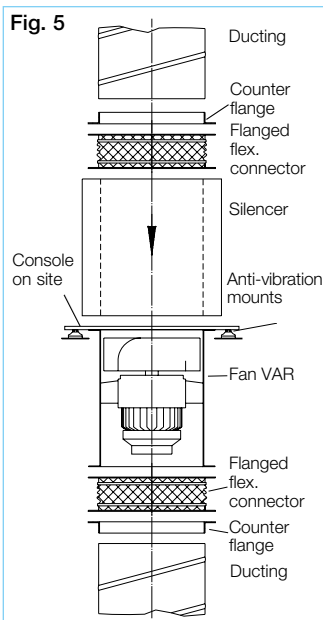
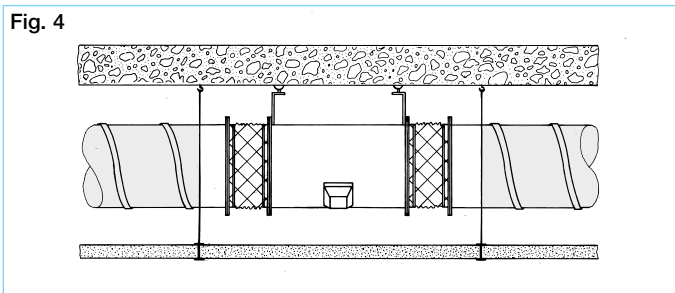
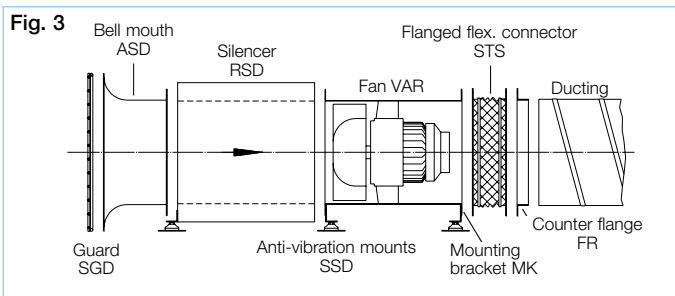
Example:

B VAR 900/4 37 kW F300 as Z unit

1) Calculation of mass to be dampened	
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 B VAR 500/2 and 500/4/2, an additional extension duct is required (to be ordered separately).

- 2) Selection of anti-vibration dampers (see page 164).
Up to 1300 kg = SDD 9



Two-stage and parallel units

The wide-ranging requirements in relation to pressure increases, output and space requirement are often fulfilled in the area of technical building equipment (TGA) with two-stage Z or parallel P units. The Helios range offers suitable mounting packages for the respective units:

Two-stage unit / mounting package MP-Z

Two fans connected in series ensure unrivalled power density and advantageous installation due to the smallest space requirement. The two fans are arranged one behind the other and connected by means of extension ducts.

Mounting package MP-Z (scope of delivery):

Extension ducts (2 pcs.) incl. assembly kit (hexagon screws, nuts, spring washers).

Parallel unit / mounting package MP-P

Two fans connected in parallel bring high flow rates with corresponding pressure ratings and they specifically meet the requirements for car park ventilation and smoke extraction. Two identical fans side by side operate in a joint duct system.

Mounting package MP-P (scope of delivery):

Extension ducts (2 St.), Backdraught shutter (2 pcs.), mounting bracket (4 pcs.) mounting rail (2 pcs.) assembly kit (hexagon screws, nuts, spring washers, washers and threaded plate).

Series B VAR F600

Impeller

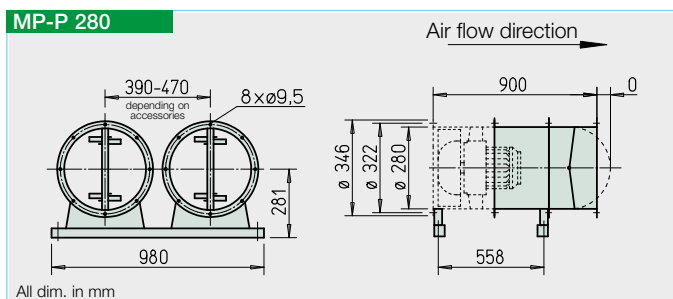
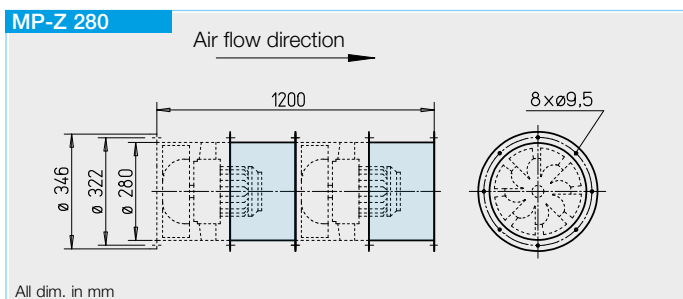
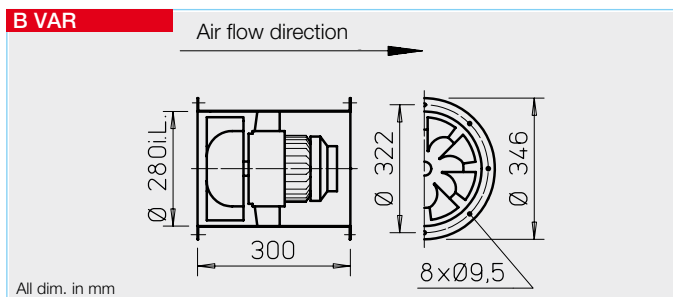
Specially developed impeller made from hot-dip galvanised steel. Dynamically balanced, quality class G 6.3.

Centrifugal cooling air fan

The centrifugal cooling air fan B KLG (Fig. 7) is a necessary accessory for ensuring motor cooling.

Alternative forced ventilation fans upon request.

Minimum cooling air flow rate see Accessories page 174.



- Casing**
 Duct with flanges on both sides DIN 24155 pt. 3. Made from galvanised sheet steel, fixed impeller with inner hub for mounting the flange motor.
- Impeller**
 Optimised for high pressure and volume output. Special development with spatially curved cast aluminium blades.
- Motor**
 Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
 Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
 Standard terminal box in temperature-resistant design (protection class IP54) outside of duct.
- Safety information**
 Guard for impeller pursuant to DIN EN ISO 13857 must be secured by installation.
- Noise levels**
 See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

- Mounting package MP-Z for two-stage Z unit**
 For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 6.5 kg

MP-Z 280 Ref no. 4902

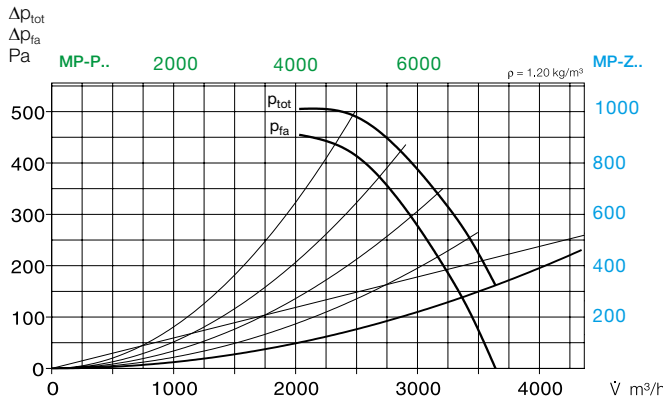
- Mounting package MP-P for parallel P unit**
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 22 kg

MP-P 280 Ref no. 4886

B VAR 280/2

n=2800 1/min

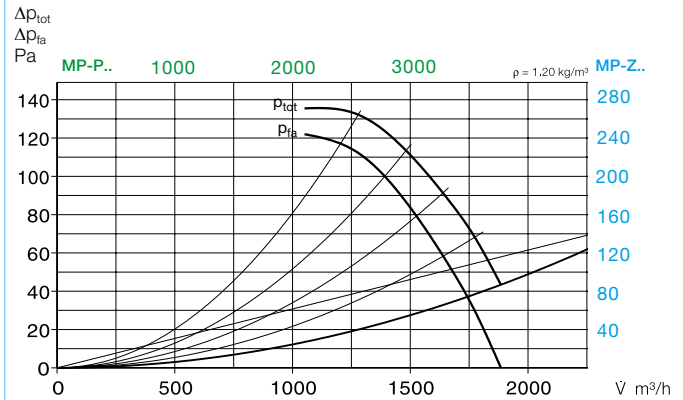
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	88	58	69	80	83	83	79	70
L _{PA,4m}	Air noise	dB(A)	68	38	49	60	63	63	59	50



B VAR 280/4

n=1450 1/min

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	72	48	62	66	69	66	59	49
L _{PA,4m}	Air noise	dB(A)	52	28	42	46	49	46	39	29



Certification

The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-147 Certificate of performance reliability: F300: 0036-CPR-RG05-01

Information

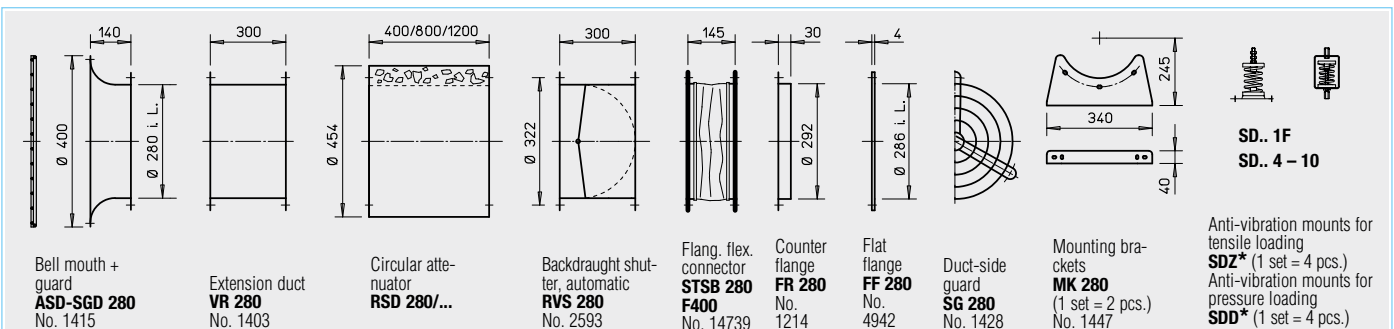
Techn. description 74 ff.
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Accessories page 175 ff.

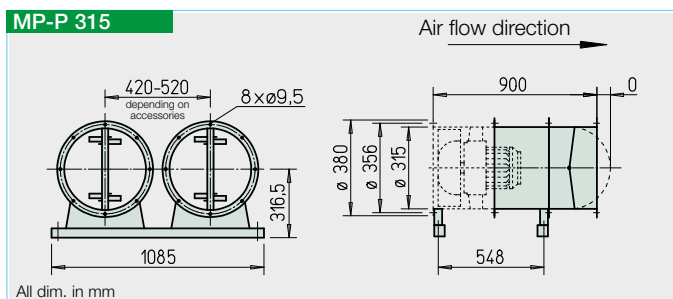
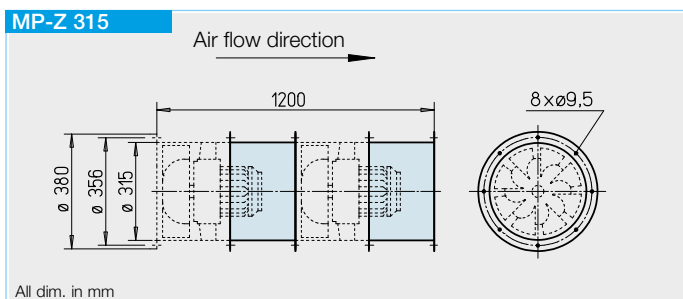
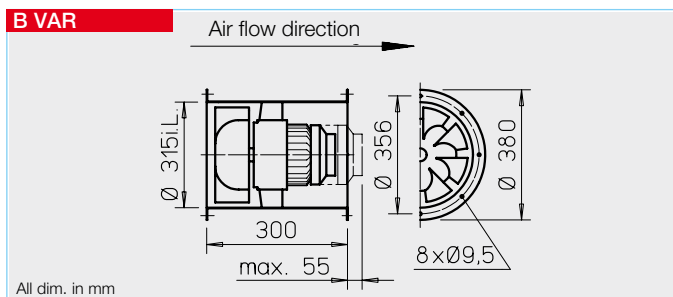
* Type allocation see table, last column

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power. (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount ⁴⁾															
											min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref. no.	Pressure	Tensile	Ref. no.	Ref. no.		
F300 Three phase motor, 50 Hz, protection class IP54																										
B VARD 280/4 F300	2298	1420	1860	0.55	400	1.23	776	40/300	22	—	—	SDD 1F	1942	SDZ 1F	1943											
B VARD 280/2 F300	2300	2830	3700	1.10	400	2.33	776	40/300	23	—	—	SDD 1F	1942	SDZ 1F	1943											
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54																										
B VARD 280/4/2 F300	2301	1390/2810	1810/3700	0.25/1.1	400	0.75/2.41	471	40/300	24	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943											

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.



- Casing**
 Duct with flanges on both sides DIN 24155 pt. 3. Made from galvanised sheet steel, fixed impeller with inner hub for mounting the flange motor.
- Impeller**
 Optimised for high pressure and volume output. Special development with spatially curved cast aluminium blades.
- Motor**
 Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
 Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
 Standard terminal box in temperature-resistant design (protection class IP54) outside of duct.
- Safety information**
 Guard for impeller pursuant to DIN EN ISO 13857 must be secured by installation.
- Noise levels**
 See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

■ Mounting package MP-Z for two-stage Z unit
 For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 7.5 kg

MP-Z 315 Ref no. 4903

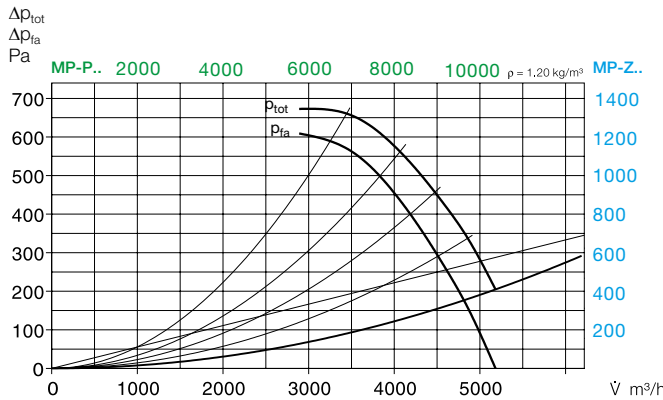
■ Mounting package MP-P for parallel P unit
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 25 kg

MP-P 315 Ref no. 4887

B VAR 315/2

n=2800 1/min

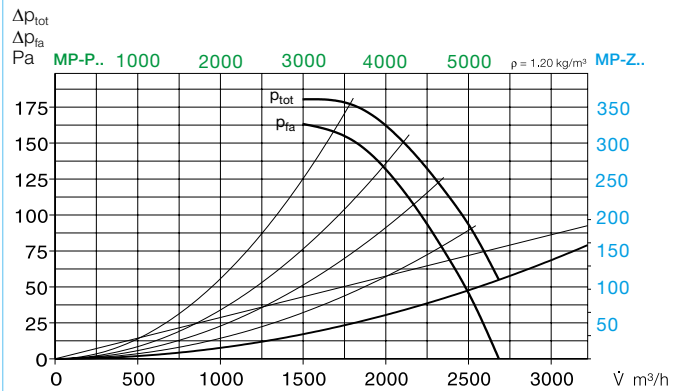
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	91	62	73	84	86	87	82	74
L _{pA,4m}	Air noise	dB(A)	71	42	53	64	66	67	62	54



B VAR 315/4

n=1450 1/min

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 extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-147 Certificate of performance reliability: F300: 0036-CPR-RG05-01

Information

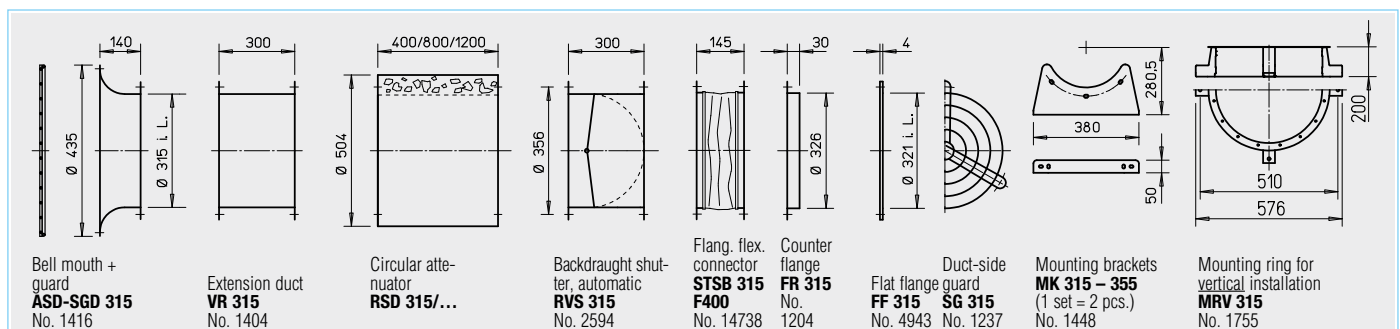
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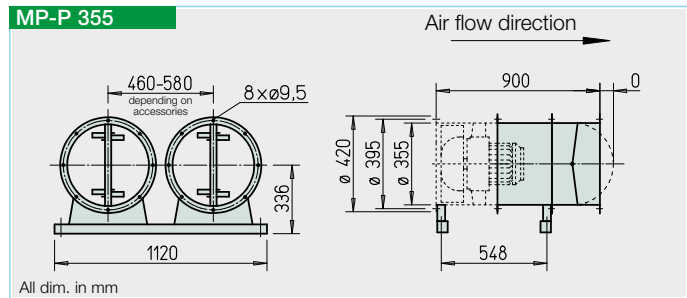
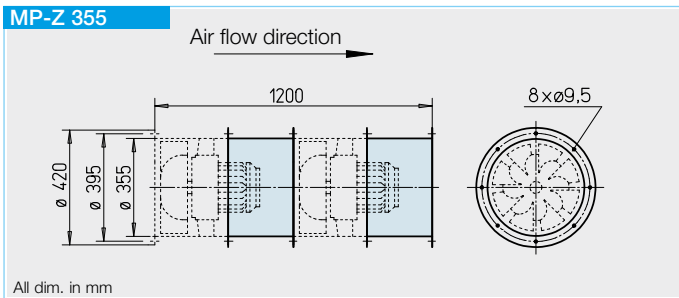
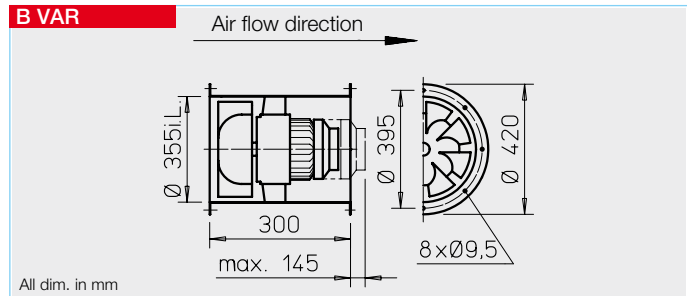
Accessories page 175 ff.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount ⁴⁾					
											min ⁻¹	V m ³ /h	kW	V	A	No.
											Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
F300 Three phase motor, 50 Hz, protection class IP54																
B VARD 315/4 F300	2302	1420	2590	0.55	400	1.23	776	40 / 300	22	— —	SDD 1F	1942	SDZ 1F	1943		
B VARD 315/2 F300	2303	2885	5270	1.50	400	3.20	776	40 / 300	32	— —	SDD 1F	1942	SDZ 1F	1943		
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54																
B VARD 315/4/2 F300	2304	1390/2810	2580/5270	0.25/1.1	400	0.75/2.41	471	40 / 300	26	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.



- Casing**
 Duct with flanges on both sides DIN 24155 pt. 3. Made from galvanised sheet steel, fixed impeller with inner hub for mounting the flange motor.
- Impeller**
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades.
- Motor**
 Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
 Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
 Standard terminal box in temperature-resistant design (protection class IP54) outside of duct.
- Safety information**
 Guard for impeller pursuant to DIN EN ISO 13857 must be secured by installation.
- Noise levels**
 See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

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

MP-Z 355 Ref no. 4904

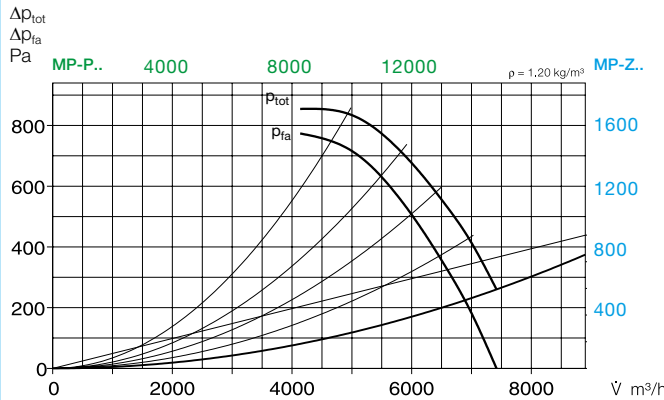
■ Mounting package MP-P for parallel P unit
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 27 kg

MP-P 355 Ref no. 4888

B VAR 355/2

n=2800 1/min

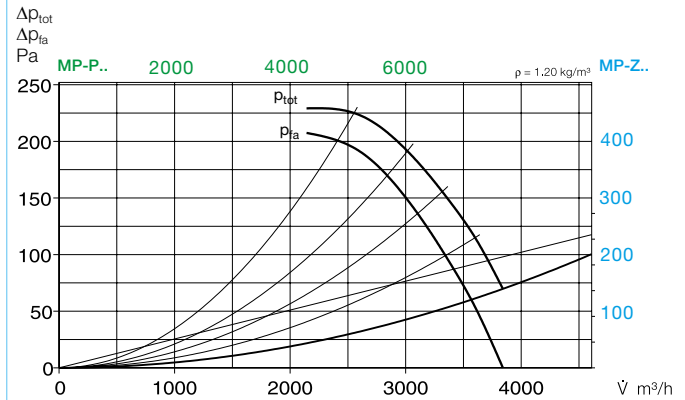
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	95	65	76	88	90	90	86	77
L _{pA,4m}	Air noise	dB(A)	75	45	56	68	70	70	66	57



B VAR 355/4

n=1450 1/min

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	80	55	69	73	76	73	66	56
L _{pA,4m}	Air noise	dB(A)	60	35	49	53	56	53	46	36



Certification

The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-147 Certificate of performance reliability: F300: 0036-CPR-RG05-01

Information

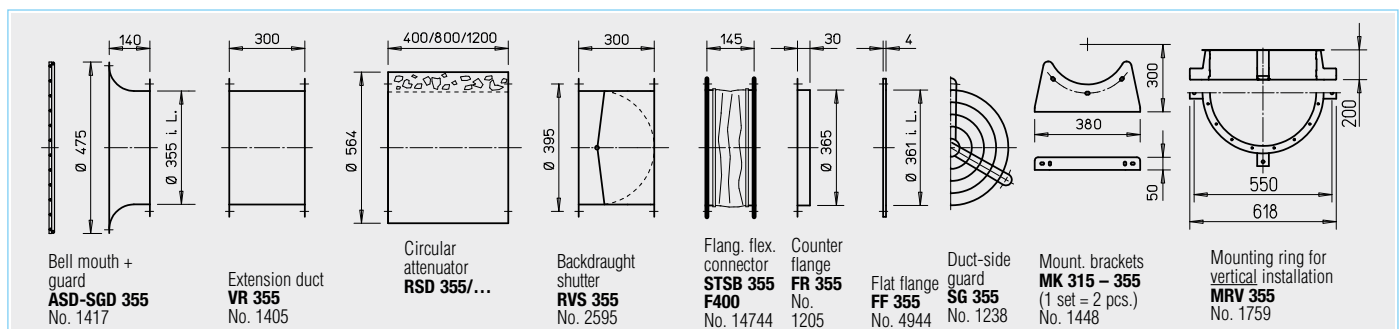
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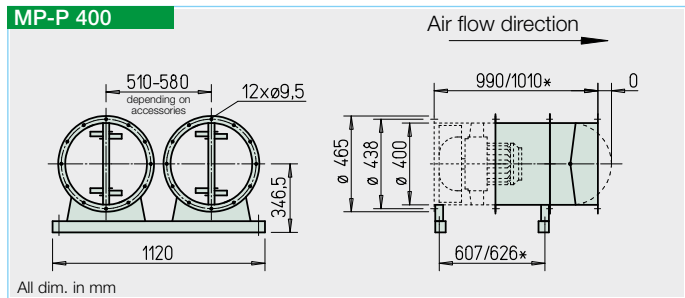
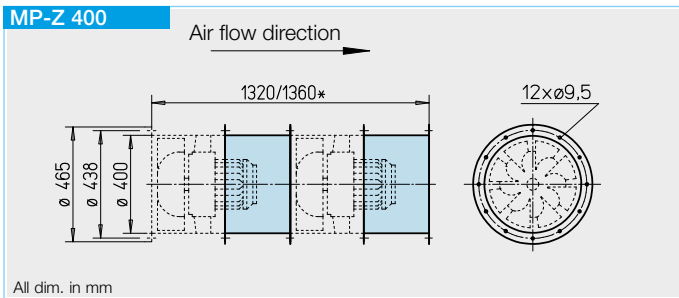
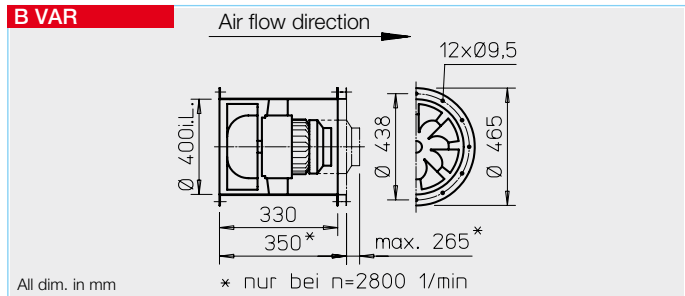
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Accessories page 175 ff.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount ⁴⁾						
											min ⁻¹	V m ³ /h	kW	V	A	No.	+°C
F300 Three phase motor, 50 Hz, protection class IP54																	
B VARD 355/4 F300	2305	1420	3700	0.55	400	1.23	776	40 / 300	24	—	—	SDD 1F	1942	SDZ 1F	1943		
B VARD 355/2 F300	2306	2915	7625	3.00	400	5.77	776	40 / 300	48	—	—	SDD 1F	1942	SDZ 1F	1943		
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54																	
B VARD 355/4/2 F300	2307	1435/2890	3750/7545	0.65/2.5	400	1.66/5.18	471	40 / 300	43	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943		

¹⁾ For ventilation / smoke extraction (once 120 min.). ³⁾ Flush-mounted version see Switch product page. ⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.



- Casing**
 Duct with flanges on both sides DIN 24155 pt. 3. Made from galvanised sheet steel, fixed impeller with inner hub for mounting the flange motor.
 Type 400/2 welded casing, hot-dip galvanised.
- Impeller**
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades.
- Motor**
 Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
 Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
 Standard terminal box in temperature-resistant design (protection class IP54) outside of duct.
- Safety information**
 Guard for impeller pursuant to DIN EN ISO 13857 must be secured by installation.
- Noise levels**
 See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

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

MP-Z 400 Ref no. 4905

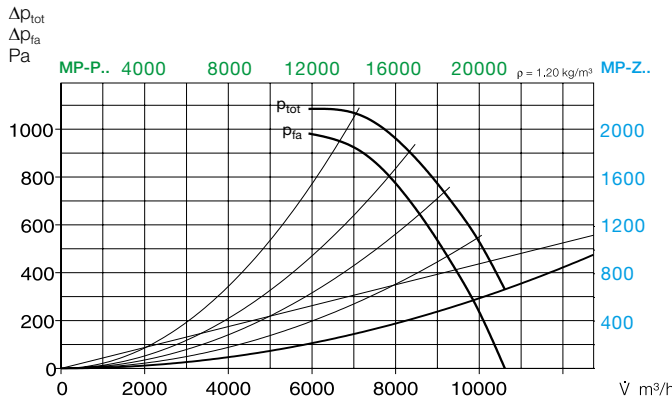
■ Mounting package MP-P for parallel P unit
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 35 kg

MP-P 400 Ref no. 4889

B VAR 400/2

n=2800 1/min

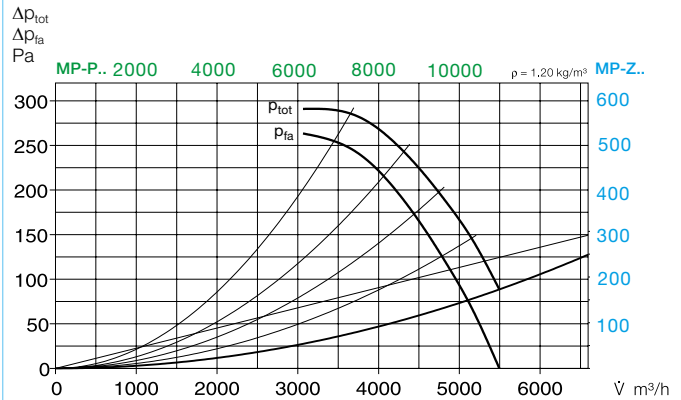
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	98	69	80	91	94	94	90	81
L _{PA,4m}	Air noise	dB(A)	78	49	60	71	74	74	70	61



B VAR 400/4

n=1450 1/min

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 extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-147. Certificate of performance reliability: F300: 0036-CPR-RG05-01

Information

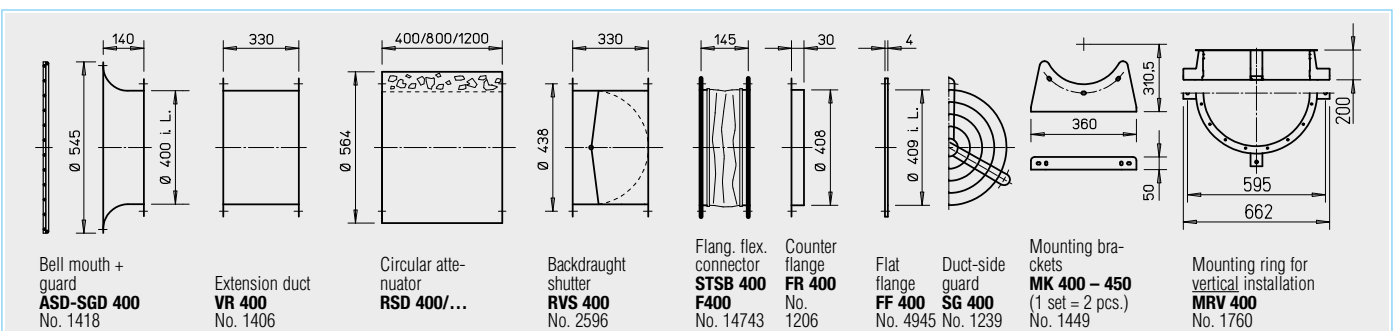
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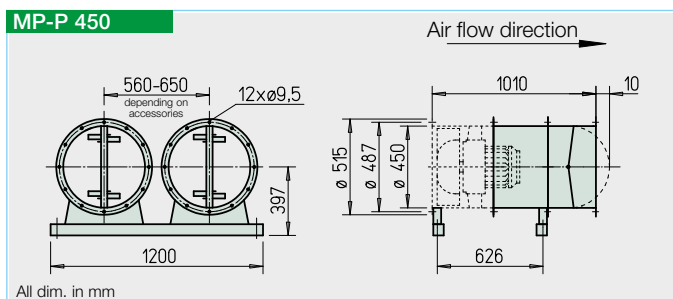
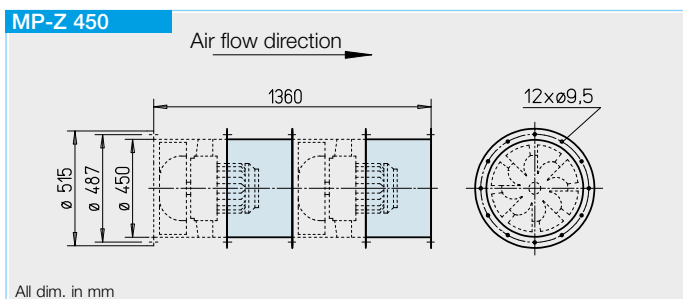
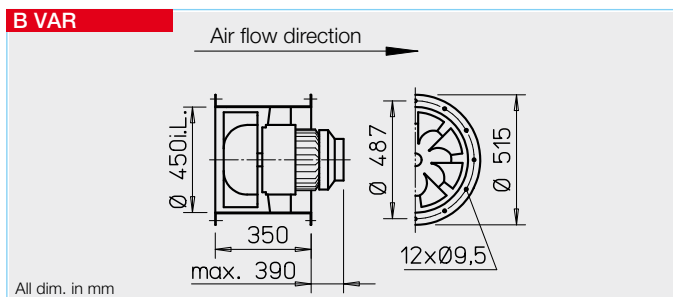
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Accessories page 175 ff.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount ⁴⁾					
											min ⁻¹	V m ³ /h	kW	V	A	No.
											Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
F300 Three phase motor, 50 Hz, protection class IP54																
B VARD 400/4 F300	2308	1420	5300	0.75	400	1.62	776	40 / 300	33	— —	SDD 1F	1942	SDZ 1F	1943		
B VARD 400/2 F300	2309	2900	11010	4.00	400	7.59	776	40 / 300	71	— —	SDD 1F	1942	SDZ 1F	1943		
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54																
B VARD 400/4/2 F300	2310	1440/2890	5450/10900	1.1/4.4	400	2.79/8.59	471	40 / 300	76	PDA 12 ³⁾	5081	SDD 1F	1942	SDZ 1F	1943	

¹⁾ For ventilation / smoke extraction (once 120 min.). ³⁾ Flush-mounted version see Switch product page. ⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.



- Casing**
 Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades.
- Motor**
 Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
 Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
 Standard terminal box in temperature-resistant design (protection class IP54) outside of duct.
- Safety information**
 Guard for impeller pursuant to DIN EN ISO 13857 must be secured by installation.
- Noise levels**
 See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

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

MP-Z 450 Ref no. 4906

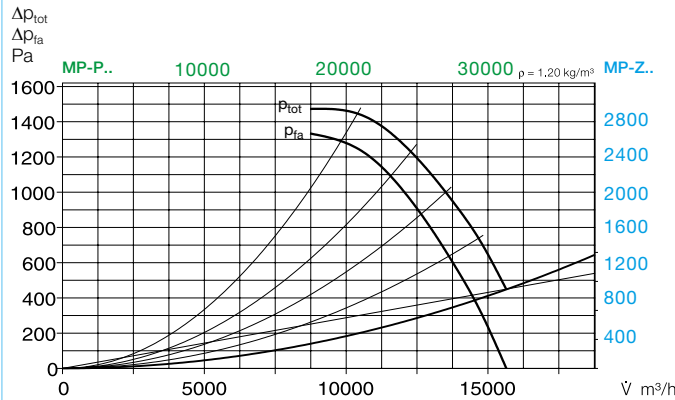
■ Mounting package MP-P for parallel P unit
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 43 kg

MP-P 450 Ref no. 4890

B VAR 450/2

n=2900 1/min

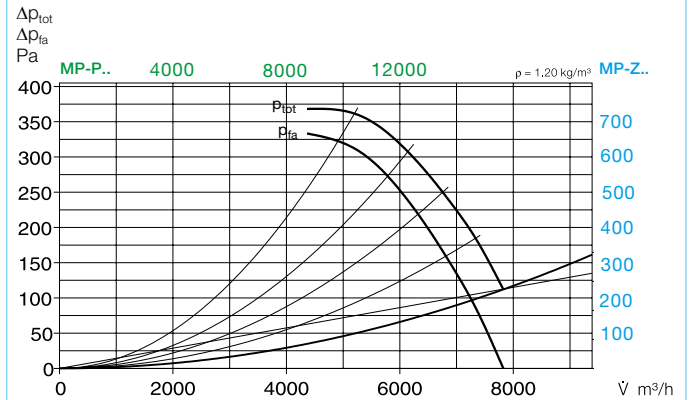
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	103	73	84	95	98	98	94	85
L _{PA,4m}	Air noise	dB(A)	83	53	64	75	78	78	74	65



B VAR 450/4

n=1450 1/min

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 extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F300: Z-78.11-147 Certificate of performance reliability: F300: 0036-CPR-RG05-01

Information

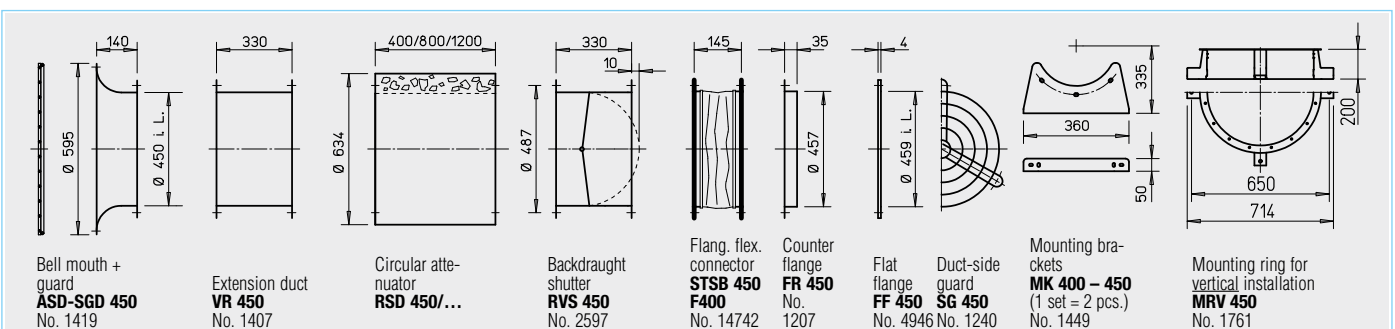
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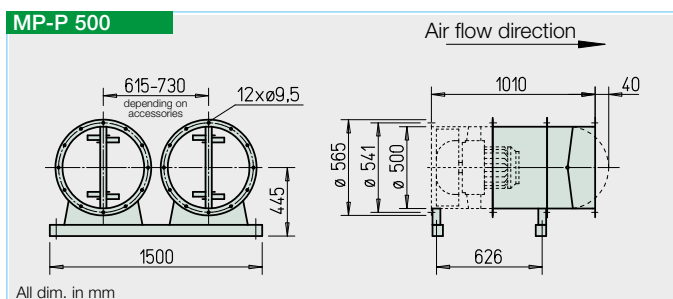
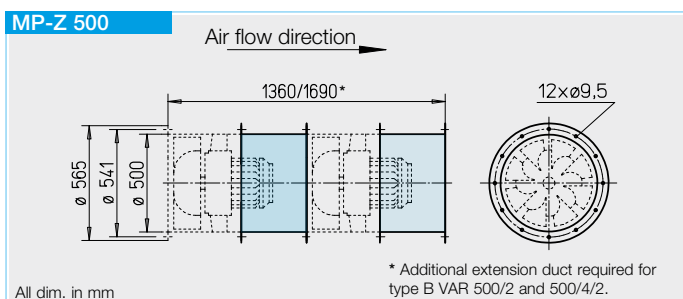
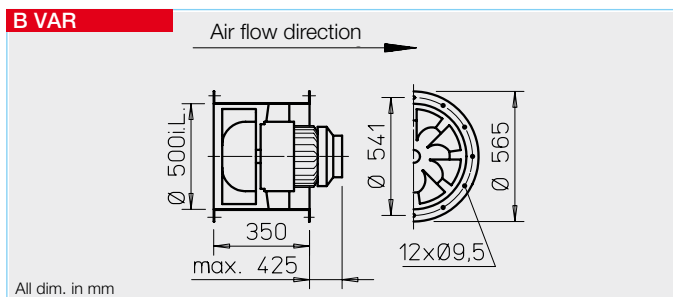


Accessories page 175 ff.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power. (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount ³⁾				
											min ⁻¹	V m ³ /h	kW	V	A
F300 Three phase motor, 50 Hz, protection class IP54															
B VARD 450/4 F300	2311	1450	7600	1.5	400	3.17	776	40 / 300	64	—	—	SDD 1F	1942	SDZ 1F	1943
B VARD 450/2 F300	2312	2930	15805	7.5	400	14.1	776	40 / 300	102	—	—	SDD 4	1944	SDZ 4	1945
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VARD 450/4/2 F300	2313	1470/2930	7815/15765	2.0/8.0	400	4.83/15.3	471	40 / 300	106	PDA 25	5060	SDD 4	1944	SDZ 4	1945

¹⁾ For ventilation / smoke extraction (once 120 min.).

³⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.



- Casing**
 Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades.
- Motor**
 Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
 All types (except pole-switching) have PTC resistors as standard and must be protected with aa full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
 Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
 Standard terminal box in temperature-resistant design (protection class IP54) outside of duct.
- Safety information**
 Guard for impeller pursuant to DIN EN ISO 13857 must be secured by installation.
- Noise levels**
 See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

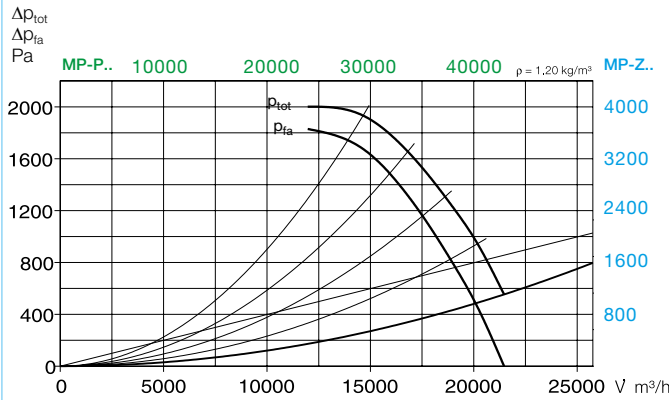
- Mounting package MP-Z for two-stage Z unit**
 For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 15 kg
MP-Z 500 Ref no. 4907
 Additional extension duct required for type B VAR 500/2 and 500/4/2.
VR 500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

- Mounting package MP-P for parallel P unit**
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 55 kg
MP-P 500 Ref no. 4891

B VAR 500/2

n=2900 1/min

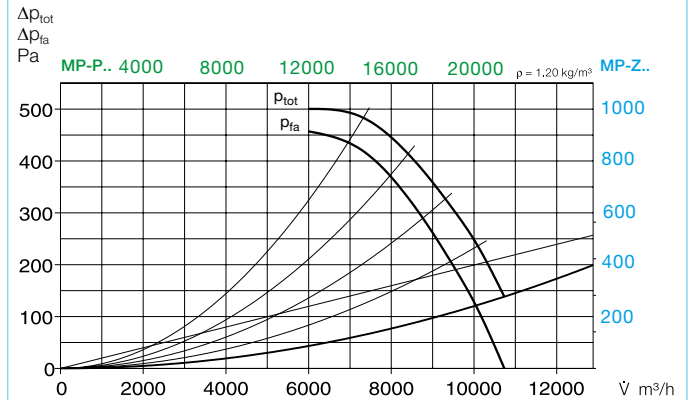
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	106	76	87	99	101	101	97	89
L _{pA,4m}	Air noise	dB(A)	86	56	67	79	81	81	77	69



B VAR 500/4

n=1450 1/min

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 extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval:
F300: Z-78.11-147
F400: Z-78.11-148
Certificate of performance reliability:
F300: 0036-CPR-RG05-01
F400: 0036-CPR-RG05-05

Information

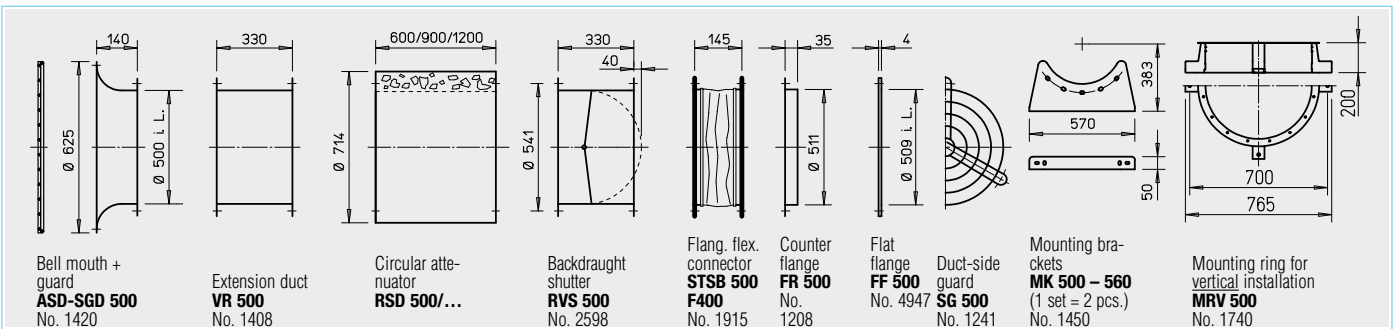
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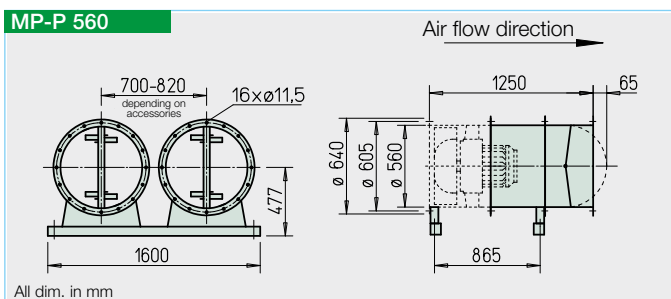
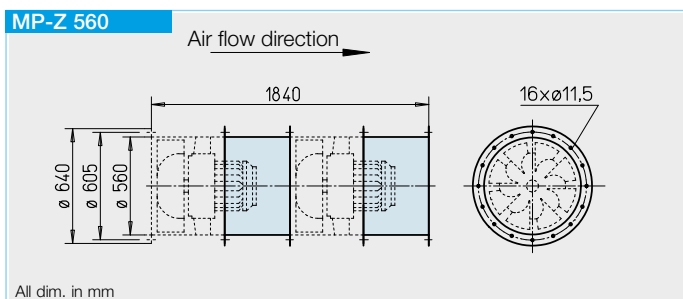
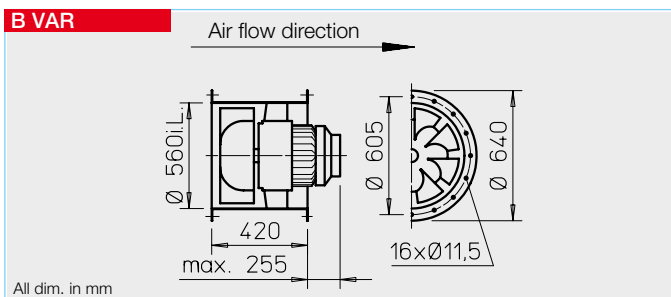
Accessories page 175 ff.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount ⁴⁾							
											min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg
F300 Three phase motor, 50 Hz, protection class IP54																		
B VARD 500/4 F300	2322	1435	10510	2.2	400	4.56	776	40 / 300	79	—		SDD 4	1944	SDZ 4	1945			
B VARD 500/2 F300	2296	2945	21760	15.0	400	27.7	776	40 / 300	168	—		SDD 5	1924	SDZ 5	1925			
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54																		
B VARD 500/8/4 F300	2323	700/1430	4960/10430	0.55/2.2	400	2.0/4.84	471	40 / 300	84	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945			
B VARD 500/4/2 F300	2299	1470/2950	10840/21760	4.0/16.0	400	9.57/30.5	471	40 / 300	191	PDA 63	1283	SDD 5	1924	SDZ 5	1925			
F400 Three phase motor, 50 Hz, protection class IP54																		
B VARD 500/4 F400	2404	1435	10510	2.2	400	4.56	776	40 / 400	79	—		SDD 4	1944	SDZ 4	1945			
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54																		
B VARD 500/8/4 F400	2405	700/1430	4960/10430	0.55/2.2	400	2.0/4.84	471	40 / 400	84	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945			

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

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.



- Casing**
 Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades
- Motor**
 Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
 Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
 Standard terminal box in temperature-resistant design (protection class IP54) outside of duct.
- Safety information**
 Guard for impeller pursuant to DIN EN ISO 13857 must be secured by installation.
- Noise levels**
 See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

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

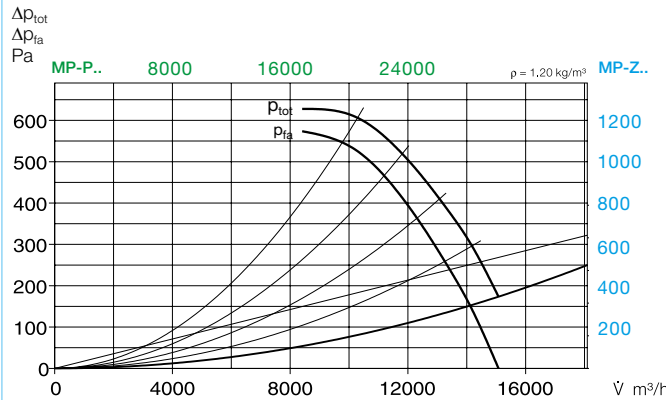
MP-Z 560 Ref no. 4908

- Mounting package MP-P for parallel P unit**
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 82 kg

MP-P 560 Ref no. 4892

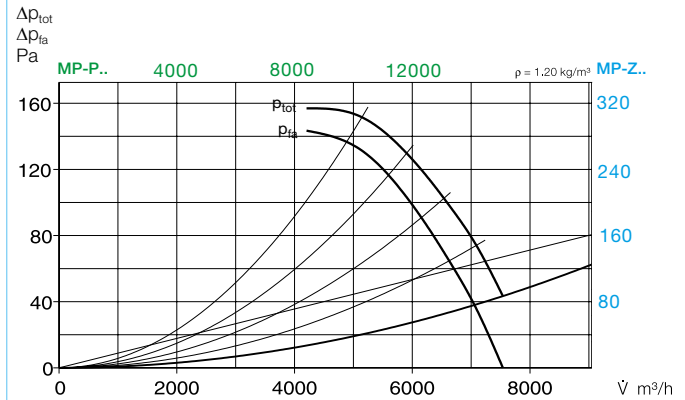
B VAR 560/4 n=1450 1/min

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 n=725 1/min

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



Certification

The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval:
F300: Z-78.11-147
F400: Z-78.11-148
Certificate of performance reliability:
F300: 0036-CPR-RG05-01
F400: 0036-CPR-RG05-05

Information

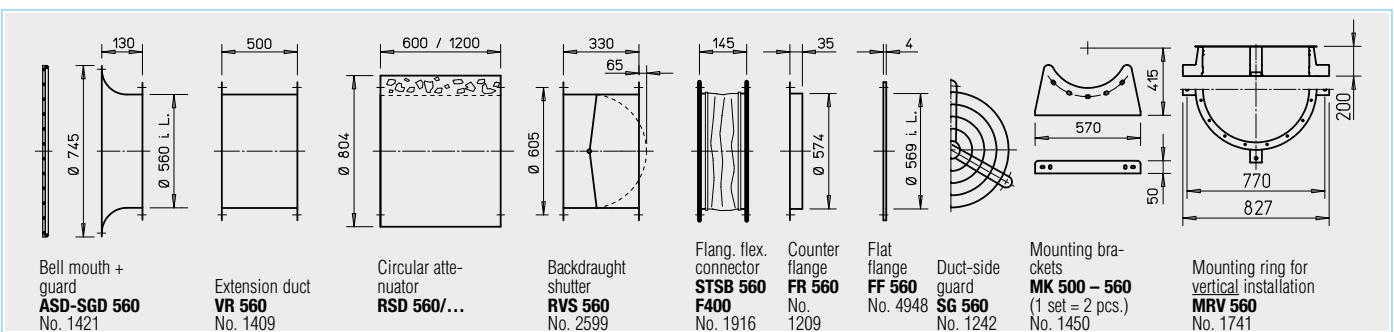
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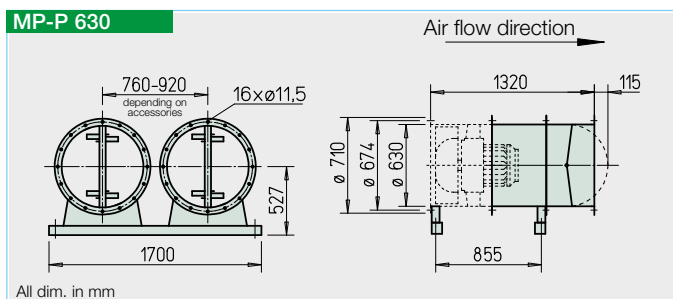
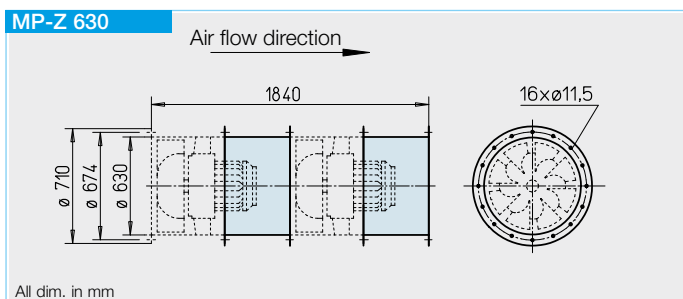
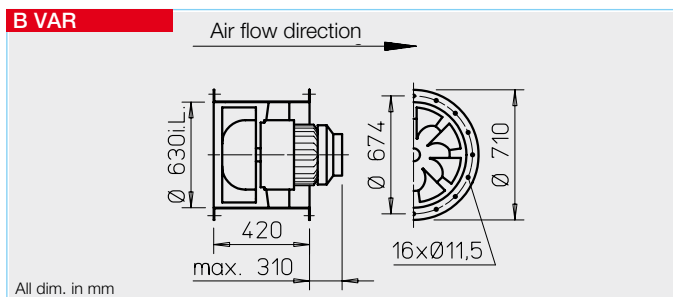
Accessories page 175 ff.

Type	Ref no.	Speed	Output free-blowing	Nom. motor power. (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount ⁴⁾				
											Pressure		Tensile		
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
F300 Three phase motor, 50 Hz, protection class IP54															
B VAR 560/4 F300	2330	1440	14710	3.0	400	6.15	776	40 / 300	106	—		SDD 4	1944	SDZ 4	1943
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VAR 560/8/4 F300	2331	690/1410	7380/14970	0.7/2.8	400	2.41/6.01	471	40 / 300	106	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1943
F400 Three phase motor, 50 Hz, protection class IP54															
B VAR 560/4 F400	2412	1440	14710	3.0	400	6.15	776	40 / 400	110	—		SDD 4	1944	SDZ 4	1943
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VAR 560/8/4 F400	2413	690/1410	7380/14970	0.7/2.8	400	2.41/6.01	471	40 / 400	106	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1943

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

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.



□ Casing
 Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.

□ Impeller
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades

□ Motor
 Direct through efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.

□ Motor protection
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.

□ Installation
 Installation in any position. Suitable for installation within and outside of the fire zone.

□ Electrical connection
 Standard terminal box in temperature-resistant design (protection class IP54) outside of duct.

□ Safety information
 Guard for impeller pursuant to DIN EN ISO 13857 must be secured by installation.

□ Noise levels
 See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

■ Mounting package MP-Z for two-stage Z unit
 For arrangement of two identical fans in a row, for highest pressure ratings.
 Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 36 kg

MP-Z 630 Ref no. 4909

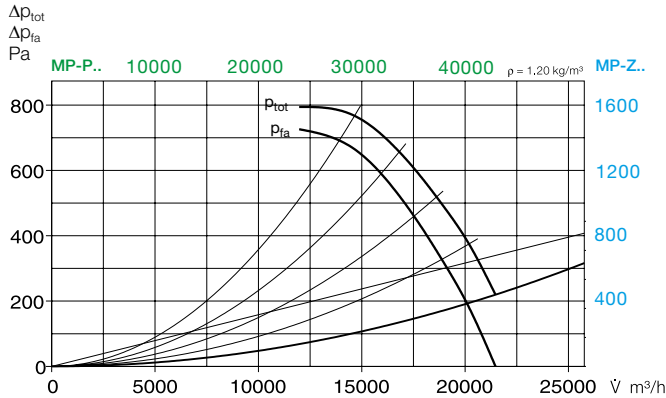
■ Mounting package MP-P for parallel P unit
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 110 kg

MP-P 630 Ref no. 4893

B VAR 630/4

n=1450 1/min

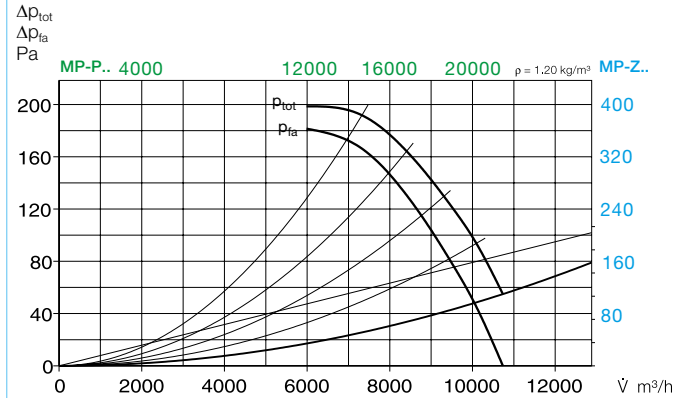
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	97	73	89	91	93	91	84	74
L _{PA,4m}	Air noise	dB(A)	77	53	69	71	73	71	64	54



B VAR 630/8

n=725 1/min

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



Certification

The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval:
F300: Z-78.11-147
F400: Z-78.11-148
Certificate of performance reliability:
F300: 0036-CPR-RG05-01
F400: 0036-CPR-RG05-05

Information

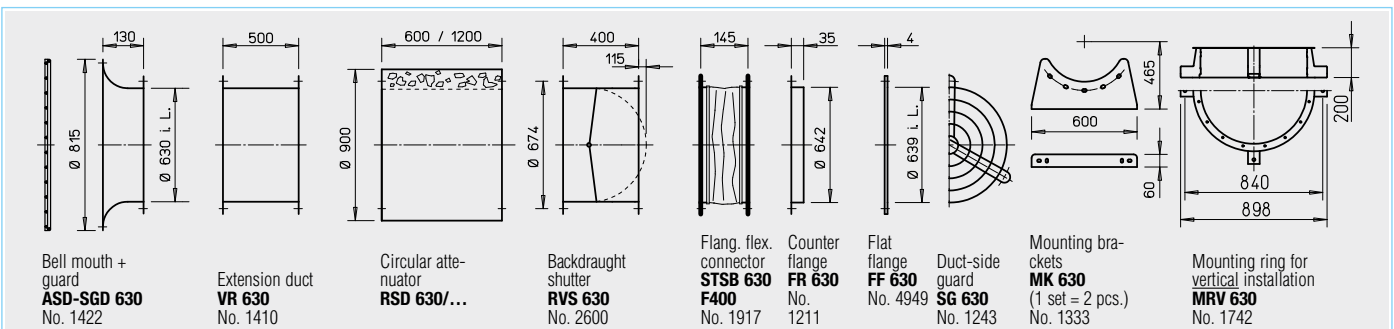
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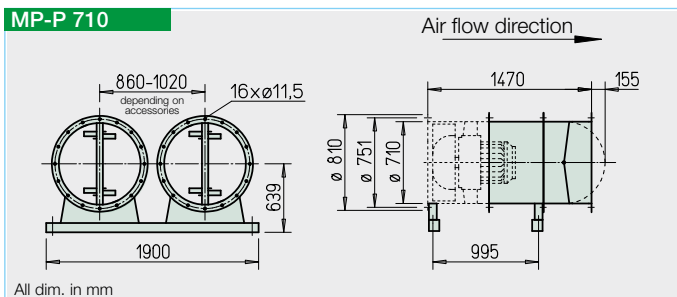
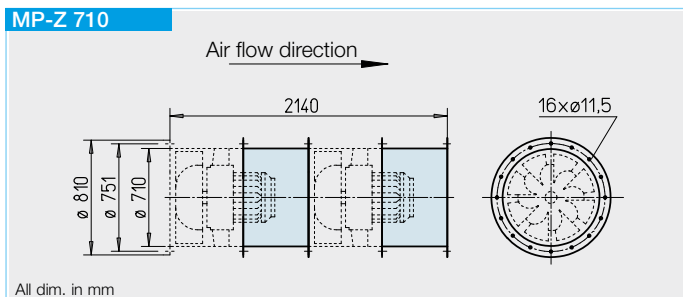
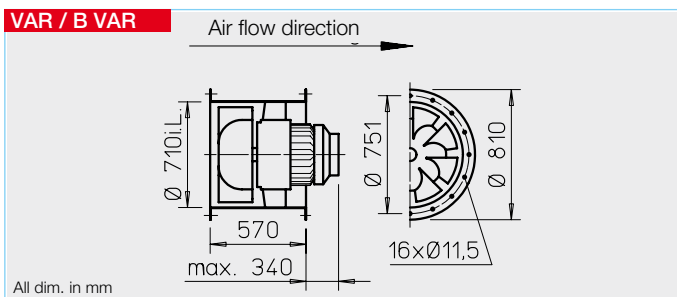
Accessories page 175 ff.

Type	Ref no.	Speed	Output free-blowing	Nom. motor power. (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount ⁴⁾				
											min ⁻¹	V m ³ /h	kW	V	A
F300 Three phase motor, 50 Hz, protection class IP54															
B VAR 630/4 F300	2341	1460	21460	5.5	400	10.4	776	40 / 300	150	—	SDD 5	1924	SDZ 5	1925	
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VAR 630/8/4 F300	2342	725/1430	10660/21460	1.8/7.2	400	4.64/14.4	471	40 / 300	167	PDA 25	5060	SDD 5	1924	SDZ 5	1925
F400 Three phase motor, 50 Hz, protection class IP54															
B VAR 630/4 F400	2423	1460	21460	5.5	400	10.4	776	40 / 400	153	—	SDD 5	1924	SDZ 5	1925	
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VAR 630/8/4 F400	2424	725/1430	10660/21460	1.8/7.2	400	4.64/14.4	471	40 / 400	167	PDA 25	5060	SDD 5	1924	SDZ 5	1925

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

³⁾ Flush-mounted version see Switch product page.

⁴⁾ For Z/P version due to higher total weight Type allocation according to tables on page 181.



Casing
 Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.

Impeller
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades

Motor
 Direct through IEC three phase motor.

Series VAR
 Enclosed design IP54. With condensation drain holes upon request, installation type specification necessary when ordering for this purpose.

Series B VAR
 Efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.

Motor protection
Series VAR
 All types (except explosion-proof and pole-switching models) have PTC resistors. For effective

motor protection, these must be wired to a full motor protection device (see type table). Motors without PTC resistors must be protected with an on-site motor-protective circuit-breaker.

Series B VAR
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.

Installation
 Installation in any position.

Series VAR
 Consider potential condensation drain holes depending on application.

Series B VAR
 Suitable for installation within and outside of the fire zone.

Electrical connection
 Standard plastic terminal box (protection class IP54) (series VAR) or in temperature-resistant design (series B VAR), outside of duct.

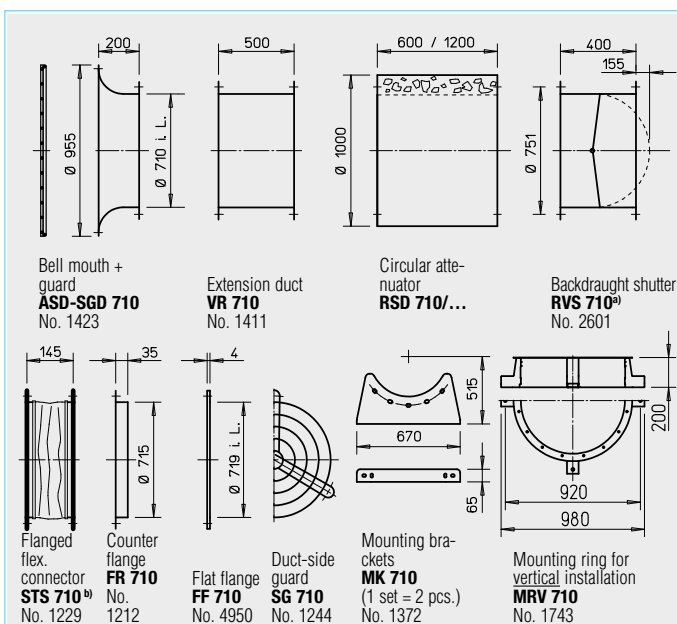
Safety information B VAR
 Protection against accidental contact for impeller must be ensured by installation pursuant to DIN EN ISO 13857.

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

MP-Z 710 Ref no. 4910

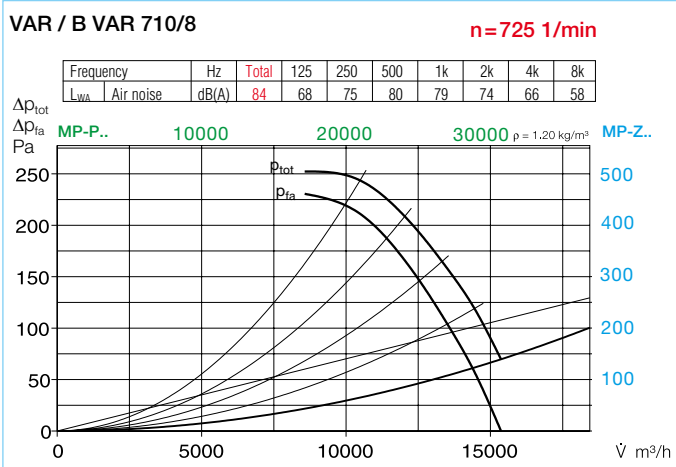
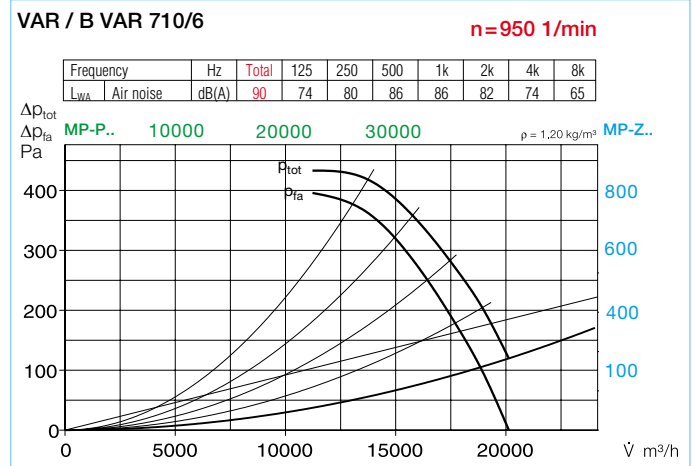
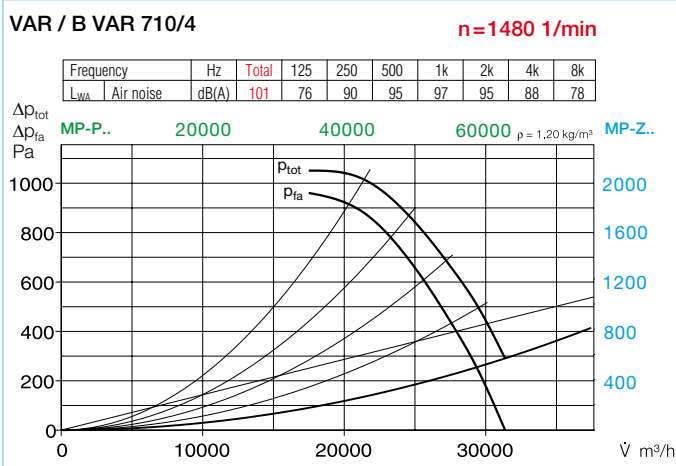
Mounting package MP-P for parallel P unit
 For arrangement of two identical fans side by side, for highest flow rates.
 Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 145 kg

MP-P 710 Ref no. 4894



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

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



Certification

The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval:
F300: Z-78.11-147
F400: Z-78.11-148
Certificate of performance reliability:
F300: 0036-CPR-RG05-01
F400: 0036-CPR-RG05-05

Information

Techn. description 74 ff.
Project planning information 3 ff.

Accessory details

Mounting accessories 175 ff.
Attenuator 180
Gas warning systems, switch and control technology 182 ff.

Noise levels

See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

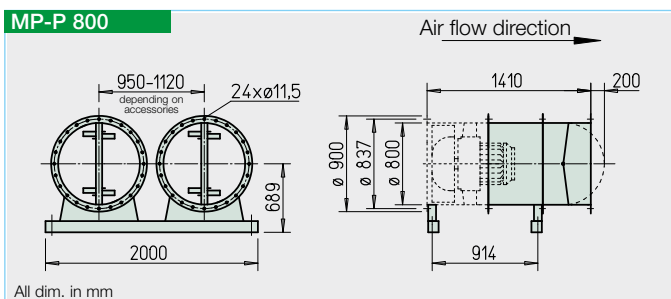
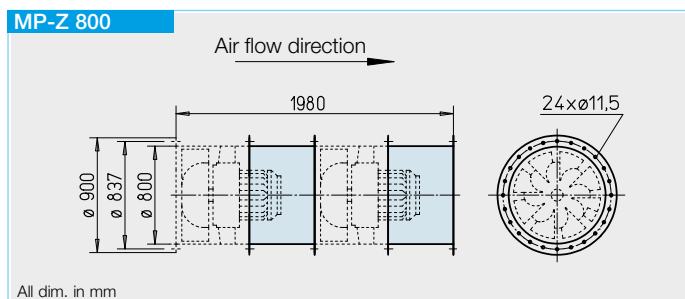
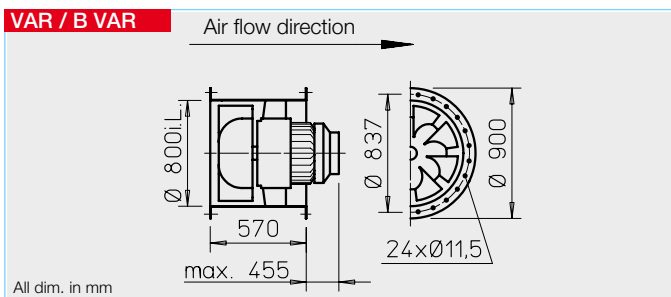
Type	Ref. no.	Speed	Output free-blowing	Nom. motor power. (*output)	Nominal voltage	Power consumption at nom. voltage	Wiring diagram at control	max. air flow temp. at nom. voltage	Weight net ⁶⁾	Frequency inverter Pole switch	Full motor protection device for connection of integrated PTC resistor				
		min ⁻¹	V m ³ /h	kW	V	A	A	+°C	ca. kg	Type	Ref. no.	Type	Ref. no.		
40° Three phase motor, 50 Hz, protection class IP54															
VAR 710/4	6723	1450	31050	11.0*	400/690	21.6/12.6	—	776	60	—	280.0	FU-CS 22²⁾	5470	MSA³⁾	1289
40° Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
VAR 710/8/4	6794	730/1470	15470/31160	3.00/11.00*	400	8.90/24.0	—	471	60	—	230.0	PDA 63	1283	MSA³⁾	1289
40° Explosion-proof, E Exe II, three phase motor, 50 Hz, temperature class T 3, protection class IP54															
VAR 710/8 Ex¹⁾	6724	680	14410	1.30*	400	3.65	—	470	40	—	165.0	not permitted	—	not permitted	—
VAR 710/6 Ex¹⁾	6725	955	20240	2.60*	400	6.8/3.9	—	498	40	—	190.0	not permitted	—	not permitted	—
VAR 710/4 Ex¹⁾	6726	1465	31050	10.00*	400	19.3/11.2	—	498	40	—	255.0	not permitted	—	not permitted	—
F300 Three phase motor, 50 Hz, protection class IP54															
B VAR 710/4 F300	2350	1470	30940	11.00	400	20.9	—	776	40 / 300 ⁵⁾	—	230.0	—	—	—	—
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VAR 710/8/4 F300	2351	725/1455	15460/30940	3.0/11.0	400	7.0/21.0	—	471	40 / 300 ⁵⁾	—	244.0	PDA 25	5060	—	—
F400 Three phase motor, 50 Hz, protection class IP54															
B VAR 710/4 F400	2433	1470	30940	11.0	400	20.9	—	776	40 / 400 ⁵⁾	—	240.0	—	—	—	—
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VAR 710/8/4 F400	2434	725/1455	15460/30940	3.0/11.0	400	7.0/21.0	—	471	40 / 400 ⁵⁾	—	244.0	PDA 25	5060	—	—

¹⁾ There must be a vibration monitoring system (on-site) pursuant to DIN EN 14986. ²⁾ incl. full motor protection device and sine filter

³⁾ for PTC resistor temperature sensor

⁵⁾ Smoke extraction (once 120 min. at 300 °C or 120 min. at 400 °C)

⁶⁾ Anti-vibration mounts weight-dependent see p. 177.



□ Casing
 Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.

□ Impeller
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades

□ Motor
 Direct through IEC three phase motor.

- Series VAR
 Enclosed design IP54. With condensation drain holes upon request, installation type specification necessary when ordering for this purpose.

- Series B VAR
 Efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.

□ Motor protection
- Series VAR
 All types (except explosion-proof and pole-switching models) have PTC resistors. For effective

motor protection, these must be wired to a full motor protection device (see type table). Motors without PTC resistors must be protected with an on-site motor-protective circuit-breaker.

- Series B VAR
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.

□ Installation
 Installation in any position.

- Series VAR
 Consider potential condensation drain holes depending on application.

- Series B VAR
 Suitable for installation within and outside of the fire zone.

□ Electrical connection
 Standard plastic terminal box (protection class IP54) (series VAR) or in temperature-resistant design (series B VAR), outside of duct.

□ Safety information B VAR
 Protection against accidental contact for impeller must be ensured by installation pursuant to DIN EN ISO 13857.

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

For arrangement of two identical fans in a row, for highest pressure ratings.

Scope of delivery: Extension ducts (2 pcs.) and assembly kit.
 Weight: 60 kg

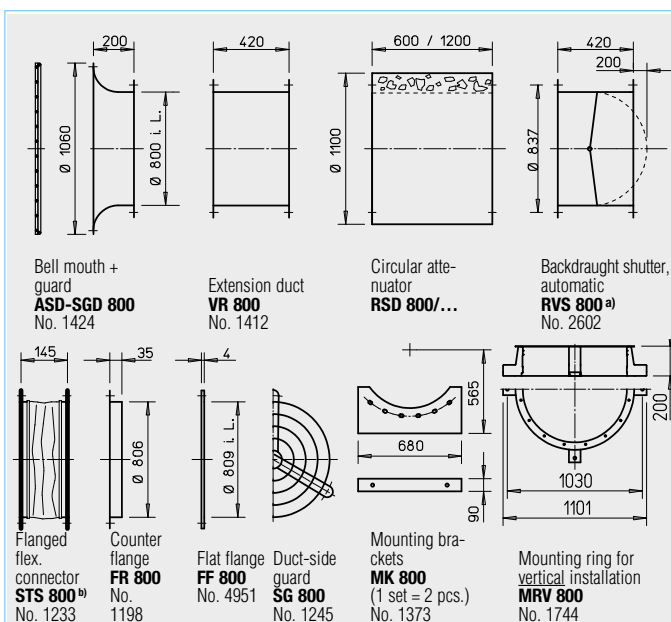
MP-Z 800 Ref no. 4911

■ Mounting package MP-P for parallel P unit

For arrangement of two identical fans side by side, for highest flow rates.

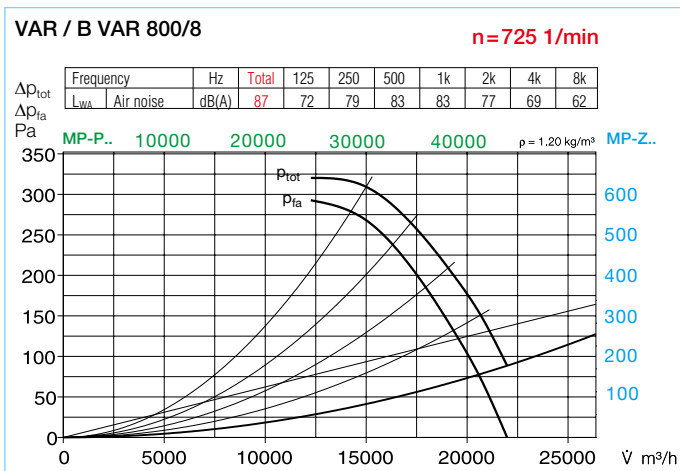
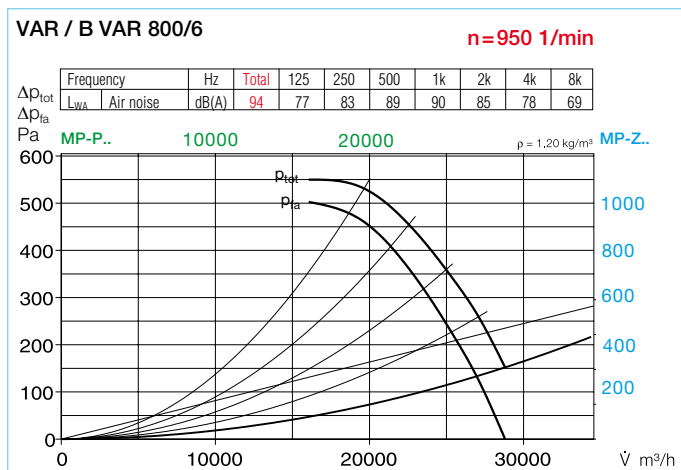
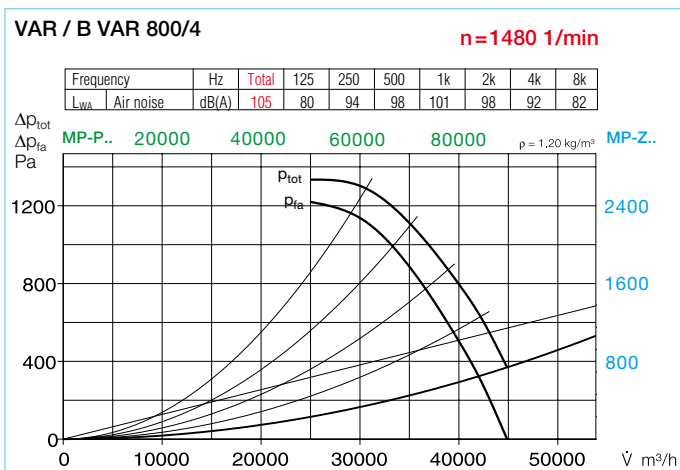
Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits.
 Weight: 205 kg

MP-P 800 Ref no. 4895



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

^{b)} Type for B VAR: STSB 800 F400, No. 1919



Certification

The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval:
F300: Z-78.11-147
F400: Z-78.11-148
Certificate of performance reliability:
F300: 0036-CPR-RG05-01
F400: 0036-CPR-RG05-05

Information

Techn. description 74 ff.
Project planning information 3 ff.

Accessory details

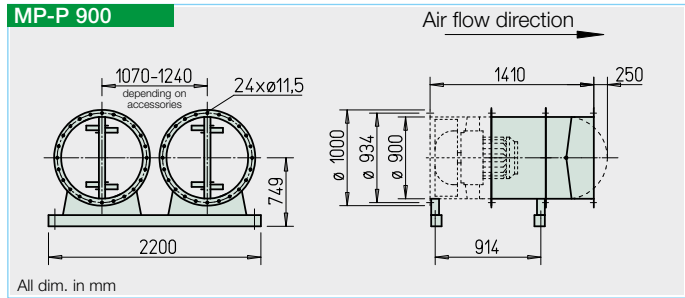
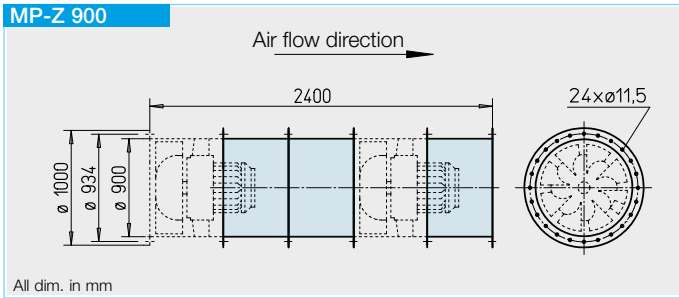
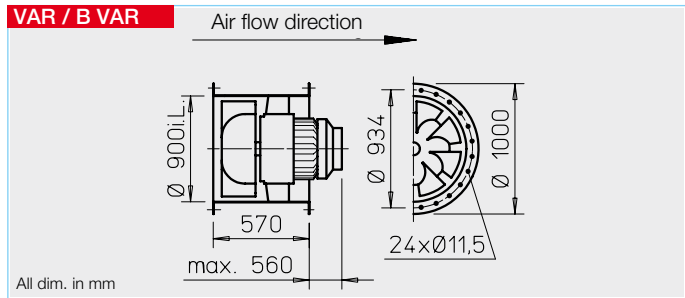
Mounting accessories 175 ff.
Attenuator 180
Gas warning systems, switch and control technology 182 ff.

Noise levels

See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power. (*output)	Nominal voltage	Power consumption at nom. voltage	Wiring diagram at control	max. air flow temp. at nom. voltage	at control	Weight net ⁴⁾	Frequency inverter Pole switch	Full motor protection device for connection of integrated PTC resistor
		min ⁻¹	V m ³ /h	kW	V	A	A	No.	+°C	+°C	ca. kg	Type Ref. no. Type Ref. no.
40° Three phase motor, 50 Hz, protection class IP54												
VAR 800/4	6729	1460	44720	18.50*	400/690	34.4/20	—	776	60	—	324.0	FU-CS 40²⁾ 5472 MSA 1289
40° Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54												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, three phase motor, 50 Hz, temperature class T 3, protection class IP54												
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 Three phase motor, 50 Hz, protection class IP54												
B VAR 800/4 F300	2360	1470	44570	18.5	400	35.1	—	776	40 / 300 ³⁾	—	326.0	— —
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54												Pole switch
B VAR 800/8/4 F300	2361	730/1470	22430/44570	5.0/20.0	400	14.1/38.6	—	471	40 / 300 ³⁾	—	339.0	PDA 63 1283 —
F400 Three phase motor, 50 Hz, protection class IP54												
B VAR 800/4 F400	2444	1470	44570	18.5	400	35.1	—	776	40 / 400 ³⁾	—	330.0	— — 1925
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54												Pole switch
B VAR 800/8/4 F400	2445	730/1470	22430/44570	5.0/20.0	400	14.1/38.6	—	471	40 / 400 ³⁾	—	339.0	PDA 63 1283 — 1925

¹⁾ There must be a vibration monitoring system (on-site) pursuant to DIN EN 14986. ²⁾ incl. full motor protection device and sine filter ³⁾ Smoke extraction (once 120 min. at 300 °C or 120 min. at 400 °C).
⁴⁾ Anti-vibration mounts weight-dependent see p. 177.



Casing
 Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.

Impeller
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades

Motor
 Direct through IEC three phase motor.

Series VAR
 Enclosed design IP54. With condensation drain holes upon request, installation type specification necessary when ordering for this purpose.

Series B VAR
 Efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.

Motor protection
Series VAR
 All types (except explosion-proof and pole-switching models) have PTC resistors. For effective

motor protection, these must be wired to a full motor protection device (see type table). Motors without PTC resistors must be protected with an on-site motor-protective circuit-breaker.

Series B VAR
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.

Installation
 Installation in any position.

Series VAR
 Consider potential condensation drain holes depending on application.

Series B VAR
 Suitable for installation within and outside of the fire zone.

Electrical connection
 Standard plastic terminal box (protection class IP54) (series VAR) or in temperature-resistant design (series B VAR), outside of duct.

Safety information B VAR
 Protection against accidental contact for impeller must be ensured by installation pursuant to DIN EN ISO 13857.

Mounting package MP-Z for two-stage Z unit

For arrangement of two identical fans in a row, for highest pressure ratings.

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

Weight: 68 kg

MP-Z 900 Ref no. 4912

Additional extension duct required.

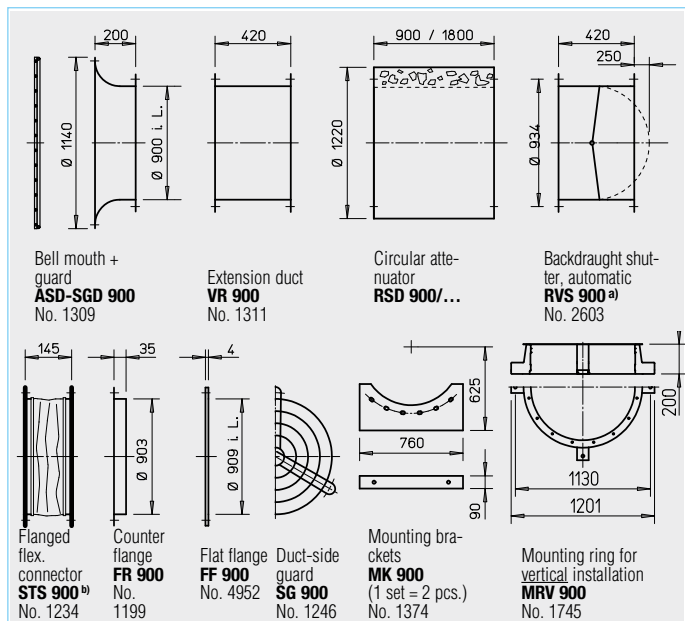
VR 900 Ref no. 1311

Mounting package MP-P for parallel P unit

For arrangement of two identical fans side by side, for highest flow rates.

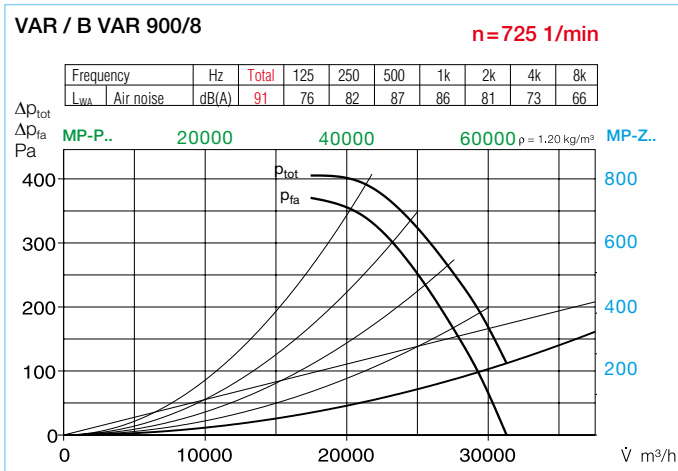
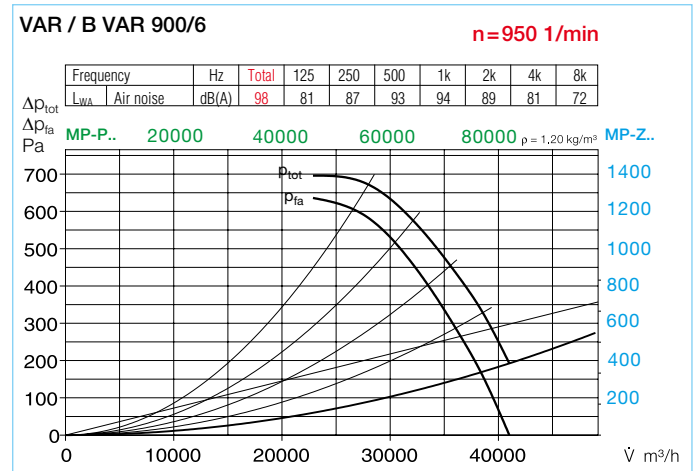
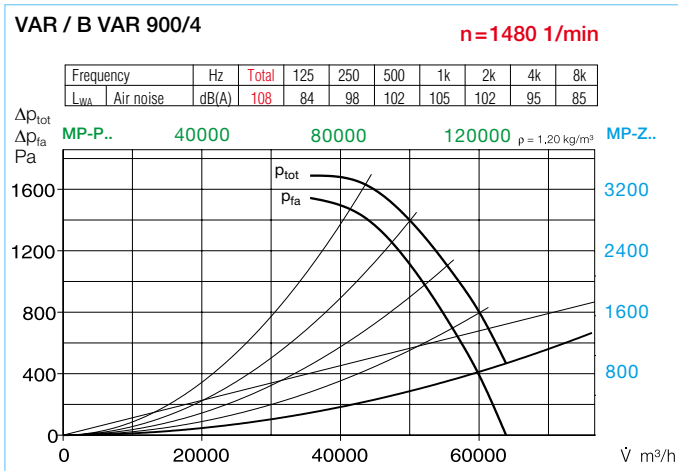
Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits. Weight: 235 kg

MP-P 900 Ref no. 4896



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

^{b)} Type for B VAR: STSB 900 F400, No. 1920 to 2000 Pa



Certification

The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval:
F300: Z-78.11-147
F400: Z-78.11-148
Certificate of performance reliability:
F300: 0036-CPR-RG05-01
F400: 0036-CPR-RG05-05

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Mounting accessories 175 ff.
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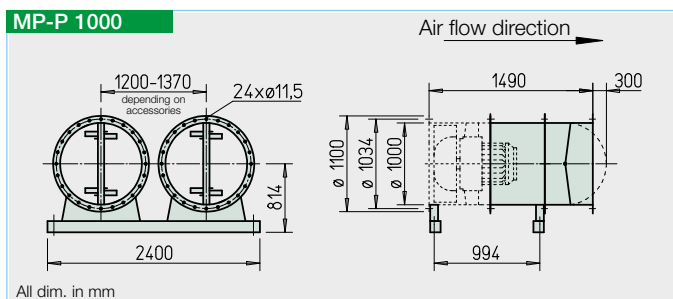
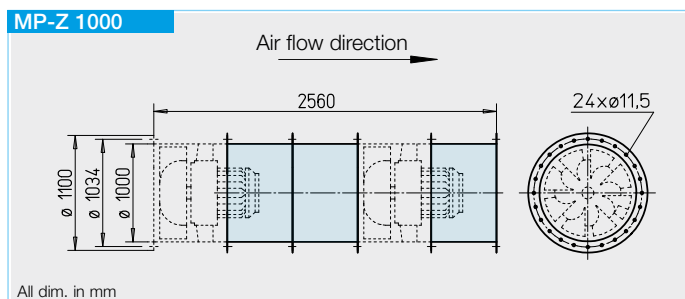
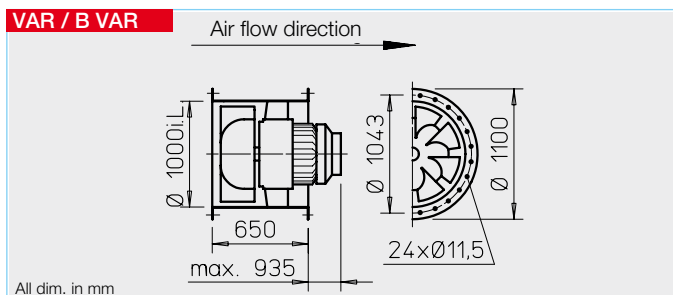
Noise levels

See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power (*output)	Nominal voltage	Power consumption		Wiring diagram	max. air flow temp.		Weight net ⁴⁾	Pole switch		Full motor protection device for connection of integrated PTC resistor	
						at nom. voltage	at control		at nom. voltage	at control		Type	Ref. no.	Type	Ref. no.
		min ⁻¹	V m ³ /h	kW	V	A	A	No.	+°C	+°C	ca. kg				
Three phase motor, 50 Hz, protection class IP54															
VAR 900/4	6743	1480	63890	37.00*	400/690	73.0/42.2	—	776	60	—	500.0	—	—	—	—
Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
VAR 900/8/4	6800	730/1450	31510/62600	9.50/40.00*	400	35.0/80.0	—	471	60	—	540.0	PDA 115	1352	—	—
Explosion-proof, E Exe II, three phase motor, 50 Hz, temperature class T 3, protection class IP54															
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	—	—	—	—
Three phase motor, 50 Hz, protection class IP54															
B VAR 900/4 F300	2370	1480	63460	37.0	400	66.8	—	776	40 / 300 ³⁾	—	533.0	—	—	—	—
Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
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	PDA 115	1352	—	—
Three phase motor, 50 Hz, protection class IP54															
B VAR 900/4 F400	2456	1480	63460	37.0	400	66.8	—	776	40 / 400 ³⁾	—	554.0	—	—	—	—
Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
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	PDA 115	1352	—	—

¹⁾ There must be a vibration monitoring system (on-site) pursuant to DIN EN 14986. ³⁾ Smoke extraction (once 120 min. at 300 °C or 120 min. at 400 °C).

⁴⁾ Anti-vibration mounts weight-dependent see p. 177.



Casing
 Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.

Impeller
 Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades

Motor
 Direct through IEC three phase motor.

Series VAR
 Enclosed design IP54. With condensation drain holes upon request, installation type specification necessary when ordering for this purpose.

Series B VAR
 Efficient IE3 three phase motor (smoke extraction motors F300 and F400). Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.

Motor protection
Series VAR
 All types (except explosion-proof and pole-switching models) have PTC resistors. For effective

motor protection, these must be wired to a full motor protection device (see type table). Motors without PTC resistors must be protected with an on-site motor-protective circuit-breaker.

Series B VAR
 All types (except pole-switching) have PTC resistors as standard and must be protected with a full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.

Installation
 Installation in any position.

Series VAR
 Consider potential condensation drain holes depending on application.

Series B VAR
 Suitable for installation within and outside of the fire zone.

Electrical connection
 Standard plastic terminal box (protection class IP54) (series VAR) or in temperature-resistant design (series B VAR), outside of duct.

Safety information B VAR
 Protection against accidental contact for impeller must be ensured by installation pursuant to DIN EN ISO 13857.

Mounting package MP-Z for two-stage Z unit

For arrangement of two identical fans in a row, for highest pressure ratings.

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

Weight: 75 kg

MP-Z 1000 Ref no. 4913
 Additional extension duct required.

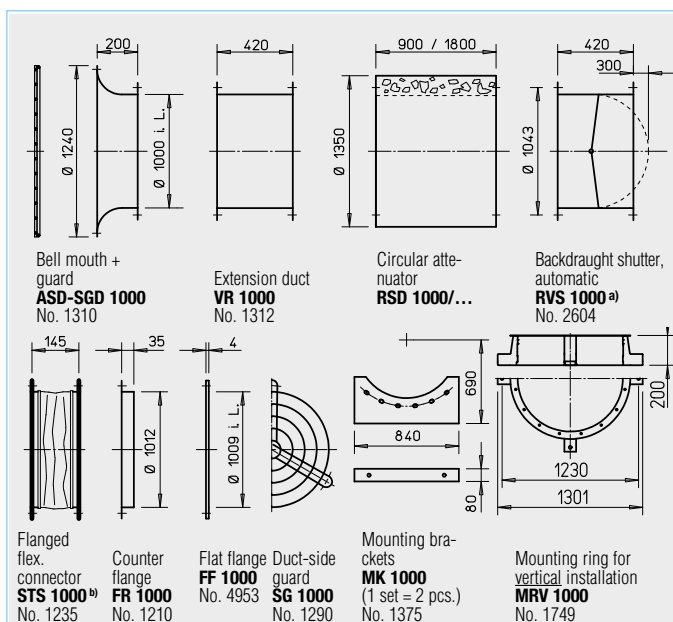
VR 1000 Ref no. 1312

Mounting package MP-P for parallel P unit

For arrangement of two identical fans side by side, for highest flow rates.

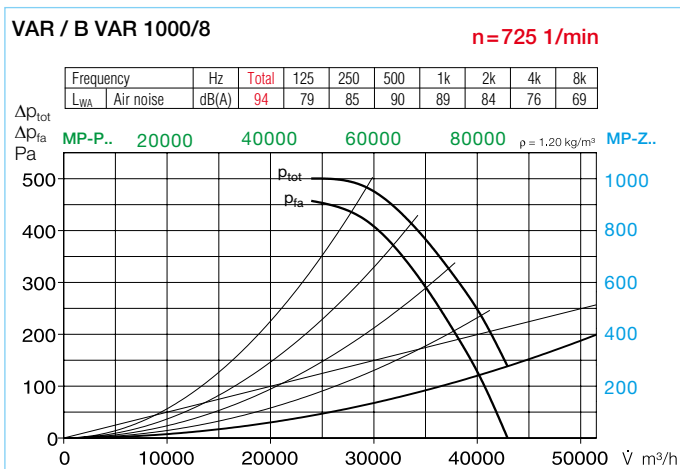
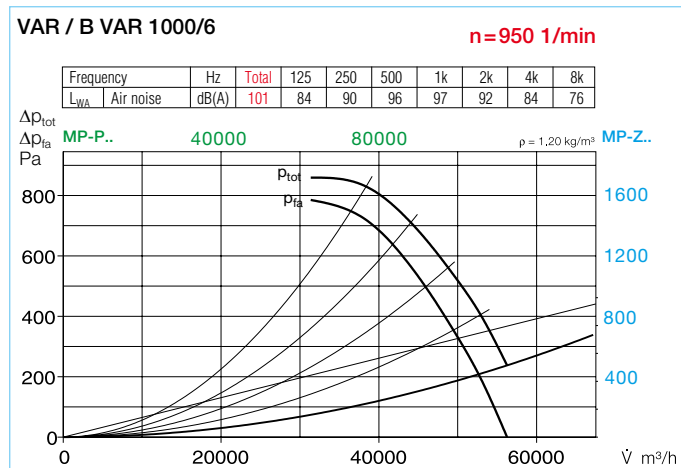
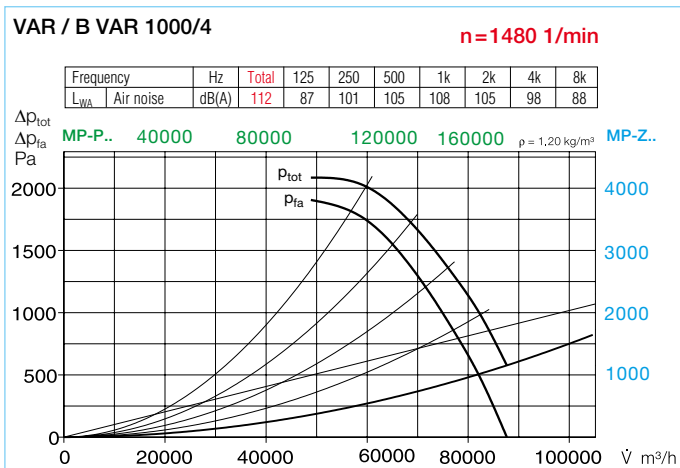
Scope of delivery: Extension ducts, backdraught shutter, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and assembly kits. Weight: 255 kg

MP-P 1000 Ref no. 4897



^{a)} Backdraught shutter, motorised, for ventilation, see main Helios catalogue

^{b)} Type for B VAR: STSB 1000 F400, No. 1921 to 2000 Pa



Certification

The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval:
 F300: Z-78.11-147
 F400: Z-78.11-148
 Certificate of performance reliability:
 F300: 0036-CPR-RG05-01
 F400: 0036-CPR-RG05-05

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Noise levels

See information on sound power levels above the performance curves. The lower sound pressure level can be determined using the diagram on the "Technical information" page. Noise emissions and room acoustics see page 5.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power. (*output)	Nominal voltage	Power consumption at nom. voltage	Wiring diagram at control	max. air flow temp. at nom. voltage	Weight net	Pole switch		Full motor protection device for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
		min ⁻¹	V m ³ /h	kW	V	A	A	+°C	ca. kg				
40° Three phase motor, 50 Hz, protection class IP54													
VAR 1000/4	6750	1480	87640	55.00*	400/690	106.0/61.3	—	776	60	—	697.0	—	—
40° Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54													
VAR 1000/8/4	6804	730/1450	43230/85860	19.00/70.00*	400	48.0/126.0	—	471	60	—	870.0	—	—
40° Explosion-proof, E Exe II, three phase motor, 50 Hz, temperature class T 3, protection class IP54													
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 Three phase motor, 50 Hz, protection class IP54													
B VAR 1000/4 F300	2381	1480	87050	55.0	400	98.6	—	776	40 / 300 ³⁾	—	702.0	—	—
F300 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54													
B VAR 1000/8/4 F300	2382	735/1480	43525/87050	14.7/55.0	400	36.5/100.0	—	471	40 / 300 ³⁾	—	708.0	PDA 115	1352
F400 Three phase motor, 50 Hz, protection class IP54													
B VAR 1000/4 F400	2468	1480	87050	55.0	400	98.6	—	776	40 / 400 ³⁾	—	689.0	—	—
F400 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54													
B VAR 1000/8/4 F400	2469	735/1480	43525/87050	14.7/55.0	400	36.5/100.0	—	471	40 / 400 ³⁾	—	708.0	PDA 115	1352

¹⁾ There must be a vibration monitoring system (on-site) pursuant to DIN EN 14986. ³⁾ Smoke extraction (once 120 min. at 300 °C or 120 min. at 400 °C).

⁴⁾ Anti-vibration mounts weight-dependent see p. 177.

F600 – The temperature class for increased requirements.



If particularly high requirements are placed on projects in the area of mechanical smoke extraction, such as high fire loads, low ceiling heights or other unfavourable circumstances, the use of fans in temperature class F600 are recommended.

Almost any project requirements are ideally met due to the large variety of types in the finest gradations. The F600 fans are suitable for installation within and outside of the fire zone. They can be installed in any

position and this guarantees flexible and demand-specific project planning. The cooling air required for the fan motor is supplied via a separate centrifugal cooling air fan.

As a perfect addition to the Helios F600 range, the smoke exhaust control system (EVS) is available in the special F600 design, which also regulates the centrifugal cooling air fan.



TEMPERATURE CLASS F600

101^{ff}

The Helios range includes two F600 series

- B AVD F600 with Ø 500 – 1250 mm
- B VAR F600 with Ø 500 – 1000 mm

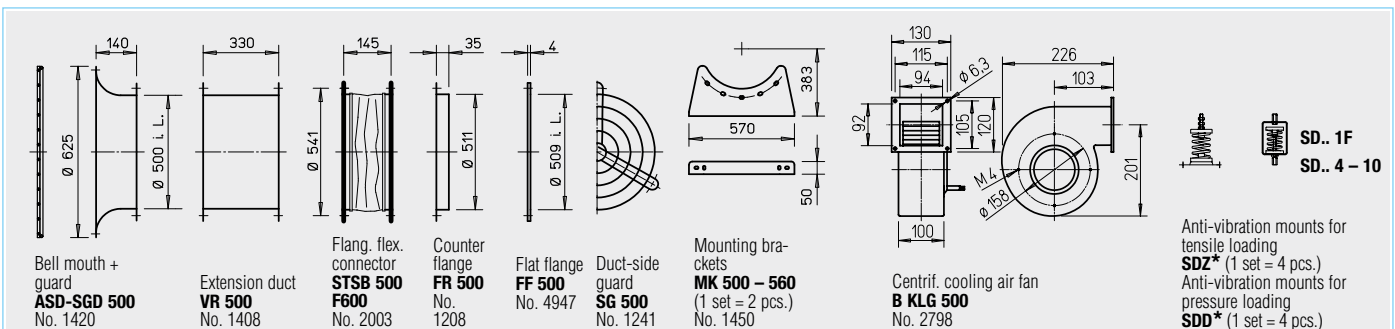
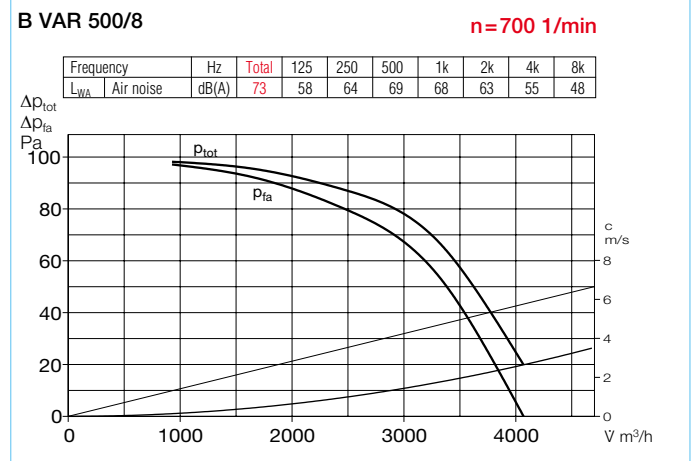
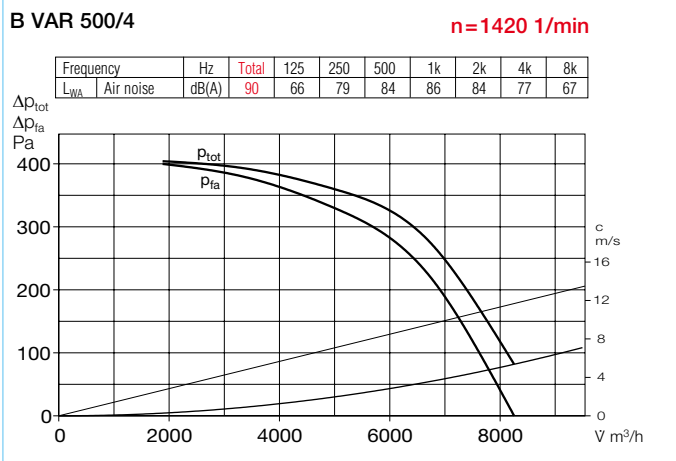
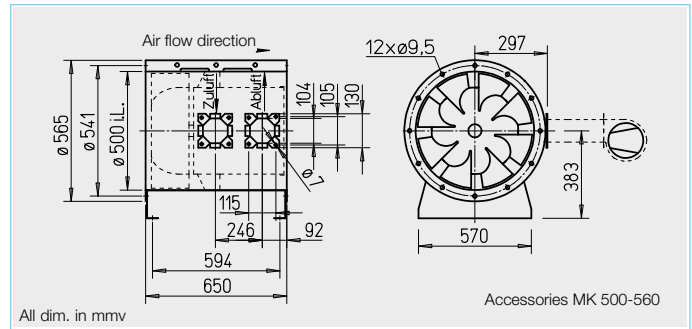
CENTRIFUGAL COOLING AIR FAN

174

The following types are available in the accessories range

- B KLG 500
- B KLG 1000





Accessories page 162 ff.

* Type allocation see table, last column

- Casing**
Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades
- Motor**
Direct through Efficient IE3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
All types (except pole-switching) have PTC resistors as standard and must be protected with aa full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box (IP54) mounted for installation outside of the fire zone.
- Safety information**
Protection against accidental contact for impeller must be ensured pursuant to DIN EN ISO 13857.
- Centrifugal cooling air fan**
The centrifugal cooling air fan B KLG is a required accessory for ensuring motor cooling. Alternative forced ventilation fan upon request. Minimum cooling air flow rate $\dot{V} = 250 \text{ m}^3/\text{h}$.
- Certification**
The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-149 Certificate of performance reliability: F600: 0036-CPR-RG05-02

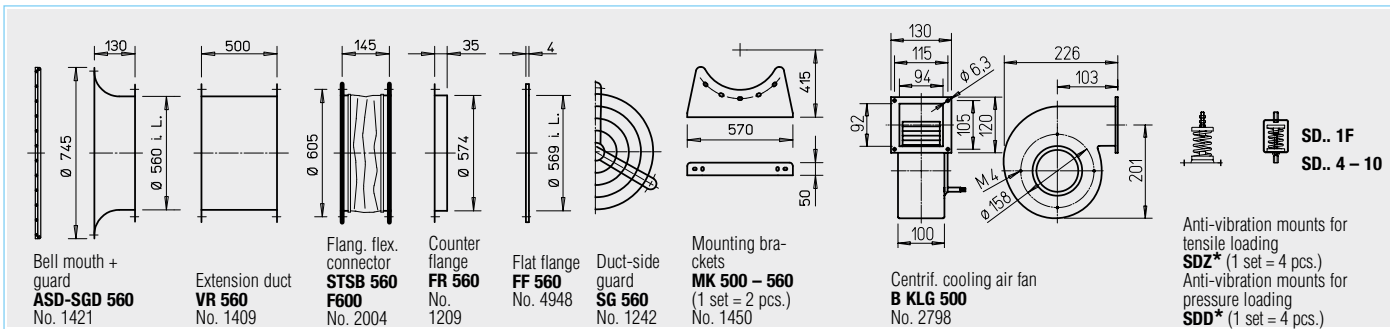
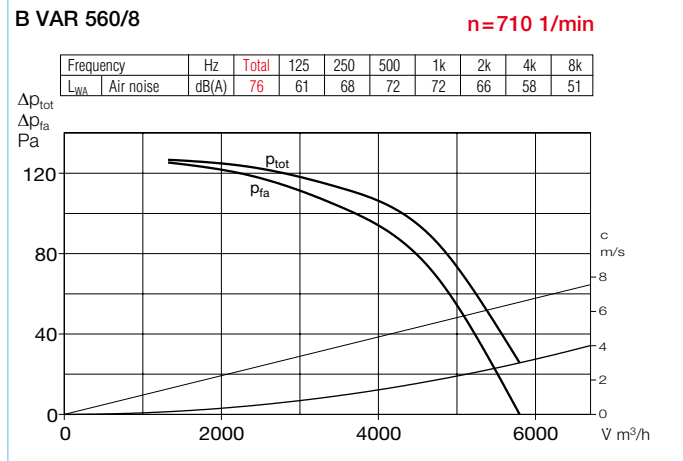
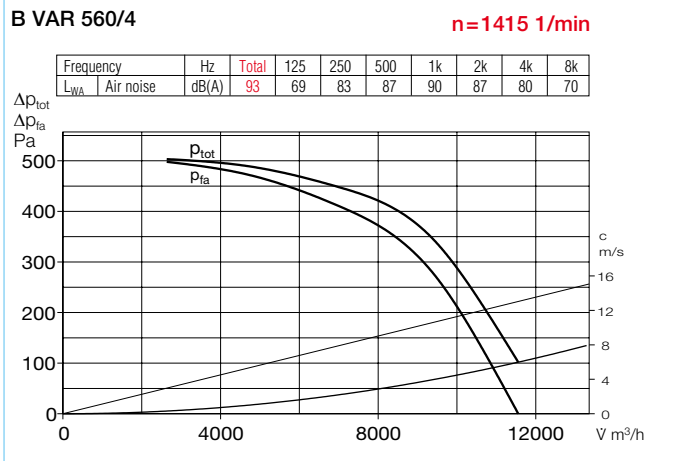
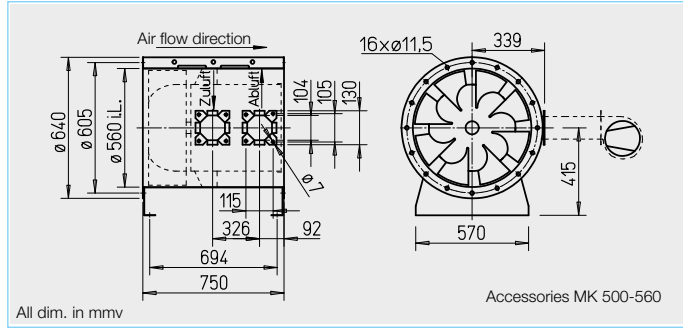
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Type	Ref. no.	Speed	Output free-blowing	Nom. motor power. (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount NG				
											Pressure		Tensile ²⁾		
		min ⁻¹	$\dot{V} \text{ m}^3/\text{h}$	kW	V	A	No.	+°C	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
F600 Three phase motor, 50 Hz, protection class IP54															
B VARD 500/4 F600	2813	1435	10510	2.2	400	4.56	776	40 / 600	101	—		SDD 4	1944	SDZ 4	1945
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VARD 500/8/4 F600	2814	700/1430	4960/10430	0.55/2.2	400	2.0/4.84	471	40 / 600	96	PDA 12 ³⁾	5081	SDD 4	1944	SDZ 4	1945

¹⁾ For ventilation / smoke extraction (once 120 min.).

²⁾ Types SDZ not permitted for installation within fire zone.

³⁾ Flush-mounted version see Switch product page.



- Casing**
Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades
- Motor**
Direct through Efficient IE3 three phase motor. Pole-switching fans with IEC standard motor.
- Protection class IP55.** Insulation class H. External cable with sheathing.
- Motor protection**
All types (except pole-switching) have PTC resistors as standard and must be protected with aa full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box (IP54) mounted for installation outside of the fire zone.
- Safety information**
Protection against accidental contact for impeller must be ensured pursuant to DIN EN ISO 13857.
- Centrifugal cooling air fan**
The centrifugal cooling air fan B KLG is a required accessory for ensuring motor cooling. Alternative forced ventilation fan upon request. Minimum cooling air flow rate $\dot{V} = 340 \text{ m}^3/\text{h}$.
- Certification**
The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-149 Certificate of performance reliability: F600: 0036-CPR-RG05-02

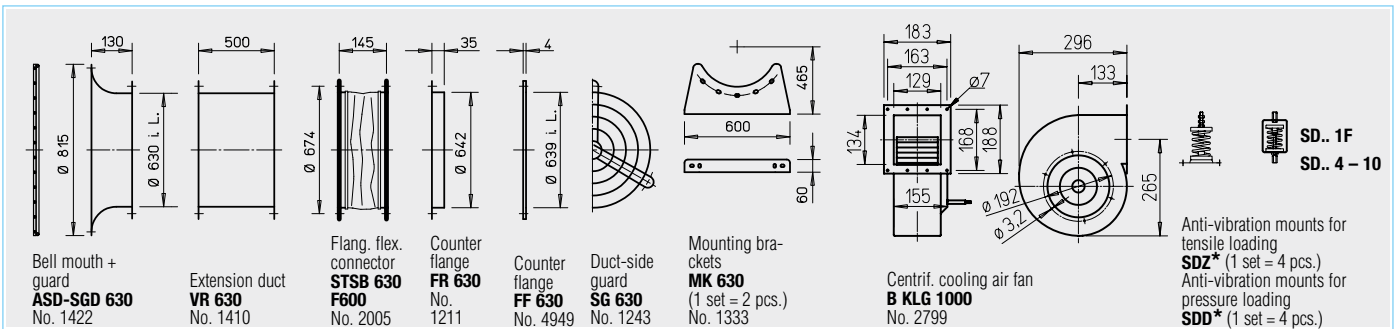
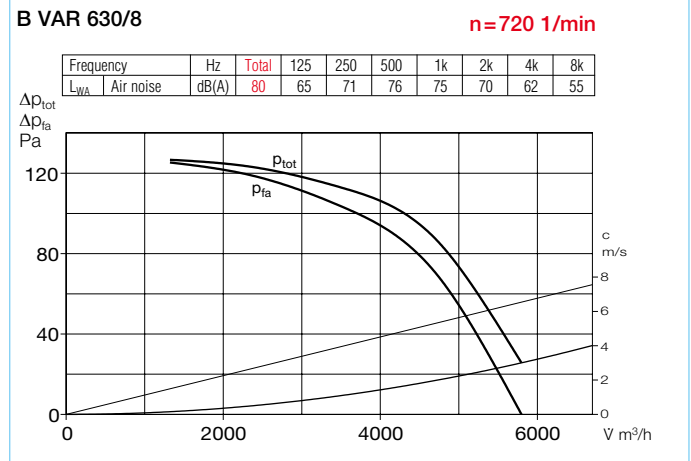
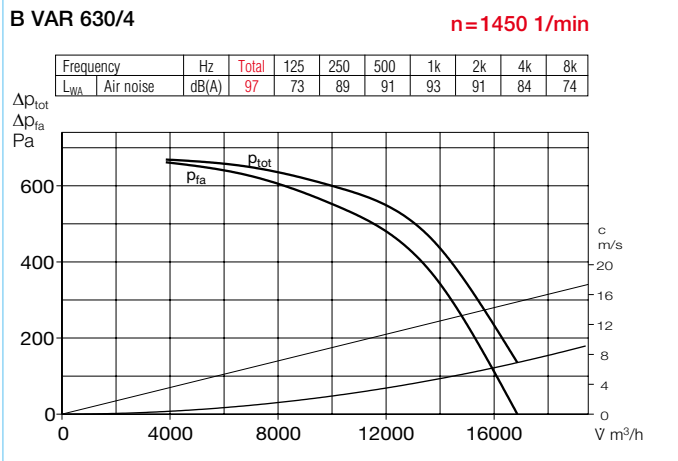
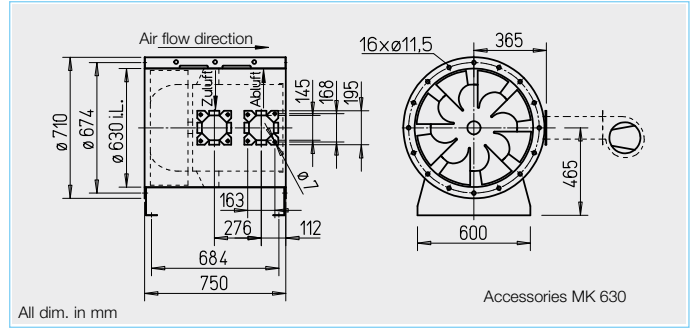
* Type allocation see table, last column

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Type	Ref no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount NG				
											Pressure		Tensile ²⁾		
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
F600 Three phase motor, 50 Hz, protection class IP54															
B VARD 560/4 F600	2828	1440	11470	3.0	400	6.15	776	40 / 600	129	—		SDD 4	1944	SDZ 4	1943
F600 Pole-switching, 2 speed (Dahlander winding Y/Y), three phase motor 50 Hz, protection class IP54															
B VARD 560/8/4 F600	2829	690/1410	7380/14970	0.7/2.8	400	2.41/6.01	471	40 / 600	134	PDA 12³⁾	5081	SDD 4	1944	SDZ 4	1943

¹⁾ For ventilation / smoke extraction (once 120 min.).

²⁾ Types SDZ not permitted for installation within fire zone.



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* Type allocation see table, last column

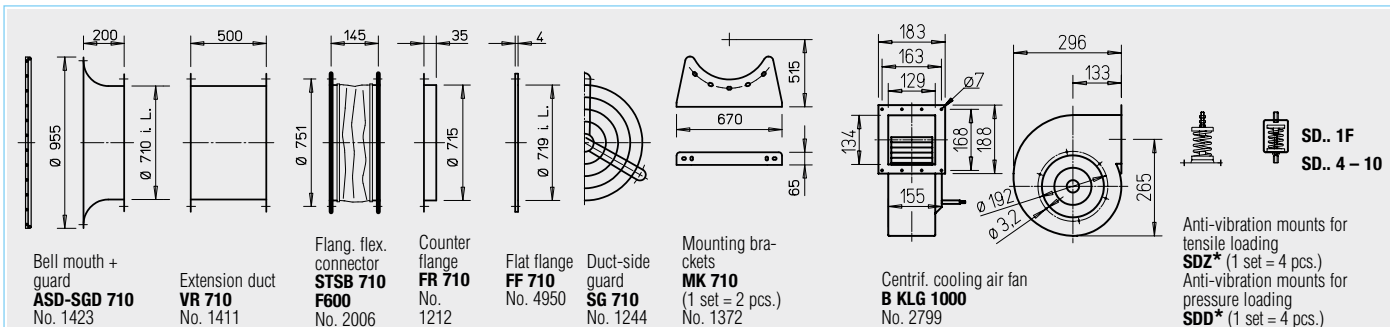
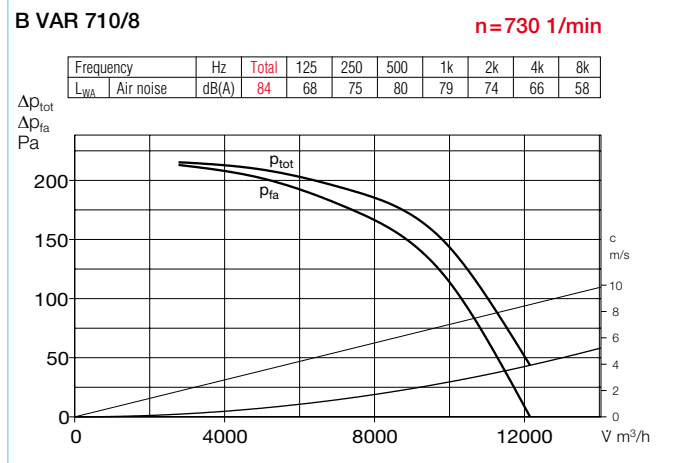
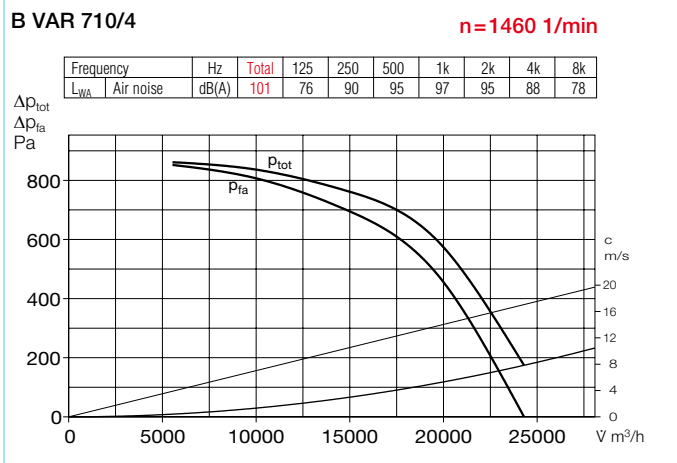
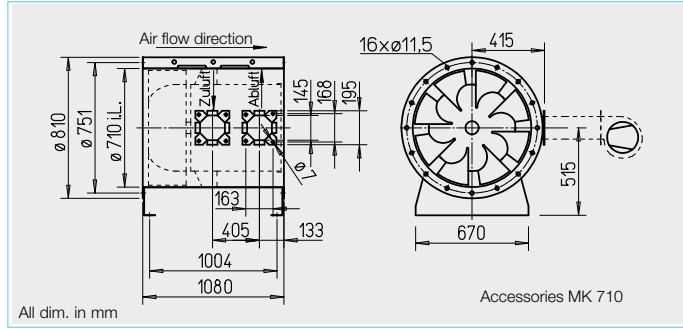
- Casing**
Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades
- Motor**
Direct through Efficient IE3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
All types (except pole-switching) have PTC resistors as standard and must be protected with aa full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box (IP54) mounted for installation outside of the fire zone.
- Safety information**
Protection against accidental contact for impeller must be ensured pursuant to DIN EN ISO 13857.
- Centrifugal cooling air fan**
The centrifugal cooling air fan B KLG is a required accessory for ensuring motor cooling. Alternative forced ventilation fan upon request. Minimum cooling air flow rate $\dot{V} = 445 \text{ m}^3/\text{h}$.
- Certification**
The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-149 Certificate of performance reliability: F600: 0036-CPR-RG05-02

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Type	Ref no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount BG				
											Pressure		Tensile ²⁾		
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
F600 Three phase motor, 50 Hz, protection class IP54															
B VARD 630/4 F600	2843	1460	21460	5.5	400	10.4	776	40 / 600	179	—		SDD 5 1924	SDZ 5 1925		
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VARD 630/8/4 F600	2844	725/1430	10660/21460	1.8/7.2	400	4.64/14.4	471	40 / 600	196	PDA 25 5060		SDD 5 1924	SDZ 5 1925		

¹⁾ For ventilation / smoke extraction (once 120 min.).

²⁾ Types SDZ not permitted for installation within fire zone.



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* Type allocation see table, last column

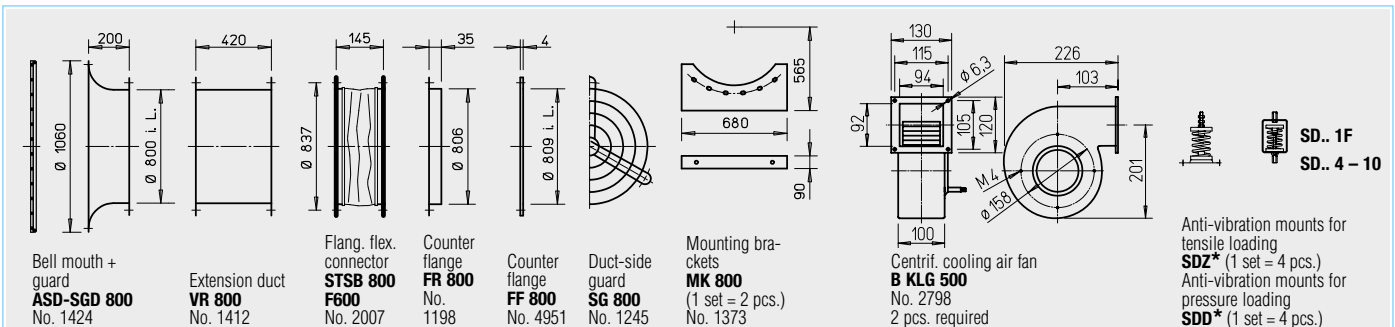
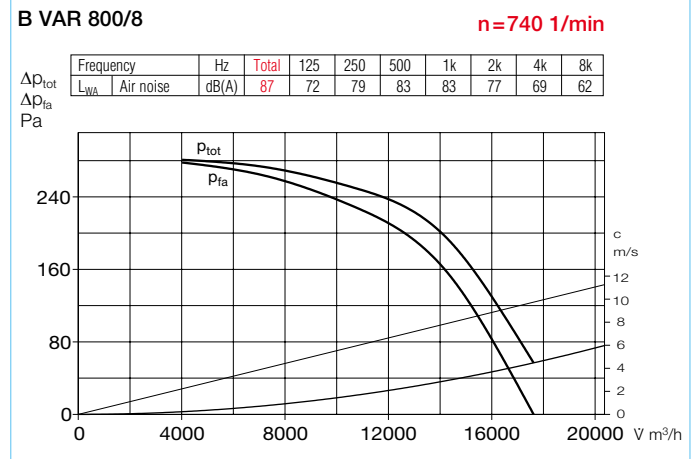
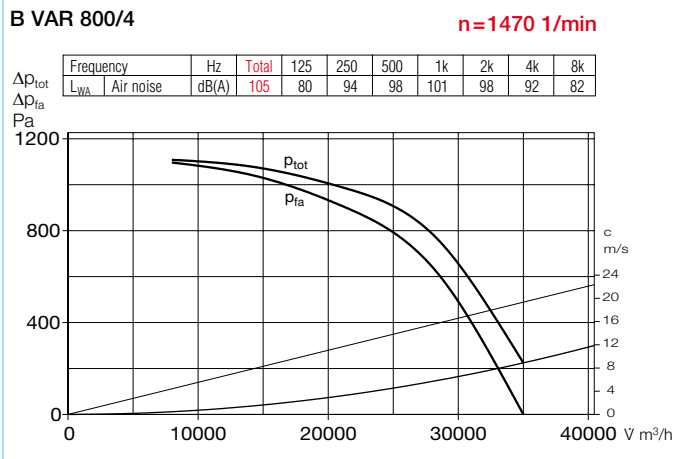
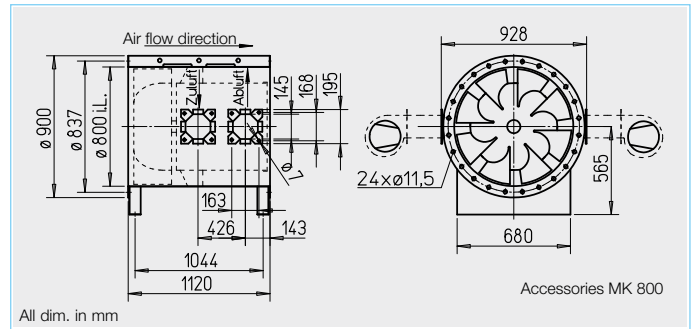
- Casing**
Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades
- Motor**
Direct through Efficient IE3 three phase motor. Pole-switching
- fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
All types (except pole-switching) have PTC resistors as standard and must be protected with aa full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box (IP54) mounted for installation outside of the fire zone.
- Safety information**
Protection against accidental contact for impeller must be ensured pursuant to DIN EN ISO 13857.
- Centrifugal cooling air fan**
The centrifugal cooling air fan B KLG is a required accessory for ensuring motor cooling. Alternative forced ventilation fan upon request. Minimum cooling air flow rate $\dot{V} = 565 \text{ m}^3/\text{h}$.
- Certification**
The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-149 Certificate of performance reliability: F600: 0036-CPR-RG05-02

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Type	Ref no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount BG				
											Pressure		Tensile ²⁾		
		min ⁻¹	V m ³ /h	kW	V	A	No.	+°C	ca. kg	Type	Ref no.	Type	Ref no.	Type	Ref no.
F600 Three phase motor, 50 Hz, protection class IP54															
B VARD 710/4 F600	2853	1470	30940	11.0	400	20.9	776	40 / 600	283	—		SDD 6	1926	SDZ 6	1927
F600 Pole-switching, 2 speed (Dahlander winding Y/Y), three phase motor 50 Hz, protection class IP54															
B VARD 710/8/4 F600	2854	725/1455	15460/30940	3.0/11.0	400	7.0/21.0	471	40 / 600	297	PDA 25	5060	SDD 6	1926	SDZ 6	1927

¹⁾ For ventilation / smoke extraction (once 120 min.).

²⁾ Types SDZ not permitted for installation within fire zone.



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* Type allocation see table, last column

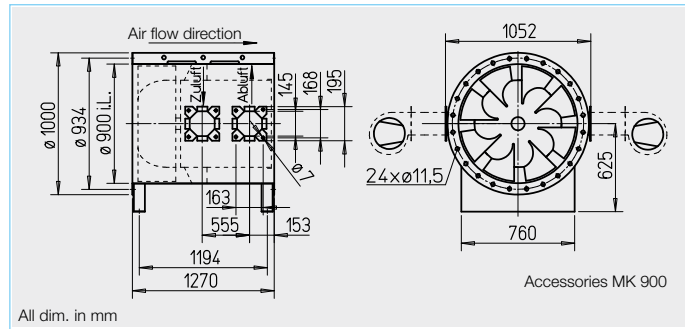
- Casing**
Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades
- Motor**
Direct through Efficient IE3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
All types (except pole-switching) have PTC resistors as standard and must be protected with aa full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box (IP54) mounted for installation outside of the fire zone.
- Safety information**
Protection against accidental contact for impeller must be ensured pursuant to DIN EN ISO 13857.
- Centrifugal cooling air fan**
The centrifugal cooling air fan B KLG is a required accessory for ensuring motor cooling. Alternative forced ventilation fan upon request. Minimum cooling air flow rate $\dot{V} = 700 \text{ m}^3/\text{h}$.
- Certification**
The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-149 Certificate of performance reliability: F600: 0036-CPR-RG05-02

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Type	Ref. no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount NG				
											Pressure		Tensile ²⁾		
		min ⁻¹	$\dot{V} \text{ m}^3/\text{h}$	kW	V	A	No.	+°C	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
F600 Three phase motor, 50 Hz, protection class IP54															
B VARD 800/4 F600	2863	1470	44570	18.5	400	35.1	776	40 / 600	394	—		SDD 7	1928	SDZ 7	1925
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VARD 800/8/4 F600	2864	730/1470	22430/44570	5.0/20.0	400	14.1/38.6	471	40 / 600	407	PDA 63	1283	SDD 7	1928	SDZ 7	1925

¹⁾ For ventilation / smoke extraction (once 120 min.).

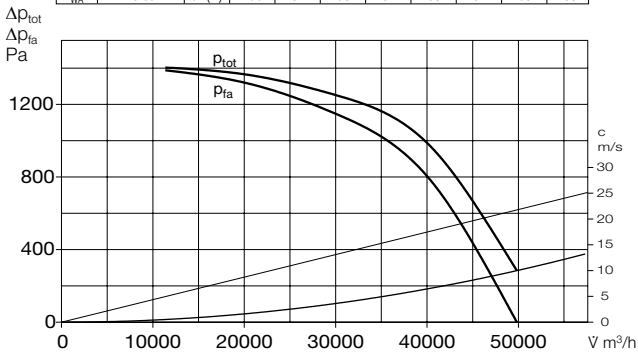
²⁾ Types SDZ not permitted for installation within fire zone.



B VAR 900/4

n=1470 1/min

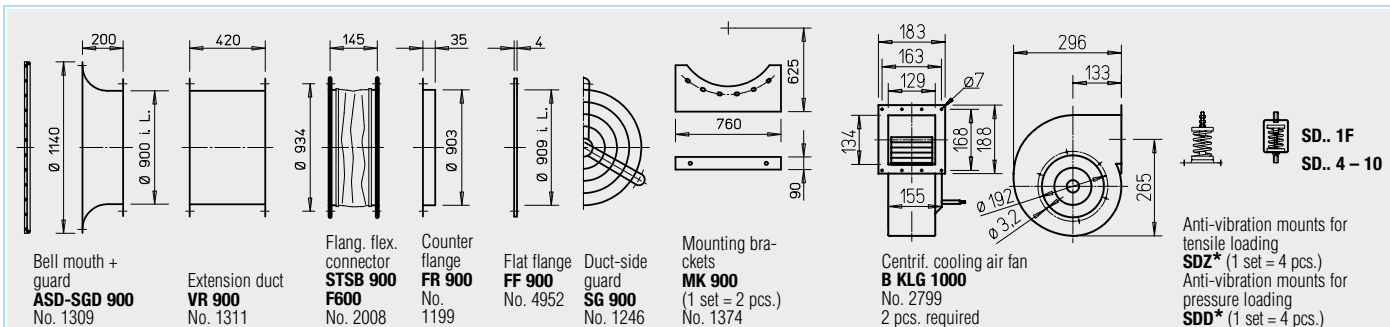
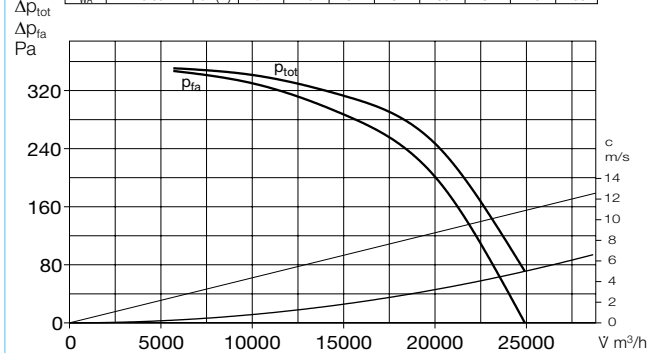
Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	108	84	98	102	105	102	95	85



B VAR 900/8

n=735 1/min

Frequency	Hz	Total	125	250	500	1k	2k	4k	8k	
L _{WA}	Air noise	dB(A)	91	76	82	87	86	81	73	66



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* Type allocation see table, last column

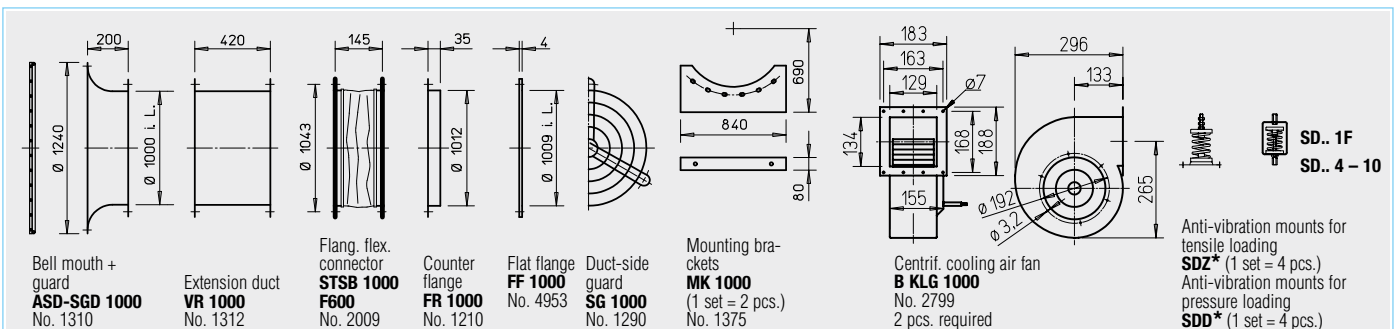
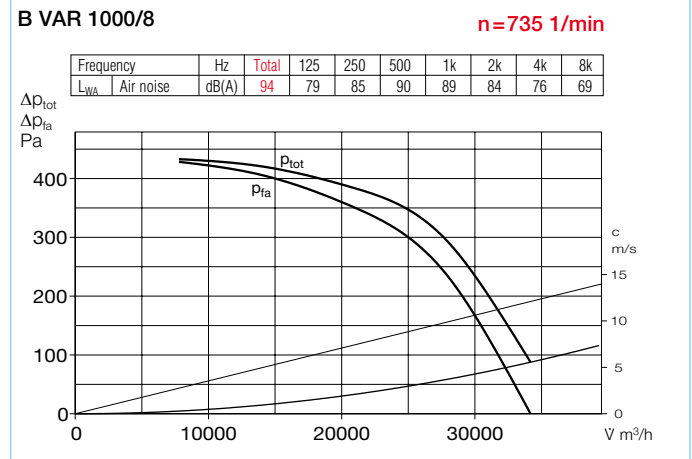
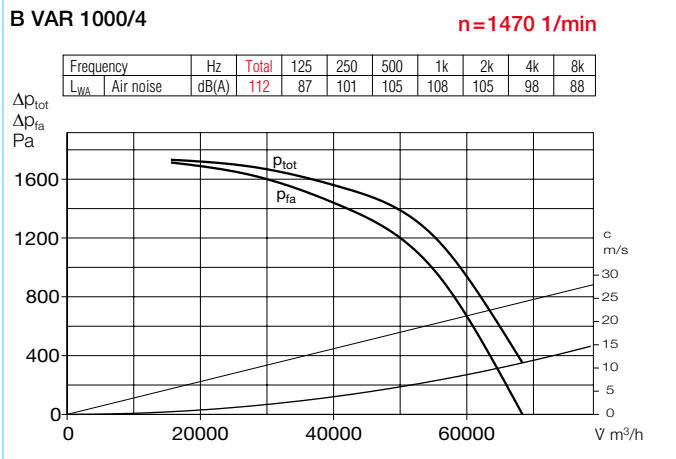
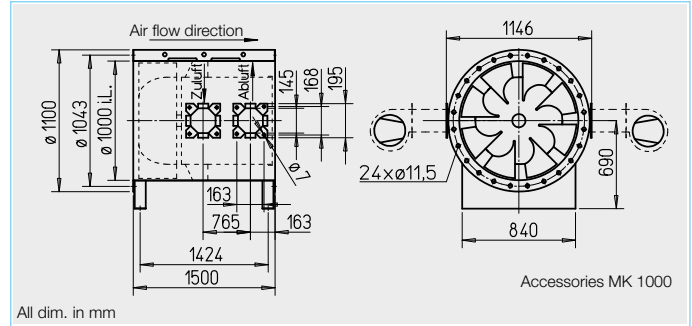
- Casing**
Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades
- Motor**
Direct through Efficient IE3 three phase motor. Pole-switching
- fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
All types (except pole-switching) have PTC resistors as standard and must be protected with aa full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box (IP54) mounted for installation outside of the fire zone.
- Safety information**
Protection against accidental contact for impeller must be ensured pursuant to DIN EN ISO 13857.
- Centrifugal cooling air fan**
The centrifugal cooling air fan B KLG is a required accessory for ensuring motor cooling. Alternative forced ventilation fan upon request. Minimum cooling air flow rate $\dot{V} = 850 \text{ m}^3/\text{h}$.
- Certification**
The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-149 Certificate of performance reliability: F600: 0036-CPR-RG05-02

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Type	Ref no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted		Anti-vibration mount NG					
										Type	Ref no.	Pressure	Tensile ²⁾	Type	Ref no.	Type	Ref no.
F600 Three phase motor, 50 Hz, protection class IP54																	
B VARD 900/4 F600	2873	1480	63460	37.0	400	66.8	776	40 / 600	630	—		SDD 8	1930	SDZ 8	1931		
F600 Pole-switching, 2 speed (Dahlander winding Y/Y), three phase motor 50 Hz, protection class IP54																	
B VARD 900/8/4 F600	2874	740/1485	31730/63460	9.2/37.0	400	25.4/74.2	471	40 / 600	648	PDA 115	1352	SDD 8	1930	SDZ 8	1931		

¹⁾ For ventilation / smoke extraction (once 120 min.).

²⁾ Types SDZ not permitted for installation within fire zone.



Accessories page 162 ff.

* Type allocation see table, last column

- Casing**
Duct with flanges on both sides DIN 24155 pt. 3. Welded construction, hot-dip galvanised. Welded guide vane with inner hub for mounting the flange motor, hot-dip galvanised.
- Impeller**
Optimised for high pressure and volume output. Special development with spatially curved hot-dip galvanised steel blades
- Motor**
Direct through Efficient IE3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55. Insulation class H. External cable with sheathing.
- Motor protection**
All types (except pole-switching) have PTC resistors as standard and must be protected with aa full motor protection device (MSA, Ref no. 1289). This must be bridged in smoke extraction situation.
- Installation**
Installation in any position. Suitable for installation within and outside of the fire zone.
- Electrical connection**
Standard terminal box (IP54) mounted for installation outside of the fire zone.
- Safety information**
Protection against accidental contact for impeller must be ensured pursuant to DIN EN ISO 13857.
- Centrifugal cooling air fan**
The centrifugal cooling air fan B KLG is a required accessory for ensuring motor cooling. Alternative forced ventilation fan upon request. Minimum cooling air flow rate $\dot{V} = 1000 \text{ m}^3/\text{h}$.
- Certification**
The smoke extraction fans B VARD have been tested according to DIN EN 12101-3. DIBt approval: F600: Z-78.11-149 Certificate of performance reliability: F600: 0036-CPR-RG05-02

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Accessory details	Page
Mounting accessories	175 ff.
Attenuator	180
Gas warning systems, switch and control technology	182 ff.

Type	Ref. no.	Speed	Output free-blowing	Nom. motor power (output)	Nominal voltage	Power consumption	Wiring diagram	max. air flow temp. ¹⁾	Weight net	Pole switch surface-mounted	Anti-vibration mount NG				
											Pressure		Tensile ²⁾		
		min ⁻¹	$\dot{V} \text{ m}^3/\text{h}$	kW	V	A	No.	+°C	ca. kg	Type	Ref. no.	Type	Ref. no.	Type	Ref. no.
F600 Three phase motor, 50 Hz, protection class IP54															
B VARD 1000/4 F600	2883	1480	87050	55.0	400	98.6	776	40 / 600	865	—		SDD 8	1930	SDZ 8	1931
F600 Pole-switching, 2 speed (Dahlander winding Y/YY), three phase motor 50 Hz, protection class IP54															
B VARD 1000/8/4 F600	2884	735/1480	43525/87050	14.7/55.0	400	36.5/100.0	471	40 / 600	838	PDA 115	1352	SDD 8	1930	SDZ 8	1931

¹⁾ For ventilation / smoke extraction (once 120 min.).

²⁾ Types SDZ not permitted for installation within fire zone.

Smoke protection pressure and stairway scavenging air systems – Life-saving protection of escape routes.



Smoke protection pressure and stairway scavenging air systems guarantee life-saving smoke extraction in stairways, airlocks, fire brigade lifts and anterooms in case of fire. They allow people in the building to use the escape routes and thus the safely exit the building.

A **smoke protection pressure system** generates a defined differential pressure between the escape routes and the

adjacent building areas using a supply air fan, which effectively prevents the spread of smoke. Whenever escaping persons open the doors which lead into the smoke-free escape route, the supply air fan immediately provides a flow of fresh air. This prevents the smoke from entering the escape route. Even with opened doors, the spreading of smoke is effectively prevented, so that the escape routes can be used without restrictions. In addition to keeping escape route free from smoke, the smoke protection pressure system also ensures the sig-

nificant reduction of building damage caused by smoke. Smoke-free access to the fire floor is also created for the fire brigade, so that the source of the fire can be tackled quickly and effectively.

Stairway scavenging air systems ensure the ventilation of the entire stairway using a fan. The resulting dilution and discharge of smoke significantly reduces the smoke gas concentration. The chances for a quick and successful self-rescue are considerably increased for the people in the building.



SMOKE PROTECTION PRESSURE SYSTEM

Product-specific planning information

110^{ff}

RDA

- + Redundancy package**
 - Supply air fan incl. mounting brackets and extension duct
 - Frequency inverter or load unit
- + Smoke package**
 - Push-button alarm
 - Smoke detector
 - Flash light siren
- + Ventilation package**
 - Wind and rain sensor
 - Temperature sensor
 - Weekly timer
 - Ventilation key switch

112^{ff}



STAIRWAY SCAVENGING AIR SYSTEM WITH CONTROLLED PRESSURE MAINTENANCE

Product-specific planning information

110^{ff}

TSA

- + Redundancy package**
 - Supply air fan incl. mounting brackets and extension duct
 - Frequency inverter or load unit
- + Smoke package**
 - Push-button alarm
 - Smoke detector
 - Flash light siren
- + Ventilation package**
 - Wind and rain sensor
 - Temperature sensor
 - Weekly timer
 - Ventilation key switch

118^{ff}



STAIRWAY SCAVENGING AIR SYSTEM

Product-specific planning information

110^{ff}

TSA / TSA-L

- + Smoke package**
 - Push-button alarm
 - Smoke detector
 - Flash light siren
- + Ventilation package**
 - Wind and rain sensor
 - Temperature sensor
 - Weekly timer
 - Ventilation key switch

124^{ff}

■ Planning

□ Protection objectives

Smoke protection pressure systems (RDA) keep escape routes in buildings free from smoke in case of fire.

Thus, they enable the self-rescue of persons, support the fire brigade efforts and reduce the damage caused by the spread of smoke and fire in the building.

□ Requirements

In order to effectively prevent the entry of smoke into the escape route, fresh air must flow through leakage areas against the spread of smoke and the specified speeds must be complied with for the cross-sections of the opened doors on the fire floor (self-rescue: ≥ 0.75 or ≥ 1.0 m/s, fire brigade: ≥ 2 m/s). In this respect, the differential pressure must not fall below 15 Pa and a door opening force of 100 N must not be exceeded for closed doors in the escape route.

The constantly changing pressure conditions due to opening and closing doors must be taken into account by adjusting the air volume flows in the stairway complying with a control time of 3 seconds.

□ Standards and directives

DIN EN 12101-6 contains detailed explanations and specifications for smoke protection pressure systems. The VDMA standard sheet 24188 formulates further requirements for the smoke removal, dilution and clearance. Furthermore, the legal building guidelines in the specific State Building Codes (LBO) or the high-rise building regulation must be taken into account.

□ Acceptance

A RDA must be coordinated with the architects, fire protection concept designers and the competent approval authority early in the planning phase. After the installation and adjustment, an expert will conduct an acceptance inspection. The operator will receive a briefing upon system handover. The functional reliability in case of emergency is ensured by the annual maintenance and regular functional tests.

□ System types

The VDMA standard sheet 24188 distinguishes between five system types:

1. Natural smoke extraction
2. Scavenging air system without controlled pressure maintenance
3. Scavenging air system with controlled pressure main-

tenance, without secured outflow on floor.

4. Smoke protection pressure system with secured outflow on floor.
5. Smoke protection pressure system with secured outflow on floor as well as redundant operating mode and emergency power supply.

□ Delivery range

If only the flushing of the stairway is required, the planning of a stairway scavenging air system (TSA, TSAS) is favourable. This provides a constant supply air flow rate into the stairway, whereby infiltrated smoke gases are diluted and flushed out via the opened light dome. If there are additional requirements for overpressure in the stairway, a stairway scavenging air system with controlled pressure maintenance (TSA FU or TSA DDK) is preferable in the planning phase. If there are further requirements regarding the air flow speed for the door between the stairway and the fire floor beyond the differential pressure regulation in the stairway, a smoke protection pressure system (RDA FU and RDA DDK) with controlled air discharge opening on the fire floor should be planned.

■ Functions of a smoke protection pressure system

□ Triggering

Smoke protection pressure systems must be automatically put into operation via smoke detector. There should be one smoke detector per door that leads into the escape route. The smoke detector must be mounted in front of the entrance door in anterooms. Furthermore, at least one push-button alarm must be installed in the entrance area from outside. The system can be triggered by the building fire alarm system (BMA).

□ Flushing

The smoke protection pressure system must flush the stairway directly after triggering. An opening area must be created for discharging the scavenging air at the top of the stairway, e.g. through a light dome controlled by the RDA control system or differential pressure control damper. Possible infiltrated smoke gases are diluted in the RDA start-up phase and discharged from the stairway.

□ Overpressure build-up

After the initial scavenging, a controlled overpressure must be built up between the stairway and the fire floor in order to ensure a smoke-free area. For this purpose, the system must switch to pressure regulation operation and provide a defined air flow volume to the stairway using the supply air fan. For an equal air supply in the stairway of a high building, a supply air duct must be planned with injection points on every third floor. With the doors closed in the stairway, the differential pressure between the stairway and the adjacent unit is at least 15 Pa. If the differential pressure in the stairway falls too low or if not enough air is flowing through an opened door on the fire floor, smoke may enter the stairway. On the other hand, if the differential pressure is too high in the stairway, there may be impermissibly high door opening forces of more than 100 N (measured at the door handle) at the emergency doors. Depending on the surface of the door leaves and the force of the attached door closer, overpressures of approx. 40 Pa must not be exceeded in most cases.

□ Diff. pressure regulation

Escaping persons or the fire brigade require the opening and closing of doors, which results in constantly changing pressure conditions in the stairway. A smoke protection pressure system must react to these conditions very quickly (3 sec.). The smoke protection pressure and stairway scavenging air systems with controlled pressure maintenance are available as active systems with frequency inverters (RDA FU, TSA FU) or as a passive solution with a self-regulating differential pressure control damper (RDA DDK, TSA DDK) for regulating the differential pressure.

– Active system:

The actively controlled systems have a specially developed frequency inverter, which enables a variable system supply air flow volume. During pressure regulation operation, sensors permanently measure the differential pressure in the stairway. The frequency inverter automatically ensures that the differential pressure in the stairway is kept constant by controlling the speed of the supply air fan. For example, in case of an opened door, a significantly higher supply air volume flow will be supplied to the stairway than if all doors are closed.

– Passive system:

The passively controlled smoke protection pressure system has a differential pressure control damper, which reduces the overpressure to the atmosphere using an innovative mechanism when the differential pressure in the stairway is too high. For this purpose, an opening pressure that is individually adjusted to the building is set for the differential pressure control damper. With this system, the supply air fan runs permanently at its nominal speed in case of fire. The supply air flow volume is designed for if there is an opened door to the fire floor and simultaneous flow through smaller leakage areas in the stairway. In this situation, the differential pressure control damper is closed. If the door on the fire floor is closed, the differential pressure control damper will open and allow the supply air volume flow to flow into the atmosphere.

□ Door throughflow

In order that no smoke can infiltrate into the stairway while people are escaping from the fire floor, fresh air must quickly flow through the open door on the fire floor. For this purpose, the supply air fan provides fresh air through the open door in the direction of the escaping persons. The required door throughflow speed depends on the respective protection objectives:

- Self-rescue of persons ≥ 0.75 bzw. ≥ 1.0 m/s
- Fire brigade support ≥ 2 m/s

□ Controlled air discharge opening

In order to reach the door throughflow speed, there must be a controlled air discharge opening (air discharge shaft, window with actuator, etc.) in the utilisation unit affected by the fire. The actuator for this opening can be controlled by the RDA or the fire alarm system, which requires the precise location of the fire source via fire source-selective smoke detector analysis. DIN EN 12101-6 Annex A contains important information on the correct design for the free-flowing areas of a controlled air discharge opening. If the air is discharged via a smoke extraction duct, precise pressure loss calculations and large duct cross-sections are often required.

■ Outside air inlet

The outside air inlet of the system must be located in such a way that no smoke can be taken in (see Model Ventilation System Directive – M-LüAR). Duct smoke detectors for monitoring the outside air inlet offer additional security, but must be coordinated with the expert inspectors in advance.

An intake-side multi-leaf damper must be provided in the outside air inlet to protect against the infiltration of cold air. This multi-leaf damper is equipped with a motorised drive and is automatically opened when the system is in operation.

If the system has two redundant supply air fans (e.g. redundancy package), backdraught shutters must be provided for the fans to prevent short-circuiting when only one fan is operated. These backdraught shutters can be operated by spring force or via a motorised drive. The switch cabinet expansion in the redundancy package provides a specific damper control system for the supply air fan in operation for this purpose.

■ Fire brigade lifts

Smoke protection pressure systems prevent the entry of smoke gases into the fire service lift shaft and their anterooms through the regulated build-up of overpressure. The RDA automatically opens an overflow opening (smoke extraction damper) on the fire floor, so that there is a ventilation connection between the lift shaft and anteroom, through which the supply air volume flow can flow from the lift shaft into the anteroom.

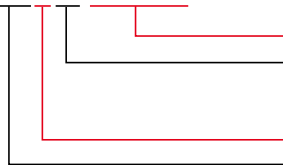
Parallel to this, a controlled air discharge opening is automatically created on the fire floor. If the anteroom door is opened in case of fire, the supply air will immediately flow from the anteroom towards the direction of the spreading smoke. The resulting door throughflow speed of at least 0.75 m/s effectively prevents the spreading of smoke through the doors into the fire service lift anteroom. Thus, the entire fire service lift and its anterooms are kept free from smoke.

In line with the throughflow speed in a stairway, it is also essential to create a controlled air discharge opening on the fire floor for the fire service lifts.



■ Differential pressure control dampers

Type description example:
DDK-L FD 1000/1020



Dimensions in mm
FD = flat roof installation
LK = light dome installation
WE = wall installation
with ventilation function
Diff. pressure control damper

■ Supply air volume flow design

Using the calculation of the required dimensioning volume flow, the matching supply air fan is designed in three steps:

□ Leakage volume flow

The leakage volume flow must constantly flow into the stairway after triggering in order to build up the required overpressure. Leakages which the overpressure in the stairway can leak through include e.g. door gaps, lift shaft doors and leaking connections between windows and brickwork. Since the determination of leakages is often very difficult, non-considered leakages are compensated for using a factor of 1.5. In this respect, it is important to consider a potentially opened light dome or external door.

□ Volume flow for ensuring the required door throughflow speed

The required volume flow is determined depending on the door size and required throughflow speed.

□ Dimensioning volume flow

The final dimensioning volume flow results from the sum of the two aforementioned volume flows plus a limit deviation of 15 % for throughflow losses. The supply air fan is designed based on this dimensioning volume flow and the property-specific pressure losses.

DDK.. FD



DDK.. LK



DDK.. WE



■ Helios fans

□ Products

As a leading manufacturer of fans and ventilation systems, Helios offers a wide range of products and meets all requirements for flow rate and pressure increase in the finest gradations. Helios high-performance axial fans and Helios medium pressure axial fans are used in the RDA and TSA service packages and their flow rates are ideally adapted to the smoke protection pressure and stairway scavenging air systems.

□ Systems

Modular system packages enable the individual adjustment to the property and thus increase planning flexibility and system safety.

□ Services

Helios offers various services for planning support, realisation, commissioning and acceptance of RDA and TSA. The systems can only be commissioned by the Helios customer service team. Details on the scope of services can be found in the Helios TGA service catalogue Ref no. 85934 or heliosventilatoren.de/de/tga-service.de

Smoke protection pressure system.

Smoke protection pressure systems ensure that escape routes are kept free from smoke in case of fire by building up differential pressure.

Both active systems with frequency inverters (FU) and passive systems with self-regulating differential pressure control dampers (DDK) are used for differential pressure regulation. RDA service packages are available with frequency inverters or differential pressure control dampers in a total of three (DDK) or four (FU) sizes with volume flows from 15,000 to 35,000 m³/h. In addition

to the fan, the service packages also include the switch cabinet with the control system and the respective components for differential pressure regulation.

Each RDA service package can be combined with the packages below and additional accessories to complete the system.



RDA FU service package

- ✓ Supply air fan incl. mounting brackets and extension duct
- ✓ Switch cabinet with control
- ✓ Frequency inverter
- ✓ 2 differential pressure sensors
- Light dome (to be ordered separately if not provided on-site)



RDA DDK service package

- ✓ Supply air fan incl. mounting brackets and extension duct
- ✓ Switch cabinet with control
- ✓ Safety pressure switch
- Differential pressure control damper, optionally with/without ventilation function, for flat roof/wall or light dome installation (to be ordered separately)



RDA FU Redundancy package

The solution when a RDA FU is required with two separately operating fans and load units.

- Includes 1 unit of each
- ✓ Supply air fan incl. mounting brackets and extension duct
 - ✓ Frequency inverter
 - ✓ Switch board expansion



Smoke package

Everything that is required for system triggering and alerting:

- ✓ Push-button alarm
- ✓ Smoke detector
- ✓ Flash light siren



Ventilation package

Extends the functionality of the RDA to demand-oriented ventilation operation:

- ✓ Wind and rain sensor
- ✓ Temperature sensor
- ✓ Weekly timer
- ✓ Ventilation key switch



RDA DDK Redundancy package

The solution when a RDA DDK is required with two separately operating fans and load units.

- Includes 1 unit of each
- ✓ Supply air fan incl. mounting brackets and extension duct
 - ✓ Load unit
 - ✓ Switch board expansion



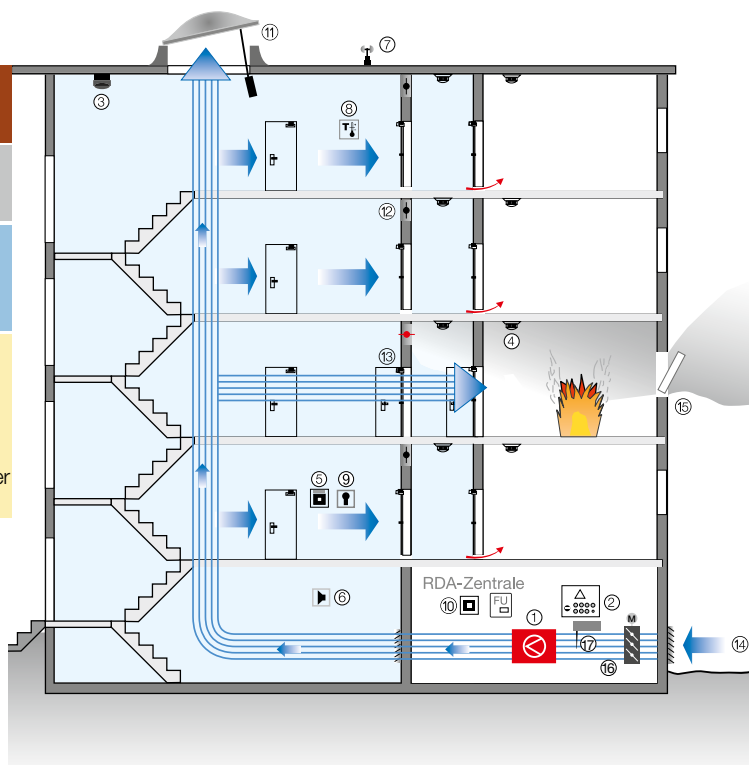
Active system Smoke protection pressure systems with frequency inverter (RDA FU)

RDA FU packages and their components

- ① Supply air fan
- ② RDA control with FU
- ③ Diff. pressure sensor
- ④ Smoke detector
- ⑤ Push-button alarm
- ⑥ Flash light siren
- ⑦ Wind and rain sensor
- ⑧ Temperature sensor
- ⑨ Ventilation key switch
- ⑩ Weekly timer
- ⑪ Light dome
- ⑫ Overflow valve
- ⑬ Door closer
- ⑭ Outside air inlet
- ⑮ Contr. air disch. opening
- ⑯ Intake-side multi-l. damper
- ⑰ Duct smoke detector

Legend:

- Service package RDA FU
- Smoke package RPT
- Ventilation package LPT
- Redun. package RDA FU and
- Accessories



Smoke protection pressure system

Functionality RDA FU

During smoke detection, the RDA FU is triggered and the fan supplies fresh air to the stairway. The constant flow of fresh air flows through the opened light dome to dilute and flush any infiltrated smoke gases. The additional controlled overpressure that builds up in the stairway prevents the infiltration of smoke and ensures that the escape routes are kept free from smoke. The RDA opens a controlled air discharge opening on the fire floor, through which the supply air flows into the atmosphere after it has passed through the opened door between the escape route and the fire floor at a prescribed speed in addition to the escape route. Thus, fire gases are held back and the entry of smoke into the stairway is prevented.

The required differential pressure regulation is carried out by speed adjustment via the frequency inverter. The optional ventilation function allows the system to be used for the demand-based ventilation of the stairway at high temperatures.

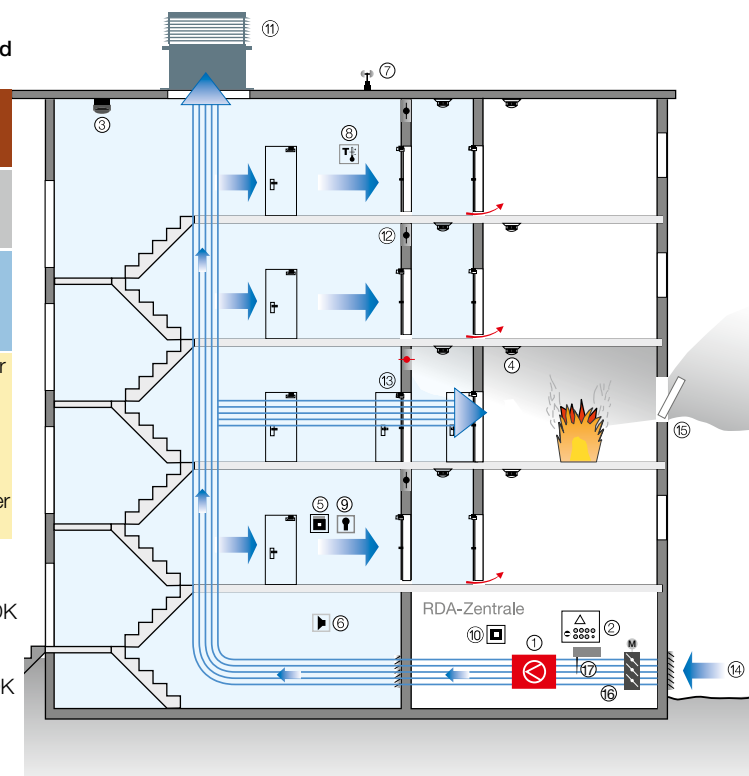
Passive system Smoke protection pressure systems with differential pressure control damper (RDA DDK)

RDA DDK packages and their components

- ① Supply air fan
- ② RDA control with FU
- ③ Diff. pressure sensor
- ④ Smoke detector
- ⑤ Push-button alarm
- ⑥ Flash light siren
- ⑦ Wind and rain sensor
- ⑧ Temperature sensor
- ⑨ Ventilation key switch
- ⑩ Weekly timer
- ⑪ Diff. press. contr. damper
- ⑫ Overflow valve
- ⑬ Door closer
- ⑭ Outside air inlet
- ⑮ Contr. air disch. opening
- ⑯ Intake-side multi-l. damper
- ⑰ Duct smoke detector

Legend:

- Service package RDA DDK
- Smoke package RPT
- Ventilation package LPT
- Redun. package RDA DDK and
- Accessories



Smoke protection pressure system

Functionality RDA DDK

For the passive smoke protection pressure system RDA DDK, the differential pressure regulation is ensured by an automatic differential pressure control damper, which creates an opening to the atmosphere at a pre-set pressure.

During smoke detection, the RDA DDK is triggered and the fan supplies fresh air to the stairway. The resulting controlled overpressure prevents the infiltration of smoke and ensures that the escape routes are kept free from smoke. The supply air flows into the atmosphere through a controlled air discharge opening after it has passed through the opened door between the escape route and the fire floor at a prescribed speed in addition to the escape route. Thus, fire gases are held back and the entry of smoke into the stairway is prevented.

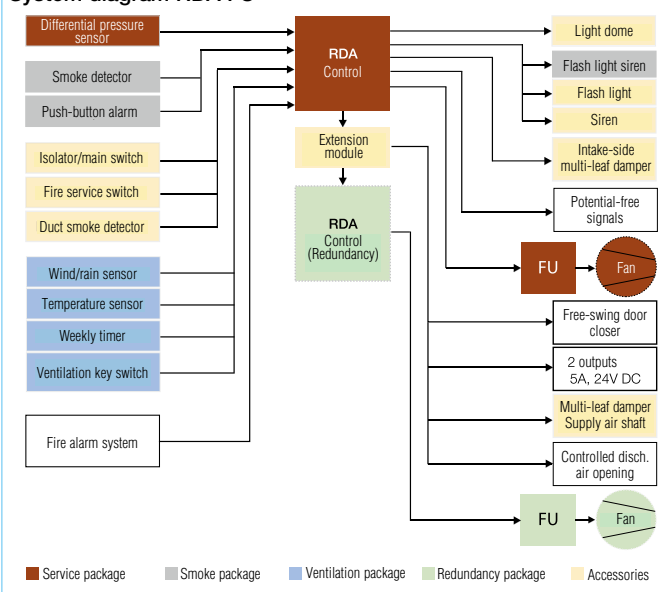
The optional ventilation function allows the system to be used for the demand-based ventilation of the stairway at high temperatures.

RDA FU service package

Light dome available as separate accessory, see page 131.



System diagram RDA FU



Smoke protection pressure systems ensure that stairways, airlocks, fire brigade lifts and their anterooms are kept free from smoke in case of fire by building up the differential pressure.

With regard to the active systems RDA FU, the differential pressure is regulated by automatic fan speed adjustment via a frequency inverter.

Ideally matched system components in modular packages allow

- the individual adjustment of the system to all structural conditions and requirements.
- trouble-free planning, installation and commissioning, as well as safe system operation.

Scope of delivery / Packages

The modular packages can be ordered individually:

Service package RDA FU

There are four service packages for selection, which contain the following components required in all properties as the basis of each RDA FU:

- Supply air fan in four performance ratings, depending on the required volume flow and operating point, see table below. Includes mounting brackets and extension duct.
- Switch cabinet with complete control system. Can be expanded with various functions and modules, see table on right page.
- Frequency inverter, specially coordinated ex works for optimal differential pressure regulation in smoke protection pressure systems.
- 2 differential pressure sensors for recording the prevailing pressure conditions in the overpressure area.

A light dome coordinated with the property must be selected as a pressure release unit pursuant to the table below and ordered separately if there is no controllable

opening area at the top of the stairway on-site.

Smoke package RPT

Includes the system components required for system triggering and alerting (see right page).

Ventilation package LPT

Extends the functionality of the RDA to demand-oriented ventilation operation (see right page).

Redundancy package RDP RDA FU

Converts the RDA into a complete system with two independently operating supply air fans including control system and frequency inverter (see right page) in case of corresponding building code requirements.

Description

Switch cabinet

Lockable switch cabinet in high-quality sheet metal casing. With control and display panel mounted on the front.

Differential pressure regulation

The Helios RDA FU fulfils all building code and normative requirements for differential pressure regulation by using a specially developed frequency inverter in combination with a high-performance supply air fan and innovative control technology.

Battery buffering

RDA FU has battery buffering, which powers the entire control system including all relevant connections, warning devices and components (except supply air fan) in the event of a power cut as a breakdown control system.

Optional ventilation function

The RDA creates natural ventilation in the stairway by opening the light dome and intake-side multi-leaf damper. There is also an option to support the ventilation with the supply air fan. The optional ventilation package (LPT) is required to use this extended function.

RDA FU service package incl. a) Frequency inverter ¹⁾				b) Supply air fan, three phase motor, IP55				c) Switch cab.		d) Diff. pressure sensor		Redundancy package		Anti-vibration mounts (tensile)	
Type	Ref no.	Volume flow (max.)	Differential pressure (max.)	Type	Nominal motor power	Voltage	Power consum.	Dimensions	Meas. range	Signal	Type	Ref no.	Type	Ref no.	
		m ³ /h	Pa	400 V, 50 Hz	KW	V	A	mm	Pa	mA					
RDA FU 15	5040	15 000	350	AMD 630/4	3.0	400	6,00	1000x1000x301	-100 to +100	4 - 20	RDP RDA FU 15	5048	SDZ 4	1945	
RDA FU 20	4996	20 000	350	AVD 800/4	4.0	400	7,95	1000x1000x301	-100 to +100	4 - 20	RDP RDA FU 20	5058	SDZ 4	1945	
RDA FU 25	4997	25 000	300	AVD 800/4	5.5	400	10,6	1000x1000x301	-100 to +100	4 - 20	RDP RDA FU 25	5059	SDZ 5	1925	
RDA FU 35	4998	35 000	400	AVD 900/4	11.0	400	22,2	1000x1000x301	-100 to +100	4 - 20	RDP RDA FU 35	5070	SDZ 6	1927	

Accessories RDA FU..																	
Type	Light dome with 24V DC spindle drive, hub = 500 mm, 300 mm skylight base				Intake-side multi-leaf damper			Servo motor 24V DC		Bell mouth with guard		Automatic back-draught shutter		Flanged flex. connector		Anti-vibration mounts (pressure)	
	Type	Nom. dim.	Opening	Ref no.	Type	mm	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.
RDA FU 15	LK 12	1200x1200	1.0 m ²	82059	JVK 70/70	700x700	1067	STM 10/24	1075	ASD-SGD 630	1422	RVS 630	2600	STS 630	1228	SDD 4	1944
RDA FU 20	LK 12	1200x1200	1.0 m ²	82059	JVK 80/80	800x800	1068	STM 10/24	1075	ASD-SGD 800	1424	RVS 800	2602	STS 800	1233	SDD 4	1944
RDA FU 25	LK 15	1500x1500	1.3 m ²	82060	JVK 90/90	900x900	1069	STM 10/24	1075	ASD-SGD 800	1424	RVS 800	2602	STS 800	1233	SDD 5	1924
RDA FU 35	LK 15	1500x1500	1.3 m ²	82060	JVK 100/100	1000x1000	1074	STM 20/24	1093	ASD-SGD 900	1309	RVS 900	2603	STS 900	1234	SDD 6	1926

¹⁾ Power (kW) and dimensions (mm) upon request. Further accessories, see page 175 f.

Connection options to RDA FU controls		
Type	Qty	Description
AVD/AMD	1 x	Frequency inverter, supply air fan
RS	1 x	Isolator switch
RMR	20 x	Smoke detector (1 line)
DKM	10 x	Push-button alarm (1 line)
BLH	Σ 10 x	Flash light siren
BL		Flash light
WH		Siren
DDR	2 x	Differential pressure sensor
FWS 2	1 x	Fire service switch
RMK	1 x	Duct smoke detector
JVK..	1 x	Intake-side multi-leaf damper
LK..	1 x	Light dome
EM..	-	Extension module
RPT	1 x	Smoke package
LPT	1 x	Ventilation package
RDP RDA FU..	1 x	Redundancy package

Extension modules for RDA FU controls (for integration in switch cabinet)		
Type	Ref no.	Description
EM 1	4968	2 outputs: 5 A, 24 V DC
EM 2	4969	Changeover contact for free-swing door closer, cap. 250 V/6 A Two outputs for magnetic door clamps, 24 V DC / 250 mA
EM 3	4970	20 additional smoke detectors (1 line)
EM 4	4971	10 additional multi-leaf dampers in supply air
EM 5	4972	7 floor-selective inputs and outputs
EM 6	4973	14 floor-selective inputs and outputs
EM 10	4419	GSM module Access. for EM 10: GSM antenna Ref no. 4420

System packages

Smoke package Type RPT Ref no. 4987

Contains following components (1 unit each):

- Smoke detector No. 4984
- Push-button alarm No. 4985
- Flash light siren No. 4983

These package components can also be ordered individually as accessories, see description on page 130.

Smoke package



Ventilation package Type LPT Ref no. 4986

Extends the RDA functional scope to the demand-oriented ventilation operation (summer), Package contents (1 unit each):

- Ventilation key switch No. 82063
- Temperature sensor No. 82064
- Weekly timer No. 09990
- Wind and rain sensor No. 82066

Ventilation package



Redundancy package

RDP RDA FU 15 Ref no. 5048
RDP RDA FU 20 Ref no. 5058
RDP RDA FU 25 Ref no. 5059
RDP RDA FU 35 Ref no. 5070

Package contents coordinated with the service package, consists of (1 unit each):

- Supply fan incl. mounting brackets (set of 2 pcs) and extension duct
- Frequency inverter
- Switch cabinet expansion

Redundancy package



■ **Connection + commissioning RDA-AI Ref no. 28860**
Clamp the cable laid on-site to switch cabinet and Helios field devices. Electrical and ventilation commissioning. Briefing of the operating personnel.

□ The systems can only be commissioned by the Helios customer service team. Details on the scope of services can be found in the Helios TGA service catalogue Ref no. 85934 or

heliosventilatoren.de/de/tga-service

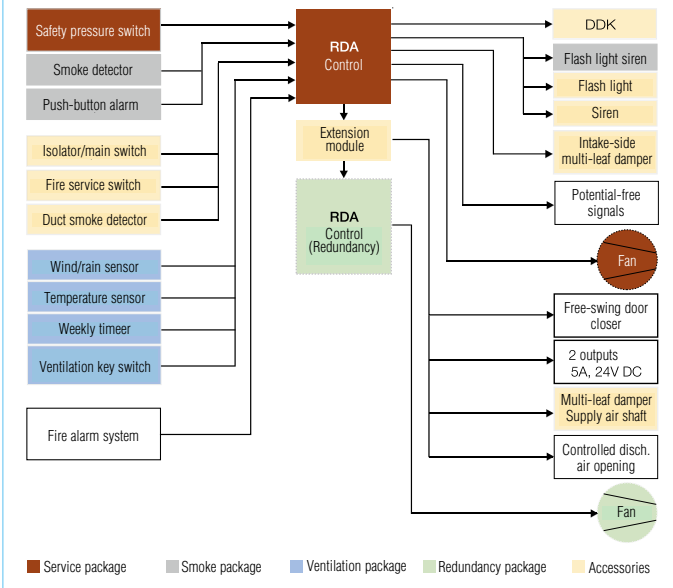


RDA DDK service package

Diff. pressure control damper available as separate accessory.



System diagram RDA DDK



Smoke protection pressure systems ensure that stairways, airlocks, fire brigade lifts and their anterooms are kept free from smoke in case of fire by building up the differential pressure.

With regard to the passive systems RDA DDK, the differential pressure is regulated by the automatic, mechanical differential pressure control damper.

Ideally matched system components in modular packages allow

- the individual adjustment of the system to all structural conditions and requirements.
- trouble-free planning, installation and commissioning, as well as safe system operation.

Scope of delivery / Packages

The modular packages can be ordered individually:

Service package RDA DDK

There are three service packages for selection, which contain the following components required in all properties as the basis of each RDA DDK:

- Supply air fan in three performance ratings, depending on the required volume flow and operating point, see table below. Includes mounting brackets and extension duct.
- Switch cabinet with complete control system. Can be expanded with various functions and modules, see table on right page.
- Safety pressure switch as reliable protection against impermissibly high differential pressure in stairway.

A differential pressure control damper (DDK) must be selected (see product table) for differential pressure regulation depending on the property-specific design volume flow. This DDK is available for wall, flat roof or light dome installation, and with the optional ventilation function.

Smoke package RPT

Includes the system components required for system triggering and alerting (see right page).

Ventilation package LPT

Extends the functionality of the RDA to demand-oriented ventilation operation (see right page) with the additional selection of DDK-L with ventilation function.

Redundancy package RDP RDA DDK

Converts the RDA into a complete system with two independently operating supply air fans including control system (see right page) in case of corresponding building code requirements.

Description

Switch cabinet

Lockable switch cabinet in high-quality sheet metal casing. With control and display panel mounted on the front.

Differential pressure regulation

The Helios RDA DDK fulfils all building code and normative requirements for differential pressure regulation by using a differential pressure control damper in combination with a high-performance supply air fan and innovative control technology.

Battery buffering

RDA DDK has battery buffering, which powers the entire control system including all relevant connections, warning devices and components (except supply air fan) in the event of a power cut as a breakdown control system.

Optional ventilation function

The RDA DDK creates natural ventilation in the stairway by opening the differential pressure control damper and intake-side multi-leaf damper. The optional ventilation package (LPT) and a differential pressure control damper with ventilation function (DDK-L, see product table) are required to use this extended function.

RDA DDK service package including				a) Supply air fan, three phase motor, IP55			b) Switch cab.	c) Safety pressure switch			Redundancy package		Anti-vibration mounts Pressure Tensile			
Type	Ref no.	Volume flow (max.)	Diff. pressure (max.)	Type	Nominal motor power	Voltage	Power consum.	Dimensions	Meas. range	Signal	Type	Ref no.	Type	Ref no.	Type	Ref no.
		m ³ /h	Pa	400 V, 50 Hz	KW	V	A	mm	Pa	pot. free						
RDA DDK 15	5085	15 000	350	AMD 630/4	3.0	400	6.00	1000x1000x301	+20 to +300	changeover	RDP RDA DDK 15	5241	SDD 4	1944	SDZ 4	1945
RDA DDK 20	5087	20 000	350	AVD 800/4	4.0	400	7.95	1000x1000x301	+20 to +300	changeover	RDP RDA DDK 20	5246	SDD 4	1944	SDZ 4	1945
RDA DDK 25	5097	25 000	300	AVD 800/4	5.5	400	10.6	1000x1000x301	+20 to +300	changeover	RDP RDA DDK 25	5247	SDD 5	1924	SDZ 5	1925

Accessories for RDA DDK.. See right page for dimensions

Type		Differential pressure control damper without ventilation function				Differential pressure control damper with ventilation function				Deflector plate		Intake-side multi-leaf damper		Servo motor 24V DC					
	DDK FD..	DDK LK..	DDK WE..	DDK-L FD..	DDK-L LK..	DDK-L WE..	DDK-PB..					Type	mm	Ref no.	Type	Ref no.			
	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	mm	Ref no.	Type	Ref no.		
RDA DDK 15	..900/920	7604	..900/920	7614	..900/920	7182	..900/920	7609	..900/920	7131	..900/920	7187	..900/920	7225	JVK 70/70	700x700	1067	..10/24	1075
RDA DDK 20	..1000/1020	7605	..1000/1020	7615	..1000/1020	7183	..1000/1020	7610	..1000/1020	7132	..1000/1020	7188	..1000/1020	7226	JVK 80/80	800x800	1068	..10/24	1075
RDA DDK 25	..1100/1120	7606	..1100/1120	7616	..1100/1120	7184	..1100/1120	7611	..1100/1120	7133	..1100/1120	7189	..1100/1120	7227	JVK 90/90	900x900	1069	..10/24	1075

Further accessories, see page 175 f.

System packages

Smoke package

Type RPT Ref no. 4987

Contains following components (1 unit each):

- Smoke detector No. 4984
- Push-button alarm No. 4985
- Flash light siren No. 4983

These package components can also be ordered individually as accessories, see description on page 130.

Smoke package



Ventilation package

Type LPT Ref no. 4986

Extends the RDA functional scope to the demand-oriented ventilation operation (summer), Package contents (1 unit each):

- Ventilation key switch No. 82063
- Temperature sensor No. 82064
- Weekly timer No. 09990
- Wind and rain sensor No. 82066

Ventilation package



Redundancy package

RDP RDA DDK 15 Ref no. 5241

RDP RDA DDK 20 Ref no. 5246

RDP RDA DDK 25 Ref no. 5247

Package contents coordinated with the service package, consists of (1 unit each):

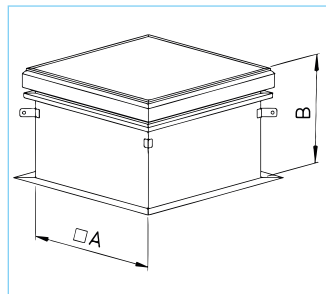
- Supply fan incl. mounting brackets (set of 2 pcs) and extension duct
- Frequency inverter
- Switch cabinet expansion

Redundancy package



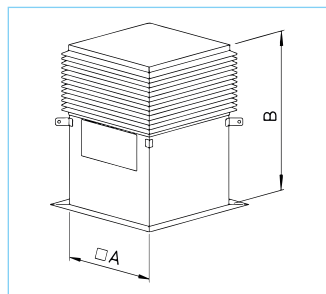
Type	Ref no.*	Dimensions in mm		
		A	B	C
DDK LK	7612	1200	1042	1200
DDK LK	7613	1200	1042	1200
DDK LK	7614	1500	1042	1500
DDK LK	7615	1500	1042	1500
DDK LK	7616	1500	1042 <td 1500	

Diff. press. control damper with ventil. function – Ref no. see left page.



Type	Ref no.*	Dimensions in mm		
		A	B	C
DDK FD	7602	1200	1819	1200
DDK FD	7603	1200	1819	1200
DDK FD	7604	1500	2014	1500
DDK FD	7605	1500	2014	1500
DDK FD	7606	1500	2014	1500

Diff. press. control damper with ventil. function – Ref no. see left page.



Connection options to RDA DDK controls

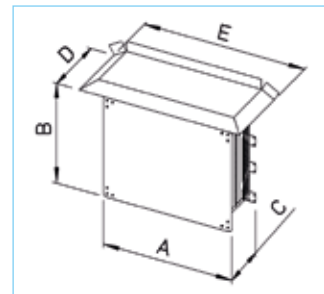
Type	Qty	Description
AVD/AMD	1 x	Supply air fan
RS	1 x	Isolator switch
RMR	20 x	Smoke detector (1 line)
DKM	10 x	Push-button alarm (1 line)
BLH	Σ 10 x	Flash light siren
BL		Flash light
WH		Siren
DDB	1 x	Safety pressure switch
FWS 2	1 x	Fire service switch
RMK	1 x	Duct smoke detector
JVK..	1 x	Intake-side multi-leaf damper
DDK..	1 x	Differential pressure control damper
EM..	-	Extension module
RPT	1 x	Smoke package
LPT	1 x	Ventilation package
RDP RDA DDK..	1 x	Redundancy package

Extension modules for RDA FU controls (for integration in switch cabinet)

Type	Ref no.	Description
EM 1	4968	2 outputs: 5 A, 24 V DC
EM 2	4969	Changeover contact for free-swing door closer, cap. 250 V/6 A Two outputs for magnetic door clamps, 24 V DC / 250 mA
EM 3	4970	20 additional smoke detectors (1 line)
EM 4	4971	10 additional multi-leaf dampers in supply air
EM 5	4972	7 floor-selective inputs and outputs
EM 6	4973	14 floor-selective inputs and outputs
EM 10	4419	GSM module

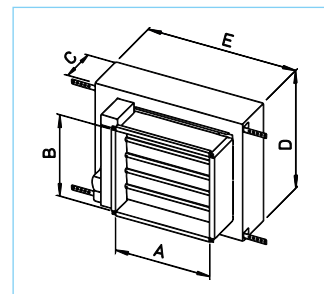
Access. for EM 10: GSM antenna Ref no. 4420

Type	Ref no.	Dimensions in mm				
		A	B	C	D	E
DDK PB	7223	1335	1040	520	680	1760
DDK PB	7224	1435	1340	770	930	1860
DDK PB	7225	1635	1440	770	930	1960
DDK PB	7226	1735	1540	770	930	2060
DDK PB	7227	1835	1640	1020	1180	2160



Type	Ref no.*	Dimensions in mm				
		A i.L	B	C	D	E
DDK WE	7180	600	520	246	756	951
DDK WE	7181	700	820	246	1056	1051
DDK WE	7182	900	920	246	1156	1251
DDK WE	7183	1000	1020	246	1256	1351
DDK WE	7184	1100	1120	246	1356	1451

Diff. press. control damper with ventil. function – Ref no. see left page.



Connection + commissioning RDA-AI Ref no. 28860

Clamp the cable laid on-site to switch cabinet and Helios field devices. Electrical and ventilation commissioning. Briefing of the operating personnel.

The systems can only be commissioned by the Helios customer service team. Details on the scope of services can be found in the Helios TGA service catalogue Ref no. 85934 or

heliosventilatoren.de/de/tga-service



Stairway scavenging air system with controlled pressure maintenance.

Stairway scavenging air systems with controlled pressure maintenance dilute and flush the smoke gases which have entered into escape routes in case of fire. They also prevent the further entry of smoke through leakage routes or leaks by building up a controlled differential pressure. Both active systems with frequency inverters (FU) and passive systems with self-regulating differential pressure control dampers (DDK) are used for differential pressure regulation. TSA service packages are available with frequency inverters or

differential pressure control dampers in a total of three sizes with volume flows from 10,000 to 20,000 m³/h. In addition to the fan, the service packages also include the switch cabinet with the control system and the respective components for differential pressure regulation. Each TSA service package can be combined with the packages below and additional accessories to complete the system.



TSA FU service package



TSA DDK service package

- ✓ Supply air fan incl. mounting brackets and extension duct
- ✓ Switch cabinet with control
- ✓ Frequency inverter
- ✓ 2 differential pressure sensors
- Light dome (to be ordered separately if not provided on-site)



- ✓ Supply air fan incl. mounting brackets and extension duct
- ✓ Switch cabinet with control
- ✓ Safety pressure switch
- Differential pressure control damper, optionally with/without ventilation function, for flat roof/wall or light dome installation (to be ordered separately)



TSA FU Redundancy package

The solution when a TSA FU is required with two separately operating fans and load units.

- Includes 1 unit of each
- ✓ Supply air fan incl. mounting brackets and extension duct
- ✓ Frequency inverter
- ✓ Switch board expansion



Smoke package

Everything that is required for system triggering and alerting:

- ✓ Push-button alarm
- ✓ Smoke detector
- ✓ Flash light siren



Ventilation package

Extends the functionality of the TSA to demand-oriented ventilation operation:

- ✓ Wind and rain sensor
- ✓ Temperature sensor
- ✓ Weekly timer
- ✓ Ventilation key switch



TSA DDK Redundancy package

The solution when a TSA DDK is required with two separately operating fans and load units.

- Includes 1 unit of each
- ✓ Supply air fan incl. mounting brackets and extension duct
- ✓ Load unit
- ✓ Switch board expansion



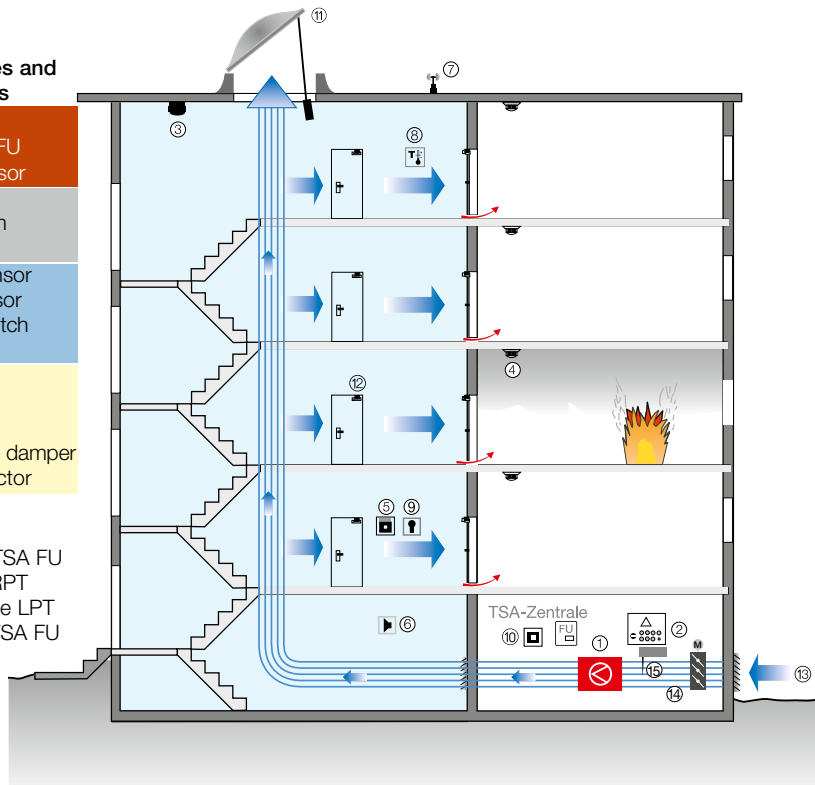
Active system
Stairway scavenging air systems with frequency inverter (TSA FU)
Flushing of stairways with controlled pressure maintenance

TSA FU packages and their components

- ① Supply air fan
- ② TSA control with FU
- ③ Diff. pressure sensor
- ④ Smoke detector
- ⑤ Push-button alarm
- ⑥ Flash light siren
- ⑦ Wind and rain sensor
- ⑧ Temperature sensor
- ⑨ Ventilation key switch
- ⑩ Weekly timer
- ⑪ Light dome
- ⑫ Door closer
- ⑬ Outside air inlet
- ⑭ Intake-side multi-l. damper
- ⑮ Duct smoke detector

Legend:

- Service package TSA FU
- Smoke package RPT
- Ventilation package LPT
- Redun. package TSA FU and
- Accessories



Stairway scavenging air system with controlled pressure maintenance

Functionality TSA FU

During smoke detection in a utilisation unit, the Helios TSA FU is immediately triggered and the supply air fan supplies fresh air into the stairway. This flows through the entire stairway, dilutes the infiltrated smoke gases and flushes the gases into the atmosphere through the opened light dome at the top of the stairway. A controlled overpressure also builds up in the stairway, which prevents the infiltration of smoke through leaks between the escape route and fire floor. Thus, the stairway can still be used as an escape route. The required differential pressure regulation takes place via the frequency inverter and the realised variable fan speed. The optional ventilation function allows the system to be used for the demand-based ventilation of the stairway at high temperatures.

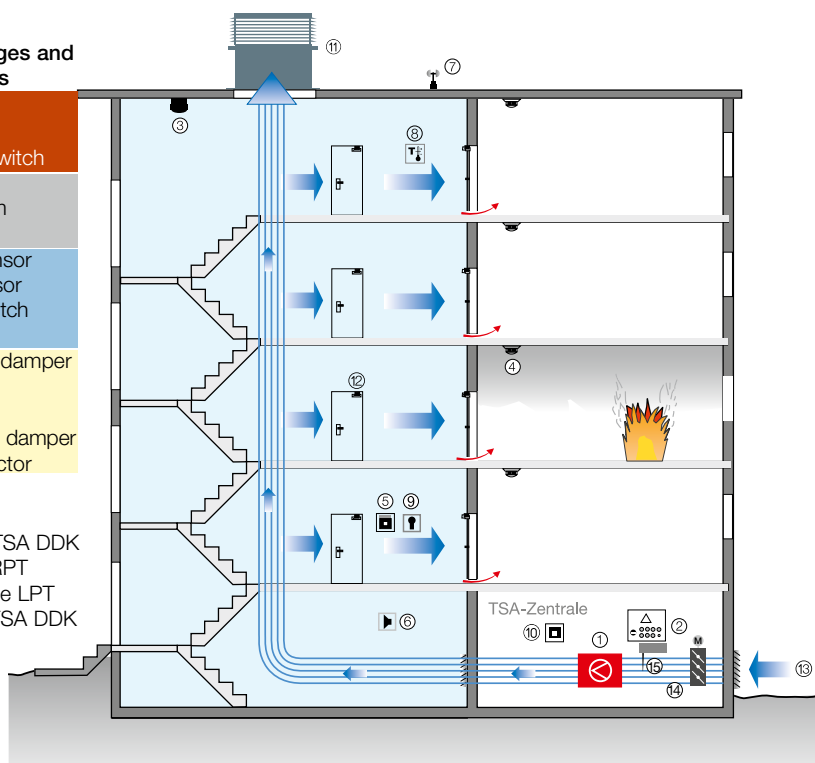
Passive system
Stairway scavenging air systems with differential pressure control damper (TSA DDK)
Flushing of stairways with controlled pressure maintenance

TSA DDK packages and their components

- ① Supply air fan
- ② TSA control
- ③ Safety pressure switch
- ④ Smoke detector
- ⑤ Push-button alarm
- ⑥ Flash light siren
- ⑦ Wind and rain sensor
- ⑧ Temperature sensor
- ⑨ Ventilation key switch
- ⑩ Weekly timer
- ⑪ Diff. press. contr. damper
- ⑫ Door closer
- ⑬ Outside air inlet
- ⑭ Intake-side multi-l. damper
- ⑮ Duct smoke detector

Legend:

- Service package TSA DDK
- Smoke package RPT
- Ventilation package LPT
- Redun. package TSA DDK and
- Accessories



Stairway scavenging air system with controlled pressure maintenance

Functionality TSA DDK

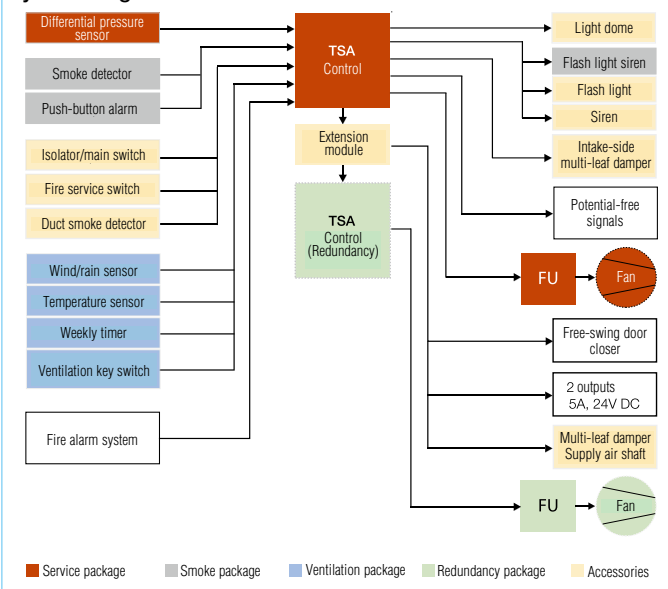
During smoke detection in a utilisation unit, the Helios TSA DDK is immediately triggered and the supply air fan supplies fresh air into the stairway. This flows through the entire stairway, dilutes the infiltrated smoke gases and flushes the gases into the atmosphere through the differential pressure control damper at the top of the stairway. A controlled overpressure also builds up in the stairway, which prevents the infiltration of smoke through leaks between the escape route and fire floor. Thus, the stairway can still be used as an escape route. The required differential pressure regulation takes place via the automatic differential pressure control damper, which creates an opening to the atmosphere at a pre-set pressure. The optional ventilation function allows the system to be used for the demand-based ventilation of the stairway at high temperatures.

TSA FU Service package

Light dome available as separate accessory, see page 131.



System diagram TSA FU



Stairway scavenging air systems with controlled pressure maintenance dilute and flush the infiltrated smoke gases in the escape route in case of fire. The further entry of smoke into the escape route is additionally prevented by building up a controlled differential pressure.

With regard to the active systems TSA FU, the differential pressure is regulated by automatic fan speed adjustment via a frequency inverter.

Ideally matched system components in modular packages allow

- the individual adjustment of the system to all structural conditions and requirements.
- trouble-free planning, installation and commissioning, as well as safe system operation.

Scope of delivery / Packages

The modular packages can be ordered individually:

Service package TSA FU

There are three service packages for selection, which contain the following components required in all properties as the basis of each TSA FU:

- Supply air fan in three performance ratings, depending on the required volume flow and operating point, see table below. Includes mounting brackets and extension duct.
- Switch cabinet with complete control system. Can be expanded with various functions and modules, see table on right page.
- Frequency inverter, specially coordinated ex works for optimal differential pressure regulation in smoke protection pressure systems.
- 2 differential pressure sensors for recording the prevailing pressure conditions in the overpressure area.

A light dome coordinated with the property must be selected as a pressure release unit pursuant to the table below and ordered separately if there is no controllable opening area at the top of the stairway on-site.

Smoke package RPT

Includes the system components required for system triggering and alerting (see right page).

Ventilation package LPT

Extends the functionality of the TSA to demand-oriented ventilation operation (see right page).

Redundancy package RDP TSA FU

Converts the TSA into a complete system with two independently operating supply air fans including control system and frequency inverter (see right page) in case of corresponding building code requirements.

Description

Switch cabinet

Lockable switch cabinet in high-quality sheet metal casing. With control and display panel mounted on the front.

Differential pressure regulation

The Helios TSA FU fulfils all building code and normative requirements for differential pressure regulation by using a specially developed frequency inverter in combination with a high-performance supply air fan and inno-

vative control technology.

Battery buffering

TSA FU has battery buffering, which powers the entire control system including all relevant connections, warning devices and components (except supply air fan) in the event of a power cut as a breakdown control system.

Optional ventilation function

The TSA creates natural ventilation in the stairway by opening the light dome and intake-side multi-leaf damper. There is also an option to support the ventilation with the supply air fan. The optional ventilation package (LPT) is required to use this extended function.

TSA FU service package incl. a) Freq. inverter ¹⁾				b) Supply air fan, three phase motor, IP55				c) Switch cab.		d) Diff. pressure sensor		Redundancy package		Anti-vibration mounts Pressure Tensile			
Type	Ref no.	Volume flow (max.) m ³ /h	Diff. pressure (max.) Pa	Type	Nominal motor power KW	Voltage V	Power consum. A	Dimensions mm	Meas. range Pa	Signal mA	Type	Ref no.	Type	Ref no.	Type	Ref no.	
TSA FU 10	5474	10 000	300	AMD 560/4	2.2	400	4.50	800x800x211	-100 to +100	4 - 20	RDP TSA FU 10	5535	SDD 4	1944	SDZ 4	1945	
TSA FU 15	5475	15 000	350	AMD 630/4	3.0	400	6.00	800x800x211	-100 to +100	4 - 20	RDP TSA FU 15	5536	SDD 4	1944	SDZ 4	1945	
TSA FU 20	5476	20 000	350	AVD 800/4	4.0	400	7.95	800x800x211	-100 to +100	4 - 20	RDP TSA FU 20	5537	SDD 5	1924	SDZ 5	1925	

Accessories for TSA FU.																
Type	Light dome with 24V DC spindle drive, hub = 500 mm, 300 mm skylight base			Intake-side multi-leaf damper			Servo motor 24V DC		Bell mouth with guard		Automatic backdraught shutter		Flanged flex. connector			
	Type	Nom. dim.	Opening	Ref no.	Type	mm	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	
TSA FU 10	LK 12	1200x1200	1.0 m ²	82059	JVK 60/60	600x600	1066	STM 10/24	1075	ASD-SGD 560	1421	RVS 560	2599	STS 560	1226	
TSA FU 15	LK 12	1200x1200	1.0 m ²	82059	JVK 70/70	700x700	1067	STM 10/24	1075	ASD-SGD 630	1422	RVS 630	2600	STS 630	1228	
TSA FU 20	LK 12	1200x1200	1.0 m ²	82059	JVK 80/80	800x800	1068	STM 10/24	1075	ASD-SGD 800	1424	RVS 800	2602	STS 800	1233	

¹⁾ Power (kW) and dimensions (mm) upon request. Further accessories, see page 175 f.

System packages

Smoke package

Type RPT Ref no. 4987

Contains following components (1 unit each):

- Smoke detector No. 4984
- Push-button alarm No. 4985
- Flash light siren No. 4983

These package components can also be ordered individually as accessories, see description on page 130.

Smoke package



Ventilation package

Type LPT Ref no. 4986

Extends the TSA functional scope to the demand-oriented ventilation operation (summer), Package contents (1 unit each):

- Ventilation key switch No. 82063
- Temperature sensor No. 82064
- Weekly timer No. 09990
- Wind and rain sensor No. 82066

Ventilation package



Redundancy package

RDP TSA FU 10 Ref no. 5535

RDP TSA FU 15 Ref no. 5536

RDP TSA FU 20 Ref no. 5537

Package contents coordinated with the service package, consists of (1 unit each):

- Supply fan incl. mounting brackets (set of 2 pcs) and extension duct
- Frequency inverter
- Switch cabinet expansion

Redundancy package



Connection options to TSA FU controls

Type	Qty	Description
AVD/AMD	1 x	Frequency inverter, supply air fan
RS	1 x	Isolator switch
RMR	20 x	Smoke detector (1 line)
DKM	10 x	Push-button alarm (1 line)
BLH	Σ 10 x	Flash light siren
BL		Flash light
WH		Siren
DDR	2 x	Differential pressure sensor
FWS 2	1 x	Fire service switch
RMK	1 x	Duct smoke detector
JVK..	1 x	Intake-side multi-leaf damper
LK..	1 x	Light dome
EM..	-	Extension module
RPT	1 x	Smoke package
LPT	1 x	Ventilation package
RDP TSA FU..	1 x	Redundancy package

Extension modules for TSA FU controls for integration in switch cabinet)

Type	Ref no.	Description
EM 1	4968	2 outputs: 5 A, 24 V DC
EM 2	4969	Changeover contact for free-swing door closer, cap. 250 V/6 A Two outputs for magnetic door clamps, 24 V DC / 250 mA
EM 3	4970	20 additional smoke detectors (1 line)
EM 4	4971	10 additional multi-leaf dampers in supply air
EM 10	4419	GSM module Access. for EM 10: GSM antenna Ref no. 4420

Connection + commissioning TSA-G-AI Ref no. 28863

Clamp the cable laid on-site to switch cabinet and Helios field devices. Electrical and ventilation commissioning. Briefing of the operating personnel.

- The systems can only be commissioned by the Helios customer service team. Details on the scope of services can be found in the Helios TGA service catalogue Ref no. 85934 or

heliosventilatoren.de/de/tga-service

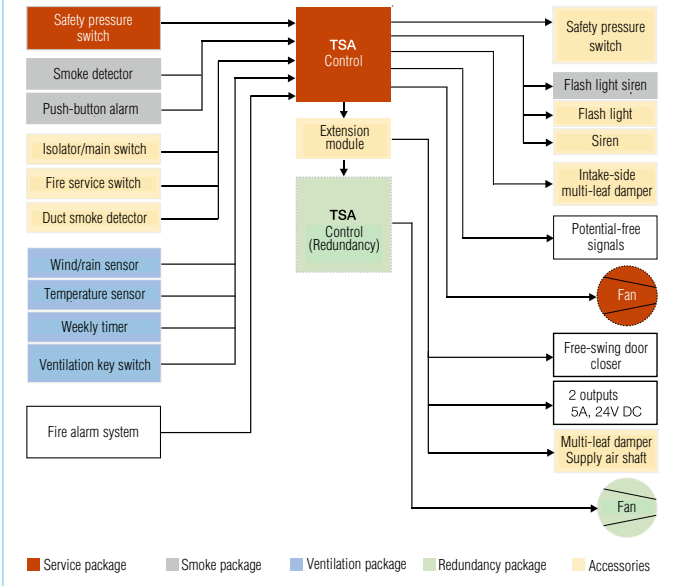


TSA DDK service package

Diff. pressure control damper available as separate accessory.



System diagram TSA DDK



Stairway scavenging air systems with controlled pressure maintenance dilute and flush the infiltrated smoke gases in the escape route in case of fire. The further entry of smoke into the escape route is additionally prevented by building up a controlled differential pressure.

With regard to the passive systems TSA DDK, the differential pressure is regulated by the automatic, mechanical differential pressure control damper.

Ideally matched system components in modular packages allow

- the individual adjustment of the system to all structural conditions and requirements.
- trouble-free planning, installation and commissioning, as well as safe system operation.

Scope of delivery / Packages

The modular packages can be ordered individually:

Service package TSA DDK

There are three service packages for selection, which contain the following components required in all properties as the basis of each TSA DDK:

- Supply air fan in three performance ratings, depending on the required volume flow and operating point, see table below. Includes mounting brackets and extension duct.
- Switch cabinet with complete control system. Can be expanded with various functions and modules, see table on right page.
- Safety pressure switch as reliable protection against impermissibly high differential pressure in stairway.

A differential pressure control damper (DDK) must be selected (see product table) for differential pressure regulation depending on the property-specific design volume flow. This DDK is available for wall, flat roof or light dome installation, and with the optional ventilation function.

Smoke package RPT

Includes the system components required for system triggering and alerting (see right page).

Ventilation package LPT

Extends the functionality of the TSA to demand-oriented ventilation operation (see right page) with the additional selection of DDK-L with ventilation function.

Redundancy package RDP TSA DDK

Converts the TSA into a complete system with two independently operating supply air fans including control system (see right page) in case of corresponding building code requirements.

Description

Switch cabinet
Lockable switch cabinet in high-quality sheet metal casing. With control and display panel mounted on the front.

Differential pressure regulation

The Helios TSA DDK fulfils all building code and normative requirements for differential pressure regulation by using a differential pressure control damper in combination with a high-performance supply air fan and innovative control technology.

Battery buffering

TSA DDK has battery buffering, which powers the entire control system including all relevant connections, warning devices and components (except supply air fan) in the event of a power cut as a breakdown control system.

Optional ventilation function

The TSA DDK creates natural ventilation in the stairway by opening the differential pressure control damper and intake-side multi-leaf damper. The optional ventilation package (LPT) and a differential pressure control damper with ventilation function (DDK-L, see product table) are required to use this extended function.

TSA DDK service package including				a) Supply air fan, three phase motor, IP55				b) Switch cab.		c) Safety pressure switch		Redundancy package		Anti-vibration mounts Pressure Tensile			
Type	Ref no.	Volume flow (max.)	Diff. pressure (max.)	Type	Nominal motor power	Voltage	Power consum.	Dimensions	Meas. range	Signal	Type	Ref no.	Type	Ref no.	Type	Ref no.	
		m³/h	Pa	400 V, 50 Hz	KW	V	A	mm	Pa	pot. free							
TSA DDK 10	5277	10 000	300	AMD 560/4	2.2	400	4.50	800x800x211	+20 to +300	changeover	RDP TSA DDK 10	5248	SDD 4	1944	SDZ 4	1945	
TSA DDK 15	5278	15 000	350	AMD 630/4	3.0	400	6.00	800x800x211	+20 to +300	changeover	RDP TSA DDK 15	5249	SDD 4	1944	SDZ 4	1945	
TSA DDK 20	5279	20 000	350	AVD 800/4	4.0	400	7.95	1000x1000x301	+20 to +300	changeover	RDP TSA DDK 20	5234	SDD 5	1924	SDZ 5	1925	

Accessories for TSA DDK.. See right page for dimensions

Type		Differential pressure control damper without ventilation function				Differential pressure control damper with ventilation function				Deflector plate		Intake-side multi-leaf damper		Servo motor 24V DC			
		DDK FD..	DDK LK..	DDK WE..	DDK-L FD..	DDK-L LK..	DDK-L WE..	DDK-PB..					STM..				
Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	mm	Ref no.	Type	Ref no.	
TSA DDK 10	..700/820 7603	..700/820	7613	..700/820	7181	..700/820	7608	..700/820	7130	..700/820	7186	..700/820	7224	JVK 60/60	600x600	1066	..10/24 1075
TSA DDK 15	..900/920 7604	..900/920	7614	..900/920	7182	..900/920	7609	..900/920	7131	..900/920	7187	..900/920	7225	JVK 70/70	700x700	1067	..10/24 1075
TSA DDK 20	..1000/1020 7605	..1000/1020	7615	..1000/1020	7183	..1000/1020	7610	..1000/1020	7132	..1000/1020	7188	..1000/1020	7226	JVK 80/80	800x800	1068	..10/24 1075

Further accessories, see page 175 f.

System packages

Smoke package

Type RPT Ref no. 4987

Contains following components (1 unit each):

- Smoke detector No. 4984
- Push-button alarm No. 4985
- Flash light siren No. 4983

These package components can also be ordered individually as accessories, see description on page 130.

Smoke package



Ventilation package

Type LPT Ref no. 4986

Extends the TSA functional scope to the demand-oriented ventilation operation (summer), Package contents (1 unit each):

- Ventilation key switch No. 82063
- Temperature sensor No. 82064
- Weekly timer No. 09990
- Wind and rain sensor No. 82066

Ventilation package



Redundancy package

RDP TSA DDK 10 Ref no. 5248

RDP TSA DDK 15 Ref no. 5249

RDP TSA DDK 20 Ref no. 5234

Package contents coordinated with the service package, consists of (1 unit each):

- Supply fan incl. mounting brackets (set of 2 pcs) and extension duct
- Load unit
- Switch cabinet expansion

Redundancy package



Connection options to TSA DDK controls

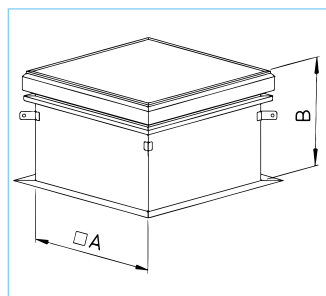
Type	Qty	Description
AVD/AMD	1 x	Supply air fan
RS	1 x	Isolator switch
RMR	20 x	Smoke detector (1 line)
DKM	10 x	Push-button alarm (1 line)
BLH	Σ 10 x	Flash light siren
BL		Flash light
WH		Siren
DDB	1 x	Safety pressure switch
FWS 2	1 x	Fire service switch
RMK	1 x	Duct smoke detector
JVK..	1 x	Intake-side multi-leaf damper
DDK..	1 x	Differential pressure control damper
EM..	1 x	Extension module
RPT	1 x	Smoke package
LPT	1 x	Ventilation package
RDP TSA DDK..	1 x	Redundancy package

Extension modules for TSA FU controls for integration in switch cabinet)

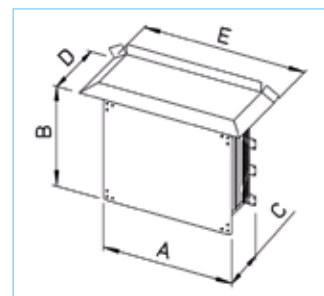
Type	Ref no.	Description
EM 1	4968	2 outputs: 5 A, 24 V DC
EM 2	4969	Changeover contact for free-swing door closer, cap. 250 V/6 A Two outputs for magnetic door clamps, 24 V DC / 250 mA
EM 3	4970	20 additional smoke detectors (1 line)
EM 4	4971	10 additional multi-leaf dampers in supply air
EM 10	4419	GSM module Access. for EM 10: GSM antenna Ref no. 4420

Type	Ref no.*	Dimensions in mm		
		A	B	C
DDK LK	7612	1200	1042	1200
DDK LK	7613	1200	1042	1200
DDK LK	7614	1500	1042	1500
DDK LK	7615	1500	1042	1500
DDK LK	7616	1500	1042	1500

Diff. press. control damper with ventil. function – Ref no. see left page.

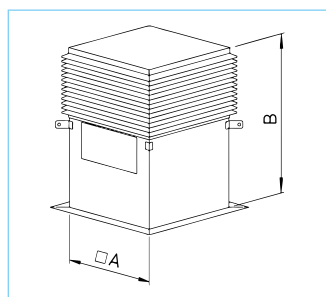


Type	Ref no.	Dimensions in mm				
		A	B	C	D	E
DDK PB	7223	1335	1040	520	680	1760
DDK PB	7224	1435	1340	770	930	1860
DDK PB	7225	1635	1440	770	930	1960
DDK PB	7226	1735	1540	770	930	2060
DDK PB	7227	1835	1640	1020	1180	2160



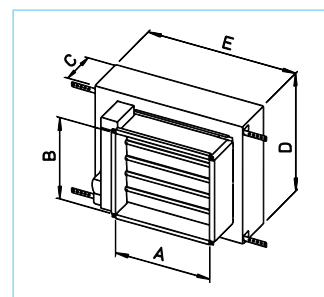
Type	Ref no.*	Dimensions in mm		
		A	B	C
DDK FD	7602	1200	1819	1200
DDK FD	7603	1200	1819	1200
DDK FD	7604	1500	2014	1500
DDK FD	7605	1500	2014	1500
DDK FD	7606	1500	2014	1500

Diff. press. control damper with ventil. function – Ref no. see left page.



Type	Ref no.*	Dimensions in mm				
		A i.L	B	C	D	E
DDK WE	7180	600	520	246	756	951
DDK WE	7181	700	820	246	1056	1051
DDK WE	7182	900	920	246	1156	1251
DDK WE	7183	1000	1020	246	1256	1351
DDK WE	7184	1100	1120	246	1356	1451

Diff. press. control damper with ventil. function – Ref no. see left page.



Connection + commissioning

TSA-G-AI Ref no. 28863

Clamp the cable laid on-site to switch cabinet and Helios field devices. Electrical and ventilation commissioning. Briefing of the operating personnel.

The systems can only be commissioned by the Helios customer service team. Details on the scope of services can be found in the Helios TGA service catalogue Ref no. 85934 or

heliosventilatoren.de/de/tga-service



Stairway scavenging air system.

Stairway scavenging air systems flush the entire stairway with fresh air in case of fire (minimum volume flow 10,000 m³/h) and thus ensure the dilution and flushing of the fire gases which have entered into escape routes.

The TSA service packages are available as standard units (TSA) or in a special low-noise "Silent" design (TSAS). Both versions are available with optional pole-switching fans, which extend the functionality of the TSA system to a demand-oriented ventilation operation (TSA-L and TSAS-L) in combination with the ventilation

package below.

In addition to the fan, all TSA service packages include the switch cabinet with the control system and can be combined with the smoke package below and additional accessories to complete the system. The service packages TSA-L and TSAS-L also offer the connection option of the ventilation package.



TSA / TSAS service package



TSA-L / TSAS-L service package

- ✓ Supply air fan incl. mounting brackets and extension duct
- ✓ Switch cabinet with control
- ✓ Safety pressure switch
- Light dome (to be ordered separately if not provided on-site)



- ✓ Supply air fan incl. mounting brackets and extension duct
- ✓ Switch cabinet with control and connection option for ventilation package
- ✓ Safety pressure switch
- Light dome (to be ordered separately if not provided on-site)



Smoke package

Everything that is required for system triggering and alerting:

- ✓ Push-button alarm
- ✓ Smoke detector
- ✓ Flash light siren



Ventilation package*

Extends the functionality of the TSA-L and TSAS-L to demand-oriented ventilation operation:

- ✓ Wind and rain sensor
- ✓ Temperature sensor
- ✓ Weekly timer
- ✓ Ventilation key switch



* can be combined with service packages TSA-L and TSAS-L

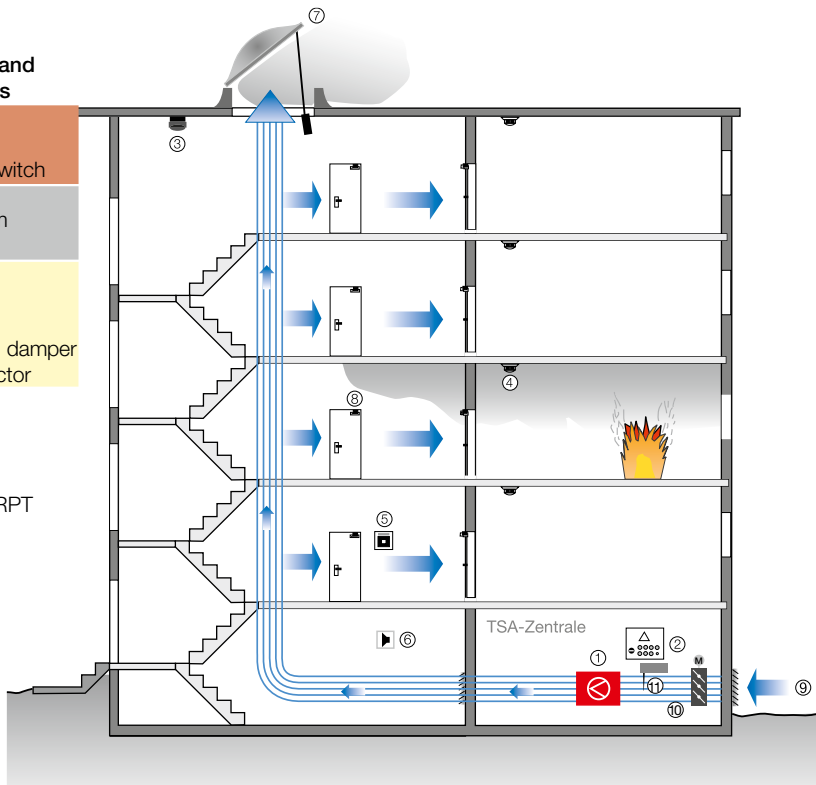
■ Stairway scavenging air systems TSA and TSAS in low-noise “silent” design
Flushing of stairways to dilute the smoke gas concentration

□ TSA.. packages and their components

- ① Supply air fan
- ② TSA control
- ③ Safety pressure switch
- ④ Smoke detector
- ⑤ Push-button alarm
- ⑥ Flash light siren
- ⑦ Light dome
- ⑧ Door closer
- ⑨ Outside air inlet
- ⑩ Intake-side multi-l. damper
- ⑪ Duct smoke detector

Legend:

- Service package TSA and TSAS
- Smoke package RPT
- Accessories



■ Stairway scavenging air system

□ Functionality TSA/TSAS

During smoke detection in a utilisation unit, the Helios TSA/TSAS is immediately triggered and the light dome at the top of the stairway is opened. The supply air fan supplies fresh air into the stairway, which flows through the entire stairway and thus dilutes the infiltrated smoke gases. The air then flows outside through the opened light dome at the top of the stairway. A constant volume flow of over 10,000 m³/h ensures the considerable reduction of the smoke gas concentration in the flushed stairway.

The TSA service packages are available with the standard supply air fan or as a “silent” version “TSAS” with a lower sound power level.

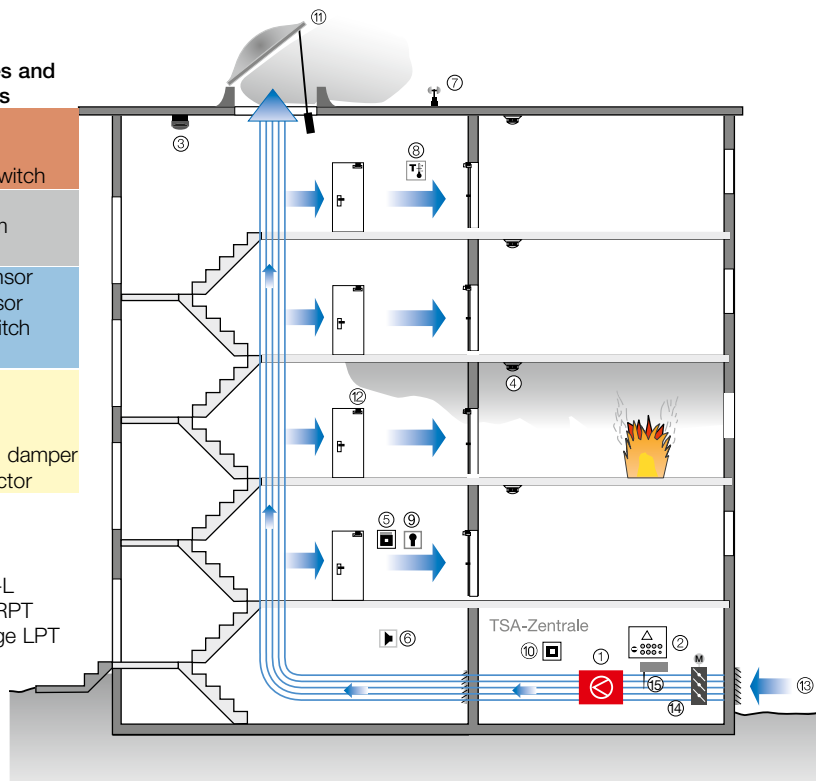
■ Stairway scavenging air systems TSA-L and TSAS-L for additional, optional ventilation operation
– Flushing of stairways to dilute the smoke gas concentration in case of fire
– Economical, demand-oriented ventilation operation in connection with ventilation package LPT

□ TSA.-L packages and their components

- ① Supply air fan
- ② TSA control
- ③ Safety pressure switch
- ④ Smoke detector
- ⑤ Push-button alarm
- ⑥ Flash light siren
- ⑦ Wind and rain sensor
- ⑧ Temperature sensor
- ⑨ Ventilation key switch
- ⑩ Weekly timer
- ⑪ Light dome
- ⑫ Door closer
- ⑬ Outside air inlet
- ⑭ Intake-side multi-l. damper
- ⑮ Duct smoke detector

Legende:

- Service package TSA-L and TSAS-L
- Smoke package RPT
- Ventilation package LPT
- Accessories



■ Stairway scavenging air system

□ Functionality TSA-L/TSAS-L

If manual and automatic stairway ventilation is required, e.g. at high temperatures in the summer, in addition to the stairway scavenging in case of fire, the Helios range offers the service packages TSA-L and TSAS-L. Using the corresponding switch cabinet equipment and two-stage supply air fan, they are predestined for the connection of ventilation package “LPT” and guarantee particularly economical, demand-oriented ventilation operation.

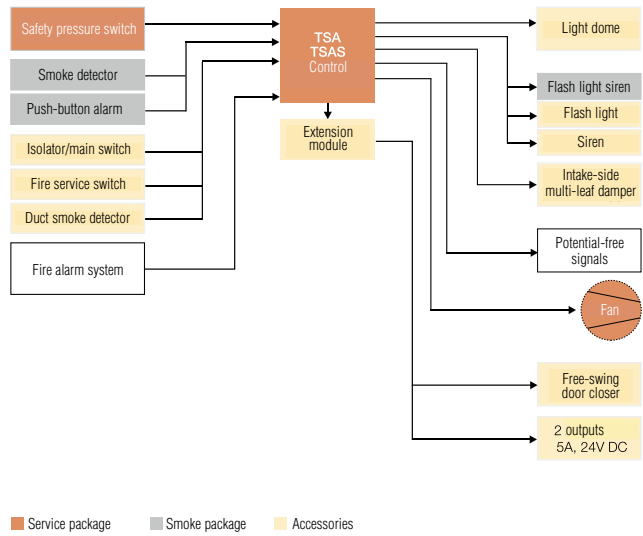
During smoke detection in a utilisation unit, the operation corresponds to the functionality described above.

TSA/TSAS Service package

Light dome available as separate accessory, see page 131.



System diagram TSA/TSAS



Helios stairway scavenging air systems ensure the significant dilution of the smoke gas concentration in stairways by flushing in case of fire and thus increasing the chances of a fast and successful self-rescue.

The Helios TSA service range is divided into preconfigured packages with matched components and also includes particularly low-noise system solutions.

The modular system allows the individual adjustment of the system to all structural conditions and requirements. trouble-free planning, installation and commissioning, as well as safe system operation.

Scope of delivery / Packages

The TSA service range is modular in packages with matching components, which can be ordered separately:

Service package TSA/TSAS

The service package can be selected in a compact standard version TSA or in a particularly low-noise design TSAS depending on the structural conditions. Both service packages contain the following components required in all properties as the basis of each stairway scavenging air system:

- Supply air fan in two performance ratings pursuant to the table below, with a supply air volume flow of at least 10,000 m³/h for stairway flushing. Includes mounting brackets and extension duct.
- Switch cabinet with complete control system. Can be expanded with various functions and modules, see table on right page.
- Safety pressure switch as reliable protection against impermissibly high differential pressure in stairway.

The light dome coordinated with the property must be selected as a pressure release unit pursuant to the table below and ordered separately if there is no controllable opening area at the top of the stairway on-site.

Smoke package RPT

Includes the system components required for system triggering and alerting (see right page).

Description

Switch cabinet

Lockable switch cabinet in high-quality sheet metal casing. With control and display panel mounted on the front.

Stairway flushing

The infiltrated smoke gases in the stairway are diluted and flushed out through a supply air volume flow of at least 10,000 m³/h. In this respect, the supply air fan runs at maximum speed and flushes the entire stairway with fresh air via an injection point in the lower area with simultaneous air discharge opening at the top of the stairway.

Battery buffering

TSA/TSAS has battery buffering, which powers the entire control system including all relevant connections, warning devices and components (except supply air fan) in the event of a power cut as a breakdown control system.

TSA/TSAS service package including				a) Supply air motor, three phase motor, IP55				b) Switch cab.		c) Safety pressure switch		Anti-vibration mounts			
Type	Ref no.	Volume flow (max.)	Diff. pressure (max.)	Type	Nominal motor power	Voltage	Power consum.	Dimensions	Meas. range	Signal	Pressure		Tensile		
		m ³ /h	Pa	400 V, 50 Hz	KW	V	A	mm	Pa	pot. free	Type	Ref no.	Type	Ref no.	
TSA	4992	10 000	500	AMD 450/2	3.0	400	5.70	800x800x211	+20 to +300	Changeover	SDD 4	1944	SDZ 4	1945	
TSAS	4994	10 000	300	AMD 560/4	2.2	400	4.50	800x800x211	+20 to +300	Changeover	SDD 4	1944	SDZ 4	1945	

Accessories for TSA/TSAS..

Type	Light dome with 24V DC spindle drive, hub = 500 mm, 300 mm skylight base				Intake-side multi-leaf damper			Servo motor 24V DC		Bell mouth with guard		Automatic backdraught shutter		Flanged flex. connector	
	Type	Nom. dim.	Opening	Ref no.	Type	mm	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.
TSA	LK 12	1200x1200	1.0 m ²	82059	JVK 60/60	600x600	1066	STM 10/24	1075	ASD-SGD 450	1419	RVS 450	2597	STS 450	1224
TSAS	LK 12	1200x1200	1.0 m ²	82059	JVK 60/60	600x600	1066	STM 10/24	1075	ASD-SGD 560	1421	RVS 560	2599	STS 560	1226

Description of accessories, see page 175 f.

■ System packages

Smoke package

Type RPT Ref no. 4987

Contains following components
(1 unit each):

- Smoke detector No. 4984
- Push-button alarm No. 4985
- Flash light siren No. 4983

These package components can also be ordered individually as accessories, see description on page 130.

Smoke package



Connection options to TSA/TSAS controls

Type	Qty	Description
AMD	1 x	Supply air fan
RS	1 x	Isolator switch
RMR	20 x	Smoke detector (1 line)
DKM	10 x	Push-button alarm (1 line)
BLH	Σ 10 x	Flash light siren
BL		Flash light
WH		Siren
DDB	1 x	Safety pressure switch
FWS 2	1 x	Fire service switch
RMK	1 x	Duct smoke detector
JVK..	1 x	Intake-side multi-leaf damper
LK..	1 x	Light dome
EM..	–	Extension module
RPT	1 x	Smoke package

Extension modules for TSA/TSAS controls (for integration in switch cabinet)

Type	Ref no.	Description
EM 1	4968	2 outputs: 5 A, 24 V DC
EM 2	4969	Changeover contact for free-swing door closer, cap. 250 V/6 A Two outputs for magnetic door clamps, 24 V DC / 250 mA
EM 3	4970	20 additional smoke detectors (1 line)
EM 4	4971	10 additional multi-leaf dampers in supply air
EM 10	4419	GSM module Access. for EM 10: GSM antenna Ref no. 4420

■ Connection + commissioning TSA-AI Ref no. 28866

Clamp the cable laid on-site to switch cabinet and Helios field devices. Electrical and ventilation commissioning. Briefing of the operating personnel.

- The systems can only be commissioned by the Helios customer service team. Details on the scope of services can be found in the Helios TGA service catalogue Ref no. 85934 or

heliosventilatoren.de/de/tga-service

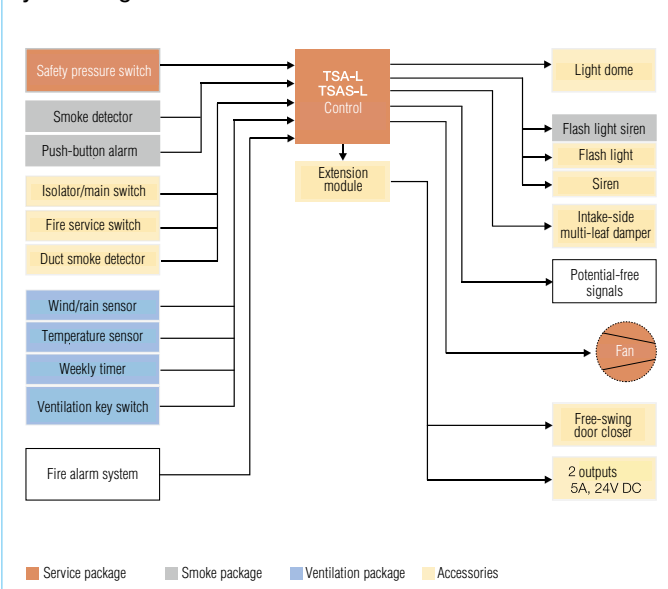


TSA-L/TSAS-L service package

Light dome available as separate accessory, see page 131.



System diagram TSA-L/TSAS-L



Helios stairway scavenging air systems ensure the significant dilution of the smoke gas concentration in stairways by flushing in case of fire and thus increasing the chances of a fast and successful self-rescue.

The Helios TSA-“L” service range also offers the possibility of economical, demand-oriented ventilation operation (e.g. at high temperatures in summer).

The modular system packages allow:

- the individual adjustment of the system to all structural conditions and requirements.
- trouble-free planning, installation and commissioning, as well as safe system operation.

Scope of delivery / Packages

The TSA-L/TSAS-L service range is modular in packages with matching components, which can be ordered separately:

Service package TSA-L/TSAS-L

The service package can be selected in a compact standard version TSA-L or in a particularly low-noise design TSAS-L depending on the structural conditions. Both service packages contain the following components required in all properties as the basis of each stairway scavenging air system:

- Two-stage supply air fan with Dahlander motor. Ideally suited for optional ventilation operation (e.g. at high temperatures in the summer). In two performance ratings pursuant to the table below, with a supply air volume flow of at least 10,000 m³/h for stairway flushing. Includes mounting brackets and extension duct.
- Switch cabinet with complete control system. Can be expanded with various functions and modules, see table on right page.
- Safety pressure switch as reliable protection against impermissibly high differential pressure in stairway.

The light dome coordinated with the property must be selected as a pressure release unit pursuant to the table below and ordered separately if there is no controllable opening area at the top of the stairway on-site.

Smoke package RPT

Includes the system components required for system triggering and alerting (see right page).

Ventilation package LPT

Extends the functionality of the TSA-L/TSAS-L to demand-oriented ventilation operation (see right page).

Description

Switch cabinet

Lockable switch cabinet in high-quality sheet metal casing. With control and display panel mounted on the front.

Stairway flushing

The infiltrated smoke gases in the stairway are diluted and flushed out through a supply air volume flow of at least 10,000 m³/h. In this respect, the supply air fan runs at maximum speed and flushes the entire stairway with fresh air via an injection point in the lower area with

simultaneous air discharge opening at the top of the stairway.

Battery buffering

TSA-L/TSAS-L has battery buffering, which powers the entire control system including all relevant connections, warning devices and components (except supply air fan) in the event of a power cut as a breakdown control system.

Optional ventilation function

The TSA-L/ TSAS-L creates natural ventilation in the stairway by opening the light dome and intake-side multi-leaf damper. There is also an option to support the ventilation with the supply air fan, which blows fresh air into the stairway at a low stage (fan with Dahlander motor). The optional ventilation package (LPT) is required to use this extended function.

TSA-L/TSAS-L service package including				a) Supply air fan, three phase motor, IP55				b) Switch cab.		c) Safety pressure switch		Anti-vibration mounts			
Type	Ref no.	Volume flow (max.)	Diff. pressure (max.)	Type	Nominal motor power	Voltage	Power consum.	Dimensions	Meas. range	Signal					
		m ³ /h	Pa	400 V, 50 Hz	KW	V	A	mm	Pa	pot. free	Type	Ref no.	Type	Ref no.	
TSA-L	4993	10 000	500	AMD 450/4/2	0.8/3.1	400	2.10/6.10	1000x1000x301	+20 to +300	Changeover	SDD 4	1944	SDZ 4	1945	
TSAS-L	4995	10 000	250	AMD 560/8/4	0.5/2.0	400	2.00/4.50	1000x1000x301	+20 to +300	Changeover	SDD 4	1944	SDZ 4	1945	

Accessories for TSA-L/TSAS-L

Type	Light dome with 24V DC spindle drive, hub = 500 mm, 300 mm skylight base				Intake-side multi-leaf damper			Servo motor 24V DC		Bell mouth with guard		Automatic backdraught shutter		Flanged flexible connector	
	Type	Nom. dim.	Opening	Ref no.	Type	mm	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.	Type	Ref no.
TSA-L	LK 12	1200x1200	1.0 m ²	82059	JVK 60/60	600x600	1066	STM 10/24	1075	ASD-SGD 450	1419	RVS 450	2597	STS 450	1224
TSAS-L	LK 12	1200x1200	1.0 m ²	82059	JVK 60/60	600x600	1066	STM 10/24	1075	ASD-SGD 560	1421	RVS 560	2599	STS 560	1226

Description of accessories, see page 175 f.

■ System packages

Smoke package

Type RPT Ref no. 4987

Contains following components (1 unit each):

- Smoke detector No. 4984
- Push-button alarm No. 4985
- Flash light siren No. 4983

These package components can also be ordered individually as accessories, see description on page 130.

Smoke package



Ventilation package

Type LPT Ref no. 4986

Extends the TSA functional scope to the demand-oriented ventilation operation (summer), Package contents (1 unit each):

- Ventilation key switch No. 82063
- Temperature sensor No. 82064
- Weekly timer No. 09990
- Wind and rain sensor No. 82066

Ventilation package



Connection options to TSA-L/TSAS-L controls

Type	Qty	Description
AMD	1 x	Supply air fan
RS	1 x	Isolator switch
RMR	20 x	Smoke detector (1 line)
DKM	10 x	Push-button alarm (1 line)
BLH	Σ 10 x	Flash light siren
BL		Flash light
WH		Siren
DDB	1 x	Safety pressure switch
FWS 2	1 x	Fire service switch
RMK	1 x	Duct smoke detector
JVK..	1 x	Intake-side multi-leaf damper
LK..	1 x	Light dome
EM..	-	Extension module
RPT	1 x	Smoke package
LPT	1 x	Ventilation package

Extension modules for TSA-L/TSAS-L controls (for integration in switch cabinet)

Type	Ref no.	Description
EM 1	4968	2 outputs: 5 A, 24 V DC
EM 2	4969	Changeover contact for free-swing door closer, cap. 250 V/6 A Two outputs for magnetic door clamps, 24 V DC / 250 mA
EM 3	4970	20 additional smoke detectors (1 line)
EM 4	4971	10 additional multi-leaf dampers in supply air
EM 10	4419	GSM module Access. for EM 10: GSM antenna Ref no. 4420

■ Connection + commissioning TSA-AI Ref no. 28866

Clamp the cable laid on-site to switch cabinet and Helios field devices. Electrical and ventilation commissioning. Briefing of the operating personnel.

- The systems can only be commissioned by the Helios customer service team. Details on the scope of services can be found in the Helios TGA service catalogue Ref no. 85934 or

heliosventilatoren.de/de/tga-service



■ Accessories

Smoke detector

Type RMR Ref no. 4984

Smoke detector according to EN 54-7, incl. detector base for the automatic triggering of EVS for smoke detection.
Operating voltage 9-33 V DC
Power consum. rest/alarm 30 µA/20 mA
Protection class IP40
Dim. mm Ø 100 x H 44



Push-button alarm

Type DKM Ref no. 4985

Push-button alarm in limit value technology for manual triggering of EVS by button. Includes reset button and LED indicator for operating state.
Operating voltage 20-30 V DC
Protection class IP40
Colour RAL 2011
Dim. mm W 125 x H 125 x D 36



Signal transmitters

Type BLH Ref no. 4983

Type BL Ref no. 8216

Type WH Ref no. 8217

Flash light siren (BLH), flash light (BL) and siren (WH) as 24 Volt signal transmitters, incl. base. Casing made from impact-resistant plastic, for ceiling and wall installation.
Protection class IP65
Dim. mm Ø 93



Duct smoke detector

Type RMK Ref no. 4982

Duct smoke detector, incl. inlet duct for early detection of fire gases in the outside air inlet at flow speeds of 1 – 20 m/s.
Operating current 16-28 V DC
Power consum. rest/alarm 22/11 mA
Protection class IP54
Relay contact potential-free break contact
Dim. mm L 250 x W 135 x H 100



Isolator switch

Type RS 3+1 7,5 Ref no. 6387

– 3-pole with auxiliary contact
For fans with direct start-up.
Plastic casing for surface-mounting. Locking options in position "0 OFF" and position "I ON".
Voltage 400 V, 3-, 50/60 Hz
Operating current 20 A
Capacity AC-23 B, 7.5 kW
Protection category IP65
Protection class II
Actuation Rotary actuator
Temperature range -25 °C to +60 °C
Weight ca. 0.3 kg
Casing Flush and weather-resistant
Wiring diagram no. SS-1088



Fire service switch

Type FWS 2 Ref no. 8255

Fire service switch with LED display for connection to RDA / TSA.
Operating voltage 18 – 30 V DC
Power consum. rest/alarm 2/20 mA
Protection class IP44
Dim. mm 125 x 70

Accessory:
Locking cylinder FWS ZY Ref no. 82331



Safety pressure switch

Type DDB Ref no. 82062

Safety pressure switch for monitoring differential pressures and protection against impermissibly high differential pressure, e.g. in RDA/TSA DDK and TSA.
Pressure meas. range 20 to 300 Pa
Capacity switch contact 1.0 (0,4) A, 250 VAC
Protection class IP54
Dim. mm ca. 58 x 104 mm
Installation Wall and ceiling installation



Differential pressure sensor

Type DDR Ref no. 82061

Differential pressure sensor in two-wire technology with durable capacitive sensor element.
Operating voltage 12 to 36 V DC
Measurement range -100 to +100 Pa
Casing protection class IP65
Dim. mm 90 x 75 x 61.5 mm
Casing material Polyamide PA 6.6



Isolator switch

Type RS 6+1

– 6-pole with auxiliary contact

Type	Ref no.	Capacity
For Dahlander winding or Y/D start-up		
RS 6+1 7.5	6388	20 A, AC-23 B 7.5 kW
RS 6+1 11	6389	25 A, AC-23 B 11 kW
RS 6+1 15	6390	32 A, AC-23 B 15 kW
RS 6+1 22	6391	50 A, AC-23 B 22 kW
RS 6+1 37	6392	80 A, AC-23 B 37 kW
RS 6+1 45	6393	125 A, AC-23 B 45 kW

Voltage 400 V, 3-, 50/60 Hz
Protection category IP65
Protection class II
Actuation Rotary actuator
Locking options. "0 OFF" and "I ON"
Temperature range -25 °C to +60 °C*
Casing Flush and weather-resistant
Wiring diagram no. SS-1088



■ Accessories

Light dome

Type LK 12 Ref no. 82059

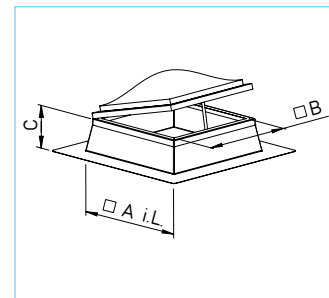
Type LK 15 Ref no. 82060

Light dome with 300 mm skylight base and 24 Volt RWA linear actuator. Opal light dome design with coloured plastic glazing.

Scope of delivery: Skylight, skylight base, linear actuator, hinge bracket and piston slide bracket.



Type	Ref no.	Dimensions in mm		
		A i.L	B	C
LK 12	82059	1200	1000	300
LK 15	82060	1500	1300	300



Overflow valve

Type ÜV 200 Ref no. 4981

For pressure equalisation between two rooms, DN 200. Incl. in-duct fire damper (BAK) and cold smoke shutter (KAK).

External diameter 235 mm

Length 280 mm

suitable for wall thickness min. 100 mm

Throughflow volume flow 50 of 400 m³ /h



Screen

Type ÜVB 200 Ref no. 7509

Material screen:

Steel, powder-coated RAL 9003

(signal white)

External screen dimensions: 300x300 mm



Cover shell

Type ÜVH 200/50 Ref no. 7510

Type ÜVH 200/110 Ref no. 7511

Material cover shell:

Steel, powder-coated RAL 9003 (signal white)

External diameter 241 mm

Length cover shell 50 and 110 mm (depending on type)



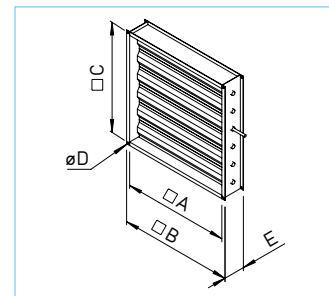
Multi-leaf damper

Type JVK

Multi-leaf damper JVK: Designed in square frame casing with connection flanges made from galvanised sheet steel on both sides. Airtight connection to frame casing.



Type	Ref no.	Dimensions in mm				
		A	B	C	D	E
JVK 60/60	1066	600	640	620	Ø 9	120
JVK 70/70	1067	700	740	720	Ø 9	120
JVK 80/80	1068	800	840	820	Ø 9	120
JVK 90/90	1069	900	940	920	Ø 9	120
JVK 100/100	1074	1000	1040	1020	Ø 9	120



Multi-leaf damper

Type JKG 70/50

Multi-leaf damper JKG 70/50 with mounted aluminium screen.

Nom. dim. multi-leaf damp. 700 x 500 mm

Nom. dim. screen 880 x 555 mm

Depth multi-leaf damper 175 mm

Depth screen 85 mm

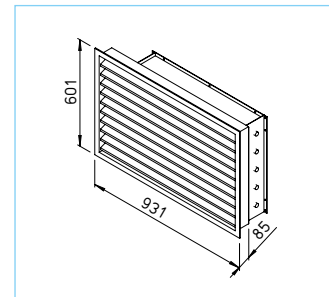
Total depth 260 mm

Total weight ca. 18 kg

Leak tightness (EN 1751) Class 2



Type	Ref no.	Dimensions in mm		
		A	B	C
JKG 70/50	4979	931	601	85



Damper servo motor

STM 10 24V 2P Ref no. 1075

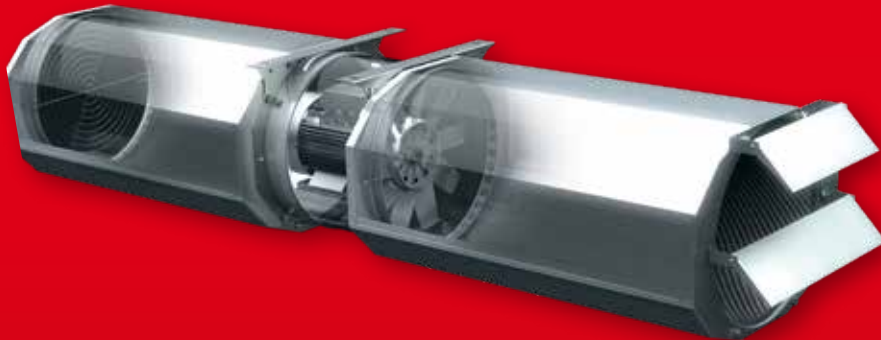
STM 20 24V 2P Ref no. 1093

Electrical 24 Volt servo motor with spring return for opening and closing shutters JVK and JKG.

Torque 10 und 20 Nm (depending on type)



Jet fans
Compact. High-thrust. Quiet.



CERTIFIED FOR
TEMPERATURE CLASSES
F300 und F400 according
to DIN EN 12101-3



The decades of experience and competence in the area of car park ventilation technology have been consistently incorporated in the development of Helios jet fans.

Jet fans are used in parking garages for daily supply and extract ventilation and they ensure smoke extraction in case of fire. They have an impulse effect on the air due to the generated air jet. Thus, there is a movement of air in the respective air flow direction towards the central extract air fan or towards the next jet fan unit.

In contrast to a ducted car park ventilation system, the use of jet fans allows control of the air flow to ensure continuous and effective supply and extract ventilation as well as life-saving smoke extraction in case of emergency. Helios jet fans IV come in axial and centrifugal design as the new, extremely compact, lightweight fans in the TGA sector.

Practical, integrated standard mounting rails for easy ceiling installation perfectly complement the lightweight aluminium construction.

Furthermore, the lowest sound emissions at maximum thrust performances from 6 to 75 N speak for themselves.





AXIAL JET FANS
 Product-specific information

134^f

Axial jet fans
 IVAD and B IVAD

Low-noise and universal in application, they set standards in thrust and weight.

- High-performance axial impeller for unidirectional and reversible operation.
- ø 315-400, thrust 6-67 N
- Optional in F300 and F400 (300 °C or 400 °C/ 120 min.)

136^{ff}



CENTRIFUGAL JET FANS
 Product-specific information

134^f

Centrifugal jet fans
 IVRD and B IVRD

Slimline, compact, lightweight and full power. Ideal for restricted spatial conditions.

- High-performance centrifugal impeller with backward curved blades.
- ø 500-560, thrust 16-75 N
- Optional in F300 (300 °C/120 min.)

142^{ff}



The Helios formula for the future of car park ventilation systems.

High-quality, compact, extremely high-thrust jet fans for car park ventilation and car park smoke extraction. Easy to install due to the low weight. Ideally complemented with first-class service in planning, design and commissioning.

Axial jet fan
IVAD and B IVAD F300/F400

■ **Application**

- For supply and extract ventilation and smoke extraction in car parks.
- For areas of application with air flow temperatures of 300 °C and 400 °C for 120 min. (F300 and F400). In continuous supply and extract ventilation up to max. +60 °C air flow temperature.

■ **Casing**

- Duct casing made from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with safety guard according to DIN EN 13857, outlet nozzle with adjustable guide vanes. Reversible types with adjustable guide vanes on both sides.
- Polygon-shaped impact attenuators on both sides of casing. Casing made from corrosion-resistant aluminium, abrasion-resistant mineral wool lining (non-flammable according to DIN 4102) and galvanised perforated plate.

■ **Impeller**

- High-performance impeller for unidirectional and reversible operation.
- Dynamically balanced, quality class 6.3.
- With aerodynamically optimal blades made from corrosion-resistant aluminium alloy, continuously adjustable in standstill.

■ **Motor**

- The connection for direct start-up is provided for single-speed fans with three phase motor and nominal motor output ≤ 3.00 kW.
- Series IVAD: Maintenance-free efficient IE3 three phase motor, protection class IP55. Connection cable (Ölflex SY cable) centrifugal design, with metal cladding.
- Series B IVAD: Efficient IE3 smoke exhaust three phase motor in temperature-resistant design, protection class IP55. Radial external cable to terminal box with fire-resistant sheathing.

■ **Motor protection**

- Series IVAD and B IVAD: All types are equipped with PTC resistors from the terminal boxes. Thus, effective motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).
- Series B IVAD: For the smoke extraction function, all motor protection devices and speed controllers (FU) of

the smoke extraction fan must be bridged to achieve the required output and max. operating duration.

■ **Electrical connection**

- Series IVAD: Standard plastic terminal box (protection class IP55), mounted on outside of ducting.
- Series B IVAD: Standard aluminium die-cast terminal box (protection class IP55), mounted on outside of ducting.

■ **Air flow temperatures**

- Series IVAD: Suitable for supply and extract ventilation from -20 °C to +60 °C permanent temperature.
- Series B IVAD: Suitable for smoke gases up to 300 °C/120 min. (F300) or 400 °C/120 min. (F400).

■ **Air flow direction**

Depending on the selected type, both unidirectional and 100% reversible air flow directions are possible.

■ **Certification**

The jet fans B IVAD have been tested according to DIN EN 12101-3.
 DIBt approval:
 F300: Z-78.11-216
 F400: Z-78.11-215
 EC certificate of conformity:
 F300: 0036 CPD RG05 10
 F400: 0036 CPD RG05 11

■ **Installation**

- Easy and safe installation by integrated standard mounting rails directly to the ceiling. Rail attachment with just four fixing points.
- When installing a fan from series B IVAD, temperature-resistant plugs and screws (Accessories, to be provided on-site) should be used.
- In order to avoid vibration transmission the use of anti-vibration mounts is recommended.
- For girders or other suspensions, the jet fan guide van must be adjusted. Thus, different distances to girders can be realised.
- Compliance with Federal and regional fire protection regulations.

Centrifugal jet fan
IVRD and B IVRD F300

■ **Application**

- For supply and extract ventilation and smoke extraction in car parks.
- For areas of application with air flow temperatures of 300 °C (F300). In continuous supply and extract ventilation up to max. +60 °C air flow temperature.

■ **Casing**

Casing made from corrosion-resistant aluminium in compact design. Aerodynamically designed inlet nozzle. Continuous optimal surface protection through steel powder coating.

■ **Impeller**

High-performance centrifugal impeller with backward curved blades made from powder coated sheet steel. Dynamically balanced, quality class 6.3.

■ **Motor**

The connection for direct start-up is provided for single-speed fans with three phase motor and nominal motor output ≤ 3.00 kW.

- Series IVRD: Maintenance-free efficient IE3 three phase motor, protection class IP55. Connection cable (Ölflex SY cable) centrifugal design, with metal cladding.
- Series B IVRD: IEC smoke exhaust three phase motor in temperature-resistant design, protection class IP55. Radial external cable to terminal box with fire-resistant sheathing.

■ **Motor protection**

- Series IVRD and B IVRD: All types are equipped with PTC resistors from the terminal boxes. Thus, effective motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).
- Series B IVRD: or the smoke extraction function, all motor protection devices and speed controllers (FU) of the smoke extraction fan must be bridged to achieve the required output and max. operating duration.

■ **Electrical connection**

- Series IVRD: Standard plastic terminal box (protection class IP55), mounted on outside of ducting.
- Series B IVRD: Standard aluminium die-cast terminal box (protection class IP55), mounted on outside of ducting.

■ **Air flow temperatures**

- Series IVRD: Suitable for supply and extract ventilation from -20 °C to +60 °C permanent temperature.
- Series B IVRD: Suitable for smoke gases up to 300 °C/120 min. (F300).

■ **Certification**

The jet fans B IVRD have been tested according to DIN EN 12101-3.
 DIBt-approval:
 F300: Z-78.11-214
 EC certificate of conformity:
 F300: 0036 CPD RG05 12

■ **Installation**

- Easy and safe installation by integrated standard mounting rails directly to the ceiling. Rail attachment with just four fixing points.
- When installing a fan from series B IVRD temperature-resistant plugs and screws (on-site accessories) should be used.
- In order 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 fans of the same size, which together provide the required total air flow volume in simultaneous operation. Explosion-proof fans are not required.
- Each fan in a mechanised supply or extract air system must be powered by a dedicated circuit to which other systems may not be connected.
- Each final and auxiliary circuit of a mechanical supply or extract air system must be designed in such a way that an electrical fault will not cause the failure of the entire ventilation system.
- If the ventilation system will be operated with one fan from time to time, the fans must be connected in such a way that if one fan fails, the other fan will switch on automatically.

■ Mechanical smoke and heat extraction

- Smoke and heat extraction is prescribed in addition to the pure ventilation function in some countries (see table).
- The requirements of the Ordinance Governing Parking Facilities in the Federal States with regard to mechanical smoke and heat extraction have the following in common:
 - Automatic activation on in case of smoke.
 - Maximum load temperature of 300 °C (F300)/1 hour.
 - 10 air changes per hour (max. 70,000 m³/h in Baden-Württemberg).
 - Functional integrity of the electrical cable systems in case of external fire for at least 1 ½ hours.

■ Isolator switch and control

The use of isolator switches on smoke and heat exhaust fans is only permissible if it is secured against unauthorised operation. This can be done through the use of key switches or by attaching a padlock. Furthermore, the terminal boxes in smoke and heat exhaust fans must be temperature resistant. The smoke and heat exhaust fan control equipment (cabinets) must 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 the development of a controlled air flow in the direction of the extract air unit, and for the after-flow of the supply air.
- Central extraction units for the extraction of extract air in normal operation or smoke gases in case of fire.
- Supply air fans, if the air supply via access ramps or other supply air openings is not sufficient.

■ Functionality in ventilation mode

Jet fans have an impulse effect on the air due to the generated air jet. Thus, there is continuous air movement in the respective flow direction towards the central extract air unit or towards the next jet fan unit. Indoor air is induced into the jet through the generated wake turbulence. Due to this induction effect and the mixture of indoor air, the discharge flow rate of the fan increases by approx. tenfold to an effective total air flow rate. Thus, reliable and highly effective air circulation

in the car park is guaranteed. Dead zones, which are usual for duct-guided extract air systems, are avoided through the use of jet fans.

- Extract air fans discharge the polluted air from the car park. The supply air flow circulation is passive via the entrance and exit or supply air openings, or alternatively mechanically through supply air fans.
- The number of fans, size and exact positioning of the jet fans is project-specific in consideration of structural conditions such as geometry, girders, supply air flows, columns, etc.
- Helios jet fans are available in axial and centrifugal design. Different system solutions can be realised depending on the structural conditions or ventilation system requirements.

■ Functionality in case of fire

Helios jet fans are available in different temperature classes. If mechanical smoke and heat extraction is not required in relation to building law or regulatory requirements, jet fans with a permissible permanent temperature of up to +60 °C are used. The two temperature classes F300 (120 min.) and F400 (120 min.) are available for use as smoke and heat exhaust fans.

- While the aim is to provide an escape route keeping the smoke layer above head height when designing smoke extraction for factories, assembly areas, sales outlets and non-residential buildings, this cannot be achieved in car parks due to the low height of the ceiling (approx. 2.50 m). In order to provide an escape route for affected people in the event of a fire and the necessary smoke extraction,

the ultimate planning goal is to create low smoke or smoke free areas.

Car parks are usually required to have fire alarm systems which not only monitor smoke within the car park, but also offer a suitable control strategy which observes the operation of impulse and smoke extraction fans. In the event of smoke extraction, the primary task for jet fan systems is to effectively prevent the spread of smoke and fumes and to direct the smoke gases towards the main extraction points. Depending on the design strategy, defined areas in a car park can be kept smoke-free for longer periods. Reversible (thrust-reversible) jet fans can be used in all sorts of scenarios (depending on the fire locations in the car park).

Federal State	Extract air flow rate	Closed medium-size car park 101 - 1000 m ²		Closed large car park > 1000 m ²				max. permissible CO content	CO content Warning threshold
		In and outgoing traffic low / active		In and outgoing traffic					
	m ³ /h per m ² car park space	Smoke and heat extraction	Gas warn- ing sys.	low	active	low	active	ppm / min. Average	ppm / min. Actual value
Baden-Württemberg	6 / 12	–	–	10 / F300 ¹⁾²⁾	–	10 / F300 ¹⁾²⁾	x	100 / 30	250
Bavaria	6 / 12	–	–	10 / F300	–	10 / F300	x	100 / 30	250
Berlin	6 / 12	–	–	F300 ³⁾	–	F300 ³⁾	x	100 / 30	250
Brandenburg	6 / 12	–	–	10 / F300	–	10 / F300	x	100 / 30	250
Bremen	6 / 12	–	–	–	–	–	x	100 / 30	250
Hamburg	6 / 12	–	–	12 m ³ /h per m ² ⁵⁾	–	12 m ³ /h per m ² ⁵⁾	x	100 / 30	250
Hessen	8 / 16	–	x	10 / F300	x	10 / F300	x	50 / 60	85 / 15
Mecklenburg-Vorpommern	6 / 12	–	–	–	–	–	x	100 / 30	250
Niedersachsen	6 / 12	–	–	10 / F300 ¹⁾	–	10 / F300 ¹⁾	x	100 / 30	250
Nordrhein-Westfalen	6 / 12	–	–	10 / F300	–	10 / F300	x	100 / 30	250
Rheinland-Pfalz	6 / 12	–	–	–	–	–	x	100 / 30	250
Saarland	6 / 12	–	–	–	–	–	x	100 / 60	250
Sachsen	6 / 12	–	–	10 / F300 ⁴⁾	–	10 / F300 ⁴⁾	x	100 / 30	250
Sachsen-Anhalt	6 / 12	–	–	10 / F300	–	10 / F300	x	100 / 30	250
Schleswig-Holstein	6 / 12	–	–	–	–	–	x	100 / 30	250
Thüringen	6 / 12	–	–	10 / F300	–	10 / F300	x	100 / 30	250

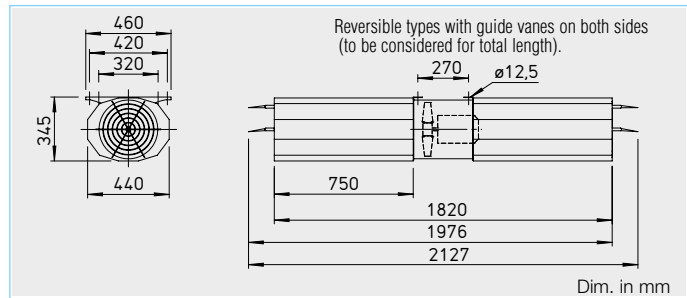
¹⁾ only for floors which are more than 4 m below the ground surface on average

²⁾ max. 7,000 m³/h

³⁾ Extract air flow rate same as smoke extraction rate

⁴⁾ 300 °C for 30 minutes

⁵⁾ The Hamburg Construction Inspection Service must be taken into account



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks with air flow temperatures up to 60 °C.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, axial.
- Optional 100% reversible (types IVAD R).

Casing

Duct casing made from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with guard, outlet nozzle with adjustable guide vane. Reversible types with adjustable guide vanes on both sides (to be considered for total length).

Impeller

High-performance impeller for unidirectional and reversible operation. Dynamically balanced, quality class 6.3. With flow-optimised blades made from corrosion-resistant

aluminium alloy, adjustable in standstill.

Motor

Direct via efficient IE 3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).

Noise insulation

Polygon attenuators mounted on both sides, whose aluminium casings are fully lined with abrasion-resistant mineral wool and galvanised perforated plate according to DIN 4102 (non-flammable).

Installation

With integrated mounting rails as standard, which are fixed directly to the ceiling using plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vi-

bration mounts is recommended (SDZ, Accessories, see table).

Electrical connection

Plastic terminal box (protection class IP55) as standard, outside on casing.

Assembly

The Federal, State and regional regulations and ordinances must be observed for the assembly.

Accessories

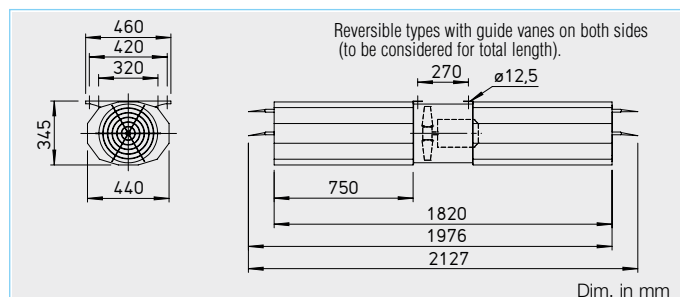
Anti-vibration mounts for tensile loading (1 set = 4 pcs.)



Information	Page
Techn. description	134 f.
Accessory details	Page
Anti-vibration mounts	177
Gas warning systems	182 f.

Type	Ref no.	Thrust	Discharge speed	Max. output	Nominal speed	Reversible	Sound pressure level ¹⁾ L _{Pa}	Nominal motor power (output)	Nominal motor current Operation	Nominal motor current Start-up	Wiring diagram	Max. air flow temperature	Weight net ca.	Anti-vibration mount (1 set = 4 pcs.)
		N	m/s	V m ³ /h	min ⁻¹		dB(A)	kW	A	A	No.	+°C	kg	Type Ref no.
Three phase motor, 400 V, 50 Hz, protection class IP55														
IVAD 315/2 R	4102	23	15.42	4400	2890	Yes	59	1.10	2.30	8.03	796	60	37	SDZ 1 1454
IVAD 315/2	4110	25	15.93	4600	2890	No	58	1.10	2.30	8.03	796	60	37	SDZ 1 1454
Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
IVAD 315/4/2 R	4101	6/23	7.64/15.28	2200/4400	1340/2835	Yes	39/59	0.25/0.95	0.90/2.32	4.62/17.18	777	60	42	SDZ 1 1454
IVAD 315/4/2	4109	6/24	7.91/15.81	2200/4400	1340/2835	No	39/58	0.25/0.95	0.90/2.32	4.95/17.40	777	60	42	SDZ 1 1454

¹⁾ measured in freefield conditions below 45°, at distance of 3 m



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks. Temperature range optional 300 °C/120 min. or 400 °C/ 120 min. (in smoke extraction operation) or 60 °C in permanent operation.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, axial.
- Optional 100% reversible (types B IVAD R).

Casing

Duct casing made from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with guard, outlet nozzle with adjustable guide vane. Reversible types with adjustable guide vanes on both sides (to be considered for total length).

Impeller

High-performance impeller for unidirectional and reversible operation. Dynamically balanced, quality class 6.3. With flow-optimised blades made from corrosion-resistant aluminium alloy, adjustable in standstill.

Motor

Direct via efficient IE 3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55 and temperature-resistant design.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories). For the smoke extraction function, all full motor protection devices and speed controllers (FU) for the smoke extraction fan must be bridged to achieve the required output and max. operating duration.

Noise insulation

Polygon attenuators mounted on both sides, whose aluminium casings are fully lined with abrasion-resistant mineral wool and galvanised perforated plate according to DIN 4102 (non-flammable).

Installation

With integrated mounting rails as standard, which are fixed directly to the ceiling using temperature-resistant plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended (SDZ, Accessories, see table).

Electrical connection

Aluminium die-cast terminal box (protection class IP55) as standard, outside on casing. On-site cabling with temperature-resistant connection cable.

Certification

- Structural tolerances according to DIN 2768
 - Performance measurement according to DIN 24163
 - The jet fans B IVAD have been tested according to DIN EN 12101-3.
- DIBt approval:
F300: Z-78.11-216
F400: Z-78.11-215
- EC certificate of compliance:
F300: 0036 CPD RG05 10
F400: 0036 CPD RG05 11

Accessories

Anti-vibration mounts for tensile loading (1 set = 4 pcs.)

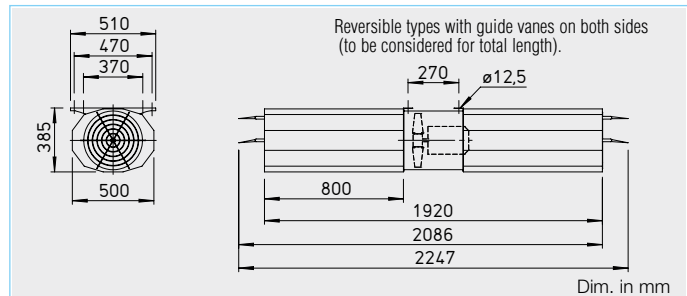
SDZ 1 F



Type	Ref no.	Thrust	Discharge speed	Max. output	Nominal speed	Reversible	Sound pressure level ¹⁾	Nominal motor power (output)	Nominal motor current		Wiring diagram	Max. air flow temperature ²⁾	Weight net ca.	Anti-vibration mount (1 set = 4 pcs.)	
									Operation	Start-up				No.	+°C
F300 Three phase motor, 400 V, 50 Hz, protection class IP55															
B IVAD 315/2 R F300	4118	23	15.25	4400	2830	Yes	59	1.10	2.33	17.24	776	60 / 300	41	SDZ 1 F	1943
B IVAD 315/2 F300	4126	25	15.84	4500	2830	No	58	1.10	2.33	17.24	776	60 / 300	41	SDZ 1 F	1943
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
B IVAD 315/4/2 R F300	4117	6/23	7.63/15.25	2200/4400	1390/2810	Yes	40/60	0.25/1.10	0.8/2.49	3.44/14.94	777	60 / 300	40	SDZ 1 F	1943
B IVAD 315/4/2 F300	4125	7/25	7.86/15.73	2300/4500	1390/2810	Yes	39/58	0.25/1.10	0.8/2.49	3.44/14.94	777	60 / 300	40	SDZ 1 F	1943
F400 Three phase motor, 400 V, 50 Hz, protection class IP55															
B IVAD 315/2 R F400	4134	23	15.25	4400	2830	Yes	59	1.10	2.33	17.24	776	60 / 400	42	SDZ 1 F	1943
B IVAD 315/2 F400	4142	25	15.84	4500	2830	No	58	1.10	2.33	17.24	776	60 / 400	42	SDZ 1 F	1943
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
B IVAD 315/4/2 R F400	4133	6/23	7.63/15.25	2200/4400	1390/2810	Yes	39/59	0.25/1.10	0.75/2.41	2.90/14.40	777	60 / 400	43	SDZ 1 F	1943
B IVAD 315/4/2 F400	4141	7/25	7.86/15.73	2300/4500	1390/2810	No	37/58	0.25/1.10	0.75/2.41	2.90/14.40	777	60 / 400	43	SDZ 1 F	1943

¹⁾ measured in freefield conditions below 45°, at distance of 3 m

²⁾ For ventilation / smoke extraction (one-off 120 min.)



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks with air flow temperatures up to 60 °C.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, axial.
- Optional 100% reversible (types IVAD R).

Casing

Duct casing made from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with guard, outlet nozzle with adjustable guide vane. Reversible types with adjustable guide vanes on both sides (to be considered for total length).

Impeller

High-performance impeller for unidirectional and reversible operation. Dynamically balanced, quality class 6.3. With flow-optimised blades made from corrosion-resistant

aluminium alloy, adjustable in standstill.

Motor

Direct via efficient IE 3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).

Noise insulation

Polygon attenuators mounted on both sides, whose aluminium casings are fully lined with abrasion-resistant mineral wool and galvanised perforated plate according to DIN 4102 (non-flammable).

Installation

With integrated mounting rails as standard, which are fixed directly to the ceiling using plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended

(SDZ, Accessories, see table).

Electrical connection

Plastic terminal box (protection class IP55) as standard, outside on casing.

Assembly

The Federal, State and regional regulations and ordinances must be observed for the assembly.

Accessories

Anti-vibration mounts for tensile loading (1 set = 4 pcs.)

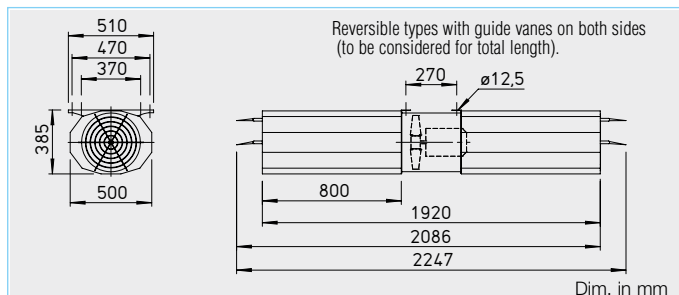
SDZ



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Type	Ref no.	Thrust	Discharge speed	Max. output	Nominal speed	Reversible	Sound pressure level ¹⁾ L _{Pa}	Nominal motor power (output)	Nominal motor current		Wiring diagram	Max. air flow temperature	Weight net ca.	Anti-vibration mount (1 set = 4 pcs.)	
									Operation	Start-up				Type	Ref no.
Three phase motor, 400 V, 50 Hz, protection class IP55															
IVAD 355/2 R	4105	38	17.68	6400	2890	Yes	63	1.50	3.10	23.56	796	60	47	SDZ 1	1454
IVAD 355/2	4113	46	19.39	7000	2890	No	63	1.50	3.10	23.56	796	60	47	SDZ 1	1454
Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
IVAD 355/4/2 R	4104	10/37	8.68/17.35	3200/6300	1340/2850	Yes	38/62	0.30/1.40	1.10/3.08	6.05/23.10	777	60	48	SDZ 1	1454
IVAD 355/4/2	4112	11/42	9.35/18.70	3400/6800	1340/2850	No	41/62	0.30/1.40	1.10/3.08	6.05/23.10	777	60	48	SDZ 1	1454

¹⁾ measured in freefield conditions below 45°, at distance of 3 m



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks. Temperature range optional 300 °C/120 min. or 400 °C/ 120 min. (in smoke extraction operation) or 60 °C in permanent operation.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, axial.
- Optional 100% reversible (types B IVAD R).

Casing

Duct casing made from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with guard, outlet nozzle with adjustable guide vane. Reversible types with adjustable

guide vanes on both sides (to be considered for total length).

Impeller

High-performance impeller for unidirectional and reversible operation. Dynamically balanced, quality class 6.3. With flow-optimised blades made from corrosion-resistant aluminium alloy, adjustable in standstill.

Motor

Direct via efficient IE 3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55 and temperature-resistant design.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories). For the smoke extraction function, all full motor protection

devices and speed controllers (FU) for the smoke extraction fan must be bridged to achieve the required output and max. operating duration.

Noise insulation

Polygon attenuators mounted on both sides, whose aluminium casings are fully lined with abrasion-resistant mineral wool and galvanised perforated plate according to DIN 4102 (non-flammable).

Installation

With integrated mounting rails as standard, which are fixed directly to the ceiling using temperature-resistant plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended (SDZ, Accessories, see table).

Electrical connection

Aluminium die-cast terminal box (protection class IP55) as standard, outside on casing. On-site cabling with temperature-resistant connection cable.

Certification

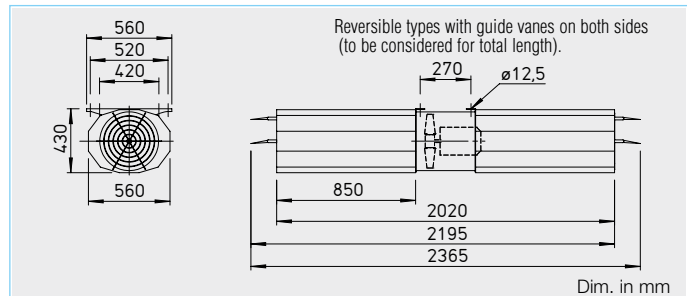
- Structural tolerances according to DIN 2768
 - Performance measurement according to DIN 24163
 - The jet fans B IVAD have been tested according to DIN EN 12101-3.
- DIBt approval:
F300: Z-78.11-216
F400: Z-78.11-215
- EC certificate of compliance:
F300: 0036 CPD RG05 10
F400: 0036 CPD RG05 11

Information	Page	Accessory details	Page
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Type	Ref no.	Thrust	Discharge speed	Max. output	Nominal speed	Reversible	Sound pressure level ¹⁾	Nominal motor power (output)	Nominal motor current		Wiring diagram	Max. air flow temperature ²⁾	Weight net ca.	Anti-vibration mount (1 set = 4 pcs.)
		N	m/s	√ m ³ /h	min ⁻¹		dB(A)	kW	Operation	Start-up	No.	+°C	kg	Type Ref no.
F300 Three phase motor, 400 V, 50 Hz, protection class IP55														
B IVAD 355/2 R F300	4121	38	17.54	6400	2875	Yes	62	1.50	3.09	23.48	776	60 / 300	51	SDZ 1 F 1943
B IVAD 355/2 F300	4129	46	19.23	7000	2875	Yes	63	1.50	3.09	23.48	776	60 / 300	51	SDZ 1 F 1943
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
B IVAD 355/4/2 R F300	4120	10/38	8.86/17.72	3200/6400	1430/2875	Yes	41/62	0.37/1.50	1.19/3.58	5.95/25.06	777	60 / 300	53	SDZ 1 F 1943
B IVAD 355/4/2 F300	4128	12/46	9.72/19.43	3600/7000	1430/2875	Yes	41/63	0.37/1.50	1.19/3.58	5.95/25.06	777	60 / 300	53	SDZ 1 F 1943
F400 Three phase motor, 400 V, 50 Hz, protection class IP55														
B IVAD 355/2 R F400	4137	38	17.54	6400	2875	Yes	62	1.50	3.09	23.48	776	60 / 400	54	SDZ 1 F 1943
B IVAD 355/2 F400	4145	46	19.23	7000	2875	No	63	1.50	3.09	23.48	776	60 / 400	54	SDZ 1 F 1943
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
B IVAD 355/4/2 R F400	4136	10/38	8.86/17.72	3200/6400	1435/2900	Yes	41/62	0.37/1.50	1.25/3.54	5.60/23.00	777	60 / 400	52	SDZ 1 F 1943
B IVAD 355/4/2 F400	4144	12/46	9.72/19.43	3600/7000	1435/2900	No	41/64	0.37/1.50	1.25/3.54	5.60/23.00	777	60 / 400	52	SDZ 1 F 1943

¹⁾ measured in freefield conditions below 45°, at distance of 3 m

²⁾ For ventilation / smoke extraction (one-off 120 min.)



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks with air flow temperatures up to 60 °C.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, axial.
- Optional 100% reversible (types IVAD R).

Casing

Duct casing made from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with guard, outlet nozzle with adjustable guide vane. Reversible types with adjustable guide vanes on both sides (to be considered for total length).

Impeller

High-performance impeller for unidirectional and reversible operation. Dynamically balanced, quality class 6.3. With flow-optimised blades made from corrosion-resistant

aluminium alloy, adjustable in standstill.

Motor

Direct via efficient IE 3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).

Noise insulation

Polygon attenuators mounted on both sides, whose aluminium casings are fully lined with abrasion-resistant mineral wool and galvanised perforated plate according to DIN 4102 (non-flammable).

Installation

With integrated mounting rails as standard, which are fixed directly to the ceiling using plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended

(SDZ, Accessories, see table).

Electrical connection

Plastic terminal box (protection class IP55) as standard, outside on casing.

Assembly

The Federal, State and regional regulations and ordinances must be observed for the assembly.

Accessories

Anti-vibration mounts for tensile loading (1 set = 4 pcs.)

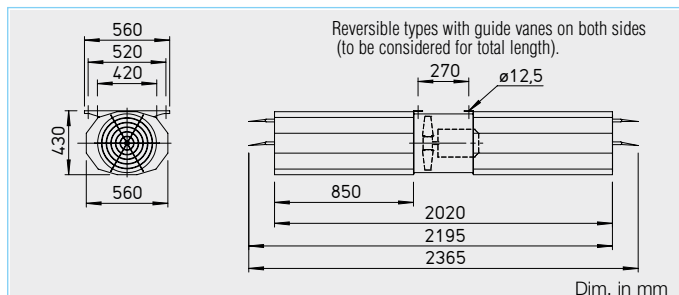
SDZ



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Type	Ref no.	Thrust	Discharge speed	Max. output	Nominal speed	Reversible	Sound pressure level ¹⁾ L _{Pa}	Nominal motor power (output)	Nominal motor current		Wiring diagram	Max. air flow temperature	Weight net ca.	Anti-vibration mount (1 set = 4 pcs.)	
									Operation	Start-up				Type	Ref no.
Three phase motor, 400 V, 50 Hz, protection class IP55															
IVAD 400/2 R	4108	62	20.20	9200	2890	Yes	67	2.20	4.3	32.68	796	60	59	SDZ 1	1454
IVAD 400/2	4116	67	21.08	9600	2890	No	66	2.20	4.3	32.68	796	60	59	SDZ 1	1454
Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55															
IVAD 400/4/2 R	4107	15/60	9.92/20.71	4500/9000	1380/2855	Yes	43/66	0.65/2.50	1.94/5.01	10.18/39.38	777	60	73	SDZ 2	1455
IVAD 400/4/2	4115	17/65	10.35/20.71	4700/9400	1380/2855	No	44/65	0.65/2.50	1.94/5.01	10.67/37.58	777	60	73	SDZ 2	1455

¹⁾ measured in freefield conditions below 45°, at distance of 3 m



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks. Temperature range optional 300 °C/120 min. or 400 °C/ 120 min. (in smoke extraction operation) or 60 °C in permanent operation.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, axial.
- Optional 100% reversible (types B IVAD R).

Casing

Duct casing made from corrosion-resistant aluminium with motor support and ceiling suspension. Aerodynamically shaped inlet with guard, outlet nozzle with adjustable guide vane.

Reversible types with adjustable guide vanes on both sides (to be considered for total length).

Impeller

High-performance impeller for unidirectional and reversible operation. Dynamically balanced, quality class 6.3. With flow-optimised blades made from corrosion-resistant aluminium alloy, adjustable in standstill.

Motor

Direct via efficient IE 3 three phase motor. Pole-switching fans with IEC standard motor. Protection class IP55 and temperature-resistant design.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).

For the smoke extraction function, all full motor protection devices and speed controllers (FU) for the smoke extraction fan must be bridged to achieve the required output and max. operating duration.

Noise insulation

Polygon attenuators mounted on both sides, whose aluminium casings are fully lined with abrasion-resistant mineral wool and galvanised perforated plate according to DIN 4102 (non-flammable).

Installation

With integrated mounting rails as standard, which are fixed directly to the ceiling using temperature-resistant plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended (SDZ, Accessories, see table).

Electrical connection

Aluminium die-cast terminal box (protection class IP55) as standard, outside on casing. On-site cabling with temperature-resistant connection cable.

Certification

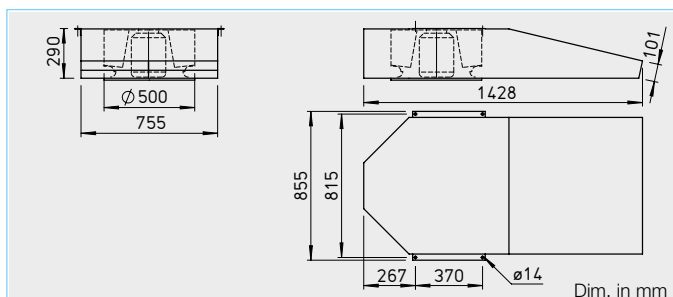
- Structural tolerances according to DIN 2768
- Performance measurement according to DIN 24163
- The jet fans B IVAD have been tested according to DIN EN 12101-3.
- DIBt approval: F300: Z-78.11-216 F400: Z-78.11-215
- EC certificate of compliance: F300: 0036 CPD RG05 10 F400: 0036 CPD RG05 11

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Type	Ref no.	Thrust	Discharge speed	Max. output	Nominal speed	Reversible	Sound pressure level ¹⁾	Nominal motor power (output)	Nominal motor current	Wiring diagram	Max. air flow temperature ²⁾	Weight net ca.	Anti-vibration mount (1 set = 4 pcs.)
		N	m/s	√ m ³ /h	min ⁻¹		dB(A)	kW	A	No.	+°C	kg	Type Ref no.
F300 Three phase motor, 400 V, 50 Hz, protection class IP55													
B IVAD 400/2 R F300	4124	60	19.85	9000	2865	Yes	66	2.20	4,43	33,23	776	60 / 300	62 SDZ 1 F 1943
B IVAD 400/2 F300	4132	65	20.71	9400	2865	Yes	65	2.20	4,43	33,23	776	60 / 300	62 SDZ 1 F 1943
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55													
B IVAD 400/4/2 R F300	4123	15/60	9.94/19.88	4500/9000	1420/2845	Yes	44/65	0.50/2.20	1,54/4,63	5,39/31,48	777	60 / 300	62 SDZ 1 F 1943
B IVAD 400/4/2 F300	4131	17/65	10.37/20.74	4700/9400	1420/2845	Yes	44/66	0.50/2.20	1,54/4,63	5,39/31,48	777	60 / 300	62 SDZ 1 F 1943
F400 Three phase motor, 400 V, 50 Hz, protection class IP55													
B IVAD 400/2 R F400	4140	60	19.85	9000	2865	Yes	66	2.20	4,43	33,23	776	60 / 400	63 SDZ 1 F 1943
B IVAD 400/2 F400	4148	65	20.71	9400	2865	No	65	2.20	4,43	33,23	776	60 / 400	63 SDZ 1 F 1943
F400 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55													
B IVAD 400/4/2 R F400	4139	15/60	9.94/19.88	4500/9000	1420/2845	Yes	43/66	0.50/2.20	1,54/4,63	5,38/27,80	777	60 / 400	63 SDZ 1 F 1943
B IVAD 400/4/2 F400	4147	17/65	10.37/20.74	4700/9400	1420/2845	No	42/65	0.50/2.20	1,54/4,63	5,38/27,80	777	60 / 400	63 SDZ 1 F 1943

¹⁾ measured in freefield conditions below 45°, at distance of 3 m

²⁾ For ventilation / smoke extraction (one-off 120 min.)



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks with air flow temperatures up to 60 °C.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, centrifugal.

Casing

Casing made from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet nozzle. Permanent optimal surface protection through steel powder coating.

Impeller

High-performance centrifugal impeller with welded, backward curved blades. Dynamically balanced, quality class 6.3.

Motor

IEC three phase standard motor in protection class IP55.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).

Installation

With integrated mounting brackets as standard, which are fixed directly to the ceiling using plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended (SDZ, Accessories, see table).

Electrical connection

Plastic terminal box (protection class IP55) as standard, outside on casing.

Assembly

The Federal, State and regional regulations and ordinances must be observed for the assembly.

Accessories

Anti-vibration mounts for tensile loading (1 set = 4 pcs.)

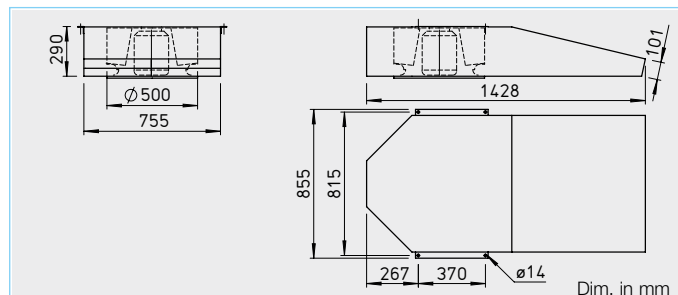
SDZ



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Type	Ref no.	Thrust N	Discharge speed m/s	Max. output V m ³ /h	Nominal speed min ⁻¹	Sound pressure level ¹⁾ L _{Pa} dB(A)	Nominal motor power (output) kW	Nominal motor current		Wiring diagram No.	Max. air flow temperature +°C	Weight net ca. kg	Anti-vibration mount (1 set = 4 pcs.)	
								Operation A	Start-up A				Type	Ref no.
Three phase motor, 400 V, 50 Hz, protection class IP55														
IVRD 500/4	4149	42	21.0	6100	1440	73	1.50	3.26	20.50	776	60	63	SDZ 2	1455
Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
IVRD 500/8/4	4150	11/42	10.5/21.0	3000/6000	700/1420	55/73	0.40/1.60	1.69/3.80	5.41/21.66	777	60	61	SDZ 2	1455

¹⁾ measured in freefield conditions below 45°, at distance of 3 m



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks. Temperature range 300 °C/120 min. (in smoke extraction operation) or 60 °C in permanent operation.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, centrifugal.

Casing

Casing made from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet nozzle. Permanent optimal surface protection through steel powder coating.

Impeller

High-performance centrifugal impeller with welded, backward curved blades. Dynamically balanced, quality class 6.3.

Motor

IEC three phase standard motor in temperature-resistant design, protection class IP55.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories). For the smoke extraction function, all full motor protection devices and speed controllers (FU) for the smoke extraction fan must be bridged to achieve the required output and max. operating duration.

Installation

With integrated mounting brackets as standard, which are fixed directly to the ceiling using plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended (SDZ, Accessories, see table).

Electrical connection

Aluminium die-cast terminal box (protection class IP55) as standard, outside on casing. On-site cabling with temperature-resistant connection cable

Assembly

The Federal, State and regional regulations and ordinances must be observed for the assembly.

Certification

- Structural tolerances according to DIN 2768
 - Performance measurement according to DIN 24163
 - The jet fans B IVRD have been tested according to DIN EN 12101-3.
- DIBt approval:
F300: Z-78.11-214
EC certificate of compliance:
F300: 0036 CPD RG05 12

Accessories

Anti-vibration mounts for tensile loading (1 set = 4 pcs.)

SDZ 1 F

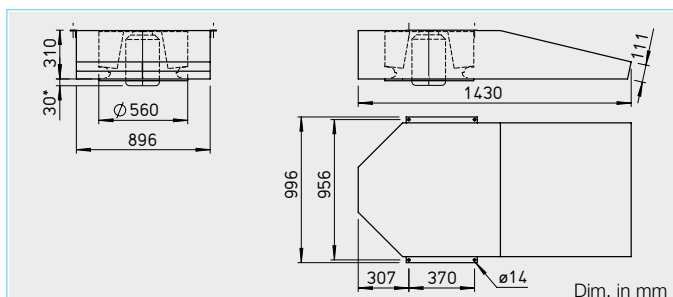


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Type	Ref no.	Thrust	Discharge speed	Max. output	Nominal speed	Sound pressure level ¹⁾ L _{pa}	Nominal motor power (output)	Nominal motor current		Wiring diagram	Max. air flow temperature ²⁾	Weight net ca.	Anti-vibration mount (1 set = 4 pcs.)	
								Operation	Start-up				Type	Ref no.
F300 Three phase motor, 400 V, 50 Hz, protection class IP55														
B IVRD 500/4 F300	4155	42	21.0	6100	1420	73	1.50	3.29	20.50	776	60 / 300	63	SDZ 1 F	1943
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
B IVRD 500/8/4 F300	4156	11/42	10.5/21.0	3000/6000	700/1420	55/73	0.40/1.60	1.69/3.80	5.41/21.66	777	60 / 300	63	SDZ 1 F	1943

¹⁾ measured in freefield conditions below 45°, at distance of 3 m

²⁾ For ventilation / smoke extraction (one-off 120 min.)



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks with air flow temperatures up to 60 °C.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, centrifugal.

Casing

Casing made from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet nozzle. Permanent optimal surface protection through steel powder coating.

Impeller

High-performance centrifugal impeller with welded, backward curved blades. Dynamically balanced, quality class 6.3.

Motor

IEC three phase standard motor in protection class IP55.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories).

Installation

With integrated mounting brackets as standard, which are fixed directly to the ceiling using plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended (SDZ, Accessories, see table).

Electrical connection

Plastic terminal box (protection class IP55) as standard, outside on casing.

Assembly

The Federal, State and regional regulations and ordinances must be observed for the assembly.

Accessories

Anti-vibration mounts for tensile loading (1 set = 4 pcs.)

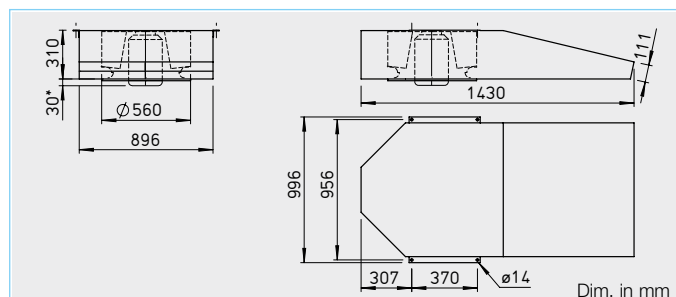
SDZ



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Type	Ref no.	Thrust N	Discharge speed m/s	Max. output V m³/h	Nominal speed min⁻¹	Sound pressure level ¹⁾ L _{Pa} dB(A)	Nominal motor power (output) kW	Nominal motor current		Wiring diagram No.	Max. air flow temperature +°C	Weight net ca. kg	Anti-vibration mount (1 set = 4 pcs.)	
								Operation A	Start-up A				Type	Ref no.
Three phase motor, 400 V, 50 Hz, protection class IP55														
IVRD 560/4	4153	75	25.2	8900	1420	77	2.20	4.59	34.00	776	60	71	SDZ 2	1455
Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
IVRD 560/8/4	4154	19/75	25.2/12.5	4500/8900	700/1420	77/58	0.50/2.20	2.02/5.04	7.07/30.7	777	60	72	SDZ 2	1455

¹⁾ measured in freefield conditions below 45°, at distance of 3 m



High-quality, high-performance jet fans with optimal dimensions for minimum space requirement. Suitable for supply and extract ventilation of car parks. Temperature range 300 °C/120 min. (in smoke extraction operation) or 60 °C in permanent operation.

Special features

- Low noise emission.
- Maximum thrust.
- Easy and fast to install due to low weight (aluminium construction).
- Direct driven, centrifugal.

Casing

Casing made from corrosion-resistant aluminium in compact design. Aerodynamically shaped inlet nozzle. Permanent optimal surface protection through steel powder coating.

Impeller

High-performance centrifugal impeller with welded, backward curved blades. Dynamically balanced, quality class 6.3.

Motor

IEC three phase standard motor in temperature-resistant design, protection class IP55.

Motor protection

All types are equipped with PTC resistors from the terminal boxes. Thus, efficient motor protection is possible by means of full motor protection device (type MSA, Ref no. 1289, Accessories) or FU (Accessories). For the smoke extraction function, all full motor protection devices and speed controllers (FU) for the smoke extraction fan must be bridged to achieve the required output and max. operating duration.

Installation

With integrated mounting brackets as standard, which are fixed directly to the ceiling using plugs (Accessories, on-site) at four fixing points. In order to prevent vibration transmission, the use of anti-vibration mounts is recommended (SDZ, Accessories, see table).

Electrical connection

Aluminium die-cast terminal box (protection class IP55) as standard, outside on casing. On-site cabling with temperature-resistant connection cable.

Assembly

The Federal, State and regional regulations and ordinances must be observed for the assembly.

Certification

- Structural tolerances according to DIN 2768
 - Performance measurement according to DIN 24163
 - The jet fans B IVRD have been tested according to DIN EN 12101-3.
- DIBt approval:
F300: Z-78.11-214
EC certificate of compliance:
F300: 0036 CPD RG05 12

Accessories

Anti-vibration mounts for tensile loading (1 set = 4 pcs.)

SDZ 1 F



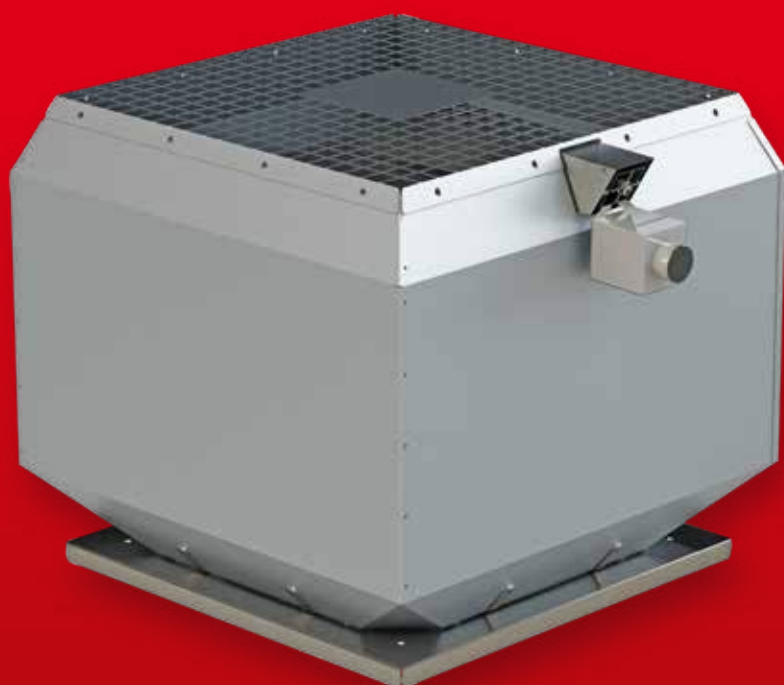
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Type	Ref no.	Thrust	Discharge speed	Max. output	Nominal speed	Sound pressure level ¹⁾ L _{pa}	Nominal motor power (output)	Nominal motor current		Wiring diagram	Max. air flow temperature ²⁾	Weight net ca.	Anti-vibration mount (1 set = 4 pcs.)	
								Operation	Start-up				Type	Ref no.
F300 Three phase motor, 400 V, 50 Hz, protection class IP55														
B IVRD 560/4 F300	4159	75	25.2	8900	1410	77	2.20	5.19	34.00	776	60 / 300	70	SDZ 1 F	1943
F300 Pole-switching, 2 speed, three phase motor, Dahlander winding Y/YY, 400 V, 50 Hz, protection class IP55														
B IVRD 560/8/4 F300	4160	19/75	25.2/12.5	4500/8900	700/1420	77/58	0.50/2.20	2.02/5.04	7.07/30.7	777	60 / 300	72	SDZ 1 F	1943

¹⁾ measured in freefield conditions below 45°, at distance of 3 m

²⁾ For ventilation / smoke extraction (one-off 120 min.)

Smoke exhaust fans.
For smoke ventilation in buildings of all types.



**CERTIFIED FOR
TEMPERATURE CLASSES
F400 and F600 according
to DIN EN 12101-3**



Roof-mounted and in-line rectangular smoke exhaust fans guarantee smoke and heat extraction in preventive fire protection.

The roof-mounted smoke exhaust fans for temperature classes F400 and F600 and the in-line rectangular smoke exhaust fans for temperature class F400 are certified according to the European product

and test standard DIN EN 12101-3.

They allow air flow temperatures up to 400 °C/120 minutes or 600 °C/ 120 minutes. Furthermore, in order to ensure maximum safety for buildings and people, all materials used in the production are monitored by the TÜV (Technical Inspection Association).



Roof-mounted smoke exhaust fans

The vertical air outlet prevents damage to adjacent parts of the building in case of fire. Due to their robust design, roof-mounted smoke exhaust fans are ideal for use in difficult operating conditions. Roof-mounted smoke exhaust fans with dual-use for smoke extraction and ventilation.

The standard integrated transport lug facilitates unit positioning. The isolator switch, which is easily accessible from the outside and for the electrical connection, is practical for installation.

Motor protection against thermal overload during ventilation comes as standard with the integrated PTC resistor elements. This motor protection device must be bridged in case of fire. The special back side blades of the centrifugal impeller also enable the efficient flow of cooling air and prevent the overheating of the motor during smoke extraction operation.



ROOF-MOUNTED SMOKE EXHAUST FANS

148^{ff}

Roof-mounted smoke exhaust fans available in sizes from Ø 315 to 900 mm and flow rates from 1,000 to 70,000 m³/h.

- Dual-use for smoke extraction and ventilation
- Speed control by means of frequency inverter
- High-quality smoke exhaust motor, thermally separated from the smoke gases
- Directly driven high-performance centrifugal impeller
- Standard isolator switch



IN-LINE RECTANGULAR SMOKE EXHAUST FANS

168^f

In-line rectangular smoke exhaust fans F400 for rectangular ducts 40 x 20 up to 120 x 60 cm

- Hinged motor-impeller unit for simple inspection and cleaning.
- Compact design for direct installation in ducting without height offset.
- Inlet and outlet with holes for connection of standard flanges.
- 16 types
V̇ = 1 500 - 16 000 m³/h



■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

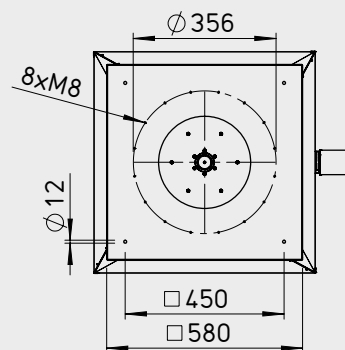
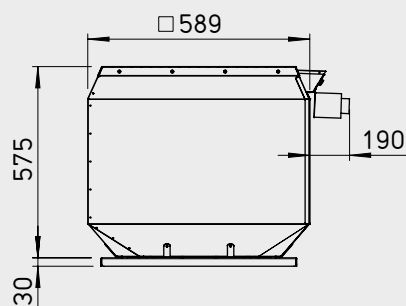
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 315/4 F400	7583	1420	2950	55	0.55	1.23	7.5	1262	44	EVS-D 001	4594	MSA	1289
B VDD 315/6 F400	7584	905	1900	51	0.37	1.13	4.1	1262	46	EVS-D 001	4594	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 315/4 F600	7585	1420	2950	55	0.55	1.23	7.5	1262	44	EVS-D 001	4594	MSA	1289
B VDD 315/6 F600	7586	905	1900	51	0.37	1.13	4.1	1262	46	EVS-D 001	4594	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm

series can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

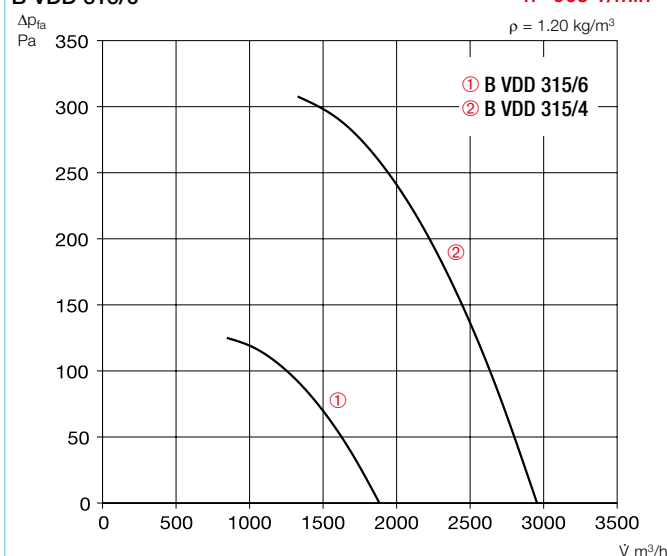
- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 315/4

B VDD 315/6

n=1420 1/min

n=905 1/min



■ Accessories

- B FDS 315/300** Ref no. 1765
- B FDS 315/500** Ref no. 1766
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 315** Ref no. 3475
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 315** Ref no. 3071
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 315** Ref no. 3410
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

Project planning info S. 3 ff.

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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

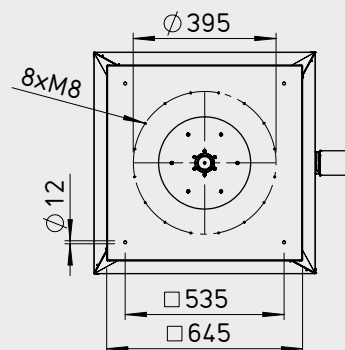
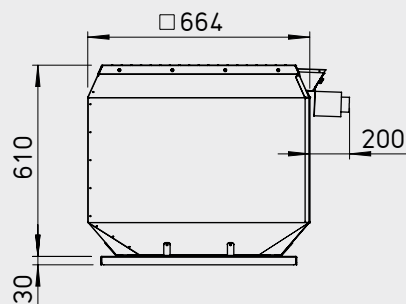
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
		min ⁻¹	V m ³ /h	dB(A) in 4 m	kW	A	A	No.	kg	Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 355/4 F400	1213	1420	4250	58	0.55	1.23	7.5	1262	49	EVS-D 001	4594	MSA	1289
B VDD 355/6 F400	1227	905	2700	55	0.37	1.13	4.1	1262	51	EVS-D 001	4594	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 355/4 F600	1232	1420	4250	58	0.55	1.23	7.5	1262	49	EVS-D 001	4594	MSA	1289
B VDD 355/6 F600	1451	905	2700	55	0.37	1.13	4.1	1262	51	EVS-D 001	4594	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm

sories can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

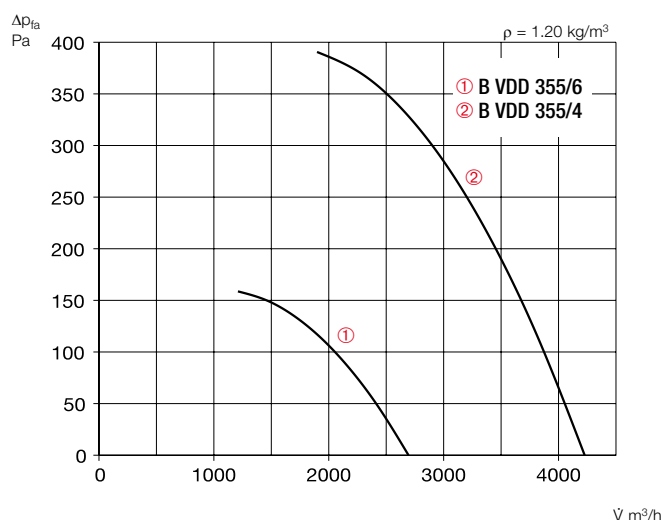
- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 355/4
B VDD 355/6

n = 1420 1/min
n = 905 1/min



■ Accessories

- B FDS 355/300** Ref no. 1767
- B FDS 355/500** Ref no. 1768
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 355** Ref no. 3482
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 355** Ref no. 3081
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 355** Ref no. 3425
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

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Accessories	Page
Mounting accessories	175 ff.
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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

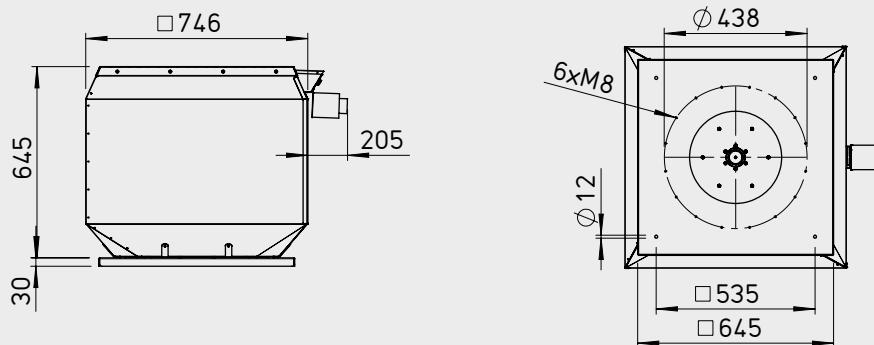
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 400/4 F400	1458	1420	6150	62	0.75	1.62	10.9	1262	56	EVS-D 001	4594	MSA	1289
B VDD 400/6 F400	1478	905	3850	59	0.37	1.13	4.1	1262	56	EVS-D 001	4594	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 400/4 F600	1480	1420	6150	62	0.75	1.62	10.9	1262	56	EVS-D 001	4594	MSA	1289
B VDD 400/6 F600	1487	905	3850	59	0.37	1.13	4.1	1262	56	EVS-D 001	4594	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm

sories can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

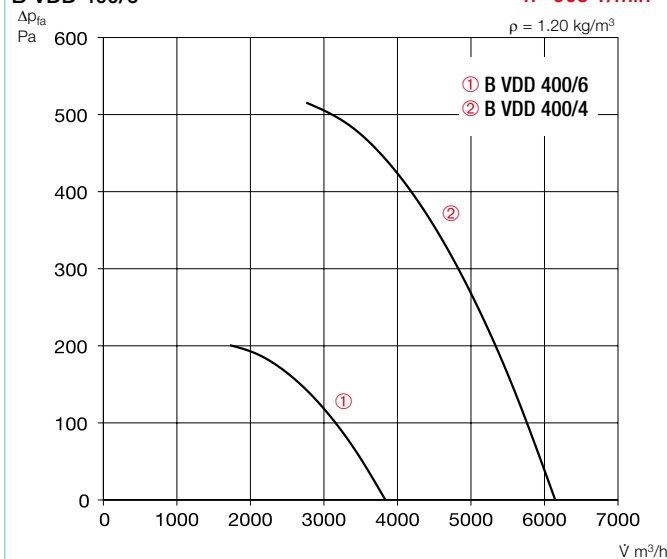
- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 400/4

B VDD 400/6

n=1450 1/min

n=905 1/min



■ Accessories

- B FDS 400/300** Ref no. 1767
- B FDS 400/500** Ref no. 1768
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 400** Ref no. 3482
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 400** Ref no. 3135
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 400** Ref no. 3428
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

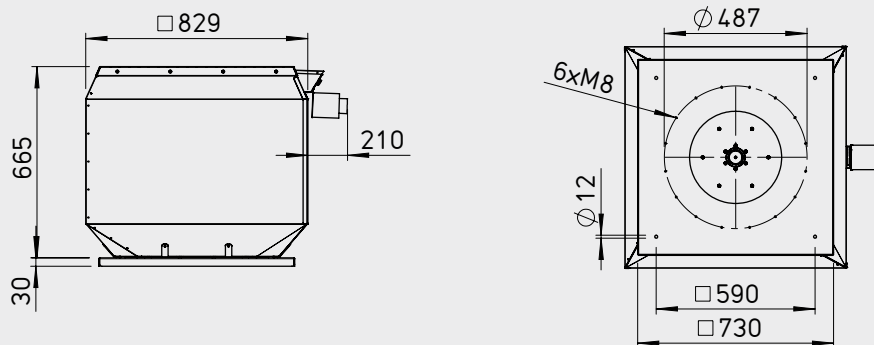
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 450/4 F400	1488	1450	8450	65	1.50	3.17	23.5	1262	80	EVS-D 001	4594	MSA	1289
B VDD 450/6 F400	1490	905	5250	62	0.37	1.13	4.1	1262	72	EVS-D 001	4594	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 450/4 F600	1566	1450	8450	65	1.50	3.17	23.5	1262	80	EVS-D 001	4594	MSA	1289
B VDD 450/6 F600	1572	905	5250	62	0.37	1.13	4.1	1262	72	EVS-D 001	4594	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm

sories can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

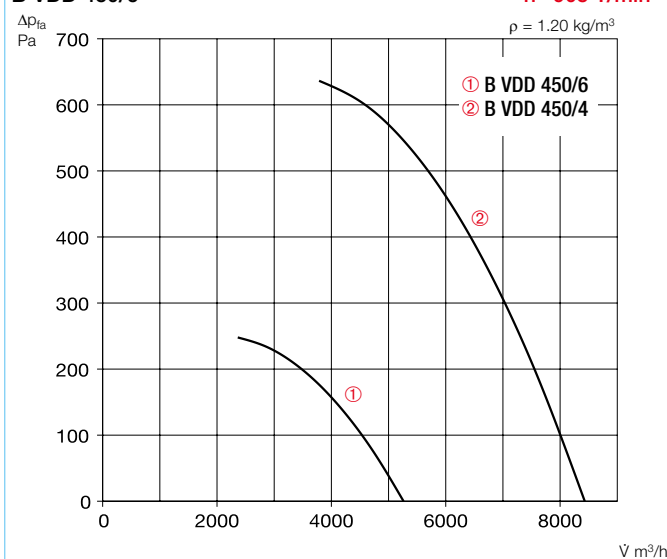
- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 450/4

B VDD 450/6

n=1450 1/min

n=905 1/min



■ Accessories

- B FDS 450/300** Ref no. 1793
- B FDS 450/500** Ref no. 1800
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 450** Ref no. 3500
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 450** Ref no. 3136
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 450** Ref no. 3434
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

Project planning info S. 3 ff.

Accessories	Page
Mounting accessories	175 ff.
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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

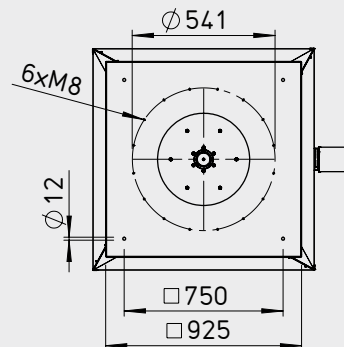
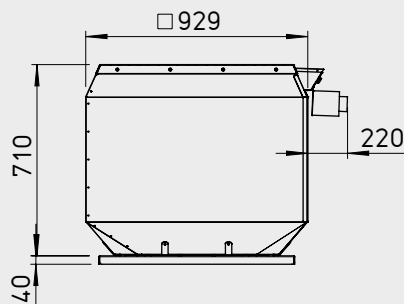
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 500/4 F400	1573	1435	11750	68	2.20	4.56	33.7	1262	107	EVS-D 001	4594	MSA	1289
B VDD 500/6 F400	1591	940	7700	64	0.75	1.93	10.0	1262	97	EVS-D 001	4594	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 500/4 F600	1597	1435	11750	68	2.20	4.56	33.7	1262	107	EVS-D 001	4594	MSA	1289
B VDD 500/6 F600	1618	940	7700	64	0.75	1.93	10.0	1262	97	EVS-D 001	4594	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm

series can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

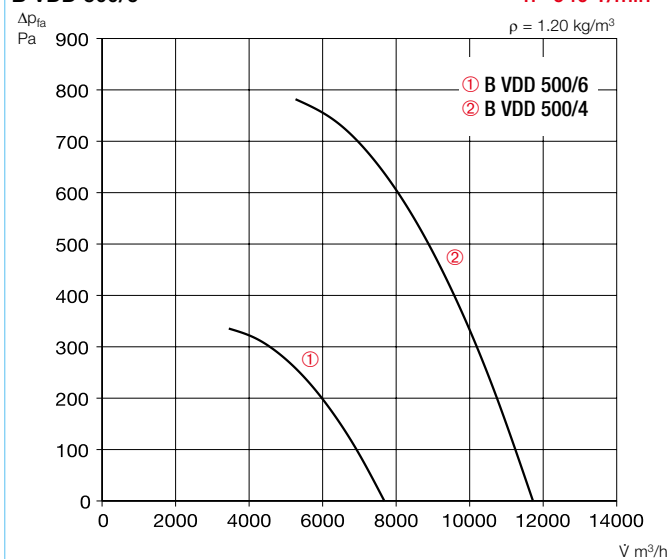
- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 500/4
B VDD 500/6

n=1435 1/min
n=940 1/min



■ Accessories

- B FDS 500/300** Ref no. 1804
- B FDS 500/500** Ref no. 1810
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 500** Ref no. 3501
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 500** Ref no. 3192
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 500** Ref no. 3437
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

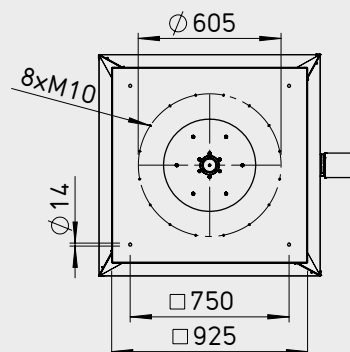
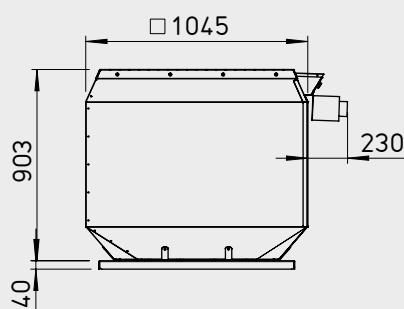
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
		min ⁻¹	V m ³ /h	dB(A) in 4 m	kW	A	A	No.	kg				
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 560/4 F400	1625	1450	16850	72	4.00	8.23	57.6	1261	143	EVS-SD 001	4586	MSA	1289
B VDD 560/6 F400	1627	945	11000	68	1.10	2.69	13.2	1262	128	EVS-D 001	4594	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 560/4 F600	1638	1450	16850	72	4.00	8.23	57.6	1261	143	EVS-SD 001	4586	MSA	1289
B VDD 560/6 F600	1639	945	11000	68	1.10	2.69	13.2	1262	128	EVS-D 001	4594	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm

sories can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

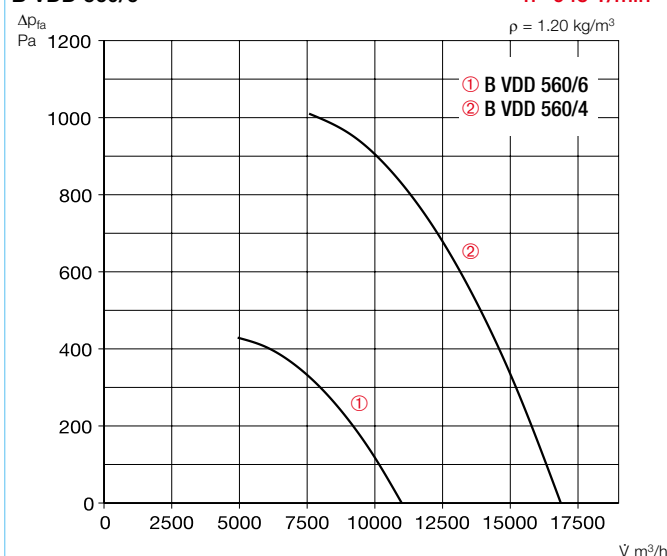
- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 560/4
B VDD 560/6

n=1450 1/min
n=945 1/min



■ Accessories

- B FDS 560/300** Ref no. 1804
- B FDS 560/500** Ref no. 1810
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 560** Ref no. 3501
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 560** Ref no. 3193
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 560** Ref no. 3454
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

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Accessories	Page
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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

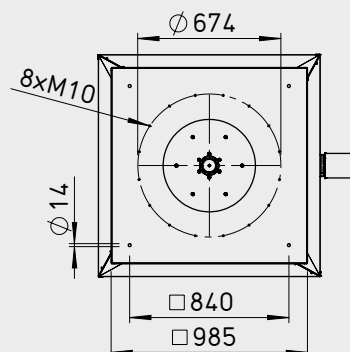
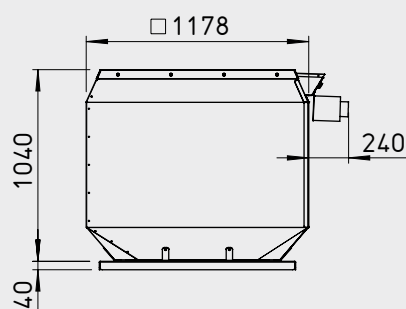
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 630/4 F400	1640	1460	24300	76	7.50	14.20	118	1261	188	EVS-SD 003	4584	MSA	1289
B VDD 630/6 F400	1642	960	16000	72	2.20	5.22	31.3	1262	160	EVS-D 001	4594	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 630/4 F600	1643	1460	24300	76	7.50	14.20	118	1261	188	EVS-SD 003	4584	MSA	1289
B VDD 630/6 F600	1644	960	16000	72	2.20	5.22	31.3	1262	160	EVS-D 001	4594	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm

ories can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

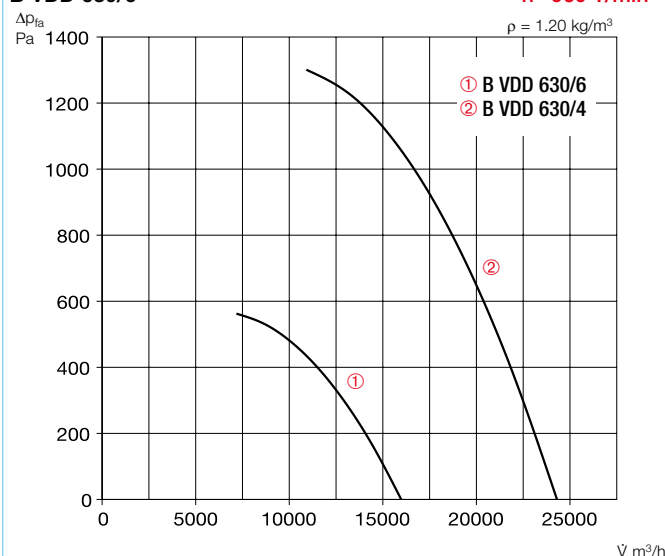
- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 630/4

B VDD 630/6

n=1460 1/min

n=960 1/min



■ Accessories

- B FDS 630/300** Ref no. 1866
- B FDS 630/500** Ref no. 1867
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 630** Ref no. 3512
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 630** Ref no. 3203
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 630** Ref no. 3455
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

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Accessories	Page
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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

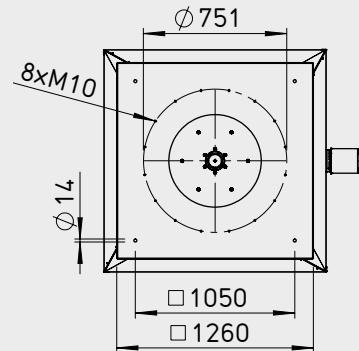
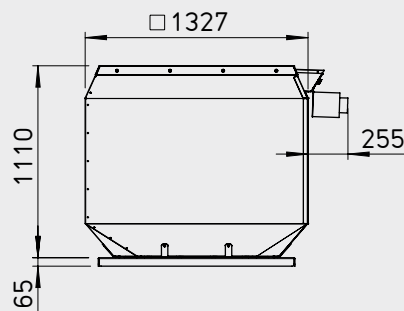
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 710/4 F400	1646	1465	34850	80	15.00	27.90	201	1261	301	EVS-SD 005	4582	MSA	1289
B VDD 710/6 F400	1647	965	22950	76	4.00	9.11	55.6	1261	236	EVS-SD 001	4586	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 710/4 F600	1648	1465	34850	80	15.00	27.90	201	1261	301	EVS-SD 005	4582	MSA	1289
B VDD 710/6 F600	1698	965	22950	76	4.00	9.11	55.6	1261	236	EVS-SD 001	4586	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm

sories can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

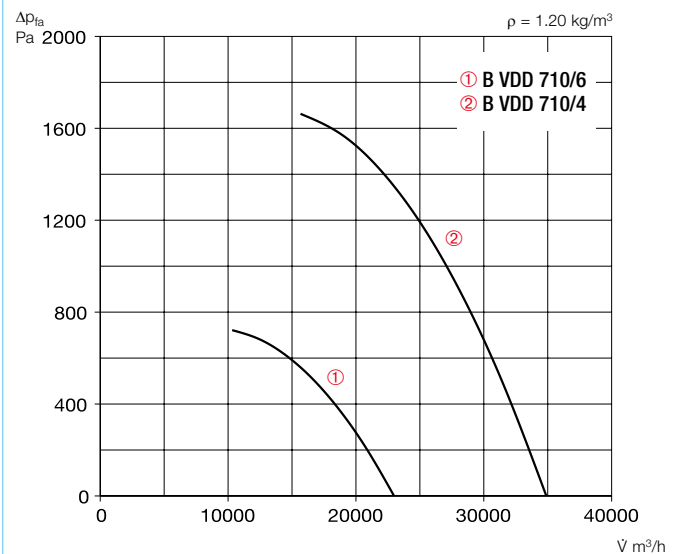
- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 710/4
B VDD 710/6

n=1465 1/min
n=965 1/min



■ Accessories

- B FDS 710/300** Ref no. 1868
- B FDS 710/500** Ref no. 1869
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 710** Ref no. 3523
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 710** Ref no. 3253
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 710** Ref no. 3468
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

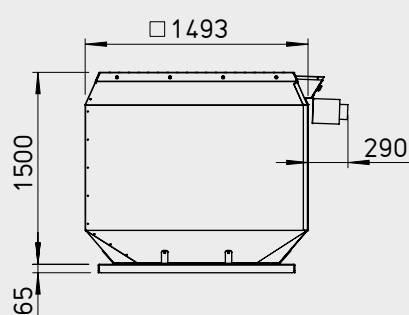
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

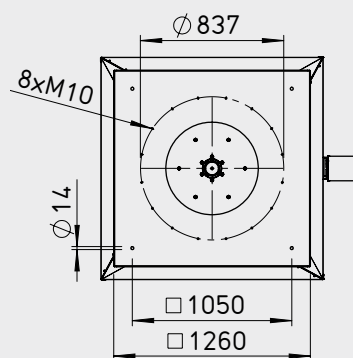
- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 800/4 F400	1699	1480	49850	83	30.00	57.10	428	1261	428	EVS-SD 008	4579	MSA	1289
B VDD 800/6 F400	1709	975	33050	79	7.50	14.80	108	1261	318	EVS-SD 003	4584	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 800/4 F600	1715	1480	49850	83	30.00	57.10	428	1261	428	EVS-SD 008	4579	MSA	1289
B VDD 800/6 F600	1716	975	33050	79	7.50	14.80	108	1261	318	EVS-SD 003	4584	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm



sories can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

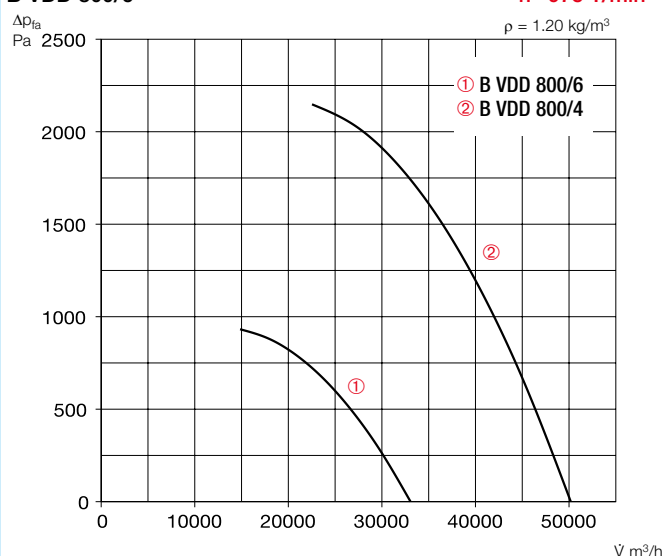
- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 800/4
B VDD 800/6

n=1480 1/min
n=975 1/min



■ Accessories

- B FDS 800/300** Ref no. 1868
- B FDS 800/500** Ref no. 1869
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 800** Ref no. 3523
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 800** Ref no. 3370
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 800** Ref no. 3471
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

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■ Application

- In mechanical smoke extraction systems (MRA) for ensuring smoke extraction in special structures, such as shops, large car parks, assembly places or industrial buildings.
- Smoke extraction with temperature classes F400 and F600.
- Also suitable for ventilation (dual-use).
- For increased ventilation requirements with a continuous air flow temperature of up to 120 °C.

■ Features

- Roof-mounted smoke exhaust fan as smoke extraction fan with dual-use (smoke extraction and ventilation).
- Robust design with efficiency-optimised casing for difficult operating conditions.
- High operational reliability due to minimum maintenance efforts.
- Ready-for-use delivery for easy installation.
- Base plate with threaded bolts for easy mounting of intake-side accessories.
- Standard PTC resistor as motor protection for ventilation operation (motor protection devices must be automatically deactivated for max. operating duration in case of fire).

- Motor outside of air flow, enclosed in self-ventilated motor casing for optimal motor cooling.
- Comprehensive accessories enable the perfect coordination with property-specific requirements.
- Isolator switch for electrical connection as standard.
- Perfectly tuned for operation with frequency inverter.

■ Casing

- Made from seawater-resistant aluminium, for maximum weather protection.
- Base plate with inlet nozzle and motor support made from powder-coated sheet steel.
- Vertical air outlet prevents damage to adjacent parts of the building in case of fire.
- Discharge-side aluminium guard.
- Standard transport lug for simple positioning.
- Attractive architecture design.

■ Impeller

- Directly driven high-performance centrifugal impeller, with eight backward curved blades.
- Powder-coated sheet steel design.
- Single-side inlet.
- Dynamically balanced, quality class 6.3.

- High efficiency for maximum output with low-noise operation.
- Direct mounting of hub and motor shaft.

■ Motor

- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.
- High-quality smoke exhaust motor for high environmental temperatures, perfectly tuned for use in smoke extraction fans.
- Enclosed motor design, protection class IP55.
- Winding in insulation class H.
- Motor outside of air flow, protected from this by thermal separation.
- Innovative cooling concept for motor, perfectly tuned for smoke extraction with frequency inverter operation and reduced speed.
- Motor cooling air flow through intake duct. Automatic flow during fan operation.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

■ Speed control

- Optimal ventilation through speed control by means of fre-

- quency inverter.
- Smoke extraction possible with operation through frequency inverter, elaborate bypass circuit can be omitted in case of fire.
- It must be ensured that operation takes place at the speed required for the smoke extraction flow rate for smoke extraction.
- Frequency inverter with all-pole sine filter and special operating mode for smoke ventilation operation is essential (Accessories).

■ Dual-use

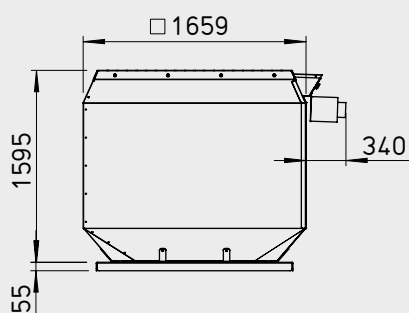
- Approved for daily ventilation and smoke extraction.
- Ventilation in continuous operation possible.
- High efficiency meets the ERP requirements for dual-use smoke extraction fans.

■ Assembly/Installation

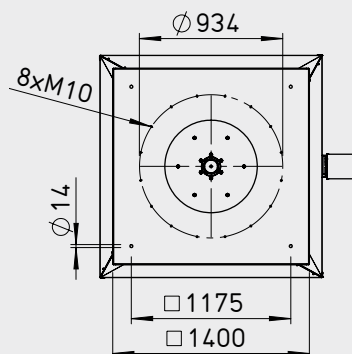
- Outdoors on horizontal roof (vertical motor shaft) or roof purlin box. Roof purlin box see Accessories.
- Snow load class 0 pursuant to DIN EN 12101-3, installation on roofs above heated rooms. Discharge-side deflector see Accessories.
- Standard transport lug for simple positioning.
- Intake-side connectable acces-

Type	Ref. no.	Speed	Output free-blowing	Sound pres. casing-radiated	Nominal motor output	Nominal motor current	Starting current	Wiring diagram	Weight net ca.	Smoke ventilation fan control system		Full motor prot. dev.* for connection of integrated PTC resistor	
										Type	Ref. no.	Type	Ref. no.
F400 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 900/4 F400	1719	1475	68550	89	45.00	80.90	607	1261	650	EVS-SD 009	4578	MSA	1289
B VDD 900/6 F400	1720	975	45300	82	15.00	28.20	217	1261	435	EVS-SD 005	4582	MSA	1289
F600 Single speed, three phase motor 400 V, 50 Hz, protection class IP55													
B VDD 900/4 F600	1721	1475	68550	89	45.00	80.90	607	1261	650	EVS-SD 009	4578	MSA	1289
B VDD 900/6 F600	1723	975	45300	82	15.00	28.20	217	1261	435	EVS-SD 005	4582	MSA	1289

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.



All dimensions in mm



sories can be attached to the threaded bolts in the base plate (hole pattern according to DIN 24155).

■ Air flow temperature

- Temp. class F400 and F600
- Smoke extraction 400 °C/120 minutes, and 600 °C/120 minutes.
- 120 °C continuous air flow temperature.
- For ambient temperatures from -20 °C to +60 °C.

■ Noise levels

- The horizontally radiated noise is specified in the type table as sound pressure level in 4 m (freefield conditions).
- Different installation situations or disturbed flow can lead to noise increases.
- Roof fan attenuator and attenuator insert for roof purlin box see Accessories.

■ Motor protection

- All types have PTC resistors in the motor winding as standard.
- PTC resistor assessment by suitable full motor protection device, MSA, EVS or frequency inverter (Accessories).
- The motor protection must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

■ Voltages and frequencies

- Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Electrical connection

- To external isolator switch in protection class IP65.
- Locking option in position "0 OFF" and "I ON" of isolator switch by means of on-site padlock.
- Fans with a nominal motor output up to 2.20 kW can be directly activated, with star-delta start-up for 3.00 kW and above.

■ Delivery information

- Ready-to-use units, completely pre-assembled.
- Simple positioning with standard transport lug.

■ Safety information

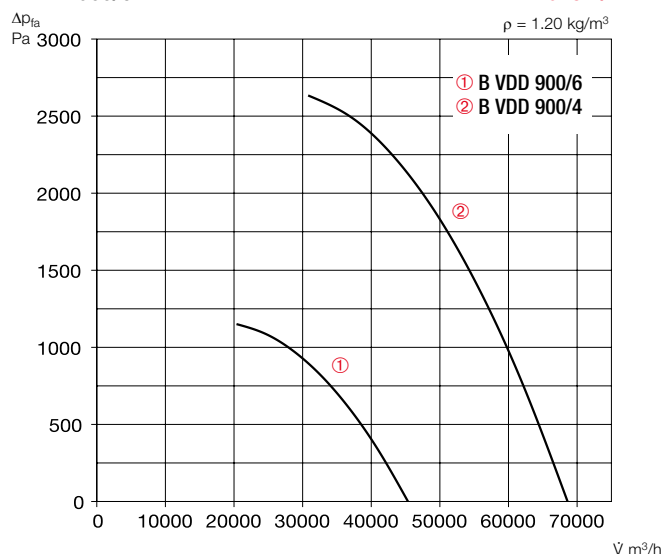
- Discharge-side with aluminium guard as standard. Prevents penetration of leaves, solids and provides protection against contact.

■ Fire test

- Successfully tested according to DIN EN 12101-3: 2015-12.

B VDD 900/4
B VDD 900/6

n=1475 1/min
n=975 1/min



■ Accessories

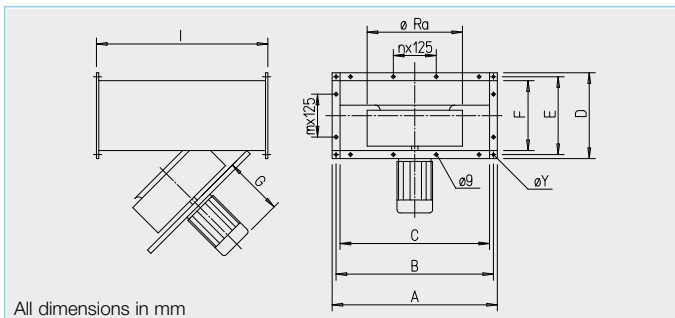
- B FDS 900/300** Ref no. 1884
- B FDS 900/500** Ref no. 2000
- Roof purlin box for B VDD F400 and F600 for mounting on flat roof.
- B SSD 900** Ref no. 3532
- Attenuator insert with connectors for roof purlin box for intake-side noise reduction. Roof purlin box B FDS with 300 or 500 mm height required.
- B HSDV 900** Ref no. 3372
- Roof fan attenuator with inner core for discharge-side noise reduction.
- B DEF 900** Ref no. 3473
- Deflector for mounting on B VDD F400 and F600. Prevents penetration of snow in roof-mounted smoke exhaust fan. Can be installed directly on B VDD.

■ Important information

The unhindered discharge of smoke gases must be possible at all times. Smoke extraction fans require a secure power supply in case of fire. With regard to functional integrity and the laying of the electrical cable systems, the relevant regulations shall apply. The smoke extraction fan must remain functional for the intended smoke extraction period (functional integrity). Motor protection devices must be automatically bridged in case of smoke extraction (deactivation) to ensure the maximum function duration.

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All dimensions in mm

Type	A	B	C	D	E	F	G	I	ØY
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
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	358	775	9
BKD 400/4/4/60/35	640	620	600	390	370	350	285	775	9

■ Application

- For ensuring smoke and heat extraction in preventative fire protection for individual rooms, corridors, escape routes or entire buildings. Also for prevention of "flashover".
- For areas of application with air flow temperatures from 400 °C/120 Min. (F400).
- Versatile for general smoke extraction tasks.
- Wherever easy access is necessary for cleaning and maintenance.

■ Air flow temperature

Temperature range 400 °C /120 min. (in smoke extraction) and ambient temperatures from -20 °C to +40 °C.

■ Features

- Hinged motor-impeller unit for inspection and cleaning. All parts easily accessible.
- Robust design for difficult operating conditions.
- Standard motor protection

against thermal overload through integrated thermal contacts (to be bridged in case of smoke extraction).

- Additional cooling wheel on the motor shaft for effective heat dissipation.
- Ready-for-use delivery for easy installation.
- High operational reliability due to minimum maintenance efforts.

■ Casing

- Made from galvanised sheet steel. Rectangular, for direct installation in ducting. Inlet and outlet with holes for connection of standard flanges.
- Compact design for simple integration in smoke extraction ducts, without height offset.

■ Impeller

- Directly driven, backward curved centrifugal impeller made from galvanised steel.
- Dynamically balanced, quality class 6.3.

■ Motor

- For single speed fans with three phase motor and a nominal motor output ≤ 2.20 kW, the connection is provided for direct start-up, fans with a nominal motor output ≥ 3.00 kW for star-delta start-up.
- Special motor for use with high air flow temperatures.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).
- Enclosed design in IP55, with self-ventilation, storage with sufficient lubricant for service life.
- Winding with humidity protection in insulation class F.
- Motor outside of air flow, protected from this by thermal separation.
- Additional impeller for atmospheric cooling.
- Design according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 and VDE 0700 / DIN EN 60335-1.

■ Full motor protection

- All types have thermal contacts. Their connections are led out to the terminal board and must be wired to the suitable full motor protection device (Accessories). The motor protection devices must be bridged in smoke extraction operation.

■ Electrical connection

- Freely accessible terminal box (protection class IP55) mounted to motor. When cutting the connection cable to length, consider the pivoting range of the motor-impeller unit.

■ Assembly/Installation

- **For installation outside the fire/temperature-critical rooms.**
- Installation in any position. Consider pivoting range and ease of access to motor-impeller unit.
- When using as smoke exhaust fan, the motor must only be suspended with a horizontal installation position.

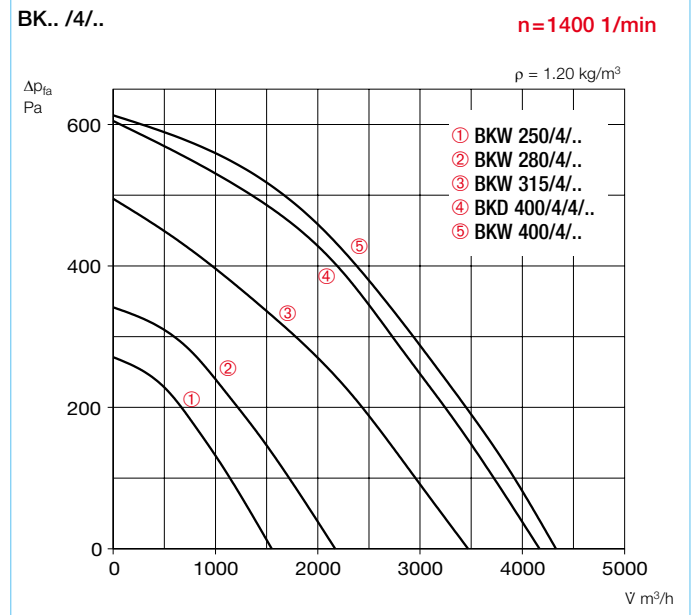
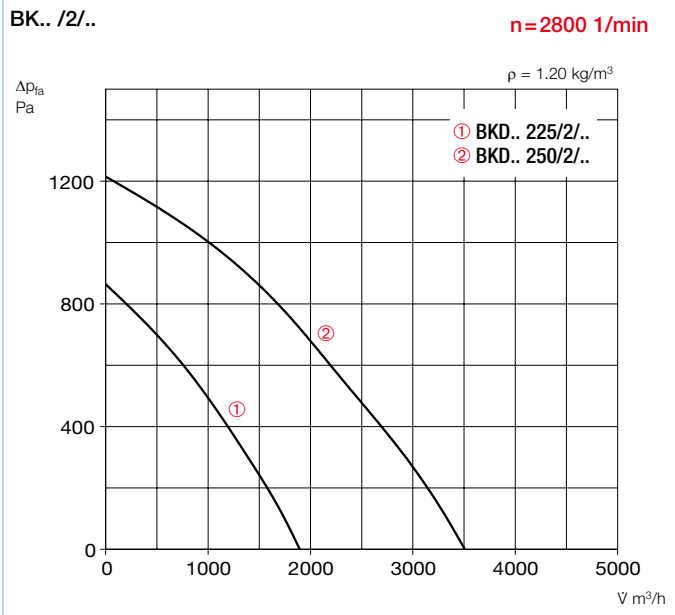
Type	Ref no.	Speed	Output free-blowing	Sound pres. casing-radiated	Power consumption		Wiring diagram	Weight net ca.	Full motor protection device* for connection of integrated thermal contacts		Smoke ventilation fan control system	
					kW	A			Type	Ref no.	Type	Ref no.
Single speed, single phase motor 230 V, 50 Hz, capacitor motor, protection class IP55, with thermal contact												
BKW 250/4/50/30	8552	1350	1550	45	0.16	0.80	1268 ¹⁾	36	MD	5849	EVS-W 001	4595
BKW 280/4/50/30	8555	1370	2170	48	0.16	0.82	1268 ¹⁾	38	MD	5849	EVS-W 001	4595
BKW 315/4/60/35	8558	1320	3470	52	0.42	2.00	1268 ¹⁾	46	MD	5849	EVS-W 001	4595
BKW 400/6/60/35	8557	915	2750	45	0.30	1.62	1268 ¹⁾	57	MD	5849	EVS-W 001	4595
BKW 400/4/60/35	8559	1420	4330	55	1.36	6.90	1268 ¹⁾	58	MD	5849	EVS-W 001	4595
Single speed, three phase motor 400 V, 50 Hz, protection class IP55, with thermal contact												
BKD 225/2/2/40/20	8548	2630	1900	56	0.47	0.96	1234 ²⁾	34	MD ³⁾	5849	EVS-D 001	4594
BKD 250/2/2/50/30	8553	2720	3510	59	1.03	2.00	1234 ²⁾	37	MD ³⁾	5849	EVS-D 001	4594
BKD 400/4/4/60/35	8561	1350	4170	55	0.81	1.60	1234 ²⁾	60	MD ³⁾	5849	EVS-D 001	4594

* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.

³⁾ Type M 4, Ref no. 1571 is required for operation at two speed stages.

¹⁾ Principle layout SS-1269

²⁾ Principle layout SS-565



Note:

When using as smoke exhaust fan, it must be insulated according to DIN 4102-4 if damage to the surrounding area is expected due to the casing temperature.

Safety information

Protection against contact must be ensured for the impeller pursuant to DIN EN ISO 13857.

Noise levels

The radiated noise is specified in the type table as sound pressure level in dB(A) in 4 m in freefield conditions. Different installation conditions or disturbed flow can lead to noise increases.

Accessories

Counter flange GFB

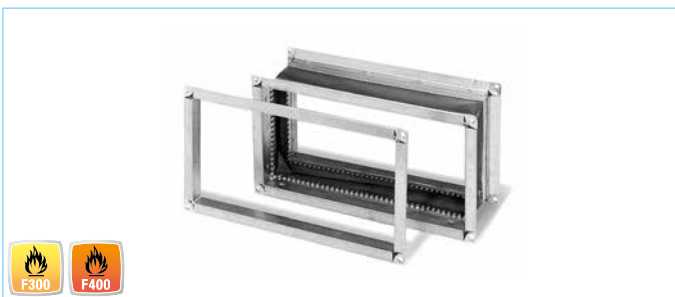
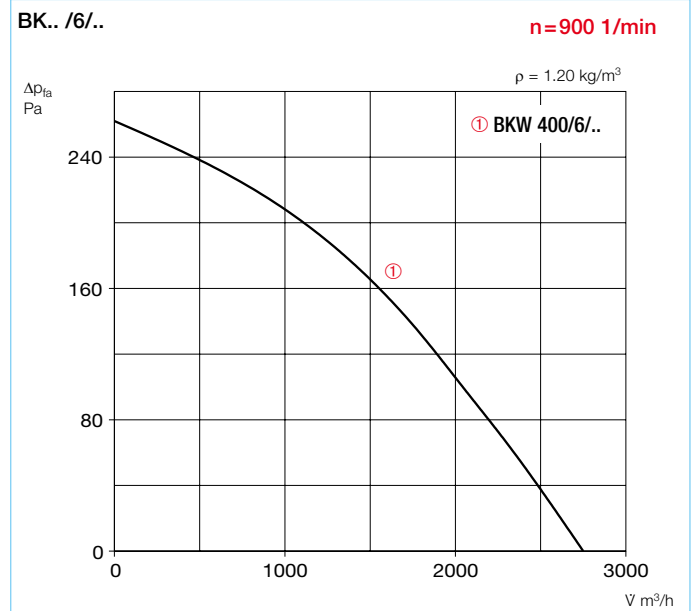
Galvanised sheet steel flange frame dimensionally adapted to the in-line rectangular fans for connection to duct.

Certification

The smoke extraction fans BK have been tested according to DIN EN 12101-3. DIBt approval: F400: Z-78.11-151 Certificate of performance reliability: F400: 0036-CPR-RG05-08

Flexible connector VSB

With flange frames on both sides. For prevention of structure-borne sound transmission and compensation of mounting tolerances.



Accessories for in-line rect. smoke exhaust fans BK..		Suitable for in-line rect. smoke exhaust fan	
Counter flange GFB Type	Ref no.	Flexible connector VSB Type	Ref no.
GFB 40/20	6871	VSB 40/20 F400	6844
GFB 50/30	6872	VSB 50/30 F400	6834
GFB 60/35	6873	VSB 60/35 F400	6835
			NG mm i.L.
			400 x 200
			500 x 300
			600 x 350

VSB = Temperature resistance from -30 °C to +130 °C, 400 °C for 2 hours.

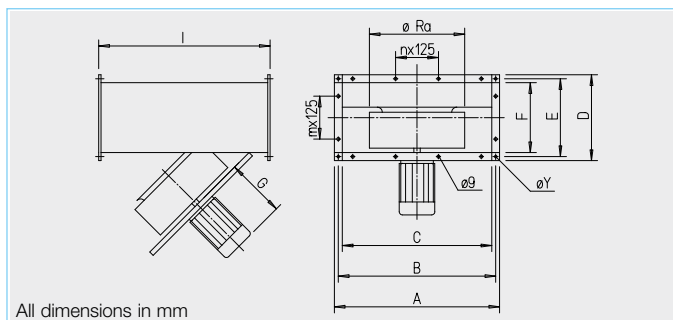
Important information

In case of smoke extraction, the electrical power supply must be fire-protected. Potential motor protection devices, control devices must be automatically bridged in case of fire (deactivated) and functionality at the maximum operating stage must be ensured.

Project planning info S. 3 ff.

Accessories Page

Mounting accessories 175 ff.
Control devices, switches 182 ff.



Type	A	B	C	D	E	F	G	I	Ø Y
BKW 450/6/70/40	740	720	700	440	420	400	274	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	274	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	358	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 710/6/120/60	1240	1220	1200	640	620	600	442	1200	9

■ Application

- For ensuring smoke and heat extraction in preventative fire protection for individual rooms, corridors, escape routes or entire buildings. Also for prevention of "flashover".
- For areas of application with air flow temperatures from 400 °C/120 Min. (F400).
- Versatile for general smoke extraction tasks.
- Wherever easy access is necessary for cleaning and maintenance.

■ Air flow temperature

Temperature range 400 °C /120 min. (in smoke extraction) and ambient temperatures from -20 °C to +40 °C.

■ Features

- Hinged motor-impeller unit for inspection and cleaning. All parts easily accessible.
- Robust design for difficult operating conditions.
- Standard motor protection against thermal overload through integrated thermal contacts (to be bridged in case of smoke extraction).
- Additional cooling wheel on the motor shaft for effective heat dissipation.
- Ready-for-use delivery for easy installation.
- High operational reliability due to minimum maintenance efforts.

■ Casing

- Made from galvanised sheet steel. Rectangular, for direct installation in ducting. Inlet and outlet with holes for connection of standard flanges.

- Compact design for simple integration in smoke extraction ducts, without height offset.

■ Impeller

- Directly driven, backward curved centrifugal impeller made from galvanised steel.
- Dynamically balanced, quality class 6.3.

■ Motor

- For single speed fans with three phase motor and a nominal motor output ≤ 2.20 kW, the connection is provided for direct start-up, fans with a nominal motor output ≥ 3.00 kW for star-delta start-up.
- Special motor for use with high air flow temperatures.
- Motor bearings can be monitored with Helios Bearing Condition Diagnostic System (Accessories).

- Enclosed design in IP55, with self-ventilation, storage with sufficient lubricant for service life.
- Winding with humidity protection in insulation class F.
- Motor outside of air flow, protected from this by thermal separation.
- Additional impeller for atmospheric cooling.
- Design according to IEC/T5 60034-1, IEC 72, VDE 530 / DIN EN 60034 and VDE 0700 / DIN EN 60335-1.

■ Full motor protection

- All types have thermal contacts. Their connections are led out to the terminal board and must be wired to the suitable full motor protection device (Accessories). The motor protection devices must be bridged in smoke extraction operation.

Type	Ref no.	Speed	Output free-blowing	Sound pres. casing-radiated	Power consumption		Wiring diagram	Weight net ca.	Full motor protection device* for connection of integrated thermal contacts		Smoke ventilation fan control system	
					kW	A			Type	Ref no.	Type	Ref no.
Single speed, single phase motor 230 V, 50 Hz, capacitor motor, protection class IP55, with thermal contact												
BKW 450/6/70/40	8562	870	4040	49	0.42	2.0	1268 ¹⁾	85	MD	5849	EVS-W 001	4595
BKW 500/6/80/50	8564	810	5620	52	0.58	2.6	1268 ¹⁾	105	MD	5849	EVS-W 001	4595
Single speed, three phase motor 400 V, 50 Hz, protection class IP55, with thermal contact												
BKD 450/4/4/70/40	8563	1380	6420	59	1.41	3.2	1234 ²⁾	87	MD ⁴⁾	5849	EVS-D 001	4594
BKD 500/4/4/80/50	8550	1370	10210	62	2.10	4.2	1234 ²⁾	108	MD ⁴⁾	5849	EVS-D 001	4594
BKD 560/6/6/80/50	8565	920	8610	56	1.31	3.8	1234 ²⁾	120	MD ⁴⁾	5849	EVS-D 001	4594
BKD 630/6/6/100/50	8566	950	10770	59	2.20	6.3	1234 ²⁾	150	MD ⁴⁾	5849	EVS-D 001	4594
Single speed, three phase motor 400 V, 50 Hz, protection class IP55, with PTC resistor												
BKD 560/4/80/50	8551	1435	12770	65	4.00	8.4	1235 ³⁾	142	MSA	1289	EVS-SD 001	4586
BKD 710/6/120/60	8568	954	15400	63	3.00	6.80	1235 ³⁾	185	MSA	1289	EVS-SD 001	4586

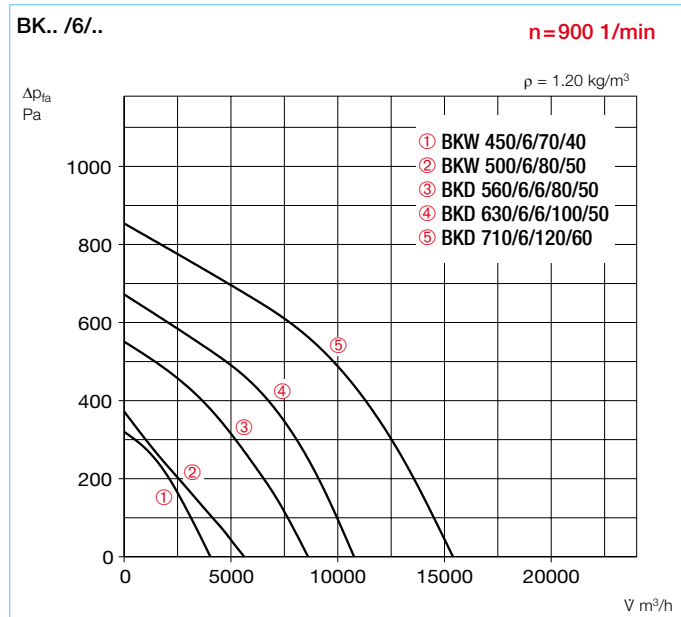
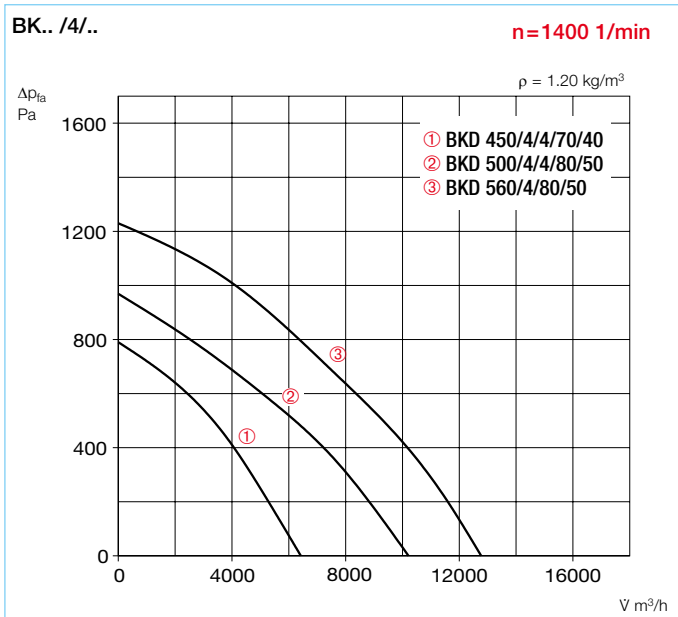
* These switch devices in the on-site control system must be bridged when using as smoke exhaust fan.

⁴⁾ Type M 4, Ref. no. 1571 is required for operation at two speed stages.

¹⁾ Principle layout SS-1269

²⁾ Principle layout SS-565

³⁾ Principle layout SS-565.1



■ Electrical connection

□ Freely accessible terminal box (protection class IP55) mounted to motor. When cutting the connection cable to length, consider the pivoting range of the motor-impeller unit. The motor protection devices must be bridged in smoke extraction operation.

■ Voltages and frequencies

□ Nominal voltage and frequency are specified in the table. These also form the basis for the performance data.

■ Assembly/Installation

- For installation outside the fire/temperature-critical rooms.
- Installation in any position. Consider pivoting range and ease of access to motor-impeller unit.
- When using as smoke exhaust fan, the motor must only be suspended with a horizontal installation position.

Note:

When using as smoke exhaust fan, it must be insulated according to DIN 4102-4 if damage to

the surrounding area is expected due to the casing temperature.

■ Safety information

Protection against contact must be ensured for the impeller pursuant to DIN EN ISO 13857.

■ Noise levels

The radiated noise is specified in the type table as sound pressure level in dB(A) in 4 m in freefield conditions. Different installation conditions or disturbed flow can lead to noise increases.

■ Certification

The smoke extraction fans BK have been tested according to DIN EN 12101-3. DIBt approval: F400: Z-78.11-151 Certificate of performance reliability: F400: 0036-CPR-RG05-08

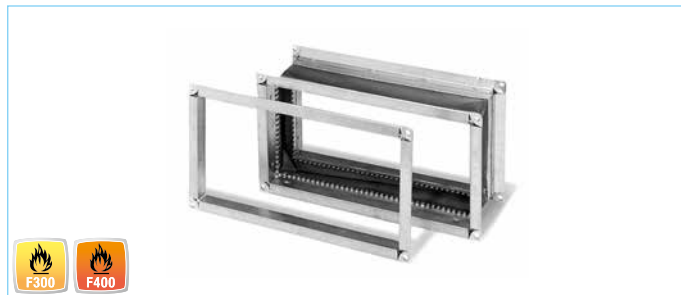
■ Accessories

Counter flange GFB

Galvanised sheet steel flange frame dimensionally adapted to the in-line rectangular fans for connection to duct.

Flexible connector VSB

With flange frames on both sides. For prevention of structure-borne sound transmission and compensation of mounting tolerances.



Accessories for in-line rect. smoke exhaust fans BK..

Counter flange GFB		Flexible connector VSB		Suitable for in-line rect. smoke exhaust fan NG mm i.L.
Type	Ref no.	Type	Ref no.	
GFB 70/40	6874	VSB 70/40 F400	6836	700 x 400
GFB 80/50	6847	VSB 80/50 F400	6838	800 x 500
GFB 100/50	6848	VSB 100/50 F400	6839	1000 x 500
GFB 120/60	6845	VSB 120/60 F400	6842	1200 x 600

VSB = Temperature resistance from -30 °C to +130 °C, 400 °C for 2 hours.

■ Important information

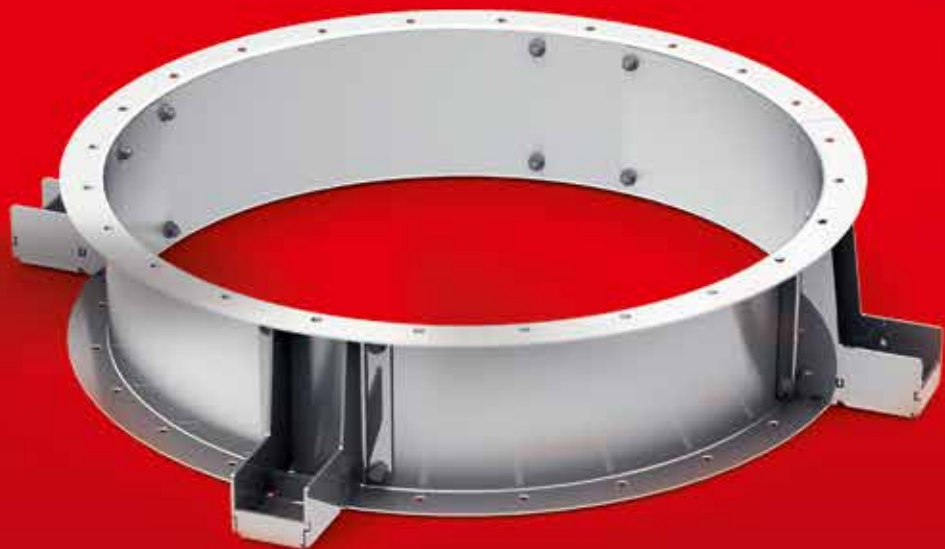
In case of smoke extraction, the electrical power supply must be fire-protected. Potential motor protection devices, control devices must be automatically bridged in case of fire (deactivated) and functionality at the maximum operating stage must be ensured.

Project planning info S. 3 ff.

■ Accessories Page

Mounting accessories 175 ff.
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Tailored system components and perfectly coordinated mounting accessories.



Whatever you need for installation and line connection, at Helios you will find the matching system components for smoke exhaust fans. From the new mounting ring MRV for vertical fan mounting to the automatic backdraught shutter and anti-vibration mounts.

Thus nothing can go wrong with the installation. Expensive adaptations through elaborate, handcrafted constructions are no longer necessary. The installation times are reduced. Helios always focuses on integrated complete solutions with accessories that are perfectly tailored to the fans. In addition to the special mounting accessories for smoke exhaust fans, you will find other system components on the following pages.

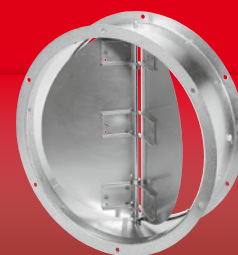




**CENTRIFUGAL
COOLING AIR FAN**

174

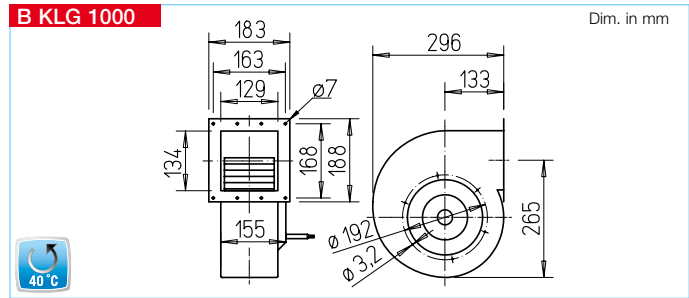
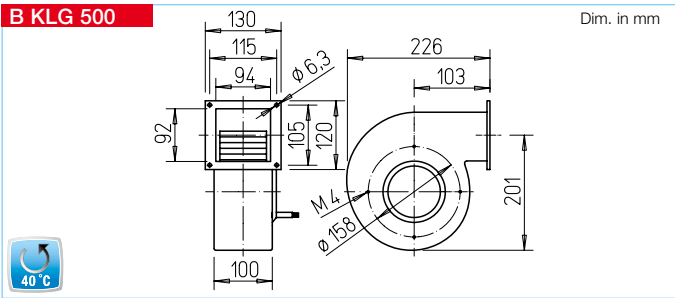
Centrifugal cooling air fan B KLG (with separate external thermal contact) for the additional motor ventilation for smoke exhaust fans (**B AVD** and **B VAR**) in temperature class **F600**.



**MECHANICAL
MOUNTING
ACCESSORIES**

175^{ff}

- Bell mouth inlet + guard ASD-SGD
- Guard SG
- Backdraught shutter RVS
- Extension duct VR
- Flanged flex. connector STSB
- Mounting bracket MK
- Roof purlin box FDS B
- Base attenuator for roof purlin box B SSD
- Roof fan attenuator B HSDV
- Anti-vibration mounts
- Counter flange
- Rectangular flex. connector VSB
- Diffuser DIF
- Mounting ring MRV
- Flanged circular attenuator RSD



Centrifugal cooling air fan
with separate external thermal
contact and intake-side guard for
smoke exhaust fans F600 for motor
ventilation.

An electronic air flow sensor (Ac-
cessories, type SWE, Ref no. 0065)
for monitoring the motor cooling is
required for ventilation operation.

Technical data
Type B KLG 500 **Ref no. 2798**

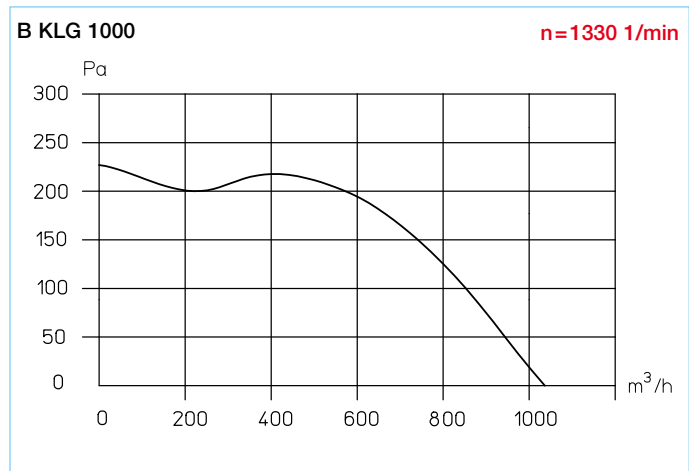
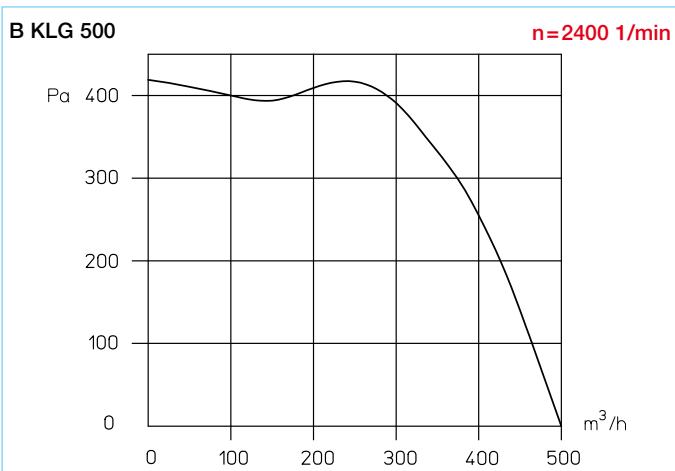
Protection class	IP44
Voltage	230 V
Frequency	50 Hz
Current	0.7 A
Power	160 W
Max. ambient temperature	40 °C
Speed	2400 1/min
Flow rate	500 m ³ /h

Centrifugal cooling air fan
for smoke exhaust fans and in-
take-side guard F600 for motor
ventilation.

An electronic air flow sensor
(Accessories, type SWE, Ref no.
0065) for monitoring the motor
cooling is required for ventilation
operation.

Technical data
Type B KLG 1000 **Ref no. 2799**

Protection class	IP44
Voltage	400 V
Frequency	50 Hz
Current	0.39 A
Power	175 W
Max. ambient temperature	40 °C
Speed	1330 1/min
Flow rate	1030 m ³ /h



■ Selection table – cooling air volume for B VAR..

Type	Fan	Cooling air vol. required, V [m ³ /h]	Quantity	B VAR casing [Pa] ¹	still available Δp _{ex} [Pa] ²
B VAR	B KLG				
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	-	-	-	-	-

Cooling air temperature max. 40 °C

¹Resistance in the fan/cooling system

²Available pressure at the cooling air fan outlet

■ Selection table – cooling air volume for B AVD..

Type	Fan	Cooling air vol. required, V [m ³ /h]	Quantity	B VAR casing [Pa] ¹	still available Δp _{ex} [Pa] ²
B AVD	B KLG				
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

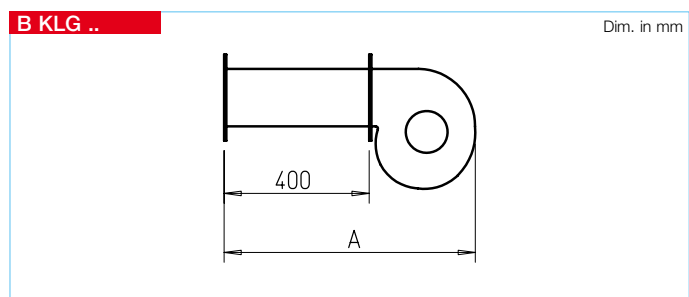
Cooling air temperature max. 40 °C

¹Resistance in the fan/cooling system

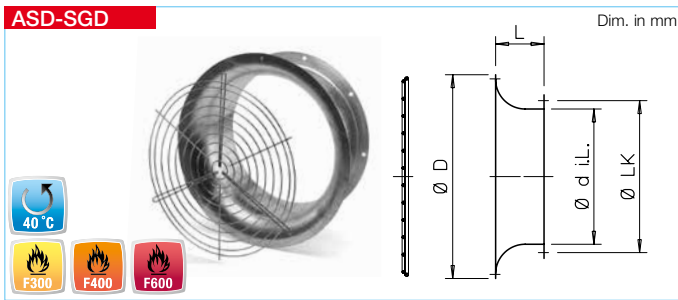
²Available pressure at the cooling air fan outlet

■ 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	-



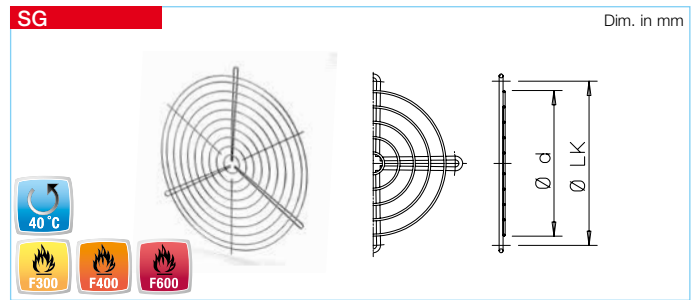
Assignment, see adjacent table.



Bell mouth + guard
with large inlet radius. Made from hot-dip galvanised sheet steel. With flange on connection side ac-

ording to DIN 24155, pt. 2. Powder-coated guard to cover intake-side (galvanised from \varnothing 800), according to DIN EN ISO 13857.

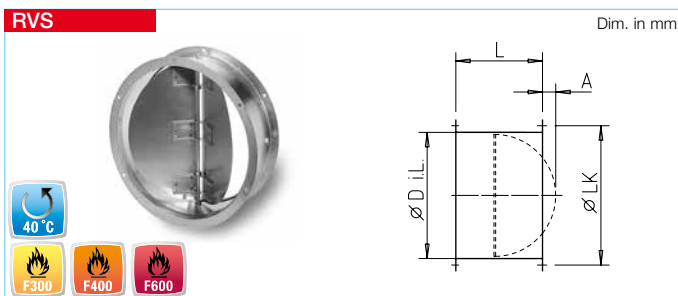
Type	Ref no.	\varnothing D	L	\varnothing d i.L.	\varnothing LK	Weight ca. kg
ASD-SGD 280	1415	400	140	280	322	3.2
ASD-SGD 315	1416	435	140	315	356	3.5
ASD-SGD 355	1417	475	140	355	395	4.0
ASD-SGD 400	1418	545	140	400	438	4.5
ASD-SGD 450	1419	595	140	450	487	5.7
ASD-SGD 500	1420	625	140	500	541	6.3
ASD-SGD 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	1490	200	1250	1311	45.0



Guard SG
Powder-coated guard to cover intake-side, colour: metallic silver (galvanised from \varnothing 800). Dimen-

sions and fastening lugs tailored to fan flange tube NG DIN 24155, pt. 2. according to DIN EN ISO 13857.

Type	Ref no.	\varnothing d	\varnothing LK	Weight ca. 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	1174	6.5	4
SG 1250	1914	1270	1311	8.0	4

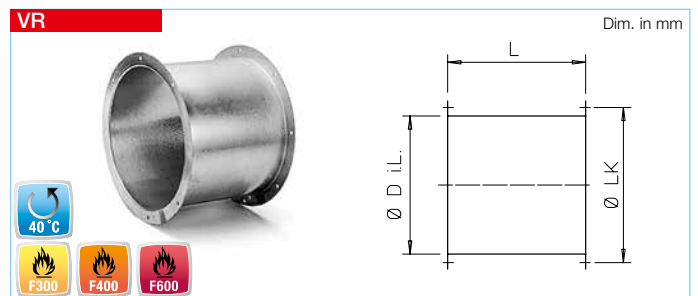


Automatic backdraught shutter with spring reset¹⁾
Horizontal installation in any direction, vertical installation with air flow from bottom to top. Shutter opening in air flow direction; automatic function through fan operation.

Spring mechanism outside air flow. Fan output and installation position adjustable according to closing force. Shutter and casing made from galvanised sheet steel, NG 225 – 560 mm aluminium shutters. Flange on both sides. Drill holes pursuant to DIN 24155, pt. 2.

Type ²⁾	Ref no.	\varnothing D i.L.	L	A	\varnothing LK	Weight ca. 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	10	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

¹⁾ Pressure loss diagram and motor-operated version RVM for ventilation (cold operation 40 °C) see main Helios catalogue

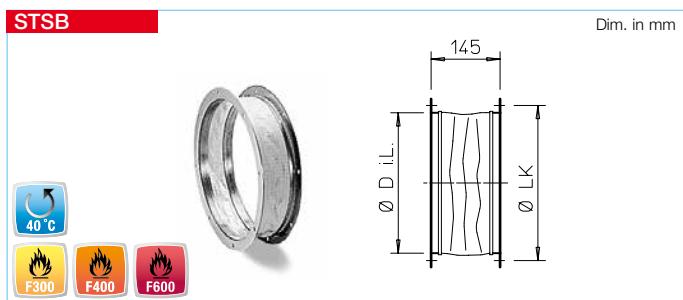


Extension duct VR
Duct section with flanges on both sides and drill holes pursuant to DIN 24155, pt. 2. Made from hot-dip galvanised sheet steel, for the extension of fan shaft.

For types with protruding motor, for installation in ducting. Prevents performance losses from free outlet.

Type	Ref no.	\varnothing D i.L.	L	\varnothing LK	Weight ca. 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

²⁾ Ambient temperature -30 to +100 °C

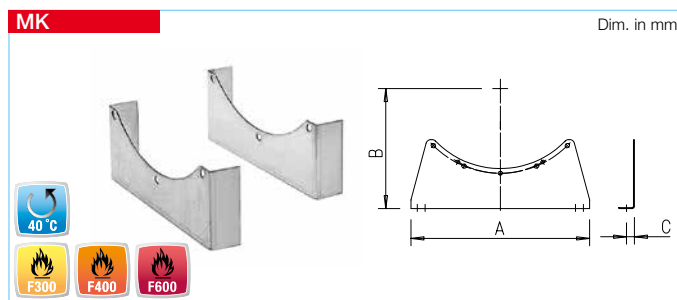


Flanged flexible connector STSB

Flexible connector for installation between the fan and ducting system. Prevents structure-borne sound transmission.

Elastic glass fibre sleeve (max. +600 °C). Galvanised angled flange rings or flat flanges on both sides for F400 and F600. Dimensions according to DIN 24155 pt. 2. (see table for permissible temperature & operating point).

Type	Ref no.	Type	No.	NG mm	Ø D i.L.	Ø LK	Weight ca. kg
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	5806	1120	1120	1174	16.5
STSB 1250 F400	1923	STS 1250	9523	1250	1250	1311	19.0
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



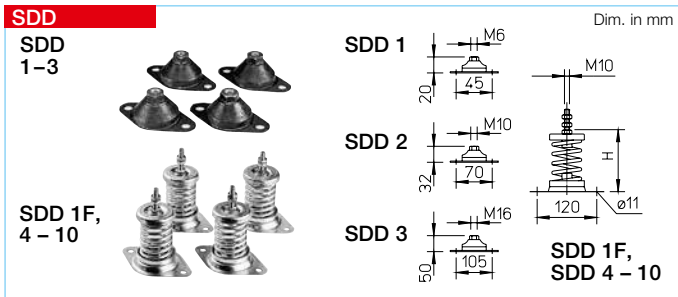
Mounting bracket MK

For mounting the fan flange casing to the ceiling, wall or floor. Made from galvanised sheet steel (up to Ø 1000) or hot-dip galvanised steel. Holes adapted to the hole circle in the fan flanges. Supplied as a pair including screws and nuts.

Note:

If motors with high weight are installed, an extension duct (VR..) must be provided to move the centre of gravity. Attach the brackets to the two external flanges.

Type	Ref no.	A	B	C	Weight ca. kg
MK 250-280	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

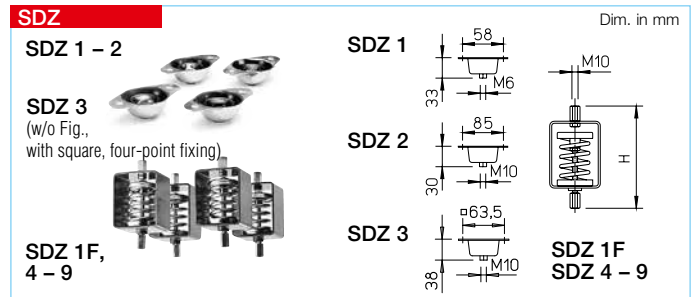


Anti vibration mounts for pressure loading for vibration and sound-insulating installation of fans. Delivery unit 1 set = 4 pcs.

Rubber-bonded metal elements should be used for temp. up to max. +60 °C, and spring elements should be used for temp. above +60 °C (e.g. smoke ventilation).

Type	Ref no.	max. fan weight kg	H Height in mm	Spring element	Temperature resistance
SDD 1	1452	80	*		60 °C
SDD 2	1453	180	*		60 °C
SDD 3	1367	750	*		60 °C
SDD 1F	1942	80	112-87	•	600 °C
SDD 4	1944	130	112-87	•	600 °C
SDD 5	1924	210	112-86	•	600 °C
SDD 6	1926	350	112-85	•	600 °C
SDD 7	1928	520	112-85	•	600 °C
SDD 8	1930	900	112-82	•	600 °C
SDD 9	1934	1300	112-85	•	600 °C
SDD 10	1951	1800	112-88	•	600 °C

* shown in dimensional drawing

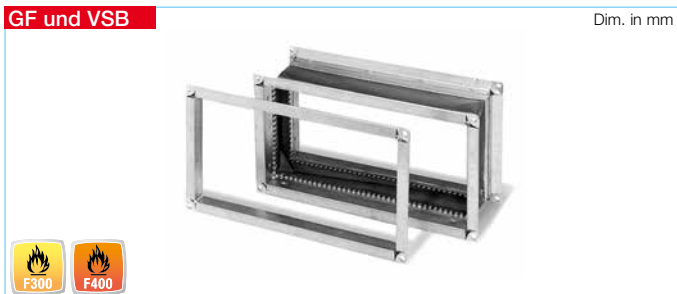


Anti vibration mounts for tensile loading for vibration and sound-insulating suspension (ceiling installation). Design like series SDD.

Important installation note
Ensure even load distribution (balance centre of gravity for heavy motor) during installation. Delivery unit 1 set = 4 pcs.

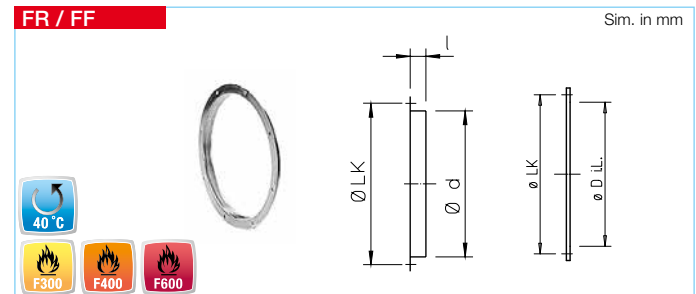
Type	Ref no.	max. fan weight kg	H Height in mm	Spring element	Temperature resistance
SDZ 1	1454	60	*		60 °C
SDZ 2	1455	160	*		60 °C
SDZ 3	1366	300	*		60 °C
SDZ 1F	1943	80	190-215	•	400 °C
SDZ 4	1945	130	190-215	•	400 °C
SDZ 5	1925	210	190-216	•	400 °C
SDZ 6	1927	350	190-217	•	400 °C
SDZ 7	1929	520	190-217	•	400 °C
SDZ 8	1931	900	190-220	•	400 °C
SDZ 9	1935	1300	190-217	•	400 °C

* shown in dimensional drawing



Counter flange GFB
Galvanised sheet steel flange frame dimensionally adapted for rectangular inline duct fans for connection to ducting.

Connector VSB
With flange frame on both sides. For preventing structure-borne sound transmission and compensating for installation tolerances.

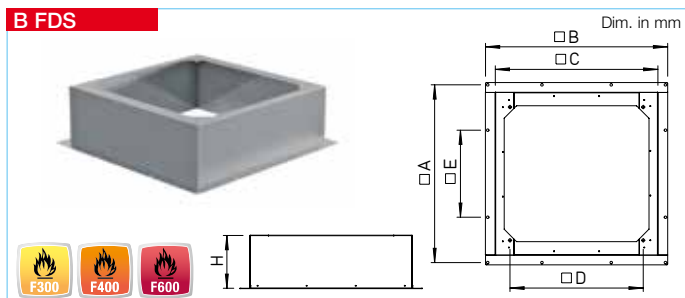


Counter flange FR / Flat flange FF
Angled flange ring / flat flange ring made from galvanised sheet steel. Dimensions/holes according to DIN 24155 pt. 2.

Accessories for inline duct smoke exhaust fans BK..				Suitable for
Counter flange GFB		Connector VSB		Inline smoke exhaust fan
Type	Ref no.	Type	Ref no.	NG mm i.L.
GFB 40/20	6871	VSB 40/20 F400	6844	400 x 200
GFB 50/30	6872	VSB 50/30 F400	6834	500 x 300
GFB 60/35	6873	VSB 60/35 F400	6835	600 x 350
GFB 70/40	6874	VSB 70/40 F400	6836	700 x 400
GFB 80/50	6847	VSB 80/50 F400	6838	800 x 500
GFB 100/50	6848	VSB 100/50 F400	6839	1000 x 500
GFB 120/60	6845	VSB 120/60 F400	6842	1200 x 600

VSB = Temperature resistance from -30 °C to +130 °C, 400 °C for 2 hours.

Type	Ref no.	Type	Ref no.	Ø LK	l	Ø d	Ø d i.L.	Weight ca. kg	
								FR	FF
FR 280	1214	FF 280	4942	322	30	292	286	0.9	0.9
FR 315	1204	FF 315	4943	356	30	326	321	1.0	1.0
FR 355	1205	FF 355	4944	395	30	365	361	1.1	1.1
FR 400	1206	FF 400	4945	438	30	408	409	1.2	1.2
FR 450	1207	FF 450	4946	487	35	457	459	1.4	1.3
FR 500	1208	FF 500	4947	541	35	511	509	1.6	1.5
FR 560	1209	FF 560	4948	605	35	574	569	1.9	2.1
FR 630	1211	FF 630	4949	674	35	642	639	2.2	2.3
FR 710	1212	FF 710	4950	751	35	715	719	2.5	3.1
FR 800	1198	FF 800	4951	837	35	806	809	3.7	3.9
FR 900	1199	FF 900	4952	934	35	903	909	3.8	4.4
FR 1000	1210	FF 1000	4953	1043	35	1012	1009	4.1	5.0
FR 1120	1362	FF 1120	4954	1174	50	1126	1129	8.0	5.5
FR 1250	1913	FF 1250	4955	1311	50	1256	1259	9.0	6.0



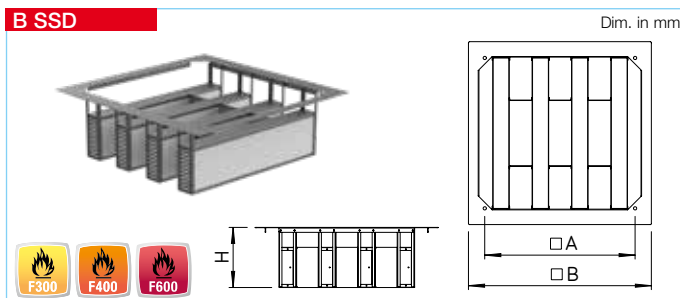
Roof purlin box B FDS

Base for roof smoke exhaust fans on flat roofs. Powder-coated sheet steel design, with abrasion-resistant, sound and thermal insulation.

Suitable for smoke extraction with temperature class F400 and F600. Available in height 300 and 500 mm, snow depth should be checked.

Installation:

Install base over ceiling opening (roof). Allow roof coating over entire adhesive edge of the base and seal with bitumen putty.



Base attenuator for roof purlin box B SSD

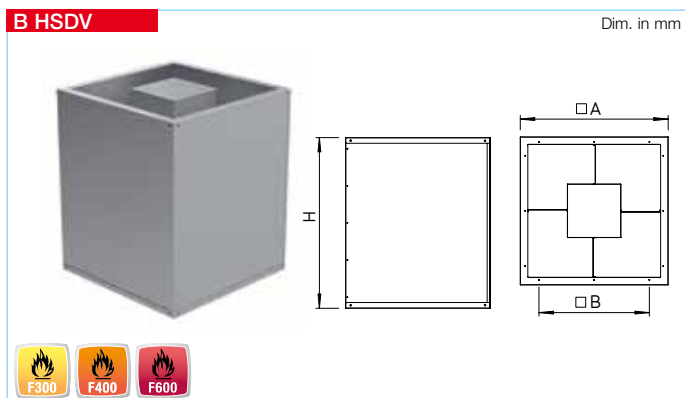
Base attenuator with connectors for insertion in roof purlin box, for intake-side sound insulation. Galvanised sheet steel design. Roof purlin box B FDS with 300 or 500 mm height required. Average insulation value 9 dB. Pressure loss coefficient $\zeta = 0.80$.

Installation:

Insert base attenuator into installed roof purlin box from top and fix to roof smoke exhaust fan and roof purlin box using screw connection. When using B SSD, the installation of intake-side accessories to the fan baseplate is not possible. Base attenuator can be retrofitted.

Type	Ref no.	A	B	C	D	E	H
B FDS 315/300	1765	770	820	570	450	255	300
B FDS 315/500	1766	770	820	570	450	255	500
B FDS 355/300	1767	835	885	635	535	280	300
B FDS 355/500	1768	835	885	635	535	280	500
B FDS 400/300	1767	835	885	635	535	280	300
B FDS 400/500	1768	835	885	635	535	280	500
B FDS 450/300	1793	920	970	720	590	305	300
B FDS 450/500	1800	920	970	720	590	305	500
B FDS 500/300	1804	1115	1165	915	750	370	300
B FDS 500/500	1810	1115	1165	915	750	370	500
B FDS 560/300	1804	1115	1165	915	750	370	300
B FDS 560/500	1810	1115	1165	915	750	370	500
B FDS 630/300	1866	1165	1215	965	840	390	300
B FDS 630/500	1867	1165	1215	965	840	390	500
B FDS 710/300	1868	1440	1490	1240	1050	480	300
B FDS 710/500	1869	1440	1490	1240	1050	480	500
B FDS 800/300	1868	1440	1490	1240	1050	480	300
B FDS 800/500	1869	1440	1490	1240	1050	480	500
B FDS 900/300	1884	1580	1630	1380	1175	525	300
B FDS 900/500	2000	1580	1630	1380	1175	525	500

Type	Ref no.	A	B	H
B SSD 315	3475	450	570	300
B SSD 355	3482	535	635	300
B SSD 400	3482	535	635	300
B SSD 450	3500	590	720	300
B SSD 500	3501	750	915	300
B SSD 560	3501	750	915	300
B SSD 630	3512	840	965	300
B SSD 710	3523	1050	1240	300
B SSD 800	3523	1050	1240	300
B SSD 900	3532	1175	1380	300



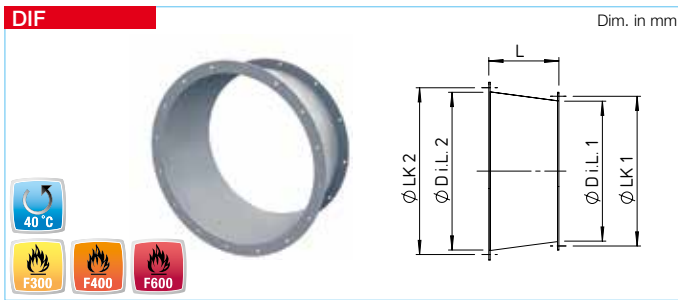
Roof fan attenuator B HSDV

With inner core for discharge-side sound insulation. High-quality aluminium design. Available for series B VDD F400 and F600, nominal size 315 to 900. Average insulation value 8 dB. Pressure loss coefficient $\zeta = 0.75$.

Installation:

The roof fan attenuator is attached to the roof smoke exhaust fan and can also be retrofitted without structural changes. Can only be attached to series B VDD F400 and F600.

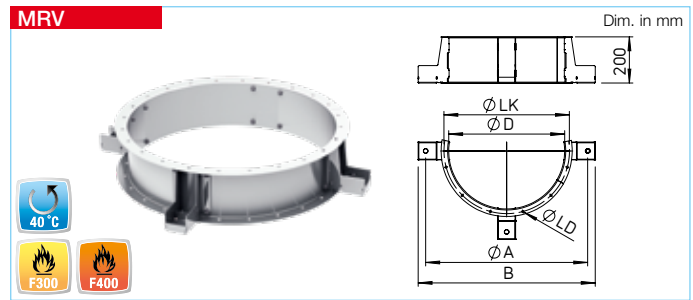
Type	Ref no.	A	B	H
B HSDV 315	3071	565	430	315
B HSDV 355	3081	640	485	355
B HSDV 400	3135	725	545	400
B HSDV 450	3136	810	605	450
B HSDV 500	3192	910	675	500
B HSDV 560	3193	1020	760	560
B HSDV 630	3203	1155	860	630
B HSDV 710	3253	1305	965	710
B HSDV 800	3370	1470	1085	800
B HSDV 900	3372	1635	1205	900



Diffuser DIF

Diffuser, flow-optimised for high pressure recovery. Delays the flow of air by size step, for the conversion of dynamic pressure into static pressure. Additional use as connector for an optimised transition to the next size. Specially designed for use directly behind a fan and at the end of a duct section as an outlet to the outside with

reduced outlet losses. High-quality design made from hot-dip galvanised sheet steel with welded flange on both sides, hole pattern according to DIN 24155. Approved for use in smoke ventilation for temperature classes F300, F400 and F600.



Mounting ring MRV

The mounting ring MRV is designed for the vertical fixing of fans (e.g. Helios types AVD, AMD, VAR etc.).

In each case, four mounting brackets for direct mounting or the

inclusion of anti-vibration mounts (SDZ or SDD) ensure the safe vertical installation of fans. The galvanised mounting rings MRV are temperature-resistant for smoke extraction: F300 and F400.

Type	Ref no.	Size step	L	Ø D.i.L 1	Ø LK 1	Ø D.i.L 2	Ø LK 2	Weight kg
DIF 280	3551	280 to 315	140	280	322	315	356	4.1
DIF 315	3552	315 to 355	160	315	356	355	395	4.9
DIF 355	3553	355 to 400	180	355	395	400	438	5.9
DIF 400	3554	400 to 450	200	400	438	450	487	7.0
DIF 450	3555	450 to 500	225	450	487	500	541	8.4
DIF 500	3556	500 to 560	250	500	541	560	605	11.5
DIF 560	3565	560 to 630	280	560	605	630	674	15.4
DIF 630	3566	630 to 710	315	630	674	710	751	19.0
DIF 710	3567	710 to 800	355	710	751	800	837	24.1
DIF 800	3568	800 to 900	400	800	837	900	934	37.8
DIF 900	3569	900 to 1000	450	900	934	1000	1043	45.7
DIF 1000	3570	1000 to 1120	500	1000	1043	1120	1174	54.9
DIF 1120	3571	1120 to 1250	560	1120	1174	1250	1311	66.5
DIF 1250	3572	1250 to 1400	630	1250	1311	1400	1465	81.3

Type	Ref no.	Ø A	B	Ø D	Ø LK	Ø LD	Weight kg	Load capacity kg
MRV 315	1755	510	576	315	356	9,5 (8x)	6.5	280
MRV 355	1759	550	618	355	395	9,5 (8x)	6.9	280
MRV 400	1760	595	662	400	438	9,5 (12x)	7.4	280
MRV 450	1761	650	714	450	487	9,5 (12x)	7.9	280
MRV 500	1740	700	765	500	541	9,5 (12x)	8.3	280
MRV 560	1741	770	827	560	605	11,5 (16x)	12.9	390
MRV 630	1742	840	898	630	674	11,5 (16x)	13.9	390
MRV 710	1743	920	980	710	751	11,5 (16x)	15.7	390
MRV 800	1744	1030	1101	800	837	11,5 (24x)	24.8	1050
MRV 900	1745	1130	1201	900	934	11,5 (24x)	27.0	1050
MRV 1000	1749	1230	1301	1000	1043	11,5 (24x)	29.1	1050
MRV 1120	1750	1350	1422	1120	1174	11,5 (24x)	31.7	1050
MRV 1250	1754	1480	1552	1250	1311	11,5 (24x)	34.5	1050

Flanged circular attenuator RSD

■ Design – Installation

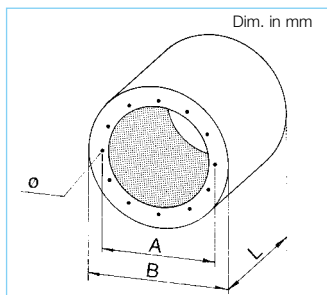
Galvanised steel casing. Lining with high-quality mineral wool, which is equipped with a fleece on the flow side against abrasion. The dimensions and fixing hole circle for all sizes are adapted to the standard fan diameter (R 20). Fixing holes according to DIN 24155, pt. 2.

■ Pressure losses

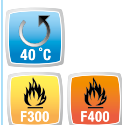
The flow resistances of the RSD attenuator are very low. The twofold friction resistance is taken into account for system calculations.

■ Insertion attenuation

Multiple circular attenuators with the same diameter can be arranged successively for greater insertion attenuation.

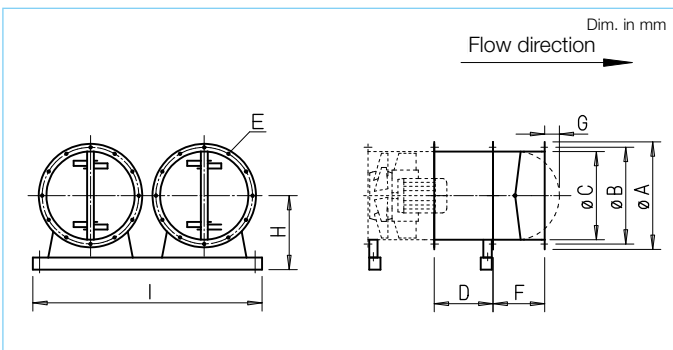


RSD



Type Nom. Ø	Ref no.	Basic length	L	Dimensions in mm			Weight ca. kg	Insertion attenuation D _e dB								Average insulation
				A	B	Hole Ø		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	

MP-P



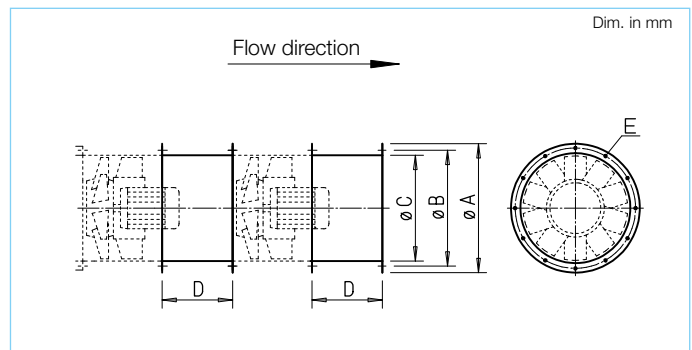
Mounting package MP-P for parallel P unit

Two fans connected in parallel provide high flow rates at the corresponding pressure rating and specifically meet the requirements for car park ventilation and smoke ventilation. Two fans arranged side by side in the P unit work in the

same duct system for the highest flow rates.

Scope of delivery: Extension ducts, backdraught shutters, mounting rails (2 pcs. each), mounting brackets (4 pcs.) and mounting kits.

MP-Z



Mounting package MP-Z for two-stage Z unit

Two fans connected in parallel ensure high power density and advantageous installation due to the lowest space requirement. The two fans are arranged successively and connected with extension ducts. Z unit for successive arrangement of

two identical fans, for the highest pressure ratings.

Scope of delivery: Extension ducts (2 pcs.) and mounting kit.

Type	Ref no.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)
MP-P 225	4884	277	259	225	300	6xø7.0	300	0	256	910
MP-P 250	4885	305	286	250	300	6xø7.0	300	0	263	945
MP-P 280	4886	346	322	280	300	8xø9.5	300	0	281	980
MP-P 315	4887	380	356	315	300	8xø9.5	300	0	317	1085
MP-P 355	4888	420	395	355	300	8xø9.5	300	0	336	1120
MP-P 400	4889	465	438	400	330	12xø9.5	330	0	347	1120
MP-P 450	4890	515	487	450	330	12xø9.5	330	15	397	1200
MP-P 500	4891	565	541	500	330	12xø9.5	330	40	445	1500
MP-P 560	4892	640	605	560	500	16xø11.5	330	65	477	1600
MP-P 630	4893	710	674	630	500	16xø11.5	400	115	527	1700
MP-P 710	4894	810	751	710	500	16xø11.5	400	155	639	1900
MP-P 800	4895	900	837	800	420	24xø11.5	420	200	689	2000
MP-P 900	4896	1000	934	900	420	24xø11.5	420	250	749	2200
MP-P 1000	4897	1100	1043	1000	420	24xø11.5	420	300	814	2400
MP-P 1120	4898	1220	1174	1120	420	24xø11.5	420	335	834	2500

Type	Ref no.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
MP-Z 225	4900	277	259	225	300	6xø7.0
MP-Z 250	4901	305	286	250	300	6xø7.0
MP-Z 280	4902	346	322	280	300	8xø9.5
MP-Z 315	4903	380	356	315	300	8xø9.5
MP-Z 355	4904	420	395	355	300	8xø9.5
MP-Z 400	4905	465	438	400	330	12xø9.5
MP-Z 450	4906	515	487	450	330	12xø9.5
MP-Z 500*	4907	565	541	500	330	12xø9.5
MP-Z 560	4908	640	605	560	500	16xø11.5
MP-Z 630	4909	710	674	630	500	16xø11.5
MP-Z 710	4910	810	751	710	500	16xø11.5
MP-Z 800*	4911	900	837	800	420	24xø11.5
MP-Z 900*	4912	1000	934	900	420	24xø11.5
MP-Z 1000	4913	1100	1043	1000	420	24xø11.5
MP-Z 1120	4914	1220	1174	1120	420	24xø11.5

* Additional extension duct (Accessories: Type VR) may be required. Fan motor protrusion (dim. B) must be taken into account.

Digital gas warning systems GWA. Measure. Control. Regulate.



Modern control and regulation technology is essential for the economic and safe operation of car park systems. The extensive Helios range offers a variety of system solutions that allow individual adaptation to the property. With a variety of clever and unique features, the new gas warning system (GWA) meet the highest requirements in terms of performance, energy and cost efficiency according to EN 50545-1.

At the heart of the gas warning system, the digital controller with a sophisticated logic and software according to EN 50271 (SIL 2) takes over the analysis of all incoming sensor signals (CO, NO₂, NO, LPG) and transmits commands to connected fans and signalling components. Potential free relays and analogue and digital inputs (e.g. fire alarm system) enable a wide variety of system applications. Freely configurable parameters and setpoints allow the optimal adaptation to different ventilation and smoke extraction scenarios.

**Gas warning system according to EN 50545-1
Software according to EN 50271(SIL 2)**

Electrical devices for the detection and measurement of toxic (and flammable) gases in underground car parks and tunnels.

Additional, often costly programmable controllers (SPS) in the switch cabinet can be omitted. The individual, almost unlimited variable use of Helios GWA is the key to optimised, economical and energy-efficient car park ventilation and smoke extraction.

The synergy between innovative measurement, control and regulation technology and the latest high-performance fans makes Helios the most technically advanced supplier in car park ventilation technology.



DIGITAL GAS WARNING SYSTEM

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Application examples for gas warning systems (GWA)

1. Demand-oriented, economical supply and extract ventilation.

Daily ventilation operation is controlled by the detection of harmful gas (CO, NO₂, NO, LPG), whereby the control of the jet fans and central extract air fans is carried out according to the maximum permissible pollutant concentration. Due to this demand-oriented ventilation, single jet fans run at a low speed or are deactivated by the control system in case of a low pollutant concentration. This is also the case for the main smoke and heat exhaust fans.

2. Maximum thrust in "smoke extraction" operating mode.

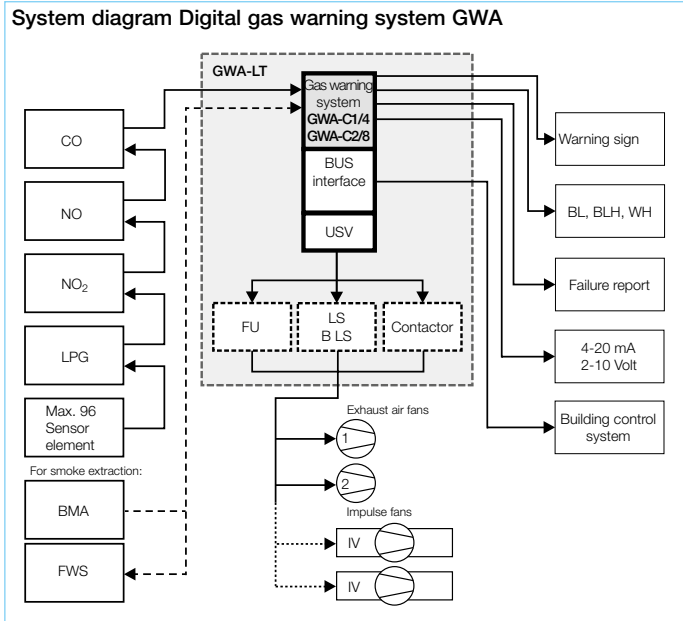
If the ventilation system also serves the powered smoke extraction, the use of a fire alarm system is required. Smoke detectors (on-site) locate the source of fire. The intelligent control logic of the GWA develops a control scenario from all incoming signals and activates the jet and central smoke and heat exhaust fans based on the requirements. Due to this selective smoke extraction from the fire location and the targeted smoke removal, smoke-free areas (primary protection aim) are created in the car park.



ELECTRONIC ACCESSORIES

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- Car park ventilation control system LS and B LS
- Smoke exhaust fan control system EVS
- Bearing condition diagnostic system LZD
- Frequency inverter FU
- Electr. control system EUR
- Electronic speed controller
- Pole and speed switch
- Isolator/main switch
- Full motor protection Switch and triggering device



The Helios gas warning system GWA was specially developed to monitor pollutant concentrations in car park and loading areas. The detection of pollutants can be adjusted to the specific requirements of the property by using different sensor elements. Furthermore, the GWA can be expanded to a complete system consisting of all necessary components, such as an uninterruptible power supply (UPS), smoke extraction function power unit for controlling fans, visual and acoustic warning devices as well as an interface for integration in the building control technology (GLT).

Description
Digital gas warning system pursuant to EN 50545, with software according to EN 50271 (SIL 2), installed in compact plastic casing. Can be expanded into an individual system with smoke extraction function and power unit, for controlling extract air and jet fans in switch cabinet.

Information

The systems can only be commissioned by the Helios Customer Service team. Gas warning systems must be maintained once a year. Performance range details in Helios TGA service catalogue Ref no. 85 934.

Controller for continuous monitoring with connection option for a total of 96 bus sensors.

Product features

- High system reliability due to permanent monitoring of sensors and fail-safe storage of all parameters.
- Simple operation of control system through six input buttons and a LCD display with plain text.
- Universal, easily understandable installation concept for all components.

Scope of delivery

The Helios gas warning system is available in two different compact variants, as well as a system solution individually tailored to property-specific customer requirements.

Compact variants 1 and 2
Type GWA-C1/4
Type GWA-C2/8

Gas warning system in compact plastic casing (RAL 7035) with viewing cover and cable glands. Standard connection option for warning devices. Control output with 2-10 V signal for demand-oriented speed control of EC fans or fans with frequency inverter. For controlling other fans, optimally expandable with the car park ventilation control system LS.

Individual system solution
Type GWA-LT

Gas warning system incl. matching power unit with frequency inverter or load contactor, for controlling extract air and jet fans. Standard connection option for EC fans via 2-10 V output. The property-specific system solution which is perfectly, individually matched to the set requirements. Also available with smoke extraction function for controlling the Helios smoke and heat exhaust fans. The motor protection devices in the smoke and heat exhaust fans are automatically bridged in case of fire, for ensuring functionality until the destruction of the fan in case of fire.

Alarm thresholds

Up to four alarm thresholds can be set per sensor. Three standard values for these alarm thresholds are preset upon delivery, but these can be adjusted to on-site conditions e.g. during commissioning. If alarm threshold 3 is exceeded of if a fault occurs, a transmission signal will be automatically generated.

Alarm threshold 1 and 2:
15 minute averaging process
Alarm threshold 3 and 4:
Actual value trigger

Relay

The gas warning system control unit has a defined number (see product table) of potential-free fault and alarm relays, which can be loaded with max. 250 V AC and 5.0 A. Various components such as extract air fans, jet fans or warning devices can be allocated to the individual alarm thresholds with the alarm relay.

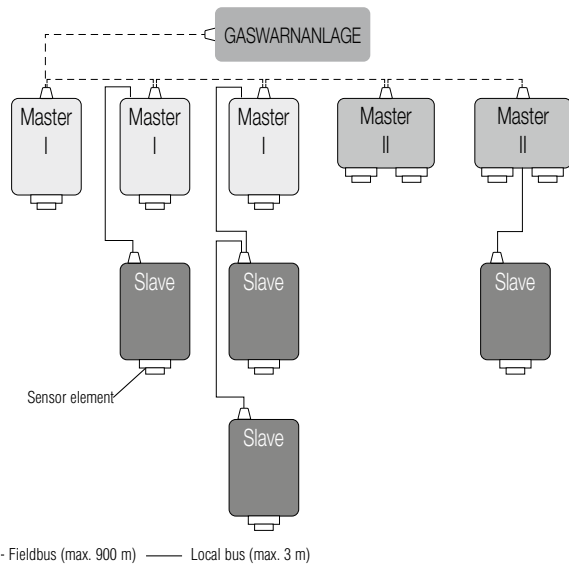
Uninterruptible power supply

The Helios gas warning system can be expanded with an optimally tailored uninterruptible power supply (UPS). Designed for the reliable functioning of the gas warning system, connected sensors and warning devices, also for at least 1 hour in case of a power failure. In this respect, the UPS has its own self-monitoring system and is delivered in a separate casing for the two compact variants, whereby the individual system solution is integrated in the switch cabinet.

Type	Ref no.	Voltage	Power supply 24V DC	Connection sensor elements	Fault relay	Alarm relay	Analogue inputs	Analogue outputs	Weight (w/o UPS)	Dimensions (WxHxD)	UPS			
											Type	Ref no.	Cap..	Dim. (WxHxD)
Compact variant 1	GWA-C1/4 5884	1-, 230V, 50/60 Hz	6.5	96	1	4	4	2	2.7	298x260x140	GWA-USV 2.2 5886	2.2 Ah	298x260x140	4 kg
Compact variant 2	GWA-C2/8 5885	1-, 230V, 50/60 Hz	6.5	96	1	8	8	4	3.4	298x420x140	GWA-USV 7.2 5887	7.2 Ah	410x260x140	7 kg
System solution	GWA-LT 8252	3-, 400V, 50/60 Hz	10	96	1	max. 32	max. 32	max. 16	A. A.	Upon request	GWA-USV 7.2	7.2 Ah	In switch cab.	7 kg

Application examples for sensors

Maximum 96 sensor elements



■ Sensors

The individual sensors for detecting pollutant concentrations consist of sensor casings and sensor elements.

□ Sensor casing

- Sensor casing made from plastic (protection class IP65) with cable glands. Sensor casing Master I optionally in stainless steel design (IP54). (Accessories: Opener for stainless steel casing: Type GWA-S OE, Ref no. 8215)
- Master I and Master II: Casing for connection of max. 3 sensor elements. Direct and indirect connection of sensor elements

possible via additional casings (Slave). Connection to gas warning system via fieldbus.

- Slave: Casing for connection of one sensor element. Connection to casing Master I or Master II via local bus.
- **Sensor element**
 - Sensor element for mounting to sensor casing Master I, Master II or Slave.
 - Available sensor elements: CO, NO, NO₂ and LPG.
 - The connection of max. 96 sensor elements is possible per gas warning system.

Sensor casing

– Master I
for connection to GWA via fieldbus and direct connection of sensor element. Additional connection of max. 2 sensor casings (Slave) possible via local bus. Optionally in stainless steel. For VA, connection of sensor casing Slave not possible.

GWA-SG K M1 Ref no. 5857
GWA-SG VA M1 Ref no. 5858

– Master II

for connection to GWA via fieldbus and direct connection of two sensor elements. Additional connection of max. 1 sensor casing (Slave) possible via local bus.

GWA-SG K M2 Ref no. 5859

– Slave

for connection to Master I + II and direct connection of one sensor element.

GWA-SG K S Ref no. 5860

Master I + II



* K = Plastic casing VA = Stainless steel casing

Slave



Sensor casing

	Dimensions WxHxD	Protection class plastic casing	Protection class stainl. steel casing	Temp. range
Master I	94x130x57	IP65	IP54	-25 to +50 °C
Master II	130x94x57	IP65	–	-25 to +50 °C
Slave	94x130x56	IP65	–	-25 to +50 °C

Sensor element

	Meas. range	Preset alarm thresholds	Recommended installation height	Application
CO	0 -300 ppm	30 / 60 / 150	1.50 m	Petrol motors
NO	0 -100 ppm	10 / 20 / 50	1.50 m	Diesel motors (alt.)
NO₂	0 -30 ppm	3 / 6 / 15	0.80 m	Diesel motors
LPG	0 -100 % UEG	10 / 20	0.30 m	LPG motors

■ Project planning information

- 1x warning sign per 500 m²
- 1x CO-, NO-, NO₂ sensor, LPG sensor per 400 m²

■ Information

The sensor elements must be calibrated or replaced regularly.

■ Accessories

Bus interface

Interfaces for connection of gas warning system to the building control technology (GLT) and transmission of system statuses. There is no intervention option.

- for Modbus
GWA-BG Modbus Ref no. 8251
- for BACnet
GWA-BG BACnet Ref no. 5861

Sensor element

for connection to sensor casing.

– CO

GWA-SE CO Ref no. 5879

– NO

GWA-SE NO Ref no. 5880

– NO₂

GWA-SE NO₂ Ref no. 5881

– LPG

GWA-SE LPG Ref no. 5882



Warning devices

Visual and acousting warning devices as 24 Volt signal transmitters, incl. base. Casing made from impact-resistant plastic, for ceiling and wall installation.

– Flash light siren

BLH Ref no. 4983

– Flash light

BL Ref no. 8216

– Siren

WH Ref no. 8217

Sensor



BL, BLH, WH



Warning sign

24 Volt warning sign with yellow symbols according to VDI 2053 on white background. Optionally with acoustic signal.

– Warning sign

GWA-WT 1 Ref no. 8213

– Warning sign with acoustics

GWA-WT 1S Ref no. 8214

GWA-WT



FWS



■ Accessories for GWA-LT and B LS

Fire service switch

Type FWS 2 Ref no. 8255

Fire service switch (incl. LED display) with connection for DIN profile half-cylinder (Accessories).

Accessories:

Locking cylinder FWS ZY
Ref no. 82331



Information
Individual switch cabinets for large systems for car park ventilation available upon request.

Car park ventilation control system

The Helios car park ventilation system control system Helios was specially developed to meet the requirements for modern and efficient car park ventilation. The use of Helios fans and the ventilation control system LS, significantly reduces the risks to people from toxic gases such as carbon monoxide (CO) and nitrogen dioxide (NO₂).

- Two fans are operated and monitored by the ventilation control system LS according to the provisions of the Ordinance Governing Parking Facilities. Pollutants resulting from car park use are diluted and discharged through the air exchange stipulated in the respectively valid Ordinance Governing Parking Facilities (GaVO).
- The LS monitors the control and load circuits, detects faults or power failures and switches over to the system that is still functional.
- In addition to the automatic mode, the fans also can be operated individually, together or alternately to achieve the same fan running times.
- If only one fan is operating, the car park ventilation control system LS is programmed in such a way that the second fan automatically goes into operation and a fault signal is transmitted in case of such a failure.

Delivery range

Vent. control sys.	Control system with smoke extr. function	Switch	Current	Voltage	Performance 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

Types with greater performance upon request.

Delivery range

The Helios range of smoke exhaust fan control systems includes 1~ and 3~ models in various performance ranges for direct and star-delta start-up and with Dahlander winding for fan operation at two different speed pursuant to the table below. All models are optionally available with additional smoke ventilation function (type B LS).

Order information

- When ordering the car park ventilation control system, the following specifications are required:
- Required control system type
Car park ventilation control system (LS) or car park ventilation control system with additional smoke vent. function (B LS).
 - Fan types
The performance range, switching type and motor protection device of the car park ventilation control system can be found in the type specification of the fan to be controlled (Helios reference number).

Casing

The system is delivered ready-for-use and easy to install and service in a plastic casing (types up to 4 kW) or in robust switch cabinet casing made from sheet metal (types from 4 kW).

Operation

The operating mode and fan sequence can be set using the rotary switch on the control panel. The running times of the connected fans can be individually programmed using the analogue timer.

	Position	Function
□ Fan sequence	"1"	Fan 1 activated for operation. Switch to fan 2 in case of fault.
	"2"	Fan 2 activated for operation. Switch to fan 1 in case of fault.
	"1+2"	Both fans successively activated for operation.
	"1/2"	Both fans alternatively activated for operation to achieve the same running times.
□ Oper. mode	"Auto"	Pre-selected fan sequence controlled by timer.
	"Manual"	Fan operation controlled by manual adjustment on rotary switch.
	"Fan seq."	
	"Off/unlock"	The control system is deactivated. Faults are deleted.
□ Timer		The analogue timer allows the individual adjustment of fan running times to the respective situation in the car park to be ventilated. "Auto" mode must be selected on the car park ventilation control system for the corresponding controlling of programmed times. The shortest timer switching sequence is 20 minutes.

Display function

The status of the connected fans and the position of the supply/extract air shutters are indicated separately place for each fan via LEDs. Fault signals and triggered fire dampers are also indicated by LEDs on the control system in addition to the acoustic warning via the optionally connectable siren.

	Operation	Function
□ Damper OPEN	Green LED lights up	Supply or extract air damper is opened, fan runs 30 seconds delayed.
	Green LED goes off	Supply or extract air damper is closed, fan is off.
□ Fan ON	Green LED lights up	Fan is in operation, associated supply or extract air damper is opened.
	Green LED goes off	Fan is not in operation, associated supply and extract air damper is closed.
□ Fault	Red LED flashes	Fan fault.
□ Fire damper	Red LED lights up	Fire damper triggered.

Car park ventilation control system with smoke extraction function B LS

If there are car park smoke extraction requirements in case of fire in addition to the ventilation and the associated reduction of the pollutant concentration, the car park ventilation control system B LS with smoke extraction function is the optimal solution.

- By connecting the smoke exhaust car park ventilation control system B LS to a smoke detector line or a fire alarm system, the smoke extraction function is automatically triggered in case of fire. One or more push-button alarms and a fire service switch can be attached for manual triggering by car park users and the fire brigade.
- Once the smoke extraction function is triggered, all motor protection devices are bridged and the smoke exhaust fans will run at nominal speed. Stage 2 (maximum fan speed) is automatically set for control systems with Dahlander windings.
- The operation of F600 smoke exhaust fans with cooling air fan is not possible through the Helios smoke exhaust car park ventilation control system.

Information

- In accordance with applicable car park regulations and VDI directives, the ventilation system requires two fans, each of which must provide at least 50 % of the total air flow volume. In case of the failure of one fan, the other fan must be able to provide 2/3 of the total air flow volume.
- The car park ventilation control system LS and both fans must be powered via separate power supplies.

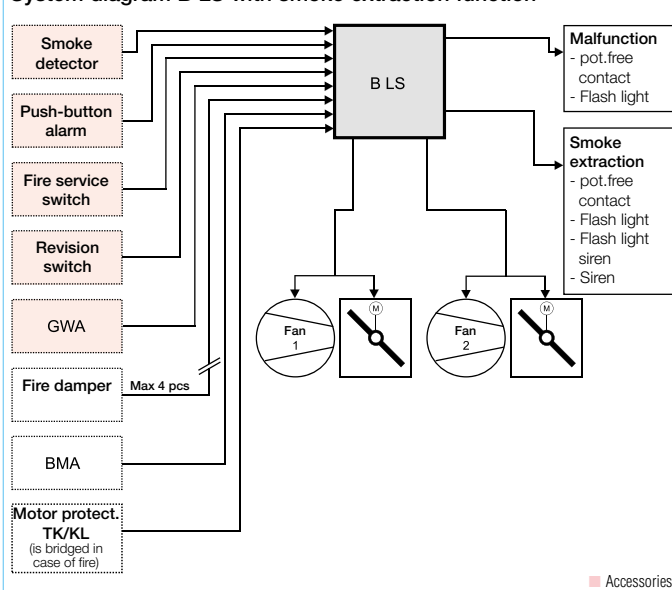
Operating and display panel

The functionality and operation of the Helios car park ventilation control system can be adjusted on the clearly arranged control and display panel. The front panel is well protected by a lockable cover against access by unauthorised persons.

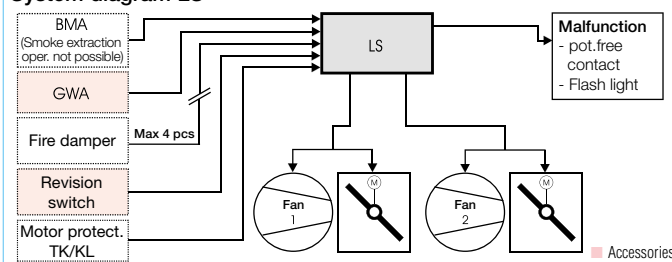
Line monitoring B LS

The detector circuits for the fire alarm system, as well as the smoke detector, push-button alarm and fire service switch are monitored for wire breakage and short circuit. The detector circuits are executed in limit value technology.

System diagram B LS with smoke extraction function



System diagram LS



Motor protection

- The motors of the connected fans are protected by deactivation in case of overload by the car park ventilation control system LS. For motors with thermal contacts or PTC resistors, this can be connected to the car park ventilation control system terminal block. For motors without thermal contacts or PTC resistors, the car park ventilation control system has motor protection circuit breakers. If the motor protection devices are triggered, a fault signal is transmitted which can be unlocked after cause investigation by the rotary switch for the operating mode.
- All motor protection devices for the smoke exhaust car park ventilation control system B LS are bridged in case of smoke extraction. Thus, the smoke extraction function is ensured until the destruction of the fan.

Connection options B LS

- **Input**
 - Gas warning system
 - Fire alarm system
 - 4x fire dampers
 - 2x feedback from isolator switch
 - 60x smoke detector
 - 20x push-button alarm
 - 6x fire service switch
 - Motor monitoring by PTC resistor (KL) or thermal contact (TK)
- **Output**
 - 2x smoke exhaust fan
 - 2x 230 V damper
 - Fault
 - 1x pot.-free contact
 - 1x flash light
 - Smoke extraction

Connection options LS

- **Input**
 - Gas warning system
 - Fire alarm system (smoke extract. not possible)
 - 4x fire dampers
 - 2x feedback from isolator switch
 - Motor monitoring by PTC resistor (KL) or thermal contact (TK)
- **Output**
 - 2x fan
 - 2x 230 V damper
 - Fault
 - 1x pot.-free contact
 - 1x flash light

Accessories

Type RMR Ref no. 4984

Smoke detector according to EN 54-7, incl. detector base for the automatic triggering of system for smoke detection.

Type DKM Ref no. 4985

Push-button alarm in limit value technology for manual triggering of system by button. Includes reset button and LED indicator for operating state.

Type FWS 2 Ref no. 8255

Fire service switch (incl. LED display) with connection for DIN profile half-cylinder (Accessories) (type FWS ZY 82331).

Type BL Ref no. 8216

Flash light as 24 V signal transmitter, incl. base. Casing made from impact-resistant plastic. For ceiling and wall installation.

Accessory:

Voltage transformer SPW 110-240 V AC / 24 V DC Ref no. 5820

Type BLH Ref no. 4983

Flash light siren as 24 V signal transmitter, incl. base. Casing made from impact-resistant plastic. For ceiling and wall installation.

Type WH Ref no. 8217

Siren as 24 V signal transmitter, incl. base. Casing made from impact-resistant plastic. For ceiling and wall installation.

Accessory:

Voltage transformer SPW 110-240 V AC / 24 V DC Ref no. 5820

Type DDS Ref no. 0445

Complete attachment kit for monitoring air filters, system pressure and fan operation.

Type RS 3+1 Ref no. 6387

3-pole isolator switch with auxiliary contact for fans. Plastic casing for surface-mounting.

Type RS 6+1 See page 197

6-pole isolator switch with auxiliary contact for fans. Plastic casing for surface-mounting.

Marking

- TÜV approval
- CE

Technical data

Timer	24 h
Switching sequence	20 min.
Switching capacity	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 class	IP54
Installation position	Upright

EVS



Smoke exhaust fan control system

- By generating low-smoke layers and areas, Helios smoke exhaust fans facilitate the safe evacuation of people. The smoke exhaust fan control system EVS was specifically designed for controlling the fans available in temperature classes F300, F400 and F600.
- EVS is particularly suitable for smoke extraction in small properties as well as individual fire sections and it also has a ventilation function. This ensures a significant improvement of air quality during normal operation due to the regular air exchange.

Delivery range

The Helios range of smoke exhaust fan control systems includes 1~ and 3~ models in various performance ranges for direct and star-delta start-up and with Dahlander winding for fan operation at two different speed pursuant to the table below.

Delivery range and technical data

Type	Switching	Power consumption	Nominal voltage	Ambient temperature
EVS-W	Direct	up to 4.0 kW	230 V	0 to +40 °C
EVS-D	Direct	up to 4.0 kW	400 V	0 to +40 °C
EVS-SD	Y/Δ	up to 55 kW	400 V	0 to +40 °C
EVS-DA	Y/YY	up to 55 kW	400 V	0 to +40 °C

Order information

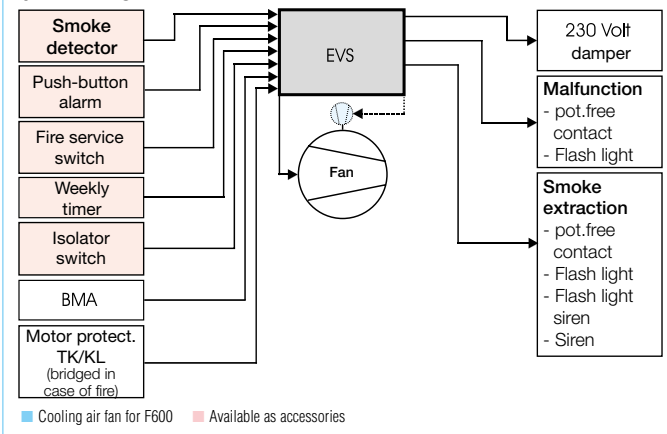
When ordering the Helios smoke exhaust fan control system, the following specifications are required:

- Smoke exhaust fan type to be controlled
The performance range, switching type and motor protection device of the smoke exhaust fan control system can be found in the type specification of the smoke exhaust fan to be controlled (Helios reference number).

Casing and operation

The EVS types up to 22 kW are delivered in a light grey ISO casing (IP54). The models from 30 kW are designed in a robust sheet metal casing with a side-mounted, lockable „Emergency Stop“ main switch, which can be sealed in the „ON“ position. The front control and display panel enables the control of the individual functions with visual indication of the current operating states. The casing type of EVS for F600 with the addition for a cooling air fan and casing dimensions of the respective control available upon request.

System diagram EVS



Information

One smoke exhaust fan can be connected and operated per EVS. Smoke exhaust fan control systems for the connection of multiple smoke exhaust fans are also available upon request.

Functions

The functionality of the Helios smoke exhaust fan control system complies with the requirements of the VDMA standard sheet 24177.

The following control functions can be adjusted via the control panel connected to the EVS casing:

□ **Ready:**

The smoke exhaust fan is deactivated. The smoke extraction mode is activated when the EVS is triggered via the smoke detector, push-button alarm or other external smoke extraction warning device.

□ **Smoke extraction:**

All motor protection devices for the smoke exhaust fan are bridged. Once the damper is opened by the EVS, the smoke exhaust fan runs at the nominal speed. Stage 2 (maximum fan speed) is automatically set for control systems with Dahlander windings.

□ **On or stage 1 and 2:**

All motor protection devices for overload protection are activated. Once the multi-leaf damper is opened by the EVS, the smoke exhaust fan runs at the selected speed for manual ventilation. The smoke extraction mode is activated when the EVS is triggered via the smoke detector, push-button alarm or other external smoke extraction warning device.

Information

The installation of the EVS should be as close as possible to the relevant smoke exhaust fan, but outside the area from which smoke is to be extracted. The installation of the power supply for the EVS and the smoke exhaust fan must be function-preserving and directly connected to the low-voltage main distribution board.

■ Connection options

□ Input:

- Fire alarm system
- 60x smoke detector
- 20x push-button alarm
- 6x fire service switch
- Motor monitoring by PTC resistor or thermal contact
- 1x WSUP (2x WSUP for EVS-DA)
- 1x feedback from isolator switch

□ Output:

- 1x smoke exhaust fan
- 1x 230 V damper
- 2x cooling air fan for F600 smoke exhaust fan, flow monitor system included
- Fault
 - 1x pot.-free contact
 - 1x flash light
- Smoke extraction
 - 1x pot.-free contact
 - 1x flash light
 - 1x flash light siren
 - 1x siren

■ Motor protection

The motor of smoke exhaust fan is protected by deactivation in case of overload in ventilation mode. 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 does not have a thermal contact or PTC resistor, then a motor protection relay in the EVS will protect the motor against overloading.

□ All motor protection devices for the smoke exhaust fan control system EVS are bridged in case of smoke extraction. Thus, smoke extraction function is ensured until the destruction of the fan.

■ Line monitoring

The detector circuits for the fire alarm system, as well as the smoke detector, push-button alarm and fire service switch are monitored for wire breakage and short circuit. The detector circuits are executed in limit value technology.

■ EVS for F600 smoke exhaust fans

The motor cooling for Helios F600 smoke exhaust fans is carried out using separate cooling air fans (type KLG, Accessories). These cooling air fans are also controlled by the EVS and monitored in the ventilation mode by flow monitor systems. The flow monitor systems are already installed in the EVS.

■ Individual solutions

Helios supplies individual switch cabinets upon request and thus the matching smoke exhaust fan control system for each project.

■ Marking

- TÜV approval
- CE

■ Accessories

Smoke detector

Type RMR Ref no. 4984

Smoke detector according to EN 54-7, incl. detector base for the automatic triggering of EVS for smoke detection.

Operating voltage 9-33 V DC
Power consum. rest/alarm 30 µA/20 mA
Protection class IP40
Dim. mm Ø 100 x H 44



Push-button alarm

Type DKM Ref no. 4985

Push-button alarm in limit value technology for manual triggering of EVS by button. Includes reset button and LED indicator for operating state.

Operating voltage 20-30 V DC
Protection class IP40
Colour RAL 2011
Dim. mm W 125 x H 125 x D 36



Fire service switch

Type FWS 2 Ref no. 8255

Fire service switch (incl. LED display) with connection for DIN profile half-cylinder (Accessories).

Accessories:
Locking cylinder FWS ZY
Ref no. 82331



Weekly timer

Digital timer with LCD display for automatic control of EVS ventilation function. Installation in dry environment.

- For surface-mounting

Type WSUP Ref no. 9990

- For switch cabinet installation

Type WSUP-S Ref no. 9577



Warning devices

Visual and acousting warning devices as 24 Volt signal transmitters, incl. base. Casing made from impact-resistant plastic, for ceiling and wall installation.

- Flash light siren

Type BLH Ref no. 4983

- Flash light

Type BL Ref no. 8216

- Siren

Type WH Ref no. 8217



Isolator switch

Type RS 3+1 Ref no. 6387

3-pole isolator switch with auxiliary contact for fans. Plastic casing for surface-mounting.

Type RS 6+1 See page 197

6-pole isolator switch with auxiliary contact for fans. Plastic casing for surface-mounting.

■ Information

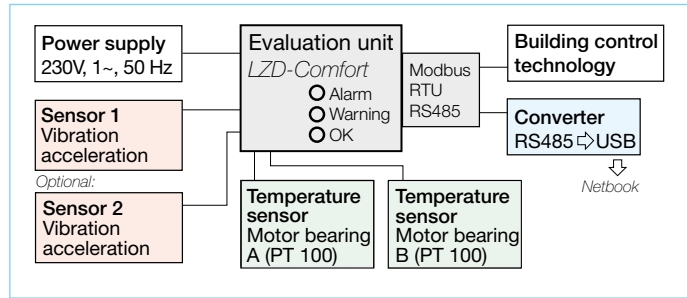
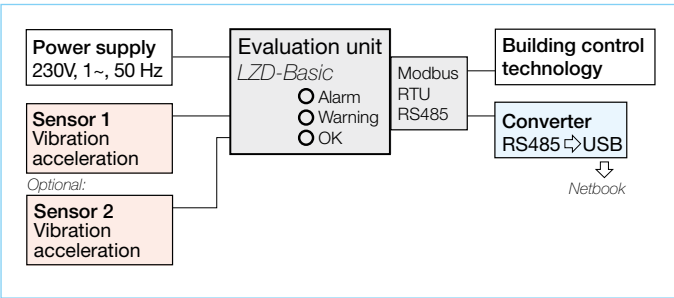
Cooling air fan B KLG for F600 smoke exhaust fan 174 ff.

LZD



Information

The system is ready-for-use without on-site parametrisation or calibration.



The Helios bearing condition diagnostic system is for ensuring the functionality of motor bearings, even after a long standstill period, as may be the case with Helios smoke exhaust fans. The system checks and analyses the condition of the motor bearings. The results are shown directly using the traffic light principle for fast recording on-site or through the optional integration in the building control technology.

Area of application

The Helios bearing condition diagnostic system is designed for the constant or occasional monitoring of motor bearings in Helios fans operated directly on the mains. Ideally used for Helios smoke exhaust fans to be able to detect bearing damage at an early stage so that the motor bearings can be replaced depending on the actual bearing condition.

Product variants

The Helios bearing condition diagnostic system is available in two variants. Both systems have been developed for recording, checking, visualising and transmitting the bearing conditions.

- **LZD basic:** Motor bearing condition diagnostics by recording the vibration acceleration.
- **LZD comfort:** Motor bearing condition diagnostics by recording the vibration acceleration and bearing temperatures.

Order information

When ordering the Helios bearing condition diagnostic system, the following specifications are required:

- bearing condition diagnostic system product variant (LZD basic or LZD comfort).
- Accessories for bearing condition diagnostic system.
- Helios fan to be monitored (type or reference no.).

Description

LZD basic

- Analysis of vibration acceleration at motor.
- Recording, analysing, visualising and transmitting the bearing conditions.
- Results shown directly using the traffic light principle with visual LED condition display or through integration in the building control technology (Modbus RTU).
- Connection to PC possible through interface converter (Accessories) using USB interface.
- Retrofittable for existing fans.

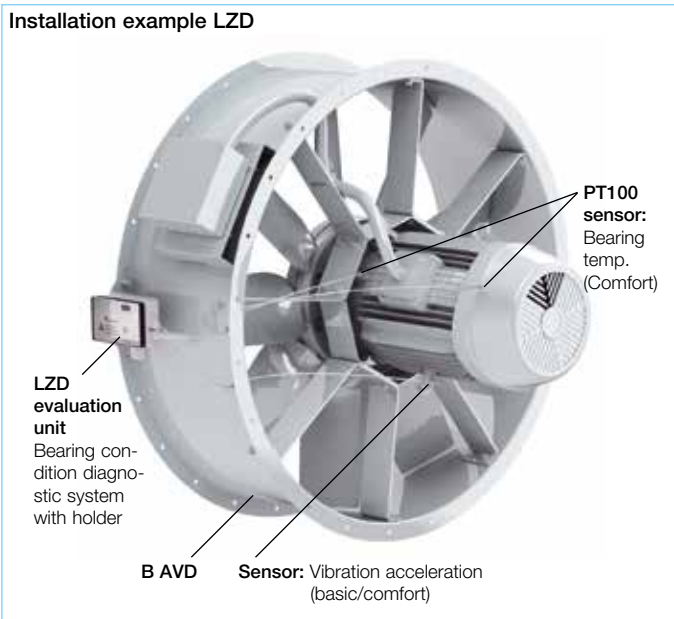
Description

LZD comfort

- Analysis of vibration acceleration at motor.
- Evaluation of bearing grease condition by analysing the absolute and temperature difference between A-side and B-side motor bearings.
- Recording, analysing, visualising and transmitting the bearing conditions.
- Results shown directly using the traffic light principle with visual LED condition display or through integration in the building control technology (Modbus RTU).
- Connection to PC possible through interface converter (Accessories) using USB interface.

Type	Ref no.	Voltage	Power consumption	Sensors		Monitoring	Evaluation unit		Wiring diagram
				Vibration acceleration	Bearing temp.		Dimensions (WxHxD)	Protection class IP	
LZD basic	5790	1~, 230V, 50 Hz	5 W	1 - 2 pcs.	-	Vibration acceleration	180 x 110 x 62,5	67	1089
LZD comfort	5791	1~, 230V, 50 Hz	5 W	1 - 2 pcs.	2 pcs.	Vibration acceleration and bearing temp.	180 x 110 x 62,5	67	1089

Installation example LZD



Information

One evaluation unit is required per fan to be monitored.

■ Outstanding product features

- The system is ready-for-use without on-site parametrisation or calibration.
- The bearing condition diagnostic system works independently of the nominal speed of the motor and can be used for both 1-stage and 2-stage motors.
- The data set in the control unit contains all limit values for the vibrations and temperatures of the Helios fan motors.
- Optimised analysis of bearing conditions by suppressing the low frequency vibrations of the fan.
- Integration of up to 247 evaluation units in the building control technology.

■ System benefits

- Maximum cost-savings through simple documentation of bearing condition for the functional test and maintenance.
- Retrofittable for existing fans.
- Immediately ready-for-use without on-site calibration.
- The system allows bearing replacement depending on actual wear through bearing condition diagnosis.
- High operational reliability of smoke exhaust fans through early detection of impending bearing damage.

■ Scope of delivery

- The Helios bearing condition diagnostic system is already mounted ex works to the fan to be monitored via a separate holder upon delivery (possible additional costs for fan in special design).
- Evaluation unit LZD basic or LZD comfort.
- Sensors for recording the vibration acceleration and bearing temperatures (only for LZD comfort).

■ Casing

- Evaluation unit in compact plastic casing with transparent cover, cable glands and condensation drain.
- Can be used for outdoor installation, protection class IP67, UV-resistant.

■ Connection

- Input**
 - Mains connect. 230 V/1~/50 Hz
 - Max. two sensors for vibration acceleration
 - Max. two sensors (PT 100) for motor bearing temp. (only for LZD comfort)
- Output**
 - Modbus RTU interface
 - Building control technology
 - USB interface converter

■ Connection options

- Stand-alone
- Connection via USB interface converter, max. 247 evaluation units.
- Integration in bus system in building control technology (GLT), max. 247 evaluation units.

■ Bearing condition indication

- Green: OK**
The condition of the rolling bearing (LZD basic) and the condition of the bearing grease (LZD comfort) is fine.
 - Bearing is functional.
 - Bearing replacement not recommended!
- Yellow: WARNING**
The condition of the rolling bearing (LZD basic) and the condition of the bearing grease (LZD comfort) is still acceptable.
 - Bearing is still functional.
 - Halving of maintenance interval is recommended!
- Red: ALARM**
The condition of the rolling bearing (LZD basic) and the condition of the bearing grease (LZD comfort) is not fine.
 - Bearing is not functional.
 - Immediate bearing replacement is recommended!

■ Marking

– CE

■ Technical data

Mains voltage	230 V, 1~
Mains frequency	50 Hz
Power consumption	5 W
Operating temp.	-30 to +50 °C
Max. length Modbus RTU	400 m
Prot. cat. (pursuant to DIN EN 60529)	IP67
Protection class	II
Casing	UV-resistant
Dimensions	W 180 x H 110 x D 62.5
Wiring diagram	SS-1089

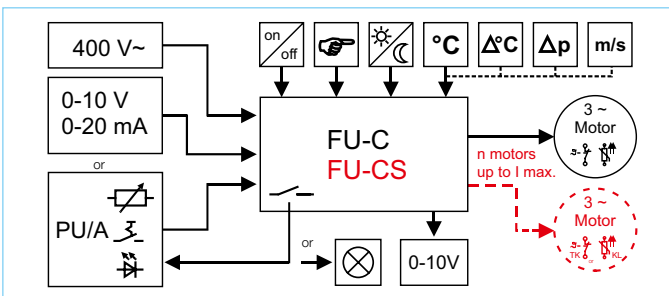
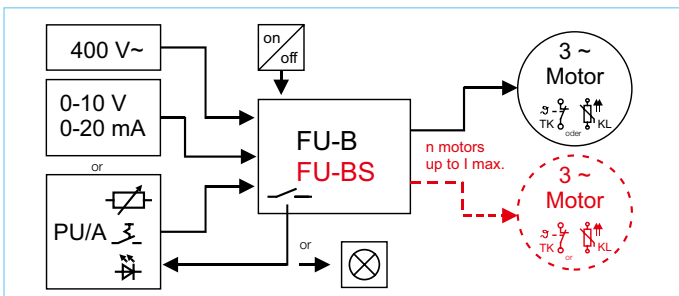
■ Accessories

Interface converter
Type LZD-WD Ref no. 5795
Interface converter from RS485 to USB interface 2.0 (USB cable included).

FU-B and FU-BS



FU-C and FU-CS



■ **Description FU-B "Basic"**

- Frequency inverter FU-B in basic design without sine filter for speed control of individual fan.
- Speed specification via 0-10 V control signal (e.g. potentiometer PU/PA, Accessories).
- Cable length between FU-B and fan max. 10 m with shielded cable.
- The fan must be designed for operation with frequency inverter (EMC suitable fan/motor, optional special design).
- The FU-B is fixed at its nominal current.
- For FU-B operation (without sine filter), the frequency inverter capability must be specified when ordering fan.

■ **Description FU-BS "Basic sine"**

- Frequency inverter FU-BS in basic design with integrated, all-pole effective sine filter.
- For the speed control of one or more fans. The permitted number of fans comes from the maximum FU current.
- Speed specification via 0-10 V control signal (e.g. PU/PA, Accessories).
- Cable length between FU-BS and fan over 10 m possible.
- No additional EMC shielding of electrical cables required. The fans including motors do not require special EMC measures for the frequency inverter operation.
- The FU-BS is fixed at its nominal current.
- When using the frequency inverter with integrated sine filter, conventional standard fans/motors can be used.

■ **Description FU-C "Comfort"**

- Frequency inverter FU-C in comfort design without sine filter for speed control of individual fan.
- Includes display and three operating buttons for adjusting the fan and control parameters.
- Parameterisation and control options via Modbus.
- With integrated, full control system for temperature, pressure and air speed. Required sensors LDF 500, LGF 10, LT available as accessories.
- Speed specification via 0-10 V control signal (e.g. potentiometer PU/PA, Accessories) or via direct input on display.
- Cable length and suitability of fan for operation with frequency inverter see description FU-B.
- For FU-C operation (without sine filter), the frequency inverter capability must be specified when ordering fan.
- With operating mode for use in smoke extraction systems, bridged internal protection device for maximum operating duration.

■ **Description FU-CS "Comfort sine"**

- Frequency inverter FU-CS in comfort design with integrated, all-pole effective sine filter.
- For the speed control of one or more fans. The permitted number of fans comes from the maximum FU current.
- Includes display and three operating buttons for adjusting the fan and control parameters.
- Parameterisation and control options via Modbus.
- With integrated, full control system for temperature, pressure and air speed. Required sensors LDF 500, LGF 10, LT available as accessories.
- Speed specification, cable length, EMC measures see description FU-BS.
- When using the frequency inverter with integrated sine filter, conventional standard fans/motors can be used.
- With operating mode for use in smoke extraction systems, bridged internal protection device for maximum operating duration.

	FU-B and FU-BS
Analogue inputs	1 x 0-10 V, Ri 100 kOhm or 0-20 mA
Logic inputs	1 x digital 24 V, release
Analogue output	-
Relay output	1 x NOC 250 V / 2 A ind.
Power supply for modules	1 x 10 V DC, 10 mA, 1 x 24 V DC, 70 mA
Motor temperature monitoring	Thermal contact or PTC resistor

	FU-C and FU-CS
Analogue inputs	2 x 0-10 V, Ri 100 kOhm or 0-20 mA or KTY
Logic inputs	2 x digital 24 V, release
Analogue output	10 x 0-10 V DC, 10 mA
Relay output	2 x change-over 250 V / 2 A ind.
Power supply for modules	1x10V DC,10mA (in analogue output), 1x24V DC, 70mA
Motor temperature monitoring	Thermal contact or PTC resistor

■ General features

- Specially for HLK application of optimised inverter.
- Energy-saving through stepless speed setting.
- Specially designed for fan motor, i.e. minimum energy consumption and minimum noise generation in partial load zone.
- Use of maintenance-free three phase asynchronous motors of all designs and performances.
- No performance restriction when using standard motors.
- Operating signal via potential-free contact.
- Potentiometer power supply: 10 V DC / 10 mA for potentiometer with e.g. 10 kOhm
- Analogue input for speed specification (0-10 V, 0(4)-20 mA).
- Protection against earth leakage and short circuit.
- Integrated electronic motor protection via TK or PTC resistor.
- Controller galvanically isolated.
- Protection against overvoltages.
- Also suitable for switch cabinet installation.
- Performance reduction at ambient temp. above 40 °C - 55 °C.

■ Type-specific features

- Basic types:
- Additional power supply: 24 V DC / 70 mA for wiring of digital inputs and external auxiliary components.
- Sine types:
- Includes internal, all-pole effective sine filter.
 - For the simple, retrospective extension of existing ventilation systems.
- Comfort types:
- Free specification of acceleration and deceleration times for reduction of start-up noises.
 - Additional power supply: 24 V DC / 120 mA for wiring of digital inputs and external auxiliary components.
 - Simple adjustment and control of values by means of display
 - Comprehensive diagnostic display in case of fault.
 - Speed specification direct on unit via display.
 - Serial interface RS 485 / Modbus-RTU.
 - Parameterisable, performance adjustment as required.

■ Information

- **Internal, all-pole effective sine filter** (types FU-..S)
Filters the voltages between the individual phases as well as the phase voltage between phase and protective conductor. 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 FU in an environment that requires a FI circuit breaker, it must be sensitive to universal current, type B+, 300 mA.
- **EMC**
All FU types comply with EMC directive 2004/108/EC and the applicable standards such as DIN EN 60335-1 and DIN EN 550011. Radio interference filters are integrated for compliance with cl. B (residential area). For FU-B and C, the cable between the fan and the frequency inverter must be shielded and max. 10 m long. Motor power supply and temperature monitoring must be installed separately.

□ Design motor current/frequency

When selecting a suitable frequency inverter, the max. motor current must be considered. If a multiple fans are operated, 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 otherwise the motor will overload and fail. Operation with higher frequency is possible upon request.

□ Motor protection

Maximum motor protection is achieved by monitoring (thermal contact/PTC resistors), in which max. 6 PTC resistors in series can be connected to a device. An increase in the number of PTC resistors is possible through the use of monitoring devices (MSA, accessories).

■ Accessories for all FU types

PU 24/PA 24 No. 1736/1737

Speed potentiometer, flush/surface, LED 24 V, potentiometer 10 V/1.3-10 V

SU-3 10/SA-3 10 No. 4266/4267

Speed three-step switch, flush/surface, 10 V / 1,7-10 V

Type WSUP Ref no. 9990

Weekly timer with LCD display, potential-free contact

Type WSUP-S Ref no. 9577

Weekly timer potential-free contact, for DIN rail

Type EDR Ref no. 1437

Electronic diff. pressure controller 0-1000 Pa, 10-24 V/0-10 V

Type ETR Ref no. 1438

Electronic temperature controller (sensor see Accessories ETR)

Type LDF 500 Ref no. 1322

Differential air pressure sensor Measurement range 0 – 500 Pa

Type LGF 10 Ref no. 1325

Air speed sensor Measurement range 0 – 10 m/s

Type LTA 40 Ref no. 1336

Temp. sensor for outside Meas. range -20°C to +60 °C

Type LTK 40 Ref no. 1324

Temp. sensor for duct installation Meas. range 0 °C to +40 °C

Type LTR 40 Ref no. 1323

Room temperature sensor Meas. range +0.5 °C to +40 °C

■ General technical data

Network voltage	3~, 208-480 V
Network frequency	50/60 Hz
Output voltage	95 % of U _{Netz}
Output frequency	50 Hz
Protection class	IP54
Ambient temperature	0 °C to +40 °C (-20 °C not currentless)

Type	Ref no.	maximum output		Cable cross-section from mains to motor cable	Wiring diagram	Dimensions			Weight net ca.	
		Output current	Motor			Height	Width	Depth		
		A	kW	mm ²	No.	mm	mm	mm	kg	
Basic design without sine filter for three phase fans, 3~, 400 V, 50/60 Hz, protection class IP54										
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 7,0	5455	7.0	3.0	4 x 1.5 ¹⁾	1020	302	250	196	4.7	
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 design with all-pole effective sine filter for three phase fans, 3~, 400 V, 50/60 Hz, protection class IP54										
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 14/16	5463	16.0	²⁾	4 x 1.5	1028	302	250	196	6.9	
Comfort design without sine filter for three phase fans, 3~, 400 V, 50/60 Hz, protection class IP54										
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 design with all-pole effective sine filter for three phase fans, 3~, 400 V, 50/60 Hz, protection class IP54										
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 installed separately

²⁾ The max. current of all connected fans is decisive for the design

■ Universal controller EUR 6 C
Electronic automatic control system with phase angle-controlled power unit.

□ Area of application

For control of central/ventilation systems or for stepless control of one or more speed-controllable single phase fans. In residential, commercial, industrial and agricultural applications.

□ Control functions

Simple and quick start-up of parameters through integrated "Start-up assistant". Depending on the connected sensors, control is possible according to the following control parameters:

- **Manual speed control**, e.g. adjustable by button
- **Temperature** (required accessory Temperature sensor LTR 40 or LTK 40)
- **Temperature with additional functions** pre-programmed, (required accessory Temperature sensor LTR 40 or LTK 40)
- **Differential temp. control** (required accessory Temperature sensor LTR 40 or LTK 40)
- **Differential pressure** (required accessory Differential air pressure sensor LDF 500)
- **Differential pressure with outdoor temperature compensation** (required accessory Differential air pressure and temperature sensor LDF 500 and LTR 40 or LTK 40). Ideal for central ventilation systems according to DIN 18017 in residential construction.
- **Air speed** (required accessory Air speed sensor LGF 10)

EUR 6 C



- 2 x potential-free relay, programmable, alarm, heating or status reports
- Inputs:**
- 2 x sensor inputs, programmable to the respective required sensor type
 - Connection of thermal contacts for motor protection
- The whole system stops when a TK is triggered and must then be manually reactivated after motor cooling.
- 2 x digital inputs, programmable for release, external fault, limit on/off, switching night time mode, internal/external, automatic/manual, reset, max. speed on/off.

Possible settings

- Stepless specification of setpoint values and control range
- Min./max. performance (speed) limit
- Minimum volume flow can be switched on and off
- Activation e.g. of a heater via programmable relay
- Stepless specification for alarm signal in case of high and low temperature, Output on display or also on relay
- Min. and max. shutter opening
- Control function reversal
- Constant control of ventilation shutter
- Settings carried out via a dirt-resistant membrane keypad

□ Display

- Multi function LC-display
- Numerical setpoint and actual display with measuring unit
- Symbols (alarm, heater, release)
- Bar graph/level indicator
- Text display for menu, status and fault indications

The desired sensors must be ordered separately as accessories. The control ranges are freely adjustable in the context of the sensor measurement range.

The controlled output voltage balancing the actual and setpoint value lies between 0% (35 V) and 100% (corresponds to approx. 80 V – 230 V).

The minimum and maximum values can be specified.

– Main switch with positions:

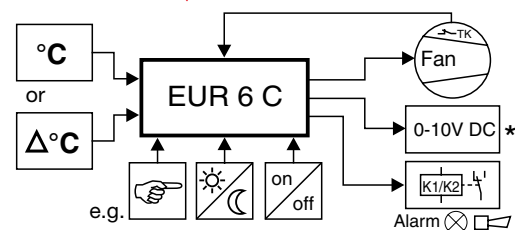
- “0” = Controller off
- “I” = Automatic operation
- “230 V” = Uncontrolled direct mains operation.

Inputs and outputs:

Outputs:

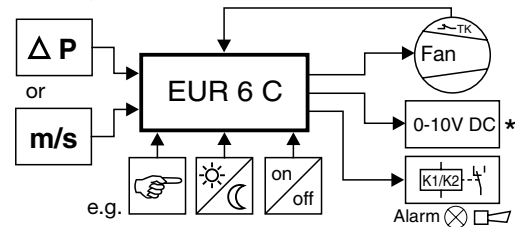
- 1 x motor connection phase angle-controlled
- 1 x analogue output 0–10 V for controlling e.g. frequency inverter, shutter, EC motor

Mode 2.03: Temperature control with additional function
Mode 2.05: Differential temperature control



* e.g. for shutter, frequency inverter

Mode 4.01: Differential pressure control
Mode 6.01: Air speed control



* e.g. for shutter, frequency inverter

Type EUR 6 C Ref. no. 1321

Voltage	230 V~, 50/60 Hz
Max. capacity	6 A
Required minimum current	0.2 A
Controlled output voltage	0 – 100 %
Measurement range Temp.	0 – 40 °C
Measurement range Pressure	0 – 500 Pa
Meas. range speed	0 – 10 m/s
Permitted ambient temp.	0 to +40 °C
Protection class	IP54
Casing	Surface-mounted, plastic, light-grey
Dim. mm	W 223 x H 200 x D 131
Weight	ca. 1.4 kg
Wiring diagram no.	SS-911

■ Required accessories

Type LDF 500 Ref. no. 1322

Differential air pressure sensor
 Meas. range 0 – 500 Pa

Type LGF 10 Ref. no. 1325

Air speed sensor
 Meas. range 0 – 10 m/s

Type LTA 40 Ref. no. 1336

Outside temperature sensor
 Meas. range –20 to +60 °C
 Protection class IP54

Type LTK 40 Ref. no. 1324

Temp. sensor for duct installation
 Meas. range 0 to +40 °C

Type LTR 40 Ref. no. 1323

Room temperature sensor
 Meas. range 0.5 to +40 °C

■ Information

Electronic speed controllers can generate motor humming noises. In noise-critical cases of application, transformer controllers are preferable.

ESD



Helios combines fans and customer-specified central building control technology in a simple solution with these speed control devices!

Common features

- Control via analogue 0–10 V input through on-site signal, electronic control system EUR 6 C or other control units.
- Multiple, different fans can be connected to a control device up to maximum control current capacity.
- Multiple control devices can be controlled in parallel by the building control technology and this enables the distribution of fan power to multiple fans or fan groups and thus circuits.

Accessories for both series

In the event that the control does not take place through the central building control technology, a universal controller with 10 V output can be used for this purpose.

Type EUR 6 C Ref no. 1321
Description see page electronic control system.

Delivery range

Type	Ref no.	Output current	Power consumption	Wiring diagram	Dim.			Cooling element width	Weight	Protection class
					H	W	D			
		A	No.	mm	mm	mm	mm	kg	IP	
For three phase fans, 3~, 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

Description ESD

Convenient stepless electronic speed controller for 3~ fans, which can be phase angle-controlled by voltage reduction (except KVD.. Ex types). State-of-the-art technology through use of microcontrollers.

Setting options/display

- On/off and stepless speed specification through rotary potentiometer.
- 0-10 V input. Remote control possible through on-site rotary potentiometer (22 kOhm) .
- 3~ phase monitoring, protection against phase loss.
- Soft start function.
- Automatic minimum starting voltage 80 V.
- Meets EMC requirements class B, shielded cable between device and motor not required.
- LEDs as status and fault indicator.
- Integrated protection of electronics against overload.
- Full motor protection through monitoring of thermal contacts or motor.

Casing

- Plastic casing, light-grey with wide cooling element.
- Can be used directly in heavily polluted environments (e.g. kitchen) due to protection class IP65.

Transformer speed controller MWS with full motor protection device

1~ single phase motor, 230 V

Five-stage speed controller with integrated triggering device for 230 V, 1~ fans. For connection of thermal contacts wired to the terminal board.

Connection of multiple fans possible up to nominal capacity. If a thermal contact is triggered, all fans will be deactivated. With step switch and indicator light. Restart after fault or mains disconnection via "0" position.

Type	Ref no.	I max. A	Casing IP54 made from	Dim. in mm			Weight ca. kg
				W	H	D	
MWS 1.5	1947	1.5	Plastic	200	254	98	3.0
MWS 3	1948	3.0	Plastic	200	254	98	4.0
MWS 5	1949	5.0	Plastic	200	254	167	5.3
MWS 7.5	1950	7.5	Plastic	236	316	188	10.0
MWS 10	1946	10.0	Plastic	236	316	188	13.5

Wiring diagram no. SS-440.4

MWS



Transformer speed controller RDS with full motor protection device

3~ three phase motor, 400 V

Five-stage speed controller with integrated thermal contract triggering device for 3~, 400 V three phase fans. For connection of thermal contacts wired to the terminal board.

Connection of multiple fans possible up to nominal capacity. If a thermal contact is triggered, all fans will be deactivated. With step switch and indicator light. Restart after fault or mains disconnection via "0" position.

Type	Ref no.	I max. A	Casing IP54 made from	Dim. in mm			Weight ca. kg
				W	H	D	
RDS 1	1314	1.0	Plastic	236	316	128	6.0
RDS 2	1315	2.0	Plastic	236	316	128	9.7
RDS 4	1316	4.0	Plastic	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

Design according to VDE 0550, dip-impregnated transformer in V switching. Max. permitted ambient temp. + 40 °C. Wiring diagram no. SS-139.

RDS



Transformer speed control. TSW

For one or more single phase fans.

1~ single phase motor, 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 no. SS-960

TSW



Transformer speed control. TSD

Like TSW, but for 3~ fans.

3~ three phase motor, 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 no. SS-436.2

TSD



Pole switch

- for separate winding **PGWA**
- for Dahlander winding **PDA**

Surface-mounting

Surface-mounted operating switch for pole-switching fans.

Type	Ref. no.	Capacity	SS no.
For separate winding			
PGWA 12	5083	AC 3/5,5 kW 12 A	345
PGWA 25	5061	AC 3/11 kW 25 A	345
For Dahlander winding			
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 switch

- for separate winding **PGWU**
- for Dahlander winding **PDU**

Flush-mounting

Flush-mounted operating switch for pole-switching fans.

Type	Ref. no.	Capacity	SS no.
For separate winding			
PGWU 12	5084	AC 3/5,5 kW 12 A	345
For Dahlander winding			
PDU 12	5082	AC 3/5,5 kW 12 A	733 ¹⁾

¹⁾ For motors with thermal contacts; without TK: Wiring diagram no. SS-732

Reversing and pole switch

- for separate winding **PWGW**
- for Dahlander winding **PWDA**

Surface-mounting

Type	Ref. no.
Type PWGW	Ref. no. 1281

For separate winding
For speed switching and changing the air flow direction of individual pole-switching fans. Grey plastic casing.

Type	Ref. no.
Type PWDA	Ref. no. 1282

For Dahlander winding
For speed switching and changing the air flow direction of individual pole-switching fans. Grey plastic casing.

Speed switch DS 2..

- for two speed Y/Δ switching three phase fans

Type	Ref. no.
Type DS 2	Ref. no. 1351

Speed and on/off switch for two speed three phase fans in Y/Δ switching. Grey plastic casing for surface mounting.

- for two-stage single phase fans

Type	Ref. no.
Type DS 2/2	Ref. no. 1267

Speed and on/off switch for two-stage 1~ fans,

Electronic air flow monitor

Type	Ref. no.
Type SWE	Ref. no. 0065

For monitoring the air flow in a duct section. Open-circuit or closed-circuit principle possible.

Differential pressure switch

Type	Ref. no.
Type DDS	Ref. no. 0445

Complete attachment kit for monitoring air filters, system pressure and fan operation. Suitable for DDC applications (24 V DC/0.1 A) due to gold-plated connection contacts. Once used in conventional technology (230 V AC/1.5 A), subsequent use in DDC applications no longer possible. Suitable for applications according to VDI 6022.

Technical data for all types

Voltage 400 V, 3~, 50/60 Hz
Protection class IP65

Type	B	H	T	Weight ca. kg
P.. 12	82	82	130	0.4
P.. 25	92	92	140	0.5

Technical data for both types

Voltage 400 V, 3~, 50/60 Hz
Protection class IP30
Dim. mm Install depth 87
Protrusion 40
Cover plate 80 x 80
incl. flush-mounted box
Delivery Weight ca. 0.2 kg

Technical data for both types

Voltage 400 V, 3~, 50/60 Hz
Capacity AC 3 / 7.5 kW
Protection class IP55
Dim. mm W 96 x H 105 x D 147
Weight ca. 0.5 kg
Wiring diagram no. for PWGW SS-13
Wiring diagram no. for PWDA SS-11

Technical data for both types

Voltage 400 V, 3~, 50/60 Hz
Capacity AC 3 / 5.5 kW / 12 A
Dim. mm W 82 x H 82 x D 130
Weight ca. 0.4 kg
Protection class, Type DS 2 IP65
Wiring diagram no. for Type DS 2 SS-87

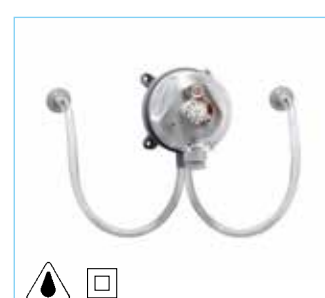
Protection class, Type DS 2/2 IP54
Wiring diagram no. Type DS 2/2 SS-934

Technical data

Voltage 230 V, 1~, 50/60 Hz
Capacity 5 A (ind.) cos j 0.4
Setpoint setting range 1-20 m/s
Air flow temperature max. 60 °C
Ambient temperature max. 60 °C
Protection class IP20
Dim. mm W 35 x H 90 x D 66
Sensor length mm 140
Weight ca. 0.4 kg
Wiring diagram no. SS-689.1

Technical data

Adjustable measuring range 50 – 500 Pa
Switching differential Dp 20 Pa
max. operating pressure 5 kPa
Capacity 230 V AC 1.5 (0,4) A
24 V DC 0.1 A
Ambient temp. -20 to +85 °C
Air flow temp. -20 to +85 °C
Humidity 0...50% RH non-condensing
Protection class IP54
Dim. mm Ø 104, T 58
Weight ca. 0.23 kg
Wiring diagram no. SS-490



Isolator switch RS – 3 pole with auxiliary contact

Type RS 3+1 7.5 Ref no. 6387
Plastic casing for surface-mounting. Locking options in position "0 OFF" and position "1 ON".

Technical data
Voltage 400 V, 3~, 50/60 Hz
Operating current 20 A
Capacity AC-23 B, 7.5 kW
Protection category IP65
Protection class II
Actuation Rotary actuator
Temperature range -25 °C to +60 °C
Weight ca. 0.3 kg
Casing Flush and weather-resistant
Wiring diagram no. SS-1088



– 6 pole with auxiliary contact

Type RS 6+1
Plastic casing for surface-mounting. Locking options in position "0 OFF" and position "1 ON".

Technical data
Voltage 400 V, 3~, 50/60 Hz
Protection category IP65
Protection class II
Actuation Rotary actuator
Locking options. "0 OFF" and "1 ON"
Temperature range -25 °C to +60 °C*
Casing Flush and weather-resistant
Wiring diagram no. SS-1088



*RS 6+1 55: -25 °C to +40 °C.

Type	Ref no.	Capacity	Cable entry main contact	Size cable entry
For Dahlander winding or Y/Δ start-up				
RS 6+1 7,5	6388	20 A, AC-23 B 7,5 kW	4 pcs.	M20
RS 6+1 11	6389	25 A, AC-23 B 11 kW	4 pcs.	M25
RS 6+1 15	6390	32 A, AC-23 B 15 kW	4 pcs.	M25
RS 6+1 22	6391	50 A, AC-23 B 22 kW	4 pcs.	M40/32/25
RS 6+1 37	6392	80 A, AC-23 B 37 kW	4 pcs.	M40/50
RS 6+1 45	6393	125 A, AC-23 B 45 kW	4 pcs.	M50
RS 6+1 55	6394	125 A, AC-23 B 55 kW	4 pcs.	M40/50

Isolator/main switch RHS

Type RHS 3 + 1 Ref no. 1594
Position "0" lockable by means of padlock. According to DIN EN 60204 pt.1 / VDE 0113-1. Plastic casing for surface-mounting. 3 pole with additional contact, for single speed and speed-controlled fans.

Technical data
Voltage 400 V, 3~, 50 Hz
Capacity
– Main contact AC 3 / 5.5 kW 12 A ind.
– Aux. contact AC 3 / 2.2 kW 4 A ind.
Protection category IP54
Dim. mm W 101 x H 126 x D 104
Weight ca. 0.35 kg
Wiring diagram no. SS-505.2



Type RHS 6 + 2 Ref no. 1595
Position "0" lockable by means of padlock. According to DIN EN 60204 pt.1 / VDE 0113-1. Plastic casing for surface-mounting. 6 pole with 2 additional contacts, for all pole-switching fans.

Technical data
Voltage 400 V, 3~, 50/60 Hz
Capacity AC 3 / 5.5 kW
Protection category IP65
Dim. mm W 82 x H 82 x D 125
Weight ca. 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 (hereinafter "TK"), which monitor the motor winding temperature. These contacts also protect the speed-controlled motors.
- For low motor powers, the thermal contacts are wired in series with the motor windings, i.e. they are internally wired. This ensures an automatic function (deactivation and reactivation after cooling) without the operator necessarily having to react to the fault.
- For motors/fans with higher power, the connections of the thermal contacts or PTC resistor temperature sensors are wired to the terminal block and must be connected to the adjacent motor full motor protection/trig-gering devices. Only under this condition can the warranty claim be preserved.
- Motors/fans without thermal monitoring elements in the winding (e. g. IEC standard motors) must be all-pole protected by a suitable motor protection switch.

For single phase fans with thermal contacts wired to the terminal board

Full motor protection switch MW
Switch and full protection device in plastic casing for surface mounting or installation in switch cabinet (clamping assembly for mounting rail).



Type MW **Ref no. 1579**
On/off actuation by push-button switch. Manual recommissioning after fault.
Potential-free auxiliary contact for connection for fault report.
230 V, 1~, 50/60 Hz, applicable from 80 V
Nominal current 0.4 to 10 A
Protection class IP55 Weight ca. 0.5 kg
Dim. mm W 80 x H 140 x D 95
Wiring diagram no. SS-517

For three phase fans with thermal contacts

Full motor protection switch MD
Switch and full protection device in plastic casing for surface mounting or installation in switch cabinet (clamping assembly for mounting rail).



Type MD **Ref no. 5849**
On/off actuation by push-button switch. Manual recommissioning after fault.
Potential-free auxiliary contact for connection for fault report.
400 V, 3~, 50/60 Hz, applicable from 80 V
Nominal current 0.1 to 25 A
Protection class IP55 Weight ca. 0.5 kg
Dim. mm W 80 x H 140 x D 95
Wiring diagram no. SS-518

For pole-switching three phase fans with separate winding and thermal contacts

Full motor protection switch M 2
Switch and full protection device in light-grey plastic casing with indicator light for surface mounting.



Type M 2 **Ref no. 1292**
Motor disconnected from the mains with TK response. Recommissioning after fault by switch rotation over position "0".

Voltage 400 V, 50/60 Hz
Switching capacity AC 3 / 5.5 kW
Nominal current ca. 12 A
Protection class IP55 Weight ca. 1.0 kg
Dim. mm W 170 x H 135 x D 115
Wiring diagram no. SS-142

For pole-switching three phase fans with Dahlander winding and thermal contacts

Full motor protection switch M 3
Design and function like M 2



Type M 3 **Ref no. 1293**
Like M 2, but for pole-switching 3~ fans with Dahlander winding and built-in TK.
Dim. mm W 170 x H 135 x D 135
Wiring diagram no. SS-143

For two speed three phase fans with Y/Δ switching and thermal contacts

Full motor protection switch M 4
Design and function like M 3

Type M 4 **Ref no. 1571**
Like M 3, but for two speed 3~ fans with Y/Δ switching and built-in TK.
Wiring diagram no. SS-144

For three phase fans with integrated PTC resistors (PTC temperature sensors) for thermal motor protection. Use mandatory for speed-controlled, explosion-proof fans.

Full motor protection switch MSA
Triggering device with lockout for 1 to 6 PTC resistor temperature sensors connected in series.



Type MSA **Ref no. 1289**
For thermal protection of electric motors (also explosion-proof electric motors according to guideline 2014/34/EU (ATEX)) with built-in PTC resistor temperature sensors according to DIN 44081 and DIN 44082.
When following is reached
Voltage 230 V ± 15 %, 50/60 Hz
3~ operation via contactor
Switching capacity at 230 V 3 A AC 15
Connection options 1 to 6 PTC resistors in series. Type-tested by Federal Institute of Physics and Metrology, according to DIN EN 60079-14 / VDE 0165-1
DIN EN 60079-0 / VDE 0170-1
DIN EN 60079-17 / VDE 0165-10-1
Protection class IP20
Weight ca. 0.2 kg
Dim. mm W 35 x H 90 x D 58
Wiring diagram no. SS-325.1

When the nominal response temperature of a PTC resistor is reached, the built-in relay drops out. A Fault is indicated by built-in LED. Recommissioning by pressing the "Reset" button or via externally connectable switch. Plastic casing for switch cabinet installation on mounting rail according to DIN EN 60715.

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