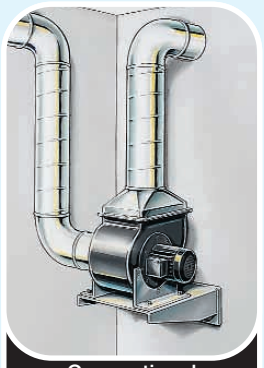
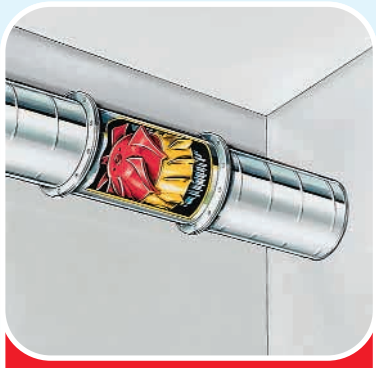
Non stalling in-line high pressure fans VAR

Comparison of the required space



Conventional centrifugal fan

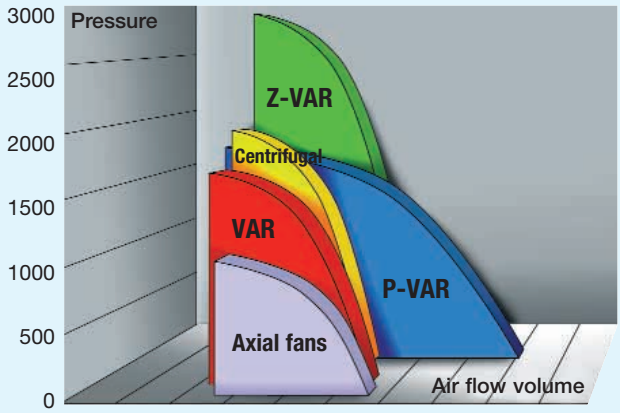


Helios RADAX® VAR-system

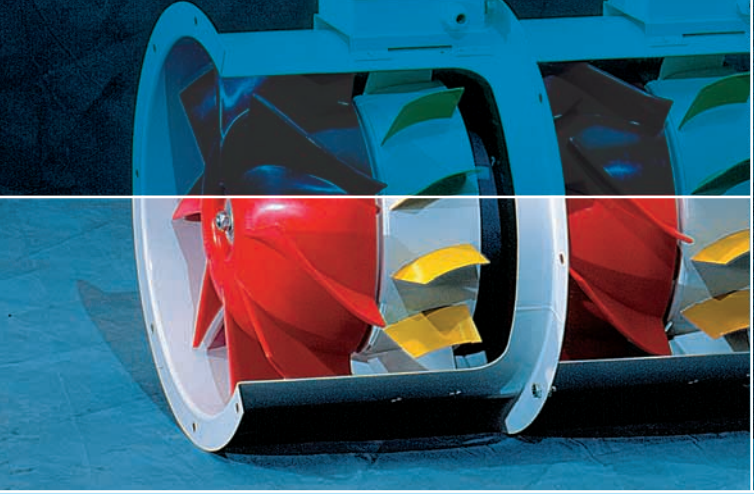
The VAR-system fills the gap between axial-low pressure and high pressure centrifugal fans. The in-line airflow improves the efficiency of the total system and offers a considerable reduction of the required installation space and ducting compared to conventional solutions.
The effect:

- ☐ A wider range of applications.
- ☐ Increases options at design stage.
- ☐ Complicated ducting, bends etc. and associated pressure drop are reduced to a minimum, compared to centrifugal fans.
- ☐ Lower installation cost.
- ☐ Energy conservation.
- ☐ Smaller size than axial fans for a similar duty.

VAR technology in comparison



Volume v's pressure in comparison to conventional axial and centrifugal fans.
The example (fan with ø 400 mm, R.P.M. 2800 min^{-1}) shows the benefits of the RADAX® VAR systems in both volume and pressure.



High pressure in-line mixed-flow fans VAR

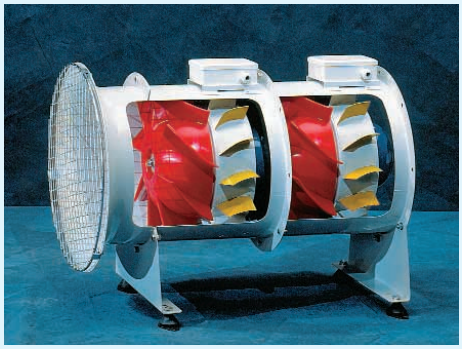
The Helios strategy of developing practical solutions to customers applications has resulted in many exciting fan designs. The RADAX® VAR-system is one of the best examples, being highly respected and well received in the market.

The success of the VAR-high pressure fans is in the combination of the pressure characteristics of centrifugal fans with axial air flow.
The benefits are:
– Maximum power at minimal energy costs.
– Low sound levels.
– High pressure and airflow with smaller dimensions.

The following ranges for various applications are available:

Single stage unit VAR
– Sizes 225 to 630 mm
Ideal for commercial kitchen extract.
see following pages
– For other sizes up to ø 1000 mm
VAR-catalogue Ref. No. 90 386

Parallel units P-VAR
Large volumes and high pressures in a compact design. Especially suitable for twin and underground car park applications.
VAR-catalogue Ref. No. 90 386



Twin unit TwinVent® Z-VAR
Highly efficient units with highest pressure characteristics in a compact design. Flexible in application.
VAR-catalogue Ref. No. 90 386

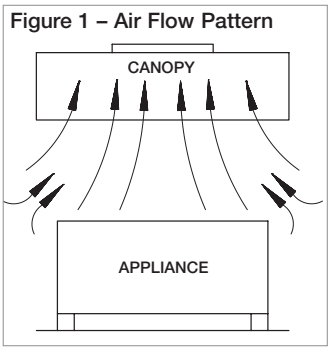
Smoke extract 300 °C / 60 minutes
All VAR-models from ø 280 mm and are available for smoke extraction temperature ranges up to +300 °C for 60 minutes.
VAR-catalogue Ref. No. 90 386

Further models are available in +400 °C and +600 °C for 60, 90 and 120 minutes.

Introduction

Whilst systems extracting from equipment producing effluent, such as dust, depend upon air streams of sufficient velocity being created to enable capture to take place, this concept cannot be applied to a heat producing process such as cooking. All cooking processes create approximately 35% radiant and 65% convected heat which, in the absence of cross-draughts, rises vertically in a thermal updraught called a 'plume'. This is shown in figure 1. Most of the effluent released from the food and heat source is entrained with additional air which causes the plume to enlarge and the average temperature and velocity to decrease. The rate of exhaust from the hood must equal or slightly exceed the flow rate of the plume, and additional air will be required to resist the cross-draughts that would otherwise carry the plume away from the canopy.

Figure 1 – Air Flow Pattern



The calculation of the optimum extract flow rate is the most important element of canopy design as too much air will cause as many problems as too little. Whilst the size of the cooking appliances determine the size of the canopy supplied, it is the type of appliance that determines the volume of air to be extracted. The following methods of calculation are included for information.

Method 1 – Thermal Convection Method

This method follows the procedure covered in the CIBSE Guide but has been expanded to include a wider range of equipment. When details of the equipment to be ventilated are known, then each cooking appliance is allocated a thermal convection coefficient, which is the recommended volume of air to be extracted in m^3/s per m^2 of surface area of the appliance. The area of each appliance is multiplied by the factor for that appliance, and the total value for each item of equipment under the canopy is added together to determine the total volume to be extracted. The factor will vary depending on whether the appliance is fired by gas or electricity, and these are shown in Table 1.

In the absence of complete information about the proposed equipment to be installed in a kitchen, there are a number of approximate methods that may be used to assess the amount of air to be removed. These are listed here for information, but should only be used for preliminary purposes and *not* for the final air flow calculation.

Table 1 – Appliance, Coefficient and Temperature Schedule

Appliance	Coefficient (m^3/s of appliance area) Gas	Electric	Surface Temp. °C
MISCELLANEOUS			
Benches, Spreaders and worktops	0.03	0.03	25
Sink	0.15	0.15	25
Pass Through Dishwasher *	0.30	0.30	61
Pan Wash, Utensil Wash	0.40	0.40	42
Rack and Flight Dishwasher		see manufacturers literature	58
** NB – the figures quoted are for the machine only; the room in which they are located needs to be treated separately.*			
HEATING / WATER			
Coffee Maker	—	0.03	25
Microwave Oven, Toaster	—	0.03	25
Bains Marie, Hot Cupboard	0.20	0.15	57
Servery Counter - Hot Food	0.24	0.24	73
Water Boiler, Still, Beverage Unit	0.25	0.20	78
Light Duty Boiling Pan, Tilting Kettle	0.25	0.20	78
Refrigeration Unit		see manufacturers literature	
GENERAL COOKING			
Induction Hob, Ceramic Stove	—	0.10	30
Pantry and High Output Bakery Oven	0.25	0.20	86
Steamer / Pressure Cooker	0.30	0.20	125
Bratt Pan, Tilt Skillet	0.32	0.32	190
Boiling Table, Hot Top, Stock Pot Stove	0.35	0.25	190
Heavy Duty Boiling Pan	0.35	0.25	146
Open Top Range and Oven	0.35	0.25	190
Steaming and Roasting Oven	0.35	0.35	98
Fan Assisited Convection Oven	0.38	0.30	86
Pizza Oven	0.38	0.30	92
Low/Medium Duty Deep Fat Fryer	0.45	0.35	190
Low Medium Duty Grill	0.50	0.30	220
FLAME COOKING			
Griddle	0.30	0.25	190
Deep Fat Bratt Pan	0.40	0.35	190
Conveyer Pizza Oven	0.45	0.40	90
High Duty Deep Fat Fryer	0.45	0.40	190
Solid Top Oveen range	0.60	0.51	420
Upright or Chain Broiler	0.75	0.55	190
Salamander or Steakhouse Grille	0.75	0.55	260
Chargrille. Broiler	0.95	0.52	350
Chinese Wok Range	1.10	—	280
Mesquite grille	1.20	—	420

Method 2 – Quick calculaction method

Face Velocity Method

When there is insufficient information on the type of cooking appliance available, the volume of air to be extracted may be determined by selecting a velocity across the face area of the canopy that is appropriate for the type of appliances expected to be used. The capture velocity is multiplied by the canopy area to determine the volume of air to be extracted.

The capture velocity should be selected to ensure an even distribution of air across the canopy face, and this velocity will vary according to the cooking application.

☐ Light loading – 0.25 m/s
Applies to steaming ovens, boiling pans, bains marie and stock-pot stoves.

☐ Medium loading – 0.35 m/s
Applies to deep fat fryers, bratt pans, solid and open ranges and griddles.

☐ Heavy loading – 0.5 m/s
Applies to chargrills, mesquite and specialist broiler units.

Recommended Duct Velocities	Supply	Extract
Mains Runs	6 - 8 m/s	6 - 9 m/s
Branch Runs	4 - 6 m/s	5 - 7 m/s
Spigots	3 - 5 m/s	5 - 7 m/s

Table 2 – Types of Grease Filter and Their Main Properties

Type	Recommended Face Velocity Efficiency	Typical	Advantages	Disadvantages
Mesh	2.0 - 5.0 m/s	40 - 50 %	• Inexpensive • Low Pressure drop when clean	• Grease held in air stream • Variable pressure drop • Potential fire hazard
Baffle	4.5 - 5.5 m/s (at slot)	65 - 80 %	• Inexpensive • Has Non-overloading pressure drop	• Higher pressure drop than mesh filters
Cartridge	4.5 - 5.5 m/s (at entry)	90 - 95 %	• Higher Efficiency • Non-overloading pressure drop	• High pressure drop • Special plenum fabrication required
Water Wash	4.5 - 5.5 m/s (at entry)	90 - 95 %	• Higher Efficiency • Non-overloading • Low maintenance	• Expensive • Very high pressure drop • Hot water supply and drains required
Water Mist	4.5 - 5.5 m/s (at entry)	90 - 98 %	• Very efficient • Non-overloading • Low maintenance	• Expensive • Very high pressure drop • Hot & Cold water supplies & drains required.

Table 3 – Types of Fans

Type	Advantages	Disadvantages
Axial Fans	• Compact with an extensive duty range especially when operating in series • Easily removed for maintenance cleaning • A cheaper option	• The temperature limitations are greater but will serve for most general kitchen vent systems • Unable to deal with some pressure requirements
'In-Line' Centrifugal and Mixed flow	• Compact with a good duty range which can serve many kitchen vent systems • Generally less expensive than some options • Easily removed for maintenance and cleaning	• The temperature limitations are greater but will generally serve the the majority of kitchen systems • Forward curved fans should only be used for supply systems
Roof Extract Fans (vertical jet discharge with Centrifugal impellers)	• Compact and, where the motor is encased outside the air stream, has a good temperature range • Easily removed for maintenance and cleaning • No space restrictions • Good external appearance	• The temperature limitations are greater but will generally serve the majority of kitchen vent systems • With poor roof access this type of fan can be problem to maintain • More expensive than in-line/axial fans but dispenses with necessity of discharge ductwork.

Make-Up Air

In order for the kitchen extract system to function correctly, it is essential that an allowance is made for the provision of replacement air. This can be achieved either by introducing mechanically supplied air, or by making provision for natural infiltration.

Where mechanical input is selected the system should provide 85% of the total extracted volume with the remaining 15% infiltrating naturally into the kitchen from surrounding areas. The mechanical or 'fan assisted' method ensures that the kitchen remains under negative pressure thus minimising the potential transfer of kitchen odours to areas outside the kitchen.

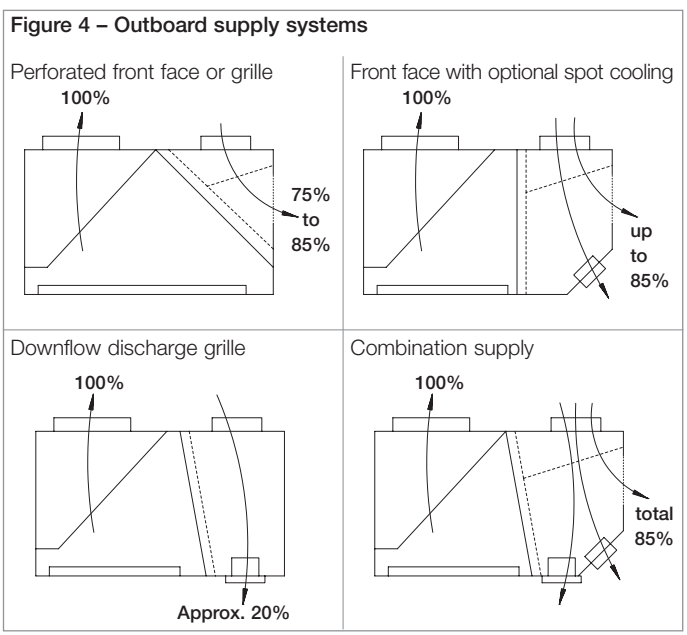
Make-up air can be introduced into the kitchen by means of the canopy or ventilated ceiling or through the HVAC system or by a combination of both. Where air is introduced through the canopy, the various options are shown in figs 4.

The fan powered system provides a option because the lack of control with a infiltration may create the following problems:

- ☐ Unfiltered air will enter the kitchen.
- ☐ Air could be drawn from dirty areas.
- ☐ Uncontrolled air movement may affect the cooking process.
- ☐ Draughts and discomfort can be caused in cold weather.
- ☐ 'cooling' can not be provided to adjacent areas.

Acknowledgment
The information shown here is taken from HVCA's DW/171 Standard for Kitchen Ventilation Systems. For a full copy of DW/171 please contact HVCA Publications, Penrith – Telephone 01768 860405.

Figure 4 – Outboard supply systems



These pages provide some additional information to complete the general technical information in the front of the catalogue.

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

Air flow
The axial air flow pattern allows operation without loss, guide vanes improve and straighten the air and increase the efficiency of the fan. The VAR in-line installation eliminates the need for bulky bends, transformation pieces etc. including their resistances. This saves installation and energy costs.

Casing
Galvanised steel casing with guide vanes and flanges to DIN 24155, Pt. 3 on both sides. Terminal box to IP 55 fixed to the outer casing.

Impeller
Mixed flow impeller with 8 spatially curved blades made from polymers (up to Ø 355). For models 355/2, 355/4/2 and from diameter Ø 400 on made from galvanised steel. Aluminium (surcharge) available on request. High efficiency with low noise characteristic. Highly corrosion resistant and vibration free dynamically balanced to DIN ISO 1940, class G 6.3.

Air flow temperature
The standard models are suitable for ambients from –30 °C to at least +60 °C. See also information on product pages.
Higher temperature models are available on request.

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

Installation in ducting
To achieve the performance figures shown, a straight duct of 2 times the diameter in length downstream of the fan is required (and installed in ducting ideally the same upstream) see figure 1.
RADAX® VAR can be installed in any positon; if motor drainage holes are used, ensure that they face downwards.

Transmission of vibration
To avoid transmission of vibration between fan and building the use of anti vibration mounts is recommended (accessory SDD..., SDZ...).
For fans with larger motors the motor may protrude beyond the flange. In this case we recommend an extension duct (accessory VR...) to ensure the anti vibration mounts are equally loaded.

Installation-examples
☐ Horizontal installation
– **Figure 2**
Free intake, ducted on exhaust. Mounted on ceilling, wall or floor.

– **Figure 3**
Free intake with attenuator, ducted on exhaust.
To reduce inlet and exhaust noise levels, attenuators can be fitted to both ends of the fan.

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

☐ Vertical installation
– **Figure 5**
In-line wall mounted installation with attenuator on intake. The accessories should be fixed separately to ensure that the fan may be easily removed for maintenance.

Information	Pages
Design of systems.	
Acoustic, explosion proof	12-16
General technical information	
Speed control	17-19

Fig. 1

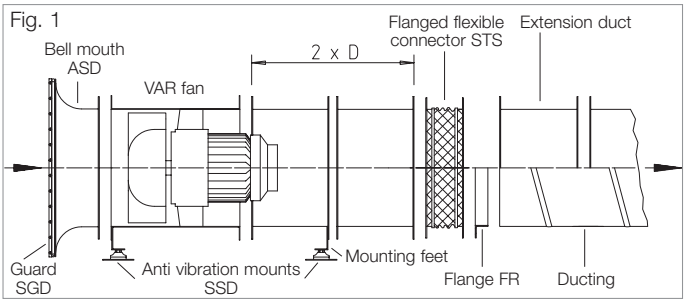


Fig. 2

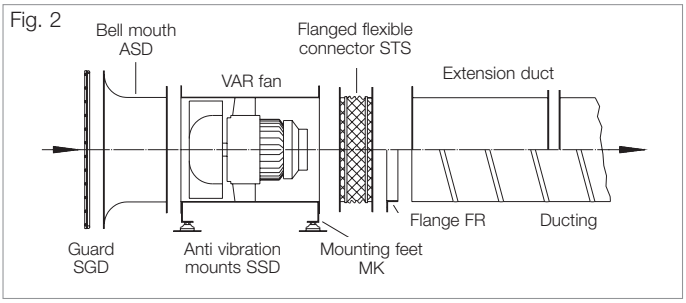


Fig. 3

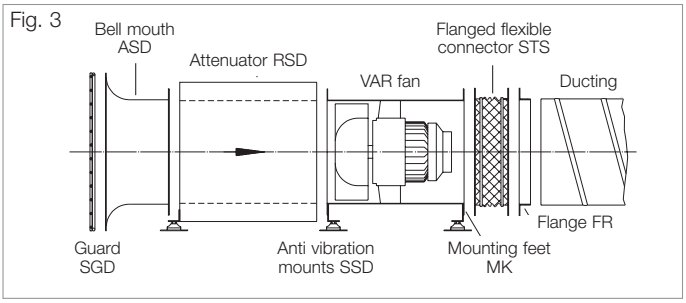


Fig. 4

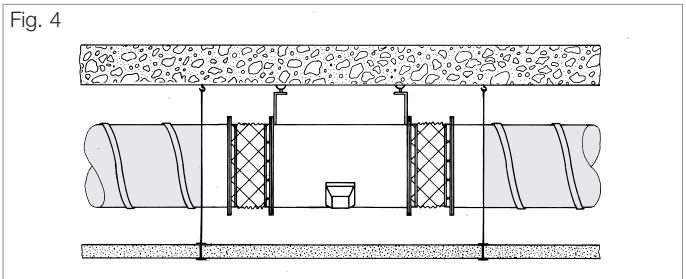
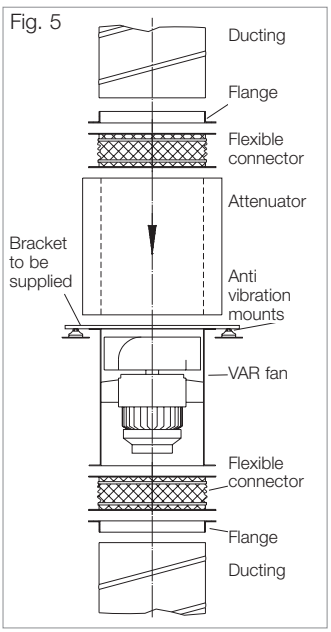


Fig. 5



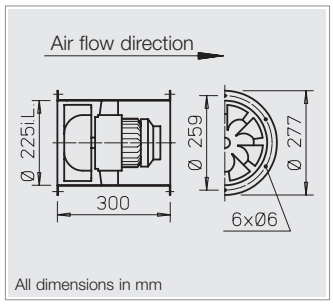
To use this quick selection table for RADAX®-VAR mixed flow fans: Select the nearest static pressure $\Delta p_{stat.}$ (Pa.) and follow the column down until you reach the nearest air flow volume $\dot{V}$ (m^3/s). N.B. More than one selection may be possible. The sound pressure level dB(A), R.P.M. and impeller diameter in mm are given on the table, horizontally to the left.

Sizes from ø 710 mm as well as twin and parallell VAR-units are shown in the HELIOS VAR-catalogue a copy of which is available on request. (RADAX® VAR catalogue Ref. No. 90 386).

Diameter	R.P.M.	Sound pressure level – intake	Air flow volume $\dot{V}$ m^3/s against static pressure = Pa = free available pressure												
mm	min^{-1}	L_{PA} dB(A)	($\Delta p_{stat.}$) in Pa												
		at 4 meters	0	50	100	150	200	300	400	500	600	700	800	900	1000
225	2800	61	0.525	0.503	0.478	0.450	0.417								
225	1450	46	0.269	0.217											
250	2800	64	0.719	0.694	0.669	0.639	0.606	0.525							
250	1450	49	0.369	0.317											
280	2800	68	1.011	0.983	0.956	0.925	0.892	0.814	0.711						
280	1450	52	0.519	0.464	0.381										
315	2800	71	1.439	1.411	1.383	1.353	1.319	1.244	1.161	1.058	0.842				
315	1450	56	0.742	0.686	0.611	0.494									
355	2800	75	2.058	2.028	1.997	1.967	1.931	1.850	1.764	1.669	1.561	1.417			
355	1450	60	1.064	1.003	0.922	0.828	0.650								
400	2800	78	2.947	2.914	2.878	2.842	2.803	2.722	2.633	2.533	2.431	2.314	2.181	2.006	
400	1450	63	1.522	1.453	1.372	1.278	1.164								
400	930	52	0.972	0.850	0.636										
450	2900	83	4.347	4.308	4.272	4.233	4.193	4.114	4.022	3.928	3.822	3.714	3.600	3.481	3.347
450	1450	67	2.169	2.094	2.008	1.906	1.794	1.494							
450	930	56	1.386	1.256	1.075										
500	2900	86	5.964	5.889	5.805	5.769	5.722	5.661	5.611	5.556	5.319	5.472	5.250	5.161	4.889
500	1450	70	2.978	2.944	2.833	2.731	2.722	2.403	2.111						
500	930	59	1.906	1.791	1.501	1.431									
560	1450	73	4.186	4.112	4.030	3.919	3.625	3.575	3.361	3.014					
560	950	63	2.736	2.611	2.431	2.253	1.965								
560	725	56	2.086	1.653											
630	1450	77	5.961	5.903	5.764	5.669	5.444	5.308	5.012	4.753	4.378	3.862			
630	950	67	3.900	3.778	3.583	3.386	3.153	2.500							
630	725	60	2.969	2.778	2.597	2.169									

The following sizes are shown in the VAR catalogue a copy of which is available on request.

Diameter	R.P.M.	Sound pressure level - intake	Air flow volume $\dot{V}$ m^3/s against static pressure = N / m^2 = free available pressure												
mm	min^{-1}	L_{PA} dB(A)	($\Delta p_{stat.}$) in Pa												
		at 4 meters	0	150	300	450	600	750	900	1050	1200	1550	1800		
710	1480	81	8.708	8.392	8.033	7.603	7.133	6.586	5.775						
710	950	70	5.586	5.033	4.275										
710	725	64	4.258	3.439											
800	1480	85	12.464	12.106	11.725	11.281	10.781	10.253	9.661	8.925	7.408				
800	950	74	7.992	7.400	6.625	5.547									
800	725	67	6.094	5.225											
900	1480	88	17.747	17.347	16.928	16.472	15.956	15.392	14.808	14.164	13.450	11.003			
900	950	78	11.386	10.736	9.919	8.958	7.453								
900	725	71	8.683	7.753	6.433										
1000	1480	92	24.344	23.903	23.447	22.942	22.436	21.847	21.222	20.586	19.903	18.358	15.958		
1000	950	81	15.617	14.914	14.075	13.078	11.933	10.014							
1000	725	74	11.911	10.925	9.608	6.969									



Specification

Casing
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.

Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from impact resistant polymers.

Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.
Optional drainage holes made to order (please state installation position).

Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller.
If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. If the fan is to be controlled by a frequency inverter this must be stated when ordering.
Explosion proof fans are not controllable.

Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

Installation
Installation in any position.
Ensure that motor drainage holes (where used) face downwards.

Motor protection
All models (except 3 ph. explosion proof) have thermal contacts as standard which must be connected to a motor protection unit (see table below).
Models without thermal contacts must be protected by a conventional circuit breaker MCB/RCD).

Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Information	Pages
Technical description	108
Selection chart	109
Design of systems	12-16

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

For safety and correct use note the technical information on pages 17-19.

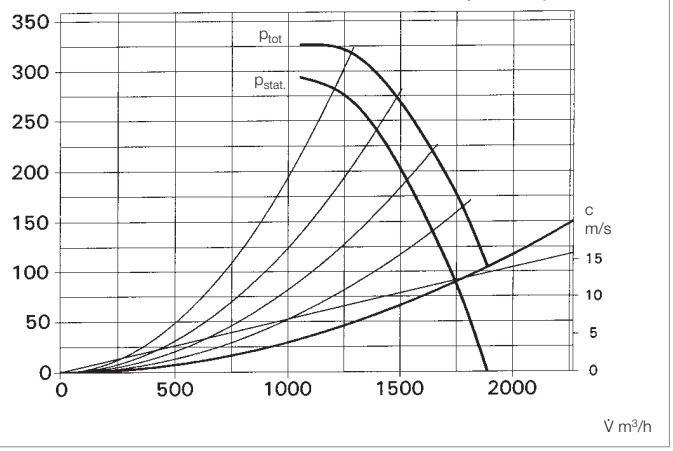
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	$\dot{V}$ m^3/h	kW	V	A	A	No.	+°C	+°C	kg	Type		Type		Type	Type
1 Phase motor, 230 V / 1 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARW 225/4	6660	1450	980	0.05	230	0.50	0.55	301	60	60	10.5	**MWS 1.5**[1)3)]	1947	**MW**	1579	**SDD 1**	**SDZ 1**
VARW 225/2	6661	2800	1890	0.25	230	1.90	2.50	301	60	50	10.5	**MWS 3**[1)3)]	1948	**MW**	1579	**SDD 1**	**SDZ 1**
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 54																	
VARD 225/4	6662	1450	980	0.05	400Y	0.20	0.20	469	60	60	10.5	**RDS 1**[1)3)]	1314	**MD**	5849	**SDD 1**	**SDZ 1**
VARD 225/2	6663	2800	1890	0.25	400Y	0.65	0.65	469	60	60	10.5	**RDS 1**[1)3)]	1314	**MD**	5849	**SDD 1**	**SDZ 1**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 225/8/4	6770	725/1450	490/980	0.02/0.05	400	0.10/0.22	—	472	60	—	10.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
VARD 225/4/2	6771	1450/2800	980/1890	0.06/0.25	400	0.25/0.70	—	472	60	—	10.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
Explosion proof, E Ex de II B, 230 V / 1 ph. / 50 Hz, temperature class T4, protection to IP 55																	
VARW 225/4 Ex	6733	1400	950	0.06	230	0.70	—	757	40	—	12.0	not permitted		**MW**	1579	**SDD 1**	**SDZ 1**
VARW 225/2 Ex	6734	2650	1780	0.18	230	1.23	—	757	40	—	12.5	not permitted		**MW**	1579	**SDD 1**	**SDZ 1**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protected to IP 54																	
VARD 225/4 Ex	6664	1400	940	0.12	400Y	0.44	—	470	40	—	12.5	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 225/2 Ex	6665	2860	1930	0.25	400Y	0.73	—	470	40	—	12.5	not permitted		not permitted		**SDD 1**	**SDZ 1**

[1)] Includes full motor protection unit
[2)] Includes reversing and on/off switch
[3)] alternative: TSW/TSD; 5 step transformer controller without motor protection

225/2 — R.P.M. = 2800

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	81	51	62	74	76	76	72	63
$L_{PA,4m}$	Air noise	dB(A)	61	31	42	54	56	56	52	43

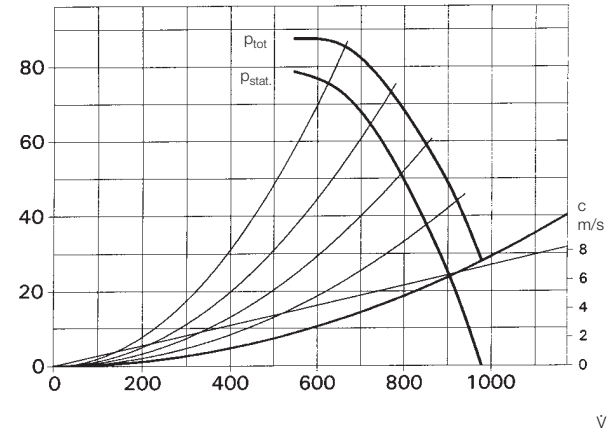
Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³



225/4 — R.P.M. = 1450

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	66	41	55	60	62	59	52	43
$L_{PA,4m}$	Air noise	dB(A)	46	21	35	40	42	39	32	23

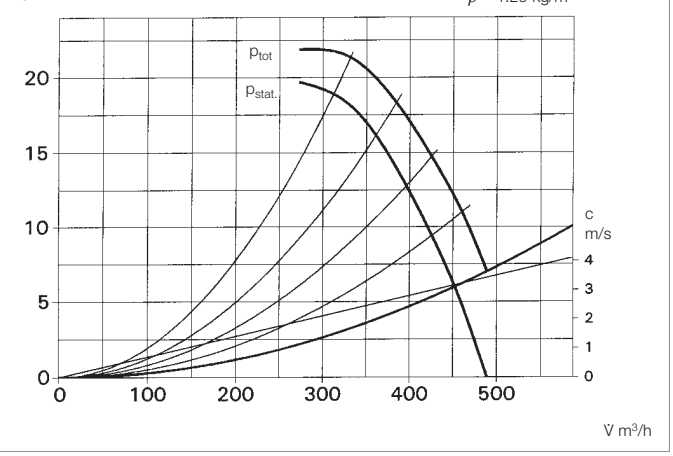
Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³



225/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	49	33	40	45	44	39	31	24
$L_{PA,4m}$	Air noise	dB(A)	29	13	20	25	24	19	11	4

Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³

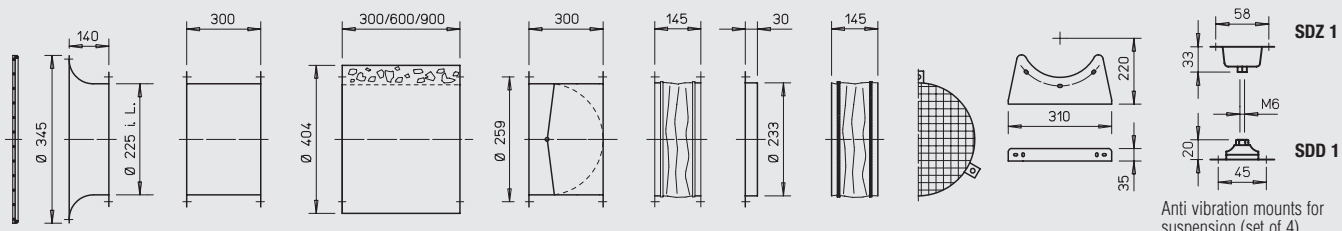


b) Accessories for explosion proof fans

Flanged flexible connector	
Type STS 225 Ex	Ref. 2500
Flexible sleeve	
Type FM 225 Ex	Ref. 1687

Other accessories	**Pages**
Attenuator	218-220
Shutters	245-256
Speed controllers and switches	275-290

Accessories – Specification see pages 142-145.



Bell mouth + guard **ASD-SGD 225** Ref. 1413

Extension duct **VR 225** Ref. 1401

Circular attenuators **RSD 225/...**

Automatic back-draught shutter **RVS 225** a) Ref. 2591

Flanged flex. connector **STS 225** b) Ref. 1218

Flange **FR 225** Ref. 1201

Flexible sleeve **FM 225** b) Ref. 1671

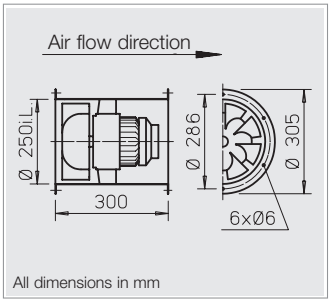
Guard **SG 225** Ref. 1215

Mounting feet (pair) **MK 225** Ref. 1446

Anti vibration mounts for suspension (set of 4) **SDZ 1** (4 pcs.) Ref. 1454
Anti vibration mounts for compression (set of 4) **SDD 1** (4 pcs.) Ref. 1452

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see above



All dimensions in mm

■ Specification

☐ Casing
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.

☐ Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from impact resistant polymers.

☐ Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.
Optional drainage holes made to order (please state installation position).

☐ Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. If the fan is to be controlled by a frequency inverter this must be stated when ordering.
Explosion proof fans are not controllable.

☐ Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

☐ Installation
Installation in any position.
Ensure that motor drainage holes (where used) face downwards.

☐ Motor protection
All models (except 3 ph. explosion proof) have thermal contacts as standard which must be connected to a motor protection unit (see table below).
Models without thermal contacts must be protected by a conventional circuit breaker MCB/RCD).

☐ Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Information	Pages
Technical description	108
Selection chart	109
Design of systems	12-16

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

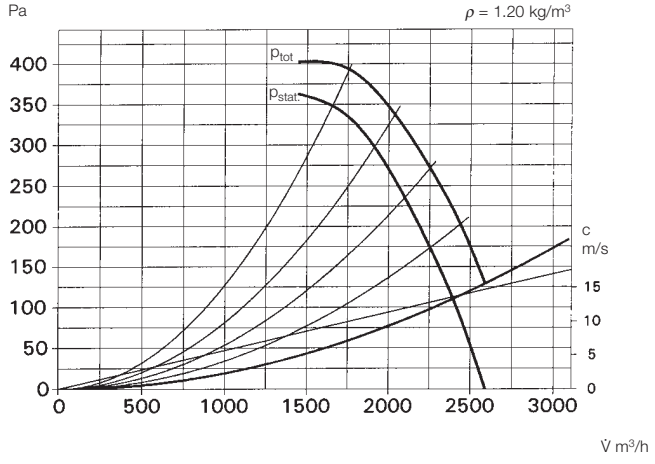
For safety and correct use note the technical information on pages 17-19.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	V m^3/h	kW	V	A	A	No.	+°C	+°C	kg	Type	Ref. No.	Type	Ref. No.	Type	Type
1 Phase motor, 230 V / 1 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARW 250/4	6666	1450	1340	0.06	230	0.46	0.60	301	60	50	11.5	**MWS 1.5**[1)3)]	1947	**MW**	1579	**SDD 1**	**SDZ 1**
VARW 250/2	6667	2800	2590	0.37	230	2.40	3.00	301	60	50	13.0	**MWS 5**[1)3)]	1949	**MW**	1579	**SDD 1**	**SDZ 1**
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 54																	
VARD 250/4	6668	1450	1340	0.06	400Y	0.30	0.30	469	60	60	11.5	**RDS 1**[1)3)]	1314	**MD**	5849	**SDD 1**	**SDZ 1**
VARD 250/2	6669	2800	2590	0.37	400Y	1.10	1.10	469	60	60	11.5	**RDS 2**[1)3)]	1315	**MD**	5849	**SDD 1**	**SDZ 1**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 250/8/4	6772	725/1450	670/1340	0.02/0.06	400	0.12/0.25	—	472	60	—	11.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
VARD 250/4/2	6773	1450/2800	1340/2590	0.08/0.37	400	0.30/1.10	—	472	60	—	13.0	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
Explosion-proof, E Ex de II B, 230 V / 1 ph. / 50 Hz, temperature class T4, protection to IP 55																	
VARW 250/4 Ex	6735	1400	1290	0.06	230	0.70	—	757	40	—	13.0	not permitted		**MW**	1579	**SDD 1**	**SDZ 1**
Explosion-proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protection to IP 54																	
VARD 250/4 Ex	6670	1400	1300	0.12	400Y	0.44	—	470	40	—	13.0	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 250/2 Ex	6671	2860	2590	0.37	400Y	1.02	—	470	40	—	15.5	not permitted		not permitted		**SDD 1**	**SDZ 1**

[1)] Includes full motor protection unit [2)] Includes reversing and on/off switch [3)] alternative: TSW/TSD; 5 step transformer controller without motor protection

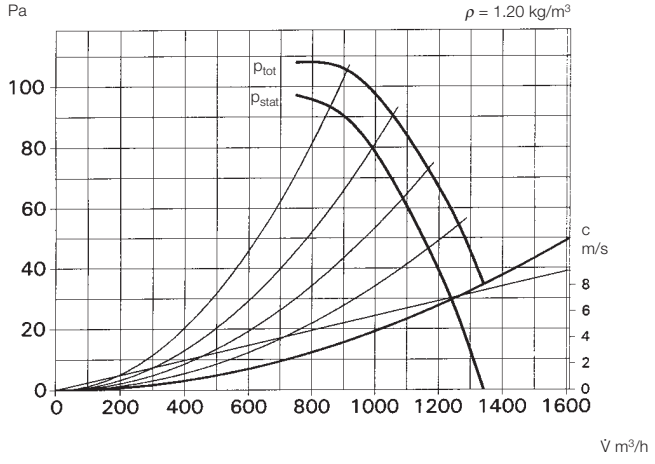
250/2 — R.P.M. = 2800

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	84	55	65	77	79	80	75	67
$L_{PA,4m}$	Air noise	dB(A)	64	35	45	57	59	60	55	47



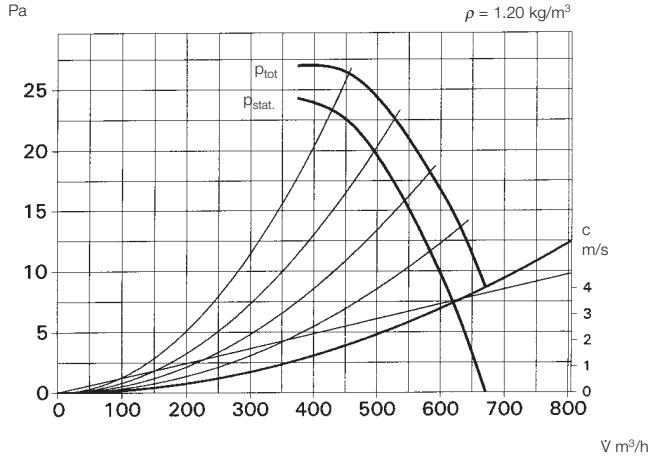
250/4 — R.P.M. = 1450

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	69	44	58	63	65	63	56	46
$L_{PA,4m}$	Air noise	dB(A)	49	24	38	43	45	43	36	26



250/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	52	37	43	48	47	42	34	27
$L_{PA,4m}$	Air noise	dB(A)	32	17	23	28	27	22	14	7

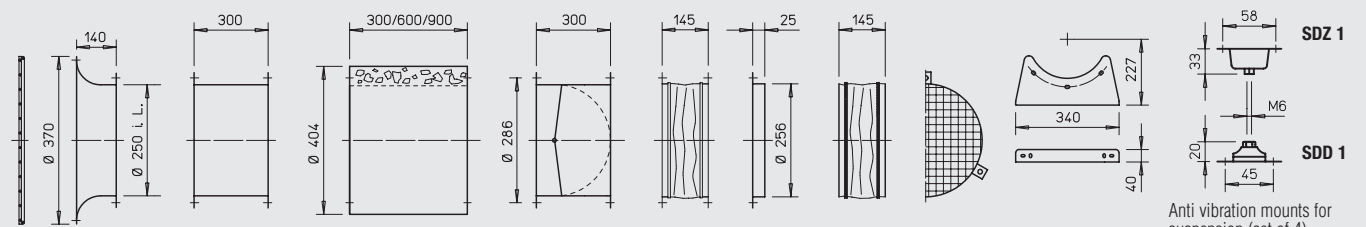


b) Accessories for explosion proof fans

Flanged flexible connector Type STS 250 Ex	Ref. 2501
Flexible sleeve Type FM 250 Ex	Ref. 1688

Other accessories	**Pages**
Filters and attenuators	211-220
Shutters, grilles and louvres	245-256
Speed controllers and switches	263-290

Accessories – Specification see pages 142-145.



Bell mouth + guard **ASD-SGD 250** Ref. 1414

Extension duct **VR 250** Ref. 1402

Circular attenuators **RSD 250/...**

Automatic back-draught shutter **RVS 250** a) Ref. 2592

Flanged flex. connector **STS 250** b) Ref. 1220

Flange **FR 250** Ref. 1203

Flexible sleeve **FM 250** b) Ref. 1672

Guard **SG 250** Ref. 1236

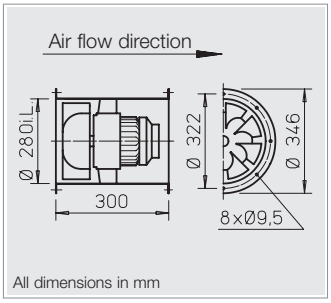
Mounting feet (pair) **MK 250** Ref. 1447

Anti vibration mounts for suspension (set of 4) **SDZ 1** (4 pcs.) Ref. 1454
Anti vibration mounts for compression (set of 4) **SDD 1** (4 pcs.) Ref. 1452

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see above

280 mm ø High pressure in-line mixed-flow RADAX® VAR



All dimensions in mm

■ Specification

☐ Casing
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.

☐ Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from impact resistant polymers.

☐ Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.
Optional drainage holes made to order (please state installation position).

☐ Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. If the fan is to be controlled by a frequency inverter this must be stated when ordering.
Explosion proof fans are not controllable.

☐ Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

☐ Installation
Installation in any position.
Ensure that motor drainage holes (where used) face downwards.

☐ Motor protection
All models (except 3 ph. explosion proof) have thermal contacts as standard which must be connected to a motor protection unit (see table below).
Models without thermal contacts must be protected by a conventional circuit breaker MCB/RCD).

☐ Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Information	Pages
Technical description	108
Selection chart	109
Design of systems	12-16

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

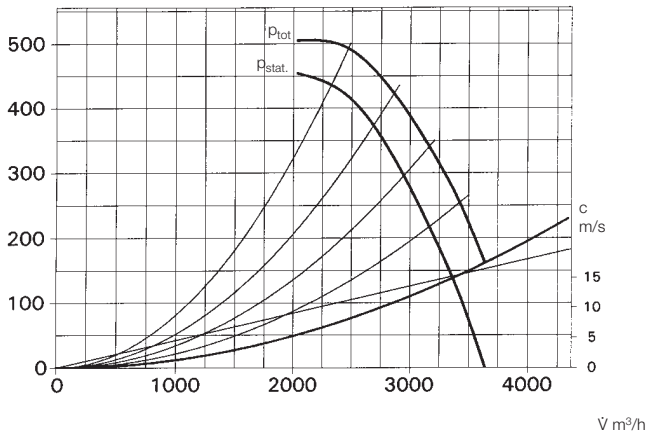
For safety and correct use note the technical information on pages 17-19.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	V̇ m^3/h	kW	V	A	A	No.	+°C	+°C	kg	Type		Type		Type	Type
1 Phase motor, 230 V / 1 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARW 280/4	6672	1450	1880	0.09	230	0.75	0.85	301	60	55	12.0	**MWS 1.5**[1)3)]	1947	**MW**	1579	**SDD 1**	**SDZ 1**
VARW 280/2	6659	2800	3640	0.75	230	4.00	4.50	301	60	55	14.0	**MWS 5**[1)3)]	1949	**MW**	1579	**SDD 1**	**SDZ 1**
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 55																	
VARD 280/4	6673	1450	1880	0.09	400Y	0.35	0.35	469	60	60	12.0	**RDS 1**[1)3)]	1314	**MD**	5849	**SDD 1**	**SDZ 1**
VARD 280/2	6674	2800	3640	0.75	400Y	1.60	1.80	469	60	55	13.5	**RDS 2**[1)3)]	1315	**MD**	5849	**SDD 1**	**SDZ 1**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 280/8/4	6774	725/1450	940/1880	0.03/0.12	400	0.15/0.35	—	472	60	—	12.0	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
VARD 280/4/2	6775	1450/2800	1880/3640	0.16/0.75	400	0.65/1.95	—	472	60	—	13.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
Explosion proof, E Ex de II B, 230 V / 1 ph. / 50 Hz, temperature class T4, protection to IP 55																	
VARW 280/4 Ex	6737	1330	1720	0.09	230	1.15	—	757	40	—	14.0	not permitted		**MW**	1579	**SDD 1**	**SDZ 1**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protection to IP 54																	
VARD 280/4 Ex	6675	1400	1820	0.12	400Y	0.44	—	470	40	—	16.0	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 280/2 Ex	6676	2860	3720	0.75	400Y	1.80	—	470	40	—	18.0	not permitted		not permitted		**SDD 1**	**SDZ 1**

[1)] Includes full motor protection unit [2)] Includes reversing and on/off switch [3)] alternative: TSW/TSD; 5 step transformer controller without motor protection

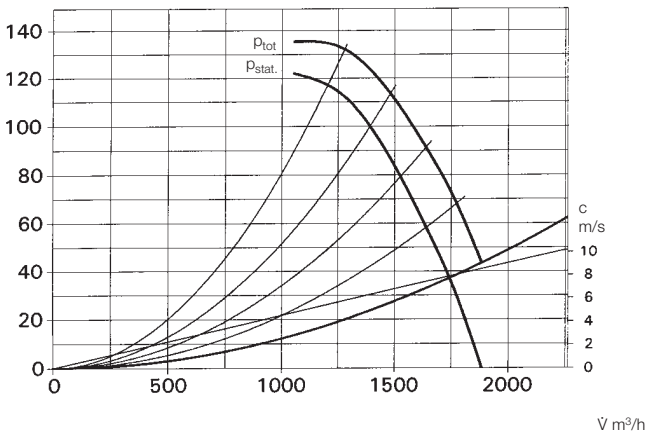
280/2 — R.P.M. = 2800

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



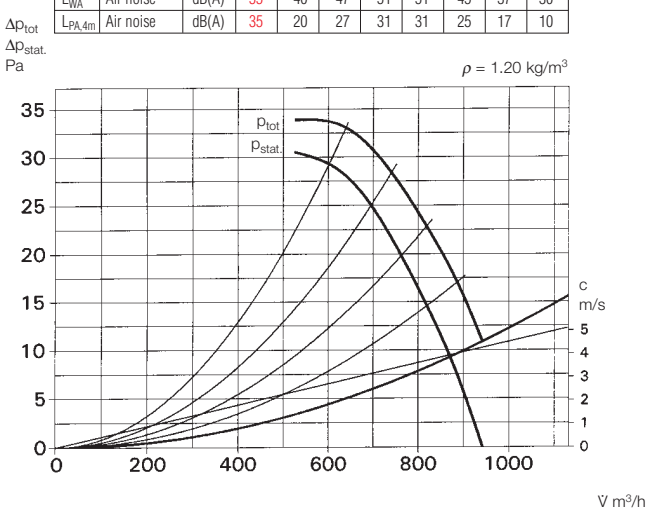
280/4 — R.P.M. = 1450

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



280/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	55	40	47	51	51	45	37	30
$L_{PA,4m}$	Air noise	dB(A)	35	20	27	31	31	25	17	10

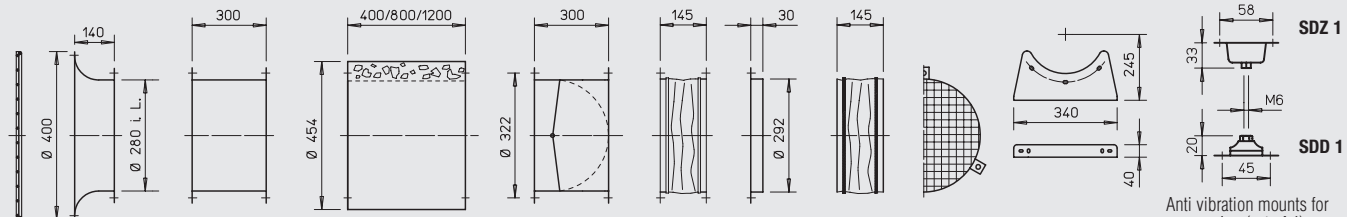


b) Accessories for explosion proof fans

Flanged flexible connector Type STS 280 Ex	Ref. 2502
Flexible sleeve Type FM 280 Ex	Ref. 1689

Other accessories	**Pages**
Filters and attenuators	211-220
Shutters, grilles and louvres	245-256
Speed controllers and switches	263-290

Accessories – Specification see pages 142-145.



Bell mouth + guard **ASD-SGD 280** Ref. 1415

Extension duct **VR 280** Ref. 1403

Circular attenuators **RSD 280/...**

Automatic back-draught shutter **RVS 280** a) Ref. 2593

Flanged flex. connector **STS 280** b) Ref. 1231

Flange **FR 280** Ref.1214

Flexible sleeve **FM 280** b) Ref. 1673

Guard **SG 280** Ref. 1428

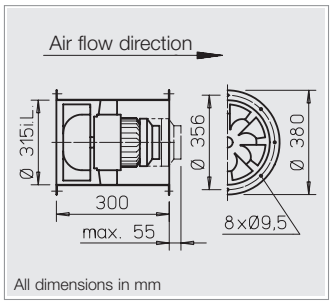
Mounting feet (pair) **MK 280** Ref. 1447

Anti vibration mounts for suspension (set of 4) **SDZ 1** (4 pcs.) Ref. 1454
Anti vibration mounts for compression (set of 4) **SDD 1** (4 pcs.) Ref. 1452

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see above

315 mm ø High pressure in-line mixed-flow RADAX® VAR



All dimensions in mm

■ Specification

☐ Casing
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.

☐ Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from impact resistant polymers.

☐ Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.
Optional drainage holes made to order (please state installation position).

☐ Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. If the fan is to be controlled by a frequency inverter this must be stated when ordering.
Explosion proof fans are not controllable.

☐ Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

☐ Installation
Installation in any position.
Ensure that motor drainage holes (where used) face downwards.

☐ Motor protection
All models (except 3 ph. explosion proof) have thermal contacts as standard which must be connected to a motor protection unit (see table below).
Models without thermal contacts must be protected by a conventional circuit breaker MCB/RCD).

☐ Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Information	Pages
Technical description	108
Selection chart	109
Design of systems	12-16

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

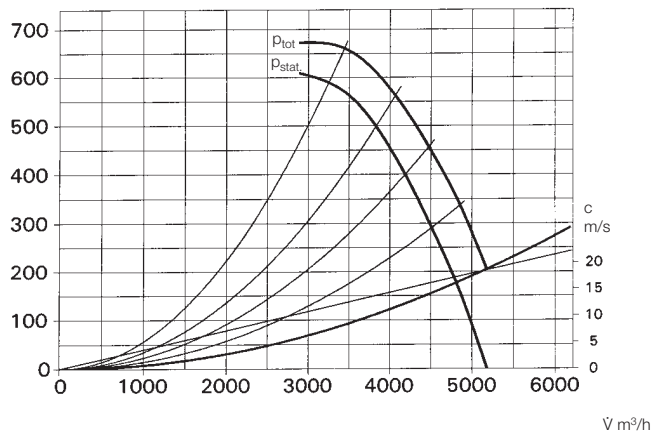
For safety and correct use note the technical information on pages 17-19.

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	$\dot{V}$ m^3/h	kW	V	A	A	No.	+°C	+°C	kg	**Type**	Ref. No.	**Type**	Ref. No.	**Type**	**Type**
1 Phase motor, 230 V / 1 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARW 315/4	6677	1450	2680	0.18	230	1.10	1.30	301	60	55	13.0	**MWS 3**[1)3)]	1948	**MW**	1579	**SDD 1**	**SDZ 1**
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 55																	
VARD 315/4	6678	1450	2680	0.18	400Y	0.70	0.70	469	60	60	13.0	**RDS 1**[1)3)]	1314	**MD**	5849	**SDD 1**	**SDZ 1**
2 speed motor, 3 Phase motor, 400 V / 3 ph. / 50 Hz, Y/△-motor, protection to IP 55																	
VARD 315/2/2	6679	2080/2700	3850/5000	0.75/1.1	400Y/Δ	1.6/2.5	2.8	520	60	55	20.5	**RDS 4**[1)3)]	1316	**M 4**[2)]	1571	**SDD 1**	**SDZ 1**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 315/8/4	6776	725/1450	1340/2680	0.04/0.18	400	0.25/0.55	—	472	60	—	14.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
VARD 315/4/2	6777	1450/2800	2680/5180	0.25/1.10	400	0.70/2.90	—	472	60	—	20.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
Explosion proof, E Ex de II B, 230 V / 1 ph. / 50 Hz, temperature class T4, protection to IP 55																	
VARW 315/4 Ex	6738	1450	2680	0.18	230	1.90	—	757	40	—	15.0	not permitted		**MW**	1579	**SDD 1**	**SDZ 1**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protection to IP 54																	
VARD 315/4 Ex	6680	1410	2610	0.37	400Y	1.10	—	470	40	—	17.0	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 315/2 Ex	6681	2840	5260	1.50	400Y	3.25	—	470	40	—	23.0	not permitted		not permitted		**SDD 1**	**SDZ 1**

[1)] Includes full motor protection unit
[2)] Includes reversing and on/off switch
[3)] alternative: TSW/TSD; 5 step transformer controller without motor protection

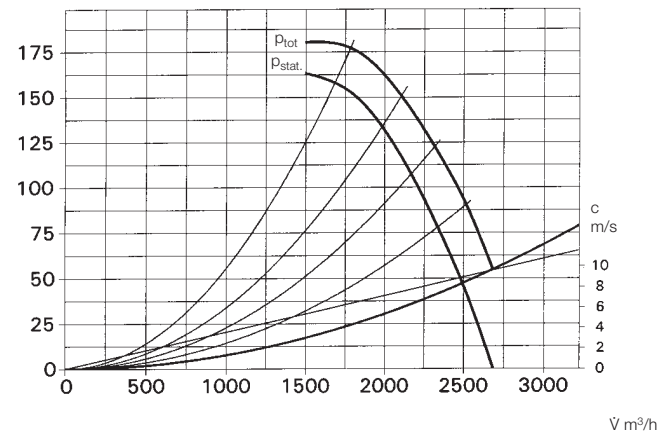
315/2 — R.P.M. = 2800

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



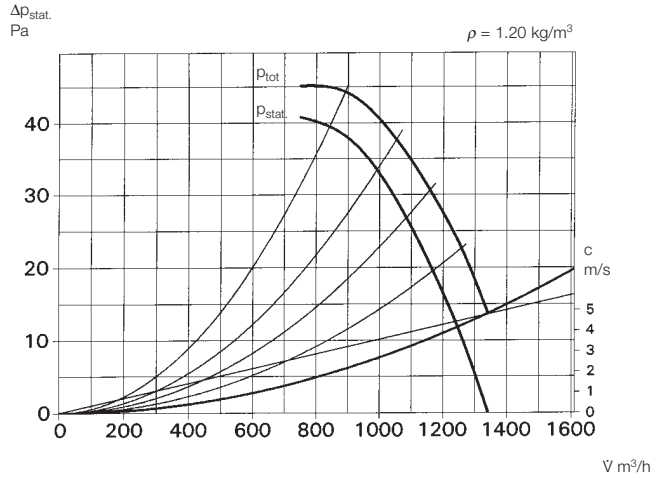
315/4 — R.P.M. = 1450

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



315/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	59	44	50	55	54	49	41	34
$L_{PA,4m}$	Air noise	dB(A)	39	24	30	35	34	29	21	14

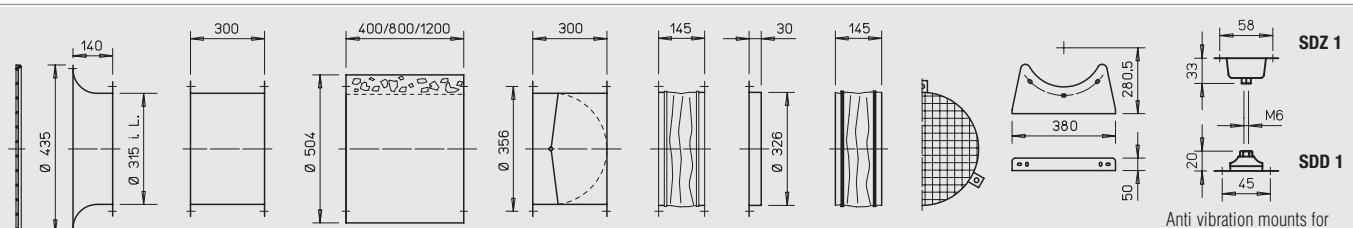


b) Accessories for explosion proof fans

Flanged flexible connector	
Type STS 315 Ex	Ref. 2503
Flexible sleeve	
Type FM 315 Ex	Ref. 1690

Other accessories	**Pages**
Filters and attenuators	211-220
Shutters, grilles and louvres	245-256
Speed controllers and switches	263-290

Accessories – Specification see pages 142-145.



Bell mouth + guard **ASD-SGD 315** Ref. 1416

Extension duct **VR 315** Ref. 1404

Circular attenuators **RSD 315/...**

Automatic back-draught shutter **RVS 315** a) Ref. 2594

Flanged flex. connector **STS 315** b) Ref. 1221

Flange **FR 315** Ref. 1204

Flexible sleeve **FM 315** b) Ref. 1674

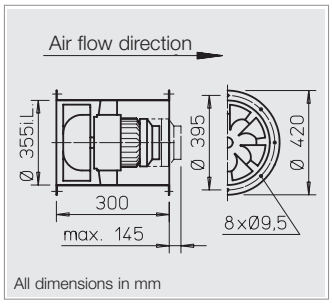
Guard **SG 315** Ref. 1237

Mounting feet (pair) **MK 315** Ref. 1448

Anti vibration mounts for suspension (set of 4) **SDZ 1** (4 pcs.) Ref. 1454
Anti vibration mounts for compression (set of 4) **SDD 1** (4 pcs.) Ref. 1452

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see above



All dimensions in mm

■ Specification

☐ Casing
Manufactured in galvanised sheet steel with flanges on both sides to DIN 24155, Pt. 3, with fixed guide vanes and motor support.

☐ Impeller
Specially developed spatially curved impeller, dynamically balanced manufactured from impact resistant polymers (2 pole models R.P.M. = 2800 from hot dipped galvanised steel).

☐ Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression.
Optional drainage holes made to order (please state installation position).

☐ Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. If the fan is to be controlled by a frequency inverter this must be stated when ordering.
Explosion proof fans are not controllable.

☐ Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

☐ Installation
Installation in any position. Ensure that motor drainage holes (where used) face downwards.

☐ Motor protection
All models (except explosion proof as well as models VARD 355/4/2 and 355/2) have thermal contacts as standard which must be connected to a motor protection unit (see table below).
Models without thermal contacts must be protected by a conventional circuit breaker (MCB/RCD).

☐ Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Information	Pages
Technical description	108
Selection chart	109
Design of systems	12-16

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

For safety and correct use note the technical information on pages 17-19.

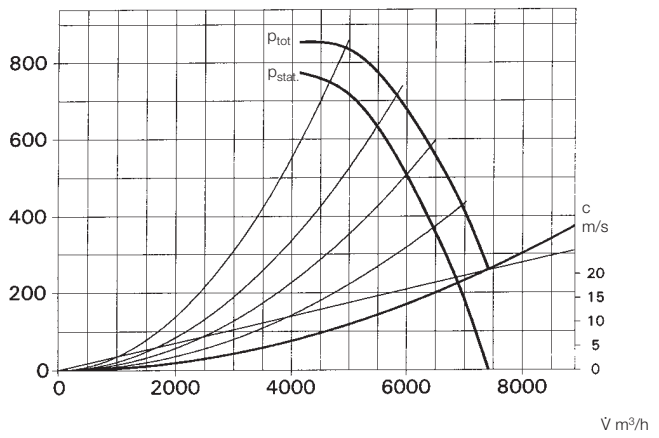
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	V̇ m³/h	kW	V	A	A	No.	+°C	+°C	kg	**Type**	Ref. No.	**Type**	Ref. No.	**Type**	**Type**
1 Phase motor, 230 V / 1 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARW 355/4	6682	1450	3840	0.33	230	1.70	2.00	301	60	55	15.5	**MWS 3**[1)4)]	1948	**MW**	1579	**SDD 1**	**SDZ 1**
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 55																	
VARD 355/4	6683	1450	3840	0.33	400Y	0.90	0.90	469	60	60	15.5	**RDS 1**[1)4)]	1314	**MD**	5849	**SDD 1**	**SDZ 1**
VARD 355/2	6684	2850	7550	2.20	400Y	5.10	[3)]	470	40	—	21.5	[3)]		—	—	**SDD 1**	**SDZ 1**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 355/8/4	6778	725/1450	1920/3840	0.06/0.30	400	0.40/1.10	—	472	60	—	15.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
VARD 355/4/2	6779	1440/2880	3820/7630	0.65/2.60	400	1.50/5.70	—	471	40	—	29.0	**PDA 12**	5081	—	—	**SDD 1**	**SDZ 1**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protection to IP 54																	
VARD 355/4 Ex	6685	1410	3740	0.37	400Y	1.10	—	470	40	—	19.0	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 355/2 Ex	6686	2860	7580	2.50	400/690	4.85/2.77	—	498	40	—	33.0	not permitted		not permitted		**SDD 1**	**SDZ 1**

[1)] Includes full motor protection unit [2)] Includes reversing and on/off switch [3)] Speed control on demand [4)] alternative: TSD/TSW; 5 step transformer controller without motor protection

355/2 — R.P.M. = 2800

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

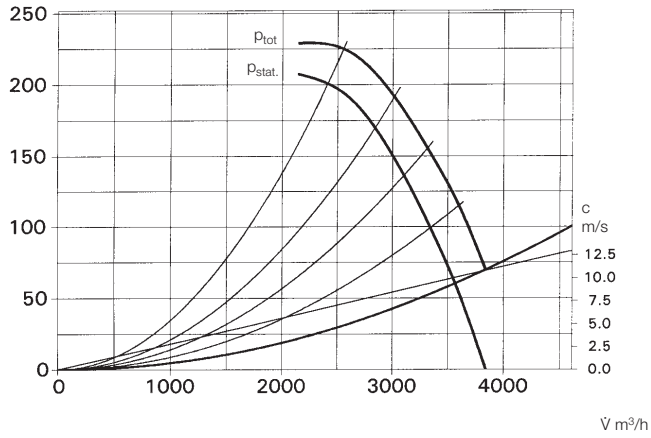
Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³



355/4 — R.P.M. = 1450

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

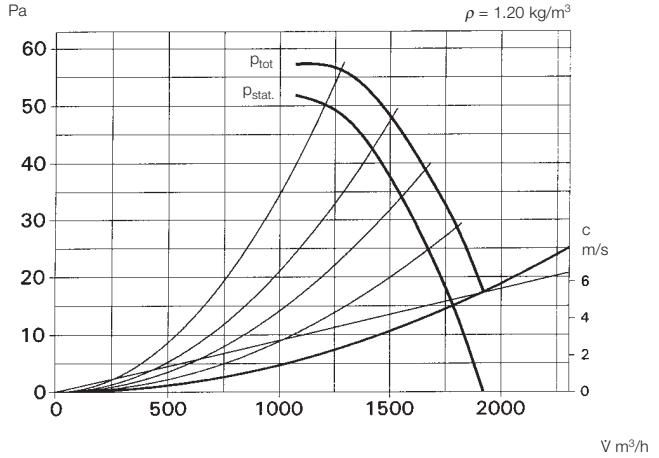
Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³



355/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	63	47	54	59	58	52	44	37
$L_{PA,4m}$	Air noise	dB(A)	43	27	34	39	38	32	24	17

Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³

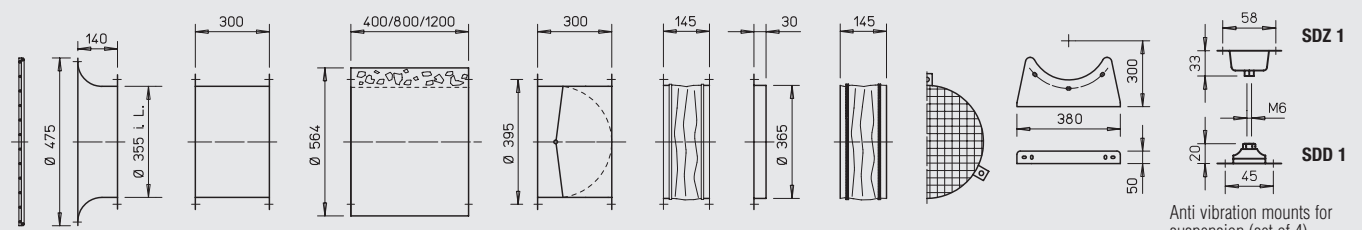


b) Accessories for explosion proof fans

Flanged flexible connector Type STS 355 Ex	Ref. 2504
Flexible sleeve Type FM 355 Ex	Ref. 1691

Other accessories	**Pages**
Filters and attenuators	211-220
Shutters, grilles and louvres	245-256
Speed controllers and switches	263-290

Accessories – Specification see pages 142-145.



Bell mouth + guard **ASD-SGD 355** Ref. 1417

Extension duct **VR 355** Ref. 1405

Circular attenuators **RSD 355/...**

Automatic back-draught shutter **RVS 355** a) Ref. 2595

Flanged flex. connector **STS 355** b) Ref. 1222

Flange **FR 355** Ref.1205

Flexible sleeve **FM 355** b) Ref. 1675

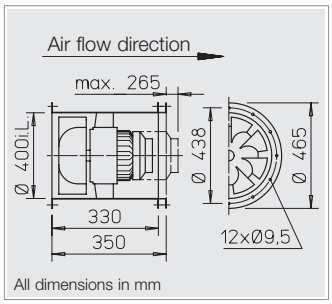
Guard **SG 355** Ref. 1238

Mounting feet (pair) **MK 355** Ref. 1448

Anti vibration mounts for suspension (set of 4) **SDZ 1** (4 pcs.) Ref. 1454
Anti vibration mounts for compression (set of 4) **SDD 1** (4 pcs.) Ref. 1452

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see above



All dimensions in mm

■ Specification

☐ Casing
Manufactured in galvanised steel with flanges on both sides to DIN 24155, Pt. 3, vanes and fixed motor support. Models 400/2 made from hot dipped galvanised steel.

☐ Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from hot dipped galvanised steel.

☐ Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium or die cast casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression. Optional drainage holes made to order (please state installation position).

☐ Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. If the fan is to be controlled by a frequency inverter this must be stated when ordering.
Explosion proof fans are not controllable.

☐ Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

☐ Installation
Installation in any position. Ensure that motor drainage holes (where used) face downwards.

☐ Installation
Installation in any position. Ensure that motor drainage holes (where used) face downwards.

☐ Motor protection
All models (except explosion proof as well as model VARD 400/4/2) have thermal contacts as standard which must be connected to a motor protection unit (see table below). Models without thermal contacts must be protected by a conventional circuit breaker (MCB/RCD).

☐ Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Information	Pages
Technical description	108
Selection chart	109
Design of systems	12-16

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

For safety and correct use note the technical information on pages 17-19.

b) Accessories for explosion proof fans

Flanged flexible connector
Type STS 400 Ex Ref. 2505
Flexible sleeve
Type FM 400 Ex Ref. 1692

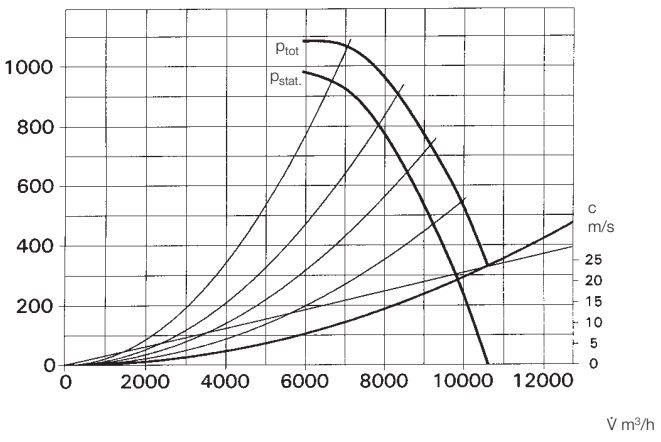
Other accessories	Pages
Filters and attenuators	211-220
Shutters, grilles and louvres	245-256
Speed controllers and switches	263-290

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	V̇ m^3/h	kW	V	A	A	No.	+°C	+°C	kg	Type		Type		Type	Type
1 Phase motor, 230 V / 1 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARW 400/6	6687	930	3520	0.18	230	1.20	1.25	301	60	60	19.5	**MWS 3**[1)3)]	1948	**MW**	1579	**SDD 1**	**SDZ 1**
VARW 400/4	6688	1420	5380	0.55	230	3.20	3.70	301	60	50	22.5	**MWS 5**[1)3)]	1949	**MW**	1579	**SDD 1**	**SDZ 1**
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 55																	
VARD 400/6	6689	930	3520	0.18	400Y	0.75	0.75	469	60	60	19.5	**RDS 1**[1)3)]	1314	**MD**	5849	**SDD 1**	**SDZ 1**
VARD 400/4	6690	1420	5380	0.55	400Y	2.00	2.00	469	60	60	22.5	**RDS 4**[1)3)]	1316	**MD**	5849	**SDD 1**	**SDZ 1**
2 speed motor, 400 V / 3 ph. / 50 Hz, Y/△-motor, protection to IP 55																	
VARD 400/2/2	6691	2290/2780	8680/10540	2.2/4.4	400Y/Δ	5.9/8.0	10.00	520	60	50	74.0	**RDS 11**[1)3)]	1332	**M 4**[2)]	1571	**SDD 1**	**SDZ 2**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 400/12/6	6780	465/930	1760/3520	0.06/0.18	400	0.30/0.70	—	472	60	—	19.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
VARD 400/8/4	6781	710/1420	2690/5380	0.12/0.50	400	1.00/2.00	—	472	60	—	22.5	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
VARD 400/4/2	6782	1460/2890	5530/10950	1.20/4.80	400	2.60/10.0	—	471	40	—	74.0	**PDA 12**	5081	—	—	**SDD 1**	**SDZ 2**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protection to IP 54																	
VARD 400/6 Ex	6692	895	3390	0.18	400Y	0.68	—	470	40	—	21.0	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 400/4 Ex	6693	1415	5360	0.55	400Y	1.51	—	470	40	—	25.0	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 400/2 Ex	6694	2890	10950	4.60	400/690	8.80/5.00	—	498	40	—	83.0	not permitted		not permitted		**SDD 2**	**SDZ 2**

[1)] Includes full motor protection unit [2)] Includes reversing and on/off switch [3)] alternative: TSW/TSD; 5 step transformer controller without motor protection

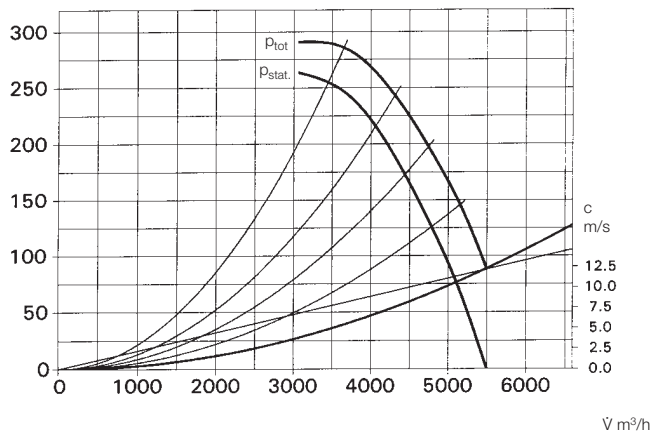
400/2 — R.P.M. = 2800

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



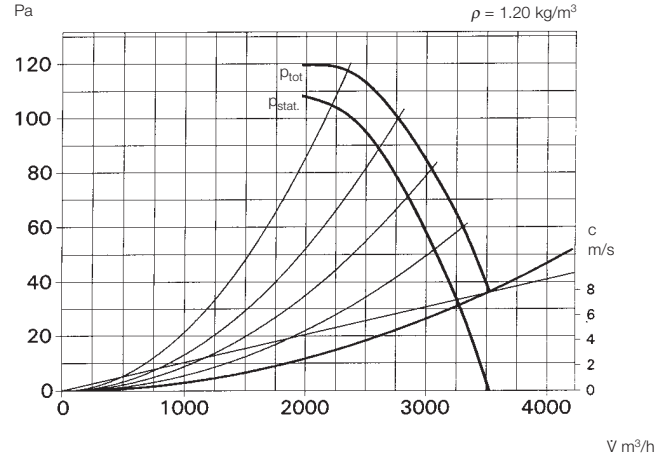
400/4 — R.P.M. = 1450

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



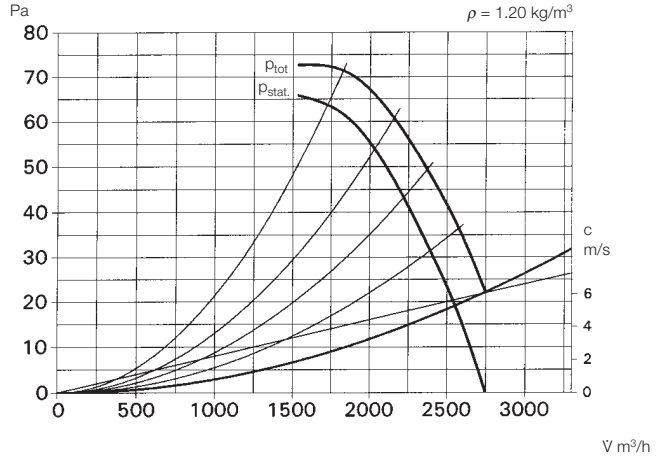
400/6 — R.P.M. = 930

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	72	56	62	68	68	64	56	47
$L_{PA,4m}$	Air noise	dB(A)	52	36	42	48	48	44	36	27

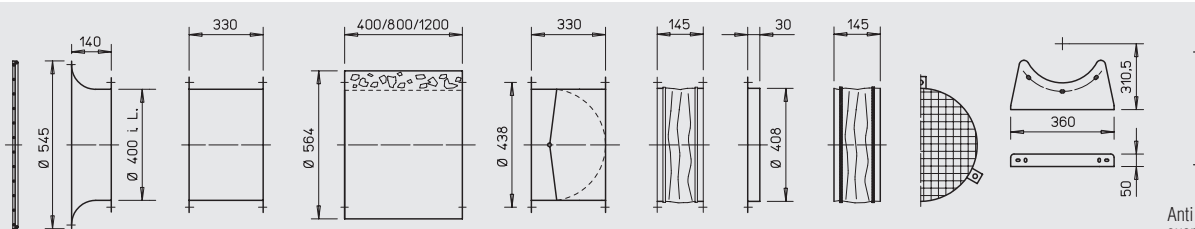


400/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	66	51	58	62	62	56	48	41
$L_{PA,4m}$	Air noise	dB(A)	46	31	38	42	42	36	28	21



Accessories – Specification see pages 142-145.



Bell mouth + guard
ASD-SGD 400
Ref. 1418

Extension duct
VR 400
Ref. 1406

Circular attenuators
RSD 400/...

Automatic back-draught shutter
RVS 400 a)
Ref. 2596

Flanged flex. connector
STS 400 b)
Ref. 1223

Flange
FR 400
Ref.1206

Flexible sleeve
FM 400 b)
Ref. 1676

Guard
SG 400
Ref. 1239

Mounting feet (pair)
MK 400
Ref. 1449

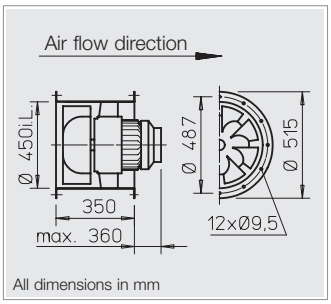
Anti vibration mounts for suspension (set of 4)
SDZ c) (4 pcs.)
Anti vibration mounts for compression (set of 4)
SDD c) (4 pcs.)

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see left page

c) Suitable model see last column of data table

450 mm ø High pressure in-line mixed-flow RADAX® VAR



All dimensions in mm

■ Specification

☐ Casing
Manufactured in hot dipped galvanised steel with flanges on both sides to DIN 24155, Pt. 3, vanes and fixed motor support.

☐ Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from hot dipped galvanised steel.

☐ Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium or die cast casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression. Optional drainage holes made to order (please state installation position).

☐ Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. Explosion proof fans are not controllable.

☐ Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

☐ Installation
Installation in any position. Ensure that motor drainage holes (where used) face downwards.

☐ Motor protection
All models (except explosion proof as well as models VARD 450/4/2 and 450/8/4) have thermal contacts as standard which must be connected to a motor protection unit (see table below). Models without thermal contacts must be protected by a conventional circuit breaker MCB/RCD).

☐ Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

For safety and correct use note the technical information on pages 17-19.

[b] Accessories for explosion proof fans

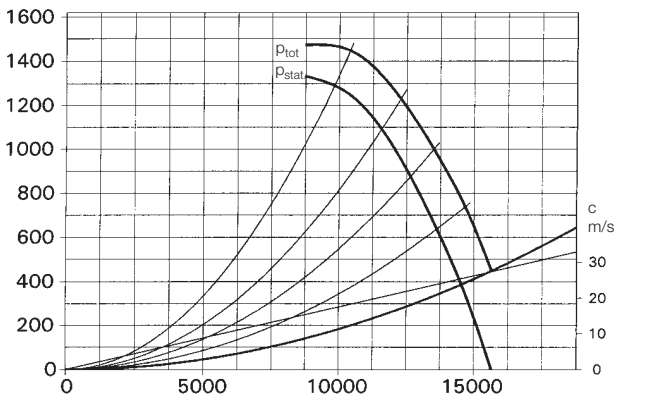
Flanged flexible connector
Type STS 450 Ex Ref. 2506
Flexible sleeve
Type FM 450 Ex Ref. 1693

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Max. air flow temp. standard supply	Max. air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	V m^3/h	kW	V	A	A	No.	+°C	+°C	kg	Type		Type		Type	Type
1 Phase motor, 230 V / 1 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARW 450/6	6695	930	5020	0.25	230	1.80	2.21	301	60	50	45.0	**MWS 3**[1)3)]	1948	**MW**	1579	**SDD 1**	**SDZ 1**
VARW 450/4	6736	1340	7230	0.75	230	6.50	7.10	301	60	55	45.0	**MWS 7.5**[1)3)]	1950	**MW**	1579	**SDD 1**	**SDZ 1**
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 55																	
VARD 450/6	6696	930	5020	0.25	400Y	1.15	1.15	469	60	60	45.0	**RDS 2**[1)3)]	1315	**MD**	5849	**SDD 1**	**SDZ 1**
VARD 450/2	6698	2890	15590	7.50	400/690	15/8.7	—	776	60	—	95.0	**FUR 16**[3)]	9493	**MSA**	1289	**SDD 2**	**SDZ 2**
2 sped motor, 400 V / 3 ph. / 50 Hz, Y/△-motor, protection to IP 55																	
VARD 450/4/4	6697	1100/1370	5930/7390	0.55/0.75	400Y/Δ	1.2/2.3	2.3	520	60	60	45.0	**RDS 4**[1)3)]	1316	**M 4**[2)]	1571	**SDD 1**	**SDZ 1**
Pole-switching, 2 speed motor (Dahlander winding Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 450/12/6	6783	460/930	2480/5020	0.04/0.26	400	0.4/1.1	—	472	60	—	45.0	**PDA 12**	5081	**M 3**[2)]	1293	**SDD 1**	**SDZ 1**
VARD 450/8/4	6784	710/1420	3830/7660	0.25/1.00	400	1.1/2.6	—	471	60	—	50.0	**PDA 12**	5081	—	—	**SDD 1**	**SDZ 1**
VARD 450/4/2	6785	1460/2920	7880/15760	2.00/8.00	400	4.20/16.5	—	471	60	—	105.0	**PDA 25**	5060	—	—	**SDD 2**	**SDZ 2**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protection to IP 54																	
VARD 450/6 Ex	6699	930	5020	0.25	400Y	0.87	—	470	40	—	48.0	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 450/4 Ex	6700	1415	7640	1.10	400Y	2.70	—	470	40	—	51.0	not permitted		not permitted		**SDD 1**	**SDZ 1**
VARD 450/2 Ex	6701	2930	15810	7.50	400/690	15/8.7	—	498	40	—	155.0	not permitted		not permitted		**SDD 2**	**SDZ 3**

[1)] Includes full motor protection unit [2)] Includes reversing and on/off switch [3)] alternative TSW/TSD; 5 step transformer controller without motor protection

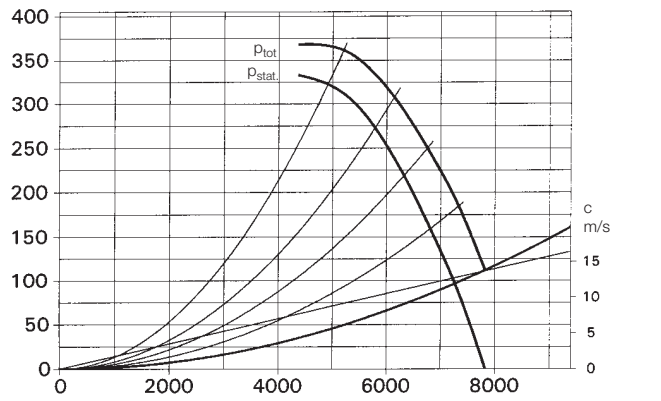
450/2 — R.P.M. = 2900

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



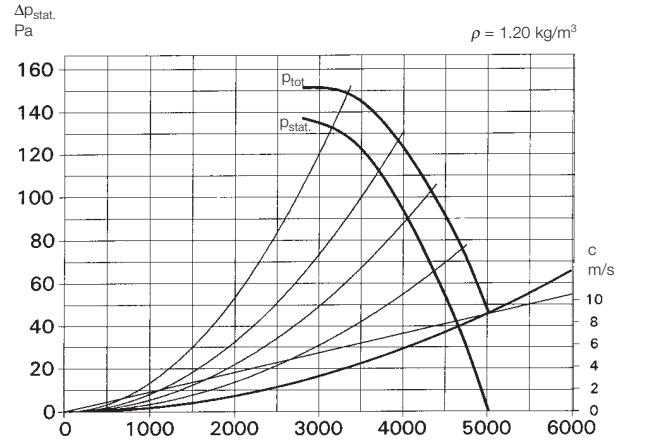
450/4 — R.P.M. = 1450

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



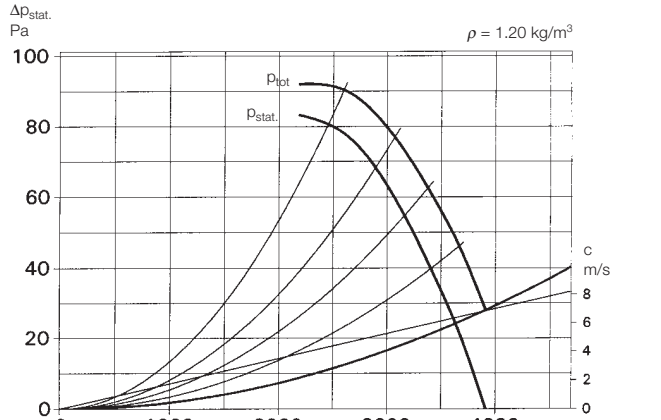
450/6 — R.P.M. = 930

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	76	60	65	71	72	67	59	51
$L_{PA,4m}$	Air noise	dB(A)	56	40	45	51	52	47	39	31

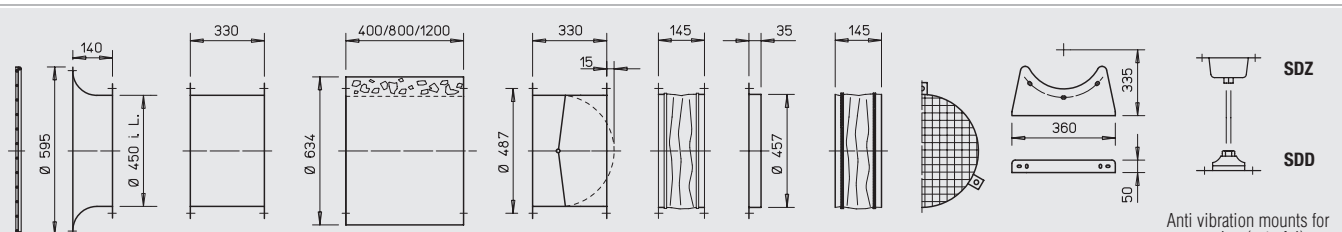


450/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	70	54	61	66	65	60	52	45
$L_{PA,4m}$	Air noise	dB(A)	50	34	41	46	45	40	32	25



Accessories – Specification see pages 142-145.



Bell mouth + guard
ASD-SGD 450
Ref. 1419

Extension duct
VR 450
Ref. 1407

Circular attenuators
RSD 450/...

Automatic back-draught shutter
RVS 450 a)
Ref. 2597

Flanged flex. connector
STS 450 b)
Ref. 1224

Flange
FR 450
Ref. 1207

Flexible sleeve
FM 450 b)
Ref. 1677

Guard
SG 450
Ref. 1240

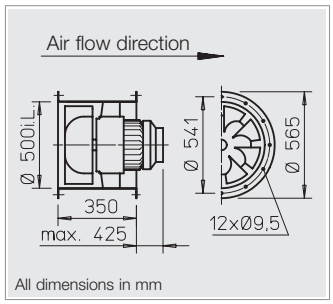
Mounting feet (pair)
MK 450
Ref. 1449

Anti vibration mounts for suspension (set of 4)
SDZ c) (4 pcs.)
Anti vibration mounts for compression (set of 4)
SDD c) (4 pcs.)

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see left page

c) Suitable model see last column of data table



■ Specification

☐ Casing
Manufactured in hot dipped galvanised steel with flanges on both sides to DIN 24155, Pt. 3, vanes and fixed motor support.

☐ Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from hot dipped galvanised steel.

☐ Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium or die cast casing with cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression. Optional drainage holes on special order (please state installation position).

☐ Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. Explosion proof fans are not controllable.

☐ Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

☐ Installation
Installation in any position. Ensure that motor drainage holes (where used) face downwards.

☐ Motor protection
All models (except explosion proof as well as models VARD 500/4/2 and 500/8/4) have thermal contacts as standard which must be connected to a motor protection unit (see table below). Models without thermal contacts must be protected by a conventional circuit breaker MCB/RCD).

☐ Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

b) Accessories for explosion proof fans

Flanged flexible connector
Type STS 500 Ex Ref. 2507
Flexible sleeve
Type FM 500 Ex Ref. 1694

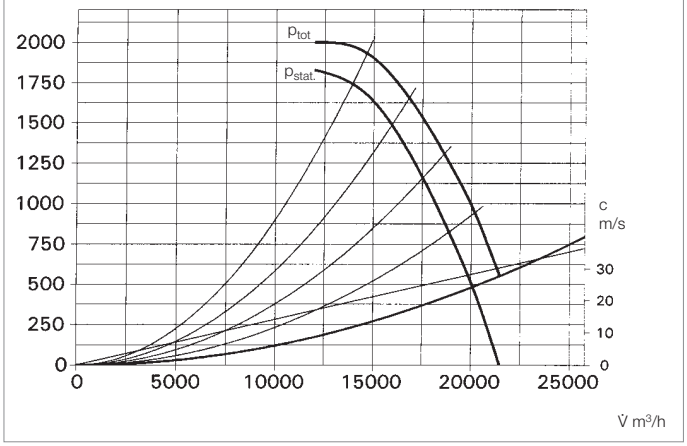
Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Speed controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	V̇ m^3/h	kW	V	A	A	No.	+°C	+°C	kg	Type		Type		Type	Type
1 Phase motor, 230 V / 1 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARW 500/6	6702	940	6960	0.55	230	3.00	3.40	301	60	50	70.0	**MWS 5** [1)3)]	1949	**MW**	1579	**SDD 2**	**SDZ 2**
VARW 500/4	6739	1340	9920	1.50	230	9.10	9.10	301	60	55	70.0	**ESA 10 i** [3)]	7808	**MW**	1579	**SDD 2**	**SDZ 2**
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 55																	
VARD 500/6	6703	940	6960	0.55	400Y	1.60	1.60	469	60	60	70.0	**RDS 2** [1)3)]	1315	**MD**	5849	**SDD 2**	**SDZ 2**
VARD 500/2	6705	2935	21730	15.00	400/690	29/16.7	—	776	60	—	170.0	**FUR 32** [1)]	9497	**MSA**	1289	**SDD 2**	**SDZ 3**
2 speed motor, 400 V / 3 ph. / 50 Hz, Y/△-motor, protection to IP 55																	
VARD 500/4/4	6704	1130/1360	8360/10070	1.0/1.5	400Y/Δ	2.1/3.9	3.9	520	60	55	70.0	**RDS 7** [1)3)]	1578	**M 4** [2)]	1571	**SDD 2**	**SDZ 2**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 500/12/6	6786	460/930	3400/6880	0.10/0.55	400	0.8/1.9	—	472	60	—	70.0	**PDA 12**	5081	**M 3** [2)]	1293	**SDD 2**	**SDZ 2**
VARD 500/8/4	6787	690/1400	5110/10360	0.55/2.20	400	1.7/5.1	—	471	60	—	75.0	**PDA 12**	5081	—	—	**SDD 2**	**SDZ 2**
VARD 500/4/2	6788	1475/2935	10920/21730	4.00/12.00	400	6.0/23.5	—	471	60	—	165.0	**PDA 25**	5060	—	—	**SDD 2**	**SDZ 3**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz temperature class T3, protection to IP 54																	
VARD 500/6 Ex	6706	920	6810	0.55	400Y	1.75	—	470	40	—	70.0	not permitted		not permitted		**SDD 2**	**SDZ 2**
VARD 500/4 Ex	6707	1415	10470	1.50	400Y	3.65	—	470	40	—	75.0	not permitted		not permitted		**SDD 2**	**SDZ 2**
VARD 500/2 Ex	6708	2940	21760	12.50	400/690	23/13.3	—	498	40	—	215.0	not permitted		not permitted		**SDD 3**	**SDZ 3**

1) Includes full motor protection unit
2) Includes reversing and on/off switch
3) alternative: TSW/TSD; 5 step transformer controller without motor protection

500/2 — R.P.M. = 2900

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

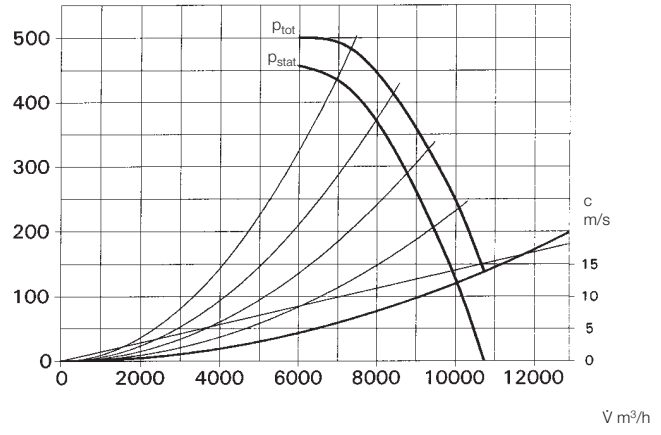
Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³



500/4 — R.P.M. = 1450

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

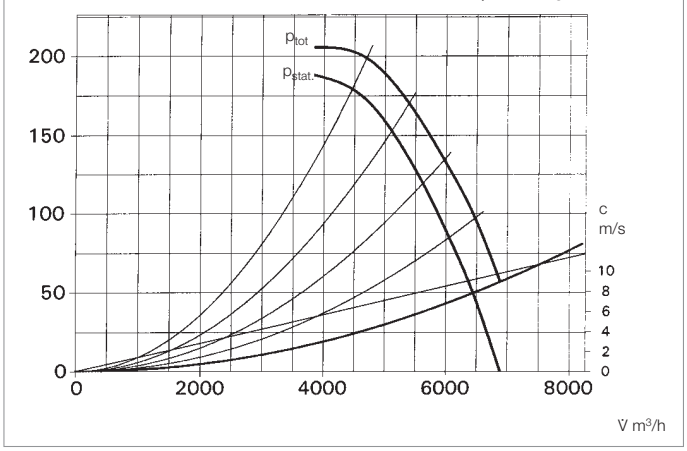
Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³



500/6 — R.P.M. = 930

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	79	63	69	74	75	71	63	54
$L_{PA,4m}$	Air noise	dB(A)	59	43	49	54	55	51	43	34

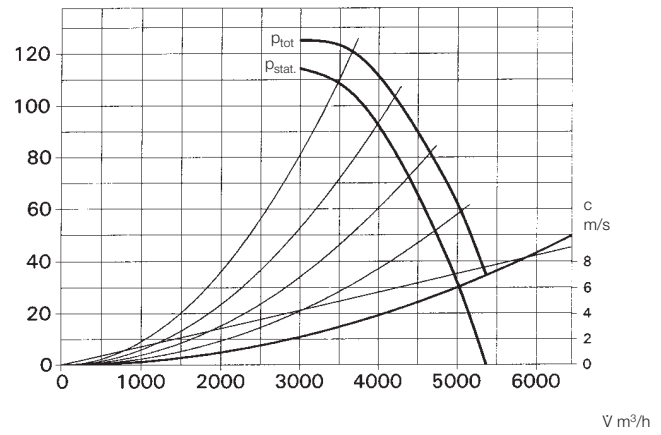
Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³



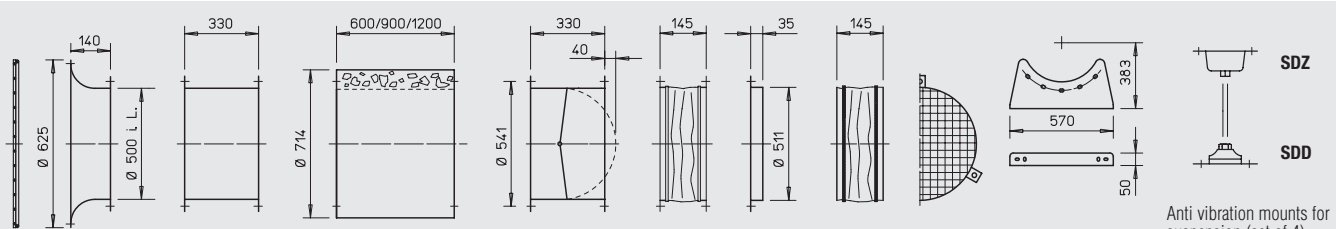
500/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	73	58	64	69	68	63	55	48
$L_{PA,4m}$	Air noise	dB(A)	53	38	44	49	48	43	35	28

Δp_{tot} $\Delta p_{stat.}$ Pa — ρ = 1.20 kg/m³



Accessories – Specification see pages 142-145.



Bell mouth + guard **ASD-SGD 500** Ref. 1420

Extension duct **VR 500** Ref. 1408

Circular attenuators **RSD 500/...**

Automatic back-draught shutter **RVS 500** a) Ref. 2598

Flanged flex. connector **STS 500** b) Ref. 1225

Flange **FR 500** Ref. 1208

Flexible sleeve **FM 500** b) Ref. 1678

Guard **SG 500** Ref. 1241

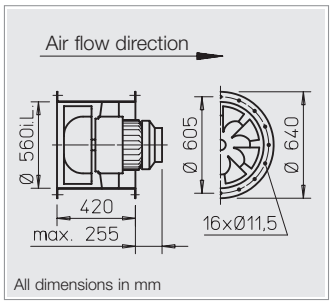
Mounting feet (pair) **MK 500** Ref. 1450

Anti vibration mounts for suspension (set of 4) **SDZ** c) (4 pcs.)
Anti vibration mounts for compression (set of 4) **SDD** c) (4 pcs.)

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see left page

c) Suitable model see last column of data table



All dimensions in mm

■ Specification

☐ Casing
Manufactured in hot dipped galvanised steel with flanges on both sides to DIN 24155, Pt. 3, vanes and fixed motor support.

☐ Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from hot dipped galvanised steel.

☐ Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium or die cast casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression. Optional drainage holes made to order (please state installation position).

☐ Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. Explosion proof fans are not controllable.

☐ Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

☐ Installation
Installation in any position. Ensure that motor drainage holes (where used) face downwards.

☐ Motor protection
All models (except explosion proof and pole switching) have thermal contacts as standard which must be connected to a motor protection unit (see table below). Models without thermal contacts must be protected by a conventional circuit breaker (MCB/RCD).

☐ Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Information	Pages
Technical description	108
Selection chart	109
Design of systems	12-16

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

For safety and correct use note the technical information on pages 17-19.

b) Accessories explosion proof fans

Flanged flexible connector
Type STS 560 Ex Ref. 2508
Flexible sleeve
Type FM 560 Ex Ref. 1695

Other accessories	Pages
Filters and attenuators	211-220
Shutters, grilles and louvres	245-256
Speed controllers and switches	263-290

Type	Ref. No.	R.P.M.	Air flow volume (FDI)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	V m^3/h	kW	V	A	A	No.	+°C	+°C	kg	Type		Type		Type	Type
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARD 560/8	6709	720	7490	0.37	400Y	1.35	1.35	469	60	60	95.0	**RDS 2**[1)3)]	1315	**MD**	5849	**SDD 2**	**SDZ 2**
2 speed motor, 400 V / 3 ph. / 50 Hz, Y/△-motor, protection to IP 55																	
VARD 560/6/6	6710	775/915	8060/9520	0.55/0.75	400Y/Δ	1.2/2.4	2.4	520	60	60	85.0	**RDS 4**[1)3)]	1316	**M 4**[2)]	1571	**SDD 2**	**SDZ 2**
VARD 560/4/4	6711	1140/1370	11850/14240	1.50/2.75	400Y/Δ	3.5/5.9	6.5	520	60	50	95.0	**RDS 11**[1)3)]	1332	**M 4**[2)]	1571	**SDD 2**	**SDZ 2**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 560/12/6	6789	460/940	4780/9780	0.22/1.20	400	1.6/3.7	—	471	60	—	100.0	**PDA 12**	5081	—	—	**SDD 2**	**SDZ 2**
VARD 560/8/4	6790	705/1430	7330/14870	0.90/3.60	400	3.0/8.1	—	471	60	—	100.0	**PDA 12**	5081	—	—	**SDD 2**	**SDZ 2**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protection to IP 54																	
VARD 560/8 Ex	6712	685	7120	0.37	400Y	1.17	—	470	40	—	85.0	not permitted		not permitted		**SDD 2**	**SDZ 2**
VARD 560/6 Ex	6713	900	9360	1.10	400Y	3.30	—	470	40	—	90.0	not permitted		not permitted		**SDD 2**	**SDZ 2**
VARD 560/4 Ex	6714	1440	14980	3.60	400/690	8.0/4.6	—	498	40	—	105.0	not permitted		not permitted		**SDD 2**	**SDZ 2**

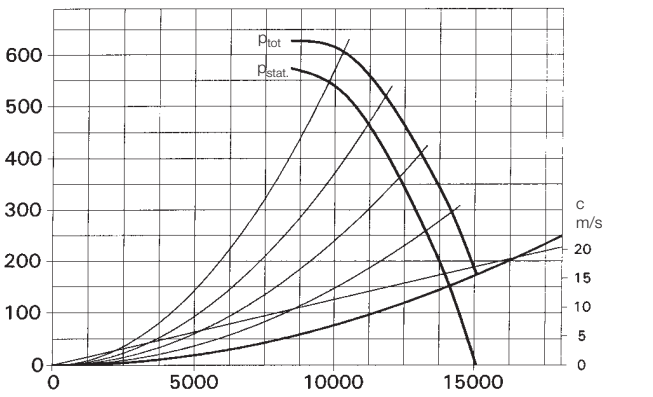
[1)] Includes full motor protection unit [2)] Includes reversing and on/off switch [3)] alternative: TSD; 5 step transformer controller without motor protection

560/4 — R.P.M. = 1450

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

Δp_{tot}
$\Delta p_{stat.}$
Pa

ρ = 1.20 kg/m³

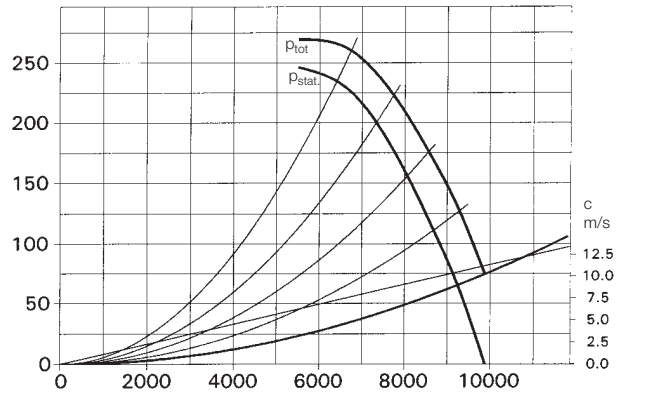


560/6 — R.P.M. = 950

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	83	67	72	78	79	75	67	58
$L_{PA,4m}$	Air noise	dB(A)	63	47	52	58	59	55	47	38

Δp_{tot}
$\Delta p_{stat.}$
Pa

ρ = 1.20 kg/m³

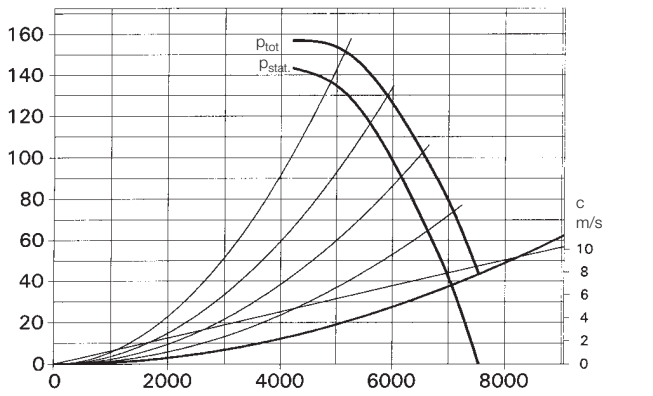


560/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	76	61	68	72	72	66	58	51
$L_{PA,4m}$	Air noise	dB(A)	56	41	48	52	52	46	38	31

Δp_{tot}
$\Delta p_{stat.}$
Pa

ρ = 1.20 kg/m³

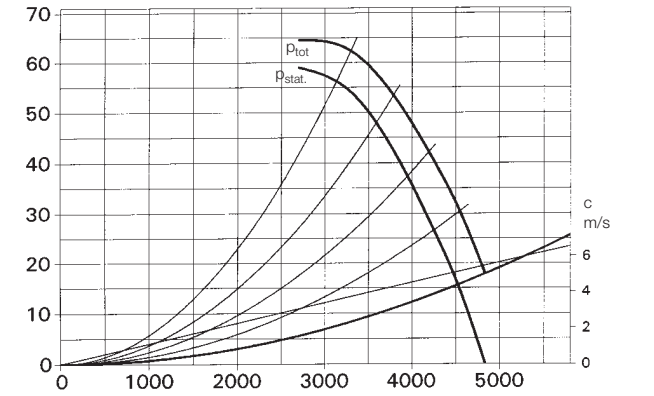


560/12 — R.P.M. = 465

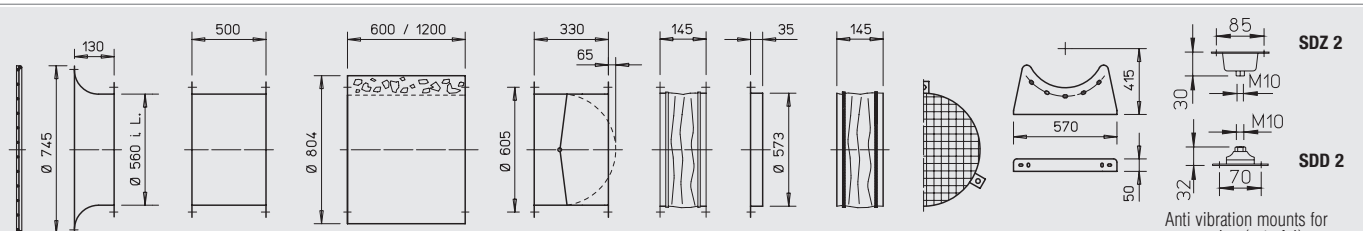
Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	65	50	58	61	59	52	46	41
$L_{PA,4m}$	Air noise	dB(A)	45	30	38	41	39	32	26	21

Δp_{tot}
$\Delta p_{stat.}$
Pa

ρ = 1.20 kg/m³



Accessories – Specification see pages 142-145.



Bell mouth + guard
ASD-SGD 560
Ref. 1421

Extension duct
VR 560
Ref. 1409

Circular attenuators
RSD 560/...

Automatic back-draught shutter
RVS 560 a)
Ref. 2599

Flanged flex. connector
STS 560 b)
Ref. 1226

Flange
FR 560
Ref.1209

Flexible sleeve
FM 560 b)
Ref. 1679

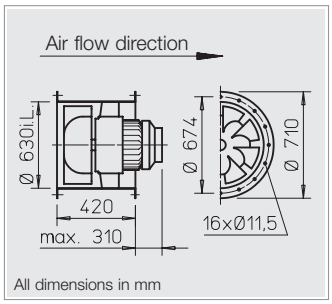
Guard
SG 560
Ref. 1242

Mounting feet (pair)
MK 560
Ref. 1450

Anti vibration mounts for suspension (set of 4)
SDZ 2 (4 pcs.) Ref. 1455
Anti vibration mounts for compression (set of 4)
SDD 2 (4 pcs.) Ref. 1453

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see left page



All dimensions in mm

Specification

Casing
Manufactured in hot dipped galvanised steel with flanges on both sides to DIN 24155, Pt. 3, vanes and fixed motor support.

Impeller
Specially developed spatially curved impeller, dynamically balanced, manufactured from hot dipped galvanised steel.

Motor
Direct driven, maintenance free flange motor, totally enclosed with an aluminium or die cast casing and cooling fins, protected to IP 54 / IP 55. Sealed for life ball bearings with tropical protection of windings and radio suppression. Optional drainage holes made to order (please state installation position).

Speed control
For all speed controllable models the current is given in the 'speed controlled' column of the table below which must be used when selecting a controller. If a controller not shown in the table below is selected, the maximum temperature (controlled) must be reduced by a further 10 °C. Explosion proof fans are not controllable.

Electrical connection
Terminal box fitted externally on the casing as standard (IP 55).

Installation
Installation in any position. Ensure that condensation motor drainage holes (where used) face downwards.

Motor protection
All models (except explosion proof and pole switching) have thermal contacts as standard which must be connected to a motor protection unit (see table below). Models without thermal contacts must be protected by a conventional circuit breaker (MCB/RCD).

Sound levels
Data shown within the performance curves refer to sound power levels. For determination of the lower sound pressure levels refer to acoustical information on page 13.

Special designs
Alternative voltages, frequencies, protection classes, high temperatures, acid protection etc. are available on request.

For safety and correct use note the technical information on pages 17-19.

b) Accessories for explosion proof fans

Flanged flexible connector
Type STS 630 Ex Ref. 2509
Flexible sleeve
Type FM 630 Ex Ref. 1696

Type	Ref. No.	R.P.M.	Air flow volume (FID)	Motor power (nominal)	Voltage	Current full load	Current speed controlled	Wiring diagram	Maximum air flow temp. standard supply	Maximum air flow temp. speed controlled	Nominal weight (net)	Transformer controller or Pole switch	Ref. No.	Full motor protection starter using the motor thermal contacts	Ref. No.	Anti vibration mounts comp.	Anti vibration mounts susp.
		min^{-1}	V m^3/h	kW	V	A	A	No.	+°C	+°C	kg	Type		Type		Type	Type
3 Phase motor, 400 V / 3 ph. / 50 Hz, protection to IP 55												5 step transformer					
VARD 630/4	6717	1440	21320	5.50	400/690	12.0/6.9	—	776	60	—	145.0	**FUR 13**[2)]	9491	**MSA**	1289	**SDD 2**	**SDZ 2**
2 speed motor, 400 V / 3 ph. / 50 Hz, Y/△-motor, protection to IP 55																	
VARD 630/8/8	6715	580/680	8590/10070	0.40/0.75	400Y/Δ	1.9/3.1	3.1	520	60	60	110.0	**RDS 4**[2)3)]	1316	**M 4**[1)]	1571	**SDD 2**	**SDZ 2**
VARD 630/6/6	6716	755/920	11180/13630	0.90/1.50	400Y/Δ	2.0/3.9	3.9	520	60	60	110.0	**RDS 7**[2)3)]	1578	**M 4**[1)]	1571	**SDD 2**	**SDZ 2**
Pole-switching, 2 speed motor (Dahlander windings Y/YY), 400 V / 3 ph. / 50 Hz, protection to IP 54												Pole switch					
VARD 630/12/6	6791	460/950	6810/14070	0.44/2.20	400	2.7/7.1	—	471	60	—	120.0	**PDA 12**	5081	—	—	**SDD 2**	**SDZ 2**
VARD 630/8/4	6792	715/1430	10590/21170	1.40/5.50	400	5.0/12.0	—	471	60	—	145.0	**PDA 12**	5081	—	—	**SDD 2**	**SDZ 2**
Explosion proof, E Exe II, 400 V / 3 ph. / 50 Hz, temperature class T3, protection to IP 54																	
VARD 630/8 Ex	6718	690	10220	0.75	400Y	2.20	—	470	40	—	110.0	not permitted		not permitted		**SDD 2**	**SDZ 2**
VARD 630/6 Ex	6719	945	13990	1.90	400Y	4.90	—	470	40	—	130.0	not permitted		not permitted		**SDD 2**	**SDZ 2**
VARD 630/4 Ex	6720	1445	21400	6.80	400/690	14.0/8.1	—	498	40	—	165.0	not permitted		not permitted		**SDD 2**	**SDZ 3**

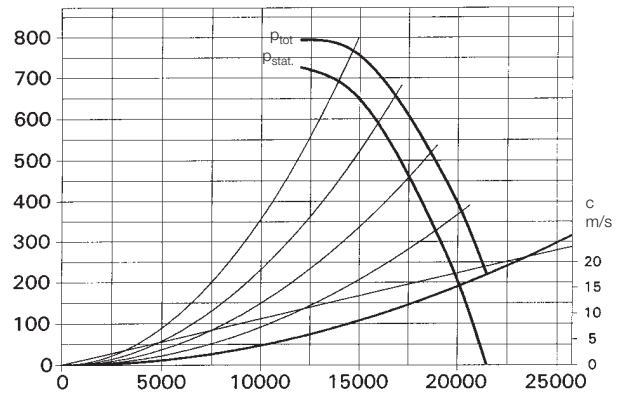
[1)] Includes reversing and on/off switch [2)] Includes full motor protection unit [3)] alternative: TSD; 5 step transformer controller without motor protection

630/4 — R.P.M. = 1450

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

Δp_{tot} $\Delta p_{stat.}$ Pa

ρ = 1.20 kg/m³

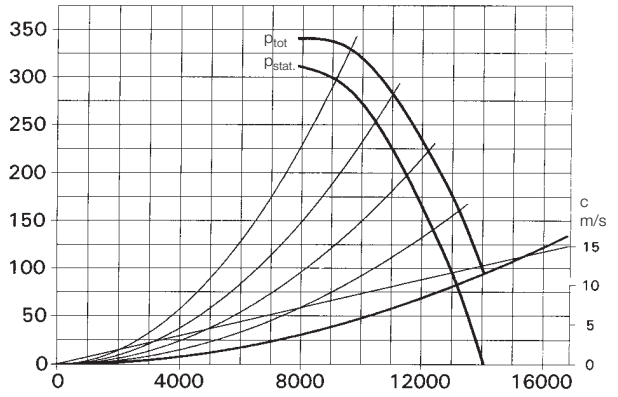


630/6 — R.P.M. = 950

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	87	70	76	82	83	78	70	62
$L_{PA,4m}$	Air noise	dB(A)	67	50	56	62	63	58	50	42

Δp_{tot} $\Delta p_{stat.}$ Pa

ρ = 1.20 kg/m³

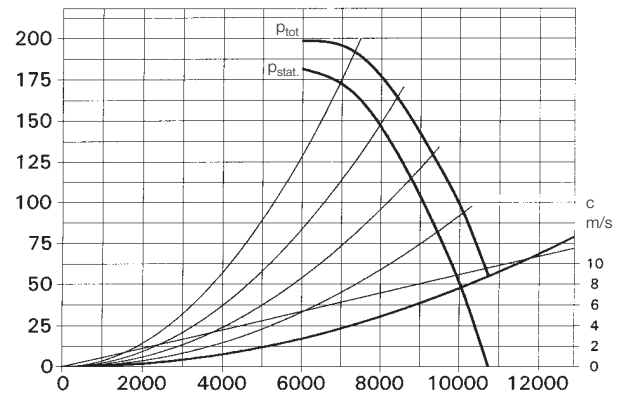


630/8 — R.P.M. = 725

Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	80	65	71	76	75	70	62	55
$L_{PA,4m}$	Air noise	dB(A)	60	45	51	56	55	50	42	35

Δp_{tot} $\Delta p_{stat.}$ Pa

ρ = 1.20 kg/m³

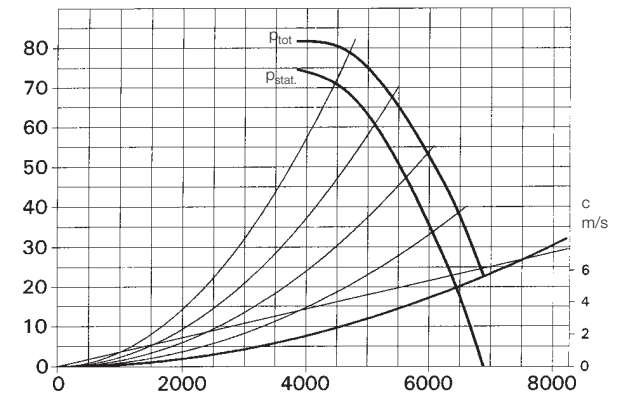


630/12 — R.P.M. = 465

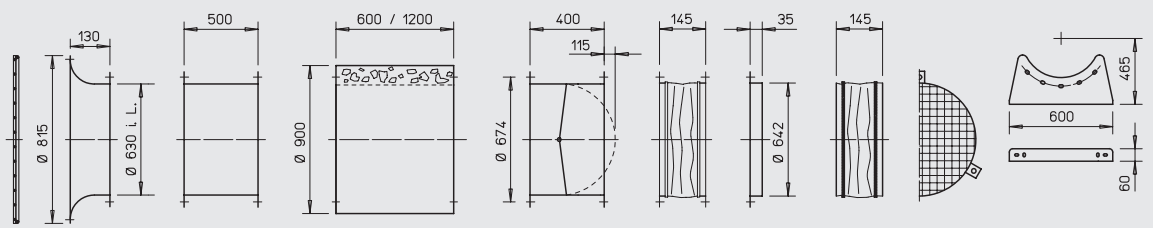
Frequency		Hz	Total	125	250	500	1k	2k	4k	8k
L_{WA}	Air noise	dB(A)	68	54	62	65	62	56	49	45
$L_{PA,4m}$	Air noise	dB(A)	48	34	42	45	42	36	29	25

Δp_{tot} $\Delta p_{stat.}$ Pa

ρ = 1.20 kg/m³



Accessories – Specification see pages 142-145.



Bell mouth + guard **ASD-SGD 630** Ref. 1422

Extension duct **VR 630** Ref. 1410

Circular attenuators **RSD 630/...**

Automatic back-draught shutter **RVS 630** a) Ref. 2600

Flanged flex. connector **STS 630** b) Ref. 1228

Flange **FR 630** Ref. 1211

Flexible sleeve **FM 630** b) Ref. 1680

Guard **SG 630** Ref. 1243

Mounting feet (pair) **MK 630** Ref. 1333

Anti vibration mounts for suspension (set of 4) **SDZ** c) (4 pcs.)
Anti vibration mounts for compression (set of 4) **SDD** c) (4 pcs.)

a) For motorised shutters see accessory pages

b) Types for explosion proof fans see left page

c) Suitable model see last column of data table