



ALMECO

air and water technologies

Centrifugal roof fans VRR



Centrifugal Roof Fans VRR

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Roof fans

Series VRR / 702

Series VRR / ALM

Application in all ranges of ventilation

Series VRR / 702 corrosion-resistant by full-plastic design and motor outside the medium to be conveyed

Series VRR / ALM with 100% speed-controlled external rotor motor for use in general room air conditioning and apartment ventilation

Series VRR / ALM -EC with EC-motor and integrated pressure for use in general room air conditioning and apartment ventilation

See information: central ventilation with EC-Technology Roof fan VRR/ALM-EC

High efficiency and little noise emission

Explosion-proof versions according to European Directive 94/9/EG (ATEX) 

Wide range of characteristics by 5 sizes

Volumetric flow up to 22 700 m³/h
Pressure increase up to 1600 Pa

Easy installation on roofs with different upstand designs

Many electrical and ventilation accessories

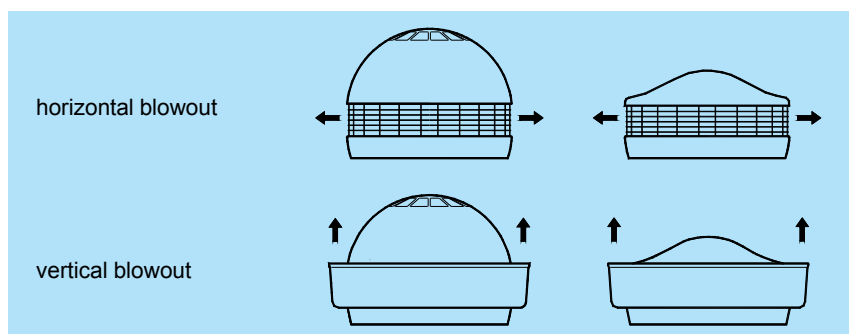
Roof fans of plastic material - Series VRR - Technical explanation

SERIES AND TYPES

For **preselection**, please differentiate between the two series VRR / 702 and 701 or VRR / ALM:

series	motor	design	particulars	application
VRR / 702 and 701	standard motor outside the stream	spherical shape	corrosion-resistant	industry, laboratories
VRR / ALM	external rotor motor	flat shape	100 % controlled	room air conditioning apartment ventilation

The **deflector ring** (within the accessories) leads to vertical blowout.



APPLICATION

Fans of series VRR can be used in all areas of exhaust air processing. They are resistant to corrosion and atmospheric conditions and suitable for exhausting even aggressive gases and vapours.

The fan with its clear, functional, and harmonious outer contour fits well in the appearance of buildings and plants. The design allows direct fastening on pipes, pipe silencers, and circular foundations. A large assortment of roof bases, silencer bases, hinged bases, all of them to be matched individually to the building conditions, is available. In addition, a pipeline on the suction end can be connected by an elastic pipe.

Fans of series VRR with their many assembly facilities are a very convenient and favourably priced solution for ventilating laboratories, pickling and washing shops, agricultural plants, workshops, store halls, restaurants, sports complexes, supermarkets etc.

VRR fans are traditionally used in apartment ventilation, mainly in large-panel structures. The VRR / ALM series has been developed for this application in particular. These fans with their universal control facilities are basic elements of apartment ventilation according to needs.

TECHNICAL DESCRIPTION

The medium to be delivered is taken in axially and blown out through the whole circumference. The deflector ring from the accessories deflects the medium toward horizontal blowout direction. The special design LAB is characterized by very high blowout speed so that the exhaust air can better be merged with the environment.

The basis of the excellent aerodynamic and acoustical properties, especially of the high efficiency of 77 % free blowout, are the intake nozzle in the base part, the radial impeller with profiled blades curved backward, and the patented radial diffuser.

The damping of vibrations and solid-borne sound has been considered in particular. The impeller is dynamically balanced. Rubber elements between the motor and carrier structure suppress the transmission of noise to the foundation. In the case of size 400 and 500, the entire drive unit inside the fan is carried by coil springs so that vibrationdamping foundations are usually not necessary.

Safety demands comply with VDMA 24 167. The protective grating is the contact and splinter guard on the outlet end. A protective grating on the intake end has to be provided if contact protection on this side cannot be warranted by installation in the plant.

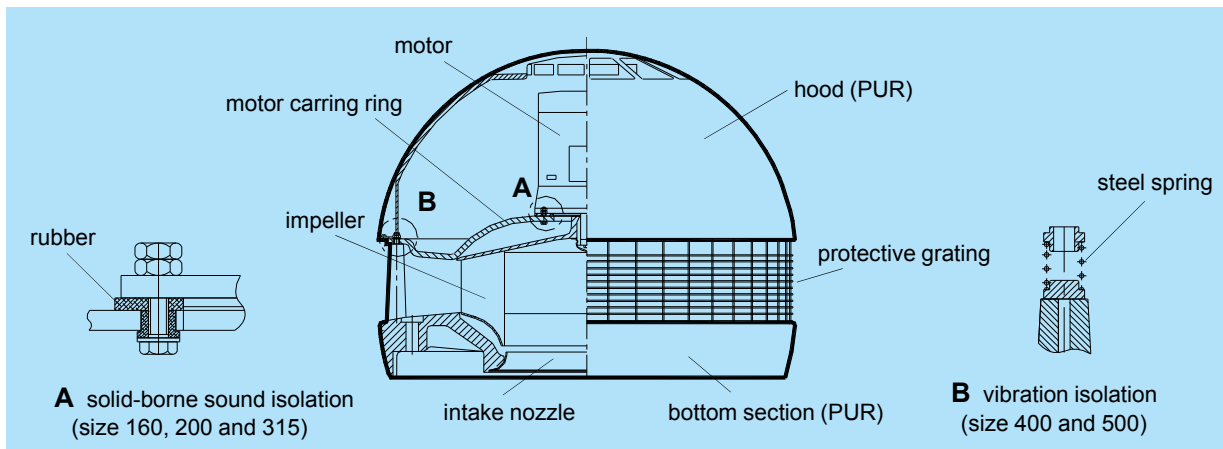
Notes on fire prevention

Roof fans VRR consist of the synthetic materials PUR, PP, and PVC and of various steel components.

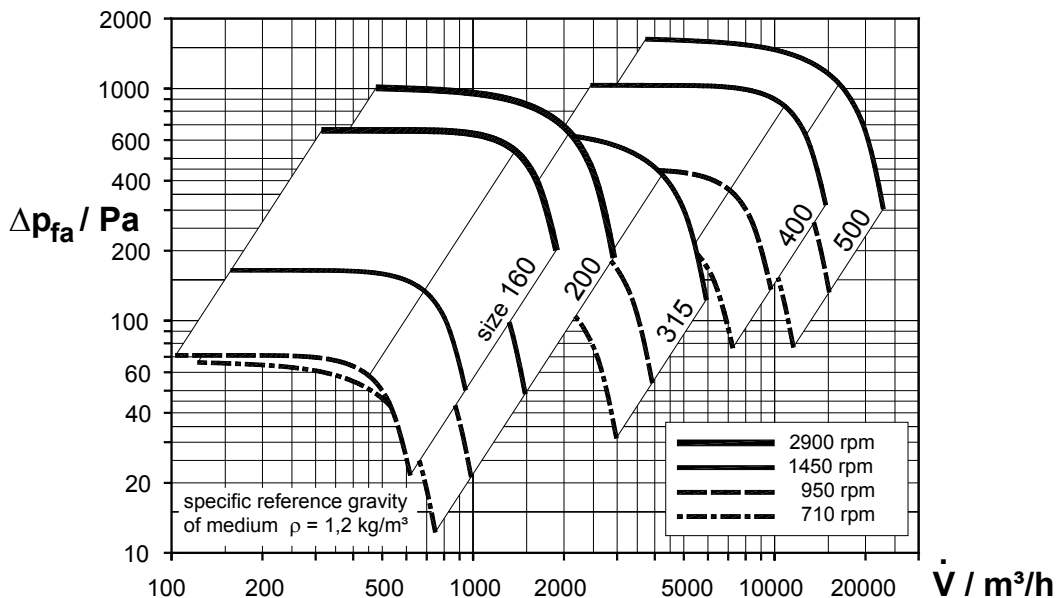
DIN 4102 Part 4 classifies PP and PVC as structural materials of class B 2. The applied integral skin polyurethane foam contains flame-inhibiting additives. Its inflammation and burning properties make it a substance of class B 2 according to DIN 4102 (test certificate is available).

Consequently, these fans comply with fire prevention demands on ventilation plants.

Roof fans of plastic material - Series VRR / 702



SURVEY OF TYPES - PRESELECTION



DESIGN FEATURES

Fans of type VRR / 702 in all-plastic design are manufactured in the traditional spherical shape and have stood the test in all branches of industry due to their robustness.

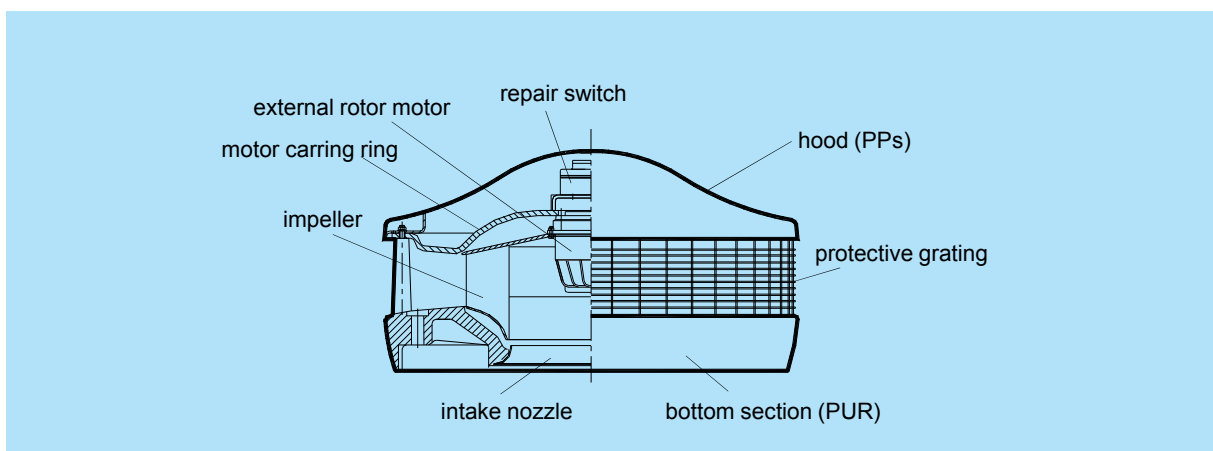
- Drive by standard motors outside the stream to be conveyed
- Five sizes with three (four) nominal speed rates each
- Highest efficiency and low running noise
- Hood and base section of integral skin PUR foam free of chlorinated fluorocarbons
- Impeller of plastic material (glass fibre-reinforced polypropylene, PPs, PVC, FRP depending upon size and speed)
- Outstanding resistance to corrosion and atmospheric influences
- Steel components efficiently protected against corrosion by plastic covering
- All materials with fire protection B 2 according to DIN 4102
- Explosion-proof designs
- Standard colour golden yellow (similar to RAL 1004), other colours (RAL 7036) as special designs

FIELDS OF USE

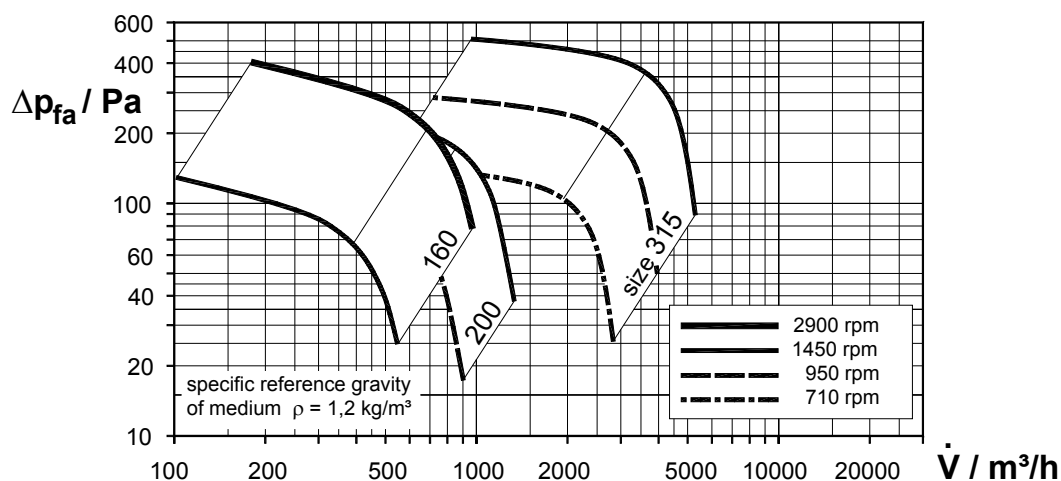
Due to their high resistivity to corrosion, fans of type VRR / 702 are used preferably for process exhaust plants in the chemical/pharmaceutical industry, for ventilation of laboratories, battery rooms, pickling and washing plants, agricultural installations etc. The fans are also employed in general room ventilation and air conditioning.

For selection of suitable materials the purpose of use of the fan and the type of medium conveyed should be specified in requests or orders.

Roof fans with external rotor motor - Series VRR / ALM



SURVEY OF TYPES - PRESELECTION



DESIGN FEATURES

The fans of type VRR / ALM have been developed on the basis of the approved series VRR / 702. They are manufactured in a flat, harmoniously styled design.

- ◆ Drive by external rotor motors with 100 % control
- ◆ Integrated motor protection by thermal contacts
- ◆ Three sizes with two (three) nominal speeds each
- ◆ Highest efficiency and low running noise
- ◆ Flat, harmoniously styled plastic hood of PPs
- ◆ base section of integral skin PUR foam free of chlorinated fluorocarbons
- ◆ Fitting dimensions identical to those of series VRR / 702 x)
- ◆ Good resistance to corrosion and atmospheric influences by use of plastic materials
- ◆ All materials with fire protection B 2 according to DIN 4102
- ◆ Easily accessible repair switch under the hood
- ◆ Platinum-grey colour (RAL 7036)

x) Note: The constructional structure of the VRR160/ALM differs somewhat from sizes 200 and 315 (see page 21).

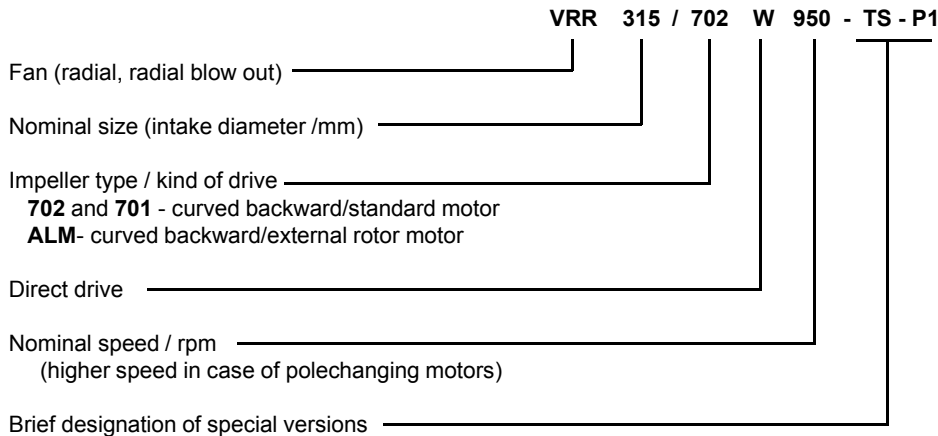
FIELDS OF USE

Universal controllability makes these fans suitable for all ranges of room air conditioning. A main field is their use in apartment ventilation (see information „Central ventilation systems“).

The external rotor motors are cooled by the flowing medium conveyed which leads to restricted resistivity to corrosion. However, it is possible to convey slightly moist and slightly dusty media.

Roof fans - Series VRR - Designations

EXPLANATION OF TYPE DESIGNATIONS



702 and **701** - curved backward/standard motor
ALM- curved backward/external rotor motor

- E** = single-phase drive
- TS** = with thermal winding protection (thermistor)
- P1** = speed halving (Dahlander) such as 1,450 P1 = 1,450/710 rpm
- P2** = changeover to next smaller speed such as 1,450 P2 = 1,450/950 rpm
- LAB** = laboratory design
- ET** = increased temperature of medium flow to be conveyed
- EX** = with motor EEx e II T3 (fan type for zone 2 , designation ZZZ2)
- FA** = flat design with supplementary equipment
- DR** = pressure-controlled
- RAL** = colour (specify RAL no.)

PERFORMANCE PARAMETERS

All performance parameters are determined on MIETZSCH-own test racks. The design corresponds to DIN 24 163. The **volumetric flow** determined from the differential pressure by means of a measuring nozzle according to EN ISO 5167.

In cases of roof fans that are destined to be arranged at the end of the plant and that can blow out free into the environment, **pressure difference for free blowout** p_{fa} results from

$$\Delta p_{fa} = p_{bar} - p_{tot S} = p_{bar} - p_{statS} - r/2 * c_s^2$$

This size corresponds to the usable total pressure increase on the suction side and practically considers the outlet loss of the fan.

Duct sound power level L_{WA}

The measuring method for determination of the duct sound power level is specified in DIN 45 635 , Part 9. Interpretation is according to

$$L_{WA} = L_{Me\&wert} + 10 * \log (\pi / 4 * D^2) \text{ dB} \text{ } D = \text{diameter of measuring line}$$

Sound pressure level L_{3m}

Several measuring points are arranged on an enveloping surface around the fan. Conversion to the specified level at 3 meters is calculated from

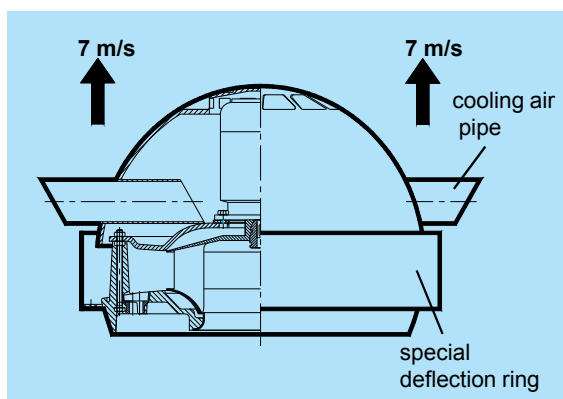
$$L_{3m} = L_{Me\&wert} + 20 * \log (r_m / 3m) \text{ dB}$$

Roof fans - Series VRR - Special designs

Laboratory version LAB (VRR / 702 and VRR / 701)

In room air conditioning plants for laboratories it is customary to blow out the exhaust air vertically above the roof and above the intakes of external air. Exhaust speed should not fall below 7 m/s .

The high flow speed merges the aggressive exhaust air more intensely with the ambient air.



The special version LAB leads to the outlet speed of 7 m/sec. if the following condition is met:

size 160/200	volumetric flow greater than 900 m ³ /h
size 315	volumetric flow greater than 2 100 m ³ /h
size 400/500	volumetric flow greater than 9 500 m ³ /h

Smaller volumetric flows do not reach the speed required. Radial fans VRE are applied in such cases in combination with suitable deflector hoods.

When selecting the fans take care that the increase of blowout energy reduces the usable pressure increase Δp_{fa} by about 10 % if compared with the standard version.

The exhaust air stream is directed vertically upward by a deflector ring of special design. The motor gets its cooling air through two pipes pushed laterally into the hood after assembly.

Explosion proof EX (VRR / 702 and VRR / 701)



Guideline 2014/34/EU (ATEX) newly regulates explosion protection for non-electrical devices from March 29, 2014. In addition to observation of design and safety instructions according to DIN EN 14986 and DIN EN 13463, the fan has to be assigned exactly to the relevant degree of protection and labelled accordingly. The manufacturers have to prove conformity.

Protection demands on a fan depend on the probability of occurrence of explosible atmosphere in the medium conveyed or/and in the surrounding. Hazard is classified in three zones:

Explosions hazard	Hazard zone	Avoidance of ignition sources	Category acc. to ATEX
continuous long periods	zone 0	even in the event of rare incidents	1
likely to occur	zone 1	even in the event of frequent disturbances/faults	2
infrequently short period	zone 2	during normal operation	3

The plant operator or the relevant board of control has to decide which protection is necessary and which additional regulations have to be considered. This means that the customer has to specify in the order which kind of protection the fan has to have.

The design has to ensure that the ignition probability of the fan, along with the corresponding explosion risk of the atmosphere, warrants a sufficient safety level.

Fans of type VRR / 702 and of version EX are equipped with motors increased safety EEx e II. They can be used in zone 2 for gases of temperature class T 3 (ignition temperature > 200 °C). Gases of explosion group IIA, IIB and hydrogen are allowed.

The type of protection is for the roof fan: II 3G c IIB+H2 T3

On principle, application in zone 0 and zone 1 is not possible. Gases of explosion group IIC (hydrogen excluded), gases with ignition temperature below 200 °C, and combustible dusts are likewise impermissible.

Special demands for operation with frequency inverter

Motors with increased safety EEx e II must not be used in inverter operation.

Motors EEx de with flameproof enclosure can be employed in inverter mode if they are equipped with special winding protection (special design TS15).

Roof fans - Series VRR - Special designs

Version ET for increased temperature of medium conveyed (VRR / 702 und VRR / 701)

Fans of plastic material urgently require the permissible temperature range to be observed. Heavy plastic deformation may otherwise lead to capacity decrease and even to averages.

The version ET is made of synthetic materials with increased strength and better temperature resistivity. Certain components have larger dimensions. This means that the following conditions of use are permissible:

fan type	nominal speed rpm	permissible temperature of medium conveyed		
		standard	version ET	
			short-time	permanent
VRR 160/701	up to 1450	50 °C	80 °C	70 °C
VRR 200/702	2900	50 °C	70 °C	60 °C
VRR 315/702	up to 950	50 °C	80 °C	70 °C
	1450	50 °C	70 °C	60 °C
VRR 400/701	up to 1450	50 °C	upon inquiry	
VRR 500/702	up to 1450	40 °C		

Ambient temperature must not exceed 40 °C to warrant motor cooling. The manufacturers should be consulted if higher temperatures of use are desired.

Pressure-controlled version DR (VRR/ALM)

The special version DR is an element of pressure-controlled central ventilation plants in apartment buildings, hotels, hospitals, hostels, and office buildings (see information „Central ventilation systems“).

Such plants ensure continuous fundamental ventilation and meet the minimum demands of building physics and hygiene. Changeover to ventilation on demand is possible by the user by means of electrically adjustable exhaust air guiding elements. The fan adapts its capacity to the changing demand by means of a suitable controller.

The fans contain a pressure measuring probe and a pressure pickup.

Installation is restricted to the electrical connection of the fan to the controller PTDE 6-M (see page 27) .

Pressure-controlled version DR (VRR / 702 and VRR / 701)

Also the fans VRR/702 and VRR/701 are offered in a pressure-regulated version. The regulation is taken over by a particularly modified static frequency inverter FU... A31 (see page 29).

With this system for example the pressure in the collecting duct of a laboratory exhaust plant can be kept constant and the fan capacity is adapted to the changing demand.

The fan contains a pressure measuring probe and a pressure pickup. All settings and programmings of the frequency inverter are made by the manufacturer. Thus no special knowledge is necessary,

In similar way a flow rate regulation with a measuring device (e.g. orifice plate MBL) is possible. Thus for example the filter pollution in a plant can become balanced by changing the fan speed.

Roof fans - Series VRR - Installation / Maintenance

A large assortment of accessories is available for assembly. The fan is usually placed on a base or a foundation. Sealing is by self-adhering sealing tape (within program of delivery). Suction pipes connected must not stress the fan.

Qualified personnel only is allowed to connect the fan electrically and to work on electrical equipment (motors, control and regulation devices etc.) in consideration of DIN VDE 0105 or IEC 364. Conditions of electrical connection according to the pertaining documentation must urgently be observed. The connection cable can be led through a bored supporting column to the motor.

Usually the fans need no maintenance. Cleaning in regular intervals is necessary if very dirty media are conveyed. Bearings of the drive motor have been lubricated for their whole service life of about 40 000 hours in the case of normal ambient temperatures.

EXAMPLES OF INSTALLATION

on foundation ring **FU**

on roof base **DAS**

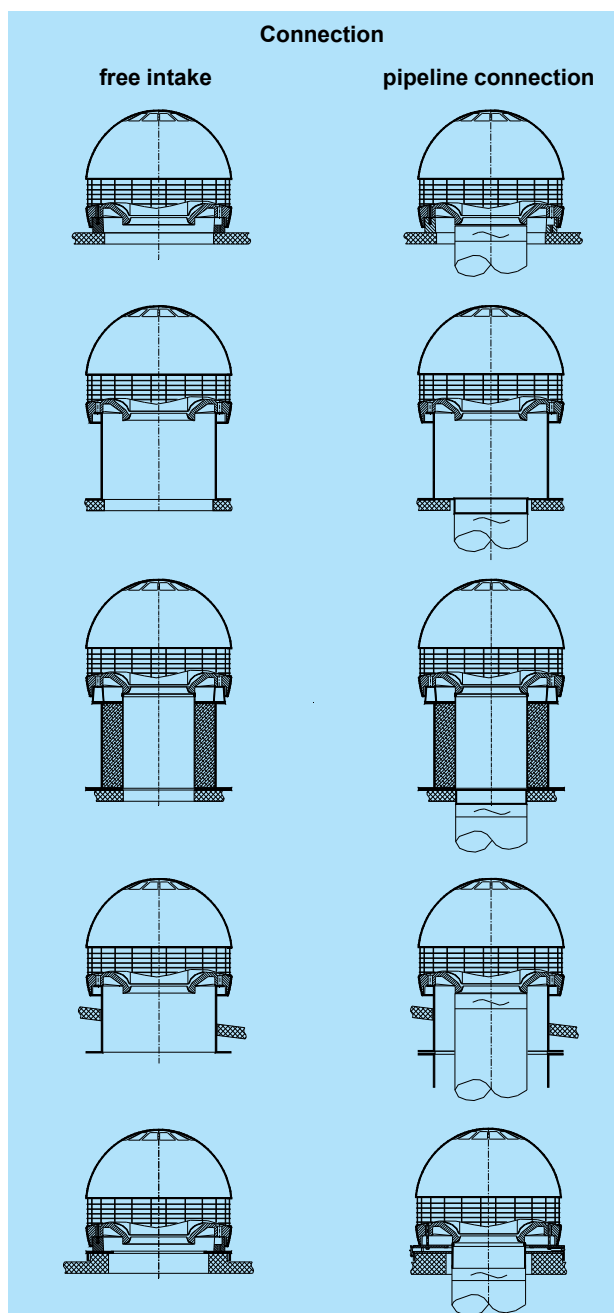
(optionally with pipe connection, sealing plate, insulation, non-return flap)

on sound insulation base **SDS**

(optionally with pipe connection, sealing plate, hinged base))

flange-mounted on pipe or cylindrical silencer

with foundation plate **FPL** or hinged roof base **DKS**



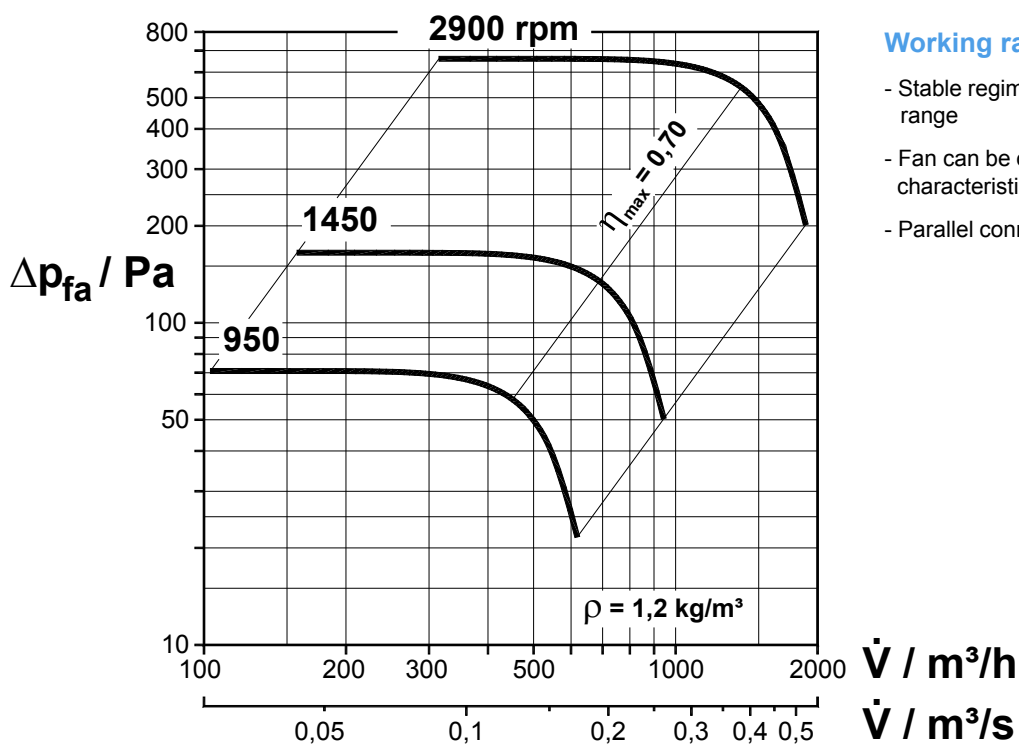


Centrifugal roof fans VRR

Roof fans of plastic material

VRR 160 / 701

PERFORMANCE



SOUND LEVEL

speed rpm	L _{A3m} dB(A)	L _{WA} dB(A)	L _{WA Okt} / dB(A)							
			63	125	250	500	1000	2000	4000	8000
950	34	51	33	45	44	47	44	39	30	21
1450	42	59	34	52	49	55	54	47	40	25
2900	57	75	56	66	68	71	67	66	67	51

L_{A3m} = A - weighted sound pressure level at distance of 3 m from fan center

L_{WA} = A - weighted sound power level in duct

L_{WA Okt} = A - weighted octave-band sound power level in duct

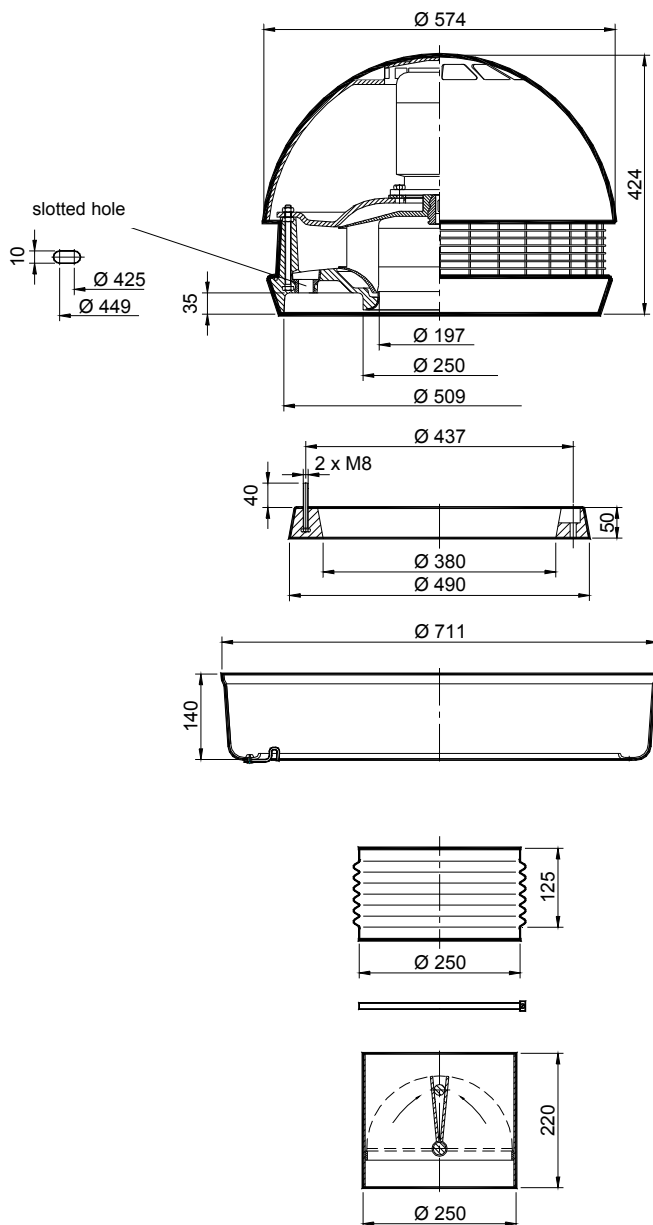
MOTOR VERSIONS

(Data for other motors, such as polechanging or Ex, upon inquiry)

fan type	speed rpm	power required kW	motor type	nominal motor power kW	nominal motor current A	weight with motor kg
VRR 160/701 W 950	950	0,014	3 ~	0,09	0,44	15
VRR 160/701 W 1450	1450	0,045	400 V/50 Hz	0,12	0,42	15
VRR 160/701 W 2900	2900	0,31	IP 55	0,37	1,0	17
VRR 160/701 W 950 E	950	0,014	1 ~	0,09	0,76	15
VRR 160/701 W 1450 E	1450	0,045	230 V/50 Hz	0,12	0,73	15
VRR 160/701 W 2900 E	2900	0,31	IP 55	0,37	2,70	17
VRR 160/701 W 2900 P1	2900 / 1450	0,31 / 0,045	polechanging	0,43 / 0,3	1,3 / 0,89	19
VRR 160/701 W 1450 P1	1450 / 710	0,045 / 0,006	400 V/50 Hz	0,5 / 0,1	1,28 / 0,57	21
VRR 160/701 W 1450 P2	1450 / 950	0,045 / 0,014	IP 55	0,18 / 0,06	0,58 / 0,35	21

VRR 160 / 701

PRINCIPAL DIMENSIONS (The dimensions are identical with the VRR 200/702)



Design features

- welded impeller of PPs with vanes curved backward
- Hood and base of integral skin PUR foam material free of chlorinated fluorocarbons
- Motor carried with vibration absorbers and arranged outside the medium stream to be conveyed
- Steel components protected against corrosion by plastic covering

FU 200 foundation ring
assembly aid of PUR for fastening on flat roofs without foundation

UR 200 deflector ring
accessories for vertical blowout

Compensator 250
of soft PVC for connection of ventilation pipes

Band clamp 250
of stainless steel

Non-return flap 250
for vertical installation, optionally of PVC or PPs

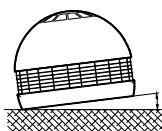
CONDITIONS OF USE

permissible temperature range: medium conveyed -30°C ... 50°C
(continous loading) ambient -30°C ... 40°C

aggressivity and dustiness: Moist, aggressive, and dusty media can be conveyed.

The purpose of use of the fan and the type of medium conveyed should be specified in requests or orders.

permissible fan inclination: 10°



SPECIAL DESIGNS

TS = with thermal winding protection (PTC resistor)

EX = with motor EEx e II T3 (for zone 2)

LAB = laboratory design

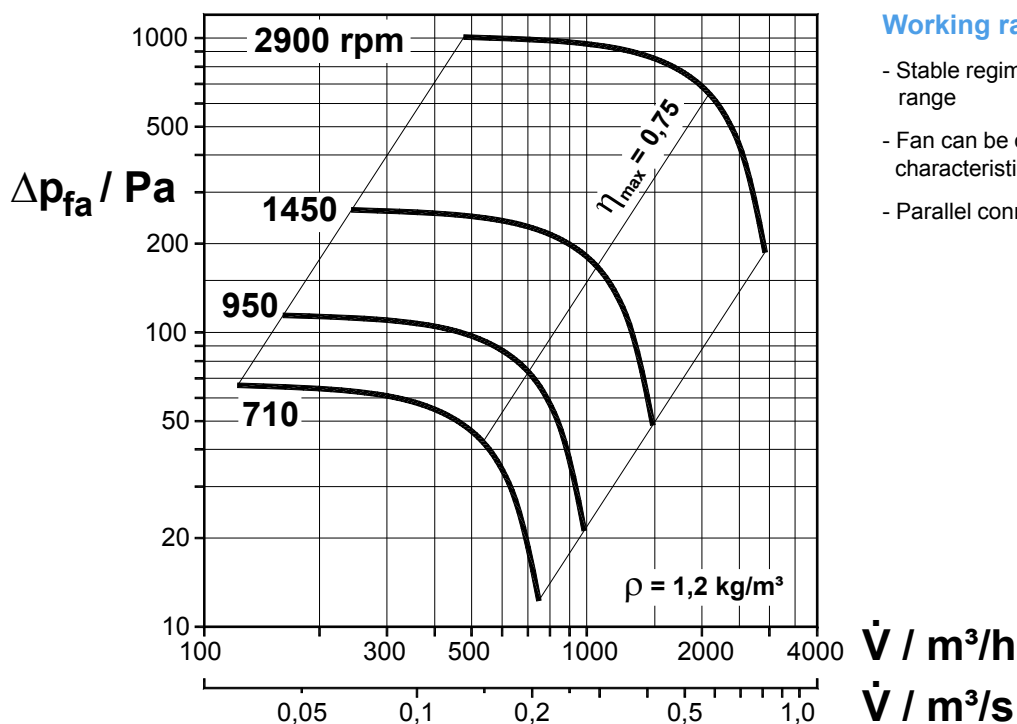
ET = increased temperature of medium to be conveyed

RAL = color

DR = pressure-controlled by inverter, with pressure probe and pressure pickup

VRR 200 / 702

PERFORMANCE



Working range

- Stable regime in entire characteristic range
- Fan can be operated beyond characteristic specified
- Parallel connection possible

SOUND LEVEL

speed rpm	L_{A3m} dB(A)	L_{WA} dB(A)	$L_{WA \text{ Okt}}$ / dB(A)							
			63	125	250	500	1000	2000	4000	8000
710	39	57	39	46	51	55	48	39	31	27
950	41	58	40	48	52	55	50	45	37	30
1450	49	66	42	55	57	63	60	53	47	34
2900	64	82	60	70	75	76	75	73	72	56

L_{A3m} = A - weighted sound pressure level at distance of 3 m from fan center

L_{WA} = A - weighted sound power level in duct

$L_{WA \text{ Okt}}$ = A - weighted octave-band sound power level in duct

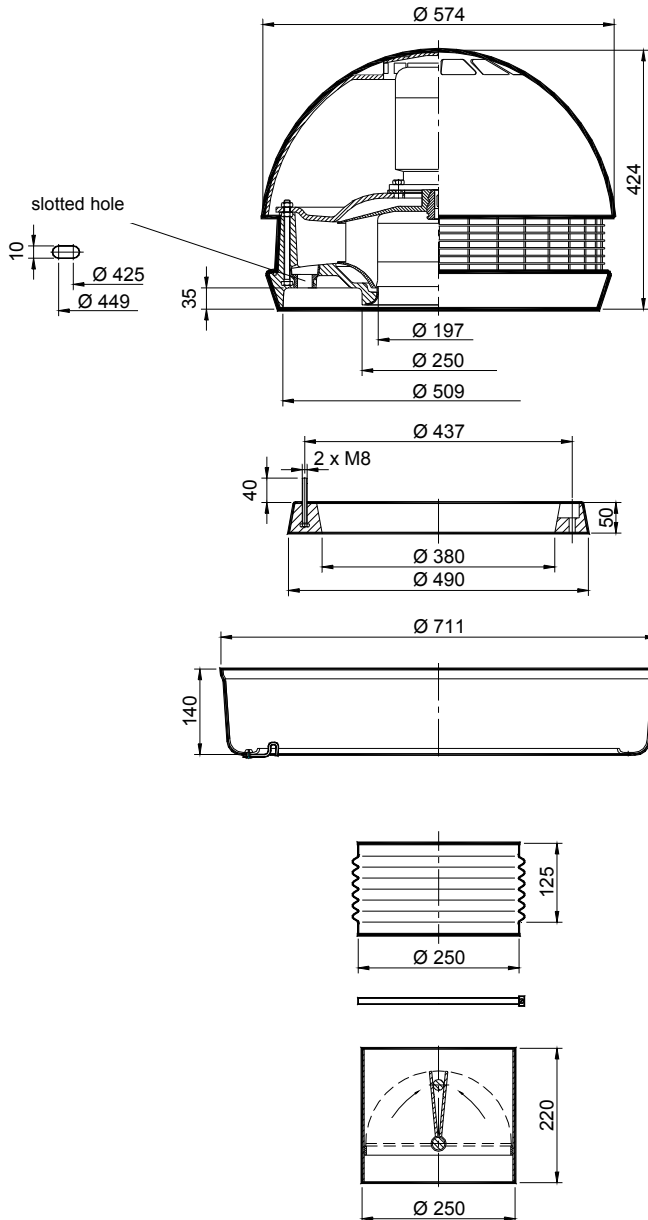
MOTOR VERSIONS

(Data for other motors, such as polechanging or Ex, upon inquiry)

fan type	speed rpm	power required kW	motor type	nominal motor power kW	nominal motor current A	weight with motor kg
VRR 200/702 W 710	710	0,012		0,09	0,6	15
VRR 200/702 W 950	950	0,03		0,18	0,81	15
VRR 200/702 W 1450	1450	0,1	3 ~	0,25	0,87	15
VRR 200/702 W 2900	2900	0,61	400 V/50 Hz IP 55	0,75	1,7	18
VRR 200/702 W 710 E	710	0,012		0,09	1,1	15
VRR 200/702 W 950 E	950	0,03		0,18	1,7	15
VRR 200/702 W 1450 E	1450	0,1	1 ~	0,25	1,9	15
VRR 200/702 W 2900 E	2900	0,61	230 V/50 Hz IP 55	0,75	5,30	18
VRR 200/702 W 2900 P1	2900 / 1450	0,061 / 0,1	polechanging	0,75 / 0,2	1,95 / 1,1	18
VRR 200/702 W 1450 P1	1450 / 710	0,1 / 0,012	400 V/50 Hz	0,4 / 0,1	1,1 / 0,44	16
VRR 200/702 W 1450 P2	1450 / 950	0,1 / 0,03	IP 55	0,25 / 0,07	0,9 / 0,4	16

VRR 200 / 702

PRINCIPAL DIMENSIONS



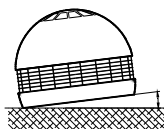
CONDITIONS OF USE

permissible temperature range: medium conveyed -30°C ... 50°C
(continuous loading) ambient -30°C ... 40°C

aggressivity and dustiness: Moist, aggressive, and dusty media can be conveyed.

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permissible fan inclination: 10°



Design features

- impeller of PP, glass fibre-reinforced, with vanes curved backward and profiled
- Hood and base of integral skin PUR foam material free of chlorinated fluorocarbons
- Motor carried with vibration absorbers and arranged outside the medium stream to be conveyed
- Steel components protected against corrosion by plastic covering

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assembly aid of PUR for fastening on flat roofs without foundation

UR 200 deflector ring
accessories for vertical blowout

Compensator 250
of soft PVC for connection of ventilation pipes

Band clamp 250
of stainless steel

Non-return flap 250
for vertical installation, optionally of PVC or PPs

SPECIAL DESIGNS

TS = with thermal winding protection (PTC resistor)

EX = with motor EEx e II T3 (for zone 2)

LAB = laboratory design

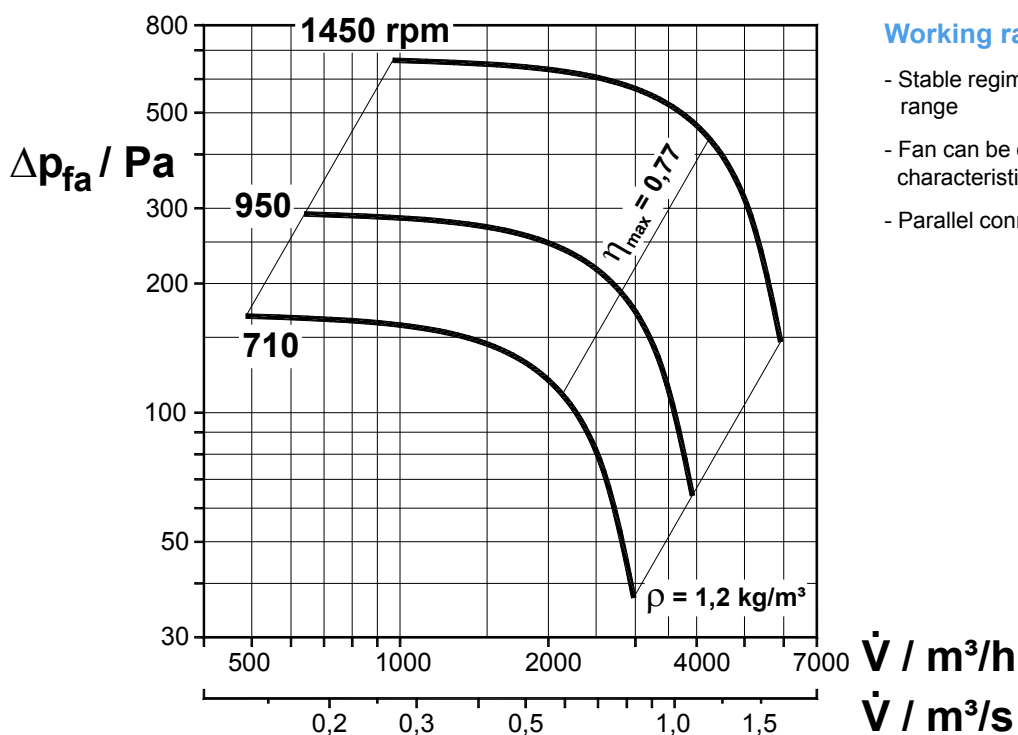
ET = increased temperature of medium to be conveyed

RAL = color

DR = pressure-controlled by inverter, with pressure probe and pressure pickup

VRR 315 / 702

PERFORMANCE



SOUND LEVEL

speed rpm	L_{A3m} dB(A)	L_{WA} dB(A)	$L_{WA\ Okt}$ / dB(A)							
			63	125	250	500	1000	2000	4000	8000
710	48	65	45	52	56	61	60	50	39	30
950	50	68	49	59	60	61	63	58	50	41
1450	61	78	64	64	69	70	73	71	62	52

L_{A3m} = A - weighted sound pressure level at distance of 3 m from fan center

L_{WA} = A - weighted sound power level in duct

$L_{WA\ Okt}$ = A - weighted octave-band sound power level in duct

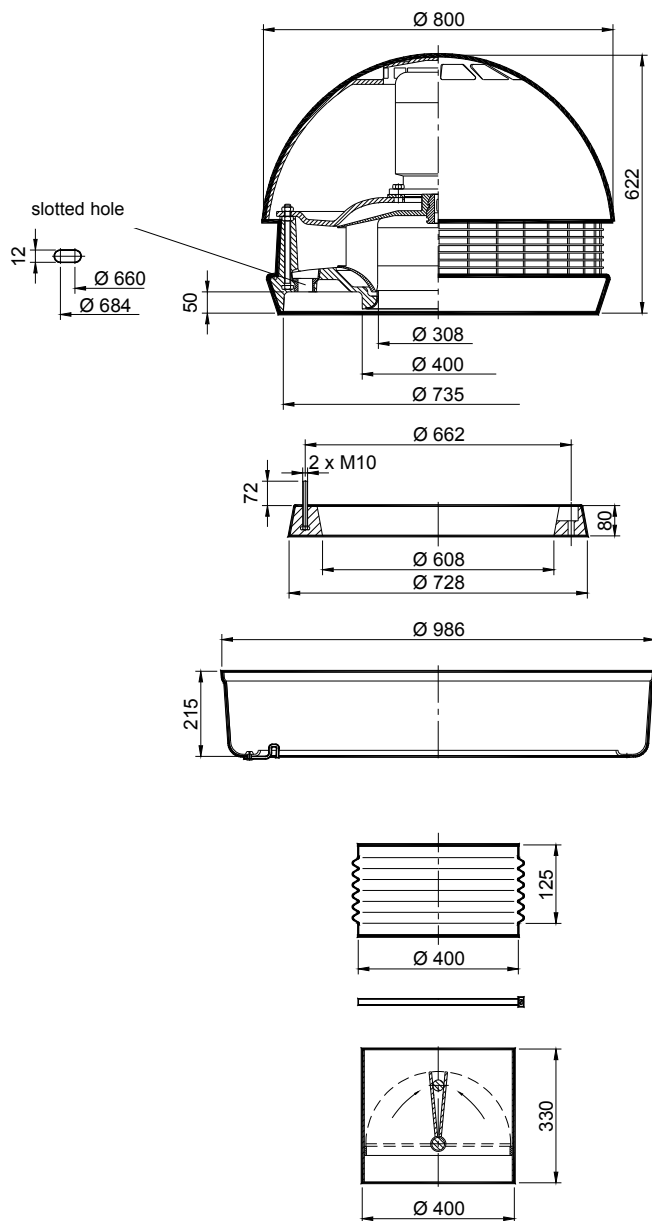
MOTOR VERSIONS

(Data for other motors, such as polechanging or Ex, upon inquiry)

fan type	speed rpm	power required kW	motor type	nominal motor power kW	nominal motor current A	weight with motor kg
VRR 315/702 W 710	710	0,1	3 ~	0,18	0,78	35
VRR 315/702 W 950	950	0,22	400 V/50 Hz	0,37	1,19	35
VRR 315/702 W 1450	1450	0,75	IP 55	0,75	1,86	40
VRR 315/702 W 710 E	710	0,1	1 ~	0,18	1,3	35
VRR 315/702 W 950 E	950	0,22	230 V/50 Hz	0,37	2,2	35
VRR 315/702 W 1450 E	1450	0,75	IP 55	1,1	7,4	40
VRR 315/702 W 1450 P1	1450 / 710	0,75 / 0,1	polechanging	1,0 / 0,25	2,6 / 1,2	40
VRR 315/702 W 1450 P2	1450 / 950	0,75 / 0,22	400 V/50 Hz	0,9 / 0,3	2,5 / 1,3	40
VRR 315/702 W 950 P2	950 / 710	0,22 / 0,1	IP 55	0,22 / 0,11	0,95 / 0,75	40

VRR 315 / 702

PRINCIPAL DIMENSIONS



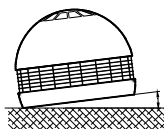
CONDITIONS OF USE

permissible temperature range: medium conveyed -30°C ... 50°C
(continuous loading) ambient -30°C ... 40°C

aggressivity and dustiness: Moist, aggressive, and dusty media can be conveyed.

The purpose of use of the fan and the type of medium conveyed should be specified in requests or orders.

permissible fan inclination: 10°



Design features

- impeller of PP, glass fibre-reinforced, with vanes curved backward and profiled
- Hood and base of integral skin PUR foam material free of chlorinated fluorocarbons
- Motor carried with vibration absorbers and arranged outside the medium stream to be conveyed
- Steel components protected against corrosion by plastic covering

FU 315 foundation ring
assembly aid of PUR for fastening on flat roofs without foundation

UR 315 deflector ring
accessories for vertical blowout

Compensator 400
of soft PVC for connection of ventilation pipes

Band clamp 400
of stainless steel

Non-return flap 400
for vertical installation, optionally of PVC or PPs

SPECIAL DESIGNS

TS = with thermal winding protection (PTC resistor)

EX = with motor EEx e II T3 (for zone 2)

LAB = laboratory design

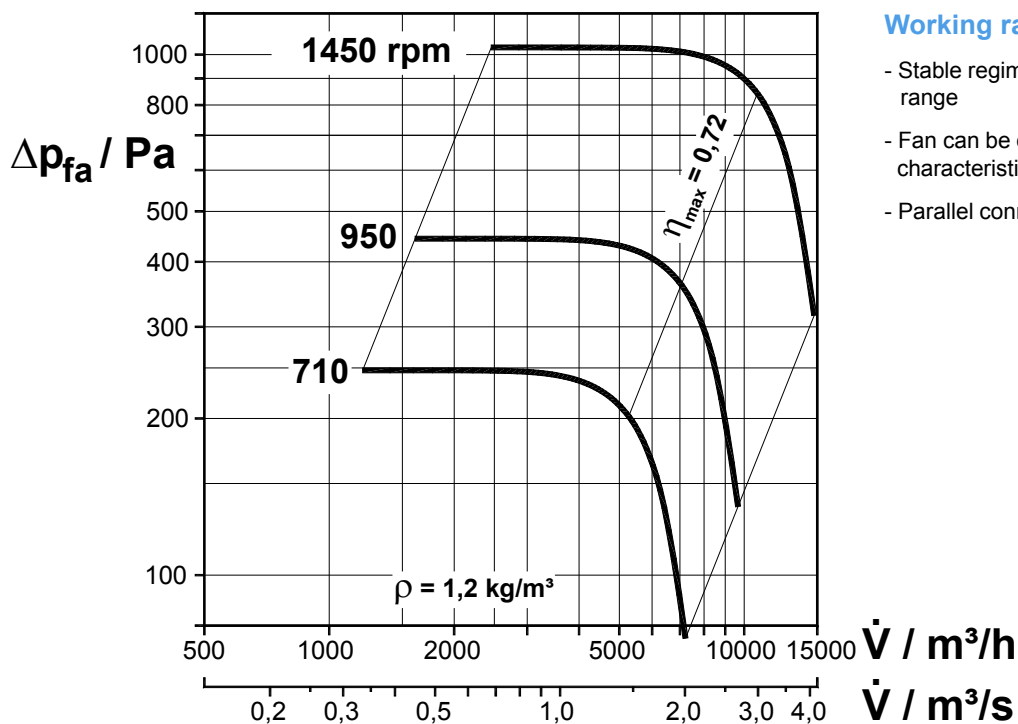
ET = increased temperature of medium to be conveyed

RAL = color

DR = pressure-controlled by inverter, with pressure probe and pressure pickup

VRR 400 / 701

PERFORMANCE



Working range

- Stable regime in entire characteristic range
- Fan can be operated beyond characteristic specified
- Parallel connection possible

SOUND LEVEL

speed rpm	L_{A3m} dB(A)	L_{WA} dB(A)	$L_{WA \text{ Okt}} / \text{dB(A)}$							
			63	125	250	500	1000	2000	4000	8000
710	55	69	47	58	57	67	60	59	49	34
950	61	76	51	67	66	71	66	67	61	45
1450	67	84	58	69	77	79	77	78	71	58

L_{A3m} = A - weighted sound pressure level at distance of 3 m from fan center

L_{WA} = A - weighted sound power level in duct

$L_{WA \text{ Okt}}$ = A - weighted octave-band sound power level in duct

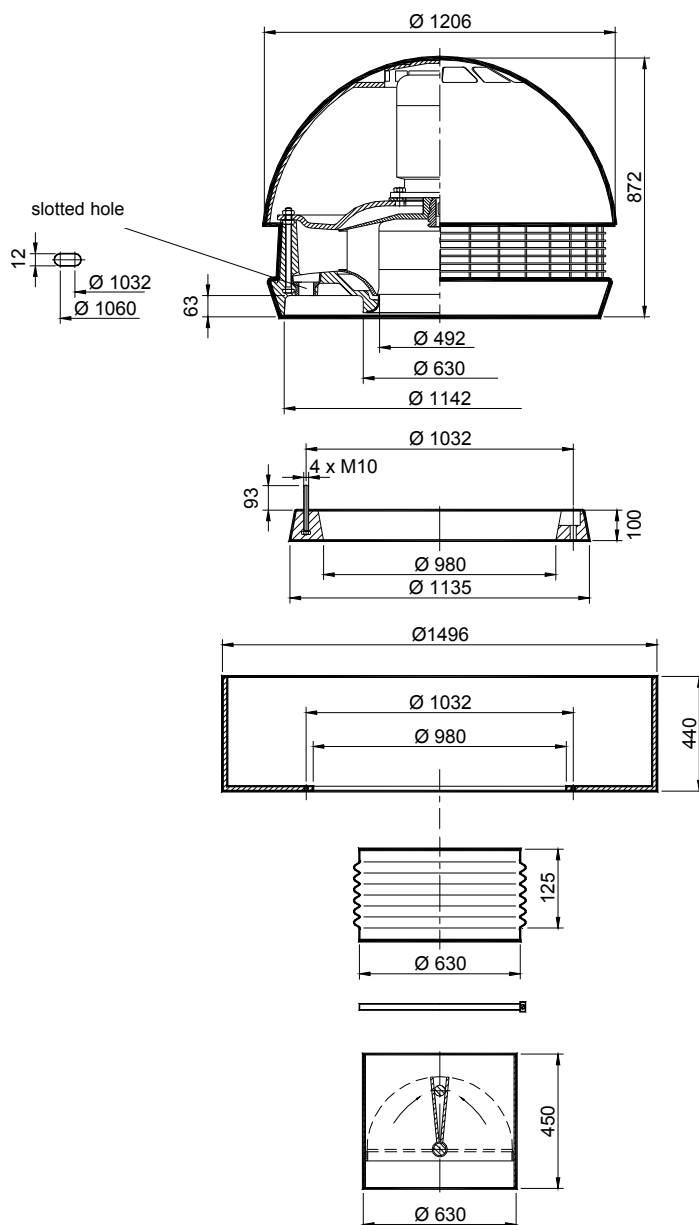
MOTOR VERSIONS

(Data for other motors, such as polechanging or Ex, upon inquiry)

fan type	speed rpm	power required kW	motor type	nominal motor power kW	nominal motor current A	weight with motor kg
VRR 400/701 W 710	710	0,46	3 ~	0,55	1,58	81
VRR 400/701 W 950	950	1,17	400 V/50 Hz	1,5	3,9	93
VRR 400/701 W 1450	1450	4,13	IP 55	5,5	11,4	119
VRR 400/701 W 1450 P1	1450 / 710	4,13 / 0,46	polechanging	4,7 / 1,1	10,3 / 3,3	119
VRR 400/701 W 1450 P2	1450 / 950	4,13 / 1,17	400 V/50 Hz	5,4 / 1,7	11,4 / 4,55	127
VRR 400/701 W 950 P2	950 / 710	1,17 / 0,46	IP 55	1,2 / 0,6	2,95 / 2,15	120

VRR 400 / 701

PRINCIPAL DIMENSIONS (The dimensions are identical with the VRR 500/702)



Design features

- welded impeller of PPs with vanes curved backward
- Hood and base of integral skin PUR foam material free of chlorinated fluorocarbons
- Motor arranged outside the medium stream to be conveyed
- Complete drive carried on springs
- Steel components protected against corrosion by plastic covering

FU 500 foundation ring
assembly aid of PUR for fastening on flat roofs without foundation

UR 500 deflector ring
accessories for vertical blowout

Compensator 630
of soft PVC for connection of ventilation pipes

Band clamp 630
of stainless steel

Non-return flap 630
for vertical installation, optionally of PVC or PPs

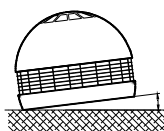
CONDITIONS OF USE

permissible temperature range: medium conveyed -30°C ... 50°C
(continous loading) ambient -30°C ... 40°C

aggressivity and dustiness: Moist, aggressive, and dusty media can be conveyed.

The purpose of use of the fan and the type of medium conveyed should be specified in requests or orders.

permissible fan inclination: 5°



SPECIAL DESIGNS

TS = with thermal winding protection (PTC resistor)

EX = with motor EEx e II T3 (for zone 2)

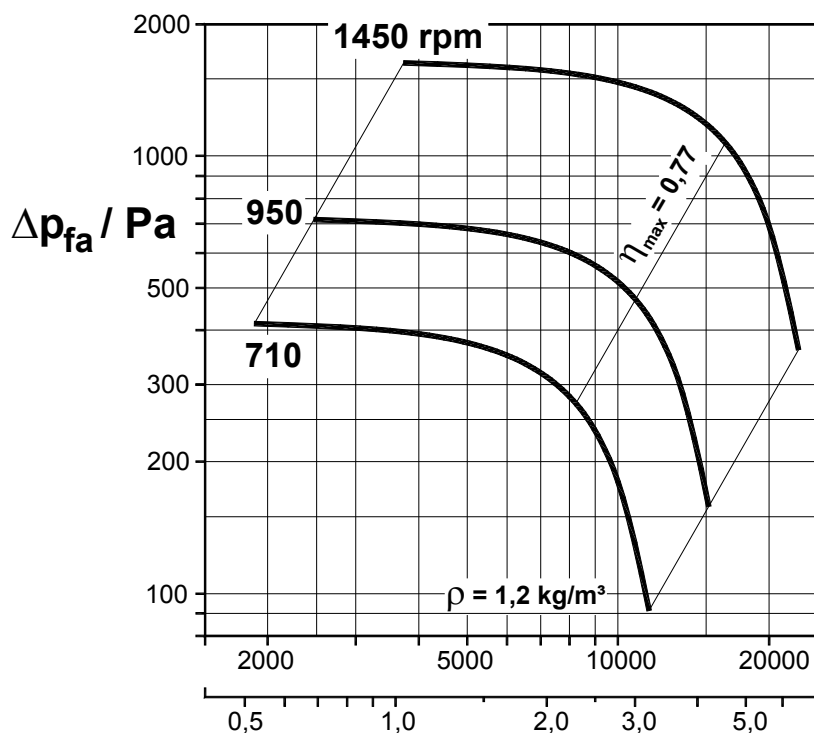
LAB = laboratory design

RAL = color

DR = pressure-controlled by inverter, with pressure probe and pressure pickup

VRR 500 / 702

PERFORMANCE



Working range

- Stable regime in entire characteristic range
- Fan can be operated beyond characteristic specified
- Parallel connection possible

SOUND LEVEL

speed rpm	L_{A3m} dB(A)	L_{WA} dB(A)	$L_{WA \text{ Okt}} / \text{dB(A)}$							
			63	125	250	500	1000	2000	4000	8000
710	60	76	54	65	64	74	67	66	56	41
950	66	82	58	72	72	78	72	74	68	52
1450	74	91	65	76	84	86	84	85	78	65

L_{A3m} = A - weighted sound pressure level at distance of 3 m from fan center

L_{WA} = A - weighted sound power level in duct

$L_{WA \text{ Okt}}$ = A - weighted octave-band sound power level in duct

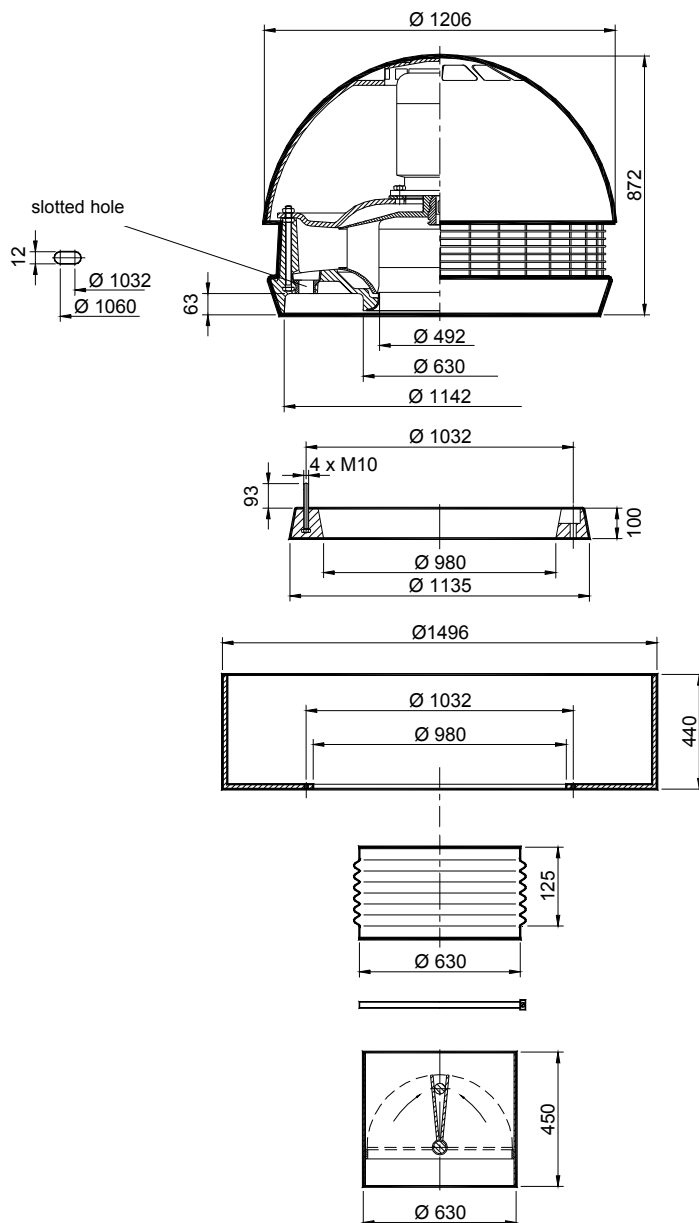
MOTOR VERSIONS

(Data for other motors, such as polechanging or Ex, upon inquiry)

fan type	speed rpm	power required kW	motor type	nominal motor power kW	nominal motor current A	weight with motor kg
VRR 500/702 W 710	710	0,95	3 ~	1,1	2,9	100
VRR 500/702 W 950	950	2,3	400 V/50 Hz	3,0	7,3	120
VRR 500/702 W 1450	1450	8,3	IP 55	11,0	21,5	160
VRR 500/702 W 1450 P1	1450 / 710	8,3 / 0,95	polechanging	9,2 / 2,2	19,5 / 7,6	160
VRR 500/702 W 950 P2	950 / 710	2,3 / 0,95	400 V/50 Hz IP 55	3,5 / 1,7	8,7 / 4,9	120

VRR 500 / 702

PRINCIPAL DIMENSIONS



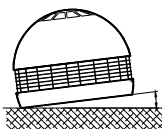
CONDITIONS OF USE

permissible temperature range: medium conveyed -30°C ... 40°C
(continous loading) ambient -30°C ... 40°C

aggressivity and dustiness: Moist, aggressive, and dusty media can be conveyed.

The purpose of use of the fan and the type of medium conveyed should be specified in requests or orders.

permissible fan inclination: 5°



Design features

- welded impeller of PVC with vanes curved backward, for 1450 rpm made of FRP (fibre reinforced plastic)
- Hood and base of integral skin PUR foam material free of chlorinated fluorocarbons
- Motor arranged outside the medium stream to be conveyed
- Complete drive carried on springs
- Steel components protected against corrosion by plastic covering
- **FU 500 foundation ring**
assembly aid of PUR for fastening on flat roofs without foundation

UR 500 deflector ring
accessories for vertical blowout

Compensator 630
of soft PVC for connection of ventilation pipes

Band clamp 630
of stainless steel

Non-return flap 630
for vertical installation, optionally of PVC or PPs

SPECIAL DESIGNS

TS = with thermal winding protection (PTC resistor)

EX = with motor EEx e II T3 (for zone 2)

LAB = laboratory design

RAL = color

DR = pressure-controlled by inverter, with pressure probe and pressure pickup

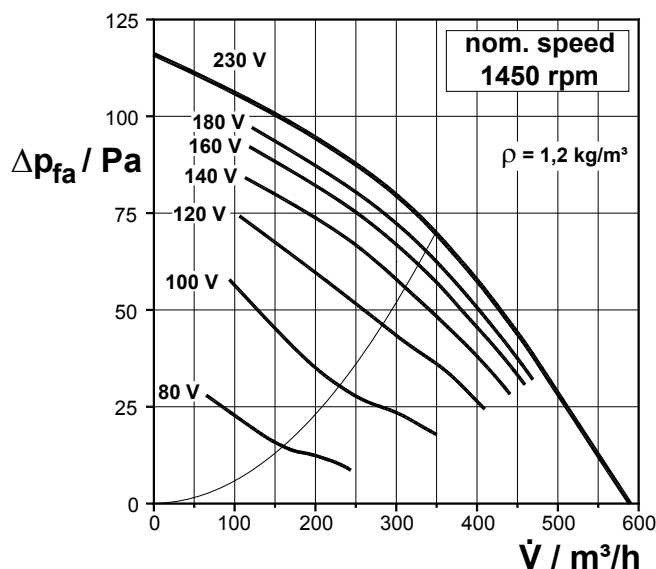


Centrifugal roof fans VRR

Roof fans with external rotor motor

VRR 160 / ALM

PERFORMANCE



Working range

- Stable regime in entire characteristic range
- Parallel connection possible
- 100% controllable

MOTOR PROTECTION

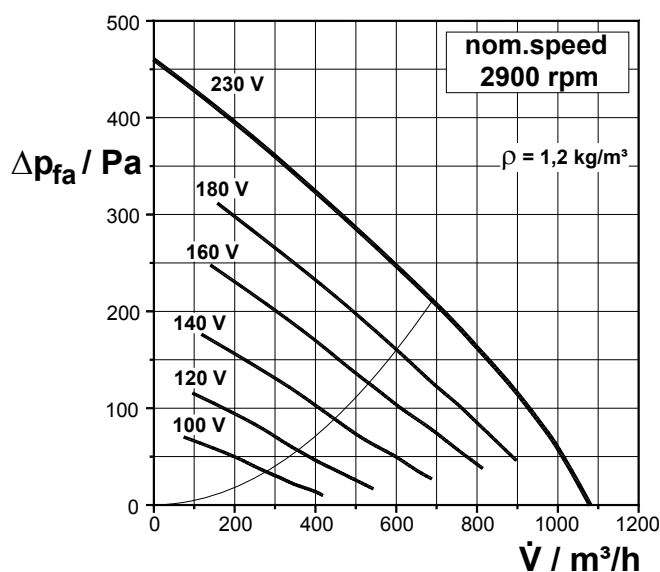
The thermal contacts of the motor are internally integrated into the electrical supply line. External connection is **not** possible.

SOUND LEVEL

L_{A3m} = A - weighted sound pressure level at distance of 3 m from fan center

L_{WA} = A - weighted sound power level in duct

Sound level specifications apply to voltage setting by transformer and to range of maximum efficiency.

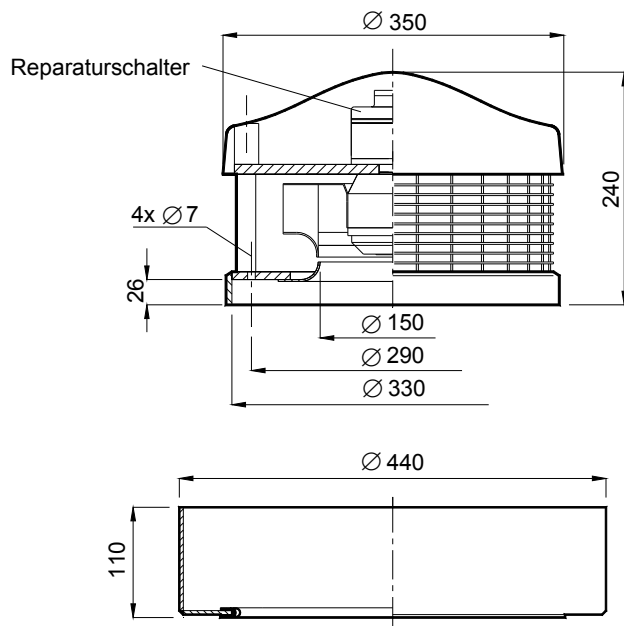


MOTOR VERSIONS

fan type	nominal speed rpm	motor type	maximum motor current A	voltage V	speed in optimum rpm	L_{A3m} dB(A)	L_{WA} dB(A)	w eight with motor kg	transformer step switch	electronic speed controller
VRR 160/ALM W 1450	1450	1 ~ with operating capacitor 230 V/50 Hz IP 44	0,20	100	850	24	42	5,5	RE 1.5	ES 0
				120	1065	27	45			
				140	1205	29	47			
				160	1285	30	48			
				180	1330	31	49			
				230	1390	32	50			
VRR 160/ALM W 2900	2900	1 ~ with operating capacitor 230 V/50 Hz IP 44	0,51	100	930	25	43	6,0	RE 1.5	ES 1
				120	1165	28	46			
				140	1455	33	51			
				160	1765	37	55			
				180	2040	40	58			
				230	2460	44	62			

VRR 160 / ALM

PRINCIPAL DIMENSIONS



Design features

- Impeller of plastic / galvanized steel with vanes curved backward
- flat hood and base of polypropylen (PPs) color platinum-grey (RAL 7036)
- External rotor motor, cooled by medium stream conveyed
- good weather resistivity by use of plastic material
- Repair switch under the hood

UR 160 deflector ring
accessories for vertical blowout

CONDITIONS OF USE

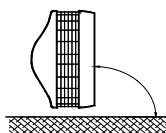
permissible temperature range: medium conveyed -30°C ... 40°C
(continous loading) ambient -30°C ... 40°C

aggressivity and dustiness: Moist and dusty media can be conveyed.

The purpose of use of the fan and the type of medium conveyed should be specified in requests or orders.

permissible fan inclination:

90°



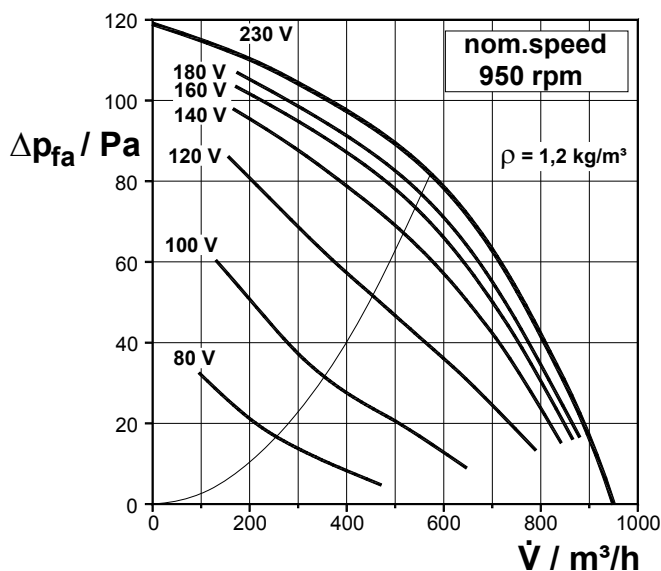
SPECIAL DESIGNS

DR = pressure-controlled, with pressure probe and pressure pickup

QF = with square base 320 x 320 mm (other dimensions upon inquiry)

VRR 200 / ALM

PERFORMANCE



Working range

- Stable regime in entire characteristic range
- Parallel connection possible
- 100% controllable

MOTOR PROTECTION

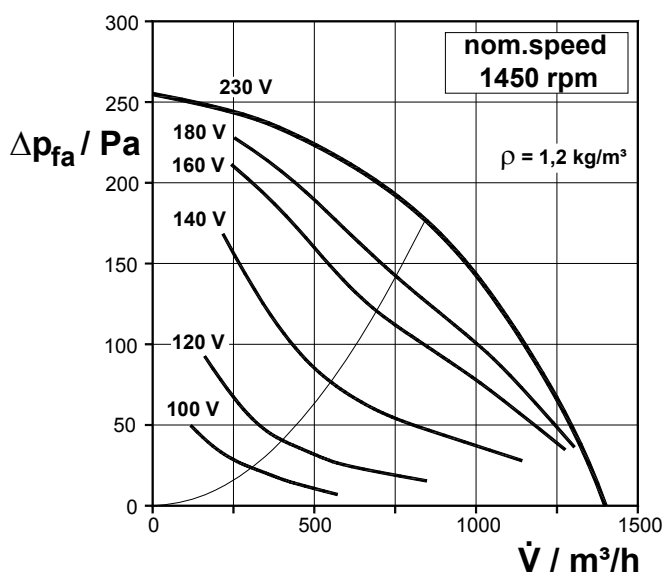
The thermal contacts of the motor are either integrated into the electrical supply line or connected to an external trigger (controller, for instance).

SOUND LEVEL

L_{A3m} = A - weighted sound pressure level at distance of 3 m from fan center

L_{WA} = A - weighted sound power level in duct

Sound level specifications apply to voltage setting by transformer and to range of maximum efficiency.

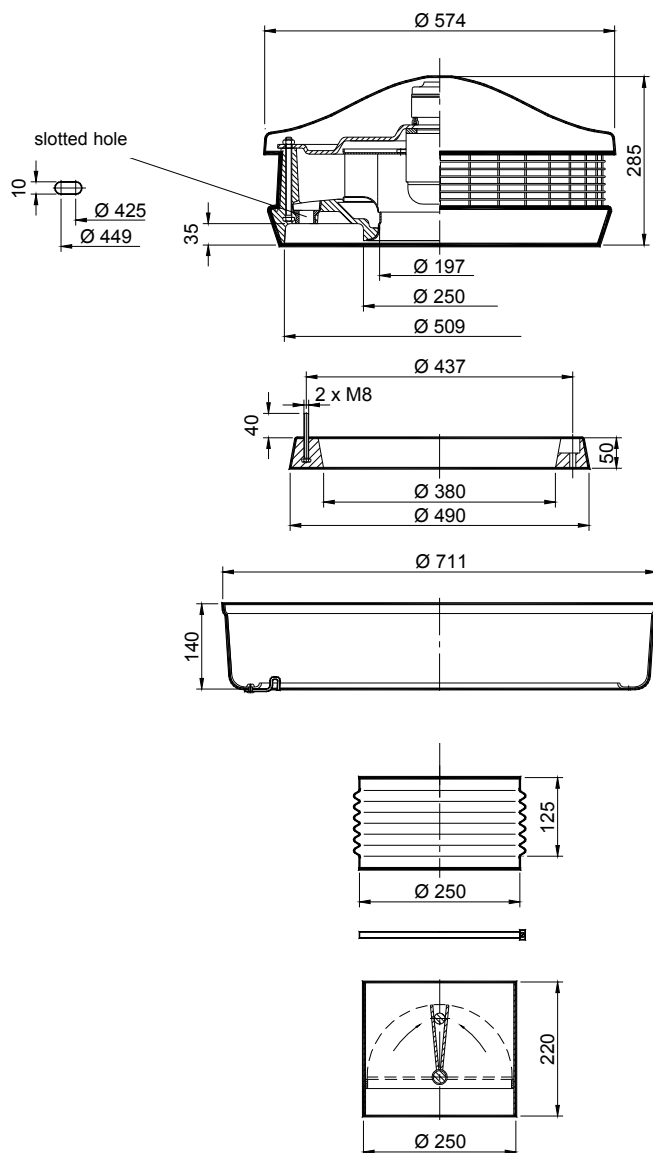


MOTOR VERSIONS

fan type	nominal speed rpm	motor type	maximum motor current A	voltage V	speed in optimum rpm	L_{A3m} dB(A)	L_{WA} dB(A)	w eight with motor kg	transformer step switch	electronic speed controller
VRR 200/ALM W 950	950	1 ~ with operating capacitor 230 V/50 Hz IP 44	0,20	100	575	30	48	11,0	RE 1.5	ES 0
				120	740	35	53			
				140	845	38	56			
				160	885	39	57			
				180	905	39	57			
VRR 200/ALM W 1450	1450	1 ~ with operating capacitor 230 V/50 Hz IP 44	0,51	100	500	26	44	11,0	RE 1.5	ES 1
				120	655	31	49			
				140	895	38	56			
				160	1125	42	60			
				180	1225	43	61			
				230	1380	46	64			

VRR 200 / ALM

PRINCIPAL DIMENSIONS



CONDITIONS OF USE

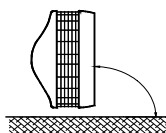
permissible temperature range: medium conveyed -30°C ... 40°C
(continous loading) ambient -30°C ... 40°C

aggressivity and dustiness: Moist and dusty media can be conveyed.

The purpose of use of the fan and the type of medium conveyed should be specified in requests or orders.

permissible fan inclination:

90°



Design features

- Impeller of aluminium, with vanes curved backward
- Base of integral skin PUR foam material free of chlorinated fluorocarbons, flat hood of PPs color platinum-grey (RAL 7036)
- External rotor motor, carried with vibration absorbers, cooled by medium stream conveyed
- good weather resistivity by use of plastic material
- Repair switch under the hood

FU 200 foundation ring
assembly aid of PUR for fastening on flat roofs without foundation

UR 200 deflector ring
accessories for vertical blowout

Compensator 250
of soft PVC for connection of ventilation pipes

Band clamp 250
of stainless steel

Non-return flap 250
for vertical installation, optionally of PVC or PPs

SPECIAL DESIGNS

DR = pressure-controlled, with pressure probe and pressure pickup



ALMECO

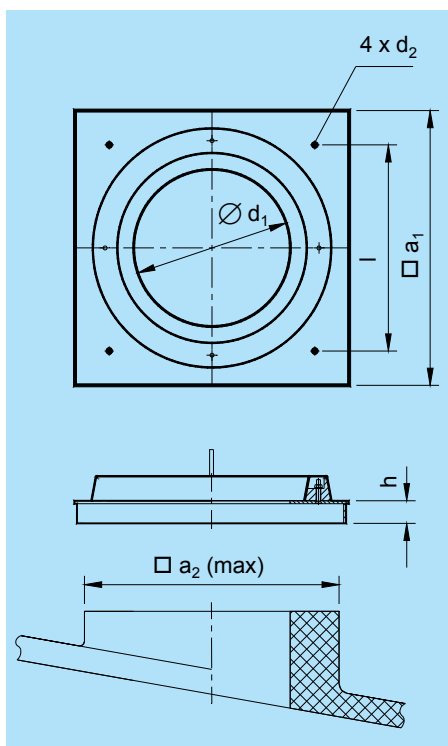
air and water technologies

Centrifugal roof fans VRR

Roof fans

Fitting upstands

Foundation plate FPL



The foundation plate FPL is used for the installation on square foundations, such as brick footing stalls, chimneys, and ducts. It consists of a baseplate with rain collar on which a foundation ring has tightly been screwed and sealed.

Fastening on the foundation is as required by the structural conditions. The foundation plate should rest with its whole face, if possible. Take care of correct sealing.

The fan is installed on the foundation ring. Fastening elements are within the scope of delivery.

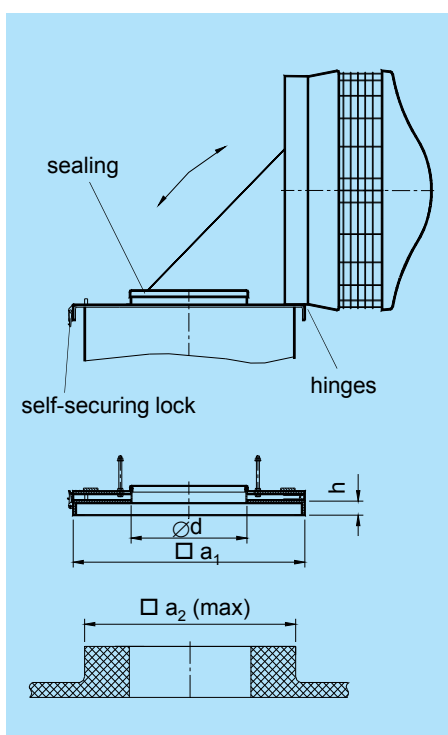
Special designs: with pipe connection (socket connection)
cable bushings
special sizes

Variants for special roof designs and foundations on request.

Material: PVC or PPs to option

type	fan type	a ₁	a ₂ (max)	l	d ₁	d ₂	h
FPL 200	VRR 200 (VRR160/701)	560	530	420	320	9	58
FPL 315	VRR 315	800	765	554	550	11	66
FPL 500	VRR 500 (VRR400/701)	1210	1160	1000	870	14	90

Hinged roof upstand DKS



The hinged roof upstand is used if fast access to the ventilation duct or to the fan is necessary, such as for maintenance or duct cleaning. Two profiled plastic plates are connected by hinges and tensioned by self-securing locks. A protective device keeps the open fan safely in position. A profiled seal ensures tight connection to the duct and prevents from soaking of rain water.

Fastening has to correspond to building properties. The baseplate should be arranged on a roof base or foundation with consideration of good sealing.

The fan is installed with four screws on the upper plate. Fastening elements are within the scope of delivery.

The electrical supply line has to be flexible. It is recommended to install a repair switch on the fan.

Special designs: with pipe connection (socket connection)
duct connection (rectangular)
cable bushings

Variants for special roof designs and foundations on request

Material: PVC

type	fan type	a ₁	a ₂ (max)	d	h
DKS 160	VRR 160/ALM	350	330	200	25
DKS 200	VRR 200 (VRR160/701)	580	530	250	25
DKS 315	VRR 315	820	765	400	41

Fitting upstands

Examples of installation and attachments for upstands

There are two main types of installation:

- installation on an even roof
- installation on a square foundation such as brick footing stalls

In addition to the presented roof upstands variants for special roof designs and foundations are available on request. Different accessories and attachments can be supplied.

Material: PPs, other materials on request

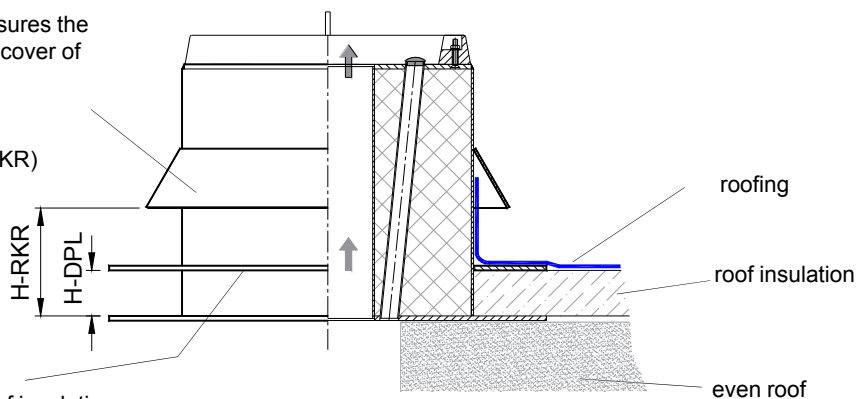
Installation on a even roof (rain collar and/or sealing plate to option)

Rain collar RKR

Rain deflector, which ensures the tightness between outer cover of the upstand and roofing.

Supply:

- loose or
- welded (indicate H-RKR)



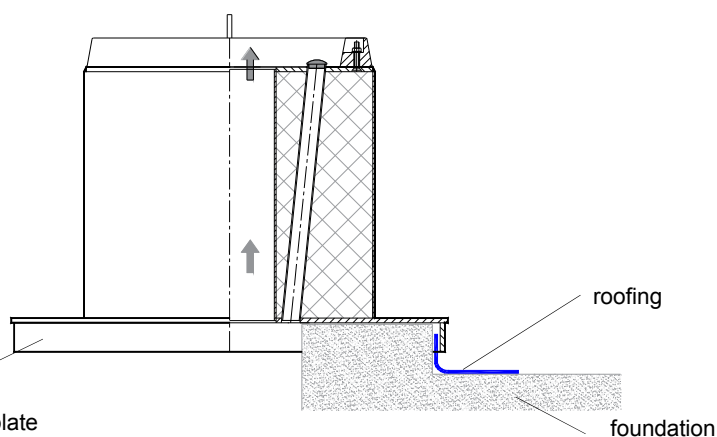
Sealing plate DPL

Plate for covering the roof insulation.
(if welded indicate H-DPL)

Installation on foundations (upstand preferably with rain water edge)

Rain water edge RKA

Dripping rail welded on the base-plate for assembling on a roof base.
Edge height 50 mm

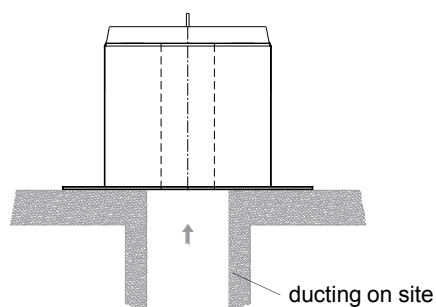


Fitting upstands

Connecting the ventilation system

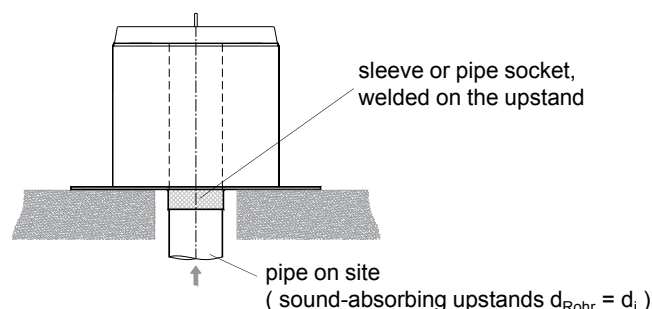
without piping
 (types: DAS, SDS, SDS-DKS)

The upstand is placed directly on a ducting of concrete or bricks on site.



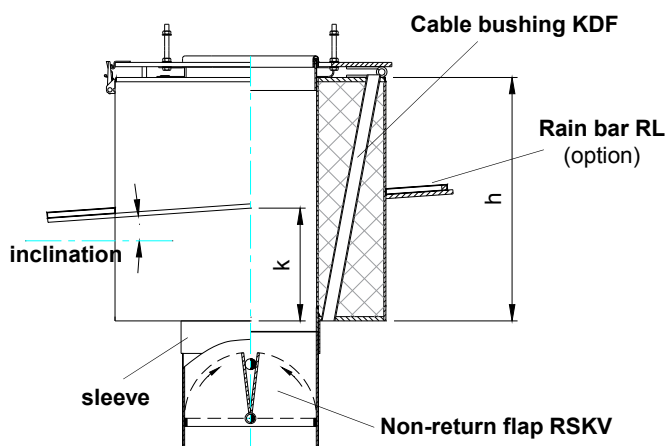
design „R“ - pipe connection
 (types: DASR, SDSR, SDSR-DKS)

The upstand is connected with a pipe welded on the upstand.

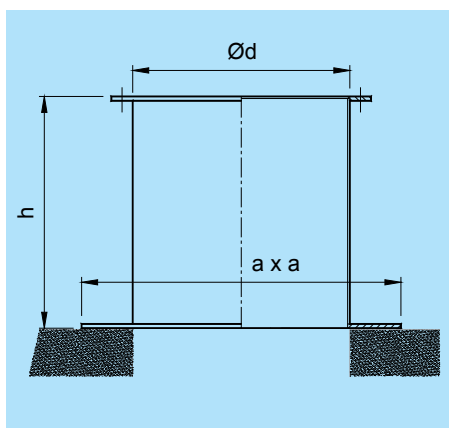


Other special designs and attachments

- cable bushing **KDF**
 inserted pipe for the electrical supply line
 clearance 28mm
- non-return flap **RSKV**
- upstand for pitched roof (indicate **inclination**)
 rain bar to option in case of tiled roof
- in the roof **lowered** assembly
 the baseplate is fixed at $k = h/2$
 preferably for pitched roof



Roof upstand DAS Roof upstand DASR



The roof upstand is used for elevated installation of roof fans, such as for compensation of snow heights or insulations.

Fastening on an even roof follows the building conditions with the baseplate resting on its full face, if possible. Careful sealing has to be considered.

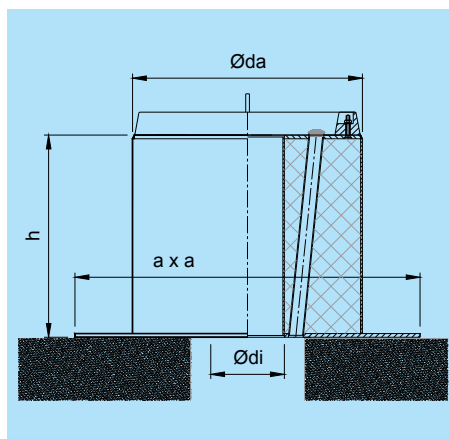
The fan is fastened with four screws (in scope of delivery) on the flange put on.

Special designs see page 25/26

type	fan type	d	a	h	max.weight
DAS(R) 160	VRR 160/ALM	250	500	470	5,5 kg
DAS(R) 200	VRR 200 (VRR160/701)	400	600	470	8 kg
DAS(R) 315	VRR 315	630	800	470	19 kg
DAS(R) 500	VRR 500 (VRR400/701)	1175	1500	470	81 kg

Sound-absorbing upstands

Sound-absorbing upstand SDS Sound-absorbing upstand SDSR (with pipe connection)



The sound-absorbing upstand is used for damping the sound power radiated into the suction line.

The absorber material is incombustible according to DIN 4102 and covered with glass wool and perforated plates.

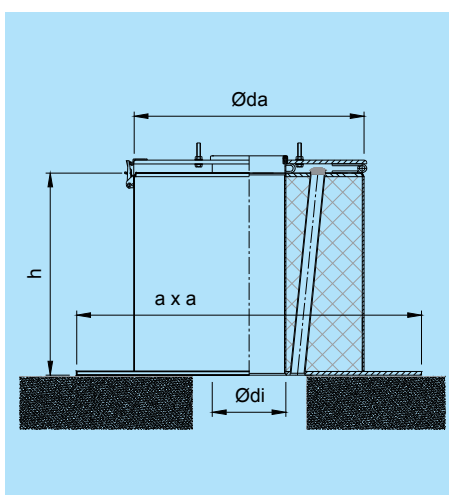
Fastening on an even roof follows the building conditions with the baseplate resting on its full face, if possible. Careful sealing has to be considered.

The fan is fastened with four screws (in scope of delivery) on the flange put on.

Special designs see page 27/28

type	fan type	d _i	d _a	a	h	D _e	max.weight
SDS(R) 160	VRR 160/ALM	200	315	500	450	7 dB	13 kg
SDS(R) 200 / 01	VRR 200 (VRR160/701)	400	605	850	450	8 dB	19 kg
SDS(R) 200 / 02	VRR 200 (VRR160/701)	250	500	750	450	10 dB	18 kg
SDS(R) 315 / 01	VRR 315	630	835	1000	950	8 dB	48 kg
SDS(R) 315 / 02	VRR 315	400	750	1000	950	16 dB	45 kg
SDS(R) 500	VRR 500 (VRR400/701)	630	1175	1500	1000	10 dB	142 kg

Sound-absorbing upstand SDS-DKS (with hinged upstand) Sound-absorbing upstand SDSR-DKS (with pipe connection and hinged upstand)



The sound-absorbing upstand is used for damping the sound power radiated into the suction line.

The integrated hinged roof upstand is used if fast access to the ventilation duct or to the fan is necessary, such as for maintenance or duct cleaning.

The absorber material is incombustible according to DIN 4102 and covered with glass wool and perforated plates.

Fastening on an even roof follows the building conditions with the baseplate resting on its full face, if possible. Careful sealing has to be considered.

The fan is installed with four screws on the upper plate carried in hinges.

Fastening elements are within the scope of delivery.

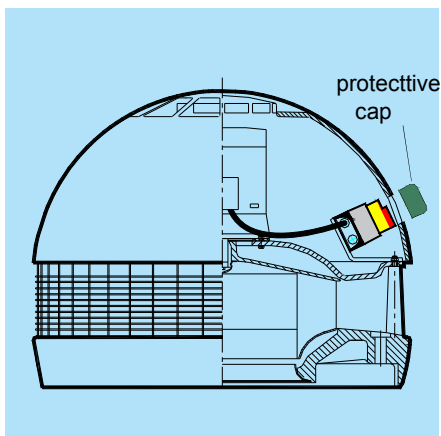
The electrical supply line has to be flexible. It is recommended to install a repair switch on the fan.

Special designs see page 25/26

type	fan type	d _i	d _a	a	h	D _e	max.weight
SDS(R)-DKS 160	VRR 160/ALM	200	315	500	450	7 dB	15 kg
SDS(R)-DKS 200 / 01	VRR 200 (VRR160/701)	400	605	850	450	8 dB	23 kg
SDS(R)-DKS 200 / 02	VRR 200 (VRR160/701)	250	500	750	450	10 dB	22 kg
SDS(R)-DKS 315 / 01	VRR 315	630	835	1000	950	8 dB	53 kg
SDS(R)-DKS 315 / 02	VRR 315	400	750	1000	950	16 dB	50 kg

Electrical accessories

Repair switch RS (VRR / 702 and VRR / 701)



The repair switch RS is used to disconnect the fan completely from the mains in cases of repair and maintenance. This excludes the risk of accidents arising from unauthorized activation.

The switch is supplied as a separate unit or fastened and wired on request under the hood and easily accessible by removing the protective cap. The switch size is determined by the motor power and mains voltage.

Fan connection through a frequency inverter requires the cable connection to be shielded. Six-pole switches are used for pole-changing motors. Explosion-proof motors are equipped with switches with explosion protection EEX de IICT6 according to ATEX.

Repair switch three-pole, IP 65 with auxiliary contact key-locked	Type	Switching capacity / kW		
		3(1)x230V	3x400V	3x500V
	RS 20 A / HS	3,5	6,5	7,5
	RS 25 A / HS	7	13	11

Repair switch (VRR / ALM)



A repair switch is integrated as standard in fans VRR / ALM and easily accessible by removing the protective cap.

The switch is the terminal box as well.

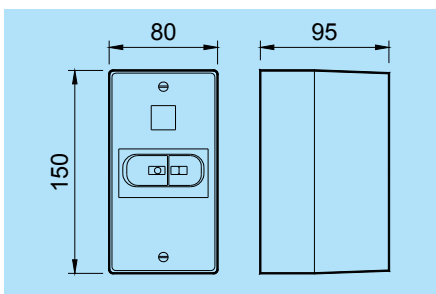
Motor protection switch MS (VRR / 702 and VRR / 701)

Every motor has to be connected to the supply system through a protective device with reclosing blocking. Protective switches of type MS are three-pole low voltage switching appliances used for single-phase and three-phase motors. They protect the motor from impermissible overload and are used simultaneously for fan activation and deactivation in normal operation.

The switch is supplied as a separate unit or fastened and wired on request under the hood and easily accessible by removing the protective cap.

It has to be set according to the particular nominal motor current.

Pole-changing motors require a switch for every speed rate. Explosion-proof motors are equipped with switches with explosion protection EEX de IICT6 according to ATEX.



Motor protection switch three-pole (for single-phase and three-phase motors) degree of protection IP 54	Type	Current range / A
		MS 1.0
	MS 1.6	1,0 ... 1,6
	MS 2.5	1,6 ... 2,5
	MS 4.0	2,5 ... 4,0
	MS 6.3	4,0 ... 6,3
	MS 10.0	6,3 ... 10
	MS 16.0	10 ... 16
	MS 20.0	16 ... 20
	MS 25.0	20 ... 25

Electrical accessories

Thermal winding protection TS (VRR / 702 and VRR / 701)

Thermal motor protection by means of PTC resistors (**thermistor**) in the winding is the most efficient and reliable one. The motor is protected against overload and overheating irrespective of the cause of trouble, such as heavy starting duty, failing of a phase, too high switching frequency, high ambient temperature, impeded cooling or blocked rotor. The PTC resistor increases its resistance exponentially in the region of critical motor temperature.

A special trigger unit (TS-ÜS) processes this change and disconnects the motor from the mains system.

Use of the pole changer unit PS 90, fan control LS 96, or other controller with PTC monitoring-devices requires the fans to be equipped with thermal winding protection. This protection is recommended in the case of inverter regime or the integrated motor protection via calculation of I^2t is used.

In case of motors with increased safety (EEx e) pay attention to:

A motor protection device with a current-dependent delay and an ATEX approval must be installed so that, in the event of an overload, it will disconnect the motor from the mains supply within the permissible heating period (t_E time). The motor can be additionally protected by a PTC thermistor. However, protection of the motor using only a PTC thermistor is not permissible.

Thermal contact TK (VRR / ALM)

External rotor motors are equipped with thermal contacts as standard. This are bimetal switches, which are embedded in the motor winding. They open an electrical contact, if the maximum allowed winding temperature is attained.

Thus an effective and reliable motor protection is secured even if the motor is speed controlled by voltage or if the cooling is insufficient. The disconnection of the motor is made by special external protection relay or a control device with integrated protection relay.

For uncomplicated applications it is sufficient to integrate the thermocontacts into the electrical supply. After cooling down the motor is switched on automatically.

In size VRR160/ALM the thermal contacts of the motor are internally integrated into the electrical supply line. External connection is **not** possible.

Cam-operated pole changer NPS (VRR / 702 and VRR / 701)

The switch of type NPS in a housing for surface mounting (degree of protection IP 55) for manual speed changeover of polechanging motors with two speed rates. The selection depends on the motor type and nominal motor current for the higher speed rate.

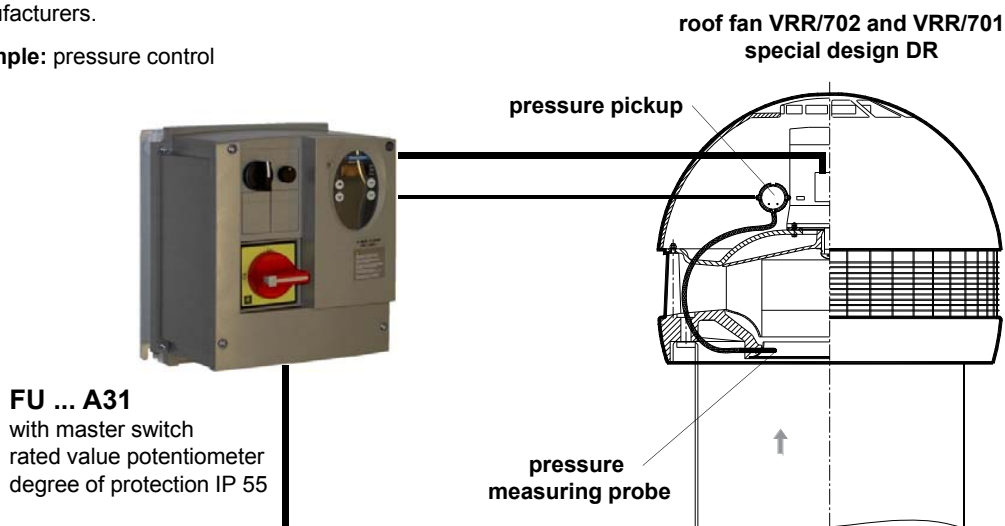
kind of motor	nom.current	type
Dahlander-winding (P1)	20A	NPS 1/20 A
	60A	NPS 1/60 A
2 separate windings (P2)	20A	NPS 2/20 A
	25A	NPS 2/25 A

Frequency inverter FU 0,18 ... 15,0-A31 (VRR / 702 and VRR / 701)

The inverter FU ... A31 permits many simple control and regulation problems to be solved in a very convenient way if its numerous functions are utilized and some additional components added.

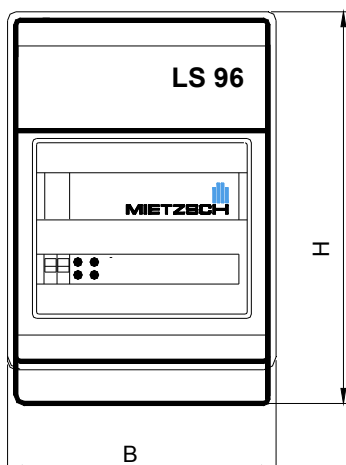
On this basis MIETZSCH supply individual applications such as speed setting by means of integrated potentiometer, stepped regime, time-control activation, pressure or volume flow control and many others. The user gets a complete system (fan, inverter, switches, signal lamps, measuring appliances, sensors etc.) which is immediately ready for operation when the electrical connections have been made. All necessary setting and programming work is done by the manufacturers.

Example: pressure control



Electrical accessories

Fan control LS 96 (VRR / 702 and VRR / 701)



The fan control of type LS 96 is a compact solution for the control of fans with three-phase motors.

The control cabinet contains all control and operating elements, signal lamps, and a full motor protection unit with trouble indicator. Consequently, the fan has to be ordered as special version TS (with thermal winding protection).

According to the version up to three fans can be connected and controlled.

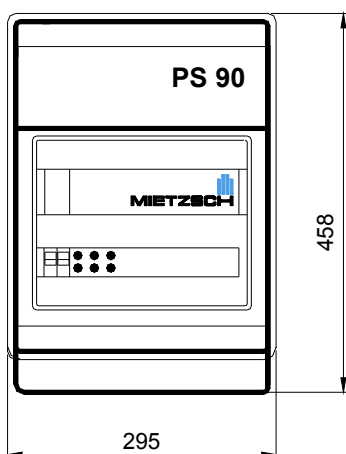
The version **LSU 96** additionally contains a quartz-controlled timer with daily and weekly program.

	for 1 fan	for 2 fans	for 3 fans
basic variant	LS 96 / 1 / 16 A	LS 96 / 2 / 16 A	LS 96 / 3 / 16 A
with timer	LSU 96 / 1 / 16 A	LSU 96 / 2 / 16 A	LSU 96 / 3 / 16 A
B x H x T	295 x 458 x 129 mm	403 x 458 x 129 mm	403 x 603 x 129 mm
weight	4 kg	5,5 kg	8 kg

nominal voltage 3 x 400 V / 50 Hz
 nominal current 16 A (higher current on request)
 motor protection thermal winding protection (PTC resistor)
 housing plastic material, IP 54

The LS 96 and suitable external additional units permit different simple control and regulation problems to be solved: remote actuation, flap control, air flow supervision, temperature and moisture control etc. (See information „Control and regulation systems“.)

Pole changer PS 90 (VRR / 702 and VRR / 701)



The pole changer of type PS 90 is a compact solution for the control of fans with polechanging motors.

The control cabinet contains all control and operating elements, signal lamps, and a full motor protection unit with trouble indicator. Consequently, the fan has to be ordered as special version TS (with thermal winding protection).

The version **PSU 90** additionally contains a quartz-controlled timer with daily and weekly program.

	Dahlander-winding (P1)	2 separate windings (P2)
basic variant	PS 90 / 1 / 16 A	PS 90 / 2 / 16 A
with timer	PSU 90 / 1 / 16 A	PSU 90 / 2 / 16 A

nominal voltage 3 x 400 V / 50 Hz
 nominal current 16 A (higher current on request)
 motor protection thermal winding protection (PTC resistor)
 housing plastic material, IP 54, 295 x 458 x 129 mm
 weight 4 kg

The PS 90 and suitable external additional units permit different simple control and regulation problems to be solved: remote actuation, flap control, air flow supervision, temperature and moisture control etc. (See information „Control and regulation systems“.)

Electrical accessories

Stage control unit RE



The transformer induced 5-stage control unit RE is used for manual speed control of fans with external rotor motor. Contrary to electronic voltage setting (such as phase angle control, frequency conversion), the sinusoidal control voltage does not lead to additional motor noise or feedback to the mains. The device contains an integrated fuse as short-circuit protection and an operational signal lamp.

type	nom.current	w x h x d	weight
RE 1.5	1,5 A	115 x 180 x 85 mm	1,7 kg
RE 3.5	3,5 A	200 x 280 x 140 mm	3,6 kg
RE 5.0	5,0 A	200 x 280 x 140 mm	5,1 kg

nominal voltage 230V / 50 Hz
 output voltage 0/60/105/130/160/230 V
 housing plastic material, IP 54

Electronic speed controller ES



The electronic speed controllers of types ES are used for manual speed control of fans with external rotor motor. Their functional mode is the principle of phase angle control. The integrated switch permits the fans to be turned on and off.

type	nom.current	flush-mounting	surface-mounting	weight
ES 0	0,5 A	IP 44	IP 54	0,23 kg
ES 1	1,0 A	IP 44	IP 54	0,24 kg
ES 2	2,0 A	IP 44	IP 54	0,29 kg
ES 4	4,0 A	-	IP 54	0,36 kg

nominal voltage 230V / 50 Hz
 housing 82x82x65 mm, plastic material

Compact-timer-control ZSK



The timer-control ZSK is used for the speed control of fans with external rotor motor. The sinusoidal control voltage does not lead to additional motor noise or feedback to the mains.

The version ZTSK includes additionally a temperature-dependent control. Preferably this device is used in central ventilation systems.

type	type	nom.current	output voltages	weight
ZSK 1.5	ZTSK 1.5	1,5 A	0/65/110/135/170/230 V	4,0 kg
ZSK 3.0	ZTSK 3.0	3,0 A	0/65/110/135/170/230 V	5,4 kg
ZSK 4.0	ZTSK 4.0	4,0 A	0/60/105/130/160/230 V	6,7 kg

nominal voltage 230V / 50 Hz
 housing 240x284x115 mm, aluminium / plastic material, IP 54

Electronic pressure controller PXET6Q



The devices is used for continuously variable speed-regulation of fans with external rotor motors by controlling the pressure. Typical application is e.g. the pressure control in central ventilation systems.

type	nom.current	control parameter	measuring range	sensor	weight
PXET6Q	6 A	pressure	200 Pa 500 Pa 1000 Pa	DSG	1,3 kg


nominal voltage 230V / 50 Hz
 housing 223x200x131 mm, plastic material, IP 54




Centrifugal roof fans VRR

Specifications


Roof fans of plastic material

no.	quantity	specification		individual price EUR	Total price EUR
		<p>Roof fans of plastic material Mietzsch Lufttechnik - Series VRR Object:</p> <p>Impeller with vanes curved backward made of glass fibre-reinforced PP / PVC / FRP laminated, fly-mounted on a shaft, with balancing quality G 6.3 according to ISO 1940</p> <p>Spherical hood and base of integral skin polyurethane foam material free of chlorinated fluorocarbons, axial intake on one end all materials with inflammation and burning properties of class B 2 according to DIN 4102</p> <p>Intake nozzle of plastic material shaped aerodynamically, reduction of outlet losses by integrated radial diffuser</p> <p>Direct drive by standard motor outside the flow conveyed Design in single-phase / three-phase / pole-changing Motor protection: no / thermistor (TS)</p> <p>Fan optionally with horizontal or vertical blowout</p> <p>Safety demands according to VDMA 24 167</p> <p>VRR - - - / 70 - W - - - - -</p> <p>Nominal size <input type="text"/> Impeller type <input type="text"/> Nominal speed <input type="text"/> Special version <input type="text"/></p> <p>Volumetric flow : <input type="text"/> m³/h Pressure increase free blowout : <input type="text"/> Pa Temperature of medium conveyed : <input type="text"/> °C Motor power : <input type="text"/> kW Voltage / Frequency : <input type="text"/> V <input type="text"/> Hz Rated motor current : <input type="text"/> A Fan speed : <input type="text"/> rpm Sound level L_{A3m} : <input type="text"/> dB(A) Weight : <input type="text"/> kg</p> <p>Media / use:</p> <p>Special accessories and special equipment</p> <ul style="list-style-type: none"> ♦ House colour golden yellow (approximately RAL1004), platinum-grey (RAL7036), light blue (RAL5012) ♦ Foundation ring FR ♦ Deflector ring UR ♦ Elastic connector, tensioning ring, non-return flap ♦ Upstands: roof upstand DAS, sound-absorbing upstand SDS foundation plate FPL, hinged roof upstand DKS ♦ Repair switch: single / mounted, 3-poles with auxiliary switch / 6-poles with auxiliary switch ♦ Motor protection switch: single / mounted ♦ Other accessories 			

Roof fans of plastic material - Explosion-proof

no.	quantity	specification		individual price EUR	Total price EUR															
		<p>Roof fans of plastic material explosion-proof Mietzsch Lufttechnik - Series VRR Object: Permitted for EX-Categorie according to EU-guideline 2014/34/EU (ATEX) :</p> <table border="1" data-bbox="432 611 1120 712"> <thead> <tr> <th rowspan="2">Location in relation to the fan</th> <th colspan="3">category</th> </tr> <tr> <th>gas area 1</th> <th>gas area 2</th> <th>no EX-area</th> </tr> </thead> <tbody> <tr> <td>inside</td> <td></td> <td>II 3G c IIB+H2 T3</td> <td><input type="checkbox"/></td> </tr> <tr> <td>outside</td> <td></td> <td>II 3G c IIB+H2 T3</td> <td><input type="checkbox"/></td> </tr> </tbody> </table> <p>Impeller with vanes curved backward made of glass fibre-reinforced PP / PVC / FRP laminated, fly-mounted on a shaft, with balancing quality G 6.3 according to ISO 1940</p> <p>Spherical hood and base of integral skin polyurethane foam material free of chlorinated fluorocarbons, axial intake on one end all materials with inflammation and burning properties of class B 2 according to DIN 4102</p> <p>Intake nozzle of plastic material shaped aerodynamically, reduction of outlet losses by integrated radial diffuser</p> <p>Direct drive with EX-motor outside the flow conveyed Protection: EEXe II - increased safety EEXde II - flameproof enclosure Motor protection: no / thermistor (TS)</p> <p>Fan optionally with horizontal or vertical blowout Safety demands according to VDMA 24 167</p> <p>VRR ___ / 70 _ W - - - - -</p> <p>Nominal size <input type="text"/> Impeller type <input type="text"/> Nominal speed <input type="text"/> Special version <input type="text"/></p> <p>Volumetric flow : _____ m³/h Pressure increase : _____ Pa free blowout : _____ Pa Temperature of medium : _____ °C Ambient temperature : _____ °C Motor power : _____ kW Voltage / Frequency : _____ V _____ Hz Rated motor current : _____ A Fan speed : _____ rpm Sound level L_{A3m} : _____ dB(A) Weight : _____ kg</p> <p>Media / use:</p> <p>Special accessories and special equipment</p> <ul style="list-style-type: none"> ♦ House colour golden yellow (approximately RAL1004), platinum-grey (RAL7036), light blue (RAL5012) ♦ Foundation ring FR ♦ Deflector ring UR ♦ Elastic connector, tensioning ring, non-return flap ♦ Upstands: roof upstand DAS, sound-absorbing upstand SDS foundation plate FPL, hinged roof upstand DKS ♦ Repair switch: single / mounted, 3-poles with auxiliary switch, standard / explosion-proof ♦ Motor protection switch: single / mounted, standard / explosion-proof ♦ Other accessories 	Location in relation to the fan	category			gas area 1	gas area 2	no EX-area	inside		II 3G c IIB+H2 T3	<input type="checkbox"/>	outside		II 3G c IIB+H2 T3	<input type="checkbox"/>			
Location in relation to the fan	category																			
	gas area 1	gas area 2	no EX-area																	
inside		II 3G c IIB+H2 T3	<input type="checkbox"/>																	
outside		II 3G c IIB+H2 T3	<input type="checkbox"/>																	

Roof fans with external rotor motor

no.	quantity	specification		individual price EUR	Total price EUR	
		<p>Roof fans with external rotor motor Mietzsch Lufttechnik - Series VRR /ALM flat shape (version FA)</p> <p>Object:</p> <p>Impeller with vanes curved backward with balancing quality G 6.3 according to ISO 1940</p> <p>Flat hood of PPs, base of integral skin polyurethane foam material free of chlorinated fluorocarbons, axial intake on one end, standard colour platinum-grey (RAL7036), all materials with inflammation and burning properties of class B 2 according to DIN 4102</p> <p>Intake nozzle of plastic material shaped aerodynamically, reduction of outlet losses by integrated radial diffuser</p> <p>Direct drive by 100% controllable external rotor motor on motor carrier ring vibrationinsulated fastening thermoswitch on motor as overload protection</p> <p>Fan optionally with horizontal or vertical blowout</p> <p>easily accessible repair switch under the hood</p> <p>Safety demands according to VDMA 24 167</p> <p>VRR ___ / ALM W ___ - FA</p> <p>Nominal size <input type="text"/> Nominal speed <input type="text"/> Special version <input type="text"/></p> <p>Volumetric flow : <input type="text"/> m³/h Pressure increase free blowout : <input type="text"/> Pa Temperature of medium conveyed : <input type="text" value="40"/> °C Motor power : <input type="text"/> kW Voltage / Frequency : <input type="text" value="230"/> V <input type="text" value="50"/> Hz Rated motor currant : <input type="text"/> A Fan speed : <input type="text"/> rpm Sound level L_{A3m} : <input type="text"/> dB(A) Weight : <input type="text"/> kg</p> <p>Media / use:</p> <p>Special accessories and special equipment</p> <ul style="list-style-type: none"> ♦ Foundation ring FR ♦ Deflector ring UR ♦ Elastic connector, tensioning ring, non-return flap ♦ Upstands: roof upstand DAS, sound-absorbing upstand SDS foundation plate FPL, hinged roof upstand DKS ♦ pressure-controlled design DR with integrated measuring probe and pressure pickup ♦ pressure control device PTDE 6-M / timer control device for night reduction NAG ♦ compact timer/temperature control device ZSK / ZTSK ♦ Other accessories 				