ALMECO
air and water technologies

Centrifugal fans

VRE - Direct Driven

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Centrifugal Fans VRE • Direct Driven

Technical Explanation

Technical Data

Casing Connections

Accessories

Specifications

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Radial fans of plastic materials
Series VRE VRE 100 ... 560
direct driven

Application in all ranges of ventilation

High chemical resistivity by the use of plastic materials
(PVC, PPs, PE, PVDF, GfK, electrically conductive plastic)

High efficiency and little noise emission

Volumetric flow	up to 36 000 m^3/h
Pressure increase	up to 3 300 Pa

Capacity gradation by nine sizes and two versions

Housing positions left and right (L and R)

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

Varied casing connectors

Many electrical and ventilation accessories

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Technical Explanation

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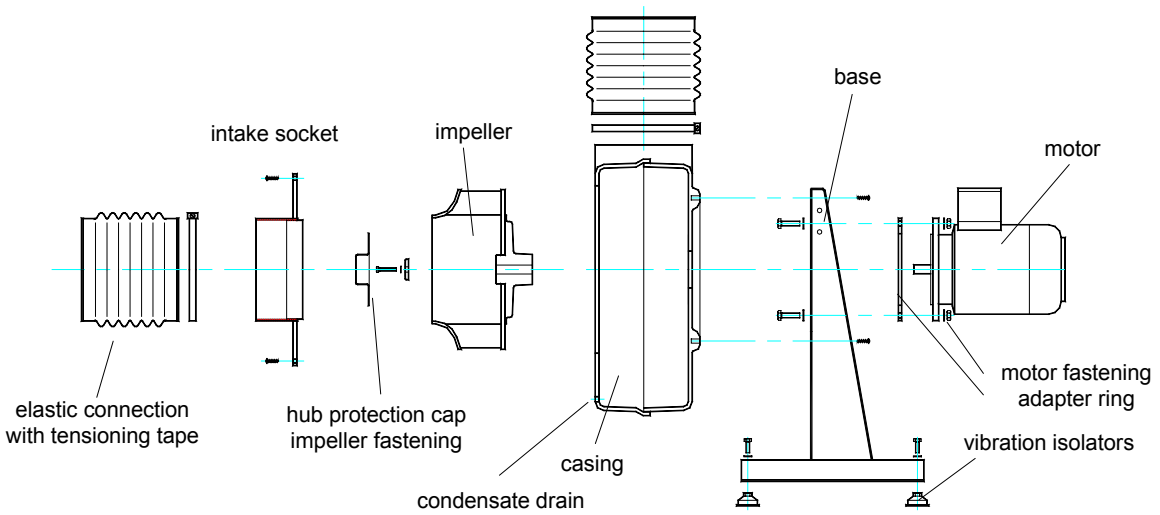
Application / Technical Description



APPLICATION

High resistance to corrosion resulting from the use of high-quality plastic materials makes the radial fans of type VRE suitable in particular for process exhausting devices in the chemical and pharmaceutical industries, for ventilating laboratories, battery rooms, pickling and washing plants, galvanic and agricultural facilities etc.

TECHNICAL DESCRIPTION

Main components of the fans are the impeller, spiral casing, casing connections, base, and driving motor. The motor is flange-connected directly to the base and completely separated from the flowing medium. The impeller has been arranged on the motor shaft and is driven directly. Steel components - such as screws, hub and hub connections - are made of acid-resistant steel or protected against corrosion by plastic coverings.
The aerodynamic design of the fans is state-of-the-art so that high efficiency, low sound levels, and high performance density can be achieved.
Every fan is supplied as a complete assembly unit ready for use. Vibration absorbers matched in size and quantity, elastic connections on the pressure and suction sides, and a condensate drain bore with closing cap are elements of the standard range of delivery.

Design features

Impeller: There are two impeller designs covering a wide range of performance:
Type 731 with vanes curved backward
Type 734 with vanes curved forward
Special impellers are used for special applications. Impellers with vanes in radial arrangement, for instance, are advantageous if the medium conveyed contains intensely sticking substances.
The impellers are made of singles components and assembled with progressive joining methods. Dynamic balancing complies with ISO 1940.
Materials: PVC, PPs, PVDF, FRP (for high demands), electrically conductive plastic material (explosion-proof fans)

Casing: The casings are made of deep-drawn half shells (sizes 100 … 250 made of PVC or PPs) or even side walls and a jacket which are tightly welded. The connection diameter on the suction side is in any case identical with the nominal size of the fan. The casing can be opened on the suction side for cleaning. A condensate drain has been arranged in deepest position.
Sealness of the shaft lead-through that is sufficient for many applications results from the vanes with far end arrangement. Higher demands on sealness are met by an additional seal between impeller and casing (see section Shaft seal).
A shatter guard or an additional FRP reinforcement should be arranged for cases of high demands on safety.
A wide range of casing connections is available for connecting ventilation lines.
Note: Connected plant components must not load the fan mechanically.
Materials: PVC, PPs, PVDF, FRP (for high demands), electrically conductive plastic material (explosion-proof fans)

Base: Robust welded design of zinc-coated sheet steel, optionally available: varnished or of stainless steel.

Motors: Standard motor: 3 ~ 400 V/ 50 Hz, degree of protection IP 54, design B 5 (in special cases B 14 or B 3)
Single-phase motors 230 V/ 50 Hz, motors with special voltages and different degree of protection, pole-changing and explosion-proof motors
Motors with thermal winding protection (PTC resistor) --> special design **TS**
Motors with integrated frequency inverter --> special design **MFU**

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Conditions of Use / Shaft Seal / Special Designs and Accessories

CONDITIONS OF USE

permissible ambient temperature: -30 °C … 40 °C (EX motors -20 °C ... 40 °C)
permissible temperature of medium conveyed: -30 °C … 40 °C
Higher temperatures depend on the design size, material, and speed rate and are subject to consultation with the manufacturers.

The applied materials have good **chemical resistance** against many substances. It should be considered, however, that evens plastic materials are attacked by certain chemicals. This depends on the following items:

- Chemical composition and concentration of medium conveyed
- Temperature and time of action
- Mechanical loading and residual stress resulting from processing

Many applications in fields such as laboratories and stockrooms for chemicals, in agriculture and damp-loaded processes led to good results with "standard materials" such as PVC or PPs that can be used without any problem in most cases. Critical applications may occur in the process-technological industry - surface refinement, pickling plants, process exhaust air in microelectronics.
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.

Slightly **dust-laden media** can also be conveyed but lead to increased wear.

Notes on **outdoor use:** If possible, fans should not be exposed to intense ultraviolet radiation.
The motor should be protected by a weather hood.
Ambient conditions have to be considered in material selection.

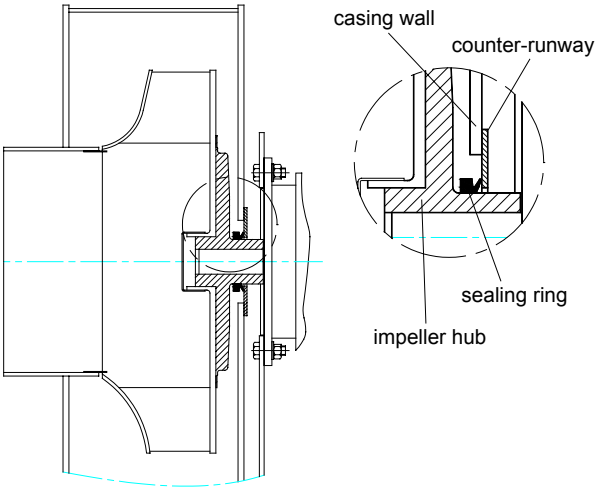
Working range: The fans show stable operation in the entire range of the characteristic shown. Operation with smaller volume flows is possible but very ineffective. Use with larger volume flows may lead to motor overload (type 734 in particular) and must be avoided.
Parallel arrangement: of type 731 is possible in any case, of type 734 after consultation with the manufacturers only.
Series arrangement: requires the manufacturers' agreement (increased casing pressures).

SHAFT SEAL

Radial fans VRE with standard design have vanes in far end arrangement and formed on the rear hub protection cap. This means permanent intake of external air through the minimized gap of the shaft lead-through if

pressure loss on suction end is greater that one third of total pressure loss.

This is the reason why components with high pressure losses such as washers, filters, separators etc. should be arranged, whenever possible, before the fan, i.e. on the suction side.



A shaft seal is used if this "aerodynamic casing sealing" is not sufficient. This may happen if, for instance, there is the risk of aggressive gas escaping with the fan at rest.

The hub body of **special design GD** carries a sealing ring with axially acting flexible sealing lip.
The counter-runway in the casing wall consists of a material with good sliding properties (stainless steel or a special plastic material, the latter in cases of action of hydrochloric acid, chromic aid, hydrofluoric acid etc.).

This seal is used for high demands on gastightness and in cases of relatively dry outlet air. It is distinguished by its long service life.

There are various special seals such as gas shutoff seals, labyrinth seals etc. for very high demands on tightness, in particular in cases of high humidity and much condensate. The manufacturers should be contacted for such applications.

SPECIAL DESIGNS and ACCESSORIES (more details at the end of this brochure)

Cleaning opening, shatter guard, weather hood for motor, various connections for condensate drain, base of stainless steel, intake and outlet protective grating
Ventilation components: ducts, elbows, flaps, air hoods, pipe and profiled silencers
Electrical accessories: repair switches, motor protection switches, pole changing switches, complete fan controls, frequency inverters (also with pressure and volumetric flow regulation), air flow monitoring.

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EXPLOSION PROTECTION

Guideline 94/9/EG (**ATEX**) newly regulates explosion protection for non-electrical devices from July 1, 2003. In addition to observation of design and safety instructions according to DIN EN 13463 and VDMA 24 169, the fan has to be assigned exactly to the relevant degree of protection and labelled accordingly. The manufacturers have to prove conformity.

Areas with hazard of explosion exist in the chemical industry, in gasworks, coking plants, varnishing units, petrol stations, sewage and wastewater treatment plants, laboratory systems etc.

Prerequisites of explosion are:

Flammable substances (such as gas, dust),
Oxygen in sufficient quantity of air
Ignition source (sparks, fire, hot surfaces, electrostatic discharges)

The following measures have to be taken if explosions cannot be excluded:

Prevention of explosible atmosphere
Avoidance of ignition sources
Moderation of damaging effects of explosions

An efficient and supervised ventilation system is often a sufficient measure for avoiding ignitable atmosphere and, consequently, hazard of explosion.

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.

Fans VRE are supplied for the following types of ignition protection:

Zone 1: II 2G IIB T3

Zone 2: II 3G IIB T3

- T3: temperature class T3 (ignition temperature of gas > 200 °C)
- IIB: explosion group of gases IIB (IIA included, IIC not included)
- 2G / 3G: category (2G = gases of zone 1, 3G = gases of zone 2)
- II: Equipment-group I (use in mining not permissible)

On principle, application in zone 0 is not possible. Gases of explosion group IIC which have very high ignition performance, gases with ignition temperature below 200 °C, and combustible dusts are likewise impermissible.

Classification generally differentiates between inside (medium conveyed) and outside (surrounding). Every zone of hazard requires its special design. Explosion-proof electrical devices (motors, switches etc.) and electrically conductive materials (preferably conductive and flame retardant polypropylene --> PPsX) are employed. General classification is as follows:

Hazard zone			Motor		Impeller/housing
inside	outside	designation	without inverter	with inverter	material
zone 2	zone 2	Z2Z2	EEx e II	EEx de	not conductive
zone 2	none	Z2Z3	EEx e II	standard	not conductive
zone 1	zone 1	Z1Z1	EEx e II	EEx de	conductive
zone 1	zone 1	Z1Z2	EEx e II	EEx de	conductive

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). Standard motors can be used and operated in inverter mode if the surrounding is not an EX zone and the fan meets certain design demands.

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Explanation of Type Designations / Performance Parameters

EXPLANATION OF TYPE DESIGNATIONS

VRE 250 / 731 W 1450 - TS - GD - 090 L - PE/PPs

Fan (radial, one suction side)

Nominal size (inlet diameter /mm)

Impeller type
731 - curved backward
734 - curved forward
(special disigns of impeller types)

Direct drive

Nominal speed rpm
(higher speed in cases of pole-changing motors)

Brief designation of special versions

E	= single-phase drive
TS	= with thermal winding protection (thermistor)
P1	= pole-changing motors with speed halving (Dahlander) such as 1450 P1 = 1450/710 rpm
P2	= pole-changing motors with Separate windings such as 1450 P2 = 1450/950 U/min (changeover to next smaller speed)
EX	= with motor increased safety EEx e II T3
EXde	= with motor flameproof enclosure EEx de IIC T4
ZiZo	= explosion-proof fan for zone i=inside and o=outside such as Z1Z2 = inside zone 1 and outside zone 2
GD	= gastight (with shaft sealing)
GDS	= high gastight casing for humid media with condensate
DD	= motor in delta connection for frequency inverter 3x230V (in case of mounted repair switch)

Housing positions (view from intake side)

Material (casing/impeller)

PERFORMANCE PARAMETERS

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

In cases of radial fans that are destined to be arranged within a plant, the **total pressure difference Δp_t** results from

$$\Delta p_t = p_{t\,D} - p_{t\,S} = (p_{stat\,D} + \rho/2 * c_D^2) - (p_{stat\,S} + \rho/2 * c_S^2)$$

This size corresponds to the usable total pressure losses on the suction side (S) and the pressure side (D).
If area of inlet and outlet are equal total pressure difference is identically to static pressure difference

$$\Delta p_t = p_{statD} - p_{statS} = \Delta p_{stat}$$

In praxis a pressure difference diminished by the dynamic pressure is often used. This size corresponds to the pressure difference for free blowout Δp_{fa} which is used for roof fans:

$$\Delta p_{fa} = \Delta p_t - \rho/2 * c_D^2$$ (to designate it *static pressure difference* is incorrect)

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

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

Sound power level L3m
Several measuring points are arranged on an enveloping surface around the fan. Conversion to the specified level at 3 meters is calculated from

$$L_{3m} = L_{value\ measuredt} + 20 * \log (r_m / 3m)\ dB$$

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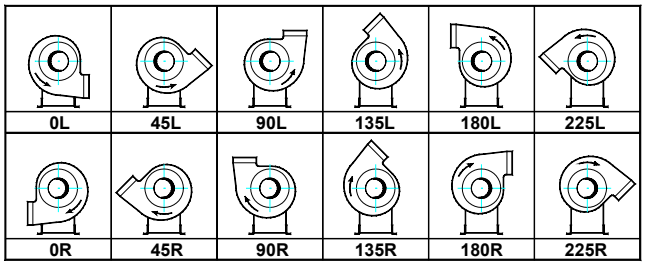
Housing Positions / Survey of Types

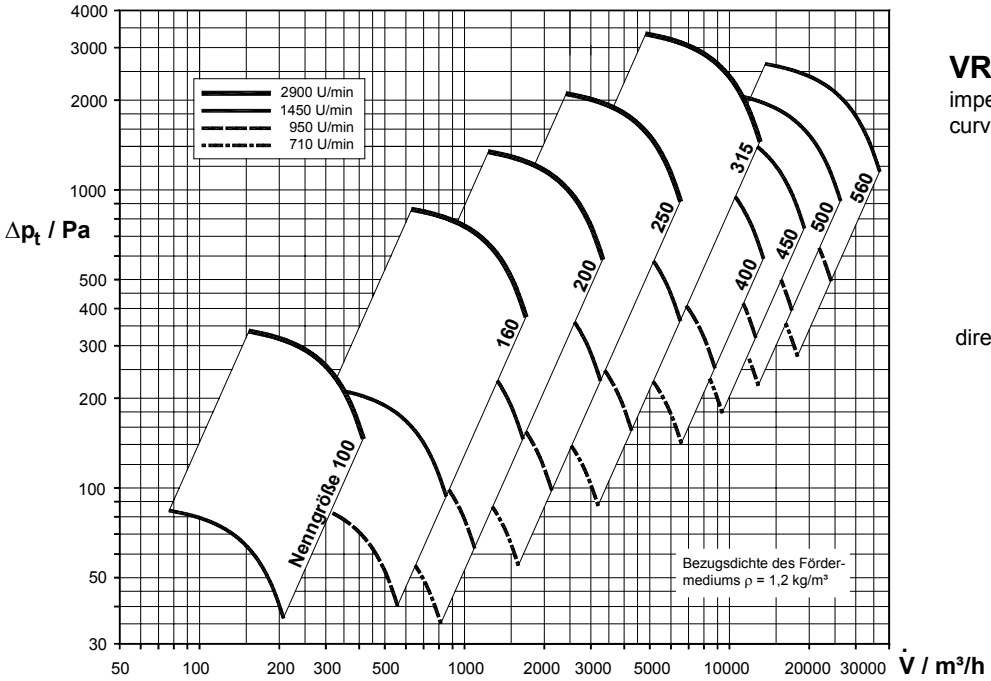
HOUSING POSITIONS (view from inlet side)



All fans are available in direction of rotation **L** (left) und **R** (right) and in 6 different housing positions.

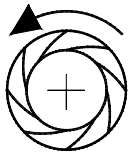
Changing the position of the casing after manufacturing is complicated. Please consult the manufacturer.

SURVEY OF TYPES - PRESELECTION

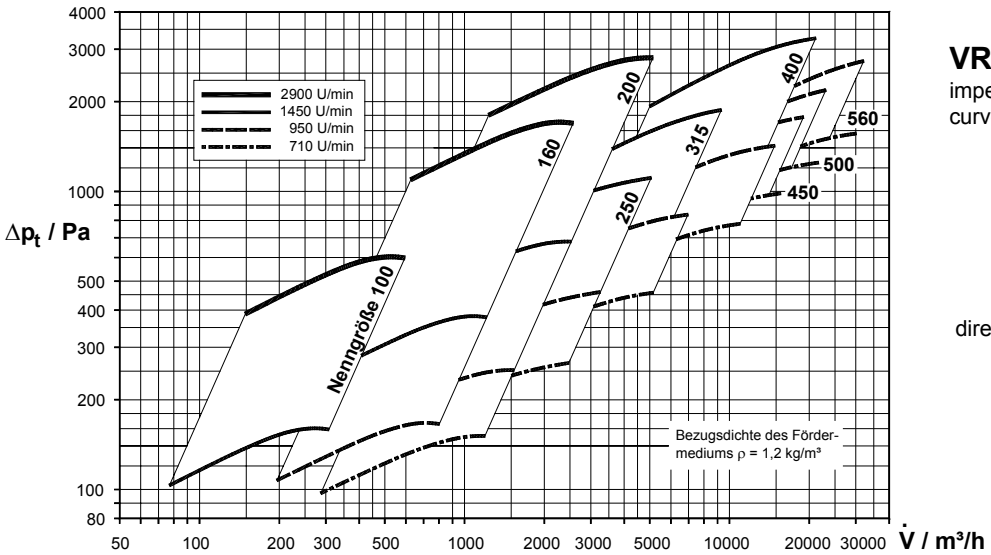


VRE 731

impeller with backward curved vanes

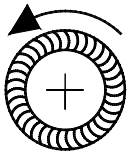


direction of rotation left



VRE 734

impeller with forward curved vanes



direction of rotation left

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Centrifugal fans
VRE - Direct Driven

Technical Data

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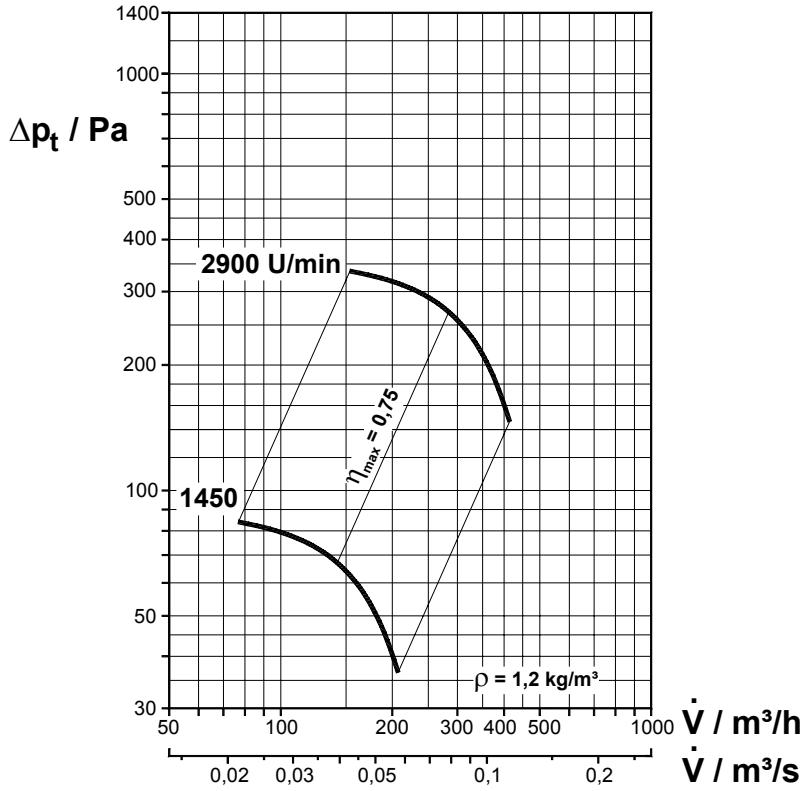
VRE 100/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

- welded impeller with 8 vanes curved backward
- casing
  deep-drawn for PVC or PPs
  welded for special materials
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

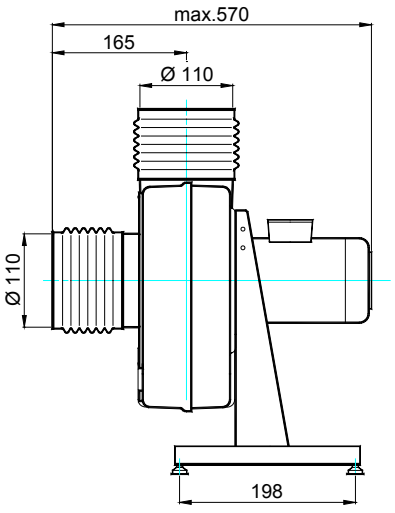
PRINCIPAL DIMENSIONS

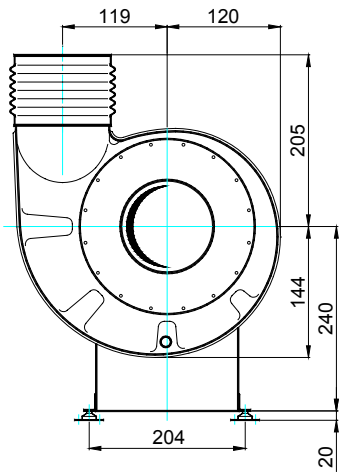
(made of PVC or PPs **)**

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 26.
For special materials see page 28.

Number of vibration absorbers : 4





MOTOR VERSIONS for standard motor 3~400V/50Hz

(Data for other motors, such as single-phase, polechanging or Ex, upon inquiry.)

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 100/731W1450	1450	0,0045	0,12	0,42	9,5	45	62	39	43	58	54	54	55	44	37
VRE 100/731W2900	2900	0,035	0,18	0,51	10	51	68	52	60	62	63	61	55	46	36

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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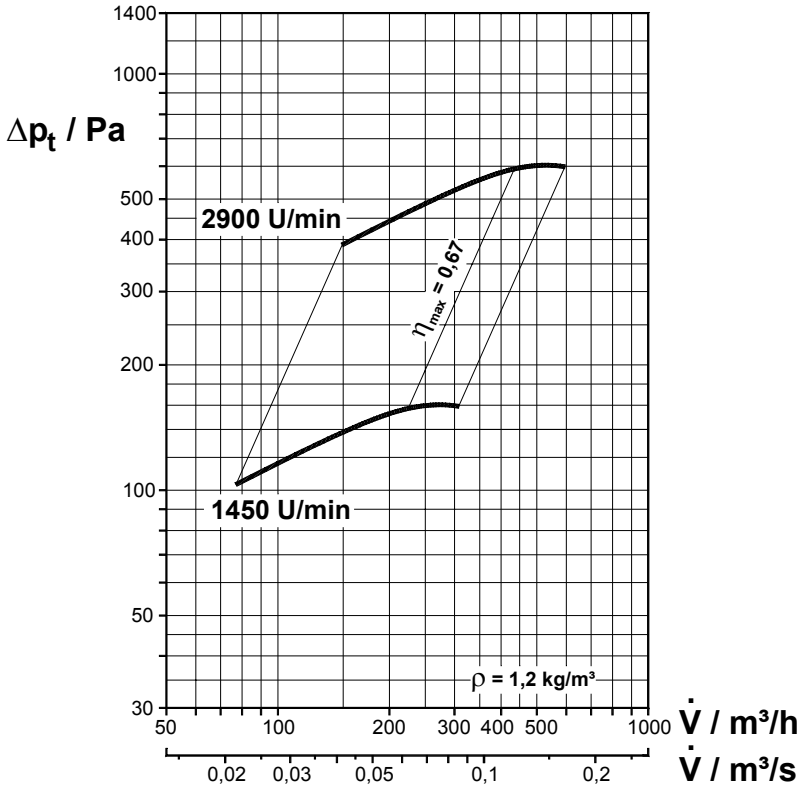
VRE 100/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

- welded impeller with 32 vanes curved forward
- casing
  deep-drawn for PVC or PPs
  welded for special materials
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

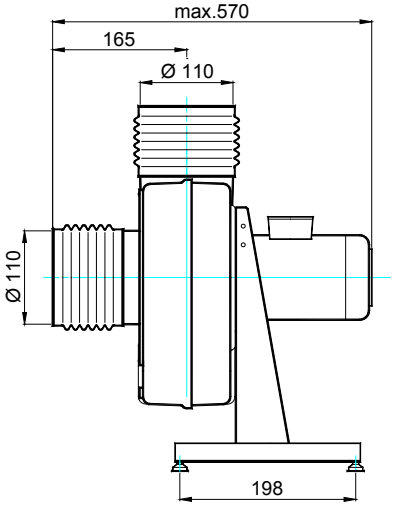
PRINCIPAL DIMENSIONS

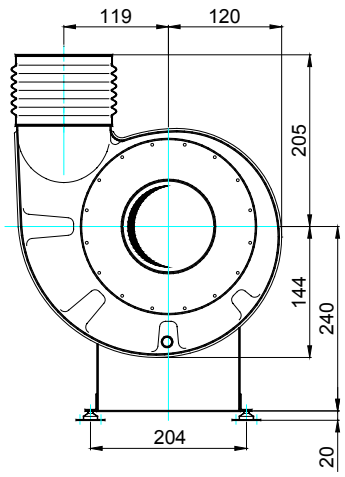
(made of PVC or PPs **)**

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 26.
For special materials see page 28.

Number of vibration absorbers : 4





MOTOR VERSIONS for standard motor 3~400V/50Hz

(Data for other motors, such as single-phase, polechanging or Ex, upon inquiry.)

fan type	speed	power required	nom. motor power	nom. motor current	weight with motor	L_{A3m}	L_{WA}	octave-band $L_{WA\text{-}Okt}$ / dB(A)							
	rpm	kW	kW	A	kg	dB(A)	dB(A)	63	125	250	500	1000	2000	4000	8000
VRE 100/734W1450	1450	0,024	0,12	0,42	10	45	61	42	56	56	53	56	47	39	23
VRE 100/734W2900	2900	0,17	0,18	0,51	10	54	72	57	65	67	63	67	64	51	42

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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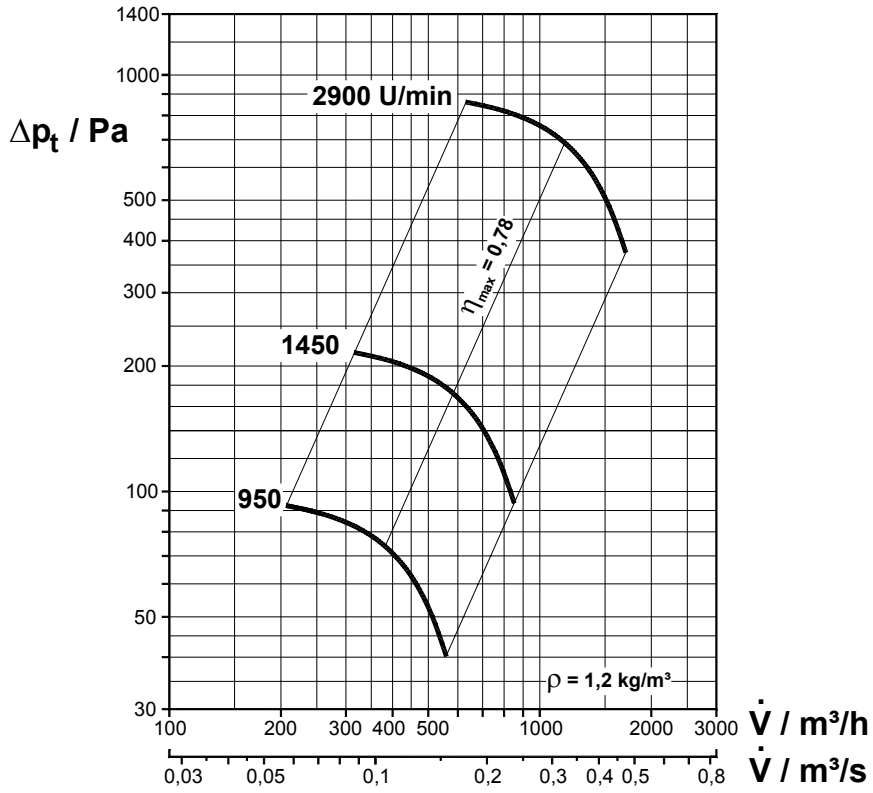
VRE 160/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

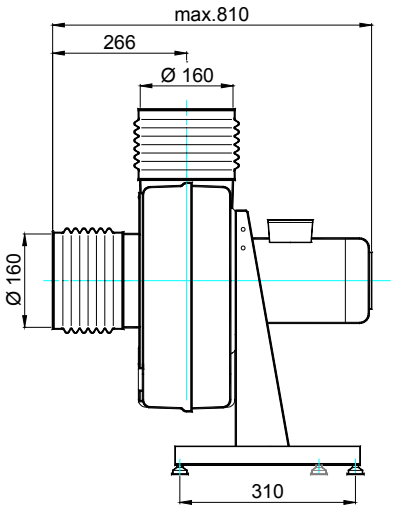
- welded impeller with 8 vanes curved backward
- casing
  deep-drawn for PVC or PPs
  welded for special materials
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

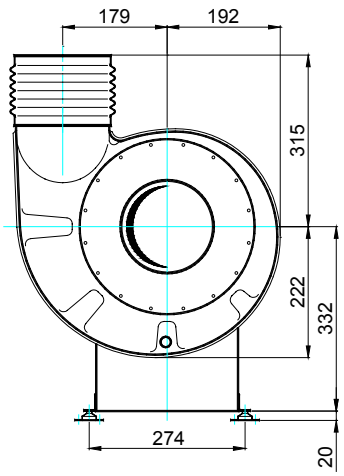
PRINCIPAL DIMENSIONS

(made of PVC or PPs **)**
The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 26.
For special materials see page 28.

Number of vibration absorbers : 4
(in case of heavy motors 6)





MOTOR VERSIONS for standard motor 3~400V/50Hz

(Data for other motors, such as single-phase, polechanging or Ex, upon inquiry.)

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 160/731W950	950	0,014	0,09	0,44	17	39	56	39	51	46	48	50	48	33	16
VRE 160/731W1450	1450	0,045	0,12	0,42	17	44	62	44	57	53	55	56	53	43	26
VRE 160/731W2900	2900	0,31	0,37	1,0	19	60	78	57	66	68	77	70	62	59	50

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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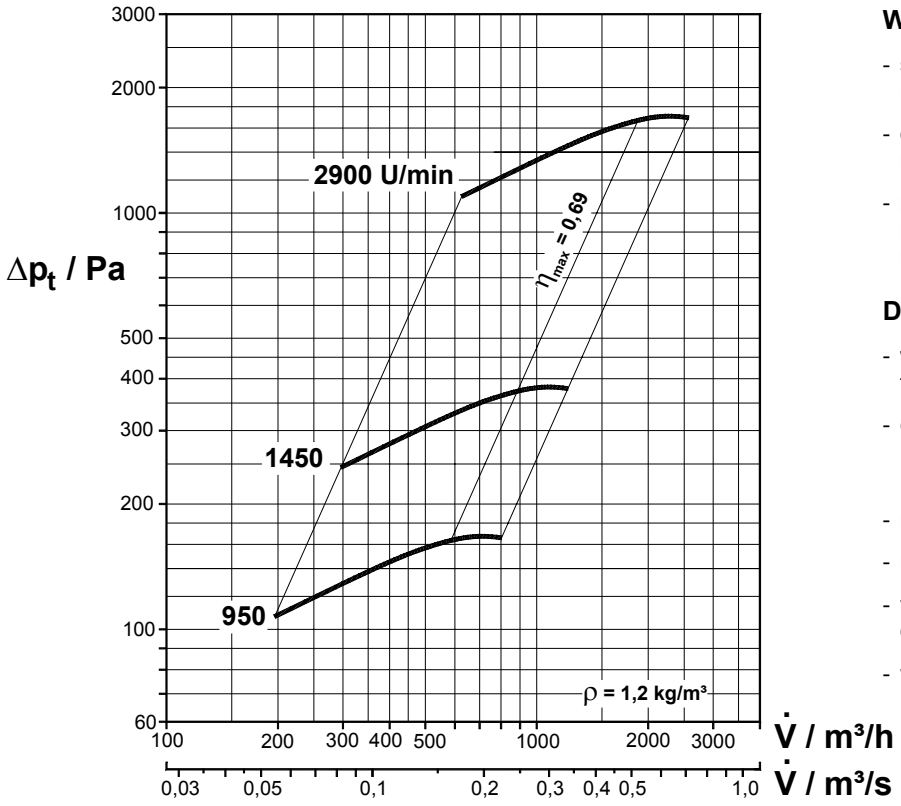
VRE 160/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

- welded impeller with 35 vanes curved forward
- casing
  deep-drawn for PVC or PPs
  welded for special materials
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

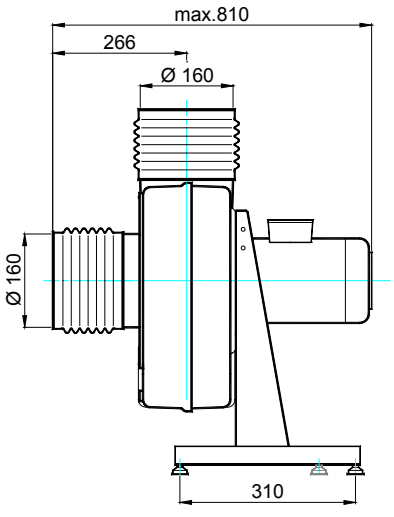
PRINCIPAL DIMENSIONS

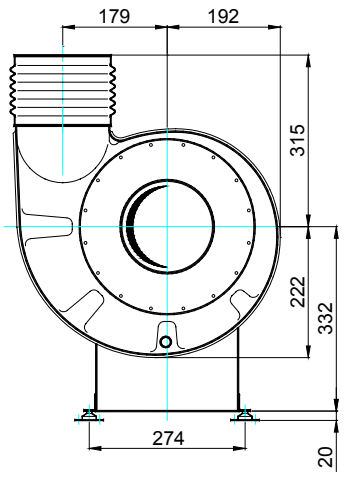
(made of PVC or PPs **)**

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 26.
For special materials see page 28.

Number of vibration absorbers : 4
(in case of heavy motors 6)





MOTOR VERSIONS for standard motor 3~400V/50Hz

(Data for other motors, such as single-phase, polechanging or Ex, upon inquiry.)

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 160/734W950	950	0,08	0,09	0,44	18	44	62	43	51	51	59	55	51	40	26
VRE 160/734W1450	1450	0,25	0,25	0,76	19	52	69	54	59	58	64	66	57	50	38
VRE 160/734W2900	2900	2,2	2,2	4,6	29	63	82	59	72	72	76	78	76	70	62

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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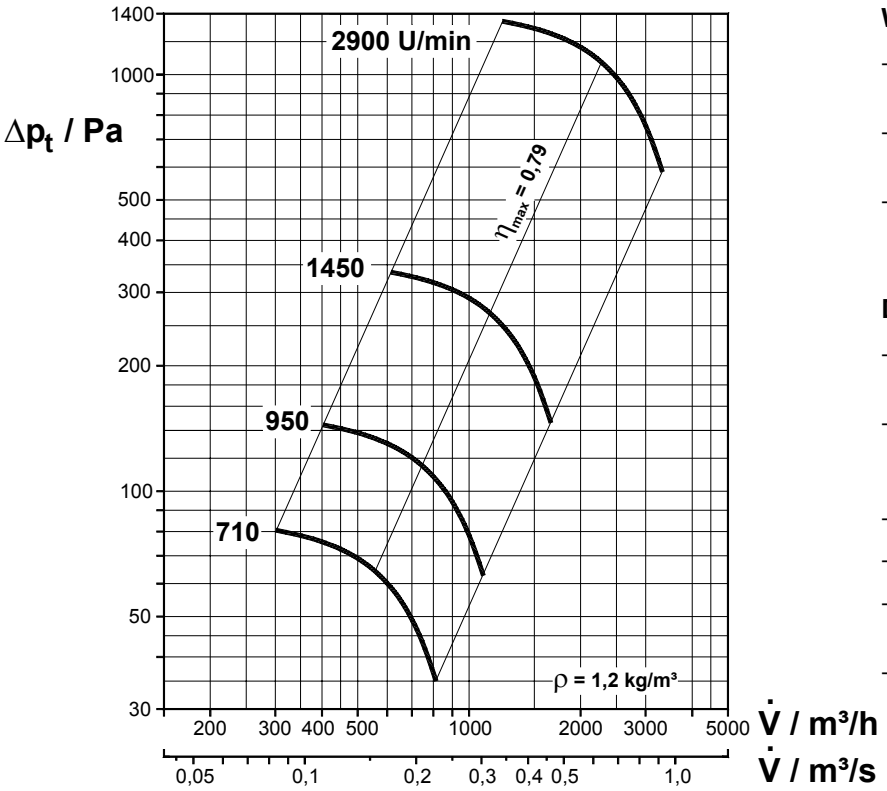
VRE 200/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

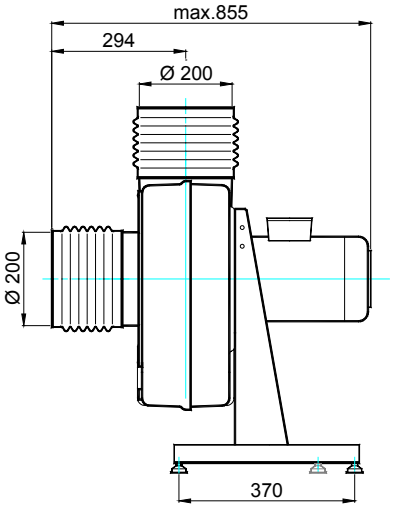
- welded impeller with 8 vanes curved backward
- casing
  deep-drawn for PVC or PPs
  welded for special materials
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

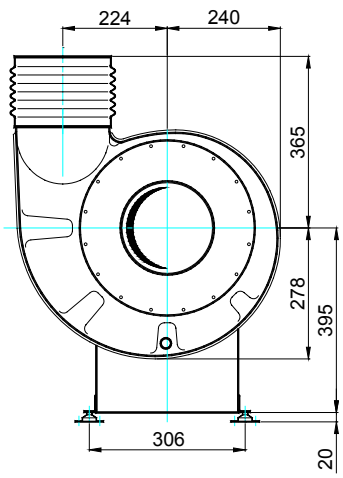
PRINCIPAL DIMENSIONS

(made of PVC or PPs **)**
The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 26.
For special materials see page 28.

Number of vibration absorbers : 4
(in case of heavy motors 6)





MOTOR VERSIONS for standard motor 3~400V/50Hz

(Data for other motors, such as single-phase, polechanging or Ex, upon inquiry.)

fan type	speed	power required	nom. motor power	nom. motor current	weight with motor	L_{A3m}	L_{WA}	octave-band $L_{WA\text{-}Okt}$ / dB(A)							
	rpm	kW	kW	A	kg	dB(A)	dB(A)	63	125	250	500	1000	2000	4000	8000
VRE 200/731W710	710	0,016	0,09	0,36	26	40	57	44	49	49	52	49	43	31	22
VRE 200/731W950	950	0,036	0,09	0,55	24	45	63	46	54	54	56	57	54	41	25
VRE 200/731W1450	1450	0,121	0,18	0,58	24	51	69	52	60	61	63	62	59	50	36
VRE 200/731W2900	2900	0,968	1,1	2,40	31	67	85	61	70	75	82	78	69	64	55

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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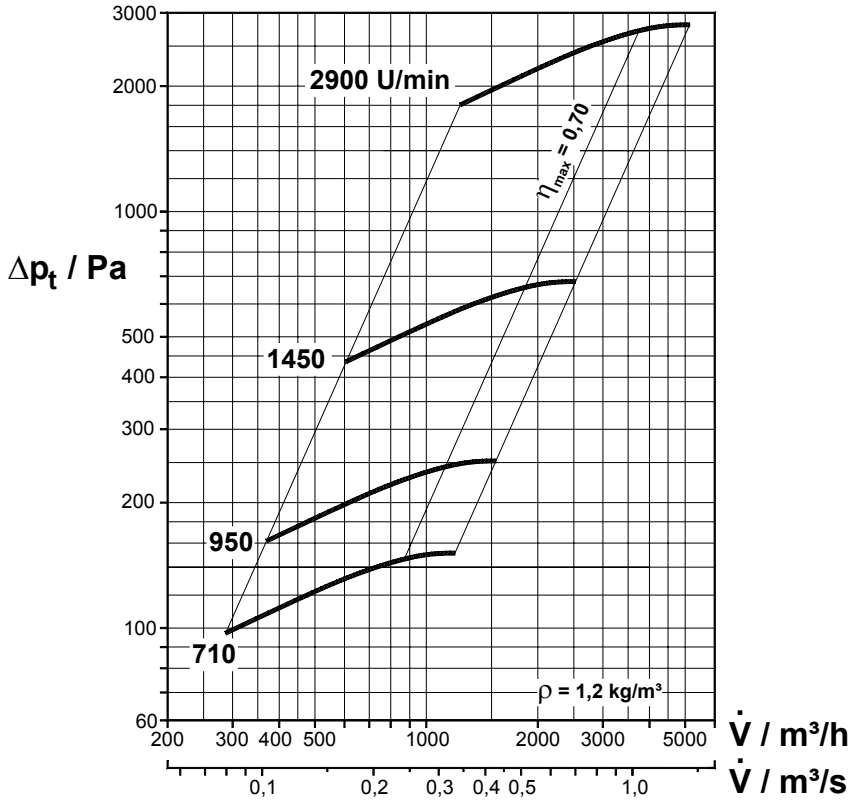
VRE 200/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

- welded impeller with 35 vanes curved forward
- casing
  deep-drawn for PVC or PPs
  welded for special materials
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

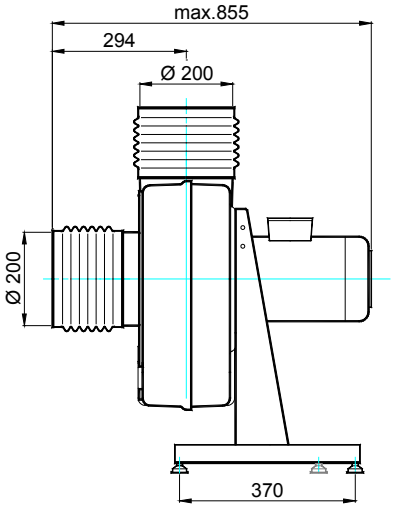
PRINCIPAL DIMENSIONS

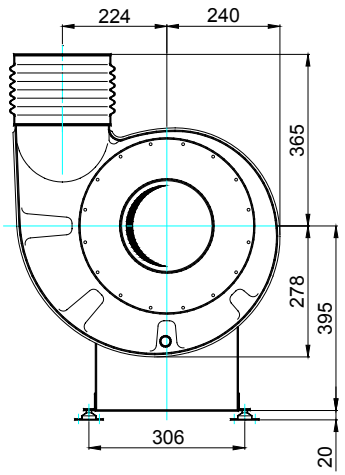
(made of PVC or PPs **)**

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 26.
For special materials see page 28.

Number of vibration absorbers : 4
(in case of heavy motors 6)





MOTOR VERSIONS for standard motor 3~400V/50Hz

(Data for other motors, such as single-phase, polechanging or Ex, upon inquiry.)

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 200/734W710	710	0,1	0,12	0,51	32	45	62	48	53	54	57	53	49	56	33
VRE 200/734W950	950	0,2	0,25	0,78	32	50	67	51	56	59	64	58	53	46	35
VRE 200/734W1450	1450	0,85	1,1	2,65	38	59	77	60	65	67	71	72	67	60	48
VRE 200/734W2900	2900	7,2	7,5	14,7	86	75	92	75	82	84	87	88	82	75	63

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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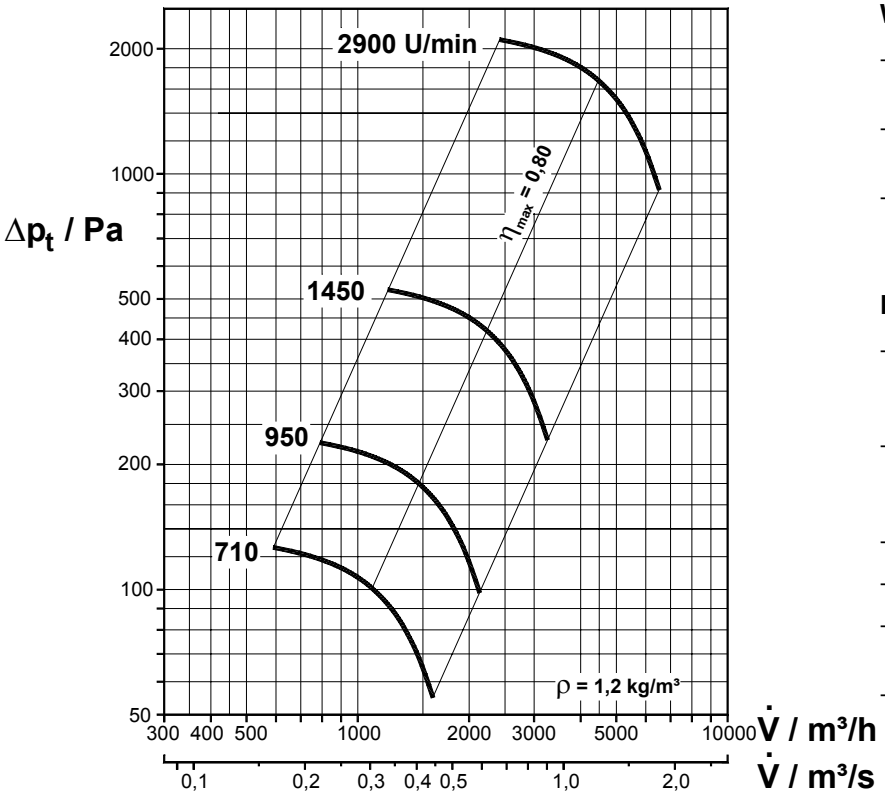
VRE 250/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

- welded impeller with 8 vanes curved backward
  speed 2900rpm with FRP-impeller
- casing
  deep-drawn for PVC or PPs
  welded for special materials
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

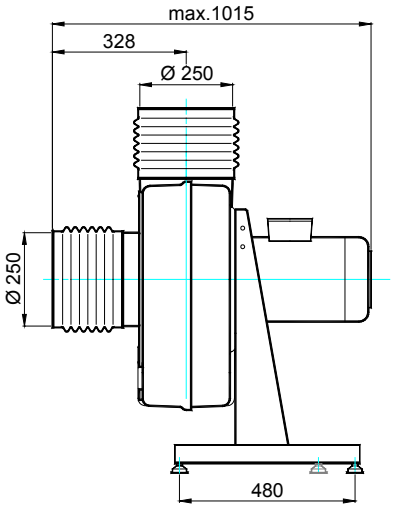
PRINCIPAL DIMENSIONS

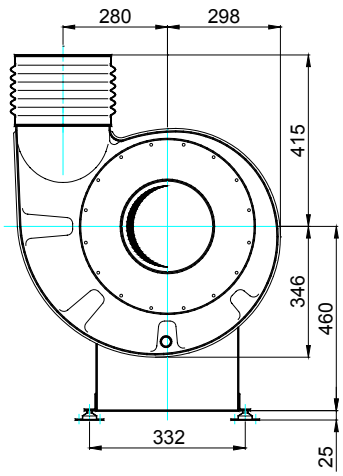
(made of PVC or PPs **)**

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 26.
For special materials see page 28.

Number of vibration absorbers : 4
(in case of heavy motors 6)





MOTOR VERSIONS for standard motor 3~400V/50Hz

(Data for other motors, such as single-phase, polechanging or Ex, upon inquiry.)

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE250/731W710	710	0,05	0,09	0,36	35	42	59	44	53	50	55	52	44	30	21
VRE250/731W950	950	0,11	0,18	0,62	36	47	64	50	55	56	57	60	53	46	28
VRE250/731W1450	1450	0,37	0,37	1,03	36	55	73	59	62	68	69	66	62	56	43
VRE250/731W2900 GfK	2900	3,2	4,0	7,7	75	70	88	74	78	83	84	80	76	69	56

GfK - impeller made of fibre reinforced plastic (FRP)

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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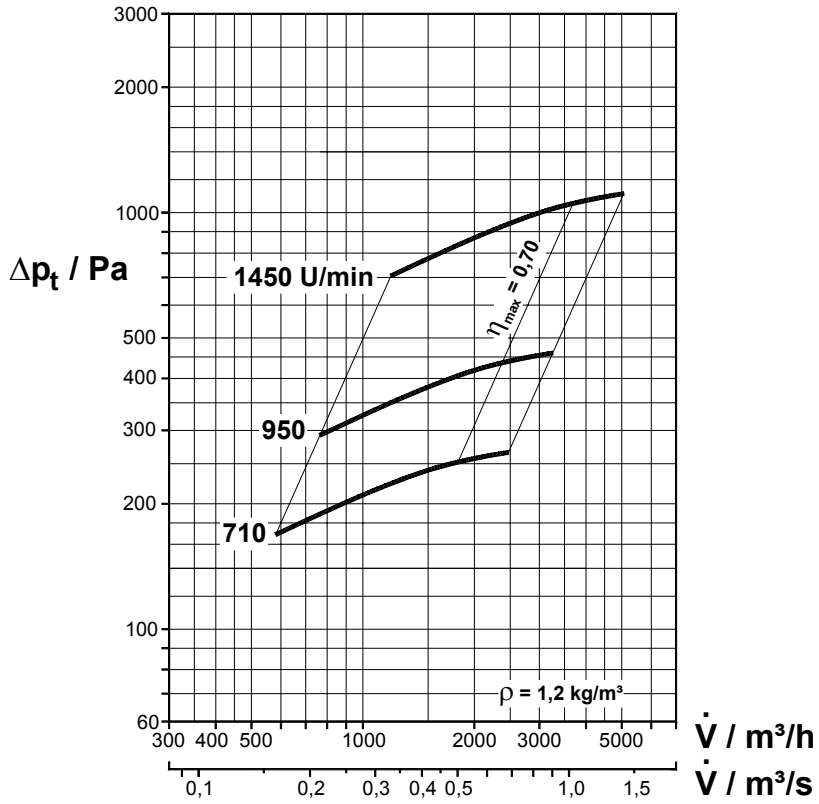
VRE 250/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

- welded impeller with 35 vanes curved forward
- casing
  deep-drawn for PVC or PPs
  welded for special materials
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

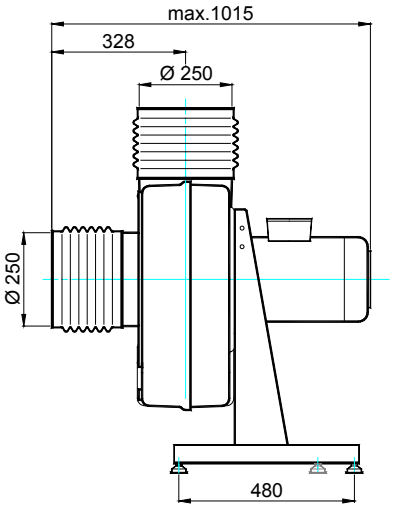
PRINCIPAL DIMENSIONS

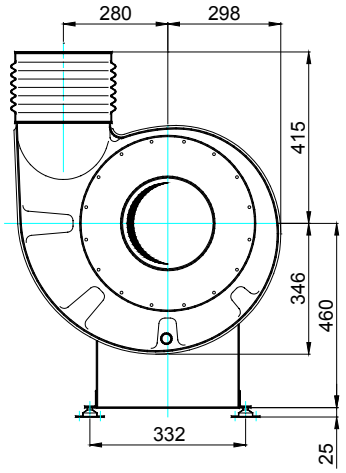
(made of PVC or PPs **)**

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 26.
For special materials see page 28.

Number of vibration absorbers : 4
(in case of heavy motors 6)





MOTOR VERSIONS for standard motor 3~400V/50Hz

(Data for other motors, such as single-phase, polechanging or Ex, upon inquiry.)

fan type	speed	power required	nom. motor power	nom. motor current	weight with motor	L_{A3m}	L_{WA}	octave-band $L_{WA\text{-}Okt}$ / dB(A)							
	rpm	kW	kW	A	kg	dB(A)	dB(A)	63	125	250	500	1000	2000	4000	8000
VRE 250/734W710	710	0,3	0,37	1,13	43	48	65	50	55	57	64	54	51	47	33
VRE 250/734W950	950	0,73	0,75	2,1	45	53	70	55	58	63	68	58	55	49	39
VRE 250/734W1450	1450	2,67	3,0	6,4	58	62	80	65	69	72	75	76	70	65	53

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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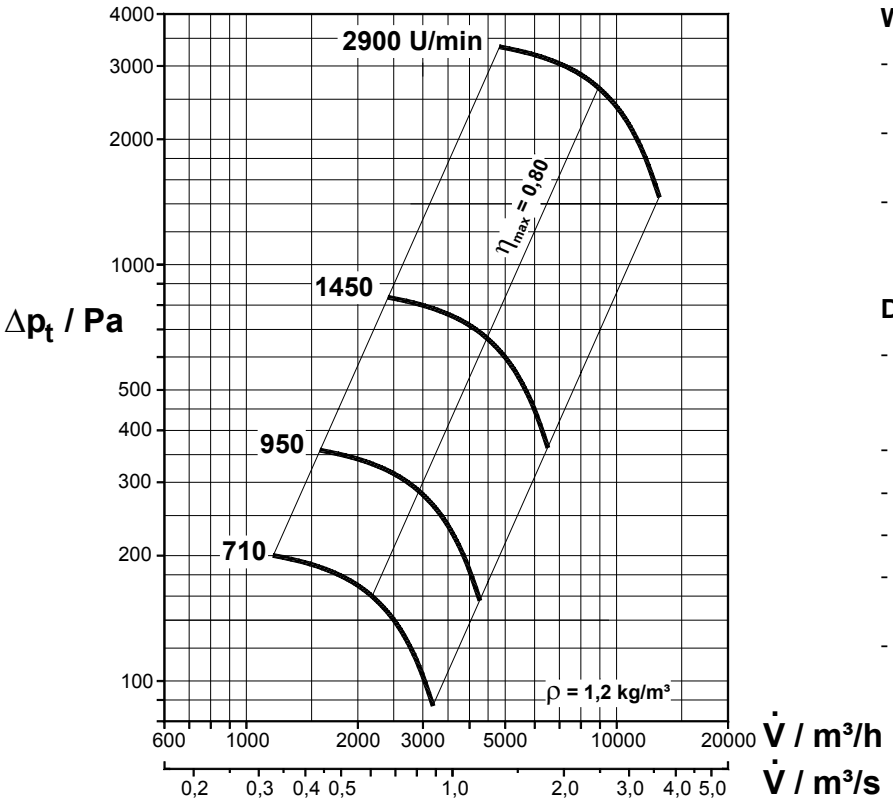
VRE 315/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

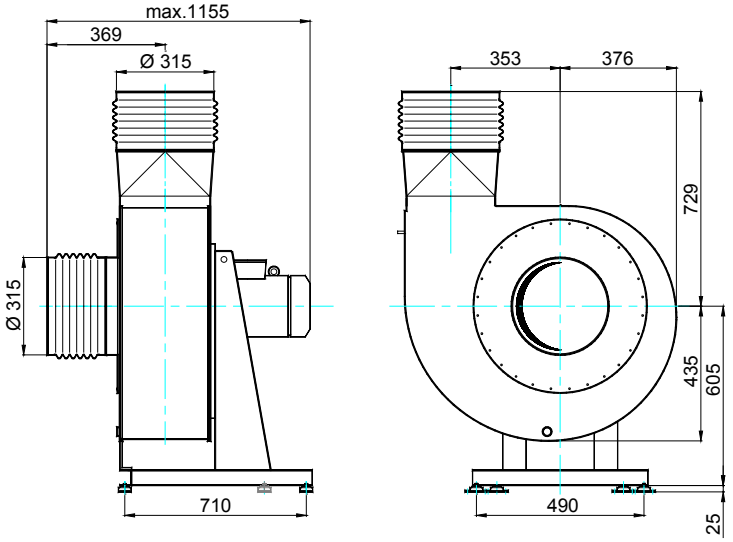
- welded impeller with 8 vanes curved backward
  speed 2900rpm with FRP-impeller
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band L_{WA-Okt} / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 315/731W710	710	0,139	0,18	0,75	60	48	65	53	59	58	60	58	53	45	38
VRE 315/731W950	950	0,354	0,37	1,2	61	53	71	59	64	65	66	64	60	56	44
VRE 315/731W1450	1450	1,25	1,5	3,45	68	62	80	65	69	75	74	72	67	62	51
VRE 315/731W2900 GfK	2900	10,2	11,0	21,4	144	77	95	81	86	91	90	87	82	76	65

GfK - impeller made of fibre reinforced plastic (FRP)

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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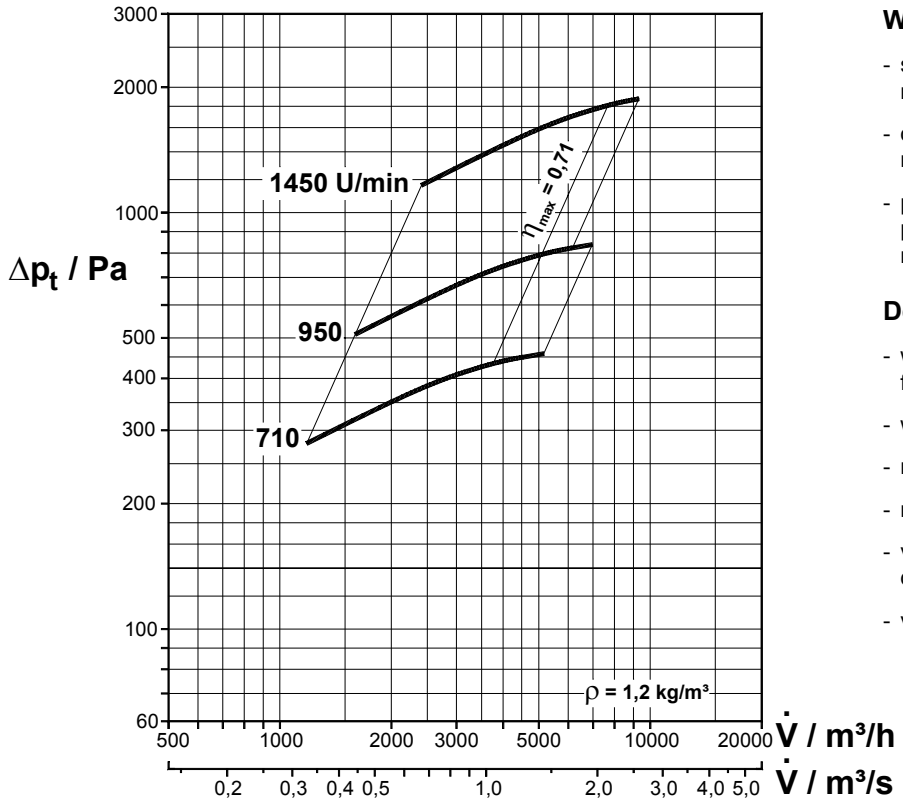
VRE 315/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

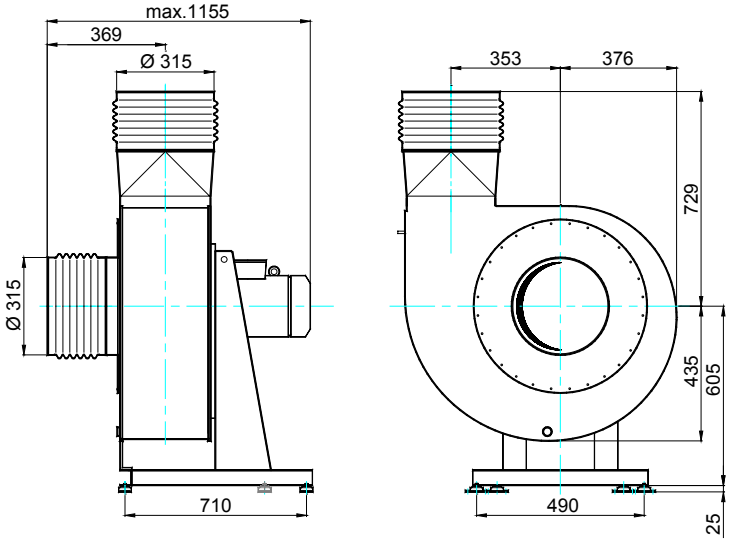
- welded impeller with 35 vanes curved forward
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed	power required	nom. motor power	nom. motor current	weight with motor	L_{A3m}	L_{WA}	octave-band $L_{WA\text{-}Okt}$ / dB(A)							
	rpm	kW	kW	A	kg	dB(A)	dB(A)	63	125	250	500	1000	2000	4000	8000
VRE 315/734W710	710	1,12	1,5	3,9	92	55	72	57	60	65	69	64	59	55	43
VRE 315/734W950	950	2,6	3,0	7,2	109	62	78	63	66	71	76	68	63	57	47
VRE 315/734W1450	1450	7,45	7,5	15,1	124	68	87	71	75	77	81	82	76	72	59

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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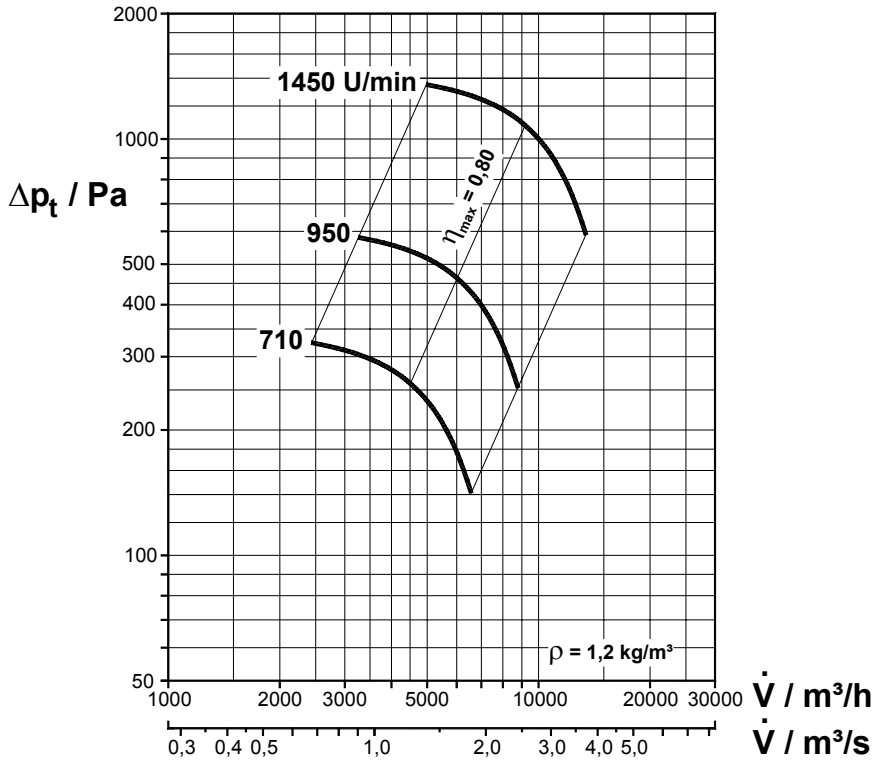
VRE 400/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

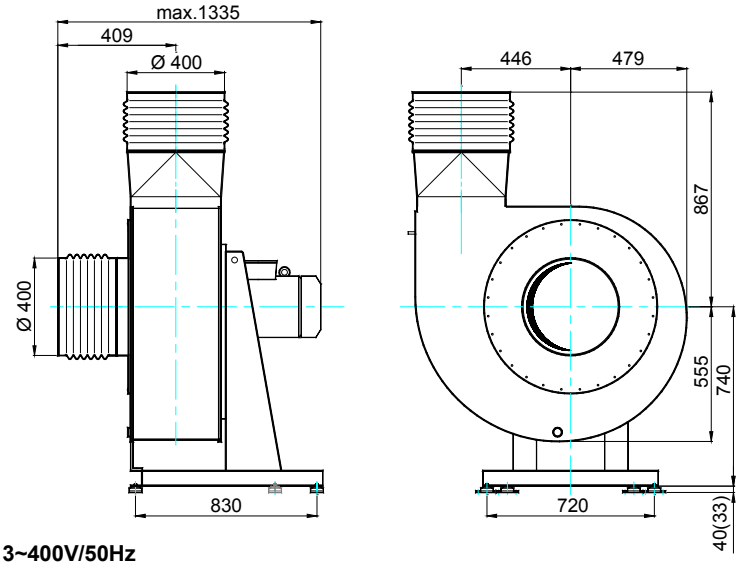
- welded impeller with 8 vanes curved backward
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 400/731W710	710	0,46	0,55	1,58	115	55	72	59	65	69	66	62	60	57	53
VRE 400/731W950	950	1,17	1,5	3,9	122	61	79	66	70	76	73	68	65	63	58
VRE 400/731W1450	1450	4,13	5,5	11,4	148	68	86	73	76	84	80	75	72	69	60

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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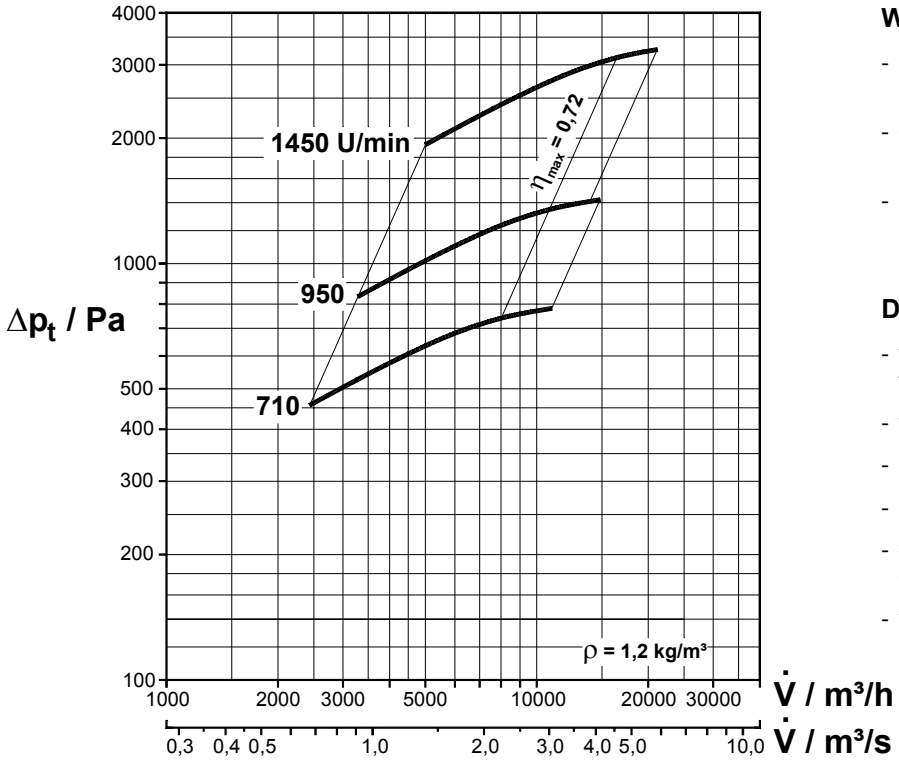
VRE 400/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

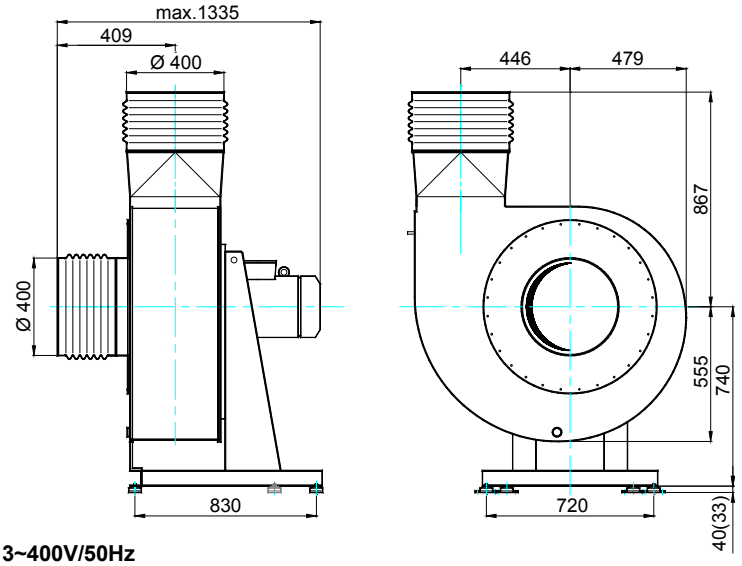
- welded impeller with 35 vanes curved forward
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 400/734W710	710	3,9	4,0	10,0	184	62	79	63	65	72	77	72	67	63	52
VRE 400/734W950	950	9,6	11,0	24,5	225	68	85	70	74	78	82	75	71	64	54
VRE 400/734W1450	1450	29,8	30,0	55,0	297	75	93	77	81	84	87	88	83	78	66

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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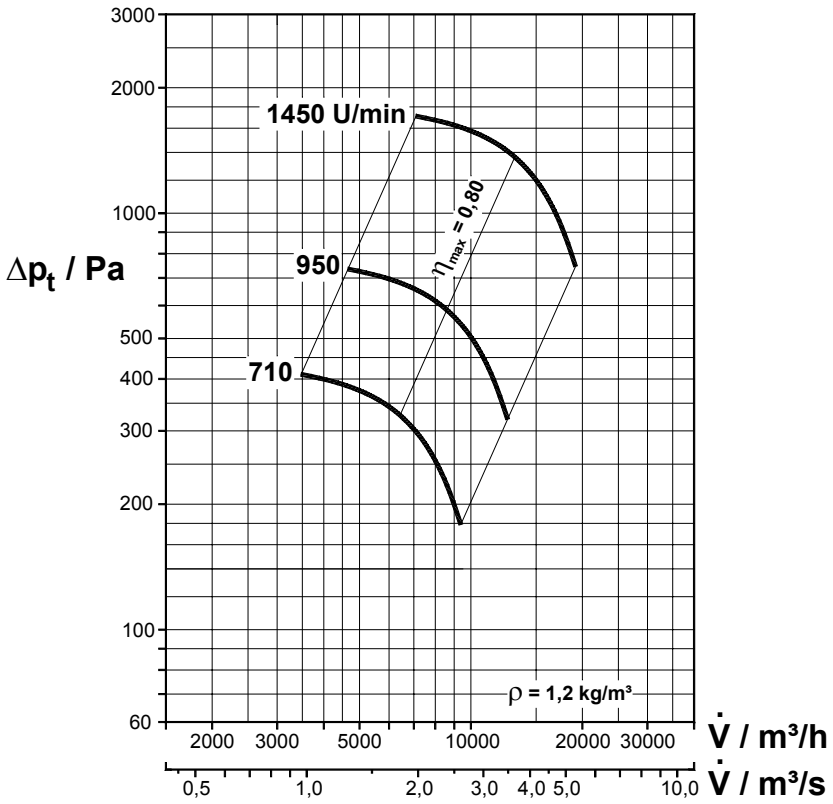
VRE 450/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

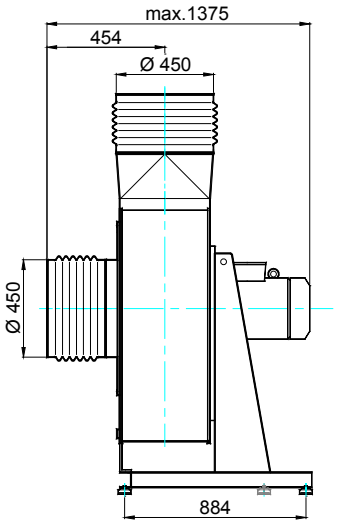
- welded impeller with 8 vanes curved backward
  speed 1450rpm with FRP-impeller
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

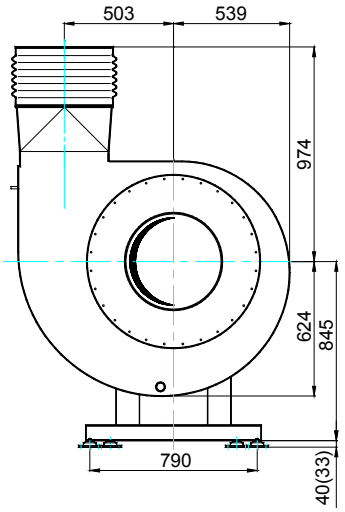
PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)





MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 450/731W710	710	0,87	1,1	2,9	162	57	75	62	68	72	69	65	63	60	56
VRE 450/731W950	950	2,08	2,2	5,2	167	63	81	68	72	78	75	70	67	65	60
VRE 450/731W1450 GfK	1450	7,48	7,5	15,1	196	72	90	77	80	88	84	79	76	73	64

GfK - impeller made of fibre reinforced plastic (FRP)

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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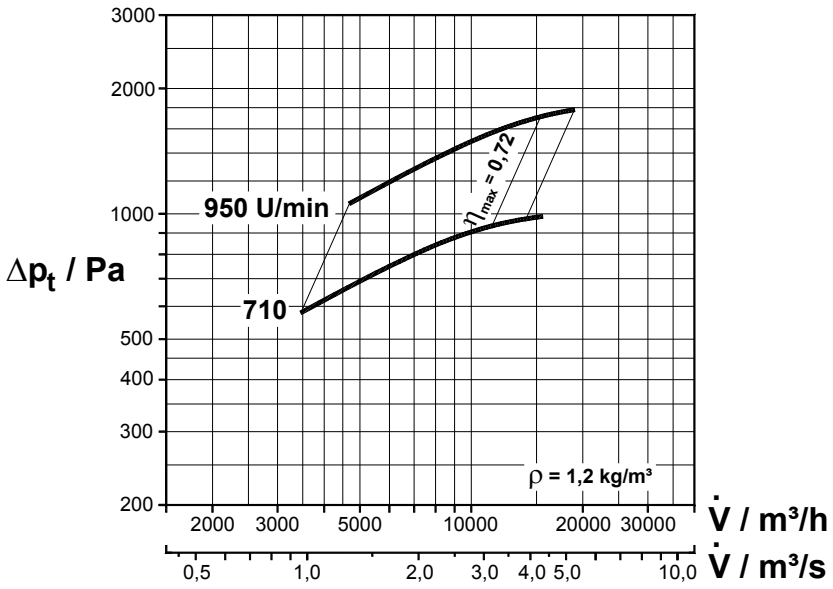
VRE 450/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

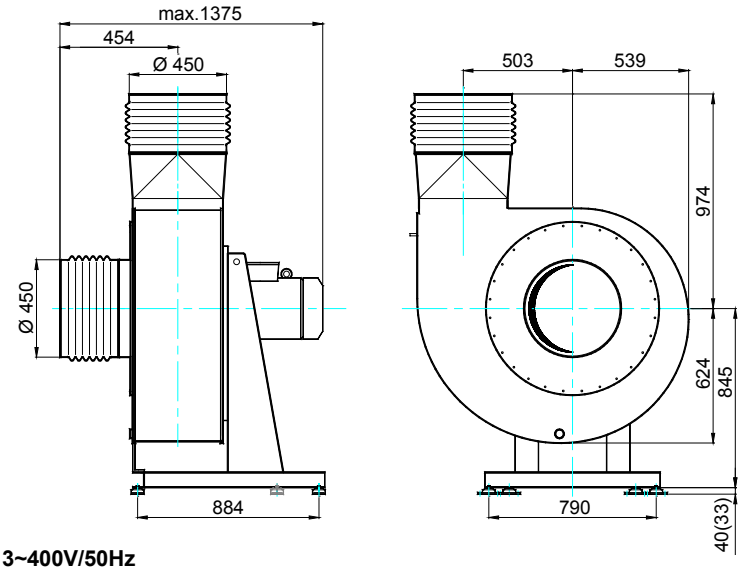
- welded impeller with 35 vanes curved forward
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed	power required	nom. motor power	nom. motor current	weight with motor	L_{A3m}	L_{WA}	octave-band $L_{WA\text{-}Okt}$ / dB(A)							
	rpm	kW	kW	A	kg	dB(A)	dB(A)	63	125	250	500	1000	2000	4000	8000
VRE 450/734W710	710	7,25	7,5	17,7	226	66	83	67	69	76	81	76	71	67	56
VRE 450/734W950	950	14,5	15,0	31,5	271	71	89	74	78	82	86	79	74	68	58

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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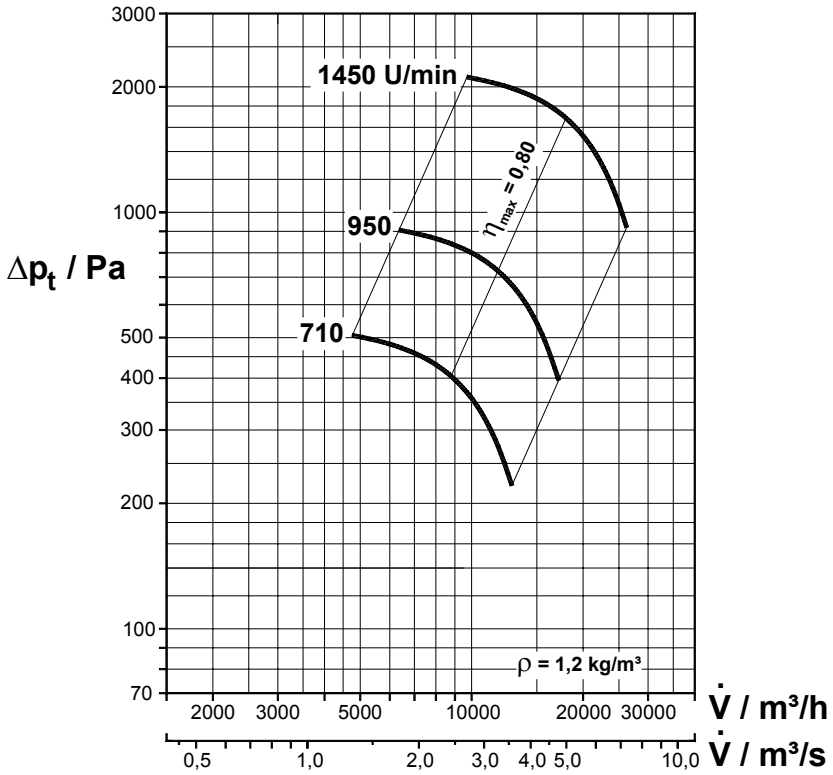
VRE 500/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

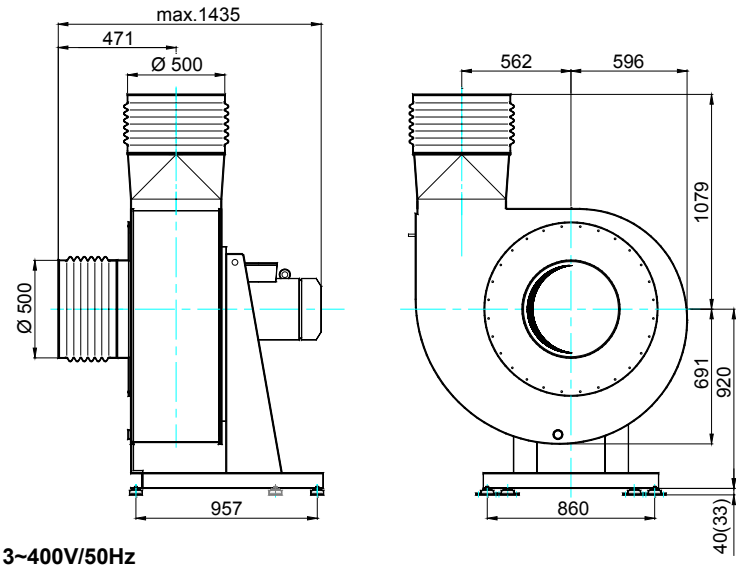
- welded impeller with 8 vanes curved backward
  speed 1450rpm with FRP-impeller
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 500/731W710	710	1,42	1,5	3,9	185	59	79	67	72	75	72	69	67	64	60
VRE 500/731W950	950	3,6	4,0	9,4	195	66	85	72	75	82	80	74	72	70	65
VRE 500/731W1450 GfK	1450	13,1	15,0	28,5	250	75	93	80	83	91	87	82	79	76	67

GfK - impeller made of fibre reinforced plastic (FRP)

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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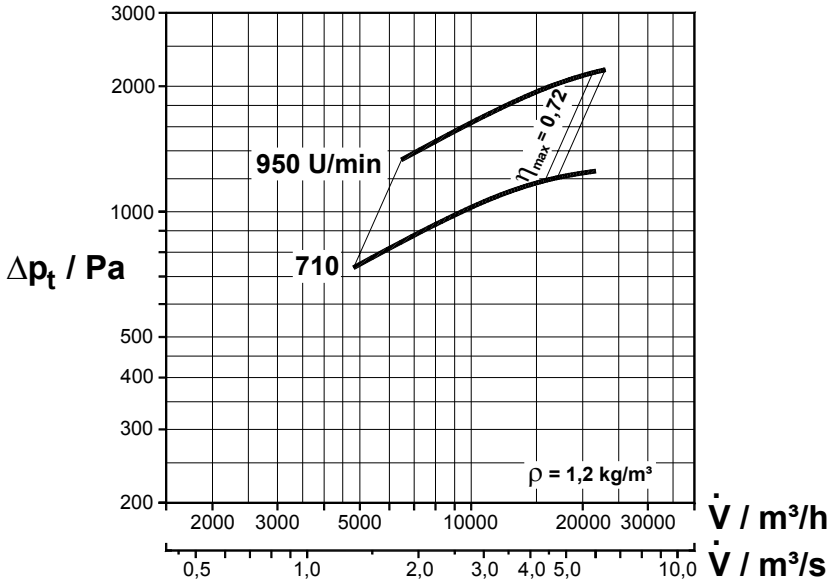
VRE 500/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

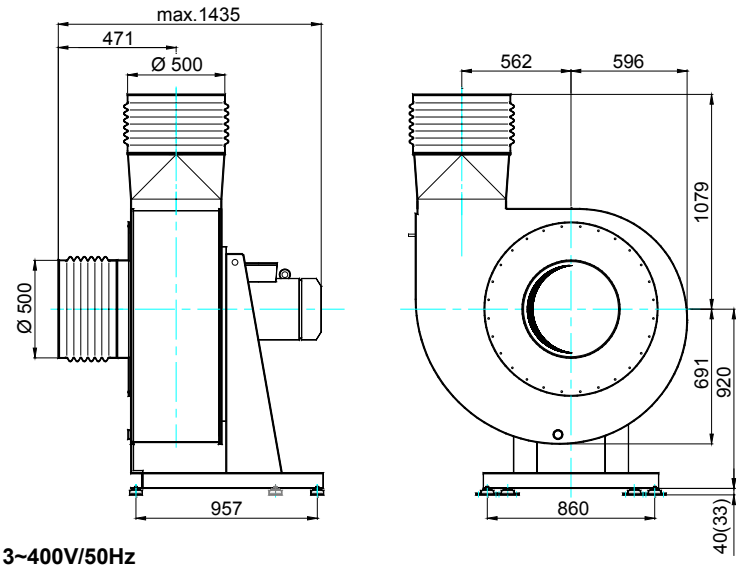
- welded impeller with 35 vanes curved forward
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 500/734W710	710	12,6	15,0	31,5	352	69	86	69	72	79	84	79	74	70	59
VRE 500/734W950	950	20,6	22,0	45,5	359	75	92	77	81	85	89	83	78	72	62

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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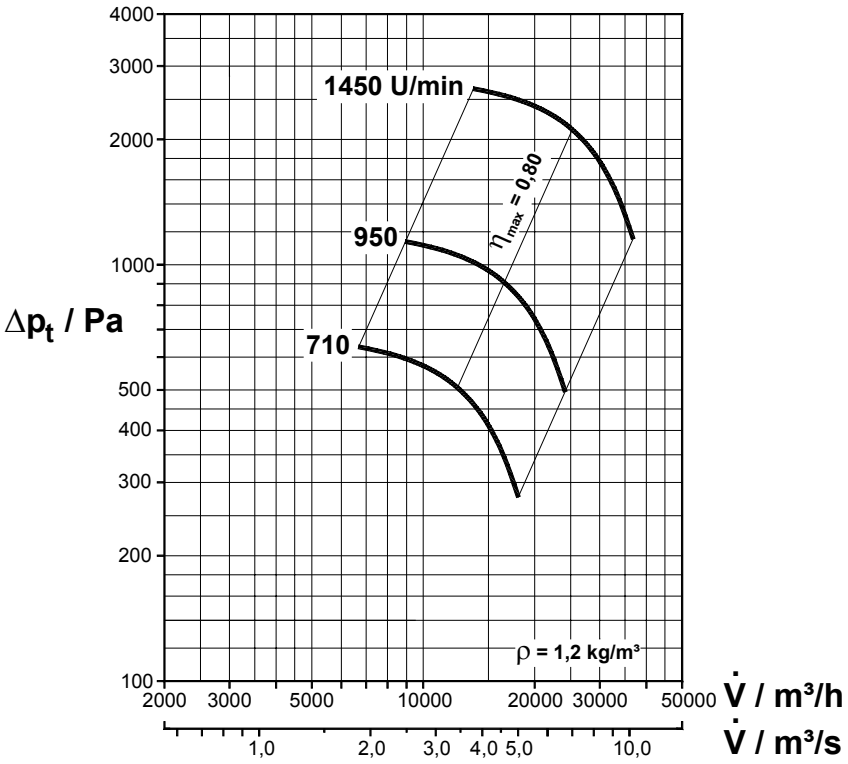
VRE 560/731 - Backward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- fan can be operated beyond characteristic specified
- parallel connection possible, series connection after consultation with the manufacturers

Design features

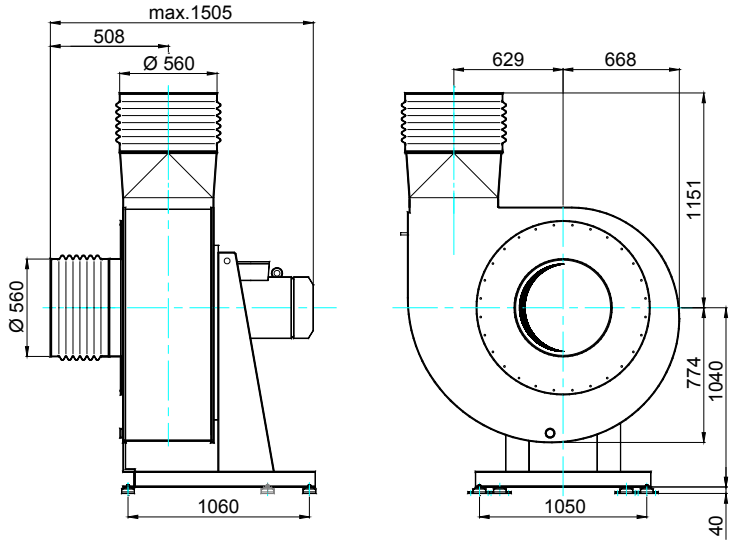
- welded impeller with 8 vanes curved backward
  speed 1450rpm with FRP-impeller
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed	power required	nom. motor power	nom. motor current	weight with motor	L_{A3m}	L_{WA}	octave-band $L_{WA\text{-}Okt}$ / dB(A)							
	rpm	kW	kW	A	kg	dB(A)	dB(A)	63	125	250	500	1000	2000	4000	8000
VRE 560/731W710	710	2,6	3,0	7,6	245	63	82	68	72	78	77	71	69	67	62
VRE 560/731W950	950	6,6	7,5	17,0	270	69	88	74	78	84	83	77	75	73	68
VRE 560/731W1450 GfK	1450	23,4	30,0	55,0	367	79	97	83	86	94	90	85	82	79	70

GfK - impeller made of fibre reinforced plastic (FRP)

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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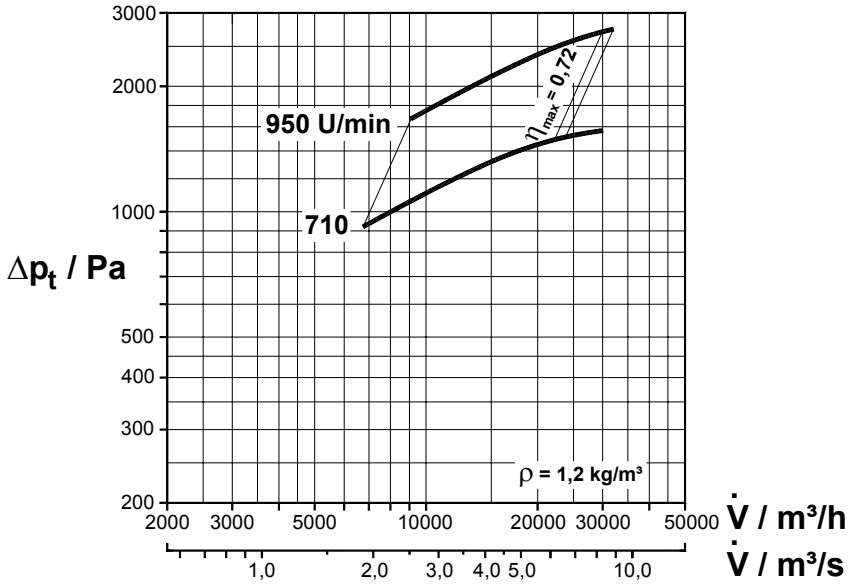
VRE 560/734 - Forward curved vanes

PERFORMANCE



Working range

- stable regime in entire characteristic range
- operation with larger volumetric flows may lead to motor
- parallel and series connection possible after consultation with the manufacturers

Design features

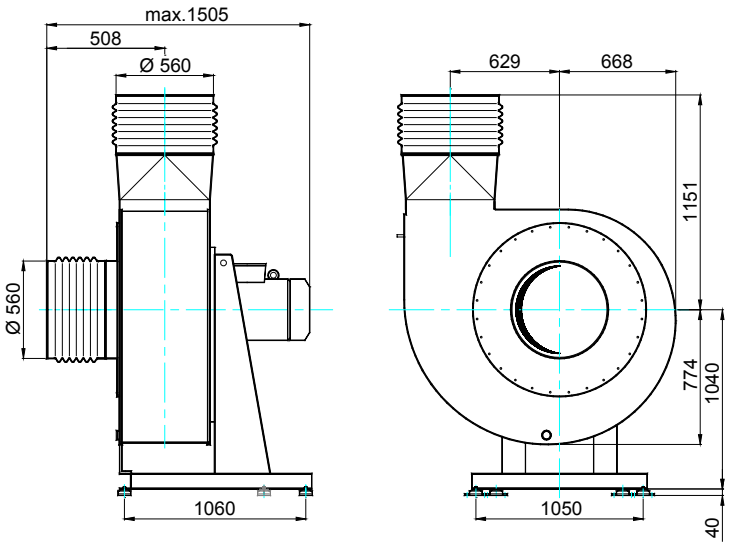
- welded impeller with 35 vanes curved forward
- welded spiral casing
- motor outside the flow conveyed
- robust sheet metal base, zinc-coated
- vibration absorbers in range of delivery
- variant connectors of casing

PRINCIPAL DIMENSIONS

The principal dimensions refer to elastic connectors on inlet and outlet and for housing position 90R.
Height of axis is identical for all housing positions.

Further dimensions see page 27.

Number of vibration absorbers : 4
(in case of heavy motors 6)



MOTOR VERSIONS for standard motor 3~400V/50Hz

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

fan type	speed rpm	power required kW	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)	octave-band $L_{WA\text{-}Okt}$ / dB(A) 63	125	250	500	1000	2000	4000	8000
VRE 560/734W710	710	21,0	22,0	44,5	439	73	89	72	75	82	87	82	77	73	62
VRE 560/734W950	950	36,0	37,0	70,0	592	78	95	80	84	88	92	86	81	75	65

L_{A3m} = A - weighted sound pressure level at distance of 3 m
L_{WA} = A - weighted sound power level in duct

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Centrifugal fans
VRE - Direct Driven

Casing Connections

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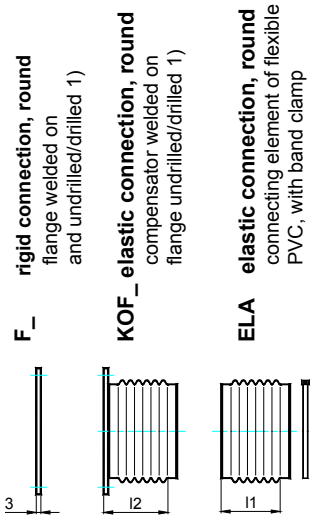
VRE 100 ... 250 (PVC / PPs)

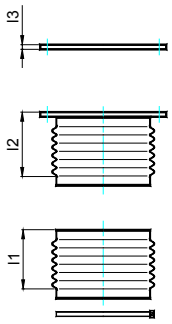
MAIN DIMENSIONS

Casings of sizes 100 … 250 made of PVC or PPs consist of two deep-drawn half shells welded together.
The dimension sketch shows **housing position 090R**. For other positions the manufacturers turn the casing around the fan axis.
The smooth connection on the suction and pressure sides has diameter d = nominal diameter.
Many connection variants are possible to meet customers' demands.
Design version ELA, vibration isolators, and a condensate bore with closing cap are elements of the standard range of delivery. Other versions have to be ordered separately.

Casing connection - suction side



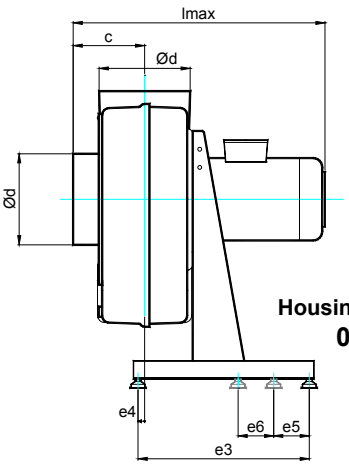
Casing connection-pressure side



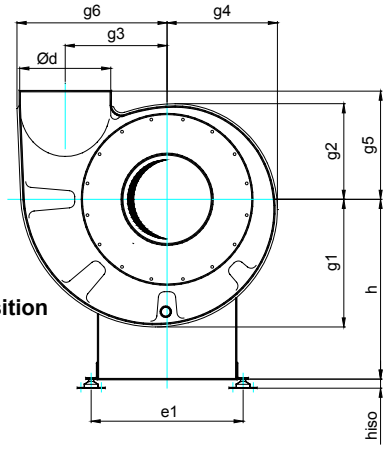
F_ rigid connection, round
flange welded on
and undrilled/drilled 1)

KOF_ elastic connection, round
compensator welded on
flange undrilled/drilled 1)

ELA elastic connection, round
connecting element of
flexible PVC
fastened with band clamp



Housing position
090R



Fan dimensions

Fan size	Ø d	c	e1	e3	e4	e5	g1	g2	g3	g4	g5	g6	h	hiso	lmax
VRE 100	110	105	204	198	-40	50	144	109	119	120	145	178	240	20	510
VRE 160	160	141	274	310	4	60	222	168	179	194	190	264	332	20	685
VRE 200	200	169	306	370	17	70	278	210	224	240	240	330	395	20	730
VRE 250	250	203	332	480	52	110	346	264	280	298	290	412	460	25	890

Dimensions for casing connections

Fan size	Ø d	l1	l2	l3
VRE 100	110	60	70	4
VRE 160	160	125	135	5
VRE 200	200	125	135	5
VRE 250	250	125	135	5

L1, l2, and l3 are functional dimensions applying to the corresponding casing connection.
In the case of KOF, for instance, the distance fan axis/flange amounts to c + l2 or g5 + l2.

1) Flanges (round) and frames (rectangular) are made according to standard MWS 53030.
Drilling pattern:
0 undrilled (such as FO, KOFO)
1 drilled according to series 1 for normal applications (such as KOF1)
2 drilled according to series 2 (double number of screws) for high pressures and large quantities of condensate (such as F2, KOF2)

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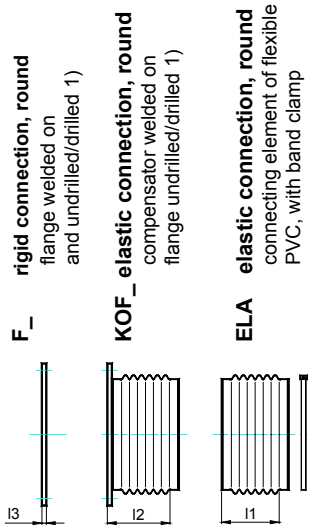
VRE 100 ... 250 (Special Materials)

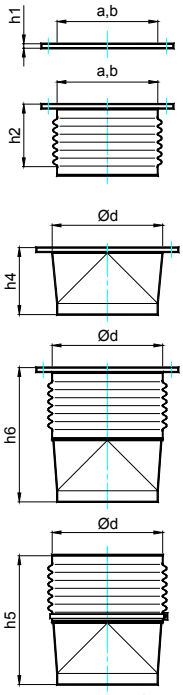
MAIN DIMENSIONS

In case of special materials (PE, PVDF, electrically conductive materials) casings of sizes 100 … 250 consist of two even side walls and one jacket welded together.
The dimension sketch shows **housing position 090R**. For other positions the manufacturers turn the casing around the fan axis.
The smooth connection on the suction side has diameter d = nominal diameter. The smooth connection on the pressure side is rectangular a x b.
Many connection variants are possible to meet customers' demands.
Design version ELA, vibration isolators, and a condensate bore with closing cap are elements of the standard range of delivery. Other versions have to be ordered separately.

Casing connection - suction side



Casing connection-pressure side



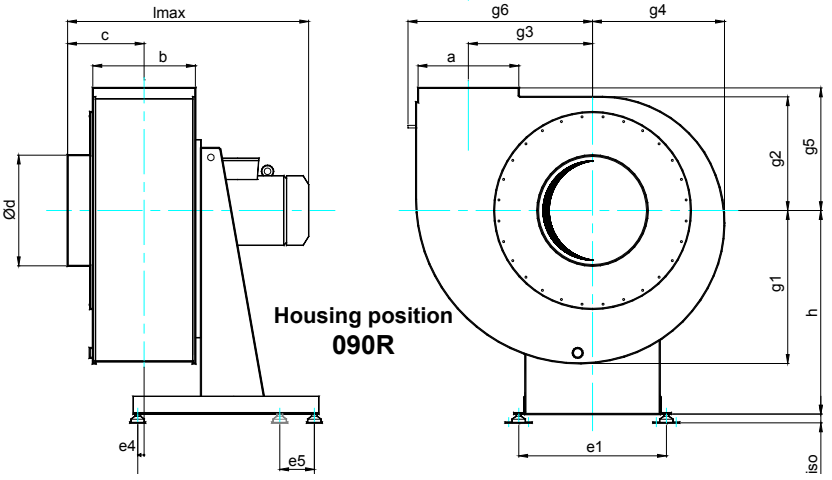
R_ rigid connection, rectangular
flange welded on
and undrilled/drilled[1)]

KOR_ elastic connection, rectangular
compensator welded on
flange undrilled/drilled 1)

RSF_ rigid connection, round
transition, flange welded on
and undrilled/drilled 1)

KOF_ elastic connection, round
transition
compensator welded on
flange undrilled/drilled 1)

ELA elastic connection, round
transition
connecting element of
flexible PVC
fastened with band clamp



Housing position 090R

Fan dimensions

Fan size	Ø d	a	b	c	e1	e3	e4	e5	g1	g2	g3	g4	g5	g6	h	hiso	lmax
VRE 100	110	96	102	105	204	198	-40	50	144	109	119	120	145	178	240	20	510
VRE 160	160	144	152	141	274	310	4	60	222	168	179	194	190	264	332	20	685
VRE 200	200	180	187	169	306	370	17	70	278	210	224	240	240	330	395	20	730
VRE 250	250	226	236	203	332	480	52	110	346	264	280	298	290	412	460	25	890

Dimensions for casing connections

Fan size	Ø d	a	b	l1	l2	l3	h1	h2	h4	h5	h6
VRE 100	110	96	102	60	70	4	4	135	104	225	235
VRE 160	160	144	152	125	135	5	5	135	135	255	265
VRE 200	200	180	187	125	135	5	5	135	155	275	285
VRE 250	250	226	236	125	135	5	5	135	205	325	335

l and h are functional dimensions applying to the corresponding casing connection.
In the case of KOF, for instance, the distance fan axis/flange amounts to c + l2 or g5 + l2.

1) Flanges (round) and frames (rectangular) are made according to standard MWS 53030.
Drilling pattern: 0 undrilled (such as FO, KOFO)
1 drilled according to series 1 for normal applications (such as KOF1)
2 drilled according to series 2 (double number of screws) for high pressures and large quantities of condensate (such as F2, KOF2)

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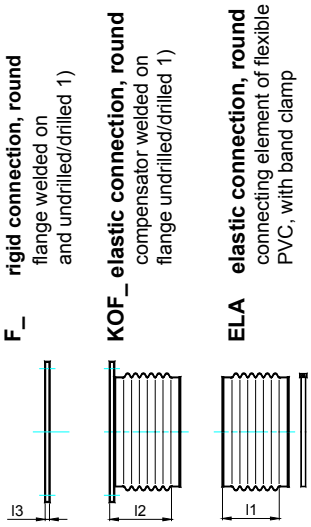
VRE 315 ... 560

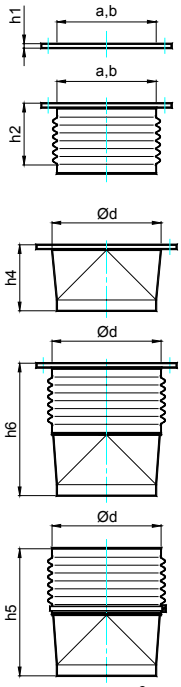
MAIN DIMENSIONS

Casings of sizes 315 … 560 consist of two even side walls and one jacket welded together.
The dimension sketch shows **housing position 090R**. For other positions the manufacturers turn the casing around the fan axis.
The smooth connection on the suction side has diameter d = nominal diameter. The smooth connection on the pressure side is rectangular a x b.
Many connection variants are possible to meet customers' demands.
Design version ELA, vibration isolators, and a condensate bore with closing cap are elements of the standard range of delivery. Other versions have to be ordered separately.

Casing connection - suction side



Casing connection-pressure side



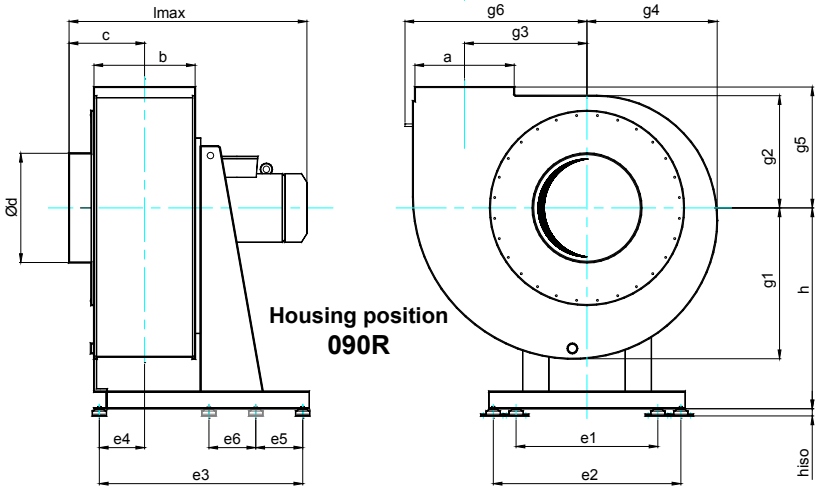
R_ rigid connection, rectangular
flange welded on
and undrilled/drilled[1)]

KOR_ elastic connection, rectangular
compensator welded on
flange undrilled/drilled 1)

RSF_ rigid connection, round
transition, flange welded on
and undrilled/drilled 1)

KOF_ elastic connection, round
transition
compensator welded on
flange undrilled/drilled 1)

ELA elastic connection, round
transition
connecting element of
flexible PVC
fastened with band clamp



Fan dimensions

Fan size	Ø d	a	b	c	e1	e2	e3	e4	e5	g1	g2	g3	g4	g5	g6	h	hiso	lmax
VRE 315	315	288	300	244	425	490	710	120	120	435	324	353	376	354	527	605	25	1030
VRE 400	400	370	380	284	540	720	830	160	130	555	412	446	479	442	666	740	40(33)	1210
VRE 450	450	416	429	329	540	790	884	185	140	624	464	503	539	499	751	845	40(33)	1250
VRE 500	500	455	464	346	580	860	957	202	150	691	514	562	596	554	835	920	40(33)	1310
VRE 560	560	510	517	383	580	1050	1060	229	150	774	576	629	668	626	934	1040	40	1380

Dimensions for casing connections

Fan size	Ø d	a	b	l1	l2	l3	h1	h2	h4	h5	h6
VRE 315	315	288	300	125	135	6	6	135	256	375	385
VRE 400	400	370	380	125	135	6	6	135	306	425	435
VRE 450	450	416	429	125	135	6	6	135	356	475	485
VRE 500	500	455	464	125	135	6	6	135	406	525	535
VRE 560	560	510	517	125	135	6	6	135	406	525	535

l and h are functional dimensions applying to the corresponding casing connection.
In the case of KOF, for instance, the distance fan axis/flange amounts to c + l2 or g5 + l2.

1) Flanges (round) and frames (rectangular) are made according to standard MWS 53030.
Drilling pattern: 0 undrilled (such as FO, KOFO)
1 drilled according to series 1 for normal applications (such as KOF1)
2 drilled according to series 2 (double number of screws) for high pressures and large quantities of condensate (such as F2, KOF2)

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Centrifugal fans

VRE - Direct Driven

Accessories

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Accessories

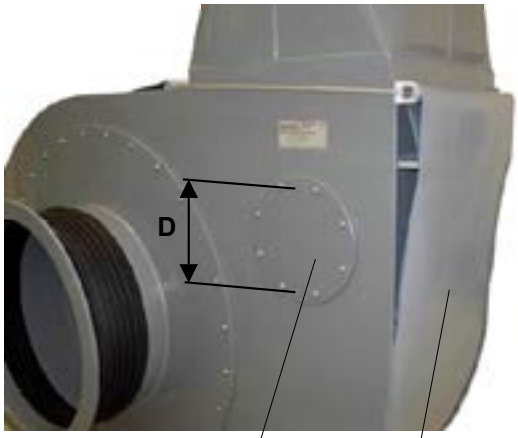
Shatter guard SPS and SPSG

Many years of practical tests have led to a design with safe dimensioning of the fans VRE. A breakdown can be excluded if all conditions of use are met.
If an impermissible mode of operation cannot be prevented safely, we recommend the use of a shatter guard of soft PVC foil laid around the housing jacket. A threat to the surrounding by shatters is excluded even in the case of impeller damage by substances sticking to the impeller or by influence of foreign bodies, for instance.

How to order:

SPS - shatter guard of PVC foil
SPSG - shatter guard of PVC foil with additional wire grating

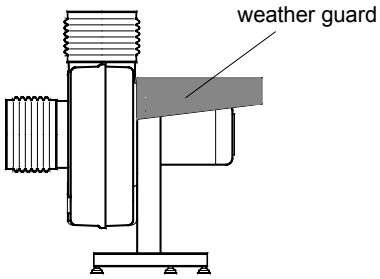
More safety is possible by reinforcement of the casing jacket with glass fibre-reinforced plastic (GRP).



Weather guard for motor

The standard versions of motors are of IP 54 which means protection against splash water from all directions. In the case of outdoor arrangement, an additional guard against all atmospheric influences should be used.

How to order: WS - weather guard



Cleaning opening

Cleaning of the impeller requires the fan to be taken out of the plant and the intake socket to be opened.
An additional cleaning opening (see picture) is advisable for reducing maintenance in cases of larger fans and intense soiling.

How to order: ROE - cleaning opening

Cleaning opening	
Fan size	Ø D
VRE 315	110
VRE 400	140
VRE 450	160
VRE 500	180
VRE 560	225

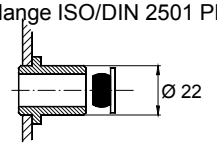
Condensate drain KSS / KSV / KSF

Every fan has a condensate bore with closing cap in its deepest position.
Several sockets for connection of a condensate line are optional.

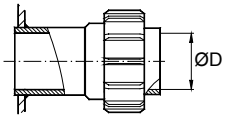
How to order:

KSS condensate socket, diameter 22 mm for hose ¾"
KSV condensate socket with screwing fixture seal of EDPM
KSF condensate socket with flange ISO/DIN 2501 PN10

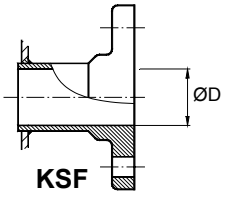
Condensate drain	
FAn size	Ø D
VRE 100	20
VRE 160 ... 200	25
VRE 250 ... 450	32
VRE 500 ... 560	40



KSS



KSV



KSF

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Centrifugal fans
VRE - Direct Driven

Specifications

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Radial Fans of Plastic Material - Direct Drive

no.	quantity	specification		individual price EUR	Total price EUR

Radial fans of plastic material – direct drive

Object:

Impeller optionally of PVC / PPs welded / FRP laminated, with balancing quality G 6.3 according to ISO 1940, fly-mounted on a shaft

Spiral casing optionally of PVC / PPs, sucking on one side, with condensate drain
Shaft seal: without seal / GD-technical gastight

Direct drive by standard motor outside the flow conveyed
Design in single-phase / three-phase / pole-changing
Motor protection: no / thermistor (TS)

Robust base,welded, for location of fan and motor
Corrosion protection: zinc-coated / painted , vibration absorbers included

Safety aquipment according to VDMA 24 167

VRE _ _ _ / _ _ _ W _ _ _ _ - _ _ - _ _ - _ _ _ _ - _ _ _ _

Nominal size
Impeller type
Nominal speed
Special version
Housing position / direction of rotation
Material casing / impeller

Volumetric flow	:	_____	m^3/h
Total pressure increase	:	_____	Pa
Temperature of medium	:	_____	°C
Motor power	:	_____	kW
Voltage / Frequency	:	_____	V ____ Hz
Rated motor currant	:	_____	A
Fan speed	:	_____	rpm
Sound level L_{A3m}	:	_____	dB(A)
Weight	:	_____	kg

Media / use:

Special accessories and special equipment

- Connection suction side: ELA-elastic (circular) / KOF-compensator with flange (circular)
- Connection pressure side: ELA-elastic / KOF-compensator with flange
- Condensate drain: drilling with cap / neck with cap or fitting
- Shutter guard: PVC-foil / PVC-foil with wire screen
- Weather guard for motor
- Cleaning opening
- Repair switch: single / mounted, 3-poles with auxiliary contact / 6-poles with auxiliary switch
- Motor protection switch: single / mounted
- Other accessories

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Radial Fans of Plastic Material - Direct Drive - Explosion Proof

no.	quantity	specification		individual price EUR	Total price EUR

Radial fans of plastic material – direct drive explosion-proof

Object:

Permitted for EX-Categorie according to EU-guideline 94/9/EG (ATEX) :

Location in relation to the fan	category gas area 1	gas area 2	no EX-area
inside	II 2G IIB T3 ❍	II 3G IIB T3 ❍	no ❍
outside	II 2G IIB T3 ❍	II 3G IIB T3 ❍	no ❍

Impeller optionally of PVC / PPs welded / FRP laminated or
electrically conductive plastic (PVCX,PPsX) welded
with balancing quality G 6.3 according to ISO 1940, fly-mounted on a shaft

Spiral casing optionally of PVC / PPs or electrically conductive plastic (PVCX,PPsX)
sucking on one side, with condensate drain
Shaft seal: without seal / GD-technical gastight

Direct drive with **EX-motor** outside the flow conveyed
Protection: EEXe II - increased safety
EEXde II - flameproof enclosure

Direct drive by **standard motor** (no EX-protection) outside the flow conveyed
Design in single-phase / three-phase / pole-changing

Motor protection: no / thermistor (TS)

Robust base,welded, for location of fan and motor
Corrosion protection: zinc-coated / painted , vibration absorbers included

Safety aquipment according to VDMA 24 167

VRE _ _ _ / _ _ _ W _ _ _ _ - _ _ - _ _ - _ _ _ _ - _ _ _ _

Nominal size
Impeller type
Nominal speed
Special version
Housing position / direction of rotation
Material casing / impeller

Volumetric flow	:	_____	m^3/h
Total pressure increase	:	_____	Pa
Temperature of medium	:	_____	°C
Ambient temperature	:	_____	°C
Motor power	:	_____	kW
Voltage / Frequency	:	_____	V ____ Hz
Rated motor currant	:	_____	A
Fan speed	:	_____	rpm
Sound level L_{A3m}	:	_____	dB(A)
Weight	:	_____	kg

Media / use:

Special accessories and special equipment
- Connection suction side: ELA-elastic (circular) / KOF-compensator with flange (circular)
- Connection pressure side: ELA-elastic / KOF-compensator with flange

- Condensate drain: drilling with cap / neck with cap or fitting
- Shutter guard: PVC-foil / PVC-foil with wire screen
- Weather guard for motor
- Cleaning opening

- Repair switch: single / mounted, 3-poles with auxiliary contact, standard / explosion-proof
- Motor protection switch: single / mounted, standard / explosion-proof

- Other accessories

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