

MIETZSCH

GmbH Lufttechnik Dresden

USER INFORMATION

INLINE DUCT FANS

SERIES VRK



Inline duct fans

Series VRK

Usable in ventilation engineering of all branches of industry


High chemical resistivity by use of plastic materials and motor arrangement outside the medium conveyed

Little floor space required; universal assembly facilities

Volumetric flow up to 2,800 m³/h

Pressure increase up to 1,330 Pa

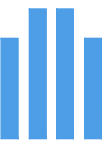
Stepped capacity by four sizes (larger versions on request)

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

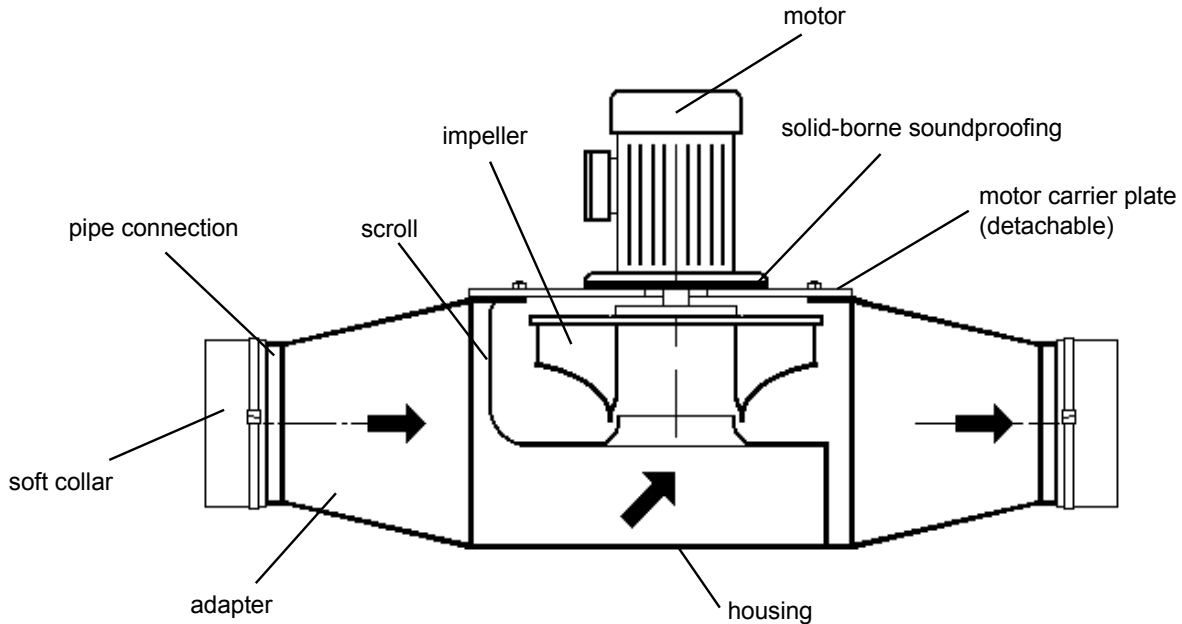
Wide range of electrical and ventilation accessories

Inline duct fans of plastic materials

Technical explanation



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APPLICATION

Inline duct fans of type VRK are employed in all branches of industry and agriculture. They are an easily assembled alternative to conventional radial fans with complicated diversions wherever the capacity of usual axial fans is not sufficient and straight ducts are necessary mainly due to lack of space.

High resistivity to corrosion makes VRK fans suitable in particular for process exhaust systems in the chemical and pharmaceutical industries, for ventilation of laboratories, battery compartments, pickling and washing units, galvanic and agricultural facilities etc.

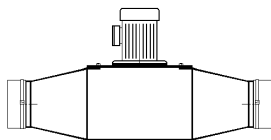
TECHNICAL DESCRIPTION

The standard version of inline duct fans consists of the impeller and channel housing with integrated scroll as major components. Adapters with pipe connection and soft collars are elements of the range of delivery. The motor is carried with vibration insulation outside the medium conveyed. Motors are suitable for three-phase current (also pole-changing or explosion-proof) and single-phase ac.

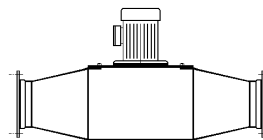
The impeller with balancing quality G 6.3 according to ISO 1940 is arranged directly on the motor shaft stud. Rubber elements between the motor and motor carrier plate prevent transmission of noise and vibrations.

The impeller and housing are made of PPs (PVC or electrically conductive plastic material on request) are made with state-of-the-art joining methods of single components. Steel components such as screws, hub, and hub connections are protected by plastic covers from corrosion or connecting elements are made of stainless and acid-resistant steel.

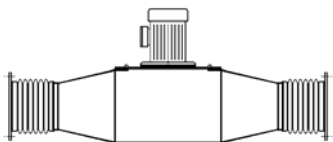
Four different connections meet diverse assembly demands:



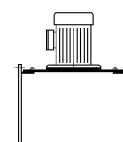
Standard version
with pipe connection and soft collars



Version FF
with flange



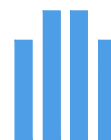
Version FK
with compensator and flange



Version RR
with (rectangular) frame, without adapters

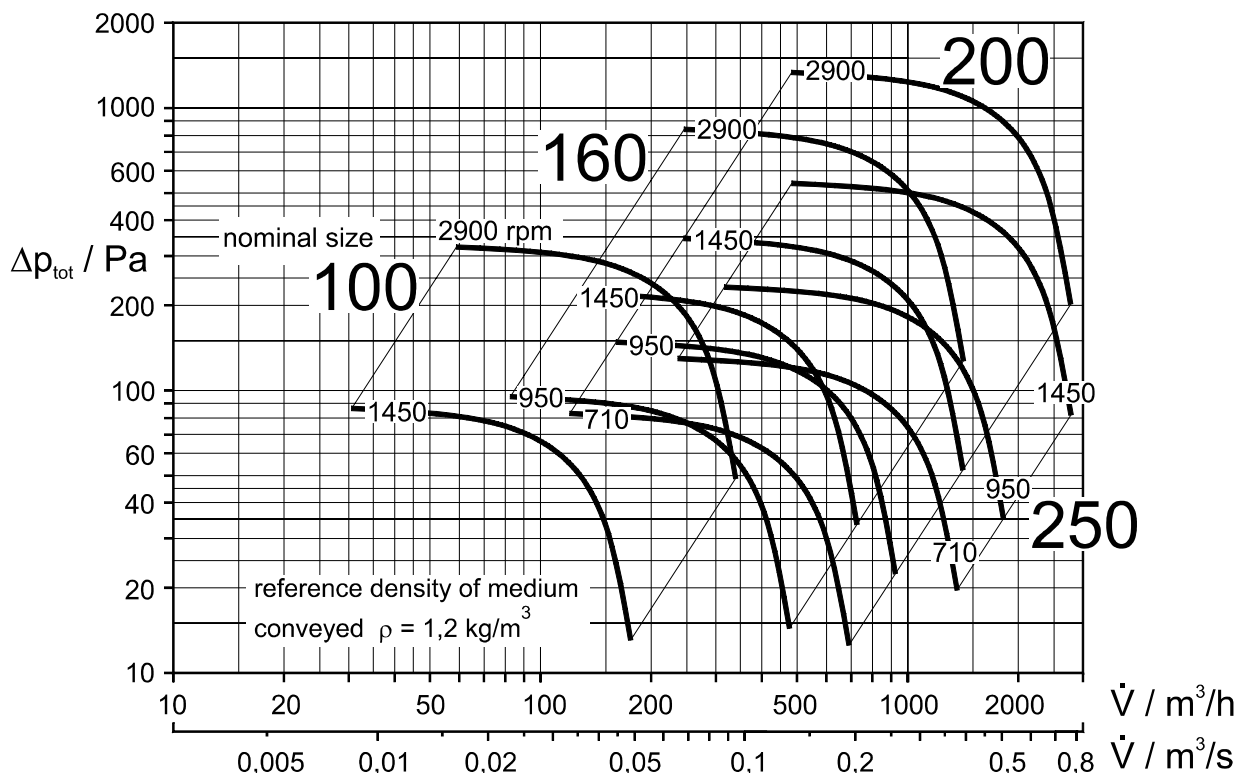
Inline duct fans of plastic materials

Application / Assembly



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TYPE SURVEY - PRESELECTION



CONDITION OF USE

permissible ambient temperature: $-30 \text{ }^\circ\text{C} \dots 40 \text{ }^\circ\text{C}$ (EX motors $-20 \text{ }^\circ\text{C} \dots 40 \text{ }^\circ\text{C}$)
 permissible temperature of medium conveyed: $-30 \text{ }^\circ\text{C} \dots 40 \text{ }^\circ\text{C}$
 Higher temperatures depend on the speed rate and are possible after 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.

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.

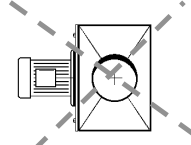
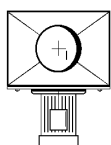
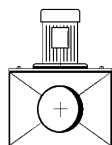
Slightly **dust-laden media** can also be conveyed but lead to increased wear.

Explosion-proof types are produced for zone 1 and zone 2 (See information series VRE).

Working range: The fans show stable operation in the entire range of the characteristic shown.

ASSEMBLY / MAINTENANCE

The inline duct fan is preferably integrated in a horizontal pipeline. The motor can be arranged in top or bottom position.



On request!

Consultation of the manufacturers is required in cases of horizontal motor axis or vertical fan arrangement.

For assembling the housing is placed on two wall or ceiling consoles. Suction and pressure lines are connected by means of soft collars (in range of delivery). Flange connection is optionally possible. Connected plant components must not stress the fan mechanically.

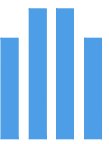
If needed, a line for condensate draining has to be connected to the relevant bore in the deepest housing position.

Motor cooling must not be impaired by adjacent components and ceilings. The distance between motor cooling air inlet and ceiling must not be **less than 50 mm**. In cases of outdoor installation especially the motor must be protected against direct weather effects such as ice, snow, and hail (weather hood is part of accessories).

The housing may be opened on its motor end for cleaning and repair. A condensate drain can be arranged in addition (accessories).

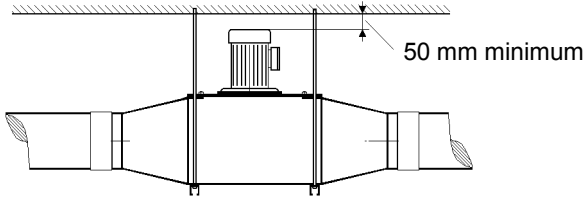
Inline duct fans of plastic materials

Assembly / Designation

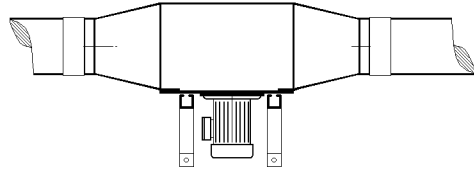


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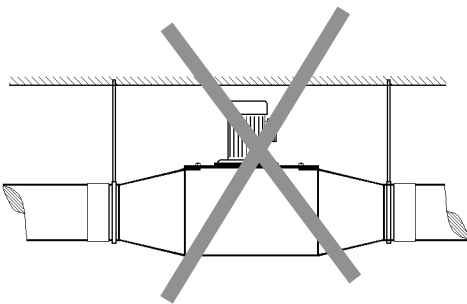
EXAMPLES OF ASSEMBLY



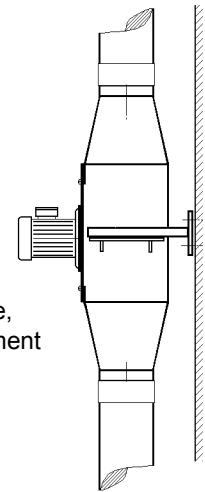
Assembly with threaded bar and crossbeam, motor upward



Assembly on wall console, motor downward

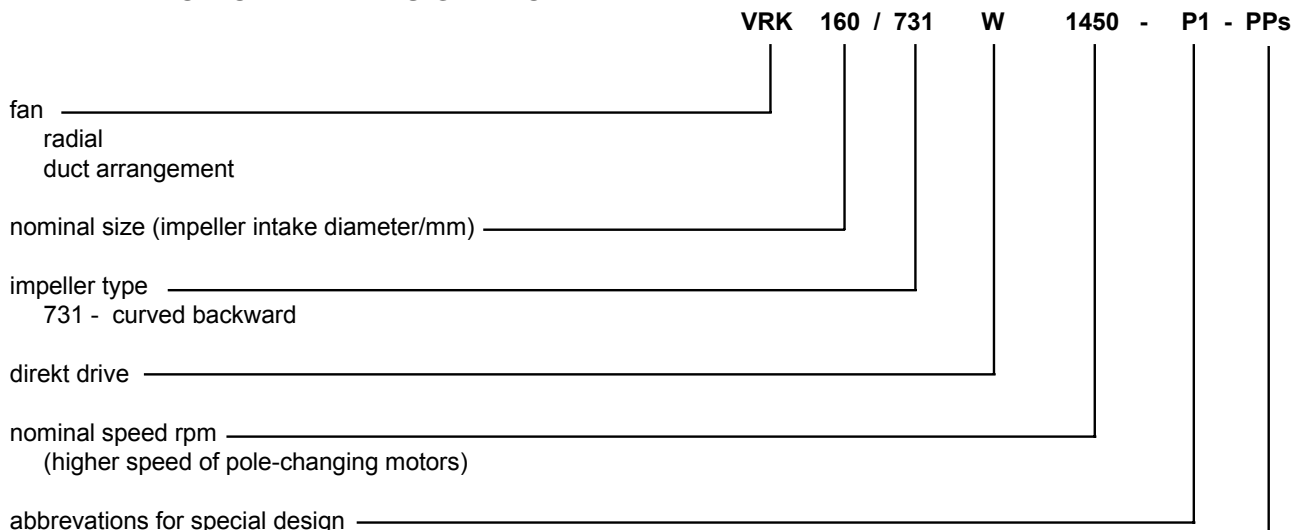


Hanging arrangement permissible from channel housing only



On request!
Assembly on wall console, vertical channel arrangement

EXPLANATION OF TYPE DESIGNATION

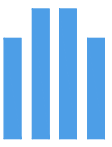


- E** = single-phase drive
- TS** = with thermal winding protection (PTC resistor)
- P1** = speed halving (Dahlander) such as 1450 P1 = 1,450/710 rpm
- P2** = changeover to next smaller speed such as 1450 P2 = 1,450/950 rpm
- EX** = with explosion-proof motor EEx e II T3
- EXde** = with explosion-proof motor 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)

Material _____

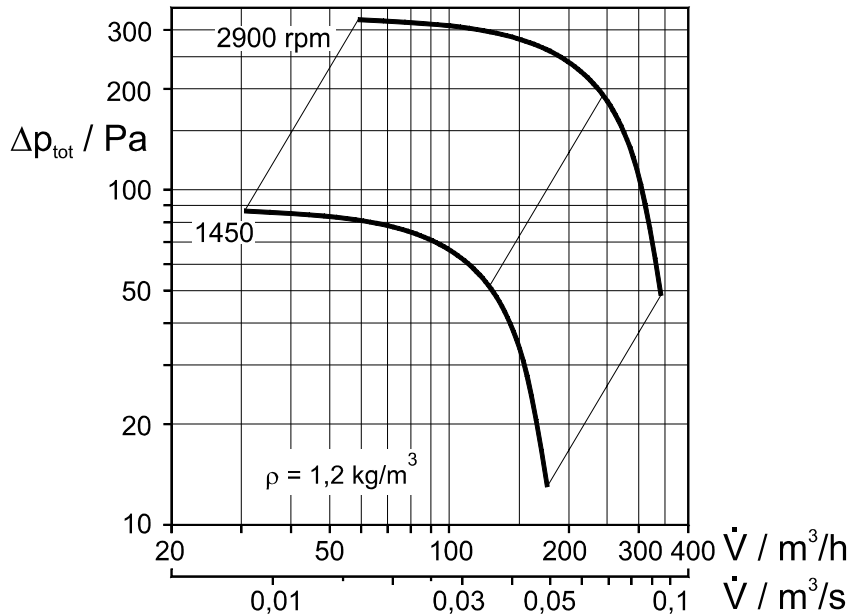
Inline duct fans of plastic materials

VRK 100 /731

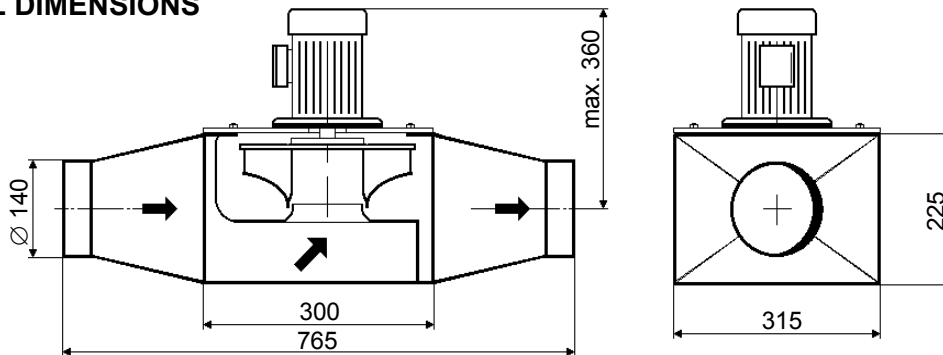


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PERFORMANCE



PRINCIPAL DIMENSIONS



MOTOR VERSIONS (other motors, such as single-phase or Ex, upon inquiry)

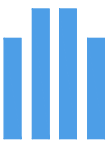
fan type	speed rpm	motor type	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)
VRK 100/731 W 1450	1450	3 ~ 400 V/50 Hz IP 55	0,12	0,42	10,0	45	
VRK 100/731 W2900	2900		0,18	0,51	10,0	51	
VRK 100/731 W 2900 P1	2900	3 ~ polumschaltbar 400 V/50 Hz	0,20	0,58	11,0	51	
VRK 100/731 W 1450 P1	1450		0,15	0,51		45	
	710	IP 55					

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

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

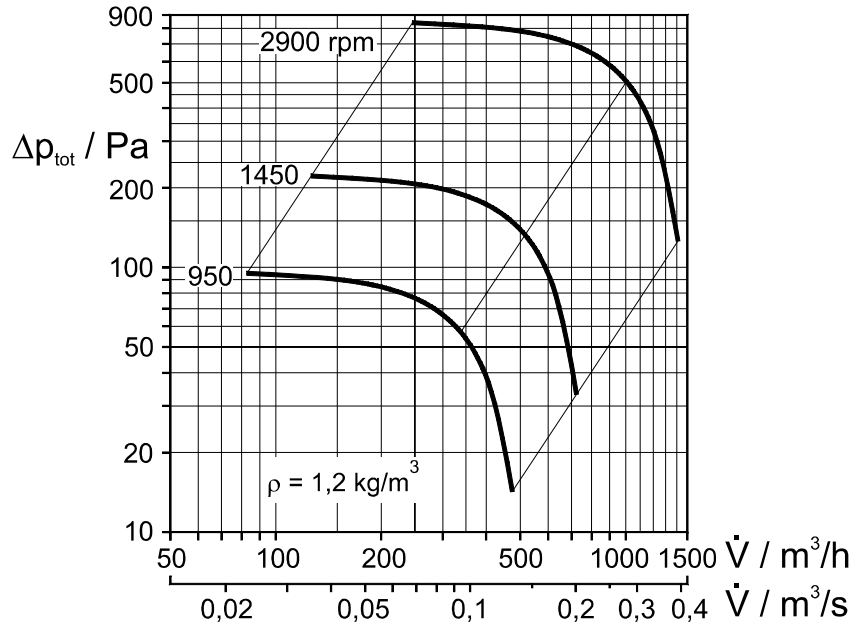
Inline duct fans of plastic materials

VRK 160 /731

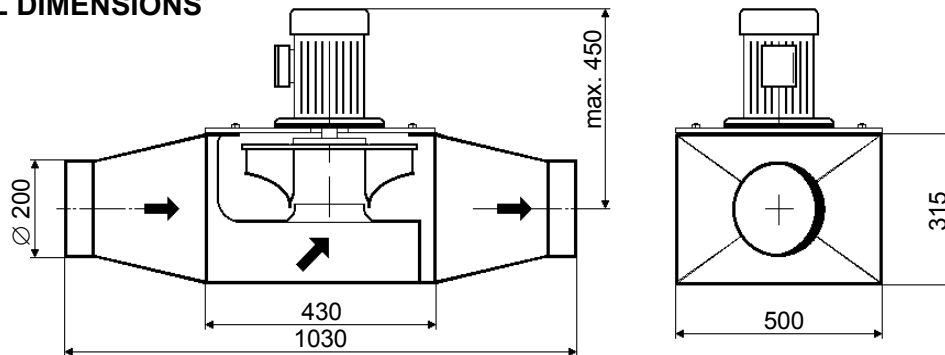


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PERFORMANCE



PRINCIPAL DIMENSIONS



MOTOR VERSIONS (other motors, such as single-phase or Ex, upon inquiry)

fan type	speed rpm	motor type	nom. motor power kW	nom. motor current A	weight with motor kg	L _{A3m} dB(A)	L _{WA} dB(A)
VRK 160/731 W 950	950	3 ~ 400 V/50 Hz IP 55	0,09	0,44	20,0	39	
VRK 160/731 W 1450	1450		0,12	0,42	20,0	44	
VRK 160/731 W2900	2900		0,37	1,00	21,0	60	
VRK 160/731 W 2900 P1	2900	3 ~ polumschaltbar 400 V/50 Hz IP 55	0,43	1,30	22,0	60	
VRK 160/731 W 1450 P1	1450		0,30	0,89	22,0	44	
VRK 160/731 W 1450 P1	710		0,20	0,71	22,0	44	
VRK 160/731 W 1450 P2	950		0,035	0,30	21,0	32	
			0,18	0,58	21,0	44	
			0,06	0,35	21,0	39	

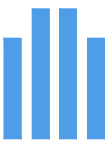
L_{A3m} = A - weighted sound pressure level at distance of 3 m

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

L_vrk_en (08/04)

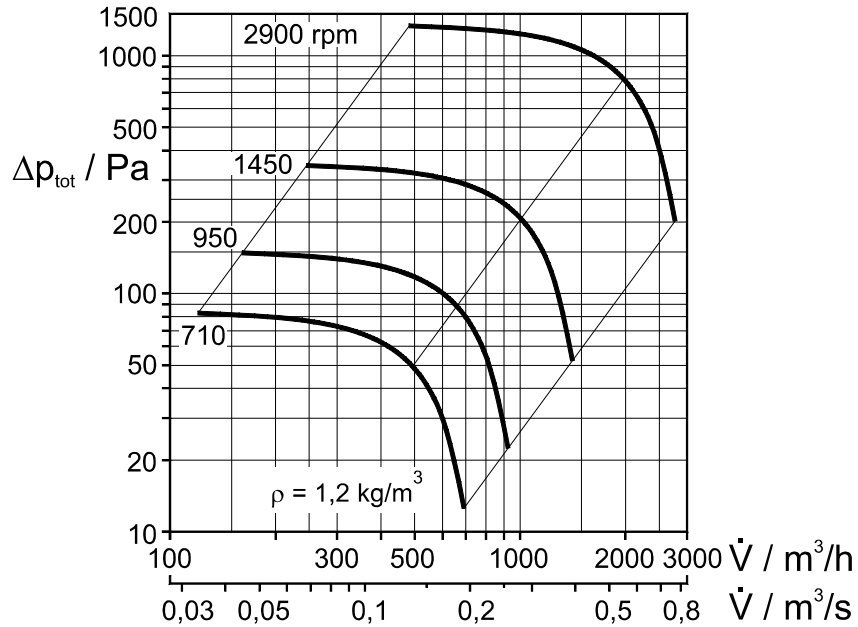
Inline duct fans of plastic materials

VRK 200 /731

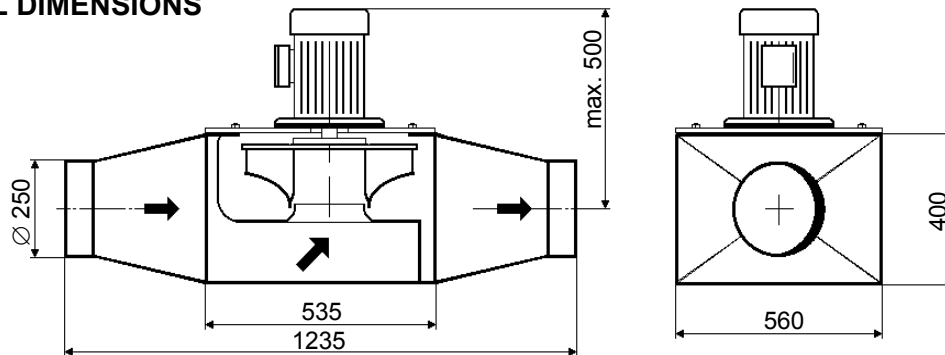


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PERFORMANCE



PRINCIPAL DIMENSIONS



MOTOR VERSIONS (other motors, such as single-phase or Ex, upon inquiry)

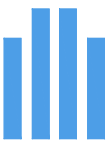
fan type	speed rpm	motor type	nom. motor power kW	nom. motor current A	weight with motor kg	L _{A3m} dB(A)	L _{WA} dB(A)
VRK 200/731 W 710	710	3 ~ 400 V/50 Hz IP 55	0,09	0,36	31,0	40	
VRK 200/731 W 950	950		0,09	0,55	29,0	46	
VRK 200/731 W 1450	1450		0,18	0,58	29,0	51	
VRK 200/731 W2900	2900		1,10	2,40	35,0	67	
VRK 200/731 W 2900 P1	2900	3 ~ polumschaltbar 400 V/50 Hz IP 55	1,40	3,50	37,0	67	
VRK 200/731 W 1450 P1	1450		0,33	0,76	33,0	46	
VRK 200/731 W 1450 P1	710		0,20	0,71	33,0	51	
VRK 200/731 W 1450 P2	950		0,05	0,30		40	

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

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

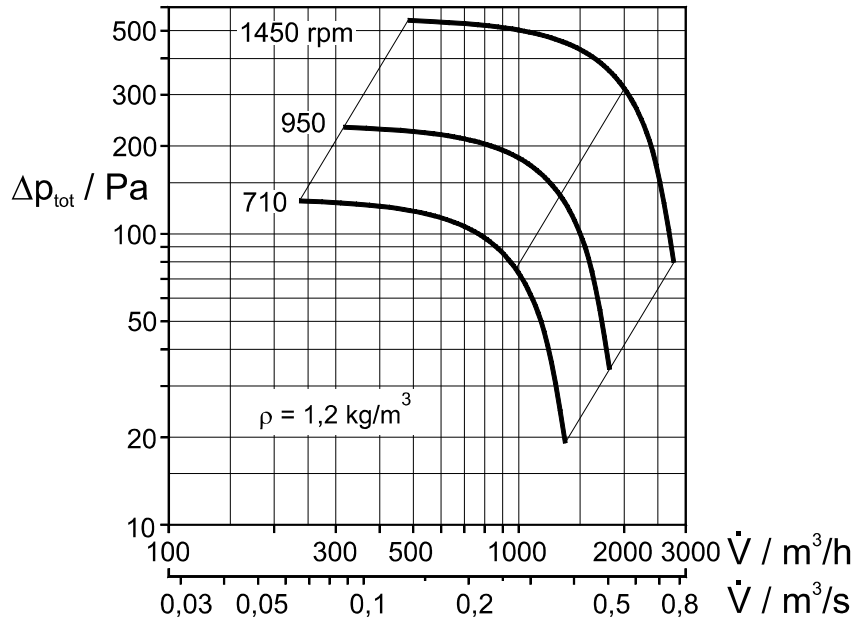
Inline duct fans of plastic materials

VRK 250 /731

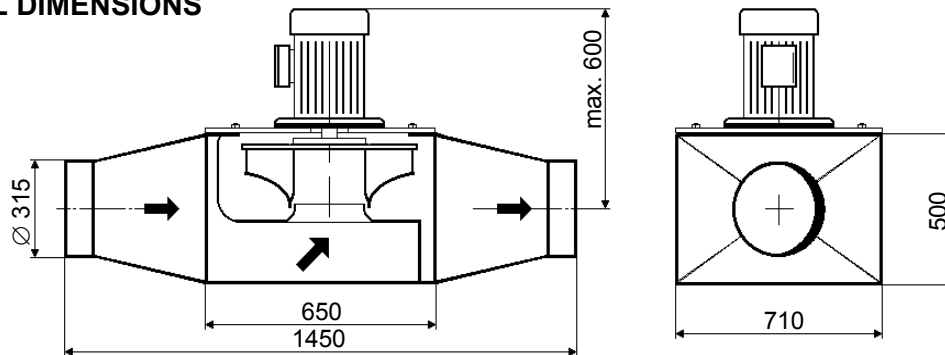


MIETZSCH

PERFORMANCE



PRINCIPAL DIMENSIONS



MOTOR VERSIONS (other motors, such as single-phase or Ex, upon inquiry)

fan type	speed rpm	motor type	nom. motor power kW	nom. motor current A	weight with motor kg	L_{A3m} dB(A)	L_{WA} dB(A)
VRK 250/731 W 710	710	3 ~ 400 V/50 Hz IP 55	0,09	0,36	47,0	42	
VRK 250/731 W 950	950		0,18	0,62	47,0	47	
VRK 250/731 W 1450	1450		0,37	1,03	46,0	55	
VRK 250/731 W 1450 P1	710	3 ~ polumschaltbar 400 V/50 Hz IP 55	0,50	1,28	48,0	55	
VRK 250/731 W 1450 P2	950		0,10	0,57	48,0	42	
VRK 250/731 W 950 P2	710		0,40	1,38	48,0	55	
	950		0,12	0,51		47	
	710					42	

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


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

no.	quantity	specification		individual price EUR	Total price EUR
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Inline duct fan of plastic material, explosion-proof
Mietzsch Lufttechnik - Series VRK

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 c IIB+H2 T3 <input type="radio"/>	II 3G c IIB+H2 T3 <input type="radio"/>	no <input type="radio"/>
outside	II 2G c IIB+H2 T3 <input type="radio"/>	II 3G c IIB+H2 T3 <input type="radio"/>	no <input type="radio"/>	

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

Welded housing with aerodynamically optimized scroll optionally of PVC / PPs or electrically conductive plastic (PVCX,PPsX)
Housing to be opened on motor end

Standard line connection by welded adapters with pipe connection and soft collars
version **FF** with flange
version **FK** with compensator and flange
version **RR** with (rectangular) frame, without adapters

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)

Safety equipment according to VDMA 24 167

VRK _____ / **73 1 W** _____

nominal size

nominal speed

special version

material

- Volumetric flow : _____ m³/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

- ◆ Condensate drain: drilling with cap / neck with cap or fitting
- ◆ Weather guard for motor
- ◆ Repair switch: single / mounted, 3-poles with auxiliary contact, standard / explosion-proof
- ◆ Motor protection switch: single / mounted, standard / explosion-proof
- ◆ Wall console / ceiling console for assembling
- ◆ Other accessories

Our program of products and services

Radial fans of plastic material

Direct and belt drive
up to about 80 000 m³/h and 3 500 Pa

Explosion-proof fans

according to ATEX for zone 1 and zone 2

Roof fans of all-plastic design

with many assembly accessories

Special fans

Duct built-in devices,
mobile radial fans

Systems for **central ventilation** in housing construction, special-purpose fans, exhaust elements, controlling and regulating devices

Complete plants of plastic materials for industry and craft, laboratory and process exhaust systems, air cleaning plants

Ventilation components of plastic material

Pipes, ducts, fittings, flaps, gas-tight shutoff flaps, exhaust air heads, deflector hoods, exhaust hoods, filter cases, volume flow controller etc.

Rectangular and cylindrical **silencers**, silencing casings in corrosion-proof design

Droplet eliminators and moisteners

Gas washers

for separation of gaseous dangerous substances, dust/gas separators

Heat exchangers

for recovery of heat from moist and aggressive exhaust air

Containers of PVC, PP, PE

for liquids endangering water, according to water resources regulations, containers of composite design PVC/GFRP, PP/GFRP

Controlling and regulating elements and systems

Switches, motor protection devices, speed controllers, frequency inverter, fan controls, flow supervision

Special designs of plastic materials

Devices, linings etc.

Engineering performances

Planning, calculation, and design, ventilation measurement on standardized test stands, low and high temperature test in company-own climatic test chambers

