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GENERAL AND SPECIAL PURPOSE FANS

Revision of 15.09.2023



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## RADIAL FANS

### RADIAL FANS

#### VRAN

•N •CR1 •V •VCR1



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#### VRAV

•N •CR1 •V •VCR1



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#### VRAV-U

•N



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### COMPACT RADIAL FANS

#### RAV

•N



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#### RAF

•N



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### DUST FANS

#### DUF

•N



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## ROOF FANS

### HORIZONTAL OUTLET RADIAL ROOF FANS

#### KROS

•N •CR1 •V •VCR1



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### VERTICAL OUTLET RADIAL ROOF FANS

#### KROV

•N •CR1 •V •VCR1



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### LOW PROFILE VERTICAL OUTLET RADIAL ROOF FANS

#### KROM

•N •CR1



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### AXIAL ROOF FANS

#### OZA-R

•N •CR1 •V •VCR1

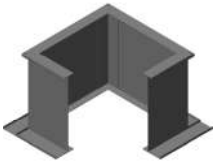


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GENERAL AND SPECIAL PURPOSE FANS

## ADDITIONAL EQUIPMENT

**STAM**  
ROOF BASE



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**POD**  
CONDENSATE DRAIN PAN



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**TSK**  
HEAT AND SOUND INSULATED CASING



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**ZNT**  
WEATHER PROTECTION HOOD



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**ZNT-STAM**  
WEATHER PROTECTION HOOD



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**KZR**  
WEATHER PROTECTION HOOD



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**KZR-A**  
WEATHER PROTECTION HOOD



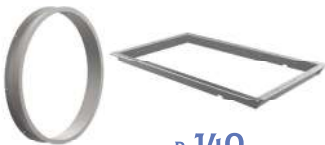
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**COM-VRAN, COM-VRAY**  
FLEXIBLE CONNECTOR



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**FON, FOV**  
COUNTER FLANGES



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**OZA-SEM**  
PROTECTIVE MESH



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**VG-H, VG-B**  
FLEXIBLE INSERT



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MOUNTING FRAME



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## AUTOMATION SYSTEM ELEMENTS

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SPEED CONTROLLER



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**ASC-150, ASC-310**  
FREQUENCY CONVERTER



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**FC-101, FC-102**  
FREQUENCY CONVERTER



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**MCD-201, MCD-202**  
SOFT STARTER



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**SAU-PPV, SAU-SPV**  
FAN CONTROL CABINET



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**S32**  
SERVICE SWITCH



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**SAU-VK**  
AUTOMATION CABINET



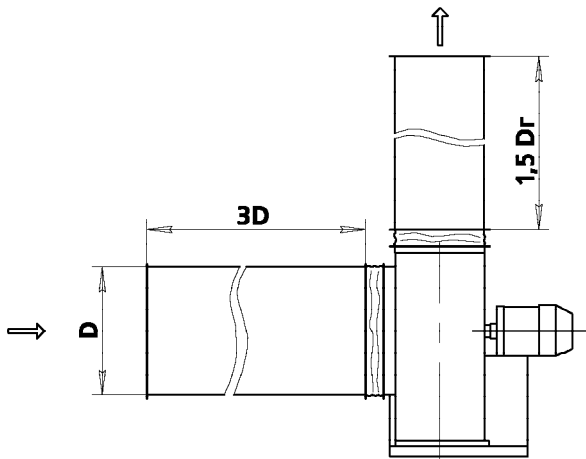
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# FAN INSTALLATION IN THE NETWORK

The aerodynamic characteristics given in the catalog are obtained on an aerodynamic testing bench with a free inlet and outlet section of the fan. When installing fans in a ventilation system, certain conditions must be met to ensure uniform distribution of flow parameters in the immediate vicinity of the fan inlet and outlet. It is especially important to maintain a uniform flow at the inlet of an axial fan, since the impeller blades are in most cases located in close proximity to the inlet cross-section. And it is necessary to ensure a uniform load on the blades with respect to the height.

Below are specific recommendations for installing axial fans in ventilation systems for the most common layout options. If these recommendations are violated, the decline of the pressure curve can reach 30% or more. The declining of the pressure curve in each specific case may differ, requires detailed study and consultation with a specialist.

## AIR DUCTS AND FLEXIBLE INSERTS



### RECOMMENDED

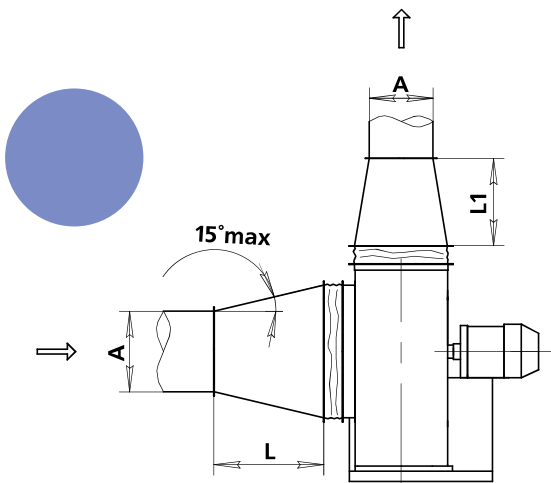
Straight sections of air ducts of sufficient length with a cross-sectional area equal to the area of the inlet and outlet cross-sections of the fan must be installed in front of the inlet cross-section of the fan and behind it. Reducing the length of straight sections adjacent to the fan results in a reduction in the pressure generated by the fan. The presence of flexible inserts in front and behind the fan reduces vibration and noise.

### NOT RECOMMENDED

It is not recommended to place shaped elements on the fan casing without rectangular sections.

$D_r$  - is the hydraulic diameter of a rectangular outlet cross-section

## ADAPTERS



### RECOMMENDED

To connect a fan and an air duct with different cross-sections, use a diffuser with a small opening angle or a confuser with a small convergence angle. The opening value of this angle should not exceed 30°.

### NOT RECOMMENDED

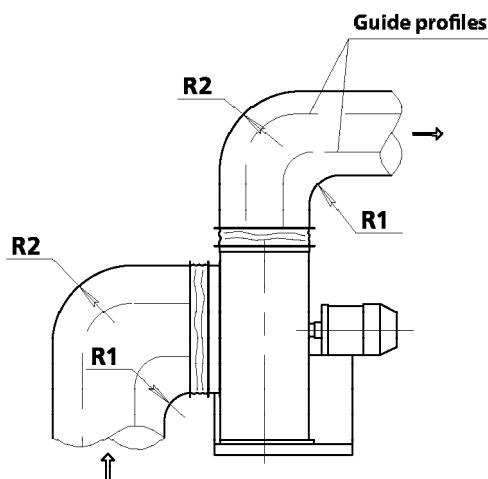
It is not recommended to place an air duct with a smaller cross-section than the fan inlet cross-section directly before the fan inlet, without a smooth transition with a length of  $L > D_{impeller}$

$$L \geq D_{impeller}$$

$$L1 \geq 2D_{impeller}$$

$$D_{impeller}/2 \leq A \leq D_{impeller}$$

## DUCT ANGLES



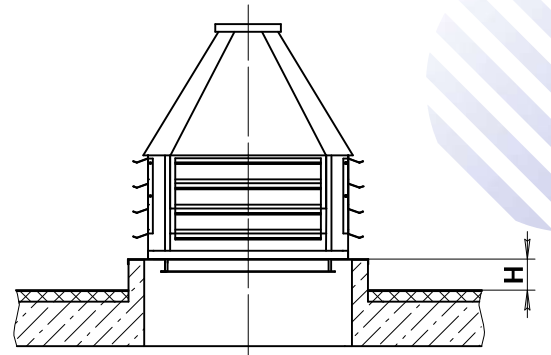
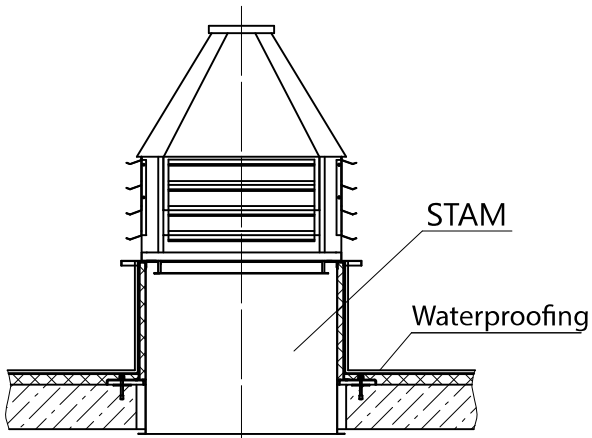
### RECOMMENDED

In case of limited dimensions, install duct angle sections with a large rounding radius at the inlet and outlet of the fan flow. It is recommended to use guide profiles in confined spaces.

### NOT RECOMMENDED

It is not recommended to perform "boot-type" turns ( $R=0$ ), which leads to a decrease in flow rate and the pressure created, as well as an increase in noise and vibration.

### STAM ROOF CURBS (SEPARATE PRODUCT FOR KROS, KROV)



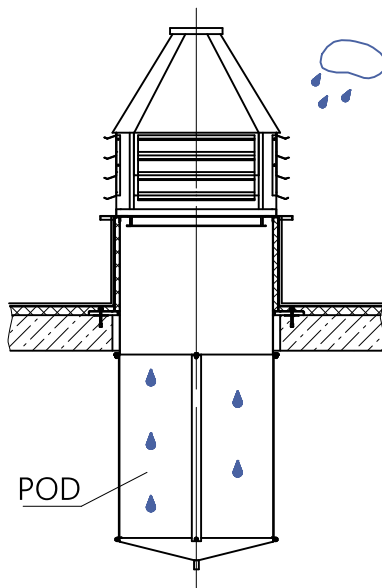
#### RECOMMENDED

When installing roof fans, install them on STAM mounting supports to prevent leaks at the connection points.

#### NOT RECOMMENDED

Due to the risk of leaks caused by melted snow, it is not recommended to install fans on roofs in case the height of  $H < 400$  mm (see picture above).

### POD PANS (SEPARATE PRODUCT FOR KROS, KROV)



#### RECOMMENDED

When installing roof fans, install pans to collect and remove precipitation and condensate. POD pans are attached to the STAM roof curb.

A small amount of moisture (up to 3.75 l/h per 1 m<sup>2</sup> with wind up to 45 km/h and precipitation up to 80 mm/h) can pass through the storm-proof deflectors and collect in the volume of the POD pan. Evaporation of moisture from the POD does not require drainage, except for marine and subtropical climates (precipitation more than 80 mm/h; wind more than 45 km/h).

#### NOT RECOMMENDED

It is not recommended to install roof fans without taking into account the passage of moisture from condensation or rain with wind.

## DESCRIPTION OF RADIAL FANS

**VRAN** – radial fans with backward-curved impeller blades, with high efficiency and low noise level.

**VRAV** – radial fans with forward-curved impeller blades, with highly loaded impellers, ensuring the compactness of the ventilation unit.

All fans are manufactured by using the modern, high-tech equipment. Cutting of blades, impeller discs, casing walls and other elements is carried out using a laser. The formation of conical and toroidal parts of the fan is carried out on a CNC-controlled flanging bellmouth machine. Impeller welding is performed using a robot welder. The casings of all fans are made of galvanized steel using rolling technology as standard. The production of fans on high-precision equipment with a high degree of unification ensures full compliance of the characteristics of mass products with the reference characteristics obtained at the testing bench, and guarantees constant high quality of fans.

Thanks to the simple and reliable design of the fans, as well as high energy efficiency, the fans are versatile and economical equipment for various tasks of comfortable and technological ventilation.

### VRAN FANS

VRAN fans are manufactured in 16 standard sizes and provide a wide range of performance modes from 300 m<sup>3</sup>/h up to 120,000 m<sup>3</sup>/h and pressure up to 2,600 Pa. VRAN fans are used in systems where the following required:

- high efficiency;
- low noise level;
- in systems with parallel operation of several fans.

Fans are produced with two versions of VRAN6 and VRAN9 impellers, differing in the number of blades, and are made with a wide range of R20 impeller diameters: 020, 025, 031, 035, 040, 050, 056, 06 100, 112 and 125. This allows choosing the optimal fan for almost any given mode with minimum margin of up to 5%.

Several impeller designs are available depending on the circumferential speed, ensuring reliable operation of the fans throughout their entire service life. The calculations for the strength of impellers using the finite element method are fully confirmed by the corresponding experiments.

Optimized reserve power when selecting motors, allowing the use of motors with lower installed power, especially for fans with small-size impellers.

It is envisaged that fans of all numbers will be manufactured according to the 1st design scheme using frequency converters, which allows for the adjustment of the fan operating mode during commissioning tests and during operation.

The shape of the spiral casing has been changed - the size of the outlet flange has been increased, which reduces the average speed in the fan outlet section and pressure losses in the connected ventilation duct. Reducing the speed at the fan outlet also increases the static pressure of the fan.

### VRAV FANS

VRAV fans are manufactured in 12 standard sizes and provide a wide range of performance modes from 300 m<sup>3</sup>/h up to 50,000 m<sup>3</sup>/h and pressure up to 2,600 Pa.

VRAV fans are used mainly in blower units and systems where strict restrictions on overall dimensions are imposed. A wide range of R20 impeller diameters for a number of fans with small-size impellers has been introduced, which are most often used as embedded in various installations.

The fans manufactured in a variety of designs: general purpose industrial, explosion-proof, corrosion-resistant or for use in cold climates (YHL2).

### RAV FANS

RAV compact radial fans are manufactured in 4 standard sizes and provide a range of modes in terms of capacity from 300 m<sup>3</sup>/h to 4,000 m<sup>3</sup>/h and pressure up to 400 Pa.

RAV fans are designed for stationary supply and exhaust ventilation systems, air conditioning for industrial, public and residential buildings. RAV compact radial fans provide increased system performance while maintaining a compact size.

Compact radial fans are manufactured only in general purpose industrial design.

## RAF FANS

RAF compact radial fans come in 7 standard sizes and provide a range of modes in terms of capacity from 400 m<sup>3</sup>/h to 1,000 m<sup>3</sup>/h and pressure up to 800 Pa.

RAF fans are designed for stationary supply and exhaust ventilation systems, air conditioning for industrial, public and residential buildings. RAF compact radial fans provide increased system performance while maintaining a compact size.

Compact radial fans are manufactured only in general purpose industrial design.

## DUF FANS

DUF dust fans are manufactured in 5 standard sizes and provide a range of modes in terms of capacity from 600 m<sup>3</sup>/h to 10,000 m<sup>3</sup>/h and pressure from 800 to 2,300 Pa.

They are used in pneumatic transport systems for removing wood chips and sawdust, removing metal dust from machine tools, removing dust and slag in welding production, and in dusty air extraction systems in the production of cement and reinforced concrete structures.

DUF dust fans are manufactured in general purpose industrial design.

DUF dust fans have a simplified design that ensures reliable operation when various materials pass through it. The fan consists of the main components: a casing, a special impeller, a cylindrical inlet pipe and an electric motor.

Fans are equipped with standard three-phase asynchronous motors.





# NOMENCLATURE OF RADIAL FANS

TYPE	OPERATING MODE	STANDARD SIZE																DESIGN SCHEME				DESIGN VERSION						
		016	018	020	025	028	031	035	040	045	050	056	063	071	080	090	100	112	125	1	5	1	5	N <sup>1</sup>	CRT <sup>2</sup>	V <sup>3</sup>	VCRT <sup>4</sup>	
VRAN	T80				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	T200				■																							
VRAV	T80			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	T200			■	■																							
VRAV-U	T80	■																										
DUF	T80			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

1- general purpose industrial design  
 2- corrosion-resistant design (stainless steel)  
 3- explosion-proof design  
 4- explosion-proof corrosion-resistant design (stainless steel)

TYPE	OPERATING MODE	STANDARD SIZE										DESIGN VERSION															
		2	2,5	2,8	3,1	3,55	4	4,5	N <sup>1</sup>	N <sup>1</sup>	N <sup>1</sup>	N <sup>1</sup>															
RAV	T80		■		■																						
RAF	T80	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

1- general purpose industrial design

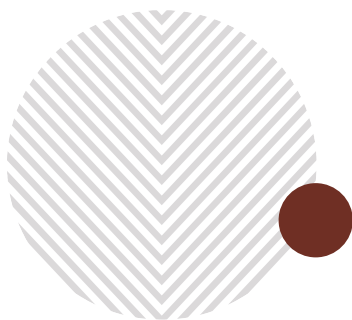




## CONDITIONS FOR THE MOVED MEDIUM

Design version	Flow path	Designation	Operation	Temperature of the moved medium	Notes
general purpose industrial	carbon steel	N	For moving air and other non-explosive gas-vapor-air medium that do not cause corrosion of carbon steel more than 0.1 mm per year, with a content of dust and other solid impurities not exceeding 0.1 g/m <sup>3</sup> , free of sticky substances and fibrous materials	-40°...+80°	
corrosion-resistant	stainless steel	CR1	For moving air with admixtures of non-explosive vapors and gases that are not aggressive to stainless steel, but cause accelerated corrosion of ordinary carbon steel, with a content of dust and other solid impurities not exceeding 0.1 g/m <sup>3</sup> , do not contain sticky and fibrous materials.	-40°...+80°	
explosion-proof	carbon steel	V	For moving gas-vapor-air explosive mixtures which do not contain explosives that cause corrosion of carbon steel more than 0.1 mm per year, with a content of dust and other solid impurities not exceeding 0.1 g/m <sup>3</sup> , free of sticky substances and fibrous materials.	-40°...+80°	They are not used for moving gas-vapor-air mixtures from technological installations where explosive substances are heated above their auto-ignition temperature or are under excessive pressure.
explosion-proof corrosion-resistant	stainless steel	VCR1	For moving gas-vapor-air explosive mixtures, not containing explosives and contaminated with impurities of aggressive vapors and gases, in which the corrosion rate of stainless steel does not exceed 0.1 mm per year with a dust and other solid impurity content of no more than 0.1 g/m <sup>3</sup> , not containing sticky substances and fibrous materials.	-40°...+80°	

\* equipment is ordered upon an individual order





ENERGY EFFICIENT RADIAL FANS WITH BACKWARD-CURVED BLADES

VRAN

- ▶ low noise level;
  - ▶ in systems with parallel operation of multiple fans;
  - ▶ with backward-curved blades.
- ▶ **INTENDED USE:**
- ventilation and air heating systems - T80 operating mode;
  - sanitary and industrial installations - T80 and T200 operating modes.



**•025•028•031•035•040•045•050•056•063•071•080•090•100•112•125**  
 BELT DRIVEN  
**•063•080•100•125**  
 BELT DRIVEN

VRAN fans feature a left or right rotation impeller with specially shaped backward-curved blades that provide high efficiency and low noise.

Spiral casing - rotary.

The fans are equipped with standard 3-phase asynchronous single-speed motors. For VRAN 9 fans, made according to the 1st design scheme, it is possible to complete them with motors that allow frequency control of the rotation speed.

Motor ingress protection rating IP54.

For the R0 (L0) casing orientation (for the 1st placement category (outdoor)), ZNT-VRAN weather protection hood is provided (to be ordered separately, as an option); for the R90 (L90) casing orientation - KZR weather protection hood (to be ordered separately, as an option).

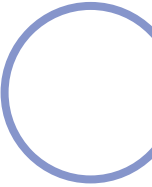
The "additional equipment" section offers additional equipment for fans.

- ▶ general purpose industrial (N);
- ▶ corrosion-resistant (CR1);
- ▶ explosion-proof (V) - only made according to 1st design scheme;
- ▶ corrosion-resistant, explosion-proof (VCRI) - only made according to 1st design scheme

**OPERATING CONDITIONS:**

- ▶ ambient temperature:
  - from -45°C to +80°C for temperate climates;
  - from -60°C to +40°C for temperate and cold climates;
  - from -10°C to +50 C for tropical climates;
- ▶ the average value of vibration velocity of external vibration sources at the fan installation locations is no more than 2 mm/s;
- ▶ conditions for the moved medium are presented in the Table "Conditions for the moved medium".

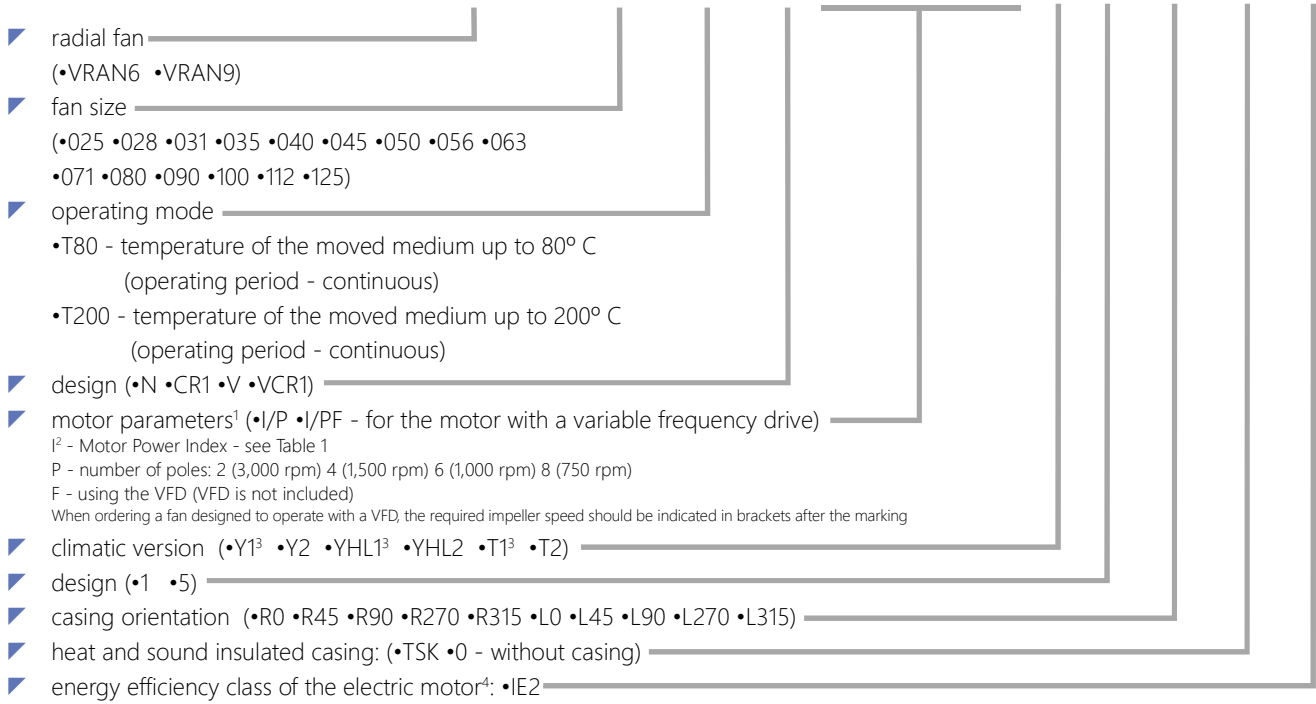
GENERAL AND SPECIAL PURPOSE FANS



**EXAMPLE:**

VRAN9 radial fan, size 063, operating mode T80, general purpose industrial design, nominal power Nnom = 5.5 kW, number of poles 4, frequency control of the rotation speed is provided, climatic version Y2, design 1, casing orientation R90, without TSK, energy efficiency class of the electric motor IE2

**VRAN9-063-T80-N-00550/4F-Y2-1-R90-0-IE2**



**NOTE :**

<sup>1</sup> By default all supplied motors are designed for 380V, 50Hz, direct start. Design types of other voltages and connection methods are available upon special agreement. Starting of motors over 15 kW must be done using a soft starter.

<sup>2</sup> The Motor Power Index is shown in the Table

<sup>3</sup> For Y1, YHL1 and T1 climatic versions additional motor protection is provided.

<sup>4</sup> Specified if different from standard. Special requirements for the fan are specified additionally and agreed upon with the manufacturer.

GENERAL AND SPECIAL PURPOSE FANS

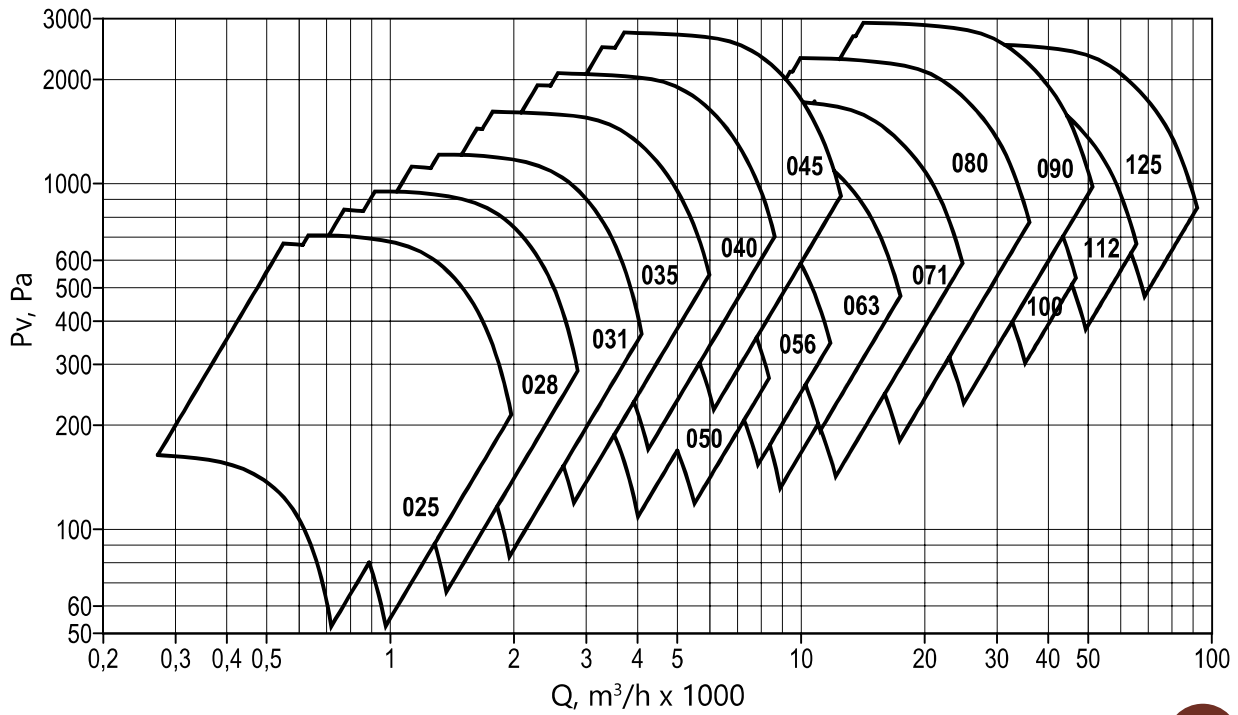
**VRAN MOTOR POWER INDEX**

Nominal power (Nnom), kW	0,25...0,75	1,1...7,5	11...90
Motor Power Index (I)	00025...00075	00110...00750	01100...09000

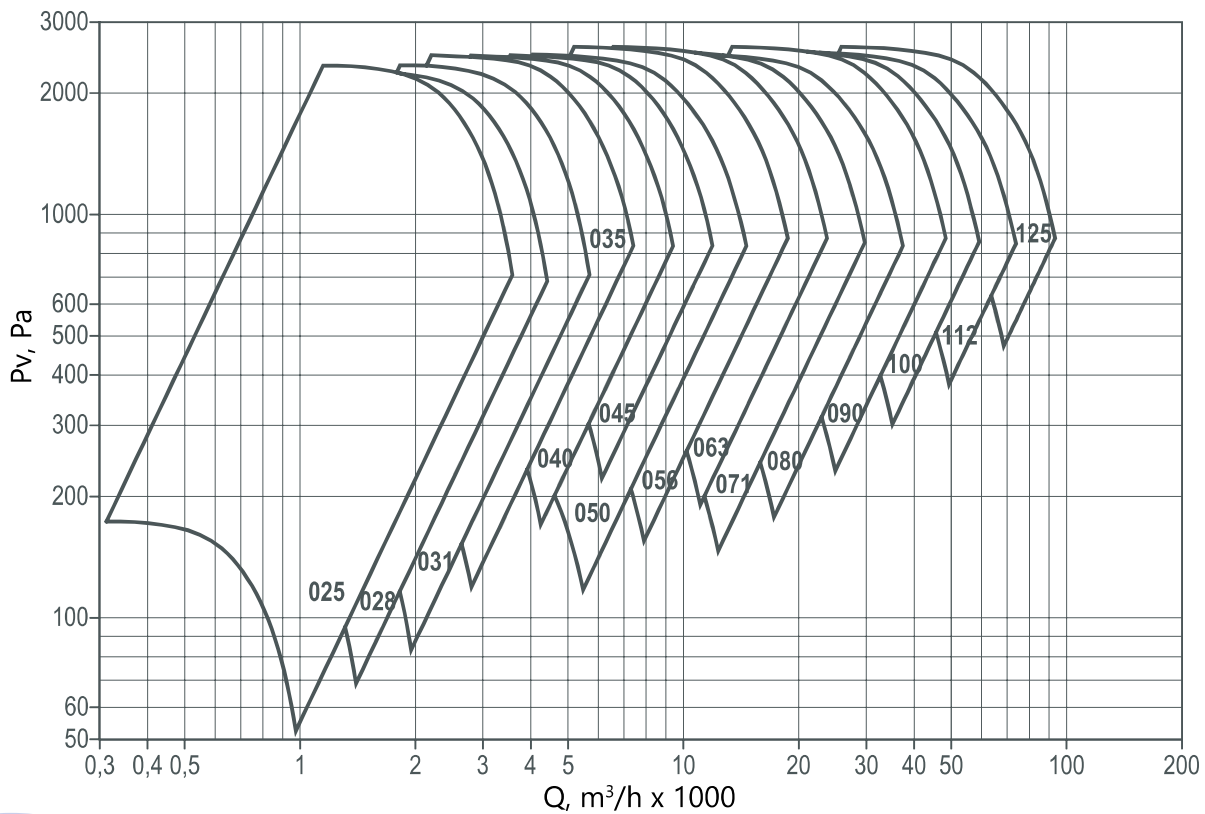


## AREAS OF AERODYNAMIC PARAMETERS

VRAN6, VRAN9, DESIGN 1

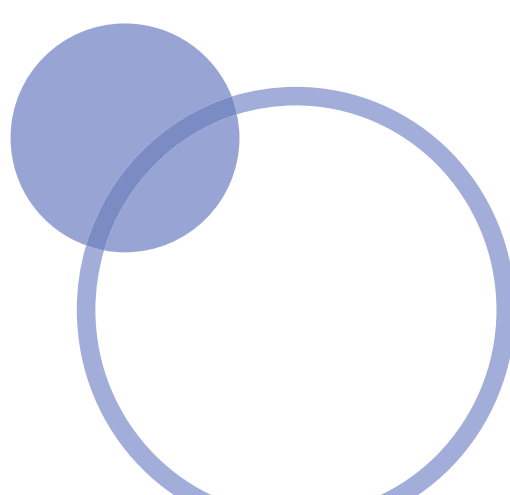
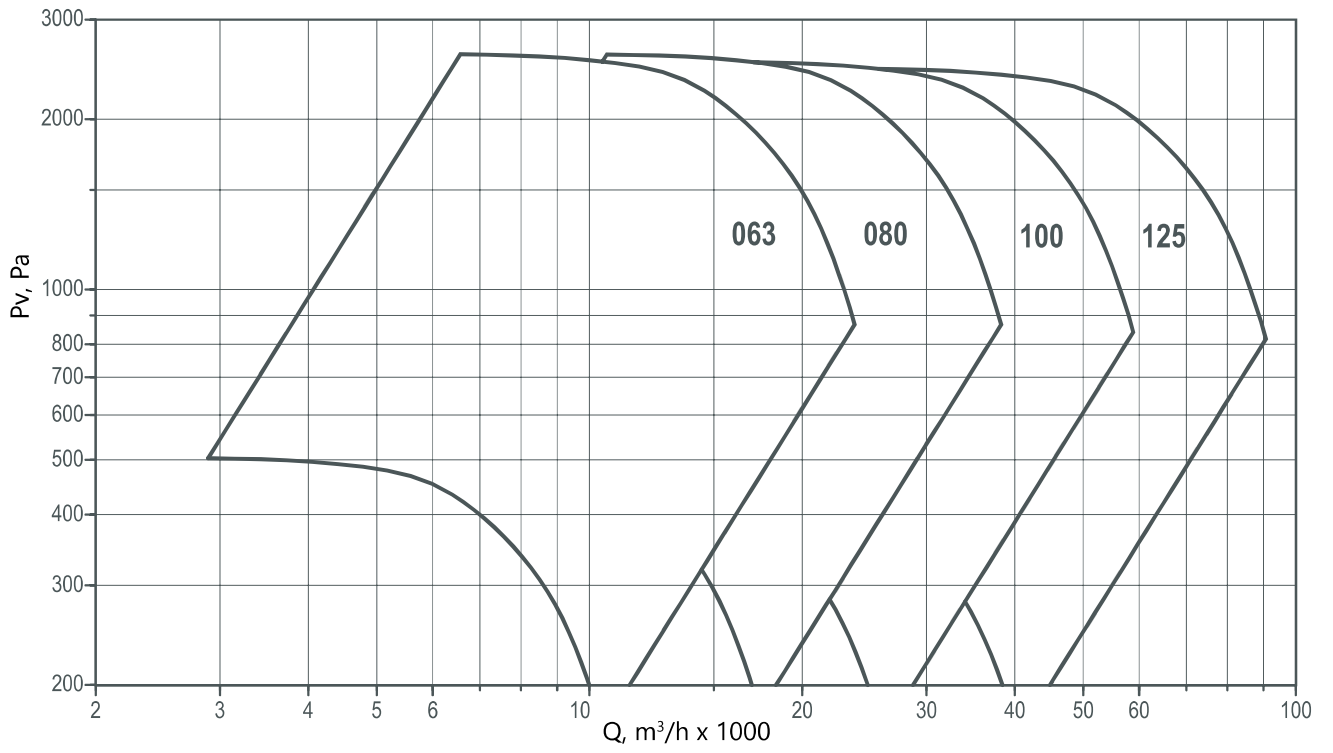


VRAN9, DESIGN 1, WITH VFD





### VRAN9, DESIGN 5

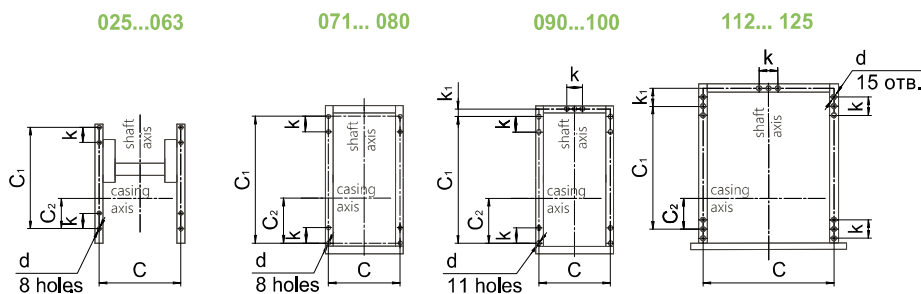




# OVERALL AND CONNECTION DIMENSIONS

## DESIGN 1

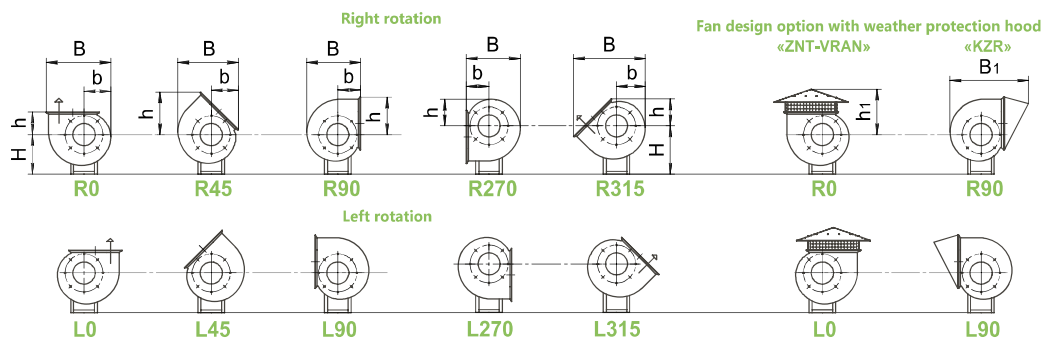
### LOCATION OF FAN MOUNTING HOLES



Fan standard size	Installation dimensions, mm							
	C	C1	C2	C3	C4	d	k	k1
025	295	330	71	—	—	10×20	70	—
028	295	365	80	—	—	10×20	70	—
031	420	470	70	—	—	10×20	70	—
035	460	530	104	—	—	10×20	70	—
040	520	610	127	—	—	11×25	80	—
045	525	660	140	—	—	12×20	100	—
050	525	695	160	—	—	12×20	100	—
056	550	740	183	—	—	14×25	100	—
063	550	830	200	—	—	14×25	100	—
071	710	750	200	—	—	14×34	120	—
080	655	845	222	—	—	14×34	120	—
090	870	950	258	—	—	14×34	130	100
100	958	960	218	—	—	15×60	130	75 245*
112	1048	920	245	—	—	15×60	180	184 354*
125	1230	1030	235	—	—	15×60	180	279

\* for motor size 180...225

## CASING ORIENTATION

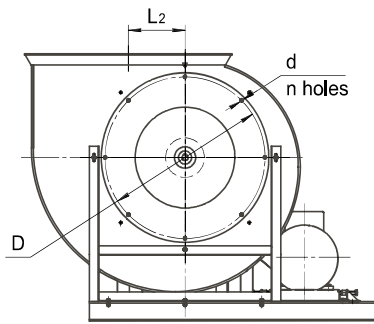


Fan standard size	Dimensions, mm																					
	•R0 •L0					•R45 •L45				•R90 •L90					•R270 •L270				•R315 •L315			
	B	b	H	h	h1	B	b	H	h	B	B1	b	H	h	B	b	H	h	B	b	H	h
025	456	186	240	173	398	423	190	240	312	390	675	173	240	270	390	173	340	186	515	202	340	190
028	515	213	310	193	390	471	206	310	349	441	755	193	310	302	441	193	350	213	579	230	350	206
031	572	237	310	215	415	521	225	310	388	491	835	215	310	335	491	215	410	237	644	257	410	225
035	644	268	350	245	482	590	256	350	438	557	950	245	350	376	557	245	450	268	728	290	450	256
040	738	301	390	290	593	686	310	390	514	642	1095	290	390	437	642	290	470	301	840	326	470	310
045	821	338	435	325	715	761	339	435	570	719	1219	325	435	483	719	325	535	338	936	366	535	339
050	913	375	510	338	699	832	363	510	619	777	1322	338	510	538	777	338	580	375	1026	406	580	363
056	1020	420	570	375	705	924	399	570	688	865	1473	375	570	600	865	375	665	420	1143	455	665	399
063	1140	474	625	420	758	1034	442	625	768	973	1647	420	625	666	973	420	746	474	1282	513	746	442
071	1280	532	725	480	933	1167	499	725	869	1103	1855	480	725	748	1103	480	845	532	1447	578	845	500
080	1440	602	795	536	1044	1304	553	795	972	1238	2041	536	795	838	1238	536	895	602	1623	651	895	553
090	1615	675	890	590	1100	1467	621	890	1078	1378	2316	590	890	940	1378	590	1010	675	1811	733	1010	621
100	1797	751	970	656	1156	1625	686	970	1204	1533	2590	656	970	1046	1533	656	1100	751	2017	814	1100	689
112	2004	841	1070	735	1396	1822	764	1070	1342	1716	2888	735	1070	1163	1716	735	1220	841	2254	911	1220	764
125	2240	946	1230	813	1525	2035	860	1230	1492	1906	3173	813	1230	1294	1906	813	1430	946	2510	1017	1430	864

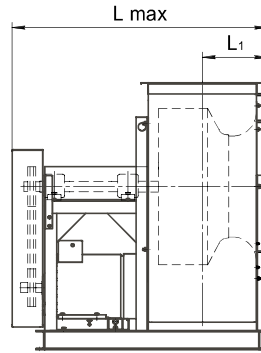
GENERAL AND SPECIAL PURPOSE FANS



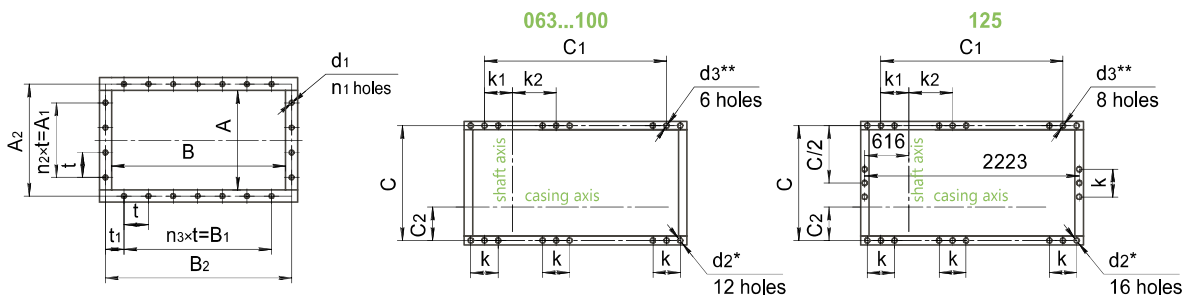
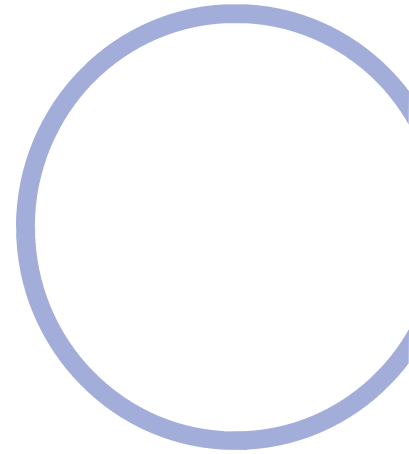
### DESIGN 5



Output flange



Location of fan mounting holes

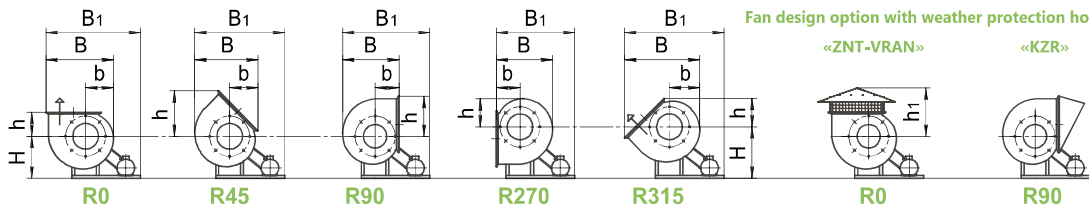


\* size for vibration isolator  
\*\* size for foundation bolt

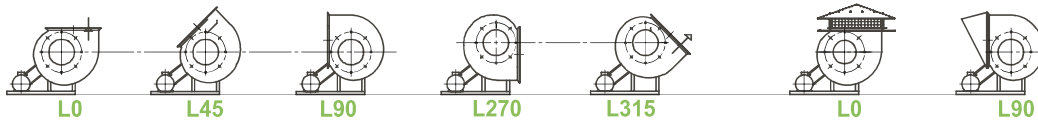
Fan standard size	Installation dimensions, mm										
	Lmax	L1	L2	C	C1	C2	d2	d3	k	k1	k2
063	1160	290	231	980	1110	245	12x30	18	120	140	320
080	1326	332	297	1156	1190	310	12	18	130	301	294
100	1640	416	366	1455	1900	446	12	18	150	381	904
125	1860	503	455	1645	2025	548	15	24	180	525	875

Fan standard size	Connection dimensions, mm															
	A	A1	A2	B	B1	B2	D	d	d1	t	t1	n	n1	n2	n3	
063	444	400	470	802	700	830	660	M8	9	100	35	8	26	4	7	
080	566	300	600	1010	750	1047	835	M8	9	150	150	8	18	2	5	
100	706	450	750	1270	1050	1317	1050	M8	12	150	150	16	24	3	7	
125	880	750	925	1594	1500	1638	1285	M10	12	150	87,5	16	34	5	10	

Right rotation



Left rotation



Fan standard size	Dimensions, mm																													
	•R0 •L0						•R45 •L45						•R90 •L90						•R270 •L270						•R315 •L315					
	B	B1	b	H	h	h1	B	B1	b	H	h	B	B1	b	H	h	B	B1	b	H	h	B	B1	b	H	h				
063	1140	1736	474	671	420	758	1034	1662	442	671	768	973	1623	420	671	666	973	1490	420	751	474	1282	1839	513	751	442				
080	1440	1833	602	843	536	1044	1304	1746	553	843	972	1238	1697	536	843	838	1238	1531	536	933	602	1623	1967	651	933	553				
100	1797	2673	751	1050	656	1156	1625	2568	686	1050	1204	1533	2511	656	1050	1046	1533	2290	656	1150	751	2017	2833	814	1150	689				
125	2240	2926	946	1230	813	1525	2035	2811	860	1230	1492	1906	2725	813	1230	1294	1906	2437	813	1430	946	2510	3117	1017	1430	864				

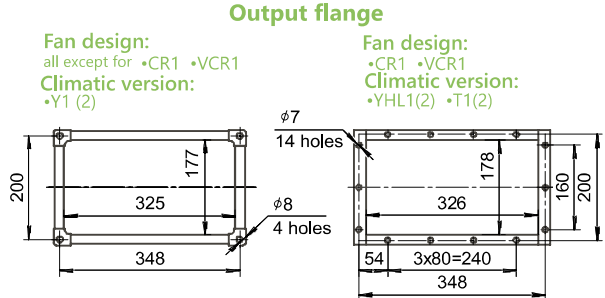
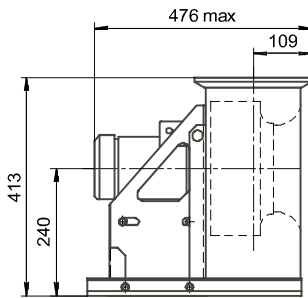
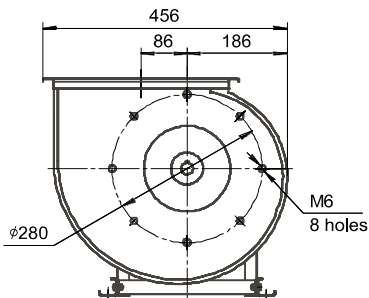
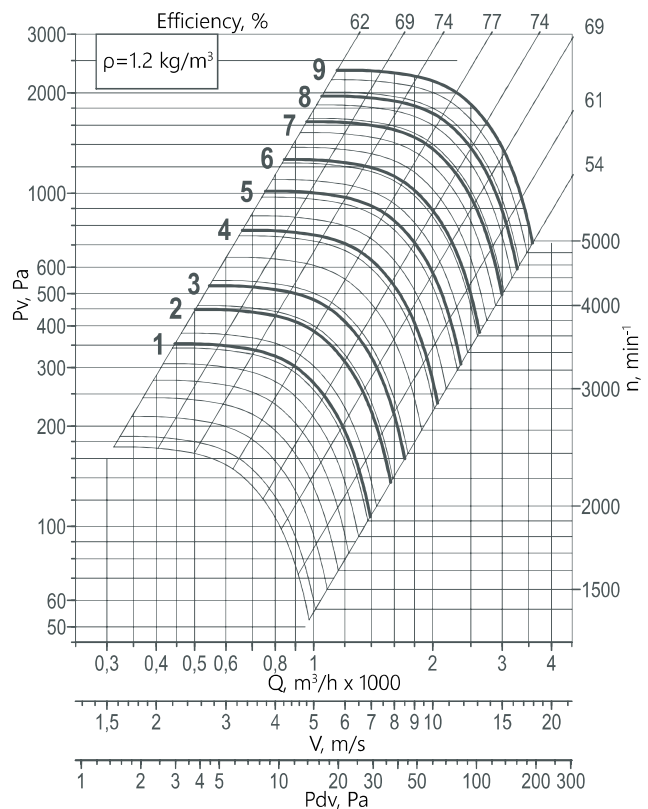
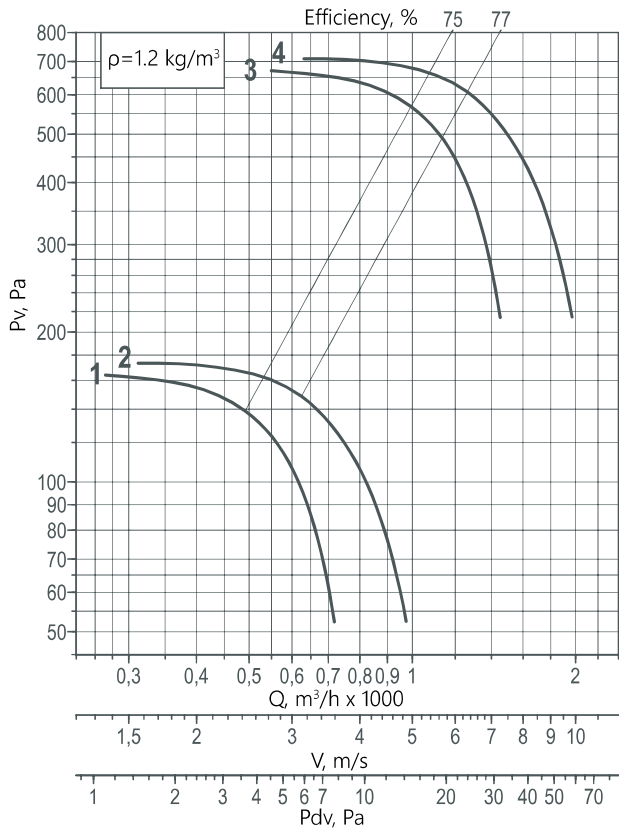




# 025 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	VRAN6	4	0,12**	0,54	22,0
2	VRAN9				22,3
3	VRAN6	2	0,25**	0,72	22,1
4	VRAN9				23,9

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>				
1	VRAN9-F	4	0,12**	22,3
2			0,18**	22,9
3			0,25	23,8
4			0,37	23,9
5		2	0,55	24,8
6			0,75	27,4
7			1,1	29,2
8			1,5	31,7
9			2,2	33,7



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.  
 \*\* the motor is not available in explosion-proof design.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	

GENERAL AND SPECIAL PURPOSE FANS

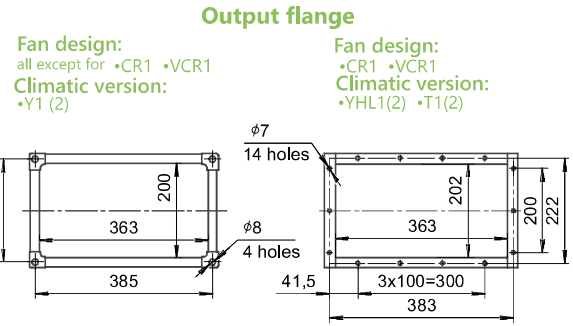
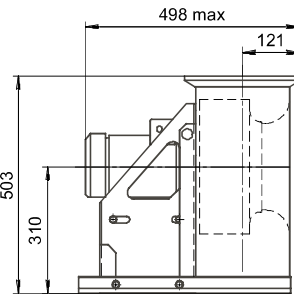
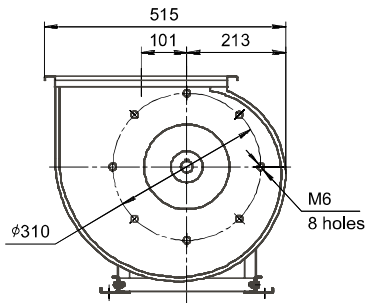
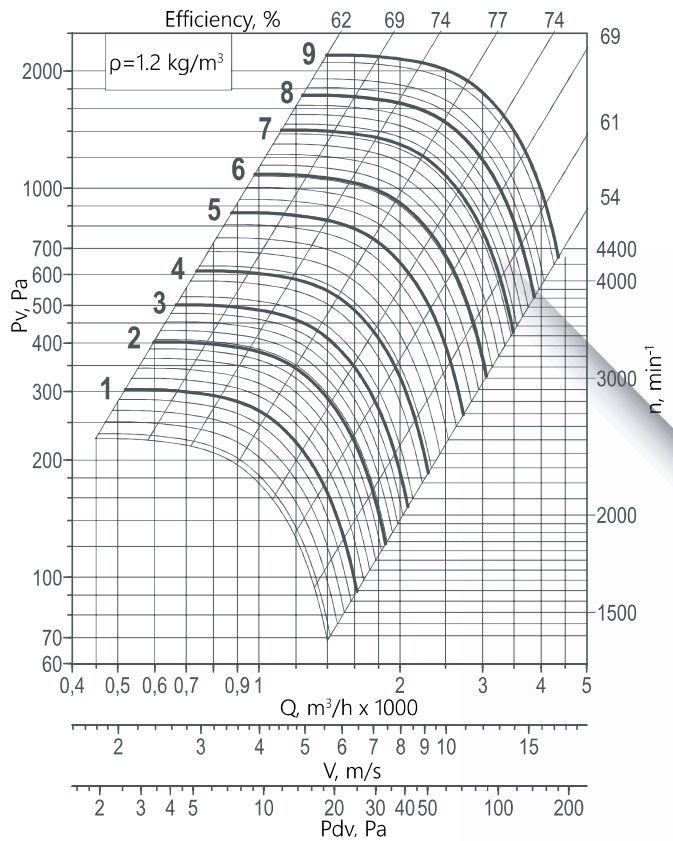
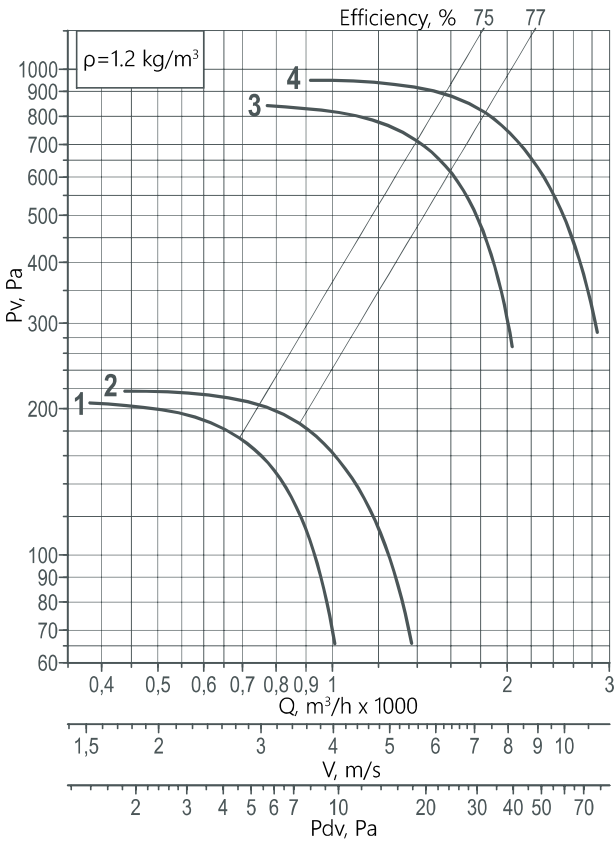




# 028 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	VRAN6	4	0,12**	0,54	26,4
2	VRAN9				
3	VRAN6	2	0,55	1,4	28,9
4	VRAN9				

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>				
1	VRAN9-F	4	0,12**	26,8
2			0,18**	27,4
3			0,25	29,3
4			0,37	29,2
5		2	0,55	29,3
6			0,75	31,9
7			1,1	33,7
8			1,5	36,2
9			2,2	38,2



18 GENERAL AND SPECIAL PURPOSE FANS

**NOTE**  
 \* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.  
 \*\* the motor is not available in explosion-proof design.

ADDITIONAL EQUIPMENT				
heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	

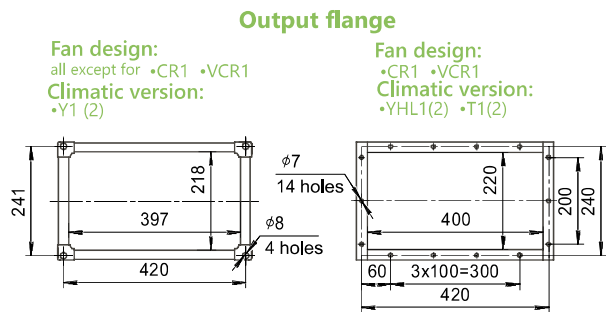
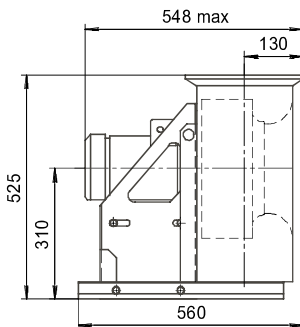
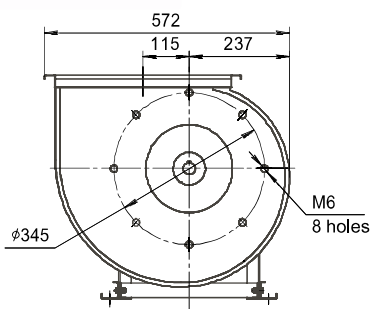
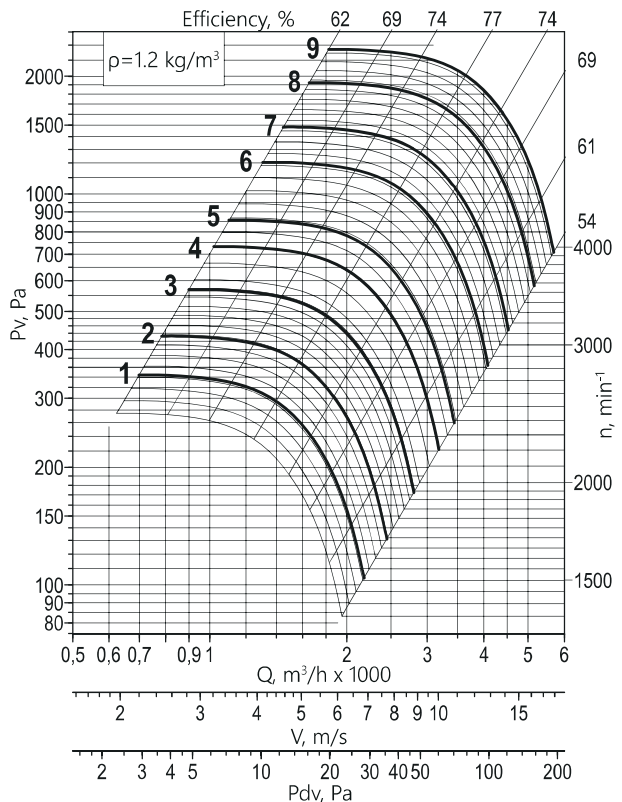
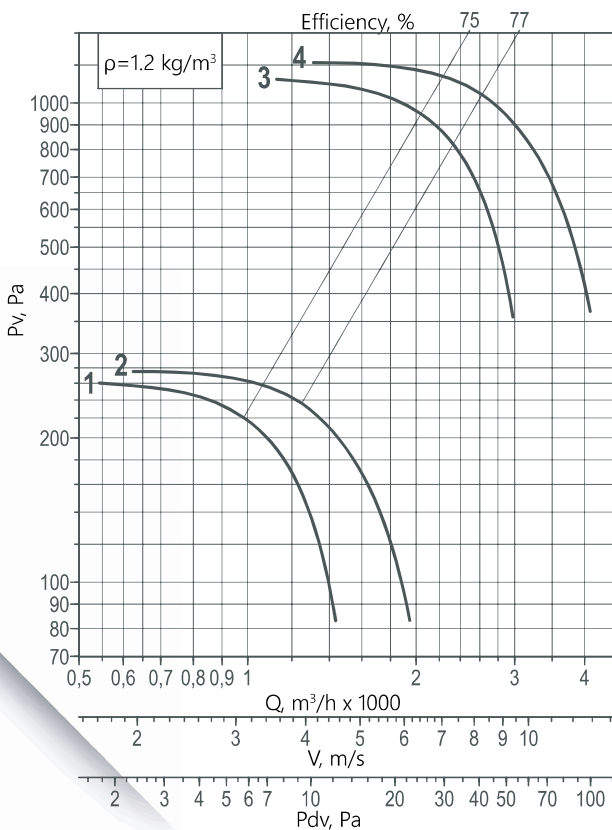




# 031 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	VRAN6	4	0,12**	0,54	33,2
2	VRAN9		0,18**	0,73	33,8
3	VRAN6	2	1,1	2,4	38,4
4	VRAN9				38,8

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>				
1	VRAN9-F	4	0,18**	33,8
2			0,25	35,2
3			0,37	36,1
4			0,55	38,5
5		2	0,75	40,1
6			1,1	38,8
7			1,5	43,1
8			2,2	45,1
9			3	47,1



**Fan design:**  
all except for •CR1 •VCR1  
**Climatic version:**  
•Y1 (2)

**Fan design:**  
•CR1 •VCR1  
**Climatic version:**  
•YHL1(2) •T1(2)

**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.  
\*\* the motor is not available in explosion-proof design.

ADDITIONAL EQUIPMENT				
heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	



# 035 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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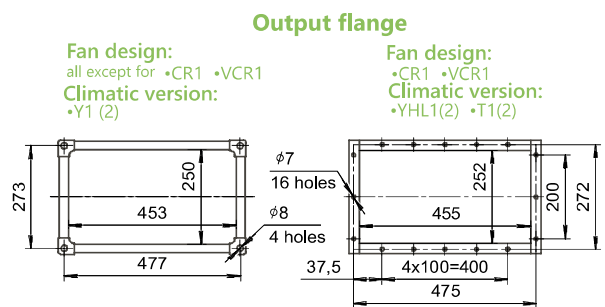
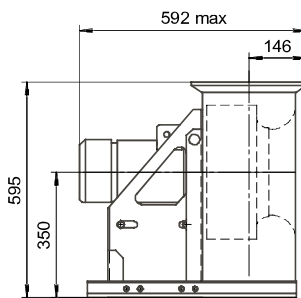
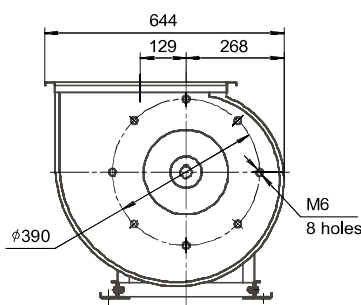
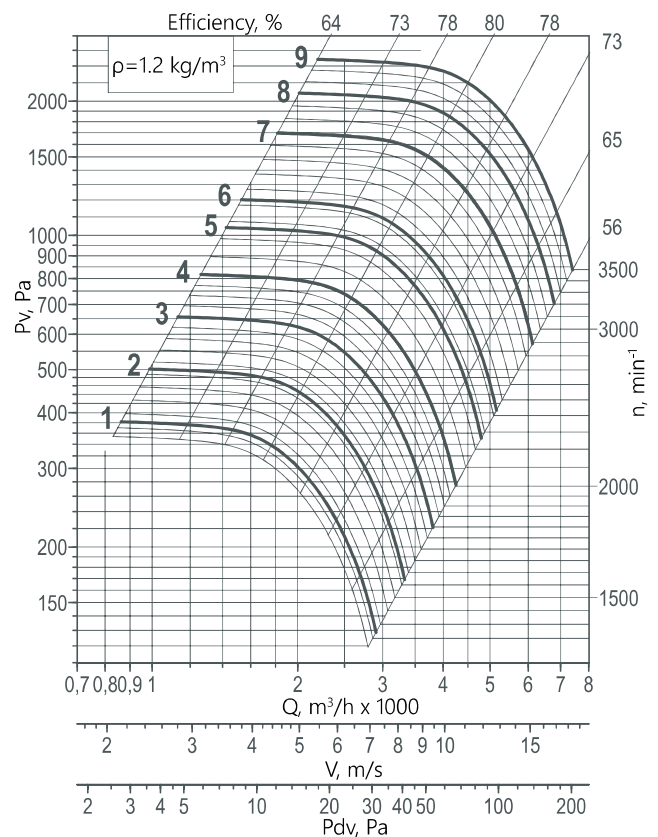
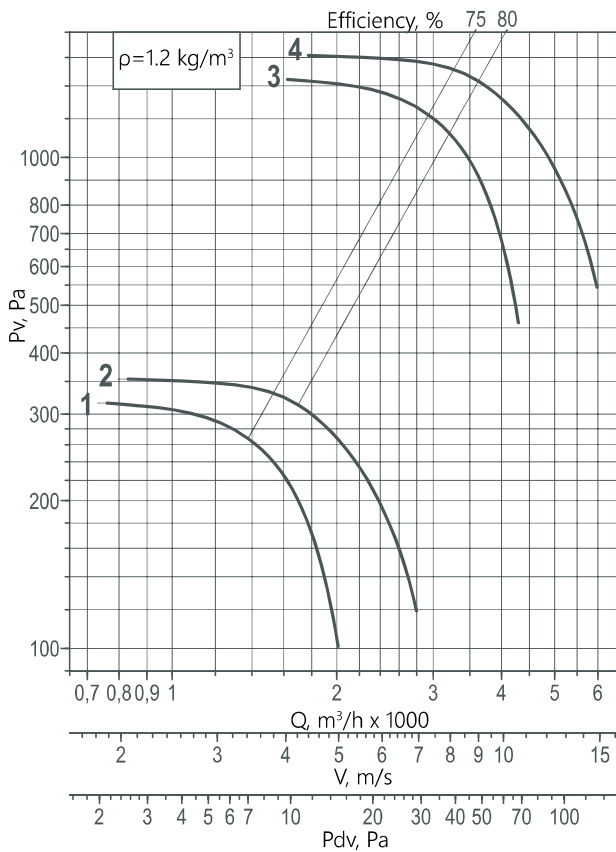
**ALL MODES**

1	VRAN6	4	0,18**	0,73	40,5
2	VRAN9		0,25	0,83	42,5
3	VRAN6	2	2,2	4,6	51,5
4	VRAN9				52,5

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	VRAN9-F	4	0,25	42,5
2			0,37	43,5
3			0,55	45,5
4			0,75	47,5
5		2	1,1	51,5
6			1,5	53,5
7			2,2	52,5
8			3	54,5
9			4	58



20 GENERAL AND SPECIAL PURPOSE FANS

**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

\*\* the motor is not available in explosion-proof design.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	



# 040 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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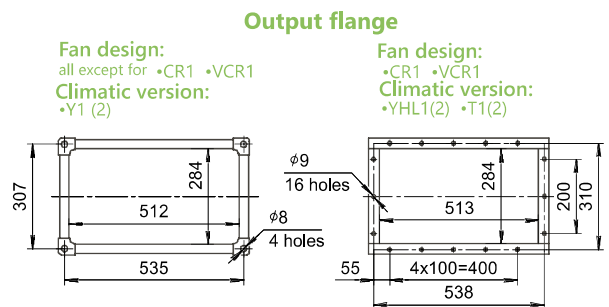
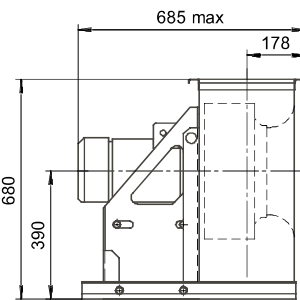
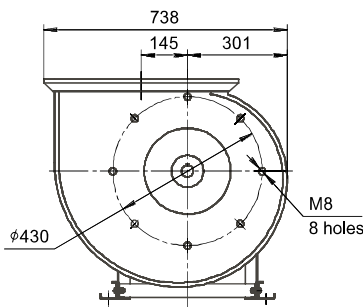
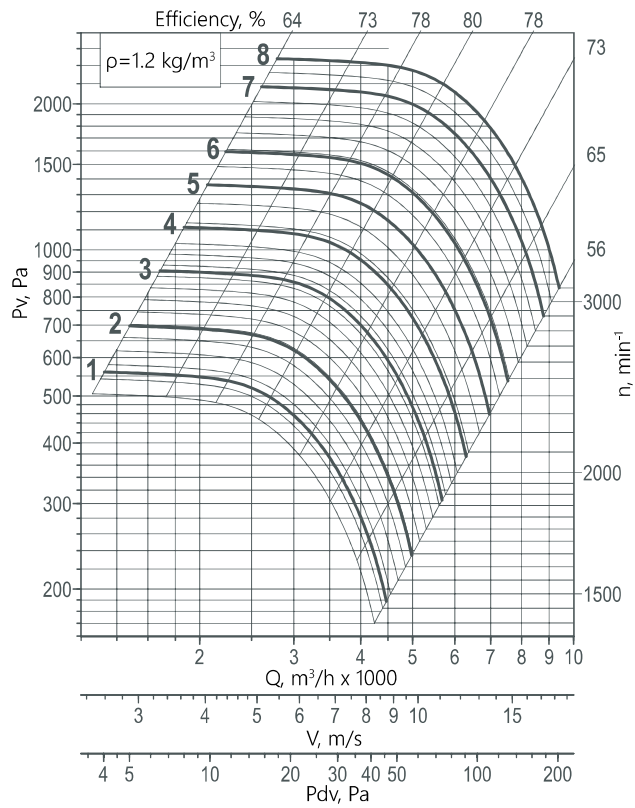
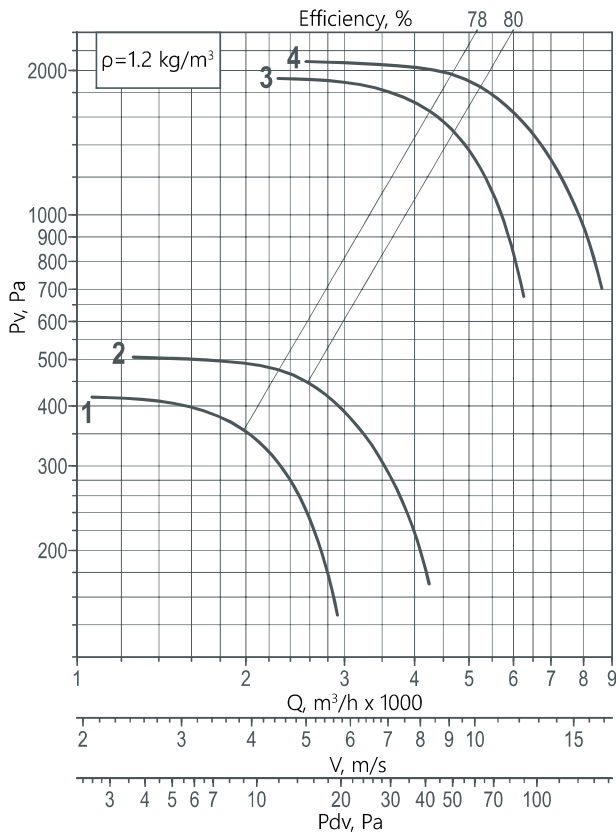
**ALL MODES**

1	VRAN6	4	0,37**	1,18	51
2	VRAN9		0,55	1,67	53,8
3	VRAN6	2	3	6,5	62
4	VRAN9		4	8,8	66

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	VRAN9-F	4	0,55	53,8
2			0,75	55,5
3			1,1	59,5
4			1,5	61,5
5		2,2	62,5	
6		3	66,5	
7		4	66	
8		2	5,5	73,5



**Output flange**

**Fan design:**  
all except for -CR1 -VCR1  
**Climatic version:**  
-Y1 (2)

**Fan design:**  
-CR1 -VCR1  
**Climatic version:**  
-YHL1(2) -T1(2)

**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.  
\*\* the motor is not available in explosion-proof design.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	



# 045 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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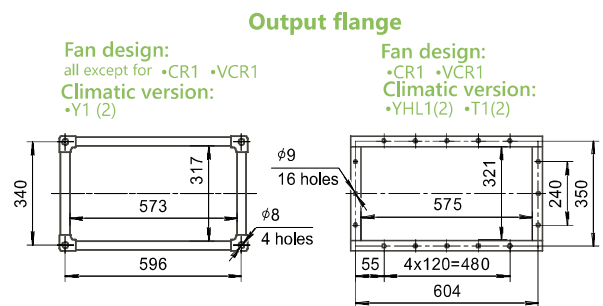
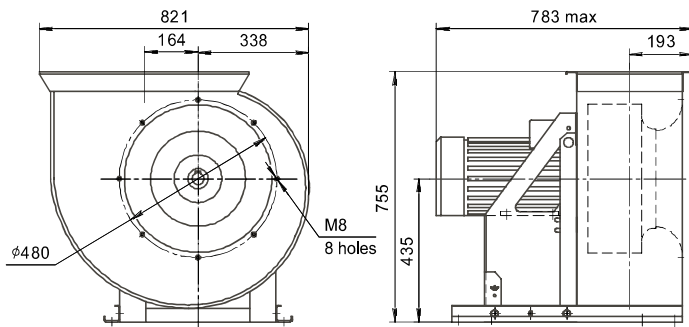
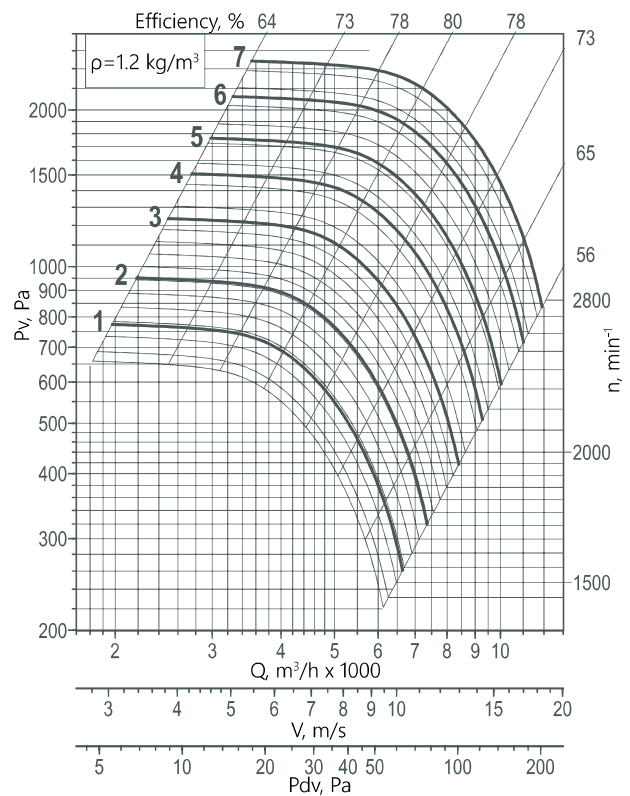
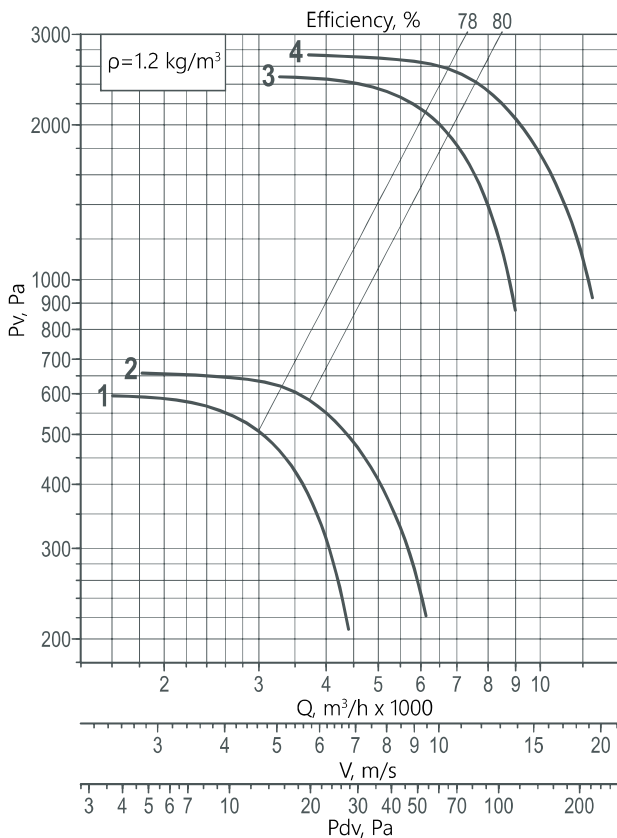
**ALL MODES**

1	VRAN6	4	0,75	2,2	64
2	VRAN9		1,1	2,7	68,5
3	VRAN6	2	5,5	11	83
4	VRAN9		7,5	14,7	105

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	VRAN9-F	4	1,1	68,5
2			1,5	70,5
3			2,2	71,5
4			3	76
5		4	92	
6		2	5,5	83
7			7,5	104



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	

GENERAL AND SPECIAL PURPOSE FANS

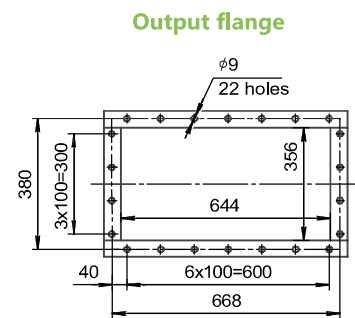
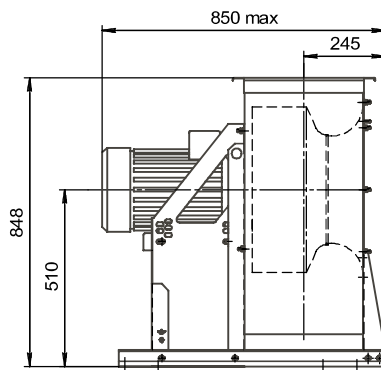
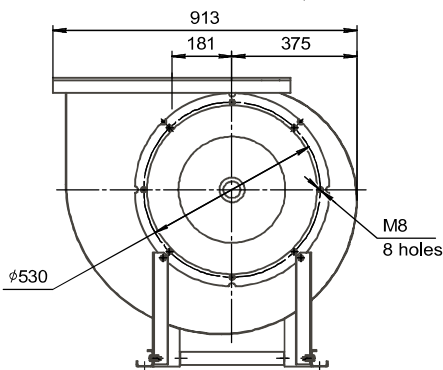
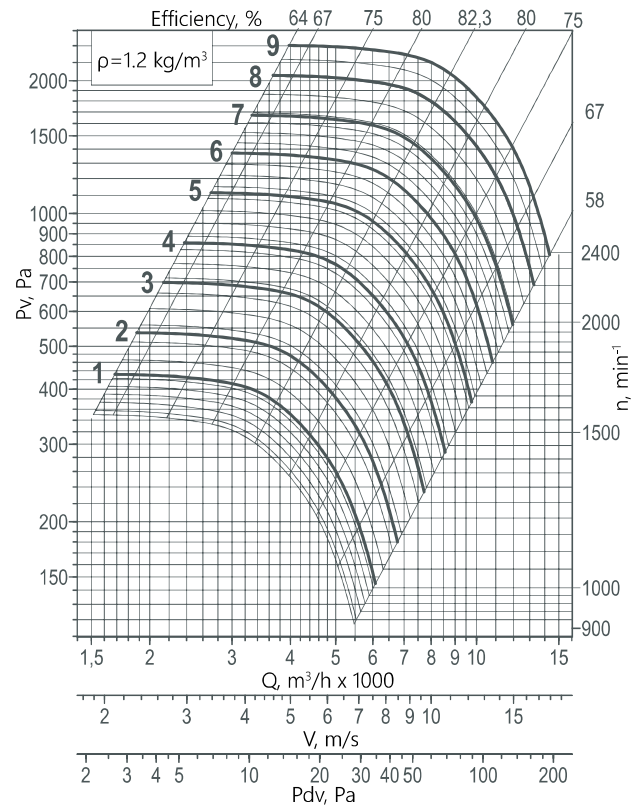
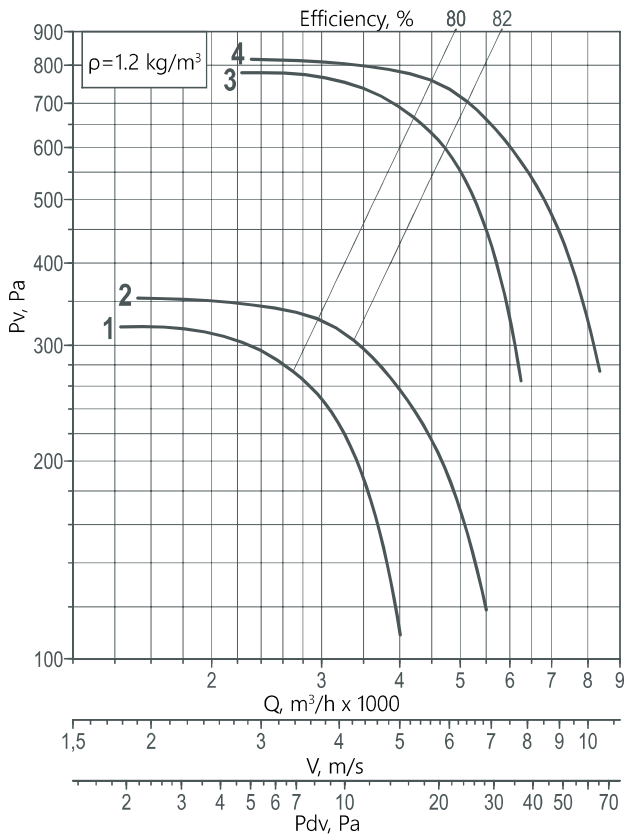
22



# 050 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	VRAN6	6	0,37	1,04	75,2
2	VRAN9				
3	VRAN6	4	1,5	3,6	82,8
4	VRAN9				

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>				
1	VRAN9-F	6	0,55	78,4
2			0,75	82,5
3			1,1	84,5
4		4	1,5	84,5
5			2,2	85,5
6			3	89,7
7			4	106
8			5,5	114
9			7,5	121



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

ADDITIONAL EQUIPMENT				
heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	



# 056 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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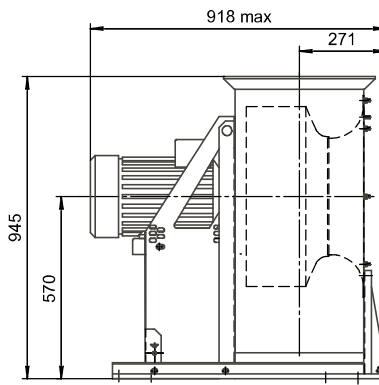
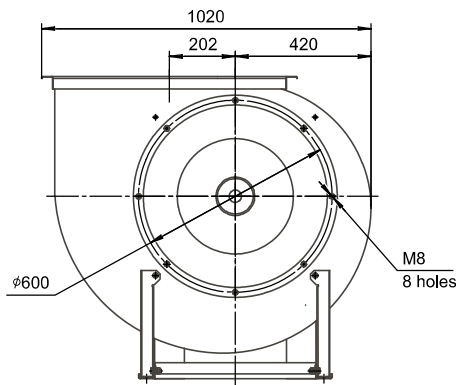
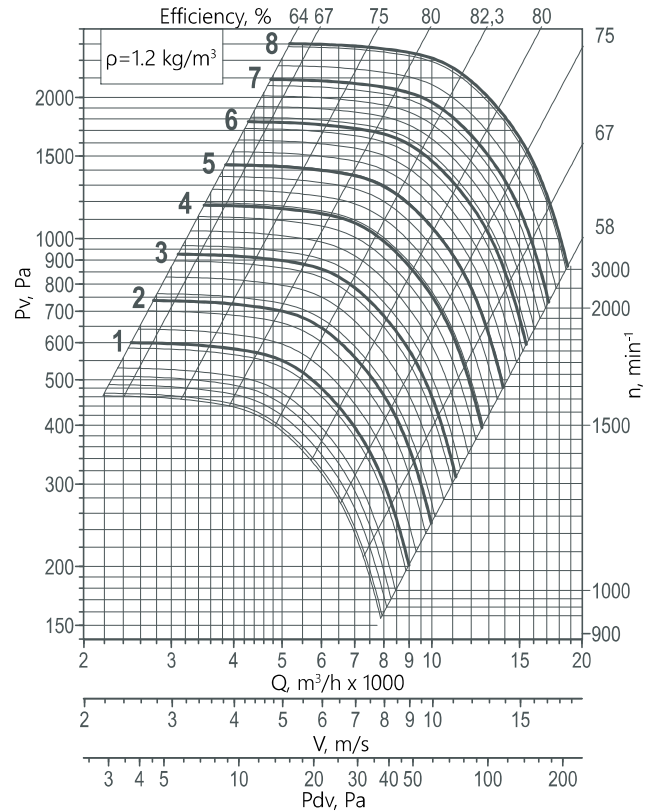
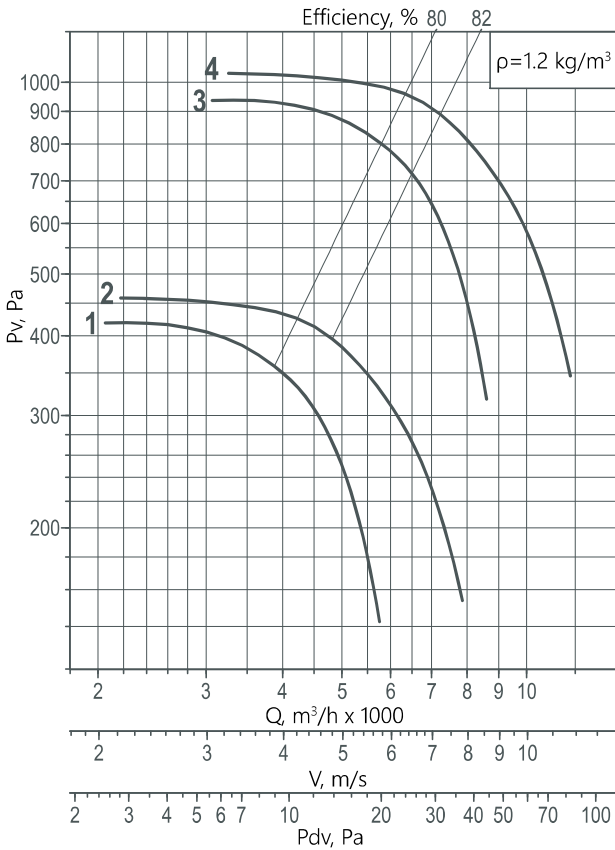
**ALL MODES**

1	VRAN6	6	0,55	1,74	76
2	VRAN9		0,75	2,3	80
3	VRAN6	4	2,2	5,2	83
4	VRAN9		3	7,3	87,1

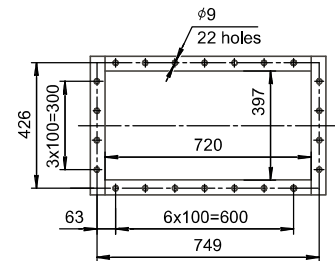
Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	VRAN9-F	6	1,1	82
2			1,5	84
3			2,2	99,6
4			3	87,1
5		4	4	103
6			5,5	111
7			7,5	119
8			11	127



**Output flange**



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





# 063 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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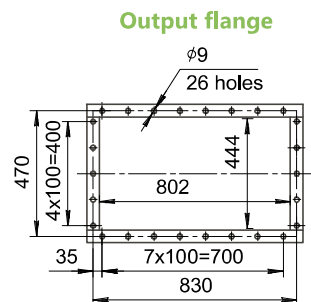
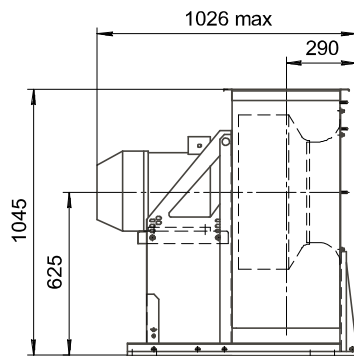
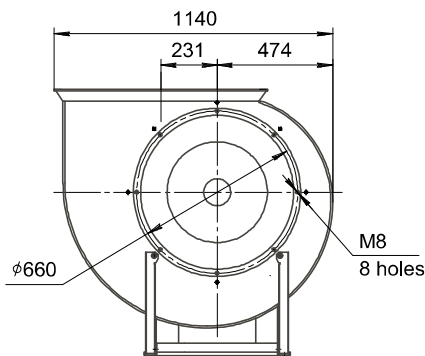
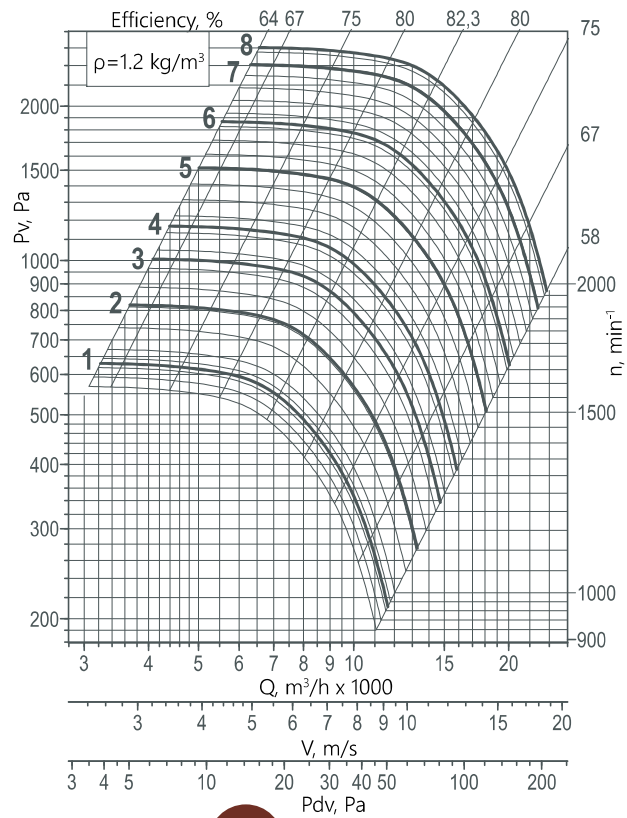
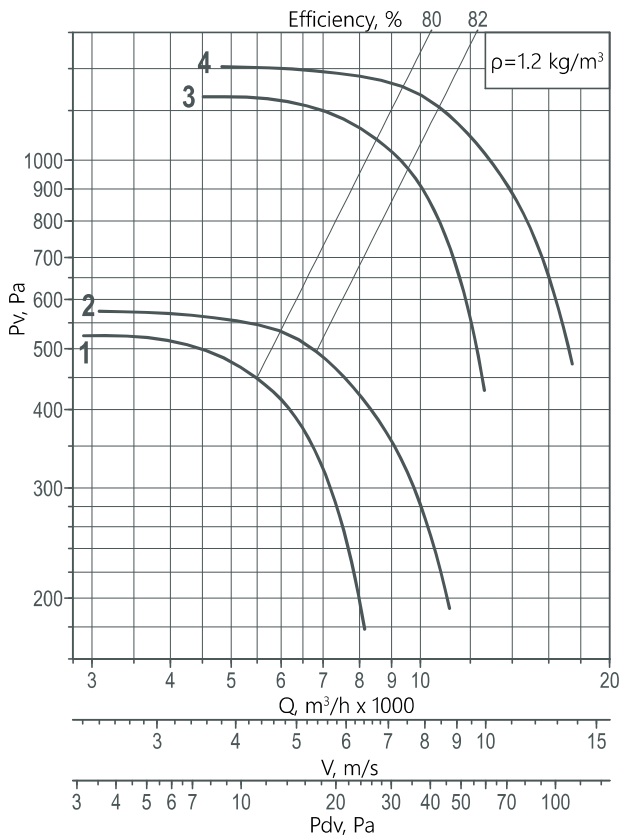
ALL MODES

1	VRAN6	6	1,1	3,2	109
2	VRAN9		1,5	4	113
3	VRAN6	4	4	8,8	130
4	VRAN9		5,5	11,7	140

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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WITH FREQUENCY CONVERTER

1	VRAN9-F	6	1,5	113
2			2,2	129
3			3	136
4			4	145
5		4	5,5	142
6			7,5	149
7			11	157
8			15	222



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

ADDITIONAL EQUIPMENT

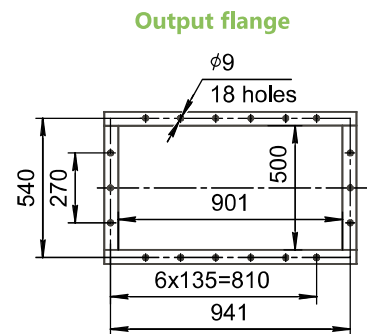
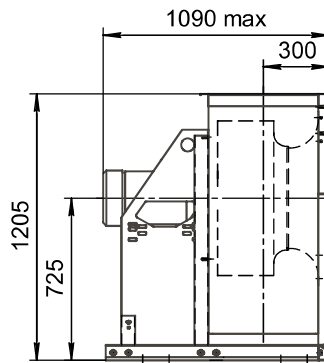
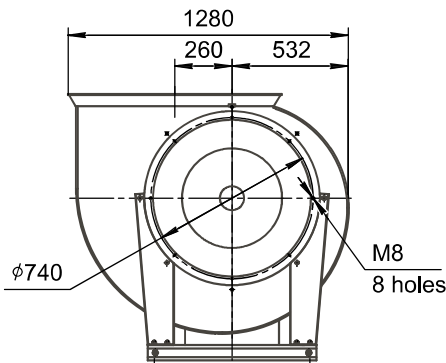
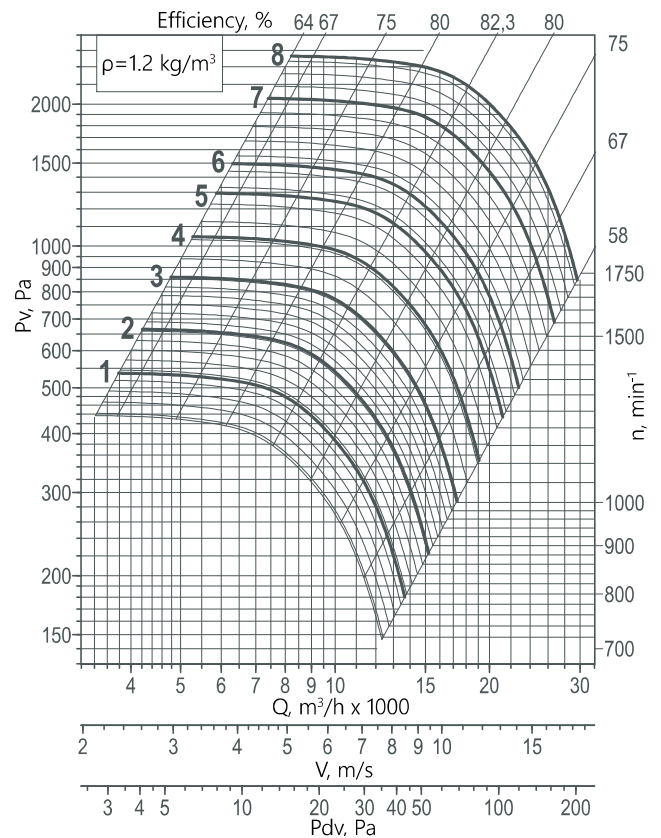
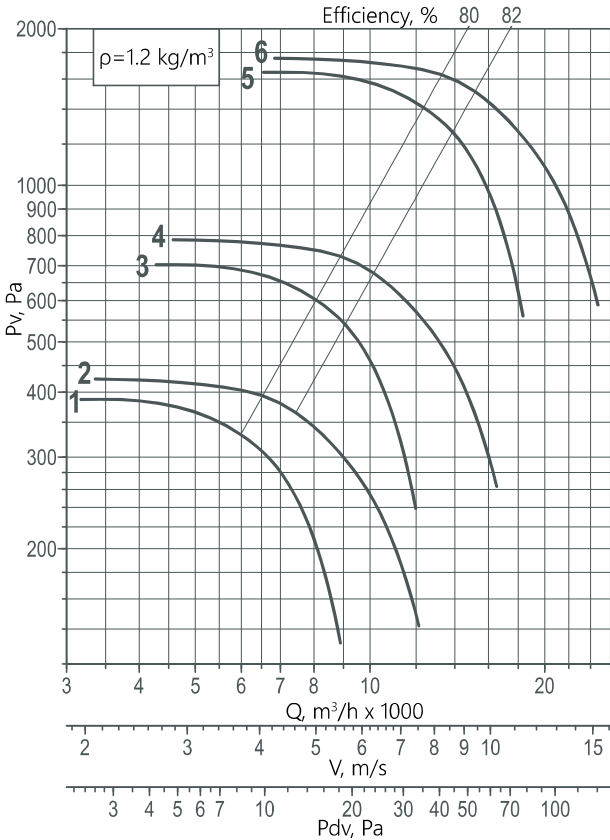
heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	



# 071 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	VRAN6	8	1,1	3	167
2	VRAN9				
3	VRAN6				
4	VRAN9	6	2,2	5,8	172
5	VRAN6				
6	VRAN9	4	7,5	15,6	194
6	VRAN9				

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>				
1	VRAN9-F	8	1,5	176
2			2,2	189
3			3	184
4		6	4	193
5			5,5	199
6			7,5	207
7		4	11	206
8			15	271



**NOTE**  
\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

ADDITIONAL EQUIPMENT				
heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	



# 080 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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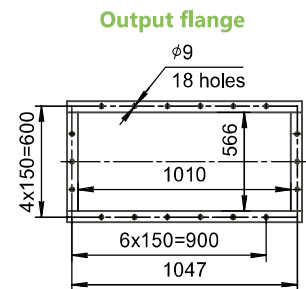
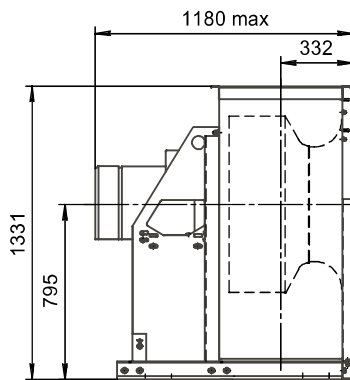
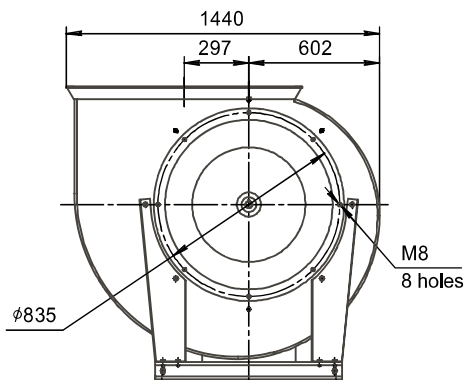
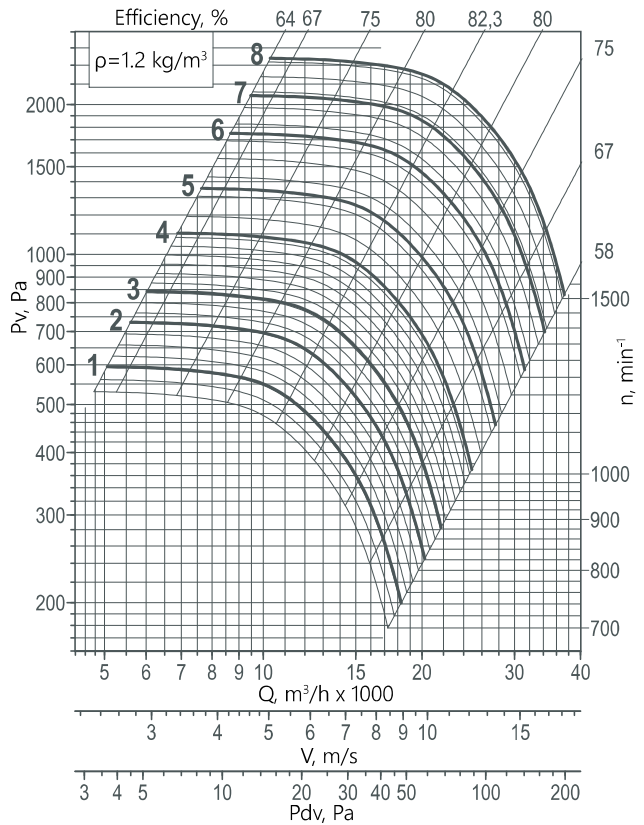
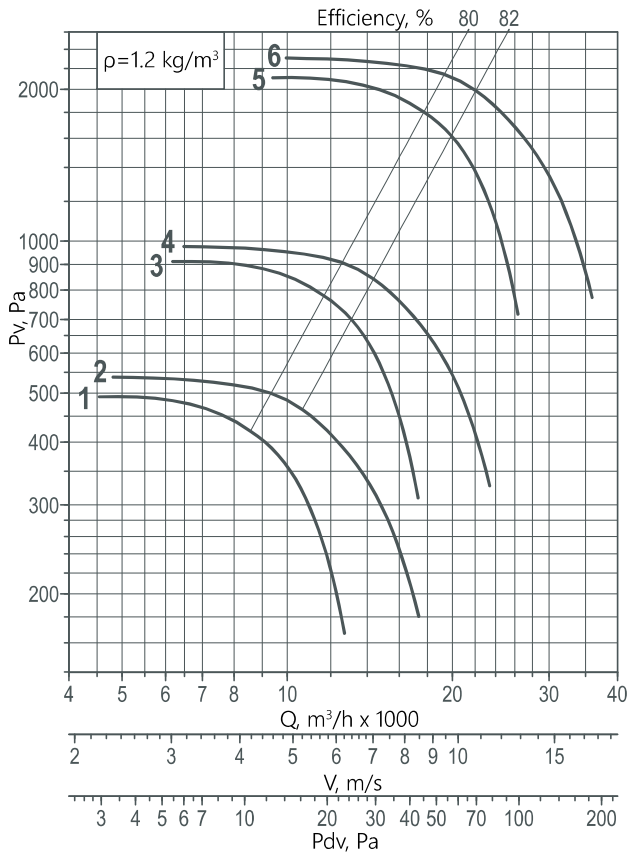
**ALL MODES**

1	VRAN6	8	1,5	4,6	207
2	VRAN9		2,2	6,3	223
3	VRAN6		4	9	223
4	VRAN9	6	5,5	12	233
5	VRAN6		15	29	302
6	VRAN9	4	18,5	35	308

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	VRAN9-F	8	2,2	223
2			3	229
3			4	247
4		6	5,5	233
5			7,5	238
6			11	301
7		4	15	338
8			18,5	325



**NOTE**  
\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

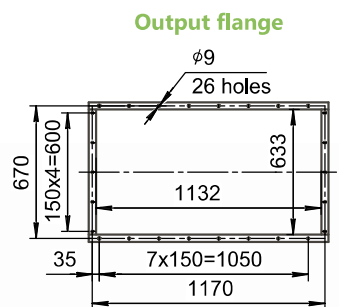
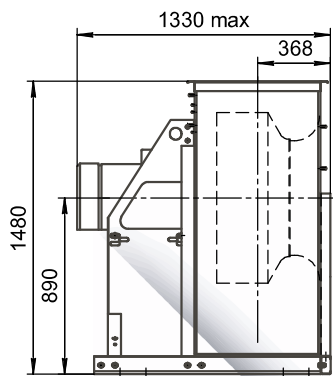
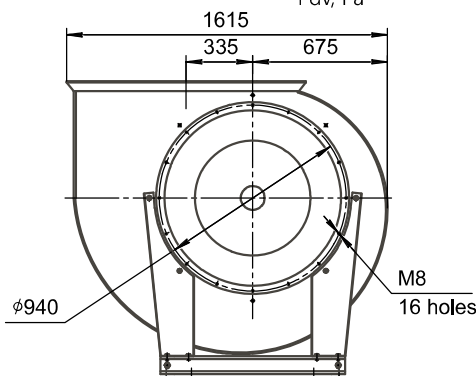
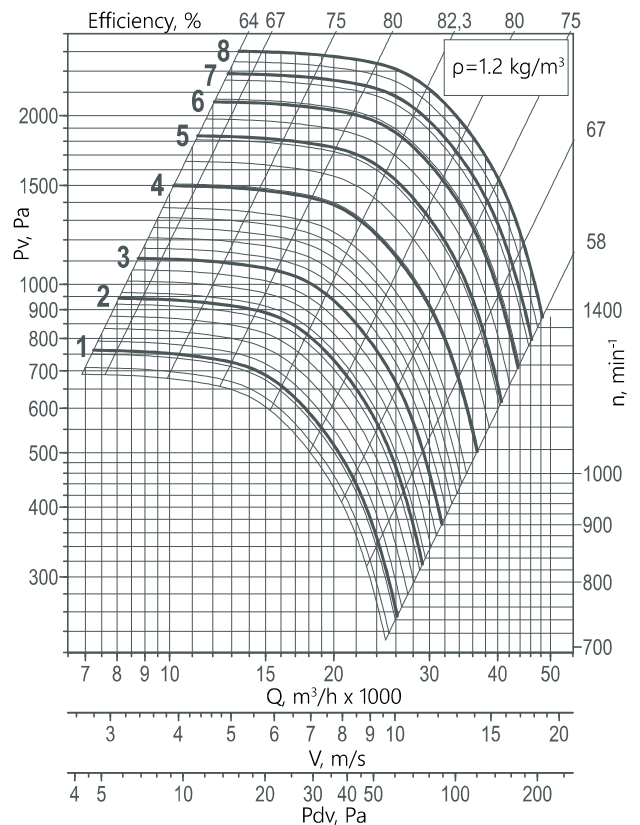
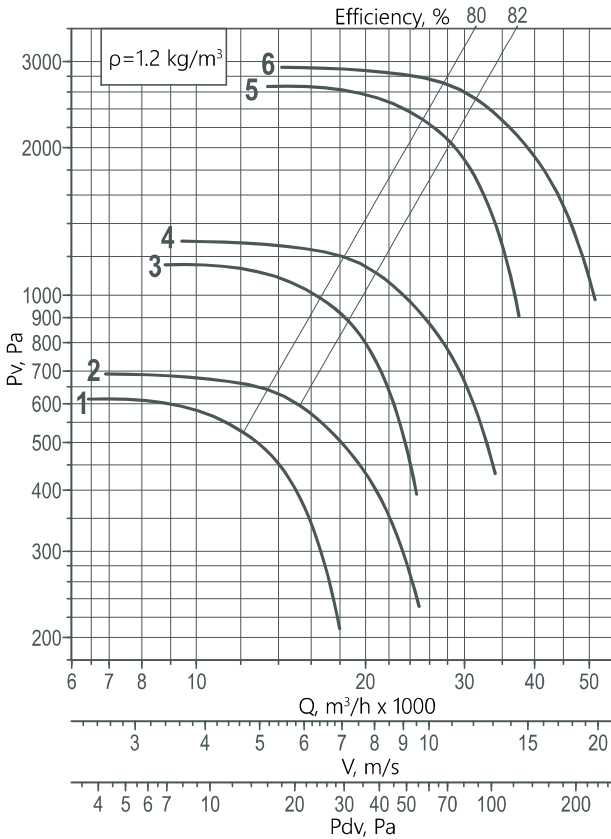
**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	



# 090 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg	Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
<b>ALL MODES</b>						<b>WITH FREQUENCY CONVERTER</b>				
1	VRAN6	8	3	8	302	1	VRAN9-F	8	4	326
2	VRAN9		4	10,5	326	2			5,5	342
3	VRAN6		7,5	18	308	3			7,5	381
4	VRAN9	6	11	23	381	4		11	381	
5	VRAN6		22	56	407	5		15	411	
6	VRAN9	4	30	56	446	6		18,5	416	
			22	451	7	22		451		
			30	446	8	30		446		



**NOTE**

\*When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	



# 100 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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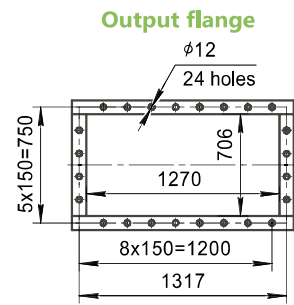
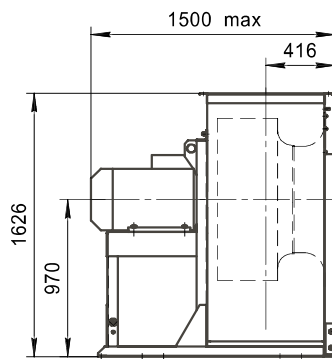
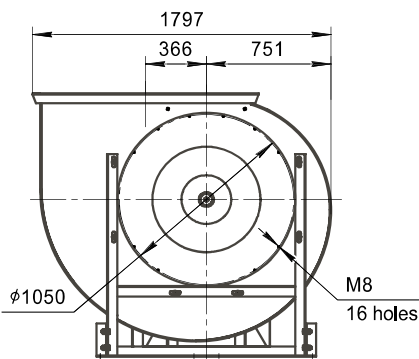
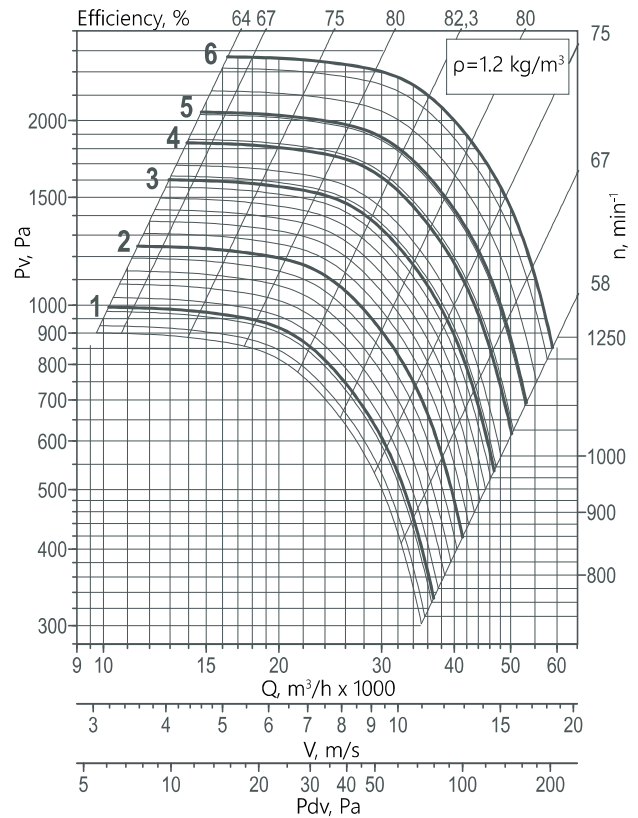
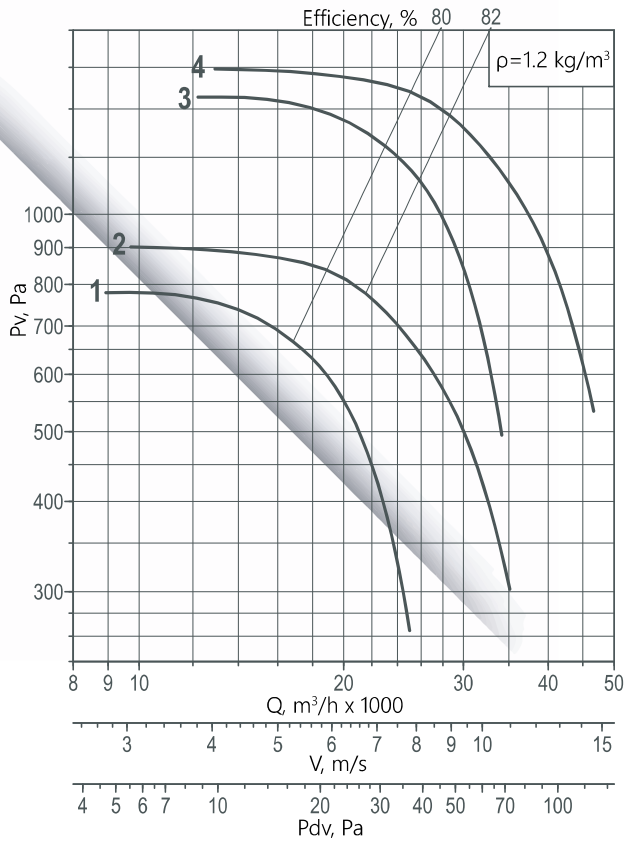
**ALL MODES**

1	VRAN6	8	5,5	13,6	418
2	VRAN9		7,5	18	465
3	VRAN6	6	11	23	457
4	VRAN9		15	31	496

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	VRAN9-F	8	7,5	465
2			11	490
3			15	496
4		6	18,5	500
5			22	535
6			30	565



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





# 112 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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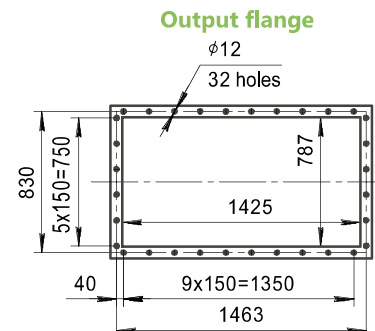
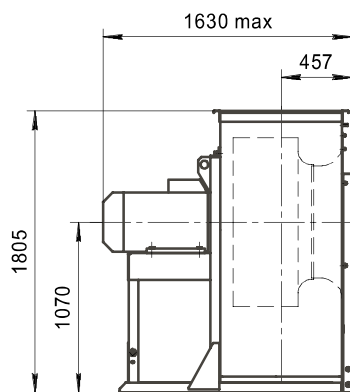
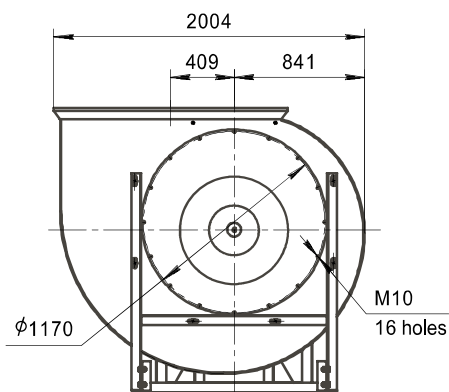
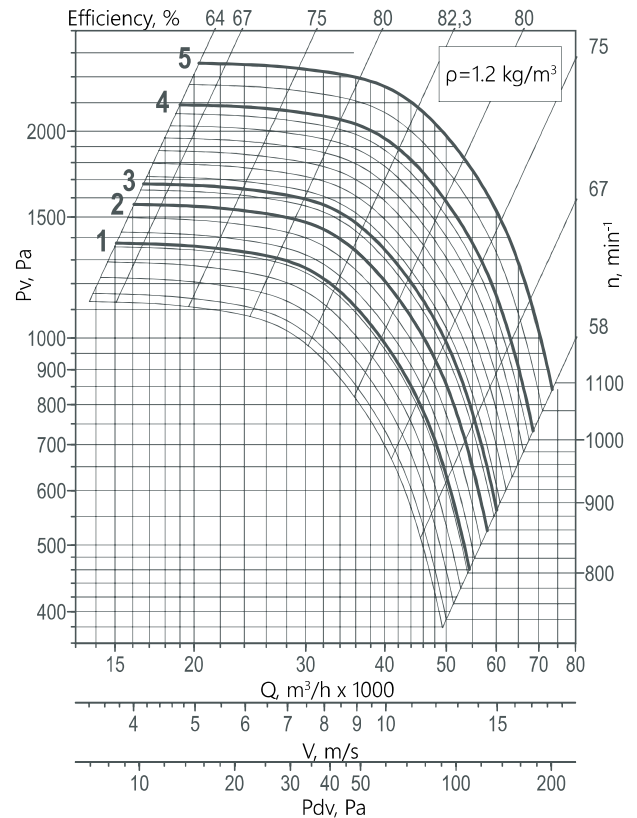
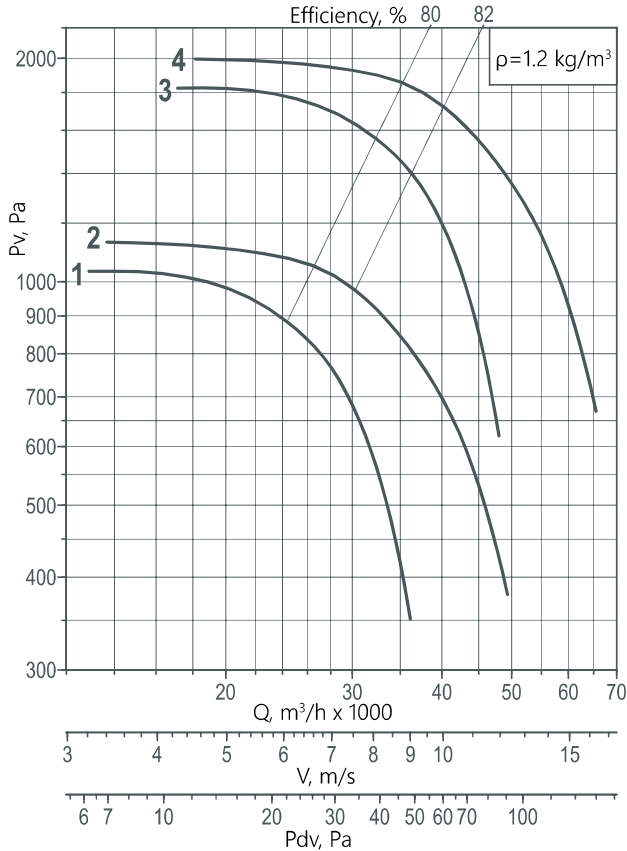
ALL MODES

1	VRAN6	8	11	26	496
2	VRAN9		15	35	527
3	VRAN6	6	22	44	541
4	VRAN9		30	60	580

Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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WITH FREQUENCY CONVERTER

1	VRAN9-F	8	15	527
2			18,5	565
3			22	580
4		6	30	580
5			37	715



NOTE

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

ADDITIONAL EQUIPMENT

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	

30 GENERAL AND SPECIAL PURPOSE FANS



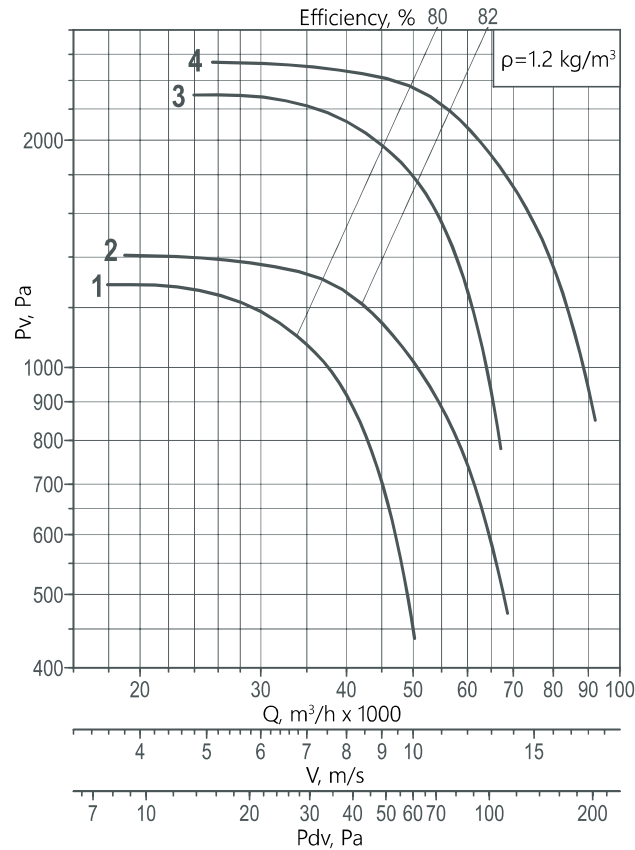


# 125 DESIGN 1

Curve number	Fan type	Number of poles	Nnom, kW	Current at 380 V, A	Weight*, kg
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**ALL MODES**

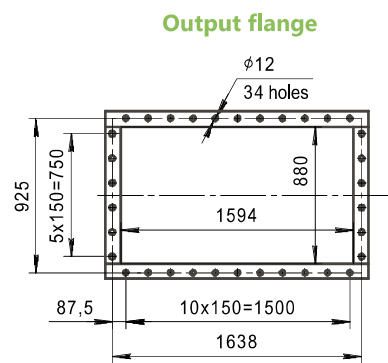
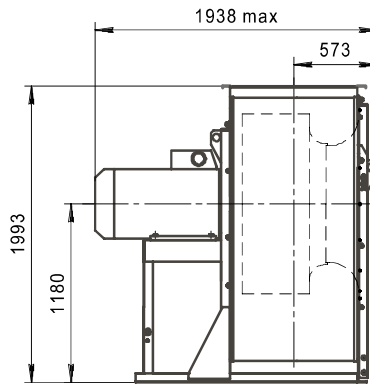
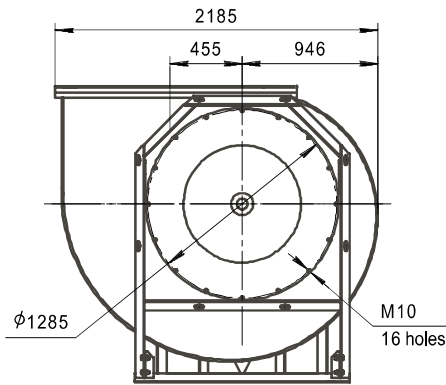
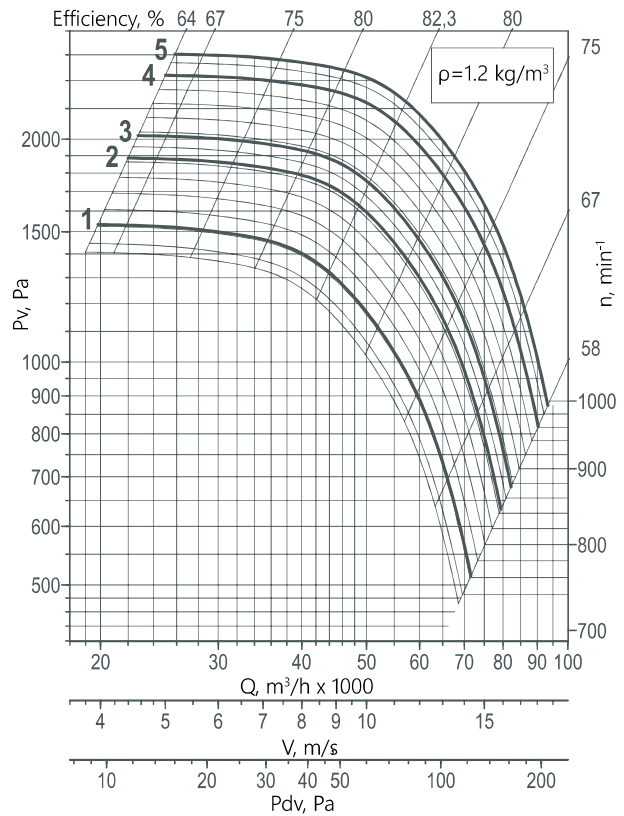
1	VRAN6	8	15	35	631
2	VRAN9		22	48	694
3	VRAN6		37	70	819
4	VRAN9	6	55	103	989



Curve number	Fan type	Number of poles	Nnom, kW	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	VRAN9-F	8	22	694
2			30	829
3			37	934
4		45	989	
5		6	55	989



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





## 063 DESIGN 5

Curve number	Fan type	Number of poles	Nnom, kWt	nk max min <sup>-1</sup>	Current at 380 V, A	Weight*, kg
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**ALL MODES**

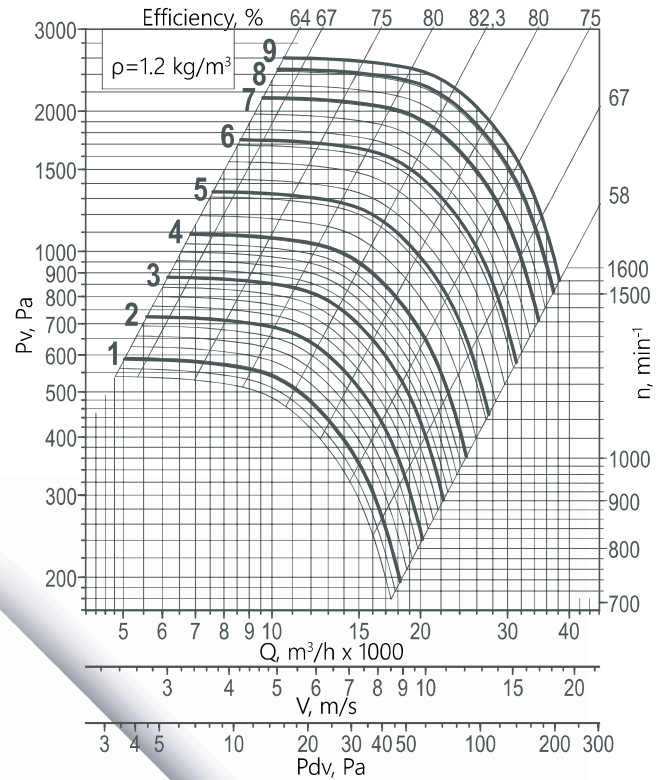
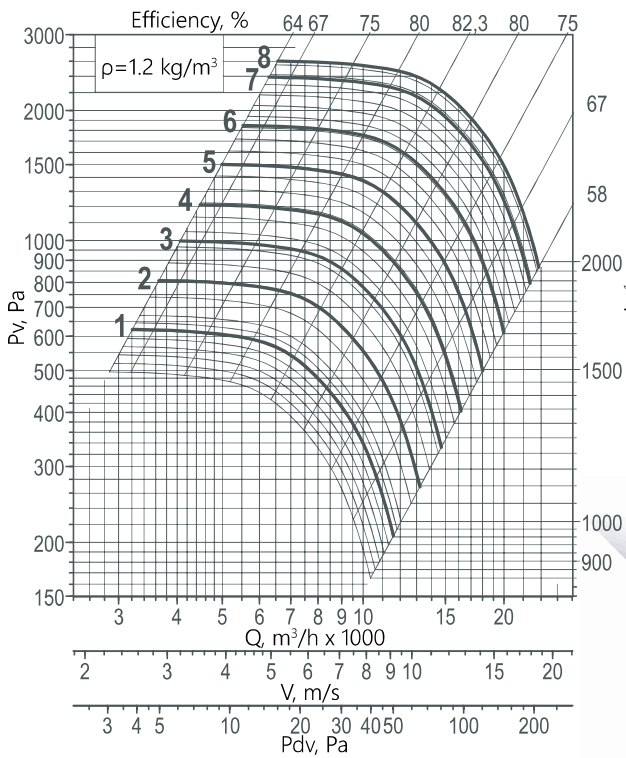
Curve number	Fan type	Number of poles	Nnom, kWt	nk max min <sup>-1</sup>	Current at 380 V, A	Weight*, kg
1	VRAN9	4	1,5	965	3,6	197
2			2,2	1095	5,2	198
3			3	1220	7,3	203
4			4	1345	8,8	219
5			5,5	1495	12,1	227
6			7,5	1660	15,6	234
7			11	1885	23	257
8			15	1970	36	329

## 080 DESIGN 5

Curve number	Fan type	Number of poles	Nnom, kWt	nk max min <sup>-1</sup>	Current at 380 V, A	Weight*, kg
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**ALL MODES**

Curve number	Fan type	Number of poles	Nnom, kWt	nk max min <sup>-1</sup>	Current at 380 V, A	Weight*, kg
1	VRAN9	6	2,2	735	5,8	350
2			3	820	7	359
3			4	900	9	368
4		4	5,5	1005	12,1	362
5			7,5	1115	15,6	370
6			11	1265	23	388
7			15	1405	29	457
8			18,5	1510	35	474
9			22	1550	44	496



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

32 GENERAL AND SPECIAL PURPOSE FANS

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	







## 100 DESIGN 5

## 125 DESIGN 5

Curve number	Fan type	Number of poles	Nnom, kWtr	nk max min <sup>-1</sup>	Current at 380 V, A	Weight*, kg
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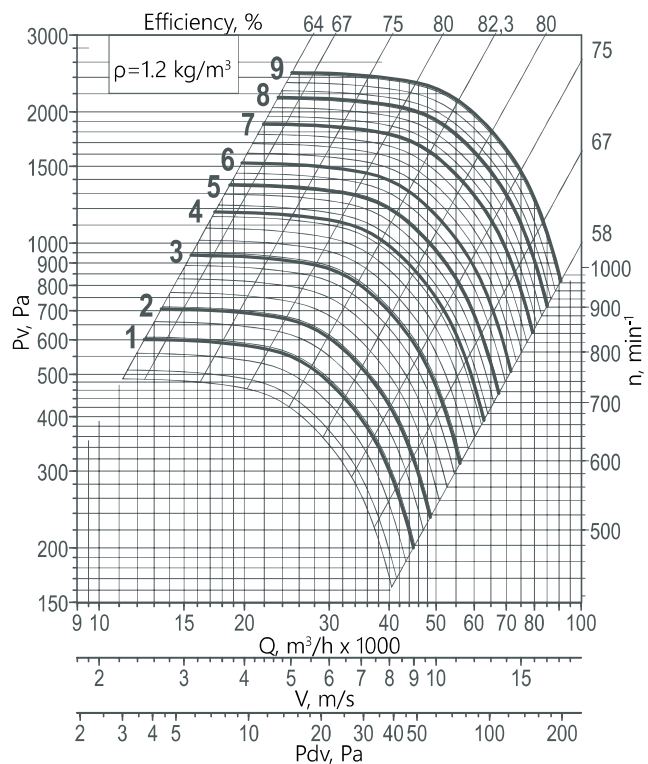
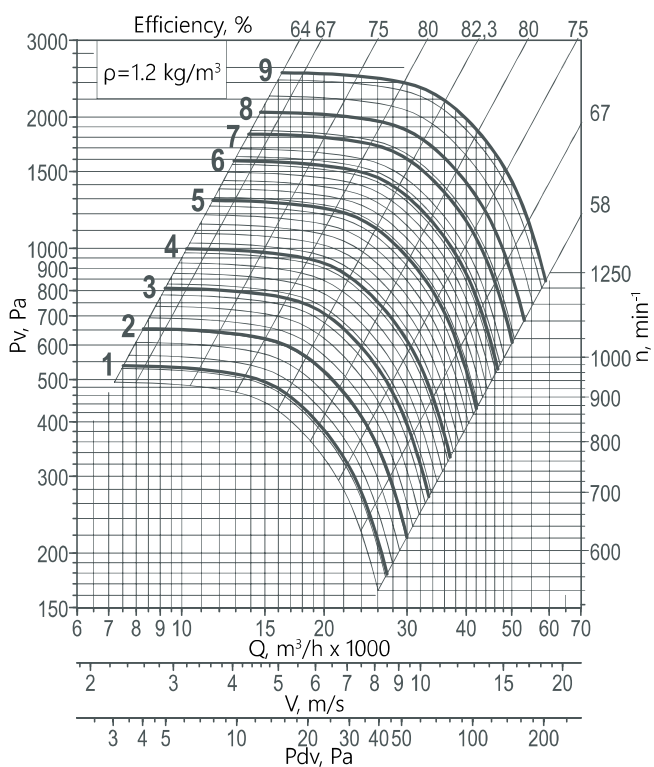
**ALL MODES**

1	VRAN9	8	3	565	0,74	560
2			4	620	10,5	578
3			5,5	690	13,6	600
4		6	7,5	770	18	577
5			11	875	23	650
6			15	970	31	678
7		4	18,5	1040	36	668
8			22	1100	42	690
9			30	1225	56	733

Curve number	Fan type	Number of poles	Nnom, kWtr	nk max min <sup>-1</sup>	Current at 380 V, A	Weight*, kg
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**ALL MODES**

1	VRAN9	8	5,5	477	13,6	734
2			7,5	529	18	773
3			11	603	26	813
4		6	15	668	35	841
5			18,5	717	40	882
6			22	759	48	908
7		4	30	842	60	917
8			37	903	70	1061
9			45	964	85	1173



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





## QUESTIONNAIRE

Please fill in all the necessary data and send it to the nearest company office

### VRAN RADIAL FAN

**VRAN** \_\_\_\_\_

quantity, pcs \_\_\_\_\_

Contact person: \_\_\_\_\_

Organization: \_\_\_\_\_

tel.: \_\_\_\_\_ e-mail: \_\_\_\_\_

Region (city): \_\_\_\_\_ Date: \_\_\_\_\_

Please check with the sign "v" or specify a value

<b>operation mode</b>	efficiency Q, m <sup>3</sup> /h	
	static pressure Psv at t = 20° C, Pa	
<b>fan size</b>		
<b>operating mode</b>	T80 - temperature of the moved medium up to 80° C	
	T200 - temperature of the moved medium up to 200° C	
<b>fan design</b>	N - general purpose industrial	
	V - explosion-proof	
	CR1 - corrosion-resistant	
	VCR1 - explosion-proof corrosion-resistant	
<b>climatic version</b>	Y (Y)	
	YHL (УХЛ)	
	T (T)	
	placement category	1 2
<b>design</b>	1	
	5	
<b>impeller</b>	rotation speed, min <sup>-1</sup> (for design version 1 and 5)	
<b>motor</b>	nominal power, kW	
	number of poles	
	with frequency converter	
<b>casing orientation</b>	flow Exit angle, deg	right rotation (R) left rotation (L)

#### Additional equipment

<b>TSK</b> heat and sound insulated casing		
<b>KIV</b> set of vibration isolators		
<b>COM-VRAN</b>	series	
	installation at the flow inlet	
	installation at the flow outlet	
	flange material	
<b>counter flange</b>	FOV – from the suction side	
	FON – from the discharge side	
<b>RM</b> mounting frame		
<b>frequency converter</b>		
<b>soft starter</b>		
<b>SAU</b> fan control cabinet		
<b>ZNT-VRAN, KZR</b> weather protection hood		

**Special requirements:**

**Customer:** \_\_\_\_\_ (signature) \_\_\_\_\_ (full name)



# VRAV | ENERGY EFFICIENT RADIAL FANS WITH FORWARD-CURVED BLADES



- low noise level;
- a wide range of impeller diameters for a number of fans with small-size impellers;
- with forward-curved blades.

▸ **INTENDED USE:**

- ventilation and air heating systems - T80 operating mode;
- sanitary and industrial installations - T80 and T200 operating modes.

**•020•025•028•031•035•040•045•050•063•080**  
 BELT DRIVEN  
**•063•080•100•125**  
 BELT DRIVEN

- general purpose industrial (N);
- corrosion-resistant (CR1);
- explosion-proof (V) - only made according to 1st design scheme;
- corrosion-resistant, explosion-proof (VCR1) - only made according to 1st design scheme

**OPERATING CONDITIONS:**

- ambient temperature:
  - from -45° C to +80° C for temperate climates;
  - from -60° C to +40° C for temperate and cold climates;
  - from -10° C to +50° C for tropical climates;
- the average value of vibration velocity of external vibration sources at the fan installation locations is no more than 2 mm/s;
- conditions for the moved medium are presented in the Table "Conditions for the moved medium".

VRAV fans feature a drum-type impeller of left or right rotation with specially shaped forward-curved blades.

Spiral casing - rotary.

The fans are equipped with standard 3-phase asynchronous single-speed motors.

Motor ingress protection rating IP54.

For the R0 (L0) casing orientation (for the 1st placement category (outdoor)), ZNT-VRAV weather protection hood is provided (to be ordered separately, as an option); for the R90 (L90) casing orientation - KZR weather protection hood (to be ordered separately, as an option).

The "additional equipment" section offers additional equipment for fans.

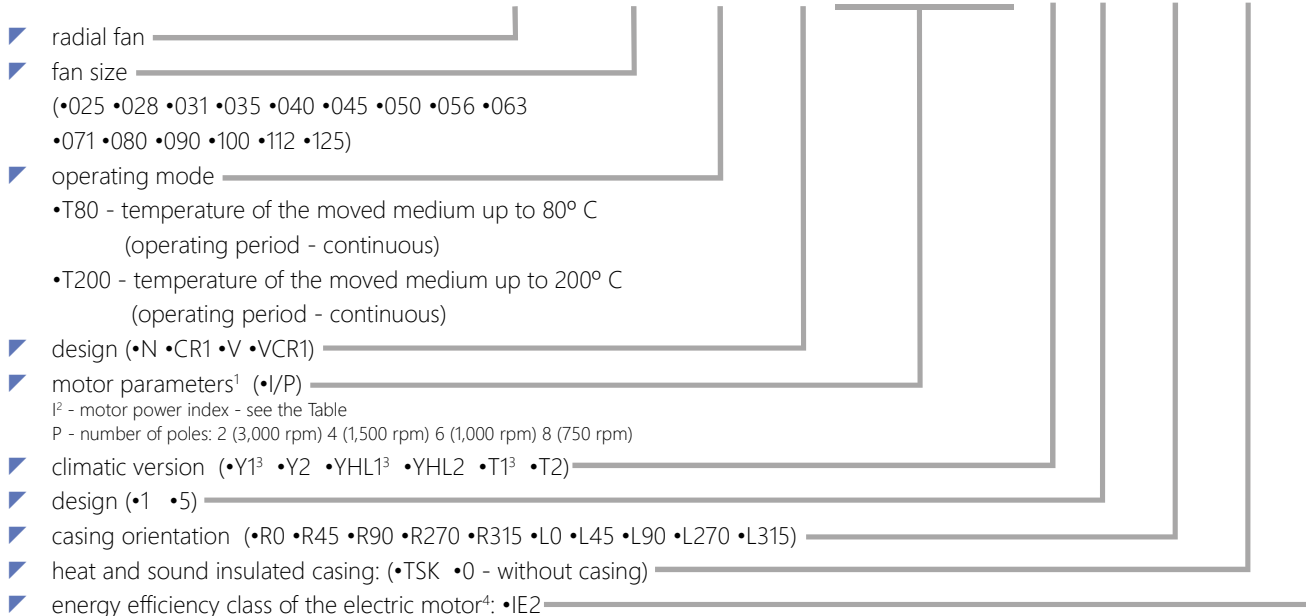
GENERAL AND SPECIAL PURPOSE FANS



**EXAMPLE:**

VRAV9 radial fan, size 063, operating mode T80, general purpose industrial design, nominal power Nnom = 7.5 kW, number of poles 6, climatic version Y2, design 5, casing orientation R90, without TSK

## VRAV-063-T80-N-00750/6-Y2-5-R90-0-IE2



**NOTE:**

<sup>1</sup>By default all supplied motors are designed for 380 V, 50 Hz, direct start. Design types of other voltages and connection methods are available upon special agreement. Starting of motors over 15 kW must be done using a soft starter.

<sup>2</sup>The Motor Power Index is shown in the Table.

<sup>3</sup>For Y1, YHL1 and T1 climatic versions, additional protection of the engine and fan outlet is provided.

<sup>4</sup>Specified if different from standard.

Special requirements for the fan are specified additionally and agreed upon with the manufacturer.

### VRAV MOTOR POWER INDEX

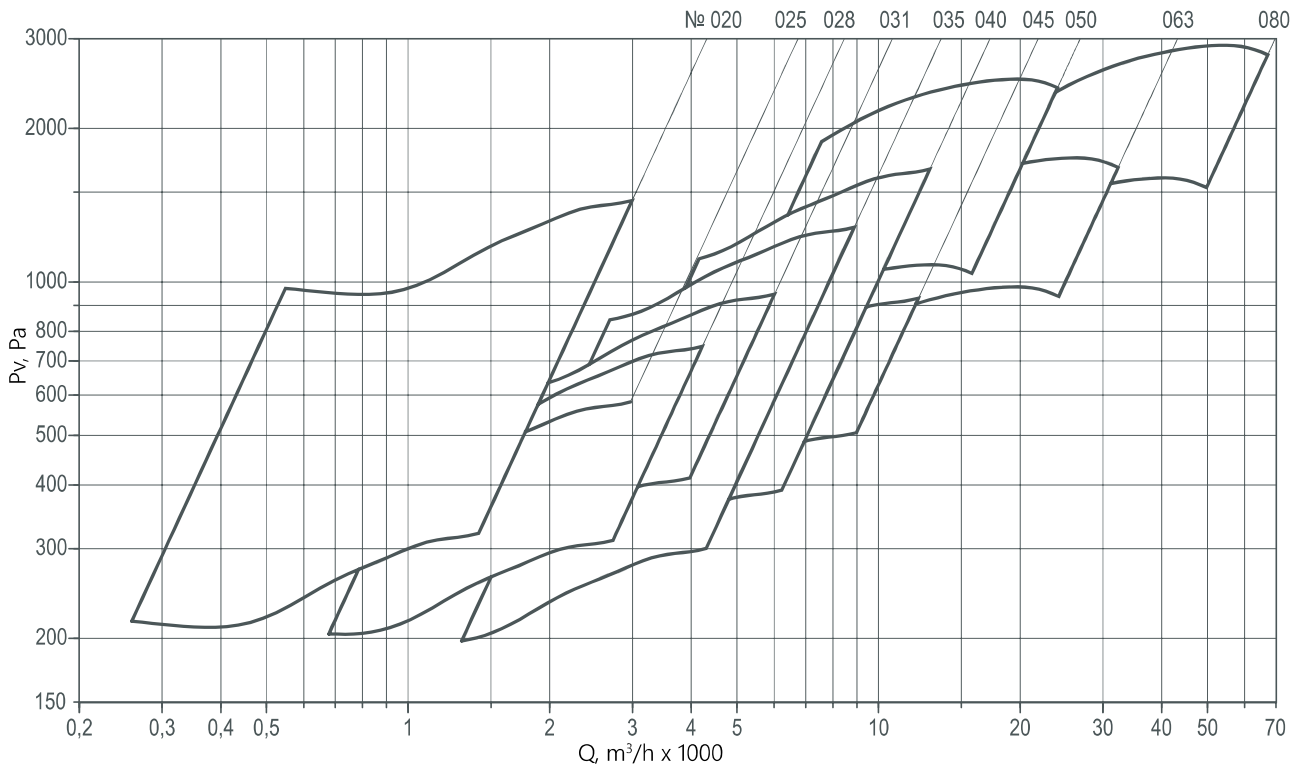
Nominal power (Nnom), kW	0,25...0,75	1,1...7,5	11...90
Motor Power Index (I)	00025...00075	00110...00750	01100...09000



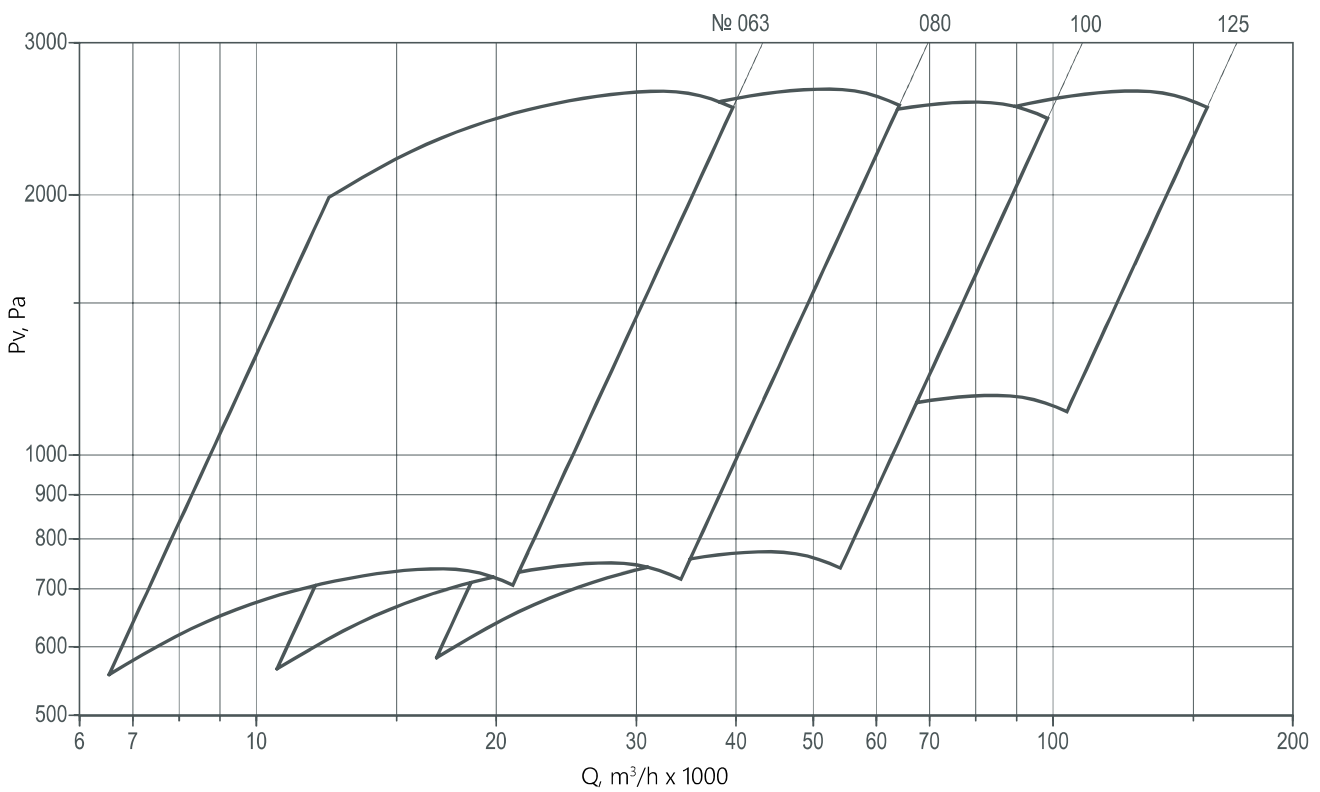


## AREAS OF AERODYNAMIC PARAMETERS

### VRAV, DESIGN 1



### VRAV, DESIGN 5

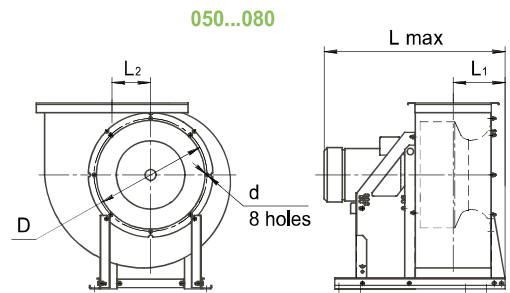
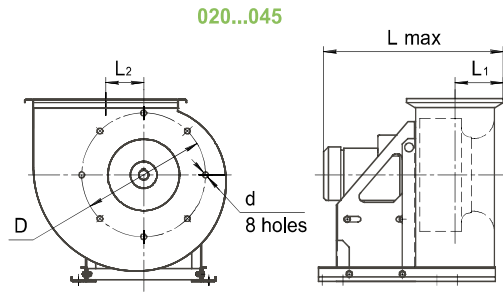


GENERAL AND SPECIAL PURPOSE FANS

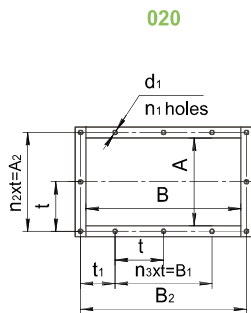
# OVERALL AND CONNECTION DIMENSIONS

## DESIGN 1

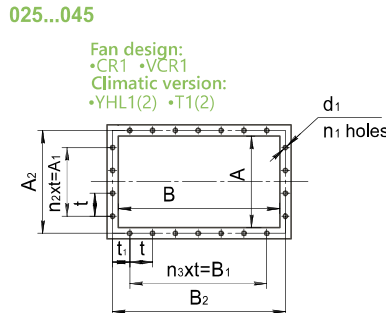
### LOCATION OF FAN MOUNTING HOLES



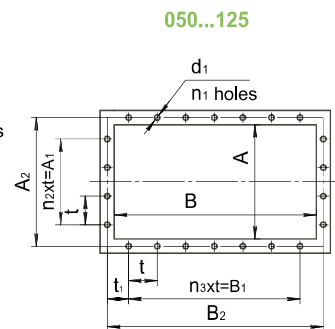
#### Fan outlet flange



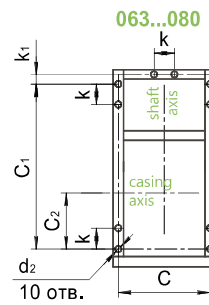
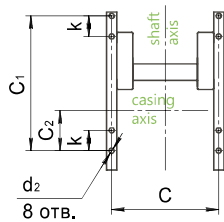
Fan design:  
all except for •CR1 •VCR1  
Climatic version:  
•Y1 (2)



Fan design:  
•CR1 •VCR1  
Climatic version:  
•YHL1(2) •T1(2)



#### Location of fan mounting holes



Fan standard size	Installation dimensions, mm									
	Lmax	L1	L2	C	C1	C2	d2	k	k1	
020	470	97	73	275	330	48	10x16	70	—	
025	456	109	86	295	330	70	10x16	70	—	
028	528	121	101	295	365	80	10x16	75	—	
031	564	130	115	420	470	60	10x16	75	—	
035	701	146	129	530	460	104	10x20	90	—	
040	750	178	145	520	610	127	11x25	90	—	
045	783	193	164	525	660	140	12x18	100	—	
050	1020	245	181	525	695 900*	160 226*	12x18	100 125*	—	
063	1226	290	231	460	850	150	14x30	120	—	
080	1785	332	297	800	1200	235	14x40	155	40	

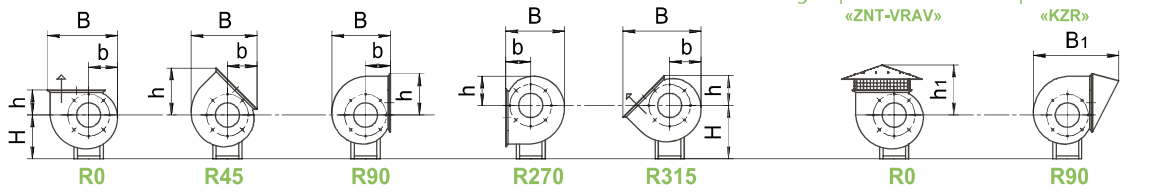
\* for motor sizes 160 and 180

Fan standard size	Installation dimensions, mm															
	A	A1	A2	A3	B	B1	B2	B3	D	d	d1	t	t1	n1	n2	n3
020	140	170	170	—	255	170	283	—	235	M6	7	85	56,5	12	2	2
025	178	160	200	200	326	240	348	348	280	M6	7	80	54	14	2	3
028	202	200	222	225	363	300	383	385	310	M6	7	100	41,5	14	2	3
031	220	200	240	241	400	300	420	420	345	M6	7	100	60	14	2	3
035	252	200	272	273	455	400	475	477	390	M6	7	100	37,5	16	2	4
040	284	200	310	307	513	400	538	535	430	M8	9	100	55	16	2	4
045	321	240	350	340	575	480	604	596	480	M8	9	120	55	16	2	4
050	356	300	380	—	644	600	668	—	530	M8	9	100	40	22	3	6
063	444	400	470	—	802	700	830	—	660	M8	9	100	35	26	4	7
080	566	300	600	—	1010	750	1047	—	835	M8	9	150	150	18	2	5

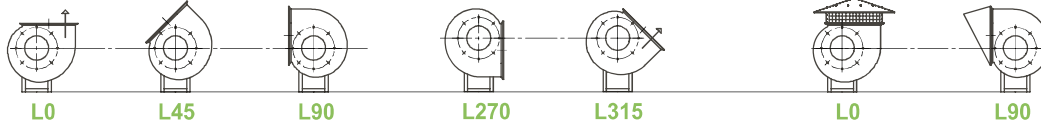


## CASING ORIENTATION

### Right rotation



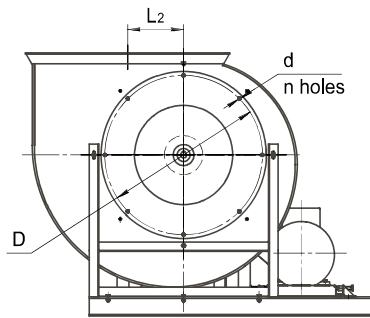
### Left rotation



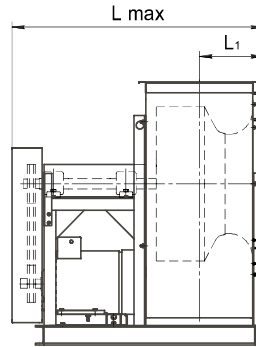
Fan standard size	Dimensions, mm																					
	•R0 ·L0					•R45 ·L45				•R90 ·L90				•R270 ·L270				•R315 ·L315				
	B	b	H	h	h1	B	b	H	h	B	B1	b	H	h	B	b	H	h	B	b	H	h
<b>020</b>	377	151	200	145	320	346	158	200	261	321	520	145	200	226	321	145	280	151	425	164	280	158
<b>025</b>	456	186	240	173	398	423	190	240	312	390	675	173	240	270	390	173	340	186	515	202	340	190
<b>028</b>	515	213	310	193	390	471	206	310	349	441	755	193	310	302	441	193	350	213	579	230	350	206
<b>031</b>	572	237	310	215	415	521	225	310	388	491	835	215	310	335	491	215	410	237	644	257	410	225
<b>035</b>	644	268	350	245	482	590	256	350	438	557	950	245	350	376	557	245	450	268	728	290	450	256
<b>040</b>	738	301	390	290	593	686	310	390	514	642	1095	290	390	437	642	290	470	301	840	326	470	310
<b>045</b>	821	338	435	325	715	761	339	435	570	719	1219	325	435	483	719	325	535	338	936	366	535	339
<b>050</b>	913	375	510	338	699	832	363	510	619	777	1322	338	510	538	777	338	580	375	1026	406	580	363
			535*					535*					535*									
<b>063</b>	140	474	640	420	758	1034	442	640	768	973	1647	420	640	666	973	420	750	474	1282	513	750	442
<b>080</b>	440	602	800	536	1044	1304	553	800	972	1238	2041	536	800	838	1238	536	900	602	1623	651	900	553

\* for motor sizes 160 and 180

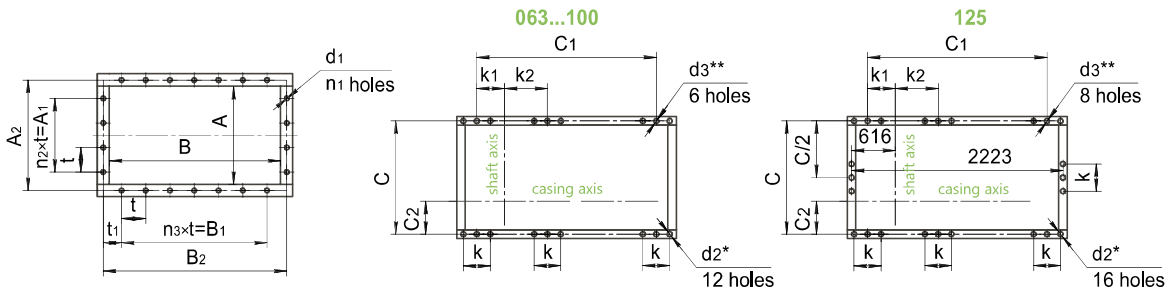
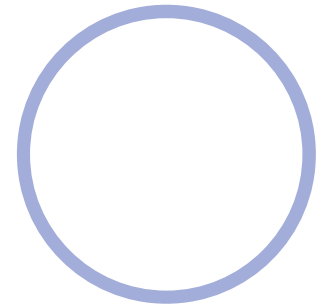
## DESIGN 5



Output flange



Location of fan mounting holes



\* size for vibration isolator

\*\* size for foundation bolt

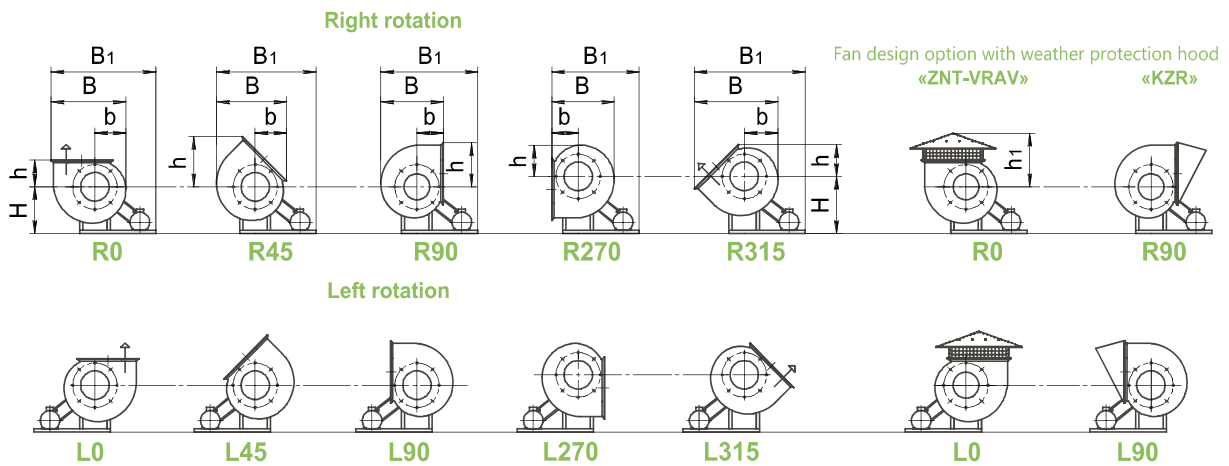


Fan standard size	Dimensions, mm										
	Lmax	L1	L2	C	C1	C2	d2	d3	k	k1	k2
<b>063</b>	1160	290	231	980	1110	245	12x30	18	120	140	320
<b>080</b>	1326	332	297	1156	1190 1540*	310	12 12x30*	18	130 140*	301	294
<b>100</b>	1640	416	366	1455	1900	446	12x30	18	165	381	904
<b>125</b>	1860	503	455	1645	2025	548	15	24	180	525	875

\* for motor dimensions 225 and 280

Fan standard size	Connection dimensions, mm														
	A	A1	A2	B	B1	B2	D	d	d1	t	t1	n	n1	n2	n3
<b>063</b>	444	400	470	802	700	830	660	M8	9	100	35	8	26	4	7
<b>080</b>	566	300	600	1010	750	1047	835	M8	9	150	150	8	18	2	5
<b>100</b>	706	450	750	1270	1050	1317	1050	M8	12	150	150	16	24	3	7
<b>125</b>	880	750	925	1594	1500	1638	1285	M10	12	150	87,5	16	34	5	10

### CASING ORIENTATION



Fan standard size	Dimensions, mm																									
	•R0 •L0						•R45 •L45					•R90 •L90					•R270 •L270					•R315 •L315				
	B	B1	b	H	h	h1	B	B1	b	H	h	B	B1	b	H	h	B	B1	b	H	h	B	B1	b	H	h
<b>063</b>	1140	1736	474	671	420	758	1034	1662	442	671	768	973	1623	420	671	668	973	1490	420	751	474	1282	1839	513	751	442
<b>080</b>	1440	1833 2153*	602	844	536	1044	1304	1746 2066*	553	844	972	1238	1697 2017*	536	844	838	1238	1531 1851*	536	933	602	1623	1967 2287*	651	933	553
<b>100</b>	1797	2673	751	1050	656	1156	1627	2568	686	1050	1204	1533	2511	656	1050	1046	1533	2290	656	1150	751	2017	2833	814	1150	689
<b>125</b>	2240	2926	946	1230	813	1525	2035	2811	860	1230	1492	1906	2725	813	1230	1294	1906	2437	813	1430	946	2510	3117	1017	1430	864

\* for motor dimensions 225 and 280

GENERAL AND SPECIAL PURPOSE FANS

40







## 020 DESIGN 1

## 025 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

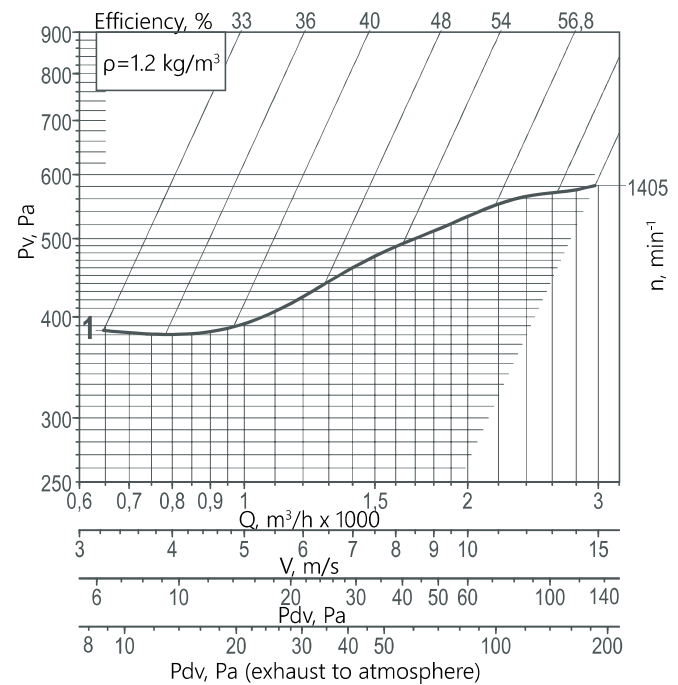
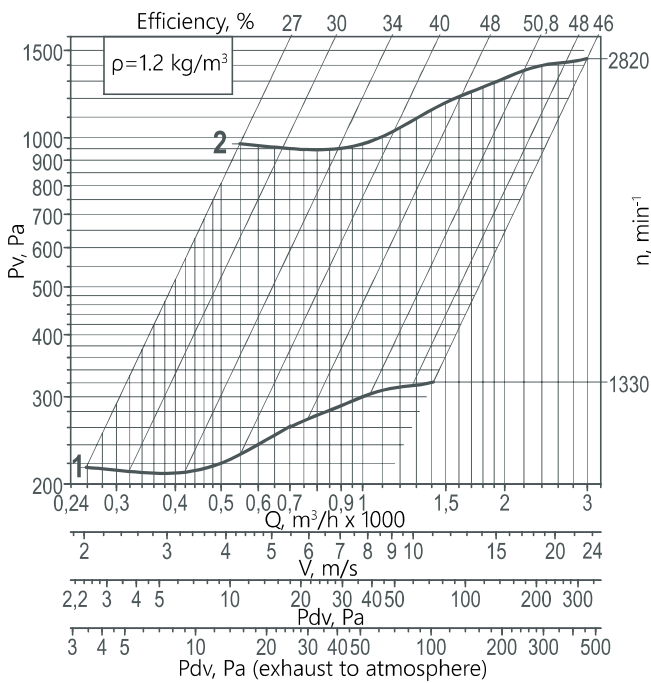
Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

**ALL MODES**

**ALL MODES**

1	4	0,18**	905	0,73	19
		0,25	1200	0,83	20
		0,37	1410	1,18	21
2	2	1,1	1395	2,4	26
		1,5	1840	3,2	28
		2,2	2480	4,6	30
		3	2995	6,5	32

1	4	0,55	1850	1,5	23
		0,75	2365	2,2	25
		1,1	2970	2,6	29



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

\*\* the motor is not available in explosion-proof design.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	

GENERAL AND SPECIAL PURPOSE FANS

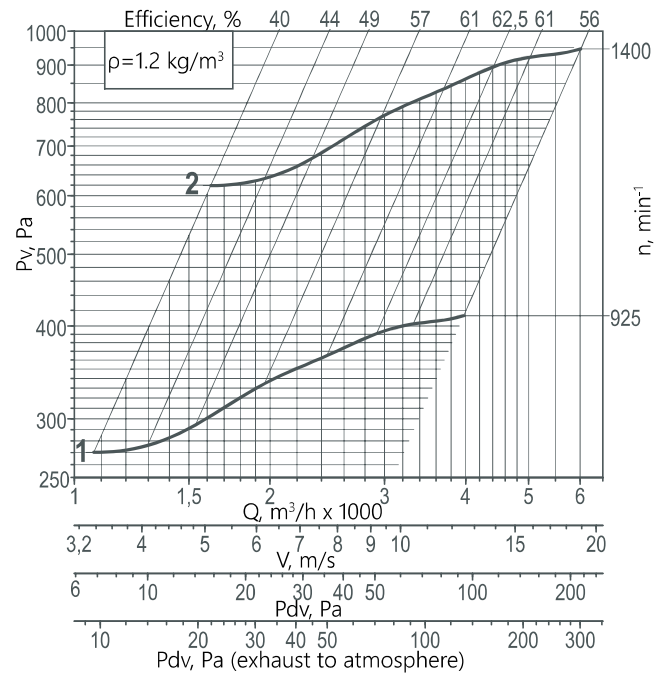
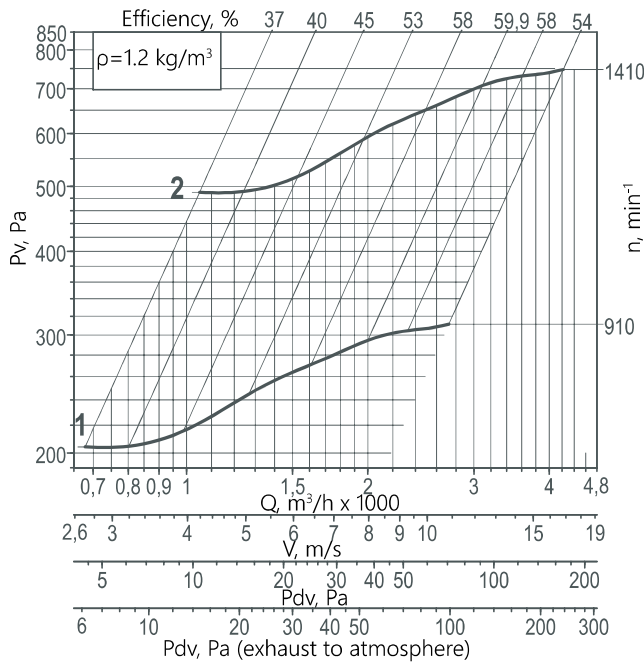


## 028 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m <sup>3</sup> /h	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	6	0,37	2210	1,31	29
		0,55	2725	1,74	31
2	4	0,75	2150	2,2	31
		1,1	2950	2,6	35
		1,5	3700	3,6	37
		2,2	4220	5,1	38

## 031 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m <sup>3</sup> /h	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	6	0,55	2810	1,74	36
		0,75	3455	2,3	40
		1,1	3970	3,2	42
2	4	1,5	3435	3,6	42
		2,2	4795	5,1	43
		3	5860	7,3	47



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

GENERAL AND SPECIAL PURPOSE FANS

ADDITIONAL EQUIPMENT				
heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





## 035 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

### ALL MODES

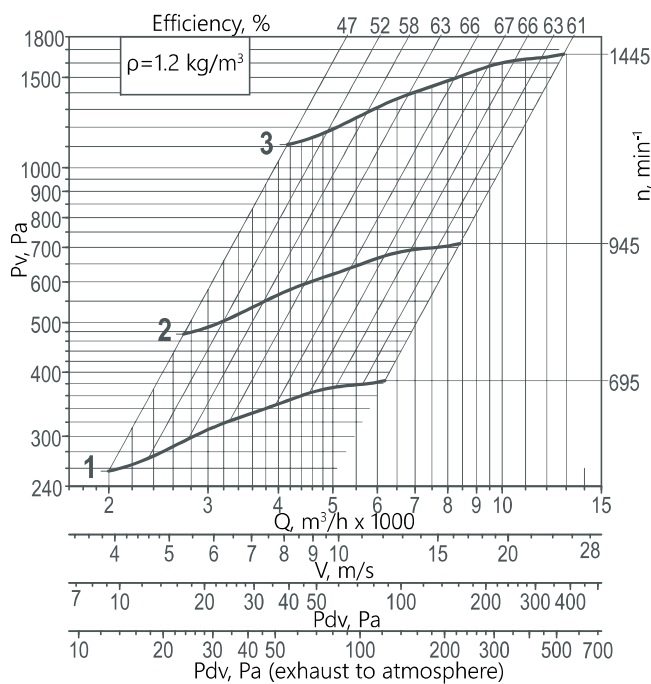
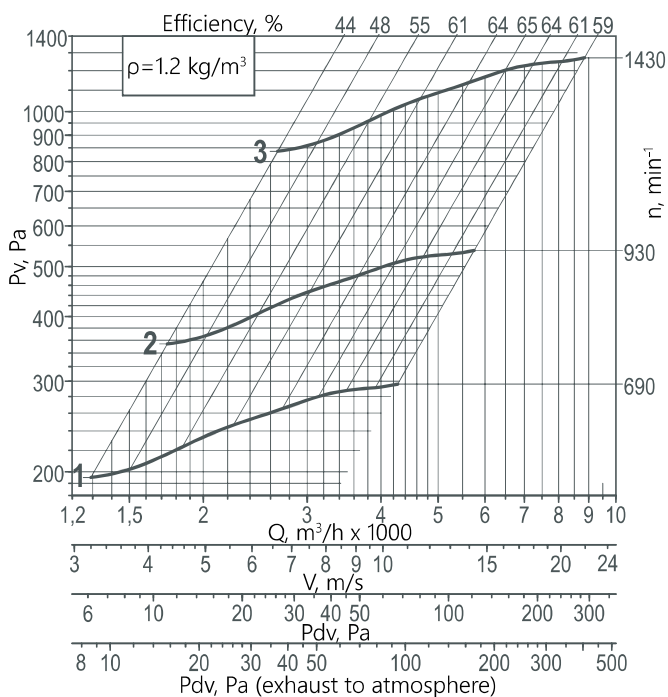
1	8	0,37	2665	1,5	43
		0,55	3770	2,17	46
		0,75	4300	2,1	51
2	6	0,75	3185	2,3	42
		1,1	4385	3,2	44
		1,5	5445	4,1	46
3	4	2,2	5785	5,8	62
		3	5660	7,3	49
		4	6805	8,6	65
		5,5	8370	11,7	73
		7,5	8880	15,6	80

## 040 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

### ALL MODES

1	8	0,55	3515	2,17	62
		0,75	4290	2,1	67
		1,1	5655	3	72
		1,5	6185	4,6	78
2	6	1,5	5175	4,1	62
		2,2	6705	5,8	78
		3	8170	7	85
3	4	5,5	7900	11,7	89
		7,5	10025	15,6	96
		11	12855	23	104



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

### ADDITIONAL EQUIPMENT

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





## 045 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m <sup>3</sup> /h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	--------------------------	---------------------	-------------

**ALL MODES**

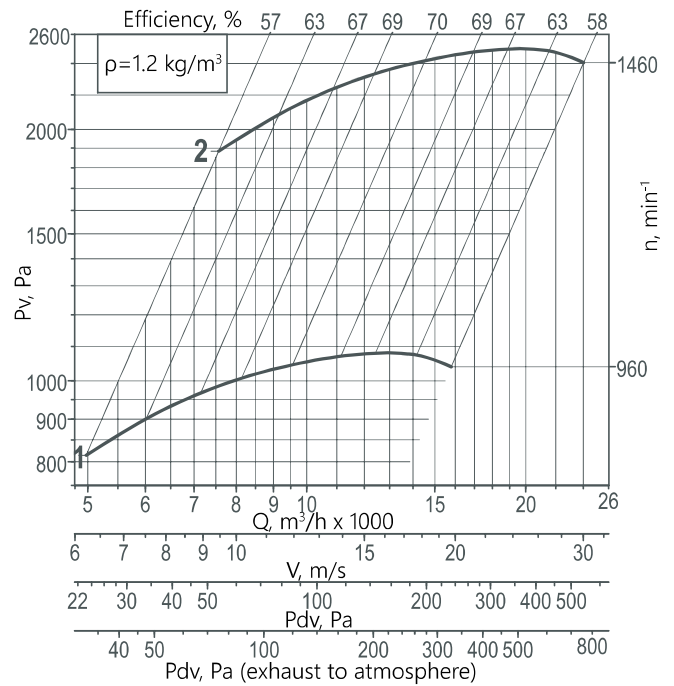
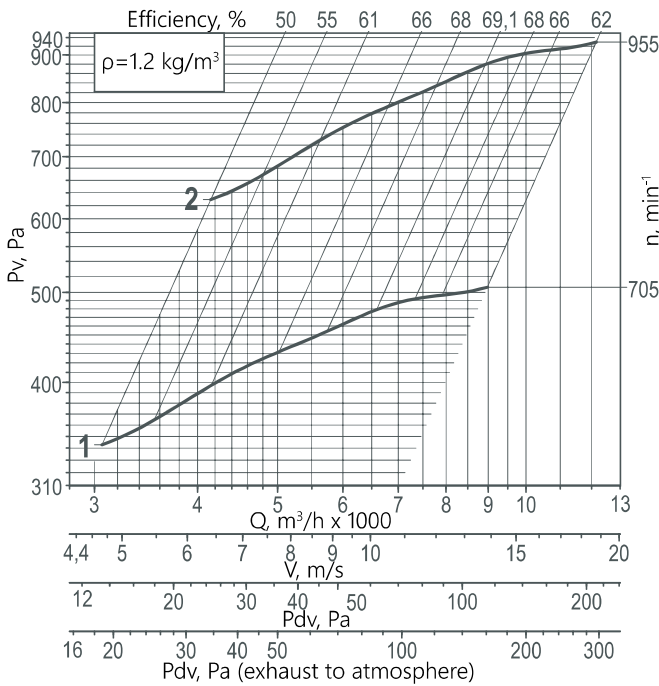
1	8	1,1	5280	3	80
		1,5	6815	4,6	85
		2,2	8760	6,3	98
2	6	3	7790	7	93
		4	9705	9	102
		5,5	12090	12	108

## 050 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m <sup>3</sup> /h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	--------------------------	---------------------	-------------

**ALL MODES**

1	6	4	8730	9	117
		5,5	11560	12	123
		7,5	14240	17,5	128
		11	15800	24	192
2	4	15	14145	31	192
		18,5	16770	36	209
		22	19075	44	227
		30	23635	56	257



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

GENERAL AND SPECIAL PURPOSE FANS

44

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





## 063 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

**ALL MODES**

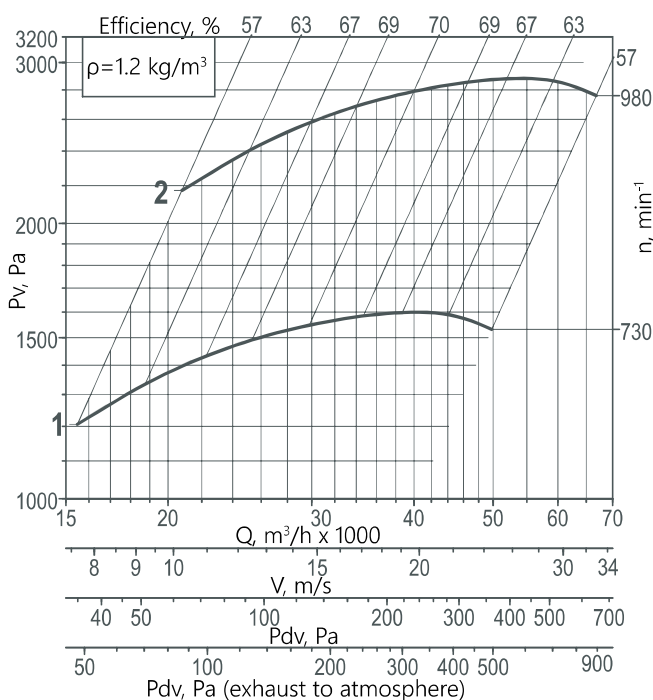
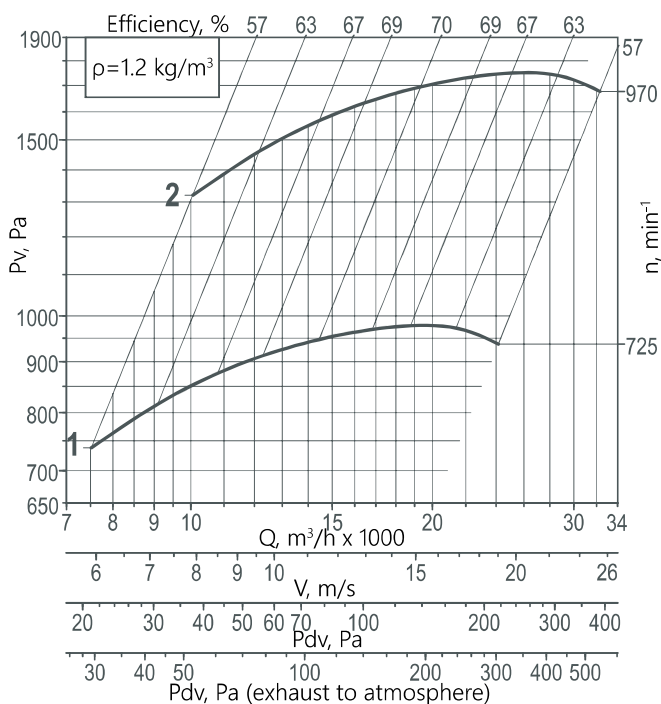
1	8	5,5	13805	13,6	187
		7,5	17045	18	226
		11	22395	26	251
		15	24155	35	273
2	6	15	19955	32	257
		18,5	23525	37	261
		22	26660	44	296
		30	32315	60	326

## 080 DESIGN 1

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

**ALL MODES**

1	8	18,5	27485	40	372
		22	31805	48	387
		30	40185	64	522
		37	46110	76	627
		45	49800	93	682
2	6	45	37075	85	627
		55	43830	103	682
		75	54895	140	785
		90	67400	163	972



**NOTE**  
 \* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.  
 \*\* the motor is not available in explosion-proof design.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





## 063 DESIGN 5

## 080 DESIGN 5

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

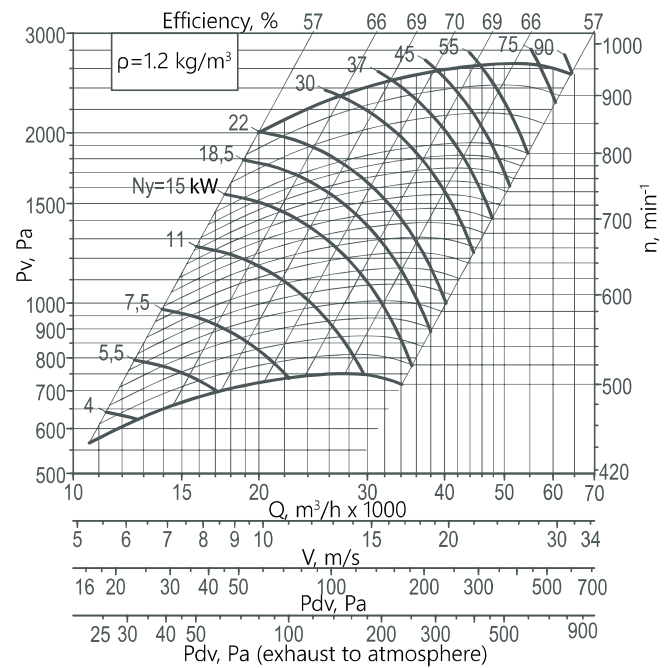
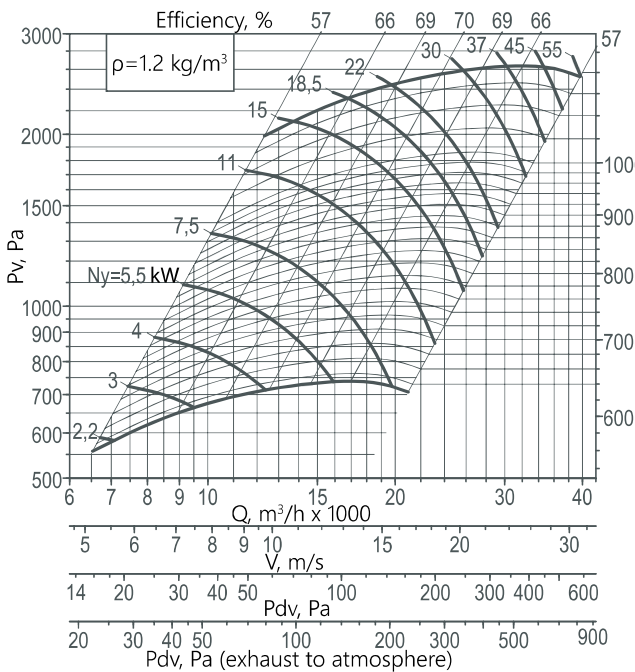
Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

ALL MODES

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
1	8	3	610...749	8	157
2		4		10,5	174
3		5,5		13,6	190
4		7,5		18	229
5		11		26	254
6		15		35	276
7		5,5		12	160
8	6	7,5	750...999	17,5	171
9		11		24	229
10		15		32	249
11		18,5		37	264
12		22		44	314
13		30		60	329
14		37		71	464
15	4	15	1000...1200	31	224
16		18,5		36	246
17		22		44	261
18		30		56	294
19		37		70	334
20		45		86	364
21		55		105	444

ALL MODES

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
1	8	5,5	518...749	13,6	252
2		7,5		18	291
3		11		26	316
4		15		35	346
5		18,5		40	376
6		22		48	391
7		30		64	482
8		37		76	601
9	6	45	750...940	93	686
10		18,5		37	326
11		22		44	361
12		30		60	391
13		37		71	526
14		45		85	631
15		55		103	686
16		75		140	856
17		90		163	966



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

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ADDITIONAL EQUIPMENT

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





## 100 DESIGN 5

## 125 DESIGN 5

Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

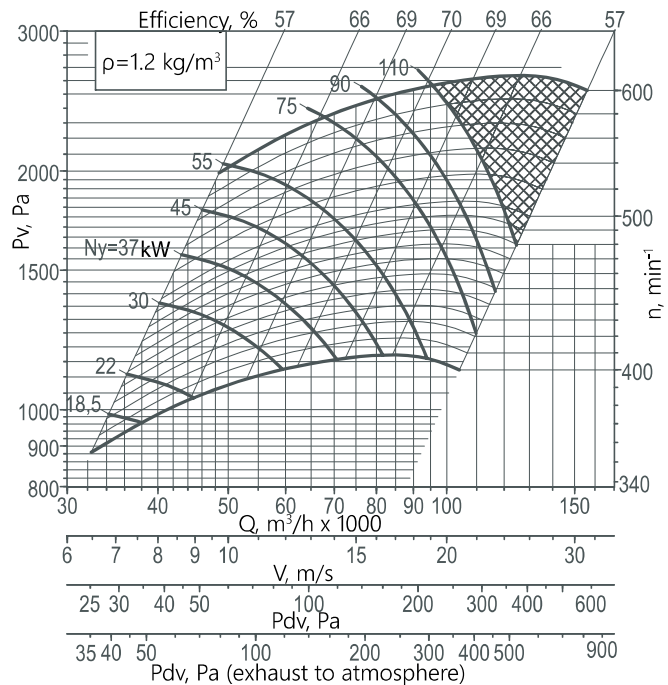
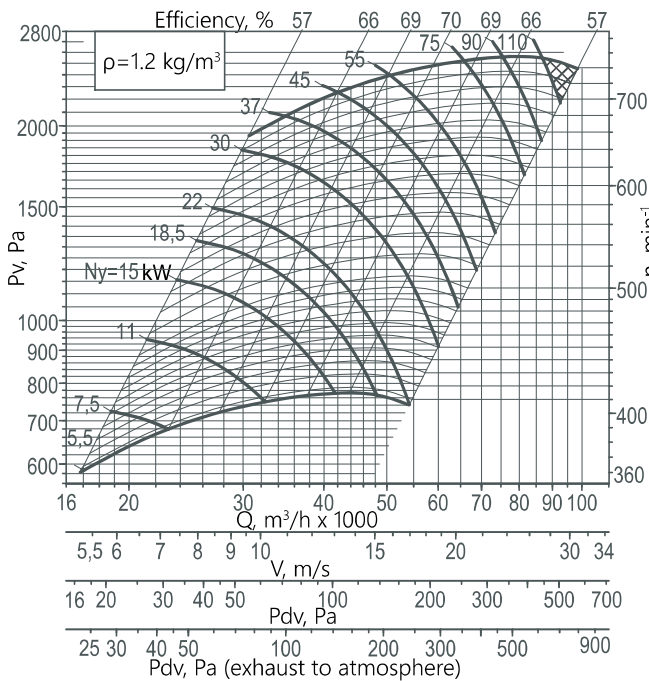
Curve number	Number of poles	Nnom, kW	Q max, m³/h	Current at 380 V, A	Weight*, kg
--------------	-----------------	----------	-------------	---------------------	-------------

**ALL MODES**

**ALL MODES**

1	8	11	420...750	26	490
2		15		35	512
3		18,5		40	550
4		22		48	565
5		30		64	700
6		37		76	805
7		45		93	860
8		55		113	1030
9		75		153	1140
10		90		177	1220
11		110		223	1390

1	8	30	400...600	64	829
2		37		76	934
3		45		93	989
4		55		113	1159
5		75		153	1269
6		90		177	1349
7		110		223	1519



**NOTE**

\* When changing the motor type, the weight may change. Graphs are given for simplified fan selection.

**ADDITIONAL EQUIPMENT**

heat and sound insulated casing <b>TSK</b>	flexible connector <b>COM-VRAN</b>	weather protection hood <b>ZNT, KZR</b>	frequency converter <b>ASC, FC</b>	fan control cabine <b>SAU-PPV, SAU-SPV, SAU-VK</b>
vibration isolator kit <b>KIV</b>	counter flange <b>FON, FOV</b>	mounting frame <b>RM</b>	soft starter <b>MCD 201, MCD 202</b>	





## QUESTIONNAIRE

Please fill in all the necessary data and send it to the nearest company office

### VRAV RADIAL FAN

**VRRAN** \_\_\_\_\_

quantity, pcs \_\_\_\_\_  
 Contact person: \_\_\_\_\_  
 Organization: \_\_\_\_\_  
 tel.: \_\_\_\_\_ e-mail: \_\_\_\_\_  
 Region (city): \_\_\_\_\_ Date: \_\_\_\_\_

Please check with the sign "v" or specify a value

<b>operation mode</b>	efficiency Q, m <sup>3</sup> /h		
	static pressure Psv at t = 20° C, Pa		
<b>fan size</b>			
<b>operating mode</b>	T80 - temperature of the moved medium up to 80° C		
	T200 - temperature of the moved medium up to 200° C		
<b>fan design</b>	N - general purpose industrial		
	V - explosion-proof		
	CR1 - corrosion-resistant		
	VCR1 - explosion-proof corrosion-resistant		
<b>climatic version</b>	Y (Y)		
	YHL (УХЛ)		
	T (T)		
	placement category	1	
		2	
<b>design</b>	1		
	5		
<b>impeller</b>	rotation speed, min <sup>-1</sup> (for design version 1 and 5)		
<b>motor</b>	nominal power, kW		
	number of poles		
	with frequency converter		
<b>casing orientation</b>	flow Exit angle, deg	right rotation (R)	
		left rotation (L)	

#### Additional equipment

<b>TSK</b> heat and sound insulated casing	
<b>KIV</b> set of vibration isolators	
<b>COM-VRRAN</b>	series
	installation at the flow inlet
	installation at the flow outlet
	flange material
<b>counter flange</b>	FOV – from the suction side
	FON – from the discharge side
<b>RM</b> mounting frame	
<b>frequency converter</b>	
<b>soft starter</b>	
<b>SAU</b> fan control cabinet	
<b>ZNT-VRRAN, KZR</b> weather protection hood	

**Special requirements:**



**Customer:** \_\_\_\_\_ (signature) \_\_\_\_\_ (full name)





REDUCED-SIZE RADIAL FANS

VRAY-U

➤ designed for installation in industrial premises, as well as cooling of individual equipment or technological units. It is used in warehouses, in the agricultural sector, in factories and workshops. The equipment features a long service life and does not require complex maintenance

- ventilation and air heating systems;
- sanitary and technological installations



•016 •018

The fan casing is made of galvanized steel. The casing orientation is 270° to the left.

The impeller with forward-curved blades is dynamically balanced in accordance with the ISO 1940 standard. High corrosion resistance thanks to powder coating.

The fan is equipped with single- and three-phase asynchronous motors with a mains supply voltage of 230 V - 50 Hz and 380 V - 50 Hz, respectively. Motor ingress protection rating - IP54.

Additional equipment options are available - see the "Additional equipment" section.

- general purpose industrial (N);

**OPERATING CONDITIONS:**

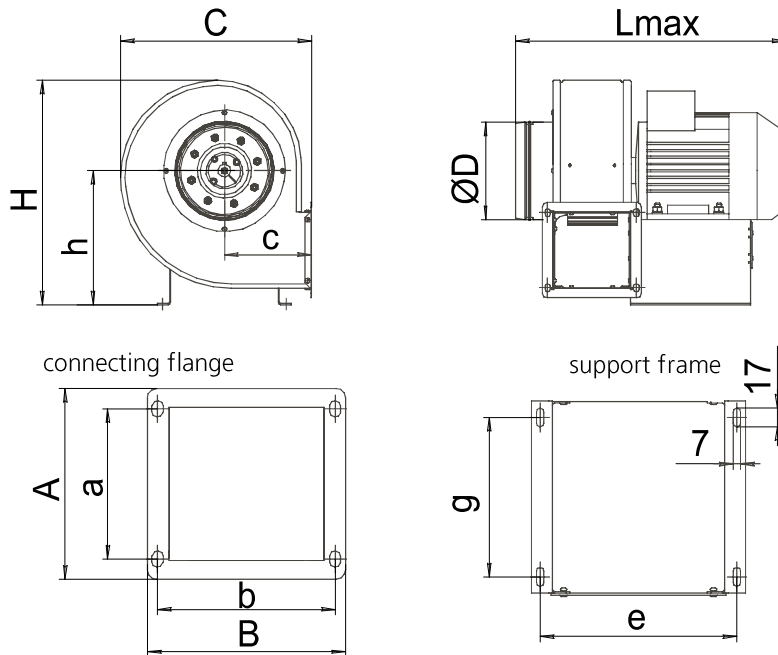
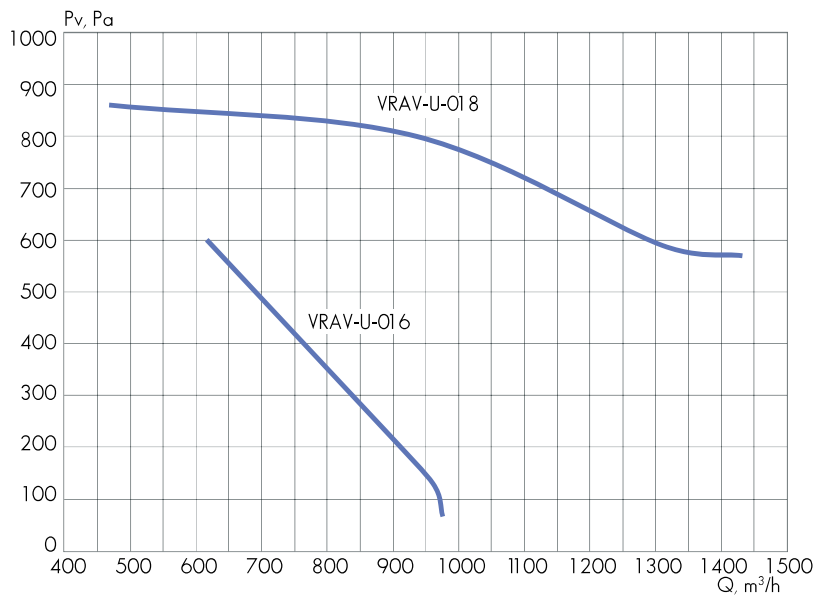
- ambient temperature
  - -45° C to + 40° C;
- the average value of vibration velocity of external vibration sources at the fan installation locations is no more than 2 mm/s;
- conditions for the moved medium are presented in the Table "Conditions for the moved medium" (p. 10 of the catalog "General and special purpose fans").

VRAY-U-018/2-220

- radial fan with forward-curved blades
- reduced-size
- impeller diameter (160 or 180)
- number of motor poles (2 - 3,000 rpm)
- supply voltage (220 V or 380 V)



Fan type	Curve number	Voltage, V	Number of poles	Nnom, kW	Current, A	Speed, rpm	Weight, kg max
016/2-220	1	230 V, 50 Hz	2	0,55	3,9	3 000	14
018/2-220	2	230 V, 50 Hz	2	0,75	5,7	3 000	15
016/2-380	1	380 V, 50 Hz	2	0,55	1,4	3 000	14
018/2-380	2	380 V, 50 Hz	2	0,75	1,9	3 000	15



Fan standard size	A, mm	a, mm	B, mm	b, mm	C, mm	c, mm	D, mm	H, mm	h, mm	g, mm	e, mm	Lmax, mm
VRAV-U-016/2	140	110	145	130	280	128	150	328	196	146	180	395
VRAV-U-018/2						120	160	348	226			430

ADDITIONAL EQUIPMENT

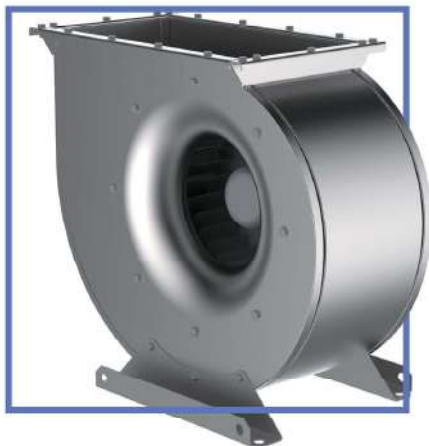
VIBRATION ISOLATOR KIT  
**KIV-1**

FLEXIBLE CONNECTOR ON THE DISCHARGE SIDE  
**COM-VRAV-U-016-B**  
**COM-VRAV-U-018-B**



# RAV

## COMPACT RADIAL FANS WITH BACKWARD-CURVED BLADES



- general purpose industrial (N)

### OPERATING CONDITIONS:

- ambient temperature:
  - from  $-45^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$  for temperate climates;
  - from  $-60^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$  for temperate and cold climates;
  - from  $-10^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  for tropical climates;
- the average value of vibration velocity of external vibration sources at the fan installation locations is no more than 2 mm/s;
- conditions for the moved medium are presented in the Table "Conditions for the moved medium".

- designed for stationary systems of supply and exhaust ventilation, air conditioning of industrial, public and residential buildings;
- provides increased system performance while maintaining a compact size.

### INTENDED USE:

- ventilation and air heating systems.

The fan casing and brackets are made of galvanized steel, which provides reliable corrosion protection. The equipment uses impellers with backward-curved blades, which are made of aluminum. (Exception: impeller for RAV-2.25 is made of polyamide).

The fan is equipped with a built-in motor with an external rotor, which ensures compact size and low weight of RAV fans. Thermal protection of fan motors is performed by means of thermal contacts with external terminals for connection to the overheat protection device.

Motor ingress protection rating IP54.

Single-phase connection 220 V.

The speed of rotation of the impeller is adjusted using the speed controller. For easy installation, the fans are equipped with a special bracket.

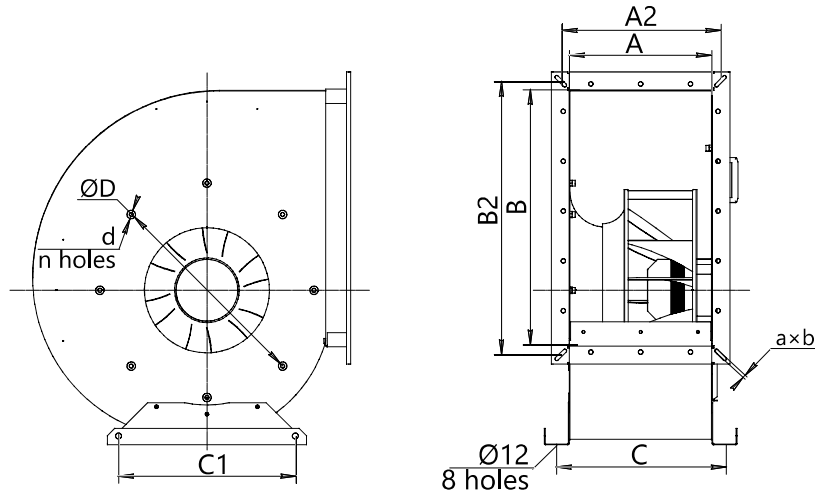
The fan is equipped with a capacitor and is fully ready for connection to the mains.

The compact radial fan is designed for air with a permissible content of dust and solid impurities of no more than  $0.1 \text{ g/m}^3$ . The presence of sticky, fibrous and abrasive components, explosive impurities in the air is not allowed.

The temperature range of the moved medium is from  $-30^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ .

Additional equipment is ordered in a separate line.

Special requirements for the fan are specified additionally and must be agreed with the manufacturer.



Fan standard size	Dimensions, mm											Weight, kg max
	A	B	A2	B2	a	b	d	n	D	C	C1	
<b>RAV-2,25</b>	177	325	200	348	7	10	M6	8	280	225	255	8,5
<b>RAV-3,10</b>	218	397	241	420	7	10	M6	8	345	265	255	17,8
<b>RAV-3,55</b>	250	453	273	477	7	10	M6	8	390	295	355	19,5
<b>RAV-4</b>	284	512	319	549	7	30	M8	8	430	326	355	26,3

Fan standard size	Motor speed, min <sup>-1</sup>	Power consumption, kW	Voltage, V	Current consumption, A	Number of phases	Capacitor capacity, µF/V
<b>RAV-2,25-2</b>	2650	0,135	220	0,6	1	4/450
<b>RAV-3,10-4</b>	1370	0,12	220	0,54	1	4/400
<b>RAV-3,55-4</b>	1420	0,245	220	1,12	1	8/400
<b>RAV-4-6</b>	910	0,117	220	0,52	1	3/450
<b>RAV-4-4</b>	1355	0,375	220	1,75	1	8/400

GENERAL AND SPECIAL PURPOSE FANS

### RAV-4-2

- ▶ compact radial fan
- ▶ fan number
- ▶ number of poles

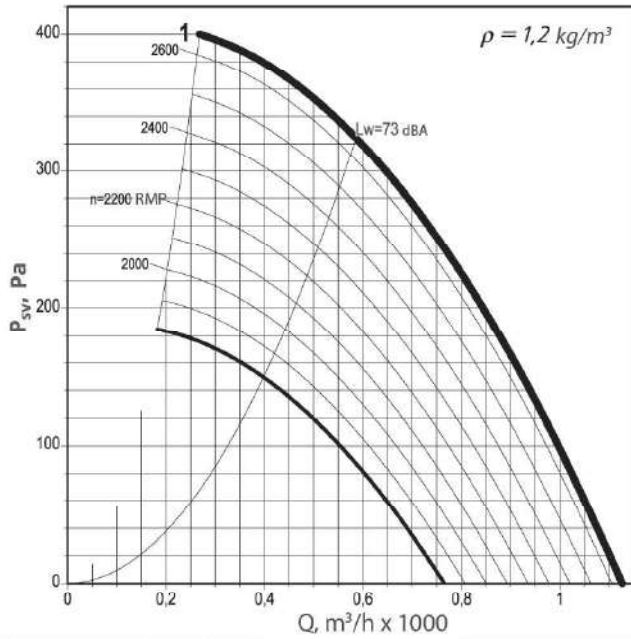
#### ADDITIONAL EQUIPMENT

FLEXIBLE INSERT  
**VG-H, VG-B**

SPEED CONTROLLER  
**PROPELLER-01 (СЕРІЯ 500)**

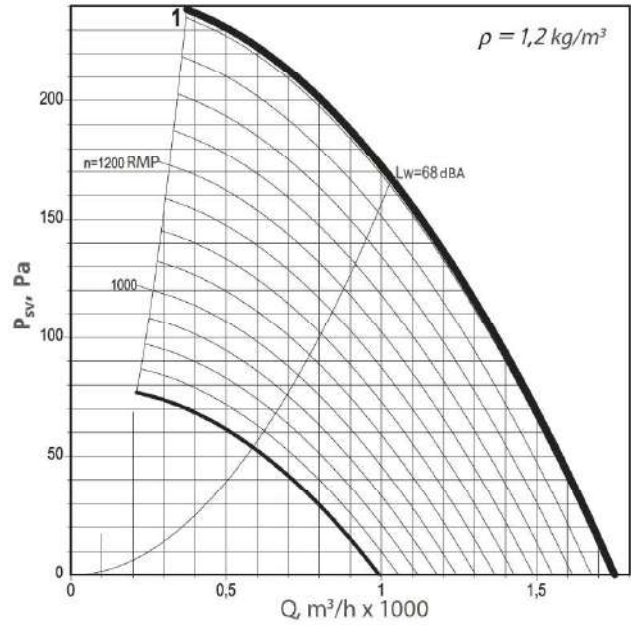


## RAV-2,25



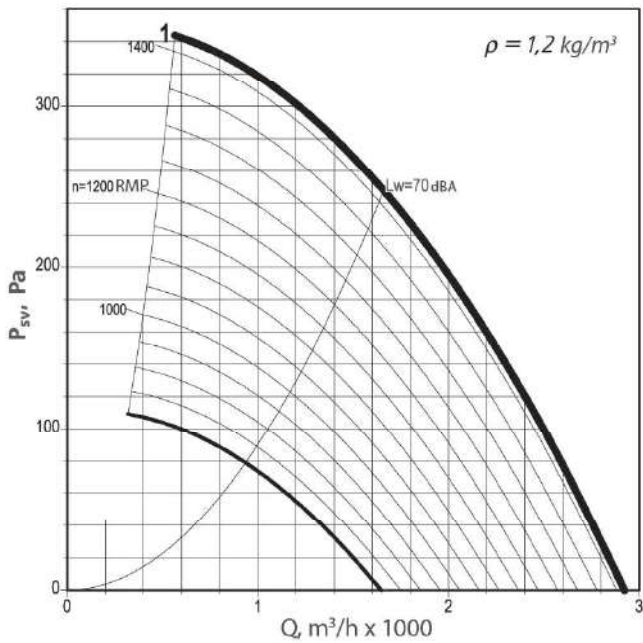
RAV	Hz	Total	63	125	250	500	1k	2k	4k	8k
input	dB(A)	71	42	60	64	66	65	62	57	50
output	dB(A)	73	44	62	66	68	66	64	59	52

## RAV-3,10



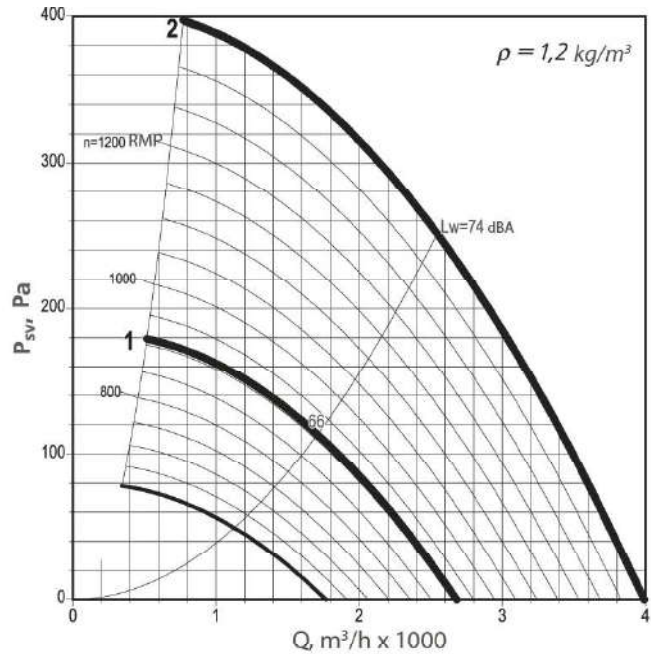
RAV	Hz	Total	63	125	250	500	1k	2k	4k	8k
input	dB(A)	66	53	55	59	61	60	57	52	45
output	dB(A)	68	55	57	61	63	62	59	54	47

## RAV-3,55



RAV	Hz	Total	63	125	250	500	1k	2k	4k	8k
input	dB(A)	68	55	57	61	63	62	59	54	47
output	dB(A)	70	57	59	63	65	64	61	56	49

## RAV-4

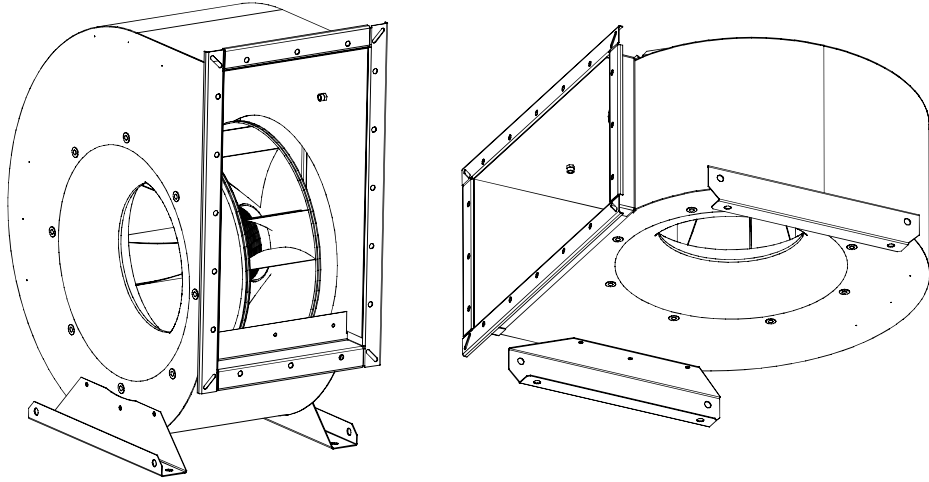


RAV	Hz	Total	63	125	250	500	1k	2k	4k	8k
input	dB(A)	64	51	53	58	59	59	55	50	42
output	dB(A)	66	53	55	60	61	61	57	52	44

RAV	Hz	Total	63	125	250	500	1k	2k	4k	8k
input	dB(A)	72	59	61	65	67	66	63	58	51
output	dB(A)	74	61	63	67	69	68	65	60	53

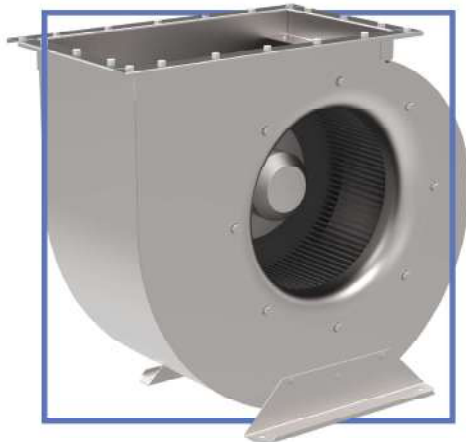


## INSTALLATION EXAMPLES



# RAF

## COMPACT RADIAL FANS WITH FORWARD-CURVED BLADES



- general purpose industrial (N)

### OPERATING CONDITIONS:

- ambient temperature:
  - from -45°C to +80°C for temperate climates;
  - from -60°C to +40°C for temperate and cold climates;
  - from -10°C to +50 C for tropical climates;
- the average value of vibration velocity of external vibration sources at the fan installation locations is no more than 2 mm/s;
- conditions for the moved medium are presented in the Table "Conditions for the moved medium".

- designed for stationary systems of supply and exhaust ventilation, air conditioning of industrial, public and residential buildings;
- provides increased system performance while maintaining a compact size.

### INTENDED USE:

- ventilation and air heating systems.

The fan casing and brackets are made of galvanized steel, which provides reliable corrosion protection.

The equipment uses impellers with forward-curved blades are used, which are made of galvanized steel.

The fan is equipped with a built-in motor with an external rotor, which ensures compact size and low weight of RAF fans. Thermal protection of fan motors is performed by means of thermal contacts with external terminals for connection to the overheat protection device.

Motor ingress protection rating IP54.

The speed of rotation of the impeller is controlled by a speed controller or frequency converter. For easy installation, the fans are equipped with a special bracket.

The fan is equipped with a capacitor and is fully ready for connection to the mains.

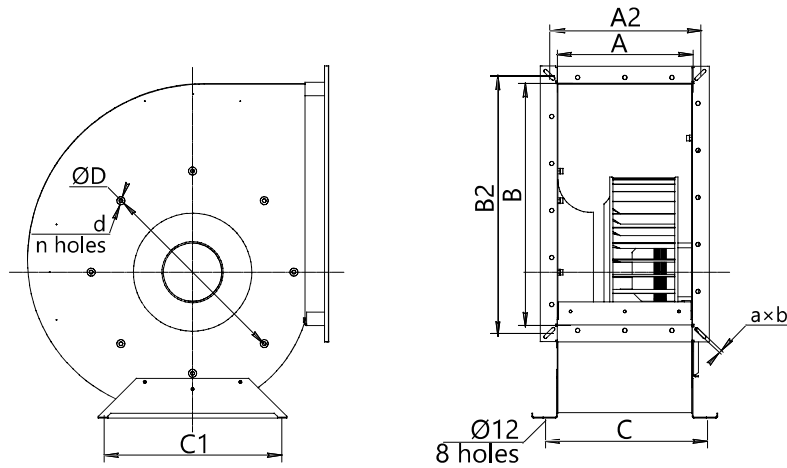
The compact radial fan is designed for air with a permissible content of dust and solid impurities of no more than 0.1 g/m<sup>3</sup>. The presence of sticky, fibrous and abrasive components, explosive impurities in the air is not allowed.

The temperature range of the moved medium is from -30° C to +40° C.

It is allowed to replace with the rotor motor of a different power, which does not deteriorate the fan parameters.

Additional equipment is ordered in a separate line.

Special requirements for the fan are specified additionally and must be agreed with the manufacturer.



Fan standard size	Dimensions, mm											Weight, kg max
	A	B	A2	B2	a	b	d	n	D	C	C1	
<b>RAF-2</b>	140	255	170	283	7	10	M6	8	235	188	255	11
<b>RAF-2,25</b>	177	325	200	348	7	10	M6	8	280	225	255	14
<b>RAF-2,8</b>	199	362	222	385	7	10	M6	8	310	247	255	18
<b>RAF-3,10</b>	218	397	241	420	7	10	M6	8	345	265	255	24
<b>RAF-3,55</b>	250	453	273	477	7	10	M6	8	390	295	355	30
<b>RAF-4</b>	284	512	319	549	7	30	M8	8	430	326	355	36
<b>RAF-4,5</b>	318	574	341	597	7	30	M6	8	480	360	355	42

GENERAL AND SPECIAL PURPOSE FANS



### RAF-2-4-220

- ▶ compact radial fan
- ▶ fan number
- ▶ number of poles
- ▶ electric motor supply voltage, 220 V or 380 V

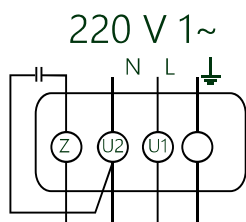
ADDITIONAL EQUIPMENT		
FLEXIBLE INSERT <b>VG-H, VG-B</b>	SPEED CONTROLLER <b>PROPELLER-01 (500 AND 1500 SERIES)</b>	FREQUENCY CONVERTER <b>ASC, FC</b>



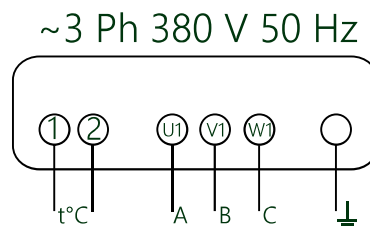


Fan standard size	Power consumption, kW	Current consumption, A	Motor speed, min <sup>-1</sup>	Corrected sound pressure level dB(A)	Wiring diagram
RAF-2-4-220	0,33	1,52	1260	55	A2
RAF-2-4-380	0,33	0,63	1230	53	D1
RAF-2,25-4-220	0,9	4,1	1230	59	A2
RAF-2,25-4-380	0,93	1,9	1380	57	D1
RAF-2,8-4-220	1,6	7,3	1210	62	A2
RAF-2,8-4-380	1,7	3,2	1310	58	D1
RAF-2,8-6-380	0,45	0,85	780	58	D1
RAF-3,10-4-380	2,5	4,1	1300	61	D1
RAF-3,10-6-380	0,9	1,8	750	53	D1
RAF-3,55-4-380	3,7	6,0	1320	66	D1
RAF-3,55-6-380	1,15	2,3	790	56	D1
RAF-4-4-380	5,7	9,0	1140	68	D1
RAF-4-6-380	2,8	4,85	830	60	D1
RAF-4,5-6-380	3,75	6,8	840	62	D1
RAF-4,5-8-380	2	4,1	600	58	D1

### A2

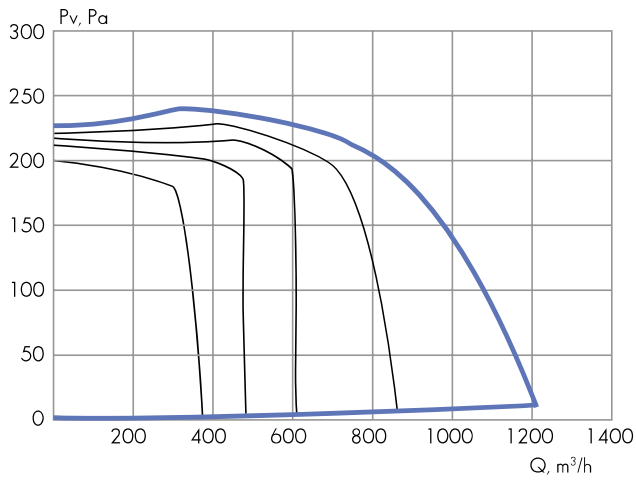


### D1

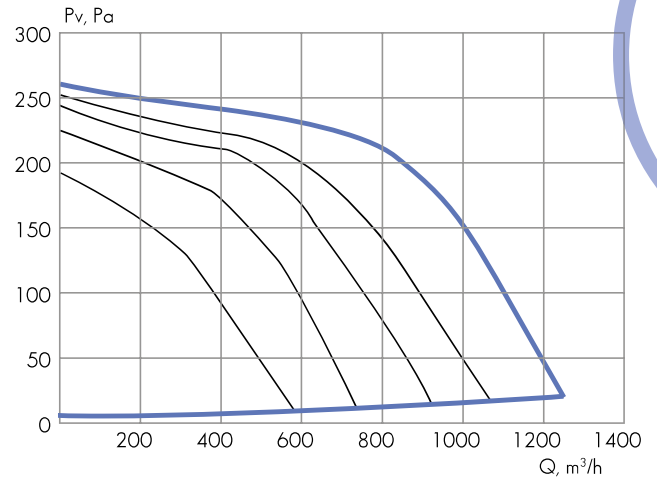




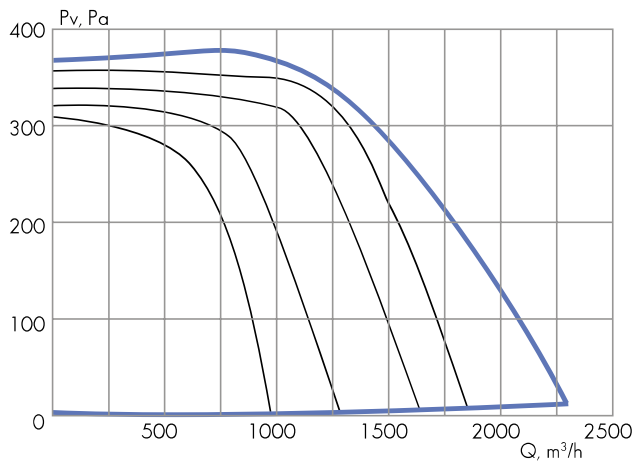
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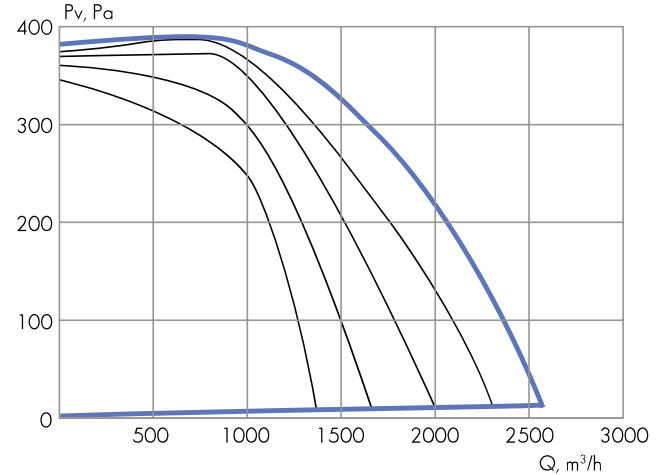
## RAF-2-4-380



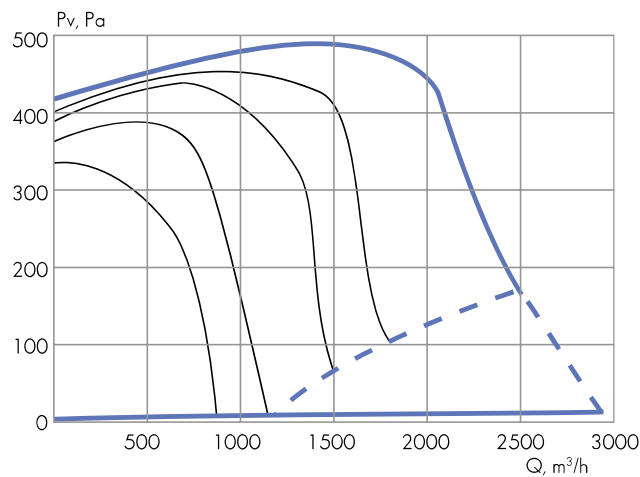
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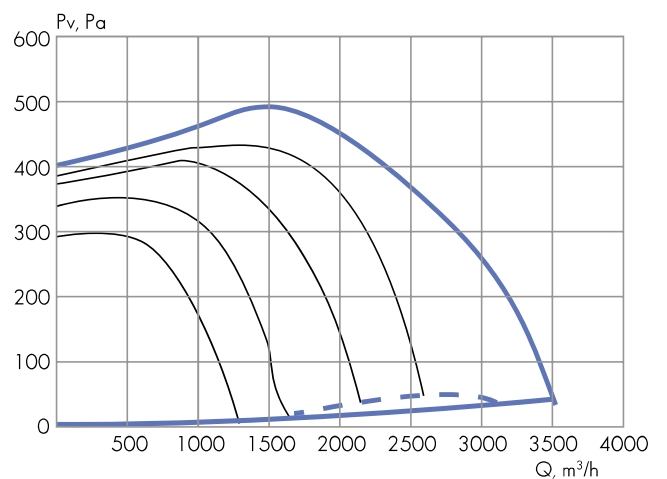
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## RAF-2,8-4-220



## RAF-2,8-4-380

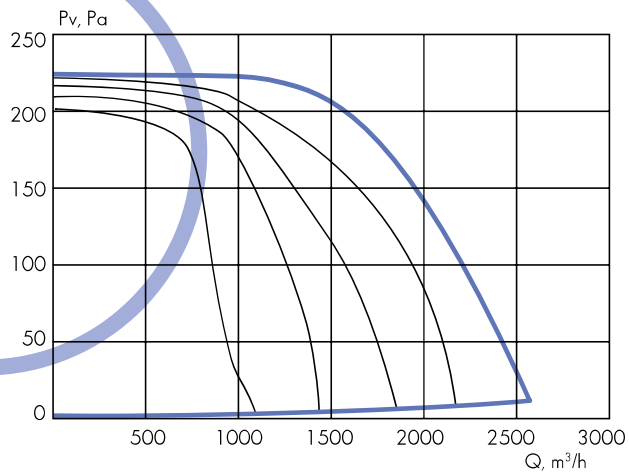


GENERAL AND SPECIAL PURPOSE FANS

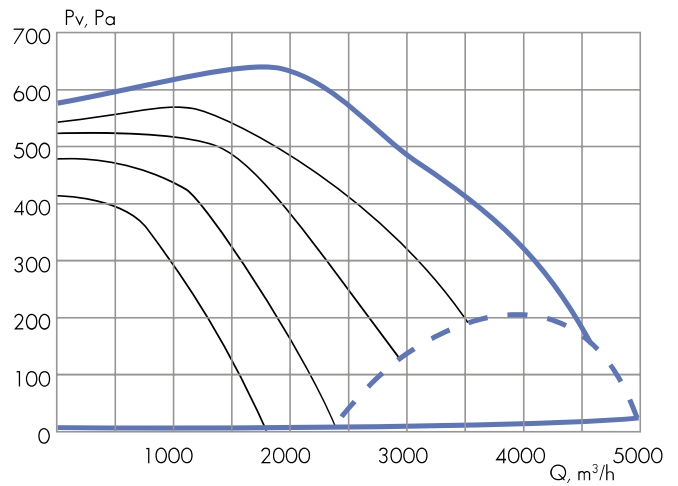




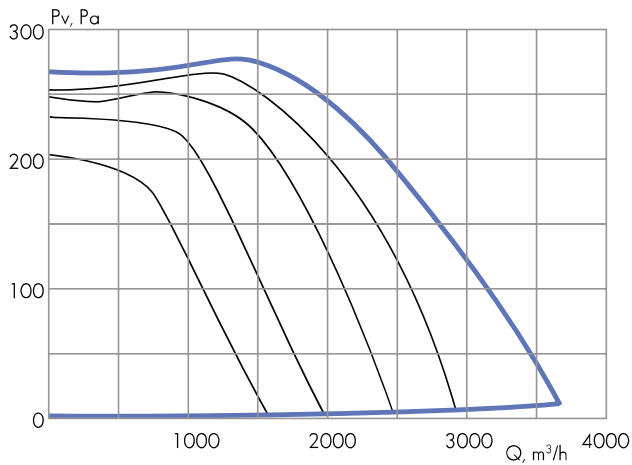
## RAF-2,8-6-380



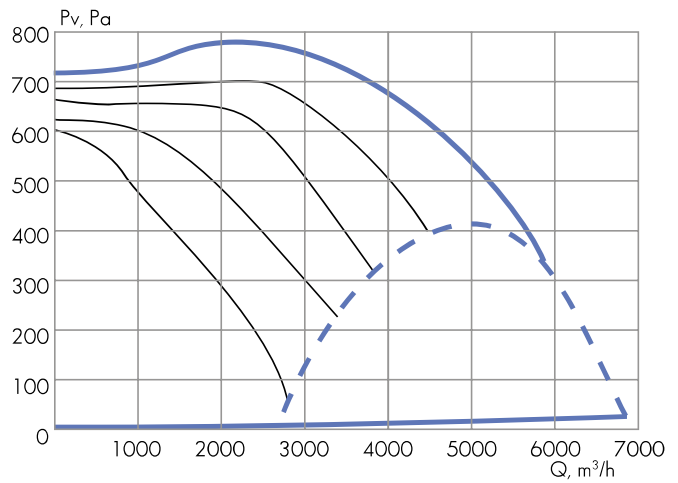
## RAF-3,10-4-380



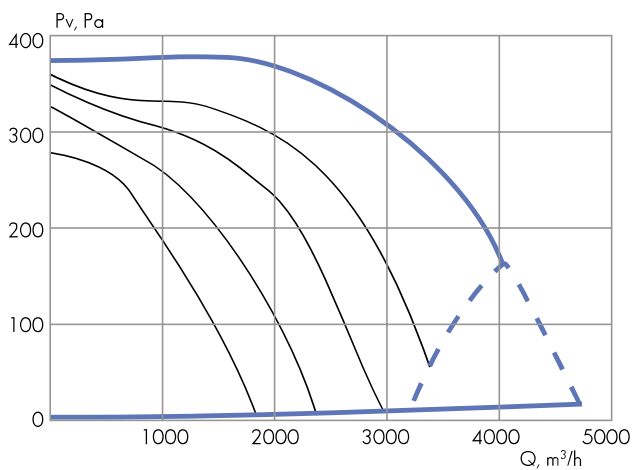
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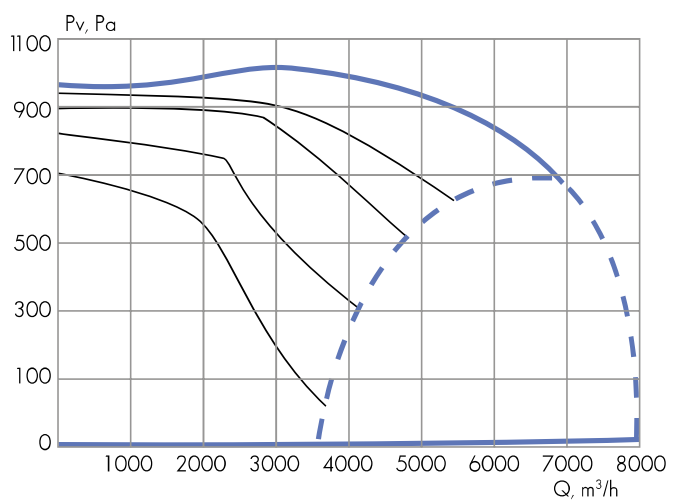
## RAF-3,55-4-380



## RAF-3,55-6-380

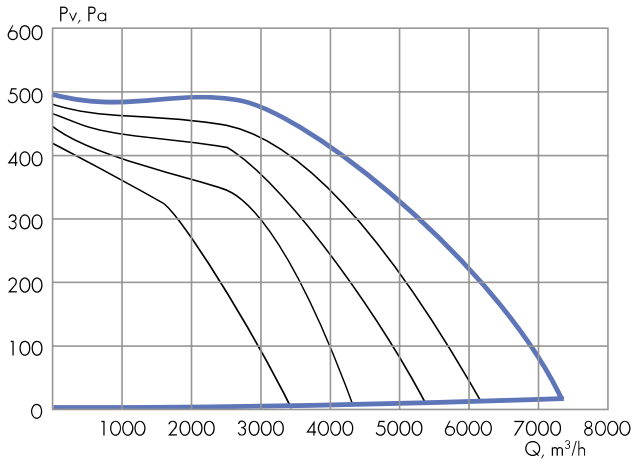


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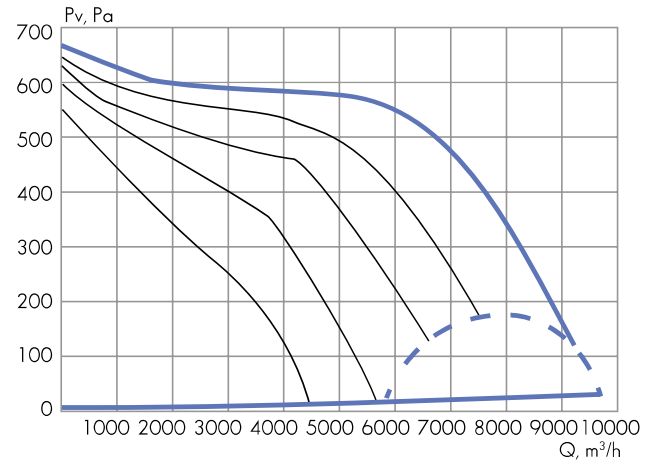


GENERAL AND SPECIAL PURPOSE FANS

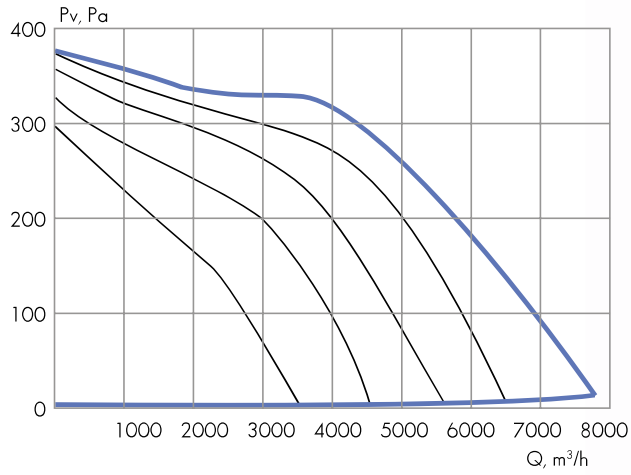
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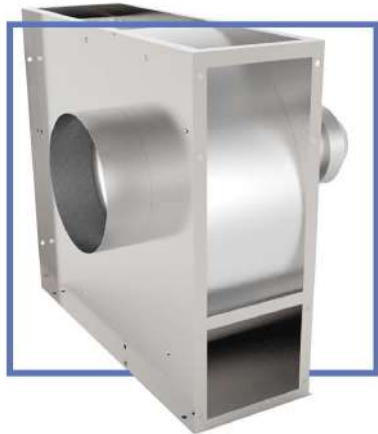
## RAF-4,5-6-380



## RAF-4,5-8-380



# DUF | DUST FANS



▶ they are used in pneumatic transport systems for removing wood chips and sawdust, removing metal dust from machine tools, removing dust and slag in welding production, and in dusty air extraction systems in the production of cement and reinforced concrete structures.

▶ general purpose industrial (N)

### OPERATING CONDITIONS:

- ▶ ambient temperature:
  - from -45°C to +80°C for temperate climates;
- ▶ the average value of vibration velocity of external vibration sources at the fan installation locations is no more than 2 mm/s.

The DUF dust fan has a simplified design that ensures reliable operation when various materials pass through it. The fan consists of the main components: a casing, a special impeller, a cylindrical inlet pipe and an electric motor.

The fan casing is a welded structure (no air leaks) made of carbon steel, the fan can be made of right or left rotation.

The impeller is made of one-way suction according to the 1st design scheme - the impeller is covered with a casing and mounted directly on the motor shaft. Dust fans are manufactured in five standard sizes: DUF-025; DUF-031; DUF-040; DUF-050; DUF-063.

The fans are equipped with standard 3-phase asynchronous motors. DUF dust fans are designed to move air and other gas mixtures whose aggressiveness towards ordinary quality carbon steel is no higher than the aggressiveness of air with a temperature of up to 80° C, do not contain sticky substances, fibrous materials, with a content of dust and other solid impurities of no more than 100 g/m<sup>3</sup>.

Motor ingress protection rating IP54.

It can also be equipped with a frequency converter

**EXAMPLE:**

DUF dust fan, size 031, general purpose industrial design, orientation of the right rotation casing:

**DUF-031-N-00550/4-R-Y**

- ▶ dust fan
- ▶ fan size (•025 •031 •040 •050 •063)
- ▶ design (•N)
- ▶ motor parameters (•I/P)
  - I\* - Motor Power Index - see Table
  - P - number of poles: 2 (3,000 rpm) 4 (1,500 rpm) 6 (1,000 rpm) 8 (750 rpm)
- ▶ casing orientation (•R •L)
- ▶ climatic version (•Y •YHL)

**NOTE:**

All supplied motors are designed with a supply voltage of 380 V/50 Hz by default, direct start, versions for other voltages and connection methods are available upon special agreement.

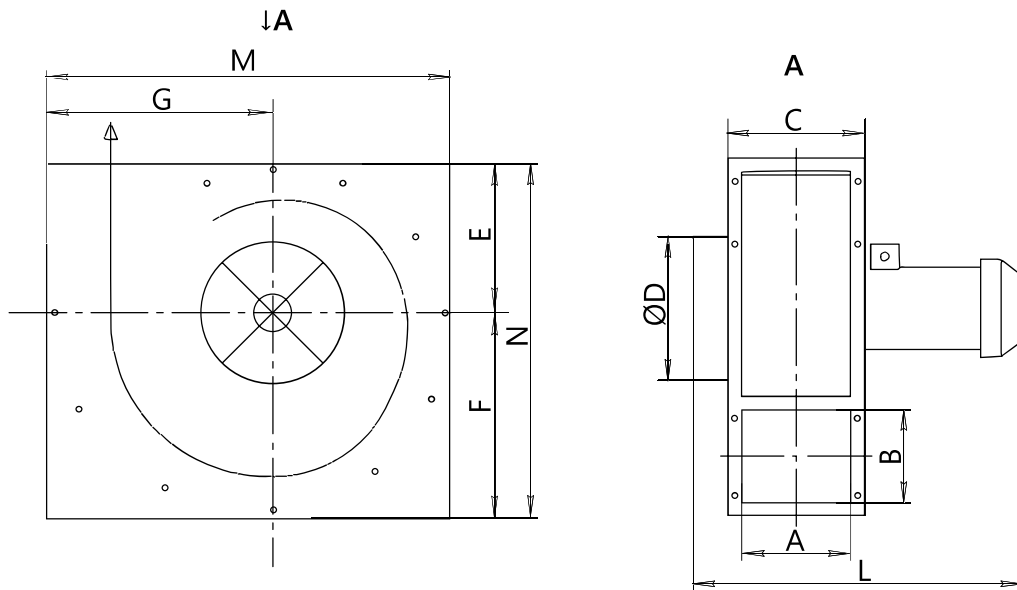
\* The Motor Power Index is shown in the Table below.

Special requirements for the fan are specified additionally and agreed upon with the manufacturer.

Additional equipment is ordered as an individual item (as options).

**DUF MOTOR POWER INDEX**

Nominal power (N <sub>nom</sub> ), kW	0,75...7,5
Motor Power Index (I)	00075...00750

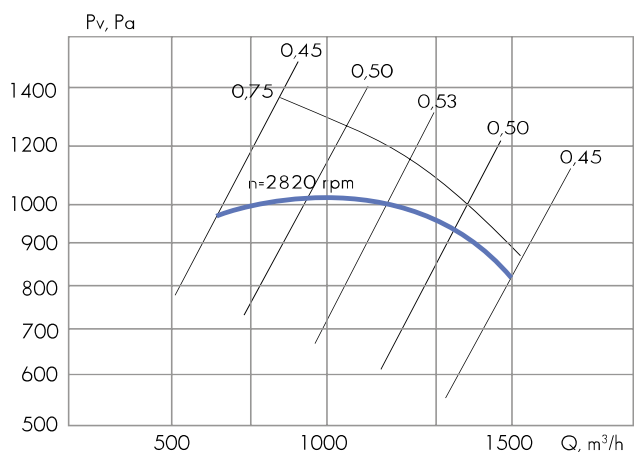


Fan standard size	Installation dimensions, mm									
	A	B	C	D	E	F	G	L	M	N
<b>DUF-025</b>	91	149	141	209	166	234	228	361	395	400
<b>DUF-031</b>	115	190	165	264	210	250	282	430	490	460
<b>DUF-040</b>	150	237	210	336	275	375	323	550	690	650
<b>DUF-050</b>	190	308	250	419	320	440	549	590	760	760
<b>DUF-063</b>	230	378	310	530	394	520	623	700	960	914

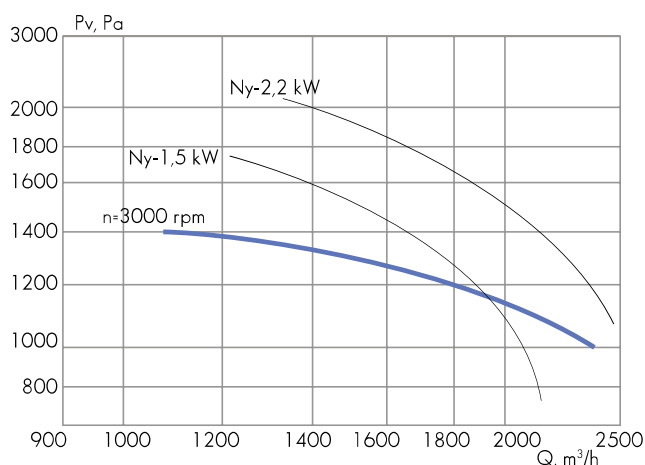


Fan size	Motor installed power, kW	Speed, rpm	Weight, kg max
DUF-025	0,75	3000	27
DUF-031	2,2	3000	38
	3,0	3000	42,5
DUF-040	4,0	3000	67
	5,5	3000	67
DUF-050	3,0	1500	101,5
	5,5	1500	127,5
DUF-063	5,5	1500	172,5
	7,5	1500	188,5

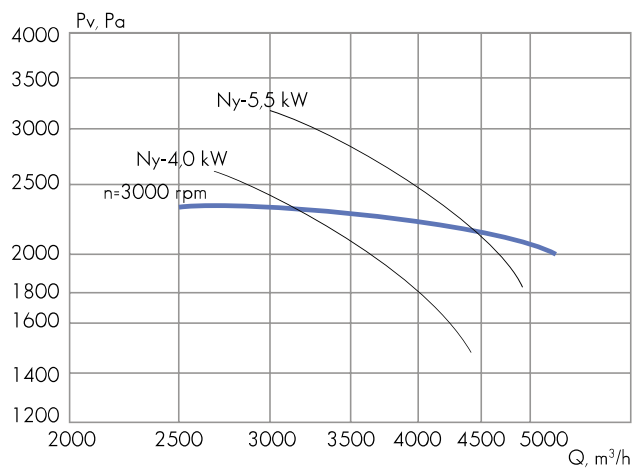
### DUF-025



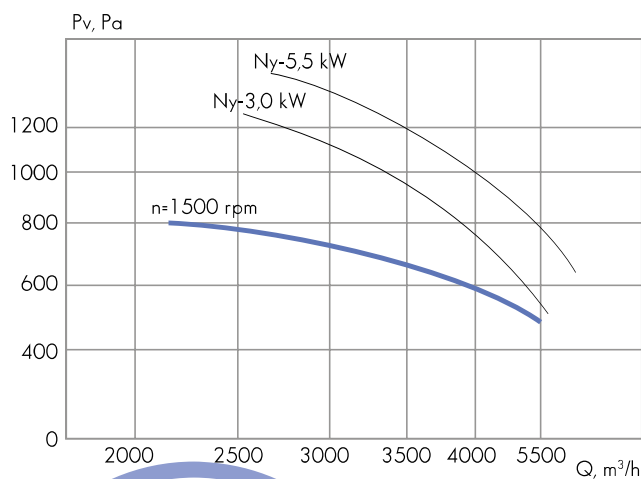
### DUF-031



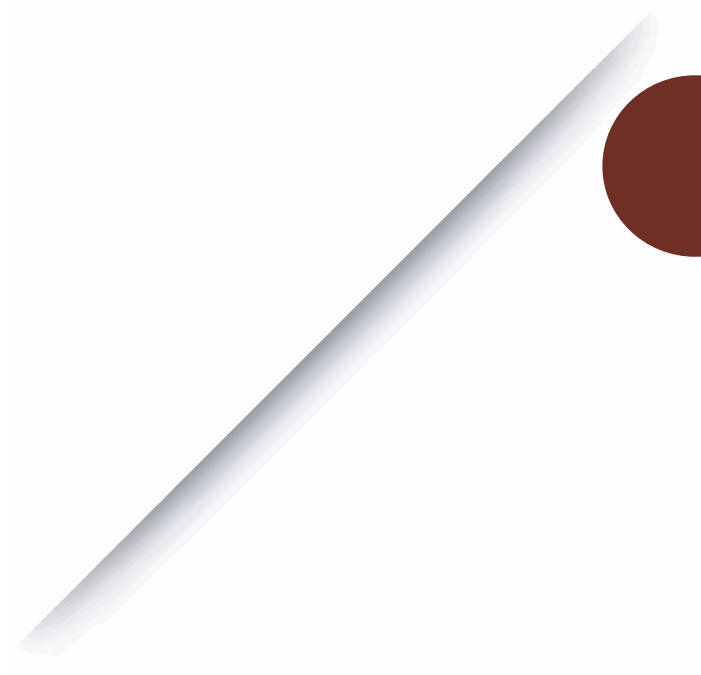
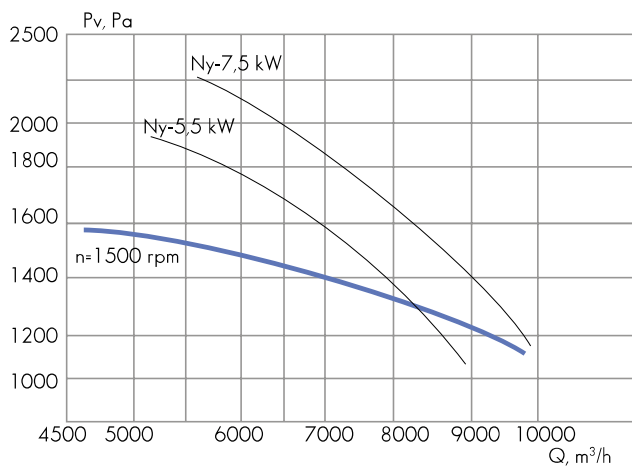
### DUF-040



### DUF-050



# DUF-063



### ADDITIONAL EQUIPMENT

SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINETS <b>SAU-PPV, SAU-SPV, SAU-VK</b>	FREQUENCY CONVERTER <b>ASC, FC</b>
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## DESCRIPTION OF RADIAL ROOF FANS

The range of ventilation equipment of the company "CCK TM" includes radial roof fans of the KROS and KROV series. Roof fans of these series are designed for exhaust ventilation systems installed on the roofs of residential, public and industrial buildings. The standard size range of fans meets various requirements.

Radial roof fans of the KROS and KROV series feature a number of advantages:

- aerodynamic schemes of impellers are characterized by increased efficiency, reaching 75%;
- fans can be equipped with electric motors with increased energy efficiency class IE2 in addition to the standard IE configuration;
- the impellers of radial roof fans are characterized by high balancing accuracy, which ensures reliability and long service life.

### KROS FANS

KROS are horizontal outlet roof fans.

KROS fans are manufactured in 12 standard sizes and provide a wide range of productivity modes from 800 m<sup>3</sup>/h to 100,000 m<sup>3</sup>/h and static pressure up to 1,200 Pa in continuous mode and up to 2,000 Pa for no more than 120 minutes.

Three modifications of impellers are used with six (KROS60, KROS61) and nine (KROS91) blades with a wide range of R20 impeller diameters. The fans create a high flow rate, have minimal dynamic pressure, and consume power with increasing flow rate without overloading the motor. The impeller is mounted directly on the motor shaft. The fan is equipped with standard asynchronous three-phase single-speed motors or motors equipped with frequency converters.

All the main elements of the fan are made of steel with a paint and varnish coating, the casing is made of galvanized steel, which makes the fan resistant to atmospheric precipitation. The fans are also equipped with special impellers made of stainless steel and aluminum.

KROS fans are made with a square or hexagonal cross-section of the casing, have an impeller with backward-curved blades and a toroidal inlet pipe with a large inlet diameter. To protect the fan from atmospheric effects, the storm-proof deflectors are installed in the output section of the casing.

### KROV FANS

KROV are vertical outlet roof fans.

KROV fans are manufactured in 12 standard sizes and provide a wide range of performance modes from 800 m<sup>3</sup>/h up to 100,000 m<sup>3</sup>/h and static pressure up to 1,200 Pa in continuous mode and up to 2,000 Pa for no more than 120 minutes.

Roof fans feature a "barrel-shaped" casing with air exhaust to atmosphere upwards, low height and weight; special protection of the serviced premise from atmospheric precipitation is provided. These fans also use modifications of impellers with six (60 and 61) and nine (91) backward-curved blades of a special shape with a wide range of R20 impeller diameters.

### KROM FANS

Low profile vertical outlet roof fans. KROM fans are manufactured in 8 standard sizes and provide a range of performance modes from 300 to 10,000 m<sup>3</sup>/h and static pressure up to 600 Pa.

The fans are equipped with rotor motors, which are characterized by considerable compactness, low weight and the ability to adjust the operating mode during operation. The sound-insulated design of KROM-S fans ensures optimized noise characteristics.

All fans feature the ability to smoothly change their performance. The fans are equipped with built-in thermal contacts with external terminals to protect the motor from overheating.

### OZA-R FANS

OZA-R axial roof fans are manufactured in 9 standard sizes and provide a range of performance modes from 5,000 m<sup>3</sup>/h up to 54,000 m<sup>3</sup>/h and at a pressure of 280 Pa.

OZA-R fans are designed for use in exhaust installations of standard ventilation systems.

The axial roof fans can be installed on the roofs of industrial, agricultural, administrative and residential buildings.

OZA-R fans feature many designs: general purpose industrial, corrosion-resistant; explosion-proof, corrosion-resistant.



## NOMENCLATURE OF RADIAL ROOF FANS

TYPE	OPERATING MODE	STANDARD SIZE												DESIGN VERSION			
		035	040	045	050	056	063	071	080	090	100	112	125	N <sup>1</sup>	CR <sup>2</sup>	V <sup>3</sup>	VCR1 <sup>4</sup>
<b>KROS</b>	T80	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<b>KROV</b>	T200	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
<b>OZA-R</b>	T80		■	■	■	■	■	■	■	■	■			■	■	■	■

TYPE	OPERATING MODE	STANDARD SIZE									DESIGN VERSION						
		2,25	3,10	3,55	4	4,5	5	5,6	6,3	N <sup>1</sup>	CR <sup>2</sup>	V <sup>3</sup>	VCR1 <sup>4</sup>				
<b>KROM</b>	T80	■	■	■	■	■	■	■	■	■	■	■					

- <sup>1</sup> - general purpose industrial design;
- <sup>2</sup> - corrosion-resistant design;
- <sup>3</sup> - explosion-proof design;
- <sup>4</sup> - explosion-proof, corrosion-resistant design.

## CONDITIONS FOR THE MOVED MEDIUM

Design version	Flow path	Designation	Operation	Temperature of the moved medium	Notes
general purpose industrial	carbon steel	N	For moving air and other non-explosive gas-vapor-air medium that do not cause corrosion of carbon steel more than 0.1 mm per year, with a content of dust and other solid impurities not exceeding 0.1 g/m <sup>3</sup> , free of sticky substances and fibrous materials	-40°...+80°	
corrosion-resistant	stainless steel	CR1	For moving air with admixtures of non-explosive vapors and gases that are not aggressive to stainless steel, but cause accelerated corrosion of ordinary carbon steel, with a content of dust and other solid impurities not exceeding 0.1 g/m <sup>3</sup> , do not contain sticky and fibrous materials.	-40°...+80°	
explosion-proof	carbon steel	V	For moving gas-vapor-air explosive mixtures, which do not contain explosives that cause corrosion of carbon steel more than 0.1 mm per year, with a content of dust and other solid impurities not exceeding 0.1 g/m <sup>3</sup> , free of sticky substances and fibrous materials.	-40°...+80°	They are not used for moving gas-vapor-air mixtures from technological installations where explosive substances are heated above their auto-ignition temperature or are under excessive pressure.
explosion-proof corrosion-resistant	stainless steel	VCR1	For moving gas-vapor-air mixtures, not containing explosives and contaminated with impurities of aggressive vapors and gases, in which the corrosion rate of stainless steel does not exceed 0.1 mm per year with a dust and other solid impurity content of no more than 0.1 g/m <sup>3</sup> , not containing sticky substances and fibrous materials.	-40°...+80°	

\* equipment is ordered upon an individual order.





# KROS | HORIZONTAL OUTLET RADIAL ROOF FANS



- ▶ provide horizontal air outlet;
- ▶ have minimal dynamic pressure.

▶ **INTENDED USE:**

- ventilation systems - T80 operating mode;
- sanitary and industrial installations - T80 and T200 operating modes..

**•035•040•045•050•056•063•071•080•090•100•112•125**

- ▶ general purpose industrial (N);
- ▶ corrosion-resistant (CR1 and CR3);
- ▶ explosion-proof (V);
- ▶ corrosion-resistant, explosion-proof (VCR1).

**OPERATING CONDITIONS:**

- ▶ ambient temperature:
  - from -45°C to +40°C for temperate climates;
  - from -60°C to +40°C for temperate and cold climates;
  - from -10°C to +50 C for tropical climates;
- ▶ the average value of vibration velocity of external vibration sources at the fan installation locations is no more than 2 mm/s;
- ▶ conditions for the moved medium are shown in the Table "Conditions for the moved medium".

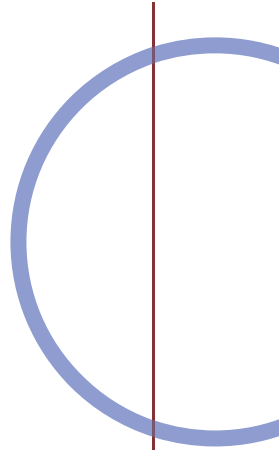
KROS fans feature a new and improved impeller with backward-curved blades, a toroidal inlet pipe with a large inlet diameter.

The impeller is mounted directly on the motor shaft. The fans are equipped with high-quality three-phase asynchronous single-speed motors. It is possible to use frequency control of the rotation speed.

The fan has improved protection against rain precipitations and leaks.

Motor ingress protection rating IP54.

The installation dimensions on the base plate are unified with KROV roof fans. Roof fans can be easily installed with a reduced-size STAM roof curb.





**EXAMPLE:**

KROS91 radial roof fan, size 056, operating mode T80, corrosion-resistant, motor with frequency speed control with nominal power  $N_{nom} = 7.5$  kW, number of poles 4, climatic version Y1, energy efficiency class of the electric motor IE2

**KROS91-056-T80-CR1-00750/4F-Y1-IE2**

- ▶ radial roof fan (•KROS60 •KROS61 •KROS91)
- ▶ fan size (•035 •040 •045 •050 •056 •063 •071 •080 •090•100 •112 •125)
- ▶ operating mode
  - T80 - temperature of the moved medium up to 80o C (operating period - continuous)
  - T200 - temperature of the moved medium up to 200o C (operating period - continuous)
- ▶ design(•N •CR1 •CR3 •V •VCR1 (for fans with VFD + Ex only as part of SAU)
- ▶ motor parameters<sup>1</sup> (•I/P •I/PF)
  - I<sup>2</sup> - motor power index - see the Table
  - P - number of poles: 2 (3,000 rpm) 4 (1,500 rpm) 6 (1,000 rpm) 8 (750 rpm) 12 (500 rpm)
  - F - using the VFD
- ▶ climatic version (•Y1 •YHL1 •T1)
- ▶ energy efficiency class of the electric motor<sup>3</sup>: •IE2

**NOTE:**

<sup>1</sup>By default all supplied motors are designed for 380V, 50Hz, direct start. Design types of other voltages and connection methods are available upon special agreement. Starting of motors over 15 kW must be done using a soft starter.

<sup>2</sup>The Motor Power Index is shown in the Table

<sup>3</sup>For Y1, YHL1 and T1 climatic versions, additional protection of the motor and fan outlet is provided.

<sup>4</sup>Specified if different from standard.

Additional equipment is ordered as an individual item (as options).

Special requirements for the fan are specified additionally and agreed upon with the manufacturer.

**KROS MOTOR POWER INDEX**

Nominal power (Nnom), kW	0,18...0,75	1,1...7,5	11...90
Motor Power Index (I)	00018...00075	00110...00750	01100...09000

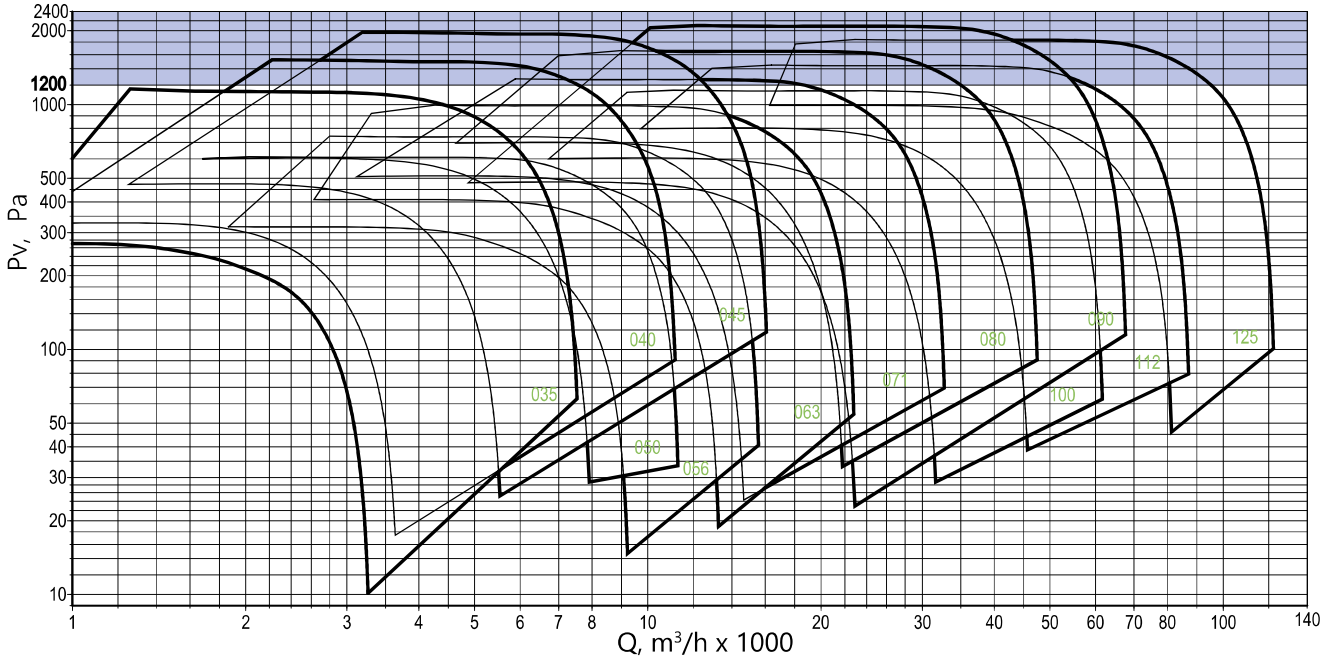
**COMPLETE SET OF THE FAN WITH A ROOF CURB**

Fan standard size	035	040	045	050	056	063	071	080	090	100	112	125
STAM standard size	35	40	45	51	56	63	71	88	90	109	112	136

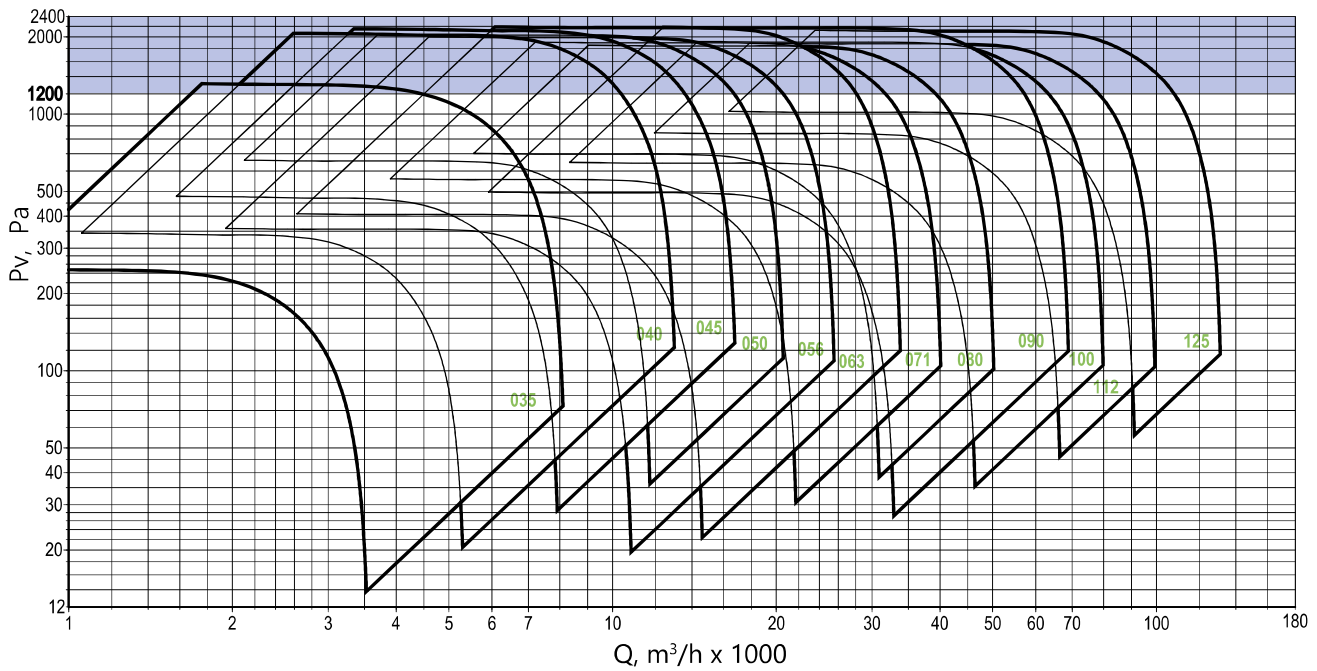


# AREAS OF AERODYNAMIC PARAMETERS

## KROS DIRECT CONNECTION TO MAINS 380 V/50 HZ



## KROS FAN WITH THE VARIABLE-FREQUENCY DRIVE



**NOTE:**

Operating time in an area where the total pressure is more than 1200 Pa, no more than 120 minutes.  
 Dynamic fan pressure is not used, so static pressure curves are shown.

# 035

Curve number	Tfan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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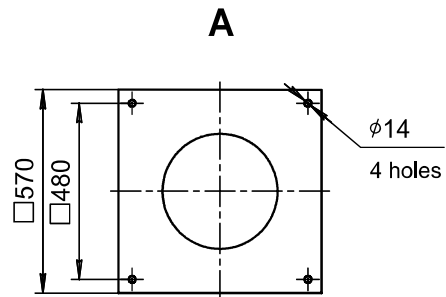
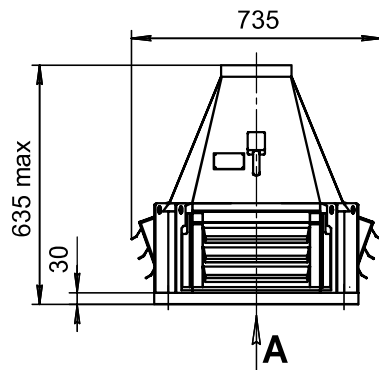
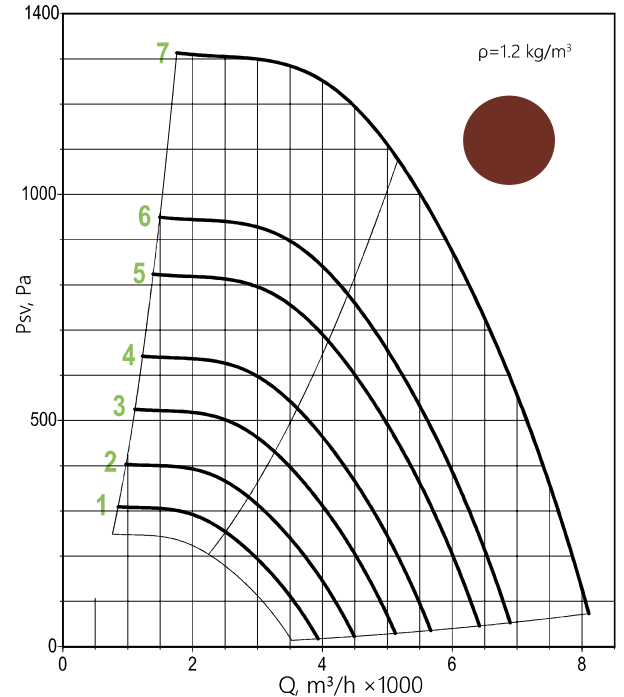
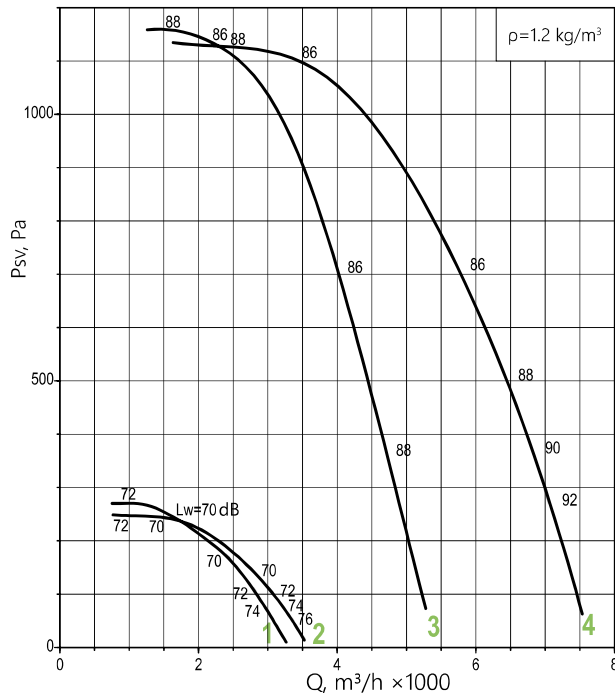
**ALL MODES**

1	KROS61	0,18**	4	0,73	38
2	KROS91	0,25		0,83	39
3	KROS60	1,5	2	3,2	47
4	KROS91	2,2		4,6	49

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROS91-F	1472	0,25	4	39
2		1681	0,37		40
3		1918	0,55		42
4		2122	0,75		43
5		2403	1,1	2	46
6		2580	1,5		47
7		3034	2,2		49



**NOTE**

\* When changing the motor type, the weight may change.

\*\* The motor is not available in explosion-proof design.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

70 GENERAL AND SPECIAL PURPOSE FANS

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 040

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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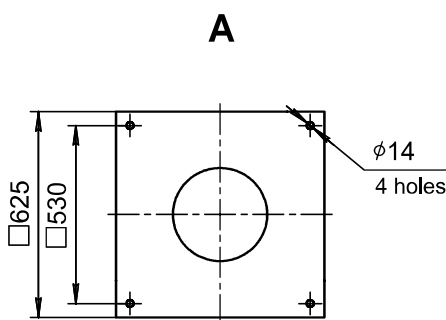
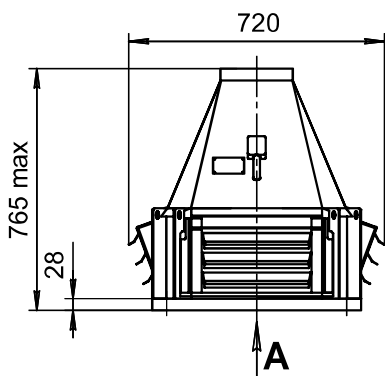
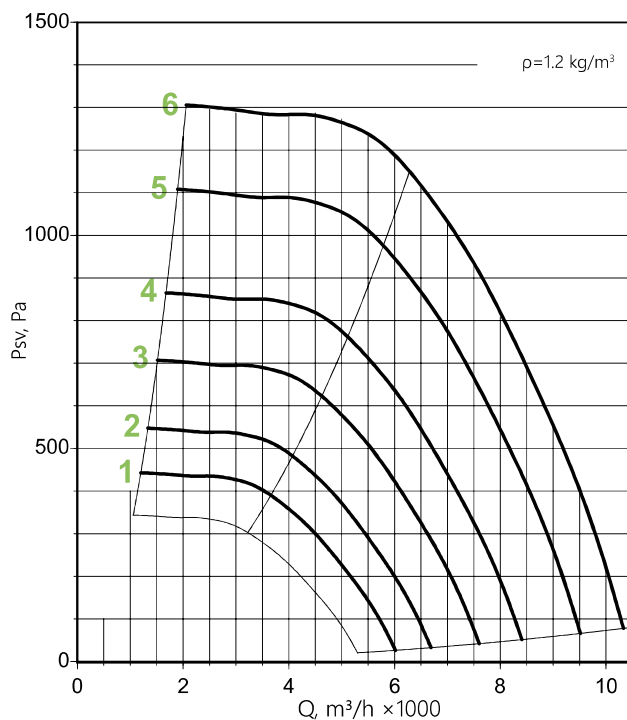
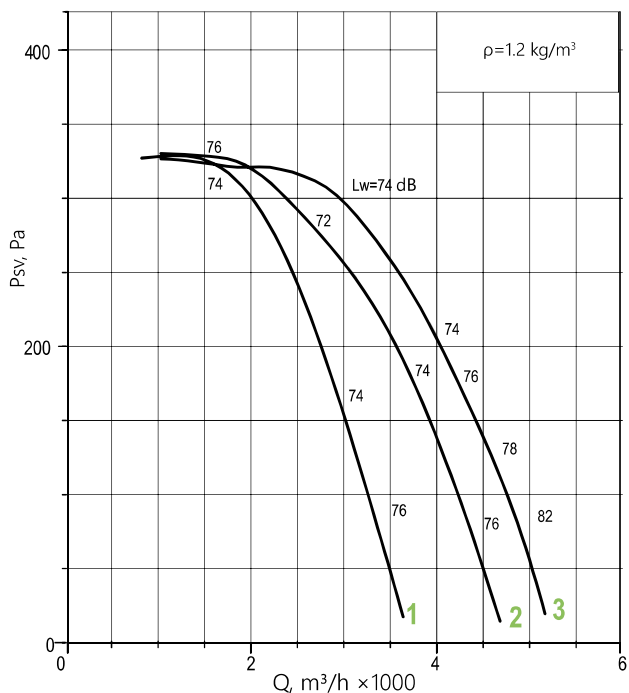
**ALL MODES**

1	KROS60	0,25	4	0,83	40
2	KROS61	0,37		1,18	41
3	KROS91	0,55		1,5	43

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
--------------	----------	-----------------------	----------	-----------------	-------------

**WITH FREQUENCY CONVERTER**

1	KROS91-F	1537	0,55	4	47
2		1709	0,75		48
3		1942	1,1		52
4		2148	1,5	2	54
5		2431	2,2		55
6		2639	3		59



**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 045

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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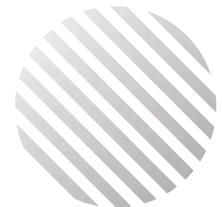
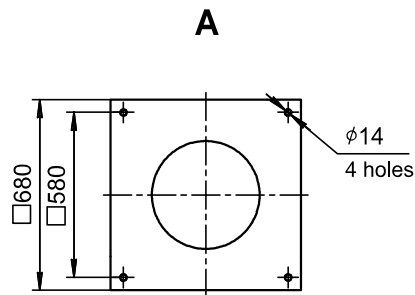
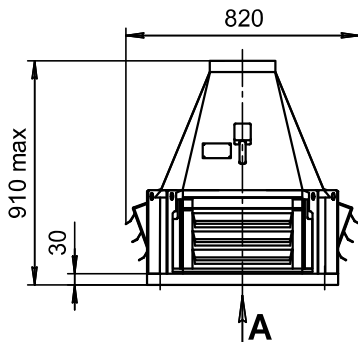
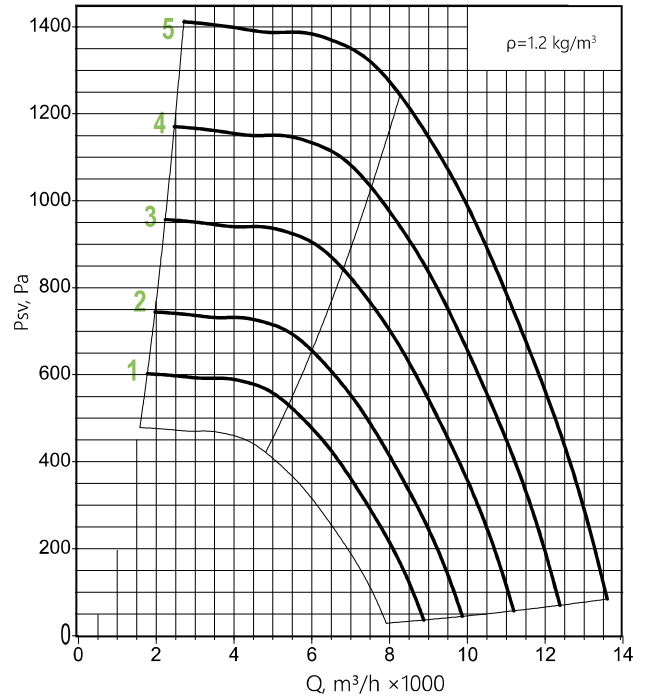
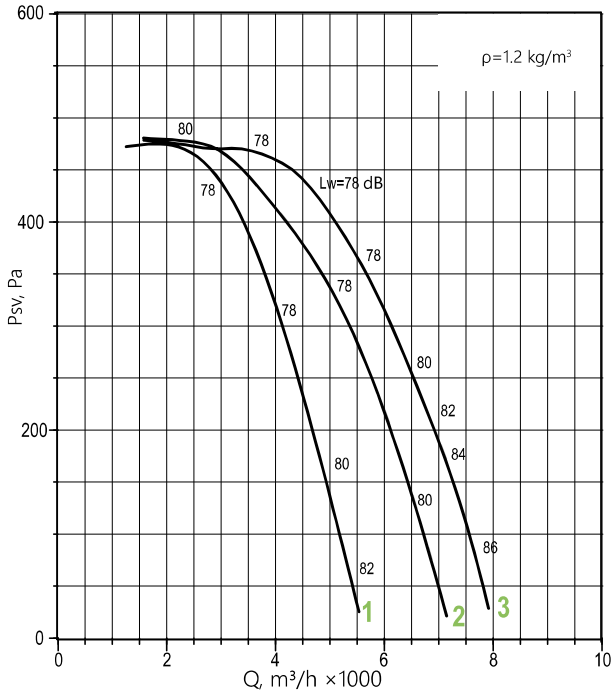
**ALL MODES**

1	KROS60	0,55	4	1,5	61
2	KROS61	0,75		2,2	63
3	KROS91	1,1		2,6	67

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROS91-F	1593	1,1	4	58
2		1771	1,5		60
3		2008	2,2		61
4		2221	3		65
5		2439	4		81



GENERAL AND SPECIAL PURPOSE FANS

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**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 050

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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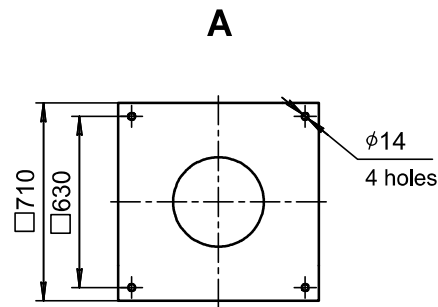
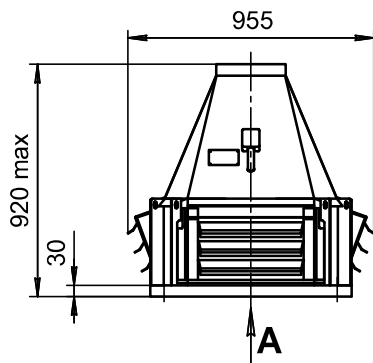
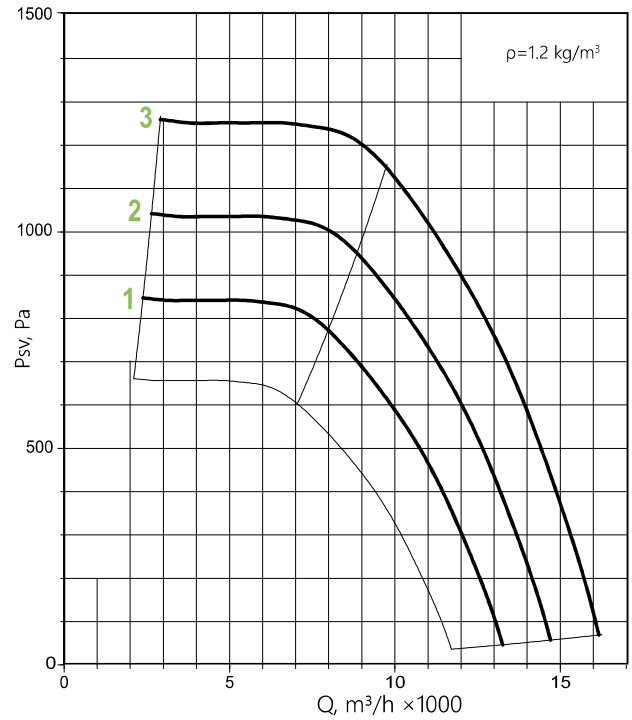
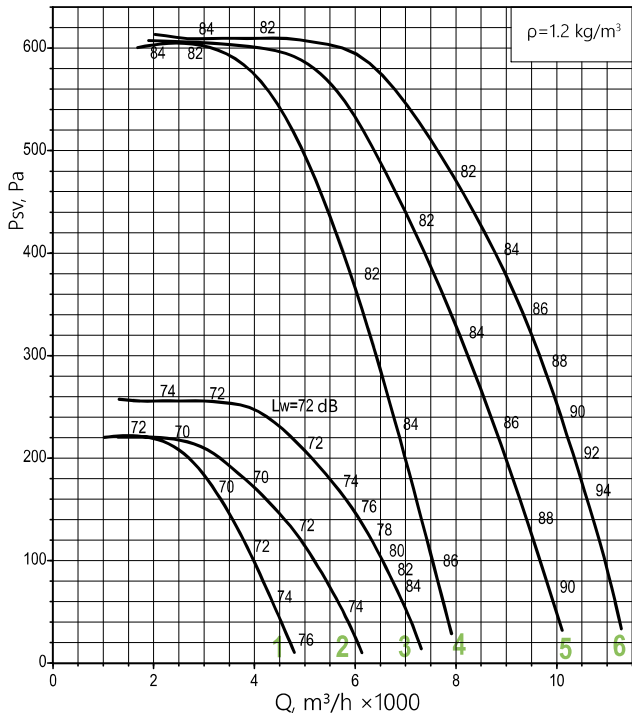
**ALL MODES**

1	KROS60	0,25	6	1,04	68
2	KROS61	0,37		1,31	71
3	KROS91	0,55		1,74	72
4	KROS60	1,1	4	2,6	76
5	KROS61	1,5		3,6	78
6	KROS91	2,2		5,1	81

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROS91-F	1669	2,2	4	81
2		1851	3		83
3		2035	4		92



**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 056

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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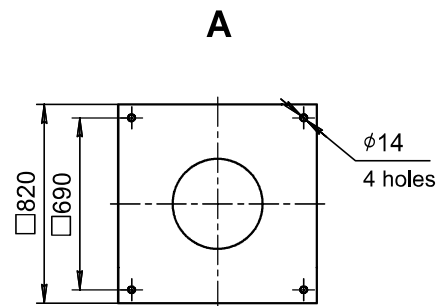
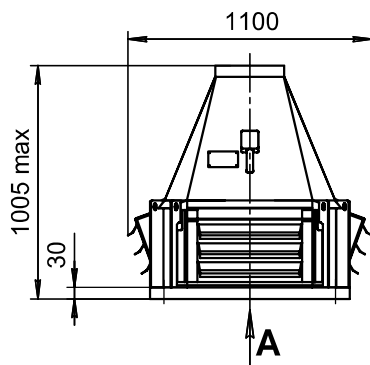
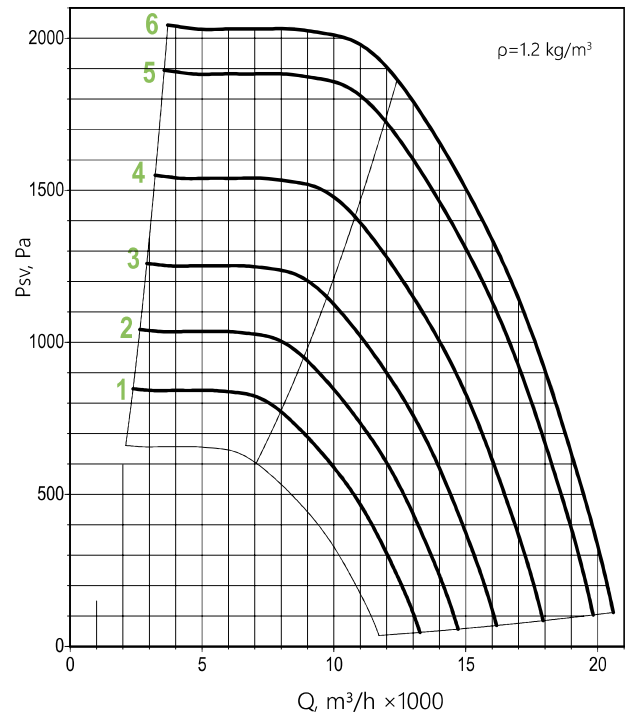
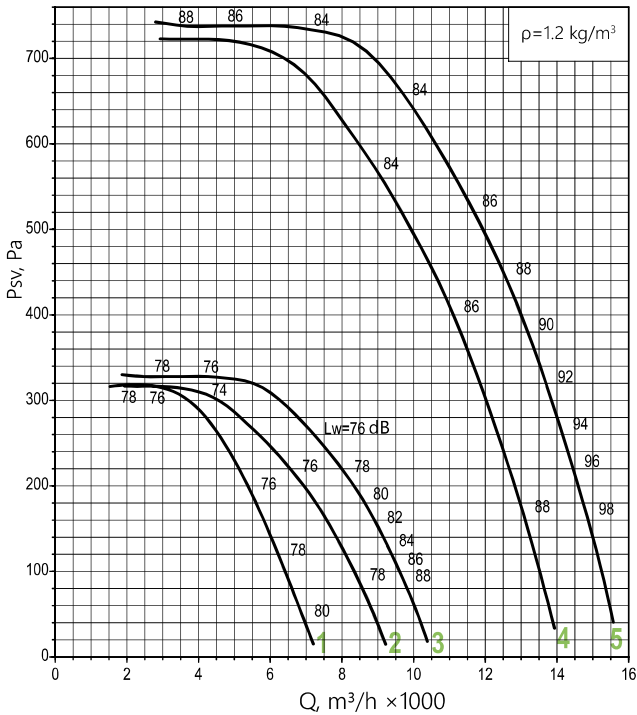
**ALL MODES**

1	KROS60	0,55	6	1,74	90
2	KROS61	0,75		2,3	94
3	KROS91	1,1		3,2	96
4	KROS61	2,2	4	5,1	99
5	KROS91	3		7,3	101

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROS91-F	1096	1,1	6	96
2		1216	1,5		99
3		1379	2,2		107
4		1528	3	4	101
5		1686	4		110
6		1876	5,5		131



**NOTE**

\* When changing the motor type, the weight may change.  
 Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

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**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 063

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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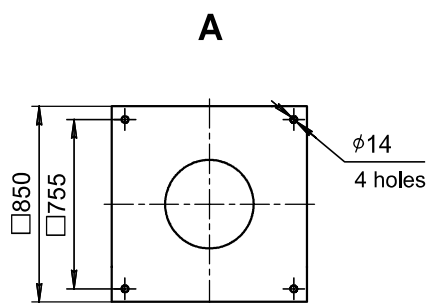
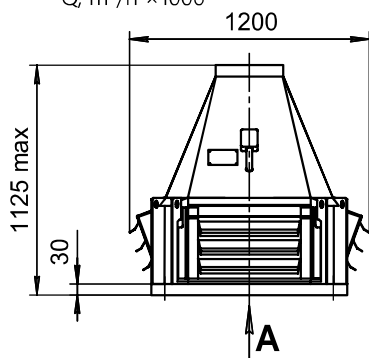
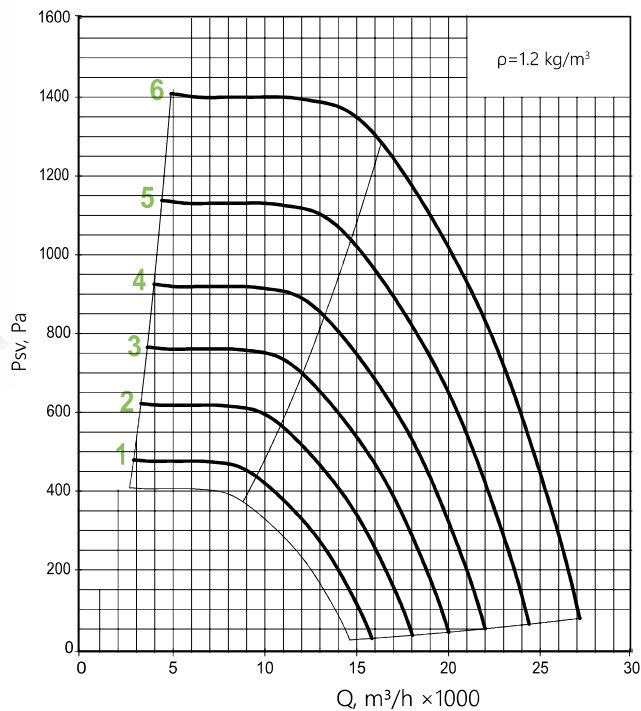
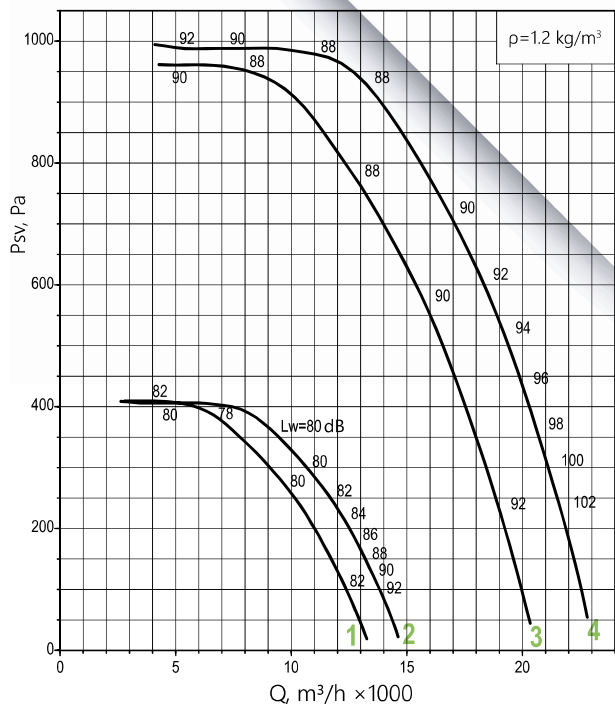
**ALL MODES**

1	KROS61	1,1	6	3,2	106
2	KROS91	1,5		4,1	109
3	KROS61	4	4	8,6	120
4	KROS91	5,5		11,7	141

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROS91-F	996	1,5	6	109
2		1135	2,2		117
3		1259	3		121
4		1384	4	4	132
5		1535	5,5		141
6		1708	7,5		165



**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 071

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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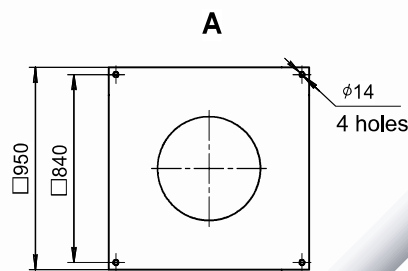
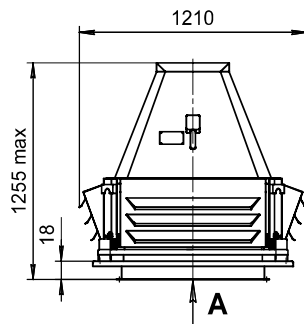
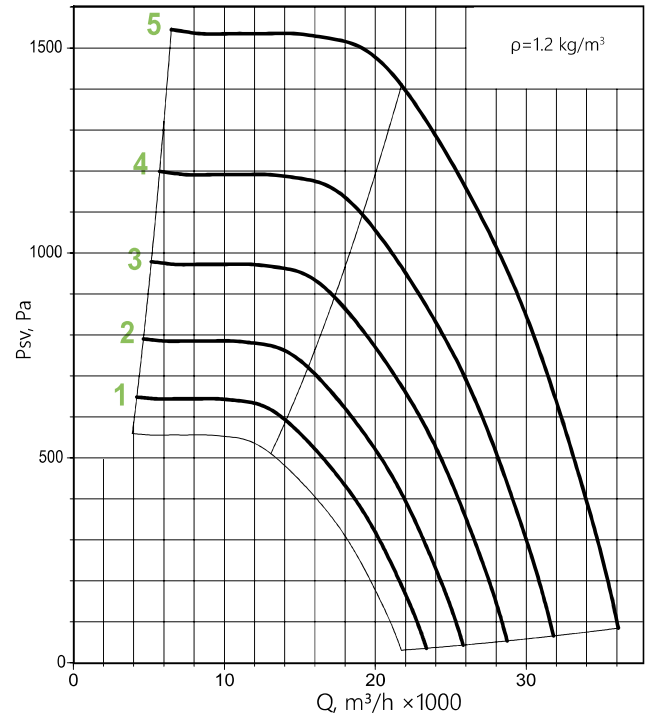
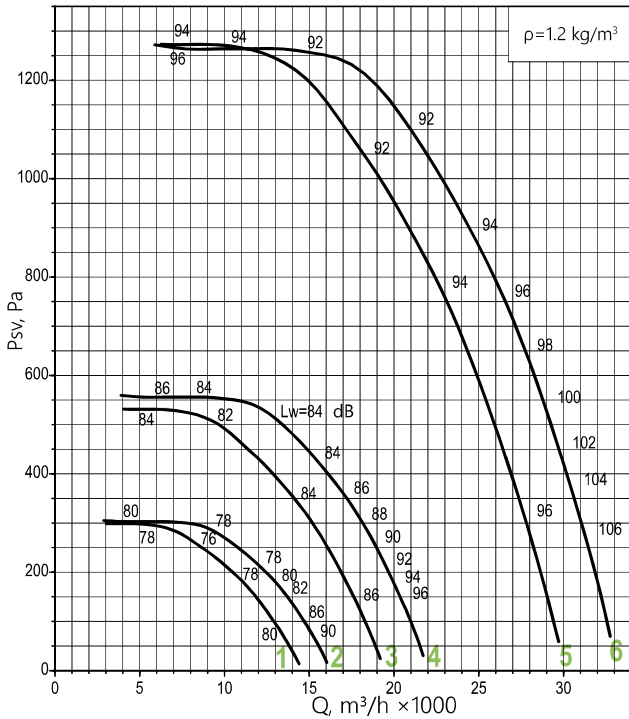
**ALL MODES**

1	KROS60	0,75	8	2,1	140
2	KROS91	1,1		3	143
3	KROS61	2,2	6	5,8	149
4	KROS91	3		7	153
5	KROS61	7,5	4	15,6	197
6	KROS91	11		23	209

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROS91-F	1028	3	6	153
2		1135	4		164
3		1263	5,5		178
4		1398	7,5	189	
5		1587	11	4	209



**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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GENERAL AND SPECIAL PURPOSE FANS



# 080

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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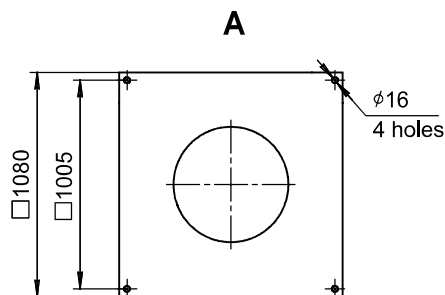
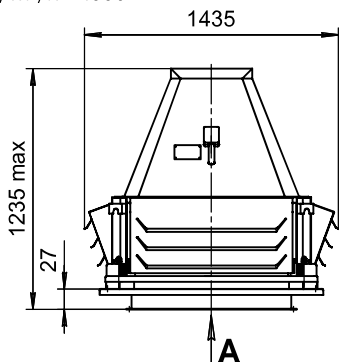
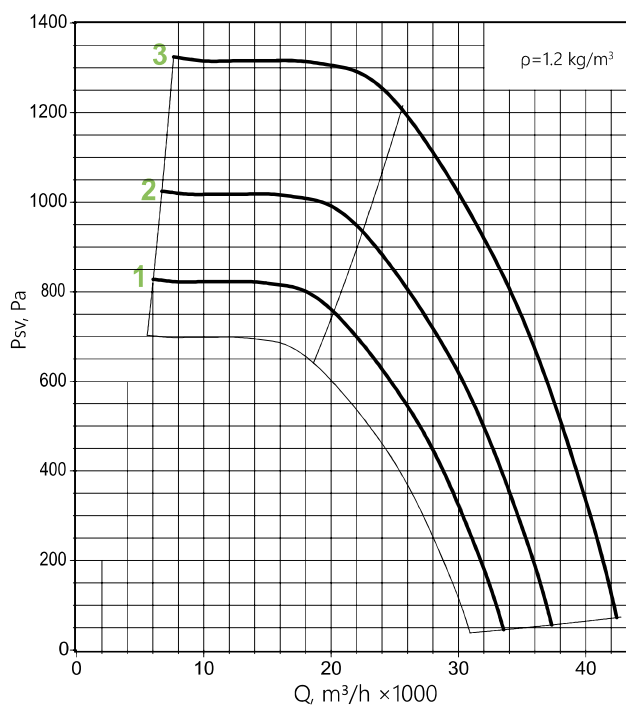
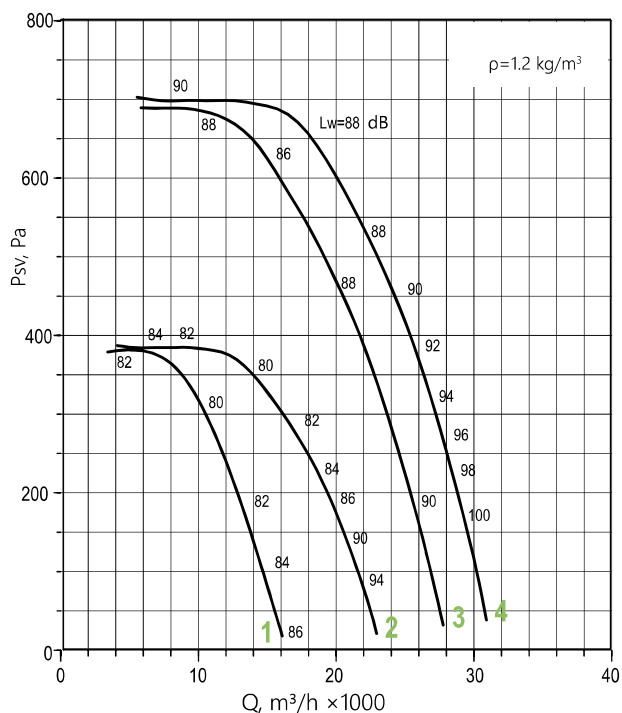
### ALL MODES

1	KROS60	1,5	8	4,6	192
2	KROS91	2,2		6,3	201
3	KROS61	4	6	9	210
4	KROS91	5,5		12	224

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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### WITH FREQUENCY CONVERTER

1	KROS91-F	1031	5,5	6	224
2		1147	7,5		235
3		1304	11		261



### NOTE

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (L<sub>p</sub> sound pressure levels) are given in the Appendix.

### ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 090

Curve number	T Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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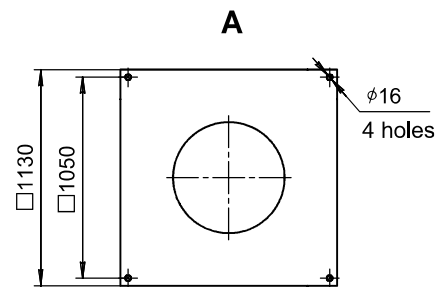
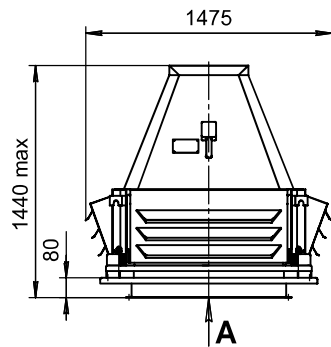
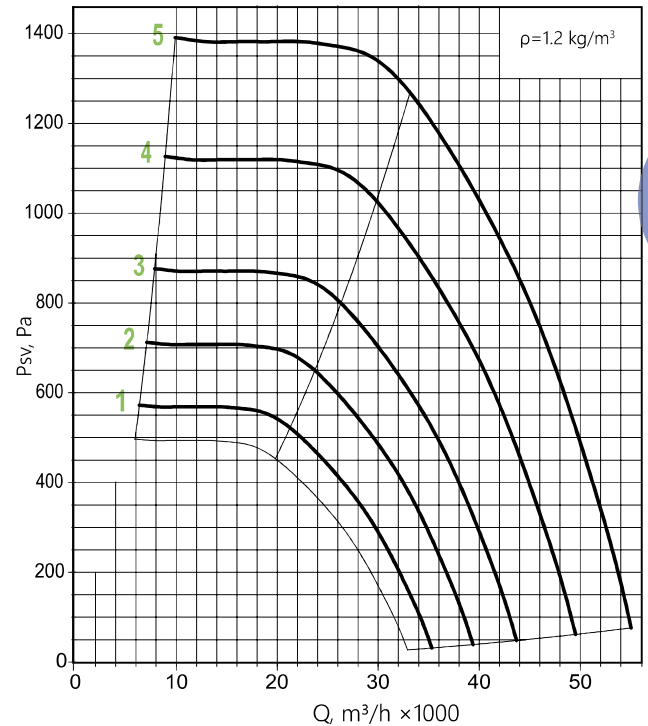
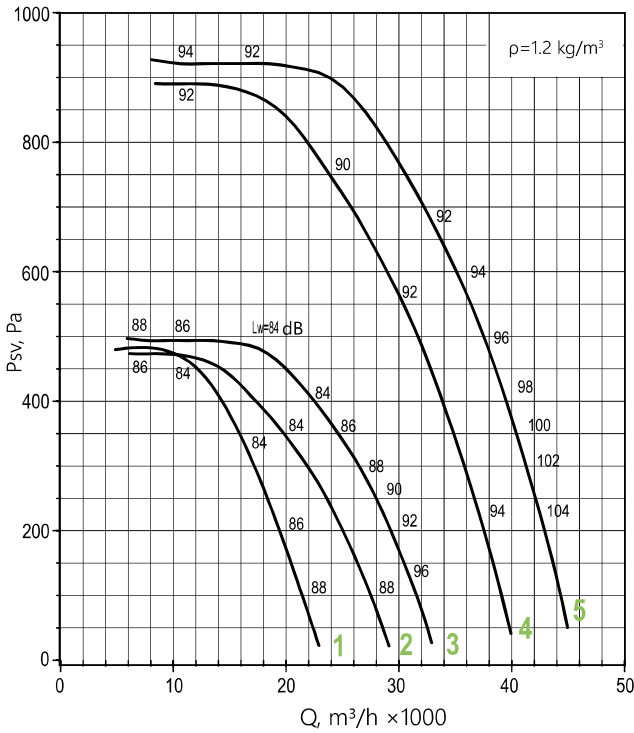
**ALL MODES**

1	KROS60	2,2	8	6,3	237
2	KROS61	3		8	243
3	KROS91	4		10,5	256
4	KROS61	7,5	6	17,5	271
5	KROS91	11		24	297

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROS91-F	762	4	8	256
2		850	5,5		266
3		943	7,5		297
4	KROS91-F	1069	11	6	297
5		1188	15		329



**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

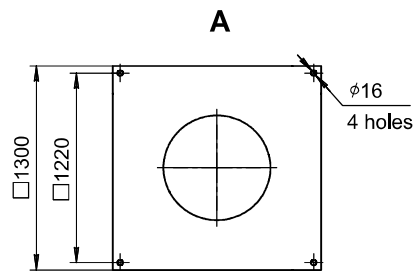
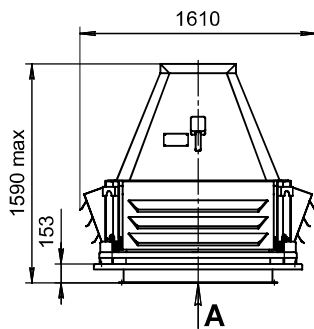
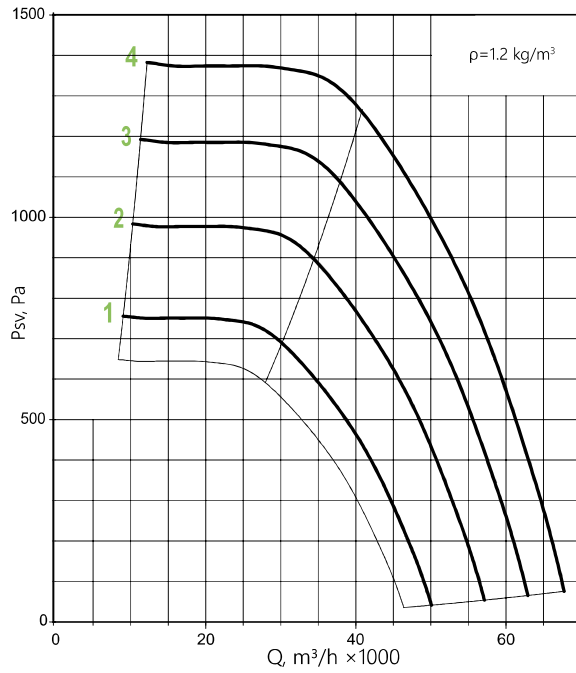
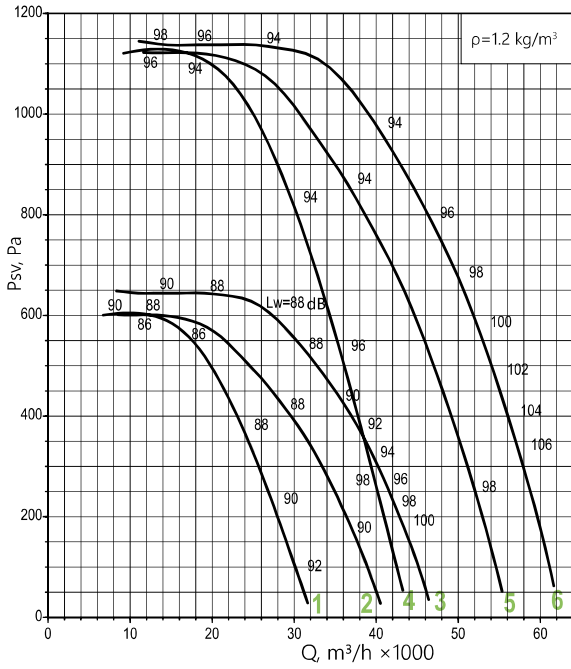
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 100

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	KROS60	4	8	10,5	330
2	KROS61	5,5		13,6	340
3	KROS91	7,5		18	371
4	KROS60	11	6	24	373
5	KROS61	15		32	403
6	KROS91	18,5		37	410

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>					
1	KROS91-F	788	7,5	8	371
2		899	11		398
3		990	15	6	403
4		1066	18,5		410



**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

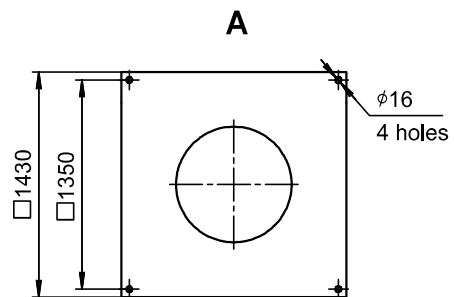
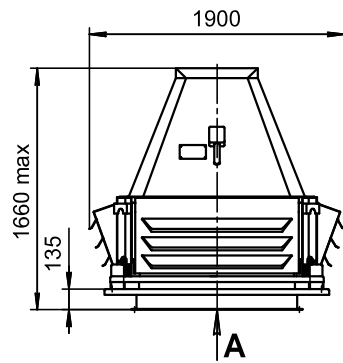
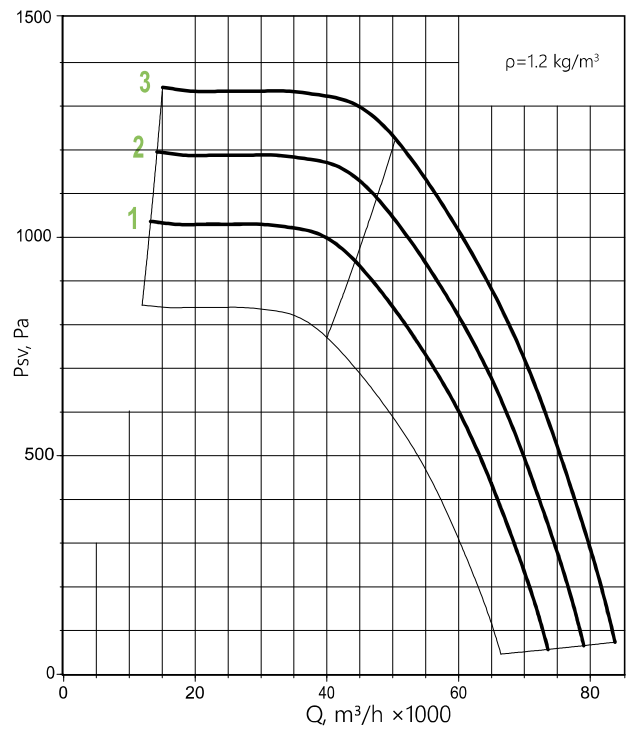
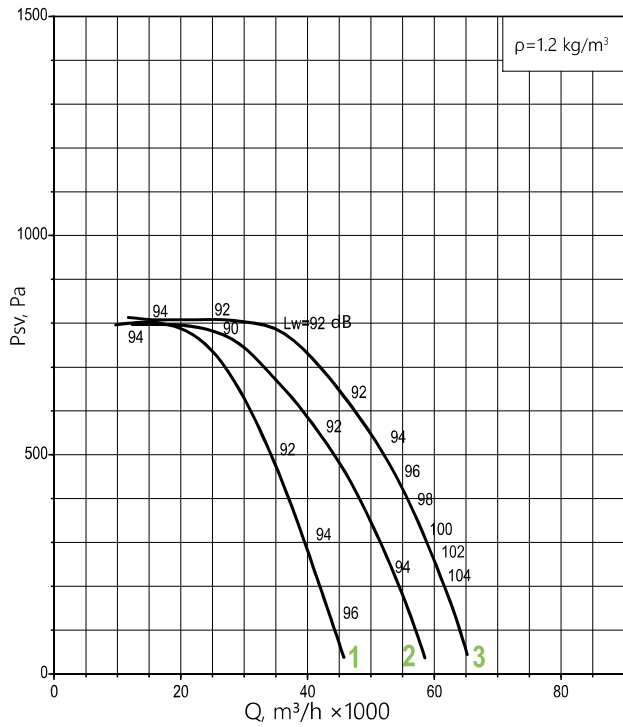
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 112

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	KROS60	7,5	8	18	399
2	KROS61	11		26	456
3	KROS91	15		35	486

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>					
1	KROS91-F	824	15	8	486
2		885	18,5		516
3		938	22		541



**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

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ADDITIONAL EQUIPMENT				
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>

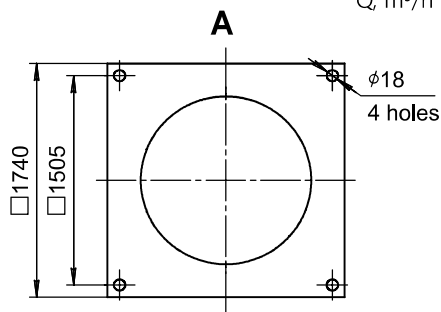
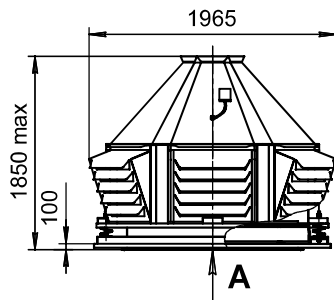
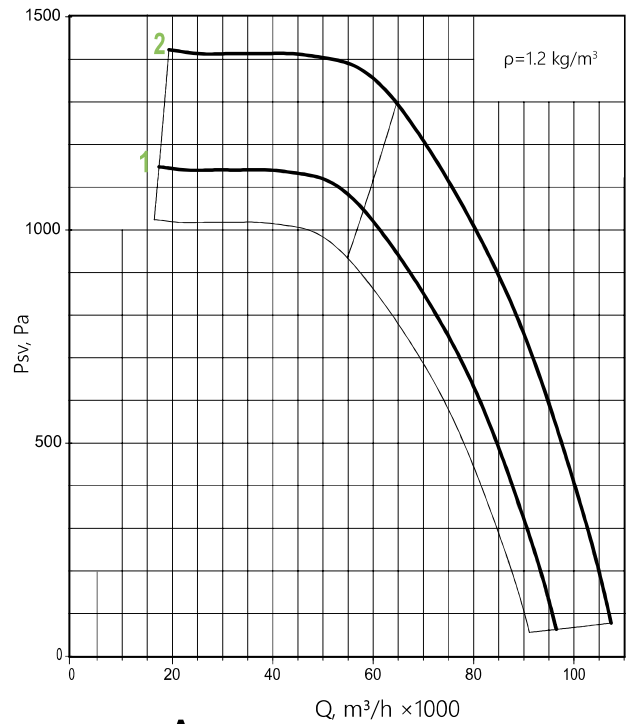
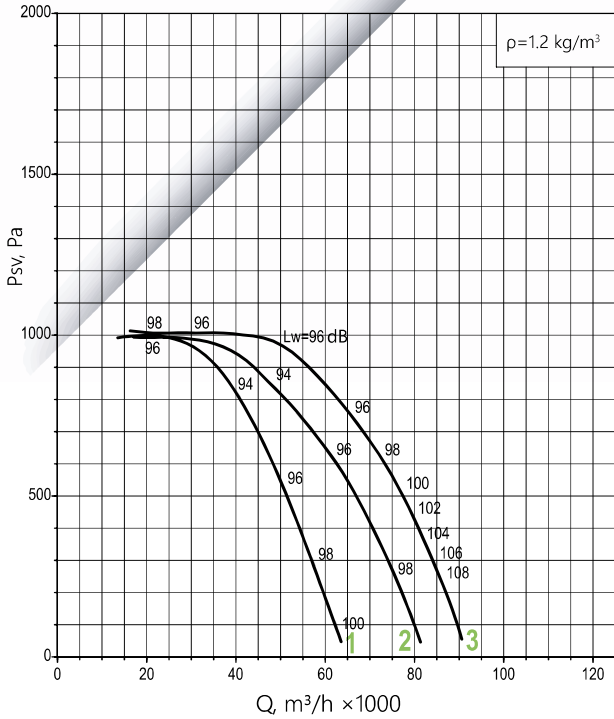




# 125

Curve number	TFan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	KROS60	15	8	35	665
2	KROS61	18,5		40	695
3	KROS91	22		48	720

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>					
1	KROS91-F	777	22	8	720
2		865	30		801



**NOTE**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

<b>ROOF CURB</b> <b>STAM</b>	<b>PAN</b> <b>POD</b>	<b>FREQUENCY CONVERTER</b> <b>ASC, FC</b>	<b>SOFT STARTER</b> <b>MCD-201, MCD-202</b>	<b>FAN CONTROL CABINET</b> <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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## QUESTIONNAIRE

Please fill in all the necessary data and send it to the nearest company office

### HORIZONTAL OUTLET RADIAL ROOF FAN, KROS

**KROS** \_\_\_\_\_

QUANTITY, pcs \_\_\_\_\_

Contact person: \_\_\_\_\_

Organization: \_\_\_\_\_

tel.: \_\_\_\_\_ e-mail: \_\_\_\_\_

Region (city): \_\_\_\_\_ date \_\_\_\_\_

Please check with the sign "v" or specify a value

<b>operation mode</b>	efficiency Q, m <sup>3</sup> /h static pressure Psv at t - 20° C, Pa	
<b>fan size</b>		
<b>operating mode</b>	T80 - temperature of the moved medium up to 80° C T200 - temperature of the moved medium up to 200° C	
<b>fan design</b>	N - general purpose industrial V - explosion-proof CR - corrosion-resistant CRV - explosion-proof, corrosion-resistant	
<b>climatic version</b>	Y1 (Y1) YHL1 (YX/11) T1 (T1)	
<b>impeller</b>	rotation speed, min <sup>-1</sup> (specify when using the frequency converter)	
<b>motor</b>	nominal power, kW number of poles with frequency control	

#### Additional equipment

<b>STAM</b> roof curb	
<b>POD</b> pan	
<b>frequency converter</b>	
<b>soft starter</b>	
<b>SAU</b> fan control cabinet	

**Special requirements:**

**Customer:** \_\_\_\_\_ (signature) \_\_\_\_\_ (full name)





# KROV

## VERTICAL OUTLET RADIAL ROOF FANS



- ▶ provide vertical air outlet;
- ▶ feature a "barrel-shaped" casing with air exhaust to atmosphere upwards.

▶ **INTENDED USE:**

- ventilation systems - T80 operating mode;
- sanitary and industrial installations - T80 and T200 operating modes.

**•035•040•045•050•056•063•071•080•090•100•112•125**

- ▶ general purpose industrial (N);
- ▶ corrosion-resistant (CR1);
- ▶ explosion-proof (V);
- ▶ corrosion-resistant, explosion-proof (VCR1).

**OPERATING CONDITIONS:**

- ▶ ambient temperature:
  - from -45° C to +40° C for temperate climates;
  - from -60° C to +40° C for temperate and cold climates;
  - from -10° C to +50° C for tropical climates;
- ▶ average value of the vibration velocity of external vibration sources in the fan installation locations is no more than 2 mm/s;
- ▶ conditions for the moved medium are presented in the Table "Conditions for the moved medium".

KROV fans feature a low-profile casing with air exhaust to atmosphere upwards and low weight; special protection of the serviced premise from atmospheric precipitation is provided.

These fans use two modifications of impellers with six (KROV6) and nine (KROV9) backward-curved blades of a special shape. The fans create high flow, high static pressure and low noise. The impellers are mounted directly on the motor shaft and consume power as the flow rate increases without overloading the motor. Fans are equipped with single-speed motors or motors that allow frequency control of the rotation speed.

Motor ingress protection rating IP54.

The installation dimensions on the fan base plate are unified with the KROS and KROM roof fans, which makes it easy to install the fans on the roof using the STAM roof curb.

It is equipped with a STAM roof curb, a pan, a soft starter and a SAU automation cabinet.





**EXAMPLE:**

KROV91 radial roof fan, size 056, operating mode T80, corrosion-resistant, motor with frequency speed control with nominal power  $N_{nom} = 7.5$  kW, number of poles 4, climatic version Y1

**KROV91-056-T80-N-00750/4F-Y1-IE2**

- ▶ radial roof fan (•KROV60 •KROV61 •KROV91)
- ▶ fan size (•035 •040 •045 •050 •056 •063 •071 •080 •090•100 •112 •125)
- ▶ operating mode
  - T80 - temperature of the moved medium up to 80° C (operating period - continuous)
  - T200 - temperature of the moved medium up to 200° C (operating period - continuous)
- ▶ design (•N •CR1 •CR3 •V •VCR1 f(or fans with VFD + Ex only as part of SAU)
- ▶ motor parameters<sup>1</sup> (•I/P •I/PF)
  - I<sup>2</sup> - motor power index - see the Table
  - P - number of poles: 2 (3,000 rpm) 4 (1,500 rpm) 6 (1,000 rpm) 8 (750 rpm) 12 (500 rpm)
  - F - using the VFD
- ▶ climatic version (•Y1 •YHL1 •T1)
- ▶ energy efficiency class of the electric motor<sup>3</sup>: •IE2

**NOTE:**

<sup>1</sup> By default all supplied motors are designed for 380V, 50Hz, direct start. Design types of other voltages and connection methods are available upon special agreement. Starting of motors over 15 kW must be done using a soft starter.

<sup>2</sup> The Motor Power Index is shown in the Table

<sup>3</sup> For Y1, YHL1 and T1 climatic versions, additional protection of the motor and fan outlet is provided.

<sup>4</sup> Specified if different from standard.

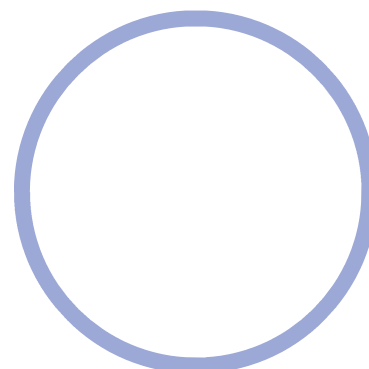
Special requirements for the fan are specified additionally and agreed upon with the manufacturer.

**KROV MOTOR POWER INDEX**

Nominal power (N <sub>nom</sub> ), kW	0,18...0,75	1,1...7,5	11...90
Motor Power Index (I)	00018...00075	00110...00750	01100...09000

**COMPLETE SET OF THE FAN WITH A ROOF CURB**

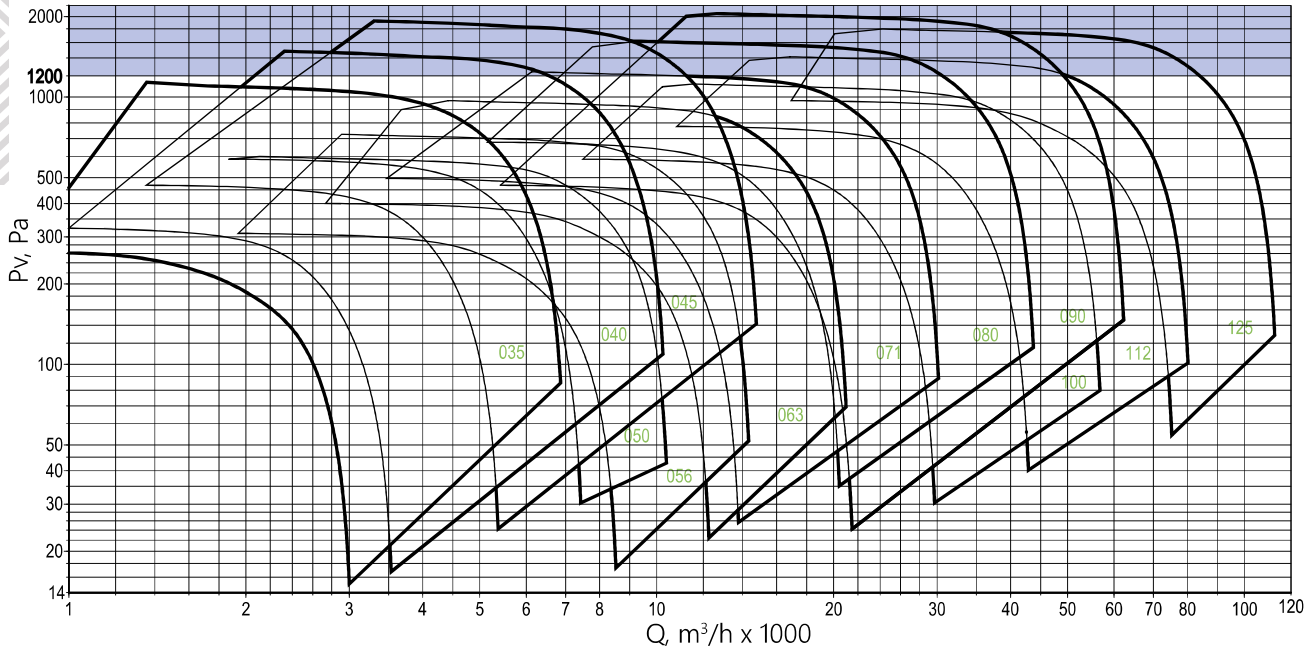
Fan standard size	035	040	045	050	056	063	071	080	090	100	112	125
STAM standard size	35	40	45	51	56	63	71	88	90	109	112	136



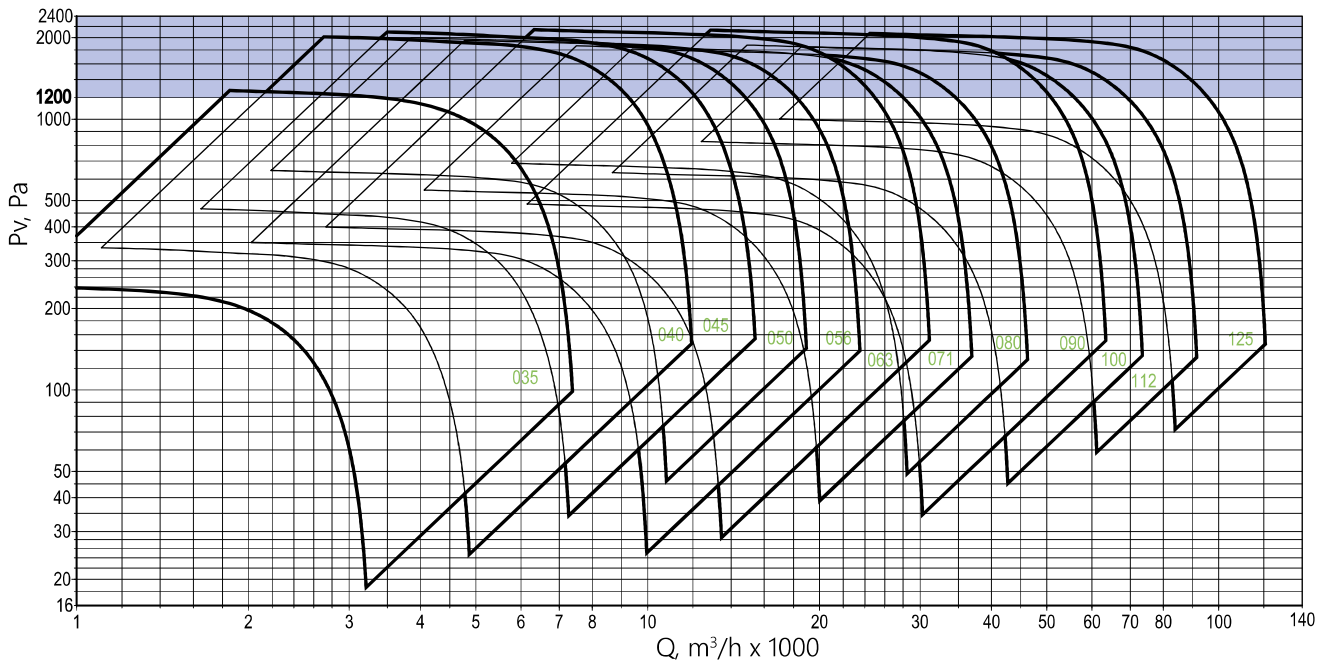


# AREAS OF AERODYNAMIC PARAMETERS

## KROV, DIRECT CONNECTION TO MAINS 380 V/50 HZ



## KROV, FAN WITH THE VARIABLE-FREQUENCY DRIVE



**NOTE:**

Operating time in an area where the total pressure is more than 1200 Pa, no more than 120 minutes.  
Dynamic fan pressure is not used, so static pressure curves are shown.



# 035

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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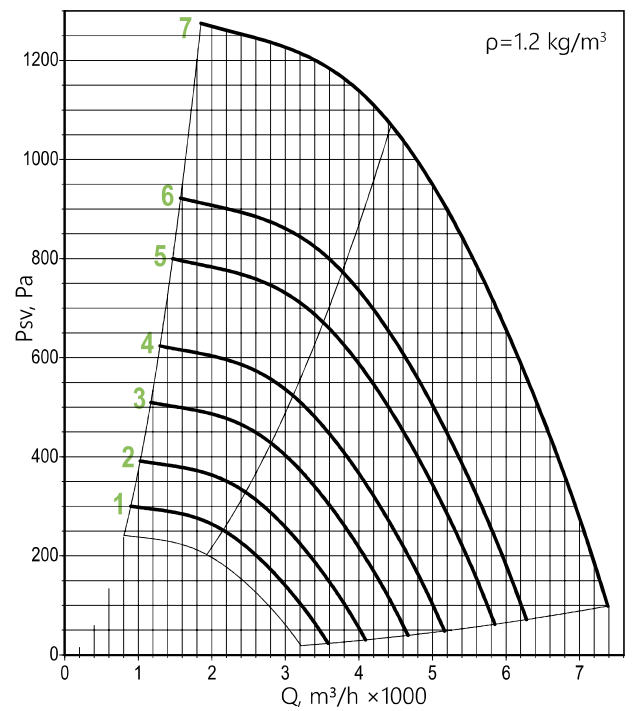
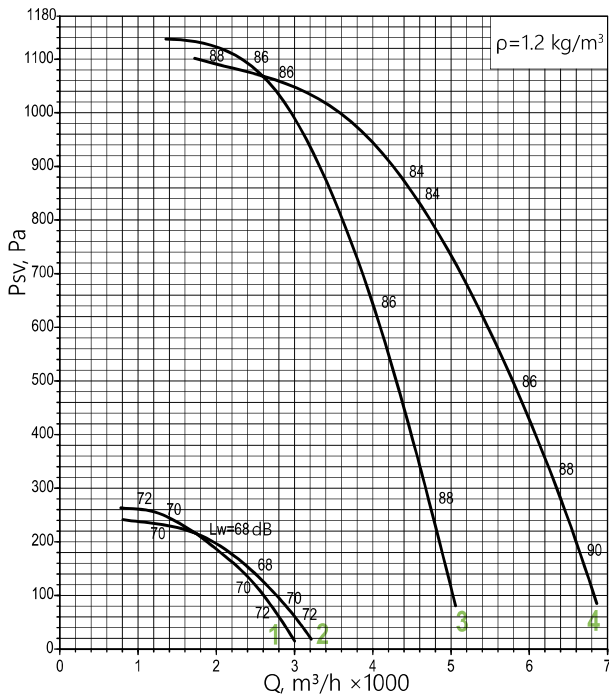
**ALL MODES**

1	KROV61	0,18**	4	0,73	64
2	KROV91	0,25		0,83	65
3	KROV60	1,5	2	3,2	73
4	KROV91	2,2		4,6	75

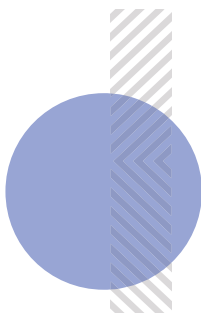
Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

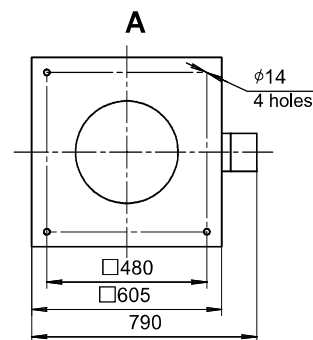
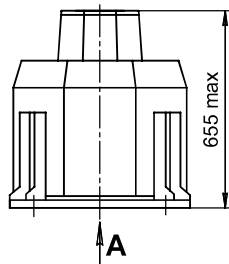
1	KROV91-F	1472	0,25	4	65
2		1681	0,37		66
3		1918	0,55		68
4		2122	0,75		69
5		2403	1,1	2	72
6		2580	1,5		73
7		3034	2,2		75



86 GENERAL AND SPECIAL PURPOSE FANS



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

\*\* the motor is not available in explosion-proof design.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 040

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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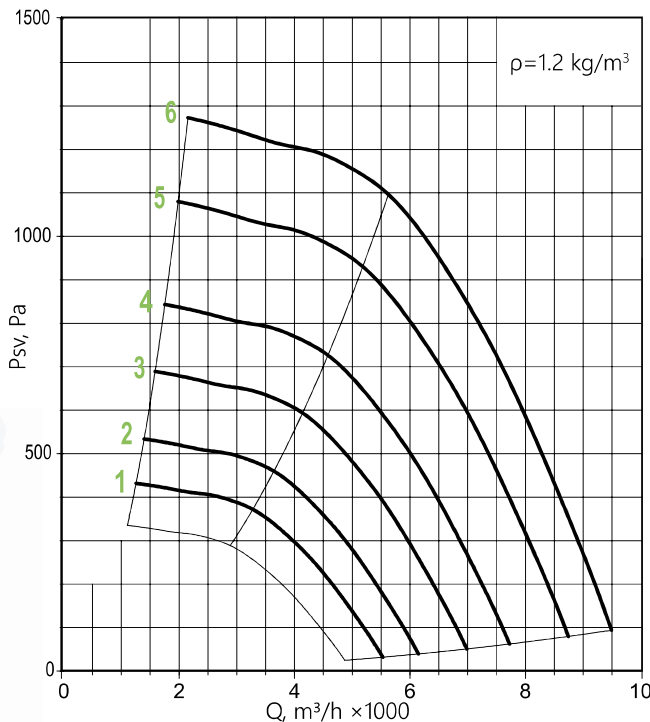
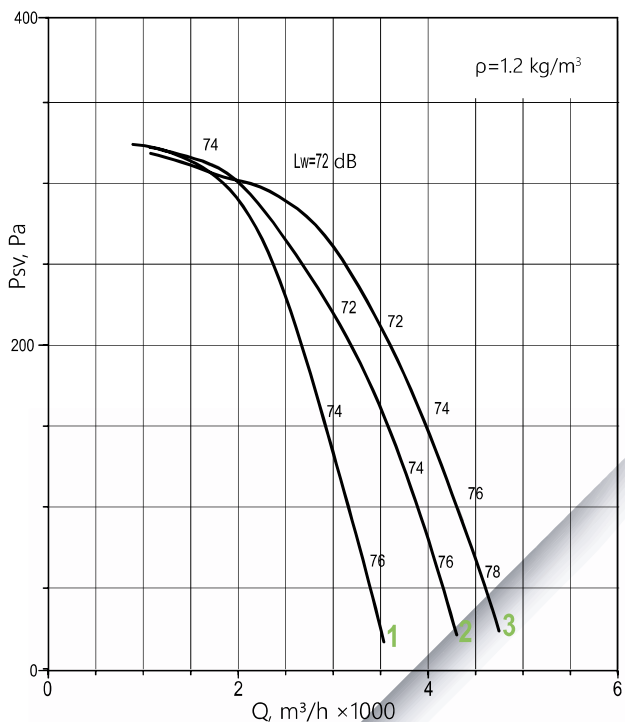
**ALL MODES**

1	KROV60	0,25	4	0,83	80
2	KROV61	0,37		1,18	81
3	KROV91	0,55		1,5	83

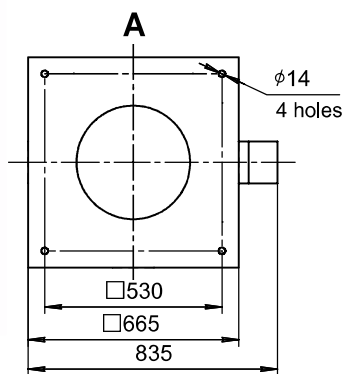
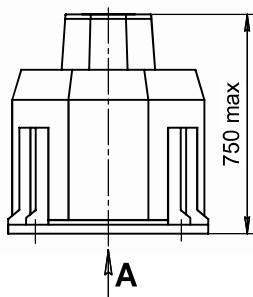
Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROV91-F	1537	0,55	4	84
2		1709	0,75		85
3		1942	1,1		89
4		2148	1,5	2	91
5		2431	2,2		90
6		2639	3		92



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

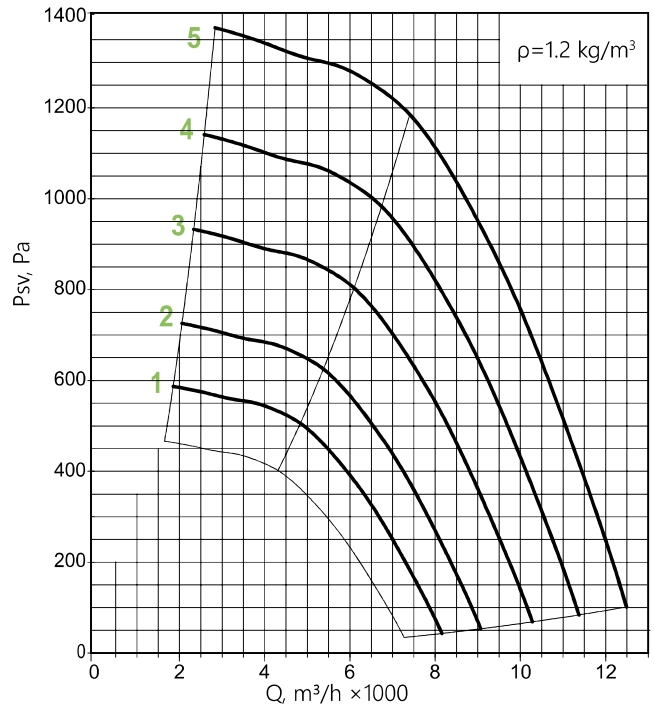
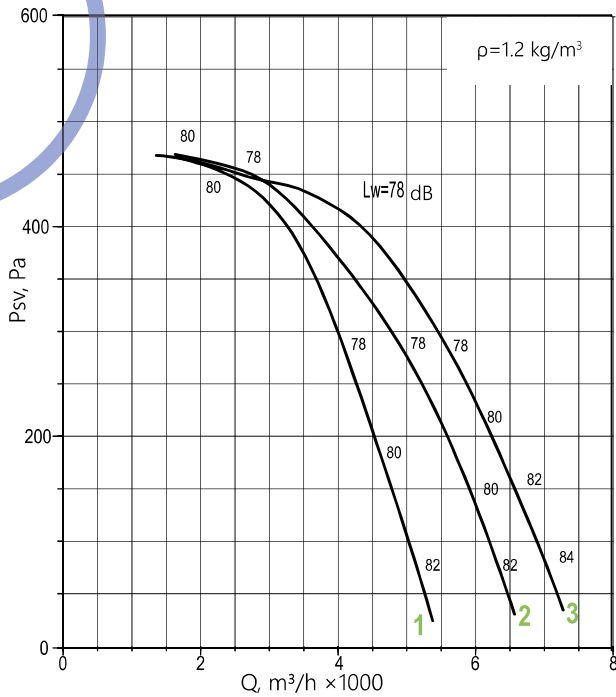
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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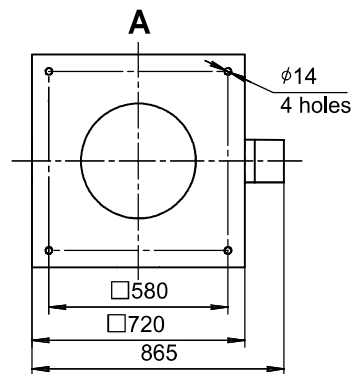
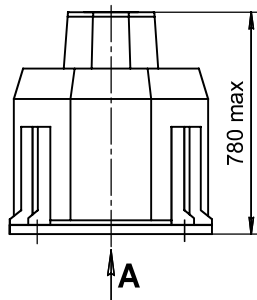
# 045

Curve number	Fan type	N <sub>nom</sub> , kW	Number of poles	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	KROV60	0,55	4	1,5	94
2	KROV61	0,75		2,2	95
3	KROV91	1,1		2,6	98

Curve number	Fan type	n <sub>k</sub> , min <sup>-1</sup>	N <sub>nom</sub> , kW	Number of poles	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>					
1	KROV91-F	1593	1,1	4	100
2		1771	1,5		102
3		2008	2,2		105
4		2221	3		107
5		2439	4		116



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (L<sub>p</sub> sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 050

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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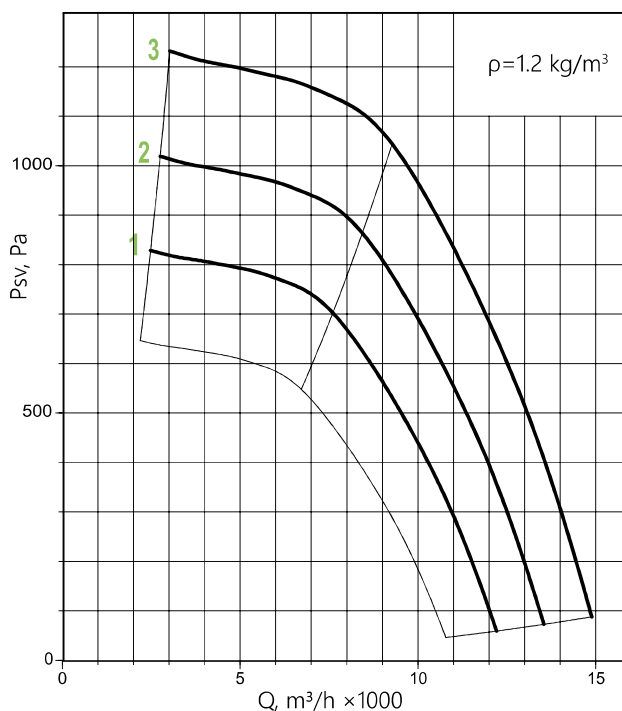
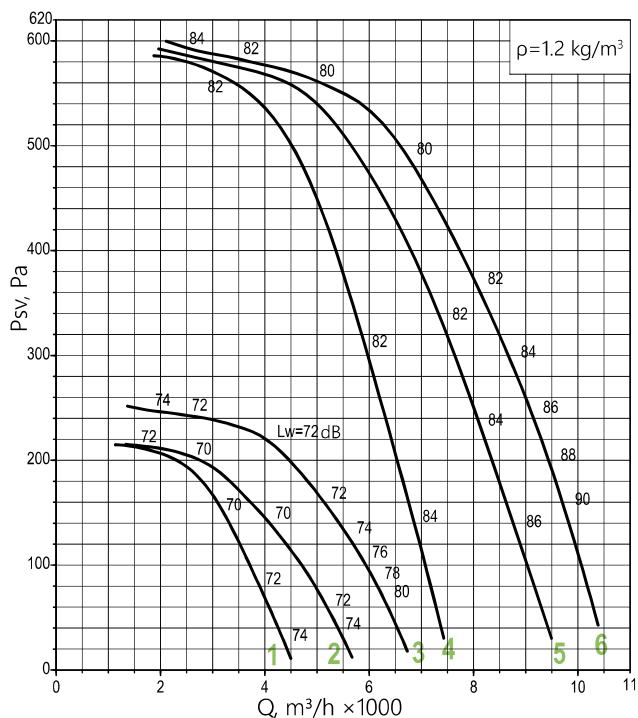
**ALL MODES**

1	KROV60	0,25	6	1,04	102
2	KROV61	0,37		1,31	105
3	KROV91	0,55		1,74	106
4	KROV60	1,1	4	2,6	110
5	KROV61	1,5		3,6	112
6	KROV91	2,2		5,1	115

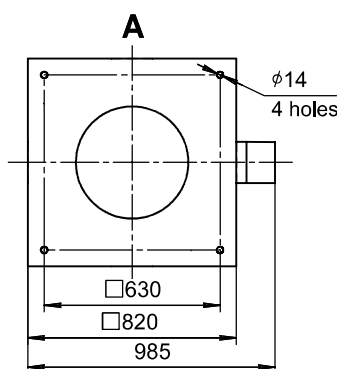
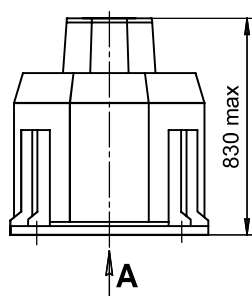
Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROV91-F	1669	2,2	4	115
2		1851	3		117
3		2035	4		126



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 056

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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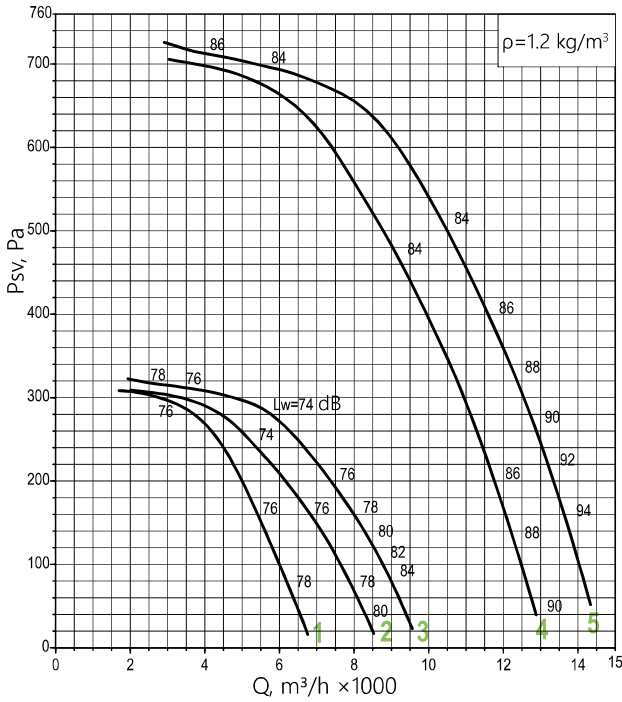
**ALL MODES**

1	KROV60	0,55	6	1,74	157
2	KROV61	0,75		2,3	161
3	KROV91	1,1		3,2	163
4	KROV61	2,2	4	5,1	166
5	KROV91	3		7,3	168

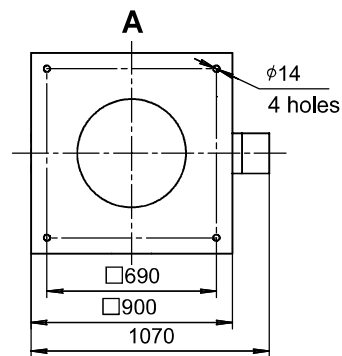
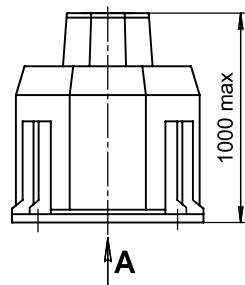
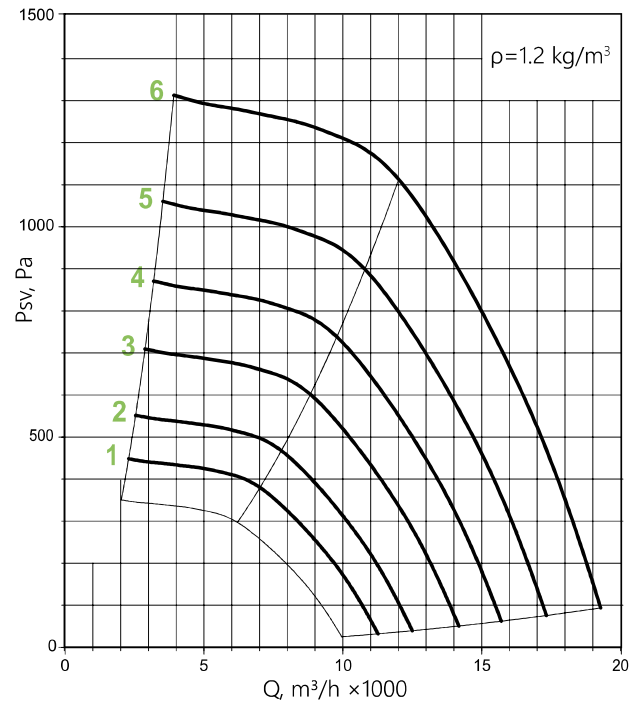
Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
--------------	----------	-----------------------	----------	-----------------	-------------

**WITH FREQUENCY CONVERTER**

1	KROV91-F	1096	1,1	6	163
2		1216	1,5		166
3		1379	2,2		174
4		1528	3	4	168
5		1686	4		177
6		1876	5,5		198



operating mode T80 and T200



90 GENERAL AND SPECIAL PURPOSE FANS

**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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# 063

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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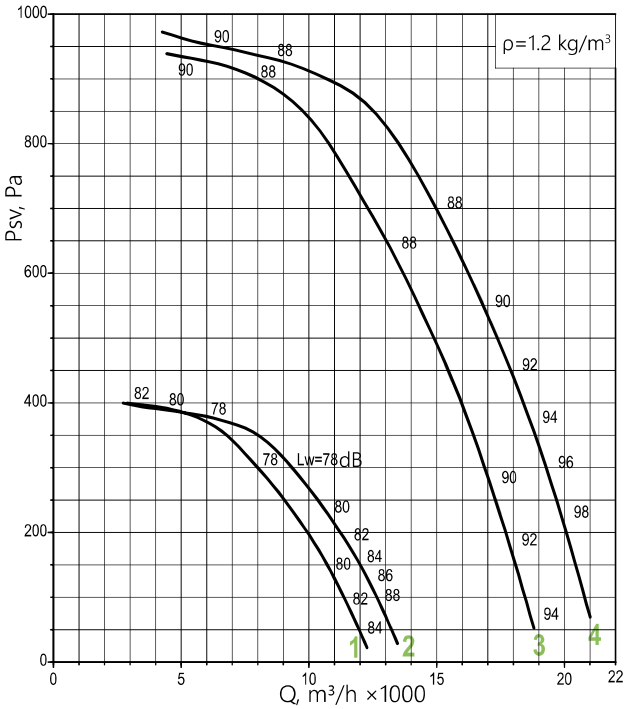
**ALL MODES**

1	KROV61	1,1	6	3,2	191
2	KROV91	1,5		4,1	194
3	KROV61	4	4	8,6	205
4	KROV91	5,5		11,7	226

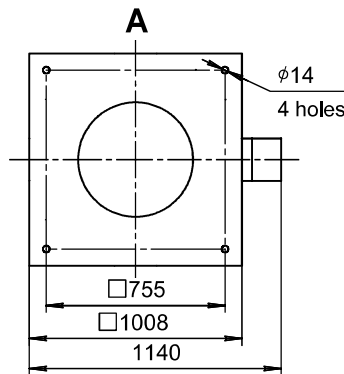
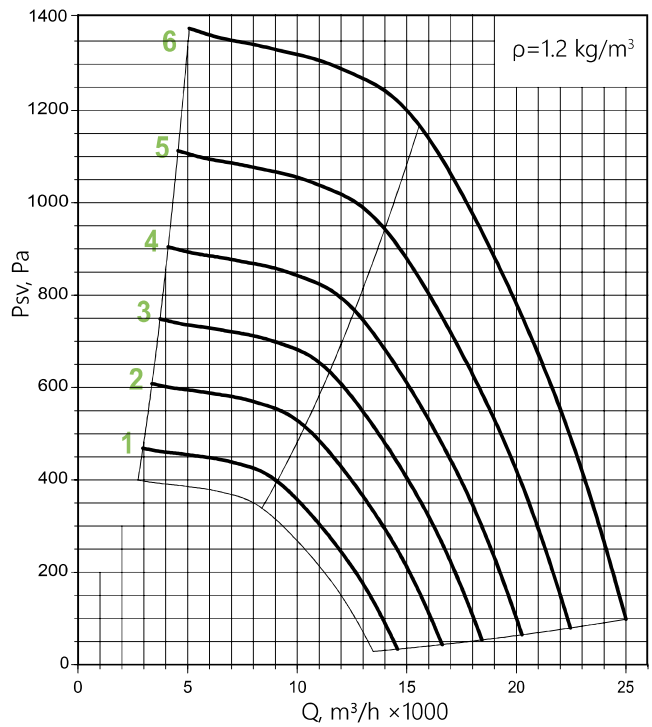
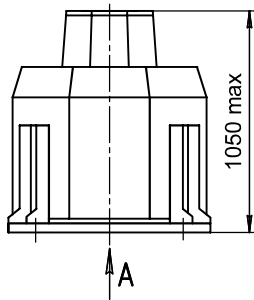
Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROV91-F	996	1,5	6	194
2		1135	2,2		202
3		1259	3		206
4		1384	4	4	217
5		1535	5,5		226
6		1708	7,5		250



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

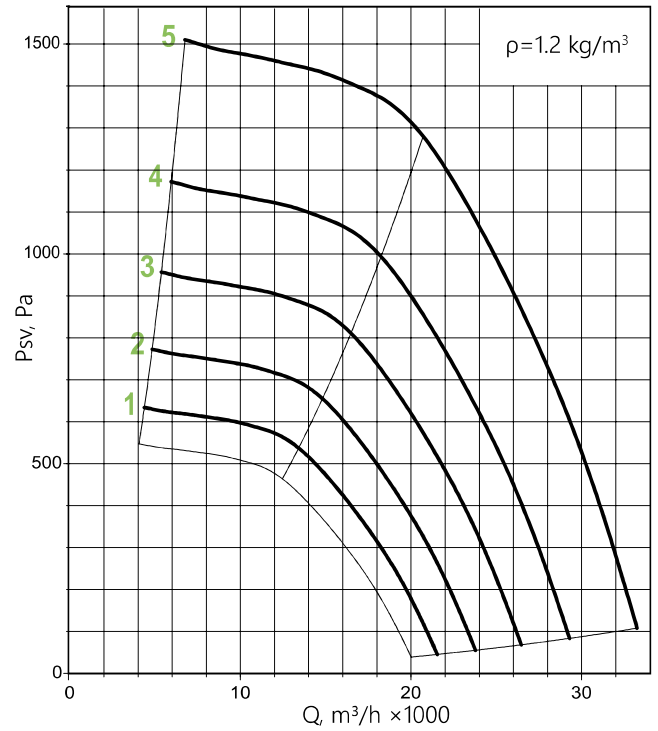
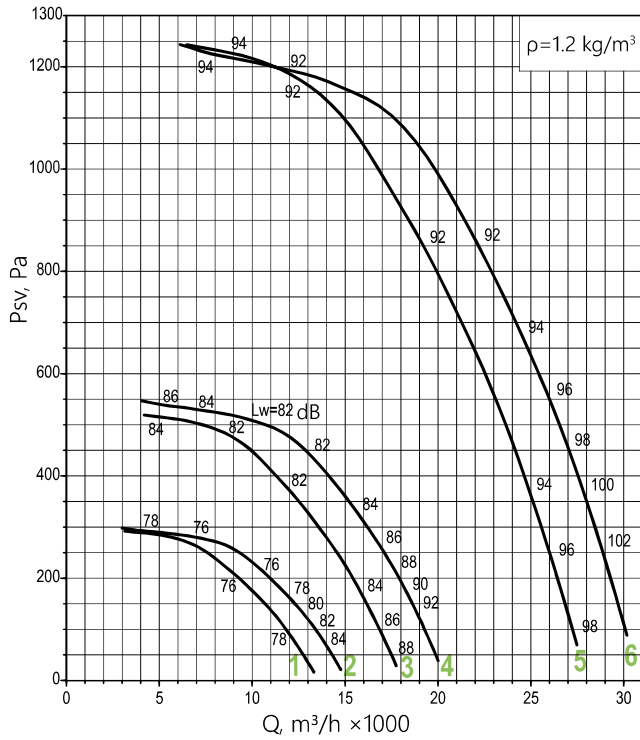
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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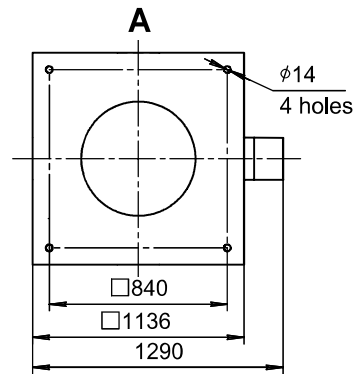
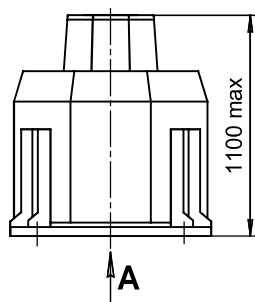
# 071

Curve number	Fan type	N <sub>nom</sub> , kW	Number of poles	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	KROV60	0,75	8	2,1	223
2	KROV91	1,1		3	226
3	KROV61	2,2	6	5,8	232
4	KROV91	3		7	236
5	KROV61	7,5	4	15,6	280
6	KROV91	11		23	292

Curve number	Fan type	n <sub>k</sub> , min <sup>-1</sup>	N <sub>nom</sub> , kW	Number of poles	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>					
1	KROV91-F	1028	3	6	236
2		1135	4		247
3		1263	5,5		261
4		1398	7,5	272	
5		1587	11	4	292



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (L<sub>p</sub> sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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GENERAL AND SPECIAL PURPOSE FANS



# 080

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
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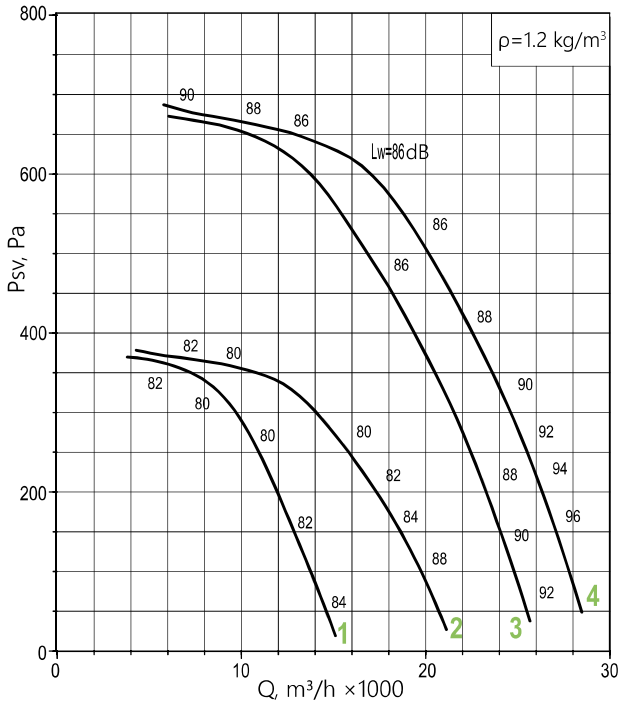
**ALL MODES**

1	KROV60	1,5	8	4,6	324
2	KROV91	2,2		6,3	333
3	KROV61	4	6	9	342
4	KROV91	5,5		12	356

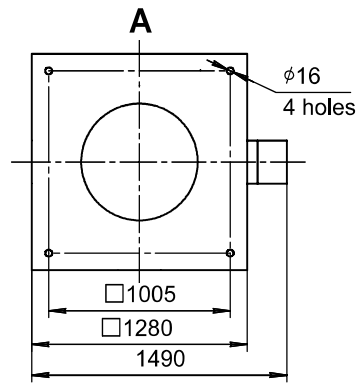
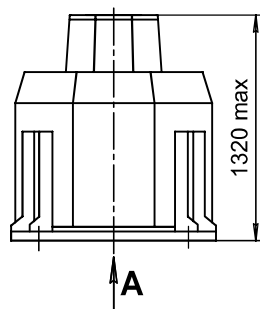
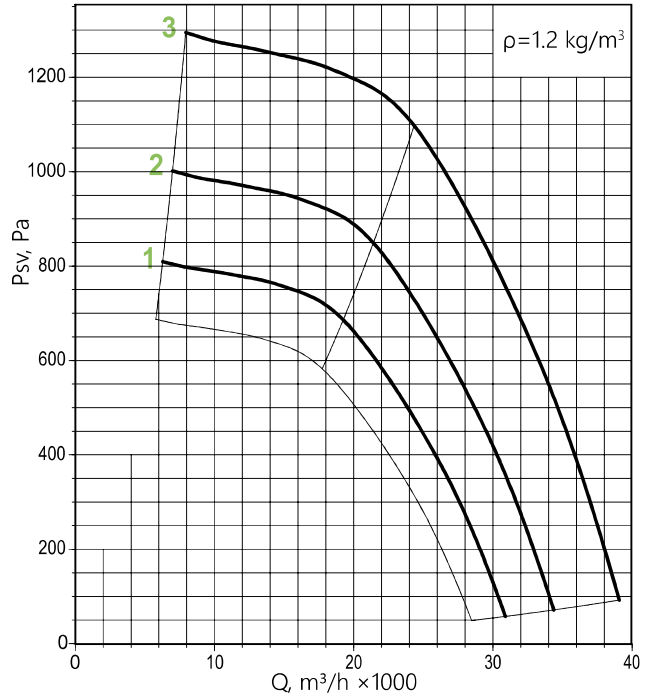
Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
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**WITH FREQUENCY CONVERTER**

1	KROV91-F	1031	5,5	6	356
2		1147	7,5		367
3		1304	11		393



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

ADDITIONAL EQUIPMENT				
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>

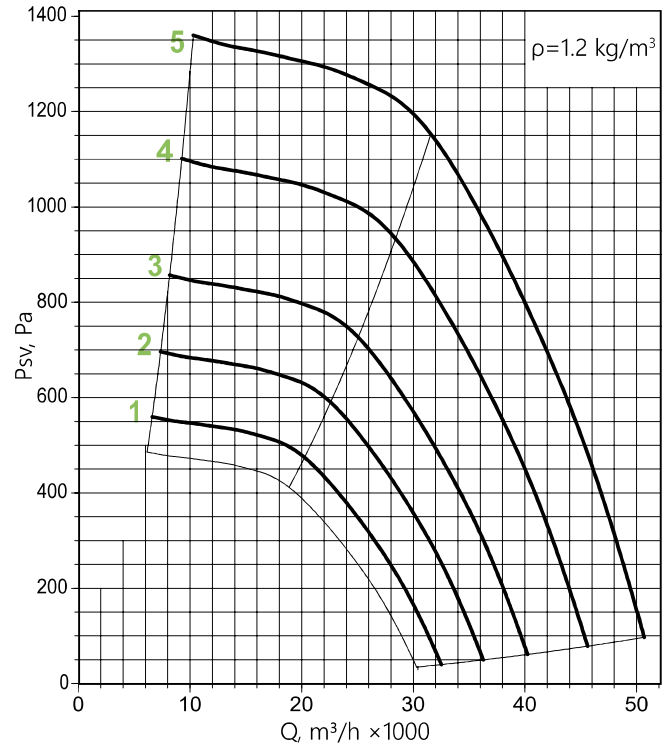
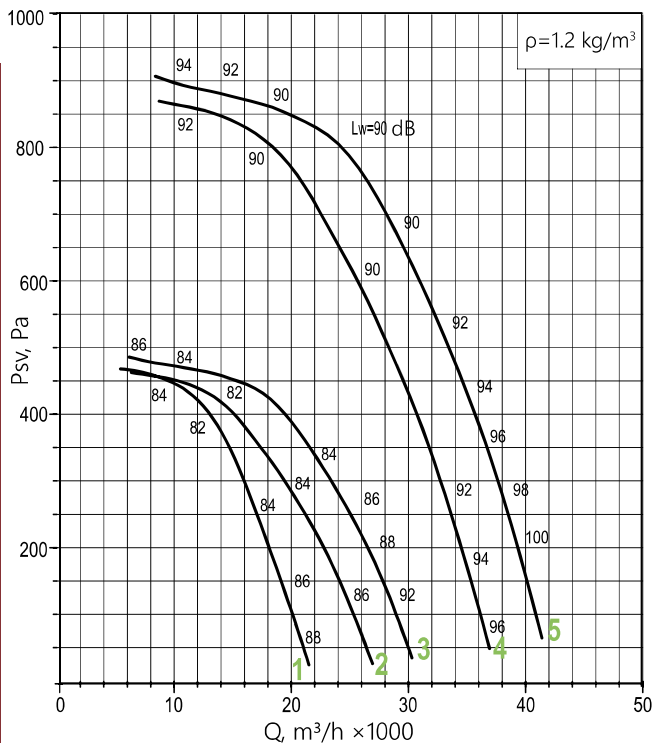




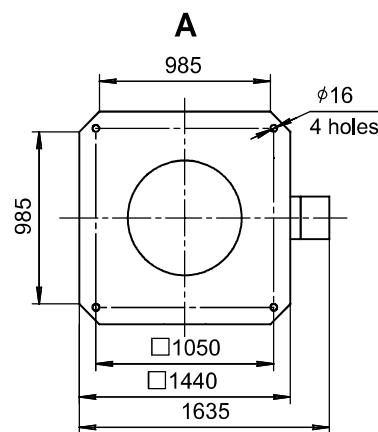
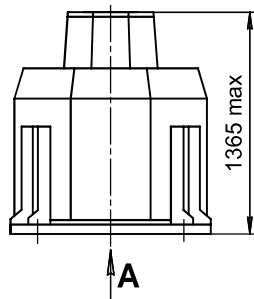
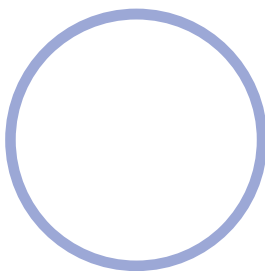
# 090

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	KROV60	2,2	8	6,3	390
2	KROV61	3		8	396
3	KROV91	4		10,5	409
4	KROV61	7,5	6	17,5	424
5	KROV91	11		24	450

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>					
1	KROV91-F	762	4	8	409
2		850	5,5		419
3		943	7,5		450
4		1069	11	6	450
5		1188	15		482



operating mode T80 and T200



**NOTE:**

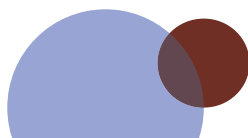
\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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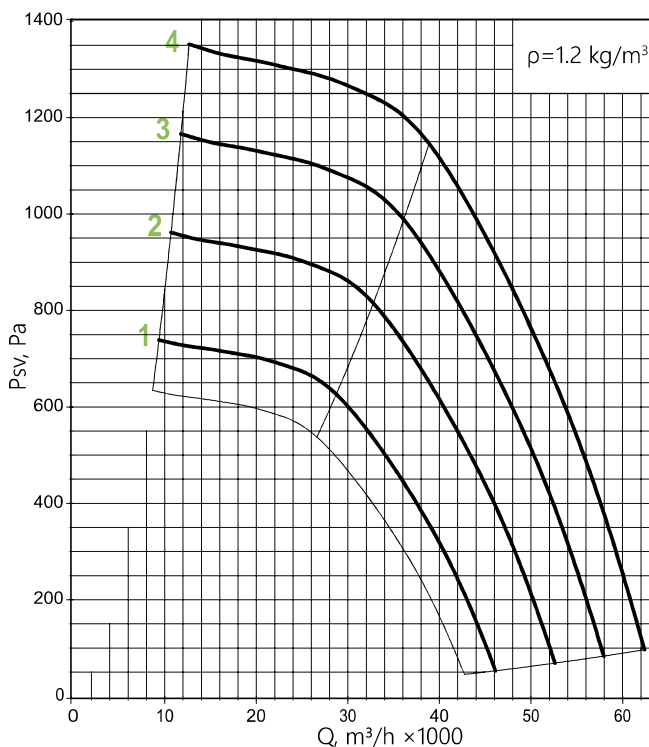
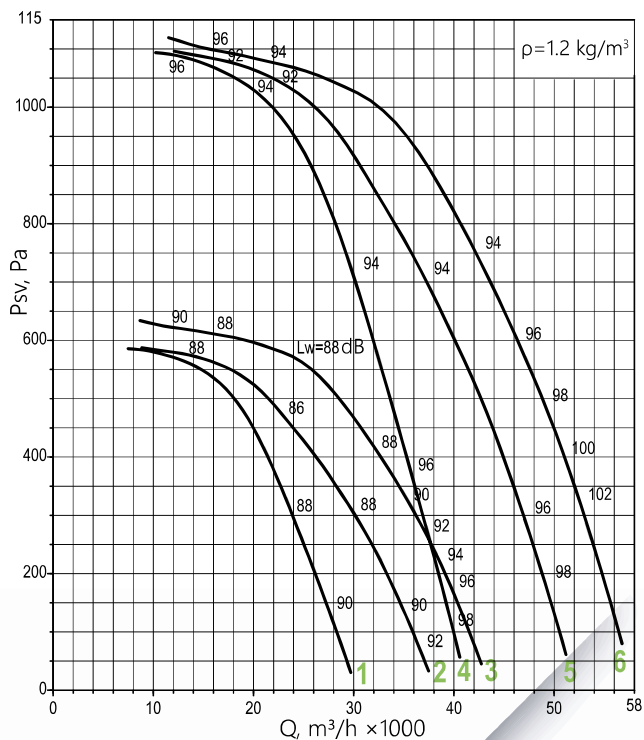
94 GENERAL AND SPECIAL PURPOSE FANS



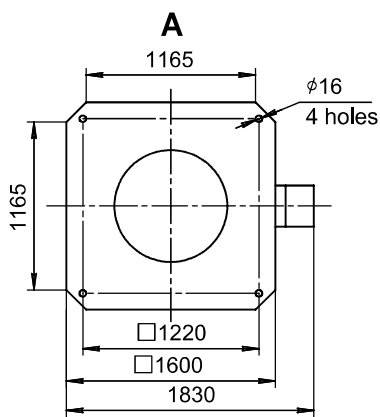
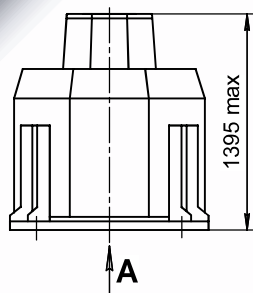
# 100

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	KROV60	4	8	10,5	589
2	KROV61	5,5		13,6	599
3	KROV91	7,5		18	630
4	KROV60	11	6	24	632
5	KROV61	15		32	662
6	KROV91	18,5		37	669

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>					
1	KROV91-F	788	7,5	8	630
2		899	11		657
3		990	15	6	662
4		1066	18,5		669



operating mode T80 and T200



**NOTE:**

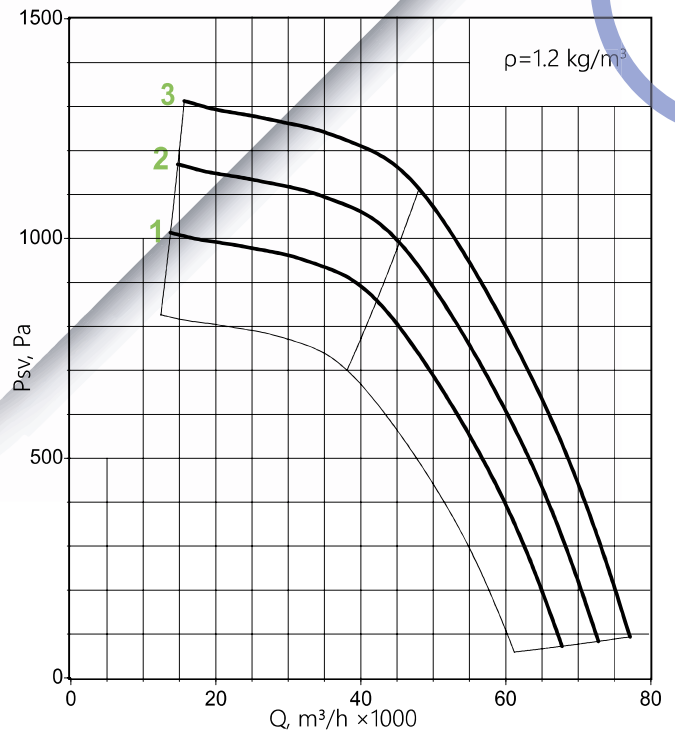
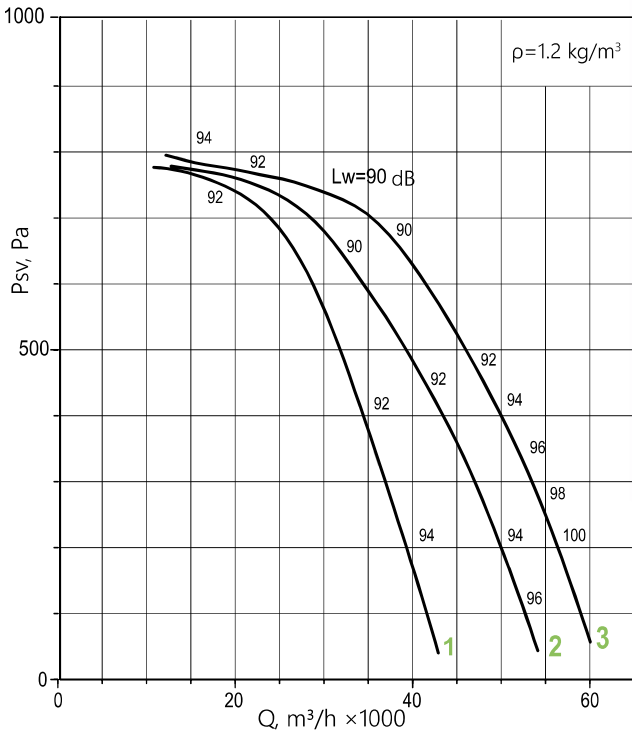
\* When changing the motor type, the weight may change.  
 Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

ADDITIONAL EQUIPMENT				
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>

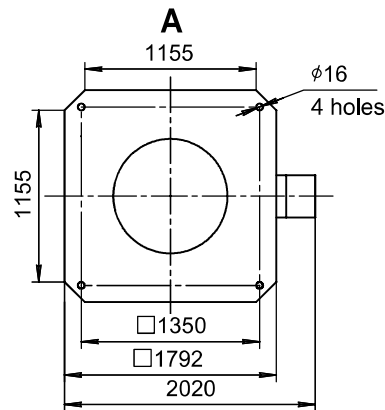
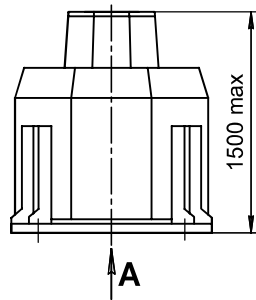
# 112

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg
<b>ALL MODES</b>					
1	KROV60	7,5	8	18	749
2	KROV61	11		26	806
3	KROV91	15		35	836

Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
<b>WITH FREQUENCY CONVERTER</b>					
1	KROV91-F	824	15	8	836
2		885	18,5		866
3		938	22		888



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

**ADDITIONAL EQUIPMENT**

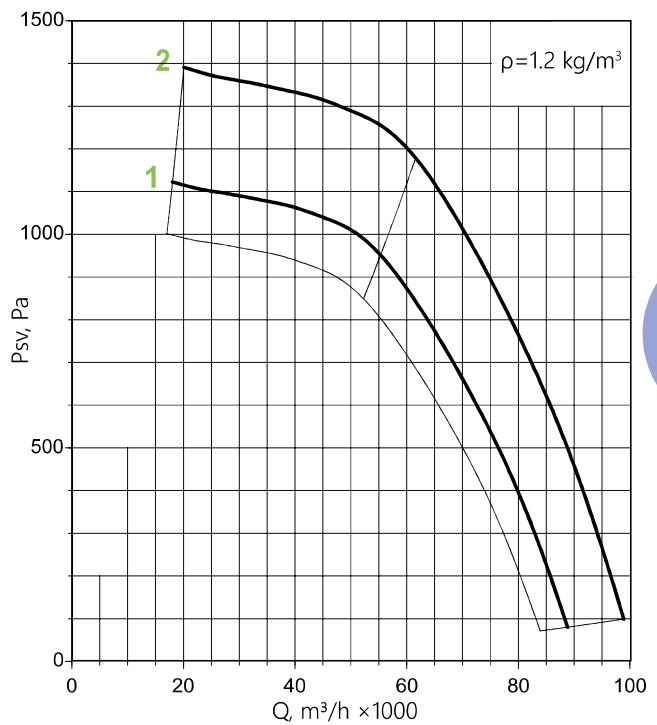
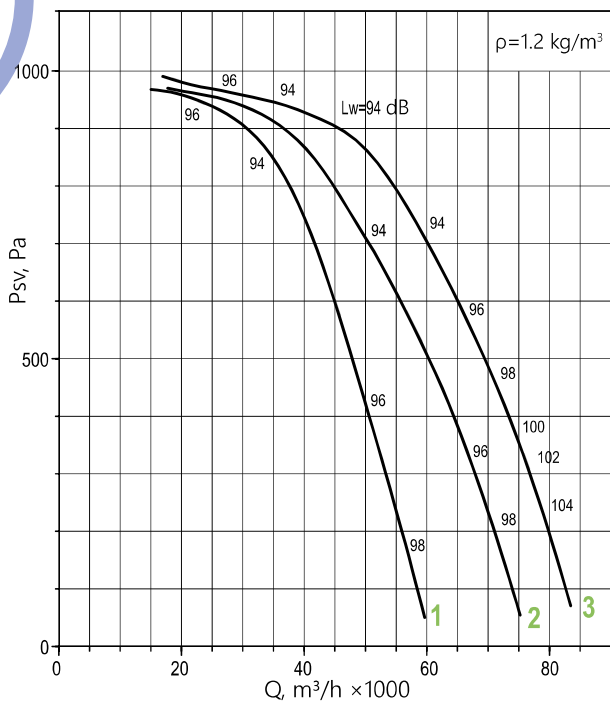
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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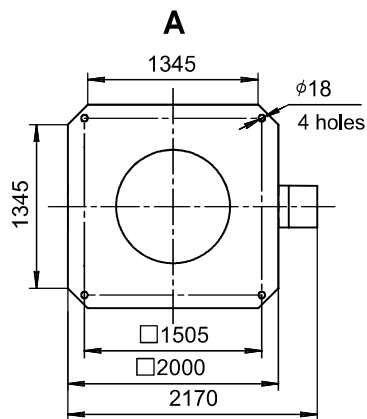
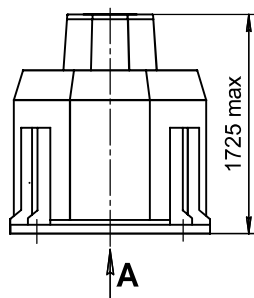


# 125

Curve number	Fan type	Nnom, kW	Number of poles	Current at 380 V, A	Weight*, kg	Curve number	Fan type	nk, min <sup>-1</sup>	Nnom, kW	Number of poles	Weight*, kg
<b>ALL MODES</b>						<b>WITH FREQUENCY CONVERTER</b>					
1	KROV60	15	8	35	963	1	KROV91-F	777	22	8	1018
2	KROV61	18,5		40	993	2		865	30		1099
3	KROV91	22		48	1018						



operating mode T80 and T200



**NOTE:**

\* When changing the motor type, the weight may change.

Graphs are given for simplified fan selection. The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

ADDITIONAL EQUIPMENT				
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>





## QUESTIONNAIRE

Please fill in all the necessary data and send it to the nearest company office

### KROV VERTICAL OUTLET RADIAL ROOF FAN

**KROV** \_\_\_\_\_  
 quantity, pcs \_\_\_\_\_  
 Contact person: \_\_\_\_\_  
 Organization: \_\_\_\_\_  
 tel.: \_\_\_\_\_ e-mail: \_\_\_\_\_  
 Region (city): \_\_\_\_\_ date: \_\_\_\_\_

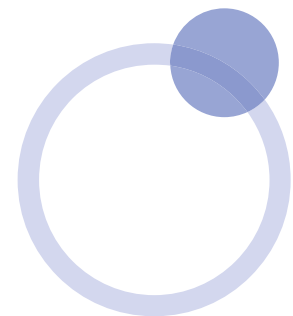
Please check with the sign "v" or specify a value

<b>operation mode</b>	efficiency Q, m <sup>3</sup> /h	
	static pressure Psv at t = 20° C, Pa	
<b>fan size</b>		
<b>operating mode</b>	T80 - temperature of the moved medium up to 80° C	
	T200 - temperature of the moved medium up to 200° C	
<b>fan design</b>	N - general purpose industrial	
	V - explosion-proof	
	CR1 - corrosion-resistant	
	VCR1 - explosion-proof, corrosion-resistant	
<b>climatic version</b>	Y1 (Y1)	
	YHL1 (YX/11)	
	T1 (T1)	
<b>impeller</b>	rotation speed, min <sup>-1</sup> (specify when using the frequency converter)	
<b>motor</b>	nominal power, kW	
	number of poles	
	with frequency control	

#### Additional equipment

<b>STAM</b> roof curb	
<b>POD</b> pan	
<b>frequency converter</b>	
<b>soft starter</b>	
<b>SAU</b> fan control cabinet	

**Special requirements:**



**Customer:** \_\_\_\_\_ (signature) \_\_\_\_\_ (full name)



# KROM

## LOW PROFILE VERTICAL OUTLET RADIAL ROOF FANS



- ▶ installed on the roofs of residential, industrial and public buildings and used in exhaust installations of stationary systems;
- ▶ exhaust air to atmosphere upwards and are particularly effective for use in buildings of various purposes (offices, warehouses, etc.).

●2,25 ●3,10 ●3,55 ●4 ●4,5 ●5 ●5,6 ●6,3

- ▶ general purpose industrial (N).

### OPERATING CONDITIONS:

- ▶ ambient temperature:
  - KROM-2,25 – from -25° to +50° C;
  - KROM-3,10 – from -25° to +50° C;
  - KROM-3,55 – from -25° to +50° C;
  - KROM-4 with a power of 0.1 kW – from -25° to +50° C;
  - KROM-4 with a power of 0.4 kW – from -40° to +50° C;
  - KROM-4,5 with a power of 0.3 kW – from -40° to +50° C;
  - KROM-4,5 with a power of 0.7 kW – from -40° to +50° C;
  - KROM-5 with a power of 0.5 kW – from -40° to +50° C;
  - KROM-5 with a power of 1.4 kW – from -40° to +50° C;
  - KROM-5,6 – from -40° to +50° C;
  - KROM-6,3 – from -40° to +50° C.
- ▶ the average value of vibration velocity of external vibration sources at the fan installation locations is no more than 2 mm/s.

KROM fans feature a trapezoidal casing with air exhaust to atmosphere upwards. The fans are equipped with rotor motors with a few backward-curved blades and a built-in motor with an external rotor, which ensures a small casing height and low fan weight. The impellers are manufactured by a foreign company, made of aluminum, only the fan impeller of KROM number 2,25 is made of polyamide. The fan casing and frame are made of galvanized steel, which provides reliable corrosion protection.

Motor ingress protection rating IP54.

The installation dimensions on the base plate are unified with the KROS and KROV roof fans, which makes it easy to install the fans on the roof using the STAM roof curb.

The KROM-S fans are produced in a noise-insulated casing.

Single-phase motors can smoothly change the speed of rotation of the impeller using a single-phase speed controller, and three-phase motors can change the speed using a frequency converter.

Fans with numbers 3,55 and higher are equipped with built-in thermal contacts with external terminals for connection to the motor overheat protection device.

The fans are offered complete with a STAM roof curb, a pan and a SAU automation cabinet.



**EXAMPLE:**

KROM radial roof fan; number 5,6; general purpose industrial design; climatic version T1; power consumption N = 0,8kW and rotation speed n = 895 min<sup>-1</sup>; rated mains voltage 220/380 V:

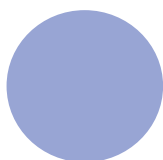
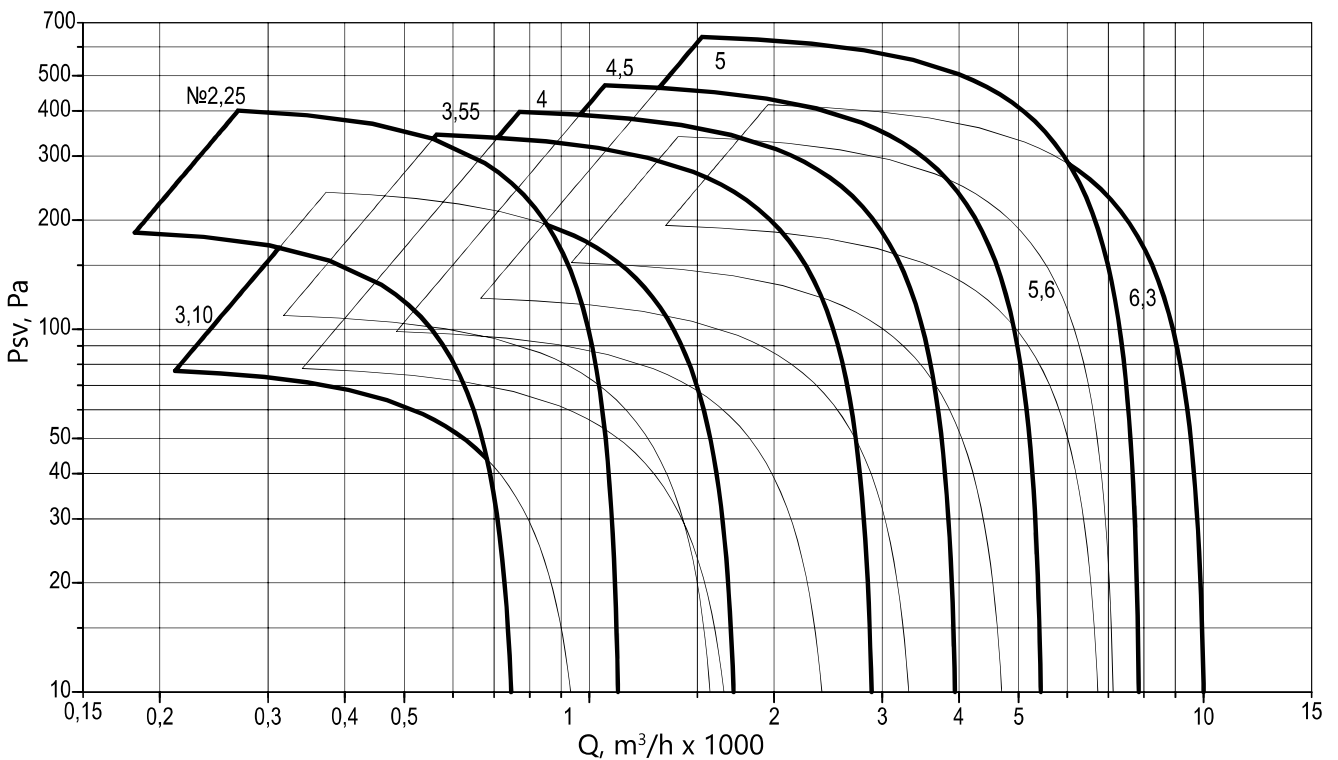
**KROM-5,6-N-T1-0,8x895-220/380**

- ▶ low-profile radial roof fan (•KROM •KROM-S)
- ▶ fan size (•2,25 •3,10 •3,55 •4 •4,5 •5 •5,6 •6,3)
- ▶ design (•N)
- ▶ climatic version (•Y1\* •T1)
- ▶ motor parameters: Nx n  
N - power consumption, kW\*\*  
n - rotation speed, min<sup>-1</sup>
- ▶ rated mains voltage, V: •220 •220/380

**NOTE:**

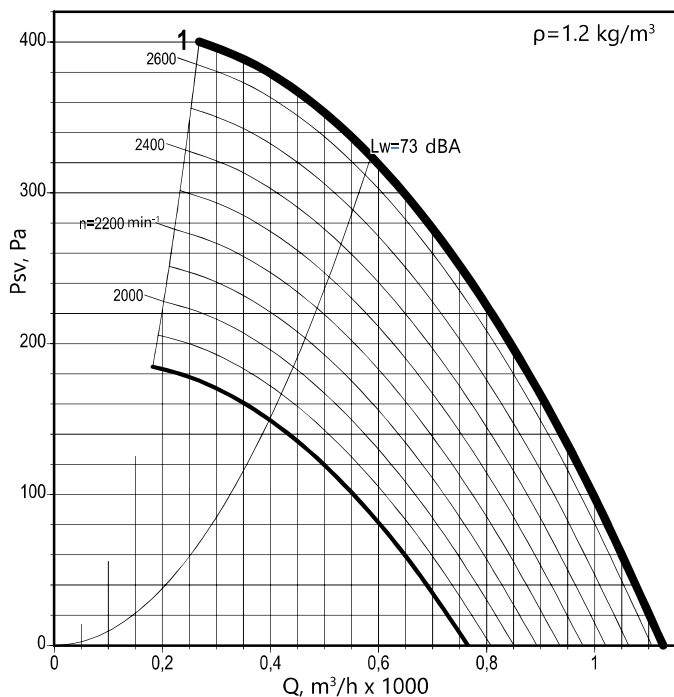
\* For KROM-2,25; KROM-3,1; KROM-3,55 and KROM-4 fans with a 0.117x910 motor, the operating temperature must not be lower than minus 25° C.  
\*\* It is allowed to replace with the rotor motor of a different power, which does not deteriorate the fan parameters.  
Additional equipment is ordered in a separate line (see the section "Additional equipment").  
Special requirements for the fan are specified additionally and must be agreed with the manufacturer.

**AREAS OF AERODYNAMIC PARAMETERS**



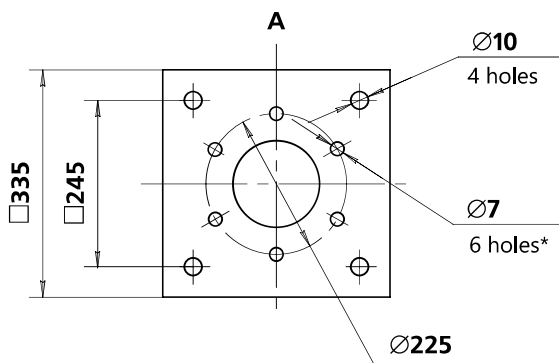
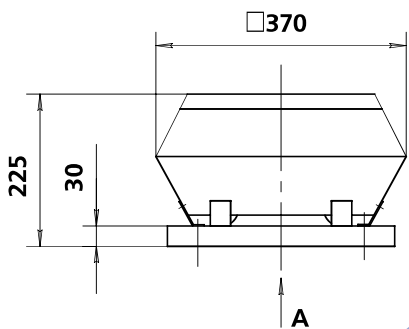
## 2,25

Curve number	Rotation speed n, min <sup>-1</sup>	Power consumption N, kW	Voltage, V	Current consumption, A	Phase	Capacitor capacity, μF/V	Weight*, kg
1	2650	0,135	220	0,6	1	4/450	8,1



Curve number	Mode		Fan	Lw, dBA	Sound power levels (dBA) in octave frequency bands, Hz							Direction	
	Q, m³/h	Psv, Pa			63	125	250	500	1000	2000	4000		8000
1	590	324	KROM	73	44	62	66	68	66	64	59	52	outlet
			KROM	71	42	60	64	66	65	62	57	50	inlet
			KROM-S	67	54	56	60	62	61	58	53	46	outlet

The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

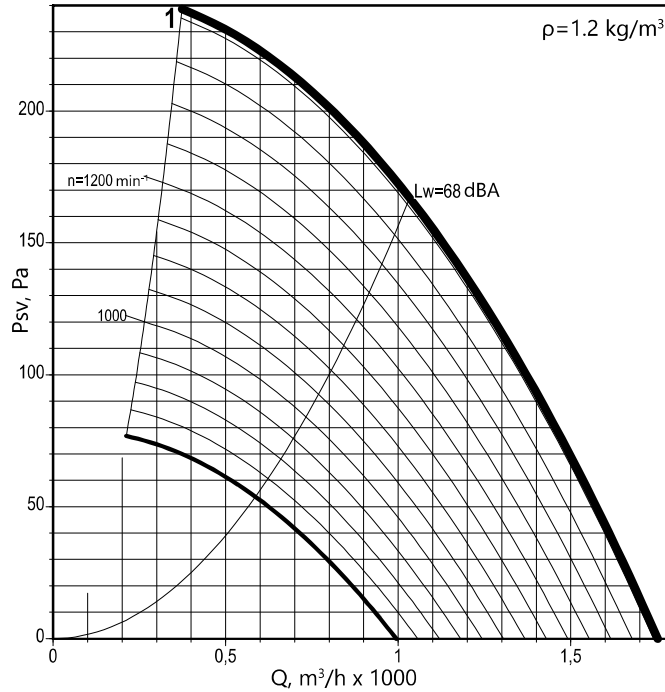


### ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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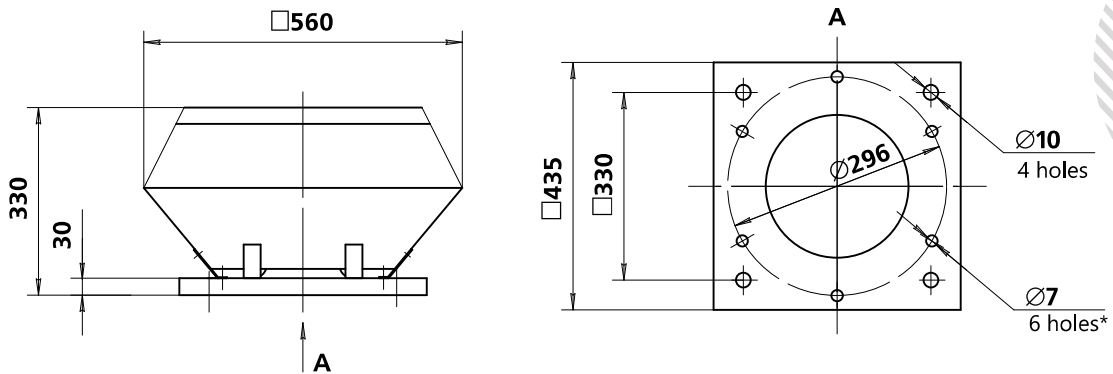
# 3,10

Curve number	Rotation speed n, min <sup>-1</sup>	Power consumption N, kW	Voltage, V	Current consumption, A	Phase	Capacitor capacity, μF/V	Weight*, kg
1	1370	0,12	220	0,54	1	4,0/400	14



Curve number	Mode		Fan	Lw, dBA	Sound power levels (dBA) in octave frequency bands, Hz								Direction
	Q, m³/h	Psv, Pa			63	125	250	500	1000	2000	4000	8000	
1	1030	167	KROM	68	55	57	61	63	62	59	54	47	outlet
			KROM	66	53	55	59	61	60	57	52	45	inlet
			KROM-S	58	51	51	53	51	45	38	36	30	outlet

The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

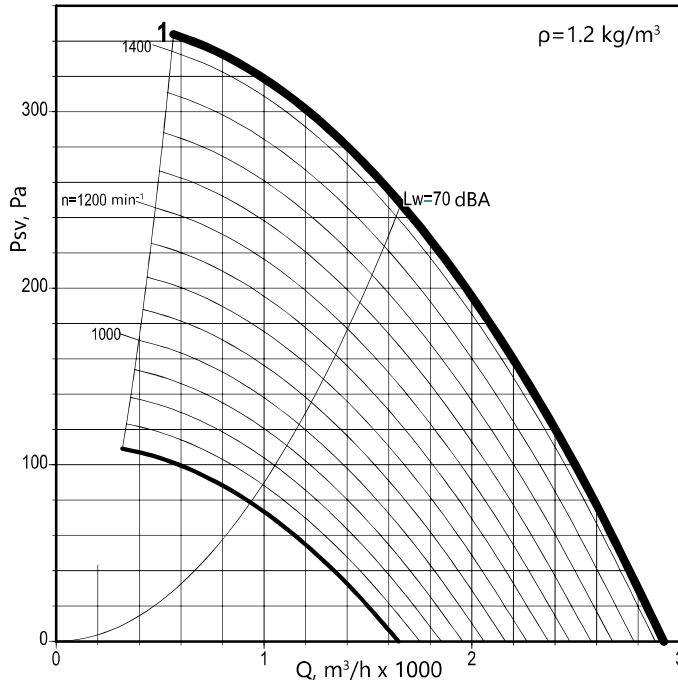


### ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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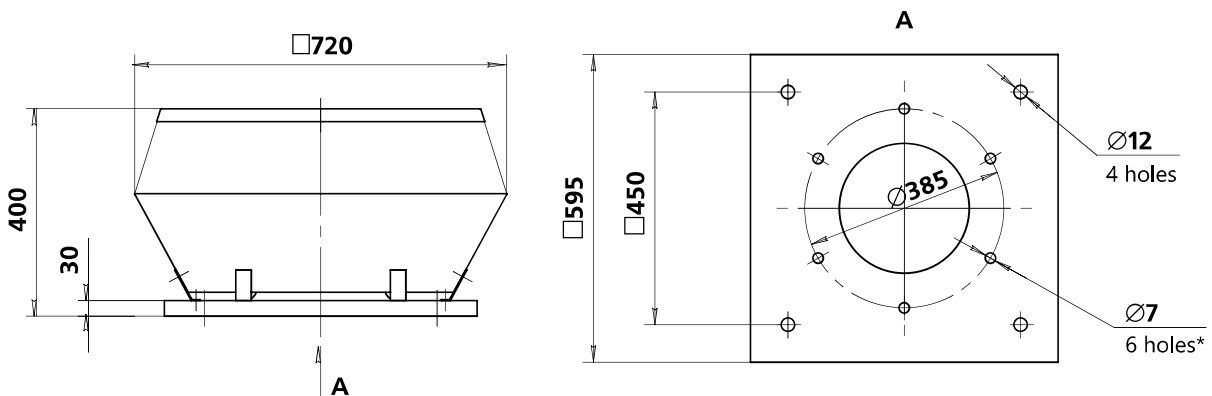
# 3,55

Curve number	Rotation speed n, min <sup>-1</sup>	Power consumption N, kW	Voltage, V	Current consumption, A	Phase	Capacitor capacity, μF/V	Weight*, kg
1	1420	0,245	220	1,12	1	8/400	26,3



Curve number	Mode		Fan	Lw, dBA	Sound power levels (dBA) in octave frequency bands, Hz								Direction
	Q, m³/h	Psv, Pa			63	125	250	500	1000	2000	4000	8000	
1	1620	240	KROM	70	57	59	63	65	64	61	56	49	outlet
			KROM	68	55	57	61	63	62	59	54	47	inlet
			KROM-S	61	54	54	56	54	48	41	39	33	outlet

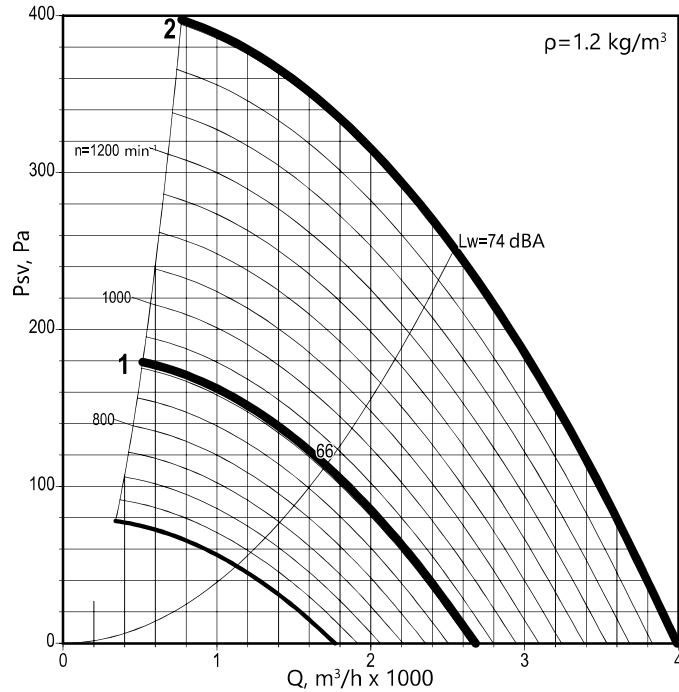
The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.



ADDITIONAL EQUIPMENT				
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>

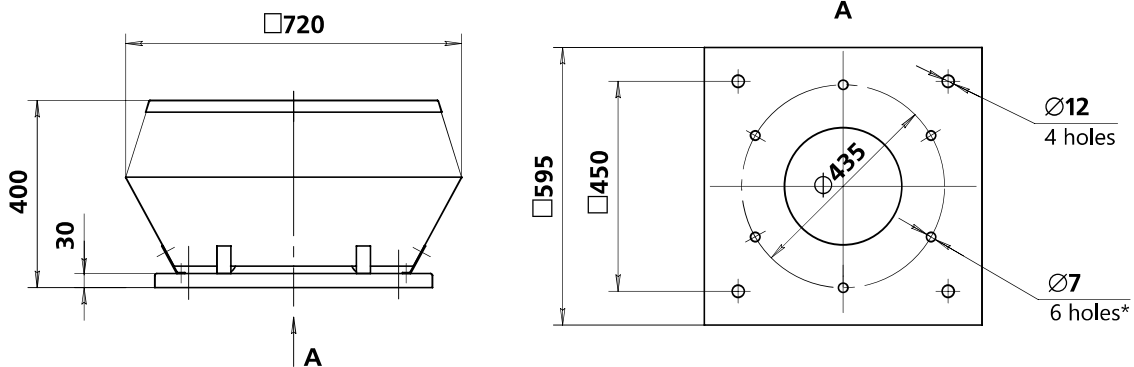
# 4

Curve number	Rotation speed n, min <sup>-1</sup>	Power consumption N, kW	Voltage, V	Current consumption, A	Phase	Capacitor capacity, μF/V	Weight*, kg
1	910	0,117	220	0,52	1	3,0/450	26,2
2	1355	0,375	220	1,75	1	8,0/400	28,1



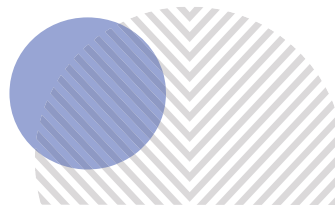
Curve number	Mode		Fan	Lw, dBA	Sound power levels (dBA) in octave frequency bands, Hz							Direction	
	Q, m³/h	Psv, Pa			63	125	250	500	1000	2000	4000		8000
1	1710	114	KROM	66	53	55	60	61	61	57	52	44	outlet
			KROM	64	51	53	58	59	59	55	50	42	inlet
			KROM-S	57	50	50	53	50	45	37	35	28	outlet
2	2540	252	KROM	74	61	63	67	69	68	65	60	53	outlet
			KROM	72	59	61	65	67	66	63	58	51	inlet
			KROM-S	65	58	58	60	58	52	45	43	37	outlet

The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.



ADDITIONAL EQUIPMENT

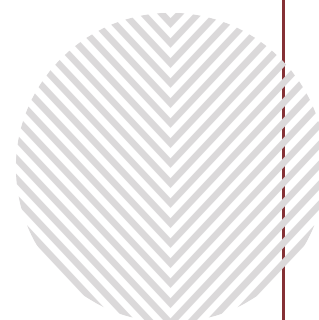
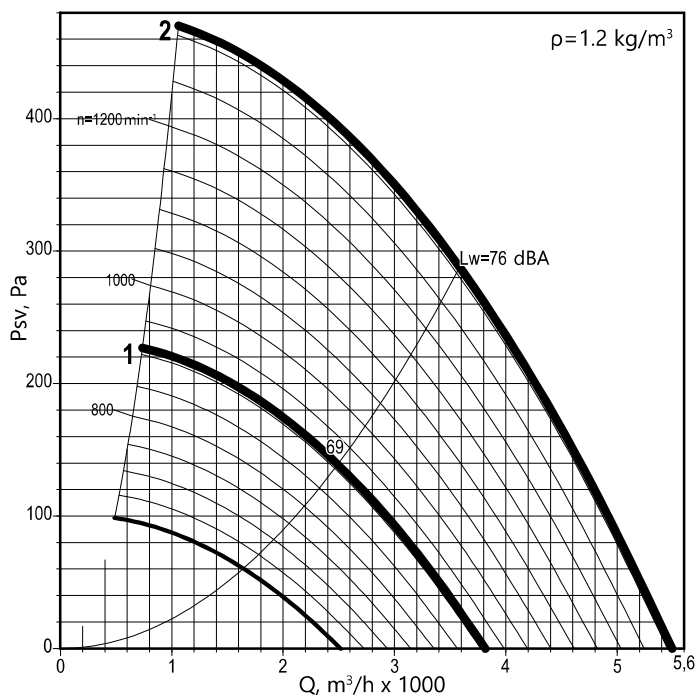
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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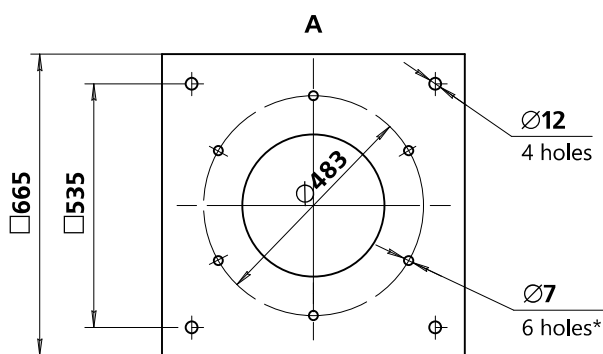
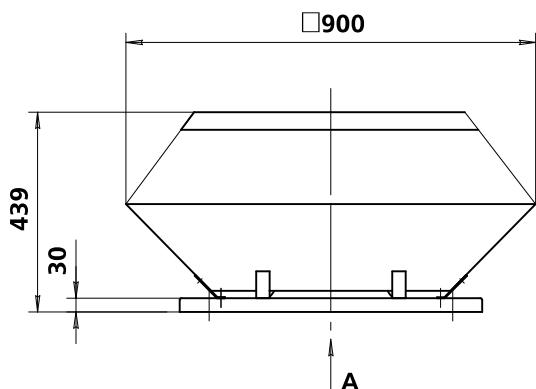
# 4,5

Curve number	Rotation speed n, min <sup>-1</sup>	Power consumption N, kW	Voltage, V	Current consumption, A	Phase	Capacitor capacity, μF/V	Weight*, kg
1	910	0,31	220	1,5	1	10/400	38,9
2	1310	0,71	220/380	2,36/1,36	3	---	41,4



Curve number	Mode		Fan	Lw, dBA	Sound power levels (dBA) in octave frequency bands, Hz							Direction	
	Q, m³/h	Psv, Pa			63	125	250	500	1000	2000	4000		8000
1	2490	139	KROM	69	56	58	63	64	64	60	55	47	outlet
			KROM	67	54	56	61	62	62	58	53	45	inlet
			KROM-S	60	53	53	56	53	48	40	38	31	outlet
2	3585	288	KROM	76	63	65	69	71	70	67	62	55	outlet
			KROM	74	61	63	67	69	68	65	60	53	inlet
			KROM-S	67	60	60	62	60	54	47	45	39	outlet

The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.

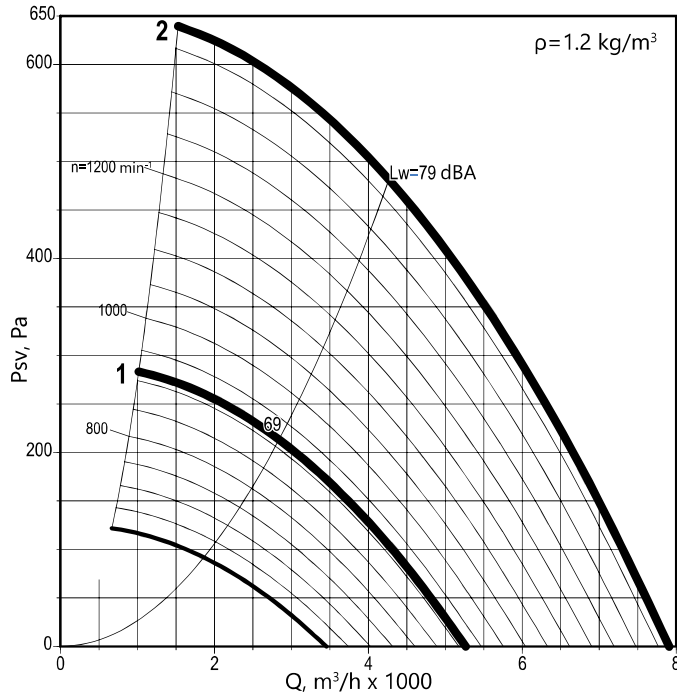


### ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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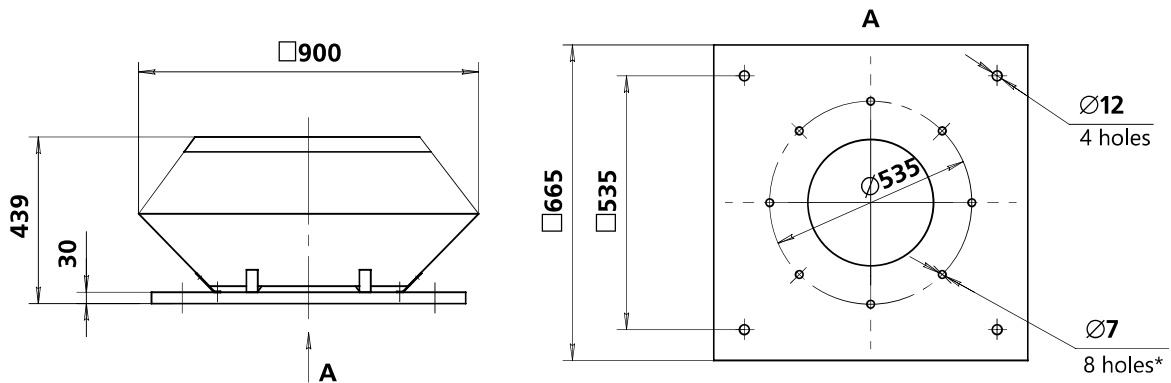
# 5

Curve number	Rotation speed n, min <sup>-1</sup>	Power consumption N, kW	Voltage, V	Current consumption, A	Phase	Capacitor capacity, μF/V	Weight*, kg
1	915	0,52	220/380	2,04/1,18	3	---	42,2
2	1375	1,43	220/380	5,2/3,0	3	---	54,6



Curve number	Mode		Fan	Lw, dBA	Sound power levels (dBA) in octave frequency bands, Hz								Direction
	Q, m³/h	Psv, Pa			63	125	250	500	1000	2000	4000	8000	
1	2840	213	KROM	69	56	58	63	64	64	60	55	47	outlet
			KROM	67	54	56	61	62	62	58	53	45	inlet
			KROM-S	60	53	53	56	53	48	40	38	31	outlet
2	4270	480	KROM	79	66	68	72	74	73	70	68	58	outlet
			KROM	77	64	66	70	72	71	68	63	56	inlet
			KROM-S	70	63	63	65	63	57	50	48	42	outlet

The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.



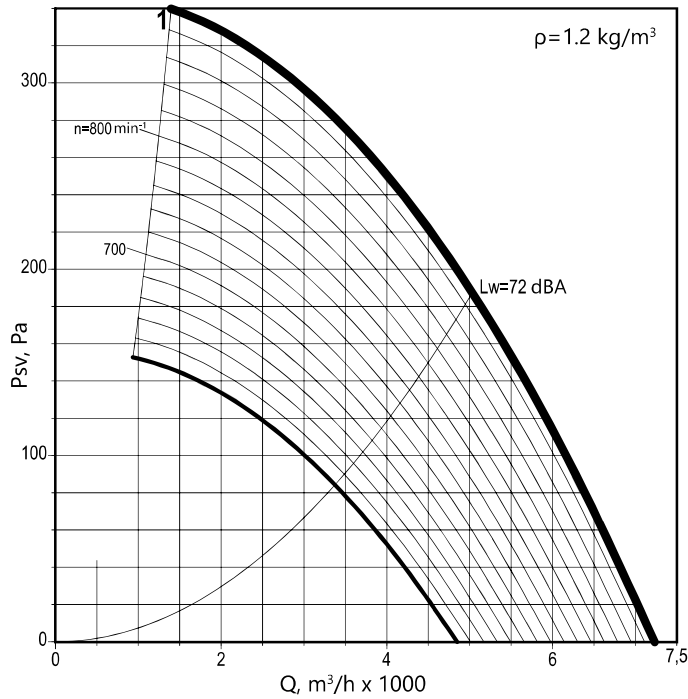
### ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>
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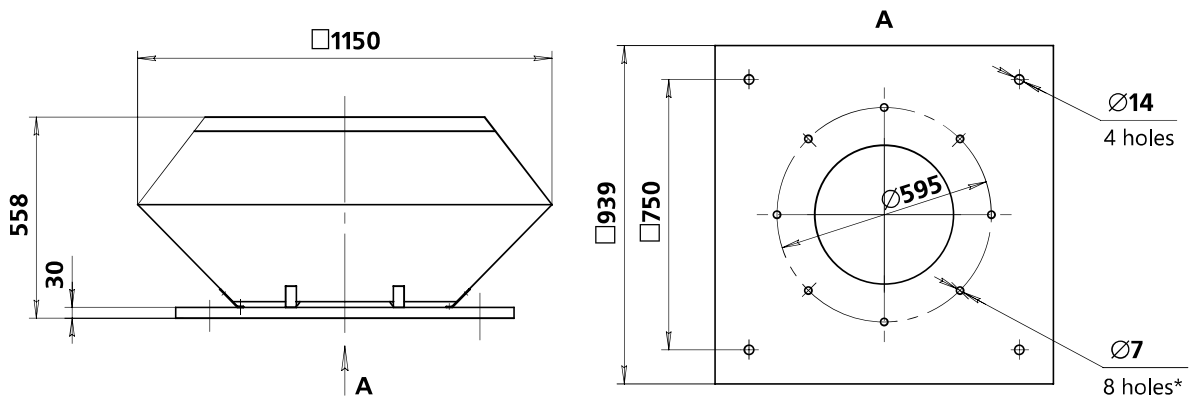
# 5,6

Curve number	Rotation speed n, min <sup>-1</sup>	Power consumption N, kW	Voltage, V	Current consumption, A	Phase	Capacitor capacity, μF/V	Weight*, kg
1	895	0,8	220/380	3,05/1,76	3	---	65



Curve number	Mode		Fan	Lw, dBA	Sound power levels (dBA) in octave frequency bands, Hz								Direction
	Q, m³/h	Psv, Pa			63	125	250	500	1000	2000	4000	8000	
1	5030	187	KROM	72	59	61	66	67	67	63	58	50	outlet
			KROM	70	57	59	64	65	65	61	56	48	inlet
			KROM-S	63	56	56	59	56	51	43	41	34	outlet

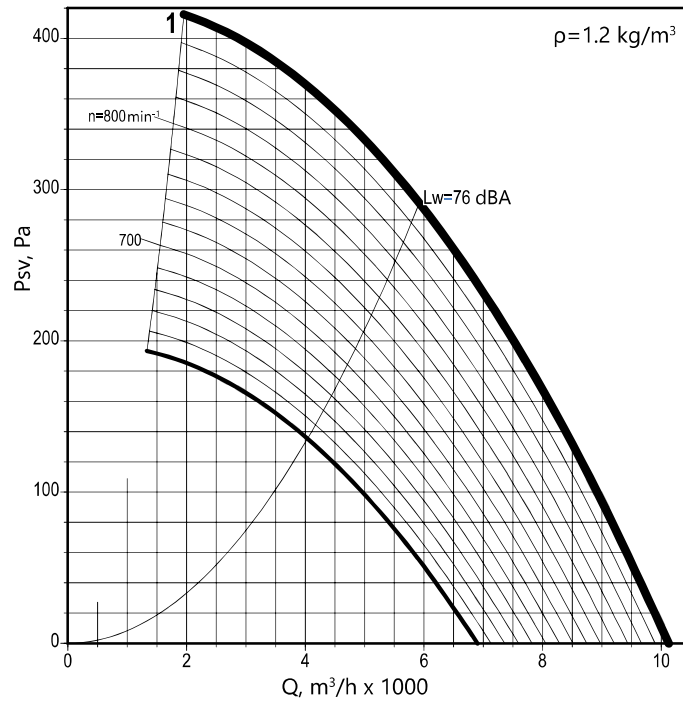
The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.



ADDITIONAL EQUIPMENT				
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>

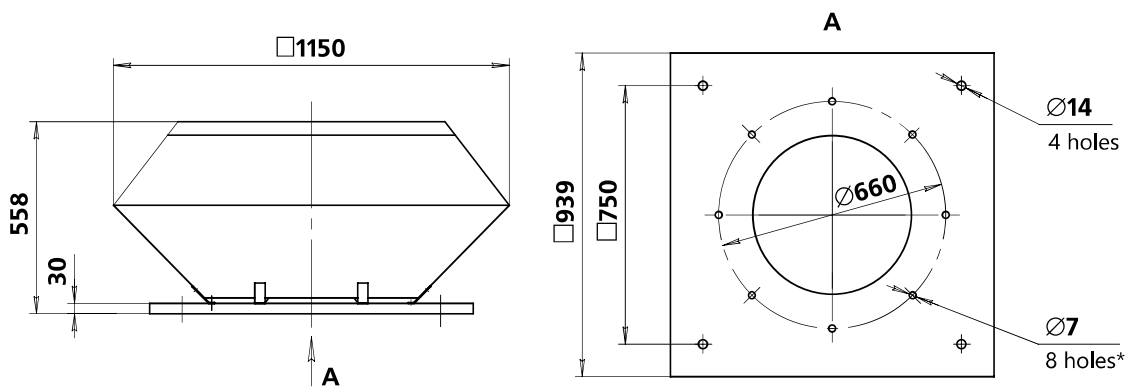
### 6,3

Curve number	Rotation speed n, min <sup>-1</sup>	Power consumption N, kW	Voltage, V	Current consumption, A	Phase	Capacitor capacity, μF/V	Weight*, kg
1	880	1,31	220/380	4,82/2,8	3	---	76,9



Curve number	Mode		Fan	Lw, dBA	Sound power levels (dBA) in octave frequency bands, Hz								Direction
	Q, m³/h	Psv, Pa			63	125	250	500	1000	2000	4000	8000	
1	5920	290	KROM	76	63	65	70	71	71	67	62	54	outlet
			KROM	74	61	63	68	69	69	65	60	52	inlet
			KROM-S	67	60	60	63	60	55	47	45	38	outlet

The acoustic parameters of the fan (Lp sound pressure levels) are given in the Appendix.



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ADDITIONAL EQUIPMENT				
ROOF CURB <b>STAM</b>	PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	SOFT STARTER <b>MCD-201, MCD-202</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>



### QUESTIONNAIRE

Please fill in all the necessary data and send it to the nearest company office

### RADIAL ROOF FAN KROM LOW PROFILE VERTICAL OUTLET ROOF FAN

**KROM**

QUANTITY, pcs \_\_\_\_\_  
 Contact person: \_\_\_\_\_  
 Organization: \_\_\_\_\_  
 tel.: \_\_\_\_\_ e-mail: \_\_\_\_\_  
 Region (city): \_\_\_\_\_ date \_\_\_\_\_

Please check with the sign "v" or specify a value

<b>operation mode</b>	efficiency Q, m <sup>3</sup> /h	
	static pressure Psv at t = 20° C, Pa	
<b>fan size</b>		
<b>version fan</b>	N - general purpose industrial	
	CR1 - corrosion-resistant	
<b>climatic version</b>	Y1 (Y1)	
	T1 (T1)	
<b>motor</b>	installed power	
	rotation speed, min <sup>-1</sup>	
	voltage, V	220
220/380		

#### Additional equipment

<b>STAM</b> roof curb	
<b>POD</b> pan	
<b>frequency converter</b>	
<b>single-phase speed controller</b>	
<b>SAU</b> fan control cabinet	

**Special requirements:**



**Customer:** \_\_\_\_\_ (signature) \_\_\_\_\_ (full name)

## AXIAL ROOF FANS | OZA-R

- ▶ low noise level;
- ▶ in systems with parallel operation of multiple fans;
- ▶ with backward-curved blades.
- ▶ **INTENDED USE:**
  - installed on the roofs of residential, public and industrial buildings;
  - used in exhaust installations of standard ventilation systems.



•040 •045 •050 •056 •063 •071 •080 •090 •100

Axial roof fans consist of a new design impeller, an all-welded casing made of rolled sheet and an asynchronous motor located in the casing, a hood and a base plate. Thanks to its special aerodynamic shape, the motor support stand serves as a guide apparatus.

The impeller is made with variable-incidence blades, the setting angle of the blade is adjustable for maximum efficiency. The volumetric blades are made by using injection molding. The air flow cross-section is maximized, which gives a significant reduction in the outlet speed.

Motor ingress protection rating IP54.

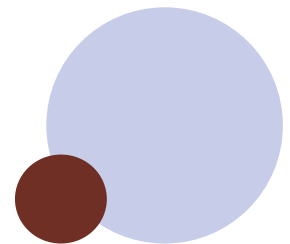
The installation dimensions on the base plate are unified with the KROV and KROM roof fans, which makes it easy to install the fans on the roof using the STAM roof curb.

The fans are offered complete with a STAM roof curb, a pan, a soft starter and a SAU automation cabinet.

- ▶ general purpose industrial (N);
- ▶ corrosion-resistant (CR1);
- ▶ explosion-proof (V);
- ▶ corrosion-resistant, explosion-proof (VCR1).

### OPERATING CONDITIONS:

- ▶ ambient temperature:
  - from -45°C to +40°C for temperate climates





**EXAMPLE:**

OZA-R-301 axial roof fan, size 080/L, impeller blade angle 50°, general purpose industrial design, nominal motor power Nnom = 0.75 kW, number of poles 6, climatic version Y1, casing type 02

## OZA-R-301-080/L-50-N-00075/6-Y1

- ▶ axial roof fan —————
  - (•OZA-R-300, •OZA-R-301 (lightweight impeller\*))
- ▶ fan size —————
  - (•040 •045 •050 •056 •063 •071 •080 •090 •100 •112 •125)
- ▶ impeller modification —————
  - (•N •CR1 •V (only for OZA-R-300) •VCR1 (only for OZA-R-300))
- ▶ motor parameters\*\* (•I/P) —————
  - I\*\*\* - Motor Power Index
  - P - number of poles: 2 (3,000 rpm) 4 (1,500 rpm) 6 (1,000 rpm) 8 (750 rpm)
- ▶ climatic version (•Y1 •YHL1) —————

**NOTE:**

\* Lightweight impeller design is used for less demanding tasks (clean air without impurities) and is not used in explosion-proof design.

\*\* All supplied motors are designed with a supply voltage of 380 V/50 Hz by default, direct start, versions for other voltages and connection methods are available upon special agreement.

\*\*\* The Motor Power Index is shown in the table below.

Special requirements for the fan are specified additionally and agreed upon with the manufacturer.

Additional equipment is ordered as an individual item (as options).

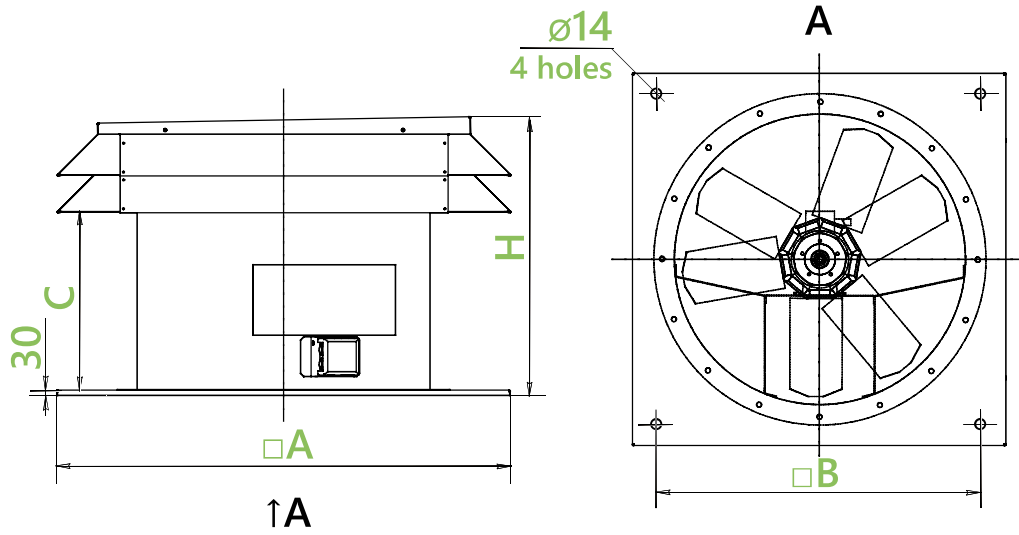
### MOTOR POWER INDEX

Nominal power (Nnom), kW	0,18...0,75	1,1...7,5
Motor Power Index (I)	00018...00075	00110...00750

### COMPLETE SET OF THE FAN WITH A ROOF CURB

Fan standard size	040	045	050	056	063	071	080	090	100
STAM standard size	40	45	51	56	63	71	88	90	109





Fan standard size	Connection dimensions, mm			
	A	H	C	B
<b>040</b>	625	625	330	530
<b>045</b>	680	680	380	580
<b>050</b>	710	710	440	630
<b>056</b>	820	820	510	690
<b>063</b>	850	850	510	775
<b>071</b>	950	950	510	840
<b>080</b>	1080	1080	510	1005
<b>090</b>	1130	1130	625	1050
<b>100</b>	1300	1300	625	1220



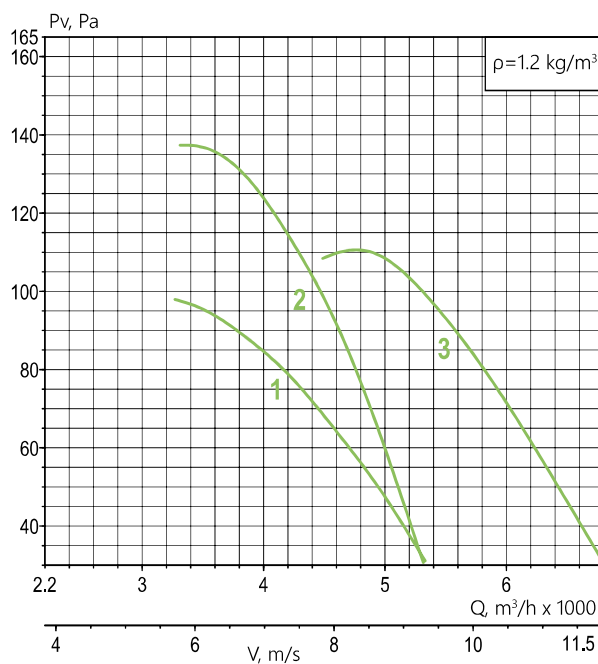
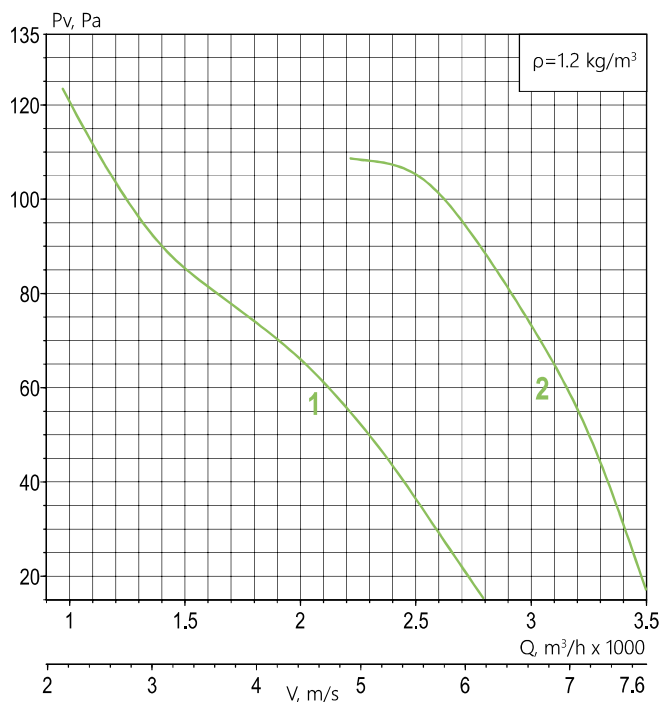


## 040

Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	4	0,18**	A	45	0,73	43
2			B	50		45

## 045

Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	4	0,18**	A	52	0,73	46
2		0,25	B	50	0,83	49
3		0,37	B	60	1,18	50



**NOTE:**

\* Weight specified for OZA-R-300. When changing the motor type, the weight may change.

\*\* "N" and "CR1" fan design only.

The company reserves the right to change the size and configuration without prior notice.

ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PROTECTIVE MESH <b>OZA-SEM</b>	SOFT STARTER <b>MCD-201, MCD-202</b>
PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>



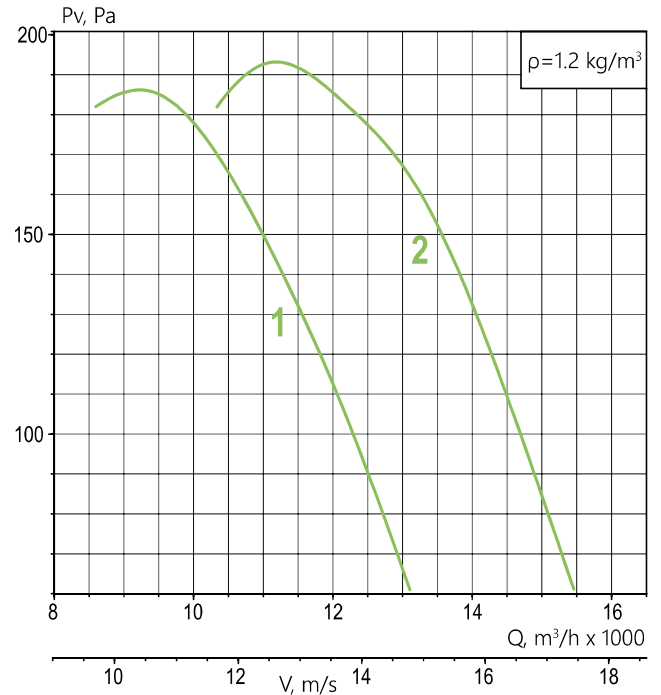
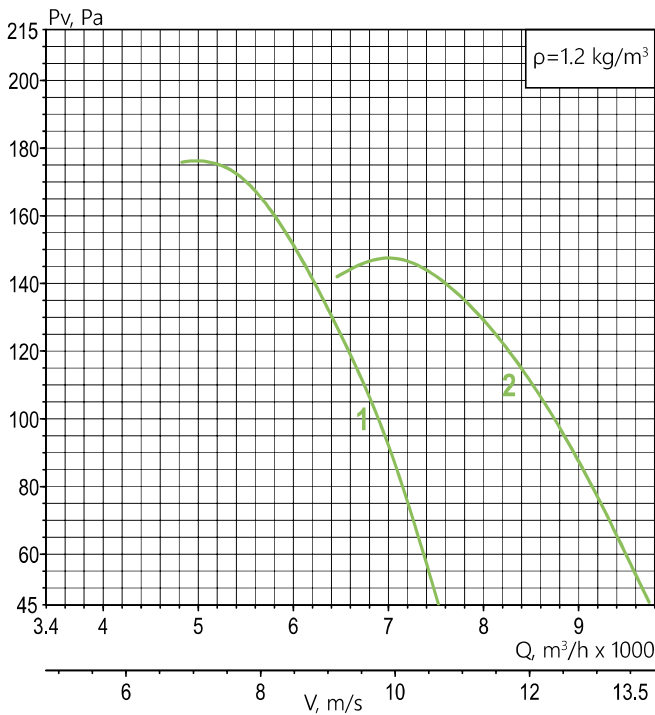


## 050

Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	4	0,55	V	50	1,5	71
2		0,75	V	60	2,2	73

## 056

Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	4	1,1	V	57	2,6	73
2		2,2	V	67	5,1	88



**NOTE:**

\* Weight specified for OZA-R-300. When changing the motor type, the weight may change. The company reserves the right to change the size and configuration without prior notice.

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ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PROTECTIVE MESH <b>OZA-SEM</b>	SOFT STARTER <b>MCD-201, MCD-202</b>
PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>

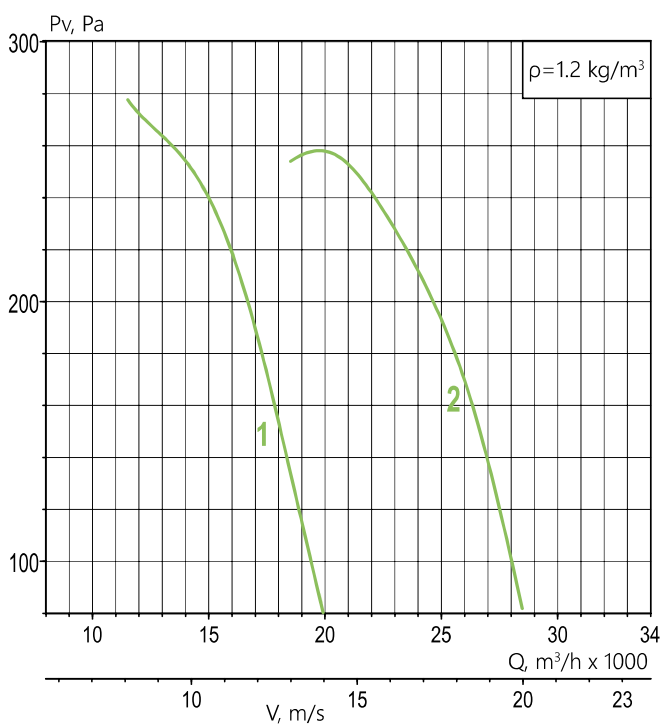
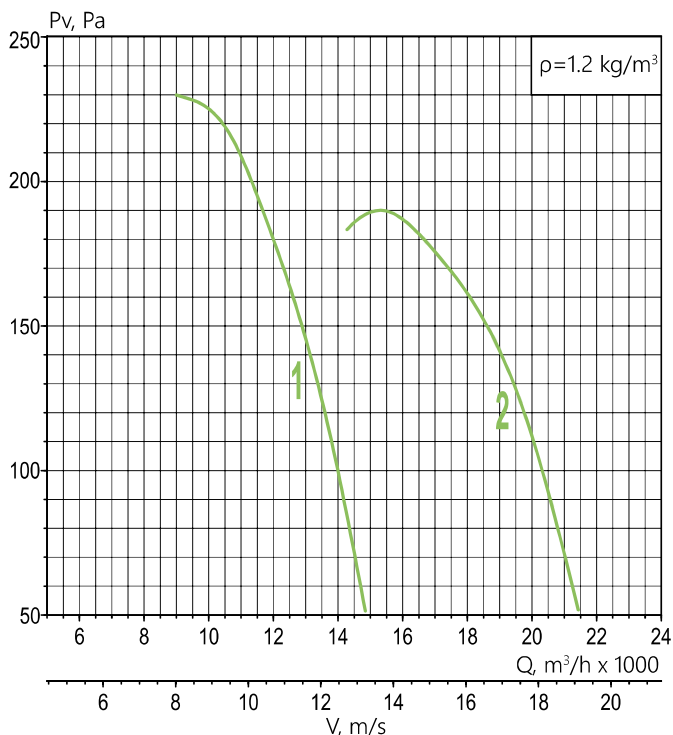


# 063

# 071

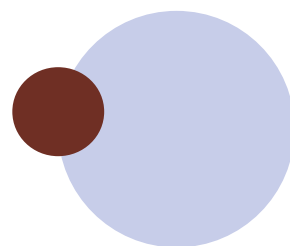
Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	4	1,1	B	50	2,6	93
2		2,2	L	65	5,1	101

Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	4	1,5	B	50	3,6	104
2		4	L	62	8,6	123



**NOTE:**

\* Weight specified for OZA-R-300. When changing the motor type, the weight may change. The company reserves the right to change the size and configuration without prior notice.



**ADDITIONAL EQUIPMENT**

ROOF CURB <b>STAM</b>	PROTECTIVE MESH <b>OZA-SEM</b>	SOFT STARTER <b>MCD-201, MCD-202</b>
PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>



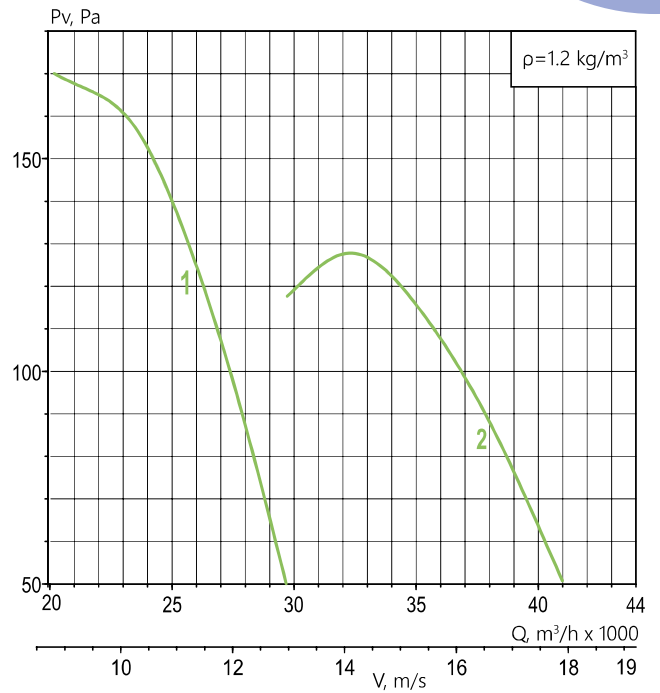
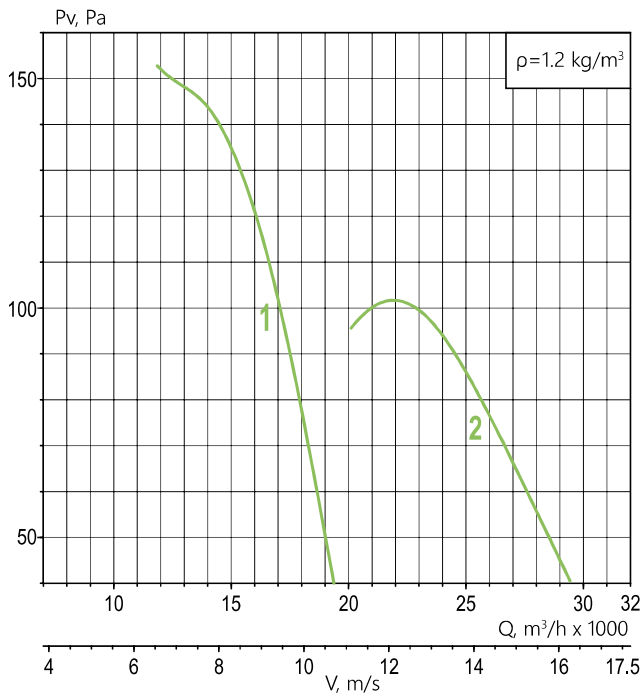


## 080

Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	6	1,1	L	52	3,2	130
2		2,2	L	67	5,8	146

## 090

Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	6	2,2	L	57	5,8	168
2		4	L	70	9	204



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**NOTE:**

\* Weight specified for OZA-R-300. When changing the motor type, the weight may change. The company reserves the right to change the size and configuration without prior notice.

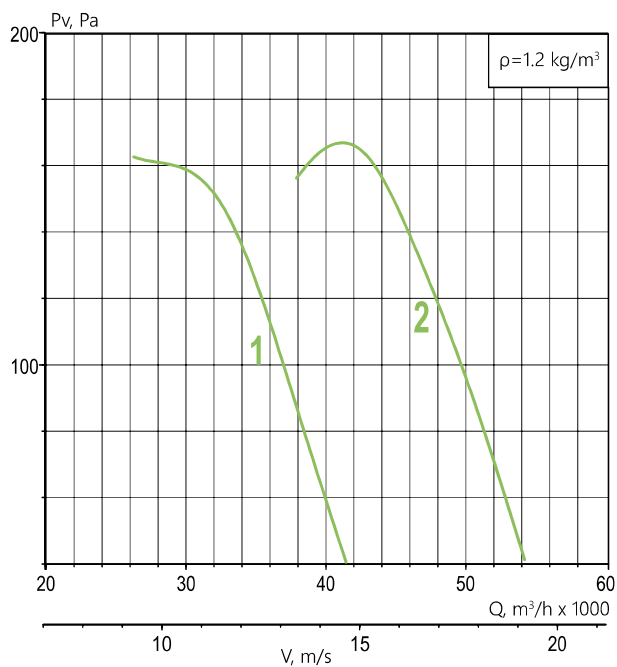
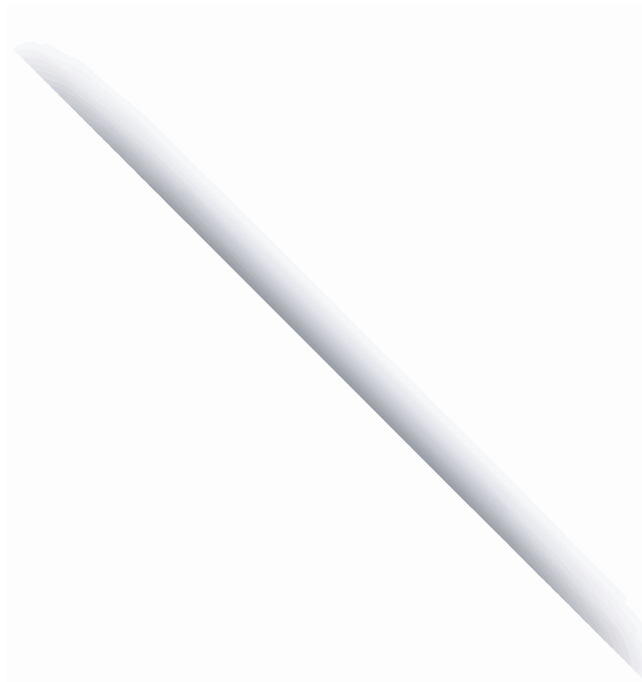
ADDITIONAL EQUIPMENT

ROOF CURB <b>STAM</b>	PROTECTIVE MESH <b>OZA-SEM</b>	SOFT STARTER <b>MCD-201, MCD-202</b>
PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>



# 100

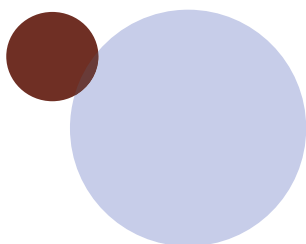
Curve number	Number of poles	Nnom, kW	impeller	$\alpha$ , deg	Current, A at 380 V	Weight*, kg
1	6	3	L	60	7	223
2		7,5	P	67	17,5	273



**NOTE:**

\* Weight specified for OZA-R-300. When changing the motor type, the weight may change. The company reserves the right to change the size and configuration without prior notice.

ADDITIONAL EQUIPMENT		
ROOF CURB <b>STAM</b>	PROTECTIVE MESH <b>OZA-SEM</b>	SOFT STARTER <b>MCD-201, MCD-202</b>
PAN <b>POD</b>	FREQUENCY CONVERTER <b>ASC, FC</b>	FAN CONTROL CABINET <b>SAU-PPV, SAU-SPV, SAU-VK</b>



## ADDITIONAL EQUIPMENT

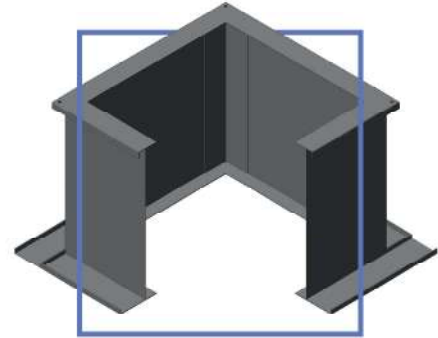
ROOF BASE

# STAM

The design of STAM mounting bases for KROS, KROV, KROM and OZA-R radial roof fans is constantly being improved.

The STAM model range is represented by models of mounting bases for various purposes:

- ▶ STAM 100 is the simplest and most cost-effective series of bases without thermal insulation of the walls;
- ▶ STAM 200 - series for general purpose industrial fans with thermal insulation;
- ▶ STAM 211 - special series with built-in GMK valve;
- ▶ STAM 310, STAM 360 - special series for KROM fans.



Additional elements are available for STAM:

- ▶ ZNT-STAM weather protection hood, mounted on STAM to provide for an air intake shaft through STAM. It can also be used for arranging discharge shafts installed inside the building.
- ▶ POD - a pan for collecting condensate and rainwater, installed below the STAM.
- ▶ GMK ▶ REG ▶ TUL (and others) - models of air valves, can be installed from below on special mounting threaded fasteners (no nuts required). The choice of the type of separately mounted valve is not limited; the use of special explosion-proof valves is permitted. Some STAMs have built-in valves, but without choosing a model.

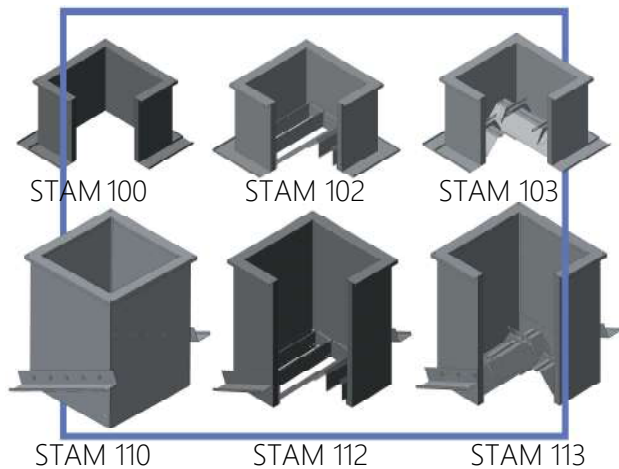
### EXAMPLE:

STAM 100 roof base (lightweight, without slope, without thermal insulation, without built-in valves), size 35, general purpose industrial design

### STAM 100-35-N

- ▶ roof base (•STAM 100 •STAM 102 •STAM 103 •STAM 110 •STAM 112 •STAM 113 •STAM 200 •STAM 202 •STAM 203 •STAM 210 •STAM 212 •STAM 213)
- ▶ fan size (•35 •40 •45 •51 •56 •63 •71 •88 •90•109 •112 •136)
- ▶ design (•N •CR1)

# STAM 100 | LIGHTWEIGHT ROOF BASE



**INTENDED USE:**

- T80 - temperature of the moved medium up to 80o C (operating period - continuous);
- T200 - temperature of the moved medium up to 200o C (operating period - continuous).

**•35 •40 •45 •51 •56 •63 •71 •88 •90 •109 •112 •136\***

\* STAM standard size (numerical index) corresponds to the size of the flow section in centimeters

- ▣ general purpose industrial (N);
- ▣ corrosion-resistant (CR1).

Lightweight roof base (without thermal insulation) of the STAM 100 series are intended for use in the design of building structures on any type of building roof. STAM 100, STAM 102 and STAM 103 are designed for installation on horizontal, STAM 110, STAM 112 and STAM 113 - on an inclined surface together with KROS, KROV, KROM and OZA-R exhaust and supply roof fans.

The design of the lightweight roof base of the STAM 100 series is a prefabricated structure consisting of a strong welded frame that carries the main load, and a sealed galvanized exterior cladding. Thermal insulation is not included in the delivery and can be installed on site as part of the adjacent roofing pie. Connection to the ventilation duct is made via the mounting flange with bolts.

The following STAM models are available for mounting on the roof without a slope:

- **STAM 100 - without valve;**
- **STAM 102 - with integrated exhaust valve;**
- **STAM 103 - with integrated intake air valve.**

The height of the roof base without a slope is 600 mm, designed for the thickness of the snow cover no more than 500 mm (taking into account the thickness of the roofing pie).

For installation on roofs with a slope:

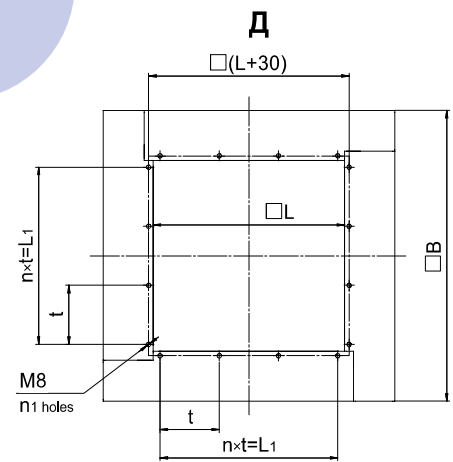
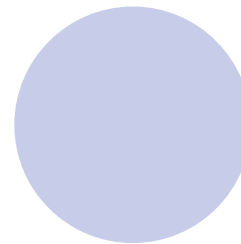
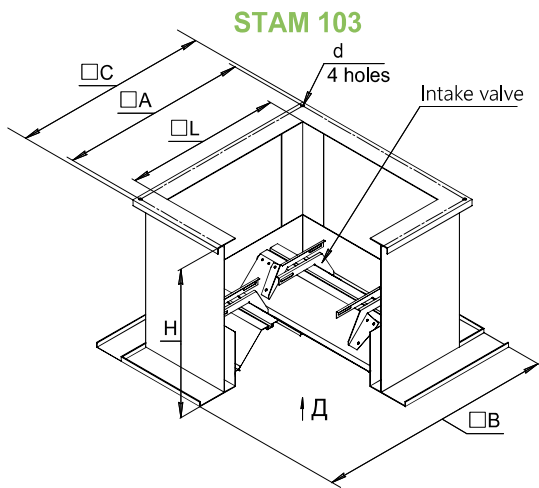
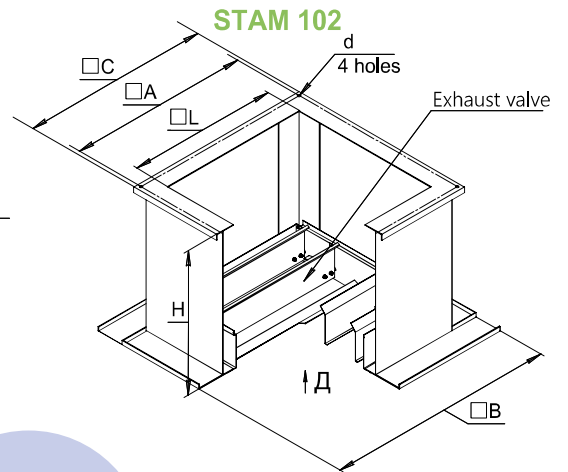
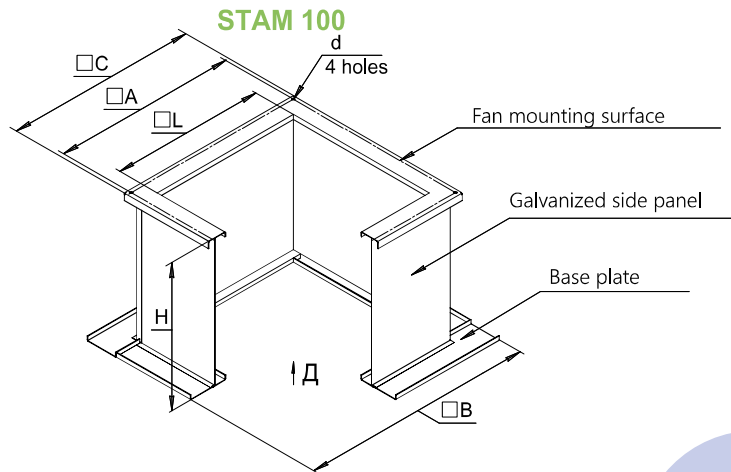
- **STAM 110 - without valve;**
- **STAM 112 - with integrated exhaust valve;**
- **STAM 113 - with integrated intake air valve.**

They are supplied with side supports that are adjustable during installation.

The angle of inclination is set when installing on the roof, the maximum slope is 1:2. The height of the roof curbs with a slope is 750-1150 mm, designed for the thickness of snow cover over 500 mm (taking into account the variable angle of installation in the roof).

The connection dimensions of the STAM 100 series are unified with KROS/KROV.

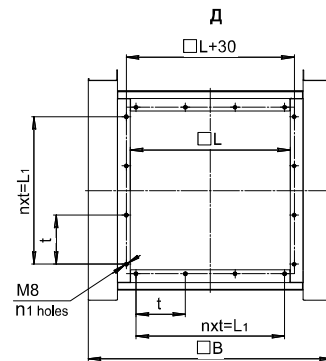
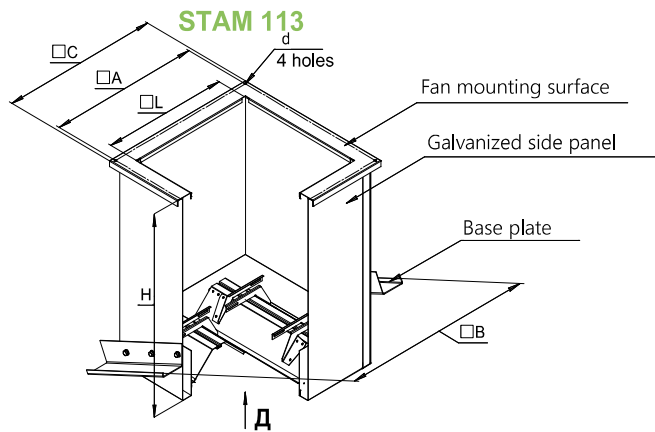
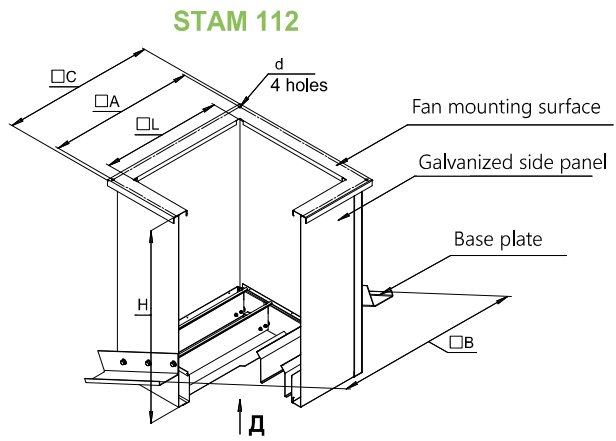
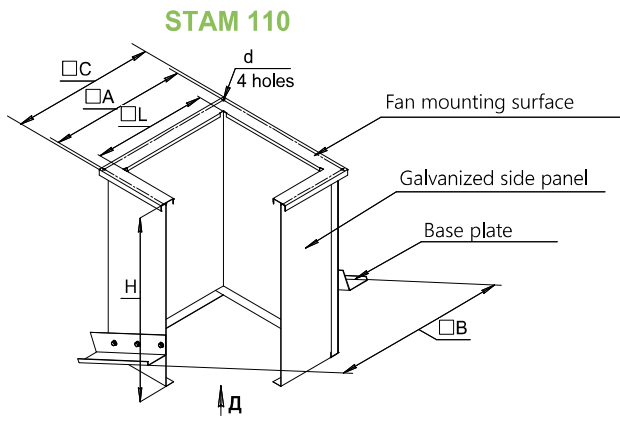
Additional equipment is offered: • POD pan • vandal-proof mesh • grille • ZNT weather protection hood • bottom-mounted GMK/REG external valves.



120 GENERAL AND SPECIAL PURPOSE FANS

STAM standard size	Dimensions, mm										Weight, kg		
	A	B	C	L	L <sub>1</sub>	t	n	n <sub>1</sub>	H	d	100	102	103
<b>35</b>	480	685	520	355	275	137,5			600		22	25	29
<b>40</b>	530	730	565	400	360	180					24	28	33
<b>45</b>	580	780	615	450	390	195	2	12			27	42	38
<b>51</b>	630	830	665	500	450	225					29	35	41
<b>56</b>	690	890	725	560	450	225					33	40	47
<b>63</b>	755	960	790	630	585	195					43	51	58
<b>71</b>	840	1040	875	710	585	195			46	56	63		
<b>88</b>	1005	1210	1050	880	780	260	3	16		53	65	73	
<b>90</b>	1050	1230	1090	900	780	260				54	68	75	
<b>109</b>	1220	1420	1260	1090	1050	150			7	32	14	61	77
<b>112</b>	1350	1450	1390	1120	960	160				69	87	96	
<b>136</b>	1505	1700	1545	1370	1260	210				6	28	18	72





STAM standard size	Dimensions, mm										Weight, kg		
	A	B	C	L	L <sub>1</sub>	t	n	n <sub>1</sub>	H	d	110	112	113
<b>35</b>	480	685	520	355	275	137,5	2	12	750	12	24	27	31
<b>40</b>	530	730	565	400	360	180			780		26	30	35
<b>45</b>	580	780	615	450	390	195			800		29	34	40
<b>51</b>	630	830	665	500	450	225	3	16	800	14	32	38	44
<b>56</b>	690	890	725	560	450	225			840		36	43	50
<b>63</b>	755	960	790	630	585	195			860		46	54	61
<b>71</b>	840	1040	875	710	585	195	7	32	900	18	50	60	67
<b>88</b>	1005	1210	1050	880	780	260			950		58	70	78
<b>90</b>	1050	1230	1090	900	780	260			970		60	74	81
<b>109</b>	1220	1420	1260	1090	1050	150	6	28	1030	18	68	86	92
<b>112</b>	1350	1450	1390	1120	960	160			1050		75	93	102
<b>136</b>	1505	1700	1545	1370	1260	210			1150		80	100	112

**EXAMPLE 1:**

STAM 100 roof base (lightweight, for mounting on the roof without slope, without valve), for a shaft size of 35x35 cm, general purpose industrial design:

**STAM 100-35-N**

**EXAMPLE 2:**

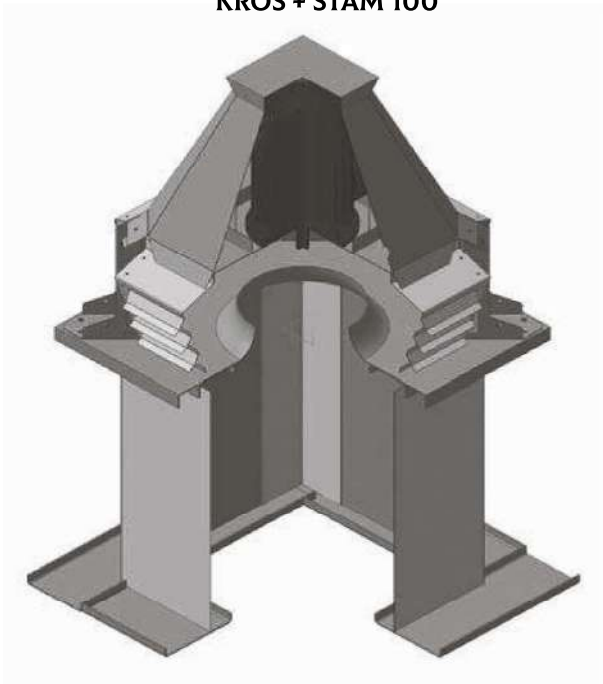
STAM 112 roof base (lightweight, for mounting on the roof with slope, with a built-in valve for the hood), for a shaft size of 109x109 cm, general purpose industrial design:

**STAM 112-109-N**

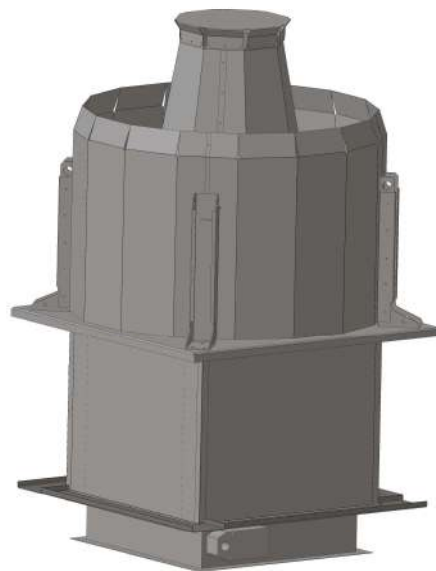
TABLE OF INDIVIDUAL COMBINATIONS OF PRODUCTS FOR USE TOGETHER WITH THE STAM 100 SERIES

Product	Standard size of the combined elements														
	35	40	45	51	56	63	71	88	90	109	112	136			
<b>STAM 100 series</b>															
<b>KROS (KROV)</b>	035	040	045	050	056	063	071	080	090	100	112			125	
<b>OZA-R</b>	—	040	045	050	056	063	071	080	090	100	—	—	—	—	
<b>PEK-OZA</b>	—	—	—	—	040	045	050	056	063	071	080	090	100	112	125
<b>POD</b>		50			84			93				137			

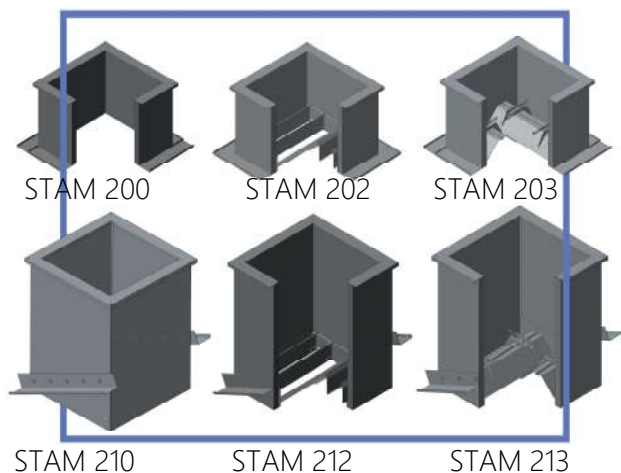
**KROS + STAM 100**



**KROV + STAM 100 + VALVE**



# STAM 200 | INSULATED ROOF BASES



**INTENDED USE:**

- T80 – temperature of the moved medium up to 80°C (operating period - continuous);

**•35 •40 •45 •51 •56 •63 •71 •88 •90 •109 •112 •136\***

\*STAM standard size (numerical index) corresponds to the size of the flow section in centimeters

- ▣ general purpose industrial (N);
- ▣ corrosion-resistant (CR1).

Insulated roof bases (with thermal insulation) of the STAM 200 series are intended for use in the design of building structures on any type of building roof. STAM 200, STAM 202 and STAM 203 are designed for installation on horizontal, and STAM 210, STAM 212 and STAM 213 - on an inclined surface together with KROS, KROV, KROM and OZA-R exhaust and supply fans.

The design of the insulated roof base of the STAM 200 series is a box-shaped structure consisting of a welded steel frame that bears the main support load, inside which a square-section air duct is fixed, made of galvanized (version N) or stainless steel (version CR1). The sides of the frame are completely covered with galvanized steel panels. There is thermal insulation between the frame and the air duct. Outside, the frame has a support surface for installation and mounting on the load-bearing part of the roof.

The following models of roof bases are offered for installation on the roof without a slope:

- **STAM 200 - without valve;**
- **STAM 202 - with integrated exhaust valve;**
- **STAM 203 - with integrated intake air valve.**

The height of STAM 200/202/203 is 600 mm, designed for the thickness of snow cover no more than 500 mm (taking into account the thickness of the "roofing pie").

For installation on roofs with a slope:

- **STAM 210 - without valve;**
- **STAM 212 - with integrated exhaust valve;**
- **STAM 213 - with integrated intake air valve.**

These roof bases are supplied with side supports that are adjustable during installation. The angle of inclination is set when installing on the roof, the maximum slope is 1:2.

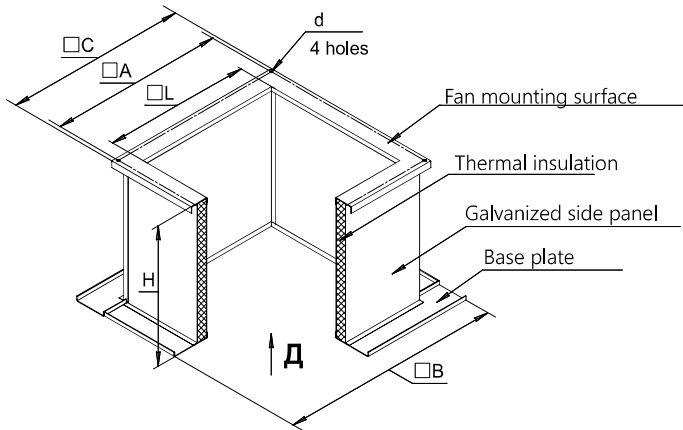
The height of STAM 210/212/213 is 750-1150 mm, designed for a snow cover thickness of more than 500 mm (taking into account the variable angle of installation in the roof).

The connection dimensions of the STAM 200 series are unified with KROS, KROV, KROM and OZA-R.

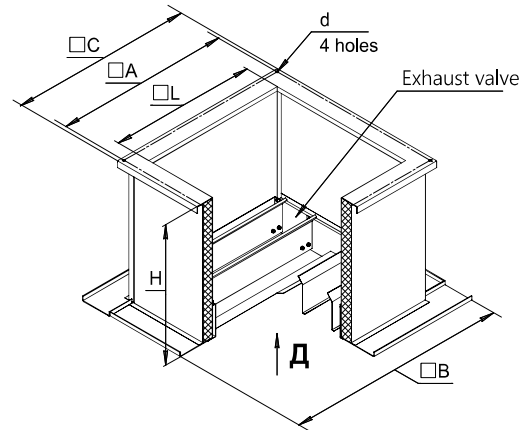
Additional equipment is offered:

- POD pan • protective mesh • grille • ZNT weather protection hood
- REG external valve.

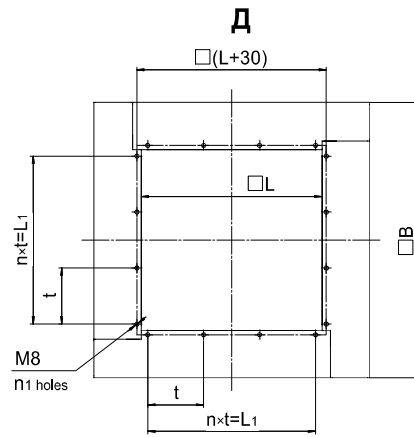
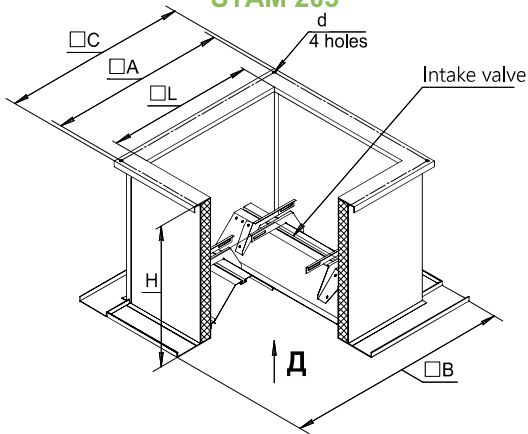
**STAM 200**



**STAM 202**

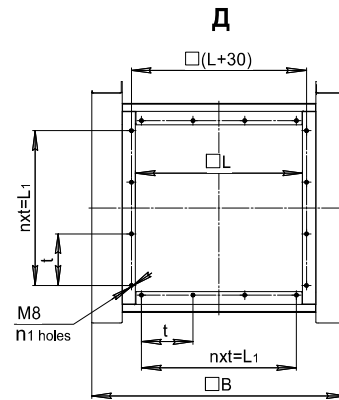
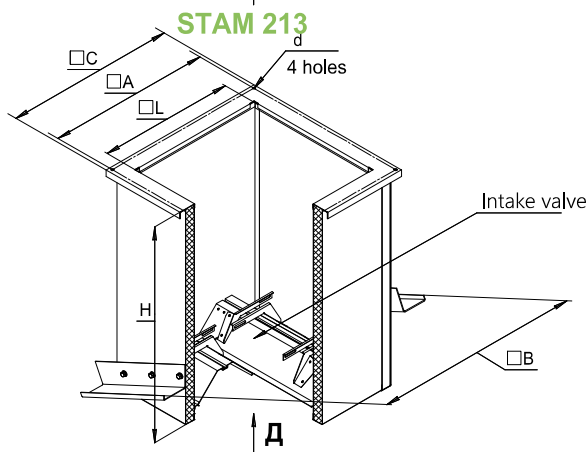
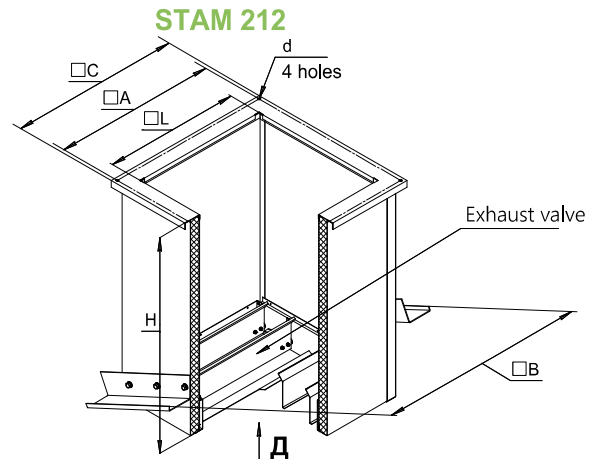
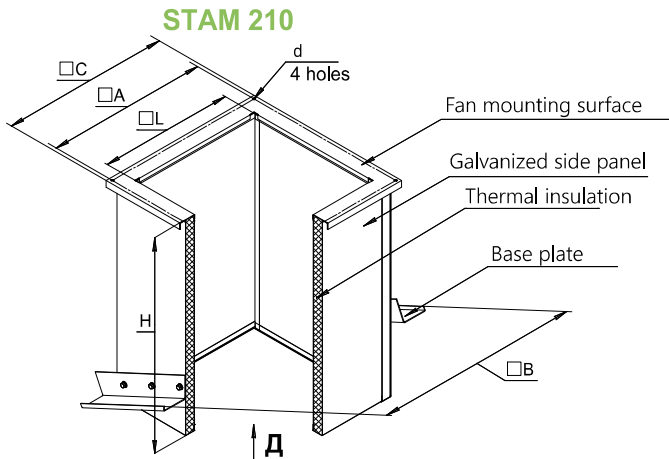


**STAM 203**



124 GENERAL AND SPECIAL PURPOSE FANS

STAM standard size	Dimensions, mm										Weight, kg		
	A	B	C	L	L <sub>1</sub>	t	n	n <sub>1</sub>	H	d	200	202	203
<b>35</b>	480	685	520	355	275	137,5	2	12	600	12	27	30	34
<b>40</b>	530	730	565	400	360	180					29	33	38
<b>45</b>	580	780	615	450	390	195					31	36	42
<b>51</b>	630	830	665	500	450	225					35	41	47
<b>56</b>	690	890	725	560	450	225					38	45	52
<b>63</b>	755	960	790	630	585	195	3	16	600	51	59	66	
<b>71</b>	840	1040	875	710	585	195				55	65	72	
<b>88</b>	1005	1210	1050	880	780	260				65	77	85	
<b>90</b>	1050	1230	1090	900	780	260	7	32	14	67	81	87	
<b>109</b>	1220	1420	1260	1090	1050	150				76	92	100	
<b>112</b>	1350	1450	1390	1120	960	160				83	101	110	
<b>136</b>	1505	1700	1545	1370	1260	210	6	28	18	90	110	122	



STAM standard size	Dimensions, mm										Weight, kg		
	A	B	C	L	L <sub>1</sub>	t	n	n <sub>1</sub>	H	d	210	212	213
35	480	685	520	355	275	137,5			750		34	37	41
40	530	730	565	400	360	180			780		36	40	45
45	580	780	615	450	390	195	2	12	800		39	44	50
51	630	830	665	500	450	225			800	12	42	48	54
56	690	890	725	560	450	225			840		46	53	60
63	755	960	790	630	585	195			860		62	70	77
71	840	1040	875	710	585	195			900		66	76	84
88	1005	1210	1050	880	780	260	3	16	950		78	90	98
90	1050	1230	1090	900					970		80	94	101
109	1220	1420	1260	1090	1050	150	7	32	1030	14	88	104	112
112	1350	1450	1390	1120	960	160			1050		92	110	119
136	1505	1700	1545	1370	1260	210	6	28	1150	18	100	120	132

**EXAMPLE 1:**

STAM 200 roof base (insulated, for mounting on the roof without slope, without valve), for a shaft size of 35x35 cm, general purpose industrial design:

**STAM 200-35-N**

**EXAMPLE 2:**

STAM 212 roof base (insulated, for mounting on the roof with slope, with a built-in valve for the hood), for a shaft size of 109x109 cm, general purpose industrial design:

**STAM 212-109-N**

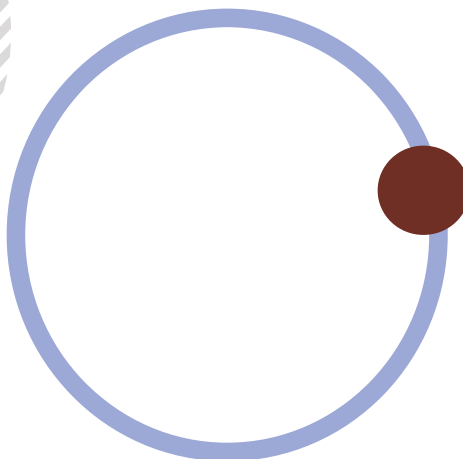
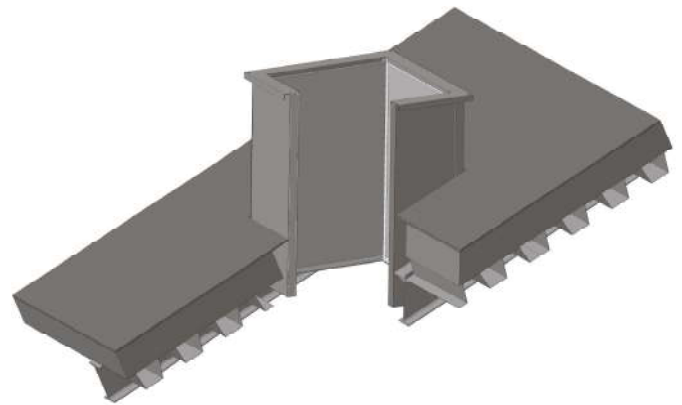
TABLE OF INDIVIDUAL COMBINATIONS OF PRODUCTS FOR USE TOGETHER WITH THE STAM 200 SERIES

Product	Standard size of the combined elements														
STAM 200 series	35	40	45	51	56	63	71	88	90	109	112	136			
<b>KROS (KROV)</b>	035	040	045	050	056	063	071	080	090	100	112	125			
<b>OZA-R</b>	—	040	045	050	056	063	071	080	090	100	—	—			
<b>ZNT-STAM</b>	35	40	45	51	56	63	71	88	90	109	112	136			
<b>PEK-OZA</b>	—	—	—	—	040	045	050	056	063	071	080	090	100	112	125
<b>POD</b>	50			84			93			137					

**OZA-R + STAM 200**

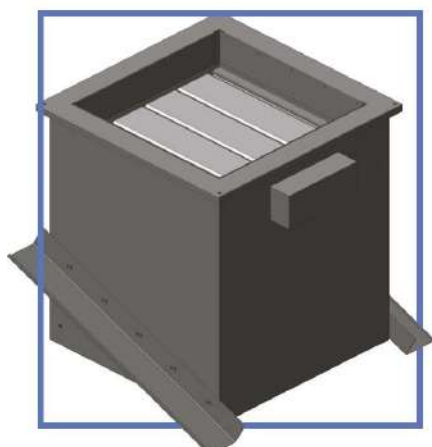


**STAM 210** installation on a sloping roof



# STAM 211

## INSULATED ROOF BASES WITH BUILT-IN GMK-P VALVE



### INTENDED USE:

- T80 – temperature of the moved medium up to 80°C (operating period - continuous);

**•35 •40 •45 •51 •56 •63 •71 •88 •90 •109 •112 •136\***

\* STAM standard size (numerical index) corresponds to the size of the flow section in centimeters

- ▣ general purpose industrial (N);
- ▣ corrosion-resistant (CR1).

Insulated roof bases with built-in GMK-P valve are intended for use in the design of building structures on any type of building roof together with exhaust and supply KROS, KROV, KROM and OZA-R roof fans.

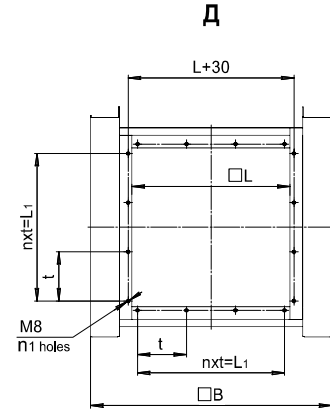
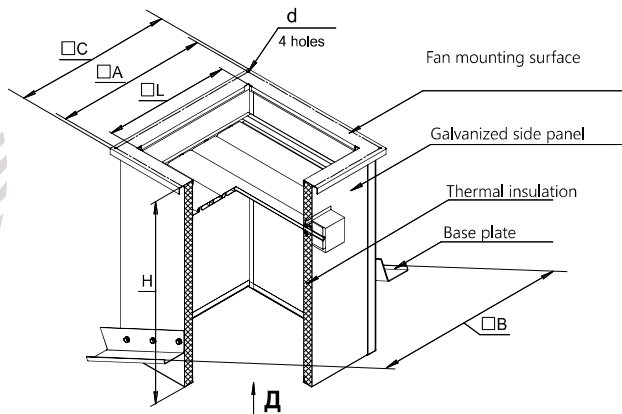
The design of the insulated roof base of the STAM 211 series is a box-shaped structure consisting of a welded steel frame that bears the main support load, inside which a square-section air duct is fixed, made of galvanized (version N) or stainless steel (version CR1). The sides of the frame are completely covered with galvanized steel panels. There is thermal insulation between the frame and the air duct. Outside, the frame has a support surface for installation and mounting on the load-bearing part of the roof.

The roof base features a built-in GMK-P valve. A heat-insulated drive protection casing with heating is not provided for STAM 211; use below -30° C is not recommended.

For roof mounting, the STAM 211 is supplied with side supports that are adjustable during installation. The angle of inclination is set when installing on the roof, the maximum slope is 1:2. It can be installed on the roof without a slope.

The height of STAM 211 is 1000 mm, designed for a snow cover thickness of more than 500 mm (taking into account the variable angle of installation in the roof).

The connection dimensions of the STAM 211 series are unified with KROS, KROV, KROM and OZA-R.



STAM standard size	Dimensions, mm										Weight, kg	
	A	B	C	L	L <sub>1</sub>	t	n	n <sub>1</sub>	H	d		
35	480	685	520	355	275	137,5			1000		50	
40	530	730	565	400	360	180						52
45	580	780	615	450	390	195	2	12				60
51	630	830	665	500	450	225				12		70
56	690	890	725	560	450	225						75
63	755	960	790	630	585	195						82
71	840	1040	875	710	585	195	3	16				97
88	1005	1210	1050	880	780	260						
90	1050	1230	1090	900	780	260				14		115
109	1220	1420	1260	1090	1050	150	7	31				123
112	1350	1450	1390	1120	960	160						140
136	1505	1700	1545	1370	1260	210	6	28			18	160

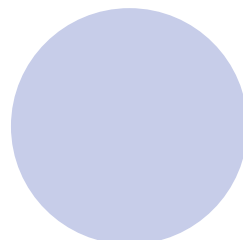
**EXAMPLE:**

STAM 211 roof curb (standard, heat and noise insulated with built-in GMK-P valve), for a shaft size of 35x35 cm, general purpose industrial design::

**STAM 211-35-N**

ТАБЛИЦЯ ОКРЕМОГО ПОЄДНАННЯ ВИРОБІВ ДЛЯ ЗАСТОСУВАННЯ РАЗОМ З СЕРІЮ STAM 211

Product	Standard size of the combined elements											
STAM 211 series	35	40	45	51	56	63	71	88	90	109	112	136
<b>KROS (KROV)</b>	035	040	045	050	056	063	071	080	090	100	112	125
<b>OZA-R</b>	—	040	045	050	056	063	071	080	090	100	—	—
<b>ZNT-STAM</b>	35	40	45	50	56	63	71	80	90	109	112	136
<b>PEK-OZA</b>	—	—	—	—	040	045	050 056	063	071	080	090	100 112 125
<b>POD</b>	50			84			93			137		





# STAM 310/360

## ROOF BASES FOR KROM FANS

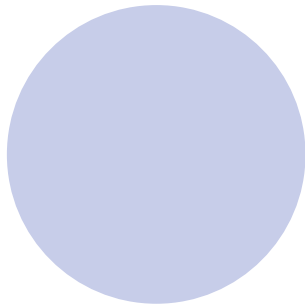


Roof bases are designed for installation and mounting of low-height KROM roof fans. STAM 310, STAM 360 - this is the most lightweight series among STAM roof bases.

For use in the design of building structures on any type of roof.

Provide a noise level reduction of 8 dB in the direction of the serviced premise.

**•27 •36 •50 •57 •84**



▀ general purpose industrial (N).

The heat-insulated soundproof STAM-310/360 roof base is a lightweight box-shaped structure of square cross-section, made of galvanized steel. The inside walls of the box are covered with 10 mm thick heat and sound insulation. The design of the STAM-360 roof base includes additional 500 mm long noise reduction plates to improve noise reduction efficiency.

For roof mounting, the STAM 310/360 is supplied with adjustable side supports. The angle of inclination is set when installing on the roof the maximum slope is 1:2.

The following models of roof curbs are available for installation on the roof:

- **STAM 310 - without silencer;**
- **STAM 360 - with built-in silencer.**

The connection dimensions of STAM 310 are completely unified with KROM.

Numerical index - the standard size of the roof curb approximately corresponds to the size of the flow section in centimeters.

GMK-P, REG, and TUL valves can be attached to the flanges of the STAM 310 base plate from below.

### EXAMPLE 1:

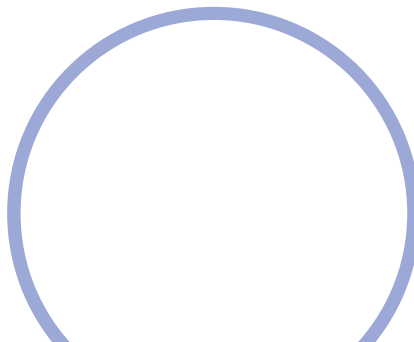
STAM 310 roof base (for KROM fan), for a shaft size of 36x36 cm, general purpose industrial design

### EXAMPLE 2:

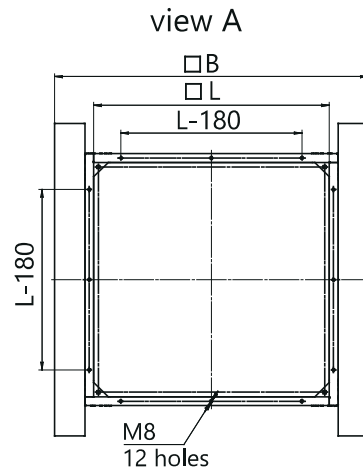
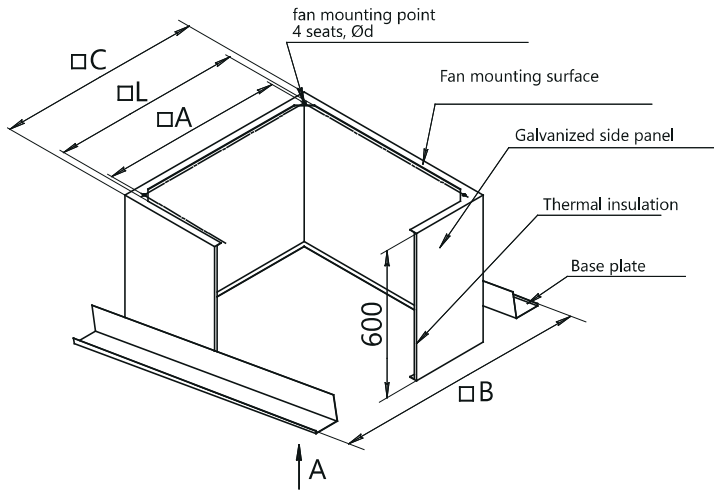
STAM 360 roof base with built-in silencer (for KROM fan), for installation in 50x50 cm shaft; general purpose industrial design:

**STAM 310-36-N**

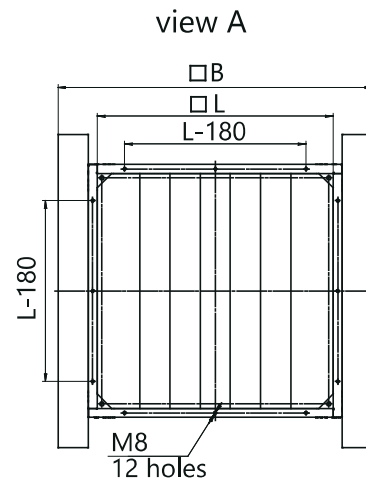
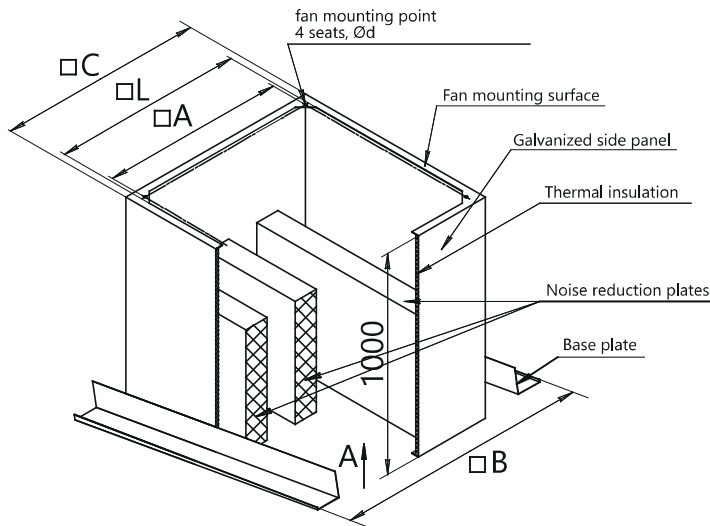
**STAM 360-50-N**



### STAM 310



### STAM 360



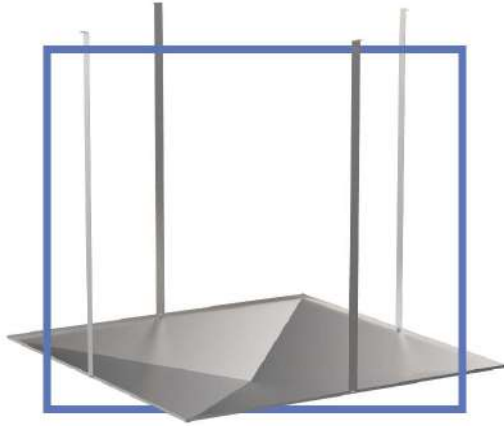
130 GENERAL AND SPECIAL PURPOSE FANS

STAM standard size	KROM fan standard size	Dimensions, mm					Weight, kg	
		A	B	C	L	d	STAM 310	STAM 360
<b>27</b>	2,25	245	535	335	275	M8	9,5	24
<b>36</b>	3,1	330	620	420	360		11,5	29
<b>50</b>	3,55	450	740	540	480	M10	14,5	40
	4	450	740	540	480		14,5	40
<b>57</b>	4,5	535	825	625	565		18	45
	5	535	825	625	565		18	45
<b>84</b>	5,6	750	1040	840	780		25	63
	6,3	750	1040	840	780		25	63

TABLE OF INDIVIDUAL COMBINATIONS OF PRODUCTS FOR USE TOGETHER WITH THE STAM

PRODUCT	STANDARD SIZE OF THE COMBINED ELEMENTS							
STAM 310/360 series	27	36	50	57	84			
<b>KROM</b>	2,25	3,1	3,55	4	4,5	5	5,6	6,3
<b>POD</b>	50				84		93	

# POD | CONDENSATE DRAIN PAN

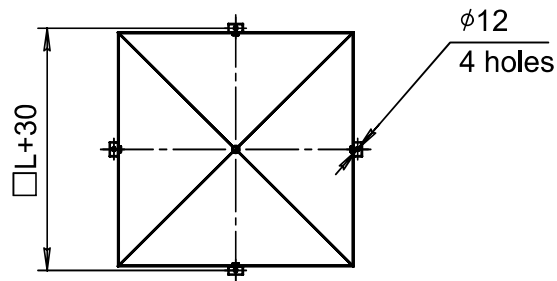
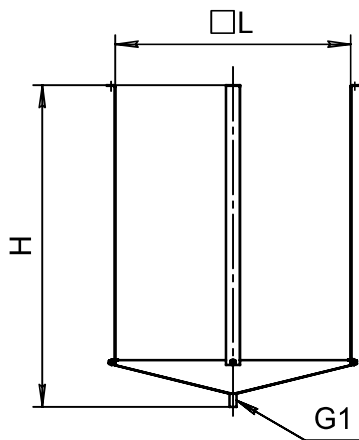


•50 •84 •93 •137

To collect and remove condensate formed at the boundary of moist air leaving the room and cold metal parts of the fan and/or STAM roof curb, it is mandatory to install a POD pan, especially at critical facilities (warehouses, control rooms, power substations). In premises with dry conditions of the fan operation, POD pan is recommended for protection against heavy rain.

The POD pan is attached to the bottom part of the STAM roof curb by adjustable hangers. The pan is fixed with four special-type bolts. In premises with constantly high humidity, it is necessary to provide additional condensate drainage from the pan. For this purpose, a fitting is provided in the lower part of the pan bottom, to which a drain pipe can be connected.

In premises with constant high humidity (food production, farms, swimming pools), it is recommended to use stainless steel design versions. The position of the supplied vertical brackets can vary by  $\pm 30^\circ$  (for matching STAM holes). Standard POD sizes that are manufactured match all STAM variants.



Standard size	50	84	93	137
H, mm	875	875	875	1125
L, mm	495	835	925	1370
Volume, l	16	28	33	65
Weight, kg	13	8	13	20
<b>STAM</b>	•35 •40 •45	•51 •56 •63	•71 •88 •90	•109 •112 •136

**EXAMPLE:**

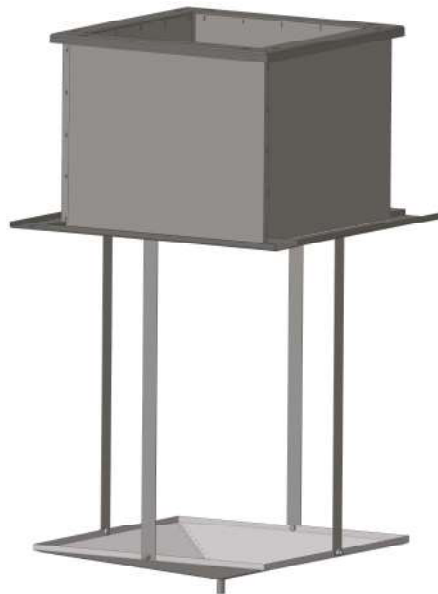
POD pan size 84 for mounting to STAM, material - galvanized steel:

**POD-84-ZS**

- ▶ condensate drain pan
- ▶ standard size  
(•50 •84 •93 •137)
- ▶ material (• ZS - galvanized steel •NS - stainless steel)

Special requirements for POD are specified additionally and agreed upon with the manufacturer.

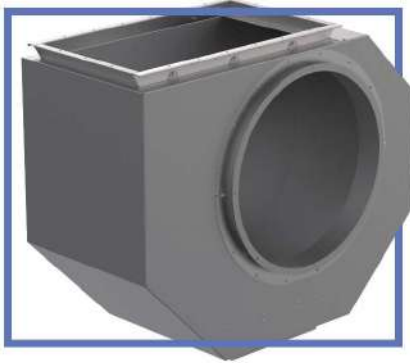
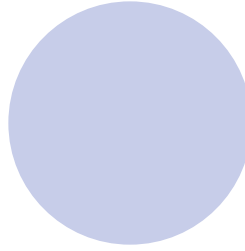
**STAM**





**TSK**

**HEAT AND SOUND INSULATED CASING**



The heat and sound insulated casing is made in the form of a frame-panel structure, consisting of a mesh on the inside and galvanized panels on the outside, between which there is a heat- and noise-absorbing material. VRAN and VRAV fans in a heat- and noise-insulated casing are manufactured according to design versions 1 and 5 only for casing orientation of 0, 90 and 270 degrees.

The casing of the VRAN and VRAV radial fans is a transfer member of increased noise generated by these fans. It is also possible that increased heat may be released when handling hot gases (T80 and T200 modes).  
Reduction

of noise and/or heat flow emitted by the casing is possible by using a special TSK casing.

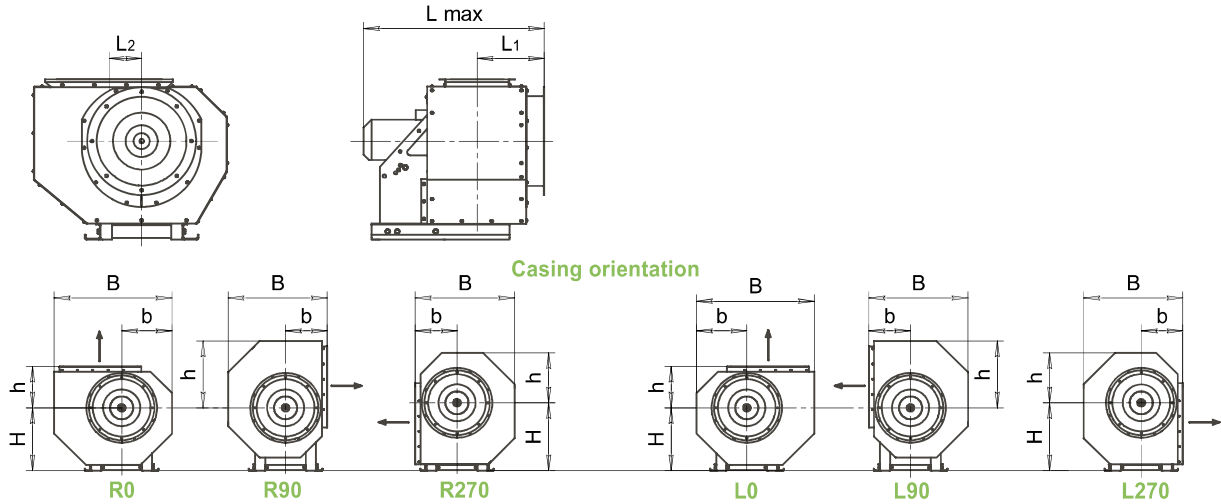
This combination allows for significant savings on air ducts, equipment and space for their placement. The proposed design of VRAN and VRAV fans in a noise-insulated casing

allows for a reduction in the total sound power level emitted by the fan by up to 12 dB due to the noise-absorbing and noise-insulating properties of the casing.

- 020 •025 •028 •031 •035 •040 •045 •050 •056 •063 •071 •080 •090**
- 100•112 •125**
- BELT DRIVEN
- 063 •080 •100 •125**
- BELT DRIVEN

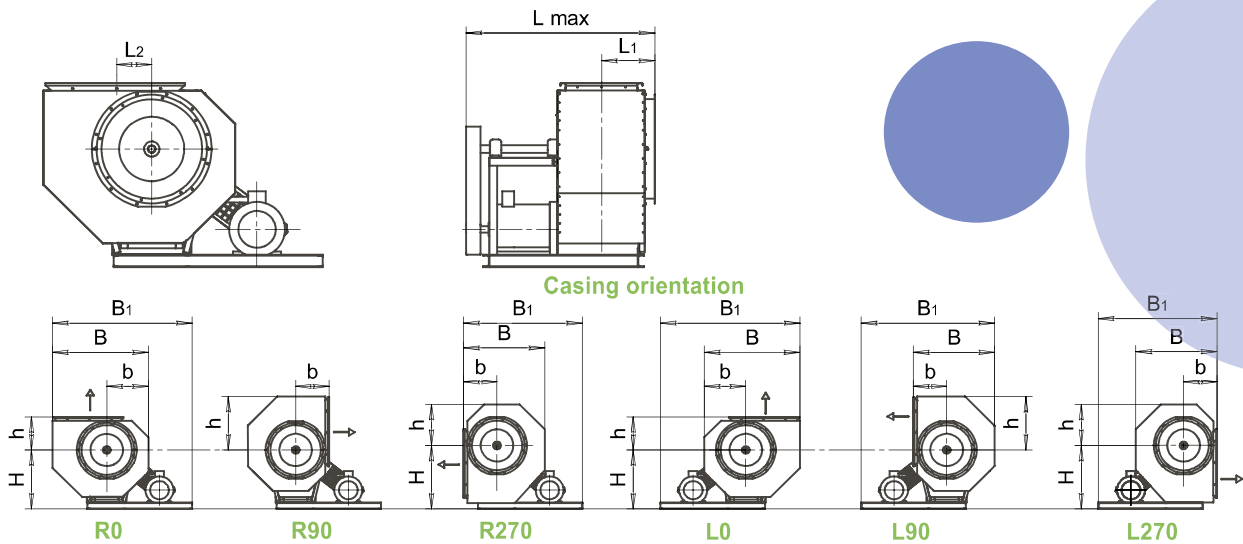


## DESIGN 1



Fan standard size	Overall dimensions, mm																Weight, kg			
	L1	L2	Lmax		R0, L0				R90, L90				R270, L270				VRAN		VRAV	
			VRAN	VRAV	B	b	H	h	B	b	H	h	B	b	H	h	min	max	min	max
040	252	145	760	860	795	345	390	290	685	290	390	450	685	290	470	345	62	93	69	138
045	270	164	860	880	875	380	435	325	765	325	435	495	765	325	535	380	70	109	101	140
050	289	181	895	1065	980	425	535	338	825	338	535	555	825	338	580	425	96,5	164	240	243
056	310	202	960	—	1090	475	570	375	915	375	570	615	915	375	665	475	120	198	—	—
063	334	231	1070	1270	1200	520	665	420	1020	420	665	680	1020	420	746	520	145	263	222	382
071	362	260	1150	—	1355	585	745	480	1150	480	745	770	1150	480	845	585	229	344	—	—
080	394	297	1245	1850	1500	650	795	536	1285	536	795	850	1285	536	895	650	295	412	570	1610
090	429	335	1390	—	1680	730	890	590	1430	590	890	950	1430	590	1010	730	333	513	—	—
100	466	366	1550	—	1870	800	970	656	1580	656	970	1070	1580	656	1100	800	537	717	—	—
112	507	409	1680	—	2060	890	1100	735	1765	735	1100	1170	1765	735	1250	890	710	915	—	—
125	552	455	1915	—	2295	990	1230	813	1975	813	1230	1305	1975	813	1430	990	870	1180	—	—

## DESIGN 5



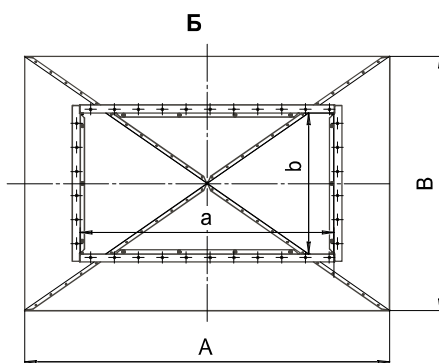
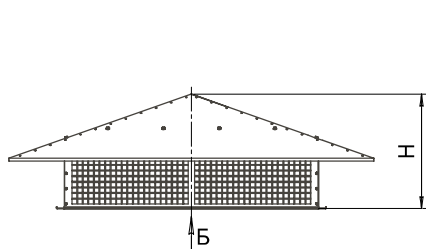
Fan standard size	Overall dimensions, mm																Weight, kg					
	L1	L2	Lmax	R0, L0				R90, L90				R270, L270				VRAN		VRAV				
				B	b	H	h	B	b	H	h	B	b	H	h	min	max	min	max			
063	334	231	1270	1350	1840	590	671	420	1065	1715	420	671	760	1020	1490	420	751	520	255	391	322	617
080	394	297	1400	1660	1550	710	843	536	1330	1790	536	843	950	1285	1535	536	933	650	444	590	507	1117
100	466	366	1720	2020	1910	860	1050	656	1625	2600	656	1050	1160	1580	2290	656	1150	800	703	876	798	1818
125	552	455	1867	2460	2350	1060	1230	810	2005	2840	810	1230	1400	1975	2450	810	1430	990	988	1388	1261	2076

# ZNT WEATHER PROTECTION HOOD



For outdoor use, VRAN and VRAV series fans are protected from atmospheric precipitation.

•020 •025 •028 •031 •035 •040 •045 •050 •056 •063 •071 •080 •090 •100  
•112 •125



Fan standard size	020	025	028	031	035	040	045	050	056	063	071	080	090	100	112	125
A, mm	500	470	520	560	695	800	900	960	980	1094	1434	1534	1660	1757	2102	2294
B, mm	380	320	360	380	492	551	600	670	658	734	1089	1089	1154	1193	1461	1588
H, mm	175	225	197	200	237	303	390	361	330	338	453	508	510	500	661	715
a, mm	256	326	363	420	455	514	575	644	720	801	900	1010	1133	1270	1425	1594
b, mm	143	178	202	240	252	286	321	356	397	441	497	566	633	706	787	880
Weight, kg	2,5	2,6	2,79	3,2	4,7	7,0	9,4	9,7	12,6	15,4	19,6	23,2	34,5	38,1	55,4	72,4

**EXAMPLE:**

ZNT-VRAN weather protection hood, fan size 063, made of stainless steel:

- ✓ weather protection hood (• ZNT-VRAN • ZNT-VRAV)
- ✓ fan size
- ✓ material (• ZS - galvanized steel •NS - stainless steel)

**ZNT-VRAN-063-NS**

Special requirements for ZNT are specified additionally and agreed with the manufacturer.

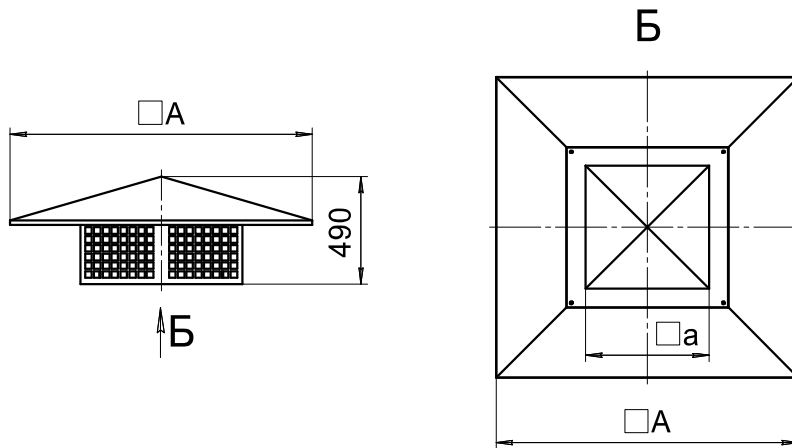
# WEATHER PROTECTION HOOD || ZNT-STAM

For outdoor use of STAM roof curb, the OZA-ZNT weather protection hood is provided.



**•35 •40 •45 •51 •56 •63 •71 •88 •90 •109 •112 •136\***

\* ZNT-STAM standard size (numerical index) corresponds to the size of the flow section in centimeters



Fan standard size	35	40	45	51	56	63	71	88	90	109	112	136
A, mm	1135	1200	1250	1300	1425	1425	1505	1685	1725	1890	2025	2180
a, mm	355	400	450	500	630	630	710	880	900	1090	1120	1370

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**EXAMPLE:**

ZNT-STAM weather protection hood for installation on STAM size 88, made of stainless steel:

- ▶ weather protection hood (• ZNT-STAM)
- ▶ roof curb size
- ▶ material (• ZS - galvanized steel •NS - stainless steel)

**ZNT-STAM-88-NS**

Special requirements for ZNT-STAM are specified additionally and agreed with the manufacturer.

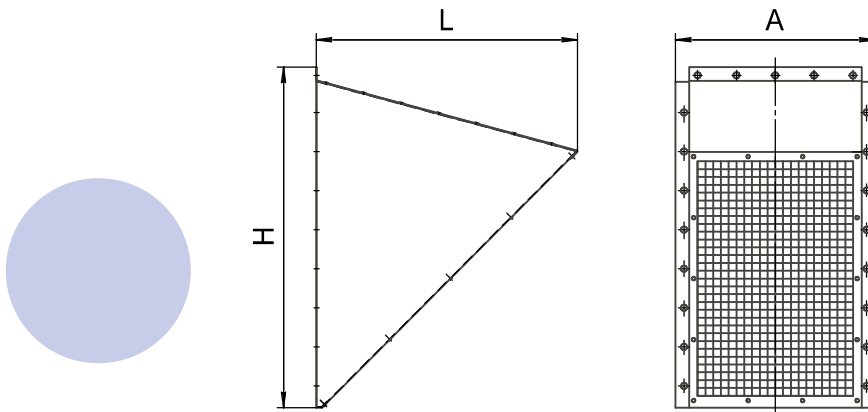


# KZR WEATHER PROTECTION HOOD



For outdoor use of fans, the VRAN and VRAV series fans (for the R90 and L90 casing on the discharge side) are equipped with KZR weather protection hood. The KZR is equipped with a protective mesh that prevents foreign objects from entering the fan.

•020 •025 •028 •031 •035 •040 •045 •050 •056 •063 •071 •080 •090 •100  
•112 •125



Fan standard size	020	025	028	031	035	040	045	050	056	063	071	080	090	100	112	125
A, mm	193	218	242	260	292	358	385	428	469	514	574	640	705	796	865	970
H, mm	303	366	403	440	495	585	639	715	792	872	975	1042	1207	1360	1505	1640
L, mm	199	285	314	344	393	454	500	546	608	674	752	803	938	1057	1172	1267
Weight, kg	1,3	3	4,3	3,5	4,3	6,5	6,5	7,8	9,3	12	15	20	23,6	33,5	41	53,4

**EXAMPLE:**

KZR weather protection hood on the VRAN fan discharge side, fan size 100, made of galvanized steel:

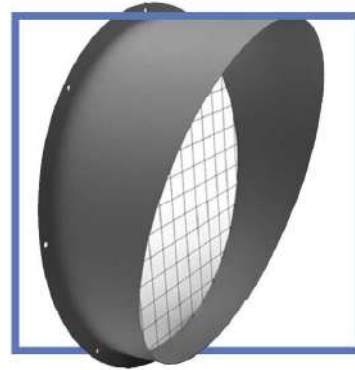
**KZR-100-NS**

- weather protection hood
- fan size
- material (• ZS - galvanized steel •NS - stainless steel)

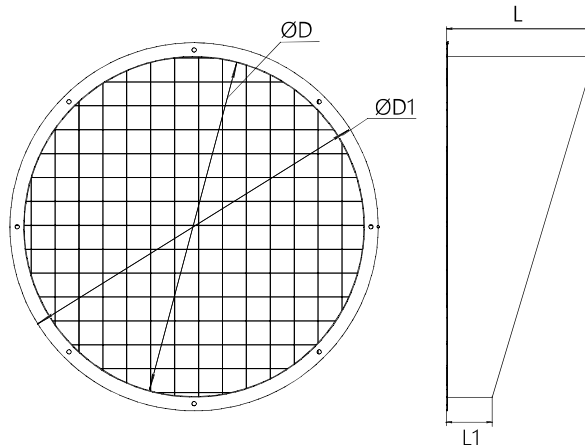
Special requirements for KZR are specified additionally and agreed with the manufacturer

## WEATHER PROTECTION HOOD | KZR-A

For outdoor fan operation, the VRAN and VRAV series fans feature a weather protection hood on the suction side - KZR-A. The KZR-A is equipped with a protective mesh that prevents foreign objects from entering the fan.



**•020 •025 •028 •031 •035 •040 •045 •050 •056 •063 •071 •080 •090 •100  
•112 •125**



138 GENERAL AND SPECIAL PURPOSE FANS

Fan standard size	020	025	028	031	035	040	045	050	056	063	071	080	090	100	112	125
D, mm	200	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250
D1, mm	250	300	330	365	410	455	505	555	620	690	770	870	970	1075	1195	1325
L, mm	105	105	115	120	140	155	180	205	230	275	310	330	350	400	455	500
L1, mm	50	50	55	55	55	55	60	65	70	75	95	110	125	135	150	165
Weight, kg	0,86	1,1	1,3	1,4	1,7	2	2,5	3,1	3,75	4,8	6,1	7,5	9,1	11,4	14,3	17,4

**EXAMPLE:**

KZR-A weather protection hood on the VRAN fan suction side, fan size 100, made of galvanized steel:

**KZR-A-100-NS**

- ▶ weather protection hood
- ▶ fan size
- ▶ material (• ZS - galvanized steel •NS - stainless steel)

Special requirements for KZR-A are specified additionally and agreed with the manufacturer.

# COM-VRAN, COM-VRAV

## FLEXIBLE CONNECTOR



The COM-VRAN, COM-VRAV flexible connector is designed to connect VRAN and VRAV fans with air ducts or valves to prevent the transmission of vibration loads or resonant force effects of air duct network elements.

**•020 •025 •028 •031 •035 •040 •045 •050 •056 •063 •071 •080 •090 •100  
•112 •125**

- COM 100 - general purpose industrial;
  - COM 110 - general purpose industrial, heat-resistant (120° C - continuous);
  - COM 120 - general purpose industrial, antistatic\*;
  - COM 200 - high strength design.
- \* COM antistatic connectors (120 series) can be installed in explosive areas where it is possible to form an explosive gas environment of all categories and groups.

The COM-VRAN, COM-VRAV flexible connector consists of a special sleeve and metal flanges fixed in the sleeve through the rims with rivets. The flanges can be made of stainless or galvanized steel, as well as St3 steel with a paint-and-varnish coating.

COM-VRAN, COM-VRAV connectors can have a rectangular (square) and round cross-section.

COM series	Operating conditions		
	Moved medium	OPERATING PRESSURE, Pa	Temperature, °C
<b>100</b>	• non-aggressive	1 500	-40° to +70°
<b>110</b>	• non-aggressive	2 000	-40° to +120° (continuous)
<b>120</b>	• non-aggressive explosive (antistatic surface)	1 500	-40° to +70°
<b>200</b>	• non-aggressive	10 000	-40° to +70°

### EXAMPLE:

COM 100 flexible connector for connecting to the VRAN fan size 063 on the suction side, flange material is St3 steel:

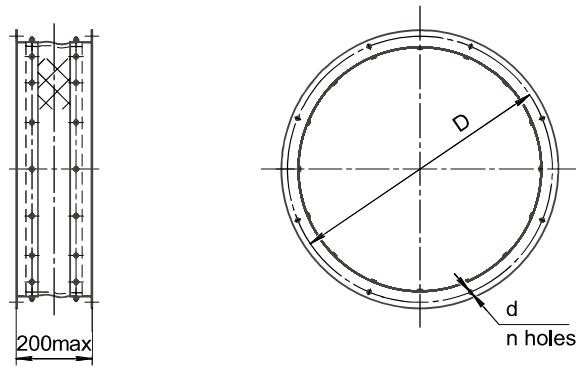
## COM-100-VRAN-063A-C

- flexible connector (• COM-100 • COM-110 • COM-120 • COM-200)
- equipment to be connected
- standard size of the connected equipment (•020Y •025Y •028Y •031Y •035Y •040Y •045Y •050Y •056Y •063Y •071Y •080Y •090Y •100Y •112Y •125Y •140Y)
- Y: A – COM installation on the suction side  
B – COM installation on the discharge side)
- flange material (•C - St3 steel •ZS - galvanized steel •NS - stainless steel)

\*COM series - see the table.

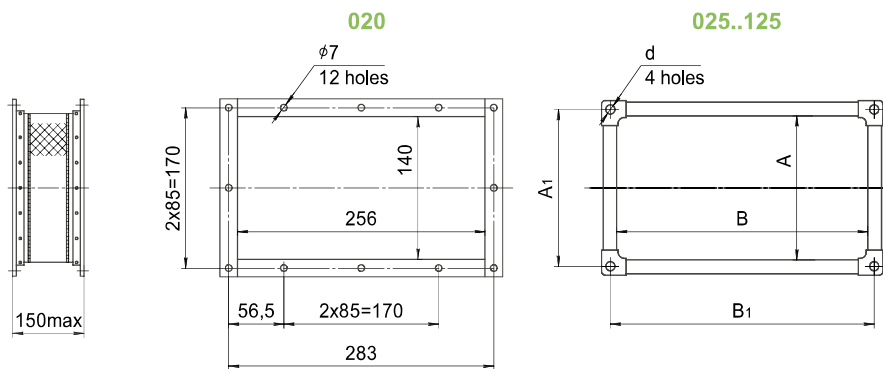
Special requirements for COM are specified additionally and agreed with the manufacturer.

### FLEXIBLE CONNECTOR COM ON THE SUCTION SIDE



Fan standard size	020	025	028	031	035	040	045	050	056	063	071	080	090	100	112	125
D, mm	235	280	310	345	390	430	480	530	600	660	740	835	940	1050	1170	1285
d, mm	7	7	7	7	7	9	9	9	9	9	9	9	9	12	12	12
n	8	8	8	8	8	8	8	8	8	8	8	8	16	16	16	16
Weight, kg	2,3	2,6	2,9	3,3	3,7	4,2	4,7	5,2	6,2	6,6	7,4	8,5	10,0	12,0	13,3	13,0

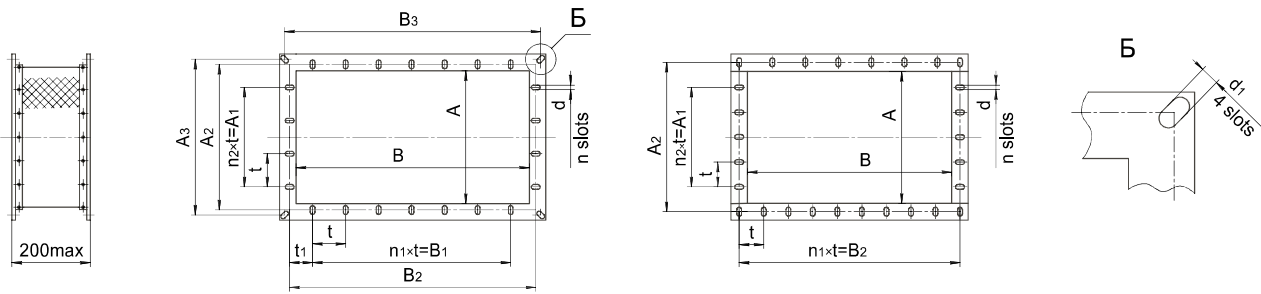
### З'ЄДНУВАЧ М'ЯКИЙ СОМ НА СТОРОНІ НАГНІТАННЯ СЕРІЇ СОМ 100 ТА СОМ 110



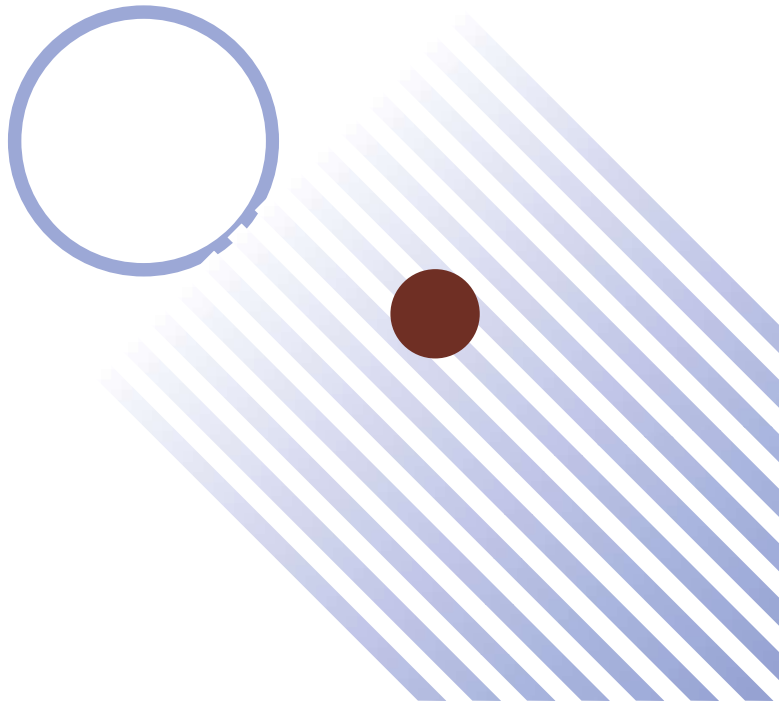
Fan standard size	020	025	028	031	035	040	045	050	056	063	071	080	090	100	112	125
A, mm	140	177	200	218	250	294	324	368	409	454	514	580	645	736	811	920
A1, mm	170	200	225	241	273	331	361	405	446	491	551	617	682	773	848	957
B, mm	255	325	363	397	453	524	577	656	732	812	915	1024	1145	1300	1449	1634
B1, mm	283	348	385	420	477	561	614	693	769	849	952	1061	1182	1337	1486	1671
d	7	8	8	8	8	11	11	11	11	11	11	11	11	11	11	11
Weight, kg	1,3	1,4	1,5	1,7	1,8	3,3	3,5	3,9	4,3	4,7	5,3	5,9	6,5	7,3	8,0	9,0

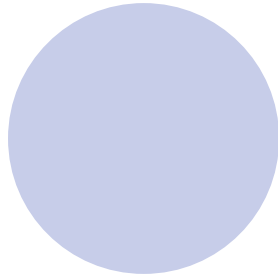


FLEXIBLE CONNECTOR COM ON THE DISCHARGE SIDE, COM 120 AND COM 200 SERIES



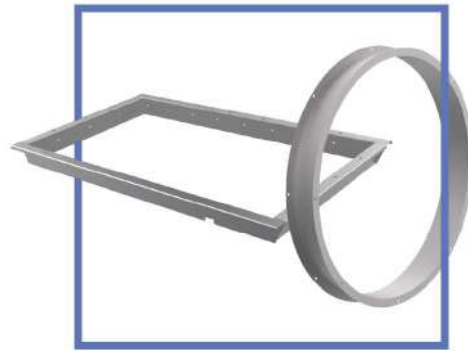
Fan standard size	Dimensions, mm															Weight, kg not less
	A	A1	A2	A3	B	B1	B2	B3	d	d1	t	t1	n	n1	n2	
<b>020</b>	140	170	170	170	256	170	283	283	7		85	56,5	12	2	2	2,1
<b>025</b>	172	160	200	197	320	240	348	345	7x10	7x10	80	54	14	3	2	2,6
<b>028</b>	196	200	222	221	357	300	383	382	7x10	7x10	100	41,5	14	3	2	2,8
<b>031</b>	214	200	240	237	394	300	420	418	7x10	7x10	100	60	14	3	2	3,2
<b>035</b>	246	200	272	269	449	400	475	472	7x10	7x10	100	37,5	16	4	2	3,6
<b>040</b>	280	200	310	319	507	400	538	549	9x16	7x30	100	55	16	4	2	5,1
<b>045</b>	319	240	350	352	573	480	604	605	9x16	7x25	120	55	16	4	2	5,3
<b>050</b>	350	300	380	402	638	600	668	690	9x16	9x16	100	40	22	6	3	6,3
<b>056</b>	395	300	426	443	718	600	749	766	9x16	9x16	100	63	22	6	3	6,8
<b>063</b>	440	400	470	488	798	700	830	846	9x16	9x16	100	35	26	7	4	7,7
<b>071</b>	508	270	540	548	909	675	941	949	9x16	9x16	135	135	18	5	2	8,3
<b>080</b>	568	300	600	614	1012	750	1047	1058	9x16	9x16	150	150	18	5	2	9,3
<b>090</b>	637	600	670	679	1137	1050	1170	1179	9x16	9x16	150	35	26	7	4	10,4
<b>100</b>	716	450	750	770	1280	1050	1317	1334	12x18	9x16	150	150	24	7	3	12,5
<b>112</b>	791	750	830	845	1429	1350	1463	1483	12x18	9x16	150	40	32	9	5	13,8
<b>125</b>	890	750	925	954	1604	1500	1638	1668	12x18	9x16	150	87,5	34	10	5	16,2





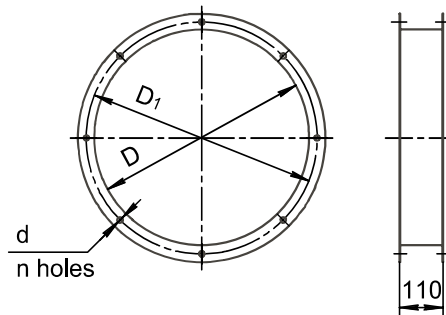
# COUNTER FLANGES | FON, FOV

The flanges are designed to connect VRAN and VRAV radial fans to the corresponding air ducts. They are made of galvanized or stainless steel.



**•020 •025 •028 •031 •035 •040 •045 •050 •056 •063 •071 •080 •090 •100  
•112 •125**

## FLANGE FOV ON THE SUCTION SIDE



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Fan standard size	020	025	028	031	035	040	045	050	056	063	071	080	090	100	112	125
D, mm	200	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250
D <sub>v</sub> , mm	235	280	310	345	390	430	480	530	600	660	740	835	940	1050	1170	1285
d, mm	7	7	7	7	7	9	9	9	9	9	9	9	9	9	12	12
n	8	8	8	8	8	8	8	8	8	8	8	8	16	16	16	16
Weight, kg	1,3	1,6	1,7	1,9	2,2	2,5	2,8	3,0	3,4	3,9	4,4	4,9	5,9	6,7	7,5	8,1

### EXAMPLE:

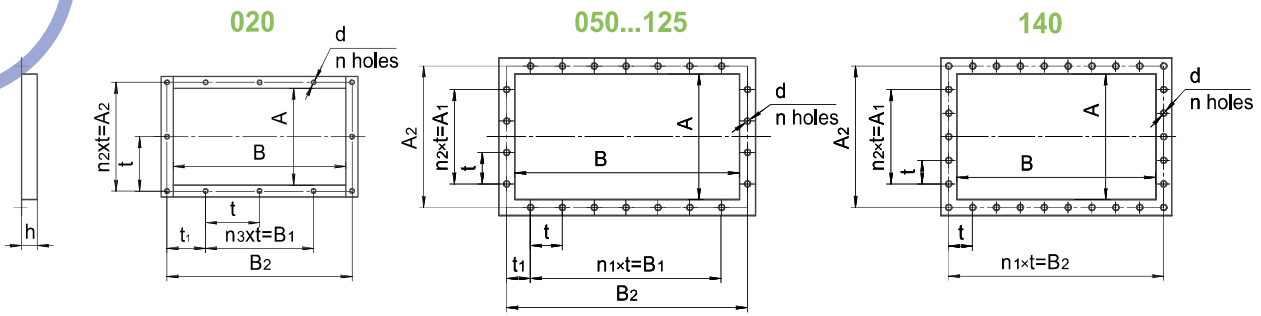
counter flange on the suction side of the VRAN fan size 100 made of galvanized steel:

## FOV-100-NS

- counter flange (•FON •FOV)
- fan size
- material (• ZS - galvanized steel •NS - stainless steel)

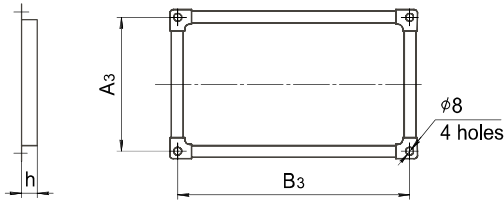
Special requirements for counter flanges are specified additionally and agreed with the manufacturer.

### COUNTER FLANGE FAN ON THE DISCHARGE SIDE

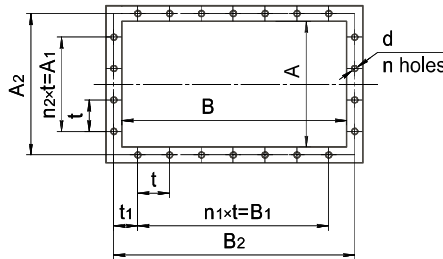


### 025...045

Fan design:  
all except for -CR1 -VCR1  
Climatic version:  
-Y1 (2)



Fan design:  
-CR1 -VCR1  
Climatic version:  
-YHL1(2) -T1(2)



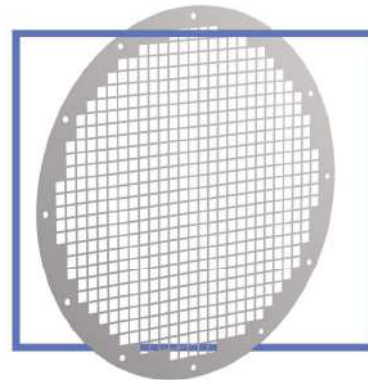
Fan standard size	020	025	028	031	035	040	045	050	056	063	071	080	090	100	112	125
A, mm	140	178	202	220	252	284	321	356	397	444	500	566	633	706	787	880
A1, mm	170	160	200	200	200	200	240	300	300	400	270	300	600	450	750	750
A2, mm	170	200	222	240	272	310	350	380	426	470	540	600	670	750	830	925
A3, mm	—	200	225	241	273	307	340	—	—	—	—	—	—	—	—	—
B, mm	255	326	363	400	455	513	575	644	720	802	901	1010	1133	1270	1425	1594
B1, mm	170	240	300	300	400	400	480	600	600	700	675	750	1050	1050	1350	1500
B2, mm	283	348	383	420	475	538	604	668	749	830	941	1047	1170	1317	1463	1638
B3, mm	—	348	385	420	477	535	596	—	—	—	—	—	—	—	—	—
d, mm	7	8	8	8	8	8	8	9	9	9	9	9	9	12	12	12
h, mm	25	20	27	27	34	50	60	45	44	47	58	58	49	62	73	75
t, mm	85	80	100	100	100	100	120	100	100	100	135	150	150	150	150	150
t1, mm	56,5	54	41	60	37,5	55	55	40	63	35	135	150	35	150	40	87,5
n	12	14	14	14	16	16	16	22	22	26	18	18	26	24	32	34
n1	2	3	3	3	4	4	4	6	6	7	5	5	7	7	9	10
n2	2	2	2	2	2	2	2	3	3	4	2	2	4	3	5	5
Weight, kg	0,4	0,5	0,7	0,7	1,0	1,8	2,1	2,2	2,4	2,7	3,5	3,9	3,8	5,5	6,8	8,3

PROTECTIVE MESH **OZA-SEM**

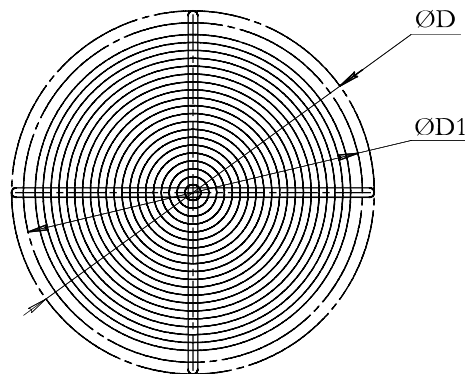
The OZA-SEM protective mesh is used to prevent external mechanical impact and ingress of foreign objects larger than 50 mm into the axial fan of the OZA series.

Protection level IP1X. The OZA-SEM protective mesh (small-size) is installed at the outlet.

The protective mesh consists of a mounting flange and a welded or woven wire mesh.



**•040 •045 •050 •056 •063 •071 •080 •090 •100 •112 •125**



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Standard size	040	045	050	056	063	071	080	090	100	112	125
<b>OZA-SEM</b>											
D, mm	430	480	530	620	690	770	860	960	1070	1195	1320
D1, mm	460	510	560	660	730	810	900	1000	1110	1235	1360
Weight, kg	0,5	0,6	0,8	1,1	2,0	2,4	3,0	3,7	4,5	4,7	6,8

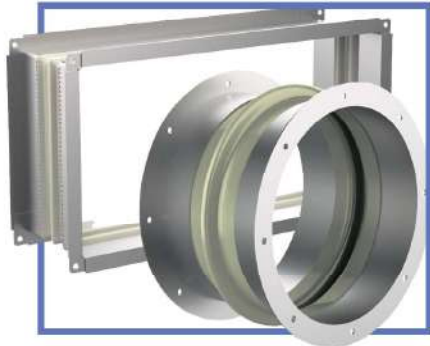
**OZA-SEM-063-NS**

- ▶ protective mesh
- ▶ fan size
- ▶ material (• ZS - galvanized steel • NS - stainless steel)



# VG-H, VG-B

## FLEXIBLE INSERTS



VG-B and VG-H flexible inserts are designed for connecting compact radial RAV and RAF fans to air ducts or valves.

Inserts can be installed on the suction side (VG-B) and the discharge side (VG-H) of the fan. The insert consists of a sleeve and flanges attached to it. On the VG-B inserts there is a flange (made by flanging bellmouth machine) with the sleeve attached by contact welding. On VG-H inserts, a special profile strip is used for the flange.

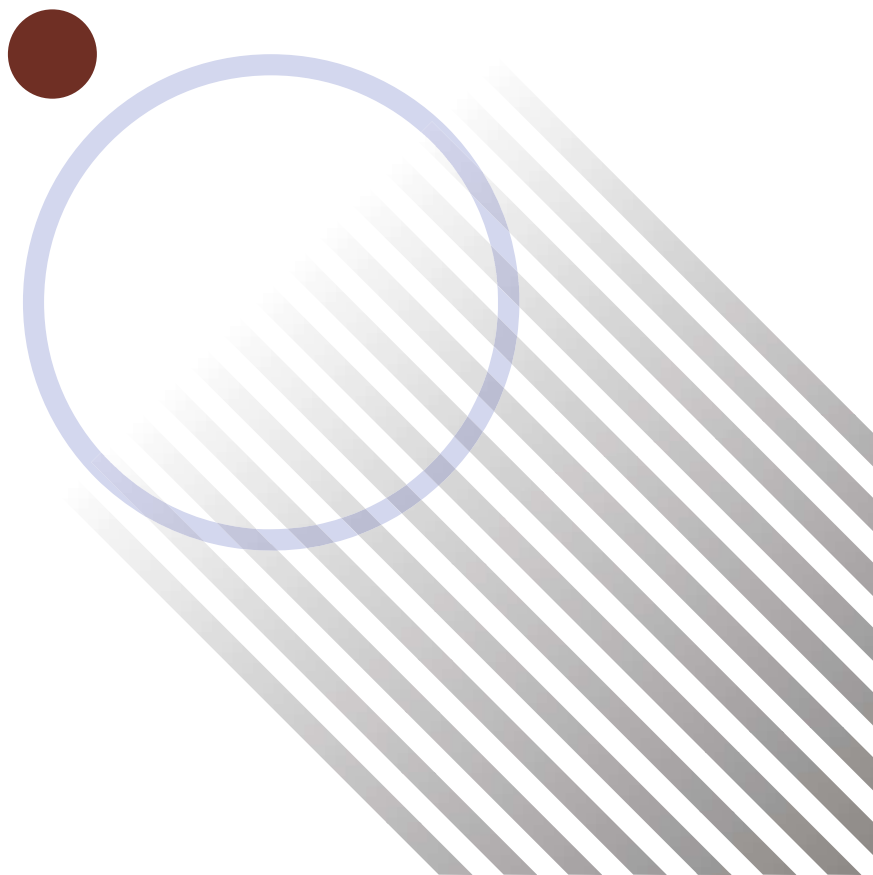
For each fan design, a corresponding flexible insert design is provided.

Special requirements for flexible inserts are specified additionally and agreed with the manufacturer.

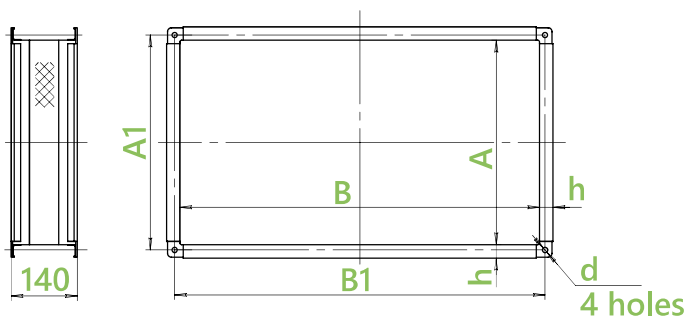
●2 ●2,25 ●2,8 ●3,10 ●3,55 ●4 ●4,5

VG-H-4

- ▣ flexible insert
- ▣ fan size

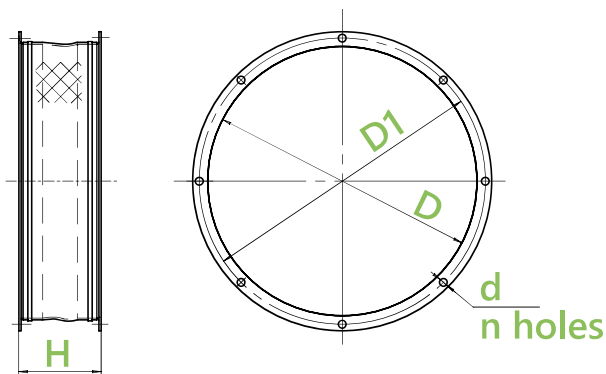


VG-H



DESIGNATION	Dimensions, mm						Weight, kg max
	A	A1	B	B1	h	d	
<b>VG-H-2</b>	140	198	255	345	20	9	1,4
<b>VG-H-2,25</b>	178	198	325	345	20	9	1,4
<b>VG-H-2,8</b>	199	222	362	385	20	9	1,6
<b>VG-H-3,10</b>	220	240	397	417	20	9	1,7
<b>VG-H-3,55</b>	250	270	455	475	20	9	1,8
<b>VG-H-4</b>	294	331	525	555	30	11	3,3
<b>VG-H-4,5</b>	318	348	574	604	30	11	3,8

VG-B



DESIGNATION	Dimensions, mm					Weight, kg max
	D	H	D1	d	n	
<b>VG-B-2</b>	225	200	255	7	8	2,4
<b>VG-B-2,25</b>	250	200	280	7	8	2,6
<b>VG-B-2,8</b>	280	200	310	7	8	2,9
<b>VG-B-3,10</b>	310	200	345	7	8	3,3
<b>VG-B-3,55</b>	355	200	390	7	8	3,7
<b>VG-B-4</b>	400	200	430	9	8	4,2
<b>VG-B-4,5</b>	450	200	480	9	8	4,6



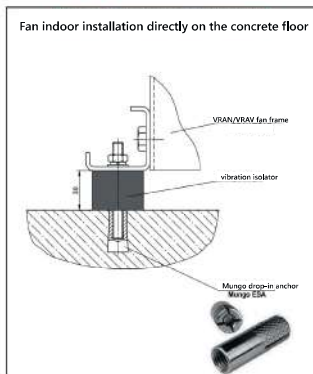
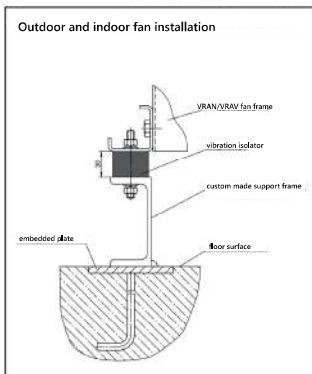
# KIV VIBRATION ISOLATOR KIT



KIV is a series of vibration isolator kits designed to simplify the design and ordering process for vibration isolators with VRAN and VRAV fans.

Each of the kits includes the required number of vibration isolators and fasteners (nuts and washers) necessary for mounting on a frame or concrete floor.

The KIV kit is used for fans operating at ambient temperatures up to -40° C. DU type fans can be operated without vibration isolators. KIV kits can be used for DUV fans.



KIT TYPE	MAXIMUM LOAD PER KIT, KG	NUMBER OF VIBRATION ISOLATORS	MOUNTING KIT	WEIGHT, KG	MUNGO STEEL DROP-IN ANCHOR*
<b>KIV-1</b>	44	4	M6	0,2	ESA M6
<b>KIV-2</b>	60	4	M8	0,2	ESA M8
<b>KIV-3</b>	130	4	M8	0,3	ESA M8
<b>KIV-4</b>	270	4	M10	0,5	ESA M10
<b>KIV-5</b>	420	4	M12	1	ESA M12
<b>KIV-6</b>	630	6	M12	1,5	ESA M12
<b>KIV-7</b>	1000	10	M12	2	ESA M12

\* anchors are not included in the KIV. Examples of the most popular and affordable Mungo anchors are shown in the table below.

## COMPLETE SET OF FANS WITH KIV KITS

KIT TYPE	FAN STANDARD SIZE	
	VRAN	VRAV
<b>KIV-1</b>	■ 025 ■ 028 ■ 031	■ 020 ■ 025 ■ 028
<b>KIV-2</b>	■ 035	■ 031 ■ 035 (750/1000 min <sup>-1</sup> )
<b>KIV-3</b>	■ 040 ■ 045 ■ 050 ■ 056	■ 035 (1500 min <sup>-1</sup> ) ■ 040 ■ 045
<b>KIV-4</b>	■ 063 ■ 071 ■ 080 (8 and 6 poles)	■ 050
<b>KIV-5</b>	■ 080 (4 poles) ■ 090	■ 063
<b>KIV-6</b>	■ 100 ■ 112	■ 080 (8 poles)
<b>KIV-7</b>	■ 125	■ 080 (6 poles)

The complete set of fans with KIV kits is offered for 1st design scheme of VRAN and VRAV fans. For the 5th design scheme, the kit is selected by special order.

### EXAMPLE:

KIM vibration isolator kit for VRAN fan size 063:

- ▣ vibration isolator kit
- ▣ fan size (•1 •2 •3 •4 •5 •6 •7)

**KIV-4**



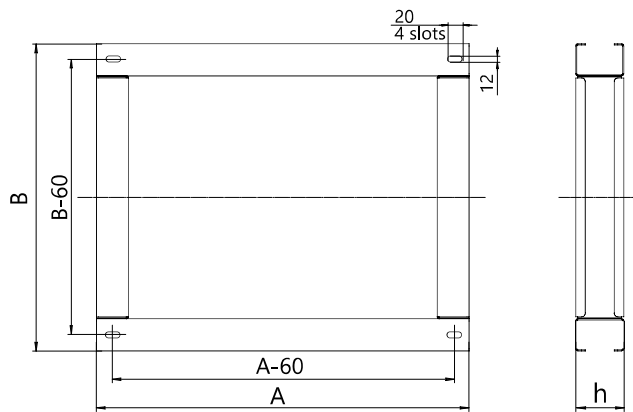
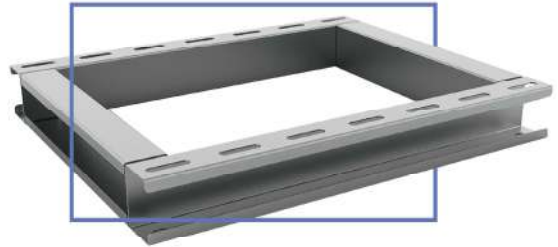
# MOUNTING FRAME | RM

The RM mounting frame is designed for mounting radial fans on a flat roof.

The RM mounting frame is used as a transition element between the fan and the foundation together with vibration mounts for easy installation.

The RM frame body is made of galvanized steel.

Special flanges at the base of the frame allow it to be easily and securely mounted on the roof.



DESIGNATION	Fan standard size	Dimensions, mm			Weight, kg max
		A	B	h	
<b>RM-20</b>	VRAN 020	400	335	60	3,9
<b>RM-25</b>	VRAN 025, VRAV 025	430	355		4,2
<b>RM-28</b>	VRAN 028, VRAV 028	430	355		4,2
<b>RM-31</b>	VRAN 031, VRAV 031	530	470		5,6
<b>RM-35</b>	VRAN 035, VRAV 035	570	510		6,1
<b>RM-40</b>	VRAN 040, VRAV 040	650	575		7,0
<b>RM-45</b>	VRAN 045, VRAV 045	700	575	90	8,5
<b>RM-50-1</b>	VRAN 050	800	575		9,2
<b>RM-50-2</b>	VRAV 050	1015	615		11,0
<b>RM-56</b>	VRAN 056	845	600		9,7
<b>RM-63-1</b>	VRAN 063	940	600		10,4
<b>RM-63-2</b>	VRAV 063	996	640		11,1

**EXAMPLE:**

RM mounting frame for VRAN fan of size 031



**RM-031**

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mounting frame

VRAN or VRAV fan size

# PROPELLER-01

(500 SERIES) SPEED CONTROLLER



Speed controllers are designed to control the performance of fans by changing the supply voltage (changing the speed of rotation). The motor speed is regulated by a handle (potentiometer) on the front panel of the casing.

It is used for smooth control of the rotation speed of single-phase fans in ventilation and air conditioning systems.

Select the adjustment mode (from minimum to maximum speed and vice versa) using the jumper inside the casing.

The speed controller is designed to control the speed of single-phase motors with a power of up to 500 W.

Power supply voltage 230 V AC, 50 Hz.

Ingress protection rating: IP40.

## FUNCTIONALITY

- prevent line interference thanks to the built-in filter;
- reliable protection of the fan motor with a built-in fuse;
- additional phase-shifting damping capacitor for normal sine wave formation;
- limiting the minimum fan speed with a trim resistor;
- it is possible to control multiple fans if the total current consumption does not exceed the maximum permissible current value of the controller.

## NOTE:

It is recommended to install the controller as close to the fan as possible, however, the distance should not more than 50 m.

## PROPELLER-01 (500 SERIES)

- speed controller

**(1500 SERIES) SPEED CONTROLLER****PROPELLER-01**

The speed controller is designed to control the speed of single-phase motors with a power of up to 1,500 W.  
 Power supply voltage 230 V AC, 50 Hz.  
 Ingress protection rating: IP 54 (IEC 529).



The fan speed controller is designed to adjust the performance of fans by changing the supply voltage (changing the speed of rotation). The motor speed is adjusted by turning the knob (potentiometer) on the front panel of the casing.

It is used for smooth, with additional options, regulation of the rotation speed of single-phase fans with a rated current of up to 8 A, 230 V, 50 Hz in ventilation and air conditioning systems.

A specialized MICROCONTROLLER allows for controlling the currents flowing in the motor windings, thereby smoothly regulating the motor speed by eliminating phase skipping. It also allows for expanding the adjustment range without the risk of motor overheating.

Built-in ELECTRONICS - the controller maintains a constant torque when the fan motor is running at low speed, preventing an unexpected stop. When the load increases or the supply voltage changes, the system raises the motor voltage. Limiting the minimum and maximum speed, as well as limiting the current protection threshold set by the potentiometer.

The active current protection is reset by the mains switch on the regulator casing. When the protection is triggered, the motor speed is reset to a safe value for this type of motor, which is accompanied by a light signal: a red LED on the controller board.

The controller is switched on in series between the power supply network and the electric motor.

**FUNCTIONALITY**

- ▀ controlled by a specialized controller;
- ▀ provides smooth motor speed control;
- ▀ prevents the risk of motor overheating;
- ▀ smooth motor start (SoftStart system) eliminates current overload at the moment of motor start;
- ▀ maintaining a constant torque on the fan motor shaft;
- ▀ prevention of unplanned motor stops when running at low speeds;
- ▀ motor current protection;
- ▀ minimum and maximum speed limits and current protection threshold limits;
- ▀ wide adjustment range without the risk of motor overheating;
- ▀ mains filter.

**NOTE:**

it is recommended to install the controller as close to the fan as possible, however, the distance should not more than 50 m.

**PROPELLER-01 (1500 SERIES)**

- ▀ speed controller



# ASC-150, ASC-310 | FREQUENCY CONVERTERS



The ASC-150, ASC-310 series of frequency converters is universal for use in heating, ventilation and air conditioning systems with the possibility of integration into the upper level;

Energy savings

98% efficiency, "Automatic Energy Optimization" function.

The Automatic Energy Optimization (AEO) function built into the standard frequency converter ensures optimal motor magnetization at all speeds and loads.

Thanks to this function, power consumption is reduced by 5-15% under partial load.

Energy consumption monitoring. Ability to monitor power consumption using ASC-150 and ASC-310 frequency converters for specified counting periods in hours, days or weeks.

Type	ASC-150	ASC-310
Operating voltage	3x380-480 V / 3x200-240 V	3x380-480 B/1x200-240 B
Mains frequency	45-66 Hz	45-66 Hz
Ingress protection rating	•IP20	•IP20 •IP21
Maximum motor cable length	30-60 m	30-60 m
Normal overload	(150%) within 1 min.	(110%) within 1 min.

Model		Motor power, kW		Continuous output current, A		Weight, kg		Dimensions HxWxD, mm	
ASC-150	ASC-310	ASC-150	ASC-310	ASC-150	ASC-310	ASC-150	ASC-310	ASC-150	ASC-310
						IP20/IP21		IP20/IP21	
<b>single-phase supply voltage, 200-240 V</b>									
0,37	0,37	0,37	0,37	2,4	2,4	1,1	1,1		
0,75	0,75	0,75	0,75	4,7	4,7	1,3	1,3	239x70x142	239x70x161
1,1	1,1	1,1	1,1	6,7	6,7	1,3	1,3		
1,5	1,5	1,5	1,5	7,5	7,5	1,5	1,5		
2,2	2,2	2,2	2,2	9,8	9,8	1,5	1,5	239x105x142	239x105x165
<b>three-phase supply voltage, 380-480 V</b>									
0,37	0,37	0,37	0,37	1,2	1,3	1,1	1,1	239x70x142	239x70x161
0,55	0,55	0,55	0,55	1,9	2,1				
0,75	0,75	0,75	0,75	2,4	2,6				
1,1	1,1	1,1	1,1	3,3	3,6				
1,5	1,5	1,5	1,5	4,1	4,5	1,3	1,3	239x105x142	239x70x161
2,2	2,2	2,2	2,2	5,6	6,2				
3	3	3	3	7,3	8,0				
4	4	4	4	8,8	9,7				
—	5,5	—	5,5	—	13,8				
—	7,5	—	7,5	—	17,2		2,5		236x169x169
—	11	—	11	—	25,4				
—	15	—	15	—	34,1				
—	18,5	—	18,5	—	41,8		4,4		244x260x169
—	22	—	22	—	48,4				

Note: for motors over 37 kW, frequency converters are available on request.

**EXAMPLE:**

ASC-310 series frequency converter for 7.5 kW motor speed control:

- frequency converter
- model

**ASC-310-7,5**

GENERAL AND SPECIAL PURPOSE FANS

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FREQUENCY CONVERTERS

# FC-101, FC-102

The VLT® HVAC Drive FC-101/FC-102 series of frequency converters is universal for use in heating, ventilation and air conditioning systems with the possibility of integration into the upper-level network.

Energy savings.

98% efficiency, "Automatic Energy Optimization" function.

The Automatic Energy Optimization (AEO) function built into the standard frequency converter ensures optimal motor magnetization at all speeds and loads. Thanks to this function, power consumption is reduced by 5-15% under partial load.

Energy consumption monitoring.

Ability to monitor power consumption using VLT® HVAC Drive frequency converters for specified counting periods in hours, days or weeks.



Type	FC-101	FC-102
Operating voltage	3x380-480 V	3x380-480 V
Mains frequency	45-66 Hz	45-66 Hz
Ingress protection rating	•IP20 •IP21 •IP55	•IP20 •IP21 •IP55 •IP66
Maximum motor cable length (shielded/unshielded)	25/50 m	150/300 m
Нормальне перевантаження 110%	within 1 min.	within 1 min.

Model		Motor power, kW		Continuous output current, A		Weight, kg		Dimensions HxWxD, mm	
FC-101	FC-102	FC-101	FC-102	FC-101	FC-102	FC-101	FC-102	FC-101	FC-102
						IP20/IP21		IP20/IP21	
—	<b>P1K1</b>	—	1,1	—	3,0	—	4,8	—	268x90x205
<b>P1K5</b>	<b>P1K5</b>	1,5	1,5	3,7	4,1	2,1	4,9	195x75x168	
<b>P2K2</b>	<b>P2K2</b>	2,2	2,2	5,3	5,6	3,4	4,9	227x90x190	
<b>P3K0</b>	<b>P3K0</b>	3,0	3,0	7,2	7,2	3,4	4,9	255x100x206	
<b>P4K0</b>	<b>P4K0</b>	4,0	4,0	9,1	10,0	3,4	4,9	268x130x205	
<b>P5K5</b>	<b>P5K5</b>	5,5	5,5	12,0	13,0	4,5	6,6		296x135x241
<b>P7K5</b>	<b>P7K5</b>	7,5	7,5	15,5	16,0	4,5	6,6	480x242x260	
<b>P11K</b>	<b>P11K</b>	11,0	11,0	23,0	24,0	7,9	23		334x150x255
<b>P15K</b>	<b>P15K</b>	15,0	15,0	31,0	32,0	7,9	23	650x242x260	
<b>P18K</b>	<b>P18K</b>	18,5	18,5	37,0	37,5	9,5	23		518x239x242
<b>P22K</b>	<b>P22K</b>	22,0	22,0	42,5	44,0	9,5	27	650x242x260	
<b>P30K</b>	<b>P30K</b>	30,0	30,0	61,0	61,0	24,5	27		680x308x310
<b>P37K</b>	<b>P37K</b>	37,0	37,0	73,0	73,0	24,5	45		

Note: for motors over 37 kW, frequency converters are available on request.

**EXAMPLE:**

FC-102 series frequency converter for 7.5 kW motor speed control:

## FC-102-P7K5

frequency converter (•FC-101 •FC-102)  
model





# THE APPLICATION OF FANS WITH VARIABLE-FREQUENCY DRIVES (VFD)

Over the past 10 years, the cost of VFDs has significantly decreased compared to the cost of fan equipment, as well as the cost of energy resources. The use of ventilation systems with a significant performance reserve relative to design parameters has become economically unprofitable, especially when constructing buildings with numerous systems. Reducing the total installed and consumed power of ventilation systems is one of the main tasks for optimizing the design. It is important to remember that ventilation systems are the largest consumer of electricity among a building's utility systems. The selection of fans for operation with VFD has some features associated with the operating parameters of the motor-VFD system. In this catalog, most of the fans are offered for operation in conjunction with VFDs. Traditional characteristics of fans without VFD are highlighted separately.

## DETERMINATION OF THE INSTALLED POWER OF THE MOTOR

The classic fan usage scheme assumes a constant rotation speed of the impeller with direct drive from the motor. In this case, the consumed power changes according to a known law with a change in flow rate and has a maximum for fans with backward-curved impeller blades in a mode close to the mode of maximum efficiency. The installed power of the motor supplied with such a fan is selected, firstly, higher than the maximum consumed power, and secondly, with some additional reserve for safe operation. After such a choice of the motor, it usually turns out that the installed power is 10-30% higher than the power actually consumed by the fan, which is taken for granted by the consumer. When using the VFD, this rule can be changed and the fan can be used in different modes with different rotation speeds, which is allowed by the selected motor and the strength of the impeller.

## EQUIPMENT SIZE REDUCTION

Let's consider an example where it is necessary to obtain higher pressure or flow rate on an already selected fan. Normal operation at a constant impeller speed does not allow achieving the required values, although there is some reserve in motor power. According to the classic rules, it is necessary to choose a fan of a larger size or with a more powerful motor due to the required increase in speed. By using the VFD, it is possible to "squeeze" higher parameters out of the fan by increasing the rotation speed. In this case, the motor overload may not occur, since the power consumption of the fan in the required mode is lower than the installed power of the motor. The actual value of the "increased" speed is determined by a special program, but with mandatory control of the impeller strength and possible motor overload. If there is no strict requirement to minimize power consumption, it is possible to switch to a smaller size fan.

## EXPANDING THE DESIGN OPTIONS

This method of "uprating the rotation speed of the impeller with an increase in the power consumed by the fan up to the installed power of the motor" when selecting fans became the basis for presenting aerodynamic characteristics in a new way. Instead of the usual pressure curves at a constant impeller speed in flow-pressure coordinates, the catalog shows the lines of equal values of installed power. The selection of fans is no longer tied to discrete values of the synchronous speed of the motors (3,000 ... 1,500 - 1,000 ... 750 rpm) but has a much larger range. Due to the increase in the number of options, the accuracy of fan selection can be significantly increased. The main advantage of using the VFD is to save energy consumed by the fan - choosing a fan with the highest possible efficiency at the required operating point. When using VFD, 10-20 solutions can be found for one required flow-pressure mode instead of two or three without VFD. To find all the options, it is necessary to use a special program.

## POWER CONSUMPTION REDUCTION

The main problem - reducing the energy consumption of ventilation systems - can only be solved by joint efforts of the designer, equipment manufacturer and installer. Today, when designing systems, the designer must more accurately and responsibly calculate the aerodynamic parameters of the network, allowing for minimum flow reserves not exceeding 2...5%. The manufacturer is obliged to ensure high-quality manufacturing of all equipment elements with high energy indicators and offer the optimal fan option for the specified parameters. An important step in this direction is the use of motors with VFD. Today, it is possible to select a fan with any requirements (in terms of noise, efficiency, size and weight) depending on the operating mode. Installers must properly assemble the system and correctly perform the commissioning work; the VFD will also provide invaluable assistance in this regard.

## ECONOMIC ASPECT OF ENERGY SAVING

The cost of energy has an operational and capital component. Connecting of 1 kW of power (capital costs) costs from \$500 to \$2,000, which, together with the price of distribution equipment, exceeds the difference in the price of a more economical fan equipped with a VFD. An additional saving effect is provided by calculating energy consumption - operating costs.

# MCD-201, MCD-202 | SOFT STARTER



Soft starters are electronic devices that regulate the voltage applied to the motor, while ensuring a smooth increase/decrease in motor speed during start-up and braking. Danfoss VLT® MCD soft starters are used.

A soft-start, unlike a frequency converter, only allows for smooth accelerate or stop the motor. In this case, only a frequency converter can regulate the rotation speed depending on the technological process. Soft starters are used mainly to reduce inrush currents from 7...9 to 3.5...4 of the motor rated current values, depending on the application.

The Danfoss VLT® MCD soft starters used have a wide range of motor protection functions, as well as the ability to connect the Modbus RTU communication interface.

Operating voltage	3x200-440 V					
Mains frequency	45-66 Hz					
Control voltage at the soft starter	24 V (DC/AC) or 110-240 V and 380-440 V					
Main models	007	015	018	022	030	037
Motor power, kW	7,5	15	18	22	30	37

**NOTE:**

for motors over 37 kW, soft starters are available on request.

**EXAMPLE:**

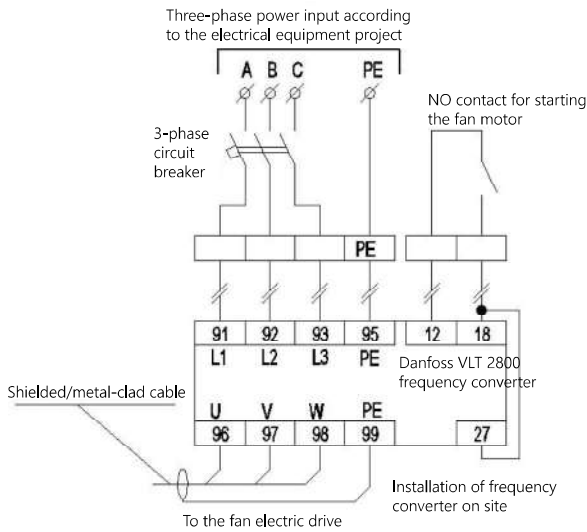
MCD-201 series soft starter for controlling the start of an 18-kW motor:

**MCD-202-018**

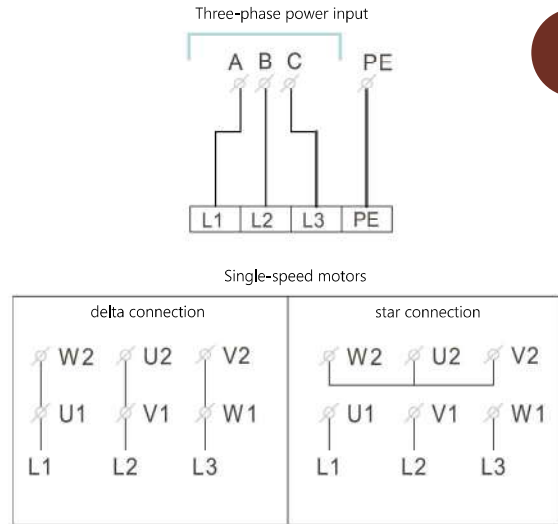
- ▀ frequency converter (•MCD-201 •MCD-202)
- ▀ model

# FAN MOTOR CONNECTION DIAGRAM

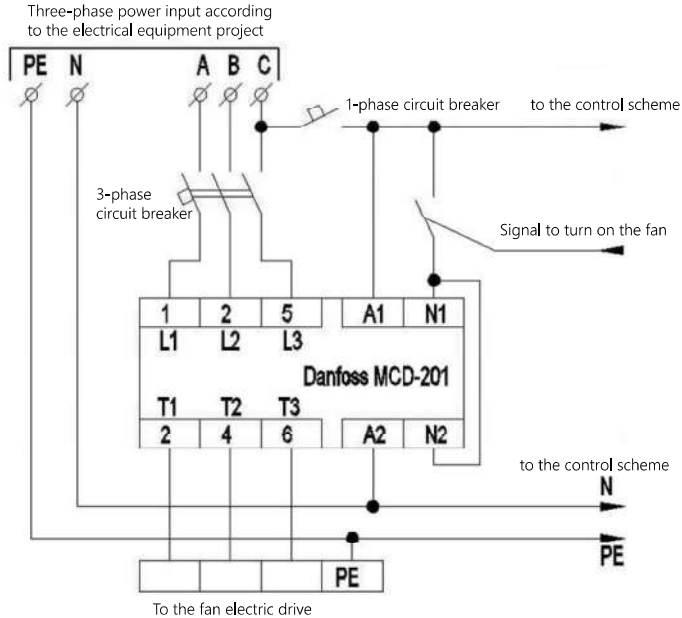
## VIA A FREQUENCY CONVERTER



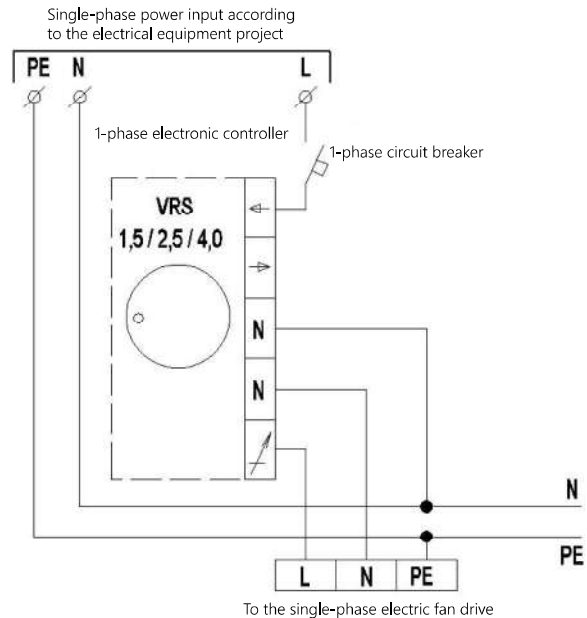
## DIRECTLY WITHOUT FREQUENCY CONVERTER



## VIA THE MCD-201 SOFT STARTER



## VIA A SINGLE-PHASE VRS CONTROLLER



These diagrams are an example. The connection is specified and carried out strictly according to the manufacturer's documentation.

# SAU-PPV, SAU-SPV | FAN CONTROL CABINET



The SAU-PPV (SAU-SPV) fan control cabinet is implemented on the basis of a power disconnecter, contactor and thermal electrical relay.

The CONTACTOR is a switching device that allows control of current in the main contact circuit by supplying control voltage to the coil (starter). The main purpose of the starter is remote starting of three-phase asynchronous motors by direct connection to the mains.

The THERMAL RELAY included protects the motors from overloads of unacceptable duration. In this case, the contactor is the same starter designed to control a 3-phase motor. Thus, the SAU-PPV (SAU-SPV) control cabinet performs the function of a contactor and starter.

A contactor with a 380V control coil is a relevant solution for industrial enterprises and developers, since the use of a 380V coil allows avoiding additional costs during installation. The load, in most cases, is asynchronous 3-phase motors 380V. In case of using 220V coils, it is necessary to use a fourth neutral conductor and install it in the contactor control circuit, which accordingly results in additional financial costs and labor hours loss.

High protection level (IP54) allows the use of the SAU-PPV (SAU-SPV) fan control cabinet in industrial enterprises.

The CONTROL CIRCUIT and the versatility of serial production make it possible to avoid errors when connecting on site and reduce installation time, which is limited only by connecting to the mains. The SAU-PPV (SAU-SPV) fan control cabinet operates in a wide temperature range from -40° C to + 55° C, with a service life of at least 10 years. Careful design development allowed for getting a number of additional advantages and convenience during installation and operation. To increase safety, a metal casing is used, which is coated with high-quality powder paint, which provides protection against corrosion. In addition, the grounded casing provides shielding of electromagnetic fields that occur when switching high currents. This ensures the protection of equipment and the safety of personnel. Additionally, a built-in load disconnecter is provided, which allows increasing the safety of this equipment during motor maintenance.

In the SAU-PPV (SAU-SPV) control cabinet, a special fire safety contact is connected, when triggered, the SAU-PPV (SAU-SPV) control cabinet blocks the operation of the fan motor. Fire safety connection is mandatory when controlling the fan

### WARNING!

The main difference between SAU-PPV and SAU-SPV is the presence of a power service voltage disconnecter.

To improve the safety of operation and maintenance of the fan, it is recommended to additionally use a service switch.

The service switch can be selected in the catalog "Duct units".

## SAU-PPV – (7,0-10,0)

- ▶ automation cabinet
- ▶ control type  
(PPV - control cabinet with integrated voltage disconnecter  
SPV - control cabinet without integrated voltage disconnecter)
- ▶ range



The main distinguishing feature of the SAU-PPV (SAU-SPV) control cabinet is precise adjustment to the requirements of a specific network. It is known that regulatory documents and the Electrical Installation Code do not recommend using standard circuit breakers and fuses to protect motors, since they have only one setpoint and it is impossible to adjust them to a specific motor load. In contrast, the settings of thermal relays can be changed up to 50%.

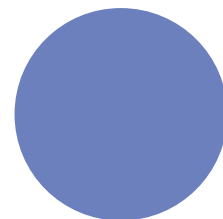
Configuration algorithm. When connecting the load, it is necessary to set the relay setpoint to the maximum value first. Then this value changes downwards until the relay is triggered. Thus, the exact value of the relay response threshold is determined. After that, the value is changed for the third time - just above the trigger threshold. For more precise threshold adjustment, this procedure can be repeated several times.

Fine adjustment is very important for low-power loads, namely for ventilation system motors. Correct relay settings will protect the motor from overloads that can be caused by aging of components, deterioration of insulation resistance, and drying out of grease in the bearings.

Restart. When the protection is triggered, the fan will not start using the "Start" button. In order to restart the fan, it is necessary to open the SAU-PPV (SAU-SPV) control cabinet, press the button to force return to the operating state of the thermal relay "R", close the SAU-PPV (SAU-SPV) control cabinet and then start the fan by pressing the "Start" button.

### RANGE OF POSSIBLE SETTINGS OF THERMAL ELECTRICAL RELAYS

RELAY TYPE	ADJUSTMENT RANGE, A	RELAY TYPE	ADJUSTMENT RANGE, A
PTЛ 1001(M)	0,10-0,17	PTЛ 1008(M)	2,40-4,00
PTЛ 1002(M)	0,16-0,26	PTЛ 1010(M)	3,80-6,00
PTЛ 1003(M)	0,24-0,40	PTЛ 1012(M)	5,50-8,00
PTЛ 1004(M)	0,38-0,65	PTЛ 1014(M)	7,00-10,00
PTЛ 1005(M)	0,61-1,00	PTЛ 1016(M)	9,50-14,00
PTЛ 1006(M)	0,95-1,60	PTЛ-1021(M)	13,00-19,00
PTЛ 1007(M)	1,50-2,60		



# S32 SERVICE SWITCH



Service switch - an electrical switching device that has manual control, the function of which is to turn off/on or switch electrical circuits.

The use of a service switch is necessary for all power consumers, including fan electric motors. In addition to its electrical properties, the load disconnecter is an indispensable part in the field of safety of operation and maintenance of electrical consumers. The service switch provides a mechanical lock to protect against unauthorized switching on of the equipment, while protecting the service personnel.

Ingress protection rating IP65.

It is mounted in a plastic casing with a rotary handle with the possibility of fixing by three padlocks – Ingress protection rating IP 65.  
 It is attached to the fan mount rack in an accessible place.  
 The kit includes two Pg 16 cable glands.  
 Type and rated breaking current (32A).  
 Plastic casing.

S32

service switch



## AUTOMATION CABINETS

## SAU-VK

SAU-VK cabinets are designed for automatic control of radial roof fans in a continuous mode.

The standard cabinet casing features an ingress protection rating IP54 according to GOST 14254.

The cabinets are powered by a three-phase AC power system with a frequency of 50Hz and a nominal voltage of 380V.

The mains feeder, fan power leads, and external connections are introduced into the cabinet through cable glands, which are standardly located on its upper wall.

The cabinet is equipped with a lockable door, on which controls and indicators are installed.



As standard, the system provides:

- ▀ ability to turn on and off any fan from the front panel;
- ▀ remote control terminals for simultaneous start of all fans (PDU), the switches of which on the front panel of the cabinet are set to the DU (remote control) position;
- ▀ indication of power on and failure for each fan on the cabinet panel;
- ▀ common dry signaling contact "Failure" (closes when any of the fans fails);
- ▀ the cabinet features a fire alarm input;
- ▀ switching on from external dry contact;
- ▀ protection against short circuits and overloads in electrical circuits;
- ▀ control of the valve with an "open-closed" actuator.

At the customer's request, a remote fan speed controller with a 0...10 V output signal for controlling the output frequency can be installed in the SAU-VK for controlling the fan with a frequency converter for each frequency converter.

Frequency converters are not installed in cabinets and are purchased separately according to the invoice. They are installed in proximity to the fan. The cable length from the frequency converter to the fan is not more than 50m (15m for shielded cable). The technical characteristics of frequency converters must correspond to the type and specification of fan motor!

**OPERATING CONDITIONS:**

According to GOST 15150, the automation cabinets can be operated in temperate and cold (YHL) climates of the 3rd and 4th placement categories.

Operating conditions:

- ▀ ambient temperature:
  - from -5° C to +35° C for the 4th placement category;
  - from -60° C to + 40° C for the 3rd placement category.



**EXAMPLE:**

SAU-VK automation cabinet for controlling six KROM-4 roof fans with a rotor motor with a power of 0.375 kW, single-phase, mounted on the STAM roof curb, complete set with valve (with AF-230 drive); climatic version YHL4:

## SAU-VK-1-0,375-V-6-SF-230-YHL4

- ▶ automation cabinet
- ▶ number of phases (1, 3)
- ▶ motor power, kW (when listing - separated by commas)
- ▶ motor control  
(V - speed controller<sup>1</sup>, CH - frequency converter<sup>2</sup>, P - direct start<sup>3</sup>  
T - start star-delta<sup>4</sup>, S - soft starter<sup>5</sup>)
- ▶ number of fans that are connected to a single cabinet<sup>6</sup>
- ▶ valve drive (SF-230 - spring return, SM-230 - "open-closed", 0 - without drive)
- ▶ climatic version

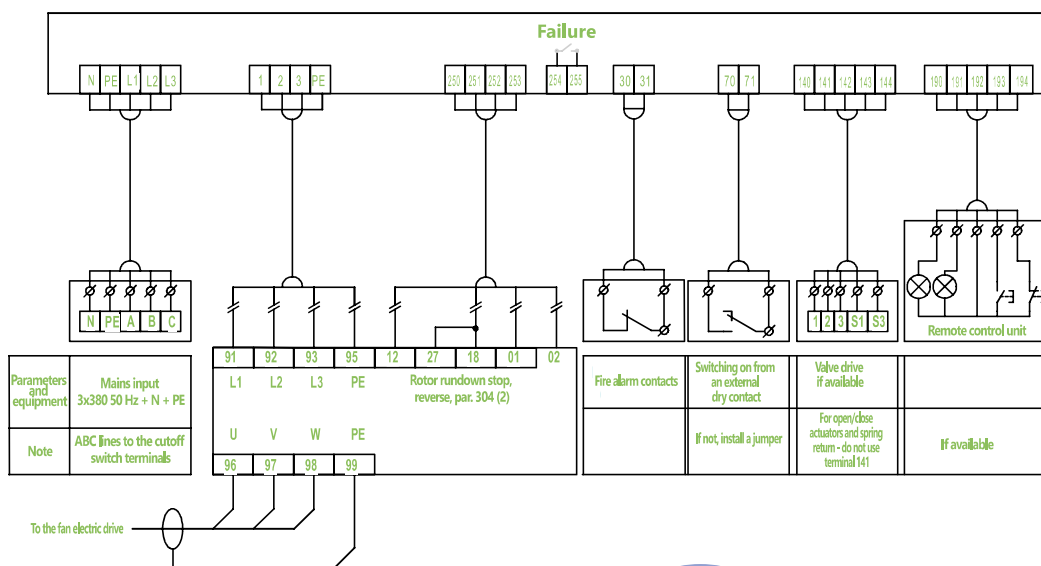
**NOTE:**

- <sup>1</sup>Used to control single-phase motors
- <sup>2</sup>Used to control three-phase motors
- <sup>3</sup>For fans up to 15 kW.
- <sup>4</sup>For fans with a three-phase motor with a power from 15 kW to 22 kW.
- <sup>5</sup>For fans with a three-phase motor with a power of 15 kW and above.
- <sup>6</sup>For single-phase motors, maximum - 9 pcs.  
for three-phase motors, maximum – 4 pcs., each with a power of up to 11 kW (up to 45 kW for fans with a frequency converter).

Special requirements for the control cabinet are specified additionally and agreed with the manufacturer.

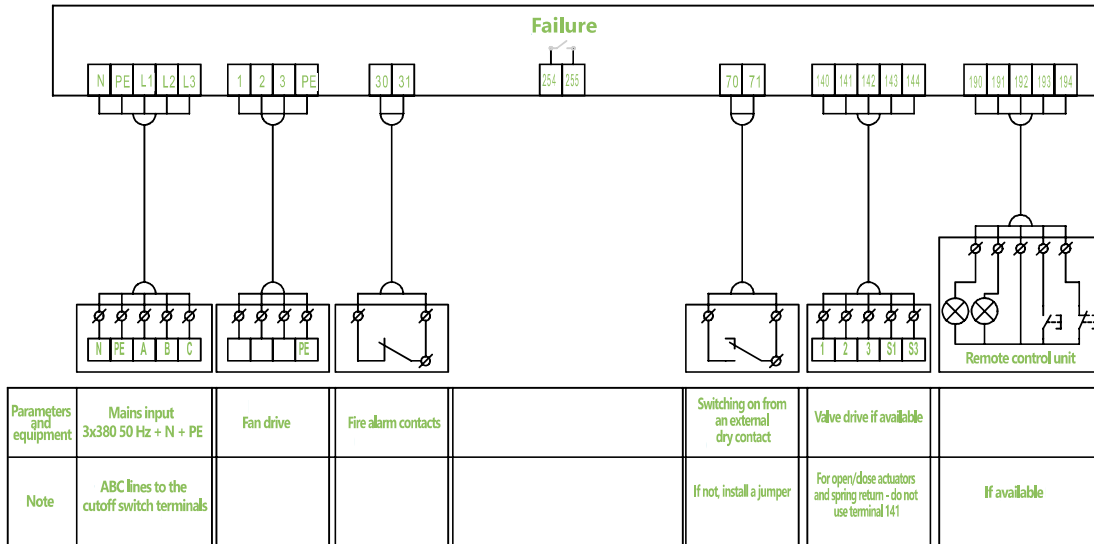
## SAU-VK CONNECTION DIAGRAM

### FAN WITH FREQUENCY CONVERTER

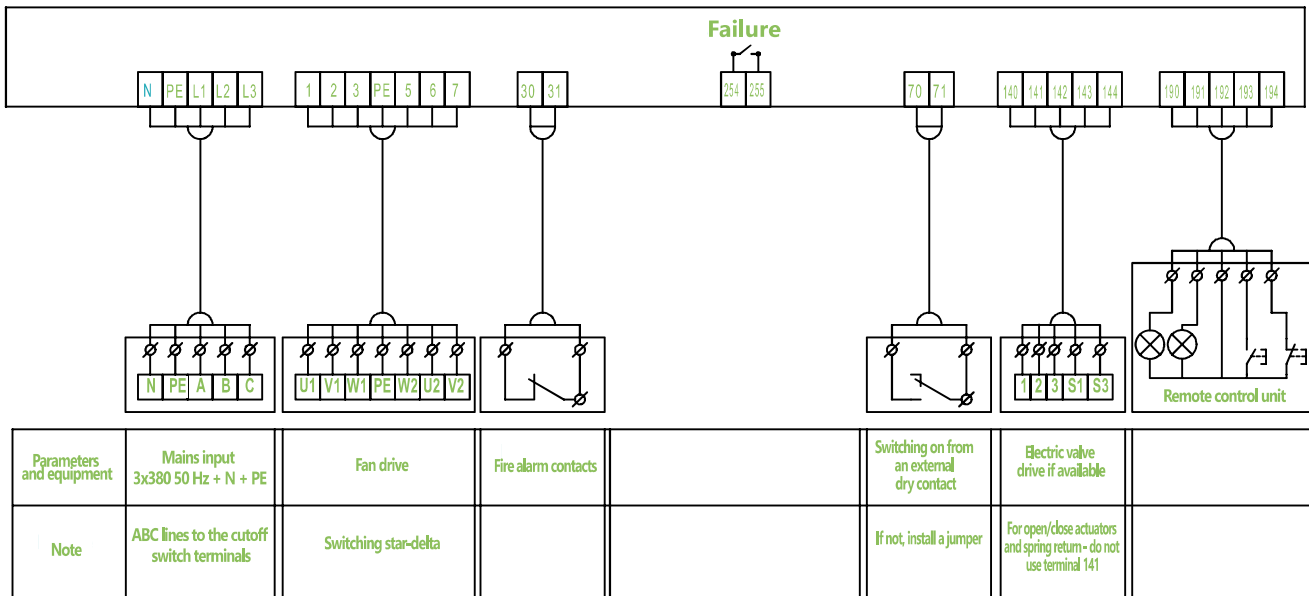




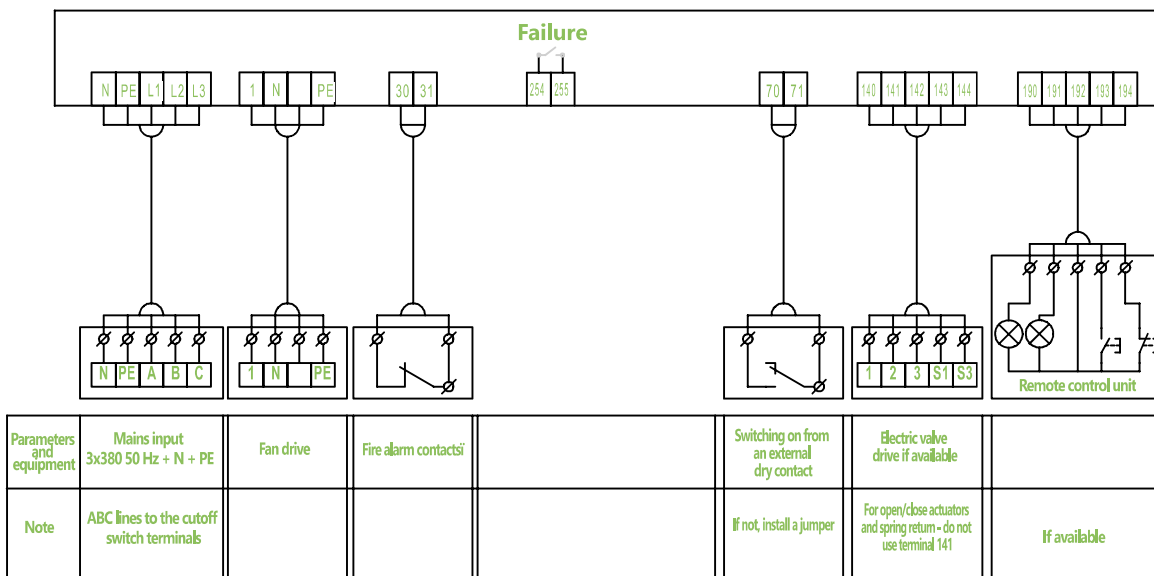
### FAN WITH SOFT STARTER OR DIRECT START



### FAN WITH STAR-DELTA START



### FAN WITH A SINGLE-PHASE MOTOR





# ACOUSTIC PARAMETERS OF ROOF FANS

SOUND PRESSURE LEVELS GENERATED BY KROM ROOF FANS  
IN THE MAXIMUM STATIC EFFICIENCY MODE AT DIFFERENT DISTANCES FROM  
THE FAN OUTLET CROSS-SECTION

Fan	№	Motor	Sound pressure levels Lp dBA at different distances from the fan outlet cross-section, m							
			1	3	5	10	15	20	25	30
KROM	2,25	0,14x2650	65	56	51	45	42	39	37	36
KROM-S	2,25	0,14x2650	59	50	45	39	36	33	31	30
KROM	3,1	0,12x1370	60	51	46	40	37	34	32	31
KROM-S	3,1	0,12x1370	50	41	36	30	27	24	22	21
KROM	3,55	0,25x1420	62	53	48	42	39	36	34	33
KROM-S	3,55	0,25x1420	53	44	39	33	30	27	25	24
KROV6	3,55	0,25x1320	62	53	48	42	39	36	34	33
KROV9	3,55	0,25x1320	63	54	49	43	40	37	35	34
KROS6	3,55	0,25x1320	62	53	48	42	39	36	34	33
KROS9	3,55	0,25x1320	63	54	49	43	40	37	35	34
KROM	4	0,12x910	58	49	44	38	35	32	30	29
KROM-S	4	0,12x910	49	40	35	29	26	23	21	20
KROM	4	0,38x1355	66	57	52	46	43	40	38	37
KROM-S	4	0,38x1355	57	48	43	37	34	31	29	28
KROV6	4	0,37x1320	64	55	50	44	41	38	36	35
KROV9	4	0,55x1410	66	57	52	46	43	40	38	37
KROS6	4	0,37x1320	64	55	50	44	41	38	36	35
KROS9	4	0,55x1410	66	57	52	46	43	40	38	37
KROM	4,5	0,31x910	61	52	47	41	38	35	33	32
KROM-S	4,5	0,31x910	52	43	38	32	29	26	24	23
KROM	4,5	0,71x1310	68	59	54	48	45	42	40	39
KROM-S	4,5	0,71x1310	59	50	45	39	36	33	31	30
KROV6	4,5	0,75x1406	69	60	55	49	46	43	41	40
KROV9	4,5	1,1x1420	70	61	56	50	47	44	42	41
KROS6	4,5	0,75x1406	69	60	55	49	46	43	41	40
KROS9	4,5	1,1x1420	70	61	56	50	47	44	42	41
KROM	5	0,52x915	61	52	47	41	38	35	33	32
KROM-S	5	0,52x915	52	43	38	32	29	26	24	23
KROM	5	1,43x1375	71	62	57	51	48	45	43	42
KROM-S	5	1,43x1375	62	53	48	42	39	36	34	33
KROV6	5	0,37x910	62	53	48	42	39	36	34	33
KROV9	5	0,55x915	63	54	49	43	40	37	35	34
KROV6	5	1,5x1420	72	63	58	52	49	46	44	43
KROV9	5	2,2x1388	73	64	59	53	50	47	45	44
KROS6	5	0,37x910	63	54	49	43	40	37	35	34
KROS9	5	0,55x915	64	55	50	44	41	38	36	35
KROS6	5	1,5x1420	72	63	58	52	49	46	44	43
KROS9	5	2,2x1388	73	64	59	53	50	47	45	44
KROM	5,6	0,8x895	64	55	50	44	41	38	36	35
KROM-S	5,6	0,8x895	55	46	41	35	32	29	27	26
KROV6	5,6	0,55x915	67	58	53	47	44	41	39	38
KROV9	5,6	1,1x930	68	59	54	48	45	42	40	39
KROV6	5,6	2,2x1388	75	66	61	55	52	49	47	46
KROV9	5,6	3x1395	76	67	62	56	53	50	48	47
KROS6	5,6	0,55x915	66	57	52	46	43	40	38	37
KROS9	5,6	1,1x930	68	59	54	48	45	42	40	39
KROS6	5,6	2,2x1388	75	66	61	55	52	49	47	46
KROS9	5,6	3x1395	76	67	62	56	53	50	48	47



Fan	№	Motor	Sound pressure levels Lp dBA at different distances from the fan outlet cross-section, m							
			1	3	5	10	15	20	25	30
KROM	6,3	1,31x880	68	59	54	48	45	42	40	39
KROM-S	6,3	1,31x880	59	50	45	39	36	33	31	30
KROV6	6,3	1,1x930	70	61	56	50	47	44	42	41
KROV9	6,3	1,5x920	71	62	57	51	48	45	43	42
KROV6	6,3	4x1425	79	70	65	59	56	53	51	50
KROV9	6,3	5,5x1450	80	71	66	60	57	54	52	51
KROS6	6,3	1,1x930	70	61	56	50	47	44	42	41
KROS9	6,3	1,5x920	71	62	57	51	48	45	43	42
KROS6	6,3	4x1425	79	70	65	59	56	53	51	50
KROS9	6,3	5,5x1450	80	71	66	60	57	54	52	51
KROV6	7,1	1,1x705	68	59	54	48	45	42	40	39
KROV9	7,1	1,5x705	69	60	55	49	46	43	41	40
KROV6	7,1	2,2x940	74	65	60	54	51	48	46	45
KROV9	7,1	3x960	75	66	61	55	52	49	47	46
KROS6	7,1	1,1x705	68	59	54	48	45	42	40	39
KROS9	7,1	1,5x705	69	60	55	49	46	43	41	40
KROS6	7,1	2,2x940	74	65	60	54	51	48	46	45
KROS9	7,1	3x960	75	66	61	55	52	49	47	46
KROV6	8	1,5x705	72	63	58	52	49	46	44	43
KROV9	8	2,2x705	73	64	59	53	50	47	45	44
KROV6	8	4x960	78	69	64	58	55	52	50	49
KROV9	8	5,5x950	79	70	65	59	56	53	51	50
KROS6	8	1,5x705	71	62	57	51	48	45	43	42
KROS9	8	2,2x705	72	63	58	52	49	46	44	43
KROS6	8	4x960	78	69	64	58	55	52	50	49
KROS9	8	5,5x950	79	70	65	59	56	53	51	50
KROV6	9	3x700	75	66	61	55	52	49	47	46
KROV9	9	4x710	76	67	62	56	53	50	48	47
KROV6	9	7,5x960	82	73	68	62	59	56	54	53
KROV9	9	11x970	83	74	69	63	60	57	55	54
KROS6	9	3x700	75	66	61	55	52	49	47	46
KROS9	9	4x710	76	67	62	56	53	50	48	47
KROS6	9	7,5x960	82	73	68	62	59	56	54	53
KROS9	9	11x970	83	74	69	63	60	57	55	54
KROV6	10	5,5x480	70	61	56	50	47	44	42	41
KROV9	10	5,5x480	71	62	57	51	48	45	43	42
KROV6	10	5,5x710	78	69	64	58	55	52	50	49
KROV9	10	7,5x730	79	70	65	59	56	53	51	50
KROV6	10	15x970	85	76	71	65	62	59	57	56
KROV9	10	18,5x970	86	77	72	66	63	60	58	57
KROS6	10	5,5x480	70	61	56	50	47	44	42	41
KROS9	10	5,5x480	71	62	57	51	48	45	43	42
KROS6	10	5,5x710	78	69	64	58	55	52	50	49
KROS9	10	7,5x730	80	71	66	60	57	54	52	51
KROS6	10	15x970	86	77	72	66	63	60	58	57
KROS9	10	18,5x970	87	78	73	67	64	61	59	58
KROV6	11,2	5,5x480	72	63	58	52	49	46	44	43
KROV9	11,2	5,5x480	73	64	59	53	50	47	45	44
KROV6	11,2	11x730	82	73	68	62	59	56	54	53
KROV9	11,2	15x730	83	74	69	63	60	57	55	54
KROS6	11,2	5,5x480	73	64	59	53	50	47	45	44
KROS9	11,2	5,5x480	73	64	59	53	50	47	45	44
KROS6	11,2	11x730	82	73	68	62	59	56	54	53
KROS9	11,2	15x730	83	74	69	63	60	57	55	54
KROV6	12,5	5,5x480	76	67	62	56	53	50	48	47
KROV9	12,5	7x485	77	68	63	57	54	51	49	48
KROV6	12,5	15x730	86	77	72	66	63	60	58	57
KROV9	12,5	22x725	87	78	73	67	64	61	59	58
KROS6	12,5	5,5x480	76	67	62	56	53	50	48	47
KROS9	12,5	7x485	77	68	63	57	54	51	49	48
KROS6	12,5	15x730	86	77	72	66	63	60	58	57
KROS9	12,5	22x725	87	78	73	67	64	61	59	58
KROS6	14	9x480	80	71	66	60	57	54	52	51
KROS9	14	11x480	81	72	67	61	58	55	53	52

