

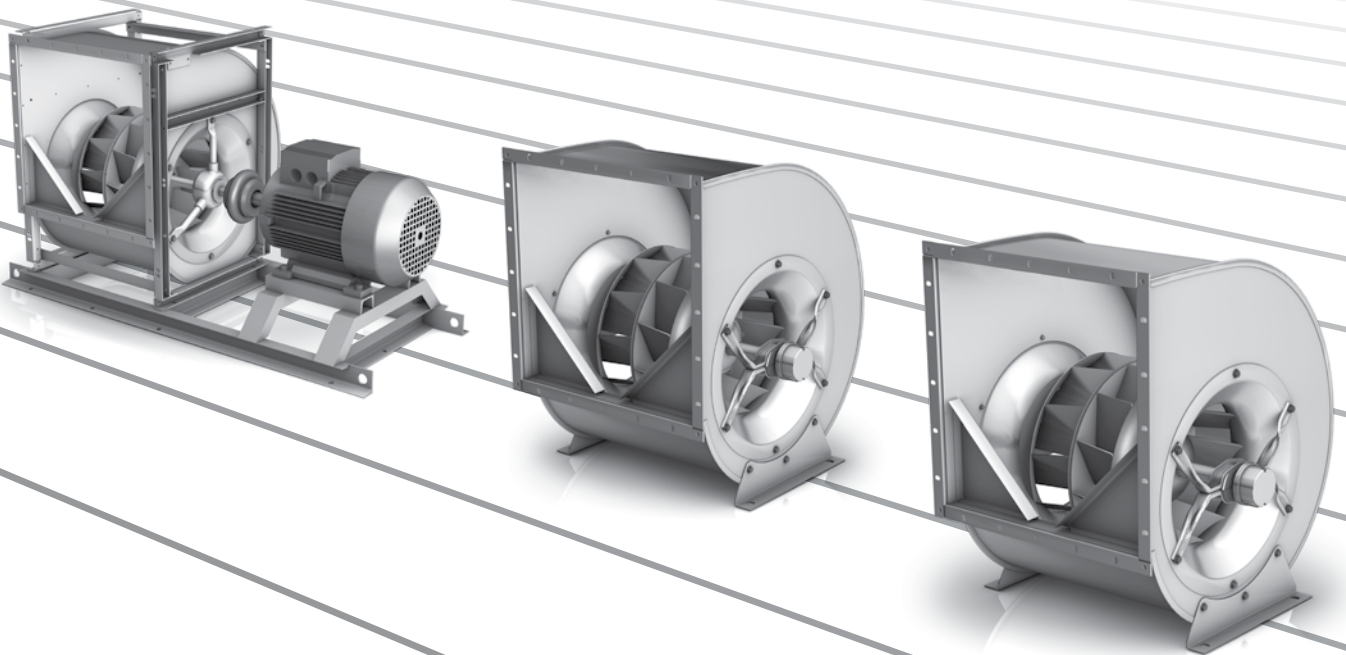
# Centrifugal Fans

double inlet with direct drive

backwardcurved true airfoil blades

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# The overall picture will decide

Depending on the model of the fan, the efficiency grade "N" set in accordance with the ErP Directive must be achieved from 2013 and 2015 respectively.

Efficiency grade "N" to ErP-Directive

Year	Centrifugal fans with backward curved blades			Centrifugal fans with forward curved blades	
	without housing static	with housing static	total	with housing static	total
2013	58	58	61	37	42
2015	62	61	64	44	49

The efficiency grade designates a parameter in the calculation of the target energy efficiency of a fan depending on the electric input power when operating at the optimal energy efficiency point. The figure of parameter "N" corresponds to the target energy efficiency with a power of 10 kW.

**To make the selection easier for our customers, we offer complete systems as defined by the ErP Directive!**

In order to compare the systems, the total efficiency  $\eta_e$  of the fan without speed regulation is considered.

$$\eta_e = P_{u(s)} / P_e$$

$\eta_e$  = Total efficiency  
 $P_{u(s)}$  = Fan gas power when operating at the optimal energy efficiency point  
 $P_e$  = Electric input power when operating at the optimal energy efficiency point

If the system has speed regulation, it will be taken into account with the "part load compensation factor"  $C_c$  (see below):

$$\eta_e = P_{u(s)} / P_{e(d)} \cdot C_c$$

$P_{ed}$  = Input power of speed regulator when operating at the optimal energy efficiency point  
 $C_c$  = part load compensation factor

- ▶ without speed regulation:  $C_c = 1$
- ▶ with speed regulation  $P_{ed} \geq 5$  kW:  $C_c = 1.04$
- ▶ with speed regulation  $P_{ed} < 5$  kW:  $C_c = -0.03 \ln(P_{ed}) + 1.088$

In order to take the speed regulation into account via the part load compensation factor  $C_c$ , the following mathematical losses arise in accordance with the formula prescribed by ErP for the following typical motor powers:

- ▶  $P_{ed} = 4.00$  kW:  $C_c = 1.05$  (5 %)
- ▶  $P_{ed} = 2.20$  kW:  $C_c = 1.06$  (6 %)
- ▶  $P_{ed} = 0.75$  kW:  $C_c = 1.10$  (10 %)

## Complete systems by Nicotra Gebhardt

Nicotra Gebhardt can supply complete systems in all product categories which meet the ErP requirements. We offer highly efficient fan systems

- ▶ with matching components and "high efficiency drives" – belt and direct drive.
- ▶ with integrated or external control to regulate speed.
- ▶ with IEC standard motors (IE2) or internal rotor motors with brushless DC technology.
- ▶ and with AC external rotor motors or brushless DC external rotor motors.

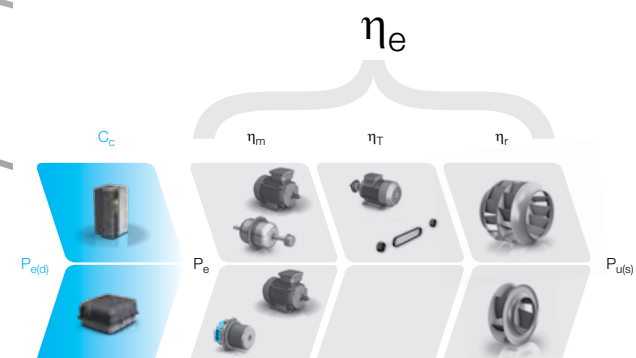
## Building blocks for best values

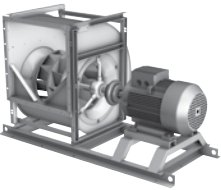


Thanks to the decades-long experience of Nicotra Gebhardt all the components of our fans contribute to their high performance.

Impellers and blades are optimised for turbulence and therefore particularly efficient. An example: With the latest development, the RLM Evo impeller, the free-running centrifugal fans of Nicotra Gebhardt achieve system efficiency grades never reached before.

In addition, the brushless DC drives which Nicotra Gebhardt offers for its direct drive fans improve the system efficiency grades.

**The fan technology of Nicotra Gebhardt delivers highly efficient systems for all applications.**



	RZM	RZP	RZA
			
Flow rate	<ul style="list-style-type: none"> <li>• 6.000 m³/h</li> <li>• 10.000 m³/h</li> <li>• 18.000 m³/h</li> <li>• 35.000 m³/h</li> <li>• 100.000 m³/h</li> <li>• 200.000 m³/h</li> </ul>	<ul style="list-style-type: none"> <li>• 6.000 m³/h</li> <li>• 10.000 m³/h</li> </ul>	<ul style="list-style-type: none"> <li>• 6.000 m³/h</li> <li>• 10.000 m³/h</li> <li>• 18.000 m³/h</li> <li>• 35.000 m³/h</li> </ul>
Media temperature	<ul style="list-style-type: none"> <li>• 40 °C</li> <li>• 60 °C</li> <li>• 80 °C</li> </ul>	<ul style="list-style-type: none"> <li>• 40 °C</li> </ul>	<ul style="list-style-type: none"> <li>• 40 °C</li> </ul>
Speed control	<ul style="list-style-type: none"> <li>• ATEX</li> <li>• Voltage</li> <li>• Brushless-DC</li> <li>• External inverter</li> </ul>	<ul style="list-style-type: none"> <li>• Brushless-DC</li> </ul>	<ul style="list-style-type: none"> <li>• External inverter</li> </ul>
Impeller	<ul style="list-style-type: none"> <li>• Forward curved blades galvanised sheet steel</li> <li>• Backward curved blades coated steel</li> </ul>	<ul style="list-style-type: none"> <li>• Forward curved blades galvanised sheet steel</li> <li>• Backward curved blades coated steel</li> </ul>	<ul style="list-style-type: none"> <li>• Forward curved blades galvanised sheet steel</li> <li>• Backward curved blades coated steel</li> </ul>
Casing material	<ul style="list-style-type: none"> <li>• Galvanised steel</li> <li>• Coated steel</li> </ul>	<ul style="list-style-type: none"> <li>• Galvanised steel</li> <li>• Coated steel</li> </ul>	<ul style="list-style-type: none"> <li>• Galvanised steel</li> <li>• Coated steel</li> </ul>
Inlet type	<ul style="list-style-type: none"> <li>• Single inlet</li> <li>• Double inlet</li> </ul>	<ul style="list-style-type: none"> <li>• Single inlet</li> <li>• Double inlet</li> </ul>	<ul style="list-style-type: none"> <li>• Single inlet</li> <li>• Double inlet</li> </ul>
ErP status	ErP 2015	ErP 2015	ErP 2015

# proSELECTA II

proSELECTA II is a technical selection program that allows you to configure your own individually designed fan. It provides you with the opportunity to choose from the entire range of fan types and their associated options.



## Simple and reliable selection

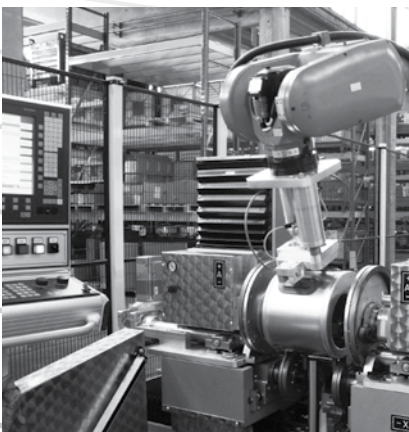
The result from proSELECTA II is the provision of all the technical data for your fan, including sound level data, dimension specifications and accessories. Apart from that, as a registered user, your purchase prices are provided. Additionally fully dimensioned drawings in dxf format are available, which can be downloaded and transferred straight into your CAD system.

So that you can be sure. Models and options that are technically not permissible, are automatically excluded in proSELECTA II. So there is no chance that you will configure a "wrong" device option.

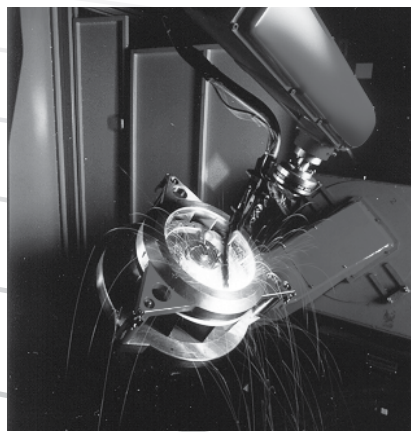
You can register as a proSELECTA II user with us, which enables us to offer you faster order processing. What this means for you is:

- ▶ The complete configuration of your fan with its associated system accessories and belt drive layout.
- ▶ The possibility to produce fans that operate via a frequency inverter.
- ▶ The option of saving your own fan configuration on our server.
- ▶ The opportunity to modify your saved configuration, even over the phone to your Nicotra Gebhardt representative.

## Nicotra Gebhardt technologies like ...



Automated manufacture of compact scroll and impeller with forward curved blades



Own motor production for optimal tuning of motor and fan!

### High performance centrifugal fans RZA rotavent

double inlet,  
with built-in, low-slip external rotor motor,  
made of galvanised sheet steel or welded and coated,  
with multi position feet and connecting flange at discharge;  
Impeller with true aerofoil blades, welded and painted – system rotavent



RZA

### High performance centrifugal fans RZP rotavent

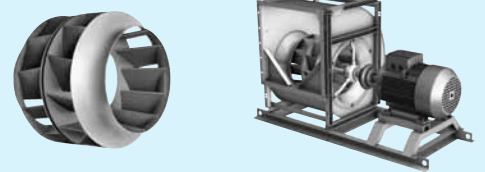
double inlet,  
with built-in, brushless DC external rotor motor and external commutation unit,  
made of galvanised sheet steel;  
with multi position feet and connecting flange at discharge;  
Impeller with true aerofoil blades, welded and painted – system rotavent



RZP

### High performance centrifugal fans RZM rotavent

double inlet,  
fan with directly coupled motor fitted on pedestal and base frame,  
made of galvanised sheet steel with heavy duty reinforced side frame,  
connecting flange at discharge,  
Impeller with true aerofoil blades, welded and painted – system rotavent



RZM

### Fittings / Accessories

- ▶ complete system accessories
- ▶ fittings and options



Fittings  
Accessories

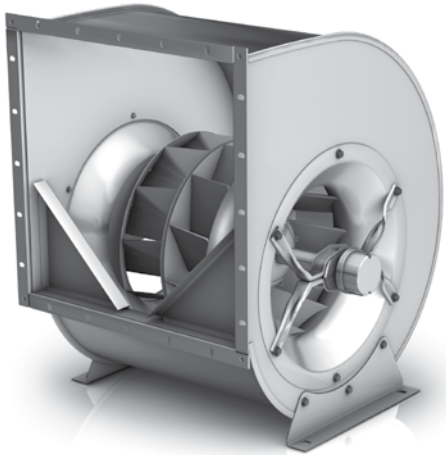
### Technical Description

- ▶ Descriptions
- ▶ Operating limits
- ▶ Notes



Technical  
Description

# Highest system performance and best energy efficiency



## The RZA rotavent serie

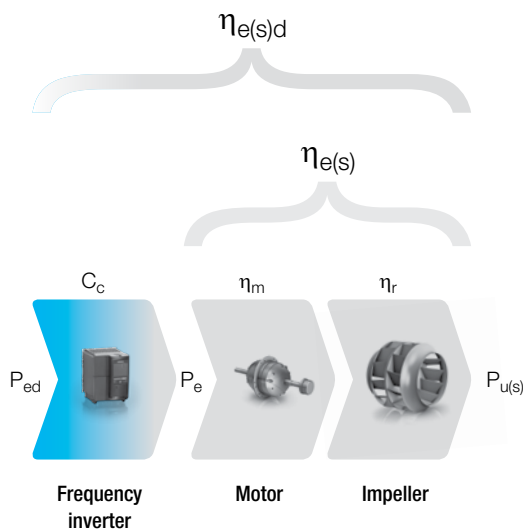
### Economic, quiet and compact.

Through the combination of two pioneering technologies - the aerodynamics of the rotavent impeller combined with energy efficient integral motors, Nicotra Gebhardt has developed a series of controllable direct drive centrifugal fans setting new standards for economy and quiet operation.

### Your benefits:

A highly efficient system through the use of energy optimised components: fans, motors and frequency inverters, operating together in harmony.

- ▶ high efficiency
- ▶ low energy costs
- ▶ low noise
- ▶ compact and maintenance free fans
- ▶ flexible in its operation



Make use of our technical selection program proSELECTA II. You receive all technical data for your fan, easy-quick-reliable.

### System efficiency

The given System Efficiency is the efficiency of the whole system and includes the individual efficiencies of the component Fan – Motor – Frequency inverter.

### ErP conformity

Depending on the model of the fan, the efficiency grade "N" set in accordance with the ErP Directive must be achieved from 2013 and 2015 respectively.

The efficiency grade designates a parameter in the calculation of the target energy efficiency of a fan depending on the electric input power when operating at the optimal energy efficiency point. The figure of parameter "N" corresponds to the target energy efficiency with a power of 10 kW.

### Efficiency grade "N" to ErP Directive

Centrifugal fans with backward curved blades with housing

Measurement category	Efficiency category	Power range P [kW]	Target energy efficiency	Efficiency grade "N"	
				Year 2013	Year 2015
A, C	static	0.125 ≤ P ≤ 10	$\eta_{\text{target}} = 4.56 \cdot \ln(P) - 10.5 + N$	58	61
		10 < P ≤ 500	$\eta_{\text{target}} = 1.10 \cdot \ln(P) - 2.60 + N$		
B, D	total	0.125 ≤ P ≤ 10	$\eta_{\text{target}} = 4.56 \cdot \ln(P) - 10.5 + N$	61	64
		10 < P ≤ 500	$\eta_{\text{target}} = 1.10 \cdot \ln(P) - 2.60 + N$		

### Calculation example for fan type: RZA 11-0355-4D

Measurement category / Efficiency category = **B / TOTAL**  
 Power range at optimum  $P_e = 3.6 \text{ kW}$  (<10 kW)  
 Efficiency grade according to ErP Directive  $N_{2015} = 64$

### Calculation of the ErP energy efficiency $\eta_{\text{target}}$ required 2015:

$\eta_{\text{target}} = 4.56 \cdot \ln(3.6) - 10.5 + 64$   $\eta_{\text{target}} \approx 59.3 \%$

### Fan energy efficiency $\eta_e$ :

System efficiency (total) by proSELECTA II  $\eta_e \approx 62.7 \%$

### Calculation of the Fan efficiency grade "N<sub>F</sub>":

$N_F = 62.7 - [4.56 \cdot \ln(3.6)] + 10.5$   $N_F = 67.4$

**Result:**  $\eta_e 60.9 \% > \eta_{\text{target}} 59.3 \%$  resp.  $N_F 67.4 > N_{2015} 64$

The energy efficiency of the fan surpasses the requirements of the ErP for 2015.

A technical data list according to ErP-REGULATION 327/2011/EU of all fans is available at the end of this chapter "RZA".

# The compact pioneering technology

## Optimal aerodynamics

Low turbulence velocity for both inlet and discharge due to the large free cross section and minimal flow restraint of the impeller, an example of aerodynamics and performance of the rotavent.

## Acoustics

Reduction of high frequency noise levels is just one of the advantages of the rotavent, together with optimised motors and frequency inverters.

Minimal sound levels due to low blade passing frequencies from the optimised impeller geometry of the rotavent. The impeller has obliquely inclined blades with trailing edges, and the throat plate is inclined opposingly.

## High efficiencies

Nicotra Gebhardt fans of the RZA rotavent range are operating at high efficiency in wide area of the fan curve.

### Your benefits:

- ▶ negligible sensitivity to built in disturbances
- ▶ minor pressure loss with free discharge operation
- ▶ smaller, yet greater energy performance






### Your benefits:

- ▶ reduced size and costs of attenuation and silencers

### Your Benefits:

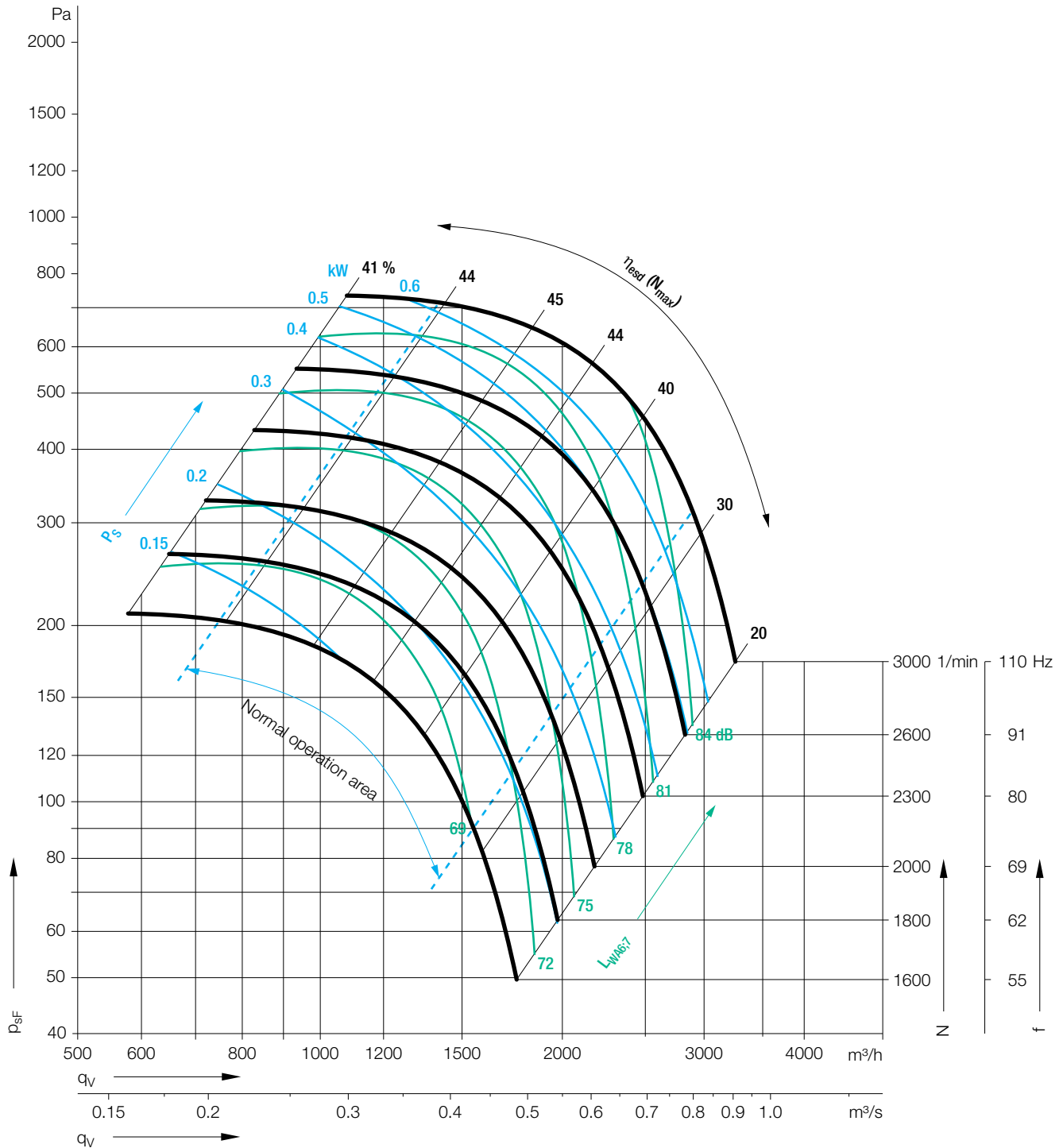
- ▶ low running costs
- ▶ high efficiency

The high value and precisely manufactured components of rotavent, manufactured with most modern machinery for demanding tolerance standards, are the basis for a product range satisfying highest quality requirements.

Version	Description	Figure
<b>RZA 11-0225/-0560</b>	Lock formed scroll made of galvanised steel sheet, equipped with multi-position bolted brackets and discharge flange. High performance impeller with backward curved true aerofoil blades, welded and coated.	
<b>The motors</b>	The motors are designed for high efficiencies with frequency inverter control, with inbuilt PTC-thermistors and aerodynamically optimised. <b>Benefits:</b> <ul style="list-style-type: none"> <li>▶ improved economical operation</li> <li>▶ high safety standard</li> <li>▶ optimised motor protection</li> </ul>	
<b>The vibration-free motor suspension</b>	The anti-vibration system, specially developed for this application, ensure smooth running of the unit without transmission of vibration to other parts of the installation or to the building.	
<b>The easy connection</b>	through easy access to the metal connection box fitted to motor shaft.	
<b>The trouble-free speed regulation</b>	from 0 to 100 % by an efficient frequency inverter. <b>Benefits:</b> <ul style="list-style-type: none"> <li>▶ high flexibility</li> <li>▶ easy adaptation to varying operational conditions</li> <li>▶ high efficiency at part load</li> </ul>	

**Technical Data**

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-9	-8	-4	-3	-4	-7	-12	-17 dB
$> 1.4 q_{Vopt}$	-11	-12	-6	-4	-4	-6	-12	-21 dB

**Discharge side**

Relative sound power level  $L_{Wrel6}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-10	-8	-5	-1	-5	-9	-16	-26 dB
$> 1.4 q_{Vopt}$	-12	-12	-8	-1	-5	-8	-15	-27 dB



# RZA 11-0225

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Nominal frequency Hz	Nominal motor power kW	Max. power consumption kW	Max. output current (FC) A	Max. operating frequency Hz	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0225-4D	③	400	87	0.60	0.87	1.6	110	3000	40	17

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Mains frequency Hz	Max. power consumption kW	Nominal motor current A	Max. operating frequency Hz	Nominal motor speed 1/min	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0225-4D-50	*	400	50	0.12	0.55	110	1460	3000	40	17
0225-4D-60	*	460	60	0.17	0.52	110	1740	3000	40	17

### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

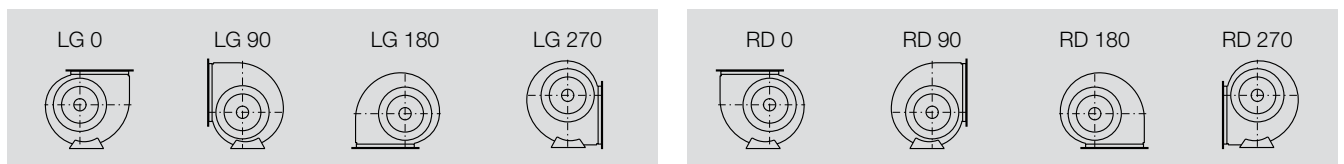
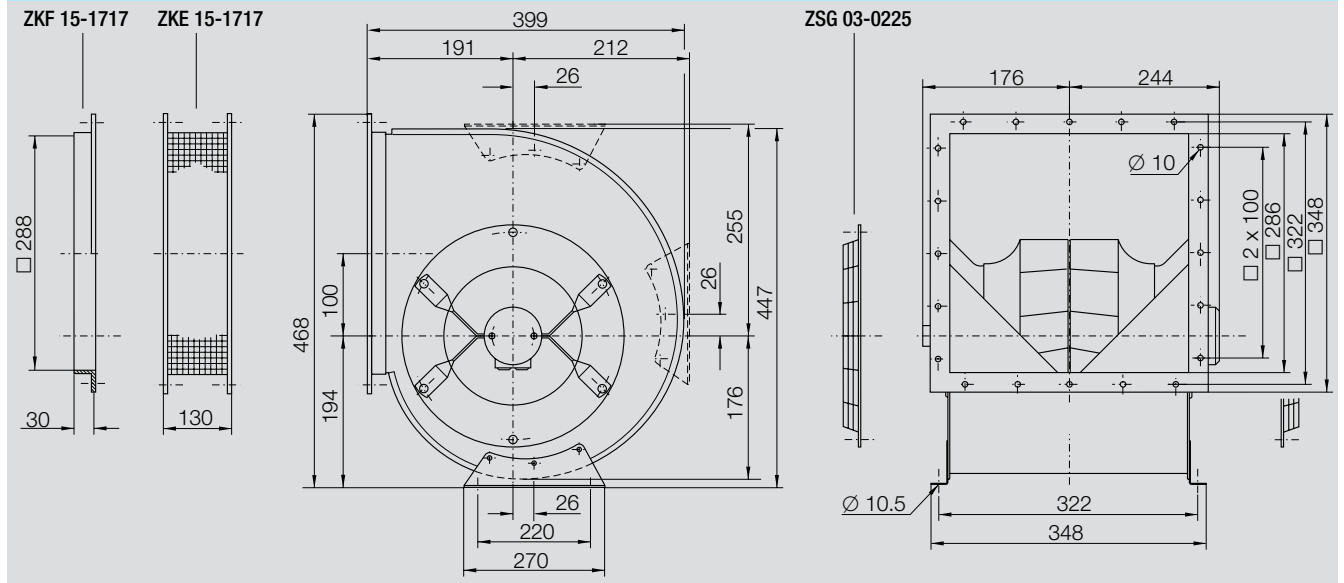
$$P_S = p_{sF} \times q_V / \eta_{sS}$$

$$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$$

$$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$$

③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.

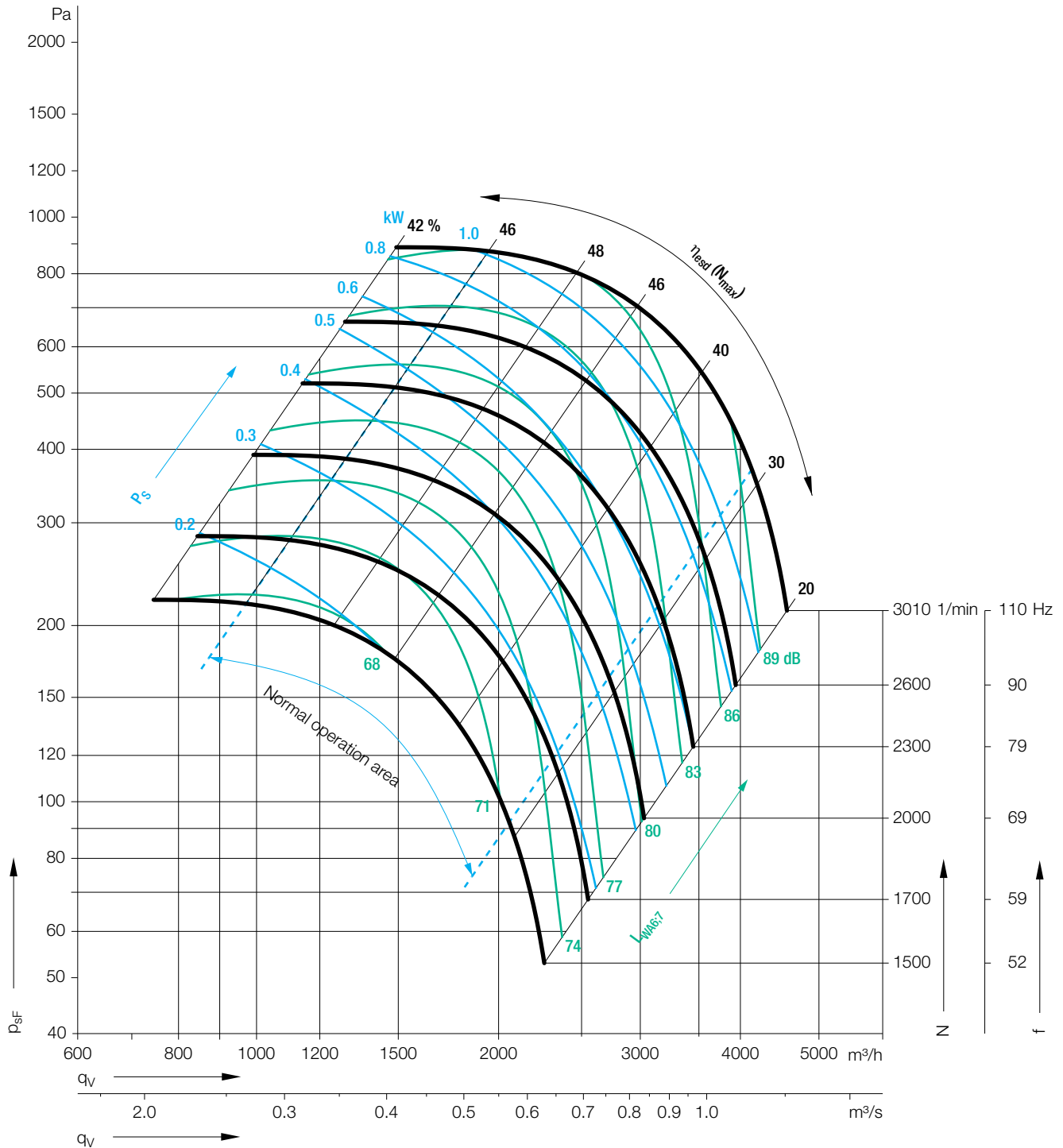


### Accessories

RZA 11-	Isolator (metal casing) ESH 22-	Frequency Inverter Unit MM420 for 3~ MM420 3AC 400V	Line Choke for 3~ 6SE6400-	Anti Vibration Rubber Buffers ZBD 01-
0225-4D	ESH 22-075-32	MM420 3AC 400V 0.75KW EMV B	6SE6400-3CC00-4AD3	ZBD 01-0506-A
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0225-4D-50	ESH 22-075-32	-	-	ZBD 01-0506-A
0225-4D-60	ESH 22-075-32	-	-	ZBD 01-0506-A

**Technical Data**

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-9	-8	-4	-3	-4	-7	-12	-17 dB
$> 1.4 q_{Vopt}$	-11	-12	-6	-4	-4	-6	-12	-21 dB

**Discharge side**

Relative sound power level  $L_{Wrel6}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-10	-8	-5	-1	-5	-9	-16	-26 dB
$> 1.4 q_{Vopt}$	-12	-12	-8	-1	-5	-8	-15	-27 dB

# RZA 11-0250

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Nominal frequency Hz	Nominal motor power kW	Max. power consumption kW	Max. output current (FC) A	Max. operating frequency Hz	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0250-4D	③	400	87	0.95	1.4	2.5	110	3010	40	21

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Mains frequency Hz	Max. power consumption kW	Nominal motor current A	Max. operating frequency Hz	Nominal motor speed 1/min	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0250-4D-50	*	400	50	0.21	0.90	110	1460	3010	40	21
0250-4D-60	*	460	60	0.29	0.87	110	1740	3010	40	21

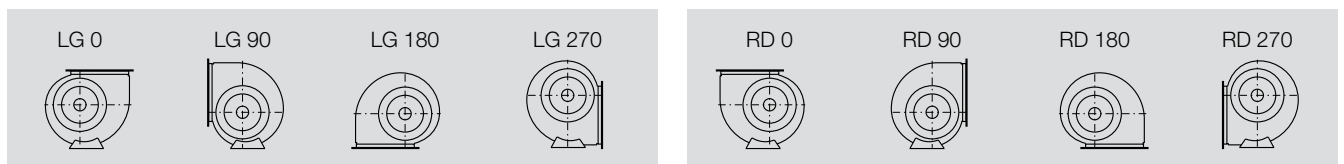
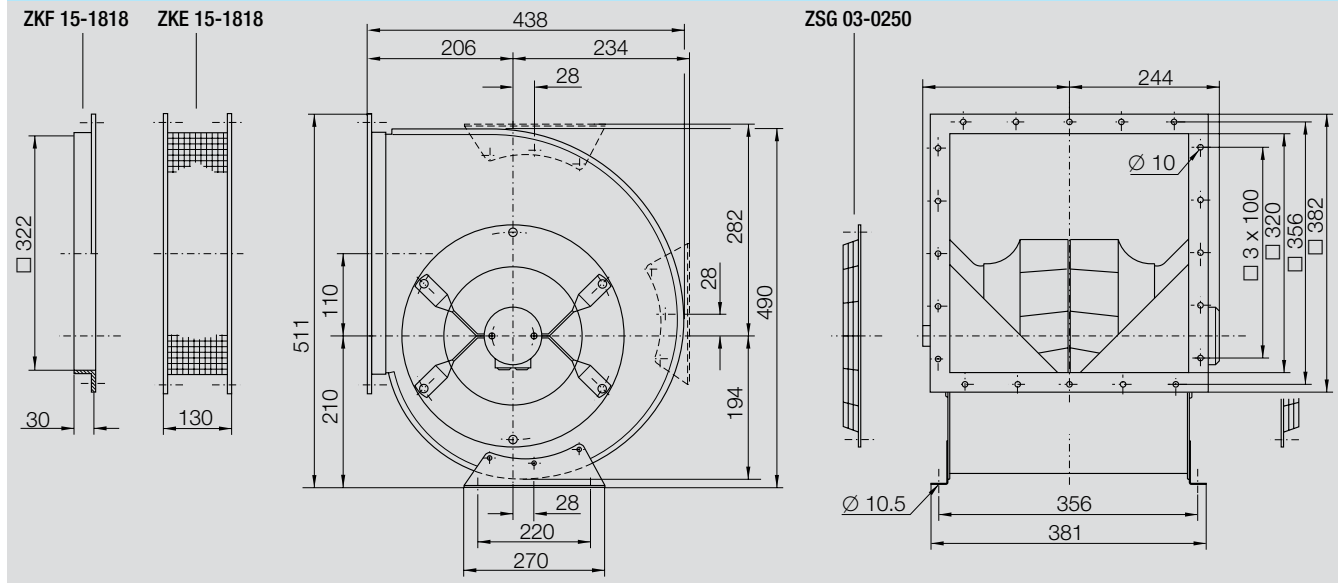
### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

$P_S = p_{sF} \times q_V / \eta_{sS}$   
 $L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$   
 $L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$   
 ③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.

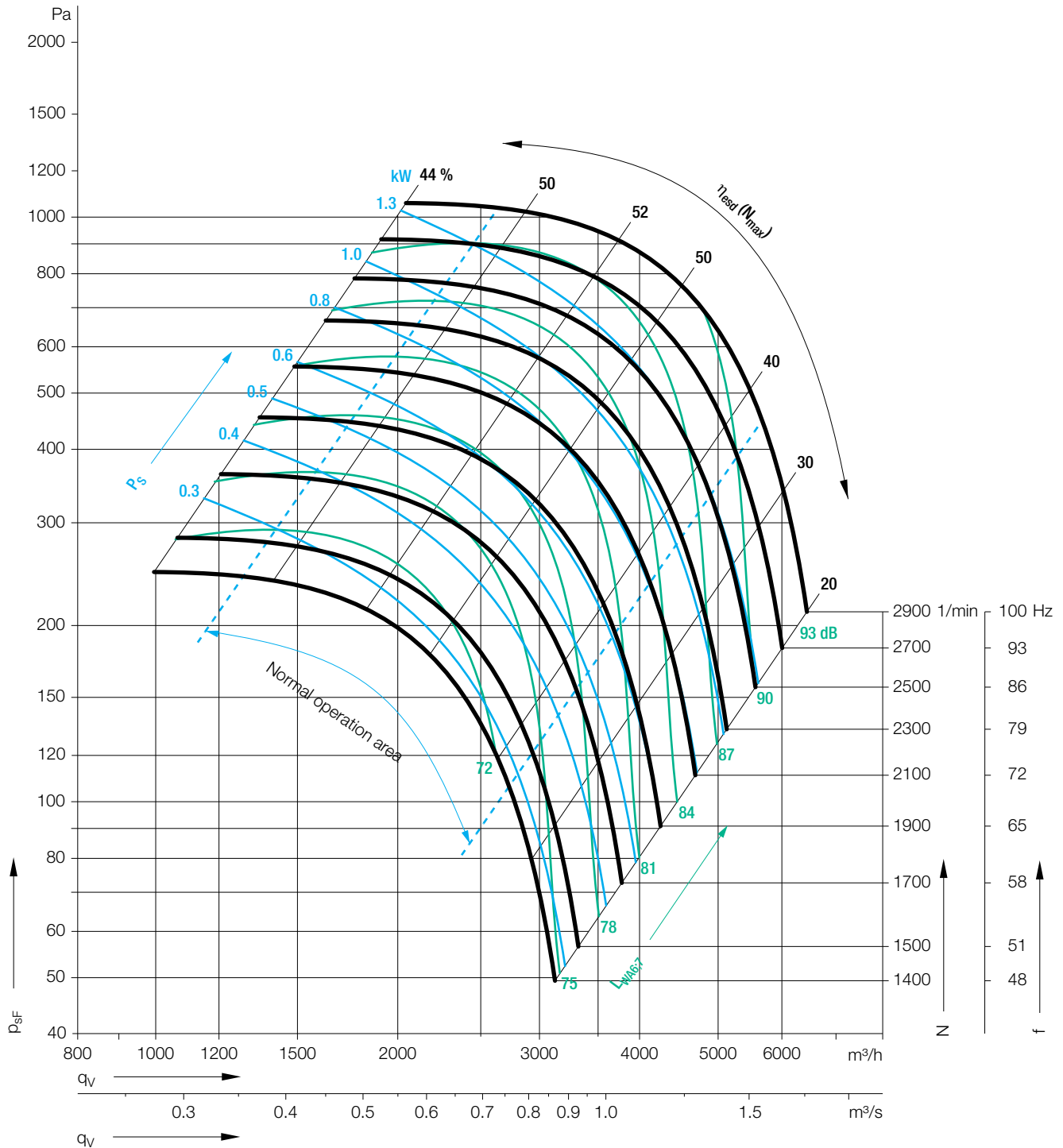


### Accessories

RZA 11-	Isolator (metal casing) ESH 22-	Frequency Inverter Unit MM420 for 3~ MM420 3AC 400V	Line Choke for 3~ 6SE6400-	Anti Vibration Rubber Buffers ZBD 01-
0250-4D	ESH 22-075-32	MM420 3AC 400V 1.10KW EMV B	6SE6400-3CC00-4AD3	ZBD 01-0506-A
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0250-4D-50	ESH 22-075-32	-	-	ZBD 01-0506-A
0250-4D-60	ESH 22-075-32	-	-	ZBD 01-0506-A

**Technical Data**

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel17}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-7	-3	-2	-1	-4	-10	-15	-21 dB
$> 1.4 q_{Vopt}$	-12	-7	-5	-1	-5	-9	-13	-21 dB

**Discharge side**

Relative sound power level  $L_{Wrel16}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-4	-8	-6	-1	-5	-11	-15	-24 dB
$> 1.4 q_{Vopt}$	-8	-12	-8	-1	-5	-9	-13	-23 dB

# RZA 11-0280

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Nominal frequency Hz	Nominal motor power kW	Max. power consumption kW	Max. output current (FC) A	Max. operating frequency Hz	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0280-4D	③	400	87	1.50	1.9	3.7	100	2900	40	29

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Mains frequency Hz	Max. power consumption kW	Nominal motor current A	Max. operating frequency Hz	Nominal motor speed 1/min	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0280-4D-50	*	400	50	0.33	1.36	100	1480	2900	40	29
0280-4D-60	*	460	60	0.49	1.35	100	1770	2900	40	29

### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

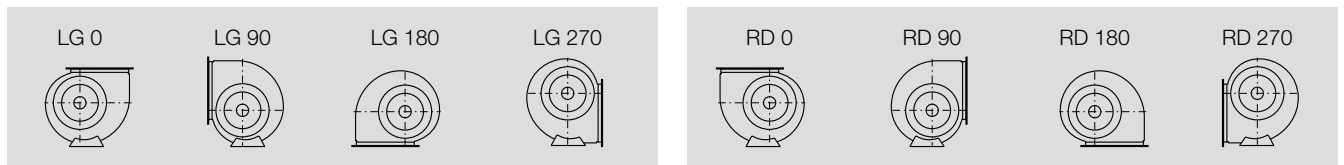
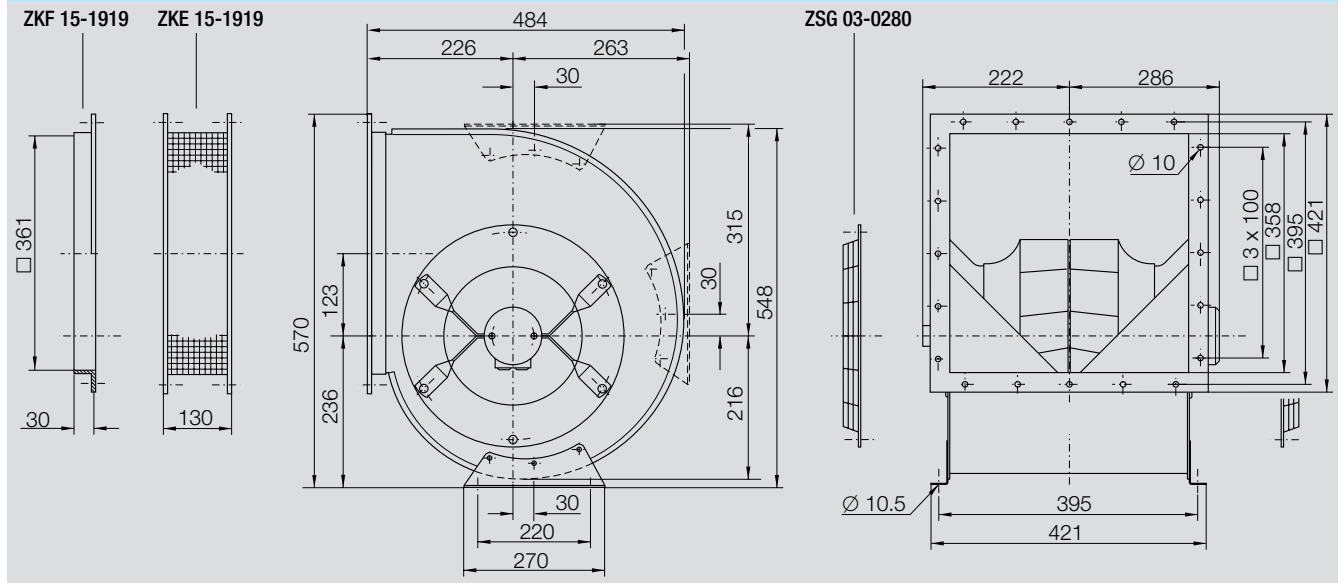
$$P_S = p_{sF} \times q_V / \eta_{sS}$$

$$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$$

$$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$$

③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.



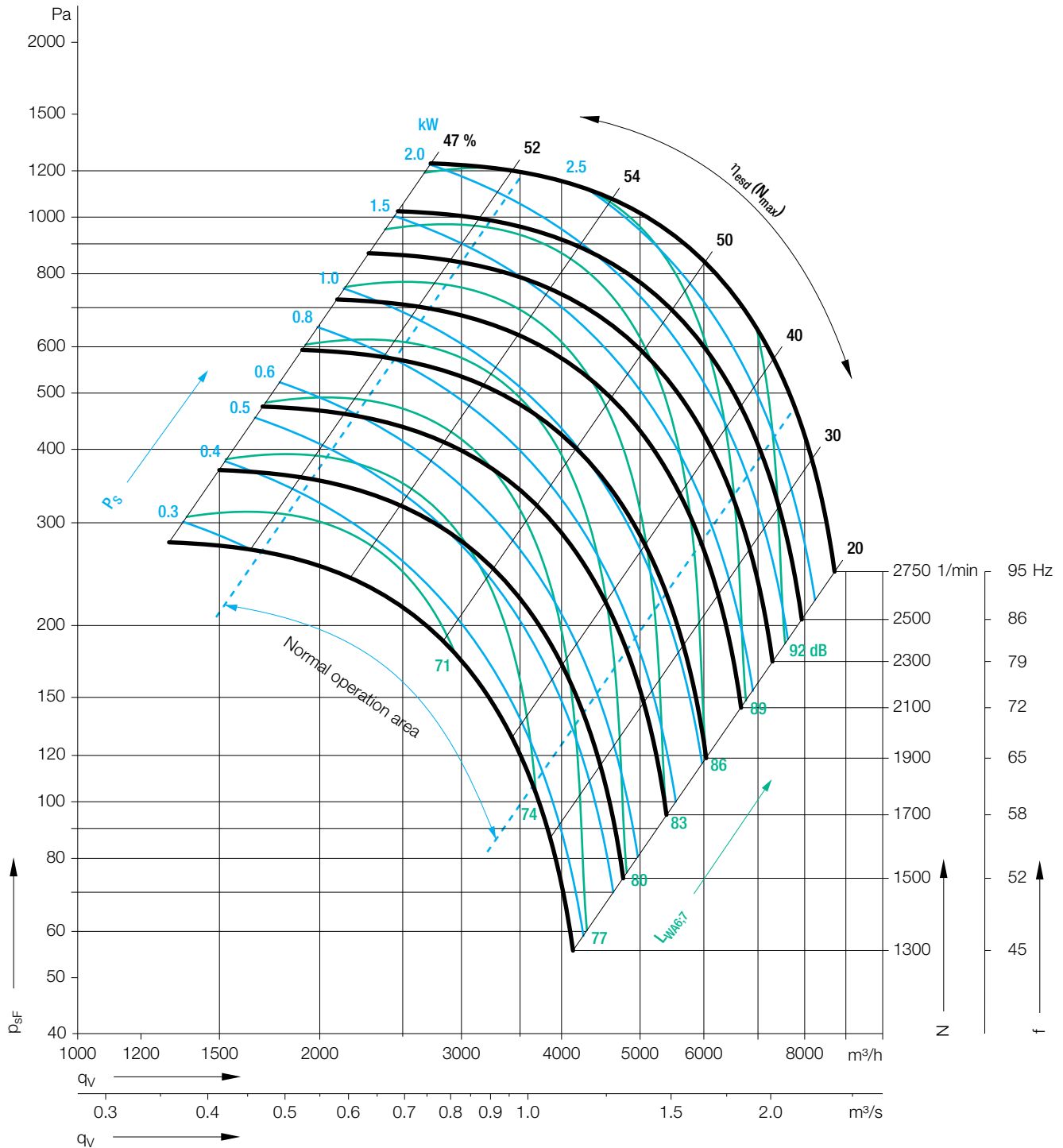
### Accessories

RZA 11-	Isolator (metal casing) ESH 22-	Frequency Inverter Unit MM420 for 3~ MM420 3AC 400V	Line Choke for 3~ 6SE6400-	Anti Vibration Rubber Buffers ZBD 01-
0280-4D	ESH 22-075-32	MM420 3AC 400V 1.50KW EMV B	6SE6400-3CC00-6AD3	ZBD 01-0506-A
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0280-4D-50	ESH 22-075-32	-	-	ZBD 01-0506-A
0280-4D-60	ESH 22-075-32	-	-	ZBD 01-0506-A

# RZA 11-0315

## Technical Data

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



### Determination of the Octave level

#### Inlet side

Relative sound power level  $L_{Wrel17}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-7	-3	-2	-1	-4	-10	-15	-21 dB
$> 1.4 q_{Vopt}$	-12	-7	-5	-1	-5	-9	-13	-21 dB

#### Discharge side

Relative sound power level  $L_{Wrel16}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-4	-8	-6	-1	-5	-11	-15	-24 dB
$> 1.4 q_{Vopt}$	-8	-12	-8	-1	-5	-9	-13	-23 dB

# RZA 11-0315

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Nominal frequency Hz	Nominal motor power kW	Max. power consumption kW	Max. output current (FC) A	Max. operating frequency Hz	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0315-4D	③	400	87	2.20	2.9	5.3	95	2750	40	36

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Mains frequency Hz	Max. power consumption kW	Nominal motor current A	Max. operating frequency Hz	Nominal motor speed 1/min	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0315-4D-50	*	400	50	0.54	1.89	95	1480	2750	40	36
0315-4D-50	*	460	60	0.82	1.94	95	1770	2750	40	36

### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

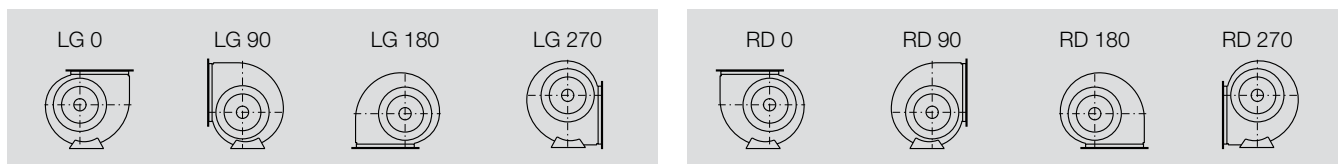
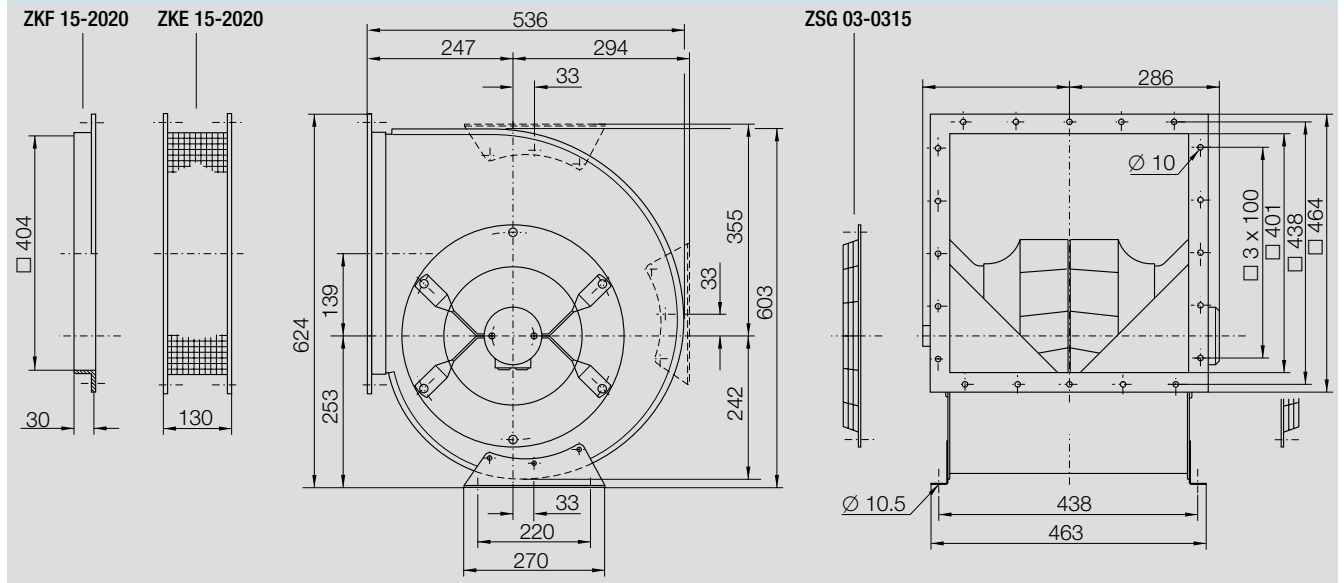
$$P_S = p_{sF} \times q_V / \eta_{sS}$$

$$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$$

$$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$$

③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.



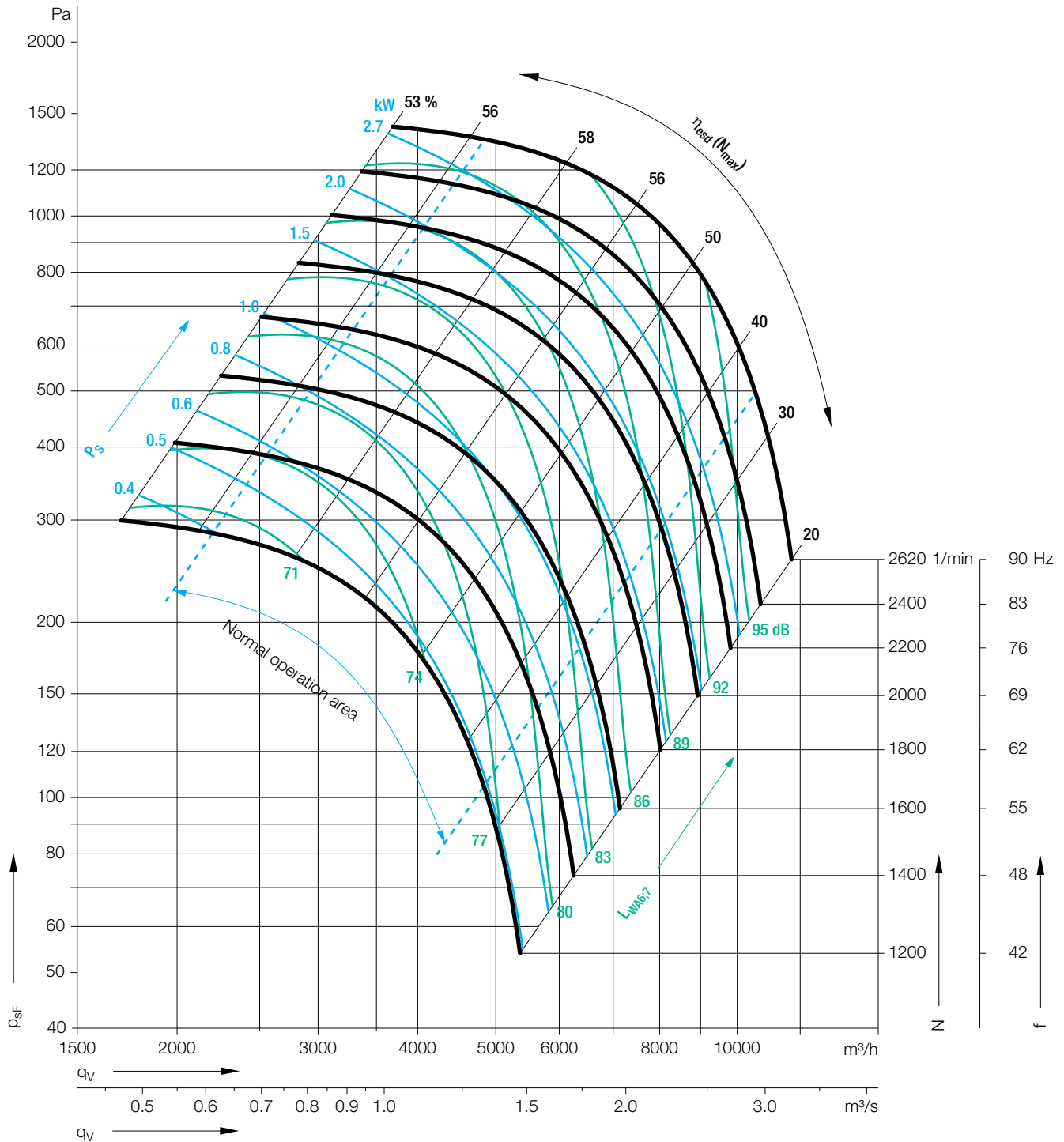
### Accessories

RZA 11-	Isolator (metal casing) ESH 22-	Frequency Inverter Unit MM420 for 3~ MM420 3AC 400V	Line Choke for 3~ 6SE6400-	Anti Vibration Rubber Buffers ZBD 01-
0315-4D	ESH 22-075-32	MM420 3AC 400V 2.20KW EMV B	6SE6400-3CC01-0BD3	ZBD 01-0506-A
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0315-4D-50	ESH 22-075-32	-	-	ZBD 01-0506-A
0315-4D-60	ESH 22-075-32	-	-	ZBD 01-0506-A

# RZA 11-0355

## Technical Data

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



### Determination of the Octave level

#### Inlet side

Relative sound power level L<sub>Wref17</sub> at octave band correction factors f<sub>c</sub>.

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤ 1.4 q <sub>Vopt</sub>	-9	-2	-3	0	-7	-9	-15	-25 dB
> 1.4 q <sub>Vopt</sub>	-12	-6	-6	0	-7	-7	-13	-25 dB

#### Discharge side

Relative sound power level L<sub>Wref16</sub> at octave band correction factors f<sub>c</sub>.

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤ 1.4 q <sub>Vopt</sub>	-5	-7	-5	-1	-6	-9	-16	-26 dB
> 1.4 q <sub>Vopt</sub>	-7	-11	-8	-1	-6	-8	-13	-26 dB



# RZA 11-0355

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Nominal frequency Hz	Nominal motor power kW	Max. power consumption kW	Max. output current (FC) A	Max. operating frequency Hz	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0355-4D	③	400	87	3.60	4.6	7.9	90	2620	40	48

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Mains frequency Hz	Max. power consumption kW	Nominal motor current A	Max. operating frequency Hz	Nominal motor speed 1/min	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0355-4D-50	*	400	50	0.79	2.20	90	1480	2620	40	48
0355-4D-60	*	460	60	1.3	2.40	90	1770	2620	40	48

### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

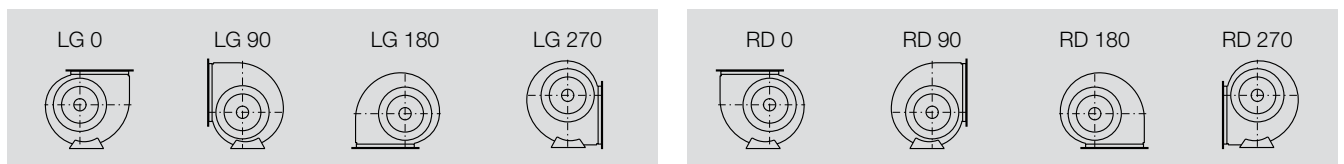
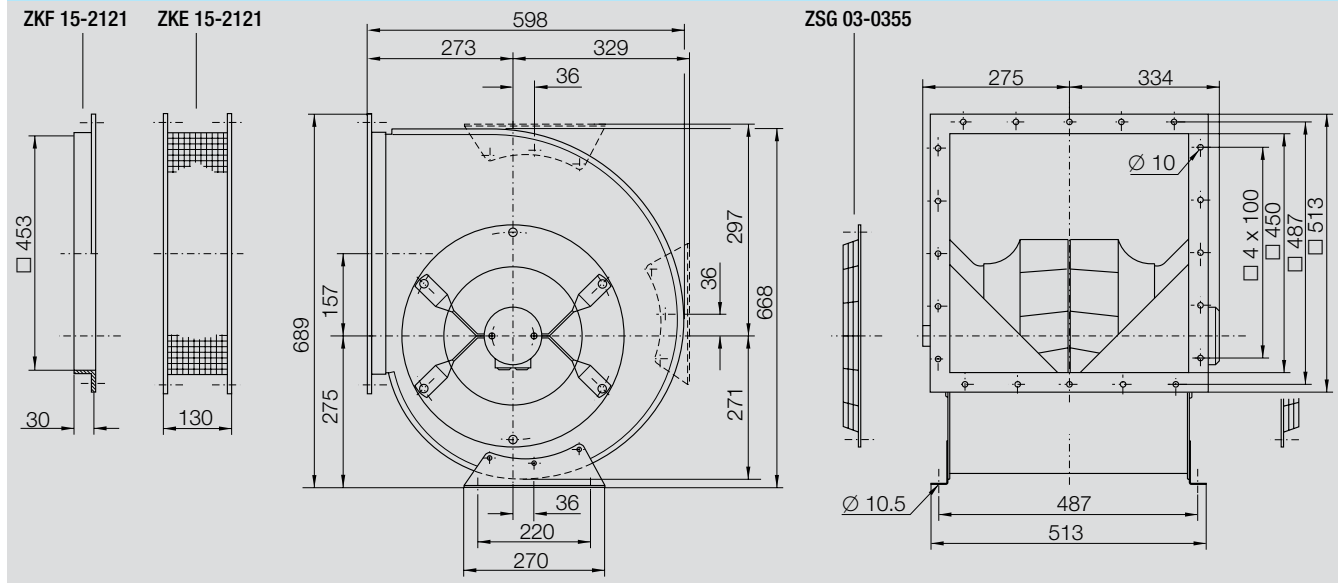
$$P_S = p_{sF} \times q_V / \eta_{sS}$$

$$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$$

$$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$$

③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.



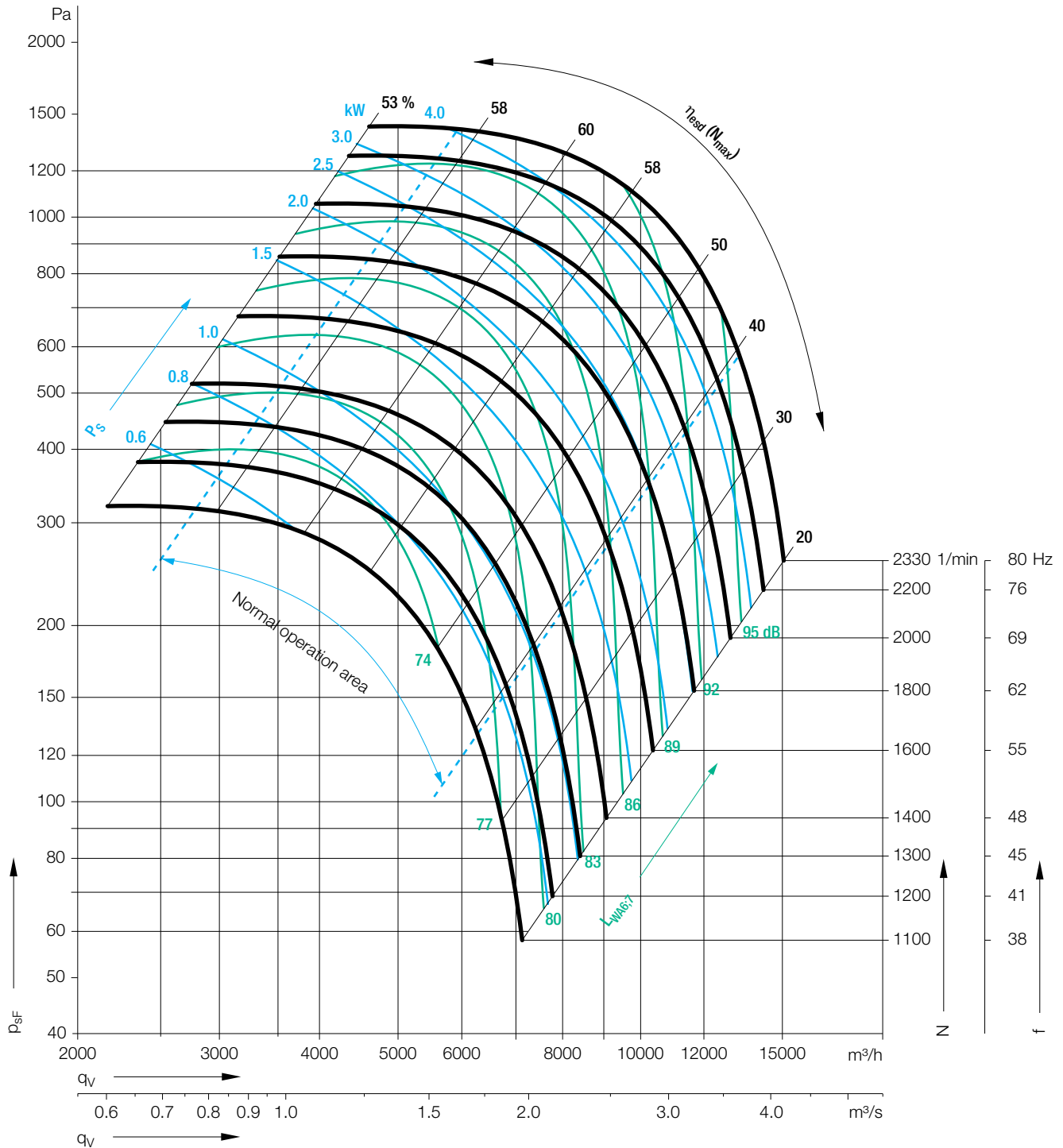
### Accessories

RZA 11-	Isolator (metal casing) ESH 22-	Frequency Inverter Unit MM420 for 3~ MM420 3AC 400V	Line Choke for 3~ 6SE6400-	Anti Vibration Rubber Buffers ZBD 01-
0355-4D	ESH 22-075-32	MM420 3AC 400V 4.00KW EMV B	6SE6400-3CC01-4BD3	ZBD 01-0606-A
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0355-4D-50	ESH 22-075-32	-	-	ZBD 01-0606-A
0355-4D-60	ESH 22-075-32	-	-	ZBD 01-0606-A

# RZA 11-0400

## Technical Data

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



### Determination of the Octave level

#### Inlet side

Relative sound power level  $L_{Wrel17}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-9	-2	-3	0	-7	-9	-15	-25 dB
$> 1.4 q_{Vopt}$	-12	-6	-6	0	-7	-7	-13	-25 dB

#### Discharge side

Relative sound power level  $L_{Wrel16}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-5	-7	-5	-1	-6	-9	-16	-26 dB
$> 1.4 q_{Vopt}$	-7	-11	-8	-1	-6	-8	-13	-26 dB

# RZA 11-0400

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Nominal frequency Hz	Nominal motor power kW	Max. power consumption kW	Max. output current (FC) A	Max. operating frequency Hz	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0400-4D	③	400	87	4.40	5.6	12	80	2330	40	68

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Mains frequency Hz	Max. power consumption kW	Nominal motor current A	Max. operating frequency Hz	Nominal motor speed 1/min	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0400-4D-50	*	400	50	1.46	3.50	80	1480	2330	40	68
0400-4D-60	*	460	60	2.41	4.20	80	1770	2330	40	68

### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

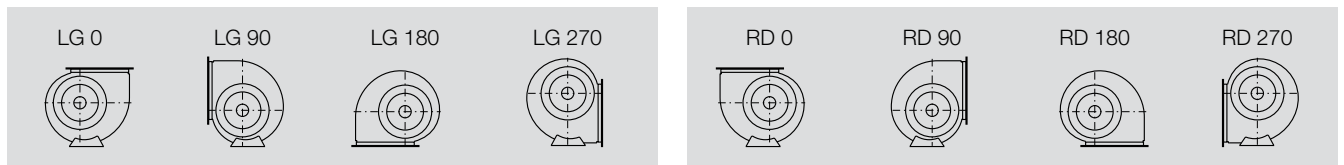
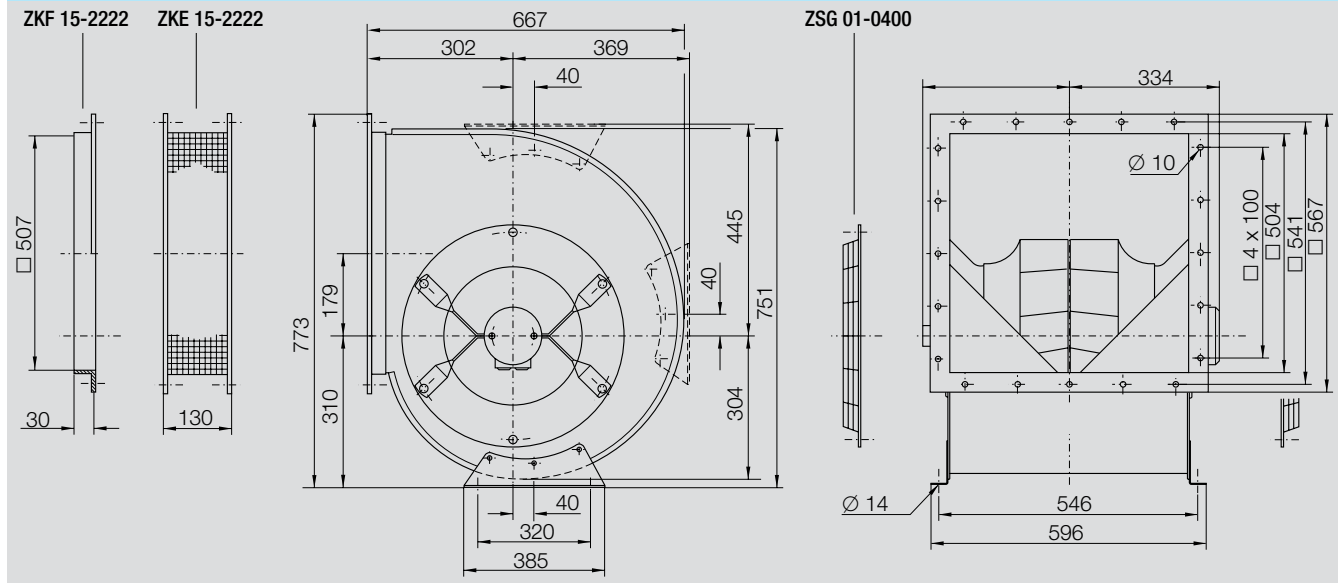
$$P_S = p_{sF} \times q_V / \eta_{sS}$$

$$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$$

$$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$$

③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.



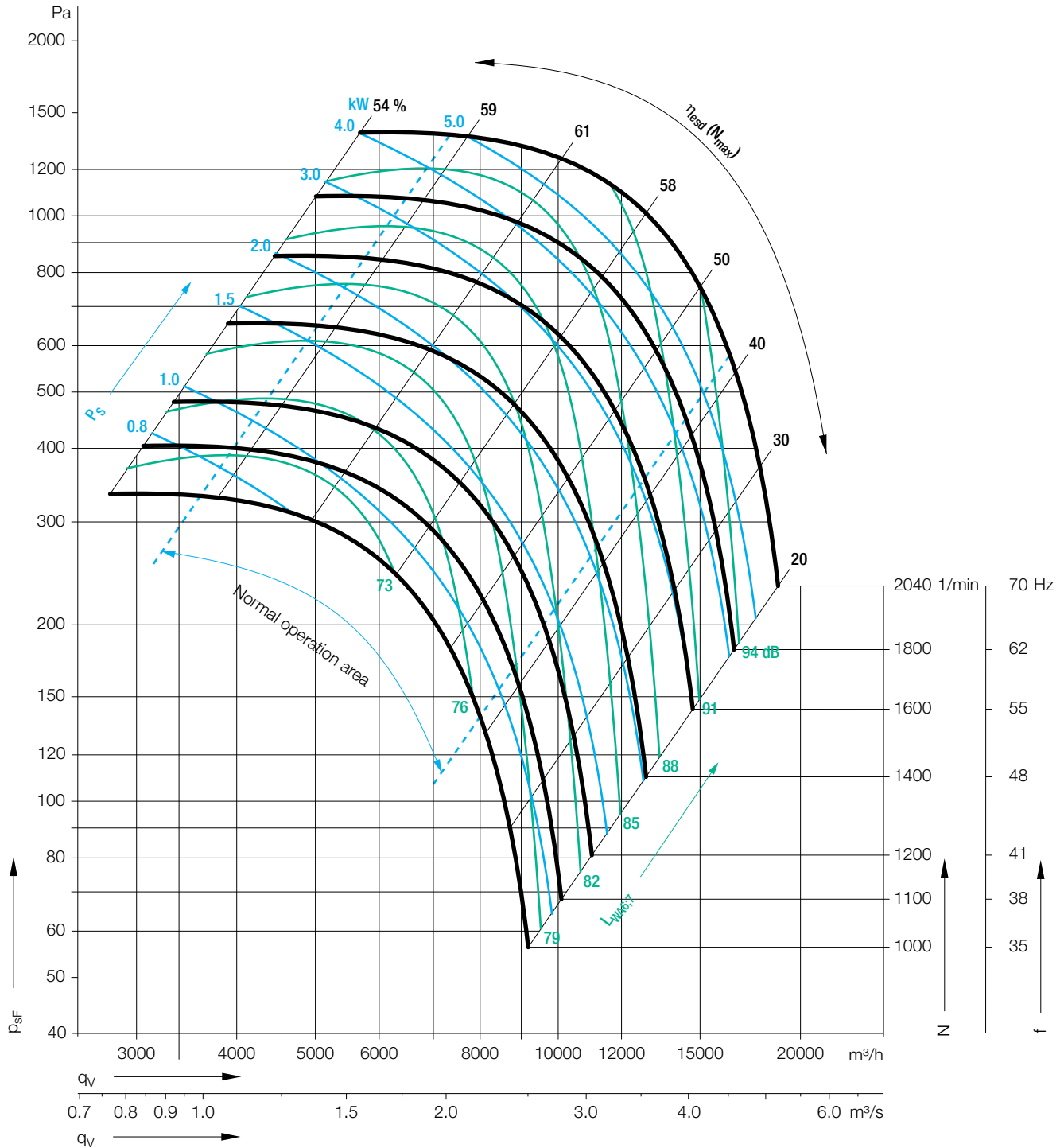
### Accessories

RZA 11-	Isolator (metal casing) ESH 22-	Frequency Inverter Unit MM420 for 3~ MM420 3AC 400V	Line Choke for 3~ 6SE6400-	Anti Vibration Rubber Buffers ZBD 01-
0400-4D	ESH 22-075-32	MM420 3AC 400V 5.50KW EMV B	6SE6400-3CC02-2CD3	ZBD 01-0606-A
0400-4D-50	ESH 22-075-32	-	-	ZBD 01-0606-A
0400-4D-60	ESH 22-075-32	-	-	ZBD 01-0606-A

# RZA 11-0450

## Technical Data

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



### Determination of the Octave level

#### Inlet side

Relative sound power level  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-2	1	2	0	-7	-12	-16	-22 dB
$> 1.4 q_{Vopt}$	-4	-2	1	0	-7	-10	-16	-24 dB

#### Discharge side

Relative sound power level  $L_{Wrel6}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-3	-5	-3	-1	-6	-16	-19	-27 dB
$> 1.4 q_{Vopt}$	-9	-8	-3	-1	-5	-14	-19	-29 dB

# RZA 11-0450

Technical Data										
	Speed control	Nominal voltage	Nominal frequency	Nominal motor power	Max. power consumption	Max. output current (FC)	Max. operating frequency	Max. fan speed	Max. media temperature	Weight
RZA 11-		V	Hz	kW	kW	A	Hz	1/min	°C	kg
0450-4D	③	400	87	5.20	6.6	15.8	70	2040	40	85

Technical Data										
	Speed control	Nominal voltage	Mains frequency	Max. power consumption	Nominal motor current	Max. operating frequency	Nominal motor speed	Max. fan speed	Max. media temperature	Weight
RZA 11-		V	Hz	kW	A	Hz	1/min	1/min	°C	kg
0450-4D-50	*	400	50	2.47	5.70	70	1480	2040	40	85
0450-4D-60	*	460	60	4.15	6.80	70	1770	2040	40	85

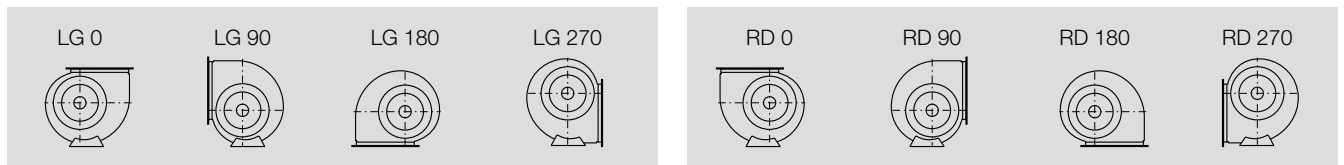
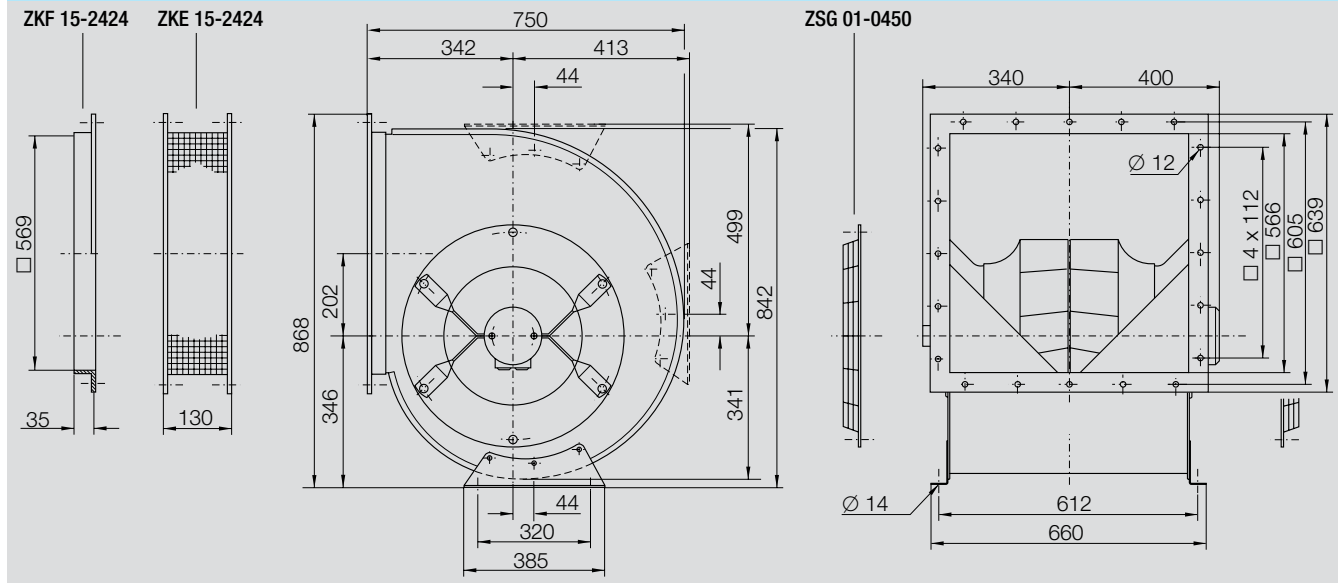
### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

$P_S = p_{sF} \times q_V / \eta_{sS}$   
 $L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$   
 $L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$   
 ③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.



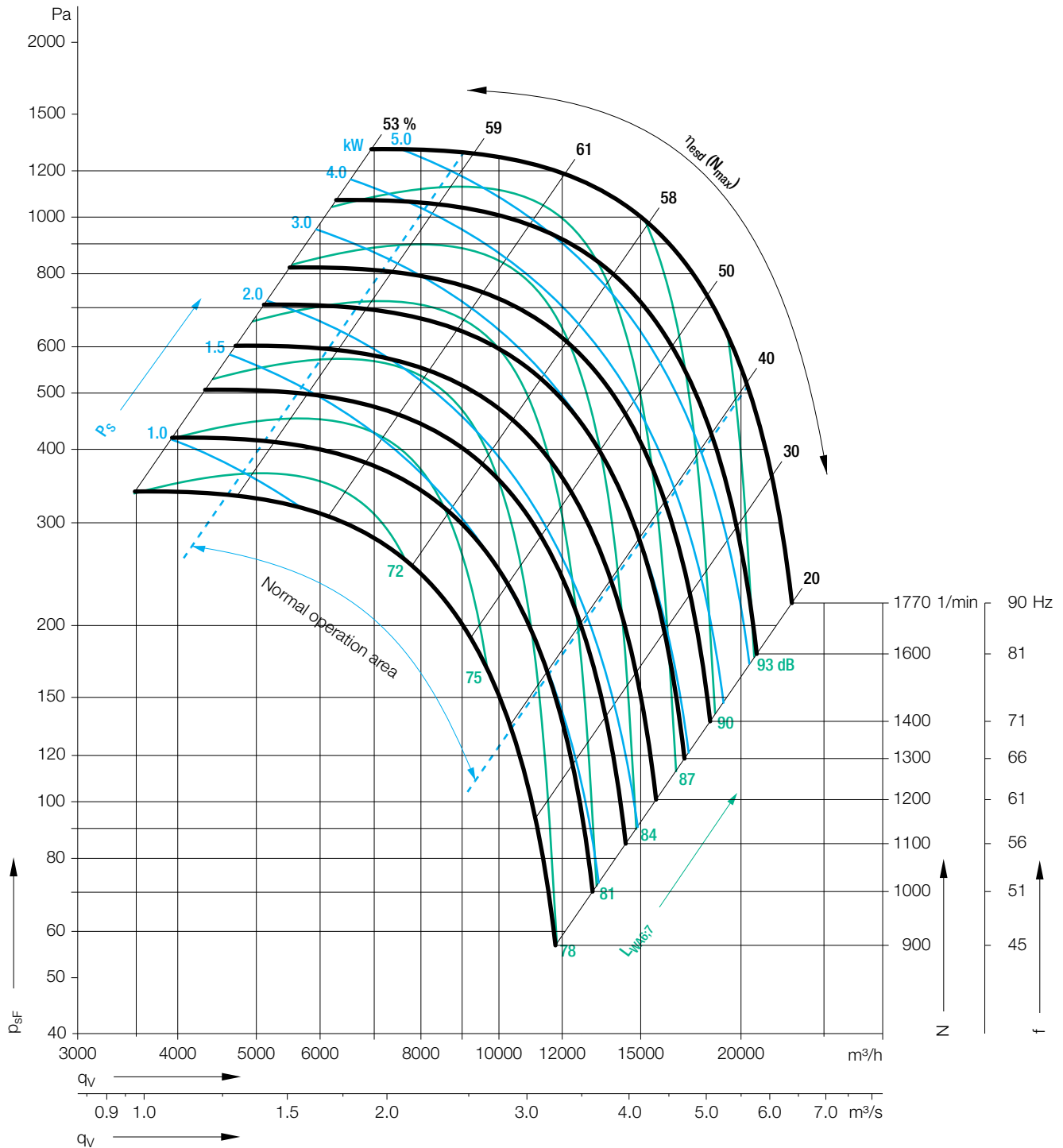
### Accessories

	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0450-4D	ESH 22-075-32	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	ZBD 01-1010-A
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0450-4D-50	ESH 22-075-32	-	-	ZBD 01-1010-A
0450-4D-60	ESH 22-075-32	-	-	ZBD 01-1010-A

# RZA 11-0500

## Technical Data

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



### Determination of the Octave level

#### Inlet side

Relative sound power level  $L_{Wrel17}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-2	1	2	0	-7	-12	-16	-22 dB
$> 1.4 q_{Vopt}$	-4	-2	1	0	-7	-10	-16	-24 dB

#### Discharge side

Relative sound power level  $L_{Wrel16}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-3	-5	-3	-1	-6	-16	-19	-27 dB
$> 1.4 q_{Vopt}$	-9	-8	-3	-1	-5	-14	-19	-29 dB

# RZA 11-0500

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Nominal frequency Hz	Nominal motor power kW	Max. power consumption kW	Max. output current (FC) A	Max. operating frequency Hz	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0500-6D	③	400	87	5.90	7.3	15.9	90	1770	40	103

Technical Data										
RZA 11-	Speed control	Nominal voltage V	Mains frequency Hz	Max. power consumption kW	Nominal motor current A	Max. operating frequency Hz	Nominal motor speed 1/min	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0500-6D	*	400	50	1.39	5.70	90	990	1770	40	103
0500-6D-60	*	460	60	2.34	5.80	90	1180	1770	40	103

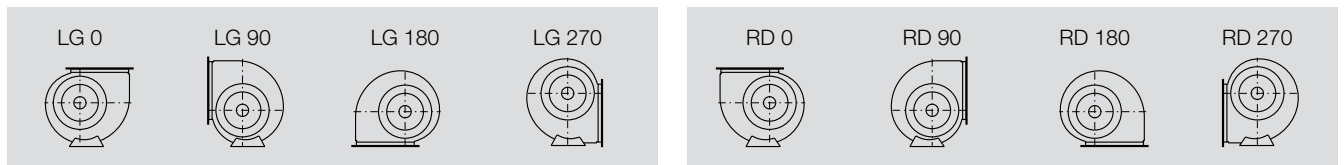
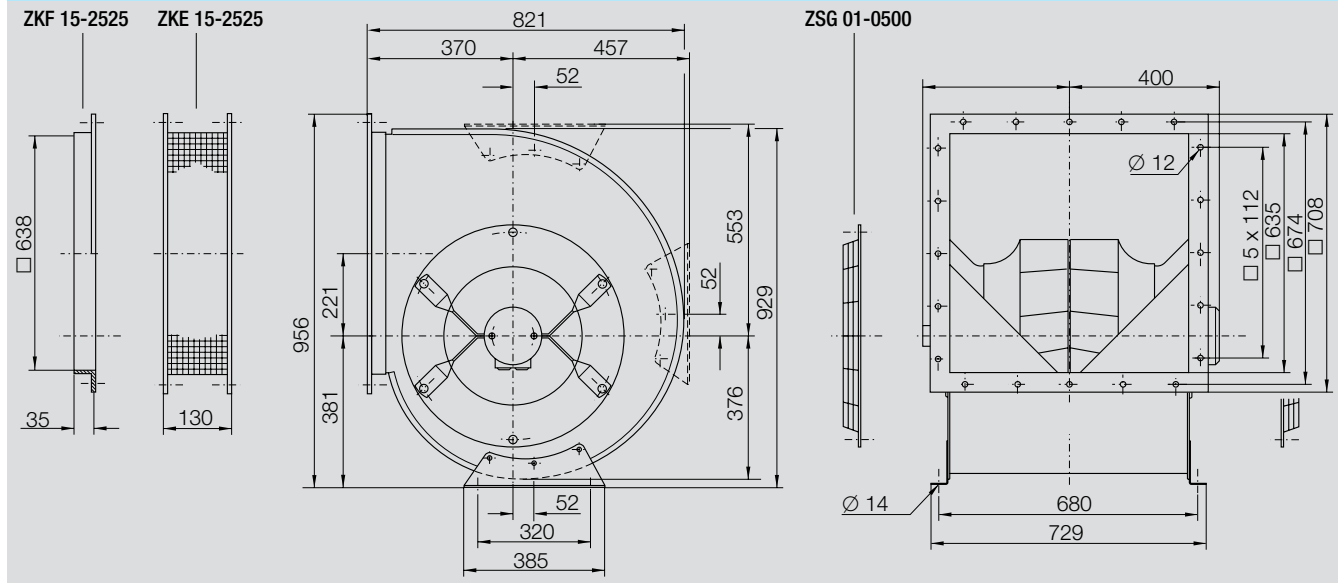
### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

$P_S = p_{sF} \times q_V / \eta_{sS}$   
 $L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$   
 $L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$   
 ③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.

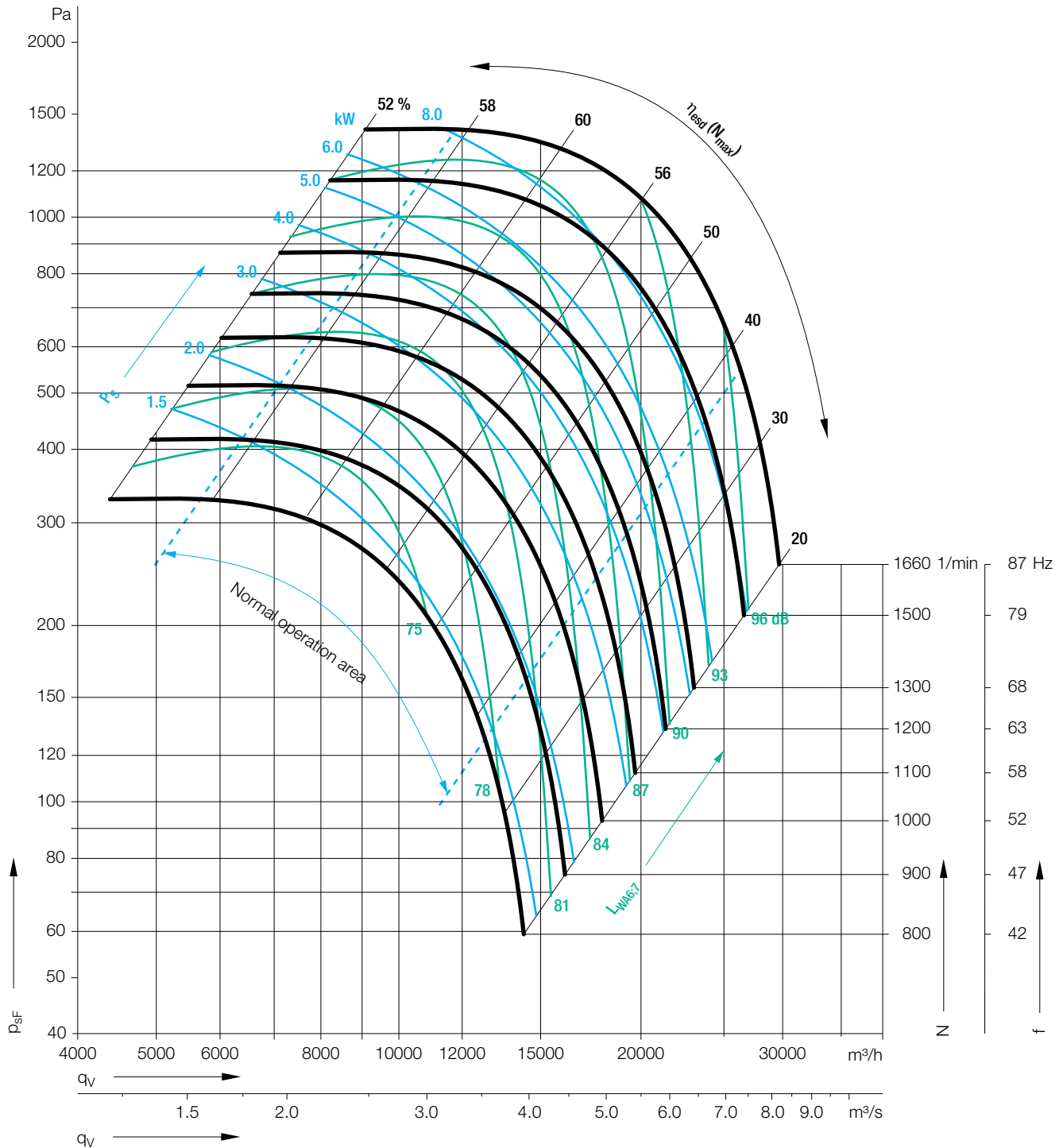


### Accessories

RZA 11-	Isolator (metal casing) ESH 22-	Frequency Inverter Unit MM420 for 3~ MM420 3AC 400V	Line Choke for 3~ 6SE6400-	Anti Vibration Rubber Buffers ZBD 01-
0500-6D	ESH 22-075-32	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	ZBD 01-1010-A
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0500-6D-50	ESH 22-075-32	-	-	ZBD 01-1010-A
0500-6D-60	ESH 22-075-32	-	-	ZBD 01-1010-A

**Technical Data**

Density of media **1.15 kg/m<sup>3</sup>**.  
 Tolerance class **2** according to **DIN 24166**.  
 Measured in installation **A** according to **ISO 5901** (unducted).



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel17}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-2	1	2	0	-7	-12	-16	-22 dB
$> 1.4 q_{Vopt}$	-4	-2	1	0	-7	-10	-16	-24 dB

**Discharge side**

Relative sound power level  $L_{Wrel16}$  at octave band correction factors  $f_c$ .

Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 1.4 q_{Vopt}$	-17	0	1	-1	-6	-16	-19	-27 dB
$> 1.4 q_{Vopt}$	-9	-3	1	-1	-5	-14	-19	-29 dB



# RZA 11-0560

## Technical Data

RZA 11-	Speed control	Nominal voltage V	Nominal frequency Hz	Nominal motor power kW	Max. power consumption kW	Max. output current (FC) A	Max. operating frequency Hz	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0560-6D	③	400	87	9.20	10.9	21.2	87	1660	40	154

## Technical Data

RZA 11-	Speed control	Nominal voltage V	Mains frequency Hz	Max. power consumption kW	Nominal motor current A	Max. operating frequency Hz	Nominal motor speed 1/min	Max. fan speed 1/min	Max. media temperature °C	Weight kg
0560-6D-50	*	400	50	2.3	9.10	87	980	1660	40	154
0560-6D-60	*	460	60	3.7	9.20	87	1160	1660	40	154

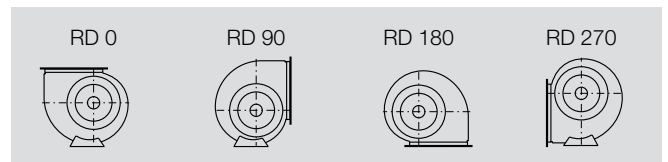
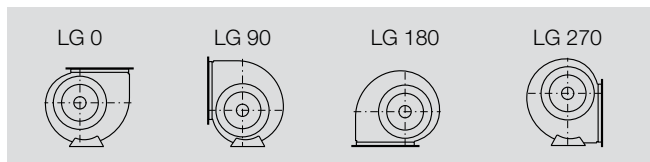
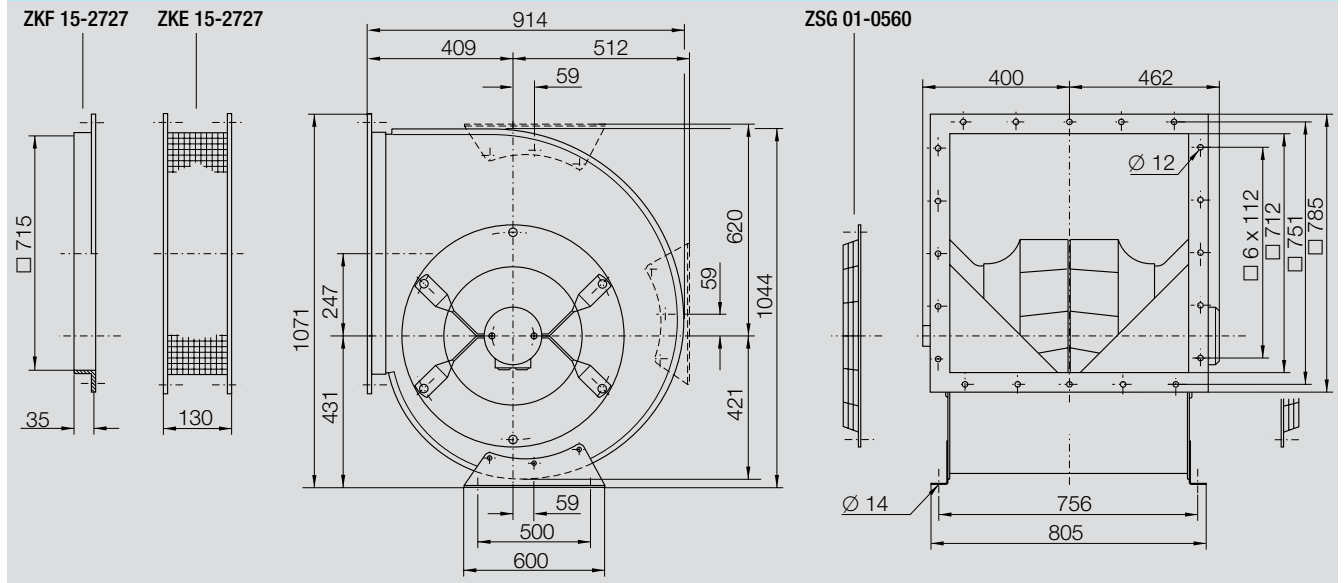
### Frequency Inverter Parameters

The following curves show the fans operating with frequency control: The nominal frequency of the inverter is 87 Hz, i.e. the input frequency 400 V is increased to 87 Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency ( $\eta_{inverter} \times \eta_{motor} \times \eta_{impeller}$ ) is expressed as a parabola. The set up parameters for each inverter are provided in the accompanying literature.

### Calculations formula

$P_S = p_{sF} \times q_v / \eta_{sS}$   
 $L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$   
 $L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$   
 ③ = Stepless speed controllable via frequency converter  
 \* = No speed control available

### Dimensions in mm, Subject to change.



### Accessories

RZA 11-	Isolator (metal casing) ESH 22-	Frequency Inverter Unit MM420 for 3~ MM420 3AC 400V	Line Choke for 3~ 6SE6400-	Anti Vibration Rubber Buffers ZBD 01-
0560-6D	ESH 22-0110-32	MM420 3AC 400V 11.0KW EMV B	6SE6400-3CC03-5CD3	ZBD 01-1010-A
RZA 11-	ESH 22-	MM420 3AC 400V	6SE6400-	ZBD 01-
0560-6D-50	ESH 22-0110-32	-	-	ZBD 01-1010-A
0560-6D-60	ESH 22-0110-32	-	-	ZBD 01-1010-A

# RZA 11-0225/-0560

## Specifications



### High performance centrifugal fan RZA rotavent

double inlet, direct driven with an LowSlip external rotor motor.

Lap jointed scroll of galvanised sheet steel with discharge flange and bolt on multipositioned feet.

High performance impeller with 11 backward curved blades (size 0225/-0280), with 12 hollow section true aerofoil blades (size 0315/-0560), inclined obliquely to the shaft axis, welded in position and coated.

Throat plate inclined obliquely in opposition to blade inclination.

Inlet cones matched to the impeller to reduce entry losses.

Impeller fixed to the rotor of the LowSlip motor in IP54 type protection, completely maintenance free, statically and dynamically balanced to DIN ISO 1940, vibration isolated mounting, ready to connect with a metal connection box.

The motor efficiency is optimised with the frequency inverters, speed control going from 0 to 100 %. The capability of maintaining a constant operational speed.

Performance data in precision class 2 according to DIN 24166.

## Ventilator Daten

Fan type	RZA 11-	
Casing position (anticlockwise)	LG	
Volume flow	$q_V$	m <sup>3</sup> /h
Static pressure	$p_{sF}$	Pa
Air density at fan inlet	$\rho_1$	kg/m <sup>3</sup>
Air temperature	t	°C
Power consumption system	$P_e (P_G)$	kW
Output current Inverter	$I_A$	A
System efficiency	$\eta_{esd}$	%
Operating frequency	f	Hz
Max. operating frequency	$f_{max}$	Hz
Weight	m	kg

## Fittings / Accessories

- ▶ Drain plug R1/2"
- ▶ Inspection door
- ▶ Corrosion protection S40
- ▶ Volumeter IMV13
- ▶
- ▶ Discharge flange
- ▶ Discharge flexible connection
- ▶ Inlet guards
- ▶ Rubber AVM
- ▶
- ▶ Frequency inverter unit
- ▶ 3 phase line reactor
- ▶ Difference pressure sensor
- ▶ Universal control device
- ▶ Isolator

# Technical Data

# Fittings / Accessories

## Technical Data according to ErP-REGULATION 327/2011/EU

RZA 11-	Overall efficiency $\eta_e$ [%]	Measurement category	Efficiency category	achieved efficiency grade at optimum energy efficiency "N"	required efficiency grade acc. to ErP since		Speed control (VSD)	Rated motor power at optimum energy efficiency $P_e$ [kW]	Flow rate at optimum energy efficiency $q_v$ [m³/h]	Pressure at optimum energy efficiency $p_F$ [Pa]	Speed at optimum energy efficiency $N$ [1/min]	"specific ratio"
					2013	2015						
0225-4D	54.7	B	TOTAL	68.7	61	64	must be installed	0.46	1748	523	2695	1.005
0250-4D	57.1	B	TOTAL	68.9	61	64	must be installed	0.75	2361	655	2700	1.007
0280-4D	58.2	B	TOTAL	66.1	61	64	must be installed	1.77	4061	914	2900	1.009
0315-4D	59.1	B	TOTAL	65.5	61	64	must be installed	2.48	4884	1082	2750	1.011
0355-4D	62.7	B	TOTAL	67.4	61	64	must be installed	3.60	6679	1218	2620	1.012
0400-4D	68.0	B	TOTAL	73.5	61	64	must be installed	3.05	7683	973	2030	1.010
0450-4D	65.6	B	TOTAL	68.1	61	64	must be installed	5.76	10753	1265	2040	1.013
0500-6D	66.0	B	TOTAL	68.0	61	64	must be installed	6.49	12861	1200	1770	1.012
0560-6D	64.2	B	TOTAL	64.4	61	64	must be installed	9.57	16748	1322	1660	1.013

## Accessories

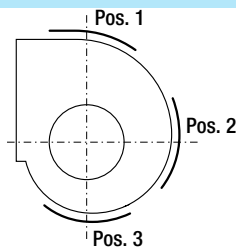
All options and accessories must be specified separately. Please take the technical data and dimensions from the corresponding page of the catalogue.

## Drain Plug



If the fan is installed outside, or if conveying a medium containing humidity, condensation of water may accumulate inside the fan scroll. For extraction of this water a condense water drain has to be installed at the lowest point of the scroll. The drain will be provided with a thread R1/2" for connecting it to a piping. At order please indicate the required casing position.

## Inspection Door



For the purposes of maintenance and cleaning there is an opening, which can be securely closed by means of an access door, in the fan casing. As it can only be opened with a tool, the access door complies with safety and accident prevention regulations. Additional securing with locking bars can be supplied on request. The site and orientation of the inspection opening depends on the casing position. The position should be specified when ordering according to the following diagram: e.g. Access door, Pos. 2.

**Dimensions** in mm, subject to change.

RZA 11-		RZA 11-	
0225/-0315	210 × 210	0355/-0560	310 × 310

## Corrosion Protection Systems

Nicotra Gebhardt fans are treated with high quality corrosion protection as standard. Under extreme operating conditions, however, additional corrosion protection is advisable.

### Corrosion protection - Class S40

Degreasing, ironphosphating

#### ► Powder coating

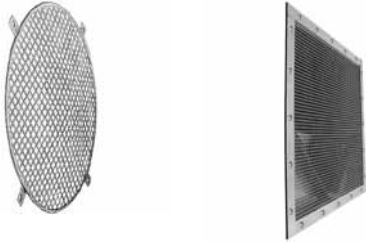
Layer thickness  $\geq 40 \mu\text{m}$ , Colour RAL 7039

#### ► Wet lacquering

Layer thickness  $\geq 40 \mu\text{m}$  (primer + lacquer finish), Colour RAL 7039

# Fittings / Accessories

## Protection guards



The fans are designed for installation in equipment and as standard are not equipped with protective guards.

**They should not be put into operation before all protective devices are fitted and connected!**

Protective measures must be carried out as set out in DIN EN ISO 12100 "Safety of machinery - Basic concepts, general principles for design".

If the application of the fan allows free access to the inlet and discharge apertures, safety devices must be put in place on the fan in accordance with DIN EN ISO 13857! Suitable safety guards are available as an optional extra.

## Flanges and Flexible Connections



Made from galvanized or painted steel, to connect ducts and system components to the fan outlet side.

Connecting piece with elastic intermediate section for the vibration or impact-noise decoupled connection of the fan to the system or unit. Made out of two connecting flanges with elastic intermediate section.

### Temperature range / Application

- ▶ Standard up to +80 °C
- ▶ ATEX max. +60 °C

## Anti Vibration Rubber Buffers



Anti Vibration Mounts (AVM) are designed to prevent noise and vibrations being transmitted through the base of the fan. AVMs should be mounted beneath the fan base frame so the weight and spring deflections are evenly distributed.

They should not be mounted symmetrically around the centre of gravity of the system when idle, because a counter force is induced into the system by the pressure created by the working fan.

It is difficult for the manufacturer to establish the position of the AV mounts to suit all types of application.

Vibration and noise insulation can also be improved by ensuring that the fan is connected to its external environment by a flexible coupling.

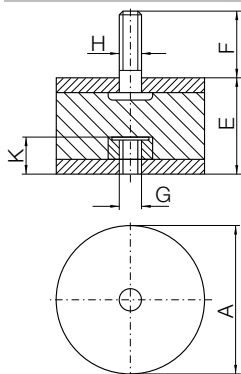
### ▶ Rubber buffers

for both vibration and noise insulation at fan speeds above 1400 rpm or 850 rpm

### ▶ Rubber buffers

for noise insulation only at fan speeds under 800 rpm or 1700 rpm

Dimensions in mm, subject to change.

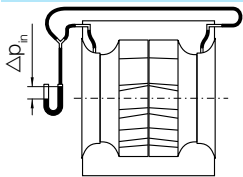


ZBD	ZBD	A	E	F	G	H	K
01-0405A*	01-0405C*	20	25	16	M6	M6	6.5
03-0503A*	03-0503C*	25	15	11	M6	M6	6.5
01-0504A*	01-0504C*	25	20	11	M6	M6	6.5
03-0806A*	03-0806C*	40	30	21	M8	M8	9.5
03-1007A*	03-1007C*	50	34	26.5	M10	M10	10.5
03-1510A*	03-1510C*	75	50	39	M12	M12	12.5
02-2008A*	02-2008C*	100	40	44	M16	M16	16.5

\* A = for U-profile; C = for CC-profile

# Fittings / Accessories

## Volumeter

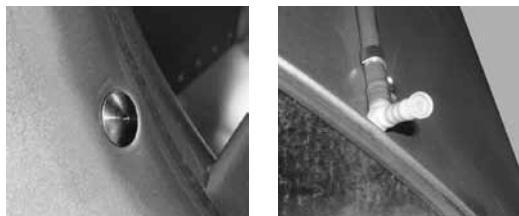


$$q_v = K \times \sqrt{\frac{2}{\rho} \times \Delta p_{Dü}}$$

With the flow measuring device it is possible to easily measure / monitor the flow rate after the fan is installed. A pressure tapping at a predetermined position on the inlet cone is provided whereby the differential pressure in relation to the static pressure is measured in front of the inlet cone in a static atmosphere.

- ▶ volume flow  $q_v$  [m<sup>3</sup>/h]
- ▶ calibration factor  $K$  [m<sup>2</sup>s/h]
- ▶ density of media  $\rho$  [kg/m<sup>3</sup>]
- ▶ pressure difference at cone  $\Delta p_{Dü}$  [Pa]

In order to calculate the flow rate, a calibrating factor "K" is required. This factor is determined by comparative measurement on a standard test rig.



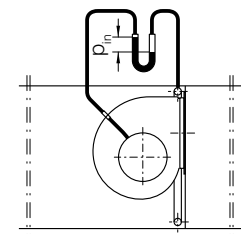
Measuring connector in inlet cone  
Hose pipe to connecting piece in the side wall  
Connecting piece (external diameter of 6mm) for the pressure measurement

### Calibration factors

RZA 11-	K [m <sup>2</sup> s/h]	RZA 11-	K [m <sup>2</sup> s/h]	RZA 11-	K [m <sup>2</sup> s/h]
0225	112	0315	180	0450	330
0250	125	0355	215	0500	410
0280	160	0400	255	0560	550

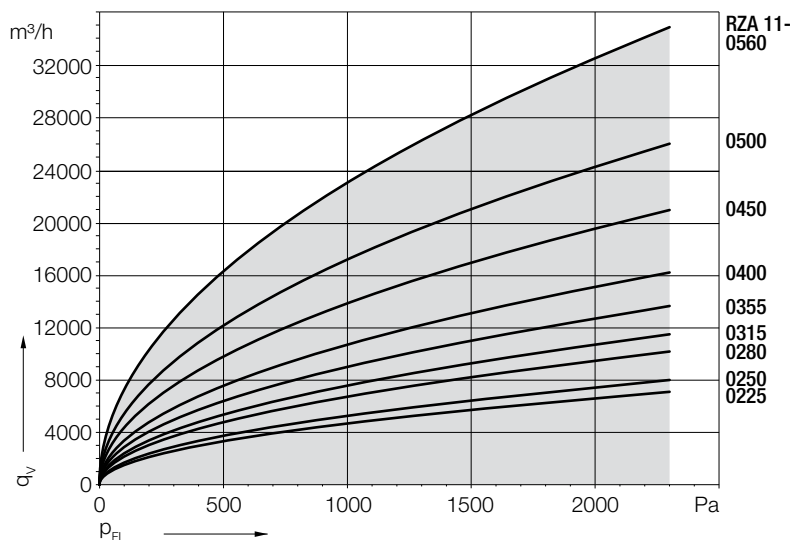
### Standard-calibration factor K

Where fans are built into a plenum, the pressure difference between the static pressure in the inlet side plenum and the pressure on the inlet cone is to be measured. It must be ensured that the static pressure to be measured is in front of the inlet cone and is not tampered by dynamic pressure fractions. It is often recommended to arrange a ring of points on the wall facing the outlet side as illustrated in the sketch. When using the K-factors specified below, a minimum clearance of 0.5×D between the inlet cone of the fan and the side wall of the plenum must be maintained. Indentations that obstruct the flow to the cone can lead to faults when measuring the flow rate. In the event that the differential pressure is fed via a pressure sensor, the signal can also be used for regulating purposes.



## Volume flow determination

With the represented chart and a measured difference pressure at the nozzle can be determined the volumes in the indicated density. The chart can be used also to the determination of the needed pressure area of a manometer. In addition the difference pressure is determined at the nozzle for the maximally appearing volume current with the chart.



## Electrical accessories

Electrical accessories (Frequency converter, Differential pressure sensor, Universal control device, Isolator) see chapter "Accessories".

# Description

## Safety

The fans are designed for installation in equipment and as standard are not equipped with protective guards.

**They should not be put into operation before all protective devices are fitted and connected!**

Protective measures must be carried out as set out in DIN EN ISO 12100 "Safety of machinery - Basic concepts, general principles for design".

If the application of the fan allows free access to the inlet and discharge apertures, safety devices must be put in place on the fan in accordance with DIN EN ISO 13857! Suitable safety guards are available as an optional extra.

## Performance data

The performance curves of the fans are determined at the plenum test rig according to ISO 5801.

The curves show the pressure increase for a fan with free discharge as a function of the flow rate. The diagram scale is a double logarithmic one.

The throttle curves (system resistance parabolas) are then represented by straight lines.

All fan curve and related data are based on a reference density of  $\rho_1 = 1.15 \text{ kg/m}^3$  for the conveyed medium at fan intake.

For a medium density  $\rho_1$  different to this standard value the fan curves and the motor load, as a consequence, will be changing.

The efficiencies and power consumption given in the performance curves include all losses due to the motor and the frequency converter unit.

The data are established for a fan with free discharge i.e. without duct connection at the pressure side, installation A.

## Sound

Sound measurement and analysis are carried out in accordance with DIN 45635-38 "Sound measurement at machines; fans".

The sound data of the fan curves are given as "A" weighted sound power levels  $L_{WA}$ . The "A" weighted sound power level are identical for fan intake ( $L_{WA7}$ ) as well as for fan discharge ( $L_{WA6}$ ).

An approximation of the "A" weighted sound pressure levels  $L_{pA7}/L_{pA6}$  at a distance of 1 m at fan Inlet or discharge may be obtained by subtracting 7 dB from the relative "A" weighted sound power levels.

It should be noted that site acoustics, duct design, reverberation, natural frequencies etc. can all influence noise to a greater or lesser extent.

For more accurate calculations to determine noise protection measures, the sound power level in each octave band is of more value.

The noise correction data, in function of the fan speed and flow rate, are to be found with the corresponding table on the fan curve page.

▶ Inlet:  $L_{Wfc7} = L_{WA6/7} + L_{Wrel7}$   
 ▶ Discharge:  $L_{Wfc6} = L_{WA6/7} + L_{Wrel6}$

In some cases the noise level - calculated by this way - may in some cases be higher than expected at the blade passing frequency.

Blade passing frequency

$$f_{BP} = \frac{N \times z}{60}$$

$f_{BP}$  = Blade passing frequency in Hz

N = Fan speed in 1/min

z = No of blades ... sizes 0225/-0280 = 11  
 sizes 0315/-0560 = 12

## Media

This range of fans are specially designed for use into air handling units (AHU) and ventilation systems.

The centrifugal fans are ideal for conveying clean air. The allowed air temperature comes from -20 °C to +40 °C.

# Description

## Motors

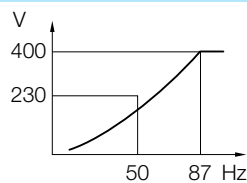
The specially developed integral motors are designated as having protection class IP54 and heat class F.

They are optimised to a high rate of efficiency, with speed that can be adjusted between 0 and 100 % via the frequency inverter.

The motors are fitted with an easily accessible metal clamping box. To prevent overloading, PTC are inserted in the windings of the motors. In conjunction with PTC release equipment or a frequency inverter with PTC connection, effective motor protection is guaranteed.

**The motors ex works are in star connection (Y). When operating with a frequency inverter, the links must be placed in delta connection (Δ) (see wiring diagram).**

## Electric connection



All fans are delivered ready for connection. Electrical connection takes place in accordance with the enclosed operating instructions and observing the relevant applicable local regulations and directives. Every fan is accompanied by a connection circuit diagram. You can also find the relevant circuit diagram online at: [www.nicotra-gebhardt.com](http://www.nicotra-gebhardt.com).

### Frequency inverter operation

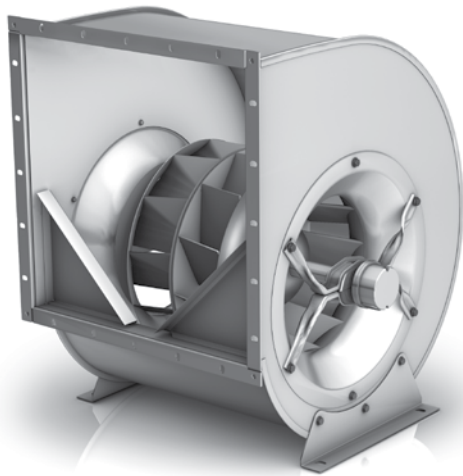
Frequency inverter operation with a nominal voltage of 400 V the edge frequency of 87 Hz must be set. The motor must then be delta (Δ) connected.

The inverter exit voltage is a square function of the frequency and the voltage-frequency-curve has a corresponding shape. In the case of direct mains (400 V) operation the motor should be star (Y) connected.

If frequency inverters are allocated by the customer, then it must be ensured that the voltage gradient of the frequency inverter does not exceed the figure of 500 V/μs and the maximum peak voltage at the motor terminals is kept to 1200 V. Depending on the frequency inverter employed and the length of cable between the frequency inverter and the motor, additional units (such as motor choke, active sinus filter, for example) may be needed to ensure that the limits named above are kept to.

**Non-compliance may lead to damage to the motor!**

# Highest system performance and best energy efficiency



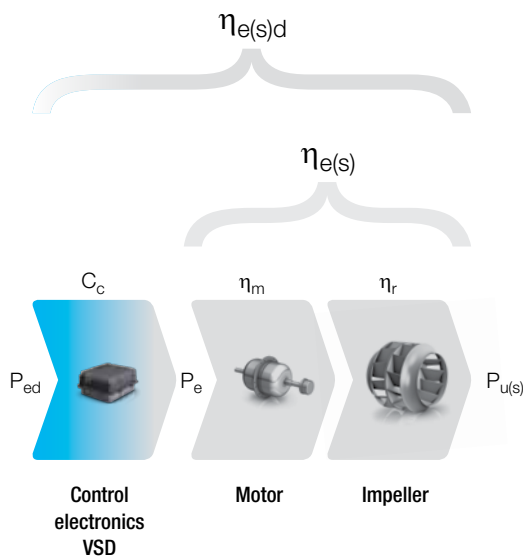
## The RZP rotavent serie

### Economic, quiet and compact.

Through the combination of two pioneering technologies - the aerodynamics of the rotavent impeller combined with energy efficient brushless integral motors, Nicotra Gebhardt has developed a series of controllable direct drive centrifugal fans setting new standards for economy and quiet operation.

### Your benefits:

- ▶ a greater motor efficiency due to the elimination of all slip losses and marked reduction in copper losses
- ▶ a compact range of fans from using built-in brushless DC motors (no belt drives)
- ▶ maintenance and wear free drive (no V-belts)
- ▶ short payback time due to high energy saving, especially with long operating periods
- ▶ higher comfort levels through particularly low noise fans and motors
- ▶ setting unrelated to mains frequency – same operating point for 50/60 Hz
- ▶ problem free speed control from 0 up to 100 %
- ▶ reduced motor heat from higher motor efficiency – reduced energy expenditure for the cooling systems



Make use of our technical selection program proSELECTA II. You receive all technical data for your fan, easy-quick-reliable.

### System efficiency

The given System Efficiency is the efficiency of the whole system and includes the individual efficiencies of the component Fan – Motor – Control electronics.

### ErP conformity

Depending on the model of the fan, the efficiency grade "N" set in accordance with the ErP Directive must be achieved from 2013 and 2015 respectively. The efficiency grade designates a parameter in the calculation of the target energy efficiency of a fan depending on the electric input power when operating at the optimal energy efficiency point. The figure of parameter "N" corresponds to the target energy efficiency with a power of 10 kW.

### Efficiency grade "N" to ErP Directive

Centrifugal fans with backward curved blades with housing

Measurement category	Efficiency category	Power range P [kW]	Target energy efficiency	Efficiency grade "N"	
				2013	2015
A, C	static	0.125 ≤ P ≤ 10	$\eta_{\text{target}} = 4.56 \cdot \ln(P) - 10.5 + N$	58	61
		10 < P ≤ 500	$\eta_{\text{target}} = 1.10 \cdot \ln(P) - 2.60 + N$		
B, D	total	0.125 ≤ P ≤ 10	$\eta_{\text{target}} = 4.56 \cdot \ln(P) - 10.5 + N$	61	64
		10 < P ≤ 500	$\eta_{\text{target}} = 1.10 \cdot \ln(P) - 2.60 + N$		

### Calculation example for fan type: RZP 11-0315-EC-51

Measurement category / Efficiency category = **B / TOTAL**  
 VSD power range at optimum  $P_{\text{ed}} = 4.12 \text{ kW}$  (<10 kW)  
 Efficiency grade according to ErP Directive  $N_{2015} = 64$

### Calculation of the ErP energy efficiency $\eta_{\text{target}}$ required 2015:

$\eta_{\text{target}} = 4.56 \cdot \ln(4.12) - 10.5 + 64$   $\eta_{\text{target}} \approx 60.0 \%$

### Fan energy efficiency $\eta_e$ :

System efficiency (total) by proSELECTA II  $\eta_e \approx 65.6 \%$

### Calculation of the Fan efficiency grade "N<sub>F</sub>":

$N_F = 65.6 - [4.56 \cdot \ln(4.12)] + 10.5$   $N_F = 69.6$

**Result:**  $\eta_e 65.6 \% > \eta_{\text{target}} 60.0 \%$  resp.  $N_F 69.6 > N_{2015} 64$

The energy efficiency of the fan surpasses the requirements of the ErP for 2015.

A technical data list according to ErP-REGULATION 327/2011/EU of all fans is available at the end of this chapter "RZP".



# The compact pioneering technology

## optimal Aerodynamics

Low turbulence velocity for both inlet and discharge due to the large free cross section and minimal flow restraint of the impeller, an example of aerodynamics and performance of the rotavent.

### Your benefits:

- ▶ negligible sensitivity to built in disturbances
- ▶ minor pressure loss with free discharge operation
- ▶ smaller, yet greater energy performance

## Acoustics

Reduction of high frequency noise levels is just one of the advantages of the rotavent, together with optimised brushless integral motors. Minimal sound levels due to low blade passing frequencies from the optimised impeller geometry of the rotavent. The impeller has obliquely inclined blades with trailing edges, and the throat plate is inclined opposingly.

### Your benefits:

- ▶ reduced size and costs of attenuation and silencers

## high efficiency





A 10% up to 20% better system efficiency is achieved in comparison to similar performance data for voltage controllable fan systems.

### Your benefits:

- ▶ low running costs
- ▶ high efficiency

## Die Produktvorteile des RZP

Die Hochwertigen und präzisen Bauelemente des rotavent, gefertigt mit modernsten Einrichtungen und höchster Wiederholgenauigkeit, bilden die Basis für ein Produkt welches auch höchsten Ansprüchen genügt:

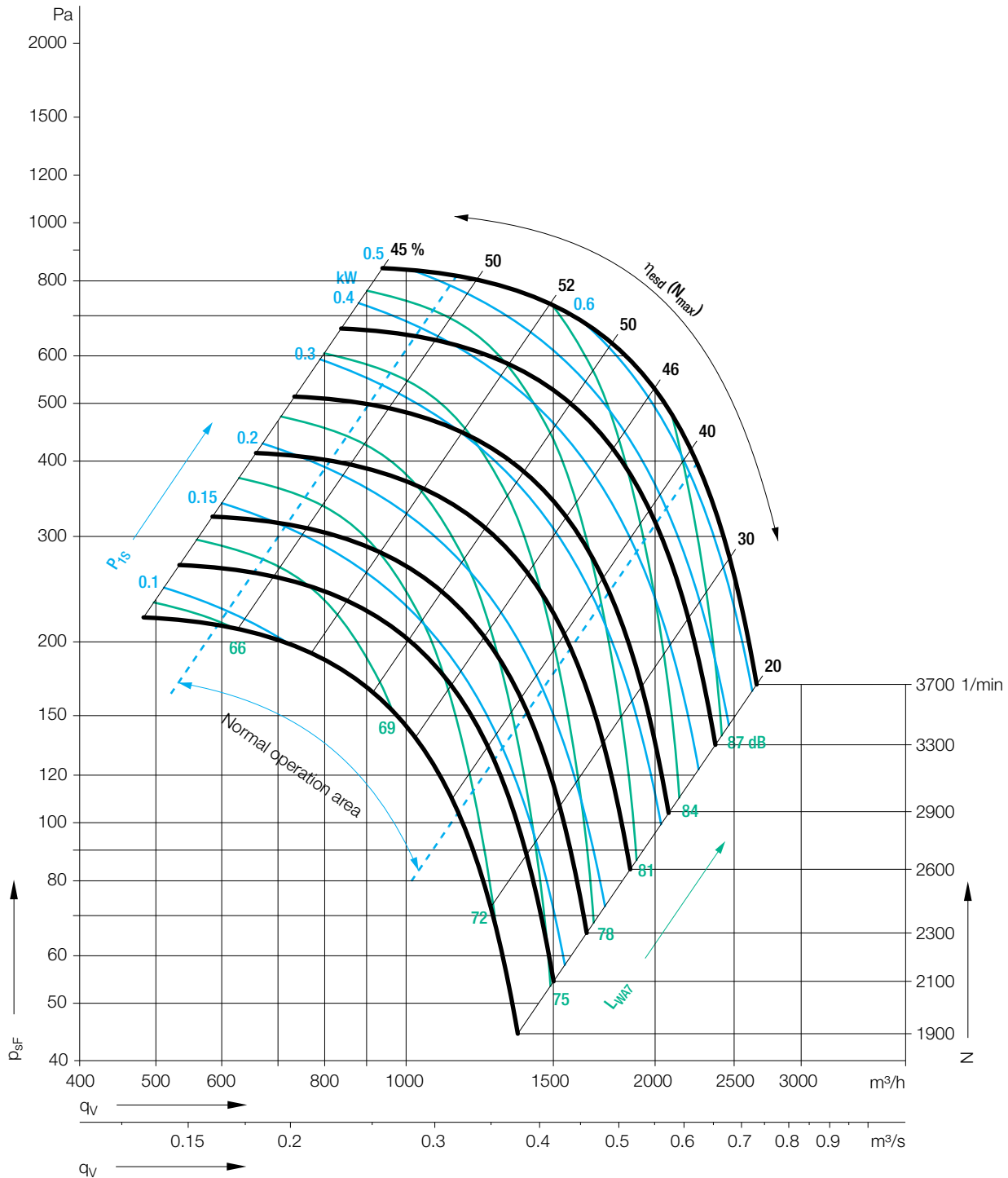
Version	Description	Figure
<b>RZP 11-0200/-0400</b>	Lock formed scroll made of galvanised steel sheet, equipped with multi-position bolted brackets and discharge flange. High performance impeller with backward curved true aerofoil blades, welded and coated.	
<b>The motors</b>	A drive unit involving an electronically commutated motor differs from the DC motors of old through it's lack of collector and carbon brushes. These subject to wear components have been replaced in electronically commutated motors with maintenance free electronics.	
<b>The vibration free motor suspension</b>	The anti-vibration system, specially developed for this application, ensure smooth running of the unit without transmission of vibration to other parts of the installation or to the building.	
<b>The trouble-free speed regulation</b>	from 0 to 100 % by an efficient Control electronics system. <b>Benefits:</b> ▶ high flexibility ▶ easy adaptation to varying operational conditions ▶ high efficiency at part load	

# RZP 11-0200-EC-11 EKE 07-0065-5E-IM

**Technical data**

$\rho_1 = 1.15 \text{ kg/m}^3$

Density of media **1.15 kg/m<sup>3</sup>**.  
Measured in installation **A** according to **ISO 5801** (unducted).



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel17}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 2342 \text{ 1/min}$	$0.70-1.4 q_{Vopt}$	-7	-10	+4	-4	-5	-10	-22	-27 dB
$> 2342 \text{ 1/min}$	$0.70-1.4 q_{Vopt}$	-12	-15	-8	-4	-4	-7	-15	-24 dB

**Discharge side**

Relative sound power level  $L_{Wrel16}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 2342 \text{ 1/min}$	$0.70-1.4 q_{Vopt}$	-8	-5	+2	-2	-5	-12	-21	-34 dB
$> 2342 \text{ 1/min}$	$0.70-1.4 q_{Vopt}$	-11	-11	-9	0	-7	-9	-14	-29 dB

# RZP 11-0200-EC-11 EKE 07-0065-5E-IM

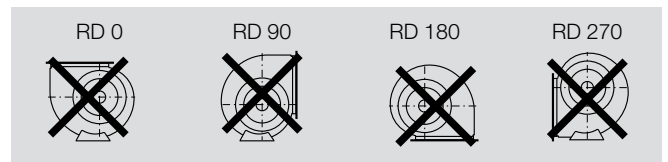
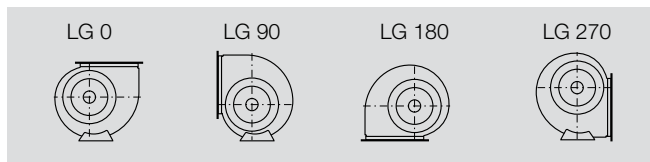
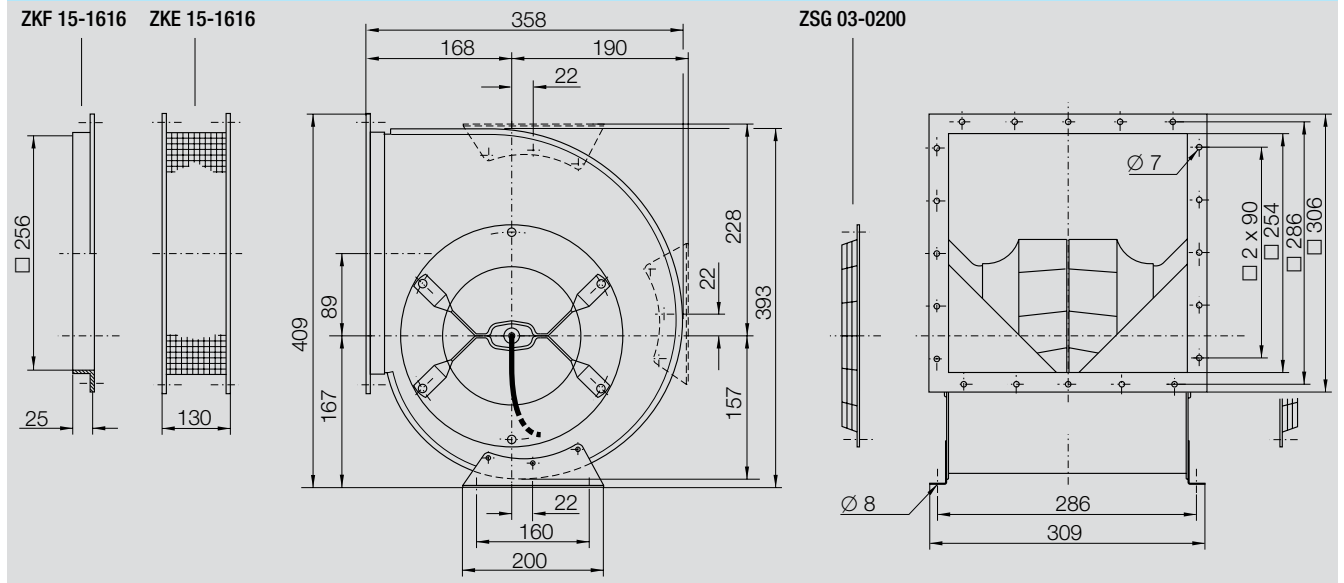
## Technical data

RZP 11-	Control electronics	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Motor protection class	Motor thermal class	Max. media temperature	Weight
0200-EC-11	EKE 07-0065-5E-IM	V		HZ	kW	A	1/min			°C	~kg
		230	1~	50/60	0.66	2.8	3700	IP54	F	40	15

The system efficiency  $\eta_{esd}$  is the efficiency of the whole system, Fan–Motor–Control electronics.

**Attention!** The performance curves relates to the fan in combination with the given Control electronics.

## Dimensions in mm, subject to change.



## Accessories

RZP 11-	Anti Vibration Rubber Buffers			
0200-EC-11	ZBD			
	ZBD 01-0506-A			

# RZP 11-0225-EC-12 EKE 07-0065-5E-IM

**Technical data**

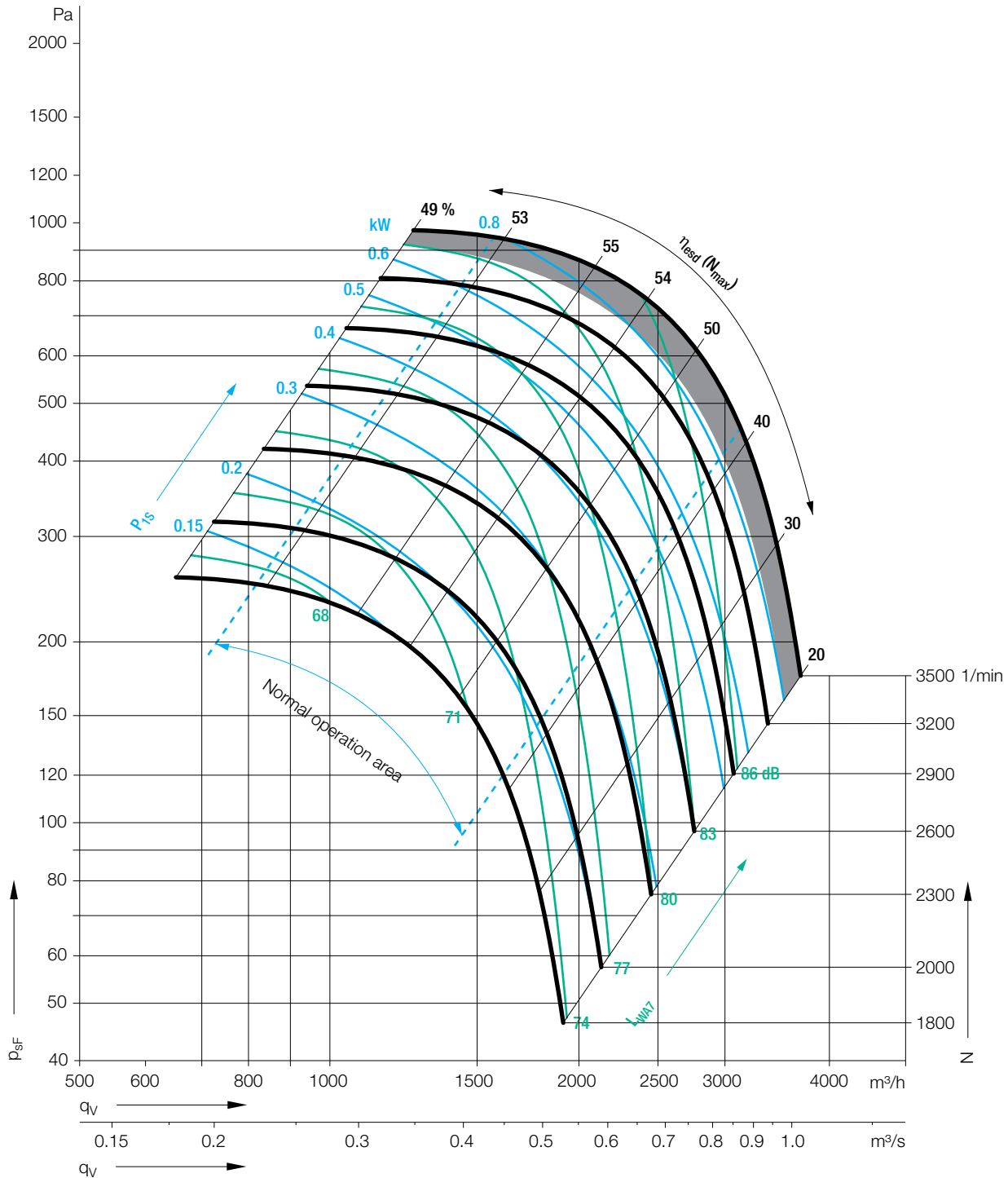
Please note coloured area!

■ do not use in this area

Density of media **1.15 kg/m<sup>3</sup>**.

Measured in installation **A** according to **ISO 5801** (unducted).

$\rho_1 = 1.15 \text{ kg/m}^3$



**Determination of the Octave level**

**Inlet side**

Relative sound power level L<sub>wrel7</sub> at octave band correction factors f<sub>c</sub>.

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 Q <sub>Vopt</sub>	-7	-9	0	-5	-3	-9	-19	-27 dB
>2342 1/min	0.70–1.4 Q <sub>Vopt</sub>	-12	-13	-8	-6	-3	-8	-13	-23 dB

**Discharge side**

Relative sound power level L<sub>wrel6</sub> at octave band correction factors f<sub>c</sub>.

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 Q <sub>Vopt</sub>	-9	-6	-2	-1	-5	-10	-20	-32 dB
>2342 1/min	0.70–1.4 Q <sub>Vopt</sub>	-12	-10	-7	-2	-4	-7	-13	-26 dB

# RZP 11-0225-EC-12 EKE 07-0065-5E-IM

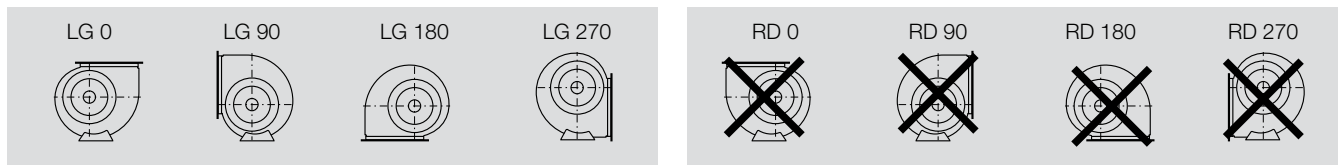
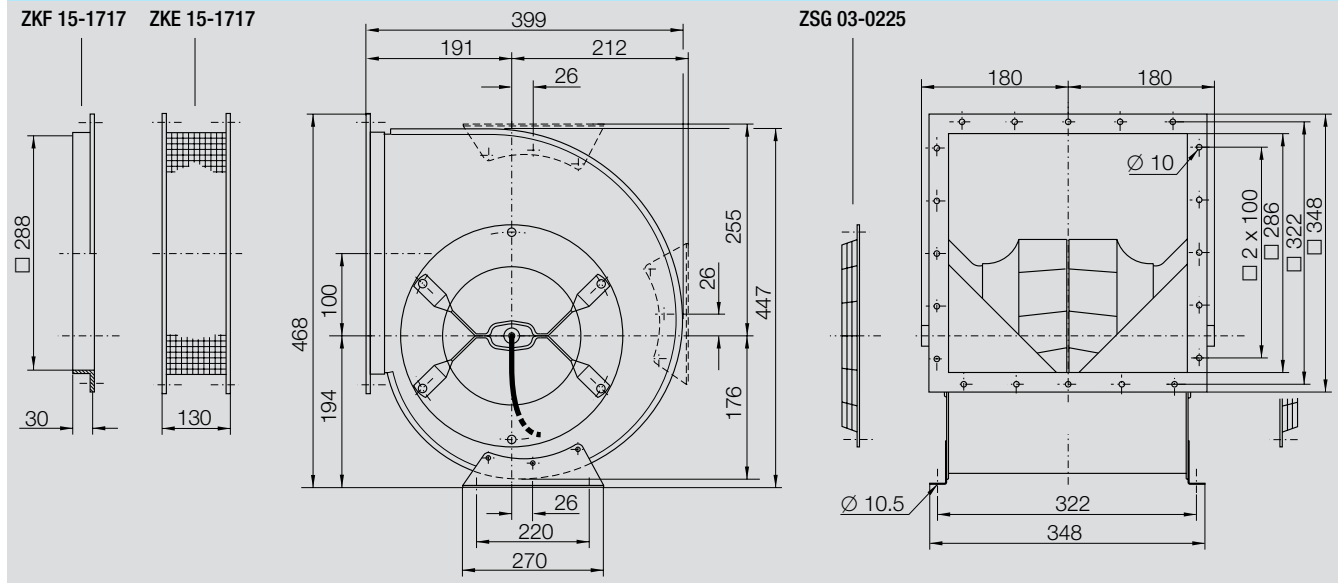
## Technical data

RZP 11-	Control electronics	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Motor protection class	Motor thermal class	Max. media temperature	Weight
0225-EC-12	EKE 07-0065-5E-IM	V		HZ	kW	A	1/min			°C	~kg
		230	1~	50/60	0.85	3.7	3400	IP54	F	40	20

The system efficiency  $\eta_{esd}$  is the efficiency of the whole system, Fan–Motor–Control electronics.

**Attention!** The performance curves relates to the fan in combination with the given Control electronics.

## Dimensions in mm, subject to change.



## Accessories

RZP 11-	Anti Vibration Rubber Buffers	ZBD
0225-EC-12	ZBD 01-0506-A	

# RZP 11-0250-EC-12 EKE 07-0065-5E-IM

**Technical data**

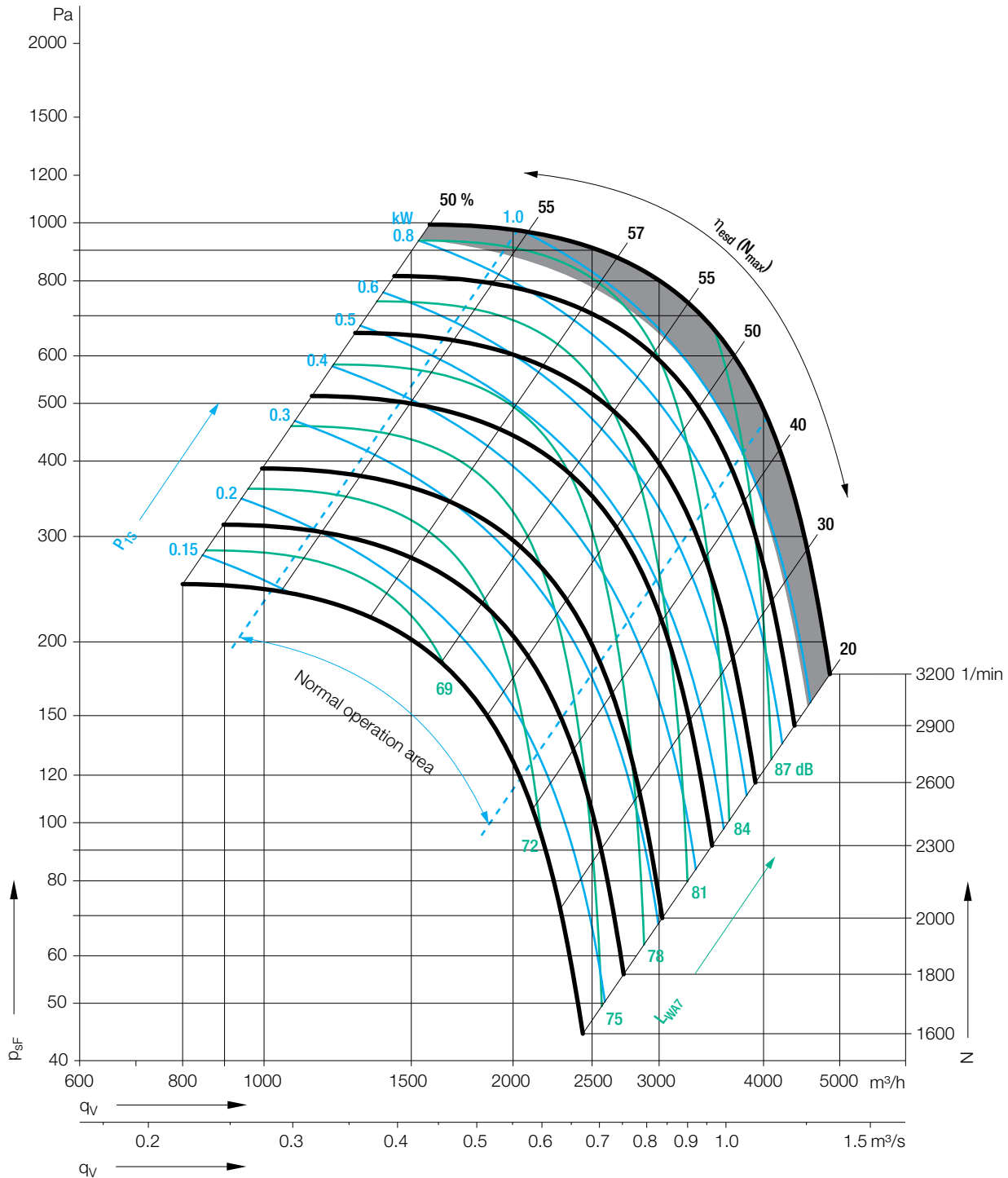
Please note coloured area!

■ do not use in this area

Density of media **1.15 kg/m<sup>3</sup>**.

Measured in installation **A** according to **ISO 5801** (unducted).

$\rho_1 = 1.15 \text{ kg/m}^3$



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 $Q_{Vopt}$	-5	-6	0	-4	-3	-10	-18	-28 dB
>2342 1/min	0.70–1.4 $Q_{Vopt}$	-9	-12	-7	-5	-3	-8	-12	-22 dB

**Discharge side**

Relative sound power level  $L_{Wrel6}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 $Q_{Vopt}$	-9	-8	-1	-1	-5	-11	-21	-31 dB
>2342 1/min	0.70–1.4 $Q_{Vopt}$	-12	-11	-8	-1	-5	-8	-16	-27 dB

# RZP 11-0250-EC-12 EKE 07-0065-5E-IM

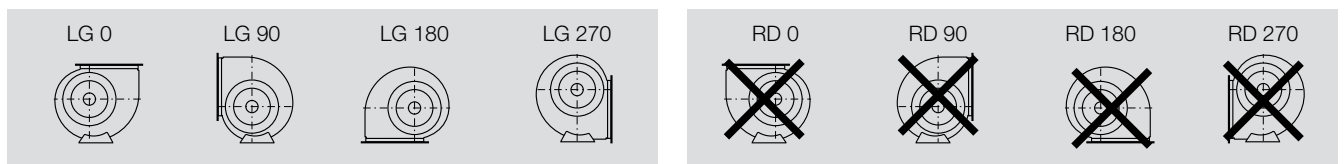
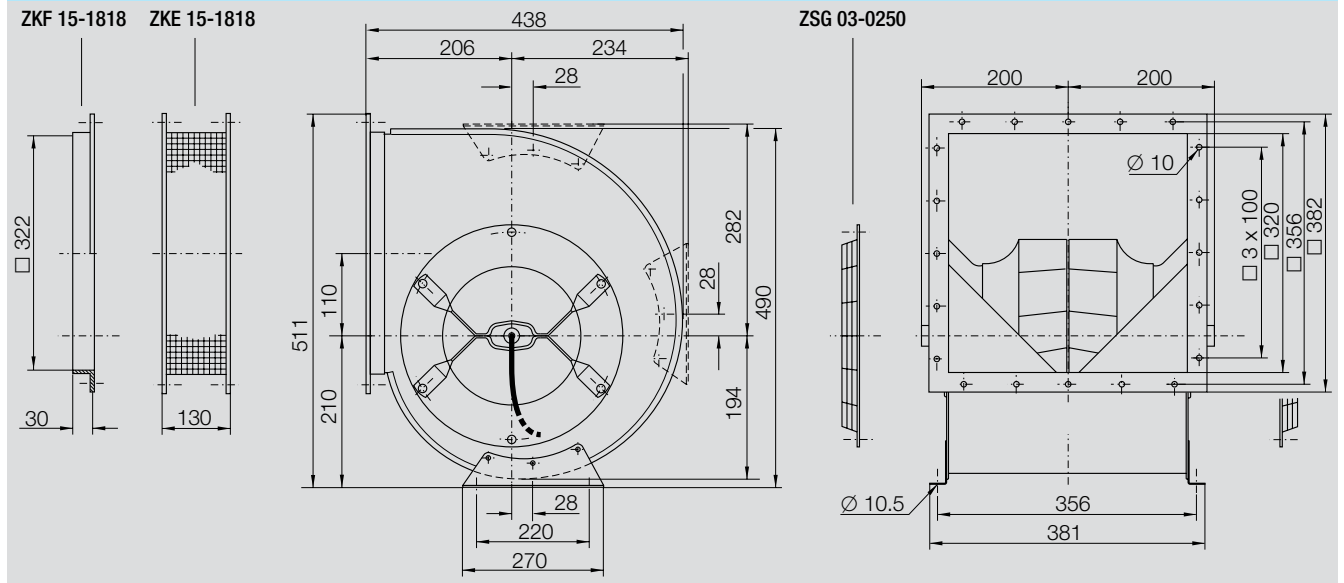
## Technical data

RZP 11-	Control electronics	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Motor protection class	Motor thermal class	Max. media temperature	Weight
0250-EC-12	EKE 07-0065-5E-IM	V		HZ	kW	A	1/min			°C	~kg
		230	1~	50/60	1.1	4.5	3100	IP54	F	40	22

The system efficiency  $\eta_{esd}$  is the efficiency of the whole system, Fan–Motor–Control electronics.

**Attention!** The performance curves relates to the fan in combination with the given Control electronics.

## Dimensions in mm, subject to change.



## Accessories

RZP 11-	Anti Vibration Rubber Buffers	ZBD
0250-EC-12	ZBD 01-0506-A	

# RZP 11-0280-EC-31 EKE 07-0065-5E-IM

**Technical data**

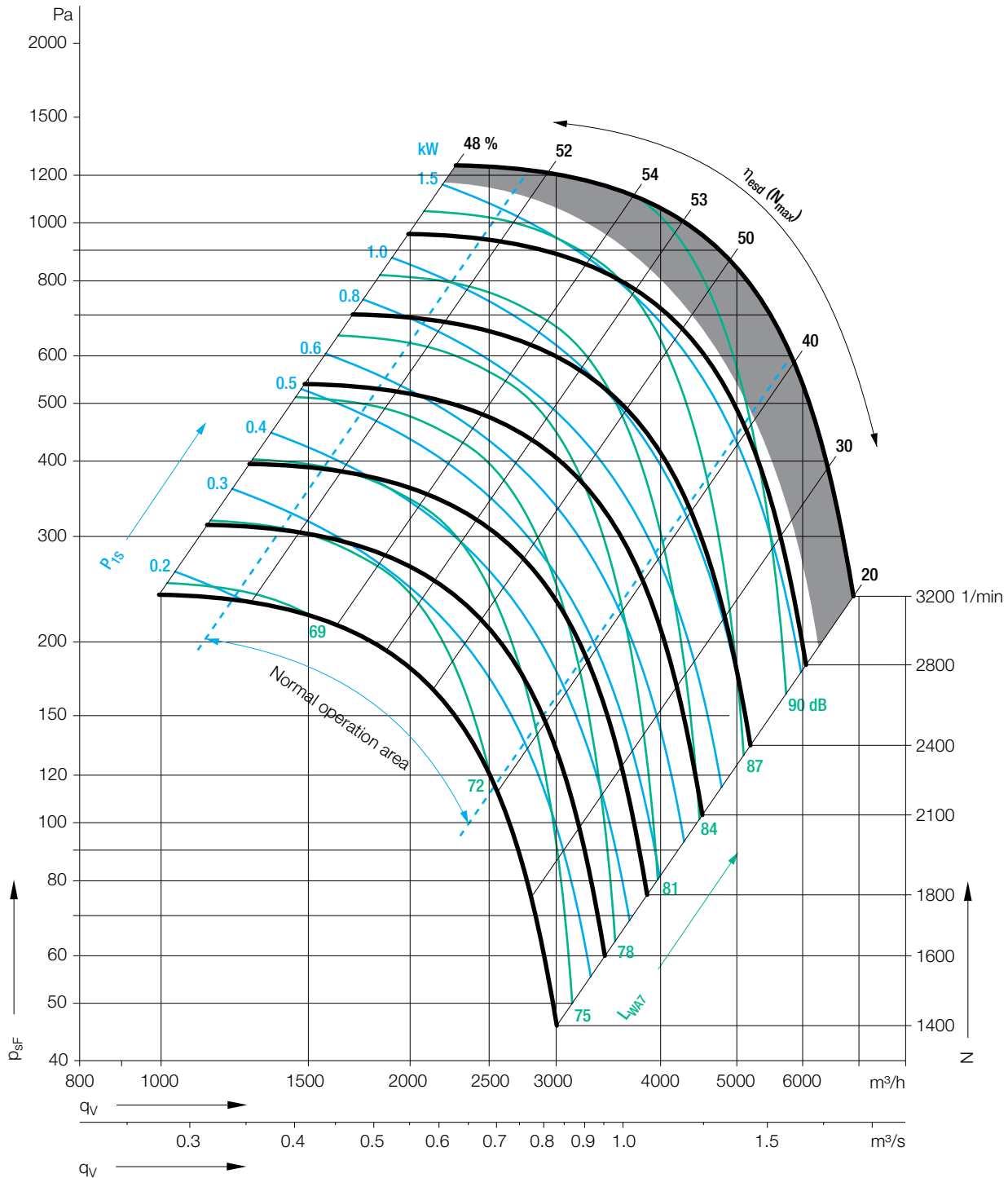
Please note coloured area!

■ do not use in this area

Density of media **1.15 kg/m<sup>3</sup>**.

Measured in installation **A** according to **ISO 5801** (unducted).

$\rho_1 = 1.15 \text{ kg/m}^3$



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 2342 \text{ 1/min}$	$0.70-1.4 \text{ } q_{Vopt}$	-4	-7	-1	-3	-3	-10	-17	-26 dB
$> 2342 \text{ 1/min}$	$0.70-1.4 \text{ } q_{Vopt}$	-9	-10	-7	-5	-3	-8	-12	-22 dB

**Discharge side**

Relative sound power level  $L_{Wrel6}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
$\leq 2342 \text{ 1/min}$	$0.70-1.4 \text{ } q_{Vopt}$	-7	-7	-2	0	-5	-10	-20	-31 dB
$> 2342 \text{ 1/min}$	$0.70-1.4 \text{ } q_{Vopt}$	-11	-9	-6	-1	-5	-8	-15	-26 dB



# RZP 11-0280-EC-31 EKE 07-0065-5E-IM

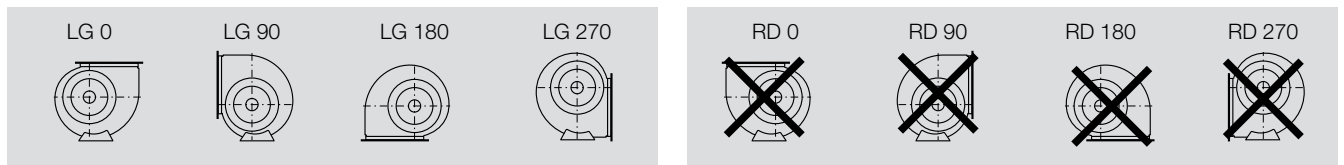
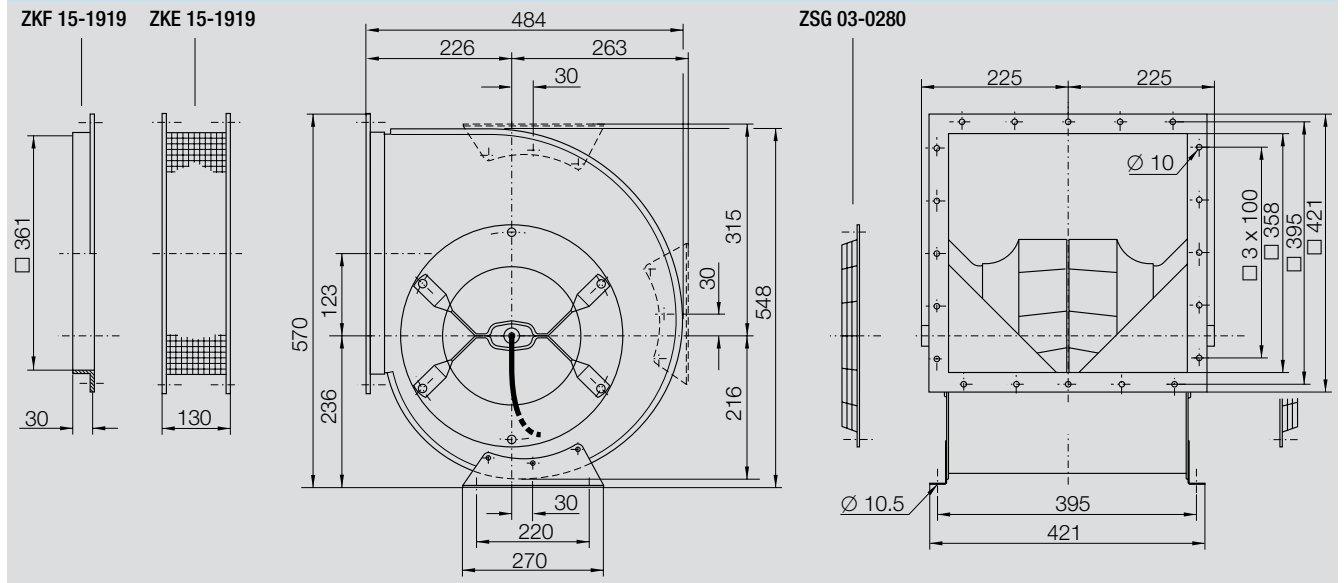
## Technical data

	Control electronics	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Motor protection class	Motor thermal class	Max. media temperature	Weight
RZP 11-	EKE 07-	V		HZ	kW	A	1/min			°C	~kg
0280-EC-31	0065-5E-IM	230	1~	50/60	1.8	7.8	3100	IP54	F	40	32

The system efficiency  $\eta_{esd}$  is the efficiency of the whole system, Fan–Motor–Control electronics.

**Attention!** The performance curves relates to the fan in combination with the given Control electronics.

## Dimensions in mm, subject to change.



## Accessories

RZP 11-	Anti Vibration Rubber Buffers ZBD
0280-EC-31	ZBD 01-0506-A

# RZP 11-0315-EC-31 EKE 07-0065-5E-IM

**Technical data**

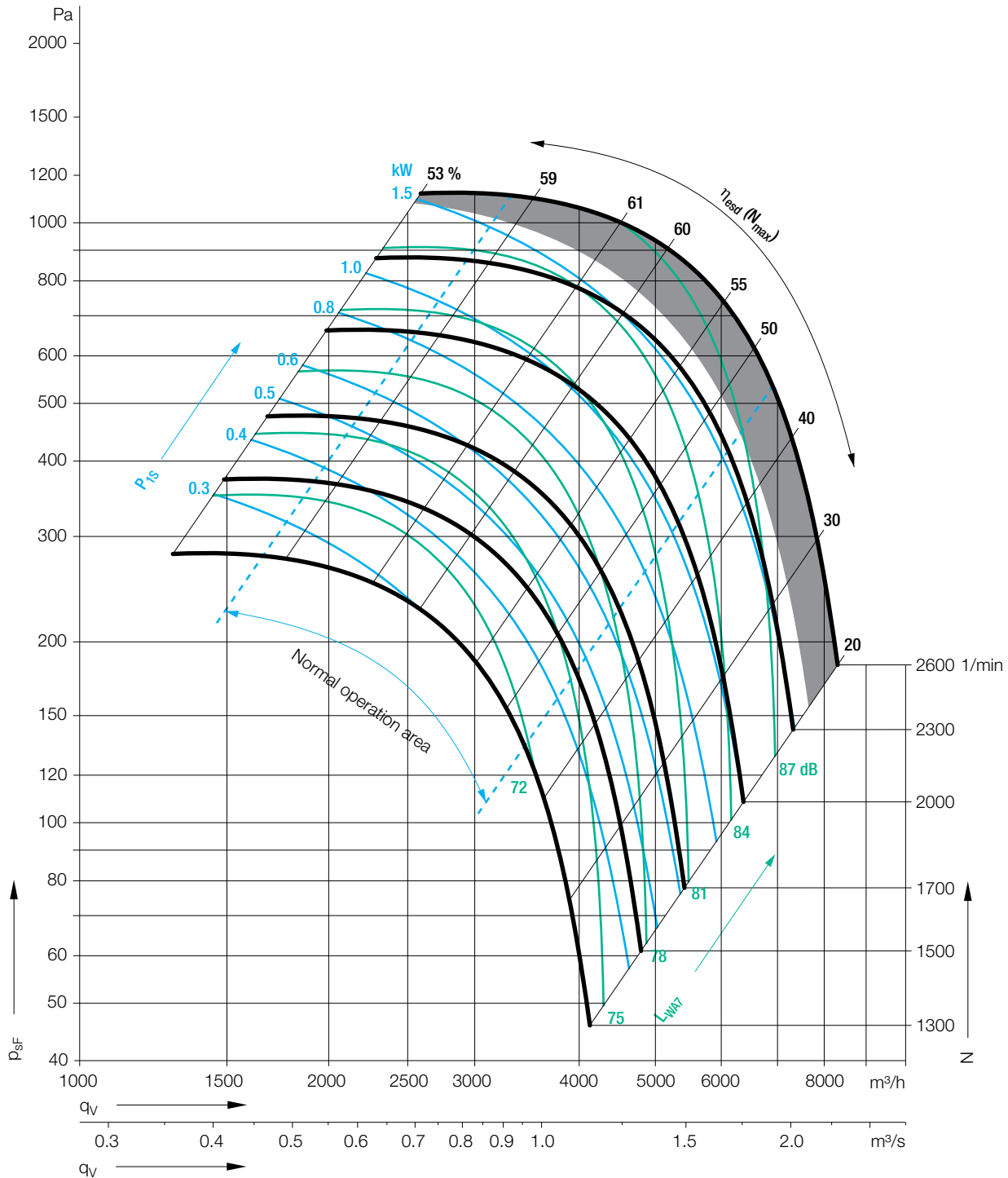
Please note coloured area!

■ do not use in this area

Density of media **1.15 kg/m<sup>3</sup>**.

Measured in installation **A** according to **ISO 5801** (unducted).

$\rho_1 = 1.15 \text{ kg/m}^3$



**Determination of the Octave level**

**Inlet side**

Relative sound power level L<sub>wrel7</sub> at octave band correction factors f<sub>c</sub>.

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 q <sub>vopt</sub>	-3	-7	0	-4	-2	-11	-20	-29 dB
>2342 1/min	0.70–1.4 q <sub>vopt</sub>	-5	-10	-6	-3	-3	-9	-14	-23 dB

**Discharge side**

Relative sound power level L<sub>wrel6</sub> at octave band correction factors f<sub>c</sub>.

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 q <sub>vopt</sub>	-2	-3	+1	-2	-4	-11	-18	-28 dB
>2342 1/min	0.70–1.4 q <sub>vopt</sub>	-5	-6	-4	-1	-5	-9	-14	-24 dB

# RZP 11-0315-EC-31 EKE 07-0065-5E-IM

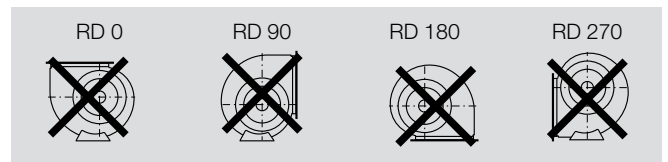
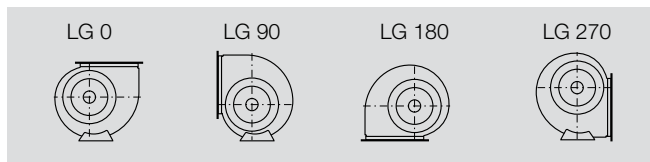
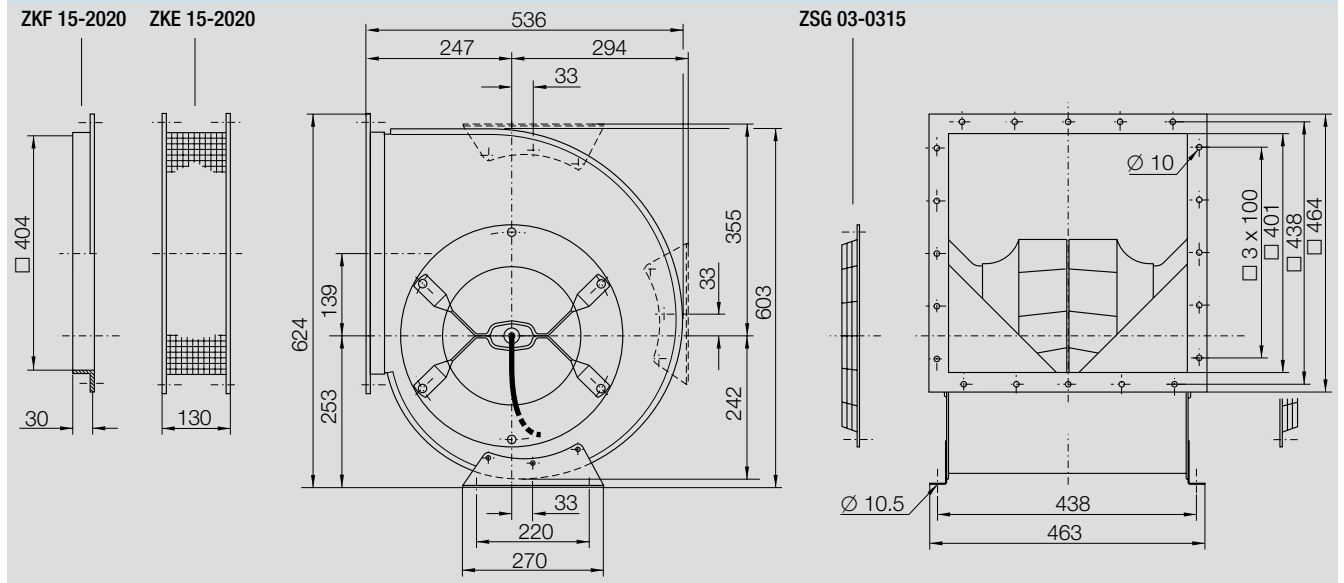
## Technical data

RZP 11-	Control electronics	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Motor protection class	Motor thermal class	Max. media temperature	Weight
0315-EC-31	EKE 07-0065-5E-IM	V		HZ	kW	A	1/min			°C	~kg
		230	1~	50/60	1.8	7.8	2550	IP54	F	40	36

The system efficiency  $\eta_{esd}$  is the efficiency of the whole system, Fan–Motor–Control electronics.

**Attention!** The performance curves relates to the fan in combination with the given Control electronics.

## Dimensions in mm, subject to change.



## Accessories

RZP 11-	Anti Vibration Rubber Buffers	ZBD
0315-EC-31	ZBD 01-0506-A	

# RZP 11-0315-EC-51

## T06-745.2.340-300

**Technical data**

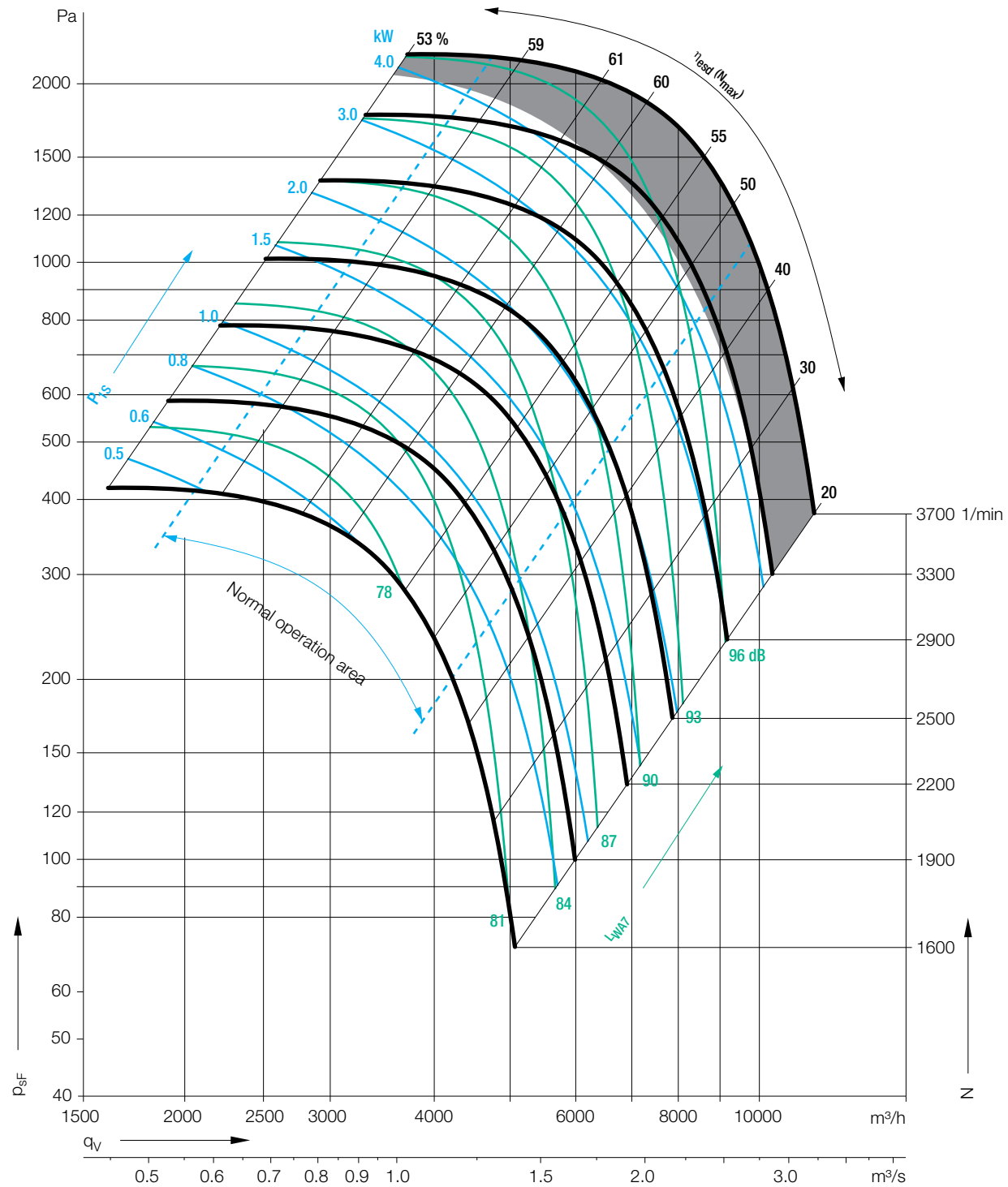
Please note coloured area!

■ do not use in this area

Density of media **1.15 kg/m<sup>3</sup>**.

Measured in installation **A** according to **ISO 5801** (unducted).

$\rho_1 = 1.15 \text{ kg/m}^3$



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 $Q_{Vopt}$	-5	-5	+3	-3	-5	-11	-13	-18 dB
>2342 1/min	0.70–1.4 $Q_{Vopt}$	-6	-11	-9	-2	-4	-10	-14	-21 dB

**Discharge side**

Relative sound power level  $L_{Wrel6}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 $Q_{Vopt}$	-4	-4	+2	-2	-5	-11	-14	-21 dB
>2342 1/min	0.70–1.4 $Q_{Vopt}$	-5	-8	-7	-1	-5	-9	-14	-22 dB

# RZP 11-0315-EC-51

## T06-745.2.340-300

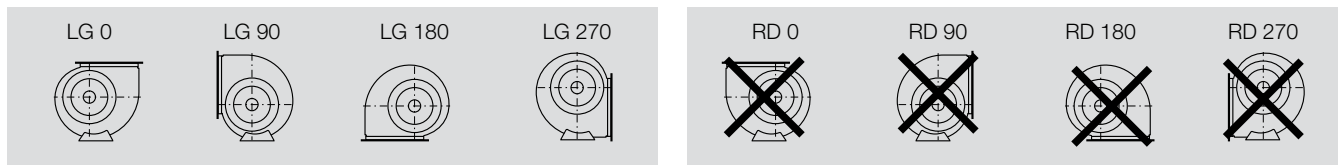
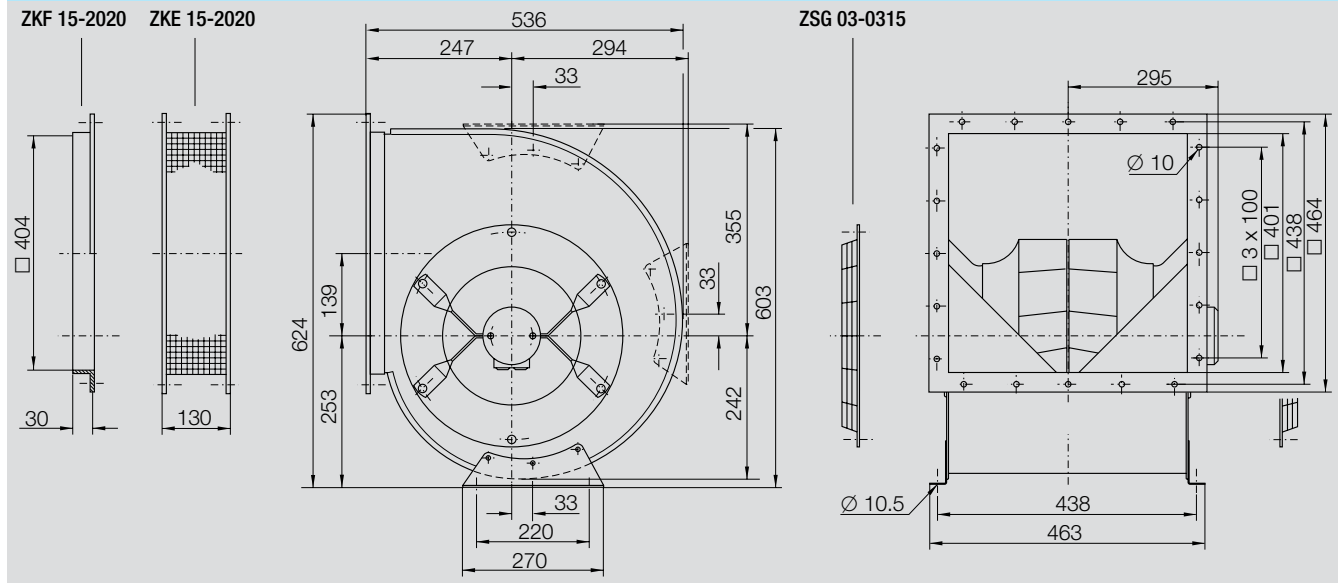
### Technical data

RZP 11-	Control electronics	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Motor protection class	Motor thermal class	Max. media temperature	Weight
0315-EC-51	T06-	V		HZ	kW	A	1/min			°C	~kg
	745.2.340-300	400	3~	50/60	4.5	7.5	3560	IP54	B	40	43

The system efficiency  $\eta_{esd}$  is the efficiency of the whole system, Fan–Motor–Control electronics.

**Attention!** The performance curves relates to the fan in combination with the given Control electronics.

### Dimensions in mm, subject to change.



### Accessories

RZP 11-	Anti Vibration Rubber Buffers	ZBD
0315-EC-51	ZBD 01-0506-A	

# RZP 11-0355-EC-52

## T06-745.2.340-300

**Technical data**

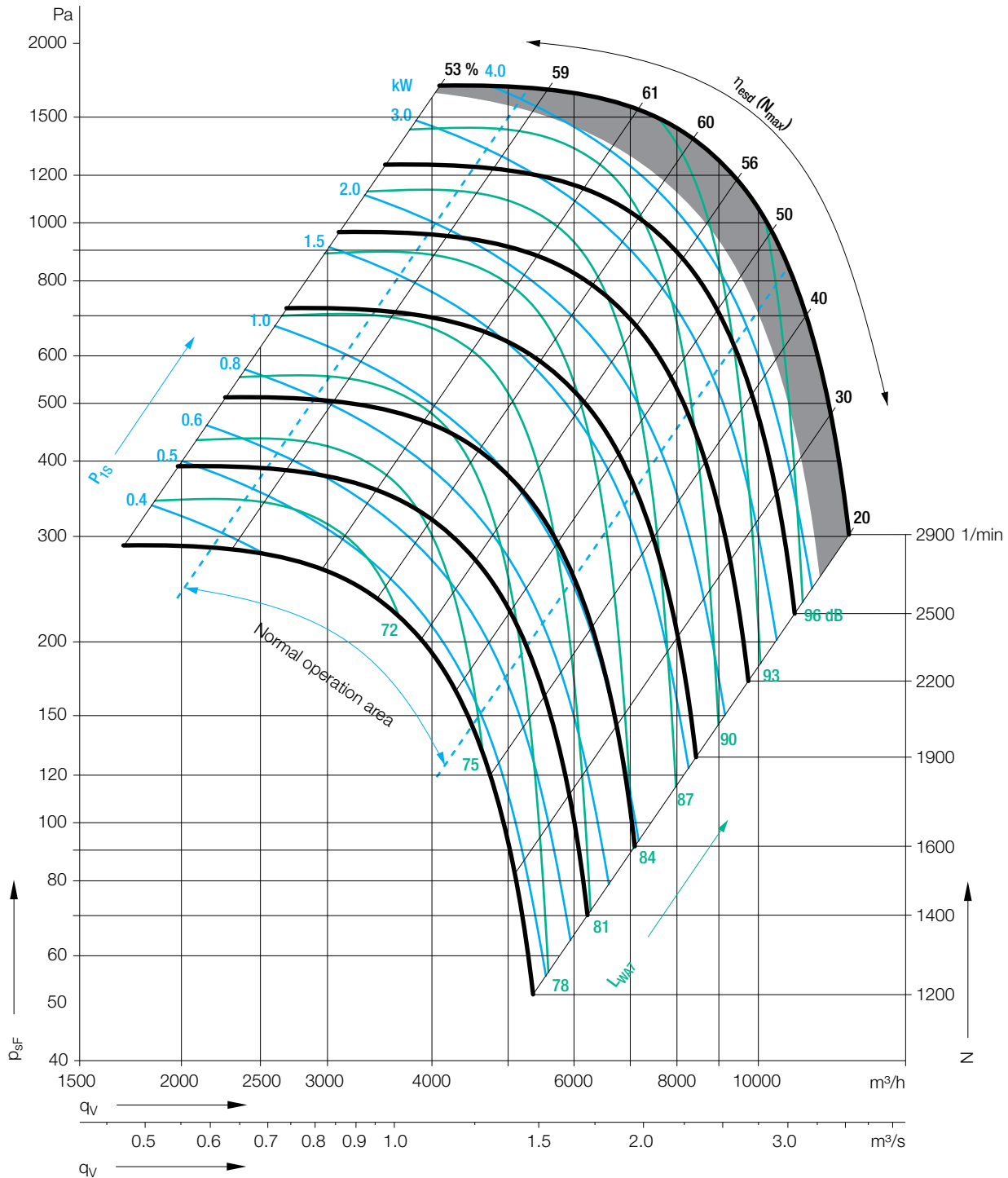
Please note coloured area!

■ do not use in this area

Density of media **1.15 kg/m<sup>3</sup>**.

Measured in installation **A** according to **ISO 5801** (unducted).

$\rho_1 = 1.15 \text{ kg/m}^3$



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 $Q_{Vopt}$	-3	-4	0	-4	-3	-11	-19	-22 dB
>2342 1/min	0.70–1.4 $Q_{Vopt}$	-7	-11	-7	-1	-5	-8	-15	-22 dB

**Discharge side**

Relative sound power level  $L_{Wrel6}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000 Hz
≤2342 1/min	0.70–1.4 $Q_{Vopt}$	-4	-1	+1	-2	-5	-11	-17	-22 dB
>2342 1/min	0.70–1.4 $Q_{Vopt}$	-7	-7	-5	-1	-5	-8	-14	-24 dB

# RZP 11-0355-EC-52

## T06-745.2.340-300

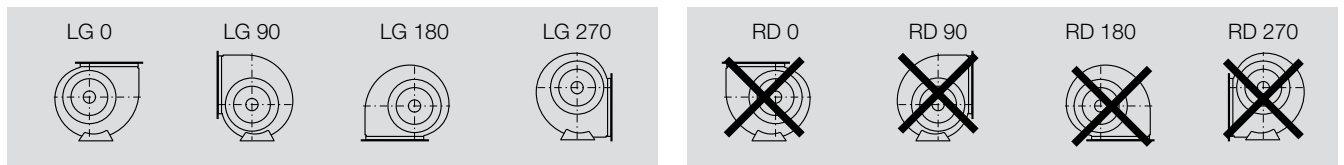
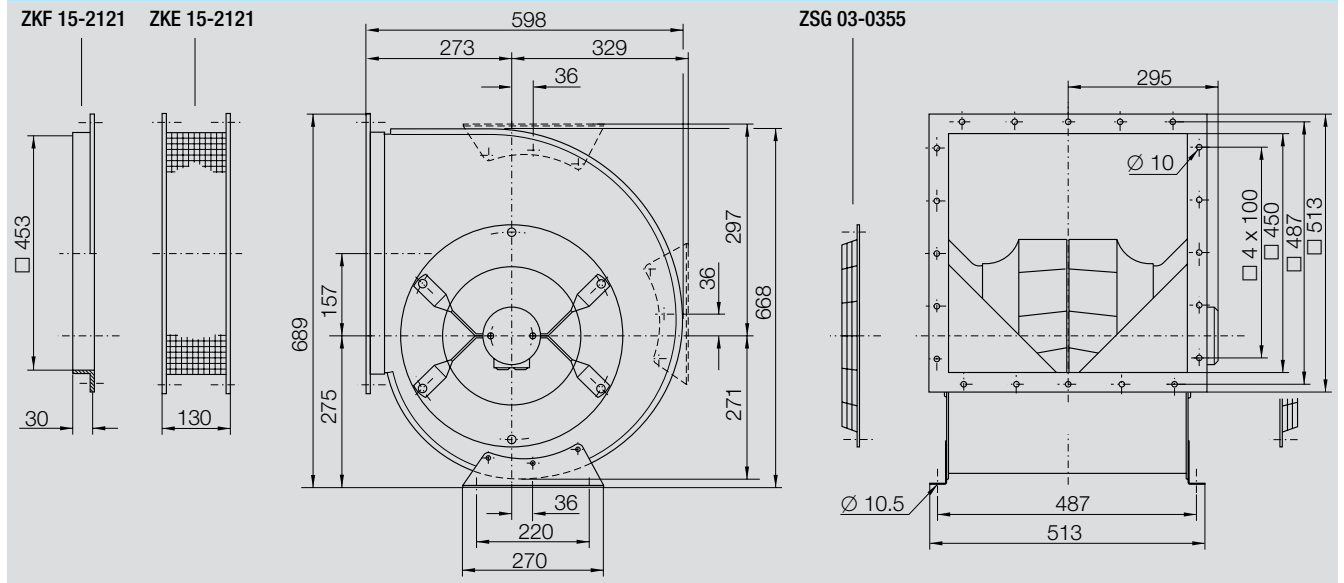
### Technical data

RZP 11-	Control electronics	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Motor protection class	Motor thermal class	Max. media temperature	Weight
0355-EC-52	T06-	V		HZ	kW	A	1/min			°C	~kg
	745.2.340-300	400	3~	50/60	4.5	7.2	2870	IP54	B	40	54

The system efficiency  $\eta_{esd}$  is the efficiency of the whole system, Fan–Motor–Control electronics.

**Attention!** The performance curves relates to the fan in combination with the given Control electronics.

### Dimensions in mm, subject to change.



### Accessories

RZP 11-	Anti Vibration Rubber Buffers
0355-EC-52	ZBD
	ZBD 01-0606-A

# RZP 11-0400-EC-52

## T06-745.2.340-300

**Technical data**

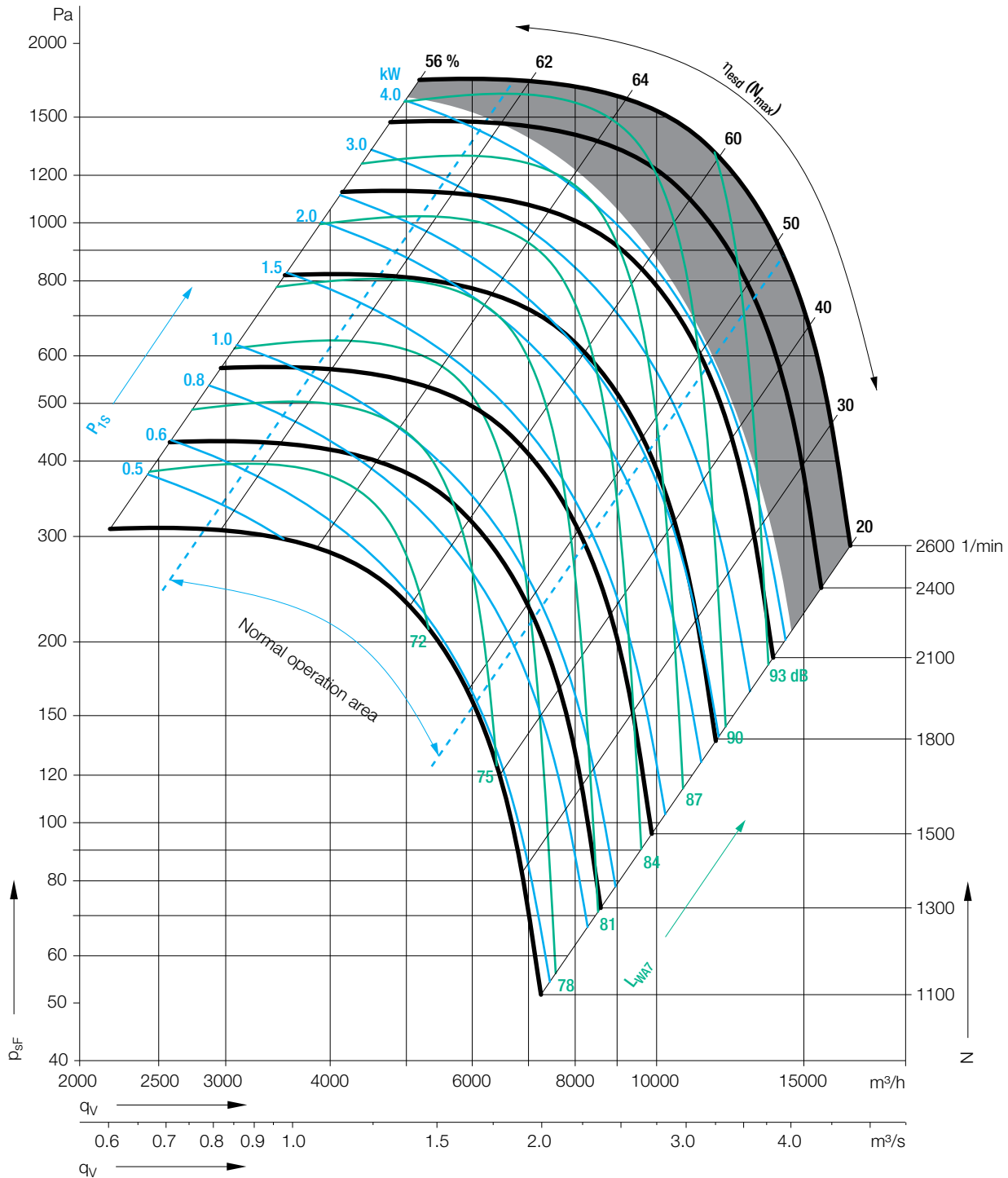
Please note coloured area!

■ do not use in this area

Density of media **1.15 kg/m<sup>3</sup>**.

Measured in installation **A** according to **ISO 5801** (unducted).

$\rho_1 = 1.15 \text{ kg/m}^3$



**Determination of the Octave level**

**Inlet side**

Relative sound power level  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
$\leq 2342 \text{ 1/min}$	$0.70-1.4 \text{ } q_{Vopt}$	-3	-4	0	-2	-5	-9	-15	-19	dB
$> 2342 \text{ 1/min}$	$0.70-1.4 \text{ } q_{Vopt}$	-5	-11	-5	-1	-5	-8	-12	-21	dB

**Discharge side**

Relative sound power level  $L_{Wrel6}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
$\leq 2342 \text{ 1/min}$	$0.70-1.4 \text{ } q_{Vopt}$	-5	-2	0	-2	-4	-10	-16	-21	dB
$> 2342 \text{ 1/min}$	$0.70-1.4 \text{ } q_{Vopt}$	-8	-8	-6	-2	-4	-9	-14	-24	dB



# RZP 11-0400-EC-52

## T06-745.2.340-300

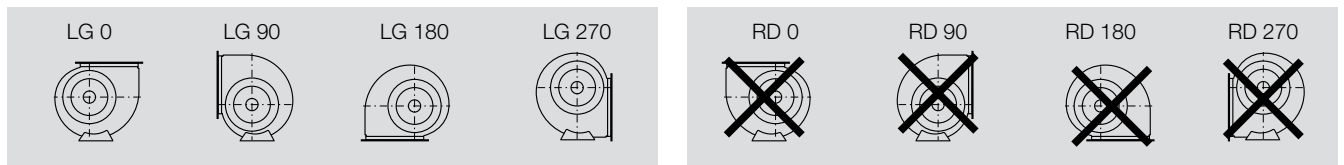
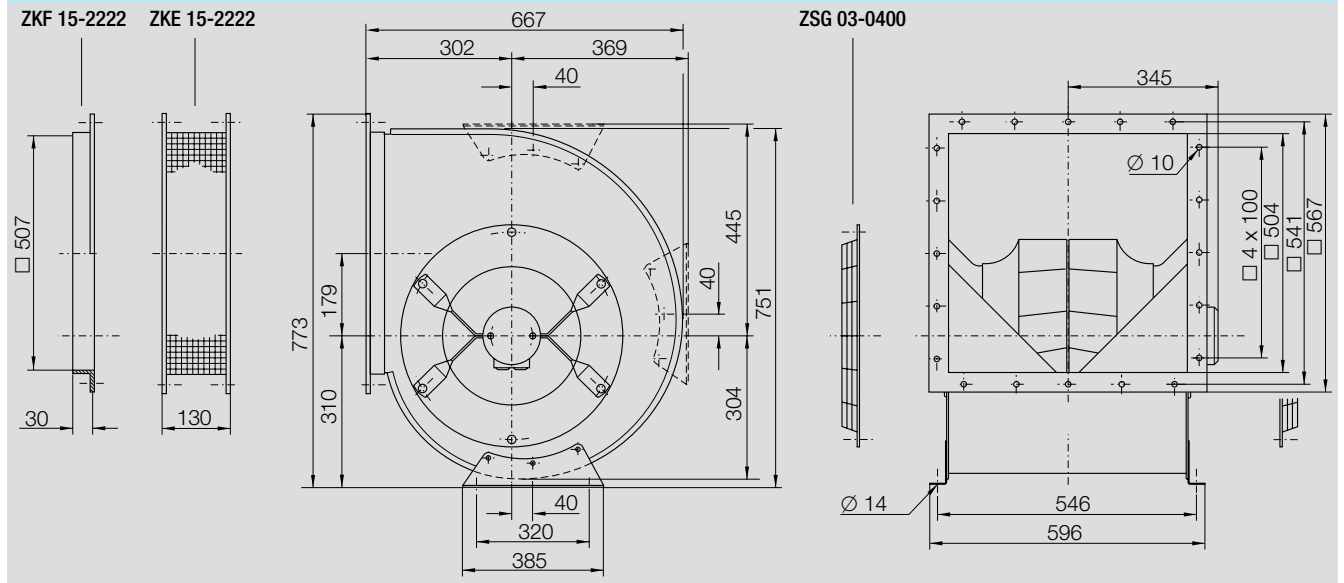
### Technical data

RZP 11-	Control electronics	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Motor protection class	Motor thermal class	Max. media temperature	Weight
0400-EC-52	T06-	V		HZ	kW	A	1/min			°C	~kg
	745.2.340-300	400	3~	50/60	4.5	7.5	2520	IP54	B	40	64

The system efficiency  $\eta_{esd}$  is the efficiency of the whole system, Fan–Motor–Control electronics.

**Attention!** The performance curves relates to the fan in combination with the given Control electronics.

### Dimensions in mm, subject to change.



### Accessories

RZP 11-	Anti Vibration Rubber Buffers
0400-EC-52	ZBD
	ZBD 01-0606-A

# Technical Data

## Technische Daten nach ErP-VERORDNUNG 327/2011/EU

RZP 11-	Overall efficiency $\eta_e$ [%]	Measure- ment category	Efficiency category	achieved effi- ency grade at optimum energy efficiency "N"	required efficiency grade acc. to ErP since		Speed control (VSD)	Rated motor po- wer at optimum energy efficiency $P_e$ [kW]	Flow rate at op- timum energy efficiency $q_v$ [m <sup>3</sup> /h]	Pressure at op- timum energy efficiency $p_F$ [Pa]	Speed at op- timum energy efficiency $N$ [1/min]	"specific ratio"
					2013	2015						
0200-EC-11	58.6	B	TOTAL	72.0	61	64	integrated	0.53	1565	720	3685	1.007
0225-EC-12	62.5	B	TOTAL	74.5	61	64	integrated	0.71	2105	760	3320	1.008
0250-EC-12	65.0	B	TOTAL	76.2	61	64	integrated	0.87	2665	766	2980	1.008
0280-EC-31	59.7	B	TOTAL	68.1	61	64	integrated	1.60	3660	943	2940	1.009
0315-EC-31	67.5	B	TOTAL	76.0	61	64	integrated	1.58	4430	865	2400	1.009
0315-EC-51	65.6	B	TOTAL	69.6	61	64	integrated	4.12	6058	1605	3300	1.016
0355-EC-52	66.5	B	TOTAL	70.7	61	64	integrated	3.96	7048	1345	2690	1.013
0400-EC-52	69.9	B	TOTAL	74.0	61	64	integrated	4.03	8459	1198	2235	1.012

# RZP 11-0200/-0400

## Specifications



### High performance centrifugal fan RZP rotavent

double inlet, direct driven with an brushless external rotor motor. Lap jointed scroll of galvanised sheet steel with discharge flange and bolt on multi position feet.

High performance impeller with 12 hollow section true airfoil blades (Size 0315/-0400), with 11 backward curved laminar blades (Size 0200/-0280) inclined obliquely to the shaft axis, welded in position and epoxy coated.

Throat plate inclined obliquely in opposition to blade inclination.

Inlet cones matched to the impeller to reduce entry losses.

Impeller fixed to the rotor of the brushless motor in IP54 type protection, completely maintenance free, statically and dynamically balanced to DIN ISO 1940, vibration isolated mounting, ready to connect with a metal connection box.

Optimised and approved for operation with an Electronic Commutation Unit.

## Fan data

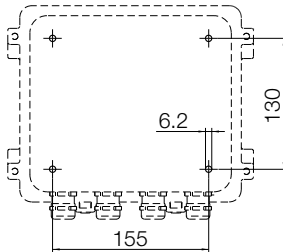
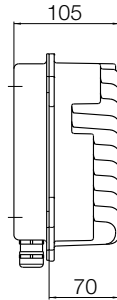
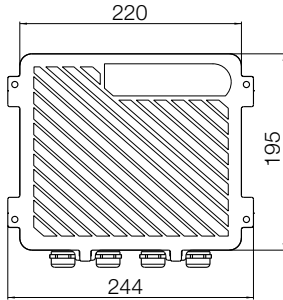
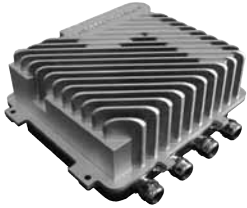
Fan type	RZP 11-	
Casing position (anticlockwise)	LG	
Volume flow	$Q_V$	m <sup>3</sup> /h
Static pressure	$p_{sF}$	Pa
Air density at fan inlet	$\rho_1$	kg/m <sup>3</sup>
Air temperature	t	°C
Max. power consumption	$P_e (P_{1S})$	kW
Max. current consumption	$I_e$	A
System efficiency	$\eta_{esd}$	%
Speed	N	1/min
Weight	m	kg

## Fittings / Accessories

- ▶ Drain plug R1/2"
- ▶ Inspection door
- ▶ Corrosion protection S40
- ▶ Volumeter
  
- ▶ Discharge flange
- ▶ Discharge flexible connection
- ▶ Inlet guards
- ▶ Rubber AVM
  
- ▶ Difference pressure sensor
- ▶ Universal control device
- ▶ Casing (additional for wall mounting of the communication unit)
- ▶ Remote control unit

# EKE 07-0065-5E-IM

## Description



## Execution

Controller EKE 07 with single phase input and variable output voltage and frequency, especially designed to operate forward curved fans with brushless DC motors. By using modern power semiconductors a high efficiency at any speed is guaranteed.

## Specification

- ▶ suitable exclusively for operating Nicotra Gebhardt brushless DC motors
- ▶ for single phase supply 230 V, 50/60 Hz – input power up to 1.8 kW
- ▶ internal speed-, power- and motor current limitation can be adjusted according to the connected fan type simply by dip switches
- ▶ integrated active Power Factor Correction (power factor >95 %)
- ▶ Modbus RTU serial interface
- ▶ analogue interface 0...5 V/0...10 V
- ▶ dry error contact (max. 24 V DC/250 mA)
- ▶ protection class IP54 (protected against dust and splashing water)

## Standards and guide lines

### European Low Voltage Directive

The Controller EKE 07 complies to the requirements of the Low Voltage Directive 2006/95/EC. The unit has been manufactured according to the standard: EN 60146-1-1 (Semiconductor converters - General requirements and line commutated converters)

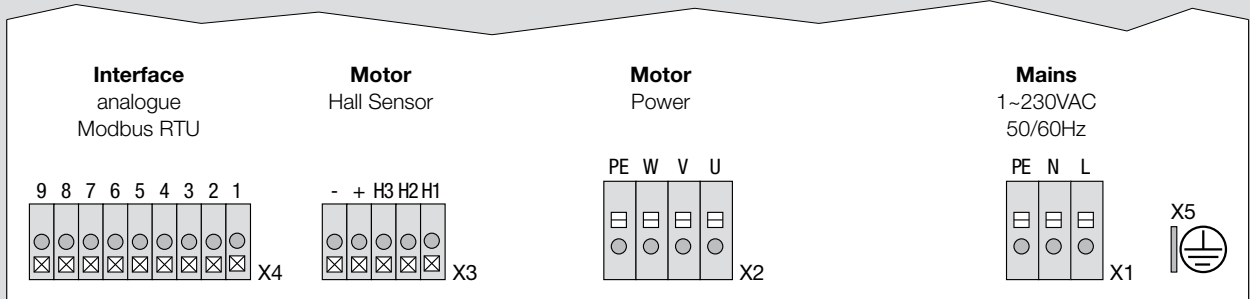
### European EMC Directive

The Controller EKE 07 is supplied exclusively in connection with products of the company Nicotra Gebhardt. The unit is fully integrated in the corresponding products and then complies to all requirements of the EMC directive, according to the EMC product standard for electrical drives with variable speed EN 61800-3.

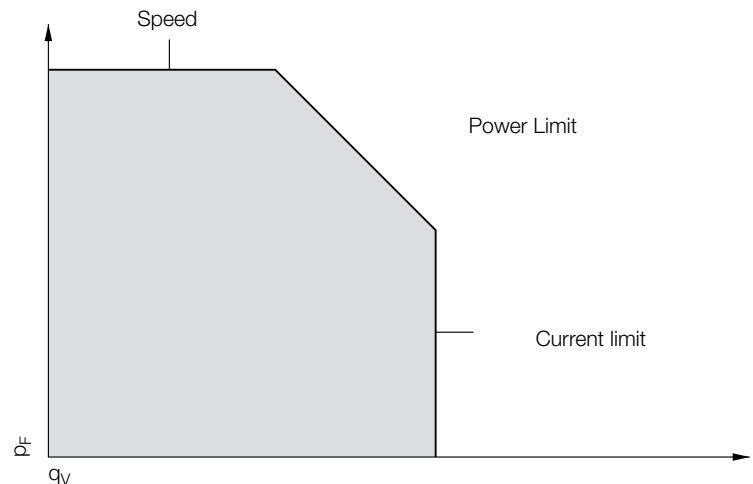
### European Machinery Directive

The Controller EKE 07 does not impinge on the application field of the Machinery Directive.

## Interface



## Performance



The exact limits depend on the fan type selected by dip switches.

# T06-745.2.340-300

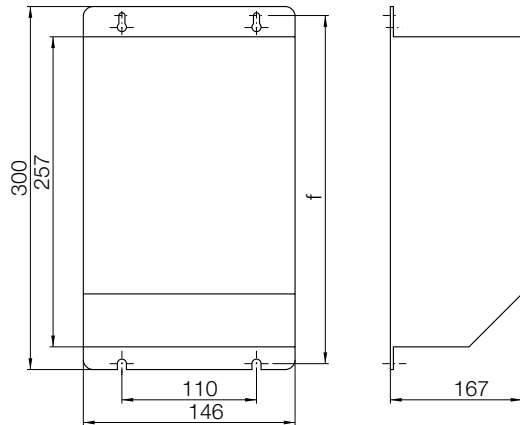
## Description



The Nicotra Gebhardt control electronic has a painted metal housing and is suitable for mounting in control units. The Unit must only be mounted and operated in a dry, dust free area. Minimum spacings are to be maintained when mounting (see Operating Instructions). The permitted ambient temperature amounts to +40 °C. EMI filter and line choke are integrated in the controller in accordance with the requirements of the EMC Guideline 89/336/EWG.

### Function

- ▶ Speed control through an external 0...10 V input signal or through an incorporated potentiometer
- ▶ On/Off switching and an adjustable speed reduction facility through potential free contacts
- ▶ Speed reporting through an analogue 0...10 V output or a digital output
- ▶ Fault and operating indication through built in LEDs and a reporting relay
- ▶ Extensive monitoring and protection functions for motor current, phase failure and overcurrent



## Technical Data

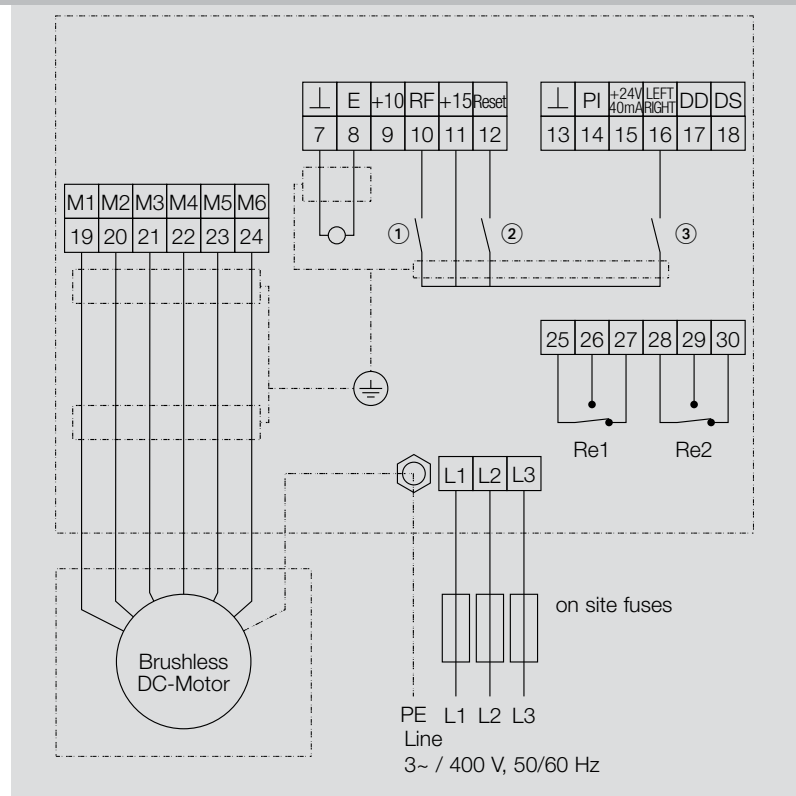
	Nominal voltage <b>V</b>		Nominal frequency <b>Hz</b>	Nominal current <b>A</b>	Nominal power <b>kW</b>	Output current <b>A</b>	Ambient temperature <b>°C</b>	Power losses <b>W</b>
T06-745.2.340-300	400	3~	50/60	6.7	4	6.7	-10...+40	160

## Cable-cross section

	Min. cable-cross section for motor leads <b>mm<sup>2</sup></b>	recommended cable-cross section for hall sensor leads <b>mm<sup>2</sup></b>	Min. cable-cross section for mains leads <b>mm<sup>2</sup></b>	recommended fusing in panel for mains leads <b>A</b>
T06-745.2.340-300	1.5	0.75	1	10

## Anschlussplan

- ① Start enable (START-STOP)
- ② Reset
- ③ Direction (Left, Right)



# Fittings / Accessories

## Accessories

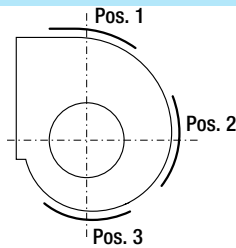
All options and accessories must be specified separately. Please take the technical data and dimensions from the corresponding page of the catalogue.

### Drain Plug



If the fan is installed outside, or if conveying a medium containing humidity, condensation of water may accumulate inside the fan scroll. For extraction of this water a condense water drain has to be installed at the lowest point of the scroll. The drain will be provided with a thread R1/2" for connecting it to a piping. At order please indicate the required casing position.

### Inspection Door



For the purposes of maintenance and cleaning there is an opening, which can be securely closed by means of an access door, in the fan casing. As it can only be opened with a tool, the access door complies with safety and accident prevention regulations. Additional securing with locking bars can be supplied on request. The site and orientation of the inspection opening depends on the casing position. The position should be specified when ordering according to the following diagram: e.g. Access door, Pos. 2.

**Dimensions** in mm, subject to change.

RZP 11-		RZP 11-	
0200/-0315	210 × 210	0355/-0400	310 × 310

## Corrosion Protection Systems

Nicotra Gebhardt fans are treated with high quality corrosion protection as standard. Under extreme operating conditions, however, additional corrosion protection is advisable.

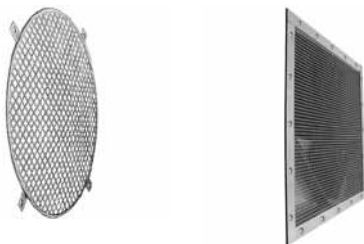
### Corrosion protection - Class S40

Degreasing, ironphosphating

► **Powder coating** - Layer thickness  $\geq 40 \mu\text{m}$ , Colour RAL 7039

► **Wet lacquering** - Layer thickness  $\geq 40 \mu\text{m}$  (primer + lacquer finish), Colour RAL 7039

## Protection guards



The fans are designed for installation in equipment and as standard are not equipped with protective guards.

**They should not be put into operation before all protective devices are fitted and connected!**

Protective measures must be carried out as set out in DIN EN ISO 12100 "Safety of machinery - Basic concepts, general principles for design".

If the application of the fan allows free access to the inlet and discharge apertures, safety devices must be put in place on the fan in accordance with DIN EN ISO 13857! Suitable safety guards are available as an optional extra.

## Flanges and Flexible Connections



Made from galvanized or painted steel, to connect ducts and system components to the fan outlet side.

Connecting piece with elastic intermediate section for the vibration or impact-noise decoupled connection of the fan to the system or unit. Made out of two connecting flanges with elastic intermediate section.

### Temperature range / Application

► Standard up to +80 °C

► ATEX max. +60 °C

# Fittings / Accessories

## Anti Vibration Rubber Buffers



Anti Vibration Mounts (AVM) are designed to prevent noise and vibrations being transmitted through the base of the fan. AVMs should be mounted beneath the fan base frame so the weight and spring deflections are evenly distributed. They should not be mounted symmetrically around the centre of gravity of the system when idle, because a counter force is induced into the system by the pressure created by the working fan.

It is difficult for the manufacturer to establish the position of the AV mounts to suit all types of application.

Vibration and noise insulation can also be improved by ensuring that the fan is connected to its external environment by a flexible coupling.

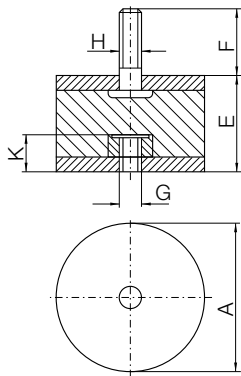
► **Rubber buffers**

for both vibration and noise insulation at fan speeds above 1400 rpm or 850 rpm

► **Rubber buffers**

for noise insulation only at fan speeds under 800 rpm or 1700 rpm

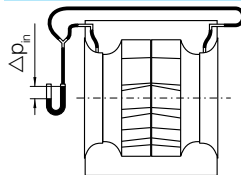
Dimensions in mm, subject to change.



ZBD	ZBD	A	E	F	G	H	K
01-0405A*	01-0405C*	20	25	16	M6	M6	6.5
03-0503A*	03-0503C*	25	15	11	M6	M6	6.5
01-0504A*	01-0504C*	25	20	11	M6	M6	6.5
03-0806A*	03-0806C*	40	30	21	M8	M8	9.5
03-1007A*	03-1007C*	50	34	26.5	M10	M10	10.5
03-1510A*	03-1510C*	75	50	39	M12	M12	12.5
02-2008A*	02-2008C*	100	40	44	M16	M16	16.5

\* A = for U-profile; C = for CC-profile

## Volumeter



$$q_v = K \times \sqrt{\frac{2}{\rho} \times \Delta p_{Dü}}$$

With the flow measuring device it is possible to easily measure / monitor the flow rate after the fan is installed. A pressure tapping at a predetermined position on the inlet cone is provided whereby the differential pressure in relation to the static pressure is measured in front of the inlet cone in a static atmosphere.

- **volume flow  $q_v$  [m³/h]**
- **calibration factor  $K$  [m²s/h]**
- **density of media  $\rho$  [kg/m³]**
- **pressure difference at cone  $\Delta p_{Dü}$  [Pa]**

In order to calculate the flow rate, a calibrating factor "K" is required. This factor is determined by comparative measurement on a standard test rig.



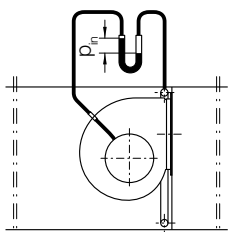
Measuring connector in inlet cone  
Hose pipe to connecting piece in the side wall  
Connecting piece (external diameter of 6mm) for the pressure measurement

### Calibration factors

RZP 11-	K [m²s/h]	RZP 11-	K [m²s/h]
0200-EC-11	100	0315-EC-31	190
0225-EC-12	115	0315-EC-51	190
0250-EC-12	140	0355-EC-52	235
0280-EC-31	165	0400-EC-52	290

### Standard-calibration factor K

Where fans are built into a plenum, the pressure difference between the static pressure in the inlet side plenum and the pressure on the inlet cone is to be measured. It must be ensured that the static pressure to be measured in front of the inlet cone is not tampered by dynamic pressure fractions. It is often recommended to arrange a ring of points on the wall facing the outlet side as illustrated in the sketch. When using the K-factors specified below, a minimum clearance of 0.5xD between the inlet cone of the fan and the side wall of the plenum must be maintained. Indentations that obstruct the flow to the cone can lead to faults when measuring the flow rate. In the event that the differential pressure is fed via a pressure sensor, the signal can also be used for regulating purposes.



# Description

## Safety

The fans are designed for installation in equipment and as standard are not equipped with protective guards.

**They should not be put into operation before all protective devices are fitted and connected!**

Protective measures must be carried out as set out in DIN EN ISO 12100 "Safety of machinery - Basic concepts, general principles for design".

If the application of the fan allows free access to the inlet and discharge apertures, safety devices must be put in place on the fan in accordance with DIN EN ISO 13857! Suitable safety guards are available as an optional extra.

## Performance data

The performance curves of the fans are determined at the plenum test rig according to ISO 5801.

The performance curves show the unrestricted outlet pressure increase  $p_{sF}$  of the fan as a function of the volume flow.

For ease of use, equipment parabolas are included in the diagrams. It should be noted that the efficiency varies with the controller position on the curve. For the controller positions 100 % the efficiency is shown on the performance curve at the points.

All the given characteristics are based on a density  $\rho_1$  for the conveyed medium at the fan entry of 1.15 kg/m<sup>3</sup>.

Pressure increase and drive output vary proportionally with the density  $\rho_1$ .

The free discharge pressure increase  $p_{sF}$  is the usable static pressure increase of the fan.

The given data is applicable to free discharge installation "A" only.

The performance curves given in the catalogue only apply for the application of the Commutation Unit and the given nominal voltage.

The efficiencies and power consumption given in the performance curves include all losses due to the built-in motor and the electronic commutation unit.

## Sound

Sound measurement and analysis are carried out in accordance with DIN 45635-38 "Sound measurement at machines; fans".

The sound data of the fan curves are given as "A" weighted sound power levels  $L_{WA7}$ . The "A" weighted sound power level are identical for fan intake  $L_{WA7}$ .

An approximation of the "A" weighted sound pressure levels  $L_{pA7}/L_{pA6}$  at a distance of 1 m at fan Inlet or discharge may be obtained by subtracting 7 dB from the relative "A" weighted sound power levels.

It should be noted that site acoustics, duct design, reverberation, natural frequencies etc. can all influence noise to a greater or lesser extent.

For more accurate calculations to determine noise protection measures, the sound power level in each octave band is of more value.

The noise correction data, in function of the fan speed and flow rate, are to be found with the corresponding table on the fan curve page.

▶ Inlet:  $L_{Wfc7} = L_{WA7} + L_{Wrel7}$   
 ▶ Discharge:  $L_{Wfc6} = L_{WA6} + L_{Wrel6}$

In some cases the noise level - calculated by this way - may in some cases be higher than expected at the blade passing frequency.

### Blade passing frequency

$f_{BP}$  = Blade passing frequency in Hz

N = Fan speed in 1/min

z = No of blades ... sizes 0200/-0280 = 11  
 sizes 0315/-0400 = 12

$$L_{WA6} = L_{WA7} + 1 \text{ dB}$$

$$f_{BP} = \frac{N \times z}{60}$$



# Description

## Media

This range of fans are specially designed for use into air handling units (AHU) and ventilation systems.  
The centrifugal fans are ideal for conveying clean air. The allowed air temperature comes from -20 °C to +40 °C.

## Motors

The motors do not have direct temperature monitoring through thermistors or probes. Motor protection is achieved through the current monitoring of the electronic commutation unit.

### **Attention!**

**In no case may the fan be driven with a larger output electronic commutation unit than the one indicated in the catalogue or be used in a conveyor medium temperature greater than the maximum permitted one.**

## Electric connection

The fans will be delivered ready for installation and are fitted with a connection cable or an easily accessible motor connection box.  
The electrical installation is to be carried out in accordance with the applicable conditions and in observance of local regulations.  
Each motor is accompanied with a terminal connection diagram which clearly shows the correct connections.

### **All motor and position sensor leads must be screened!**

Recommended cable e.g. Fabrikat Oilflex 100-CY from the Lapp Co.  
Basically the operating instructions of the Electronic Commutation Unit are to be observed.

# Highest system performance and best energy efficiency

## The RZM rotavent serie

### Economic, quiet and compact:

Through the combination of two high technologies - the aerodynamics of the rotavent impeller combined with energy efficient IEC motors - Nicotra Gebhardt has developed a series of coupled direct driven centrifugal fans setting new standards for economy and quiet operation.

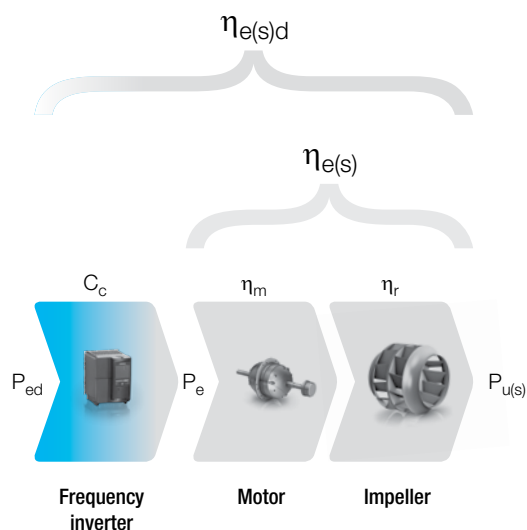
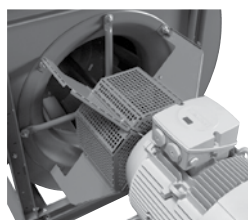
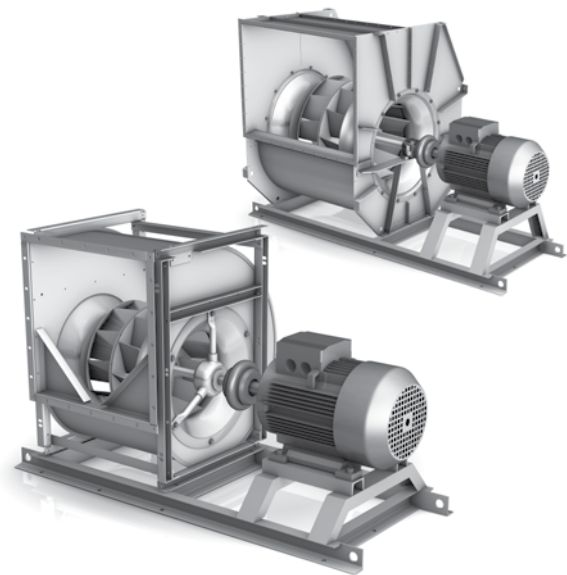
### Your benefits:

- ▶ powerful fan range direct driven with coupling
- ▶ maintenance and wear free drive (no V-belts)
- ▶ short payback time due to high energy saving, especially with long operating periods
- ▶ higher comfort levels through particularly low noise fans and motors
- ▶ problem free speed control from with frequency inverter

### Top quality for performance and a long service life!

Alongside an intelligent construction, aspects such as the quality of materials and workmanship play a crucial role in ensuring a long life cycle.

Apart from that, the tried and tested quality of our successful, long-standing RZR series remains the same. And that means robust impeller constructions, non-corrosive impeller shafts and quality bearings – for a long life with minimum noise.



Make use of our technical selection program proSELECTA II. You receive all technical data for your fan, easy–quick–reliable.

### System efficiency

The given System Efficiency is the efficiency of the whole system and includes the individual efficiencies of the component Fan – Motor – Frequency inverter.

### ErP conformity

Depending on the model of the fan, the efficiency grade "N" set in accordance with the ErP Directive must be achieved from 2013 and 2015 respectively.

The efficiency grade designates a parameter in the calculation of the target energy efficiency of a fan depending on the electric input power when operating at the optimal energy efficiency point. The figure of parameter "N" corresponds to the target energy efficiency with a power of 10 kW.

### Efficiency grade "N" to ErP Directive

Centrifugal fans with backward curved blades with housing

Measurement category	Efficiency category	Power range P [kW]	Target energy efficiency	Efficiency grade "N"	
				2013	2015
A, C	static	$0.125 \leq P \leq 10$	$\eta_{target} = 4.56 \cdot \ln(P) - 10.5 + N$	58	61
		$10 < P \leq 500$	$\eta_{target} = 1.10 \cdot \ln(P) - 2.60 + N$		
B, D	total	$0.125 \leq P \leq 10$	$\eta_{target} = 4.56 \cdot \ln(P) - 10.5 + N$	61	64
		$10 < P \leq 500$	$\eta_{target} = 1.10 \cdot \ln(P) - 2.60 + N$		

A technical data list according to ErP-REGULATION 327/2011/EU of all fans is available at the end of this chapter "RZM".

# The powerful high technologie!

## Optimal aerodynamics

Low turbulence velocity for both inlet and discharge due to the large free cross section and minimal flow restraint of the impeller, an example of aerodynamics and performance of the rotavent.

### Your benefits:

- ▶ negligible sensitivity to built in disturbances
- ▶ minor pressure loss with free discharge operation
- ▶ smaller, yet greater energy performance

## Acoustics

Reduction of high frequency noise levels is just one of the advantages of the rotavent, together with optimised AC-motors.

Minimal sound levels due to low blade passing frequencies from the optimised impeller geometry of the rotavent. The impeller has obliquely inclined blades with trailing edges, and the throat plate is inclined opposingly.

### Your benefits:

- ▶ reduced size and costs of attenuation and silencers

## High efficiencies

Nicotra Gebhardt fans of the RZM rotavent range are operating at high efficiency in wide area of the fan curve.

### Your benefits:

- ▶ low running costs
- ▶ high efficiency

## Wear-free drive by direct coupling



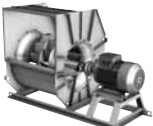
The use of direct coupling drive avoids wear of the drive as this is the case with belt driven fans.

### Your benefits:

- ▶ no subsequent filter necessary
- ▶ less dust in the system

## The benefits of rotavent RZM

The high value and precisely manufactured components of rotavent, manufactured with most modern machinery for demanding tolerance standards, are the basis for a product range satisfying highest quality requirements.

Version	Description	Figure
<b>RZM 15-0400/-1000</b>	Lap jointed scroll of galvanised steel sheet with discharge flange and heavy duty reinforced side frames. Medium-heavy duty bearing execution with cast iron housing/strut assemblies. High performance impeller with hollow section true aerofoil blades, welded and epoxy coated. Fan with motor and elastic coupling mounted on a robust base frame.	
<b>RZM 18-0630/-1000</b>	Lap jointed scroll of galvanised steel sheet with discharge flange and heavy duty reinforced side frames. Heavy duty bearing execution with split-type plummer block, mounted on robust pedestal. High performance impeller with hollow section true aerofoil blades, welded and epoxy coated. Fan with motor and elastic coupling mounted on a robust base frame.	
<b>RZM 13-1120/-1400</b>	Heavy duty casing of sheet steel with stiffening members, step welded and coated, with discharge flange. Casing is split on one axis (Size 1120), split on two axis (Sizes 1250/-1400). Heavy duty bearing execution with split-type plummer blocks, mounted on robust pedestal. High performance impeller with hollow section true aerofoil blades, welded and epoxy coated. Fan with motor and elastic coupling mounted on a robust base frame.	

# RZM 15-0400

## Technical Data

Please note coloured area!

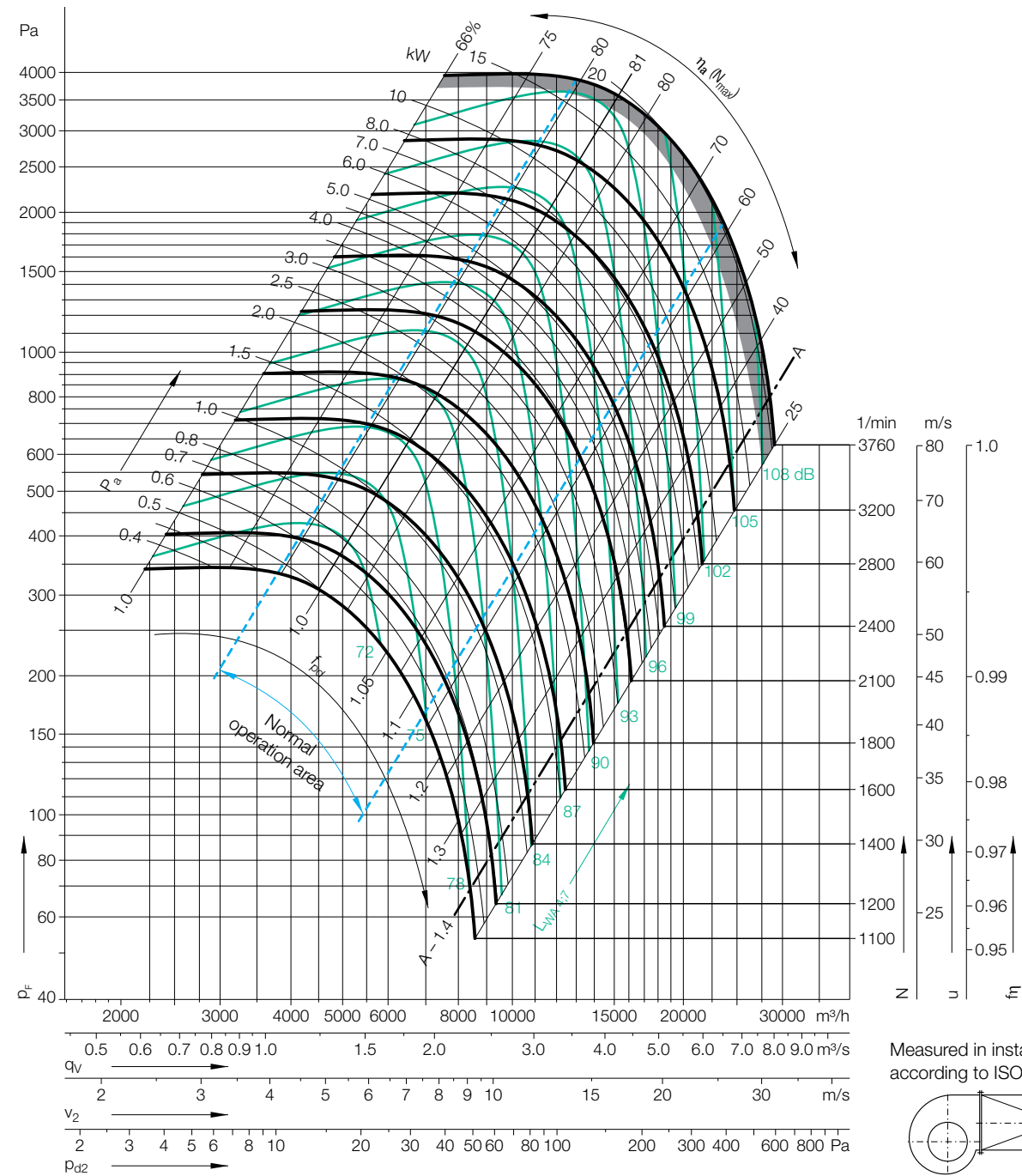
- all types suitable
- do not use in this area

### Impeller Data

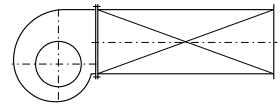
Impeller diameter	$D_r$	406 mm
Number of blades	$z$	12
Moment of Inertia	$J$	0.33 kgm <sup>2</sup>

### Impeller Data

Impeller weight	$m$	10.5 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



Measured in installation B according to ISO 5801:



## Determination of the Octave level

Relative sound power level for inlet side  $L_{wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤1882 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
>1882 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side  $L_{wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

# RZM 15-0400

## Technical Data

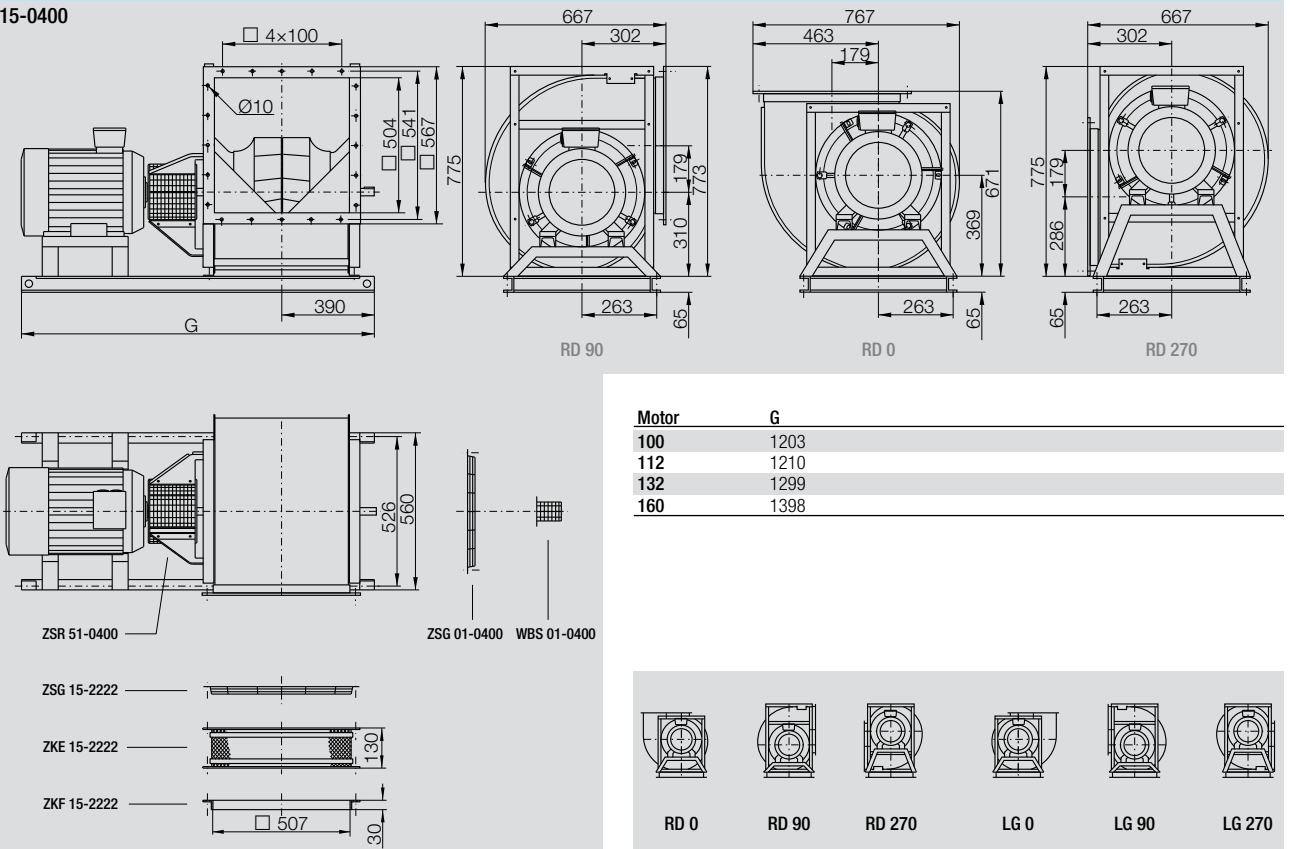
RZM 15-	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
0400-4W-16	2.2	4	100L	230/400	3~	50	Δ/Y	8.1/4.65	1455	1760	60	164
0400-4D-17	3.0	4	100Lb	400	3~	50	Δ	6.3	1425	1950	68	192
0400-4D-19	4.0	4	112M	400	3~	50	Δ	8.2	1435	2160	75	192
0400-4D-21	5.5	4	132Sa	400	3~	50	Δ	11.4	1450	2390	82	264
0400-4D-23	7.5	4	132Ma	400	3~	50	Δ	15.4	1450	2650	91	264
0400-2D-26	11.0	2	160Ma	400	3~	50	Δ	21.5	2920	2970	51	151
0400-2D-27	15.0	2	160Mb	400	3~	50	Δ	29.0	2930	3300	56	151

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

**RZM 15-0400**



**Accessories**

RZM 15-	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-
0400-4W-16	MM420 3AC 400V 2.20KW EMV B	6SE6400-3CC01-0BD3	-	-
0400-4D-17	MM420 3AC 400V 3.00KW EMV B	6SE6400-3CC01-0BD3	-	-
0400-4D-19	MM420 3AC 400V 4.00KW EMV B	6SE6400-3CC01-4BD3	-	-
0400-4D-21	MM420 3AC 400V 5.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0400-4D-23	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0400-2D-26	MM420 3AC 400V 11.0KW EMV B	6SE6400-3CC02-5CD3	-	-
0400-2D-27	-	6SE6400-3CC03-5CD3	6SE6430-2AD31-5CA0	6SE6400-0BE00-0AA0

# RZM 15-0450

## Technical Data

Please note coloured area!

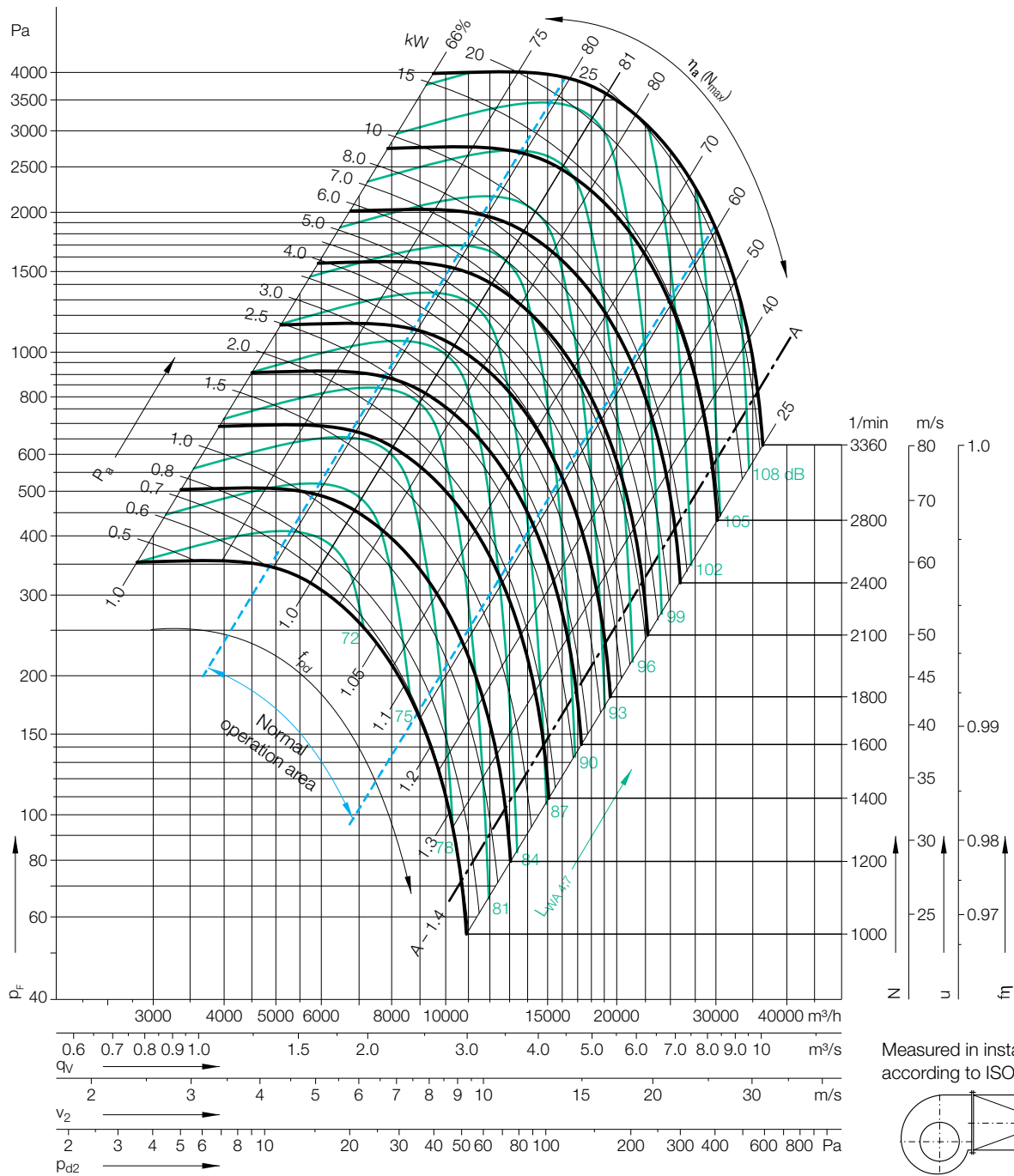
all types suitable

### Impeller Data

Impeller diameter	$D_r$	455 mm
Number of blades	$z$	12
Moment of Inertia	$J$	0.6 kgm <sup>2</sup>

### Impeller Data

Impeller weight	$m$	15.8 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



## Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤1679 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
>1679 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

# RZM 15-0450

## Technical Data

RZM 15-	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
0450-4D-19	4.0	4	112M	400	3~	50	△	8.2	1435	1770	61	182
0450-4D-21	5.5	4	132Sa	400	3~	50	△	11.4	1450	1960	67	210
0450-4D-23	7.5	4	132Ma	400	3~	50	△	15.4	1450	2180	75	210
0450-4D-26	11.0	4	160Ma	400	3~	50	△	22.0	1460	2480	85	281
0450-4D-28	15.0	4	160L	400	3~	50	△	30.0	1460	2760	94	281
0450-2D-28	18.5	2	160L	400	3~	50	△	35.0	2935	2940	50	281
0450-2D-30	22.0	2	180M	400	3~	50	△	41.0	2945	3080	52	319

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

**RZM 15-0450**

Motor	G	k2
112	1273	-
132	1362	-
160	1499	-
180	1499	78

**Accessories**

RZM 15-	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-
0450-4D-19	MM420 3AC 400V 4.00KW EMV B	6SE6400-3CC01-4BD3	-	-
0450-4D-21	MM420 3AC 400V 5.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0450-4D-23	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0450-4D-26	MM420 3AC 400V 11.0KW EMV B	6SE6400-3CC02-5CD3	-	-
0450-4D-28	-	6SE6400-3CC03-5CD3	6SE6430-2AD31-5CA0	6SE6400-0BE00-0AA0
0450-2D-28	-	6SE6400-3CC04-4DD0	6SE6430-2AD31-8DA0	6SE6400-0BE00-0AAA
0450-2D-30	-	6SE6400-3CC04-4DD0	6SE6430-2AD32-2DA0	6SE6400-0BE00-0AAA

# RZM 15-0500

## Technical Data

Please note coloured area!

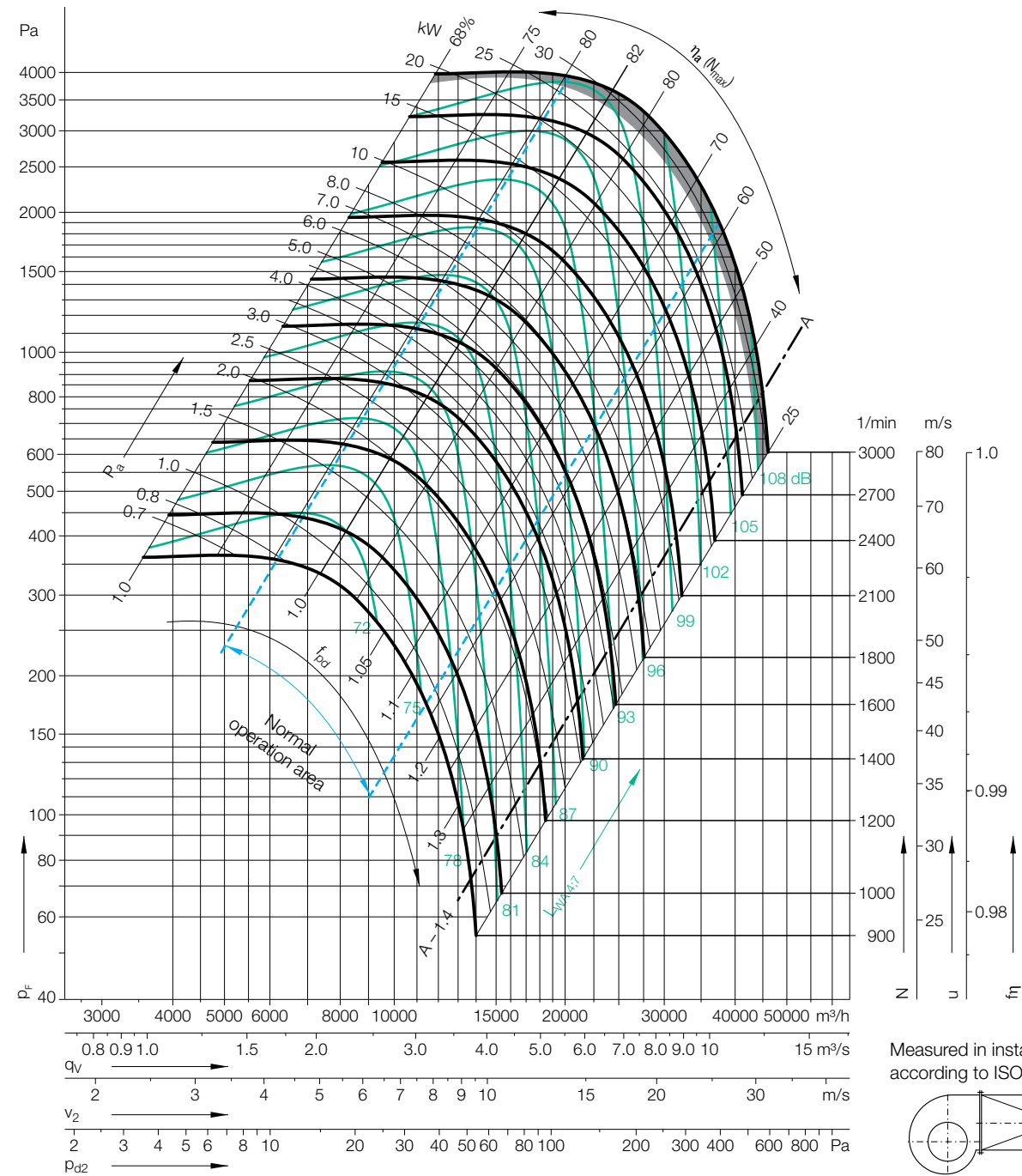
- all types suitable
- do not use in this area

### Impeller Data

Impeller diameter	$D_r$	510 mm
Number of blades	$z$	12
Moment of Inertia	$J$	0.9 kgm <sup>2</sup>

### Impeller Data

Impeller weight	$m$	19.9 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



## Determination of the Octave level

Relative sound power level for inlet side  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤1498 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
Speed	Duty point
>1498 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for discharge side  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB



# RZM 15-0500

## Technical Data

RZM 15-	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
0500-4D-19	4.0	4	112M	400	3~	50	△	8.2	1435	1470	51	205
0500-4D-21	5.5	4	132Sa	400	3~	50	△	11.4	1450	1630	56	234
0500-4D-23	7.5	4	132Ma	400	3~	50	△	15.4	1450	1820	62	234
0500-4D-26	11.0	4	160Ma	400	3~	50	△	22.0	1460	2070	70	298
0500-4D-28	15.0	4	160L	400	3~	50	△	30.0	1460	2300	78	298
0500-4W-30	18.5	4	180M	400	3~	50	△	35.0	1465	2470	84	336
0500-4W-31	22.0	4	180L	400	3~	50	△	41.5	1465	2610	89	336

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

**RZM 15-0500**

Motor	G	k2
112	1342	-
132	1431	-
160	1568	-
180	1568	27

**Accessories**

RZM 15-	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-
0500-4D-19	MM420 3AC 400V 4.00KW EMV B	6SE6400-3CC01-4BD3	-	-
0500-4D-21	MM420 3AC 400V 5.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0500-4D-23	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0500-4D-26	MM420 3AC 400V 11.0KW EMV B	6SE6400-3CC02-5CD3	-	-
0500-4D-28	-	6SE6400-3CC03-5CD3	6SE6430-2AD31-5CA0	6SE6400-0BE00-0AA0
0500-4W-30	-	6SE6400-3CC04-4DD0	6SE6430-2AD31-8DA0	6SE6400-0BE00-0AA0
0500-4W-31	-	6SE6400-3CC04-4DD0	6SE6430-2AD32-2DA0	6SE6400-0BE00-0AA0

# RZM 15-0560

## Technical Data

Please note coloured area!

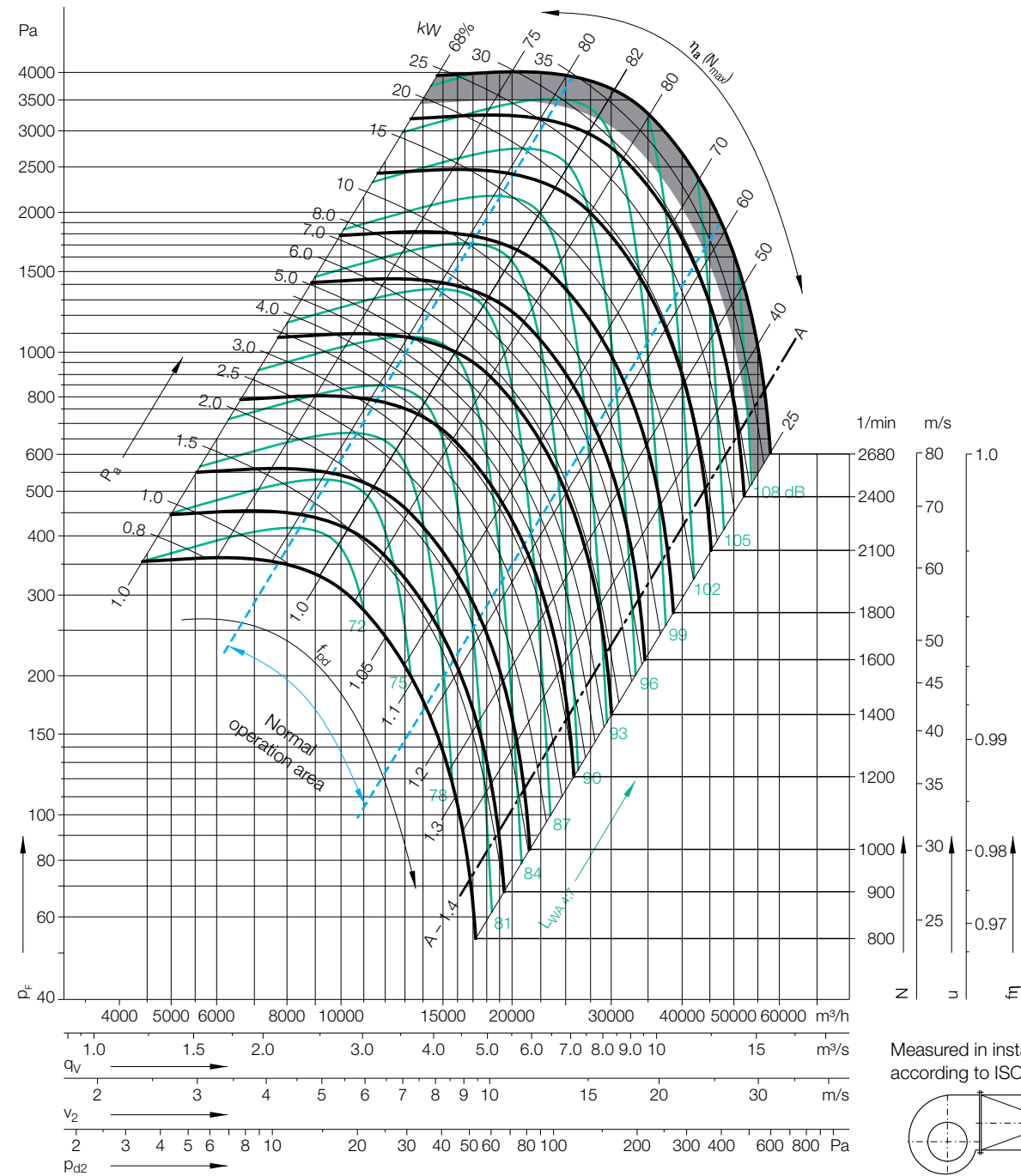
- all types suitable
- do not use in this area

### Impeller Data

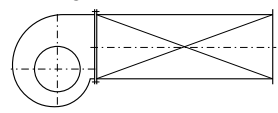
Impeller diameter	$D_r$	570 mm
Number of blades	$z$	12
Moment of Inertia	$J$	1.7 kgm <sup>2</sup>

### Impeller Data

Impeller weight	$m$	30 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



Measured in installation B according to ISO 5801:



## Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤1340 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
>1340 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

# RZM 15-0560

## Technical Data

RZM 15-	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
0560-4D-23	7.5	4	132Ma	400	3~	50	△	15.4	1450	1500	51	276
0560-4D-26	11.0	4	160Ma	400	3~	50	△	22.0	1460	1710	58	343
0560-4D-28	15.0	4	160L	400	3~	50	△	30.0	1460	1900	65	343
0560-4W-30	18.5	4	180M	400	3~	50	△	35.0	1465	2040	69	380
0560-4W-31	22.0	4	180L	400	3~	50	△	41.5	1465	2160	73	380
0560-4W-33	30.0	4	200L	400	3~	50	△	56.0	1470	2400	81	518

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

**RZM 15-0560**

Motor	G	G1	G3	k1	k2
132	1540	497	80	15	-
160	1734	497	80	15	-
180	1734	497	80	15	-
200	1774	518	100	-	1

ZSR 51-0560      ZSG 01-0560      WBS 01-0560

ZSG 15-2727

ZKE 15-2727      130

ZKF 15-2727      715      35

RD 0      RD 90      RD 270      LG 0      LG 90      LG 270

**Accessories**

RZM 15-	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-
0560-4D-23	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0560-4D-26	MM420 3AC 400V 11.0KW EMV B	6SE6400-3CC02-5CD3	-	-
0560-4D-28	-	6SE6400-3CC03-5CD3	6SE6430-2AD31-5CA0	6SE6400-0BE00-0AA0
0560-4W-30	-	6SE6400-3CC04-4DD0	6SE6430-2AD31-8DA0	6SE6400-0BE00-0AA0
0560-4W-31	-	6SE6400-3CC04-4DD0	6SE6430-2AD32-2DA0	6SE6400-0BE00-0AA0
0560-4W-33	-	6SE6400-3CC05-2DD0	6SE6430-2AD33-0DA0	6SE6400-0BE00-0AA0

# RZM 15-0630

# RZM 18-0630

### Technical Data

Please note coloured area!

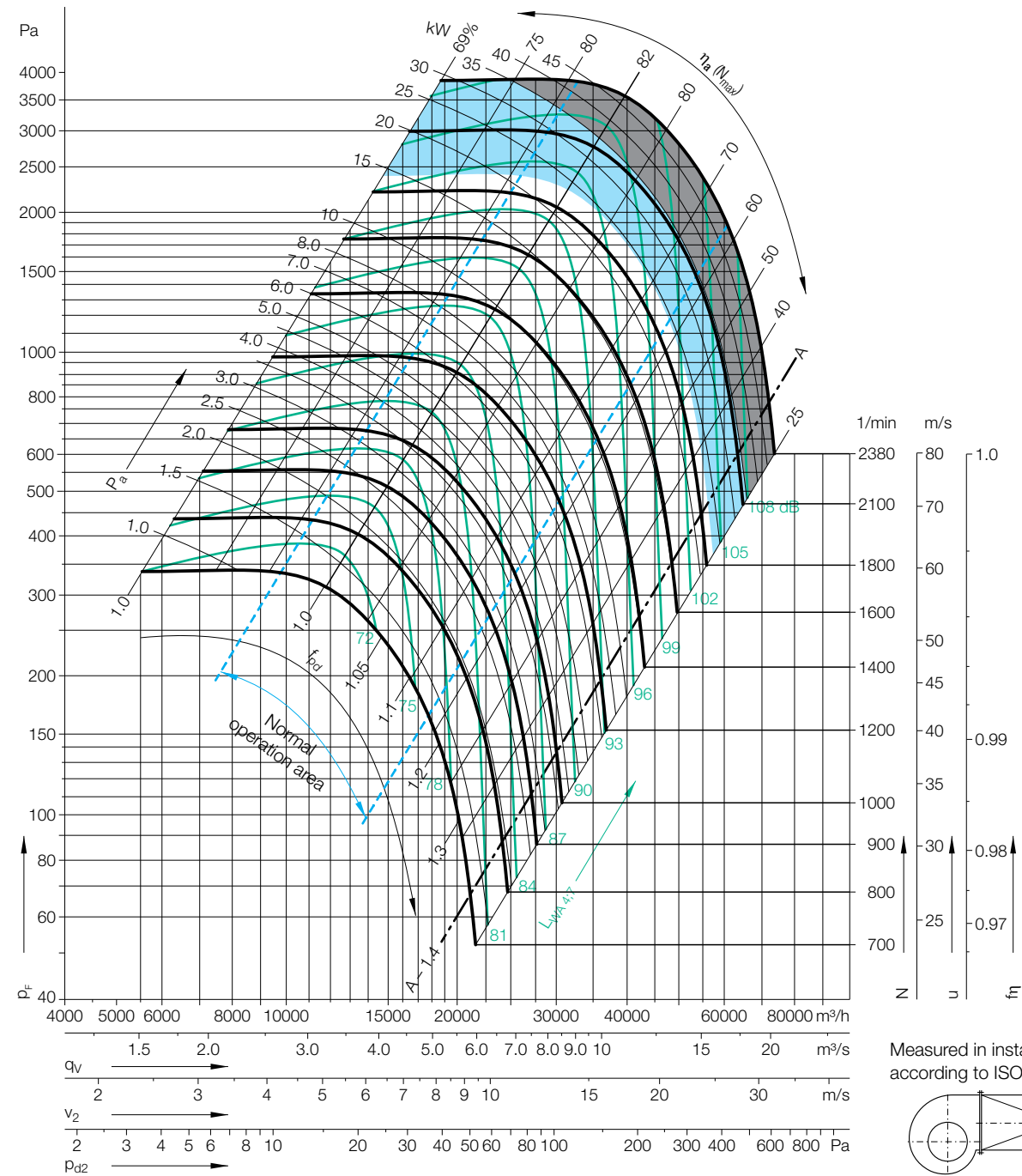
- all types suitable
- RZM 18 only
- do not use in this area

#### Impeller Data

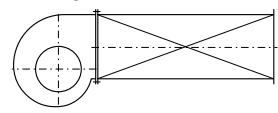
Impeller diameter	$D_r$	640 mm
Number of blades	$z$	12
Moment of Inertia	$J$	2.4 kgm <sup>2</sup>

#### Impeller Data

Impeller weight	$m$	38 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



Measured in installation B according to ISO 5801:



### Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤1194 1/min	≤0.8 $q_{Vopt}$	0	2	0	-3	-6	-9	-12	-19	dB
	>0.8-1.2 $q_{Vopt}$	-2	1	-2	-3	-6	-8	-14	-20	dB
	>1.2-1.6 $q_{Vopt}$	-3	0	-1	-3	-6	-8	-14	-21	dB
	>1.6-2.0 $q_{Vopt}$	-5	-3	-3	-3	-6	-7	-13	-21	dB
	>2.0 $q_{Vopt}$	-5	-3	-3	-3	-6	-7	-13	-21	dB
>1194 1/min	≤0.8 $q_{Vopt}$	-2	-1	-3	-1	-6	-10	-15	-21	dB
	>0.8-1.2 $q_{Vopt}$	-7	-4	-5	-1	-6	-9	-14	-21	dB
	>1.2-1.6 $q_{Vopt}$	-10	-7	-8	-1	-5	-8	-13	-21	dB
	>1.6-2.0 $q_{Vopt}$	-10	-8	-8	-2	-6	-8	-11	-18	dB
	>2.0 $q_{Vopt}$	-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

Speed	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤1194 1/min	≤0.8 $q_{Vopt}$	13	7	4	-3	-8	-14	-17	-25	dB
	>0.8-1.2 $q_{Vopt}$	10	5	3	-2	-7	-13	-17	-25	dB
	>1.2-1.6 $q_{Vopt}$	7	2	2	-2	-6	-12	-18	-27	dB
	>1.6-2.0 $q_{Vopt}$	5	1	1	-2	-6	-10	-17	-27	dB
	>2.0 $q_{Vopt}$	5	1	1	-2	-6	-10	-17	-27	dB
>1194 1/min	≤0.8 $q_{Vopt}$	11	4	2	0	-7	-12	-17	-24	dB
	>0.8-1.2 $q_{Vopt}$	7	1	-2	-3	-6	-10	-15	-23	dB
	>1.2-1.6 $q_{Vopt}$	3	-2	-4	-3	-5	-9	-14	-23	dB
	>1.6-2.0 $q_{Vopt}$	2	-3	-5	-3	-5	-9	-12	-21	dB
	>2.0 $q_{Vopt}$	2	-3	-5	-3	-5	-9	-12	-21	dB

# RZM 15-0630

# RZM 18-0630

## Technical Data

	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
<b>RZM 15-</b>												
0630-6W-23	4.0	6	132M	400	3~	50	△	8.7	970	1000	51	312
0630-6W-24	5.5	6	132M	400	3~	50	△	12.0	970	1110	57	312
0630-6W-26	7.5	6	160M	400	3~	50	△	16.1	975	1235	63	386
0630-4D-28	15.0	4	160L	400	3~	50	△	30.0	1460	1540	52	312
0630-4W-30	18.5	4	180M	400	3~	50	△	35.0	1465	1660	56	424
0630-4W-31	22.0	4	180L	400	3~	50	△	41.5	1465	1760	60	424
<b>RZM 18-</b>												
0630-4W-34	30.0	4	200L	400	3~	50	△	56.0	1470	1960	66	480
0630-4W-36	37.0	4	225S	400	3~	50	△	65.0	1470	2100	71	540

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

**RZM 15-0630**  
**RZM 18-0630**

Motor	G	G1	G3	k1	k2
132	1629	542	80	16	-
160	1766	542	80	16	-
180	1766	542	80	16	28
200	1940	561	100	51	-
225	1964	562	100	51	-

ZSR 51-0630      ZSG 01-0630      WBS 01-0630

ZSG 15-2828

ZKE 15-2828

ZKF 15-2828

**Accessories**

	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-
<b>RZM 15-</b>				
0630-6W-23	MM420 3AC 400V 4.00KW EMV B	6SE6400-3CC01-4BD3	-	-
0630-6W-24	MM420 3AC 400V 5.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0630-6W-26	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0630-4D-28	-	6SE6400-3CC03-5CD3	6SE6430-2AD31-5CA0	6SE6400-0BE00-0AA0
0630-4W-30	-	6SE6400-3CC04-4DD0	6SE6430-2AD31-8DA0	6SE6400-0BE00-0AA0
0630-4W-31	-	6SE6400-3CC04-4DD0	6SE6430-2AD32-2DA0	6SE6400-0BE00-0AA0
<b>RZM 18-</b>				
0630-4W-34	-	6SE6400-3CC05-2DD0	6SE6430-2AD33-0DA0	6SE6400-0BE00-0AA0
0630-4W-36	-	6SE6400-3CC08-3ED0	6SE6430-2AD33-7EA0	6SE6400-0BE00-0AA0

# RZM 15-0710

# RZM 18-0710

### Technical Data

Please note coloured area!

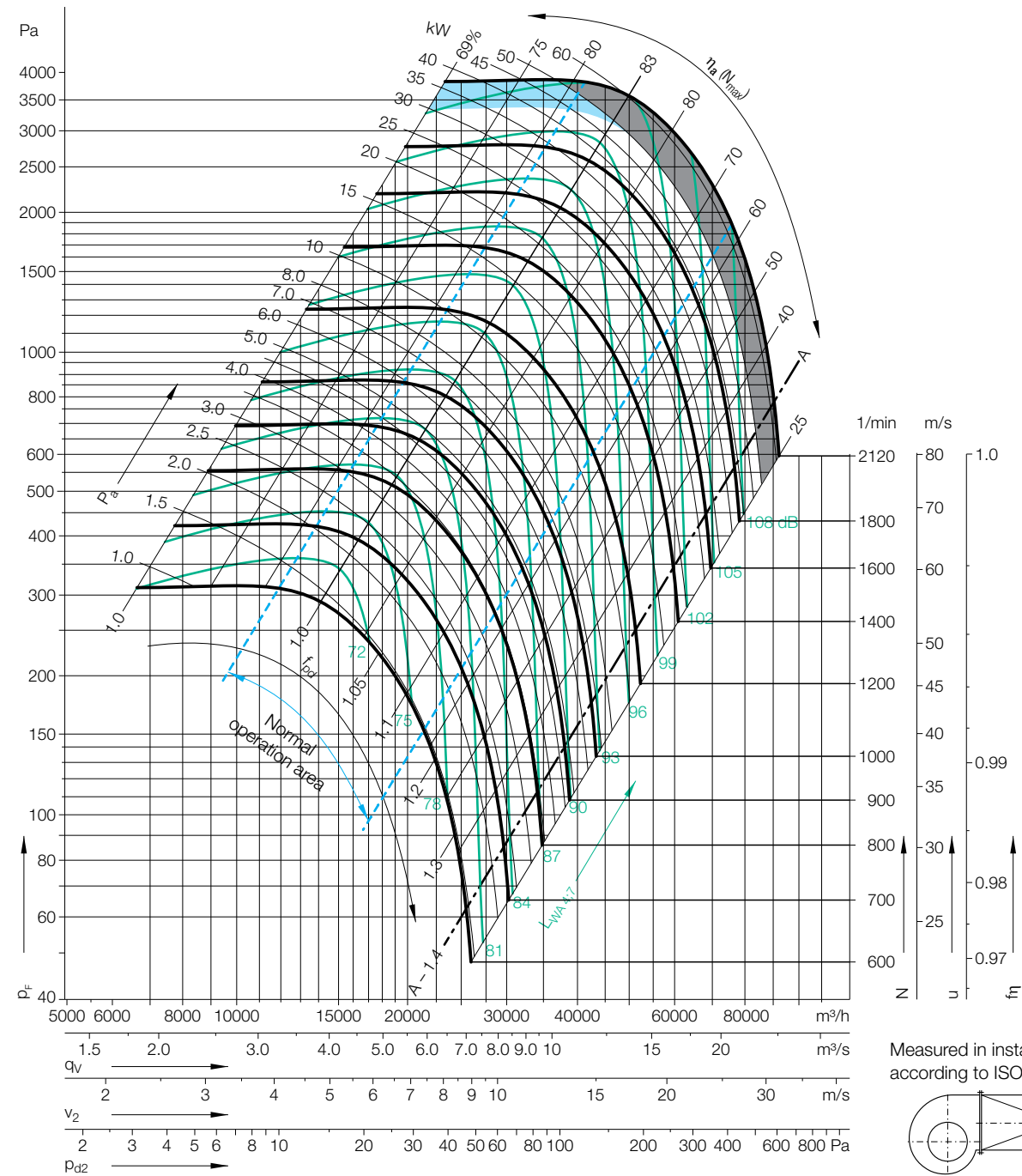
- all types suitable
- RZM 18 only
- do not use in this area

#### Impeller Data

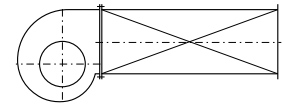
Impeller diameter	$D_r$	718 mm
Number of blades	$z$	12
Moment of Inertia	$J$	4.8 kgm <sup>2</sup>

#### Impeller Data

Impeller weight	$m$	52 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



Measured in installation B according to ISO 5801:



### Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤1064 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
Speed	Duty point
>1064 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

# RZM 15-0710

# RZM 18-0710

## Technical Data

	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
<b>RZM 15-</b>												
0710-6W-26	7.5	6	160M	400	3~	50	△	16.1	975	1015	52	453
0710-6W-28	11.0	6	160L	400	3~	50	△	22.5	975	1160	59	453
0710-6W-31	15.0	6	180L	400	3~	50	△	31.0	975	1290	66	491
0710-4W-31	22.0	4	180L	400	3~	50	△	41.5	1465	1445	49	491
0710-4W-33	30.0	4	200L	400	3~	50	△	56.0	1470	1610	54	618
0710-4D-36	37.0	4	225S	400	3~	50	△	69.0	1475	1730	58	689
0710-4D-37	45.0	4	225M	400	3~	50	△	82.0	1475	1850	62	689
<b>RZM 18-</b>												
0710-4D-39	55.0	4	250M	400	3~	50	△	101.0	1480	1980	66	828

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

RZM 15-0710  
RZM 18-0710

Motor	G	k1	k2
160	1936	31	-
180	1936	31	6
200	2039	31	44
225	2039	31	25
250	2185	92	39

**Accessories**

	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-
<b>RZM 15-</b>				
0710-6W-26	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	-	-
0710-6W-28	MM420 3AC 400V 11.0KW EMV B	6SE6400-3CC02-5CD3	-	-
0710-6W-31	-	6SE6400-3CC04-4DD0	6SE6430-2AD31-8DA0	6SE6400-0BE00-0AA0
0710-4W-31	-	6SE6400-3CC04-4DD0	6SE6430-2AD32-2DA0	6SE6400-0BE00-0AA0
0710-4W-33	-	6SE6400-3CC05-2DD0	6SE6430-2AD33-0DA0	6SE6400-0BE00-0AA0
0710-4D-36	-	6SE6400-3CC08-3ED0	6SE6430-2AD33-7EA0	6SE6400-0BE00-0AA0
0710-4D-37	-	6SE6400-3CC08-3ED0	6SE6430-2AD34-5EA0	6SE6400-0BE00-0AA0
<b>RZM 18-</b>				
0710-4D-39	-	6SE6400-3CC11-2FD0	6SE6430-2AD35-5FA0	6SE6400-0BE00-0AA0

# RZM 15-0800

# RZM 18-0800

### Technical Data

Please note coloured area!

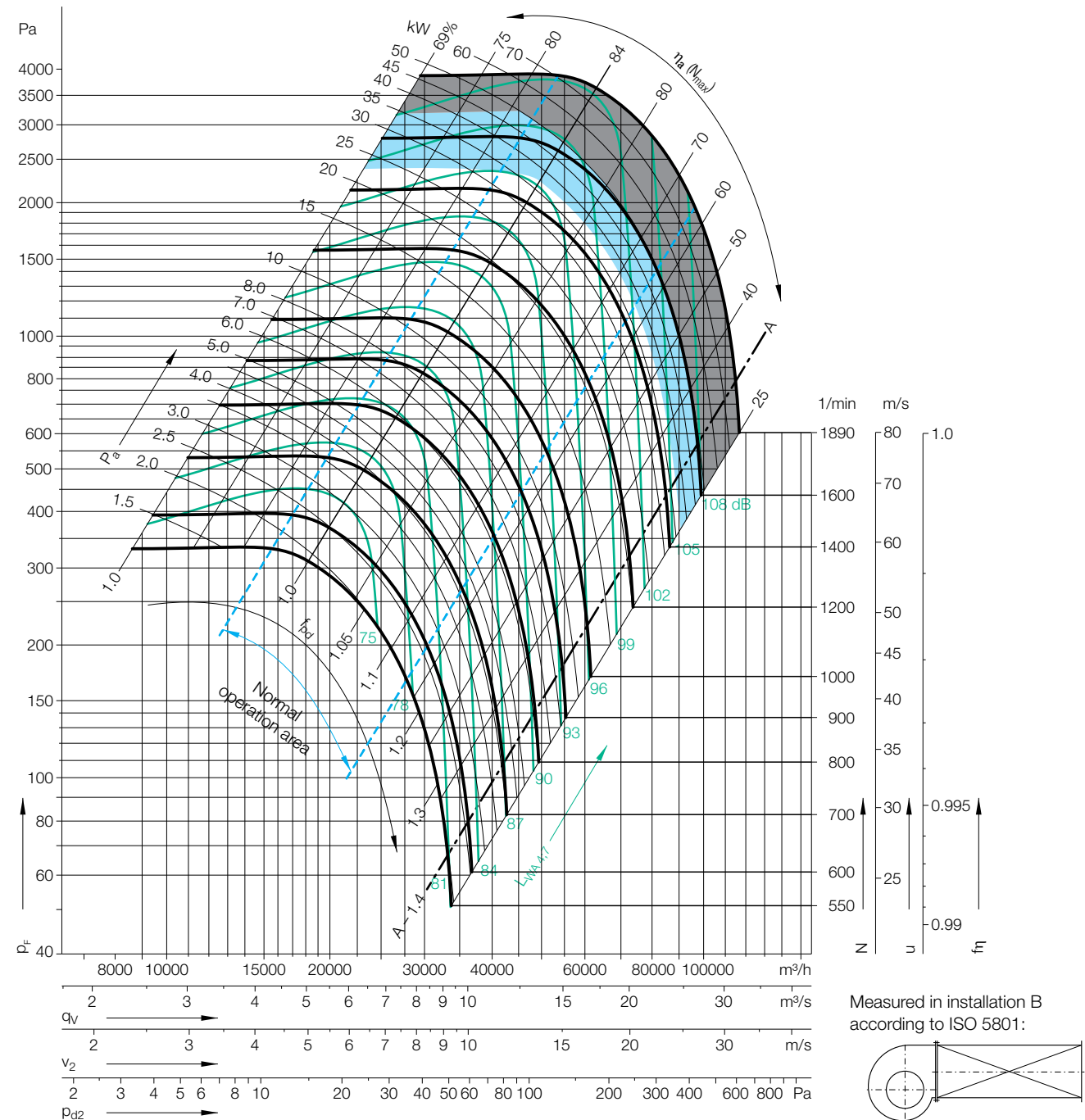
- all types suitable
- RZM 18 only
- do not use in this area

#### Impeller Data

Impeller diameter	$D_r$	808 mm
Number of blades	$z$	12
Moment of Inertia	$J$	6.85 kgm <sup>2</sup>

#### Impeller Data

Impeller weight	$m$	69 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



### Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤945 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
Speed	Duty point
>945 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB



# RZM 15-0800

# RZM 18-0800

## Technical Data

	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
<b>RZM 15-</b>												
0800-6W-28	11.0	6	160L	400	3~	50	△	22.5	975	960	49	524
0800-6W-31	15.0	6	180L	400	3~	50	△	31.0	975	1050	54	562
0800-6W-33	18.5	6	200L	400	3~	50	△	36.0	978	1130	58	681
0800-6W-34	22.0	6	200L	400	3~	50	△	42.5	978	1200	61	681
0800-6W-37	30.0	6	225M	400	3~	50	△	57.0	980	1330	67	751
0800-6W-39	37.0	6	250M	400	3~	50	△	70.0	982	1430	72	898
<b>RZM 18-</b>												
0800-4D-37	45.0	4	225M	400	3~	50	△	82.0	1475	1510	51	865
0800-4D-39	55.0	4	250M	400	3~	50	△	101.0	1480	1615	54	970

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

**RZM 15-0800**  
**RZM 18-0800**

Motor	G	G1	G3	k1	k2	P1
160	2046	665	100	30	-	500
180	2046	665	100	30	-	500
200	2149	665	100	30	-	500
225	2210	665	100	91	25	500
250	2299	670	120	86	39	495

ZSR 51-0800      ZSG 01-0800      WBS 01-0800

ZSG 15-3232

ZKE 15-3232

ZKF 15-3232

**Accessories**

	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-
<b>RZM 15-</b>				
0800-6W-28	MM420 3AC 400V 11.0KW EMV B	6SE6400-3CC02-5CD3	-	-
0800-6W-31	-	6SE6400-3CC04-4DD0	6SE6430-2AD31-8DA0	6SE6400-0BE00-0AA0
0800-6W-33	-	6SE6400-3CC04-4DD0	6SE6430-2AD32-2DA0	6SE6400-0BE00-0AA0
0800-6W-34	-	6SE6400-3CC05-2DD0	6SE6430-2AD33-0DA0	6SE6400-0BE00-0AA0
0800-6W-37	-	6SE6400-3CC08-3ED0	6SE6430-2AD33-7EA0	6SE6400-0BE00-0AA0
0800-6W-39	-	6SE6400-3CC08-3ED0	6SE6430-2AD33-7EA0	6SE6400-0BE00-0AA0
<b>RZM 18-</b>				
0800-4D-37	-	6SE6400-3CC08-3ED0	6SE6430-2AD34-5EA0	6SE6400-0BE00-0AA0
0800-4D-39	-	6SE6400-3CC11-2FD0	6SE6430-2AD35-5FA0	6SE6400-0BE00-0AA0

# RZM 15-0900

# RZM 18-0900

### Technical Data

Please note coloured area!

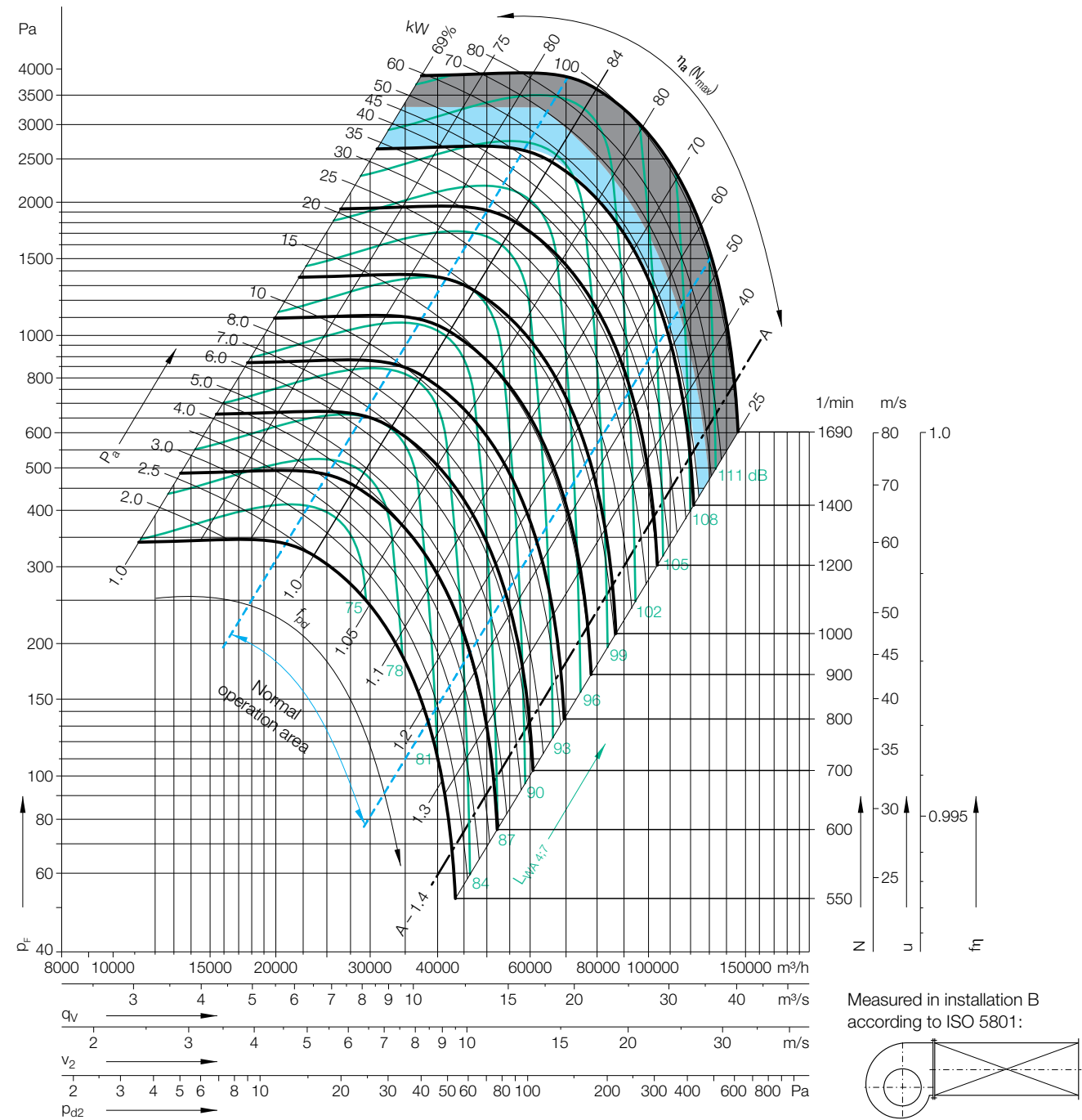
- all types suitable
- RZM 18 only
- do not use in this area

#### Impeller Data

Impeller diameter	$D_r$	905 mm
Number of blades	$z$	12
Moment of Inertia	$J$	15.5 kgm <sup>2</sup>

#### Impeller Data

Impeller weight	$m$	109 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



### Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤844 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
Speed	Duty point
>844 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

# RZM 15-0900

# RZM 18-0900

## Technical Data

	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
<b>RZM 15-</b>												
0900-8D-31	11.0	8	180L	400	3~	50	△	25.0	725	790	54	706
0900-8D-33	15.0	8	200La	400	3~	50	△	32.5	725	870	60	847
0900-6W-34	22.0	6	200L	400	3~	50	△	42.5	978	985	50	847
0900-6W-37	30.0	6	225M	400	3~	50	△	57.0	980	1100	56	981
0900-6W-39	37.0	6	250M	400	3~	50	△	70.0	982	1180	60	1028
0900-6W-41	45.0	6	280S	400	3~	50	△	83.0	985	1260	63	1265
0900-6W-42	55.0	6	280M	400	3~	50	△	99.0	985	1350	68	1265
<b>RZM 18-</b>												
0900-4W-41	75.0	4	280S	400	3~	50	△	132.0	1485	1485	50	1354

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

RZM 15-0900  
RZM 18-0900

Motor	G	k1	k2
180	2246	35	-
200	2246	35	2
225	2292	35	25
250	2376	35	39
280	2508	95	40

**Accessories**

	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-	Line Choke for 3~
<b>RZM 15-</b>			
0900-8D-31	6SE6430-2AD31-5CA0	6SE6400-0BE00-0AA0	6SE6400-3CC03-5CD3
0900-8D-33	6SE6430-2AD31-8DA0	6SE6400-0BE00-0AA0	6SE6400-3CC04-4DD0
0900-6W-34	6SE6430-2AD33-0DA0	6SE6400-0BE00-0AA0	6SE6400-3CC05-2DD0
0900-6W-37	6SE6430-2AD33-7EA0	6SE6400-0BE00-0AA0	6SE6400-3CC08-3ED0
0900-6W-39	6SE6430-2AD33-7EA0	6SE6400-0BE00-0AA0	6SE6400-3CC08-3ED0
0900-6W-41	6SE6430-2AD34-5EA0	6SE6400-0BE00-0AA0	6SE6400-3CC08-3ED0
0900-6W-42	6SE6430-2AD35-5FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-2FD0
<b>RZM 18-</b>			
0900-4W-41	6SE6430-2AD37-5FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-2FD0

# RZM 15-1000

# RZM 18-1000

### Technical Data

Please note coloured area!

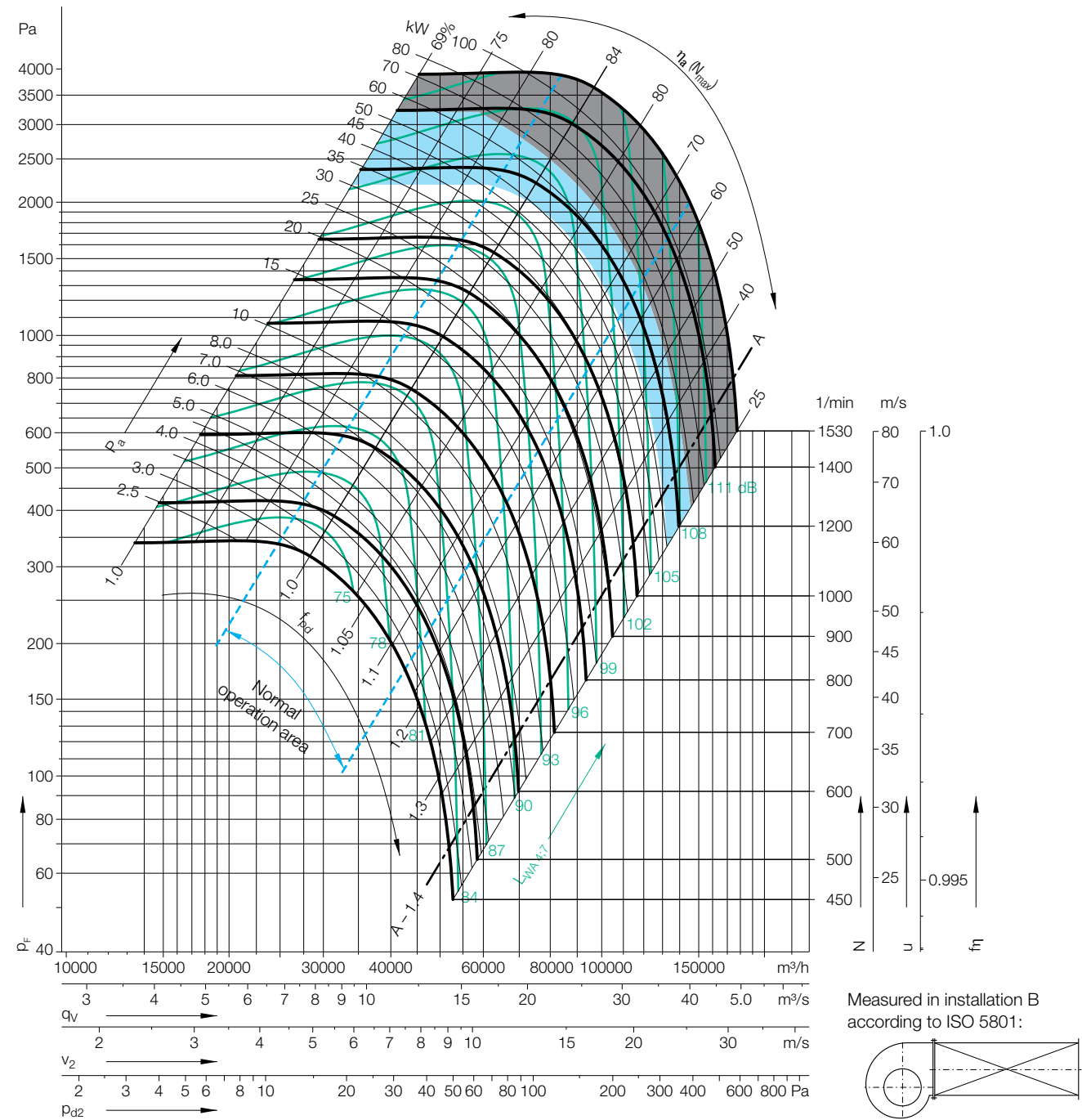
- all types suitable
- RZM 18 only
- do not use in this area

#### Impeller Data

Impeller diameter	$D_r$	1000 mm
Number of blades	$z$	12
Moment of Inertia	$J$	22 kgm <sup>2</sup>

#### Impeller Data

Impeller weight	$m$	133 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



### Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤764 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
Speed	Duty point
>764 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	2	0	-3	-6	-9	-12	-19	dB
-2	1	-2	-3	-6	-8	-14	-20	dB
-3	0	-1	-3	-6	-8	-14	-21	dB
-5	-3	-3	-3	-6	-7	-13	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-2	-1	-3	-1	-6	-10	-15	-21	dB
-7	-4	-5	-1	-6	-9	-14	-21	dB
-10	-7	-8	-1	-5	-8	-13	-21	dB
-10	-8	-8	-2	-6	-8	-11	-18	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
13	7	4	-3	-8	-14	-17	-25	dB
10	5	3	-2	-7	-13	-17	-25	dB
7	2	2	-2	-6	-12	-18	-27	dB
5	1	1	-2	-6	-10	-17	-27	dB
63	125	250	500	1000	2000	4000	8000	Hz
11	4	2	0	-7	-12	-17	-24	dB
7	1	-2	-3	-6	-10	-15	-23	dB
3	-2	-4	-3	-5	-9	-14	-23	dB
2	-3	-5	-3	-5	-9	-12	-21	dB

# RZM 15-1000

# RZM 18-1000

## Technical Data

	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
<b>RZM 15-</b>												
1000-8D-33	15.0	8	200La	400	3~	50	△	32.5	725	735	50	925
1000-8D-36	18.5	8	225S	400	3~	50	△	38.5	730	790	54	995
1000-8D-37	22.0	8	225M	400	3~	50	△	45.0	730	840	57	995
1000-8D-39	30.0	8	250Ma	400	3~	50	△	58.0	730	930	63	1165
1000-6W-39	37.0	6	250M	400	3~	50	△	70.0	982	995	50	1165
1000-6W-41	45.0	6	280S	400	3~	50	△	83.0	985	1060	53	1386
1000-6W-42	55.0	6	280M	400	3~	50	△	99.0	985	1140	57	1386
<b>RZM 18-</b>												
1000-6W-44	75.0	6	315S	400	3~	50	△	138.0	988	1265	64	1640

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

RZM 15-1000  
RZM 18-1000

Motor	G	G1	G3	k1	k2
200	2385	803	120	34	2
225	2431	803	120	34	25
250	2515	803	120	34	39
280	2647	833	140	4	10
315	2862	833	140	64	-

**Accessories**

	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-	Line Choke for 3~
<b>RZM 15-</b>			
1000-8D-33	6SE6430-2AD31-8DA0	6SE6400-0BE00-0AA0	6SE6400-3CC04-4DD0
1000-8D-36	6SE6430-2AD32-2DA0	6SE6400-0BE00-0AA0	6SE6400-3CC04-4DD0
1000-8D-37	6SE6430-2AD33-0DA0	6SE6400-0BE00-0AA0	6SE6400-3CC05-2DD0
1000-8D-39	6SE6430-2AD33-0DA0	6SE6400-0BE00-0AA0	6SE6400-3CC05-2DD0
1000-6W-39	6SE6430-2AD33-7EA0	6SE6400-0BE00-0AA0	6SE6400-3CC08-3ED0
1000-6W-41	6SE6430-2AD34-5EA0	6SE6400-0BE00-0AA0	6SE6400-3CC08-3ED0
1000-6W-42	6SE6430-2AD35-5FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-2FD0
<b>RZM 18-</b>			
1000-6W-44	6SE6430-2AD38-8FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-7FD0

# RZM 13-1120

## Technical Data

Please note coloured area!

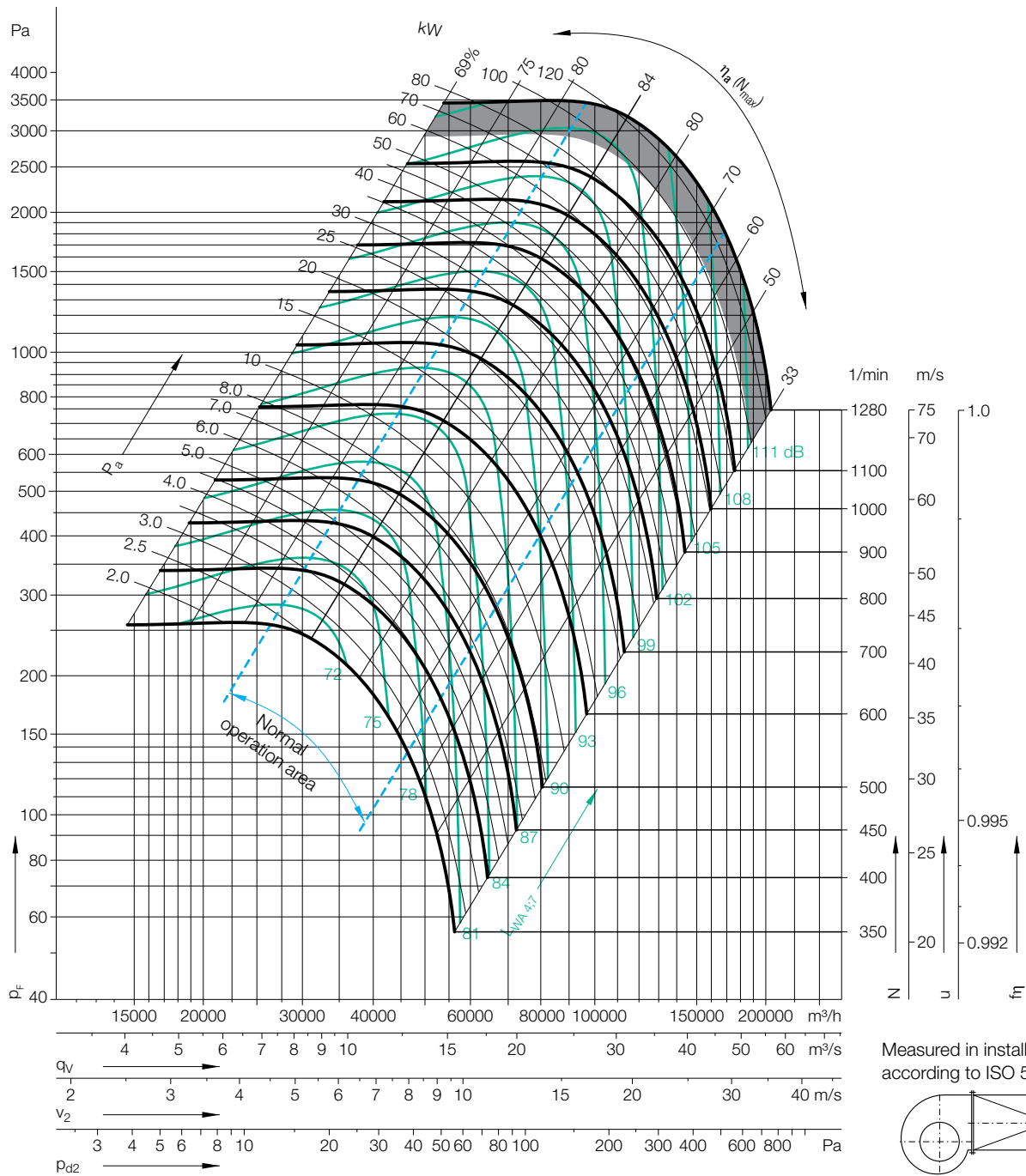
- all types suitable
- do not use in this area

### Impeller Data

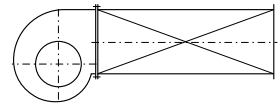
Impeller diameter	$D_r$	1120 mm
Number of blades	$z$	12
Moment of Inertia	$J$	32 kgm <sup>2</sup>

### Impeller Data

Impeller weight	$m$	200 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



Measured in installation B according to ISO 5801:



## Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
0	3	1	-2	-6	-9	-13	-20	dB
-1	2	1	-2	-6	-9	-14	-21	dB
-2	1	1	-3	-5	-8	-15	-21	dB
-5	-3	-2	-3	-5	-7	-14	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-1	-1	-3	-2	-7	-11	-16	-21	dB
-6	-4	-6	-2	-7	-10	-15	-21	dB
-10	-7	-8	-3	-6	-9	-14	-21	dB
-10	-7	-8	-3	-6	-8	-11	-20	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
12	7	4	-3	-8	-14	-18	-26	dB
10	5	3	-3	-8	-14	-19	-28	dB
7	2	3	-3	-6	-13	-20	-28	dB
4	1	2	-3	-6	-12	-19	-28	dB
63	125	250	500	1000	2000	4000	8000	Hz
10	4	1	-1	-7	-13	-18	-25	dB
6	2	-2	-3	-6	-12	-15	-25	dB
2	-3	-3	-3	-6	-11	-15	-25	dB
1	-3	-5	-3	-6	-11	-13	-22	dB

# RZM 13-1120

## Technical Data

RZM 13-	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
1120-8D-39	30	8	250M	400	3~	50	△	58	730	770	52	1490
1120-8D-41	37	8	280S	400	3~	50	△	72	735	830	56	1605
1120-8D-42	45	8	280M	400	3~	50	△	87	735	890	60	1665
1120-8D-44	55	8	315S	400	3~	50	△	106	740	950	64	1805
1120-6W-44	75	6	315S	400	3~	50	△	138	988	1050	53	1835
1120-6W-46	90	6	315M	400	3~	50	△	165	988	1115	56	1895

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

Motor	G	v	x	y
250	2834	1640	1590	795
280	2896	1640	1590	795
315	3072	1720	1670	835

**Accessories**

RZM 13-	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-	Line Choke for 3~
1120-8D-39	6SE6430-2AD33-0DA0	6SE6400-0BE00-0AA0	6SE6400-3CC05-2DD0
1120-8D-41	6SE6430-2AD34-5EA0	6SE6400-0BE00-0AA0	6SE6400-3CC08-3ED0
1120-8D-42	6SE6430-2AD35-5FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-2FD0
1120-8D-44	6SE6430-2AD37-5FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-2FD0
1120-6W-44	6SE6430-2AD38-8FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-7FD0
1120-6W-46	6SE6430-2AD38-8FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-7FD0

# RZM 13-1250

## Technical Data

Please note coloured area!

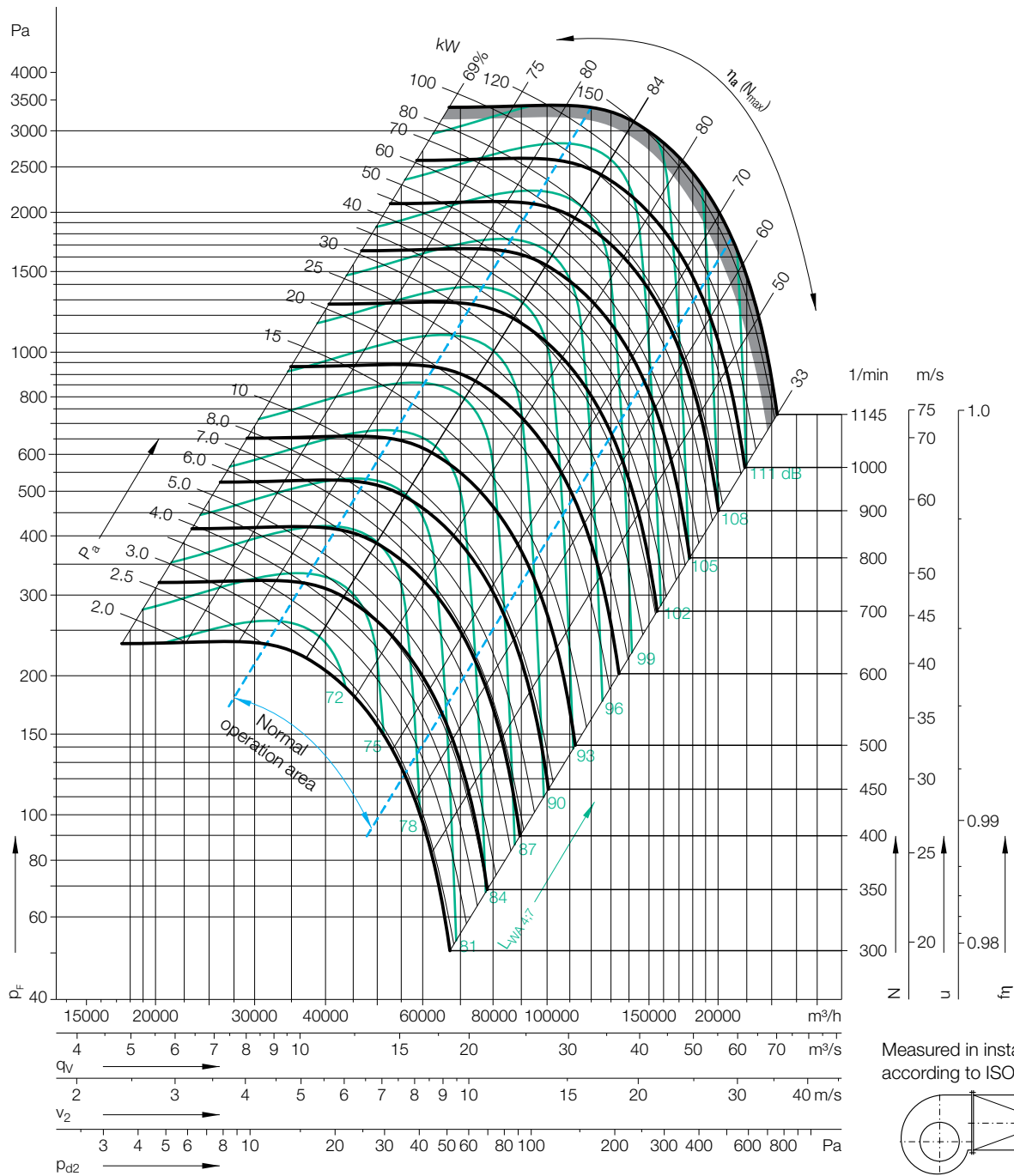
- all types suitable
- do not use in this area

### Impeller Data

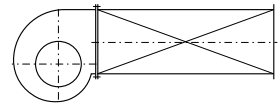
Impeller diameter	$D_r$	125 mm
Number of blades	$z$	12
Moment of Inertia	$J$	62.5 kgm <sup>2</sup>

### Impeller Data

Impeller weight	$m$	263 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



Measured in installation B according to ISO 5801:



## Determination of the Octave level

Relative sound power level for inlet side  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
0	3	1	-2	-6	-9	-13	-20	dB
-1	2	1	-2	-6	-9	-14	-21	dB
-2	1	1	-3	-5	-8	-15	-21	dB
-5	-3	-2	-3	-5	-7	-14	-21	dB
63	125	250	500	1000	2000	4000	8000	Hz
-1	-1	-3	-2	-7	-11	-16	-21	dB
-6	-4	-6	-2	-7	-10	-15	-21	dB
-10	-7	-8	-3	-6	-9	-14	-21	dB
-10	-7	-8	-3	-6	-8	-11	-20	dB

Relative sound power level for discharge side  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
12	7	4	-3	-8	-14	-18	-26	dB
10	5	3	-3	-8	-14	-19	-28	dB
7	2	3	-3	-6	-13	-20	-28	dB
4	1	2	-3	-6	-12	-19	-28	dB
63	125	250	500	1000	2000	4000	8000	Hz
10	4	1	-1	-7	-13	-18	-25	dB
6	2	-2	-3	-6	-12	-15	-25	dB
2	-3	-3	-3	-6	-11	-15	-25	dB
1	-3	-5	-3	-6	-11	-13	-22	dB



# RZM 13-1250

## Technical Data

RZM 13-	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
1250-8D-42	45	8	280M	400	3~	50	△	87	735	740	50	2115
1250-8D-44	55	8	315S	400	3~	50	△	106	740	790	53	2255
1250-8D-46	75	8	315M	400	3~	50	△	140	738	880	59	2370
1250-8D-50	90	8	315L	400	3~	50	△	168	738	935	63	2510
1250-6W-50	110	6	315L	400	3~	50	△	196	988	990	50	2490
1250-6W-51	132	6	315L	400	3~	50	△	235	988	1055	53	2580

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

Motor	G	k2
280	3096	-
315	3272	127

**Accessories**

RZM 13-	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-	Line Choke for 3~	Interference Suppression Filter - Class A
1250-8D-42	6SE6430-2AD35-5FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-2FD0	-
1250-8D-44	6SE6430-2AD37-5FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-2FD0	-
1250-8D-46	6SE6430-2AD38-8FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-7FD0	-
1250-8D-50	6SE6430-2AD38-8FA0	6SE6400-0BE00-0AA0	6SE6400-3CC11-7FD0	-
1250-6W-50	6SE6430-2UD41-3FA0	6SE6400-0BE00-0AA0	6SL3000-OCE32-8AA0	6SL3000-0BE34-4AA0
1250-6W-51	6SE6430-2UD41-3FA0	6SE6400-0BE00-0AA0	6SL3000-OCE32-8AA0	6SL3000-0BE34-4AA0

# RZM 13-1400

## Technical Data

Please note coloured area!

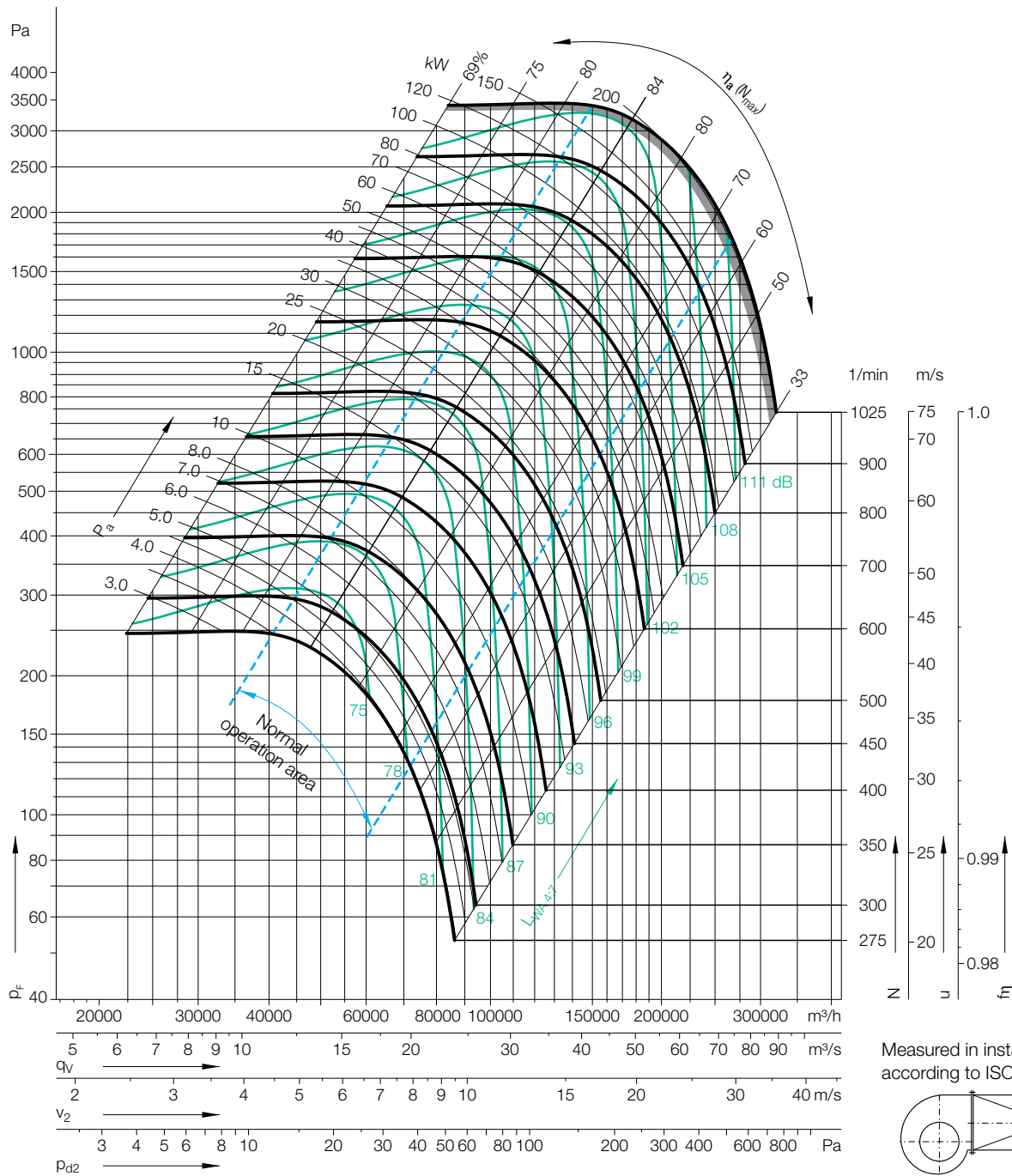
- all types suitable
- do not use in this area

### Impeller Data

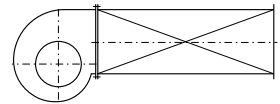
Impeller diameter	$D_r$	1400 mm
Number of blades	$z$	12
Moment of Inertia	$J$	120 kgm <sup>2</sup>

### Impeller Data

Impeller weight	$m$	335 kg
Density of media	$\rho_1$	1.2 kg/m <sup>3</sup>



Measured in installation B according to ISO 5801:



## Determination of the Octave level

Relative sound power level for **inlet side**  $L_{Wrel7}$  at octave band correction factors  $f_c$ .

Speed	Duty point
≤546 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$
>546 1/min	≤0.8 $q_{Vopt}$
	>0.8-1.2 $q_{Vopt}$
	>1.2-1.6 $q_{Vopt}$
	>1.6 $q_{Vopt}$

63	125	250	500	1000	2000	4000	8000	Hz
0	3	1	-2	-6	-9	-13	-20	dB
-1	2	1	-2	-6	-9	-14	-21	dB
-2	1	1	-3	-5	-8	-15	-21	dB
-5	-3	-2	-3	-5	-7	-14	-21	dB
-1	-1	-3	-2	-7	-11	-16	-21	dB
-6	-4	-6	-2	-7	-10	-15	-21	dB
-10	-7	-8	-3	-6	-9	-14	-21	dB
-10	-7	-8	-3	-6	-8	-11	-20	dB

Relative sound power level for **discharge side**  $L_{Wrel4}$  at octave band correction factors  $f_c$ .

63	125	250	500	1000	2000	4000	8000	Hz
12	7	4	-3	-8	-14	-18	-26	dB
10	5	3	-3	-8	-14	-19	-28	dB
7	2	3	-3	-6	-13	-20	-28	dB
4	1	2	-3	-6	-12	-19	-28	dB
10	4	1	-1	-7	-13	-18	-25	dB
6	2	-2	-3	-6	-12	-15	-25	dB
2	-3	-3	-3	-6	-11	-15	-25	dB
1	-3	-5	-3	-6	-11	-13	-22	dB

# RZM 13-1400

## Technical Data

RZM 13-	Nominal motor power kW	Poles	Motor size	Motor voltage V	Phases	Nominal frequency Hz	Connection	Nominal motor current A	Nominal motor speed 1/min	Max. fan speed 1/min	Max. operating frequency Hz	Weight kg
1400-8D-50	90	8	315L	400	3~	50	△	168	738	770	52	2915
1400-8D-51	110	8	315L	400	3~	50	△	205	738	820	55	3025
1400-8D-52	132	8	315L	400	3~	50	△	245	738	875	59	3135
1400-8D-53	160	8	315	400	3~	50	△	295	739	925	62	3235

**Motor code:**

- W = Asynchronous motor (efficiency class IE2)
- D = Asynchronous motor

**Dimensions** in mm, subject to change.

Motor	k2
315 S/M/L	-
315-6/8PB80	101

## Accessories

RZM 13-	Frequency inverter 6SE6430-	Control Panel for frequency inverter 6SE6420- and 6SE6430-	Line Choke for 3~	Interference Suppression Filter - Class A
1400-8D-50	6SE6430-2AD38-8FA0	6SE6400-OBE00-OAA0	6SE6400-3CC11-7FD0	-
1400-8D-51	6SE6430-2UD41-3FA0	6SE6400-OBE00-OAA0	6SL3000-OCE32-8AA0	6SL3000-OBE34-4AA0
1400-8D-52	6SE6430-2UD41-6GA0	6SE6400-OBE00-OAA0	6SL3000-OCE33-3AA0	6SL3000-OBE34-4AA0
1400-8D-53	6SE6430-2UD42-0GA0	6SE6400-OBE00-OAA0	6SL3000-OCE35-1AA0	6SL3000-OBE34-4AA0

# Technical Data

## Technical Data according to ErP-REGULATION 327/2011/EU

RZM	Overall efficiency $\eta_e$ [%]	Measurement category	Efficiency category	achieved efficiency grade at optimum energy efficiency "N"	required efficiency grade acc. to ErP since		Speed control (VSD)	Rated motor power at optimum energy efficiency $P_e$ [kW]	Flow rate at optimum energy efficiency $q_v$ [m³/h]	Pressure at optimum energy efficiency $p_F$ [Pa]	Speed at optimum energy efficiency $N$ [1/min]	specific ratio"
					2013	2015						
15-0400-4W-16	68.5	B	TOTAL	75.2	61	64	must be installed	2.28	7149	786	1760	1.008
15-0400-4W-17	69.9	B	TOTAL	75.3	61	64	must be installed	3.04	7921	965	1950	1.010
15-0400-4W-19	70.7	B	TOTAL	74.9	61	64	must be installed	3.97	8693	1162	2140	1.012
15-0400-4W-21	71.2	B	TOTAL	74.0	61	64	must be installed	5.49	9708	1450	2390	1.014
15-0400-4W-23	72.6	B	TOTAL	74.3	61	64	must be installed	6.93	10562	1716	2600	1.017
15-0400-2W-26	73.2	B	TOTAL	73.3	61	64	must be installed	10.19	12044	2232	2965	1.022
15-0400-2W-27	74.3	B	TOTAL	74.0	61	64	must be installed	13.85	13405	2764	3300	1.028
15-0450-4W-19	70.6	B	TOTAL	74.9	61	64	must be installed	3.91	10063	988	1760	1.010
15-0450-4W-21	71.3	B	TOTAL	74.2	61	64	must be installed	5.35	11206	1225	1960	1.012
15-0450-4W-23	72.7	B	TOTAL	74.2	61	64	must be installed	7.21	12464	1515	2180	1.015
15-0450-4W-26	73.7	B	TOTAL	73.7	61	64	must be installed	10.48	14179	1961	2480	1.020
15-0450-4W-28	74.5	B	TOTAL	74.2	61	64	must be installed	14.13	15723	2411	2750	1.024
15-0450-2W-28	75.0	B	TOTAL	74.5	61	64	must be installed	16.73	16667	2709	2915	1.027
15-0450-2W-30	75.4	B	TOTAL	74.7	61	64	must be installed	19.62	17610	3024	3080	1.030
15-0500-4W-19	71.4	B	TOTAL	75.6	61	64	must be installed	4.02	11813	875	1460	1.009
15-0500-4W-21	72.0	B	TOTAL	74.7	61	64	must be installed	5.55	13188	1091	1630	1.011
15-0500-4W-23	73.3	B	TOTAL	74.7	61	64	must be installed	7.46	14645	1345	1810	1.013
15-0500-4W-26	74.0	B	TOTAL	74.0	61	64	must be installed	11.06	16748	1759	2070	1.018
15-0500-4W-28	74.8	B	TOTAL	74.5	61	64	must be installed	14.81	18528	2153	2290	1.022
15-0500-4W-30	75.7	B	TOTAL	75.1	61	64	must be installed	18.37	19985	2505	2470	1.025
15-0500-4W-31	75.8	B	TOTAL	75.0	61	64	must be installed	21.63	21117	2797	2610	1.028
15-0560-4W-23	73.1	B	TOTAL	74.4	61	64	must be installed	7.43	16944	1154	1500	1.012
15-0560-4W-26	74.0	B	TOTAL	74.0	61	64	must be installed	10.87	19316	1500	1710	1.015
15-0560-4W-28	75.0	B	TOTAL	74.7	61	64	must be installed	14.71	21462	1851	1900	1.019
15-0560-4W-30	75.6	B	TOTAL	75.0	61	64	must be installed	18.08	23043	2134	2040	1.021
15-0560-4W-31	76.0	B	TOTAL	75.2	61	64	must be installed	21.35	24399	2393	2160	1.024
15-0560-4W-33	76.6	B	TOTAL	75.5	61	64	must be installed	29.04	27110	2954	2400	1.030
15-0630-6W-23	70.3	B	TOTAL	74.3	61	64	must be installed	4.16	16533	637	1000	1.006
15-0630-6W-24	71.2	B	TOTAL	73.9	61	64	must be installed	5.62	18351	785	1110	1.008
15-0630-6W-26	72.8	B	TOTAL	74.1	61	64	must be installed	7.57	20418	971	1235	1.010
15-0630-4W-28	76.1	B	TOTAL	75.8	61	64	must be installed	14.04	25460	1510	1540	1.015
15-0630-4W-30	76.4	B	TOTAL	75.9	61	64	must be installed	17.50	27444	1755	1660	1.018
15-0630-4W-31	76.8	B	TOTAL	76.0	61	64	must be installed	20.77	29097	1972	1760	1.020
18-0630-4W-34	77.6	B	TOTAL	76.5	61	64	must be installed	28.37	32404	2446	1960	1.024
18-0630-4W-36	77.8	B	TOTAL	76.5	61	64	must be installed	34.81	34718	2808	2100	1.028
15-0710-6W-26	72.5	B	TOTAL	73.8	61	64	must be installed	7.50	23694	826	1015	1.008
15-0710-6W-28	74.0	B	TOTAL	74.0	61	64	must be installed	10.96	27079	1078	1160	1.011
15-0710-6W-31	74.9	B	TOTAL	74.5	61	64	must be installed	14.90	30114	1334	1290	1.013
15-0710-4W-31	76.9	B	TOTAL	76.2	61	64	must be installed	20.38	33732	1673	1445	1.017
15-0710-4W-33	77.5	B	TOTAL	76.4	61	64	must be installed	27.98	37584	2077	1610	1.021
15-0710-4W-36	77.7	B	TOTAL	76.4	61	64	must be installed	34.62	40385	2399	1730	1.024
15-0710-4W-37	78.1	B	TOTAL	76.6	61	64	must be installed	42.12	43186	2743	1850	1.027
18-0710-4W-39	78.6	B	TOTAL	76.8	61	64	must be installed	51.35	46221	3142	1980	1.031

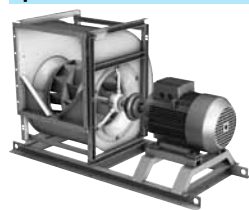
# Technical Data

## Technical Data according to ErP-REGULATION 327/2011/EU

RZM	Overall efficiency $\eta_e$ [%]	Measurement category	Efficiency category	achieved efficiency grade at optimum energy efficiency "N"	required efficiency grade acc. to ErP since		Speed control (VSD)	Rated motor power at optimum energy efficiency $P_e$ [kW]	Flow rate at optimum energy efficiency $q_v$ [m³/h]	Pressure at optimum energy efficiency $p_F$ [Pa]	Speed at optimum energy efficiency $N$ [1/min]	"specific ratio"
					2013	2015						
15-0800-6W-28	74.8	B	TOTAL	74.8	61	64	must be installed	11.15	31938	940	960	1.009
15-0800-6W-31	76.2	B	TOTAL	75.9	61	64	must be installed	14.33	34932	1125	1050	1.011
15-0800-6W-33	76.5	B	TOTAL	75.9	61	64	must be installed	17.79	37594	1303	1130	1.013
15-0800-6W-34	77.0	B	TOTAL	76.3	61	64	must be installed	21.15	39922	1469	1200	1.015
15-0800-6W-37	77.7	B	TOTAL	76.6	61	64	must be installed	28.56	44247	1805	1330	1.018
15-0800-6W-39	78.1	B	TOTAL	76.8	61	64	must be installed	35.29	47574	2087	1430	1.021
18-0800-4W-37	79.1	B	TOTAL	77.6	61	64	must be installed	41.06	50236	2327	1510	1.023
18-0800-4W-39	79.4	B	TOTAL	77.7	61	64	must be installed	50.00	53729	2662	1615	1.027
15-0900-8D-31	72.9	B	TOTAL	72.8	61	64	must be installed	11.25	36930	799	790	1.008
15-0900-8D-33	72.5	B	TOTAL	72.1	61	64	must be installed	15.10	40669	969	870	1.010
15-0900-6W-34	77.2	B	TOTAL	76.5	61	64	must be installed	20.58	46045	1242	985	1.012
15-0900-6W-37	77.7	B	TOTAL	76.7	61	64	must be installed	28.46	51421	1549	1100	1.015
15-0900-6W-39	78.3	B	TOTAL	76.9	61	64	must be installed	34.90	55161	1783	1180	1.018
15-0900-6W-41	78.6	B	TOTAL	77.1	61	64	must be installed	42.31	58900	2032	1260	1.020
15-0900-6W-42	78.9	B	TOTAL	77.2	61	64	must be installed	51.83	63107	2333	1350	1.023
18-0900-4W-41	79.9	B	TOTAL	77.8	61	64	must be installed	68.17	69418	2823	1485	1.028
15-1000-8D-33	72.5	B	TOTAL	72.1	61	64	must be installed	15.00	46354	844	735	1.008
15-1000-8D-36	74.7	B	TOTAL	74.1	61	64	must be installed	18.08	49823	976	790	1.010
15-1000-8D-37	75.0	B	TOTAL	74.2	61	64	must be installed	21.63	52976	1103	840	1.011
15-1000-8D-39	75.6	B	TOTAL	74.5	61	64	must be installed	29.13	58652	1352	930	1.014
15-1000-6W-39	78.4	B	TOTAL	77.1	61	64	must be installed	34.42	62751	1547	995	1.015
15-1000-6W-41	78.7	B	TOTAL	77.2	61	64	must be installed	41.44	66851	1756	1060	1.018
15-1000-6W-42	79.2	B	TOTAL	77.4	61	64	must be installed	51.25	71896	2031	1140	1.020
18-1000-6W-44	79.6	B	TOTAL	77.6	61	64	must be installed	69.62	79779	2501	1265	1.025
13-1120-8D-39	75.6	B	TOTAL	74.5	61	64	must be installed	29.13	68225	1163	770	1.012
13-1120-8D-41	76.1	B	TOTAL	74.8	61	64	must be installed	36.25	73542	1351	830	1.014
13-1120-8D-42	76.4	B	TOTAL	74.8	61	64	must be installed	44.52	78858	1553	890	1.016
13-1120-8D-44	77.0	B	TOTAL	75.2	61	64	must be installed	53.75	84174	1770	950	1.018
13-1120-6W-44	79.6	B	TOTAL	77.5	61	64	must be installed	70.19	93034	2162	1050	1.022
13-1120-6W-46	80.2	B	TOTAL	77.9	61	64	must be installed	83.46	98794	2438	1115	1.024
13-1250-8D-42	76.2	B	TOTAL	74.7	61	64	must be installed	44.42	91151	1337	740	1.013
13-1250-8D-44	76.8	B	TOTAL	75.0	61	64	must be installed	53.65	97310	1524	790	1.015
13-1250-8D-46	77.1	B	TOTAL	75.0	61	64	must be installed	73.85	108396	1891	880	1.019
13-1250-8D-50	77.3	B	TOTAL	75.0	61	64	must be installed	88.37	115171	2135	935	1.021
13-1250-6W-50	80.3	B	TOTAL	77.8	61	64	must be installed	100.96	121946	2394	990	1.024
13-1250-6W-51	80.4	B	TOTAL	77.7	61	64	must be installed	122.12	129952	2718	1055	1.027
13-1400-8D-50	77.3	B	TOTAL	75.0	61	64	must be installed	86.92	133253	1816	770	1.018
13-1400-8D-51	77.5	B	TOTAL	75.0	61	64	must be installed	104.81	141905	2060	820	1.021
13-1400-8D-52	77.7	B	TOTAL	75.0	61	64	must be installed	126.92	151423	2346	875	1.023
13-1400-8D-53	78.7	B	TOTAL	75.8	61	64	must be installed	148.08	160076	2621	925	1.026
13-1400-6W-53	81.2	B	TOTAL	78.1	61	64	must be installed	175.96	171325	3003	990	1.030

# RZM 15-0400/-1000

## Specifications



### Hochleistungs-Radialventilatoren RZM 15 rotavent

Double inlet fan with direct drive by coupling Lockformed scroll casing made of galvanised steel sheet, with side frames, connecting flange at discharge.

Fan with directly coupled motor (incl. PTC-Thermistors) fitted on pedestal and base frame. max. Medium temperature +40 °C.

High performance impeller with 12 hollow section true aerofoil blades inclined obliquely to the shaft axis, welded in position and painted.

Throat plate inclined obliquely in opposition to blade incination!

Inlet cones matched to the impeller reduce entry losses to a minimum.

Impeller and shaft balanced as an assembly in according to DIN ISO 1940.

Shaft accurately trued, connection to motor (B3) realised with elastic rubber coupling.

Self aligning double row ball bearings secured by adapter sleeve, mounted within a cast iron housing packed with long life, high performance grease. Can be relubricated when not in service.

Performance data (w/o drive) according to tolerance class 1 to DIN 24166.

## Fan data

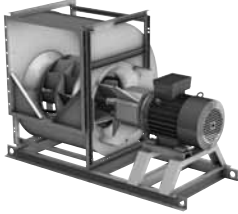
Fan type	RZM 15-	
Volume flow	$q_V$	m <sup>3</sup> /h
Static pressure	$p_{sF}$	Pa
Air density at fan inlet	$\rho_1$	kg/m <sup>3</sup>
Air temperature	t	°C
Speed	N	1/min
Nominal motor power	$P_N$	kW
Voltage / Frequency	U / f	V / Hz
Sound power level (A weighted)	$L_{WA}$	dB
Weight	m	kg

## Fittings / Accessories

- ▶ Drain plug R1/2"
- ▶ Inspection cover fitted
- ▶ Corrosion protection S40, K90 or P100
- ▶ Impeller blades continuously welded
- ▶ Shaft from stainless steel
- ▶ Nuts and bolts from stainless steel
- ▶ Thread for impuls sensor fitting
- ▶ Volumeter IMV
- ▶ Copper inlet cone
- ▶ Relubricatable bearing
- ▶ Relube nipple tube to drive side
  
- ▶ Discharge flange
- ▶ Discharge flexible connection
- ▶ Inlet guards
- ▶ Discharge guard
- ▶ Shaft guard
- ▶ Coupling guard
- ▶ Isolator
- ▶ Frequency inverter unit
- ▶ Universal control device

# RZM 18-0630/-1000

## Specifications



### High performance centrifugal fan RZM 18 rotavent

Double inlet fan with direct drive by coupling Lockformed scroll casing made of galvanised steel sheet, with side frames, connecting flange at discharge.

Fan with directly coupled motor (incl. PTC-Thermistors) fitted on pedestal and base frame. max. Medium temperature +40 °C.

High performance impeller with 12 hollow section true aerofoil blades inclined obliquely to the shaft axis, welded in position and painted.

Throat plate inclined obliquely in opposition to blade incination !

Inlet cones matched to the impeller reduce entry losses to a minimum. Impeller and shaft balanced as an assembly in according to DIN ISO 1940.

Shaft accurately trued, connection to motor (B3) realised with elastic rubber coupling. Self aligning double row ball bearings within standard plummer blocks, mounted on robust support frame. Can be relubricated when not in service.

Performance data (w/o drive) according to tolerance class 1 to DIN 24166.

## Fan data

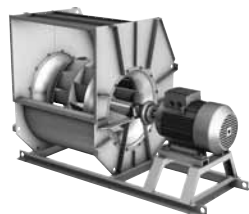
Fan type	RZM 18-	
Volume flow	$q_V$	m <sup>3</sup> /h
Static pressure	$p_{sF}$	Pa
Air density at fan inlet	$\rho_1$	kg/m <sup>3</sup>
Air temperature	t	°C
Speed	N	1/min
Nominal motor power	$P_N$	kW
Voltage / Frequency	U / f	V / Hz
Sound power level (A weighted)	$L_{WA}$	dB
Weight	m	kg

## Fittings / Accessories

- ▶ Drain plug R1/2"
- ▶ Inspection cover fitted
- ▶ Corrosion protection S40, K90 or P100
- ▶ Impeller blades continuously welded
- ▶ Shaft from stainless steel
- ▶ Nuts and bolts from stainless steel
- ▶ Thread for impuls sensor fitting
- ▶ Volumeter IMV
- ▶ Copper inlet cone
- ▶ Relubricatable bearing
- ▶ Relube nipple tube to drive side
  
- ▶ Discharge flange
- ▶ Discharge flexible connection
- ▶ Inlet guards
- ▶ Discharge guard
- ▶ Shaft guard
- ▶ Coupling guard
- ▶ Isolator
- ▶ Frequency inverter unit
- ▶ Universal control device

# RZM 13-1120/-1400

## Specifications



### High performance centrifugal fan RZM 13 rotavent

Double inlet fan with direct drive by coupling. Heavy duty casing of sheet steel with stiffening members, step welded and painted, with discharge flange.

Split on one axis - 2 segments (size 1120),

Split on two axis - 4 segments (size 1250; 1400).

Fan with directly coupled motor (incl. PTC-Thermistors) fitted on pedestal and base frame. max. Medium temperature +40 °C.

High performance impeller with 12 hollow section true aerofoil blades inclined obliquely to the shaft axis, welded in position and painted.

Inlet cones matched to the impeller reduce entry losses to a minimum.

Impeller and shaft balanced as an assembly in according to DIN ISO 1940.

Shaft accurately trued, connection to motor (B3) realised with elastic rubber coupling.

Self aligning double row roller bearings within standard plummer blocks, mounted on robust support frame.

Can be relubricated when not in service. Inlet guard fitted as a standard in accordance with DIN EN ISO 13857. Performance data (w/o drive) according to tolerance class 1 to DIN 24166.

## Fan data

Fan type	RZM 13-	
Volume flow	$q_V$	m <sup>3</sup> /h
Static pressure	$p_{sF}$	Pa
Air density at fan inlet	$\rho_1$	kg/m <sup>3</sup>
Air temperature	t	°C
Speed	N	1/min
Nominal motor power	$P_N$	kW
Voltage / Frequency	U / f	V / Hz
Sound power level (A weighted)	$L_{WA}$	dB
Weight	m	kg

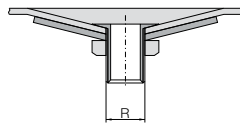
## Fittings / Accessories

- ▶ Drain plug R1/2"
- ▶ Inspection cover fitted
- ▶ Corrosion protection K90 or P100
- ▶ Impeller blades continuously welded
- ▶ Casing continuously welded inside
- ▶ Casing continuously welded inside and outside
- ▶ Shaft from stainless steel
- ▶ Nuts and bolts from stainless steel
- ▶ Thread for impuls sensor fitting
- ▶ Volumeter IMV
- ▶ Copper inlet cone
- ▶ Relubricatable bearing
- ▶ Relube nipple tube to drive side
  
- ▶ Discharge flange
- ▶ Discharge flexible connection
- ▶ Discharge guard
- ▶ Shaft guard
- ▶ Coupling guard
- ▶ Isolator
- ▶ Frequency inverter unit
- ▶ Universal control device



# Fittings / Accessories

## Drain Plug



If the fan is installed outside, or if conveying a medium containing humidity, condensation of water may accumulate inside the fan scroll. For extraction of this water a condense water drain has to be installed at the lowest point of the scroll. The drain will be provided with a thread for connecting it to a piping.

- ▶ **R 1/2"** - Sizes 0400/-1000
- ▶ **R 1"** - Sizes 1120/-1400

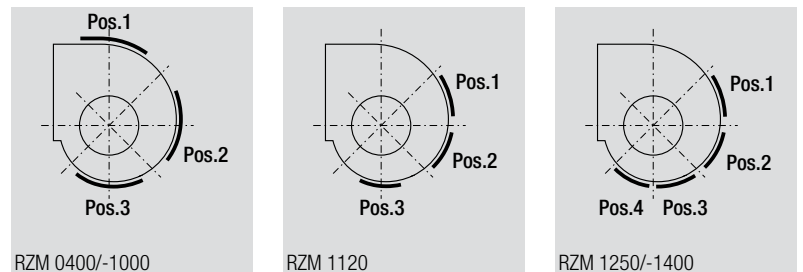
At order please indicate the required casing position.

## Inspection Door



For the purposes of maintenance and cleaning there is an opening, which can be securely closed by means of an access door, in the fan casing. As it can only be opened with a tool, the access door complies with safety and accident prevention regulations. Additional securing with locking bars can be supplied on request. The site and orientation of the inspection opening depends on the casing position. The position should be specified when ordering according to the following diagram: e.g. Access door, Pos. 2.

### Inspection Door Positions



**Dimensions** in mm, subject to change.

RZM ..-		RZM ..-	
0400/-0560	360 × 360	0630/-1400	500 × 500

## Corrosion Protection Systems



Nicotra Gebhardt fans are treated with high quality corrosion protection as standard. Under extreme operating conditions, however, additional corrosion protection is advisable. Depending on the use to which the fan is to be put and the degree of exposure to corrosion, we offer various anti-corrosion protection measures.

### Corrosion protection - Class S40

Degreasing, ironphosphating

▶ **Powder coating**

Layer thickness  $\geq 40 \mu\text{m}$ , Colour RAL 7039

▶ **Wet lacquering**

Layer thickness  $\geq 40 \mu\text{m}$  (primer + lacquer finish), Colour RAL 7039

### Corrosion protection - Class K90

Degreasing, ironphosphating

▶ **Powder coating**

Layer thickness  $\geq 90 \mu\text{m}$ , Colour RAL 7039

▶ **Wet lacquering**

Layer thickness  $\geq 90 \mu\text{m}$  (primer + lacquer finish), Colour RAL 7039

### Corrosion protection - Class P100

Degreasing, ironphosphating

▶ **Thermoplastic powder coating**

Layer thickness  $\geq 100 \mu\text{m}$ , Colour RAL 7001

## Fittings / Accessories

### Continuously welded blades



Impeller blades can be continuously welded in order to increase the corrosion resistance when conveying a humid or slightly aggressive medium. The continuous welding has no influence on the material resistance or on the max. tip speed.

### Stainless Steel Shaft



For applications where there is an increased risk of corrosion, an optional shaft made of stainless steel can be supplied.  
Stainless steel 1.4305.

### Stainless Steel Nuts and Bolts



For applications where there is an increased risk of corrosion, the connecting elements of the fan can be ordered made of stainless steel.

### Impuls Sensor Thread



A tapped hole M6 or M8 can be provided in the pedestal bearing cast housing for admission of sensors to measure the shock impulses.  
(The measuring connecting piece is not included in the scope of delivery).

### Inlet Cones



Inlet cone of copper or aluminium prevent the production of sparks during operation. These can be employed when spark protection is required, but ATEX is not mandatory.

### Relubrications



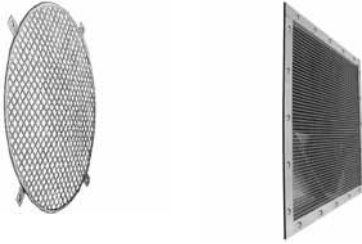
The lubrication unit IWN allows the fan bearings to be greased even when in operation.

The lubrication tubes screwed into the bearing housing are lead out and fastened at the side wall of the fan. If desired, the lubrication tubes can be lead to the drive side of the fan.

- ▶ **IWN 01** - Standard grease, Gadus S2 V100 3
- ▶ **IWN 11** - Klüber-Staburags NBU12/300KP

# Fittings / Accessories

## Protection guards



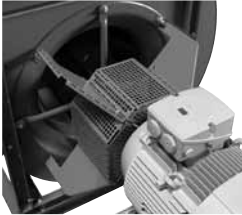
The fans are designed for installation in equipment and as standard are not equipped with protective guards.

**They should not be put into operation before all protective devices are fitted and connected!**

Protective measures must be carried out as set out in DIN EN ISO 12100 "Safety of machinery - Basic concepts, general principles for design".

If the application of the fan allows free access to the inlet and discharge apertures, safety devices must be put in place on the fan in accordance with DIN EN ISO 13857! Suitable safety guards are available as an optional extra.

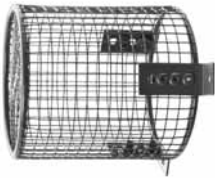
## Coupling protection guard



Contact guard for the coupling for double inlet centrifugal fans RZM.

Design in accordance with DIN EN ISO 13857, made of galvanised or coated sheet steel.

## Shaft Guards



Contact guard for the free end of the shaft for double inlet centrifugal fans. Models in accordance with DIN EN ISO 13857, made of painted steel mesh.

## Flanges and Flexible Connections



Made from galvanized or painted steel, to connect ducts and system components to the fan outlet side.

Connecting piece with elastic intermediate section for the vibration or impact-noise decoupled connection of the fan to the system or unit. Made out of two connecting flanges with elastic intermediate section.

### Temperature range / Application

- ▶ Standard up to +80 °C
- ▶ ATEX max. +60 °C

# Fittings / Accessories

## Anti Vibration Spring Diffusers

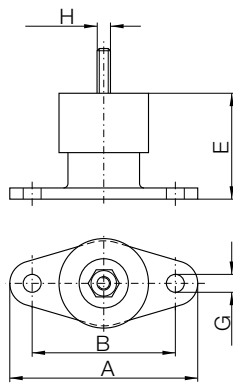
Anti Vibration Mounts (AVM) are designed to prevent noise and vibrations being transmitted through the base of the fan.

AVMs should be mounted beneath the fan base frame so the weight and spring deflections are evenly distributed. They should not be mounted symmetrically around the centre of gravity of the system when idle, because a counter force is induced into the system by the pressure created by the working fan.

It is difficult for the manufacturer to establish the position of the AVMs to suit all types of application.

Vibration and noise insulation can also be improved by ensuring that the fan is connected to its external environment by a flexible coupling. The AVMs are supplied with the suitable mounting material for the base frame (CC- or U-Profiles).

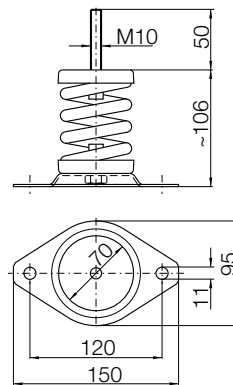
### Anti Vibration Spring Diffusers



ZBD	ZBD	A	B	C	D	~ E	~ F	G	H
60-0101A*	60-0101C*	130	100	70	72	70-50	35	13	M10
60-0103A*	60-0103C*	130	100	70	72	70-50	35	13	M10
60-0105A*	60-0105C*	130	100	70	72	70-50	35	13	M10
60-0108A*	60-0108C*	130	100	70	72	70-50	35	13	M10
60-0112A*	60-0112C*	150	120	82	92	90-75	35	13	M12
60-0120A*	60-0120C*	150	120	82	92	90-75	35	13	M12
60-0130A*	60-0130C*	150	120	82	92	90-75	35	13	M12
60-0150A*	60-0150C*	150	120	82	92	110-85	35	13	M12

\* A = for U-profile; C = for CC-profile

### Anti Vibration Spring Diffusers

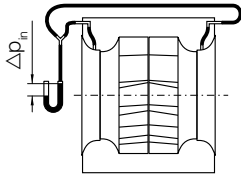


ZBD	ZBD	
SP-7501A*	SP-7501C*	
SP-7502A*	SP-7502C*	
SP-7503A*	SP-7503C*	
SP-7504A*	SP-7504C*	
SP-7505A*	SP-7505C*	
SP-7506A*	SP-7506C*	
SP-7507A*	SP-7507C*	
SP-7508A*	SP-7508C*	

\* A = for U-profile; C = for CC-profile

# Fittings / Accessories

## Volumeter



$$q_V = K \times \sqrt{\frac{2}{\rho} \times \Delta p_{Dü}}$$

With the flow measuring device it is possible to easily measure / monitor the flow rate after the fan is installed. A pressure tapping at a predetermined position on the inlet cone is provided whereby the differential pressure in relation to the static pressure is measured in front of the inlet cone in a static atmosphere.

- ▶ volume flow  $q_V$  [m<sup>3</sup>/h]
- ▶ calibration factor  $K$  [m<sup>2</sup>s/h]
- ▶ density of media  $\rho$  [kg/m<sup>3</sup>]
- ▶ pressure difference at cone  $\Delta p_{Dü}$  [Pa]



In order to calculate the flow rate, a calibrating factor "K" is required. This factor is determined by comparative measurement on a standard test rig.

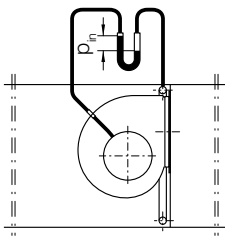
Measuring connector in inlet cone  
Hose pipe to connecting piece in the side wall  
Connecting piece (external diameter of 6mm) for the pressure measurement

### Calibration factors

RZM ..-	K10 [m <sup>2</sup> s/h]	RZM ..-	K10 [m <sup>2</sup> s/h]
0400	265	0800	1140
0450	320	0900	1370
0500	395	1000	1760
0560	520	1120	2400
0630	700	1250	3000
0710	885	1400	3800

### Standard-calibration faktor K10 <10 %

Where fans are built into a plenum, the pressure difference between the static pressure in the inlet side plenum and the pressure on the inlet cone is to be measured. It must be ensured that the static pressure to be measured in front of the inlet cone is not tampered by dynamic pressure fractions. It is often recommended to arrange a ring of points on the wall facing the outlet side as illustrated in the sketch. When using the K-factors specified below, a minimum clearance of 0.5×D between the inlet cone of the fan and the side wall of the plenum must be maintained. Indentations that obstruct the flow to the cone can lead to faults when measuring the flow rate. In the event that the differential pressure is fed via a pressure sensor, the signal can also be used for regulating purposes.



### Electrical accessories

Electrical accessories (Frequency converter, Differential pressure sensor, Universal control device, Isolator) see chapter "Accessories".

# Description

## Safety

The fans are designed for installation in equipment and as standard are not equipped with protective guards.

**They should not be put into operation before all protective devices are fitted and connected!**

Protective measures must be carried out as set out in DIN EN ISO 12100 "Safety of machinery - Basic concepts, general principles for design".

If the application of the fan allows free access to the inlet and discharge apertures, safety devices must be put in place on the fan in accordance with DIN EN ISO 13857! Suitable safety guards are available as an optional extra.

## Performance data

The curves show the total pressure rise  $p_F$  as a function of the volume flow rate  $q_V$  plotted in a double logarithmical diagram. The throttle curves (system resistance parabolas) are then represented by straight lines.

The curves are established with a reference density of  $\rho_1 = 1.2 \text{ kg/m}^3$  at the fan intake.

The pressure and impeller input power are directly proportional to density  $\rho_1$ .

Outlet velocity  $v_2$  and the dynamic pressure  $p_{d2}$  refer to the flanged cross section area at the fan discharge.

The increase in static pressure  $p_{sF}$  when a duct is fitted to the discharge (Installation B) can be calculated from the equation:

$$p_{sF} = p_F - p_{d2}$$

Where no duct is fitted (Installation A) there is no static pressure regain. The increase in pressure  $p_{sF}$  can be calculated from formula:

$$p_{sF} = p_F - f_{pd} \times p_{d2}$$

**The limits of application indicated in the fan curves (by blue dotted lines) outline the recommended functional range of the fans, where a stable operation with high efficiency can be expected.**

The efficiency marked on the straight system lines is only applicable at the maximum fan speed  $N_{max}$ ; it decreases with lower fan speed.

# Description

## Sound

Sound measurement and analysis are carried out in accordance with DIN 45635-38 "Sound measurement at machines; fans".

The sound data of the fan curves are given as "A" weighted sound power levels  $L_{WA}$ . The "A" weighted sound power level are identical for fan intake ( $L_{WA7}$ ) as well as for fan discharge ( $L_{WA4}$ ).

An approximation of the "A" weighted sound pressure levels  $L_{pA7}/L_{pA6}$  at a distance of 1m at fan Inlet or discharge may be obtained by subtracting 7dB from the relative "A" weighted sound power levels.

It should be noted that site acoustics, duct design, reverberation, natural frequencies etc. can all influence noise to a greater or lesser extent.

For more accurate calculations to determine noise protection measures, the sound power level in each octave band is of more value.

- ▶ Inlet side:  $L_{Wfc7} = L_{WA4/7} + L_{Wrel7}$
- ▶ Discharge side:  $L_{Wfc4} = L_{WA4/7} + L_{Wrel4}$

The noise correction data, in function of the fan speed and flow rate, are to be found with the corresponding table on the fan curve page.

In some cases the noise level - calculated by this way - may in some cases be higher than expected at the blade passing frequency.

### Blade passing frequency

$f_{BP}$  = Blade passing frequency in Hz

N = Fan speed in 1/min

z = Number of blades

$$f_{BP} = \frac{N \times z}{60}$$

For a free discharge situation i.e. without duct connected the sound level will be lower because of an end reflection.

This is specially true for low frequencies. For this case a correction may be applied to  $L_{Wfc4}$  of the first 3 octave bands as follows:

$$L_{Wfc6} = L_{Wfc4} + L_{Wer}$$

RZM ..-	$f_m$	63	125	250	Hz
0400/-0800	$L_{Wer}$	-9	-4	-2	dB
0900/-1400	$L_{Wer}$	-4	-1	0	dB

## Media

This range of fans are specially designed for use into air handling units (AHU) and ventilation systems.

The centrifugal fans are ideal for conveying clean air. The allowed air temperature comes from -20 °C to +40 °C.

## Motors

Standard motors of wellknown brands, type of protection IP55, thermal class F, are used. During commissioning and maintenance the detailed instructions provided by the motor manufacturer (type plate/motor operating instructions) must be followed, this also applies to the motor protection devices required onsite. The motors are equipped with PTC resistors/temperature sensors as standard. Motors with integrated frequency inverters may be supplied on request.

## Electric connection

The centrifugal fans are delivered ready for installation.

The motor terminal box can be accessed easily.

Electric installation must be carried out according to the applicable provisions in compliance with local regulations. A terminal board circuit diagram showing correct connection is enclosed with every motor.

Updated circuit diagrams are also available online at [www.nicotra-gebhardt.com](http://www.nicotra-gebhardt.com).

In case of operation with frequency inverters, always follow the respective operating instructions!

# Accessories

## Frequency converter



### Design

Frequency inverter with variable output voltage and frequency, specially designed for the operation of centrifugal fans with induction motors. Due to the use of modern power semiconductors it is possible to achieve a speed of revolution with high efficiency. Switching frequencies up to 16 kHz can be set with all types. If the highest switching frequencies are required (for example for reasons of noise reduction), the maximum output current is decreased, in which case the performance category should be specially checked.

**The overall package includes the frequency inverter, filter for class B (for residential and commercial uses) as well as a control unit.**

### General Performance characteristics

Motor protection feature for motors with thermistor temperature sensors, adjustable acceleration and deceleration ramps, minimum and maximum rotation speeds, fixed rotation speeds, trapping switch during operation, programmable inputs and PI-controller (MM420 and MM430 only), RS485 serial interface as well as a detailed operating instructions. Caution about combination with isolators (ESH)! Special EMC-action can be necessary, furthermore do not switch during operation, overvoltages can destroy the switch and the motor-winding.

### Performance range G110 1AC 230V (for single-phase AC supply)

0.25 kW to 2.2 kW rated motor power, 200 V to 240 V 10 % single-phase AC, 47 Hz up to 63 Hz, three-phase current output 3×230 V AC, protection class IP20. Permitted ambient temperature during operation: -10 °C up to +40 °C.

### Performance range MM420 3AC 400V (for three-phase AC supply)

0.55 kW to 11 kW rated motor power, 380 V to 480 V 10 % three-phase AC, 47 Hz up to 63 Hz, three-phase current output 3×400 V AC, protection class IP20. Permitted ambient temperature during operation: -10 °C up to +50 °C. The interference suppression filter required to comply with the EMC basic interference suppression standard EN 50081-1 (residential and commercial uses) is integrated into the package as substructure option. Power choke to comply with EN 61000-3-2 as additional component.

**Observe performance reduction when using high clock frequencies!**

### Performance range MM430 3AC 400V

(for three-phase AC supply)

15 kW to 250 kW rated motor power, 380 V to 480 V 10 % three-phase AC, 47 Hz up to 63 Hz, three-phase current output 3×400 V AC, protection class IP20. Permitted ambient temperature during operation: -10 °C up to +50 °C. The interference suppression filter required to comply with the EMC basic interference suppression standard EN 50081-1 (industrial applications) is partially integrated. In order to attain EMC requirements Class B a frequency inverter without filter should be selected. The appropriate EMC-B filter is then required as an additional component.

**Observe performance reduction when using high clock frequencies!**

The indicated ratings of the units are made for a quick selection. The exact dedication of an inverter in this catalogue is made by taking into account of the max. admitted current at a pulse frequency of 4 kHz. It is important to know that at higher pulse frequencies the supplied current of the inverter will be decreasing, with the possible consequences of having to select a larger inverter unit. Also longer feed lines or additional radio frequency filters may lead to the choice of a larger inverter size.

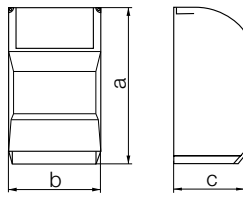
**The selected frequency inverters (G110 und MM420) are units contains the frequency inverter (as shown in the following tables) with the matching interference suppression filter (Class B) and a control panel. A further component is the line choke which is available as an accessorie.** For more information the available frequency inverters are shown in the following tables.



# Accessories

## Frequency converter

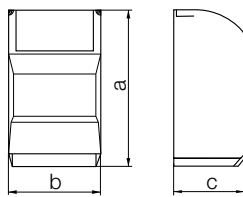
### Technical Data | Dimensions



For three-phase AC motors on the single-phase supply.

6SL3211-	Nominal power kW	Nominal current A	a mm	b mm	c mm	Weight kg
0AB12-5BA0	0.25	1.7	150	90	116	0.8
0AB13-7BA0	0.37	2.3	150	90	116	0.8
0AB15-5BA0	0.55	3.2	150	90	131	0.9
0AB17-5BA0	0.75	3.9	150	90	131	0.9
0AB21-1AA0	1.1	6	160	140	142	1.5
0AB21-5AA0	1.5	7.8	160	140	142	1.5
0AB22-2AA0	2.2	11	181	184	152	2.1

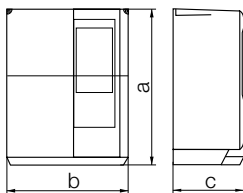
### Technical Data | Dimensions



For three-phase AC motors on the three-phase supply

6SE6420-	Nominal power kW	Nominal current A	a mm	b mm	c mm	Weight kg
2UD15-5AA1	0.55	1.6	173	73	149	1
2UD17-5AA1	0.75	2.1	173	73	149	1
2UD21-1AA1	1.1	3	173	73	149	1
2UD21-5AA1	1.5	4	173	73	149	1
2AD22-2BA1	2.2	5.9	202	149	172	3.3
2AD23-0BA1	3	7.7	202	149	172	3.3
2AD24-0BA1	4	10.2	202	149	172	3.3
2AD25-5CA1	5.5	13.2	245	185	195	5
2AD27-5CA1	7.5	18.4	245	185	195	5
2AD31-1CA0	11	26	245	185	195	5

### Technical Data | Dimensions



For three-phase AC motors on the three-phase supply

6SE6430-	Nominal power kW	Nominal current A	a mm	b mm	c mm	Weight kg
2AD31-5CA0	15	32	245	185	195	5.7
2AD31-8DA0	18.5	38	520	275	245	17
2AD32-2DA0	22	45	520	275	245	17
2AD33-0DA0	30	62	520	275	245	17
2AD33-7EA0	37	75	650	275	245	22
2AD34-5EA0	45	90	650	275	245	22
2AD35-5FA0	55	110	1150	350	320	75
2AD37-5FA0	75	145	1150	350	320	75
2AD37-8FA0	90	178	1150	350	320	75
2UD41-1FA0	110	180.4	1450	326	356	116
2UD41-3FA0	132	220	1450	326	356	116
2UD41-6GA0	160	265.8	1533	326	545	116
2UD42-0GA0	200	325.6	1533	326	545	116
2UD42-5GA0	250	419.8	1533	326	545	116

# Accessories

## Motor protection unit



Motor protection unit EUM 33

Motor protection unit for three-phase current motors (standard motors) without thermal contacts.

### Design

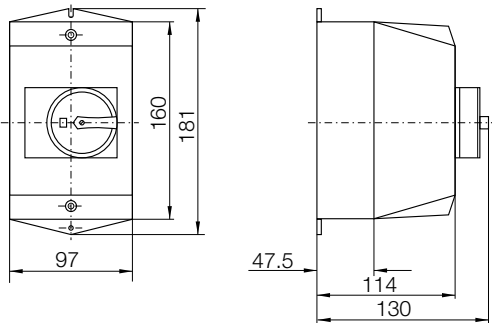
Plastic casing in protection class IP55, permissible ambient temperature +40 °C, 40 Hz up to 60 Hz, frontal operation, for wall mounting. Motor protection unit for single-speed, non-variable speed three-phase current motors without thermal contacts.

### Function

The motor protection units must be adjusted on site to the trigger current. If the preset trigger current is exceeded, the device disconnects the motor from the mains supply via a thermal overload release. Pressing the "on key" causes the unit to turn on again.

All motor protection units EUM33 are also suitable for the protection of EExe-motors (PTB-Prüfung Gesch-Nr. 3.35/386.3060). They must however be mounted outside of explosion endangered areas, since they are not themselves designed with explosion protection.

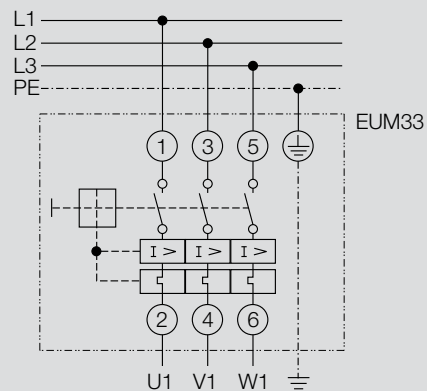
### Dimensions in mm, subject to change.



### Technical Data

EUM 33-	Continuous current A	Setting range A	Max. nominal power kW
0004-8D	0.4	+0.2...+0.4	0.09
0006-8D	0.6	+0.4...+0.6	0.12
0010-8D	1.0	+0.6...+1.0	0.25
0016-8D	1.6	+1.0...+1.6	0.55
0024-8D	2.4	+1.6...+2.4	0.8
0040-8D	4.0	+2.4...+4.0	1.5
0060-8D	6.0	+4.0...+6.0	2.5
0100-8D	10	+6.0...+10	4.0
0160-8D	16	+10...+16	7.5
0200-8D	20	+16...+20	9.0
0250-8D	25	+20...+25	12.5
0500-8D	50	+25...+50	25
0580-8D	58	+50...+58	30

### Wiring Diagram



# Accessories

## Universal control device



Universal control device for installation in control cabinets Digital control module for controlling pressure, air velocity or volume flow (PI controller). For example, a transformer for fans is controlled via the 0...10 V output. The device is designed for installation in control cabinets.

### Type

Multi functional LC-display for actual and nominal values (m/s, hPa = mbar, 100 m³/h). Menuassisted adjustment via three function keys.

Actual value input 0...10 V e. g. for:

- ▶ air speed sensors Type EIL in measuring ranges from 0...1 m/s and 0...10 m/s e. g. for:
  - Air velocity control in clean room technology.
- ▶ Pressure sensors Type EIP in measurement ranges 50Pa up to 4000Pa e. g. for:
  - Pressure control in canal systems of air conditioning systems (VVS) or
  - Flow control in centrifugal fans with pressure tapings in the inlet cone. The control module calculates the required flow (m³/h) from the differential measured pressure between the surrounding level and inlet cone, maximum volume flow 65536 m³/h.
- ▶ Output 0...10 V e. g. for controlling a transformer.
- ▶ Failure message is output via display (internal/external) and relay programmable.
- ▶ External set value specification via potentiometer or 0...10 V signal.
- ▶ Specification of two set values (day/night), can be switched over externally or via keyboard.
- ▶ Protection against unauthorised setting by keyboard code.

### Application area

- ▶ Pressure regulation for centralised ventilation systems and variable volume flow systems for building air conditioning (VVS) e.g. in combination with a frequency inverter or a commutation unit or a transformer and a pressure sensor
- ▶ Volume flow regulation for centrifugal fans (with measuring stub in the inlet cone) e.g. in combination with a frequency inverter or a commutation unit or a transformer or a mini-interface inverter and a pressure sensor and the volume flow volumeter. Maximum volume flow 65536 m³/h.
- ▶ Air speed regulation for clean room systems, e.g. in combination with a transformer and an air speed sensor

### Electrical connection and installation

Connection to 230 V, 50/60 Hz. The control module can be installed in a control cabinet door. Admissible relative humidity: 85 %, noncondensing. Power supply for the sensors included:

+24 V, 20 %, I<sub>max</sub> = 70 mA.

#### Setting options

- ▶ Set values in the measurement range of the sensor (m/s, hPa = mbar), or in the volume flow range of the fan (×100 m³/h)
- ▶ Switch over of set value (day/night)
- ▶ Min./max. setting range
- ▶ Translation of performance curve (P component)
- ▶ Constant of integration can be selected (I component)
- ▶ Reversal of the effect of the control behaviour
- ▶ Rotation of the performance curve
- ▶ Switchover or programming of internal/external set value
- ▶ Sensor selection via keypad
- ▶ Programming for "Filter fault"
- ▶ Keypad code
- ▶ K factor entry (The K-factor can be found in the current lists of our fan line)

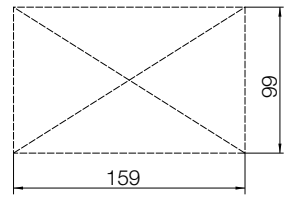
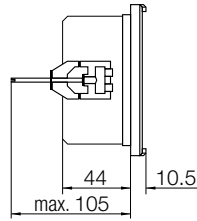
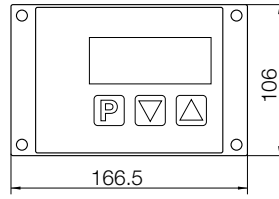
### Technical Data

	Input voltage V	Output voltage V	Max. output current mA	Motor protection class	Operating consumption VA	Operating temperature °C
ERA 02-4000-5E	0...10	0...10	10	IP20	10	+0...+40

# Accessories

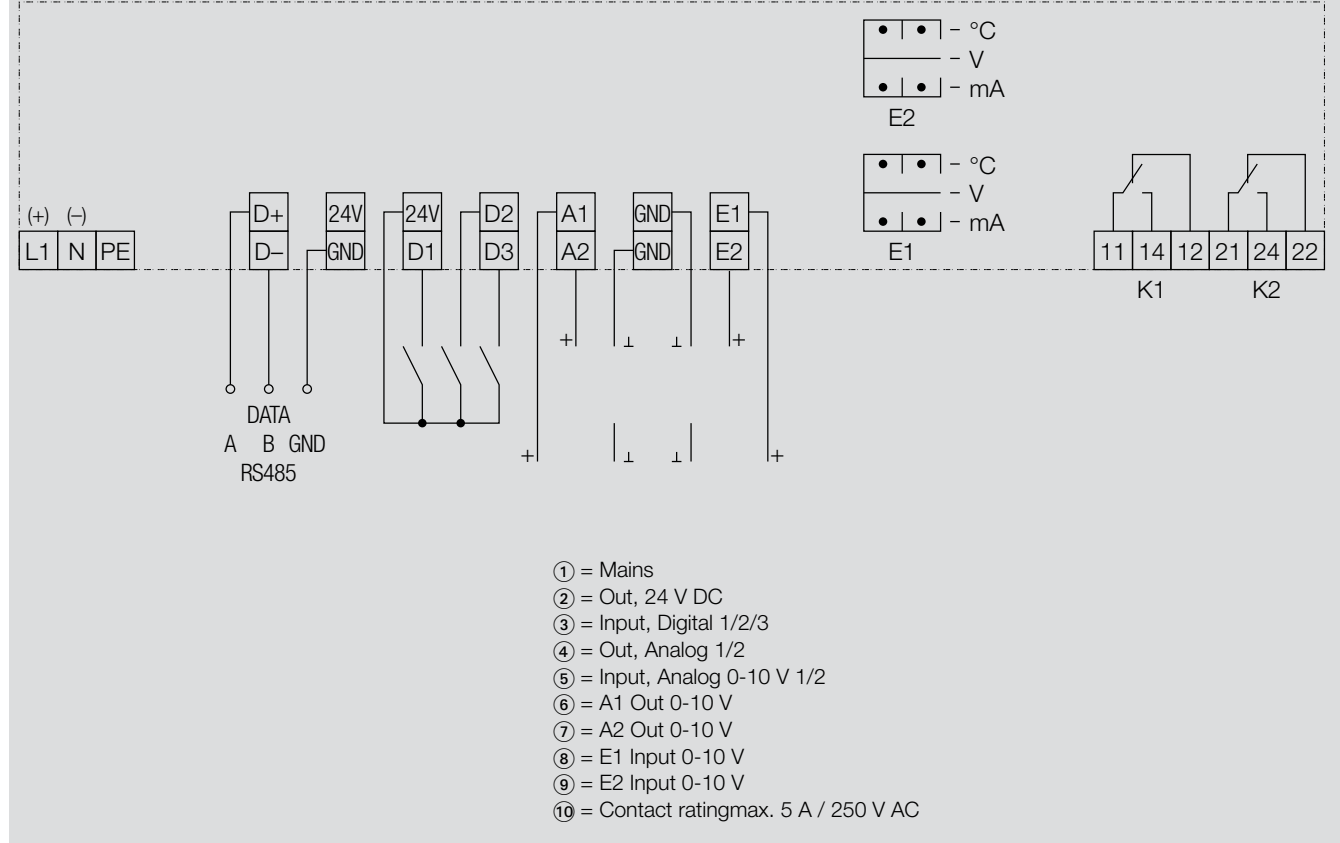
## Universal control device

Dimensions in mm, subject to change.



Instrument panel window

## Wiring Diagram



# Accessories

## Differential pressure sensor



Differential pressure sensor with membrane for measuring the pressure, negative pressure or differential pressure of nonaggressive gases.

### Type

The differential pressure to be measured acts transformed into an output signal of 0...10 V by electronics (in SMD technology).

### Application ranges

Volume flow regulators in centrifugal fans (with volume flow measuring device IMV) in connection with a frequency inverter type G110, MM420, MM430, or a universal regulator appliance type ERA 02-4000-5E in connection with a frequency regulator.

### Electrical connection and installation

The differential pressure sensor delivers a starting signal (0...10 V) by pressure increase at the "Plus" connection opposite pressure on the "Minus" connection.

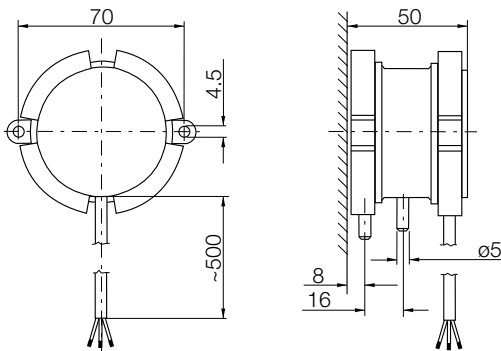
#### Voltage supply

- ▶ 15...30 V DC or 24 V AC, 15 %
- ▶ Pressure connections must point downward, tube connection ø5mm

#### Measuring accuracy

- ▶ Null drift: 0.75 %
- ▶ Sum of linearity and hysteresis: 1 %
- ▶ Temperature drift zero point: 0.3 %/10 K
- ▶ Temperature drift length of measurement: 0.2 %/10 K

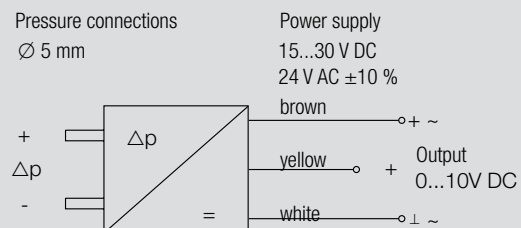
### Dimensions in mm, subject to change.



### Technical Data

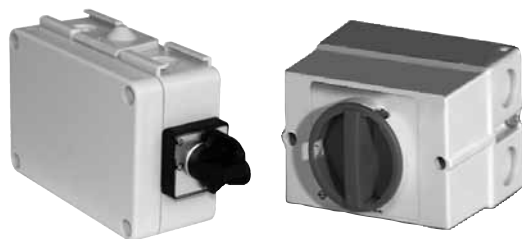
EIP 01-	Pressure range Pa	Motor protection class	Max. current consumption mA	Overload protection Pa	Output signal proportional V	Operating temperature °C
0200-12	0 ... +200	IP65	12	20000	0 ... +10	0 ... +50
0500-12	0 ... +500	IP65	12	20000	0 ... +10	0 ... +50
1000-12	0 ... +1000	IP65	12	20000	0 ... +10	0 ... +50
2000-12	0 ... +2000	IP65	12	20000	0 ... +10	0 ... +50
4000-12	0 ... +4000	IP65	12	20000	0 ... +10	0 ... +50

### Wiring Diagram



# Accessories

## Isolator ESH 21



Isolator  
ESH 21 ( $\leq 3$  kW)

Isolator  
ESH 21 ( $\geq 5.5$  kW)

The isolators are grouped according to motor rated power. All important characteristic data are evident from the model designation. E.g.: **ESH 21-0030-65**  
= 3 kW switch - 6 main contacts - 5 auxiliary contacts

### Design

Beautifully shaped, shock-resistant plastic casing. Protection class IP44/IP65, for sur-face mounting, switching symbols 0 and I. The isolator is fitted with connection terminals that are very accessible and has a con-nection diagram glued in the casing.

The **ESH21 up to 3 kW** is designed to IP44. It is equipped with an integrated locking mechanism.

The **ESH21 up to 5.5 kW** is designed to IP65. It is equipped with a coupling cover and an integrated locking mechanism. A padlock can in some cases be fitted to the rotary switch.

### Function

The isolator disconnects the fan safely from the mains in the event of cleaning, maintenance or repair work on site and thus avoids accidents due to uncontrolled activation of the unit by third parties. It is no main switch or emergency switch.

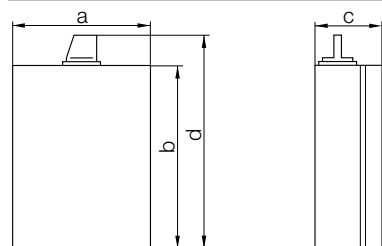
**All of the classified isolators are fitted with potential-free contacts (1 closer and 1 opener).**

The isolators for motors with a built-in thermal contact have on principle three supplementary auxiliary contacts, so that the pre-switched control device does not drop out during cleaning or servicing work due to motor.

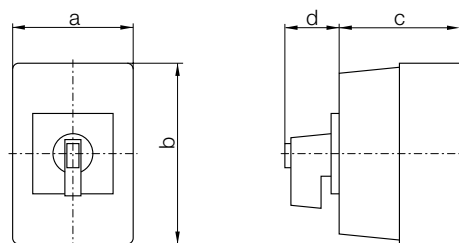
Caution about combination with frequency inverter!

Special EMC-action can be necessary, furthermore do not switch during operation, overvoltages can destroy the switch and the motor-winding.

### Dimensions in mm, subject to change.



ESH 21  $\leq 3$  kW



ESH 21  $\geq 5.5$  kW

### Technical Data

ESH 21-	Permissible motor power kW	a mm	b mm	c mm	d
0030-22	3	73	108	45	-
0030-25	3	73	108	45	-
0030-32	3	73	108	45	-
0030-35	3	73	108	45	-
0030-62	3	73	108	45	-
0030-65	3	73	108	45	-
0055-32	5.5	85	120	80	110
0055-65	5.5	125	125	126	157
0075-32	7.5	85	120	80	110
0075-35	7.5	85	120	80	110
0075-62	7.5	100	190	91	133
0075-95	7.5	125	125	126	157
0110-32	11	85	160	80	110
0110-62	11	100	190	91	133
0150-32	15	100	190	91	120
0150-62	15	145	250	100	145
0220-32	22	100	190	91	120
0220-62	22	145	250	100	145
0300-32	30	145	250	100	140
0300-62	30	200	300	172	200
0370-32	37	145	250	100	140
0370-62	37	200	300	172	200
0450-32	45	200	300	172	200
0450-62	45	300	300	172	210
0550-32	55	200	300	172	200
0550-62	55	300	300	172	210
0900-32	90	280	400	180	210
0900-62	90	280	280	260	327

# Accessories

## Isolator ESH 22

### Design

Shock-resistant metal casing, black switch with symbols 0 and I. Protection class IP65 or IP54, for surface mounting (see determination in the tabular).

The isolator is fitted with connection terminals that are very accessible and has a connection diagram glued in the casing.

All isolators are equipped with a coupling cover and an integrated locking mechanism. In some cases a padlock can be fitted to the rotary switch.

### Function

The isolator disconnects the fan safely from the mains in the event of cleaning, maintenance or repair work on site and thus avoids accidents due to uncontrolled activation of the unit by third parties. It is no main switch or emergency switch.

**All of the classified isolators are fitted with potential-free contacts (1 closer and 1 opener).**

The isolators for motors with a built-in thermal contact have on principle three supplementary auxiliary contacts, so that the pre-switched control device does not drop out during cleaning or servicing work due to motor.

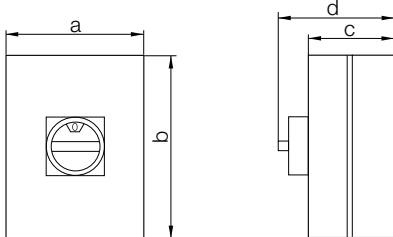
### Use

The isolator ESH22 with metal casing is necessary, if screened components must be used. (e.g. frequency inverters or control engineering devices are used featuring electronic components).

### Attention!

Do not switch during operation, overvoltages can destroy the switch and the motor winding!

**Dimensions** in mm, subject to change.



### Technical Data

ESH 22-	Permissible motor power kW	a mm	b mm	c mm	d mm	Cable lead-through (top)	Cable leadthrough (bottom)
0075-32	7.5	122	120	120	120	2×PG21	2×PG21
0110-32	11	122	120	120	120	2×PG21	2×PG21
0150-32	15	180	180	130	130	2×PG21	2×PG21
0220-32	22	180	180	130	130	2×PG21	2×PG21
0300-32	30	230	280	150	150	2×PG29/1×PG16	2×PG29
0370-32	37	230	280	150	150	2×PG36/1×PG16	2×PG36
0075-62	7.5	180	180	130	130	1×PG29/1×PG16	2×PG29
0110-62	11	180	180	130	130	1×PG36/1×PG16	2×PG36
0150-62	15	230	280	150	150	2×PG36/1×PG16	2×PG36
0220-62	22	230	280	150	150	2×PG36/1×PG16	2×PG36
0300-62	30	230	280	150	150	2×PG36/1×PG16	2×PG36
0370-62	37	230	280	150	150	2×PG36/1×PG16	2×PG36
0055-35	5.5	180	180	100	100	2×PG21	2×PG21
0075-65	7.5	116	95	80	80	2×PG16	2×PG16
0075-95	7.5	116	95	80	80	2×PG16	2×PG16

The isolators are grouped according to motor rated power.

All important characteristic data are evident from the model designation. E.g.: **ESH 22-0075-65** = 7.5 kW switch - 6 main contacts - 5 auxiliary contacts

# Notes

## Quality management system

### DIN EN ISO 9001

Nicotra Gebhardt quality is the result of a continuous company policy intended to guarantee that our product properties and features are clearly superior to comparable products.

This already established company maxim led in April 1985 to the auditing and certification of the existing quality management system. In the following years it was updated to match the changing international and European standards. Modern production processes, monitored by our quality management system, guarantee a high repeat accuracy in production.

This ongoing high standard of quality permits the establishing of the performance data in classes of accuracy in accordance with DIN 24166.

The narrow tolerances ensure a high level of data reliability for our products.

## Machine Safety

The fans contained in this catalogue are not machines in the sense of the EC Machine Directive. They are delivered with a manufacturer "Declaration of incorporation".

The assessment of the dangers associated with the fan and necessary safety measures are based on the VDMA Unit sheet 24167 : Fans; Safety requirements.

The operating instructions give which safety measures are still necessary on assembly to ensure that the fans comply with the Machine Directive 2006/42/EC.

## Catalogue data

We reserve the right to change any measurements and technical data in this catalogue in accordance with further development of our products. All information valid at the time of printing.



# Notes

