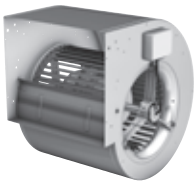
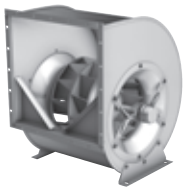
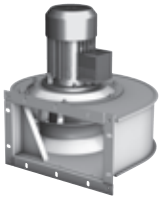
Centrifugal Fans
direct driven

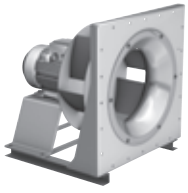
Issue 1

NICOTRA Gebhardt



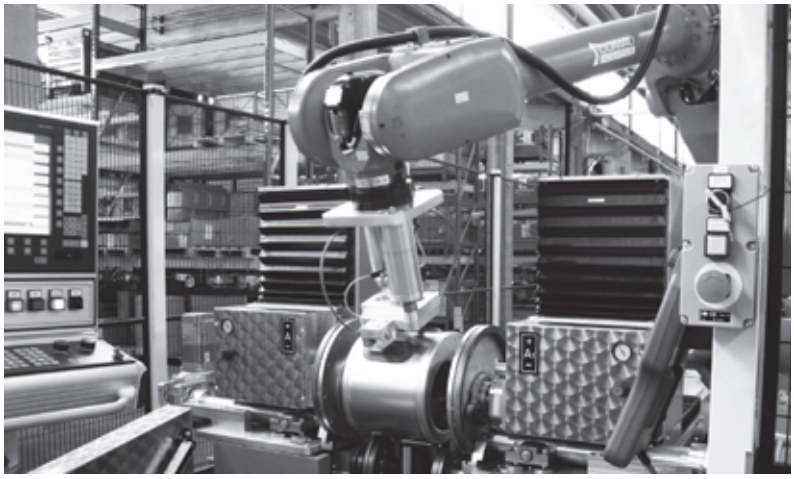




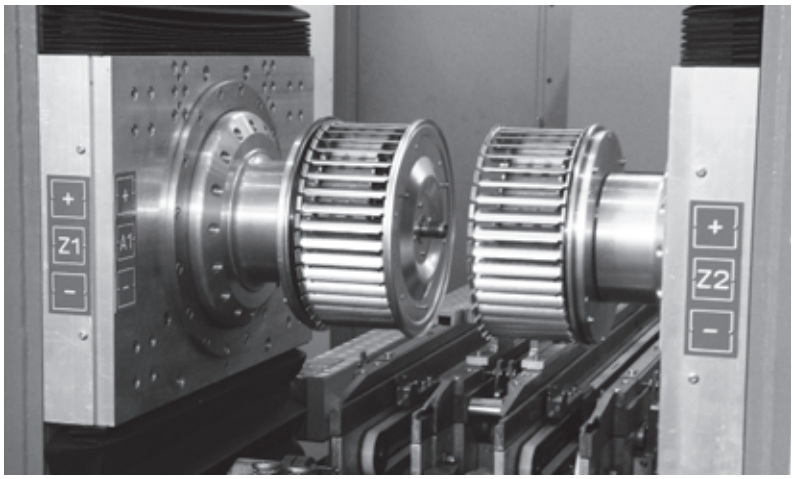


fan|tastic solutions

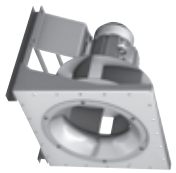
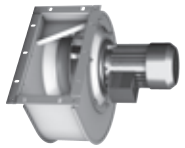
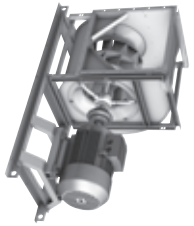
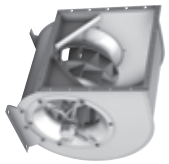
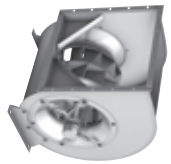
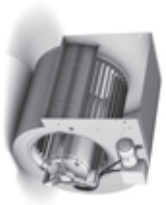
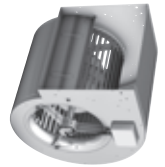
Nicotra Gebhardt technologies like ...



Automated manufacture of compact scroll and impeller with forward curved blades

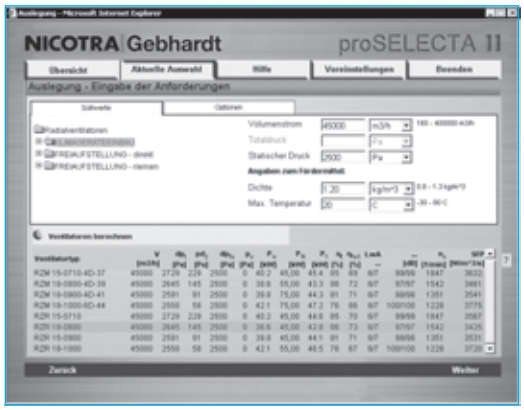


Own AC and Brushless-DC motor production
for optimal tuniung of motor and fan!

		RLE	RLM	TEM/REM	RZM	RZP	RZA	DD	DDMB	DDM
										
Flow rate	6.000 m³/h	•	•	•	•	•	•	•	•	•
	10.000 m³/h	13.000 m³/h	•	•	•	•	•	•		
	18.000 m³/h		•	•	•		•	•		
	35.000 m³/h		•	REM up to 22.000 m³/h	•		•			
	100.000 m³/h		•		•					
	200.000 m³/h	•			•					
Media temperature	40 °C	•	•	•	•	•	•	•	•	•
	60 °C			•	•					
	80 °C				•					
	ATEX		•	•	•					
Speed control	Voltage	•						•		•
	Brushless-DC	•				•			•	
	External Inverter		•	•	•		•			
Impeller	Forward curved blades galvanised sheet steel			• TEM				•	•	•
	Backward curved blades coated steel	•	•	• REM	•	•	•			
Casing material	Galvanised steel			•	• ≤ 1000	•	• ≤ 0280	•	•	•
	Coated steel			•	• ≥ 1120		• ≥ 0315			
Inlet type	Single inlet	–	–	•						
	Double inlet				•	•	•	•	•	•

proSELECTA II
Fan Selection Program

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.

What else is important to you

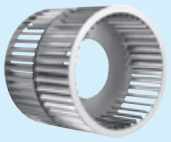
During the fan selection process, you can choose any of the standardised ATEX options.

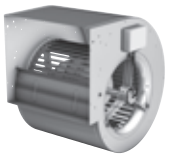
Free registration and many advantages

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.

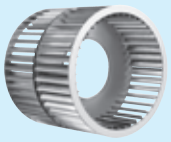
High performance centrifugal fans DDM
double width, double inlet, (DWDI),
with built-in, optimised external rotor motor,
made of galvanised sheet steel;
available in various models;
Impeller with forward curved blades of galvanised steel plate

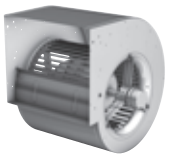




DDM

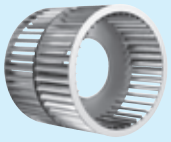
High performance centrifugal fans DDMB
double width, double inlet, (DWDI),
with built-in, brushless DC external rotor motor and external commutation unit,
made of galvanised sheet steel;
available in various models;
Impeller with forward curved blades of galvanised steel plate





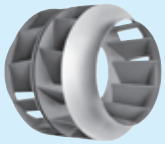
DDMB

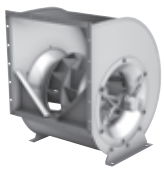
High performance centrifugal fans DD
double width, double inlet, (DWDI),
built-in, optimised internal rotor motor,
made of galvanised sheet steel;
available in various models;
Impeller with forward curved blades of galvanised steel plate



DD

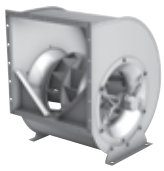
High performance centrifugal fans RZA *rotavent*
double inlet,
with built-in, low-slip external rotor motor,
made of galvanised sheet steel or welded and coated,
with multi position feet and connecting flange at discharge;
Impeller with true aerofoil blades, welded and painted – system ***rotavent***





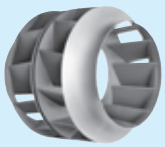
RZA

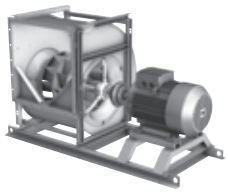
High performance centrifugal fans RZP *rotavent*
double inlet,
with built-in, brushless DC external rotor motor and external commutation unit,
made of galvanised sheet steel;
with multi position feet and connecting flange at discharge;
Impeller with true aerofoil blades, welded and painted – system ***rotavent***



RZP

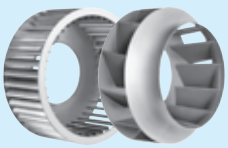
High performance centrifugal fans RZM *rotavent*
double inlet,
fan with directly coupled motor fitted on pedestal and base frame,
made of galvanised sheet steel with heavy duty reinforced side frame,
connecting flange at discharge,
Impeller with true aerofoil blades, welded and painted – system ***rotavent***





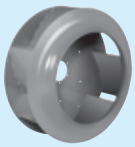
RZM

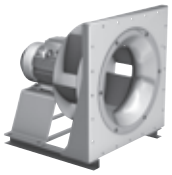
High performance centrifugal fans REM/TEM
single inlet, with flanged IEC standard motor out of air stream,
in unterschiedlichen Ausführungsvarianten,
Impeller with true aerofoil blades, welded and painted (REM)
or forward curved blades of galvanised steel plate (TEM),
with or without pedestal for horizontal or vertical mounting



TEM
REM

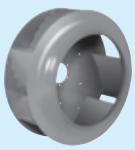
High performance plug fans RLM
optimised for use without scroll.
Motor impeller with inlet cone,
motor base and basic frame manufactured as a module and adjusted





RLM

High performance plug fans RLE
optimised for use without scroll.
Vier unterschiedliche Laufradbaureihen,
built-in, AC or brushless DC external rotor motor,
Inlet cone as an option



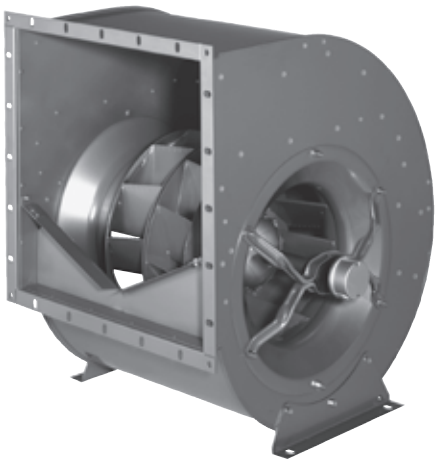
RLE

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**

We do it very precisely!
Or – Why you should not compare apples with pears!
Nicotra Gebhardt manufactures its centrifugal fans rotavent with tolerance class2 in compliance with DIN 24166. This gives you the necessary degree of security that you need when designing and planning ventilation installations.
The tolerance class is also an important criterion for the objective comparison of fans. If you compare the price/performance ratio of two fans, you should also always take the tolerance class of each into account, only then do you avoid comparing “apples with pears”!

Performance data		Deviations per tolerance class		
		1	2	3
Volume flow	q_V	2.5 %	5 %	10 %
Pressure increase	p_F	2.5 %	5 %	10 %
Power consumption	P	+3 %	+8 %	+16 %
Efficiency	η	-2 %	-5 %	-
Sound power level (A weighted)	L_{WA}	+3 dB	+4 dB	+6 dB

Nicotra Gebhardt RZA *rotavent*
The compact pioneering technology!

Optimal aerodynamics
Low turbulance 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 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.

Your benefits:
- reduced size and costs of attenuation and silencers

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

Your Benefits:
- low running costs
- high efficiency

The benefits of RZA *rotavent*
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.

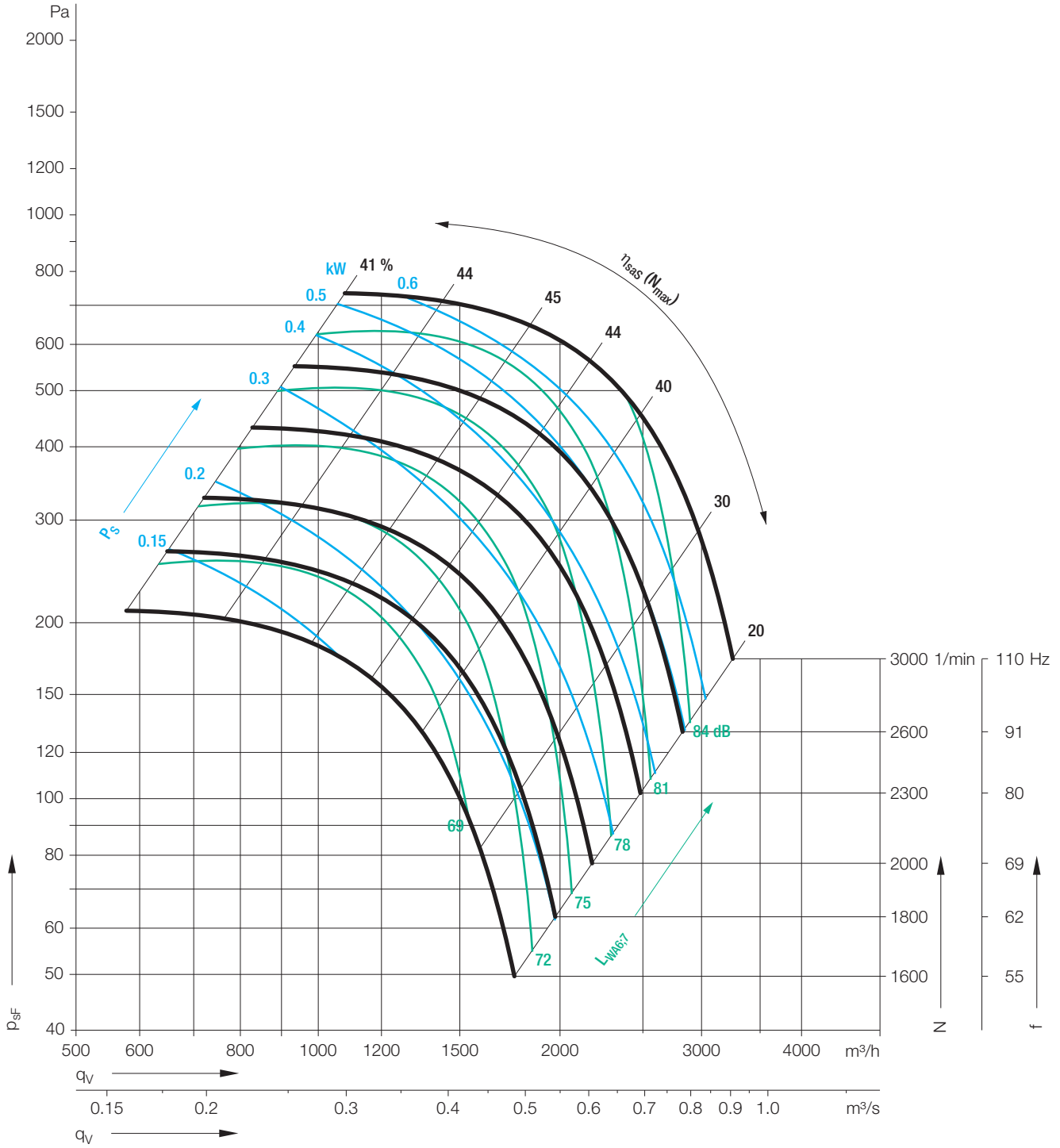
Version	Description	Figure
RZA 11-0225/-0560	Lock formed scroll made of galvanised steel sheet, equipped with multi-position bolted brackets and discharge flange. High performance impeller with backward curved true aerofoil blades, welded and coated.	
The motors	The motors are designed for high efficiencies with frequency inverter control, with inbuilt PTC-thermistors and aerodynamically optimised. **Benefits:** - improved economical operation - high safety standard - optimised motor protection	
The vibration free motor suspension	The anti-vibration system, specially developped for this application, ensure smooth running of the unit whithout transmission of vibration to other parts of the installation or to the building.	
The easy connection	through easy access to the metal connection box fitted to motor shaft.	
The trouble-free speed regulation	from 0 to 100 % by an efficient frequency inverter. **Benefits:** - high flexibility - easy adaptation to varying operational conditions - high efficiency at part load	

RZA 11-0225

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Duty point	Relative sound power level L_{Wrel7} octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ **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

Duty point	Relative sound power level L_{Wrel6} octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ **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	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V		Hz	kW	kW	A	A	Hz	1/min	1/min	°C	kg
0225-4D	(3)	400		87	0.60	0.87		1.6	110		3000	40	17

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	Hz		kW	kW	A	A	Hz	1/min	1/min	°C	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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

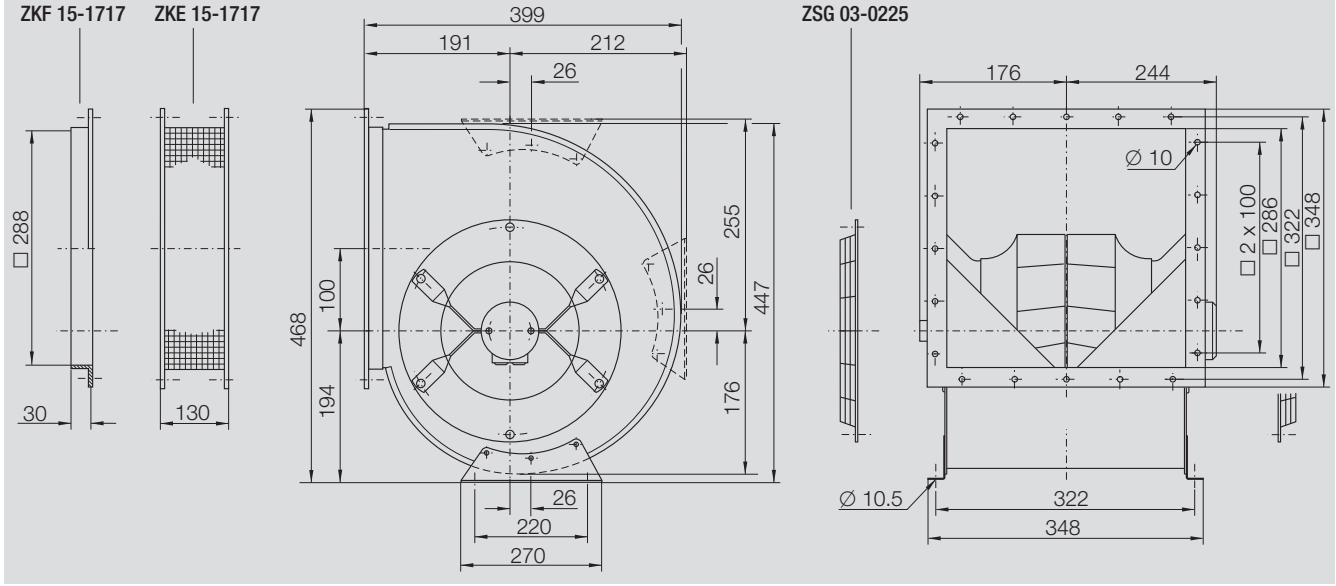
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

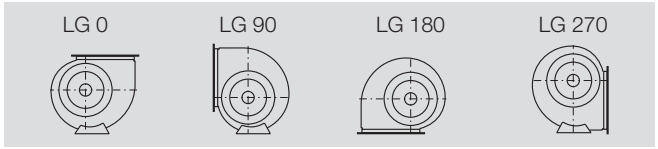
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

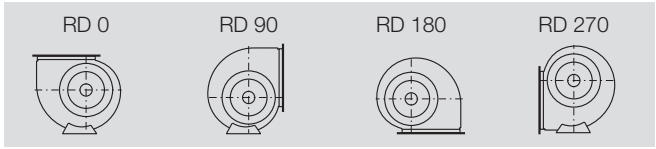
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

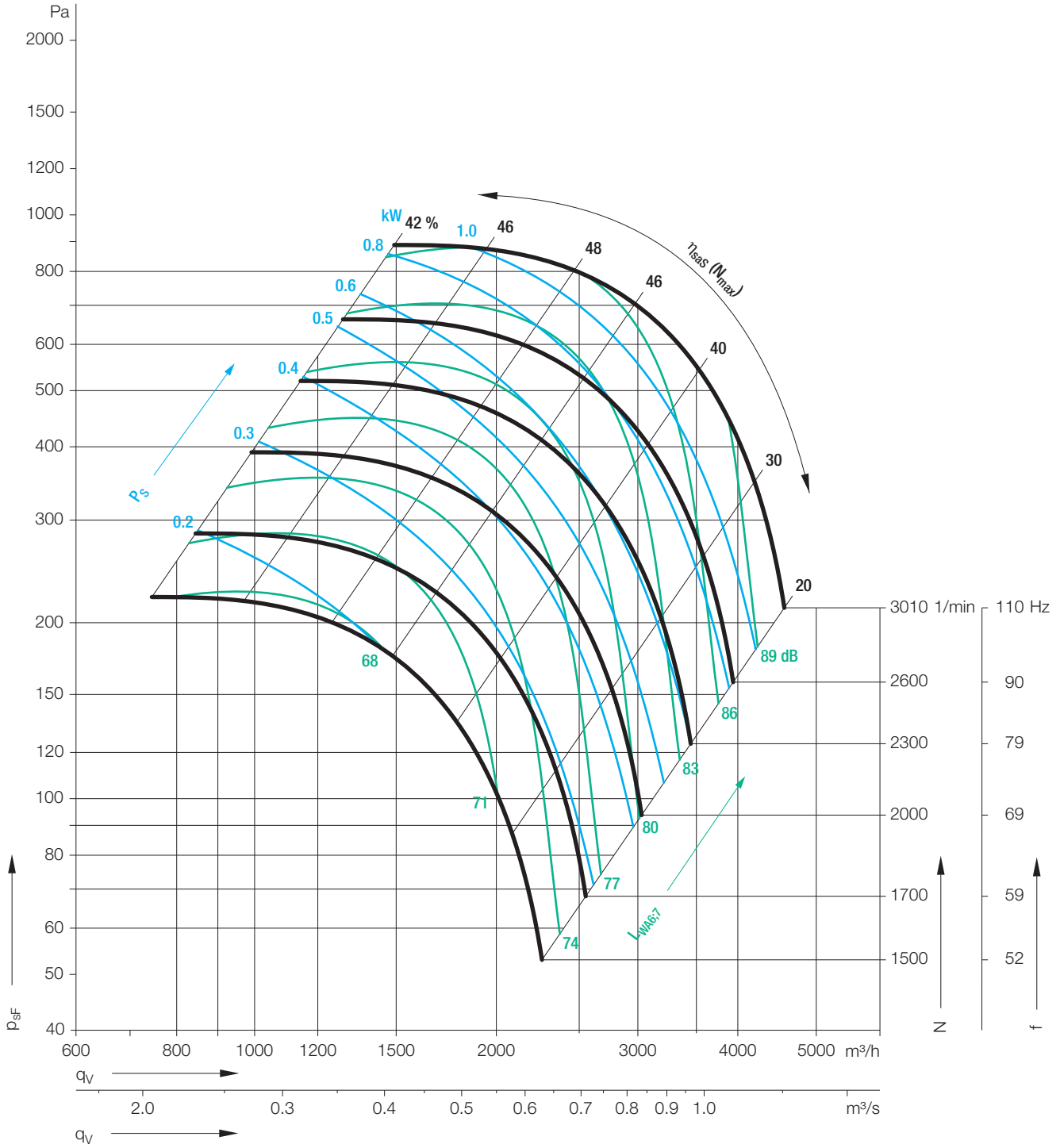
RZA 11-	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
0225-4D	ESH 22-0075-32	MM420 3AC 400V 0.75KW EMV B	6SE6400-3CC00-4AD3	ZBD 01-0506-A
RZA 11-				
0225-4D-50	ESH 22-0075-32	-	-	ZBD 01-0506-A
0225-4D-60	ESH 22-0075-32	-	-	ZBD 01-0506-A

RZA 11-0250

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 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_{WrelI6} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 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	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V		Hz	kW	kW	A	A	Hz	1/min	1/min	°C	kg
0250-4D	(3)	400		87	0.95	1.4		2.5	110		3010	40	21

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	Hz		kW	kW	A	A	Hz	1/min	1/min	°C	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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

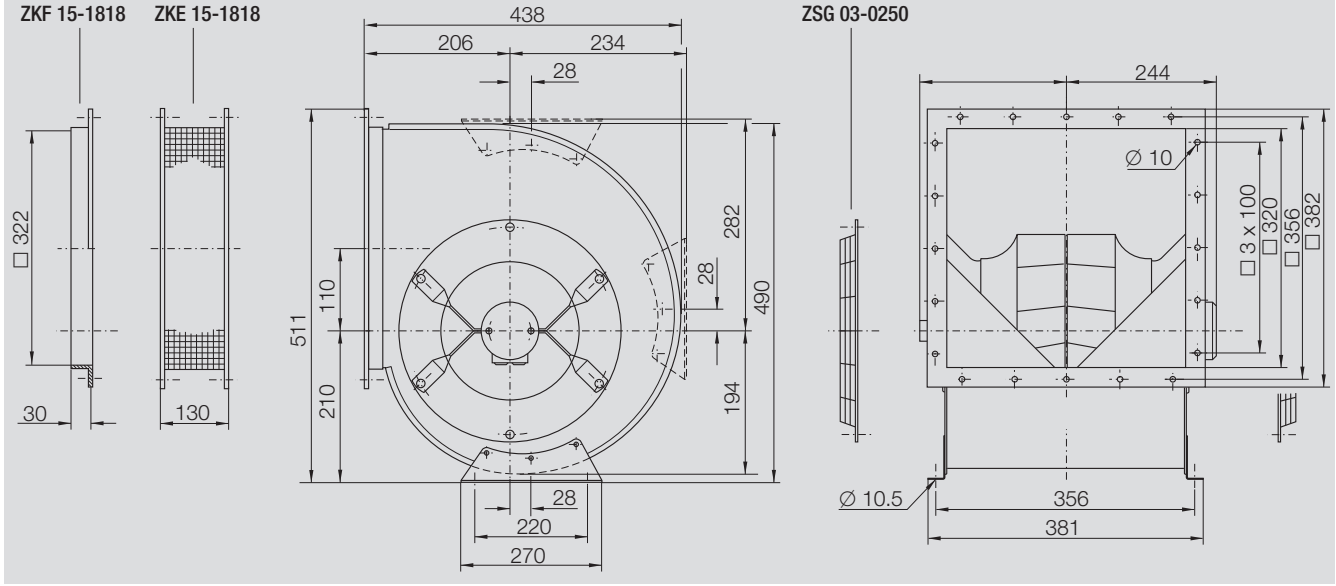
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

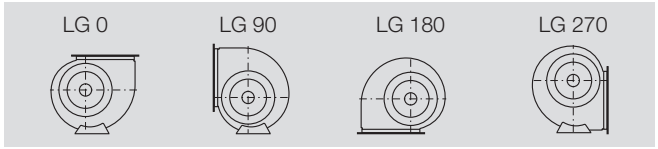
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

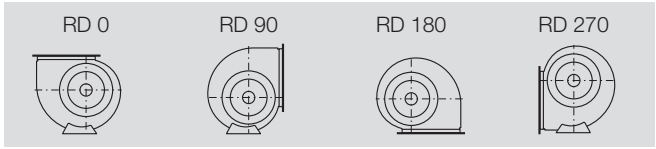
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

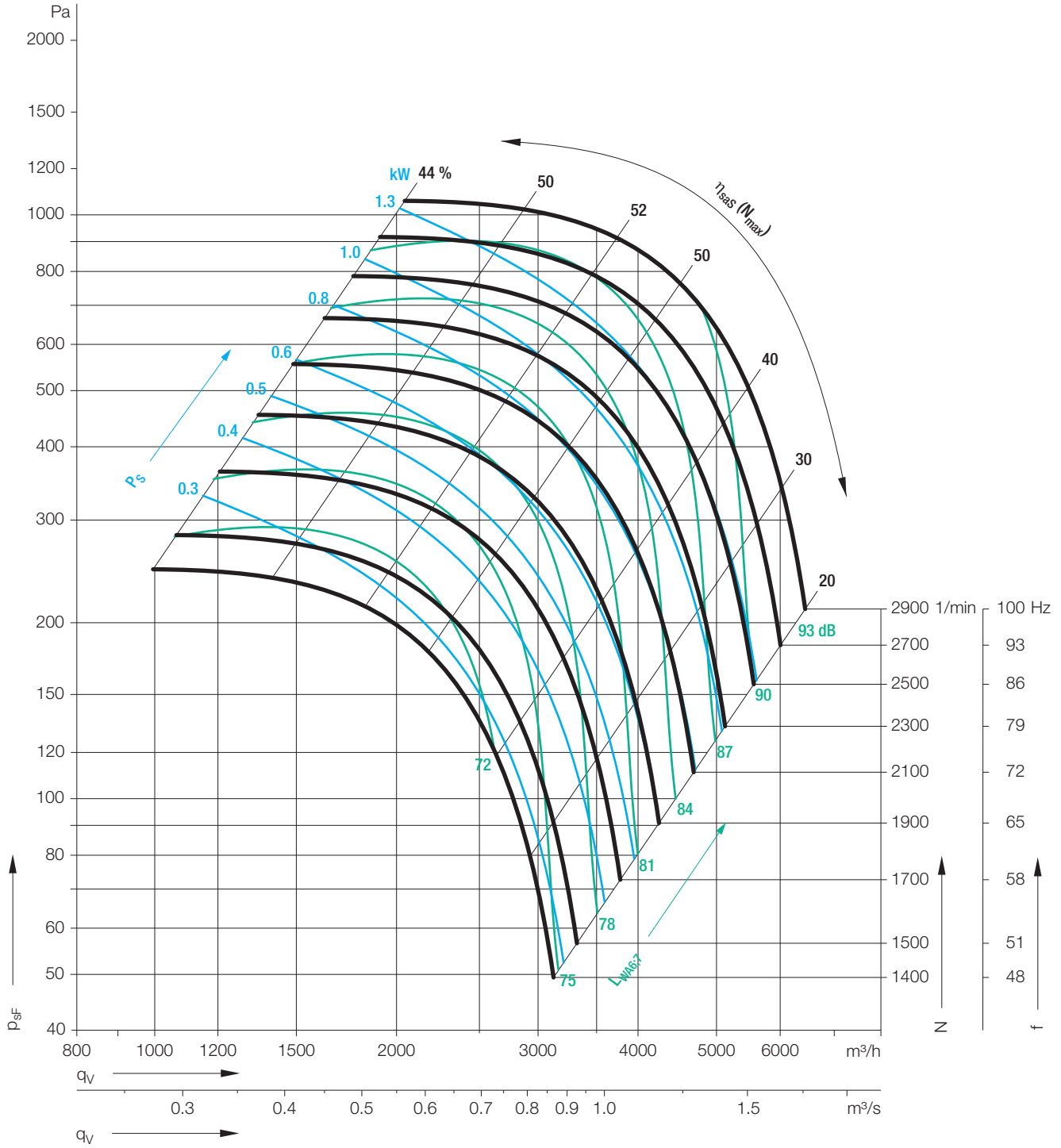
RZA 11-	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
0250-4D	ESH 22-0075-32	MM420 3AC 400V 1.10KW EMV B	6SE6400-3CC00-4AD3	ZBD 01-0506-A
RZA 11-				
0250-4D-50	ESH 22-0075-32	-	-	ZBD 01-0506-A
0250-4D-60	ESH 22-0075-32	-	-	ZBD 01-0506-A

RZA 11-0280

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Duty point	Relative sound power level L_{Wrel7} octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ **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

Duty point	Relative sound power level L_{Wrel6} octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ **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	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V		Hz	kW	kW	A	A	Hz	1/min	1/min	°C	kg
0280-4D	(3)	400		87	1.50	1.9		3.7	100		2900	40	29

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	Hz		kW	kW	A	A	Hz	1/min	1/min	°C	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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

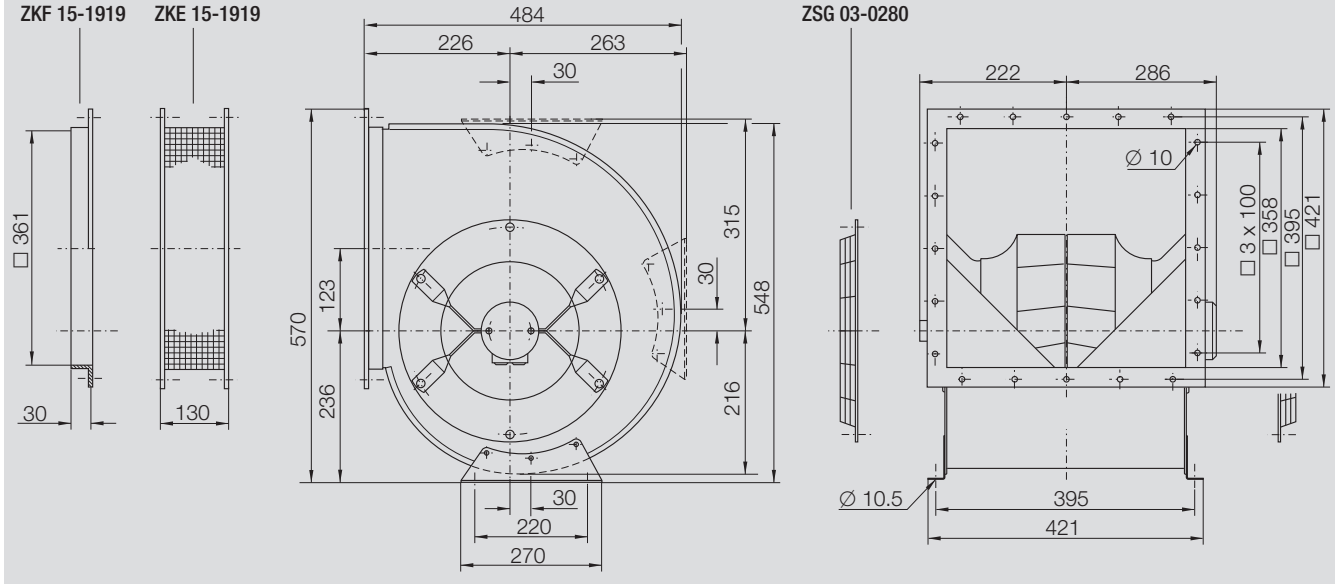
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

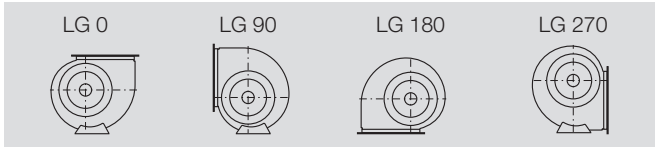
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

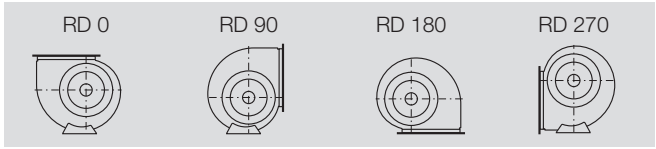
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

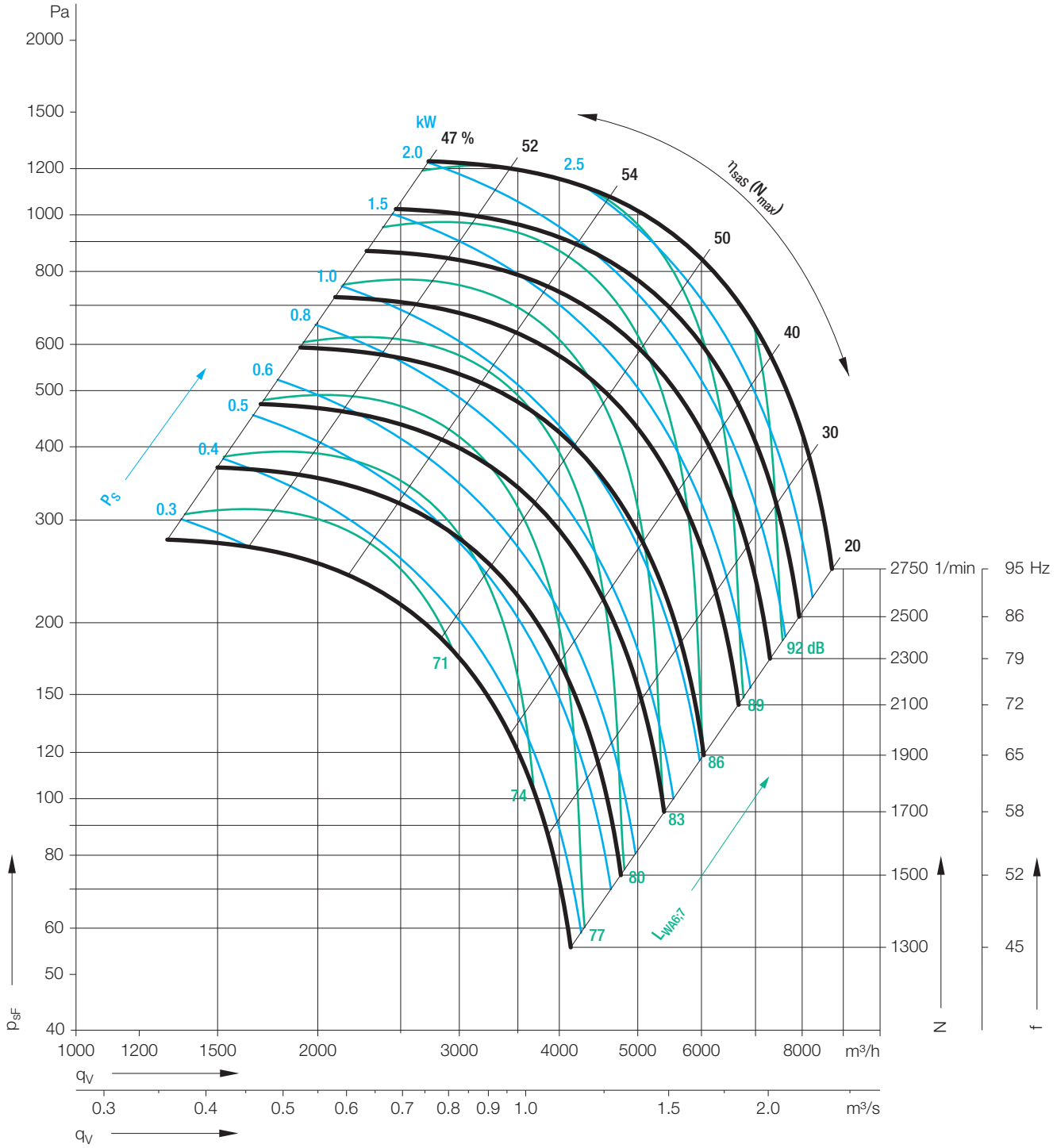
RZA 11-	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
0280-4D	ESH 22-0075-32	MM420 3AC 400V 1.50KW EMV B	6SE6400-3CC00-6AD3	ZBD 01-0506-A
RZA 11-				
0280-4D-50	ESH 22-0075-32	-	-	ZBD 01-0506-A
0280-4D-60	ESH 22-0075-32	-	-	ZBD 01-0506-A

RZA 11-0315

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ **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_{WrelI6} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ **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	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V		**Hz**	**kW**	**kW**	**A**	**A**	**Hz**	**1/min**	**1/min**	**°C**	**kg**
0315-4D	(3)	400		87	2.20	2.9		5.3	95		2750	40	36

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	**Hz**		**kW**	**kW**	**A**	**A**	**Hz**	**1/min**	**1/min**	**°C**	**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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

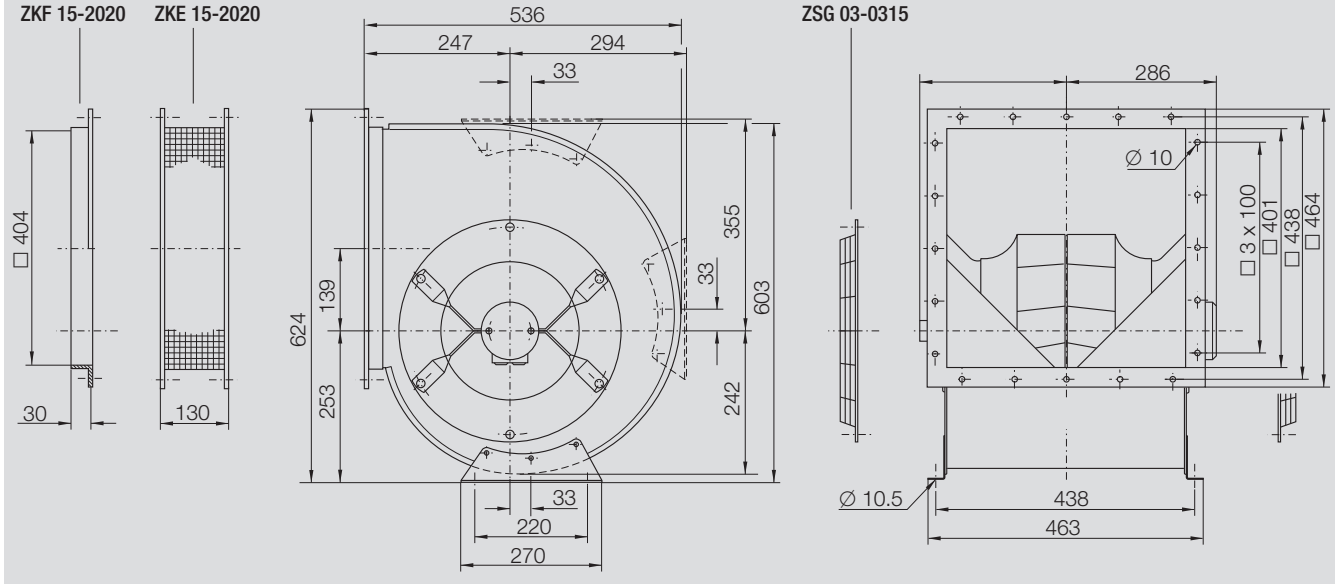
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

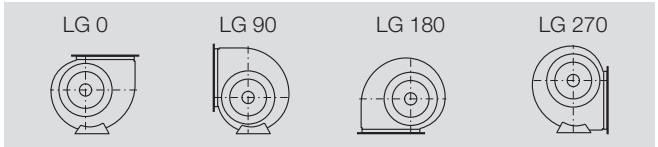
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

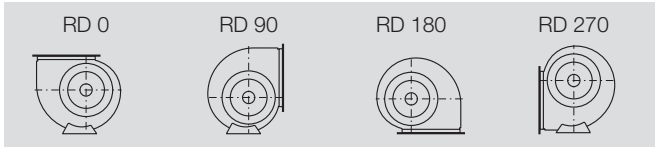
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

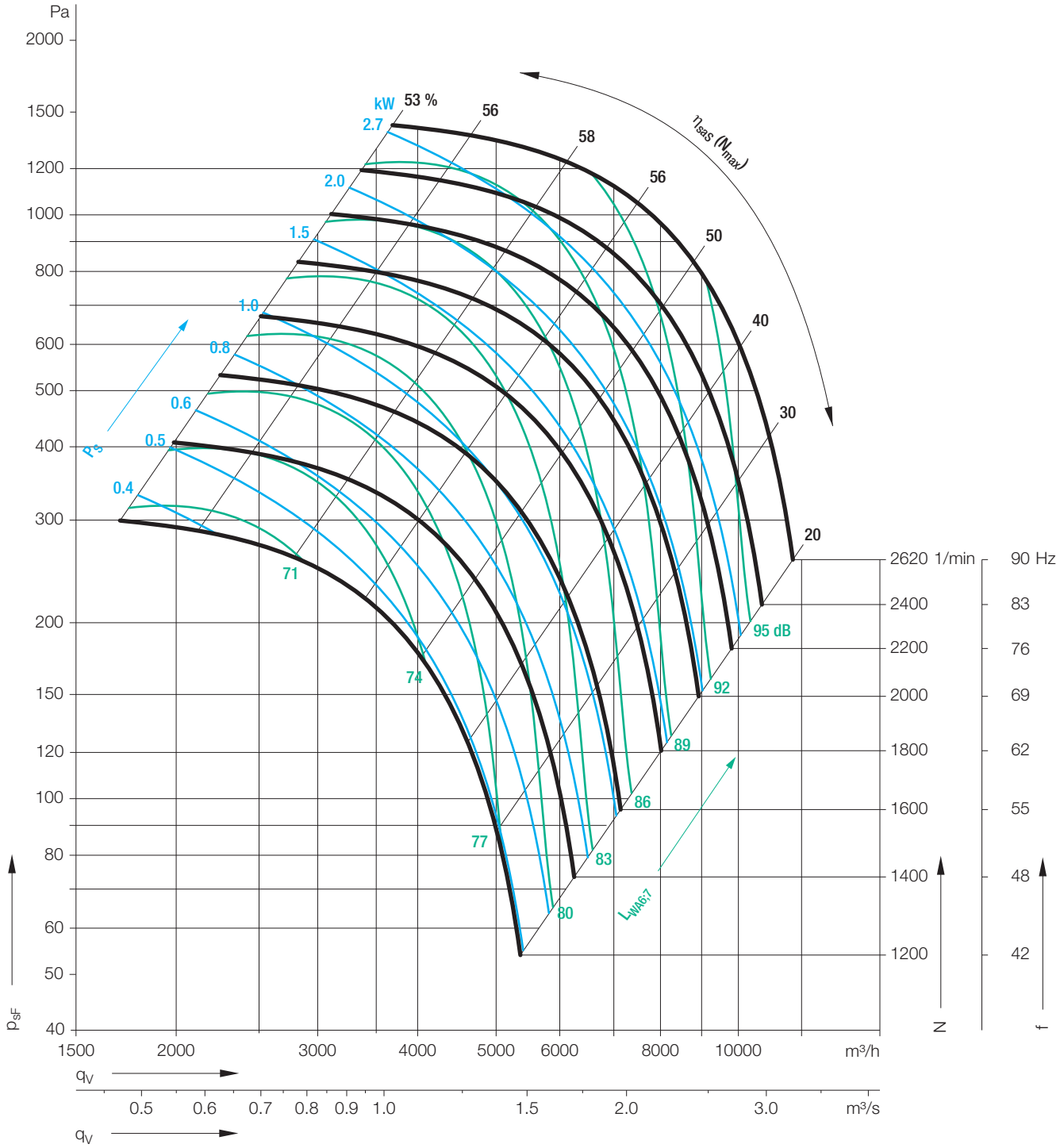
RZA 11-	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
0315-4D	ESH 22-0075-32	MM420 3AC 400V 2.20KW EMV B	6SE6400-3CC01-0BD3	ZBD 01-0506-A
RZA 11-				
0315-4D-50	ESH 22-0075-32	-	-	ZBD 01-0506-A
0315-4D-60	ESH 22-0075-32	-	-	ZBD 01-0506-A

RZA 11-0355

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Duty point	Relative sound power level L_{WrelI7} octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ **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

Duty point	Relative sound power level L_{WrelI6} octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ **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 11-0355

Technical Data

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

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	Hz		kW	kW	A	A	Hz	1/min	1/min	°C	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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

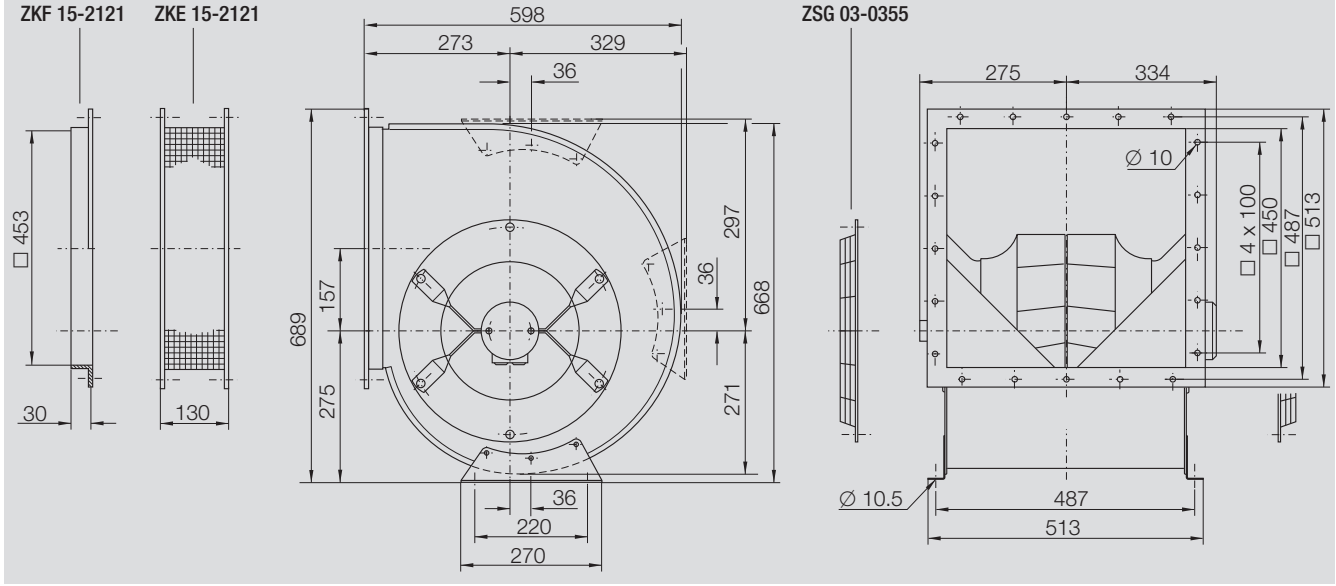
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

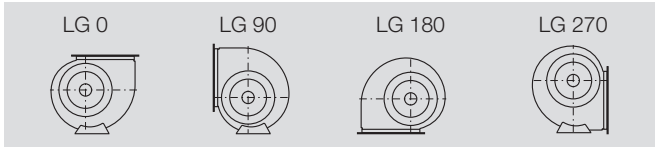
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

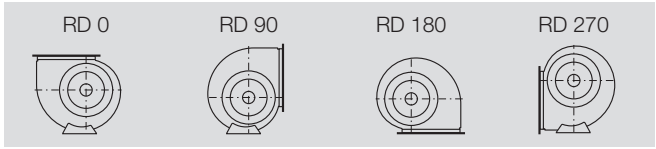
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

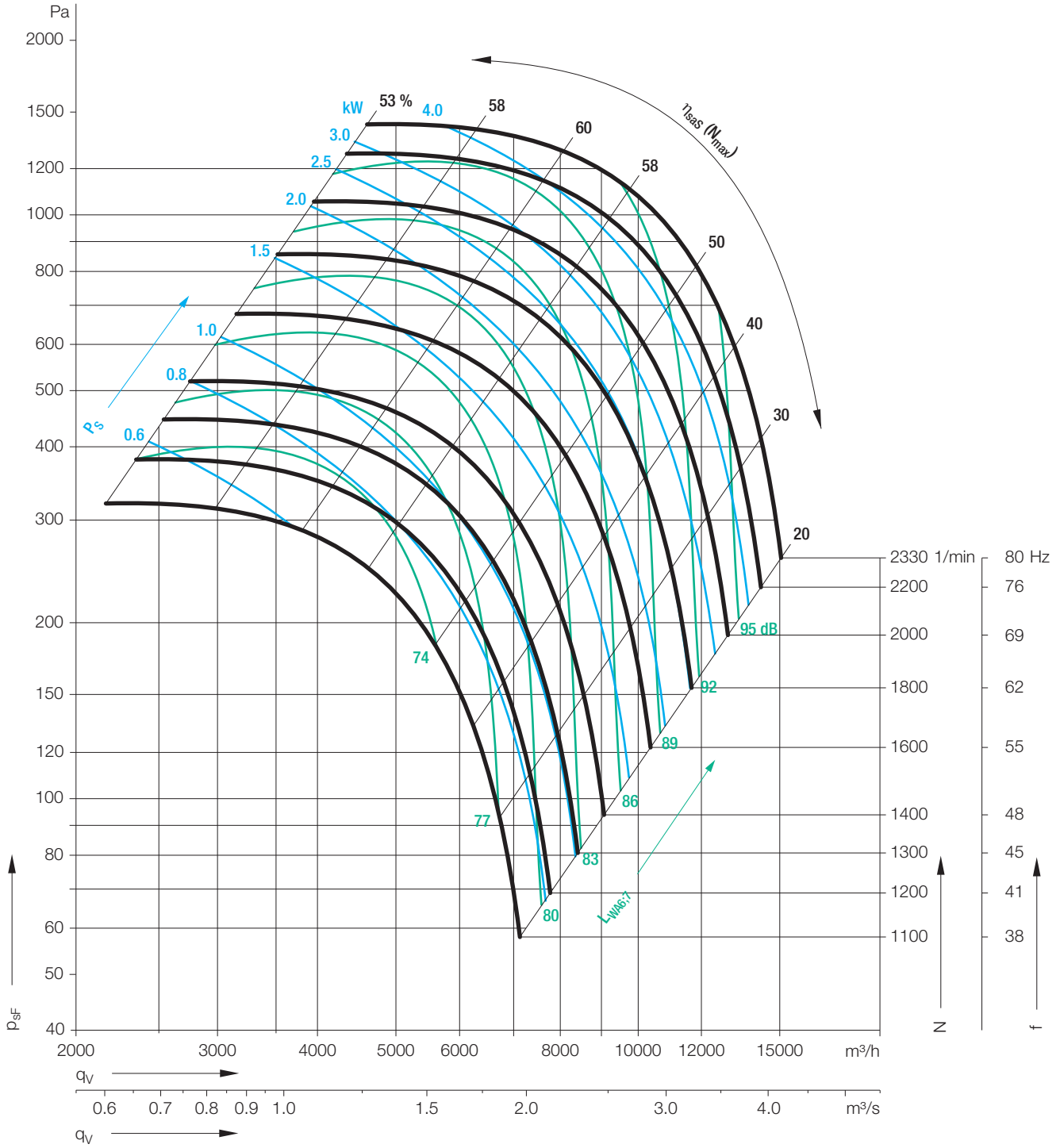
RZA 11-	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
0355-4D	ESH 22-0075-32	MM420 3AC 400V 4.00KW EMV B	6SE6400-3CC01-4BD3	ZBD 01-0606-A
RZA 11-				
0355-4D-50	ESH 22-0075-32	-	-	ZBD 01-0606-A
0355-4D-60	ESH 22-0075-32	-	-	ZBD 01-0606-A

RZA 11-0400

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ **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_{WrelI6} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ **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	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V		**Hz**	**kW**	**kW**	**A**	**A**	**Hz**	**1/min**	**1/min**	**°C**	**kg**
0400-4D	(3)	400		87	4.40	5.6		12	80		2330	40	68

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	**Hz**		**kW**	**kW**	**A**	**A**	**Hz**	**1/min**	**1/min**	**°C**	**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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

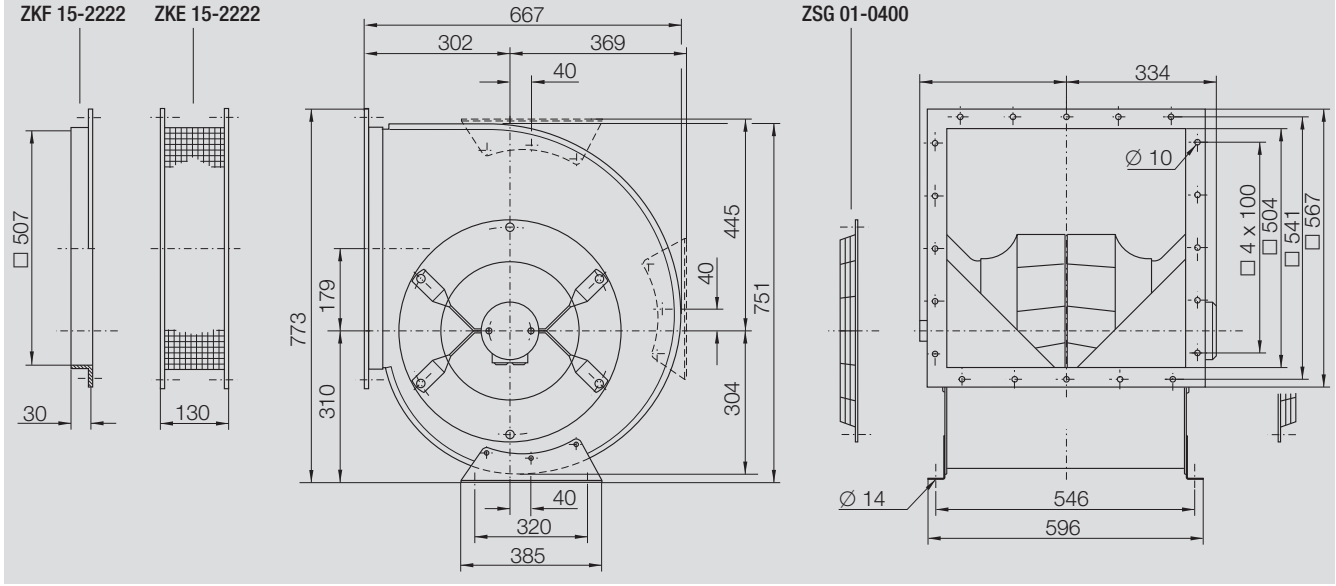
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

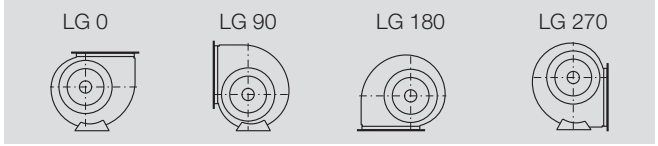
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

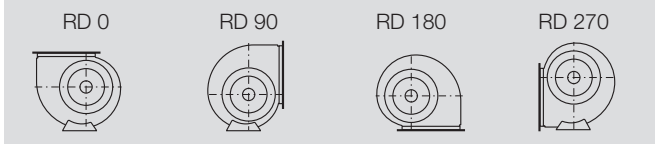
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

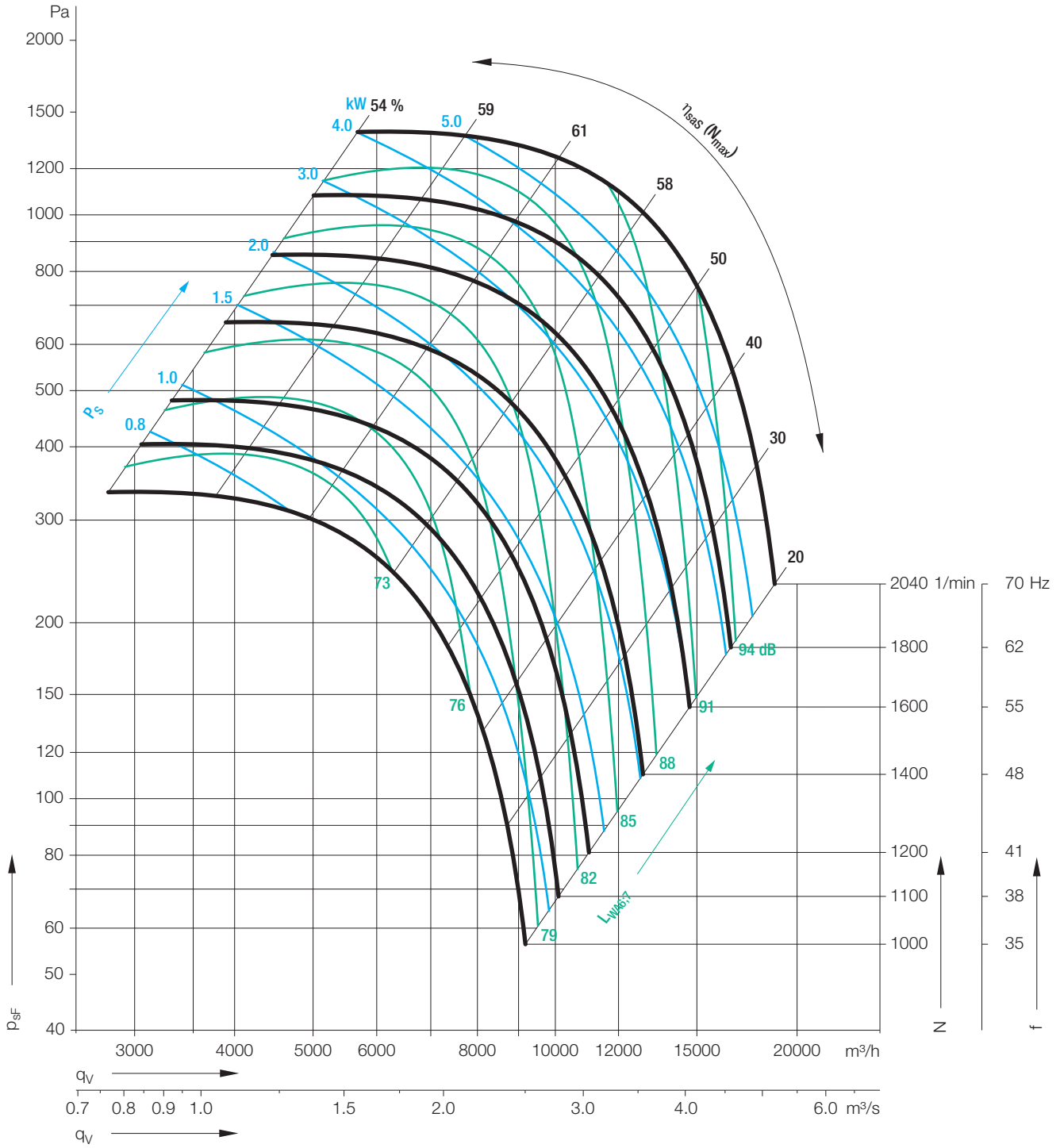
RZA 11-	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
0400-4D	ESH 22-0075-32	MM420 3AC 400V 5.50KW EMV B	6SE6400-3CC02-2CD3	ZBD 01-0606-A
RZA 11-				
0400-4D-50	ESH 22-0075-32	-	-	ZBD 01-0606-A
0400-4D-60	ESH 22-0075-32	-	-	ZBD 01-0606-A

RZA 11-0450

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ **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_{WrelI6} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ **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

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

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	Hz		kW	kW	A	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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

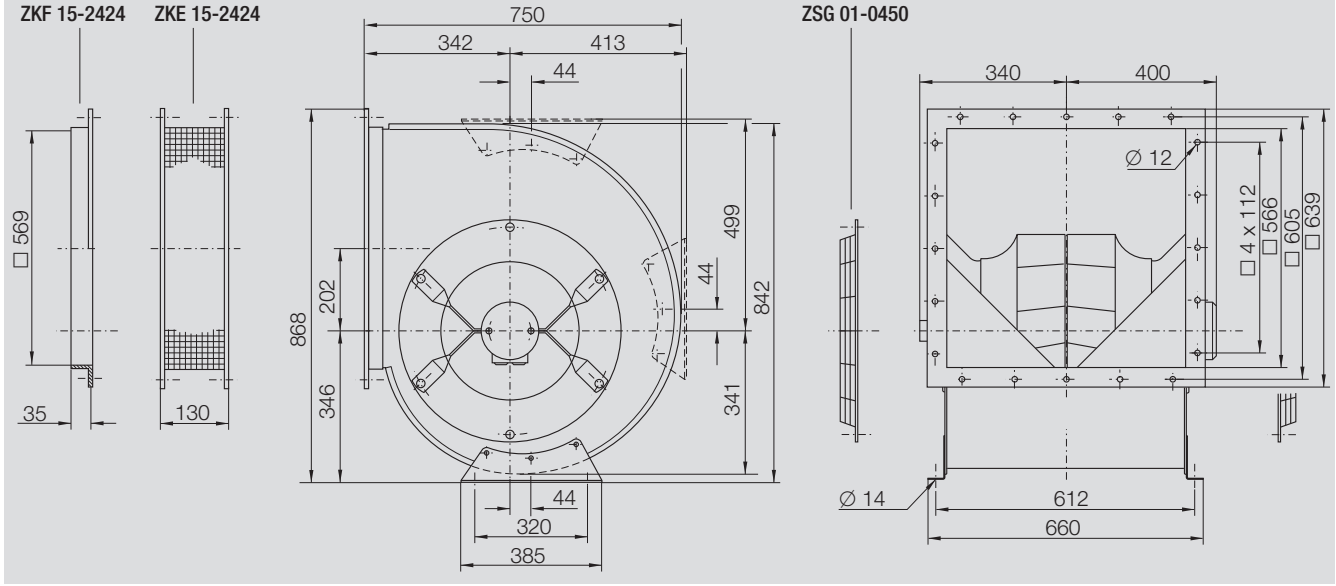
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

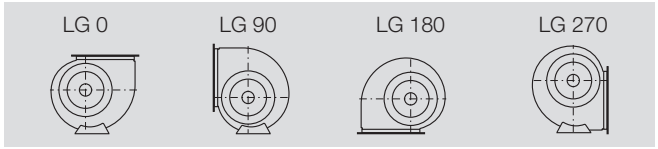
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

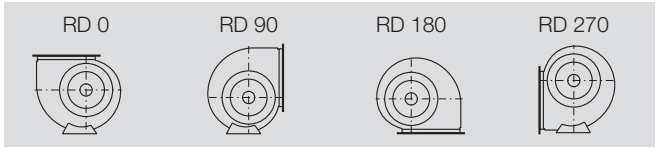
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

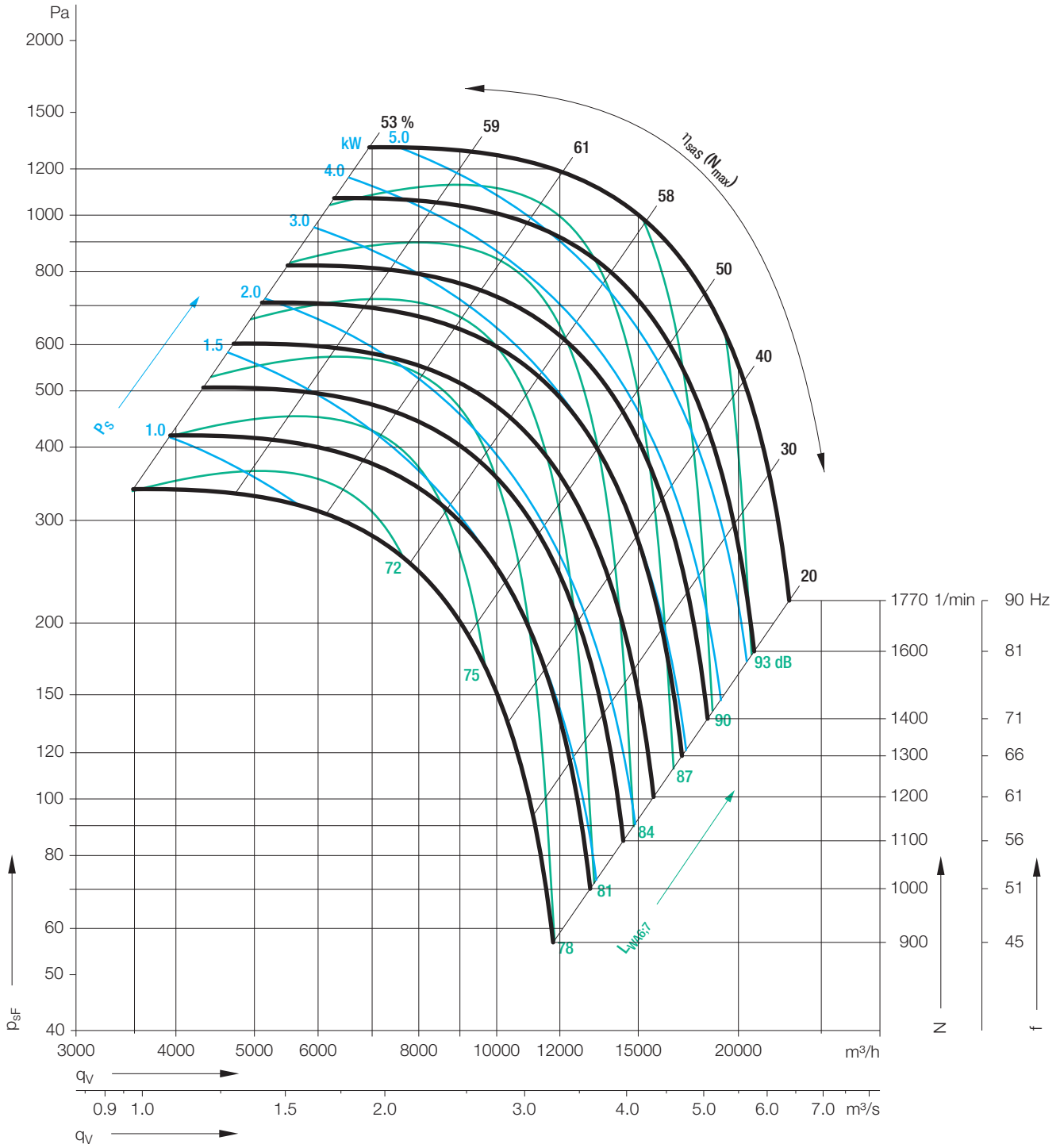
RZA 11-	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
0450-4D	ESH 22-0075-32	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	ZBD 01-1010-A
RZA 11-				
0450-4D-50	ESH 22-0075-32	-	-	ZBD 01-1010-A
0450-4D-60	ESH 22-0075-32	-	-	ZBD 01-1010-A

RZA 11-0500

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ **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_{WrelI6} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ **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	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V		**Hz**	**kW**	**kW**	**A**	**A**	**Hz**	**1/min**	**1/min**	**°C**	**kg**
0500-6D	(3)	400		87	5.90	7.3		15.9	90		1770	40	103

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	**Hz**		**kW**	**kW**	**A**	**A**	**Hz**	**1/min**	**1/min**	**°C**	**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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

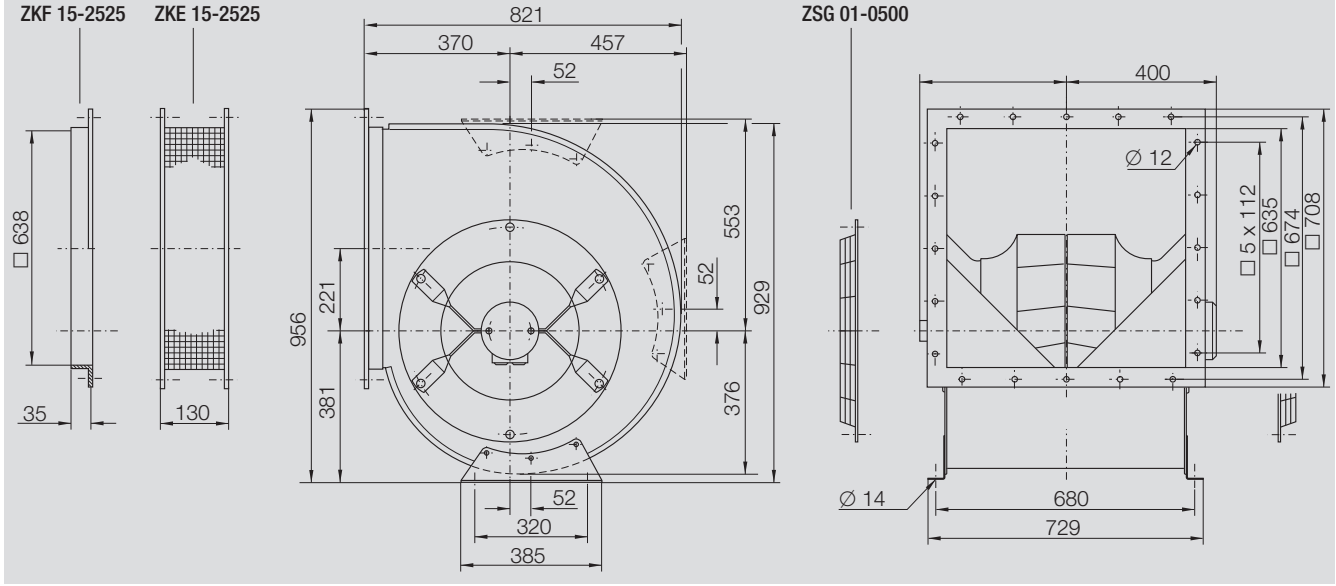
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

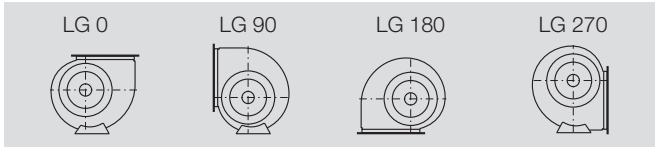
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

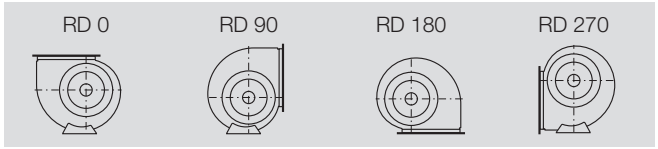
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

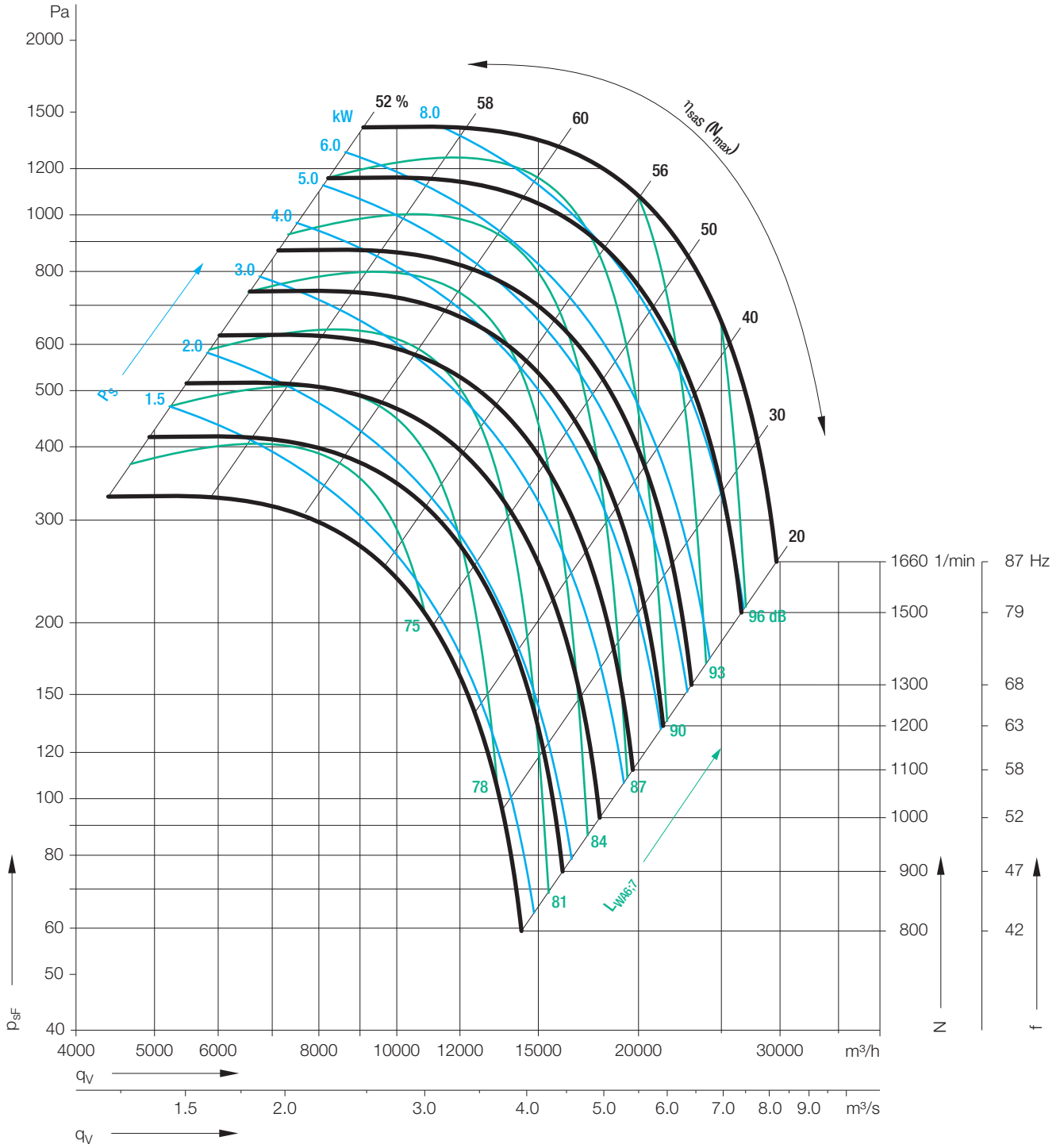
RZA 11-	Isolator (metal casing)	Frequency Inverter Unit MM420 for 3~	Line Choke for 3~	Anti Vibration Rubber Buffers
0500-6D	ESH 22-0075-32	MM420 3AC 400V 7.50KW EMV B	6SE6400-3CC02-2CD3	ZBD 01-1010-A
RZA 11-				
0500-6D-50	ESH 22-0075-32	-	-	ZBD 01-1010-A
0500-6D-60	ESH 22-0075-32	-	-	ZBD 01-1010-A

RZA 11-0560

Technical Data

Density of media **1.15 kg/m³**

Tolerance class **2** according to **DIN 24166**
Measured in installation **A** according to **ISO 5801** (unducted)



Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 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_{WrelI6} octave band correction factors f_m

Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 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	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V		Hz	kW	kW	A	A	Hz	1/min	1/min	°C	kg
0560-6D	(3)	400		87	9.20	10.9		21.2	87		1660	40	154

Technical Data

RZA 11-	Speed control	Nominal voltage	Mains frequency	Nominal frequency	Nominal motor power	Max. power consumption	Nominal motor current	Max. output current (FC)	Max. operating frequency	Nominal motor speed	Max. fan speed	Media Temperature max.	Weight
		V	Hz		kW	kW	A	A	Hz	1/min	1/min	°C	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 87Hz, i.e. the input frequency 400V is increased to 87Hz. The performance curves plot speed/frequency against volume and pressure, and the total efficiency (η inverter x η motor x η impeller) is expressed as a parabola.

The set up parameters for each inverter are provided in the accompanying literature.

Calculations formula

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

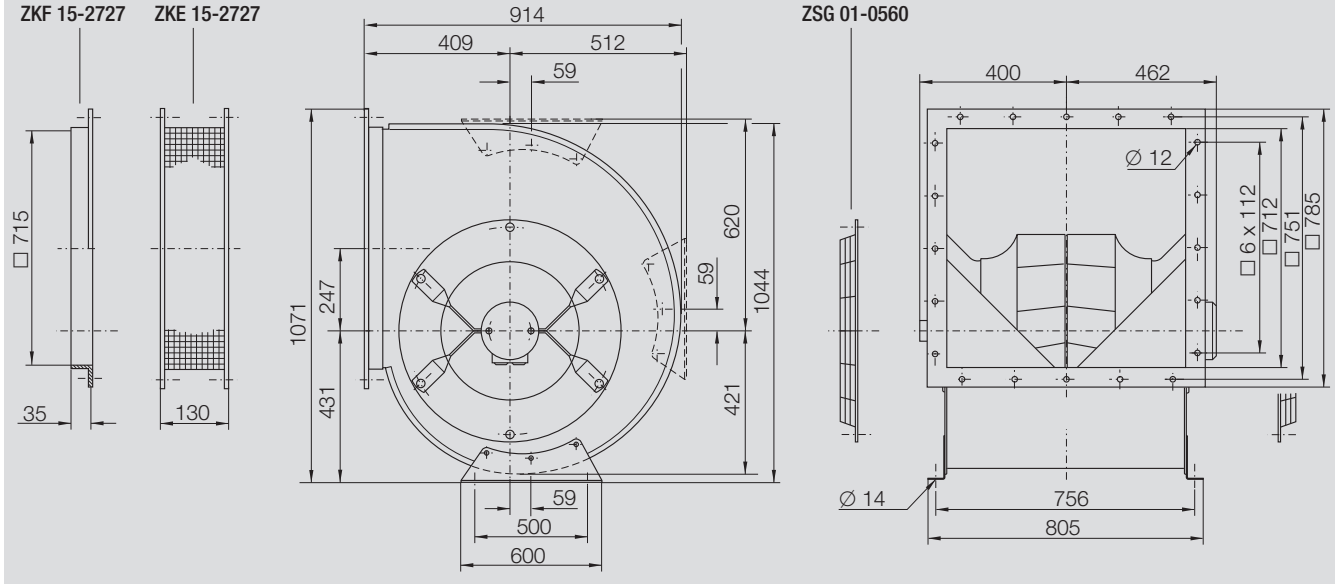
$L_{Wokt7} = L_{WA6/7} + L_{Wrel7}$

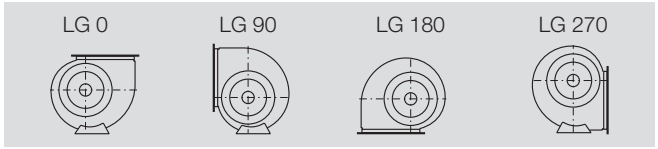
$L_{Wokt6} = L_{WA6/7} + L_{Wrel6}$

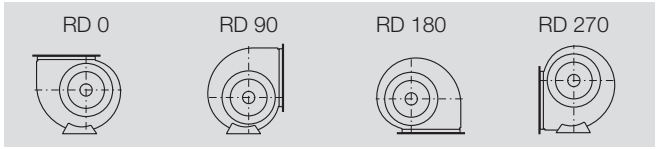
(3) = Stepless speed controllable via frequency converter

* = No speed control available

Dimensions in mm, subject to change.







Accessories

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

Fan data

Fan type		.....	
Casing position (anticlockwise)	LG	.....	
Volume flow	q_V	.....	m³/h
Static pressure	p_{sF}	.....	Pa
Air density at fan inlet	ρ_1	.....	kg/m³
Air temperature	t	.....	°C
Power consumption system	P_S	.....	kW
Output current Inverter	I_A	.....	A
System efficiency	(η_{sys})	.....	
Operating frequency	f	.....	Hz
Max. operating frequency	f_{max}	.....	Hz
Weight	m	.....	kg

Fittings / Accessories

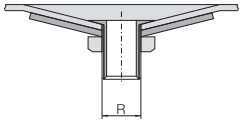
- Drain plug R1/2"
- Inspection door
- Corrosion protection S40
- Volumeter IMV13
-
- Discharge flange
- Discahrge flexible connection
- Inlet guards
- Rubber AVM
-
- Frequency inverter unit
- 3 phase line reactor
- Difference pressure sensor
- Universal control device
- Isolator

Fittings / Accessories

Accessories

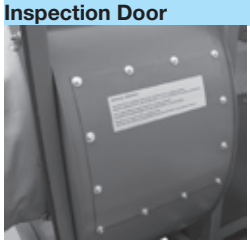
All options and accessories must be specified separately.
Please take the technical data and dimensions from the corresponding page of the catalogue.

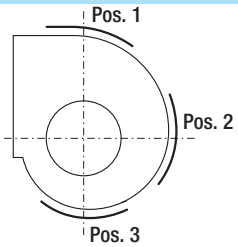
Drain Plug



If the fan is installed outside, or if conveying a medium containing humidty, 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 ..-	
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 ≥40µm, Colour RAL 7039
- **Wet lacquering** - Layer thickness ≥40µm (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

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

Fittings / Accessories

Flexible Connections

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

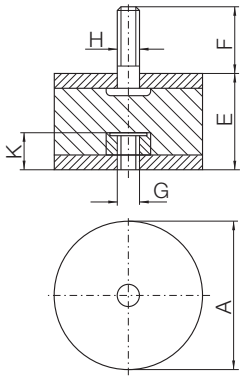
- Standard up to +80°C
- ATEX max. +60°C

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 1400rpm or 850rpm
- **Rubber buffers** - for noise insulation only at fan speeds under 800rpm or 1700rpm

Dimensions in mm, subject to change.

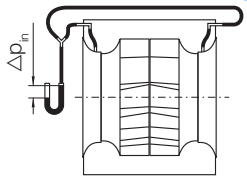


ZBD	ZBD	A	E	F	G	H	K
01-0405A*	01-0405C*	20	25	16	M 6	M 6	6.5
03-0503A*	03-0503C*	25	15	11	M 6	M 6	6.5
01-0504A*	01-0504C*	25	20	11	M 6	M 6	6.5
03-0806A*	03-0806C*	40	30	21	M 8	M 8	9.5
03-1007A	03-1007C*	50	34	26.5	M 10	M 10	10.5
03-1510A*	03-1510C*	75	50	39	M 12	M 12	12.5
02-2008A*	02-2008C*	100	40	44	M 16	M 16	16.5

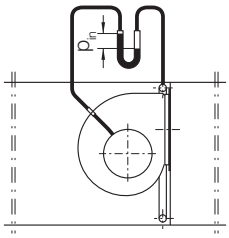
* **A** = for U-profile; **C** = for CC-profile

Fittings / Accessories

Volumeter



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



With the flow measuring device it is possible to easilymeasure / 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 ofthe inlet cone in a static atmosphere.

- **volume flow q_V [m³/h]**
- **calibration factor K [m²s/h]**
- **density of media ρ [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 comparativemeasurement 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

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 bemeasured. It must be ensured that the static pressureto 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 canlead 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.

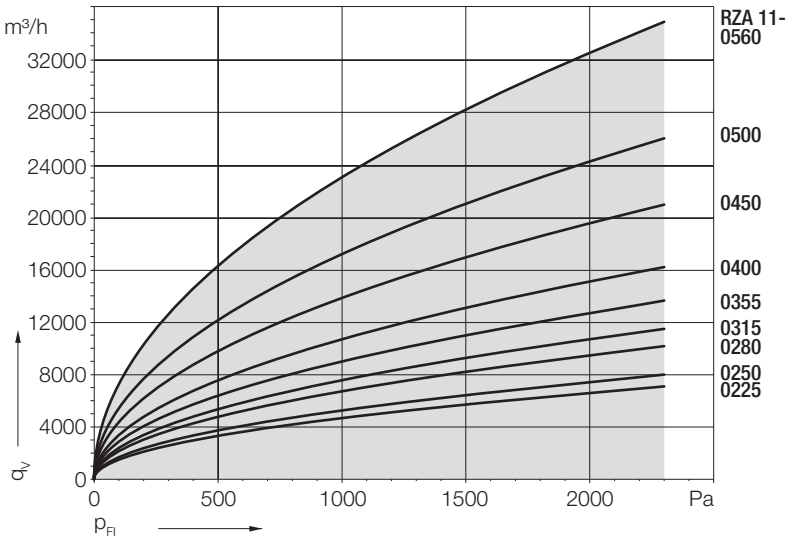
Calibration factors

Size	Standard calibration factor K10 m²s/h
0225	112
0250	125
0280	160
0315	180
0355	215
0400	255
0450	330
0500	410
0560	550

Fittings / Accessories

Volume flow determination

With the represented chart and a measured difference pressure at the nozzle can streamed determined become 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 diagramme scale is a double logarithmical net.
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 ρ_1 = 1,15kg/m³ for the conveyed medium at fan intake.
For a medium density ρ_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 presurre 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.
If 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: $\mathbf{L_{Wfc7} = L_{WA6/7} + L_{Wrel7}}$
- Discharge: $\mathbf{L_{Wfc6} = L_{WA6/7} + L_{Wrel6}}$

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

Media

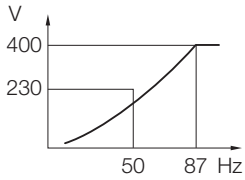
This range of fans are specially designed for use into air handling units (AHU) and ventilation systems.
The centrifugal fans are ideal for conveying clean air. The allowed air temperature comes from -20°C to +40°C.

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 under: www.nicotra-gebhardt.com.

Frequency inverter operation
Frequency inverter operation with a nominal voltage of 400V the edge frequency of 87Hz 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 (400V) operation the motor should be star (Y) connected.

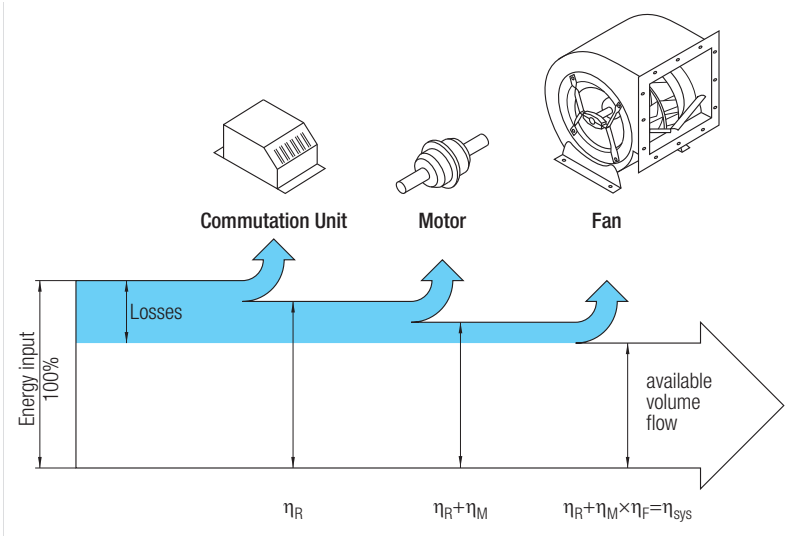
If frequency inverters are allocated by the customer, then it must be ensured that the voltage gradient of the frequency inverter does not exceed the figure of 500V/s and the maximum peak voltage at the motor terminals is kept to 1200V. Depending on the frequency inverter employed and the length of cable between the frequency inver-ter and the motor, additional units (such as motor choke, active sinus filter, for examp-le) 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 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 50/60Hz
- problrm free speed control from 0 up to 100%
- reduced motor heat from higher motor efficiency – reduced energy expenditure for the cooling systems

System efficiency:
The given System Efficiency is the efficiency of the whole system and includes the individual efficiencies of the component Fan - Motor - Commutation Unit.



Nicotra Gebhardt RZP *rotavent*
The compact pioneering technology!

optimal Aerodynamics
Low turbulance 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.

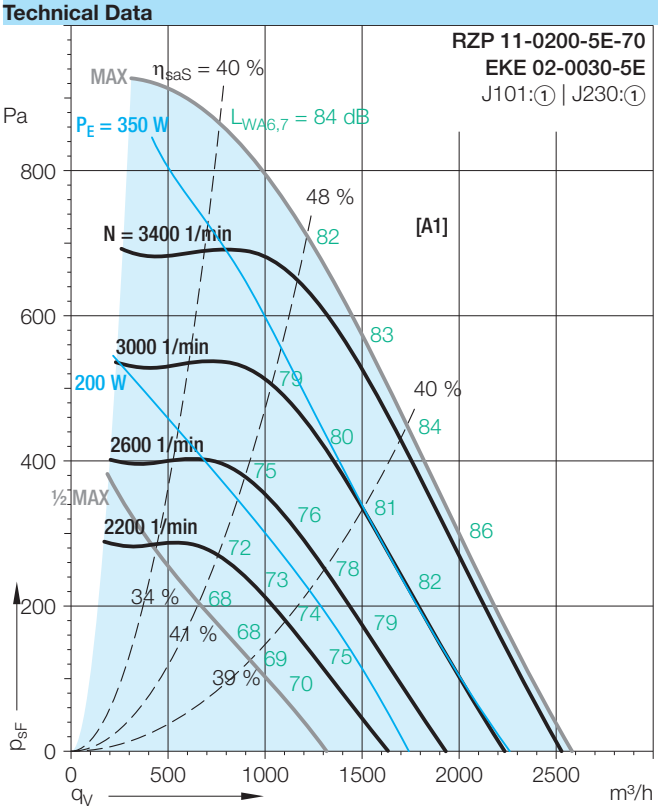
Your benefits:
- low running costs
- high efficiency

The benefits of *rotavent* RZP
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
RZP 11-0200/-0500	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.	
The motors	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.	
The vibration free motor suspension	The anti-vibration system, specially developped for this application, ensure smooth running of the unit whithout transmission of vibration to other parts of the installation or to the building.	
The trouble-free speed regulation	from 0 to 100 % by an efficient commutation system. **Benefits:** - high flexibility - easy adaptation to varying operational conditions - high efficiency at part load	

RZP 11-0200

Technical Data



Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Speed N	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
		Relative sound power level L_{Wrel7} at octave band correction factors f_m								
≤ 2342 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 2342 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Speed N	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
		Relative sound power level L_{Wrel6} at octave band correction factors f_m								
≤ 2342 1/min	0.7...1.4 q_{Vopt}	-6	-5	-2	-2	-5	-12	-19	-27	dB
> 2342 1/min	0.7...1.4 q_{Vopt}	-9	-7	-4	-1	-6	-11	-17	-28	dB

RZP 11-0200

Technical Data

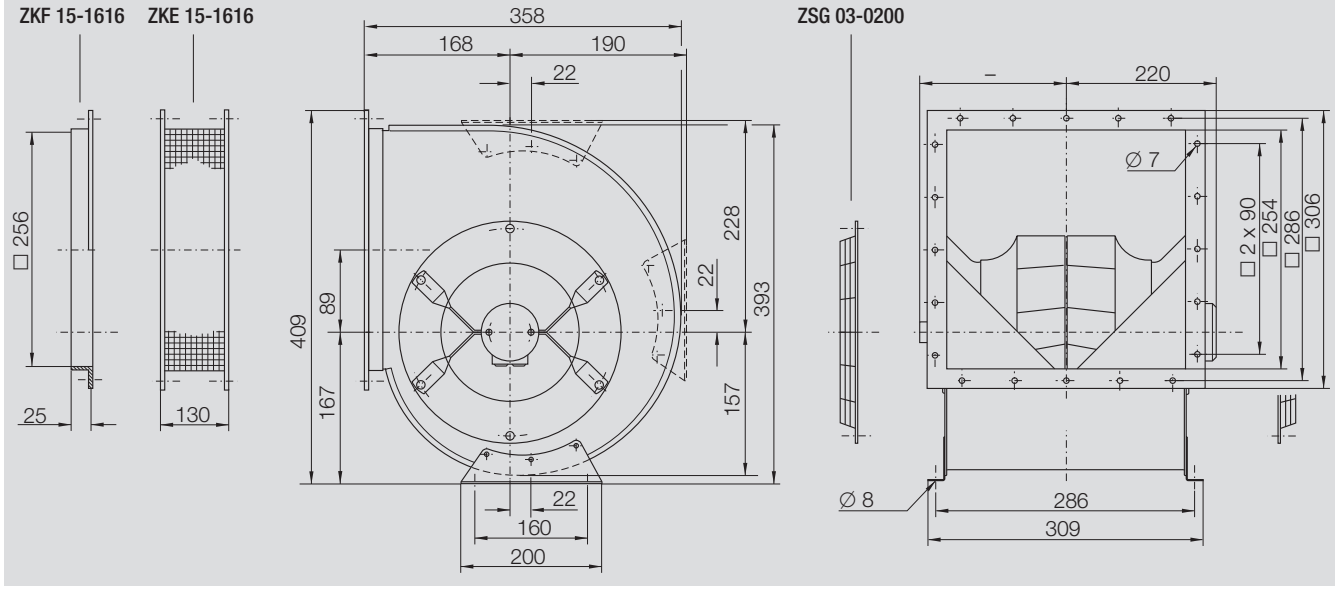
RZP 11-	Curves	Voltage V	Phases	Mains frequency Hz	Max. power consumption kW	Max. current consumption A	Nominal motor speed 1/min	Max. operating frequency Hz	Motor protection class	Motor thermal class	Media Temperature max. °C	Weight kg
0200-5E-70	[A1]	230	1~	50/60	0.55	3.15	3450	60	IP54	B	40	16

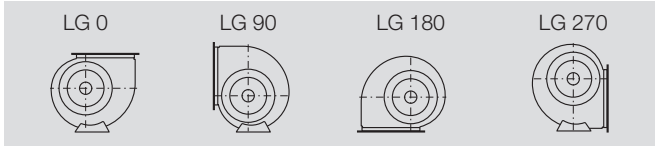
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

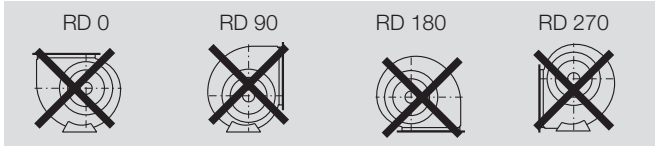
Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

(1) = ON / (0) = OFF

Dimensions in mm, subject to change.





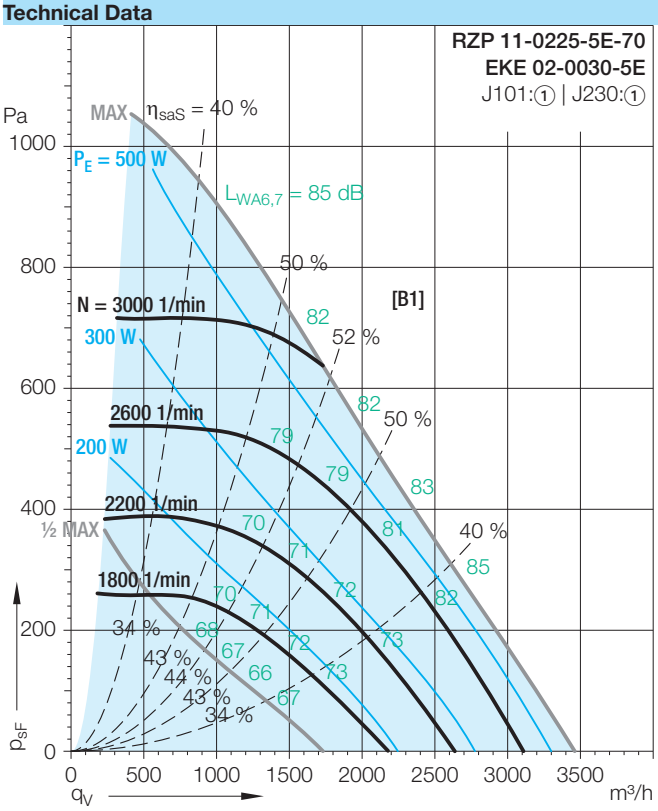


Accessories

RZP 11-	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~
0200-5E-70	ZBD 01-0405-A	EKE 02-0030-5E

RZP 11-0225

Technical Data



Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Speed N	Duty point	Relative sound power level L_{WrelI7} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 2076 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 2076 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Speed N	Duty point	Relative sound power level L_{WrelI6} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 2076 1/min	0.7...1.4 q_{Vopt}	-6	-5	-2	-2	-5	-12	-19	-27	dB
> 2076 1/min	0.7...1.4 q_{Vopt}	-9	-7	-4	-1	-6	-11	-17	-28	dB

RZP 11-0225

Technical Data

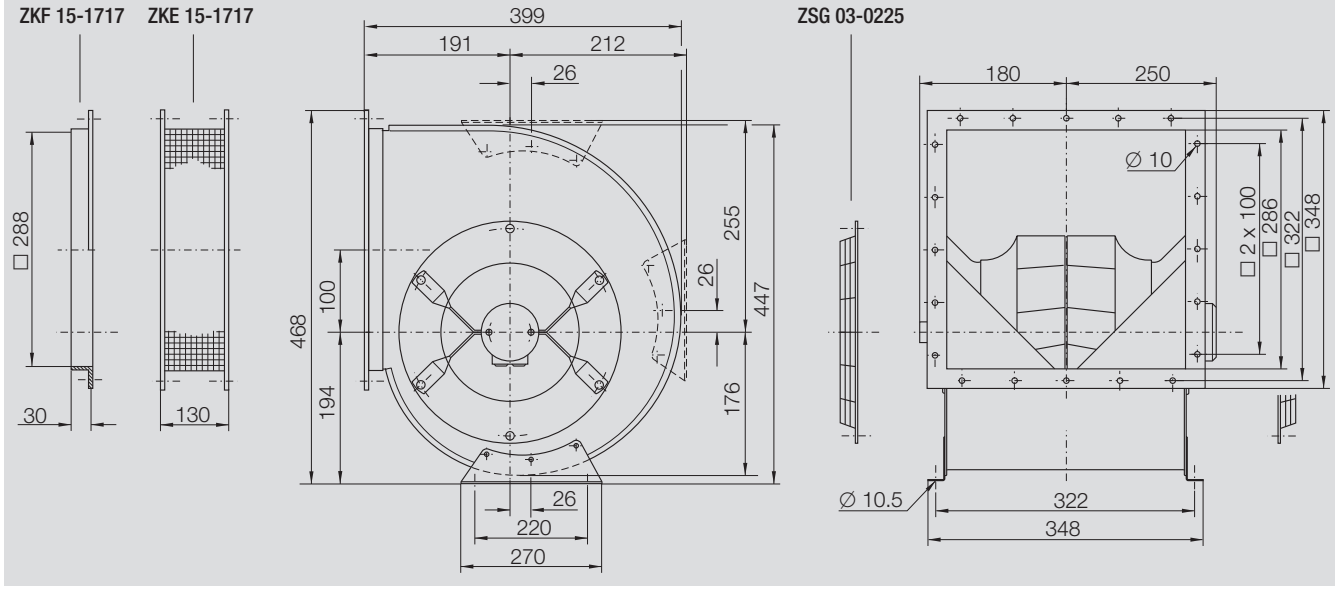
RZP 11-	Curves	Voltage V	Phases	Mains frequency Hz	Max. power consumption kW	Max. current consumption A	Nominal motor speed 1/min	Max. operating frequency Hz	Motor protection class	Motor thermal class	Media Temperature max. °C	Weight kg
0225-5E-70	[B1]	230	1~	50/60	0.6	3.45	2850	60	IP54	B	40	19

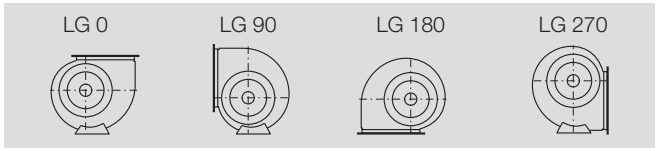
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

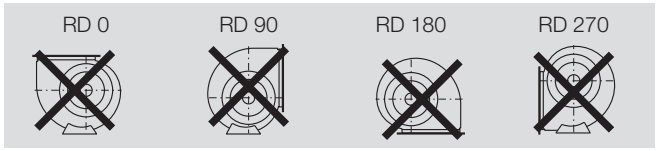
Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

(1) = ON / (0) = OFF

Dimensions in mm, subject to change.





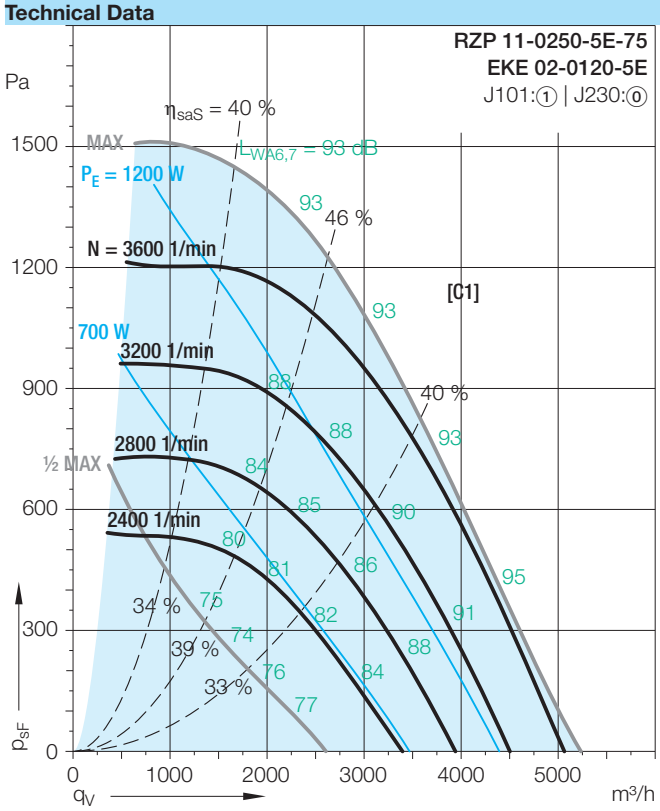


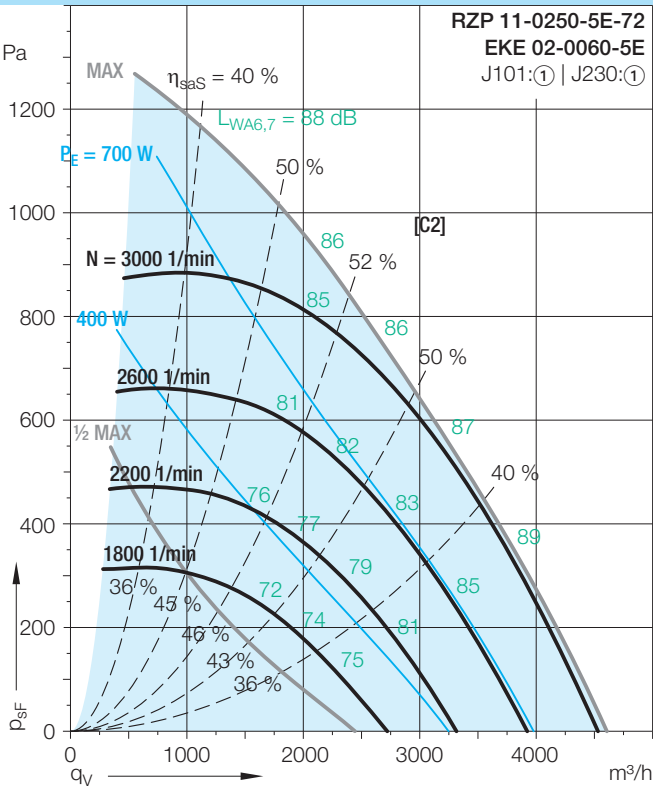
Accessories

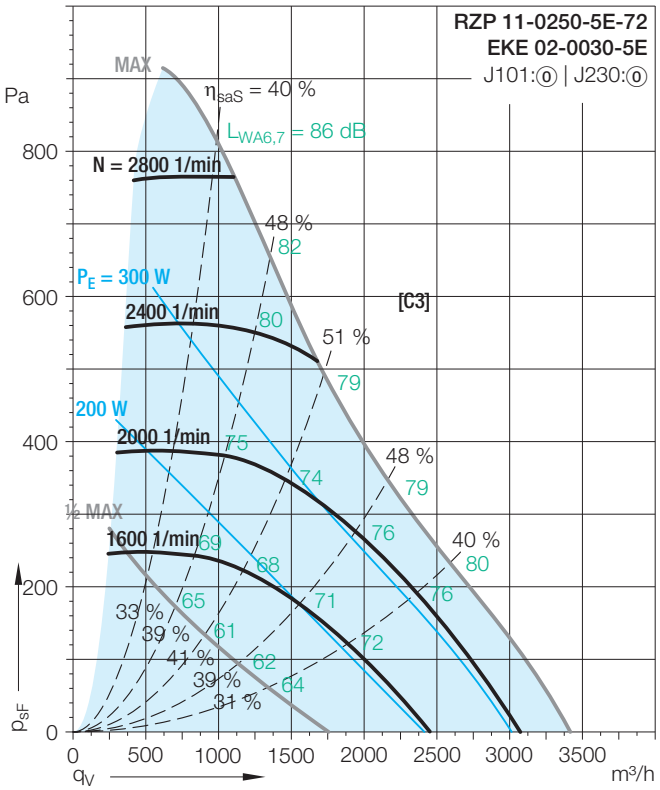
RZP 11-	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~
0225-5E-70	ZBD 01-0405-A	EKE 02-0030-5E

RZP 11-0250

Technical Data







Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} at octave band correction factors f_m

Speed N	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 1865 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 1865 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Relative sound power level L_{WrelI6} at octave band correction factors f_m

Speed N	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 1865 1/min	0.7...1.4 q_{Vopt}	-6	-5	-2	-2	-5	-12	-19	-27	dB
> 1865 1/min	0.7...1.4 q_{Vopt}	-9	-7	-4	-1	-6	-11	-17	-28	dB

RZP 11-0250

Technical Data

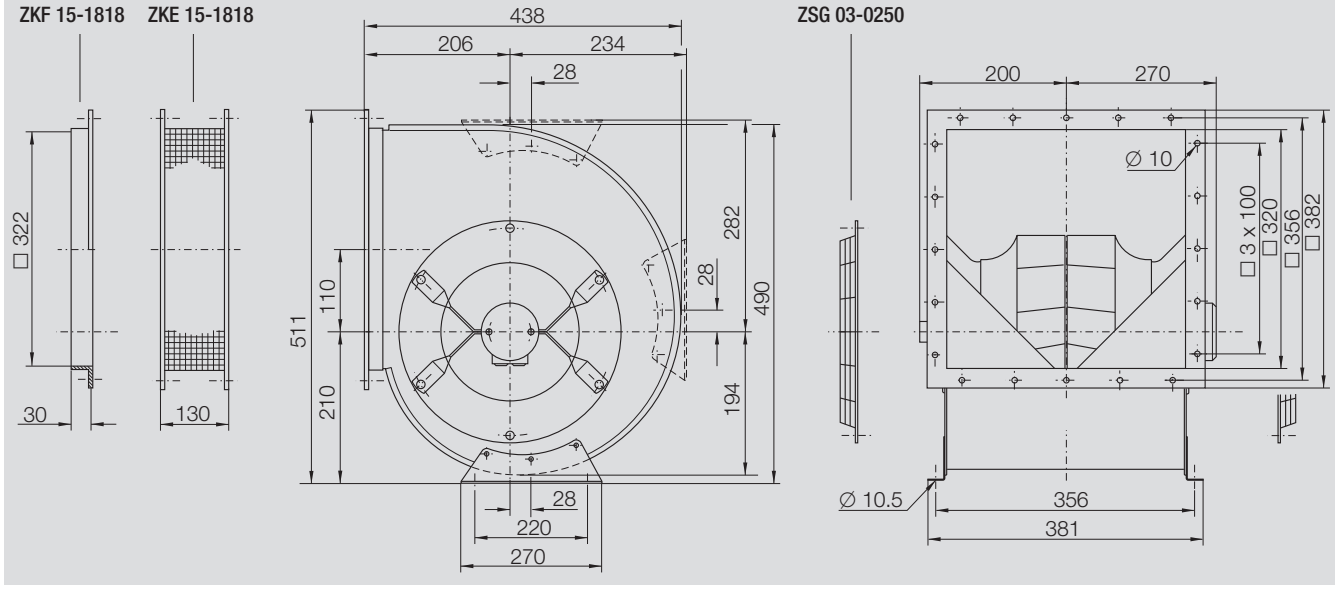
RZP 11-	Curves	Voltage V	Phases	Mains frequency Hz	Max. power consumption kW	Max. current consumption A	Nominal motor speed 1/min	Max. operating frequency Hz	Motor protection class	Motor thermal class	Media Temperature max. °C	Weight kg
0250-5E-75	[C1]	230	1~	50/60	2	10.9	3650	60	IP54	B	40	33
0250-5E-72	[C2]	230	1~	50/60	1.1	6.15	3050	60	IP54	B	40	29
0250-5E-72	[C3]	230	1~	50/60	0.55	3.2	2200	60	IP54	B	40	29

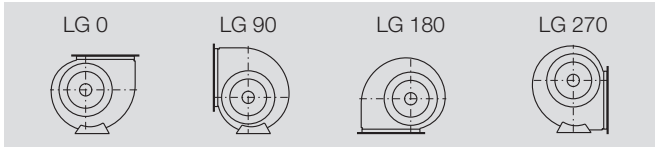
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

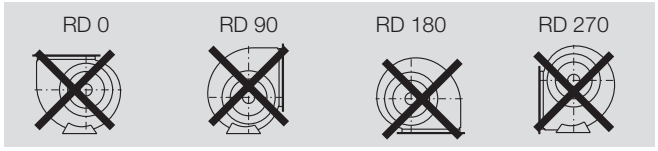
Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

(1) = ON / (0) = OFF

Dimensions in mm, subject to change.





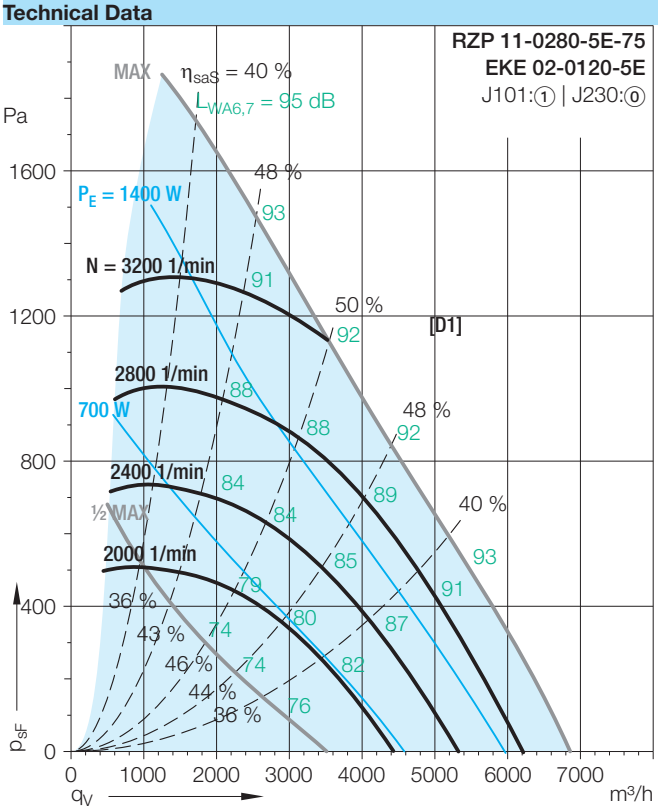


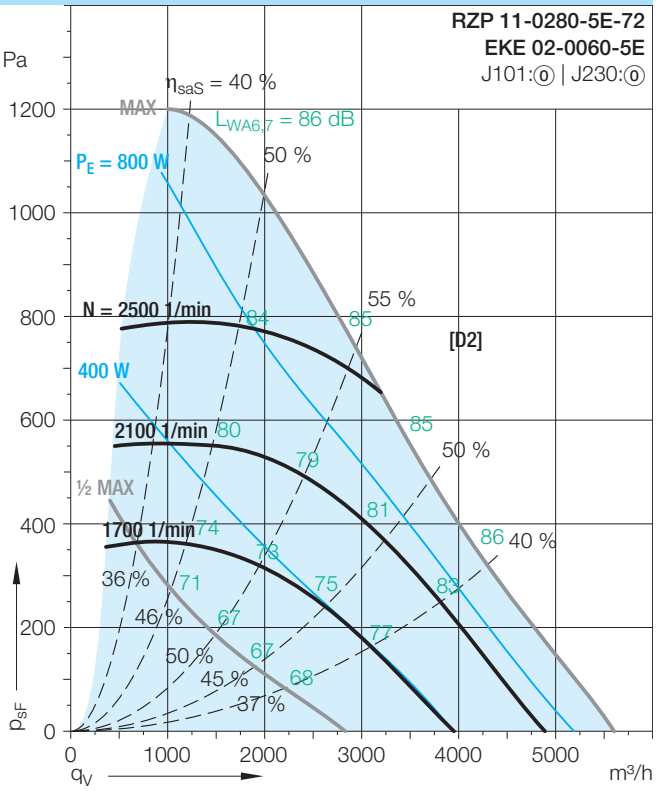
Accessories

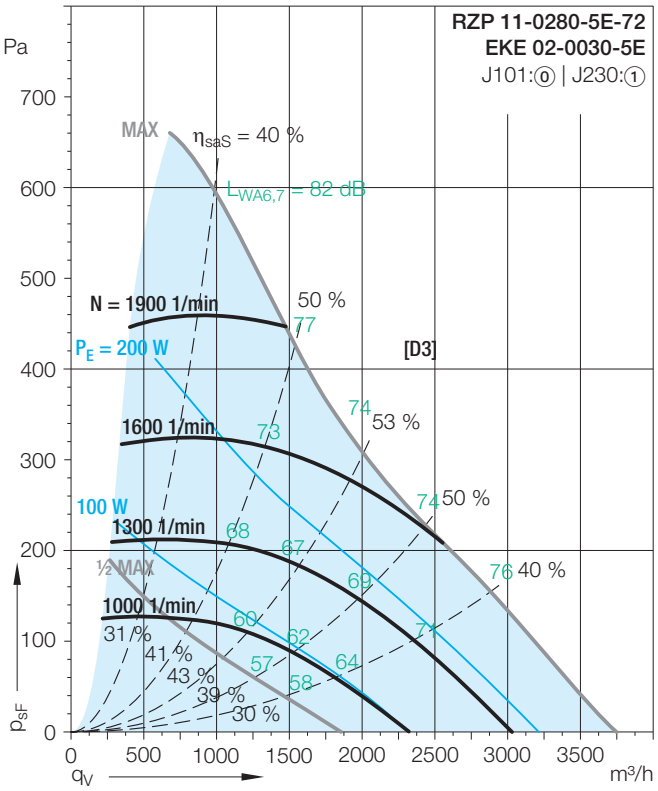
RZP 11-	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~
0250-5E-75	ZBD 01-0405-A	EKE 02-0120-5E
0250-5E-72	ZBD 01-0405-A	EKE 02-0060-5E
0250-5E-72	ZBD 01-0405-A	EKE 02-0030-5E

RZP 11-0280

Technical Data







Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} at octave band correction factors f_m

Speed N	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 1658 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 1658 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Relative sound power level L_{WrelI6} at octave band correction factors f_m

Speed N	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 1658 1/min	0.7...1.4 q_{Vopt}	-6	-5	-2	-2	-5	-12	-19	-27	dB
> 1658 1/min	0.7...1.4 q_{Vopt}	-9	-7	-4	-1	-6	-11	-17	-28	dB

RZP 11-0280

Technical Data

RZP 11-	Curves	Voltage V	Phases	Mains frequency Hz	Max. power consumption kW	Max. current consumption A	Nominal motor speed 1/min	Max. operating frequency Hz	Motor protection class	Motor thermal class	Media Temperature max. °C	Weight kg
0280-5E-75	[D1]	230	1~	50/60	2.15	11.95	3100	60	IP54	B	40	33
0280-5E-72	[D2]	230	1~	50/60	1.2	6.6	2400	60	IP54	B	40	29
0280-5E-72	[D3]	230	1~	50/60	0.4	2.4	1600	60	IP54	B	40	29

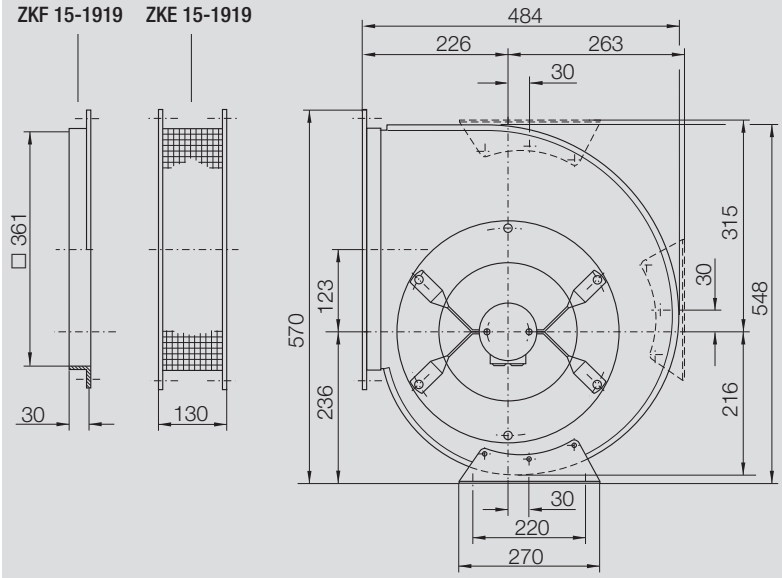
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

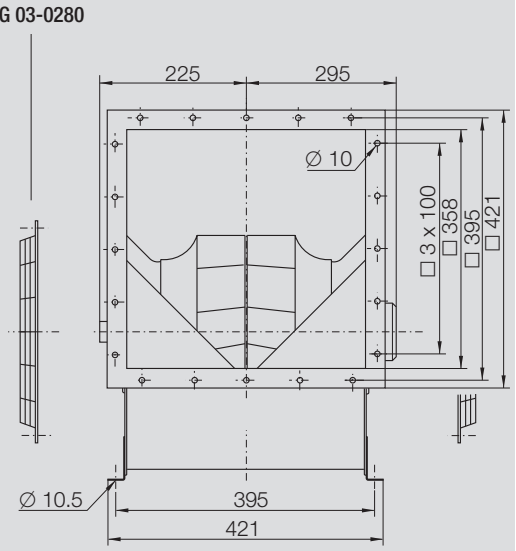
(1) = ON / (0) = OFF

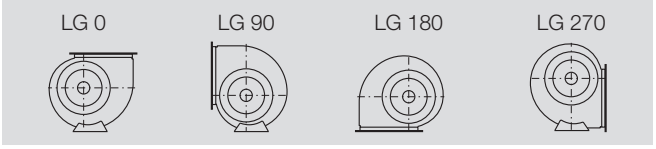
Dimensions in mm, subject to change.

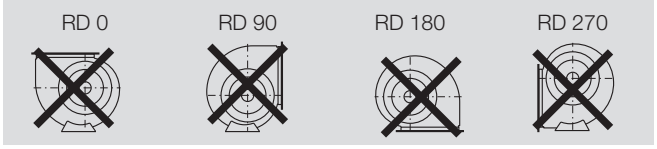
ZKF 15-1919 **ZKE 15-1919**



ZSG 03-0280





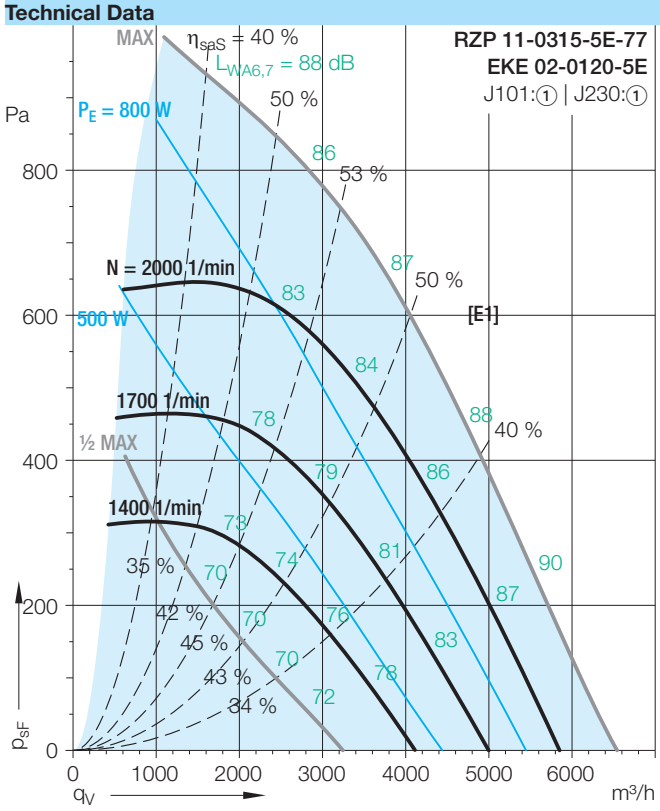


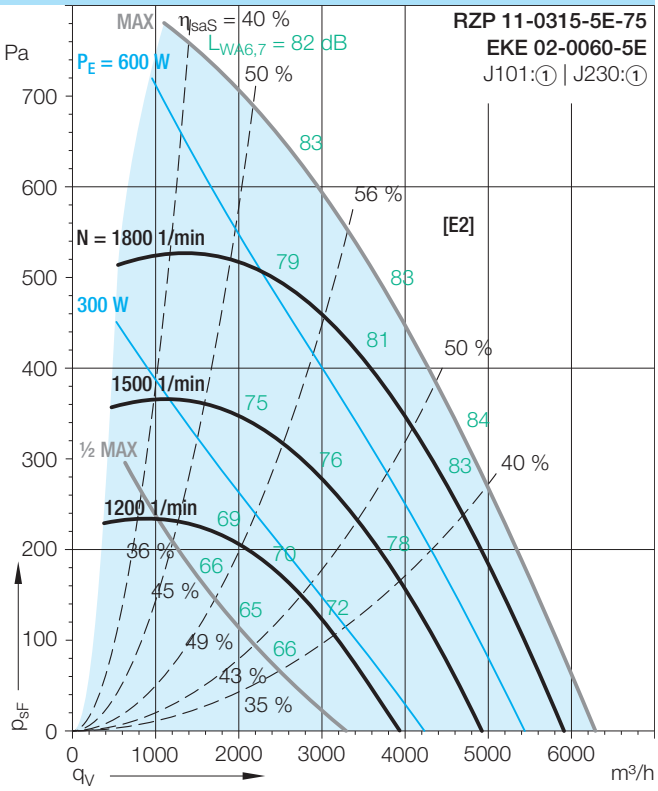
Accessories

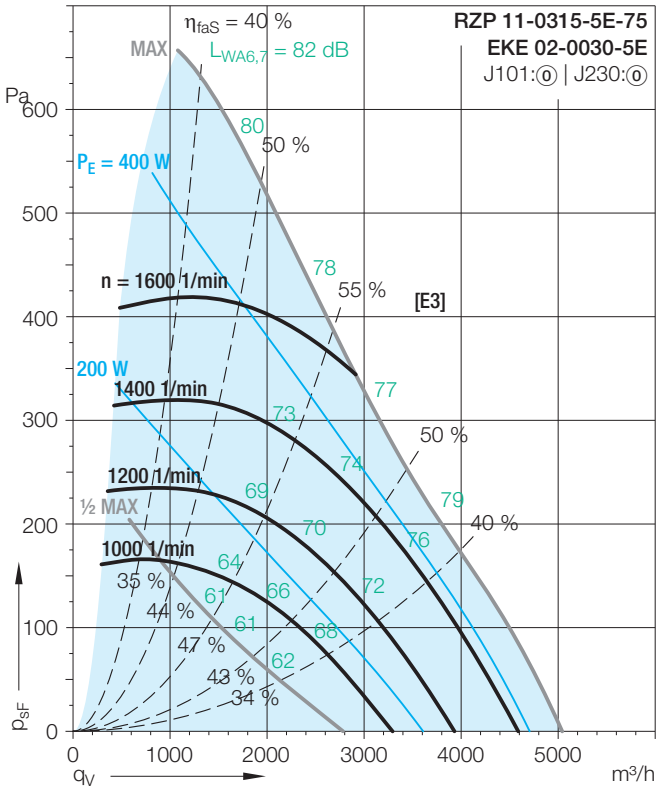
RZP 11-	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~
0280-5E-75	ZBD 01-0405-A	EKE 02-0120-5E
0280-5E-72	ZBD 01-0405-A	EKE 02-0060-5E
0280-5E-72	ZBD 01-0405-A	EKE 02-0030-5E

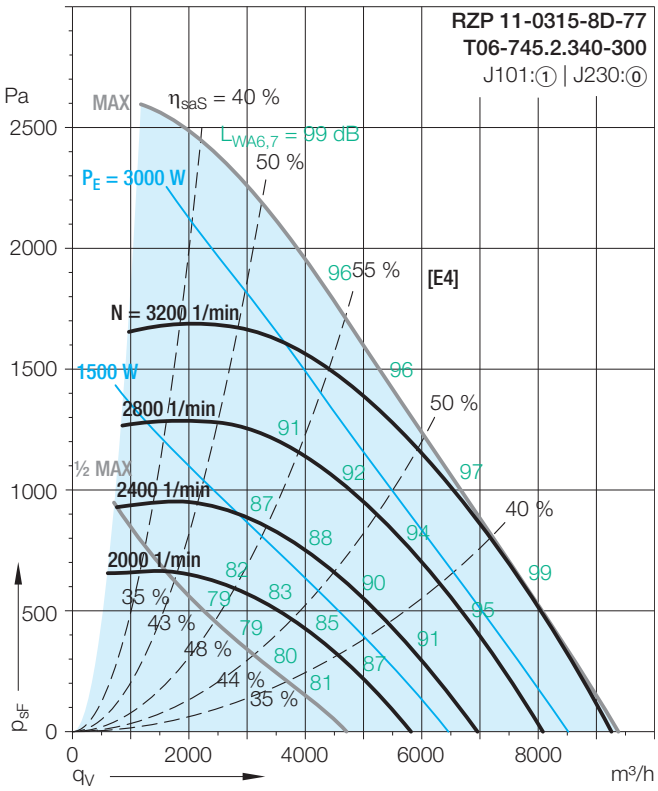
RZP 11-0315

Technical Data









Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Speed N	Duty point	Relative sound power level L_{Wrel7} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 1478 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 1478 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Speed N	Duty point	Relative sound power level L_{Wrel6} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 1478 1/min	0.7...1.4 q_{Vopt}	-1	0	0	-2	-5	-12	-19	-27	dB
> 1478 1/min	0.7...1.4 q_{Vopt}	-4	-2	-2	-1	-6	-11	-17	-28	dB

RZP 11-0315

Technical Data

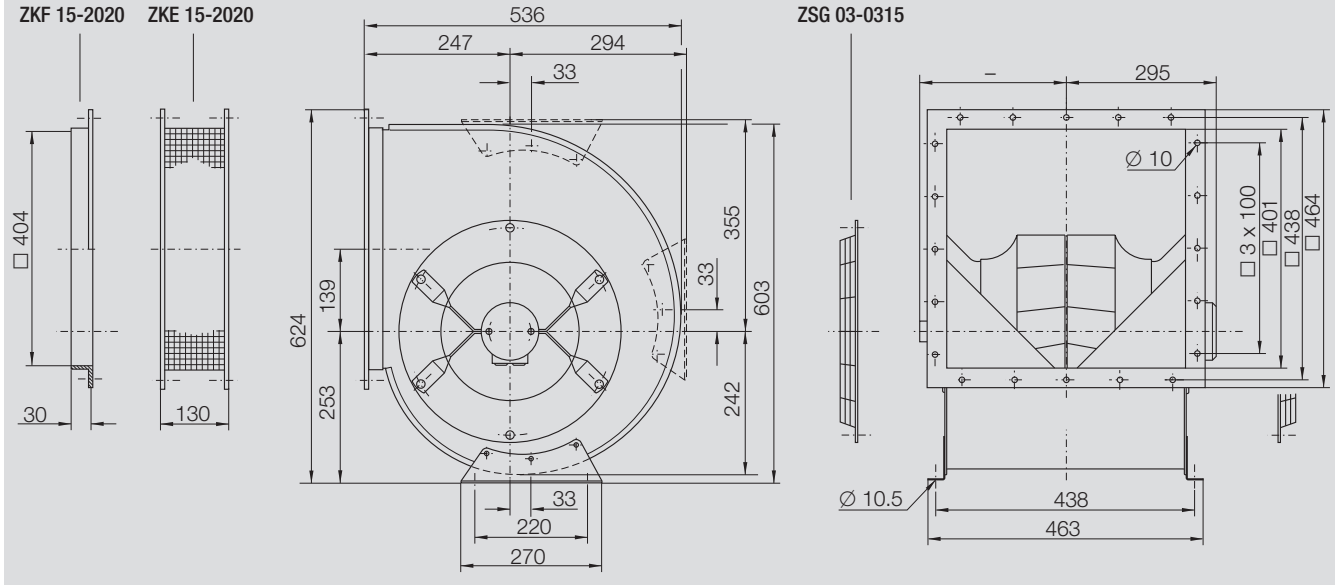
RZP 11-	Curves	Voltage V	Phases	Mains frequency Hz	Max. power consumption kW	Max. current consumption A	Nominal motor speed 1/min	Max. operating frequency Hz	Motor protection class	Motor thermal class	Media Temperature max. °C	Weight kg
0315-5E-77	[E1]	230	1~	50/60	1.4	7.75	2200	60	IP54	B	40	43
0315-5E-75	[E2]	230	1~	50/60	0.95	5.3	1900	60	IP54	B	40	36
0315-5E-75	[E3]	230	1~	50/60	0.6	3.5	1550	60	IP54	B	40	36
0315-8D-77	[E4]	400	3~	50/60	4.05	7.3	3200	60	IP54	B	40	43

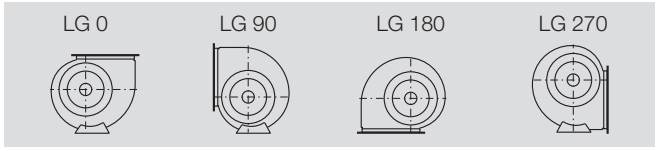
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

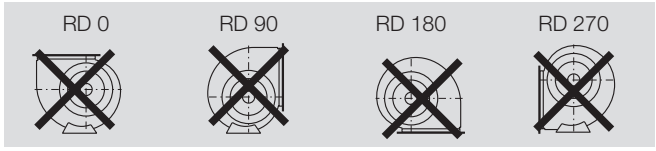
Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

(1) = ON / (0) = OFF

Dimensions in mm, subject to change.





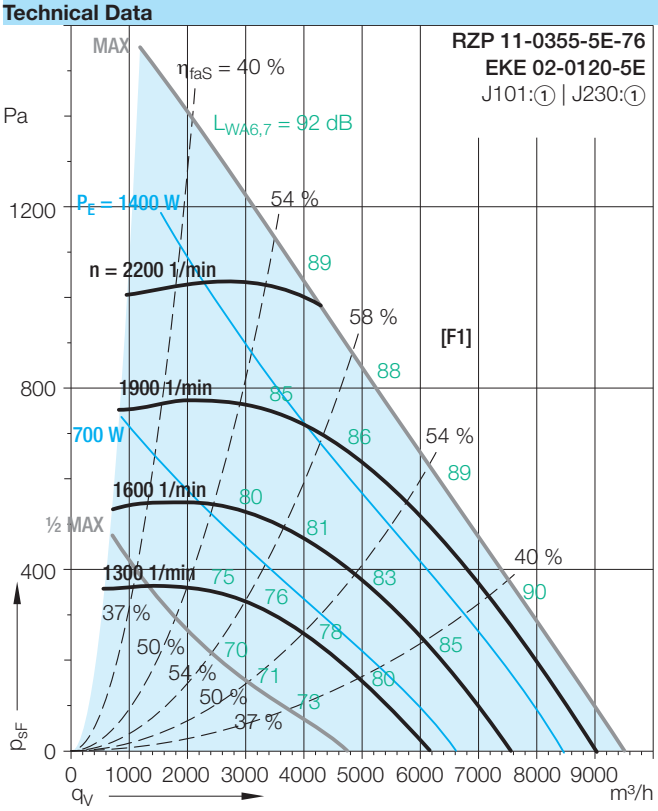


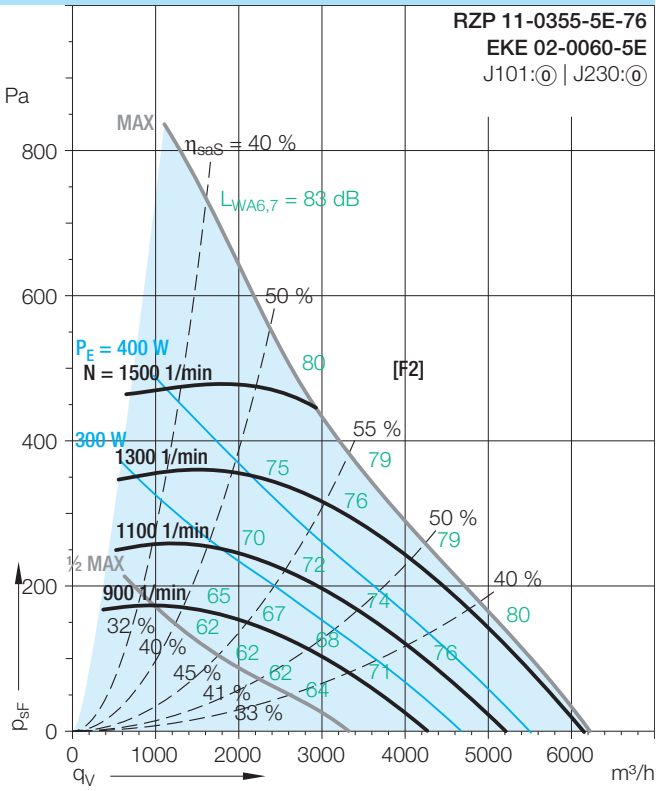
Accessories

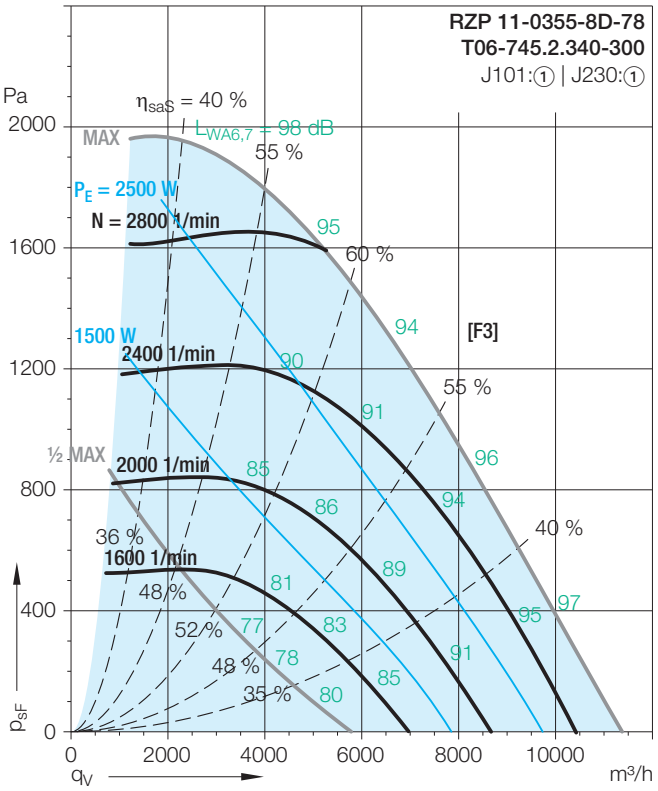
RZP 11-	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~	Electronical Commutation Unit for 3~
0315-5E-77	ZBD 01-0405-A	EKE 02-0120-5E	-
0315-5E-75	ZBD 01-0405-A	EKE 02-0060-5E	-
0315-5E-75	ZBD 01-0405-A	EKE 02-0030-5E	-
0315-5E-77	ZBD 01-0405-A	-	T06-745.2.340-300

RZP 11-0355

Technical Data







Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Speed N	Duty point	Relative sound power level L_{Wrel7} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 1315 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 1315 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Speed N	Duty point	Relative sound power level L_{Wrel6} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 1315 1/min	0.7...1.4 q_{Vopt}	-1	0	0	-2	-5	-12	-19	-27	dB
> 1315 1/min	0.7...1.4 q_{Vopt}	-4	-2	-2	-1	-6	-11	-17	-28	dB

RZP 11-0355

Technical Data

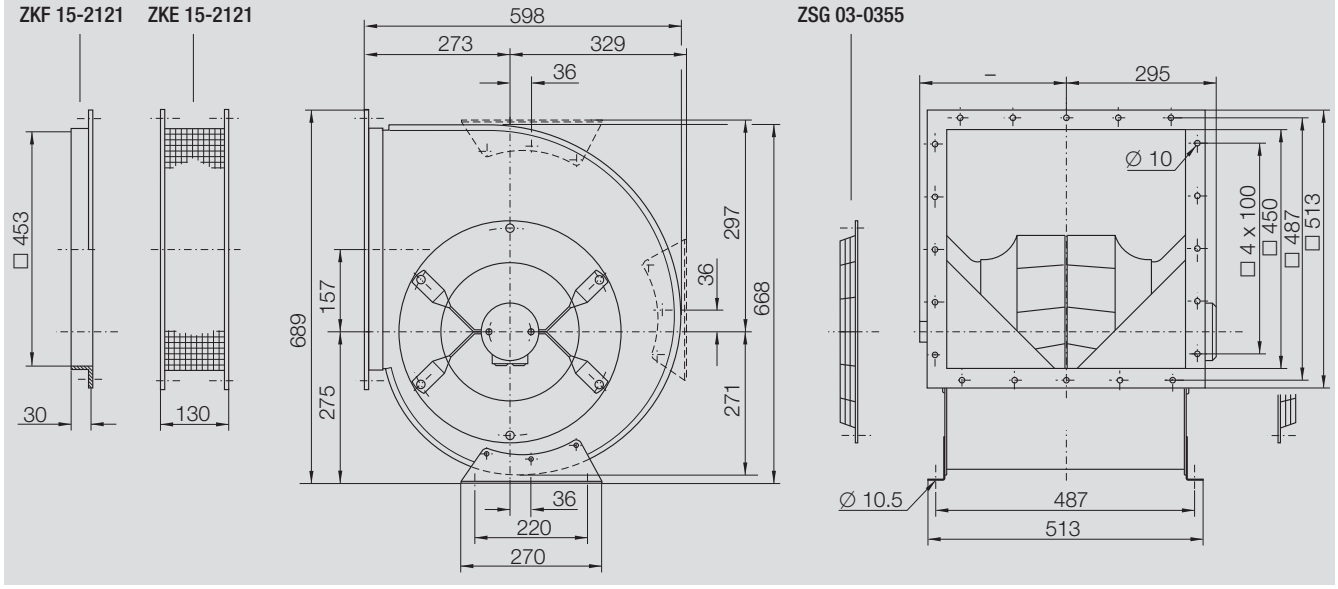
RZP 11-	Curves	Voltage V	Phases	Mains frequency Hz	Max. power consumption kW	Max. current consumption A	Nominal motor speed 1/min	Max. operating frequency Hz	Motor protection class	Motor thermal class	Media Temperature max. °C	Weight kg
0355-5E-76	[F1]	230	1~	50/60	2.05	11.35	2000	60	IP54	B	40	44
0355-5E-76	[F2]	230	1~	50/60	0.85	4.85	1300	60	IP54	B	40	44
0355-8D-78	[F3]	400	3~	50/60	3.95	7	2600	60	IP54	B	40	54

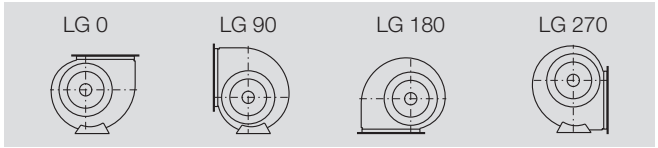
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

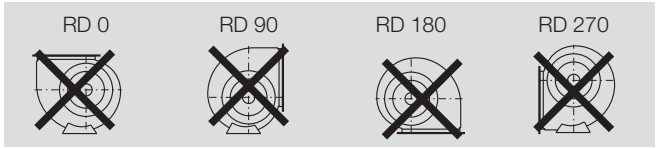
Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

(1) = ON / (0) = OFF

Dimensions in mm, subject to change.





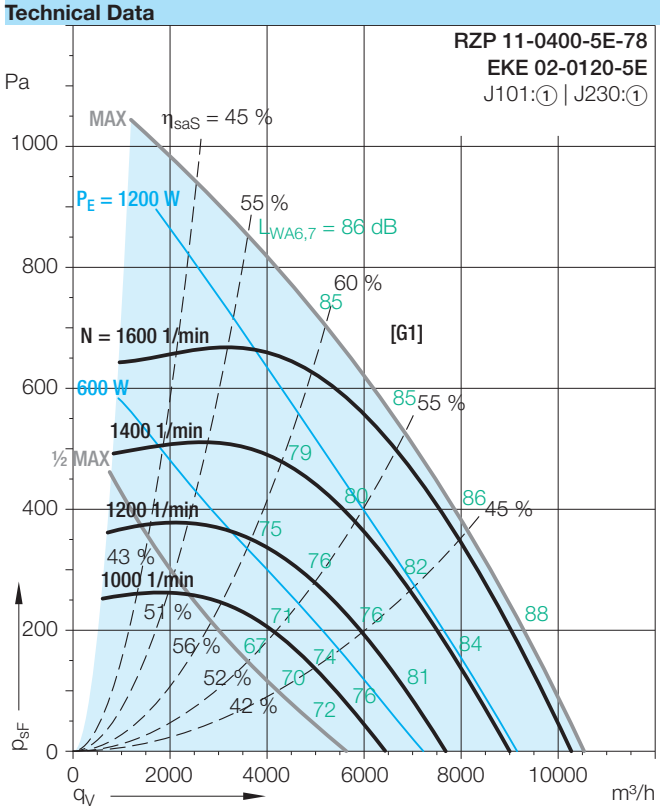


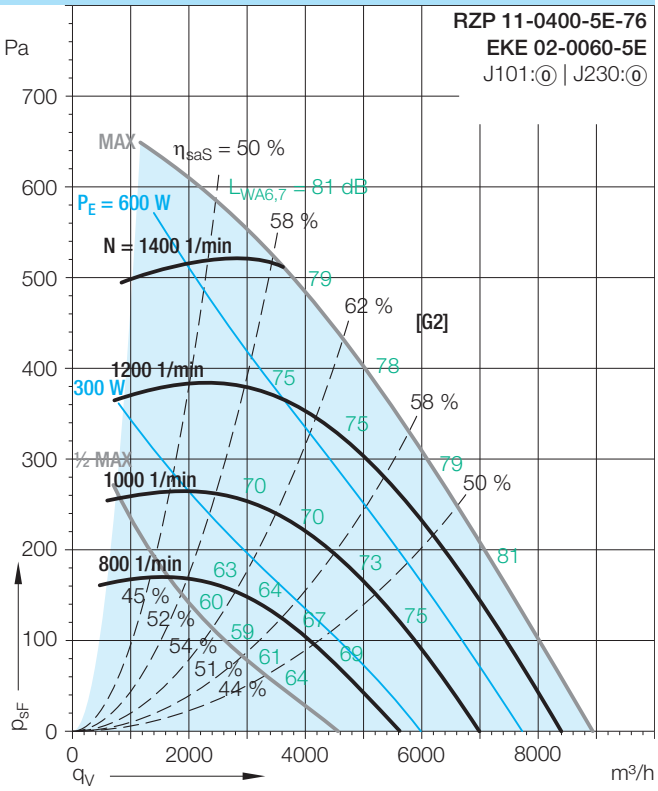
Accessories

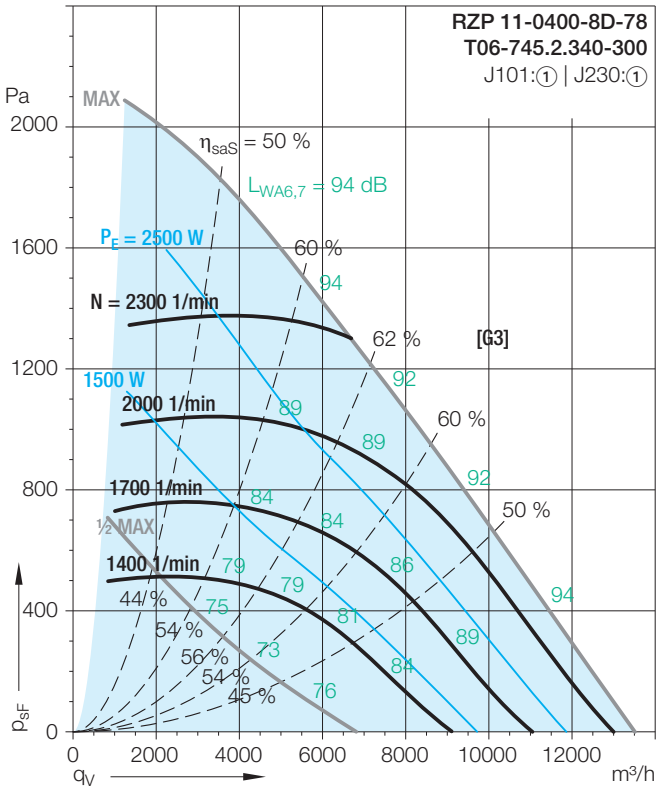
RZP 11-	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~	Electronical Commutation Unit for 3~
0355-5E-76	ZBD 01-0405-A	EKE 02-0120-5E	-
0355-5E-76	ZBD 01-0405-A	EKE 02-0060-5E	-
0355-8D-78	ZBD 01-0405-A	-	T06-745.2.340-300

RZP 11-0400

Technical Data







Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Relative sound power level L_{WrelI7} at octave band correction factors f_m

Speed N	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 1176 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 1176 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Relative sound power level L_{WrelI6} at octave band correction factors f_m

Speed N	Duty point	63	125	250	500	1000	2000	4000	8000	Hz
≤ 1176 1/min	0.7...1.4 q_{Vopt}	-1	0	0	-2	-5	-12	-19	-27	dB
> 1176 1/min	0.7...1.4 q_{Vopt}	-4	-2	-2	-1	-6	-11	-17	-28	dB

RZP 11-0400

Technical Data

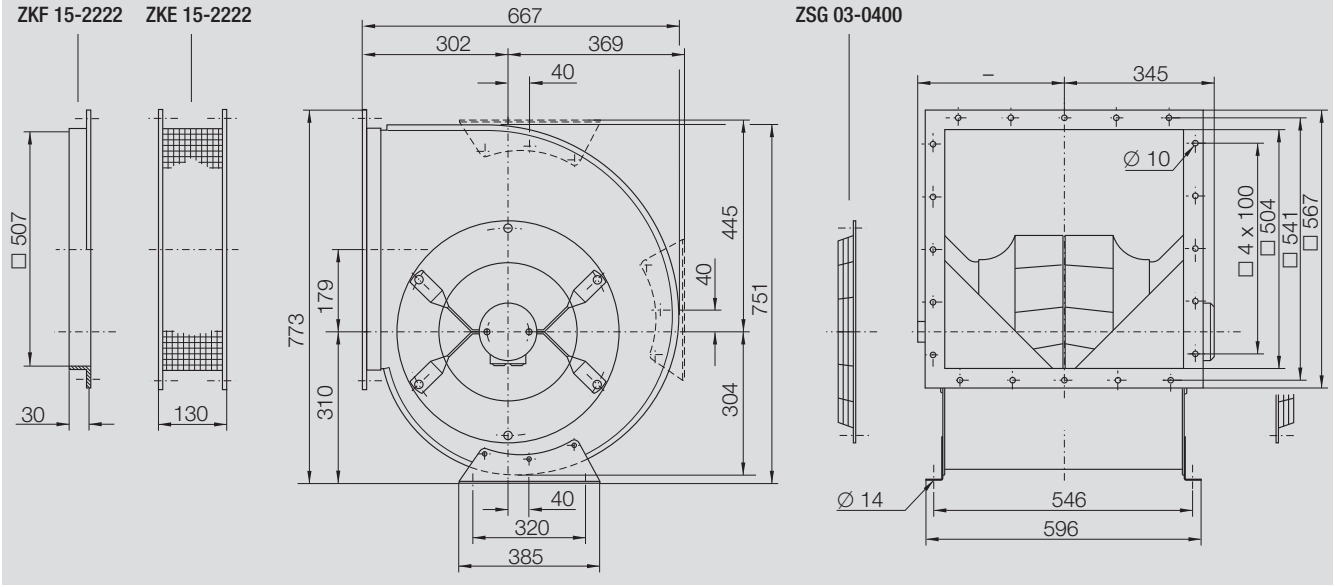
RZP 11-	Curves	Voltage V	Phases	Mains frequency Hz	Max. power consumption kW	Max. current consumption A	Nominal motor speed 1/min	Max. operating frequency Hz	Motor protection class	Motor thermal class	Media Temperature max. °C	Weight kg
0400-5E-78	[G1]	230	1~	50/60	1.85	10.4	1650	60	IP54	B	40	64
0400-5E-76	[G2]	230	1~	50/60	0.95	5.25	1300	60	IP54	B	40	54
0400-8D-78	[G3]	400	3~	50/60	3.8	6.85	2100	60	IP54	B	40	64

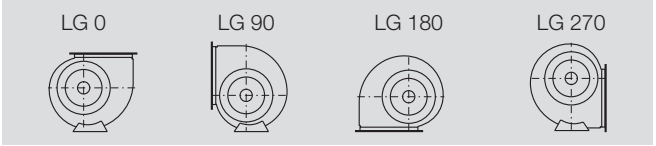
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

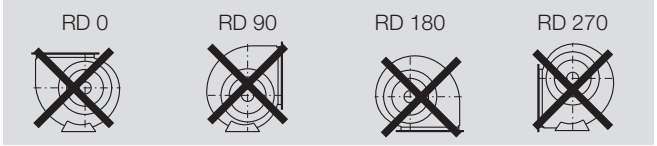
Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

(1) = ON / (0) = OFF

Dimensions in mm, subject to change.





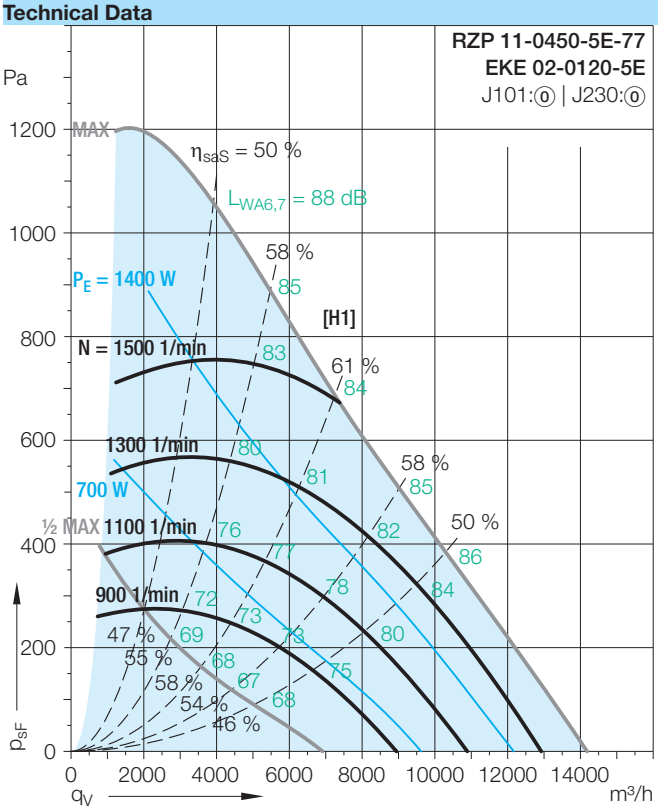


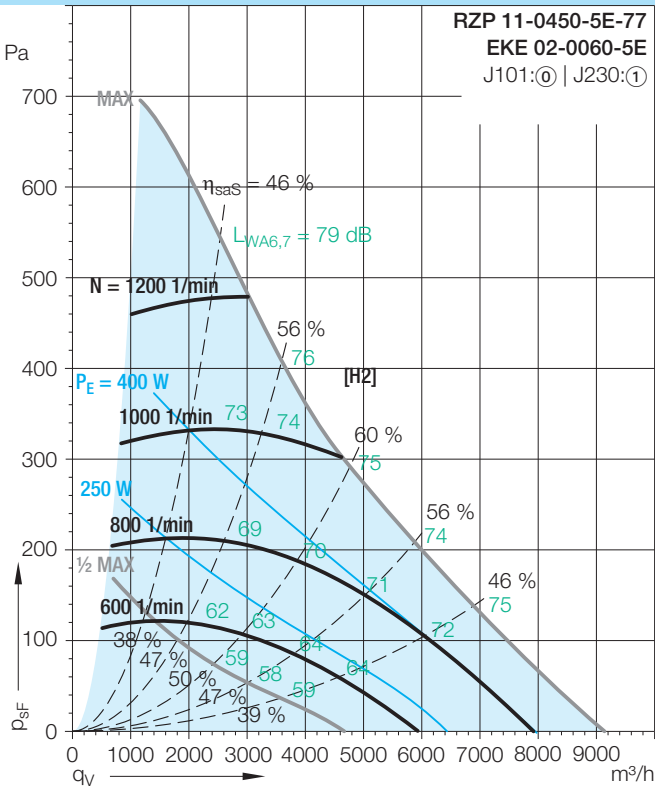
Accessories

RZP 11-	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~	Electronical Commutation Unit for 3~
0400-5E-78	ZBD 01-0504-A	EKE 02-0120-5E	-
0400-5E-76	ZBD 01-0504-A	EKE 02-0060-5E	-
0400-8D-78	ZBD 01-0504-A	-	T06-745.2.340-300

RZP 11-0450

Technical Data





Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Speed N	Duty point	Relative sound power level L_{Wrel7} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 1049 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 1049 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Speed N	Duty point	Relative sound power level L_{Wrel6} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 1049 1/min	0.7...1.4 q_{Vopt}	-1	0	0	-2	-5	-12	-19	-27	dB
> 1049 1/min	0.7...1.4 q_{Vopt}	-4	-2	-2	-1	-6	-11	-17	-28	dB

RZP 11-0450

Technical Data

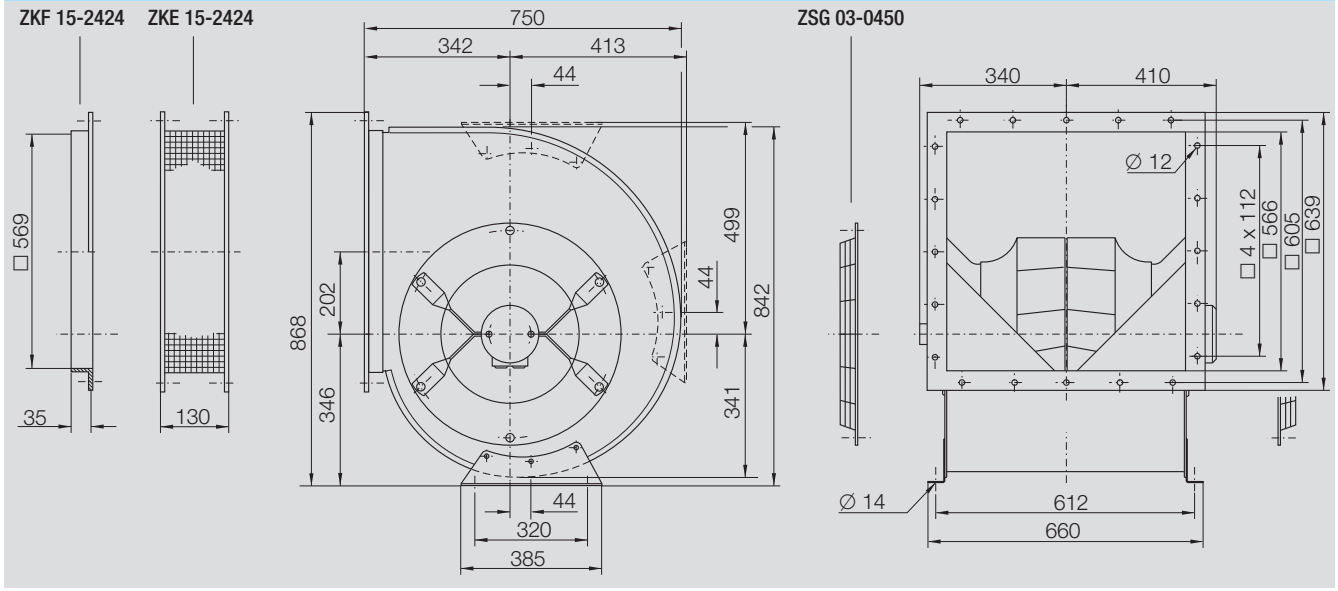
	Curves	Voltage	Phases	Mains frequency	Max. power consumption	Max. current consumption	Nominal motor speed	Max. operating frequency	Motor protection class	Motor thermal class	Media Temperature max.	Weight
RZP 11-		**V**		**Hz**	**kW**	**A**	**1/min**	**Hz**			**°C**	**kg**
0450-5E-77	[H1]	230	1~	50/60	2.35	12.9	1400	60	IP54	B	40	71
0450-5E-77	[H2]	230	1~	50/60	0.95	5.35	900	60	IP54	B	40	71

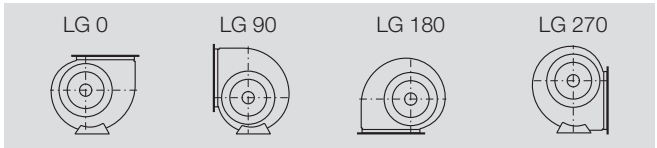
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

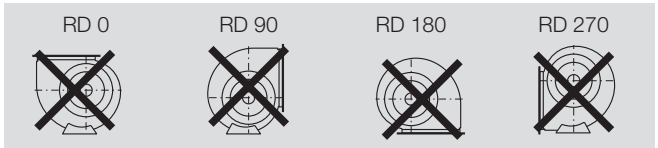
Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

(1) = ON / (0) = OFF

Dimensions in mm, subject to change.





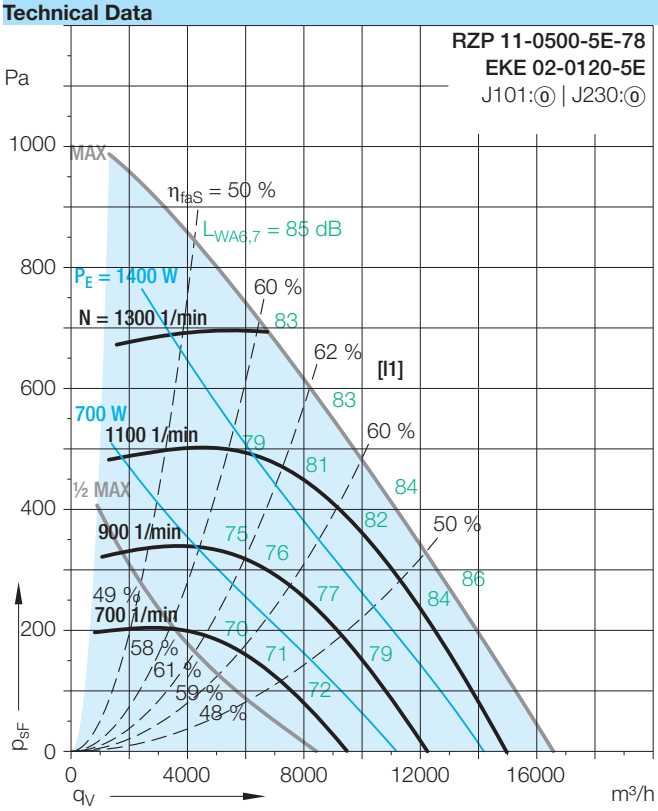


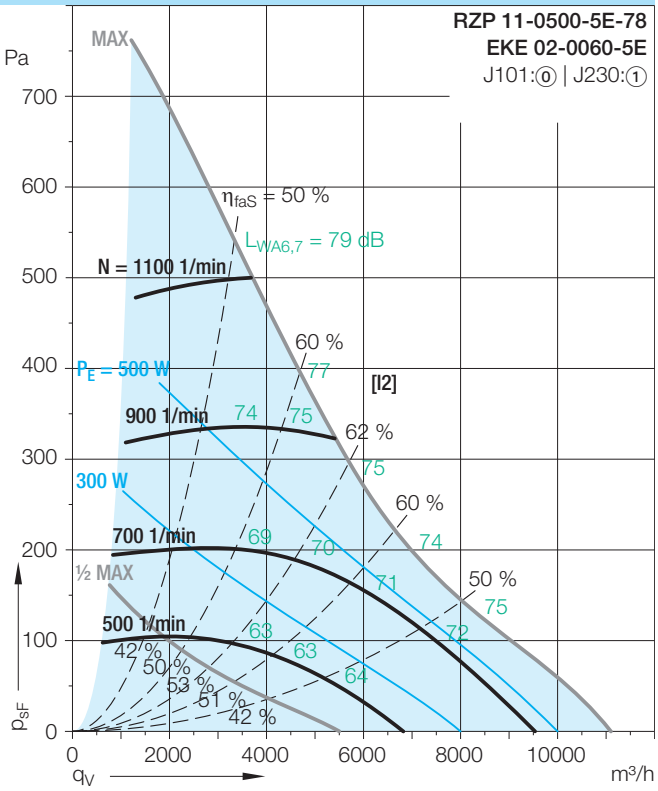
Accessories

	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~
RZP 11-		
0450-5E-77	ZBD 01-0504-A	EKE 02-0120-5E
0450-5E-77	ZBD 01-0504-A	EKE 02-0060-5E

RZP 11-0500

Technical Data





Technical data

Density of media **1.15 kg/m³**
Measured in installation **A** according to **ISO 5801** (unducted)

Attention!

The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).
① = **ON** ⓪ = **OFF**

Determination of the Octave level

Inlet side

Speed N	Duty point	Relative sound power level L_{Wrel7} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 936 1/min	0.7...1.4 q_{Vopt}	-6	0	1	-2	-5	-11	-17	-25	dB
> 936 1/min	0.7...1.4 q_{Vopt}	-9	-2	-3	-1	-5	-10	-17	-24	dB

Discharge side

Speed N	Duty point	Relative sound power level L_{Wrel6} at octave band correction factors f_m 63	125	250	500	1000	2000	4000	8000	Hz
≤ 936 1/min	0.7...1.4 q_{Vopt}	-1	0	0	-2	-5	-12	-19	-27	dB
> 936 1/min	0.7...1.4 q_{Vopt}	-4	-2	-2	-1	-6	-11	-17	-28	dB

RZP 11-0500

Technical Data

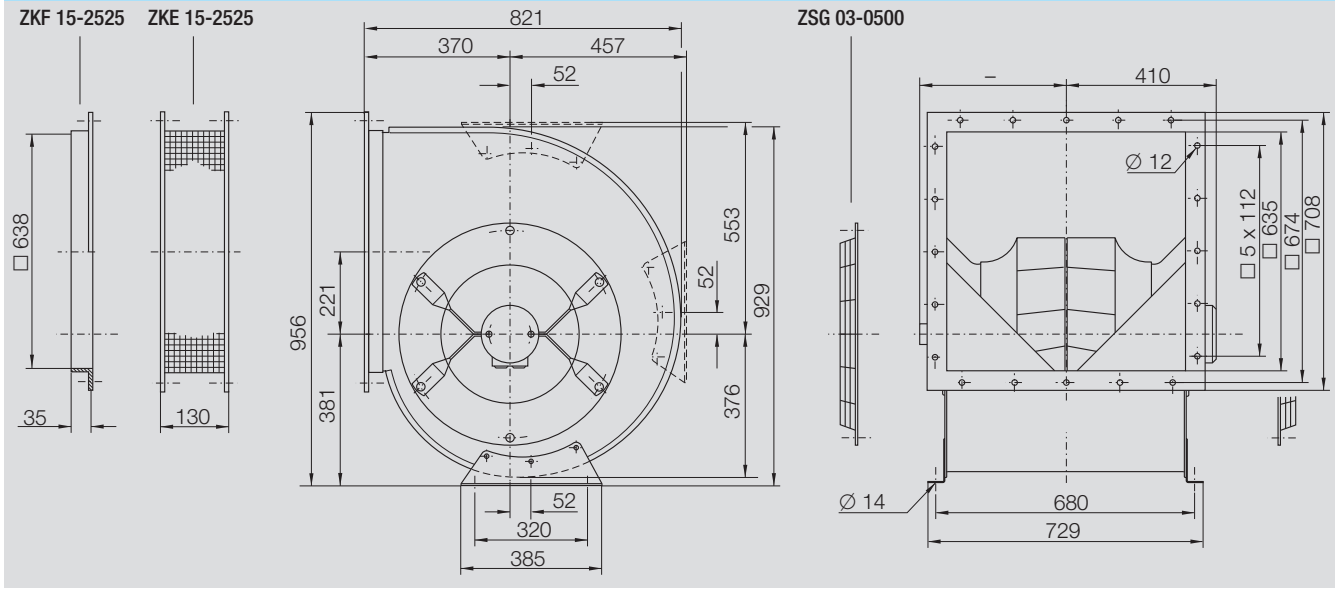
RZP 11-	Curves	Voltage V	Phases	Mains frequency Hz	Max. power consumption kW	Max. current consumption A	Nominal motor speed 1/min	Max. operating frequency Hz	Motor protection class	Motor thermal class	Media Temperature max. °C	Weight kg
0500-5E-78	[I1]	230	1~	50/60	2.25	12.4	1200	60	IP54	B	40	86
0500-5E-78	[I2]	230	1~	50/60	1.2	6.75	800	60	IP54	B	40	86

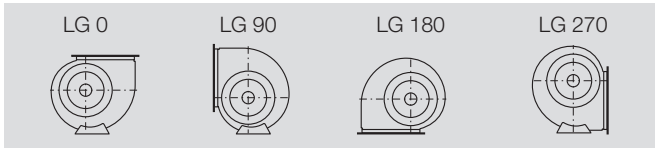
The system efficiency η_{fas} is the efficiency of the whole system, Fan–Motor–Commutation Unit.

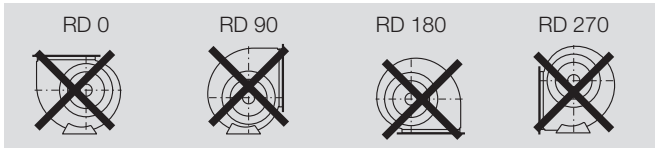
Attention! The performance curves relates to the fan in combination with the given Commutation Unit and with the internal pin arrangement **J101** and **J230** (see Operating Instruction).

(1) = ON / (0) = OFF

Dimensions in mm, subject to change.







Accessories

RZP 11-	Anti Vibration Rubber Buffers	Electronical Commutation Unit for 1~
0500-5E-78	ZBD 01-0504-A	EKE 02-0120-5E
0500-5E-78	ZBD 01-0504-A	EKE 02-0060-5E

RZP 11-0200/-0500

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 11 backward curved blades (size 0200/-0280), with 12 hollow section true aerofoil blades (size 0315/-0500), 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 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		.....	
Casing position (anticlockwise)	LG	.....	
Volume flow	q_V	.....	m^3/h
Static pressure	p_{sF}	.....	Pa
Air density at fan inlet	ρ_1	.....	kg/m^3
Air temperature	t	.....	°C
Max. power consumption	P_e	.....	kW
Max. current consumption	I_e	.....	A
System efficiency	(η_{sys})	.....	
Speed	N	.....	1/min
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

- Difference pressure sensor
- Universal control device
- Casing (additional for wall mounting of the communication unit)
- Remote control unit

Electrical commutation unit

Electrical commutation unit

The Nicotra Gebhardt Commutation Unit has a painted metal housing and is suitable for mounting in control units. When wall mounting the Type EKE 02-....-5E must be used with the additional connection housing EKO09. 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.
All Commutation Units have built-in radio interference suppression and an integrated mains rectifier (except for EKE 02-0010-5E) in accordance with the requirements of the EMC Guideline 89/336/EWG.

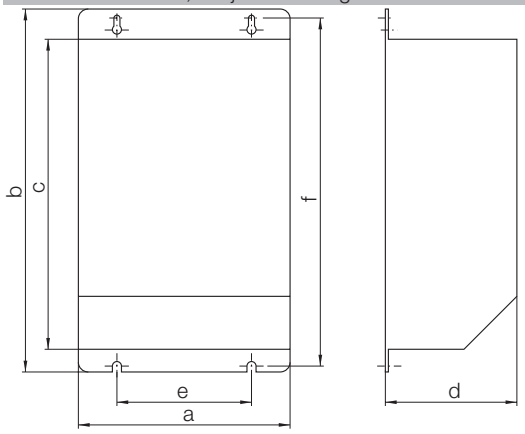
Function

- Speed control through an external 0...10V 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...10V 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 V		Nominal frequency Hz	Nominal current A	Nominal power kW	Output voltage V	Output current A	Output power kW	Max. output power kW	Ambient temperature °C	Power losses kW
EKE 02-0030-5E	230	1~	50/60	3	0.6	310	3	0.45	0.55	-10/+40	32
EKE 02-0060-5E	230	1~	50/60	6	1.2	310	6	0.9	1.1	-10/+40	55
EKE 02-0120-5E	230	1~	50/60	12.5	2.4	310	12	1.8	2.2	-10/+40	105
T06-745.2.340-300	400	3~	50/60	6.7	4		6.7			-10/+40	160

Dimensions in mm, subject to change.



EKE 02-	a	b	c	d	e	f
0030-5E	181	345	300	125	150	332
0060-5E	181	345	300	125	150	332
0120-5E	181	345	300	125	150	332

T06-	a	b	c	d	e	f
745.2.340-300	146	300	257	167	110	287

Cable-cross section

	Min. cable-cross section for motor leads mm²	recommended cable-cross section for hall sensor leads mm²	Min. cable-cross section for mains leads mm²	recommended fusing in panel for mains leads A
EKE 02-0030-5E	0.75	0.75	0.75	6
EKE 02-0060-5E	1	0.75	1	10
EKE 02-0120-5E	1.5	0.75	1.5	16
T06-745.2.340-300	1.5	0.75	1	10

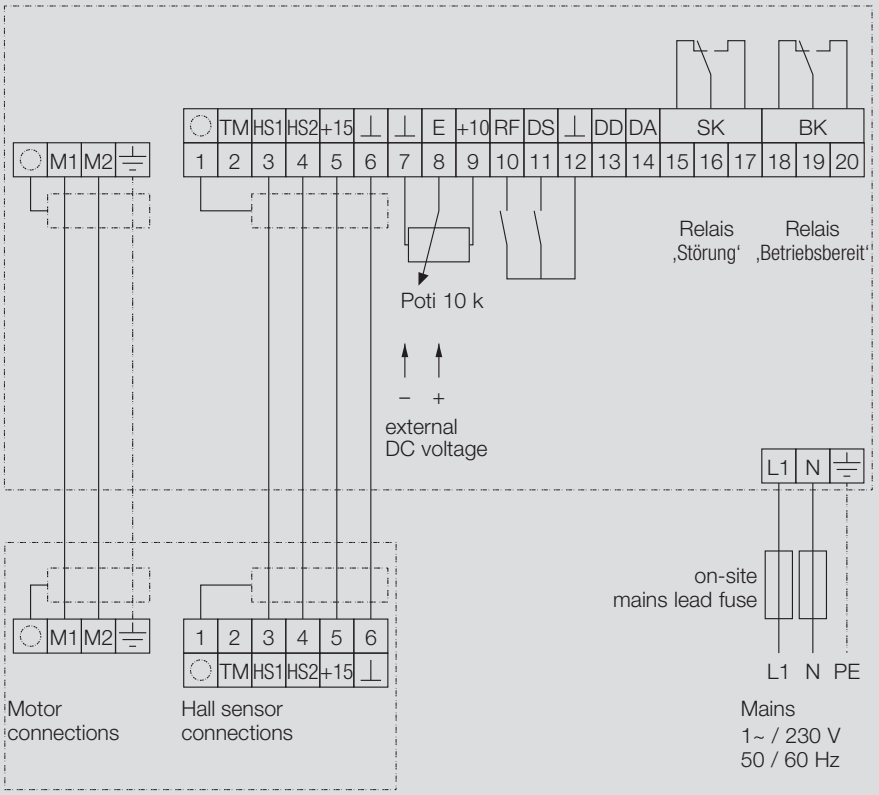
Electrical commutation unit

Connection diagram EKE 02-...-5E

Index

① Motor screening
② Motor lead 1
③ Motor lead 2
④ Earth protection connection lead

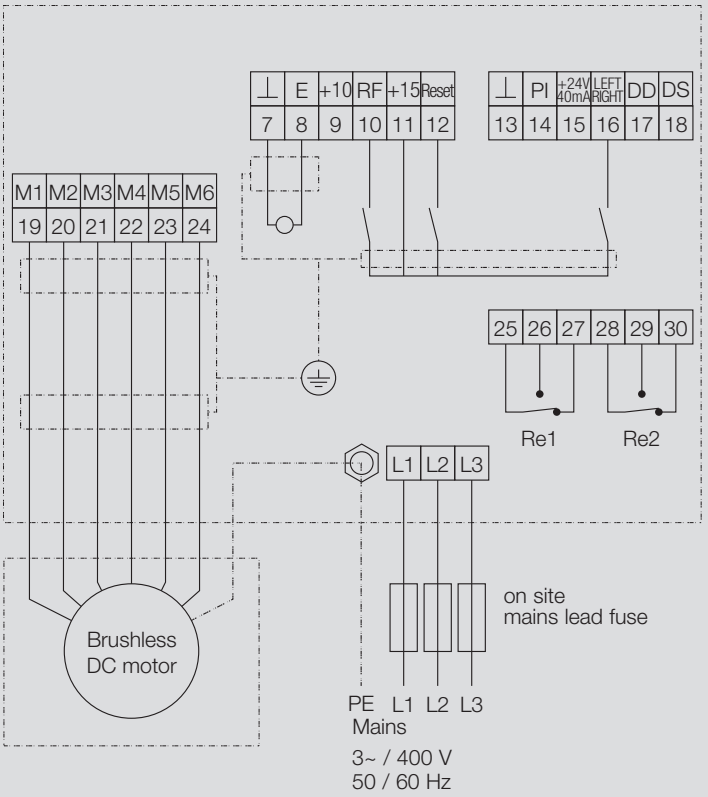
1 Hall sensor screening
2 Temperature control (optional)
3 Hall IC 1
4 Hall IC 2
5 +15 V
6 Ground
7 Ground
8 Analogue input 0...10 V
9 +10 V
10 Controller approval
11 Speed reduction
12 Ground
13 Speed output, digital
14 Speed output, analogue 0...10 V



Connection diagram T06-745.2.340-300

Legend

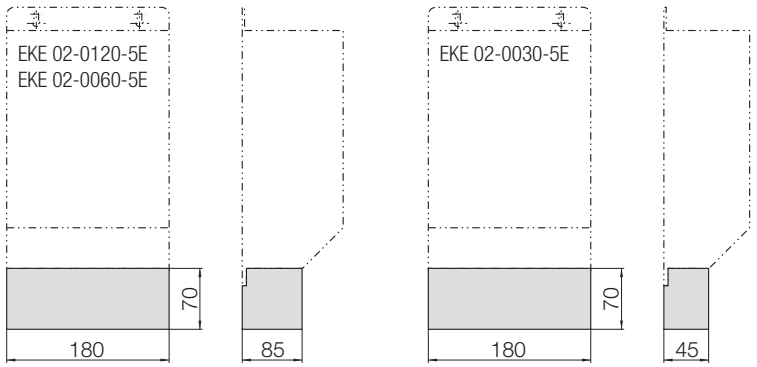
① Start enable (START-STOP)
② Reset
③ Direction (Left, Right)



Electrical commutation unit

Additional connection housing EKO 09 (only for EKE 02)

For wall mounting of the Types EKE 02-....-5E the additional connection housing is recommended. The galvanised housing is fixed with the fixing screws of the Commutation Unit. It accommodates up to 2×PG11 and 3×PG9 cable clamps through which the mechanical loading from the necessary connection cables is secured.

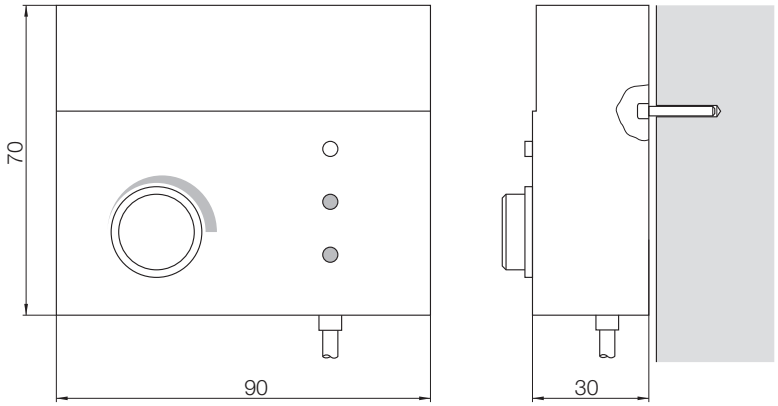


Remote Operation Unit EGH 15 (only for EKE 02)

For a simple control through the use of an external potentiometer the Remote Operation Unit is ideal.

Construction

Painted metal housing with an incorporated 10kOhm potentiometer, an On/Off switch for speed reduction and an operating indicator light. The connection to the Commutation Unit is achieved through a 1.5m long screened cable. The Remote Operation Unit is fixed directly to the wall by means of 2 screws.



Fittings / Accessories

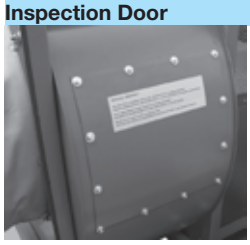
Accessories

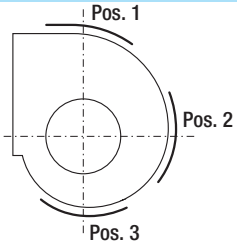
All options and accessories must be specified separately.
Please take the technical data and dimensions from the corresponding page of the catalogue.

Drain Plug

If the fan is installed outside, or if conveying a medium containing humidty, 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 ..-	
0200/-0315	210 × 210
0355/-0500	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 ≥40µm, Colour RAL 7039
- **Wet lacquering** - Layer thickness ≥40µm (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

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

Fittings / Accessories

Flexible Connections

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

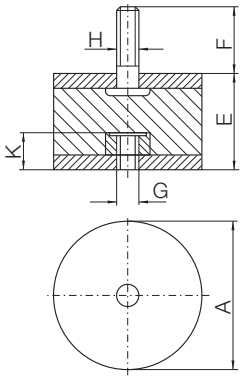
- Standard up to +80°C
- ATEX max. +60°C

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 1400rpm or 850rpm
- **Rubber buffers** - for noise insulation only at fan speeds under 800rpm or 1700rpm

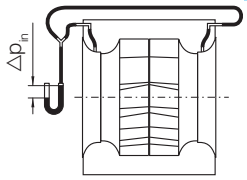
Dimensions in mm, subject to change.



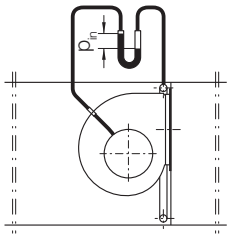
ZBD	ZBD	A	E	F	G	H	K
01-0405A*	**01-0405C***	20	25	16	M 6	M 6	6.5
03-0503A*	**03-0503C***	25	15	11	M 6	M 6	6.5
01-0504A*	**01-0504C***	25	20	11	M 6	M 6	6.5
03-0806A*	**03-0806C***	40	30	21	M 8	M 8	9.5
03-1007A	**03-1007C***	50	34	26.5	M 10	M 10	10.5
03-1510A*	**03-1510C***	75	50	39	M 12	M 12	12.5
02-2008A*	**02-2008C***	100	40	44	M 16	M 16	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 easilymeasure / 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 ofthe inlet cone in a static atmosphere.

- **volume flow q_V [m³/h]**
- **calibration factor K [m²s/h]**
- **density of media ρ [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 comparativemeasurement 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

Size	Standard calibration factor K10 m²s/h
0200-5E-70	90
0225-5E-70	115
0250-5E-75	115
0250-5E-72	125
0250-5E-72	125
0280-5E-75	155
0280-5E-72	165
0280-5E-72	165
0315-5E-77	170
0315-5E-75	180
0315-5E-75	180
0315-8D-77	170
0355-5E-76	210
0355-5E-76	210
0355-8D-78	200
0400-5E-78	260
0400-5E-76	270
0400-8D-78	260
0450-5E-77	360
0450-5E-77	360
0500-5E-78	430
0500-5E-78	430

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 bemeasured. It must be ensured that the static pressureto 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 canlead 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 con-troller positions 100% (MAX) and 50% (1/2MAX) the efficiency is shown on the per-formance curve at the points.
All the given characteristics are based on a density ρ_1 for the conveyed medium at the fan entry of 1.15kg/m³.
Pressure increase and drive output vary proportionally with the density ρ_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 in a defined pin arrangement (J101; J230 = Speed limitations) and the given nominal voltage. Deviations from the presented characteristics can occur with other pin arrangements or tolerances of the mains 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_{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 1m at fan Inlet or discharge may be obtained by subtracting 7dB from the relative “A” weighted sound power levels.
If 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: $\mathbf{L_{Wfc7} = L_{WA6/7} + L_{Wrel7}}$
- Discharge: $\mathbf{L_{Wfc6} = L_{WA6/7} + L_{Wrel6}}$

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

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 motors do not have direct temperature monitoring through termistors 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 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.

Accessories

Frequency converter

Design
Frequency inverter with variable output voltage and frequency, specially designed for the operation of centrifugal fans with induption 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 16kHz 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 accelaration and deaccelaration 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)
0.25kW to 2.2kW rated motor power, 200V to 240V 10% single-phase AC, 47Hz up to 63Hz, three-phase current output 3×230V 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)
0.55kW to 11kW rated motor power, 380V to 480V 10% three-phase AC, 47Hz up to 63Hz, three-phase current output 3×400V 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!

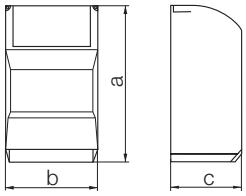
Performance range MM430 3AC 400V
(for three-phase AC supply)
15kW to 250kW rated motor power, 380V to 480V 10% three-phase AC, 47Hz up to 63Hz, three-phase current output 3×400V AC, protection class IP20.
Permitted ambient temperature during operation: -10°C up to +50°C. The interference suppression 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 4kHz. 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 suspression 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

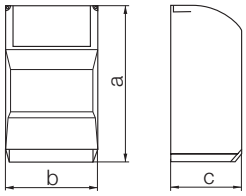
Technical Data | Dimensions



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

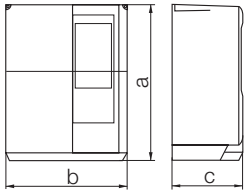
Technical Data | Dimensions



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

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, 40Hz up to 60Hz, frontal operation, for wall mounting. Motor protection unit for single-speed, non-variable speed three-phase current motors without thermal contacts.

Function

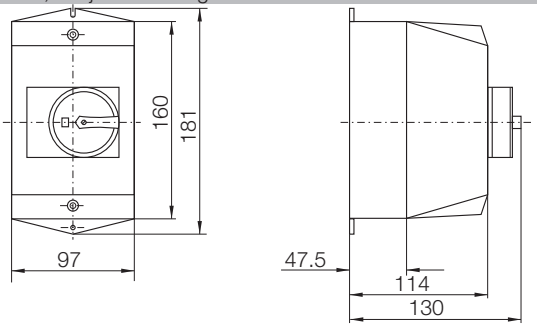
The motor protection units must be adjusted on site to the trigger current. If the preset trigger current is exceeded, the device disconnects the motor from the mains supply via a thermal overload release. Pressing the “on key” causes the unit to turn on again.

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.

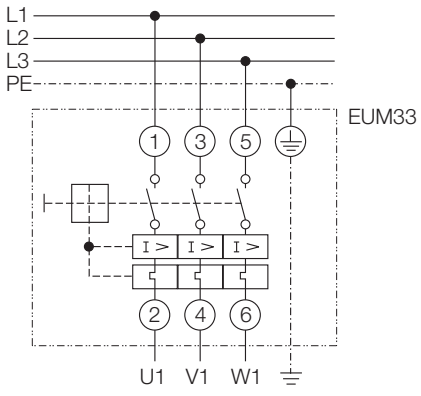
Technical Data

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	+0.6/+1	0.25
0016-8D	1.6	+1/+1.6	0.55
0024-8D	2.4	+1.6/+2.4	0.8
0040-8D	4	+2.4/+4	1.5
0060-8D	6	+4/+6	2.5
0100-8D	10	+6/+10	4
0160-8D	16	+10/+16	7.5
0200-8D	20	+16/+20	9
0250-8D	25	+20/+25	12.5
0500-8D	50	+25/+50	25
0580-8D	58	+50/+58	30

Dimensions in mm, subject to change.



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...10V output. The device is designed for installation in control cabinets.

Type

Multi functional LC-display for actual and nominal values (m/s, hPa = mbar, 100m³/h). Menuassisted adjustment via three function keys.
Actual value input 0...10V e. g. for:

- air speed sensors Type EIL in measuring ranges from 0...1m/s and 0...10m/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) and Flow control in centrifugal fans with pressure tappings 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.

- Output 0...10V 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...10V 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
- 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 230V, 50/60Hz. The control module can be installed in a control cabinet door. Admissible relative humidity: 85%, noncondensing. Power supply for the sensors included:
+24V, 20%, I_{max} = 70mA.
Setting options

- Set values in the measurement range of the sensor (m/s, hPa = mbar), or in the volume flow range of the fan (×100m³/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 K10-factor can be found in the current lists of our fan line)

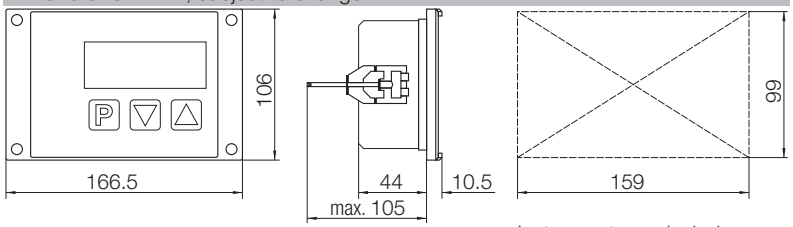
Technical Data

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

Accessories

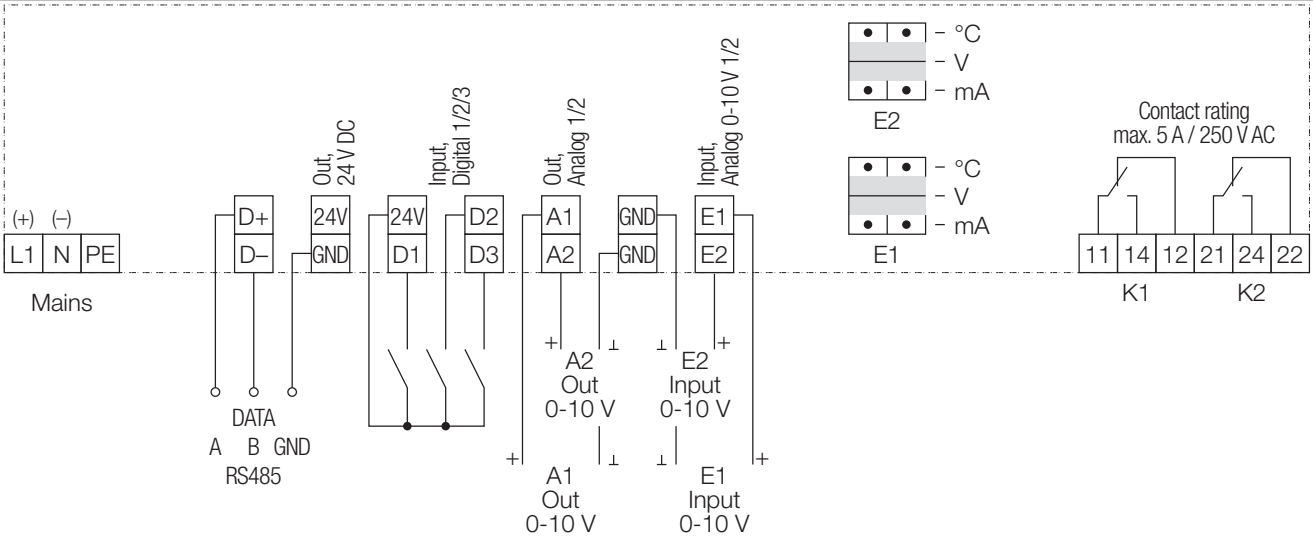
Universal control device

Dimensions in mm, subject to change.



Instrument panel window

Wiring Diagram



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...10V 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...10V) by pressure increase at the "Plus" connection opposite pressure on the "Minus" connection.

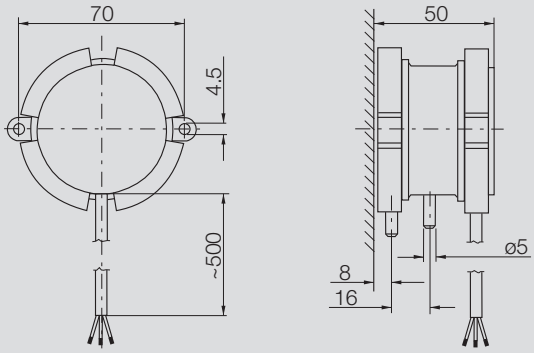
Voltage supply

- 15...30V DC or 24V 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%/10K
- Temperature drift length of measurement: 0.2%/10K

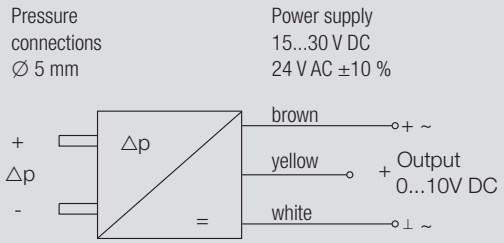
Dimensions in mm, subject to change.



Technical Data

EIP 01-	Pressure range Pa	Motor protection class	Max. current consumption mA	Overload protection Pa	Output signal proportional V	Operating temperatur °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

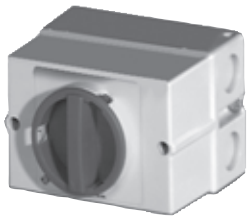
Wiring Diagram



Accessories

Isolator ESH 21

Isolator ESH 21 (≤ 3kW)



Isolator ESH 21 (≥ 5.5kW)

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.

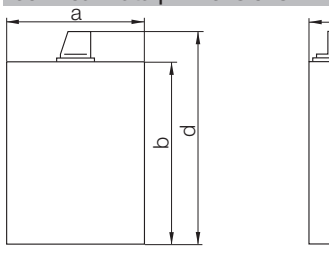
The **ESH21 up to 3kW** is designed to IP44. It is equipped with an integrated lo-cking mechanism.
The **ESH21 up to 5.5kW** is designed to IP65. It is equipped with a coupling cover and an integrated locking mechanism. A padlock can in some cases be fitted to the rotary switch.

Function

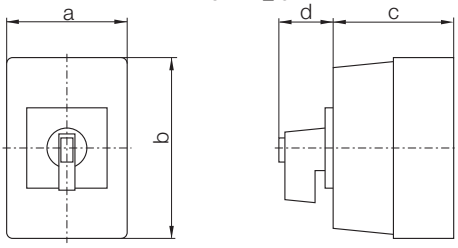
The isolator disconnects the fan safely from the mains in the event of cleaning, maintenance or repair work on site and thus avoids accidents due to uncontrolled activation of the unit by third parties. It is no main switch or emergency switch.
All of the classified isolators are fitted with potential-free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

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** = 3kW switch - 6 main contacts - 5 auxiliary contacts

Technical Data | Dimensions



ESH 21 ≤ 3 kW



ESH 21 ≥ 5.5 kW

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.

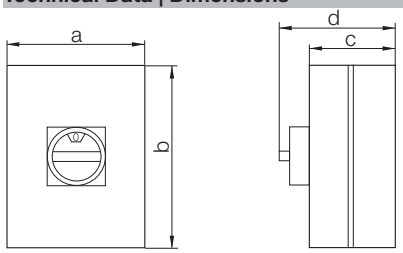
Function
The isolator disconnects the fan safely from the mains in the event of cleaning, maintenance or repair work on site and thus avoids accidents due to uncontrolled activation of the unit by third parties. It is no main switch or emergency switch.
All of the classified isolators are fitted with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

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** = 7.5kW switch, 6 main contacts, 5 auxiliary contacts.

Technical Data | Dimensions



ESH 22-	Permissible motor power kW	a mm	b mm	c mm	d mm	Cable lead-through (top)	Cable lead-through (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

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.

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