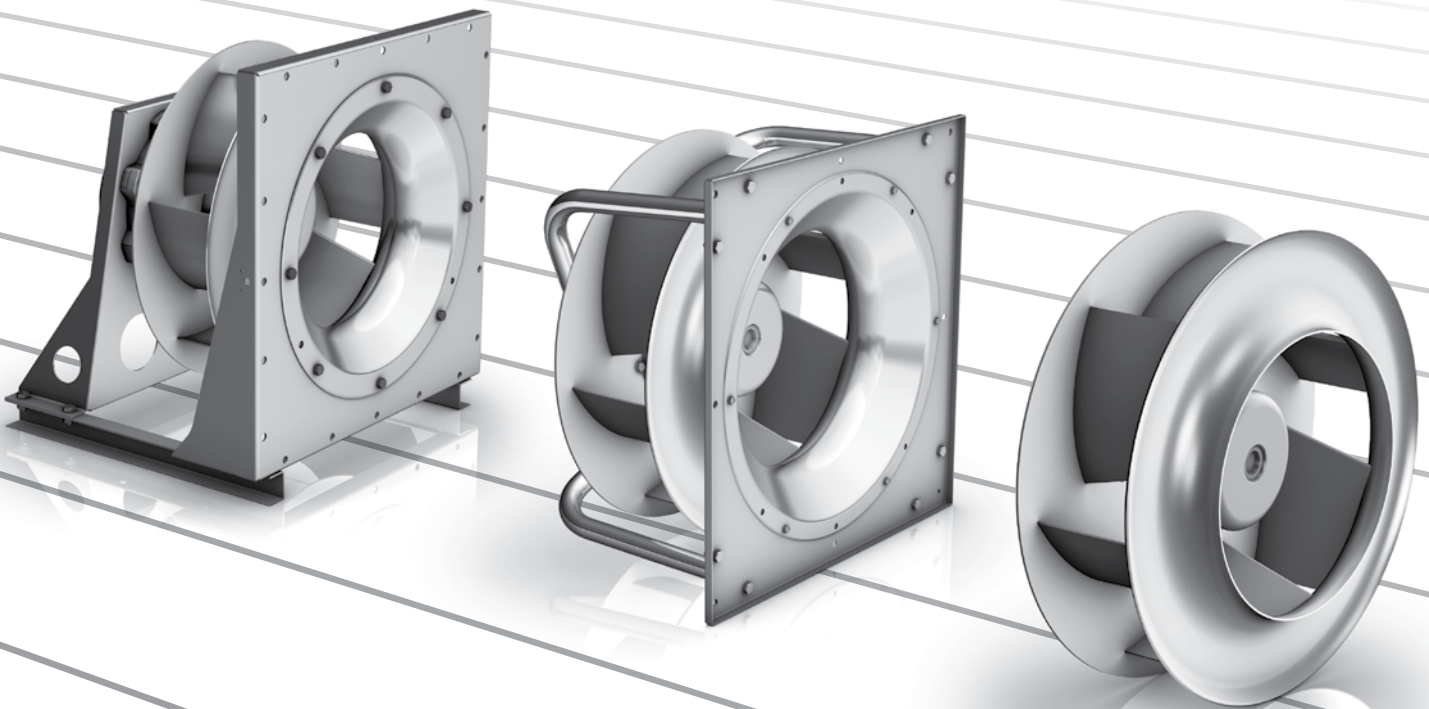


High Performance Plug Fans

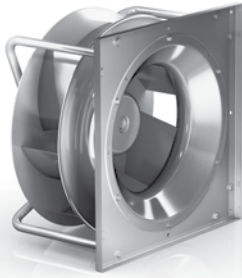
Impeller with true airfoil blades

Issue 1.4 EN
January 2013

RLE^{EVO}



NICOTRA | **Gebhardt**
fan|tastic solutions



Ready for the next generation

We have accelerated impeller technology with the RLE Evo series, the new generation in our plug fan range. The result: More efficiency and reduced turbulent conditions.

And that is highly effective as the Evo series ensures:

- ▶ lower energy consumption
- ▶ lower costs
- ▶ lower noise levels

Nicotra Gebhardt – the professionals in profiling

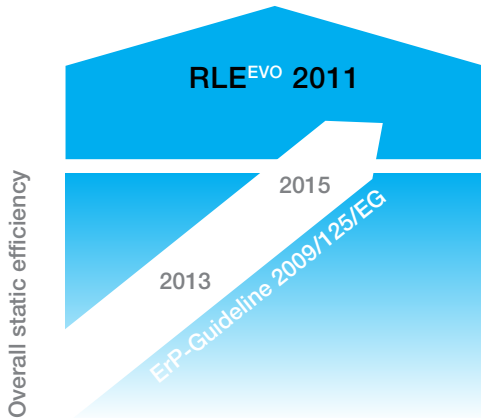
Nicotra Gebhardt is the first port of call for profiled impeller blades. We brought the first hollow section airfoil blades onto the market in 1975. Since then we have been achieving the absolutely best efficiencies in our fans in every application.

Our engineers and technicians use the latest simulation programmes to develop and test new designs. You can rely on the knowledge and experience of specialists.

Don't wait until 2015

Fans must reach ever higher system efficiencies. The EU's ErP directive will prescribe compulsory values in 2013 and will increase them again in 2015.

The new generation of plug fans by Nicotra Gebhardt, already achieved higher efficiency in 2011 than that required as from 2015.



The plus factors of the new Generation

▶ Unparalleled system efficiency for plug fans

The Evo series sets a new standard in efficiency. No other plug fan reaches higher system efficiency.

▶ Innovative blade and impeller shaped for highest efficiencies

The entire shape of the impeller was optimised using a real turbulence profile for the blades. This ensures that the impeller reaches as yet unparalleled high efficiency and takes the top position in aerodynamics.

▶ Optimal pressure and turbulence conditions

The re-designed impeller shape makes optimal pressure and minimised turbulence conditions in the impeller possible. The inclined leading edge of the blade builds pressure more evenly minimising entry and exit losses.

▶ Low operating cost brushless DC motor

The brushless DC motor used by Nicotra Gebhardt is markedly more efficient than conventional drives: It reduces the energy consumption of the fan for partial loads by up to 50 %.

▶ Much quieter

Thanks to their new design the blades and the impeller run with less noise. The entire fan is thus much quieter.

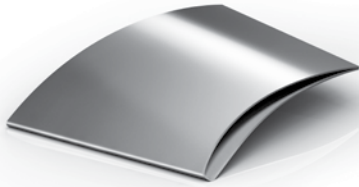
▶ Easy to integrate

Despite their improved performance figures, the Evo series have the same external dimensions and significant operational data as earlier generations of plug fans. They can therefore be easily and quickly exchanged in existing systems or integrated in available machine concepts.

▶ Easy maintenance

Thanks to the construction method and direct drive the Evo series is practically maintenance-free.

The evolutionary elements



► The perfect profile

At the heart of the Evo series are the six blades with rounded inclined leading edges and re-designed hollow profile.

They ensure minimised turbulence conditions in the impeller thus enabling the extraordinary high efficiency of the fan.

Due to their special shape, the blades build up pressure evenly at all sections. The result: Air circulates around the blades better and the turbulence tends to dissipate. This increases not only efficiency but also causes significantly lower noise.



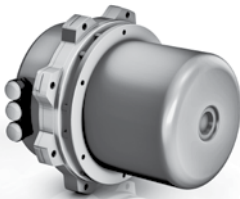
► The innovative high performance impeller

The re-designed high performance impeller makes the Evo series unbeatable in matters of efficiency. To ensure this we optimised the entire shape.

The special shape of the cover disc alone greatly improves turbulence. The width and diameter of the impeller are in an ideal ratio to each other.

The new hollow profile of the blades ensured that the weight of the impeller could be markedly reduced and that, at the same time, a high degree of stability could be reached. Pressure losses on entry were greatly decreased.

And at the exit, where losses had been sustained before, the new impeller shape ensures additional available static pressure.



► The tailored drive

The new generation of our plug fans not only have a perfect impeller but also a precisely matched drive. For this reason, the Evo series, already an innovation in itself, is available with a cutting edge brushless DC motors. Together with such a drive, the Evo series delivers high performance with particularly low energy consumption. Whether during start-up or under base, partial or full load, the efficiency exceeds that of a conventional AC motor in every situation.

Our drives with brushless DCs reach efficiencies of efficiency class IE 3 and higher.

Type code

The type code of every fan is composed as follows. Example:

RLE E6-3540-EC-04

Motor index:

- 04 = Index for motor size
- M4 = Control via Modbus® RTU protocol

Motor

- EC = brushless DC motor with integrated control unit

Impeller diameter

(nominal 400 mm)

Connecting diameter

(nominal 355 mm)

Specification

- 0 = motor impeller unit
- 1 = motor impeller unit with inlet cone
- 3 = complete Plug Fan module (motor impeller unit, supporting plate with inlet cone)
- 6 = complete Plug Fan module (motor impeller unit, supporting plate with inlet cone and motor stand on baseframe)

Impeller geometry

- E = series Evo

Drive type

- E = integrated motor

Scroll type

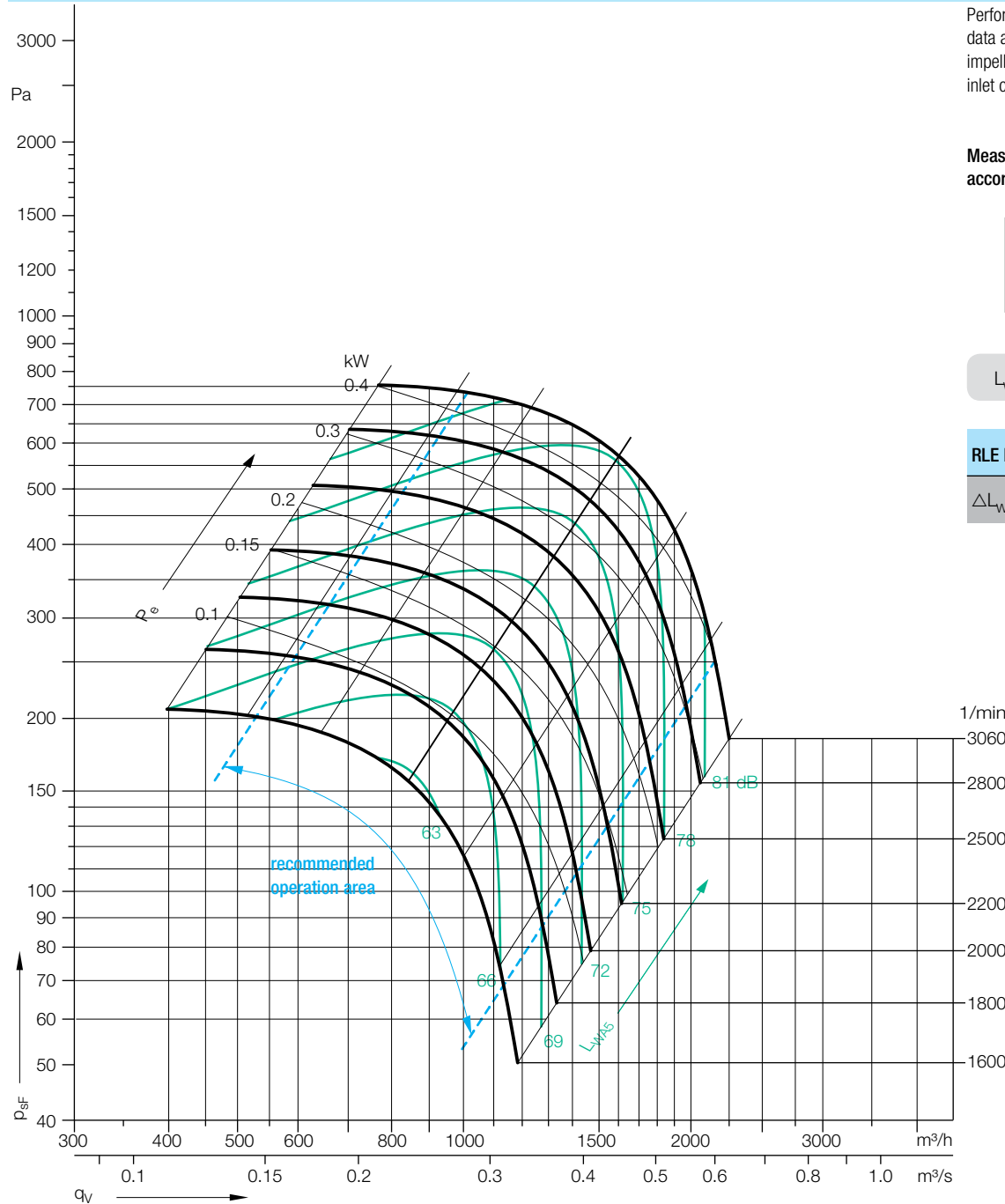
- L = plug fan (without scroll)

Fan type

- R = centrifugal fan with backwardcurved blades

RLE G1-/G3-/G6- 2225-EC-02/M2

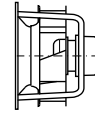
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	2225
ΔL_{WA}	+2 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area ($0.8 \dots 1.3 q_{Vopt}$).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
2225	-9	-2	2	-2	-5	-13	-17	-27 dB

Discharge

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area ($0.8 \dots 1.3 q_{Vopt}$).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
2225	-10	-9	-3	-6	-5	-6	-12	-19 dB

RLE G1-/G3-/G6- 2225-EC-02/M2

THE EVOLUTION
CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/ connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/ temp. class	Calibration factor	media temp.
RLE G1-/G3-/G6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...2225-EC-02/M2	0.45	200...277, 1~	50/60	3060	78	2.8*	IP54/F	74	-20...+40

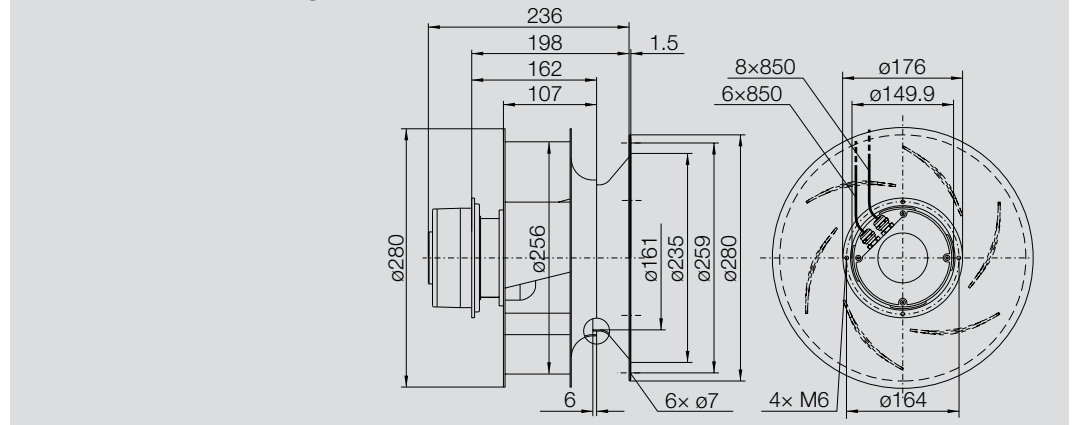
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

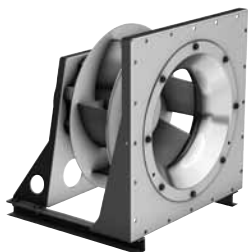
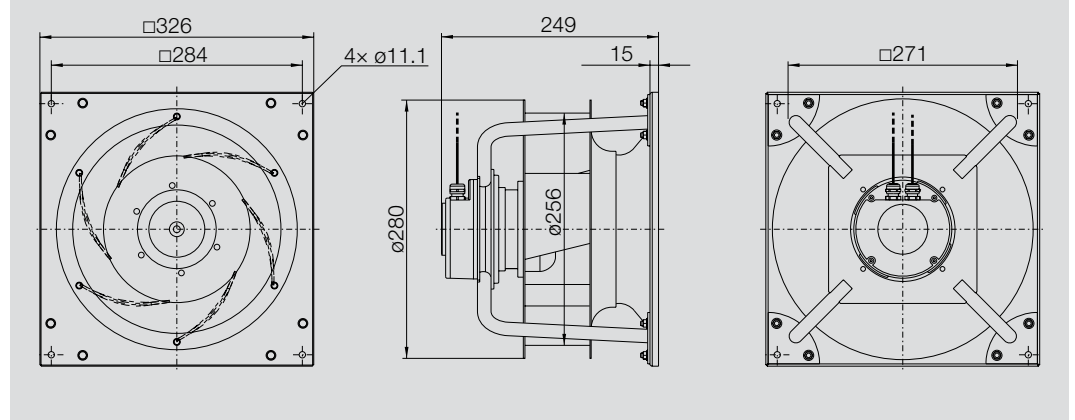
Dimensions in mm, subject to change.



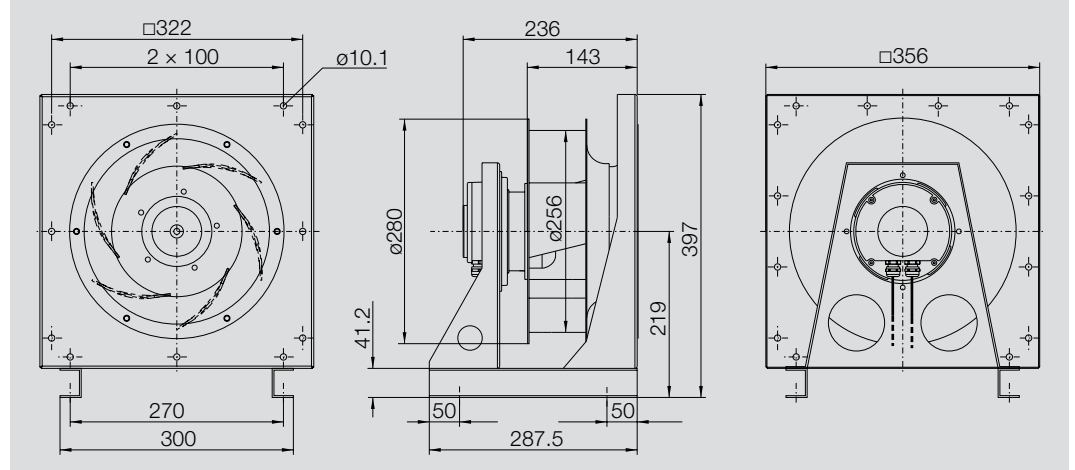
RLE G1-2225-EC-02/M2 7 kg



RLE G3-2225-EC-02/M2 10 kg

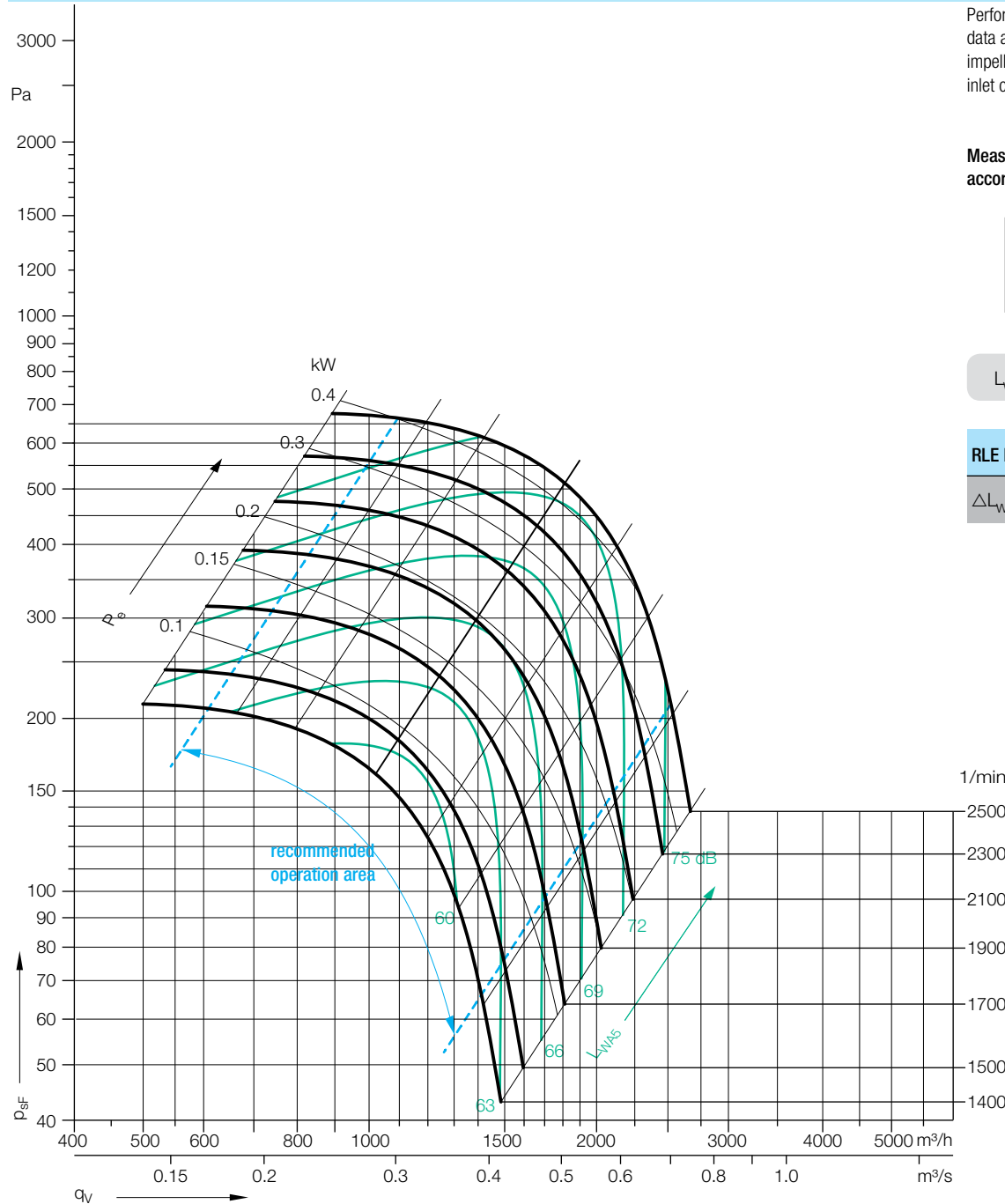


RLE G6-2225-EC-02/M2 12 kg



RLE E1-/E3-/E6-2528-EC-02/M2

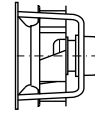
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	2528
ΔL_{WA}	+4 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
2528	-9	-8	-1	-3	-5	-10	-11	-16 dB

Discharge

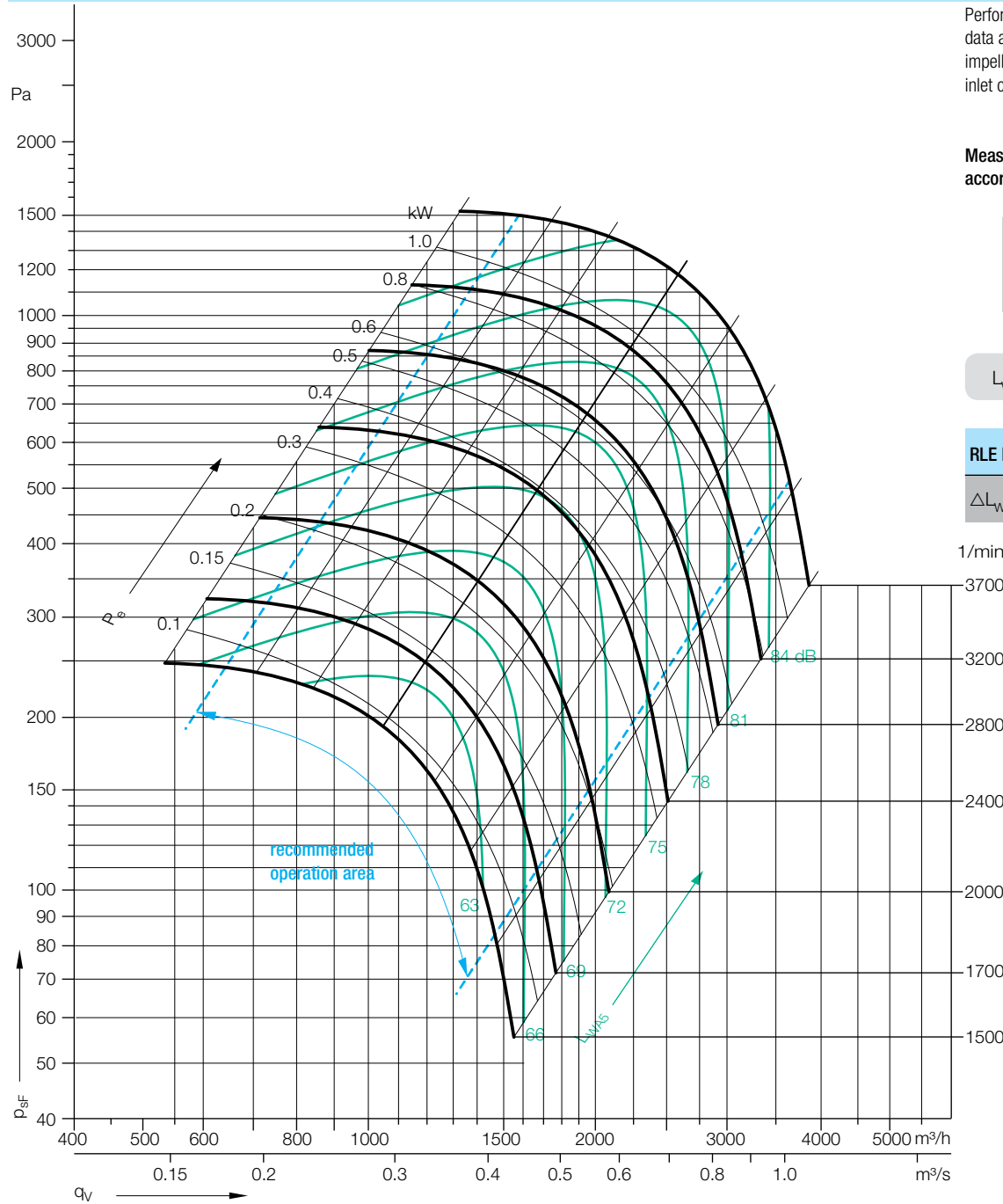
$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
2528	-10	-13	-9	-9	-6	-6	-7	-13 dB

RLE E1-/E3-/E6-2528-EC-04/M4

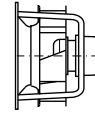
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	2528
ΔL_{WA}	+4 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
2528	-9	-8	-1	-3	-5	-10	-11	-16 dB

Discharge

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
2528	-10	-13	-9	-9	-6	-6	-7	-13 dB

RLE E1-/E3-/E6-2528-EC-04/M4

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/connection	Frequency	max. speed	L _{WA5} at Q _{Vopt} (N _{max})	Nominal current	Protection/ temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...-2528-EC-04/M4	1.30	380...480, 3~	50/60	3700	82	2.3*	IP54/F	77	-20...+40

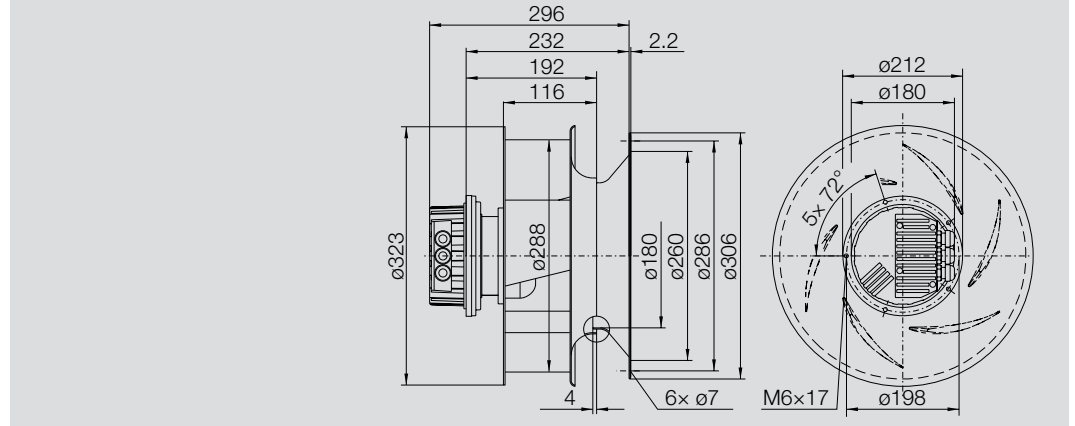
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

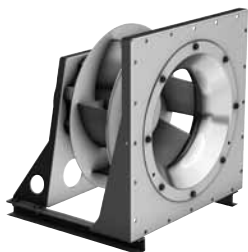
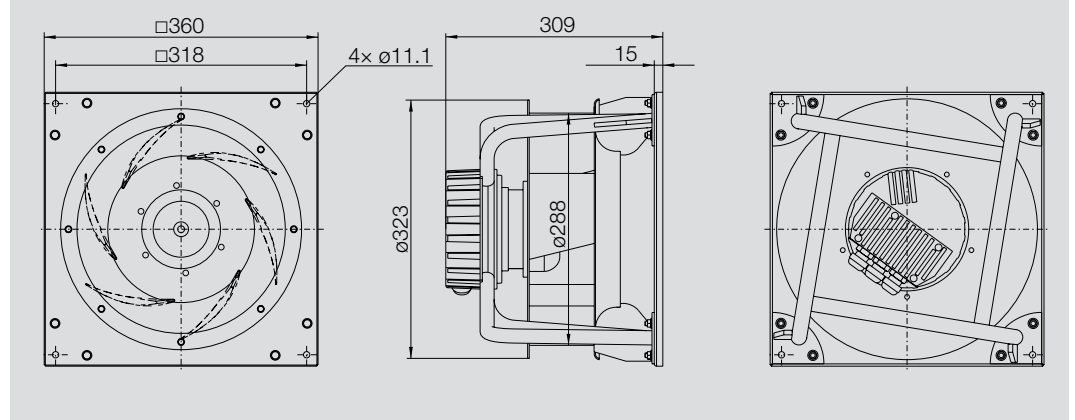
Dimensions in mm, subject to change.



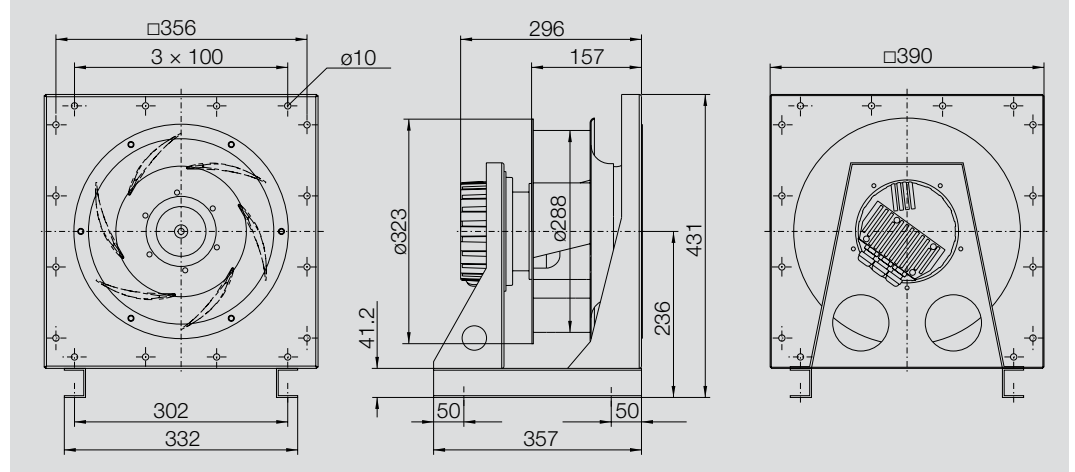
RLE E1-2528-EC-04/M4 10 kg



RLE E3-2528-EC-04/M4 18 kg



RLE E6-2528-EC-04/M4 16 kg



RLE E1-/E3-/E6-2831-EC-04/M4

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...2831-EC-04/M4	1.50	380...480, 3~	50/60	3200	82	2.5*	IP54/F	94	-20...+40

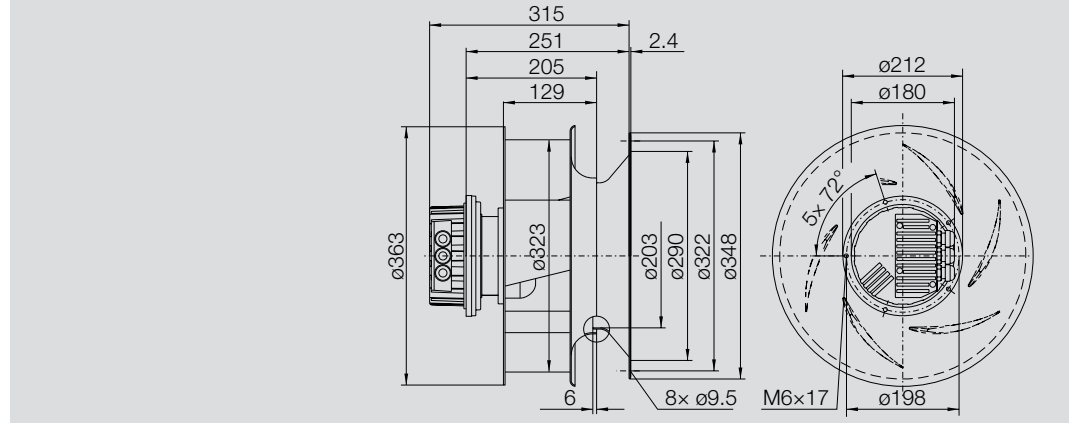
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

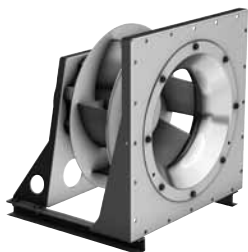
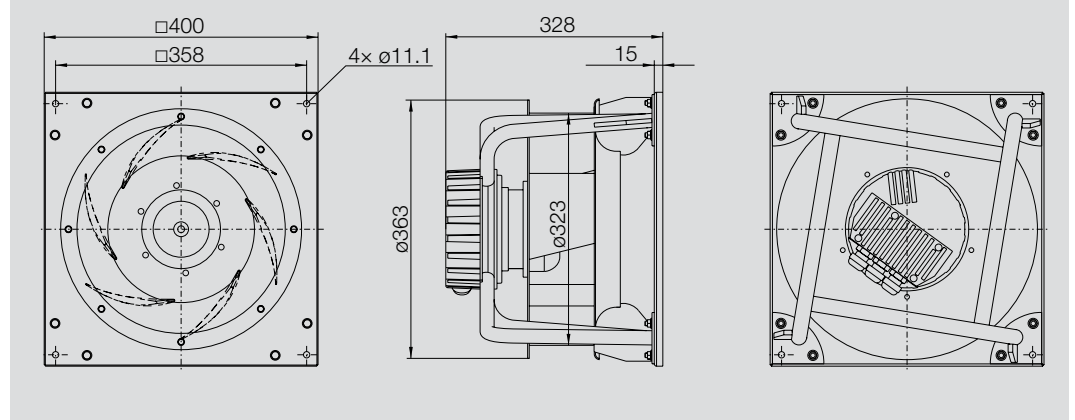
Dimensions in mm, subject to change.



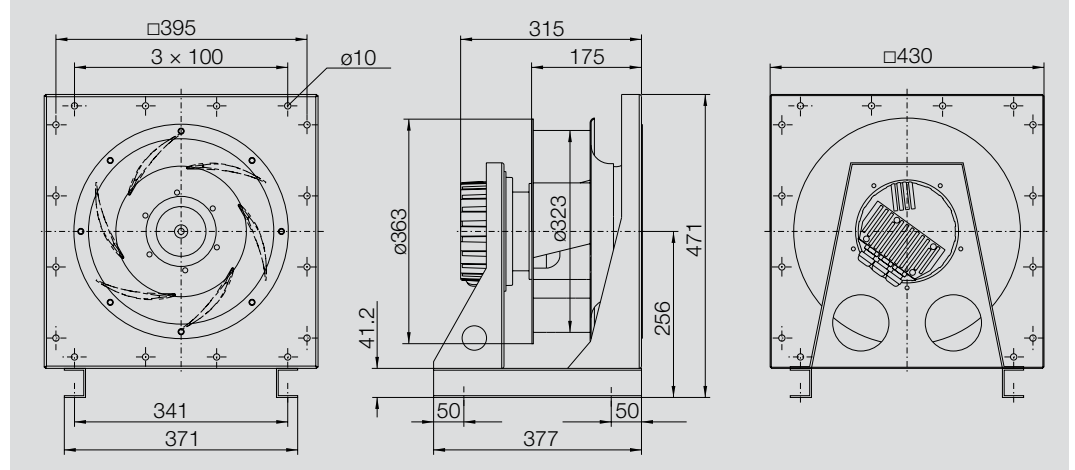
RLE E1-2831-EC-04/M4 11 kg



RLE E3-2831-EC-04/M4 19 kg

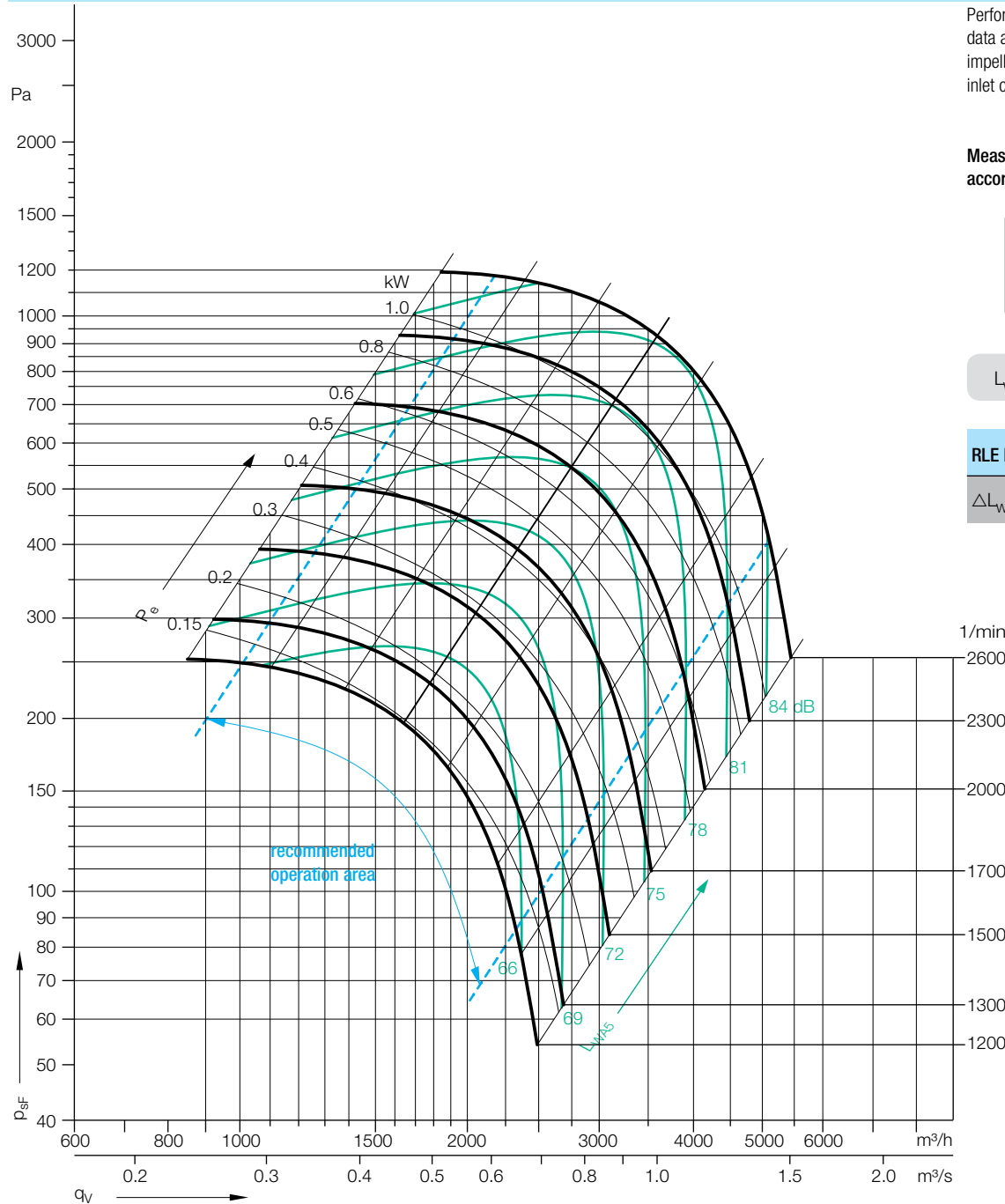


RLE E6-2831-EC-04/M4 18 kg



RLE E1-/E3-/E6-3135-EC-04/M4

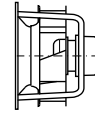
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	3135
ΔL_{WA}	+4 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
3135	-3	1	1	-1	-6	-10	-13	-20 dB

Discharge

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
3135	-6	-6	-5	-7	-4	-5	-11	-18 dB

RLE E1-/E3-/E6-3135-EC-04/M4

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/ connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/ temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...-3135-EC-04/M4	1.40	380...480, 3~	50/60	2600	81	2.4*	IP54/F	106	-20...+40

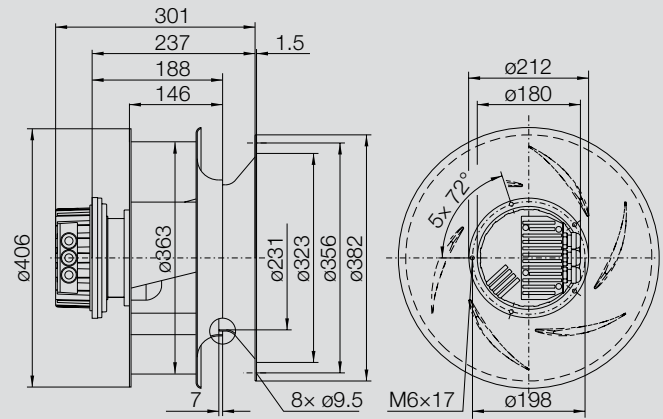
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

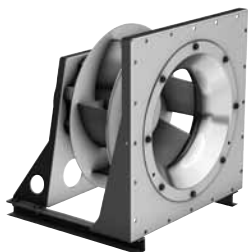
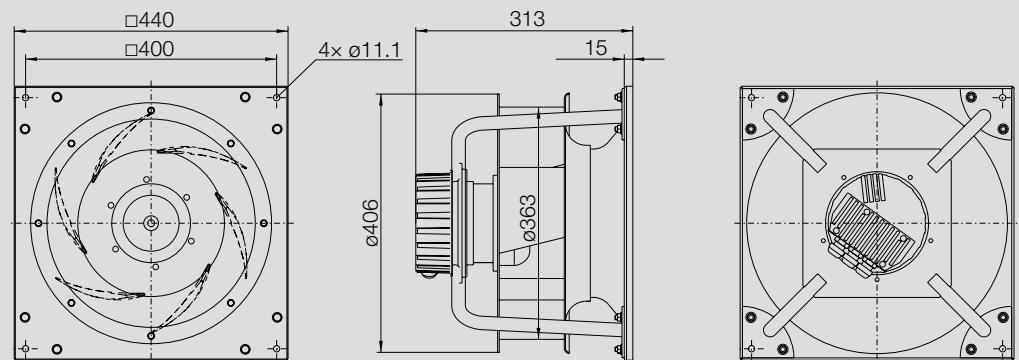
Dimensions in mm, subject to change.



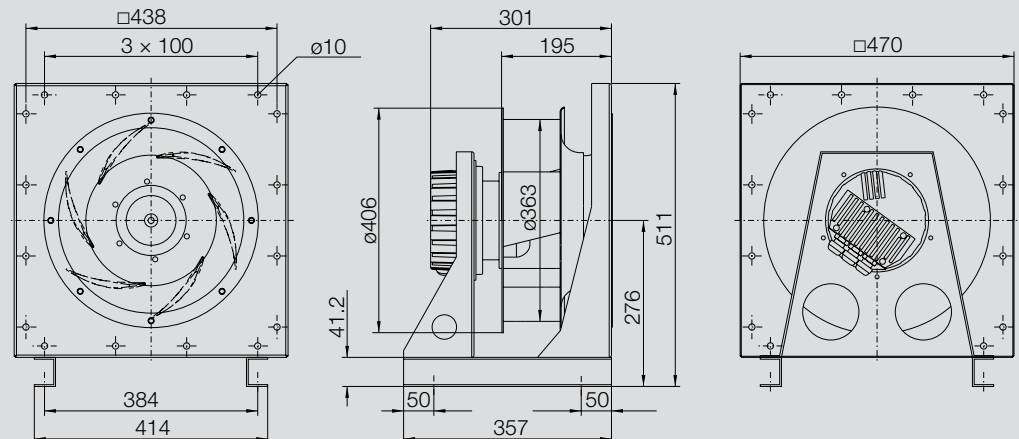
RLE E1-3135-EC-04/M4 12 kg



RLE E3-3135-EC-04/M4 20 kg

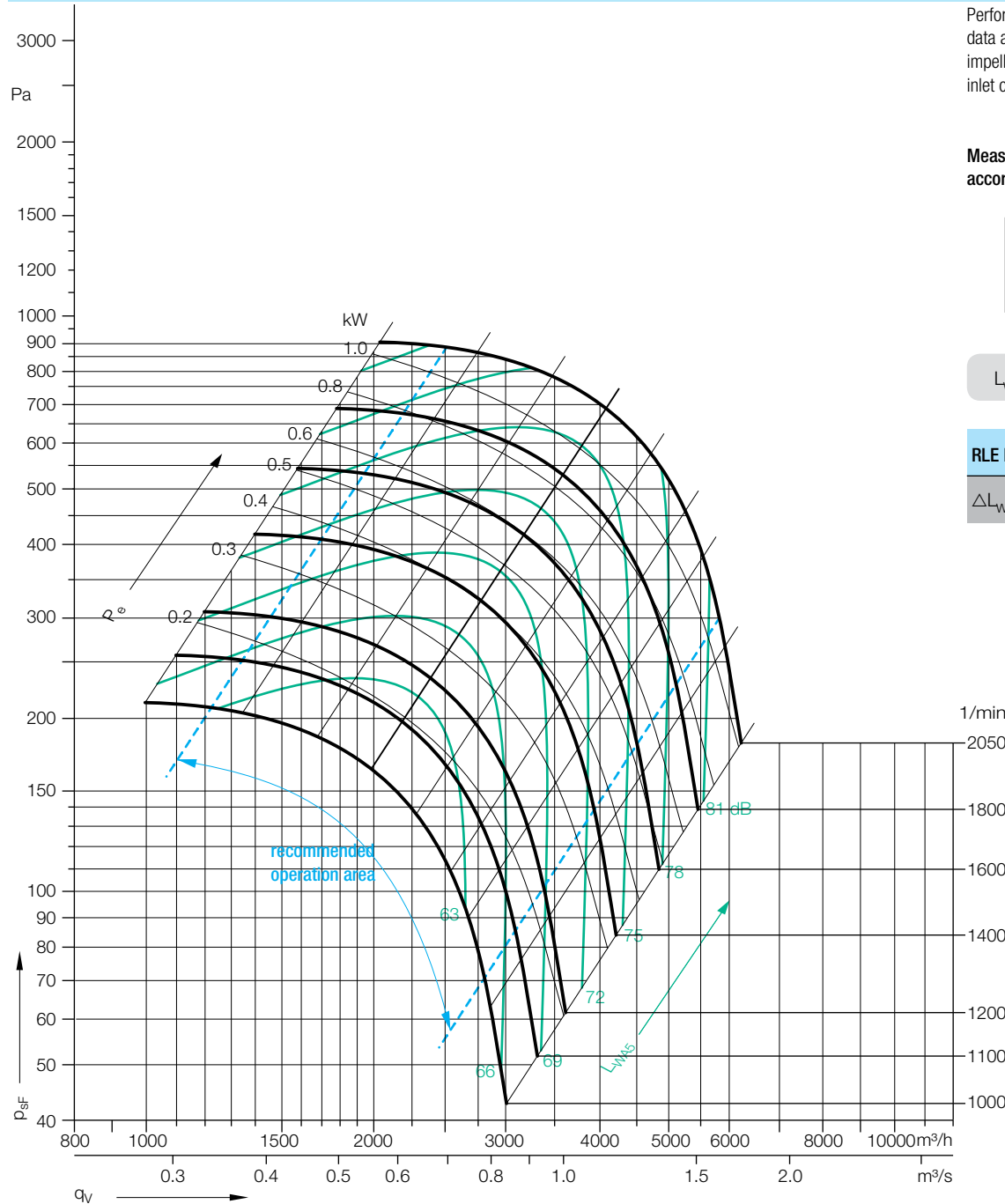


RLE E6-3135-EC-04/M4 20 kg



RLE E1-/E3-/E6-3540-EC-04/M4

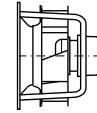
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	3540
ΔL_{WA}	+6 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area ($0.8 \dots 1.3 q_{Vopt}$).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
3540	-5	-2	0	-2	-5	-9	-14	-18 dB

Discharge

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area ($0.8 \dots 1.3 q_{Vopt}$).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
3540	-9	-9	-6	-8	-3	-7	-12	-19 dB

RLE E1-/E3-/E6-3540-EC-04/M4

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/ connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/ temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...-3540-EC-04/M4	1.20	380...480, 3~	50/60	2050	77	2.1*	IP54/F	128	-20...+40

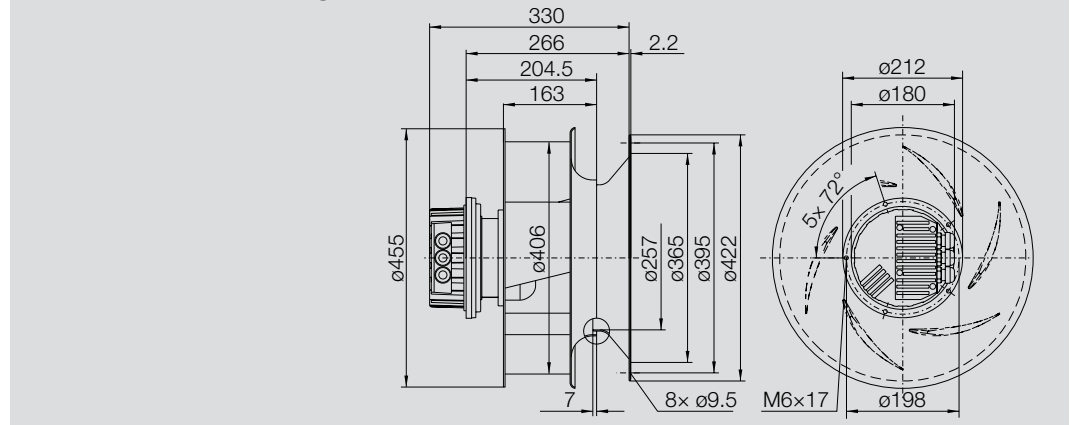
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

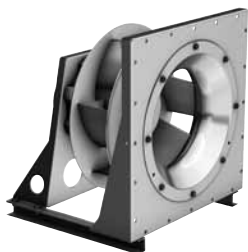
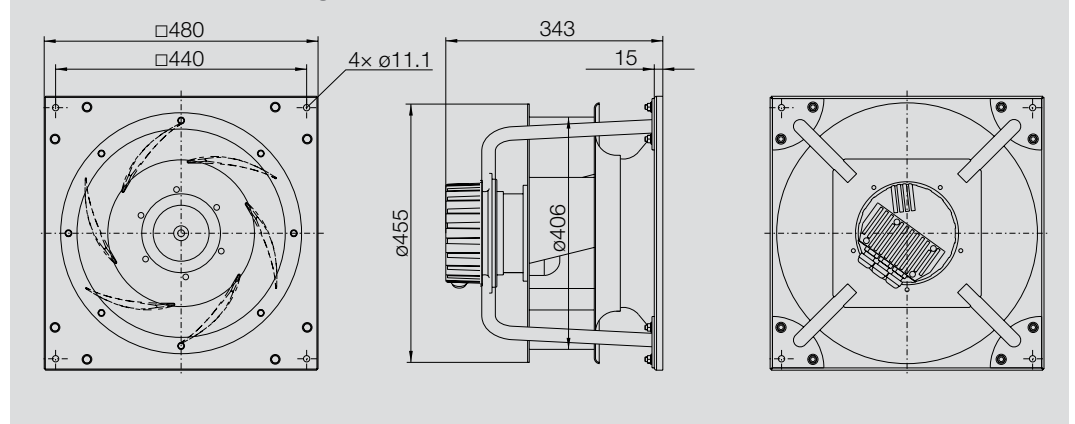
Dimensions in mm, subject to change.



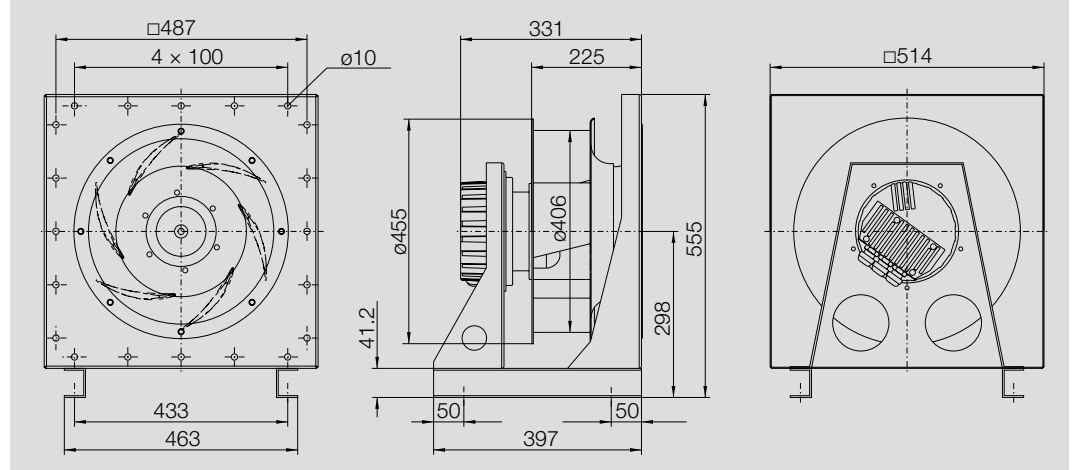
RLE E1-3540-EC-04/M4 14 kg



RLE E3-3540-EC-04/M4 21 kg

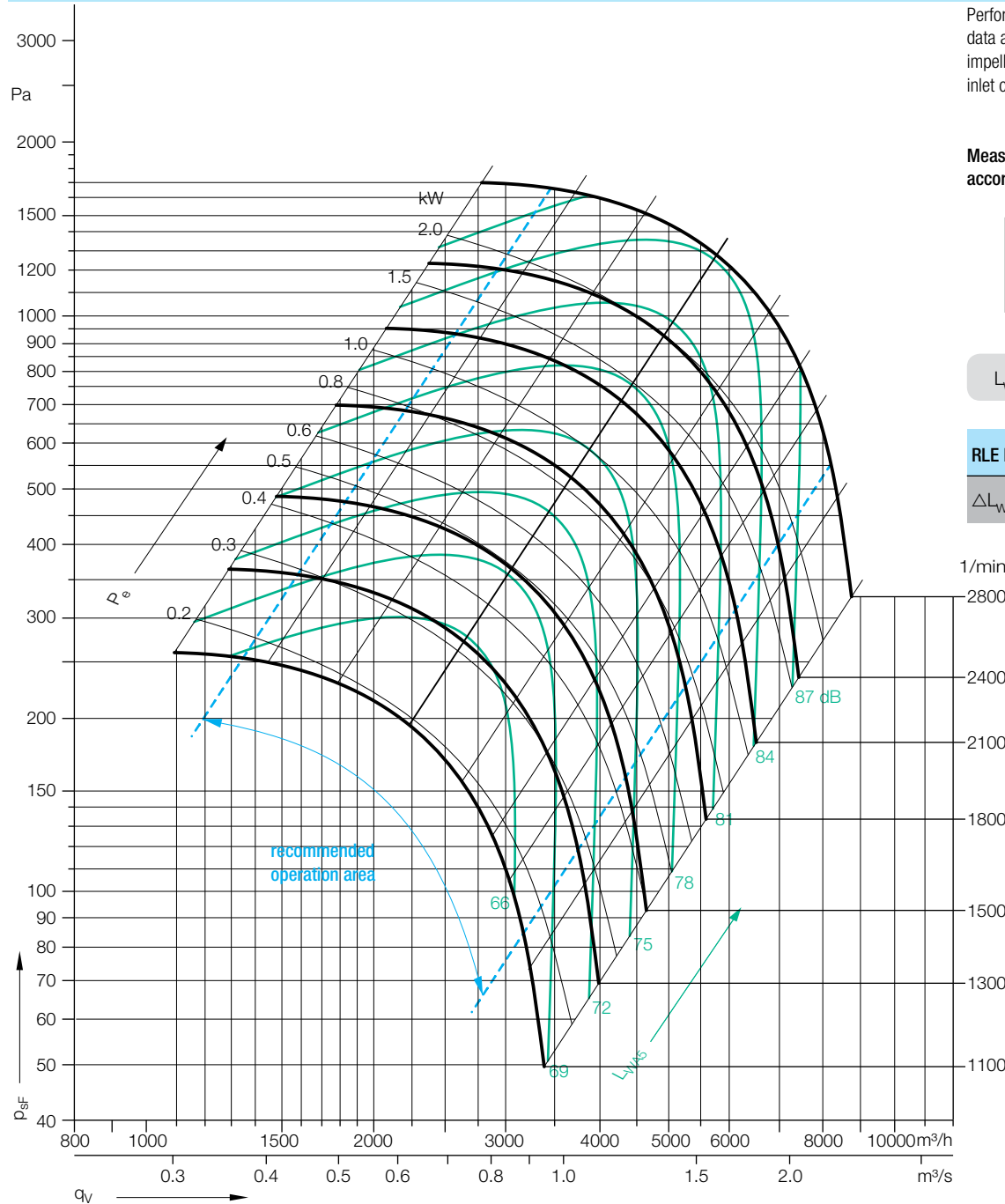


RLE E6-3540-EC-04/M4 24 kg



RLE E1-/E3-/E6-3540-EC-06/M6

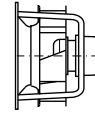
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	3540
ΔL_{WA}	+6 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
3540	-5	-2	0	-2	-5	-9	-14	-18 dB

Discharge

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
3540	-9	-9	-6	-8	-3	-7	-12	-19 dB

RLE E1-/E3-/E6-3540-EC-06/M6

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/ temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...-3540-EC-06/M6	3.00	380...480, 3~	50/60	2800	84	4.8*	IP54/F	127	-20...+40

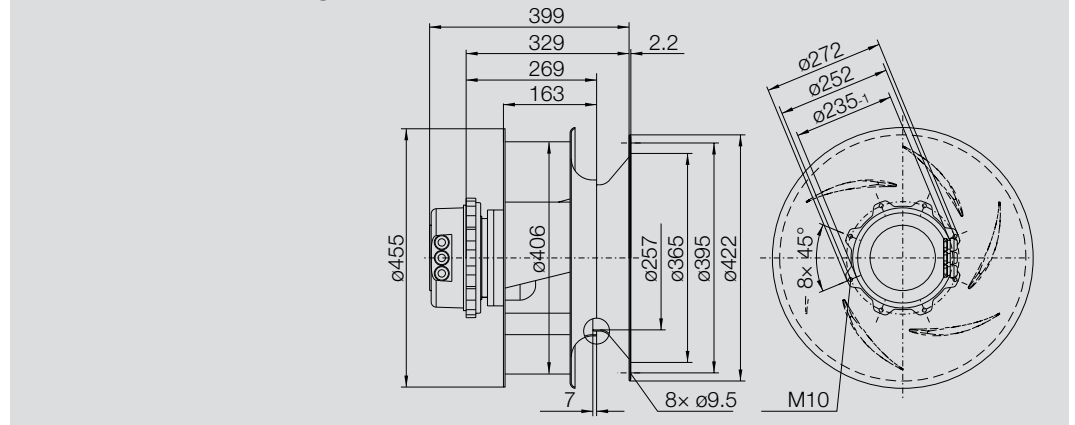
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

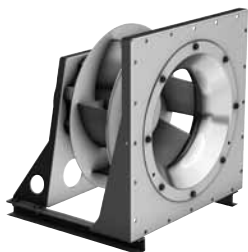
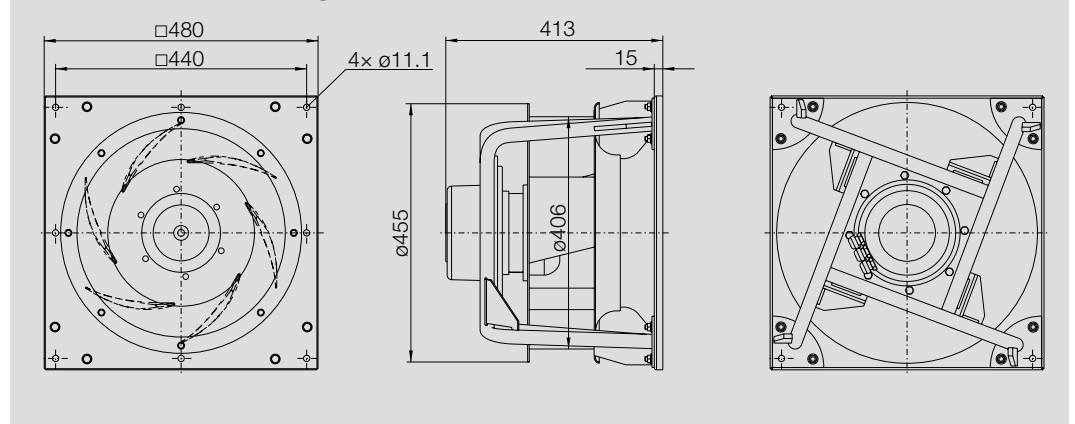
Dimensions in mm, subject to change.



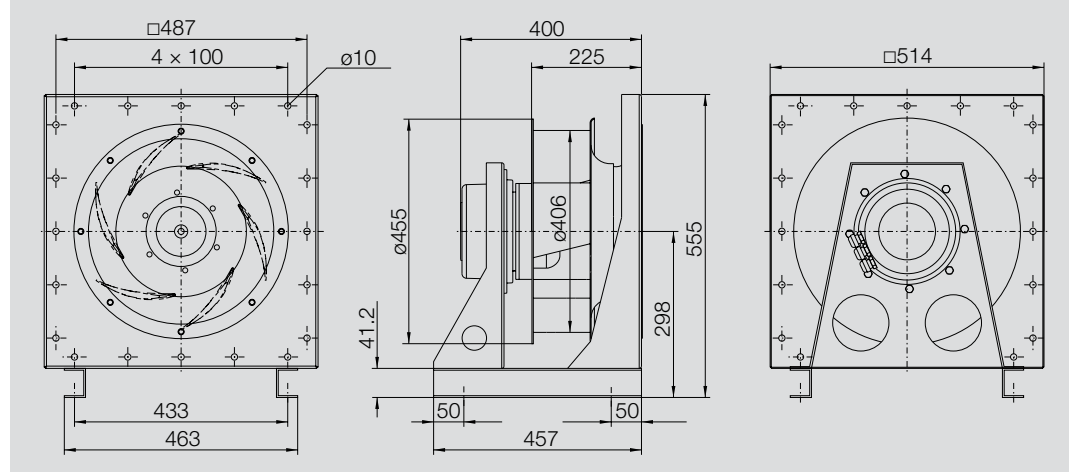
RLE E1-3540-EC-06/M6 25 kg



RLE E3-3540-EC-06/M6 38 kg

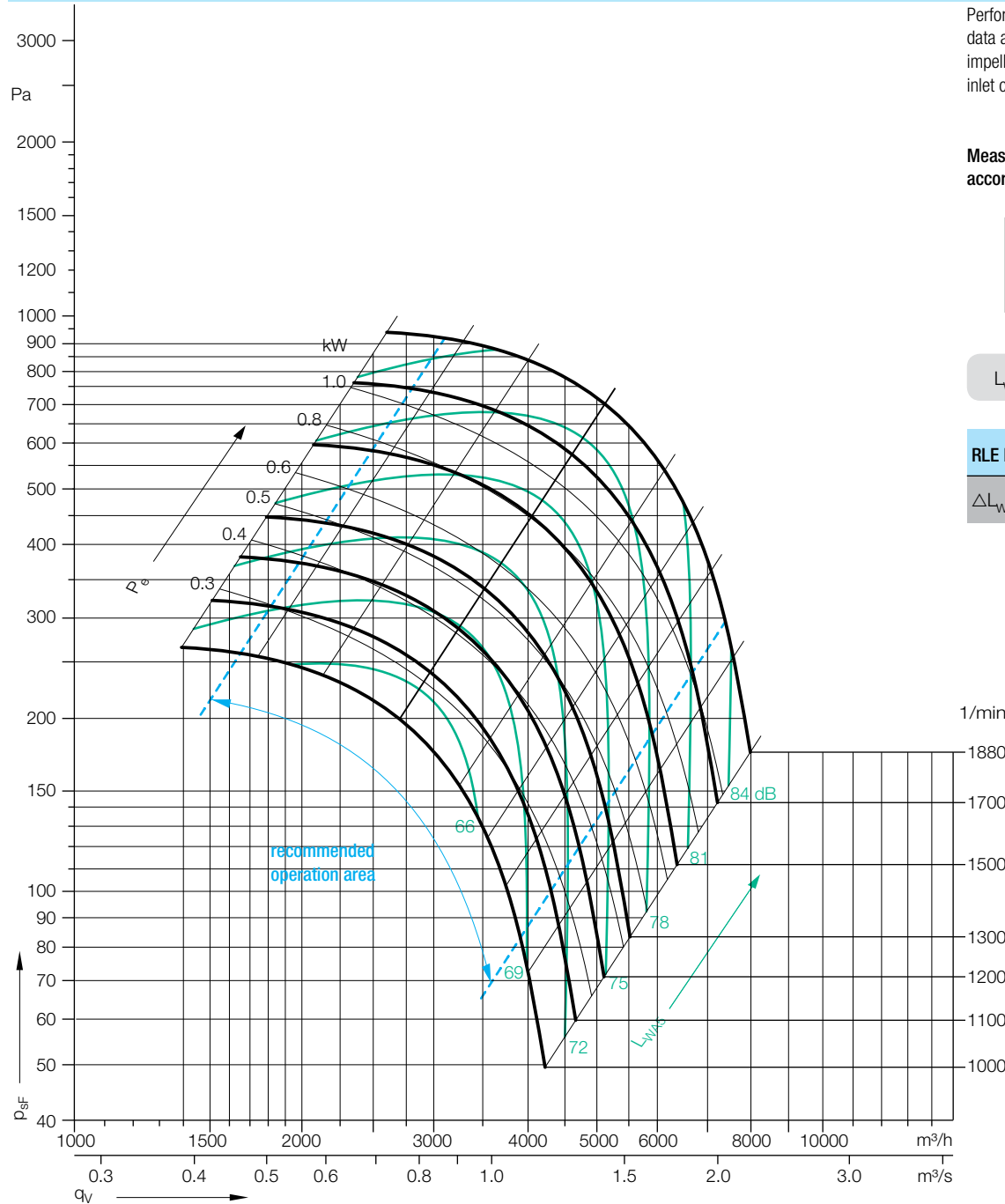


RLE E6-3540-EC-06/M6 36 kg



RLE E1-/E3-/E6-4045-EC-05/M5

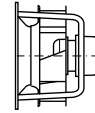
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	4045
ΔL_{WA}	+4 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
4045	1	4	1	-1	-8	-12	-17	-20 dB

Discharge

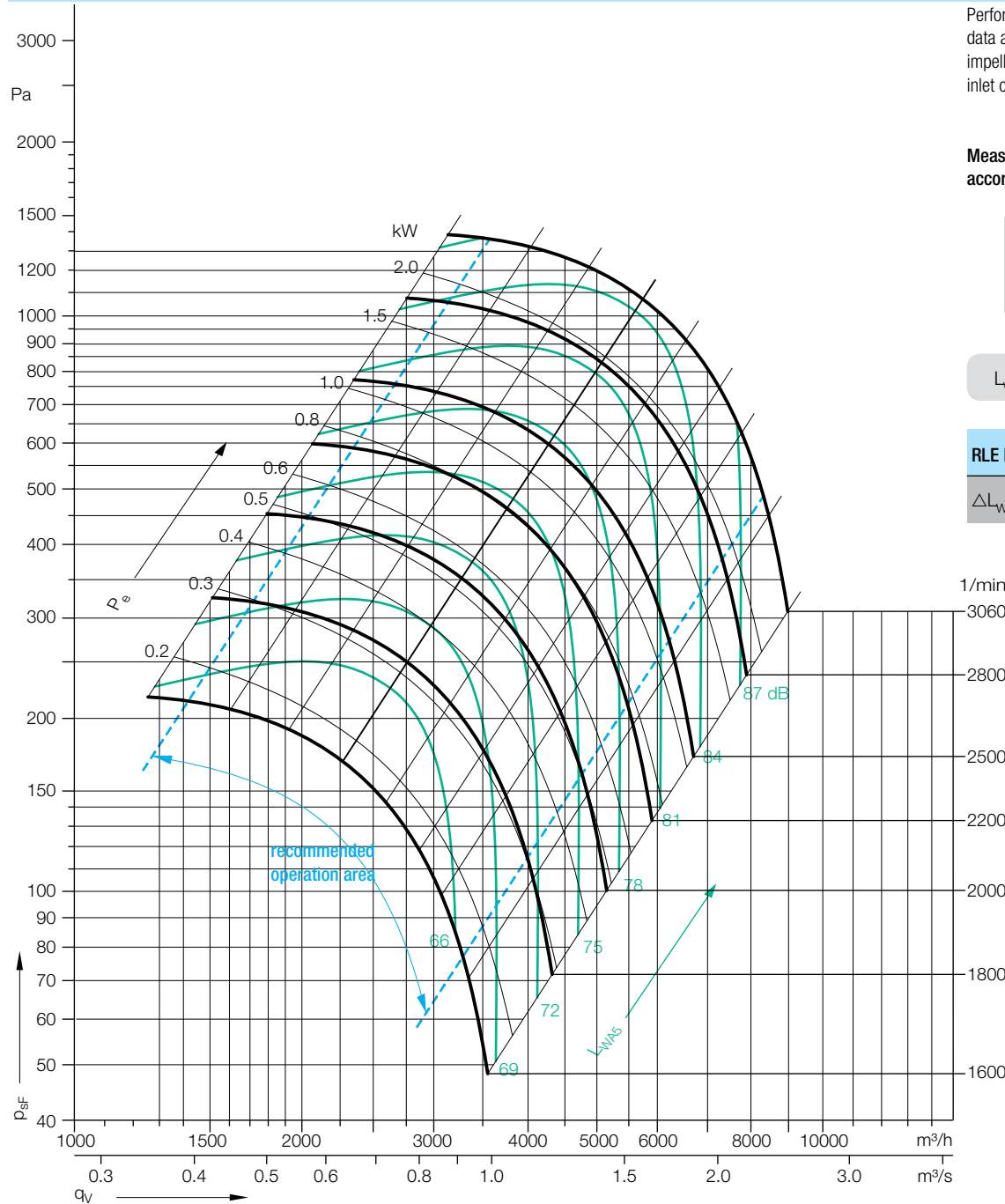
$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
4045	-5	-5	-4	-4	-4	-8	-13	-19 dB

RLE E1-/E3-/E6-4045-EC-06/M6

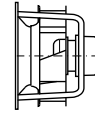
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	4045
ΔL_{WA}	+4 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
4045	1	4	1	-1	-8	-12	-17	-20 dB

Discharge

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
4045	-5	-5	-4	-4	-4	-8	-13	-19 dB

RLE E1-/E3-/E6-4045-EC-06/M6

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...4045-EC-06/M6	2.70	380...480, 3~	50/60	2270	85	4.2*	IP54/F	154	-20...+40

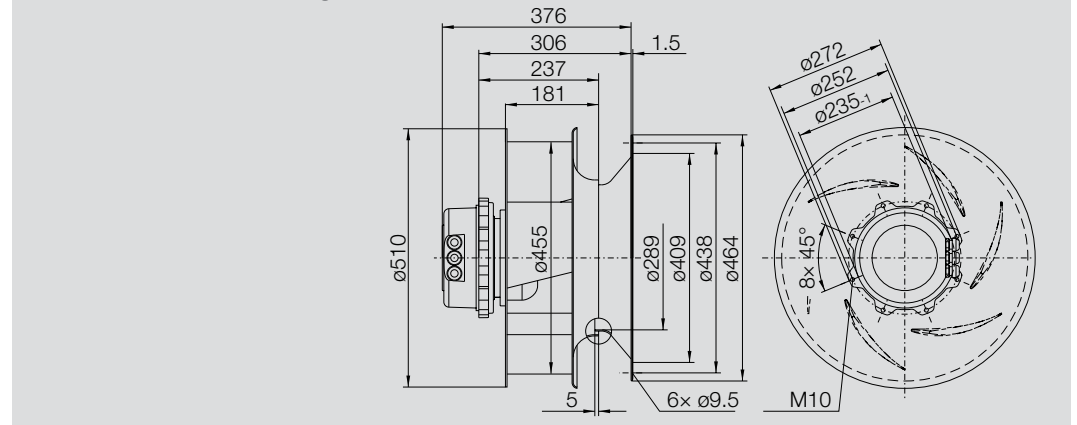
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

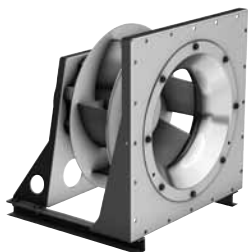
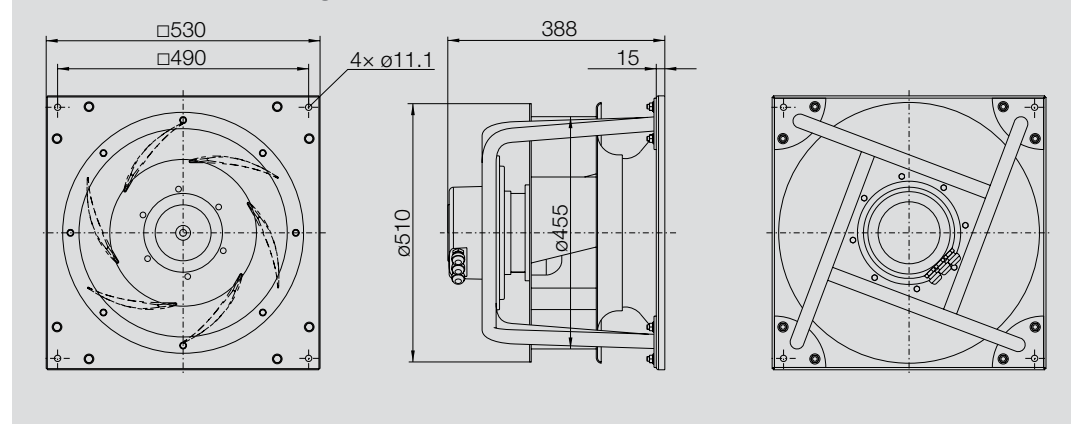
Dimensions in mm, subject to change.



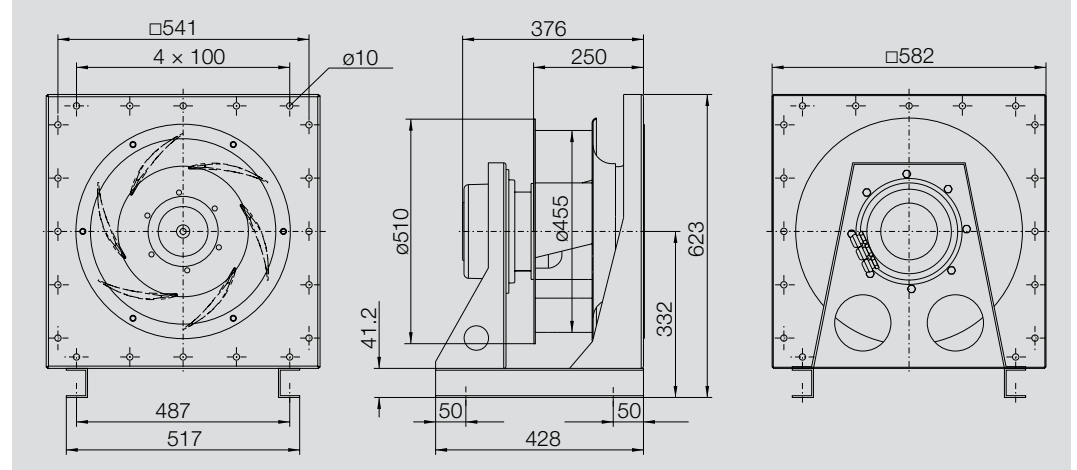
RLE E1-4045-EC-06/M6 27 kg



RLE E3-4045-EC-06/M6 38 kg

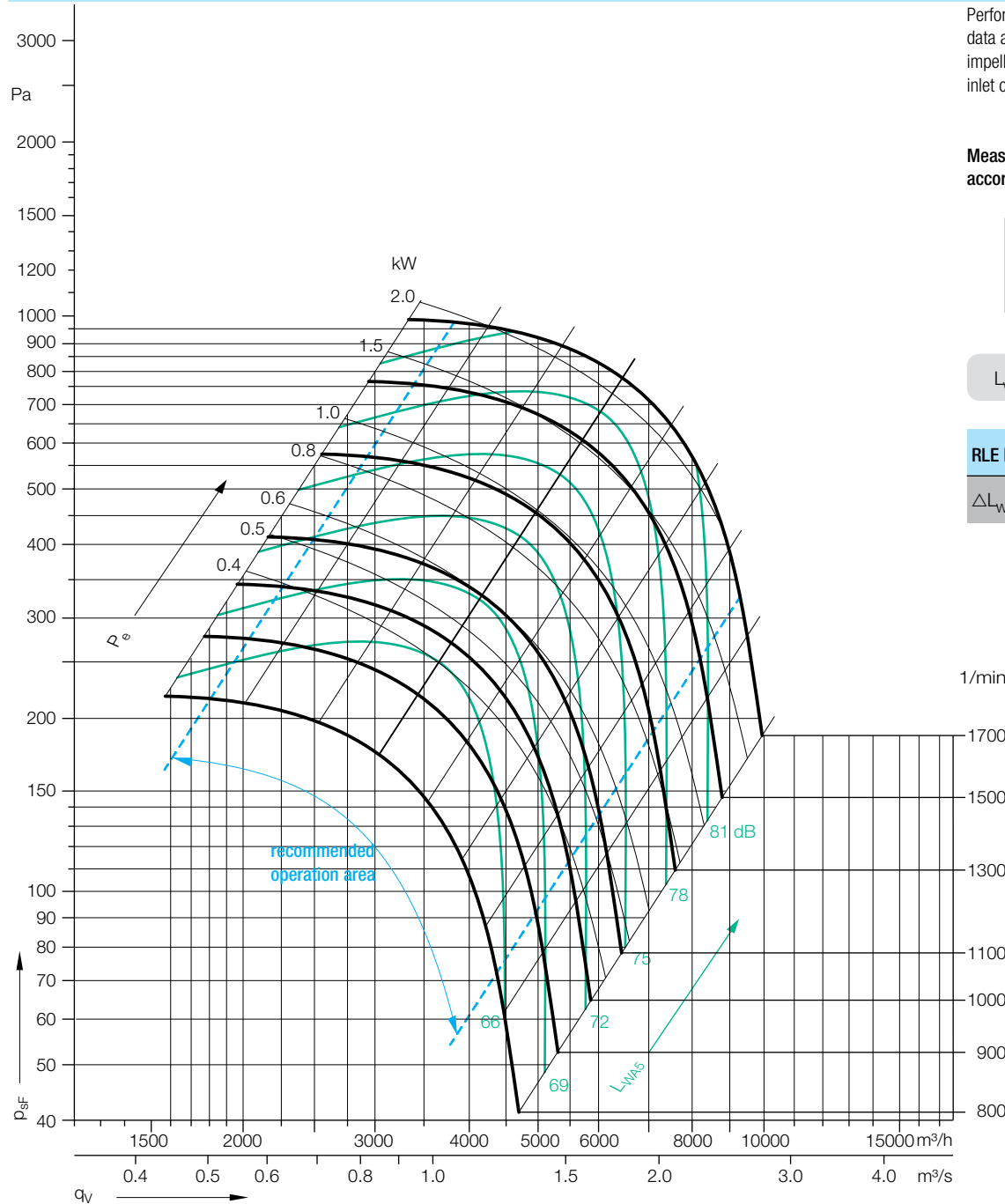


RLE E6-4045-EC-06/M6 38 kg



RLE E1-/E3-/E6-4550-EC-06/M6

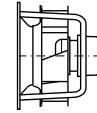
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	4550
ΔL_{WA}	+4 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
4550	3	4	0	-1	-8	-11	-14	-16 dB

Discharge

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
4550	-2	-3	-5	-5	-3	-8	-14	-19 dB

RLE E1-/E3-/E6-4550-EC-06/M6

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...-4550-EC-06/M6	2.00	380...480, 3~	50/60	1700	80	3.3*	IP54/F	184	-20...+40

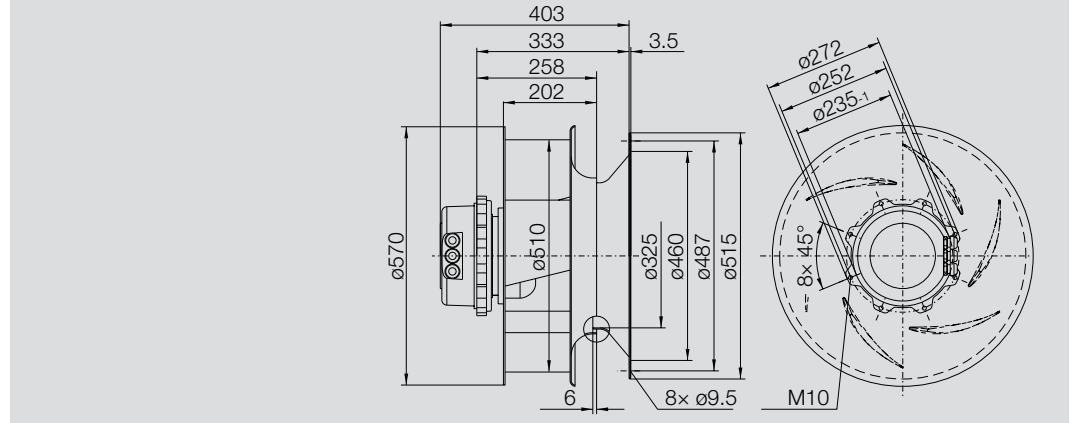
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

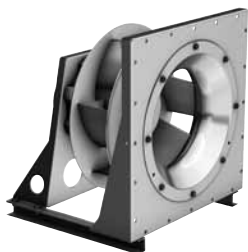
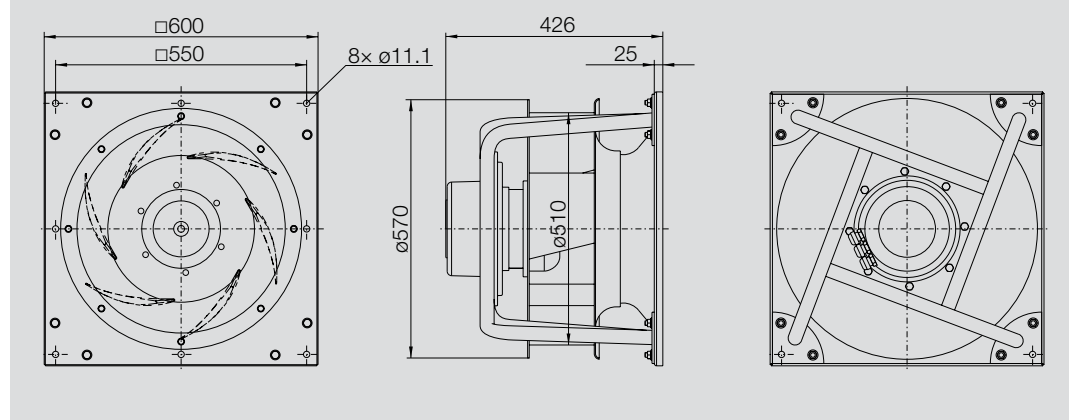
Dimensions in mm, subject to change.



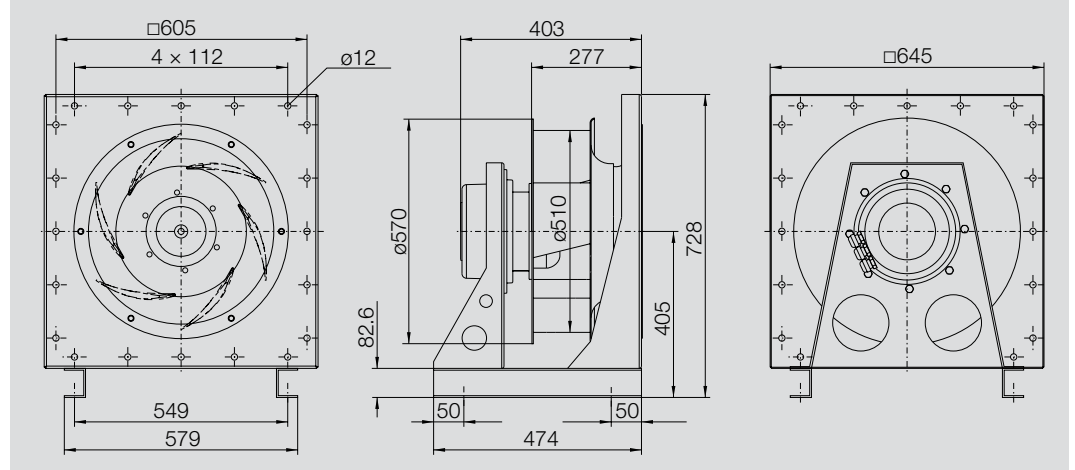
RLE E1-4550-EC-06/M6 32 kg



RLE E3-4550-EC-06/M6 47 kg

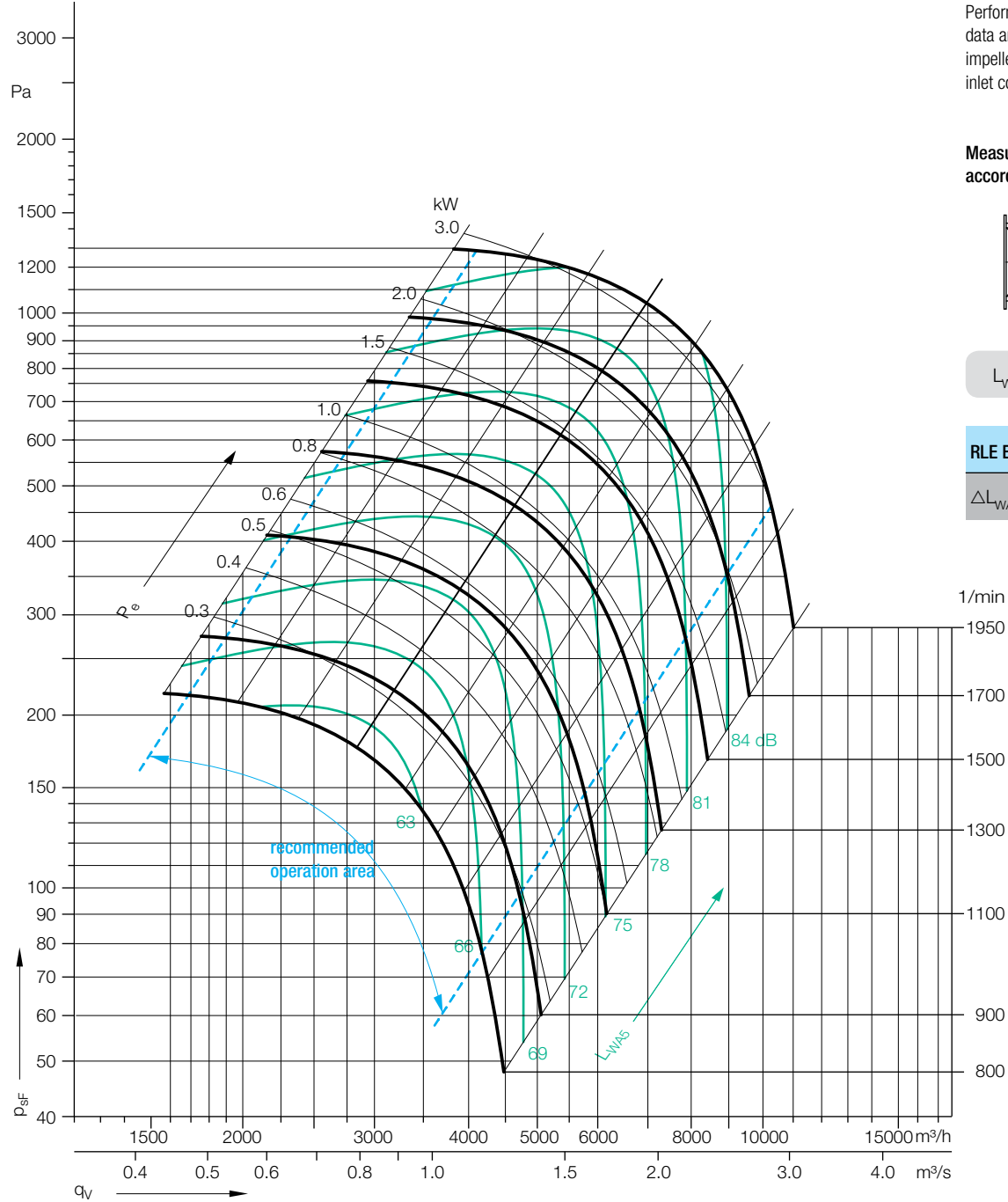


RLE E6-4550-EC-06/M6 47 kg



RLE E1-/E3-/E6-4550-EC-07/M7

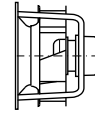
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	4550
ΔL_{WA}	+4 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
4550	3	4	0	-1	-8	-11	-14	-16 dB

Discharge

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
4550	-2	-3	-5	-5	-3	-8	-14	-19 dB

RLE E1-/E3-/E6-4550-EC-07/M7

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...-4550-EC-07/M7	3.20	380...480, 3~	50/60	1950	83	5.0*	IP54/F	182	-20...+40

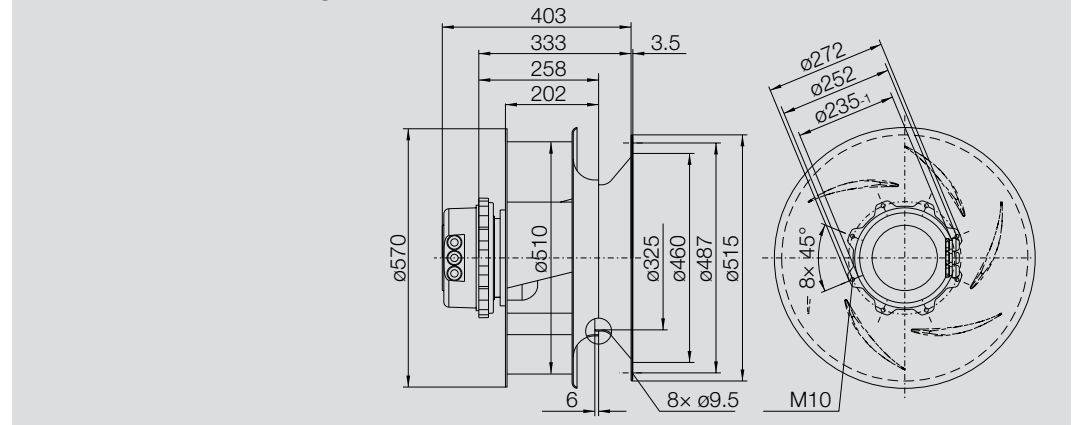
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

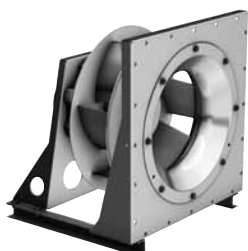
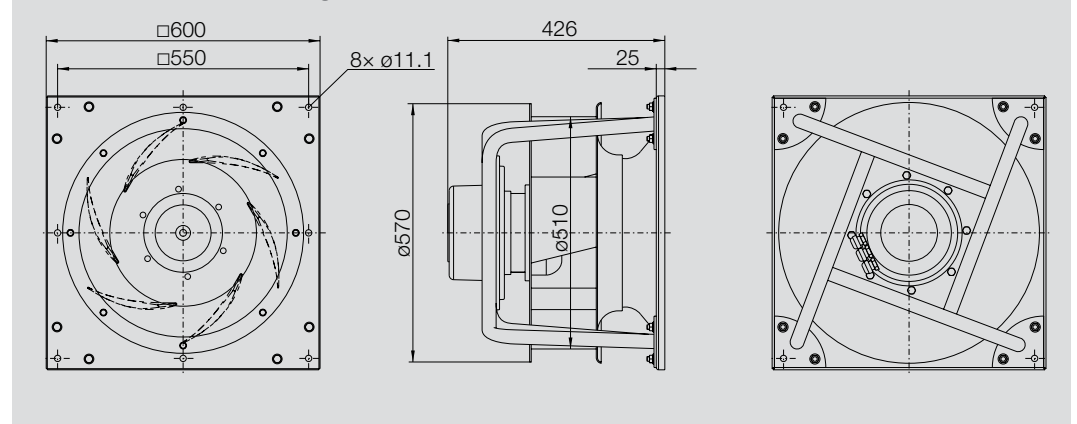
Dimensions in mm, subject to change.



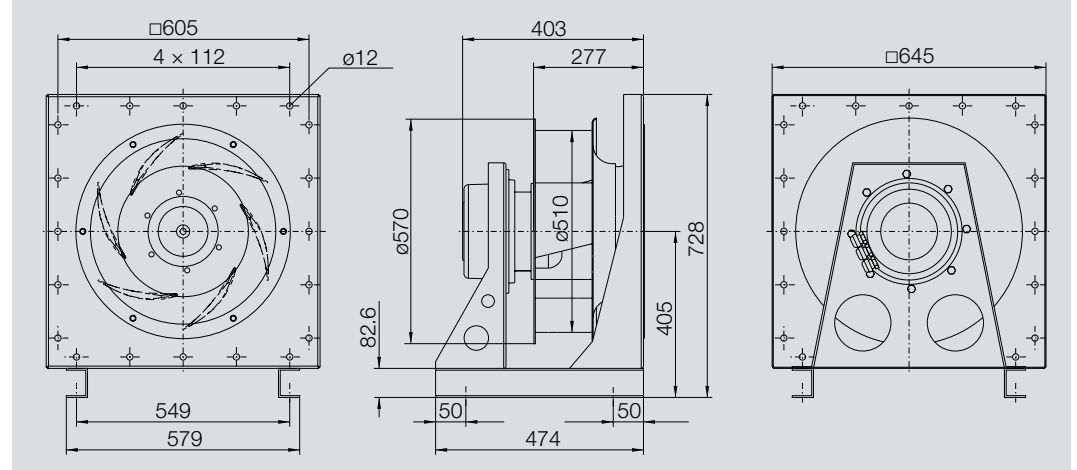
RLE E1-4550-EC-07/M7 36 kg



RLE E3-4550-EC-07/M7 51 kg

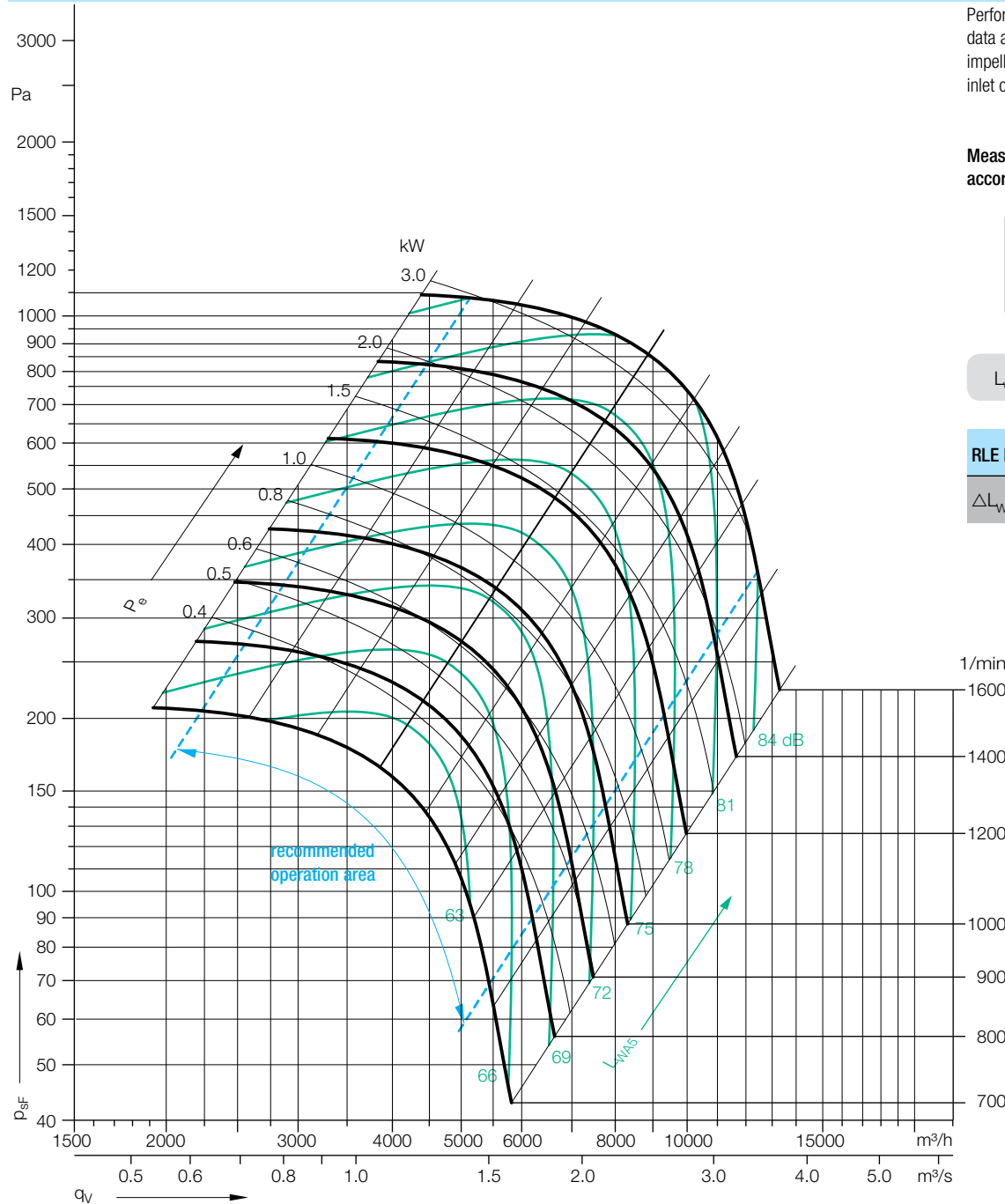


RLE E6-4550-EC-07/M7 51 kg



RLE E1-/E3-/E6-5056-EC-07/M7

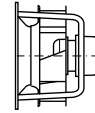
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	5056
ΔL_{WA}	+5 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
5056	3	3	1	-1	-6	-11	-14	-18 dB

Discharge

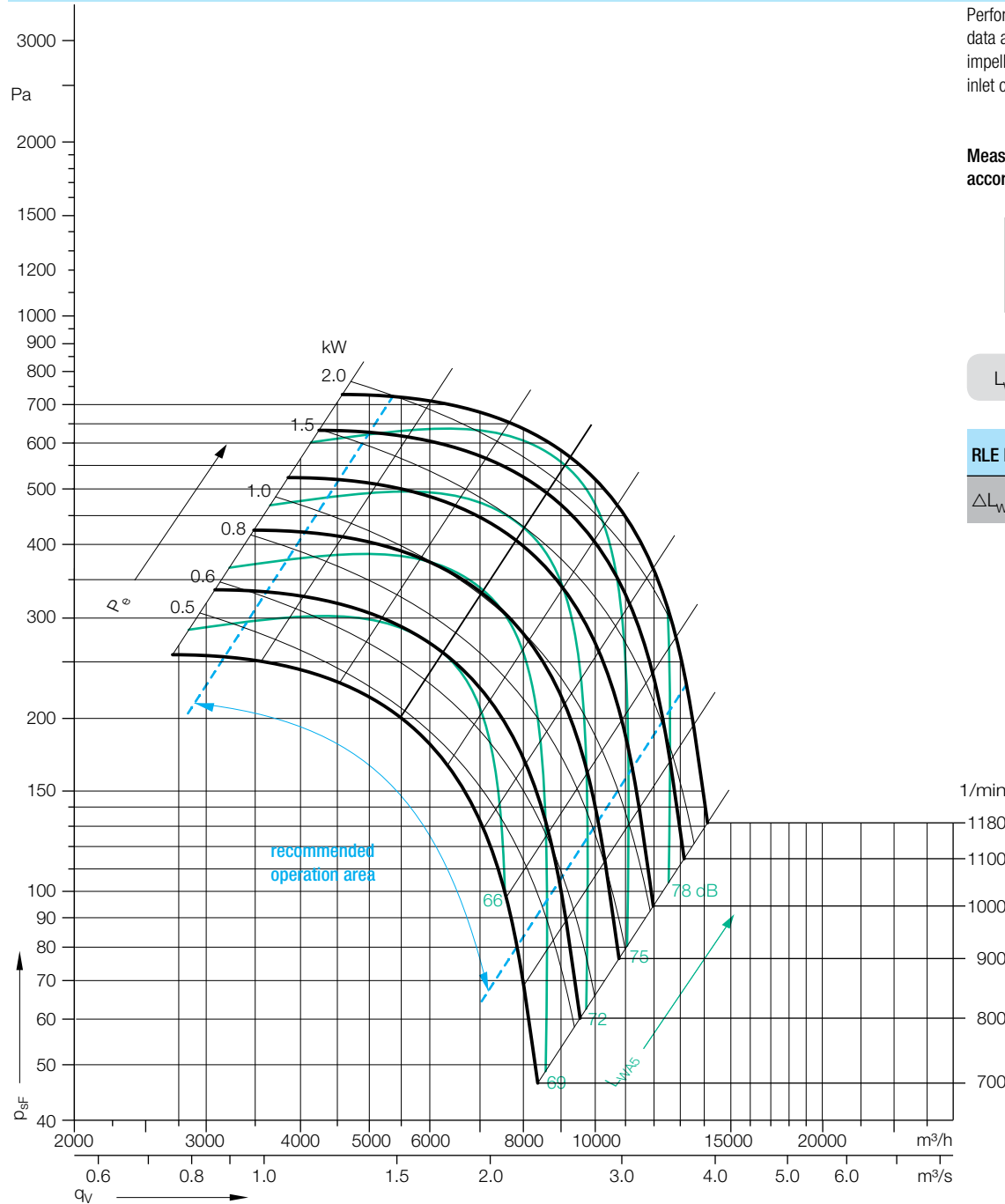
$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
5056	-2	-4	-5	-2	-4	-10	-17	-20 dB

RLE E1-/E3-/E6- 5663-EC-07/M7

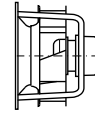
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	5663
ΔL_{WA}	+6 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area ($0.8 \dots 1.3 q_{Vopt}$).

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
5663	2	2	0	-3	-4	-10	-14	-21 dB

Discharge

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area ($0.8 \dots 1.3 q_{Vopt}$).

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
5663	-3	-5	-6	-6	-3	-9	-17	-23 dB

RLE E1-/E3-/E6-5663-EC-07/M7

THE EVOLUTION CONTINUES.
RLE^{EVO}

Technical Data

Fan type	Max. power consumption	Voltage/connection	Frequency	max. speed	L_{WA5} at Q_{Vopt} (N_{max})	Nominal current	Protection/ temp. class	Calibration factor	media temp.
RLE E1-/E3-/E6-	kW	V	Hz	1/min	dB	A		m ² s/h	°C
RLE ...5663-EC-07/M7	2.20	380...480, 3~	50/60	1180	75	3.4*	IP54/F	303	-20...+40

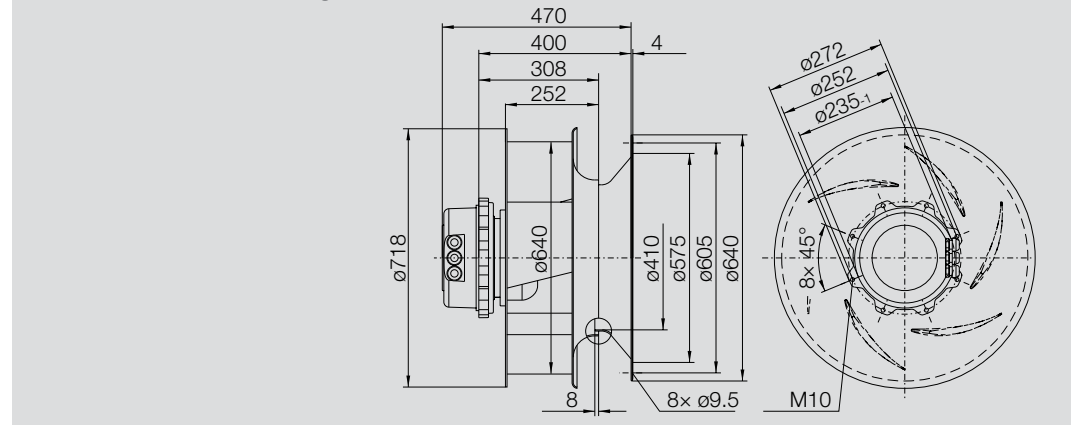
L_{WA6} = A-weighted sound power level at discharge

* at a voltage of 400 V

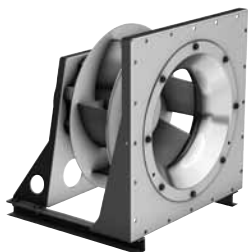
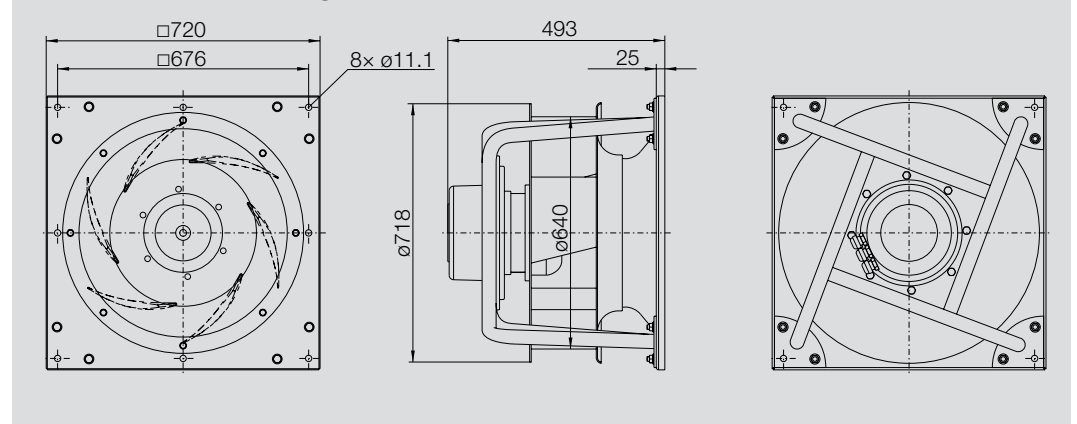
Dimensions in mm, subject to change.



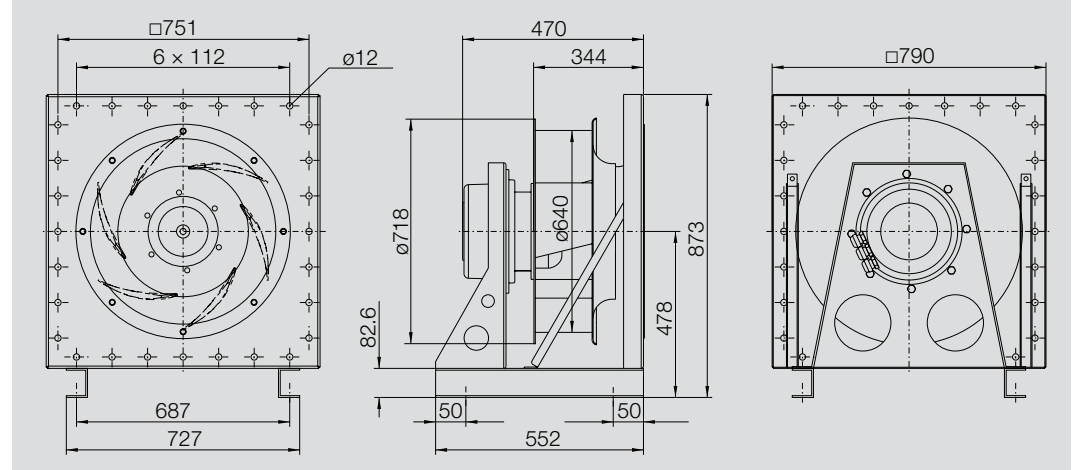
RLE E1-5663-EC-07/M7 47 kg



RLE E3-5663-EC-07/M7 65 kg

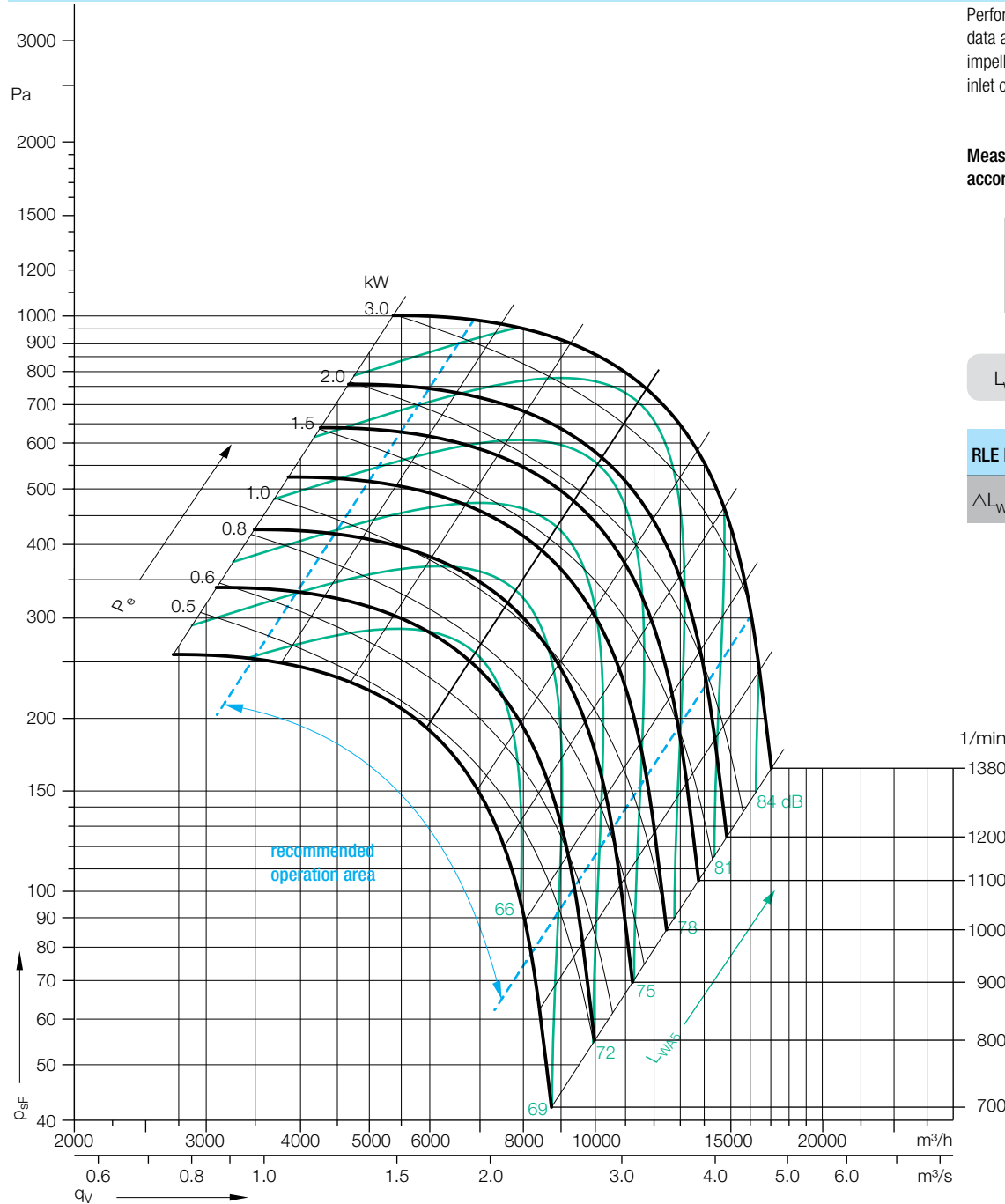


RLE E6-5663-EC-07/M7 67 kg



RLE E1-/E3-/E6-5663-EC-08/M8

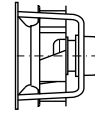
Performance charts



$\rho_1 = 1.20 \text{ kg/m}^3$

Performance curves and sound data are valid only for the motor impeller in connection with our inlet cone!

Measured in installation A according to ISO 5801:



$$L_{WA6} = L_{WA5} + \Delta L_{WA}$$

RLE E_-	5663
ΔL_{WA}	+6 dB

Sounds

The value for the discharge side L_{WA6} can be calculated with the following formula.

Inlet side

$$L_{Wfc5} = L_{WA5} + L_{Wrel5}$$

Relative sound power level for inlet side L_{Wrel5} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
5663	2	2	0	-3	-4	-10	-14	-21 dB

Discharge

$$L_{Wfc6} = L_{WA6} + L_{Wrel6}$$

Relative sound power level for discharge side L_{Wrel6} at octave centre frequencies f_c for the rated area (0.8 ... 1.3 q_{Vopt}).

RLE E_-	63	125	250	500	1000	2000	4000	8000 Hz
5663	-3	-5	-6	-6	-3	-9	-17	-23 dB

RLE^{EVO}

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

RLE Evo	Overall efficiency η_e [%]	Measure-ment category	Efficiency category	achieved efficiency grade at optimum energy efficiency "N"	required efficiency grade acc. to ErP since		Speed control (VSD)	Rated motor power at optimum energy efficiency P_e [kW]	Flow rate at optimum energy efficiency q_v [m ³ /h]	Pressure at optimum energy efficiency p_F [Pa]	Speed at optimum energy efficiency N [1/min]	"specific ratio"
					2013	2015						
2225-EC-02	74.31	A	STATIC	74.3	58	62	integrated	0.42	1596	572	3060	1.006
2528-EC-02	79.56	A	STATIC	79.6	58	62	integrated	0.40	1804	512	2500	1.005
2528-EC-04	71.94	A	STATIC	71.9	58	62	integrated	1.34	2565	1178	3700	1.012
2831-EC-04	73.98	A	STATIC	74.0	58	62	integrated	1.44	3225	1049	3200	1.010
3135-EC-04	74.25	A	STATIC	74.3	58	62	integrated	1.40	3572	924	2600	1.009
3540-EC-04	76.73	A	STATIC	76.7	58	62	integrated	1.16	4062	685	2050	1.007
3540-EC-06	71.37	A	STATIC	71.4	58	62	integrated	3.03	5687	1264	2800	1.013
4045-EC-05	76.30	A	STATIC	76.3	58	62	integrated	1.48	5112	705	1880	1.007
4045-EC-06	70.05	A	STATIC	70.0	58	62	integrated	2.68	5761	1072	2270	1.011
4550-EC-06	75.05	A	STATIC	75.0	58	62	integrated	2.08	6477	784	1700	1.008
4550-EC-07	70.18	A	STATIC	70.2	58	62	integrated	3.12	6931	1050	1950	1.011
5056-EC-07	68.69	A	STATIC	68.7	58	62	integrated	3.31	8817	861	1600	1.009
5663-EC-07	74.65	A	STATIC	74.6	58	62	integrated	2.18	9250	575	1180	1.006
5663-EC-08	73.69	A	STATIC	73.7	58	62	integrated	3.55	11675	754	1380	1.008

RLE E1-/E3-/E6-2528/-5663-EC

THE EVOLUTION
CONTINUES.
RLE^{EVO}

Specification



Plug fan with direct drive RLE Evo

Complete assembly module with highest system efficiency, specifically developed and optimized for use without a spiral casing.

Newly developed high performance impeller with optimized shape and highest efficiency, comprising six backward curved hollow section true aerofoil blades with real turbulence profile and rounded, inclined blade leading edges, from impeller shroud to backplate, for optimal impact over the entire width of the blade.

Co-rotating radial diffuser with optimized exit curving on the cover disc to enhance efficiency.

Impeller made of high tensile sheet steel in an automated manufacturing process, robotic welding, degreased, iron phosphated and coated with a high quality epoxy-polyester mixed powder, fitted to the rotor of the integrated motor. Protection IP54, statically and dynamically balanced in accordance with DIN ISO 1940.

System inlet cone made of galvanized sheet steel for optimal inflow to the impeller. Brushless DC external rotor motor with integrated control unit, stepless speed controlled.

Equipped on inlet side with connection possibility for quadratic supports (RLE E6). Equipped with volume flow measuring device IMV as standard.

Variants (at choice)

- ▶ **RLE E1** – Motor impeller with inlet cone lose, for installation horizontally or vertically
- ▶ **RLE E3** – Motor impeller with support frame and inlet cone as a compact module for installation horizontally or vertically
- ▶ **RLE E6** – Motor impeller with support frame and inlet cone on a base frame as a compact module for installation horizontally

Fan Data

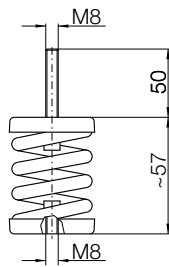
Fan type	RLE		
Volume flow	q_v		m ³ /h
Fan static pressure	p_{sF}		Pa
Air density at inlet	ρ_1		kg/m ³
Media temperature	t		°C
Fan power	P_a		kW
Efficiency	η_{se}		Hz
speed	N		1/min
Frequency	f		Hz
Sound power level (A weighted)	L_{WA}		dB
Weight	m		kg

Fittings / Accessories

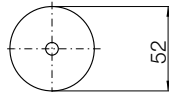
- ▶ Mating flange
- ▶ Inlet connection (flexible) - RLE E6
- ▶ Protection guard for inlet
- ▶ Anti vibration mounts (spring diffusors) - RLE E6
- ▶ Rubber buffers (for vertical installation) - RLE E3
- ▶ Universal control device
- ▶ Differential pressure sensor
- ▶ Speed Regulator Module (Potentiometer)

RLE^{EVO}

Anti Vibration Mounts



Fastening for U-profile



AV mounts are designed to prevent noise and vibrations being transmitted through the base of the fan.

AV mounts should be mounted beneath the fan base frame so the weight and spring deflections are evenly distributed. They should not be mounted symmetrically 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.

Spring diffusers with noise insulation layer and height adjustment, for both vibration and noise insulation at fan speeds above 400 rpm.

Available AV mounts for different fans, see list or proSELECTA II.

The AVM-mounts are supplied with the suitable mounting material for the base frame.

Assignment

RLE Evo	inlet side (2x)	motor side (2x)
RLE G6-2225-EC-02	ZBD SP-7702-A / MSN 2	ZBD SP-7701-A / MSN 1
RLE E6-2528-EC-02	ZBD SP-7702-A / MSN 2	ZBD SP-7701-A / MSN 1
RLE E6-2528-EC-04	ZBD SP-7703-A / MSN 3	ZBD SP-7702-A / MSN 2
RLE E6-2831-EC-04	ZBD SP-7703-A / MSN 3	ZBD SP-7702-A / MSN 2
RLE E6-3135-EC-04	ZBD SP-7704-A / MSN 4	ZBD SP-7702-A / MSN 2
RLE E6-3540-EC-04	ZBD SP-7704-A / MSN 4	ZBD SP-7703-A / MSN 3
RLE E6-3540-EC-06	ZBD SP-7705-A / MSN 5	ZBD SP-7704-A / MSN 4
RLE E6-4045-EC-05	ZBD SP-7704-A / MSN 4	ZBD SP-7704-A / MSN 4
RLE E6-4045-EC-06	ZBD SP-7705-A / MSN 5	ZBD SP-7704-A / MSN 4
RLE E6-4550-EC-06	ZBD SP-7705-A / MSN 5	ZBD SP-7705-A / MSN 5
RLE E6-4550-EC-07	ZBD SP-7705-A / MSN 5	ZBD SP-7705-A / MSN 5
RLE E6-5056-EC-07	ZBD SP-7706-A / MSN 6	ZBD SP-7705-A / MSN 5
RLE E6-5663-EC-07	ZBD SP-7706-A / MSN 6	ZBD SP-7705-A / MSN 5
RLE E6-5663-EC-08	ZBD SP-7705-A / MSN 5	ZBD SP-7707-A / MSN 7

Brushless-DC-Motors



Brushless DC motors are permanent magnet (PM) motors used in the manner of a classical DC motor. They distinguish themselves through highly efficiency and a optimal control and regulation behavior.

The use of required electronics enables the implementation of additional features e.g. pressure regulation, master slave operation.

Speed variation

The stepless speed control of motors with index „0“ is given through a external potentiometer (accessories) or an external 0...10 volt / PWM signal. Motors with index „M“ must be driven via Modbus® RTU protocol.

Electric connection

The power supply as well as all control or signal ports are to be connected directly to the motor or the connection cable.

There are no additional shielded cables needed.

Performance data



The performance curves of the fans are determined at the plenum test rig according to ISO 5801, measured in installation „A“.

The curves show a free discharge pressure rise p_{sf} as a function of the volume flow rate q_v in double logarithmic grid distribution. The resistant curves appear as straight lines.

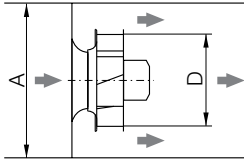
The fan curves are related to a reference density of $\rho_1 = 1.2 \text{ kg/m}^3$ at the fan intake. The pressure and impeller power are directly proportional to the density ρ_1 .

Sounds

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

In the performance maps the A sound power level L_{WA5} is stated as emission parameter for the inlet side.

Correction of design for installation in an enclosure



Installing the fan in a casing may result in a reduced flow rate and pressure increase relative to the information in the performance map which is determined freely discharging in accordance with the prescribed standards.

The pressure loss can be calculated as a function of the size of the casing with the loss coefficient ζ for the installed casing from the following diagram. The values in the diagram apply when the box sections are quadratic and the impeller is laid out symmetrically (inflow and outflow according to the diagram).

If casings with rectangular sections are used the following approximate values can be used for box size A:

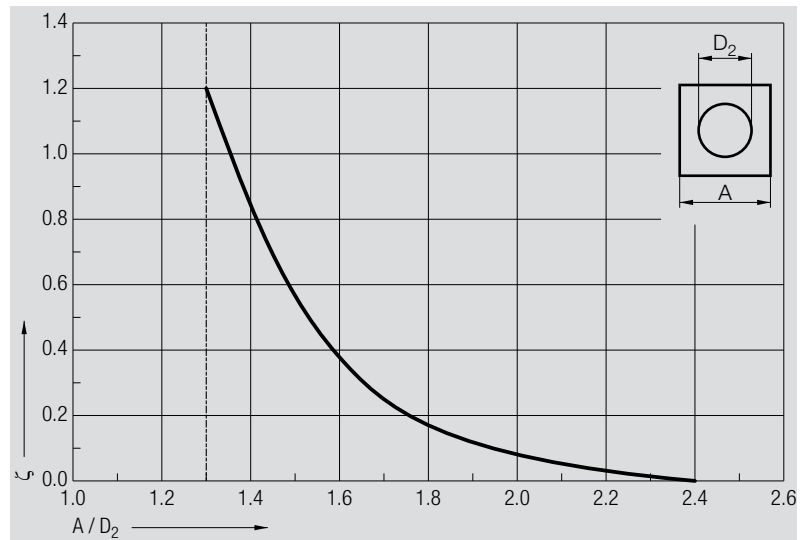
- ζ Loss coefficient for casing installation
- A Inside casing width or length
- D_2 Throat plate diameter

► Max. side length B_{max} / min. side length $B_{min} \leq 1.3$:

$$A = \sqrt{B_{max} \cdot B_{min}}$$

► Max. side length B_{max} / min. side length $B_{min} > 1.3$:

$$A = 1.14 \cdot B_{min}$$



If the impeller is laid out asymmetrically, the loss coefficients are up to 20 % higher. A minimum distance of the impeller to the surrounding wall of $0.15 \cdot D_2$ must be observed.

The pressure loss is calculated with the loss coefficient determined in accordance with the following formula:

$$p_v = 100200 \cdot \zeta \cdot \rho \frac{q_v^2}{D_2^4}$$

- p_v Pressure loss in Pa
- ζ Loss coefficient for casing installation
- ρ Reference density of conveyed air (usually: 1.2 kg/m^3)
- q_v Flow rate in m^3/h
- D_2 Throat plate diameter in mm

The throat plate diameters for the calculation can be taken from the respective dimension diagram of the fan. The pressure loss is added to the desired pressure increase in the operating point and the fan is selected with the corrected value.

