EN

Movement by Perfection

The Royal League in ventilation, control and drive technology

Product documentation

Type
FN091-VDI.7Q.V5P1

Article number
161669

ZIEHL-ABEGG

The Royal League
Die Königsklasse

Product documentation

Type
FN091-VDI.7Q.V5P1

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161669

Table of Contents

1. Recitals

The Product Specifications contained in this document are final, unless otherwise stated by a separate provision in the "ZIEHL-ABEGG deviation list document" with respect to information provided by the customer (cp. separate Chapter: Attachment).

Other regulations between the parties, regardless of time, form or content, are not part of the subject matter of the contract and the agreement on characteristics/of features (Product Specifications) between the parties.

Compliance with the following specifications is mandatory to ensure the functionality and safety of the product. If the following specifications given especially but not limited for operating conditions, transport, storage, mounting, start-up, maintenance and repair are not observed, the product may not operate safely and may cause a hazard to the life and limb of users and third parties.

Deviations from the following requirements may therefore lead both to the loss of the statutory material defect liability rights and to the liability of the buyer for the product that has become unsafe due to the deviation from the specifications.

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2. Product Specification - Technical Data

Article number	161669
Type key	FN091-VDI.7Q.V5P1
Designation	Axial fan with sickle blades
Fan design	for pipe socket
Rated values	3~400V D/Y 50Hz P(1) 5.20/3.10kW 8.8/5.0A ΔI=0% 1210/900/min COSY 0,86 PsF max.350Pa 40°C 3~400V D/Y 50Hz P(1) 4.60/2.80kW 7.8/4.6A ΔI=0% 1260/970/min COSY 0,84 PsF max.150Pa 60°C Hz
Electrical connection	Terminal box K07
Conformity	ErP2026-Status: Non compliant
ErP Data	Measurement category ErP: A Air flow q(v) on Eta opt: 23192 m3/h Pressure increase p(fs) on Eta opt: 292 Pa Input power P(1) on Eta opt: 5000 W Efficiency H(statA): 38.5 % Efficiency grade: N(actual) = 40.5 / N(target) = 40* *ErP 2015
Thermal class	THCL155
Painting motor	Fan unpainted
Colour suspension	RAL 9005 (jet black)
Material rotor	Aluminium
Painting rotor	Rotor unpainted
Material blades/impeller	Aluminium
Painting impeller	Blades unpainted
Connection diagram	wiring diagram: 1360-108XA
Fitting position	H/Vu/Vo
Motor protection	thermal contact
Type of protection	IP54
Impregnation	Moisture and hot climate protection
Quality of bearings	ball bearing with long-time lubrication
Rating plate	1x fixed
Condens. drain holes	Condensation drain holes stator/rotor open
Guard grille type	ring grill
Miscellaneous	All connecting elements in stainless steel.
Miscellaneous	
Terminal box mount	Mounted on Stator
Number of blades	5
Blade setting	P
Operating manual	L-BAL-001
Weight	52.00 kg
Min. operating temperature	-40°C***

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Disclaimer CT20/DOE	This product is currently not tested for compliance with U.S. DOE and CT20 regulations. The Purchase constitutes confirmation that the products intended use is exempt as per 10 CFR Part 431.174 paragraph A(3), or is for use in markets unaffected by these standards, as our customer we recommend you to verify local compliance prior to use.

*** Operation mode: Continuous operation with occasional starts (S1) according to DIN EN 60034-1:2011-02. Occasional starting between -40 °C and -25 °C is permissible. Continuous operation below -25 °C only with special bearings for refrigeration applications on request.

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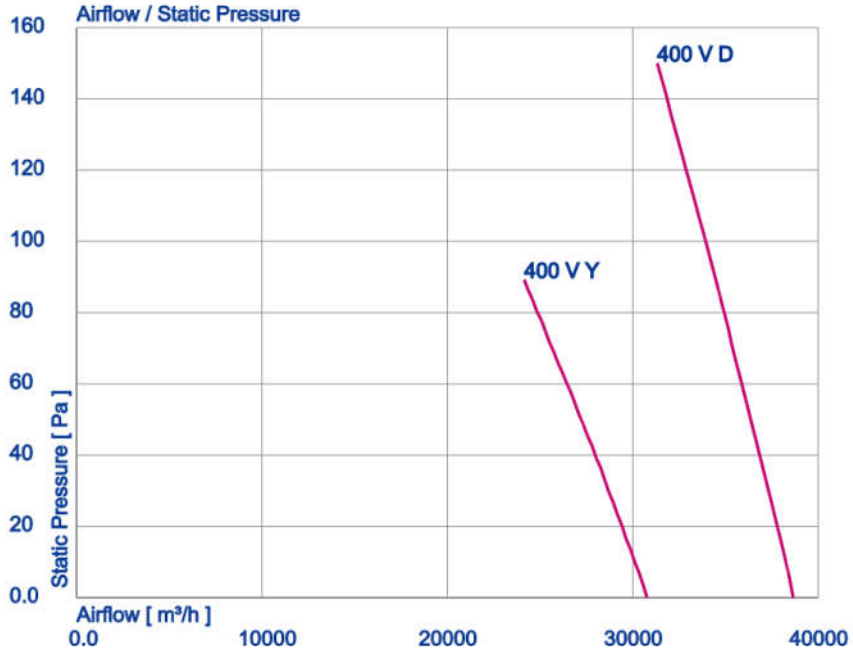
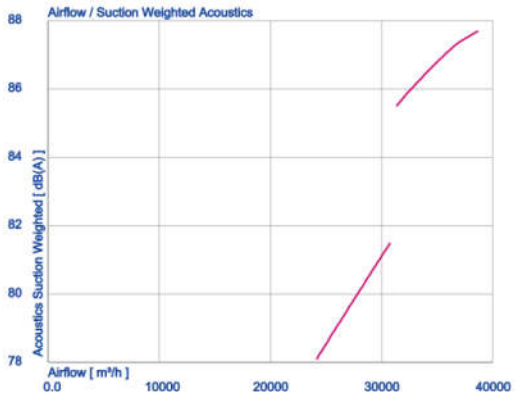
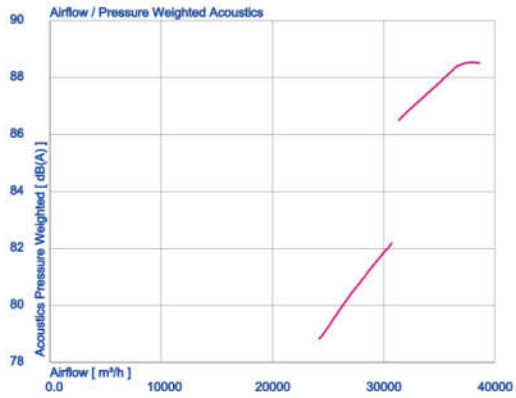
161669

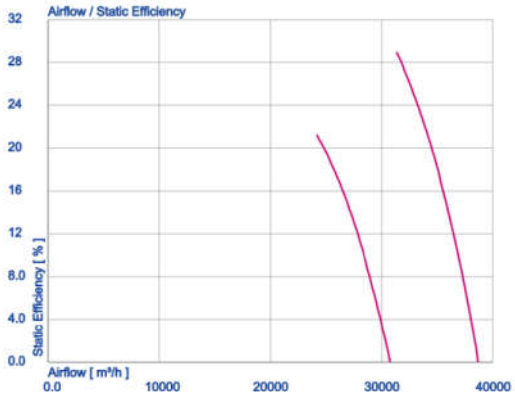
3. Characteristic Curve

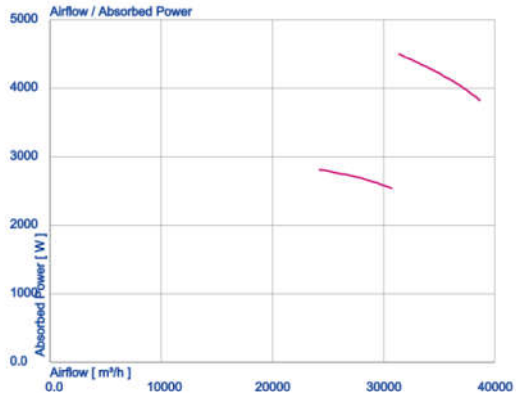
3~ 400V 50Hz `D **Measured in full nozzle without guard grille in air flow direction V in installation type A according to ISO5801**











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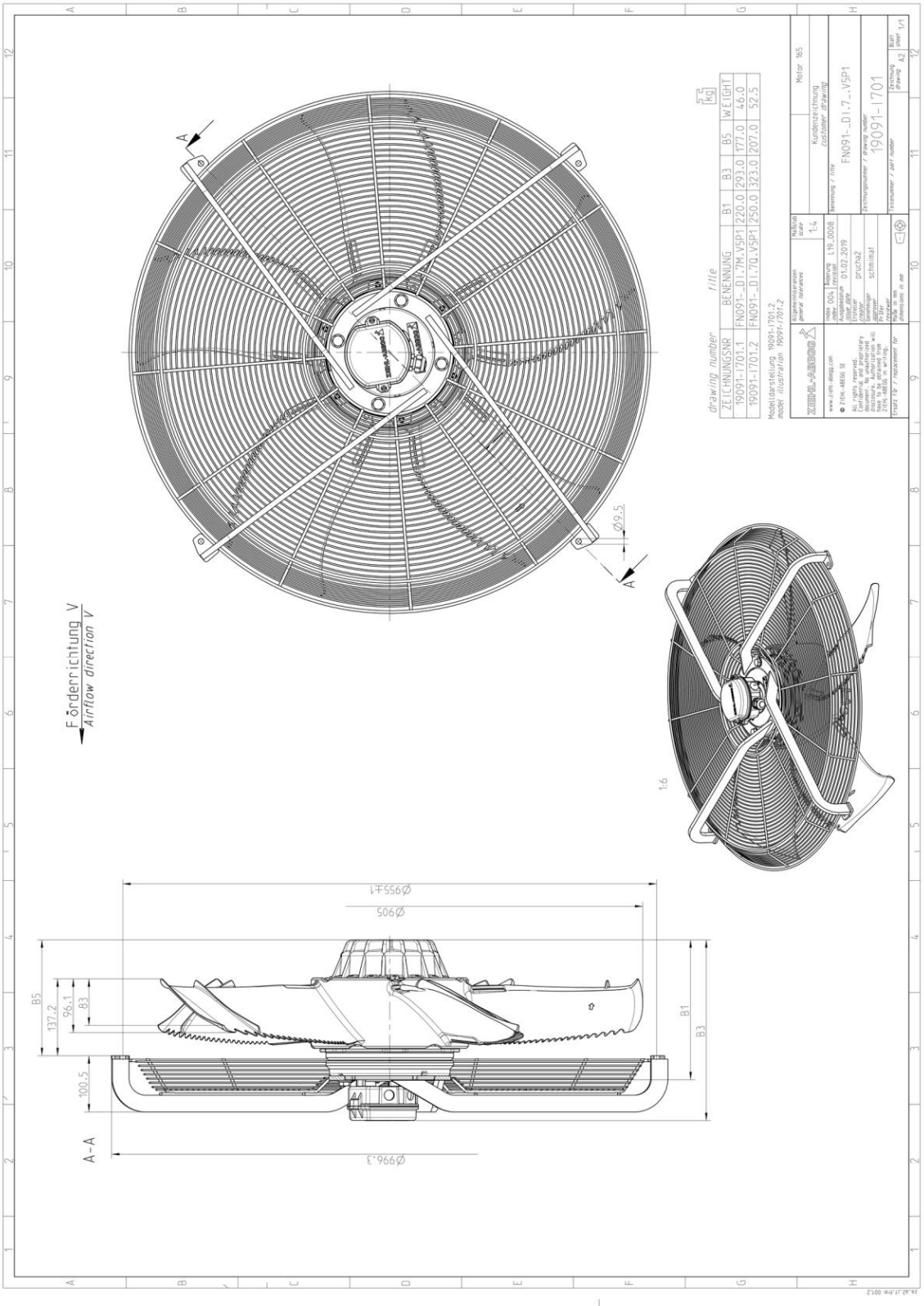
161669

4. Drawing

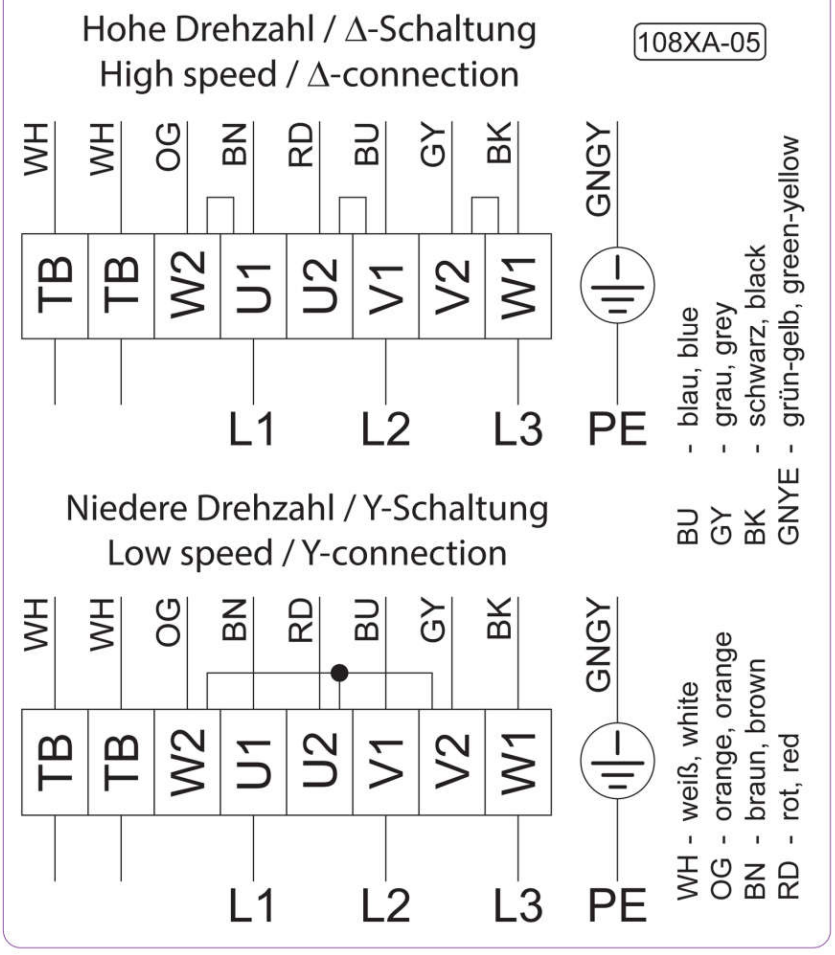


Dimensions in mm
The illustrations shown make no claim to completeness and are for orientation purposes only.

5. Connection Diagram

3~ Motor mit 2 Drehzahlen (Δ/Y-Umschaltung) und Thermostatschalter (falls eingebaut). Ohne Brücke bei Verwendung von Drehzahlumschalter.

3~ motor, 2 speeds (Δ/Y switch over) with thermostatic switch (if built in). Without bridge when using speed change-over switch.



6. Aerodynamics and Acoustics

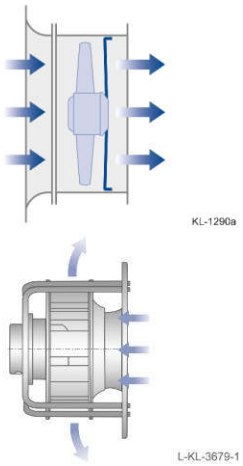
Measurement method

The characteristic map display shows the pressure increase ΔpsF in Pa as a function of the volume flow rate qV in m3/h.

Technical conditions of supply

The specified performance data meet the respective requirements for accuracy
- AN2 for centrifugal impellers without motor
- AN3 for centrifugal fans with standard motors
- AN2 for centrifugal impellers with ECblue motors (except EC055)
- AN3 for centrifugal impellers with ECblue motor EC055 (see type key)
- AN3 for axial fans with ECblue motors
- AN4 for axial fans with AC external rotor motors

in line with ISO 13348 and apply to the rated data and air performance curves at the rated voltage. The continuous line in the characteristic curve represents the optimum reliable operating range for fans.



Installation type A according to ISO 5801

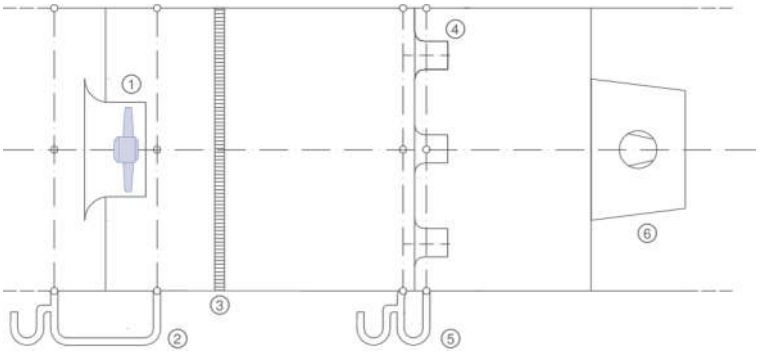
Fan test bench

The fan characteristic curves are determined on a combined ventilation and sound test bench.
The characteristic curves are measured in compliance with DIN EN ISO 5801 and AMCA 210-99. The sound power levels are measured in compliance with DIN EN ISO 3745 and ISO 13347-3 using the enveloping surface measuring method.

Technology Centre (InVent)

Air density

The figure below shows an example of the measuring setup. The fan is installed in the measuring chamber at free inlet and free exhaust (installation type A as per DIN EN ISO 5801 or AMCA 210-99).



① Test fan
② p_{fs}
③ Flow straightener
④ Nozzles
⑤ Δp Differential pressure
⑥ Auxiliary fan

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Noise level data

The sound power levels are determined by using the enveloping surface method in compliance with ISO 13347-3, accuracy class 1 and/or DIN EN ISO 3745.

This is done by measuring the sound pressure level Lp of the individual third-octave bands at 12 points on the enveloping surface (Fig. Ia). The measured sound pressure levels for the third-octave bands are initially used to calculate the sound power level for the third-octave bands and then the suction side sound power level LW5. To do this, the fans are installed with a free inlet (from the measuring chamber) and free exhaust (into the surrounding area). The standard measurements are carried out without the need for additional parts, e.g. guard grille. The measuring equipment used complies with DIN EN 61672.

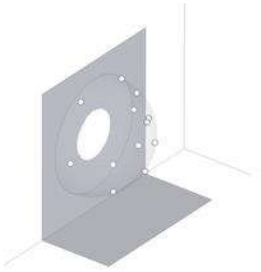

Fig.Ia: Position of microphones

Fig. Ib: Fan test-bench

Because of the different weighting of the third-octave sound power level, the A-evaluation, which is typically carried out, takes into account the subjective nature of human sound perception. The A-tested sound power level is the standard variable used to assess the sound characteristics of technical equipment.

Calculation of pressure side sound power level and total sound power level

For axial fans, the pressure side sound power level is approximately equal to the suction side level. The total sound power level is calculated by adding up the power from the sound power levels of both the suction and the pressure side (see DIN 45 635 Part 1, Appendix F, DIN EN ISO 3745). Thus, it is approximately 3 dB higher than the suction side sound power level specified.
For centrifugal fans, as a rule, the A-weighted pressure side sound power level LW,DS is about 5 dB higher than for the suction side.The overall sound power level LW,ges is therefore about 6.5 dB higher than the suction side sound power level.

Determination of total sound power level during the interaction of several sound sources

The total sound power level of several individual sound sources operating concurrently is calculated by adding the power of the individual levels in compliance with DIN EN ISO 3745. This equation is the basis for the diagrams in Fig. II and III.

To add up several sound sources with the same level, please see diagram (Fig. II) for complete level information; e.g. 6 identical sound sources operating concurrently results in a total level that is approx. 8 dB higher.

The total sound power level of two sound sources with different levels can be seen in diagram Fig. III. For example, two sound sources whose sound power levels differ by 4 dB produce a total sound power level that is around 1.5 dB higher than that of the louder sound source.

Determination of sound pressure level

The A-tested sound pressure level LpA for rooms with average absorption capacity for a distance of 1m from the fan axle is calculated by subtracting 7 dB from the A sound power level LWA. In most cases, this assumption is correct and provides a sufficient level of accuracy. However, the sound characteristics can be hugely influenced by the individual installation situation.

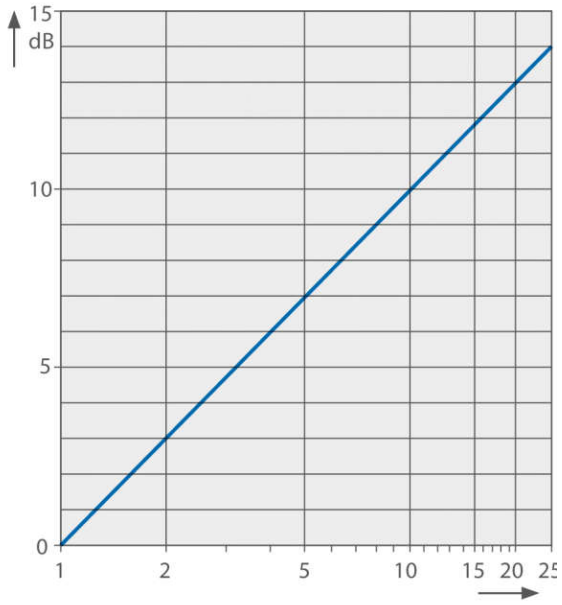

Fig. II: Addition of several sound sources

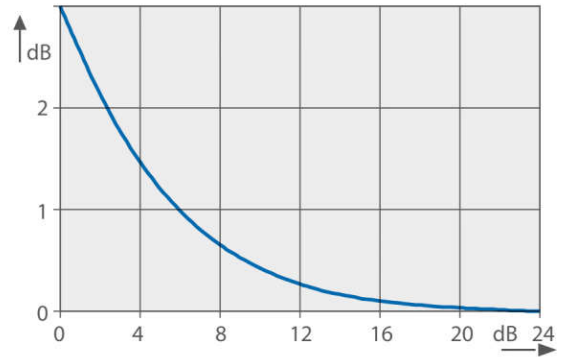

Fig. III: Sound sources of different levels

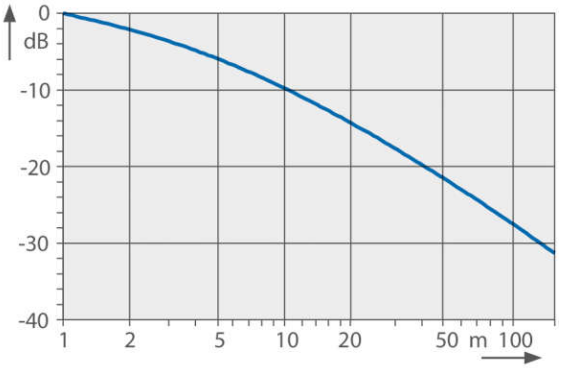

Fig. IV: Reduction of sound pressure level

7. EU-Declaration of Conformity

EU declaration of conformity

- Translation -
(english)

ZA75-GB 2024/43 Index 020

Manufacturer: **ZIEHL-ABEGG SE**
Heinz-Ziehl-Straße
74653 Künzelsau
Germany

The manufacturer is solely responsible for issuance of the declaration of conformity.

The products:

- External rotor motor MK.., MW..
- Axial fan DN.., FA.., FB.., FC.., FE.., FF.., FG.., FH.., FL.., FN.., FP.., FS.., FT.., FV.., SG.., VN.., VR.., ZC.., ZF.., ZG.., ZN..
- Centrifugal fan ER.., GR.., HR.., RA.., RD.., RE.., RF.., RG.., RH.., RK.., RM.., RR.., RZ.., WR..

Motor type:

- Asynchronous internal or external rotor motor
- Asynchronous internal or external rotor motor with integrated frequency inverter
- Electronically commutated internal or external rotor motor
- Electronically commutated internal or external rotor motor with integrated EC controller

The above mentioned products of this declaration fulfil all relevant provisions of the following Directives of the Union:

- EMC Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- ErP Directive 2009/125/EC, in conjunction with Regulation (EU) no. 327/2011

The following harmonized standards have been applied:

- EN 60034-1:2010 + AC:2010
- EN 60204-1:2018
- EN 60529:1991 + A1:2000 + A2:2013 + AC:1993 + AC:2016 + AC:2019
- EN 61000-6-2:2005 + AC:2005
- EN 61000-6-3:2007 + A1:2011 + AC:2012

The following additional standards were applied:

- EN IEC 61000-6-2:2019
- EN IEC 61000-6-3:2021

Compliance with the ErP Directive 2009/125/EC does not refer to external rotor motors MK.., MW..

All ErP-relevant information comprises measurements which are determined using a standardised measurement set-up. More details can be obtained from the manufacturer.

Compliance with the EMC Directive 2014/30/EU refers only to those products when they are connected by mounting / operating instructions. If these products are integrated into a system or supplemented with other components (e.g. sensing controls) and operated, the manufacturer or operator is responsible of the overall system for compliance with the EMC Directive 2014/30/EU.

Künzelsau, 22.10.2024
(Location, date of issue)

ZIEHL-ABEGG SE
Moritz Krämer
Director Product Development
Ventilation Technology
(name, function)

ppa.

(signature)

ZIEHL-ABEGG SE
Jürgen Albig
Global President
Product Unit Ventilation
(name, function)

ppa.

(signature)

ZIEHL-ABEGG

Article number
161669

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EC Declaration of Incorporation

- Translation -
(english)

ZA87-GB 2024/43 Index 014

as defined by the EC Machinery Directive 2006/42/EC, Annex II B

The design of the partly completed machine:

- Axial fan DN.., FA.., FB.., FC.., FE.., FF.., FG.., FH.., FL.., FN.., FP.., FS.., FT.., FV.., SG.., VN.., VR.., ZC.., ZF.., ZG.., ZN..
- Centrifugal fan ER.., GR.., HR.., RA.., RD.., RE.., RF.., RG.., RH.., RK.., RM.., RR.., RZ.., WR..

Motor type:

- Asynchronous internal or external rotor motor
- Asynchronous internal or external rotor motor with integrated frequency inverter
- Electronically commutated internal or external rotor motor
- Electronically commutated internal or external rotor motor with integrated EC controller

Complies with the requirements in Appendix I, Articles 1.1.2, 1.1.5, 1.4.1, 1.5.1 in EC Machinery Directive 2006/42/EC.

The manufacturer is **ZIEHL-ABEGG SE**
Heinz-Ziehl-Straße
D-74653 Künzelsau

The following harmonized standards have been applied:

EN 60204-1:2018	Safety of machinery – Electrical equipment of machines – Part 1: General requirements
EN ISO 12100:2010	Safety of machinery – General principles for design – Risk assessment and risk reduction
EN ISO 13857:2019	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs
Note:	Compliance with EN ISO 13857:2019 relates only to the installed contact protection if it is part of the scope of delivery.

The special technical documents in accordance with Appendix VII B have been created and are available in full.

The following persons are authorized to compile the technical documents, address see above.

Upon reasonable request, the special documents shall be transmitted to the public authority. The transfer can be made electronically, on data carriers or on paper. All property rights remain with the aforementioned manufacturer.

Start-up of this incomplete machine is prohibited until it is ensured that the machine in which it has been installed complies with the provisions of the EC Machinery Directive.

Künzelsau, 22.10.2024
(Location, date of issue)

ZIEHL-ABEGG SE
Moritz Krämer
Director Product Development
Ventilation Technology
(name, function)

i.V. M. Krämer

(signature)

ZIEHL-ABEGG SE
Jürgen Albig
Global President
Product Unit Ventilation
(name, function)

ppa. J. Albig

(signature)

ZIEHL-ABEGG

8. UKCA Declaration of Incorporation

UK Declaration of Conformity

- Original -
(english)

ZA75_UK-GB
2024/43 Index 005

Manufacturer: **ZIEHL-ABEGG SE**
Heinz-Ziehl-Straße
74653 Künzelsau
Germany

The manufacturer is solely responsible for issuance of the declaration of conformity.

The products:

- External rotor motor MK.., MW..
- Axial fan DN.., FA.., FB.., FC.., FE.., FF.., FG.., FH.., FL.., FN.., FP.., FS.., FT.., FV.., SG.., VN.., VR.., ZC.., ZF.., ZG.., ZN..
- Centrifugal fan ER.., GR.., HR.., RA.., RD.., RE.., RF.., RG.., RH.., RK.., RM.., RR.., RZ.., WR..

The motor type:

- Asynchronous internal or external rotor motor
- Asynchronous internal or external rotor motor with integrated frequency inverter
- Electronically commutated internal or external rotor motor
- Electronically commutated internal or external rotor motor with integrated EC controller

These products comply with the following UK directives:

- Electromagnetic Compatibility Regulations 2016 No. 1091
- Electrical Equipment (Safety) Regulations 2016 No. 1101
- The Ecodesign for Energy-Related Products and Energy Information (Amendment) (EU Exit) Regulations 2019 No. 539

The following designated standards have been used:

- EN 60034-1:2010 + AC:2010
- EN 60204-1:2018
- EN 60529:1991 + A1:2000 + A2:2013 + AC:1993 + AC:2016 + AC:2019
- EN 61000-6-2:2005 + AC:2005
- EN 61000-6-3:2007 + A1:2011 + AC:2012

The following additional standards were applied:

- EN IEC 61000-6-2:2019
- EN IEC 61000-6-3:2021

Compliance with the Ecodesign for Energy-Related Products and Energy Information (Amendment) (EU Exit) Regulations 2019 does not refer to external rotor motors MK.., MW..

All ErP-relevant information comprises measurements which are determined using a standardised measurement set-up. More details can be obtained from the manufacturer.

Compliance with the Electromagnetic Compatibility Regulations 2016 refers only to those products when they are connected by mounting / operating instructions. If these products are integrated into a system or supplemented with other components (e.g. sensing controls) and operated, the manufacturer or operator is responsible of the overall system for compliance with the Electromagnetic Compatibility Regulations 2016.

Künzelsau, 22.10.2024
(location, date of issue)

ZIEHL-ABEGG SE
Moritz Krämer
Director Product Development
Ventilation Technology
(name, function)

ppa.

(signature)

ZIEHL-ABEGG SE
Jürgen Albig
Global President
Product Unit Ventilation
(name, function)

ppa.

(signature)

ZIEHL-ABEGG

Article number
161669

The Royal League
Die Königsklasse

UKCA Declaration of Incorporation

- Original -
(english)

ZA87_UK-GB
2022/17 Index 002

as defined by the Supply of Machinery (Safety) Regulations 2008 No. 1597, PART 2 / Annex II B

The design of the incomplete machine:

- Axial fan DN.., FA.., FB.., FC.., FE.., FF.., FG.., FH.., FL.., FN.., FP.., FS.., FT.., FV.., VN.., VR.., ZC.., ZF.., ZG.., ZN..
- Centrifugal fan ER.., GR.., HR.., RA.., RD.., RE.., RF.., RG.., RH.., RK.., RM.., RR.., RZ.., WR..
- Cross-flow fan QD.., QG.., QK.., QR.., QT..,

The motor type:

- Asynchronous internal or external rotor motor (also with integrated frequency inverter)
- Electronically commutated internal or external rotor motor (also with integrated EC controller)

complies with the requirements in Annex I, Articles 1.1.2, 1.1.5, 1.4.1, 1.5.1 in Supply of Machinery (Safety) Regulations 2008 No. 1597.

The manufacturer is **ZIEHL-ABEGG SE**
Heinz-Ziehl-Straße
D-74653 Künzelsau

The following harmonised standards have been used:

EN 60204-1:2018	Safety of machinery; electrical equipment of machines; Part 1: General requirements
EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 13857:2019	Safety of machinery; safety distances to prevent danger zones being reached by the upper limbs
Note:	The maintenance of the EN ISO 13857:2019 relates only to the installed accidental contact protection, provided that it is part of the scope of delivery.

The specific technical documentation in accordance with Annex VII B has been written and is available in its entirety.

The following persons are authorized to compile the technical documents, address see above.

The specific documentation will be transmitted to the official authorities on justified request. The transmission can be electronic, on data carriers or on paper. All industrial property rights remain with the above-mentioned manufacturer.

It is prohibited to commission this incomplete machine until it has been secured that the machine into which it was incorporated complies with the stipulations of the Machinery (Safety) Regulations.

Künzelsau, 27.04.2022
(location, date of issue)

ZIEHL-ABEGG SE
Tobias Gauss
Deputy Head of Technics Ventilation Technology
(name, function)

i.V.

(signature)

ZIEHL-ABEGG SE
Moritz Krämer
Head of Electrical Systems
(name, function)

i.V.

(signature)

ZIEHL-ABEGG