

Axial fans



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Compliance with the following instructions is mandatory to ensure the functionality and safety of the product. If the following instructions given especially but not limited for general safety, transport, storage, mounting, operating conditions, start-up, maintenance, repair, cleaning and disposal / recycling 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.



Operational area

ZIEHL-ABEGG axial fans of the series **FA, FB, FC, FE, FG, FL, FN, FH, FS, VR, VN, ZC, ZF, ZG, ZN (type designation see rating plate) with integrated external rotor asynchronous motor** are not ready-to-use products, but designed as components for air-conditioning, air supply and air extraction. A special motor design makes the speed control by voltage reduction possible. By operation with frequency inverters see the notes in the section Operating Conditions.



The fans may not be operated until they are installed in line with their intended use. The supplied and certified guard grille of ZIEHL-ABEGG SE fans is designed in accordance with DIN EN ISO 13857 Table 4 (from the age of 14 up). In the event of deviations, further structural protective measures must be taken for safe operation.



Safety instructions

- The fans are intended for the transportation of air of mixtures that are similar to air. Usage in potentially explosive areas for the transportation of gas, mist, vapours or their mixtures is not permissible. The transportation of solid materials or similar materials in a transport media is also not permissible.
- Mounting, electrical connection and commissioning must only be carried out by trained personnel (definition in DIN EN 50 110 or IEC 364).
- **Electrical hazard!** The rotor is not protected against indirect contact neither by supplementary or reinforced insulation nor by connection to safety-earth in accordance with IEC 60204-1, therefore the system constructor must provide protection by enclosure in accordance with IEC 61140 before the motor is connected to a power source. This protection can be achieved for example by a guard grille.
- The fan is only to be operated within the ranges specified on the type plate! Use the fan only in the authorised

轴流风机



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遵守下列规范也有助于确保产品的安全。尤其是在一般安全、运输、储存、安装、运行条件、调试、维修、维护、清洁和处理/回收等方面，若未注意到所注明的提示，则可能导致产品无法安全运行，并可能会危及用户和第三方的生命安全。

因此，背离以下规范可能导致货物缺欠法定责任权利的丧失，以及由于背离规范而造成的不安全产品的买方赔偿责任。



应用

施乐百 (ZIEHL-ABEGG) **FA, FB, FC, FE, FG, FL, FN, FH, FS, VR, VN, ZC, ZF, ZG, ZN (型号详见型号铭牌)** 系列轴流风机是整体式外转子异步电机，非最终产品，而是专为空调等通风排风设备设计的部件。特殊的马达设计使得可以运用调节电压来控制马达转速。用变频方式调速请参看“运行条件”部分。



只有在风机按照其相应规定安装后方可对风机进行操作。附带的已获批准的 ZIEHL-ABEGG SE 风机接触防护装置依照 DIN EN ISO 13857 表 4 (14 岁以上) 设计。当存在偏差时，必须采取进一步的结构性防护措施以确保安全运行。



安全提示

- 风机只能用于输送空气或类似空气的混和气体，不能用于危险区域或易燃，易爆气体，雾气及其混合物的通风，也不能用于有固体成分的介质的流通。
- 安装、接线、调试必须由专业人员完成。(如 DIN EN 50110 或 IEC 364 所述)
- **电击危险!** 对转子既没有设置绝缘保护，也没有遵照 DIN EN 60204-1 采取接地保护措施。因此，在电机通电前，设备安装方必须遵照 DIN EN 61140 设立遮挡以进行防护。可以采用防护栅栏作为防护方式。
- 马达只能在铭牌上指定的范围内运转，只能用于定单中指定的介质流通，功能及授权的方式运行。

- fashion and only for the tasks and flow media specified in the order!
- ZIEHL-ABEGG fans are not designated for use by persons (including children) of reduced physical, sensory and/or mental abilities.
 - Fans are not designed for walking on even with an additive diffusor attachment (retrofit kit)! Do not climb onto fans without suitable aids.
 - The temperature monitors (TB) or PTC built into the winding serve as the motor protection and must be connected!
 - In models using PTC's, comply with the permissible test voltage max. 2.5V!
 - For motors without temperature monitors a motor protection switch obligatory must be used!
 - The EMC guideline is to be observed in connection with our control units. If the fans are completed with components of other manufacturers, the manufacturer or operator of the entire plant is responsible for keeping to the EMC guideline 2014/30/EU .
 - Pay attention to the notes which concerning maintenance and service.
 - These assembly instructions are part of the product and, as such, are to be kept accessible at all times.

Note on the ErP directive

ZIEHL-ABEGG SE wishes to point out that, based on the directive (EU) no. 327/2011 of the Commission of 30th of March 2011 for enforcing directive 2009/125/EC (hereinafter referred to as ErP directive), the operational area of certain fans within the EU is bound by certain prerequisites.

The fan may only be used within the EU when it meets the requirements of the ErP directive.

If the said fan does not have a CE mark (cf. especially the rating plate), use of this product within the EU is not admissible.

All ErP-relevant information comprises measurements which are determined using a standardised measurement set-up. More details can be obtained from the manufacturer. Further information about the ErP directive (Energy related Products-Directive) can be found on www.ziehl-abegg.de search key: "ErP".



Transport, storage

- **Wear safety shoes and gloves for handling!**
- Observe the weight data on the type code
- Do not transport the fan by the connecting cable!
- Avoid impacts and collisions, especially on fans set-up on devices.
- Watch out for possible damage to the packaging or fan.
- Store the fan in the original packaging in a dry area protected from the weather or protect it from dirt and weather until final installation.
- Avoid exposure to extreme heat and cold.
- Avoid excessive storage periods (we recommend a one year max.) and inspect the motor bearings for proper operation prior to installation.



Mounting

Do not loosen the impeller, fan or balancing weight. Do not allow the installation and the electrical connection to be made by qualified personnel.

Wear safety shoes and gloves for handling!

- The system manufacturer or the machine builder is responsible that the inherent installation and security information are harmonized with the valid standard and guidelines (DIN EN ISO 12100 / 13857).
 - **Fans design A**, for attachment to fixed motor flange: use property class 8.8 screws and provide with suitable screw locking. Permissible tightening torque: M4 = 2.1 Nm; M6 = 9.5 Nm; M10 = 40 Nm; M12 = 70 Nm; related to friction coefficient according to DIN EN ISO 4014 $\mu_{tot} = 0.12$

- 体力、感觉能力及心智能力降低的人员（包括儿童在内）不得使用施乐百风机。
- 即使带附加扩散器安装件（改装套件）的风机也不适合通行。不得在没有适当辅助工具的情况下进行攀爬。
- 在线圈中安装温度限制器（TB）和电机热敏电阻保护装置并且必须将两者连接在一起！
- 热电偶的最大测试电压为2.5V！
- 不带过热保护器的马达必须使用马达防护开关！
- 带有本公司控制器的风机遵循EMC标准。风机与其他部件整合后也应遵循EMC标准2014/30/EU。
- 注意与维护和服务相关的说明。
- 装配说明书是产品的组成部分，放到触手可及的地方妥善保存。

关于遵守ErP指令的说明

施乐百公司特此声明，依据2011年3月30日欧盟委员会关于实施2009/125/EC指令（以下称为ErP指令）第327/201号条例，公司有义务保证使其在欧盟内销售的风扇符合相关的规范。

只有满足针对风扇的ErP条例所列要求，才能在欧盟内使用。如果风扇并未贴有CE标记（参见型号铭牌），则该产品不得在欧盟内使用。

所有与耗能相关产品指令（ErP）相关的数据，均指在标准化测量装置上进行测量所获得的数据。有关详细信息请向制造商咨询。

关于ErP指令（耗能产品指令）的详细信息，则请登录www.ziehl-abegg.de 检索词：“ErP”。



储运

- **在搬运时请穿戴安全鞋和安全手套！**
- 请注意铭牌上的重量说明。
- 禁止利用连接的电缆搬运风机。
- 避免击打和碰撞，特别风机安装到设备后。
- 注意避免任何破坏包装或风机的行为。
- 将原包装的风机存储在干燥、耐候的环境中，或在最终安装前注意防尘、防候。
- 避免过热或过冷环境。
- 避免过期存放（建议最多一年），安装前检验风机的轴承运转状况。



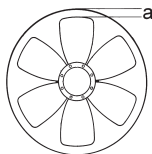
安装


不要松开叶轮、风扇或平衡重量。不允许由合格人员进行安装和电气连接。

在搬运时请穿戴安全鞋和安全手套！

- 系统或设备制造商负责设备相关的安装和安全注意事项与现有标准相一致 (DIN EN ISO 12100 / DIN EN 13857)。
 - **A型风机** 使用强度等级为8.8的螺栓安装固定马达定子法兰，并装配相应的防松装置。允许扭矩：M4 = 2.1 Nm；M6 = 9.5 Nm；M10 = 40 Nm；M12 = 70 Nm；根据DIN EN ISO 4014标准的规定，螺栓摩擦系数 $\mu_{ges} = 0.12$

- Motor frame size **068**: comply with stated length of thread engagement
- **Fans design Q with plastic wall plate**: Use U-plates DIN 125 to secure. Starting torques allowed: M8 = 10 Nm; M10 = 21 Nm
- **ZAplus fans Type ZC, ZF, ZG, ZN**: When mounting ZAplus, ensure plastic-compliant connectors. If flat washers as per DIN EN ISO 7089 or DIN125 are used for fastening, a permissible torque for Strength class 8.8 and a frictional value $\mu_{tot}=0.12$ of M8 = 12 Nm / M10 = 24 Nm / M12 = 40 Nm is recommended. Since the concrete bolt or screw varies by customer unit, these recommendations must be checked for each respective situation. Tighten the grate connector with 6Nm torque. Secure the cable covering against loss after connecting the motor by securing with 2 cable ties. For a version with a square rear wall (design Q), removal of this square plastic plate is prohibited.
- The following applies to all fan designs:
 - Avoid structural damage or stress with installation. Make sure the surface is flat and even.
 - Ensure that the clearance (gap) "a" see fig. between the fan impeller and the stationary housing section is constant. Distortion due to uneven surface may lead to fan failure.



- Protective measures must be taken against falling parts when mounting with a hanging rotor.
- In the case of a vertical motor axis, the respective lower condensation drain hole must be open (does not apply to protection class IP55 fans).
- Motor frame size **068**: The condensation drain-holes are attached dependent on the installation position or application. Please supply information about this in the product-specific ordering texts. Make sure the condensation drain-holes are not blocked!
- Connect fan only to electrical circuits that can be disconnected with an all-pole isolating switch.
- Electrical connection corresponding to connection diagram a) in terminal box b) by cable design connection diagram on cable or on wall ring.
-  **Do not use metal compression-gland fittings with plastic terminal boxes. - Danger of an electric shock if connection is not made correctly!**
- Use a dummy plug seal for the compression-gland fitting as well.
- When opening cable glands on the fan/motor, check the condition of the threaded connections and seals. Always replace defective or brittle threaded connections and seals.
- Only use lines which can guarantee a permanent seal around the cable glands (pressure-resistant, dimensionally-stable, round-centred jacket; e.g. by means of gusset filling)!
- Depending on the type of cable gland, attach a water drain sleeve or use a sealing compound.
- Screw on plastic terminal box covers should be sealed with sealant.
- Starting torque for screw on covers, Plastic version 1.3 Nm, Metal version 2.6 Nm
- Secure fan connection cable with cable fasteners or cable clips.
- Depending on the model the motors
 - can be equipped with PTC's, internally connected thermal contacts, lead-out thermal contacts or without thermal protection.
- Connect them as below:
 - PTC on PTC triggering device.

- 马达尺寸 **068** 注意注明的螺栓最大拧入深度。
- **带有塑料壁架板的Q型风机**：使用符合DIN 125标准的形板固定。允许扭矩：M8 = 10 Nm；M10 = 21 Nm
- **ZAplus 通风机型 ZC, ZF, ZG, ZN**：在安装ZAplus风机时应该注意遵守针对塑料材质螺栓的固定要求。如果在固定时使用符合DIN EN ISO 7089或DIN 125所列要求的平垫片，则会推荐采用强度等级为8.8时的上紧力矩以及摩擦系数 = $0.12 \mu_{ges}/M8 = 12 \text{ Nm} / M10 = 24 \text{ Nm} / M12 = 40 \text{ Nm}$ 。

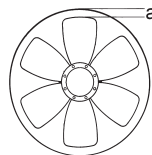
由于为客户提供的产品各不相同，所以螺栓结合也不同。


必须以6Nm的扭矩拧紧栅栏所用的螺栓。因此必须对推荐的各种状况进行核查。


电机接线完毕后，应以2个电缆扎带进行固定以防丢失。

如果是正方形背板（Q结构型式），则不得拆卸正方形塑料板。

- 以下要求适用于所有轴流风机：
 - 请勿在安装时施加拉紧力，安装面必需保持水平。
 - 为确保扇叶与壁架板之间的间隙如图示 "a" 均匀而稳定。支撑表面不平引起的变形会导致叶轮磨损，进而造成风机失灵。




- 在用悬挂的转子安装时，必须采取防护措施防止部件坠落。
- 马达轴垂直安装时，相应下部的冷凝水排水孔必须打开。（不针对防护等级为IP55的风机）
- 马达尺寸 **068**：冷凝水排水孔的位置取决于风机安装位置以及用途。相关信息参阅产品相关的订货信息。请注意不要关闭冷凝水排水孔！
- 设备只能连接到通过全极分离开关可切断的电路。
- 接线应与接线图所示完全一致。接线图附在：a)接线盒内。b)没有接线盒的(电缆直接引出的)，接线图附在电缆或底板上。
-  **切勿使用金属密封塞密封塑料接线盒，接线不当会引起电击！**
- 使用绝缘封塞密封接线盒。
- 打开在风扇/电机上的电缆螺旋接头，检查接头和垫圈状况。如有损坏或破裂，应该立即予以更换。
- 必须确保所使用的电缆在电缆接头中具有长久的密封性（压力下形状稳定、中心为圆形的护套；例如通过电缆填料来实现）！
- 根据电缆导入形式使用排水弯管或密封胶。
- 塑料接线盒的盖板螺钉应附加使用密封胶密封。
- 端子盒盖固定螺钉的扭矩为：塑料端子盒1.3Nm，金属端子盒2.6Nm
- 采用电缆束或电缆卡箍固定风机连接线。
- 根据安装规格的不同，
 - 可以将马达装配PTC电阻器、内置温控开关、外接温控开关或不装配温度防护装置。
- 该部件根据以下方式连接：
 - 将PTC电阻器连接在PTC触发装置。

-  Internally connected thermocontact: no external connection feasible or necessary. **Caution:** Thermost switches switch after triggering by excess temperature and closed independently after cooling off. The fan can start up during this time
- Lead-out temperature monitors must be integrated in the control circuit in such a way that, if a fault occurs, **the motor cannot switch on again automatically** after it has cooled down. The protection of several motors using one protection device is possible by connecting the temperature monitors of the individual motors in series. It must be remembered that if a temperature fault occurs at one motor, **all** motors will then be switched off. In practice, motors are therefore assembled in groups so that **emergency operation** with reduced performance is still possible if a motor fails.
- Without thermal protection: Use a motor protection switch!
- When in fan motors for 1~ 230V +/-10% the mains voltage is permanently over 240 V, in extreme cases the temperature monitor can trigger. In such cases a capacitor-type with the next smaller capacity should be used instead of the stated capacity."



Operating conditions

- Do not operate fans in an explosive atmosphere.
- Duty type of motor/fan
 - 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.
- Permissible minimal and maximal ambient temperature for operation
 - Please refer to the technical documentation of the product for the minimum and maximum ambient temperature valid for the respective fan. Operation below -25 °C as well as partial load operation for refrigeration applications is only possible with special bearings for refrigeration applications on request. If special bearings for refrigeration applications are installed in the fan, please observe the permissible maximum temperatures in the technical documentation of the product.
- Any use below -10 °C is dependent on not being subjected to unusual, sudden or mechanical loads or stresses on the material (see minimal permissible ambient temperature).
- ZIEHL-ABEGG Axial fans are suitable for operation with frequency inverters when the following points are complied with:
 - Between the inverter and the motor, sinusoidal filters should be incorporated which are **effective for all phases** (sinusoidal output voltage, phase against phase, phase against protective conductor) as offered by manufacturers. Please ask for our technical information L-TI-0510.
 - **du/dt filters (also called motor or suppression filters) cannot be used in place of sinusoidal filters.**
 - When using sinusoidal filters, screened motor leads, metal terminal boxes and a second earth connection to the motor can, if necessary, be omitted. Check-back by the supplier of the sinusoidal filter.
- If the operational leakage current exceeds 3.5 mA, earthing in compliance with DIN EN 50 178, art. 5.2.11.1 must be provided. For this purpose there is a connection for a second protective earth on the stator flange. Tightening torque 2.7 Nm.
- When speed controlling through electronic voltage reduction (phase control), depending on the installation situation, increased noise formation caused by resonances can occur. In such cases we recommend the use of the Fcontrol frequency changer with integrated sine filter.

-  热保护器内接时：无法外接。**注意：**当马达过热而热保护器动作，风机停转；当温度下降热保护器自动复位，此时风机就自动开始运行。
- 外接过热保护器必须合并并在控制器回路中，以便马达**出现故障时在冷却后不会自动启动**。通过把多个马达串联起来，可以使用一个防护装置同时保护多个马达。但务必注意：如果一个马达出现温度故障，**所有的**马达都会同时断电。在实际运行中，可将多台马达分成多组，当一台马达发生故障时，其他组马达可在**紧急模式**下以低负荷运转。
- 无热保护装置：使用马达保护开关！
- 如果单相 230V +/-10% 的风机马达长期运转在超过 240 V 的市电电压下，过热保护器在极端情况下会响应。请使用小一号的电容以替代标准电容。



操作条件

- 球迷 不能运行于易爆环境。
- 电机/风机的工作制类型
 - 按照 DIN EN 60034-1:2011-02 连续运行及偶尔启动 (S1)。允许在 -40 °C 至 -25 °C 下偶尔启动。仅在根据要求配备有适用低温环境的特殊轴承时，才可在 -25 °C 以下长期运行。
- 运行所允许的最小和最大环境温度
 - 有关各种风机适用的最低和最高环境温度，请参阅产品的技术文档。仅在根据要求配备有适用低温环境的特殊轴承时，才可在 -25 °C 以下运行及部分负荷运行。如果在风机中安装有特殊的耐低温轴承，请遵守产品技术文档中允许的最高温度。
- 应用环境温度低于 -10 °C 时，须预防材料受到异常的冲击或机械应力及材料应变（见所允许的最低环境温度）。
- 在满足以下条件的情况下，施乐百 轴流风机适于变频运转：
 - 在变频器和马达之间必须如某些变频器制造商的说明安装 **多线** 正弦滤波器（正弦输出电压！相间，相与零线间）。请索取我们的技术信息 L-TI-0510。
 - **du/dt 滤波器(也称马达/阻尼滤波器) 不能用来替代正弦滤波器。**
 - 使用正弦滤波器时，马达可以不使用屏蔽电缆、金属接线盒，也无须通过另外一根地线连接马达，需与正弦滤波器供应商协调。
- 如果超过了 3.5 mA 的运行漏电电流，则须满足 DIN EN 50 178, 第 5.2.11.1 款规定的接地条件。为此，在定子法兰上有用于第二保护导体的连接。压紧扭矩 2.7 Nm。
- 对于以电子方式降低电压（相位角控制）的转速控制装置，可能会因安装位置不同产生共振并且进而导致噪音增大。因此，我们推荐使用集成有正弦滤波器的 Fcontrol 变频器

- **We cannot guarantee that competitive makers of voltage control devices and frequency converters will function properly and not damage the motor when used for rotational-speed control of our fans**
- A-rated sound power levels of over 80 dB(A) are possible, see product catalogue.
- IP55 fans with a seal which is rubbing may cause additional noise.



Start-up

- Before first-time start-up, check the following:
 - Installation and electrical connection have been properly completed?
 - Electrical connection carried out in accordance with wiring diagram (wiring diagram in terminal box, for cable version on cable or wall ring)
 - Turning direction corresponds to turning direction arrow on fan blade or fan housing. The airflow direction or turning direction determines the functionality of the fan, not the motor rotation field.
 - Is the protective earth connected?
 - Connection data complies with the specifications on the type plate.
 - Motor operating capacitor data (1~ motors) complies with the specifications on the type plate.
 - Safety equipment is in place (→ Contact protection).
 - Temperature monitor/motor protection switch are professionally connected and operating properly.
 - All leftover installation materials and other foreign materials have been removed from the fan cavity.
 - Cable gland is sealed (see "Installation").
 - Do the installation position and the arrangement of the condensation drain holes in the motor (if available) correspond to each other (does not apply to protection class IP55 fans)?
- The designated use of ZIEHL-ABEGG fans with VDE certification assumes connection in a device or via a control unit.
- Start-up may only begin when all safety instructions have been verified and any hazards have been ruled out.
- Check for low vibration operation. Strong vibrations due to erratic operation (unbalanced), e.g. caused by transportation damage or improper use, can lead to failure.



Maintenance, repair, cleaning

- **During all work on Fan in the hazardous area:**
 - Maintenance operation is only to be performed by trained service personnel.
 - Observe the safety and labour regulations (DIN EN 50 110, IEC 364).
 - The rotor must be standing still!
 - Open the electrical circuit and secure against being switched back on.
 - Verify the absence of voltage.
 - No maintenance work on running Fan!
- **Wear safety shoes and gloves for handling!**
- **Keep the airways of the fan free- danger because of objects dropping out!**
- **Wet cleaning under voltage may lead to an electric shock - danger to life!**
- Regular inspection, if necessary with cleaning, is necessary to prevent imbalance due to ingress of dirt.
 - Clean the fans` s flow area.
- You can clean entire Fan with a moist cloth.
- Do not use any aggressive, paint solvent cleaning agents when cleaning.
- **Never use a high-pressure cleaner or spray jet to clean.**
- Avoid letting water permeate into the motor and the electrical installation.
- After cleaning, the motor must be operated for 30 minutes at 80-100% of the max. rpm to let it dry out. This will allow any possibly penetrated water to evaporate.



调试

- 初次试运行前请检查：
 - 机械和电气安装是否按照专业方式正确完成？
 - 已根据电路图进行电气连接（接线箱中的电路图，在电缆布线时连接至电缆或壁环）
 - 转向对应于风机扇叶 或风机壳罩上的转向箭头。对于风机的功能性起决定性作用的是气流方向或转向，而不是电机旋转磁场。
 - 接地线被连接。
 - 接线数据与铭牌上的说明是否相符
 - 马达运行电容参数（单相电机）与铭牌上的数据是否一致。
 - 安全装置是否已安装到位（→ 触摸防护装置）。
 - 过热保护器/马达防护开关安装正确，运行良好。
 - 清除风机段中的安装剩余材料和其他异物。
 - 电缆导入处是否密封良好（参阅“安装”）。
 - 是否已打开/关闭安装位置相应的冷凝水排放孔(如果有)(不针对防护等级 IP55 的风机)?
- 只有当施乐百风机连接一台设备或通过一个控制单元时，才能达到 VDE 认可的预期用途。
- 检查完所有的安全注意事项，并在排除所有危险后方可进行调试。
- 检查风机平稳运转。强烈的振动是由不平衡运行造成的（不平衡），例如运输途中损坏或不当处理造成的。



维修、维护、清洁

- **在危险区域内对 Ventilator 进行作业时：**
 - 只能由经过培训的专业人员才能进行相关作业。
 - 遵守安全及工作规范（DIN EN 50 110, IEC 364）。
 - 转子必须保持静止！
 - 在断开电路后的防重启保护。
 - 确定无电操作。
 - 切勿对运转中的 Ventilator 进行维护作业！
- **在搬运时请穿戴安全鞋和安全手套！**
- **请保持风机风路畅通 — 避免由于飞出物体造成的危险！**
- **带电情况下进行湿式清洁时可能造成电击 — 生命危险！**
- 定期检查，并在必要时进行清洁，以免因污物造成不平衡。
 - 清洁风机的风流通过区域。
- 可以使用湿抹布对整个 Ventilator 进行清洁。
- 禁止使用侵蚀性、腐蚀油漆的清洁剂。
- **切勿使用高压清洗装置或喷射进行清洁。**
- 防止水进入马达或电气设备内。
- 清洁后必须操纵马达以 80-100% 的最大转速运行 30 分钟进行干燥，以便使进入到内部的水挥发。

- Ball-bearings service life
 - The according to standard calculation methods determined bearing service life expectation of the motor-integrated ball bearings is mainly determined by the grease service life F10h and amounts for standard application to approx. 30.000 - 40.000 operating hours. The fan or motor is maintenance-free due to the use of ball bearings with "lifetime lubrication". Once the grease operating life F10h has been reached, it may be necessary to replace the bearing. The bearing service life expectation may change compared to the specified value, if operating conditions such as increased vibrations or shocks, increased or too low temperatures, humidity, dirt in the ball bearing or unfavourable control modes are present. A service life calculation for special applications can be provided on request.
 - Take note of abnormal operating noise!
 - Watch out for vibration free motion!
 - Please consult our service department with regard to changing the bearing as for all other damage (e.g. to the coil).
 - On 1~ motors, condenser rating can decrease with time, life expectancy approx. 30,000 hrs. per DIN EN 60252.
 - **Outdoor fans: If a fan is stationary for long periods in a humid atmosphere, it should be switched ON for minimum of two hours every month to remove any moisture that may have condensed within the motor.**
 - Fans with IP55 degree of protection or higher: open the existing sealed condensation bores at least every six months.
- 滚珠轴承使用寿命
 - 根据标准计算方法计算出的电机集成滚珠轴承的轴承使用寿命预测主要取决于润滑脂使用有效期 $F10h$ ，在标准应用条件下约为 30,000 - 40,000 个工时。风机或电机因使用带有“长效润滑”的滚珠轴承而免维护。润滑脂使用有效期 $F10h$ 到期后可能需要更换轴承。当给出诸如振动增大、晃动增大、温度升高或过低、潮湿、滚珠轴承中有脏污或不利的调节形式等运行条件时，轴承使用寿命预测可能会相比于所述的数值发生变化。可以根据要求针对特殊应用进行使用寿命计算。
 - 留意异常运行噪声！
 - 注意运转振动是否正常！
 - 请联系我们的服务部门，了解证券交易所以及所有其他损失（如绕组）。
 - 对于单相电机，电容器容量将会逐渐减小，符合 *DIN EN 60252* 规定的预期使用寿命大约为 30000 小时。
 - **室外放置：如果风机在潮湿的环境中长期不工作，应保证每月至少运行 2 小时以便使马达内的水挥发掉。**
 - 防护等级为 IP55 或更高等级的风机：在冷凝水孔封闭的情况下，应至少每半年打开一次。



Disposal / recycling

Disposal must be carried out professionally and environmentally friendly in accordance with the legal stipulations.



废物处理/回收

废物处理必须专业、环保，并按照法规执行。

Manufacturer

Our products are manufactured in compliance with valid international standards and regulations.

If you have any questions about how to use our products or if you are planning special applications, please contact:

ZIEHL-ABEGG SE
Heinz-Ziehl-Straße
D-74653 Künzelsau
Phone 07940/16-0
Fax 07940/16-300
info@ziehl-abegg.de

Service address

Please refer to the homepage at www.ziehl-abegg.com for a list of our subsidiaries worldwide.



製造商是：

我们的产品生产符合相关的国际标准和规范。如果您对任何与产品使用相关的问题或计划特殊的应用，请联系：

ZIEHL-ABEGG SE
Heinz-Ziehl-Strasse
D-74653 Kuenzelsau
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售后服务地址

有关各国家和地区售后服务网点地址的信息请参见公司主页 www.ziehl-abegg.com

EC Declaration of Incorporation

- Translation -
(english)

ZA87-GB 1836 Index 008

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

The design of the incomplete machine:

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

Motor type:

- Induction 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 Appendix I, Articles 1.1.2, 1.1.5, 1.4.1, 1.5.1 in EG Machinery Directive 2006/42/EG.

The manufacturer is the

ZIEHL-ABEGG SE
Heinz-Ziehl-Strasse
D-74653 Künzelsau

The following harmonised standards have been used:

EN 60204-1:2006+A1:2009+AC:2010	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 13857:2008	Safety of machinery; safety distances to prevent danger zones being reached by the upper limbs
Note:	The maintenance of the EN ISO 13857:2008 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 Appendix VII B has been written and is available in its entirety.

The person authorised for compiling the specific technical documentation is: Dr. W. Angelis, 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 EC Machinery Directive.

Künzelsau, 03.09.2018
(location, date of issue)

ZIEHL-ABEGG SE
Dr. W. Angelis
Technical Director Air Movement Division
(name, function)

ZIEHL-ABEGG SE
Dr. D. Kappel
Deputy Head of Electrical Systems
(name, function)

(Signature)

(Signature)