Assembly instructions

Axial fans

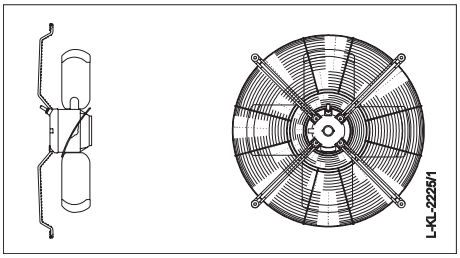
FB.. axial fans from group II, device class 2G with ignition-protection class „c“ for conveying explosive gaseous atmospheres from group IIB for zone 1 and zone 2, with MK.. integrated external rotor motor for explosion-prone areas, ignition-protection class „e“.

Contents

MOTOR-Typenschild einkleben!

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.

Application



- ZIEHL-ABEGG axial fans of the series FB (type designation see rating plate) in explosion-proofed design **c Ex eb IIB** with integrated external rotor motor of the design MK in ignition-protection class increased safety “e“ ⟨Ex⟩ II 2G Ex eb II according to IEC 60079-0; 60079-7 are not ready-to-use products, but designed as components for air-conditioning, air supply and air extraction.
- 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

安装说明

轴流风机

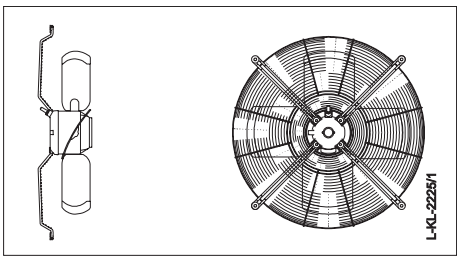
设备类别 2G 组 2 的 FB 型风机，点火防护等级“c”，用于为区域 1 和区域 2 传送组 2B 的爆炸性气体环境，配有 MK 内置外转子电机，用于具有爆炸危险的区域，点火防护等级“e”。

内容摘要

VENTILATOR-Typenschild einkleben!

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



- *FB 系列具有防爆规格 **c Ex eb IIB** 的 ZIEHL-ABEGG 轴流风机（型号标示见铭牌）（配有 MK 型内置外转子电机，采用加强点火防护等级“e”，⟨Ex⟩ II 2G Ex eb II 符合 IEC 60079-0；60079-7）并非加工成型产品，而是用作仪器和设备的组件。*
- *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 年以上）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。*

of 14 up). In the event of deviations, further structural protective measures must be taken for safe operation.
- ZIEHL-ABEGG-axial fans fulfil the requirements of EN14986 in respect of the choose of materials by special protective measures in the area of possible contact surfaces between rotating and stationary com ponents (impeller / inlet ring). Synthetics materials are used for the rotating part (blade extension) of the fan. In fan designs without wire support guards or without inlet rings, the system constructor is responsible for the selection of materials for the stationary periphery parts. Only mating materials in accordance with the EN14986 may be utilized.

ZIEHL-ABEGG axial fans, identified through the supplemental **Y** in the type designation code **(FB_ _ _-_ _ _._ Y._ _)** with integrated external rotor motors **(MK_ _ _-_ _ _._ _.Y)** in the II 2G Ex eb II, T1, T2, T3 or T4 version based on EN 60079-0; EN 60079-7 may be operated in a partial voltage range. The utilization of electronic or transformer-induced control units, with the exception of frequency converters, is allowed. The use of ZIEHL-ABEGG control units is recommended. Control devices from other manufacturers must have the same or higher quality!

- All motors and fan-motor-units are balanced in two levels in accordance with DIN ISO 1940- 1.

Safety instructions

- The EN 60079-0 Electrical apparatus standard for potentially explosive atmospheres (General Requirements), EN 60079-7 (Increased safety "e") and all standards relevant to fans in explosion protected design must be maintained. With that, the operation of motors in the presence of gasses, vapors, or mist-containing atmospheres and their mixtures in category 2G (Zone 1) and category 3G (Zone 2) potentially explosive atmospheres is permissible.
- The fans are only intended for the conveyance of air or zone 1 and zone 2 explosive atmospheres. The conveyance of solid matter, solids content, and dust/air mixtures is not permitted (materials employed: paint based polyacrylate, polyisocyanate, EN 1706 AC-ALSi12 (FE) DF, steel wire DIN EN 10016-2 grade C4D, steel EN 10142-DX54D+Z275-N-A).
- Pumping mediums, which affect the fan materials, are not permitted.
- Speed control via frequency inverter is not permitted.
- The temperature class specifications on the motor-rating-plate must correspond to any possibly arising combustible gasses or the motor must have an even higher temperature class.
- The fan is to be operated within the ranges specified on the fan-rating-plate, see operating conditions!
- The maximum permissible operating data given on the fan-rating-plate are valid from air density ρ=1,2 kg/m^3.
- Mounting and electrical installation may only be carried out by trained specialized personnel who observe the **relevant regulations**!
  - In order to prevent malfunctions and in order to protect the motor the motor must be disconnected from the mains by the integrated PTC in connection with a triggering device (identification ⟨Ex⟩ II (2)G; see directive2014/34/EU) and an external contactor during an operations failure (e.g., inadmissibly high medium temperature).
  - max. test voltage of the PTC 2.5V
  - A current dependent protection is not admissible and also not possible as secondary protection.
  - The motors have triplet PTC's. More than two PTC's may not be connected in series, as this can lead to undefined shut-downs.
- All fan-motor units are supplied with lead-out cables. If the connection of cable ends is made to the external electrical circuits within a potentially explosive area, a terminal box selected for this area with its own EU-Type examination certificate for the components must be utilized. Corresponding Ex-terminal boxes with verified cables and cable entries can be seen in our ZIEHL-ABEGG lists. The permissible medium temperature is -20°C...+40°C. Devi-

- *ZIEHL-ABEGG* 轴流风机在材料选择方面通过特殊防护措施在转动和固定零部件之间（转子/入流喷嘴）可能的接触面区域符合 *EN14986* 的要求。针对风机的转动部分（风翼延长件）采用塑料作为材料。设备制造商负责选择用于风机固定的无格栅外围设备零部件或无流入喷嘴的风机型式。只能采用符合 *EN14986* 的材料对。

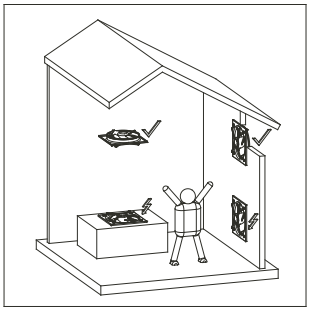
铭牌 ***(FB_ _ _-_ _ _._ Y._ _)*** 中标有 ***Y*** 的 *ZIEHL-ABEGG* 轴流风机（配有内置外转子电机 ***(MK_ _ _-_ _ _._ _.Y)***，规格为 *II 2G Ex eb II*、*T1*、*T2*、*T3* 或 *T4*，符合 *EN 60079-0*；*60079-7*）可以在部分电压范围内运行。可以使用电子或传感器型控制器，不包括变频器。建议使用 *ZIEHL-ABEGG* 的控制器。其它生产商的控制器必须具有相同或更高的品质！

- 所有马达和风机马达单元将根据 *DIN ISO 1940* 第*1*部分在两个层面上进行动平衡。

安全提示

- 用于爆炸危险区域的操作材料标准 *EN 60079-0*（一般规定），*EN 60079-7*（加强安全 *„e“)* 和所有对于爆炸防护规格相关的标准必须被遵守。这有这样才可在 *2 G*（区域*1*）类和 *3G*（区域*2*）类爆炸危险区域内的气体、蒸汽、雾或相互混合物的环境下使用马达。
- 风机仅适于在区域 *1* 和区域 *2* 传送空气或易爆气体。不允许传送固体、固体成分或粉尘/空气混合物（所使用的材料：漆基聚丙烯酸酯，聚异氰酸盐，*EN 1706 AC-ALS i12 (FE) DF*，钢丝 *DIN EN 10016-2* 品质 *C4D*，钢 *EN 101 42-DX54D+Z275-N-A*）。
- 不允许使用对风机材料有侵蚀性作用的传送介质。
- 同样不允许通过变频器操控转速。
- 马达性能铭牌上的温度等级必须与可能出现的可燃气体得温度等级一致，或者马达必须居友更高的温度等级。
- 在风机性能铭牌上给出的范围内操作风机，见运行条件。
- 风机性能铭牌上的最大许可运行数据适于空气密度 *ρ = 1.2 kg/m^3*。
- 装配，电连接只能由经过培训专业人员完成，此外，这些人员还必须遵守 ***相关规范***！
  - 为了防止故障并保护马达，必须通过内置*PTC* 热敏电阻确保在故障（例如介质温度过高）发生时在一台触发设备（标示 ⟨Ex⟩ *II (2) G* 见条例*2014/34/EU)* 和一台外接接触器的情况下与电网断开。
  - *PTC* 热敏电阻的最大检验电压 *2.5*伏
  - 不允许采用电流相关的防护措施以及二级防护措施。
  - 马达带有三管式 *PTC* 热敏电阻。不得串联两个以上的*PTC*热敏电阻，否则将导致非受控断电现象。
- 所有风机马达供货时均必须确保电缆处于引出状态。如果在爆炸危险区域内连接导线端至外电路，则必须使用带有合适欧盟实用新型专利检验证书的专用接线盒。相应的带有经检验电缆和导线引入装置的防爆接线盒请参见施乐百的清单。所允许的介质温度为 *-20*°C*...+40* °C。不同的介质温度请参阅铭牌、数据清单、欧盟实用新型检验证书。
- 防爆马达附带外部地线接口。
- 对于内置不可触及操作的安装方式而言，则规定根据 *IP20 EN60529* 在进气侧安装防护格栅。对于可触及操作的安装方式而言，则规定根据 *IP20 EN60529* 在进气和压力侧安装防护格栅。
- 禁止拆卸、避开或关闭安全零部件，如防护格栅！
- 如果通过设备设计无法防止异物被吸入或进入，则存在 ***可燃气体空气混合物爆炸危险***，则操作方必须采取措施进行防范，例如加装网孔窄小的辅助防护格栅。旁边图示的安装示例标有闪电标志，代表异物进入可能存在更严重的危险。

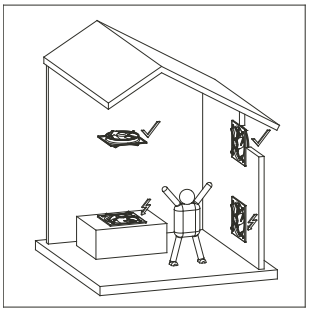
ating medium temperatures are to be taken from the rating plate, the data sheet and the EU type examination certificate.
- Ex-Motors have additional a marked outer earthing conductor connection.
- A suction-side guard grill according to IP20 EN60529 is prescribed for integrated inaccessible installations. For accessible installation, a suction-side and pressure side guard grill according to IP20 EN60529 is prescribed.
- Safety features, e.g. guard grilles, are not to be dismantled, circumvented or made inoperative!
- If sucking or falling in of foreign objects cannot be prevented due to the device design or plant construction, (the **hazard of explosion of an ignitable gas-air mixture** exists) the operator must take additional measures to prevent this from occurring, for instance by attaching an additional narrow meshed guard grill. In the installation examples marked with a lightning symbol in the picture opposite, one must reckon with an increased hazard regarding foreign objects being able to fall in.



- Pay special attention to the permitted mating materials based on the EN14986. You must observe the corresponding notices in the „Application and Installation“ chapter!
- A residual risk through inappropriate behavior, malfunction, or affects through acts of God or force majeure during operation of the fan cannot be completely excluded. The planner, operator, or constructor of the system, machine, or plant must prevent a hazardous situation from arising by taking appropriate safety precautions in accordance with **DIN EN ISO 12100** and especially in accordance with the EN14986
- The system constructor is responsible for the maintenance of the package sealing.
- **Compliance with EMC guideline 2014/30/EU is only guaranteed if the product is connected to the standard electricity supply grid. If this product is integrated into a system or complemented and operated with other components (e.g. controller units and control devices), the manufacturer or operator of the entire system is responsible for the compliance with the EMC directive 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.

Transport, Lagerung

- **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.



- 请特别注意 *EN14986.* 所规定允许的材料对。请参阅章节 “使用和安装”中相应的注意事项！
- 由于不正确使用，功能故障或不可预知力造成的风险是无法完全避免的。设备的设计方、操作方或搭建方必须根据 ***DIN EN ISO 12100***，特别是 *EN14986* 采取合适的措施（例如安装防护装置）确保防止危险情况的发生。
- 设备制造商须负责确保壳罩密封。
- ***如将产品直接接入到常规电网中，仅需遵循电磁兼容性指令2014/30/EU。如将此产品集成到某一系统中或与其它组件（例如调节和控制装置）进行组合并且投入运行，应由制造商或系统操作者对是否遵循电磁兼容性指令2014/30/EU负起责任。***
- 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。

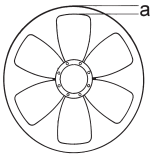
储运

- ***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。

Mounting

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/ DIN EN 60529 / EN14986) .
- The following applies to all fan designs:
  - **Motor malfunction possible by condensation**
    - When installing in the vertical motor shaft position, condensate cannot escape.
    - Installation and operation are permitted solely in the horizontal shaft position.
  - 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.



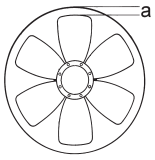
fan type	a
FB035	3,50 mm
FB042	4,20 mm
FB050	4,95 mm
FB056	5,50 mm
FB065	6,45 mm

  - Under maintenance of the materials mating, the following minimum gap must be fulfilled: between rotating and stationary parts, the minimum gap cannot be smaller than 1 % of the relevant contact diameter, but not less than 2 mm in the axial or radial directions, and must not amount to more than 20 mm.
  - Fans without wire grates or without wire grates and inlet rings: To fasten the wire grate to the fixed motor flange or to fasten the inlet ring to the wire grate, use tensile strength class 8.8 screws and provide with suitable screw locking. Permissible torque: M6 = 9.5Nm; M8 = 23Nm
  - Certain operating points/speeds may not be run during self-resonance of the attached components. The verification of self-resonance is to be carried out by the system constructor during start-up operation.
  - Electrical connection in accordance with the circuit diagram attached to the fan. The connection diagrams must be available at the operating location.
  - Connect fan only to electrical circuits that can be disconnected with an all-pole isolating switch.
  - In areas where not fixated in the ZIEHL-ABEGG factory, fasten the motor connection cable with cable ties or cable clamps. Fasten so that the cable can still be shifted after being fixated to prevent damage to the cable insulation.
  - Up and downstream components or those that lie directly in the airflow must not have any unprotected aluminium or steel surfaces. Paint or plastic coating that complies at least with cross-cut factor 2 according to DIN EN ISO 2409 is required to prevent an aluminothermic reaction. Make sure no sparks caused by electrostatic discharges (sliding brush discharges) are produced. Following high charging, sliding brush discharges can arise from non-conductive layers or overlays on metallic surfaces and can be prevented by securing a breakdown voltage of less than 4 kV.

安装

在搬运时请穿戴安全鞋和安全手套！

- 系统或设备生产商有责任确保设备相关的安装和安全注意事项符合标准和规范*(DIN EN ISO 12100/ 13857/ DIN EN 60529 / EN14986)*。
- 以下要求适用于所有轴流风机：
  - ***冷凝水可能造成电机损坏***
    - 在采用垂直电机轴安装位置时，冷凝水无法挥发掉。
    - 所以只能采用水平轴位置的安装和运行方式。
  - 请勿在安装时施加拉紧力，安装面必需保持水平。
  - 注意图例中的间隙*“a”*保持均匀。



风机类型	*a*
FB035	*3.50* 毫米
FB042	*4.20* 毫米
FB050	*4.95* 毫米
FB056	*5.50* 毫米
FB065	*6.45* 毫米

  - 在保持材料对的时候必须保持以下最小间隙：转动和固定部件之间的最小间隙不能小于规定解除直径的 *1 %*，但在轴向或径向上不得小于 *2* 毫米，大于 *20* 毫米。
  - 无铁丝支撑格栅或无铁丝支撑格栅和入流喷嘴的风机：为了将铁丝支撑格栅固定在固定的电机法兰、并将入流喷嘴固定在铁丝支撑格栅上，须使用强度等级为 *8.8* 的螺栓，并配备合适的螺栓固定装置。许可的拧紧扭矩：*M6 = 9.5Nm*；*M8 = 23Nm*
  - 如因加装部件而出现自然谐振，则不得使用特定的工作点/转速。设备制造商在调试时须检查自然谐振。
  - 根据风机上的电路图进行电连接！电路图必须妥善保存在运行地点以便取用。
  - 设备只能连接到通过全极分离开关可切断的电路。
  - 非 *ZIEHL-ABEGG* 出厂前固定的电机接线须用线束或卡箍固定。固定时须注意线缆在固定后能够移动，以防线缆的绝缘体受损。
  - 前置和后置的零部件或直接暴露在空气流中的零部件不得包含未经防护的铝或钢表面。必须采用根据 *DIN EN ISO 2409* 横切特征值至少为 *2* 的喷漆或塑料覆层，以防铝热反应。请注意防止因静电（滑杆束形放电）产生的火花。滑杆束形放电可能在非导电层或金属表面覆

– If hazards from lightning strikes have been ascertained, the system must be protected through the use of suitable lightning protection measures.
– Systems must be sufficiently separated from transmitting installations or be protected through suitable shielding.

Operating conditions

The fan motor-unit requires 2 rating plates.

- The **fan rating-plate** includes the **rated voltage** and connection and up to which specifications the **fan** can be loaded. Values higher than the stamped absorbed power / stamped absorbed wattage mean the fan is operating in a range that is not permitted. If the motor is operated with **partial voltage** (this is certified in the EU type-examination certificate data-sheet), the current may rise by the amount ΔI (in %) indicated on the fan rating plate.
- The **motor rating-plate** includes the maximum permitted specification that has been certified by the Notified Office (German Federal Institute for Science and Technology, Braunschweig). **The partial-voltage currents are also stated on this plate, which, from the point of view of compliance with the EN 60079-7 standard, must not be exceeded.** The voltage stamped on the motor rating-plate can be considerably higher than the one stamped on the fan rating-plate using the same connection. The advantage of this arrangement is explained here using an example: If the motor is loaded by the fan with considerably less power than the stamped motor output, we use voltage reduction. The motor is designed for a voltage higher than the 400V mains voltage, e.g. for 500V. This improves the electrical characteristics at 400 V and results in optimum fan-regulation properties. Through this, it is inevitable that the fan and motor rating-plate electrical data differentiate.
- Motor protection: see safety notifications
- Switching frequency: The motor is dimensioned for continuous operation S1. The control must not allow any extreme switching modes!
- **Use of a frequency inverter is not allowed.**
- A-rated sound power levels of over 80 dB(A) are possible, see product catalogue.

Start-up

- Before first-time start-up, check the following:
  – Installation and electrical connection have been properly completed?
  – Safety equipment is in place (→ Contact protection).
  – All leftover installation materials and other foreign materials have been removed from the fan cavity.
  – **The impeller must not rub against any stationary housing parts (→ sparks!).**
  – Protective conductor and external earthing conductor have been connected.
  – Thermistor and triggering device have been properly installed and are operational.
  – Cable gland is sealed.
  – Fitting position motor shaft horizontal.
  – Condensation drain hole closed.
  – Do the connection specifications correspond with the data on the fan rating plate (adhesive plate).
- Commissioning may only take place if all safety instructions have been checked and danger can be excluded.
  – Check rotational direction/air feed direction: **Definition of the rotational direction according to pictures.**

层的高电荷蓄积后产生，并且可以通过确保击穿电压小于 *4 kV* 来实现。
– 如果发现雷击损坏，则必须采取合适的防雷击措施保护设备。
– 设备必须被置于与发射装置合适的安全距离处或通过合适的屏蔽措施保护。

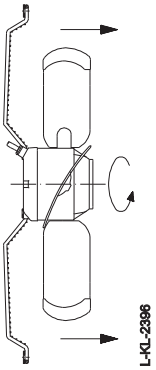
操作条件

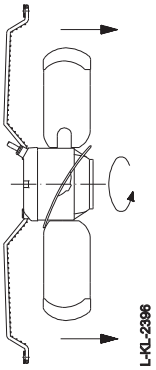
风机马达单元需要两个性能图。

- ***风机性能图*** 包含 ***测量电压*** 和电路以及 ***风机*** 可以承担的负载数据。高于标注消耗功率的值代表风机不得在不允许的状态下运行。如果马达在 ***低压范围内工作*** *(*标注在欧盟实用新型检验证书的数据清单中*)*，电流可以升高风机性能铭牌注明的值 *ΔI (in %).*
- ***马达性能铭牌*** 包含所允许的最大数据，是所述机构（德国布伦瑞克联邦物理技术所）出具的。***该铭牌上注明了低电压时的电流，该电流须满足 EN 60079-7 标准规定不得超出。*** 标注在马达性能铭牌上的电压在相同电路中不得高于风机性能铭牌上的值。该设计的优点应通过示例说明：如马达由于风机而消耗的功率明显小于标注的马达消耗功率，则将采用电压降低方式。电机设计电压为*500*伏，高于*500*伏电源电压。这样将改善*400*伏时的电气性能并得到最佳风机调控性能。风机和马达性能铭牌数据的所有电气数据因此而有区别是不可避免的.
- 马达防护：拣安全注意事项
- 开关频度：马达根据持续运行模式 *S1* 测量。控制装置不允许极限开关运行状态！
- ***不得使用变频器。***
- *A*计权声功率级可大至*80dB(A)*，详见产品目录。

启用

- 初次运转首次启用前请检查：
  – 机械和电气安装是否按照专业方式正确完成？
  – 安全装置是否已安装到位（→ 触摸防护装置）。
  – 清除风机段中的安装剩余材料和其他异物。
  – ***叶轮不得摩擦固定壳罩部件 (→ 点火火花！!)。***
  – 是否连接了地线和外接地线.
  – *PTC* 热敏电阻和触发器是否正确连接且运行正常？
  – 电缆引入是否密封？
  – 电机轴安装位置水平。
  – 冷凝水孔封闭。
  – 接线数据与风机铭牌（贴牌）上的数据一致。
- 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。
  – 检查旋转方向/空气流通方向：***根据图示定义旋转方向***





- Watch out for smooth operation.
- See to smooth running Intensive vibrations due to uneven running (out-of-balance) e.g. because of damage intransit or improper handling may lead to outage, if applicable, have the imbalance checked.
- All electrically conductive attachment and accessory parts must be grounded. The insulated, installed inlet rings and frame support wire components are connected electrically conductive to the protective earth system via contact discs. By doing so, removal of the paint coat/coating can be omitted.
- During erection / start-up operation, the ambient temperature, air humidity, environmental contamination, and corrosion through the surrounding atmosphere must be taken into consideration.

- The motor winding insulation-resistance must be measured if fan-motor units have been stored or are put into operation after long downtimes or if they are exposed to dew for long periods before being put (back) into operation. In case of values smaller/equal to 1.5 Mohm, the motor winding must be dried out.

Repairs and maintenance

Wear safety shoes and gloves for handling!

- Due to the selection of bearings with "lifetime lubrication" (special grease), the external rotor motor is maintenance-free.
- Upon signs of wear or latest after 40,000 h, a bearing exchange is required. As the opening on the motor is partially covered by the rating plate, and as custom bearings with special ZIEHL-ABEGG lubrication are employed, only ZIEHL-ABEGG SE is allowed to carry out the bearing exchange.
- Take note of abnormal operating noise!
- **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 week to remove any moisture that may have condensed within the motor.**
- **For all repair and maintenance work:**
  - Observe the safety and labour regulations (DIN EN 50 110, IEC 364).
  - The fan impeller stopped!
  - Open the electrical circuit and secure against being switched back on.
  - Verify the absence of voltage.
  - No maintenance work at running fan!
- After dismantling and reinstalling an impeller, the entire rotating unit must be rebalanced in accordance with DIN ISO 21940-11
- **Keep the airways of the fan free- danger because of objects dropping out!**
- The system constructor must enable easy access for cleaning and inspection work.
- Before switching off the fan, make sure that no Ex atmosphere is present.
- For all other defects (e.g. cable and wire lead-ins, windings and cables), please contact our repair department.
- ZIEHL-ABEGG Atex-fans / motors are completely or partly covered by antistatic painting or coating, which is able to

- 注意确保运转平稳。
- 因运输损坏或不正确操作二造成不稳定（不平衡）从而引起摆动剧烈，可能造成失灵，须检查不平衡情况。
- 所有可导电的附装件和附件必须接地。入流喷嘴的绝缘安装零部件和铁丝支撑格栅通过接触垫圈与接地系统电连接。因此无需移除漆层/覆层。
- 在搭建/调试时，必须注意环境温度、空气湿度、环境污染和周围环境造成的腐蚀。

- 如果风机马达已装入获在较长停置时间后重新投入使用，或长时间置于露点温度环境下，则必须在（重新）调试之前测量马达线圈的绝缘电压。如小于/等于*1.5MOhm*，则必须干燥马达线圈。

维修和维护

在搬运时请穿戴安全鞋和安全手套！

- 外转子马达使用带“长效润滑”（特殊润滑脂）的滚珠轴承而免维护。
- 如发现磨损现象，或最晚在*40,000*小时后，需要更换滚珠。因为马达上的开口会因性能铭牌而磨损，则必须采用带有施乐百特殊润滑脂的专用轴承，则只能由施乐百更换轴承。
- 留意异常运行噪声！
- ***室外放置：如果风机在潮湿的环境中长期不工作，应保证每周至少运行2小时以便使马达内的水挥发掉。***
- ***对于所有维修和维护作业而言：***
  - 遵守安全及工作规范（*DIN EN 50 110, IEC 364*）。
  - 风机叶轮必须静止！
  - 在断开电路后的防重启保护。
  - 确定无电操作。
  - 切勿在风机转动的情况下进行维护作业！
- 在叶轮拆卸和重新安装后，必须根据*DIN ISO 21940，T11*标准的规定对旋转单元重新进行平衡校准。
- ***请保持风机风路畅通 — 避免由于飞出物体造成的危险！***
- 设备制造商必须确保清洁和检验工作的便利。
- 在风机断电前请确保无爆炸性气体存在。
- 如出现其它损坏（例如电缆和导线引入装置、绕组和电缆损坏），请联系我们的维修部门。
- *ZIEHL-ABEGG Atex*风扇/电动机将会采用整体或部分的防静电导电涂料或涂层。重新对产品进行喷涂可能导致危险的静电，因而绝对不被允许。

derivate electric charges. A repaint may lead to dangerous static charges and is therefore not allowed.

Cleaning

- Regular inspection, and cleaning is necessary to prevent imbalance due to ingress of dirt.
  – Clean the fans`s flow area.
- Watch out for vibration free motion.
- Watch out for smooth, vibration free motion.
- You can clean the 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.**
- **Wet cleaning under voltage may lead to an electric shock - danger to life!**
- 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.

Manufacturer:

Our products are manufactured in compliance with applicable international standards and regulations (listing and relevant version see EC Declaration of Incorporation and EC Declaration of Conformity).
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.**

清洁

- 定期检查，并在必要时进行清清洁，以免因污物造成不平衡。
  – 清洁风机的风流通过区域。
- 注意运转振动是否正常.
- 留意机组的振动情况。
- 可以用湿抹布清洁整个风机。
- 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。***
- ***带电情况下进行湿式清洁时可能造成电击 — 生命危险！***
- 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。

生产商是:

我们的产品根据相关的国际标准加工而成（相关文献请参阅欧盟制造商声明和欧盟一致性声明）。
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
Tel. 07940/16-0
Fax 07940/16-300
info@ziehl-abegg.de

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