


External rotor motors

For fan drives in increased safety "e"  II 2G Ex eb II, T1, T2, T3 or T4 in accordance with directive 2014/34/EU (Ex eb II T1, T2, T3 or T4 to IEC 60079-0; IEC 60079-7)- MK model range - ..Y (speed controllable by voltage reduction)



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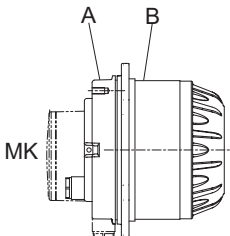
MOTOR-Typenschild
einkleben!

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 external rotor motors are specialised motors with an external cage rotor. They are subject to the same physical laws as electric motors of conventional construction design.



Design MK: A = stator (stationary housing section)
B = rotor with mounting flange

- ZIEHL-ABEGG fan-motor units in the increased safety "e"  II 2G Ex eb II ignition protection class are not ready-to-use products, but designed at components for ventilation devices and systems.
- The motors may only be operated when they are installed as intended, and when safety is ensured by safety equip-

外转子马达

适于更高安全等级的“e”型  II 2G Ex eb II, T1, T2, T3, 或 T4 风机驱动装置, 符合 2014/34/EU (Ex eb II T1, T2, T3 或 T4 符合 IEC 4-0; IEC 60079-7 条例) 条例的 MK-..Y 系列 (电压降低可调节转速)



内容摘要

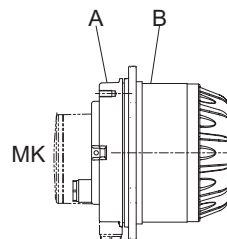
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遵守下列规范也有助于确保产品的安全。尤其是在一般安全、运输、储存、安装、运行条件、调试、维修、维护、清洁和处理/回收等方面, 若未注意到所注明的提示, 则可能导致产品无法安全运行, 并可能会危及用户和第三方的生命安全。


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) 外转子马达是配有外置鼠笼式转子的专用马达。此类马达须遵守与普通型号马达相同的物理法规。



MK 型: A = 定子 (静止的壳罩部件)
B = 带安装法兰的转子

- 点火防护等级更高的“e”型  II 2G Ex eb II 施乐百风机马达单元并非成型产品, 仅适于作为空气技术设备的组件使用。
- 马达只能在所要求的安装状态下, 并符合 DIN EN 13857 (DIN EN ISO 12 100) 标准规定的防护装置或其它保护措施下才能开始运转。
- 采用更高安全等级的“e”系列外转子马达适于作为轴流和径流风机的驱动装置使用。

ment according to DIN EN 13857 (DIN EN ISO 12 100) or by other protection measures.

- ZIEHL-ABEGG external rotor motors of the increased safety "e" protection class are used as drives for axial and centrifugal fans.
- **The speed controllable external rotor motor type MK-..Y**, identified as II 2G Ex eb II, T1, T2, T3 or T4 in accordance with EN 60079-0; 60079-7, may only be operated as a drive for fans. Operation using partial voltage is permissible. The use of electronic or transformer-induced control units is permissible. The use of ZIEHL-ABEGG control units is recommended.
- 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.
- Mounting and electrical installation may only be carried out by trained specialized personnel who observe the **relevant regulations!**
- 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 $-20^{\circ}\text{C}...+40^{\circ}\text{C}$. Deviating medium temperatures are to be taken from the rating plate, the data sheet and the EU type examination certificate.
- **The following apply to the motor:**
 - Optimal cooling of the motor by the impeller is required.
 - The ZIEHL-ABEGG fan-motor-unit (Ex) arises from the placement of the motor and the impeller. This arrangement may be carried out by ZIEHL-ABEGG only!
 - 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: II (2)G; see directive 2014/34/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.
- Use the motor only as intended and only for the specified tasks in the purchase order!
- Planners, manufacturers, and operators are responsible for the proper and safe installation of the motor and the components slated for this (e.g., impeller), and for safe operation!
- Safety features, e.g. guard grilles, are not to be dismantled, circumvented or made inoperative!
- These assembly instructions are part of the product and, as such, are to be kept accessible at all times.

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.



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。只有这样才可在 2G (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。
 - 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!**
 - 所有风机马达供货时都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 $-20^{\circ}\text{C}...+40^{\circ}\text{C}$ 。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。
 - **对于马达而言:**
 - 必须通过叶轮对马达进行最佳冷却。
 - 施乐百风机马达单元通过马达和叶轮的布置而成。该布置工作职能由施乐百完成!
 - 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 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。
 - 请只遵照说明使用曳引机, 并且只将其用于订单中规定的任务!
 - 规划商、生产商或操作方须负责确保马达的正确和安全安装与按照规定使用组件 (例如风机叶轮) 并确保安全运行!
 - 禁止拆卸、避开或关闭安全零部件, 如防护格栅!
 - 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。
- 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。**



Transport, storage

- Transport the motor either in its original packing or after screwing lifting eyebolts into the holes in the motor housing and using suitable lifting tackle.
- Wear safety shoes for handling!
- **Do not transport the fan by the connecting cable!**
- In the case of manual transportation, please observe reasonable human lifting and carrying strengths (see rating plate for information about weights).
- Avoid excessive vibration and shocks.
- Watch out for possible damage to the packaging or fan.
- Store the motor in the original packaging in a dry area protected from the weather or protect it from dirt and weather until final mounting.
- 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

Allow installation, electrical connection, and start-up operation by trained, specialized personnel only. Abide by the system-relevant conditions and system manufacturer's or system constructor's specifications. In case of non-compliance, the increased safety "e" protection class is no longer guaranteed, and the warranty on our motors and accessory components expires!

- Additionally valid for all external rotor motors:
 - Do not install distorted.
 - Deformations and misalignments must not result in the striking or grinding of moving parts.
 - Do not apply force (levering, bending).
 - Fasten to all attachment points using suitable fastening materials!
 - Provide screwed connections with suitable screw locking.
 - In the case of a vertical motor axis, the respective lower condensation drain hole must be open.
 - Connect fan only to electrical circuits that can be disconnected with an all-pole isolating switch.
 - Electrical connection according to the circuit diagram. The connection diagrams must be available at the operating location.
 - Secure motor connection cable in accordance with regulations.
 - PTC thermistor, protective earth conductor, and the external grounding electrode are to be connected.
- During erection of centrifugal impellers, the following applies:
 - Balance the motor and impeller together in order to avoid damage to the bearing through imbalance.



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



储运

- 请采用原始包装或在用合适的举升工具将环形螺栓固定在马达外壳钻孔内后再对马达进行运输。
- 工作时请穿着防护鞋！
- **禁止利用连接的电缆搬运风机。**
- 在用手搬运时，请准确估量人员的举升和抬升力（重量说明见铭牌）。
- 防止过度振动和碰撞。
- 注意避免任何破坏包装或风机的行为。
- 将曳引机原装存放在干燥、耐候的环境中，或在最终安装前注意防尘、耐候。
- 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

装配、电连接和调试只能由经过培训的专业人员进行。请严格遵守系统生产商或设备制造商的相关条款和规定。如果违反，则无法保证“e”级提高防护等级并且将丧失马达和附件的质保权利！

- 对于所有外转子马达而言：
 - 安装时，不受张力。
 - 变形和移放不能导致活动部件的碰撞或磨损。
 - 请勿使用暴力（撬、掰）。
 - 用合适的固定工具固定在所有固定点上。
 - 江螺栓连接位置配上合适的螺栓固定件。
 - 如果是垂直的电机轴，必须打开相应下面的冷凝水孔（如果有的话）。
 - 设备只能连接到通过全极分离开关可切断的电路。
 - 电连接须符合随附的电路图！接线电路图必须妥善保存在操作地点以便取阅。
 - 根据规定将马达连接线固定好。
 - 请链接正温度系数半导体元件、地线和外部地线。
- 在安装径流叶轮时请注意：
 - 将马达与叶轮一起动平衡，以防因不平衡造成的轴承损坏。



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**可以承受的负载数据。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400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。

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.

风机功率牌

ZIEHL-ABEGG	D-Künzelsau/Bieringen	134038	06068263
3~ 230/400V ±10%	ΔY 50Hz P1 0,26kW	RH35M-4DK.4Y.1R	
0,88/0,51A	ΔI=12% 1360	min ⁻¹ cosφ 0,74	
IP44 THCL F	II 2 G c IIB T3	11 kg	
L-BAL-006 L-TI-0549 prEN 14986: 2004 (D)		06/20	
		Made in Germany	

Fan-rating-plate

ZIEHL-ABEGG	D-Künzelsau/Bieringen	134038	06068263
3~ 230/400V ±10%	ΔY 50Hz P1 0,26kW	RH35M-4DK.4Y.1R	
0,88/0,51A	ΔI=12% 1360	min ⁻¹ cosφ 0,74	
IP44 THCL F	II 2 G c IIB T3	11 kg	
L-BAL-006 L-TI-0549 prEN 14986: 2004 (D)		06/20	
		Made in Germany	

Motor-rating-plate (2014/34/EU)

ZIEHL-ABEGG	D-Künzelsau/Bieringen	131987H	No. 08261799
3~ 240/415V	ΔY 50Hz P1 1,85kW Motor:MK137-6DK.20.Y	EN 60034-1	
6,4/3,7A 840	min ⁻¹ cosφ 0,69 IP44 THCL155 -20°C<Ta<+40°C		
I _{max} 6,4/3,7A at partial voltage	ΔY		
IA/IN 3,2 tA 160s	Ex DIN 44082-M130		
0102 PTB 08 ATEX 3062/04	II 2 G Ex eb II T3		
Temperaturüberwachung durch Auslösegerät nach	Ex II(2)G	09/03	

- 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.**
- Continuous sound-level pressure 70dB(A) possible, see product catalogue.



Start-up

- Before first-time start-up, check the following:
 - Installation and electrical connection have been properly completed?
 - The safety devices (accidental contact protection) have been installed.
 - Leftover installation materials and other foreign materials have been removed.
 - **Rotating parts, e.g. impeller, must not rub against stationary parts (sparks!)**
 - Protective conductor and external earthing conductor have been connected.
 - PTC thermistor have been professionally connected.
 - Installation position and the arrangement of condensation water drains correspond to each other.
 - Connection data complies with the specifications on the type plate.
- Start-up:
 - Switch motor on as required by switched state and local conditions.
 - Verify the direction of rotation: **In case the rotational direction is incorrect, adjust it in accordance with the circuit diagram.**
 - Smoothness of motor operation
- The motor winding insulation-resistance must be measured if motors 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

- 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!

马达功率牌(2014/34/EU)

ZIEHL-ABEGG	D-Künzelsau/Bieringen	131987H	No. 08261799
3~ 240/415V	ΔY 50Hz P1 1,85kW Motor:MK137-6DK.20.Y	EN 60034-1	
6,4/3,7A 840	min ⁻¹ cosφ 0,69 IP44 THCL155 -20°C<Ta<+40°C		
I _{max} 6,4/3,7A at partial voltage	ΔY		
IA/IN 3,2 tA 160s	Ex DIN 44082-M130		
0102 PTB 08 ATEX 3062/04	II 2 G Ex eb II T3		
Temperaturüberwachung durch Auslösegerät nach	Ex II(2)G	09/03	

- 马达防护：拣安全注意事项
- 开关频率：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。**
- 长期声压等级可能大于 70dB(A)，参阅产品目录。



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）。
 - 清除安装残留物和异物。
 - **旋转部件（例如叶轮）不得磨损固定部件（点火花！）**
 - 是否连接了地线和外接地线。
 - 正确连接正温度系数半导体元件。
 - 安装位置和冷凝水排水口位置是否相吻合。
 - 接线数据与铭牌上的说明是否相符
- 调试：
 - 根据接电情况和当地的情况接通马达。
 - 检查旋转方向：**如果旋转方向错误，请根据电路图予以纠正。**
 - 旋转稳定性
- 如果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

- 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：如果马达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）。

- **Outdoor motors: If a motor 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).
 - Motor must be standing still!
 - Open the electrical circuit and secure against being switched back on.
 - Verify the absence of voltage.
 - No maintenance work at running motor!
- **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 derivate electric charges. A repaint may lead to dangerous static charges and is therefore not allowed.

i Cleaning

- Regular inspection, if necessary with cleaning, is necessary to prevent imbalance due to ingress of dirt.
- Watch out for vibration free motion.
- Maintenance interval in accordance with the degree of contamination of the motor.
- You can clean the entire motor 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.

CE 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.

- 马达必须保持静止！
- 在断开电路后的防重启保护。
- 确定无电操作。
- 切勿对运转中的马达进行维护作业！
- **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。

i 清洁

- 定期检查，并在必要时进行清洁，以免因污物造成不平衡。
 - 注意运转振动是否正常。
 - 根据马达的污染度确定维护周期。
 - 可以使用湿抹布对整个马达进行清洁。
 - 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。**
 - **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。

CE 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：

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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

