

Centrifugal-/Mixed-Flow 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.



Application

centrifugal:	RE, RH - motorized impellers single inlet
	RZ, RK - motorized impellers double inlet
	RG, RF - fans with scroll single inlet
	RD, RA - fans with scroll double inlet
	GR - plug fan, -unit
mixed flow:	RM - motorized impellers single inlet
	RR - tube or duct fans

(type designation see rating plate) 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

- These assembly instructions are part of the product and, as such, are to be kept accessible at all times.
- 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).

径流/对角式风机



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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不安全产品的买方赔偿责任。



应用

径流：	RE, RH - 单流电机风扇叶轮
	RZ, RK - 双流电机风扇叶轮
	RG, RF - 单流蜗壳式风机
	RD, RA - 双流蜗壳式风机
	GR - 嵌入式风机，嵌入式组件
对角式：	RM - 单流电机风扇叶轮
	RR - 管壳式或流道式风机

施乐百 (Ziehl-Abegg) 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见“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 年以上) 设计。当存在偏差时，必须采取进一步的结构防护措施以确保安全运行。



安全提示

- 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。
- 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。
- 铭牌上的最大许可运行数据是基于空气密度为 $\rho = 1.2 \text{ kg/m}^3$ 。

- **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 fashion and only for the tasks and flow media specified in the order!
- The maximum permissible operating data given on the rating plate are valid from air density $\rho = 1.2 \text{ kg/m}^3$.
- 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.
- Blocking or braking the fan by, say, pushing objects into it is forbidden. This leads to heated surfaces and damage to the impeller.
- A residual risk through inappropriate behavior, malfunction, or affects through acts of God or force majeure during operation of the motorized impeller 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 standard.

- 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。
- 禁止向风扇插入异物, 阻止其旋转。这会导致叶轮表面发热或受损。
- 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。

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".

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327/2011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"。



Transport, storage

- **Wear safety shoes and gloves for handling!**
- Transport the fan(s) either in the original packaging or, in the case of larger fans, on the dedicated transportation fixtures (housing flange, mounting bracket, holes on the motor housing to attach lifting eye bolts), using a suitable means of transportation.
- **GR.. design:** Fan unit may only be lifted and transported using a suitable hoisting device (load spreader). Ensure there is sufficient cable or chain length.
- **Caution: Arrange the lifting beam transverse to the motor axis. Ensure that the lifting beam is sufficiently wide. Chain or cable must not touch the fan impeller during lifting! Never stand under the swinging fan, since life can be at risk in the event of a defect in the transporter. Make sure that the weight information on**



储运

- **在搬运时请穿戴安全鞋和安全手套!**
- 请使用原包装运输风机。运输较大体积的风机时, 请将风机固定在指定的运输装置(壳罩法兰、固定弯角、电机壳罩上用于安装环形螺栓的钻孔)上并使用合适的运输工具。
- **GR...型风机单元只能通过合适的举升工具(支撑横梁)举升并运输。请注意保持绳索和链条的足够长度。**
- **注意: 将支撑横梁相对电机轴横向安装。请注意保持支撑横梁的足够宽度。在举升时请勿让绳索或链条与风机叶轮触碰。切勿站立在摆动的风机下方, 否则如运输工具失灵将产生生命危险。请务必注意风机铭牌上的重量标注信息以及运输工具的允许支撑负载。**
- 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。

the fan rating plate and the permissible loads of the transporter are always observed.

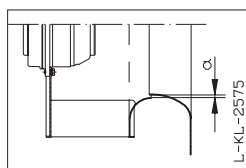
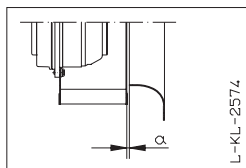
- Observe the weight data on the type code
- Do not transport the fan by the connecting cable!
- Avoid impacts and collisions, especially on fans set-up on devices.
- Watch out for possible damage to the packaging or fan.
- Store the fan in the original packaging in a dry area protected from the weather 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

Lassen Sie die Montage und den elektrischer Anschluss nur von ausgebildetem Fachpersonal vornehmen.

Wear safety shoes and gloves for handling!

- Es obliegt der Verantwortung des System- oder Anlagenherstellers, dass anlagenbezogene Einbau- und Sicherheitshinweise sich im Einklang mit den geltenden Normen und Vorschriften (DIN EN ISO 12100 / 13857) befinden.
 - **Design RE, RH, RM**, 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 $\mu_{tot} = 0.12$
 - Motorbaugröße **068** angegebene Einschraubtiefe beachten.
 - **Design RZ, RK without add on parts**, attachment to axle ends according to manufacturers specifications.
 - **Design RG, RF, RD, RA**: fasten to the flange or mounting bracket dependent on the housing mounting form. Provide screwed connections with suitable screw locking.
- The following applies to all fan designs:
 - Avoid structural damage or stress with installation. Flange and mounting bracket must be fixed flat on a level surface.
 - 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.



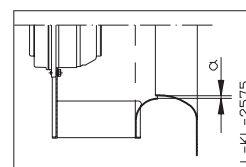
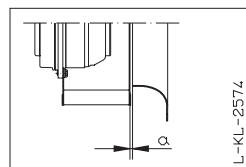
- Bei vertikaler Motorachse muss das jeweils untenliegende Kondenswasserloch geöffnet sein (gilt nicht bei Ventilatoren der Schutzart IP55).
- Motor frame size **068**: The condensation drain-holes are attached dependent on the installation position or application. Please supply information about this 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 according to connection diagram a) in terminal box b) in cable model connection diagram on cable or fan enclosure
-  **Keine Metall-Stopfbuchsenverschraubungen bei Kunststoff-Klemmenkästen verwenden - Stromschlag bei fehlerhaftem Anschluss möglich!**
- Dichtung des Blindstopfens auch für Stopfbuchsenverschraubung verwenden.
- Nur Kabel verwenden, die eine dauerhafte Dichtigkeit in Kabelverschraubungen gewährleisten (druckfest-

安装

安装和电气连接 只能由经过培训的专业人员进行。

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)。
 - **RE, RH, RM 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 $\mu_{ges} = 0.12$
 - 马达尺寸 **068** 注意注明的螺栓最大拧入深度。
 - **RZ, RK 型无附件**，根据设备生产厂商的规定固定在自由的轴末端。
 - **RG, RF, RD, RA 型**，根据壳罩型号的不同固定在法兰或固定弯角上。采用合适的螺栓保护装置配备螺栓。
- 以下要求适用于所有轴流风机：
 - 不要在没有足够支撑下安装。法兰和固定弯角必须平放接触。
 - 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。



- 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），接线图附在电缆或风机壳罩上。




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。
- 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。
- 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

- formstabiler, zentrisch-runder Mantel; z. B. mittels Zwickelfüllung)
- Je nach Art der Kabeleinführung Wasserablaufbogen vorsehen oder Dichtungskitt verwenden.
 - Anzugsmomente für Deckelverschraubung: Ausführung Kunststoff 1,3 Nm, Ausführung Metall 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.
-  Internally connected thermocontact: no external connection feasible or necessary. **Caution:** Thermostats 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."

Unit installation: Design GR..:


- To avoid the transference of disruptive vibrations, we recommend de-coupling the entire plug fan to avoid sounds transmitted through solids. (Spring and/or attenuation units are not a constituent part of the standard scope of delivery). Look at our catalogue for positioning the decoupling elements or request a dimensions sheet stating the type designation and Part.-No.
- **Caution: All contact points must be fixed securely to the base. If the fixing is inadequate there is a risk of the fan overturning.**
- Erect in the open air only if this is expressly mentioned and confirmed in the ordering information. There is a risk of damage to the bearings if the fan remains stopped in a moist environment. Avoid corrosion by suitable protective measures. Roofing is required.
- Making your own alterations/conversions on the fan module is unacceptable - safety risk.
- In the case of a vertical motor axis, the respective lower condensation drain hole must be open.



Betriebsbedingungen

- Do not operate Fans in an explosive atmosphere.
- Switching frequency:
 - Fans are rated for S1 continuous operation.
 - Controls must not allow extreme switching operation.
- ZIEHL-ABEGG Centrifugal 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

- 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。

-  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到控制器回路中,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240V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。
- 设备摆放: GR.. 型:**
- 我们建议隔离整个无蜗壳风机,以防止振动的传递及声波通过固体传递。(弹簧和减震器不是标准供货范围)。减震器3的定位请参见我们的产品目录或根据型号和物料号索要相应尺寸图。
 - **注意:所有支撑点必须与地基连接。如果固定措施不足将导致风机倾倒危险。**
 - 只有在订购单内明确注明和确定的情况下才可露天搭建。在潮湿环境下,较长时间的停机可导致轴承损坏的危险。采取相应的防护措施以避免腐蚀。必需搭建遮篷。
 - 不得擅自对风机进行改装—安全风险。
 - 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)。



操作条件

- 风机不能运行于易爆环境。
- 开关频率:
 - 风机适用于S1连续运行模式,
 - 不能极度频繁起停运行!
- 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。
- 若运行时的漏电流大于3.5 mA,则必须依照DIN EN 50178,第5.2.11.1条标准的规定接地。
- 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

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.
- 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 a frequency changer with integrated sine filter.
- **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.
- Corrosion is possible at the cutting edges on sendzimir galvanised parts.



Inbetriebnahme

- Vor Erstinbetriebnahme prüfen:
 - Einbau und elektrische Installation fachgerecht abgeschlossen.
 - Elektrischer Anschluss gemäß Schaltbild durchgeführt (Schaltbild im Klemmkasten, bei Kabelauführung an Kabel oder Wandring)
 - Drehrichtung entspricht Drehrichtungspfeil auf Ventilatorflügel bzw. Ventilatorgehäuse. Maßgeblich für die Funktionalität des Ventilators ist die Luftförderichtung bzw. die Drehrichtung und nicht das Motordrehfeld.
 - Schutzleiter angeschlossen.
 - Stimmen Anschlussdaten mit Daten auf Typenschild überein.
 - Stimmen die Daten des Betriebskondensators (1~ Motor) mit den Daten auf dem Typenschild überein.
 - Sicherheitseinrichtungen montiert (→ Berührungsschutz).
 - Temperaturwächter/Motorschutzschalter fachgerecht angeschlossen und funktionsfähig.
 - Montagerückstände und Fremdkörper aus Ventilatorraum entfernt.
 - Kabeleinführung dicht (siehe "Montage").
 - Sind die zur Einbaulage passenden Kondenswasserlöcher (falls vorhanden) geöffnet bzw. geschlossen (gilt nicht bei Ventilatoren der Schutzart IP55)?
- Inbetriebnahme darf erst erfolgen, wenn alle Sicherheitshinweise überprüft und eine Gefährdung ausgeschlossen ist.
- Check rotational direction/air feed direction: Definition of the rotational direction according to pictures.

Design	Figure	
RE, RG..P/S/R, RF	1	looking at rotor
RZ, RD..P/S/R	1	looking at motor shaft and cable
RH, RG..A, RG..M	2	looking at rotor
RD..A/K	2	looking at motor shaft and cable
GR	2	looking at rotor
RM, RR	3	looking at rotor

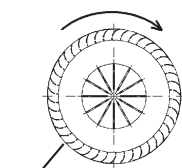


Fig. 1

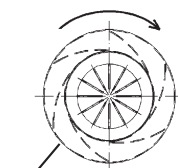


Fig. 2

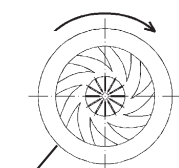


Fig. 3

- Auf ruhigen Lauf achten. Starke Schwingungen durch unruhigen Lauf (Unwucht), z.B. durch Transportschaden

大。因此，我们推荐使用集成有正弦滤波器的Fcontro变频器

- **如果使用其它制造商生产的电压控制器或变频器进行风机的转速控制，我们将不负责马达的正常功能与损坏进行质量担保。**
- A计权声功率级可大至80dB(A)，详见产品目录。
- 带有摩擦密封装置的 IP55- 风机 可能会产生附加噪音。
- 对于经过森氏镀锌的零部件，其切边可能出现腐蚀。



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？
 - 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)?
- 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

安装位置	图	
RE, RG..P/S/R, RF	1	转子视图
RZ, RD..P/S/R	1	电机轴和电缆视图
RH, RG..A, RG..M	2	转子视图
RD..A/K	2	电机轴和电缆视图
GR	2	转子视图
RM, RR	3	转子视图

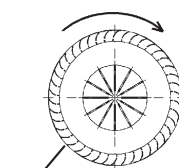


Fig. 1

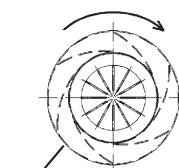


Fig. 2

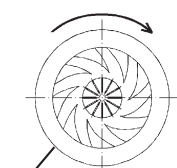


Fig. 3

- 检查风机平稳运转。强烈的振动是由不平稳运行造成的（不平衡），例如运输途中损坏或不当处理造成的。

oder unsachgemäße Handhabung, können zum Ausfall führen.



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, and 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.
- Due to the selection of bearings with "lifetime lubrication", the Fan is maintenance-free. Once the grease consumption period has expired (for standard applications, approx. 30-40,000 hrs.), it is necessary to replace the bearings.
- Take note of abnormal operating noise!
- Watch out for vibration free motion!
- Replace the bearings at the end of the grease-consumption period or if they are damaged (does not apply to motor frame size 068). To do this, ask for our Maintenance Guide or contact our Repair Department (special tools may be required!).
- Replace bearings only with original parts (ZIEHL-ABEGG special-grease).
- Please contact our service department about any other damage (e.g. winding damage).
- 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.
- Loosening of fan blade, impeller and balancing weight.



Disposal / recycling

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



维修、维护、清洁

- **在危险区域内对风机进行作业时：**
 - 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。
 - 切勿对运转中的风机进行维护作业！
- **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，避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风机进行清洁。
- 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。
- 风机因使用带有长效润滑剂的滚珠轴承而无须维护。在润滑剂消耗周期 (约30-40,000 h) 过后必须更换轴承。
- 留意异常运行噪声！
- 注意运转振动是否正常！
- 润滑剂消耗周期后或在出现损坏时更换轴承 (不适用于尺寸为068的马达)。请索取我们的维护说明书或与我们的维修部门联络。(或使用专用工具！)
- 更换轴承时请仅使用原装滚珠轴承 (施乐百特殊油脂)。
- 出现其它损坏 (例如线圈损坏) 时请与我们的维修部门联系。
- 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。
- 可从风机扇叶、转轮和平衡块松开。



废物处理/回收

废物处理必须专业、环保，并按照法规执行。

CE Hersteller

Unsere Produkte sind nach den einschlägigen internationalen Vorschriften gefertigt.

Haben Sie Fragen zur Verwendung unserer Produkte oder planen Sie spezielle Anwendungen, wenden Sie sich bitte an:

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

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Heinz-Ziehl-Strasse
D-74653 Kuenzelsau
Tel. 07940/16-0
Fax 07940/16-300
info@ziehl-abegg.de

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