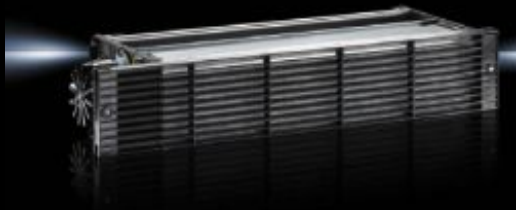


Rittal – The System.

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Tangential fans for 482,6 mm (19")



3144.000
3145.000

Assembly and operating instructions

ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES

FRIEDHELM LOH GROUP



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1 Application

- Cross flow fans (type designation see rating plate) are not ready-to-use products, but designed as components for aerodynamic devices, machines and installations.



The fans may only be operated when they are installed as intended, and when safety is ensured by safety equipment according to DIN EN ISO 13857 (DIN EN ISO 12100) or by other protection measures.

- Cross flow fans are suited to a wide range of applications due to their slim construction design. They stand out against other fans particularly by virtue of their broad laminar air band with favourable noise response.
- Speed control through voltage reduction is possible, depending upon the application.
- All fans are dynamically balanced on two planes in accordance with DIN ISO 1940, Section 1.

2 Safety instructions



- The cross flow fans are only intended for the transfer of air or air-like mixtures. They cannot be used in hazardous areas for the transfer of gas, mist vapours or mixtures. Nor can they be used for the transfer of solid components in the transfer medium.
- Mounting, electrical connection and commissioning may only be carried out by trained specialized personnel who observe the relevant regulations!
- 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!
- Designer, manufacturers or operators are responsible for proper and safe installation as well as for safe operation!
- Safety features, e.g. guard grilles, are not to be dismantled, circumvented or made inoperative!
- If thermal protector is integrated into winding as motor protection, the thermal protectors must be connected.
- If the temperature monitor is not integrated into the motor circuit (→ wiring diagram), a tripping device is required.

- For motors without a temperature monitor, a motor cut-out switch is to be used for $P_1 > 750$ W ($P_2 \geq 500$ W)!
- Blocking or braking the fan by, say, pushing objects into it is forbidden. This leads to heated surfaces and damage to the impeller.
- It is not possible to exclude a residual risk due to incorrect use, malfunction or force majeure. The designer or constructor of the installation must take suitable safety measures in accordance with DIN EN 12100, e.g. protection devices, in order to prevent hazardous situations arising.

3 Note on the ErP directive

Rittal GmbH & Co. KG 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.

4 Transport, storage

Wear safety shoes and gloves for handling!

- Transport the fan(s) either in the original packaging or using the transport fixtures provided (mounting brackets and bored holes). Use suitable lifting equipment, insofar as required by the dimensions or weight.
- Do not transport the fan by the connecting cable!
- Avoid excessive vibration and shocks.
- Be on the alert for any damage to the packaging or the 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.

5 Mounting

Mounting, electrical connection and commissioning are only to be performed by trained service personnel. Adhere to all machinery-related requirements and specifications supplied by the system manufacturer or machine builder. Wear safety shoes and gloves for handling!

- The following applies for all cross flow fans:
 - Do not install distorted.
 - Housing or mounting bracket must be fixed flat on a level surface.
 - Do not apply force (levering, bending).
 - Standard horizontal installation.
 - Depending on installation circumstances and application, the open motor (IP 10) will require protection against water spray and objects falling into it.
 - If the motor installation is insulated (version with structure-borne noise decoupling using rubber elements), the fan housing must also be earthed where components under voltage are connected to it.
 - The fan discharge must not be adversely affected with respect to flow engineering by installation of or attachments to the fan (e.g. shifting of housing edges, protruding seals).
 - Connect fan only to electrical circuits that can be disconnected with an all-pole isolating switch.
 - Electrical connection corresponding to wiring diagram on housing.
 - Connect the temperature monitor to the tripping device and/or motor cut-out switch.

6 Electrical connection



- Must only be carried out by trained personnel (DIN EN 50 110, IEC 364).
- Connect fan only to electrical circuits that can be disconnected with an all-pole isolating switch.
- The motors have partly metal terminal box or partly screened connecting line (connection to EC-controller).
- 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)!
- Thermal contacts have to be connected.
- **Attention:** Connection directly to the mains supply results in a damage of the motor. Electrical connections must not be short-

circuited since there is danger of demagnetization.

- **Do not touch the connection ends of the motor when it has been switched off and is coming to a stop – Electrical shock due to the effect of the generator.**

7 Operating conditions

- Do not operate the fan in an explosive atmosphere.
 - Switching frequency:
 - The fan is rated for S1 continuous operation.
 - Controls must not allow extreme switching operation.
 - Ziehl-Abegg cross flow fans with integrated external rotor motor are, without restriction, suitable for operation with frequency inverters when the following points are observed:
 - 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.
 - Noise problems can be eliminated by using a sound attenuator.
 - A-rated sound power levels of over 80 dB(A) are possible, see product catalogue.
 - Corrosion is possible at the cutting edges on sendzimir galvanised parts.
- ## 8 Start-up
- Before first-time start-up, check the following:
 - Have installation and electrical connection 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.
 - Is the protective earth connected?
 - Temperature monitor/motor protection switch are

professionally connected and operating properly.

- Connection data complies with the specifications on the type plate.
- Start-up:
 - Switch fan on in accordance with switched state and local conditions.
 - Check: Smoothness of motor operation, **Direction of rotation/direction of conveyance when looking at the motor (see also Fig. 1, 2)**

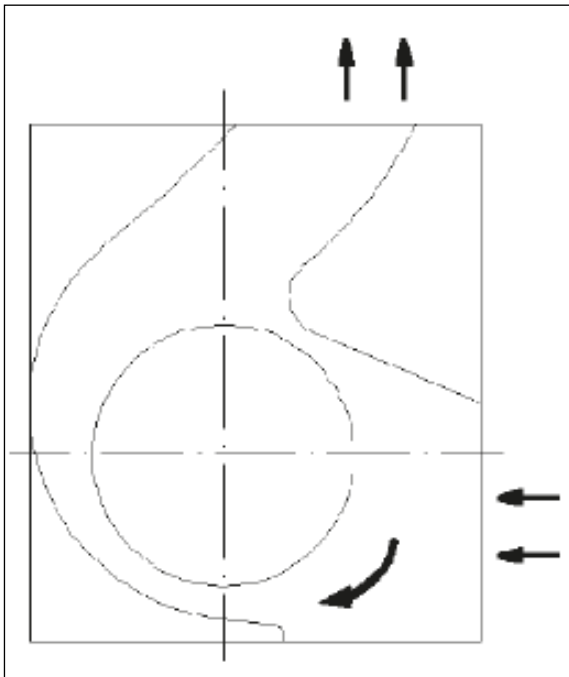


Figure 1: Direction of rotation: right

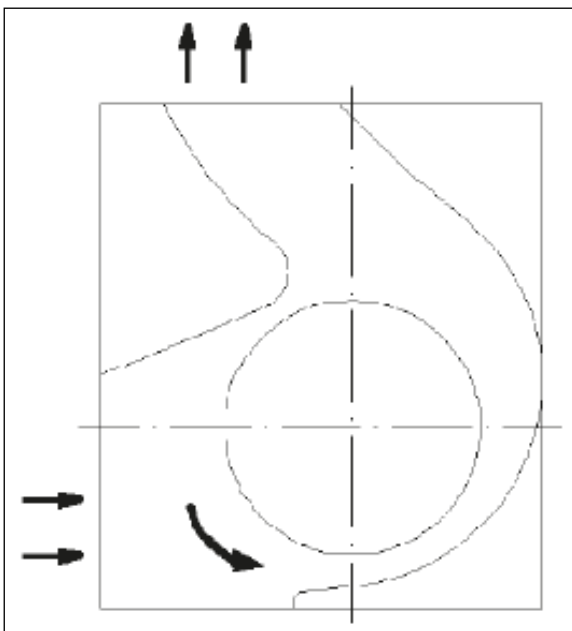


Figure 2: Direction of rotation: left

9 Maintenance, repair

Wear safety shoes and gloves for handling!

- Due to the selection of bearings with "lifetime lubrication" (special grease), the cross flow fan is maintenance-free. Once the grease consumption period has expired (for standard applications, approx. 20-30,000 hrs., for direct current motors with collector, approx. 5-10,000 hrs.), it is necessary to replace the bearings.
- Take note of abnormal operating noise!
- Replace the bearings at the end of the grease-consumption period, or if they should become damaged. Ask for our Maintenance Guide or contact our Repair Department (special tools may be required!).
- Replace bearings only with original parts.
- In the event of any other damage (e.g. motor damage or damage to the fan cylinder), please contact our Repair Department.
- 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.**
- Allow maintenance work to be carried out by trained specialists only.
- **For all repair and maintenance work:**
 - Observe the safety and labour regulations (DIN EN 50 110, IEC 364).
 - Fan cylinder has come to a standstill!
 - Open the electrical circuit and secure against being switched back on.
 - No maintenance work at running fan!
- After dismantling and reinstalling an impeller, the entire rotating unit must be rebalanced in accordance with DIN ISO 1940,-1.
- **Keep the airways of the fan free- danger because of objects dropping out!**
- **Do not bend fan cylinder or blades!**

10 Cleaning

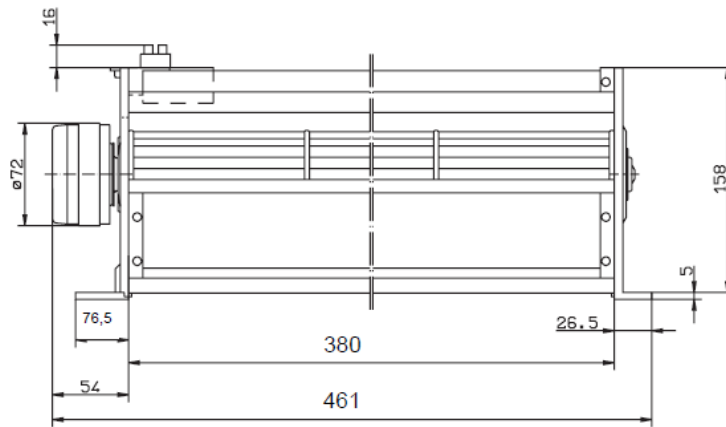
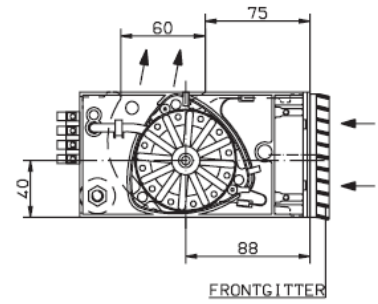
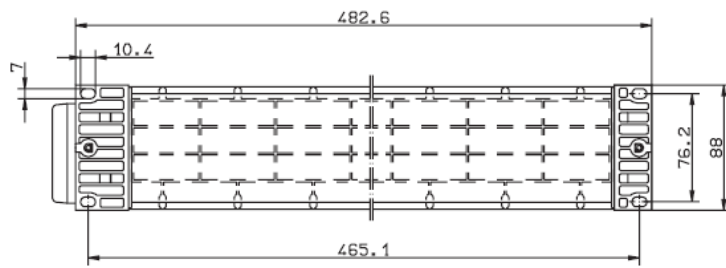
- Regular inspection, and cleaning is necessary to prevent
 - imbalance due to ingress of dirt.
- Clean the fans` s flow area.
- Keep fan air way open; clean the fan cylinder with a brush when necessary.
- Watch out for vibration free motion.
- Maintenance interval in accordance with the degree of contamination of the impeller!
- 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 water-spray for cleaning - particularly when the ventilator is running.**
- If water enters the motor:
 - Dry off the motor winding before using it again.
 - Replace motor ball bearings.
- **Wet cleaning under voltage may lead to an electric shock - danger to life!**

11 Disposal / recycling

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:

12 Dimensions



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