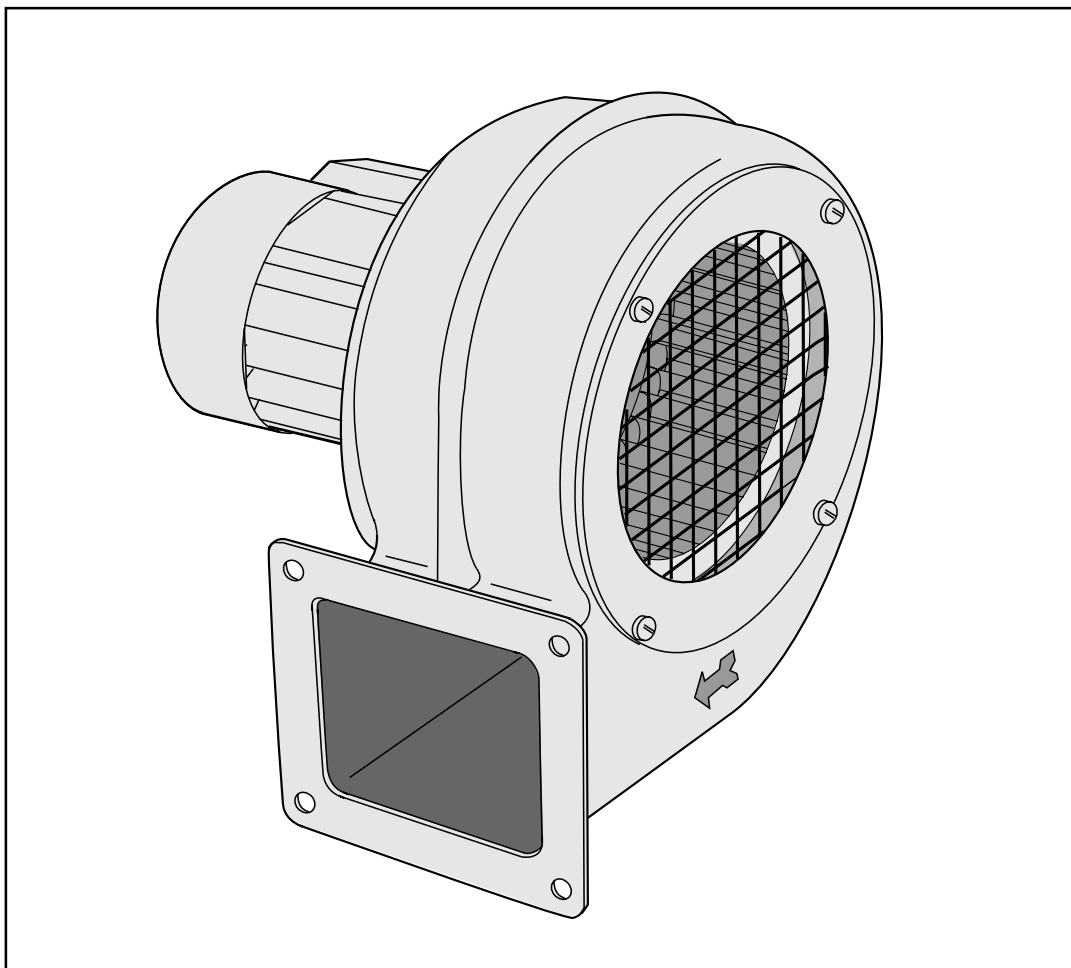




Instructions for Use

Radial Fans

Standard Motor Design



Printed in Germany

We reserve the right to make amendments to the details and illustrations listed as a result of further technical development.
Any form of reproduction, translation and copying – even of excerpts – requires the manufacturer's written approval.

These instructions for use are not updated by an amendment service.
Consult the manufacturer for details of the current status.

Karl Klein Ventilatorenbau GmbH
Waldstraße 24
D-73773 Aichwald

Tel: ++49 (0) 711 36906-0

Fax: ++49 (0) 711 36906-50

Web: www.karl-klein.de

E-Mail: info@karl-klein.de

Status: 01/02

Radial Fans	<h1>Instructions for Use</h1>
Standard motors	



Table of Contents

1	Preamble	2
1.1	Manufacturer's information for the operator:	3
1.2	Warranty.....	3
1.3	Product relevant laws, regulations, directives	3
1.4	Important directives and regulations for accident prevention.....	4
1.5	Scope	4
1.6	Nameplates, information signs.....	5
2	Safety	6
2.1	Designated use	6
2.2	Fundamental safety information.....	7
2.3	Transport and storage.....	8
2.4	General safety information for assembly and operation.....	8
2.5	Emissions.....	9
3	Description	10
4	Assembly / Installation	11
4.1	Type of connection.....	11
4.2	Fan mounting	12
4.3	Assembly and installation information for accessories.....	13
5	Maintenance, care and repair information	14



Instructions for Use

Radial Fans

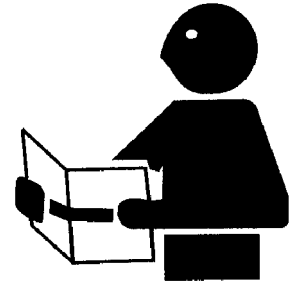
Standard motors

1 Preamble

Follow the safety information!

Read all of the safety information contained in these operating instructions with care.

Before starting work familiarise yourself with the machine handling. It is too late once you have started! Never allow someone without any knowledge of the machine, to operate it.



Copyright

These instructions are copyright to KARL KLEIN Ventilatorenbau GmbH. Neither excerpts nor the complete operating instructions may be copied without the previous approval of KARL KLEIN Ventilatorenbau GmbH.

These operating instructions are designed to accompany the machine.

Important information on safety and the prevention of damage is marked with the following **Symbols** in these operating instructions.

CAUTION, POWER SURGE!



Describes possible hazardous situations. Failure to follow such warning information can lead to death, serious injury or damage to property.

CAUTION!



Indicates a potentially hazardous situation. Failure to follow this can lead to injury or to damage to the product or other items.

Important!



User tips for optimum equipment use and other useful information.



The operating instructions have been produced by the manufacturer based on his knowledge of construction, manufacturing and operation.

The operator can add his particular instructions to it (e. g. for supervisory and reporting requirements, company internal maintenance, care plans). Test periods in accordance with VBG 4 §§ 3 and 5.

Radial Fans	<h1>Instructions for Use</h1>
Standard motors	



1.1 Manufacturer's information for the operator:

As the operator you are responsible for:

- The correct and designated use of the fan by trained, qualified staff.
- Adherence to the safety regulations and safety information and the precautions for works safety and accident prevention,
- Technical instruction of the operating personnel in the use of the machine and their knowledge of the operating instructions.

1.2 Warranty

KARL KLEIN Ventilatorenbau GmbH is responsible for the warranty within the framework of the legal regulations.

The warranty becomes invalid when the behaviours and procedures described in these operating instructions, in particular designated use are **not** adhered to.

Unauthorised modification or alterations to the machine may only be carried out in agreement with the manufacturer.

Only use original spare parts and accessories authorised by KARL KLEIN Ventilatorenbau GmbH. Using other parts annuls our liability for any damage arising.

KARL KLEIN Ventilatorenbau GmbH accepts no liability or warranty for damage arising from faulty assembly or repair.

Even after the guaranty period has expired we recommend the continued use of **KLEIN**-Original-Spare Parts only. Only this will guarantee perfect operation of your machine.

1.3 Product relevant laws, regulations, directives

The following EC-Directives apply for the use of the machine:

98/37/EG The Machinery Directive

93/68/EEC EMC-Directive

The following standards apply for the use of the machine:

DIN EN 292 Safety of Machinery

DIN EN 294 Safety Distances

DIN EN 55014 "Electromagnetic Compatability"

DIN EN 60034-1 "Rotating Electrical Machinery"

DIN EN 60204-1 "Electrical Equipment of Machinery"

DIN EN 60335-2-80 "Safety of Electrical Machinery"



Instructions for Use

Radial Fans

Standard motors

1.4 Important directives and regulations for accident prevention

UVV VBG stands for Accident Prevention Regulations from the Trade Unions Association

UVV VBG 1 "General Regulations"

UVV VBG 4 "Electrical Plants and Operating Materials"

UVV VBG 7w "Fans"

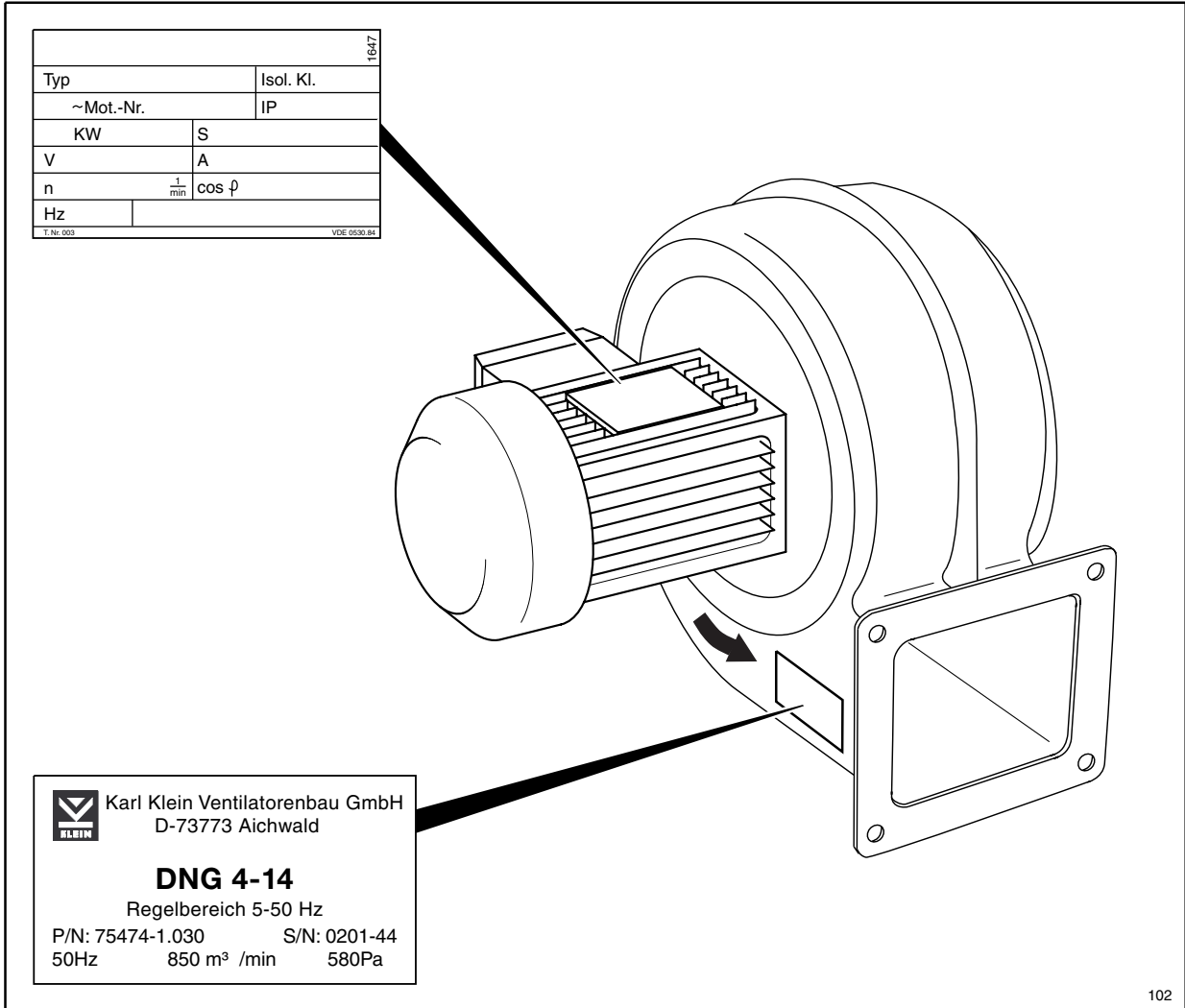
1.5 Scope

The regulations given under 1.3 and 1.4 apply for the Federal Republic of Germany and for the EC countries in part.

If the machine is used outside of the above mentioned countries, then the respective valid regulations are to be followed.



1.6 Nameplates, Information Signs



Important!



The details on the nameplate signify the respective fan type and the capacity. These details correspond with the output requirements ordered and can alter.



Instructions for Use

Radial Fans

Standard motors

2 Safety

2.1 Designated Use

This **KLEIN**-Fan has been designed and manufactured to meet with the requirements placed by gaseous, non aggressive media. Other media must not be pumped. Avoid the pumping of explosive air mixes.

Any other use is seen as not the use for which the fan was intended. The operator has exclusive liability for damage and danger arising from such use.

The following preconditions must be adhered to for fan operation:

- The pumping medium must not contain any solids or other impurities. If necessary use a filter (see accessory list produced by Klein).
- The temperature of the pumping medium must not be less than $-15\text{ }^{\circ}\text{C}$ or more than $80\text{ }^{\circ}\text{C}$.

Excepted from this are fans with a temperature limiter. It then applies that, **insofar as no other values are specified on the nameplate:**

at a speed of 1400 rpm = max. $200\text{ }^{\circ}\text{C}$

at a speed of 2800 rpm = max. $300\text{ }^{\circ}\text{C}$

as a temperature limit.

Where a temperature limiter is used the fan's speed must not be regulated.

CAUTION!



- Always use fans with a suction protection grid.
- When operating on the frequency converter, the details of the control range given on the fan nameplate are to be followed. **If the control range is exceeded the motor will be overloaded.**
- Where condensation water drain holes are used and in the case of locations where moisture and thus condensation water can be reckoned with, the condensation that has collected must be drained off via the condensation water drain holes at the lowest point of the end shield at regular intervals and the opening then closed again.

Part of designated use is also the following and adherence to the preconditions and information given in these operating instructions.

Important!



See the order confirmation for details of further approved values.

Radial Fans	<h1>Instructions for Use</h1>
Standard motors	



2.2 Fundamental safety information

KLEIN-fans are designed and manufactured in accordance with the recognised technological rulings, the Safety at Work and Accident Prevention Regulations and the EC-Directive on the Safety of Machinery. They are state of the art.

In spite of this fans can present a hazard, in particular in the case of

- improper use or
- use not as directed.

POWER SURGE!



The fan may only be used in a state that is consistent with engineering and with undamaged electrics. Faulty equipment presents a hazard to life and limb.

The electrical connection may only be carried out by specialist electricians with the relevant qualifications and training.

ATTENTION!



Qualified electricians are people who are familiar with the set-up, assembly, initial operation and operation of the equipment/machine and have a qualification relevant to their job, such as e. g. (in accordance with VBG 4):

- Training or instruction or authorisation to set up, earth and mark electric circuits and equipment in accordance with the standards of safety technology.
- Training or instruction in accordance with the standards of safety technology in the care and use of suitable safety equipment.
- Accident prevention training

The personnel must be familiar with all measures in these operating instructions that describe the correct handling and specialist handling of this piece of equipment.



Instructions for Use

Radial Fans

Standard motors

2.3 Transport and storage

Fans should if possible only be stored in closed, dry rooms. Storage in open air areas with roofing is only permitted for a short period of time. In this case steps must be taken to protect the fans from harmful environmental conditions. They must also be secured against mechanical damage.

2.4 General safety information for assembly and operation

2.4.1 Protective equipment

The following measures against possible residual danger that can above all arise from use in a fashion other than the intended use are to be adhered to.

- Only run the fan with a suction protection grid and secure from unauthorised dismantling.
- No materials which can easily be drawn in such as e. g. polystyrene, cloths, or similar are allowed in the suction area. Ensure that there is sufficient distance for suction.
- Pay attention to the air outlet direction and area. If the blade breaks the broken pieces can cause secondary damage in the buildings to be cooled down.
- Protective electrical equipment must meet the requirements of the machine in which the fans are to be fitted (e. g. motor protection circuit breaker etc.).

Radial Fans	Instructions for Use
Standard motors	



2.5 Emissions

2.5.1 Dust

Appearance of harmful emissions is dependent on the medium to be pumped.

2.5.2 Noise

Fan running noises can reach a high noise level in certain forms of fitting and fields of application.

If activities near the fan are unavoidable, then noise protection measures are to be undertaken (e. g. wearing ear protection).

2.5.3 Vibrations

The dynamic balance of KLEIN fans is of such a high quality that no hazardous vibrations occur.

The unavoidable unbalance can be reduced by using vibration reducing fastening elements, so that no transfer to other components is possible.

2.5.4 Heat protection

CAUTION!



In certain operating modes motors can reach 80°C on the upper part of the casing. Allow to cool down before touching. Avoid radiation heat from other machine components or equipment. Where there is constant radiation heat there is a danger of bearing damage due to lubrication running out.



Instructions for Use

Radial Fans

Standard motors

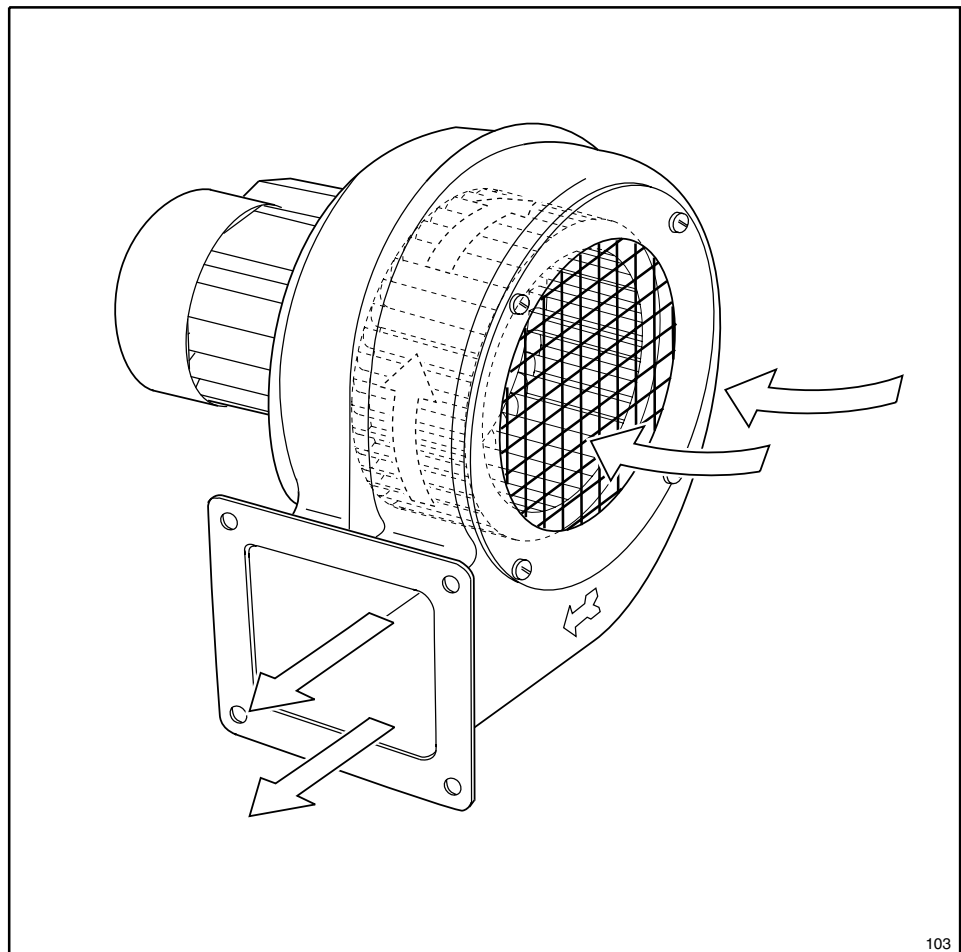
3 Description

Standard version

KLEIN-fans are clockwise running radial fans carried on ball bearings for single phase A.C. power supply or three-phase current connection.

Where the fitting requirements are laterally reversed, the direction of running is "anti-clockwise". The respective medium is drawn in axially and blown out radially in the required direction (see illustration).

Medium flow direction



Radial Fans	<h1>Instructions for Use</h1>
Standard motors	



4 Assembly / Installation

Assembly is dependent on the requirements placed on the fan and the function specific requirements at the place of assembly (placed on the machine or the piece of equipment).

Electrical installation may only be carried out by a specialist electrician.

POWER SURGE!



There is danger of a power surge when the cable ends of the fan motor are connected to the mains supply. Always de-energise the system before working on live parts.

4.1 Type of connection

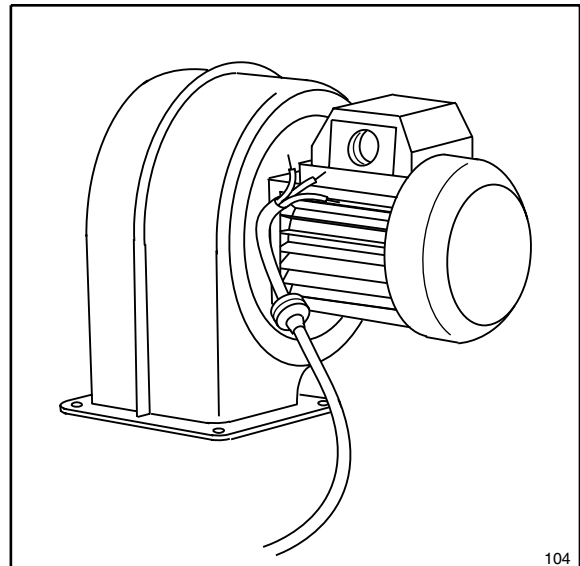
Note!



Fit the power cable dependent on the requirements for use and the respective local regulations.



*The terminal connections are shown in the terminal box. **The wiring diagram must be followed!** The correct connection ensures trouble-free operation.*



104

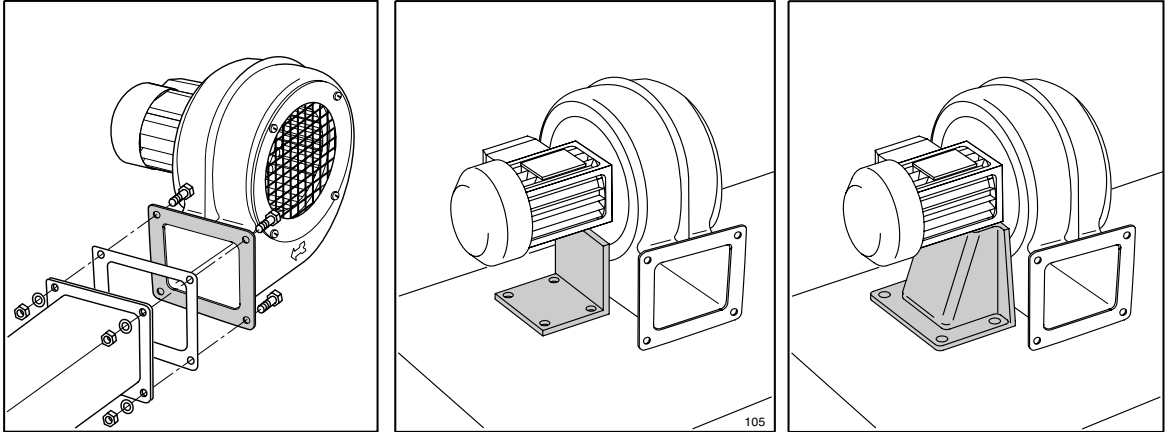


Instructions for Use

Radial Fans

Standard motors

4.2 Fan mounting

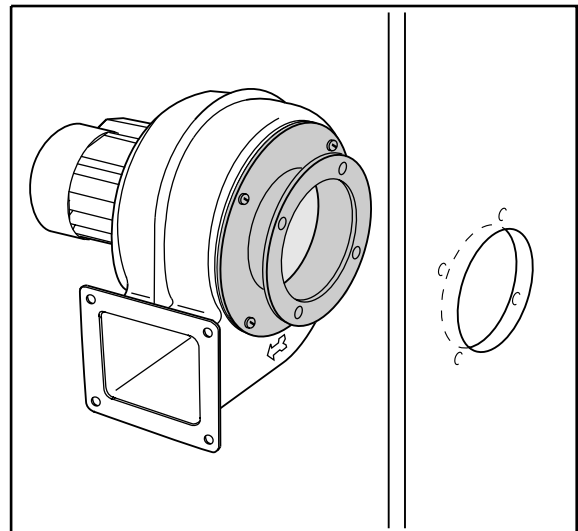


ATTENTION!



The fan may only be mounted on one spot!
Either on the blow out flange, ventilator foot or the motor bracket or on the pump above the pump intermediate flange.
Avoid double mounting!
This can lead to damage and breakage of fan parts.

Intermediate pump flange
for wall mounting



4.3 Assembly and installation information for accessories

4.3.1 Temperature limiter

An electrode radiator (1) between the motor and the fan cools the motor shaft.

ATTENTION!

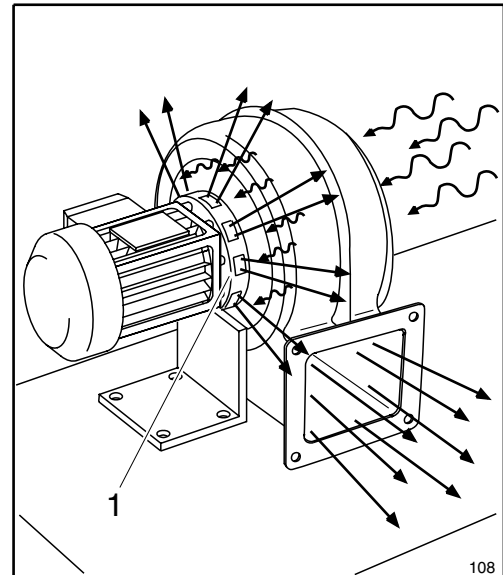


The ambient temperature 40 °C must not be exceeded for effective function.

ATTENTION!



The temperature limiter function is dependent on the speed. The speed must not be reduced for this reason.



108



Instructions for Use

Radial Fans

Standard motors

5 Maintenance, care and repair information

Different harmful influences are described in the operating instructions. If these are avoided the KLEIN-fan will be **maintenance free for the duration of its use**.

Care however is necessary as dust can always occur. A covering of dust on the motor can lead to **overheating** and consequently to **bearing damage**. Keep the motor housing clean for this reason.

Send faulty, out of centre or damaged fans to the manufacturer for repair. It is only there that a correct and expert repair and tested balancing is guaranteed.

Only allow qualified personnel to dismantle the fan.

ATTENTION!



If the **balance clips (1)** on the fan vanes are moved during dismantling the fan will become unbalanced.

