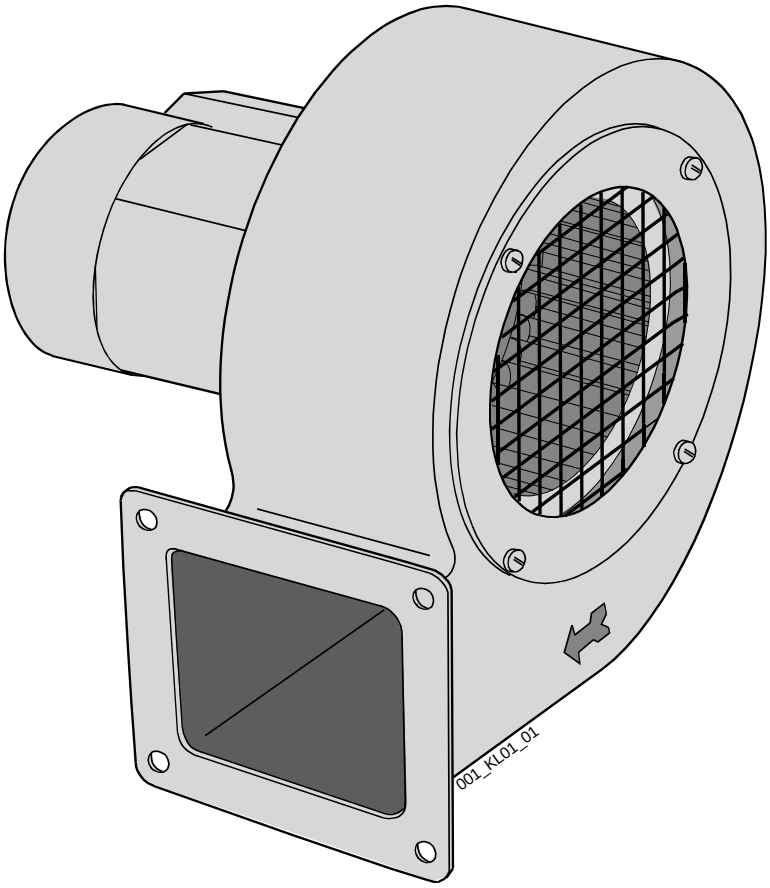
Installation and assembly instructions

for standard configuration radial blowers



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This operating manual is not subject to update services.
You may inquire with the manufacturer for the most current revision.

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Table of Contents

Comply with safety instructions!

Please read all safety instructions contained in this operating manual with care.

Familiarize yourself with the operation of the blower before placing it into service. It will be too late to do so when doing the work!

Never permit someone without the proper technical knowledge to install and operate this blower.

Applicability

This operating manual applies to all blowers with the following model designations:

ENG … ; DNG … ; EMV … ; DMV … ; EMVL … ; DMVL … ; DHV … ;

DSV2 … ; DSV4 … ; EEG … ; DEG …

Purpose of the operating manual

This operating manual accompanies the equipment. It also contains the installation instructions.
The operating manual was prepared by the manufacturer on the basis of their knowledge and experience with design, production and operating procedures.

The operating entity may supplement this manual by special instructions (for instance for supervisory and reporting duties, operating specific maintenance and care schedules),

Symbols used in this operating manual

The graphic representations and drawings are basic illustrations of a blower. They are not to scale and do not correspond to the proportions of all blowers in the product range.
These illustrations are only intended as a guide.

Detailed dimensions and views are shown in the catalog.

Copyright

1 Preliminary remarks

1.1 Manufacturer's instructions to the operating entity

As the operating entity, you are responsible for:

- the correct technical and designated use of the blower by trained personnel,
- the compliance with safety regulations and safety instructions and any occupational safety and accident prevention measures,
- the technical training of the operating personnel on the equipment, and for their awareness of the operating manual.

1.2 Blower operating entity obligations

The Operational Safety Directive [BetrSichV or equivalent other national regulations] requires the operating entity to make a variety of provisions that fall into the operating entity's scope of responsibility for the use of technical equipment.

Pursuant to §3 of the Operational Safety Directive [BetrSichV or equivalent other national regulations], the operating entity is required to conduct a hazard assessment of the area where the machinery is to be used. This assessment is intended to recognize and to take into consideration hazards that may arise when using the machinery in combination with the production materials and the environment.

Pursuant to §4 Operational Safety Directive [BetrSichV or equivalent other national regulations], the operating entity is responsible for taking any required steps and for selecting the equipment that is suited for the conditions at the deployment location and that will ensure safety and health protection if used as designated.

The operating entity is solely responsible for selecting the equipment (blower) suitable for the intended area and the intended location.

1.3 Product warranty

KARL KLEIN Ventilatorenbau GmbH provides a product warranty as part of its general terms and conditions of sale and delivery.

The warranty is rendered null and void if the installation and operating procedures described in this operating manual, in particular the designated uses, are not complied with.

Any unauthorized reconfiguration or modification of the blower is prohibited.
Only use replacement parts and accessories approved by KARL KLEIN Ventilatorenbau GmbH. The use of other parts may impair the function. The operating entity is liable for any resulting damages.

KARL KLEIN Ventilatorenbau GmbH does not assume liability or honor warranty claims for damages resulting from repairs performed by the customer or an incorrect blower installation.

1.4 Symbols used

This operating manual uses the following symbols. These are complementary to safety and damage prevention instructions.

Attention Electrical Power Shock!

Designates potentially occuring hazardous situations. Not observing these warning labels can result in death, serious injures or property damage.

Attention!

Designates a potentially occuring hazardous situation. Not observing these labels can result in injuries or property damage.

Instruction!

Application instructions for the optimal use of the equipment and other useful information.

1.5 Product-relevant statutes, requirements, regulations

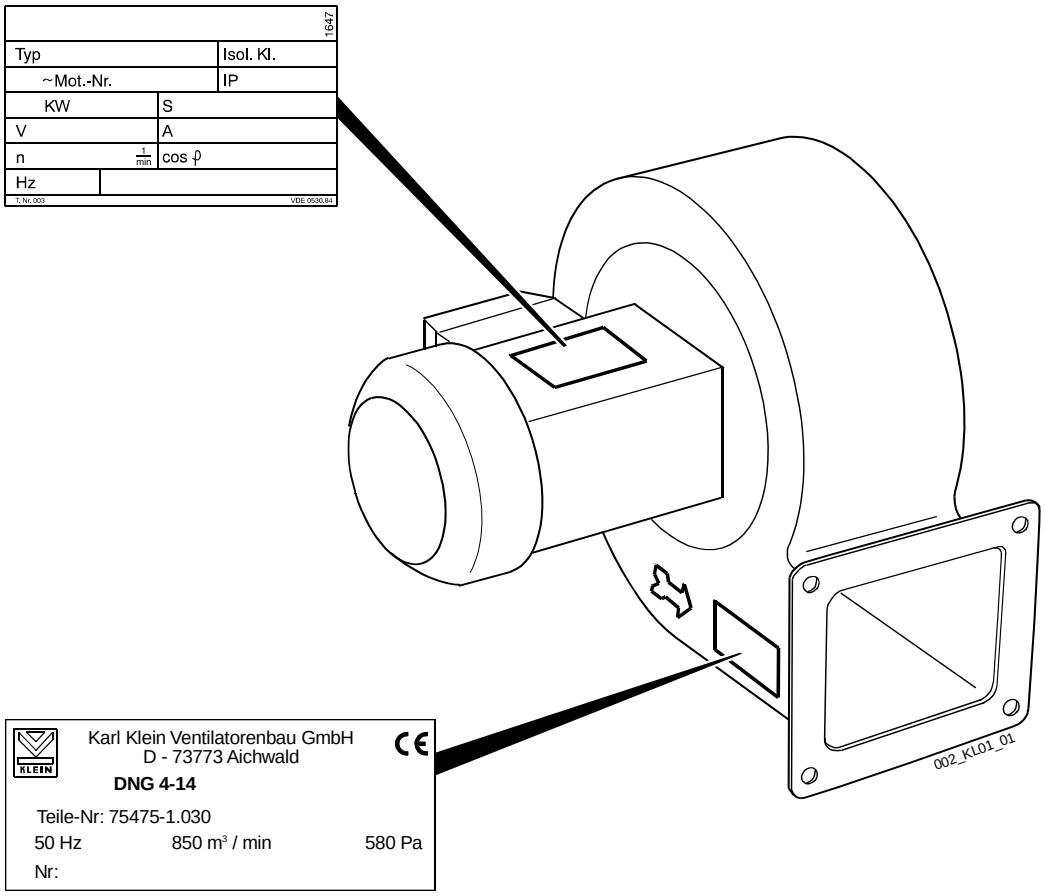
Operating this equipment is subject to the following directives and regulations:

2006/42/EC Machinery Directive

1.6 Type plates and instruction labels

Instruction!

The specifications on the type plate are important for the designated use.
All labels and plates must be legible at all times. Illegible or lost type plates and warning labels must be replaced immediately.



The information on the type plates identifies the respectively desired blower type and rating. The information on the type plate corresponds to the performance ratings that were ordered. These may be subject to change.

Instruction!

The values on the type plate take precedence. If in doubt, the information on the type plate applies. The information is binding.

Other performance ratings are found in the order confirmation

2 Designated use

This KLEIN blower is designed and fabricated for

- conveying gaseous, non-aggressive media.

When using suitable material and after applying surface protection (corrosion protectant), the blower can also be used to convey aggressive media (consultation with the manufacturer required).

- Other media may not be conveyed.
- It is mandatory to avoid explosive air mixtures.

The designated use encompasses observing and complying with the specifications and instructions in this operating manual.

2.1 Limitations to use and special considerations

- The conveyed medium may not contain solids or other contaminants. Use a filter as needed (see KLEIN list of filter accessories).
- Conveying contaminated air is possible on an exception basis. You must consult with the manufacturer, KARL KLEIN before doing so.
- The conveyed medium temperature must not fall below -15ºC, and must not exceed +80ºC.
- Blowers with a temperature cut-off are excluded from this temperature range. The applicable temperature limits for these are:
  - at 1,400 RPM = max. 200 °C
  - at 2,800 RPM = max. 300 °C
- If the blower is to be used in an open blowing configuration, or if it is likely that a hazard exists for the downstream machine or installation if the blower wheel breaks, a protective screen must be mounted to the blower exhaust opening.
- The ambient temperature may not be below – 20 °C or exceed + 40 °C.
- The blower may only be operated in an installed condition, i.e. mounted to or into systems and machines.
- If a temperature cut-off is used, the blower may not be operated based on RPM controls.
- The blower must always be operated with an installed intake protective screen.
- When operating the blower with a frequency converter, the allowable operating range information on the blower type plate must be observed.

Instruction!

The values shown on the type plate take precedence.
Other performance ratings are found in the order confirmation.

Instruction!

The motor can be overloaded and destroyed if the operating range is exceeded.

2.2 Non-designated uses

Hazardous and non-designated uses specifically include:

- conveying explosive or combustible media
- conveying abrasive media;
- conveying without a suitable intake protective screen;
- operating the equipment without electrical protective equipment (such as motor cut-off switch);
- in areas with dust build-up and dust load in the environment; the dust deposits must be held low enough to prevent the dust smoldering temperature from being reached;
- any other use that deviates from the designated uses, and which will result in a hazardous condition.

3 Safety

3.1 Basic safety instructions

Klein blowers are designed and fabricated in accordance with accepted technical practices and occupational safety and accident prevention regulations, as well as the EC Machinery Safety Directive. They correspond to the state of the art.

Nevertheless, blowers in operation can represent a hazard, specifically as a result of

- inappropriate use or
- non-designated use

Instruction!

- The blower may only be used in impeccable condition and with undamaged electrical equipment. Operating a defective machine poses a danger to life and limb.
- Easily ingested materials, such Styrofoam, fabric-rags, or similar may not be located in the vicinity of the intake. Care must be taken that sufficient clearance is provided to the intake.
- Take note of the air exhaust direction and area. The fragments from an impeller wheel failure must be prevented from damaging the downstream equipment to be cooled.
- The electrical installation must correspond to the requirements of the machine into which the blowers are to be installed (i.e. motor cut-off switch).
- The personnel must be familiar with all steps described in this operating manual that relate to the proper operation and use of this equipment.
- Only operate the blower with an intake safety screen and secure this against unauthorized disassembly.

Attention! Burning hazard when touching hot surfaces!

In certain operating modes, the motors can reach a temperature of 80 °C. Allow the equipment to cool down before touching it. Radiant heat from other machinery components or installations must be avoided. Subjecting the equipment to continuous radiant heat may result in bearing damage from loss of lubricants.

3.2 Emissions

3.2.1 Dust

The incidence of hazardous emissions is dependent on the various media to be conveyed.

3.2.2 Noise

The noise profile depends on the installation type, on the environmental conditions and the respective operating load on the blower.
The operating noise levels of the blower can reach high levels for certain installation types and uses. The values can range from 60 to 110 dB (A). Detailed noise level information can be found in the KLEIN catalog. If work must be performed in the vicinity, appropriate noise protection steps must be taken by the operating entity as part of its duties in accordance with the Operational Safety Directive [BetrSichV or equivalent other national regulations], for instance hearing protection.

3.2.3 Vibrations

KLEIN blowers are designed to such a high balance quality grade that no dangerous vibrations will occur.
The vibrations resulting from the unavoidable residual imbalance can be reduced by installing the equipment with vibration dampers, thus preventing the vibration from being transferred to other components.

3.3 Overheating protection

To avoid potential overheating, the operating entity can request a thermal winding protector when placing the order.

4 Transportation and storage

Instruction!

A suitable lifting strap should be used and the motor secured in such a way that balance is maintained when transporting and installing weights in excess of 25 kg.
Only transport the equipment with suitable rigging and lifting implements. Prevent the blower from tipping

Attention!

During transport, body parts are subject to a crushing hazard between the blower and the surroundings.

Instruction!

Dispose of packaging materials properly. Do not burn them.

Storage instructions!

Prior to transporting the blower to the installation site, the equipment should only be stored in enclosed, dry areas.
Storage in open spaces that are protected by roofing is permitted for only short periods.

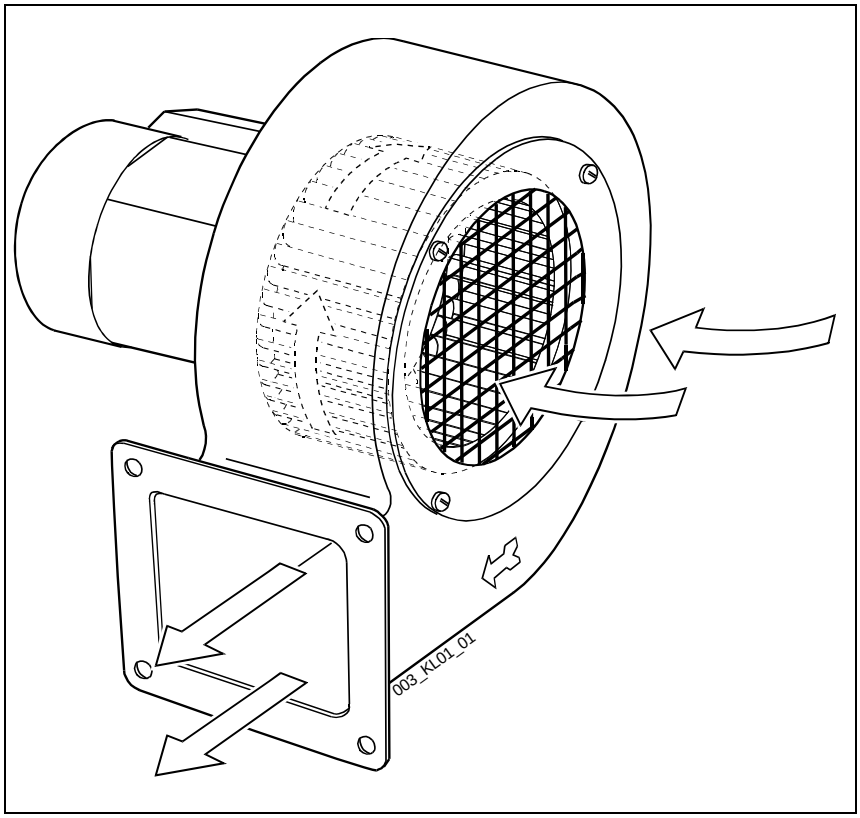
The blower must be protected against damaging environmental influences and mechanical damage.

5 Description

Standard configuration

KLEIN blowers are radial blowers with a ball-bearing mounted electrical drive.

The respective medium is ingested axially and exhausted radially in the desired direction (see illustration).



Flow direction of the medium

6 Assembly/installation

6.1 General safety instructions for assembly and operation

Warning! Life threatening electrical shock hazard!

A life threatening electrical shock hazard exists if the blower cable ends are connected without first disconnecting the electrical power. Always disconnect power prior to working on components that are electrically energized.

- The electrical hook-up may only be performed by correspondingly qualified and trained electricians.
- Trained electricians are persons who are familiar with the assembly, installation, initial startup and operation of the equipment/machine and possess an appropriate qualification, or who are familiar with safety technology standards in the maintenance and use of appropriate protective gear and accident prevention procedures.
- The installation depends on the requirements placed on the blower and the function specific conditions at the installation location (on the machine or the equipment).

6.2 Hook-up/ installation

Instruction!

The terminal assignments on the terminal block can be found in the terminal box The circuit diagram must be observed.! A correct hook-up ensures trouble-free operation.

Instruction!

Install the power supply cable in accordance with the operating requirements and the respective local regulations.

6.3 Assembly and installation requirements

Additional mandatory requirements:

Instruction!

The operating entity must install a suitable motor cut-off switch.
The minimum specifications for this (nominal current) are shown on the type plate.

Instruction!

The blower may only be mounted using one location! Either at the exhaust flange, the blower base and/or motor console or at the intake mounting flange.

Attention!

During installation, body parts are subject to a crushing hazard between the blower and the surrounding environment.

- If the blower is operated with an open intake, the surrounding area must be free of ingestible objects.
- The minimum distance between a wall and the cooling-blower enclosure is 20 mm
- The breaker must correspond to the motor specification (type plate).

6.4 Blower mounting

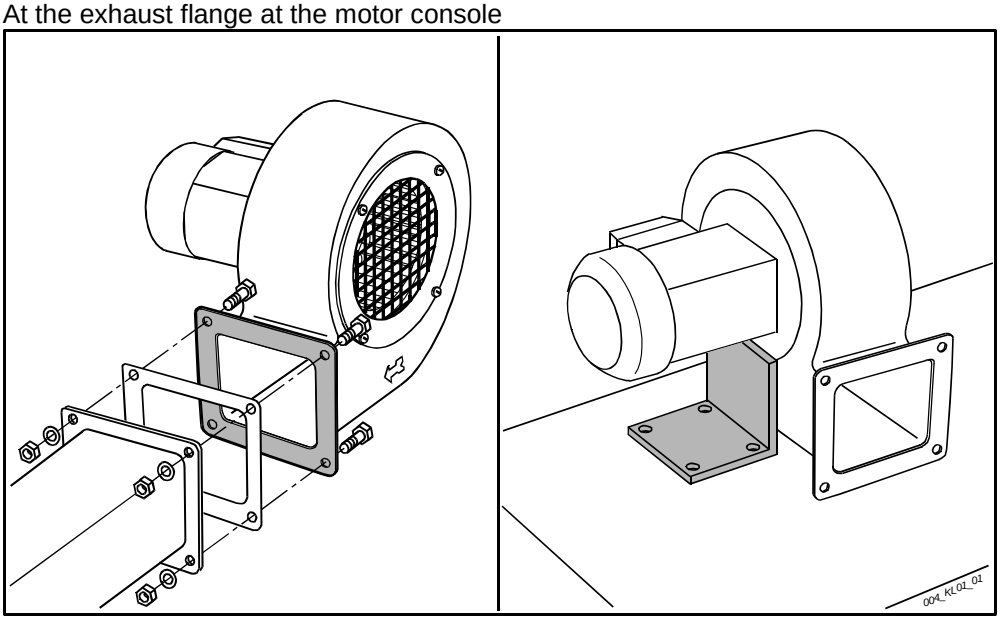
Attention! Potential for equipment damage!

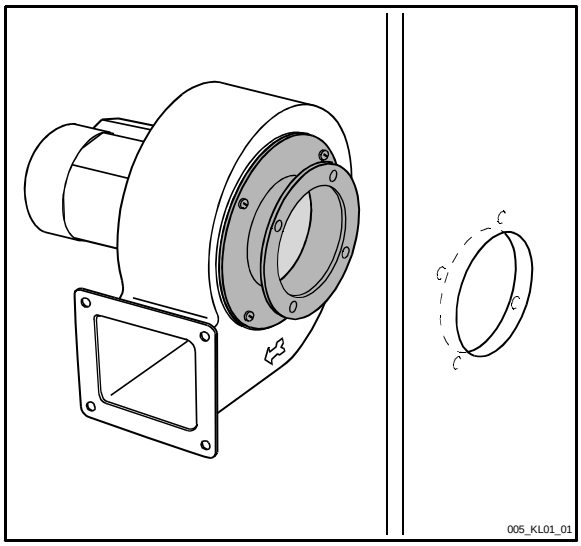
A double sided mounting must be avoided. This can result in damage and failure of blower components. Decouple the structure bound sound by installing a canvas expansion sleeve.

The blower may only be mounted using one location! Either at the exhaust flange, the blower base and/or motor console or at the intake mounting flange.

Installation examples:

At the exhaust flange at the motor console





At the intake mounting flange for wall installation

6.5 Assembly and installation instructions for accessories

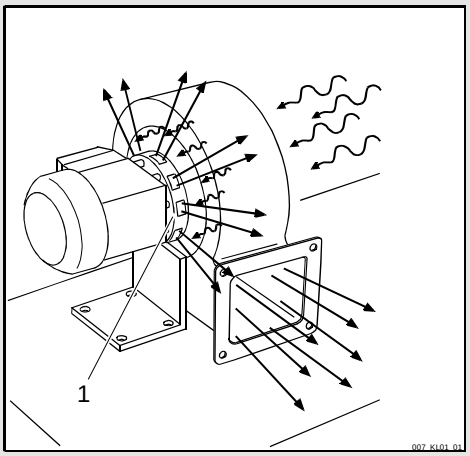
Temperature cut-off

A heat sink (1) between the motor and the blower cools the motor shaft.

Attention! Malfunction!

The ambient temperature may not exceed 40 °C. Otherwise the temperature cut-off may malfunction.

Never perform repairs on the blower on your own. Property damage may occur if the assembly and subsequent use are not performed properly.



The function of the temperature cut-off is dependent on the RPM. For this reason, the RPM setting may not be lowered when a temperature cut-off is installed.

7 Maintenance, care and repair work

Instruction!

The blower is maintenance free for the duration of its intended use.

Depending on the intended use of the blower and the respective system concept, the operating entity may prepare additional cleaning and/or maintenance intervals.

7.1 Maintenance and care

- When using condensation water drainage holes, or when the equipment is deployed in locations with dew buildup, causing condensation water to collect in the motor's interior, the collected condensation water must be drained in regular intervals via the condensation water drainage opening at the lowest point of the bearing enclosure; the drainage opening must be subsequently resealed.
- The blower wheel must be regularly inspected for contamination and cleaned to identify imbalances of the blower wheel early, and to prevent imbalances.

7.2 Inspect the bearings

- The unimpeded operation of the bearings must be inspected in regular intervals by monitoring for operating noises.

7.3 Repair instructions and procedures

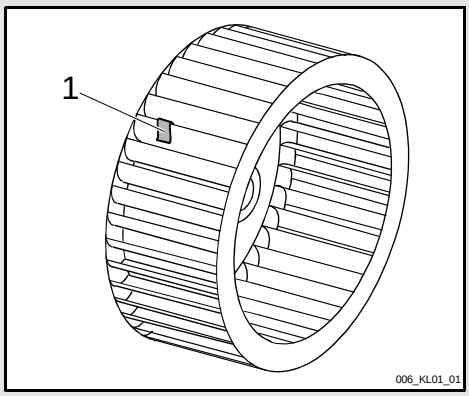
Do not perform in-house repairs on defective, damaged or unevenly running blowers, but send the equipment to the manufacturer for repair.
The manufacturer will ensure that repairs are performed properly and that the equipment is properly balanced.

The blower should only be dismantled by qualified and trained personnel.

Attention! Potential for damage to the equipment!

When balancing weight clips (1) are relocated or removed from the blower fins during the disassembly, an imbalance results.

Never perform repairs on the blower on your own. Property damage may occur if the assembly and subsequent use are not performed properly.



8 Disposal

Reusing defective blowers and/or their components, such as the blower impeller wheels, roller bearings, etc. can result in property damage and personal injury, as well as damage to the environment.

All blower components must be properly disposed of in compliance with the national and international laws and regulations.

Karl Klein Ventilatorenbau GmbH
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Declaration of incorporation of partly completed machinery

According to Directive 2006/42/EC, Annex II part 1 B

This is to declare that the products:

Radial fans, Types: EEG... /DEG ... / ENG .... / DNG .... / EMV .... / DMV .... / EMVL.../ DMVL ..., / DHV … / ESV … / DSV …

from year of manufacture 2010 on,

NHV ... / MHV ... / HHV ... / MVG ... / TVG ... from year of manufacture 2012 on,

But without explosion protected versions

as far as possible regarding our scope of delivery, generally comply with the directives as follows:

Council Directive 2006/42/EG (Machine Directive)

Furthermore effectual directives:

The safety objectives of the low voltage directive (2014/35/EC) accordingly annex I, No. 1.5.1 are fulfilled.

We furthermore declare, that the special technical documents for partly completed machinery were prepared according appendix VII part B and we commit to deliver these documents on demand to the commercial supervisory authorities by our "Technical bureau".

Note:	***Initial operation of the incomplete machinery is prohibited as long as it is not installed into a complete machine which complies with the directive 2006/42/EC and as long as the appropriate Declaration of Conformity according annex II A is not on hand.***

The authorized person for the summary of the technical documents is the subscriber.

City / date

Aichwald, 03.03.2016

Siegfried Seidler

Technical Manager

Annex

Followed Requirements of the annex I of 2006/42/EC. The figures are refering to paragraphs of annex I:

1.1.2, 1.1.3, 1.3.4, 1.7.4.2 (partly)