



BEDIENUNGSANLEITUNG

Radialventilatoren

OPERATING INSTRUCTIONS

Radial fans

HANDLEIDING

Radiaalventilatoren

NOTICE D'UTILISATION

Ventilateurs radiaux

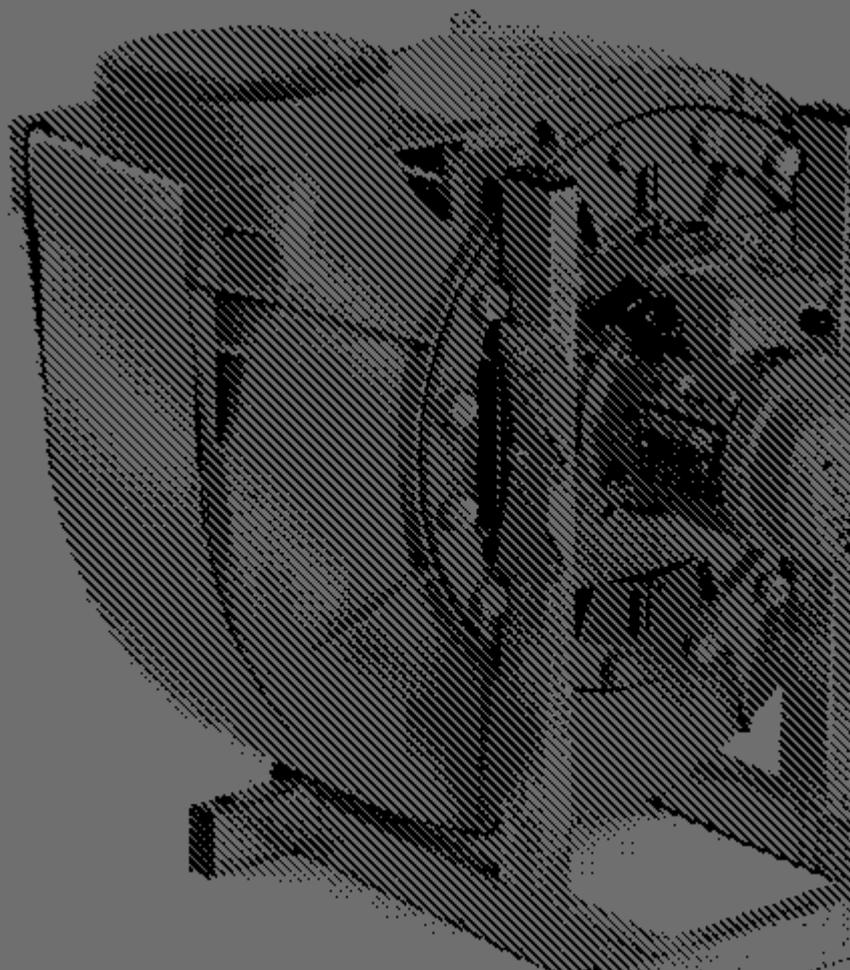
MANUAL DE INSTRUCCIONES

Ventiladores radiales

ISTRUZIONI PER L'USO

Ventilatori radiali

EH.VE.8679
EH.VE.8680
EPVE.29421
EPVE.29422
EPVE.29423
EPVE.29424
EPVE.29425
EPVE.29426
EPVE.29427
EPVE.29428
EPVE.29429



1. NOTES • GUIDELINES • WARRANTY	4
1.1. General safety information	4
1.2. Details on usage	4
2. TRANSPORT	4
2.1. General information	4
2.2. Removing the transport packaging	5
3. ASSEMBLY	5
3.1. Installation conditions	5
3.2. Installation on the attachment surface · foundation	5
3.3. Earthing	6
3.4. Pipe connection on the input side	6
4. ELECTRICAL CONNECTION	6
4.1. General information	6
4.2. Engine speed control via frequency converter	6
4.3. Connection diagrams · output · current consumption	7
5. COMMISSIONING	7
5.1. Safety check	7
5.2. Test run · starting for the first time	7
5.3. Operation	8
6. DECOMMISSIONING • DISASSEMBLY	8
6.1. Decommissioning	8
6.2. Disassembly	8
7. MAINTENANCE WORK	9
7.1. Intermittent operation	9
7.2. Continuous operation	9
7.3. Replenishing the grease container (only EH.VE.8679/8680)	9
7.4. Cleaning	10
7.5. Maintenance of the motor	10
7.6. Maintenance of rotor & accessories of the suction side	10
7.7. Recommissioning after maintenance/repair	10
8. REMOVING THE COMPONENTS OF EH.VE.8679/8680	11
8.1. Removing the drive unit	12
8.2. Removing the drive motor	12
8.3. Assembly	12
9. OPERATING FAULTS	12

1. NOTES - GUIDELINES - WARRANTY



1.1. GENERAL SAFETY INFORMATION

- The radial fans meet EC machinery directives and have been developed using the latest technology. These fans meet recognized safety standards and guidelines, are reliable and are of high-quality.
- Work on the electrical system must be performed by electrical experts while the fans are disconnected from the power supply.
- Installation, maintenance, transport and commissioning must be carried out by qualified personnel only.
- Only use the radial fan in accordance with the instructions. Unauthorized personnel must be prevented from accessing the machine.
- When using controller units with electrical components (e.g. frequency converters), follow the manufacturer's instructions for the unit to prevent electromagnetic interference (EMC)!
- **Follow the instructions and requirements in these operating instructions to ensure maximum protection for personnel and the environment!**



CAUTION applicable accident prevention rules and regulations:

- VBG1, VBG4, VBG7w, VBG9a
- Generally accepted technical practices (DIN VDE 0100, DIN VDE 0150)
- Affix a safety grille to protect personnel from rotating parts (EN 292-1)

Devices in EX-Proof configuration:

- VDE 0165, VDMA 24 169, RL 94/9/EG (ATEX)
- Secure the fan to prevent foreign bodies from falling in/being sucked in. Use a safety device to do so (VDMA 24 169)

1.2. DETAILS ON USAGE

These models are used to remove dust-free air (limit 5 mg/m³) and other aggressive and potentially explosive gases, vapors or mist.

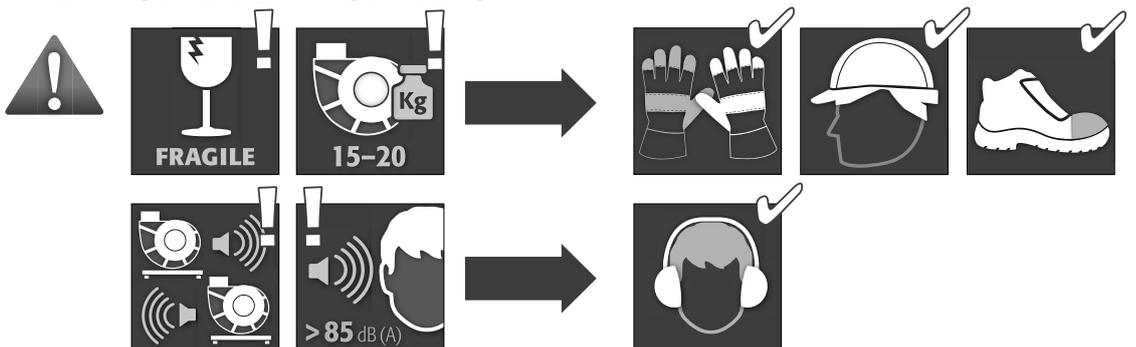


CAUTION:

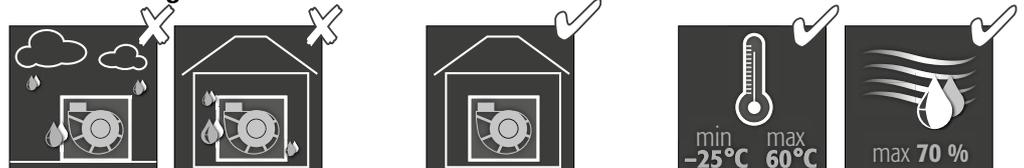
Any other use or use beyond this is considered to be improper use. The manufacturer/supplier is not liable for the resulting damage – the user is solely responsible for the risk!
The user is responsible for using the machine as intended!

2. TRANSPORT

2.1. GENERAL INFORMATION



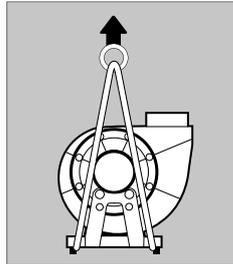
Interim storage conditions:



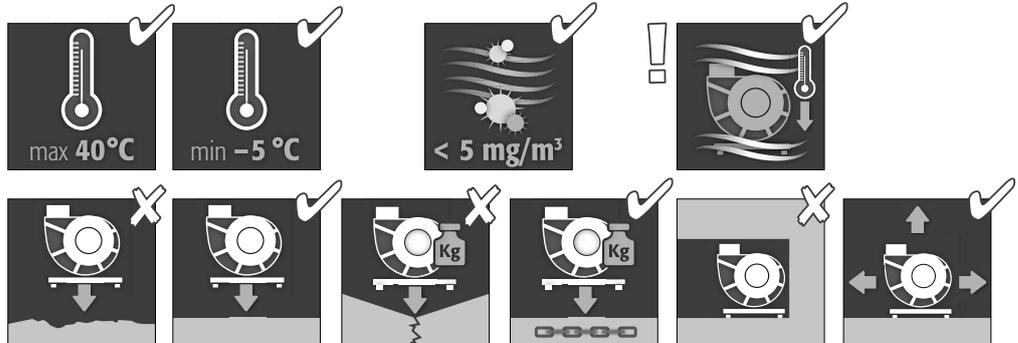
- Store the fan in its original packing or provide additional packing depending on external factors
- Protect the package against impact, vibrations, etc

**CAUTION:**

Improper transport of the machine can cause damage to it. Inspect the radial fan for damage immediately upon delivery— where applicable, file any complaint with the haulage company. Check that the delivery is complete, including accessories. Compare the information on the machine's type plate with the information on the delivery note. Have the haulage operator in charge sign off any damage or missing parts.

2.2. REMOVING THE TRANSPORT PACKAGING

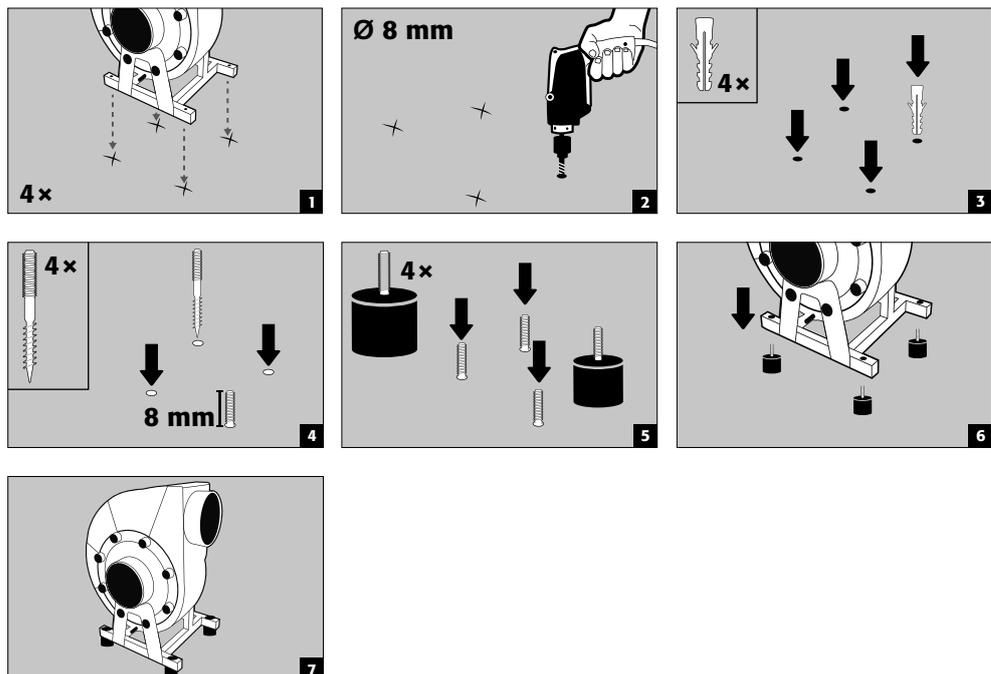
- Remove the radial fan carefully from the transport packaging!
- Remove the transport pallet (optional)
- When transporting the machine to the installation site, only make contact with the frame of the radial fan!
- Ensure even distribution of the weight!

3. ASSEMBLY**3.1. INSTALLATION CONDITIONS****ENVIRONMENTAL CONDITIONS****FLOOR SURFACE**

Foundation/attachment surface

**CAUTION:**

- The fan must be installed tension-free using vibrational elements.
- The machine is connected to exhaust/intake air systems via elastic sleeves.

3.2. INSTALLATION ON THE ATTACHMENT SURFACE - FOUNDATION

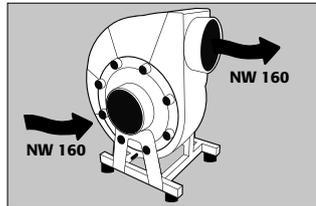
3.3. EARTHING

- If a lightning protection device is installed, a specialist should integrate the radial fan. In any case, equipotential bonding must always be provided according to DIN VDE 0100 and DIN VDE 0100-710.

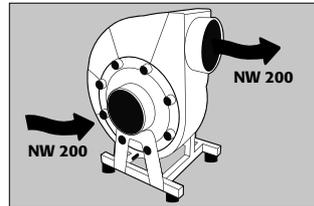
NOTE:

Local lightning protection regulations will determine whether a lightning conduction system is needed!

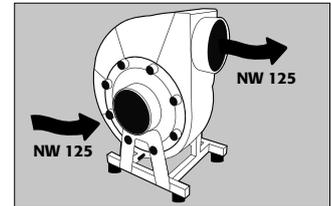
3.4. PIPE CONNECTION ON THE INPUT SIDE



EH.VE.8679
EPVE.29422
EPVE.29425
EPVE.29428



EH.VE.8680
EPVE.29423
EPVE.29426
EPVE.29429



EPVE.29421
EPVE.29424
EPVE.29427



CAUTION:

- The supply of media flow is by means of a circular-shaped, straight pipe
- Feed also via inlet nozzle with a shape favorable to the flow
- Attachments such as back flaps and throttle valves may only be connected at a distance from the fan inlet. Otherwise, reduced output may result. A rule of thumb for the spacing between attachments and fan inlet: $3 \times \varnothing$ (connection)

4. ELECTRICAL CONNECTION

4.1. GENERAL INFORMATION



CAUTION: Risk of death due to electrical current!

The electrical installation and cable installation must be carried out by authorized electrical experts only. They will determine the type of cables and the cross sections to be used. Note the following:

- VDE requirements including safety regulations, accident prevention provisions, local features
- Assembly instruction

Connecting motor and winding shield lines

- Must be installed separately (to prevent interference)
- The winding shield must be in the form of a shielded cable to be connected with the protective earth (PE) terminal in the switch cabinet.
- The locally applicable guidelines and prerequisites shall determine whether shielding on both sides will be required
- When a control unit is installed on-site, shielded cables are not required.



CAUTION:

After cable installation, all cable entries must be sealed against splash water. On site, ensure that the engine is shut off and locks when the temperature exceeds the highest permissible winding temperature in order to prevent it from starting up again after a fault.

4.2. ENGINE SPEED CONTROL VIA FREQUENCY CONVERTER

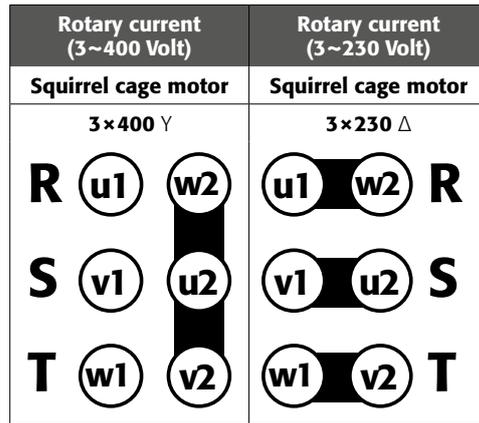
NOTE:

When frequency converters are used for the drive, you need not to use all-pole sine filters between the frequency converter and motor.

Do not mix sine filters up with motor filters (damping or du/dt filters)!

All-pole sine filters prevent high discharge currents, additional noise and damage to the motor insulation. They are the safest way of avoiding all problems. We do not recommend operating the fan in the field-weakening range (above 50 Hz).

4.3. CONNECTION DIAGRAMS - OUTPUT - CURRENT CONSUMPTION



Type	Output	Nominal current at 50 HZ	
		3×230V	3×400V
EH.VE.8679	0,12 kW	1,12 A	0,64 A
EH.VE.8680	0,25 kW	1,58 A	0,91 A
EP.VE.29421	0,06 kW	0,65 A	0,35 A
EP.VE.29422	0,18 kW	1,1 A	0,65 A
EP.VE.29423	0,37 kW	2,2 A	1,2 A
EP.VE.29424	0,06 kW	0,47 A	0,27 A
EP.VE.29425	0,18 kW	1,1 A	0,6 A
EP.VE.29426	0,37 kW	2,25 A	1,3 A
EP.VE.29427	0,06 kW	0,47 A	0,27 A
EP.VE.29428	0,18 kW	1,1 A	0,6 A
EP.VE.29429	0,37 kW	2,25 A	1,3 A

Engine speed: 1450 Upm



NOTE:

- The connection must be based on the valid terminal diagrams only!
- The diagram is located on the plate on the motor cover

Fluctuations in the supply voltage

- DIN EN 60034-1: Voltage tolerance +/-5% (range A)
- DIN IEC 60038: Mains supply 230 V, 400 V; voltage tolerance +/-10%

5. COMMISSIONING

5.1. SAFETY CHECK



Carry out the following checks before commissioning:

- Check the rotor for faultless rotation by rotating it manually
- Check channel system/fan for foreign matter (tools, small parts, etc.)
- Check the safety measures used (mechanical and electrical): e.g. protective grilles, earthing resistance, TK relay, protective motor switch
- Type of current, voltage and frequency of the mains connection must match the information on the fan/motor type plate
- Check the operation of the connected control devices
- Check that all nuts and bolts etc sit tight.

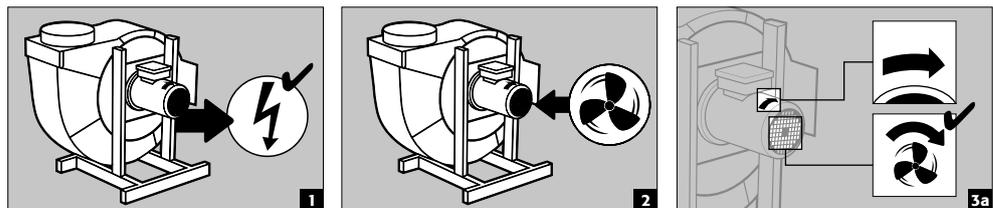


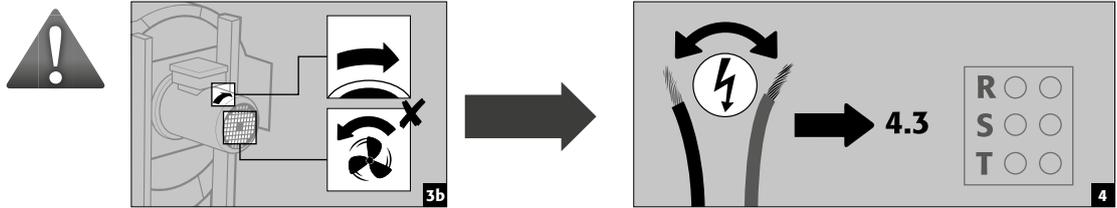
CAUTION:

The fan switch (where installed) is used to switch off the fan and prevents it from being switched on again during maintenance work. **It is not a main switch or an emergency stop switch** (on the EX-proof version it is only in the terminal box)

5.2. TEST RUN - STARTING FOR THE FIRST TIME

Check the rotational direction of the fan





Starting for the first time after a successful test run:

1. Connect the fan to the supply/exhaust system using the elastic sleeve.
2. From the control unit, switch on the unit.
3. After reaching the operating speed, measure the current consumption. Compare this value with the nominal current on the type plate.



CAUTION:

If overcurrent persists, switch off the system immediately. Check ventilation operation in all the speed stages. When an appropriate full motor protection is installed, the motor is switched off using a thermal contact when there is an overcurrent over a longer period of time.

4. Check the smoothness of the motor for unusual vibrations/oscillations or strange noises.
5. Properly close off the switching apparatus, fan and, where applicable, intermediate terminal box.
6. Hand over the system correctly.

NOTE:

When starting the machine for the first time, excess grease may leak out from the grease container on the labyrinth.



5.3. OPERATION

- The switching apparatus regulates normal operation of the fan
- Check the machine is operating correctly every day (pay attention to the running noise and listen for noise build up!)
- Decommissioning SEE 6.1!

6. DECOMMISSIONING - DISASSEMBLY

6.1. DECOMMISSIONING

The fan is switched off with the switching apparatus. Disconnect the motor from the current:

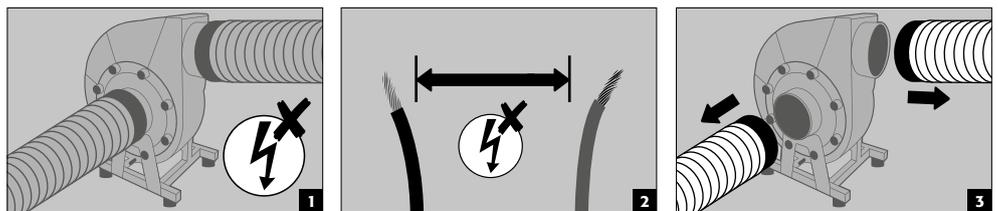
DEVICES WITH FAN SWITCH

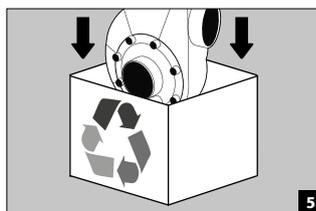
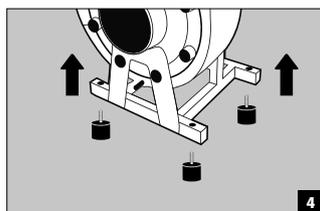
- Set the fan switch to "0". Secure the unit from being switched back on.

UNITS WITH TERMINAL BOX

- On units with a terminal box, first switch off the fan using the switching apparatus and prevent it from being switched back on. Next, undo the motor wiring in the terminal box and insulate the cable ends.

6.2. DISASSEMBLY





7. MAINTENANCE WORK



CAUTION:

Only trained personnel must be allowed to perform maintenance work following these operating instructions, the service manual, as well as applicable national provisions.

This excludes work which can only be carried out while the unit is operating in compliance with the applicable safety and accident prevention guidelines (e.g. checking for quiet running).



CAUTION:

Only work on the electrical system while it is disconnected from the power supply. See 6!
Do not begin maintenance and repair work until the fan wheel has come to a stop and the motor has cooled down!



CAUTION:

Risk of injury due to small parts flying through the air!

Harmful or dangerous residual materials which are still in the fan must be removed prior to maintenance work using suitable means.

Under normal operating conditions the radial fan is maintenance free. Nevertheless, routine inspections at regular intervals must take place (at last one per year). This is especially important when the housing and rotor are expected to become dirty due to the flow medium (e.g. material baked onto the surface due to the removal of crystallizing vapors).

Local regulations must be followed with all cleaning and maintenance work!

7.1. INTERMITTENT OPERATION

If only used intermittently, the fan must be put into operation for at **least 2 hours every 2 months** to prevent damage to the motor bearings caused by longer downtimes.

7.2. CONTINUOUS OPERATION

ANNUAL ROUTINE INSPECTION

- Check free passage through air openings and condensation outlets (only EH.VE.8679/8680)
- Check that the screw connections are secure
- Check for low-vibration running (if there are vibrations, refer to 5.5.)
- Check type plate for legibility — order a new one where necessary
- Check accessories

CHECK ELECTRICAL CONNECTION

- Check plastic parts (wear, damage, water tightness)
- Remove corrosion from electrical cables and connection terminals
- Check current consumption



CAUTION:

The warranty shall lapse in the event of damage caused by a failure to carry out the regular required inspections.

7.3. REPLENISHING THE GREASE CONTAINER (ONLY EH.VE.8679/8680)

To maintain the sealing system and extend the life time of the motor, we recommend you replenish the grease container at regular intervals. This can be done while the radial fan is operating:

1. Open the cover to the grease nipple
2. Apply the grease gun on the nipple
3. Excess grease will be ejected by the rotor

Only use high-performance lithium-soap based grease!

7.4. CLEANING

- Only to be carried out on the rotor and condensate drain (only EH.VE.8679/8680)
- Clean the internal air passages when working with fluids with a strong tendency to crystallize



Do not use the following:

1. Cutting tools
2. Auxiliary equipment which exceeds a temperature of 40°C
3. Cleaning agents which may cause the plastic to degrade
4. Steam jets/high-pressure cleaners

7.5. MAINTENANCE OF THE MOTOR

Permanent lubrication is not to be applied to the engine bearings. We recommend you check the bearings after longer downtimes (also when the engines are brand new) before commissioning.



CAUTION:

The warranty lapses for damage which can be attributed to a failure to carry out the regular required inspections.

MIN. SERVICE LIFE

Nominal service life



Max. load under 50-Hz operation



EX-Proof motors under 50-Hz operation



BEARING INSPECTION AND LUBRICATION

Number of poles	Service life of grease for motor cooling factor	
	40 °C	25 °C
2	10.000 h	20.000 h
4 / 6 / 8	20.000 h	40.000 h

7.6. MAINTENANCE OF ROTOR & ACCESSORIES OF THE SUCTION SIDE

- takes place given flow material deposits on the rotor and the elastic connecting pieces between fan and system components
- must take place at regular intervals in addition to the annual inspection
- The intervals are based on the operating conditions and are set by the owner/operator
- Units are inspected, cleaned and checked for leak-tightness (see 7.4)



CAUTION:

Leaky outlets, sleeves, etc. can cause damage and risks. Replace parts immediately!

7.7. RECOMMISSIONING AFTER MAINTENANCE/REPAIR



CAUTION:

Flying small parts!

Wear safety goggles! Carry out a safety check (5.1)



DEVICES WITH FAN SWITCH

- Set the fan switch to "1".

UNITS WITH TERMINAL BOX

- Check whether the power supply to the switching apparatus is turned off. Afterwards, restore the motor wiring in the terminal box.

8. REMOVING THE COMPONENTS OF EH.VE.8679/8680

NOTE:

When using electrical tools, please observe the following:

- max. torque 2.4–2.5 nm
- max. speed 500 upm
- minimal axial thrust when screwing in screws/bolts



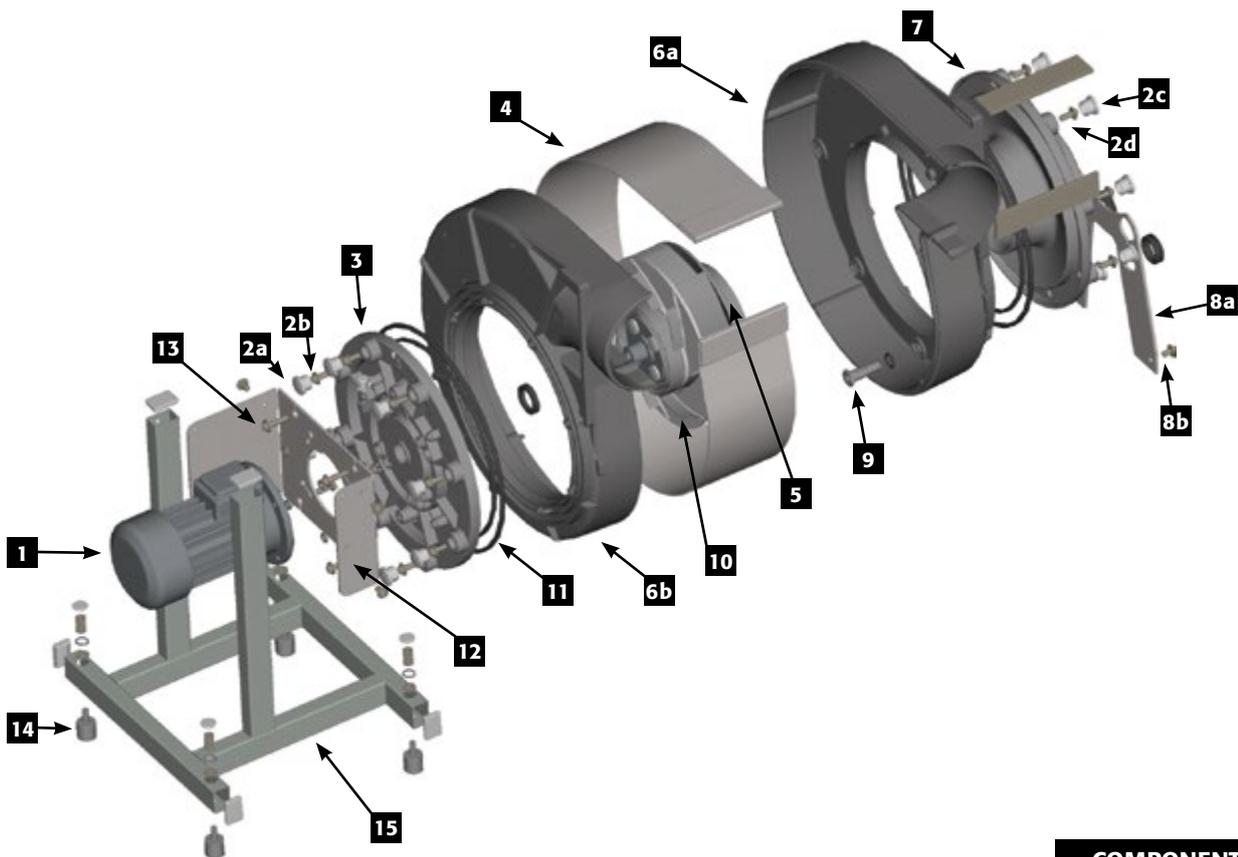
CAUTION:

Only carry out the work when disconnected from the power supply. See 6!

Do not start disassembly until the fan rotor has come to a stop and the motor has cooled down!

Only the following components may be removed:

- | | |
|--|----------------------------------|
| 1 Motor | 8a Support |
| 2a 2c Plugs | 8b Metal screws |
| 2b 2d Screws for plastic | 9 Condensation outlets |
| 3 Motor lid | 10 Rotor |
| 4 Splinter protection | 11 Ring seal |
| 5 Rotor plugs | 12 Motor bearing plate |
| 6a Semi-housing, left | 13 Motor attachment bolts |
| 6b Semi-housing, right | 14 Anti-vibration device |
| 7 Suction cover | 15 Frame |



COMPONENTS

8.1. REMOVING THE DRIVE UNIT

CAUTION:

Do not use any sharp-edge tools! The rotor is very sensitive to rough interventions on the periphery!



1. Remove **8a** and **8b**
2. Remove **2c** from **7**
3. Undo **2b** and **2d**. Note the instructions concerning electrical tools!
4. Remove **7** together with **11** carefully.
5. Remove **5**; undo the attachment bolt for the rotor/motor hub
6. Using the extractor, undo **10** from the motor hub and store in a safe place

8.2. REMOVING THE DRIVE MOTOR

1. Unclip the motor cables from the terminal box/fan switch
2. Pull out the motor cables from the terminal box/fan switch
3. Disassemble the feed/exhaust system (where installed)
4. Remove **15** from **14**

CAUTION:

Support the weight of the motor!



The following work should be carried out in a workshop or at a suitable work station:

5. Disassemble **10**
6. Remove the four attachment bolts

8.3. ASSEMBLY

- The assembly generally proceeds in reverse order to the removal
- All seals must be inserted correctly and while intact. Faulty seals must be removed because the fan must be leak tight.
- Check for free rotation by manually rotating the rotor.
- Carry out a test run by (see 5.2)

9. OPERATING FAULTS



CAUTION:

Long-term faults can lead to fan damage and as a result, injury to personnel.

Deviations from normal operating states must be inspected by service personnel immediately! Only carry out repairs to the radial fans described in this chapter!

The following table with potential faults and their remedy serves as an indicator for service personnel:

Fault	Possible causes of fault	Remedy
Fan does not turn	A. Power output not available on switching apparatus B. Fan switch is set to "0" C. Motor cable not wired in terminal box	Establish power output Set the fan switch to "1". Connect motor cable(s)
Fan does not turn	A. Mains supply missing B. Control fuse faulty C. Motor protection triggered	Check the mains of the mains supply and fuses, Check connections Checking the motor temperature; allow to cool down where necessary and switch it back on again (in case the fault repeats, remove the cause of the overheat)
Motor protection triggers during ventilation or test operation		Check motor for heavy running, bearing damage, winding damage, Check connection and power supply

Fault	Possible causes of fault	Remedy
Rotor grinding	<ul style="list-style-type: none"> A. Deposits on the rotor or nozzle B. Change the opposite position between rotor and nozzle 	Inspect the region around the rotor for foreign matter, check the motor attachment, undo support, centre rotor/nozzle, and tighten the bolts back up
Fan turns, does not draw in any air or too little	<ul style="list-style-type: none"> A. Flow of air interrupted 	Make sure the air can flow freely, clean the rotor, check the channel system, check closure
	<ul style="list-style-type: none"> B. Incorrect rotational direction of the rotor is not uniform 	Change the rotational direction by reversing the polarity
	<ul style="list-style-type: none"> C. Flow to the rotor not uniform 	Extension of the straight-line connection channel on the input side to a min. of 3x the NW of the fan inlet. Assemble the back flaps and throttle valves after the 3x NW of the fan shut-off at the earliest
Vibrations in fan running	<ul style="list-style-type: none"> A. On the paddles of the rotor, deposits have formed 	Clean the rotor
	<ul style="list-style-type: none"> B. Condensate outlet blocked, rotor in water 	Clean water outlet

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* Appendix: Characteristic curves	Bijlage: Karakteristieke krommen	Annexe : Courbes caractéristiques	Anexo: Curvas de eficacia	Appendice: Curve caratteristiche
** Pressure difference	Drukverschil	différence de pression	diferencia de presión	differenza di pressione
*** Volume flow rate	Debiet	débit volumique	velocidad de flujo	tasso di flusso del volume

