

OPERATING AND MOUNTING INSTRUCTIONS LBE 250 / LBE 500

**COMFORT
VENTILATION**



 **PICHLER**

Systematic ventilation.

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1. Introduction

Dear Customer,
Thank you for purchasing the LBE 250/
LBE 500 air humidification unit.

The LBE 250/LBE 500 air humidification unit is available in two versions and corresponds to state-of-the-art technology. It convinces through operating safety, operating comfort, and economic efficiency.

To operate your air humidification unit safely, properly, and economically, carefully read and observe these operating instructions.

Use the air humidification unit only when it is in a perfect state in a proper, safety and risk conscious manner under consideration of all information in these instructions.



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If you have further questions, please contact us.

In case of inquiries and spare parts orders, please have the device type and serial number (see the type plate on the device) on hand!

Please keep these operating instructions in a safe place that is always accessible.

Please contact us in case of a loss of the documentation.

2. Intended use

The LBE 250/LBE 500 air humidification unit is intended for immediate or later installation into ventilation and air conditioning systems with a maximum air volume flow of 250 m³/h (LBE 250) or 500 m³/h (LBE 500).

This device, which is accessible to the general public, is intended for installation in residential or commercial buildings.

It is used for active indoor air humidification and can also be used for auxiliary heating.

The compact air humidification unit works according to the principle of natural evaporation and guarantees constant, optimum indoor air humidity in living areas, adjustable in a range from 40 % to 60 % relative humidity.

In addition, a constant supply air temperature that can be adjusted within a range from 15 °C to 25 °C is generated by an integrated air heater battery.

As a part of intended use, our required operating and mounting instructions must also be observed.

Only qualified, assigned personnel may work on and with the device. People who transport or work on the device must have read and understood the corresponding parts of the operating instructions, especially *Chapter 3 „Safety Instructions.“*, page 6.

In addition, the plant installer must inform the end user of any possible risks. The LBE 250/LBE 500 air humidification unit is not a product that is ready for use. It may not be commissioned until it has been properly installed into the ventilation and air conditioning system and connected.

The air humidification unit is not suited for outdoor setup. It may only be used in suitable, temperature-controlled indoor rooms.

Subject to technical changes.

We are constantly performing technical improvements and optimisations on your products and reserves the right to modify the devices or technical data without prior notice.



2.1 LIABILITY

Air treatment unit for the active humidification of indoor air and for auxiliary heating of air in living spaces, patented and tested system, suitable for installation or retrofitting in ventilation and air conditioning systems.

Any other use shall be deemed improper and may cause personal injury or damage to the air humidification unit LBE 250/500, for which the manufacturer shall accept no liability.

The manufacturer shall accept no liability for any damages due to:

- Non-observance of the Safety, Operating and Servicing instructions in these Operating and Installation Instructions.
- Installation of spare parts not supplied by the manufacturer, whereby the responsibility for the use of such spare parts shall rest with the installer of the equipment.
- Normal wear and tear.

2.2 WARRANTY

The warranty period shall commence after the unit is put into operation, but no later than one month after delivery. You can find details on the warrantee in our "General terms and conditions" in the current version and the dealer conditions in your country. The warranty shall be subject to proof of services performed as per our instructions and executed by a licensed installer/specialised company.

Warranty claims shall be limited to material and/or constructional defects occurring during the warranty period. In the event of a warranty claim, the air humidification unit LBE 250/500 must not be dismantled without prior written authorisation from the manufacturer. The

manufacturer's liability shall be limited to spare parts installed by an installation company approved by the manufacturer.

The warranty shall automatically lapse at the end of the warranty period, following improper operation such as operation without a filter, if parts other than original manufacturer-supplied parts are installed, or if unauthorised changes or modifications are made to the unit.

The warranty is voided automatically by failure to comply with the information in this installation and operating Manual.



3. Safety Instructions

General information

The following safety symbols indicate text passages that warn against risks and sources of danger. Please familiarise yourself with these symbols.



The non-observance of this warning can lead to injury or danger to life and limb and/or damage of the device.



Dangerous electrical voltage!

The non-observance of this warning can lead to injury or danger to life and limb.

General safety notices

All safety and danger notices located on the device must be observed. In case of malfunctions, shut down the device immediately and secure it against activation. Malfunctions must be eliminated immediately.

After servicing work, have expert personnel re-establish the operating safety of the device. Use only original spare parts. For the operation of the device, the national regulations also apply without limitation.



READ THESE OPERATING INSTRUCTIONS CAREFULLY AND FOLLOW THE SAFETY NOTICES.

Damage arising from a non-observance of the operating and maintenance instructions is not covered by the guarantee.

This device is not intended to be used by people (including children) with limited physical, sensory, or mental capabilities or with a lack of experience and/or knowledge, unless supervised by a person who is responsible for their safety or who instructs them in the use of the device. Make sure that children do not play with the device.



After commissioning, the current supply may not be interrupted for longer than one day so that the hygienic requirements can be observed.

In case of an interruption in the electrical voltage supply of more than 24 hours, the air humidification unit may become contaminated with germs. In this case, a general cleaning (a cleaning agent on an organic basis) of all components should be performed before the unit is commissioned. If necessary, components must be replaced.

Deactivation of the ventilation and air conditioning system

If the ventilation and air conditioning system is decommissioned for more than one day, the air humidification unit must be shut down beforehand for at least two hours. In this way, the air humidification unit can thus dry out and hygienically perfect function is guaranteed.



Working on the device

Mounting, commissioning, maintenance, and repairs must be performed by an authorized expert (heating specialist firm/installation specialist firm).



When working on the device, de-energise it and secure it against reactivation. The water supply must be shut off.



UVC disinfection pipes

A UVC pipe (Art.No. 4010023A) is installed into the standard version of the device! It may only be replaced by a type listed on the label of the device. UVC pipes may be changed only by authorised expert personnel! Before the unit is opened or a UVC pipe is changed, the device absolutely must be de-energised and the mains plug must be pulled. Never look directly into the lit UVC light source without eye protection.



Device setup/installation

The device may be installed only in frost-free, dry rooms. The room temperature must lie between +5 °C and a maximum of +40 °C.

Ventilation and air conditioning system air lines that are not installed in heated areas must be designed with suitable heat insulation (danger when the dew point temperature is undershot) to prevent the formation of condensation.

For components or windows with bad heat insulation properties, in case of missing construction, and in old buildings, condensation may form on window glass at cold temperatures and in case of increased air humidity in living areas. The surface temperature of the components must lie above the dew point temperature of the indoor air (at least about +15 °C).

In normal operation, germs or mould cannot form inside the device unit since the humidification water is continuously treated and disinfected during operation.

Mounting

The device is intended for horizontal mounting. It may deviate a maximum of +/-1° from the horizontal position and must be mounted to a massive wall that can bear the load. The intrinsic operating weight of the air humidification unit must be taken into consideration for the suspension. No shocks or jolts may affect the device. For mounting and setup, the national and local regulations must be observed. The device may be installed only in compliance with the national installation regulations.

**Electrical connection**

The electrical connection of the supply and sensor line should be performed by an electrician according to the local regulations. Before the device is opened, the voltage supply must be shut off at all poles and secured against reactivation. If the mains connecting line of the device is damaged or defective, it must be repaired or replaced immediately to prevent risks. This work may be performed only by authorised expert personnel.

Water connections

The water, heating, and waste water connections must be established by an expert. For the connection to the water supply, only the original connecting hoses provided in delivery may be used. Pay attention to the seal tightness of the lines. The maximum water pressure of the mains water supply of 0.7 MPa and of the water heater battery of 1 MPa may not be exceeded.

Water quality

Only mains water that corresponds with the local mains water ordinance may be used for the water supply. The water inlet pipe to the air humidification unit should be established using optionally available connection sets.

In case of a chlorine content over 0.1 mg/l, the standard water filter (5 µm) must be replaced by a dual filter (5 µm/ carbon). If the iron content of the mains water exceeds a value of 0.1 mg/l, an iron filter should also be built into the water inlet pipe.

The device can be used for a maximum hardness of water of 26° dH. When this value is exceeded, the service life of the reverse osmosis membrane is considerably reduced.

Operation of the device

Every working method that impairs the safety of the device is prohibited. All warning and safety devices should be regularly checked for proper function. Safety devices may not be disassembled or decommissioned.

Mounting, disassembly, maintenance, and servicing of the device

If maintenance work or repairs are performed, the device should be de-energised. The attachment or installation of additional equipment is not permitted. In this case, please consult with the manufacturer.





Electrical system/electronics

Work on the electrical plant parts may be performed only by electricians. If maintenance work or repairs are performed, the device should be de-energised. In case of faults in the electrical voltage supply, shut down the device immediately. Use only original fuses with the required current strength. Check the electrical equipment of the device regularly. Discovered defects like loose connections or scorched cables must be eliminated immediately. After the electrical work or servicing has been performed, the safety measures should be tested (e.g. earthing resistance).

Requirement on the installation site

The installation of the air humidification unit may take place only in rooms that have an existing water outlet. In addition, safety measures that automatically close the water supply to the air humidification unit in case of leakage (e.g. safety valve/water stop) must be taken within the room. The air humidification unit is designed in IP20 type of protection.

4. Transport and storage

To prevent damage during transport due to force, the air humidification unit must be handled carefully. During transport by hand, reasonable human lifting and

carrying forces must be observed. The unit may not be transported by the connecting cable. Impacts and shocks should be avoided.

Age	Reasonable load in kg	
	Women	Men
15 – 18 years	15	35
19 – 45 years	15	55
Over 45 years	15	45

4.1 DIMENSIONS AND WEIGHT

	LBE 250	LBE 500
Dimensions of the packing unit (B x H x T)	800 x 460 x 420 mm	870 x 600 x 600 mm
Weight of the packing unit without optional accessories	28 kg	62 kg

4.2 PACKAGING

The safety labels attached to the box absolutely must be observed. During delivery, look out for and check any damage

to the packaging or device. Problems or damage must be reported immediately.

4.3 STORAGE

The device must be stored in the packaging in a dry, dust-free, and frost-protected manner. Avoid storage periods

that are too long (recommendation: one year maximum).

4.4 CHECK FOR COMPLETENESS

When the device is delivered, make sure:

- The type and serial numbers on the type plate correspond with the information in the order and delivery documents.
- The equipment (optional accessories) is complete.

- All parts are present in a perfect state.

Note: In case of any transport damage and/or missing parts, you must inform the transport company or supplier immediately in writing.

4.5 SCOPE OF SUPPLY

The delivery comprises the following:

- the air humidification unit
- the operating and mounting instructions

- accessories like: the water connection set (*see Chapter 17.3*)
- optional accessories like: the pumps/mixer connection set (*see Chapter 17.4*)



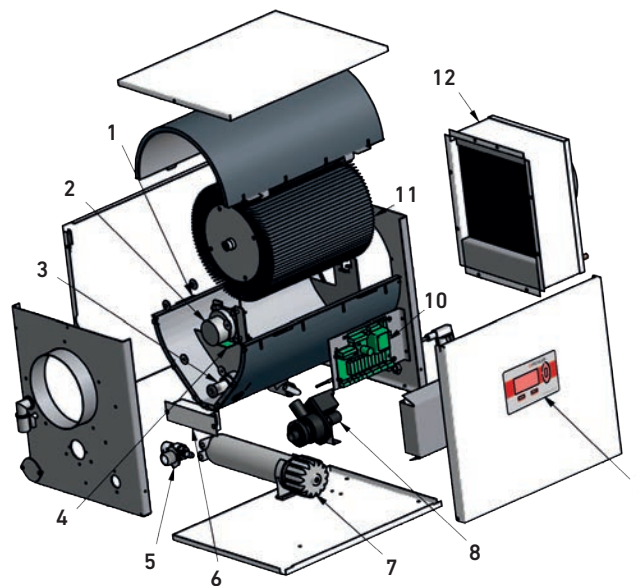
4.6 WASTE DISPOSAL

Care has to be taken that the packing material and the protective packing are disposed of in an environmentally friendly way. The packing materials have to be disposed of in accordance with the local stipulations, for example, wooden pallets and cardboard packing have to be recycled.



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5. Structure



- | | |
|--|--|
| 1 Water tank | 7 Reverse osmosis membrane
(LBE 250, 1 pc / LBE 500, 2 pcs) |
| 2 Motor | 8 Outlet pump |
| 3 UVC pipe for disinfection | 9 Electronic operation system |
| 4 Sensor plate with a temperature and
humidity sensor | 10 Main board |
| 5 Inlet valve | 11 Bladed rotary evaporator |
| 6 UVC pipe series connection unit | 12 Warm water heater battery (air side) |

GENERAL

USER

SPECIALIST PERSONNEL



6. Versions



**LBE with warm water heater battery
(for connection on the left)**
Item number: 08LBE250LW, 08LBE500LW



**LBE with warm water heater battery
(for connection on the right)**
Item number: 08LBE250RW, 08LBE500RW



**LBE with PTC electric heater battery
(for connection on the left)**
Item number: 08LBE250LE



**LBE with PTC electric heater battery
(for connection on the right)**
Item number: 08LBE250RE

7. Description of functions

7.1 WORKING PRINCIPLE

The air humidification unit works according to the principle of natural evaporation and guarantees a constant relative air humidity that can be adjusted between 40 % and 60 % in the supply air. The unit works automatically, and the air humidity is electronically monitored in the device. The indoor air can thus not be overhumidified.

The air humidification unit is dimensioned for a maximum operating air volume flow of 250 m³/h (LBE 250) / 500 m³/h (LBE 500). The water tank is supplied with mains water from the mains water supply. According to the evaporative power, a maximum of 2.5 litres of water, which is continuously placed, is located in the tank. The maximum filling level is limited using a floating switch and mechanical overflow.

The water in the tank is continuously disinfected using UVC light, whereby the UVC pipe illuminates the complete water tank and evaporation surface. The UVC pipe has a radiant power of 4.3 watt at a wavelength of 253.7 nm.

For safety reasons, the UVC pipe is monitored by UV diode. This monitoring process can detect a failure, soiling, or line breakage of the disinfection unit. If the radiant power is too low, the water is drained and a error message is output. The unit is automatically shut down in case the UVC pipe malfunctions. To prevent deposits during operation, especially scale deposits on the bladed rotary evaporator and the water tank, the standard version of the air humidification unit is equipped with a reverse osmosis unit. In the standard design, the reverse osmosis unit is integrated into the water inlet pipe between the solenoid valve and the water tank.

A prefiltering unit for the water supply, which should be installed during the course of mounting, is included in the scope of supply. As an additional safety measure, the water is drained and an error message output in case of the air humidity is exceeded by more than 25 % of the reference value of the water for longer than 25 hours.



7.2 HUMIDITY CONTROL

The air humidity is controlled using the water moistened surface of the bladed rotor and the water level in the tank. As the water level rises, the rotor blades are submerged more deeply into the water, increasing the surface area of the blades that becomes wet.

The passing air flow absorbs moisture from the wet blades, in accordance with a specific reference value that is set as a constant. However, as a rule the set relative humidity is converted to the relevant absolute humidity at 21 °C (factory setting) and then controlled.

Measured temperature	Set humidity				
15 °C	57 %	64 %	70 %	70 %	70 %
17 °C	51 %	57 %	63 %	70 %	70 %
19 °C	45 %	51 %	56 %	62 %	67 %
21 °C*	40 %*	45 %*	50 %*	55 %*	60 %*
23 °C	36 %	40 %	44 %	49 %	53 %
25 °C	32 %	36 %	40 %	43 %	48 %
27 °C	28 %	32 %	36 %	39 %	43 %
29 °C	25 %	28 %	32 %	35 %	38 %
31 °C	23 %	25 %	28 %	31 %	34 %
33 °C	21 %	23 %	25 %	27 %	30 %
35 °C	19 %	21 %	23 %	25 %	28 %
37 °C	17 %	19 %	21 %	23 %	25 %
39 °C	15 %	17 %	19 %	21 %	23 %
41 °C	14 %	15 %	17 %	19 %	21 %
43 °C	12 %	14 %	15 %	17 %	19 %
45 °C	10 %	12 %	14 %	15 %	17 %

*) Controlled humidity (factory setting)



7.3 TEMPERATURE CONTROL

The air outlet temperature of the humidification unit is controlled either by the sensor built into the device or by an external sensor, where one has been attached. In case of a connected external sensor, the control system automatically switches to external temperature control. In the display, the letter „E“ appears after the temperature.

TemperatureE21°C <

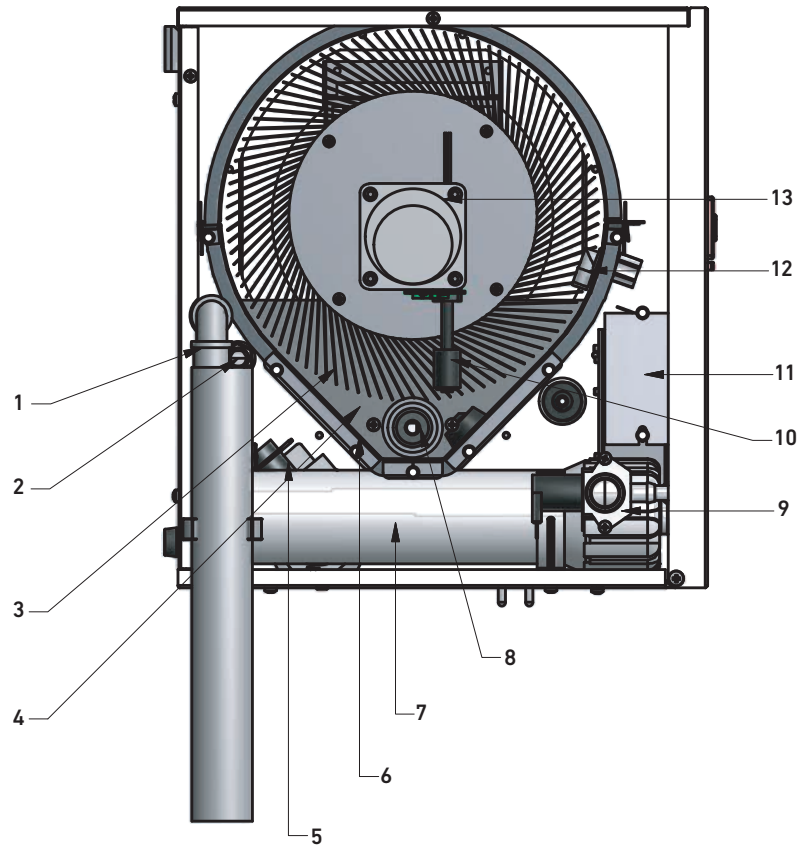


Illustration: Function view

- 1 Outlet
- 2 Osmotic outlet
- 3 Bladed rotary evaporator
- 4 Water
- 5 Outlet pump
- 6 Water tank
- 7 Reverse osmosis membrane
- 8 UVC pipe for disinfection
- 9 Inlet valve
- 10 Floating switch
- 11 UVC pipe series connection unit
- 12 Free outlet (water inlet)
- 13 Motor



8. Control system

The device is provided in a preprogrammed manner and can be commissioned immediately after all connections (air, water, and electrical) have been established.

8.1 OPERATION/KEYPAD/DISPLAY



The first two lines on the **display** show the operational menu, the third line shows the operational status.

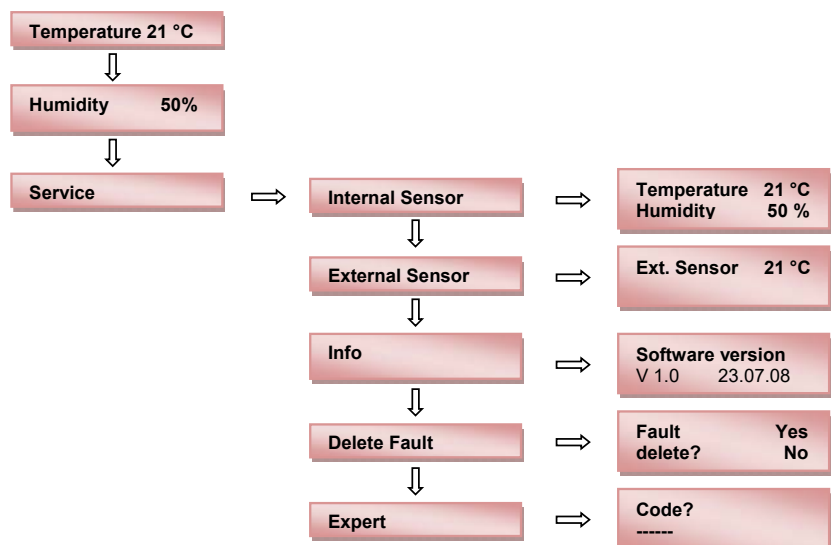
The **display illumination** is switched off 10 minutes after the entry of the last command and can be reactivated by turning the scroll wheel (energy-saving mode).

<Scroll Wheel>: Select or set the position by **turning**, confirm or save by pressing. The less-than character on the right edge of the display labels the respectively selected value.

<On/Off>: Activation and deactivation of the device.

<Back>: Go back a step in the selection.

8.2 CUSTOMER MENU



8.3 SETTINGS

Temperature 21°C <	<ul style="list-style-type: none"> With the Temperature parameter, the air temperature at the outlet of the air humidification unit is set between 15 °C and 25 °C in one degree intervals. A value of 21 °C is preset at the factory. With the TemperatureE parameter (E = external temperature sensor), the desired air temperature at the external sensor is set between 15 °C and 25 °C in one degree intervals. 	
Humidity 50 %<	<ul style="list-style-type: none"> With the Humidity parameter, the desired outlet humidity is set between 40 % and 60 % relative humidity at five percent intervals. A value of 50 % relative humidity is preset at the factory. 	
Service <	<ul style="list-style-type: none"> In the Service menu item, information regarding the operational status is displayed. 	
Internal Sensor < ⇒	Temperature 21 °C Humidity 50 %	<ul style="list-style-type: none"> Internal Sensor shows the currently measured air temperature and the relative humidity at the air outlet of the air humidification unit.
External Sensor < ⇒	Ext. Sensor 21 °C	<ul style="list-style-type: none"> External Sensor indicates the currently measured air temperature at the external temperature sensor.
Ext. Sensor display is not connected!	<ul style="list-style-type: none"> If a sensor is not connected, the Ext. Sensor display is not connected! 	
Info < ⇒	Software Version V 1.0 01.09.08	<ul style="list-style-type: none"> The installed software version is shown under Info.
Delete Fault < ⇒	Delete Fault? Yes< No	<ul style="list-style-type: none"> Error messages, which appear in the Info line of the display, are deleted using the Delete Fault Yes< function.
Expert < ⇒	Code? -----	<ul style="list-style-type: none"> With Expert, you can access the next lower menu level by entering a code. This parameter can be opened only by the respective expert.

9. Operational statuses

9.1 AUTOMATIC ACTIVATION/DEACTIVATION AUTUMN/SPRING (AUTO STANDBY)

auto STANDBY	<ul style="list-style-type: none"> The air humidification unit switches on when the air humidity is too low (Autumn) and off when the air humidity is too high (Spring). The following appears on the display: auto STANDBY. If the evaporative power within 24 hours is less than one litre, the device switches off (auto STANDBY).
CONTROL ON	<ul style="list-style-type: none"> If the humidity undershoots the set humidity by 7 % for a period of 24 hours, the air humidification unit switches on again.



9.2 AUTOMATIC ACTIVATION/DEACTIVATION (AUTO STANDBY)

<p>auto STANDBY</p>	<ul style="list-style-type: none"> • If the On/Off button is pressed, the following appears on the display: auto STANDBY. • The air humidification unit is switched off and set to the auto STANDBY mode. • If the air humidity falls by 7 % under the set value for a period of 24 hours, the air humidification unit switches on again.
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9.3 MANUAL ACTIVATION/DEACTIVATION (MANU STANDBY)

<p>manu STANDBY</p>	<ul style="list-style-type: none"> • If the On/Off button on the key pad is pressed for longer than 3 seconds, the following appears on the display: manu STANDBY. • In this operational status, the air humidification unit remains switched off. The water is drained and the UVC pipe and the rotor are switched off with a delay of 20 minutes. • The air humidification unit must be switched on again by hand. To do so, press the On/Off button for 3 seconds.
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9.4 AUTOMATIC ACTIVATION/DEACTIVATION DEPENDING ON AIR CURRENT („CONTROL OFF“)

<p>CONTROLL ON / CONTROLL OFF</p>	<ul style="list-style-type: none"> • The humidification is controlled automatically by the operation of the ventilation device. In the process, an acoustic signal indicates whether the ventilation and air conditioning system is running. • Depending on this signal, the air humidification unit switches on and off automatically.
<p>auto STANDBY</p>	<ul style="list-style-type: none"> • If the ventilation and air conditioning system is shut down for longer than 18 hours, the air humidification unit switches off automatically. Auto STANDBY. • During the operation of the ventilation and air conditioning system, it switches on automatically again.

9.5 RINSING

<p>RINSING</p>	<ul style="list-style-type: none"> • The water inlet pipe and the reverse osmosis membrane are protected against germs by the rinsing program. • The rinsing program is performed automatically once a day while the air humidification unit is shut down. „RINSING“ is shown in the display. • The rinsing period amounts to 10 minutes and can be cancelled by pressing the „Back“ button.
-----------------------	---

9.6 CONTROL ON

<p>CONTROL ON</p>	<ul style="list-style-type: none"> • This parameter indicates that the humidity and air temperature control are active.
--------------------------	--

9.7 FILL

<p>FILL</p>	<ul style="list-style-type: none"> • This parameter indicates that the tank is being filled with water.
--------------------	--



9.8 WATER REPLACEMENT

WAT. REP.	<ul style="list-style-type: none"> The water in the tank is replaced one to four times a day (LBE 250) or twice a day (LBE 500) depending on the evaporative power and the degree of hardness of the supply water (corresponds to 1 to 10 litres of water a day / LBE 250 or 2 to 30 litres a day / LBE 500). The following appears in the display: WAT.REP.
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10. Error messages

In the case of error messages, an alarm sounds which can be deactivated by pressing or turning the **<scroll wheel>**. The error messages are shown in the display. After each error message (with the exception of **Service and Filter Change**), the water is drained and the air humidification unit is switched off. The error messages can be deleted by pressing the **„Back“ button** and keeping it

pressed for **3 seconds** or in the **Service** menu under the **Delete Fault Yes<** item. After that, the air humidification unit re-enters the operating mode.



The expert/Service department should be informed in case of error messages, with the exception of the Filter Change message.

10.1 FILTER CHANGE! (CUSTOMER)

Filter change!	<ul style="list-style-type: none"> The water filter in the water inlet pipe should be changed (see Chapter 11).
-----------------------	--

11. Maintenance (customer) „Filter change“

Filter change	<ul style="list-style-type: none"> The water filter in the water inlet pipe must be exchanged every six months. The filter change is displayed automatically by the air humidification unit by the output of the „Filter Change!“ error message. <ol style="list-style-type: none"> Switch off the air humidification unit. Shut off the water supply upstream of the filter unit. Hold the container under the filter housing. (Water may emerge) Open the filter housing. Remove the filter and replace it with a new one. Close the housing and turn on the water supply again - do not forget to pay attention to seal tightness. Keep the „Back“ button pressed for three seconds. The error message on the display is deleted.
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Illustration: Filter housing and filter

Where do I order the filters?

Use only original replacement filters.

Designation	Item number
Water filter	40E0003A





























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 filter@pichlerluft.at



12. Commissioning

<div style="text-align: center;"> <p>Trans.lock rem? Yes < No</p> <p>↓</p> <p>Circ. Pump On< Off</p> <p>↓</p> <p>Open Mixer On< Off</p> <p>↓</p> <p>Close Mixer On< Off</p> </div> <p style="margin-left: 150px;">} Only in case of a device water heater battery</p>	<ul style="list-style-type: none"> After all complete connections have been established (ventilation, water, and electrical), the air humidification unit can be commissioned.  <p>Illustration: Removing the transport locking device</p> <p> The device may be commissioned only by qualified experts. The commissioning program must be completely completed to start the device. After the mains plug is plugged in, the following appears on the display:</p>																																
<p style="text-align: center;">↓</p> <div style="text-align: center;"> <p>Hardness of water 3.0?</p> </div>	<ul style="list-style-type: none"> The supply water should be tested using the test strip included in the delivery (immerse the test strip in water, shake the strip, and check the colour after one minute). The hardness of water (°dH) determined in this manner should be entered according to the table. <table style="margin-left: auto; margin-right: auto;"> <tr> <td>1</td> <td>=</td> <td>bis 5 ° dH</td> <td></td> </tr> <tr> <td>1,5</td> <td>=</td> <td>6 – 8 ° dH</td> <td></td> </tr> <tr> <td>2</td> <td>=</td> <td>9 – 11 ° dH</td> <td></td> </tr> <tr> <td>2,5</td> <td>=</td> <td>12 – 14 ° dH</td> <td></td> </tr> <tr> <td>3</td> <td>=</td> <td>15 – 17 ° dH</td> <td></td> </tr> <tr> <td>3,5</td> <td>=</td> <td>18 – 20 ° dH</td> <td></td> </tr> <tr> <td>4</td> <td>=</td> <td>21 – 23 ° dH</td> <td></td> </tr> <tr> <td>4,5</td> <td>=</td> <td>24 – 26 ° dH</td> <td></td> </tr> </table> <p>Illustration: Test strip for determining the hardness of water</p>	1	=	bis 5 ° dH		1,5	=	6 – 8 ° dH		2	=	9 – 11 ° dH		2,5	=	12 – 14 ° dH		3	=	15 – 17 ° dH		3,5	=	18 – 20 ° dH		4	=	21 – 23 ° dH		4,5	=	24 – 26 ° dH	
1	=	bis 5 ° dH																															
1,5	=	6 – 8 ° dH																															
2	=	9 – 11 ° dH																															
2,5	=	12 – 14 ° dH																															
3	=	15 – 17 ° dH																															
3,5	=	18 – 20 ° dH																															
4	=	21 – 23 ° dH																															
4,5	=	24 – 26 ° dH																															
<p style="text-align: center;">↓</p> <div style="text-align: center;"> <p>UV calibration > On Off</p> </div>	<ul style="list-style-type: none"> After the hardness of water is set, the following appears: „UV Calibration <On/Off“. 																																
<p style="text-align: center;">↓</p> <div style="text-align: center;"> <p>Calib. Started Duration: 3 min Water RUNNING</p> </div>	<ul style="list-style-type: none"> „On“ starts the UV calibration (the program runs for about three minutes). In the case of the UVC calibration, the light output of the UVC pipe is determined and saved as a calibrated value (= reference value of the new pipe). 																																
<p style="text-align: center;">↓</p> <div style="text-align: center;"> <p>Calibration successful!</p> </div>	<ul style="list-style-type: none"> When the program is needed, the following appears in the display for 8 seconds. Display: (see the picture opposite). After that, the air humidification unit automatically switches to operating mode. 																																

GENERAL

USER

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12.1 POSSIBLE FAULT MESSAGE



**UVC pipe or
sensor defective!**

• If no UVC radiation is determined, the following appears on the display (see the picture opposite).

• **Remedy of the fault only by the expert:**

Check the UVC pipe, series connection unit (green function LED), and sensor board for function.

After the commissioning of the device, the function and operation should be observed for about 15 minutes. If leaks are found on the water or air side or if disturbing noises are noticed, shut down the device immediately. In this case, have the determined faults remedied immediately under observance of the safety regulations. If something is not clear or if you have questions, contact the expert/Service department or manufacturer immediately.



After commissioning, the current supply may not be interrupted for longer than one

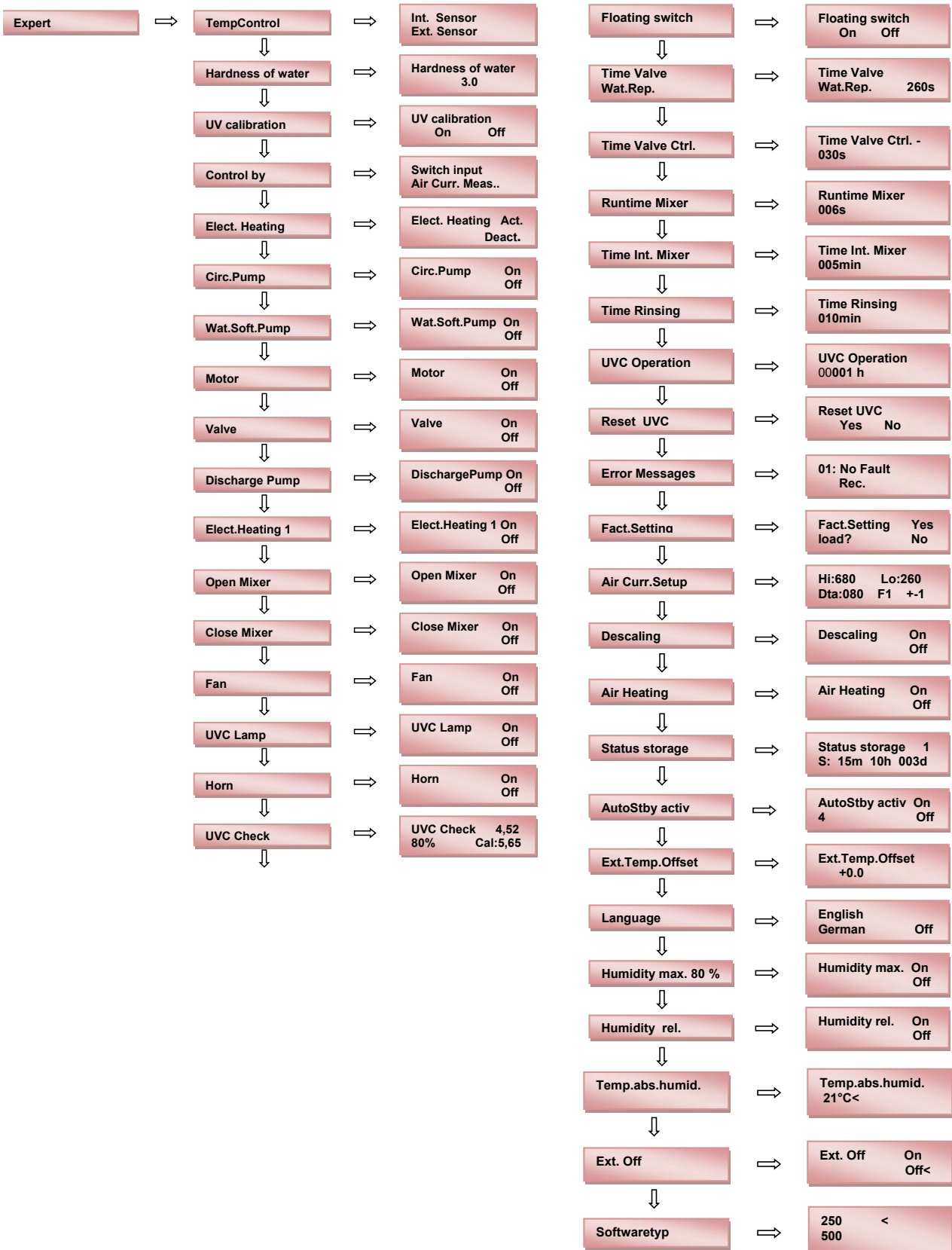
day so that the hygienic requirements can be observed.

In case of an interruption in the electrical voltage supply of more than 24 hours, the air humidification unit may become contaminated with germs. In this case, a general cleaning (a cleaning agent on an organic basis) of all components should be performed before the unit is commissioned. If necessary, components must be replaced.



13. Expert menu

13.1 EXPERT MENU OVERVIEW



13.2 SETTINGS

GENERAL

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Temp. Control <	⇒	Int. Sensor Ext. Sensor <	<ul style="list-style-type: none"> • This shows whether the air temperature is controlled via the internal or external sensor. • In the case of the Int. Sensor display, the outlet air temperature of the air humidification unit is constantly regulated to the reference value set in the customer menu. • In the case of the Ext. Sensor display, the outlet air temperature is regulated depending on the external temperature sensor. • According to the mounting site of the temperature sensor (in the extract air line in case of air heating or after the second air heater battery in case of low-temperature heating), the device regulates the temperature to the temperature reference value. The air outlet temperature of the air humidification unit is limited to a minimum of +16°C and a maximum of +35°C by the software.
Hardness of water <	⇒	Hardness of water 3.0<	<ul style="list-style-type: none"> • Set the existing hardness of water. (See Chapter 12 Commissioning.)
UV calibration <	⇒	UV calibration >On Off	<ul style="list-style-type: none"> • The UV Calibration must always be performed when the UVC pipe is exchanged. (See Chapter 12 Commissioning.)
Control by	⇒	Switch input Air Curr. Meas. <	<ul style="list-style-type: none"> • Using Control by <, the parallel control between the ventilation device and the air humidification unit can be selected. • In the case of the Switch Input presetting, a control cable must be connected from the ventilation device to the input of the air humidification unit. This cable makes contact whilst the ventilation device is running and breaks contact when it is shut down. • In the case of the Air Current Measurement selection, the operational status of the ventilation device is automatically determined using the installed microphone and the air humidification unit is actuated synchronously (factory setting).
Elect. Heating <	⇒	Elect. Heating Act. Deact.<	<ul style="list-style-type: none"> • The Elect. Heating parameter shows the operational status for the activated heater battery. • When Elect. Heating Act. < is set, the control system is programmed for the actuation of an electric heater battery. • When Elect. Heating Deact. < is set, the control system is programmed for the actuation of a water heater battery.



• In the following items, the relay outputs can be activated and deactivated manually.

Circulation pump <	⇒	Cir. Pump On< Off	Open Mixer <	⇒	Open Mixer On < Off
Wat.Soft.Pump <	⇒	Wat.Soft.Pump On< Off	Close Mixer <	⇒	Close Mixer On < Off
Motor <	⇒	Motor On < Off	Fan <	⇒	Fan On < Off
Valve <	⇒	Valve On < Off	UVC Lamp <	⇒	UVC Lamp On < Off
Discharge pump <	⇒	Disch.Pump On < Off	Horn <	⇒	Horn On < Off
Elect.Heating 1 <	⇒	Elect.Heating 1 On < Off			

Elect. Heating <	⇒	Elect. Heating Act. Deact.<	<ul style="list-style-type: none"> When Elect.Heating Act. is set, the Open Mixer and Close Mixer items are replaced by Elect.Heating 2 and Elect.Heating 3.
UVC-Check <	⇒	UVC-Check 3,65 80% Cal: 4,56	<ul style="list-style-type: none"> With the UVC Check parameter is set, the current light output of the UVC pipe is determined. At the right bottom, the current value and the value calibrated underneath that (light output of the new pipe) is displayed. In comparison with the calibrated value, the light output is shown as a percentage.
Floating switch <	⇒	Floating switch >On Off	<ul style="list-style-type: none"> This parameter is used to check the function of the floating switch. When the float is raised, the „>“ character changes from Off to On.
Time Valve Wat.Repl. <	⇒	Time Valve Wat. Repl. 260s	<ul style="list-style-type: none"> The opening time for the water valve is set when the water tank is filled (water level after water replacement). Setting range: 20 – 600 seconds Factory setting: 260 seconds LBE 250 180 seconds LBE 500
Time Valve Ctrl. <	⇒	Time Valve Ctrl. 030s	<ul style="list-style-type: none"> This parameter is used to set the refill time of the water during humidity control. The air humidity is determined every minute. When the reference value is undershot, the valve is opened according to a set value. Setting range: 1 – 70 seconds Factory setting: 30 seconds LBE 250 40 seconds LBE 500
Runtime Mixer <	⇒	Runtime Mixer 006s	<ul style="list-style-type: none"> With this parameter, the runtime of the mixer can be set. Setting range: 2 – 30 seconds Factory setting: 6 seconds
Time Int. Mixer <	⇒	Time Int. Mixer 005 min	<ul style="list-style-type: none"> With the Time Interval Mixer parameter, the interval time according to which the control system readjusts the mixer can be set. Setting range: 1 – 120 minutes Factory setting: 5 minutes
Time Rinsing <	⇒	Time Rinsing 010 min	<ul style="list-style-type: none"> Defines the runtime of the rinsing program. Setting range: 1 – 20 minutes Factory setting: 10 minutes
UVC Operation <	⇒	UVC Operation 00001 h	<ul style="list-style-type: none"> Indicates the operating hours of the UVC pipe.

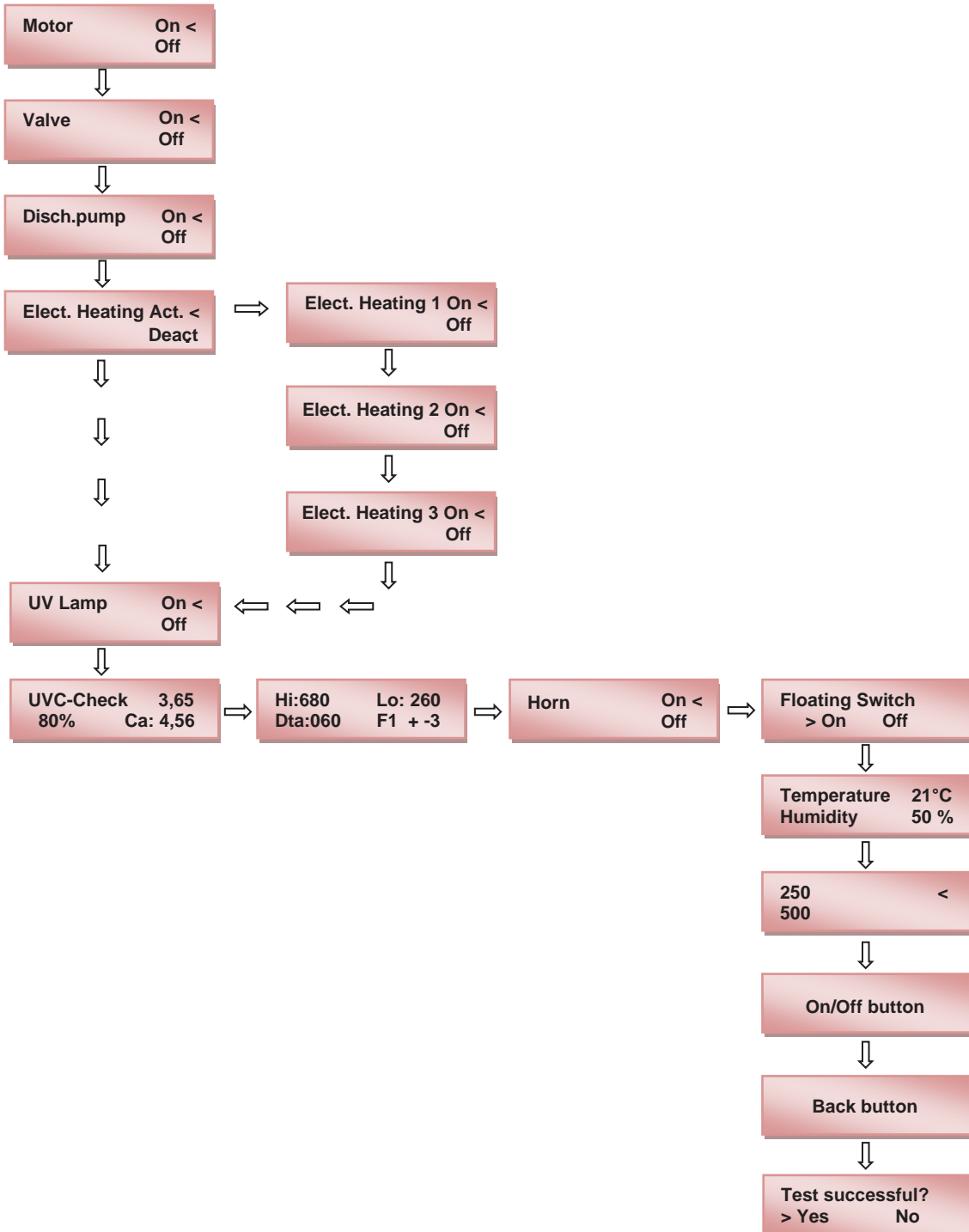


GENERAL

Reset UVC <	⇒	Reset UVC Yes No <	• Deletes the operating hours meter of the UVC pipe. Can be performed after every UVC pipe change.
Error Messages <	⇒	01: No Fault Rec.	• Occurring error messages are logged automatically and can be polled under this menu item.
Fact. Setting <	⇒	Fact. Setting load? Yes < No	• If Factory Setting is selected in the program, all saved settings are deleted. The control system must be recommissioned and reset. In addition, a test menu for testing the individual components appears.

USER

• This test program must be performed. **Test program sequence:**



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	<ul style="list-style-type: none"> The Elect. Heating parameter is used to set whether the device is equipped with an electric heater battery (Elect. Heating Act.) or a water heater battery (Elect. Heating Deact.). When the test program is ended, the mains plug should be pulled for 10 seconds. The test program must be concluded before you can access the next menu item. After that, proceed with the commissioning program (see Chapter 12).
<p>Air Curr. Setup ⇒ Hi:680 Lo: 260 Dta:060 < F1 + -3</p>	<ul style="list-style-type: none"> With this parameter, the function of the installed microphone is checked and the sensitivity is set. The „Hi“ (high) and „Lo“ (low) values indicate the level for the volume of the air noise generated by the ventilation device. The greater the difference between the „Hi“ and „Lo“ values, the greater the volume. By reducing the „Dta“ value, the sensitivity can be increased. „F1“ visualises whether the humidity control is switched on or, in the case of „F0“, switched off. In case of an air volume flow under 100 m³/h, the noise development of the ventilation device may be too low for you to detect the operation of the ventilation device. In this case, the device does not switch on and humidification does not take place. If the noise development is too low, caused by air volume flows that are too low, a control cable must be installed and connected between the ventilation device and the switch input of the air humidification unit (see Chapter 18).
<p>Descaling ⇒ Descaling On Off <</p>	<ul style="list-style-type: none"> „Descaling On“ starts an automatic descaling program that runs for about 120 minutes. For program sequence, see chapter 20.04. “Decalcification” <i>The decalcification program must only be carried out by a specialist. When the decalcification program is running, the ventilation unit must be switched off (odour)</i>
<p>Air Heating < ⇒ Air Heating On Off <</p>	<ul style="list-style-type: none"> In the case of Air Heating On, the Time Interval Mixer parameters and the hysteresis of the extract air sensor of the extract air control are adapted.



GENERAL



USER

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<p>Status memory</p>	<ul style="list-style-type: none"> In the menu Status memory the last 9 actions of the control unit can be retrieved with the time stored. <ol style="list-style-type: none"> CHANGE WATER DESCALE FLUSH UV_CHECK STANDBY CALIBRATE UV CALIBRATE AIR START START USER STANDARD
<p>AutoStby activ ⇒ AutoStby activ On 4 Off <</p>	<ul style="list-style-type: none"> Automatic switching-off of the humidifier is deactivated by AutoStby active ,Off'. Additionally, a number is now shown in the expert menu under AutoStby aktiv 'off' at the bottom on the left, which shows the reason for the AutoStby operation. <ol style="list-style-type: none"> No ventilation for 18 hours EEPROM Valve openings Switch Rinsing
<p>Ext.Temp.Offset ⇒ Ext.Temp.Offset +0.0</p>	<ul style="list-style-type: none"> The external temperature sensor can be calibrated here.
<p>Language ⇒ English German <</p>	<ul style="list-style-type: none"> The menu guidance can be switched over from German to English or to French and vice versa in the menu option Language.
<p>Max. air humidity 80 % ⇒ Max. air humidity On Off <</p>	<ul style="list-style-type: none"> If the parameter "Max. air humidity" is set to "On", the air humidity setting in the customer's menu is expanded by the values 70 % and 80 %. <p> This parameter must not be activated in an air piping system, if it is integrated into the humidifier (condensation water may form in the piping system!)</p>
<p>Rel. air humidity ⇒ Rel. air humidity On Off <</p>	<ul style="list-style-type: none"> In the menu "Relative air humidity" the humidity control is switched from the absolute air humidity control at 21 °C to relative air humidity control. <p> This parameter must not be activated in an air piping system, if it is integrated into the humidifier (condensation water may form in the piping system!)</p>
<p>Temp.abs.humidity ⇒ Temp.abs.humidity 21 °C <</p>	<ul style="list-style-type: none"> Here the temperature is set, to which the absolute humidity control is related. The value can be set between 20 °C and 24 °C in 1-degree increments. This enables the adjustment of the humidity control to the room temperature.
<p>Ext. Off ⇒ Ext. Off On Off <</p>	<ul style="list-style-type: none"> When the parameter "external Off" is activated to "On" and if the contact is open at the external switching input, the device is switched to the operating status "Control Off" (<i>For more details, see Chapter 9.4</i>). Air flow monitoring via the integrated microphone will still remain active.
<p>Software type ⇒ 250 500 <</p>	<ul style="list-style-type: none"> Displays the parameterized device type. This setting can only be adjusted in the factory defaults menu item.



14. Technical data

Version	LBE 250	LBE 500
Air volume flow [m ³ /h]	max. 250	max. 500
Humidity, adjustable [%]	40 to 60	40 to 60
Temperature, adjustable [°C]	15 to 25	15 to 25
Evaporative power [l/h]	max. 2	max. 4
Water replacement [l/day] (depends on water hardness and evaporative power)	1 to 10	2 to 30
Pressure dropt [Pa]	max. 80	max. 30
Power consumption [W]	max. 100	max. 100
on average [W] (design option with water heater batteries)	23	23
Power consumption [W] (design option with electric heater batteries)	max. 1400	–
Power supply [V/Hz]	230/50	230/50
Connection to air supply [mm]	ø 160	ø 250
Connection to water supply [Zoll]	ø ¾	ø ¾
Connection to drain [mm]	ø 40	ø 40
Siphon	provided by client	provided by client
Water inlet pressure [MPa]	min/max. 0,35/0,7	min/max. 0,35/0,7
Water temperature [°C]	min/max. 8/30	min/max. 8/30
Weight (without/with water) [kg]	25/28	46/61
Protection rating for [IP]	20	20
Installation	wall mounting	wall mounting
Hygiene – Type Examination (Hygiene-Institut des Ruhrgebiets)		

PTC Electric Heater Battery		
Heat output PTC element [W]	1300	–

Water heater battery		
Medium	water	water
Temperature supply line, return line [°C]	55/45	55/45
Performance [W]	2000	4200
Air inlet [°C]	15	15
Air outlet [°C]	40	40
Water quantity [l/s]	0,05	0,13
Connection (copper pipe) [mm]	ø 10	ø 22
Water pressure [MPa]	max. 1	max. 1
Water temperature [°C]	max. 95	max. 95

GENERAL

USER

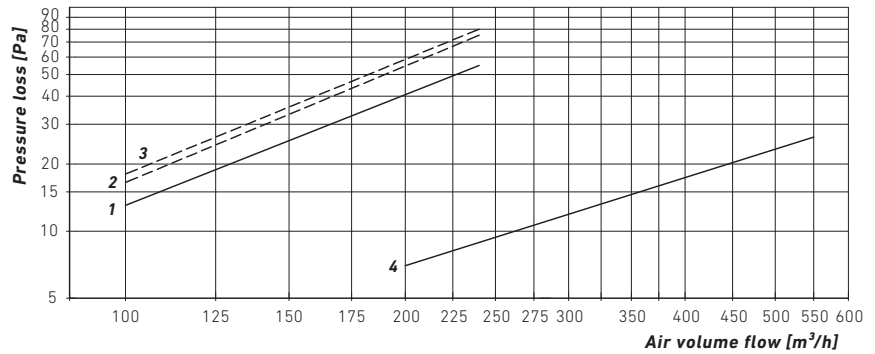
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Three heating sections that can be actuated by the control system depending on the power requirement have been integrated into the **PTC battery**. Depending on the air temperature, the heating output of the PTC battery is adapted automatically. In this way, an economic output control is guaranteed.

Reverse osmosis unit

The water is treated using the reverse osmosis unit. Any deposits on the bladed rotor, the water tank, and the UVC pipe are thus reduced to a minimum.



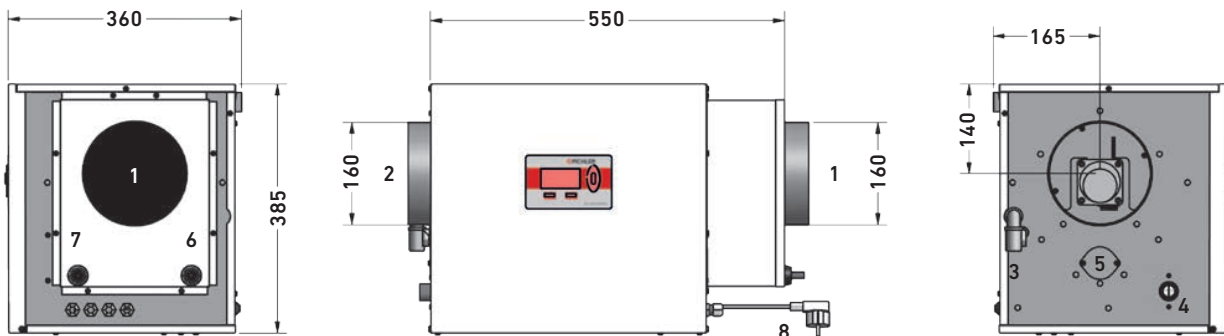
- 1 LBE 250 with water heater battery
- 2 LBE 250 with PTC electric heater battery
- 3 LBE 250 with water heater battery and low temperature auxiliary heater unit with integrated water battery
- 4 LBE 500 with water heater battery

15. Layout sketch

15.1 LAYOUT SKETCH LBE 250 (WALL-MOUNTED)

Air humidification unit LBE with warm water heater battery

Type 08LBE250RW / 08LBE250LW (Dimensions: W x H x D = 550 x 385 x 360 mm)

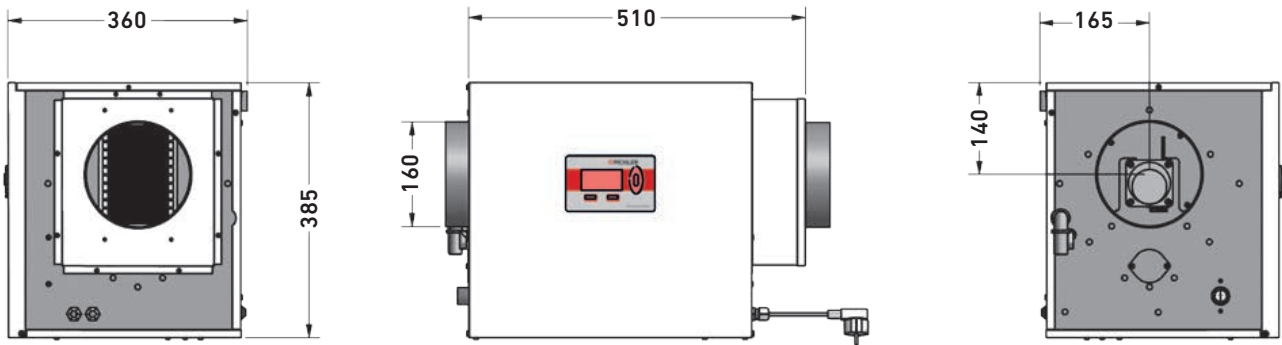


- 1 Inlet (supply air from ventilation device) \varnothing 160 mm
- 2 Outlet (supply air into the living space) \varnothing 160 mm
- 3 Outlet (water drain) \varnothing 40/50 mm
- 4 Water inlet (Drinking water connection) $\frac{3}{4}$ "
- 5 UV pipe (covering for UVC pipe exchange)
- 6 Return line heating system \varnothing 10 mm
- 7 Feed line heating system \varnothing 10 mm
- 8 Power supply 230 V/50 Hz



Air humidification unit LBE with PTC electric heater battery

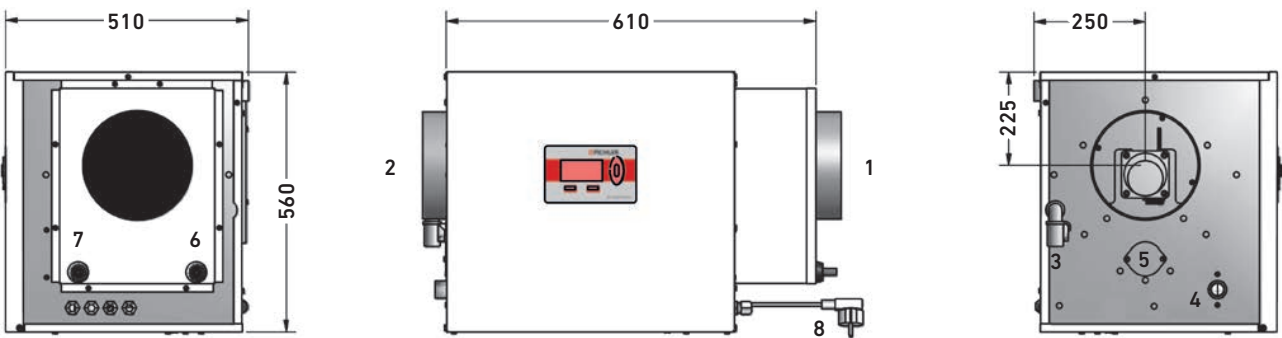
Type 08LBE250RE / 08LBE250LE (Dimensions: W x H x D = 510 x 385 x 360 mm)



15.2 LAYOUT SKETCH LBE 500 (WALL-MOUNTED)

Air humidification unit LBE with warm water heater battery

Type 08LBE500RW / 08LBE500LW (Dimensions: W x H x D = 610 x 560 x 510 mm)



- 1 Inlet (supply air from ventilation device) \varnothing 250 mm
- 2 Outlet (supply air into the living space) \varnothing 250 mm
- 3 Outlet (water drain) \varnothing 40/50 mm
- 4 Water inlet (Drinking water connection) $\frac{3}{4}$ "
- 5 UV pipe (covering for UVC pipe exchange)
- 6 Return line heating system \varnothing 22 mm
- 7 Feed line heating system \varnothing 22 mm
- 8 Power supply 230 V/50 Hz

GENERAL

USER

SPECIALIST PERSONNEL



16. Mounting

For mounting and setup, the national and local regulations must be observed. The device may be installed only in compliance with the national installation regulations.

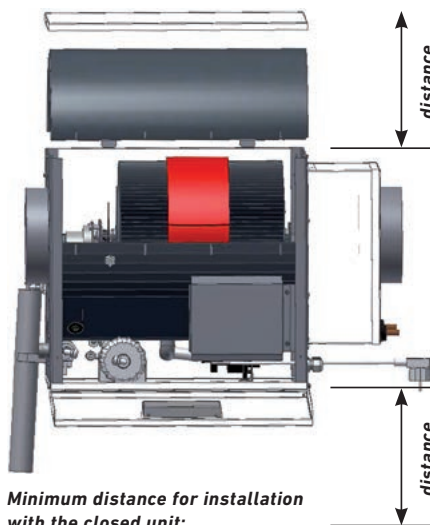
The device may be installed only in frost-free, dry rooms. The room temperature must lie between +5 °C and a maximum of +40 °C. The device is intended for horizontal mounting. It may deviate a maximum of $\pm 1^\circ$ from the horizontal position and must be mounted to a massive wall that can bear the load. The intrinsic operating weight of the air humidification unit must be taken into consideration for the suspension. No shocks or jolts may affect the device.

The installation of the air humidification unit may take place only in rooms that have an existing water outlet.



In addition, safety measures that automatically close the water supply to the air humidification unit in case of leakage (e.g. safety valve/water stop) must be taken within the room. Ventilation and air conditioning system air lines that are not installed in heated areas must be designed with suitable heat insulation (danger when the dew point temperature is undershot) to prevent the formation of condensation.

The setup site for the air humidification unit must be easily accessible for maintenance and servicing work.



Minimum distance for installation with the closed unit:
 20 cm distance LBE 250, top
 25 cm distance LBE 250, bottom
 25 cm distance LBE 500, top and bottom



A **minimum spacing of 20 cm (LBE 250) / 25 cm (LBE 500)** must be maintained above the air humidifier. A **minimum spacing of 25 cm (LBE 250 / LBE 500)** must be maintained below the air humidifier.

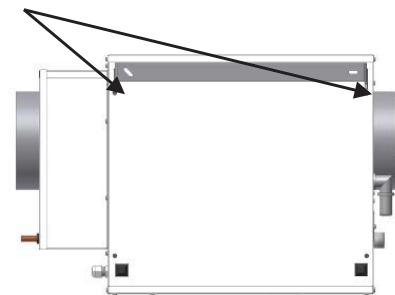
During the installation of the ventilation lines, make sure that no **metal chips** get into the pipework (metal chips cause corrosion points in the water tank). After the air lines have been cut to size and mounting is completed, the air lines should be thoroughly cleaned.

For any damage due to non-observance of this information, the warranty extinguishes.

Attach the wall mounting bracket **horizontally** (max. deviation $\pm 1^\circ$) using fastening screws and dowels with at least $\varnothing 6$ mm to a massive wall that can bear the load.



Hang the air humidification unit into the wall mounting bracket and secure it to the device with both lateral **screws**.

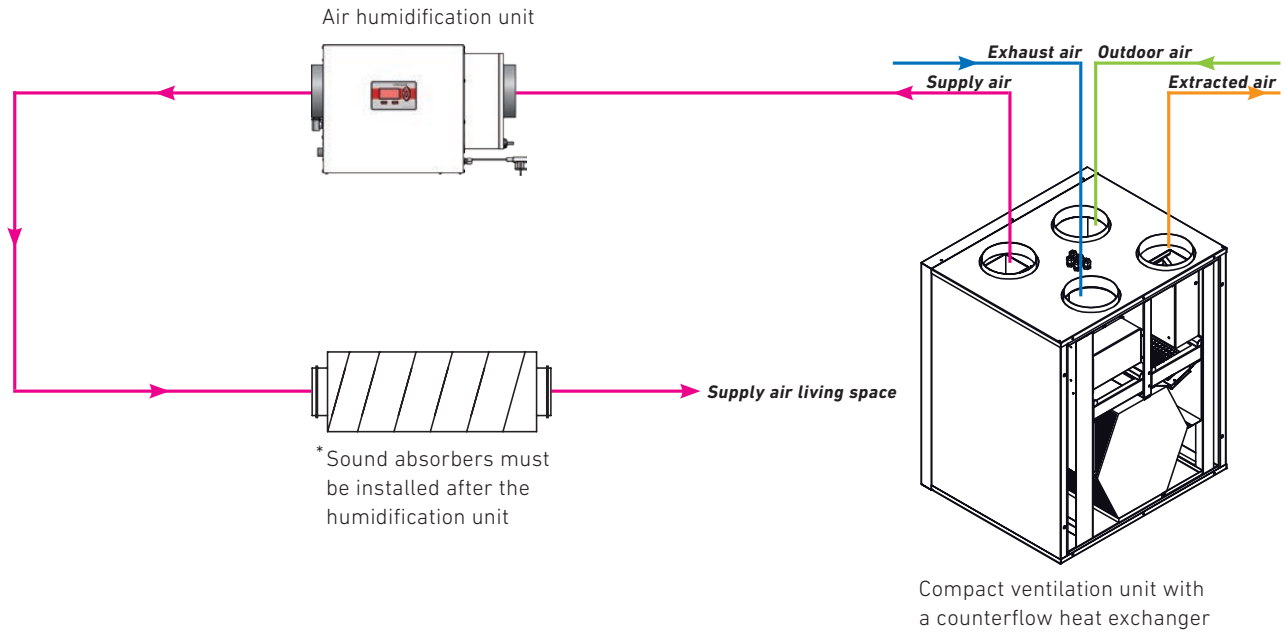


17. Connections/installation

17.1 ROUTING OF AIR LINES



The **sound absorber*** must be installed downstream of the air humidification unit, so that the built-in microphone detects the sound of the ventilation unit, hereby the correct operation of the humidification unit can be ensured.

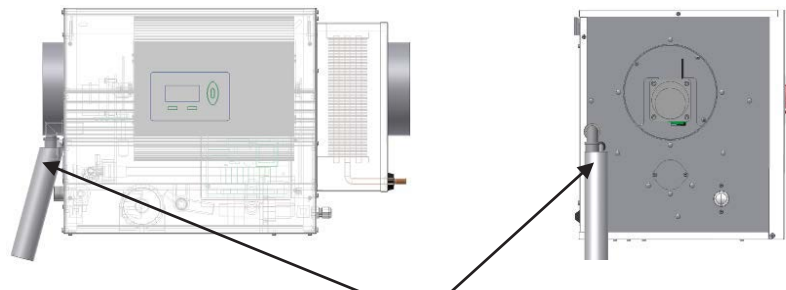


17.2 WASTE WATER CONNECTION

The two sewage connections (1 x of the osmosis unit and 1 x of the waste water of the air humidification unit) must be connected loosely into a waste water connection pipe (**HT pipe DN 40 mm or 50 mm**) sunk by approx. 3 cm. An odour guard (siphon) must be created on site using four 90° pipe bends.



Do not connect hoses directly to the outlets. The maximum water volume of 2.5 litres is drained in about eight seconds. (LBE 250)



The two sewage connections are sunk into the waste water connection pipe. (included in the scope of delivery)



GENERAL

USER

17.3 MAINS WATER CONNECTION


Only mains water that corresponds with the local mains water ordinance may be used for the water supply. For the connection to the water supply, only the original connecting hoses provided in delivery may be used. The operating pressure of a minimum of 0.35 MPa and a maximum of 0.7 MPa and a water temperature of a minimum of 8 °C and a maximum of 30 °C may not be undershot or exceeded, respectively.

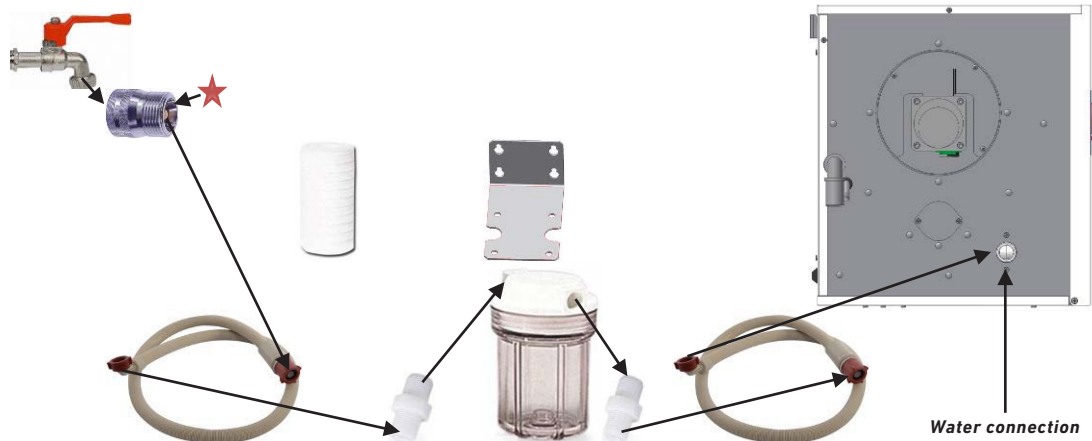
In case of a **chlorine content** over 0.1 mg/l, the standard water filter (5 µm) must be replaced by a dual filter (5 µm/carbon) (optionally available as an accessory). If the **iron content** of the mains water exceeds a value of 0.1 mg/l, an iron filter should also be built into the water inlet pipe upstream of the fine filter. The device can be used for a maximum hardness of water of 26 °dH.

When this value is exceeded, the service life of the reverse osmosis membrane is considerably reduced!

Water connection set (accessory), consisting of:

- 1 waste water connection pipe
- 2 connecting hoses, 1.5 m each 3/4"
- 2 plastic screw connections 3/4"
- 1 wall mounting bracket
- 1 safety valve/water stop 3/4"
- 1 filter housing
- 1 water filter
- 1 item test strip for determining the water hardness

 In case of a defect (leakage), the safety valve/water stop closes and the uncontrolled discharge of water is prevented. To re-establish proper function: close the water valve, remove the hose, unscrew the safety valve/water stop, and press the red button on the output side of the valve.



17.4 WATER HEATER BATTERY CONNECTION

The heater battery (feed line and return line) is to be connected to the heating system via a circulation pump and a three-way motor mixer valve. The feed line temperature should amount to at least 50°C and must be available constantly during the heating period.

Pump/mixer connection set (optional accessory), consisting of:

- 1 circulation pump 230 V
- 2 screw connections, R 1/2a / 15 mm (brass)
- 1 three-way mixer valve with actuator 230 V, Rp1/2", DN 15, runtime 120 seconds



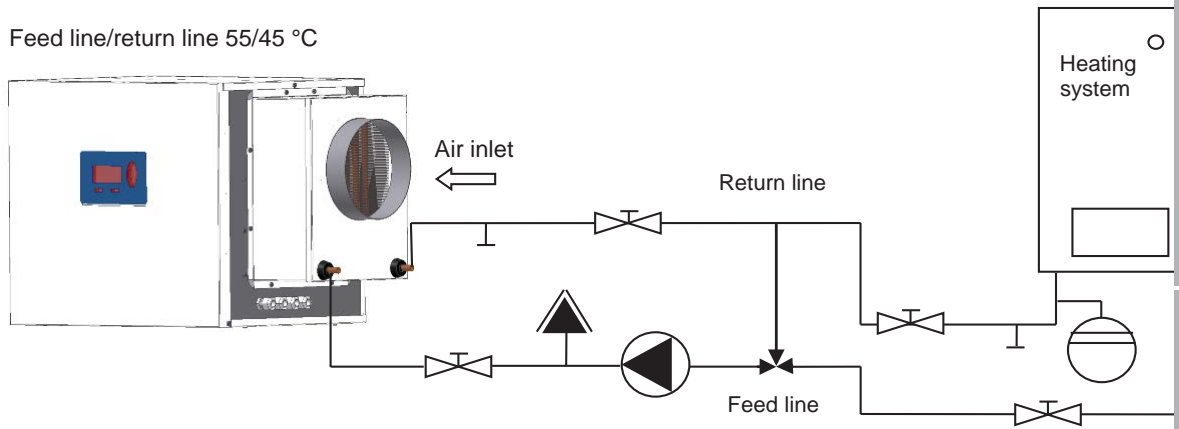
Illustration: Circulation pump with screw connections

Illustration: Three-way mixer valve with actuator

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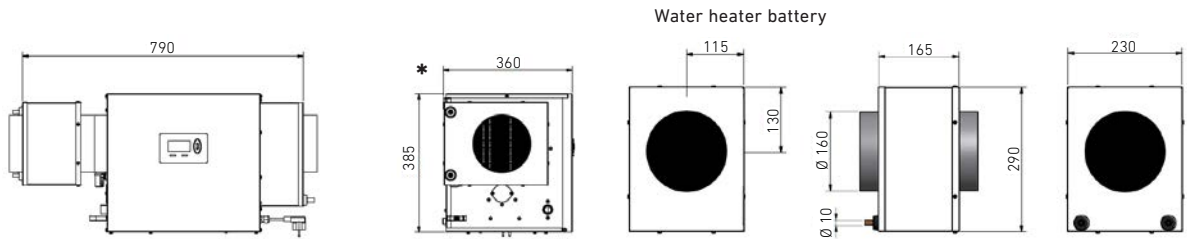
17.5 HYDRAULIC CONNECTION DIAGRAM



17.6 LOW TEMPERATURE HEATING

Feed line temperature of at least +30 °C! In case of low temperature heating, an additional auxiliary heater battery must be installed at the air outlet downstream of the air humidification unit, in order to grant a comfortable supply temperature (see figure). A feed

line temperature below 36 °C and a very cold temperature, or an outlet temperature below 19 °C at the internal sensor decreases the humidification, as too little evaporation energy is available.



The auxiliary heater battery may be mounted only in this **position***, thus guaranteeing simple accessibility for a possible UVC pipe exchange.

GENERAL

USER

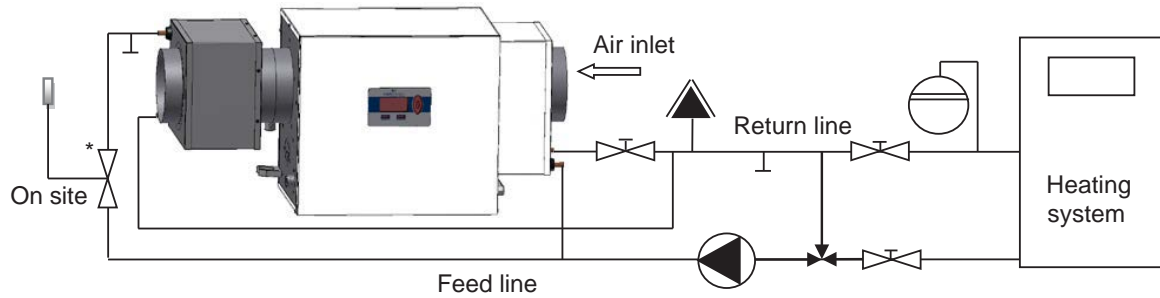
SPECIALIST PERSONNEL



Connection diagram parallel circuit with thermostatic valve: With this connection variant the system can be best coordinated and regulated. The heat output of the reheating coil is automatically adjusted by the „thermostat valve*“ to the integrated heater, with that the

highest possible evaporation line is obtained in connection with the available flow temperature.

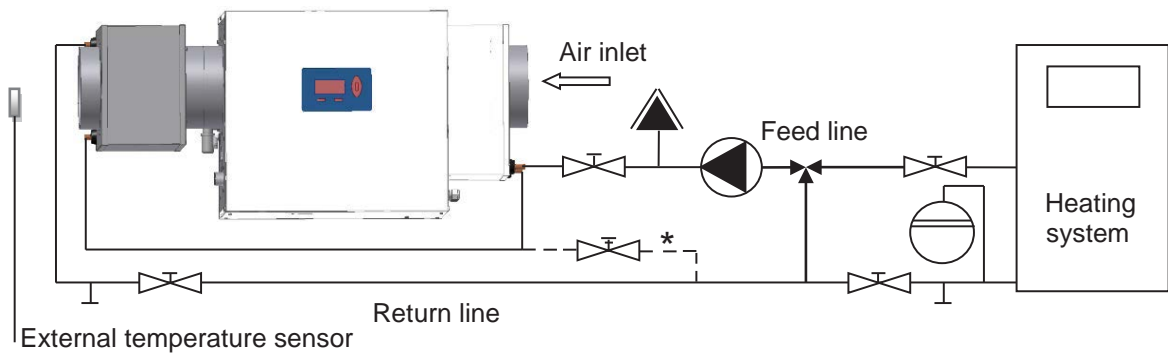
The „thermostat sensor*“ must be installed in the feed line approx. 50 cm next to the reheating coil.



Connection diagram serial connection (with bypass): This connection method has the disadvantage that the heat output of the heater cannot be controlled separately. Should the heat output of the reheating coil be too high, the mixer is added and reduces the heat output

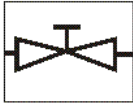
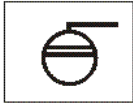
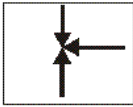
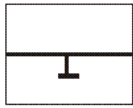


of the integrated heating coil and the humidification.

By installing a bypass line with a control valve, the heat output can be adjusted to both heating coils.



An „external temperature“ sensor has to be installed in the air supply duct approx. 50 cm downstream of the re-heating battery on site. In low temperature heating systems, the air humidifier

LBE-250 can also be integrated directly (without mixer and external sensors) into the heating system. The supply air temperature is then not regulated actively.

	shut-off valve
	expansion tank
	Mixer
	drain valve
	automatic vent valve
	Pump

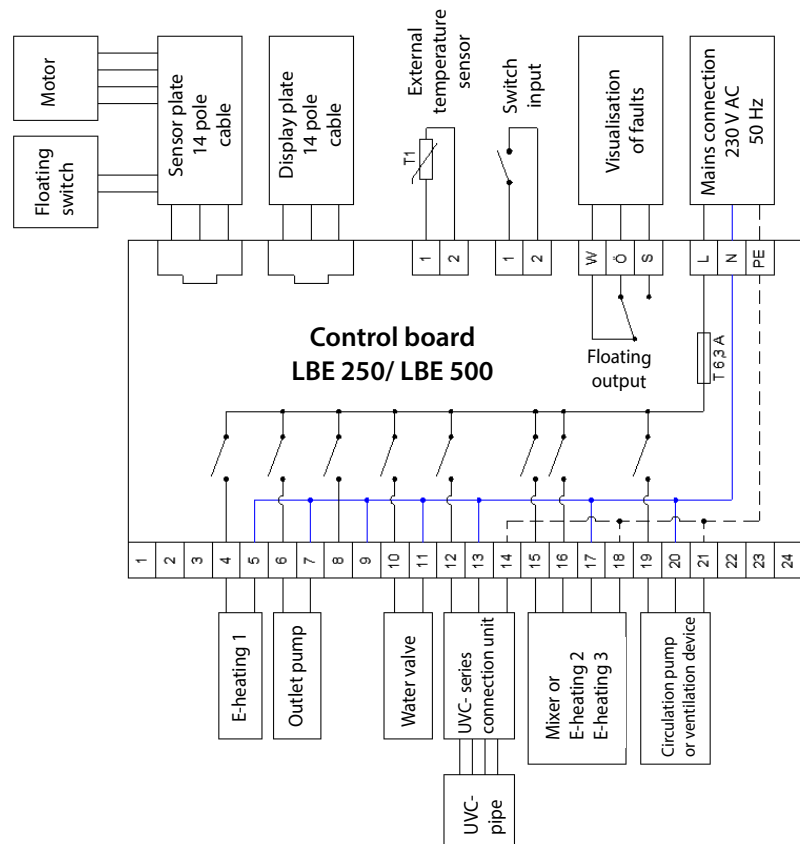
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18. Wiring diagram



Connecting terminals 1 through 24 are labelled on the motherboard and designed as relay outputs with 230 V (see figure). In the case of the device design with the water heater battery, the three-way motor mixer valve and the circulation pump are connected to the following relay outputs:

Three-way motor mixer valve (Terminals 15 through 18) :

Terminal 15 - Close Mixer phase
Terminal 16 - Open Mixer phase
Terminal 17 - Zero conductor
Terminal 18 - Neutral conductor (earthing)

Circulation pump (Terminals 19 through 21):

Terminal 19 - Phase
Terminal 20 - Zero conductor
Terminal 21 - Neutral conductor (earthing)

With **Ventilation Device Switch Input**, the air humidification unit can be switched on (break contact) and off (make contact) in parallel with the ventilation device. The switch input must be activated in the Expert menu if automatic synchronous operation cannot be guaranteed because the sound level is too low.

In the case of **External Temperature Sensor**, a PT1000 sensor, on the basis of which the air outlet temperature is controlled automatically, can be connected optionally. This is required only in connection with a second heater battery (low-temperature heating/air heating).

The **floating output** can be used for a possible visualisation of faults. For a function check with an external open-loop and closed-loop control unit.

E-heating 1, E-heating 2 and E-heating 3 and **the ventilation device** are active in the case of a device design with electric heater battery only.



19. Error messages (expert)

In the case of error messages, an alarm sounds which can be deactivated by pressing or turning the **<scroll wheel>**. The error messages are shown in the display. After each error message (with the exception of **Service and Filter Change**), the water is drained and the air humidification unit is switched off. The error messages can be deleted by pressing the **„Back“ button** and keeping it

pressed for **3 seconds** or in the **Service** menu under the **Delete Fault Yes<** item. After that, the air humidification unit re-enters the operating mode.

The expert/Service department should be informed in case of error messages, with the exception of the Filter Change message.

19.1 UVC PIPE DEFECTIVE! (EXPERT)

<p>UVC pipe defective! (expert)</p>	<ul style="list-style-type: none"> • The UVC pipe is monitored continuously. A failure is detected automatically. The UVC pipe should be changed by the Expert/Service department every two years. Only original UVC pipes should be used. In case replica components are used, the warranty extinguishes and a guarantee of function cannot be provided. • Remedy of the fault only by the expert: Change the UVC pipe under observance of the safety measures. <i>(see Chapter 20, Page 37)</i>
--	--

19.2 DESCALING! (EXPERT)

<p>Descaling! (Expert!)</p>	<ul style="list-style-type: none"> • During operation the UV radiation decreases continuously. As soon as the radiant power drops below 20% of the calibrated value, this fault message is output. • Remedy of the fault only by the expert: Open the device under observance of the safety measures and remove deposits in the tank, on the rotor, on the UVC pipe etc. using descaling agent and then rinse them with water. <i>(see Chapter 20, Page 37)</i>
------------------------------------	--

19.3 PUMP, OUTLET DEFECTIVE! (EXPERT)

<p>Pump, outlet defective!</p>	<ul style="list-style-type: none"> • If the floating switch actuates during the water replacement, the existing water cannot be drained. • Remedy of the fault only by the expert: Check the pump, outlet, and floating switch.
---------------------------------------	--

19.4 HUMIDITY TOO HIGH! (EXPERT)

<p>Humidity too high!</p>	<ul style="list-style-type: none"> • If the relative humidity exceeds the reference value by 25 % for a period of 25 hours, the water is drained and the unit switches off. • Remedy of the fault only by the expert: Check the inlet value and integrated humidity sensor.
----------------------------------	--



19.5 HUMIDITY TOO LOW! (EXPERT)

Humidity too low!

- If the relative humidity undershoots the reference value by 20 % for a period of 25 hours, the water is drained and the unit switches off.
- **Remedy of the fault only by the expert:**
Check the inlet valve, motor, integrated humidity sensor, and reverse osmosis membrane for proper function. (Reverse osmosis membrane blocked).

19.6 SERVICE (EXPERT)

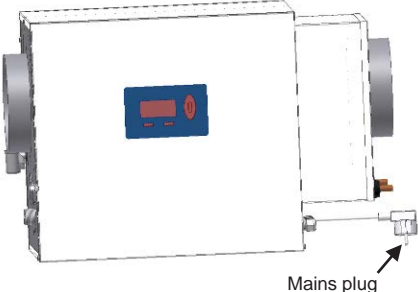


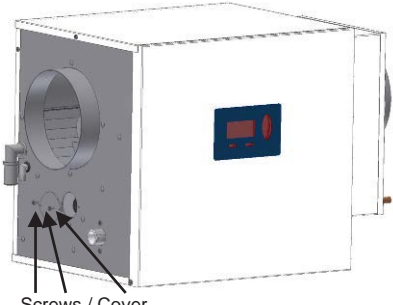

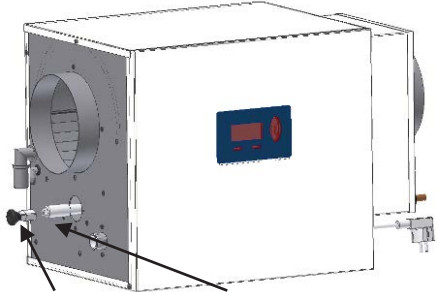
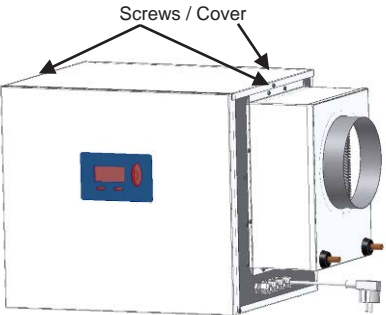

Service!

- The service message is set to an interval of 8600 operating hours by default.
- **Remedy of the fault only by the expert:**
The device should be serviced according to *Chapter 20, Page 37*.



20. Maintenance (expert)

20.1 UVC TUBE REPLACEMENT

 <p>Mains plug</p>	<p>Maintenance may be performed only by expert personnel. After the Service display message appears, the following tasks should be performed:</p> <p> 1. Before opening the device, pull the mains plug and secure against reactivation.</p> <p> Never look directly into the lit UVC light source without eye protection.</p>
 <p>Screws / Cover</p>	<p>2. Remove the cover for the UVC pipe together with other screws.</p> <p> Sharp edges of plate (danger of injury).</p>
 <p>Connecting plug / UVC pipe</p>	<p>3. Pull out the UVC pipe by 5 cm, remove the connecting plug and dispose of the UVC pipe in an environmentally sound manner.</p>
 <p>Screws / Cover</p>	<p>4. Remove both screws on the device cover and lift the cover.</p> <p> Sharp edges of plate (danger of injury).</p>

GENERAL

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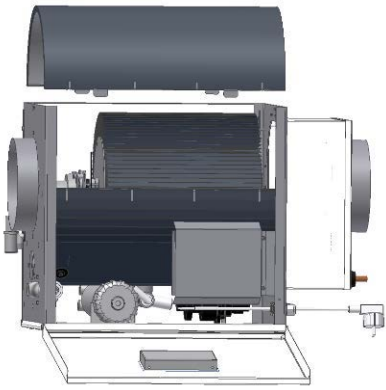

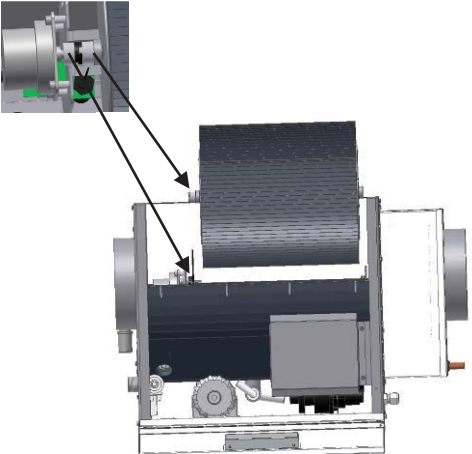


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GENERAL

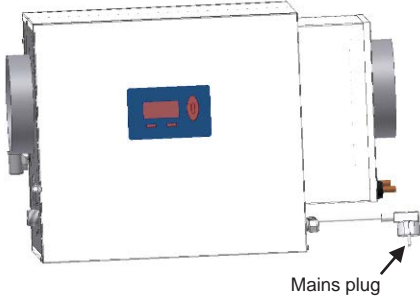


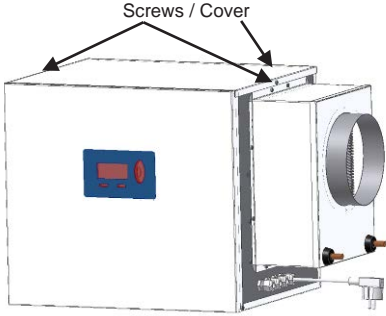

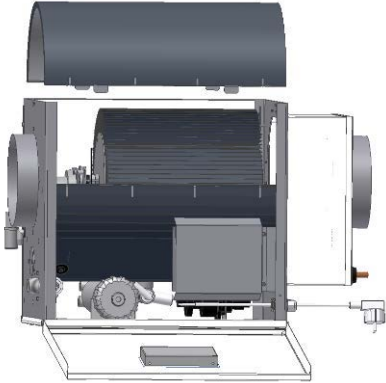

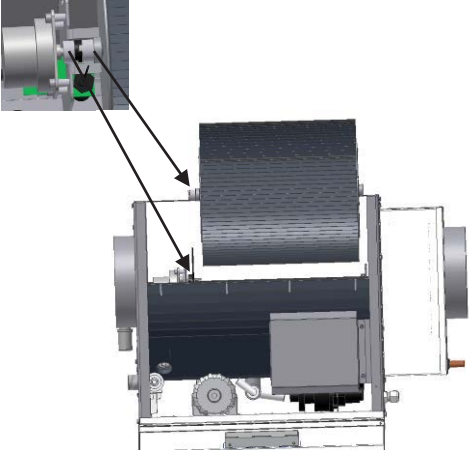
USER

SPECIALIST PERSONNEL

	<p>5. Fold down the front panel of the housing and lift the innercover.</p> <p> <i>Grab the rotor only when wearing gloves since the blades have sharp edges (danger of injury).</i></p>
	<p>6. Lift out the rotor. (If the motor coupling jams, carefully turn the rotor into the right position by hand.)</p>
	<p>7. Install a new UVC pipe of the brand Philips Type TUV 16W4P-SE. Only original spare parts may be installed. (Caution! Donot touch the pipe on the glass part!) Press the rubber seal firmly into the immersion pipe and close it off with the cover.</p>
	<p>8. Reassemble the device.</p>
	<p>9. Plug in the mains cable.</p>
	<p>10. In case of scale deposits in the device and on the rotor, the hardness of water must be set 1 to 2 levels higher in the Expert menu.</p>
	<p>11. Reset the operating hours meter with Reset UVC in the Expert menu.</p>
	<p>12. Perform the UVC Calibration in the Expert menu. (See Chapter 12 Commissioning.)</p> <ul style="list-style-type: none"> The UV Calibration must always be performed when the UVC pipe is exchanged. (See Chapter 12 Commissioning)
	<p>13. The maintenance is completed.</p>



20.2 OSMOSIS MEMBRANE REPLACEMENT

 <p>Mains plug</p>	<p>Maintenance may be performed only by expert personnel. After the Service display message appears, the following tasks should be performed:</p> <p> 1. Before opening the device, pull the mains plug and secure against reactivation.</p> <p> Never look directly into the lit UVC light source without eye protection.</p>
 <p>Screws / Cover</p>	<p>2. Remove both screws on the device cover and lift the cover.</p> <p> Sharp edges of plate (danger of injury).</p>
	<p>3. Fold down the front panel of the housing and lift the innercover.</p> <p> Grab the rotor only when wearing gloves since the blades have sharp edges (danger of injury).</p> <p>Cover electronic components using plastic foil in order to protect them against humidity in the following worksteps.</p>
	<p>4. Lift out the rotor. (If the motor coupling jams, carefully turn the rotor into the right position by hand.)</p>

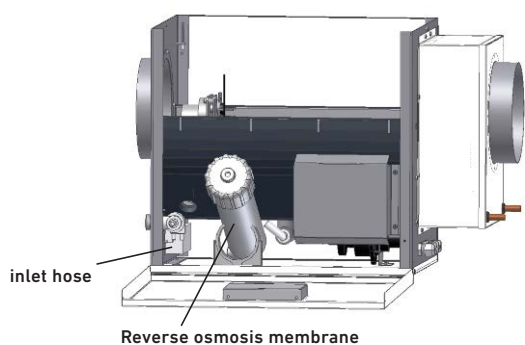
GENERAL

USER

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GENERAL



USER

5. During this work step, pay attention to leaking water!

- a.) To disconnect the inlet hose from the hose connector, push the click system backwards. Then the hose can be removed (LBE 250 1 x / LBE 500 2 x).
- b.) Then remove the cover, pull out the reverse osmosis housing and the osmosis membrane(s) from the housing.
- c.) Then exchange the osmosis membrane(s).

6. Reassemble the device.

7. Plug in the **mains cable**. After plug-in, the water tank is drained automatically..

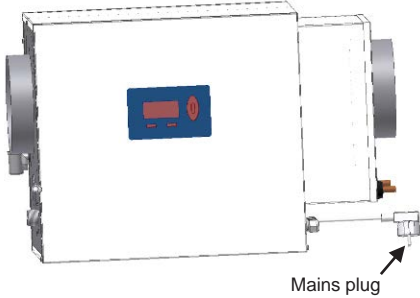


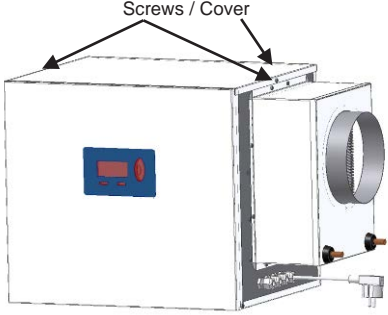

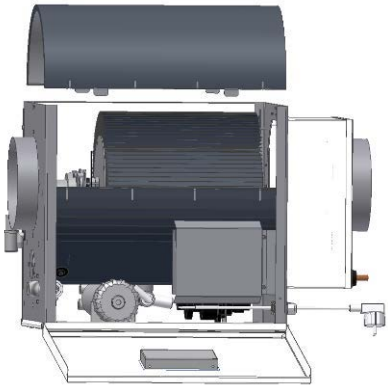

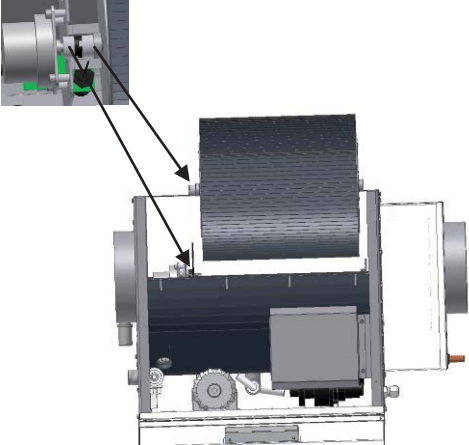
8. In case of **scale deposits** in the device and on the rotor, the hardness of water must be set 1 to 2 levels higher in the Expert menu.

9. The maintenance is completed.

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20.3 CLEANING

 <p>Mains plug</p>	<p>Maintenance may be performed only by expert personnel. After the Service display message appears, the following tasks should be performed:</p> <p> 1. Before opening the device, pull the mains plug and secure against reactivation.</p> <p> Never look directly into the lit UVC light source without eye protection.</p>
 <p>Screws / Cover</p>	<p>2. Remove both screws on the device cover and lift the cover.</p> <p> Sharp edges of plate (danger of injury).</p>
	<p>3. Fold down the front panel of the housing and lift the innercover.</p> <p> Grab the rotor only when wearing gloves since the blades have sharp edges (danger of injury).</p> <p>Cover electronic components using plastic foil in order to protect them against humidity in the following worksteps.</p>
	<p>4. Lift out the rotor. (If the motor coupling jams, carefully turn the rotor into the right position by hand.)</p>

GENERAL

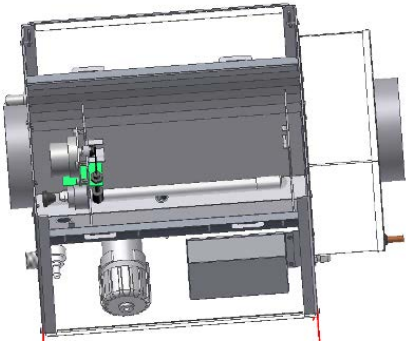


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GENERAL

USER

	<p>5. Clean the water tank and UVC pipe. In case of scale-deposits, clean with descaling agent and then rinse thoroughly with water. If there is heavier pollution, a decalcification process should be carried out.</p> <p>If a decalcification process is carried out, this item can be skipped.</p> <p> <i>Make sure that no water drips on the electronic components. If necessary, cover them using plastic foil.</i></p> <p> In order to prevent unpleasant smells, a cleaning agent on an organic basis should be used. It is available in conventional trade.</p>
	<p>6. Reassemble the device.</p>
	<p>7. Plug in the mains cable. After plug-in, the water tank is drained automatically..</p>
	<p>8. In case of scale deposits in the device and on the rotor, the hardness of water must be set 1 to 2 levels higher in the Expert menu.</p>
	<p>9. The maintenance is completed.</p>

20.4 DECALCIFICATION

Only carry out the decalcification if necessary, if heavy lime deposits have settled in the device, in the water tank, and/or on the rotor. The decalcification process must only be carried out by an authorized specialist company.



An electric shock can be life-threatening! The following maintenance and repair work must only be carried out by an authorized specialist company.

This task additionally requires corresponding instruction.

- Only carry out the work if you're sure that you can perform the tasks safely.
- Be especially careful when handling the device whilst it is switched on and open. Do not touch live parts and protect them against humidity.
- Keep away unauthorized persons.
- Use electrically insulating protective gloves to protect yourself against electric shock!



UV light is harmful to the eyes and skin! The UV C radiation used for disinfection may destroy chemical compounds of organic molecules. The UV C tube used emits strong UV radiation which, without protection, may cause severe injuries of the skin and eyes.

- Do not look directly into the UV light and do not expose your skin to the UV light.
- Only operate the UV C tube in closed housings that are not damaged.
- The UV C tube must only be replaced by an authorized specialist company. Switch the device to zero potential before opening it. The UV C tube must only be replaced by the type specified on the device label.



Health impairment by cleaning agents! During the decalcification process, the ventilation unit must remain switched off. Provide the device location with sufficient ventilation. **A cleaning agent on an organic basis should be used. Do not use any foamy cleaning agents!**

Observe the manufacturer's instructions with regard to the cleaning agent. Wear protective goggles and protective gloves.








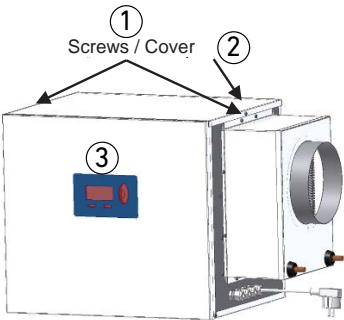



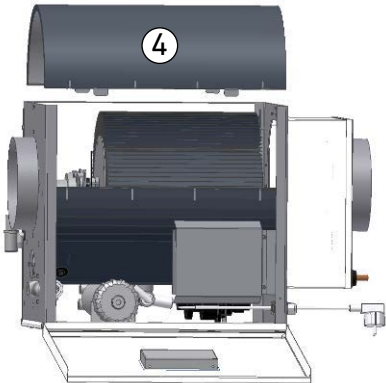

Risk of injury on sharp sheet edges! Be careful when handling the device and use suitable protective gloves.



Make sure that no water drips on the electronic components in the device. If necessary, cover them using plastic foil.

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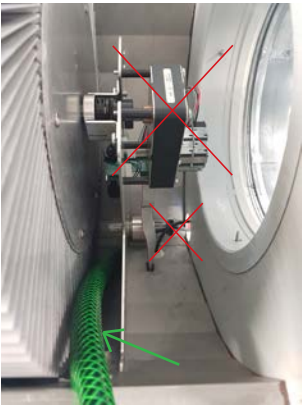

	<p>1. Switch off the ventilation unit to prevent the gases of the cleaning agent from entering the ventilated rooms.</p>
	<p>2. Switch off the air humidification unit with the ON/OFF key and wait until the water tank is empty. (pressed for longer than 3 seconds, see Chapter 8.1, Page 13) Rotor, ultraviolet lamp, etc. are active!</p> <p> <i>The device is still connected to the voltage supply.</i></p>
	<p>In the display, "manu Standby" is shown (see Chapter 9.3, Page 15) In this operational status, the air humidification unit remains switched off. The water is drained and the UVC pipe and the rotor are switched off with a delay of 20 minutes..</p>
	<p>3. Start the "Expert menu". By this, the components (rotor, UV lamp, etc.) are automatically switched off.</p> <p> <i>The device is still connected to the voltage supply.</i></p>
	<p>4. Remove the two screws (1) in the centre of the device cover and remove the cover (2). Fold forward the housing front with the display (3).</p> <p> <i>Sharp edges of plate (danger of injury).</i></p>
	<p>5. Cover electronic components using plastic foil in order to protect them against humidity in the following worksteps.</p> <p> <i>Make sure that no water drips on the electronic components.</i></p>
	<p>6. Remove the rotor cover (4).</p> <p> <i>Grab the rotor only when wearing gloves since the blades have sharp edges (danger of injury)</i></p>



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<p>Descaling → Descaling On Off</p>	<p>7. Switch the decalcification to ON in the “Decalcification” menu item of the expert menu previously selected.</p>
	<p>8. The decalcification programme will start. The tank is emptied again. The rotor starts and the UV lamp is deactivated. After the discharge pump has been switched off (noise will get softer after switch-off) and the tank has been emptied, the cleaning agent can be filled in. Fill in the cleaning agent using a tube, so that the cleaning agent (a cleaning agent on an organic basis) is not spread in an uncontrolled fashion!</p> <p>! <i>When filling the cleaning agent in, take care to observe the rotating rotor! Make sure that no fluids are spread onto the electrical components!</i></p> <p>Filling quantity of the cleaning agent with an air humidification unit 250 = approx. 2.5 litres Filling quantity of the cleaning agent with an air humidification unit 500 = approx. 6 litres</p> <p>! <i>If the quantity of cleaning agent used is too large, the medium will possibly overflow.</i></p> <p>The decalcification programme works automatically and takes approx. 120 minutes. During this time, several rinsing processes take place.</p>
<p>Descaling → Descaling On Off <</p>	<p>9. When the decalcification programme has been completed, the air humidification unit automatically changes to the control status („CLOSED-LOOP CONTROL ON” or “AUTO standby”).</p> <p>! <i>UV lamp switches on again!!! Do not look into the lamp!</i></p>
<p>Expert <</p>	<p>10. Activate the expert menu again, so that the rotor and the UV lamp are deactivated.</p>
	<p>11. Re-establish the perfect condition of the device (remove drip water, plastic foil, adhesive tape)</p>
	<p>12. Mount the rotor cover (see point 6) and the device cover (see point 4).</p> <p>! <i>Sharp edges of plate (danger of injury).</i></p>
	<p>13. By pressing the “Back” button, the expert menu is deactivated and the air humidification unit changes back to the controll status (see point 2).</p> <p>! <i>UV lamp switches on again!!! Do not look into the lamp!</i></p>
	<p>14. Now the ventilation unit can be switched on again.</p>



21. Spare parts and accessories



Only genuine spare parts may be installed and used for replacement work and repairs. Dependable operation is ensured only if genuine spare parts are used!

Designation	Item number
Water filter	40E0003A
UVC pipe	40I0023A
Osmosis membrane (LBE 250)	40C0029A
Osmosis membrane (LBE 500) 2 pcs required	40C0029A
Cable temperature sensor, length 2 m	40I0020A



22. EC Declaration of Conformity

<i>Hersteller/Manufacturer:</i>	VENTECH Fertigungs - GMBH
<i>Anschrift/Address:</i>	Ebentalerstraße 130 9021 Klagenfurt am Wörthersee
<i>Bezeichnung/Product description:</i>	LBE 250 / LBE 500
<i>Ausführungen/Type:</i>	LBE 250 RE / LE / RW / LW LBE 500 RW / LW

Die bezeichneten Produkte stimmen in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender europäischen Richtlinien überein:

The products described above in the form as delivered are in conformity with the provisions of the following European Directives:

2014/35/EU Zur Harmonisierung der Rechtsvorschriften der Mitgliedsstaaten über die Bereitstellung elektrischer Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen auf dem Markt
On the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

2014/30/EG Zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit
On the harmonisation of the laws of the Member States relating to electromagnetic compatibility

Die Konformität mit den Richtlinien wird nachgewiesen durch die Einhaltung folgender Normen und Verordnungen:

Conformity to the Directives is assured through the application of the following standards and regulations:

ÖVE / ÖNORM EN 60335-1:2012-04-01	ÖVE / ÖNORM EN 55014-2:2016-02-01
ÖVE / ÖNORM EN 60335-2-88:2003-11-01	ÖVE / ÖNORM EN 61000-3-2:2015-04-01
ÖVE / ÖNORM EN 62233:2009-01-01	ÖVE / ÖNORM EN 61000-3-3:2014-04-01
ÖVE / ÖNORM EN 55014-1:2012-06-01	

Eine vom Lieferzustand abweichende Veränderung des Gerätes führt zum Verlust der Konformität.

Product modifications after delivery may result in a loss of conformity.

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Zusicherung von Eigenschaften.

Die Sicherheitsinformationen der mitgelieferten Produktdokumentation sind zu beachten.

This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety documentation accompanying the product shall be considered in detail.

VENTECH Fertigungs GMBH
Geschäftsleitung / General Manager

Klagenfurt am Wörthersee, 01. August 2016



23. Subject to change without notice

We are constantly performing technical improvements and optimisations on your products and reserves the right to modify the devices or technical data without prior notice.

GENERAL

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Responsible for the content: J. Pichler Gesellschaft m.b.H.
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PICHLER

Systematic ventilation.

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Gesellschaft m.b.H.

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