

AIR HUMIDIFICATION UNIT LBE 250A / LBE 500A

**COMFORT
VENTILATION**



 **PICHLER**

Systematic ventilation.

Impact of the room air humidity

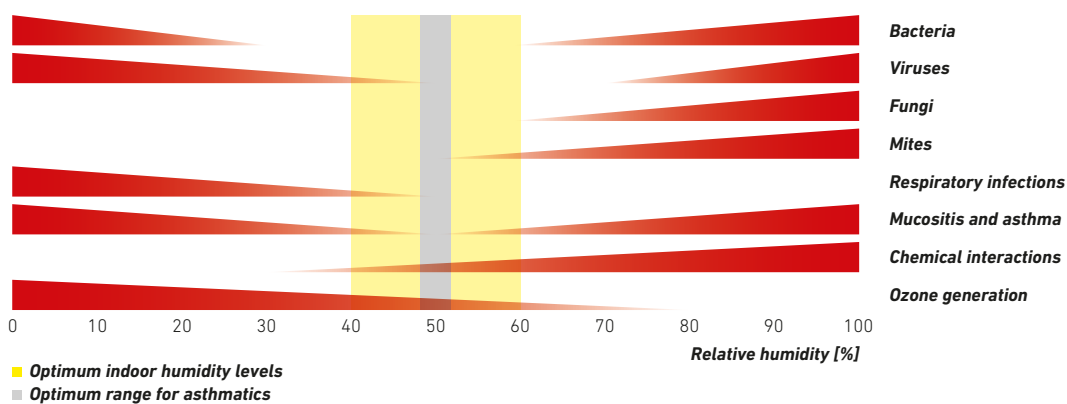
The optimum relative room air humidity level for protecting our health is between 40 % and 60 %.

It is known that a relative humidity of less than 40 % may dry out the mucous membranes and therefore may increase the susceptibility to colds, since dry air affects the cleansing function of the windpipe surface. A higher relative humidity level between 40 % and 60 % is ideal, since it has many positive effects on the comfort of the room climate: It reduces the particulate matter content of the air, activates the defences of the skin against

microbes, reduces the life of many bacteria and viruses, reduces odours and prevents an interfering electrostatic charge in the room.

However, a humidity level of more than 70 % is usually perceived as unpleasant, the reason for which is presumably that warm and humid air reduces the oxygen uptake in the bloodstream. With cold and damp air, an increase in rheumatic troubles is noted. It should be taken into account that humidity levels of more than 70 % can cause mould formation in closed rooms.

EFFECTS OF LOW OR HIGH RELATIVE HUMIDITY LEVELS IN INTERIOR SPACES



Negative impacts of too dry room air

WITH REGARD TO COMFORT

- Reduced performance and well-being
- Higher exposure to dust and microorganisms

WITH REGARD TO HEALTH

- Throat and pharynx problems
- Dry eyes and skin (itching)
- Nosebleed and headaches

WITH REGARD TO STRUCTURAL-PHYSICAL IMPACTS

- Cracks in parquet floors, furniture, etc.
- Damage on antiques and out-of-tune musical instruments

During the cold time of the year, in particular in winter, the room air humidity drops to uncomfortable levels below 30 percent!



Product description

The LBE is a compact automatic air treatment unit for the active humidification of the room air in living spaces. The patented and hygienically tested system is suitable for the installation or retrofitting in air conditioning and ventilation systems. The compact air humidification unit is installed in the supply air after a ventilation unit and operates according to the natural evaporation principle (no over-humidification possible), enabling optimum humidification.

Function

LBE 250A / LBE 500A

The process of heating the air for applying the evaporation energy is implemented using an integrated water heater battery or integrated PTC electric heater battery. The humidifier tank into which the rotation lamella evaporator is immersed is supplied via the drinking water network. The fill level is limited automatically by means of a float switch and an additional mechanical overflow. The formation of germs and bacteria in the unit is effectively prevented in the long term by continuous and automatically monitored UVC disinfection as well

LBE 250AO FOR PKOM⁴ HEAT PUMP COMBI UNIT

The LBE 250AO air humidification unit is only used in combination with the PKOM⁴ heat pump combi unit. The integrated PTC heater battery is not provided, as the thermal energy for natural evaporation is provided by the PKOM⁴ heat pump combi unit.

Operating the air treatment unit is hygienically harmless, proven by independent external hygiene reports. The LBE can be operated easily and intuitively via a touch display. It boasts low operating and maintenance costs and can be connected to the corresponding heating system used. The air humidification unit can be operated in connection with any living space ventilation unit up to a volume flow of 350 m³/h (LBE 250A) or 500 m³/h (LBE 500A).

as by time-controlled changing of the water. A reverse osmosis unit is integrated into the water supply line to protect the unit against calcification. The water change required is carried out automatically as a function of the water hardness to be adjusted and the evaporation performance.

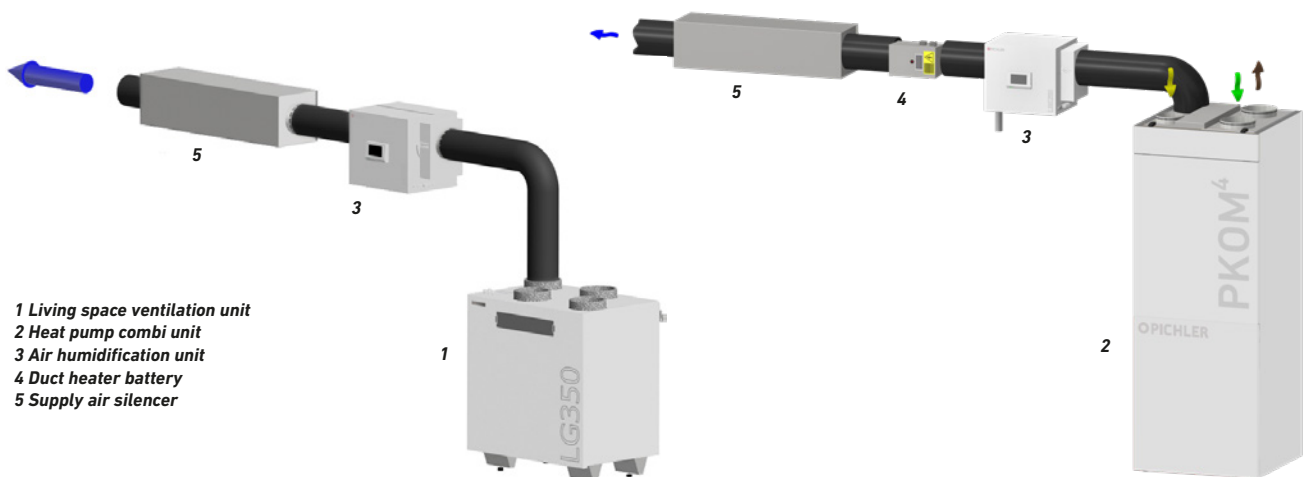
The rotation lamella evaporator is made of aluminium, the humidifier tank features a stainless steel design, and the compact housing is designed of galvanised sheet steel, powder-coated on the outside in RAL 9003.

Downstream of the air humidification unit, the supply air is heated again by a duct heater battery. The adjustable absolute air humidity is between 4.5 and 11.5 g/m³ and can be selected from four preset humidification levels.

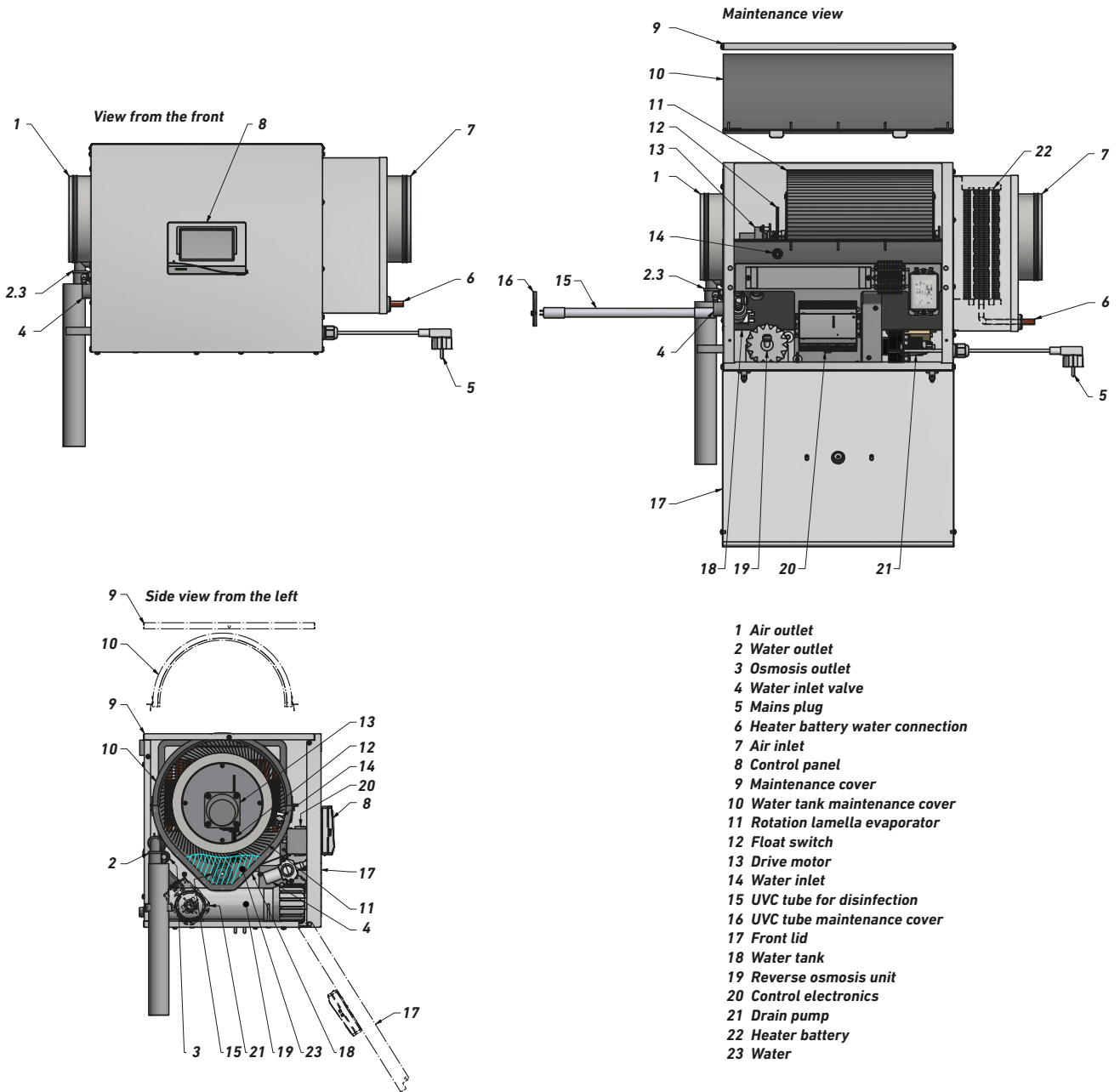
Installation

The air humidification unit is installed in the supply air duct downstream of the living space ventilation unit / heat pump combi unit.

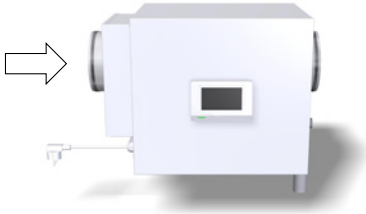
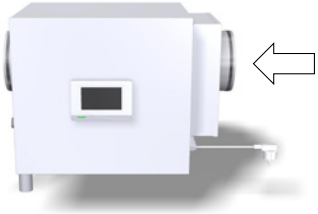
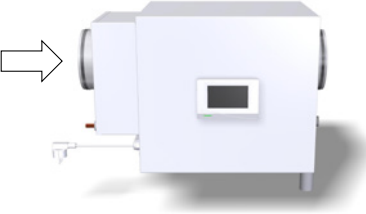
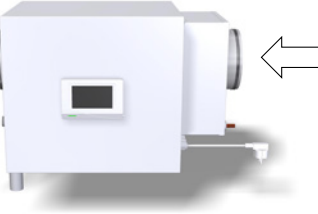
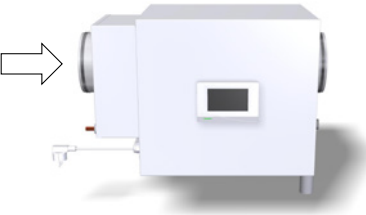
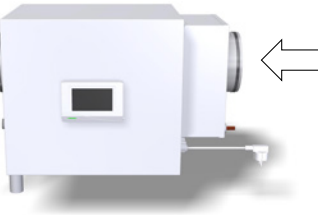
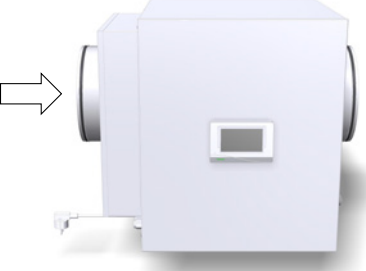
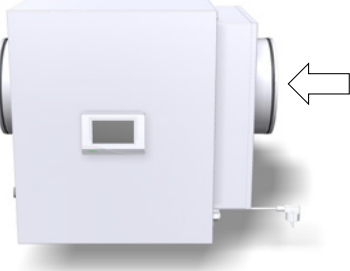
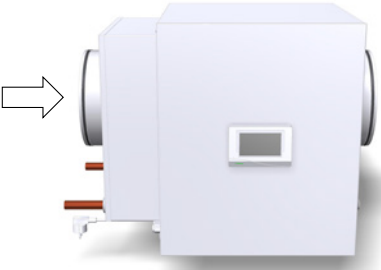
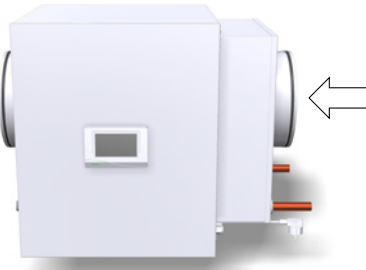
The sound absorbers must be installed downstream of the air humidification unit in order to dampen any operating noise.



Unit design



Versions

Unit versions	Left-hand air inlet	Right-hand air inlet
Item no. with PTC electric heater battery	08LBE250ALE 	08LBE250ARE 
Item no. with hot water heater battery	08LBE250ALW 	08LBE250ARW 
Item no. with no duct heater battery, for PKOM ⁴ heat pump combi unit	08LBE250ALO 	08LBE250ARO 
Item no. with PTC electric heater battery	08LBE500ALE 	08LBE500ARE 
Item no. with hot water heater battery	08LBE500ALW 	08LBE500ARW 

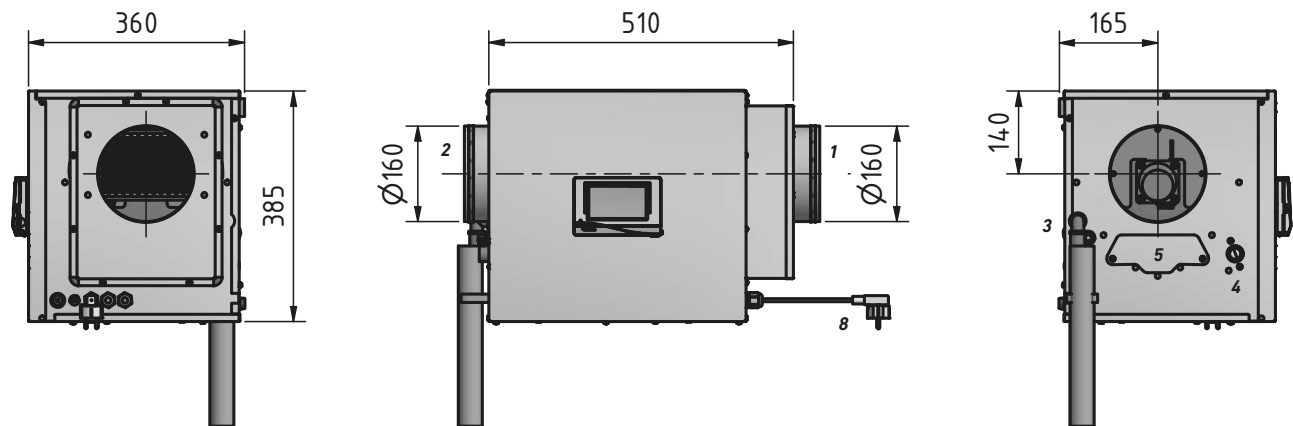


LBE 250A / LBE 250AO layout sketch for PKOM⁴ heat pump combi unit (WALL-INSTALLATION)

LBE AIR HUMIDIFICATION UNIT WITH PTC ELECTRIC DUCT HEATER BATTERY & WITH NO DUCT HEATER BATTERY

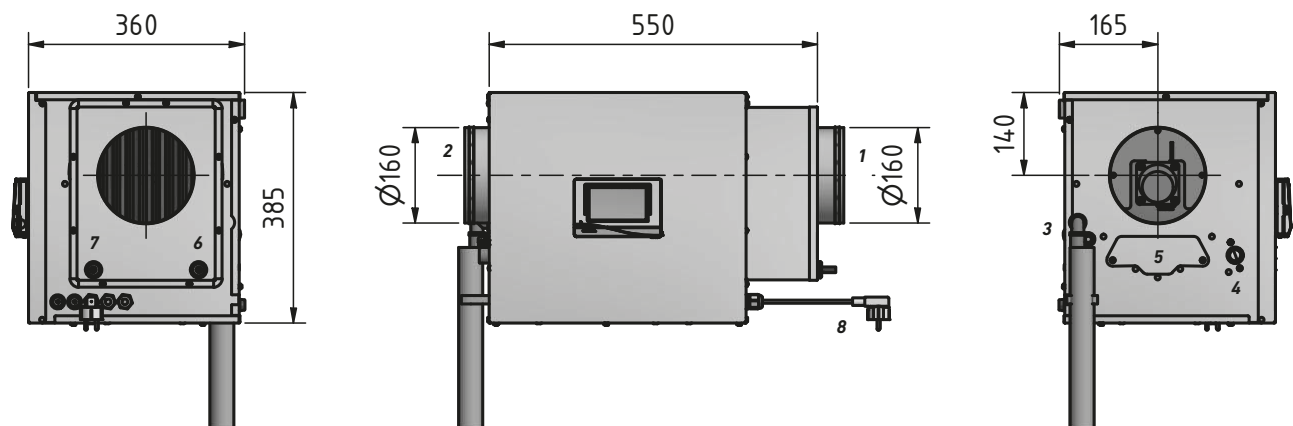
Type 08LBE250ARE / 08LBE250ALE with PTC electric heater battery (dimensions: W x H x D = 510 x 385 x 360 mm)

Type 08LBE250ARO / 08LBE250ALO with no duct heater battery, for PKOM⁴ heat pump combi unit (dimensions: W x H x D = 510 x 385 x 360 mm)



AIR HUMIDIFICATION UNIT LBE WITH HOT WATER HEATER BATTERY

Type 08LBE250ARW / 08LBE250ALW (dimensions: W x H x D = 550 x 385 x 360 mm)



- 1 Air inlet (supply air from the ventilation unit) \varnothing 160 mm
- 2 Air outlet (supply air to the living area) \varnothing 160 mm
- 3 Drain (water drain) \varnothing 40/50 mm
- 4 Water supply (drinking water connection) $\frac{3}{4}$ "
- 5 UVC tube (cover for UVC tube replacement)
- 6 Return flow heating \varnothing 10 mm
- 7 Flow heating \varnothing 10 mm
- 8 Mains connection 230 V/50 Hz

DIMENSIONS AND WEIGHT

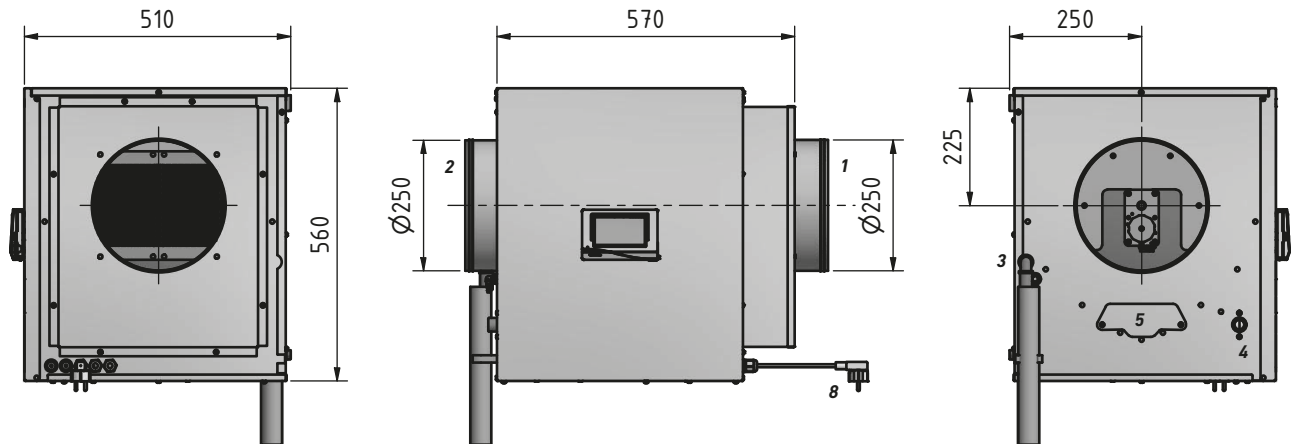
	LBE 250A
Dimensions of the packaging unit (W x H x D)	800 x 460 x 420 mm
Weight of the packaging unit without optional accessories	approx. 28 kg



Layout sketch for the LBE 500A (WALL INSTALLATION)

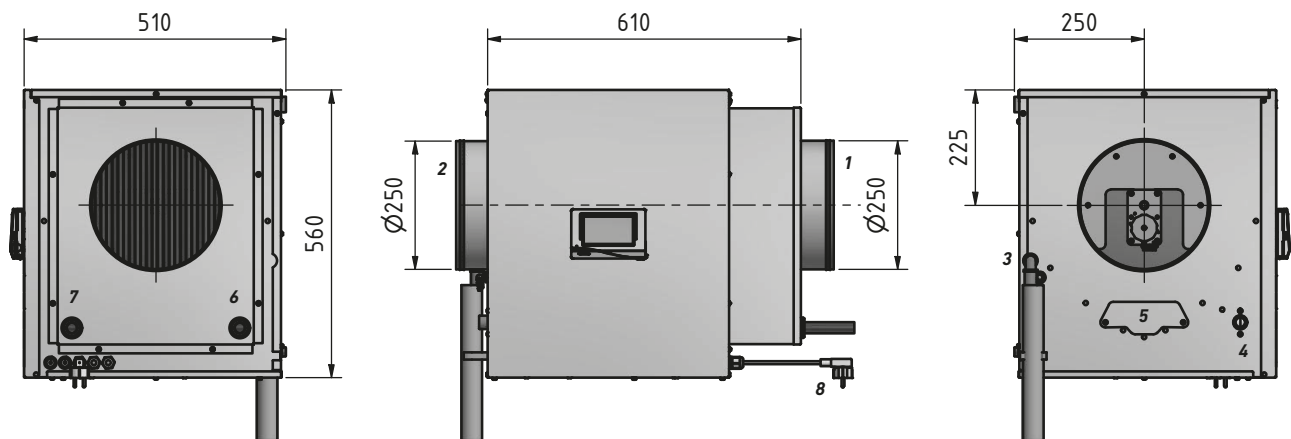
AIR HUMIDIFICATION UNIT LBE WITH PTC ELECTRIC HEATER BATTERY

Type 08LBE500ARE / 08LBE500ALE (dimensions: W x H x D = 570 x 560 x 510 mm)



AIR HUMIDIFICATION UNIT LBE WITH HOT WATER HEATER BATTERY

Type 08LBE500ARW / 08LBE500ALW (dimensions: W x H x D = 610 x 560 x 510 mm)



- 1 Air inlet (supply air from the ventilation unit) \varnothing 250 mm
- 2 Air outlet (supply air to the living area) \varnothing 250 mm
- 3 Drain (water drain) \varnothing 40/50 mm
- 4 Water supply (drinking water connection) $\frac{3}{4}$ "
- 5 UVC tube (cover for UVC tube replacement)
- 6 Return flow heating \varnothing 22 mm
- 7 Flow heating \varnothing 22 mm
- 8 Mains connection 230 V/50 Hz

DIMENSIONS AND WEIGHT

	LBE 500A
Dimensions of the packaging unit (W x H x D)	870 x 600 x 600 mm
Weight of the packaging unit without optional accessories	approx. 62 kg



Technical specifications

Unit type	LBE 250A	LBE 250AO	LBE 500A
Air volume flow [m ³ /h]	Max. 350	Max. 350	Max. 500
Supply air humidity adjustable [%]	40 to 60	1 - Minimum humidification (~ 4.5 - 6.0 g/m ³) 2 - Moderate humidification (~ 6.0 - 7.5 g/m ³) 3 - High humidification (~ 7.5 - 9.0 g/m ³) 4 - Maximum humidification (~ 9.0 - 11.5 g/m ³)	40 to 60
Supply air temperature adjustable [°C]	15 to 25	Not adjustable	15 to 25
Evaporation performance [l/h]	Max. 2.0	Max. 2,0	Max. 3.5
Tank content [l]	Max. 2.5	Max. 2,5	Max. 6
Pressure loss [Pa]	See diagram	See diagram	See diagram
Mains connection [V/Hz]	1~230/50	1~230/50	1~230/50
Power consumption [W] (version with a water heating coil)	Max. 50	Max. 50	Max. 50
Power consumption [W] (version with an electric heater battery)	Max. 1450		Max. 2850
Air connection [mm]	ø 160	ø 160	ø 250
Water connection [inches]	ø ¾	ø ¾	ø ¾
Outlet connection [mm]	ø 40	ø 40	ø 40
Siphon	On site	On site	On site
Water inlet pressure [MPa]	Min/max. 0.35/0.7	Min/max. 0.35/0,7	Min/max. 0.35/0.7
Water temperature [°C]	Min/max. 8/30	Min/max. 8/30	Min/max. 8/30
Weight (without/with water) [kg]	25/28	25/28	47/53
Protection class [IP]	20	20	20
Installation type	Wall mounting	Wall mounting	Wall mounting

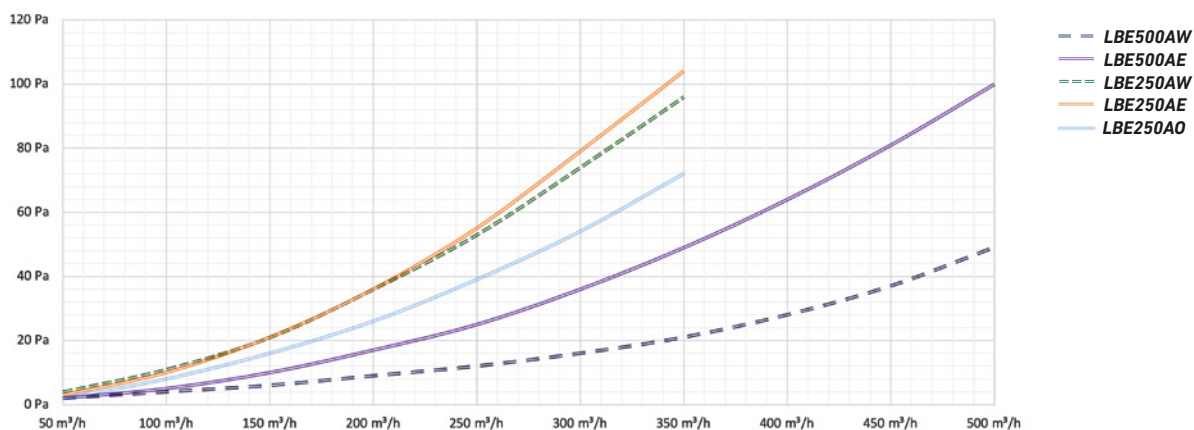
PTC electric heater battery		
Heating capacity of PTC element [W]	1400 (power-controlled)	2 x 1400 (power-controlled)

Hot water heater battery		
Medium	Water	Water
Temperature flow, return flow* [°C]	40/35	40/35
Air inlet [°C]	15	15
Air outlet [°C]	25	25
Water volume [m ³ /h]	0.24	0.48
Connection (copper pipe) [mm]	ø 10	ø 22
Water pressure [MPa]	Max. 1	Max. 1
Water temperature [°C]	Max. 60	Max. 60

**) Heating water flow temperature for the full humidification performance must be at least 15 Kelvin higher than the desired air outlet temperature.*

Pressure loss characteristics

The following diagram shows the pressure loss values of the different unit types.



Hygiene certificate

The design meets hygiene requirements in accordance with the specifications of VDI 6022, VDI 3803, SWKI VA104-01 and ÖNORM H 6021 in accordance with the hygiene assessments carried out.

Hygiene-Institut des Ruhrgebiets

Institut für Umwelthygiene und Toxikologie

Director: Dr. Thomas-Benjamin Seiler

Legal Entity: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V.



Hygiene-Institut · PO Box 10 12 55 · DE 45812 Gelsenkirchen · Germany

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Our reference: W-351037e-21-JRoll
Contact person: Dipl.-Ing. (FH) S. Horn
B. Zeidler

Gelsenkirchen, 15.10.2021

Test - certificate

hygiene-conformity check to the design requirements of
selected regulations

Test institute: Hygiene Institut des Ruhrgebiets
Institut für Umwelthygiene und Toxikologie
Rotthausen Straße 21
45879 Gelsenkirchen

Test object: Air humidification unit size "LBE 250A" /
"LBE 500A"

Manufacturer: J.Pichler Lufttechnik Gesellschaft m. b. H.
Karlweg 5
A-9021 Klagenfurt



Basis of the examination: ✓ VDI 6022, Blatt 1 (01/2018)
✓ SWKI VA104-01 (01/2019)
✓ VDI 3803, Blatt 1 (05/2020)
✓ ÖNORM H 6021 (08/2016)

Validity period: 5 years 10/2021 – 10/2026

Test report: W-351037-21-JRoll

In conclusion it can be stated that the examined Air humidification unit size "LBE 250A" / "LBE 500A", as specified in the test report W-351037-21-JRoll, is in compliance with the above mentioned regulations.

(B. Zeidler)
clerk of the Department hygienic building technology

(J. Rolle B. Eng.)
clerk of the Department hygienic building technology

issued 15.10.2021, Gelsenkirchen

Within the framework of the conformity check the hygiene-relevant requirements of the above mentioned regulations was examined. Requirements of other regulations that refer to the above mentioned regulations were not part of the examination. Additionally, the conformity check does not include a toxicological or sensory testing of the introduced materials.

Legal Entity: Verein zur Bekämpfung der Volkskrankheiten im Ruhrkohlengebiet e.V., Register: VR 519 Local Court Gelsenkirchen (Germany); VAT ID: DE125018356
Directorate: Prof. Dr. Jürgen Kretschmann (Head), Dr. Emanuel Grün, Dr. Dirk Waider, Joachim Löchte, Dr. Thomas-Benjamin Seiler (Executive Member).



Controller

The unit is delivered in a pre-programmed and ready-to-plug-in condition and can be started up easily after having established all connections (air, water and electrical connections). By means of its integrated electronic control unit, the humidification process is

continuously monitored with regard to its function and operational safety, visualising any operating messages. The individual user settings are carried out at the control panel that is integrated into the housing front.

Accessories

WATER CONNECTION SET (INCLUDED IN THE STANDARD SCOPE OF DELIVERY)

Consisting of:

- 1 item sewage connection pipe
- 2 items connecting tubes à 1.5 m
- 1 item safety valve
- 2 items plastic fittings
- 1 item filter housing
- 1 item wall mounting bracket
- 1 item water filter
- 1 item test strip for determining the water hardness

ACCESSORIES FOR THE HOT WATER HEATER BATTERY

Item	Description	Item number
Circulating pump for the heater battery	Alpha.1 15-40 130; 230 V	08UPUMPE3
Brass threaded connection for the circulation pump	Connection box: AG 1/2", IG 1	08HOVER2
Actuator for the mixing valve	LR24A-SR; AC/DC 24V; 2 – 10V; 5 Nm	07LR24ASR
3-way mixing valve incl. drive for LBE 250A	3-way valve 3015-P63-S1	07R3015P6LR24ASR
3-way mixing valve incl. drive for LBE 500A	3-way valve 3015-1P6-S1	07R30151PLR24ASR

SPARE PARTS FOR THE AIR HUMIDIFICATION UNIT

Item	Description	Item number
Water filter cartridge	Polypropylene fleece 5µm	40E0003A
Water filter housing incl. filter cartridge	¾" connection	40B0062B
Water hardness test strip	Sotin hardness indicator dipstick	40I0028A
UVC tube	TUV 16W 4P-SE	40I0023A
Osmosis membrane	(LBE 250Ax1 / LBE 500Ax2)	40C0029C
Cleaning agent	Sotin 212	40I0014A



Advantages of LBE 250A / LBE 500A

- Unique air humidification based on a natural evaporation process (adiabatic humidification)
- Lowest possible energy consumption for humidification
- High-quality water treatment through the use of a water filter and downstream reverse osmosis
- Hygienically harmless by treating the water with UVC light to prevent the build-up of bacteria and germs (no ozone formation!)
- Hygiene certificate: the unit series has been tested and certified by the Hygiene Institute Gelsenkirchen
- Product range optionally with electric heater battery or hot water heater battery
- Intuitive operation via a capacitive TFT touch display
- Interface for external Modbus connection
- Integrated sensors for automatic humidification as soon as an air volume flow is detected

Interesting facts about ventilation – why active humidification?

People spend the most part of their life indoors. An indoor climate that is compatible with healthy living is of prime importance for healthy well-being and optimum performance. Among other factors, including the temperature, humidity plays a decisive role in this for living spaces.

FUNDAMENTALS OF PHYSICS

The water consumption of the air depends on the temperature, this is a principle of physics. The colder the air, the less water it can absorb. The warmer the air, the more water it can absorb. A distinction is made between "absolute" and "relative" humidity.

ABSOLUTE HUMIDITY

Absolute humidity specifies the water content available in the air at a specific temperature. Saturation means that the maximum water consumption in the air has been reached.

RELATIVE HUMIDITY

Relative humidity specifies the ratio of the actual and the maximum water vapour content of the air at a specific temperature. It is measured using a hygrometer.

COMFORT ZONE

Most people find the indoor climate pleasant when both the room temperature and the room humidity are within the comfort zone. The surface temperatures of the surrounding components should also not deviate too much from the room temperature.

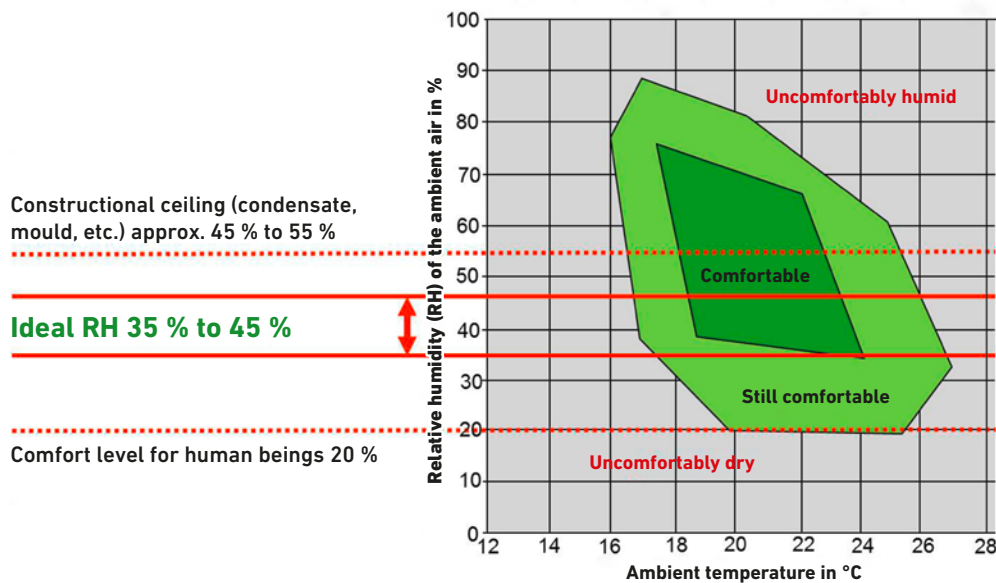


Figure: Representation of the comfort zone as a function of air temperature and relative humidity.





Your partner/installer:



Responsible for the content: J. Pichler Gesellschaft m.b.H. | Graphics and layout: WERK1 Werbegraphik GmbH
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PICHLER

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