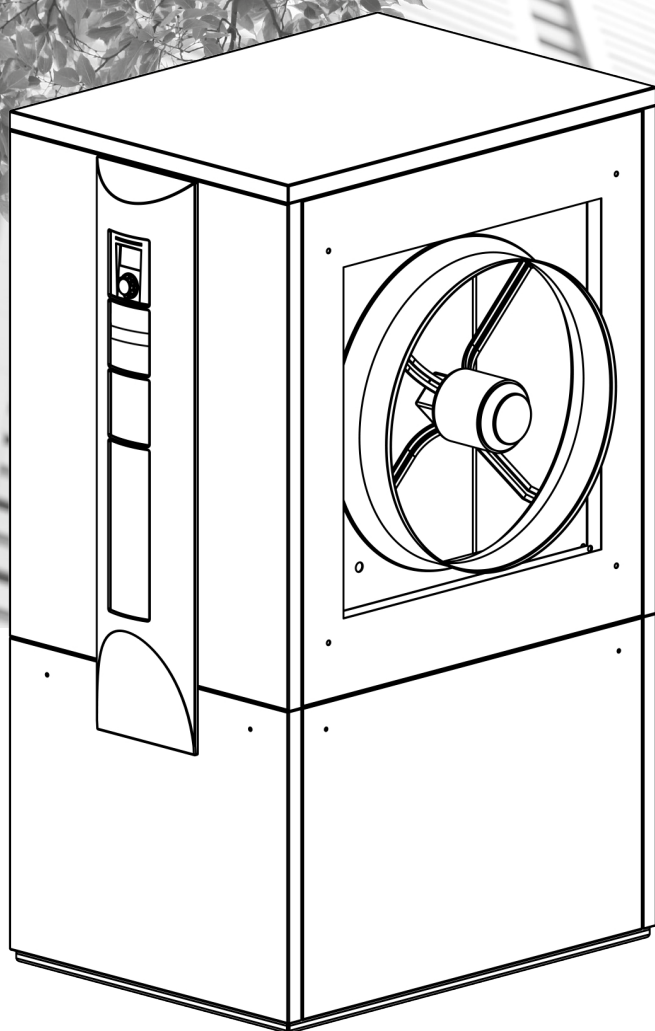


*the better way to heat*



Air/Water Heat Pumps  
Indoor installation

# Operating Manual

## LW 161H(L)/V





## 1 Please read first

This operating manual provides important information on the handling of the unit. It is an integral part of the product and must be kept ready to hand in the immediate vicinity of the unit. It must remain available throughout the entire service life of the unit. It must be handed over to subsequent owners or users of the unit.

Read the operating manual before starting any work on or with the unit. Especially the chapter on safety. Follow all instructions in full and unreservedly.

This operating manual may contain descriptions, which seem incomprehensible or unclear. In the event of any questions or if any details are unclear, contact the factory customer service department or the manufacturer's local partner.

As this operating manual was written for several different models of the unit, always comply with the parameters for the respective model.

This operating manual is intended only for persons assigned to work on or with the unit. Treat all its constituent parts confidentially. They are protected by copyright. They may not be reproduced, transmitted, copied, stored in electronic systems or translated into another language, either wholly or in part, without the express written permission of the manufacturer.

## 2 Symbols

The following symbols are used in the operating manual. They have the following meaning:



Information for operators.



Information or instructions for qualified technicians.



### **DANGER**

Indicates a direct impending danger resulting in severe injuries or death.



### **WARNING**

Indicates a potentially dangerous situation that could result in serious injuries or death.



### **CAUTION**

Indicates a potentially dangerous situation that could result in moderate or slight injuries.



### **IMPORTANT**

Indicates a potentially dangerous situation, which could result in property damage.



### **NOTE**

Emphasised information.



Prerequisite for an action.



Single-step instruction for action.

1., 2., 3., ... Numbered step within a multi-step instruction for action. Adhere to the given sequence.



List.



Reference to further information elsewhere in the operating manual or in another document.



### **ENERGY SAVING TIP**

Indicates suggestions that help to save energy, raw materials and costs.



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### 3 Intended use

The unit is only to be used for its intended purpose. This means:

- for heating.
- for water heating.

The unit may be operated only within its technical parameters.

→ “Technical data / Scope of supply”, page 27



#### NOTE

Notify the responsible power supply company of the use of a heat pump or heat pump system.

### 4 Disclaimer

The manufacturer is not liable for damage or losses resulting from any use of the unit which is not its intended use.

The manufacturer's liability also expires:

- if work is carried out on the unit and its components contrary to the instructions in this operating manual.
- if work is improperly carried out on the unit and its components.
- if work is carried out on the unit which is not described in this operating manual, and this work has not been explicitly approved by the manufacturer in writing.
- if the unit or components in the unit have been changed, modified or removed without the explicit written consent of the manufacturer.

### 5 EC conformity

The unit bears the CE marking.

→ “EC Declaration of Conformity”, page 47

### 6 Safety

The unit is safe to operate when used for its intended purpose. The construction and design of the unit conform to current state-of-the-art standards, all relevant DIN/VDE regulations and all relevant safety regulations.

The operating manuals supplied with the product are intended for all users of the product.

The operation of the product via the heating and heat pump control and work on the product which is intended for end customers / operators is suitable for all age groups of persons who are able to understand the activities and the resulting consequences and can carry out the necessary activities.

Children and adults who are not experienced in handling the product and do not understand the necessary activities and the resulting consequences must be instructed and, if necessary, supervised by persons experienced in handling the product and who are responsible for safety.

Children must not play with the product.

The product may only be opened by qualified personnel.

All instructional information in this operating manual is solely directed at qualified, skilled personnel.

Only qualified, skilled personnel is able to carry out the work on the unit safely and correctly. Interference by unqualified personnel can cause life-threatening injuries and damage to property.

- ▶ Ensure that the personnel is familiar with the local regulations, especially those on safe and hazard-aware working.
- ▶ Only allow qualified personnel with “electrical” training to carry out work on the electrics and electronics.
- ▶ Only allow qualified, skilled personnel to do any other work on the system, e.g.
  - Heating installer
  - Plumbing installer
  - Refrigeration system installer (maintenance work)

Every person who carries out work on the unit must comply with the applicable accident prevention and safety regulations. This applies in particular to the wearing of personal protective clothing.



During the warranty and guarantee period, service work and repairs may only be carried out by personnel authorised by the manufacturer.



### **DANGER**

**Risk of fatal electric shock!**

**All electrical connection work must be carried out by qualified electricians only.**

**Before opening the unit, disconnect the system from the power supply – wait for 90 seconds = residual voltage at inverter – and prevent it from being switched back on again!**

Existing earthing connections within housings or on mounting plates must not be altered. If this should nevertheless be necessary in the course of repair or assembly work:

- ▶ Restore earthing connections to their original condition after completion of the work.



### **WARNING**

**Unit contains refrigerant!**

**Leaking refrigerant could result in personal injury and environmental damage. Therefore:**

- Switch off system.
- Thoroughly ventilate installation area.
- Notify the manufacturer's authorised customer service.



### **IMPORTANT**

For safety reasons:

Never disconnect the unit from the power supply, unless the unit is being opened.



### **IMPORTANT**

Install the heat pump indoors only and operate it only with outside air as the heat source. The air ducts must discharge outdoors. They must not be constricted or blocked.

→ "Dimensioned drawings", from page 29, and "Installation plans", from page 31



### **WARNING**

**Never switch on the unit if air ducts are mounted on the unit.**

**Take precautions on the fan side to prevent injuries caused by the rotating fan (air duct outlet above ground level: weather louver, air duct outlet below ground level: rain louver, each not included in the accessories supplied).**



### **IMPORTANT**

It is not permitted to integrate the heat pump in ventilation systems. Use of the cooled air for cooling purposes is not permitted.



### **IMPORTANT**

The ambient air at the place in which the heat pump is installed, as well as the air drawn in as a heat source, must not contain any corrosive constituents!

Constituents (such as ammonia, sulphur, chlorine, salt, sewage gases, flue gases...) can cause damage to the heat pump, which can result in complete failure / irreparable total damage to the heat pump!



### **CAUTION**

**In the air outlet area the air temperature is approx. 5° K below the ambient temperature. Under certain climatic conditions an ice layer can therefore form in the air outlet area. Install the heat pump so that the air blower does not discharge into footpath areas.**

## **Decommissioning / draining the heating**

If the system/heat pump is decommissioned or drained after already being filled, it must be ensured that the condenser and any heat exchangers have been drained completely in the event of freezing temperatures. Residual water in heat exchangers and condensers can result in damage to the components.

1. Completely drain the system and the condenser, and open vent valves.
2. Blow them clear with compressed air, if required.

## **7 Contact**

Addresses for purchasing accessories, for servicing or for answers to questions about the unit and this operating manual can be found on the internet and are kept up-to-date:

- Germany: [www.alpha-innotec.de](http://www.alpha-innotec.de)
- EU: [www.alpha-innotec.com](http://www.alpha-innotec.com)



## 8 Warranty/Guarantee

For warranty and guarantee conditions, please refer to your purchase documents.



### NOTE

Please contact your dealer about all matters concerning warranties and guarantees.

## 9 Disposal

When decommissioning the old unit, always comply with local applicable laws, directives and standards concerning the recovery, recycling and disposal of materials and components of cooling units.

→ “31 Dismantling”, page 26

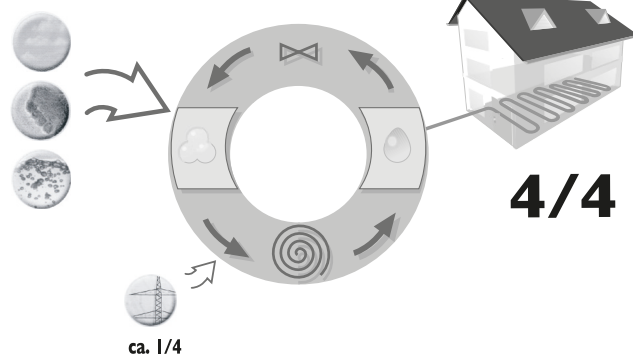
## 10 How heat pumps work

Heat pumps operate on the same principle as a refrigerator: the same technology, only with reversed benefits. The refrigerator extracts heat from food, It discharges this heat into the room through fins at its rear.

The heat pump extracts heat from our environment: from the air, earth or groundwater. The extracted heat is conditioned in the unit and passed on to the heating water. Even when it is extremely cold outside, the heat pump draws enough heat to heat a house.

Example: sketch of a brine/water heat pump with underfloor heating:

ca. 3/4



$\frac{4}{4}$  = usable energy  
approx.  $\frac{3}{4}$  = environmental energy  
approx.  $\frac{1}{4}$  = external electrical energy

## 11 Area of use

Taking into consideration the ambient conditions, limits of use and the relevant regulations, any heat pump can be used in new or existing heating systems.

→ “Technical data / Scope of supply”, page 27



## 12 Heat metering

In addition to proof of the unit's efficiency, the EEWaermeG (German law promoting renewable energy for heating) also requires heat metering (hereinafter referred to as WME). Heat metering is mandatory for air/water heat pumps. Heat metering for brine/water and water/water heat pumps only has to be installed for a flow temperature  $\geq 35$  °C. The heat metering must record the total thermal energy output (heating and hot water) to the building. In heat pumps with heat metering, the evaluation is carried out by the controller. The controller displays the thermal energy output into the heating system in kWh.

## 13 Operation

Your decision to purchase a heat pump or a heat pump system is a long-term contribution to protecting the environment through low emissions and reduced primary energy use.

You use the control element of the heating and heat pump controller to operate and control the heat pump system.



### NOTE

Make sure that the controller settings are correct.

→ Operating manual of the heating and heat pump controller

To ensure that your heat pump or heat pump system operates efficiently and ecologically, please pay particular attention to the following:



### ENERGY SAVING TIP

Avoid unnecessarily high flow temperatures. The lower the flow temperature on the heating water side the more efficient the system.



### ENERGY SAVING TIP

Preferably use purge ventilation. Compared to continuously open windows, it is better to air rooms by fully opening windows for a short period, two to three times a day (so-called "purge" ventilation); this reduces energy consumption and your heating bill.

## 14 Care of the unit

You can use a damp cloth and standard cleaning products to clean the outer surfaces of the unit.

Do not use cleaning or care products that contain abrasives, acids and/or chlorine. Such products would irreparably damage the surfaces and could also cause technical damage to the unit.



## 15 Scope of supply

Example of scope of supply packaging:

View 1:



View 2:



Unit with hermetic compressor, all safety-relevant components for cooling circuit monitoring, installed heating and heat pump controller, sensors installed in the unit to record the hot gas, heating water flow and return temperature as well as hose for condensate discharge (connected on the heat pump side)

Integrated circulation pump:  
UPM GEO 25-85 180 PWM

1. Check the delivery for outwardly visible signs of damage.
2. Check to make sure that the delivery is complete. Any defects or incorrect deliveries must be reported immediately.



### NOTE

Note the unit model. Check the direction in which the air from the unit is discharged. Units with the letter L in their model identifier blow out the air on the left (viewed from the operating side).

### Functionally necessary accessories



### IMPORTANT

Use only original accessories made by the manufacturer of the unit.

You must order the air ducts (with air duct accessories) separately.

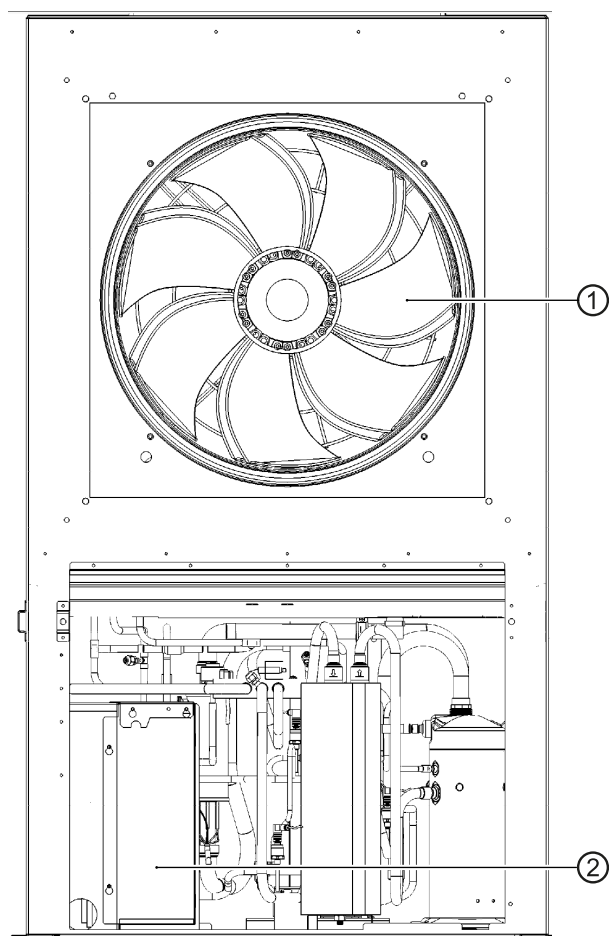
### Additional accessories

You must order separately:

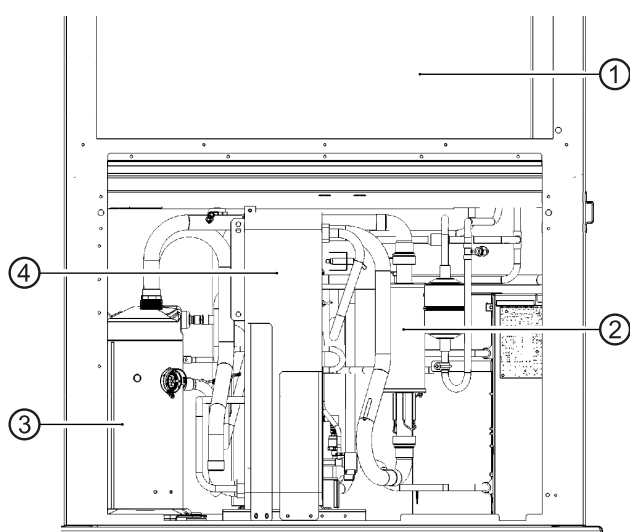
- installation accessories (vibration decouplers) for air/water indoor installation heat pumps
- air / magnetic sludge separator



## 15.1 Main components



- 1 fan
- 2 switch



- 1 evaporator
- 2 electric heating element
- 3 compressor
- 4 condenser

## 16 Installation and assembly

The following applies to all work to be done:

**NOTE**  
Always comply with the relevant local accident prevention regulations, statutory regulations, guidelines and directives.

**NOTE**  
Note the sound information for the respective model.

→ “Technical data / Scope of supply”, page 27, “Sound” section

**NOTE**  
The noise emissions of the heat pumps must be taken into account in the respective installation plans for air/water heat pumps. The respective regional regulations must be observed.

### Installation room and space requirements

**NOTE**  
Note and follow the local regulations and standards regarding the installation room and space requirements. The table shows the regulations according to EN 378-1 relevant in Germany.

Refrigerant	Limit value [kg/m³]
R 134a	0.25
R 404A	0.52
R 407C	0.31
R 410A	0.44
R 448A	0.39

→ “Technical data / Scope of supply”, page 27, “General unit data” section

$$\text{Minimum room volume} = \frac{\text{Refrigerant capacity [kg]}}{\text{Limit value [kg/m³]}}$$

**NOTE**  
If several heat pumps of the same type are installed, only one heat pump need to be taken into account. If several heat pumps of different types are installed, only the heat pump with the largest refrigerant volume needs to be taken into account.



- ✓ Minimum volume corresponds to the requirements for the refrigerant used.
- ✓ Installation inside the building only.
- ✓ Installation room is dry and frost-free.
- ✓ Clearance dimensions are met
- Dimensional drawing and installation plan for respective unit model
- ✓ The surface/floor is suitable for installation of the unit:
  - level and horizontal foundation
  - load-bearing capacity for the unit's weight

## 16.1 Transport to the installation location

To prevent damage during transport, always transport the unit still packed to its final installation location using a pallet truck.

If it is not possible to transport the unit to the final installation location using a pallet truck, you can also transport the heat pump on a handcart or with tube handles.

→ "Lifting the unit with tube handles", page 10



### WARNING

The unit is not fixed on the wooden pallet. Risk of tipping/overturning during transport! People could be injured and equipment damaged.

- Take suitable precautions to prevent the risk of overturning.



### IMPORTANT

Never use components and hydraulic connections on the unit for transport purposes.



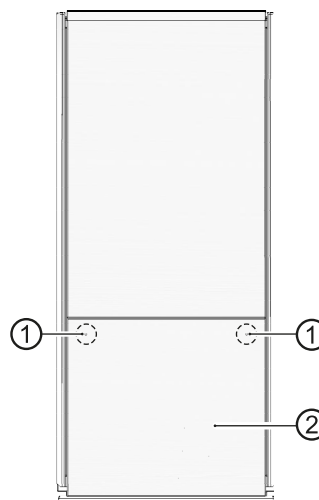
### IMPORTANT

Do not tilt the unit by more than 45° maximum (in any direction).

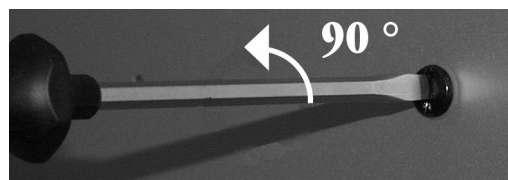
## Lifting the unit with tube handles

The LW unit can be lifted with  $\frac{3}{4}$ " or 1" tube handles (to be provided on site by the customer). Appropriate holes are provided for these in the unit frame.

1. Remove the lower facing panels at the front and rear of the unit.



- 1 Quick-release screws
- 2 Lower facing panel



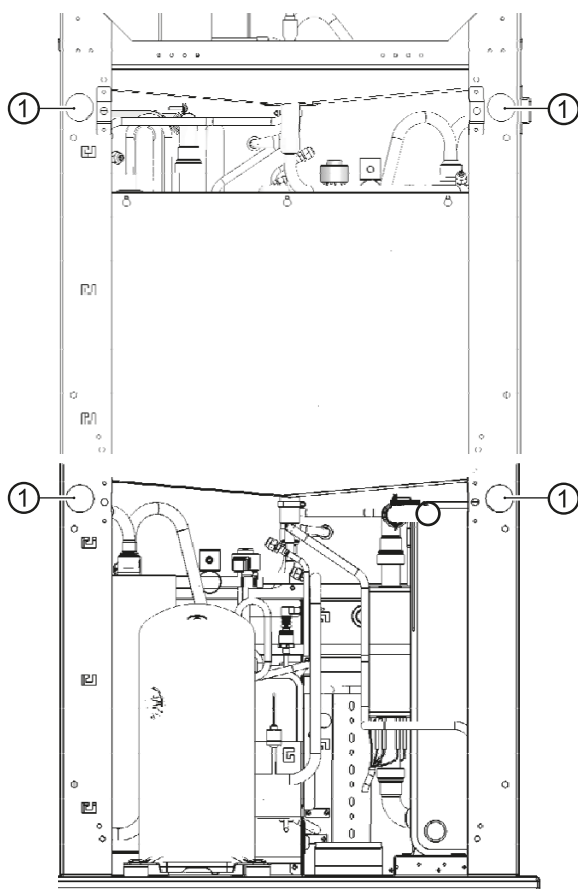
2. To do this, undo the quick-release screws. Turn through 90° to the left.



3. Pull the lower facing panel upwards and outwards at an angle, lift out and put in a safe place.



4. Pass the tube handles through the holes in the frame:



1 Holes in the frame, front and rear

Make sure that the tube handles do not damage cable harnesses and components in the unit. Feed the tube handles carefully past cable harnesses and components in the unit.

5. Lift the unit with the inserted tube handles, with at least four people (one for each tube handle) and carry to the place of installation.



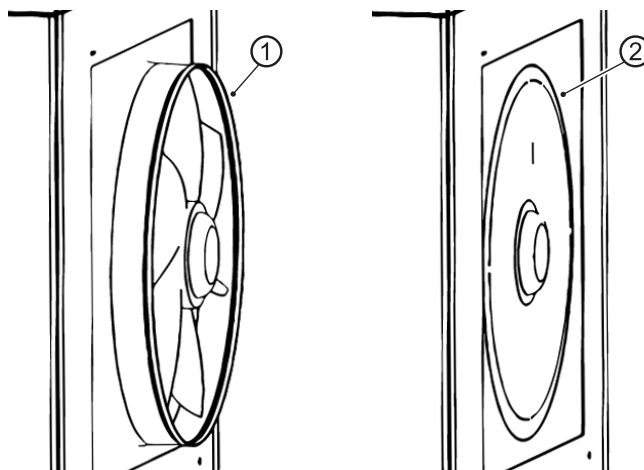
### CAUTION

**Carry the unit horizontally and secure it against slipping.**

6. Put down the unit at the place of installation. Make sure that the unit's baseframe is in full contact with the surface of the floor.
7. Remove the tube handles.
8. If the electrical connection work is not carried out immediately, re-attach the lower facade panel on the operating side.

### Push-in fan

The fan can be pushed approx. 10 cm into the housing to enable the unit to be transported in narrow basement rooms and through narrow doors or corridors:



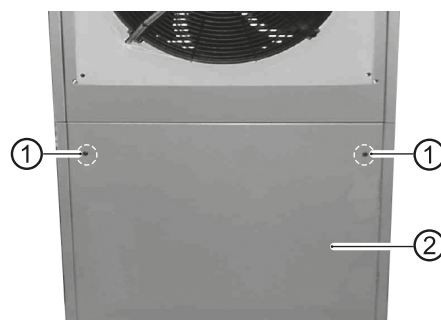
- 1 Fan in delivery condition
- 2 Fan pushed into the unit



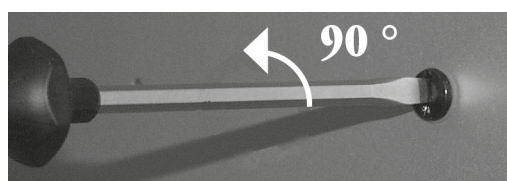
### IMPORTANT

Only push the fan into the housing for transport purposes and pull it back out of the housing immediately after transport.

1. Remove the lower facing panel on the fan side and remove it from the unit. To do this, undo the quick-release screws. Turn through 90° to the left.



- 1 Quick-release screws
- 2 Lower facing panel





2. Pull the lower facing panel upwards and outwards at an angle, lift out and put in a safe place.



3. Remove the screws in the underside of the upper facing panel.

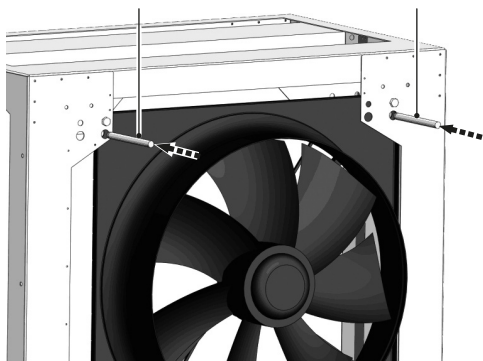


4. Lift up the facing panel at an angle, unhook it and put it in a safe place.

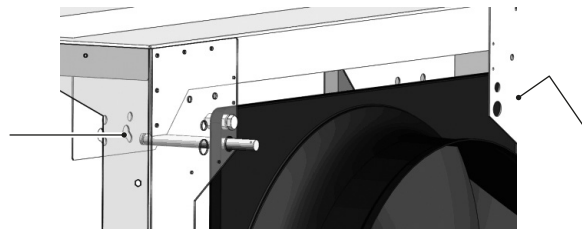


Then remove the side facing panels from the unit too and put them in a safe place.

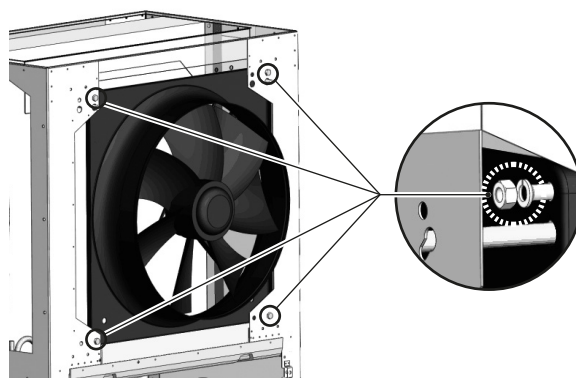
5. At the fan, thread in the two guide rods supplied with the unit through the metal tab and fan.



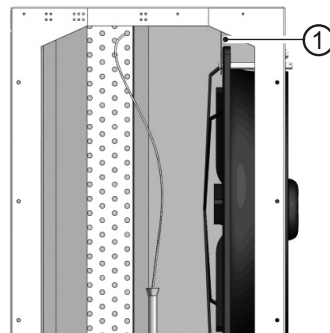
Then, on both sides, hook the guide rods in the key-hole perforation of the top metal tab inside the unit.



6. Undo all four nuts (M12) of the fan's threaded fittings inside the unit and remove together with the spring lock washers.

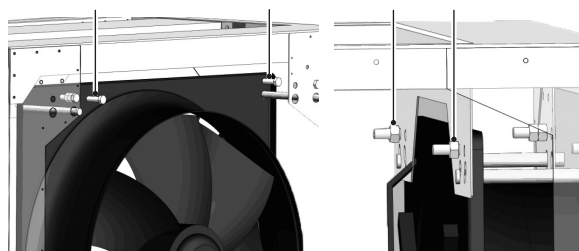


7. Push in the fan in the direction of the evaporator, up to the top metal tab inside the unit.



1 top metal tab inside the unit

8. Push the M12 x 40 (2x) bolts supplied through the fan and the top metal tab and secure with M12 nuts.





- Put down the unit at the place of installation. Make sure that the unit's baseframe is in full contact with the surface of the floor and the unit is horizontal.

Undo the two fastening nuts on the top metal tab and remove the corresponding bolts. Then pull the fan out of the unit and bolt it back onto the unit frame (do not forget the spring lock washers).

- Remove the guide rods and re-attach all facing panels to the unit.

## 16.2 Installation

Place the unit on a stable, solid and horizontal, preferably structural sound-insulated surface. Make sure that the floor is designed for the weight of the heat pump.



### CAUTION

In the air outlet area the air temperature is approx. 5 K below the ambient temperature. Under certain climatic conditions an ice layer can therefore form in the air outlet area.

Install the heat pump so that the air is not blown out in the area of footpaths.



### IMPORTANT

Do not tilt the unit by more than 45° maximum (in any direction).



### NOTE

Always refer to and follow the installation plan for the respective model. Note the size and minimum clearances.

→ "Installation plans", from page 31

Install the unit so that the switchbox side (= operating side) is accessible at all times.

## 16.3 Installing the air ducts



### IMPORTANT

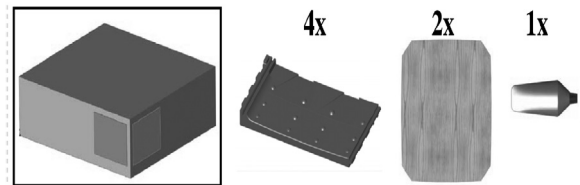
Only use original accessories or air ducts recommended by the manufacturer.

Install the air ducts only as shown on the installation plan applicable to your unit.

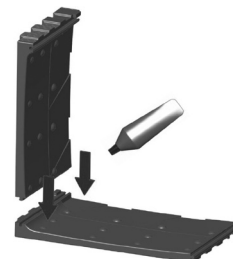
→ "Installation plans", from page 31

### Assembly and installation of the wall penetration(s) (bushings)

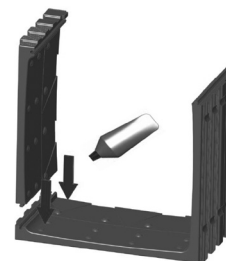
- Take the elements for assembling the wall penetration(s) from the relevant box.



- As illustrated in the following sketch, firstly, push together 2 matching elements of the wall penetration(s). Use the lubricant supplied.

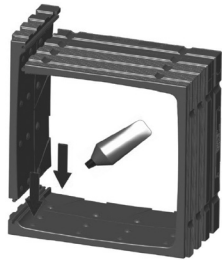


- Push on another element as illustrated.

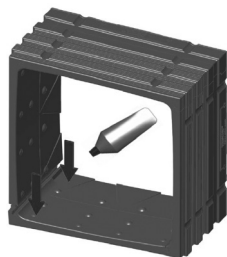




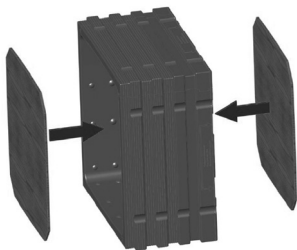
4. Turn the already pushed together parts through 90° and push on the last element at the bottom.



5. Turn the already pushed together parts through 90° again and make the last connection.



6. Use the particleboards supplied to stabilise the wall penetration on the inside.

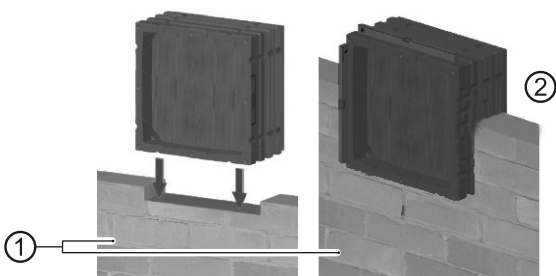


7. Insert the wall penetration in the masonry **from the outside of the building**. This can either be done during the building shell construction phase (by bricking around the penetration).



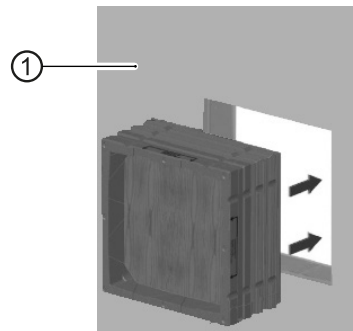
#### NOTE

Install wall penetrations 1 cm above the finished external façade.



- 1 Outside of the building masonry
- 2 Inert the wall penetration in the masonry (1 cm above the finished external façade)

or subsequently (by foaming in place in the masonry):



- 1 Finished external façade

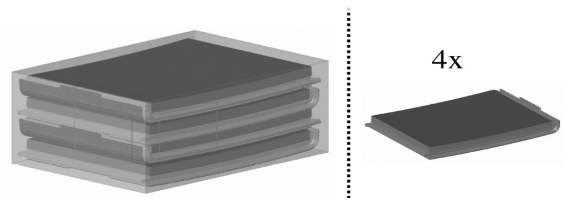


#### NOTE

Wall penetrations are used for fixing in the masonry opening, to avoid cold bridges with the masonry, and to install weather and rain louvres and wire mesh.

### Assembly and installation of the air ducts

1. Take the elements for assembling the air ducts from the relevant box.



2. The air ducts are assembled by pushing them together as is described in the "Assembly and installation of the wall penetration(s)" section, 2 – 5.



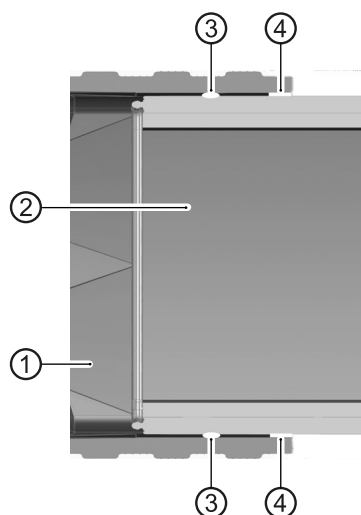
#### IMPORTANT

The height difference between the vertical centre of the air duct connections on the unit and the top edge of the air inlet / air outlet on the building must not exceed 2 m.



## Fixing the air ducts in the wall penetration

1. Pull the rolling O-ring joint supplied over one end of an air duct.
2. Push the air duct into the wall penetration with this end first.



- 1 Wall penetration
- 2 Air duct
- 3 Rolling O-ring joint
- 4 Waterstop tape (do not attach until after the unit connections have been fixed)



### NOTE

After the other end of the air duct has also been fixed onto the heat pump, seal off the opening that still exists between the wall penetration and the air duct by attaching the waterstop tape supplied.

## Fixing the air ducts onto the heat pump

1. Clip on the mounting strip and use special screws to fix onto the places provided for this purpose on the air duct for the air inlet side.
2. Glue the connection frame supplied onto the edge of the air duct.
3. Position the air duct on the respective air opening of the air inlet side.
4. At the air inlet side of the heat pump, hook 4 of the tension springs supplied in the holes provided for this purpose.
5. Hook the tension springs into the mounting strip screwed onto the air duct.
6. Fix the protective caps above the mounting strip.



7. Repeat procedure 1 – 6 at the air outlet side.



### NOTE

Do not forget:

After the air ducts have been fixed onto the heat pump, seal off the opening that still exists between the wall penetration and the air duct by attaching the waterstop tape supplied.



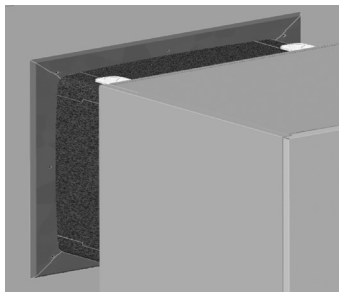
### NOTE

Use suitable means to fix the air ducts to the ceiling.



## Installing the frame trim

Screw the frame trim onto the wall penetration on the air inlet and air outlet side.

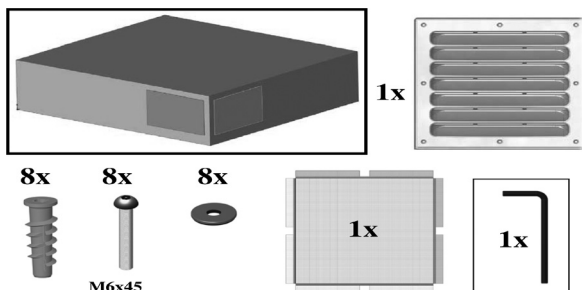


### NOTE

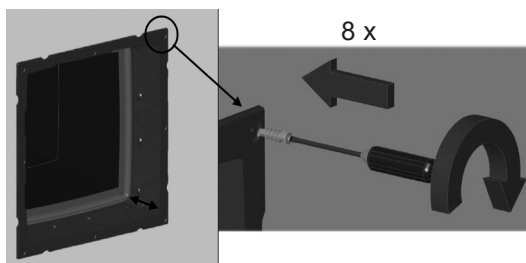
The frame trim does not fulfil any technical function; it is merely for establishing a visually attractive transition with the wall surface.

## Installing the wire mesh and the weather / rain louvre

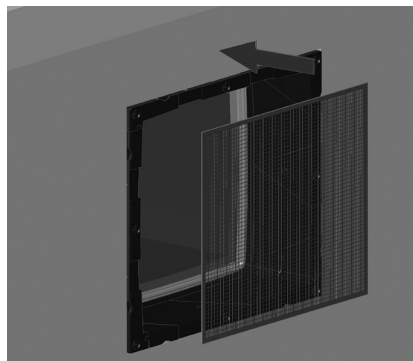
1. Remove the wire mesh and weather / rain louvre including the installation frame and fixing materials from the relevant box.



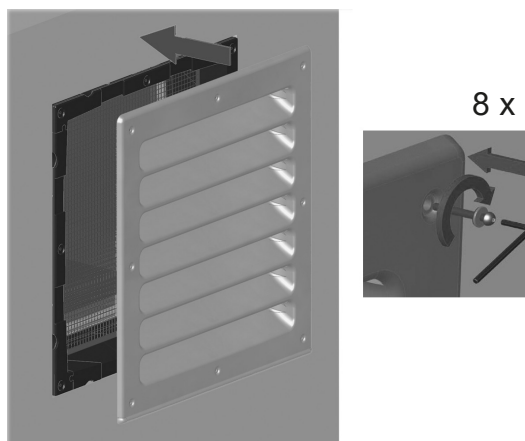
2. From the outside of the building, insert the installation frame in the wall penetration of the air inlet side and screw tight.



3. Insert the wire mesh in the installation frame.



4. Position the weather / rain louvre on the installation frame in the wall penetration and screw on.



### NOTE

Attach the weather louvre if the wall penetration is above ground level.  
If the wall penetration is installed in an air well (below ground level), attach the rain louvre.

5. Repeat procedure 2 – 4 at the air outlet side.



## 16.4 Installation / connection to the heating circuit

### ! IMPORTANT

Integrate the unit in the heating circuit as shown in the hydraulic diagram for the respective unit model.

It is not possible to connect several heat pumps in parallel.

→ “Hydraulic integration” document

Check to make sure that the cross-sections (diameters) and lengths of the pipes for the heating circuit are adequately dimensioned.

The hydraulic system must be equipped with a buffer tank, the required volume of which depends on your unit model.

→ “19 Buffer tank”, page 18

### ! IMPORTANT

Dirt and deposits in the (existing) hydraulic system can cause damage to the heat pump.

- ▶ Ensure that a sludge separator is installed in the hydraulic system.
- ▶ Rinse the hydraulic system thoroughly prior to establishing the hydraulic connection of the heat pump.

### ! IMPORTANT

When installing the connections, always protect the connections on the unit from twisting, in order to prevent damage to the copper pipes inside the unit.

1. Install shut-off devices for the heating water outlet (flow) and heating water inlet (return) on the heat pump side.

### i NOTE

By installing the shut-off devices, the condenser of the heat pump can be flushed, if necessary.

2. Connect the unit to the pipes of the heating circuit via vibration decouplers. They must be installed in order to prevent damage from vibrations to the pipes.



### NOTE

If an existing system is being replaced, the old vibration decoupling may not be reused. Vibration decouplers are available as accessories.

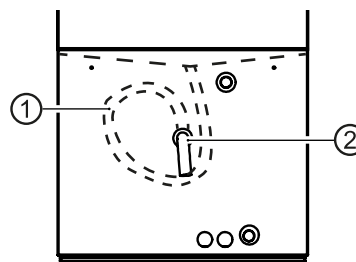
The connections for the heating water outlet (flow) and heating water inlet (return) are marked accordingly on the unit.

→ For details on how to position the connections: “Dimensioned drawings”, from page 29

## 16.5 Condensate drain

The condensate precipitated from the air must be drained through the hose for condensate discharge provided on the unit. To this end, connect the hose for condensate discharge with a water drain.

→ Positioning of the condensate discharge connection: “Dimensioned drawings”, from page 29



- 1 Hose for condensate discharge inside the unit
- 2 Connection for condensate drain on the outside of the unit

### ! IMPORTANT

Lay the hose for condensate discharge provided inside the unit as a trap, as shown in the figure.

Discharge of the condensate into the sewers is permitted only via a trap with funnel inlet, which must be accessible at all times.



## 17 Pressure safety

Equip the heating circuit with a safety valve and expansion vessel in accordance with local standards and guidelines.

Also install filling and draining emptying devices, shut-off devices and non-return valves in the heating circuit.

## 18 Circulation pump

The circulation pump is installed in the unit. Only one PWM signal is available for the circulation pump, therefore the domestic hot water supply must be provided with the changeover valve via the BUP outlet. Normally open = heating.

## 19 Buffer tank

The hydraulic integration of the heat pump requires a buffer tank in the heating circuit. It ensures a minimum running time for the heat pump if the heating circuit valves are shut off. Minimum volume of buffer tank 200 l

## 20 Water heating

Water heating with the heat pump requires another heating water circuit in addition (parallel) to the heating circuit. When integrating, make sure that the hot water supply is not fed through the buffer tank of the heating circuit.

→ “Hydraulic integration” document

## 21 Hot water tank

If the heat pump is to be used to heat water, you must integrate special hot water tanks in the heat pump system. Choose the storage volume so that the required quantity of hot water is available even during a power cut.

The heat exchanger surface of the hot water tank must be dimensioned so that the heating capacity of the heat pump is transferred with minimum temperature drop. We offer a variety of hot water tanks for you to choose from. They are optimally matched to your heat pump.

Integrate the hot water tank in the heat pump system as shown in the hydraulic diagram for your system.

## 22 Electrical connection work

The following applies to all work to be done:



### DANGER

**Risk of fatal electric shock!**

**All electrical connection work must be carried out by qualified electricians only. Before opening the unit, disconnect the system from the power supply - wait for 90 seconds = residual voltage at inverter - and prevent it from being switched back on again!**



### WARNING

**Note and follow the relevant EN, VDE and/or local safety regulations during installation and when carrying out electrical work.**

**Comply with technical connection requirements of the responsible power supply company (if required by the latter)!**

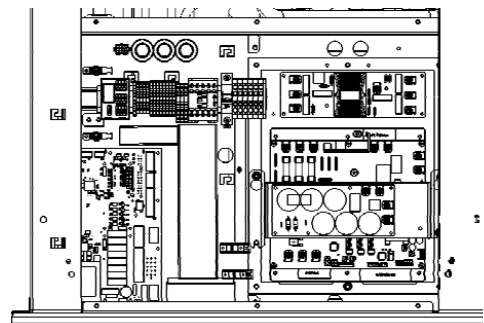


### NOTE

**All live cables must be stripped before they are laid in the cable duct of the switch box!**

### Power connection

1. If the unit is connected, open the lower facing panels on the operating side.  
→ “Installation”.
2. Open the unit's electrical switch box.



Example of an opened electrical switchbox



3. Feed the 230V power cable, power cable for circulation pumps and cable for outdoor temperature sensor through the rubber grommets in the facing panel.

- 3.1. Cut open the rubber grommets in the facing panel.

→ For details of the positioning of the rubber grommets for the cable entry, see “dimensioned drawing” for the respective unit model.

- 3.2. Push the cables through the rubber grommets in the unit.

By pushing them in, the cables are routed inside the unit in a closed cable duct to the terminals on the switching plate.

4. Carry out the electrical connection work as shown in the terminal diagram applicable to your unit model.

→ “Terminal diagram”, page 39

### **! IMPORTANT**

Ensure clockwise rotary field of the load power supply (compressor).

Operation with the incorrect rotary direction of the compressor can cause serious, irreparable damage to the compressor.

### **! IMPORTANT**

The power supply for the heat pump must be equipped with an all-pole miniature circuit-breaker with at least 3 mm contact spacing to IEC 60947-2.

→ “Technical data / Scope of supply”, page 27, “Electrics” section

### **i NOTE**

In devices with integrated electric heating element, the electric heating element is connected for 9 kW (6 kW) in the factory. At contactor Q, it is possible to select 6 kW (4 kW) = 2 phase operation. Disconnect Q5/6 for this. Or 3 kW (2 kW) = 1 phase operation. Disconnect Q5/6 and Q5/4 for this. The values in brackets are for the 6 kW heating element. Disconnected cables must be furnished with screw terminals. Only the phases cited above may be disconnected (safety temperature limiter)



### **NOTE**

The control unit of the heating and heat pump controller can be connected to a computer or network using a suitable network cable, enabling the heating and heat pump controller to be controlled remotely from there.

If this is required, lay a shielded network cable (category 6, with RJ45 connector) through the unit during the electrical connection work and route it through the front panel of the unit, parallel to the existing control cable of the heating and heat pump controller. Lay unshielded power supply cables and shielded cables (bus cable) sufficiently far apart (> 100 mm). Maximum line length: 30 m.

5. Close the unit's electrical switch box.
6. Attach the lower facing panel.



## 23 Flushing, filling and venting the system



### IMPORTANT

The system must be absolutely free from air before commissioning.

### Unsuitable quality of the water for filling up and replenishing the heating circuit

The efficiency of the system and the service life of the heat generator and the heating components depend decisively on the quality of the heating water.

If the system is filled with untreated drinking water, calcium deposits will form as scale. Lime scale deposits accumulate on the heat transfer surfaces of the heating. The efficiency is reduced and energy costs increase. In extreme cases, the heat exchangers will be damaged.

### Heating water quality



### NOTE

- For detailed information refer, among other things, to the VDI Guidelines 2035 "Vermeidung von Schäden in Warmwasserheizanlagen" (preventing damage in hot water heating systems)
- Required pH value: 8.2 ... 10;  
for aluminium materials:  
pH value: 8.2 ... 8.5

- Fill the system with deionised heating water (VE water) or with water corresponding to the VDI 2035 norm only (low-salt operation of the system).

### Advantages of low-salt operation:

- Low corrosion-promoting properties
- No formation of mineral scale
- Ideal for closed heating circuits
- Ideal pH value due to self-alkalisation after filling the system
- If the required water quality is not achieved, consult a company specialising in the treatment of heating water.
- Keep a system log for hot water heating systems in which relevant planning data is entered (VDI 2035).

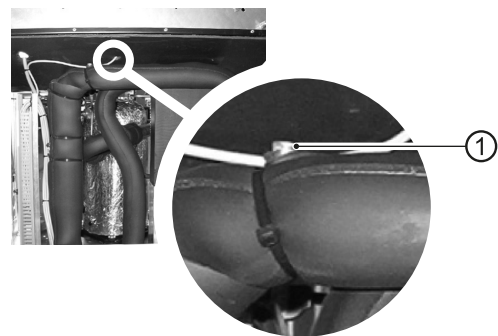
## Monitoring

Analytical recording and monitoring of the relevant water values and the added active conditioning substances is of decisive importance. Therefore, they should be monitored regularly using appropriate water test equipment.

### Flush, fill and vent the heating circuit and hot water tank

In order to vent the hot water tank the heating circuit and the hot water supply circuit must be flushed at the same time.

1. Flushing, filling and venting the heating circuit.
2. Venting the additional condenser of the heat pump.
  - 2.1. Opening the lower facing panel.
  - 2.2. Opening the vent valve (①).



3. After venting, close the lower facing panel.

## 24 Insulating the hydraulic connections

Insulate the vibration isolators and the fixed piping of the heating circuit.



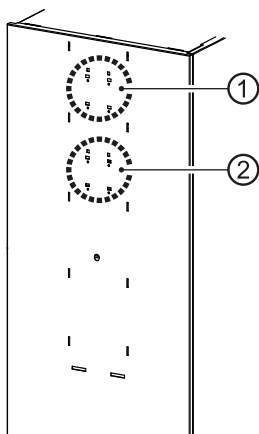
### NOTE

Insulate according to the relevant local standards, guidelines and directives.



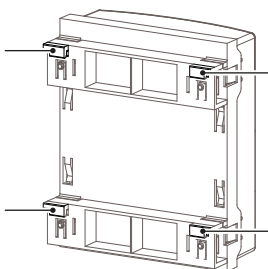
## 25 Installing the control unit

There are 4 openings each at different heights in the front panel of the unit for fastening the control unit:

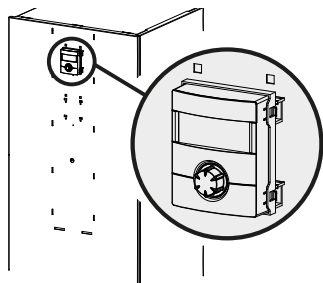


- 1 four upper openings
- 2 four lower openings

There are 4 hooks at the rear of the control unit, which are used to hook the control unit onto the front panel of the unit:

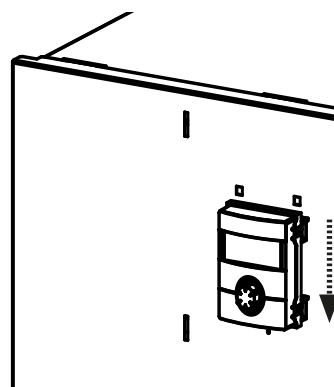


1. Hook the control unit's hooks into the openings of the front panel (either in the upper or lower openings).

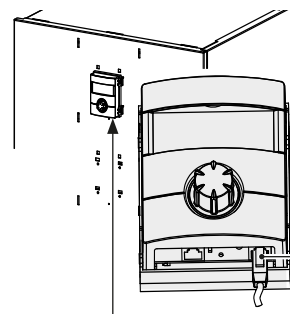


Example: Control unit in upper openings

2. Press the hooked in control unit downwards until it latches into position.



3. Push the control cable of the heating and heat pump controller into the **right** socket on the underside of the control unit.



### NOTE

A connection to a computer or a network can be made via the left socket on the underside of the control unit, in order to enable the heating and heat pump controller to be controlled remotely from there. This requires a shielded network cable (category 6) to have been laid through the unit during the electrical connection work.

- Operating manual for the heating and heat pump controller, part 2, "Web server" section

If this network cable is available, insert the network cable's RJ45 connector into the left socket of the control unit.



### NOTE

The network cable can be exchanged at any time. In order to be able to connect it, the screen must first be removed.



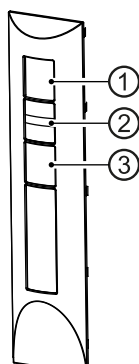
## 26 Installation and removal of the screen

### 26.1 Installing the screen



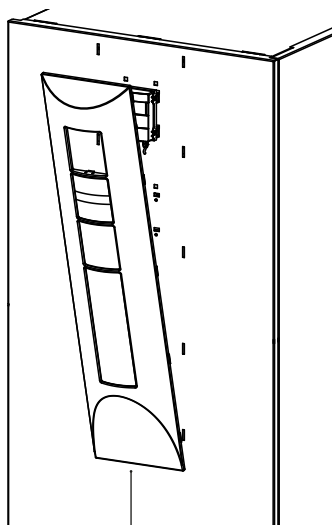
#### NOTE

The screen is provided at the time of delivery so that the control element may be inserted in the upper recesses of the front facade. If the control element has been inserted in the lower recesses of the front facade, you must first remove the screen's temporary cover and then reinsert it above the logo.

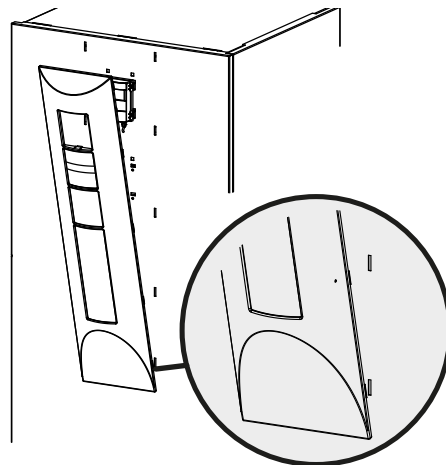


Screen at time of delivery:  
1 recess for control element  
2 logo  
3 temporary cover

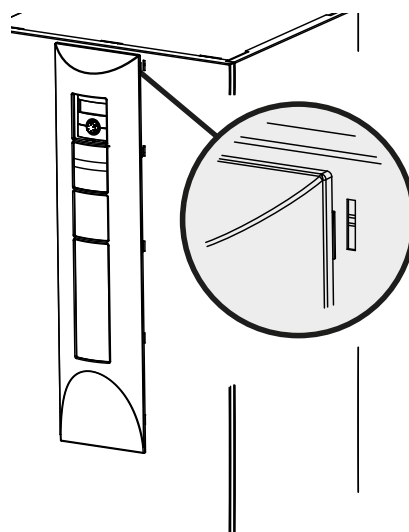
1. First, insert the screen **below**, in the provided slots on the front of the facade.



2. Beginning first on one side and moving upwards, lock the screen's snap-in lugs in place **in the slots** provided on the front of the facade.



3. **Next, on the opposite side, moving upwards.** lock the screen's snap-in lugs **in place** in the slots provided on the front of the facade.
4. Finally, press the screen's upper snap-in lugs into the slots provided on the front of the facade.



### 26.2 Removing the screen

In order to remove the screen, the snap-in lugs must **first be loosened by pressing one side completely toward the middle of the screen.**

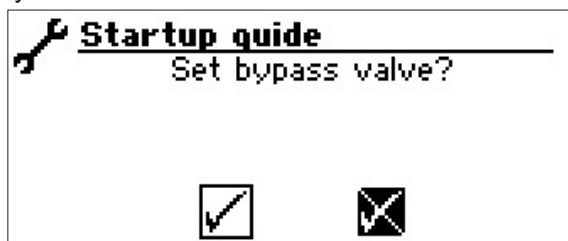
Thereafter, remove the snap-in lugs from the opposite side.



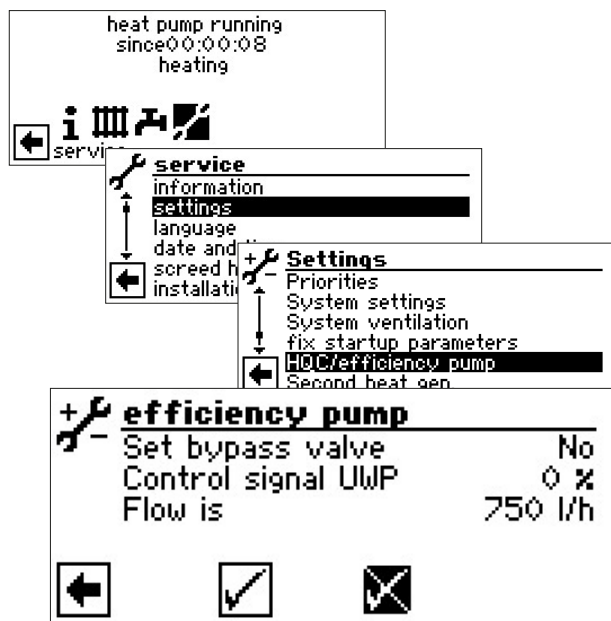
## 27 Overflow valve

Testing and setting the overflow valve  
(only necessary for integration of storage tank in series)

The IBN assistant already provides the option, in the event of the integration of the storage tank in series to adjust the overflow valve according to the hydraulic system.



Confirm the IBN assistant or:

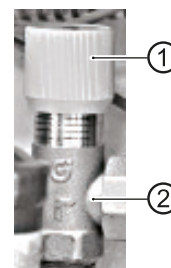


The “Set bypass valve” menu item is set by default to “No”. The overflow valve adjustment function is deactivated.

- The UWP control signal is the indication of the currently required pump capacity in %
  - If the flow rate is the current flow rate (measuring accuracy +/- 200 l/h)
1. Fully open the overflow valve, close the heating circuits
  2. If the “Set bypass valve” menu item is set from “No” to “Yes”, the circulation pump is activated with 100% – and the pump starts up.

3. If the control signal UWP reaches 100%, close the overflow valve to the extent that the maximum flow rate.

→ “Technical data / Scope of supply”, page 27



- 1 Rotary-push button
- 2 Overflow valve

4. If you exit the “Set bypass valve” menu or at the latest after one hour, the circulation pump switches back to standard regulation
5. Open valves to heating circuit.



## 28 Commissioning



### DANGER

The unit may only be started up if the air ducts, weather and/or rain louvres have been installed and the facing panels are closed.



### NOTE

The commissioning has to be in the heating mode.

1. Carry out a thorough installation check and work through the general checklist.

→ Manufacturer's homepage

By checking the installation you prevent damage to the heat pump system, which could be caused by work carried out improperly.

Check that

- **clockwise rotary field** of the load power supply (compressor) is ensured
  - The heat pump **installation and assembly** have been carried out according to the requirements of this operating manual
  - the electrical installation work has been completed properly
  - The power supply for the heat pump must be equipped with an all-pole automatic circuit-breaker with at least 3 mm contact spacing to IEC 60947-2
  - The heating circuit is flushed, filled and thoroughly vented
  - All valves and shut-off devices of the heating circuit are open
  - All pipe systems and components of the system are leaktight
2. Carefully fill out and sign the completion report for heat pump systems.
- Manufacturer's homepage
3. Within Germany:  
Send completion report for heat pump systems and general checklist to the manufacturer's factory customer service department.

In other countries:

Send completion report for heat pump systems and general checklist to the manufacturer's local partner.

4. The heat pump system is commissioned by customer service personnel authorised by the manufacturer. There is a fee for starting up!

## 29 Maintenance of the unit

The cooling circuit of the heat pump requires no regular maintenance.

According to EU regulation (EC) 517/2014, leak inspections and maintenance of a log book are required by law for certain heat pumps!

→ Log book for heat pumps, Section "Information on use of the log book"

The components of the heating circuit and the heat source (valves, expansion vessels, circulation pumps, filters, dirt traps) should be checked and cleaned as necessary, but at least by qualified personnel (heating or cooling system fitters).

Always regularly control for unimpeded air infeed accordingly. Constrictions or even blockages which, for example occur

- when applying house insulation with polystyrene balls
- through packaging material (foils, films, cartons etc.)
- through foliage, snow, icing or similar weather-related deposits
- through vegetation (bushes, tall grass etc.)
- through air shaft covers (fly protection screens etc.)

and which must be prevented and/or removed immediately.



### IMPORTANT

Check regularly to ensure that the condensate can drain out of the unit freely, without obstruction. To this end, check the condensate pan in the unit and the condensate drain regularly for dirt / blockages and clean as necessary.



## 29.1 Annual maintenance

- Determine the quality of the heating water by analysis. In the event of deviations from the specifications, take suitable measures without delay.

It is best to arrange a maintenance agreement with a heating installation company. The company will conduct the required maintenance at regular intervals.



### NOTE

Any person who works on the refrigerant circuit must have a qualification certificate issued by a body accredited by the industry.

## 29.2 Cleaning and flushing unit components



### CAUTION

Unit components may be cleaned and flushed only by customer service personnel authorised by the manufacturer. Only use liquids recommended by the manufacturer.

After flushing the condenser with chemical cleaning agent, any residues must be neutralised and the system flushed intensively with water. Always note and follow the technical data of the respective heat exchanger manufacturer.

## 30 Malfunctions

In the event of a malfunction, you can detect the cause of the malfunction via the diagnostic program of the heating and heat pump regulator.

- Operating manual of the heating and heat pump regulator



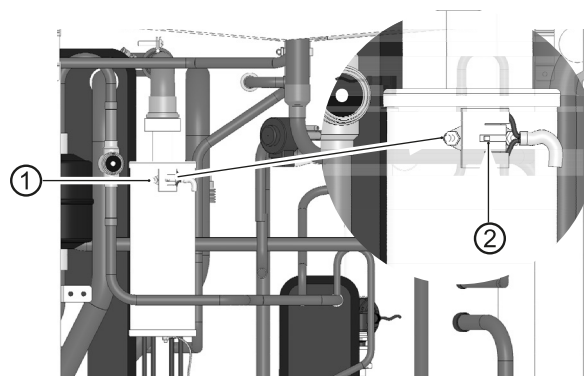
### WARNING

Service and repair work on the components of the unit may be performed only by customer service personnel authorized by the manufacturer.

## 30.1 Unlock the safety temperature limiter

A safety temperature limiter is installed in the electric heating element. If the heat pump fails or there is air in the system:

- Check whether the reset button (②) of the safety temperature limiter (①) has jumped out (by approx. 2 mm).



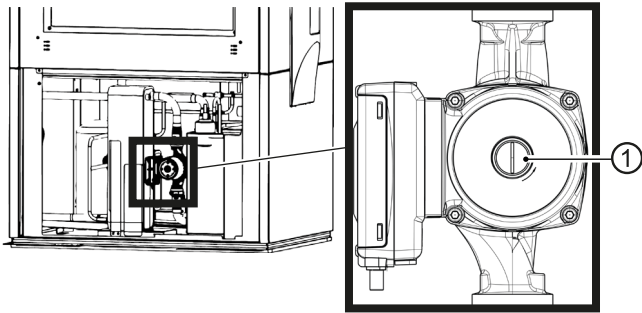
- Press the reset button (②) back in again.
- If the safety temperature limiter trips again, contact the local partner of the manufacturer or the factory's customer service.



## 30.2 Manually unblock the circulating pump

Circulating pumps can block due to sediments or longer standstill periods. This blockage can be removed manually.

1. Remove the lower facade panel on the evaporator side (for HL/V unit on fan side).
2. Undo deflating screw (①) in the middle of the circulation pump.



3. Insert a screwdriver into the opening and release the blocked shaft in the direction of rotation of the circulating pump.
4. Reinsert and tighten the deflating screw (①).
5. Re-attach the lower facade panel.

## 31 Dismantling



### **DANGER**

**Risk of fatal electric shock!**

**All electrical connection work must be carried out by qualified electricians only.**

**Before opening the unit, disconnect the system from the power supply and prevent it from being switched back on again!**



### **WARNING**

**Only qualified heating or cooling system personnel are allowed to remove the unit from the system.**



### **IMPORTANT**

Recycle or ensure proper disposal of unit components, refrigerants and oil according to the relevant regulations, standards and guidelines.

### 31.1 Removal of the buffer battery



### **IMPORTANT**

Before scrapping the heating and heat pump controller, remove the buffer battery on the processor board. The battery can be pushed out using a screwdriver. Dispose of the battery and electronic components in an environmentally friendly way.



## Technical data / Scope of supply

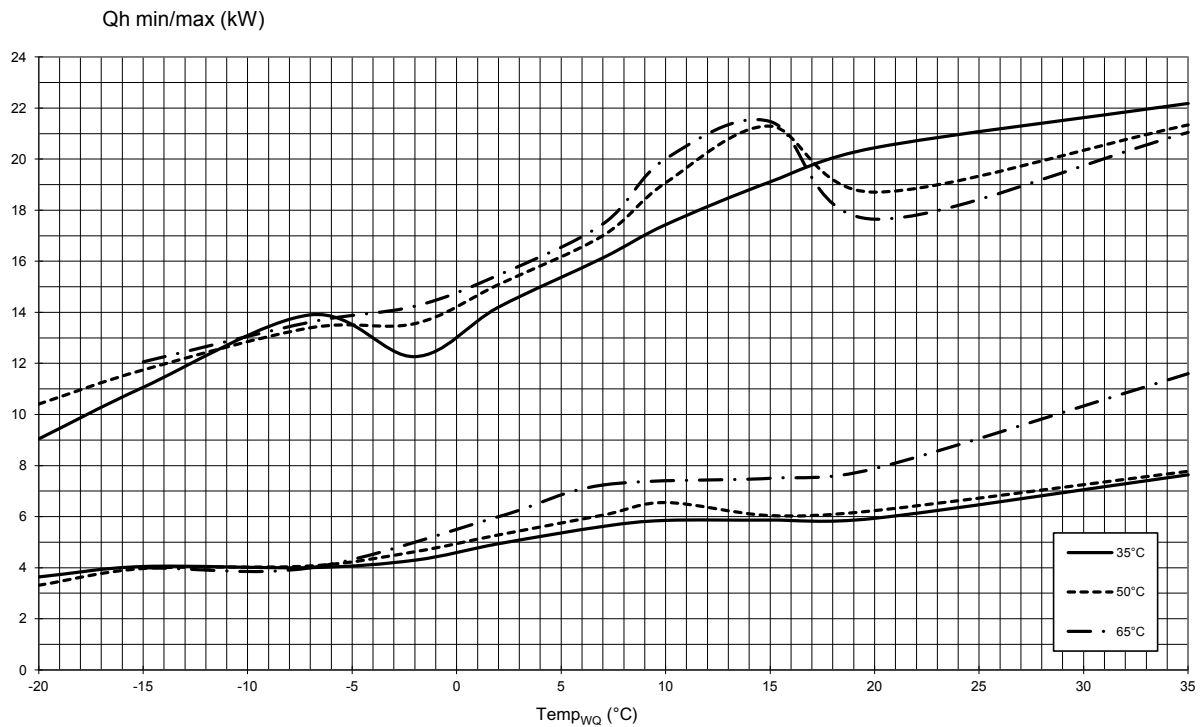
Performance data	Values in brackets: (1 Compressor)			LW 161H(L)/V
Heating capacity   COP	for A10/W35 acc. to DIN EN14511-x: 2013	Partial load operation	kW   COP	10.0   4.87
	for A7/W35 acc. to DIN EN14511-x: 2013	Partial load operation	kW   COP	5.8   4.33
	for A7/W55 acc. to DIN EN14511-x: 2013	Partial load operation	kW   COP	9.1   2.73
	for A2/W35 acc. to DIN EN14511-x: 2013	Partial load operation	kW   COP	8.1   4.20
	for A-7/W35 acc. to DIN EN14511-x: 2013	Full load operation	kW   COP	13.9   3.21
	for A-7/W55 acc. to DIN EN14511-x: 2013	Full load operation	kW   COP	14.7   2.41
Heating capacity	for A10/W35	min.   max.	kW   kW	5.8   17.4
	for A7/W35	min.   max.	kW   kW	5.6   16.1
	for A7/W55	min.   max.	kW   kW	6.5   17.1
	for A2/W35	min.   max.	kW   kW	4.9   14.2
	for A-7/W35	min.   max.	kW   kW	4.0   13.9
	for A-7/W55	min.   max.	kW   kW	4.0   14.7
Cooling capacity   EER	for A35/W18	Partial load operation	kW   EER	–   –
	for A35/W7	Partial load operation	kW   EER	–   –
Cooling capacity	for A35/W18	min.   max.	kW   kW	–   –
	for A35/W7	min.   max.	kW   kW	–   –
Heating capacity domestic hot water preparation			kW	12
Operating limits				
Heating circuit return min.   Heating circuit flow max. Heating		within heat source min./max.	°C	20   60
Heat source, heating		min.   max.	°C	-20   35
Additional operating points			...	A>-15 / W65
Sound				
Sound power level inside		min.   Night   max.	dB(A)	35   –   53
Sound power level outside 1)		min.   Night   max.	dB(A)	31   –   48
Sound power level acc. to DIN EN 12102-1:2017		inside   outside	dB(A)	44   47
Tonality   Low-frequency			dB(A)   • yes – no	–   –
Heat source				
Air flow rate at maximum external pressing   Maximum external pressure			m³/h   Pa	4400   25
Heating circuit				
Flow rate (pipe dimensioning)   Min. volume buffer tank in series   Min. volume separation buffer tank			l/h   l   l	2000   200   200
Free pressing   Pressure loss   Flow rate			bar   bar   l/h	0.513   0.157   2000
Max. allowable operating pressure			bar	3
Circulation pump control range		min.   max.	l/h	1000   2000
General unit data				
Total weight			kg	367
Weight of heat pump module   Compact module   Fan module			kg   kg   kg	–   –   –
Refrigerant type   Refrigerant capacity			...   kg	R410A   4.00
Electrics				
Voltage code   all-pole fuse protection for heat pump *)**)			...   A	3~N/PE/400V/50Hz   C25
Voltage code   Control voltage fuse protection **)			...   A	1~N/PE/230V/50Hz   B16
Voltage code   Electric heating element fuse protection **)		1 phase	...   A	—
Voltage code   Electric heating element fuse protection **)		3 phases	...   A	3~N/PE/400V/50Hz   B16
HP*): effect. Power consumption A7/W35 (partial load operation) DIN EN14511-x: 2013   Electric consumption I cosφ			kW   A   ...	0.82   3.7   0.97
HP*): effective power consumption A7/W35 acc. to DIN EN14511-x: 2013: min.   max.			kW   kW	1.40   4.30
HP*): Max. machine current   Max. power consumption within the operating limits			A   kW	22   8.0
Starting current: direct   with soft starter			A   A	5   –
Degree of protection			IP	20
Residual current circuit breaker if required			type	B
Electric heating element output 3   2   1 phase			kW   kW   kW	9   6   3
Circulation pump power consumption, heating circuit min.   max.			W	5   87
Other unit information				
Safety valve heating circuit   Response pressure			included in scope of supply: • yes – no   bar	–   –
Buffer tank   Volume			included in scope of supply: • yes – no   l	–   –
Heating circuit expansion vessel   Volume   Prepressure			incl. in scope of supply: • yes – no   l   bar	–   –   –
Overflow valve   Changeover valve heating - domestic hot water			integrated: • yes – no	–   –
Heating circuit vibration decoupling			incl. in scope of supply or integrated: • yes – no	–
Controller   Heat quantity recording   Extension board			incl. in scope of supply or integrated: • yes – no	•   •   –
*) compressor only, **) note local regulations 1) Indoor and outdoor installation.				
For indoor installation: Intake 1.5m air duct, Blow-out 1.5m air duct + air duct bend (original accessories)				813583a
The performance data and the operating limits apply to clean heat exchangers   Index: h				



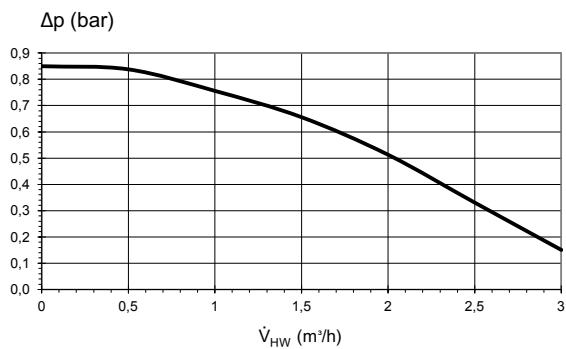
## Performance curves

LW 161H(L)/V

### Heating capacity



### Free compression



823295

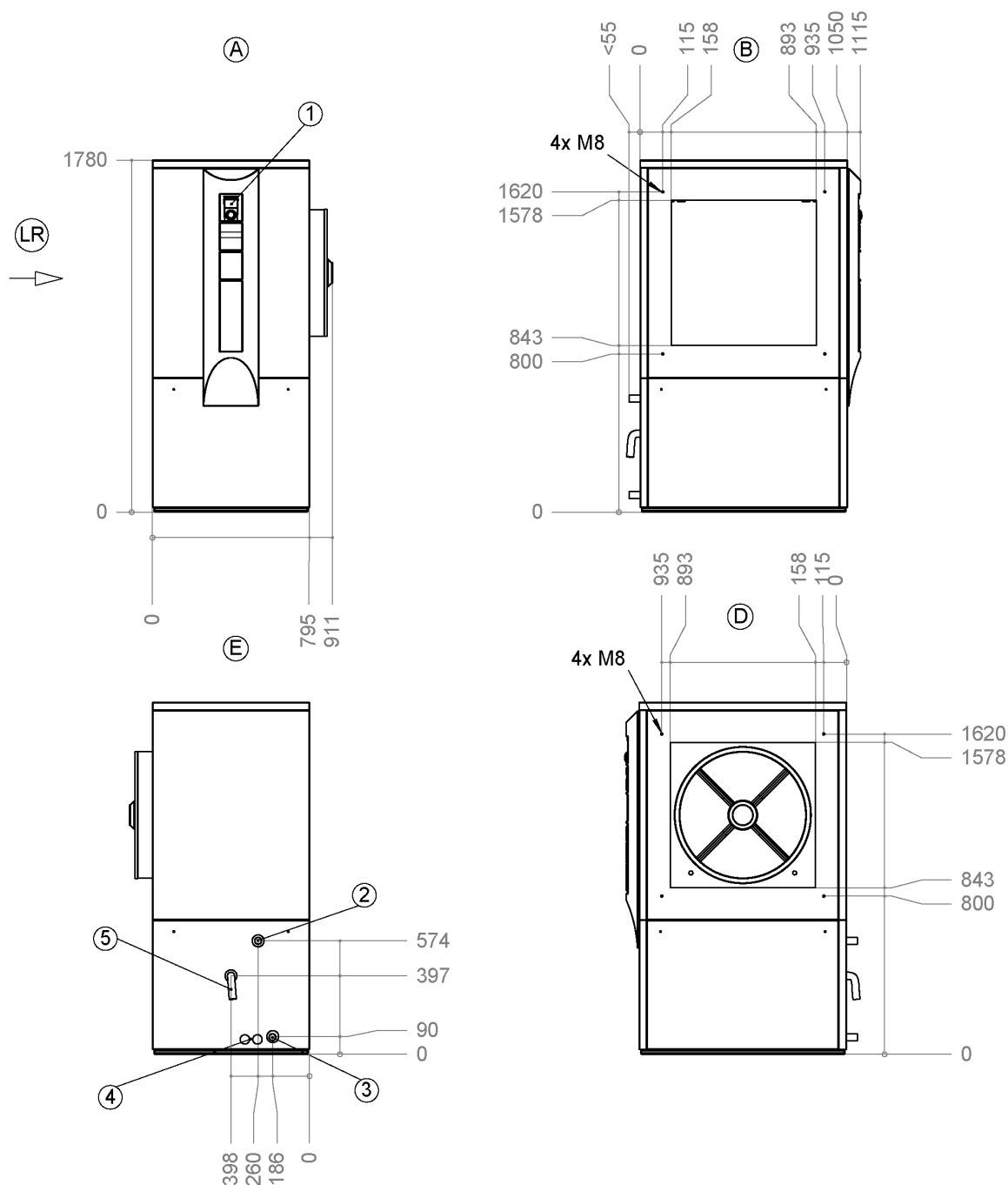
Keys:

$\dot{V}_{HW}$	Heating water flow rate
Temp <sub>WQ</sub>	Heat source temperature
$\Delta p$	Free compression heat pump
Qh min/max	min./max. heating power



## Dimensioned drawings

LW 161H/V



Keys: UK819355a

All dimensions in mm.

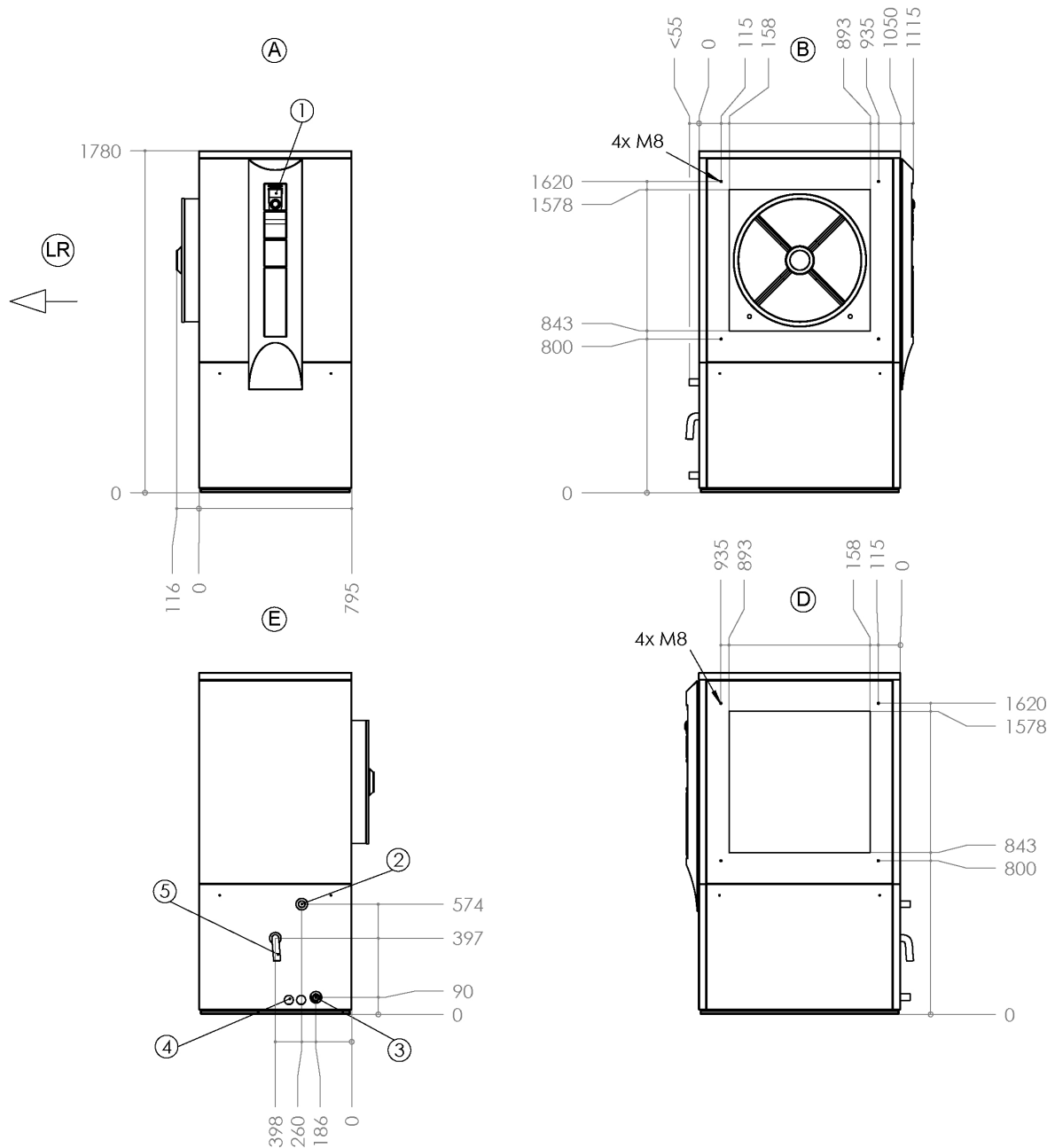
Pos.	Name
A	Front view
B	Side view from the left
D	Side view from the right
E	Rear view
LR	Air direction

Pos.	Name	
1	Control unit	
2	Heating water outlet (flow)	G 3/4" DIN ISO 228
3	Heating water inlet (return)	G 3/4" DIN ISO 228
4	Bushings for electrical / sensor cables	
5	Condensate hose Length from unit: 1 m	Ø-inside 30



## LW 161HL/V

## Dimensioned drawings



Keys: UK819356a

All dimensions in mm.

Pos.	Name
A	Front view
B	Side view from the left
D	Side view from the right
E	Rear view
LR	Air direction

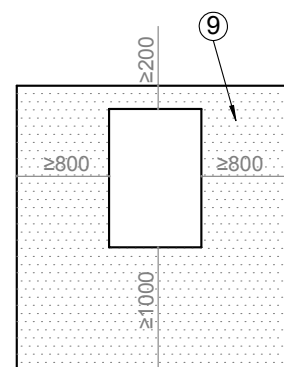
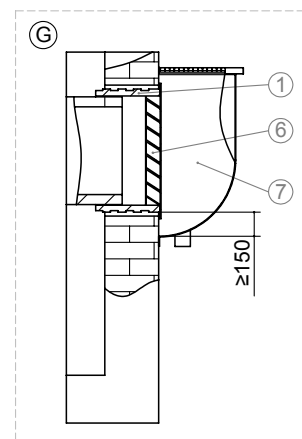
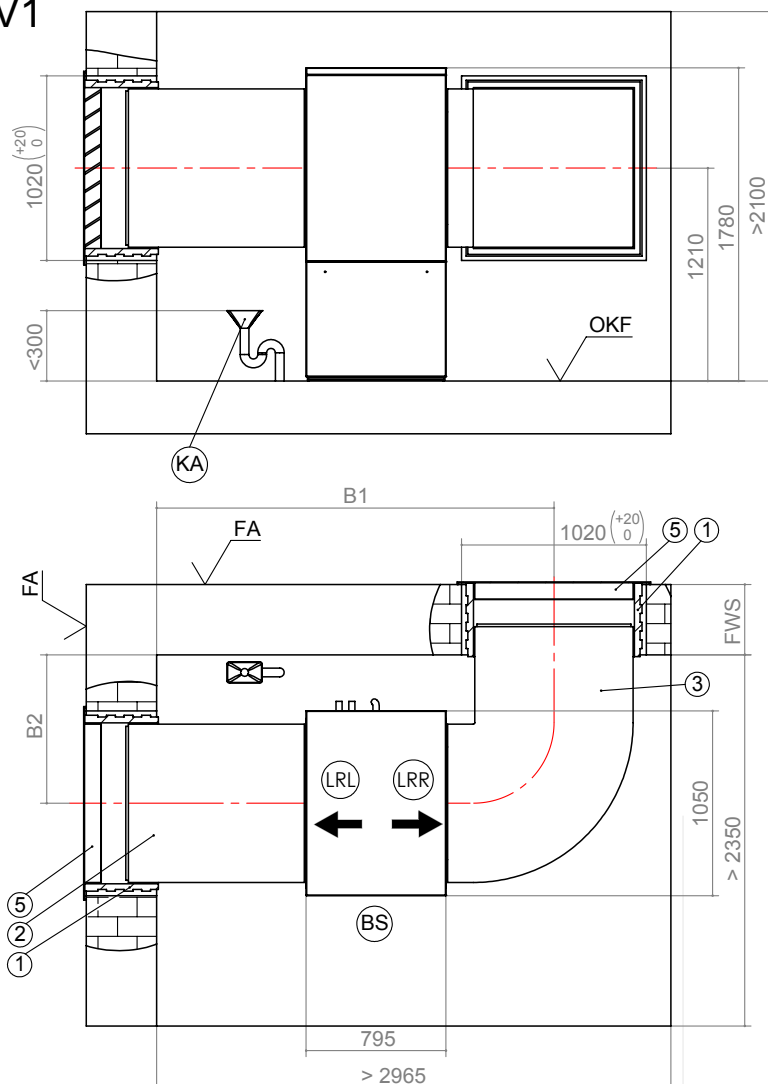
Pos.	Name	
1	Control unit	
2	Heating water outlet (flow)	G 5/8" DIN ISO 228
3	Heating water inlet (return)	G 5/8" DIN ISO 228
4	Bushings for electrical / sensor cables	
5	Condensate hose Length from unit: 1 m	Ø-inside 30



## Installation plan Version 1

LW 161H(L)/V

V1



Keys: UK819336b-1

All dimensions in mm.

V1	Version 1
OKF	Finished floor level
FA	Finished external façade
LR	Air direction
LRR	Air direction of units with fan right-hand side
LRL	Air direction of units with fan left-hand side
BS	Operating side
FWS	Finished wall thickness
KA	Condensate drain
G	Detail of installation in the light well
Tipping dimension of the heat pump = 2050	

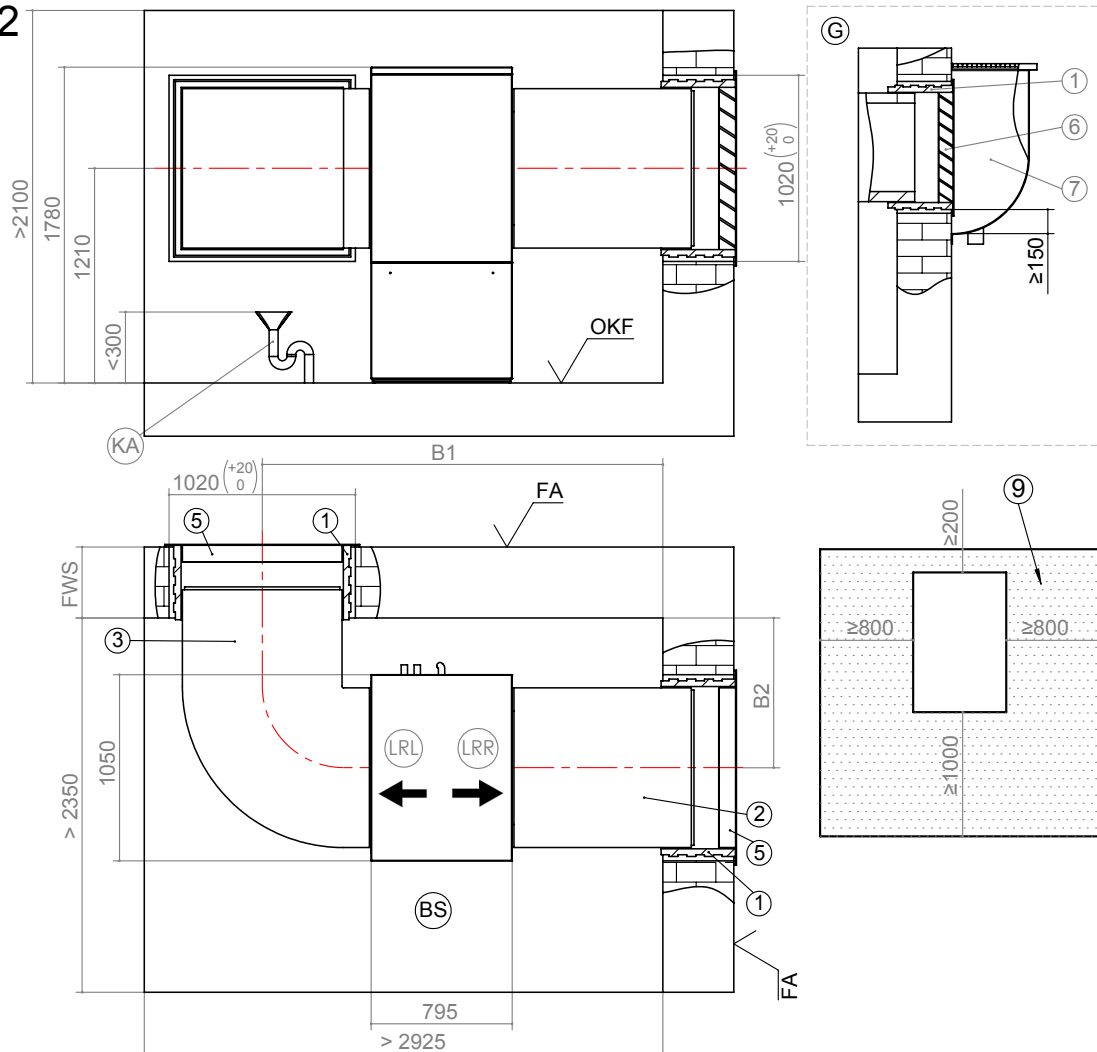
Pos.	Name	Dim.
B1	If finished wall thickness 240 to 320	2340
	If finished wall thickness 320 to 400	2260
B2	If finished wall thickness 240 to 320	920
	If finished wall thickness 320 to 400	840
1	Accessories: Wall duct 1000x1000x420	
2	Accessories: Air duct 900x900x1000	
3	Accessories: Air duct bend 900x1050x1450	
5	<b>Installation above ground level</b> Accessories: Weather louvre 1045x1050	
6	<b>Installation in the light well</b> Accessories: Rain louvre 1045x1050	
7	Provided on site by the customer: Light well with water outlet min. free cross-section 0.75m <sup>2</sup>	
9	Minimum clearance for service purposes If clearances are reduced to the minimum dimension the air ducts must be shortened. This causes a substantial increase in the sound pressure level!	



# LW 161H(L)/V

## Installation plan Version 2

V2



Keys: UK819336b-2

All dimensions in mm.

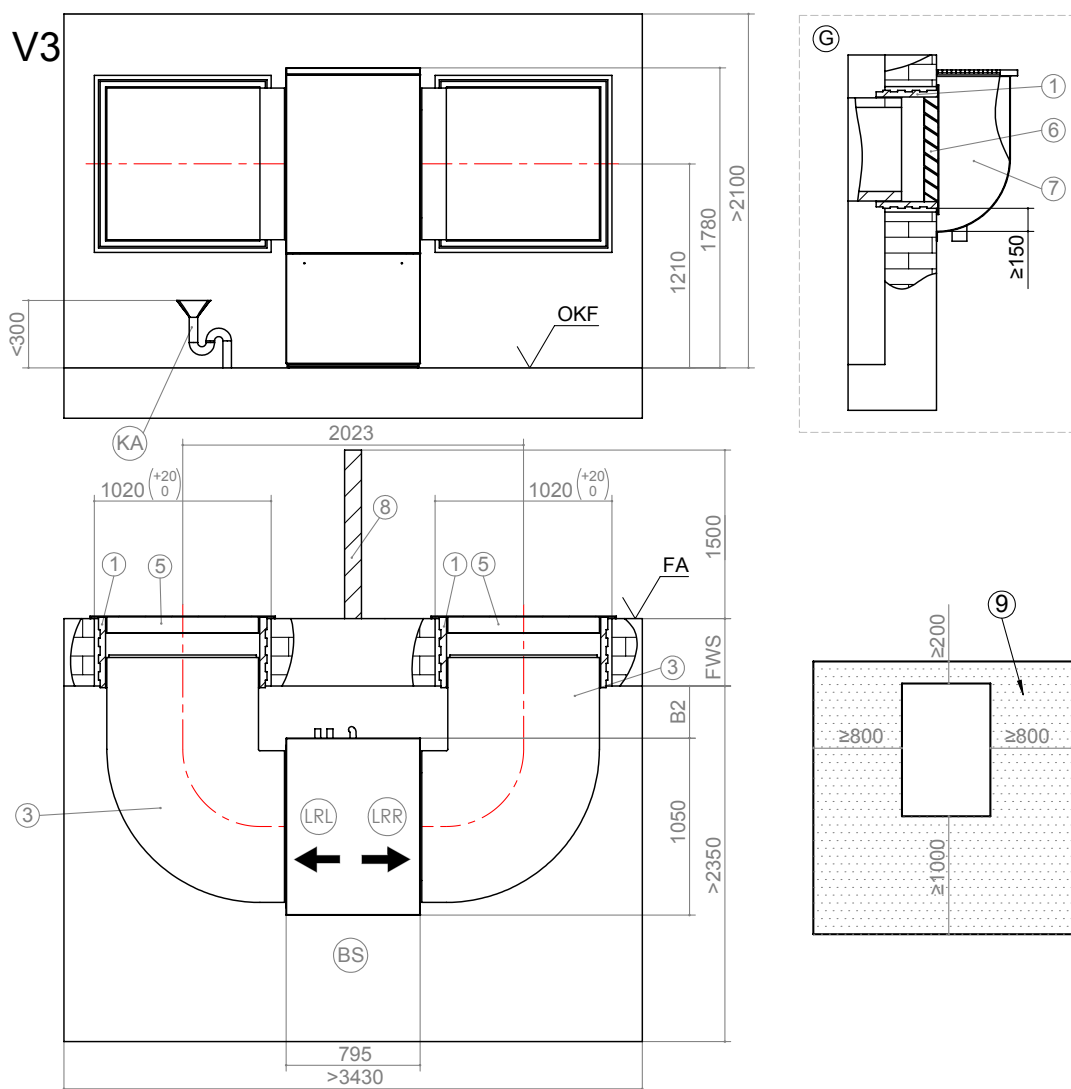
V2	Version 2
OKF	Finished floor level
FA	Finished external façade
LR	Air direction
LRR	Air direction of units with fan right-hand side
LRL	Air direction of units with fan left-hand side
BS	Operating side
FWS	Finished wall thickness
KA	Condensate drain
G	Detail of installation in the light well
Tipping dimension of the heat pump = 2050	

Pos.	Name	Dim.
B1	If finished wall thickness 240 to 320	2340
	If finished wall thickness 320 to 400	2260
B2	If finished wall thickness 240 to 320	920
	If finished wall thickness 320 to 400	840
1	Accessories: Wall duct 1000x1000x420	
2	Accessories: Air duct 900x900x1000	
3	Accessories: Air duct bend 900x1050x1450	
5	<b>Installation above ground level</b> Accessories: Weather louvre 1045x1050	
6	<b>Installation in the light well</b> Accessories: Rain louvre 1045x1050	
7	Provided on site by the customer: Light well with water outlet min. free cross-section 0,75m <sup>2</sup>	
9	Minimum clearance for service purposes If clearances are reduced to the minimum dimension the air ducts must be shortened. This causes a substantial increase in the sound pressure level!	



## Installation plan Version 3

LW 161H(L)/V



Keys: UK819336b-3

All dimensions in mm.

V3	Version 3
OKF	Finished floor level
FA	Finished external façade
LR	Air direction
LRR	Air direction of units with fan right-hand side
LRL	Air direction of units with fan left-hand side
BS	Operating side
FWS	Finished wall thickness
KA	Condensate drain
G	Detail of installation in the light well

Tipping dimension of the heat pump = 2050

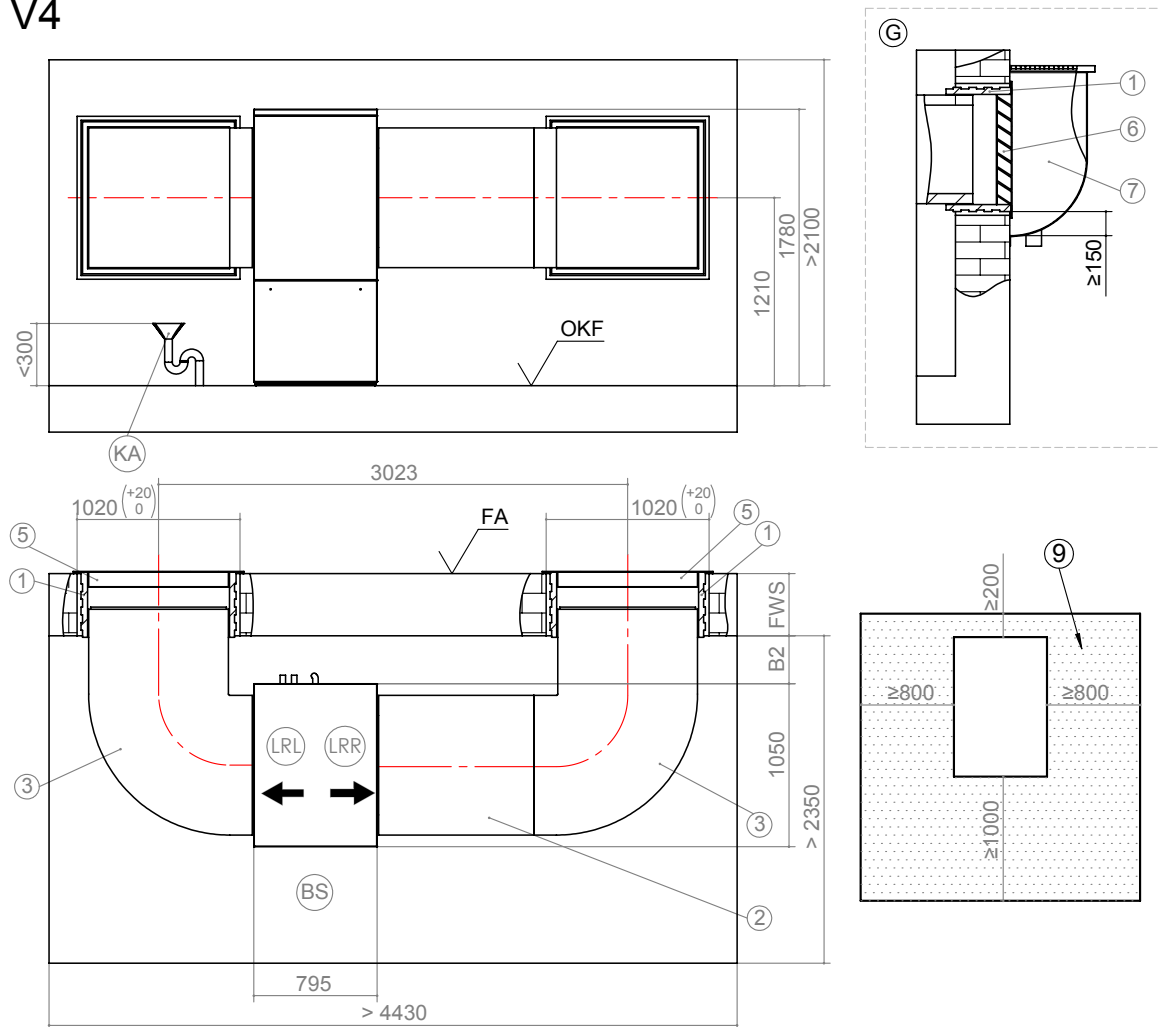
Pos.	Name	Dim.
B2	If finished wall thickness 240 to 320	390
	If finished wall thickness 320 to 400	310
1	Accessories: Wall duct 1000x1000x420	
3	Accessories: Air duct bend 900x1050x1450	
5	<b>Installation above ground level</b> Accessories: Weather louvre 1045x1050	
6	<b>Installation in the light well</b> Accessories: Rain louvre 1045x1050	
7	Provided on site by the customer: Light well with water outlet min. free cross-section 0,75m <sup>2</sup>	
8	Ventilation separation: Depth ≥ 1000 Ventilation separation: Height if <b>installed in light well</b> : ≥ 1000 bei <b>Installation above ground level</b> : ≥ 1700, above the weather louvre: ≥ 300	
9	Minimum clearance for service purposes If clearances are reduced to the minimum dimension the air ducts must be shortened. This causes a substantial increase in the sound pressure level!	



# LW 161H(L)/V

V4

## Installation plan Version 4



Keys: UK819336b-4

All dimensions in mm.

V4 Version 4

OKF	Finished floor level
FA	Finished external façade
LR	Air direction
LRR	Air direction of units with fan right-hand side
LRL	Air direction of units with fan left-hand side
BS	Operating side
FWS	Finished wall thickness
KA	Condensate drain
G	Detail of installation in the light well
Tipping dimension of the heat pump = 2050	

Pos.	Name	Dim.
B2	If finished wall thickness 240 to 320	390
	If finished wall thickness 320 to 400	310
1	Accessories: Wall duct 1000x1000x420	
2	Accessories: Air duct 900x900x1000	
3	Accessories: Air duct bend 900x1050x1450	
5	<b>Installation above ground level</b>	
	Accessories: Weather louvre 1045x1050	
6	<b>Installation in the light well</b>	
	Accessories: Rain louvre 1045x1050	
7	Provided on site by the customer: Light well with water outlet min. free cross-section 0,75m <sup>2</sup>	
9	Minimum clearance for service purposes If clearances are reduced to the minimum dimension the air ducts must be shortened. This causes a substantial increase in the sound pressure level!	



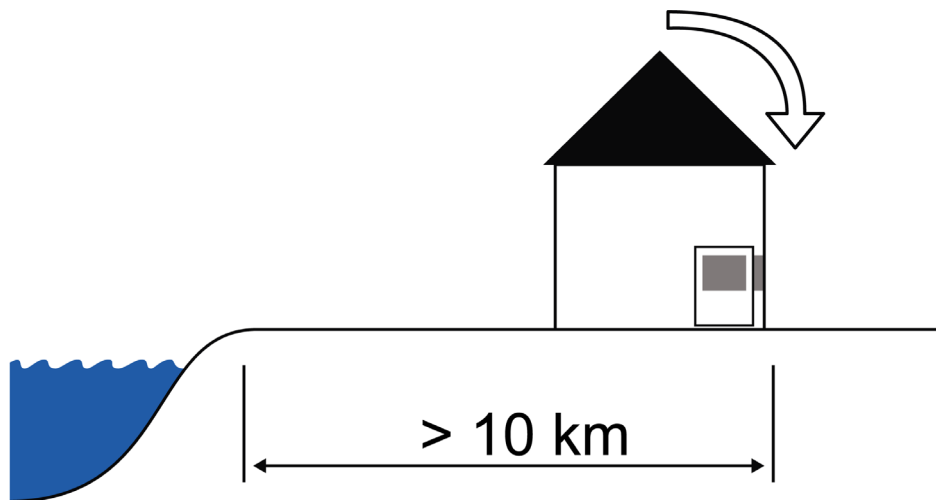
## Coastal installation

LW 161H(L)/V

### IMPORTANT

The minimum distances necessary for correct and safe operation as well as any service work must be observed.

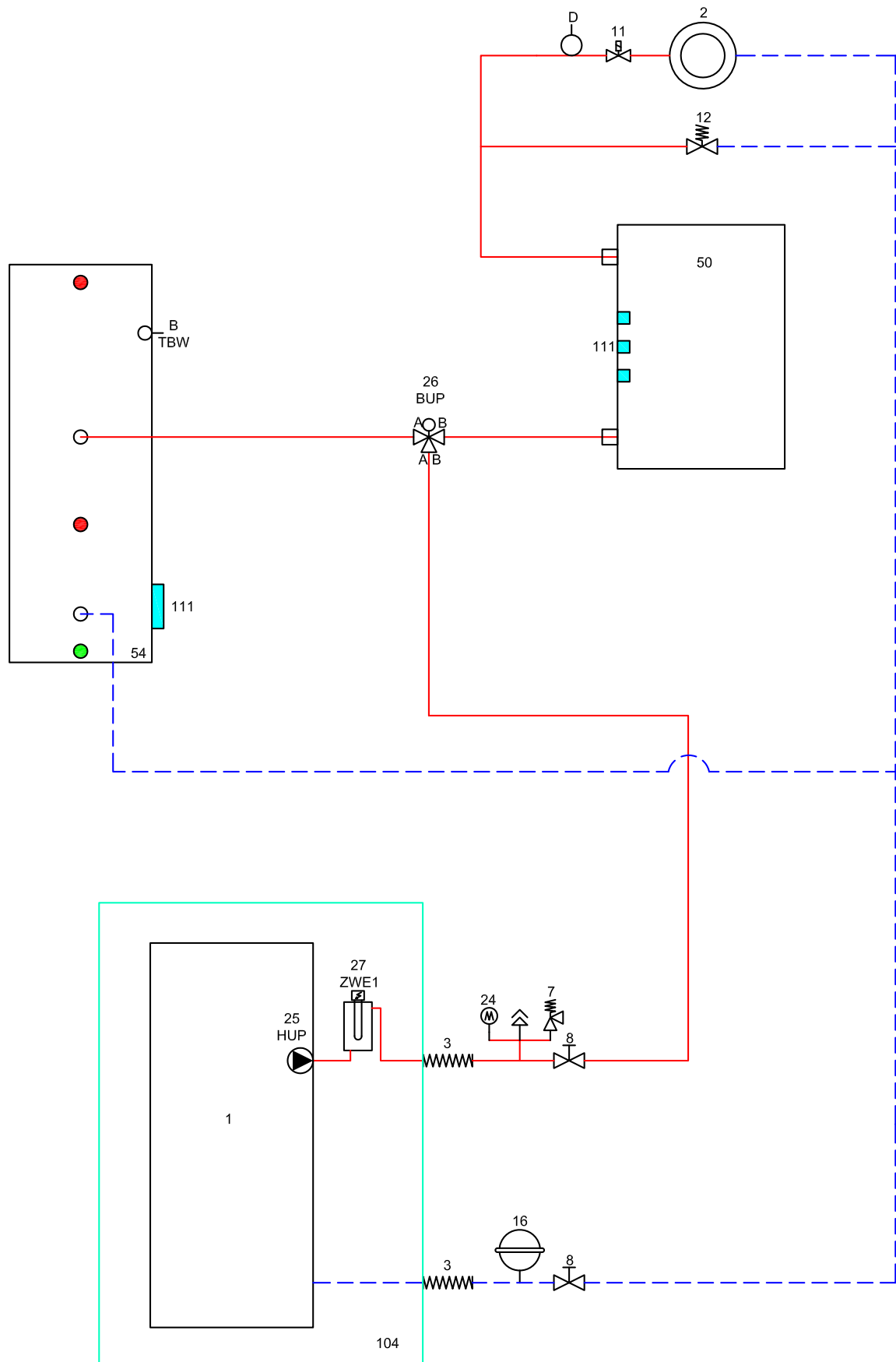
- ✓ Air intake on the side facing away from the coast / from the prevailing wind direction
- ✓ Air outlet not on the side facing the coast / prevailing wind direction





## Row tank

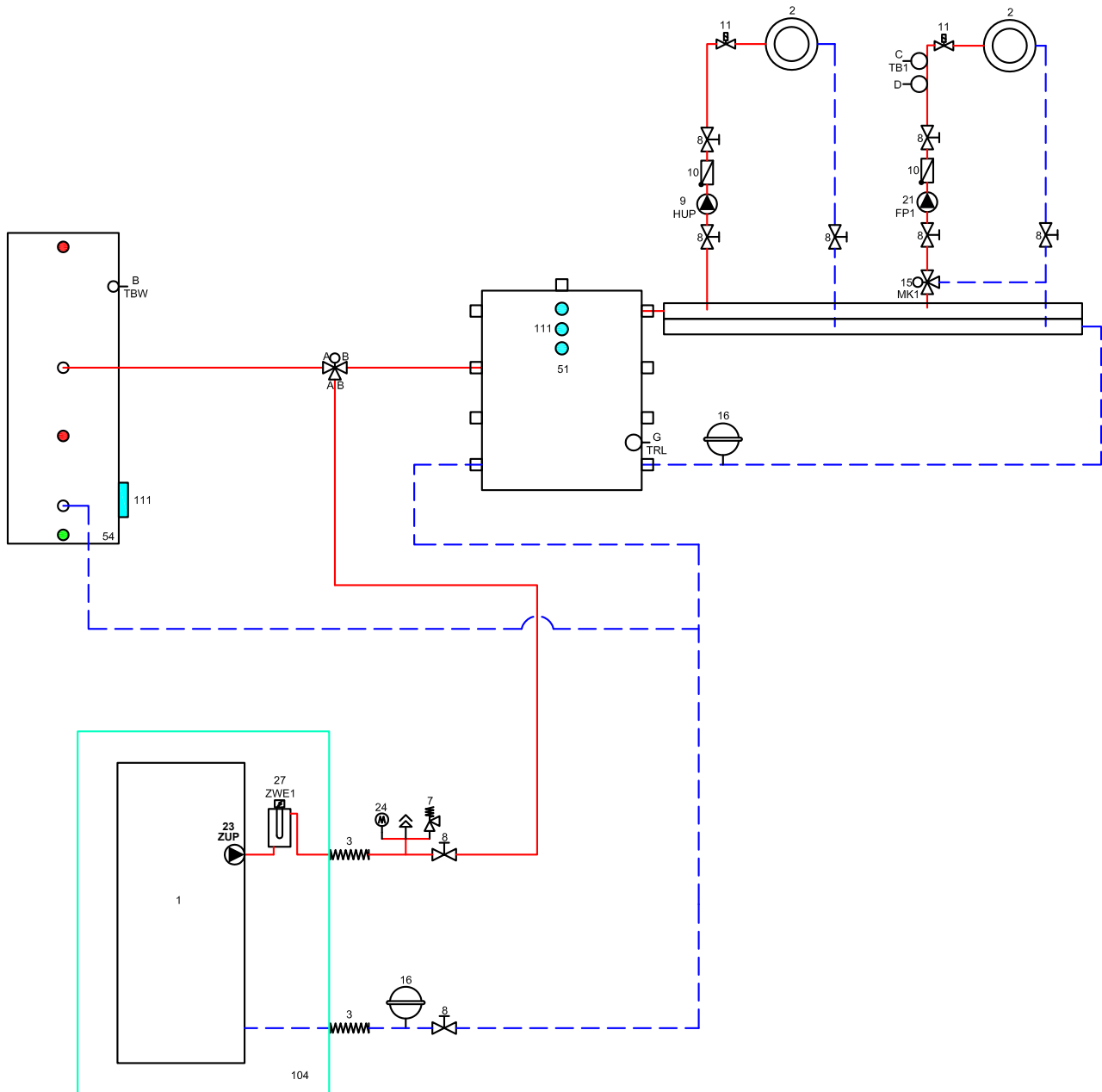
LW 161H(L)/V





LW 161H(L)/V

Separate buffer tank



## Legend hydraulic diagramm

1	Heat pump	51	Separation tank	T/A/A	External sensor
2	Underfloor heating / radiators	52	Gas- or oil-boiler	TBW/B	Domestic hot water sensor
3	Vibration isolation	53	Wood boiler	TB1/C	Feedwater sensor mixer circuits 1
4	Sylomer strip machine underlay	54	Hot water cylinder	D	Floor temperature limiter
5	Closure and drainage	55	Brine pressure switch	TR/L/G	Sensor external return
6	Expansion vessel packing list	56	Swimming pool heat exchanger	STA	Line pressure regulator valve
7	Safety valve	57	Geothermal heat exchanger	TR/L/H	Sensor return (hydraulic module, dual)
8	Closure	58	Ventilation system		
9	Heating circulation pump	59	Plate heat exchanger	79	Motor valve
10	Non return valve/ one way valve	61	Cooling cylinder	80	Mixing valve
11	Individual room regulation	65	Compact distributor	81	Split heat pump outdoor unit
12	Overflow valve	66	Fancoils	82	Split heat pump indoor unit
13	Steamtight insulation	67	Solar/ service water cylinder	83	Circulation pump
14	Service water circulation pump	68	Solar/ service water cylinder	84	Switching valve
15	Mixer circuit three-way mixer (MK1 discharge)	69	Multifunction tank	113	Connection 2nd heat generator
16	Expansion vessel supplied by customer	71	Dual hydraulic module	BT1	Outdoor temperature sensor
18	Heating rod (heating)	72	Buffer tank wall mounted	BT2	Flow temperature sensor
19	Mixer circuit four-way mixer (MK1 charge)	73	Pipe lead-in	BT3	Return temperature sensor
20	Heating rod (SW)	74	Ventlower	BT6	Domestic hot water temperature sensor
21	Mixer circuit circulation pump (FP1)	75	Scope of delivery, hydraulic tower, dual	BT12	Flow temperature liquefier
23	Feed circulating pump (reconnect the integrated circulating pump in the heat pump)			BT19	Temperature sensor immersion heater
24	Manifold	76	Fresh water station	BT24	Temperature sensor 2nd heat generator
25	Heating circulation pump	77	Scope of supply water/water booster		
26	Switching valve (heating/service water)(B = normally open)	78	Accessories water/water booster optional		
27	Heating element				
28	Brine circulation pump	100	Room thermostat for cooling (optional)	15	Mixer circuit three-way mixer (MK2-3 discharge)
29	Dirt-trap 0.6 mm mesh	101	Controls supplied by customer	17	Temperature difference regulator
30	Spill-tray for brine mix	102	Dew-point monitor (optional)	19	Mixer circuit four-way mixer (MK2 charge)
31	Wall breakthrough	103	Room thermostat for reference space in packing list	21	Mixer circuit circulation pump (FP2-3)
32	Inlet pipe	104	Supply heat pump	22	Swimming pool circulating pump
33	Brine manifold	105	Cooling circuit module box removable for installation	44	Changeover valve swimming bath preparation(B = normally open)
34	Ground collector	106	Specific glycole mixture	47	Changeover valve cooling operation(B = normally open)
35	Ground sinks	107	Scald protection / thermostatic mixer valve	60	Changeover valve solar circuit(B = normally open)
36	Groundwater spring pump	108	Solar pump assembly	62	Heat meter (optional)
37	Wall bracket	109	Overflow valve must be closed	63	Changeover valve solar circuit(B = normally open)
38	Flow switch	110	Packing list hydraulic tower	64	Cooling circulation pump
39	Suction well	111	Mounting for additional heating element	70	Solar separation module
40	Inverted well	112	Minimum distance to thermal decoupling of the mixing valve	79	Feedwater sensor mixer circuits 2-3
41	Rinse fitting heating circuit			TB2-3/C	Sensor, temperature difference control (low temperature)
42	Circulation pump			TSS/E	Sensor, temperature difference control (high temperature)
43	Brine / Water heat exchanger (cooling function)			TSK/E	Sensor external energy source
44	Three-way mixer valve (cooling function MK1)			TEE/F	
45	Cap valve				
46	Filler and drainage valve				
48	Domestic hot water charging pump				
49	Direction of groundwater flow				
50	Buffer storage				

### Comfort board / Expansion board:

15	Mixer circuit three-way mixer (MK2-3 discharge)
17	Temperature difference regulator
19	Mixer circuit four-way mixer (MK2 charge)
21	Mixer circuit circulation pump (FP2-3)
22	Swimming pool circulating pump
44	Changeover valve swimming bath preparation(B = normally open)
47	Changeover valve cooling operation(B = normally open)
60	Changeover valve solar circuit(B = normally open)
62	Heat meter (optional)
63	Changeover valve solar circuit(B = normally open)
64	Cooling circulation pump
70	Solar separation module
TB2-3/C	Feedwater sensor mixer circuits 2-3
TSS/E	Sensor, temperature difference control (low temperature)
TSK/E	Sensor, temperature difference control (high temperature)
TEE/F	Sensor external energy source

## Important notice!

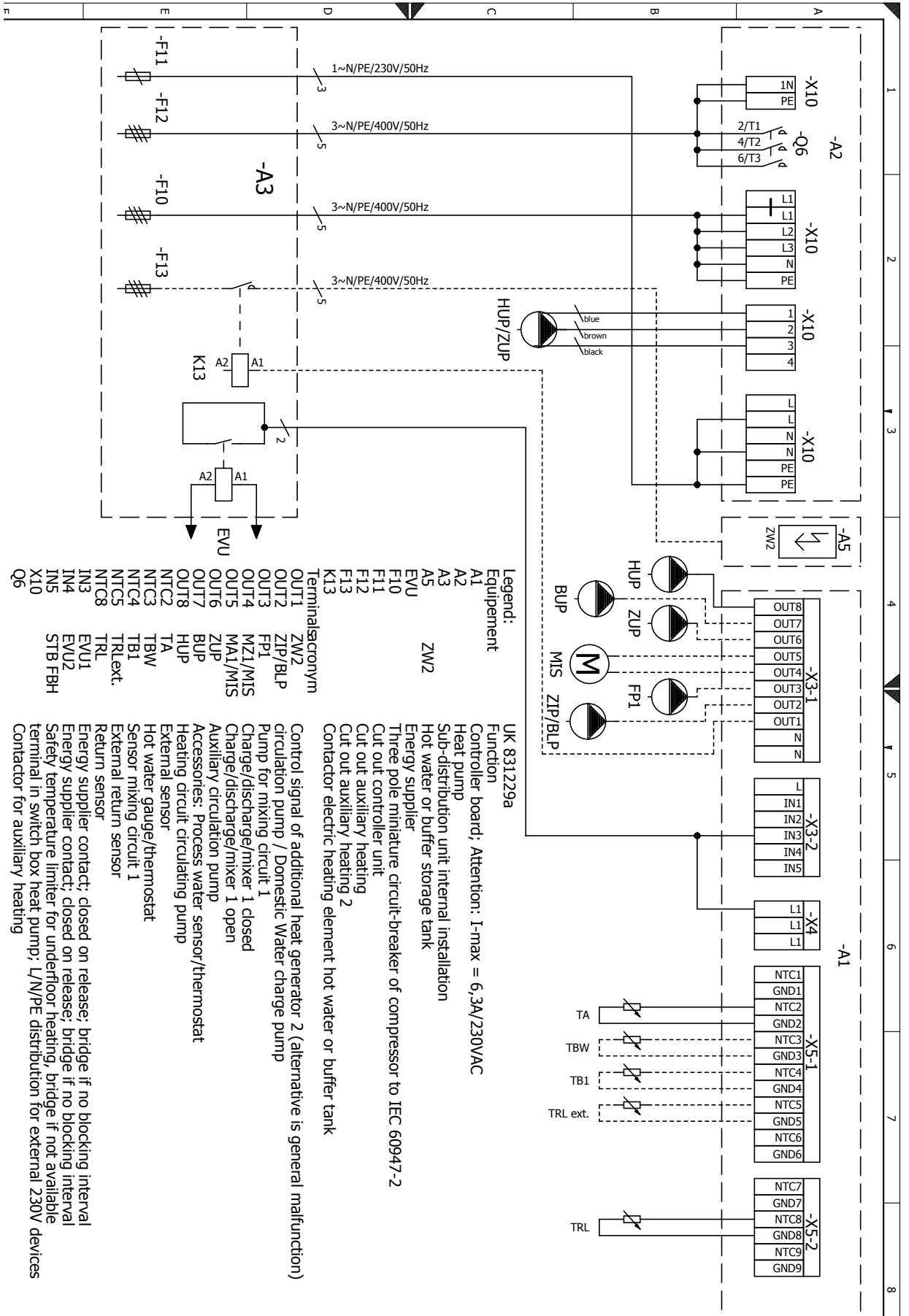
These hydraulic diagrams are schematic representations and are for assistance only. They do not relieve of the obligation to carry out appropriate planning! They do not include all necessary shut-off valves, ventilator fittings or safety devices. These must be incorporated in accordance with the standards and regulations applicable to the respective installation. All country-specific standards, laws and regulations must be observed! The tubes have to be dimensioned according to the nominal volume flow of the heat pump resp. the free pressing of the integrated circulating pump. For detailed information and advice please contact our local sales partner!





# LW 161H(L)/V

## Terminal diagram



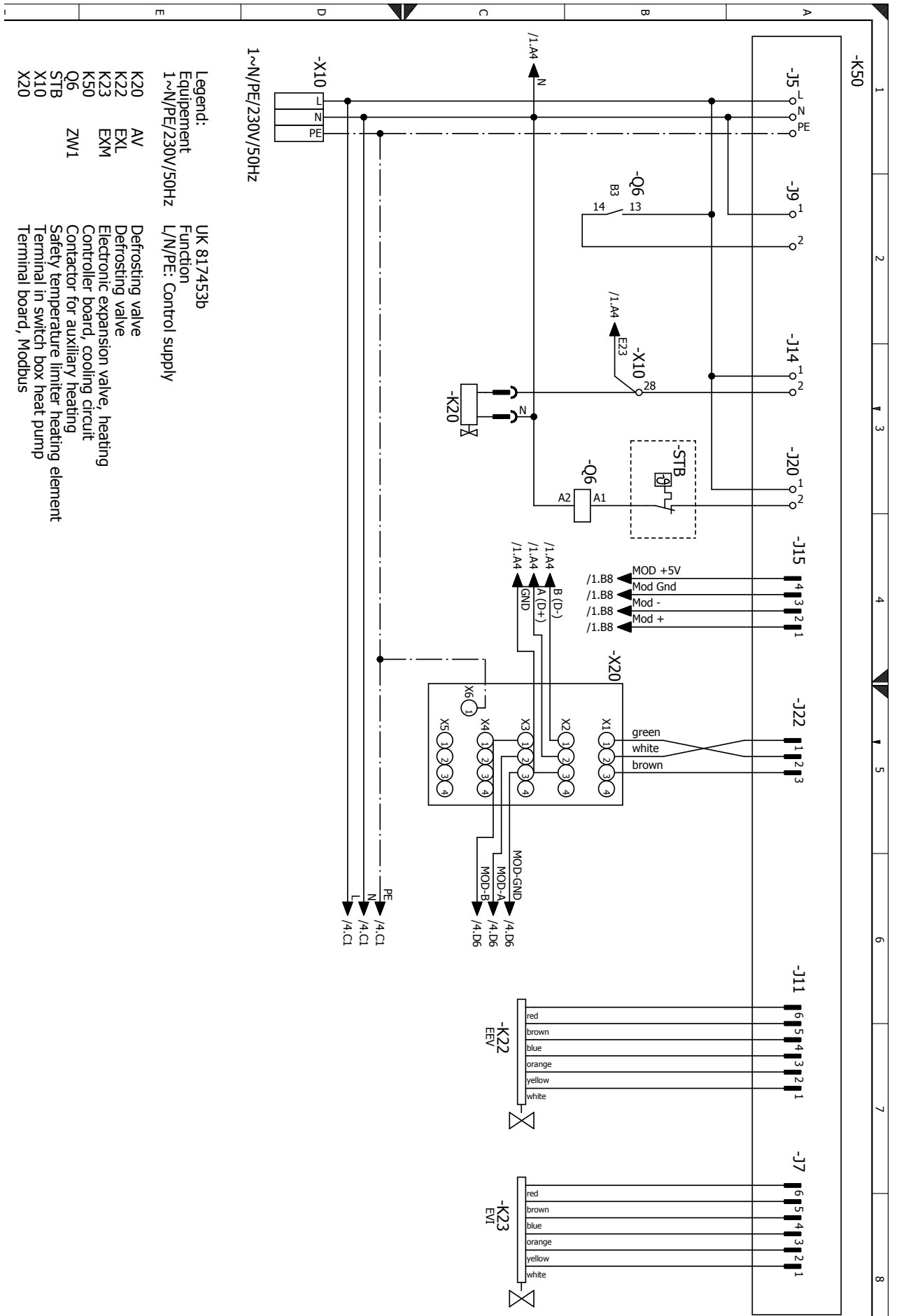


LW 161H(L)/V





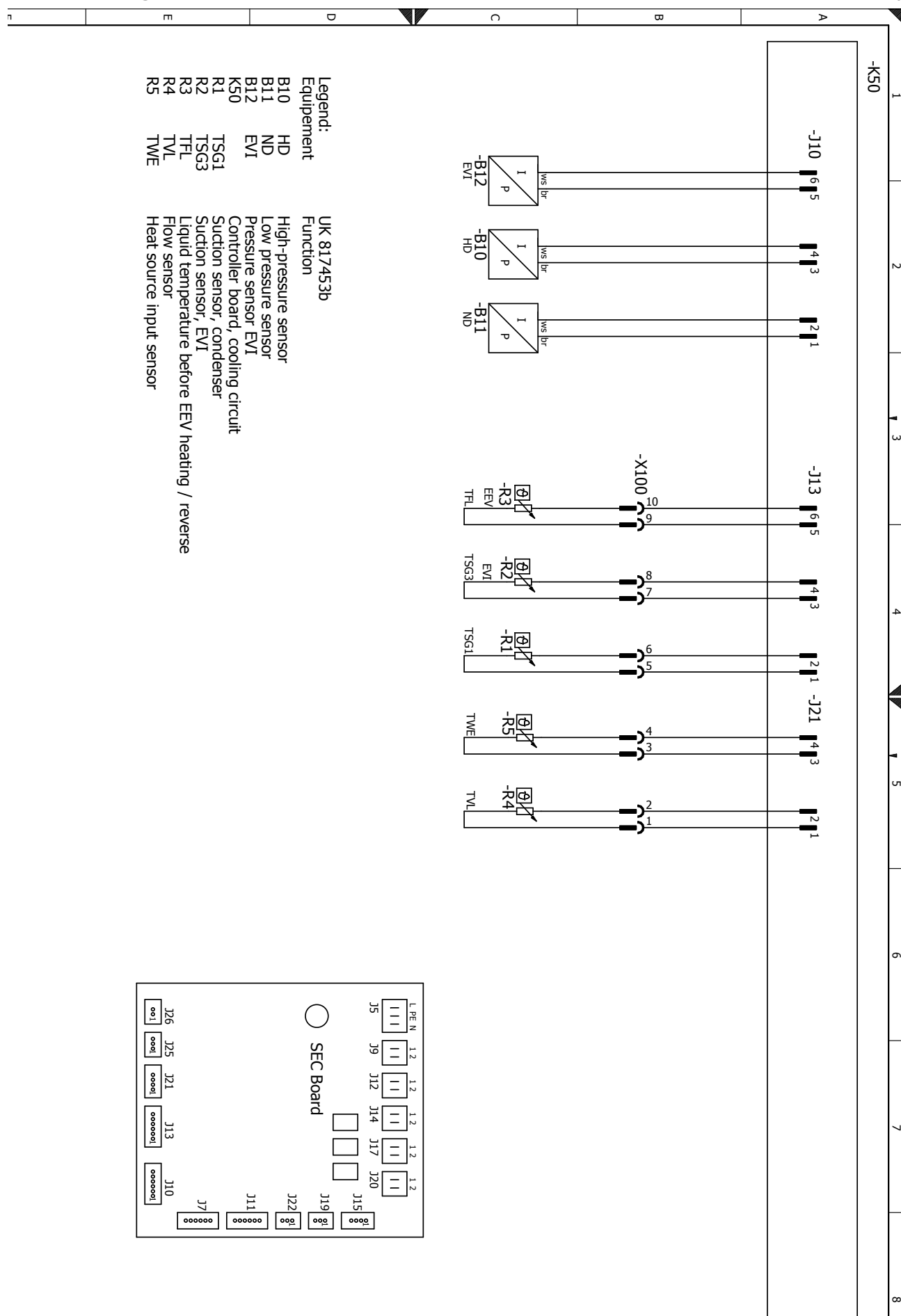
## Circuit diagram 2/4





### Circuit diagram 3/4

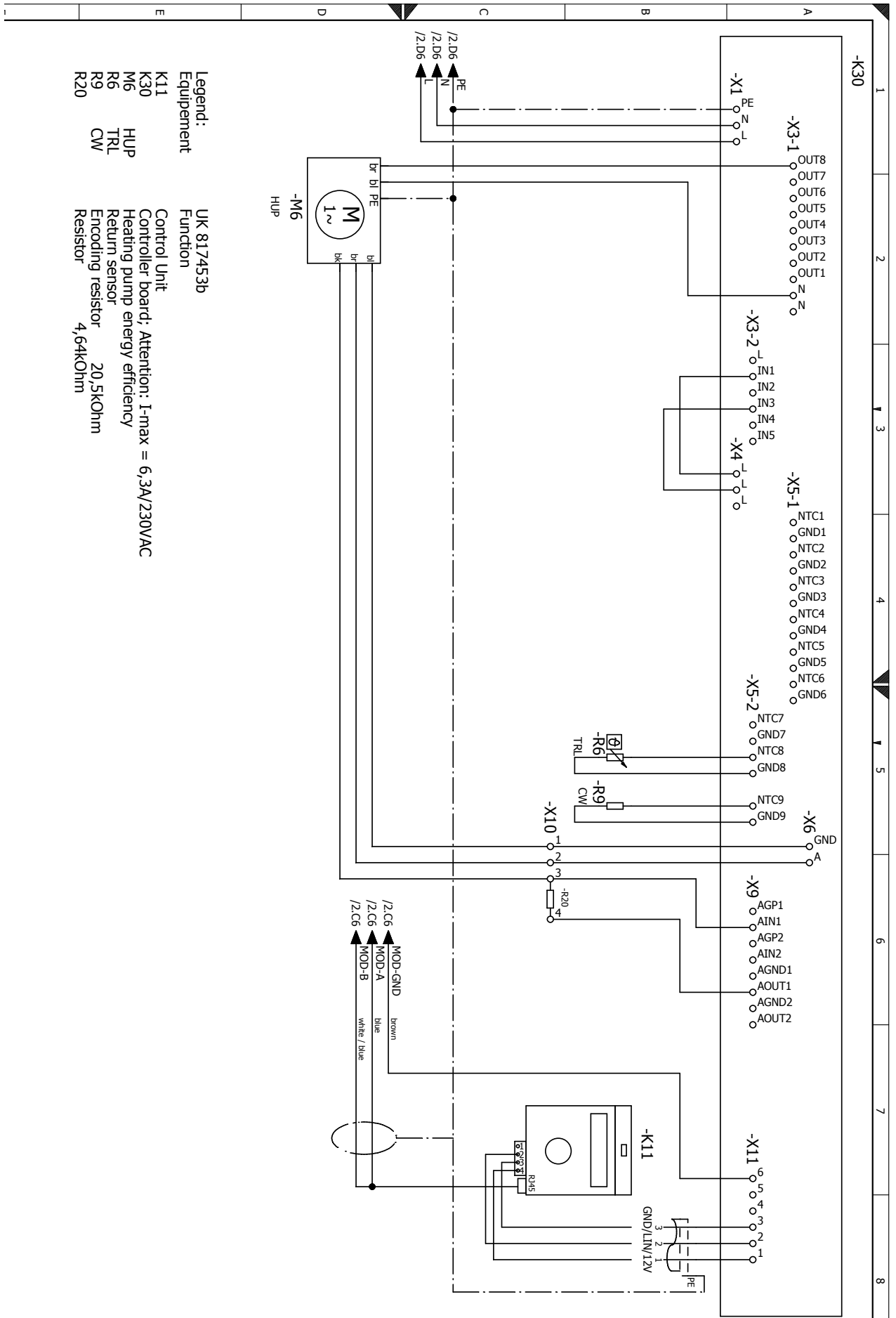
LW 161H(L)/V





# LW 161H(L)/V

## Circuit diagram 4/4











## EC Declaration of Conformity in accordance with the EC Machinery Directive 2006/42/EC, Annex II A



The undersigned

confirms that the following designated device(s) as designed and marketed by us fulfill the standardized EC directives, the EC safety standards and the product-specific EC standards.

In the event of modification of the device(s) without our approval, this declaration shall become invalid.

Designation of the device(s)

Heat Pump  alpha innotec

Item #1	Unit model	Item #2	Unit model	Number	Order code
10064701	LW 161H/V	-	-	10064701	LW 161H/V
10064801	LW 161HL/V	-	-	10064801	LW 161HL/V
10064901	LW 161H-A/V	15208901	WR 2.1-16kW	100649WR2101	LW 161 H-AV- WR2.1-16kW

### EC Directives

2006/42/EG      2009/125/EG  
2014/35/EU      2010/30/EU  
2014/30/EU  
\*2014/68/EU  
2011/65/EU

### \* Pressure equipment component

Category    II  
Module      A1  
Designated position:  
TÜV-SÜD  
Industrie Service GmbH

### Standardized EN

EN 378      EN 349  
EN 60529      EN 60335-1/-2-40  
EN ISO 12100-1/2      EN 55014-1/-2  
EN ISO 13857      EN 61000-3-2/-3-3

### Company:

ait-deutschland GmbH  
Industrie Str. 3  
93359 Kasendorf  
Germany

Place, date:

Kasendorf, 06.02.2018

Signature:

Joachim Maul  
Director R&D

UK818184



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W [www.alpha-innotec.de](http://www.alpha-innotec.de)



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