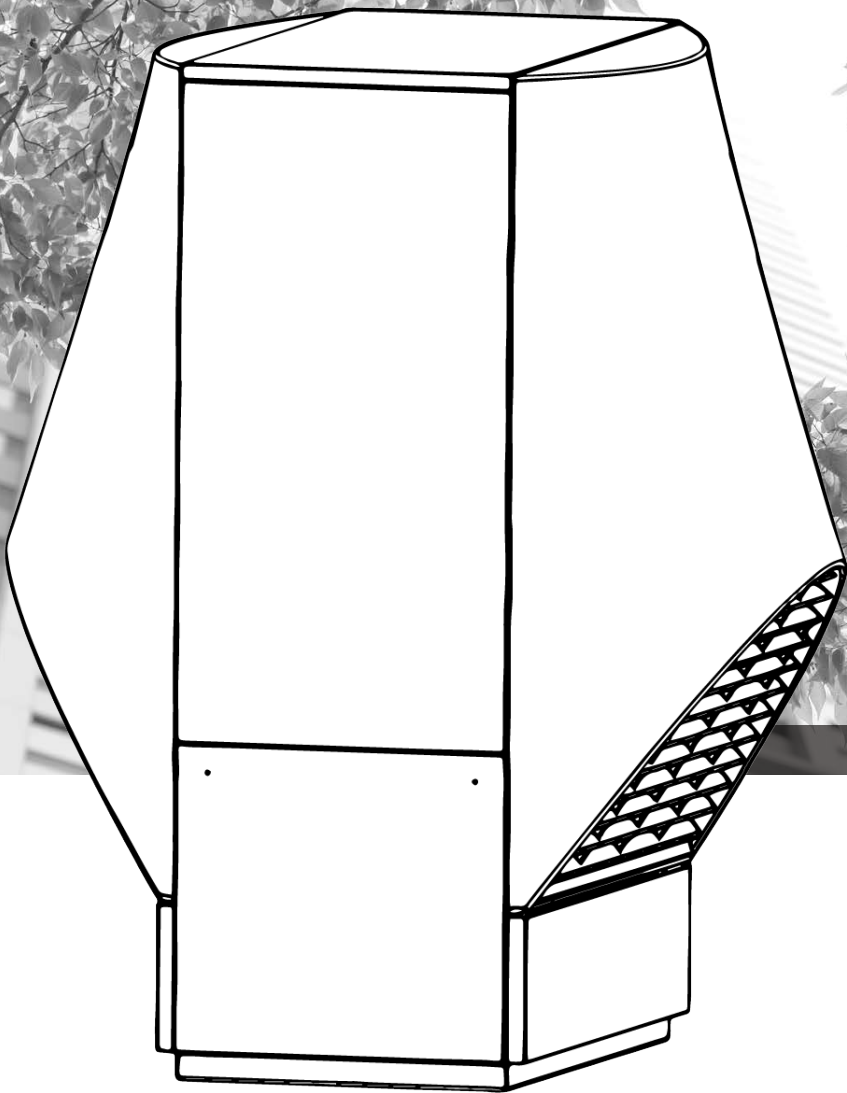
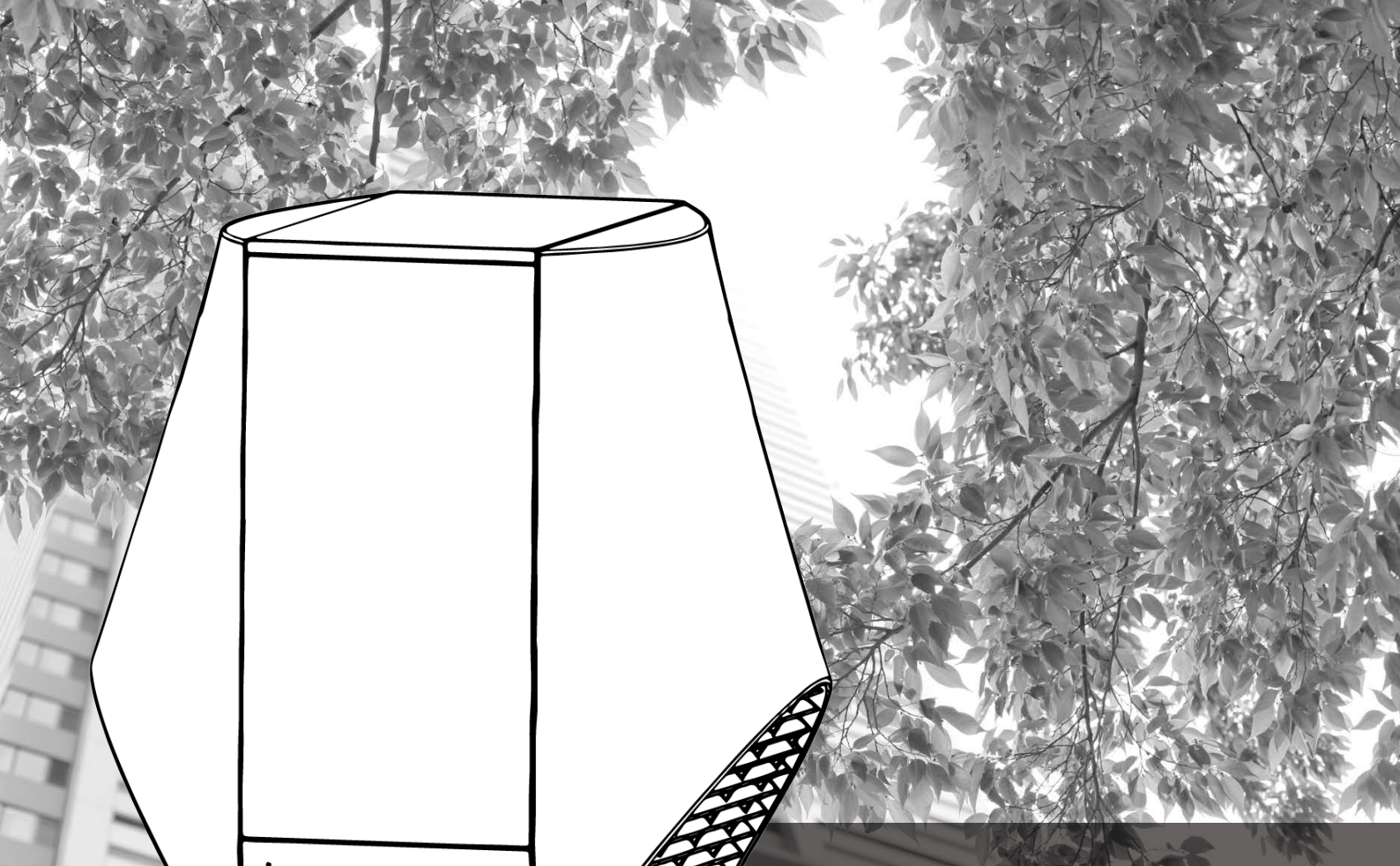


*the better way to heat*



Air/Water Heat Pumps  
Outdoor installation

# Operating Manual

## LW 300A





## Table of contents

1	About this operating manual .....	3	17	Maintenance .....	17
1.1	Validity .....	3	17.1	Basic principles .....	17
1.2	Reference documents .....	3	17.2	Maintenance as required .....	17
1.3	Symbols and markings .....	3	17.3	Clean and flush condenser .....	18
1.4	Contact .....	4	17.4	Yearly maintenance .....	18
2	Safety .....	4	18	Faults .....	18
2.1	Intended use .....	4	19	Dismantling and disposal .....	18
2.2	Personnel qualifications .....	4	19.1	Dismantling .....	18
2.3	Personal protective equipment .....	4	19.2	Disposal and recycling .....	18
2.4	Residual risks .....	4			
2.5	Disposal .....	5			
2.6	Avoid damage to property .....	5			
3	Description .....	6		Technical data / scope of supply .....	19
3.1	Delivery condition .....	6		Performance curves .....	20
3.2	Layout .....	6		Dimensional drawings .....	21
3.3	Accessories .....	7		Installation plans .....	22
3.4	Function .....	7		Installation plan .....	22
4	Operation and care .....	7		Installation plan Cascade 1/2 .....	23
4.1	Energy-conscious and environmentally-aware operation .....	7		Installation plan Cascade 2/2 .....	24
4.2	Care .....	7		Coastal installation .....	25
5	Scope of supply, storage, transport and installation .....	8		Hydraulic integration .....	26
5.1	Scope of supply .....	8		Separation buffer tank .....	26
5.2	Storage .....	8		Keys hydraulic integration .....	27
5.3	Transport .....	8		Terminal diagram .....	28
5.4	Installation .....	9		Circuit diagrams .....	29
5.5	Attaching the air flow baffles .....	10		EC Declaration of Conformity .....	35
6	Installation of hydraulic system .....	12			
7	Pressure relief .....	13			
8	Buffer tank .....	13			
9	Circulating pumps .....	13			
10	Domestic hot water preparation .....	13			
11	Domestic hot water tank .....	13			
12	Electrical installation .....	14			
13	Flushing, filling and venting .....	15			
13.1	Heating water quality .....	15			
13.2	Flush, fill and vent the heating circuit .....	16			
14	Insulation of hydraulic connections .....	16			
15	Set the overflow valve .....	16			
16	Commissioning .....	17			



# 1 About this operating manual

This operating manual is part of the unit.

- ▶ Before working on or with the unit read the operating manual carefully and follow it for all activities at all times, especially the warnings and safety instructions.
- ▶ Keep the operating manual to hand at the unit and hand over to the new owner if the unit changes hands.
- ▶ If you have any questions or anything is unclear, ask the local partner of the manufacturer or the factory's customer service.
- ▶ Note and follow all reference documents.

## 1.1 Validity

This operating manual refers solely to the unit identified by the nameplates and unit stickers (→ "Nameplates", page 7).

## 1.2 Reference documents

The following documents contain additional information to this operating manual:

- Planning & design manual, hydraulic integration
- Operating manual of the heating and heat pump controller
- Brief description of the heat pump controller
- Operating manual of the Comfort board 2.0 (accessories)
- Log book

# 1.3 Symbols and markings

## Identification of warnings

Symbol	Meaning
	Safety-relevant information. Warning of physical injuries.
<b>DANGER</b>	Indicates imminent danger resulting in severe injuries or death.
<b>WARNING</b>	Indicates a potentially dangerous situation, which can result in severe injuries or death.
<b>CAUTION</b>	Indicates a potentially dangerous situation, which can result in moderate or minor injuries.
<b>IMPORTANT</b>	Indicates a potentially dangerous situation, which can result in property damage.

## Symbols in the document

Symbol	Meaning
	Information for qualified personnel
	Information for the owner/operator
✓	Requirement for action
▶	Single step action prompt
1., 2., 3., ...	Numbered step within a multi-step action prompt. Keep to the given order.
	Additional information, e.g. a tip on making work easier, information on standards
→	Reference to further information elsewhere in the operating manual or in another document
•	Listing



## 1.4 Contact

Addresses for purchasing accessories, for service cases 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)

## 2 Safety

Only use the unit if it is in proper technical condition and only use it as intended, safely and aware of the hazards, and follow this operating manual.

### 2.1 Intended use

The unit is solely intended for the following functions:

- Heating
- Domestic hot water preparation (optional, with accessories)
- ▶ Proper use includes complying with the operating conditions (→ “Technical data / scope of supply”, page 19) and the operating manual and noting and following the reference documents.
- ▶ When using the local regulations note: laws, standards, guidelines, directives.

All other uses of the unit are not as intended.

### 2.2 Personnel qualifications

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.
- ▶ Allow qualified personnel with “electrical” training only to carry out work on the electrics and electronics.
- ▶ Allow qualified, skilled personnel only to do any other work on the system, e.g.
  - Heating installer
  - Plumbing installer
  - Refrigeration system installer (maintenance work)

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

### 2.3 Personal protective equipment

There is a risk of cutting your hands on sharp edges of the unit.

- ▶ Wear cut-resistant protective gloves during transport.

### 2.4 Residual risks

#### Electric shock

Components in the unit are live with life-threatening voltage. Before opening the unit panelling:

- ▶ Disconnect unit from power supply.
- ▶ Protect unit against 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.



## Injury due to moving parts

- ▶ Switch device on only with air flow baffles fitted.

## Injuries and environmental damage due to refrigerant

The unit contains harmful and environmentally dangerous refrigerant. If refrigerant leaks from the unit:

1. Switch off unit.
2. Notify authorised after sales service.

## 2.5 Disposal

### Media harmful to the environment

Improper disposal of environmentally harmful media (refrigerant) damages the environment:

- ▶ Collect media safely.
- ▶ Dispose of the media in an environmentally compatible way in accordance with the local regulations.

## 2.6 Avoid damage to property

The ambient air at the heat pump installation site, as well as the air drawn in as a heat source, must not contain any corrosive constituents!

Constituents such as

- Ammonia
- Sulphur
- Chlorine
- Salt
- Sewer gasses, flue gasses

can cause damage to the heat pump, which could lead to the complete failure / destruction of the heat pump!

### Decommissioning/emptying heating

If the system / heat pump is decommissioned or emptied, after it has been filled already, it is necessary to ensure that the condenser and any heat exchangers present have been completely emptied in the event of frost. Residual water in heat exchangers and condensers can result in damage to components.

- ▶ Empty system and condenser completely, open vent valves.
- ▶ Blast out with compressed air if necessary.

## Improper action

Requirements for minimum scale and corrosion damage in hot water heating systems:

- Proper planning, design and commissioning
- Closed system with regard to corrosion
- Integration of an adequately dimensioned pressure maintaining device
- Use of demineralised heating water (VE water) or water corresponding to the VDI 2035 norm
- Regular servicing and maintenance

If a system is not planned, designed, started up and operated in accordance with the given requirements, there is a risk that the following damage and faults will occur:

- Malfunctions and the failure of components, e.g. pumps, valves
  - Internal and external leaks, e.g. from heat exchangers
  - Cross-section reduction and blockages in components, e.g. heat exchanger, pipes, pumps
  - Material fatigue
  - Gas bubbles and gas cushion formation (cavitation)
  - Negative effect on heat transfer, e.g. formation of coatings, deposits, and associated noises, e.g. boiling noises, flow noises
- ▶ Note and follow the information in this operating manual for all work on and with the unit.

### Unsuitable quality of the fill and make-up water in the heating circuit

The efficiency of the system and the 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 precipitates as scale. Limescale deposits form on the heat transfer surfaces of the heating. The efficiency drops and energy costs rise. In extreme cases the heat exchangers are damaged.

- ▶ 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).





### 3 Description

#### 3.1 Delivery condition

Packing unit 1:



Air flow baffles (quantity of 2, each in a separate box)

Packing unit 2:



Basis unit with fully hermetically enclosed compressor, all safety-related components for monitoring of cooling circuit and hose for condensate discharge (connected on heat pump side).

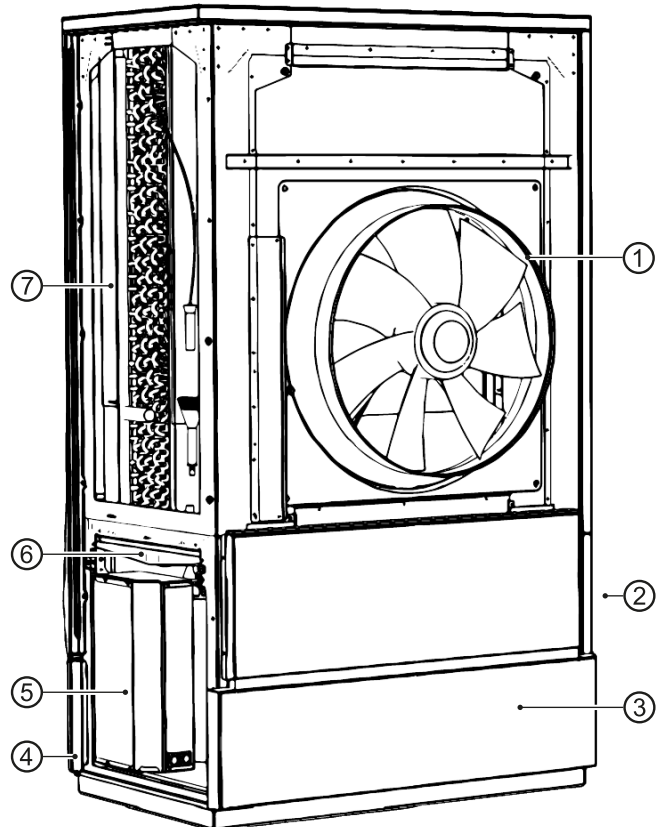
#### 3.2 Layout

##### Basic components



##### NOTE

This section essentially names the components relevant for fulfilling the tasks described in this operating manual.



- 1 Fan
- 2 Water connection side:  
Hydraulic connections and junction box for mains connection (each inside the unit)
- 3 Area behind the facing panel:  
cooling circuit components with condenser, compressor, expansion valves
- 4 Switch box side
- 5 Electrical switch box
- 6 Condensate pan
- 7 Evaporator



## Nameplates

Nameplates are attached to the following places on the unit when it is delivered:

- outside: On the lower facing panel of the water connection side
- inside: On the bottom of the unit by the electrical switch box

The nameplates contain the following information at the top:

- Unit type, product number
- Serial number

The nameplates also contains an overview of the most important technical data.

## 3.3 Accessories

### Accessories necessary for operation

The heating and heat pump controller, as wall-mounted controller, is part of the scope of delivery. Control and sensor cables are functionally necessary accessories, which you must order separately.

The heat pump is a functioning unit only with the heating and heat pump regulator and the control and sensor wires.



Heating and heat pump regulator  
(for wall mounting)

Control and sensor wires are available in various lengths, as required.

### Additional accessories

The following accessories are available for the unit through the manufacturer's local partner:

- Installation accessories (vibration decouplers)
- Air / magnetic sludge separator
- Domestic hot water tanks
- Buffer tanks
- Electrical heating elements
- Room control panel to control the main functions from the living room

- Comfort board 2.0

## 3.4 Function

Liquid refrigerant is evaporated (evaporator), the energy for this process is environmental heat and comes from the outside air. The gaseous refrigerant is compressed (compressor), this causes the pressure to rise and therefore the temperature too. The gaseous refrigerant at a high temperature is liquefied (condenser).

The high temperature is hereby discharged to the heating water and is used in the heating circuit. The liquid refrigerant at a high pressure and high temperature is depressurised (expansion valve). The pressure and temperature drop and the process begins again.

The heated heating water can be used for the domestic hot water charging or for the building heating. The temperatures required and use are controlled by the heat pump controller. Reheating, drying out screed or increasing the domestic hot water temperature can be carried out using an electric heating element (accessory), which is activated by the heat pump controller as and when necessary.

## 4 Operation and care



### NOTE

The unit is operated via the control unit of the heating and heat pump controller (→ Operating manual of the heating and heat pump controller).

### 4.1 Energy-conscious and environmentally-aware operation

The generally accepted requirements for an energy-conscious and environmentally-aware operation of a heating system also apply when using a heat pump. The most important measures include:

- No unnecessarily high flow temperature
- No unnecessarily high domestic hot water temperature (note and follow local regulations)
- Do not open windows with gap / tilt open (continuous ventilation), but instead open wide for a short time (shock ventilation).
- Make sure that the controller settings are correct

### 4.2 Care

Wipe down the outside of the unit only using a damp cloth or cloth with mild cleaning agent (washing-up liquid, neutral cleaning agent). Do not use any harsh, abrasive, acid or chlorine-based cleaning agents.



## 5 Scope of supply, storage, transport and installation

### IMPORTANT

Damage to the housing and the unit components due to heavy objects.

- ▶ Do not place any objects on the unit which are heavier than 30 kg.

### IMPORTANT

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

### 5.1 Scope of supply

- Heat pump with air flow baffles

The accompanying parts package contains:

- 20 washers and screws for fixing the air flow baffles
- Documents (manuals, ERP data and label)
- Nameplate stickers
- ▶ Check delivery immediately after receipt for externally visible damage and completeness.
- ▶ Notify supplier of any defects immediately.

### 5.2 Storage

- ▶ Do not unpack the unit until directly before installation.
- ▶ Store unit protected against
  - Moisture/damp
  - Frost
  - Dust and dirt

### 5.3 Transport

#### Notes on safe transport

The unit is heavy (→ “Technical data / scope of supply“, page 19). There is a risk of injuries or damage to property if the unit falls or overturns.

There is a risk of cutting your hands on sharp edges of the unit.

- ▶ Wear cut-resistant protective gloves.

The hydraulic connections are not designed for mechanical loads.

- ▶ Do not lift or transport the unit by the hydraulic connections.
- ▶ Transport the unit to the place of installation packaged and secured on the wooden pallet.

#### Lifting the unit with a crane

1. Guide lifting straps under the wooden pallet. On the fan side, slip behind the first longitudinal batten.



Example: Crane lifting with cross beam

2. Insert laths or beams between the lifting straps and the unit in order to prevent damage to the housing.



#### WARNING

Lifting straps should not be too close together or too near the center; otherwise the unit may tip!





## IMPORTANT

Guide lifting straps past the fan on the side. Make sure the straps do not press against the fan during transport.

3. Park the unit at the installation site so that the upper edge of the wooden pallet is flush with the upper edge of the foundation.

### Transport with a pallet truck

- ▶ Park the unit at the installation site so that the upper edge of the wooden pallet is flush with the upper edge of the foundation.

## 5.4 Installation

### Installation site requirements

- ✓ Perform installation outdoors only.
- ✓ Clearance dimensions are met  
→ "Installation plans", from page 22
- ✓ Free air intake and blowing air are possible without any air short-circuit.
- ✓ The surface is suitable for installation of the unit:
  - The foundation is level and horizontal
  - The surface and the foundation have a load-bearing capacity sufficient for the unit's weight
- ✓ Ground surface in the air outlet area of the heat pump is permeable to water

### Unpacking

1. Remove plastic films. Ensure that you do not damage the unit.
2. Dispose of the transport and packaging material in an environmentally friendly way and in accordance with local regulations.

### Set up the unit



#### 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 such that the air blower does not discharge into footpath areas.



#### NOTE

Always observe the installation plan. Note the minimum clearances.

→ "Installation plans", from page 22



#### NOTE

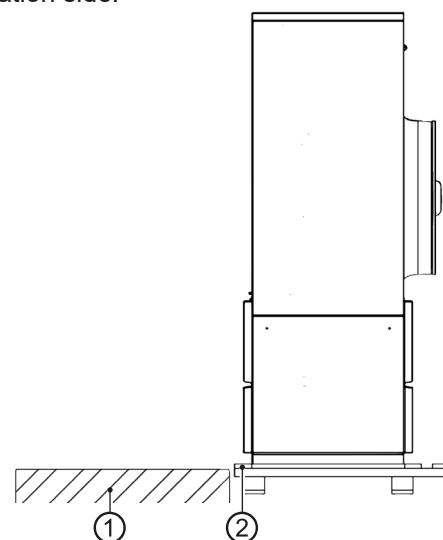
Set up the unit so that the switch box side is accessible at all times.



#### 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.

1. Remove lateral battening on the wooden pallet on the foundation side.



Example: Unit on wooden pallet, fan facing away from foundation

- 1 Foundation at the installation site
- 2 Lateral battening on the wooden pallet



2. Push the unit from the wooden pallet onto the foundation (possibly with the help of pipes placed under the appliance). Make sure that the frame of the unit is in full contact with the foundation.

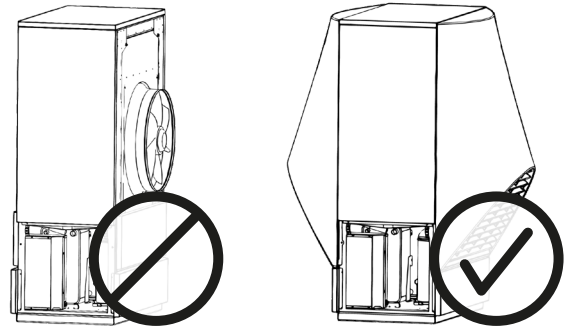
## 5.5 Attaching the air flow baffles



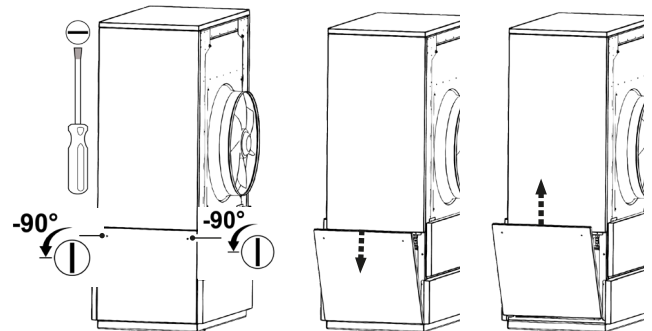
### CAUTION

Unit has rotating parts.

For safety reasons, mount the two air flow baffles on the unit before continuing with any other work.

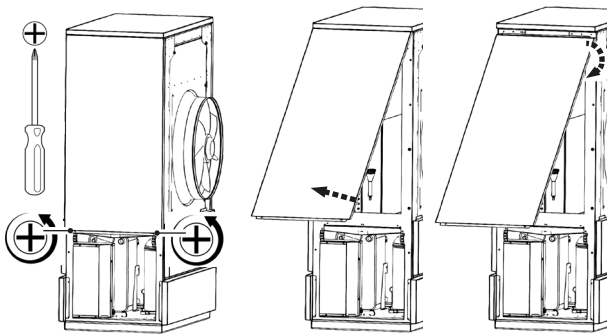


1. If you have not already done so, remove lower facing panels on the switch cabinet and water connection side of the unit.
  - 1.1. To do so, loosen the two quick-release screws on the lower facing panels.
  - 1.2. Pull each facing panel forward, detach from the unit and set securely aside.



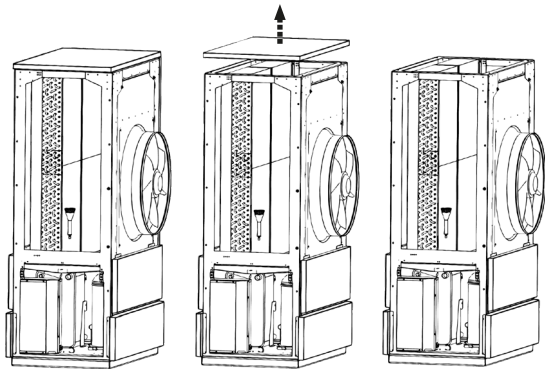
Example: Removing the lower facing panel on the switch box side

2. Remove upper facing panels from unit.
  - 2.1. To do so, loosen the two screws on the lower edges of the upper facing panels.
  - 2.2. Pull each facing panel downward and forward, detach from top cover of unit and set securely aside.



Example: Removing the upper facing panel on the switch box side

3. The top cover of the unit was fastened by the upper facing panels. After removal of the upper facing panels, the top cover is loose. Remove top cover and set securely aside.

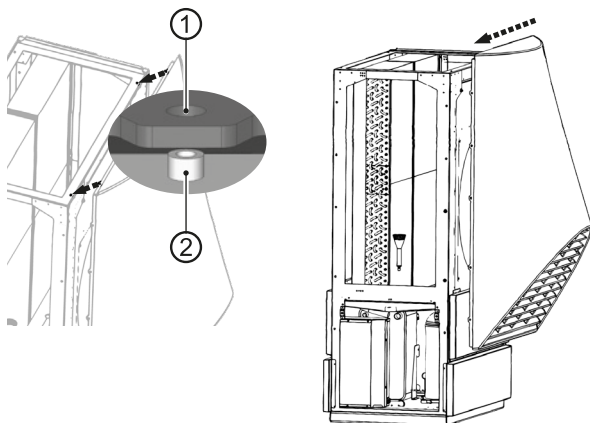


4. Install air flow baffles.

### IMPORTANT

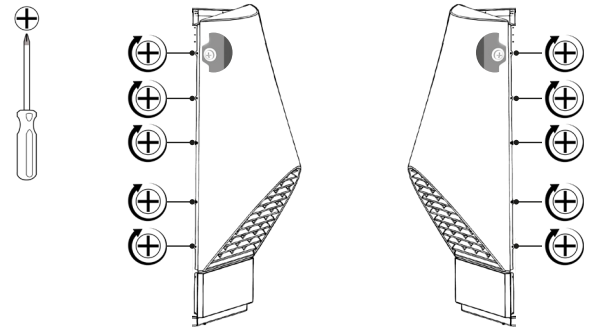
Remove the protective sheeting from the air flow baffles before installation.

- 4.1. Suspend air flow baffles on the brass bushings on the top side of the frame.



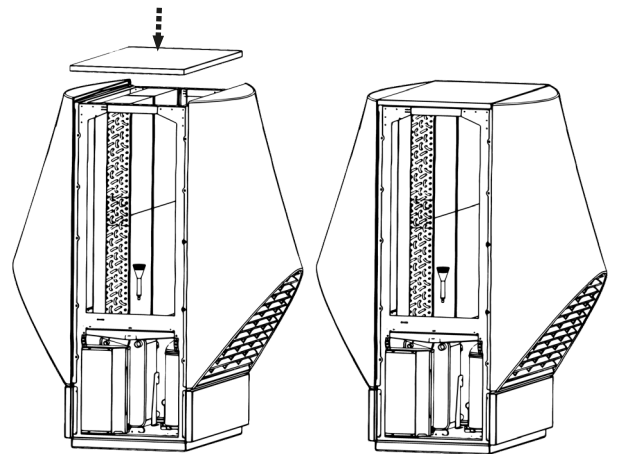
Example: Air flow baffle on the fan side  
1 Eyelet on air flow baffle  
2 Brass bushing on frame

- 4.2. Bolt air flow baffles to the frame on the switch box side and water connection side.

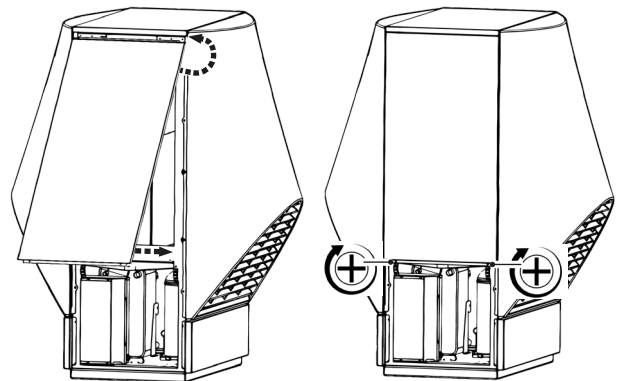


Example: Screw the air flow baffle on the fan side

5. Return top cover to frame.



6. Suspend upper facing panels in the top cover. Bolt to the frame at bottom.



The air flow baffles are now installed. You can now carry out mounting and installation work on the unit, and afterwards attach the lower facades (→ "12 Electrical installation", from page 14).



## 6 Installation of hydraulic system

### 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.

1. Install the outside pipes of the heating circuit beneath the frost line.

### IMPORTANT

Damage to the copper pipes due to unacceptable loading!

- ▶ Secure all connections against twisting.
- ✓ Connect the unit to the heating circuit according to the hydraulic diagram for the respective model.
- “8 Buffer tank”, page 13
- “9 Circulating pumps”, page 13
- ✓ Cross-sections and lengths of the pipes for the heating circuit are adequately dimensioned.
- ✓ The pipes for the heating are fixed to the wall or ceiling via a fixed point.

1. If the unit is closed, open the lower facing panel on the water connection side.
2. Install shut-off devices for the hot water outflow (forward flow) and hot water inflow (return flow) on the heat pump side.



### NOTE

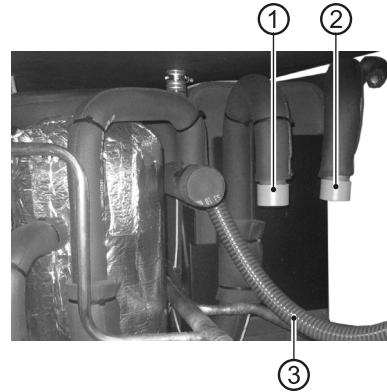
During installation of the shut-off devices, the liquefier of the heat pump can be rinsed, if necessary.

3. 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.



- 1 Hot water inflow (return flow) connection
- 2 Hot water outflow (forward flow) connection
- 3 Condensate water hose

4. Install the condensate water hose in the unit so that there is no contact with refrigerant pipes.
5. Make sure that frost-free condensate discharge is ensured.
6. Seal empty pipes on unit side.
7. Insert a vent at the highest point of the heating circuit.
8. Ensure that the working overpressures (→ “Technical data / scope of supply”, page 19) are not exceeded.

### Condensate discharge

The condensate from the air must be discharged frost-free via a condensate pipe with a minimum diameter of 50 mm. For underlying surfaces that are permeable to water, it is sufficient to insert the condensate pipe vertically at least 90 cm into the ground. If the condensate is discharged into drainage or sewage systems, install frost-free with gradient.

Discharge of the condensate into the sewage system is permitted only via a funnel siphon, which must be accessible at all times.



## 7 Pressure relief

1. Equip the heating circuit in accordance with local standards and directives with a safety valve and an expansion tank.
2. Install filling and emptying devices, shut-off devices and non-return valves in the heating circuit.

## 8 Buffer tank

The hydraulic connection of the heat pump requires a buffer tank in the heating circuit.

Required volume of the buffer tank:

→ “Technical data / scope of supply”, page 19, “Heating circuit” section

In mono-energetic air/water systems, integrate the buffer tank in the heating water outflow (forward flow) before the overflow valve.

## 9 Circulating pumps



### NOTE

Do not use regulated circulating pumps.

Circulating pumps for the heating circuit and the domestic hot water circuit must be multi-stage. They must be able to deliver at least the minimum hot water flow rate required.

→ “Technical data / scope of supply“, page 19

## 10 Domestic hot water preparation

Domestic hot water heating with the heat pump requires an additional hot water circuit, parallel to the heating circuit. Make sure that the heating water charge is not channeled through the buffer tank of the heating circuit.

→ “Hydraulic connection” instructions

## 11 Domestic hot water tank

If the heat pump will be used for heating hot water, you must integrate special hot-water tanks in the heat pump system.

- ▶ Select the hot water tank volume in such a way that the required amount of drinking water is available even during a utility shut-off period.

The heat exchanger surface of the hot water tank must be dimensioned so that the heating capacity of the heat pump is transferred with minimal spreading.

We offer a variety of hot-water tanks for you to choose from. They are optimized for use with your heat pump.

- ▶ Integrate the hot-water tank in the heat pump system corresponding to the hydraulic diagram for your system.

→ “Hydraulic connection” instructions





## 12 Electrical installation

### 12.1 Establishing the electrical connections

#### IMPORTANT

Irreparable damage to the compressor due to wrong rotary field!

- ▶ Ensure that there is a clockwise rotary field for the compressor load infeed.

#### Basic information on the electrical connection

- The specifications of the local energy supply company may apply to electrical connections
- Fit the power supply for the heat pump with an all-pole miniature circuit-breaker with at least 3 mm contact spacing (per IEC 60947-2)
- Note the level of the tripping current (→ “Technical data / scope of supply“, page 19)
- Comply with the electromagnetic compatibility regulations (EMC regulations)

#### Power connection

The power is connected at the connection box on the water connection side.

1. If the unit is closed, open lower facing panel on the water connection side.
2. Open connection box.



1 Electrical connection box: Mains connection of the heat pump

3. Connect power cable to the connection box (Electric heating element on-site).
4. Close connection box.
5. Install power cable in a conduit as far as where it enters the building and from there on to the fuse box.

6. Connect power cable to power supply.

#### IMPORTANT

If using the unit in 3~230V systems, please note that the residual-current circuit breaker (RCCB) used must be AC-DC sensitive.

#### Heat pump side connection of the control and sensor wires

The heat pump is connected to the heating and heat pump regulator by means of the control and sensor wires. They are connected at the electric switch cabinet on the switch box side of the heat pump.



#### NOTE

In order to enable unhinging of the electric switch box in the event that customer service is necessary, the control and sensor wires in the heat pump must have an excess length of about 15 cm.

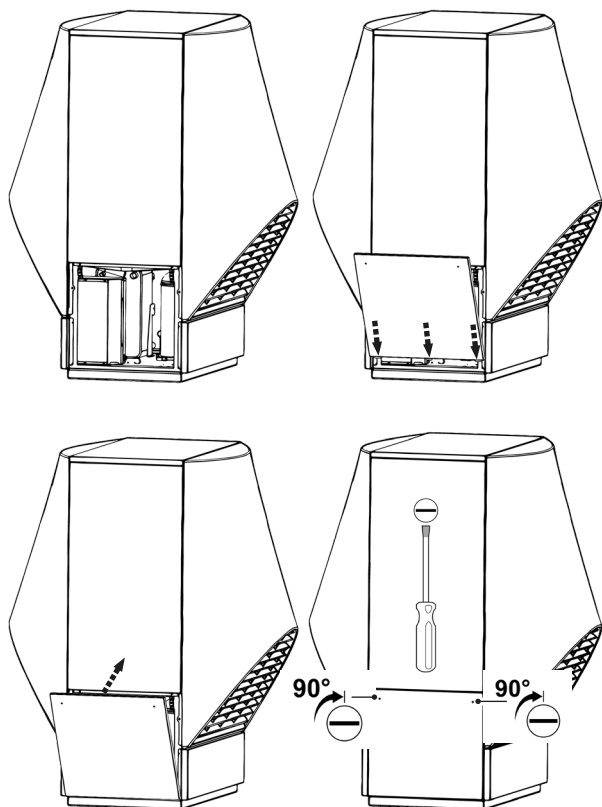
1. Screw control and sensor wires to the two connectors (at the bottom on the right-hand side of the electrical switch box).



2. Guide control and sensor wires inside the unit to the water connection side.
3. Guide control and sensor wires out of the unit.
4. Install control and sensor wires in a conduit as far as where they enter the building and from there on to the heating and heat pump regulator.
5. Connect control and sensor wires to the heating and heat pump regulator according to the terminal connection diagram and the circuit diagrams.
  - “Terminal diagram“, page 28, and “Circuit diagrams“, from page 29
  - Operating manual of the heating and heat pump regulator.
6. Seal empty pipes on unit side.



7. Screw facing panels onto the heat pump. Place lower facing panels diagonally into the frame, close at top and fasten with in quick-release screws.



Example: Attaching the lower facing panel on the switch box side

## 13 Flushing, filling and venting

### 13.1 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).

#### Antifreeze in the heating circuit

For air/water heat pumps installed outdoors, it is not necessary to fill a water/antifreeze mixture into the heating circuit.

The heat pumps have safety devices that prevent the water from freezing, even when the heating is switched off. A prerequisite is that the heat pump remains switched on and is not disconnected from the mains. Should there be a risk of frost, the circulation pumps are activated.

The following points must be observed if antifreeze is added, depending on the concentration of the mixture:

- Heat output of the heat pump is reduced
- COP value becomes worse
- In the case of on-site circulating pumps, the delivery rate is reduced; in the case of integrated circulating pumps, the specified free pressure drops
- The compatibility of the material of the components used with the antifreeze mixture must be ensured



## 13.2 Flush, fill and vent the heating circuit

- ✓ Outlet pipe of the safety valve is connected.
  - ✓ Ensure that the set pressure of the safety valve is not exceeded.
1. Vent system at the respective highest point.
  2. Additionally open the vent valve at the condenser of the heat pump. Vent the condenser.



- 1 Vent valve, above the hydraulic connections in the unit

## 14 Insulation of hydraulic connections

Insulate hydraulic lines in accordance with the local regulations.

1. Open shut-off devices.
2. Perform a pressure test and check for leaks.
3. Insulate the vibration decouplers and the outside pipes of the heating circuit so that they are sealed against vapor diffusion.
4. Insulate all connections, fittings and pipes.
5. Insulate the condensate drain in a frost-proof manner.
6. The unit must be completely closed on all sides to ensure rodent protection.

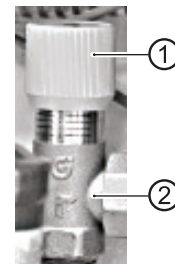
## 15 Set the overflow valve



### NOTE

- The activities in this section are only necessary for the integration of storage tanks in series
  - Complete the work steps quickly, otherwise the maximum return temperature may be exceeded and the heat pump switches to high-pressure fault
  - Turn the adjusting knob at the overflow valve to the right to increase the temperature difference (the temperature drop), turn it to the left to reduce it
- ✓ System is running in heating mode (ideally in cold condition).
1. In case of low heating curve: Set the system to "Forced heating".
- Operating manual of the heating and heat pump controller.
2. Shut off valves to the heating circuit.
  3. Ensure that the total flow is routed via the overflow valve.
  4. Read out the flow and return temperature at the heating and heat pump controller.
- Operating manual of the heating and heat pump controller.
5. Turn the adjusting knob (①) of the overflow valve (②) until the temperature drop between the flow and return temperature is set as follows:

Outdoor temperature	Recommended settings
-10 °C	4 K
0 °C	5 K
10 °C	8 K
20 °C	9 K
30 °C	10 K



6. Open valves to heating circuit.
7. Turn off "Forced heating" in the heating and heat pump controller.



## 16 Commissioning



### CAUTION

**Prior to commissioning the unit, the air flow baffles must be mounted and the facing panels closed.**

- ✓ Relevant planning & design data of the system is documented in full.
  - ✓ The relevant energy supply company has been notified of operation of the heat pump system.
  - ✓ The system is air-free.
  - ✓ Installation check using the general checklist has been completed successfully.
1. Ensure that the following points are fulfilled completely:
    - Right-hand (clockwise) rotating load supply field is available at the compressor
    - The system is installed and mounted according to this operating manual
    - The electrical installation has been carried out properly according to this operating manual and the local regulations
    - The power supply for the heat pump is equipped with an all-pole circuit-breaker with at least 3 mm contact spacing (IEC 60947-2)
    - The tripping current is complied with
    - The heating circuit has been flushed and vented
    - All shut-off devices of the heating circuit are open
    - The pipe systems and components of the system are tight
  2. Carefully fill in and sign the notice of completion for the heat pump systems.
  3. In Germany: Send notice of completion for heat pump systems and general checklist to the manufacturer's factory customer service department.  
In other countries: Send notice of completion for heat pump systems and general checklist to the manufacturer's local partner.
  4. Arrange for the heat pump system to be commissioned by the manufacturer's authorised after sales service for a fee.

## 17 Maintenance



### NOTE

We recommend that you conclude a maintenance agreement with an accredited heating company.

### 17.1 Basic principles

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

Local regulations– e.g. EU Regulation (EC) 517/2014 – among other things, require leak checks beforehand and/or for a logbook to be kept for certain heat pumps.

- ▶ Ensure compliance with local regulations with regard to the specific heat pump system.

### 17.2 Maintenance as required

- Checking and cleaning the components of the heating circuit, e.g. valves, expansion vessels, recirculating pumps, filters, dirt traps
- Test the function of the safety valve for the heating circuit
- Always regularly control for unimpeded air in-feed 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
- 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 evaporator regularly for dirt / blockages and clean as necessary.



## Check evaporator and condensate pan and clean if required

- ✓ Unit is safely disconnected from the power supply and secured against being switched back on again.
- 1. Remove the lower and upper facing panels on one side. Check the condensation pan area for soiling.
- 2. Clean the condensation pan area if necessary. For better access to the condensation pan area, remove the lower and upper facing panels on the opposite side if necessary.
- 3. Inspect the evaporator. If cleaning is required, remove the air flow baffle on the evaporator side and clean the evaporator.
- 4. After cleaning, reattach the air flow baffle and facing panels to the unit. Finally, restore the power supply.

### 17.3 Clean and flush condenser

- ▶ Clean and flush the condenser in accordance with the manufacturer's instructions.
- ▶ After flushing the condenser with chemical cleaning product: neutralise any residues and flush the condenser thoroughly with water.

### 17.4 Yearly maintenance

- ▶ Record the quality of the heating water analytically. In case of deviations from the specifications, take suitable measures without delay.

## 18 Faults

- ▶ Read out the cause of the fault via the diagnostics program of the heating and heat pump controller.
  - ▶ Contact the local partner of the manufacturer or the factory's customer service. Have the fault message and unit number to hand.
- "Nameplates", page 7

## 19 Dismantling and disposal

### 19.1 Dismantling

- ✓ Unit is safely disconnected from the power supply and secured against being switched back on again.
- ▶ Collect all media safely.
- ▶ Separate components by their materials.

### 19.2 Disposal and recycling

- ▶ Dispose of environmentally hazardous media in accordance with local regulations (e.g. refrigerant, compressor oil).
- ▶ Recycle or ensure proper disposal of unit components and packaging materials in accordance with local regulations.

### Removal of the buffer battery

#### **IMPORTANT**

Before scrapping the heating and heat pump regulator, remove the buffer battery on the processor board. The battery can be pushed out using a screwdriver. Dispose of battery and electronic components in keeping with environmental considerations.





# LW 300A

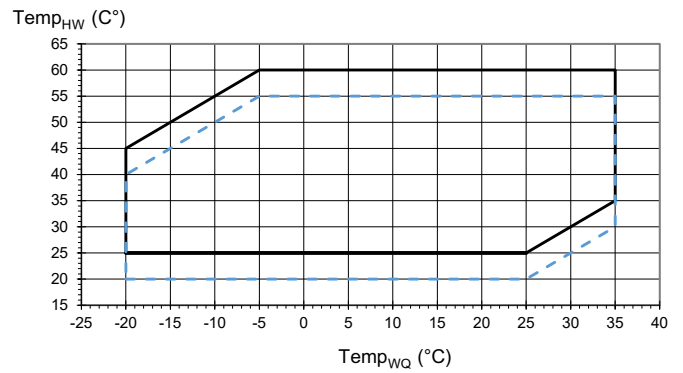
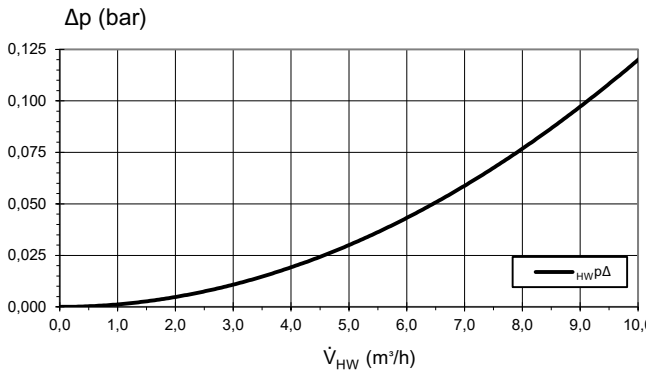
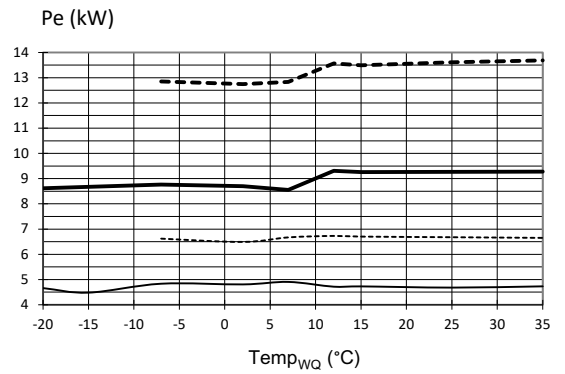
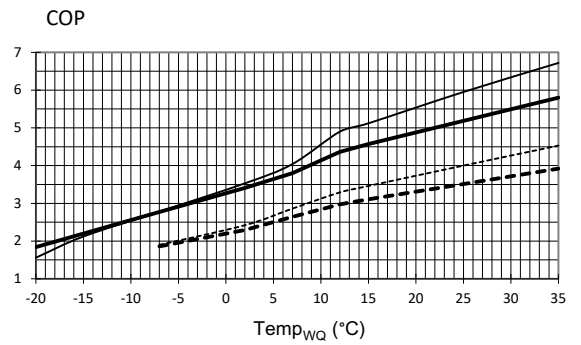
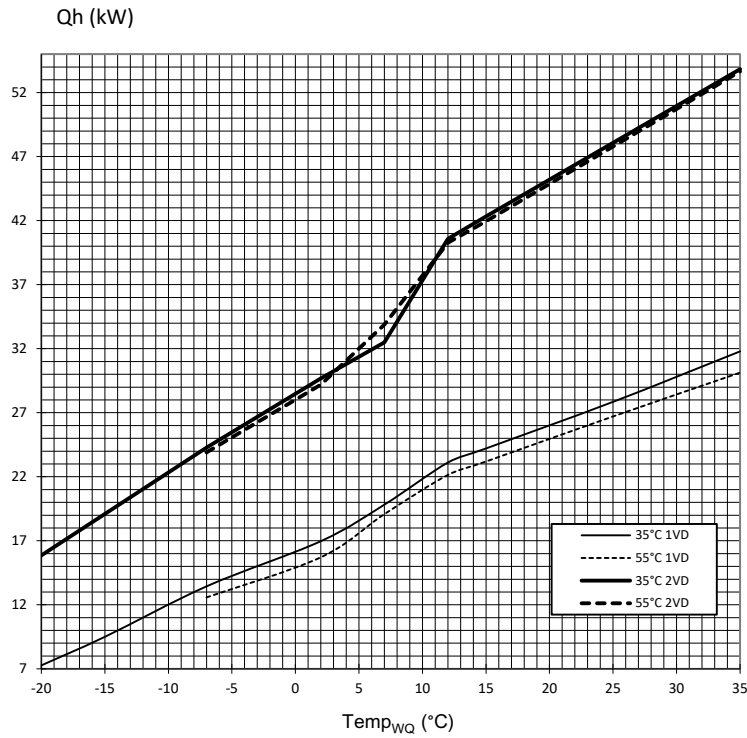
# Technical data / scope of supply

Performance data		Values in brackets: (1 Compressor)		LW 300A	
Heating capacity   COP	for A7/W35 acc. to DIN EN 14511-x: 2018	kW   COP	32.50(19.78)   3.80(4.04)		
	for A7/W45 acc. to DIN EN 14511-x: 2018	kW   COP	33.64(18.99)   3.20(3.23)		
	for A2/W35 acc. to DIN EN 14511-x: 2018	kW   COP	29.67(16.97)   3.41(3.52)		
	for A10/W35 acc. to DIN EN 14511-x: 2018	kW   COP	39.43(22.42)   4.22(4.76)		
	for A-7/W35 acc. to DIN EN 14511-x: 2018	kW   COP	24.28(13.45)   2.77(2.78)		
	for A-15/W65 acc. to DIN EN 14511-x: 2018	kW   COP	-   -		
	for A-7/W55 acc. to DIN EN 14511-x: 2018	kW   COP	24.28(13.45)   1.86(1.90)		
Cooling capacity   EER	for A35/W18	kW   EER	-   -		
	for A35/W7	kW   EER	-   -		
<b>Operating limits</b>					
Heating circuit return min.   Heating circuit flow max.		Heating	within heat source min./max.	°C	20   45
Heating circuit return min.   Heating circuit flow max.		Cooling	within heat source min./max.	°C	-   -
Heat source heating		min.   max.		°C	-20   35
Heat source cooling		min.   max.		°C	-   -
Additional operating points		...			A-5/W60
<b>Sound</b>					
Sound pressure level at 1 m distance from edge of unit inside		min.   Night   max.		dB(A)	-   -   -
Sound pressure level at 1 m distance from edge of unit outside		min.   Night   max.		dB(A)	52   -   58
Sound power level inside		min.   Night   max.		dB(A)	-   -   -
Sound power level outside 1)		min.   Night   max.		dB(A)	66   -   69
Sound power level acc. to DIN EN 12102-1:2017		inside   outside		dB(A)	-   66
Tonality   Low-frequency				dB(A)   • yes - no	-   -
<b>Heat source</b>					
Air flow rate at maximum external pressing   Maximum external pressure				m³/h   Pa	7800   25
<b>Heating circuit</b>					
Flow rate (pipe dimensioning)   Min. volume buffer tank in series   Min. volume separation buffer tank		l/h			6000   -   -
Free pressing   Pressure loss   Flow rate		bar   bar   l/h			0.04 (-)   6000
Max. allowable operating pressure		bar			3
Circulation pump control range		min.   max.		l/h	-   -
<b>Hot gas use</b>					
Flow rate (pipe dimensioning)		l/h			-
Free pressing   Pressure loss   Flow rate		bar   bar   l/h			-   -   -
<b>General unit data</b>					
Total weight		kg			480
Weight of individual components		kg   kg   kg			-   -   -
Refrigerant type   Refrigerant capacity		...   kg			R448A   10.0
<b>Electrics</b>					
Voltage code   all-pole fuse protection for heat pump **)		...   A			-   -
Voltage code   all-pole fuse protection for heat pump *) + electric heating element **)		...   A			3~N/PE/400V/50Hz   C32
Voltage code   Control voltage fuse protection **)		...   A			1~N/PE/230V/50Hz   B10
Voltage code   Electric heating element fuse protection **)		...   A			-   -
HP*): effect. power consumption A7/W35 DIN EN 14511-x: 2018   Electric consumption   cosφ		kW   A   ...			8.65 (4.87)   19.5(10.2)   0.64(0.75)
HP*): max. machine current   max. power consumption within the operating limits		A   kW			28.5   15.6
Starting current: direct   with soft starter		A   A			< 101   38
Degree of protection		IP			24
Residual current circuit breaker		if required		type	A
Electric heating element output		3   2   1 phase		kW   kW   kW	-   -   -
Circulation pump power consumption, heating circuit		min.   max.		W	-   -
<b>Other unit information</b>					
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     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			813600a
The performance data and the operating limits apply to clean heat exchangers   Index: h					



# Performance curves

LW 300A



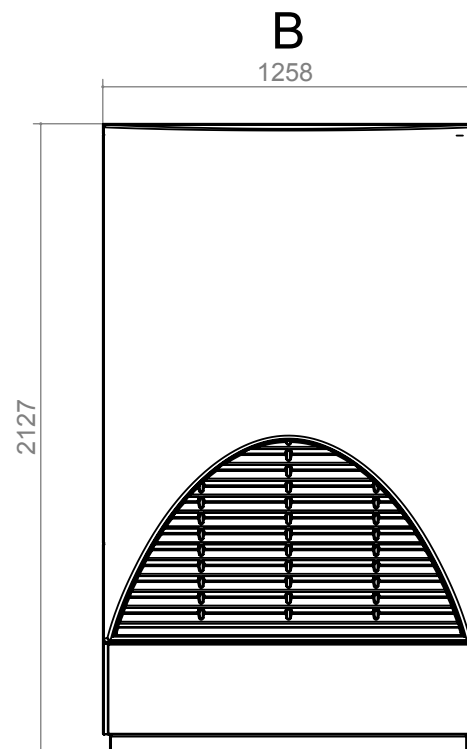
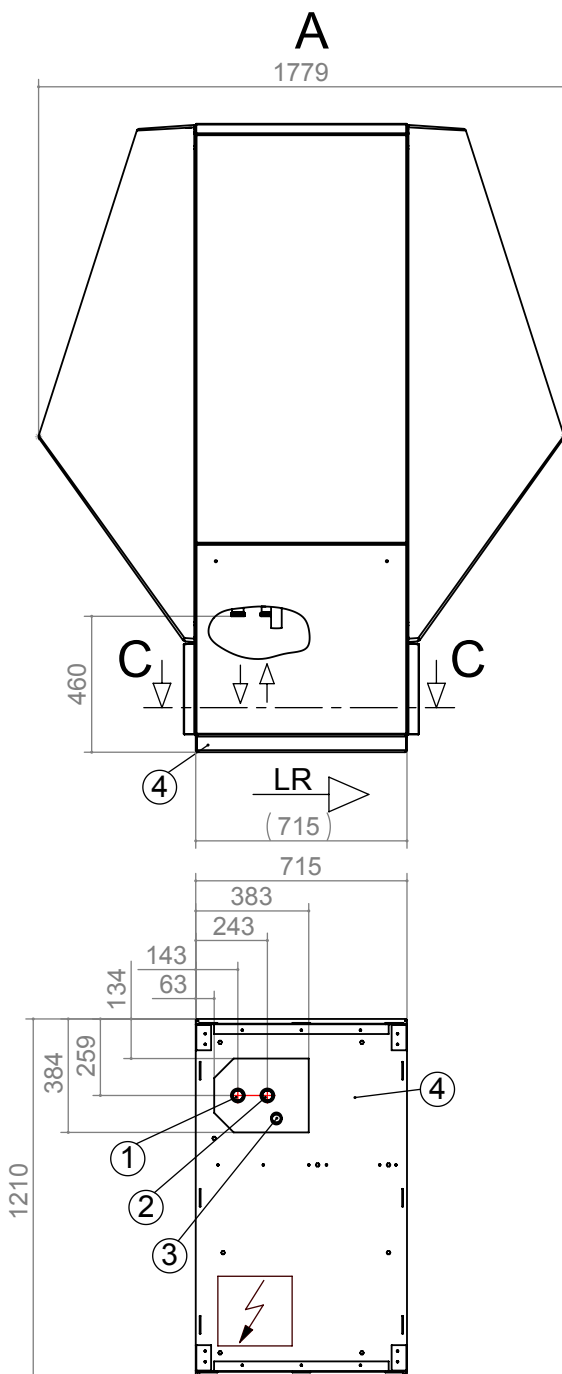
823310a

Legende:	UK823310a
$\dot{V}_{HW}$	Volume flow heating water
$Temp_{HW}$	Temperature heating water
$Temp_{WQ}$	Temperature heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
$\Delta p_{HW}$	Pressure loss heat pump
VD	Compressor(s)
—————	Flow
- - - - -	Return



LW 300A

Dimensional drawings



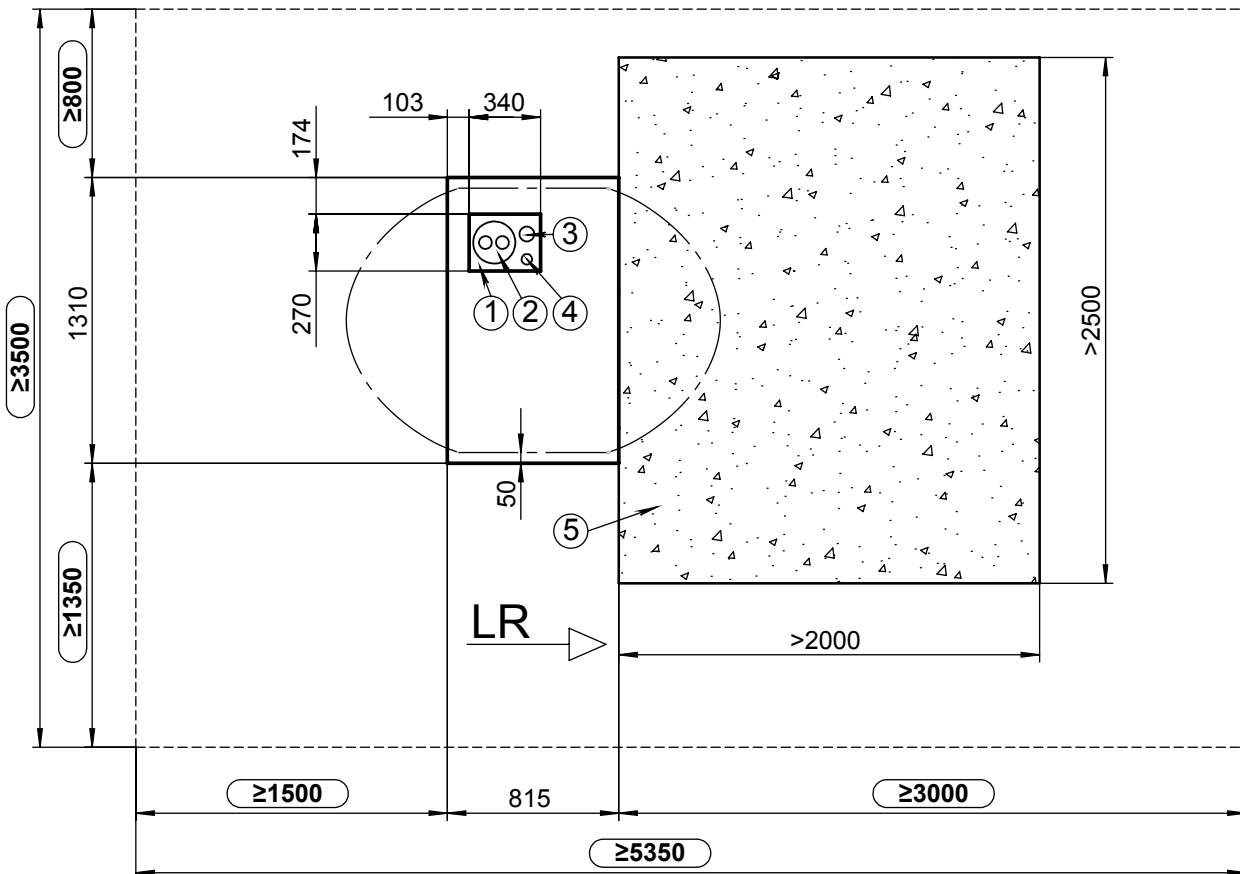
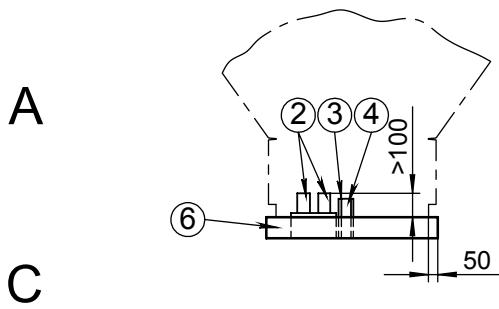
Keys: UK819326b  
All dimensions in mm.

A	Front view
B	Side view
C	Plan view (Section, without façade and shrouds)
1	Heating water outlet (flow) R 1 ½"
2	Heating water inlet (return) R 1 ½"
3	Condensate hose, outside-Ø 36x3
4	Baseplate
LR	Air direction



# Installation plan

LW 300A



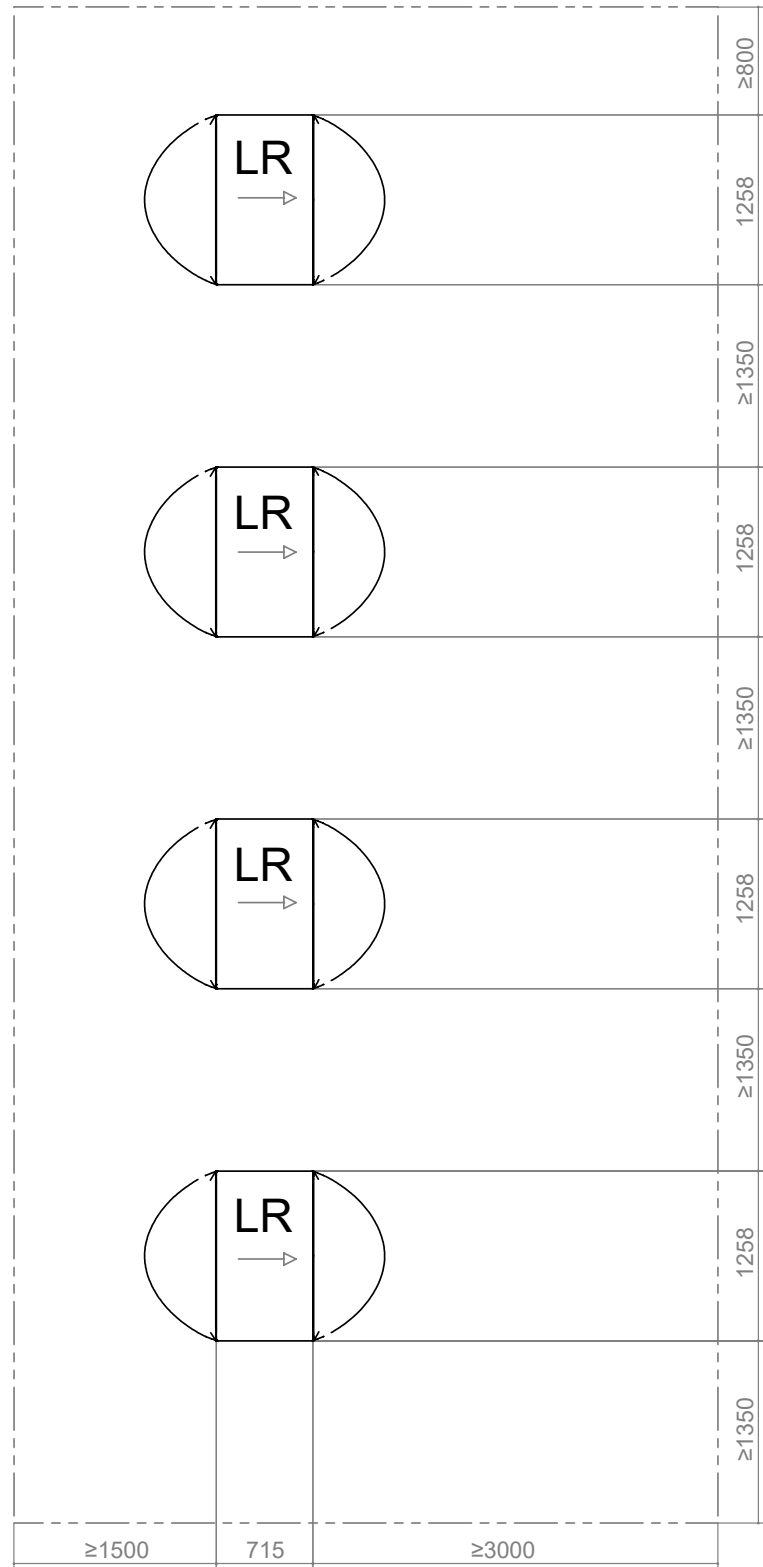
Keys: UK819327

All dimensions in mm.

A	Front view
C	Top view
≥ ...	Minimum clearances
1	Recess in base
2	Local heat pipe for heating water forward/return flow
3	Empty pipe for electric cables, minimum diameter 70mm
4	Condensate discharge, minimum diameter 50mm
5	Water-permeable surface (gravel, ...) in the air outlet area
6	Base
LR	Air direction



C

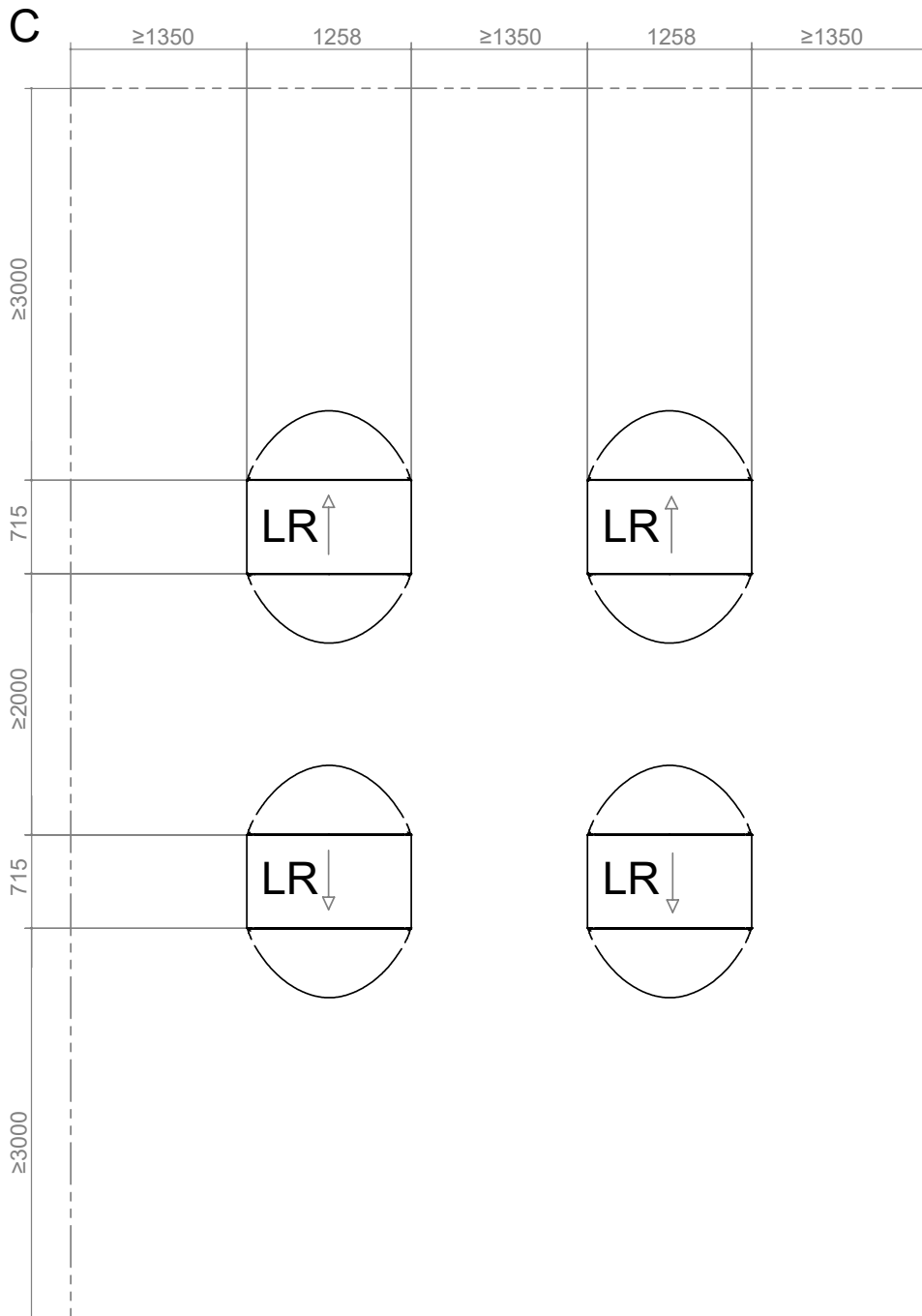


Keys: UK819512  
All dimensions in mm.

C	Top view
LR	Air direction

A maximum of two sides may be closed along the dash two-point line.





Keys: UK819512

All dimensions in mm.

C	Top view
LR	Air direction

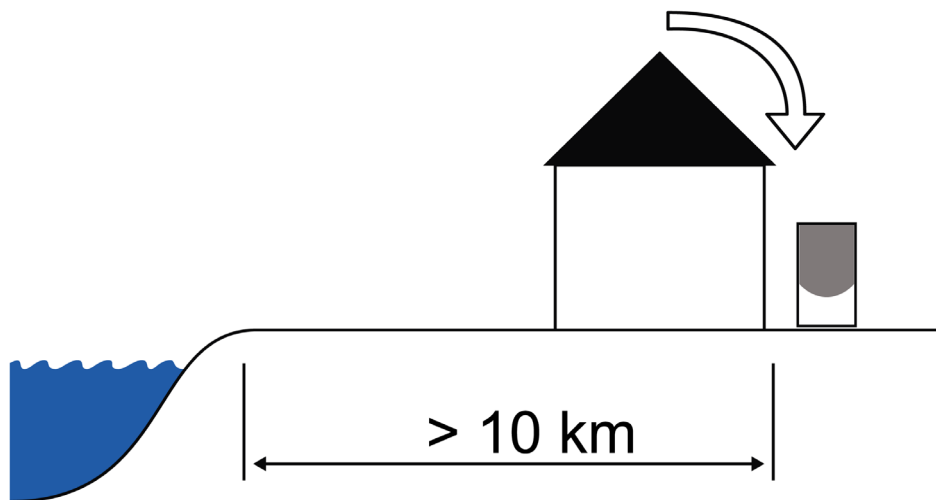
A maximum of two sides may be closed along the dash two-point line.



## IMPORTANT

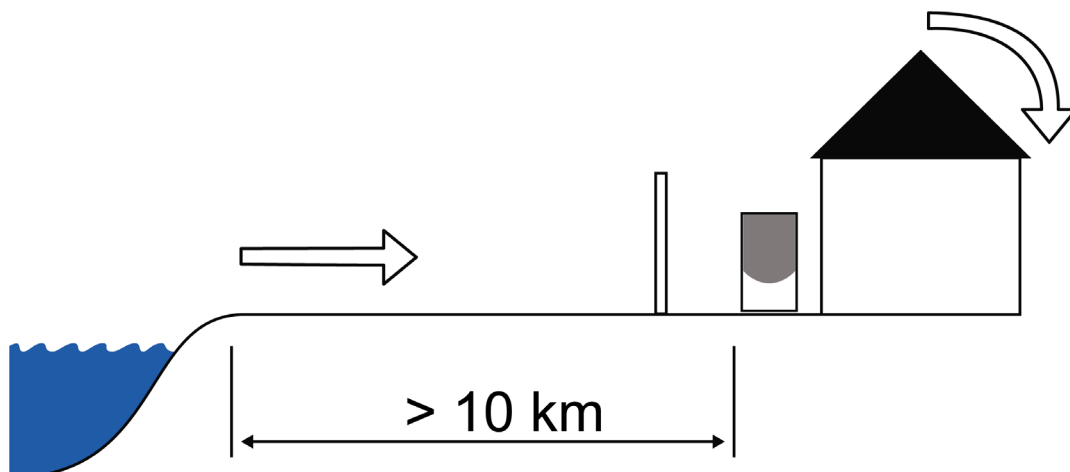
The minimum distances necessary for correct and safe operation as well as any service work must be observed.

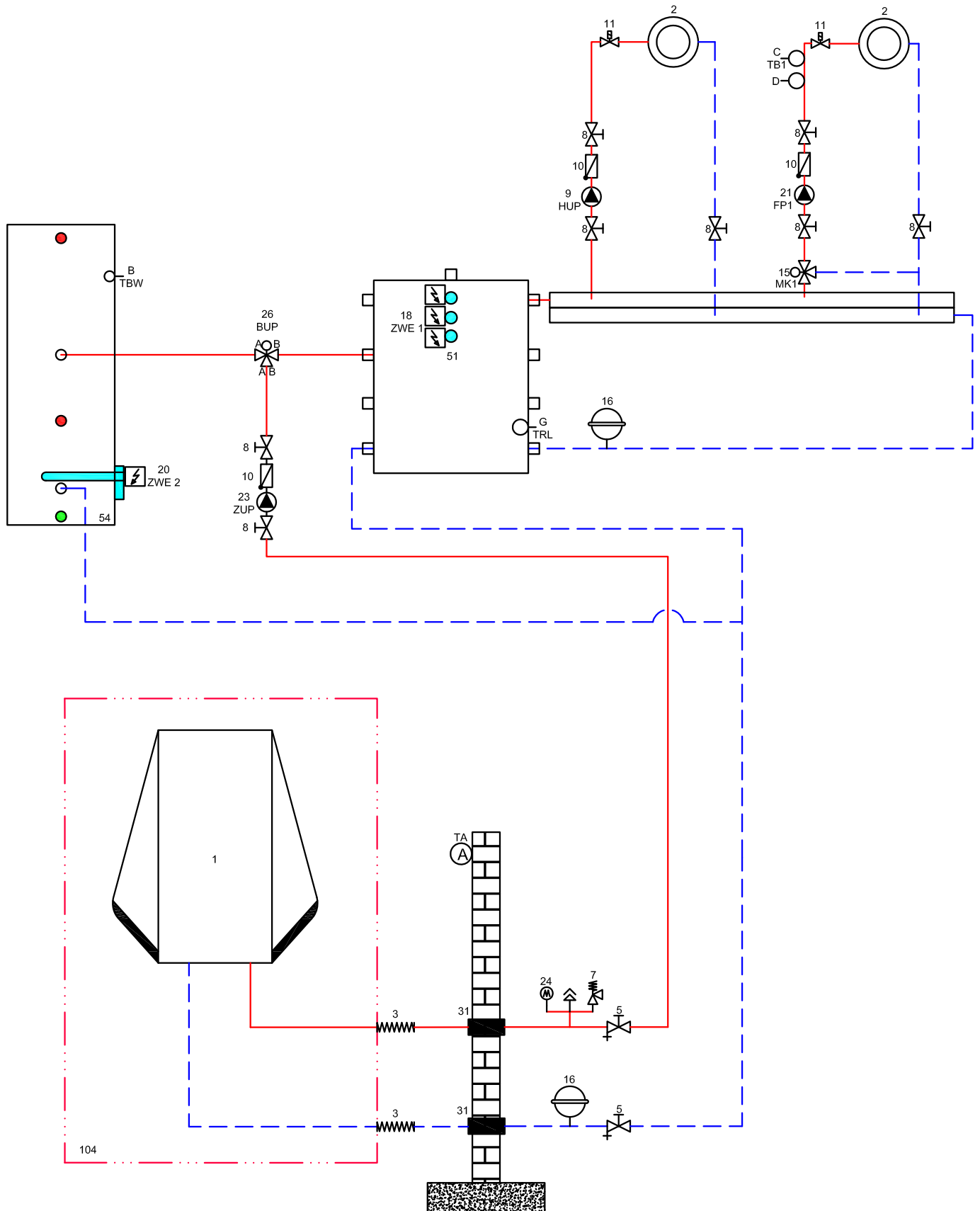
- facing away from the coast / prevailing wind direction
  - ✓ in a sheltered area near a wall
  - ✓ not in open areas
  - ✓ not in sandy surroundings (to avoid the influx of sand)



- on the seaward side

- ✓ in an area near a wall
- ✓ an impermeable windbreak resistant to onshore winds is installed
- ✓ Height and width of the windbreak  $\geq 150\%$  of the device dimensions
- ✓ not in sandy surroundings (to avoid the influx of sand)





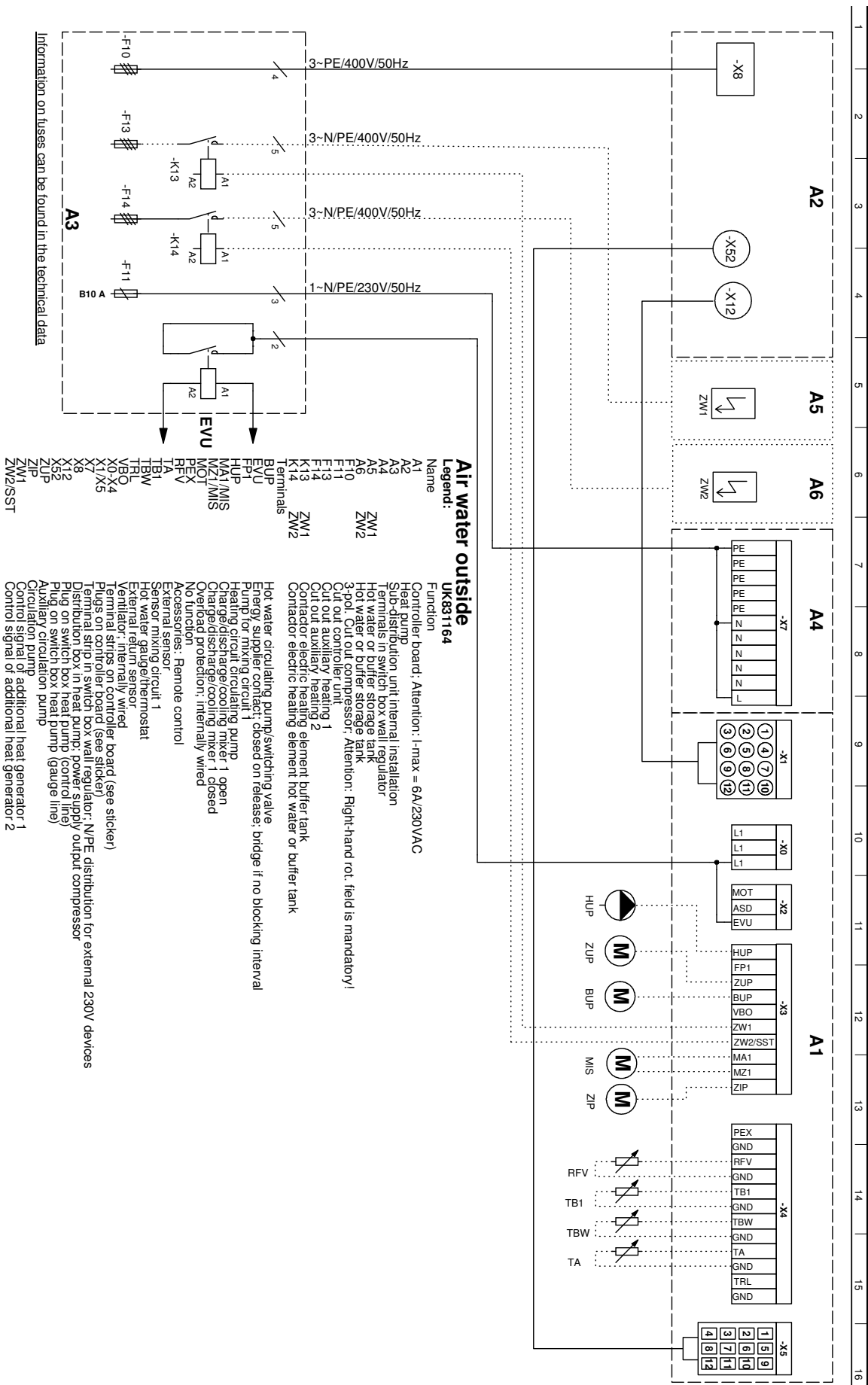


## Legend hydraulic diagram

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

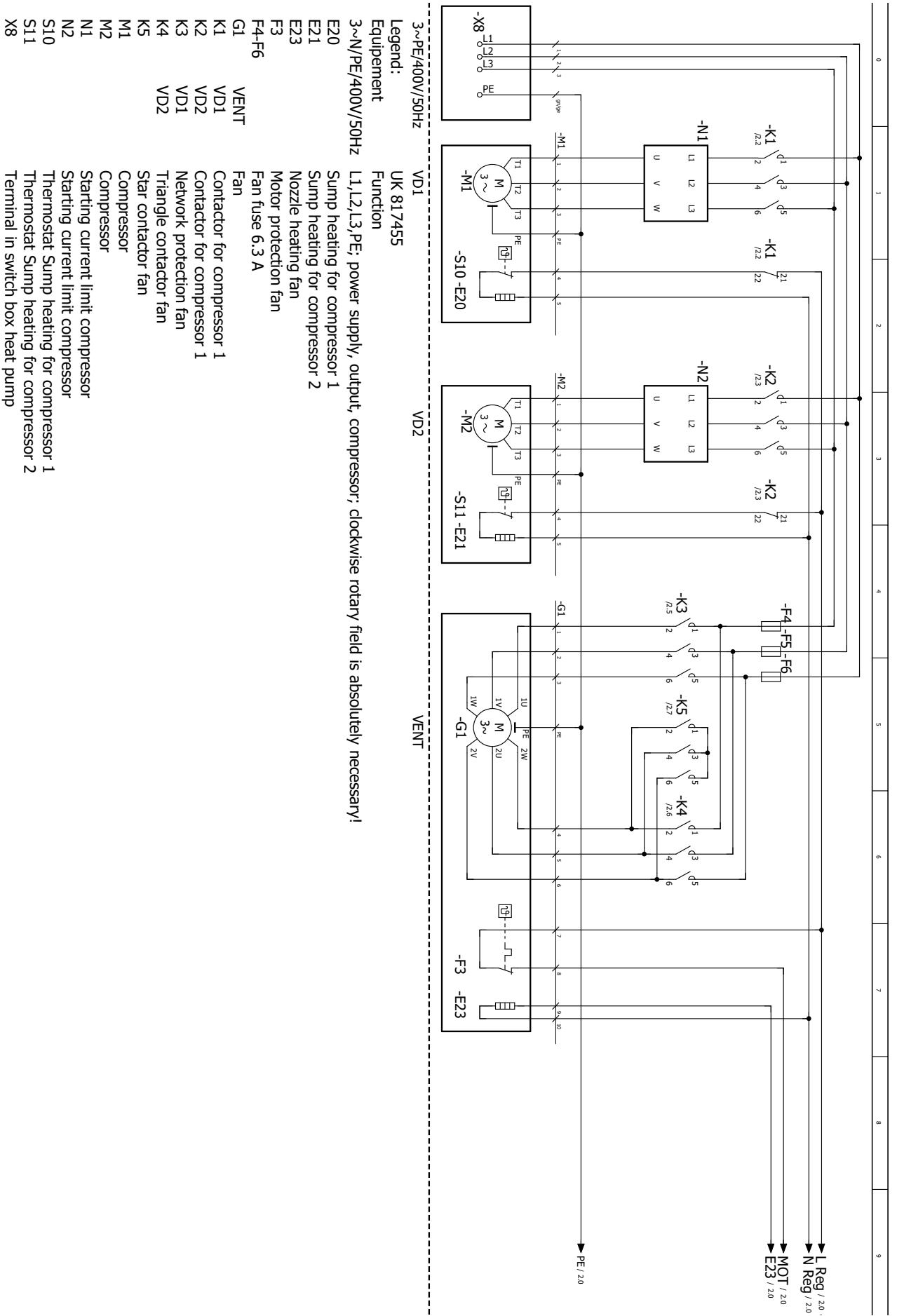
## Important notice!

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!





Circuit diagram 1/3

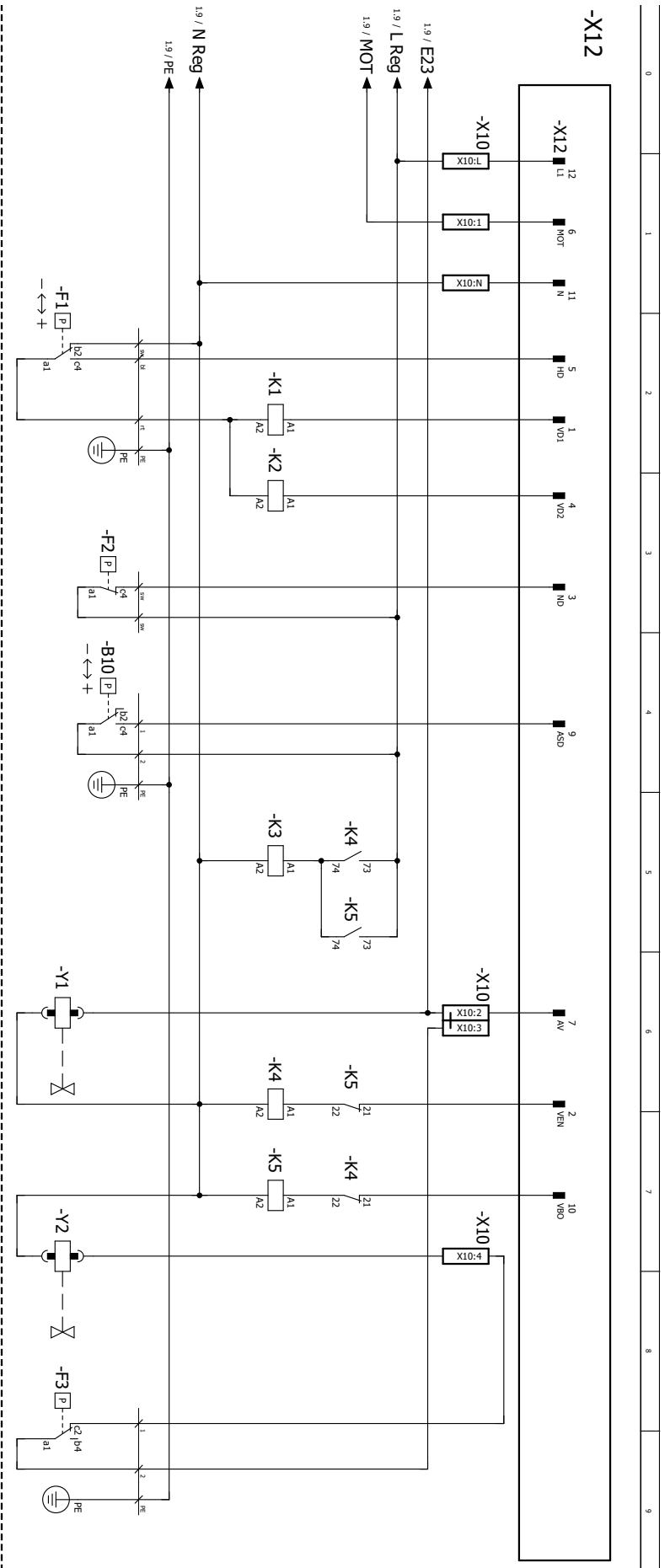


3~PE/400V/50Hz  
 VD1  
 VD2  
 VENT

Legend:  
 Equipment UK 817455  
 Function

- 3~N/PE/400V/50Hz L1, L2, L3, PE; power supply, output; compressor; clockwise rotary field is absolutely necessary!
- E20 Sump heating for compressor 1
- E21 Sump heating for compressor 2
- E23 Nozzle heating fan
- F3 Motor protection fan
- F4-F6 Fan fuse 6.3 A
- G1 Fan
- K1 Contactor for compressor 1
- K2 Contactor for compressor 1
- K3 Network protection fan
- K4 Triangle contactor fan
- K5 Star contactor fan
- M1 Compressor
- M2 Compressor
- N1 Starting current limit compressor
- N2 Starting current limit compressor
- S10 Thermostat Sump heating for compressor 1
- S11 Thermostat Sump heating for compressor 2
- X8 Terminal in switch box heat pump

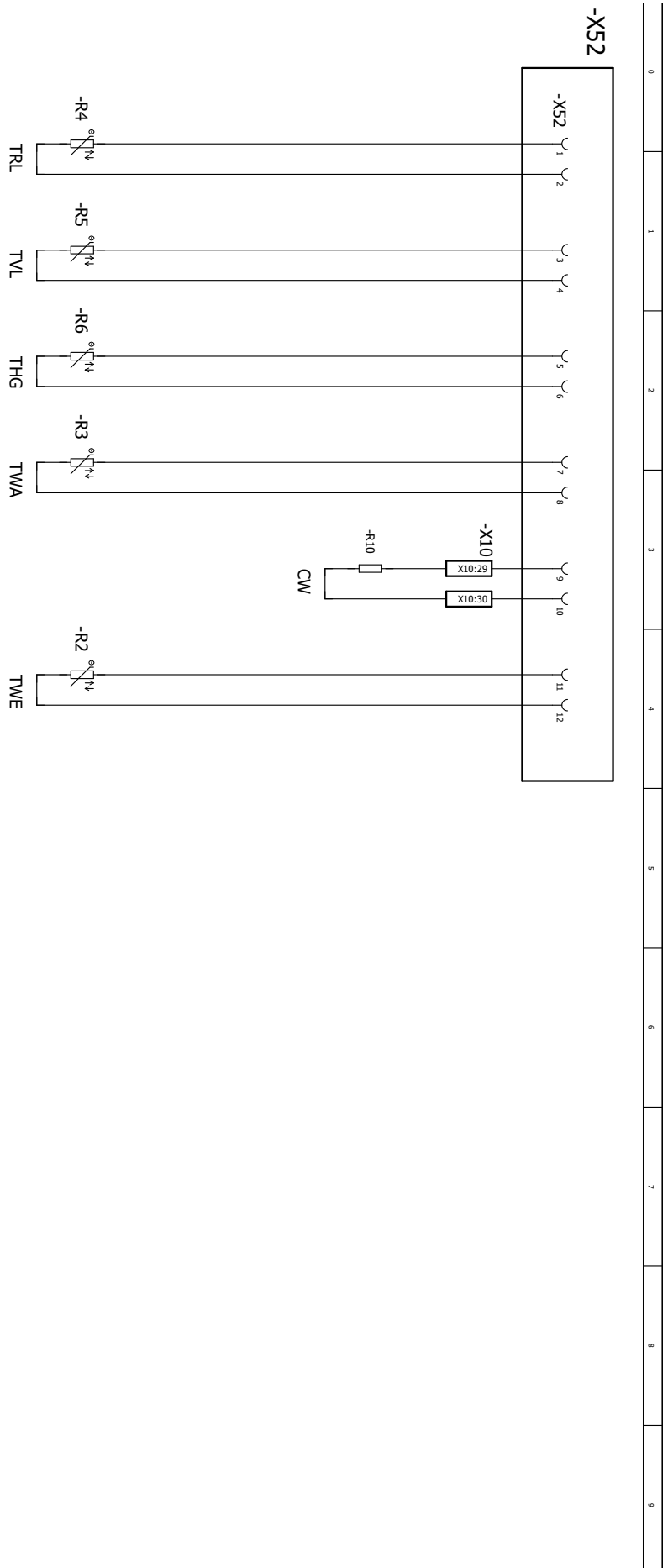




- Legend:**
- |           |   |
|-----------|---|
| Equipment | UK 817455                                   |
| B10       | AEP   |
| F1        | HDP   |
| F2        | NDP   |
| F3        | VD1   |
| K1        | VD2   |
| K2        |   |
| K3        |   |
| K4        |   |
| K5        |   |
| X10       | Terminal in switch box heat pump            |
| X12       | Plug on switch box heat pump (control line) |
| Y1        | Defrosting valve                            |
| Y2        | Bypass compressor                           |



# Circuit diagram 3/3



Legend:	UK 817455	
Equipment	Function	
R2	TWE	If installed: heat source input gauge
R3	TWA	If installed: heat source outlet gauge
R4	TRL	Return sensor
R5	TVL	Flow sensor
R6	THG	Hot gas sensor
R10	CW	Encoding resistor 2550 Ohm
X52		Plug on switch box heat pump (gauge line)









## EC Declaration of Conformity



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

Unit model	Number	Item No. 1	2	3
LW 300A-LUX 2.0	100789LUX02	100789P02	15030561	15029001
LW 300	10078702			
LW 300L	10078802			

### EC Directives

2014/35/EU 813/2013  
 2014/30/EU  
 2011/65/EG 517/2014  
 2014/68/EU

### EN..

EN 378-2:2018 EN 60335-1:2012  
 EN ISO 12100:2010 EN 60335-2-40:2014  
 EN 12102-1:2018 EN 55014-1:2018  
 EN 61000-3-11:2001 EN 55014-2:2016  
 EN 61000-3-12:2012

### Pressure equipment component

Category II  
 Module A1  
 Designated position:  
 TÜV-SÜD  
 Industrie Service GmbH (Nr.:0036)

### Company:

ait-deutschland GmbH  
 Industrie Str. 3  
 93359 Kasendorf  
 Germany

Place, date:  
 Signature:

Kasendorf, 20.07.2020

Marco Rossmertel  
 Managing Director

Edgar Timm  
 Director R&D

UK818200





ait-deutschland GmbH  
Industriestraße 3  
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