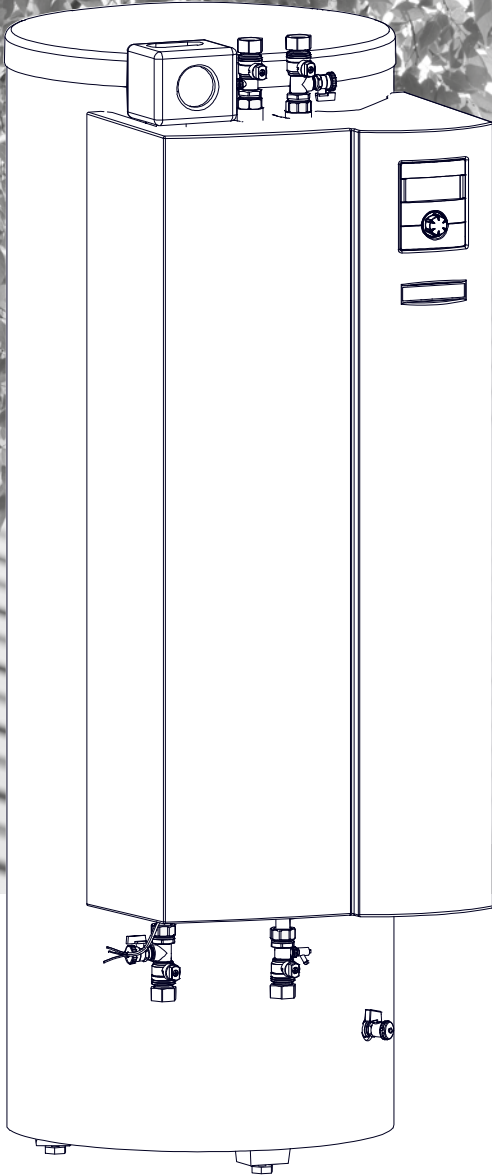


the better way to heat



Accessories for
Dual Air / Water Heat Pumps
Outdoor installation

Operating Manual

Hydraulic Tower Dual HTD





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1 About this operating manual

This operating manual is part of the device.

- ▶ Before working on or with the device, 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 device and hand over to the new owner if the device 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 exclusively refers to the device identified by the nameplate(→ "Nameplate", 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 heat pump
- Operating manual of the heating and heat pump controller
- Brief description of the heat pump controller
- Operating manual of the comfort board (accessories)

1.3 Symbols and markings

Identification of warnings

Symbol	Meaning
	Safety-relevant information. Warning of physical injuries.
	Safety-relevant information. Warning of physical injuries. Flammable materials / flammable (primary) refrigerant
	Safety-relevant information. Warning of physical injuries. Flammable materials / flammable (primary) refrigerant

Symbol	Meaning
	Safety-relevant information. Warning of physical injuries. Danger of fatal injury due to electric current.
DANGER	Indicates imminent danger resulting in severe injuries or death.
WARNING	Indicates a potentially dangerous situation, which can result in severe injuries or death.
CAUTION	Indicates a potentially dangerous situation, which can result in moderate or minor injuries.
IMPORTANT	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
▶	Procedural instructions: Single step action prompt
1., 2., 3., ...	Procedural instructions: 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
	Secure connections against twisting



1.4 Contact

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

- Germany: www.alpha-innotec.de
- EU: www.alpha-innotec.com

2 Safety

Only use the device when it is in flawless 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 designed for household use and, in combination with an LWD ... A is solely intended for the following purposes:

- Heating
- Domestic hot water preparation
- ▶ Proper use includes complying with the operating conditions (→ “Technical data / Scope of supply”, page 20) 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 device 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 procedural instructions in this operating manual are solely directed at qualified specialist 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.
- ▶ Ensure that the personnel are qualified to handle flammable (primary) refrigerant.
- Work on the refrigerating circuit may only be carried out by qualified personnel with appropriate qualifications for refrigeration system installation.
- Work on the electrics and electronics may only be carried out by electrical technicians.
- Any other work on the system may only be carried out by qualified personnel (heating installer, plumbing installer).

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

2.3 Personal protective equipment

During transport and work on the unit, there is a risk of cuts due to the sharp edges of the unit.

- ▶ Wear cut-resistant protective gloves.

During transport and work on the unit, there is a risk of foot injuries.

- ▶ Wear safety shoes.

When working on liquid-conveying lines, there is a risk of injury to the eyes due to leakage of liquids.

- ▶ Wear safety goggles.



2.4 Residual risks

Electric shock

Components in the device are energised with life-threatening voltage. Before working on the unit:

- ▶ Disconnect the device from power supply.
- ▶ Protect the device 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.

Injuries caused by high temperatures

- ▶ Before working on the unit, let it cool down.

Safety instructions and warning symbols

- ▶ Observe the safety instructions and warning symbols on the packaging and on and in the unit.

2.5 Avoid damage to property

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 according to 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 device.

Unsuitable quality of the fill and make-up water in 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.

When the system is filled with untreated drinking water, calcium and magnesium precipitate as mineral scale. Lime scale deposits form on the heat transfer surfaces of the heating. The efficiency drops and energy costs rise. In extreme cases, the heat exchangers will be 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 Operation and care



NOTE

The device is operated via the control panel of the heating and heat pump controller (→ operating manual of the heating and heat pump controller).

3.1 Energy and environmentally conscious operation

The generally accepted requirements for energy conscious and environmentally conscious operation of a heating system also apply to use of 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 just a gap or tilt open (continuous ventilation), but instead open wide for a short time (shock ventilation)
- Always ensure that the controller settings are correct

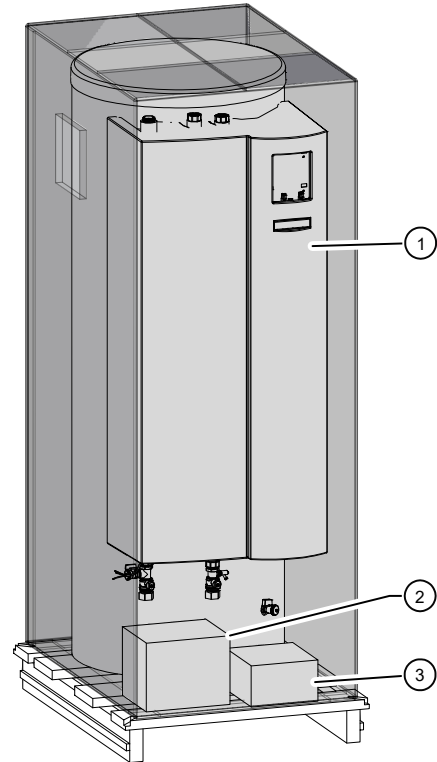


3.2 Care

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

4 Scope of supply

Example of scope of supply arrangement



- 1 Compact device (domestic hot water tank and buffer tank, without heat pump)
 - 2 Accompanying parts package: safety module, pump ball valves, outdoor temperature sensor, adjustable feet
 - 3 Accompanying parts package: control panel for the heating and heat pump controller
1. Inspect the delivery for outwardly visible signs of damage.
 2. Inspect the scope of supply for completeness. Any defects or incorrect deliveries must be reported immediately.

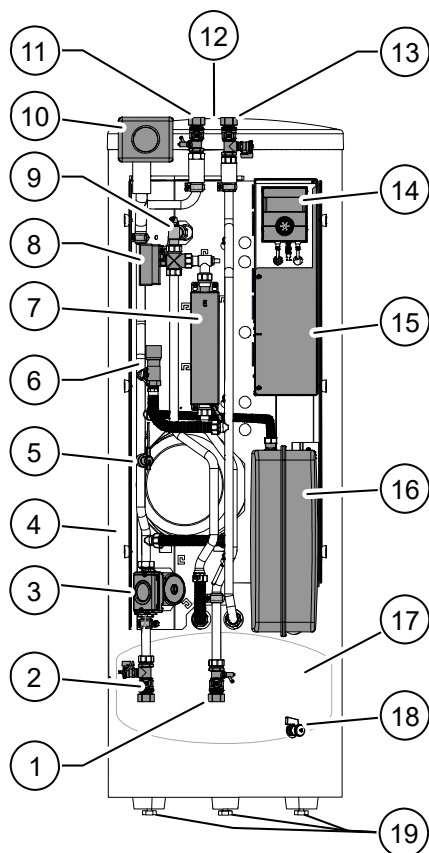
4.1 Accessories

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

- Comfort board with various additional functions
- Room control unit for controlling the main functions from the living room



4.2 Components of the device



- 1 Shut-off valve with drain tap *)
- 2 Shut-off valve with fill and drain tap *)
- 3 Heating circuit recirculating pump (HUP)
- 4 Domestic hot water tank
- 5 Flow monitor
- 6 Overflow valve
- 7 Electric heating element behind shielding panel
- 8 Switchover valve domestic hot water
- 9 Vent valve
- 10 Heating circuit safety module (insulated) *)
- 11 Shut-off ball valve hot heating water inlet (return) *)
- 12 Protection anode
- 13 Shut-off ball valve hot heating water outlet (supply) *)
- 14 Control panel *)
- 15 Switch box
- 16 Expansion tank
- 17 Buffer tank
- 18 Draining off buffer tank
- 19 Adjustable feet *)

*) to be mounted at the installation location

Nameplate

A nameplate is attached to the outside of the unit at the factory.

The nameplate contains the following information at the very top:

- Model, item number
- Serial number

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

5 Storage, transport, installation

5.1 Storage

► Store unit protected against:

- Moisture/damp
- Frost
- Dust and dirt

5.2 Unpacking and transport

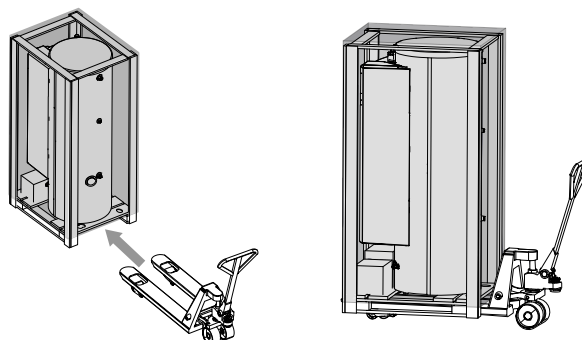
Notes on safe transport

The device is heavy (→ “Technical data / Scope of supply”, page 20). There is a risk of injuries or damage to property if the device falls or overturns.

The hydraulic connections are not designed for mechanical loads.

- Do not lift or transport the device by the hydraulic connections.
- Transport the device preferably with a pallet truck, alternatively with a handcart or by carrying.

5.2.1 Transport with a pallet truck





Unpacking

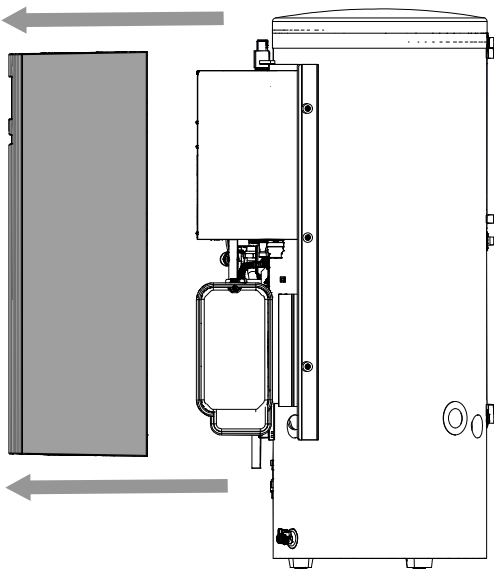
1. Remove plastic films. Ensure that you do not damage the device.
2. Dispose of the transport and packaging material in an environmentally friendly way and in accordance with local regulations.

If the device is to be carried, then it is recommended that the wooden pallet is not removed yet.

5.2.2 Making transport easier

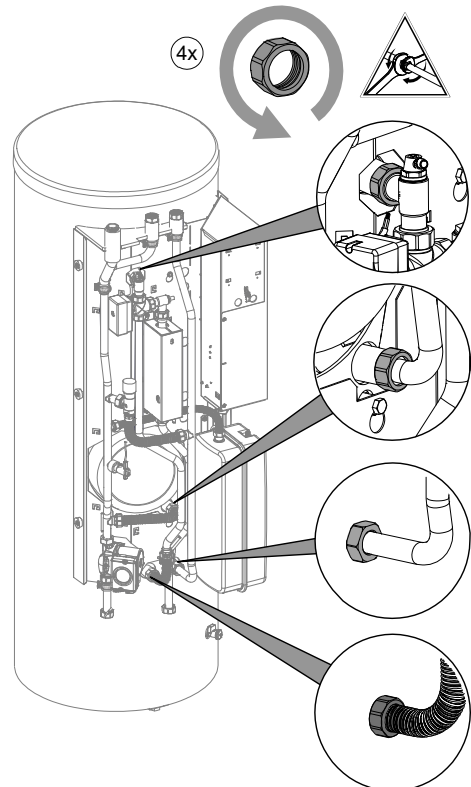
In order to make the transport simpler and easier, the whole hydraulic system (including the controller with switch box) can be unscrewed beforehand.

1.

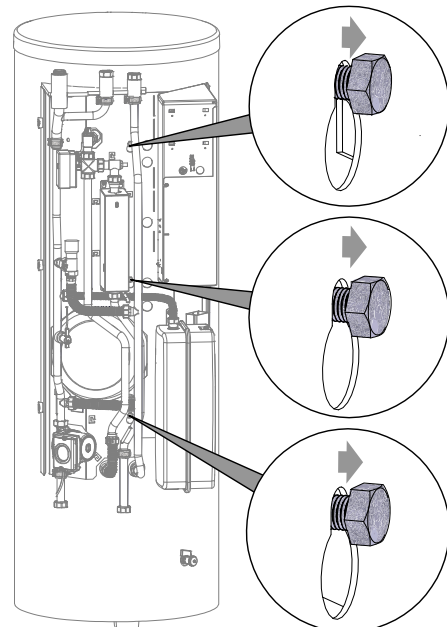


2. Disconnect the domestic hot water temperature sensor (TBW) inside the switch box and withdraw the sensor cable out of its grommet in the switch box.
Opening and closing the switch box:
→ "Open the side cover of the electrical switch box", page 13
Terminals for the domestic hot water temperature sensor:
→ "Terminal diagram", page 26

3.

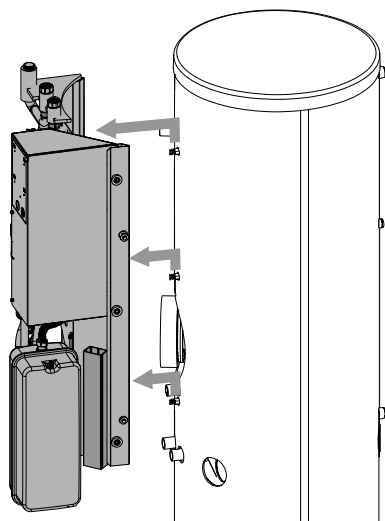


4.





5.



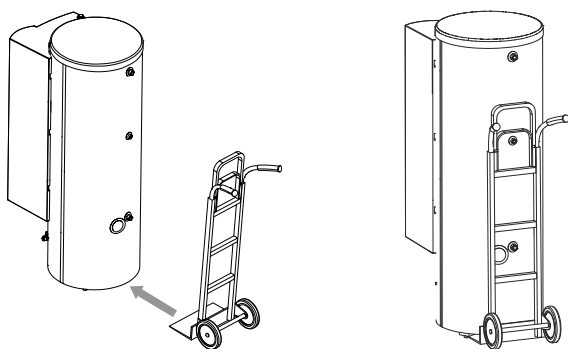
IMPORTANT

When lifting off the hydraulic system, withdraw the cable of the domestic hot water temperature sensor through its grommet in the support plate and place it behind the support plate. Be careful not to damage the cable.

6. Re-attach the hydraulics and hood after aligning the unit.

→ “5.3 Installation”, page 9

5.2.3 Transport with handcart



IMPORTANT

Do not damage the hydraulic connections on the rear of the unit, the hood on the hydraulics or the insulation for the domestic hot water tank and buffer tank.

5.2.4 Carrying the unit

In order to make it easier to carry, a T-piece with two double nipples can be fitted on the domestic hot water outlet. It is recommended that the wooden pallet is only removed after carrying is complete.

► Carry the unit to the installation site with 3 – 4 persons.

5.3 Installation

Installation site

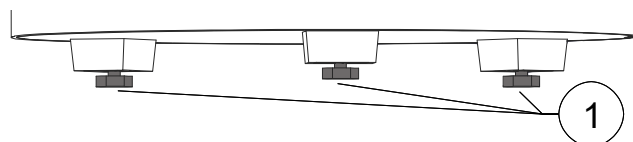
IMPORTANT

Only ever install the device inside buildings.

The installation area must be frost-free and dry. It must fulfil the relevant local regulations.

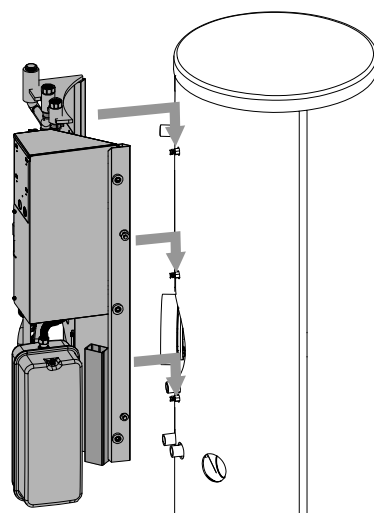
→ “Installation plans”, page 23 and “Dimensioned drawings”, page 22

1. Place the device on a stable and horizontal surface, preferably decoupled from structure-borne noise.
2. Tilt the device slowly and carefully to one side.
3. Secure the tilted device to ensure that it cannot tip back to its initial position.
4. Fit the adjustable feet (①) to all 3 feet.



5. Tilt the device slowly and carefully back to its initial position.
6. Level out the 3 adjustable feet.
7. If the hydraulic system was dismantled for transport reasons, then it must be screwed back into place on the tank!

7.1.

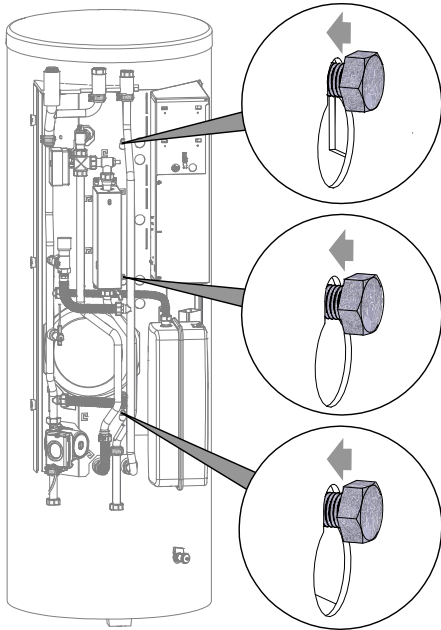




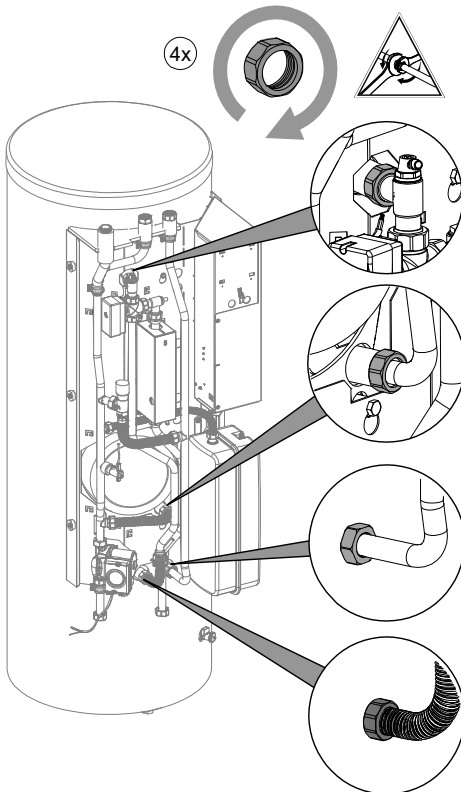
IMPORTANT

When mounting the hydraulic system, insert the cable of the domestic hot water temperature sensor through its grommet into the support plate. Take care not to damage the cable.

7.2.



7.3.



8. temperature sensor (TBW) through its grommet into the switch box and connect it.

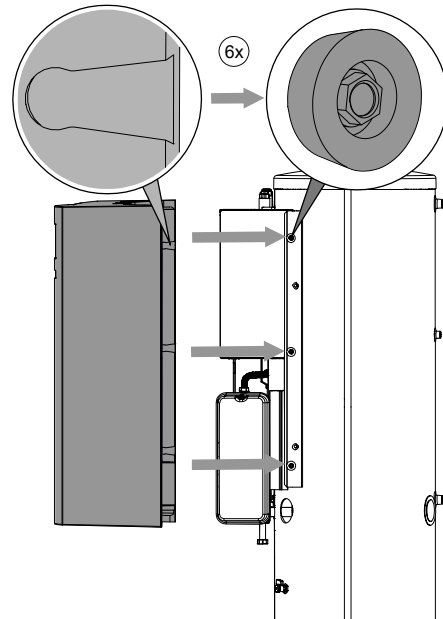
Opening and closing the switch box:

→ “Open the side cover of the electrical switch box”, page 13

Terminals for the domestic hot water temperature sensor:

→ “Terminal diagram”, page 26

9. If no further hydraulic or electrical work is being carried out for the time being, put the hood on the hydraulics.





6 Installing the hydraulic connections



NOTE

The safety valve that is integrated or included in delivery has a tolerance of plus / minus 10% for the set pressure. If local regulations, laws, standards or directives require a smaller tolerance range, the safety valve must be replaced on site with a safety valve that meets the requirements.

IMPORTANT

Avoid open heating systems and / or heating systems that are not oxygen diffusion-tight. If this is not possible, a system separation must be installed.

Depending on the dimensioning of the heat exchanger and the additionally required circulation pump, the system separation worsens the energy efficiency of the system.

IMPORTANT

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

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

IMPORTANT

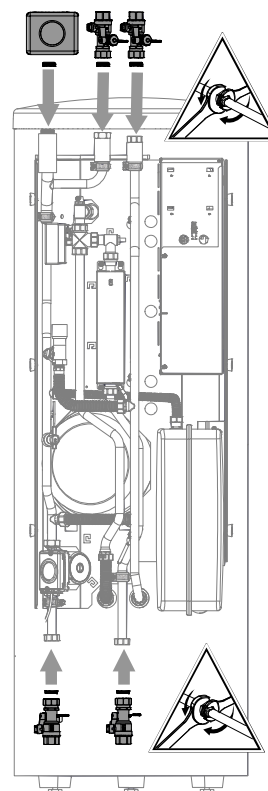
Damage to the copper pipes due to unacceptable loading!

- ▶ Secure all connections against twisting.
- ✓ Cross-sections and lengths of the pipes for the heating circuit are adequately dimensioned. In doing so, ensure that the connection pipework between the heat pump and compact station are also taken into account.
- ✓ The free pressing of the circulation pumps in the heating circuit at least results in the minimum throughput required for the unit (→ “Free Pressing”, page 21).
- ▶ Route all hydraulic connections as fixed piping and attach them via a fixed point to the wall or ceiling at a maximum distance of 20 cm from the centre of the respective unit connection.
- ▶ Insert the vent at the highest point of the heating circuit.
- ▶ Lift up the hood at the front of the hydraulic tower (→ “5.2.2 Making transport easier“, page 8).

6.1 Heating circuit

Safety module and shut-off ball valves

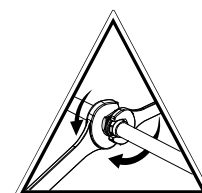
1. Take the safety module and the shut-off ball valves out of the accessory pack and fit them to the connections provided. Use seals from the accessory pack.



2. Lay the safety discharge of the safety valve into the drain via a funnel waste trap according to the relevant standards and guidelines. It is essential that the safety discharge is connected.

Heating water inlet and outlet

1. Establish the hydraulic connection to the unit.
2. Establish the hydraulic connection to the heating circuit.



- Position of the connections: “Dimensioned drawings”, page 22



6.2 Expansion vessel

The expansion vessel for the heating circuit is integrated. Always inspect whether the size of the expansion vessel is large enough for the system. If necessary, an additional expansion vessel must be installed on site in accordance with the relevant valid standards.



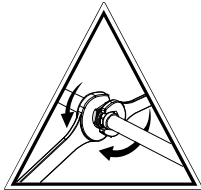
NOTE

The admission pressure of the expansion vessel must be adjusted to the system (approx. 0.5 bar less than the system filling pressure) in accordance with calculation according to the relevant standards (EN 12828).

6.3 Hydraulic connection for the domestic hot water tank

Connect the domestic hot water tank according to DIN 1988 and DIN 4753 Part 1 (or the standards and directives applicable locally).

→ Position of the connections: “Dimensioned drawings”, page 22



The working overpressure cited on the name plate must not be exceeded. Install a pressure reducer if required.

The sensor for the domestic hot water preparation is already connected in the switch box.

IMPORTANT

The electrical conductivity of the domestic hot water must be $> 100 \mu\text{S/cm}$ and must lie within the drinkable water quality limits.

7 Electrical installation

7.1 Connect the electrical cables

IMPORTANT

Irreparable damage to the compressor due to wrong rotating field (only applies to units with 400V connection).

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

Basic information on the electrical connection

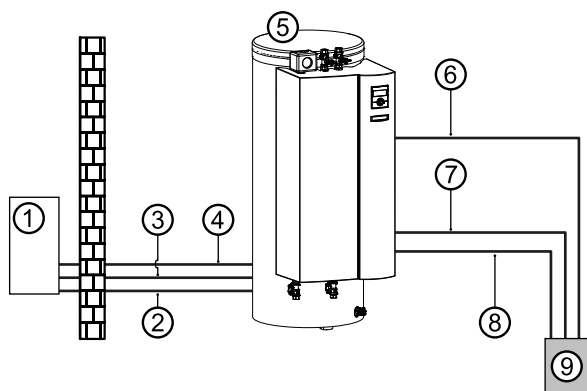
- The specifications of the local energy supply company may apply to electrical connections
 - Fit the power supply for the heat pump and the electric heating element with an all-pole circuit breaker with at least 3 mm contact spacing (per IEC 60947-2)
 - Note the level of the tripping current (→ “Technical data / Scope of supply”, page 20))
 - Comply with the electromagnetic compatibility regulations (EMC regulations)
 - Lay unshielded power supply cables and shielded cables (bus cable) sufficiently far apart ($> 100 \text{ mm}$)
 - Maximum line length: 30m
- Cable extension details see operating manual of the heat pump



7.2 Electrical connection

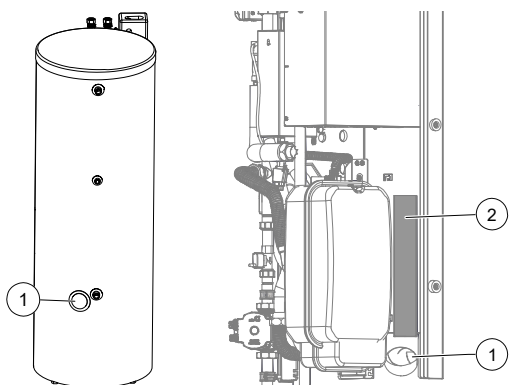
The electrical connection is established via the switch box.

The hydraulic tower is connected on site to the sub-distribution according to the following scheme:



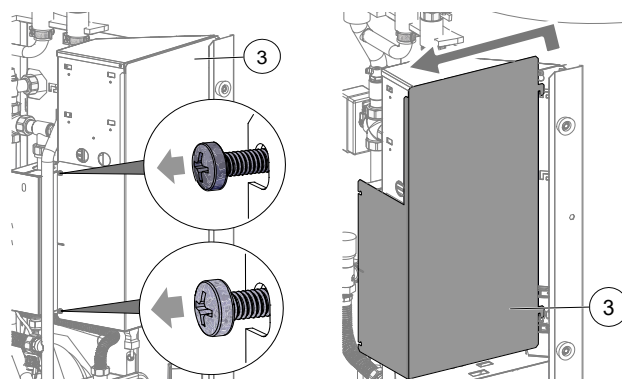
- 1 Heat pump
- 2 Load Compressor
- 3 Bus-cable (shielded)
- 4 Control voltage
- 5 Hydraulic tower Dual
- 6 Elektric heating element load line
- 7 Control voltage
- 8 Load Compressor
- 9 Sub-distribution

1. Feed the control and sensor cables, the Bus and load cable from the heat pump, the cable for the EVU blocking time as well as the cables of external loads through the grommet on the rear (①) of the device into the interior of the device.

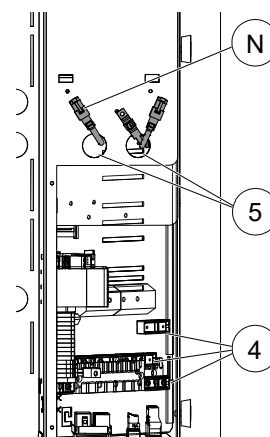


2. Feed the cables through the cable duct (②) to the switch box.
3. Strip of all other cables before feeding them into the switch box (stripping length of each of the individual wires: 6 mm).

4. Open the side cover (③) of the electrical switch box.



5. Feed the cables into the cable ducts of the switch box.
6. Carry out electrical connections in accordance with the terminal diagram.
→ "Terminal diagram", page 26
7. Insert all cables introduced into the switch box into the cable ducts in the switch box, route them through the strain reliefs (④) and screw them into the strain reliefs.
8. Route the RJ45 connector for the control panel and the bus cable of the heat pump out of the openings (⑤) in the front cover of the electrical switch box.



NOTE

The control panel for 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 such a connection is desired, route a shielded network cable (Ⓝ, category 6, with RJ45 connector) through the electrical switch box and plug it to the corresponding socket of the control panel.

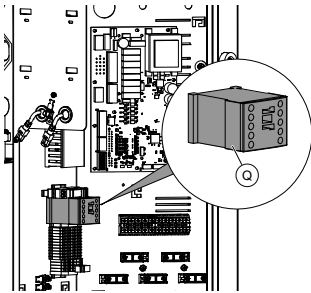
- "Connections on the control panel", page 15



NOTE

The integrated electric heating element is connected for 6 kW in the factory. At contactor Q, it is possible to select 4 kW = 2 phase operation. Disconnect Q5/6 for this. Or 2 kW = 1 phase operation. Disconnect Q5/6 and Q5/4 for this.

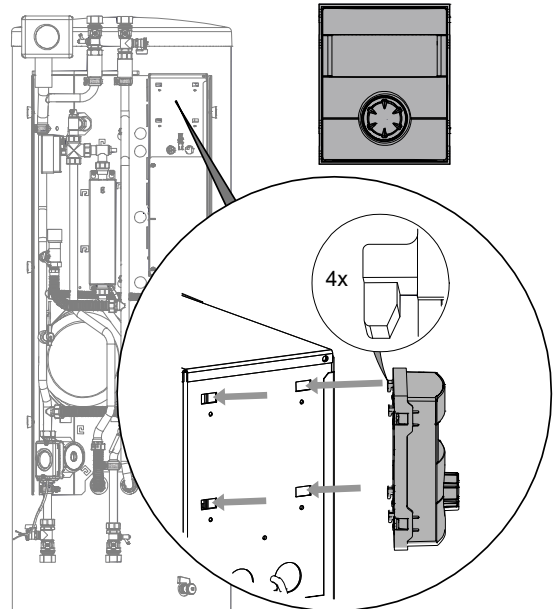
Disconnected cables must be furnished with screw terminals. Only the phases cited above may be disconnected (safety temperature limiter).



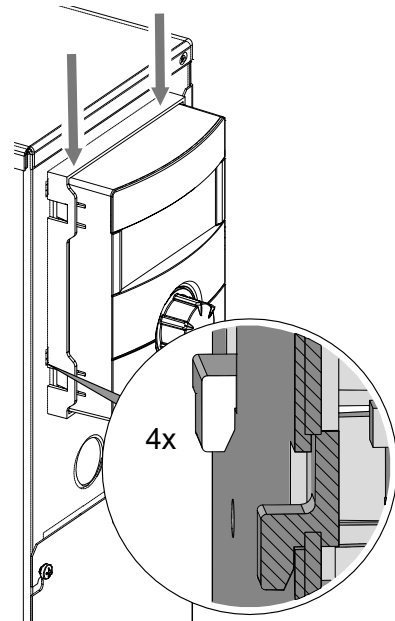
9. Close the electrical switch box by re-attaching the side cover.

8 Installing the control panel

- 1.

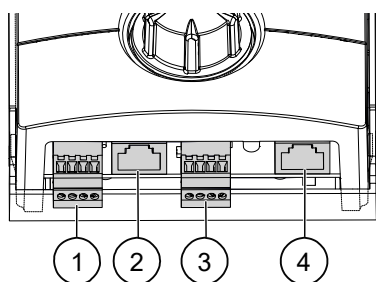


- 2.



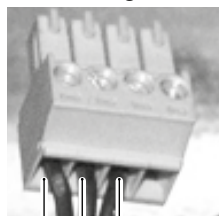


3. Make cable connections on the bottom of the control panel.



- 1 Connection (RS485) for the the room control unit (accessory)
 - 2 Connection (RJ-45) for network cable connection
 - 3 Connection (RS485) of bus cable from heat pump
 - 4 Connection (RJ-45) Modbus cable to Modbus distributor.
- 3.1. Push the shielding of the stripped bus cable coming from the heat pump to the back and strip the individual wires.
 - 3.2. Pull off the green RS 485 bus connector (3) from the bottom of the control unit and connect the cable as shown in the terminal diagram, then re-attach the connector to the control unit.

Core assignment:



- 1 12 V
- 2 LIN
- 3 GND

9 Flushing, filling and venting

9.1 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).

1. Ensure that the ph-value of the heating water is between 8.2 – 10, for aluminium materials between 8.2 – 9.
Ideally, the pH value should already be in the required range after filling. After 6 weeks at the latest, it must have adjusted to the required range.
2. Ensure that the electrical conductivity is $< 100 \mu\text{S/cm}$.



NOTE

If the required water quality is not achieved, consult a company specialising in the treatment of heating water.

3. 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
4. Keep a system log for hot water heating systems in which relevant planning data and the water quality are entered (VDI 2035).

9.2 Flush and fill the heating and domestic hot water charging circuit

- ✓ Outlet pipe of the safety valve is connected.
- Ensure that the set pressure of the safety valve is not exceeded.

IMPORTANT

Flush the heating circuit only in its flow direction.

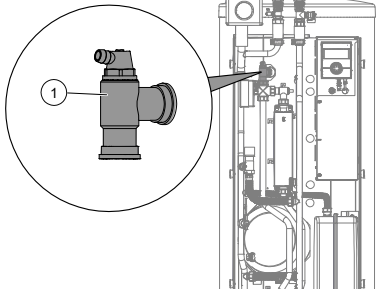


NOTE

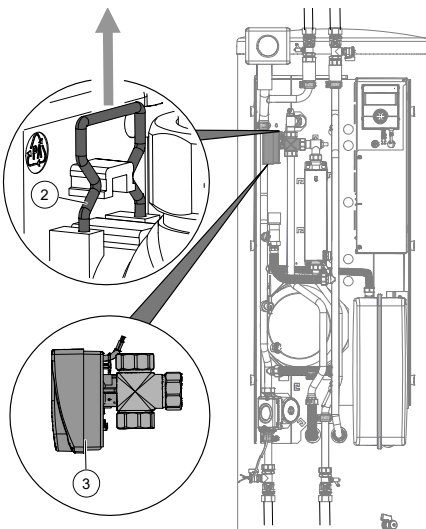
The venting programme on the controller can also be used to support the flushing and venting process. It is possible to control individual recirculating pumps and also the switchover valve via the venting programme. As a result, it is not necessary to remove the valve motor.



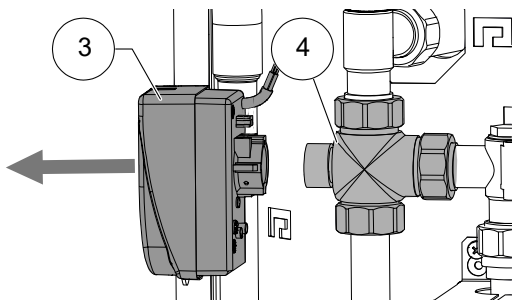
1. Vent the system at the highest point.
2. Open the vent valve (①) on the 3-way switching valve.



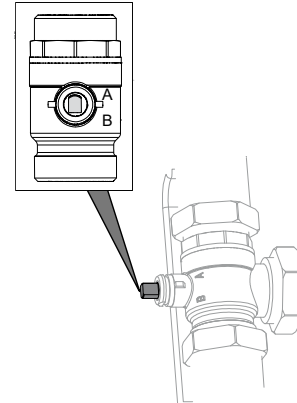
3. Pull off the U-clip (②) on the back of the valve motor (③) on the switching valve upwards.



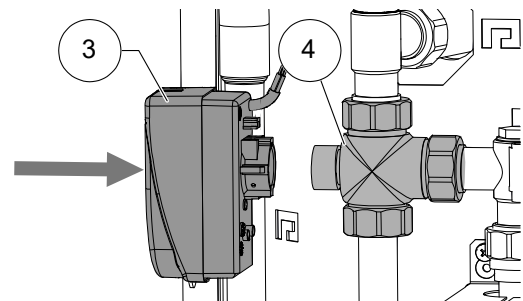
4. Carefully pull the valve motor (③) forward off the 3-way switching valve (④).



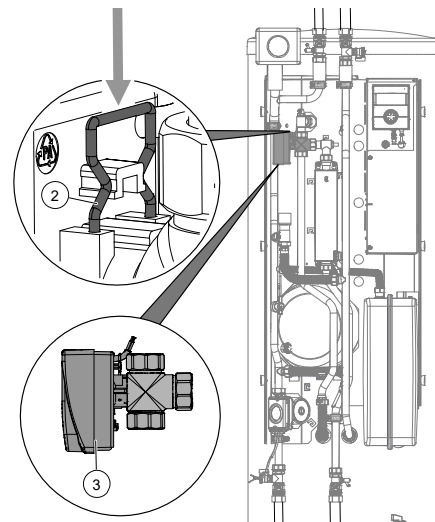
5. Turn the spindle of the 3-way switching valve so that the rounded side of the spindle points in the direction of marking A of the connections of the 3-way switching valve.



6. Flush the domestic hot water charging circuit for approx. 1 minute.
7. Turn the spindle so that the rounded side of the spindle points in the direction of marking B of the connections of the 3-way switching valve.
8. Flush heating circuit thoroughly, until no more air is discharged.
9. Position the valve motor (③) on the 3-way switching valve (④).

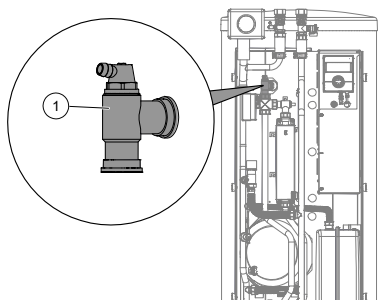


10. Insert the U-clip (②) into the base of the valve motor (③).



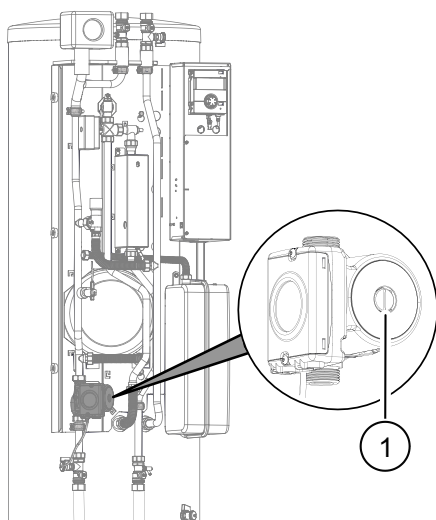


11. Ensure that the U-clip has latched into position correctly:
 - ✓ Valve motor sits securely on the 3-way switching valve.
 - ✓ Both prongs of the U-clip sit on the lug.
 - ✓ The tips of the U-clip are not visible more than approx. 2 mm.
12. Close the vent valve (①) on the 3-way switching valve.



9.3 Venting the circulating pump of the heating circuit

- ✓ The cover is removed from the hydraulic tower Dual.
1. Place vessel for collecting discharging liquid under the outlet.
 2. Undo deflating screw (①) in the middle of the circulation pump of the heating circuit.



3. Wait until liquid is discharged uniformly.
4. Screw the deflating screw (①) of the circulation pump of the heating circuit back on tightly.
5. Dispose of collected liquid according to the local regulations.

9.4 Flushing, filling and venting the domestic hot water tank

IMPORTANT

Before flushing and filling the domestic hot water tank, the outlet pipe of the safety valve must be connected. The set pressure of the safety valve must not be exceeded.

1. Open the domestic cold water supply valve on the domestic hot water tank.
2. Open the domestic hot water valves at the tapping points.
3. Flush the domestic hot water tank until no more air discharges from the valves at the tapping points.
4. Close the domestic hot water valves at the tapping points.

10 Insulate hydraulic connections

Insulate hydraulic lines in accordance with local regulations.

1. Open shut-off devices.
2. Perform a pressure test and check for leaks.
3. Insulate external piping on site.
4. Insulate all connections, fittings and pipes.



11 Overflow valve



REMARQUE

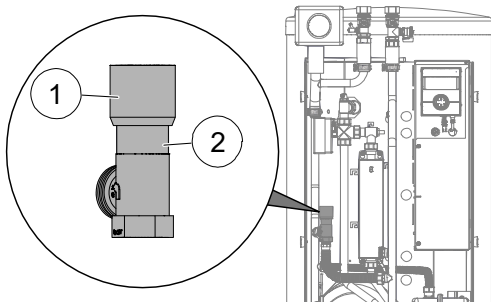
The activities in this section are only necessary for in-line tank integration.

Complete the worksteps quickly, otherwise the maximum return temperature can 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 (⊕) of the overflow valve (⊙) until the temperature drop between the flow and return temperature is set as follows:



External 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. Reset the heating and heat pump controller.

12 Commissioning

- ✓ Water supply to the domestic hot water tank is open
- ✓ Domestic hot water tank is filled



NOTE

If the heat pump is switched on whilst the tank is empty, the control panel indicates a fault.

- Operating manual of the heating and heat pump controller
- Operating manual of the heat pump

13 Maintenance



NOTE

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

13.1 Maintenance as required

- ▶ The components of the heating circuit (valves, expansion vessels, circulating pumps, filters, dirt traps) should be inspected or cleaned as needed, at the very least annually, by qualified personnel (heating or cooling system engineers).
- ▶ Check the safety valve (provided by customer) for the hot water tank at regular intervals.
- ▶ Have the magnesium anode checked and if necessary renewed by the customer service for the first time after 2 years and then at appropriate intervals.
Renew anode if protective current lower than 0.3mA. After replacing anode, re-install earthing cable between anode and storage tank jacket.

13.2 Yearly maintenance

- ▶ The domestic hot water tank should be cleaned once a year by qualified personnel (heating or cooling system engineers). To do this, first empty the hot water tank. Then remove the polystyrene guard over the service opening of the hot water tank. Unscrew the flange cover of the service opening.
- ▶ Determine the quality of the heating water by analysis. In the event of deviations from the specifications, take suitable measures without delay.



- ▶ Check all installed dirt traps for dirt and clean them if necessary.

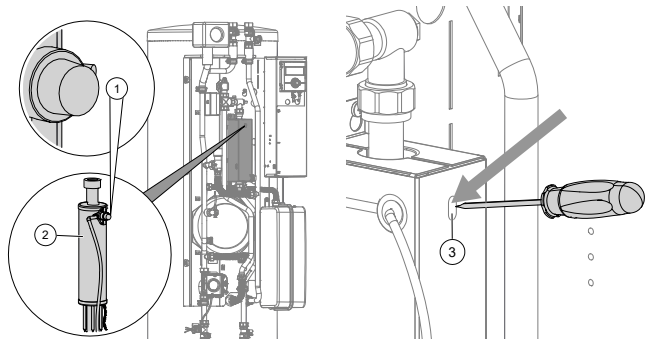
14 Faults

- ▶ Read out the cause of the fault via the diagnostics programme 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 device number to hand.

14.1 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 (①) in the centre of the safety temperature limiter (②, located underneath the cover) has tripped.
- ▶ If the reset button (①) has tripped, press it again using a small screwdriver (③).

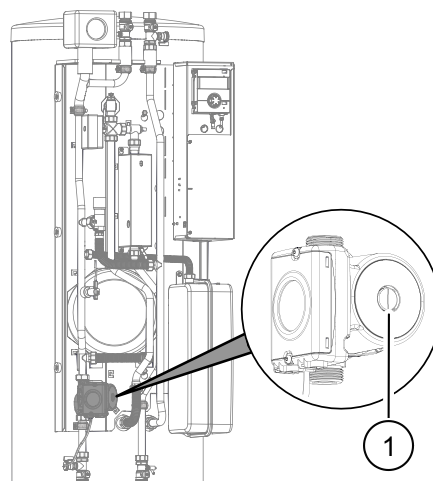


- ▶ If the safety temperature limiter trips again, contact the local partner of the manufacturer or the factory's customer service.

14.2 Manually unblock the heating circulating pump

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

1. Unscrew the front panel of the unit.
2. Undo deflating screw (①) in the middle of the circulation pump of the heating circuit.



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. Screw the front panel of the unit.

15 Dismantling and Disposal

15.1 Dismantling

- ▶ Separate components by their materials.

15.2 Disposal and Recycling

- ▶ Recycle or ensure proper disposal of device components and packaging materials in accordance with local regulations.

15.2.1 Buffer (standby) battery

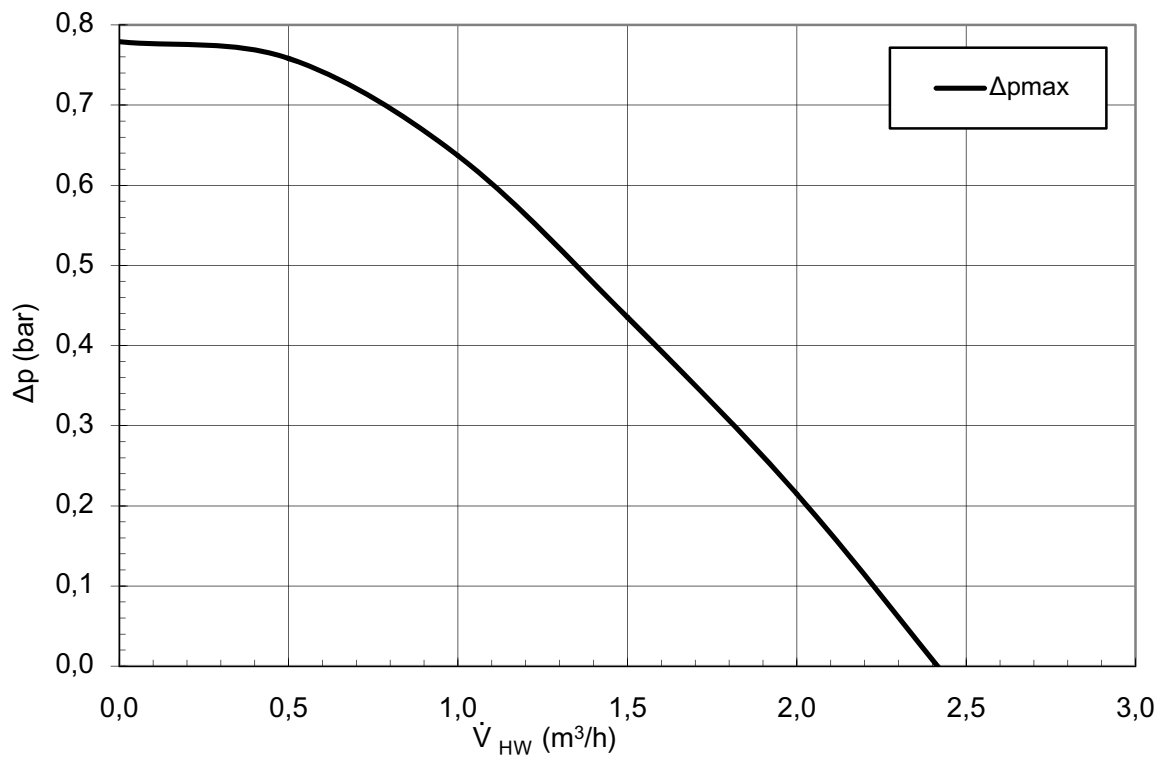
1. Use a screwdriver to push out the buffer battery on the processor circuit board of the heating and heat pump controller.
2. Dispose of the buffer battery (type: CR2032, lithium) in accordance with local regulations.



Technical data / Scope of supply

HTD

Unit designation		HTD
Accessory for heat pump model		
LWD 50A - LWD 90A	• applicable — not applicable	•
Functionally relevant	• applicable — not applicable	•
Installation location		
Indoors Outdoors	• applicable — not applicable	• —
Conformity		
CE	• applicable — not applicable	•
Heating circuit		
Heating circuit efficiency pump	integrated: • yes — no	•
Free compression heat pump Δp Flow rate	bar l/h	0.40 1600
Flow rate: minimum throughput Maximum throughput	l/h	900 2000
max. permissible operating pressure	bar	3
max. permissible operating temperature	°C	70
Expansion vessel: Volume Normal inlet pressure	l bar	12 1.5
Volume of buffer tank	l	62
3-way valve, heating/hot water	integrated: • yes — no	•
Heat metering	integrated: • yes — no	•
Domestic hot water tank		
Net contents	l	180
Corrosion protection: Impressed current anode Magnesium sacrificial anode	• applicable — not applicable	— •
Hot water temperature	up to °C	62
Output capacity at 38°C 45°C if removed at 10 l/min, storage temperature 60 °C	l l	285 230
Output capacity at 38°C 45°C if removed at 10 l/min, storage temperature 50 °C**	l l	215 170
Heat exchanger area, heat pump	m ²	02. Mrz
max. permissible operating pressure	bar	10
General unit data		
Housing dimensions (Height Width Depth)	mm mm mm	1800 600 834
Total weight	kg	150
Connections		
Heating circuit	...	Rp 1" IG
Heat pump	...	Rp 1" IG
Cold water	...	R 1" AG
Domestic hot water	...	R 1" AG
Circulation	...	R ¾" AG
Electrics		
Voltage code all-pole circuit breaker heat pump *)	... A	3~/N/PE/400V/50Hz C16
Voltage code circuit breaker control voltage *)	... A	1~/N/PE/230V/50Hz B16
Voltage code circuit breaker electric heating element *)	... A	3~/N/PE/400V/50Hz B10
Protection type	IP	20
Output, electric heating element 3 2 1 phase		6 4 2
Circulating pump, heating circuit: maximum power consumption current consumption	kW A	0.07 0.31
Heating and heat pump regulator	Included in scope of delivery: • yes — no	•
Safety equipment		
Safety assembly heating circuit Safety assembly heat source	Included in scope of delivery: • yes — no	• —
Overflow valve	integrated: • yes — no	•
Factory setting (adjust when commissioning the system)	bar	0.55
Sound		
Sound pressure level in free field/sound power level	dB(A) dB(A)	29 43
*) comply with local regulations **) Factory setting		813309



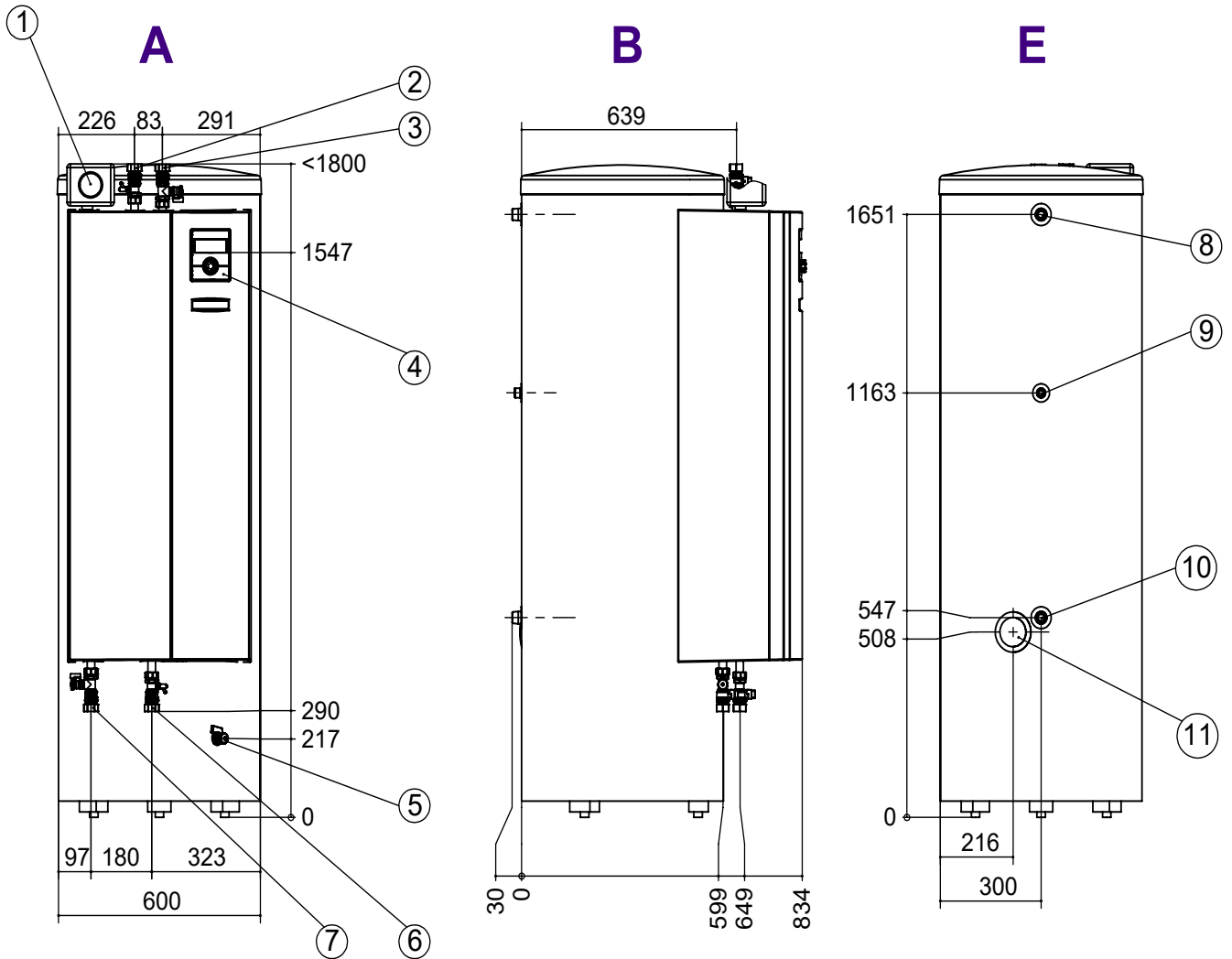
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\dot{V}_{HW}	Flow rate heating water
Δp_{max}	maximum free pressure



Dimensioned drawings

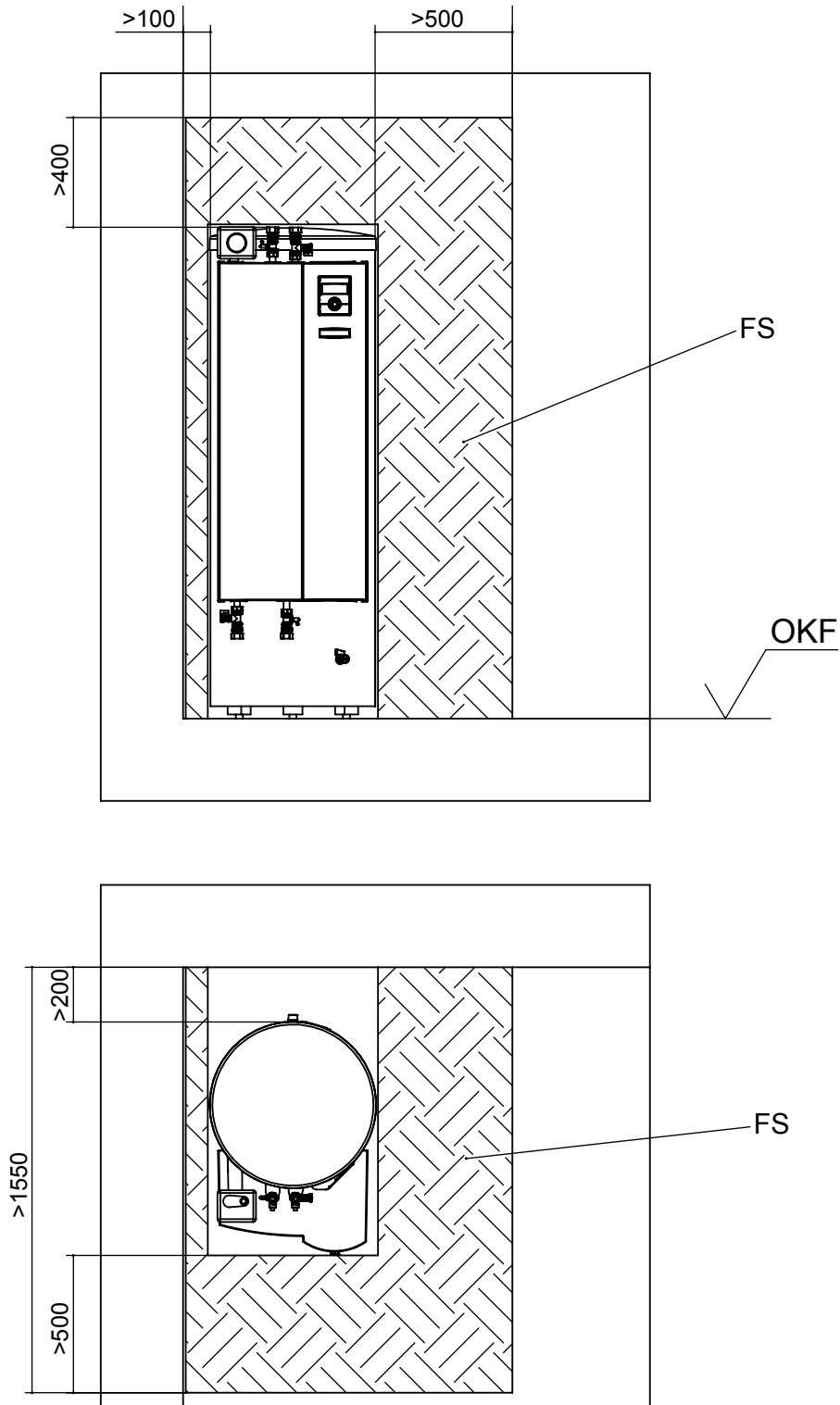
HTD



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All dimensions in mm.

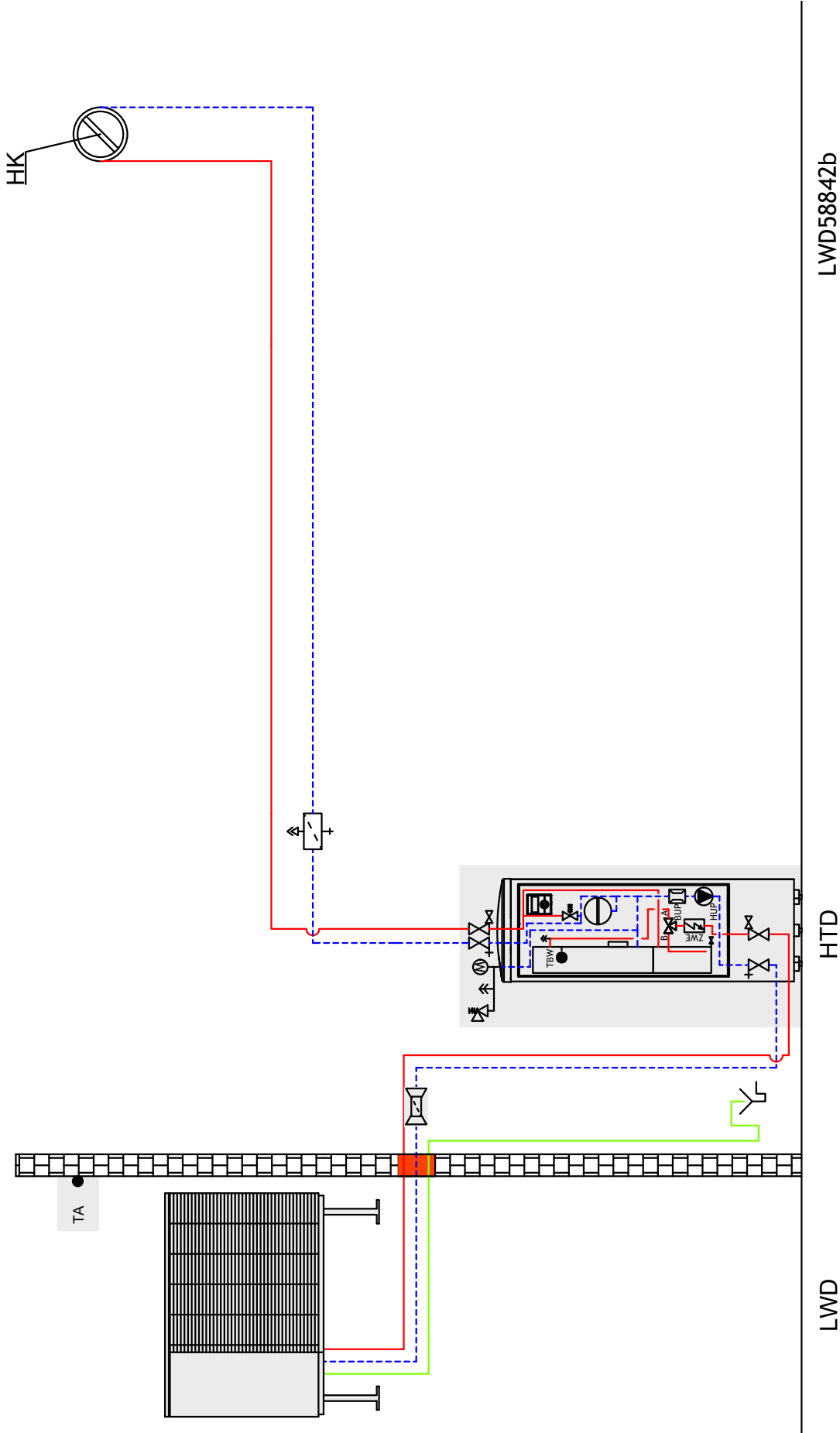
Pos.	Name	Dim.
A	Front view	
B	Side view from left	
E	Rear view	
1	Safety module	
2	Heating water inlet (return)	Rp 1" internal thread
3	Heating water outlet (flow)	Rp 1" internal thread
4	Control panel	
5	Emptying, buffer tank	G ½"
6	Hot water inlet (from heat pump)	Rp 1" internal thread
7	Hot water outlet (to heat pump)	Rp 1" internal thread
8	Domestic hot water	R 1" external thread
9	Circulation pump	R ¾" external thread
10	Cold water	R 1" external thread
11	Penetrations for electric/sensor cables	



Keys: UK819418

All dimensions in mm.

Pos.	Name
FS	Free space for service purposes
OKF	Top edge of finished floor



NOTE
This schematic diagram is an example of a system without shut-off and safety devices, and it does not replace the technical planning and design on site. All regional standards, laws and regulations must be observed. The pipe dimensions must be carefully planned and designed.





Gas- or oil-boiler	Split:	Switching valve domestic hot water / heating
Wood boiler	QN10	Switching valve cooling / heating
Brine pressure switch	QN12	Mixing valve additional heating
Swimming pool heat exchanger	QN11	Circulation pump
Separation heat exchanger / intermediate heat exchanger	GP12	Outdoor temperature sensor
Solar domestic hot water tank	BT1	upper domestic hot water (displayed value)
Pipe lead-in	BT7	Sensor return
Fresh water station (TWS)	BT3	Sensor domestic hot water
Room control unit	BT6	Flow sensor cooling
Dew-point monitor	BT4	Temperature sensor, liquid state
Supply heat pump	BT15	Flow temperature heating
Circulation pump / switching valve domestic hot water	BT25	Return temperature heating / cooling
Mixer circuit 1/2/3 (heating or cooling function)	BT71	Sensor heating boiler
Circulation pump heating circuit	BT52	Room temperature sensor
Circulation pump / switching valve	BT50	Flow heating
Feed circulating pump	XL1	Return heating / cooling
Circulation pump	XL2	Cold water
Domestic hot water charging pump	XL3	Domestic hot water
Heat source circulation pump	XL4	Circulation
Outdoor temperature sensor	XL5	Flow cooling
Sensor mixer circuit	XI10	Liquid refrigerant
Sensor external return	XL13	Gaseous refrigerant
Sensor return	XL14	Flow second heat generator
Flow sensor	XL18	Return second heat generator
Sensor desuperheater	XL19	Terminal second heat generator
Heating circuit	X2	Expansion board Split
Heating mixing circuit	EP Split	(not included in scope of delivery)
Cooling circuit		
Cooling mixing circuit		
Safety package primary		
Safety package secondary		
Circulation pump desuperheater		
Controls supplied by customer		

Controls supplied by customer / on-site components:
 Parts and components shown in the colour "grey" must be provided by the customer and also operated with a regulation provided by the customer.
 The temperature difference control SLP of the additional board is excepted from this.

General:
 Pipes, fittings and fixtures must be designed and insulated in accordance with the current and valid standards, guidelines and recognised rules of technology (e.g.: vapour diffusion-tight insulation if the temperature falls below the dew point).

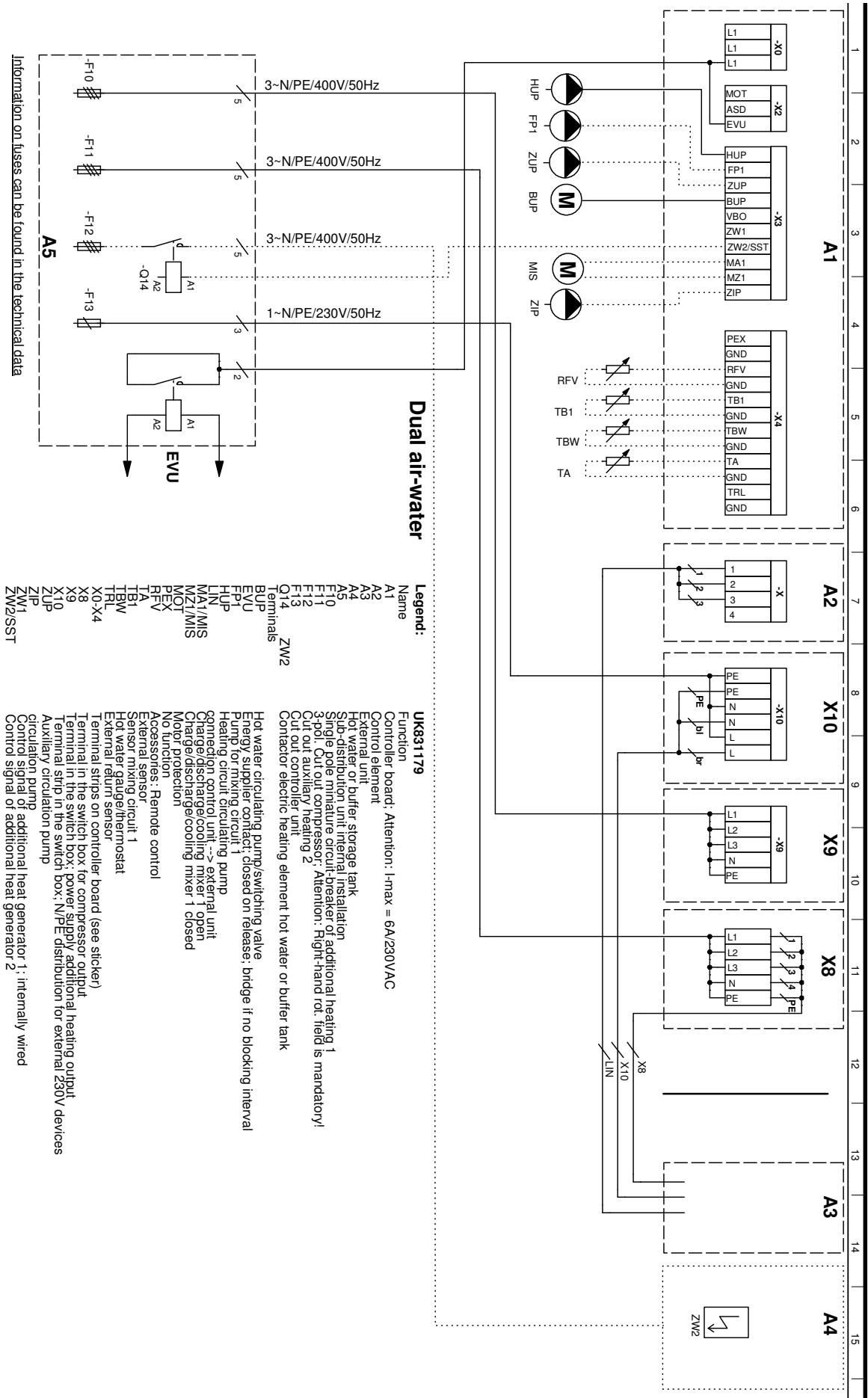
Vibration isolation	Gas- or oil-boiler
Shut-off device and drainage	Wood boiler
Shut-off device with dirt trap	Brine pressure switch
Safety group	Swimming pool heat exchanger
Shut-off device	Separation heat exchanger / intermediate heat exchanger
Circulation pump	Solar domestic hot water tank
Non return valve/ one way valve	Pipe lead-in
Overflow valve	Fresh water station (TWS)
Membrane expansion vessel	Room control unit
Second heat generator (ZWE)	Dew-point monitor
3-way mixing valve / switching valve	Supply heat pump
4-way mixing valve / switching valve	Circulation pump / switching valve domestic hot water
Dirt-trap (max. 0.6 mm mesh)	Mixer circuit 1/2/3 (heating or cooling function)
Wall breakthrough	Circulation pump heating circuit
Brine manifold	Circulation pump / switching valve
Ground slinkies	Feed circulating pump
Ground collector	Circulation pump
Flow switch	Domestic hot water charging pump
Groundwater spring pump with flow direction groundwater	Heat source circulation pump
Buffer tank: - TPS Stratified storage tank - RPS Series buffer tank - TPSK Stratified storage tank (cooling) - WTPSK Stratified storage tank, wall-mounted (cooling)	Outdoor temperature sensor
Multifunction tank	Sensor mixer circuit
Domestic hot water tank	Sensor external return
Volume flow meter	Sensor return
Heat meter	Flow sensor
	Sensor desuperheater
	Heating circuit
	Heating mixing circuit
	Cooling circuit
	Cooling mixing circuit
	Safety package primary
	Safety package secondary
	Circulation pump desuperheater
	Controls supplied by customer

WMMW	Gas- or oil-boiler
Shut-off device and drainage	Wood boiler
Shut-off device with dirt trap	Brine pressure switch
Safety group	Swimming pool heat exchanger
Shut-off device	Separation heat exchanger / intermediate heat exchanger
Circulation pump	Solar domestic hot water tank
Non return valve/ one way valve	Pipe lead-in
Overflow valve	Fresh water station (TWS)
Membrane expansion vessel	Room control unit
Second heat generator (ZWE)	Dew-point monitor
3-way mixing valve / switching valve	Supply heat pump
4-way mixing valve / switching valve	Circulation pump / switching valve domestic hot water
Dirt-trap (max. 0.6 mm mesh)	Mixer circuit 1/2/3 (heating or cooling function)
Wall breakthrough	Circulation pump heating circuit
Brine manifold	Circulation pump / switching valve
Ground slinkies	Feed circulating pump
Ground collector	Circulation pump
Flow switch	Domestic hot water charging pump
Groundwater spring pump with flow direction groundwater	Heat source circulation pump
Buffer tank: - TPS Stratified storage tank - RPS Series buffer tank - TPSK Stratified storage tank (cooling) - WTPSK Stratified storage tank, wall-mounted (cooling)	Outdoor temperature sensor
Multifunction tank	Sensor mixer circuit
Domestic hot water tank	Sensor external return
Volume flow meter	Sensor return
Heat meter	Flow sensor
	Sensor desuperheater
	Heating circuit
	Heating mixing circuit
	Cooling circuit
	Cooling mixing circuit
	Safety package primary
	Safety package secondary
	Circulation pump desuperheater
	Controls supplied by customer



Terminal diagram

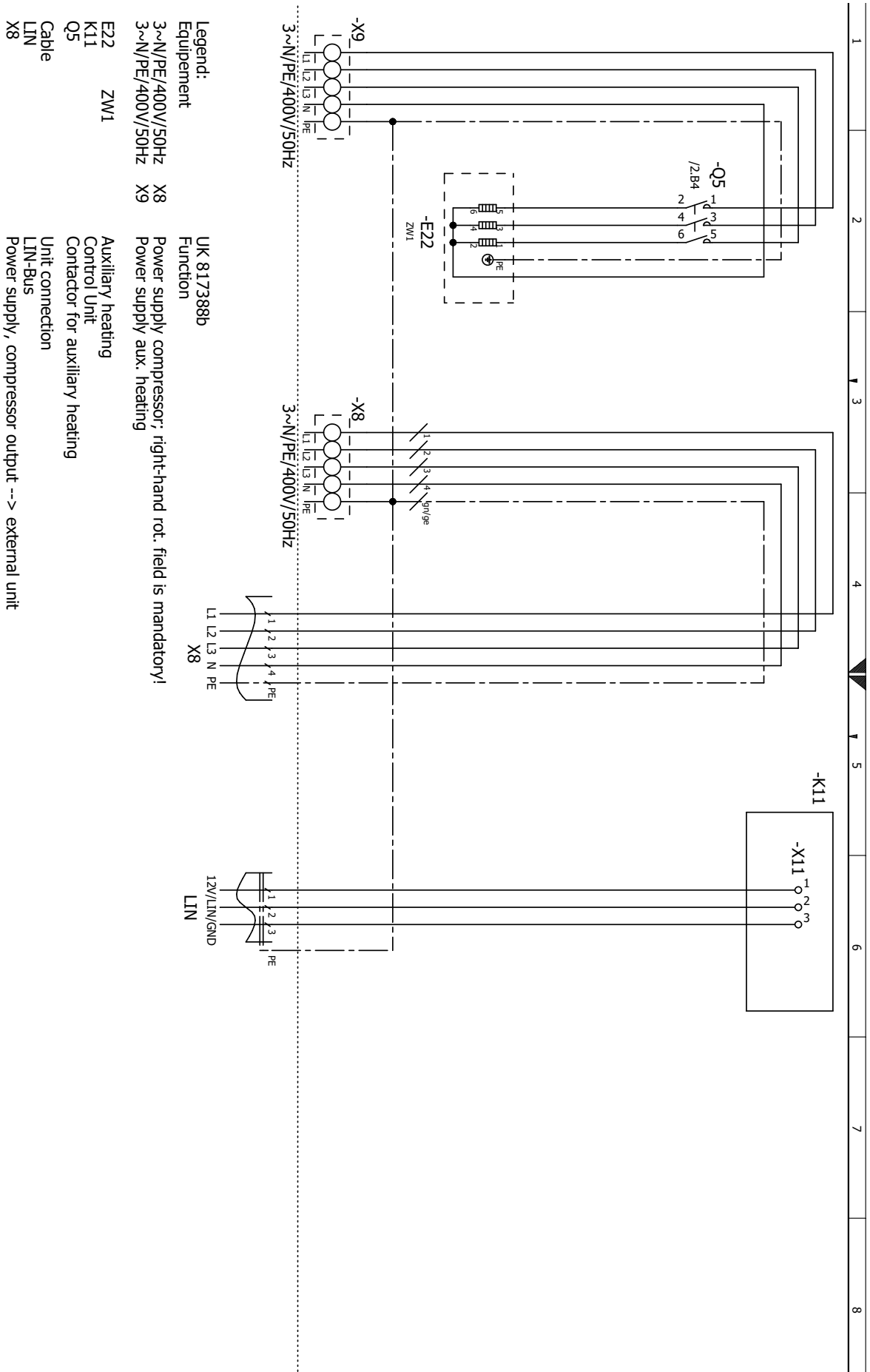
HTD





Circuit diagram 1/2

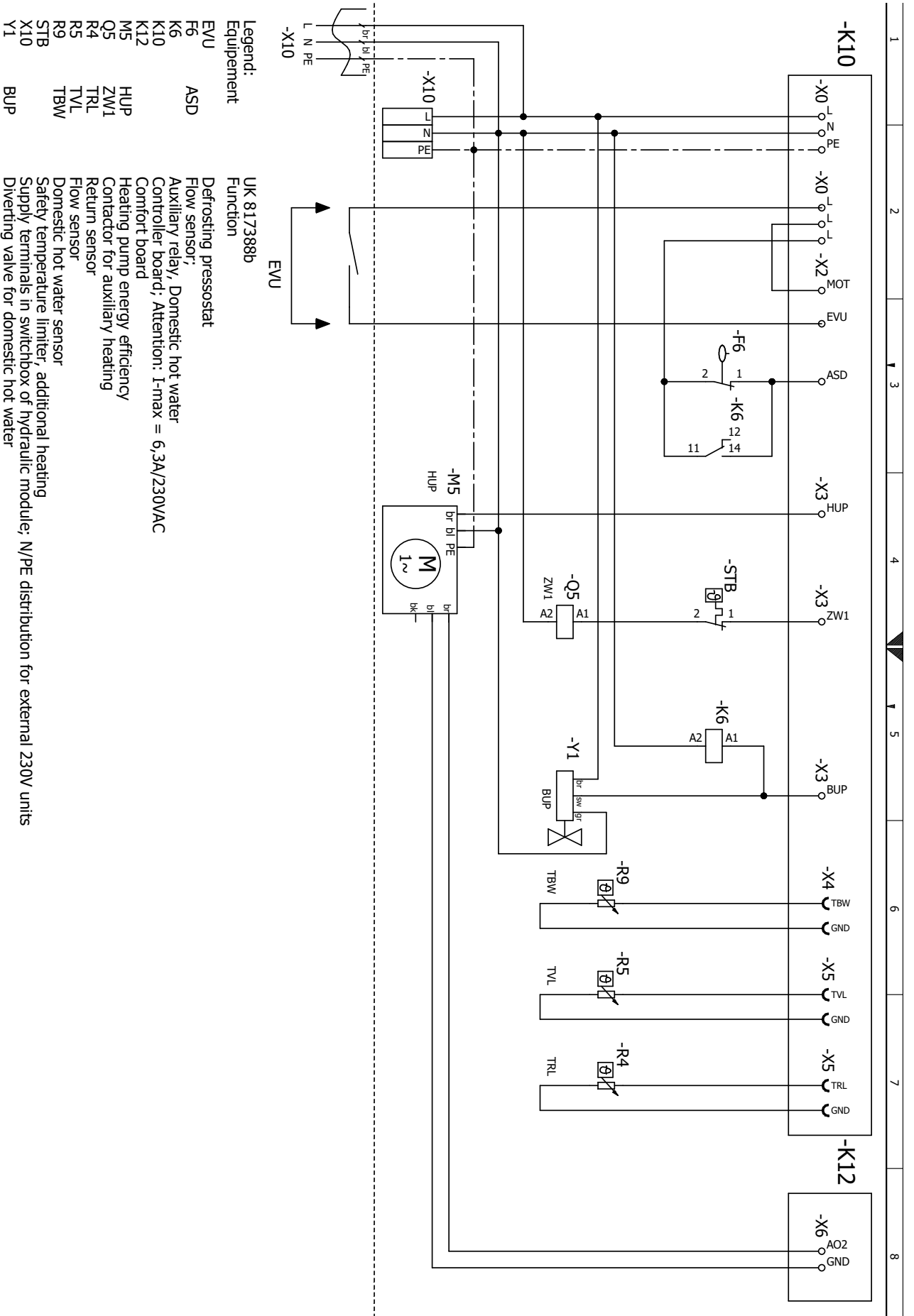
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Circuit diagrams 2/2

HTD



Legend:
 Equipment

- EVU
- F6 ASD
- K6
- K10
- K12
- M5 HUP
- O5 ZW1
- R4 TRL
- R5 TVL
- R9 TBW
- STB
- X10 BUP
- Y1

UK 817388b
 Function

- Defrosting pressostat
- Flow sensor,
- Auxiliary relay, Domestic hot water
- Controller board; Attention: I-max = 6,3A/230VAC
- Comfort board
- Heating pump energy efficiency
- Contactor for auxiliary heating
- Return sensor
- Flow sensor
- Domestic hot water sensor
- Safety temperature limiter, additional heating
- Supply terminals in switchbox of hydraulic module; N/PE distribution for external 230V units
- Diverting valve for domestic hot water









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