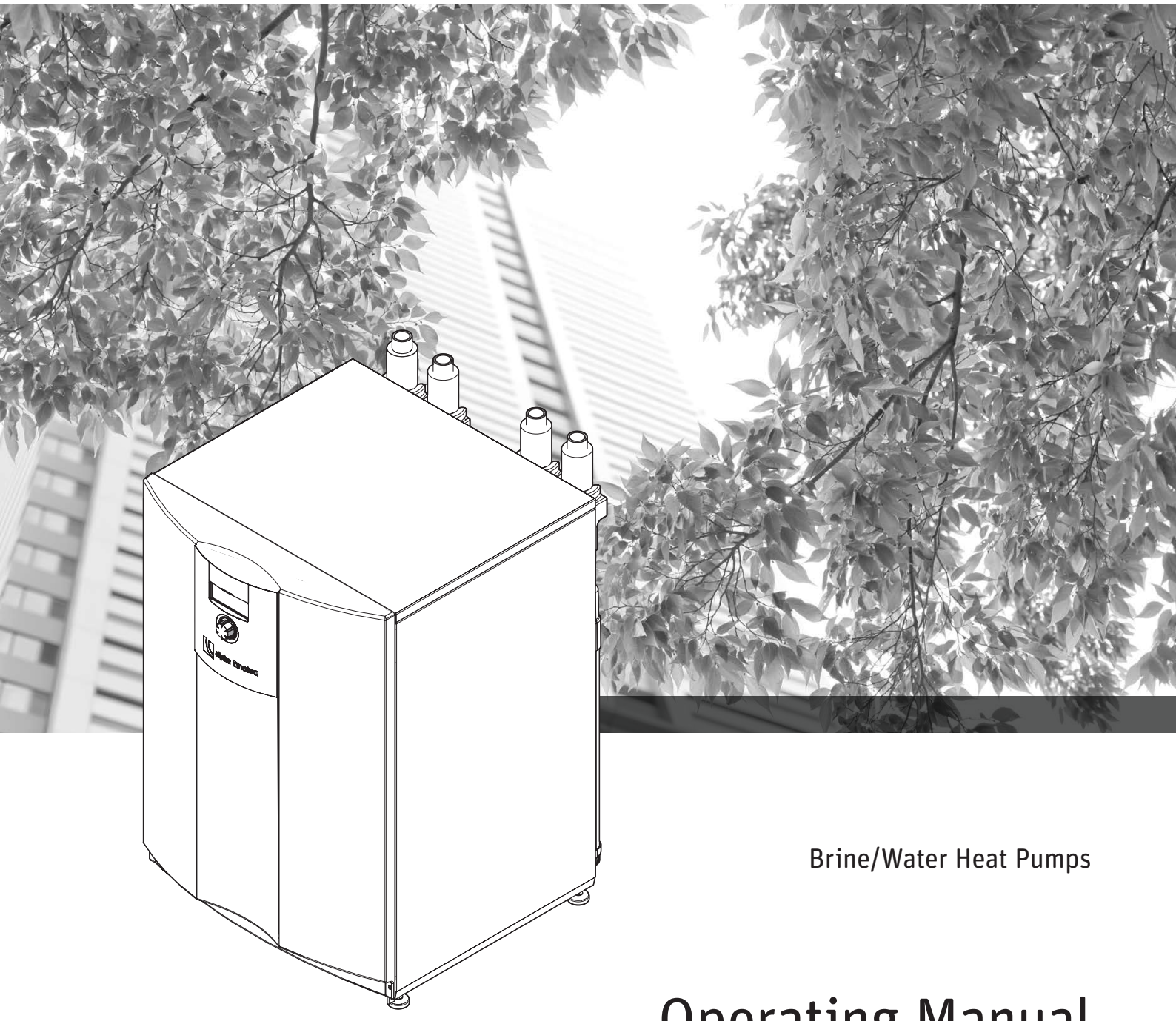
*the better way to heat*

alpha innotec



Brine/Water Heat Pumps

# Operating Manual

## SW 42(H)(K)3 – SW 192H3

UK

8305680OfUK – Translation of the original operating manual

# Table of contents

# 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 nameplate and unit sticker (→ “Rating plate”, page 6 and “Unit sticker”, page 3).

## 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 expansion board (accessories)
- Logbook, if included with this unit by the manufacturer

### Unit sticker

The unit sticker contains important information for contact with the manufacturer or the local partner of the manufacturer.

► Stick on the unit sticker (barcode with serial and product number) here.

## 1.3 Symbols and identification markings

### Identification of warnings

| Symbol | Meaning |
|---|---|
|  | Safety-relevant information. Warning of physical injuries. |
| **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 |
| ▶ | 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 at any time and is kept up-to-date:

- Germany: www.alpha-innotec.de
- EU: 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 water heating (optional, with accessories)
- Cooling (optional, with accessories or unit type …K3)

► Proper use includes complying with the operating conditions (→ “Technical data / Scope of supply”, from page 22) 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 safety and correctly. Interference by unqualified personnel can cause life-threatening injuries and damage to property.

► Ensure that the personnel is familiar with the local regulations, especially those on safe and hazard-aware working.

► Only allow qualified personnel with “electrical” training to carry out work on the electrics and electronics.

► Only allow qualified, skilled personnel to do any other work on the system, e.g.

- Heating installer
- Plumbing installer
- Refrigeration system installer (maintenance work)

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 flammable liquids and potentially explosive atmospheres

Constituents of antifreeze mixtures, e.g. ethanol, methanol, are highly flammable and form an explosive atmosphere:

► mix antifreeze in well-ventilated rooms.

► Note the hazardous substance markings and comply with the relevant safety regulations.

### 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. Thoroughly ventilate installation room.
3. Notify authorised customer service.

## 2.5 Disposal

### Batteries

Improper disposal of the buffer battery damages the environment.

► Dispose of the buffer battery in an environmentally compatible way according to the local regulations.

### Media harmful to the environment

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

► Collect media safely.

► Dispose of the media in an environmentally compatible way according to the local regulations.

## 2.6 Avoid damage to property

### Improper action

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

- Proper planning, design and start-up
- Closed system with regard to corrosion
- Integration of adequately dimensioned pressure retention
- Use of deionised 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 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 domestic 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).

### Unsuitable quality of the water or the water-antifreeze mixture in the heat source

► Use of pure water in the heat source with a flat-plate collector or a borehole heat exchanger is not permitted.

► For operation of the heat source with water or water-antifreeze mixture, ensure that the water used fulfils the quality specifications of the heating water side.

→ “7 Flushing, filling and venting“, from page 17

### Using groundwater

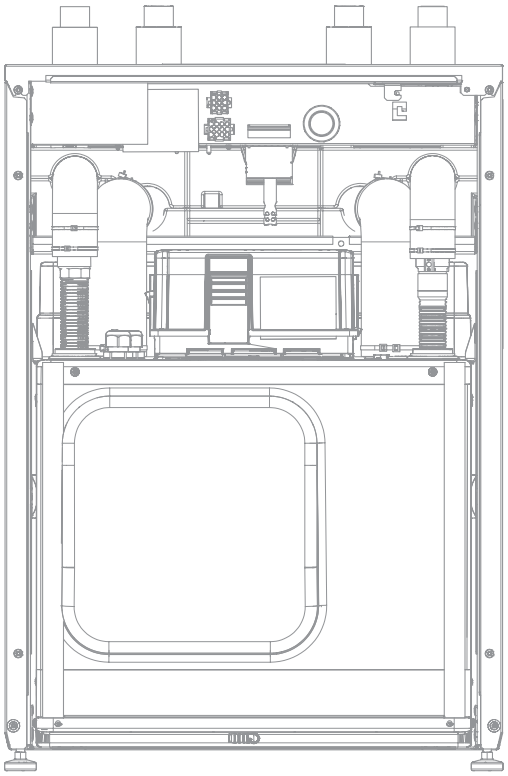
► If using groundwater install an intermediate exchanger.

# 3 Description

## 3.1 Layout

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

### Housing with unit components



The module box is inserted in the bottom of the housing. The electrical control box is at the top.

### Rating plate

Rating plates are attached to the following places on the unit:

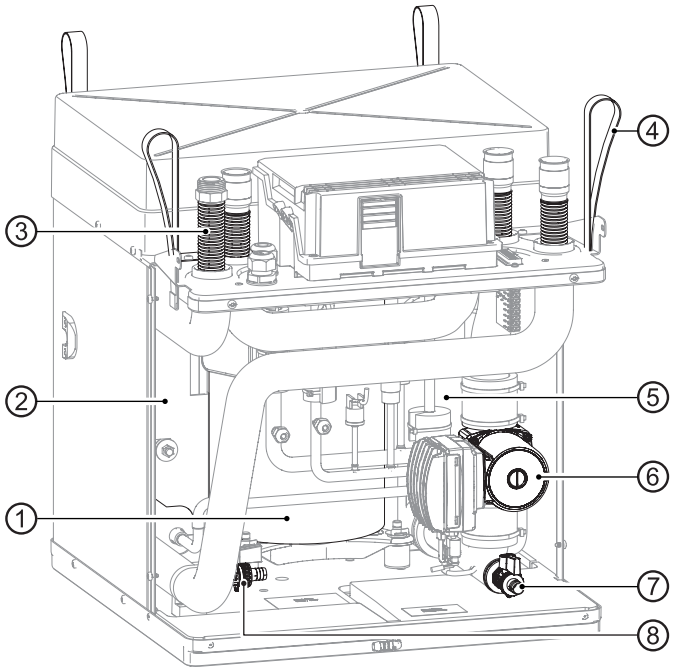
- at the rear on the outer panel
- left-hand side, on the module box

The rating plate contains the following information at the top:

- Unit type, product number
- Serial number, unit index

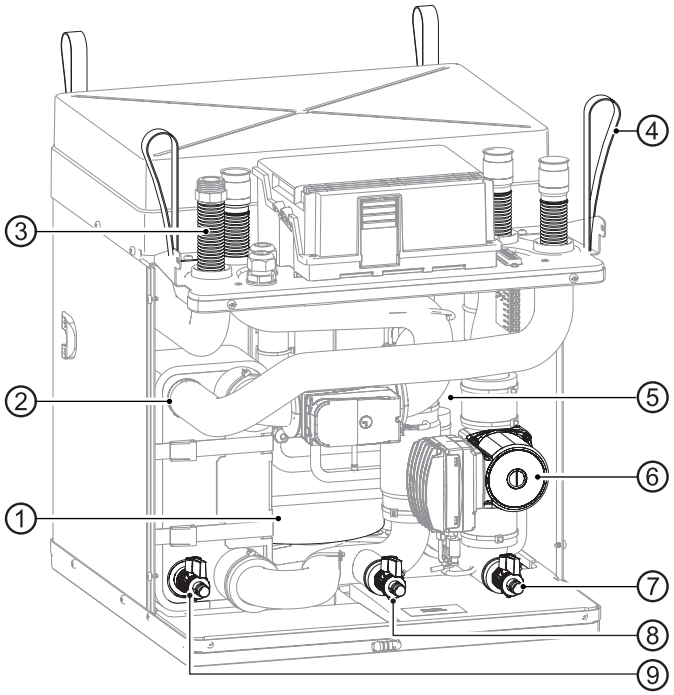
The rating plate also contains an overview of the most important technical data.

### Module box – variant without cooling




1 Compressor
2 Condenser
3 Vibration isolator (4x)
4 Lifting lug (4x)
5 Evaporator
6 Heat source circulation pump
7 Heat source filling and drain tap
8 Heating filling and drain tap

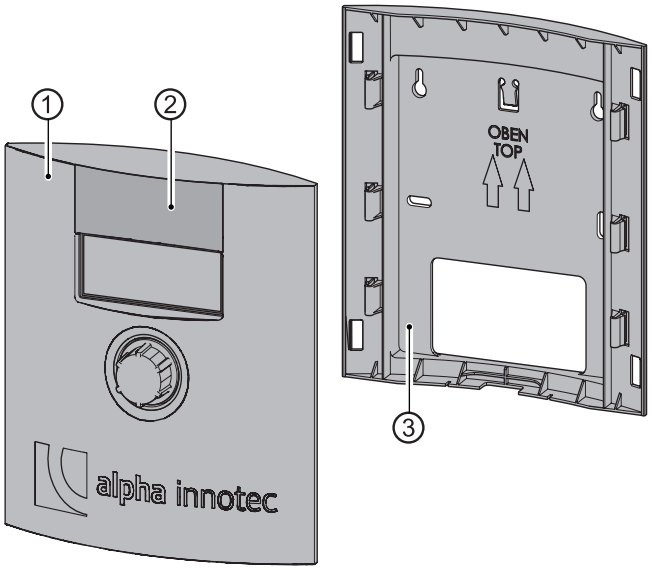
## Module box – variant with cooling




1 Compressor
2 Condenser
3 Vibration isolator (4x)
4 Lifting lug (4x)
5 Evaporator
6 Heat source circulation pump
7 Heat source filling and drain tap
8 Heat source filling and drain tap
9 Heating filling and drain tap

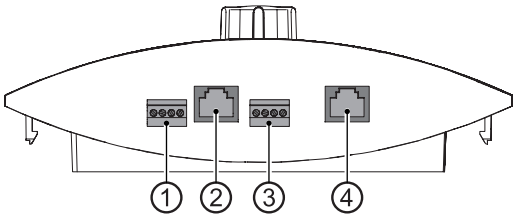
**NOTE**
The hose connectors are not part of the scope of delivery with all KFE ball valves.

## Control unit




1 Control panel
2 Push up flap upstream of USB connection (for qualified personnel for software updates and for data logging)
3 Wall-mounted bracket (only necessary for wall-mounted installation)

## Underside of the control panel




1 Connection room control unit RBE RS 485 (accessory)
2 RJ45 connection cable to the network link
3 Connection LIN bus to the regulator board
4 RJ45 connection not assigned

# 3.2 Accessories

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

- Additional masking plate for the front cover panel, if the control is mounted on the wall
- Domestic hot water tank
- Changeover valve, domestic hot water
- Room thermostat for switching the cooling function (if included)

- Dew point monitor for protecting a system with cooling function at low flow temperatures (if available)
- Expansion board
- “Cooling package” for use of the cooling function
- for units without cooling: Pump assemblies for separate storage tank and in-line tank integration (heating circuit)
- Heating circuit safety package
- Heat source circuit safety package

## 3.3 Function

Liquid refrigerant is evaporated (evaporator), the energy for this process is environmental heat and comes from the “ground” heat source (collector, borehole heat exchanger or groundwater via intermediate exchanger). The gaseous refrigerant is compressed (compressor), this causes the pressure to rise and therefore the temperature too. The gaseous refrigerant with high temperature is liquefied (condenser).

Here the high temperature is discharged to the heating water and is used in the heating circuit. The liquid refrigerant with high pressure and high temperature is expanded (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.

The integrated vibration isolators for the heating circuit and heat source prevent structure-borne sound and vibrations from being transferred onto the fixed pipes and therefore into the building.

### Cooling

Cooling is integrated in type K units. Type H units can be retrofitted with the “Cooling package” accessories. The following options are possible for units with cooling function (→ operating manual of the heating and heat pump controller):

- Passive cooling (without compressor)
- Control of the cooling function via the heating and heat pump controller
- Automatic switching between heating and cooling mode

### Network connection on the control

The control can be connected to a computer or network via a network cable. The heating and heat pump controller can then be controlled from the computer or from the network.

# 4 Operation and care

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

## 4.1 Energy and environmentally aware operation

The generally accepted requirements for energy-aware and environmentally-aware operation of a heating system also apply to use of a brine/water 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 (purge ventilation)

## 4.2 Maintenance

Wipe down the outside of the unit 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.

# 5 Delivery, 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.

## 5.1 Scope of supply

**NOTE**
On delivery the accessories are enclosed in two packages on the housing.

► Check delivery immediately after receipt for outwardly visible damage and completeness.

► Notify supplier of any defects immediately.

The separate pack included contains:

- Sticker with the unit number for attaching to page 3 of this manual
- Control unit, consisting of the control, wall bracket and masking plate
- 6-mm anchors with screws (2x each) for wall-mounting the control unit
- Outdoor sensor
- Replacement material after dismantling the module box:
  - Insulation hoses (2x)
  - Cable ties (4x)
  - for units up to 12 kW capacity: O-rings (6x), flat seal (1x)
  - for units with 14 kW capacity and higher: O-rings (8x)

## 5.2 Storage

► Where possible do not unpack the unit until directly before installation.

► Store unit protected against:

- Moisture/damp
- Frost
- Dust and dirt

## 5.3 Unpacking and transport

**NOTE**
The module box can be removed for transport (→ “Dismantle the module box”, page 11).

### Notes on safe transport

The housing with the unit components and the module box are heavy (→ “Technical data / Scope of supply”, from page 22). There is a risk of injuries or damage to property if the housing with the unit components falls or overturns or if the module box falls.

► The housing with the unit components and module box must be transported and installed by several persons.

► Secure the housing with the unit components during transport. Carry the module box by the carrying lugs.

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.

If the module box is tilted by more than 45°, compressor oil runs into the cooling circuit.

► Do not tilt the unit with installed module box by more than 45°.

Transport the unit preferably with a pallet truck, alternatively with a handcart.

### Transport with a pallet truck

► Transport the unit to the place of installation packaged and secured on a wooden pallet.

### Unpacking

**NOTE**
If the unit is not transported by a pallet truck: Do not lift off the pallet until after unpacking and dismantling the housing panels.

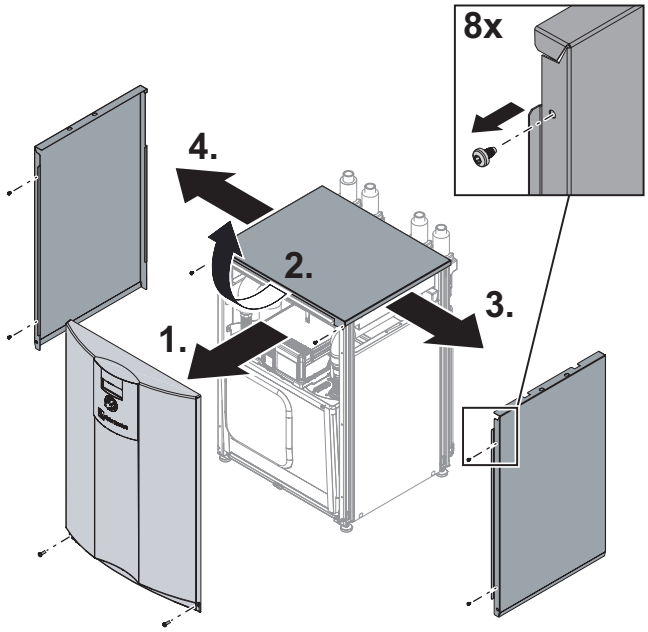
1. Remove plastic films. Ensure that you do not damage the unit.
2. Dispose of the mounting bracket, transport and packaging material in an environmentally friendly way according to local regulations.
3. Remove the film from the plastic element of the front panel in the place of installation.

## Dismantle housing panels for transport with handcart or carrying the unit

✓ Unit is unpacked (→ “Unpacking”, page 9).

To avoid damage to the housing panels:

1. Undo 2 screws at the bottom of the front panel.
   Lift up the front panel and put down in safe place.
2. Undo the 2 screws at the front of the cover.
   Lift the cover slightly, push back by approx. 1 cm and remove.
3. Undo 2 screws at the right panel.
   Lift up the right side panel to the side and put down in safe place.
4. Undo 2 screws at the left panel.
   Lift up the left side panel to the side and put down in safe place.



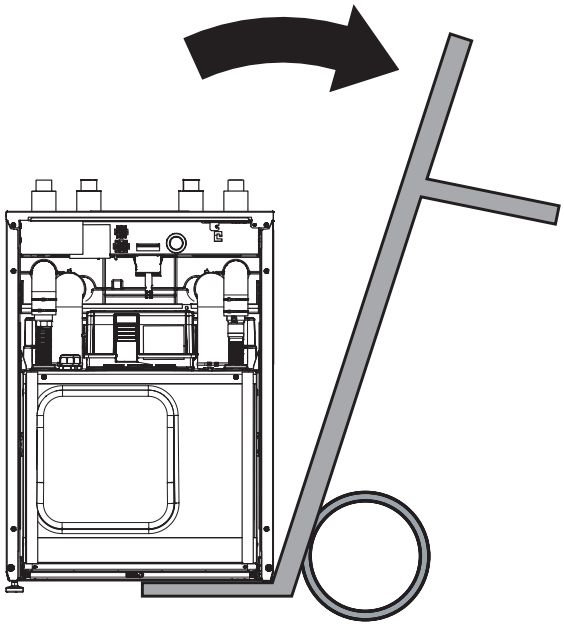

## Transport with a handcart

**NOTE**

- If transporting with a handcart the module box must be pushed in.
- The following figure with the handcart shows transporting the unit on its left-hand side; it can also be transported on its right-hand side.

✓ Housing panels are dismantled.

To avoid damage: On a handcart, load the unit on its side only.



Transport unit on the handcart.

## Carrying the unit

✓ Housing panels are dismantled.

1. Dismantle module box (→ “Dismantle the module box”, page 11) and carry it by the support lugs to the place of installation.
2. Carry the housing with the unit components separately to the place of installation.

## 5.4 Installation

### Installation room and space requirements

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

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

→ “Technical data / Scope of supply”, from page 22

$$\textbf{Minimum room volume} = \frac{\text{Refrigerant capacity [kg]}}{\text{Limit [kg/m}^3\text{]}}$$

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

✓ Minimum volume corresponds to the requirements for the refrigerant used.

✓ Installation inside the building only.

✓ Installation room is dry and frost-free.

✓ Clearance dimensions are met (→ “Installation plans”, from page 36).

✓ The surface/floor is suitable for installation of the unit:

- level and horizontal
- load-bearing capacity for the unit's weight

### Aligning the unit

► Align the unit horizontally and stably in the installation site using the height-adjustable feet and a spanner size SW 13. Adjustment range: 25 mm.

# 6 Installation and connection

## 6.1 Dismantle the module box

**IMPORTANT**
If the module box is tilted by more than 45°, compressor oil runs into the cooling circuit.

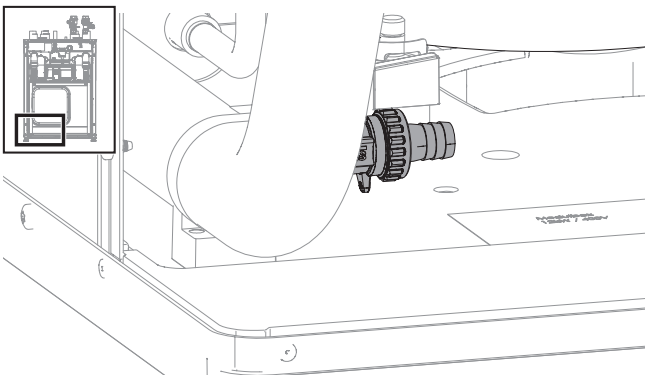
► Do not tilt the module box by more than 45°.

**NOTE**
- If necessary the module box can be dismantled for easier transport of the unit or for service reasons.
- Steps 1 to 5 are only required if the module box is connected and filled.

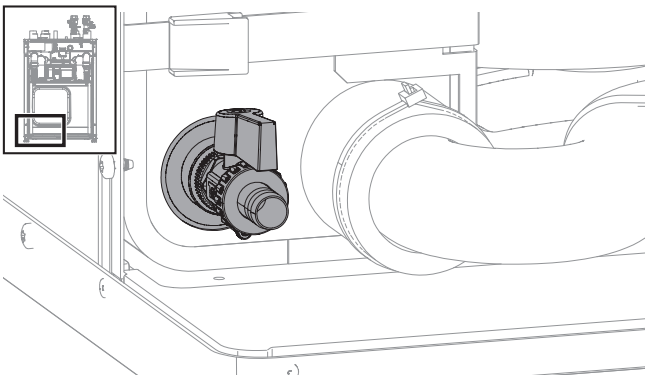
✓ Unit is safely disconnected from the power supply and protected against being switched back on again.

1. Remove the front panel of the module box (→ “7.1 Remove the front panel of the module box”, page 17).
2. Close shut-off valves to the heating circuit.
3. Drain the unit via the filling and drain tap of the heating.

► Unit **without** cooling:



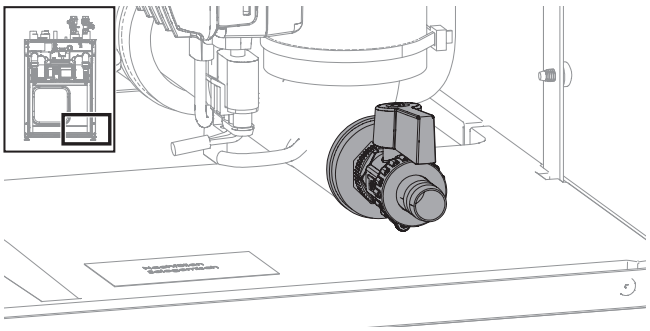
► Unit **with** cooling:



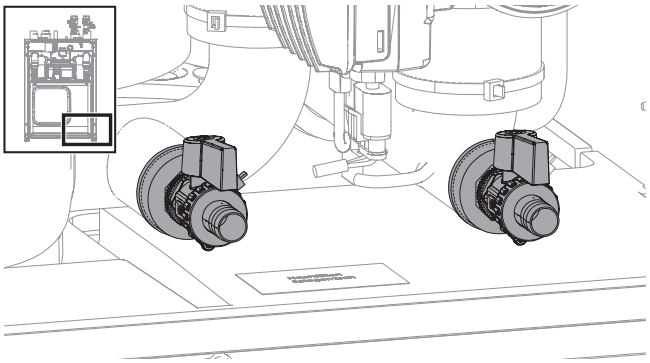
**NOTE**
The hose connectors are not part of the scope of delivery with all KFE ball valves.

4. Close shut-off valves to the heat source.
5. Drain the unit via the filling and drain tap of the heat source.

► Unit **without** cooling:



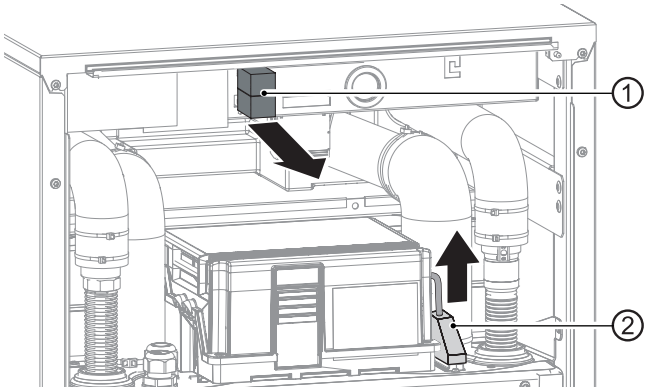
► Unit **with** cooling:



6. Disconnect the electrical connections:

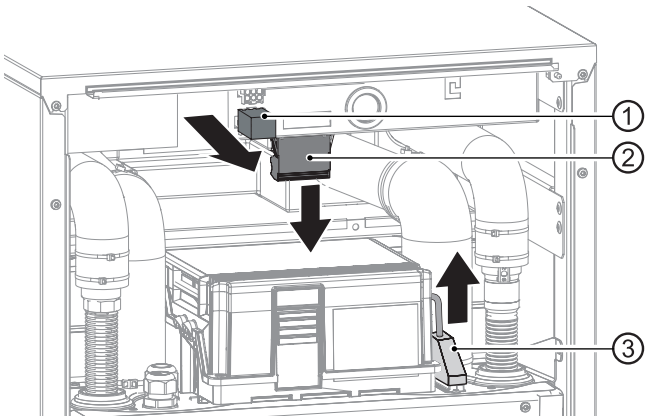
► Unit **up to 12 kW** capacity:

- Disconnect 2 white connectors (①) at the electrical control cabinet. To do this, release the lugs by pressing on the sides of the connectors
- Pull out the black rectangular connector (②) at the top of the module box



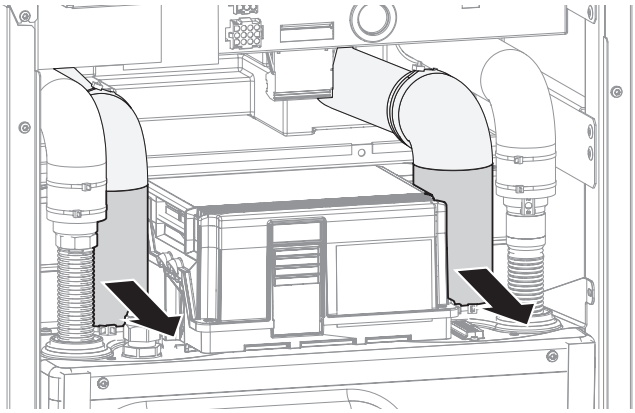

► Unit with **14 kW** capacity **and higher**:

- Disconnect connector (①) at the front of the electrical control cabinet
- Disconnect connector (②) at the bottom of the electrical control cabinet. To do this, remove the control cabinet cover and undo the connector from the inside
- Pull out the black rectangular connector (③) at the top of the module box

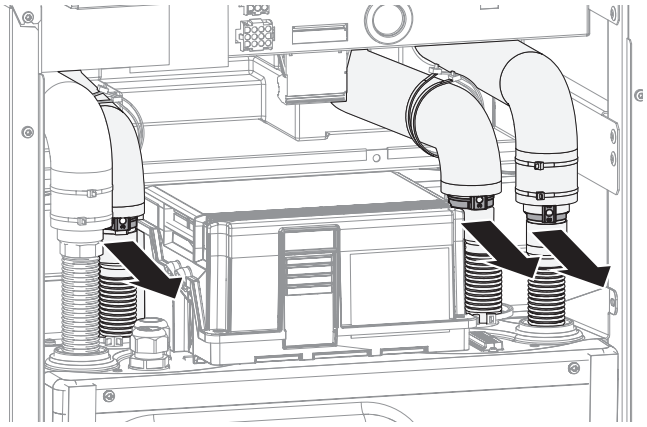



**NOTE**
The following diagrams show the connections of units with up to 12 kW capacity. In units with 14 kW capacity and higher all connections are installed with clips and without valves.

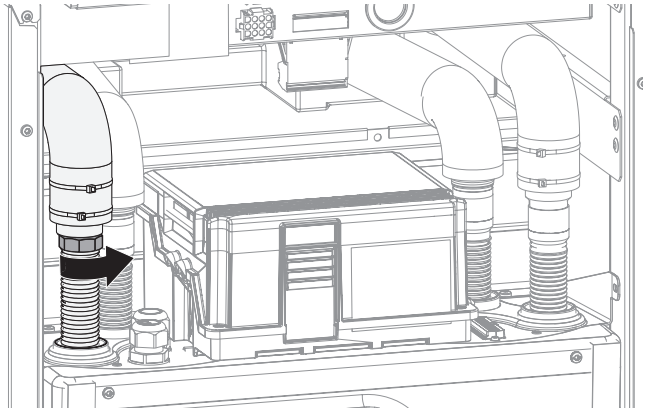
7. Remove the insulation on the hydraulic connections.



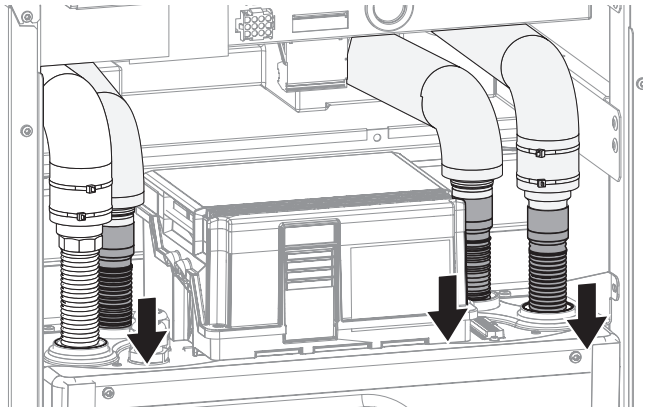
8. Remove 3 clips on the hydraulic connections.



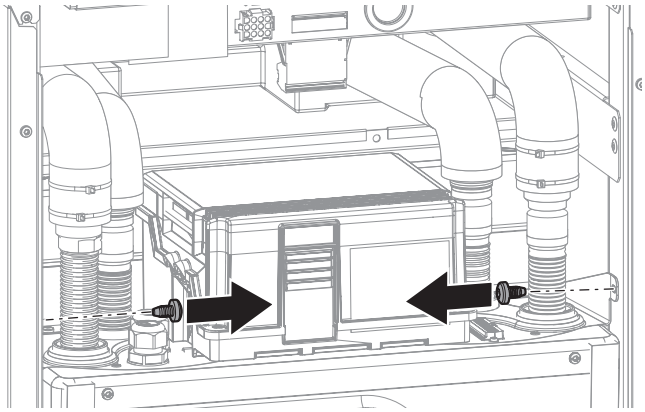
9. Use spanner size SW 37 to unscrew the heating flow.



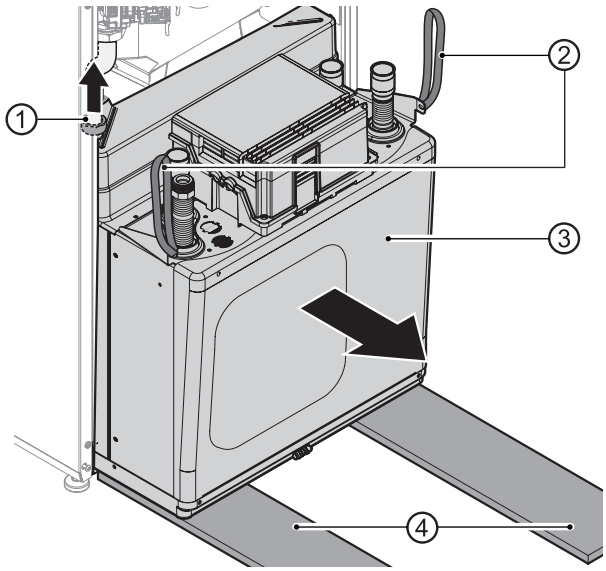
10. Disconnect the hydraulic connections; to do this, push the pipes apart as far as necessary.



11. Remove the 2 side retaining screws.

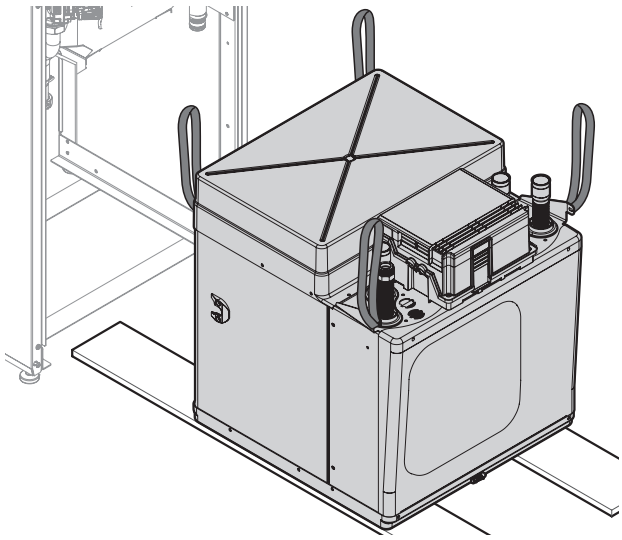


12. To protect the floor and move the module box (③) more easily: place boards (④) under it, e.g. from the packaging material.




13. Lift and hold nut (①) on the heating flow.
14. Slowly and carefully pull out the module box by the carrying lugs (②). Ensure that none of the pipes are damaged.

15. Pull out the module box completely and place it on the boards.



## 6.2 Install the module box

1. Place the module box carefully in the bottom of the housing and slowly and carefully push it in.
   - At the same time, lift and hold the nut on the heating flow
   - Lift up pipes so that they do not get damaged
2. Attach the two side retaining screws.
3. Connect the heating flow and hydraulic connections. At the same time, replace O-rings on the heat pump connections (→ separate pack included).
4. Perform pressure test and insulate pipes with the enclosed insulation hoses (→ separate pack).
5. Connect the electrical cables:
   - Plug both connectors into the electrical control cabinet. Ensure that the connectors move easily and the lugs latch into position
   - Plug in the black rectangular connector at the top of the module box

## 6.3 Install the hydraulic connections

**IMPORTANT**
Damage to the copper pipes due to unacceptable loading!

► Secure all connections against twisting.

✓ The heat source system has been installed in accordance with the specifications (→ planning & design manual, dimensioned diagrams, installation plans).

✓ Cross-sections and lengths of the pipes for the heating circuit and heat source are dimensioned adequately.

✓ The free pressure of the circulation pumps produces at least the minimum throughput required for the unit type (→ “Technical data / Scope of supply”, from page 22).

✓ The cables for the heat source and the heating are fixed to the wall or ceiling via a fixed point.

### Connect the unit to the heat source and heating circuit

1. Install shut-off devices at the connections of the heat source and heating circuit.
2. Insert the vent at the highest point of the heat source and the heating circuit.
3. Recommendation: Fit a dirt filter with mesh size 0.9 mm onto the heat source inlet.
4. Ensure that the operating overpressures (→ “Technical data / Scope of supply”, from page 22) are not exceeded.

## 6.4 Connect the electrical cables

**IMPORTANT**
Irreparable damage to the compressor due to wrong rotating field!

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

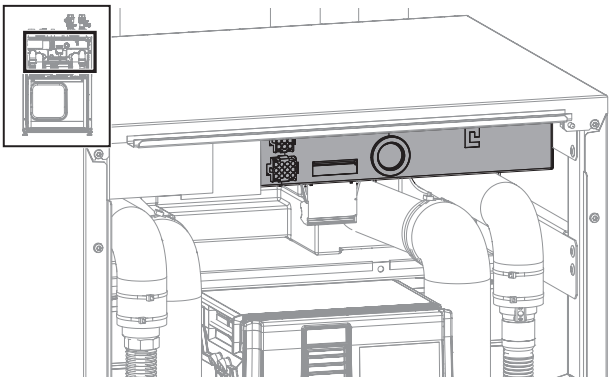
### Basic information on the electrical connection

**NOTE**
Ensure that the unit is supplied with electricity at all times. After working inside the unit and attaching the unit panelling, switch the power supply back on immediately.

- 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”, from page 22)
- Comply with the electromagnetic compatibility regulations (EMC regulations)
- Lay unshielded power supply cables and shielded cables (bus cable) sufficiently far apart (> 100 mm)
- Maximum line length: 30 m.
  The LIN-bus cable must be a shielded cable of at least 4 x 0.5 mm²

### Pull in the cables and conductors and make the connections

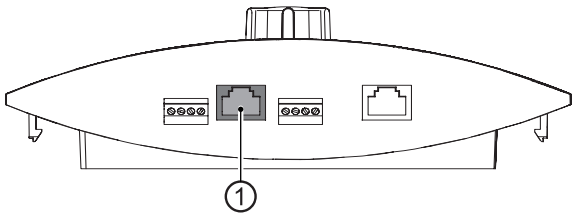
1. Strip the sheathing of all cables to the external loads before laying in the cable duct of the control box.
2. Dismantle the cover of the electrical control box.



3. Feed the control/sensor cables and unit supply cable into the housing from the rear.
4. Route cables from underneath through the cable openings in the control box.
5. Connect cables to the respective terminals (→ “Terminal diagrams”, from page 42).

### Operate the controller via a PC /network

1. During installation lay a shielded network cable (category 6) through the unit.
2. Plug the RJ-45 connector of the network cable into the socket of the control unit (①).



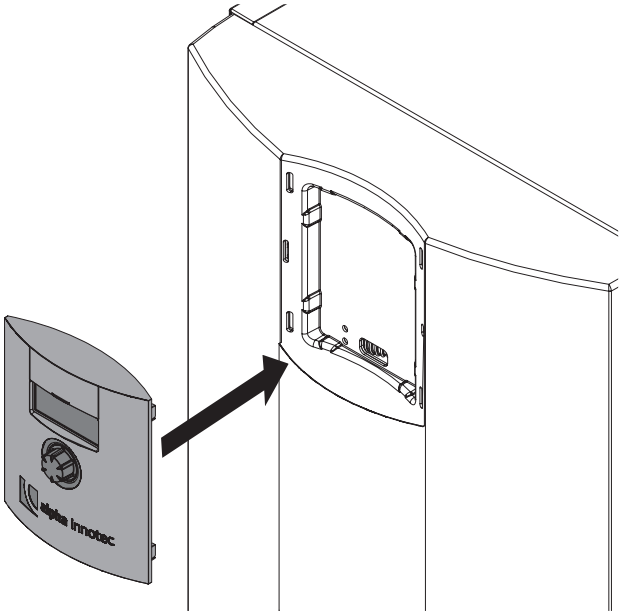

**NOTE**
The network cable can be retrofitted at any time.

## 6.5 Installing the control panel

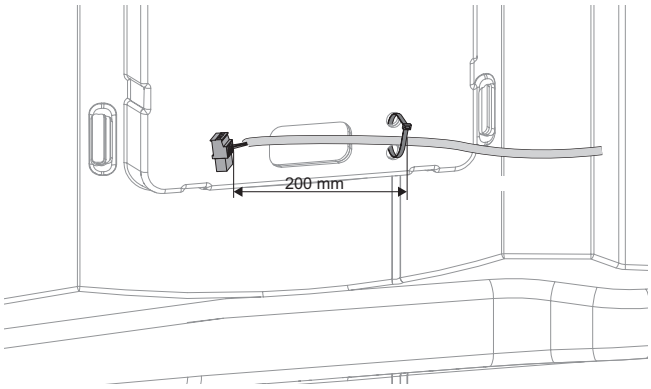
**NOTE**
The control can be inserted in a recess in the front panel of the unit or can be installed on the wall.

### Insert the control in the unit and connect

1. If required: Remove masking plate from the slot. To do this, dismantle the front panel (→ “Dismantle housing panels for transport with handcart or carrying the unit”, page 10), press the lugs together and push out of the openings.
2. Remove film from the plastic element of the front panel.
3. Position the control in the recess in the front unit panel.



4. Cut the cable to length generously so that the front panel can be removed and placed to the side of the unit. Do not cut the cable ties for strain relief of the LIN bus cable at the electric control box.
   - LIN bus cable approx. 1.1 m from the fixing of the strain relief at the electrical control box
   - All other cables approx. 1.2 m
5. Use cable ties (→separate pack) to fix the LIN bus cable to a web of the masking plate around 20 cm in front of the connector (strain relief).

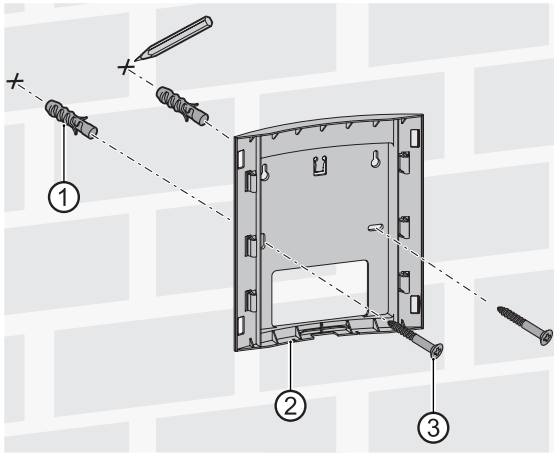



6. Push the cable through the opening in the front panel of the unit from below and into the control.
7. Press the lugs of the control into the openings in the front panel of the unit.

### Mount the control on the wall and connect

**IMPORTANT**
Mount the wall bracket with control panel **only vertically** on a wall!

1. Release the rear bracket from the control.
2. If visually unattractive: Cut off the lugs on the rear of the control (are only needed to insert in the front panel).
3. Mark 2 drillholes (→ Dimensional drawing “Wall-mounted bracket”, page 35).
4. If cables are fed in from underneath: Break out the web at the bottom in the middle of the wall bracket. Use side-cutters if necessary.
5. Fix the wall-mounted bracket (②) with 2 wall plugs (①) and 2 screws (③).

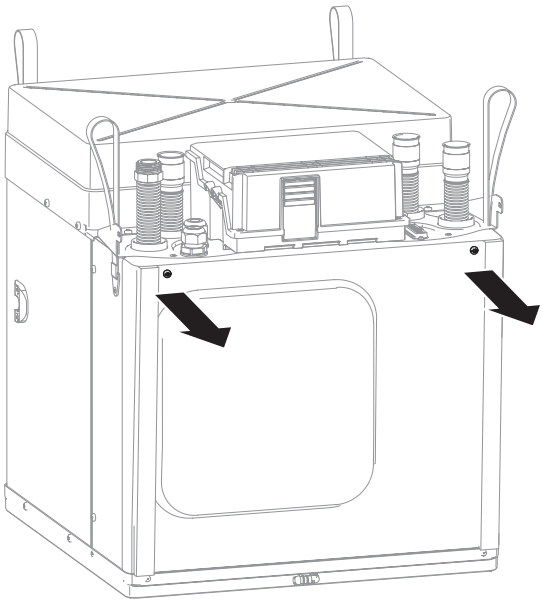


6. Feed in the cables from the wall (e.g. in-wall box) or from below.
7. Route the LIN bus cable from the top right-hand side at the rear from the heat pump and plug into the control at the bottom.
8. Push the control onto the wall-mounted bracket.
9. Put on the masking plate if applicable (accessories).

# 7 Flushing, filling and venting

## 7.1 Remove the front panel of the module box

► Unscrew the front panel of the module box.



## 7.2 Fill, flush and vent heat source

Frost protection must be provided in the heat source. Below are the approved antifreeze agents based on:

- Monopropylene glycol
- Monoethylene glycol
- Ethanol
- Methanol

Antifreeze agents based on salt are not permitted.

► When selecting the antifreeze agent, it must be ensured that it is compatible with the following materials:
  - Brass (CW602N and CW614N)
  - Stainless steel (AISI304, AISI316 and AISI316L)
  - Copper (Cu-DHP CW024A - EN1652)
  - Cast iron (EN-GJL-150)
  - Composite (PES 30% GF)
  - EPDM (ethylene propylene diene rubber)
  - PTFE (Polytetrafluoroethylene)
  - FKM (fluororubber)

  If an antifreeze agent is not compatible with one of these materials, it may not be used.

  Antifreeze agents from our product range are safe with regard to our units and the accessories purchased from us and guarantee compatibility with the listed materials.

► Pressure losses must be observed when selecting the antifreeze agent.

► The antifreeze agent that is selected and used must comply with the specifications and requirements of the local authorities and water management authorities.

**WARNING**
**Methanol and ethanol can give off flammable and explosive gases. Therefore, the safety provisions for the anti-freeze must be noted and followed!**
**The hazard markings of all anti-freezes used must be noted and the relevant safety provisions must be followed.**

► Make sure that the mixing ratio of water and antifreeze agent meets the required minimum antifreeze temperature in the heat source.

→ “Technical data / Scope of supply“, from page 22

► For operation of the heat source with water or water-antifreeze mixture, ensure that the water used fulfils the quality specifications of the heating water side.

→ “Heating water quality“, page 18

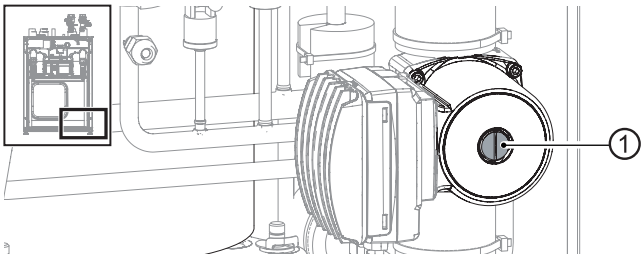
✓ Drain pipe of the safety valve is connected.

✓ Room is ventilated.

1. Flush the heat source system thoroughly.
2. Mix antifreeze with water thoroughly with the required ratio, before adding to the heat source.
3. Check the concentration of the water-antifreeze mixture.
4. Fill the heat source with the water-antifreeze mixture.
   Fill until the system is air-free.
5. Fill the unit via the ball valves in the module box.

## 7.3 Vent the circulation pump of the heat source

1. Place vessel for collecting discharging liquid under the outlet.
2. Undo deflating screw (①) in the middle of the circulation pump of the heat source.




**NOTE**
The hose connectors are not part of the scope of delivery with all KFE ball valves.

3. Wait until liquid is discharged uniformly.
4. Screw the deflating screw (①) of the circulation pump of the heat source back on tightly.
5. Screw the front panel of the module box.
6. Dispose of collected liquid according to the local regulations.
7. Set system pressure to 1 bar.

## 7.4 Flush and fill the heating and domestic hot water charging circuit

### Heating water quality

**NOTE**
- For detailed information refer, among other things, to the VDI Guidelines 2035 “Vermeidung von Schäden in Warmwasserheizanlagen”
- 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 VDI 2035 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).

✓ Drain pipe of the safety valve is connected.

✓ The front panel of the module box is unscrewed.

► Ensure that the set pressure of the safety valve is not exceeded.

1. If installed: Flush the domestic hot water charging circuit for approx. 1 minute.
2. Flush heating circuit thoroughly, until no more air is discharged.
3. Unscrew the front panel of the module box.

# 8 Insulate hydraulic connections

1. Insulate heating circuit and heat source according to the local regulations.
2. Open shut-off devices.
3. Perform a pressure test and check for leaks.
4. Insulate the internal piping of the module box with the insulation material from the separate pack included.
5. Insulate external piping on site.
6. Insulate all connections, fittings and pipes.
7. Insulate heat source so that it is vapour-diffusion tight.
8. Insulate the heating circuit of units with cooling vapour-diffusion tight too.

# 9 Commissioning

✓ Relevant planning & design data of the system is documented in full.

✓ The competent energy supplier has been notified of operation of the heat pump system.

✓ System is air-free.

✓ Installation check using the rough checklist has been completed successfully.

1. Ensure that the following points are fulfilled completely:

- Clockwise rotating load infeed field is present at the compressor
- The system is installed and mounted in accordance with this operating manual
- The electrical installation has been carried out properly in accordance with this operating manual and 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 level of the tripping current is compliant
- Heating circuit is flushed and vented
- Frost protection of the heat source meets the requirements
  → “Technical data / Scope of supply“, from page 22
- All shut-off devices of the heating circuit are open
- The pipe systems and components of the system are leak-tight

2. Fill out carefully and sign the notice of completion for heat pump systems.
3. In Germany: Send notice of completion for heat pump systems and rough checklist to the manufacturer’s factory customer service department.
   In other countries: Send notice of completion for heat pump systems and rough checklist to the manufacturer’s local partner.
4. Arrange for the heat pump system to be commissioned by after-sales service authorised by the manufacturer; this is a chargeable service.

# 10 Maintenance

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

## 10.1 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.

The hermetic tightness and refrigerant fill quantity are criteria for whether a logbook has to be kept and leak tests performed or not, and at what time intervals.

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

## 10.2 Maintenance as required

- Checking and cleaning the components of the heating circuit and the heat source, e.g. valves, expansion vessels, circulation pumps, filters, dirt traps
- Test the function of the safety valve for the heating circuit

## 10.3 Clean and flush the evaporator and condenser

► Clean and flush the evaporator/condenser strictly according to the manufacturer's regulations.

► After flushing the evaporator/condenser with chemical cleaning product: neutralise any residues and flush the evaporator/condenser thoroughly with water.

## 10.4 Yearly maintenance

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

# 11 Faults

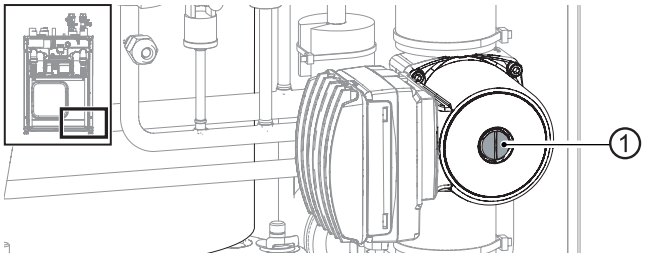
► Read out the cause of the fault via the diagnostics program of the heating and heat pump controller.

► Contact the local partner of the manufacturer or the factory's customer service. Have the fault message and unit number (→ “Unit sticker”, page 3) to hand.

## 11.1 Manually unblock the heat source circulation 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 module box.
2. Undo deflating screw (①) in the middle of the circulation pump of the heat source.




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 module box.

# 12 Dismantling and disposal

## 12.1 Dismantling

✓ Unit is safely disconnected from the power supply and protected against being switched back on again.

► Collect all media safely.

► Separate components by their materials.

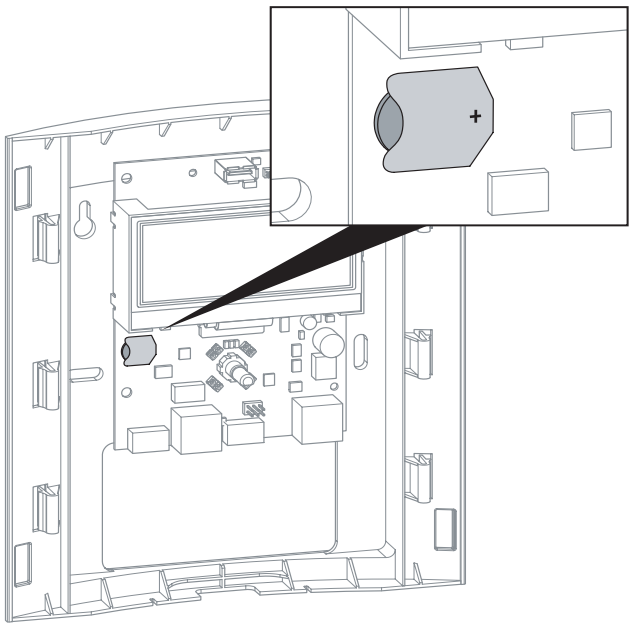
## 12.2 Disposal and Recycling

► Dispose of media harmful to the environment according to local regulations, e.g. antifreeze mixture, refrigerant.

► Recycle or ensure proper disposal of unit components and packaging materials according to local regulations.

## 12.3 Removal of the buffer battery

1. Use a screwdriver to push out the buffer battery on the processor board of the control




2. Dispose of the buffer battery according to local regulations.

# Technical data / Scope of supply SW 42(H)(K)3 – SW 62H3

| Performance data: Heating output / COP | | | SW 42(H)(K)3 | SW 62H3 |
|---|---|---|---|---|
| Heating capacity ı COP | at B0/W35 operating point to EN14511-3/2013 | kW ı COP | 4,70 ı 4,70 | 6,11 ı 4,68 |
| | at B0/W45 operating point to EN14511-3/2013 | kW ı COP | 4,42 ı 3,42 | 5,38 ı 3,63 |
| | at B0/W55 operating point to EN14511-3/2013 | kW ı COP | 4,16 ı 2,58 | 4,70 ı 2,93 |
| | at B7/W35 flows analogous to B0/W35 | kW ı COP | 5,83 ı 5,70 | 7,30 ı 5,61 |
| Cooling capacity at max. flow rate (B15/W25), units with passive cooling: Identifier K | | kW | 4,3 | — |
| **Limits of use** | | | | |
| Heating circuit return min. ı Heating circuit flow max. | | °C | 20 ı 60 | 20 ı 60 |
| Heat source return | min. ı max. | °C | -5 – 25 | -5 – 25 |
| additional operating points | | ... | B0W65 | B0W65 |
| **Sound** | | | | |
| Sound pressure level at 1m distance from edge of unit | | dB(A) | 31 | 32 |
| Sound power level to EN12102 | | dB(A) | 43 | 44 |
| **Heat source** | | | | |
| Flow rate: minimum ı **nominal analogous to B0/W35** ı maximum | | l/h | 700 ı 1050 ı 1575 | 900 ı **1350** ı 2000 |
| Max. free heat pump pressure Δp (with cooling ΔpK) ***) ı Flow rate | | bar (bar) ı l/h | 0,74 ( 0,72 ) ı 1050 | 0,6 (—) ı 1350 |
| Approved anti-freeze | Monoethylene glycol ı Propylene glycol ı Methanol ı Ethanol | | • ı • ı • ı • | • ı • ı • ı • |
| Anti-freeze concentration: Minimum frost protection down to | | °C | -13 | -13 |
| max. allowable operating pressure | | bar | 3 | 3 |
| **Heating circuit** | | | | |
| Flow rate: minimum ı **nominal analogous to B0/W35** ı maximum | | l/h | 450 ı 850 ı 1300 | 500 ı **1000** ı 1250 |
| Max. free heat pump pressure Δp (with cooling ΔpK) ı Volume flow | | bar (bar) ı l/h | — (—) ı — | — (—) ı — |
| Pressure losses, heat pump Δp (with cooling ΔpK) ı Volume flow | | bar ı l/h | 0,03 ( 0,05 ) ı 850 | 0,04 (—) ı 1000 |
| max. allowable operating pressure | | bar | 3 | 3 |
| **General unit data** | | | | |
| Total weight (with cooling) | | kg (kg) | 135 (143) | 140 (—) |
| Box weight (with cooling) ı Tower weight (with cooling) | | kg (kg) ı kg (kg) | 90 (98) ı 45 (45) | 95 (—) ı 45 (—) |
| Refrigerant type ı Refrigerant capacity | | ... ı kg | R410A ı 1,05 | R410A ı 1,42 |
| **Domestic hot water tank** | | | | |
| Net volume | | l | — | — |
| Impressed current anode | integrated: • yes — no | | — | — |
| Domestic hot water temperature, heating pump mode l Electric heating element | up to °C ı up to °C | | — ı — | — ı — |
| Mixed water quantity according to ErP: 2009/125/EC (at 40°C, draw-off of 10 l/min) | | l | — | — |
| Standing loss according to ErP: 2009/125/EC (at 65°C) | | W | — | — |
| Maximum pressure | | bar | — | — |
| **Electrics** | | | | |
| Voltage code ı all-pole heat pump fusing *)**) | | ... ı A | 3~PE/400V/50Hz ı C10 | 3~PE/400V/50Hz ı C10 |
| Voltage code ı Control voltage fusing **) | | ... ı A | 1~N/PE/230V/50Hz ı B10 | 1~N/PE/230V/50Hz ı B10 |
| Voltage code ı Electric heating element fusing **) | | ... ı A | — ı — | — ı — |
| Voltage code ı all-pole fusing for connection via a joint supply cable*)**) | | ... ı A | — ı — | — ı — |
| HP*): effect. power input at B0/W35 to EN14511-3/2013 l Current input l cosϕ | | kW ı A ı ... | 1,00 ı 2,44 ı 0,59 | 1,25 ı 2,5 ı 0,72 |
| HP*): max. machine current l max. power input within the limits of use | | A ı kW | 4,8 ı 2,3 | 5,0 ı 2,5 |
| Starting current: direct ı with soft starter | | A ı A | 22,0 ı — | 23,0 ı — |
| Degree of protection | | IP | 20 | 20 |
| Electric heating element output | | kW | — | — |
| Circulation pump power consumption, heating circuit l heat source | min. — max. W ı W | | — ı 5 – 87 | — ı 5 – 87 |
| **Other unit information** | | | | |
| Safety valve, heating circuit l Heat source | included in scope of supply: • yes — no | | — ı — | — ı — |
| Expansion valve, heating circuit l Heat source | included in scope of supply: • yes — no | | — ı — | — ı — |
| Overflow valve l Changeover valve, heating -Domestic hot water | integrated: • yes — no | | — ı — | — ı — |
| Vibration isolators, heating circuit l Heat source | integrated: • yes — no | | • ı • | • ı • |

*) Only compressor, **) Follow local regulations, ***) Figures for 25% mono-ethylene glycol

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# Technical data / Scope of supply

# SW 82H3 – SW 102H3

| Performance data: Heating output / COP | | | SW 82H3 | SW 102H3 |
|---|---|---|---|---|
| Heating capacity ı COP | at B0/W35 operating point to EN14511-3/2013 | kW ı COP | 7,70 ı 4,90 | 9,34 ı 5,05 |
| | at B0/W45 operating point to EN14511-3/2013 | kW ı COP | 6,84 ı 3,61 | 8,84 ı 3,80 |
| | at B0/W55 operating point to EN14511-3/2013 | kW ı COP | 6,49 ı 2,91 | 8,30 ı 2,82 |
| | at B7/W35 flows analogous to B0/W35 | kW ı COP | 9,20 ı 5,96 | 11,19 ı 6,30 |
| Cooling capacity at max. flow rate (B15/W25), units with passive cooling: Identifier K | | kW | — | — |
| **Limits of use** | | | | |
| Heating circuit return min. ı Heating circuit flow max. | | °C | 20 ı 60 | 20 ı 60 |
| Heat source return | min. ı max. | °C | -5 – 25 | -5 – 25 |
| additional operating points | | ... | B0W65 | B0W65 |
| **Sound** | | | | |
| Sound pressure level at 1m distance from edge of unit | | dB(A) | 31 | 32 |
| Sound power level to EN12102 | | dB(A) | 43 | 44 |
| **Heat source** | | | | |
| Flow rate: minimum ı **nominal analogous to B0/W35** ı maximum | | l/h | 1200 ı **1750** ı 2600 | 1500 ı **2200** ı 3300 |
| Max. free heat pump pressure Δp (with cooling ΔpK) ***) ı Flow rate | | bar (bar) ı l/h | 0,84 (—) ı 1750 | 0,87 (—) ı 2200 |
| Approved anti-freeze | Monoethylene glycol ı Propylene glycol ı Methanol ı Ethanol | | • ı • ı • ı • | • ı • ı • ı • |
| Anti-freeze concentration: Minimum frost protection down to | | °C | -13 | -13 |
| max. allowable operating pressure | | bar | 3 | 3 |
| **Heating circuit** | | | | |
| Flow rate: minimum ı **nominal analogous to B0/W35** ı maximum | | l/h | 650 ı **1300** ı 1600 | 800 ı **1600** ı 2000 |
| Max. free heat pump pressure Δp (with cooling ΔpK) ı Volume flow | | bar (bar) ı l/h | — (—) ı — | — (—) ı — |
| Pressure losses, heat pump Δp (with cooling ΔpK) ı Volume flow | | bar ı l/h | 0,06 (—) ı 1300 | 0,09 (—) ı 1600 |
| max. allowable operating pressure | | bar | 3 | 3 |
| **General unit data** | | | | |
| Total weight (with cooling) | | kg (kg) | 155 (—) | 160 (—) |
| Box weight (with cooling) ı Tower weight (with cooling) | | kg (kg) ı kg (kg) | 110 (—) ı 45 (—) | 115 (—) ı 45 (—) |
| Refrigerant type ı Refrigerant capacity | | ... ı kg | R410A ı 1,72 | R410A ı 1,98 |
| **Domestic hot water tank** | | | | |
| Net volume | | l | — | — |
| Impressed current anode | integrated: • yes — no | | — | — |
| Domestic hot water temperature, heating pump mode l Electric heating element | up to °C ı up to °C | | — ı — | — ı — |
| Mixed water quantity according to ErP: 2009/125/EC (at 40°C, draw-off of 10 l/min) | | l | — | — |
| Standing loss according to ErP: 2009/125/EC (at 65°C) | | W | — | — |
| Maximum pressure | | bar | — | — |
| **Electrics** | | | | |
| Voltage code ı all-pole heat pump fusing *)**) | | ... ı A | 3~PE/400V/50Hz ı C10 | 3~PE/400V/50Hz ı C10 |
| Voltage code ı Control voltage fusing **) | | ... ı A | 1~N/PE/230V/50Hz ı B10 | 1~N/PE/230V/50Hz ı B10 |
| Voltage code ı Electric heating element fusing **) | | ... ı A | — ı — | — ı — |
| Voltage code ı all-pole fusing for connection via a joint supply cable*)**) | | ... ı A | — ı — | — ı — |
| HP*): effect. power input at B0/W35 to EN14511-3/2013 l Current input l cosϕ | | kW ı A ı ... | 1,57 ı 3,02 ı 0,75 | 1,87 ı 3,73 ı 0,72 |
| HP*): max. machine current l max. power input within the limits of use | | A ı kW | 6,01 ı 3,10 | 7,63 ı 4,00 |
| Starting current: direct ı with soft starter | | A ı A | 30,0 ı — | — ı 22,0 |
| Degree of protection | | IP | 20 | 20 |
| Electric heating element output | | kW | — | — |
| Circulation pump power consumption, heating circuit l heat source | min. — max. W ı W | | — ı 3 – 140 | — ı 2 – 180 |
| **Other unit information** | | | | |
| Safety valve, heating circuit l Heat source | included in scope of supply: • yes — no | | — ı — | — ı — |
| Expansion valve, heating circuit l Heat source | included in scope of supply: • yes — no | | — ı — | — ı — |
| Overflow valve l Changeover valve, heating -Domestic hot water | integrated: • yes — no | | — ı — | — ı — |
| Vibration isolators, heating circuit l Heat source | integrated: • yes — no | | • ı • | • ı • |

*) Only compressor, **) Follow local regulations, ***) Figures for 25% mono-ethylene glycol

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# Technical data / Scope of supply SW 122H3 – SW 142H3

| Performance data: Heating output / COP | | | SW 122H3 | SW 142H3 |
|---|---|---|---|---|
| Heating capacity ı COP | at B0/W35 operating point to EN14511-3/2013 | kW ı COP | 12,18 ı 5,00 | 13,50 ı 5,08 |
| | at B0/W45 operating point to EN14511-3/2013 | kW ı COP | 11,24 ı 3,76 | 12,29 ı 3,76 |
| | at B0/W55 operating point to EN14511-3/2013 | kW ı COP | 10,63 ı 2,97 | 11,76 ı 2,94 |
| | at B7/W35 flows analogous to B0/W35 | kW ı COP | 14,55 ı 6,06 | 16,07 ı 6,31 |
| Cooling capacity at max. flow rate (B15/W25), units with passive cooling: Identifier K | | kW | — | — |
| **Limits of use** | | | | |
| Heating circuit return min. ı Heating circuit flow max. | | °C | 20 ı 60 | 20 ı 60 |
| Heat source return | min. ı max. | °C | -5 – 25 | -5 – 25 |
| additional operating points | | ... | B0W65 | B0W65 |
| **Sound** | | | | |
| Sound pressure level at 1m distance from edge of unit | | dB(A) | 31 | 32 |
| Sound power level to EN12102 | | dB(A) | 43 | 44 |
| **Heat source** | | | | |
| Flow rate: minimum ı **nominal analogous to B0/W35** ı maximum | | l/h | 1900 ı **2800** ı 4200 | 2100 ı **3150** ı 4750 |
| Max. free heat pump pressure Δp (with cooling ΔpK) ***) ı Flow rate | | bar (bar) ı l/h | 0,7 (—) ı 2800 | 0,74 (—) ı 3150 |
| Approved anti-freeze | Monoethylene glycol ı Propylene glycol ı Methanol ı Ethanol | | • ı • ı • ı • | • ı • ı • ı • |
| Anti-freeze concentration: Minimum frost protection down to | | °C | -13 | -13 |
| max. allowable operating pressure | | bar | 3 | 3 |
| **Heating circuit** | | | | |
| Flow rate: minimum ı **nominal analogous to B0/W35** ı maximum | | l/h | 1050 ı **2050** ı 2600 | 1150 ı **2300** ı 2900 |
| Max. free heat pump pressure Δp (with cooling ΔpK) ı Volume flow | | bar (bar) ı l/h | — (—) ı — | — (—) ı — |
| Pressure losses, heat pump Δp (with cooling ΔpK) ı Volume flow | | bar ı l/h | 0,13 (—) ı 2050 | 0,06 (—) ı 2300 |
| max. allowable operating pressure | | bar | 3 | 3 |
| **General unit data** | | | | |
| Total weight (with cooling) | | kg (kg) | 165 (—) | 175 (—) |
| Box weight (with cooling) ı Tower weight (with cooling) | | kg (kg) ı kg (kg) | 120 (—) ı 45 (—) | 130 (—) ı 45 (—) |
| Refrigerant type ı Refrigerant capacity | | ... ı kg | R410A ı 2,25 | R410A ı 2,38 |
| **Domestic hot water tank** | | | | |
| Net volume | | l | — | — |
| Impressed current anode | integrated: • yes — no | | — | — |
| Domestic hot water temperature, heating pump mode I Electric heating element | up to °C ı up to °C | | — ı — | — ı — |
| Mixed water quantity according to ErP: 2009/125/EC (at 40°C, draw-off of 10 l/min) | | l | — | — |
| Standing loss according to ErP: 2009/125/EC (at 65°C) | | W | — | — |
| Maximum pressure | | bar | — | — |
| **Electrics** | | | | |
| Voltage code ı all-pole heat pump fusing *)**) | | ... ı A | 3~PE/400V/50Hz ı C10 | 3~PE/400V/50Hz ı C10 |
| Voltage code ı Control voltage fusing **) | | ... ı A | 1~N/PE/230V/50Hz ı B10 | 1~N/PE/230V/50Hz ı B10 |
| Voltage code ı Electric heating element fusing **) | | ... ı A | — ı — | — ı — |
| Voltage code ı all-pole fusing for connection via a joint supply cable*)**) | | ... ı A | — ı — | — ı — |
| HP*): effect. power input at B0/W35 to EN14511-3/2013 I Current input I cosϕ | | kW ı A ı ... | 2,44 ı 4,70 ı 0,75 | 2,66 ı 4,84 ı 0,79 |
| HP*): max. machine current I max. power input within the limits of use | | A ı kW | 9,44 ı 4,80 | 10,62 ı 5,60 |
| Starting current: direct ı with soft starter | | A ı A | — ı 26,0 | — ı 27,0 |
| Degree of protection | | IP | 20 | 20 |
| Electric heating element output | | kW | — | — |
| Circulation pump power consumption, heating circuit I heat source | min. — max. W ı W | | — ı 2 – 180 | — ı 3 – 180 |
| **Other unit information** | | | | |
| Safety valve, heating circuit I Heat source | included in scope of supply: • yes — no | | — ı — | — ı — |
| Expansion valve, heating circuit I Heat source | included in scope of supply: • yes — no | | — ı — | — ı — |
| Overflow valve I Changeover valve, heating -Domestic hot water | integrated: • yes — no | | — ı — | — ı — |
| Vibration isolators, heating circuit I Heat source | integrated: • yes — no | | • ı • | • ı • |

*) Only compressor, **) Follow local regulations, ***) Figures for 25% mono-ethylene glycol

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# Technical data / Scope of supply

# SW 172H3 – SW 192H3

| Performance data: Heating output / COP | | | SW 172H3 | SW 192H3 |
|---|---|---|---|---|
| Heating capacity ı COP | at B0/W35 operating point to EN14511-3/2013 | kW ı COP | 16,86 ı 4,93 | 18,60 ı 4,87 |
| | at B0/W45 operating point to EN14511-3/2013 | kW ı COP | 16,15 ı 3,82 | 17,08 ı 3,73 |
| | at B0/W55 operating point to EN14511-3/2013 | kW ı COP | 15,59 ı 3,07 | 16,36 ı 2,88 |
| | at B7/W35 flows analogous to B0/W35 | kW ı COP | 19,80 ı 5,88 | 21,80 ı 5,84 |
| Cooling capacity at max. flow rate (B15/W25), units with passive cooling: Identifier K | | kW | — | — |
| **Limits of use** | | | | |
| Heating circuit return min. ı Heating circuit flow max. | | °C | 20 ı 60 | 20 ı 60 |
| Heat source return | min. ı max. | °C | -5 – 25 | -5 – 25 |
| additional operating points | | ... | B0W65 | B0W65 |
| **Sound** | | | | |
| Sound pressure level at 1m distance from edge of unit | | dB(A) | 34 | 34 |
| Sound power level to EN12102 | | dB(A) | 47 | 46 |
| **Heat source** | | | | |
| Flow rate: minimum ı **nominal analogous to B0/W35** ı maximum | | l/h | 2700 ı **4000** ı 6000 | 3000 ı **4400** ı 6600 |
| Max. free heat pump pressure Δp (with cooling ΔpK) ***) ı Flow rate | | bar (bar) ı l/h | 0,53 (—) ı 4000 | 0,43 (—) ı 4400 |
| Approved anti-freeze | Monoethylene glycol ı Propylene glycol ı Methanol ı Ethanol | | • ı • ı • ı • | • ı • ı • ı • |
| Anti-freeze concentration: Minimum frost protection down to | | °C | -13 | -13 |
| max. allowable operating pressure | | bar | 3 | 3 |
| **Heating circuit** | | | | |
| Flow rate: minimum ı **nominal analogous to B0/W35** ı maximum | | l/h | 1450 ı **2850** ı 3600 | 1600 ı **3200** ı 4000 |
| Max. free heat pump pressure Δp (with cooling ΔpK) ı Volume flow | | bar (bar) ı l/h | — (—) ı — | — (—) ı — |
| Pressure losses, heat pump Δp (with cooling ΔpK) ı Volume flow | | bar ı l/h | 0,07 (—) ı 2850 | 0,12 (—) ı 3200 |
| max. allowable operating pressure | | bar | 3 | 3 |
| **General unit data** | | | | |
| Total weight (with cooling) | | kg (kg) | 180 (—) | 185 (—) |
| Box weight (with cooling) ı Tower weight (with cooling) | | kg (kg) ı kg (kg) | 135 (—) ı 45 (—) | 140 (—) ı 45 (—) |
| Refrigerant type ı Refrigerant capacity | | ... ı kg | R410A ı 2,65 | R410A ı 2,80 |
| **Domestic hot water tank** | | | | |
| Net volume | | l | — | — |
| Impressed current anode | integrated: • yes — no | | — | — |
| Domestic hot water temperature, heating pump mode l Electric heating element | up to °C ı up to °C | | — ı — | — ı — |
| Mixed water quantity according to ErP: 2009/125/EC (at 40°C, draw-off of 10 l/min) | | l | — | — |
| Standing loss according to ErP: 2009/125/EC (at 65°C) | | W | — | — |
| Maximum pressure | | bar | — | — |
| **Electrics** | | | | |
| Voltage code ı all-pole heat pump fusing *)**) | | ... ı A | 3~PE/400V/50Hz ı C16 | 3~PE/400V/50Hz ı C16 |
| Voltage code ı Control voltage fusing **) | | ... ı A | 1~N/PE/230V/50Hz ı B10 | 1~N/PE/230V/50Hz ı B10 |
| Voltage code ı Electric heating element fusing **) | | ... ı A | — ı — | — ı — |
| Voltage code ı all-pole fusing for connection via a joint supply cable*)**) | | ... ı A | — ı — | — ı — |
| HP*): effect. power input at B0/W35 to EN14511-3/2013 l Current input l cosϕ | | kW ı A ı ... | 3,35 ı 7,90 ı 0,61 | 3,82 ı 8,71 ı 0,63 |
| HP*): max. machine current l max. power input within the limits of use | | A ı kW | 19,0 ı 6,90 | 18,0 ı 7,50 |
| Starting current: direct ı with soft starter | | A ı A | — ı 30,0 | — ı 33,0 |
| Degree of protection | | IP | 20 | 20 |
| Electric heating element output | | kW | — | — |
| Circulation pump power consumption, heating circuit l heat source | min. — max. W ı W | | — ı 3 – 180 | — ı 3 – 180 |
| **Other unit information** | | | | |
| Safety valve, heating circuit l Heat source | included in scope of supply: • yes — no | | — ı — | — ı — |
| Expansion valve, heating circuit l Heat source | included in scope of supply: • yes — no | | — ı — | — ı — |
| Overflow valve l Changeover valve, heating -Domestic hot water | integrated: • yes — no | | — ı — | — ı — |
| Vibration isolators, heating circuit l Heat source | integrated: • yes — no | | • ı • | • ı • |

*) Only compressor, **) Follow local regulations, ***) Figures for 25% mono-ethylene glycol

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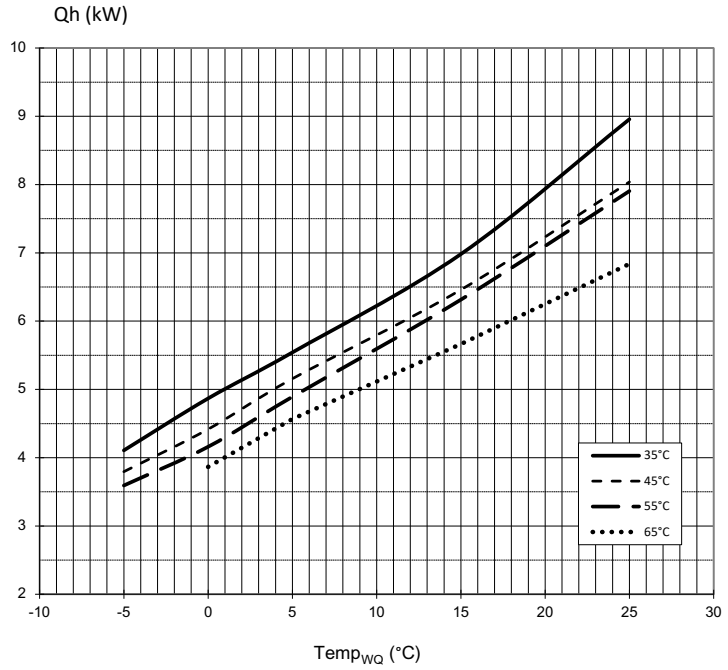
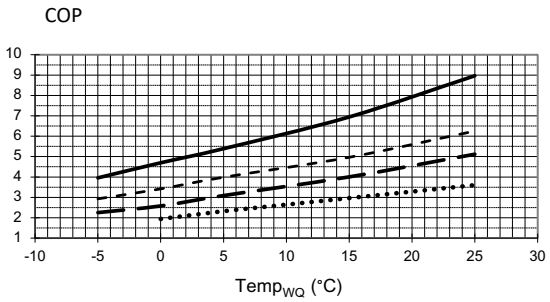
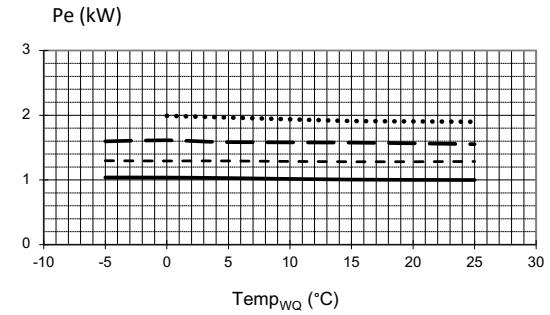
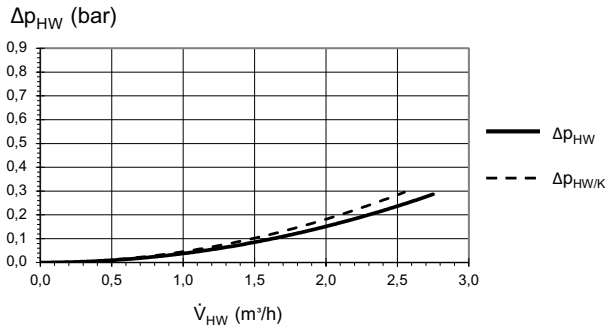
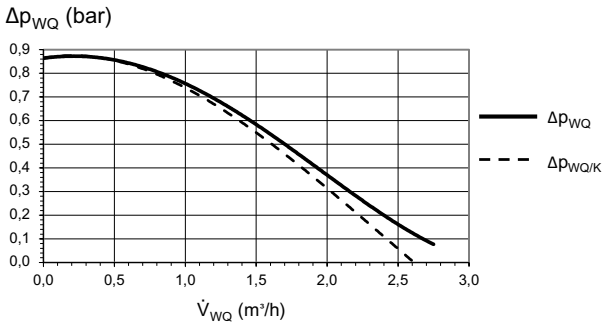


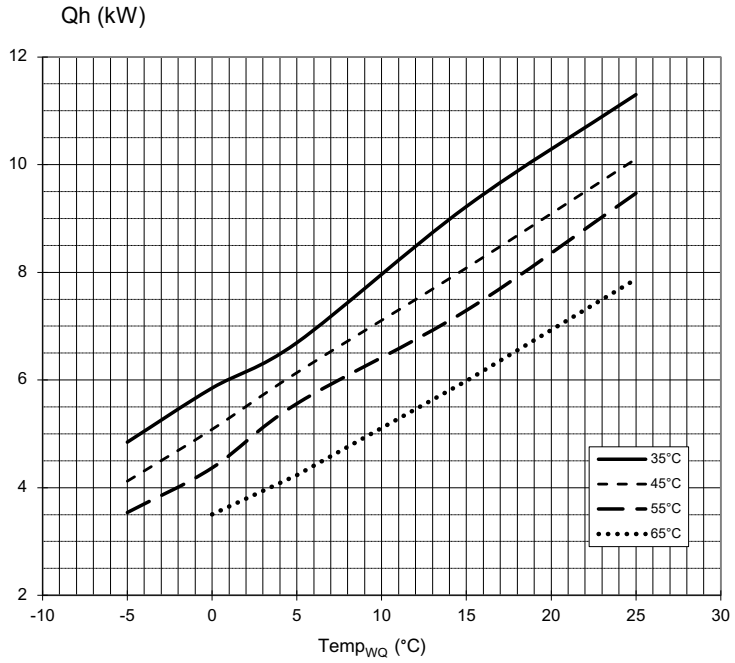



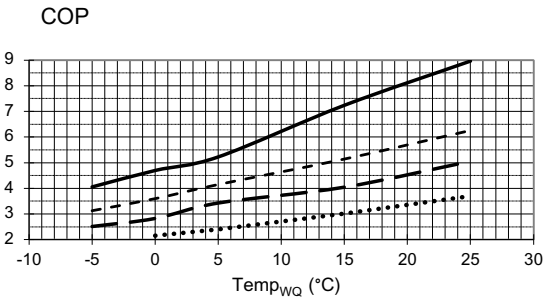



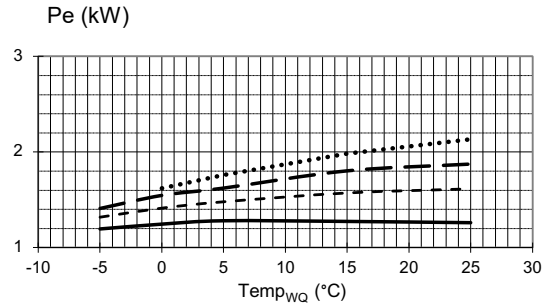



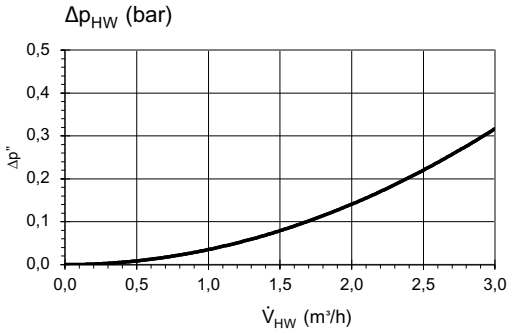

823311

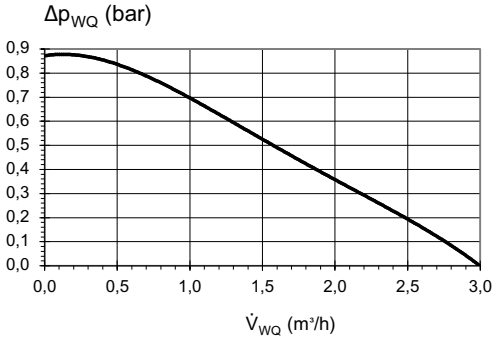
| Keys: | UK823000L/170408 |
|---|---|
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| $\Delta p_{HW}$ / $\Delta p_{HW/K}$ | Heating circuit free pressure / Heating circuit with cooling free pressure |
| $\Delta p_{WQ}$ / $\Delta p_{WQ/K}$ | Heat source free pressure / Heat source with cooling free pressure |



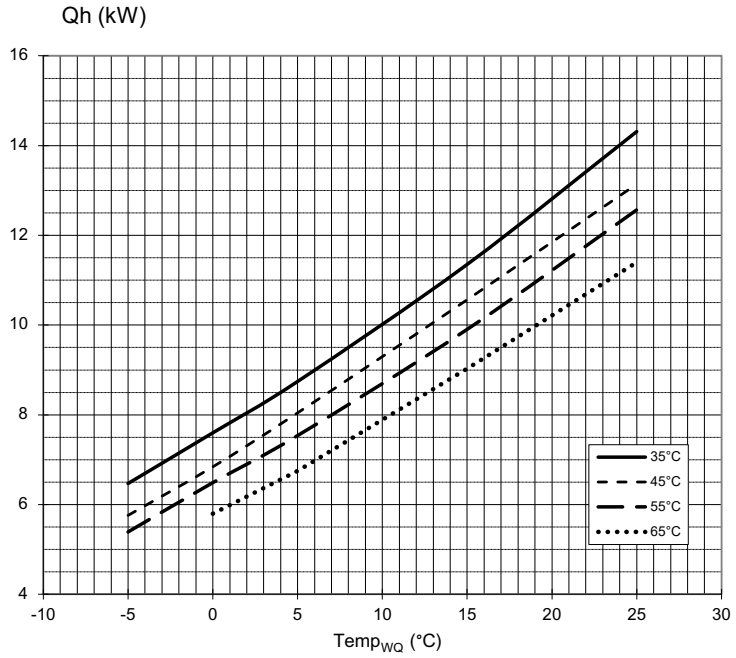



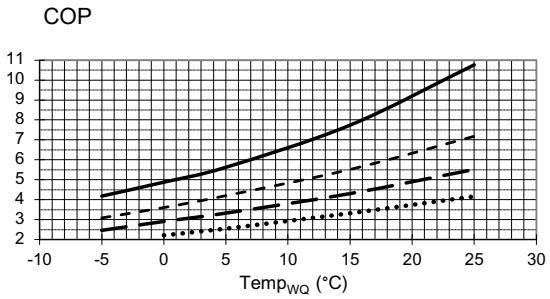

823248

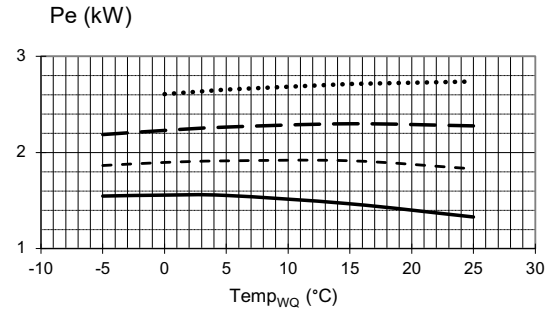
| Keys: | UK823000L/170408 |
|---|---|
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| $\Delta p_{HW}$ | Heating circuit free pressure |
| $\Delta p_{WQ}$ | Heat source free pressure |

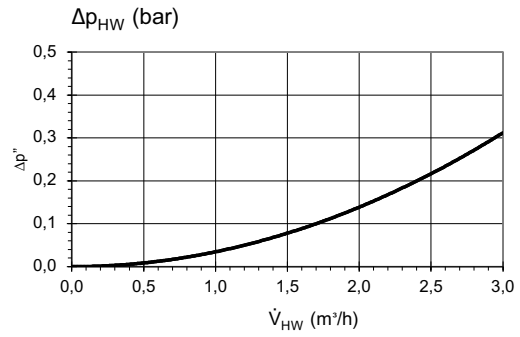
# SW 82H3

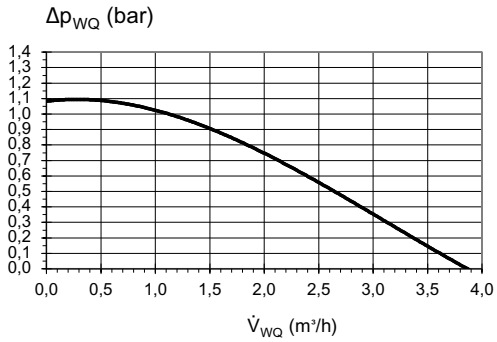
# Performance curves



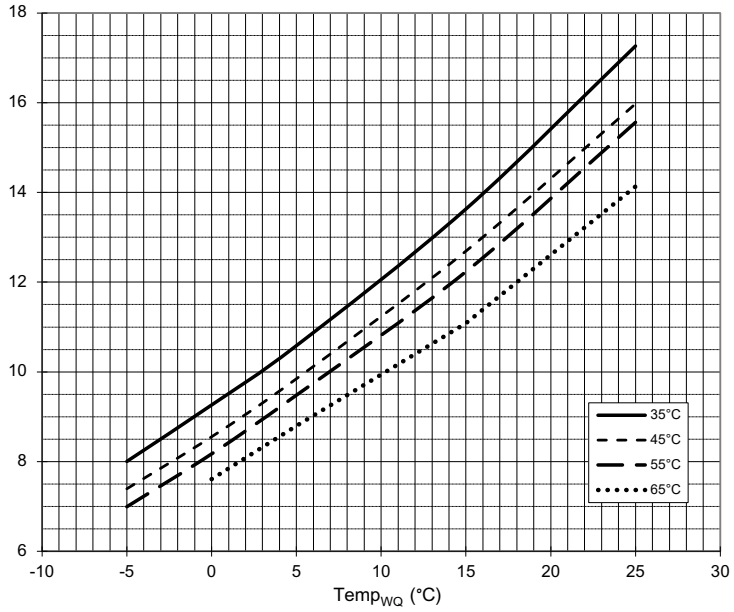

823249

| Keys: | UK823000L/170408 |
|---|---|
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| $\Delta p_{HW}$ | Heating circuit free pressure |
| $\Delta p_{WQ}$ | Heat source free pressure |

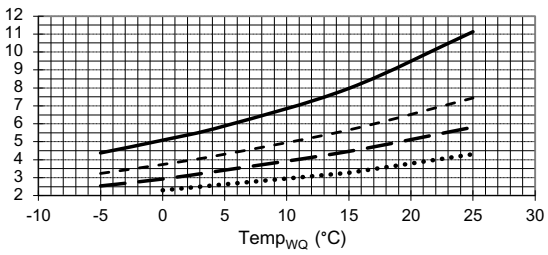
# Performance curves

SW 102H3

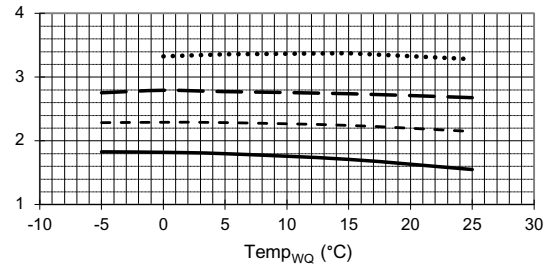
Qh (kW)



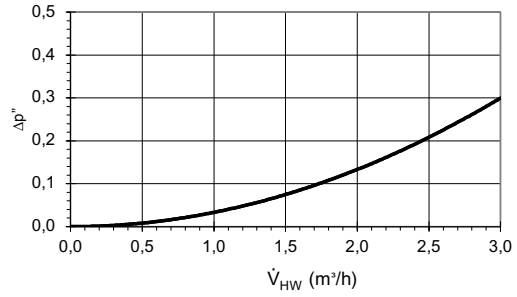

COP



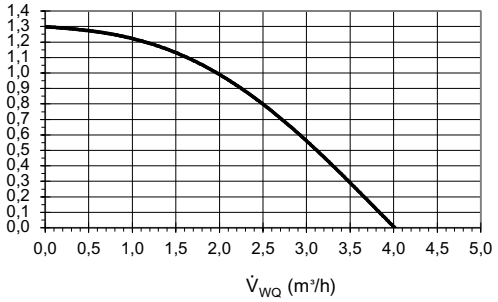

Pe (kW)




$\Delta p_{HW}$ (bar)



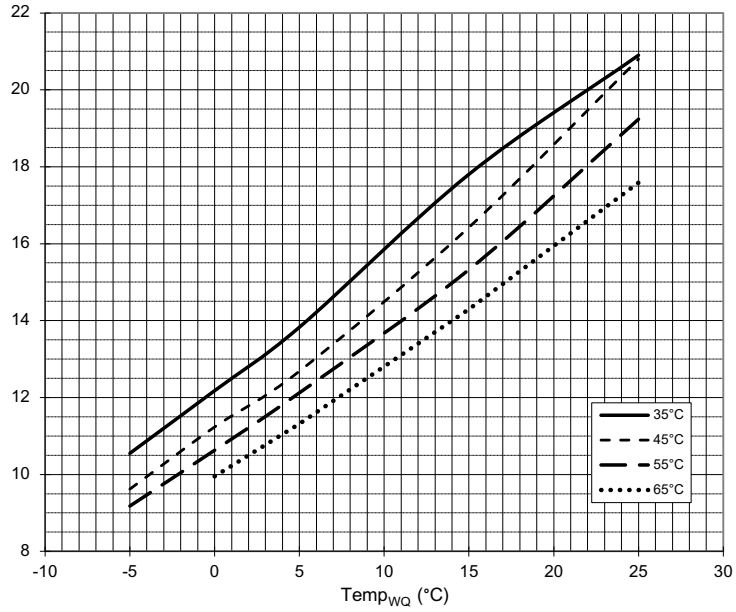

$\Delta p_{WQ}$ (bar)



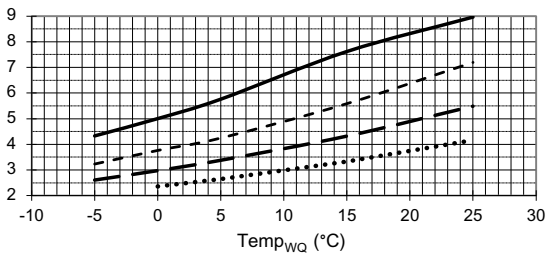

823250

| Keys: | UK823000L/170408 |
|---|---|
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| $\Delta p_{HW}$ | Heating circuit free pressure |
| $\Delta p_{WQ}$ | Heat source free pressure |

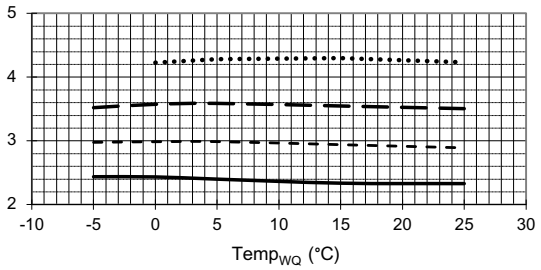
Qh (kW)



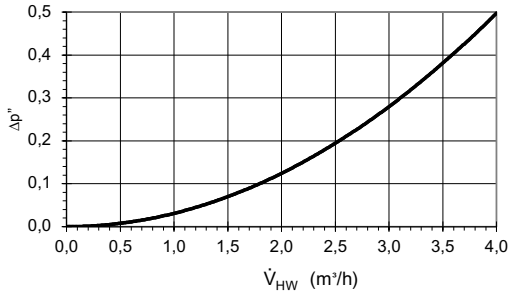

COP



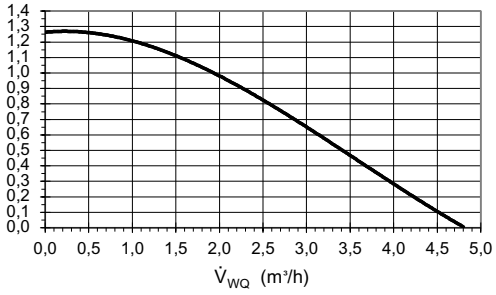

Pe (kW)




$\Delta p_{HW}$ (bar)




$\Delta p_{WQ}$ (bar)



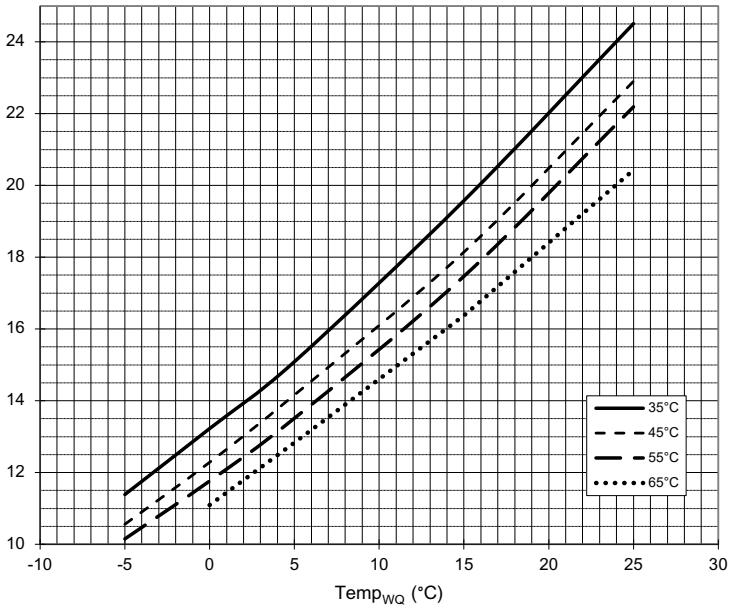

823251

| Keys: | UK823000L/170408 |
|---|---|
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| $\Delta p_{HW}$ | Heating circuit free pressure |
| $\Delta p_{WQ}$ | Heat source free pressure |

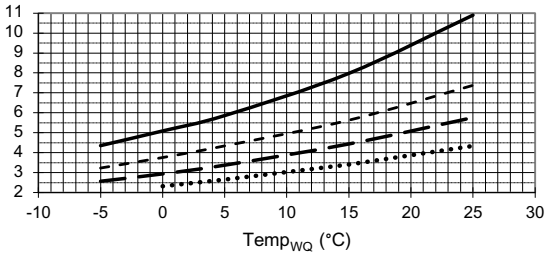
# Performance curves

SW 142H3

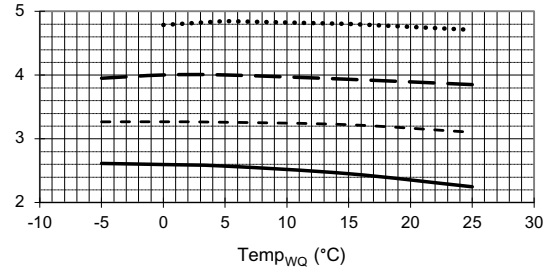
Qh (kW)



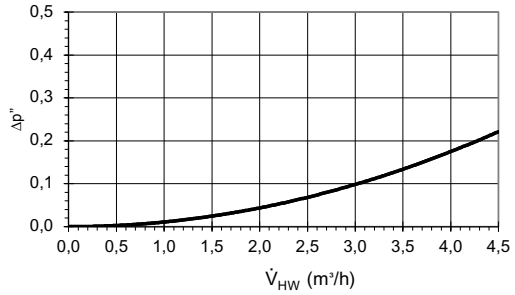

COP



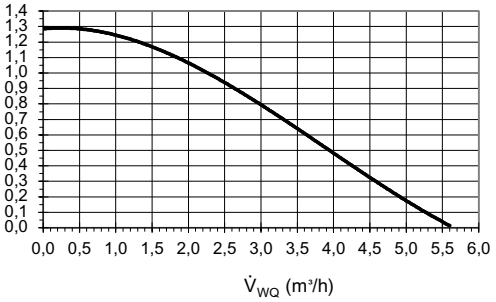

Pe (kW)




$\Delta p_{HW}$ (bar)



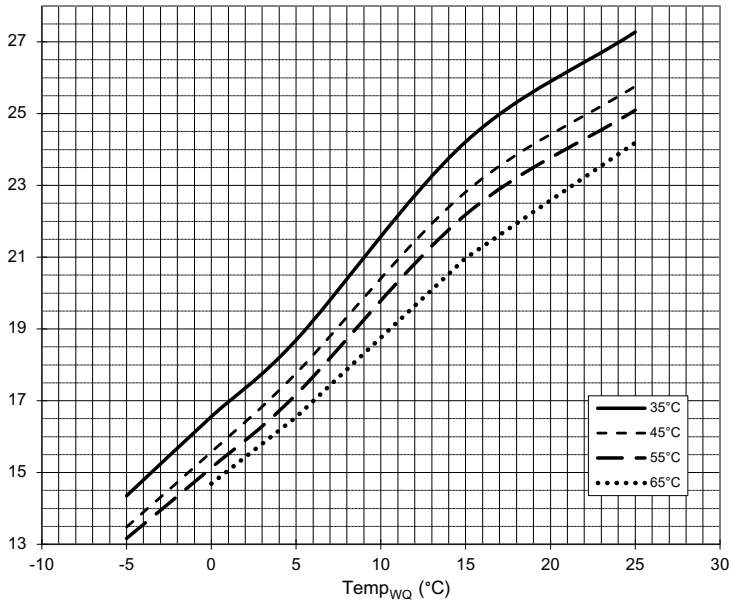

$\Delta p_{WQ}$ (bar)




823252

| Keys: | UK823000L/170408 |
|---|---|
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| $\Delta p_{HW}$ | Heating circuit free pressure |
| $\Delta p_{WQ}$ | Heat source free pressure |

Qh (kW)

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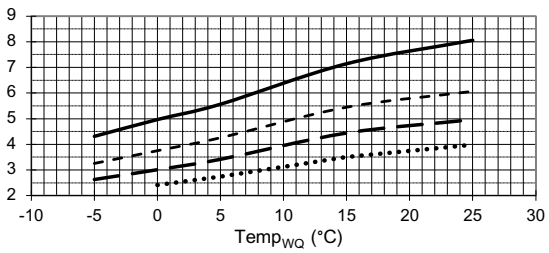
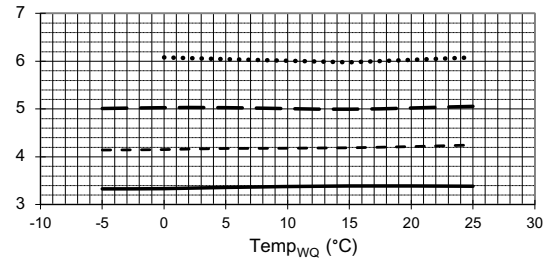
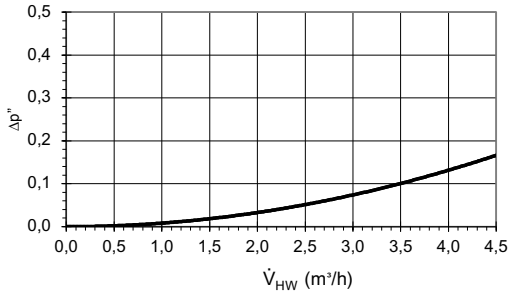


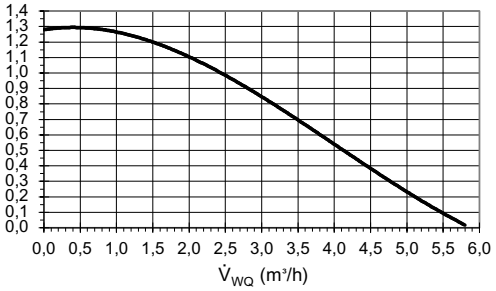

Pe (kW)




$\Delta p_{HW}$ (bar)




$\Delta p_{WQ}$ (bar)



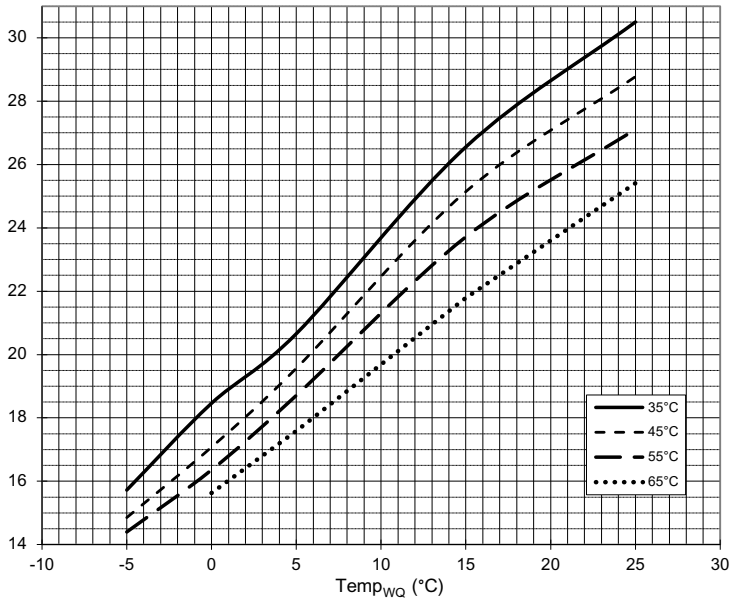

823253

| Keys: | UK823000L/170408 |
|---|---|
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| $\Delta p_{HW}$ | Heating circuit free pressure |
| $\Delta p_{WQ}$ | Heat source free pressure |

# Performance curves

# SW 192H3

Qh (kW)

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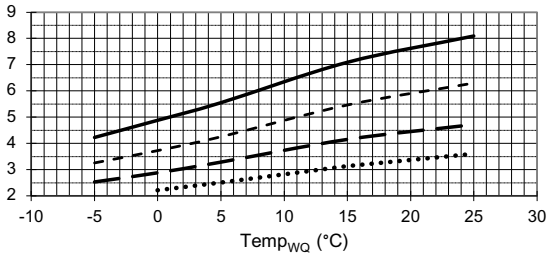
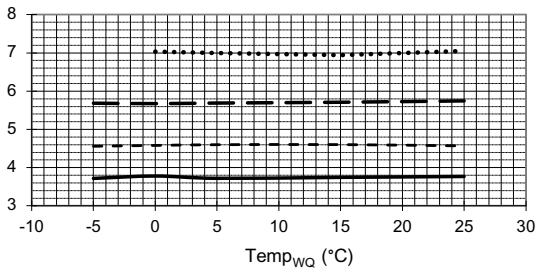
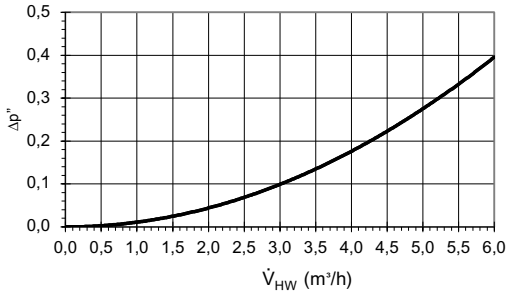


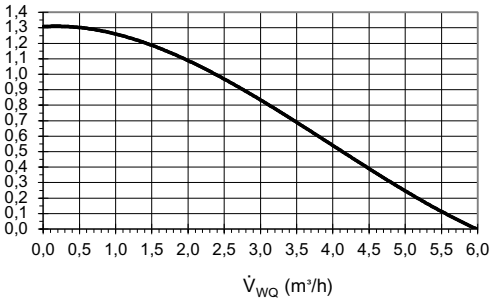

Pe (kW)




$\Delta p_{HW}$ (bar)



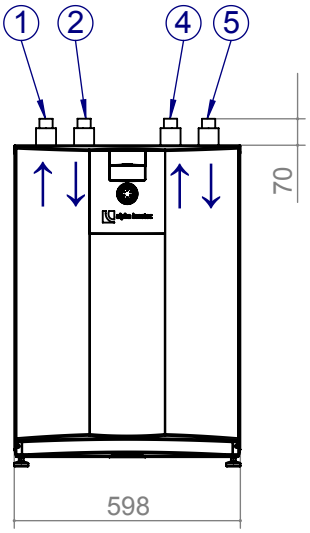

$\Delta p_{WQ}$ (bar)



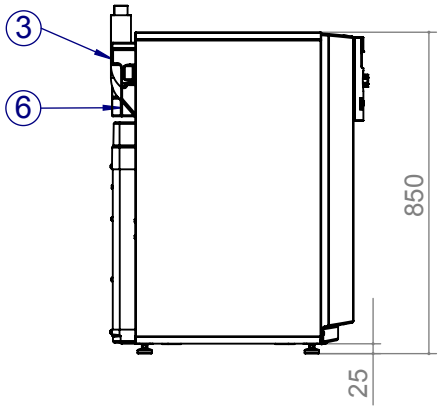

823254

| Keys: | UK823000L/170408 |
|---|---|
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| $Temp_{WQ}$ | Heat source temperature |
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| $\Delta p_{HW}$ | Heating circuit free pressure |
| $\Delta p_{WQ}$ | Heat source free pressure |

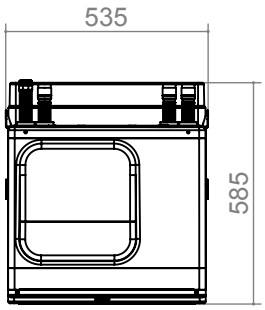
## A



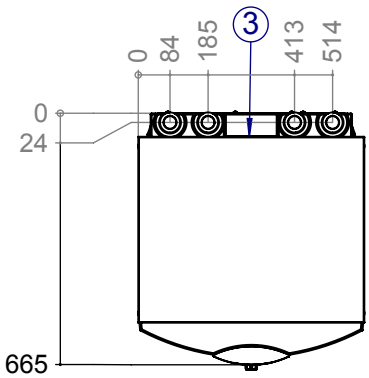

## B



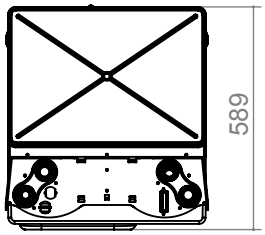

## A1




## C




## C1

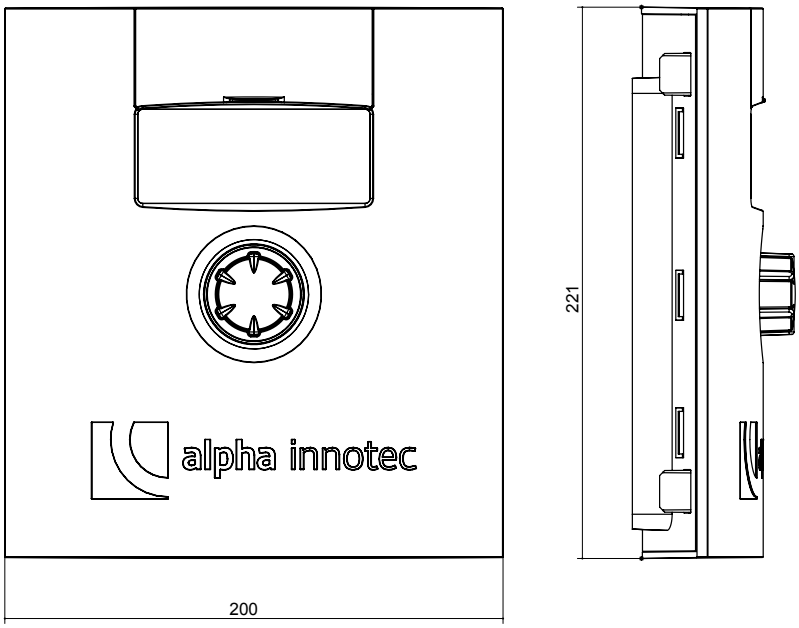



| Keys: UK819447 | | Pos. | Name | 4kW –12kW | 14kW – 19kW |
|---|---|---|---|---|---|
| All dimensions in mm. | | 1 | Heating water outlet (flow) | Ø28 *) | Ø35 *) |
| A | Front view | 2 | Heat source inlet (in heat pump) | Ø28 *) | Ø35 *) |
| B | Side view from left | 3 | Cable entry, connection cable | – | – |
| C | Plan view | 4 | Heat source outlet (from heat pump) | Ø28 *) | Ø35 *) |
| A1 | Front view of module box | 5 | Heating water inlet (return) | Ø28 *) | Ø35 *) |
| C1 | Top view of module box | 6 | Cable entry, LIN bus cable | – | – |

*) outside diameter

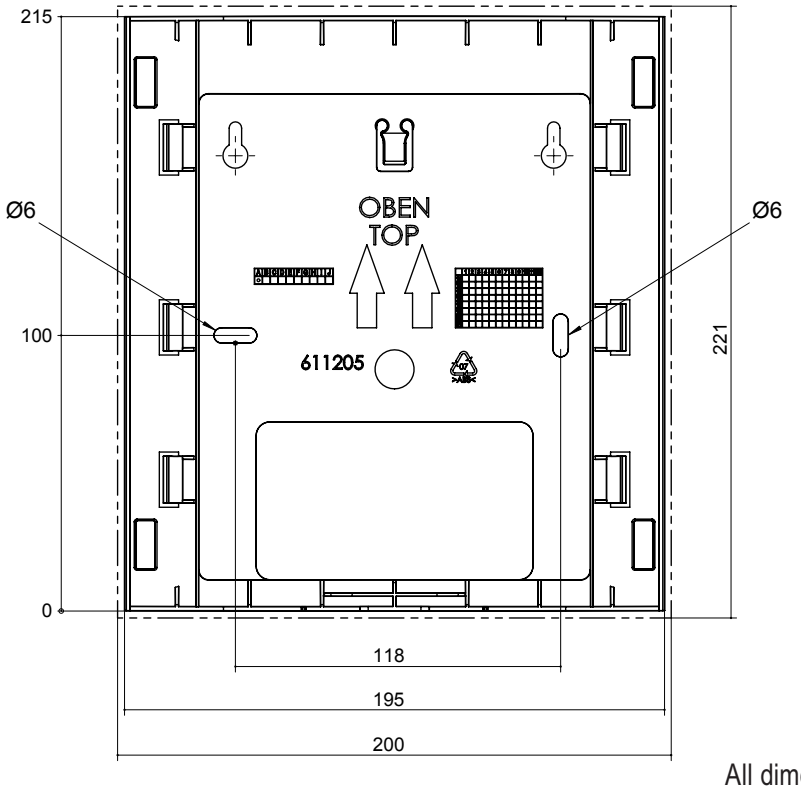
## Dimensional drawings

## Control unit



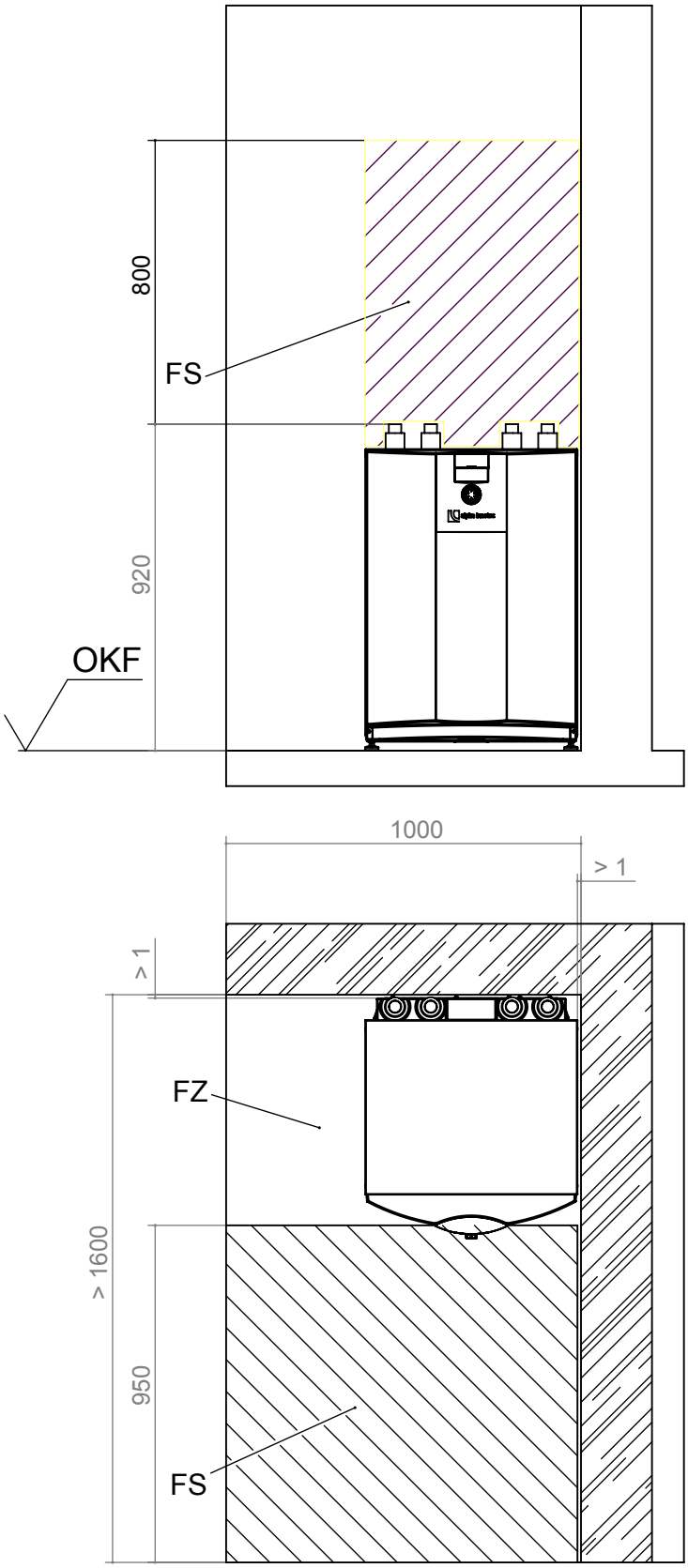

All dimensions in mm.

## Wall-mounted bracket




All dimensions in mm.

# V1

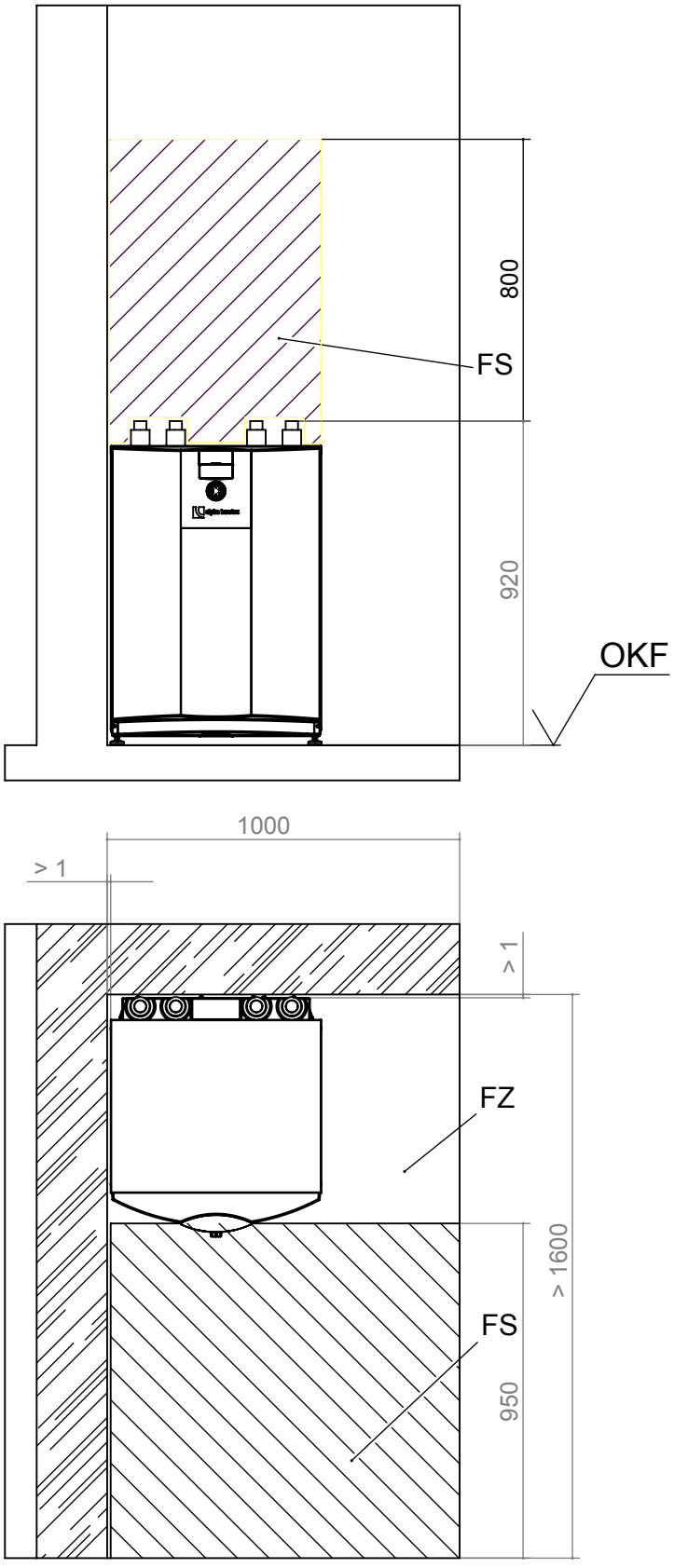



Keys: UK819456a

All dimensions in mm.

| | | | |
|---|---|---|---|
| V1 | Version 1 | FS | Free space for service purposes |
| OKF | Finished floor level | FZ | Free space for functionally necessary accessories |

# V2

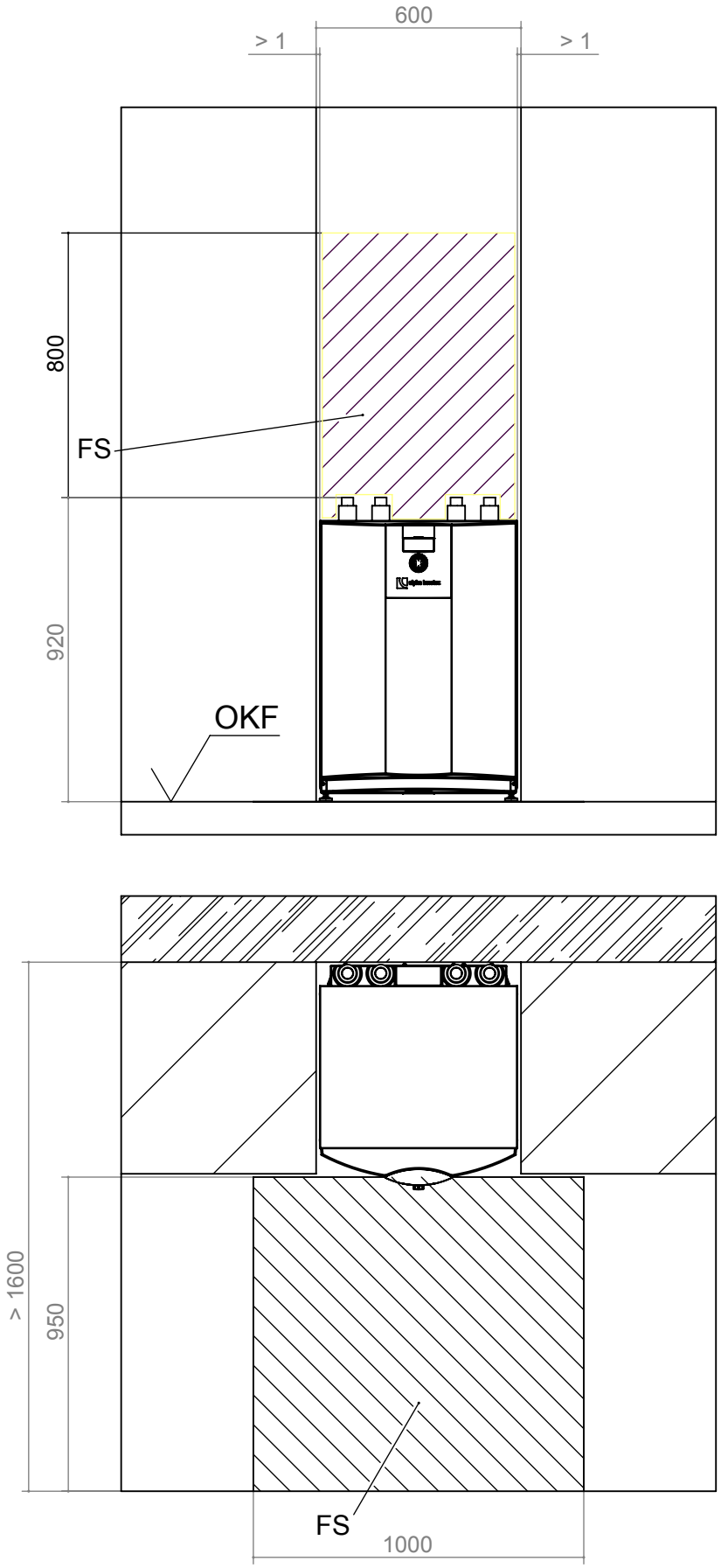



Keys: UK819456a

All dimensions in mm.

| | | | |
|---|---|---|---|
| V2 | Version 2 | FS | Free space for service purposes |
| OKF | Finished floor level | FZ | Free space for functionally necessary accessories |

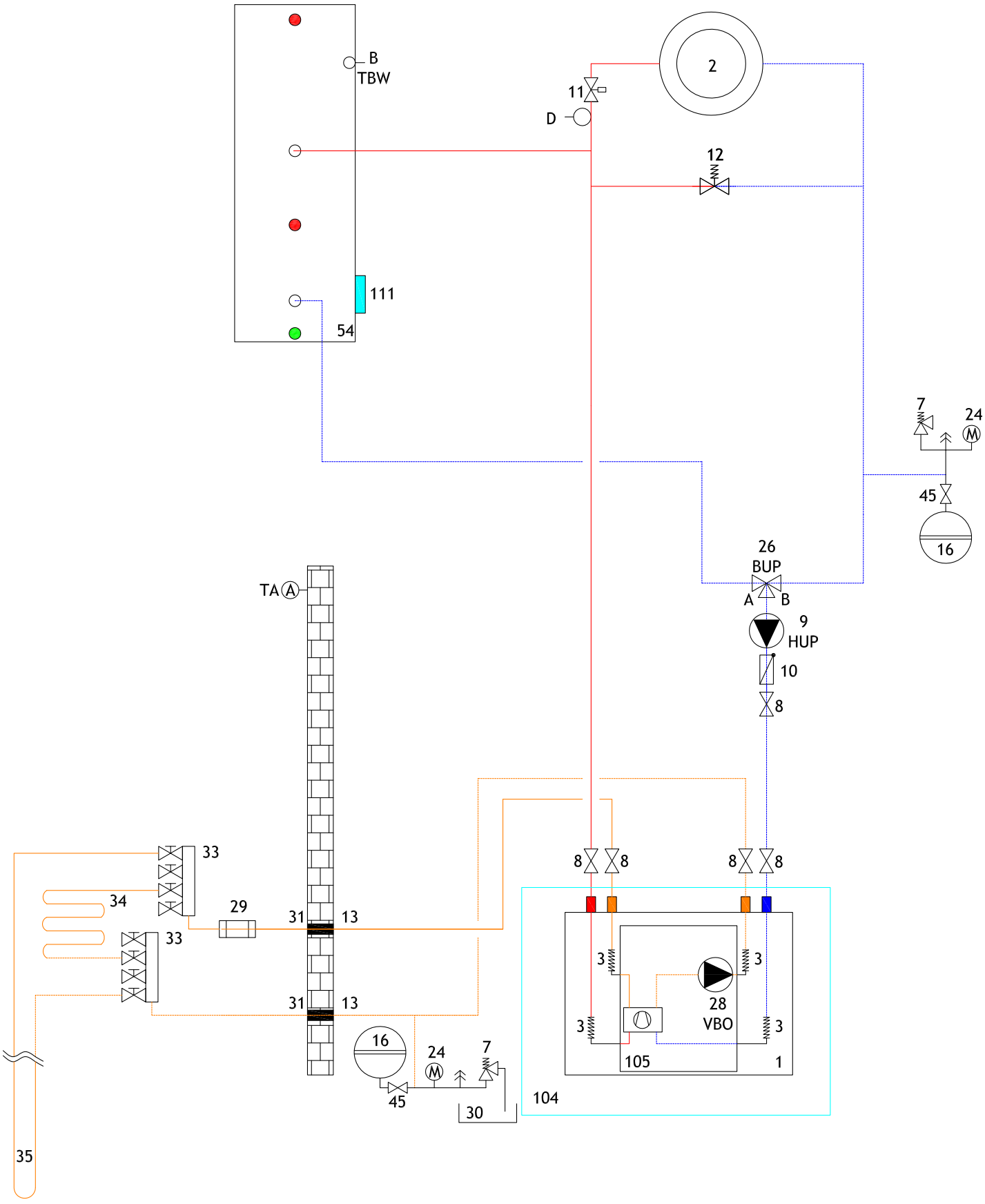
# V3

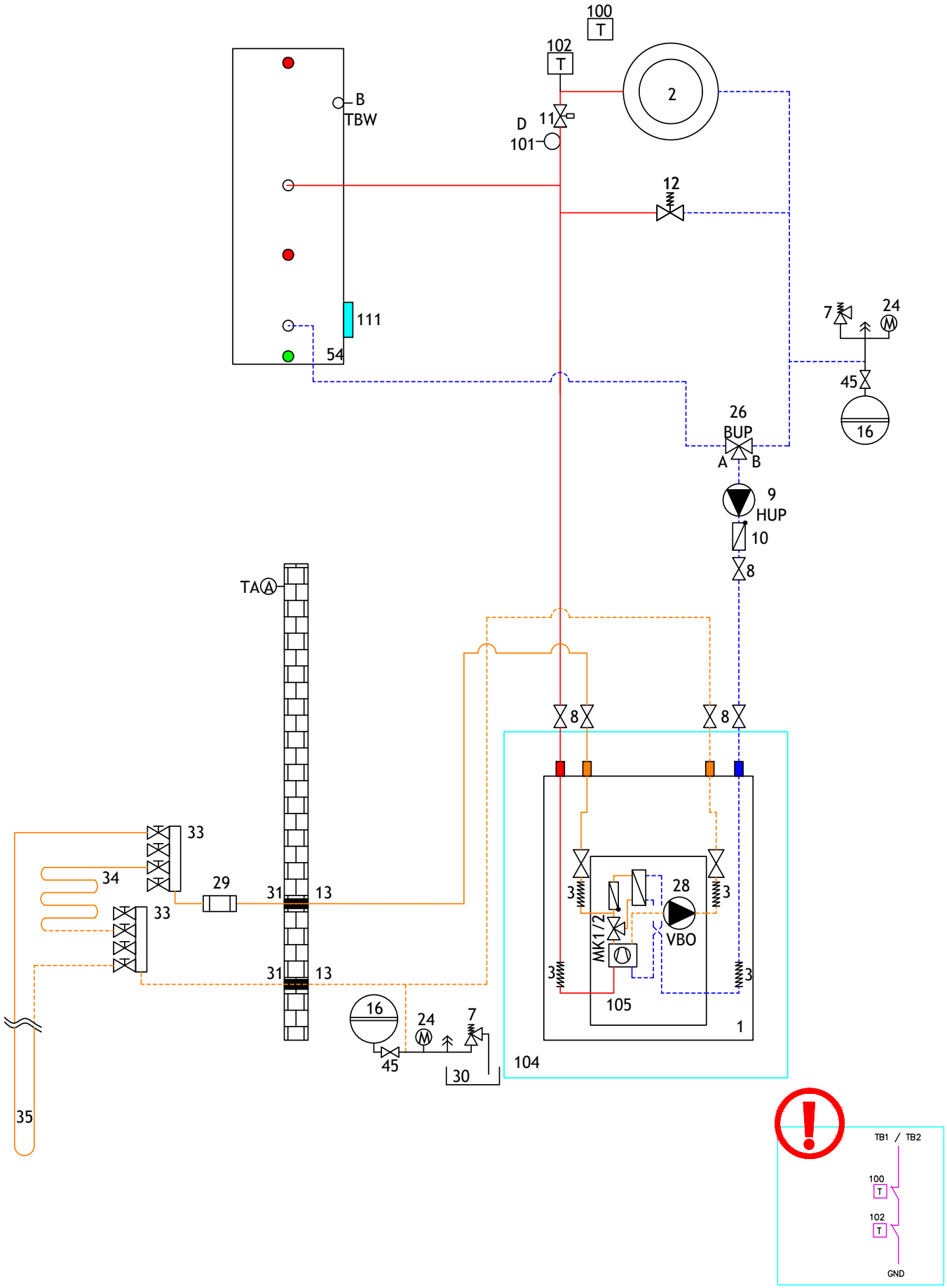



Keys: UK819456a

All dimensions in mm.

| | |
|---|---|
| V3 | Version 3 |
| OKF | Finished floor level |
| FS | Free space for service purposes |


B
TBW
111
54
2
11
D
12
7
24
45
16
26
BUP
A
B
9
HUP
10
8
TA
33
34
29
31
13
33
31
13
16
24
7
45
30
35
8
8
8
8
3
3
3
3
28
VBO
105
1
104


100
T
102
T
2
B
TBW
D
11
101
12
111
54
7
24
45
16
26
BUP
A
B
9
HUP
10
8
TA
8
8
33
34
33
29
31
13
31
13
35
16
24
7
45
30
104
3
28
3
MK1/2
VBO
3
3
105
1
TB1 / TB2
100
T
102
T
GND

## Legend hydraulic diagramm

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

Comfort board / Expansion board:

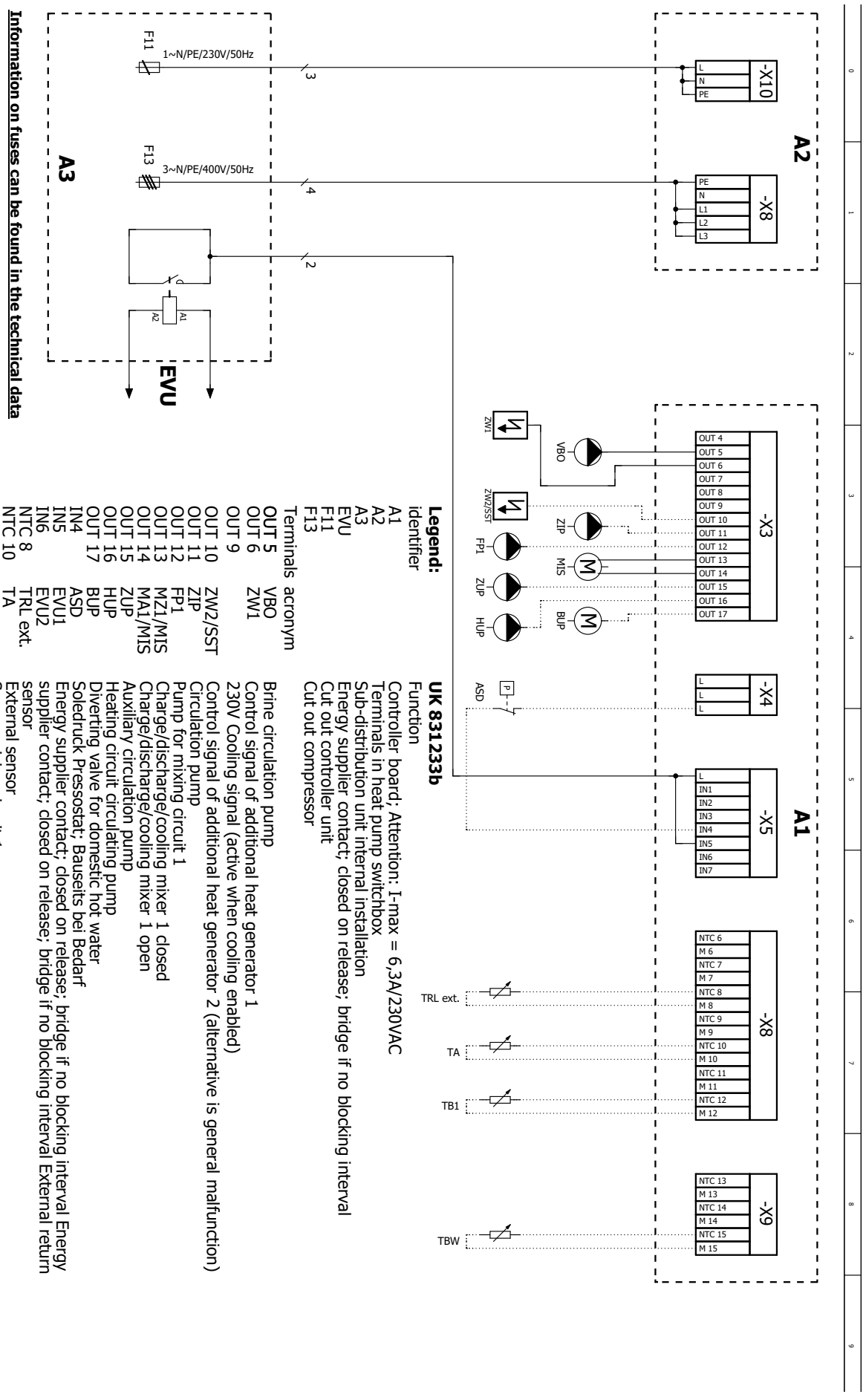
| | |
|---|---|
| 15 | Mixer circuit three-way mixer (MK2-3 discharge) |
| 17 | Temperature difference regulator |
| 19 | Mixer circuit four-way mixer (MK2 charge) |
| 21 | Mixer circuit circulation pump (FP2-3) |
| 22 | Swimming pool circulating pump |
| 44 | Three-way mixer valve (cooling function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

## Important notice !

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

# Terminal diagram

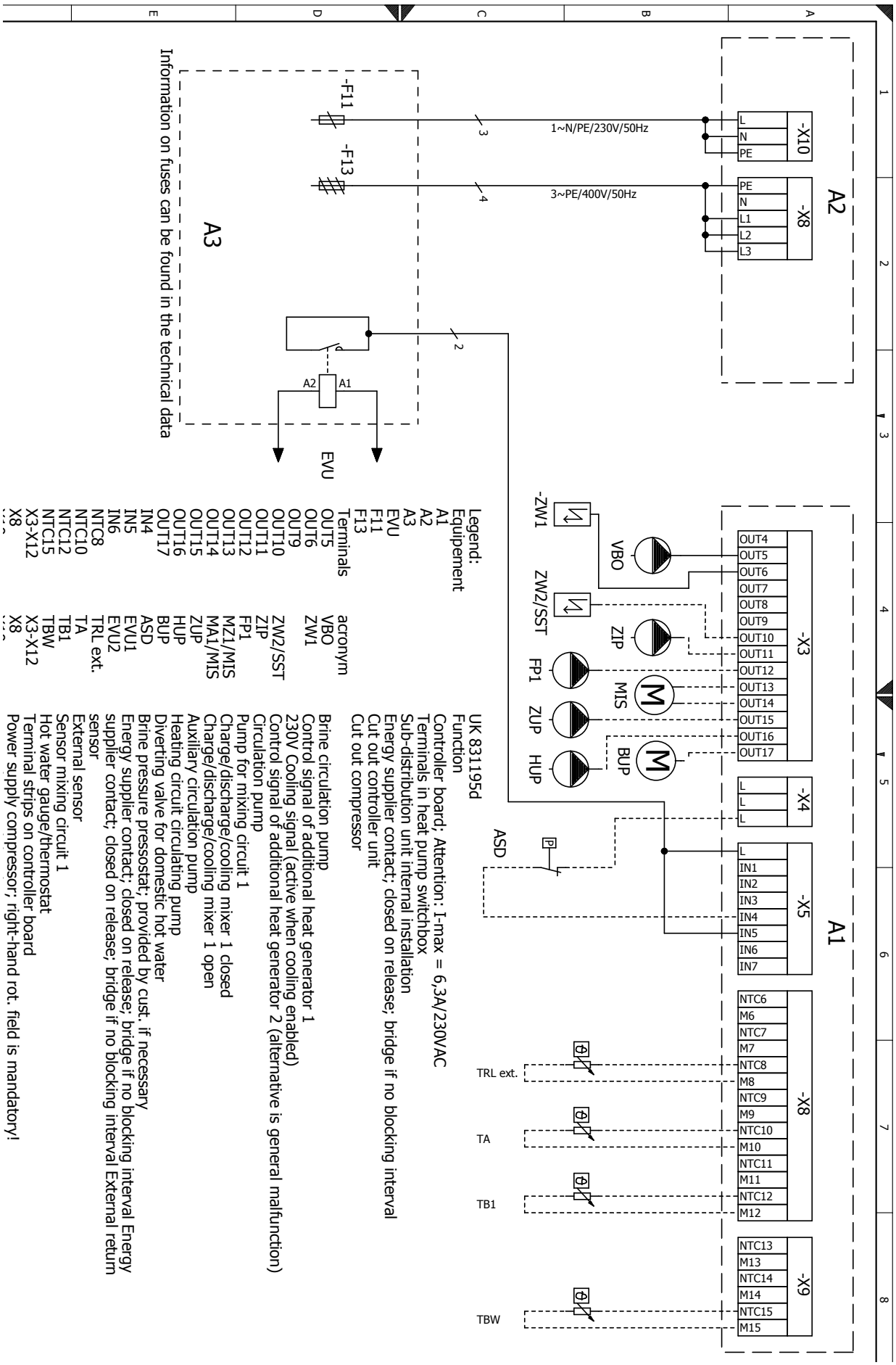
SW 42K3




**Legend:**

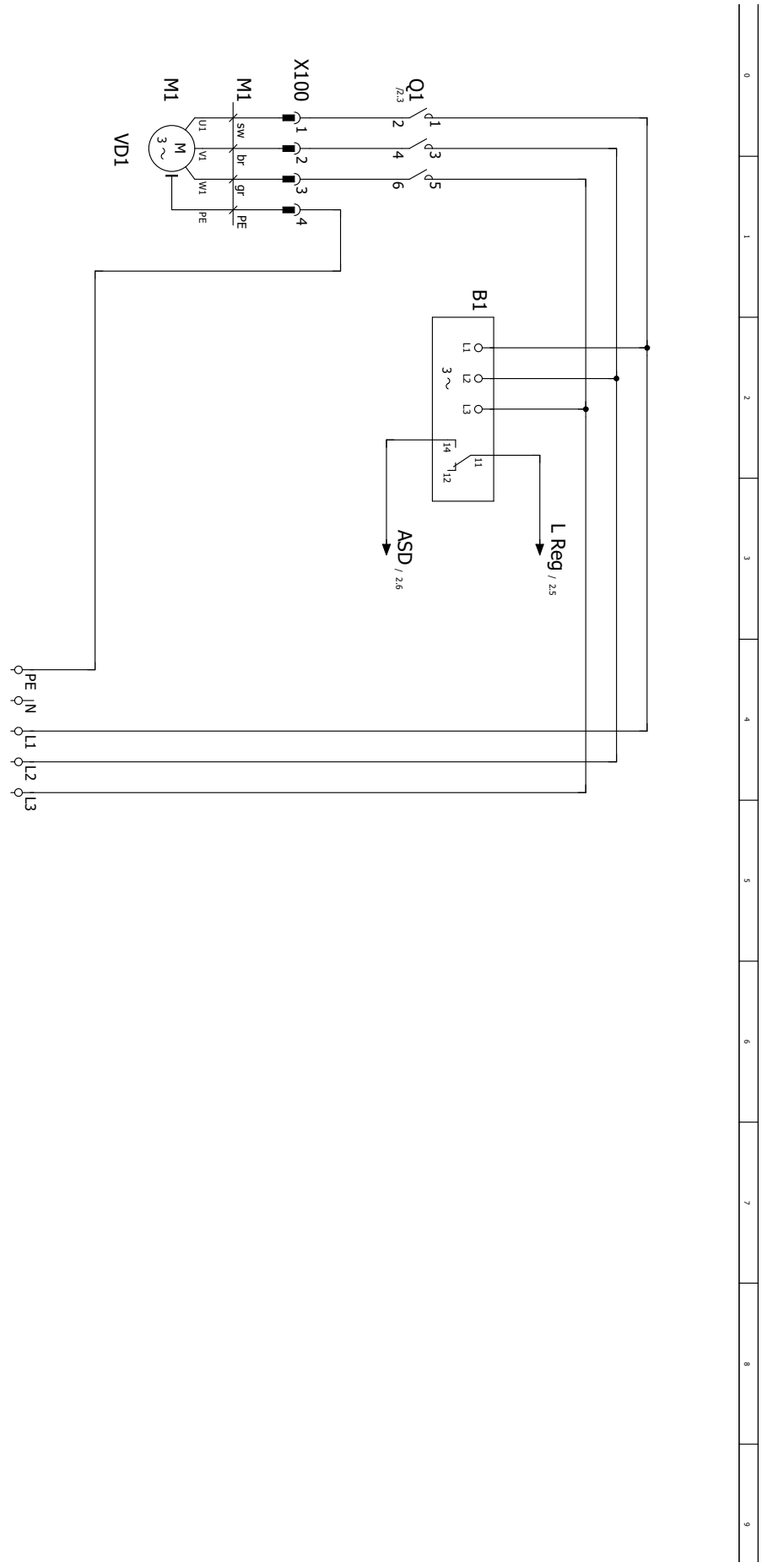
| identifier | Function |
|---|---|
| A1 | Controller board; Attention: I-max = 6,3A/230VAC |
| A2 | Terminals in heat pump switchbox |
| A3 | Sub-distribution unit internal installation |
| EVU | Energy supplier contact; closed on release; bridge if no blocking interval |
| F11 | Cut out controller unit |
| F13 | Cut out compressor |

| Terminals | acronym | |
|---|---|---|
| OUT 5 | VBO | Brine circulation pump |
| OUT 6 | ZW1 | Control signal of additional heat generator 1 |
| OUT 9 | | 230V Cooling signal (active when cooling enabled) |
| OUT 10 | ZW2/SST | Control signal of additional heat generator 2 (alternative is general malfunction) |
| OUT 11 | ZIP | Circulation pump |
| OUT 12 | FP1 | Pump for mixing circuit 1 |
| OUT 13 | MZ1/MIS | Charge/discharge/cooling mixer 1 closed |
| OUT 14 | MA1/MIS | Charge/discharge/cooling mixer 1 open |
| OUT 15 | ZUP | Auxiliary circulation pump |
| OUT 16 | HUP | Heating circuit circulating pump |
| OUT 17 | BUP | Diverting valve for domestic hot water |
| IN4 | ASD | Soledruck Pressostat; Bauseits bei Bedarf |
| IN5 | EVU1 | Energy supplier contact; closed on release; bridge if no blocking interval Energy |
| IN6 | EVU2 | supplier contact; closed on release; bridge if no blocking interval External return |
| NTC 8 | TRL ext. | sensor |
| NTC 10 | TA | External sensor |
| NTC 12 | TB1 | Sensor mixing circuit 1 |
| NTC 15 | TBW | Hot water gauge/thermostat |
| X3-X12 | X3-X12 | Terminal strips on controller board |
| X8 | X8 | Einspeisung Leistung Verdichter; Rechtsdrehfeld ist Zwingend erforderlich! |
| X10 | X10 | Terminal in switch box heat pump |




Legend:
Equipement
A1 UK 831195d
A2 Function
A3 Controller board; Attention: I-max = 6,3A/230VAC
EVU Terminals in heat pump switchbox
F11 Sub-distribution unit internal installation
F13 Energy supplier contact; closed on release; bridge if no blocking interval
Terminals Cut out controller unit
OUT5 Cut out compressor
OUT6
OUT9
OUT10
OUT11
OUT12
OUT13
OUT14
OUT15
OUT16
OUT17
IN4
IN5
IN6
NTC8
NTC10
NTC12
NTC15
X3-X12
X8

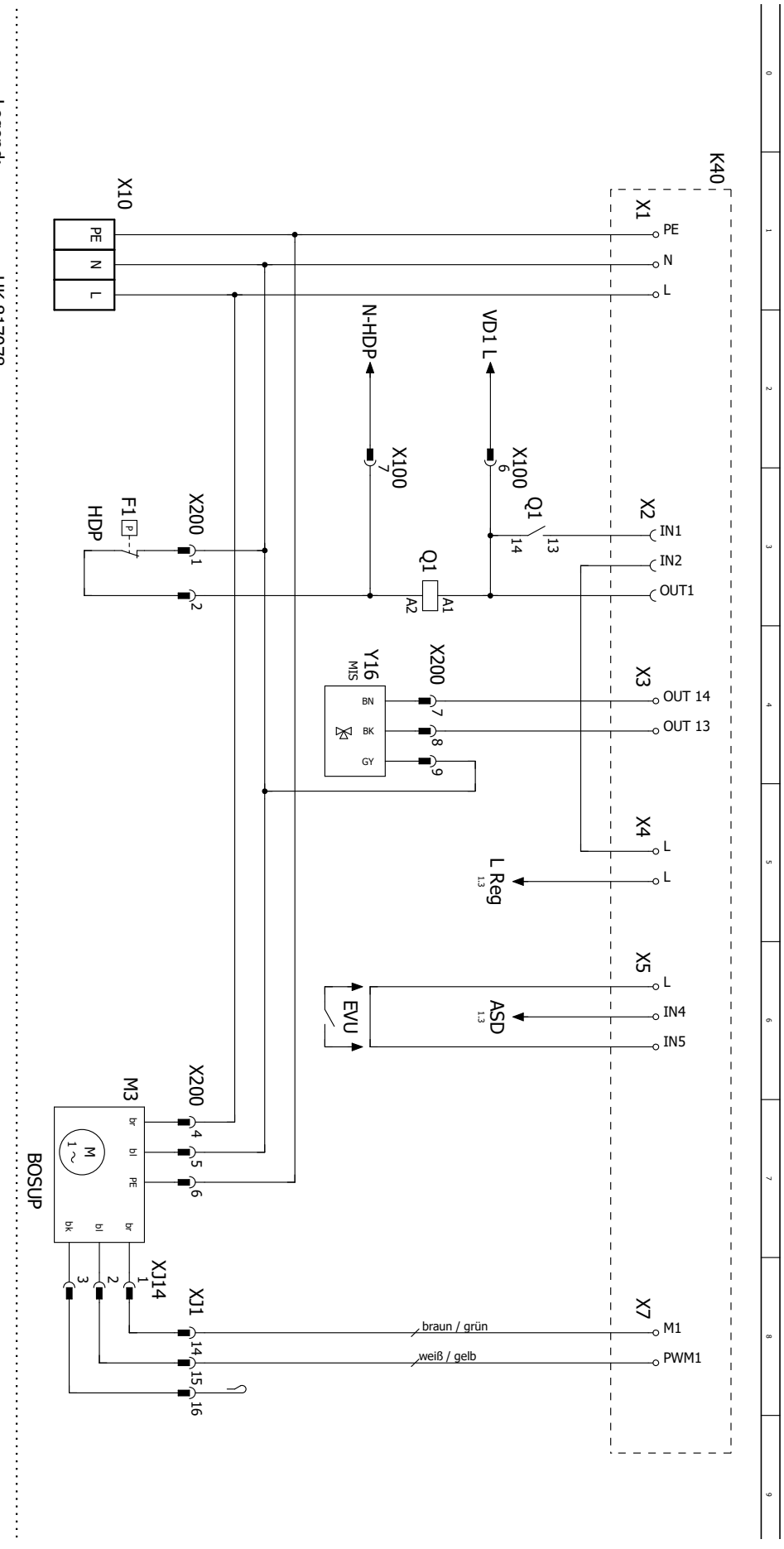
acronym
VBO Brine circulation pump
ZW1 Control signal of additional heat generator 1
230V Cooling signal (active when cooling enabled)
ZW2/SST Control signal of additional heat generator 2 (alternative is general malfunction)
ZIP Circulation pump
FP1 Pump for mixing circuit 1
MZ1/MIS Charge/discharge/cooling mixer 1 closed
MA1/MIS Charge/discharge/cooling mixer 1 open
ZUP Auxiliary circulation pump
HUP Heating circuit circulating pump
BUP Diverting valve for domestic hot water
ASD Brine pressure pressostat; provided by cust. if necessary
EVU1 Energy supplier contact; closed on release; bridge if no blocking interval Energy
EVU2 supplier contact; closed on release; bridge if no blocking interval External return
TRL ext. sensor
TA External sensor
TB1 Sensor mixing circuit 1
TBW Hot water gauge/thermostat
X3-X12 Terminal strips on controller board
X8 Power supply compressor; right-hand rot. field is mandatory!




Legend: UK 817078
Equipement Function

3~PE/400V/50Hz L1,L2,L3,PE; power supply, output, compressor; clockwise rotary field is absolutely necessary!!
B1 Phase sequence relay; if phase sequence in the order of 11 + 14 is closed
M1 VD1 Compressor
Q1 Contactor for compressor 1
X8 Power supply compressor; right-hand rot. field is mandatory!
X100 Compressor output / control connector

# Circuit diagram 2/3

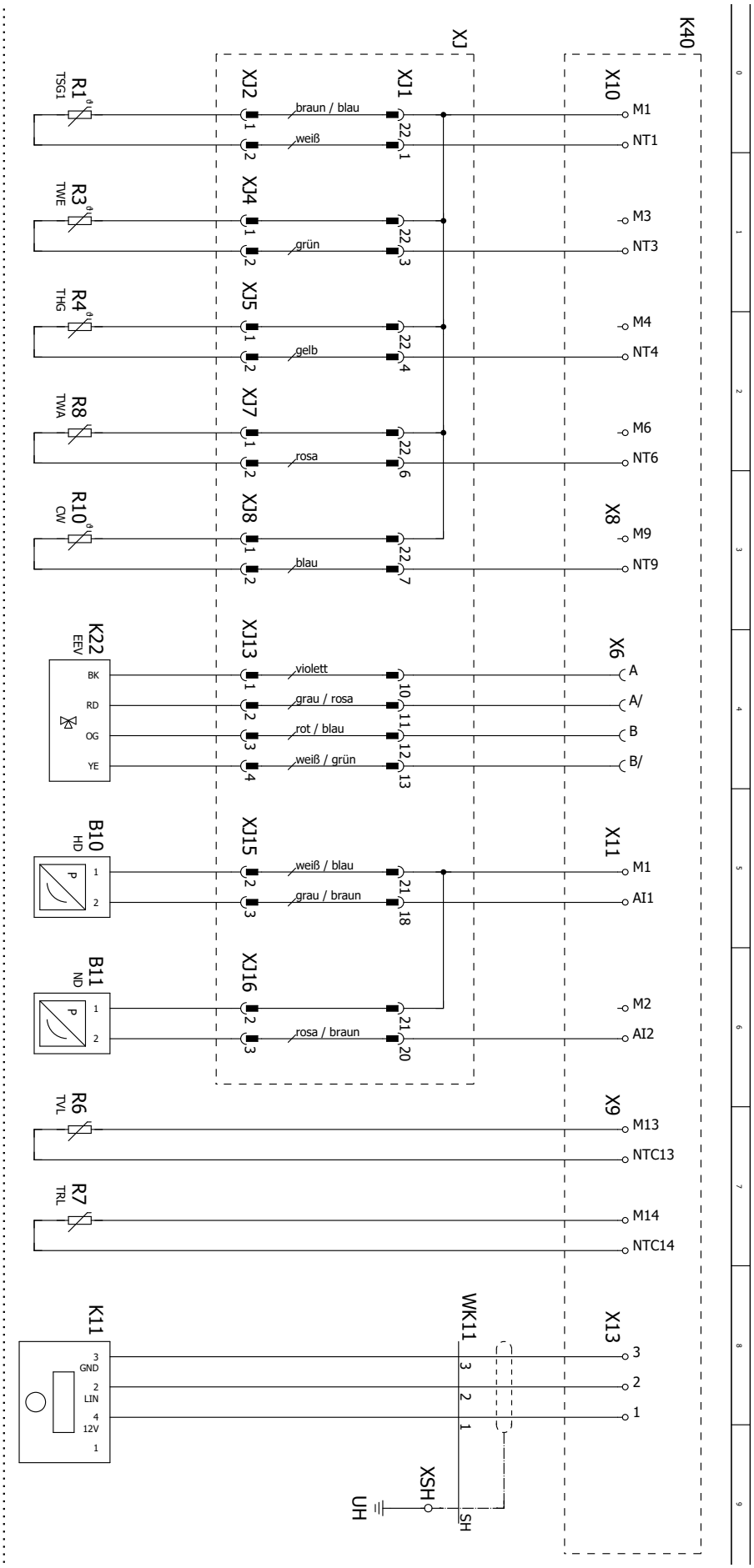


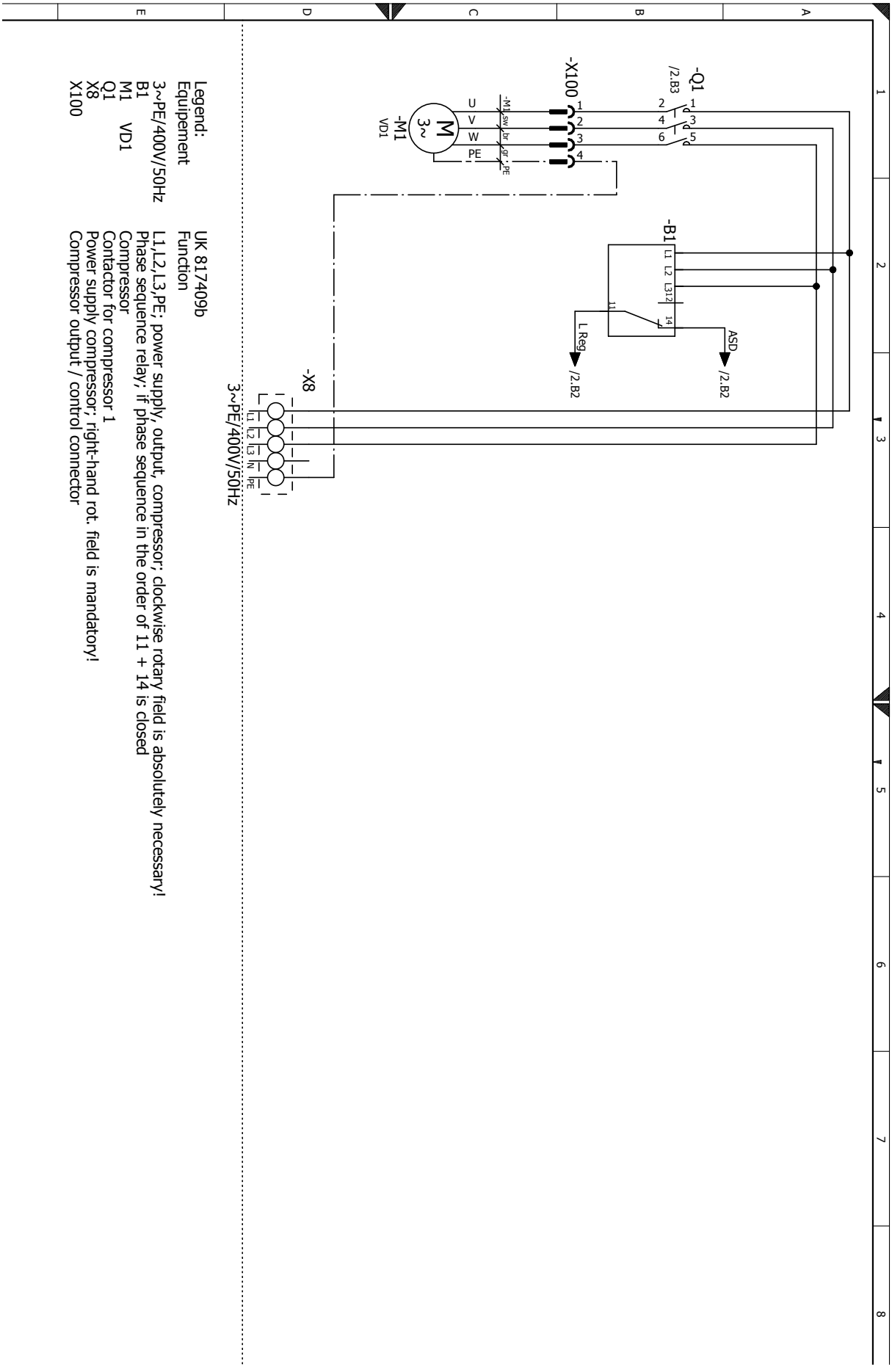

Legend:

| | |
|---|---|
| Equipement | UK 817078 |
| | Function |
| 1~N/PE/230V/50Hz | Power supply controller 230V |
| F1 HDP | High-pressure switch |
| K40 | Controller board; Attention: I-max = 6,3A/230VAC |
| M3 BOSUP | Brine pump energy efficiency |
| Q1 VD | Contactor for compressor 1 |
| R20 | Resistor 4,64kOhm |
| X10 | Terminal in switch box heat pump |
| X100 | Compressor output / control connector |
| X200 | Control connector |
| XJ | Sensor card connector |
| EVU | Energy supplier contact; closed on release; bridge if no blocking interval |
| Y16 MIS | Cooling mixer |

# Circuit diagram 3/3

SW 42K3

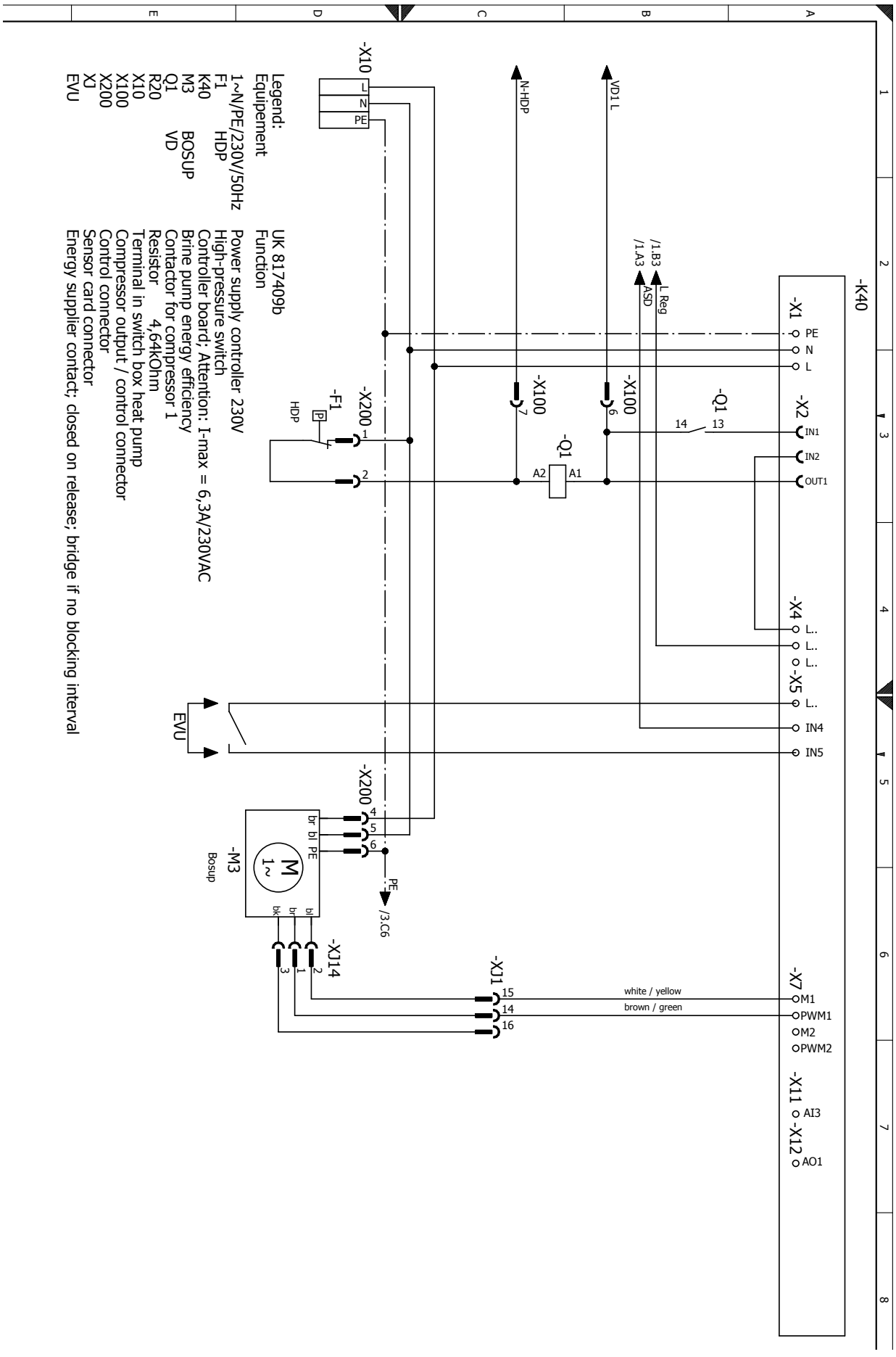


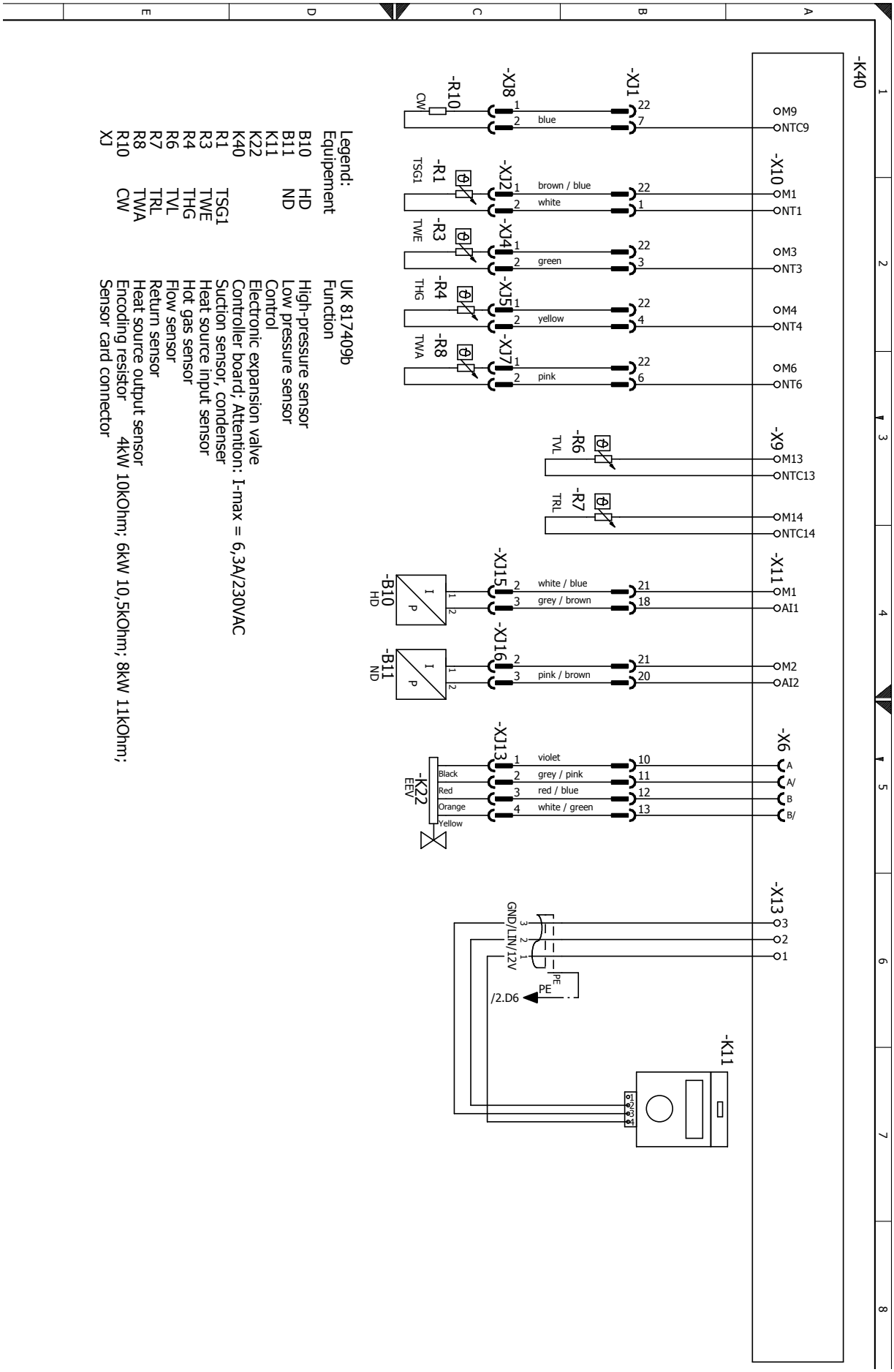


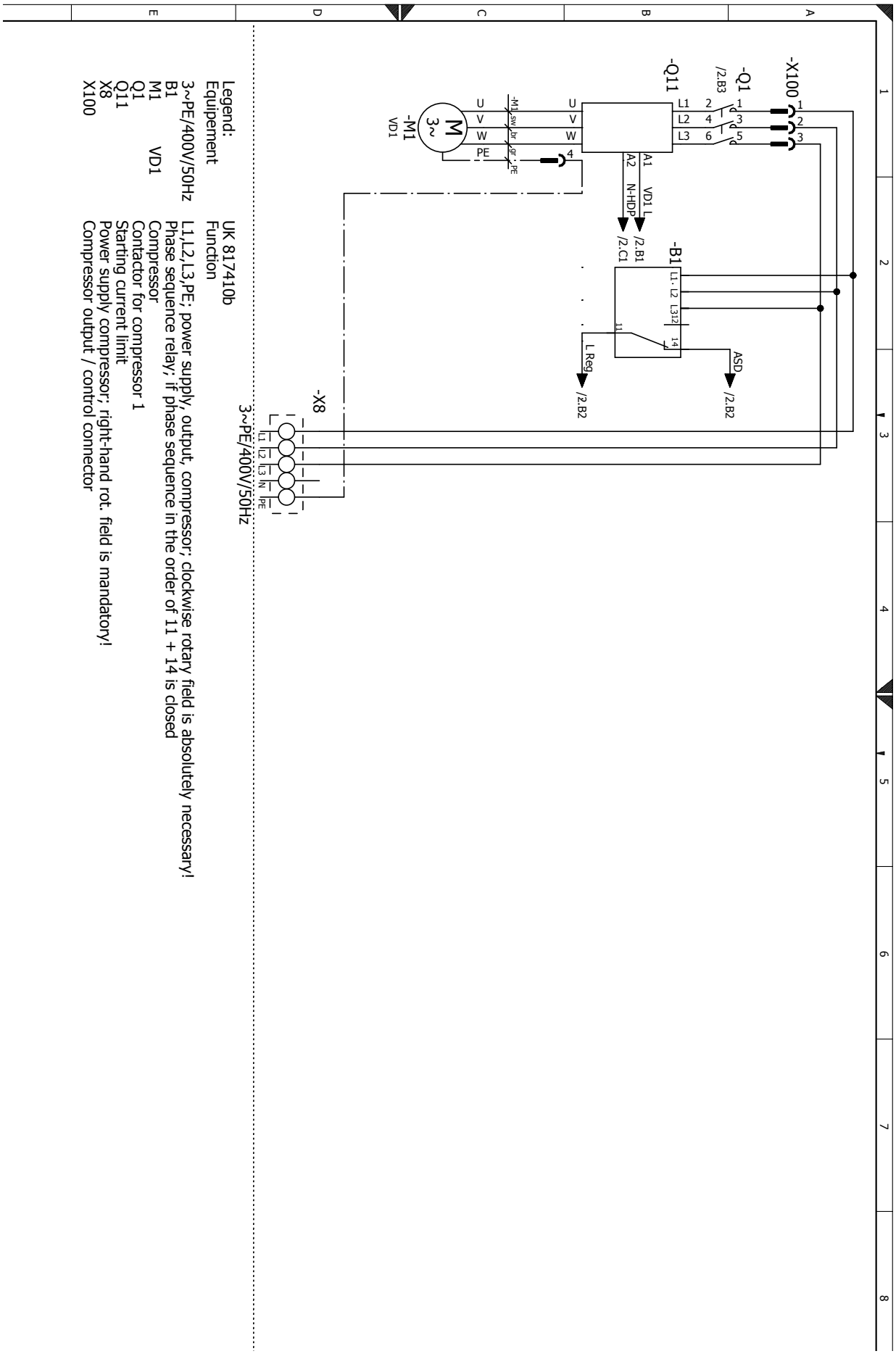

Legend:
Equipement — UK 817409b
B1 — 3~PE/400V/50Hz — L1,L2,L3,PE; power supply, output, compressor; clockwise rotary field is absolutely necessary!
M1 VD1 — Compressor
Q1 — Contactor for compressor 1
X8 — Power supply compressor; right-hand rot. field is mandatory!
X100 — Compressor output / control connector

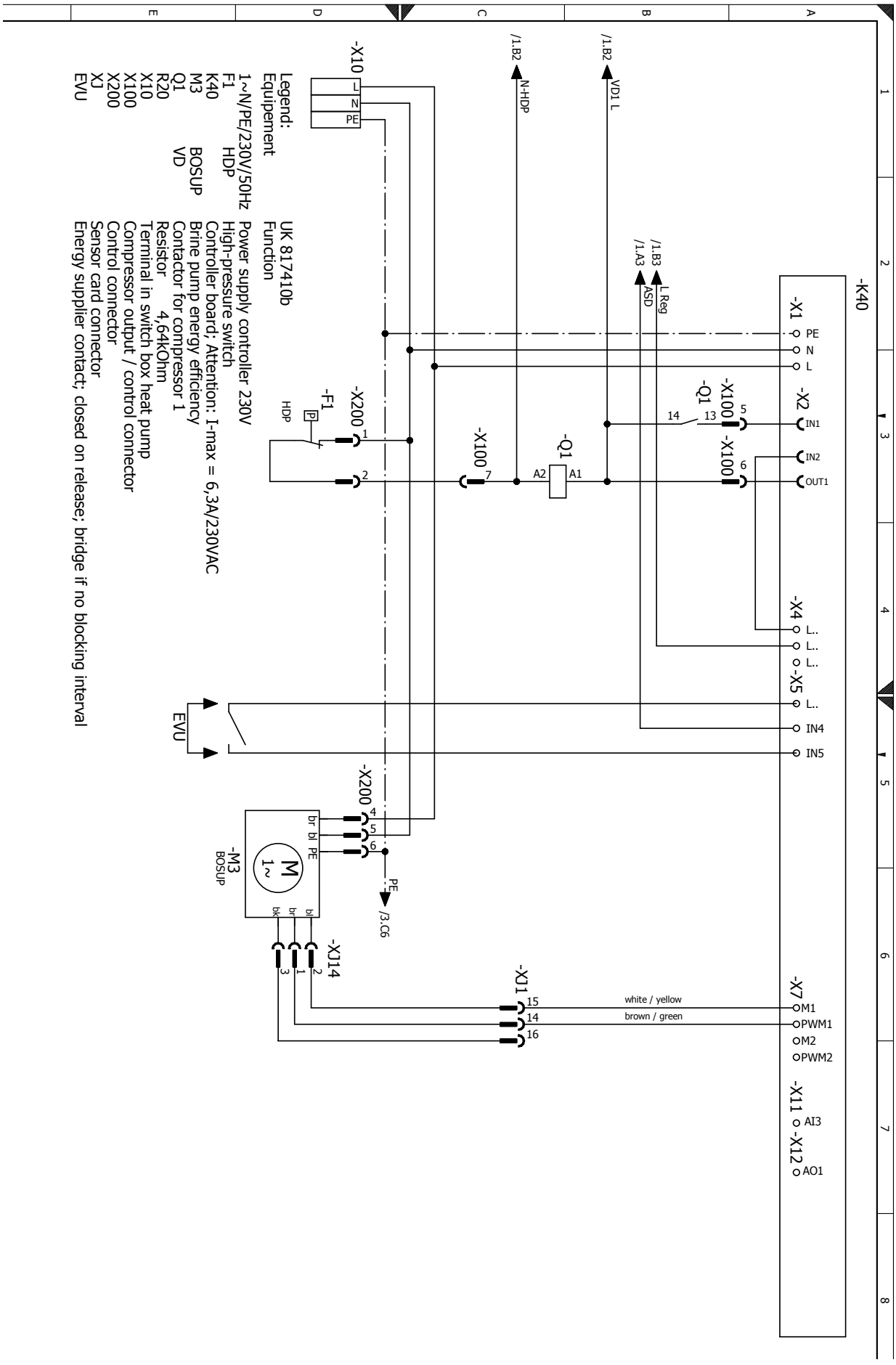
# Circuit diagram 2/3

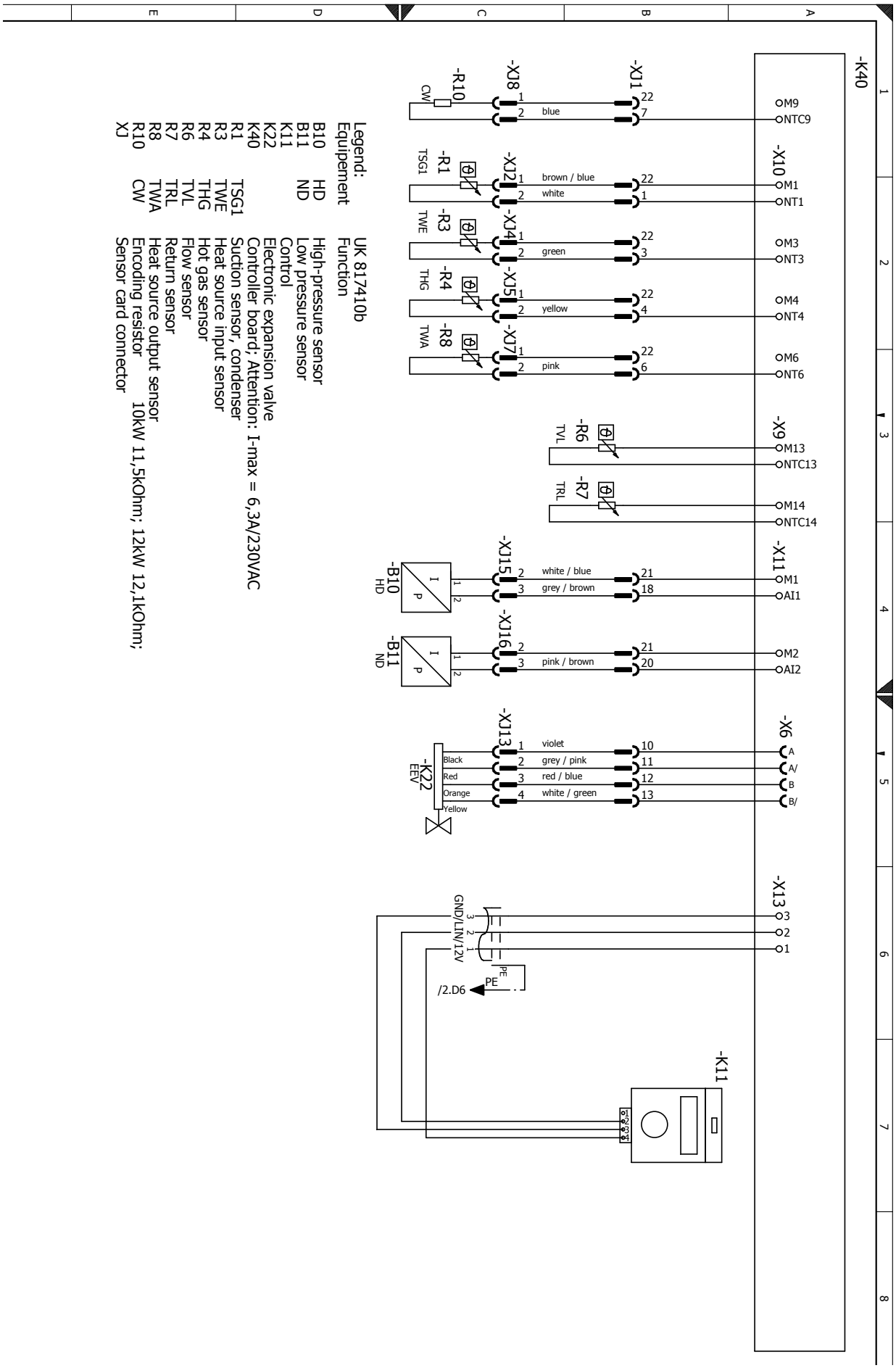
SW 42H3 – SW 82H3

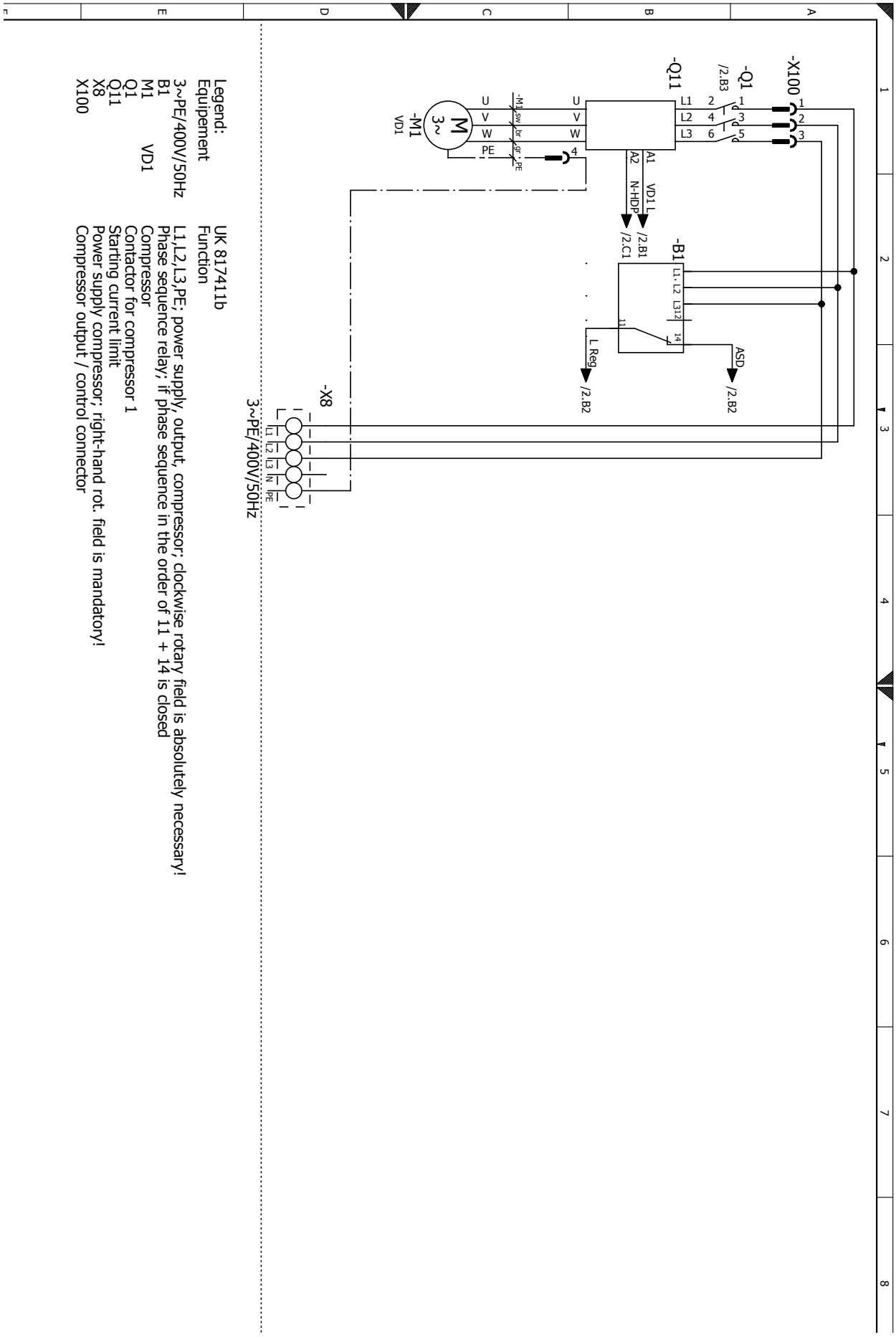



Legend:
Equipement
B10 HD
B11 ND
K11
K22
K40
R1 TSG1
R3 TWE
R4 THG
R6 TVL
R7 TRL
R8 TWA
R10 CW
XJ
UK 817409b
Function
High-pressure sensor
Low pressure sensor
Control
Electronic expansion valve
Controller board; Attention: I-max = 6,3A/230VAC
Suction sensor, condenser
Heat source input sensor
Hot gas sensor
Flow sensor
Return sensor
Heat source output sensor
Encoding resistor 4kW 10kOhm; 6kW 10,5kOhm; 8kW 11kOhm;
Sensor card connector
-K40
-R10 CW
-XJ8
-XJ1
blue
M9
NTC9
-R1 TSG1
-XJ2
brown / blue
white
-X10
M1
NT1
-R3 TWE
-XJ4
green
M3
NT3
-R4 THG
-XJ5
yellow
M4
NT4
-R8 TWA
-XJ7
pink
M6
NT6
-R6 TVL
-X9
M13
NTC13
-R7 TRL
M14
NTC14
-B10 HD
-XJ15
white / blue
grey / brown
-X11
M1
AI1
-B11 ND
-XJ16
pink / brown
M2
AI2
-K22 EEV
-XJ13
Black
Red
Orange
Yellow
violet
grey / pink
red / blue
white / green
-X6
A
A/
B
B/
-X13
GND/LIN/12V
PE
/2.D6
-K11


Legend:
Equipement
UK 817410b
Function
3~PE/400V/50Hz
B1
L1,L2,L3,PE; power supply, output, compressor; clockwise rotary field is absolutely necessary!
M1
Compressor
VD1
Phase sequence relay; if phase sequence in the order of 11 + 14 is closed
Q1
Contactor for compressor 1
Q11
Starting current limit
X8
Power supply compressor; right-hand rot. field is mandatory!
X100
Compressor output / control connector
3~PE/400V/50Hz
-X8
-M1
VD1
-Q11
-Q1
/2.B3
-X100
-B1
/2.B1
/2.C1
L Reg
/2.B2
ASD
/2.B2


Legend:
Equipement
1~N/PE/230V/50Hz Power supply controller 230V
F1 High-pressure switch
K40 Controller board; Attention: I-max = 6,3A/230VAC
M3 Brine pump energy efficiency
Q1 Contactor for compressor 1
R20 Resistor 4,64kOhm
X10 Terminal in switch box heat pump
X100 Compressor output / control connector
X200 Control connector
XJ Sensor card connector
EVU Energy supplier contact; closed on release; bridge if no blocking interval
BOSUP
VD
HDP
UK 817410b
Function
-X10
L
N
PE
-F1
HDP
-X200
-X100
-Q1
A2
A1
-K40
-X1
PE
N
L
-X2
IN1
IN2
OUT1
-X4
-X5
IN4
IN5
EVU
-M3
BOSUP
M
1~
br
bl
PE
bk
-XJ14
-XJ1
-X7
M1
PWM1
M2
PWM2
-X11
AI3
-X12
AO1
white / yellow
brown / green
/1.B2
N-HDP
VD1 L
/1.B3
/1.A3
L Reg
ASD
/3.C6


Legend:
Equipement UK 817410b
B10 HD High-pressure sensor
B11 ND Low pressure sensor
K11 Control
K22 Electronic expansion valve
K40 Controller board; Attention: I-max = 6,3A/230VAC
R1 TSG1 Suction sensor, condenser
R3 TWE Heat source input sensor
R4 THG Hot gas sensor
R6 TVL Flow sensor
R7 TRL Return sensor
R8 TWA Heat source output sensor
R10 CW Encoding resistor 10kW 11,5kOhm; 12kW 12,1kOhm;
XJ Sensor card connector
-K40
-XJ8
-XJ1
-R10
CW
blue
M9
NTC9
-X10
-R1
TSG1
-XJ2
brown / blue
white
M1
NT1
-R3
TWE
-XJ4
green
M3
NT3
-R4
THG
-XJ5
yellow
M4
NT4
-R8
TWA
-XJ7
pink
M6
NT6
-X9
-R6
TVL
M13
NTC13
-R7
TRL
M14
NTC14
-XJ15
-B10
HD
white / blue
grey / brown
-X11
M1
AI1
-XJ16
-B11
ND
pink / brown
M2
AI2
-XJ13
violet
grey / pink
red / blue
white / green
-K22
EEV
Black
Red
Orange
Yellow
-X6
A
A/
B
B/
-X13
GND/LIN/12V
PE
/2.D6
-K11

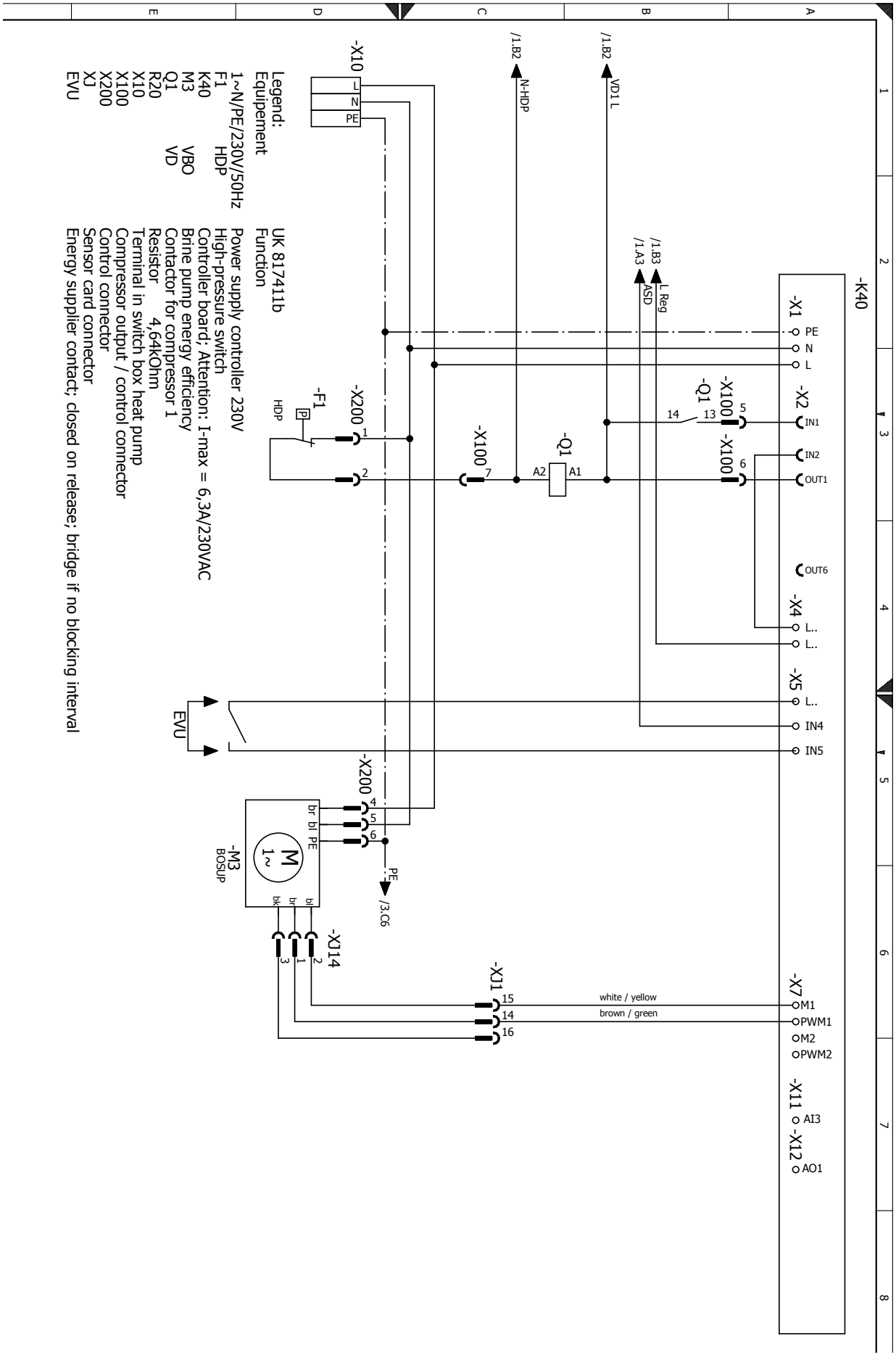



Legend:

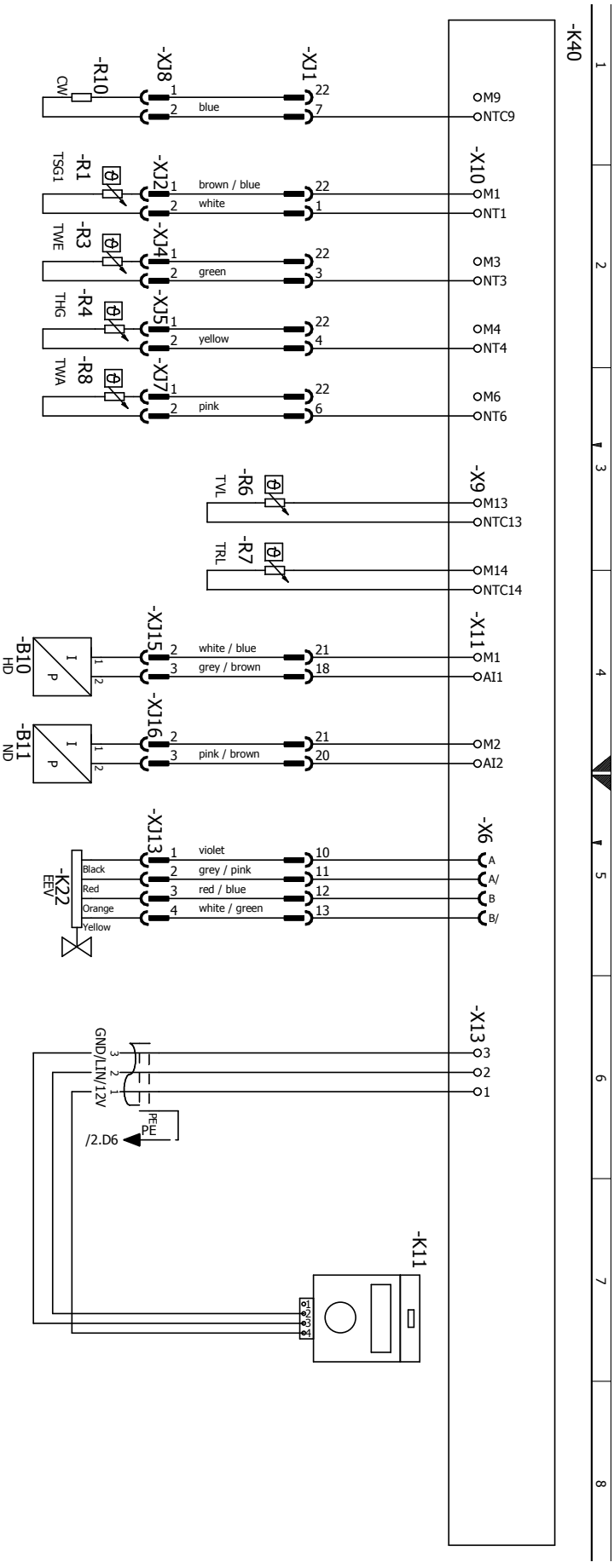
| Equipement | UK 817411b |
|---|---|
| 3~PE/400V/50Hz | Function |
| B1 | L1,L2,L3,PE; power supply, output, compressor; clockwise rotary field is absolutely necessary! |
| M1 | Phase sequence relay; if phase sequence in the order of 11 + 14 is closed |
| VD1 | Compressor |
| Q1 | Contactor for compressor 1 |
| Q11 | Starting current limit |
| X8 | Power supply compressor; right-hand rot. field is mandatory! |
| X100 | Compressor output / control connector |

# Circuit diagram 2/3

SW 142H3 – SW 192H3



# Circuit diagram 3/3




Legend:

| Equipement | Function |
|---|---|
| B10 HD | High-pressure sensor |
| B11 ND | Low pressure sensor |
| K11 | Control |
| K22 | Electronic expansion valve |
| K40 | Controller board; Attention: I-max = 6,3A/230VAC |
| R1 TSG1 | Suction sensor, condenser |
| R3 TWE | Heat source input sensor |
| R4 THG | Hot gas sensor |
| R6 TVL | Flow sensor |
| R7 TRL | Return sensor |
| R8 TWA | Heat source output sensor |
| R10 CW | Encoding resistor 14kW 12,7KOhm; 17kW 13,3kOhm; 19kW 14,0kOhm; |
| XJ | Sensor card connector |

UK 817411b

# 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** |
|---|---|---|---|---|
| SW 42K3 | 10070941 | | | |

**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 61000-3-2:2019 | EN 55014-2:2016 |
| EN 61000-3-3:2014 | |

**Company:**
ait-deutschland GmbH
Industrie Str. 3
93359 Kasendorf
Germany

**Place, date:** Kasendorf, 13.07.2020

**Signature:**

Marco Rolsmerkel
Managing Director

Edgar Timm
Technical Director

UK818202

# 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 | Unit model | Number |
|---|---|---|---|
| SW 42H3 | 10070041 | SW 42H1 | 10074042 |
| SW 82H3 | 10070241 | SW 62H1 | 10074142 |
| SW 102H3 | 10070342 | SW 82H1 | 10074242 |
| SW 122H3 | 10070442 | SW 102H1 | 10074342 |
| SW 142H3 | 10070542 | SW 132H1 | 10074442 |
| SW 172H3 | 10070642 | | |
| SW 192H3 | 10070742 | WWB 21 | 10062901 |
| SW 232H3 | 10074642 | | |
| SW 262H3 | 10074742 | | |
| SW 302H3 | 10074842 | | |

**EC Directives**
2014/35/EU 813/2013
2014/30/EU
2011/65/EG
*2014/68/EU

**EN..**
EN 378 EN 349
EN 60529 EN 60335-1/-2-40
EN ISO 12100-1/2 EN 55014-1/-2
EN ISO 13857 EN 61000-3-2/-3-3
EN 14825

*** 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:** Kasendorf, 27.05.2019

**Signature:**

Jesper Stannow
Head of Heating Development

UK818173d

UK

ait-deutschland GmbH
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