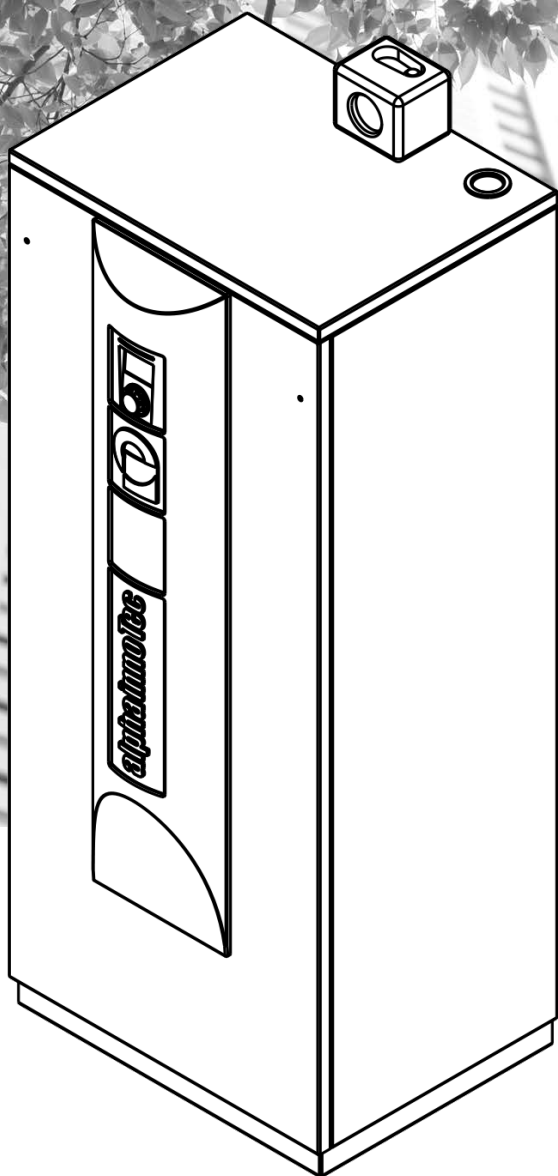


the better way to heat



Water/Water-Heat Pumps
Compact

Operating Manual

WWC H/X – series





1 Please read first

This operating manual provides important information on handling the unit. It is an integral part of the product and must be stored so that it is accessible in the immediate vicinity of the unit. It must remain available throughout the unit's entire service life. It must be handed over to subsequent owners or users of the unit.

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

It is possible that this operating manual may contain instructions that seem incomprehensible or unclear. In the event of any questions or if any details are unclear, contact the factory customer service department or the manufacturer's local partner.

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

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

2 Symbols

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



Information for users.



Information or instructions for qualified technicians.



DANGER!

Indicates imminent danger, which results in severe injuries or death.



WARNING!

Indicates a potentially dangerous situation, which could result in severe injuries or death.



CAUTION!

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



IMPORTANT

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



NOTE

Emphasized information.



ENERGY SAVING TIP

Indicates advice, which helps to save energy, raw materials and costs.



Reference to other sections of the operating manual



Reference to other documents of the manufacturer



Table of contents

1	Please read first	2	26	Installing the control panel	18
2	Symbols	2	27	Installation and removal of the screen....	19
3	Intended use	4	28	Set the overflow valve	20
4	Disclaimer	4	29	Commissioning	21
5	EC conformity	4	29.1	Pump settings for WWC 220 H/X.....	21
6	Safety	4	29.3	Safety temperature limiter	22
7	Customer service	5	30	Dismantling	22
8	Warranty/Guarantee	5			
9	Disposal	5			
10	Operating principle of heat pumps	5		Technical data / Scope of delivery	24
11	Area of use and heat source requirements	6		Performance curves	26
12	Heat metering	7		WWC 100H/X	26
13	Operation	7		WWC 130H/X	27
14	Care of the unit	7		WWC 160H/X	28
15	Maintenance of the unit	7		WWC 190H/X	29
15.1	Cleaning and flushing unit components	7		WWC 220H/X	30
16	Malfunctions	8		Dimensional drawings and installation plans	31
17	Scope of delivery	8		Dimensional drawings	31
17.1	Functionally necessary accessories	9		Installation plans	32
17.2	Main components	9		Hydraulic integration	33
18	Installation	9		Default	33
18.1	Installation room	9		Separate buffer tank	34
18.2	Transport to installation location	10		Legend Hydraulic integration	35
18.3	Installation	10		Terminal diagram	36
19	Installing the hydraulic connections	12		Circuit diagrams	37
19.1	Safety assembly	13		WWC 100H/X	37
19.2	Expansion vessel	13		WWC 130H/X – 220H/X	40
20	Domestic water heating	13		EC declaration of conformity	43
21	Domestic hot water tank	13			
22	Electrical connection work	14			
23	Flushing and filling the system	16			
23.1	Water quality	16			
23.2	Flush and fill the heating circuit and the domestic hot water tank	17			
24	Bleeding	17			
25	Insulating the hydraulic connections	18			



3 Intended use

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

The unit may be operated only within its technical parameters.



Overview "Technical data/scope of delivery"



NOTE

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

4 Disclaimer

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

The manufacturer's liability also expires:

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

5 EC conformity

The unit bears the CE marking.



EC Declaration of Conformity

6 Safety

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

Every person who carries out work on the unit must have read and understood the operating manual before starting any work. This also applies if the person concerned has already worked with such a unit or a similar unit or has been trained by the manufacturer.

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



DANGER!

Risk of fatal electric shock!

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

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



WARNING!

Only qualified personnel (trained heating, refrigerating system and refrigerant engineers and electricians) may carry out work on the unit and its components.



WARNING!

Note and follow safety stickers on and in the unit.



WARNING!

Unit contains refrigerant!

Leaking refrigerant could result in personal injury and environmental damage.

Therefore:

- Switch off system.
- Thoroughly ventilate installation room.
- Notify the manufacturer's authorised service centre.



IMPORTANT

For safety reasons:

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



! IMPORTANT

Only install the heat pump indoors.



Dimensioned drawing and installation plan for the respective unit model

7 Customer service

For technical assistance, please contact your qualified technician or the manufacturer's local service partner.

For a current list and additional partners of the manufacturer, please visit

DE: www.alpha-innotec.de

EU: www.alpha-innotec.com

8 Warranty / Guarantee

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



NOTE

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

9 Disposal

When withdrawing the old unit from service, always comply with the relevant local laws, guidelines, directives and standards concerning the recovery, recycling and disposal of the operating materials and components of refrigerating units.



"Dismantling"

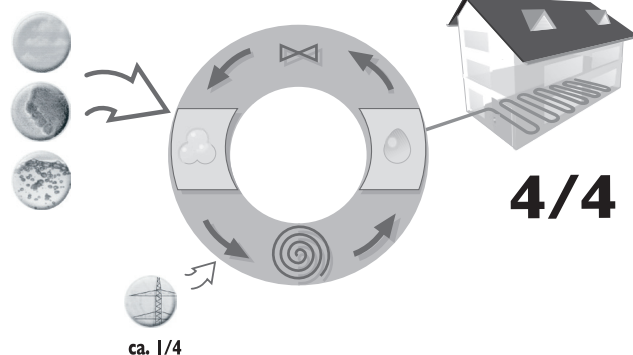
10 Operating principle of heat pumps

Heat pumps operate on the same principle as a refrigerator: same technology, only with reversed benefits. The refrigerator extracts heat from foods, which is released into the room through fins on the back.

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

Example: drawing of a brine/water heat pump with floor heating:

ca. 3/4



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



11 Area of use and heat source requirements

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



“Technical data/scope of delivery” overview,

Water temperature / water quantity

The water in the extraction well of the heat source system must have a minimum temperature of 7 °C all year round and may not exceed a temperature of 25°C. Depending on the heat output required or its cooling capacity as a relevant variable for dimensioning the heat source, a minimum water rate is required, which must be provided by the heat source as a continuous output. Before installing the water/water heat pump, a pump test should/must be carried out for at least 12 hours with verification of a quasi-constantly lowered water table (persistence) in order to provide information about the quantity of water available. For efficient operation of the well, during the initial start-up the nominal flow rate must be adjusted on the heat source side. Any appropriate components, which enable balancing are to be installed in the pipe network here. The material of the components used must be chosen according to the water quality. The necessary flow rate (heat source water rate) must meet the heat pump's requirements.



“Technical data/scope of supply” overview

Water quality

In Germany the well must be designed and built to DIN 4021 and VDI 4640 (in other countries according to the corresponding regulations). Wells may only be drilled and built by drilling companies with a permit in accordance with DVGW W120. The water quality of the heat source is defined as normal groundwater. Ensure that the suction and return pipe always extends below the water level by sufficient depth, to ensure that oxygen is not added to the water (risk of iron oxide deposits). Please discuss the problem of iron oxide deposits with your well builder. During the planning the quality of the groundwater should be checked in advance as well as possible (e.g. by asking the competent water authority or searching for data on existing adjacent wells) and subsequently verified by water analysis in the built production well. The following table helps to assess the water quality.



IMPORTANT

A water analysis and pump test must be carried out before installing the water/water heat pump.



NOTE

Water analyses are prepared by water test laboratories. Initial information about possible use of groundwater is available from your local water management authority. A pump test provides information as to whether a sufficient quantity / rate of water is available to cover the requirements for the heating output of your unit. The minimum groundwater flow rate must at least be available as a continuous output.



“Technical data/scope of supply” overview, “Heat source flow rate” section

Evaluation of the water analysis

Water constituents - minimum requirement. The water should be analysed in advance for the test values listed below (table). An important criterion to be used for taking water samples is the DVGW Standard, Technical Notices, Leaflet W 112 and use of the technical rules listed in it (DIN, EN and ISO standards).

Designation	Limit
pH value	> 6,8
Iron level	< 0,2 mg / l
Manganese level	< 0,1 mg / l
Chloride level	< 300 mg / l
Free chlorine level	< 3 mg / l
Turbidity	keine
Technical freedom from sand	< 0,1 ml sand per 10 l pumped water



IMPORTANT

If a value does not conform to the value listed in the table, a water/water heat pump may not be used. Direct operation of the unit in conjunction with surface water, wastewater, industrial wastewater or mixtures of water and alkali solutions, acids or chlorine is also not allowed.



12 Heat metering

In addition to proof of the system's efficiency, the EEWaermeG (German law on renewable energy heat) also requires heat metering (referred to in the following as WME). The WME is mandatory for air/water heat pumps. For brine/ water and water/water heat pumps, a WME must be installed for flow temperatures $\geq 35^{\circ}\text{C}$. The WME must record the total thermal energy output (heating and domestic hot water) in the building. In the case of heat pumps with heat metering the analysis is carried out via the controller. This displays the thermal energy output into the heating system in kWh.



NOTE

Unit variants with or without heat metering are available.

13 Operation

Energy saving use of the heat pump heating

By deciding to purchase a heat pump or a heat pump system you are making a long-term contribution to protecting the environment through low emissions and reduced primary energy use.

You can operate and control the heat pump system with the control panel of the heating and heat pump controller.



NOTE

Make sure that the control settings are correct.



Operating manual of the heating and heat pump controller

To ensure that your heat pump or heat pump system operates efficiently and in an environmentally friendly way in heating mode, please pay particular attention to the following:



ENERGY SAVING TIP

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



ENERGY SAVING TIP

Preferably use purge ventilation. Compared to continuously open windows, this form of ventilation (fully opening windows for a short period, two to three times a day) reduces energy consumption and your heating bill.

14 Care of the unit

You can clean the outer surfaces of the unit with a damp cloth and proprietary household cleaning products.

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

15 Maintenance of the unit

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

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



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

The components of the heating circuit and the heat source (valves, expansion vessels, circulation pumps, filters, dirt traps) should be tested and cleaned as needed, however, at least annually, by qualified personnel (heating or refrigerating system fitters).

It is best to arrange a maintenance agreement with a heating installation company. The company will arrange the necessary regular maintenance work.

15.1 Cleaning and flushing unit components



CAUTION!

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

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



16 Malfunctions

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



Operating manual of the heating and heat pump controller



WARNING!

Only customer service personnel authorised by the manufacturer may carry out service and repair work on the components of the unit.

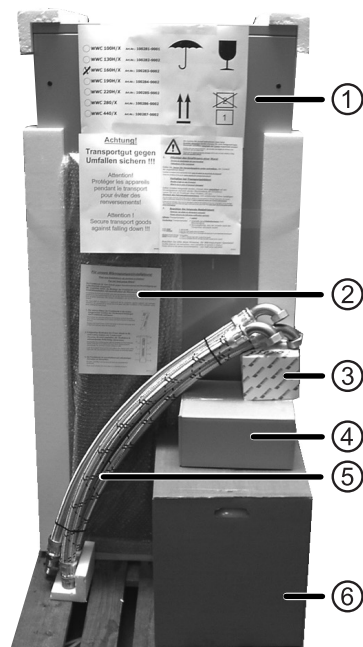
Note that no fault is displayed if the safety temperature limiter on the electric heating element has triggered (depending on model).



“Commissioning”, “Safety temperature limiter” section

17 Scope of delivery

Example layout of the scope of delivery:



- 1 Compact unit with hermetic compressor, all safety-relevant components for refrigeration circuit monitoring, installed sensors for recording the hot gas, heating water flow and return temperature, sensors for monitoring the heat source temperature, flow monitors for monitoring the water flow rate
- 2 Screen
- 3 Safety assembly for the heating circuit
- 4 Separate package with control panel, external temperature sensor, dirt trap, Sylomer strips, seals
- 5 Vibration isolators for the heating circuit and for the heat source
- 6 Expansion vessel for the heating circuit with cap valve

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



NOTE

Note the unit model.



“Technical data/scope of delivery” overview



17.1 Functionally necessary accessories

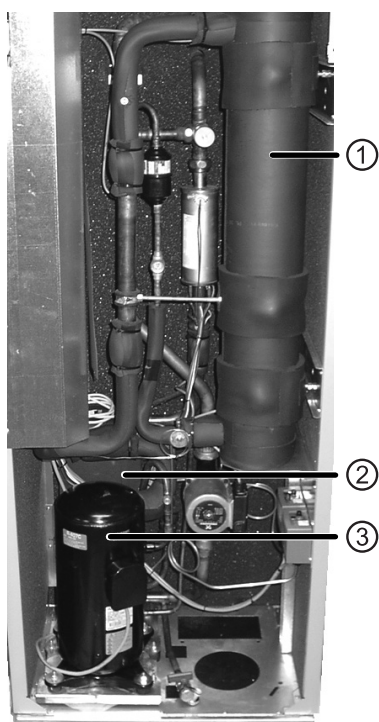


IMPORTANT

Only use the manufacturer's original accessories.

If the unit is to be used for heating water, a 3-way switching valve must be installed. This is not included with the unit and must be ordered separately.

17.2 Main components



- 1 evaporator
- 2 compressor
- 3 condenser

18 Installation

The following applies to all work to be done:



NOTE

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



NOTE

Note the sound information for the respective model.



"Technical data/Scope of delivery" overview, "Sound" section

18.1 Installation room



ATTENTION

Install the heat pump only indoors.
The installation room must be frost-free and dry.



WARNING!

Please note and follow the respective relevant local standards, directives and regulations applicable, especially the minimum volume necessary depending on the refrigerant capacity of the relevant heat pump system (EN 378-1).

Refrigerant	Limit
R 134a	0,25 kg/m ³
R 404A	0,48 kg/m ³
R 407C	0,31 kg/m ³
R 410A	0,44 kg/m ³



Overview "Technical data/scope of delivery", "General unit data" section

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



NOTE

If several heat pumps of the same type are installed, only one heat pump must be considered.

If several heat pumps of different types are installed, the heat pump with the largest refrigerant capacity must be considered.



18.2 Transport to installation location

Always comply with the following safety information during transport:



WARNING!

Several people are required to transport the unit. Take into account the weight of the unit.



“Technical data/Scope of delivery” overview, “General unit data” section,



CAUTION!

Wear safety gloves.



WARNING!

The unit can tilt and tip over when being removed from the wooden pallet and during transport. This can result in personal injury and damage to the unit.

- Take suitable precautions to prevent the risk of tipping over.



IMPORTANT

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



IMPORTANT

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

To prevent transport damage, you should transport the unit to its final place of installation in its packed condition (on the wooden pallet with packaging) using a pallet truck.

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

Before transporting with a handcart, we recommend removing the front panel in order to reduce the weight of the unit.

- ① Remove packaging and set extra box aside (will be needed later on!).
- ② Remove angle bracket, transport and packaging material from the unit.

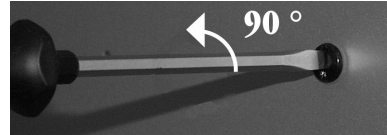
Dispose of angle bracket, transport and packaging material properly and in an ecologically compatible way.

Lift unit from the pallet.

- ③ Remove front panel of unit.

③.①

To do so, loosen the quick-release screws. Turn through 90° to the left.



③.②

Lift front panel and set aside in a safe place.

- ④ Push handcart under the rear side of the unit.



IMPORTANT

If the handcart is pushed under the unit at the rear panel, ensure you do not damage any connections during transport.



IMPORTANT

Transport with a handcart on the front side of the unit is not permitted.



IMPORTANT

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

18.3 Installation



CAUTION!

Several people are required to install the unit.



NOTE

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



Installation plan for the respective model

- ① If you have not already done so, remove angle bracket, transport and packaging material from the unit. Set the extra box to the side and lift the unit from the wooden pallet.



“Transport to installation location”

Dispose of angle bracket, transport and packaging material properly and in an ecologically compatible way.



- ② Set unit on a stable, solid and level, preferably sound-insulated surface. Ensure that the floor is designed for the weight of the heat pump.

Set up the unit so that the switchbox side (= operator side) is accessible at all times.



“Technical data/Scope of delivery” overview, “General unit data” section

- ③ Use the Sylomer strips supplied to level out any minor unevenness.

The Sylomer strips give the heat pump additional stability. They absorb sound and vibrations transfer to the floor.

Place the Sylomer strips under the heat pump as follows:

③•①

Tilt the unit to one side, slowly and carefully.

Secure unit in raised tilted position so that it cannot accidentally tip back into the original position.



IMPORTANT

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

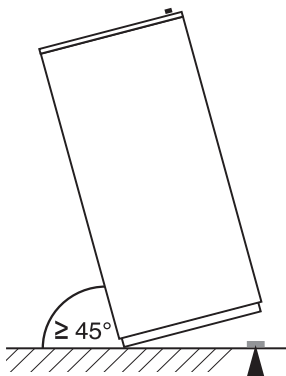


CAUTION!

Hands and fingers could be crushed during the following work!

③•②

Position a Sylomer strip under the unit, flush with the respective outer edge.



③•③

Slowly and carefully tilt the unit back into its initial position.

- ④ Repeat steps ③•① to ③•③ for the remaining sides of the unit.

Position Sylomer strips at right angles to each other, end-to-end:



Front side of unit (= operator side)



19 Installing the hydraulic connections



NOTE

All materials used in the heat source circuit (pipes, connections, sealing material...) must be corrosion resistant and suitable for the groundwater quality. Use suitable plastics or stainless steel.



IMPORTANT

Connect the unit to the heating circuit according to the hydraulic diagram for the respective model.



“Hydraulic connection” instructions



IMPORTANT

The heat source system must be designed according to the specifications of the planning manual.



Planning manual and “Hydraulic connection” documents



NOTE

Check to make sure that the cross-section and lengths of the pipes for the heating circuit are adequately dimensioned. The free compression of the circulation pumps must be able to deliver at least the minimum throughput required for your model.



“Technical data/Scope of delivery” overview, “Heat source” and “Heating circuit” sections



NOTE

Check whether the cross-sections and lengths of the heat source pipes are adequately dimensioned.



NOTE

The heat source pump must be designed as a constant speed pump. It must at least produce the minimum throughput required for your unit model. The heat source pump must be designed by performing a pipe network calculation.



“Technical data/Scope of delivery” overview, “Heat source” sections



IMPORTANT

Please note that the designed heat source pump may only be used within its pump characteristic curve!



IMPORTANT

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



NOTE

Install the dirt trap included in the scope of delivery in the well shaft (heat source inlet)

The connections for the heating circuit or the heat source are located at the rear of the unit:



For position of the connections, please refer to the dimensioned drawing for the respective model

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

Install shut-off devices for the heat source inlet and heat source outlet on the heat pump side.



NOTE

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

- ② Thoroughly flush the heating circuit and heat source circuit before connecting to the unit.



NOTE

Dirt and deposits in the heating circuit and heat source can cause malfunctions.

- ③ Connect the fixed pipes of the heating circuit with the corresponding connections at the rear of the unit. Use vibration isolators.

Vibration isolators must be installed to prevent structurally borne sound transfer to the fixed piping.

Vibration isolators for the heating circuit are included with the unit; they have a zined mesh and are marked in colour.

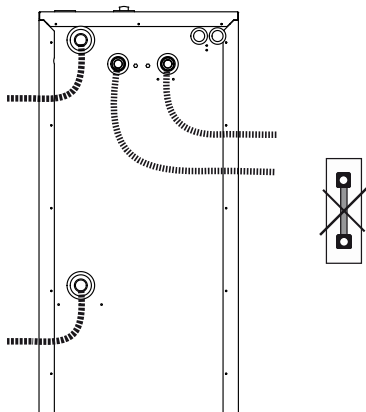


- ④ Connect the fixed piping of the heat source with the relevant connections at the rear of the unit. Use vibration isolators.

Vibration isolators must be installed to prevent structurally borne sound transfer to the fixed piping.

Vibration isolators for the heat source are included with the unit and have a stainless steel mesh.

Lay vibration isolators in the quadrant, as shown by way of example in the following sketch:



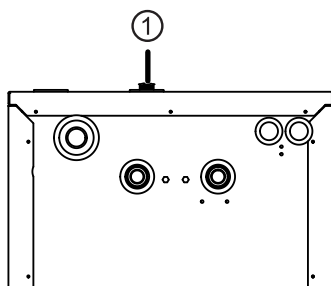
Straight or extended hose laying of the vibration isolators is not permitted.

19.1 Safety assembly

You must install the safety assembly for the heating circuit. The safety assembly for the heating circuit is included in the extra box.

The discharge from the heating water safety valve must be drained according to the relevant standards and regulations. Discharging the safety valve discharge into the sewers is allowed only if fed via a funnel siphon, which must be accessible at all times.

The connection for the safety assembly is located on the outside at the top rear of the unit.



1 Heating circuit safety assembly connection

19.2 Expansion vessel

The expansion vessel for the heating circuit and the corresponding cap valve are included in the scope of delivery. They must both be integrated in the heating circuit on site in compliance with the relevant standards, guidelines and directives.

! IMPORTANT

In conjunction with a multi-functional and/or buffer tank with volume >200 l, always install an additional, adequately-dimensioned expansion vessel.

20 Domestic water heating

If the unit is to be used for domestic water heating, a 3-way changeover valve must be installed. This is not included with the unit and must be ordered separately.

! IMPORTANT

Only use the manufacturer's original accessories.

Domestic water heating with the heat pump requires an additional heating water circuit (parallel) to the heating circuit. When connecting, make sure that the domestic hot water charge is not fed through a buffer tank in the heating circuit.



"Hydraulic connection" documents

21 Domestic hot water tank

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



NOTE

The heat exchanger surface of the domestic hot water tank must be dimensioned so that the heating output of the heat pump is transferred with minimum spread.

You can choose a domestic hot water tank from our product range. They are optimally matched to your heat pump.



NOTE

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



"Hydraulic connection" documents

22 Electrical connection work

The following applies to all work to be done:



DANGER!

Risk of fatal electric shock!

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

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



WARNING!

During installation and when carrying out electrical work, comply with the relevant EN-, VDE and/or local safety regulations.

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



NOTE

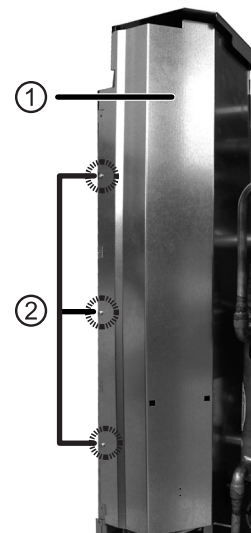
All live cables must be stripped before they are laid in the cable duct of the switchbox!

① Open unit, if closed.



"Transport to the installation location", ② and ③

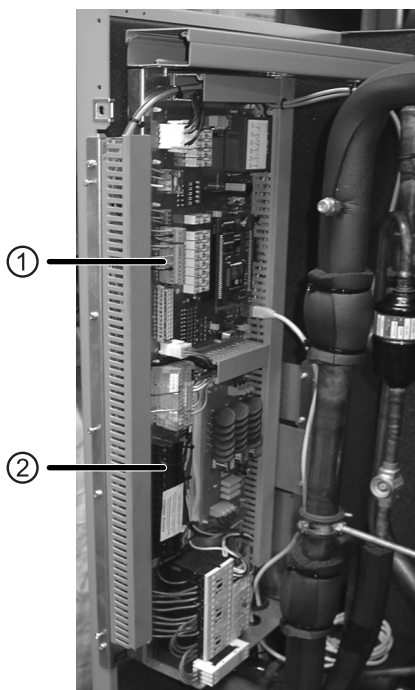
② Open electrical switchbox inside the unit.



- 1 Cover plate of the switchbox
- 2 Screw plugs



Opened switch box:



- 1 Controller board connections
- 2 Power and control cable connections

- ③ Feed the load and control cables as well as the cables for sensors into the inside of the unit through the openings provided at the rear of the unit.



For positioning of the rubber grommets for feeding through the cables, see “dimensioned drawing” for the respective model

- ④ Lay load and control leads in the cable duct inside the unit all the way to the switchbox.
- ⑤ Install electrical connections according to the terminal diagram and the circuit diagrams.



“Terminal diagrams” and “Circuit diagrams” for the respective model



IMPORTANT

Install electric connections only according to the terminal diagram and the circuit diagrams that apply to your model.



IMPORTANT

Ensure clockwise rotary field of the load power supply (compressor).
Operation with the incorrect rotary direction of the compressor can cause serious, irreparable damage to the compressor.



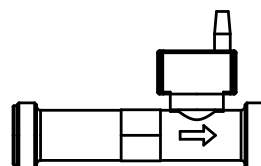
IMPORTANT

The power supply for the heat pump must be equipped with a three-phase automatic circuit-breaker with at least 3mm contact spacing to IEC 60947-2.

Note the level of the tripping current.



“Technical data/Scope of delivery” overview, “Electrics” section



IMPORTANT

The sensor cable for heat quantity recording may not be shortened!



NOTE

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

If this is required, install a shielded network cable (category 6, with RJ-45 connector) through the unit when installing the connections and run it through the front panel of the unit, parallel to the existing control cable of the heating and heat pump controller.

- ⑥ After completing all electrical installation work, close the switchbox inside the unit.
- ⑦ Screw on the front panel of the unit, if no further installation work inside the unit is to be carried out immediately.



23 Flushing and filling the system



IMPORTANT

The system must be absolutely free from air before commissioning.

23.1 Water quality

of the fill and additional water in hot water heating systems according to VDI 2035 Part I and II

Use of modern, energy-efficient heat pump systems is becoming increasingly widespread. Their ingenious technology enables these systems to achieve very good efficiencies. The decreasing space available for heat generators has led to the development of compact units with increasingly smaller cross-sections and high capacities. This means the complexity of the systems and the material diversity are also increasing, which plays an important role especially in their corrosion behaviour. The heating water not only affects the efficiency of the system, but also the life of the heat generator and the heating components of a system.

The guide values of VDI 2035 Part I and Part II must therefore be complied with as minimum requirements for proper operation of the systems. Our practical experience has shown that the safest and most trouble-free running of the systems is achieved with so-called low-salt operation.

VDI 2035 Part I gives important information and recommendations regarding scaling and its prevention in heating and domestic hot water heating systems.

VDI 2035 Part II primarily deals with the requirements for reducing heating water corrosion in hot water heating systems.

Principles of Part I and Part II

The occurrence of scaling and corrosion damage in hot water heating systems is low, if

- proper planning and commissioning is carried out
- the system is closed in corrosion terms
- adequately dimensioned pressurising is integrated
- the guide values for the heating water are complied with
- and regular servicing and maintenance are carried out.

A system log should be kept, in which the relevant planning data is entered (VDI 2035).

Damage that can occur in case of non-compliance

- malfunctions and the failure of components (e.g. pumps, valves)
- internal and external leaks (e.g. from heat exchangers)
- cross-section reduction and blockaging of components (e.g. heat exchanger, pipes, pumps)
- Material fatigue
- gas bubbles and gas cushion formation (cavitation)
- negative effect on heat transfer (formation of coatings, deposits) and associated noises (e.g. boiling noises, flow noises)

Limescale – the energy killer

Filling with untreated drinking water inevitably leads to the precipitation of all calcium as scale. The consequence: limescale deposits form on the heat transfer surfaces of the heating. The efficiency falls and the energy costs rise. A rule of thumb is that 1 millimetre of limescale deposit causes an energy loss of 10%. In extreme cases it can even cause damage to the heat exchangers.

Water softening to VDI 2035 – Part I

If the water is softened before the heating is filled, in accordance with the VDI 2035 guidelines, no scale can form. This effectively and permanently prevents limescale deposits and the resulting negative effects on the entire heating system.

Corrosion – an underestimated problem

VDI 2035, Part II, deals with the problem of corrosion. Softening the heating water can prove to be insufficient. The pH value can significantly exceed the limit of 10. pH values higher than 11 can set in, which even damage rubber seals. The VDI 2035, Part 1 guidelines are fulfilled, however, VDI 2035, Part 2 suggests a pH value between 8.2 and maximum 10.

If aluminium materials are used, which is the case in many modern heating systems, a pH value of 8.5 must not be exceeded, because otherwise there is a threat of corrosion – and aluminium is attacked without the presence of oxygen. Therefore, apart from softening the heating fill and additional water, the heating water should also be appropriately conditioned. This is the only way to comply with the VDI 2035 requirements and the recommendations and installation instructions of the heat pump manufacturer.



Part 2 of VDI 2035 also points out the reduction in total salt content (conductivity). The risk of corrosion is far lower if deionised water is used than is the case if the system is operated with salty, i.e. softened water.

Even if the water has been softened beforehand, it contains dissolved, corrosion-promoting salts, which act as electrolytes due to the use of different materials in the heating system and therefore accelerate corrosion processes. This can ultimately result in pitting.

On the safe side with low-salt operation

The problems listed above do not occur at all with low-salt operation, as neither corrosive salts such as sulphates, chlorides and nitrates nor alkalising sodium hydrogen carbonate are in the heating water. The corrosive properties of deionised water are very low and in addition, fur cannot form in the boiler. This is the ideal approach for closed heating circuits, in particular, because low oxygen input into the heating circuit can also be tolerated.

In general, when the system is filled with deionised water, the pH value sets itself within the ideal range due to „self-alkalinisation“. If necessary, a pH value of 8.2 can be very easily alkalised by adding chemicals. In this way, optimum protection of the entire heating system is achieved.

Monitoring

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

23.2 Flush and fill the heating circuit and the domestic hot water tank

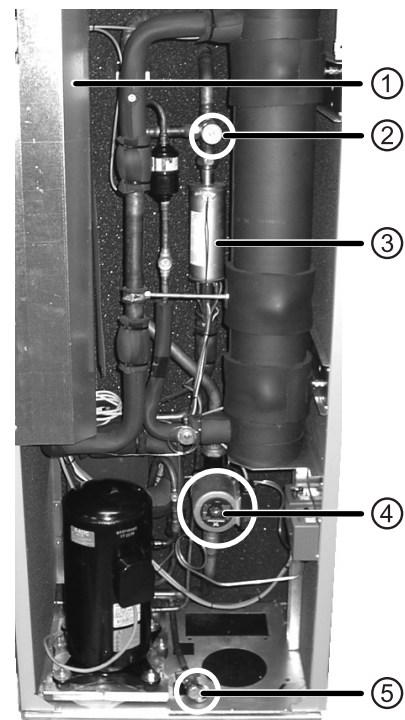
- ① Place a bleeder (vent) at the highest point of the heating circuit in the heating water outlet (flow).
- ② If necessary, place a bleeder at the highest point of the heating circuit in the heating water inlet (return).
- ③ Open unit, if closed.
- ☞ “Transport to the installation location”, ② and ③
- ④ Flush and fill the unit via the filling and draining tap.

! IMPORTANT

Do not exceed a pressure of 2.5 bar when flushing the unit. The drain line of the heating circuit safety valve must be closed before flushing and filling.

24 Bleeding

View of inside of unit



- 1 Electrical switchbox
- 2 Overflow valve
- 3 Electric heating element
- 4 Circulation pump, heating circuit
- 5 Fill and drain tap, heating circuit



Bleeding the unit

The unit is bled automatically if the bleeder (vent valve) of the safety assembly is open. If the heating circuit is filled or drained, the venting valve of the safety assembly opens.

Bleeding the circulation pump of the heating circuit

Unscrew the screw cover in the middle of the circulation pump until loose and close again after venting.

Bleeding the domestic hot water tank

To bleed the domestic hot water tank, the domestic hot water charge circuit must be flushed separately.

To do this, manually switch the domestic hot water changeover valve to domestic hot water charging. After bleeding, return it to the initial position.



NOTE

Once the heat pump, heating circuit and domestic hot water charging circuit have been flushed, the bleeding program of the heating and heat pump controller must be started, after the control panel has been installed.

- ⑤ If no further steps follow, install the front panel.

25 Insulating the hydraulic connections



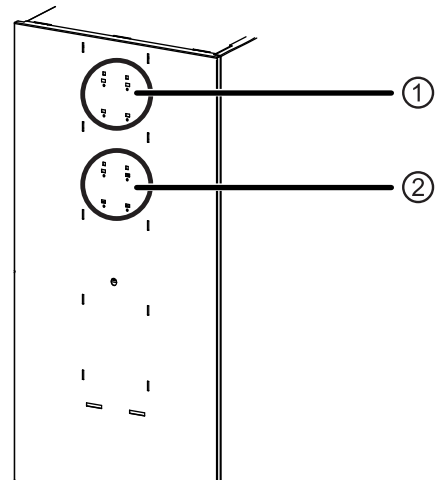
NOTE

Insulate the heating circuit and the heat source according to relevant local standards and guidelines.

- ① Check all hydraulic connections for leaks. Perform leak test.
- ② Insulate all connections, vibration isolators, connections and pipes of the heating circuit and the heat source. Insulate the heat source so that it is **vapour-diffusion tight**.

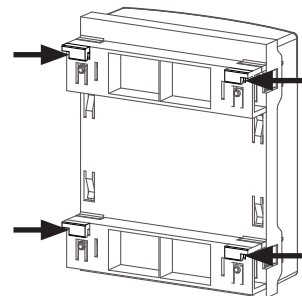
26 Installing the control panel

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

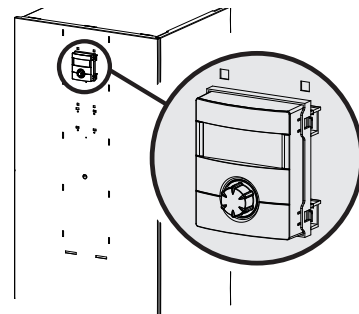


- 1 four upper recesses
- 2 four lower recesses

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



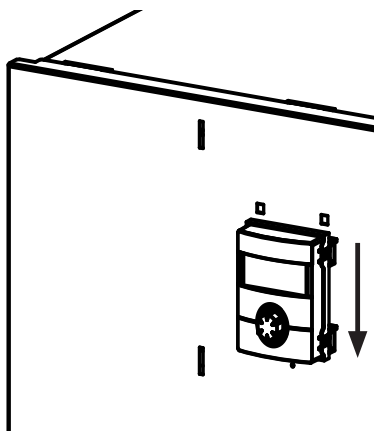
- ① Hook the control panel's hooks into the recesses of the front panel (either in the upper or lower recesses).



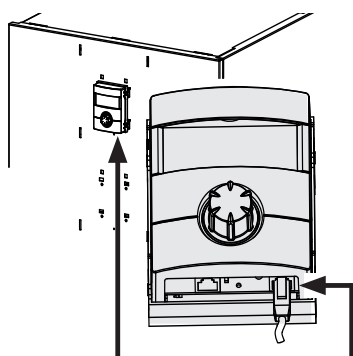
Example:
Control panel in upper recesses



- ② Push down the hooked in control panel, until it latches into place.



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



NOTE

A connection to a computer or a network can be made via the left socket at the bottom of the control panel, thereby allowing the heating and heat pump controller to be controlled remotely from there. This requires a shielded network cable (category 6) to be laid through the unit during the electrical connection work.



Operating manual for the heating and heat pump controller, "Qualified technician" version, "Web server" section

If this network cable is available, insert the network cable's RJ-45 connector into the left socket of the control panel.



NOTE

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

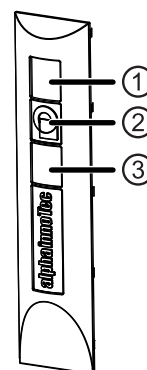
27 Installation and removal of the screen

27.1 Installing the screen



NOTE

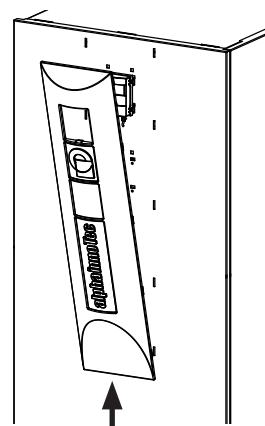
The masking plate is provided in the as delivered unit so that the control panel is inserted in the upper recesses of the front panel. If the control panel has been inserted in the lower recesses of the front panel, you must first remove the masking plate's dummy cover and then reinsert it above the logo.



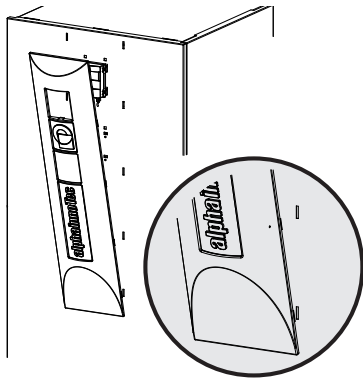
Screen at time of delivery:

- 1 Recess for control panel
- 2 Logo
- 3 Dummy cover

- ① First, insert the masking plate **below** in the slots provided in the front panel.

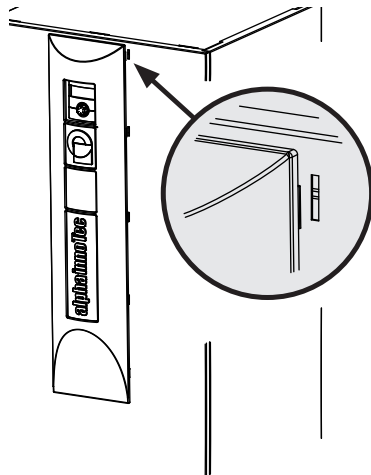


- ② Then, beginning on one side, latch the lugs on the masking plate **from the bottom up** into the slots provided in the front panel.



- ③ Then, on the opposite side, latch the lugs on the masking plate **from the bottom up** into the slots provided in the front panel.

- ④ Finally, press the upper latching lugs of the masking plate into the slots provided in the front panel.



27.2 Dismantling the masking plate

In order to dismantle the masking plate, the latching lugs must be completely released **on one side first** by pushing **towards the middle of the masking plate**. Then release the lugs on the opposite side.

28 Set the overflow valve



REMARQUE

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

Complete the worksteps quickly, otherwise the maximum return temperature can be exceeded and the heat pump switches to high-pressure fault.

Turn the adjusting knob at the overflow valve to the right to increase the temperature difference (the temperature drop), turn it to the left to reduce it.

System is running in heating mode (ideally in cold condition).

- ① In case of low heating curve: Set the system to "Forced heating".



Operating manual of the heating and heat pump controller.

- ② Shut off valves to the heating circuit.

- ③ Ensure that the total flow is routed via the overflow valve.

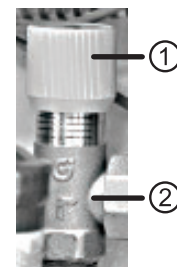
- ④ Read out the flow and return temperature at the heating and heat pump controller.



Operating manual of the heating and heat pump controller.

- ⑤ Turn the adjusting knob (1) of the overflow valve (2) until the temperature drop between the flow and return temperature is set as follows:

Heat source temperature	Recommended settings
10 °C	9 K



- 1 Adjusting knob
2 Overflow valve

- ⑥ Open valves to heating circuit.

- ⑦ Reset the heating and heat pump controller.



29 Commissioning



NOTE

The commissioning has to be in the heating mode.

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



Manufacturer's homepage

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

Check that.

- **clockwise rotary field** of the load power supply (compressor) is ensured
- The heat pump **installation and assembly** have been carried out according to the requirements of this operating manual
- the electrical installation work has been completed properly
- The power supply for the heat pump must be equipped with an all-pole automatic circuit-breaker with at least 3 mm contact spacing to IEC 60947-2

- The heating circuit is flushed, filled and thoroughly vented
- All valves and shut-off devices of the heating circuit are open
- All pipe systems and components of the system are leaktight

- ② Carefully fill out and sign the completion report for heat pump systems.



Manufacturer's homepage

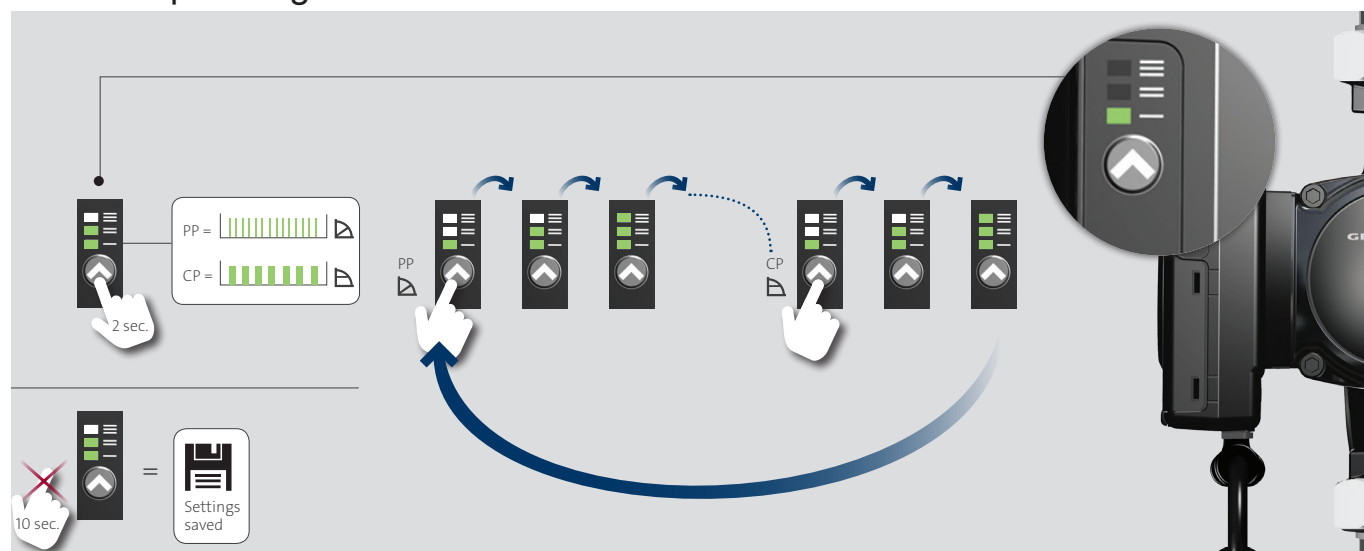
- ③ Within Germany:
Send completion report for heat pump systems and general checklist to the manufacturer's factory customer service department.

In other countries:

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

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

29.1 Pump settings for WWC 220 H/X



PP = Proportional Pressure short flashing
CP = Constant Pressure long flashing

Factory setting is Constant Pressure at Level 3.

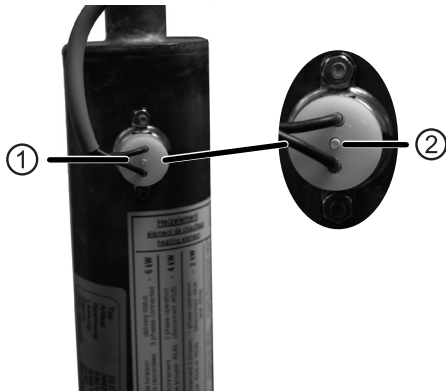
For operation, the recirculation pump always has to be in the range „Constant Pressure“



29.2 Information for units with integrated electric heating element

29.3 Safety temperature limiter

A safety temperature limiter is installed in the electric heating element. If the heat pump fails or there is air in the system, check whether the reset button of this safety temperature limiter has sprung out. If necessary, push it back in again.



- 1 Safety temperature button on electric heating element
- 2 Reset button

30 Dismantling



DANGER!

Risk of fatal electric shock!

Electrical work may only be carried out by qualified electricians.

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



WARNING!

Only qualified heating or refrigerating system personnel may dismantle the unit from the system.



IMPORTANT

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

Removal of the buffer battery



IMPORTANT

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





Technical data / Scope of delivery

WWC 100H/X – WWC 220H/X

Heat pump type	Brine/water Air/water Water/water	• applicable — not applicable
Installation location	Indoors Outdoors	• applicable — not applicable
Conformity		CE
Performance data	Heating capacity/COP at	
	W10/W35 Standard point to EN14511 2 compressors kW ...	
	1 compressor kW ...	
	W10/W45 Standard point to EN14511 kW ...	
	W10/W35 Standard point acc. to EN255 2 compressors kW ...	
	1 compressor kW ...	
Limits of use	Heating circuit	°C
	Heat source	°C
	additional operating points	...
Sound	Sound pressure level averaged at distance of 1m around the machine (in free field)	dB(A)
	Sound power level to EN12102	dB
Heat source	Flow rate: minimum flow nominal flow maximum flow	l/h
	Pressure loss heat pump Δp (with cooling Δp_K) Flow rate	bar (bar) l/h
	Free compression heat pump Δp (with cooling Δp_K) Flow rate	bar (bar) l/h
	Recommended heat source pump	
	Power consumption of the heat source pump at nominal throughput	kW
	Nominal power / electricity consumption of heat source pump	kW A
	Total compression of the recommended heat source pump at nominal throughput	bar
	Dirt trap, to be installed upstream of the heat pump (included in additional box)	
Heating circuit	Flow rate: minimum flow nominal flow maximum flow	l/h
	Pressure loss heat pump Δp (with cooling Δp_K) Flow rate	bar (bar) l/h
	Free compression heat pump Δp (with cooling Δp_K) Flow rate	bar (bar) l/h
General unit data	Dimensions (see dimensioned drawing for the specified unit size)	unit size
	Total weight (including cooling)	kg (kg)
	Additional weight module 1	kg
	Additional weight module 2	kg
	Connections Heating circuit	...
	Heat source	...
	Refrigerant Refrigerant type Quantity	... kg
Electrics	Voltage code all-pole circuit breaker heat pump *)	... A
	Voltage code circuit breaker control voltage *)	... A
	Voltage code circuit breaker electric heating element *)	A
Heat pump	Effective power consumption in the standard point W10/W35 to EN14511: Power consumption current consumption $\cos\phi$	kW A ...
	Maximum machine current within the use limits	A
	Starting current: direct with soft starter	A A
	Degree of protection	IP
	Output, electric heating element 3 2 1 phase	kW kW kW
Components	Circulation pump, heating circuit at nominal flow rate: Power consumption current consumption	kW A
	Circulation pump, heat source at nominal flow rate: Power consumption current consumption	kW A
Passive cooling function	Specification only for units with designator K: Cooling output at nominal flow rate (15°C heat source, 25°C heating water)	kW
Safety equipment	Safety component heating circuit Safety component heat source	Incl. in scope of delivery: • yes — no
Heating and heat pump controller		Incl. in scope of delivery: • yes — no
Electronic soft starter		integrated: • yes — no
Expansion vessels	Heat source: Scope of delivery Volume Initial pressure	• yes — no bar
	Heating circuit: Scope of delivery Volume Initial pressure	• yes — no bar
Overflow valve		integrated: • yes — no
Vibration decouplers	Heating circuit heat source	Incl. in scope of delivery: • yes — no

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*) comply with local regulations n.d. = not detectable

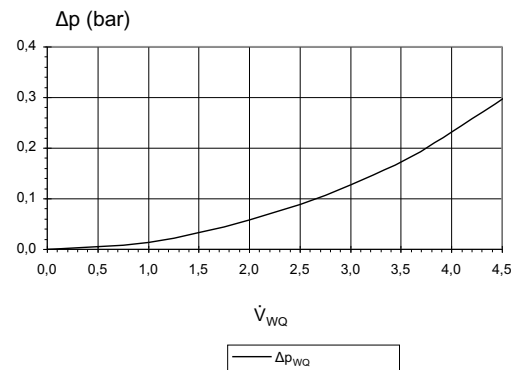
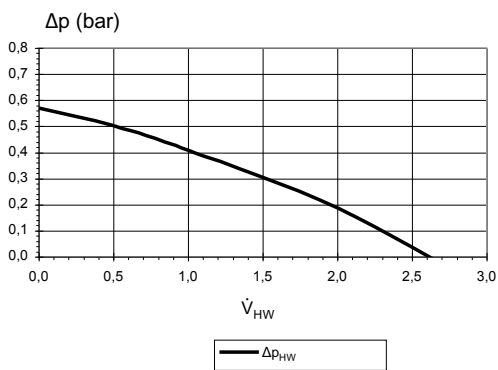
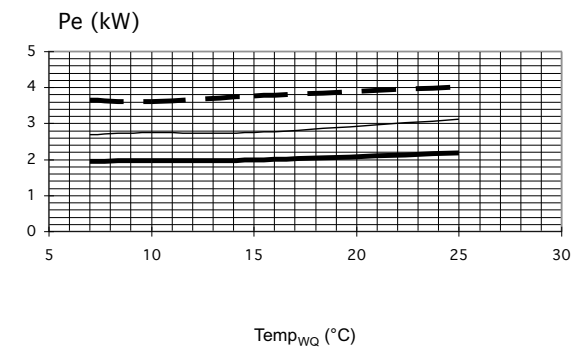
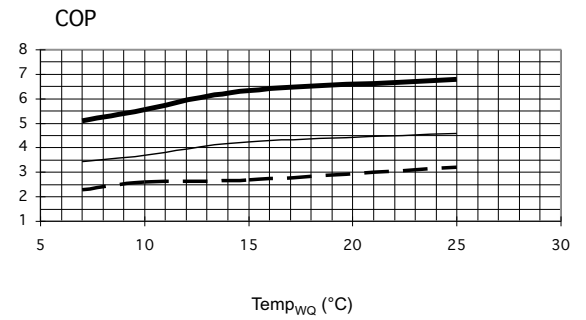
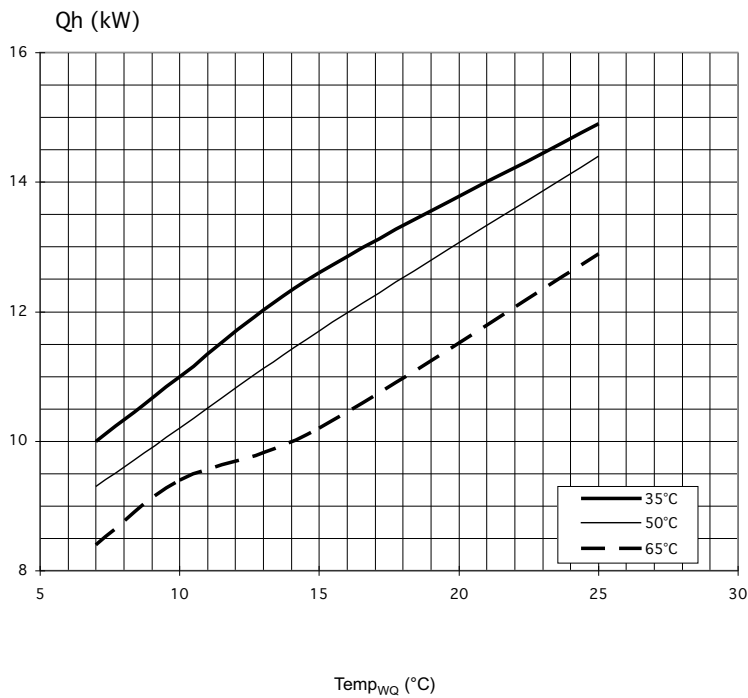


WWC 100H/X	WWC 130H/X	WWC 160H/X	WWC 190H/X	WWC 220H/X
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—	—	—	—	—
11,0 5,6	12,9 5,5	14,7 5,6	18,6 5,6	21,8 5,7
—	—	—	—	—
—	—	—	—	—
11,2 5,7	12,7 5,7	14,8 5,7	18,6 5,7	21,8 6,1
20 - 65	20 - 65	20 - 65	20 - 65	20 - 65
7 - 25	7 - 25	7 - 25	7 - 25	7 - 25
—	—	—	—	—
40	40	40	40	43
53	53	53	53	56
2200 2200 4100	2600 2600 4500	3000 3000 5200	3800 3800 6500	4400 4400 7700
0,06 (—) 2200	0,1 (—) 2600	0,11 (—) 3000	0,16 (—) 3800	0,23 (—) 4400
—	—	—	—	—
Grundfos SP 3A-6	Grundfos SP 3A-6	Grundfos SP 3A-6	Grundfos SP 3A-6	Grundfos SP 5A-6
0,33	0,38	0,38	0,38	0,54
0,38 1,4	0,38 1,4	0,38 1,4	0,38 1,4	0,55 2,2
3,00	2,85	2,57	1,76	2,67
5/4"	5/4"	5/4"	5/4"	6/4"
950 1900 2400	1100 2200 2800	1300 2500 3100	1600 3100 3900	1900 3700 4700
—	—	—	—	—
0,34 (—) 1350	0,46 (—) 1600	0,40 (—) 1800	0,52 (—) 2200	0,61 (—) 3700
1	1	1	1	1
213 (—)	216 (—)	219 (—)	227 (—)	235 (—)
—	—	—	—	—
—	—	—	—	—
R 5/4" AG	R 5/4" AG	R 5/4" AG	R 5/4" AG	R 5/4" AG
R 5/4" AG	R 5/4" AG	R 5/4" AG	R 5/4" AG	R 5/4" AG
R407c 2,95	R407c 3,5	R407c 3,95	R407c 4,3	R407c 4,5
3~/PE/400V/50Hz C10	3~/PE/400V/50Hz C10	3~/PE/400V/50Hz C10	3~/PE/400V/50Hz C13	3~/PE/400V/50Hz C13
1~/N/PE/230V/50Hz B10	1~/N/PE/230V/50Hz B10	1~/N/PE/230V/50Hz B10	1~/N/PE/230V/50Hz B10	1~/N/PE/230V/50Hz B10
3~/N/PE/400V/50Hz C10	3~/N/PE/400V/50Hz C10	3~/N/PE/400V/50Hz C16	3~/N/PE/400V/50Hz C16	3~/N/PE/400V/50Hz C16
1,96 3,8 0,74	2,35 4,4 0,77	2,6 4,6 0,81	3,27 6,0 0,79	3,82 7,0 0,79
5,9	6,9	7,5	9,4	11,0
30 —	— 20	— 25	— 28	— 30
20	20	20	20	20
6 4 2	6 4 2	9 6 3	9 6 3	9 6 3
0,07 n.n.	0,16 n.n.	0,16 n.n.	0,17 n.n.	0,18 n.n.
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• 25l 1,5	• 25l 1,5	• 35l 1,5	• 35l 1,5	• 50l 1,5
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WWC 100H/X

Performance curves



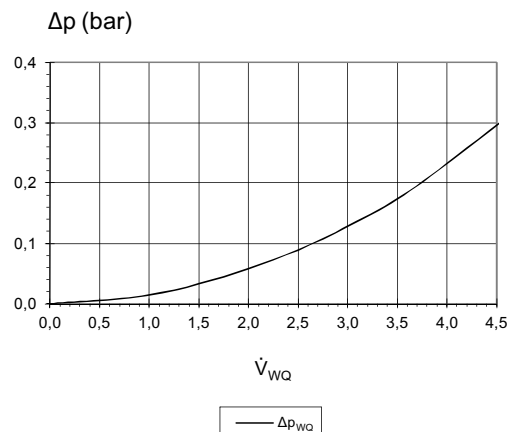
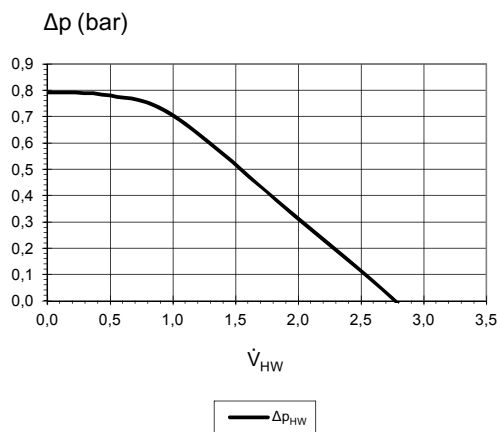
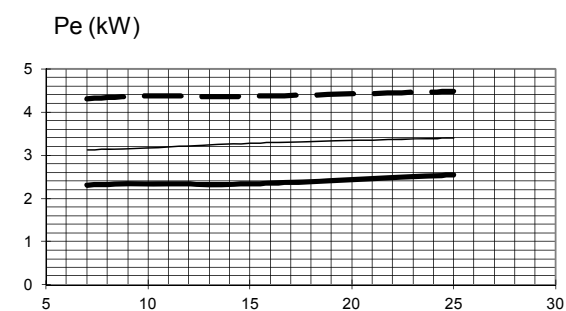
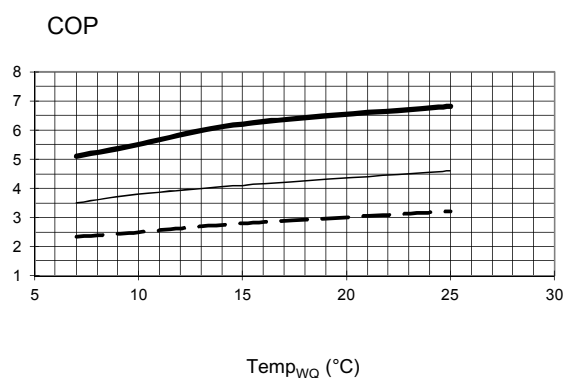
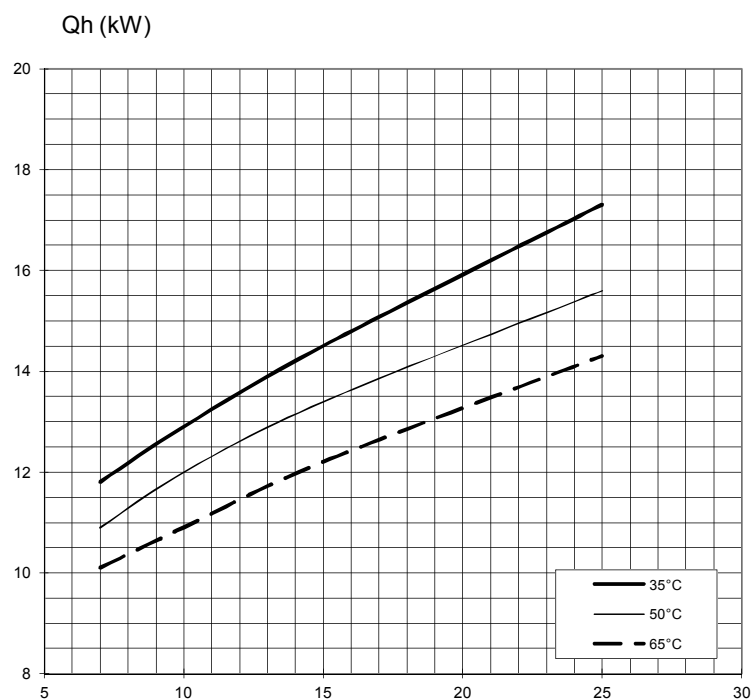
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Keys	UK823200
\dot{V}_{HW}	Volume flow, heating water
\dot{V}_{WQ}	Volume flow, heat source
Temp _{WQ}	Temperature, heat source
Q _h	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp _{HW}	Free compression, heating circuit
Δp _{WQ}	Pressure loss heat source
VD	Compressor(s)



Performance curves

WWC 130H/X



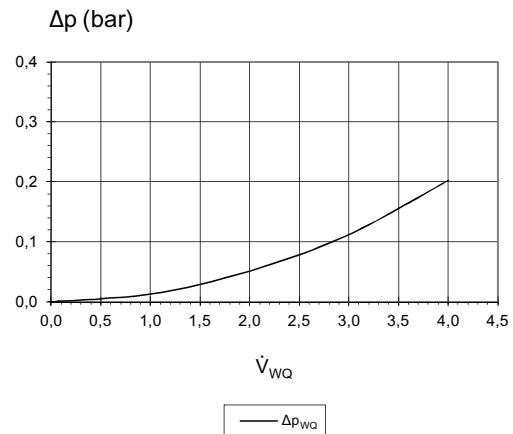
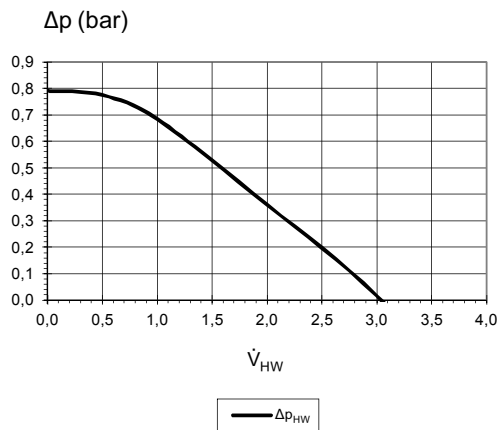
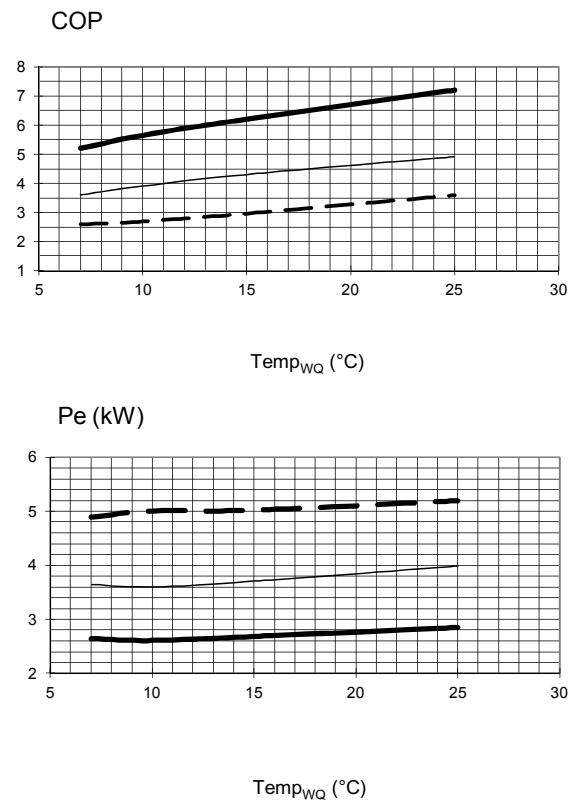
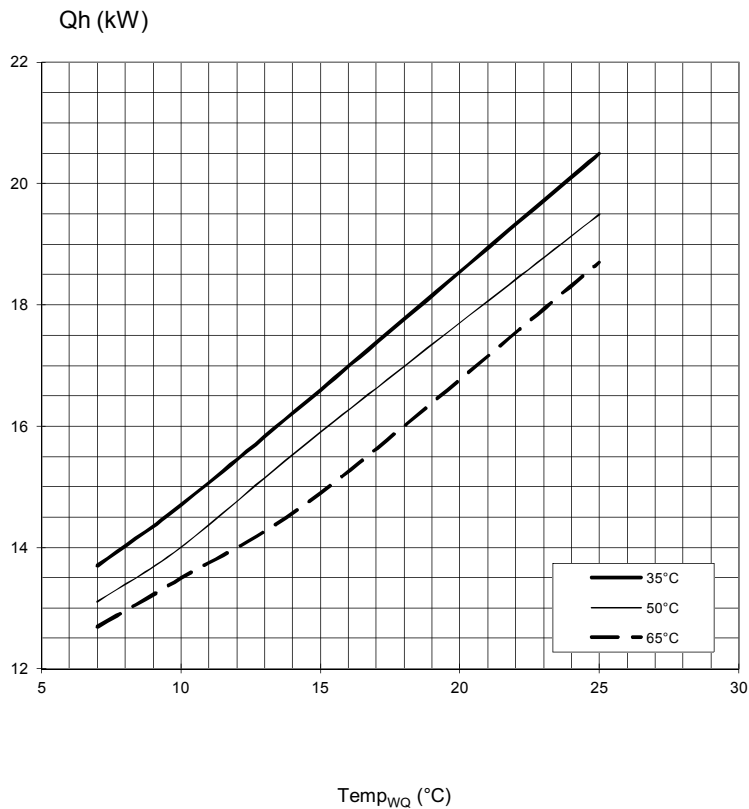
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Keys	UK823200
\dot{V}_{HW}	Volume flow, heating water
\dot{V}_{WQ}	Volume flow, heat source
Temp _{WQ}	Temperature, heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp _{HW}	Free compression, heating circuit
Δp _{WQ}	Pressure loss heat source
VD	Compressor(s)



WWC 160H/X

Performance curves



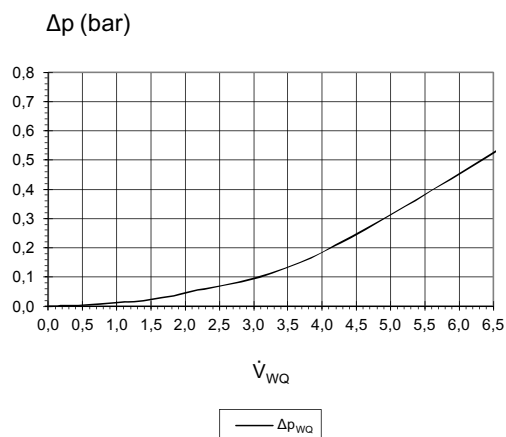
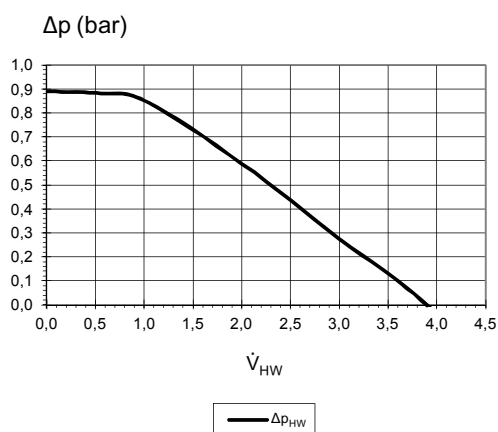
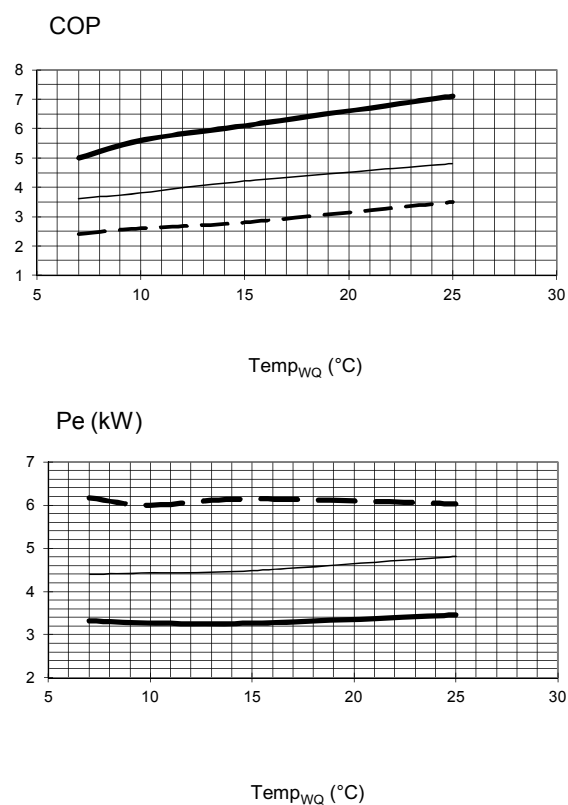
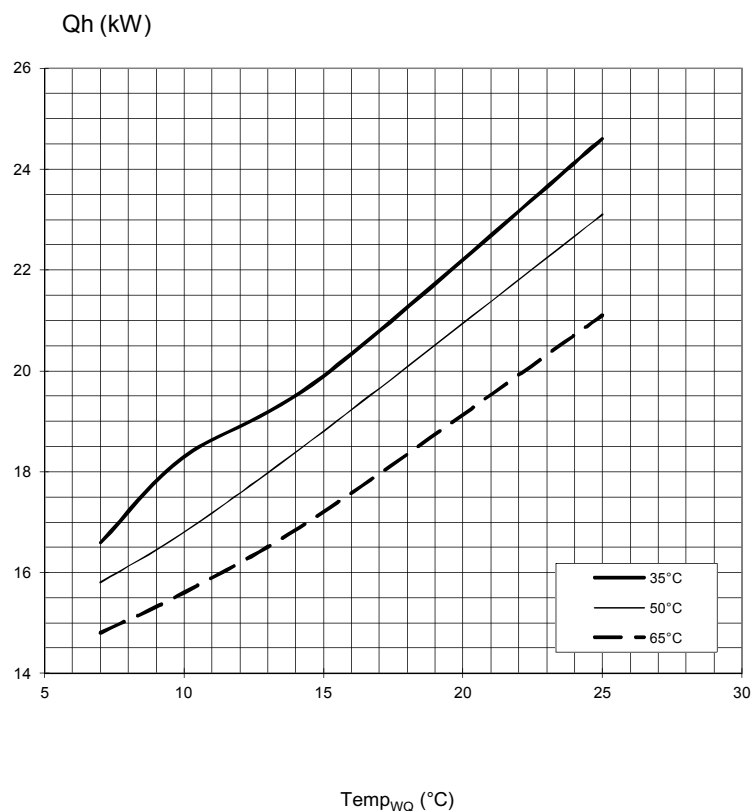
823203-a

Keys	UK823200
\dot{V}_{HW}	Volume flow, heating water
\dot{V}_{WQ}	Volume flow, heat source
Temp _{WQ}	Temperature, heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp _{HW}	Free compression, heating circuit
Δp _{WQ}	Pressure loss heat source
VD	Compressor(s)



Performance curves

WWC 190H/X



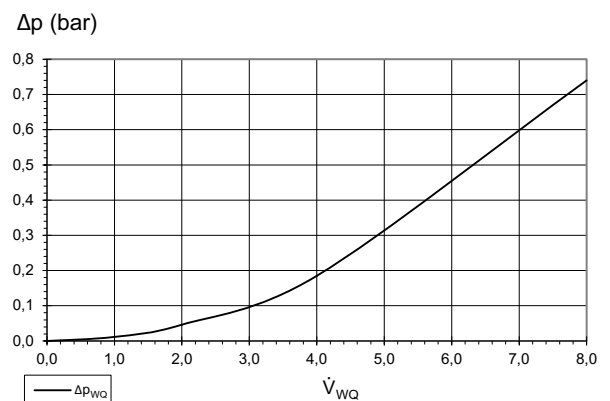
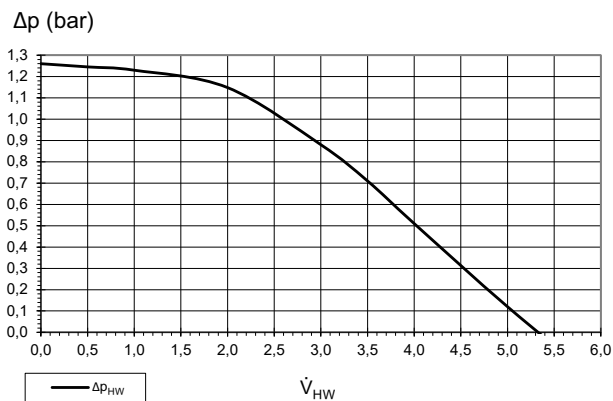
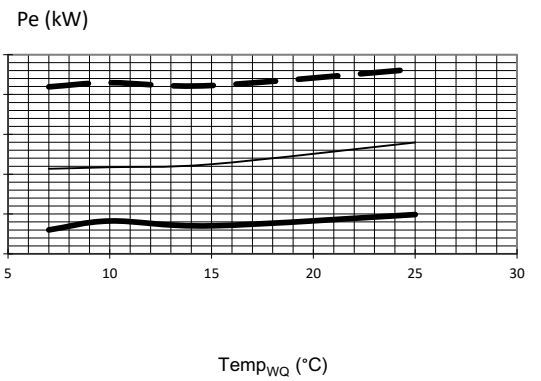
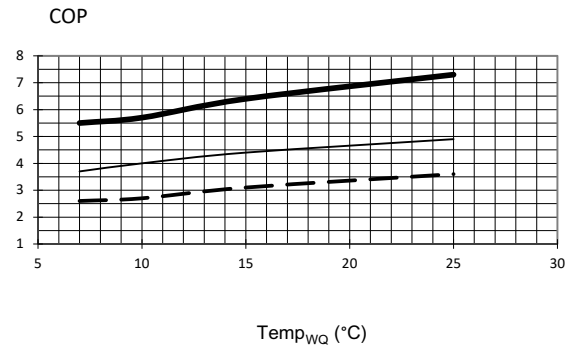
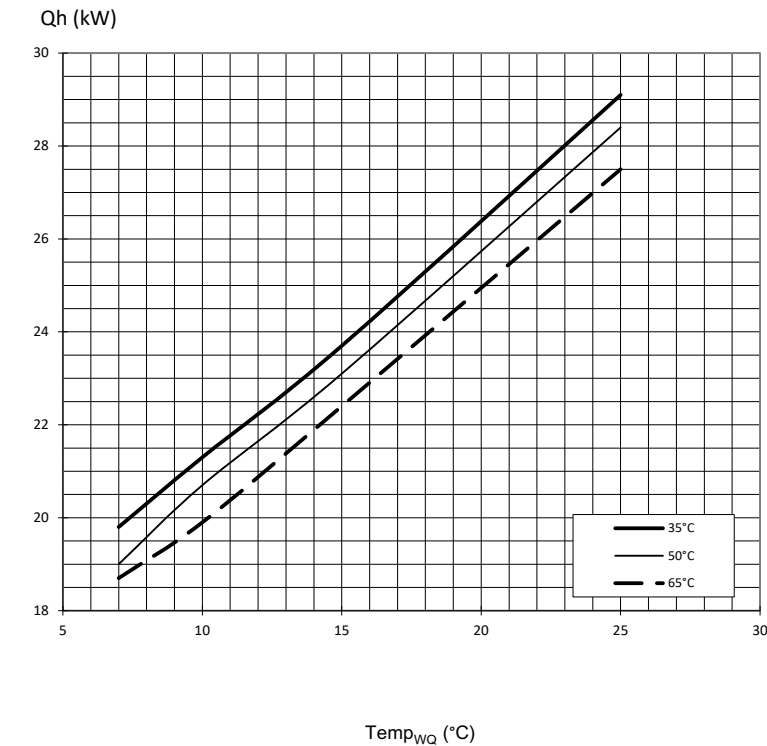
823204-a

Keys	UK823200
\dot{V}_{HW}	Volume flow, heating water
\dot{V}_{WQ}	Volume flow, heat source
Temp _{WQ}	Temperature, heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp _{HW}	Free compression, heating circuit
Δp _{WQ}	Pressure loss heat source
VD	Compressor(s)



WWC 220H/X

Performance curves



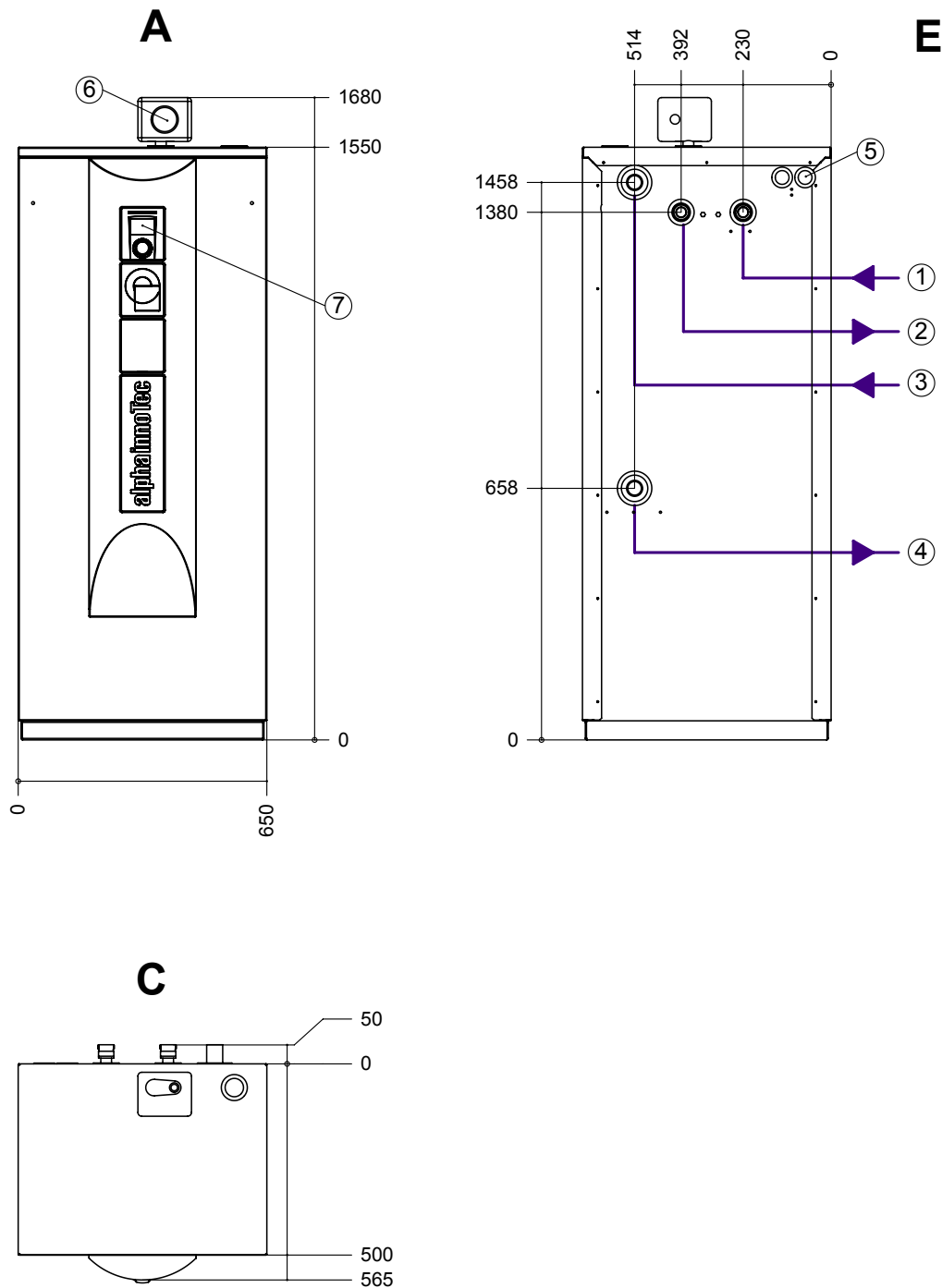
823205b

Keys	UK823200
\dot{V}_{HW}	Volume flow, heating water
\dot{V}_{WQ}	Volume flow, heat source
Temp _{WQ}	Temperature, heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp _{HW}	Free compression, heating circuit
Δp _{WQ}	Pressure loss heat source
VD	Compressor(s)



Dimensional drawings

WWC 100H/X – WWC 220H/X



Keys: UK819258b

All dimensions in mm.

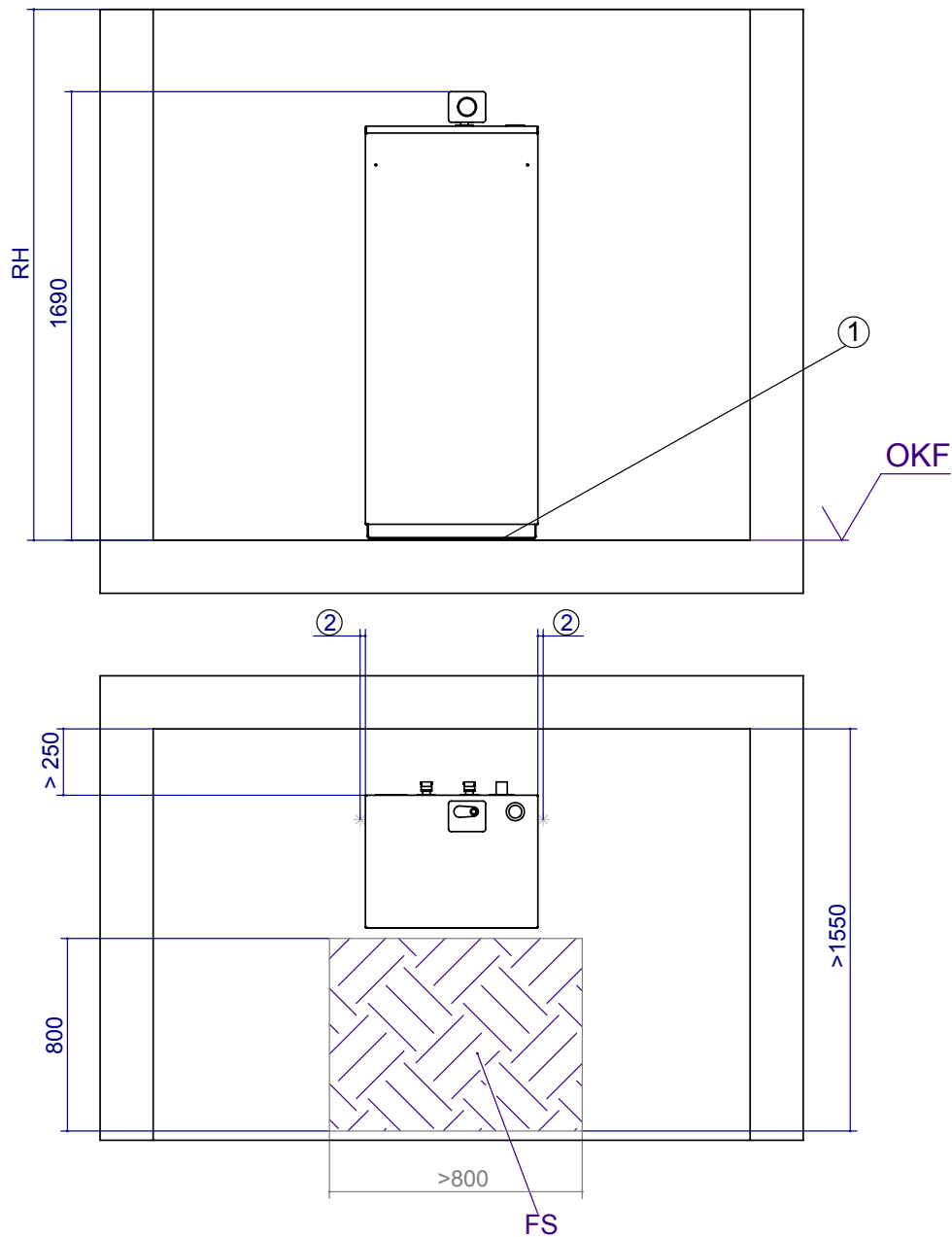
Pos.	Designation
A	Front view
C	Top view
E	Rear view

Pos.	Designation	Dim.
1	Heating water inlet (return); flat seat	G 1 ¼"
2	Heating water outlet (flow); flat seat	G 1 ¼"
3	Heat source inlet at the unit; flat seat	G 1 ¼"
4	Heat source outlet at the unit; flat seat	G 1 ¼"
5	Penetration for electric/sensor cables	
6	Safety assembly (in extra box)	
7	Control panel (in extra box)	



WWC 100H/X – WWC 220H/X

Installation plans



Keys: DE819260a

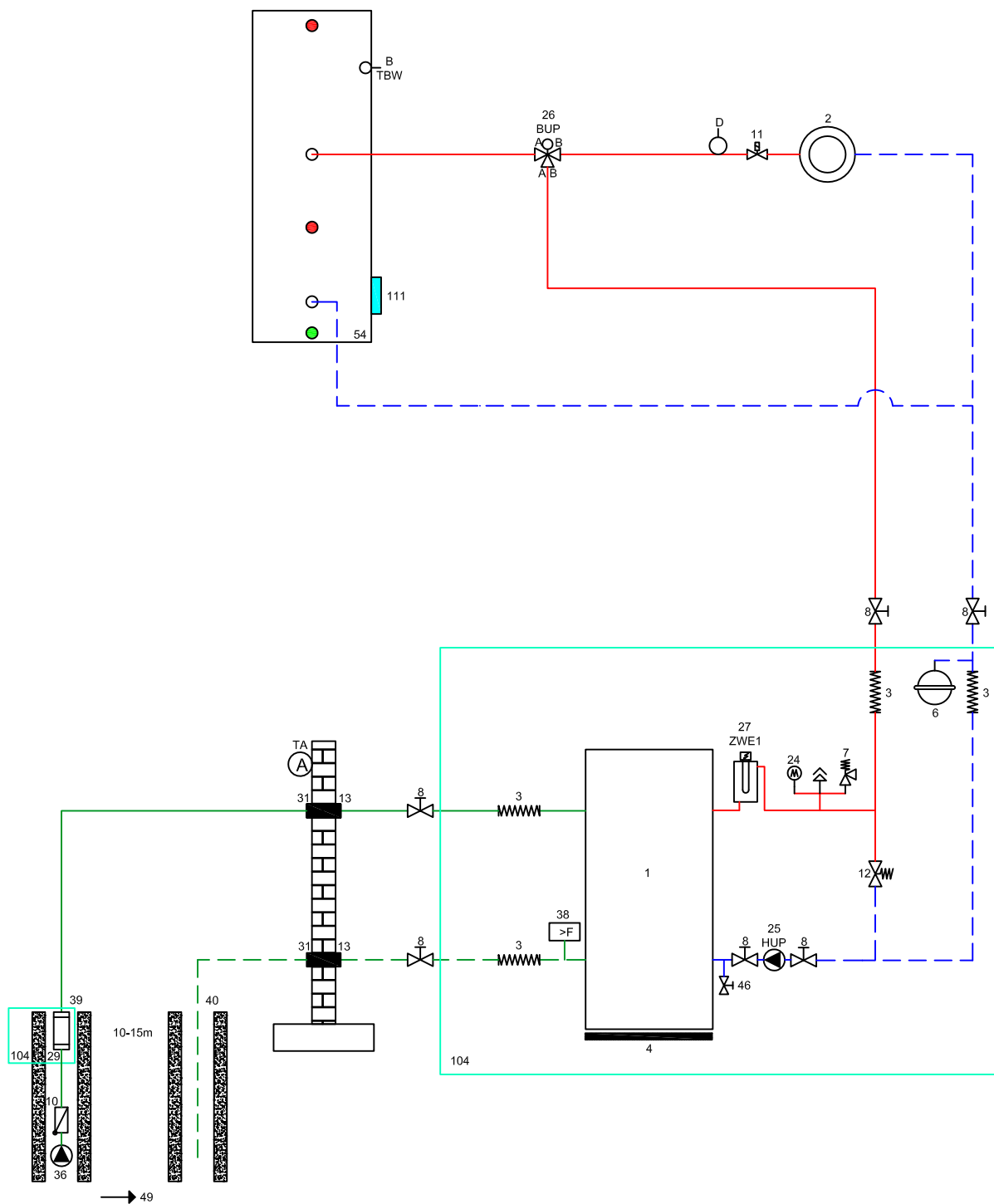
All dimensions in mm.

Pos.	Designation
FS	Shaded area = free space for service purposes
OKF	Finished floor level
RH	Minimum room height 2000
1	Unit installation on Sylomer strips (in extra box)
2	20 Distance to next object



WWC 100H/X – WWC 220H/X

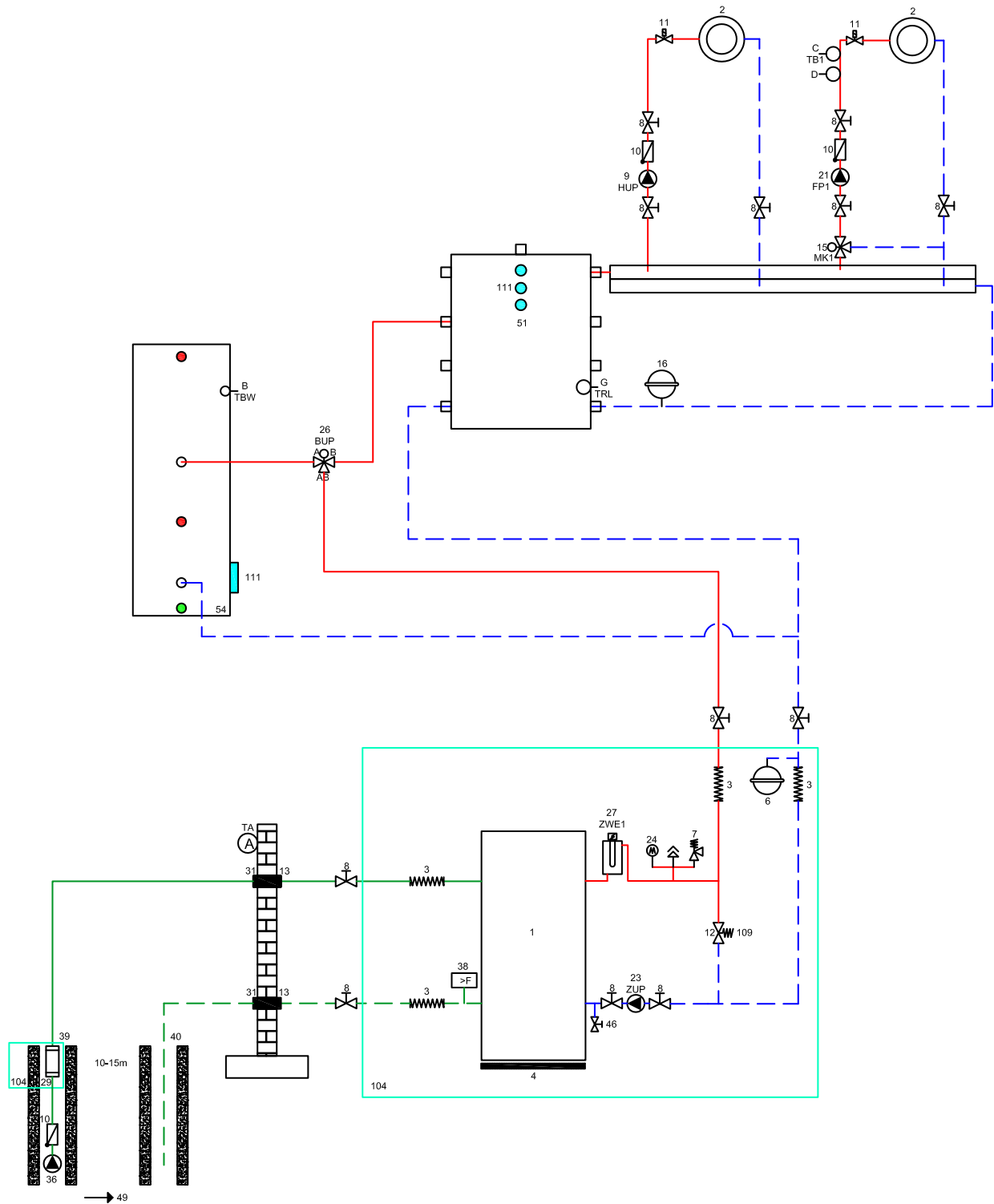
Default





Separate buffer tank

WWC 100H/X – WWC 220H/X



Legend hydraulic diagramm

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

Comfort 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 separation module
TB2-3/C	Feedwater sensor mixer circuits 2-3
TSS/E	Sensor, temperature difference control (low temperature)
TSK/E	Sensor, temperature difference control (high temperature)
TEE/F	Sensor external energy source

Important notice !

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





Water Water Compact 10 - 22kW

Legend:

UK831 150a

Function

Controller board; Attention: I_{max} = 6A/230VAC

Terminals in heat pump switchbox

3-pole cut out compressor; Attention: Right-hand rot. field is mandatory!

Cut out auxiliary heating

Well pump

Terminals

ASD

BUP

EVU

HUP

M21/MIS

M3

PEX

RFV

TB1

TBW

TA

TRL

VBO

ZUP

ZW1

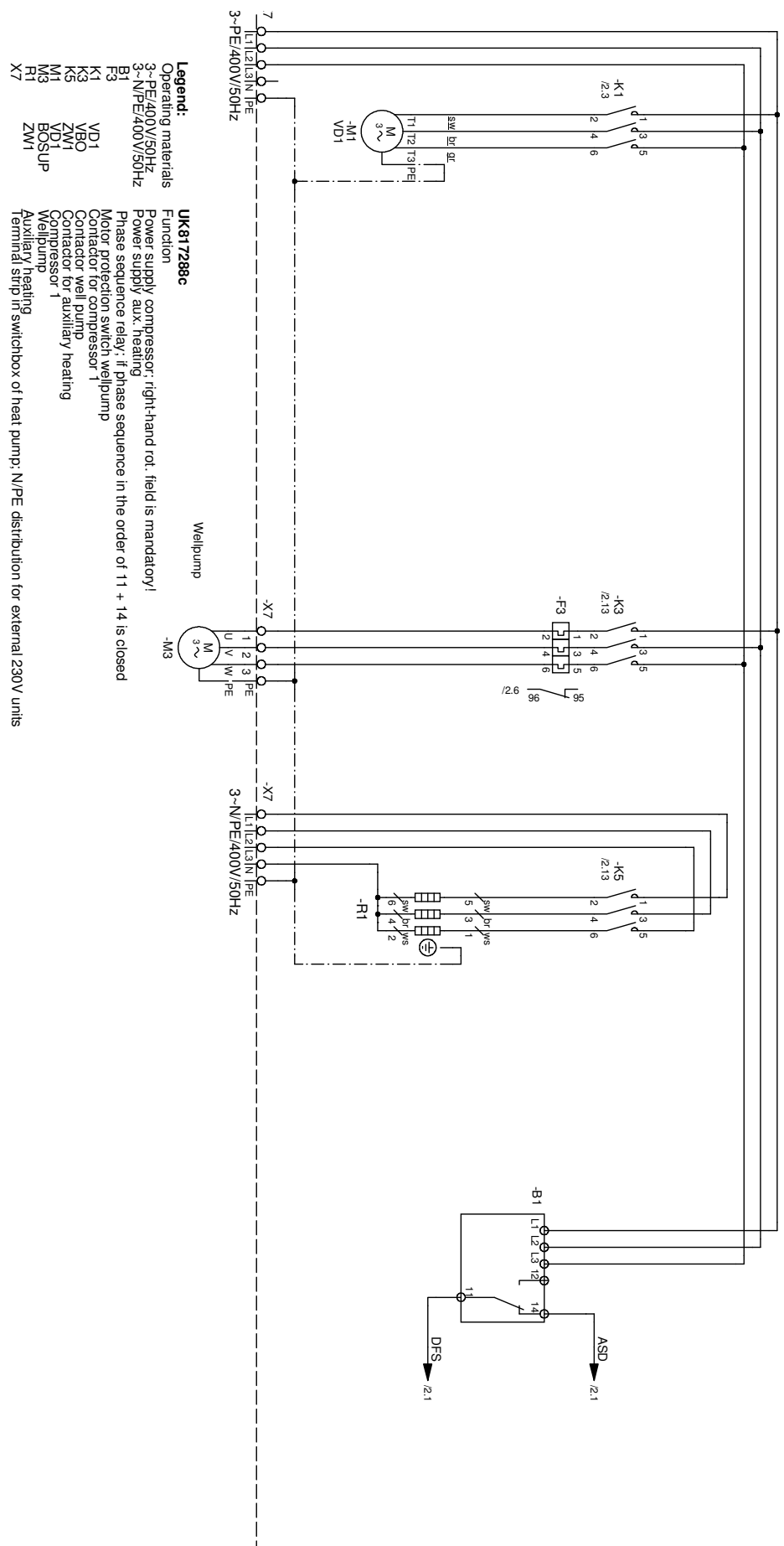
ZW2/SST

MA1



WWC 100H/X

Circuit diagram 1/3





The diagram illustrates the electrical wiring for a 230VAC system. It includes a main power supply section at the top with terminals for L, N, and PE. The system is divided into several functional areas, each represented by a dashed box. These areas include:

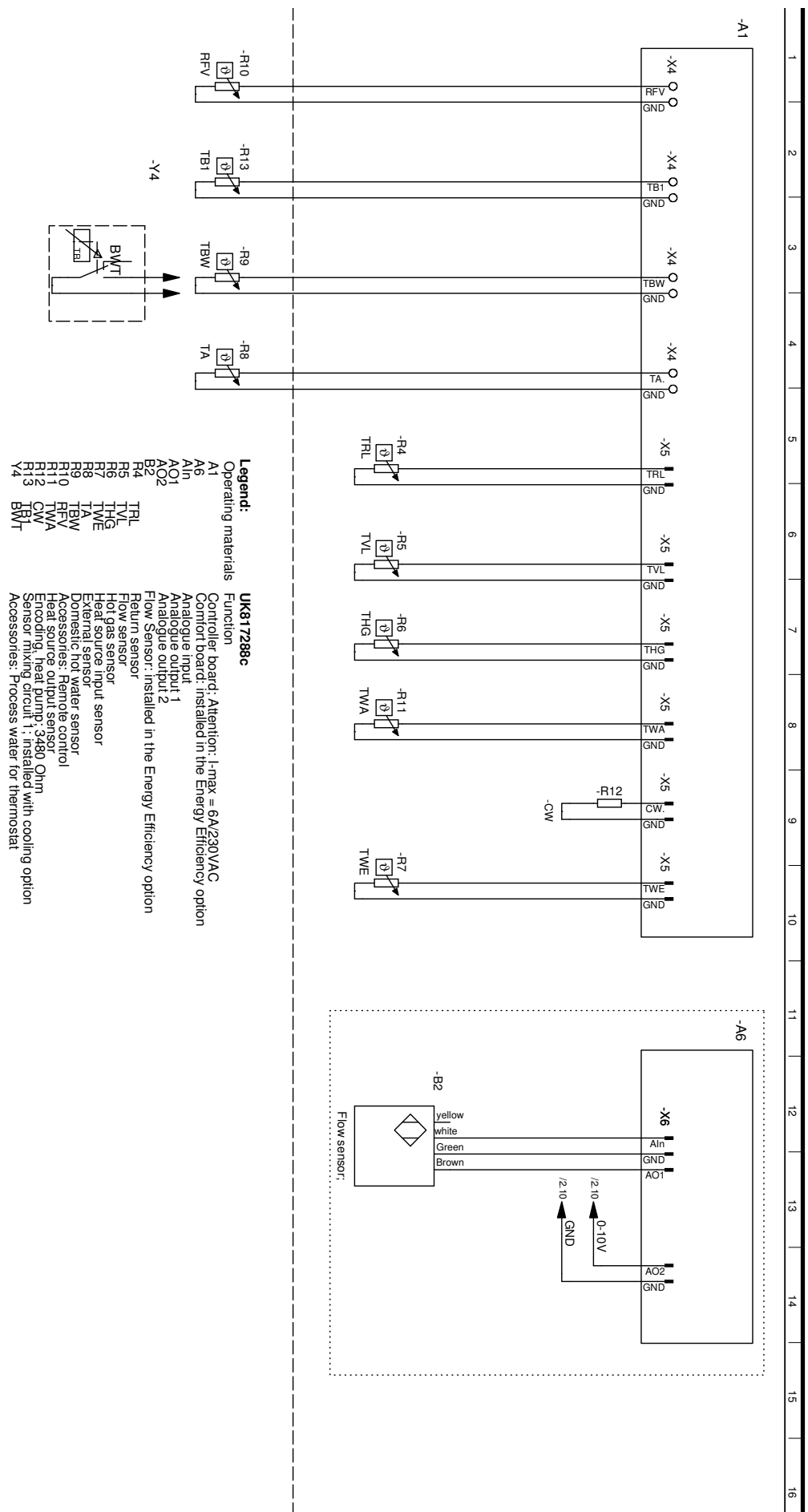
- Control and Protection:** Features a circuit breaker (CB) and a fuse (F1) connected to the main supply. A terminal block (TB) is used for connecting various control lines.
- Pumps and Motors:** Includes a main pump (M) and a backup pump (M2). The main pump is connected to a motor (M) and a motor protection unit (MPU). The backup pump is connected to a motor (M2) and a motor protection unit (MPU2).
- Valves and Actuators:** Includes a valve (V) and an actuator (A) connected to a control line.
- Heating and Cooling:** Includes a heating pump (HP) and a cooling pump (CP) connected to a control line.
- Accessories:** Includes a terminal strip (TS) for connecting various accessories.

The wiring is color-coded and labeled with numbers (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100) to indicate the specific wiring connections. The diagram also includes a legend for the symbols used, such as a motor (M), a pump (P), a valve (V), an actuator (A), a heating pump (HP), a cooling pump (CP), and a terminal strip (TS).



WWC 100H/X

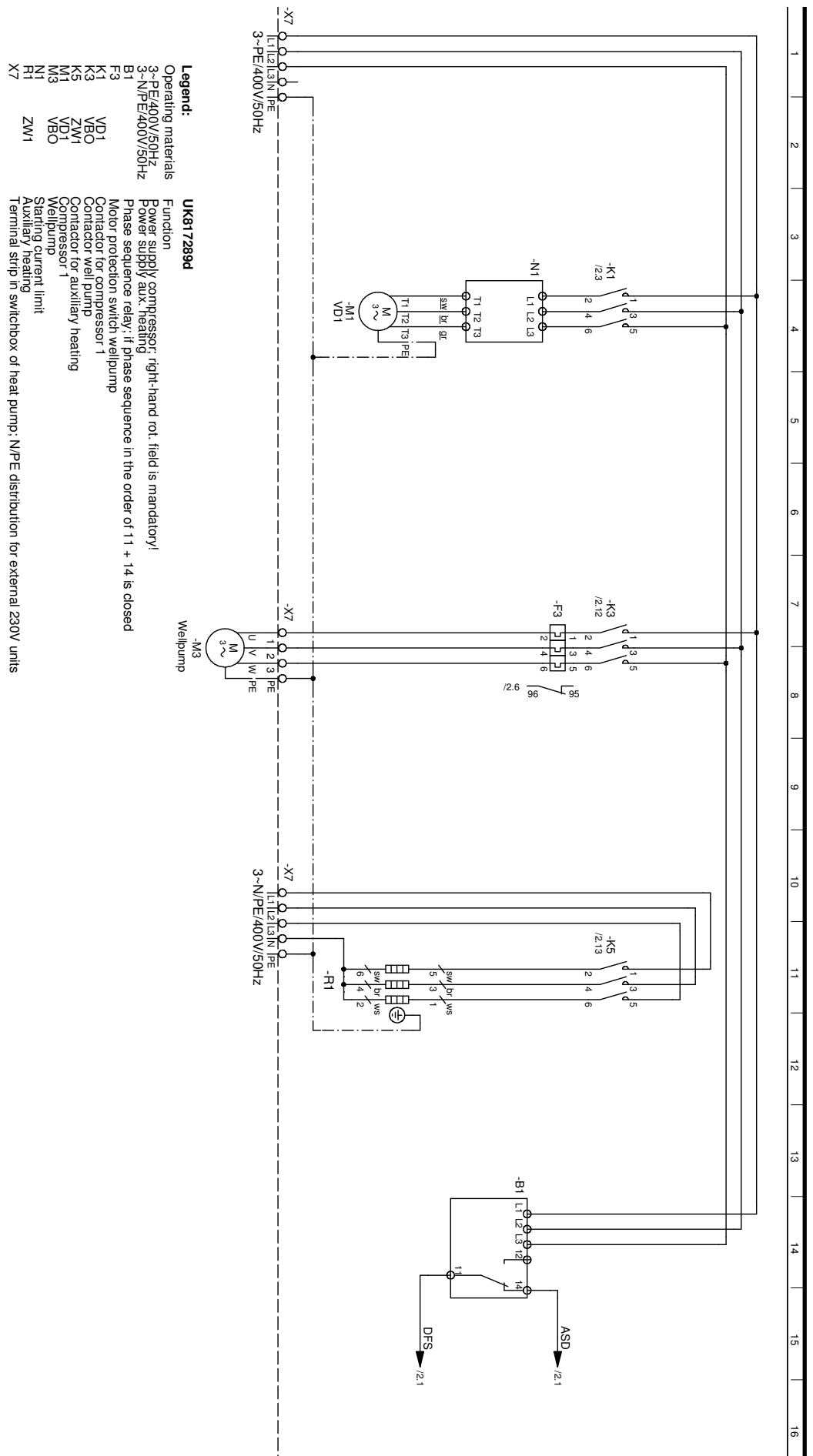
Circuit diagram 3/3





WWC 130H/X – 220H/X

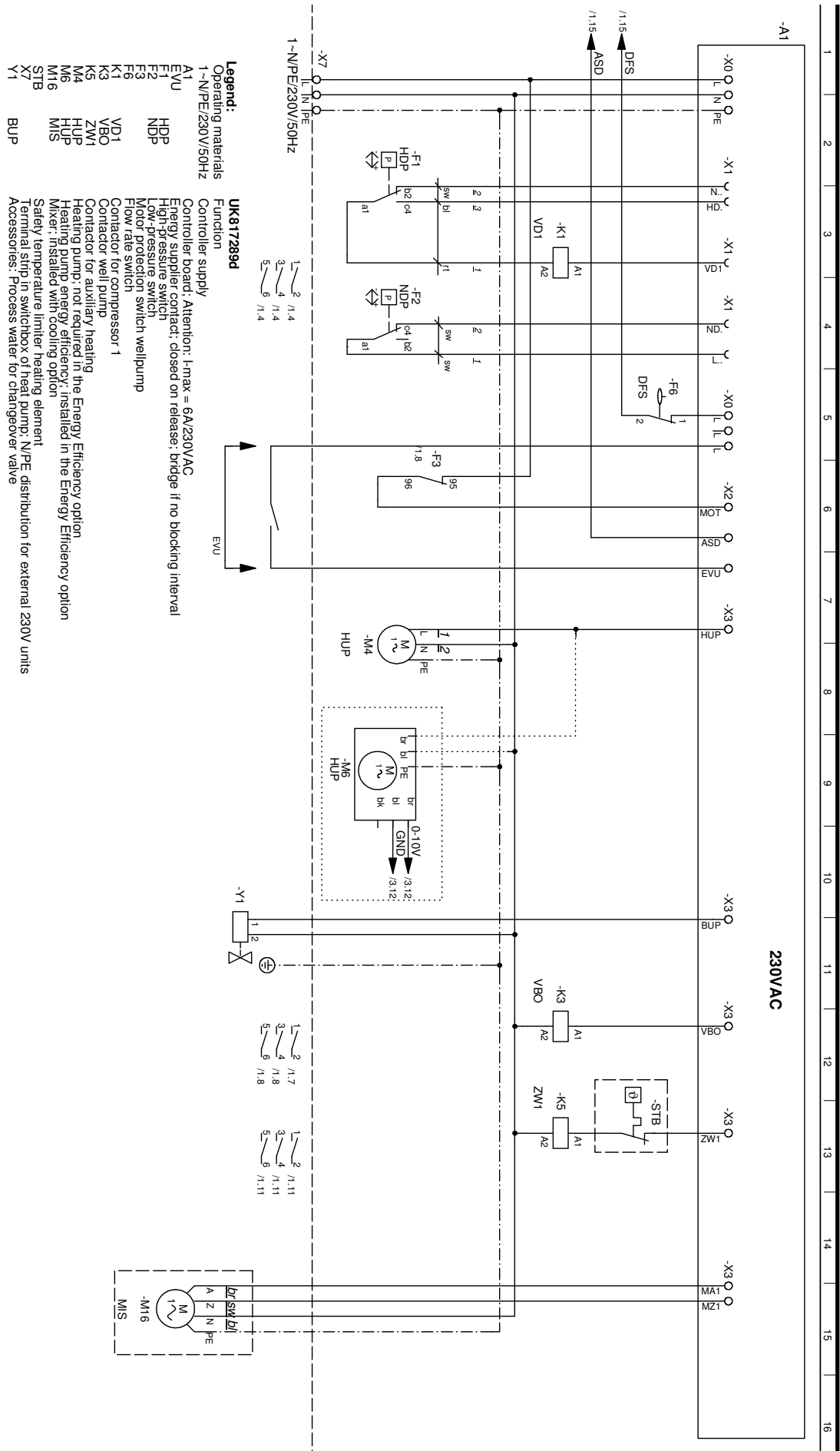
Circuit diagram 1/3





Circuit diagram 2/3

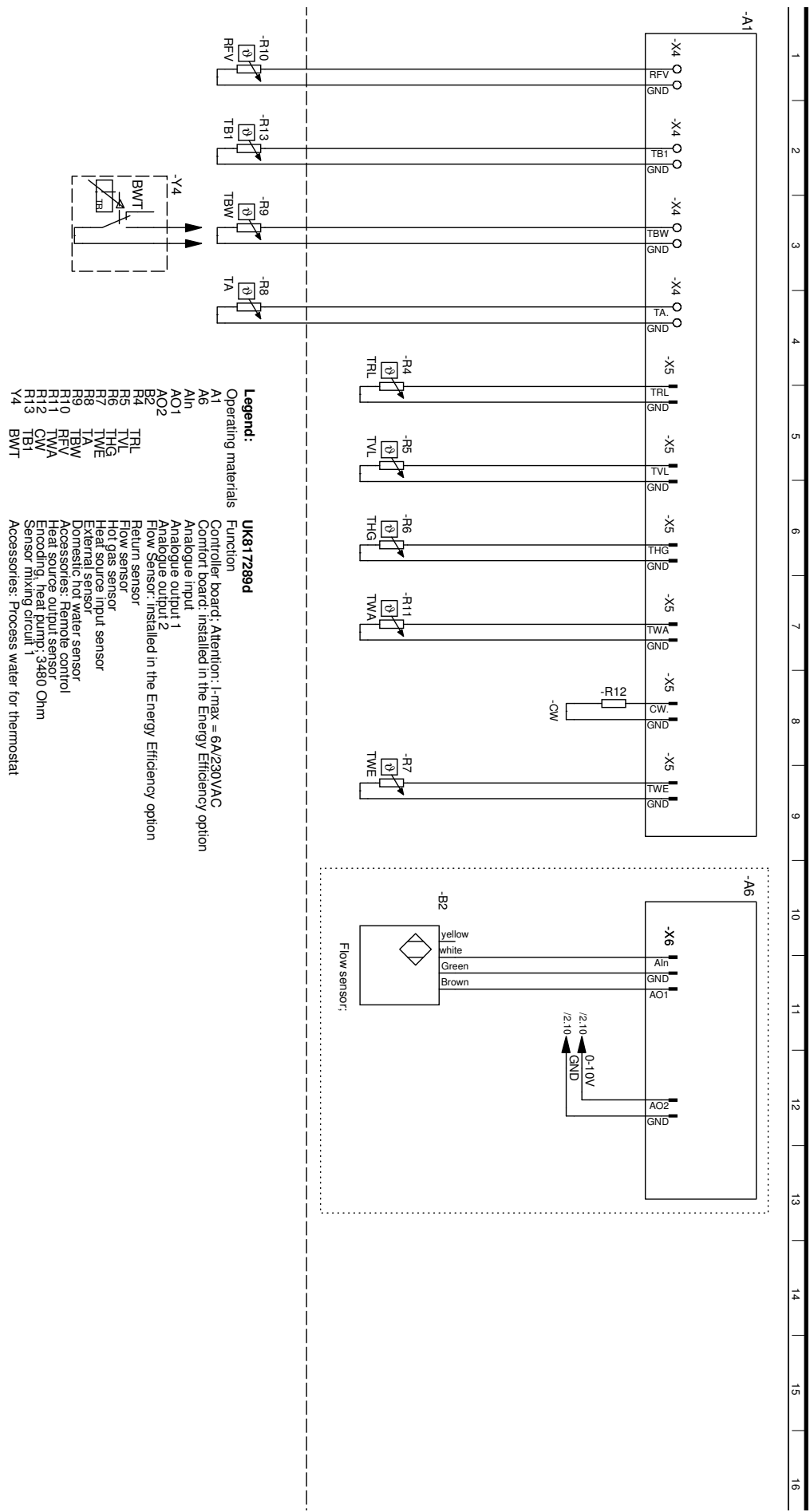
WWC 130H/X – WWC 220H/X





WWC 130H/X – 220H/X

Circuit diagram 3/3





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



Unit model	Number
WWC 100H/X	10048141
WWC 130H/X	10048242
WWC 160H/X	10048342
WWC 190H/X	10048442
WWC 220H/X	10048542

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, 08.05.2019

Signature:

UK818132e

Jesper Stannow
Head of Heating Development



ait-deutschland GmbH
Industriestraße 3
D-95359 Kasendorf, Germany

www.ait-deutschland.eu

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