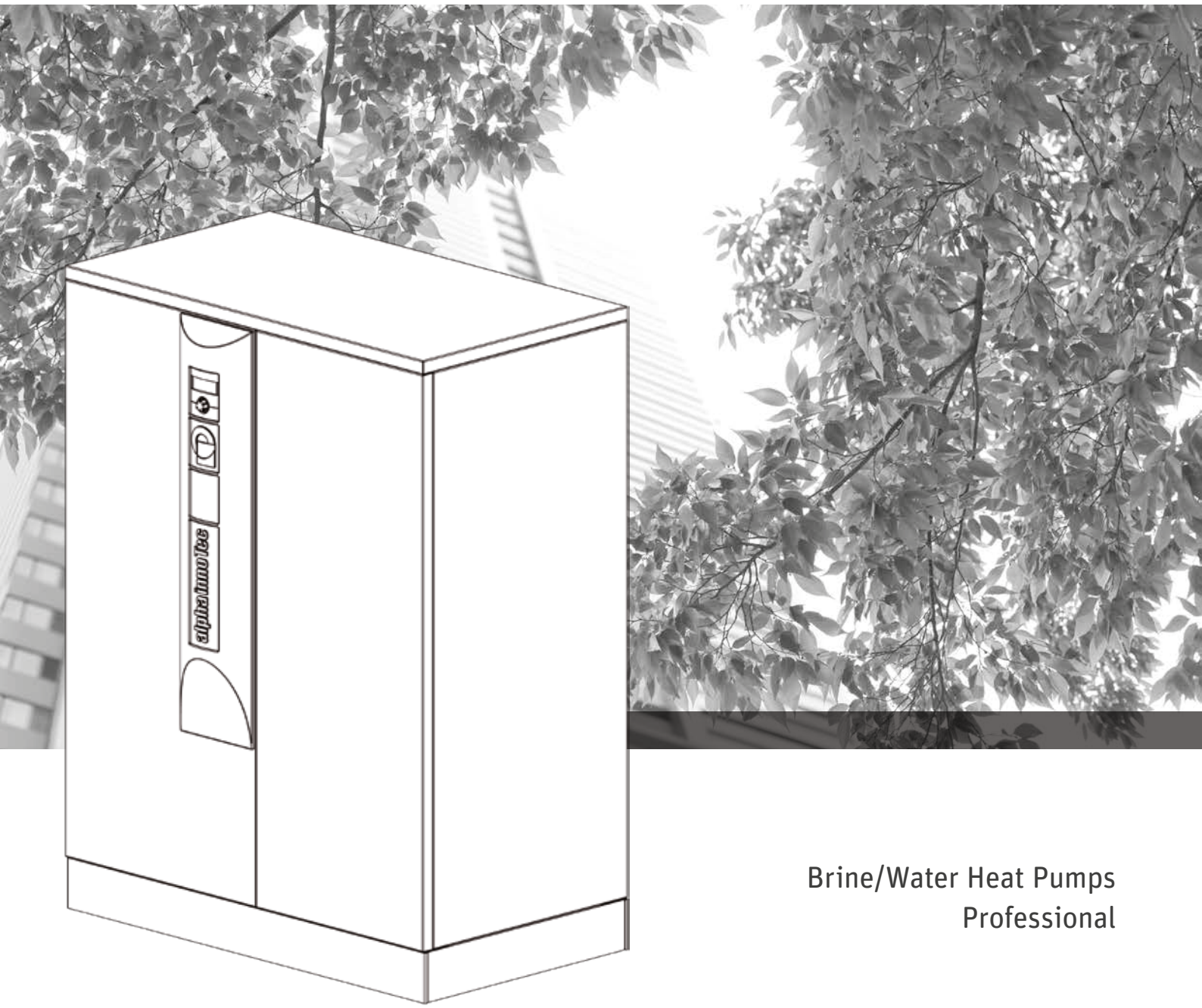
the better way to heat

alpha innotec



Brine/Water Heat Pumps
Professional

Operating Manual

SWP – Series

83050900dUK – Translation into English of the original German operating manual

UK

Please read first

These operating instructions provide information on how to use the appliance. They are an integral element of the product and must be kept within easy reach in close proximity to the appliance. They must remain available throughout the entire service life of the appliance. They must be handed over to new owners or users of the machine.

Read the operating instructions before commencing all work on and with the appliance. In particular, the Safety section. Follow all instructions to a full and unrestricted extent.

These operating instructions may contain descriptions which appear unintelligible or unclear. If questions or unclear points arise, please contact the works customer service or the local representative of the manufacturer.

As these operating instructions have been written for several device types, you must always adhere to the parameters applicable for the relevant device type.

The operating instructions are only intended for persons working on or with the appliance. Treat all elements in confidence. They are protected by copyright. They may not be reproduced in any form, transferred, duplicated, saved in electronic systems or translated into another language, either in whole or in part, without the written consent of the manufacturer.

Symbols

Symbols are used in the operating instructions. They have the following significance:

Information for uers.

Information or instructions for qualified technicians.

DANGER!
Indicates a directly imminent hazard, which will result in serious injuries or death.

WARNING!
Indicates a potentially hazardous situation, which could result in serious injuries or death.

CAUTION!
Indicates a potentially hazardous situation, which could result in moderate or minor injuries.

ATTENTION.
Indicates a potentially hazardous situation which could result in material damage.

NOTE.
Emphasised information.

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

Reference to other sections in the operating instructions.

Reference to other help tips by the manufacturer.

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Intended use

The device must only be used in accordance with its intended application. This is:

- for heating.
- for domestic hot water preparation.

The device may only be operated within its technical parameters.

 Overview "Technical Data/Scope of Supply".

NOTE.
Show operation of the heat pump or heat pump system to the relevant power supply utility.

Exclusion of liability

The manufacturer is not liable for damage resulting from improper use of the device.

The liability of the manufacturer is also invalidated:

- if work has been carried out on the device and its components divergent from the specifications of these operating instructions.
- if work has been carried out improperly on the device and its components.
- if work has been carried out on the device which is not described in these operating instructions, and this work has not been expressly authorised in writing by the manufacturer.
- if the device or components in the device have been modified, converted or removed without the express written approval of the manufacturer.

EC Conformity

The device bears the CE marking.

 EC Declaration of Conformity.

Safety

The device is safe to operate for its intended use. The construction and design of the device correspond to the prior art, as well as all relevant DIN/VDE regulations and all relevant safety provisions.
Any person who carries out work on the device must have read and understood the operating instructions before starting the work. This also applies if the person in question has already worked with such a device or a similar device or has been trained by the manufacturer.
Any person who carried out work on the device must comply with the health and safety at work regulations locally applicable. This applies, in particular, in respect to wearing personal protective clothing.

DANGER!
Danger of fatal injury due to electric current!
Electrical connections may be installed only by qualified electricians.
Before opening the unit, disconnect the system from the power supply and secure it from being switched back on!

WARNING!
Only qualified technicians (heating, refrigerating plant or coolant technicians and electricians) may carry out work on the device and its components.

WARNING!
Observe the safety labels on and in the device.

WARNING!
Device contains coolant!

If coolant escapes due to a leakage, this poses a threat to people and the environment. Therefore:

- **Switch off system.**
- **Ensure installation room is well ventilated**
- **Inform the customer service authorised by the manufacturer.**

ATTENTION.
For safety-relevant reasons:
Never disconnect the device from the power supply, unless the device is opened.

ATTENTION.
Use of pure water in a flat-plate collector or a borehole heat exchanger (vertical collector) is not permitted.

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

Warranty / Guarantee

You can find warranty and guarantee provisions in your purchase documents.

NOTE.
Contact your dealer for all matters relating to the warranty and guarantee.

Disposal

When decommissioning the end-of-life device, observe locally-applicable laws, directives and standards for the recycling, reuse and disposal of operating materials and components of refrigerating devices.

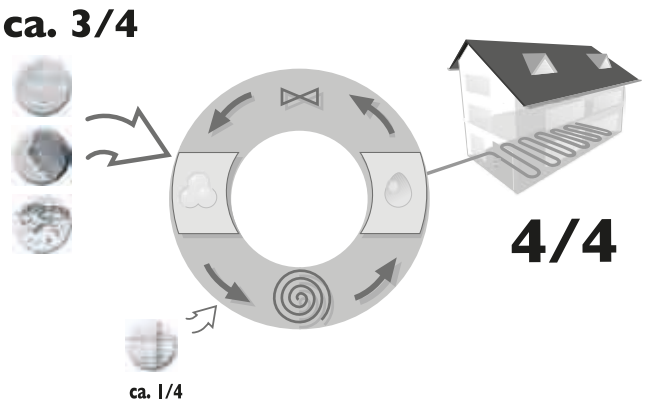
☞ "Deinstallation".

How heat pumps function

Heat pumps work following the principle of a refrigerator: the same technology, only for the opposite use. Refrigerators remove heat from food. They then release this into the room through slats on its rear.

Heat pumps extract heat from the air, earth or ground water in our surroundings. This heat that is obtained is prepared in the device and sent on to the hot water. Even if it is bitterly cold outside, the heat pump will still extract enough heat as is required for heating a house.

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



4/4 = usable energy
ca. 3/4 = environmental energy
ca. 1/4 = external electrical energy

Area of application

Each heat pump can be used in newly installed or existing heating systems under consideration of the ambient conditions, operating limits and applicable regulations.

☞ Overview "Technical Data/Scope of Supply".

Heat quantity recording

In addition to the proof of the unit's efficiency, EEWaermeGalso meets the demand for a heat quantity recording (hereafter refered to as HQR). The HQR is mandatory with air/water heat pumps. With brine/water and water/water heat pumps, a HQR may only be set up when a forward flow temperature of ≥ 35 °C has been reached. The HQR must record the total warm energy release (heating and hot water) in the building. In heat pumps with heat quantity recording, the analysis is conducted by the regulator. The regulator displays the thermal energy that is exchanged from the heating system in kWh.

Operation

Your decision to opt for a heat pump or heat pump system means you can now make a contribution to sparing the environment over many years thanks to low emissions and lower primary energy use.

You operate and control the heat pump system via the control panel of the heating and heat pump control.

NOTE.
Ensure that the control settings are correct.

Operating instructions for the heat and heat pump control.

To ensure that your heat pump or heat pump system operates efficiently and ecologically, the following are especially important:

ENERGY SAVING TIP
Avoid unnecessarily high flow temperatures.
A lower flow temperature on the hot water side increases the efficiency of the system.

ENERGY SAVING TIP
When letting in fresh air, do not leave windows open for an extended period in order to save energy and reduce your heating costs.

Care of the device

You can clean the surface of the device exterior with a damp cloth and standard cleaning agents.

Do not use cleaning and care agents which scour or which contain acid and/or chlorine. Media of this type would irreversibly damage the surfaces and possibly cause technical damage to the device.

Device maintenance

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, circulating pumps, filters, dirt traps) should be inspected as well as cleaned as needed - at the very least annually - by a qualified heating or cooling system technician.

The best solution is to conclude a service agreement with a heating installation company. This will carry out all the required maintenance work at regular intervals.

CLEANING AND RINSING OF DEVICE COMPONENTS

CAUTION!
Only customer service personnel authorised by the manufacturer may clean and rinse device components. Only liquids recommended by the manufacturer may be used for this.
After rinsing the condenser with chemical cleaning agents, a neutralisation of residues and intensive rinsing with water will be necessary. When doing so, observe the technical data of the relevant heat exchanger manufacturer.

Faults

In the event of a fault, you can read off the cause of the fault via the diagnosis program of the heating and circulating pump control.

Operating instructions for the heat and heat pump control.

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

Scope of supply

Typical scope of supply arrangement:

Compact device with fully-hermetic compressor, all safety-relevant components for cold circuit monitoring, built-in heating and heat pump control, sensors mounted in the device for recording the hot gas and hot water flow and return temperature

What to do first:

① Check the supplied product for signs of external damage during delivery…

② Check that nothing is missing from the scope of supply…
Immediately submit a complaint in the event of delivery defects.

NOTE.
Note device type.

Overview "Technical Data/Scope of Supply" or rating plate on the device.

Set-up and Installation

For all work to be carried out:

NOTE.
Observe the locally-applicable accident prevention regulations, statutory provisions, ordinances and directives.

NOTE.
Observe the noise data of the relevant device type.

Overview "Technical Data/Scope of Supply", section "Sound".

INSTALLATION AREA

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/m³
R 404A	0.48 kg/m³
R 407C	0.31 kg/m³
R 410A	0.44 kg/m³

Overview “Technical data / scope of delivery”, “General unit data” section.

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

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.

TRANSPORT TO THE INSTALLATION SITE

Always comply with the following safety information during transport:

CAUTION!
Wear protective gloves.

WARNING!
Work with several persons during transport. Remember the weight of the device.

Overview "Technical Data/Scope of Supply", section "General Device Data".

WARNING!
The unit can tip when being removed from the wooden pallet and during transport. This can result in personal injury and damage to the unit.
- **Take suitable precautionary measures to eliminate the danger of tipping.**

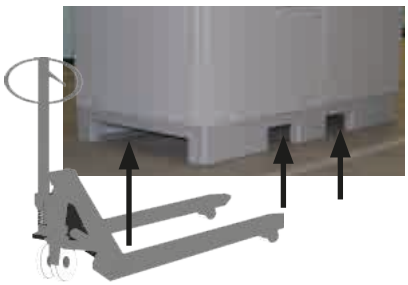
ATTENTION
Never use the components and hydraulic connections on the device for transportation purposes.

ATTENTION
Do not tilt the device more than 45° maximum (applies for every direction).

To avoid damage during transport, you should transport the unit to the final installation location in its original packaging (with packaging on the wooden pallet), using a lifting truck.

① Remove packaging and set extra box aside (will be needed later on!)...

② Transport the unit using a lifting truck...



INSTALLATION

CAUTION!
Several people are required to install the unit.

NOTICE:
Always comply with the dimensional drawings for the respektive size.

Overview “Dimensional drawings” and “Clearance dimensions”.

ATTENTION
The heat pump must be placed on a load-bearing, horizontal base. Ensure that the base is designed for the weight of the heat pump.
Do not use a rigid foam boiler platform!

Overview “Technical data/scope of delivery”, “General unit data” section.

NOTE.
Set up the device so that the control side is accessible at all times!

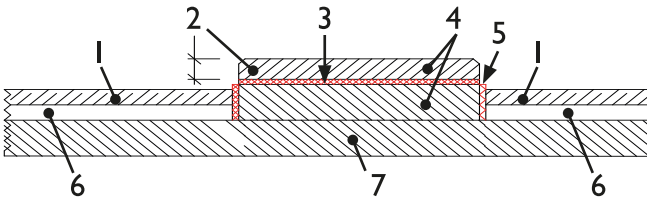
ATTENTION
Do not tilt device more than 45° - applies for every direction!

NOTE.
The openings for the lifting truck must be closed with the covering plate supplied!.

Proceed as follows at the installation site:

① Place the device on a load-bearing and horizontal base, preferably insulated from structure-borne sound…

Detail drawing of concrete foundation:



1 Screed
2 Approx. 100 mm according to weight of heat pump
3 Insulation from structure-borne sound according to weight of heat pump
4 Concrete foundation
5 Edge insulation strip
6 Impact sound insulation
7 Concrete cover

Assembly of the Hydraulic Connections

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

Heat pump guide and "Hydraulic connection" instructions.

NOTICE:
Check to make sure that the diameters and lengths of the pipes for the heating circuit and for the heat source are sufficiently dimensioned.

NOTICE:
Circulating pumps must be multi-stage. They must be able to deliver at least the minimum flow rate required for your model.

Overview "Technical data/scope of delivery", "Heat source " and "Heat circuit" section.

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

ATTENTION
When installing the connections, always secure the connections on the unit from twisting, in order to prevent damage to the copper pipes in the interior of the unit.

① Mount shutoff devices on the heating circuit…

② Mount shutoff devices on the heat source…

NOTE.
The evaporator and liquefier of the heat pump can be rinsed, if necessary, when mounting the shutoff devices.

③ Position a ventilator at the highest point of the heat source in the heat source outlet…

You need to make the connection to the fixed pipework via the compensators (accessories)…

The compensators serve for vibration isolation…

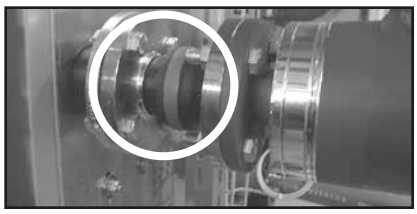
④ We recommend mounting a dirt filter (screen size 0.9 mm) at the heat source inlet connection (return)…

The hot water and heat source connections are marked correspondingly on the device.

For the positioning of the connections, see dimensional diagram for the relevant device type.

⑤ Screw the compensators onto the connections on the unit until they bear against the rubber gasket…

⑥ Screw the compensators by hand onto the pipes of the heating circuit and the heat source until they bear against the rubber gasket…



⑦ Tighten all connections one or two turns to achieve a tight seal…

Do not overtighten. The rubber part of the compensators must not become twisted (torsion). This could cause malfunctions and even serious damage to the unit.

Electrical connection work

For all work to be carried out:

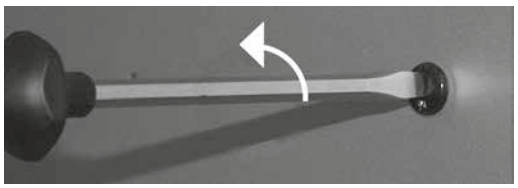
DANGER!
Danger of fatal injury due to electric current!
Electrical connections may be installed only by qualified electricians.
Before opening the unit, disconnect the system from the power supply and secure it from being switched back on!

WARNING!
Observe the appropriate EN, VDE and/or locally applicable safety regulations during installation and when carrying out electrical work.
Observe the technical conditions of the relevant energy supply utility (if the latter requires this)!

NOTE.
All live wires must be stripped before they are installed in the cable duct of the switch cabinets!

① Remove the front panel from the device…

② Open the quick fastening screws of the front panel by rotating 90° anticlockwise…



③ Take the front panel off its hinges and put in a safe place…

Gain an overview of the inside of the device…

1 Electrical switch cabinet
2 Device intermediate bottom

④ Open the electrical switch cabinets of the device… For this only loosen the upper two screws of the covering plate. Remove the remaining screws. The covering plate can then be taken off its hinges…

⑤ Route load and external control and sensor lines to the terminals via the cable duct. Tighten strain relief screws…

⑥ Make electrical connections according to the dimensional data of the terminal diagram and circuit diagrams…

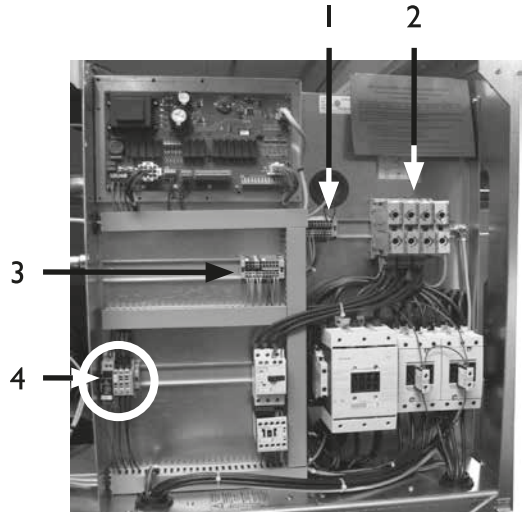
☞ "Terminal Diagram" and "Circuit Diagrams".

ATTENTION.
Only carry out electrical work according to the terminal diagram and circuit diagrams applicable for the device type.

ATTENTION
Ensure clockwise rotary field of the load power supply (compressor).
– An incorrect rotary field of the compressor during operation can cause serious, irreparable damage to the compressor.

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

☞ Overview "Technical Data/Scope of Supply", section "Electrics".



1 Connection for control
2 Connection for power compressor 3~PE
3 N/PE
4 Phase sequence relay

NOTE.
The control element of the heat and heat pump regulator can be a connection with a computer or network using an network cable designed for such pruposes, thus allowing the heating and heat pump regulator to be controlled remotely.
If such a connection is desired, install a screened network cable (category 6, with RJ-45 plug) through the unit when installing the connections and run it through the front facade of the unit, parallel to the already-present heating and heat pump regulator control cable.

⑦ Close the switch cabinet inside the device after finishing all the electrical work…

⑧ Close the front panel of the device if no further installation work is to be carried out directly afterwards.

Rinsing, Filling and Ventilating the System

ATTENTION
The system must be absolutely free from air before commissioning.

RINSING, FILLING AND BLEEDING THE HEAT SOURCE

Dirt and deposits in the heat source can lead to malfunctions.

ATTENTION.
Before flushing and filling the heat source the drain pipe of the safety valve must be connected - Important: do not discharge into the drains (anti-freeze mixture)!.

NOTE
The following antifreezes are approved for the brine circuit:

- Monoethylene glycol

ATTENTION
Ensure that the (pipe) materials, seals and other components used on site are made of materials that are compatible with the antifreeze used!

① Rinse heat source system thoroughly…

② Thoroughly mix the antifreeze available as an accessory with water in the required ratio. Only fill the heat source after mixing…

ATTENTION
The type amd concentration of the antifreeze in the water must have the value indicated for your device type.

Overview “Technical Data/Scope of Supply”, section “Heat Source”.

③ Check the concentration of the antifreeze in the mixture…

④ Fill the heat source with antifreeze mixture…

⑤ Bleed the heat source.

FLUSHING AND FILLING THE HEATING CIRCUIT

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 I 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.

! ATTENTION
The drainage pipe must be connected to the safety assembly before rinsing and filling the heat circuit.

① Thoroughly rinse heat circuit…

i NOTE.
Rinse heat pump and heating circuit for about 5 minutes.

② Fill heat circuit…

③ Bleed heat circuit.

Isolation of the Hydraulic Connections

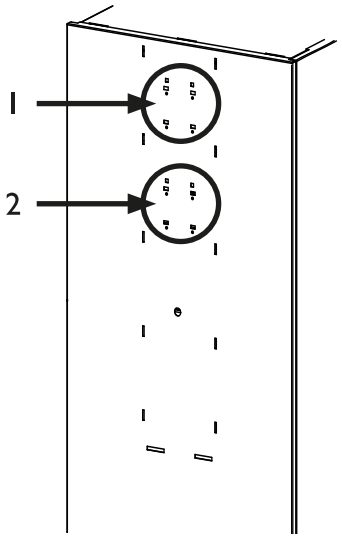
i NOTE.
Insulate the heat source and heat circuit according to the standards and directives applicable locally.

① Check leakproofness of all hydraulic connections. Perform pressure test…

② Insulate all connections, vibration isolation, connections and lines of the heat circuit and heat source. Provide **steam diffusion-tight** heat source insulation.

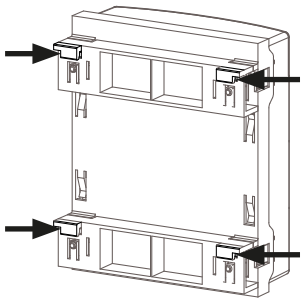
Installation of the control element

Situated at different heights in the front facade of the unit are recesses (each with 4 recesses) for fastening the control element:

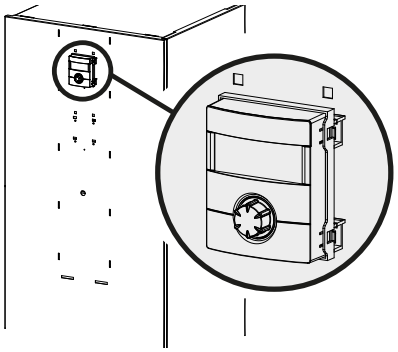


1 four upper recesses
2 four lower recesses

4 hooks are located on the back side of the control element and can be used to hang the control element on the front facade of the unit:

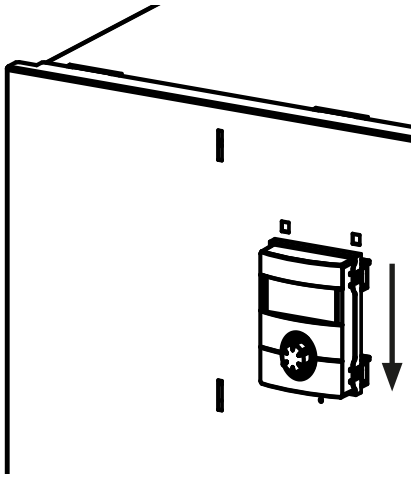


① Hang the control element's hooks on the recesses of the front facade (either in the upper or lower recesses)…

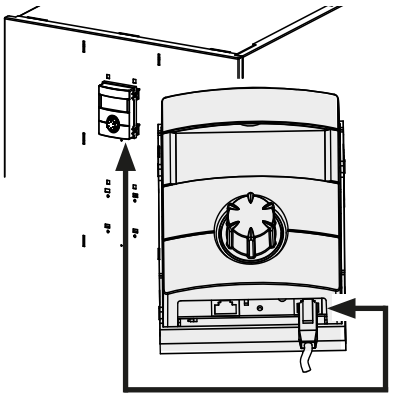


Example:
Control element in upper recesses

② Push the control element down until it locks into position…



③ Stick the heating and heat pump regulator's control cable into the **right** bushing on the bottom of the control element…



NOTE.
A connection to a computer or a network can be installed via the left bushing on the bottom of the control element, thus allowing the heating and heat pump regulator to be controlled remotely. One pre-condition is that a screened network cable (category 6) be installed through the unit when installing the unit.

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

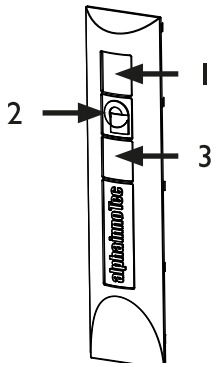
If this network cable is available, insert the network cable's RJ-45 plug into the left bushing of the control element.

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

Installation and removal of the screen

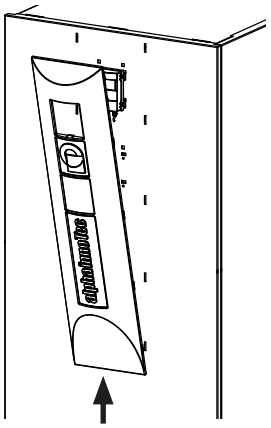
INSTALLING THE SCREEN

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

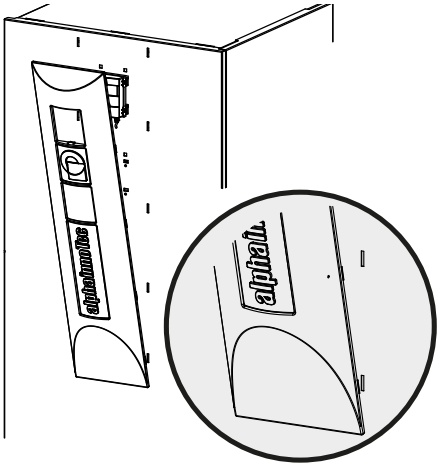


Screen at time of delivery:
1 recess for control element
2 logo
3 temporary cover

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

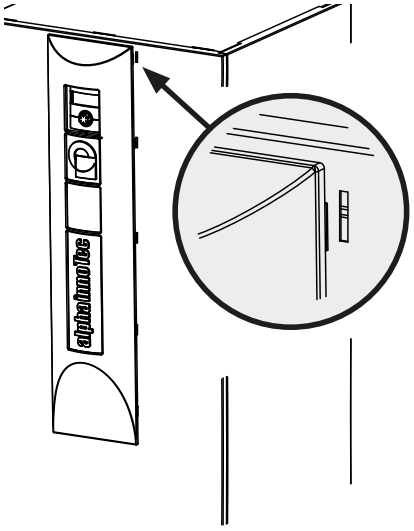


② Beginning first on one side and moving upwards, lock the screen's snap-in lugs in place **in the slots** provided on the front of the facade…



③ **Next, on the opposite side, moving upwards.** Lock the screen's snap-in lugs **in place** in the slots provided on the front of the facade…

④ Finally, press the screen's upper snap-in lugs into the slots provided on the front of the facade.



REMOVING THE SCREEN

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

Buffer tank

Hydraulic integration of the heat pump requires a buffer tank in the heating circuit. The volume required for the buffer tank can be derived from the following formula:

$$V_{\text{Buffer tank}} = \frac{\text{Min. throughput of heating circuit volumetric flow / hour}}{10}$$

☞ For the minimum throughput of the heating circuit volumetric flow, see the overview "Technical Data/scope of Supply", section "Heating Circuit".

Circulation Pumps

! ATTENTION.
Always note the model.
Do not use regulated circulating pumps.
Circulating pumps and domestic hot water circulation pumps must be multi-stage, regulated pumps.

i NOTE:
The minimum hot water, heat source volumetric flow must be ensured!

i NOTE:
The viscosity of the brine must be observed when dimensioning the heat source circulating pump!

i NOTE:
A motor protection switch for the heat source circulating pump is integrated in the heat pump!

☞ Setting range "Technical Data/Scope of Supply" Electrics

☞ For the minimum volumetric flow rate of the heat circuit/heat source, see overview "Technical Data/Scope of Supply" section "Heat Circuit" "Heat Source" for the relevant type.

Domestic Hot Water Preparation

The domestic hot water preparation with the heat pump requires a further hot water circuit in addition (parallel) to the heating circuit. During integration, ensure that the domestic hot water loading is not routed through the buffer tank of the heating circuit.

Tip “Hydraulic Integration”.

Domestic Hot Water Tank

If the heat pump is to prepare domestic hot water, you need to incorporate special domestic hot water tanks in the heat pump system. Select the tank volume so that the required domestic hot water volume is also available during a power failure of the public supply utility.

NOTE:
The heat exchanger area of the domestic hot water tank must be dimensioned in such way that the heating capacity of the heat pump is transferred with as little spread as possible.

We shall be pleased to offer domestic hot water tanks from our product range. They are optimally tailored to your heat pump.

NOTE:
Integrate the domestic hot water tank in the heat pump system in such way that it corresponds to the hydraulic scheme suitable for your system.

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 and Austria:
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!

Deinstallation

DANGER!
Danger of fatal injury due to electric current!
Electrical connections may be installed only by qualified electricians.

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

WARNING!
Only qualified heating and refrigerating plant technicians may remove the device from the system.

ATTENTION
The antifreeze mixture of the heat source must not be disposed of into the sewerage system.
Collect antifreeze mixture and dispose of properly.

ATTENTION
Provide the device components, coolant and oil for recycling or properly dispose of them corresponding to the applicable regulations, standards and directives.

REMOVING THE BACKUP BATTERY

ATTENTION
Before scrapping the heating and heat pump control, remove the backup battery on the processor circuit board. The battery can be pushed out using a screwdriver. Properly dispose of the battery and electronic components in line with environmental requirements.

Technical Data/Scope of Supply

Heat pump type	Brine/Water ı Air/Water ı Water/Water			• relevant ı — not relevant
Installation location	Indoors ı Outdoors			• relevant ı — not relevant
Conformity				CE
Power data	Heating power/COP at			
	B0/W35	Standard point as per EN255	2 Compressors 1 Compressor	kW ı ... kW ı ...
	B0/W50	Standard point as per EN255	2 Compressors 1 Compressor	kW ı ... kW ı ...
	B-5/W35	Standard point as per EN255	2 Compressors 1 Compressor	kW ı ... kW ı ...
	B-0/W45	Standard point as per EN14511	2 Compressors 1 Compressor	kW ı ... kW ı ...
Operating limits	Heat circuit			°C
	Heat source			°C
	Additional operating points			...
Noise	Sound pressure level at 1m gap around the machine averaged (in free field)			dB(A)
	Sound power level as per EN12102			dB
Heat source	Volumetric flow: minimum throughput ı nominal throughput ı maximum throughput			l/h
	Pressure loss in heat pump Δp ı Volumetric flow			bar ı l/h
	Recommended brine circulating pump			...
	Total compression of the recommended pump at nominal brine volumetric flow			bar ı l/h
	Antifreeze			Monoethylene glycol
	Minimum concentration ı frostproof to			% ı °C
Heat circuit	Volumetric flow: minimum throughput ı nominal throughput ı maximum throughput			l/h
	Pressure loss in heat pump Δp ı Volumetric flow			bar ı l/h
	Free compression of heat pump Δp ı Volumetric flow			bar ı l/h
	Temperature spread for B0/W35			K
General device data	Earth (see dimensional diagram for the size indicated)			Size
	Total weight			kg
		Extra weight of construction unit 1		kg
		Extra weight of construction unit 2		kg
	Connections	Heat circuit		...
		Heat source		...
	Refrigerant	Refrigerant type ı Filling capacity		... ı kg
Electrics	Voltage code ı All-pole circuit breaker for pump *)			... ı A
	Voltage code ı Control voltage circuit breaker *)			... ı A
	Voltage code ı Electrical heating element circuit breaker *)			ı A
Heat pump	Effective power consumption in the normal point B0/W35 as per EN255: Power consumption ı Current consumption ı cosφ			kW ı A ı ...
	Maximum machine current within the operating limits			A
	Starting current: direct ı with slow-starter			A ı A
	Protection type			IP
	Power of electrical heating element 3 ı 2 ı 1-phase			kW ı kW ı kW
Components	Circulating pump for heat circuit at nominal throughput: Power consumption ı Current consumption			kW ı A
	Circulating pump for heat source at nominal throughput: Power consumption ı Current consumption			kW ı A
	Setting range for motor protection switch of heat source circulating pump			A
Passive cooling function	Data only for devices with ID K: Cooling power at nominal volumetric flow rates (15 °C heat source, 25 °C hot water)			kW
Safety devices	Safety assembly for heat circuit ı Safety assembly for heat source			in scope of supply: • yes — no
Heating and heat pump control				in scope of supply: • yes — no
Electronic soft-starter				integrated: • yes — no
Expansion vessels	Heat source: Scope of supply ı Volume ı Supply pressure			• yes — no ı l ı bar
	Heat circuit: Scope of supply ı Volume ı Supply pressure			• yes — no ı l ı bar
Overflow valve				integrated: • yes — no
Vibration isolation	Heat circuit ı Heat source			in scope of supply: • yes — no

UK813198a

*) Observe local regulations n.n. = cannot be demonstrated

	SWP1100	SWP1250	SWP1600
	• ı — ı —	• ı — ı —	• ı — ı —
	• ı —	• ı —	• ı —
	•	•	•
	107,5 ı 4,3 57,0 ı 4,4	125,1 ı 4,3 66,3 ı 4,4	161,6 ı 4,4 85,6 ı 4,5
	107,6 ı 3,1 57,1 ı 3,2	125,2 ı 3,1 66,4 ı 3,2	161,8 ı 3,2 85,8 ı 3,3
	96,5 ı 3,9 51,2 ı 4,0	112,3 ı 3,9 59,5 ı 4,0	145,1 ı 4,0 76,9 ı 4,1
	100,0 ı 3,2 53,0 ı 3,3	116,3 ı 3,2 61,7 ı 3,3	150,3 ı 3,3 76,6 ı 3,3
	20 - 55	20 - 55	20 - 55
	-5 - 25	-5 - 25	-5 - 25
	62	64	66
	20000 ı 20000 ı 38400	22300 ı 22300 ı 44600	29100 ı 29100 ı 58200
	0,23 ı 20000	0,18 ı 22300	0,26 ı 29100
	Grundfos UPS 50-180F	Grundfos UPS 65-180F	Grundfos UPS 65-180F
	0,9	1,06	0,92
	•	•	•
	25 ı -13	25 ı -13	25 ı -13
	9500 ı 10500 ı 21000	10700 ı 11500 ı 23000	13900 ı 15200 ı 30400
	0,1 ı 10500	0,06 ı 11500	0,07 ı 15200
	— ı —	— ı —	— ı —
	8,9	9,3	9,1
	2	2	2
	870	935	1000
	—	—	—
	—	—	—
	DN50 DIN2566	DN65 DIN2566	DN65 DIN2566
	DN65 DIN2566	DN65 DIN2566	DN65 DIN2566
	R407c ı 19,0	R407c ı 18,8	R407c ı 20,7
	3~/PE/400V/50Hz ı C100	3~/PE/400V/50Hz ı C125	3~/PE/400V/50Hz ı C125
	1~/N/PE/230V/50Hz ı B10	1~/N/PE/230V/50Hz ı B10	1~/N/PE/230V/50Hz ı B10
	— ı —	— ı —	— ı —
	25,0 ı 2x24,6 ı 0,74	29,1 ı 2x28,8 ı 0,73	36,7 ı 2x33,4 ı 0,79
	2 x 38,6	2 x 47,0	2 x 58,7
	225 ı 130	270 ı 146	310 ı 270
	20	20	20
	— ı — ı —	— ı — ı —	— ı — ı —
	— ı —	— ı —	— ı —
	1,0 ı 2,0	1,55 ı 2,9	1,55 ı 2,9
	1,8 - 2,5	2,8 - 4,0	2,8 - 4,0
	—	—	—
	— ı —	— ı —	— ı —
	•	•	•
	•	•	•
	— ı —	— ı —	— ı —
	— ı —	— ı —	— ı —
	—	—	—
	—	—	—
	813148-c	813146-c	813149-c

Technical Data/Scope of Supply

Heat pump type	Brine/Water ı Air/Water ı Water/Water			• relevant ı — not relevant
Installation location	Indoors ı Outdoors			• relevant ı — not relevant
Conformity				CE
Power data	Heating power/COP at			
	B0/W35	Standard point as per EN255	2 Compressors 1 Compressor	kW ı ... kW ı ...
	B0/W50	Standard point as per EN255	2 Compressors 1 Compressor	kW ı ... kW ı ...
	B-5/W35	Standard point as per EN255	2 Compressors 1 Compressor	kW ı ... kW ı ...
	B-0/W45	Standard point as per EN14511	2 Compressors 1 Compressor	kW ı ... kW ı ...
Operating limits	Heat circuit			°C
	Heat source			°C
	Additional operating points			...
Noise	Sound pressure level at 1m gap around the machine averaged (in free field)			dB(A)
	Sound power level as per EN12102			dB
Heat source	Volumetric flow: minimum throughput ı nominal throughput ı maximum throughput			l/h
	Pressure loss in heat pump Δp ı Volumetric flow			bar ı l/h
	Recommended brine circulating pump			...
	Total compression of the recommended pump at nominal brine volumetric flow			bar ı l/h
	Antifreeze			Monoethylene glycol
	Minimum concentration ı frostproof to			% ı °C
Heat circuit	Volumetric flow: minimum throughput ı nominal throughput ı maximum throughput			l/h
	Pressure loss in heat pump Δp ı Volumetric flow			bar ı l/h
	Free compression of heat pump Δp ı Volumetric flow			bar ı l/h
	Temperature spread for B0/W35			K
General device data	Earth (see dimensional diagram for the size indicated)			Size
	Total weight			kg
		Extra weight of construction unit 1		kg
		Extra weight of construction unit 2		kg
	Connections	Heat circuit		...
		Heat source		...
	Refrigerant	Refrigerant type ı Filling capacity		... ı kg
Electrics	Voltage code ı All-pole circuit breaker for pump *)			... ı A
	Voltage code ı Control voltage circuit breaker *)			... ı A
	Voltage code ı Electrical heating element circuit breaker *)			ı A
Heat pump	Effective power consumption in the normal point B0/W35 as per EN255: Power consumption ı Current consumption ı cosφ			kW ı A ı ...
	Maximum machine current within the operating limits			A
	Starting current: direct ı with slow-starter			A ı A
	Protection type			IP
	Power of electrical heating element 3 ı 2 ı 1-phase			kW ı kW ı kW
Components	Circulating pump for heat circuit at nominal throughput: Power consumption ı Current consumption			kW ı A
	Circulating pump for heat source at nominal throughput: Power consumption ı Current consumption			kW ı A
	Setting range for motor protection switch of heat source circulating pump			A
Passive cooling function	Data only for devices with ID K: Cooling power at nominal volumetric flow rates (15 °C heat source, 25 °C hot water)			kW
Safety devices	Safety assembly for heat circuit ı Safety assembly for heat source			in scope of supply: • yes — no
Heating and heat pump control				in scope of supply: • yes — no
Electronic soft-starter				integrated: • yes — no
Expansion vessels	Heat source: Scope of supply ı Volume ı Supply pressure			• yes — no ı l ı bar
	Heat circuit: Scope of supply ı Volume ı Supply pressure			• yes — no ı l ı bar
Overflow valve				integrated: • yes — no
Vibration isolation	Heat circuit ı Heat source			in scope of supply: • yes — no

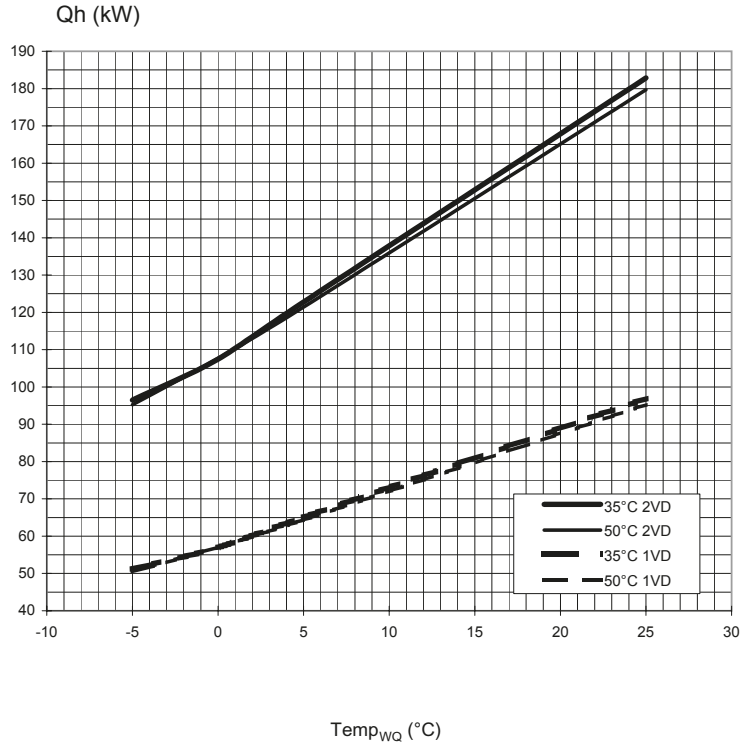
UK813198a

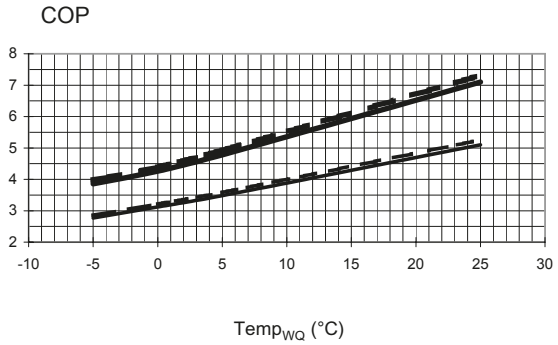
*) Observe local regulations n.n. = cannot be demonstrated

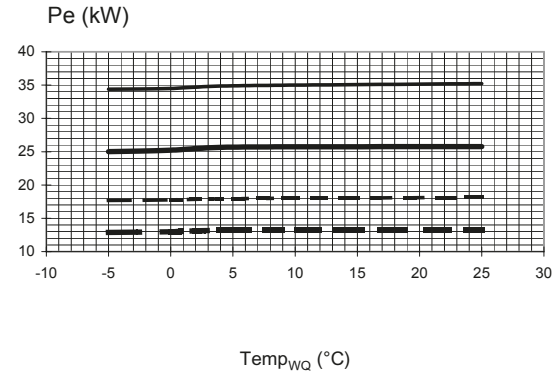
	SWP700H	SWP850H	SWP1000H
	• ı — ı —	• ı — ı —	• ı — ı —
	• ı —	• ı —	• ı —
	•	•	•
	70,0 ı 4,1 37,1 ı 4,2	88,0 ı 4,1 46,5 ı 4,2	100,0 ı 4,1 53,0 ı 4,2
	66,8 ı 3,0 32,7 ı 3,0	86,4 ı 3,0 42,5 ı 3,2	93,0 ı 2,8 49,3 ı 2,9
	58,8 ı 3,6 29,4 ı 3,6	78,0 ı 3,8 40,5 ı 4,0	89,8 ı 3,7 47,6 ı 3,8
	65,1 ı 3,2 34,5 ı 3,1	81,8 ı 3,2 43,2 ı 3,1	93,0 ı 3,2 49,3 ı 3,1
	20 - 65	20 - 65	20 - 65
	-5 - 25	-5 - 25	-5 - 25
	B5 ı W70	B5 ı W70	B5 ı W70
	64	64	68
	12400 ı 16500 ı 24800	14800 ı 14800 ı 29600	18000 ı 18000 ı 36000
	0,16 ı 16500	0,09 ı 14800	0,18 ı 18000
	Grundfos UPS 50-180F	Grundfos UPS 50-180F	Grundfos UPS 50-180F
	1,10	1,16	1,01
	•	•	•
	25 ı -13	25 ı -13	25 ı -13
	6000 ı 6600 ı 13200	7200 ı 8200 ı 16400	7850 ı 9400 ı 17000
	0,04 ı 6600	0,05 ı 8200	0,08 ı 9400
	— ı —	— ı —	— ı —
	9,1	8,8	9,1
	2	2	2
	930	935	965
	—	—	—
	—	—	—
	DN50 DIN2566	DN50 DIN2566	DN50 DIN2566
	DN65 DIN2566	DN65 DIN2566	DN65 DIN2566
	R134a ı 15,5	R134a ı 17,0	R134a ı 17,6
	3~/PE/400V/50Hz ı C80	3~/PE/400V/50Hz ı C80	3~/PE/400V/50Hz ı C100
	1~/N/PE/230V/50Hz ı B10	1~/N/PE/230V/50Hz ı B10	1~/N/PE/230V/50Hz ı B10
	— ı —	— ı —	— ı —
	17,1 ı 2x19,2 ı 0,65	20,5 ı 2x22,8 ı 0,65	24,3 ı 2x27,6 ı 0,65
	2 x 29,3	2 x 37,9	2 x 45,6
	215 ı 130	270 ı 146	310 ı 270
	20	20	20
	— ı — ı —	— ı — ı —	— ı — ı —
	— ı —	— ı —	— ı —
	1,0 ı 2,0	1,0 ı 2,0	1,0 ı 2,0
	1,8 - 2,5	1,8 - 2,5	1,8 - 2,5
	—	—	—
	— ı —	— ı —	— ı —
	•	•	•
	•	•	•
	— ı —	— ı —	— ı —
	— ı —	— ı —	— ı —
	—	—	—
	—	—	—
	813150-d	813151-c	813152-d

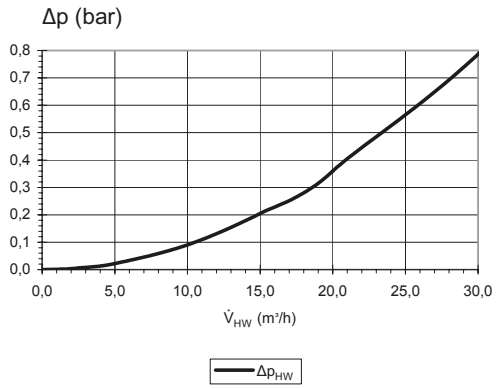
SWP 1100

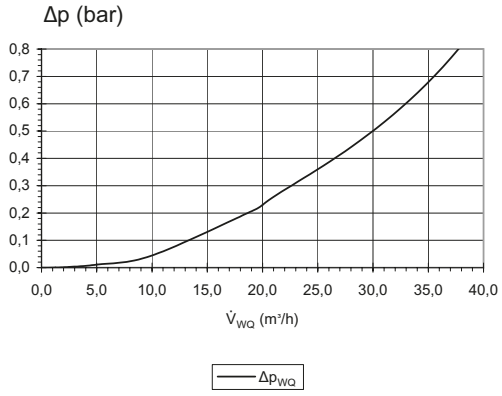
Power Curves











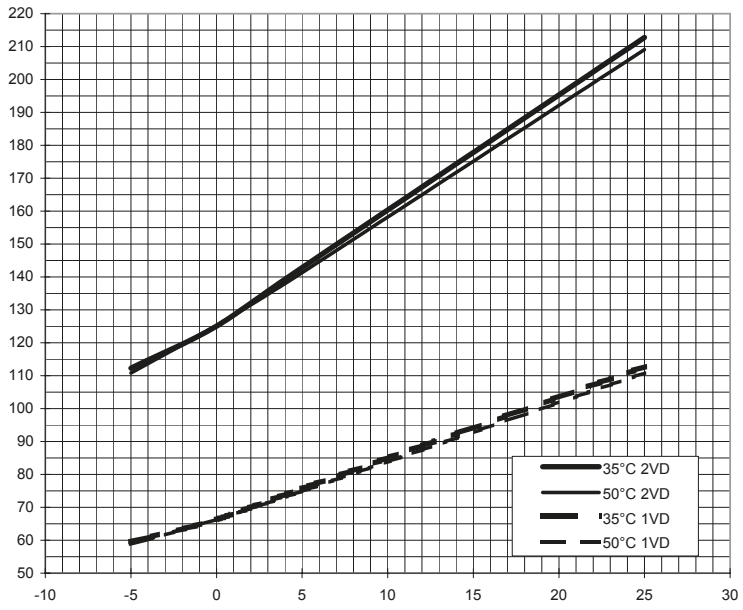
823032

Legend:	UK823025L
$\dot{V}_{HW}$	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$_{HW}$	Pressure loss heat circuit
Δp$_{WQ}$	Pressure loss heat source
VD	Compressor(s)

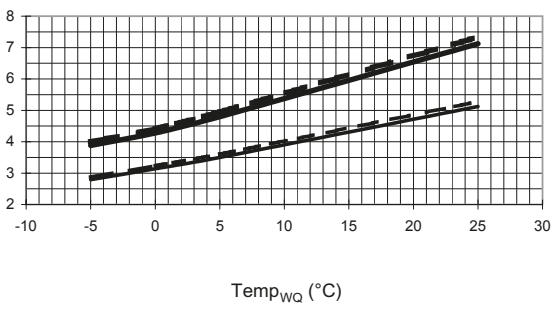
Power Curves

SWP 1250

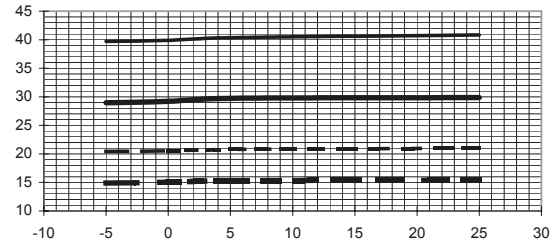
Qh (kW)



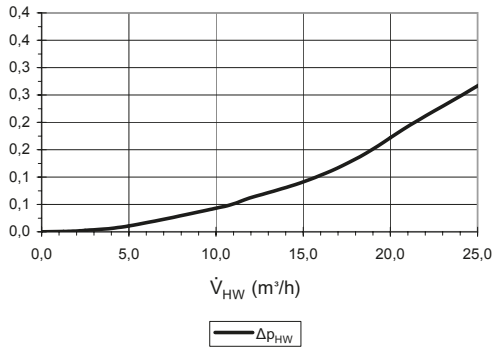
COP



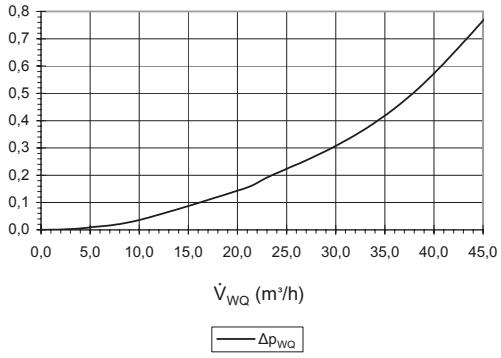
Pe (kW)



Δp (bar)



Δp (bar)



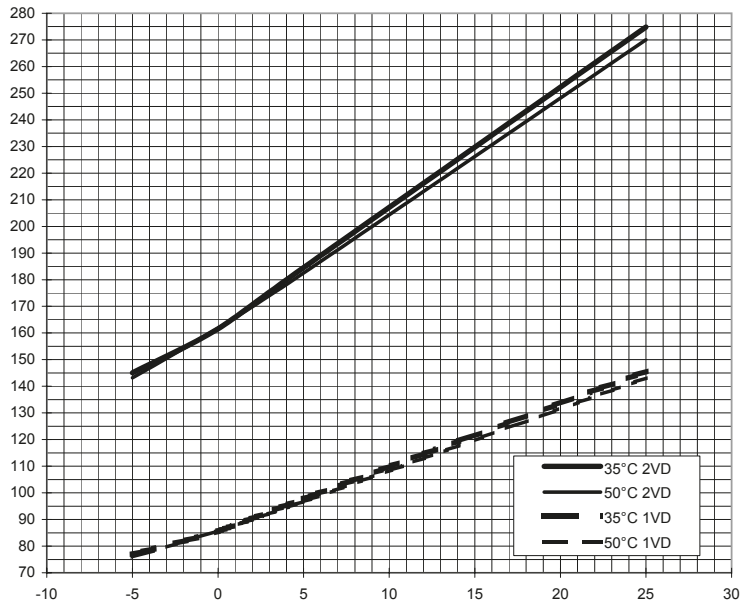
823033

Legend:	UK823025L
$\dot{V}_{HW}$	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$_{HW}$	Pressure loss heat circuit
Δp$_{WQ}$	Pressure loss heat source
VD	Compressor(s)

SWP 1600

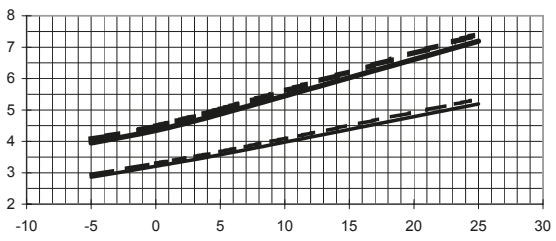
Power Curves

Qh (kW)



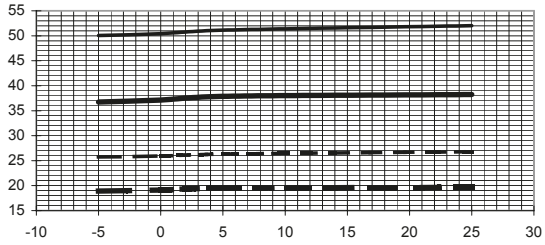
$Temp_{WQ}$ (°C)

COP



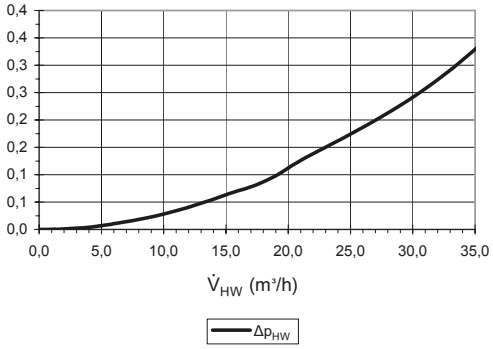
$Temp_{WQ}$ (°C)

Pe (kW)

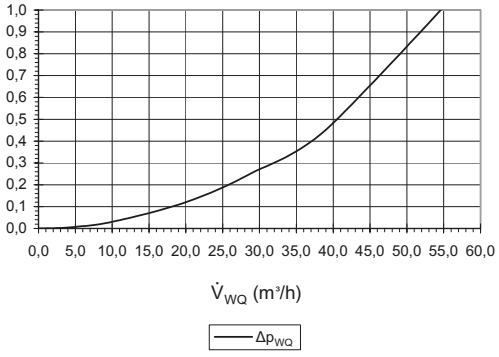


$Temp_{WQ}$ (°C)

Δp (bar)



Δp (bar)



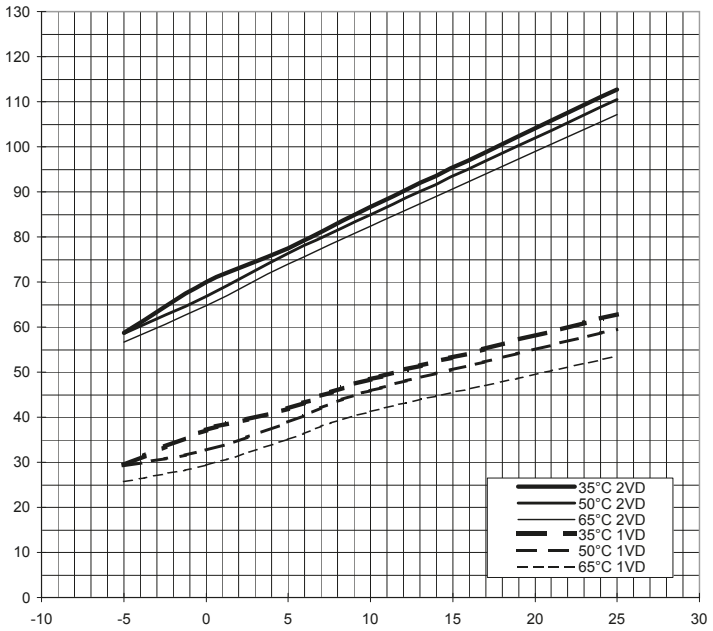
823033

Legend:	UK823025L
$\dot{V}_{HW}$	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}	Pressure loss heat circuit
Δp_{WQ}	Pressure loss heat source
VD	Compressor(s)

Power Curves

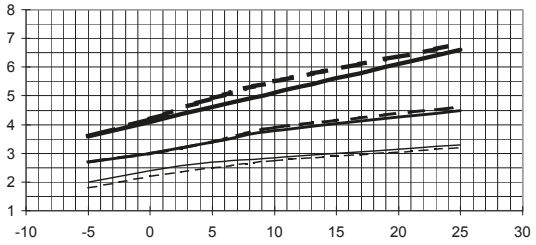
SWP 700H

Qh (kW)



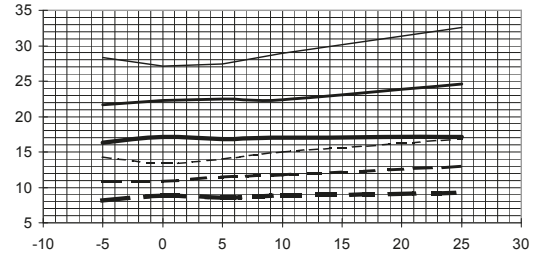
$Temp_{WQ}$ (°C)

COP



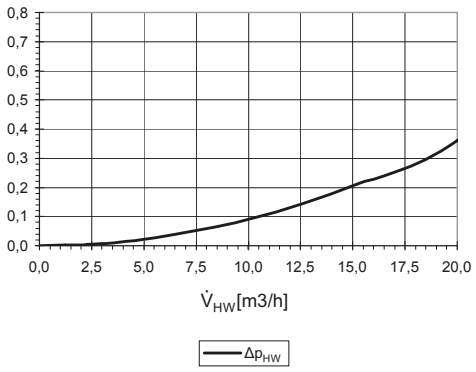
$Temp_{WQ}$ (°C)

Pe (kW)

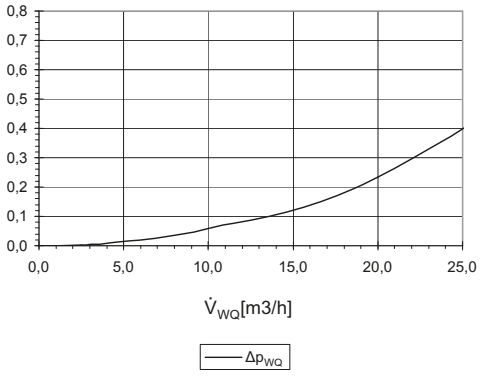


$Temp_{WQ}$ (°C)

Δp (bar)



Δp (bar)

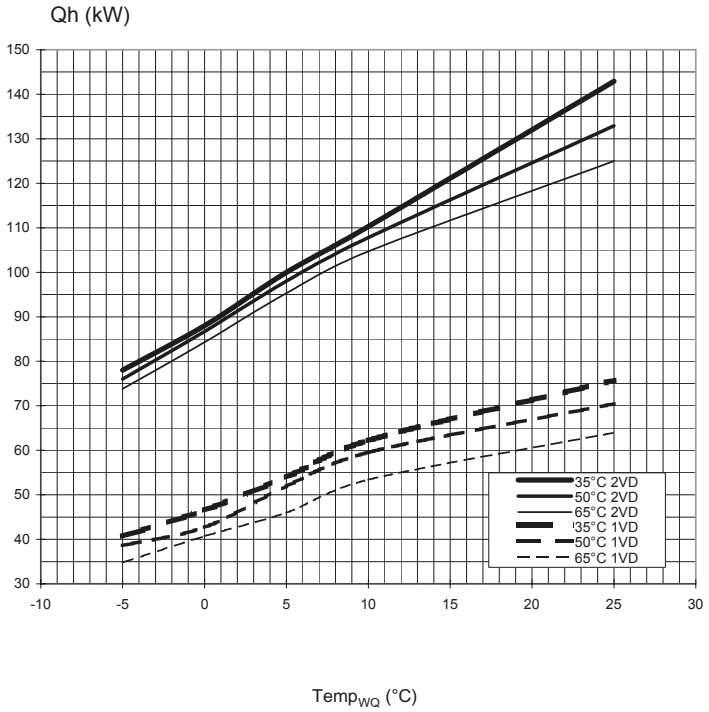


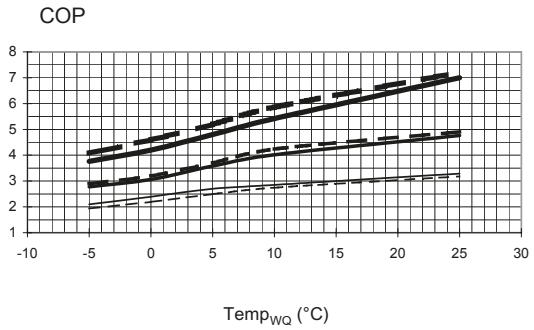
823040

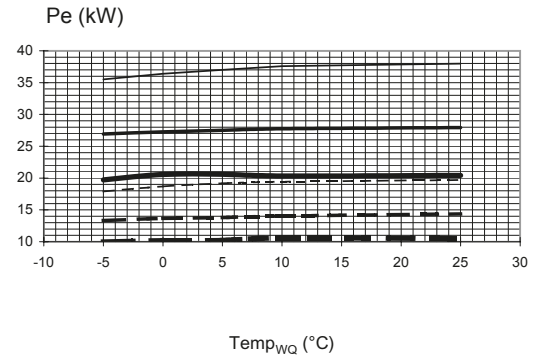
Legend:	UK823025L
$\dot{V}_{HW}$	Volume flow, heating water
$\dot{V}_{WQ}$	Volume flow, heat source
$Temp_{WQ}$	Temperature, heat source
Qh	Heating capacity
Pe	Power consumption
COP	Coefficient of performance / efficiency rating
Δp_{HW}	Pressure loss heat circuit
Δp_{WQ}	Pressure loss heat source
VD	Compressor(s)

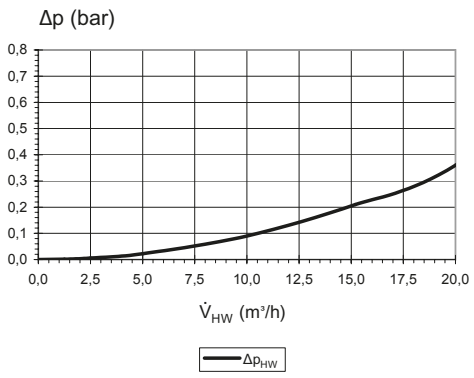
SWP 850H

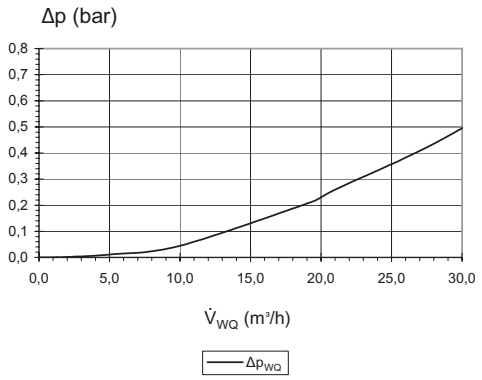
Power Curves











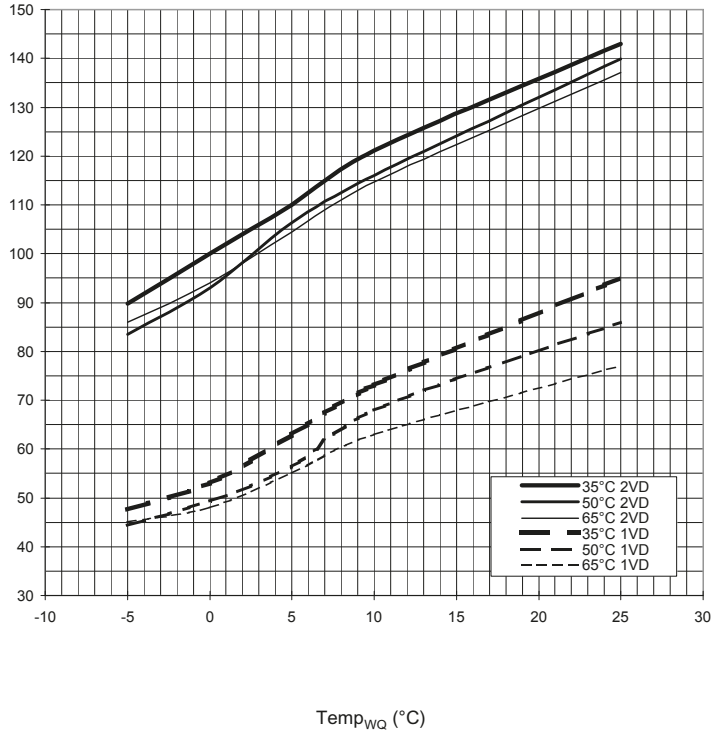
823041

Legend:	UK823025L
$\dot{V}_{HW}$	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$_{HW}$	Pressure loss heat circuit
Δp$_{WQ}$	Pressure loss heat source
VD	Compressor(s)

Power Curves

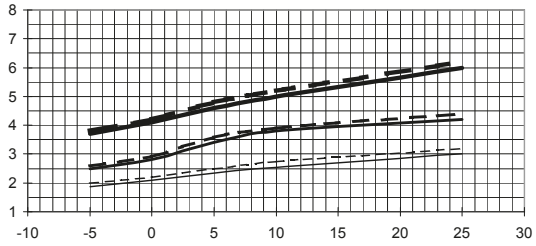
SWP 1000H

Qh (kW)



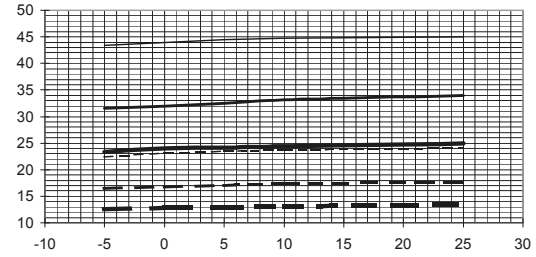
$Temp_{WQ}$ (°C)

COP



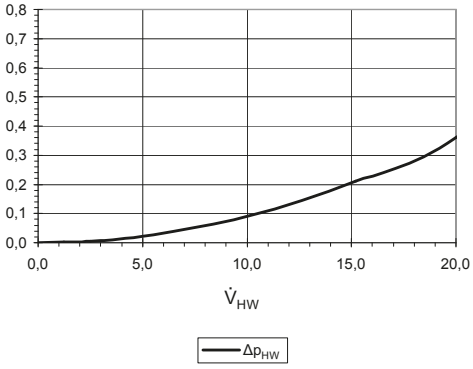
$Temp_{WQ}$ (°C)

Pe (kW)

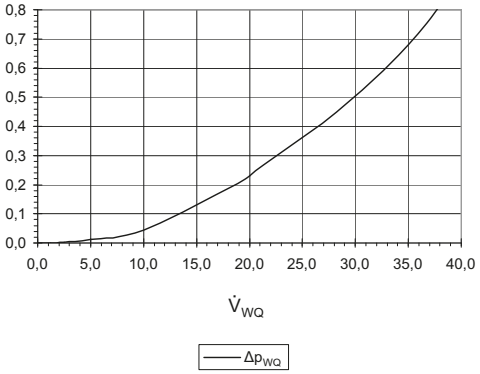


$Temp_{WQ}$ (°C)

Δp (bar)



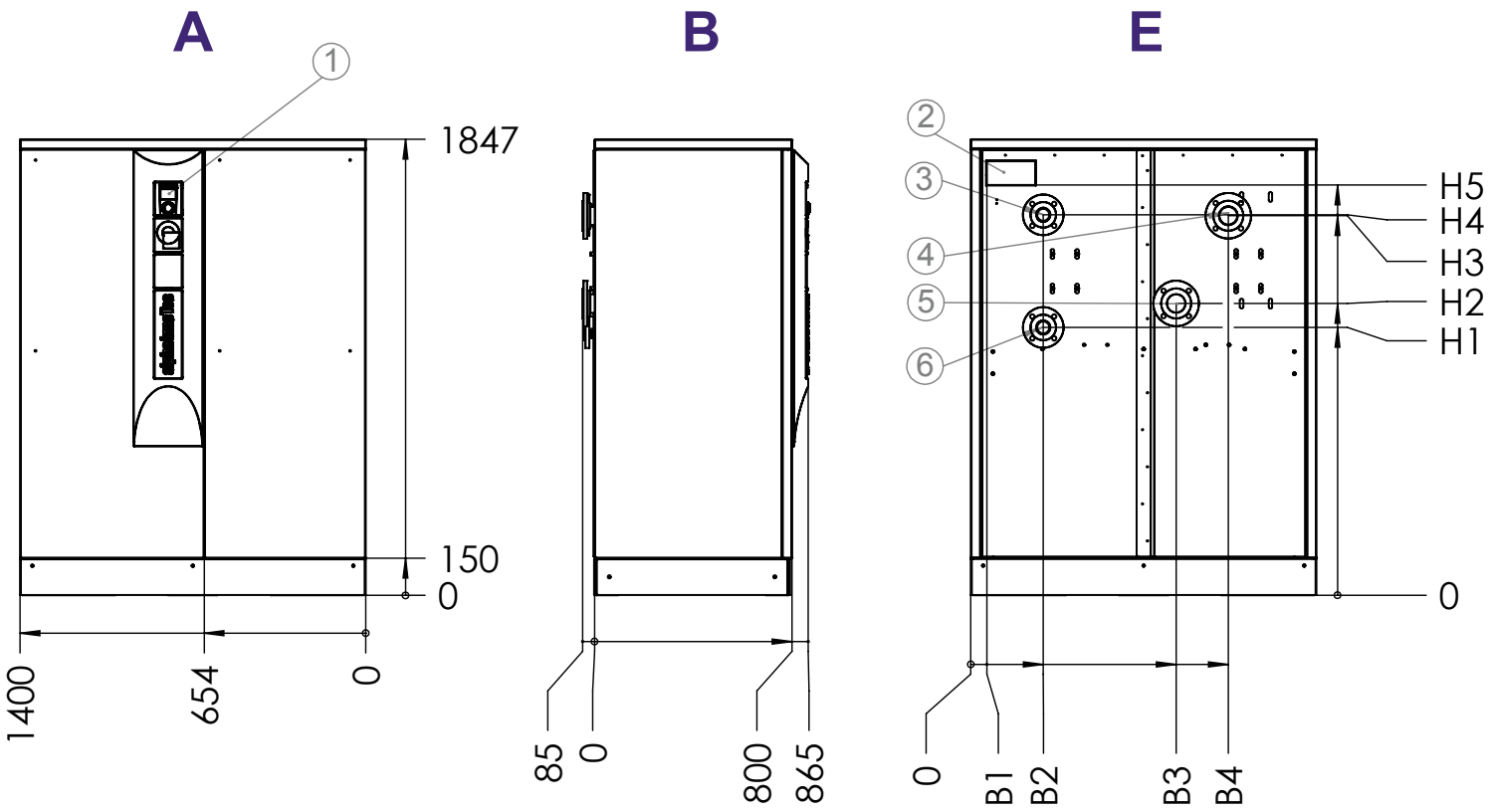
Δp (bar)



823042-a

Legend:	UK823025L
$\dot{V}_{HW}$	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}	Pressure loss heat circuit
Δp_{WQ}	Pressure loss heat source
VD	Compressor(s)

SWP 1100 – 1250 / SWP 700H – 1000H Dimensional diagrams



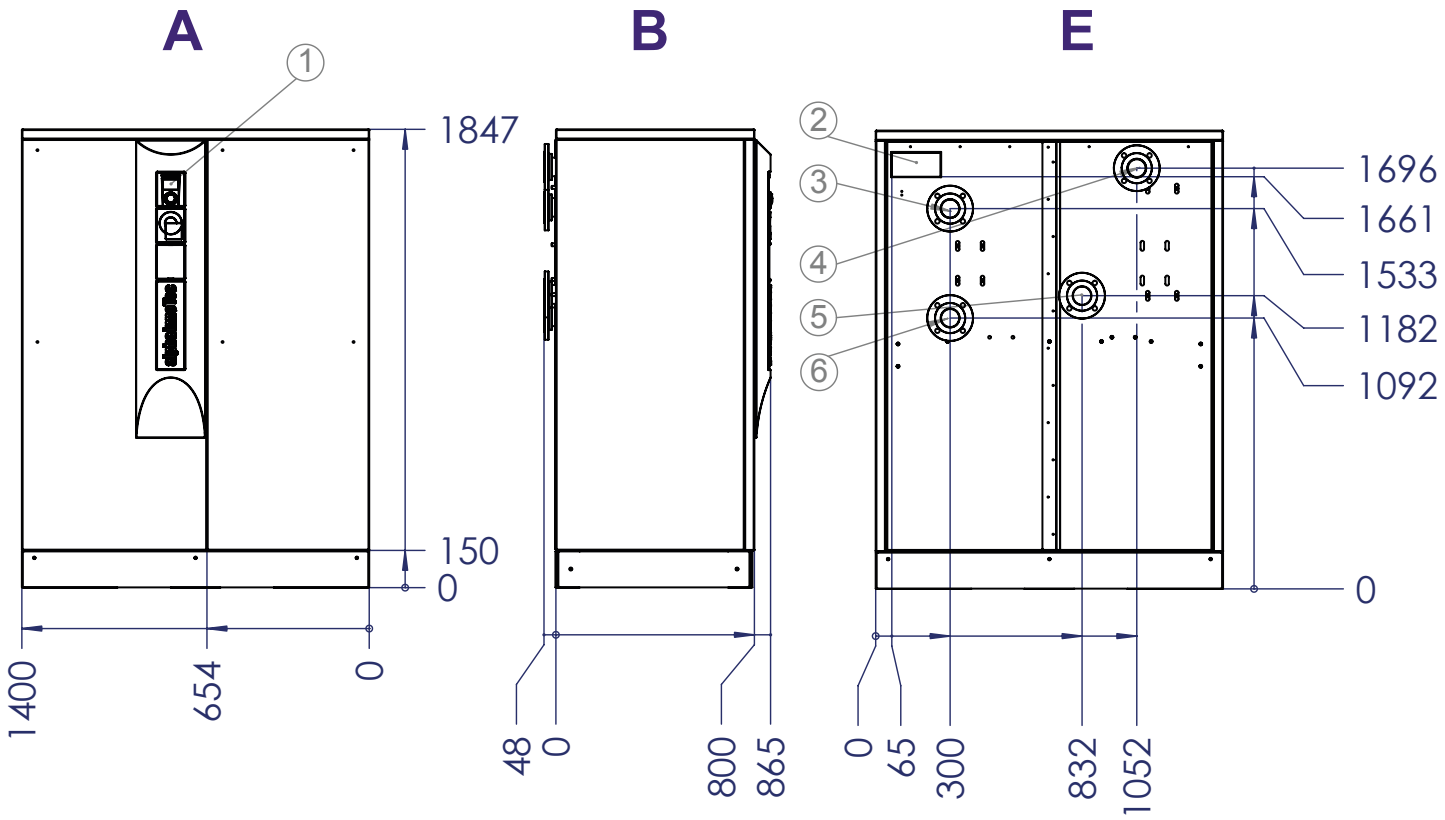
Legend: UK819162~e
All dimensions in mm.

A	Front view
B	Side view from left
E	Rear view

POS	Designation
1	Control panel
2	Sleeves for electrical / sensor cables
3	Hot water outlet (flow), flange DIN 2566
4	Heat source inlet, flange DIN 2566
5	Heat source outlet, flange DIN 2566
6	Hot water inlet (return), flange DIN 2566

Dimensioning table

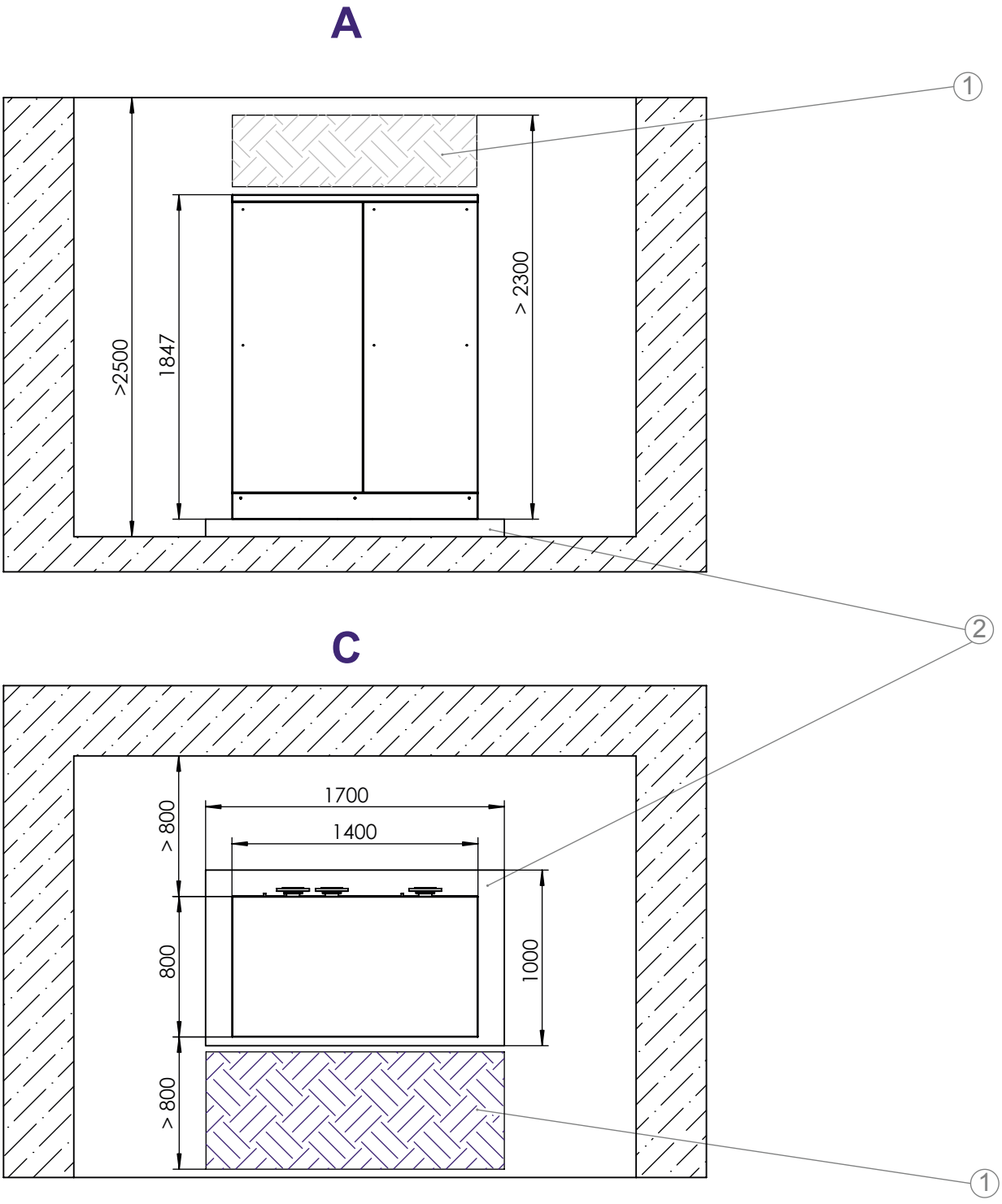
Type	H1	H2	H3	H4	H5	B1	B2	B3	B4	3	4	5	6
SWP 1100, 700H-1000H	1085	1182	1537	1541	1661	65	294	832	1043	DN50	DN65	DN65	DN50
SWP 1250	1092	1182	1537	1533	1661	65	300	832	1043	DN65	DN65	DN65	DN65



Legend: UK819163~e
All dimensions in mm.

A	Front view
B	Side view from left
E	Rear view

POS	Designation	Connections
1	Control panel	
2	Sleeves for electrical / sensor cables	
3	Hot water outlet (flow)	Flange 2 1/2” DIN 2566
4	Heat source inlet	Flange 2 1/2” DIN 2566
5	Heat source outlet	Flange 2 1/2” DIN 2566
6	Hot water inlet (return)	Flange 2 1/2” DIN 2566

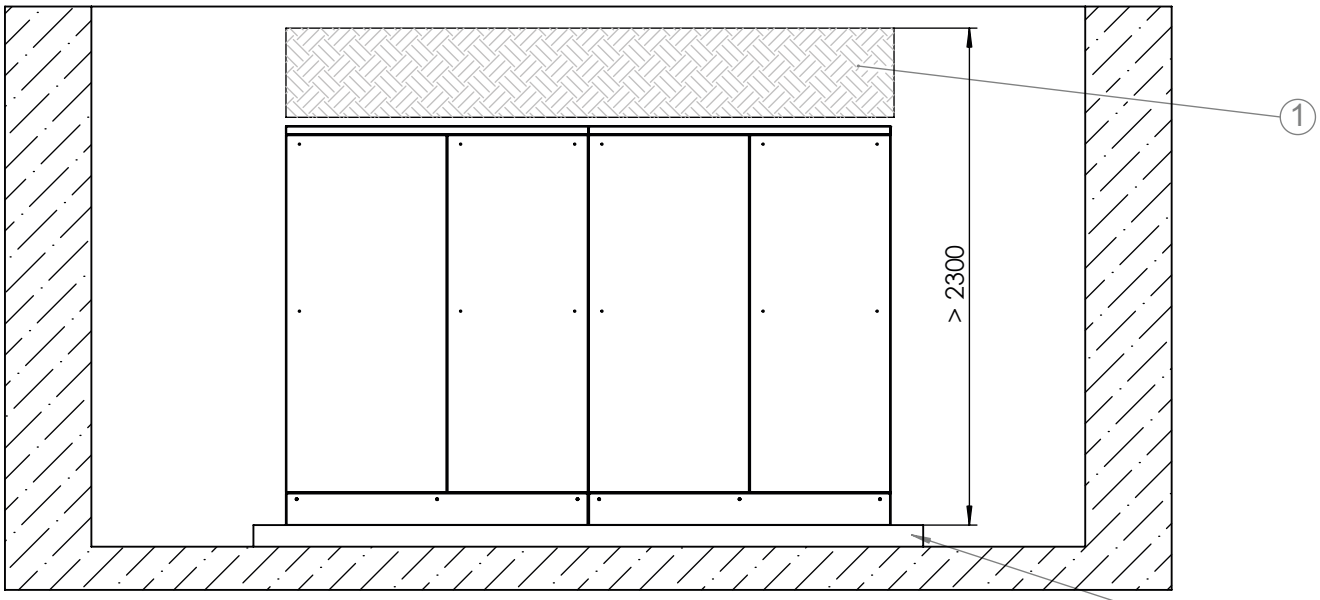


Legend: UK819166~b
All dimensions in mm.

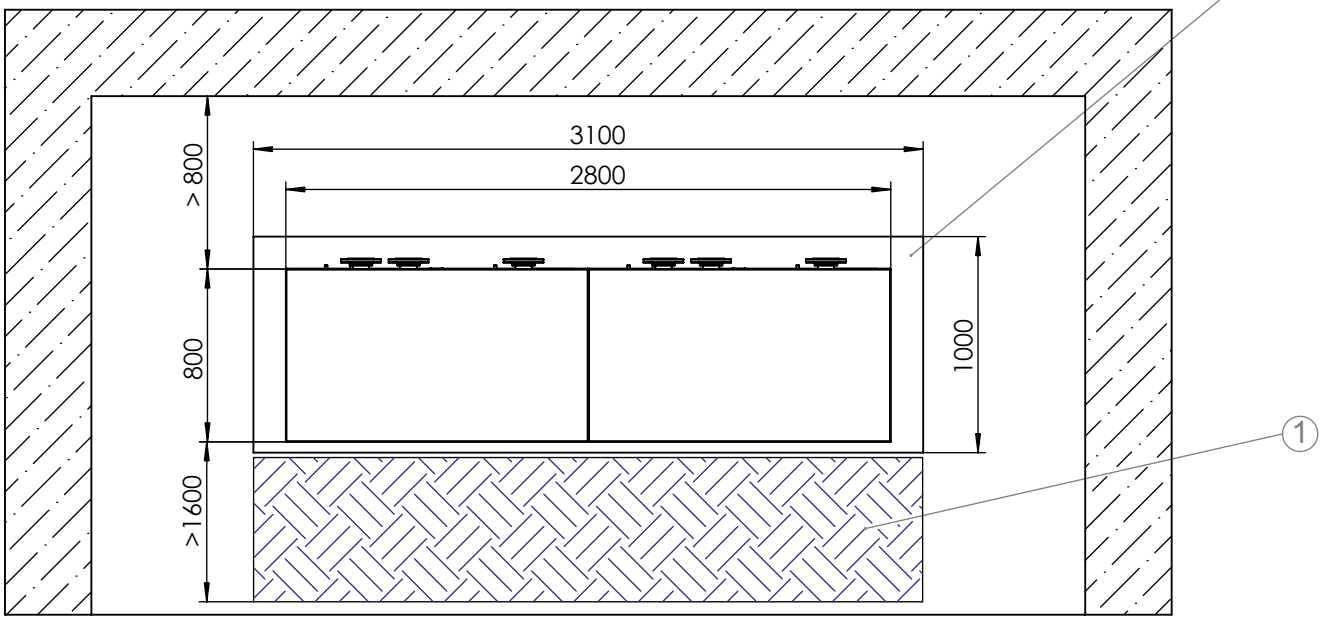
A	Front view
C	Top view

POS	Designation
1	Hatched area is free space for service purposes
2	Concrete foundation with sound insulation inlay

A



C

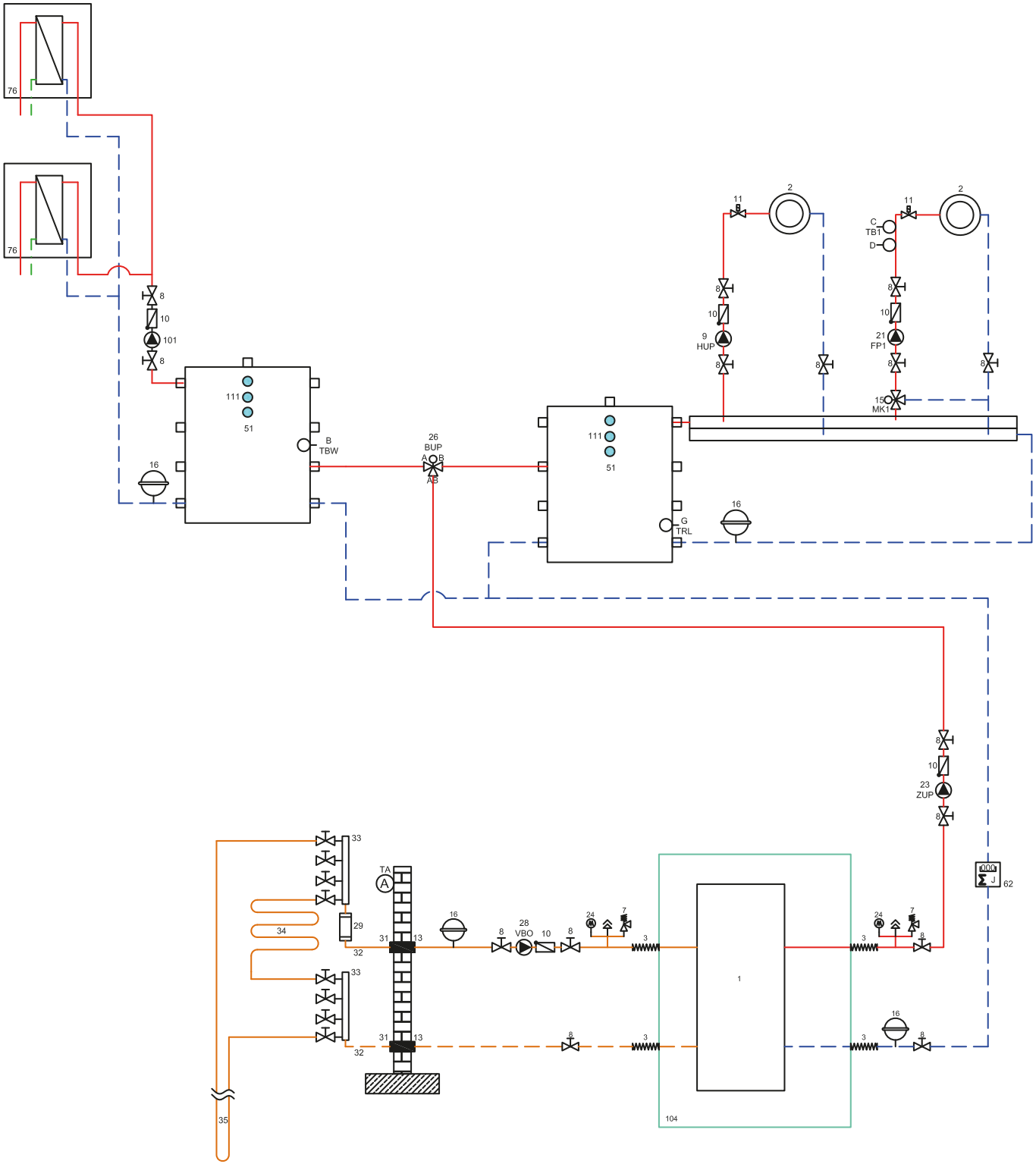


Legend: UK819135~c
All dimensions in mm.

A	Front view
C	Top view

POS	Designation
1	Hatched area is free space for service purposes
2	Concrete foundation with sound insulation inlay

SWP 1100 – 1600 / SWP 700H – 1000H Separate buffer tank



Legend hydraulic diagramm

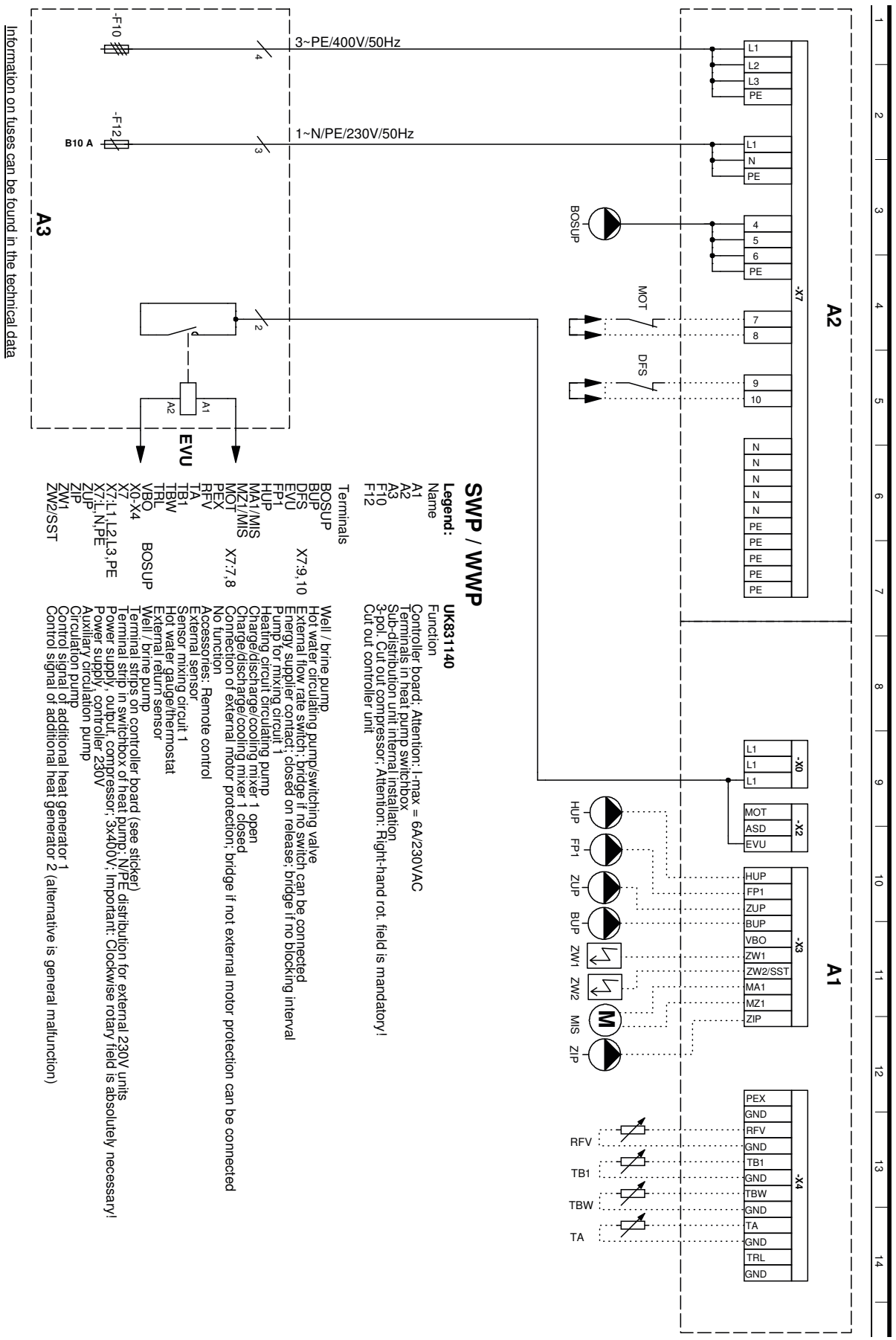
1	Heat pump
2	Underfloor heating / radiators
3	Vibration isolation
4	Sylomer strip machine underlay
5	Closure and drainage
6	Expansion vessel packing list
7	Safety valve
8	Closure
9	Heating circulation pump
10	Non return valve/ one way valve
11	Individual room regulation
12	Overflow valve
13	Steamtight 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:

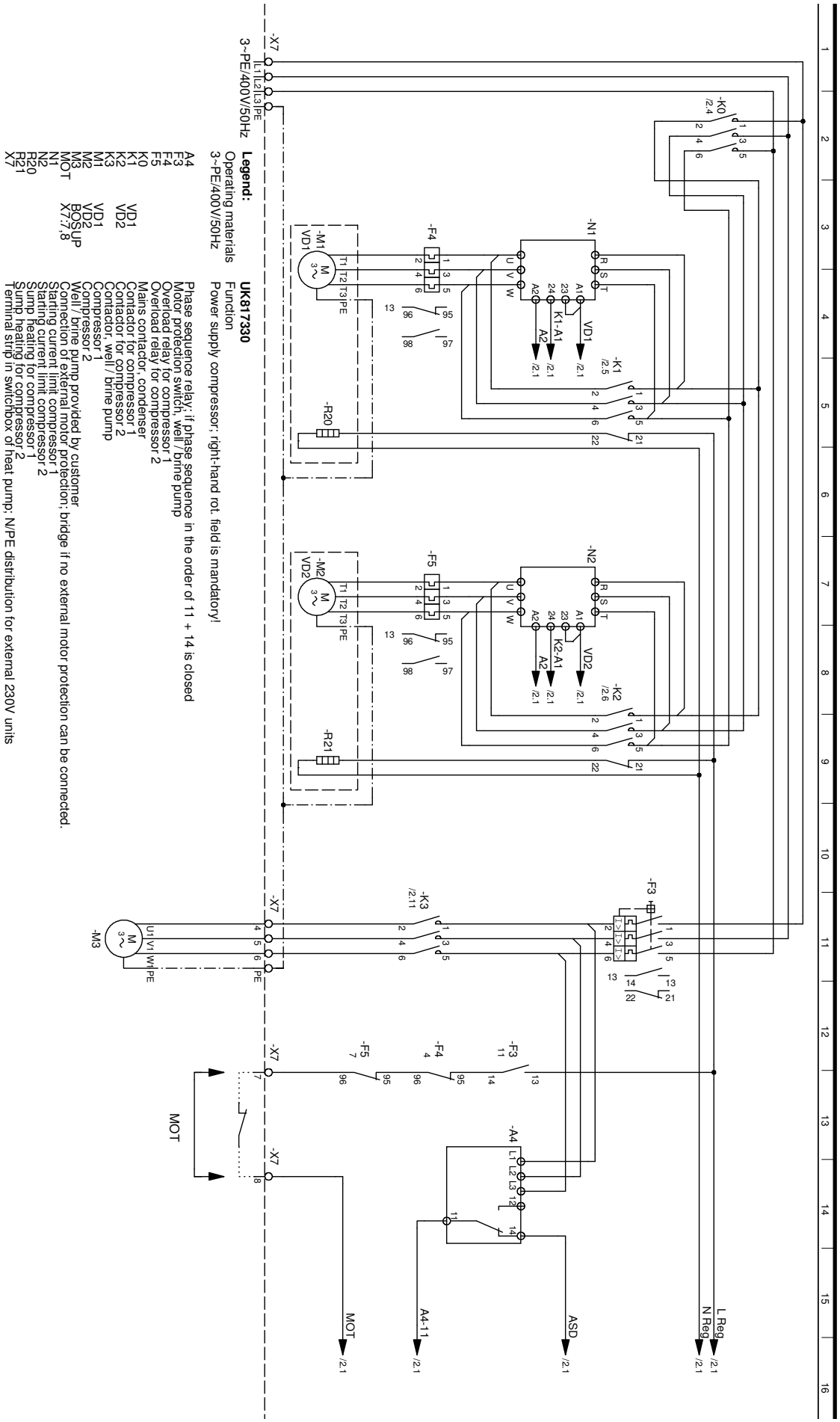
15	Mixer circuit three-way mixer (MK2-3 discharge)
17	Temperature difference regulator
19	Mixer circuit four-way mixer (MK2 charge)
21	Mixer circuit circulation pump (FP2-3)
22	Swimming pool circulating pump
44	Three-way mixer valve (cooling function MK2)
47	Changeover valve swimming bath preparation(B = 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!


3~PE/400V/50Hz
1~N/PE/230V/50Hz
B10 A
-F10
-F12
A3
A2
A1
EVU
BOSUP
MOT
DFS
HUP
FP1
ZUP
BUP
ZW1
ZW2
MIS
ZIP
RFV
TB1
TBW
TA
-X7
-X0
-X2
-X3
-X4
SWP / WWP
Legend:
UK831140
Name
Function
A1 Controller board; Attention: I-max = 6A/230VAC
A2 Terminals in heat pump switchbox
A3 Sub-distribution unit internal installation
F10 3-pol. Cut out compressor; Attention: Right-hand rot. field is mandatory!
F12 Cut out controller unit
Terminals
BOSUP Well / brine pump
BUP Hot water circulating pump/switching valve
DFS External flow rate switch; bridge if no switch can be connected
EVU Energy supplier contact; closed on release; bridge if no blocking interval
FP1 Pump for mixing circuit 1
HUP Heating circuit circulating pump
MA1/MIS Charge/discharge/cooling mixer 1 open
MZ1/MIS Charge/discharge/cooling mixer 1 closed
MOT Connection of external motor protection; bridge if not external motor protection can be connected
PEX No function
RFV Accessories: Remote control
TA External sensor
TB1 Sensor mixing circuit 1
TBW Hot water gauge/thermostat
TRL External return sensor
VBO Well / brine pump
X0-X4 Terminal strips on controller board (see sticker)
X7 Terminal strip in switchbox of heat pump; N/PE distribution for external 230V units
X7:L1,L2,L3,PE Power supply, output, compressor; 3x400V; Important: Clockwise rotary field is absolutely necessary!
X7:L,N,PE Power supply, controller 230V
ZUP Auxiliary circulation pump
ZIP Circulation pump
ZW1 Control signal of additional heat generator 1
ZW2/SST Control signal of additional heat generator 2 (alternative is general malfunction)
X7:7,8
X7:9,10
BOSUP
Information on fuses can be found in the technical data

Circuit Diagram 1/3 SWP 1100 – 1600 / SWP 700H – 1000H



Legend:

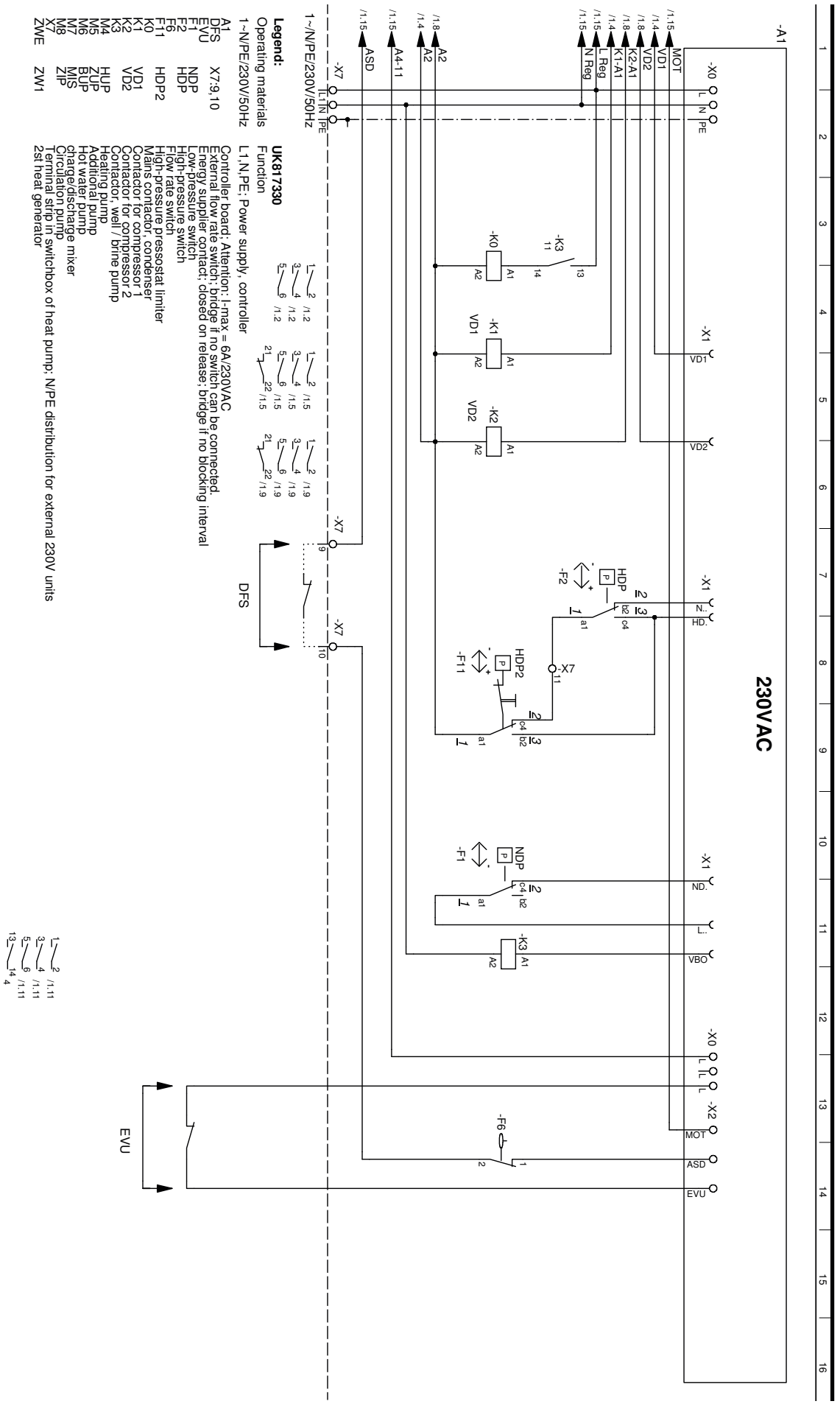
Operating materials
3~PE/400V/50Hz

UK617330

Function
Power supply compressor; right-hand rot. field is mandatory!

A4		Phase sequence relay; if phase sequence in the order of 11 + 14 is closed
F3		Motor protection switch, well / brine pump
F4		Overload relay for compressor 1
F5		Overload relay for compressor 2
K0		Mains contactor, condenser
K1	VD1	Contactor for compressor 1
K2	VD2	Contactor for compressor 2
K3		Contactor, well / brine pump
M1	VD1	Compressor 1
M2	VD2	Compressor 2
M3		Well / brine pump provided by customer
MOT	BOSUP	Connection of external motor protection; bridge if no external motor protection can be connected.
N1	X7:7,8	Starting current limit compressor 1
N2		Starting current limit compressor 2
R20		Sump heating for compressor 1
R21		Sump heating for compressor 2
X7		Terminal strip in switchbox of heat pump; N/PE distribution for external 230V units

SWP 1100 – 1600 / SWP 700H – 1000H Circuit Diagram 2/3

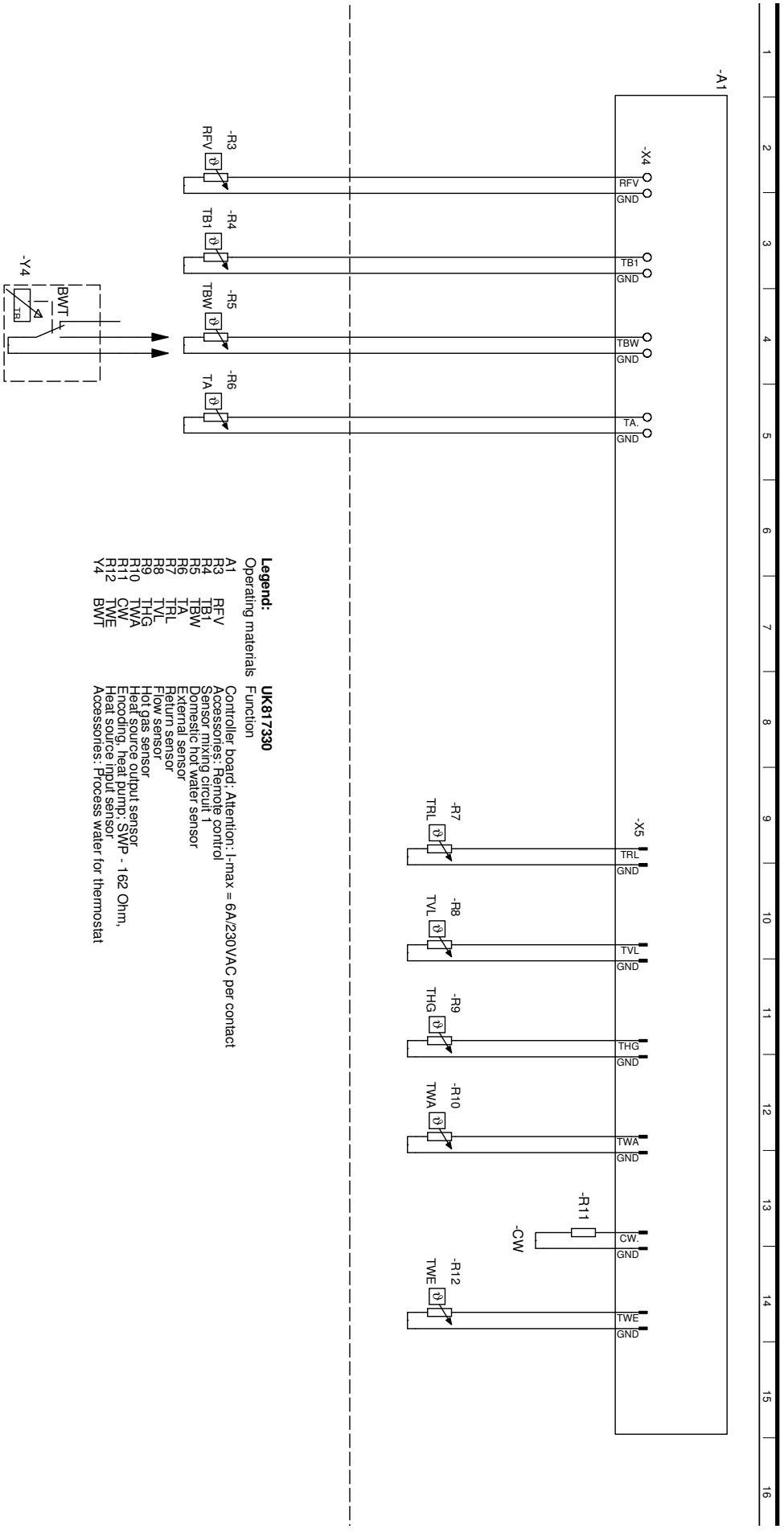


Legend:

Operating materials **UK817330**

1~N/PE/230V/50Hz	Function	
A1	L1,N,PE; Power supply; controller	
DFS	Controller board; Attention: I-max = 6A/230VAC	
EVU	External flow rate switch; bridge if no switch can be connected.	
F1	Energy supplier contact; closed on release; bridge if no blocking interval	
F2	Low-pressure switch	
F6	High-pressure switch	
F11	Flow rate switch	
K0	High-pressure pressostat limiter	
K1	Mains contactor condenser	
K2	Contactor for compressor 1	
K3	Contactor for compressor 2	
M4	Contactor, well / brine pump	
M5	Heating pump	
M6	Additional pump	
M7	Hot water pump	
M8	charge/discharge mixer	
X7	Circulation pump	
ZWE	Terminal strip in switchbox of heat pump; N/PE distribution for external 230V units	
ZW1	2st heat generator	

Circuit Diagram 3/3 SWP 1100 – 1600 / SWP 700H – 1000H



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

The undersigned
confirms that the following designated device(s) as designed and marketed by us fulfill the standardized EC directives, the EC safety standards and the product-specific EC standards.
In the event of modification of the device(s) without our approval, this declaration shall become invalid.

Designation of the device(s)

Heat Pump alpha innotec

Unit model	Number	Unit model	Number
SWP 430 *	100 488	SWP 270H *	100 489
SWP 540 *	100 361	SWP 330H *	100 365
SWP 670 *	100 362	SWP 410H *	100 366
SWP 820 *	100 363	SWP 500H *	100 367
SWP 1100 *	100 372	SWP 700H *	100 375
SWP 1250 *	100 373	SWP 850H *	100 376
SWP 1600 *	100 374	SWP 1000H *	100 377
WWP 550X *	100 490	WWP 900X *	100 370
WWP 700X *	100 369	WWP 1100X *	100 371

EC Directives

2006/42/EG	2009/125/EG
2006/95/EG	2010/30/EU
2004/108/EG	
*97/23/EG	
2011/65/EG	

Standardized EN

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

*** 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, 17.12.2015

Signature:

UK818125d

Jesper Stannow
Head of Heating Development

Model	SWP 1100
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	low
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit
Rated heat output	Prated	108	kW
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	Pdh	107,5	kW
Tj = +2°C	Pdh	107,5	kW
Tj = +7°C	Pdh	107,5	kW
Tj = +12°C	Pdh	107,5	kW
Tj = bivalent temperature	Pdh	107,5	kW
Tj = operation limit temperature	Pdh	107,5	kW
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	107,5	kW
	Tbiv	-10	°C
Cycling interval capacity for heating	Pcych		kW
Degradation co-efficient (**)	Cdh	1,0	-
Power consumption in modes other than active mode			
Off mode	POFF	0,010	kW
Thermostat-off mode	PTO	0,010	kW
Standby mode	PSB	0,010	kW
Crankcase heater mode	PCK	0	kW
Other items			
Capacity control		fixed	
sound power level, indoors/outdoors	LWA	77/-	dB
Emissions of nitrogen oxides	NOX	0	mg/kWh
For heat pump combination heater:			
Declared load profile		-	
Daily electricity consumption	Qelec	-	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	ηS	155,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	COPd	4,31	-
Tj = +2°C	COPd	4,57	-
Tj = +7°C	COPd	4,84	-
Tj = +12°C	COPd	5,14	-
Tj = bivalent temperature	COPd	4,26	-
Tj = operation limit temperature	COPd	4,26	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	4,26	-
For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval efficiency	COPcyc		-
Heating water operating limit temperature	WTOL	55	°C
Supplementary heater			
Rated heat output	Psup	0,0	kW
Type of energy input		electrical	
For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	20000	m³/h
Water heating energy efficiency	ηwh	-	%
Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 1100
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	medium
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	Prated	108	kW	**Seasonal space heating energy efficiency**	ηS	112,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj				**Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj**			
Tj = -7°C	Pdh	107,6	kW	Tj = -7°C	COPd	2,94	-
Tj = +2°C	Pdh	107,6	kW	Tj = +2°C	COPd	3,36	-
Tj = +7°C	Pdh	107,5	kW	Tj = +7°C	COPd	3,68	-
Tj = +12°C	Pdh	107,5	kW	Tj = +12°C	COPd	4,08	-
Tj = bivalent temperature	Pdh	107,6	kW	Tj = bivalent temperature	COPd	2,84	-
Tj = operation limit temperature	Pdh	107,6	kW	Tj = operation limit temperature	COPd	2,84	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	107,6	kW	For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	2,84	-
Bivalent temperature	Tbiv	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation co-efficient (**)	Cdh	1,0	-	Heating water operating limit temperature	WTOL	55	°C
Power consumption in modes other than active mode				**Supplementary heater**			
Off mode	POFF	0,010	kW	Rated heat output	Psup	0,0	kW
Thermostat-off mode	PTO	0,010	kW	Type of energy input		electrical	
Standby mode	PSB	0,010	kW				
Crankcase heater mode	PCK	0	kW				
Capacity control		fixed		For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
sound power level, indoors/outdoors	LWA	77/-	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	20000	m³/h
Emissions of nitrogen oxides	NOX	0	mg/kWh				
For heat pump combination heater:							
Declared load profile		-		Water heating energy efficiency	ηwh	-	%
Daily electricity consumption	Qelec	-	kWh	Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 1250
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	low
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit
Rated heat output	Prated	125	kW
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	Pdh	125,1	kW
Tj = +2°C	Pdh	125,1	kW
Tj = +7°C	Pdh	125,1	kW
Tj = +12°C	Pdh	125,1	kW
Tj = bivalent temperature	Pdh	125,1	kW
Tj = operation limit temperature	Pdh	125,1	kW
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	125,1	kW
	Tbiv	-10	°C
Cycling interval capacity for heating	Pcych		kW
Degradation co-efficient (**)	Cdh	1,0	-
Power consumption in modes other than active mode			
Off mode	POFF	0,010	kW
Thermostat-off mode	PTO	0,010	kW
Standby mode	PSB	0,010	kW
Crankcase heater mode	PCK	0	kW
Other items			
Capacity control		fixed	
sound power level, indoors/outdoors	LWA	79/-	dB
Emissions of nitrogen oxides	NOX	0	mg/kWh
For heat pump combination heater:			
Declared load profile		-	
Daily electricity consumption	Qelec	-	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	ηS	155,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	COPd	4,33	-
Tj = +2°C	COPd	4,58	-
Tj = +7°C	COPd	4,84	-
Tj = +12°C	COPd	5,12	-
Tj = bivalent temperature	COPd	4,28	-
Tj = operation limit temperature	COPd	4,28	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	4,28	-
For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval efficiency	COPcyc		-
Heating water operating limit temperature	WTOL	55	°C
Supplementary heater			
Rated heat output	Psup	0,0	kW
Type of energy input		electrical	
For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	22300	m³/h
Water heating energy efficiency	ηwh	-	%
Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 1250
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	medium
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	Prated	125	kW	**Seasonal space heating energy efficiency**	ηS	114,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj				**Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj**			
Tj = -7°C	Pdh	125,2	kW	Tj = -7°C	COPd	2,98	-
Tj = +2°C	Pdh	125,2	kW	Tj = +2°C	COPd	3,40	-
Tj = +7°C	Pdh	125,1	kW	Tj = +7°C	COPd	3,72	-
Tj = +12°C	Pdh	125,1	kW	Tj = +12°C	COPd	4,11	-
Tj = bivalent temperature	Pdh	125,2	kW	Tj = bivalent temperature	COPd	2,88	-
Tj = operation limit temperature	Pdh	125,2	kW	Tj = operation limit temperature	COPd	2,88	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	125,2	kW	For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	2,88	-
Bivalent temperature	Tbiv	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation co-efficient (**)	Cdh	1,0	-	Heating water operating limit temperature	WTOL	55	°C
Power consumption in modes other than active mode				**Supplementary heater**			
Off mode	POFF	0,010	kW	Rated heat output	Psup	0,0	kW
Thermostat-off mode	PTO	0,010	kW	Type of energy input		electrical	
Standby mode	PSB	0,010	kW				
Crankcase heater mode	PCK	0	kW				
Capacity control		fixed		For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
sound power level, indoors/outdoors	LWA	79/-	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	22300	m³/h
Emissions of nitrogen oxides	NOX	0	mg/kWh				
For heat pump combination heater:							
Declared load profile		-		Water heating energy efficiency	ηwh	-	%
Daily electricity consumption	Qelec	-	kWh	Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 1600
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	low
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	Prated	162	kW	**Seasonal space heating energy efficiency**	ηS	158,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj				**Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj**			
Tj = -7°C	Pdh	161,6	kW	Tj = -7°C	COPd	4,39	-
Tj = +2°C	Pdh	161,6	kW	Tj = +2°C	COPd	4,65	-
Tj = +7°C	Pdh	161,5	kW	Tj = +7°C	COPd	4,90	-
Tj = +12°C	Pdh	161,5	kW	Tj = +12°C	COPd	5,18	-
Tj = bivalent temperature	Pdh	161,6	kW	Tj = bivalent temperature	COPd	4,35	-
Tj = operation limit temperature	Pdh	161,6	kW	Tj = operation limit temperature	COPd	4,35	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	161,6	kW	For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	4,35	-
	Tbiv	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation co-efficient (**)	Cdh	1,0	-	Heating water operating limit temperature	WTOL	55	°C
Power consumption in modes other than active mode				**Supplementary heater**			
Off mode	POFF	0,010	kW	Rated heat output	Psup	0,0	kW
Thermostat-off mode	PTO	0,010	kW	Type of energy input	electrical		
Standby mode	PSB	0,010	kW				
Crankcase heater mode	PCK	0	kW				
Other items							
Capacity control	fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
sound power level, indoors/outdoors	LWA	81/-	dB				
Emissions of nitrogen oxides	NOX	0	mg/kWh	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	29100	m³/h
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	ηwh	-	%
Daily electricity consumption	Qelec	-	kWh	Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 1600
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	medium
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	Prated	162	kW	**Seasonal space heating energy efficiency**	ηS	116,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj				**Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj**			
Tj = -7°C	Pdh	161,8	kW	Tj = -7°C	COPd	3,05	-
Tj = +2°C	Pdh	161,7	kW	Tj = +2°C	COPd	3,47	-
Tj = +7°C	Pdh	161,7	kW	Tj = +7°C	COPd	3,79	-
Tj = +12°C	Pdh	161,6	kW	Tj = +12°C	COPd	4,18	-
Tj = bivalent temperature	Pdh	161,9	kW	Tj = bivalent temperature	COPd	2,95	-
Tj = operation limit temperature	Pdh	161,9	kW	Tj = operation limit temperature	COPd	2,95	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	161,9	kW	For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	2,95	-
Bivalent temperature	Tbiv	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation co-efficient (**)	Cdh	1,0	-	Heating water operating limit temperature	WTOL	55	°C
Power consumption in modes other than active mode				**Supplementary heater**			
Off mode	POFF	0,010	kW	Rated heat output	Psup	0,0	kW
Thermostat-off mode	PTO	0,010	kW	Type of energy input		electrical	
Standby mode	PSB	0,010	kW				
Crankcase heater mode	PCK	0	kW				
Capacity control		fixed		For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
sound power level, indoors/outdoors	LWA	81/-	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	29100	m³/h
Emissions of nitrogen oxides	NOX	0	mg/kWh				
For heat pump combination heater:							
Declared load profile		-		Water heating energy efficiency	ηwh	-	%
Daily electricity consumption	Qelec	-	kWh	Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 850H
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	low
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	Prated	88	kW	**Seasonal space heating energy efficiency**	ηS	154,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj				**Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj**			
Tj = -7°C	Pdh	88,0	kW	Tj = -7°C	COPd	4,32	-
Tj = +2°C	Pdh	88,3	kW	Tj = +2°C	COPd	4,56	-
Tj = +7°C	Pdh	88,5	kW	Tj = +7°C	COPd	4,79	-
Tj = +12°C	Pdh	88,7	kW	Tj = +12°C	COPd	5,05	-
Tj = bivalent temperature	Pdh	88,0	kW	Tj = bivalent temperature	COPd	4,28	-
Tj = operation limit temperature	Pdh	88,0	kW	Tj = operation limit temperature	COPd	4,28	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	88,0	kW	For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	4,28	-
	Tbiv	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation co-efficient (**)	Cdh	1,0	-	Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				**Supplementary heater**			
Off mode	POFF	0,010	kW	Rated heat output	Psup	0,0	kW
Thermostat-off mode	PTO	0,010	kW	Type of energy input	electrical		
Standby mode	PSB	0,010	kW				
Crankcase heater mode	PCK	0	kW				
Other items							
Capacity control	fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
sound power level, indoors/outdoors	LWA	79/-	dB				
Emissions of nitrogen oxides	NOX	0	mg/kWh	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	14800	m³/h
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	ηwh	-	%
Daily electricity consumption	Qelec	-	kWh	Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 850H
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	medium
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit
Rated heat output	Prated	86	kW
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	Pdh	86,1	kW
Tj = +2°C	Pdh	86,9	kW
Tj = +7°C	Pdh	87,3	kW
Tj = +12°C	Pdh	87,8	kW
Tj = bivalent temperature	Pdh	85,9	kW
Tj = operation limit temperature	Pdh	85,9	kW
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	85,9	kW
Bivalent temperature	Tbiv	-10	°C
Cycling interval capacity for heating	Pcych		kW
Degradation co-efficient (**)	Cdh	1,0	-
Power consumption in modes other than active mode			
Off mode	POFF	0,010	kW
Thermostat-off mode	PTO	0,010	kW
Standby mode	PSB	0,010	kW
Crankcase heater mode	PCK	0	kW
Capacity control		fixed	
sound power level, indoors/outdoors	LWA	79/-	dB
Emissions of nitrogen oxides	NOX	0	mg/kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	ηS	114,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	COPd	3,01	-
Tj = +2°C	COPd	3,42	-
Tj = +7°C	COPd	3,73	-
Tj = +12°C	COPd	4,10	-
Tj = bivalent temperature	COPd	2,91	-
Tj = operation limit temperature	COPd	2,91	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	2,91	-
For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval efficiency	COPcyc		-
Heating water operating limit temperature	WTOL	65	°C
Supplementary heater			
Rated heat output	Psup	0,0	kW
Type of energy input		electrical	
For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	14800	m³/h

For heat pump combination heater:			
Declared load profile		-	
Daily electricity consumption	Qelec	-	kWh

Water heating energy efficiency	ηwh	-	%
Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 1000H
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	low
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output	Prated	100	kW	**Seasonal space heating energy efficiency**	ηS	149,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj				**Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj**			
Tj = -7°C	Pdh	99,9	kW	Tj = -7°C	COPd	4,20	-
Tj = +2°C	Pdh	99,1	kW	Tj = +2°C	COPd	4,40	-
Tj = +7°C	Pdh	98,4	kW	Tj = +7°C	COPd	4,59	-
Tj = +12°C	Pdh	97,7	kW	Tj = +12°C	COPd	4,81	-
Tj = bivalent temperature	Pdh	100,0	kW	Tj = bivalent temperature	COPd	4,17	-
Tj = operation limit temperature	Pdh	100,0	kW	Tj = operation limit temperature	COPd	4,17	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	100,0	kW	For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	4,17	-
	Tbiv	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation co-efficient (**)	Cdh	1,0	-	Heating water operating limit temperature	WTOL	65	°C
Power consumption in modes other than active mode				**Supplementary heater**			
Off mode	POFF	0,010	kW	Rated heat output	Psup	0,0	kW
Thermostat-off mode	PTO	0,010	kW	Type of energy input	electrical		
Standby mode	PSB	0,010	kW				
Crankcase heater mode	PCK	0	kW				
Other items							
Capacity control	fixed			For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
sound power level, indoors/outdoors	LWA	83/-	dB				
Emissions of nitrogen oxides	NOX	0	mg/kWh	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	18000	m³/h
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	ηwh	-	%
Daily electricity consumption	Qelec	-	kWh	Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

Model	SWP 1000H
Air-to-water heat pump: (yes/no)	no
Brine-to-water heat pump: (yes/no)	yes
Water-to-water heat pump: (yes/no)	no
Low-temperature heat pump: (yes/no)	no
Equipped with supplementary heater: (yes/no)	no
combination heater with: (yes/no)	no
application: (low/medium)	medium
climate: (colder/average/warmer)	average

Item	Symbol	Value	Unit
Rated heat output	Prated	107	kW
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	Pdh	106,0	kW
Tj = +2°C	Pdh	103,5	kW
Tj = +7°C	Pdh	102,0	kW
Tj = +12°C	Pdh	100,4	kW
Tj = bivalent temperature	Pdh	106,7	kW
Tj = operation limit temperature	Pdh	106,7	kW
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	Pdh	106,7	kW
Bivalent temperature	Tbiv	-10	°C
Cycling interval capacity for heating	Pcych		kW
Degradation co-efficient (**)	Cdh	1,0	-
Power consumption in modes other than active mode			
Off mode	POFF	0,010	kW
Thermostat-off mode	PTO	0,010	kW
Standby mode	PSB	0,010	kW
Crankcase heater mode	PCK	0	kW
Capacity control		fixed	
sound power level, indoors/outdoors	LWA	83/-	dB
Emissions of nitrogen oxides	NOX	0	mg/kWh
For heat pump combination heater:			
Declared load profile		-	
Daily electricity consumption	Qelec	-	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	ηS	118,0	%
Declared coefficient of performance for part load at indoor temperature 20°C and outdoor temperature Tj			
Tj = -7°C	COPd	3,16	-
Tj = +2°C	COPd	3,50	-
Tj = +7°C	COPd	3,76	-
Tj = +12°C	COPd	4,07	-
Tj = bivalent temperature	COPd	3,08	-
Tj = operation limit temperature	COPd	3,08	-
For air-to-water heat pumps: Tj = +15°C (if TOL < -20°C)	COPd	3,08	-
For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval efficiency	COPcyc		-
Heating water operating limit temperature	WTOL	65	°C
Supplementary heater			
Rated heat output	Psup	0,0	kW
Type of energy input		electrical	
For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	18000	m³/h
Water heating energy efficiency	ηwh	-	%
Daily fuel consumption	Qfuel	0	kWh

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(*) For heat pump space heaters and heat pump combination heaters, the rated heat output Prated is equal to the design load for heating Pdesignh, and the rated heat output of a supplementary heater Psup is equal to the supplementary capacity for heating sup(Tj).

(**) If Cdh is not determined by measurement then the default degradation coefficient is Cdh = 0,9.

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