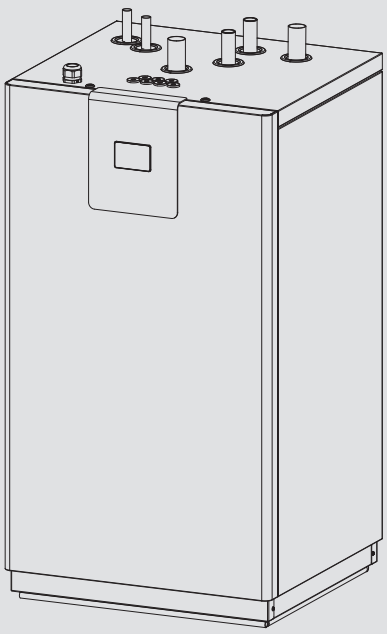
OPERATION AND INSTALLATION

Ground source heat pump

» WPE-I 33 H 400 Premium
» WPE-I 44 H 400 Premium
» WPE-I 59 H 400 Premium
» WPE-I 87 H 400 Premium



STIEBEL ELTRON

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GUARANTEE

ENVIRONMENT AND RECYCLING

SPECIAL INFORMATION

- The appliance may be used by children over 8 years of age and persons with reduced physical, sensory or mental capabilities or a lack of experience and expertise, provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the potential risks. Children must never play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision.
- The connection to the power supply must be in the form of a permanent connection. Ensure the appliance can be separated from the power supply by an isolator that disconnects all poles with at least 3 mm contact separation.
- Maintain the minimum clearances to ensure trouble-free operation of the appliance and facilitate maintenance work.
- In dual mode operation, return water from the second heat generator may flow through the heat pump. Please note that the return water temperature may be a maximum of 65 °C.
- The appliance can be used for active and passive cooling. This however, is only possible in conjunction with a suitable hydraulic circuit.
- Only qualified contractors may perform maintenance work, such as electrical safety checks.
- We recommend a regular inspection (to establish the current condition of the system), and maintenance by a qualified contractor if required (to return the system to its intended condition).
- Following isolation from the mains supply, parts of the appliance may remain live. This is because the condensers on the inverter still have to discharge. When the condensers have discharged, the LEDs on the inverter stop flashing.
- Do not perform a hard reset of the appliance by unscrewing the fuse. This may damage the appliance.
- Never interrupt the power supply, even outside the heating season. The system's active frost protection is not guaranteed if the power supply is interrupted.
- There is no need to shut the system down in summer. The programming unit has an automatic summer/winter changeover.

OPERATION

1. General information

The chapters "Special information" and "Operation" are intended for appliance users and qualified contractors.

The chapter "Installation" is intended for qualified contractors.

Note
Read these instructions carefully before using the appliance and retain them for future reference.
Pass on these instructions to a new user if required.

1.1 Relevant documents

- Operating instructions for the programming unit
- Commissioning instructions for the programming unit
- Operating and installation instructions for system components

1.2 Safety instructions

1.2.1 Structure of safety instructions

KEYWORD Type of risk
Here, possible consequences are listed that may result from failure to observe the safety instructions.
▶ Steps to prevent the risk are listed.

1.2.2 Symbols, type of risk

Symbol	Type of risk
	Injury
	Electrocution

1.2.3 Keywords

KEYWORD	Meaning
DANGER	Failure to observe this information will result in serious injury or death.
WARNING	Failure to observe this information may result in serious injury or death.
CAUTION	Failure to observe this information may result in non-serious or minor injury.

1.3 Other symbols in this documentation

Note
General information is identified by the adjacent symbol.
▶ Read these texts carefully.

Symbol	Meaning
	Material losses (appliance damage, consequential losses and environmental pollution)
	Appliance disposal

▶ This symbol indicates that you have to do something. The action you need to take is described step by step.

1.4 Units of measurement

Note
All measurements are given in mm unless stated otherwise.

1.5 Standardised output data

Information on determining and interpreting the specified standardised output data

1.5.1 Standard: EN 14511, EN 14825

The output data specifically mentioned in text, diagrams and technical datasheets has been calculated according to the test conditions of the standard shown in the heading of this section.

Generally, these standardised test conditions will not fully meet the conditions found at the installation site of the system user.

Depending on the chosen test method and the extent to which this method deviates from the conditions defined in the norm shown in the heading of this section, any deviations can have a considerable impact.

Additional factors that have an influence on the test values are the measuring equipment, the system configuration, the age of the system and the flow rates.

A confirmation of the specified output data can only be obtained if the test conducted for this purpose is also performed in accordance with the conditions defined in the norm shown in the heading of this section.

2. Safety

2.1 Intended use

The appliance is designed for:

- Heating rooms
- Cooling rooms
- Heating of DHW

Observe the operating limits listed in chapter "Specification".

The appliance is intended for domestic use. It can be used safely by untrained persons. The appliance can also be used in non-domestic environments, e.g. in small businesses, as long as it is used in the same way.

Any other use beyond that described shall be deemed inappropriate. Observation of these instructions and of instructions for any accessories used is also part of the correct use of this appliance.

2.2 Safety instructions

- Only recognised, qualified contractors may carry out the electrical work and installation of the heating circuit.
- Work on the refrigerant circuit must only be carried out by a recognised and qualified refrigeration engineer or by our customer service engineer.
- The qualified contractor is responsible for adherence to all applicable regulations during installation and commissioning.
- The appliance should only be operated once it is fully installed and all safety equipment has been fitted.
- Protect the appliance from dust and dirt during building work.
- Have the high pressure switch checked annually by a qualified contractor.

WARNING Injury
The appliance may be used by children over 8 years of age and persons with reduced physical, sensory or mental capabilities or a lack of experience and expertise, provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the potential risks. Children must never play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision.

WARNING Injury
▶ For safety reasons, only operate the appliance with the casing closed.

WARNING Injury
The system contains refrigerant. Refrigerant is heavier than air. If refrigerant escapes from the appliance, it sinks and displaces the air. There is risk of suffocation.
▶ Install the appliance only in rooms with adequate ventilation.

WARNING Injury
In conjunction with naked flames, refrigerant forms a toxic irritant gas. The gas can already be smelt at concentrations well below the permissible limit values.
▶ Leave the room until it has been adequately ventilated.

2.3 Test symbols

See type plate on the appliance.

3. Appliance description

The appliance is a heating heat pump suitable for use as a ground source heat pump. The heat pump extracts energy from the heat source medium at a low temperature level. This extracted energy is then transferred to the heating water at a higher level, augmented by the electric energy drawn by the compressor. Subject to the heat source temperature, heating water can be heated up to a flow temperature of 65 °C.

If a DHW cylinder is integrated in the system, the appliance can be used to heat DHW. To heat the DHW, the heating water that has been heated by the heat pump is directed through an indirect coil in the DHW cylinder, where it transfers its energy to the DHW.

An electric threaded immersion heater can be installed in the buffer and DHW cylinder for use as a booster heater (see chapter "Installation / Appliance description / Accessories / Additional accessories"). An external, second heat generator can also be integrated in the system as a booster heater.

The optional Internet Service Gateway ISG accessory allows the system to be monitored via the internet.

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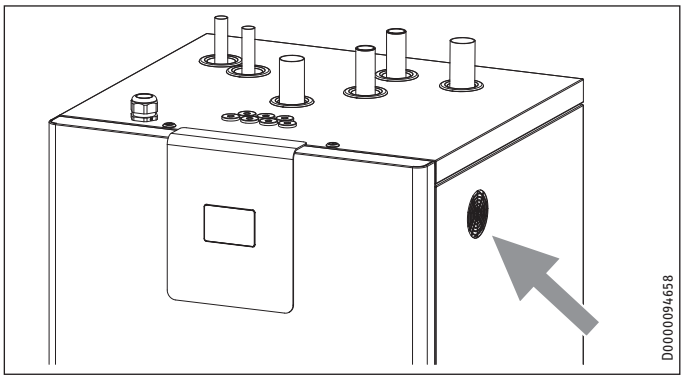
A fan is installed at the top right-hand side of the appliance. The fan is responsible for inverter cooling.



4. Operation

The heat pump is exclusively controlled via the programming unit. Observe the instructions for the programming unit.

5. Maintenance and care

Material losses
Only qualified contractors may perform maintenance work, such as electrical safety checks.

A damp cloth is sufficient for cleaning all plastic and sheet metal parts. Never use abrasive or corrosive cleaning agents.

We recommend a regular inspection (to establish the current condition of the system), and maintenance by a qualified contractor if required (to return the system to its intended condition).

6. Troubleshooting

Fault	Cause	Remedy
There is no hot water or the heating system remains cold.	The fuse/MCB has blown/ responded.	Check the fuses / MCBs in your fuse box / distribution board.

6.1 Other problems

If you cannot remedy the fault, contact your qualified contractor. To facilitate and speed up your request, provide the number from the type plate. The type plate is located at the top left on the appliance cover.

INSTALLATION

7. Safety

Only a qualified contractor should carry out installation, commissioning, maintenance and repair of the appliance.

7.1 General safety instructions

We guarantee trouble-free function and operational reliability only if original accessories and spare parts intended for the appliance are used.

7.2 Instructions, standards and regulations

Note
Observe all applicable national and regional regulations and instructions.

The appliance must be installed in a suitable room by a qualified contractor in line with EN 60335-2-40. The installation room must meet the requirements of EN 378-3, sections 5.1-5.14.

The tested appliance conforms to IEC 61000-3-12.

8. Appliance description

If the heat demand of the heating system exceeds the heating output of the heat pump, the booster heater covers the residual heat demand.

If the hot gas function is used, the heat pump can be used to achieve DHW temperatures over 60 °C when heating without a booster heater. The compressed refrigerant transfers the energy absorbed by the compressor to the DHW in a hot gas heat exchanger. The refrigerant then flows into a second heat exchanger in which the energy is transferred to the heating water.

The heat pump is not suitable for dry heating the screed.

8.1 Standard delivery

The following are delivered with the appliance:

- Outside sensor
- Immersion / contact sensor
- Snap-on ferrite bead

8.2 Accessories

- Extension module EM 33-87
- Extension module in wall mounted enclosure EMW 33-87
- Hot gas set HG Set 33-87
- Remote control FE 33-87
- Instantaneous water cylinder SBS 601-1501 W (SOL)
- Threaded immersion heater BGC 2/60
- Flow switch (source side) FS-HP
- Room temperature sensor (for cooling) FEW
- Buffer cylinder (for cooling)

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- Pressure hose SD 32-0.6 G
- Pressure hose SDB 40-0.8 G

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- Pressure hose SD 40-0.8 G
- Pressure hose SDB 50-0.8 G

9. Preparation

Note
The appliance is designed for indoor installation, except in damp areas.

9.1 Sound emissions

Note
For details regarding the sound power level, see the chapter "Specification / Data table".

- Never site the appliance on joist floors.
- ▶ Ensure that the entire appliance frame is in full contact with the substrate. Uneven substrates can increase sound emissions.
- ▶ Never install the appliance directly below or next to a living room or bedroom.
- ▶ Avoid installation on large, echoing floor areas, e.g. tiled floors.
- ▶ Avoid installation between reflective building walls. Reflecting building walls can increase the noise level.
- ▶ Never install the appliance in the corner of the installation room.
- ▶ Implement pipe outlets through walls and ceilings with anti-vibration insulation.
- ▶ Use flexible supply lines.
- ▶ Secure the supply lines with structure-borne noise attenuation on noise-sensitive walls.
- ▶ Ensure that the appliance feet are aligned.

9.2 Minimum clearances

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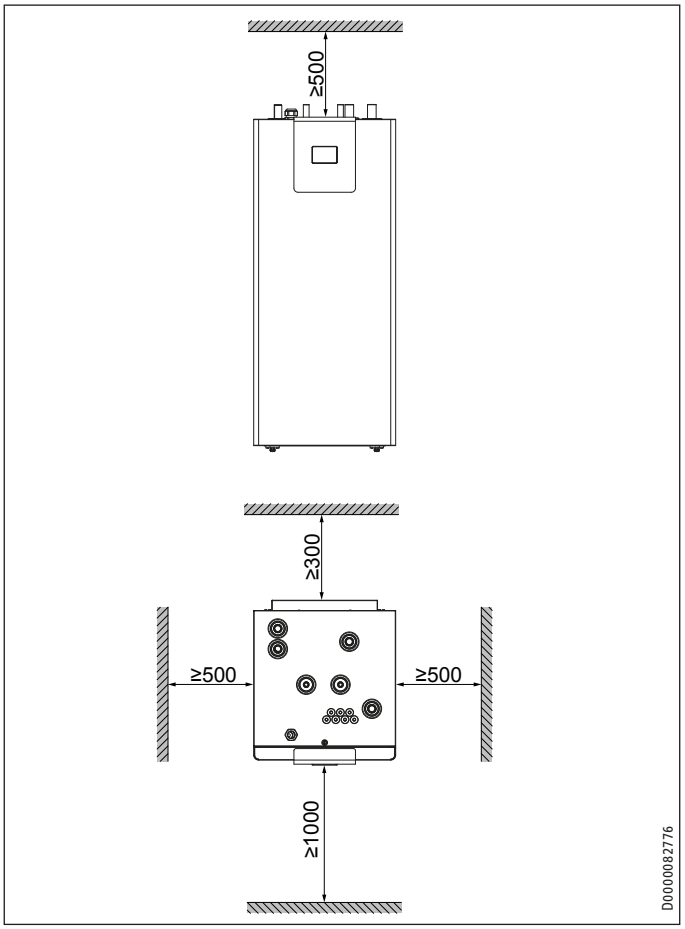
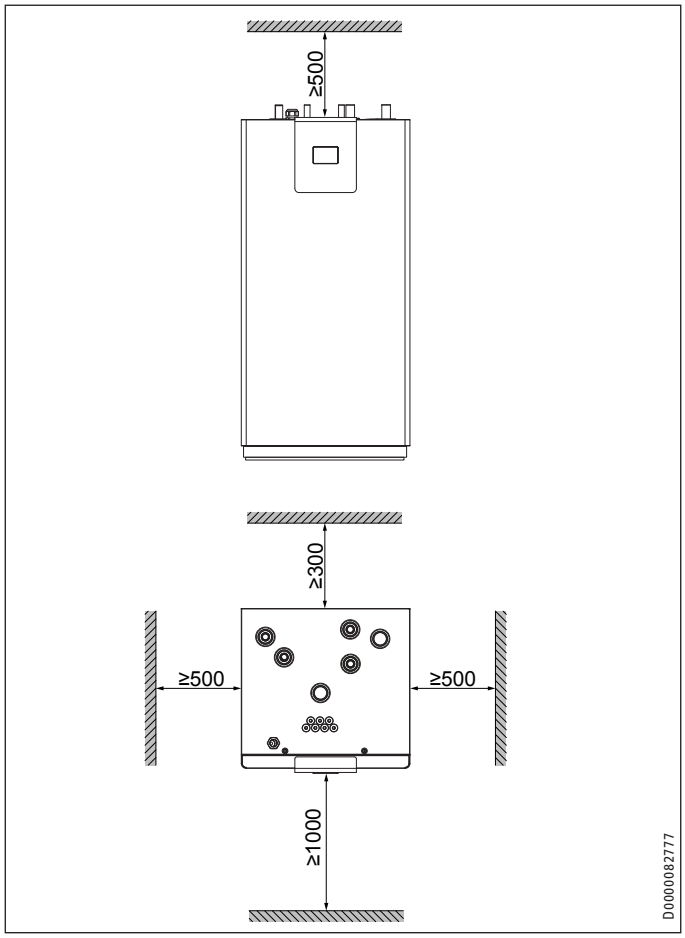


▶ Maintain the minimum clearances to ensure trouble-free operation of the appliance and facilitate maintenance work.

WPE-I 59 H 400 Premium | WPE-I 87 H 400 Premium



▶ Maintain the minimum clearances to ensure trouble-free operation of the appliance and facilitate maintenance work.

9.3 Preparation of the installation site

▶ Observe chapter "Sound emissions".

The room where the appliance is installed must meet the following conditions:

- No risk from frost.
- The room must not be subject to a risk of explosions arising from dust, gases or vapours.
- When installing the appliance in a boiler room together with other heating equipment, ensure that the operation of other heating equipment will not be impaired.
- Load bearing floor (for the weight of the appliance, see chapter "Specification / Data table").

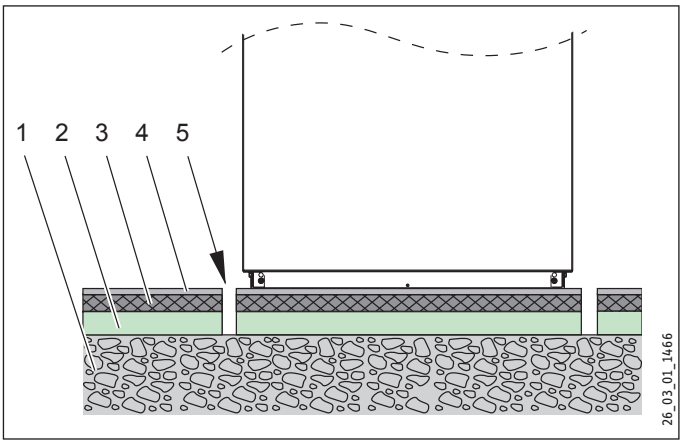
▶ Install the appliance, ideally on an external wall.

▶ Ensure that the substrate is level, even, solid and permanent.

▶ Install the appliance on a concrete floor with a thickness of at least 100 mm or on another base with corresponding characteristics.

▶ For installation on floating screeds, make provisions for quiet heat pump operation.

▶ Isolate the installation surface around the heat pump by means of a recess. After completing the installation, seal the recess with a waterproof, sound insulating material, such as silicone.



1 Concrete base
2 Impact sound insulation
3 Floating screed
4 Floor covering
5 Recess

9.4 Wall outlet

9.4.1 General

▶ Always ensure there is enough space for the other supply lines in the wall outlets (see chapter "Specification / Dimensions and connections").

▶ Route the brine lines through separate wall outlets.

▶ Provide thermal insulation on the brine lines in accordance with applicable regulations.

9.4.2 Wall outlets above ground

▶ Establish wall outlets in the building wall with a slight fall to the outside (minimum inclination: 1 cm every 30 cm).

▶ Insert the wall outlets with a slight fall.

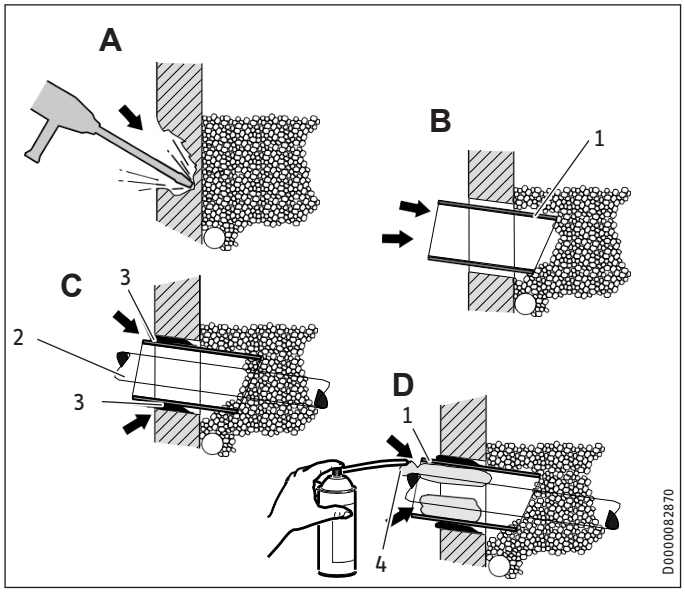
▶ Seal the space between the wall and wall outlet with mortar.

▶ Route the brine lines through the wall outlets.

▶ Seal the space between the brine line and wall outlet with a suitable sealant (e.g. well foam). Ensure the brine lines are centred in the wall outlets.

9.4.3 Wall outlets below ground

Material losses
▶ Use waterproof wall outlets below the highest groundwater level.



1 Wall outlet
2 Brine line
3 Mortar
4 Sealant

▶ Establish wall outlets in the building wall with a slight fall to the outside (minimum inclination: 1 cm every 30 cm).
▶ Insert the wall outlets with a slight fall.
▶ Cut off the wall outlet from the top downwards at an angle to the building wall.
▶ Seal the space between the wall and wall outlet with mortar.
▶ Route the brine lines through the wall outlets.
▶ Seal the space between the brine line and wall outlet with a suitable sealant (e.g. well foam). Ensure the brine lines are centred in the wall outlets.

9.5 Preparing the electrical installation

WARNING Electrocution
Carry out all electrical connection and installation work in accordance with national and regional regulations.

WARNING Electrocution
The connection to the power supply must be in the form of a permanent connection. Ensure the appliance can be separated from the power supply by an isolator that disconnects all poles with at least 3 mm contact separation. This requirement can be met by using contactors, circuit breakers, fuses/MCBs, etc.

Note
The specified voltage must match the mains power supply. Observe the type plate.

▶ Use cables with the relevant cross-sections. Observe the applicable national and regional regulations.

Electrical data is provided in chapter "Specification / Data table".

Note
The appliance includes an inverter for the variable speed compressor. In the event of a fault, inverters can cause DC residual currents. If RCDs are provided, they must be type B AC/DC-sensitive.
A DC residual current can block type A RCDs.
▶ Ensure that the appliance power supply is disconnected from the distribution board.

10. Installation

10.1 Transport

Note
The WPE-I 59 and WPE-I 87 are designed for transport with a forklift truck or similar.
▶ Secure the appliance during transport to prevent it from falling off.

▶ Transport the appliance in its packaging in an upright position to protect it against damage.
▶ Protect the appliance against heavy impact during transport.
- If the appliance needs to be tilted during transport, this must only be for a short time and it must only be tilted on one of its longitudinal sides.
  The longer the appliance is tilted, the greater the distribution of refrigerant oil inside the system.
- Storage and transport at temperatures below - 20 °C and above + 50 °C are not permissible.

10.2 Siting

▶ Remove the packaging material.
▶ Lift the appliance off the pallet with a forklift truck.
▶ Position the appliance on the prepared substrate.
▶ Maintain the minimum clearances.
▶ Level the appliance horizontally by adjusting the feet.

10.3 Removing the casing parts

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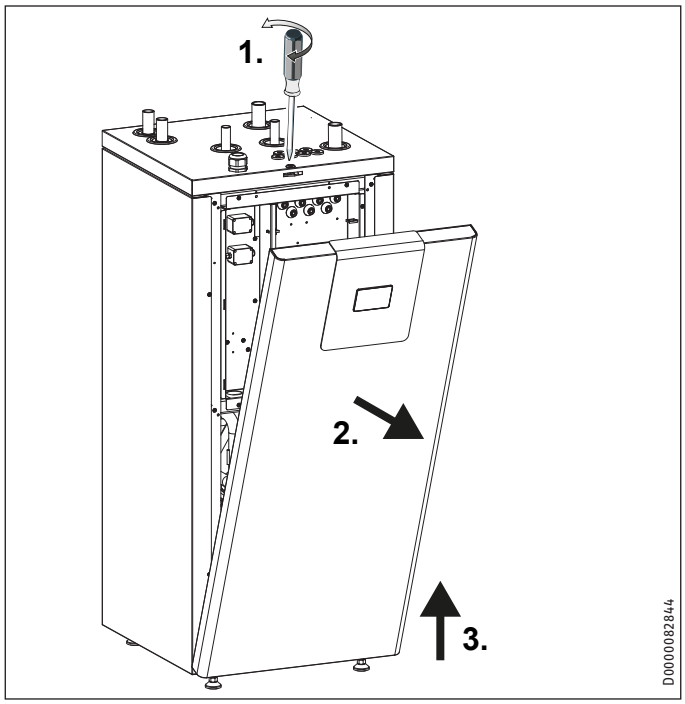
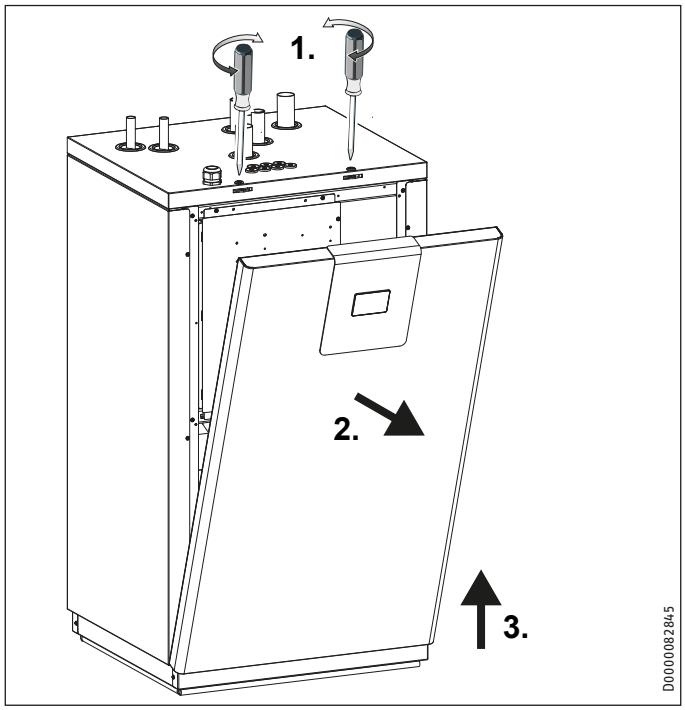


- ▶ Undo the closure on the top cover.
- ▶ Pull the top of the front panel forwards.
- ▶ Remove the front panel by lifting it upwards.

WPE-I 59 H 400 Premium | WPE-I 87 H 400 Premium



- ▶ Undo the two closures on the top cover.
- ▶ Pull the top of the front panel forwards.
- ▶ Remove the front panel by lifting it upwards.

10.4 Installing the heat source system

Note
Engineer the heat source system for the appliance according to the technical guides.

Note
The output data specified in the data table (see "Specification / Data table") refer to ethylene glycol. These details will vary as a result of different viscosity and thermal conductivity properties.

Permitted brine:

		Part number
MEG 10	Heat transfer medium as concentrate on an ethylene glycol base	231109
MEG 30	Heat transfer medium as concentrate on an ethylene glycol base	161696
PG 10	Heat transfer medium as concentrate on a polypropylene glycol base	236307
PG 30	Heat transfer medium as concentrate on a polypropylene glycol base	236306

10.4.1 Connection

- ▶ Thoroughly flush the pipework with brine before connecting the heat pump to the heat source circuit. Foreign bodies, such as rust, sand and sealant, can impair the operational reliability of the heat pump.
- ▶ Place a filter (maximum mesh size 0.7 mm) in the heat source flow.
- ▶ Install the heat source flow and heat source return with all the necessary components.
- ▶ Insulate the heat source flow and heat source return against vapour diffusion to prevent the formation of condensate.
- ▶ Size the diaphragm expansion vessel according to the manufacturer's instructions. The maximum operating pressure of the heat source is 6 bar.
- ▶ Check for leaks.

10.5 Flow and return connection

10.5.1 Heating water quality

Carry out a fill water analysis before filling the system. This may, for example, be requested from the relevant water supply utility.

Material losses
To avoid damage as a result of scaling, it may be necessary to soften or desalinate the fill water. Always observe the fill water limits specified in the "Specification / Data table" chapter.
- ▶ Recheck these limits 8-12 weeks after commissioning and as part of the annual system maintenance.

Note
With a conductivity > 1000 µS/cm, desalination treatment is recommended in order to avoid corrosion.

Note
Suitable appliances for water softening and desalinating, as well as for charging and flushing heating systems, can be obtained via trade suppliers.

Note
If you treat the fill water with inhibitors or additives, the same limits apply as for desalination.

▶ Avoid chemical and oil contamination.

10.5.2 Heating water connection

Material losses
Ensure the supply lines are not under tension, in order to avoid leaks.

The heating system to which the heat pump is connected must be installed by a qualified contractor in accordance with the water installation diagrams that are part of the technical guides.

▶ Thoroughly flush the pipework before connecting the heat pump. Foreign bodies, such as rust, sand and sealant, can impair the operational reliability of the heat pump.
▶ Construct the heating flow and return from a heat-resistant and corrosion-resistant material (e.g. copper).
▶ Install a dirt trap (maximum mesh size 0.7 mm) in the heating return in the immediate vicinity of the appliance.
▶ Connect the heating system to the "heating flow" and "heating return" connections. Check for leaks.
▶ Ensure that the heating flow and return are connected correctly.
▶ Install air vent valves at the required positions.
▶ Install the heating circuit pump in the heating flow.
▶ Install a fill connector with a non-return valve.
▶ When sizing the heating circuit, observe the maximum available external pressure differential (see chapter "Specification / Data table").
▶ Provide thermal insulation in accordance with applicable regulations.

10.5.3 Safety valve

▶ In heating systems with a sealed unvented diaphragm expansion vessel, install a pressure gauge and a safety valve (min. 20 DN) with a maximum opening pressure of 6 bar.
▶ Ensure the connection pipe of the diaphragm expansion vessel has a steady fall to the safety valve.
▶ Install the safety valve drain with a constant fall to the discharge outlet. When installing the drain, never kink the drain hose.
▶ Ensure that the safety valve drain is open to the outside and free from the risk of frost.
▶ Size the discharge outlet so that water can drain off unimpeded when the safety valve is fully opened.

10.6 Oxygen diffusion

Material losses
Do not use open vented heating systems. Use oxygen diffusion-proof pipes in underfloor heating systems with plastic pipework.

In underfloor heating systems with plastic pipes that are permeable to oxygen and in open vented heating systems, oxygen diffusion may lead to corrosion on the steel components of the heating system (e.g. on the indirect coil of the DHW cylinder, on buffer cylinders, steel radiators or steel pipes).

▶ With heating systems that are permeable to oxygen, separate the heating system between the heating circuit and the buffer cylinder.

Material losses
The products of corrosion (e.g. rusty sludge) can settle in the heating system components, which may result in a lower output or fault shutdowns due to reduced cross-sections.

10.7 Filling the heating system

Material losses
Never switch on the power before filling the system.

10.7.1 Checks before filling

- Have the pipe connections been carried out according to the water installation plans contained in the technical guides?
- Has the dirt trap been installed in the heating return?
- Has a diaphragm expansion vessel been installed?
- In heating systems with a sealed unvented diaphragm expansion vessel, have a safety valve and a pressure gauge been installed?
- Has a fill connector with a non-return valve been installed?

10.7.2 Filling the heating system

Material losses
The pressure in the heating system must not exceed 6 bar.
▶ Vent the heating system carefully.

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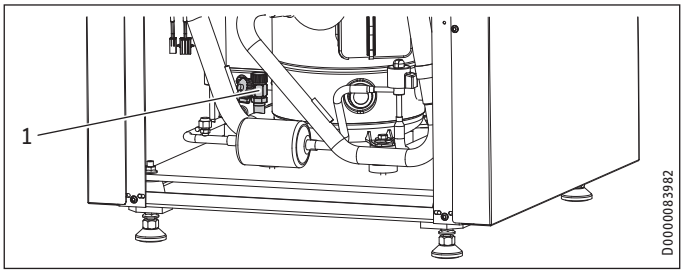
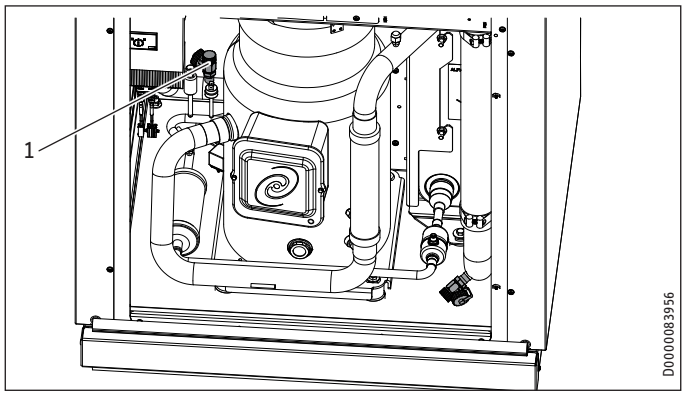


1 Drain

▶ Fill the heating system via the drain.
▶ Fully open all radiator valves.

- ▶ Bleed all the radiators.
- ▶ Fill the heating system via the drain.
- ▶ Repeat this process until there is no more air left in the heating system.
- ▶ Check the heating system for leaks.

WPE-I 59 H 400 Premium | WPE-I 87 H 400 Premium



1 Drain

- ▶ Fill the heating system via the drain.
- ▶ Fully open all radiator valves.
- ▶ Bleed all the radiators.
- ▶ Fill the heating system via the drain.
- ▶ Repeat this process until there is no more air left in the heating system.
- ▶ Check the heating system for leaks.

10.8 DHW heating

For DHW heating, a DHW cylinder with an internal indirect coil is required (see chapter "Installation / Appliance description / Accessories").

- ▶ Thoroughly flush the pipework before connecting the heat pump. Foreign bodies, such as rust, sand and sealant, can impair the operational reliability of the heat pump.

10.8.1 DHW heating without hot gas technology

- ▶ Connect the heat pump DHW flow and heat pump DHW return from the DHW cylinder via a diverter valve to the heating flow and heating return.
- ▶ Observe the hydraulic diagrams in the technical guides.

10.8.2 DHW heating with hot gas technology

- ▶ Connect the heat pump DHW flow and heat pump DHW return from the DHW cylinder to the hot gas DHW flow optional and hot gas DHW return optional.
- ▶ Observe the hydraulic diagrams in the technical guides.

10.9 Operation with buffer cylinder

- ▶ Install the supplied flow sensor on the buffer outlet.
- ▶ Connect the flow sensor to the control panel.

11. Electrical connection

11.1 General

WARNING Electrocution
- ▶ **Before working on the appliance, isolate it from the power supply at the control panel.**

Following isolation from the mains supply, parts of the appliance may remain live. This is because the condensers on the inverter still have to discharge. When the condensers have discharged, the LEDs on the inverter stop flashing.

WARNING Electrocution
Carry out all electrical connection and installation work in accordance with national and regional regulations.

WARNING Electrocution
- ▶ **Connect the power cable only to the intended terminal.**
- ▶ **Do not use any other terminals.**

WARNING Electrocution
The inverter has a high fault current and must be earthed.
- ▶ **Ensure there is a good connection between the earth cable and the earthing contact. The cross-section of the earth conductor must be designed according to the maximum operating current (see chapter "Specification / Data table").**

Material losses
The power cables must not be connected via a regularly switching contactor. If an externally controlled shutdown is necessary (e.g. by the power supply utility), this must be performed via the "PSU/Smart Grid 1" contact. When the contact is enabled, the heat pump will switch off within a short period in a controlled manner.

Note
The heating system needs to be filled before making the electrical connection (see chapter "Heating water connection").

Connection work must only be carried out by a qualified contractor and in accordance with these instructions.

You must have permission to connect the appliance from the relevant power supply utility (PSU).

- ▶ Follow the instructions in the chapter "Preparation / Preparing the electrical installation".
- ▶ Use appropriate electric cables in accordance with local regulations for the connections.
- ▶ Only connect the appliance to a supply system with a short-circuit capacity greater than the values listed in the table.

Heat pump	Short-circuit capacity [MVA]
WPE-I 33 H 400 Premium	2.1
WPE-I 44 H 400 Premium	2.1
WPE-I 59 H 400 Premium	2.4
WPE-I 87 H 400 Premium	3.2

11.2 Checks before electrical connection

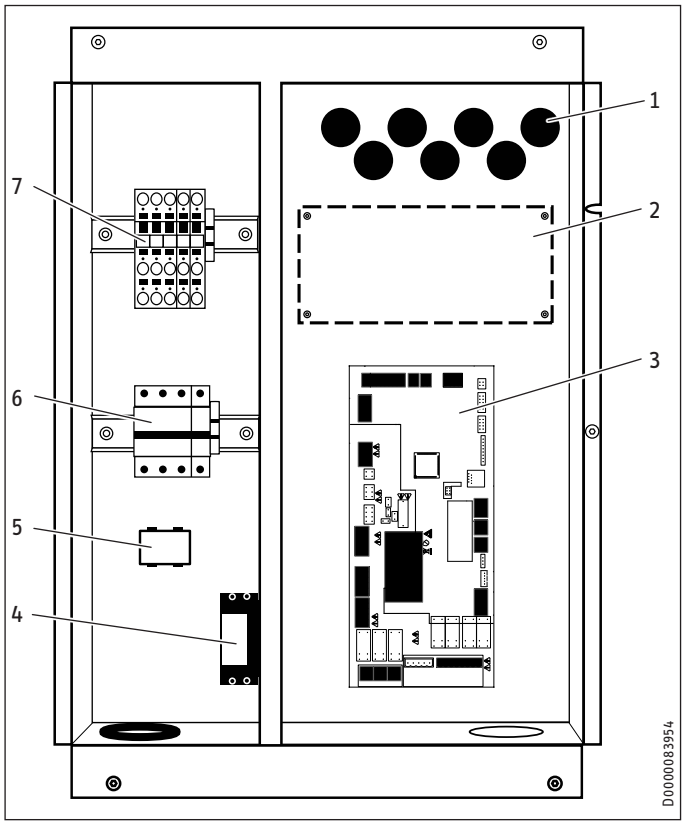
- ▶ Does the appliance have adequate fuse protection?
- ▶ Has the outside temperature sensor been positioned correctly? Observe chapter "Sensor installation".

11.3 Access to the terminal area

The terminals are located inside the appliance control panel, behind the front fascia.

- ▶ Remove the front panel of the appliance (see chapter "Installation / Removing the casing parts").
- ▶ Remove the three screws on the cover panel.
- ▶ Pivot the cover panel to the side.

11.4 Terminal area



1 Cable entry
2 Space for extension module EM3 (optional)
3 BM card (internal heat pump control unit)
4 Transformer
5 EMV filter
6 Fuse protection
7 Terminal X1

11.5 Dynamic allocation

The BM card allows you some configurations. You can assign some connections on the BM card differently. The connections that are changeable can be recognised by the little boxes in the wiring diagram. Please note that the connections can only be used for the specified optional functions.

- ▶ Connect the corresponding component to the required connection.
- ▶ Mark any changes made on the wiring diagram in the appliance.
- ▶ Deactivate the factory-set function on the programming unit.
- ▶ Activate the new function on the programming unit.

11.6 Electrical connection

Note
In order to prevent failures in the electromagnetic field, attach the supplied snap-on ferrite bead outside the connection area on the bus cable.

Note
If the power cables do not fit through the cable entries, use the supplied cable entries which can be cut to size.

11.6.1 Routing power cables

- ▶ Route the power cables from above through the cable entries and into the appliance.

WPE-I 33 H 400 Premium | WPE-I 44 H 400 Premium

- ▶ Remove the cable entries in the control panel.
- ▶ Route the power cables through the apertures in the control panel.
- ▶ Feed the cable entries over the power cables.
- ▶ Push the cable entries securely back into the apertures.

WPE-I 59 H 400 Premium | WPE-I 87 H 400 Premium

- ▶ Route the power cables through the cable entries in the control panel.

11.6.2 Power supply

X1	Heat pump
	L1, L2, L3, N, PE

- ▶ Connect the power cable to the terminal.

11.6.3 Additional components

Note
- ▶ If you want to install a mixer, use one with a control voltage of 10 V.

- ▶ Connect the power cables for the other components according to the wiring diagrams (see chapter "Specification / Wiring diagram" and "Appendix").

11.7 Sensor installation

Outside temperature sensor

The temperature sensors have a significant influence on the function of your heating system. Therefore ensure sensors are correctly seated and well insulated.

When the sensor cable is laid in a pipe, the pipe must be sealed to prevent escaping air.

Install the outside temperature sensor on a north or north-eastern wall. Minimum clearances: 2.5 m above the ground, and 1 m to

the side of windows and doors. In high buildings, install the outside temperature sensor between the second and third floor. The outside temperature sensor should be freely exposed to the elements but not placed in direct sunlight. Never mount the outside temperature sensor above windows, doors or air ducts. Do not install the outside temperature sensor on reflective metal panels.

Immersion / contact sensor

This sensor is required when using a mixer circuit.

Sensor resistance values

Temperature in °C	Pt1000 sensor Resistance in Ω
- 30	882
- 20	922
-10	961
0	1000
10	1039
20	1078
25	1097
30	1117
40	1155
50	1194
60	1232
70	1271
80	1309
90	1347
100	1385
110	1423
120	1461

11.8 High limit safety cut-out for STB-FB area heating system

Material losses
In order to prevent excessively high flow temperatures in the area heating system causing damage in the event of a fault, install a high limit safety cut-out to limit the system temperature.

11.9 Internet Service Gateway ISG

The Internet Service Gateway ISG enables you to operate the heat pump within your local home network and via the internet when you are away. The ISG is not supplied with power by the heat pump.

► Observe the ISG operating instructions.

11.10 Internal bus connection

The jumpers on the BM card in the appliance are fitted at the factory.

If a bus connection is used, the communication system requires termination.

► Observe the EM extension module operating and installation instructions.

12. Charging the brine circuit

Note
► Observe the regional and national regulations before filling with heat transfer medium.

Calculate the volume of the heat source circuit. The brine volume of the heat pump under operating conditions can be found in the data table (see chapter "Specification").

The overall volume is equal to the required amount of brine made by mixing undiluted glycol and water. The chloride content of the water must not exceed 300 ppm.

12.1 Mixing ratio

The brine concentration varies depending on whether a geothermal collector or a geothermal probe is used as the heat source.

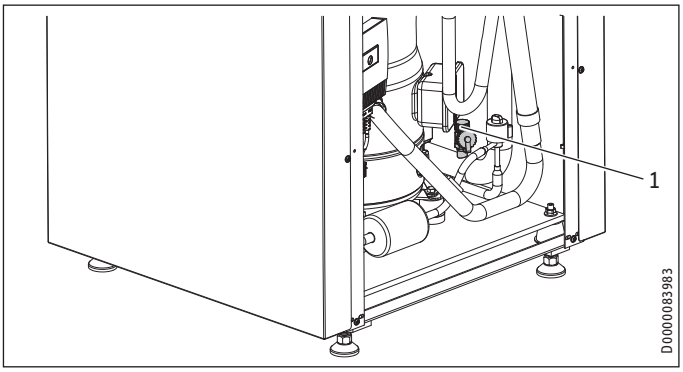
For the mixing ratio see the table below.

	Ethylene glycol	Water
Geothermal probe	25 %	75 %
Geothermal collector	33 %	67 %

	Propylene glycol	Water
Geothermal probe	27.5 %	72.5 %
Geothermal collector	36.5 %	63.5 %

12.2 Charging the brine circuit

WPE-I 33 H 400 Premium | WPE-I 44 H 400 Premium

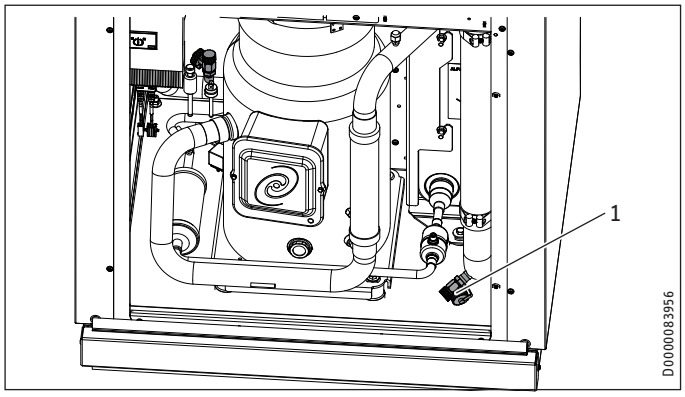


1 Drain

► Fill the brine circuit via the drain.

► Vent the brine circuit.

WPE-I 59 H 400 Premium | WPE-I 87 H 400 Premium



1 Drain

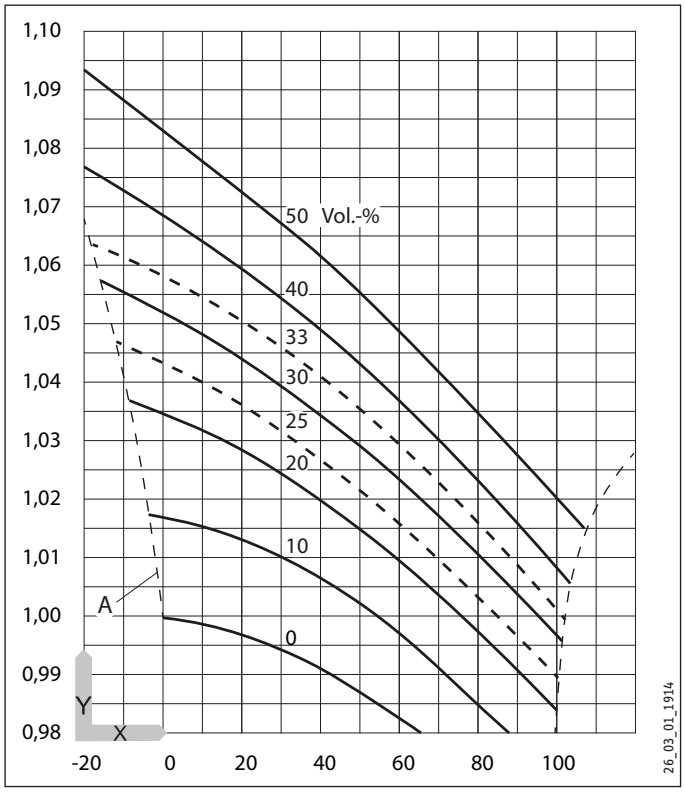
- ▶ Fill the brine circuit via the drain.
- ▶ Vent the brine circuit.

12.3 Check the brine concentration

- ▶ Determine the density of the glycol/water mixture, e.g. with a hydrometer.

Using the actual density and temperature, you can check the actual concentration in the diagram.

Note
The quoted output data relates to ethylene glycol (see "Specification").



X Temperature [°C]
Y Density [g/cm³]
A Frost protection [°C]

13. Commissioning

Material losses
Do not operate the appliance until the heating system, the heat source system and the hot water boiler have been filled and vented to the correct pressure.

Note
The sensor in the heating flow and the outside sensor must be connected so that the appliance can calculate the required heating output.

Note
Class A messages prevent the appliance from starting.
- ▶ Identify the faults in displayed messages.

A qualified contractor must commission the appliance, make all the settings in the programming unit, and instruct the user.

Carry out commissioning in accordance with these operating and installation instructions and the programming unit instructions. Our customer support can assist with commissioning, which is a chargeable service. Observe the commissioning checklist in the appendix of these operating and installation instructions.

Where this appliance is intended for commercial use, the regulations of the relevant operational safety legislation may apply during commissioning. For further details, check your local authorising body.

13.1 Checks before commissioning

Before commissioning, check the points detailed below.

13.1.1 Heating system

- Have you filled the heating system to the correct pressure?
- Have you vented the heating system?

Material losses
In the case of area heating systems, observe the maximum system temperature.

13.1.2 Heat source

Material losses
Never use the heat pump to dry the screed by means of the underfloor heating system.

- Have you filled the brine circuit to the correct pressure?
- Have you vented the brine circuit?

13.1.3 Temperature sensor

- Have you correctly connected and positioned the sensors?

Sensor	
Outside sensor	T35
Flow sensor	T33

13.1.4 Power supply

- Have you correctly connected the power supply?

13.2 Manual test of connected components

Note
Certain menu items are protected by a code. The code set at the factory is 607080.

Note
A hand is displayed when the manual test is activated.

- ▶ Call up the "Manual test" menu in the programming unit (see chapter "Controller menu / Settings / Manual test" in the programming unit commissioning instructions).
- ▶ Activate the manual test.
- ▶ Observe the following information.

Note
Deactivate the menu item "Manual test" after carrying out the different tests.

13.2.1 Mandatory tests

Heating circuit pump

- ▶ In the "Manual test" menu, select the heating circuit pump test.
- ▶ Start the pump via the menu.
- ▶ Check whether the pump is running.
- Listen.
- Place your hand on the pump.
- Listen for air noises.
- ▶ Vent the heating system if necessary (see chapter "Installation / Filling the heating system").
- ▶ Stop the pump via the menu.

Brine pump

Material losses
The pressure in the heat source system must not exceed 6 bar.

- ▶ In the "Manual test" menu, select the brine pump test.
- ▶ Start the pump via the menu.
- ▶ Check whether the pump is running.
- Listen for air noises.
- Check the pressure in the brine circuit with an on-site pressure gauge.
- ▶ Vent the brine circuit if required (see chapter "Charging the brine circuit").
- ▶ Stop the pump via the menu.

Heating circuit pump

- ▶ In the "Manual test" menu, select the heating circuit pump test.
- ▶ Start the pump via the menu.
- ▶ Check whether the pump is running.
- Listen for air noises.
- ▶ Vent the heating system if necessary (see chapter "Installation / Filling the heating system").
- ▶ Stop the pump via the menu.

Compressor

- ▶ In the "Manual test" menu, select the compressor test.
- ▶ Select the compressor stage to be tested.
- ▶ Check that no unusual noises can be heard.
- ▶ Check if the hot gas line gets hot.
- ▶ Check the other compressor stages.
- ▶ Stop the compressor via the menu.

13.2.2 Optional tests

The additional tests displayed in the "Manual test" menu are optional.

13.3 Checking for unusual noises

Under adverse circumstances, supply lines and the way they are routed can cause noise and vibrations, which are increased at certain compressor and pump speeds.

- ▶ Test the operation of the appliance in heating and DHW mode across the entire speed range of the compressor and pumps.
- ▶ Make sure there are no unusual noises near the appliance and in other parts of the building.
- ▶ If required, install anti-vibration mounts and sound-absorbing pipe clamps near the appliance.
- ▶ If the unusual noises continue occurring, you can block or adjust the problematic speeds of the compressor and the pumps in the controller.

13.4 Connecting to the internet

The connection required to connect to the internet can be found behind the front panel below the controller unit.

- ▶ Remove the front panel (see chapter "Installation / Removing the casing parts").
- ▶ Connect a router to the terminal.
- ▶ Observe the commissioning instructions for the programming unit and the operating and installation instructions for the Internet Service Gateway (ISG).

13.5 Locking commissioning mode

After commissioning, leave the programming unit in safe mode.

- ▶ Press the open lock on the screen. Confirm the selection. A closed lock appears on the left of the menu window.

13.6 Heating curve adjustment during commissioning

The efficiency of a heat pump decreases as the flow temperature rises. Therefore adjust the heating curve with care. A heating curve that is set too high leads to the zone or thermostatic valves closing and the minimum flow rate required for the heating circuit may not be achieved.

The following steps will help you to adjust the heating curve correctly:

- ▶ Fully open thermostatic or zone valves in a lead room (e.g. living room or bathroom).
  We do not recommend installing thermostatic or zone valves in the lead room.
- ▶ At different outside temperatures (e.g. -10 °C and +10 °C), adjust the heating curve so the required temperature is achieved in the lead room.

13.7 Appliance handover

Explain the appliance function to users and familiarise them with how it works.

Note
Hand over these operating and installation instructions to users for safe-keeping. All information in these instructions must be closely observed. The instructions provide information on safety, operation, installation and maintenance of the appliance.

14. Shutting down the system

If the system is to be taken out of use, set the programming unit to standby. This retains the safety functions designed to protect the system (e.g. frost protection).

There is no need to shut the system down in summer. The programming unit has an automatic summer/winter changeover.

Material losses
Never interrupt the power supply, even outside the heating season. The system's active frost protection is not guaranteed if the power supply is interrupted.

Material losses
Observe the temperature application limits and the minimum circulation volume on the heat consumer side (see chapter "Specification / Data table").

Material losses
If the heat pump is completely switched OFF and there is a risk of frost, drain the system on the water side.

15. Troubleshooting

WARNING Electrocution
▶ Isolate the appliance from the power supply when carrying out any work.
Following isolation from the mains supply, parts of the appliance may remain live. This is because the condensers on the inverter still have to discharge. When the condensers have discharged, the LEDs on the inverter stop flashing.

Material losses
▶ Do not perform a hard reset of the appliance by unscrewing the fuse. This may damage the appliance.

15.1 BM card status display

LEDs are arranged on the BM card (internal heat pump control unit) which display the current control status.

The two individual LEDs show the communication status.

	LED	Meaning
RX (receiver)	illuminates	The control is processing a message or responding to a message that was sent to the inverter.
TX (transmitter)	illuminates	The control is responding to a message.

The four LEDs show the control status.

LED 1	2	3	4	Meaning
x				Standard condition
x	○	○	○	Safety stop The compressor is blocked.
x	x	x	x	Update mode The heat pump profile cannot be configured.
-	-	-	-	Frost protection Not assigned

x Flashing
○ illuminates

15.2 Fault message

If the appliance registers a fault, this is displayed clearly on the programming unit.

15.2.1 The heat pump is not running

The wrong heat pump is set on the programming unit.

- ▶ Check the set model in the "Process data / Version information" menu.
- ▶ Have the service engineer set the correct heat pump.

The heat pump is in standby mode.

- ▶ Change the system setting to standard operation.

The blocking time for the power supply utility (PSU) is applied.

- ▶ Wait for the blocking time to elapse. The heat pump will automatically start up again.

There is no heat demand.

- ▶ Under the menu item "Process data / Operating data / Calculated demand (heating)", check if there is a heating demand.

There may be an incorrect fuse protection rating.

- ▶ See chapter "Specification / Data table".

Note
The heat pump can only be restarted after the fault has been removed and deleted from the message list.

15.3 Fault table

See the appendix for an overview of possible faults.

16. Maintenance

WARNING Electrocution
- ▶ **Isolate the appliance from the power supply when carrying out any work.**

Following isolation from the mains supply, parts of the appliance may remain live. This is because the condensers on the inverter still have to discharge. When the condensers have discharged, the LEDs on the inverter stop flashing.

Material losses
- ▶ Do not perform a hard reset of the appliance by unscrewing the fuse. This may damage the appliance.

We recommend a regular inspection (to establish the current condition of the system), and maintenance if required (to return the system to its original condition).

- ▶ Check the pressure in the brine circuit regularly. Never exceed the maximum pressure of 6 bar.
- ▶ Check the pressure in the heating circuit at least twice a year. Never exceed the maximum pressure of 6 bar.
- ▶ Check the safety valve for correct function.
- ▶ Check the high pressure switch is working correctly.
- ▶ Check the DHW lines for leaks between the heat pump and the draw-off points.
- ▶ Check the brine circuit for leaks.
- ▶ Check and clean the filters in the heating circuit and brine circuit twice in the first year since commissioning. The maintenance interval can be extended in subsequent years.

WPE-I 59 H 400 Premium | WPE-I 87 H 400 Premium

- ▶ Ensure that the heat pump refrigerant circuit is tested once a year for leaks, in accordance with EC DIRECTIVE 517/2014.

17. Decommissioning

Material losses
If the heat pump is completely switched OFF and there is a risk of frost, drain the system on the water side.

18. Specification

18.1 Approximate current strength values

- ▶ Refer to the tables to find the estimated current intensity of the appliance at a certain radiator flow and heat source temperature.

18.1.1 WPE-I 33 H 400 Premium

Radiator flow [°C]	Heat source temperature [°C]						
	-10	-5	0	5	10	15	20
65	*	*	15.0	25.2	25.2	25.1	25.0
60	*	15.6	22.9	23.0	23.1	23.0	22.9
55	14.1	20.8	21.1	21.2	21.2	21.2	21.0
50	19.0	19.3	19.5	19.6	19.6	19.5	19.3
45	17.8	18.0	18.2	18.2	18.2	18.0	17.8
40	16.7	16.9	17.0	17.0	16.9	16.7	16.3
35	15.8	15.9	15.9	15.8	15.6	15.3	14.9
30	14.9	14.9	14.9	14.7	14.3	13.9	13.3

* No details

18.1.2 WPE-I 44 H 400 Premium

Radiator flow [°C]	Heat source temperature [°C]						
	-10	-5	0	5	10	15	20
65	*	*	15.0	29.3	29.4	29.6	29.6
60	*	29.1	29.3	29.5	29.8	30.1	30.2
55	26.6	26.8	27.0	27.3	27.6	27.8	27.9
50	24.6	24.9	25.1	25.4	25.6	25.8	25.8
45	22.9	23.2	23.4	23.7	23.8	23.9	23.8
40	21.5	21.7	21.9	22.1	22.2	22.1	21.9
35	20.1	20.3	20.5	20.6	20.6	20.4	20.0
30	18.9	19.0	19.1	19.1	19.0	18.6	18.0

* No details

18.1.3 WPE-I 59 H 400 Premium

Radiator flow [°C]	Heat source temperature [°C]						
	-10	-5	0	5	10	15	20
65	*	*	22.5	39.0	39.3	39.6	39.8
60	*	38.9	39.3	39.6	39.9	40.3	40.6
55	35.8	36.1	36.5	36.8	37.1	37.5	37.8
50	33.1	33.5	33.9	34.2	34.6	34.9	35.2
45	30.7	31.1	31.4	31.8	32.1	32.4	32.7
40	28.5	28.9	29.2	29.5	29.9	30.1	30.4
35	26.5	26.8	27.2	27.5	27.7	28.0	28.2
30	24.6	25.0	25.3	25.5	25.8	26.0	26.1

* No details

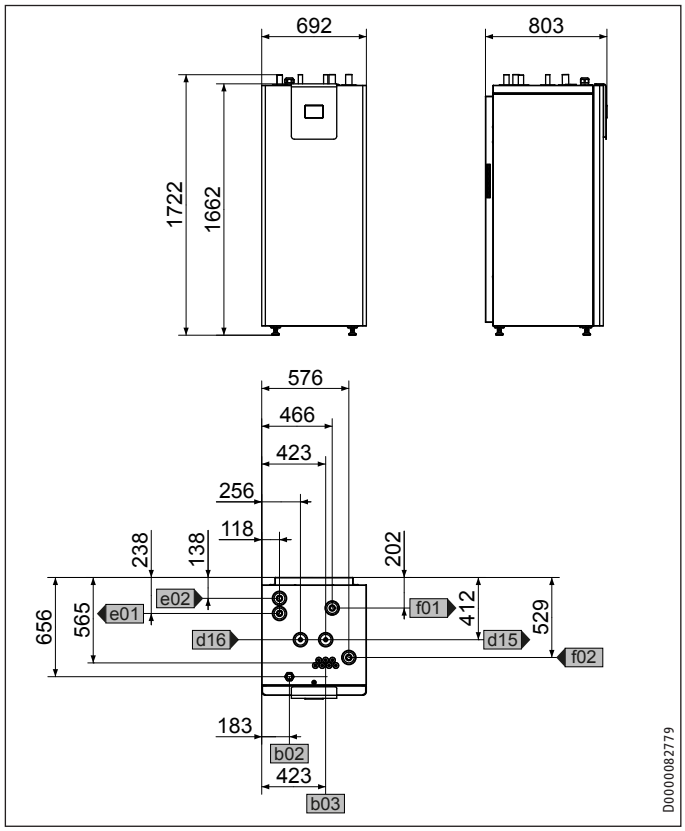
18.1.4 WPE-I 87 H 400 Premium

Radiator flow [°C]	Heat source temperature [°C]						
	-10	-5	0	5	10	15	20
65	*	*	50.9	52.4	52.9	53.6	54.4
60	*	52.0	52.4	52.8	53.4	54.2	55.2
55	47.4	47.9	48.3	48.8	49.2	49.8	50.6
50	44.0	44.5	44.9	45.3	45.7	46.1	46.7
45	41.1	41.7	42.0	42.3	42.5	42.8	43.1
40	38.6	39.1	39.4	39.6	39.7	39.7	39.8
35	36.3	36.8	37.1	37.1	37.0	36.8	36.6
30	34.1	34.6	34.7	34.6	34.3	33.8	33.3

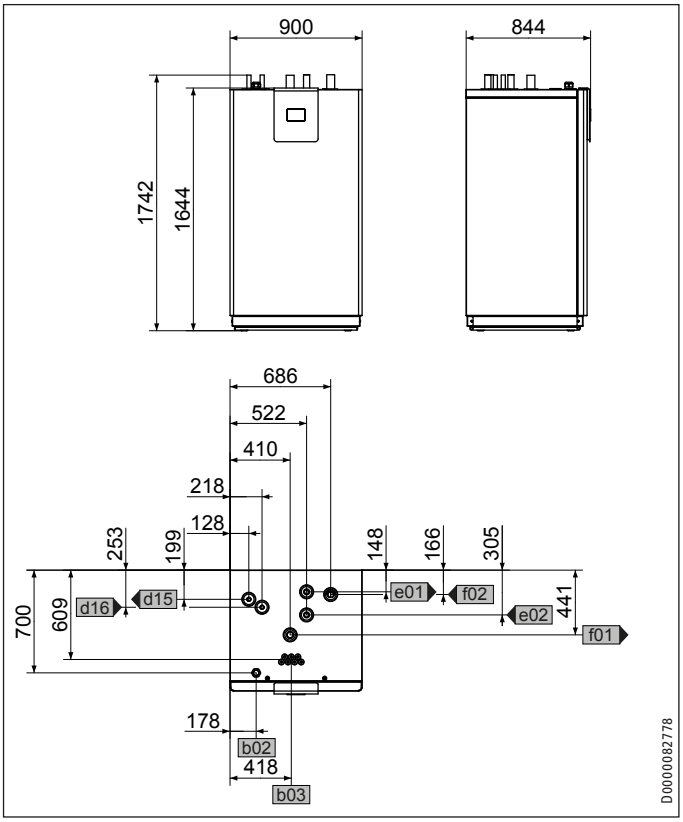
* No details

18.2 Dimensions and connections

WPE-I 33 H 400 Premium | WPE-I 44 H 400 Premium

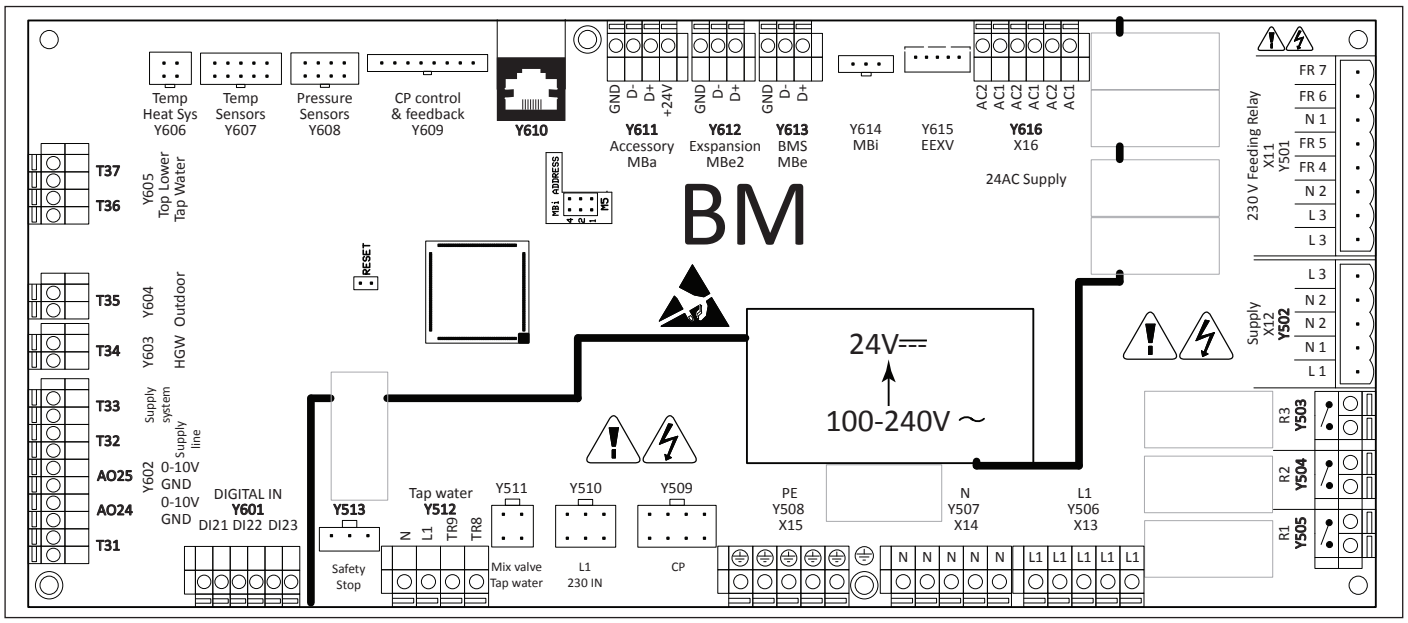


WPE-I 59 H 400 Premium | WPE-I 87 H 400 Premium



				WPE-I 33 H 400 Premium	WPE-I 44 H 400 Premium	WPE-I 59 H 400 Premium	WPE-I 87 H 400 Premium
b02	Entry electrical cables I						
b03	Entry electrical cables II						
d15	Hot gas DHW flow optional	Diameter	mm	28	28	28	28
d16	Hot gas DHW return optional	Diameter	mm	28	28	28	28
e01	Heating flow	Diameter	mm	35	35	42	42
e02	Heating return	Diameter	mm	35	35	42	42
f01	Heat source flow	Diameter	mm	42	42	54	54
f02	Heat source return	Diameter	mm	42	42	54	54

18.3 Wiring diagram



Key

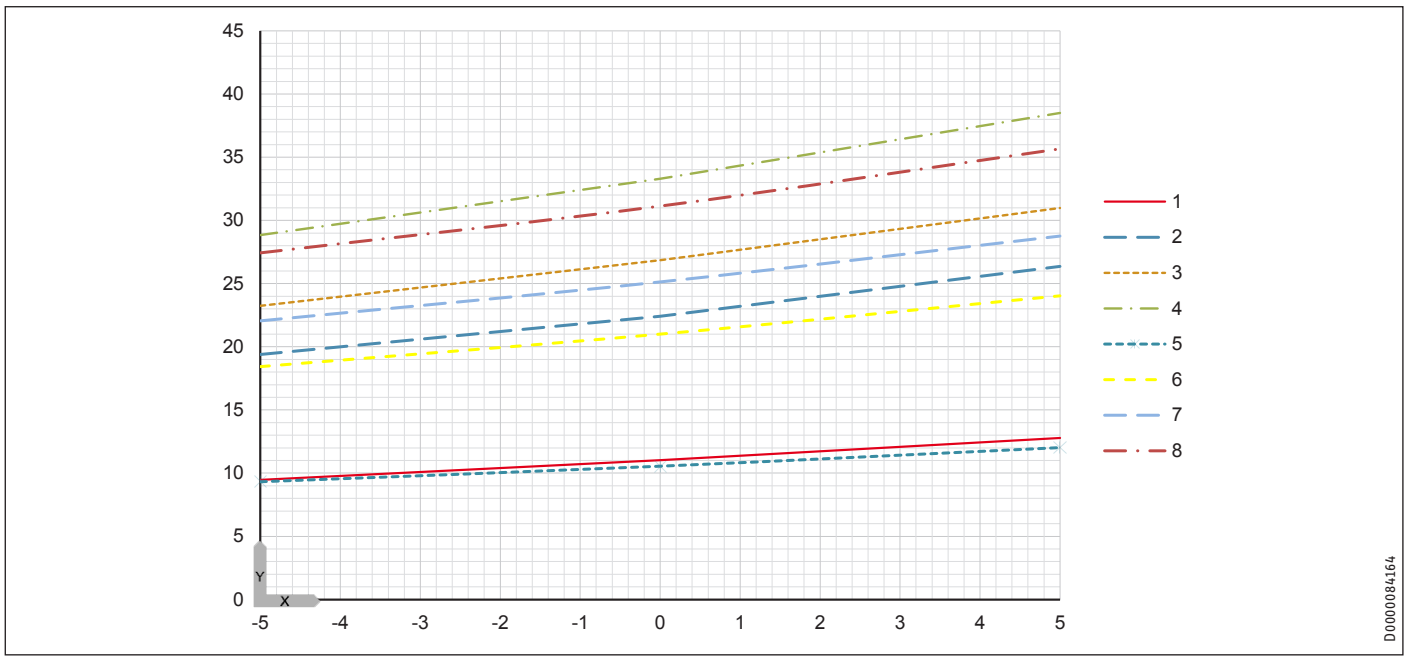
	BM card		Description
501.FR4	Y501	X11	Additional system circulation pump (brine)
501.FR5			Circulation pump (heating circuit 1)
501.FR6			Circulation pump (system)
501.FR7			Circulation pump (hot gas)
502	Y502	X12	Power supply
503.R3	Y503	R3	2nd heat generator, heating
503.R2	Y504	R2	Potential-free relay
503.R1	Y505	R1	Potential-free relay
506	Y506	X13	230 V AC power supply
507	Y507	X14	Neutral
508	Y508	X15	PE
509	Y509		Source pump
			Buffer charging pump
510	Y510		Power input
511	Y511		Mixer DHW
512	Y512		DHW diverter valve
513	Y513		Safety stop
601.DI21	Y601	DI 21	EVU
			Smart grid
601.DI22		DI 22	External alarm
601.DI23		DI 23	Flow sensor
602.T31	Y602	T31	Buffer cylinder sensor
602.AO24		AO24	Mixer, mixer circuit 1
602.AO25		AO25	Dual mode mixer HG2
602.T32		T32	Flow sensor mixer circuit 1
602.T33		T33	System flow sensor
603.T34	Y603	T34	System return sensor
604.T35	Y604	T35	Sensor outside temperature
605.T36	Y605	T36	DHW top sensor
605.T37		T37	DHW bottom sensor
606.13	Y606		Heating sensor HP inlet
606.24			Heating sensor HP outlet
607.16	Y607		Brine inlet sensor
607.27			Brine outlet sensor
607.38			Suction gas sensor
607.49			Liquid line sensor
607.510			Hot gas sensor

	BM card		Description
608.15	Y608		High pressure switch
608.432			Low pressure transmitter
608.687			High pressure transmitter
609.1259	Y609		Source pump
609.3478			Buffer charging pump
610	Y610	RJ145	CM card
611	Y611	MBa	Accessories / room thermostat
612	Y612	MBa2	Accessories / extension module
613	Y613	MBe	Not assigned
614	Y614	Mbi	Inverters
615	Y615	EEXV	Electronic expansion valve
616	Y616	24V AC-SUP	24 V AC
* Note 28			230 V AC for outdoor loads
* Note 29			Max. 5 A total load
* Note 30			24 V AC for external applications
* Note 31			Max. 1 A total load
* Note 34			Only in conjunction with EM card

18.4 Output diagrams

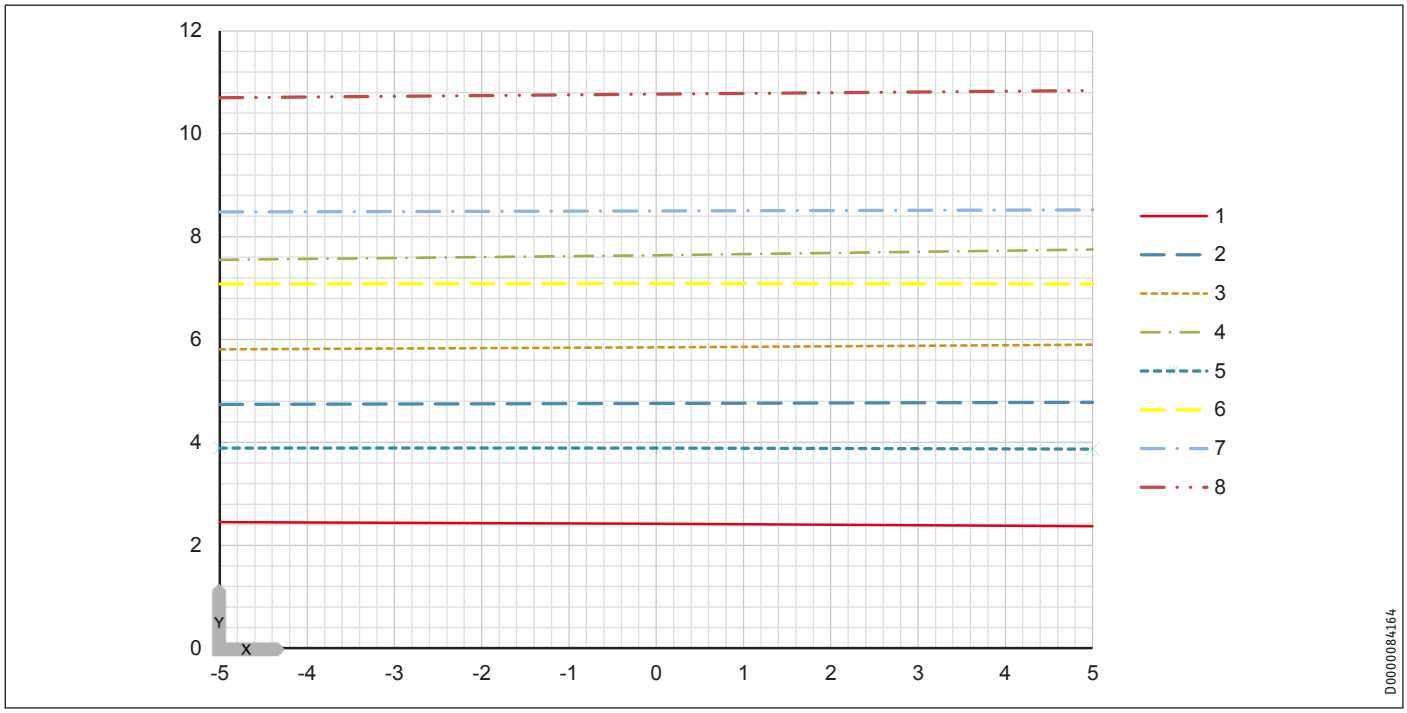
18.4.1 WPE-I 33 H 400 Premium

Heating output



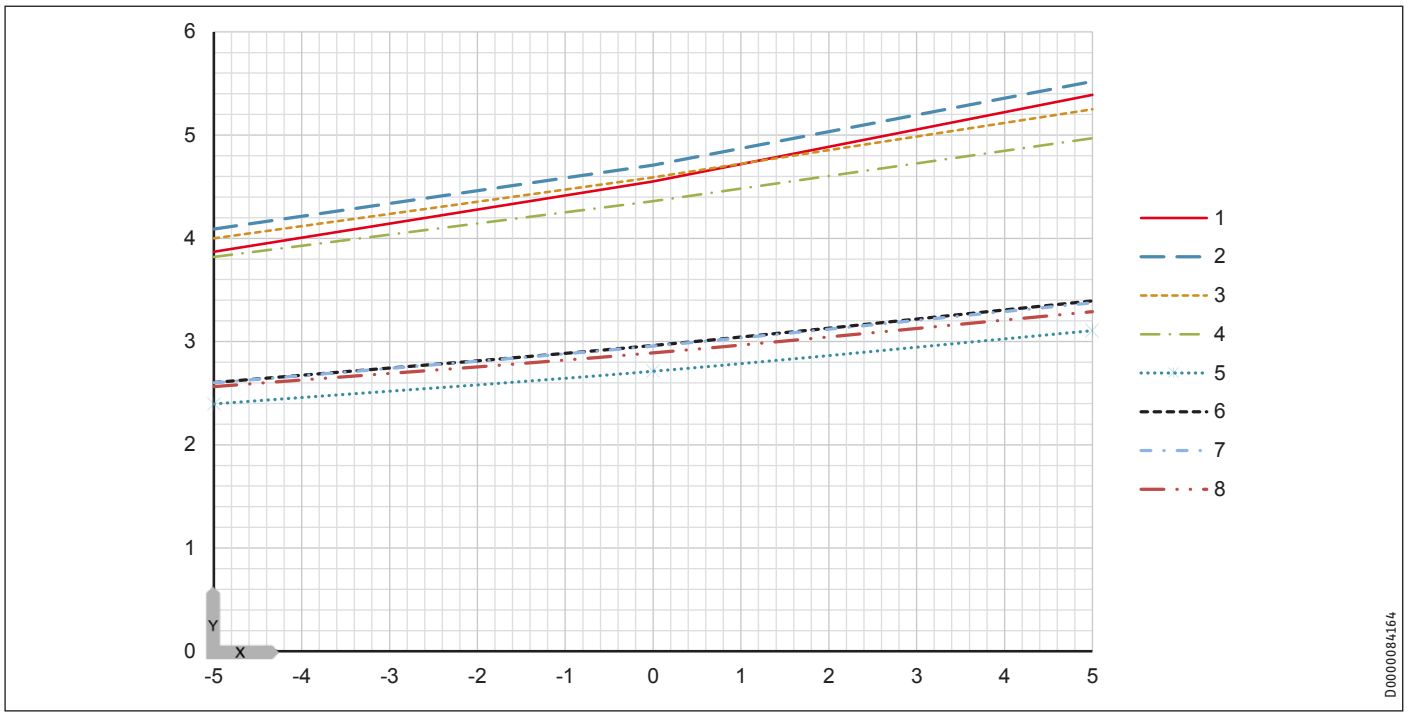
	Flow temperature 35 °C [rpm]		Flow temperature 55 °C [rpm]	
X Temperature of heat source system [°C]	1 1500	3 3600	5 1500	7 3600
Y Heating output [kW]	2 3000	4 4500	6 3000	8 4500

Power consumption



	Flow temperature 35 °C [rpm]		Flow temperature 55 °C [rpm]	
X Temperature of heat source system [°C]	1 1500	3 3600	5 1500	7 3600
Y Power consumption [kW]	2 3000	4 4500	6 3000	8 4500

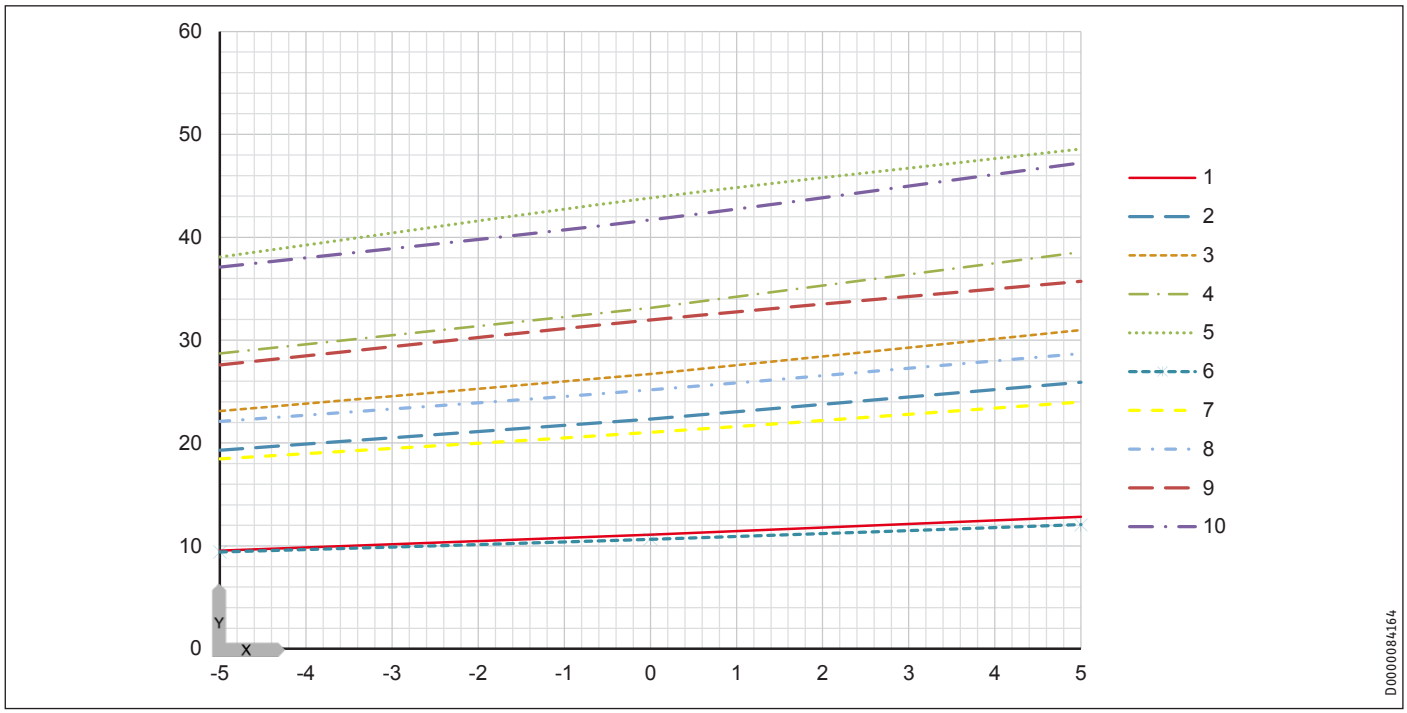
Coefficient of performance (COP)



	Flow temperature 35 °C [rpm]		Flow temperature 55 °C [rpm]	
X Temperature of heat source system [°C]	1 1500	3 3600	5 1500	7 3600
Y Coefficient of performance (COP)	2 3000	4 4500	6 3000	8 4500

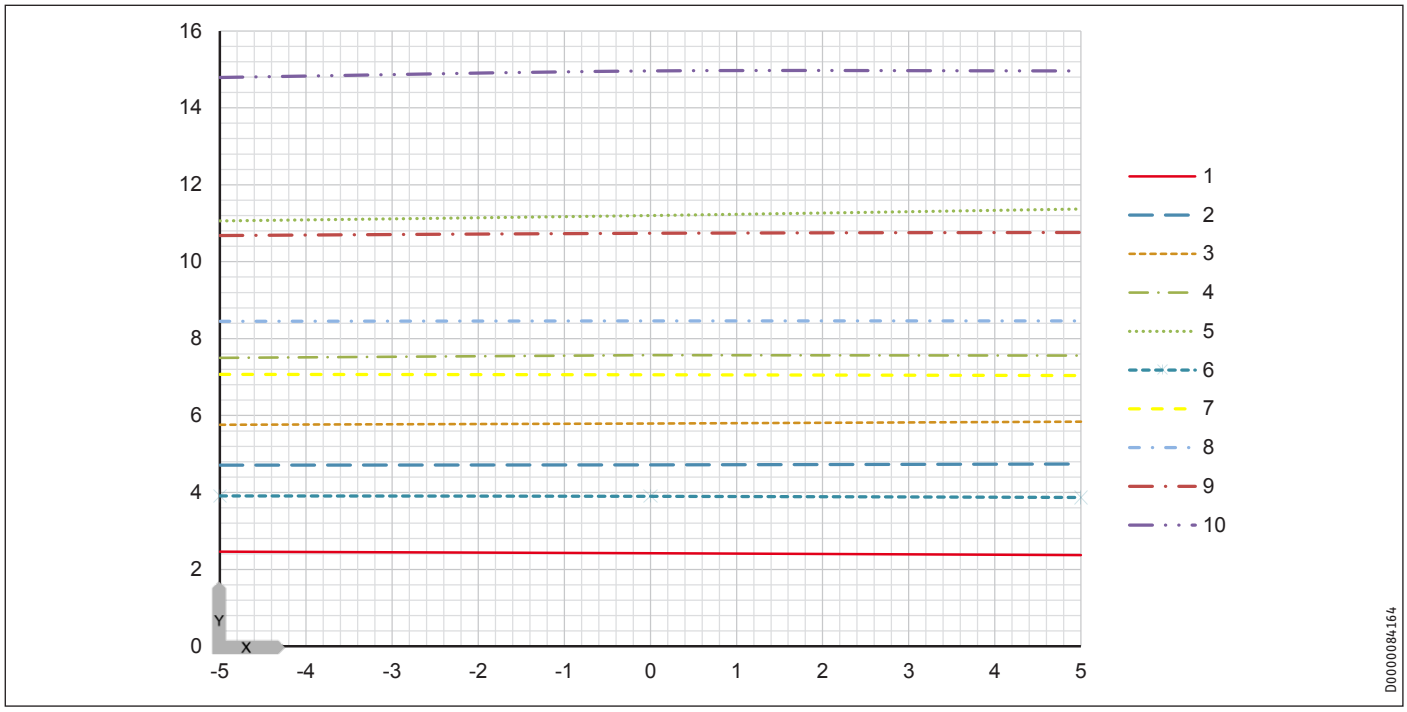
18.4.2 WPE-I 44 H 400 Premium

Heating output



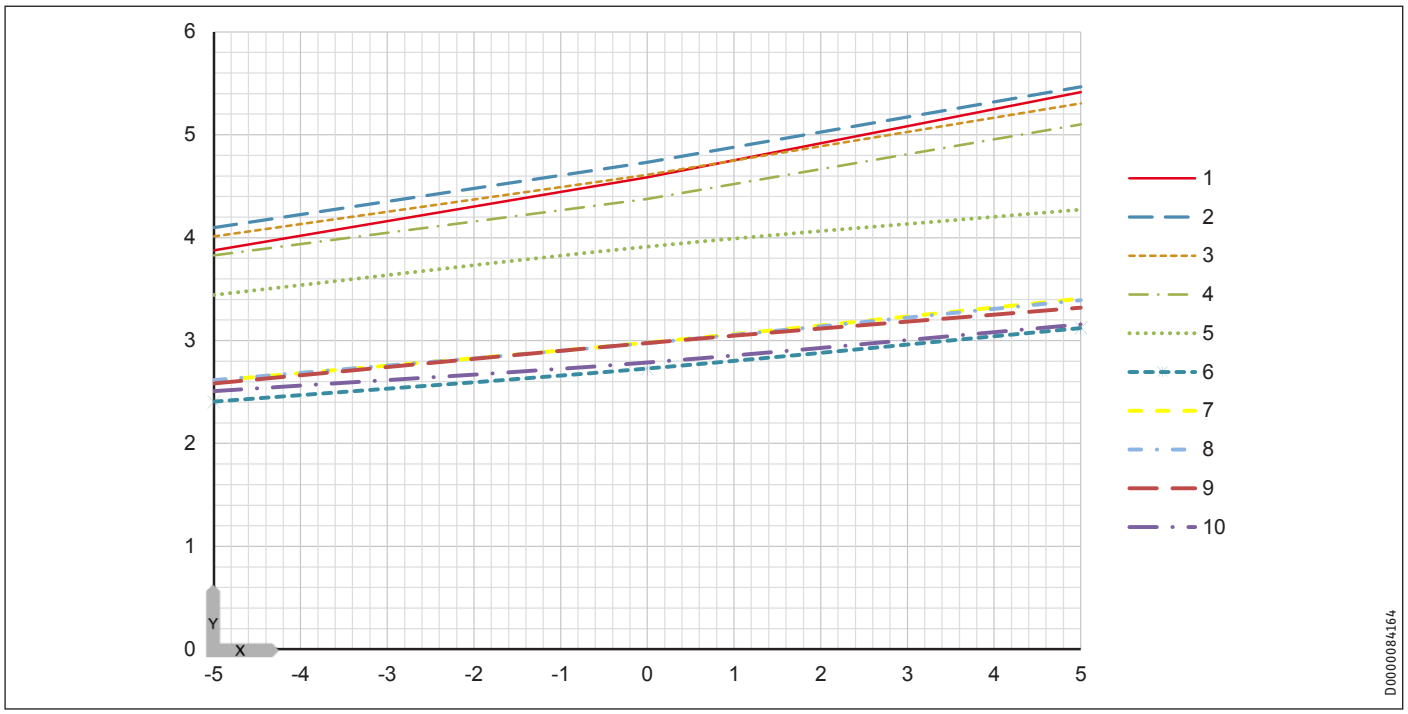
	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
X Temperature of heat source system [°C]	1 1500	3 3600	5 6000	6 1500	8 3600	10 6000
Y Heating output [kW]	2 3000	4 4500		7 3000	9 4500	

Power consumption



	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
X Temperature of heat source system [°C]	1 1500	3 3600	5 6000	6 1500	8 3600	10 6000
Y Power consumption [kW]	2 3000	4 4500		7 3000	9 4500	

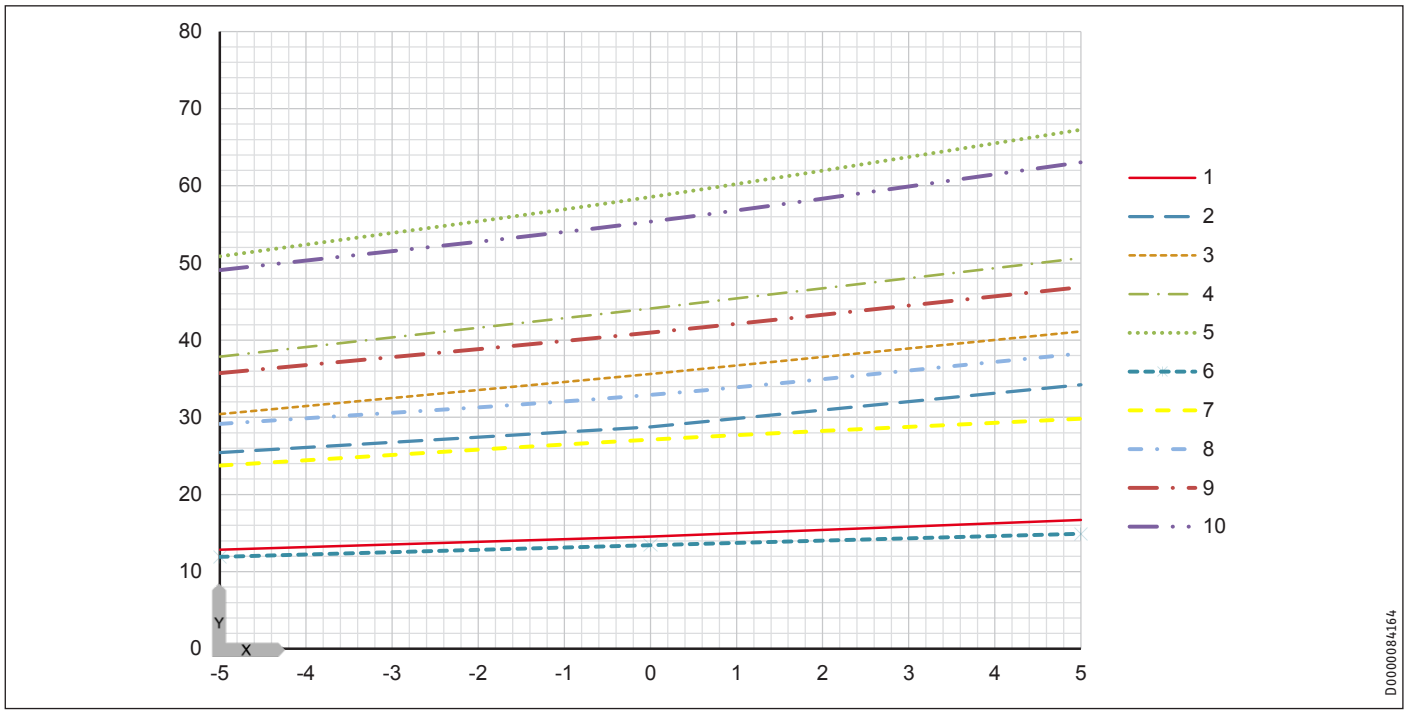
Coefficient of performance (COP)



	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
X Temperature of heat source system [°C]	1 1500	3 3600	5 6000	6 1500	8 3600	10 6000
Y Coefficient of performance (COP)	2 3000	4 4500		7 3000	9 4500	

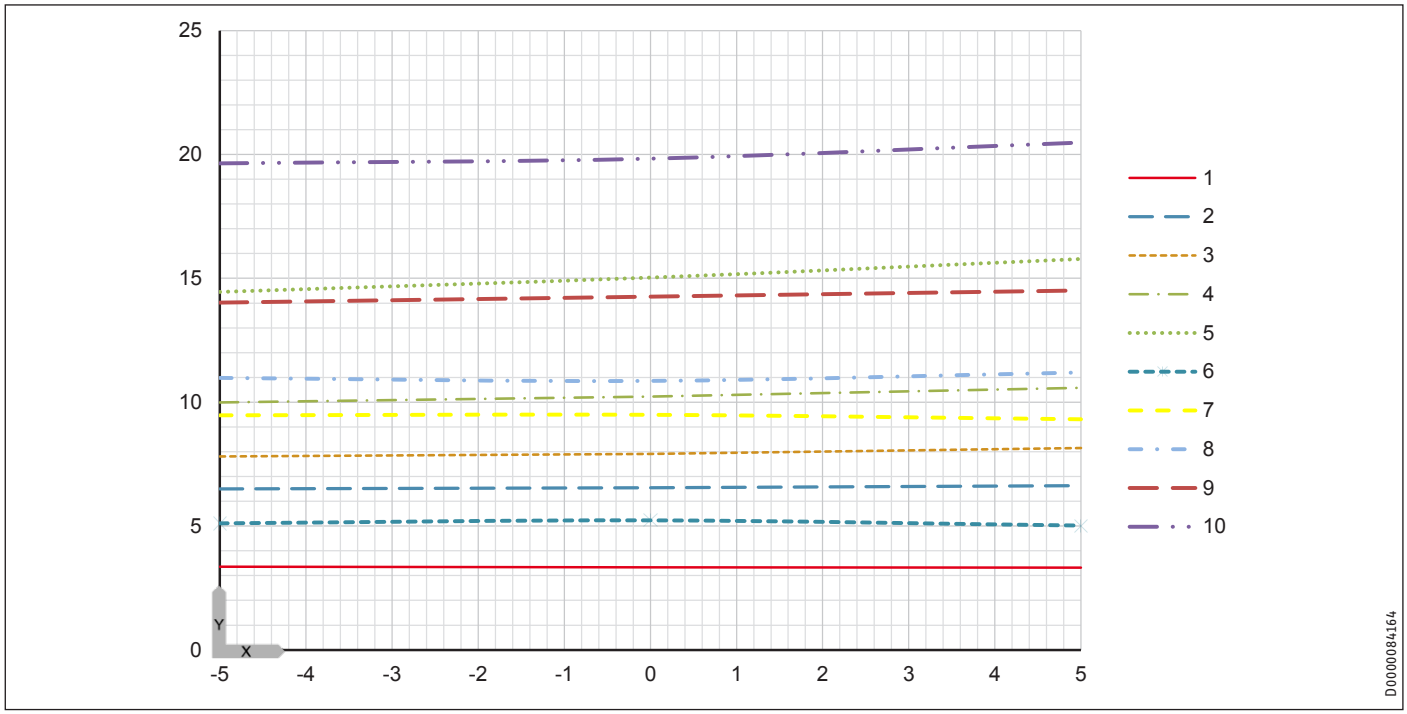
18.4.3 WPE-I 59 H 400 Premium

Heating output



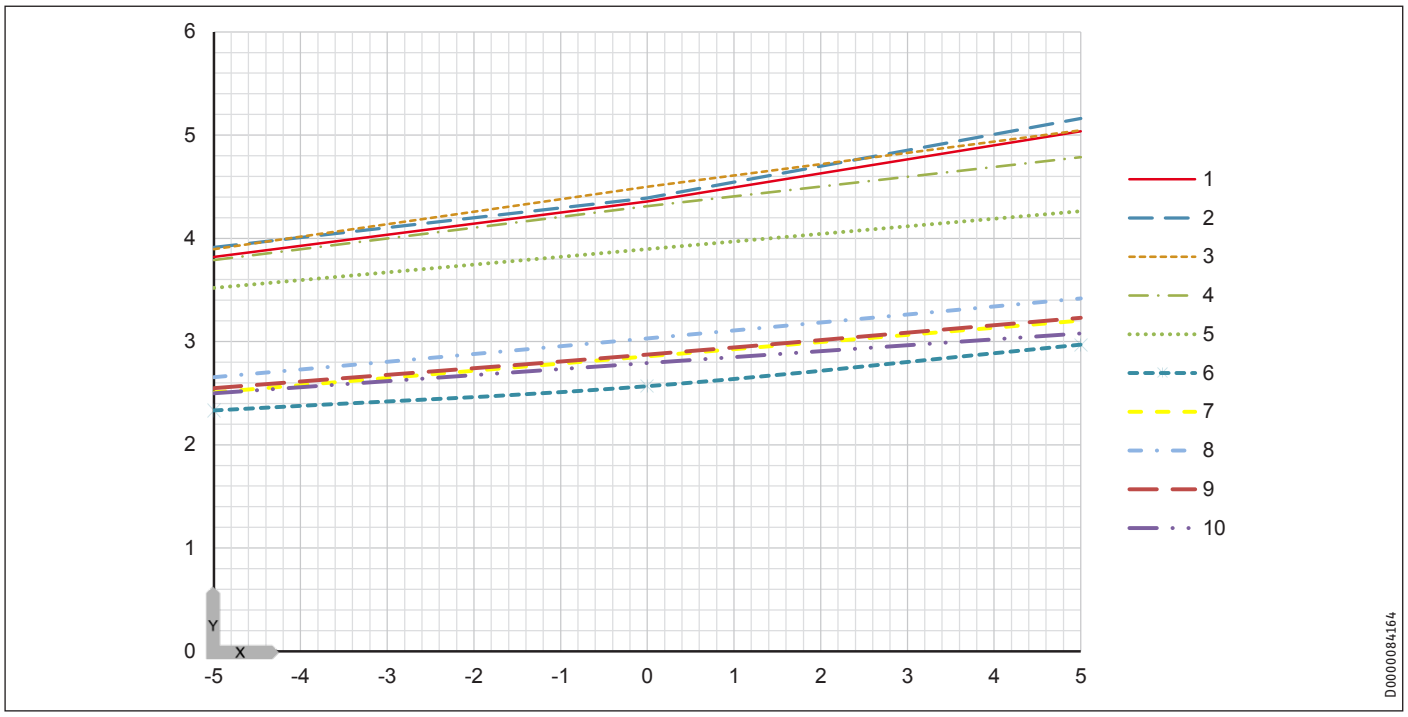
	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
X Temperature of heat source system [°C]	1 1500	3 3600	5 6000	6 1500	8 3600	10 6000
Y Heating output [kW]	2 3000	4 4500		7 3000	9 4500	

Power consumption



	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
X Temperature of heat source system [°C]	1 1500	3 3600	5 6000	6 1500	8 3600	10 6000
Y Power consumption [kW]	2 3000	4 4500		7 3000	9 4500	

Coefficient of performance (COP)

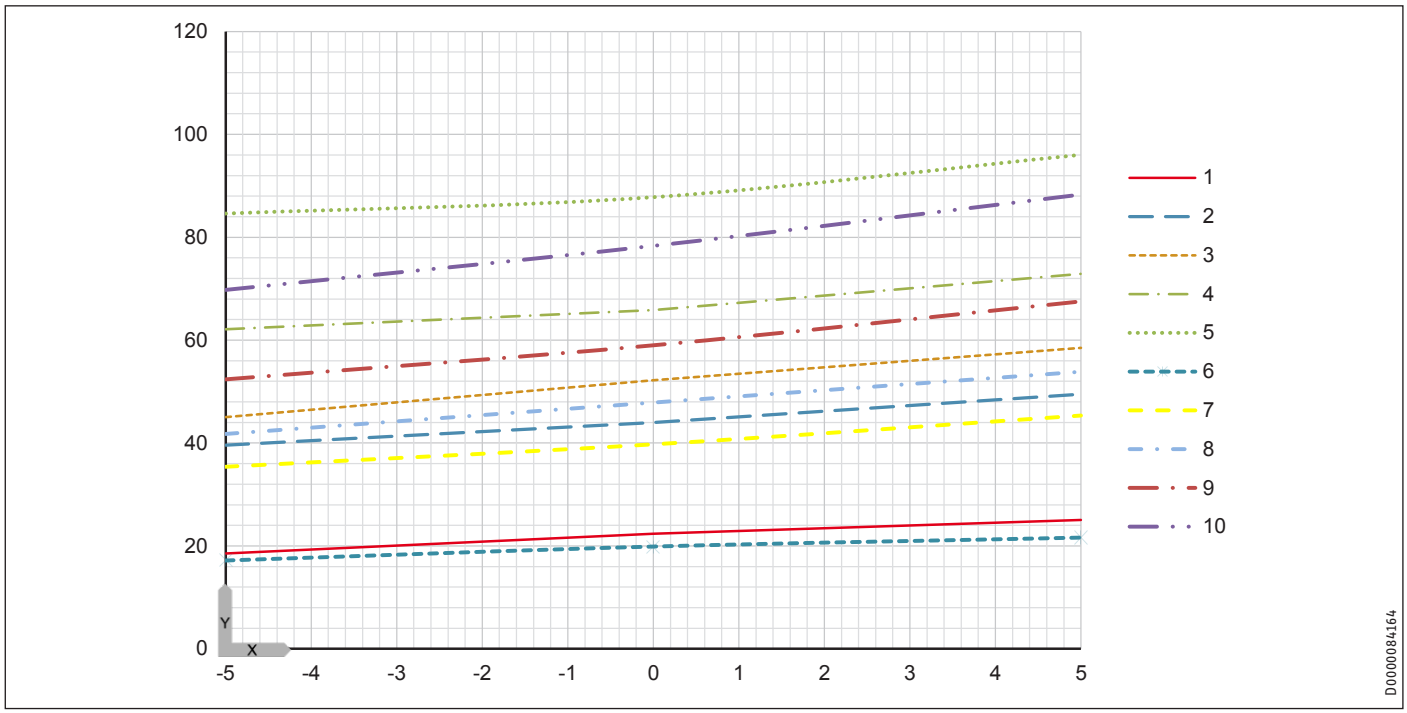


X Temperature of heat source system [°C]
Y Coefficient of performance (COP)

	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
1	1500	3	3600	5	6000	6	1500	8	3600	10	6000
2	3000	4	4500			7	3000	9	4500		

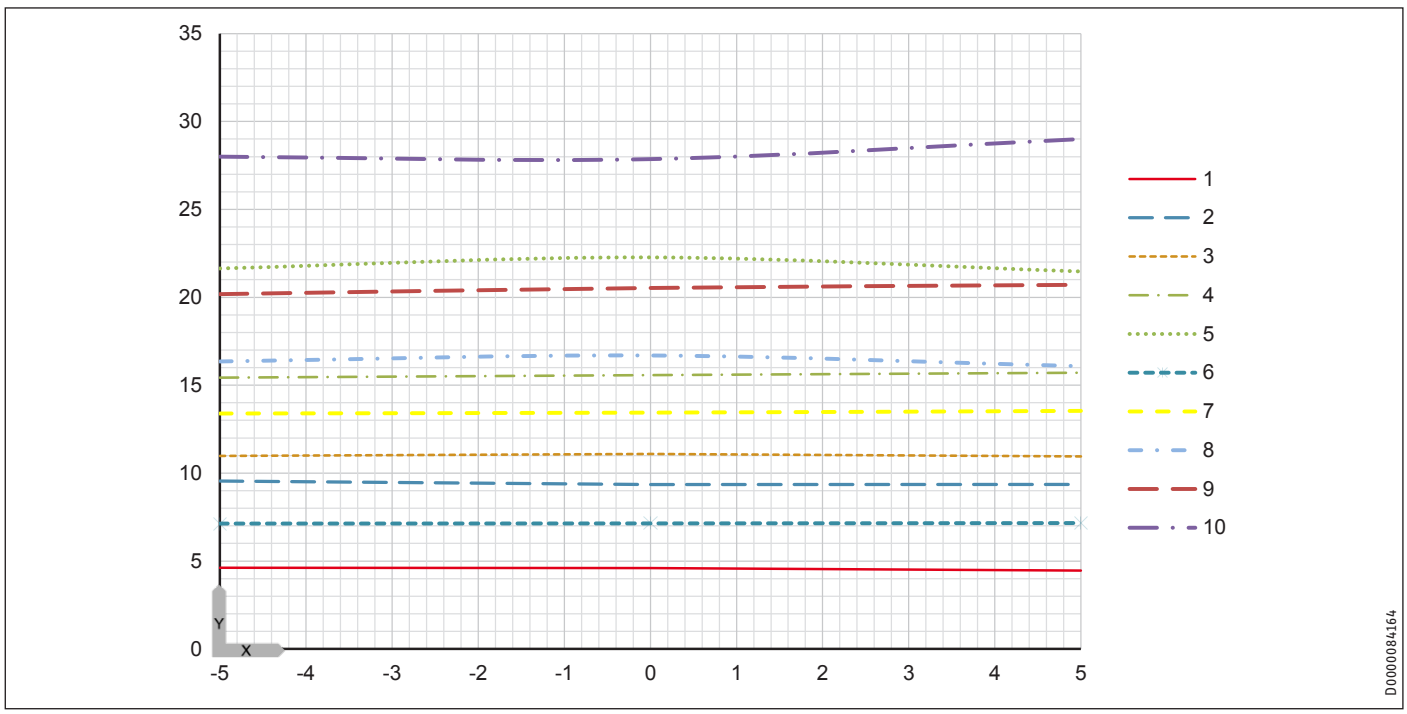
18.4.4 WPE-I 87 H 400 Premium

Heating output



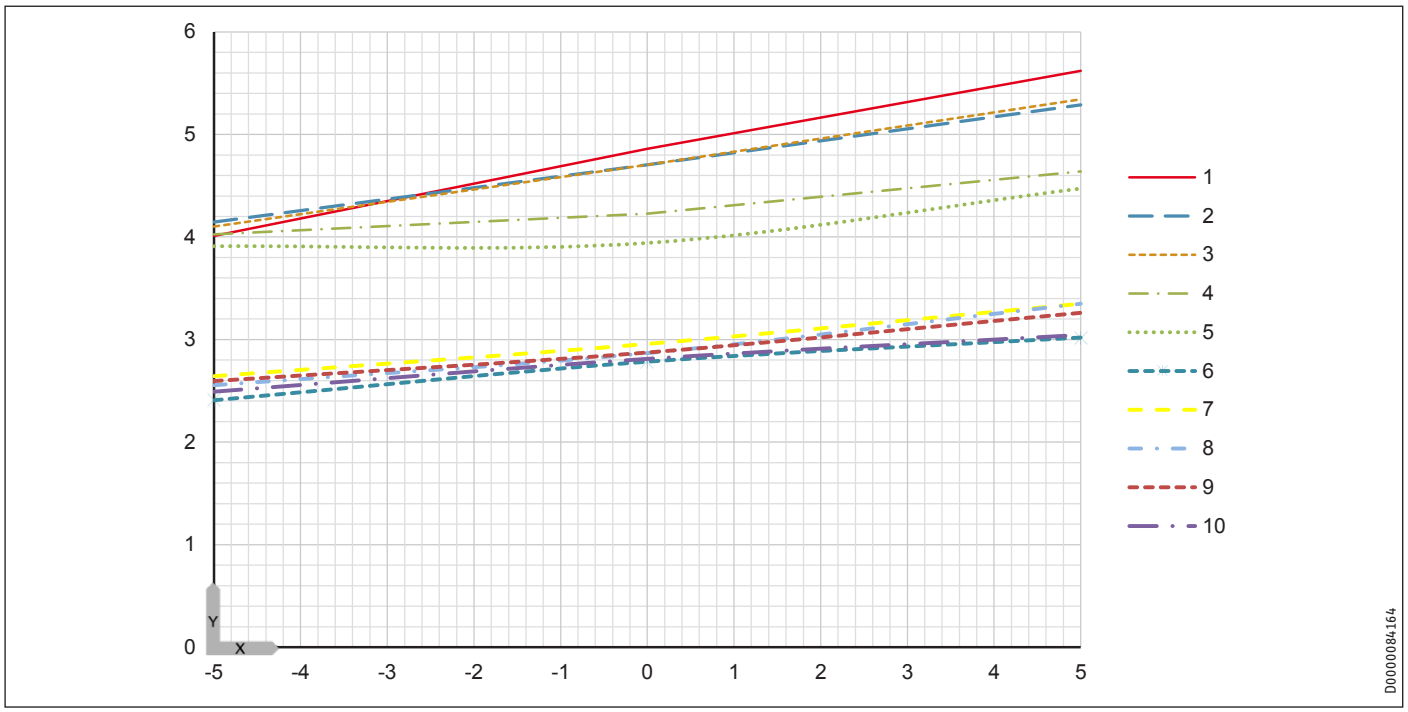
	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
X Temperature of heat source system [°C]	1 1500	3 3600	5 6000	6 1500	8 3600	10 6000
Y Heating output [kW]	2 3000	4 4500		7 3000	9 4500	

Power consumption



	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
X Temperature of heat source system [°C]	1 1500	3 3600	5 6000	6 1500	8 3600	10 6000
Y Power consumption [kW]	2 3000	4 4500		7 3000	9 4500	

Coefficient of performance (COP)



	Flow temperature 35 °C [rpm]			Flow temperature 55 °C [rpm]		
X Temperature of heat source system [°C]	1 1500	3 3600	5 6000	6 1500	8 3600	10 6000
Y Coefficient of performance (COP)	2 3000	4 4500		7 3000	9 4500	

18.5 Data table

Output details apply to new appliances with clean heat exchangers.

The power consumption figures for the integral auxiliary drives are maximum values and may vary subject to operating point.

The power consumption of the integral auxiliary drives is included in the output details of the heat pump (to EN 14511).

		WPE-I 33 H 400 Premium	WPE-I 44 H 400 Premium	WPE-I 59 H 400 Premium	WPE-I 87 H 400 Premium
		201412	201413	201414	201415
Heating output					
Heating output at B0/W35 (EN 14511)	kW	20.18	26.71	35.60	52.00
Heating output at B0/W35 (min./max.)	kW	10 - 33	11 - 44	14 - 59	21 - 87
Power consumption					
Power consumption at B0/W35 (EN 14511)	kW	4.26	5.81	7.91	11.0
Coefficients of performance					
COP at B0/W35 (EN 14511)		4.73	4.6	4.5	4.71
SCOP (EN 14825)		5.55	5.65	5.19	5.17
Sound emissions					
Sound power level (EN 12102)	dB(A)	41-56	41-56	46-61	46-63
Application limits					
Min. application limit on the heating side	°C	20	20	20	20
Max. application limit on the heating side	°C	65	65	65	65
Min. application limit, heat source	°C	-10	-10	-10	-10
Max. application limit, heat source	°C	20	20	20	20
Energy data					
Energy efficiency class		A+++/A+++	A+++/A+++	A+++/A+++	A+++/A+++
Energy efficiency class, average climate, W55/W35		A+++/A+++	A+++/A+++	A+++/A+++	A+++/A+++
Electrical data					
Frequency	Hz	50	50	50	50
Fuse protection	A	32	40	50	63
Phases		3/N/PE	3/N/PE	3/N/PE	3/N/PE
Rated voltage	V	400	400	400	400
Starting current	A	17	21	29	37
Max. operating current	A	25.2	29.3	39.8	54.2
Versions					
Refrigerant		R410A	R410A	R410A	R410A
Refrigerant charge	kg	3.9	4.4	5.7	8.7
CO_2 equivalent (CO_2e)	t	8.14	9.19	11.9	18.16
Global warming potential of the refrigerant (GWP100)		2088	2088	2088	2088
Compressor oil		POE	POE	POE	POE
Condenser material		1.4401/Cu	1.4401/Cu	1.4401/Cu	1.4401/Cu
Evaporator material		1.4401/Cu	1.4401/Cu	1.4401/Cu	1.4401/Cu
Dimensions					
Height	mm	1723	1723	1742	1742
Width	mm	692	692	900	900
Depth	mm	803	803	848	848
Weights					
Weight	kg	300	300	430	550
Connections					
Hot gas connection	mm	28.00	28.00	28.00	28.00
Connecting cable	mm^2	5 x 6.0	5 x 6.0	5 x 10.0	5 x 10.0
Heating water quality requirements					
Water hardness	°dH	≤3	≤3	≤3	≤3
pH value (with aluminium fittings)		8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5
pH value (without aluminium fittings)		8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0
Chloride	mg/l	<30	<30	<30	<30
Conductivity (softening)	µS/cm	<1000	<1000	<1000	<1000
Conductivity (desalination)	µS/cm	20-100	20-100	20-100	20-100
Oxygen 8-12 weeks after filling (softening)	mg/l	<0.02	<0.02	<0.02	<0.02
Oxygen 8-12 weeks after filling (desalination)	mg/l	<0.1	<0.1	<0.1	<0.1
Heat transfer medium requirements on the heat source side					
Concentration, mono ethylene glycol refrigerant	Vol.-%	25-35	25-35	25-35	25-35

Specification

		WPE-I 33 H 400 Premium	WPE-I 44 H 400 Premium	WPE-I 59 H 400 Premium	WPE-I 87 H 400 Premium
Values					
Permissible refrigerant pressure	MPa	4.5	4.5	4.5	4.5
Heating flow rate (EN 14511) at A7/W35, B0/W35 and 5 K	m³/h	3.24	4.5	6.19	9.29
Flow rate on heat source side	m³/h	7.63	9.75	12.38	18.79
Min. heating flow rate	m³/h	1.91	1.91	2.66	3.82
Flow rate on the heating side	m³/h	5.76	7.56	10.3	15.12

Further details

		WPE-I 33 H 400 Premium	WPE-I 44 H 400 Premium	WPE-I 59 H 400 Premium	WPE-I 87 H 400 Premium
		201412	201413	201414	201415
Maximum altitude for installation	m	2000	2000	2000	2000

19. Appendix

19.1 Fault table

Message	Class	Description
High pressure switch	A	High pressure switch activated
Low pressure	A	Paused at low pressure, more than 5 times in 5 hours, low pressure limit = 2.3 bar
High discharge temperature	A	Paused at high discharge temperature, more than 3 times in 8 hours
High pressure	A	Paused at high pressure, more than 5 times in 5 hours, switch-off limit = 41.5 bar
Sensor drain line	A	Sensor alarm
Liquid line sensor	A	Sensor alarm
Suction gas sensor	A	Sensor alarm
Low brine flow/pressure	A	Pressure or flow switch
IO three-phase monitoring	A	BM card, one or more phases have dropped out
Inverters	A	Inverter alarm, more than 3 stops in 2 hours
Superheating	A	Paused at superheating, more than 5 times in 5 hours
Pressure ratio	A	Paused at pressure ratio, high and low pressure side of the compressor, more than 5 times in 5 hours
Outside operating range	A	Paused at operating range limit, more than 5 times in 5 hours
Brine temperature	A	Paused at brine temperature monitoring, more than 5 times in 5 hours
Inverter communication	A	The CM card (control module) has lost the Modbus communication connection to the inverter
Heat pump profile	A	Reconfigure in the heat pump profile menu
No BM card found	A	No BM card detected; a reboot is required
Below operating range	A	Paused at operating range limit, more than 5 times in 5 hours
To right of operating range	A	Paused at operating range limit, more than 5 times in 5 hours
Brine inlet sensor	B	Sensor alarm
Brine outlet sensor	B	Sensor alarm
Condenser inlet sensor	B	Sensor alarm
Condenser outlet sensor	B	Sensor alarm
Outside temperature sensor	B	Sensor alarm
System flow sensor	B	Sensor alarm
Heating circuit 1 sensor	B	Sensor alarm
Heating circuit 2 sensor	B	Sensor alarm
Heating circuit 3 sensor	B	Sensor alarm
Heating circuit 4 sensor	B	Sensor alarm
Heating circuit 5 sensor	B	Sensor alarm
DHW charging system sensor	B	Sensor alarm
DHW control sensor	B	Sensor alarm
DHW return	B	Sensor alarm
Cooling cylinder sensor	B	Sensor alarm
Cooling circuit flow sensor	B	Sensor alarm
Cooling circuit return sensor	B	Sensor alarm
Max. temperature differential on brine side	B	Temperature differential on the brine side exceeds the "Brine differential alarm limit" set value
DHW sensor (centre)	B	Sensor alarm
Maximum brine flow temperature	B	Brine flow temperature is above the set limit for brine temperature monitoring
Minimum brine flow temperature	B	Brine flow temperature is below the set limit for brine temperature monitoring
Minimum brine return temperature	B	Brine return temperature is below the set limit for brine temperature monitoring
Fault, humidity sensor (room)	B	Sensor alarm
Heat surplus, flow	B	Sensor alarm
Heat surplus, return	B	Sensor alarm
Return sensor, cooling	B	Sensor alarm
Pool return sensor	B	Sensor alarm
End cylinder sensor DHW	B	Sensor alarm; TWC anti-legionella function must be activated
Max. pasteurisation time exceeded	B	The pasteurisation function was not completed within 3.5 hours of starting.
Buffer cylinder sensor	B	Sensor alarm
EM communication: 0-9	B	Communication error for EM. The CM card (control module) cannot communicate with one or more EM cards.
EM communication: 10-19	B	Communication error for EM. The CM card (control module) cannot communicate with one or more EM cards.
Heating circuit 2 room sensor	B	Sensor alarm
Heating circuit 3 room sensor	B	Sensor alarm
Heating circuit 4 room sensor	B	Sensor alarm
Heating circuit 5 room sensor	B	Sensor alarm
Min. control, DHW return	C	Low temperature according to alarm settings for DHW return temperature
Min. control, DHW	C	Low temperature according to alarm settings for DHW flow temperature
Water charging system control	C	Temperature deviation according to alarm settings for water charging system

Message	Class	Description
Heating circuit 1 control	C	Temperature deviation according to alarm settings for heating circuit 1
Heating circuit 2 control	C	Temperature deviation according to alarm settings for heating circuit 2
Heating circuit 3 control	C	Temperature deviation according to alarm settings for heating circuit 3
Heating circuit 4 control	C	Temperature deviation according to alarm settings for heating circuit 4
Heating circuit 5 control	C	Temperature deviation according to alarm settings for heating circuit 5
Cooling circuit supply control	C	Temperature deviation in accordance with alarm settings for cooling
Cooling buffer cylinder control	C	Temperature deviation according to alarm settings for buffer cylinder cooling
Surplus heat control	C	Temperature deviation in accordance with alarm settings for surplus heat
Room temperature sensor	C	Room temperature sensor communication error
External alarm	C	Alarm input for external alarm; activation in the "Alarm control/central alarm" menu is required
Low system flow temperature	C	Flow temperature below 70 % of the set value for longer than 3 hours
High system supply temp.	C	Flow temperature exceeds the specified limit value (standard: 70 °C)
DHW valve stuck	C	The controller suspects that the DHW valve is stuck in the wrong position
Communication error with primary heat pump	D	Communication error secondary to primary heat pump
Communication error with secondary heat pump	D	Communication error primary to secondary heat pump
Too few secondary heat pumps detected.	D	The number of secondary heat pumps communicating with the primary heat pump is less than expected
Secondary heat pump class A alarm	D	A secondary heat pump reacting to a class A alarm
Secondary heat pump class B alarm	D	A secondary heat pump reacting to a class B alarm
Multiple primary heat pumps detected	D	One or more additional primary heat pumps have been detected on the same communication port. Correct the cause by changing the communication port.
Alarm, ext. heat pump pressure switch	E	Operating pressure switch for extension module
Ext. heat pump general error	E	Central alarm from external heat pump
Communication ext. heat pump	E	Communications error

19.2 Commissioning checklist

Note
This commissioning checklist is solely intended to provide assistance to qualified contractors. It is not exhaustive and is subject to change and correction. Qualified contractors are responsible for the services and work they have provided and must observe and comply with the latest technical standards and generally accepted engineering standards.

Note
Read the operating and installation instructions of the appliances and the accessories carefully before use and retain them for future reference. This checklist cannot replace careful reading of the operating and installation instructions.

	Checkpoint	Reference to the operating and installation instructions	Check-box
Siting			
	Have the minimum clearances been maintained?	Heat pump: Chapter "Minimum clearances"	❑
	Has the general information on sound and installation location been taken into account?	Heat pump: Chapter “Preparations”	❑
	Have the wall outlets for the hydraulic lines and electric cables been sealed against moisture?	Heat pump: Chapter “Wall outlet”	❑
Hydraulic installation			
	Was the heat source system flushed thoroughly with brine before the heat pump was connected?	Heat pump: Chapter "Installing the heat source system"	
	Was the heating system flushed thoroughly with suitable water before the heat pump was connected?	Heat pump: Chapter "Flow and return connection"	❑
	Have the flow and return been correctly connected to the heat pump and the cylinder or heating system and sufficiently insulated?	Heat pump: Chapter "Flow and return connection"	❑
	Does the water quality correspond to the specifications in the technical data table?	Heat pump: Chapter “Data table”	❑
	Has the heating system been charged to the correct pressure?		❑
	Has the heating system been fully vented at the heat pump and the cylinder or heating system and the air vent valves then closed again?	Heat pump: Chapter "Filling the heating system"	❑
	Have all the pipes in the heating system been sized correctly?		❑
	Has hydronic balancing been carried out?		❑
Electrical installation			
	Have cables with a sufficient cross-section and the correct fuse protection been used for the electrical connection?	Heat pump: “Data table”	❑
	Has the outside temperature sensor been installed on the correct side of the building (north or north-east wall) and protected from external heating and direct sunlight?	Heat pump: Chapter “Sensor installation”	❑
	If cooling is to be provided: Have the room based remote controls been installed in the lead room and connected electrically?		❑
	If cooling is to be provided: Has a buffer cylinder for cooling been installed and connected in the heating system?		
	For systems with DHW heating: Have the DHW temperature sensors been properly connected, positioned and programmed at the programming unit?		❑
	Has the heating circuit flow sensor been correctly positioned and connected? (lowest sensor well in the buffer cylinder)		❑
Initial start-up			
	Has the correct language been set?	Programming unit: Operating instructions, chapter "Setting the language"	❑
	Has the set room temperature been selected?	Programming unit: Operating instructions, chapter "Adjusting the temperature (heating)"	❑
	Has the heating curve been set?	Programming unit: Operating instructions, chapter "Adjusting the temperature (heating)"	❑
	Has the buffer cylinder been configured correctly in the programming unit?	Programming unit: Commissioning instructions, chapter "Controller menu" (Settings / Buffer cylinder)	❑
	If cooling is to be provided: Has the heat pump for cooling been enabled and the necessary settings made?	Programming unit: Commissioning instructions, chapter "Controller menu" (Settings / Cooling)	❑
	Has the high pressure switch been tested?		❑

Guarantee

The guarantee conditions of our German companies do not apply to appliances acquired outside of Germany. In countries where our subsidiaries sell our products a guarantee can only be issued by those subsidiaries. Such guarantee is only granted if the subsidiary has issued its own terms of guarantee. No other guarantee will be granted.

We shall not provide any guarantee for appliances acquired in countries where we have no subsidiary to sell our products. This will not affect warranties issued by any importers.

Environment and recycling

We would ask you to help protect the environment. After use, dispose of the various materials in accordance with national regulations.

Deutschland
STIEBEL ELTRON GmbH & Co. KG
Dr.-Stiebel-Straße 33 | 37603 Holzminden
Tel. 05531 702-0 | Fax 05531 702-480
info@stiebel-eltron.de
www.stiebel-eltron.de

Verkauf Tel. 05531 702-110 | Fax 05531 702-95108 | info-center@stiebel-eltron.de
Kundendienst Tel. 05531 702-111 | Fax 05531 702-95890 | kundendienst@stiebel-eltron.de
Ersatzteilverkauf Tel. 05531 702-120 | Fax 05531 702-95335 | ersatzteile@stiebel-eltron.de

Australia
STIEBEL ELTRON Australia Pty. Ltd.
294 Salmon Street | Port Melbourne VIC 3207
Tel. 03 9645-1833 | Fax 03 9644-5091
info@stiebel-eltron.com.au
www.stiebel-eltron.com.au

Austria
STIEBEL ELTRON Ges.m.b.H.
Gewerbegebiet Neubau-Nord
Margaritenstraße 4 A | 4063 Hörsching
Tel. 07221 74600-0 | Fax 07221 74600-42
info@stiebel-eltron.at
www.stiebel-eltron.at

Belgium
STIEBEL ELTRON bvba/sprl
't Hofveld 6 - D1 | 1702 Groot-Bijgaarden
Tel. 02 42322-22 | Fax 02 42322-12
info@stiebel-eltron.be
www.stiebel-eltron.be

China
STIEBEL ELTRON (Tianjin) Electric Appliance Co., Ltd.
Plant C3, XEDA International Industry City
Xiqing Economic Development Area
300085 Tianjin
Tel. 022 8396 2077 | Fax 022 8396 2075
info@stiebeleltron.cn
www.stiebeleltron.cn

Czech Republic
STIEBEL ELTRON spol. s r.o.
Dopraváků 749/3 | 184 00 Praha 8
Tel. 251116-111 | Fax 235512-122
info@stiebel-eltron.cz
www.stiebel-eltron.cz

Finland
STIEBEL ELTRON OY
Kapinakuja 1 | 04600 Mäntsälä
Tel. 020 720-9988
info@stiebel-eltron.fi
www.stiebel-eltron.fi

France
STIEBEL ELTRON SAS
7-9, rue des Selliers
B.P 85107 | 57073 Metz-Cédex 3
Tel. 0387 7438-88 | Fax 0387 7468-26
info@stiebel-eltron.fr
www.stiebel-eltron.fr

Hungary
STIEBEL ELTRON Kft.
Gyár u. 2 | 2040 Budaörs
Tel. 01 250-6055 | Fax 01 368-8097
info@stiebel-eltron.hu
www.stiebel-eltron.hu

Japan
NIHON STIEBEL Co. Ltd.
Kowa Kawasaki Nishiguchi Building 8F
66-2 Horikawa-Cho
Saiwai-Ku | 212-0013 Kawasaki
Tel. 044 540-3200 | Fax 044 540-3210
info@nihonstiebel.co.jp
www.nihonstiebel.co.jp

Netherlands
STIEBEL ELTRON Nederland B.V.
Daviottenweg 36 | 5222 BH 's-Hertogenbosch
Tel. 073 623-0000 | Fax 073 623-1141
info@stiebel-eltron.nl
www.stiebel-eltron.nl

Poland
STIEBEL ELTRON Polska Sp. z O.O.
ul. Działkowa 2 | 02-234 Warszawa
Tel. 022 60920-30 | Fax 022 60920-29
biuro@stiebel-eltron.pl
www.stiebel-eltron.pl

Russia
STIEBEL ELTRON LLC RUSSIA
Urzhumskaya street 4,
building 2 | 129343 Moscow
Tel. 0495 7753889 | Fax 0495 7753887
info@stiebel-eltron.ru
www.stiebel-eltron.ru

Slovakia
STIEBEL ELTRON Slovakia, s.r.o.
Hlavná 1 | 058 01 Poprad
Tel. 052 7127-125 | Fax 052 7127-148
info@stiebel-eltron.sk
www.stiebel-eltron.sk

Switzerland
STIEBEL ELTRON AG
Industrie West
Gass 8 | 5242 Lupfig
Tel. 056 4640-500 | Fax 056 4640-501
info@stiebel-eltron.ch
www.stiebel-eltron.ch

Thailand
STIEBEL ELTRON Asia Ltd.
469 Moo 2 Tambol Klong-Jik
Amphur Bangpa-In | 13160 Ayutthaya
Tel. 035 220088 | Fax 035 221188
info@stiebeleltronasia.com
www.stiebeleltronasia.com

United Kingdom and Ireland
STIEBEL ELTRON UK Ltd.
Unit 12 Stadium Court
Stadium Road | CH62 3RP Bromborough
Tel. 0151 346-2300 | Fax 0151 334-2913
info@stiebel-eltron.co.uk
www.stiebel-eltron.co.uk

United States of America
STIEBEL ELTRON, Inc.
17 West Street | 01088 West Hatfield MA
Tel. 0413 247-3380 | Fax 0413 247-3369
info@stiebel-eltron-usa.com
www.stiebel-eltron-usa.com

STIEBEL ELTRON

4 017213 414957

A 341495-42609-9567
B 339363-42609-9567

Stand 9535