

# STIEBEL ELTRON

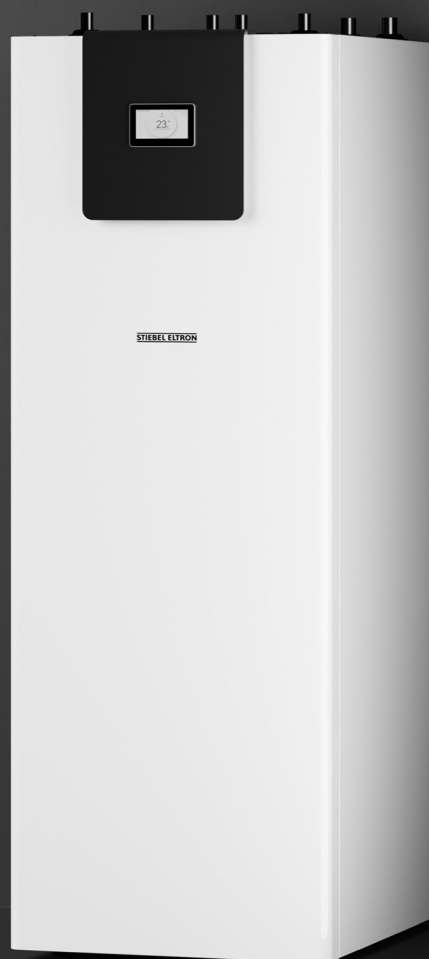
WPE-I 05 H 400 Plus /  
WPE-I 07 H 400 Plus /  
WPE-I 10 H 400 Plus /  
WPE-I 13 H 400 Plus /  
WPE-I 17 H 400 Plus /  
WPE-I 05 HW 400 Plus /  
WPE-I 07 HW 400 Plus /  
WPE-I 10 HW 400 Plus

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Ground source heat pump

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## 1 Special information

- The following groups of people are not permitted to use the appliance:
  - Children
  - Persons with reduced physical, sensory or mental capabilities
  - Persons lacking experience and expertise
- Children must never play with the appliance.
- Only qualified contractors are permitted to clean and service the appliance.
- 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.
- Observe all applicable national and regional regulations and instructions during installation.
- Never install the appliance in a room containing flammable surfaces.
- Before installation, never store the appliance in a room where permanently active ignition sources are present or in operation. These include, for example, open flames, gas appliances, electric heating appliances or hot surfaces at temperatures >700 °C.
- Only a qualified contractor authorised by the manufacturer may carry out servicing and repairs. Servicing may should always be carried out according to the manufacturer's instructions.
- Observe the applicable national gas installation regulations.

## 2 General information



Read these instructions carefully before using the appliance and retain them for future reference. Pass on these instructions along with the appliance as necessary.

### 2.1 Symbols in this document

Symbol	Meaning
	This symbol indicates possible property damage, equipment damage, consequential damage or environmental damage.
	General information is identified by the adjacent symbol.
	This symbol indicates that you have to do something.

Symbol	Meaning
✓	This symbol indicates that you must fulfil certain prerequisites before you perform the following steps.
⇒	This symbol indicates a result or intermediate result.
□□■	These symbols indicate the software menu level (in this example level 3).
[▶ 11]	This symbol indicates a reference to the corresponding page number (page 11 in this example).

### 2.2 Units of measurement

All measurements are given in mm unless stated otherwise.

### 2.3 Symbols on the appliance

Symbol	Meaning
	Inlet/intake
	Outlet/discharge
	Heat source
	Heating
	DHW

### 2.4 Other applicable documents

- Instructions for the heat pump manager
- Operating and installation instructions for system components
- Instructions for the accessories used

### 2.5 Standardised output data

Information on determining and interpreting the specified standardised output data

#### Standard: EN14511

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 conditions applicable to the relevant test match those of the standard shown in the heading of this chapter.

### 2.6 Target groups

#### Operator

Person without specialist expert knowledge

## Qualified heating contractor

Person with specialist expert knowledge in the following areas: heating technology, heating media, building services and engineering, ventilation and air conditioning technology, measuring technology, heat pump technology, environmental technology, occupational safety and fire safety

## Qualified electrical contractor

Person with specialist expert knowledge in the following areas: electrical engineering, measuring technology, occupational safety and fire safety

## Apprentice

Apprentices may only carry out the assigned tasks under professional supervision and instruction.

## Professional qualification

Subject to local legislation, training, a course of studies or skill development is required.

Specialist expert knowledge applies subject to local regulations.

## Gender-sensitive documentation

We endeavour to follow language changes and use gender-aware linguistic form without compromising fluency. We aim to recognise, include and speak to all genders in our documentation.

## 3 Safety

### 3.1 Structure of the warning notices

#### 3.1.1 Section-specific warning notices

Section-specific warning notices apply to all steps in the section.

#### Injury

#### CAUTION



#### Type and source of risk

Consequence(s) of failure to observe the warning notice

► Hazard prevention measure(s)

#### Property damage, consequential losses, environmental pollution

#### NOTICE



#### Type and source of risk

Consequence(s) of failure to observe the warning notice

Hazard prevention measure(s)

#### 3.1.2 Embedded warning notices

Embedded warning notices apply only to the subsequent step.

- **SIGNAL WORD: Consequence(s) of failure to observe the warning notice. Hazard prevention measure(s).** Step to which the warning notice refers

#### 3.1.3 Key to symbols

Symbol	Type of risk
	Injury

Symbol	Type of risk
	Electrocution
	Burns, scalding

#### 3.1.4 Signal words

Signal word	Meaning
DANGER	Failure to observe this information will result in death or serious injury
WARNING	Failure to observe this information may result in death or serious injury
CAUTION	Failure to observe this information may result in moderate or minor injury
NOTICE	Failure to observe this information may result in property damage, consequential losses or environmental damage

### 3.2 Intended use

WPE-I H 400 Plus: This appliance is designed for to heat rooms.

WPE-I HW 400 Plus: The appliance is used for DHW heating and for heating rooms.

The appliance is designed for installation indoors.

The product is designed for domestic use. It can be used safely by untrained persons. This product can also be used in a non-domestic environment, e.g. in a small business, as long as it is used in the same way.

Observation of these instructions and of instructions for any accessories used is also part of the intended use of this appliance.

Permitted brine:

Type	Description	Part no.
MEG 10	Heat transfer medium as concentrate based on ethylene glycol Content: 10 l	231109
MEG 30	Heat transfer medium as concentrate based on ethylene glycol Content: 30 l	161696

### 3.3 Foreseeable misuse

Any other use beyond that described shall be deemed to be outside the intended use.

The appliance is not designed for installation in damp areas.

### 3.4 Safety instructions

- Failure to install and wire the appliance correctly may result in injury. Only a qualified contractor may carry out electrical installation and installation of the appliance.
- Safe use is not guaranteed if you install the appliance. The appliance should only be operated once it is fully installed and all safety equipment has been fitted.
- Opening the casing while the appliance is in operation may cause injury. Only operate the appliance with the casing closed.

#### Property damage, consequential losses, environmental pollution

- Unsuitable spare parts and accessories may jeopardise user and product safety. Always use original spare parts and original accessories.

- If the overflow pipes are blocked, the pressure in the appliance cannot be reduced. Never block the connection to the overflow pipes for the air vent valves.
- Polluted ambient air can damage the appliance. Protect the appliance from dust and dirt during building work.

## 4 Appliance description

### 4.1 Function description

The appliance supplies multiple draw-off points with domestic hot water and heating water.

Appliance type WPE-I HW 400 Plus is equipped with an integral DHW cylinder.

Appliance type WPE-I H 400 Plus can be linked to a separate DHW cylinder (not part of the standard delivery).

#### Function

- A sealed refrigerant circuit routes the refrigerant from the appliance into the ground and back again. The refrigerant absorbs the heat from the ground and is converted in the evaporator from a liquid to a gas.
- The compressor draws in the gaseous refrigerant and compresses it. This increase in pressure raises the refrigerant temperature still further.
- In the downstream condenser, the refrigerant then transfers heat to the heating water.
- The still prevalent pressure is then reduced and the cyclical process starts again.
- The heating water is pumped through a DHW cylinder heating coil, heating the domestic hot water.

The lower the ground temperature and the higher the selected set temperature, the longer the heat-up time. The heating output of the heat pump drops and the demand for electrical energy increases.

#### Electric emergency/auxiliary heater

The appliance is equipped with an electric emergency/auxiliary heater (DHC).

The electric emergency/auxiliary heater can be deactivated in the heat pump manager. When it is activated, it performs the following functions:

To safeguard heating operation, the electric emergency/auxiliary heater is activated if the temperature falls below the dual mode point in mono mode operation.

The electric emergency/auxiliary heater is activated if the temperature falls below the dual mode point in mono energetic operation.

The electric emergency/auxiliary heater is activated if the heat demand exceeds the heating output of the heat pump.

#### Heat pump manager (WPM)

The heat pump manager is an integral weather-compensated flow temperature control unit.

The WPM regulates DHW heating to the preferred temperature and controls the built-in electric emergency/auxiliary heater.

#### Detection of a leak in the brine circuit

The appliance is equipped with a brine pressure switch in the brine circuit. The brine pressure switch prevents brine getting into the ground if there is a leak in the brine circuit.

If the pressure in the brine circuit falls below 0.7 bar, the brine pressure switch turns the heat pump off. In order for the heat pump to be enabled again, the pressure must be raised to at least 1.5 bar while the heat pump is on standby.

### 4.2 Standard delivery

- 1× outside sensor
- 1× contact sensor
- Gaskets for water line and brine line connections

### 4.3 Accessories

#### 4.3.1 Required accessories

For DHW heating, a DHW cylinder with an internal indirect coil is required. The minimum indirect coil surface area can be found in the table.

Output	Indirect coil surface area
WPE-I 05 H 400 Plus	2 m <sup>2</sup>
WPE-I 05 HW 400 Plus	
WPE-I 07 H 400 Plus	
WPE-I 07 HW 400 Plus	
WPE-I 10 H 400 Plus	
WPE-I 10 HW 400 Plus	
WPE-I 13 H 400 Plus	3.2 m <sup>2</sup>
WPE-I 17 H 400 Plus	

#### 4.3.2 Optional accessories

- ISG Internet Service Gateway

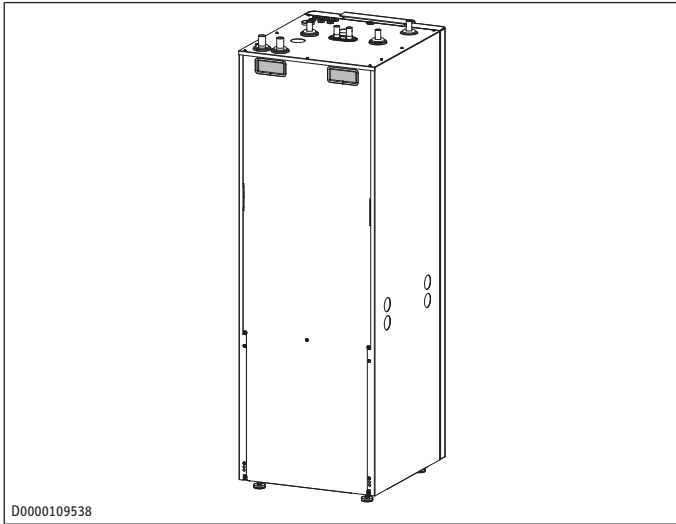
The ISG Internet Service Gateway enables you to operate the heat pump within your local home network and via the internet when you are away.

## 5 Transportation (qualified contractors)

Observe the following information:

- The appliance casing is not designed to withstand strong forces.
- The appliance is easier to transport in its packaging on the pallet than if it is removed from the packaging.
- ▶ Transport the appliance at temperatures between -20 °C and +50 °C.
- ▶ Transport the appliance vertically.
- ▶ Transport the appliance using a sack truck. Secure the appliance to the sack truck so that it cannot tip over and the casing will not become damaged.
- ▶ Use the recessed grips and the bottom section of the pallet to carry the appliance.

# Installation (qualified contractors)



► Remove the transport plugs from the connections for the water lines and brine lines.

## 6 Installation (qualified contractors)

### 6.1 Installation site

The installation site must fulfil the following requirements:

- Free from the risk of frost
- No unauthorised access
- Adequate lighting
- Adequate ventilation and even distribution of air at the installation site
- Substrate
  - Horizontal
  - Level
  - Sufficient load bearing capacity
  - Water resistant
  - No joist floors
  - Preferably concrete floors
- Bottom drain available (recommended)
- The installation site is not subject to a risk of explosions arising from dust, gases or vapours.
- The appliance does not impair the operation of other appliances at the installation site.

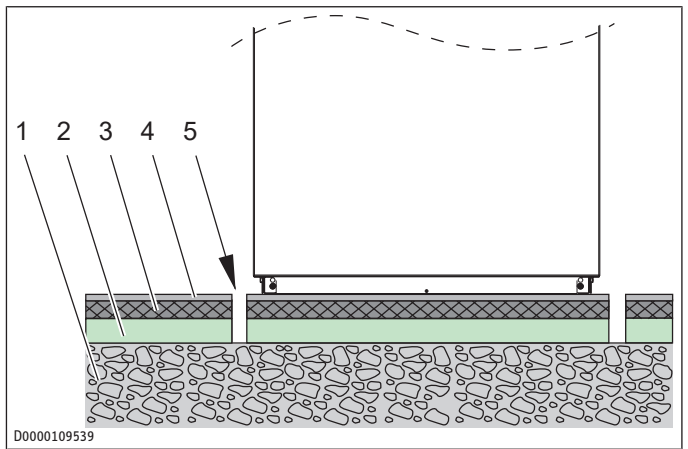
#### 6.1.1 Refrigerant

- Refrigerant must not get into adjacent rooms, open areas, corridors or drainage systems. Route any escaping refrigerant or gas to the outside.
- Doors must be airtight and self-closing. They must be able to be opened from the inside and have a fire resistance of at least 1 hour. Escaping refrigerant must not get into living spaces.
- At least one emergency exit must lead directly outside or into an emergency exit corridor.

#### 6.1.2 Sound emissions

- The installation site should not be located in a corner or close to a bedroom or living space. The surrounding walls may amplify the noise of the appliance.

- Ensure that the entire appliance frame is in full contact with the substrate. Uneven substrates can increase sound emissions.
- Avoid installation on large, echoing floor areas, e.g. tiled floors.
- Implement pipe outlets through walls and ceilings with anti-vibration insulation.
- Secure the supply lines with structure-borne noise attenuation on noise-sensitive walls.
- Align the appliance feet.
- 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.

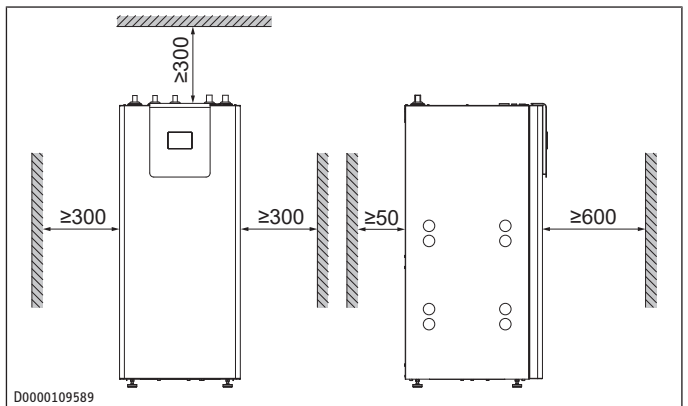


1	Concrete base	2	Impact sound insulation
3	Floating screed	4	Floor covering
5	Recess for anti-vibration material		

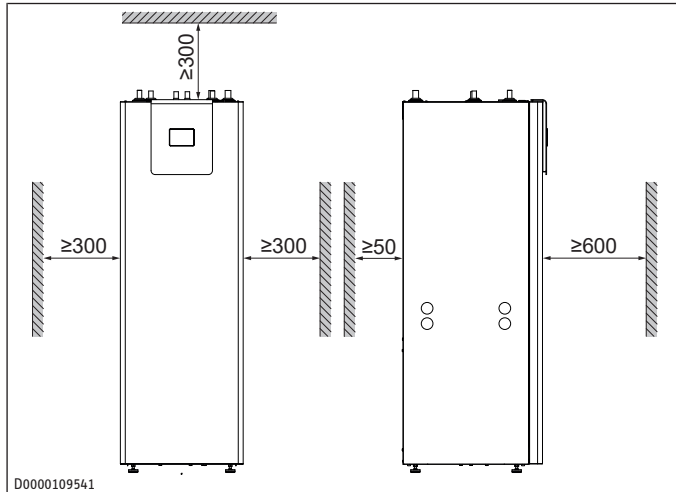
#### 6.1.3 Minimum clearances

- Maintain the minimum clearances in order to ensure trouble-free operation of the appliance and to allow enough space for maintenance work.

#### WPE-I H 400 Plus



## WPE-I HW 400 Plus



### 6.2 Creating wall outlets

- ▶ 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 the wall outlet.

### 6.3 Siting the appliance

#### Unpacking the appliance

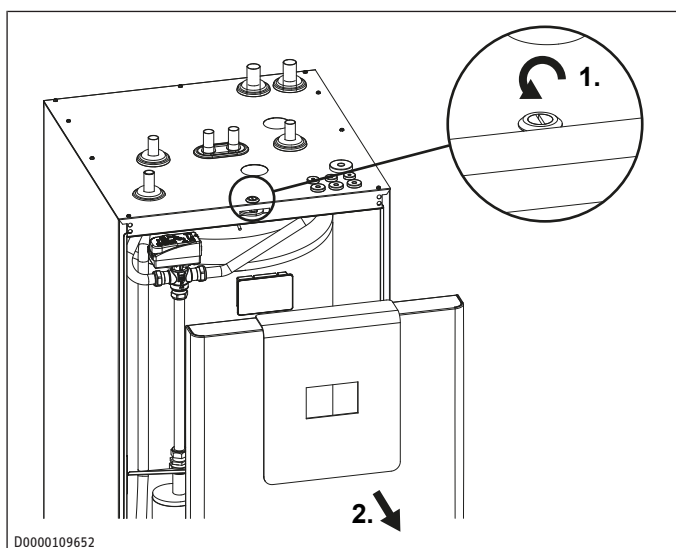
- ▶ Remove the box and packaging film.
- ▶ Slightly tip the appliance and lift it off the pallet. Use the recessed grips and adjustable feet to lift it off.

#### Siting the appliance

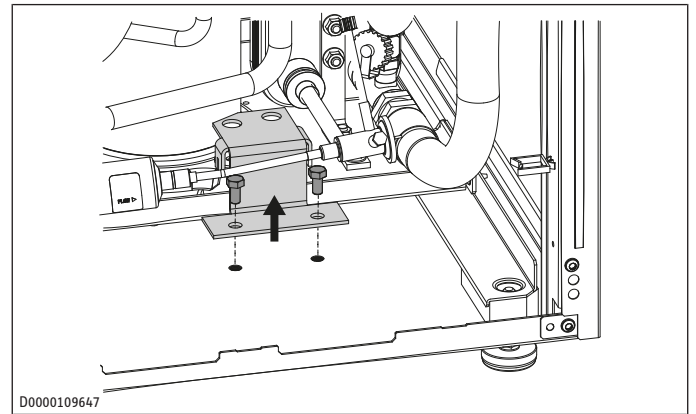
- ▶ Position the appliance on the prepared substrate.
- ▶ Align the appliance horizontally by adjusting the feet.

#### Removing the transport lock

- ▶ **NOTICE:** Ensure that no damage is caused to the cable between the front cover and the appliance. Take off the front cover.



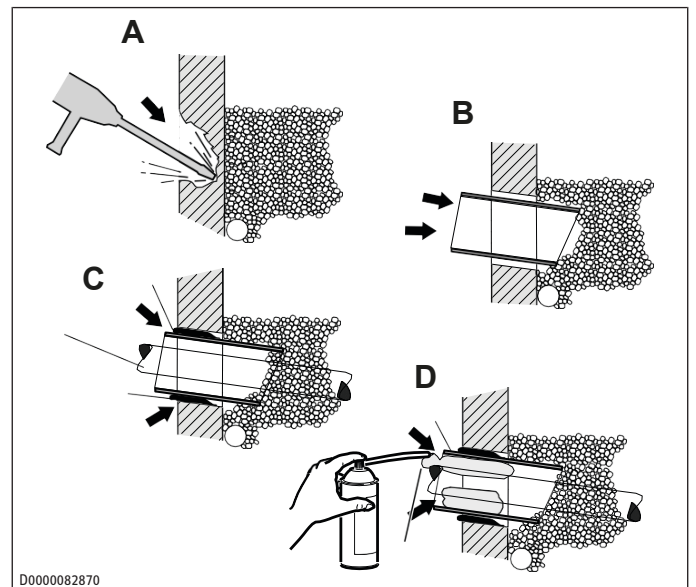
- ▶ Remove the transport lock on the bottom of the appliance.



### 6.4 Installing and filling the brine circuit

#### Routing the brine lines through the wall outlets

- Route the brine lines through separate wall outlets.
- 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.



#### Wall outlet below ground

#### Making up the brine

- ▶ Refer to the specification to determine the brine volume in the heat pump under operating conditions. The overall volume is equal to the amount of brine required.
- ▶ Make up the brine by mixing undiluted glycol and water in a separate clean container. The chloride content of the water must not exceed 250 ppm.

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

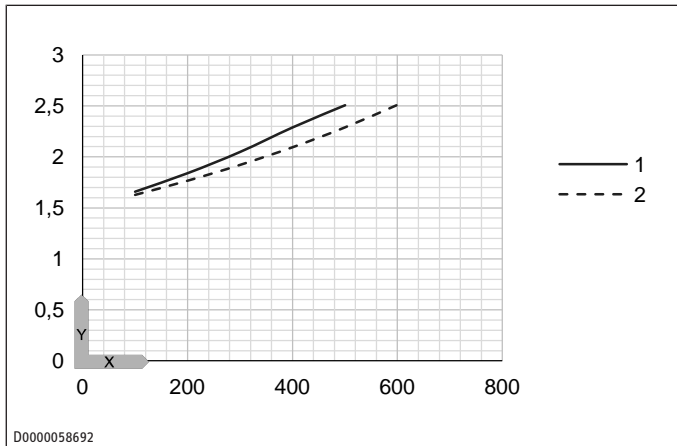
- ▶ Use a refractometer to check the freezing point.

#### Flushing the brine circuit

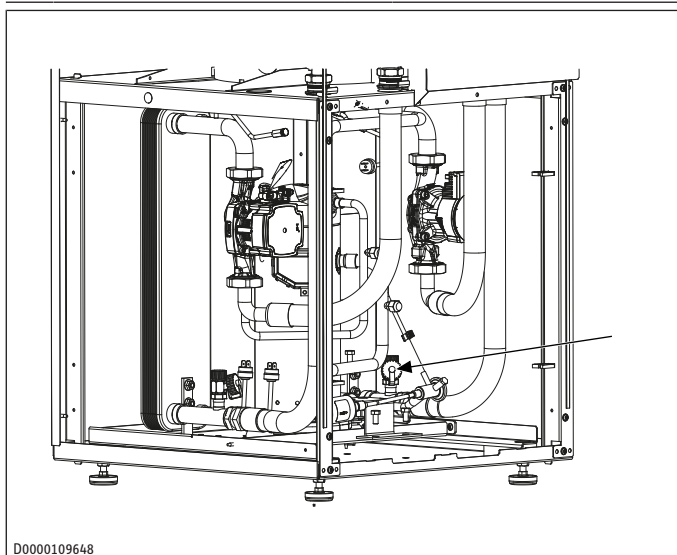
- ✓ You will need an external pump to fill the brine circuit.
- ▶ Connect the pressure side of the external pump to the filling unit.
- ⇒ We recommend brine filling unit WPSF.

## Charging the brine circuit

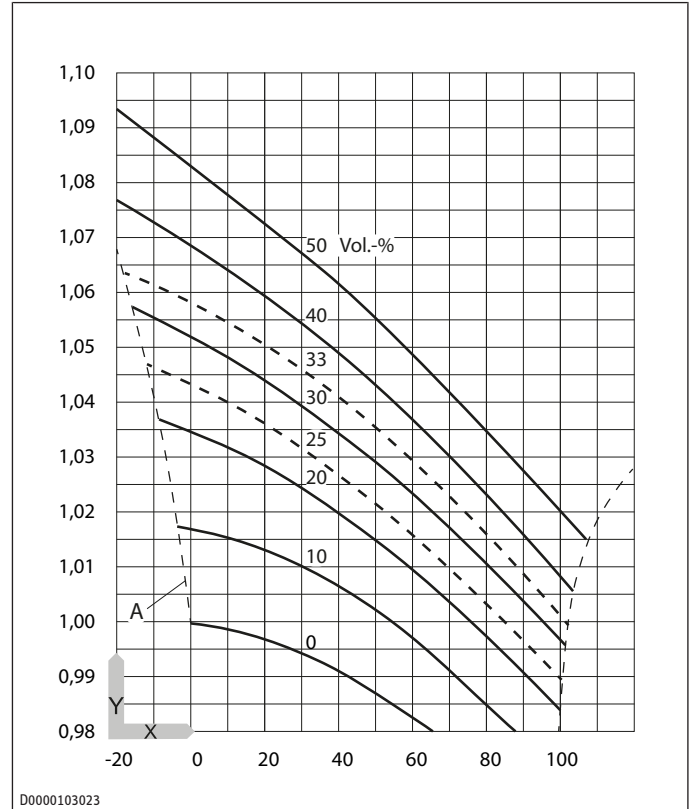
- ▶ **NOTICE: Foreign bodies, such as rust or sealing material, can impair the operational reliability of the heat pump.** Before connecting the heat pump to the heat source circuit, flush the pipework thoroughly with brine.
- ▶ Connect the appliance to the brine circuit.
- ▶ Install a diaphragm expansion vessel on the brine side. Ensure that the pre-charge pressure is at 0.5 bar.
- ▶ To prevent the brine pressure switch turning the heat pump off when there is no leak, charge the heat source side of the heat pump to a pressure of 1.5-3 bar.
- ▶ Charge the system according to the following curve to prevent an unintentional response from the brine pressure switch.



X	System volume [l]	1	Required fill pressure depending on system volume at 33 % brine
Y	Charge pressure [bar]	2	Required fill pressure depending on system volume at 25 % brine



- ▶ Vent the brine circuit.
- ▶ Determine the density of the glycol/water mixture.
- ▶ The concentration based on the measured density and temperature can be found on the diagram.



X Temperature  
Y Density  
A Frost protection

- ▶ Insulate all brine lines with vapour diffusion-proof thermal insulation.
- ▶ Check the pre-charge pressure of the diaphragm expansion vessel on the brine side.
- ▶ If necessary, adjust the pre-charge pressure. The system fill pressure must be higher than the pre-charge pressure plus the max. pressure differential of the heat pump.

## 6.5 Installing the heating circuit

- ✓ The heating system to which the appliance is connected has been installed by a qualified contractor in accordance with the installation diagrams that are part of the technical guides.
- ✓ A diaphragm expansion vessel has been installed.
- ✓ Safety valves (max. opening pressure 3 bar) are installed.
- ▶ Lay the pipework for the heating circuit.
- ▶ **NOTICE: Foreign bodies, such as welding pearls, rust or sealing material, can impair the operational reliability of the appliance.** Flush the pipework thoroughly before connecting the appliance.
- ▶ Install a dirt trap (maximum mesh size 0.7 mm) in the heating return in the immediate vicinity of the appliance.
- ▶ Install a safety valve with a maximum opening pressure of 10 bar on the cold water inlet of the DHW cylinder. Note the position of any non-return valves.
- ▶ Connect the heat pump on the heating side.
- ▶ Provide thermal insulation.
- ▶ When sizing the heating circuit, observe the internal pressure differential (see chapter *Data table* [▶ 23]).



## Heating circuit oxygen diffusion

If oxygen gets into the heating system, steel parts may become corroded, e.g. the indirect coil in the DHW cylinder or the buffer cylinder. The products of corrosion (e.g. rusty sludge) can settle in the heating system components. This may cause the pipe cross-sections to narrow, leading to a lower output.

- ▶ Use oxygen diffusion-proof pipes and hoses (e.g. multi-layer composite pipes).
- ▶ If you have an open vented heating system, separate the heating circuit from the buffer cylinder. For example, you could use a plate heat exchanger for this.

## 6.6 Connecting the appliance to a DHW cylinder

This chapter only applies to the WPE-I H 400 Plus.

A three-way valve is integrated into the appliance for switching between the DHW heating circuit and the central heating circuit.

- ▶ 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.
- ▶ We recommend installing our filter assembly in the DHW heating circuit.
- ▶ Connect the DHW inlet of the heat pump to the upper coil connection of the DHW cylinder.
- ▶ Connect the DHW return of the heat pump to the lower coil connection of the DHW cylinder.
- ▶ **CAUTION: Water discharged from the safety valve overflow pipe may be hot.** Route away any water discharged from the overflow pipe via a bottom drain.

### Using a heat pump without DHW heating

- ▶ Deactivate the function for DHW heating in the WPM.

## 6.7 Filling the DHW cylinder and heating circuit

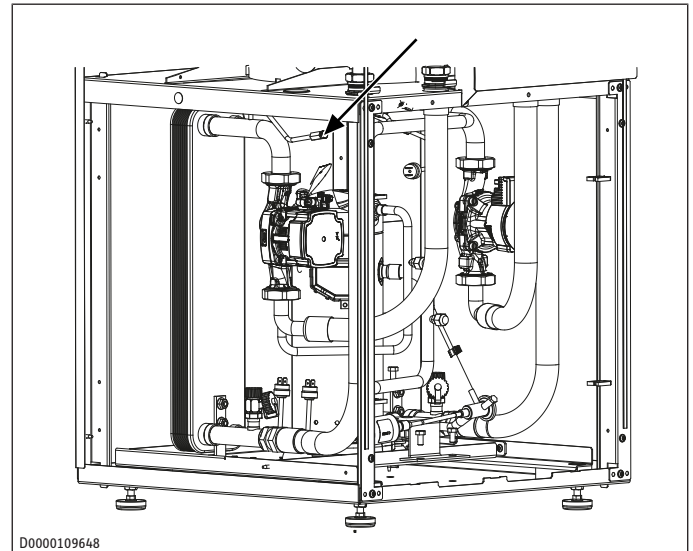
### Before filling, check that

- ✓ The pipe connections have been installed according to the water installation diagrams in the technical guides.
- ✓ A diaphragm expansion vessel has been installed.
- ✓ In heating systems with a sealed unvented diaphragm expansion vessel, a safety valve and a pressure gauge have been installed.
- ✓ A fill connector with a non-return valve has been installed.
- ▶ To prevent damage to the appliance, observe the limits for the fill water. Soften or desalinate the fill water if required.
- With a conductivity >1000 µS/cm, desalination treatment is recommended in order to avoid corrosion.
- If you treat the fill water with inhibitors or additives, the same limits apply as for desalination.
- Recheck these limits 8-12 weeks after commissioning and during the annual service.

### Filling the DHW cylinder and heating circuit

- ✓ The front cover of the heat pump is removed.
- ▶ Open a DHW draw-off point.
  - ⇒ The DHW cylinder is filled.
- ▶ **NOTICE: High flow rates or water hammer can damage the appliance. Fill the appliance at a low flow rate.** Fill the heating circuit with water up to a pressure of 1 bar.

- ▶ Vent the heating coil of the DHW cylinder via the air vent valve on the DHW cylinder e07 (WPE-I HW 400 Plus) or via the air vent valve on the external DHW cylinder (WPE-I H 400 Plus).
- ▶ Switch off the circulation pump.
- ▶ Vent the indirect coil above the circulation pump.



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- ▶ Fill the heating system until the pressure is approx. 1 bar.
- ▶ Repeat the entire process until there is no more air left in the heating system.
- ▶ Check the heating system for leaks.
- ▶ Leave the radiator valves fully open.

### Determining the fill pressure

- ▶ Calculate the pre-charge pressure:

$$P_0 = \frac{\Delta h}{10} + 0,2 \text{ bar}$$

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⇒ The heating system fill pressure is increased.

- ▶ Fill the heating system to the appropriate pressure ( $P_0 + 0.3 \text{ bar}$ ). Observe the safety valve's response pressure of 3 bar.

## 6.8 Electrical connection

- ✓ You must have permission to connect the appliance from the relevant power supply utility (PSU).
- ✓ The heating system has been filled.
- ✓ The cover is removed.
- ▶ Lay the electrical cables through the cable entry in the upper cover.

### Connection version 1

- ▶ Install cables with the following cross-sections in accordance with the respective fuse protection:

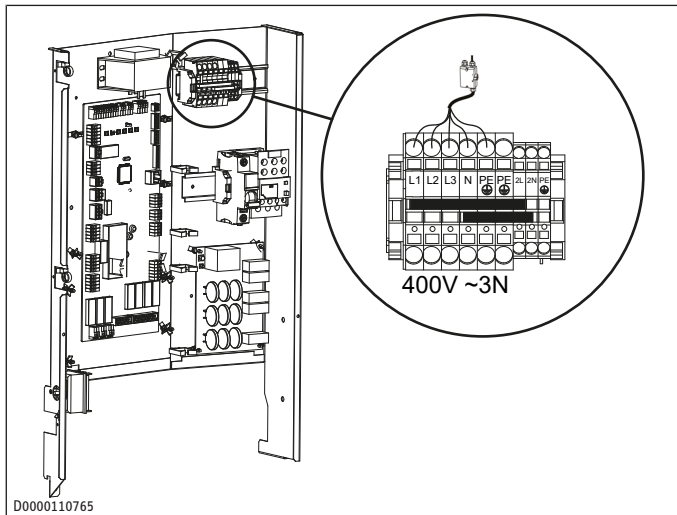
Model	Com-pressor	Compressor with electric emergency/auxiliary heater		
		Com-pressor + 3 kW (stage 1)	Com-pressor + 6 kW (stage 2)	Compressor + 9 kW (stage 3)
WPE-I 05 H 400 Plus	6 A	10 A	16 A	20 A
WPE-I 05 HW 400 Plus				

# Installation (qualified contractors)

Model	Com-pressor	Compressor with electric emergency/auxiliary heater		
		Com-pressor + 3 kW (stage 1)	Com-pressor + 6 kW (stage 2)	Compressor + 9 kW (stage 3)
WPE-I 07 H 400 Plus	6 A	13 A	16 A	20 A
WPE-I 07 HW 400 Plus				
WPE-I 10 H 400 Plus	10 A	13 A	16 A	20 A
WPE-I 10 HW 400 Plus				
WPE-I 13 H 400 Plus	10 A	16 A	20 A	25 A
WPE-I 17 H 400 Plus	13 A	20 A	25 A	32 A

Compressor, electric emergency/auxiliary heater, heat pump manager and circulation pumps have separate internal fuse protection.

- ▶ Strip 15 mm of insulation off the wires.
- ▶ Connect a 5-core 400 V cable.



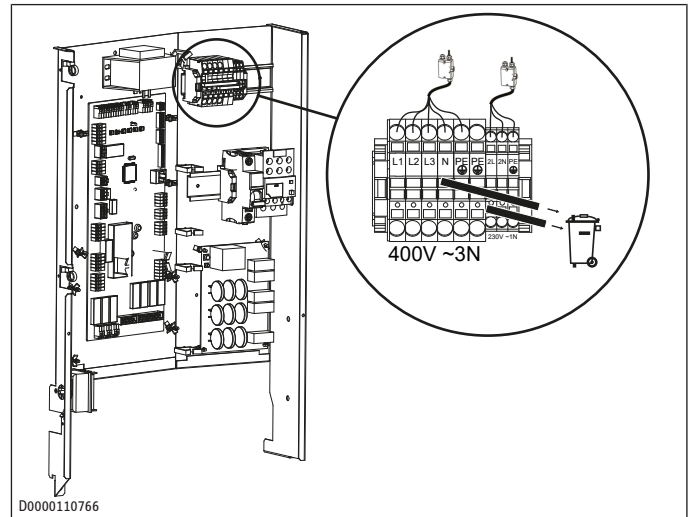
- ▶ If an RCD is required for the installation, connect the heat pump to a separate RCD (minimum 30 mA).

The jumpers remain connected as in factory setting.

## Connection version 2

Required step	Compressor, electric emergency/auxiliary heater	Heat pump manager and circulation pumps
▶ Remove the jumpers and dispose of them.		
▶ Strip insulation off the wires.	15 mm	12 mm
▶ Connect the components to the appropriate mains power supply.	400 V	230 V

This will ensure that, in the event of a power-OFF by the power supply utility, the circulation pumps and the heat pump manager will continue to be supplied with power; the compressor is switched off.



- ▶ If an RCD is required for the installation, connect the heat pump to a separate RCD (minimum 30 mA).
- ▶ Fit the cover.

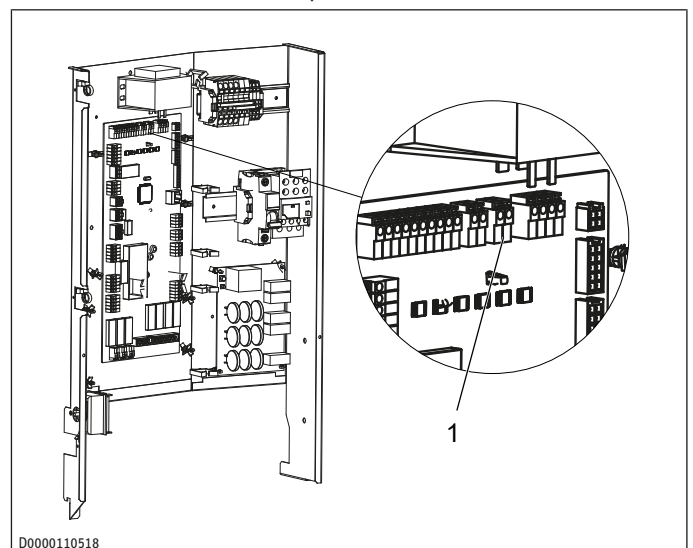
## See also

- ▶ Electrical connection [▶ 9]

## 6.9 Temperature sensor

### Outside temperature sensor

- ✓ The minimum clearances are observed: 2.5 m above the ground, and 1 m to the side of windows and doors.
- ✓ The installation site is not above windows, doors or air ducts.
- ✓ The outside temperature sensor is freely exposed to the elements but not in direct sunlight.
- ✓ The front cover of the heat pump is removed.
- ▶ Remove the cover of the outside temperature sensor.
- ▶ Fasten the lower section using the fixing materials necessary for installation on the required wall.
- ▶ Guide the sensor lead through the designated entry in the cover of the heat pump.
- ▶ Connect the outside temperature sensor.



- 1 T35: Terminal for outside temperature sensor

- ▶ Fit the front heat pump cover.

- ▶ Replace the cover.
  - ⇒ The cover clicks audibly into place.

### Contact sensor AVF 6

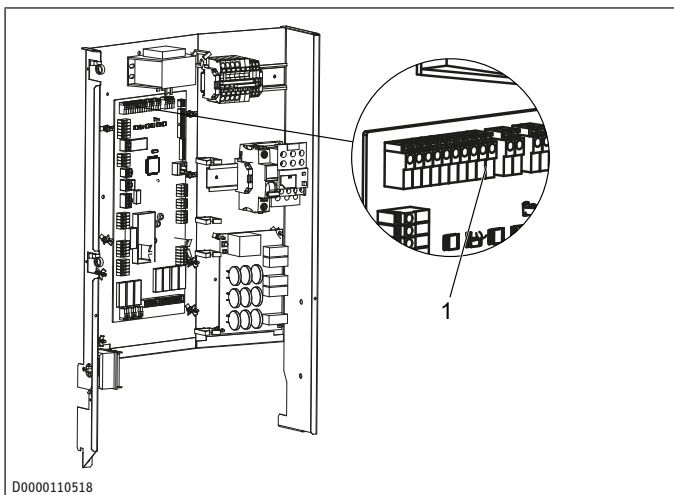
Install the sensor in the heating circuit flow if you wish to use a mixer circuit.

- ▶ Clean the mixer circuit pipe.
- ▶ Apply heat conducting paste.
- ▶ Secure the sensor with a cable tie.

Sensor resistance values:

Temperature [°C]	PT 1000 sensor Resistance [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

- ▶ Connect the sensor.



1 T33: Terminal for contact sensor

## 6.10 High limit safety cut-out

### NOTICE



#### Property damage

Excessively high flow temperatures may damage the underfloor heating system.

- ▶ Use a high limit safety cut-out to limit the system temperature in the event of a fault.

We recommend using high limit safety cut-out STB-FB.

- ▶ Install the high limit safety cut-out according to the corresponding instructions.

## 7 Commissioning (qualified contractors)

Our customer support can assist with commissioning, which is a chargeable service.

If this appliance is intended for commercial use, observe the rules of the relevant Health & Safety at Work Act during commissioning. For further details, check with your local authorising body (e.g. TÜV in Germany).

### 7.1 Checks before commissioning

#### 7.1.1 Heating circuit

- Have you filled the heating system to the correct pressure?
- Have you vented the heat exchanger (condenser)?

#### 7.1.2 Brine circuit

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

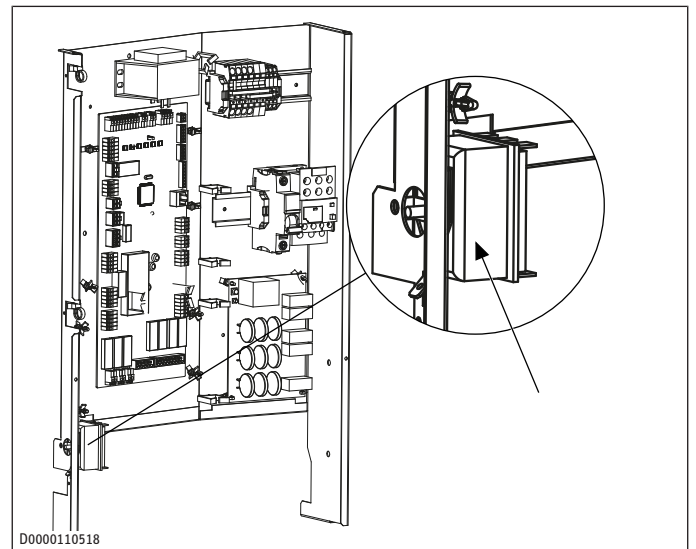
#### 7.1.3 Temperature sensor

- Have you correctly connected and positioned the sensors?

#### 7.1.4 High limit safety cut-out of the emergency/auxiliary heater

At ambient temperatures of below -15 °C, the high limit safety cut-out of the electric emergency/auxiliary heater may trip.

- ▶ Check whether the high limit safety cut-out has tripped.
- ▶ Remove the cause of the fault.



- ▶ Reset the high limit safety cut-out by pressing the reset button.

#### 7.1.5 Power supply

- Have you correctly connected the power supply?

### 7.2 Commissioning the appliance

To commission the appliance, observe the instructions for the controller.

## 8 Cleaning (users)

- ▶ **NOTICE: To prevent damage to components, never use abrasive or corrosive cleaning agents.** Clean plastic and sheet metal parts with a damp cloth.

## 9 Cleaning (qualified contractors)

Component	Interval
Filters in the heating circuit and brine circuit	In the first year: 2× per year Adapt the interval according to the water quality and the installation conditions in subsequent years.

### 9.1 Cleaning the filter in the heating circuit and brine circuit

Cleaning filters can let air into the brine circuit or heating circuit, which may cause operating faults. Information about cleaning magnetite filters can be found in the instructions provided by the filter manufacturer.

#### Heating circuit

- ✓ You have a cloth to hand for any discharged water.
- ▶ Switch off the heat pump.
- ▶ Close the shut-off valve.
- ▶ Take off the cover.
- ▶ Remove the filter.
- ▶ Clean the filter.
- ▶ Reinsert the filter.
- ▶ Ensure that the gasket ring on the cover is not damaged.
- ▶ Fit the cover.
- ▶ Open the appliance shut-off valve.
- ▶ Start the heat pump.

#### Brine circuit

Ask STIEBEL ELTRON customer service for recommendations for the brine circuit filter.

## 10 Maintenance (qualified contractors)

Component	Activity	Interval
Entire appliance	Check operating pressure	Every 2 years
Entire appliance	Leak test (visual check)	Every 2 years
Entire appliance	Check brine level	Every 2 years
Safety valves outside the heat pump unit	Check whether the mechanism is clogged with deposits.	4× per year

### 10.1 Checking the brine level

- ▶ Check the brine level using the brine filling unit or the WPM.
- ▶ If the brine level is below  $\frac{1}{3}$ , check the brine circuit for leaks and top it up (see chapter *Installing and filling the brine circuit* [▶ 7]).

### 10.2 Checking safety valves

The safety valve of the DHW cylinder is located on the supply line to the cold water inlet.

- ▶ **NOTICE: There is a risk of damage to the water tank if the safety valve is not checked regularly.** Check whether the mechanism is clogged by deposits: turn the cap clockwise a quarter of a turn until water is discharged from the overflow pipe.

- ▶ Never block the connection to the overflow pipes for the safety valves. Excess pressure must always be able to escape.

### 10.3 Leak detection (refrigerant)

- ✓ Never use leak detection fluids that contain chlorine. Otherwise, the chlorine may react with the refrigerant and could corrode the copper pipes.
- ✓ Never use potential ignition sources for leak detection.
- ▶ If you suspect a leak, ensure that there are no open flames.
- ▶ Use electronic leak detectors or suitable leak detection fluids.
- ▶ Set the leak detectors to a percentage of the lower flammability limit of the refrigerant.
  - Flammability limit LFL of R452B: 0.31 kg/m<sup>3</sup>
- ▶ Calibrate the leak detector in an area that is not contaminated by refrigerant.
- ▶ When soldering or welding a leak, ensure that the area is adequately ventilated. Remove all refrigerant from the system.

## 11 Troubleshooting (users)

Fault	Possible cause	Remedy
There is no hot water or the heating system remains cold.	No voltage at the appliance.	Check the fuses / MCBs in your fuse box / distribution board. Replace the fuses/reset the MCBs if required. Notify a qualified contractor if the fuses/ MCBs blow/trip again after switching the system back on.

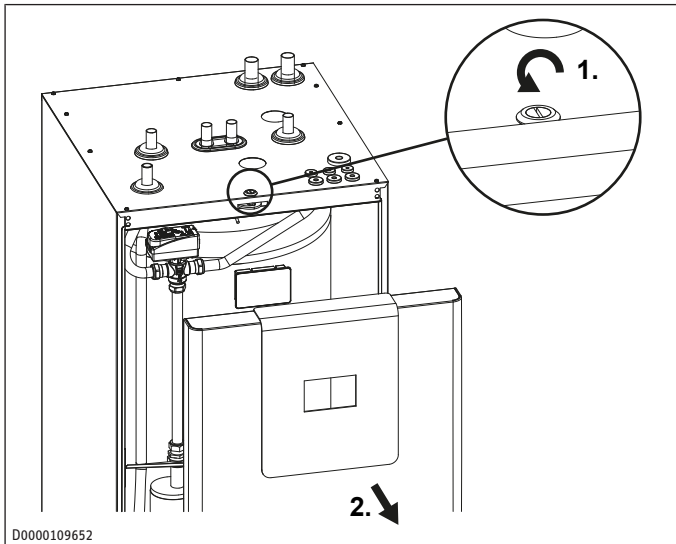
- ▶ If you cannot remedy the fault, contact a qualified contractor.
- ▶ To facilitate and speed up your enquiry, please provide the qualified contractor with the number from the type plate.
- ▶ Observe the instructions for the WPM.

## 12 Troubleshooting (qualified contractors)

### 12.1 Resetting the high limit safety cut-out of the emergency/auxiliary heater

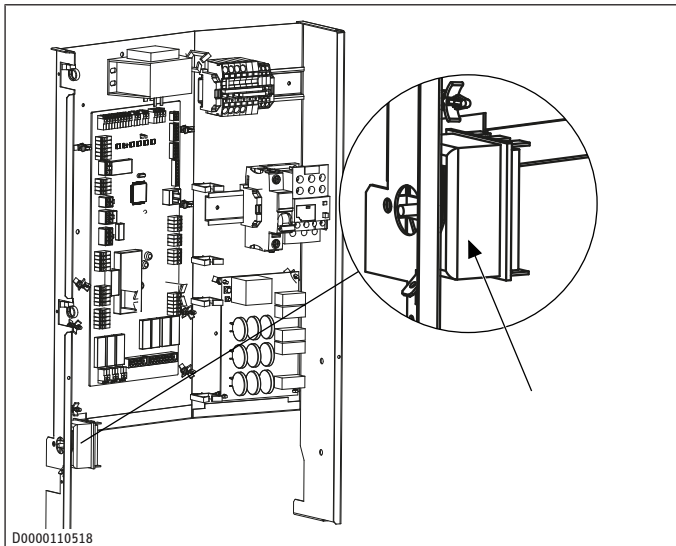
If the heating water temperature exceeds 95 °C, the electric emergency/auxiliary heater shuts down.

- ▶ **NOTICE: Ensure that no damage is caused to the cable between the front cover and the appliance.** Take off the front cover.



D0000109652

- ▶ Remove the cause of the fault.
- ▶ Reset the high limit safety cut-out by pressing the reset button.



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- ▶ Check whether the heating water is being circulated at a sufficiently high flow rate.
- ▶ Install the front cover.

## 13 Shutdown (qualified contractors)

There is no need to shut the system down in summer. The heat pump manager has an automatic summer / winter changeover.

### Standby mode

- ▶ Activate standby mode. This retains the safety functions designed to protect the system (e.g. frost protection).

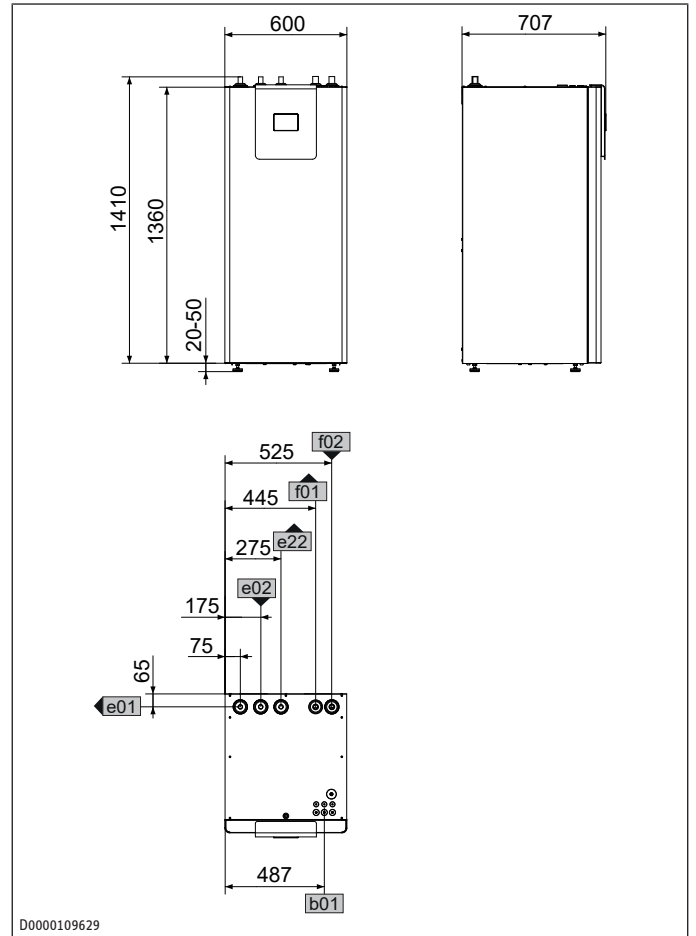
### Interrupting the power supply

If you interrupt the power supply, drain the water side of the system when there is a risk of frost. For this, proceed as follows:

- ▶ Switch off the appliance and disconnect it from the power supply.
- ▶ Close the cold water inlet.
- ▶ Disconnect the water supply lines and water drains from the appliance.
- ▶ Use a suction hose to drain the DHW cylinder from the top.

## 14 Specification

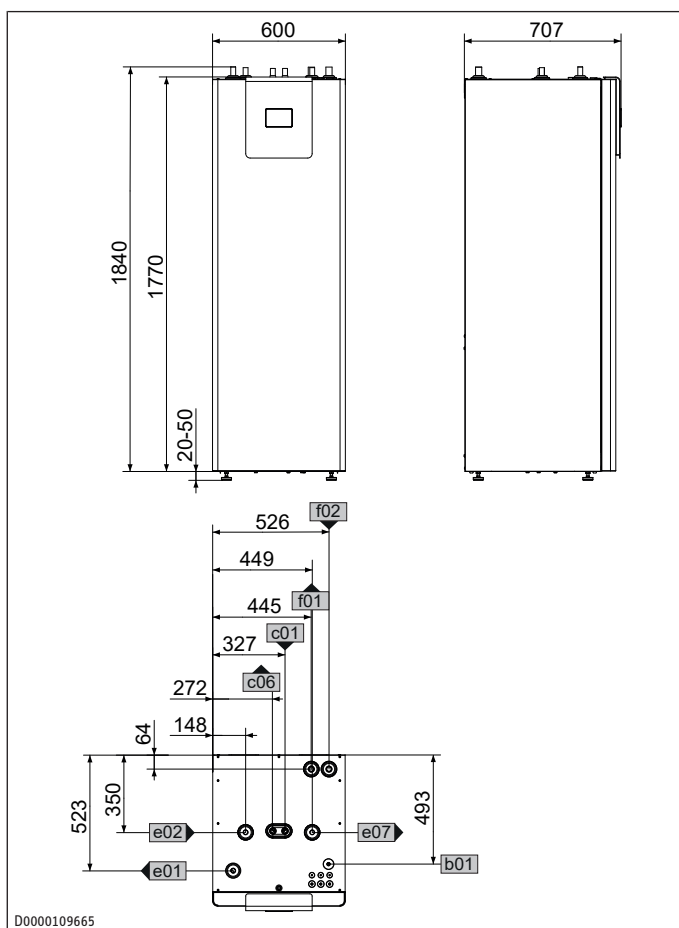
### 14.1 Dimensions and connections



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WPE-I H 400 Plus

## WPE-I HW 400 Plus

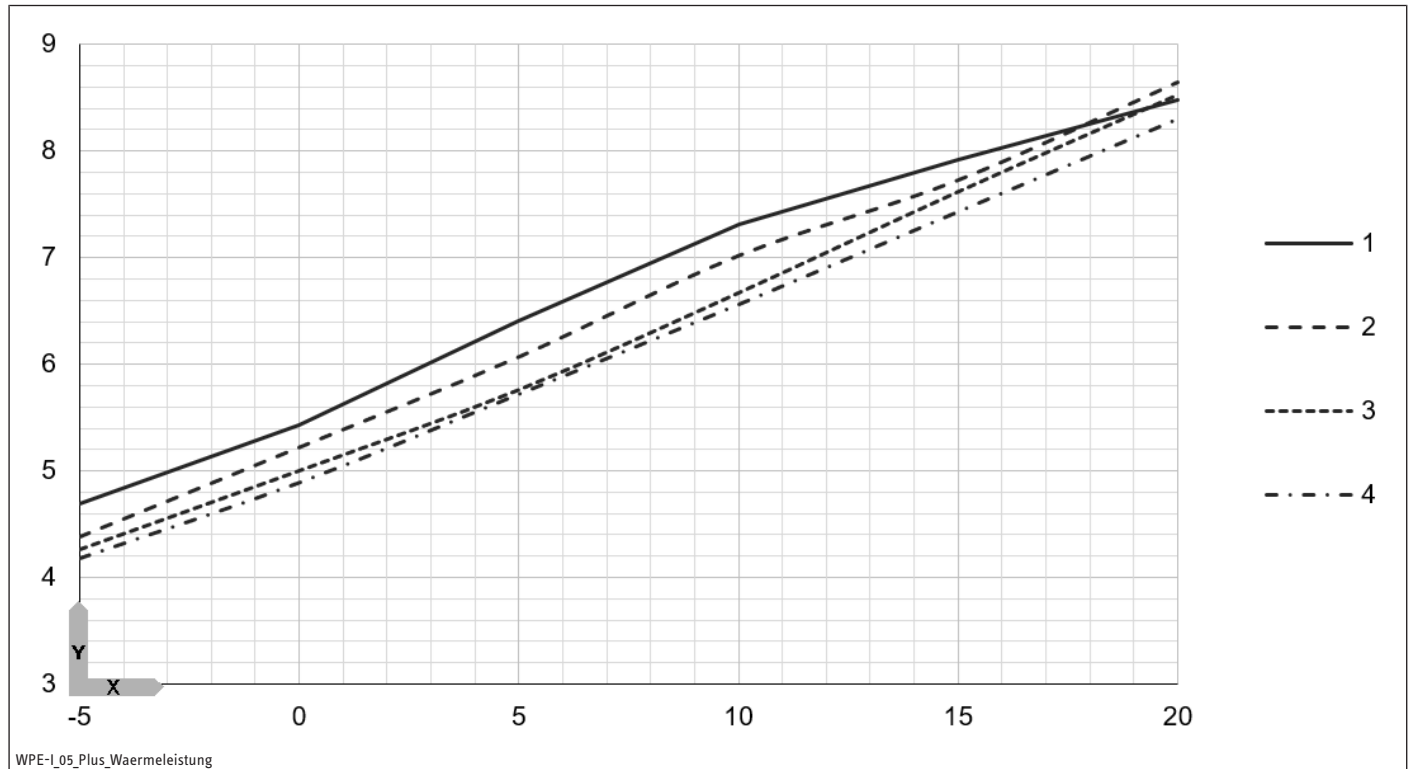


				WPE-I 05 H 400 Plus	WPE-I 07 H 400 Plus	WPE-I 10 H 400 Plus	WPE-I 13 H 400 Plus	WPE-I 17 H 400 Plus	WPE-I 05 HW 400 Plus	WPE-I 07 HW 400 Plus	WPE-I 10 HW 400 Plus
b01	Entry electrical cables										
c01	Cold water inlet	Diameter	mm	-	-	-	-	-	22	22	22
c06	DHW outlet	Diameter	mm	-	-	-	-	-	22	22	22
e01	Heating flow	Diameter	mm	22	22	22	28	28	22	22	22
e02	Heating return	Diameter	mm	22	22	22	28	28	22	22	22
e07	Ventilation	Diameter	mm	-	-	-	-	-	22	22	22
e22	Cylinder flow	Diameter	mm	22	22	22	22	22	-	-	-
f01	Heat source flow	Diameter	mm	28	28	28	28	28	28	28	28
f02	Heat source return	Diameter	mm	28	28	28	28	28	28	28	28

## 14.2 Output diagrams

### WPE-I 05 H 400 Plus, WPE-I 05 HW 400 Plus

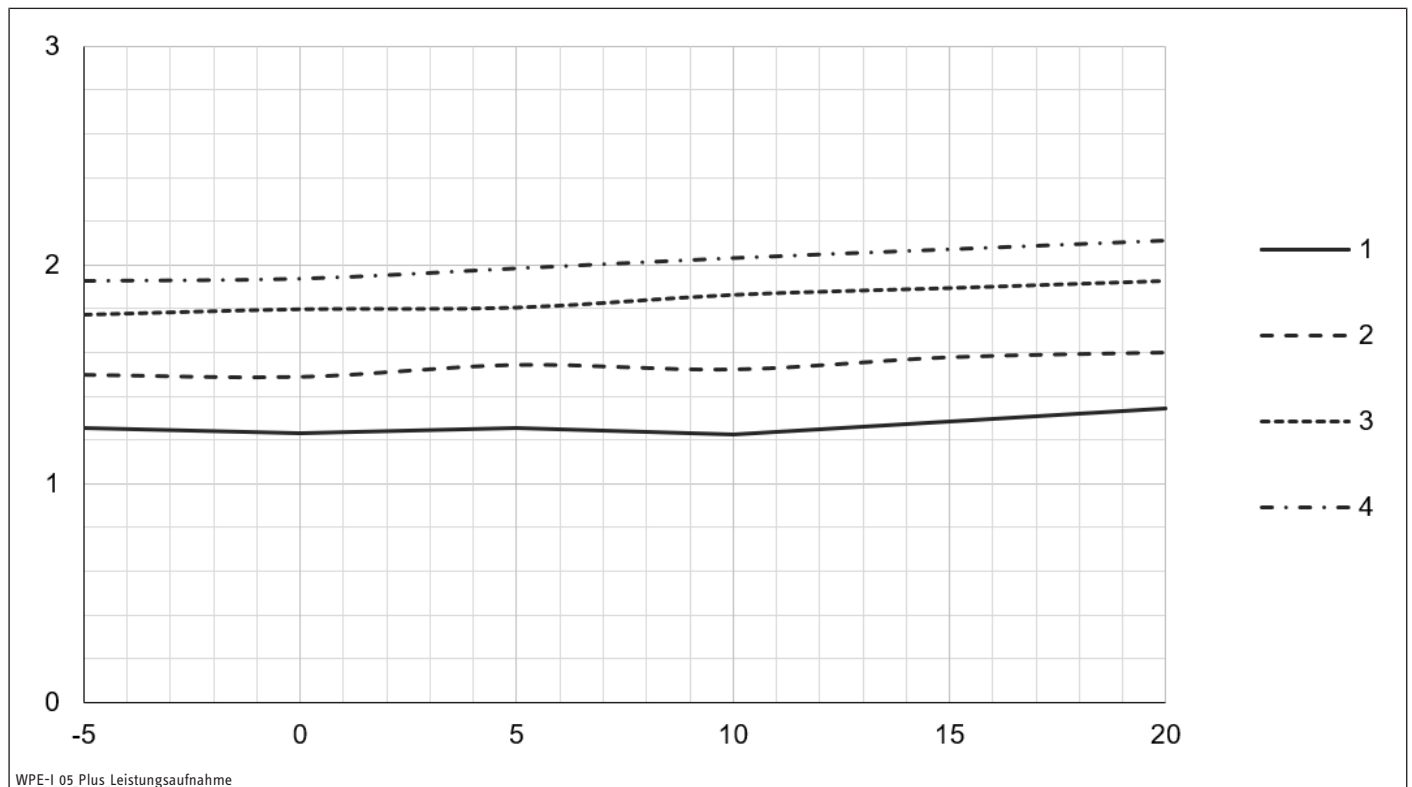
Heating output:



WPE-I\_05\_Plus\_Waermeleistung

		Flow temperature of the heat pump [°C]			
X	Temperature of heat source system [°C]	1	35 °C	3	55 °C
Y	Heat pump heating output	2	45 °C	4	60 °C

Power consumption:

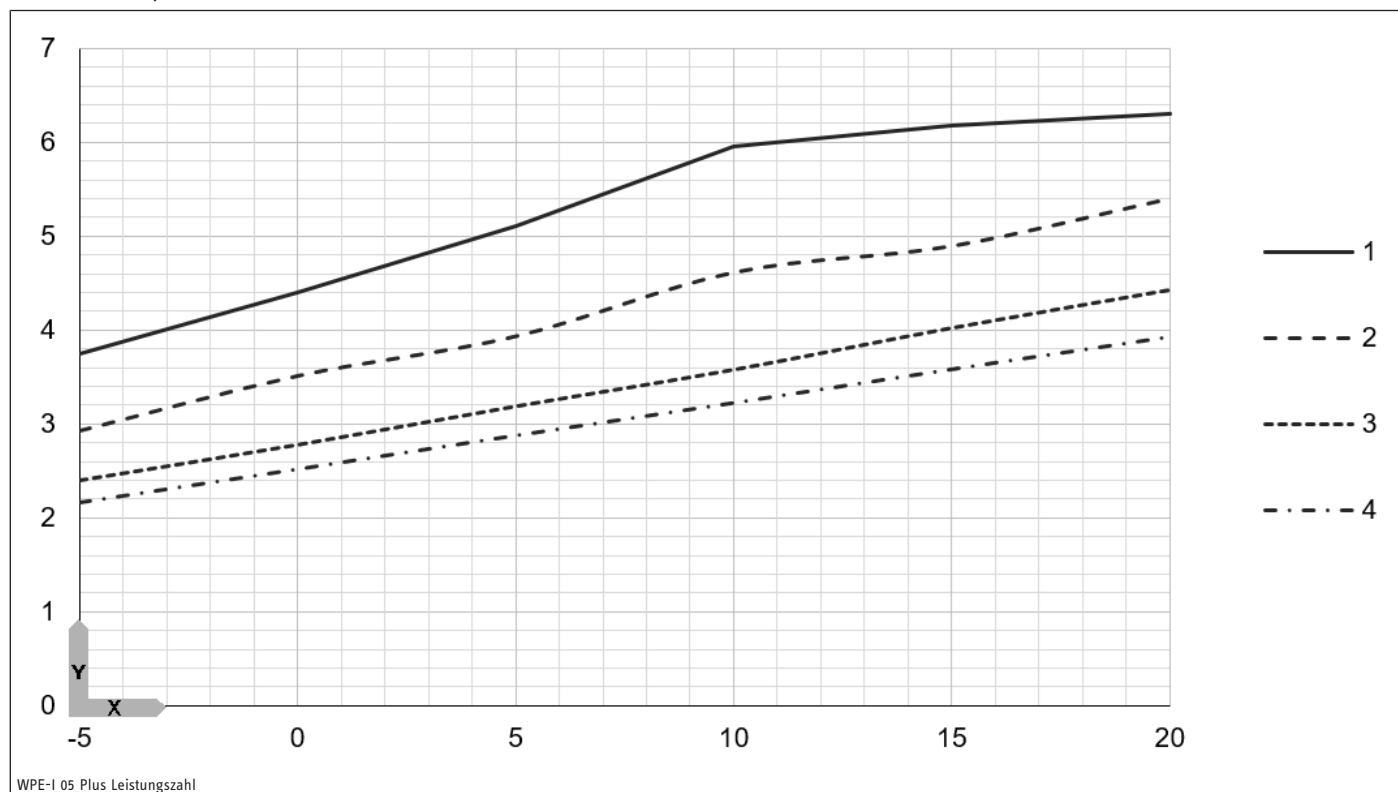


WPE-I\_05\_Plus\_Leistungsaufnahme

		Flow temperature of the heat pump [°C]			
X	Temperature of heat source system [°C]	1	35	3	55
Y	Electrical power consumption of the heat pump with auxiliary drives	2	45	4	60

# Specification

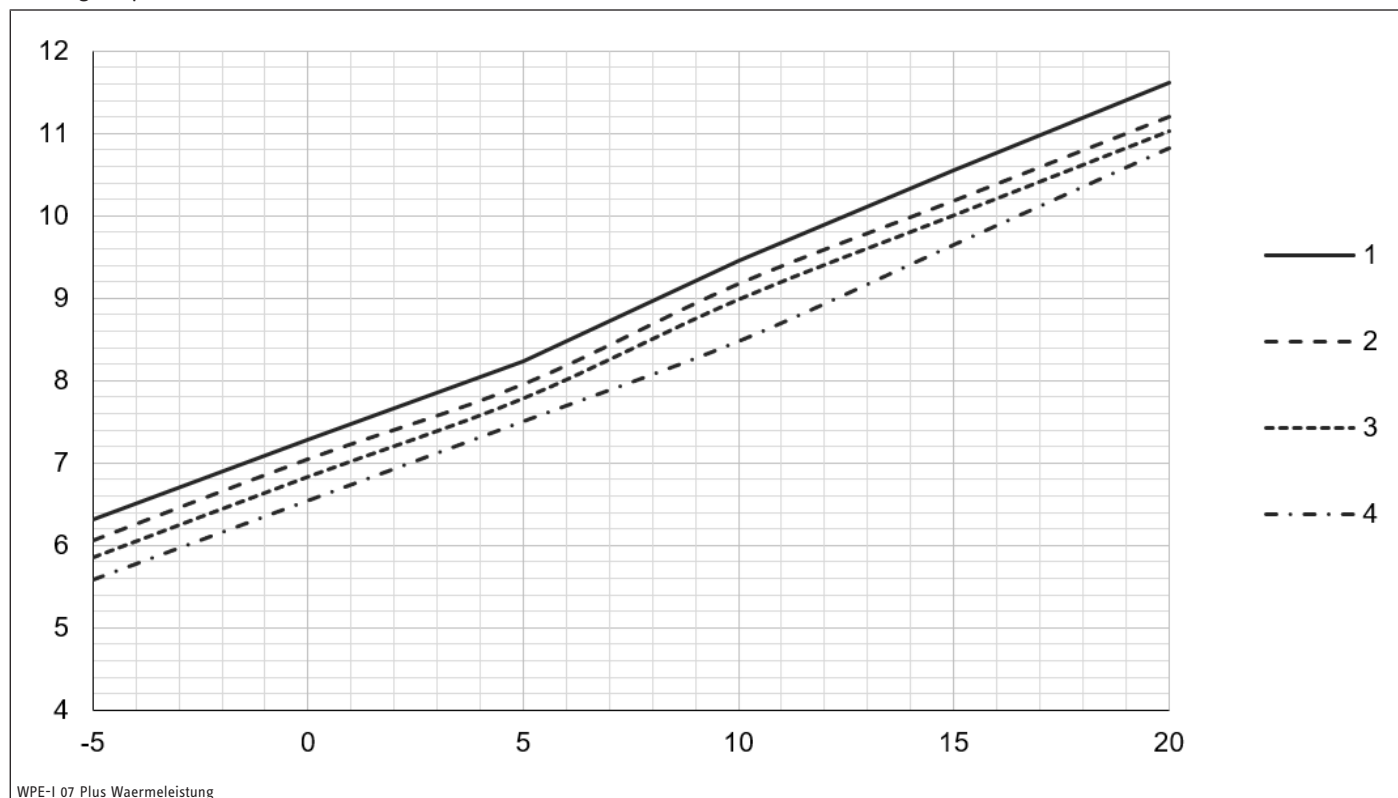
Coefficient of performance:



	Flow temperature of the heat pump [°C]			
X Temperature of heat source system [°C]	1	35	3	55
Y Coefficient of performance	2	45	4	60

## WPE-I 07 H 400 Plus, WPE-I 07 HW 400 Plus

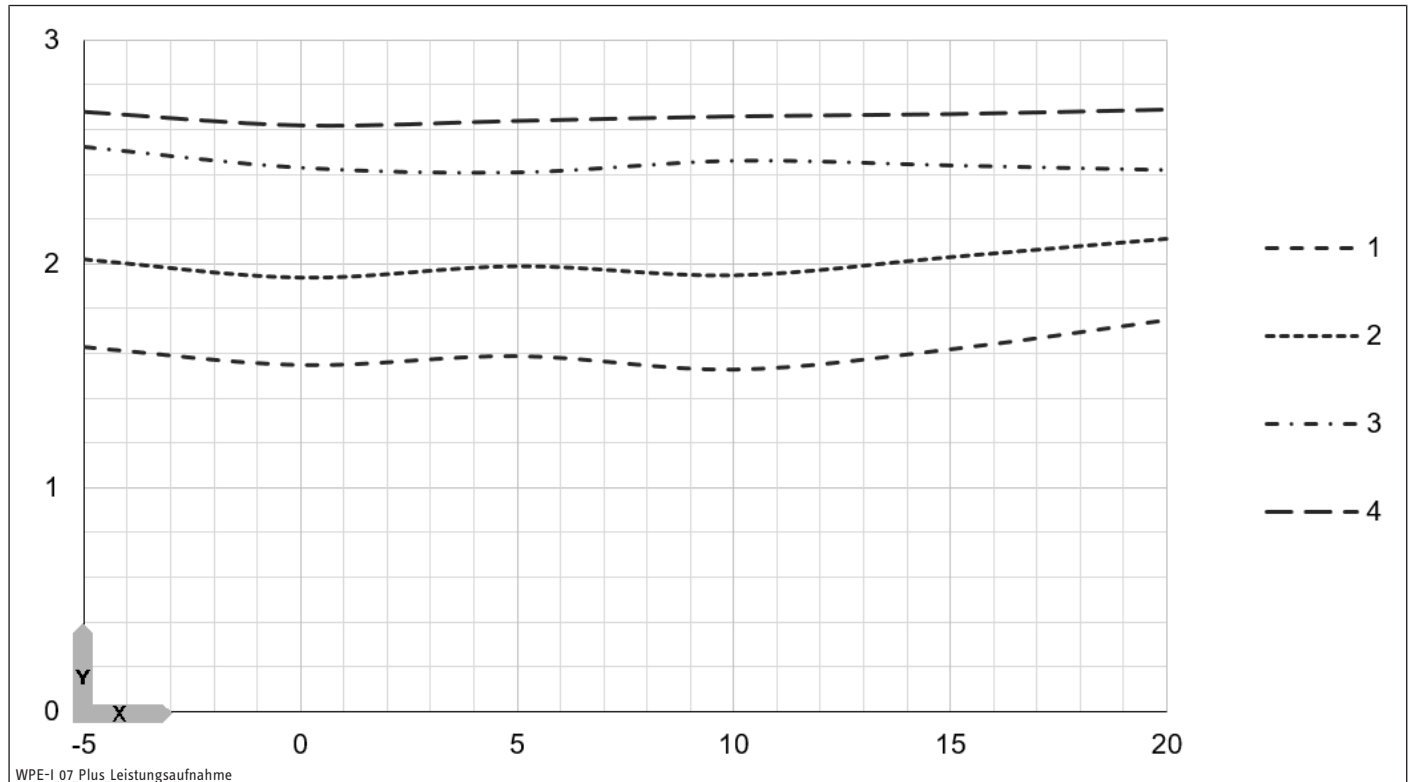
Heating output:



	Flow temperature of the heat pump [°C]			
X Temperature of heat source system [°C]	1	35 °C	3	55 °C
Y Heat pump heating output	2	45 °C	4	60 °C

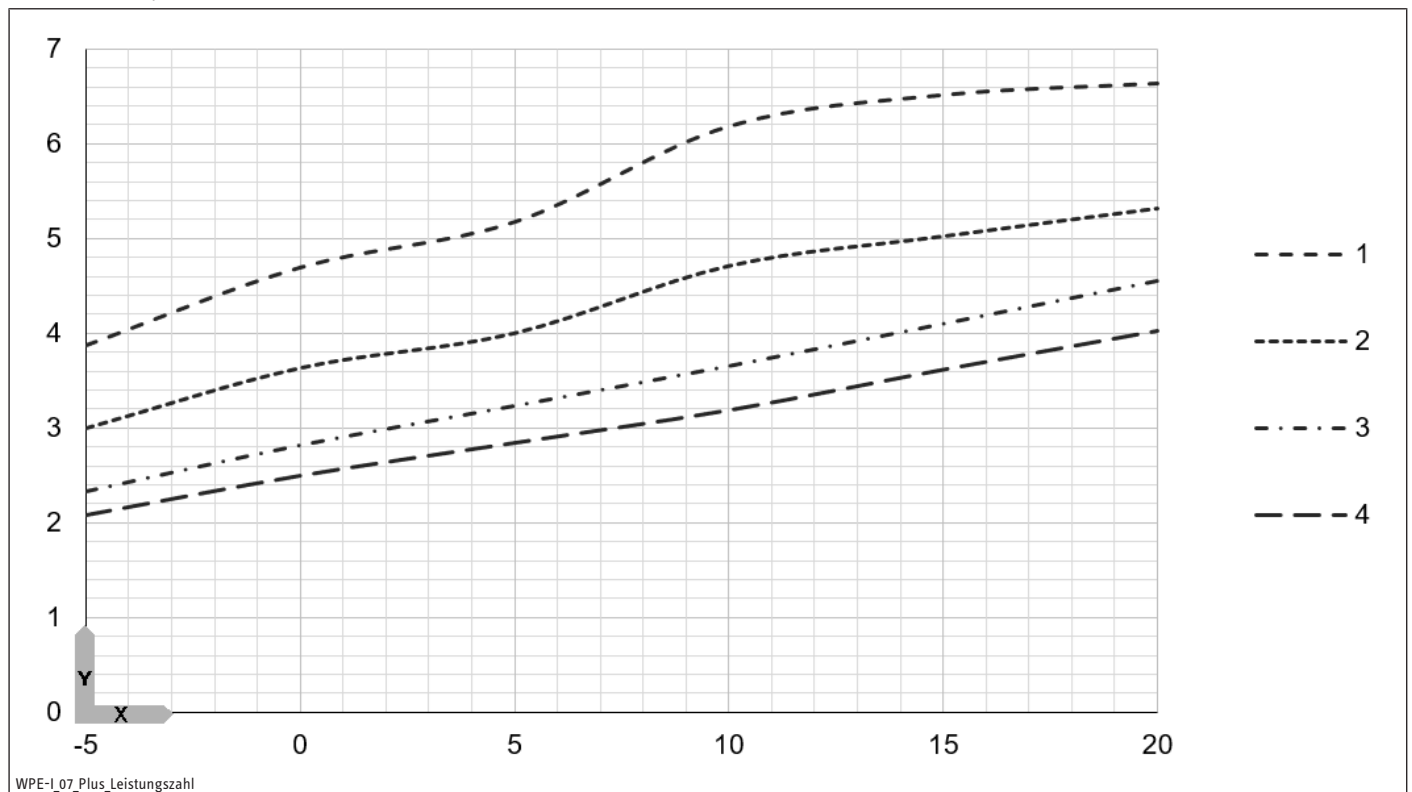


Power consumption:



		Flow temperature of the heat pump [°C]			
X	Temperature of heat source system [°C]	1	35	3	55
Y	Electrical power consumption of the heat pump with auxiliary drives	2	45	4	60

Coefficient of performance:

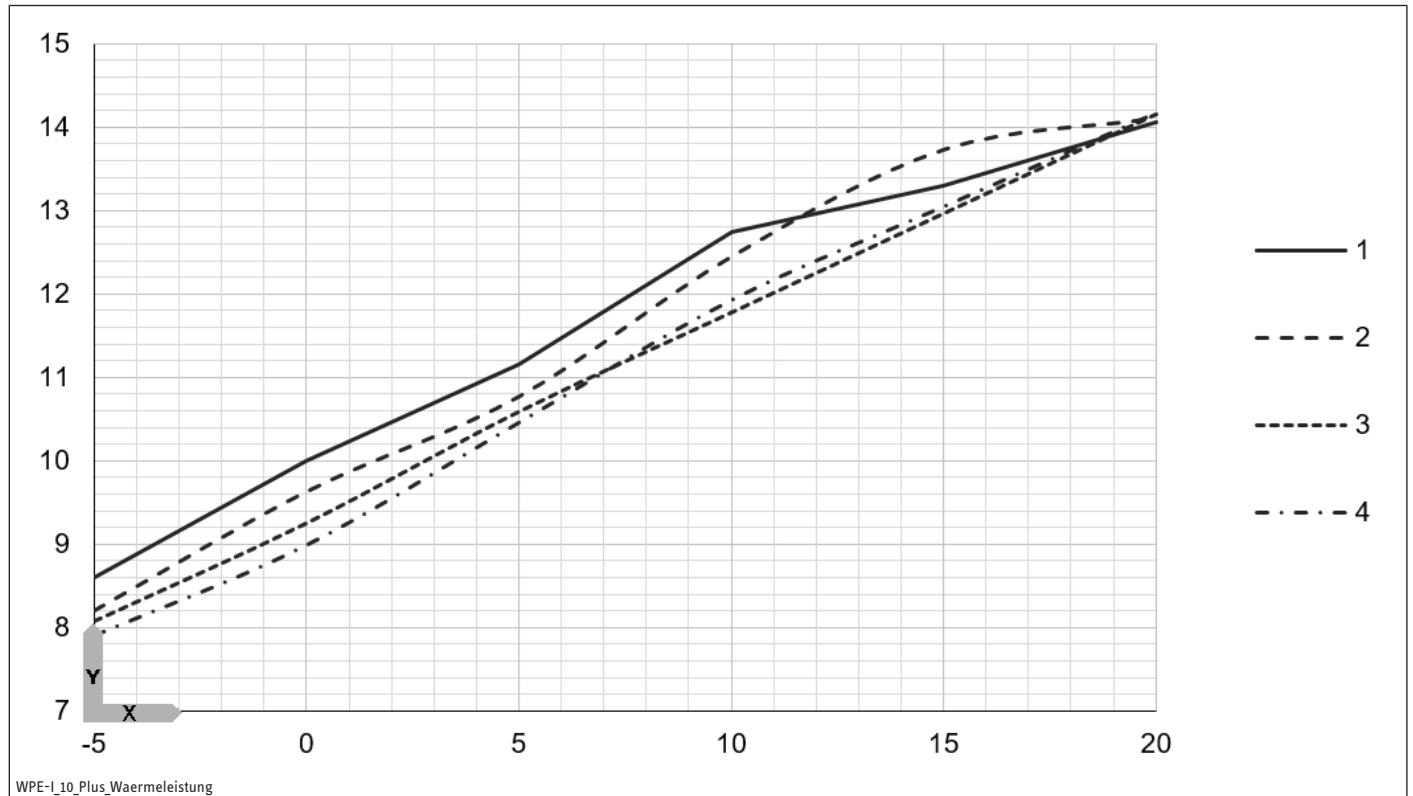


		Flow temperature of the heat pump [°C]			
X	Temperature of heat source system [°C]	1	35	3	55
Y	Coefficient of performance	2	45	4	60

# Specification

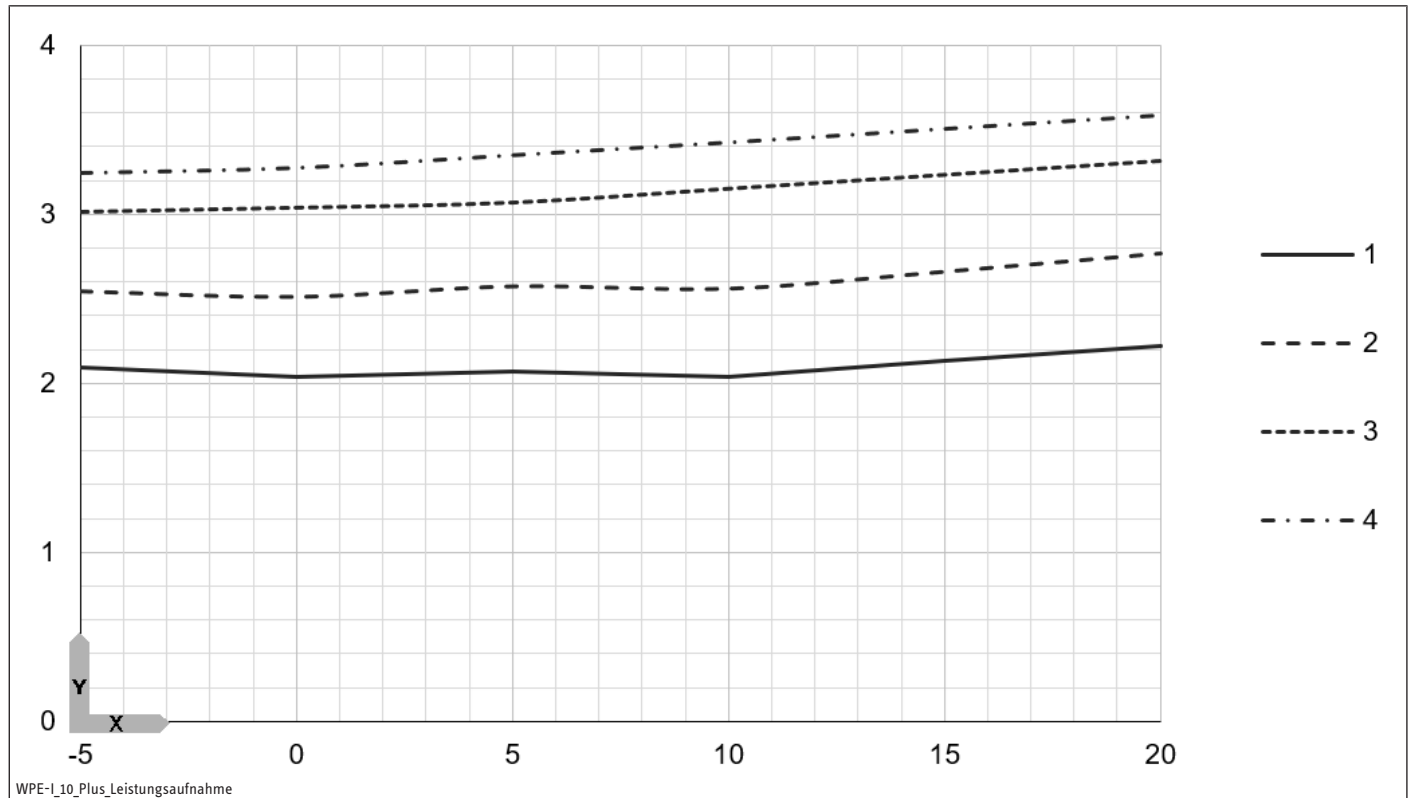
WPE-I 10 H 400 Plus, WPE-I 10 HW 400 Plus

Heating output:



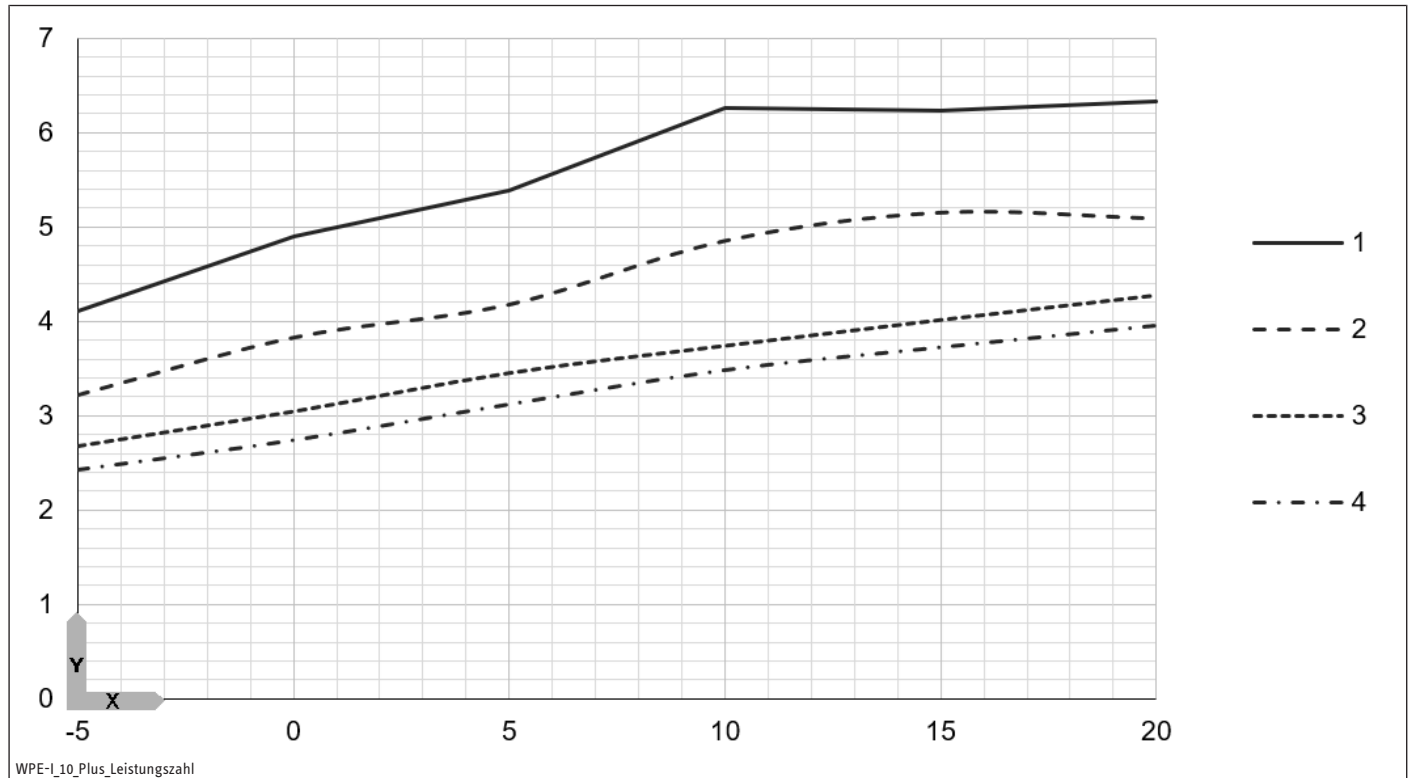
		Flow temperature of the heat pump [°C]			
X	Temperature of heat source system [°C]	1	35 °C	3	55 °C
Y	Heat pump heating output	2	45 °C	4	60 °C

Power consumption:



		Flow temperature of the heat pump [°C]			
X	Temperature of heat source system [°C]	1	35	3	55
Y	Electrical power consumption of the heat pump with auxiliary drives	2	45	4	60

Coefficient of performance:

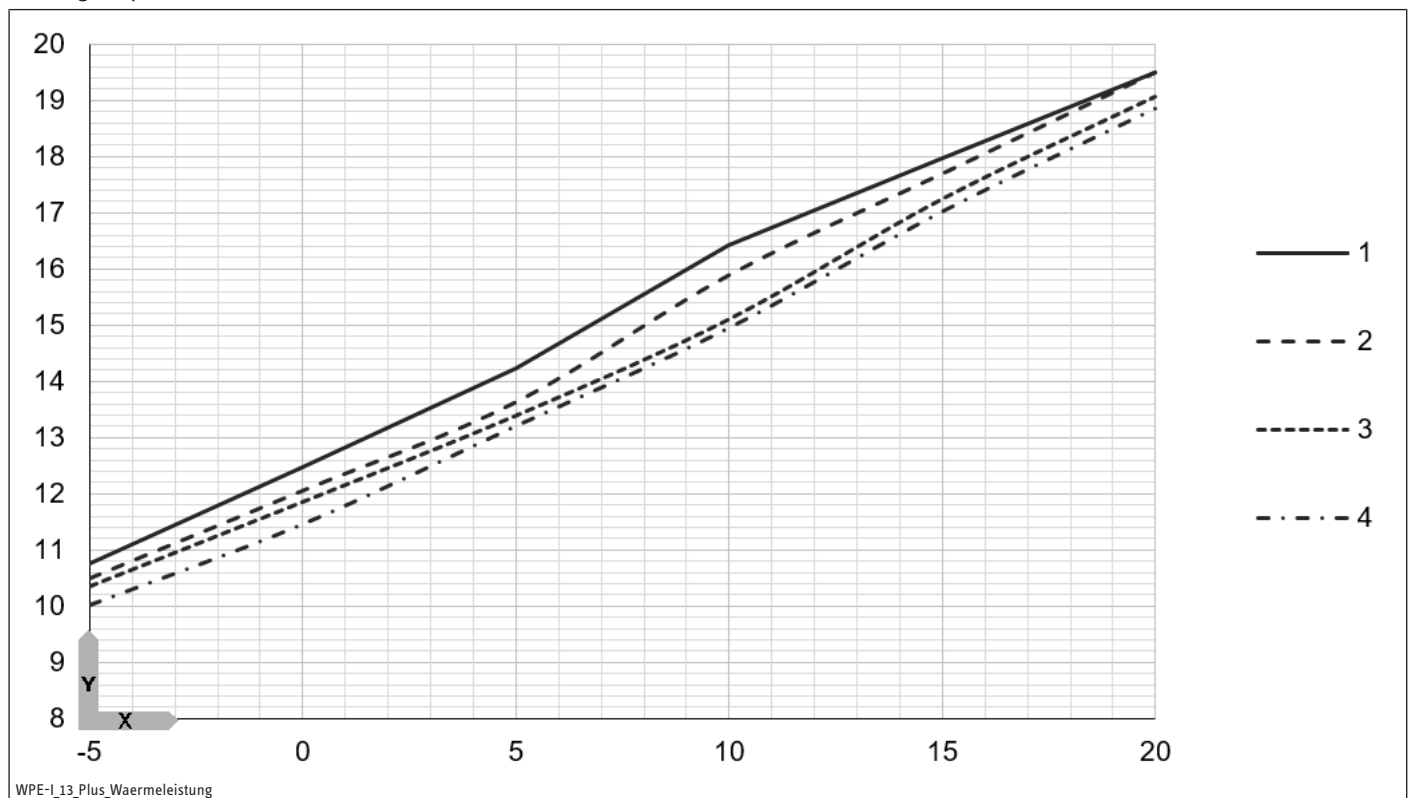


WPE-I\_10\_Plus\_Leistungszahl

	Flow temperature of the heat pump [°C]			
X Temperature of heat source system [°C]	1	35	3	55
Y Coefficient of performance	2	45	4	60

**WPE-I 13 H 400 Plus**

Heating output:

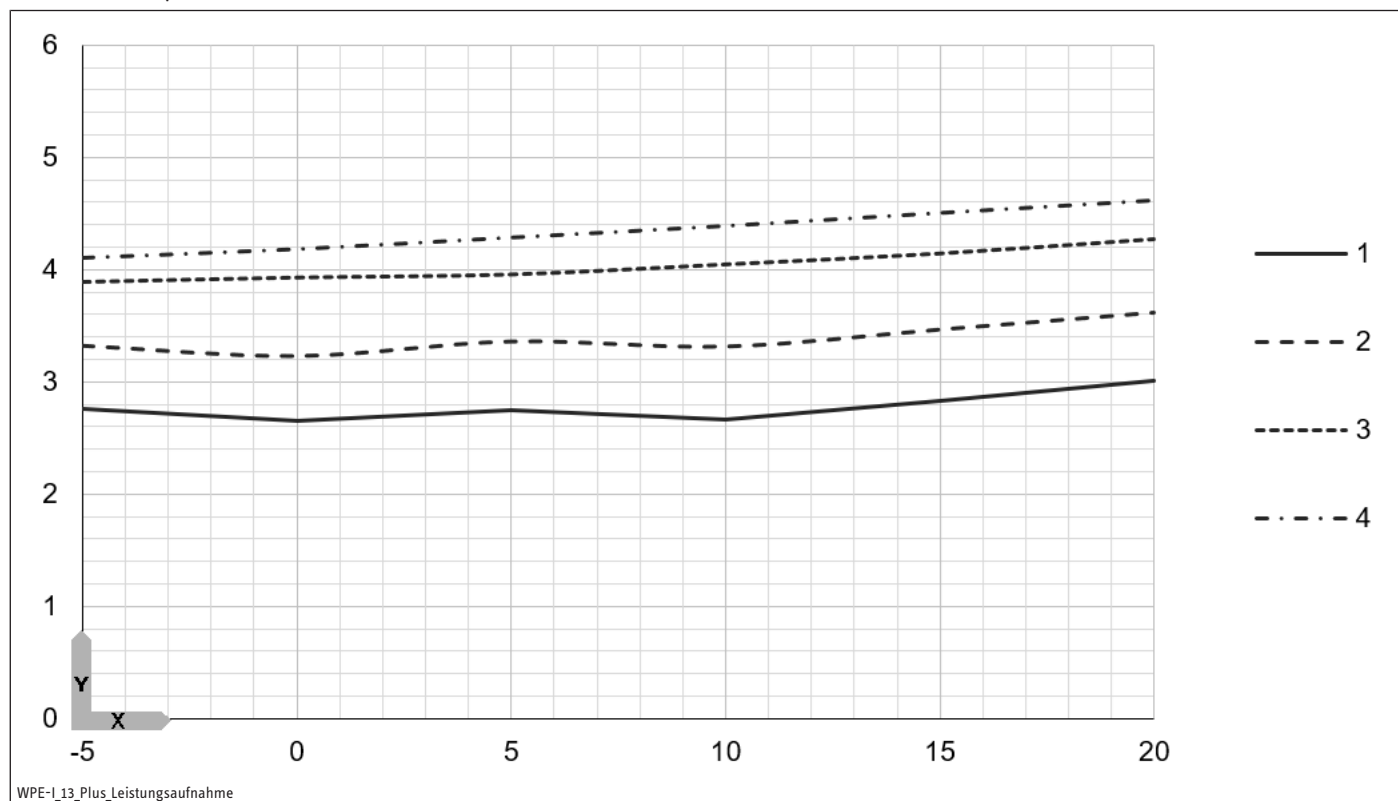


WPE-I\_13\_Plus\_Waermeleistung

	Flow temperature of the heat pump [°C]			
X Temperature of heat source system [°C]	1	35 °C	3	55 °C
Y Heat pump heating output	2	45 °C	4	60 °C

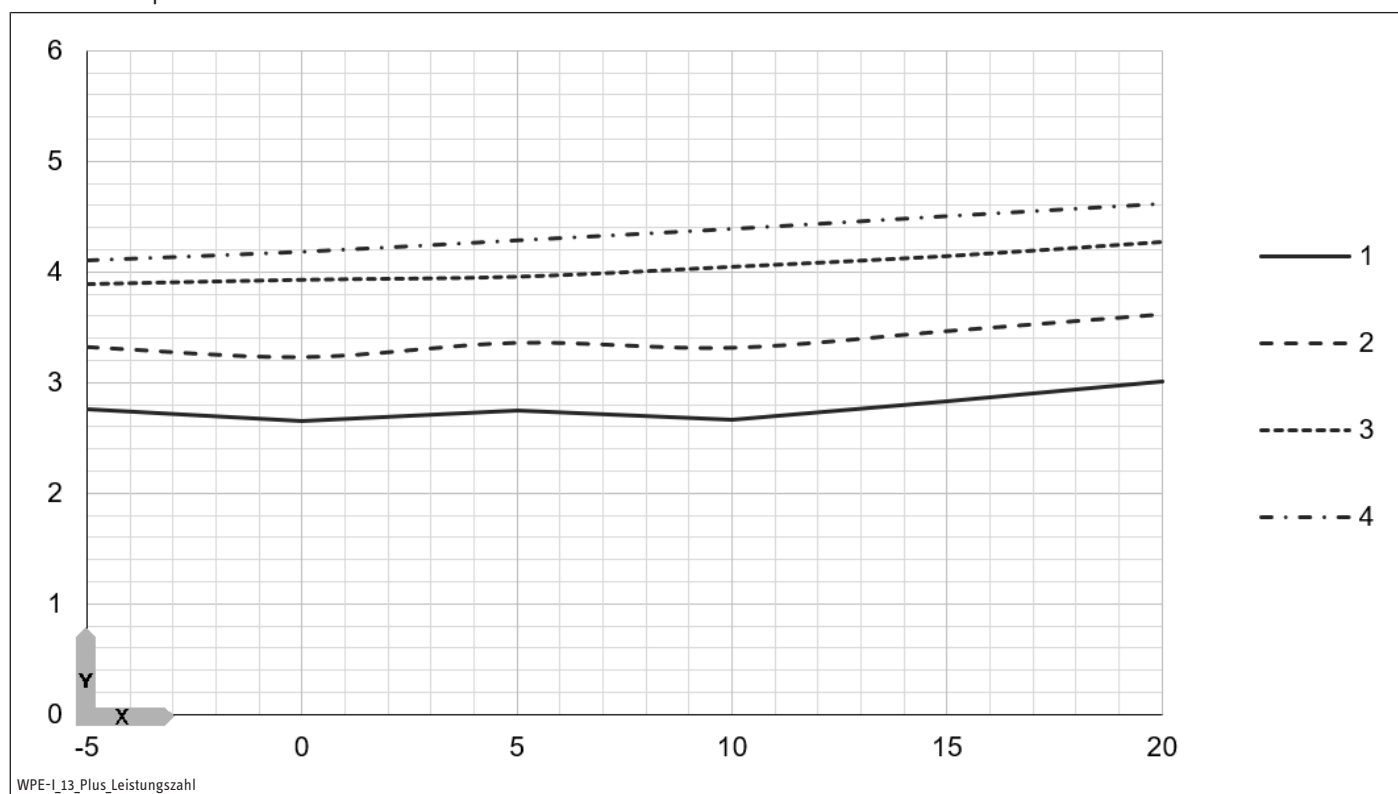
# Specification

Power consumption:



		Flow temperature of the heat pump [°C]			
X	Temperature of heat source system [°C]	1	35	3	55
Y	Electrical power consumption of the heat pump with auxiliary drives	2	45	4	60

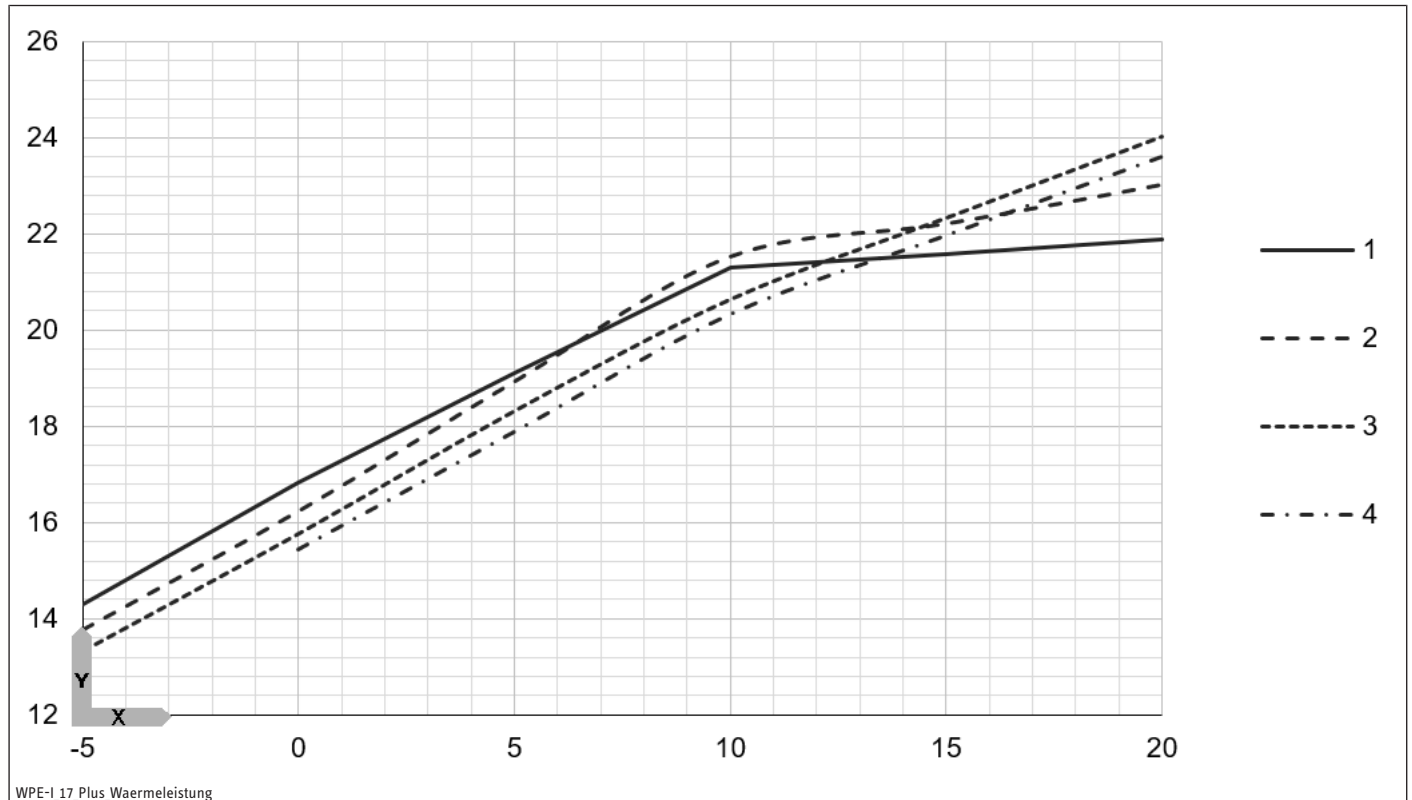
Coefficient of performance:



		Flow temperature of the heat pump [°C]			
X	Temperature of heat source system [°C]	1	35	3	55
Y	Coefficient of performance	2	45	4	60

## WPE-I 17 H 400 Plus

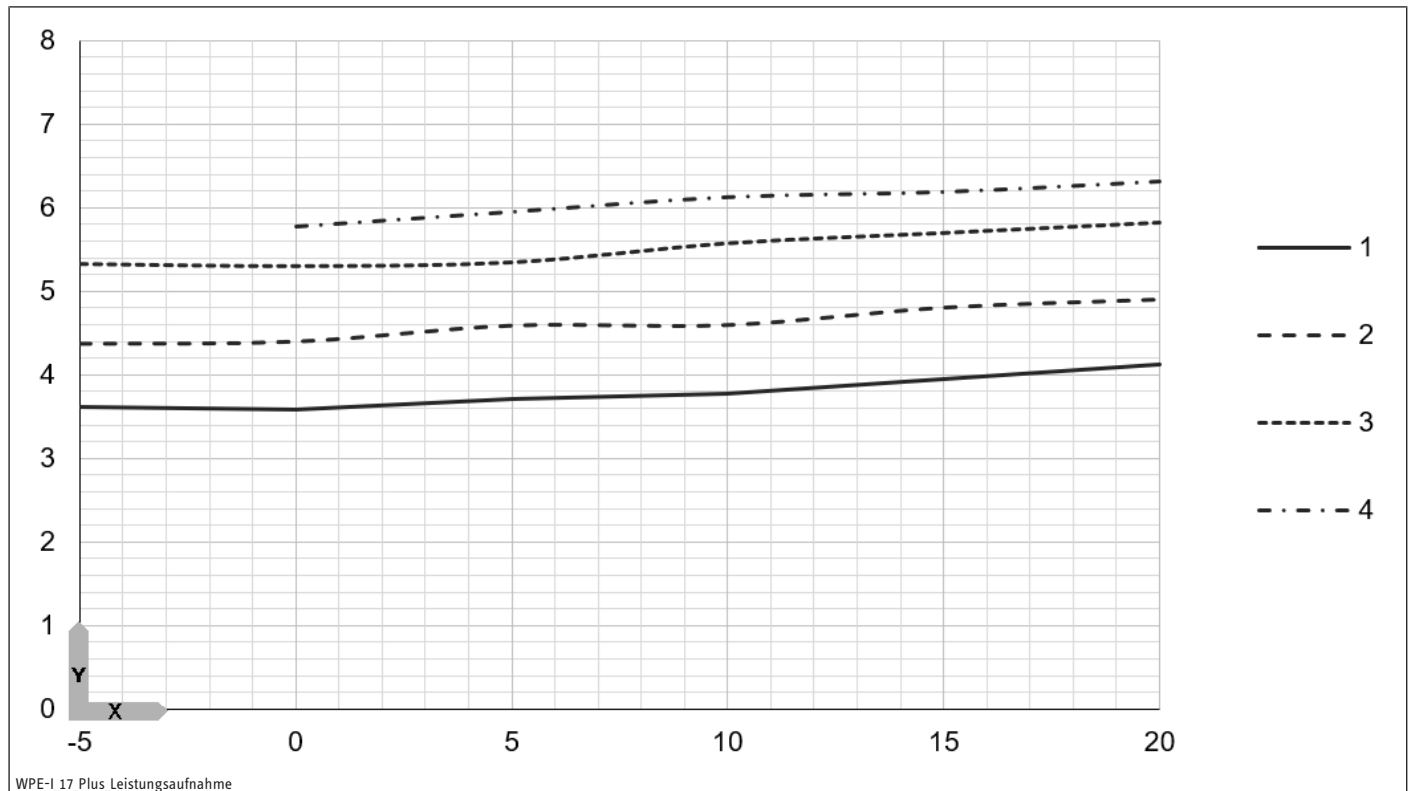
### Heating output:



WPE-I\_17\_Plus\_Waermeleistung

	Flow temperature of the heat pump [°C]			
X Temperature of heat source system [°C]	1	35 °C	3	55 °C
Y Heat pump heating output	2	45 °C	4	60 °C

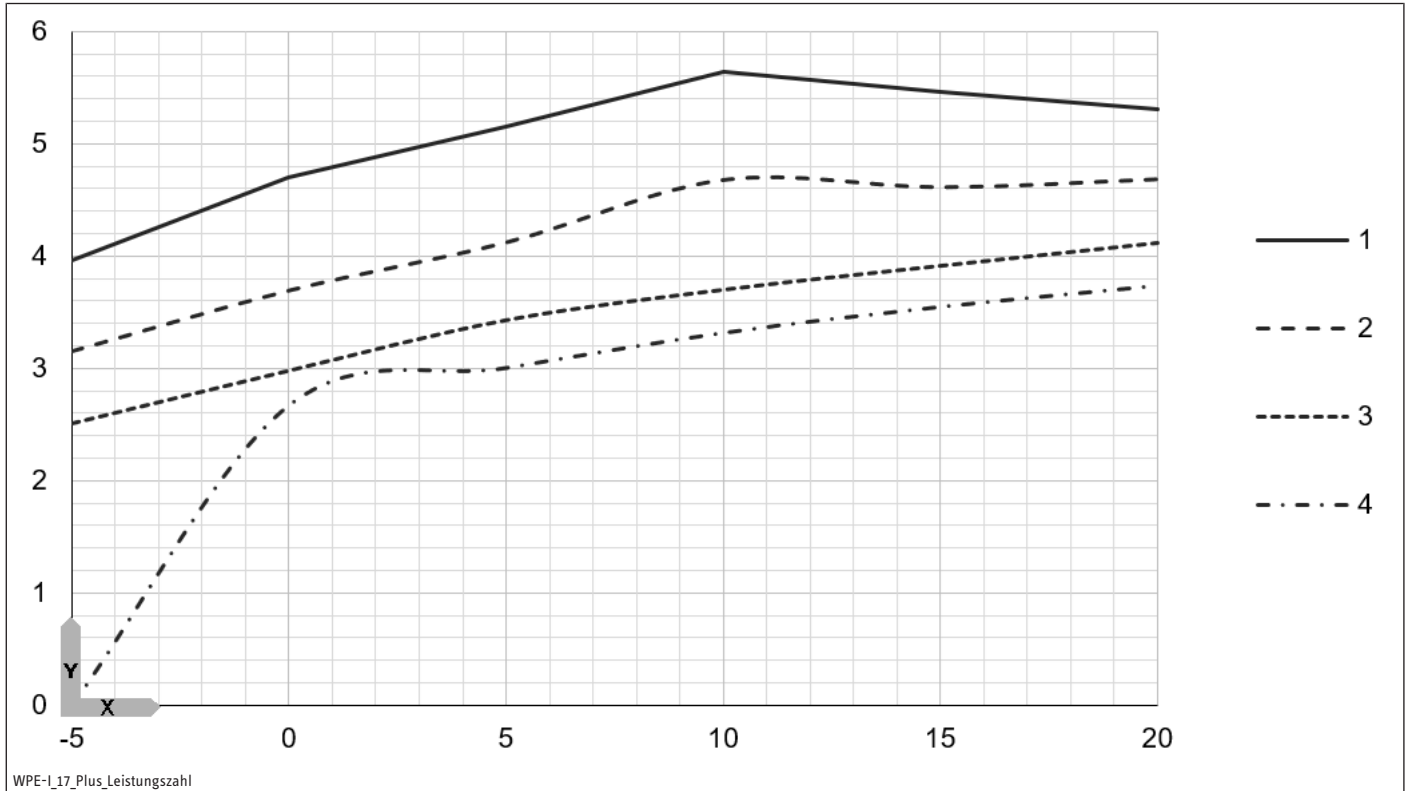
### Power consumption:



WPE-I\_17\_Plus\_Leistungsaufnahme

	Flow temperature of the heat pump [°C]			
X Temperature of heat source system [°C]	1	35	3	55
Y Electrical power consumption of the heat pump with auxiliary drives	2	45	4	60

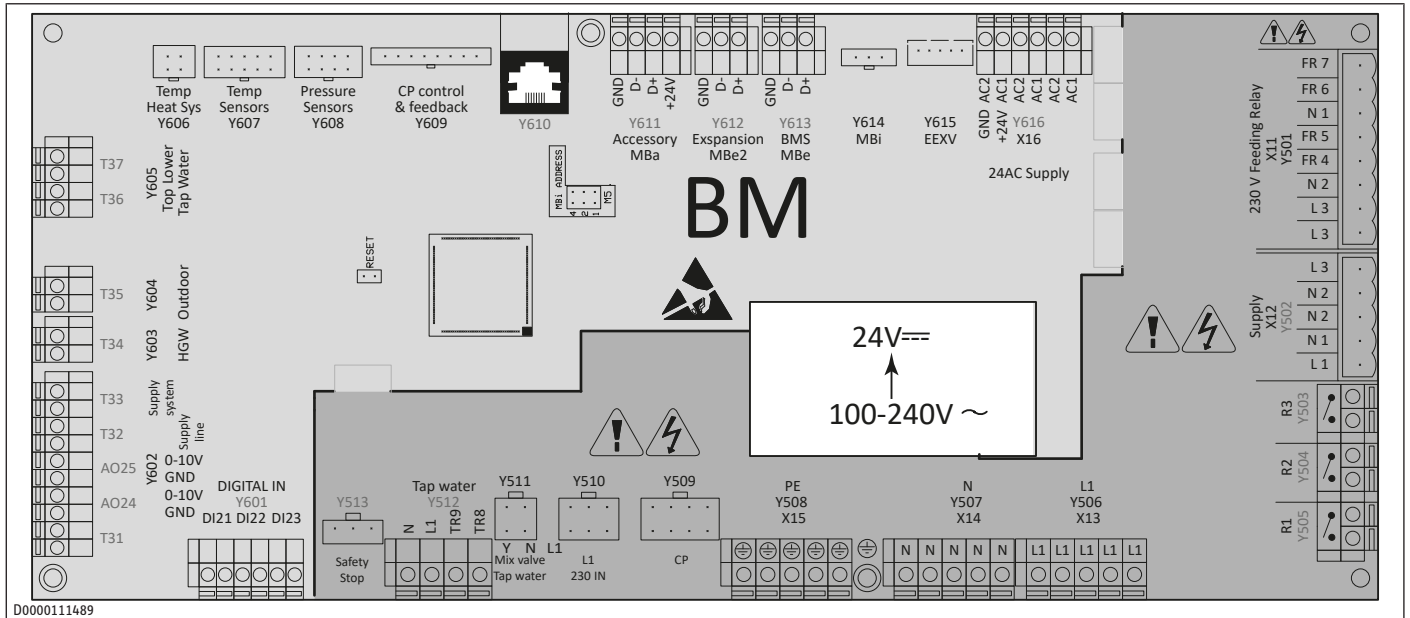
Coefficient of performance:



WPE-I\_17\_Plus\_Leistungszahl

		Flow temperature of the heat pump [°C]	
X	Temperature of heat source system [°C]	1	35
Y	Coefficient of performance	2	45
		3	55
		4	60

## 14.3 Wiring diagram



D0000111489

	BM card	Description
501	Y501 X11	Heating element
502	Y502 X12	Power supply
503.R3	Y503 R3	Potential-free relay, external brine circulation pump / external electric immersion heater
503.R2	Y504 R2	230 V relay, circulation pump "add. heating circuit 1"
503.R1	Y505 R1	230 V relay, circulation pump "heating"
506	Y506 X13	230 V AC power supply
507	Y507 X14	Neutral

	BM card	Description
508	Y508 X15	PE
509	Y509	Source pump Buffer charging pump
510	Y510	Power input
511	Y511	DHW diverter valve, internal
512	Y512	DHW diverter valve, external
513	Y513	Compressor start

	BM card	Description
601.DI21	Y601 DI 21	Power supply utility Smart grid 1
601.DI22	DI 22	Smart grid 2
601.DI23	DI 23	Flow rate sensor
602.T31	Y602 T31	Buffer cylinder sensor
602.AO2 4	A024	Mixing valve "add. heating circuit 1"
602.AO2 5	A025	Mixing valve "heating"
602.T32	T32	Flow sensor "add. heating circuit 1"
602.T33	T33	Flow sensor "heating"
603.T34	Y603 T34	Not assigned
604.T35	Y604 T35	Outside temperature sensor
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
607.15		Outlet pipe sensor

	BM card	Description
608.15	Y608	Overload relay
608432		Low pressure switch
608687		Operating pressure switch
609125	Y609	Source pump control
609347		Buffer charging pump control
610	Y610 RJ145	CM card
611	Y611 MBa	Accessories/room thermostat
612	Y612 MBa2	Not assigned
613	Y613 MBe	Not assigned
614	Y614 Mbi	Not assigned
615	Y615 EEXV	Not assigned
616	Y616 24 V 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

#### 14.4 Data table

		WPE-I 05 H 400 Plus	WPE-I 07 H 400 Plus	WPE-I 10 H 400 Plus	WPE-I 13 H 400 Plus	WPE-I 17 H 400 Plus	WPE-I 05 HW 400 Plus	WPE-I 07 HW 400 Plus	WPE-I 10 HW 400 Plus
		205828	205829	205831	205832	205833	205834	205835	205836
<b>Heating outputs</b>									
Heating output at B0/W35 (EN 14511)	kW	5.56	7.35	9.81	12.42	16.69	5.56	7.35	9.81
Heating output at B0/W55	kW	5	6.84	9.25	11.85	15.77	5	6.84	9.25
Heating output at B5/W35	kW	6.4	8.23	11.15	14.24	19.1	6.4	8.23	11.15
Heating output at B5/W55	kW	5.76	7.79	10.59	13.39	18.32	5.76	7.79	10.59
Heating output at B10/W35	kW	7.3	9.46	12.74	16.42	21.3	7.3	9.46	12.74
Heating output at B10/W55	kW	6.7	8.81	11.78	15.1	20.63	6.7	8.81	11.78
<b>Power consumption</b>									
Power consumption at B0/W35 (EN 14511)	kW	1.26	1.59	2.06	2.75	3.77	1.26	1.59	2.06
Power consumption at B0/W55	kW	1.8	2.43	3.04	3.94	5.3	1.8	2.43	3.04
Power consumption at B5/W35	kW	1.26	1.59	2.07	2.75	3.71	1.26	1.59	2.07
Power consumption at B5/W55	kW	1.81	2.41	3.07	3.96	5.34	1.81	2.41	3.07
Power consumption at B10/W35	kW	1.23	1.53	2.04	2.66	3.78	1.23	1.53	2.04
Power consumption at B10/W55	kW	1.86	2.46	3.15	4.05	5.58	1.86	2.46	3.15
<b>Coefficients of performance</b>									
Coefficient of performance at B0/W35 (EN 14511)	kW	4.4	4.62	4.76	4.52	4.43	4.4	4.62	4.76
Coefficient of performance at B0/W55	kW	2.78	2.81	3.04	3.01	2.98	2.78	2.81	3.04
Coefficient of performance at B5/W35	kW	5.1	5.18	5.38	5.18	5.15	5.1	5.18	5.38
Coefficient of performance at B5/W55	kW	3.19	3.23	3.45	3.38	3.43	3.19	3.23	3.45
Coefficient of performance at B10/W35	kW	5.95	6.18	6.26	6.17	5.64	5.95	6.18	6.26
Coefficient of performance at B10/W55	kW	3.58	3.59	3.74	3.73	3.7	3.58	3.59	3.74
SCOP (EN 14825)		4.74	4.96	5.09	4.94	4.79	4.74	4.96	5.09
<b>Sound emissions</b>									
Sound power level (EN 12102)	dB(A)	44	44	44	46	46	40	42	42
<b>Application limits</b>									
Min. application limit on heating side	°C	25	25	25	25	25	25	25	25
Max. application limit on the heating side	°C	60	60	60	60	60	60	60	60
Min. application limit, heat source	°C	-5	-5	-5	-5	-5	-5	-5	-5
Max. application limit, heat source	°C	25	25	25	25	25	25	25	25
<b>Hydraulic data</b>									
Cylinder volume	l						184	184	184
Surface area, heat exchanger	m <sup>2</sup>						1.83	1.83	1.83

# Specification

		WPE-I 05 H 400 Plus	WPE-I 07 H 400 Plus	WPE-I 10 H 400 Plus	WPE-I 13 H 400 Plus	WPE-I 17 H 400 Plus	WPE-I 05 HW 400 Plus	WPE-I 07 HW 400 Plus	WPE-I 10 HW 400 Plus
<b>Energy data</b>									
Energy efficiency class, DHW heating with load profile XL							A	A	A
Energy efficiency class, moderate climate, W55/W35		A++/A+++	A++/A+++	A++/A+++	A++/A+++	A++/A+++	A++/A+++	A++/A+++	A++/A+++
<b>Electrical data</b>									
Rated voltage, compressor	V	400	400	400	400	400	400	400	400
Rated voltage, control unit	V	230	230	230	230	230	230	230	230
Rated voltage, emergency/auxiliary heater	V	400	400	400	400	400	400	400	400
Frequency	Hz	50	50	50	50	50	50	50	50
Overall fuse protection	A	3 X C 20	3 X C 20	3 X C 20	3 X C 25	3 X C 32	3 X C 20	3 X C 20	3 X C 20
Starting current (with/without starting current limiter)	A	9	10	11	20	23	9	10	11
Max. operating current	A	4.8	6.2	7.4	9.7	13	4.8	6.2	7.4
<b>Versions</b>									
Refrigerant		R452B	R452B	R452B	R452B	R452B	R452B	R452B	R452B
Refrigerant charge	kg	0.575	0.85	0.9	1	1.25	0.575	0.85	0.9
CO2 equivalent (CO2e)	T	0.401	0.593	0.628	0.698	0.873	0.401	0.593	0.628
Global warming potential of the refrigerant (GWP100)		698	698	698	698	698	698	698	698
Compressor oil		POE RL32-3MAF	POE RL32-3MAF	POE RL32-3MAF	POE RL32-3MAF	POE RL32-3MAF	POE RL32-3MAF	POE RL32-3MAF	POE RL32-3MAF
Condenser material		1.4401/Cu	1.4401/Cu	1.4401/Cu	1.4401/Cu	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	1.4401/Cu	1.4401/Cu	1.4401/Cu	1.4401/Cu
<b>Dimensions</b>									
Height	mm	1430	1430	1430	1430	1430	1860	1860	1860
Width	mm	600	600	600	600	600	600	600	600
Depth	mm	707	707	707	707	707	707	707	707
<b>Weights</b>									
Weight	kg	113	125	130	135	148			
Weight, empty	kg						148	165	170
Weight, full	kg						338	355	360
<b>Connections</b>									
Connection, heating flow/return	mm	22	22	22	28	28	22	22	22
Connection, brine flow/return	mm	28	28	28	28	28	28	28	28
<b>Heating water quality requirements</b>									
Water hardness	°dH	3	3	3	3	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	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	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0
Chloride	mg/l	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
Conductivity (softening)	µS/cm	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000
Conductivity (desalination)	µS/cm	20-100	20-100	20-100	20-100	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	< 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	< 0.1	< 0.1	< 0.1	< 0.1
<b>Heat transfer medium requirements on the heat source side</b>									
Ethylene glycol concentration, geo-thermal probe	% by vol.	25	25	25	25	25	25	25	25
Ethylene glycol concentration, geo-thermal collector	% by vol.	33	33	33	33	33	33	33	33
<b>Values</b>									
Available external pressure differential, heating	hPa	760	620	690	720	780	760	620	690
Available external pressure differential, heat source	hPa	700	550	700	600	700	700	550	700
Heating flow rate (EN14511) at A7/W35, B0/W35 and 5	m³/h	0.97	1.27	1.71	2.16	2.85	0.97	1.27	1.71
Flow rate on heat source side	m³/h	0.9	1.26	1.8	2.16	2.88	0.9	1.26	1.8



**Further details**

	WPE-I 05 H 400 Plus	WPE-I 07 H 400 Plus	WPE-I 10 H 400 Plus	WPE-I 13 H 400 Plus	WPE-I 17 H 400 Plus	WPE-I 05 HW 400 Plus	WPE-I 07 HW 400 Plus	WPE-I 10 HW 400 Plus
	205828	205829	205831	205832	205833	205834	205835	205836
Maximum height for m installation	2000	2000	2000	2000	2000	2000	2000	2000

**15 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.

**16 Environment and recycling**

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





Comfort through Technology



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