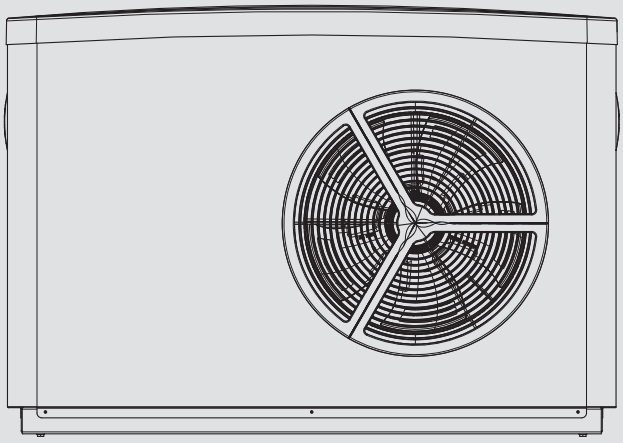
# OPERATION AND INSTALLATION

Air | water heat pump

- » WPL 15 AS
- » WPL 15 ACS
- » WPL 20 A
- » WPL 20 AC
- » WPL 25 A
- » WPL 25 AS
- » WPL 25 AC
- » WPL 25 ACS



STIEBEL ELTRON

# CONTENTS

# SPECIAL INFORMATION OPERATION

- The appliance may be used by children aged 8 and up and persons with reduced physical, sensory or mental capabilities or a lack of experience and know-how provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the resulting risks. Children must never play with the appliance. Children must never clean the appliance or perform user maintenance unless they are supervised.
- Use a permanent connection to the power supply. The appliance must be able to 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.
- Maintenance work, such as checking the electrical safety, must only be carried out by a qualified contractor.
- We recommend an annual inspection (to establish the system's current condition), and maintenance by a qualified contractor if required (to return the system to the desired condition).
- Following isolation from the mains supply, parts of the appliance may remain live for up to 2 minutes since the capacitors still have to discharge into the inverter.
- Never interrupt the power supply, even outside the heating period. The system's active frost protection is not guaranteed if the power supply is interrupted.
- If the heat pump and frost protection are completely switched off, drain the system on the water side.

## 1. General information

The chapters "Special Information" and "Operation" are intended for both the user 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 the instructions to a new user if required.

### 1.1 Safety instructions

#### 1.1.1 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.**

#### 1.1.2 Symbols, type of risk

| Symbol | Type of risk |
|---|---|
|  | Injury |
|  | Electrocution |

#### 1.1.3 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. |

### 1.2 Other symbols in this documentation

**Note**
General information is identified by the symbol shown on the left.
▶ Read these texts carefully.

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

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

### 1.3 Units of measurement

**Note**
All measurements are given in mm unless stated otherwise.

### 1.4 Standardised output data

Explanations to determine and interpret the specified standardised output data.

#### 1.4.1 EN 14511

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. However, there is a deviation from this norm in the output data for air/water inverter heat pumps at source temperatures of > -7 °C as this concerns partial load values. The associated percentage weighting in the partial load range can be found in EN 14825 and EHPA quality label regulations.

Generally, the test conditions stated above 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 test conditions defined in the first paragraph of this section, any deviations can have a considerable impact.

Further 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 test conditions defined in the first paragraph of this section.

## 2. Safety

### 2.1 Intended use

Observe the application limits listed in chapter "Specification / Data table".

This appliance is intended for domestic use. It can be used safely by untrained persons. The appliance 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.

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

Observe the following safety instructions and regulations.

- Only qualified contractors should carry out the electrical work and installation of this appliance.
- The qualified contractor is responsible for adherence to all currently applicable instructions during installation and commissioning.
- Operate the appliance only when fully installed and with all safety equipment fitted.
- Protect the appliance from dust and dirt ingress during building work.

**WARNING Injury**
**The appliance may be used by children aged 8 and up and persons with reduced physical, sensory or mental capabilities or a lack of experience and know-how provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the resulting risks. Children must never play with the appliance. Children must never clean the appliance or perform user maintenance unless they are supervised.**

# 3. Appliance description

## 3.1 Properties

The appliance is a heating heat pump for outdoor installation that operates as an air|water heat pump. Heat is extracted from the outdoor air at a low temperature level, and is then transferred to the heating water at a higher temperature. The heating water can be heated up to a flow temperature of 65 °C.

The appliance is equipped with an electric emergency/booster heater (DHC). If the dual mode point can no longer be maintained in mono mode operation, the electric emergency/booster heater is activated to safeguard heating operation and the provision of high DHW temperatures. In such cases, the electric emergency/booster heater is activated in mono energetic operation as a booster heater.

This appliance has further operational characteristics:

- Suitable for underfloor and radiator heating.
- Preferred for low temperature heating systems.
- Extracts heat from the outdoor air even at –20 °C outside temperature.
- Corrosion-protected, external casing made from hot-dipped galvanised sheet steel plus stove-enamelled finish.
- Comprises all components and safety equipment required for operation.
- Filled with non-combustible safety refrigerant.

**Note**
For centralised control of the heating system you will need heat pump manager WPM.

## 3.2 Function

### 3.2.1 Heating

Heat is extracted from the outdoor air via the heat exchanger (evaporator) on the air side. The evaporated refrigerant is compressed by a compressor. Electrical energy is necessary for this process. At this point, the refrigerant is at a higher temperature level. A further heat exchanger (condenser) transfers the heat to the heating circuit. During this process, the refrigerant expands, and the cycle restarts from the beginning.

At air temperatures below approx. +7 °C, the humidity in the air condenses as hoarfrost on the evaporator fins. Any hoarfrost is automatically defrosted. Water created by this process collects in the defrost pan and is drained off via a hose.

**Material losses**
In the defrost cycle, the fan is switched off and the heat pump circuit is reversed. The heat required for defrosting is drawn from the buffer cylinder. For operation without a buffer cylinder, observe chapter „Operation / Menu structure / Menu SETTINGS / STANDARD SETTING / BUFFER OPERATION“ in the operating and installation instructions of the WPM. Otherwise the heating water freezes under unfavourable conditions.

The heat pump automatically reverts to heating mode at the end of the defrost cycle.

**Material losses**
In dual mode operation, the return water of the second heat generator can flow through the heat pump. Please note that the return temperature must be no higher than 60 °C.

### 3.2.2 Cooling

**Material losses**
The heat pump is not suitable for continuous, year-round cooling.
▶ Observe the application limits (see chapter “Specification / Data table”).

Rooms are cooled by reversing the heat pump circuit. Heat is extracted from the heating water and the evaporator transfers this heat to the outdoor air.

Area cooling requires the installation of the FEK remote control unit in a reference room to capture the relative humidity and the room temperature as part of monitoring the dew point.

**Heat pump application limit**

The heat pump is switched off if the outside temperature falls below the selected lower application limit for cooling (parameter LIMIT COOLING).

# 4. Settings

The system is operated exclusively by the WPM heat pump manager.

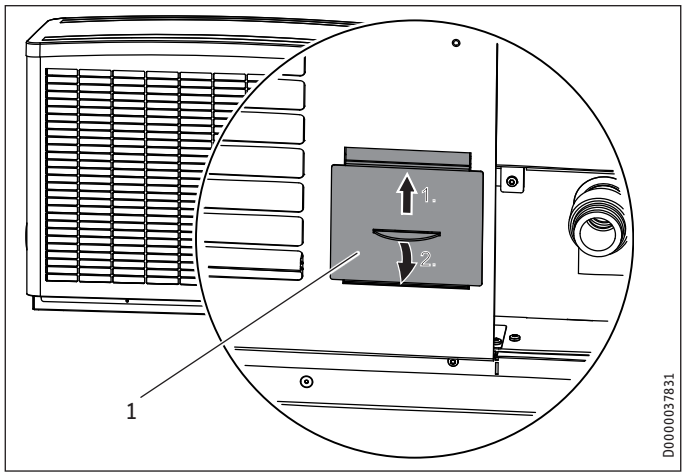
▶ Please observe the heat pump manager operating and installation instructions.

## 5. Maintenance and care

**Material losses**
Maintenance work, such as checking the electrical safety, must only be carried out by a qualified contractor.

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

Regularly check the condensate drain (visual inspection). Remove contamination and blockages immediately (see chapter "Installation / Condensate drain").




1 Inspection port

**Material losses**
Keep the air discharge and intake apertures free from snow and leaves.

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

Protect the appliance from dust and dirt ingress during building work.

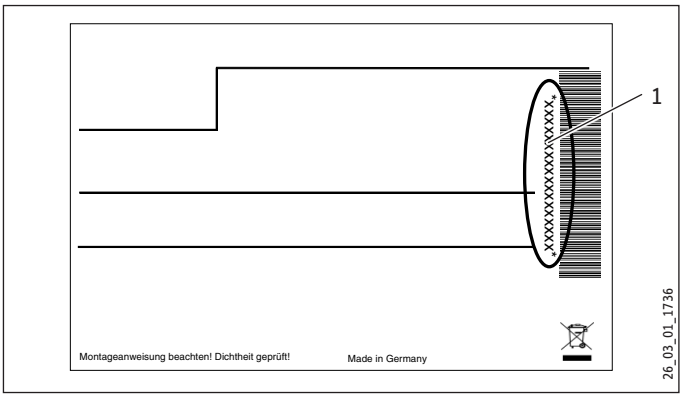
## 6. Troubleshooting

| Fault | Cause | Remedy |
|---|---|---|
| There is no hot water or the heating system stays cold. | No power at the appliance. | Check the fuses/MCBs in your fuse box/distribution panel. Replace the fuses/ reset the MCBs if required. Notify your qualified contractor if the fuses/MCBs blow/trip again. |
| The external unit leaks water. | The condensate drain may be blocked. | Clean the condensate drain as described in „Maintenance and care“. |
| This can cause the humidity in the outdoor air to accumulate as dew or frost on the cooled heat pump casing | The heat pump is drawing heat from the outdoor air to heat the building. This can cause the humidity in the outdoor air to accumulate as dew or frost on the cooled heat pump casing. This is not a defect. | |

**Note**
Even when the condensate is draining away correctly, expect water to drip from the appliance onto the floor.

If you cannot remedy the fault, notify your qualified contractor. To facilitate and speed up your enquiry, please provide the serial number from the type plate. The type plate is located at the front top, on the right or left hand side of the casing.

**Sample type plate**




1 Number on the type plate

# 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.

## 8. Appliance description

The appliance offers frost protection for the connection lines. The integral frost protection circuit starts the circulation pump in the heat pump circuit automatically at a condenser temperature of 8 °C, and thereby ensures circulation in all water-carrying sections. If the temperature inside the buffer cylinder drops, the heat pump starts automatically no later than when the temperature falls below +5 °C.

### 8.1 Standard delivery

The following are delivered with the appliance:

- Wiring diagram

### 8.2 Accessories

#### 8.2.1 Required accessories

- Heat pump manager in wall mounting enclosure, WPM

#### 8.2.2 Further accessories

- Remote control for heating systems FEK
- Remote control for heating systems FE7
- Ribbon heater HZB-1
- Ribbon heater HZB-2
- Safety temperature controller for underfloor heating system STB-FB
- T-support SK-WPL
- Wall mounting support WK 2
- Mounting bracket MK 1
- Connection set AS-WP 1
- Connection set AS-WP 2

## 9. Preparations

The appliance is designed for siting in front of a wall. Observe the minimum clearances. If the appliance is installed in an open space or on a roof, protect the air intake side. Do this by erecting a wall to shield it against the wind.

### 9.1 Sound emissions

The appliance is louder on the air intake and air discharge sides than on the two enclosed sides. Observe the following information when selecting the installation location.

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

- Lawn areas and shrubs help reduce the spread of noise.
- Sound propagation can also be reduced by installing closely spaced palisade fencing around the appliance.

▶ Ensure that the air intake direction is the same as the main wind direction.

▶ Air should not be blown out against the wind.

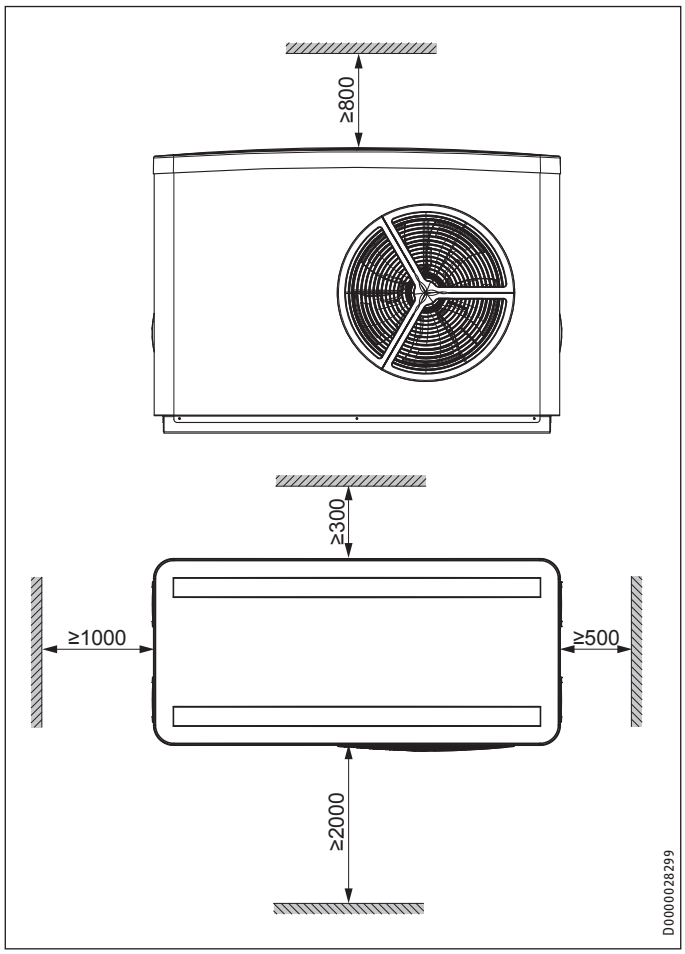
▶ Never direct the air intake or discharge towards noise-sensitive rooms of the house, e.g. bedrooms.

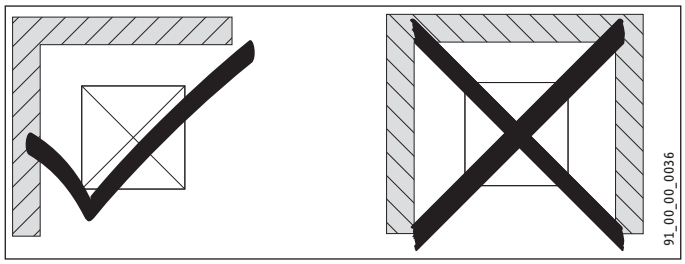
▶ Avoid installation on large, echoing floor areas, e.g. tiled floors.

▶ Avoid installation between reflective building walls. Reflecting building walls can increase the sound level.

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

## 9.2 Minimum clearances




▶ Do not install the appliance in a recess. Two sides of the appliance must remain exposed.

## 9.3 Preparation of the installation location

▶ Observe chapter “Sound emissions”.

▶ Ensure that the appliance is accessible from all sides.

## 9.4 Siting

**Note**
If the condensate drain hose is not laid with frost protection or is exposed to severe weather conditions, installation of a ribbon heater is recommended both with the plinth and the wall mounting support.

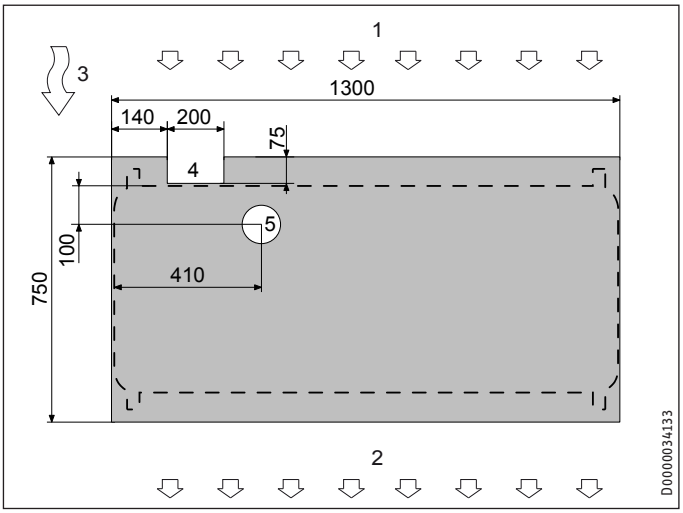
### 9.4.1 Example: Pipe routing above ground or mounting bracket MK 1

- The substrate must be horizontal, level, solid and permanent.

▶ Ensure the entire appliance frame is in full contact with the substrate. Uneven substrates can increase noise emissions.

If the supply lines are run downwards through the ground, they must be laid in a recess (space) in the foundation.

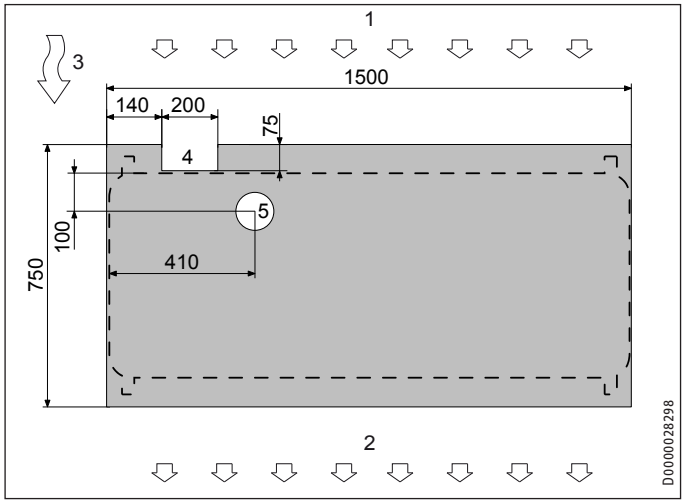
**WPL 15 AS | WPL 15 ACS**




1 Air intake
2 Air discharge
3 Main wind direction
4 Supply line recess
5 Condensate drain recess (minimum diameter 70 mm)

▶ Ensure that the foundations offer the necessary recess.

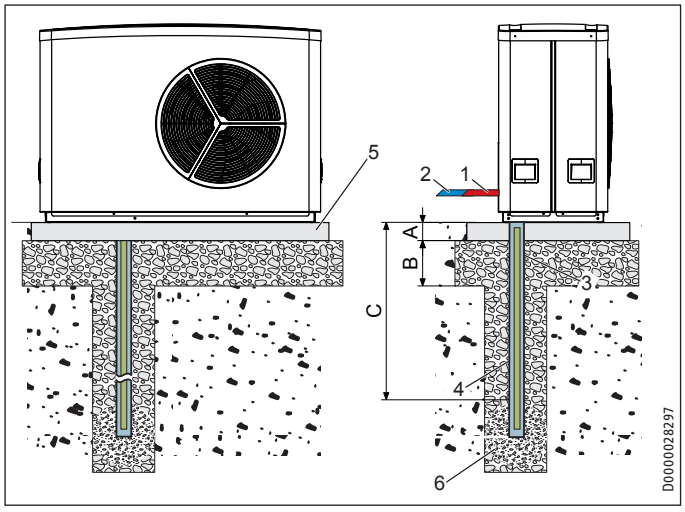
**WPL 20 A | WPL 20 AC | WPL 25 A | WPL 25 AS | WPL 25 AC | WPL 25 ACS**




1 Air intake
2 Air discharge
3 Main wind direction
4 Supply line recess
5 Condensate drain recess (minimum diameter 70 mm)

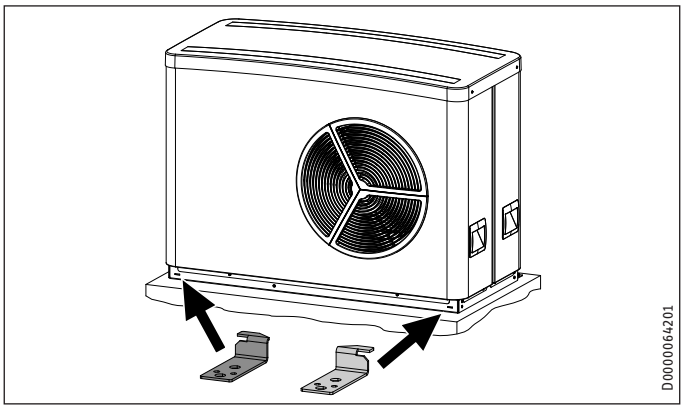
▶ Ensure that the foundations offer the necessary recess.

**Example: Laying pipes above ground**




A 100
B 300
C Depth of frost line
1 Heating flow
2 Heating return
3 Condensate drain
4 Condensate drain pipe
5 Foundation
6 Gravel bed

**Note**
The transport brackets can be used to secure the appliance to the foundations.

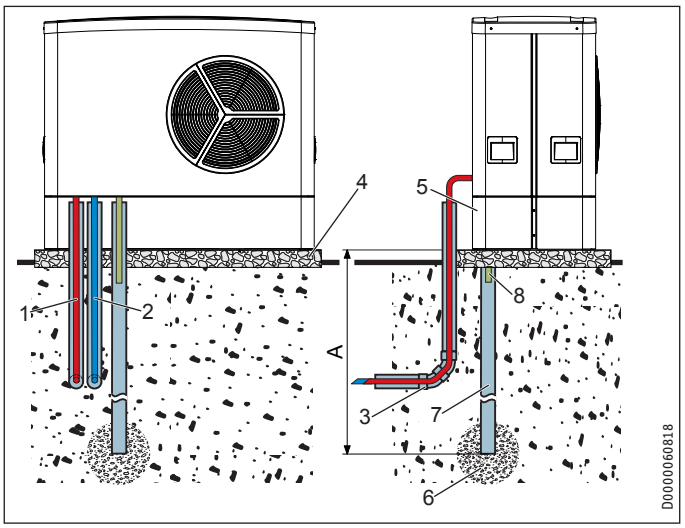



▶ Hook two brackets respectively into the lateral slots on the front and back. Ensure you are using the correct brackets for the left and right hand slots respectively.
▶ Position the brackets so that the groove on the bracket is hooked into the appliance.
▶ Secure the appliance to the foundations using the brackets and suitable rawl plugs and screws.

**Note**
▶ Do not use the screws with which the appliance was secured to the transport pallet.

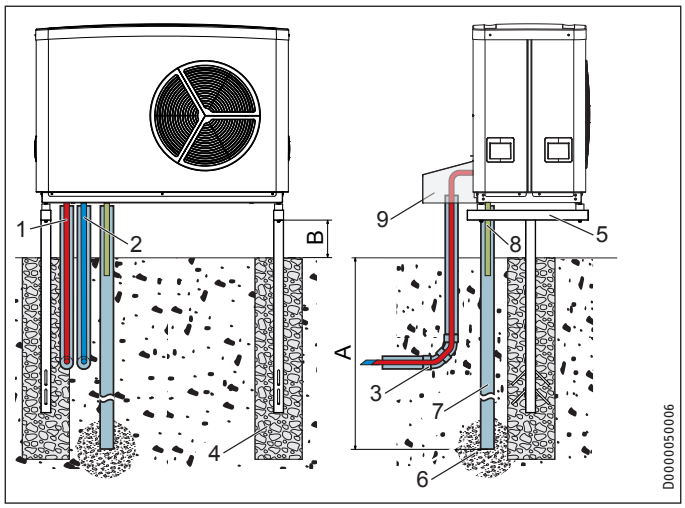
**Example: Mounting bracket MK 1 (only WPL 15 AS | WPL 15 ACS)**

**Note**
The mounting bracket cannot be used in combination with the connection sets (AS-WP 1 and AS-WP 2).




A Depth of frost line
1 Heating flow
2 Heating return
3 Conduit for supply lines
4 Foundation
5 Mounting support
6 Gravel bed
7 Drainage pipe
8 Condensate drain

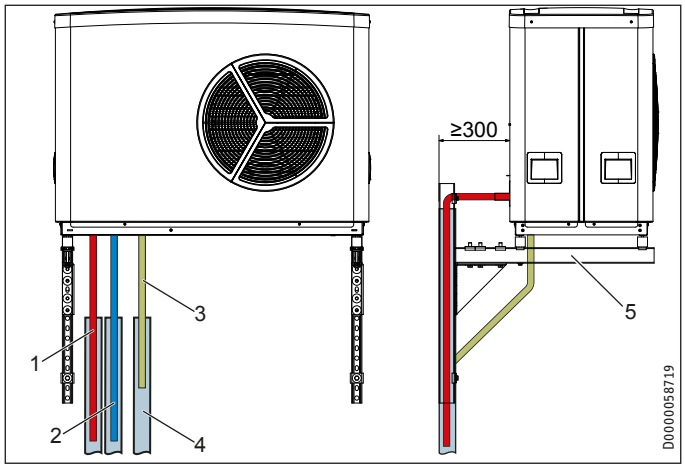
#### 9.4.2 Example: T-support SK-WPL




A Depth of frost line
B 300
1 Heating flow
2 Heating return
3 Conduit for supply lines/cables
4 Foundation
5 T-support
6 Gravel bed
7 Drainage pipe
8 Condensate drain
9 Cover

▶ Observe the static limits of the T-support used.

#### 9.4.3 Example: Wall mounting support WK 2




1 Heating flow
2 Heating return
3 Condensate drain
4 Drainage pipe
5 Wall mounting bracket

▶ Observe the static limits of the wall mounting support used.

**Note**
To prevent disturbance due to structure-borne noise transmission, never install the wall mounting bracket on the external walls of living areas or bedrooms.
▶ Install the wall mounting bracket, for example, on a garage wall.

## 9.5 Installing supply lines and supply cables

The supply lines are all electric cables plus the heating flow and return lines.

▶ Use only weather-resistant cables, e.g. NYY.
▶ Protect the flow and return lines against frost, with sufficient thermal insulation. Provide the thermal insulation in accordance with applicable regulations.
▶ Also protect all supply lines/cables against humidity, damage and UV radiation by means of a conduit.
▶ Protect the supply lines and cables routed through the ground from moisture and damage by routing them through a conduit.
▶ Protect all pipe fixings and outer wall transitions with anti-vibration insulation.

**Note**
When routing the condensate hose, observe chapter "Installation / Condensate drain".

## 9.6 WPM heat pump manager

A WPM heat pump manager is required to operate the appliance. This controls the entire heating system.

## 9.7 Buffer cylinder

A buffer cylinder is recommended to ensure trouble-free appliance operation.

The buffer cylinder provides hydraulic separation of the volume flows in the heat pump circuit and heating circuit, and also serves as an energy source for defrosting.

▶ When operating without a buffer cylinder, observe the details specified in chapter „Minimum flow rate with individual room controller by means of FEK / FE7 in the case of systems without buffer cylinder“.

**Material losses**
A buffer cylinder with diffusion-proof insulation is essential for cooling mode.

### 9.8 Preparing the electrical installation

**WARNING Risk of electrocution!**
**Carry out all electrical connection and installation work in accordance with national and regional regulations.**

**WARNING Risk of electrocution!**
**Use a permanent connection to the power supply. The appliance must be able to 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 contactors, isolators, fuses, etc.**

**Material losses**
The specified voltage must match the mains voltage. Observe the type plate.

**Material losses**
Provide separate fuses for the 3 power circuits (for the appliance, the electric emergency/booster heater and the control unit).

▶ Lay the relevant pipe cross-sections. Observe the applicable national and regional regulations.

| Fuse protection | Assignment | Cable cross-section |
|---|---|---|
| 1x C 20 A | Heat pump (single phase)<br>WPL 15 AS<br>WPL 15 ACS | 2.5 mm² for routing above the surface<br>4.0 mm² for routing through a wall |
| 1x C 35 A | Heat pump (single phase)<br>WPL 25 AS<br>WPL 25 ACS | 6.0 mm² for routing through a wall |
| 3x C 16 A | Heat pump (3-phase)<br>WPL 20 A<br>WPL 20 AC<br>WPL 25 A<br>WPL 25 AC | 2.5 mm² |
| 2x B 16 A | Electric emergency/booster heater WPL 15 AS<br>WPL 15 ACS<br>WPL 25 AS<br>WPL 25 ACS | 2.5 mm² |
| 3x B 16 A | Electric emergency/booster heater<br>WPL 20 A<br>WPL 20 AC<br>WPL 25 A<br>WPL 25 AC | 2.5 mm² |
| 1x B 16 A | Control | 1.5 mm² |

The electrical data is provided in the "Specification" chapter. You require a J-Y (St) 2x2x0.8 mm² cable as BUS cable.

**Note**
The appliance contains an inverter for the variable speed compressor. In case of a fault inverters can cause DC residual currents. If RCDs are provided, they have to be type B AC/DC-sensitive.
A DC residual current can block type A RCDs.
▶ Make sure that the appliance power supply is disconnected from the fuse board/distribution panel.

# 10. Installation

**Note**
The device is designed in such a way that it can be positioned and connected without removing the cover or side panels.

### 10.1 Handling

▶ Use the recessed grips provided at the sides.

**Material losses**
Protect the appliance against heavy impact during transport.

Only allow the appliance to be tilted during transport for a short time to one of its longitudinal sides. The longer the appliance is tilted, the greater the distribution of refrigerant oil in the system. Wait approx. 30 minutes before starting the appliance after it has been tilted.

### 10.2 Siting

▶ When installing the appliance, observe the air intake direction.
▶ Position the standard appliance on the prepared substrate.

**Note**
The appliance can be secured to a foundation with screws as additional protection against tipping over.
▶ Use the accessories that were in place to secure the appliance to the transport pallet.

### 10.3 Heating water connection

The heat pump heating system must be connected by a qualified contractor in accordance with the water installation drawings, which are part of the technical guides.

▶ Thoroughly flush the pipework before connecting the heat pump. Foreign bodies, such as welding beads, rust, sand, sealant, etc. can impair the operational reliability of the heat pump.
▶ Connect the heat pump on the heating water side. Check for tightness.
▶ Ensure the correct connection of the heating flow and return.

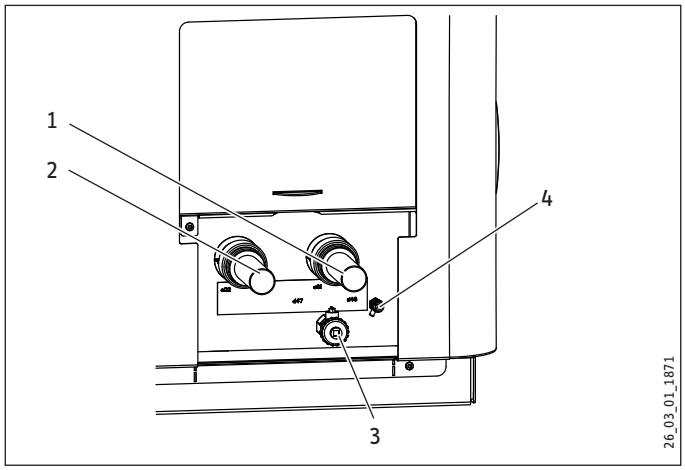
To facilitate connection to the heating system, push-fit connectors are enclosed with the appliance (see chapter "Fitting the push-fit connectors").

▶ Provide the thermal insulation in accordance with applicable regulations.
▶ When designing the heating circuit, observe the internal pressure difference (see chapter "Specification / Data table").

## 10.4 Flow and return connection

**Material losses**
Insulate the heating flow and return lines for cooling mode with vapour diffusion-proof material.

▶ Take the position of the heating flow and return from the following figure:




1 Heating flow
2 Heating return
3 Drain
4 Ventilation

▶ Connect the heat pump to the heating circuit. Check for tightness.

## 10.5 Fitting the push-fit connector

**Note**
The plastic push-fit connectors are not suitable for installation in the DHW line or the solar circuit.
▶ Only install the push-fit connectors in the heating or brine circuits.

**Material losses**
Tighten the screw cap of the push-fit connector by hand. Never use a tool.

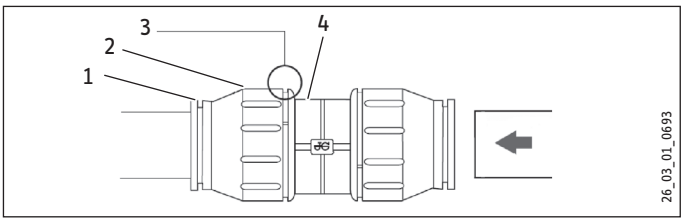
**Material losses**
Support sleeves are required when using plastic pipes.

### How the push-fit connectors work

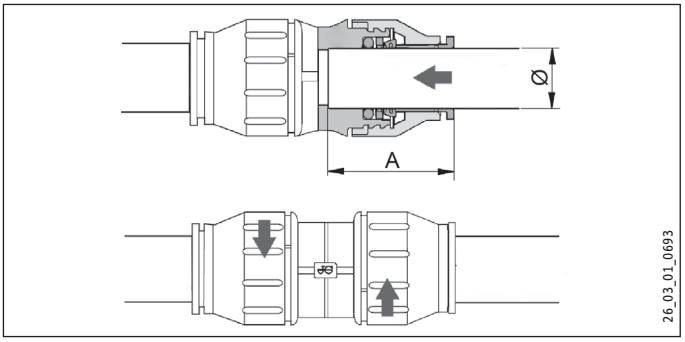
The push-fit connectors are equipped with a retainer with stainless steel serrations and an O-ring seal. In addition, the push-fit connectors are equipped with the “twist and lock” function. Simply turning the screw cap by hand will secure the pipe in the connector and push the O-ring against the pipe to seal it.

### Making the push-fit connection

The connector must be in its relaxed position before the pipe is inserted. In this position, there is a small gap between the screw cap and main body.




1 Retainer
2 Screw cap
3 Gap between screw cap and main body
4 Main body




| | |
|---|---|
| Pipe Ø | 28 mm |
| Depth of insertion A | 44 mm |

**Material losses**
Pipe ends must be deburred.
▶ Always use a pipe cutter to trim pipes.

▶ Push the pipe through the O-ring into the push-fit connector until it reaches the prescribed insertion depth.

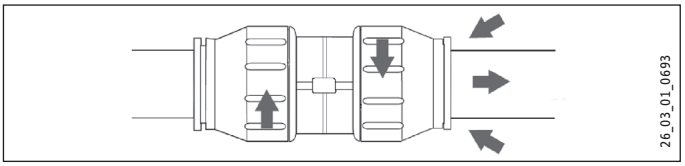
▶ Tighten the screw cap by hand against main body as far as it will go. This locks the push-fit connection.

### Undoing the push-fit connection

If the push-fit connectors later need to be undone, proceed as follows:

▶ Turn the screw cap anti-clockwise until there is a narrow gap of approx. 2 mm. Press the retainer back with your fingers and hold on to it.

▶ Pull out the inserted pipe.



## 10.6 Oxygen diffusion

**Material losses**
Avoid open heating systems and plastic pipes in underfloor heating systems which are permeable to oxygen.

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 heating elements or steel pipes).

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

## 10.7 Filling the heating system

▶ Fill the heating system via the drain (see chapter "Specification / Dimensions").

### 10.7.1 Water quality

Before the system is filled, a fill water analysis must be made available. This may, for example, be requested from the relevant water supply utility.

To avoid damage as a result of scaling, it may be necessary to soften or desalinate the fill water. The fill water limits specified in chapter "Specification / Data table" must always be observed.

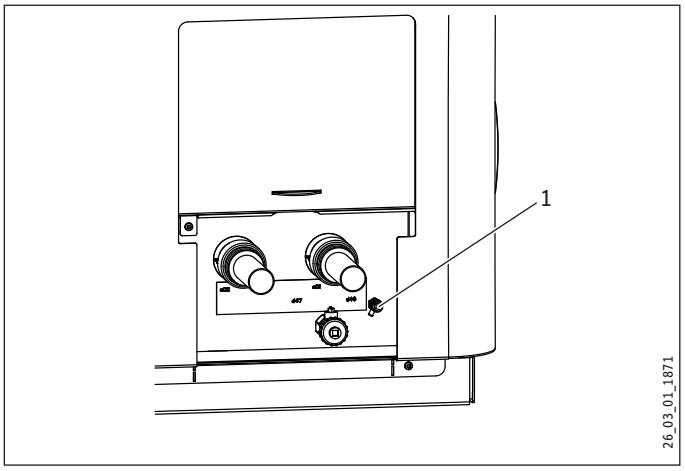
▶ Recheck these limits 8-12 weeks after commissioning and as part of annual system maintenance.

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

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

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

### 10.7.2 Venting the heating system




1 Ventilation

▶ Vent the pipework by activating the ventilation.

## 10.8 Minimum flow rate

For heating operation without buffer cylinder, ensure the minimum flow rate and the availability of defrost energy.

## 10.9 Setting the flow rate on the heating side

**Material losses**
For operation without a buffer cylinder, it is essential that the electric emergency/booster heater (DHC) is connected.

The appliance is designed in such a way that no buffer cylinder is required to provide hydraulic separation of the flow in the heat pump circuit and the heating circuit in conjunction with panel heating systems.

We recommend the use of a buffer cylinder for installations with several heating circuits.

The setting is made in heat pump mode. For this, make the following settings first:

▶ Temporarily remove the fuse from the electric emergency/booster heater to isolate the emergency/booster heater from the power supply. Alternatively, switch OFF the second heat generator.

▶ Operate the appliance in heating mode.

### 10.9.1 Minimum flow rate with individual room controller by means of FEK / FE7 in systems without buffer cylinder

For systems without a buffer cylinder, in menu „SETTINGS / HEATING / STANDARD SETTING“, set parameter „BUFFER OPERATION“ to „OFF“.

In such cases, one or more heating circuits in the heating system must be left open. Ensure the minimum flow rate (see „Specification / Data table“) by means of the correspondingly opened heating circuits (see table „Design recommendation for an underfloor heating system inside the lead room“).

Design recommendation for underfloor heating system inside the lead room:

**Material losses**
A buffer cylinder with diffusion-proof insulation is essential for cooling mode.

| | Minimum flow rate | Minimum water content of buffer cylinder or open circuits | Composite pipework 16 x 2 mm / routing gap 10 cm | | Composite pipework 20x2.25 mm / routing gap 15 cm | |
|---|---|---|---|---|---|---|
| | | | Lead room floor area | Number of circuits | Lead room floor area | Number of circuits |
| | l/h | l | m² | n x m | m² | n x m |
| WPL 15 AS | 700 | 16 | 21 | 3x70 | 21 | 2x70 |
| WPL 15 ACS | 700 | 16 | 21 | 3x70 | 21 | 2x70 |
| WPL 20 A | 1000 | 29 | 28 | 4x70 | 32 | 3x70 |
| WPL 20 AC | 1000 | 29 | 28 | 4x70 | 32 | 3x70 |
| WPL 25 A | 1000 | 29 | 28 | 4x70 | 32 | 3x70 |
| WPL 25 AS | 1000 | 29 | 28 | 4x70 | 32 | 3x70 |
| WPL 25 AC | 1000 | 29 | 28 | 4x70 | 32 | 3x70 |
| WPL 25 ACS | 1000 | 29 | 28 | 4x70 | 32 | 3x70 |

| | Buffer cylinder always required | Recommended buffer cylinder volume, underfloor heating | Recommended buffer cylinder volume, radiators | Activating the integral emergency/booster heater |
|---|---|---|---|---|
| WPL 15 AS | no | 100 | 200 | yes |
| WPL 15 ACS | no | 100 | 200 | yes |
| WPL 20 A | no | 200 | 400 | yes |
| WPL 20 AC | no | 200 | 400 | yes |
| WPL 25 A | no | 200 | 400 | yes |
| WPL 25 AS | no | 200 | 400 | yes |
| WPL 25 AC | no | 200 | 400 | yes |
| WPL 25 ACS | no | 200 | 400 | yes |

- ▶ Install the open heating circuit(s) in the lead room (room where the external programming unit of the heat pump control unit is installed, such as in the living room). The individual room can then be controlled either with the external programming unit or directly by adjusting the heating curve or the room influence.
- ▶ Fully open the heating circuit(s) in the lead room.
- ▶ Close all other heating circuits.
- ▶ If an overflow valve has been installed in the heating system, fully close this overflow valve in order to determine the minimum flow rate.

In combination with an hydraulic module, cylinder and hydraulic module or integral cylinder:

- ▶ Under menu item “COMMISSIONING / HEATING” set the parameter “HEATING CIRC PUMP RATE” (heating circuit pump rate) so that the minimum flow rate required for system operation is assured (see chapter “Specification / Data table”).

If the appliance is operated on its own with a WPM:

- ▶ Set the heating circuit pump so that the minimum flow rate required to operate the system is safeguarded.

The current flow rate can be called up in the menu „INFO / HEAT PUMP INFO / PROCESS DATA“ under „WP WATER FLOW RATE“.

### 10.9.2 Minimum flow rate for systems with buffer cylinder

When using a buffer cylinder, in menu „SETTINGS / HEATING / STANDARD SETTING“, set parameter „BUFFER OPERATION“ to „ON“.

In combination with an hydraulic module, cylinder and hydraulic module or integral cylinder:

- ▶ Under menu item “COMMISSIONING / HEATING” set the parameter “HEATING CIRC PUMP RATE” so that the nominal flow rate required for system operation is assured (see chapter “Specification / Data table”).

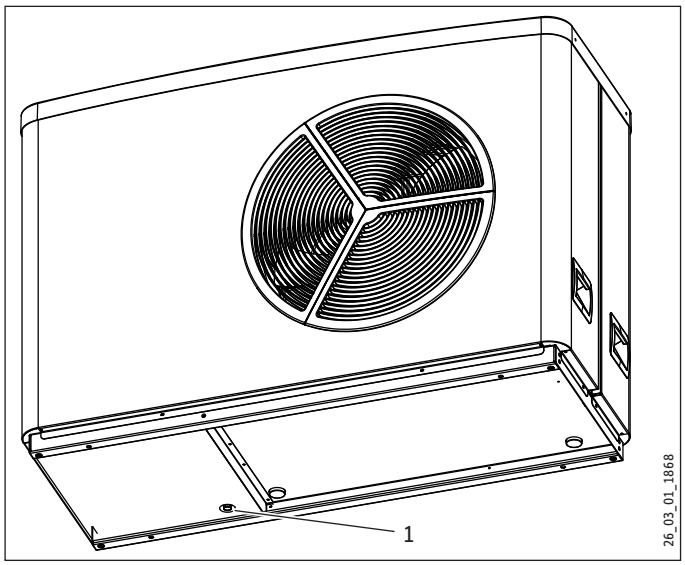
If the appliance is operated on its own with a WPM:

- ▶ Set the buffer charging pump so that the nominal flow rate required for system operation is assured.

The current flow rate can be called up in the menu „INFO / HEAT PUMP INFO / PROCESS DATA“ under „WP WATER FLOW RATE“.

### 10.10 Condensate drain

A condensate drain connector is factory fitted to the defrost pan to enable any condensate that may form to drain off.




1 Condensate drain

If required, you may install a supplementary heating facility inside the condensate drain pipe on site. We recommend that you install a supplementary heating facility if the routing of the condensate hose means it is at risk of frost or is fully exposed to the elements. If the appliance is mounted on a wall mounting bracket or T-support, a supplementary heating facility must be fitted.

- ▶ If the appliance is mounted on a wall bracket or T-support, attach a condensate hose to the condensate drain.
- ▶ Protect the condensate hose against frost with sufficient thermal insulation.

**Material losses**
Ensure the condensate hose is not kinked. Route the hose with a slope.

- ▶ After routing the condensate hose, check that the condensate can drain correctly.
- ▶ Please also observe the chapter "Electrical connection of supplementary heating facility".

### 10.11 External second heat generator

For dual mode systems, always connect the heat pump into the return of the second heat generator (e.g. oil boiler).

### 10.12 Safety temperature controller for underfloor heating system STB-FB

**Material losses**
In case of failure, in order to prevent an excessively high flow temperature in the underfloor heating system, we generally recommend the use of a safety temperature controller to limit the system temperature.

## 11. Power supply

**WARNING Electrocution**
- ▶ **Before any work, isolate the appliance from the power supply at the control panel.**

**Following isolation from the mains supply, parts of the appliance may remain live for up to 2 minutes since the capacitors still have to discharge into the inverter.**

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

Permission to connect the appliance may need to be obtained from your local power supply utility.

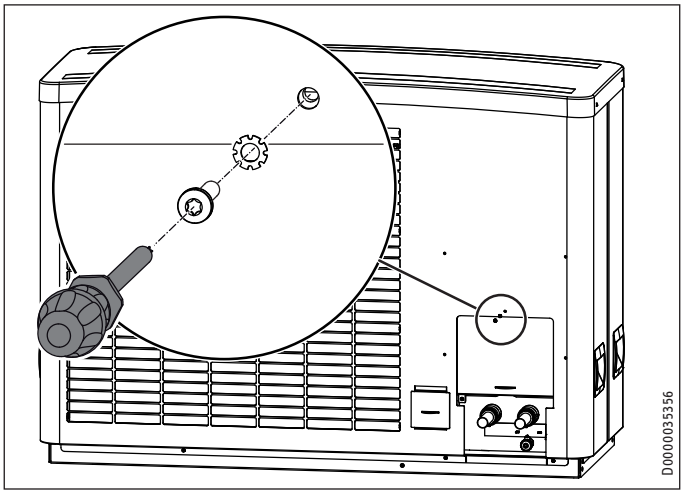
**Note**
Observe the operating and installation instructions for the WPM heat pump manager.

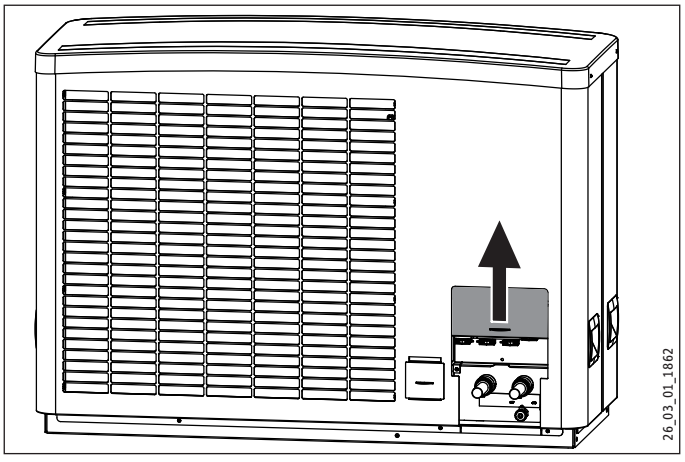
The terminals are located in the wiring chamber of the appliance.

Observe chapter "Preparing the electrical installation".

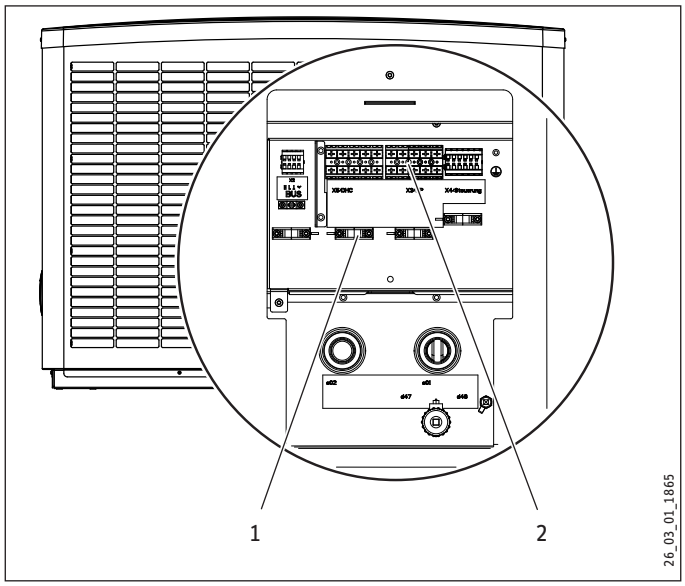
- ▶ Use appropriate electrical cables in accordance with local regulations for all connections.

**Access to the wiring chamber**



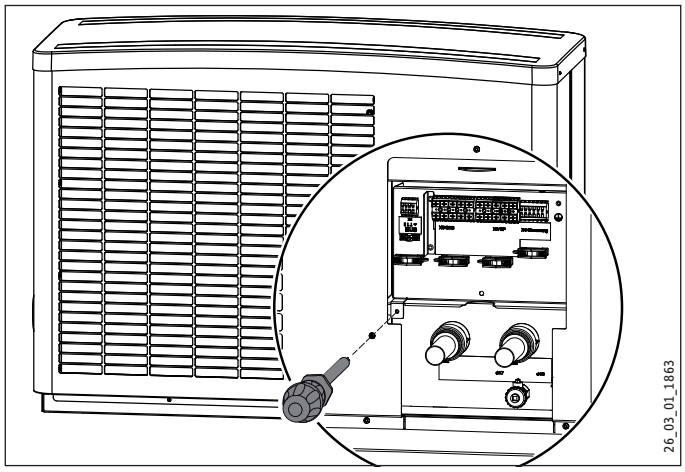

- ▶ Push the cover upwards.

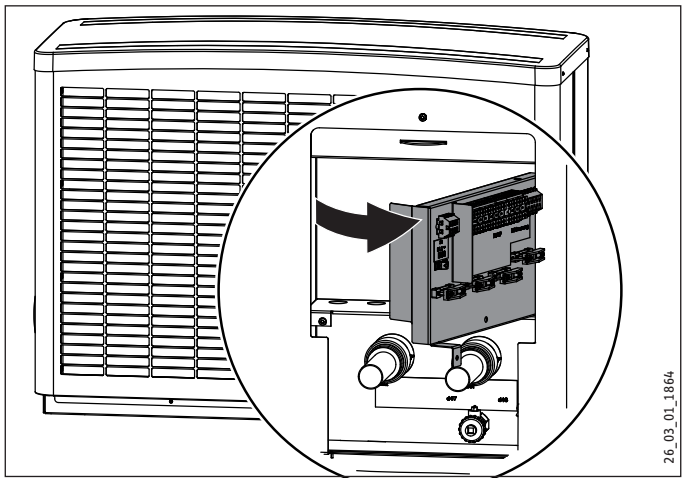



1 Strain relief
2 Wiring chamber

▶ Route cables and leads through the strain reliefs.

If space behind the appliance is limited, the wiring chamber can be folded out.




▶ Connect the electric emergency/booster heater if you want to utilise the following appliance functions:

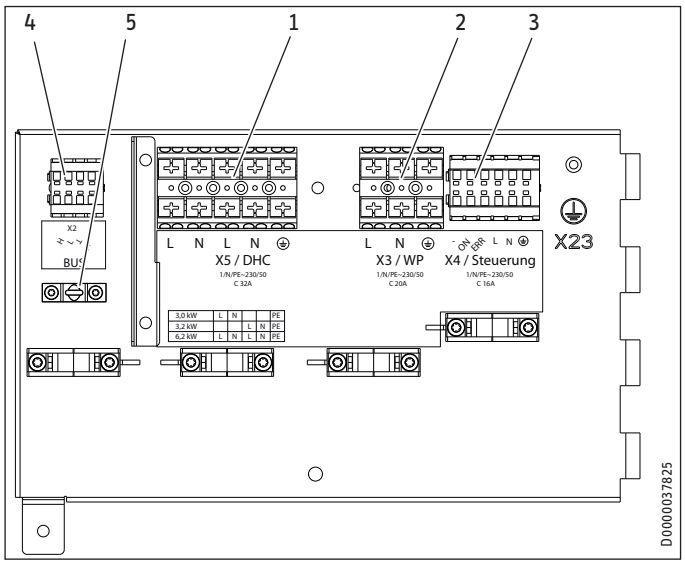
| Appliance function | Effect of the electric emergency/booster heater |
|---|---|
| Mono energetic operation | If the heat pump cannot reach the dual mode point, the electric emergency/booster heater ensures both the heating operation and the provision of high DHW temperatures. |
| Emergency mode | Should the heat pump suffer a fault that prevents its continued operation, the heating output will be covered by the electric emergency/booster heater. |
| Heat-up program (only for underfloor heating systems) | Where return temperatures are <25 °C, the electric emergency/booster heater must provide the necessary heat for screed drying.<br>With these low system temperatures, the drying heat must not be provided by the heat pump, otherwise the frost protection of the appliance can no longer be guaranteed during the defrost cycle.<br>When the heat-up program has ended, you can disconnect the electric emergency/booster heater if it is not required for the appliance operation.<br>Please note that during the heat-up program, the emergency mode cannot be selected. |
| Pasteurisation control | The electric emergency/booster heater starts automatically when the pasteurisation control is active in order to regularly heat the DHW to 60 °C to protect it against the growth of legionella bacteria. |

▶ Connect cables according to the following diagram.

▶ Earth the LV lead by inverting the screen over the external sheath and clamping it under the earth terminal.

▶ Then check the function of the strain relief fittings.

## 11.1 Power connection WPL 15 AS | WPL 15 ACS




| | | |
|---|---|---|
| 1 | X5 | Electric emergency/booster heater (DHC) |
| | | L, N, L, N, PE |

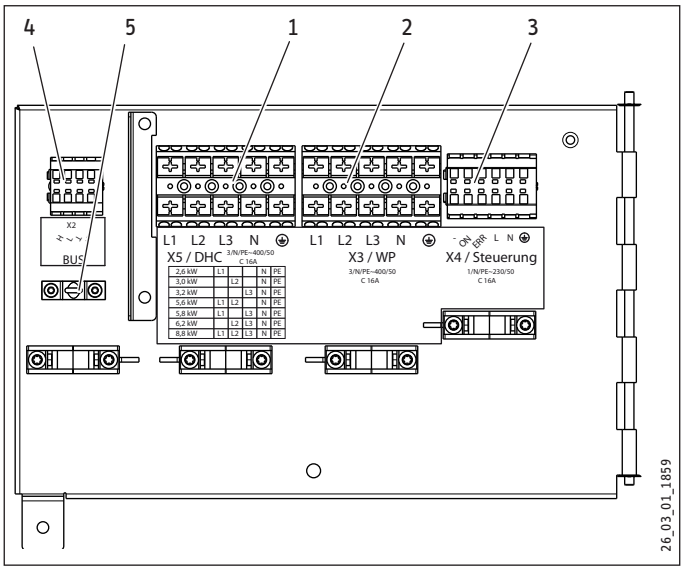
| Connected load | Terminal allocation | | | | |
|---|---|---|---|---|---|
| 3,0 kW | L | N | | | PE |
| 3,2 kW | | | L | N | PE |
| 6,2 kW | L | N | L | N | PE |

| | | |
|---|---|---|
| 2 | X3 | Compressor (inverter) |
| | | L, N, PE |
| 3 | X4 | Control voltage |
| | | Power supply: L, N, PE |
| 4 | X2 | Low voltage (BUS cable) |
| | | BUS High H<br>BUS Low L<br>BUS earth ⊥<br>BUS "+" (is not connected) |
| 5 | | Earth terminal for screening the LV lead |

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

The maximum permissible mains impedance is indicated in chapter “Specification / Data table”.

## 11.2 Power connection WPL 20 A | WPL 20 AC | WPL 25 A | WPL 25 AC

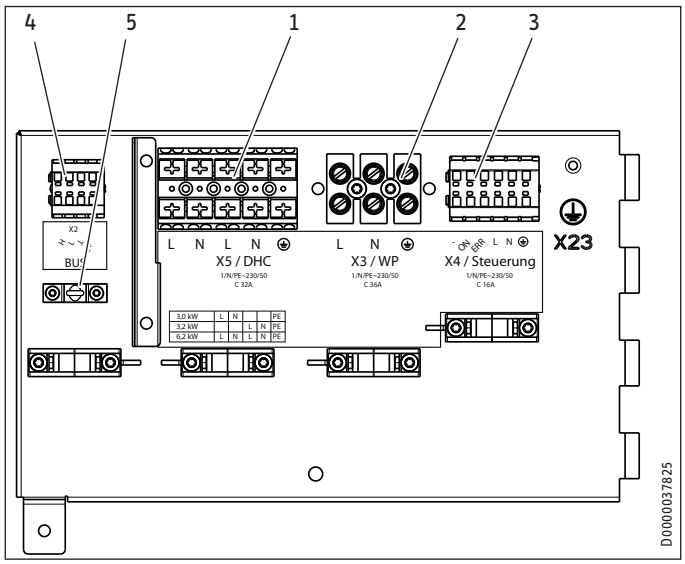



| | | |
|---|---|---|
| 1 | X5 | Electric emergency/booster heater (DHC) |
| | | L1, L2, L3, N, PE |

| Connected load | Terminal allocation | | | |
|---|---|---|---|---|
| 2,6 kW | L1 | | | PE |
| 3,0 kW | | L2 | | PE |
| 3,2 kW | | | L3 | PE |
| 5,6 kW | L1 | L2 | | PE |
| 5,8 kW | L1 | | L3 | PE |
| 6,2 kW | | L2 | L3 | PE |
| 8,8 kW | L1 | L2 | L3 | PE |

| | | |
|---|---|---|
| 2 | X3 | Compressor (inverter) |
| | | L1, L2, L3, N, PE |
| 3 | X4 | Control voltage |
| | | Power supply: L, N, PE |
| 4 | X2 | Low voltage (BUS cable) |
| | | BUS High H<br>BUS Low L<br>BUS earth ⊥<br>BUS "+" (is not connected) |
| 5 | | Earth terminal for screening the LV lead |

## 11.3 Power connection WPL 25 AS | WPL 25 ACS

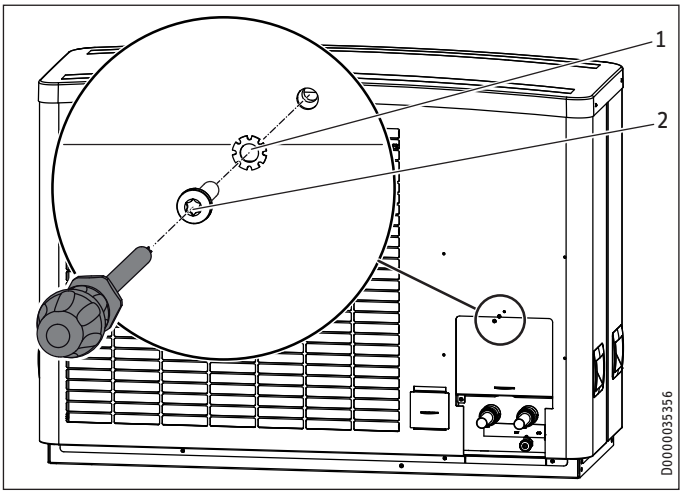



| | | |
|---|---|---|
| 1 | X5 | Electric emergency/booster heater (DHC) |
| | | L, N, L, N, PE |

| Connected load | Terminal allocation | | | | |
|---|---|---|---|---|---|
| 3,0 kW | L | N | | | PE |
| 3,2 kW | | | L | N | PE |
| 6,2 kW | L | N | L | N | PE |

| | | |
|---|---|---|
| 2 | X3 | Compressor (inverter) |
| | | L, N, PE |
| 3 | X4 | Control voltage |
| | | Power supply: L, N, PE |
| 4 | X2 | Low voltage (BUS cable) |
| | | BUS High H<br>BUS Low L<br>BUS earth ⊥<br>BUS "+" (is not connected) |
| 5 | | Earth terminal for screening the LV lead |

**Closing the wiring chamber**




1 Serrated washer
2 Screw

▶ Secure the cover with the screw and serrated washer.

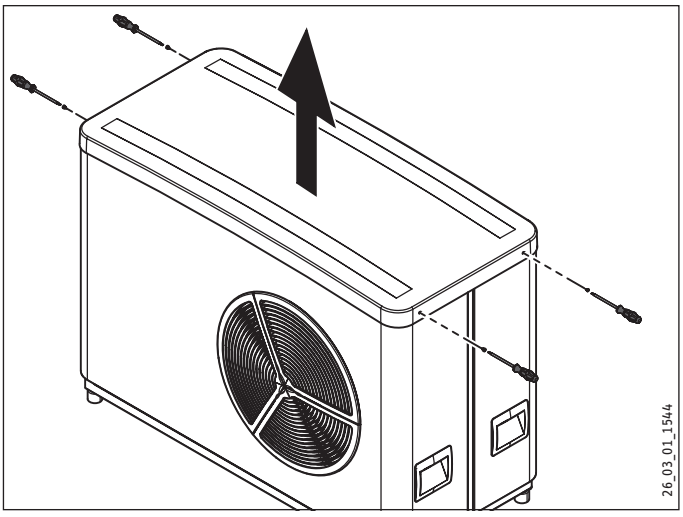
▶ Connect the following components to the heat pump manager in accordance with the technical guides:

- Circulation pump for the heat consumer side
- Outside temperature sensor
- Return sensor (only for operation with buffer cylinder)

## 11.4 Electrical connection of supplementary heating facility

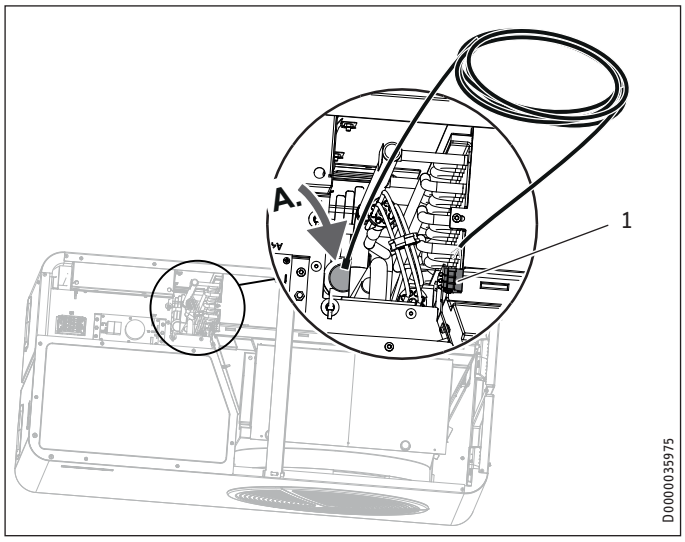
If required, you can mount a ribbon heater on the condensate pan and the condensate hose on site. We recommend that you install a ribbon heater if the routing of the condensate hose means it is at risk of frost or is fully exposed to the elements. A ribbon heater must be fitted if the condensate hose is installed on a wall mounting panel. See also chapter “Electrical connection”.

**Access to the wiring chamber**

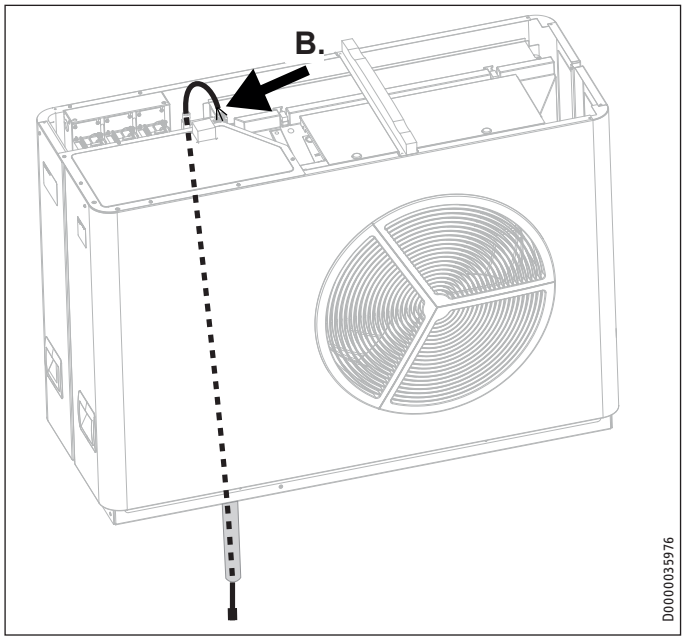


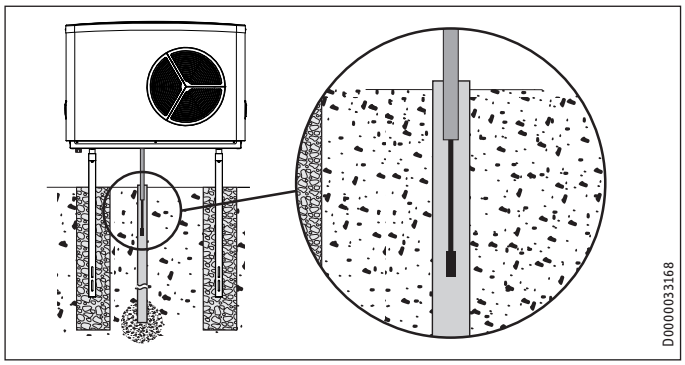

▶ Remove the cover.

# Power supply

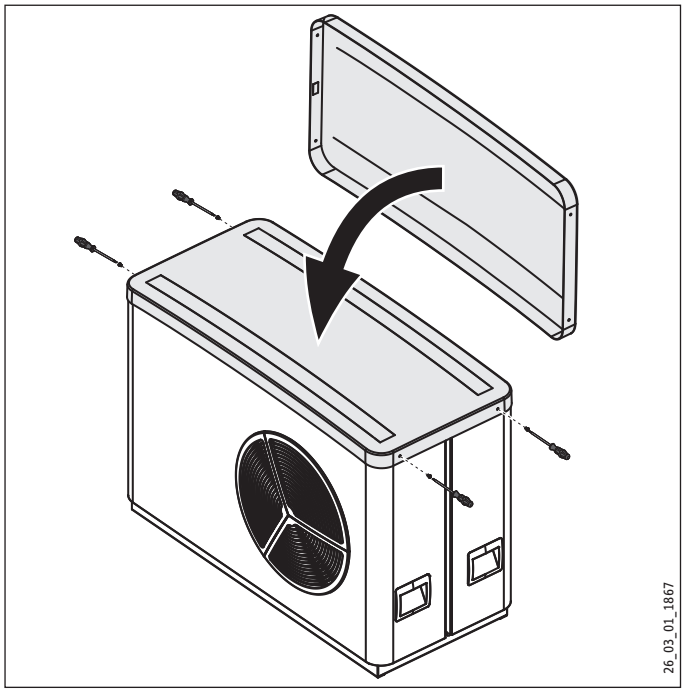



| | |
|---|---|
| 1 | Electrical connection for ribbon heater<br>Power supply: L, N, PE |




**Closing the wiring chamber**




- ▶ Position the cover on the appliance.
- ▶ Secure the cover with the four screws.

# 12. Commissioning

A WPM heat pump manager is required to operate the appliance. All necessary adjustments prior to and during operation are made on this device.

Only qualified contractors may carry out the adjustments on the heat pump manager commissioning report, commission the appliance and instruct the owner in its use.

Carry out commissioning in accordance with these installation instructions and the operating and installation instructions of the heat pump manager. Our customer service can assist with commissioning, which is a chargeable service.

Where this appliance is intended for commercial use, the rules of the relevant Health & Safety at Work Act must be observed at commissioning. For further details, check your local authorising body.

## 12.1 Checks before commissioning

Before commissioning, check the following points.

#### 12.1.1 Heating system

- Have you filled the heating system to the correct pressure, and opened the quick-action air vent valve?

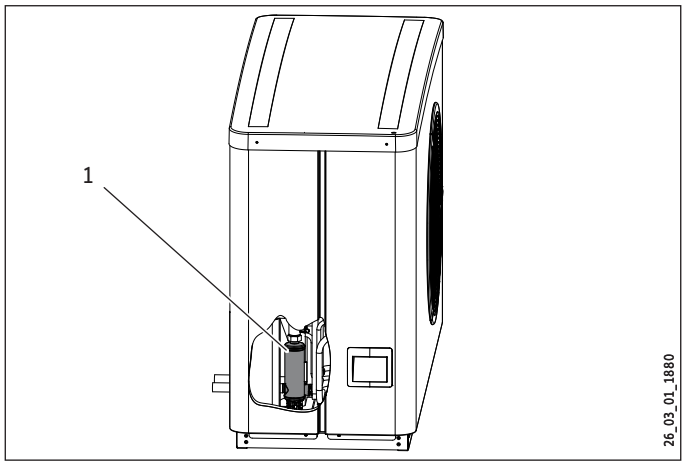
#### 12.1.2 Temperature sensor

- Have you correctly positioned and connected the outside temperature sensor and the return temperature sensor (in conjunction with a buffer cylinder)?

#### 12.1.3 High limit safety cut-out

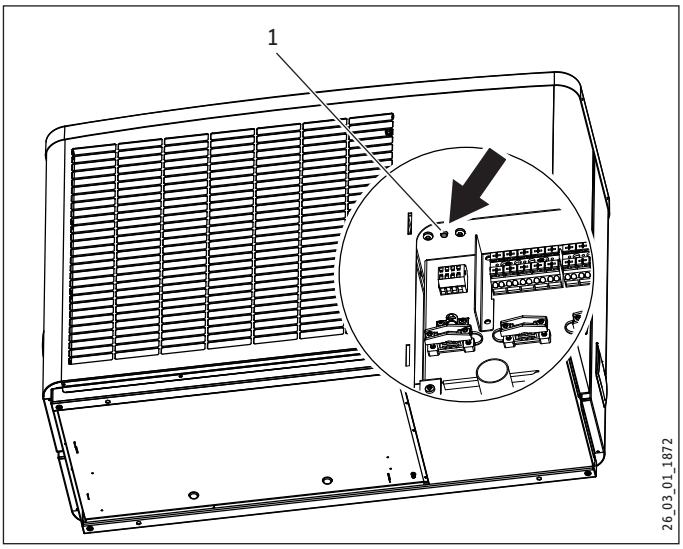
In ambient temperatures of below -15 °C it is possible that the high limit safety cut-out of the electrical emergency/booster heater may trip.

► Check whether the high limit safety cut-out has tripped.




1 Electric emergency/booster heater

► Remove the cause of the fault.




1 High limit safety cut-out reset button

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

#### 12.1.4 Power supply

- Have you correctly connected the power supply?

## 12.2 Using the appliance with an external second heat generator

The appliance is factory set for Compressor operation with an electric emergency/booster heater. If the appliance is used in dual mode with an external second heat generator or as a module with an additional identical heat pump, you must set the DIP switch to WP Type 4 (see chapter "Troubleshooting / Checking the IWS DIP switch settings / Compressor mode with an external second heat generator").

## 12.3 Settings

#### 12.3.1 Heating curve adjustment

The efficiency of a heat pump decreases as the flow temperature rises. The heating curve should therefore be adjusted with care. Heating curves that are set too high cause the zone valves and thermostatic valves to close, which may lead to the minimum flow rate required for the heating circuit not being achieved.

► Observe the WPM operating and installation instructions.

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 and bathroom).
  We do not recommend installing thermostatic or zone valves in the lead room. Control the temperature for these rooms via remote control.
- At different outside temperatures (e.g. −10 °C and +10 °C), adjust the heating curve so the required temperature is set in the lead room.

Standard values to begin with:

| Parameter | Underfloor heating system | Radiator heating system |
|---|---|---|
| Heating curve | 0.4 | 0.8 |
| Control response time | 25 | 50 |
| Comfort temperature | 21 °C | 23 °C |

If the room temperature is not high enough in spring and autumn (approx. 10 °C outside temperature), raise the „COMFORT TEMPERATURE“ parameter in the heat pump manager menu under „SETTINGS / HEATING / HEATING CIRCUIT“.

**Note**
If no remote control is installed, raising the "COMFORT TEMPERATURE" parameter leads to a parallel offset of the heating curve.

Increase the „HEATING CURVE“ parameter, if the room temperature is not high enough when outside temperatures are low.

If you raise the „HEATING CURVE“ parameter, adjust the zone valve or thermostatic valve in the lead room to the required temperature when outside temperatures are high.

**Material losses**
Never reduce the temperature in the entire building by closing all zone or thermostatic valves, instead use the setback programs.

When everything has been implemented correctly, the system can be heated to its maximum operating temperature and vented once again.

**Material losses**
With underfloor heating systems, observe the maximum permissible temperature for the system.

#### 12.3.2 Other settings

- For operation with and without buffer cylinder, observe chapter „Operation / Menu structure / Menu SETTINGS / STANDARD SETTING / BUFFER OPERATION“ in the operating and installation instructions of the WPM.

**When using the heat-up program**

If you use the heat-up program, make the following settings on the WPM:

- Initially set parameter „DUAL MODE TEMP HZG“ to 30 °C.
- Then set parameter „LOWER APP LIMIT HZG“ to 30 °C.

**Note**
After completing the heat-up process, reset the parameters "DUAL MODE TEMP HZG" and "LOWER APP LIMIT HZG" to their respective standard values or to the respective system values.

### 12.4 Operation and control

**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.

The system does not have to be switched off in summer. The heat pump manager has an automatic summer / winter changeover.

### 12.5 Decommissioning

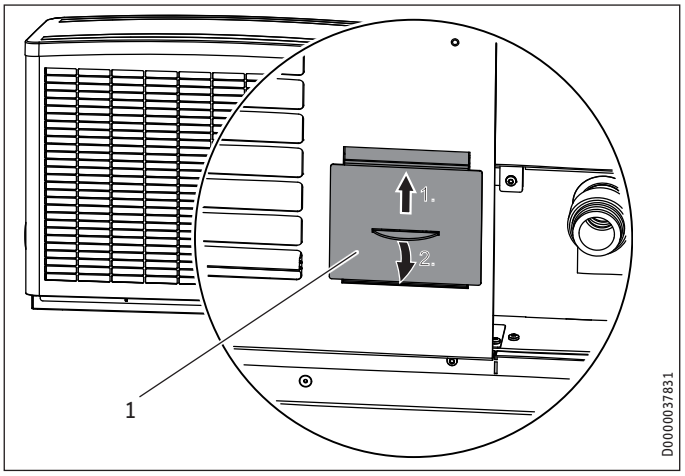
If the system is to be taken out of use, set the WPM to standby. This retains the safety functions designed to protect the system (e.g. frost protection).

**Material losses**
If the heat pump and frost protection are completely switched off, drain the system on the water side.

## 13. Maintenance

We recommend that you perform an annual inspection (to establish the current condition of the system), and as required have maintenance carried out (to return the system to its original condition).

Check the condensate drain (visual inspection). Remove contaminants and blockages immediately.




1 Inspection port

**Material losses**
Keep the air discharge and intake apertures free from snow and ice.

Remove any leaves or other foreign bodies from the evaporator fins periodically.

# 14. Troubleshooting

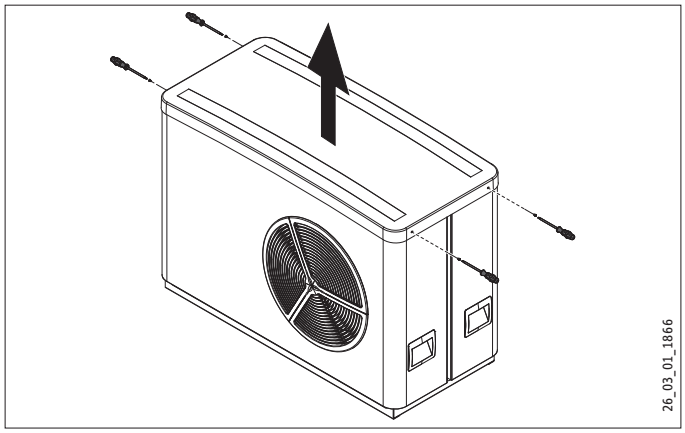
**WARNING Electrocution**
▶ **Before any work, isolate the appliance from the power supply at the control panel.**
**Following isolation from the mains supply, parts of the appliance may remain live for up to 2 minutes since the capacitors still have to discharge into the inverter.**

**Note**
Please observe the heat pump manager operating and installation instructions.

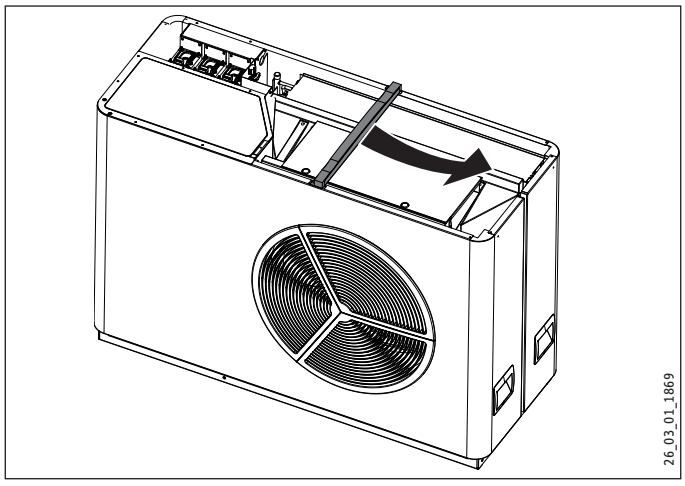
If a fault cannot be located during service using the heat pump manager, open the control panel in emergencies and check the IWS settings. This check must only be carried out by a qualified contractor.

## 14.1 Checking the IWS DIP switch settings

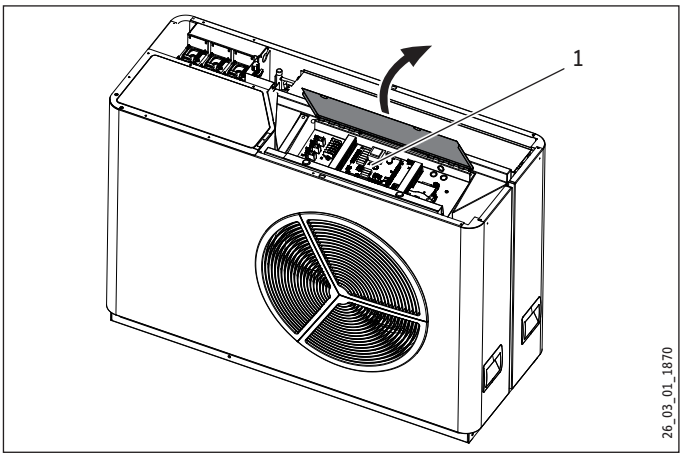
Carry out the following steps to make the IWS accessible.




▶ Remove the cover.



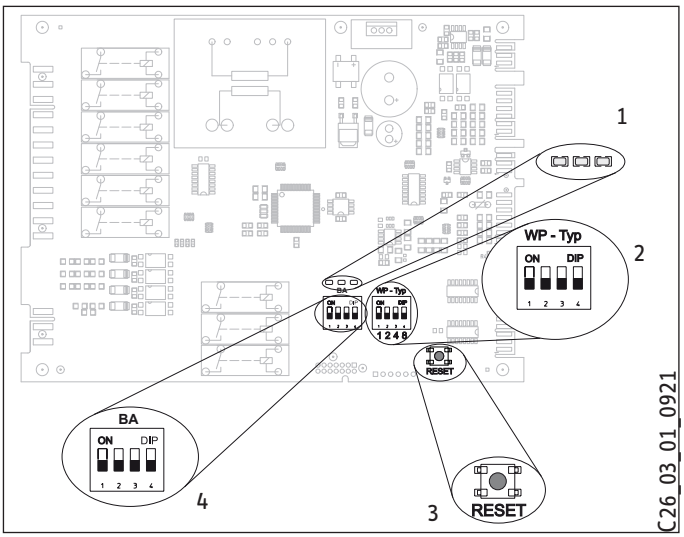

▶ Remove the bracket highlighted in grey.




1 IWS

▶ Lift the cover.

**IWS**

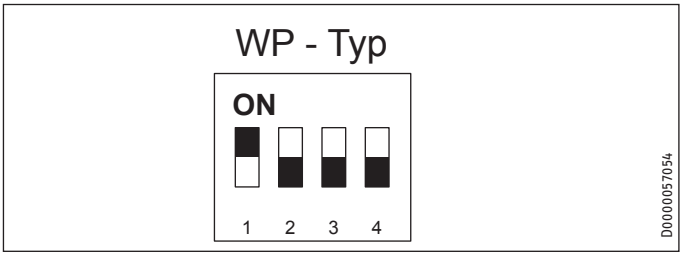



1 LEDs
2 DIP switch (WP-Typ)
3 Reset button
4 DIP switch (BA)

**DIP switch (WP-Typ)**

With the DIP switch ("WP-Typ"), you can select the various heat pump types on the IWS.

**Factory setting**
**Compressor mode with electric emergency/booster heater**



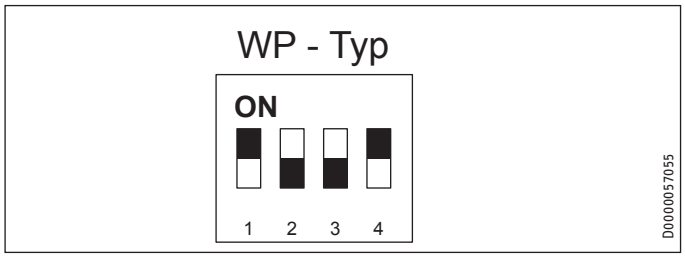

▶ Check whether the DIP switch is set correctly.

**Compressor mode with an external second heat generator**

**Damage to the appliance and environment**
In this case, do not connect the electric emergency/booster heater.

If the appliance is operated in dual mode with an external second heat source, set the DIP switch as follows:

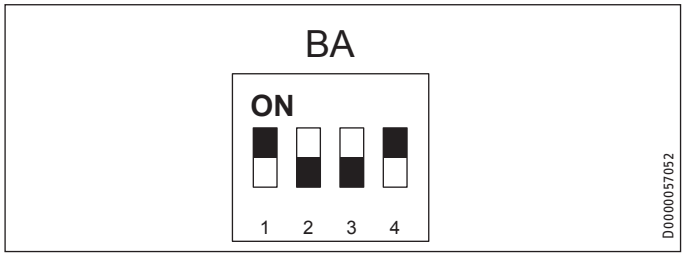
▶ Set the DIP switch as follows.




**DIP switch (BA)**

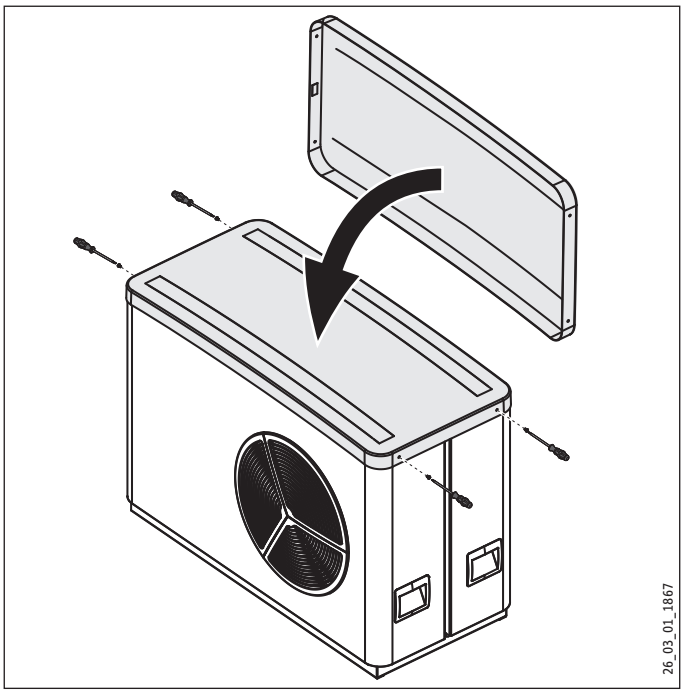
▶ Check whether the DIP switch (BA) is set correctly.

**Heating operation**




**Cooling operation**

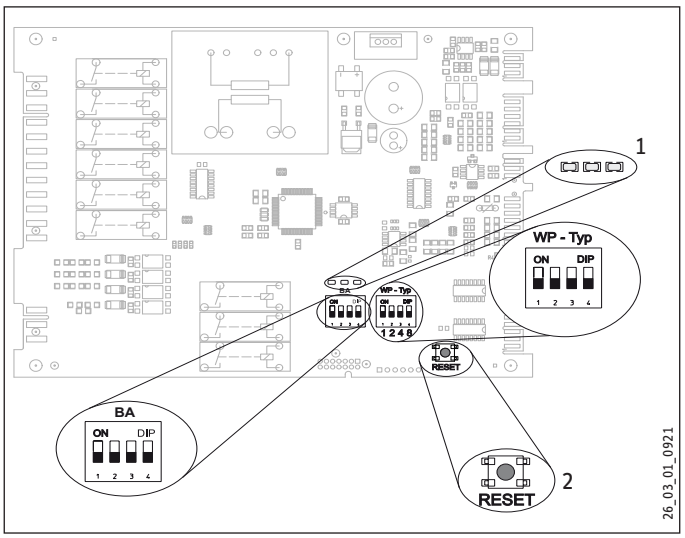

### 14.1.1 Closing the wiring chamber




▶ Position the cover on the appliance.

▶ Secure the cover with the four screws.

## 14.2 Light emitting diodes (LEDs)




1 LEDs
2 Reset button

The following table shows the meaning of the LEDs of the IWS.

| LED indicator | Meaning |
|---|---|
| Red LED flashes | Single fault. Appliance stops and restarts after 10 minutes, and the LED extinguishes. |
| Red LED illuminates | More than 5 faults within 2 hours run. The appliance is shut down permanently and only restarts following a reset on the IWS. The internal fault counter will then be reset. The appliance can be restarted after 10 minutes. The LED extinguishes. |
| Green LED (centre) flashes | The heat pump is initialising. |
| Green LED (centre) illuminates | The heat pump was initialised successfully and the connection with the WPM is active. |

Faults indicated by the red LED:

- High pressure fault
- Low pressure fault
- Other fault and
- Hardware fault on the IWS (see fault list)

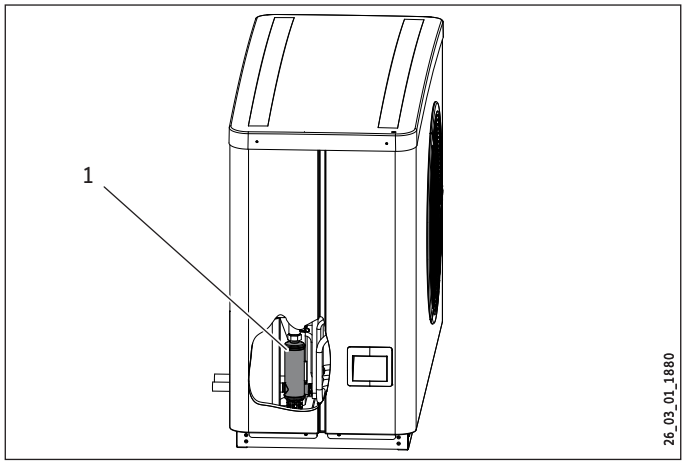
## 14.3 Reset button

If the IWS was not initialised successfully, you can reset the settings with this button.

▶ For this, also observe chapter "Reinitialising the IWS" in the heat pump manager operating and installation instructions.

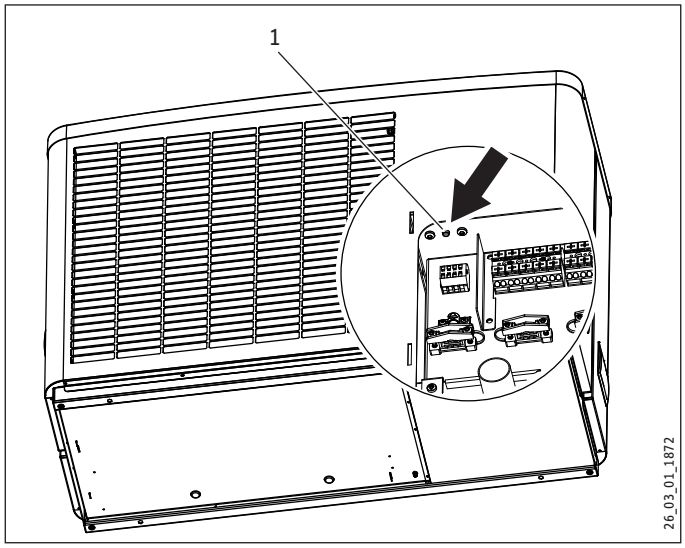
## 14.4 Resetting the high limit safety cut-out

The electric emergency/booster heater stops if the heating water temperature exceeds 85 °C, for example on account of a low flow rate.




1 Electric emergency/booster heater

▶ Remove the cause of the fault.




1 High limit safety cut-out reset button

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

▶ Check whether the heating water is being circulated at a sufficient flow rate.

## 14.5 Fan noise

The heat pump draws heat from the outdoor air. This causes the outdoor air to cool down. At outside temperatures of 0 °C to 8 °C, the air may be cooled to below freezing point. If under these conditions precipitation occurs in the form of rain or fog, ice may form on the air grille, the fan blades or the air routing. If the fan comes into contact with this ice, noise develops.

**How to remedy rhythmically scratching or grinding noises:**

▶ Check whether the condensate drain is free from obstruction.

▶ Check whether the design output and temperature are set correctly. Ice formation is particularly pronounced when a high heating output is demanded at moderate outside temperatures.

▶ Carry out a manual defrost, repeatedly if required, until the fan runs free again. For this, observe the information in the operating and installation instructions for the WPM.

▶ At outside temperatures above + 1 °C, switch the appliance off for around 1 hour or switch it over to emergency mode. After this, the ice should have melted.

▶ Check whether the appliance is installed in line with the installation conditions.

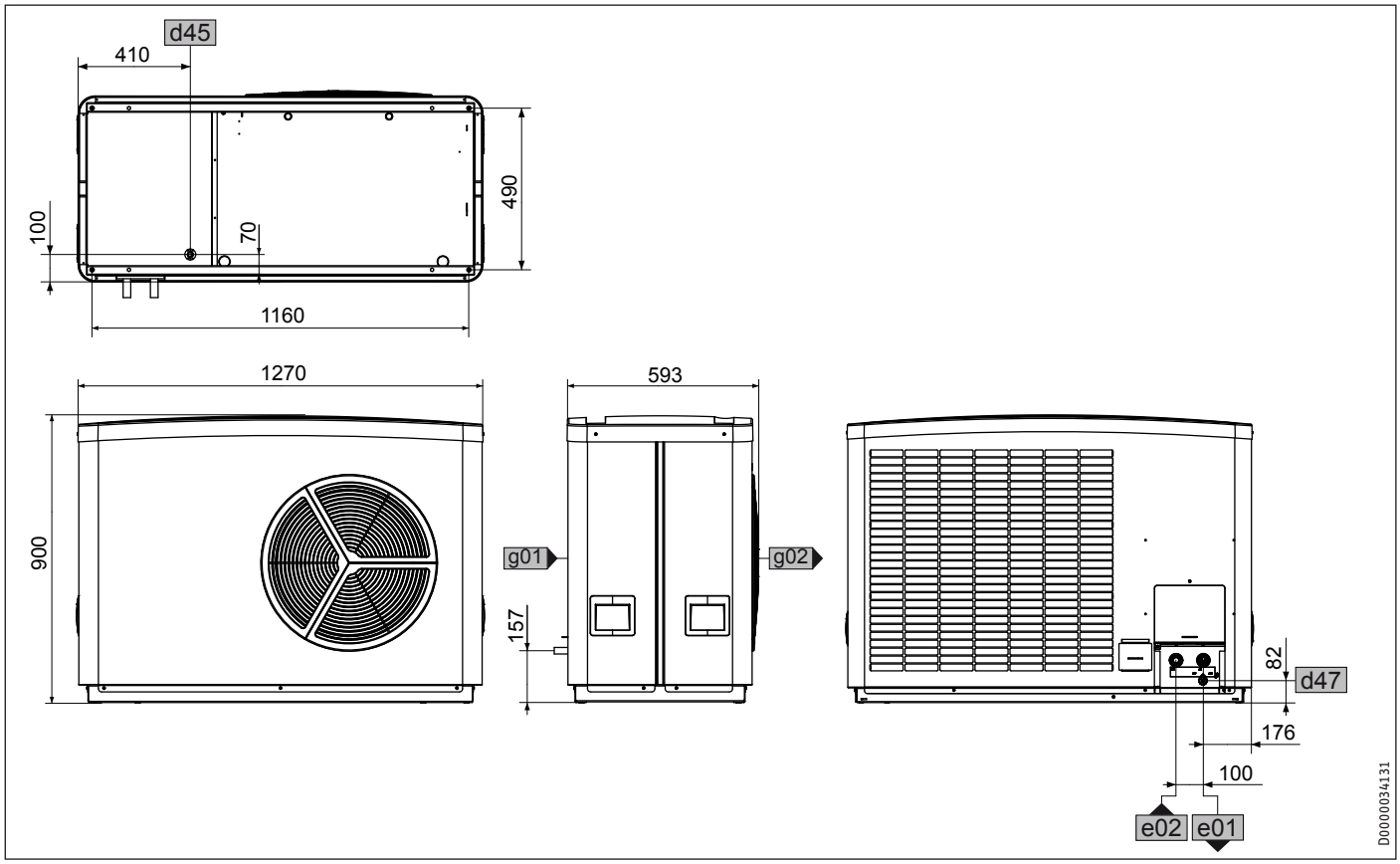
▶ If the noises occur frequently, notify customer support.

# Troubleshooting

# 15. Specification

## 15.1 Dimensions and connections

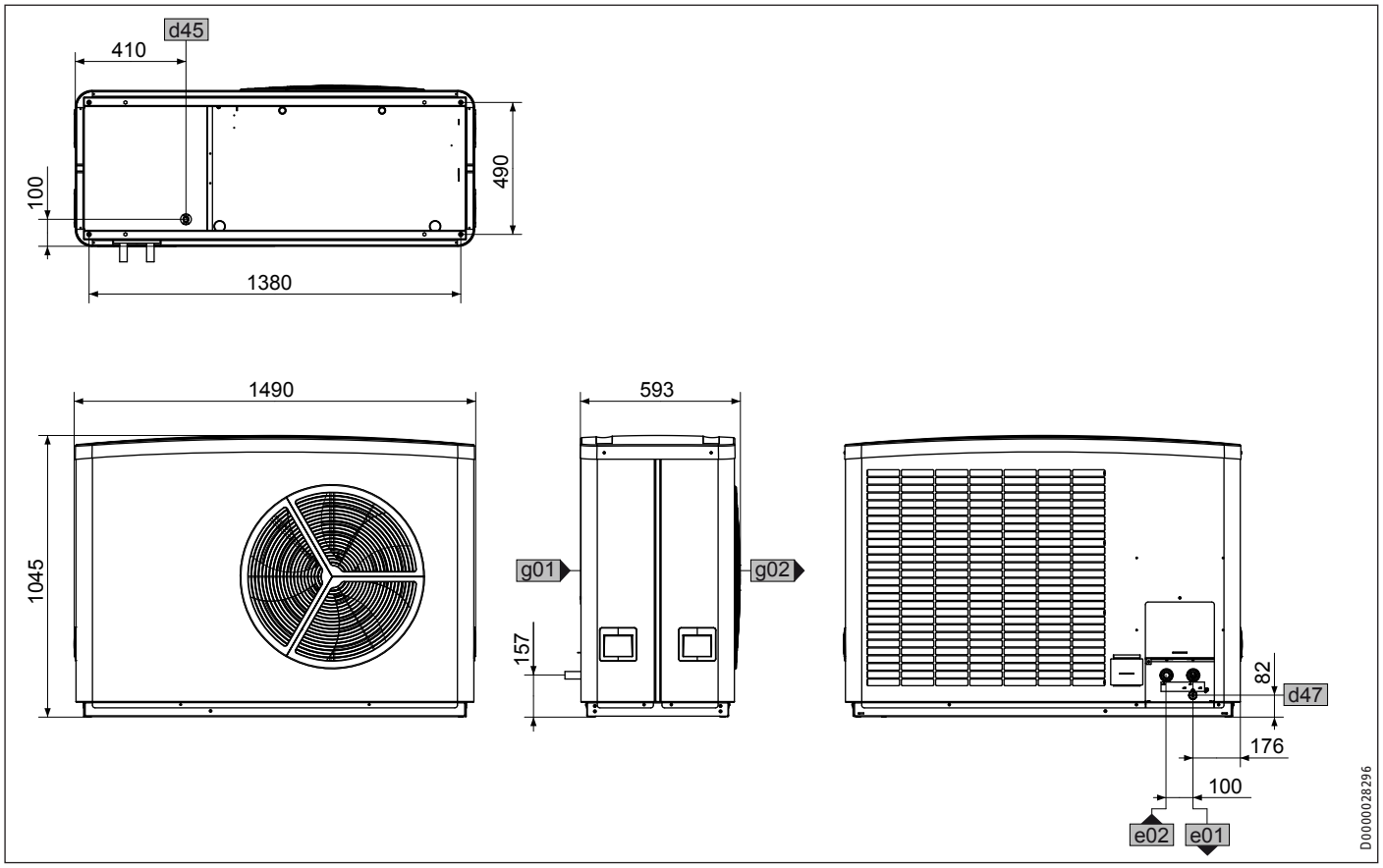
**WPL 15 AS | WPL 15 ACS**




| | | | | WPL 15 AS | WPL 15 ACS |
|---|---|---|---|---|---|
| e01 | Heating flow | Type of connection | | Plug-in connection | Plug-in connection |
| | | Diameter | mm | 28 | 28 |
| e02 | Heating return | Type of connection | | Plug-in connection | Plug-in connection |
| | | Diameter | mm | 28 | 28 |
| d45 | Condensate drain | Diameter | mm | 22 | 22 |
| d47 | Drain | | | | |
| g01 | Air intake | | | | |
| g02 | Air discharge | | | | |

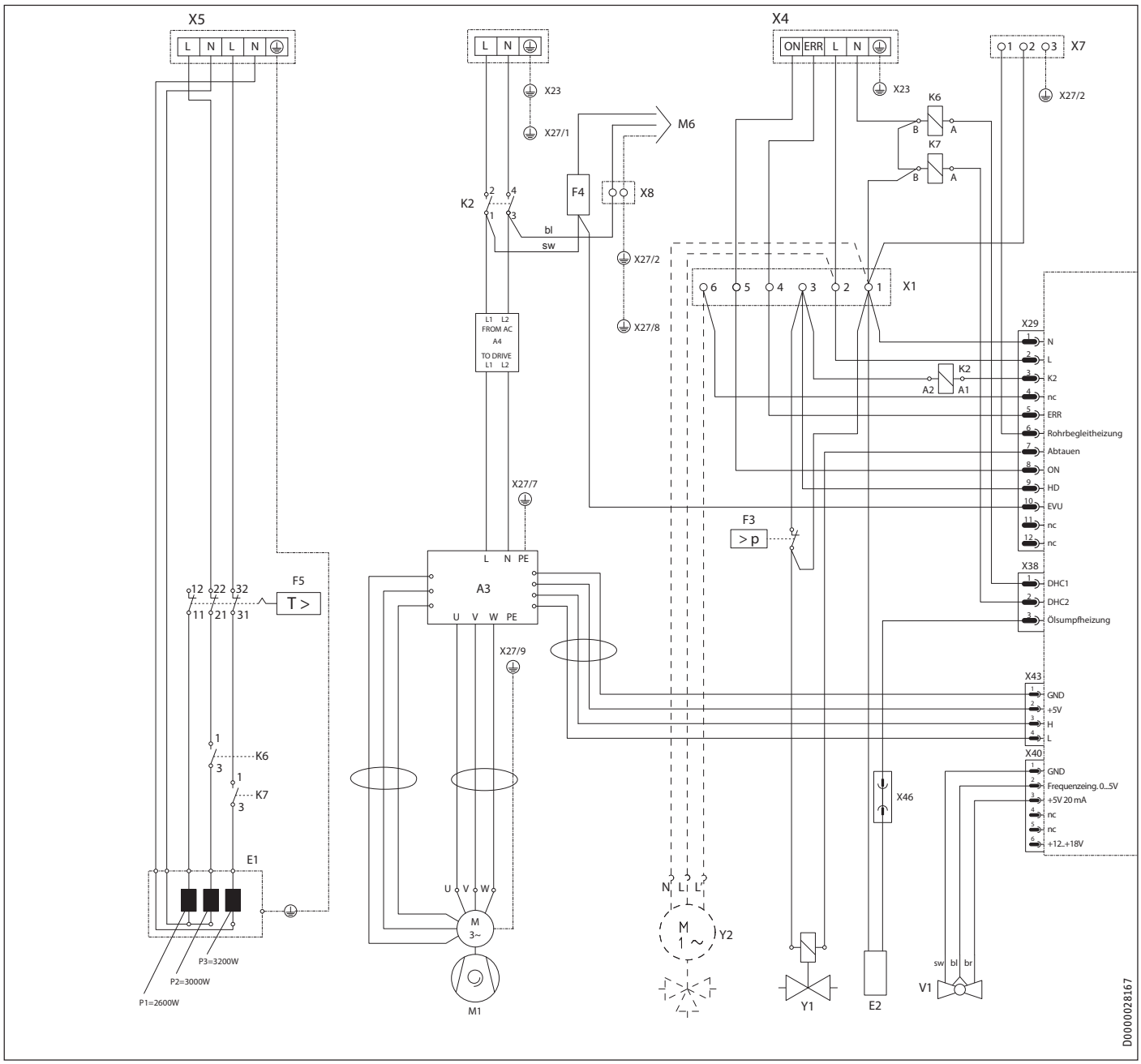
# Specification

**WPL 20 A | WPL 20 AC | WPL 25 A | WPL 25 AS | WPL 25 AC | WPL 25 ACS**



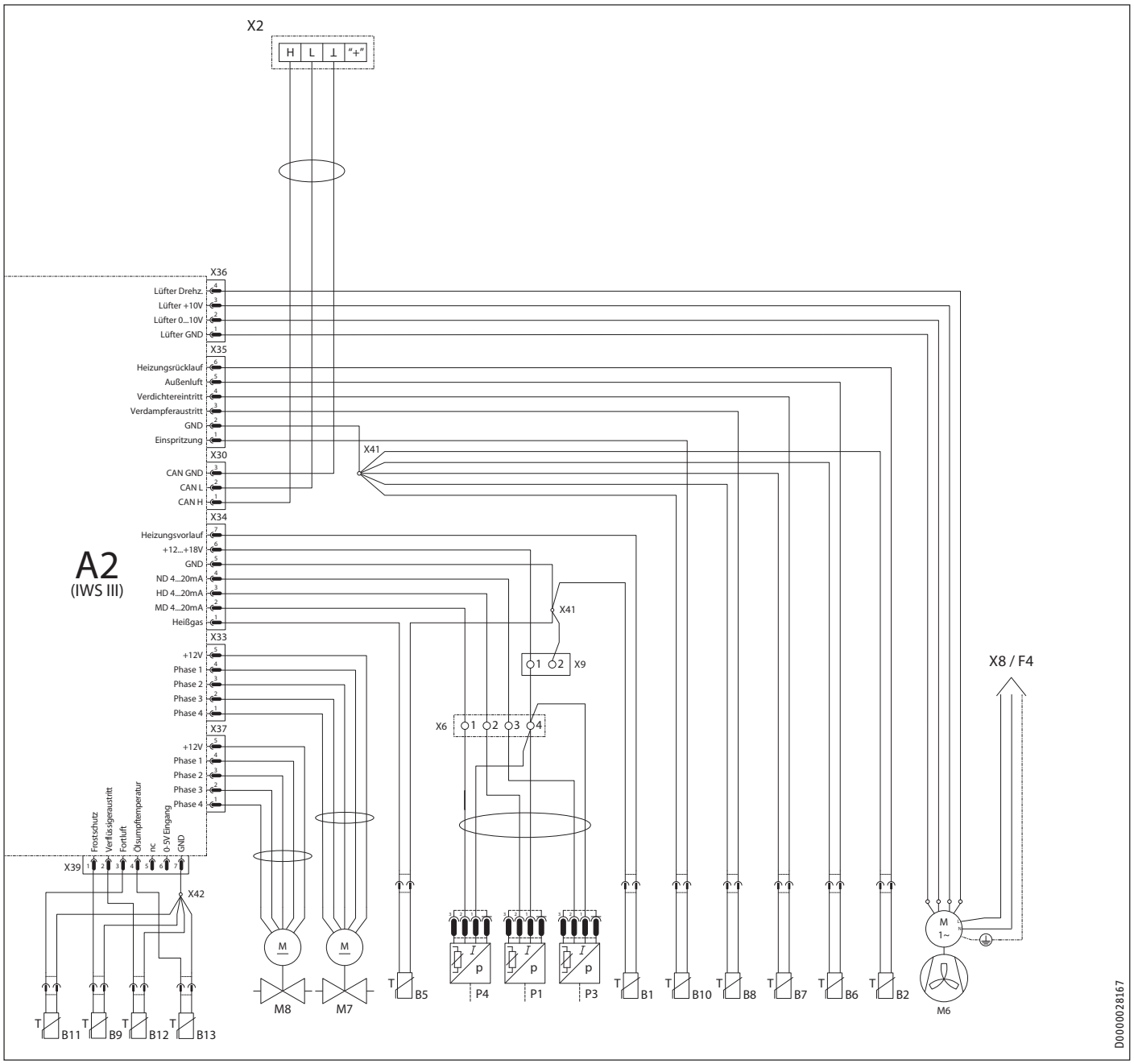

| | | | | WPL 20 A | WPL 20 AC | WPL 25 A | WPL 25 AS | WPL 25 AC | WPL 25 ACS |
|---|---|---|---|---|---|---|---|---|---|
| e01 | Heating flow | Type of connection | | Plug-in connection | Plug-in connection | Plug-in connection | Plug-in connection | Plug-in connection | Plug-in connection |
| | | Diameter | mm | 28 | 28 | 28 | 28 | 28 | 28 |
| e02 | Heating return | Type of connection | | Plug-in connection | Plug-in connection | Plug-in connection | Plug-in connection | Plug-in connection | Plug-in connection |
| | | Diameter | mm | 28 | 28 | 28 | 28 | 28 | 28 |
| d45 | Condensate drain | Diameter | mm | 22 | 22 | 22 | 22 | 22 | 22 |
| d47 | Drain | | | | | | | | |
| g01 | Air intake | | | | | | | | |
| g02 | Air discharge | | | | | | | | |

### 15.2 Wiring diagram for WPL 15 AS | WPL 15 ACS | WPL 25 AS | WPL 25 ACS (single-phase)



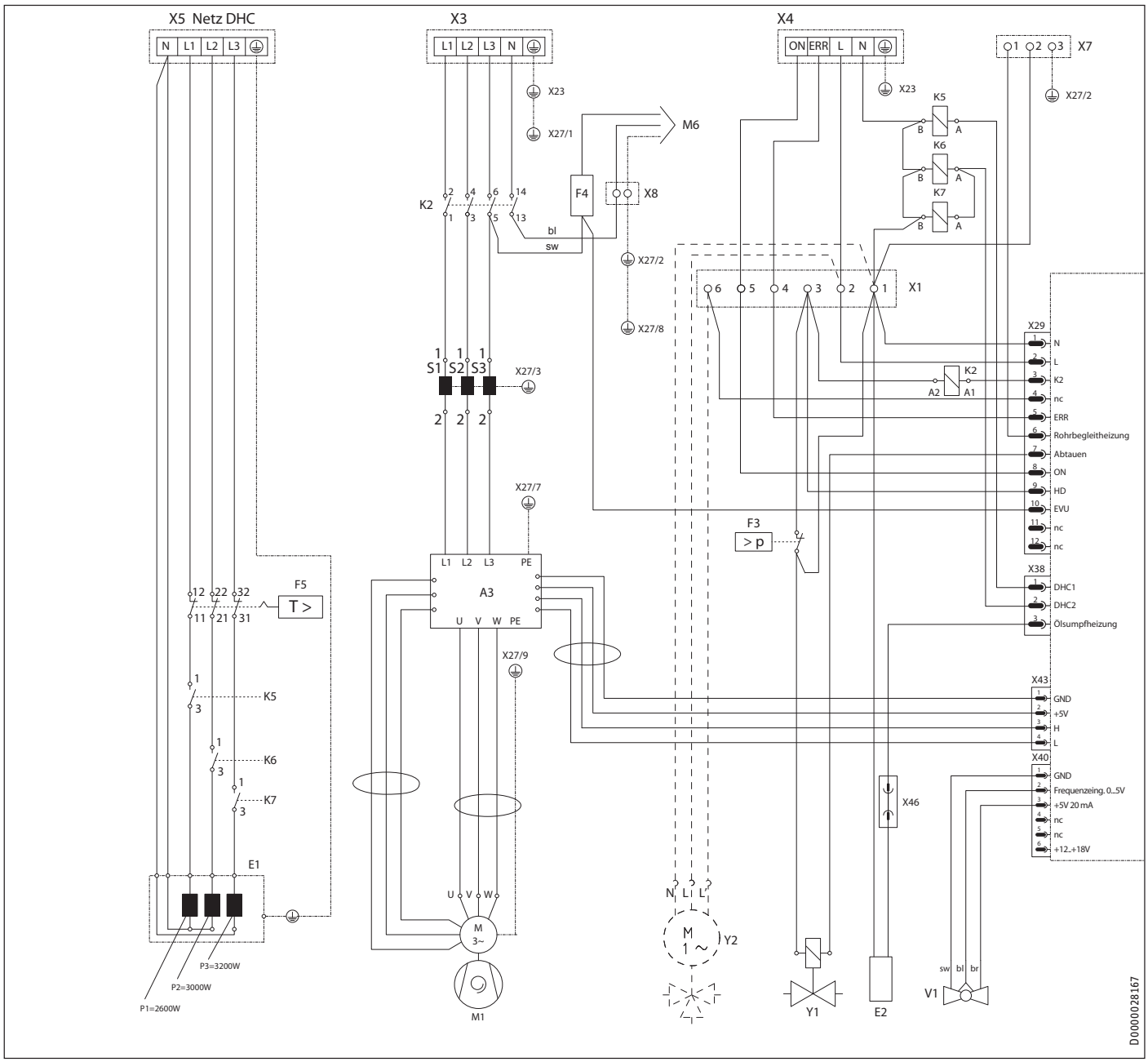

A2 Integral heat pump control unit (IWS)
A3 Inverter compressor
B1 Heating flow temperature sensor - KTY
B2 Heating return temperature sensor - KTY
B5 Hot gas temperature sensor - PT1000
B6 Outdoor air temperature sensor - PT1000
B7 Compressor intake temperature sensor - PT1000
B8 Evaporator discharge temperature sensor - PT1000
B9 Frost protection temperature sensor - KTY
B10 Injection temperature sensor - PT1000
B11 Exhaust air temperature sensor - KTY
B12 Condenser outlet temperature sensor - KTY
B13 Oil sump temperature sensor - KTY
E1 DHC
E2 Oil sump heater
F3 High pressure switch 42 bar
F4 Fuse 10 A (fan)
F5 High limit safety cut-out for DHC
K2 Compressor start contactor L
K5 DHC relay
K6 DHC relay
K7 DHC relay
M1 Compressor motor
M6 Fan motor
M7 Electrical expansion valve stepper motor
M8 Electrical injection valve stepper motor
P1 High pressure sensor (42 bar)
P3 Low pressure sensor (16 bar)
P4 Mean pressure sensor (30 bar)
S1 Sinter filter coil
S2 Sinter filter coil
S3 Sinter filter coil

# Specification

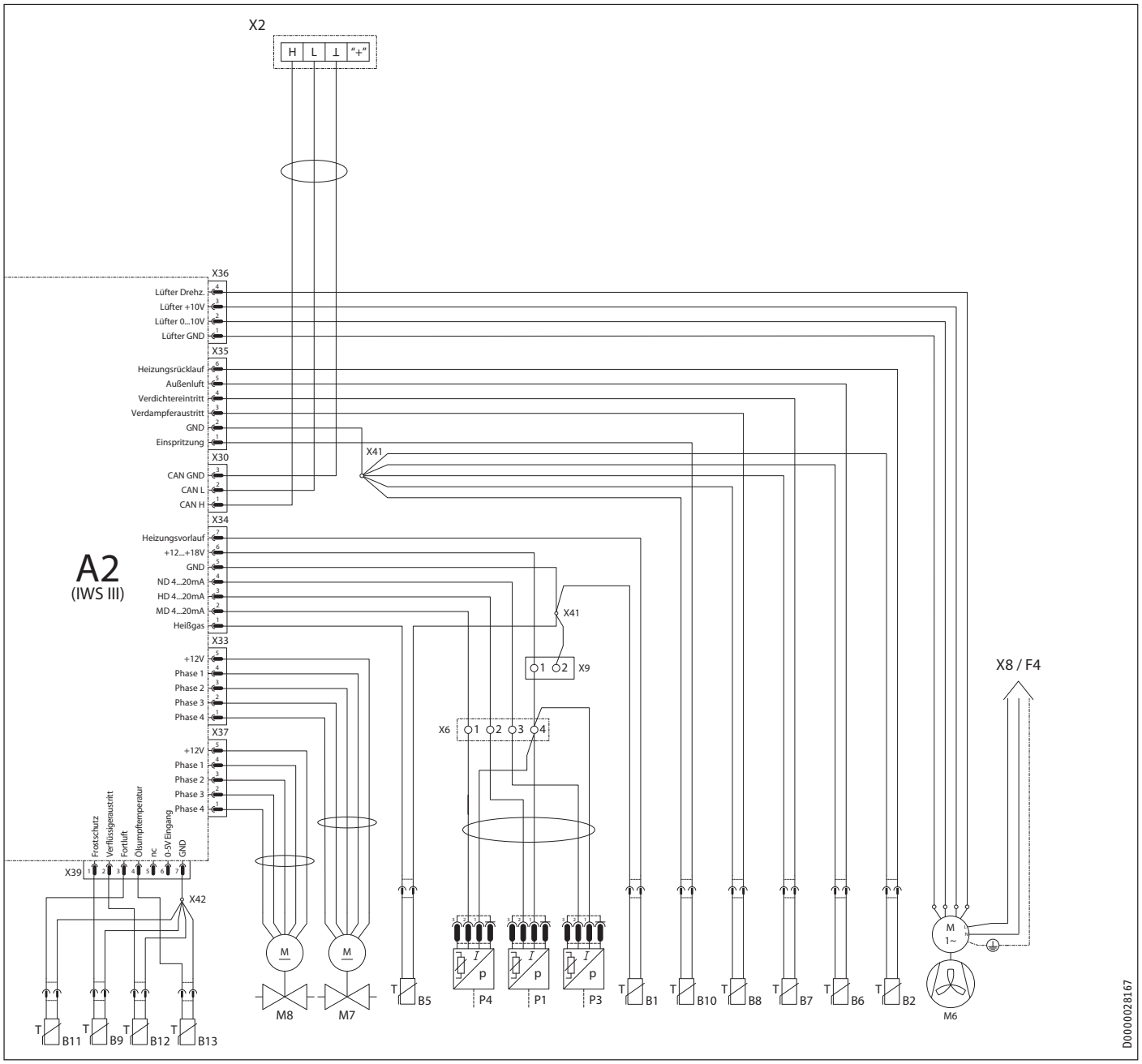



V1 Flow sensor
X1 Internal distribution terminal
X2 External BUS terminal
X3 External power terminal
X4 External control terminal
X5 External DHC terminal
X6 4-pole terminal
X7 3-pole terminal
X8 2-pole terminal
X9 2-pole terminal
X23 Power supply earth block
X27 Earth stud
X29 IWS plug 12-pin - control unit
X30 IWS plug 3-pin - BUS
X33 IWS plug 5-pin - electrical expansion valve
X34 IWS plug 7-pin - sensors
X35 IWS plug 6-pin - temperature sensors
X36 IWS plug 3-pin - fan
X37 IWS plug 5-pin - electrical injection valve
X38 IWS plug 3-pin - oil sump
X39 IWS plug 7-pin - temperature
X40 IWS plug 6-pin - HT special
X41 Link PCB ground
X42 Link PCB ground
X43 IWS plug, 3-pin
X46 Plug-in connector
Y1 Diverter valve - defrost
Y2 Diverter valve (only for WPL ACS)

### 15.3 Wiring diagram for WPL 20 A | WPL 20 AC | WPL 25 A | WPL 25 AC (3-phase)



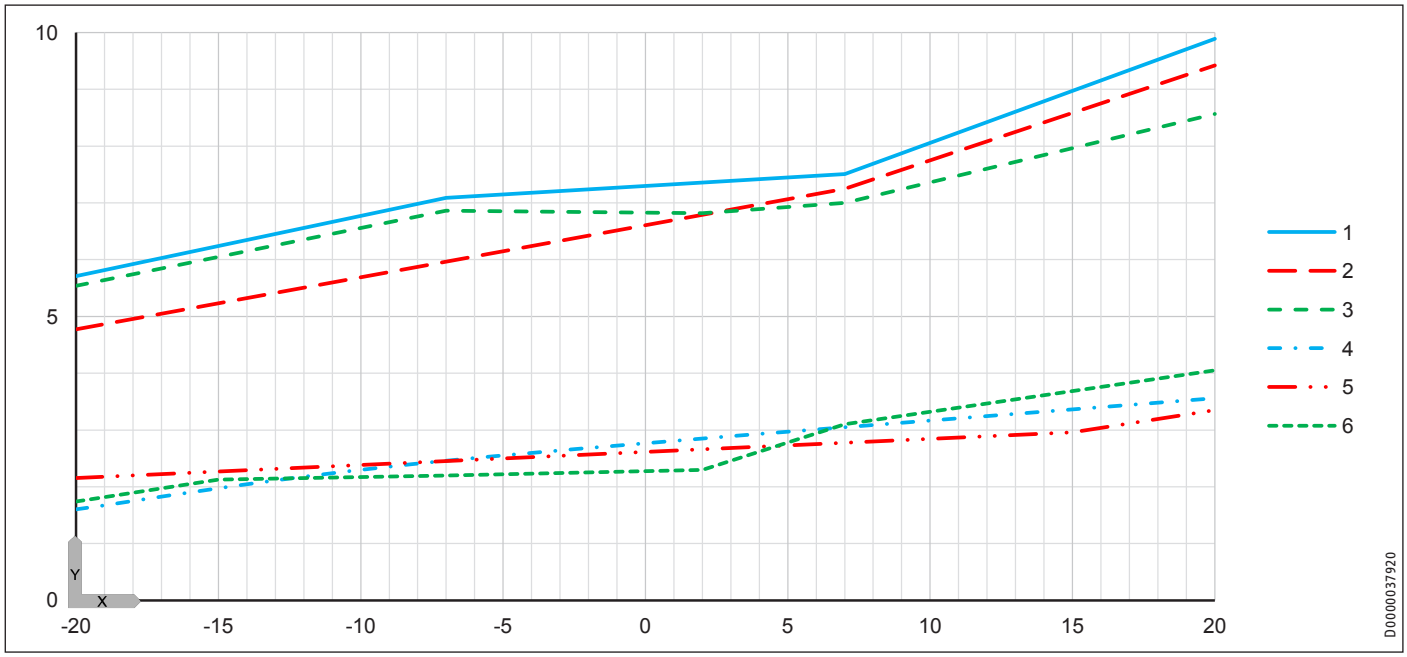

A2 Integral heat pump control unit (IWS)
A3 Inverter compressor
B1 Heating flow temperature sensor - KTY
B2 Heating return temperature sensor - KTY
B5 Hot gas temperature sensor - PT1000
B6 Outdoor air temperature sensor - PT1000
B7 Compressor intake temperature sensor - PT1000
B8 Evaporator discharge temperature sensor - PT1000
B9 Frost protection temperature sensor - KTY
B10 Injection temperature sensor - PT1000
B11 Exhaust air temperature sensor - KTY
B12 Condenser outlet temperature sensor - KTY
B13 Oil sump temperature sensor - KTY
E1 DHC
E2 Oil sump heater
F3 High pressure switch 42 bar
F4 Fuse 10 A (fan)
F5 High limit safety cut-out for DHC
K2 Compressor start contactor L
K5 DHC relay
K6 DHC relay
K7 DHC relay
M1 Compressor motor
M6 Fan motor
M7 Electrical expansion valve stepper motor
M8 Electrical injection valve stepper motor
P1 High pressure sensor (42 bar)
P3 Low pressure sensor (16 bar)
P4 Mean pressure sensor (30 bar)
S1 Sinter filter coil
S2 Sinter filter coil
S3 Sinter filter coil
V1 Flow sensor
X1 Internal distribution terminal




X2 External BUS terminal
X3 External power terminal
X4 External control terminal
X5 External DHC terminal
X6 4-pole terminal
X7 3-pole terminal
X8 2-pole terminal
X9 2-pole terminal
X23 Power supply earth block
X27 Earth stud
X29 IWS plug 12-pin - control unit
X30 IWS plug 3-pin - BUS
X33 IWS plug 5-pin - electrical expansion valve
X34 IWS plug 7-pin - sensors
X35 IWS plug 6-pin - temperature sensors
X36 IWS plug 3-pin - fan
X37 IWS plug 5-pin - electrical injection valve
X38 IWS plug 3-pin - oil sump
X39 IWS plug 7-pin - temperature
X40 IWS plug 6-pin - HT special
X41 Link PCB ground
X42 Link PCB ground
X43 IWS plug, 3-pin
X46 Plug-in connector
Y1 Diverter valve - defrost
Y2 Diverter valve (only for WPL AC)

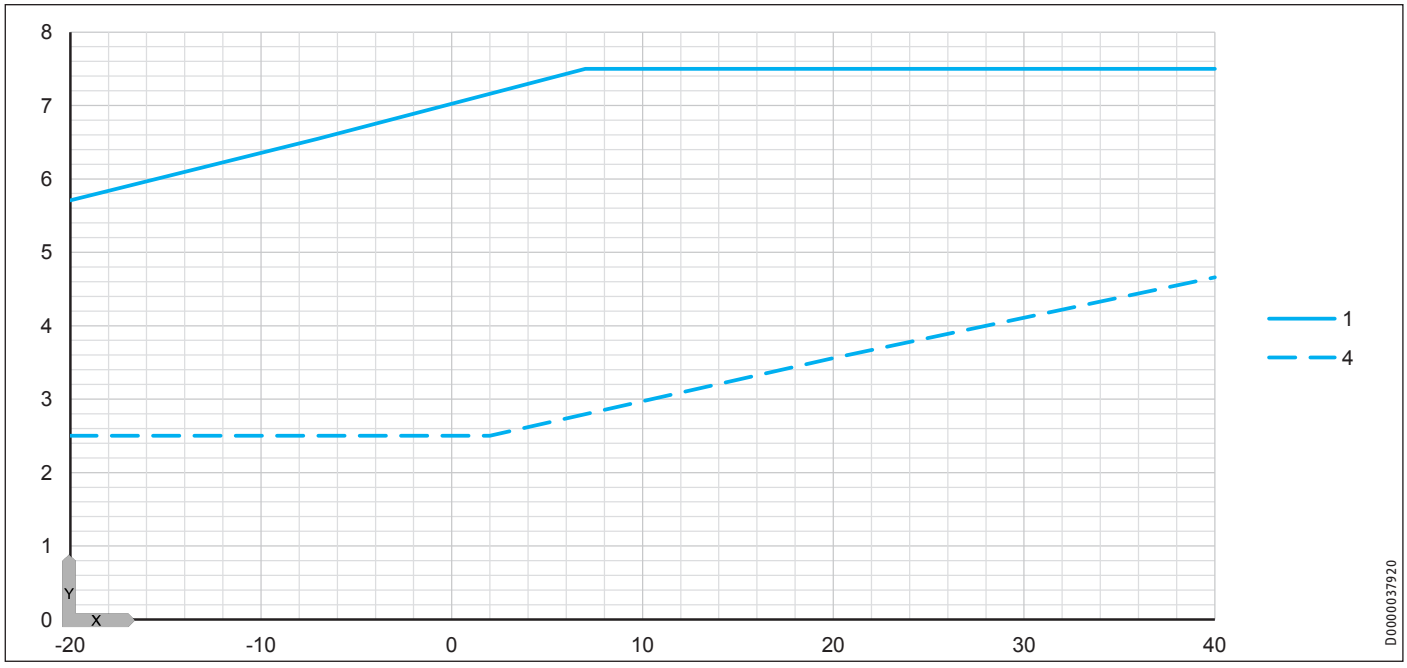
## 15.4 Output diagrams WPL 15 AS | WPL 15 ACS

### Heating output



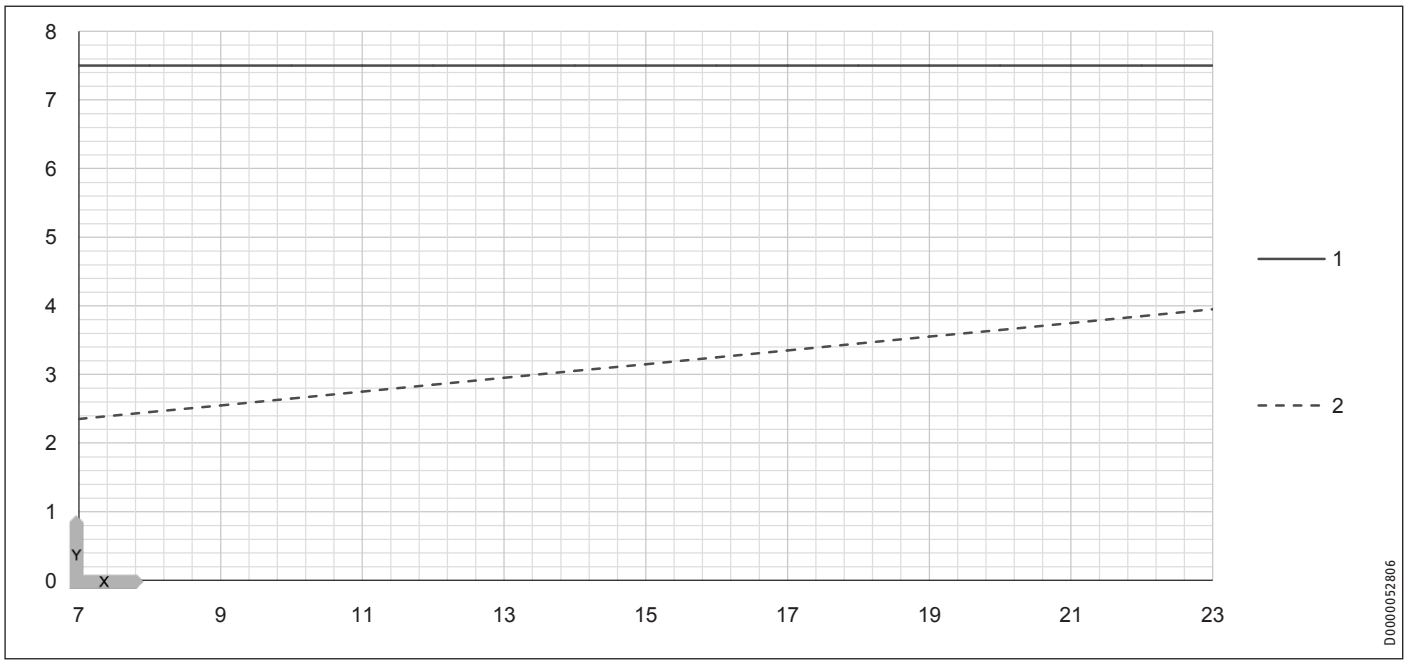

X Outside temperature [°C]
Y Heating output [kW]
1 max. W55
2 max. W45
3 max. W35
4 min. W55
5 min. W45
6 min. W35

### DHW output




X Outside temperature [°C]
Y DHW output [kW]
1 max. W55
4 min. W55

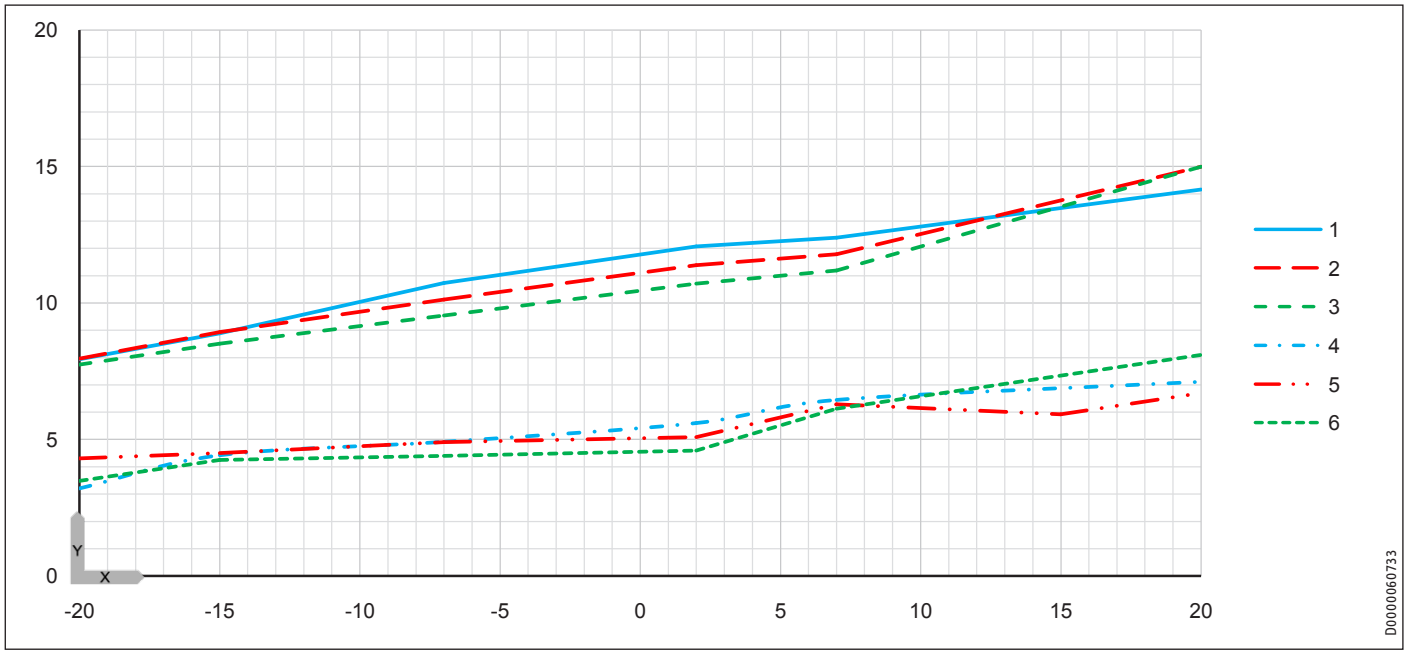
**Cooling capacity**




X Flow temperature [°C]
Y Cooling capacity [kW]
1 max. A35
2 min. A35

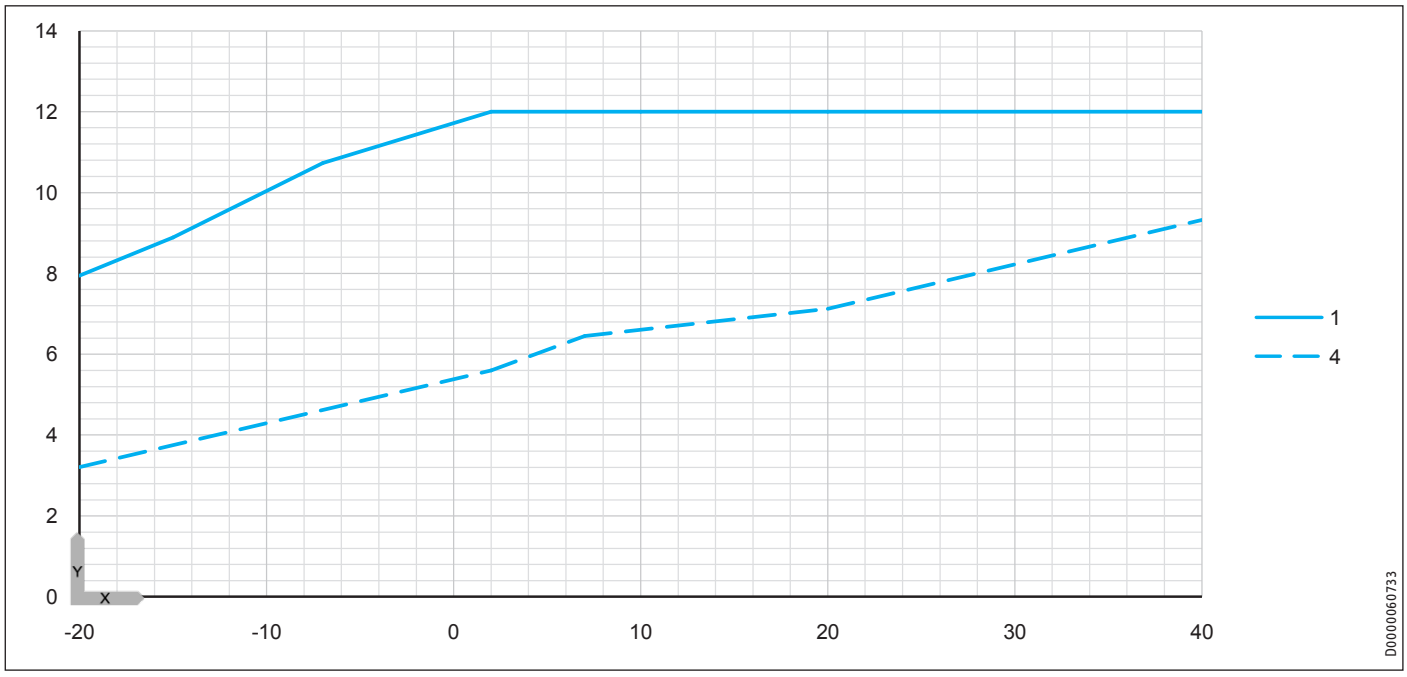
## 15.5 Output diagrams WPL 20 A | WPL 20 AC

### Heating output



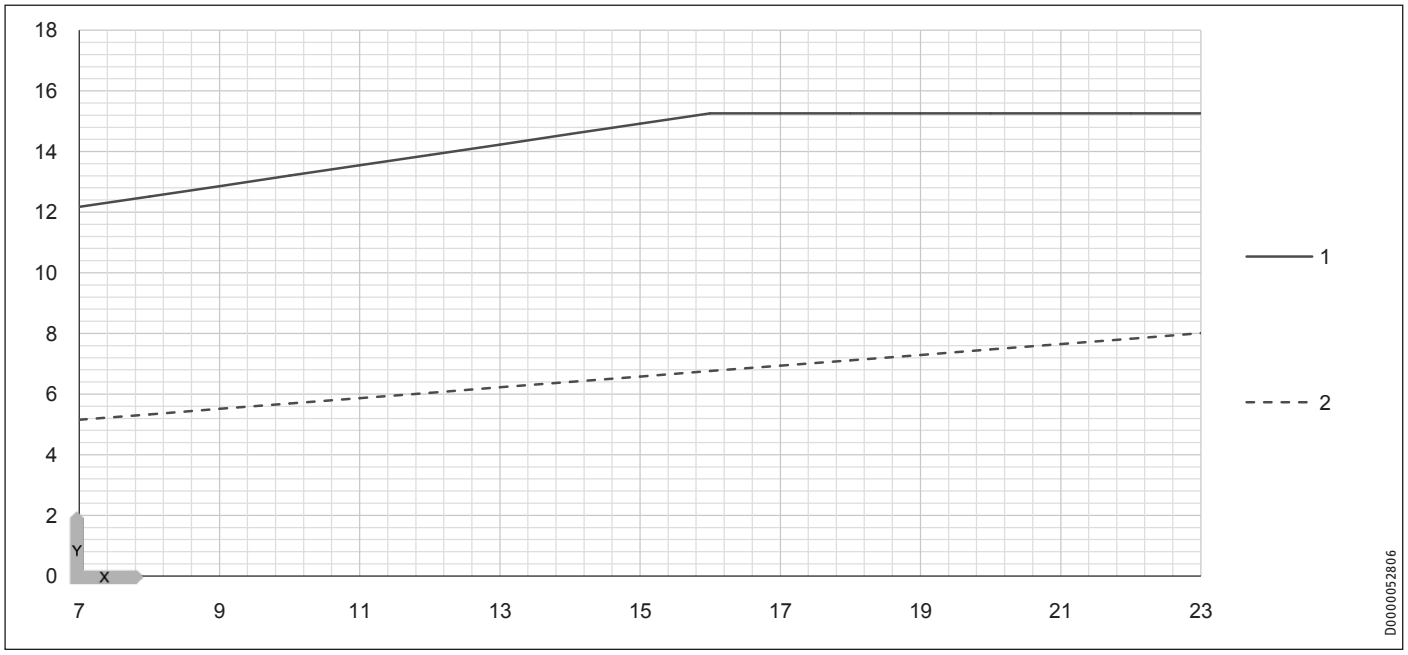

X Outside temperature [°C]
Y Heating output [kW]
1 max. W55
2 max. W45
3 max. W35
4 min. W55
5 min. W45
6 min. W35

### DHW output




X Outside temperature [°C]
Y DHW output [kW]
1 max. W55
4 min. W55

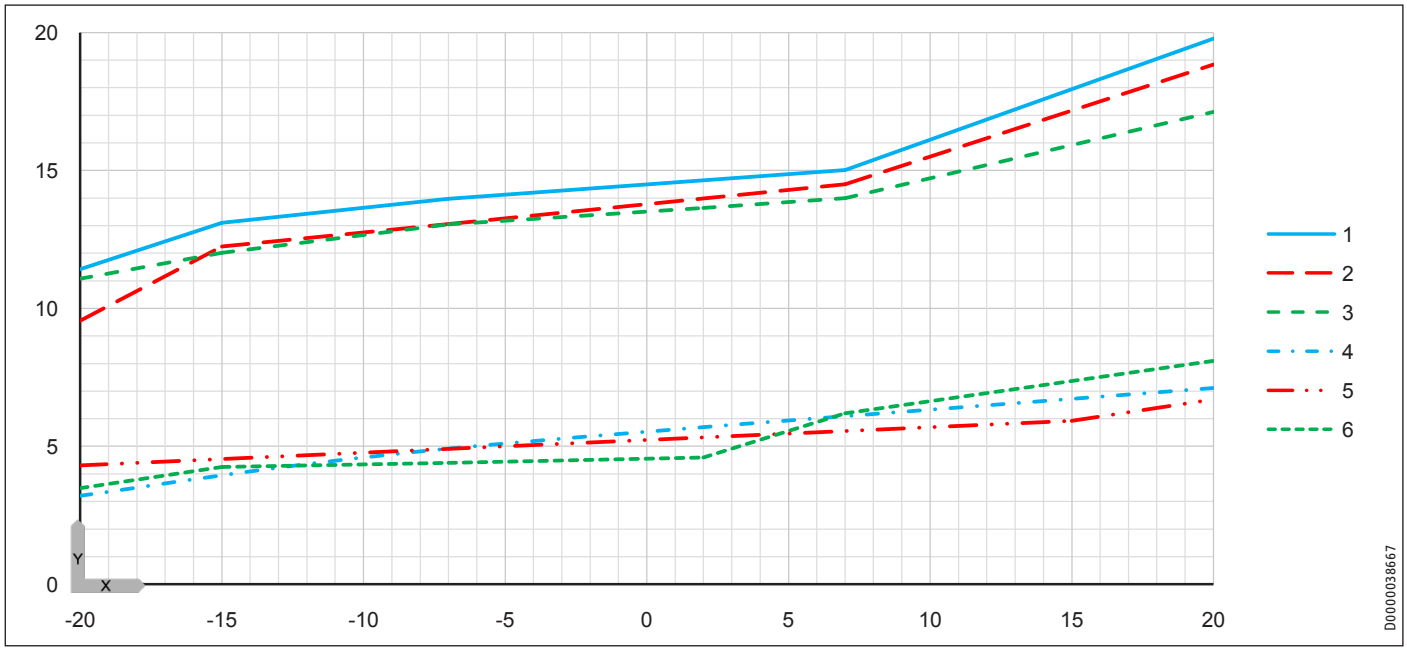
**Cooling capacity**




X Flow temperature [°C]
Y Cooling capacity [kW]
1 max. A35
2 min. A35

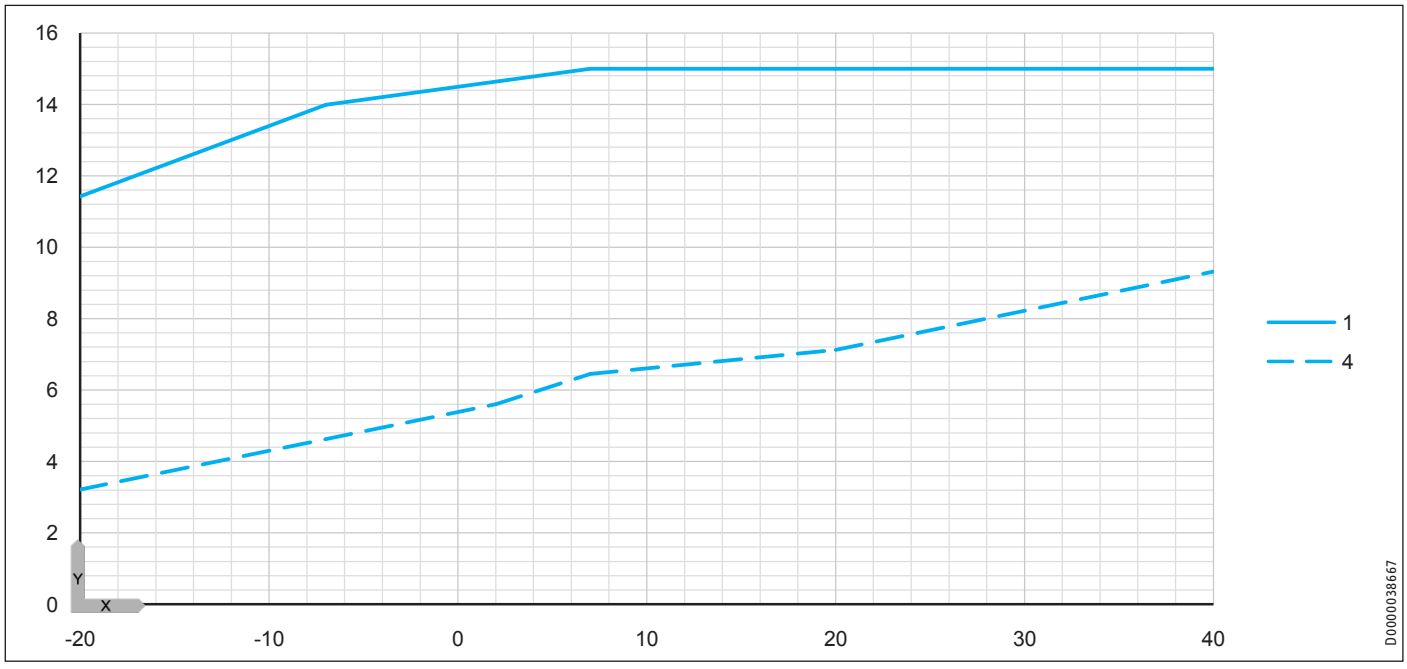
## 15.6 Output diagrams WPL 25 A | WPL 25 AC | WPL 25 AS | WPL 25 ACS

### Heating output diagram



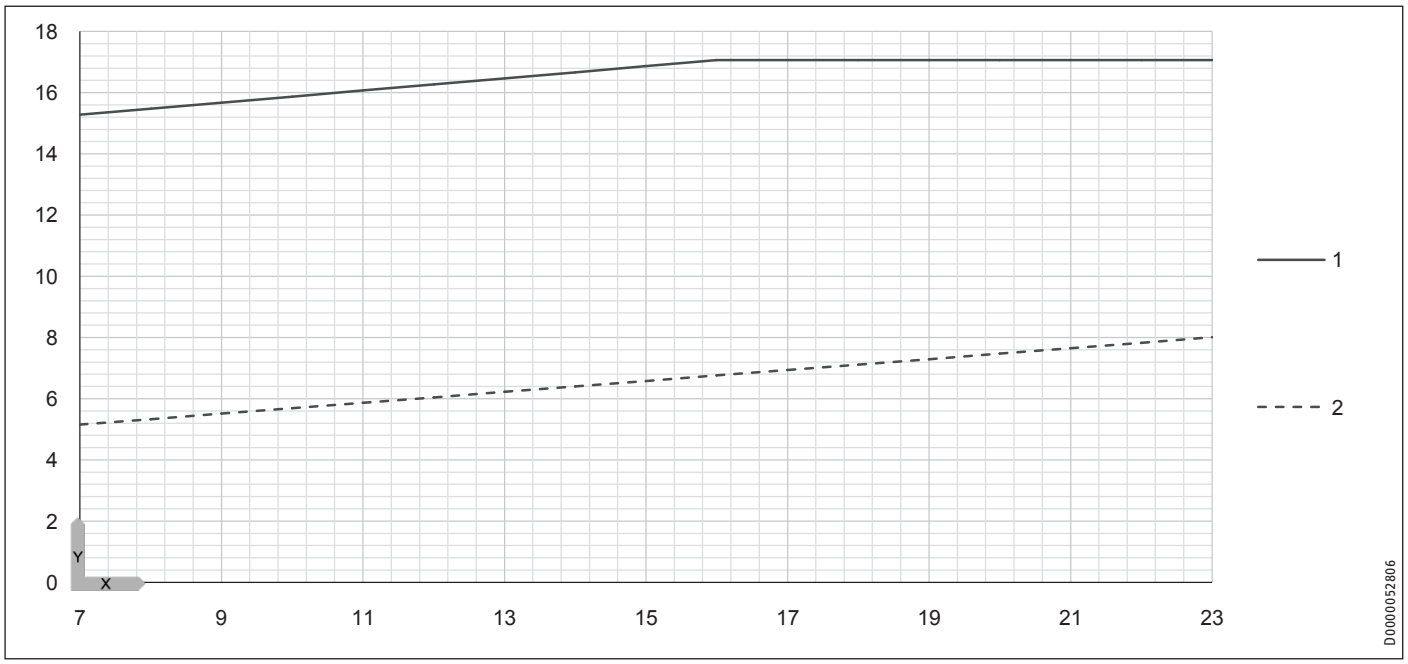

X Outside temperature [°C]
Y Heating output [kW]
1 max. W55
2 max. W45
3 max. W35
4 min. W55
5 min. W45
6 min. W35

### DHW output diagram




X Outside temperature [°C]
Y DHW output [kW]
1 max. W55
4 min. W55

**Cooling capacity diagram**




X Flow temperature [°C]
Y Cooling capacity [kW]
1 max. A35
2 min. A35

## 15.7 Data table

The performance data apply for 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).

| | | WPL 15 AS | WPL 15 ACS | WPL 20 A | WPL 20 AC | WPL 25 A | WPL 25 AS | WPL 25 AC | WPL 25 ACS |
|---|---|---|---|---|---|---|---|---|---|
| | | 232491 | 234759 | 236006 | 236007 | 232493 | 232492 | 234760 | 234761 |
| Heating output | | | | | | | | | |
| Heating output at A7/W35 (min./max.) | kW | 3.50/7.40 | 3.50/7.40 | 6.13/11.19 | 6.13/11.19 | 6.20/14.00 | 6.20/14.00 | 6.13/14.00 | 6.13/14.00 |
| Heating output at A2/W35 (min./max.) | kW | 3.10/7.09 | 3.10/7.09 | 4.59/10.71 | 4.59/10.71 | 4.59/13.64 | 4.59/13.64 | 4.59/13.64 | 4.59/13.64 |
| Heating output at A-7/W35 (min./max.) | kW | 2.50/6.86 | 2.50/6.86 | 4.40/9.54 | 4.40/9.54 | 4.40/12.86 | 4.40/13.05 | 4.40/12.86 | 4.40/13.05 |
| Heating output at A7/W35 (EN 14511) | kW | 4.28 | 4.28 | 6.13 | 6.13 | 7.84 | 8.00 | 7.84 | 8.00 |
| Heating output at A2/W35 (EN 14511) | kW | 4.23 | 4.23 | 6.83 | 6.83 | 8.33 | 8.32 | 8.33 | 8.32 |
| Heating output at A-7/W35 (EN 14511) | kW | 6.86 | 6.86 | 9.54 | 9.54 | 12.86 | 13.05 | 12.86 | 13.05 |
| Heating output at A-7/W55 (EN 14511) | kW | 7.09 | 7.09 | 10.73 | 10.73 | 13.93 | 13.97 | 13.93 | 13.97 |
| Heating output at A-15/W35 (EN 14511) | kW | 6.16 | 6.16 | 8.51 | 8.51 | 12.05 | 11.96 | 12.05 | 11.96 |
| Max. heating output in silent mode at A-7/W35 | kW | 3.43 | 3.43 | 4.77 | 4.77 | 6.43 | 6.52 | 6.43 | 6.52 |
| Max. heating output in silent mode at A-7/W55 | kW | 3.55 | 3.55 | 5.37 | 5.37 | 6.97 | 6.98 | 6.97 | 6.98 |
| Cooling capacity at A35/W7 max. | kW | | 7.5 | | 11.49 | | | 14.88 | 14.88 |
| Cooling capacity at A35/W7 partial load | kW | | 2.15 | | 4.80 | | | 4.80 | 4.80 |
| Cooling capacity at A35/W18 max. | kW | | 7.5 | | 15.26 | | | 17.06 | 17.06 |
| Cooling capacity at A35/W18 partial load | kW | | 3.25 | | 6.76 | | | 6.76 | 6.76 |
| Power consumption | | | | | | | | | |
| Power consumption at A7/W35 (EN 14511) | kW | 0.94 | 0.94 | 1.37 | 1.37 | 1.54 | 1.66 | 1.54 | 1.66 |
| Power consumption at A2/W35 (EN 14511) | kW | 1.09 | 1.09 | 1.71 | 1.71 | 2.00 | 2.10 | 2.00 | 2.10 |
| Power consumption at A-7/W35 (EN 14511) | kW | 2.42 | 2.42 | 2.93 | 2.93 | 4.16 | 4.38 | 4.16 | 4.38 |
| Power consumption at A-15/W35 (EN 14511) | kW | 2.45 | 2.45 | 2.91 | 2.91 | 4.48 | 4.56 | 4.48 | 4.56 |
| Power consumption at A-7/W55 (EN 14511) | kW | 3.38 | 3.38 | 4.10 | 4.10 | 5.76 | 5.94 | 5.76 | 5.94 |
| Power consumption, fan heating max. | kW | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Power consumption, emergency/booster heater | kW | 6.2 | 6.2 | 8.8 | 8.8 | 8.8 | 6.2 | 8.8 | 6.2 |
| Coefficient of performance | | | | | | | | | |
| COP at A7/W35 (EN 14511) | | 4.55 | 4.55 | 4.48 | 4.48 | 5.09 | 4.82 | 5.09 | 4.82 |
| COP at A2/W35 (EN 14511) | | 3.88 | 3.88 | 4.00 | 4.00 | 4.17 | 3.96 | 4.17 | 3.96 |
| COP at A-7/W35 (EN 14511) | | 2.83 | 2.83 | 3.26 | 3.26 | 2.93 | 2.98 | 2.93 | 2.98 |
| COP at A-15/W35 (EN 14511) | | 2.51 | 2.51 | 2.92 | 2.92 | 2.69 | 2.62 | 2.69 | 2.62 |
| COP at A-7/W55 (EN 14511) | | 2.10 | 2.10 | 2.62 | 2.62 | 2.42 | 2.35 | 2.42 | 2.35 |
| Cooling capacity factor at A35/W7 max. | | | 2.41 | | 2.53 | | | 2.38 | 2.38 |
| Cooling capacity factor at A35/W7 partial load | | | 2.39 | | 2.84 | | | 2.84 | 2.84 |
| Cooling capacity factor at A35/W18 max. | | | 2.87 | | 3.12 | | | 2.83 | 2.83 |
| Cooling capacity factor at A35/W18 partial load | | | 3.78 | | 3.76 | | | 3.76 | 3.76 |
| Sound data | | | | | | | | | |
| Sound power level (EN 12102) | dB(A) | 55 | 55 | 56 | 56 | 56 | 56 | 56 | 56 |
| Sound pressure level at 5 m distance in a free field | dB(A) | 33 | 33 | 34 | 34 | 34 | 34 | 34 | 34 |
| Sound power level, outdoor installation (EHPA, A7/W65) | dB(A) | 58 | 58 | 56 | 56 | 56 | 56 | 56 | 56 |
| Max. sound power level, outdoor installation | dB(A) | 65 | 65 | 67 | 67 | 67 | 67 | 67 | 67 |
| Max. sound power level, silent mode | dB(A) | 58 | 58 | 60 | 60 | 60 | 60 | 60 | 60 |
| Application limits | | | | | | | | | |
| Min. application limit, heat source | °C | -20 | -20 | -20 | -20 | -20 | -20 | -20 | -20 |
| Max. application limit, heat source | °C | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Min. application limit on the heating side | °C | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Max. application limit on the heating side | °C | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Application limit heat source at W60 | °C | -12 | -12 | -15 | -15 | -15 | -15 | -15 | -15 |
| Application limit heat source at W65 | °C | -4 | -4 | -4 | -4 | -4 | -4 | -4 | -4 |
| Min. application limit, outside temperature, cooling mode | °C | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Max. application limit, outside temperature, cooling mode | °C | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Water hardness | °dH | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 | ≤3 |
| pH value (with aluminium compounds) | | 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 compounds) | | 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 |
| 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 |
| Chloride | mg/l | <30 | <30 | <30 | <30 | <30 | <30 | <30 | <30 |
| 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 |

# Specification

| | | WPL 15 AS | WPL 15 ACS | WPL 20 A | WPL 20 AC | WPL 25 A | WPL 25 AS | WPL 25 AC | WPL 25 ACS |
|---|---|---|---|---|---|---|---|---|---|
| Energy data | | | | | | | | | |
| Energy efficiency class | | A+/A++ | A++/A++ | A++/A++ | A++/A++ | A++/A++ | A++/A++ | A++/A++ | A++/A++ |
| Electrical data | | | | | | | | | |
| Rated voltage, compressor | V | 230 | 230 | 400 | 400 | 400 | 230 | 400 | 230 |
| Rated voltage, controller | V | 230 | 230 | 230 | 230 | 230 | 230 | 230 | 230 |
| Rated voltage, emergency/booster heater | V | 230 | 230 | 400 | 400 | 400 | 230 | 400 | 230 |
| Phases, compressor | | 1/N/PE | 1/N/PE | 3/N/PE | 3/N/PE | 3/N/PE | 1/N/PE | 3/N/PE | 1/N/PE |
| Phases, controller | | 1/N/PE | 1/N/PE | 1/N/PE | 1/N/PE | 1/N/PE | 1/N/PE | 1/N/PE | 1/N/PE |
| Phases, emergency/booster heater | | 2/N/PE | 2/N/PE | 3/N/PE | 3/N/PE | 3/N/PE | 2/N/PE | 3/N/PE | 2/N/PE |
| Compressor fuse/MCB | A | 1 x C 20 | 1 x C 20 | 3 x C 16 | 3 x C 16 | 3 x C 16 | 1 x C 35 | 3 x C 16 | 1 x C 35 |
| MCB/fuse protection, controller | A | 1 x B 16 | 1 x B 16 | 1 x B 16 | 1 x B 16 | 1 x B 16 | 1 x B 16 | 1 x B 16 | 1 x B 16 |
| MCB/fuse protection, emergency/booster heater | A | 2 x B 16 | 2 x B 16 | 3 x B 16 | 3 x B 16 | 3 x B 16 | 2x B 16 | 3 x B 16 | 2x B 16 |
| starting current | A | 7 | 7 | 5 | 5 | 5 | 10 | 5 | 10 |
| Max. operating current | A | 19.5 | 19.5 | 8.3 | 8.3 | 12.1 | 35 | 12.1 | 35 |
| Versions | | | | | | | | | |
| Refrigerant | | R410 A | R410 A | R410 A | R410 A | R410 A | R410 A | R410 A | R410 A |
| Refrigerant charge | kg | 4.2 | 4.2 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| IP rating | | IP14B | IP14B | IP14B | IP14B | IP14B | IP14B | IP14B | IP14B |
| 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 |
| Dimensions | | | | | | | | | |
| Height | mm | 900 | 900 | 1045 | 1045 | 1045 | 1045 | 1045 | 1045 |
| Width | mm | 1270 | 1270 | 1490 | 1490 | 1490 | 1490 | 1490 | 1490 |
| Depth | mm | 593 | 593 | 593 | 593 | 593 | 593 | 593 | 593 |
| Weights | | | | | | | | | |
| Weight | kg | 140 | 140 | 175 | 175 | 175 | 175 | 175 | 175 |
| Connections | | | | | | | | | |
| Connection, heating flow/return | | 28 mm | 28 mm | 28 mm | 28 mm | 28 mm | 28 mm | 28 mm | 28 mm |
| Values | | | | | | | | | |
| Heating flow rate (EN 14511) at A7/W35, B0/W35 and 5 K | m³/h | 0.7 | 0.7 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| Permissible operating pressure, heating circuit | MPa | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Flow rate, heat source side | m³/h | 2300 | 2300 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| Min heating flow rate | m³/h | 0.7 | 0.7 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Internal pressure differential | hPa | 60 | 60 | 110 | 110 | 110 | 110 | 110 | 110 |

## 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.

### KYOTO | R410A

This device is filled with refrigerant R410A.

Refrigerant R410A is a CFC greenhouse gas mentioned in the Kyoto protocol with a global greenhouse potential (GWP) = 1925.

Never release refrigerant R410A to atmosphere.

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