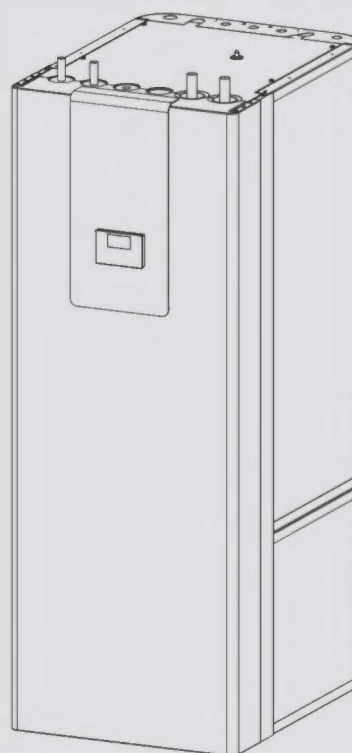


## OPERATION AND INSTALLATION

Integral cylinder

» HSBC 300 cool (WPM)



**STIEBEL ELTRON**

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# CONTENTS

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## SPECIAL INFORMATION

### OPERATION

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### INSTALLATION

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### GUARANTEE

### ENVIRONMENT AND RECYCLING

# SPECIAL INFORMATION OPERATION

- The appliance may be used by children over 8 years of age and persons with reduced physical, sensory or mental capabilities or a lack of experience and expertise, provided that they are supervised or they have been instructed on how to use the appliance safely and have understood the potential risks. Children must never play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision.
- The connection to the power supply must be in the form of a permanent connection. Ensure the appliance can be separated from the power supply by an isolator that disconnects all poles with at least 3 mm contact separation.
- Observe all applicable national and regional regulations and instructions.
- Observe minimum distances (see chapter "Installation / Preparations / Installation site").
- Only a qualified contractor should carry out installation, commissioning, maintenance and repair of the appliance.

## DHW cylinder

- Drain the appliance as described in chapter "Installation / Maintenance / Draining the DHW cylinder".
- Observe the maximum permissible pressure (see chapter "Installation / Specification / Data table").
- The DHW cylinder is under supply pressure. During the heat-up process, expansion water will drip from the safety valve.
- The safety valve drain aperture must remain open to atmosphere.

## 1. General information

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

The chapter "Installation" is intended for qualified contractors.



### Note

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

### 1.1 Relevant documents

- Instructions for the WPM heat pump manager
- Operating and installation instructions for the connected heat pump
- Operating and installation instructions for all other system components

### 1.2 Safety instructions

#### 1.2.1 Structure of safety instructions



#### KEYWORD Type of risk

Here, possible consequences are listed that may result from failure to observe the safety instructions.

► Steps to prevent the risk are listed.

#### 1.2.2 Symbols, type of risk

Symbol	Type of risk
	Injury
	Electrocution
	Burns (burns, scalding)

#### 1.2.3 Keywords

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

### 1.3 Other symbols in this documentation



#### Note

General information is identified by the adjacent symbol.

- Read these texts carefully.

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

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

### 1.4 Information on the appliance

#### Connections

Symbol	Meaning	
	Inlet / intake	Red arrow: hot Blue arrow: Cold Green arrow: Neutral
	Drain / outlet	Red arrow: hot Blue arrow: Cold Green arrow: Neutral
	Domestic hot water	
	DHW circulation	
	Heat pump	
	Heating	

### 1.5 Units of measurement



#### Note

All measurements are given in mm unless stated otherwise.

## 2. Safety

### 2.1 Intended use

This appliance is intended to be used for seasonal heating and cooling of interiors (7 °C / 12 °C) and for DHW heating.

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

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

### 2.2 General safety instructions



#### WARNING Burns

There is a risk of scalding at outlet temperatures in excess of 43 °C.



#### WARNING Injury

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



#### WARNING Injury

For safety reasons, only operate the appliance with the front casing closed.



#### Material losses

The system's active frost protection is not guaranteed if the power supply is interrupted.

- Never interrupt the power supply even outside the heating season.



#### Note

The DHW cylinder is under supply pressure. During the heat-up process, expansion water will drip from the safety valve.

- If water continues to drip when heating is completed, please inform your qualified contractor.

### 2.3 Test symbols

See type plate on the appliance.

### 3. Appliance compatibility

The appliance can be operated in conjunction with the following air source heat pumps:

- HPA-O 05.1-07.1 CS Premium
- HPA-O 7-13 (C)(S) Premium
- WPL-A 05-07 HK 230 Premium
- WPL 15-25 A(C)(S)
- WPL 19-24 I, A

### 4. Appliance description

The buffer cylinder and DHW cylinder with indirect coil are arranged one above the other and can be separated for easier handling.

The appliance has a plastic jacket with foam insulation and is equipped with a removable front casing. The appliance is connected hydraulically and electrically to the heat pump. All hydraulic connections are made at the top (heating) and rear (DHW).

In addition to the DHW cylinder and the buffer cylinder, further system components are integrated:

- Heat pump manager
- Highly efficient circulation pump for a heating circuit without mixer
- 3/2-way diverter valve
- Cylinder primary pump

#### DHW cylinder

The steel cylinder is coated on the inside with special direct enamel and is equipped with a signal anode. The anode with consumption indicator protects the cylinder interior from corrosion.

The heating water heated by the heat pump is pumped through an indirect coil inside the DHW cylinder. The heat channelled through the indirect coil is thus transferred to the domestic hot water. The integral heat pump manager regulates the DHW heating to the required temperature.

#### Buffer cylinder

The steel cylinder provides hydraulic separation between the flow rates of heat pump and heating circuit. The heating water heated by the heat pump is transferred into the buffer cylinder by the cylinder charging pump. When a demand is issued, the integral heating circuit pump delivers the heating water to the heating circuit.

#### Heat pump manager (WPM)

The system is controlled by means of the integral heat pump manager.



**Note**

The heat pump manager has an automatic summer/winter changeover so you can leave the system switched on in summer.

- ▶ Please observe the instructions for the heat pump manager.

### 5. Cleaning, care and maintenance

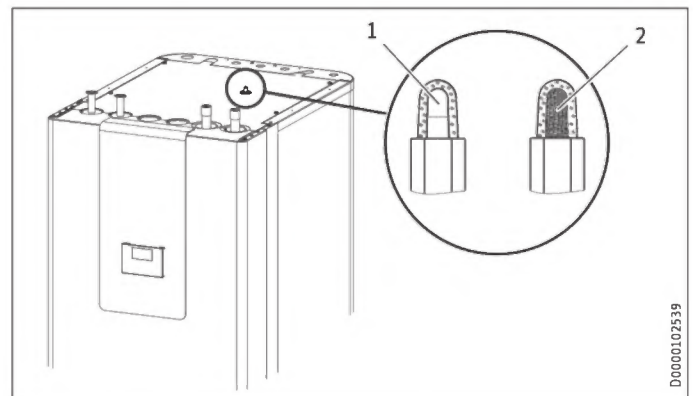
- ▶ Have the electrical safety of the appliance and the function of the safety assembly regularly checked by a qualified contractor.
- ▶ Never use abrasive or corrosive cleaning agents. A damp cloth is sufficient for cleaning the unit.

#### Signal anode with consumption indicator



**Material losses**

If the consumption indicator changes colour from white to red, have the signal anode checked by a qualified contractor and if necessary replaced.

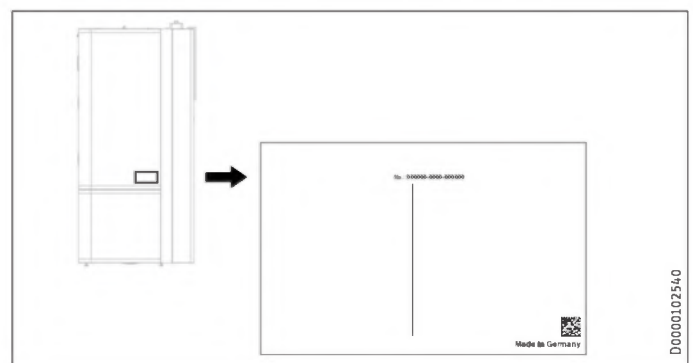


- 1 White = Anode OK
- 2 Red = Requires checking by qualified contractor

### 6. Troubleshooting

Problem	Cause	Remedy
The water does not heat up. The heating does not work.	There is no power.	Check the fuses / MCBs in your fuse box / distribution board.

If you cannot remedy the fault, contact your qualified contractor. To facilitate and speed up your enquiry, please provide the serial number from the type plate (000000-0000-000000).





# INSTALLATION

## Preparation

### 9.2 Transport and handling

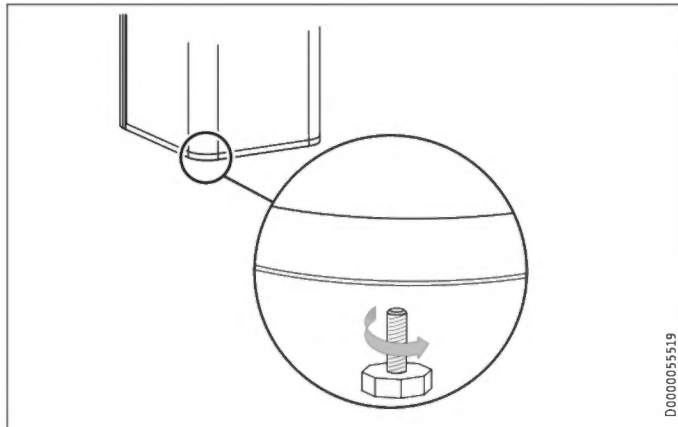


#### Material losses

Store and transport the appliance at temperatures between -20 °C and +60 °C.

#### Handling

- ▶ Undo the 4 screws from the non-returnable pallet.

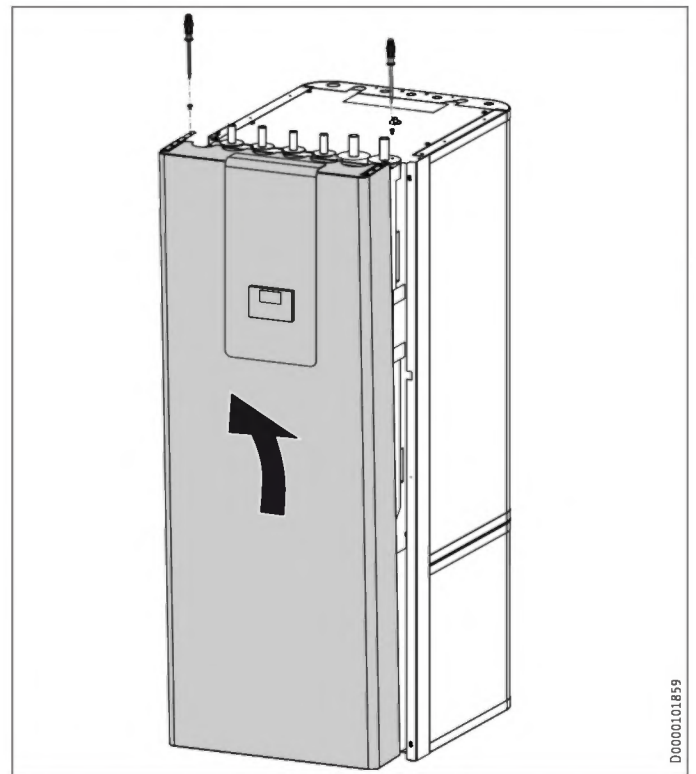


- ▶ Tilt the appliance and screw the 4 adjustable feet into the appliance.
- ▶ Lift the appliance off the pallet. For a better hold during transport, use the recessed grips on the underside and rear of the appliance.

If narrow doors or hallways hinder handling, you can separate the upper and lower sections of the appliance as described in the following chapters.

### 9.2.1 Removing/fitting the front casing

#### Removing the front casing



- ▶ Remove the 2 locking screws on the top of the front casing.
- ▶ Unhook the front casing towards the top.
- ▶ AA01-X1.18: If required, disconnect the connector plug of the programming unit from the connection in the appliance. The functionality of the appliance will not be affected. However, it will not be possible to operate the appliance via the programming unit.
- ▶ Remove the earth cable from the front casing.

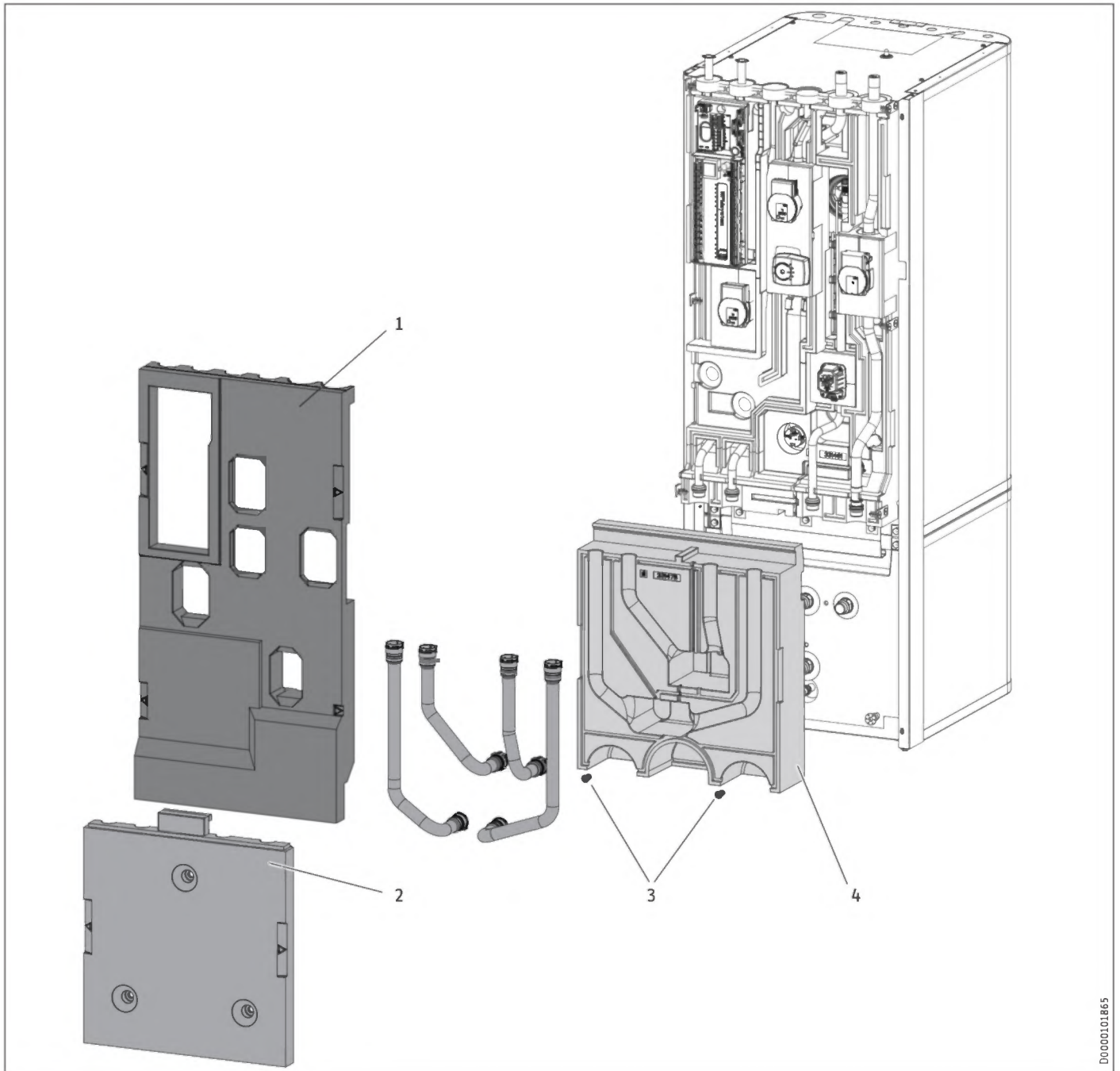
#### Fitting the front casing

- ▶ Fit the front casing in reverse order.

# INSTALLATION

## Preparation

### 9.2.2 Overview of insulation segments



- 1 Insulation segment 1
- 2 Insulation segment 2
- 3 Insulation material screw
- 4 Insulation segment 3

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# INSTALLATION

## Preparation

### 9.2.3 Separating / joining the appliance sections

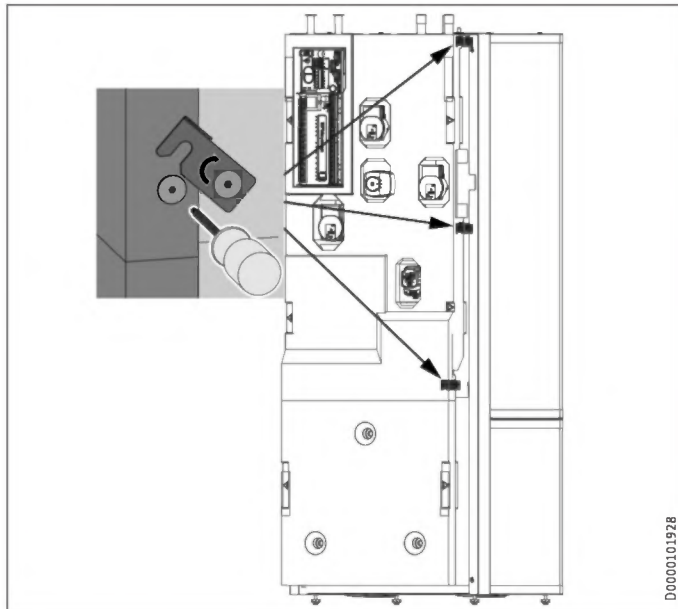
#### Separating the appliance sections



#### Material losses

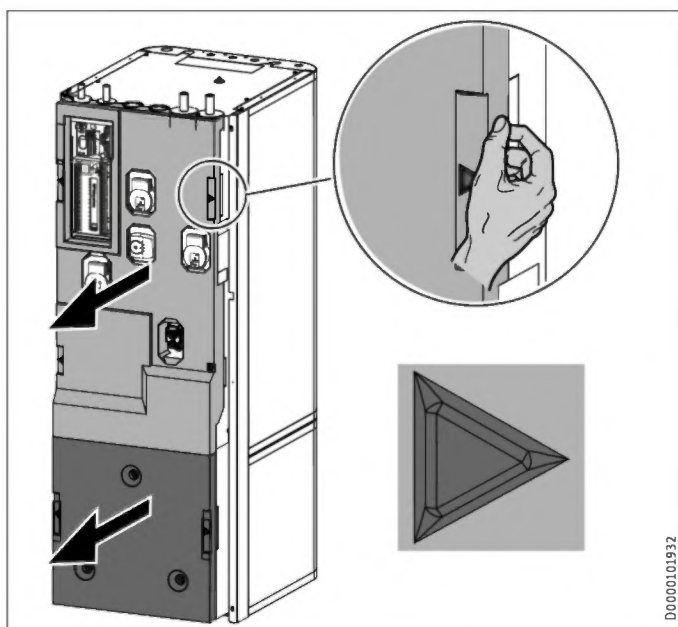
Unscrewing the fastening screws destroys the threads in the insulation segment.

- ▶ To open the 3 fixing tabs, loosen the fastening screws slightly but do not unscrew them completely.

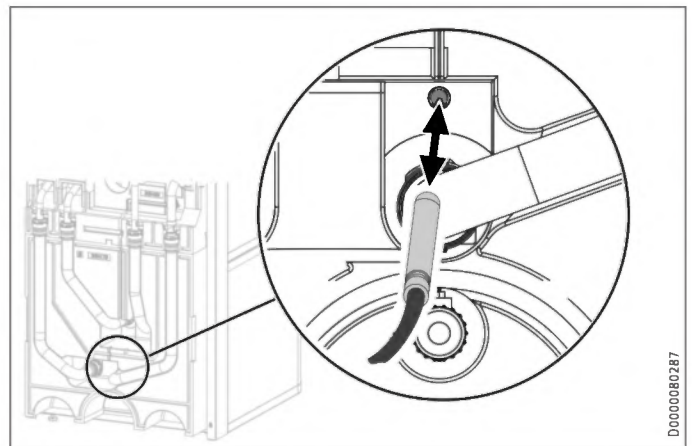


#### Note

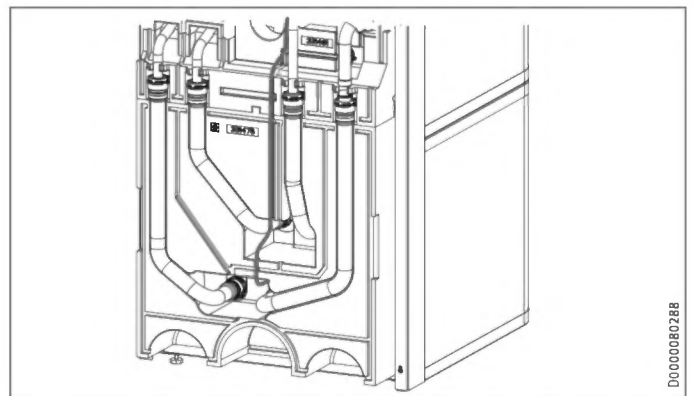
To make removal simpler, the insulation segments have labelled recessed grips on the left and right.



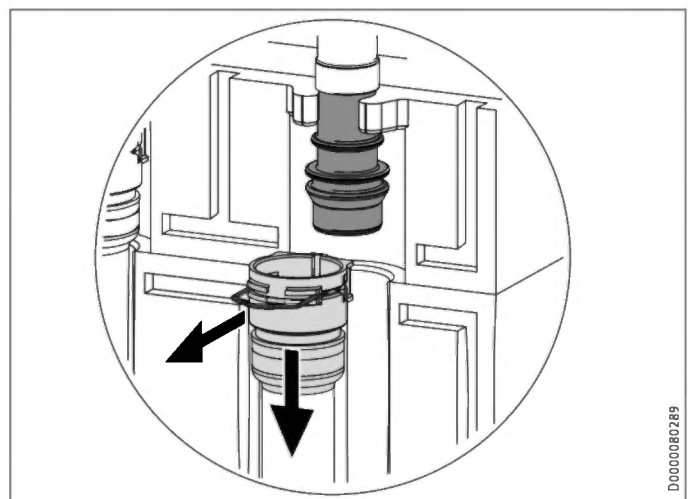
- ▶ Remove insulation segment 1.
- ▶ Remove insulation segment 2.



- ▶ Pull the "heating sensor" out of the buffer cylinder.



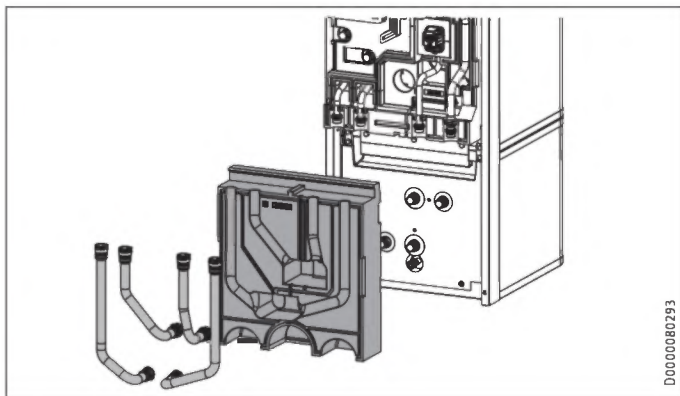
- ▶ Release the sensor lead from the guide groove in the insulation segment.



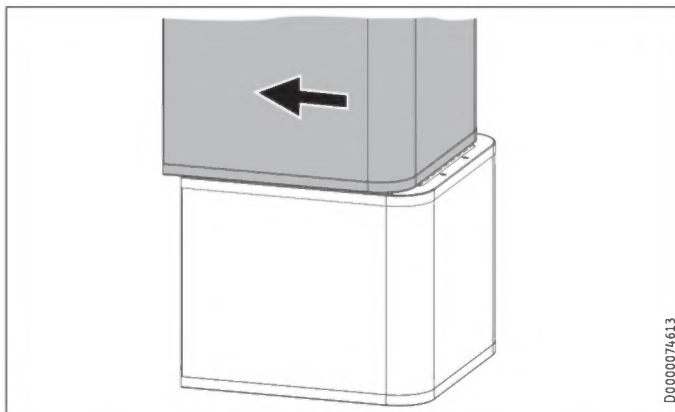
- ▶ Disconnect the push-fit connectors of the 4 hydraulic connections. To do this, pull the spring clips fully out with a screwdriver.
- ▶ Pull the hydraulic connectors as indicated.

# INSTALLATION

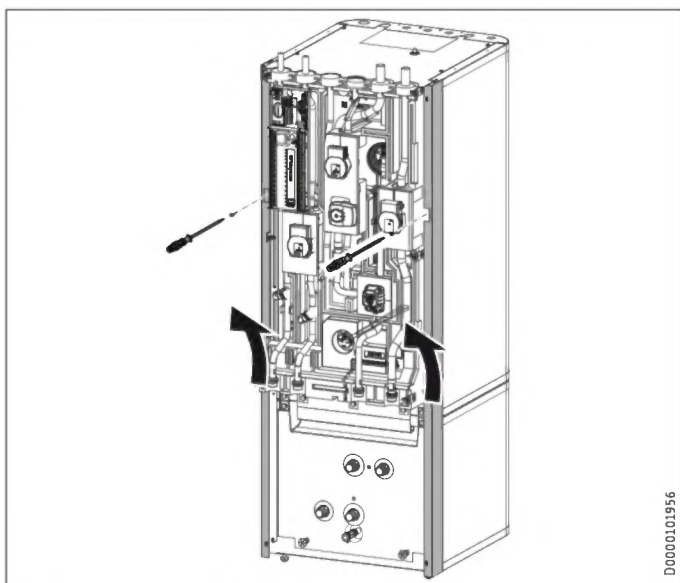
## Preparation



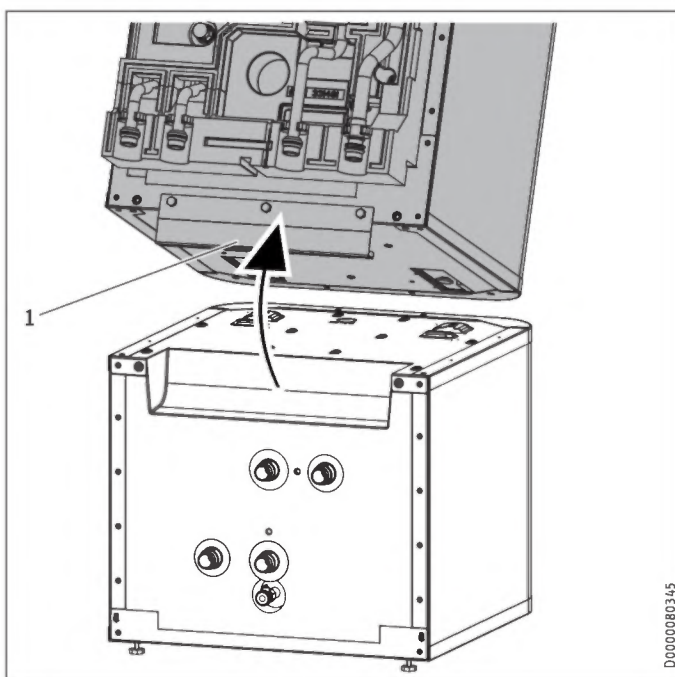
- ▶ Remove the 4 hydraulic hoses.
- ▶ Remove the 2 insulation material screws.
- ▶ Remove insulation segment 3.



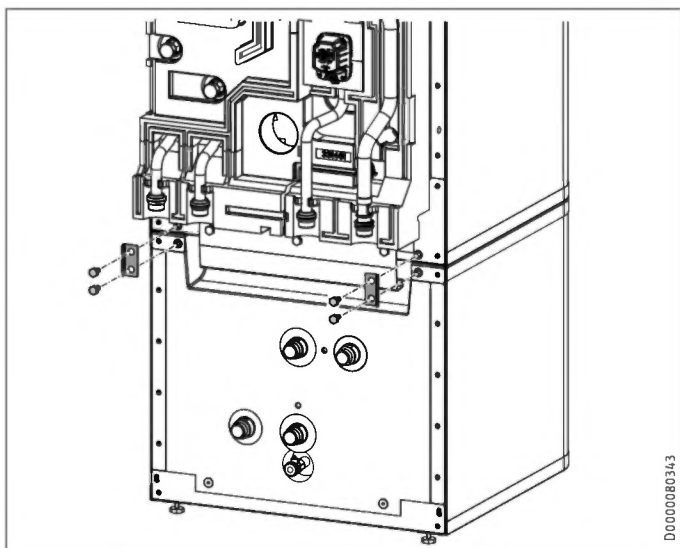
- ▶ Pull the upper section of the appliance towards the front.



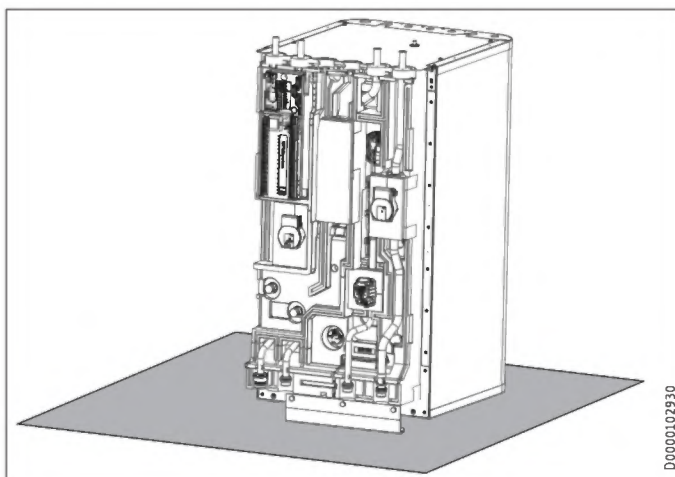
- ▶ Undo the 2 locking screws on the side profile strips.
- ▶ Lift up and unhook the side profile strips.



- 1 Handle
- ▶ Tip the upper section of the appliance backwards. Use the handle for improved grip.



- ▶ Release the 4 screws on the tabs at the front of the appliance.



- ▶ Place the upper section of the appliance on a base to prevent damage.

# INSTALLATION

## Preparation

### Joining appliance sections



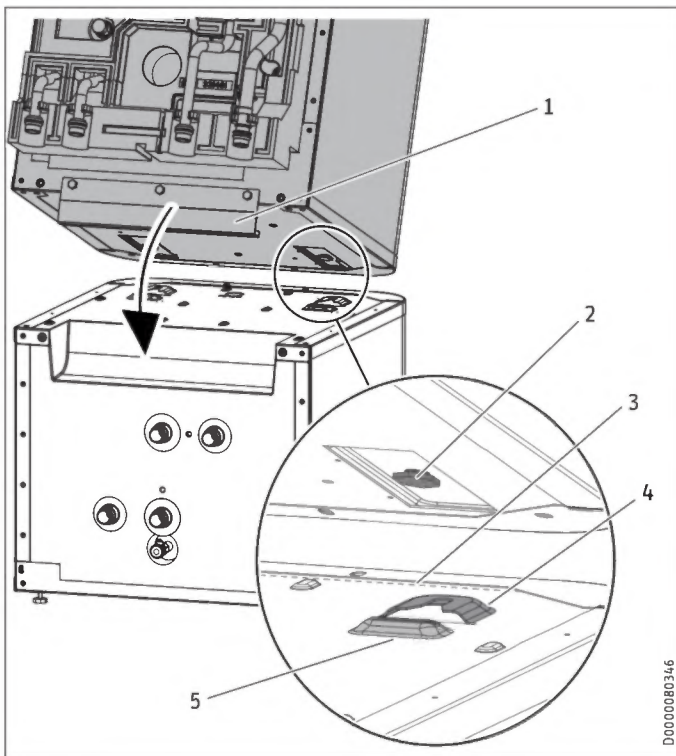
#### Material losses

To prevent condensation forming, the insulation segments must fit closely against the lower section with no gaps.

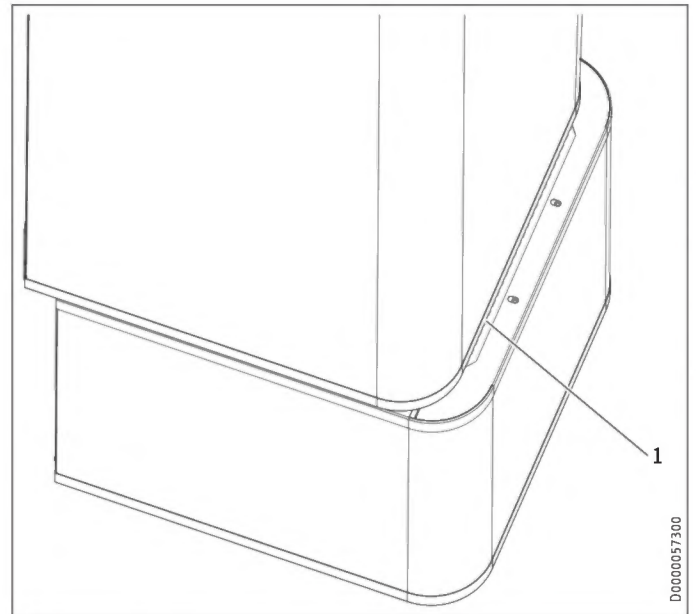
- ▶ When inserting the insulation segments, ensure that the joint grooves are kept clear.
- ▶ Tap the insulation segments down with your hand.

Rejoin the appliance sections in reverse order.

The positioning aids and the dotted line marking provide assistance when positioning and inserting the upper appliance section into the guide groove on the lower section:

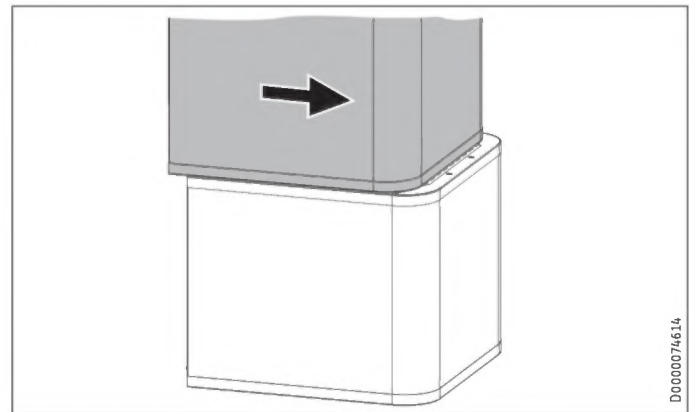


- 1 Handle
- 2 Guide pin
- 3 Dotted line (perforation in the panel)
- 4 Guide groove
- 5 Positioning aid



1 Dotted line (perforation in the panel)

- ▶ Place the upper appliance section onto the lower appliance section along the dotted line.



- ▶ Slide the upper appliance section to the back until it is flush with the lower appliance section. If the appliance sections are joined correctly, the final position is determined by the guide groove and guide pin.
- ▶ Secure the tabs on the appliance front.
- ▶ Fit the side profile strips.
- ▶ Fit insulation segment 3 and the 4 hydraulic hoses.
- ▶ Connect the push-fit connectors of the 4 hydraulic connections. Ensure that the spring clips click into place.
- ▶ Insert the "heating sensor" into the buffer cylinder.
- ▶ Lay the sensor lead in the guide groove provided for this purpose in the insulation segment.
- ▶ Fit insulation segment 2.
- ▶ Fit insulation segment 1.
- ▶ Fit the front casing.

### 10. Installation

#### 10.1 Positioning the appliance

- ▶ When positioning the appliance, observe minimum clearances (see chapter "Preparations / Installation site").
- ▶ Use the adjustable feet to compensate for any unevenness in the floor.

#### 10.2 Heating water connection

**!** **Material losses**  
The heating system to which the appliance is connected must be installed by a qualified contractor in accordance with the water installation drawings in the technical guides.

**!** **Material losses**  
When fitting additional shut-off valves, install a further safety valve in an accessible location on the heat generator itself or in the flow line in close proximity to the heat generator. There must not be a shut-off valve between the heat generator and the safety valve.

#### Oxygen diffusion

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

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

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

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

#### Supply lines

**Note**  
The maximum permissible line length between the appliance and the heat pump will vary, depending on the version of the heating system (pressure drop). As a standard value, assume a maximum line length of 10 m and a pipe diameter of 22-28 mm.

- ▶ Thoroughly flush the pipes before connecting the heat pump. Foreign bodies (e.g. welding pearls, rust, sand, sealing material, etc.) can impair the operational reliability of the system.

- ▶ Install the heating water pipes (see chapter "Specification / Dimensions and connections").
- ▶ Protect the flow and return lines against frost with sufficient thermal insulation.
- ▶ Connect the hydraulic connections with flat gaskets.

If the available external pressure difference is exceeded, the pressure drop in the heating system could result in a reduced heating output.

- ▶ When sizing the pipes, ensure that the available external pressure differential is not exceeded (see chapter "Specification / Data table").
- ▶ When calculating the pressure drop, take account of the flow and return lines and the pressure drop of the heat pump. The pressure drop must be covered by the available pressure differential.

#### 10.2.1 HSBC 3-HKM (optional)

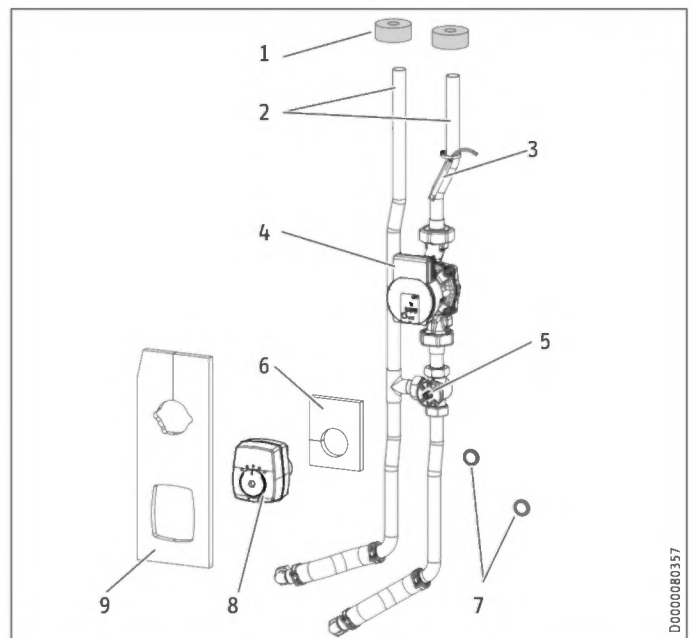


#### WARNING Electrocutation

Before starting work on the appliance, disconnect all poles from the power supply and drain the heating circuit via the drain valve on the buffer cylinder.

To extend the appliance with a heating circuit with mixer, you can install pump assembly HSBC 3-HKM (available as an accessory).

#### Standard delivery



- 1 Pipe insulation
  - 2 Connection pipes (\*)
  - 3 Temperature sensor
  - 4 Heating circuit pump (\*)
  - 5 3-way mixer (\*)
  - 6 Insulation mat for 3-way mixer
  - 7 Flat gaskets
  - 8 Servomotor for 3-way mixer (\*)
  - 9 Insulation mat for 3-way mixer and heating circuit pump
- (\*) Pipe assembly

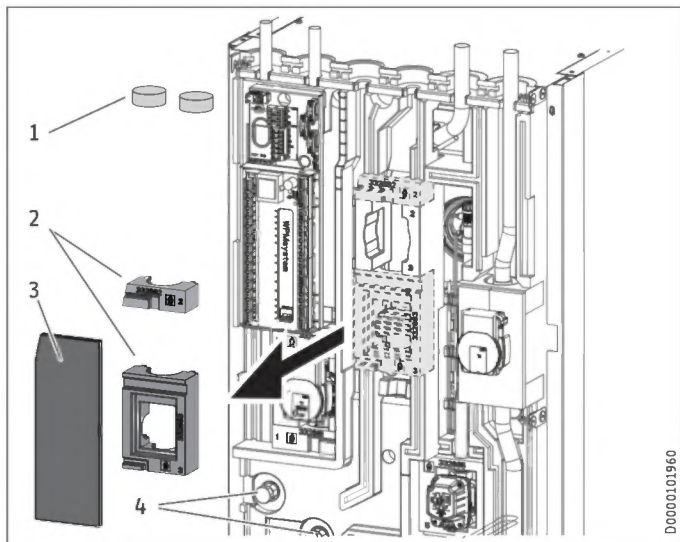
# INSTALLATION

## Installation

### Preparation

- ▶ Remove the front casing and insulation segment 1 (see chapter "Installation / Preparations / Transport and handling").

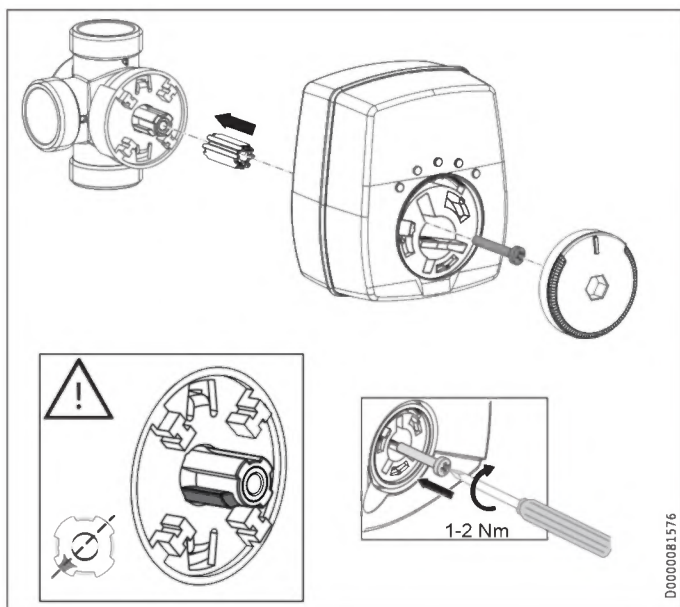
The following components are prefitted on the HSBC side at the pump assembly installation site:



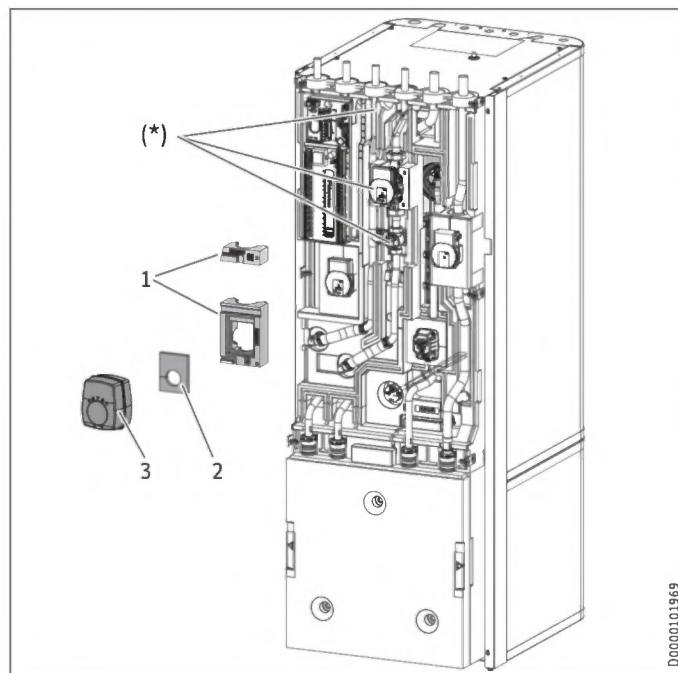
- 1 Insulation plugs
- 2 Profiles for 3-way mixer
- 3 Insulation mat, closed
- 4 Adaptor with dummy cap screwed on

- ▶ Remove the insulation plugs.
- ▶ Remove the closed insulation mat and profiles for the 3-way mixer and the heating circuit pump.
- ▶ Counterhold and unscrew the dummy caps from the adaptors.

### Installation



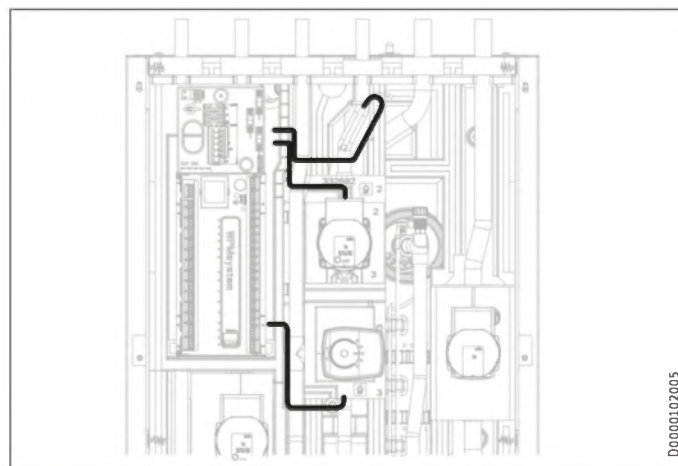
- ▶ Check the position of the 3-way mixer shaft.
- ▶ Adjust the position if necessary.



(\*) Pipe assembly inserted

- 1 Profiles for 3-way mixer
- 2 Insulation mat for 3-way mixer
- 3 Servomotor for 3-way mixer

- ▶ Insert the pipe assembly.
- ▶ Insert the flat gaskets into the union nuts for the connection pipes.
- ▶ Counterhold and secure the union nuts to the adaptors.
- ▶ Check the alignment of the pipes and functional elements of the pump assembly.
- ▶ Retighten all fittings.
- ▶ Install the profiles for the 3-way mixer over the mixing valve body and above the pump.
- ▶ Place the insulation mat for the 3-way mixer on the valve body.
- ▶ Install the servomotor for the 3-way mixer.



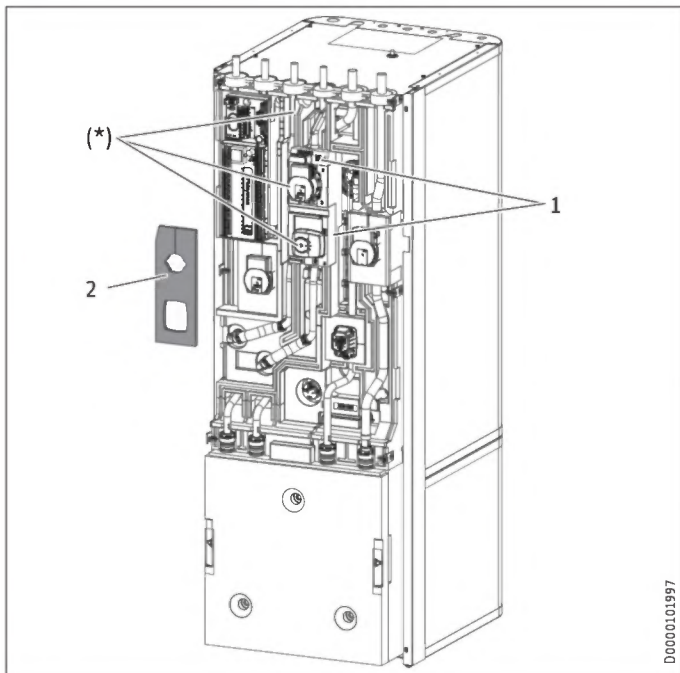
### Material losses

To prevent condensation from forming, do not lay any cables in the joint grooves of the EPP parts.

# INSTALLATION

## Installation

- ▶ Route the pump assembly connecting cable to the control panel as shown.
- ▶ Slide the pipe insulation over the connection pipe connectors from above.



- (\*) Pipe assembly inserted
- 1 Profiles for 3-way mixer
  - 2 Insulation mat for 3-way mixer and heating circuit pump

- ▶ Insert the insulation mat on the HKM side for the 3-way mixer and the heating circuit pump.
- ▶ Observe the parameter settings in menu "SETTINGS / HEATING / HEATING CIRCUIT 2" in the enclosed commissioning instructions for the heat pump manager.

### 10.3 DHW connection and safety assembly

**! Material losses**  
The maximum permissible pressure must not be exceeded (see chapter "Specification / Data table").

**! Material losses**  
Operate the appliance only with pressure-tested taps.

#### Cold water line

Galvanised steel, stainless steel, copper and plastic are approved materials.

**! Material losses**  
A safety valve is required.

#### DHW line, DHW circulation line

Stainless steel, copper and plastic are approved materials.

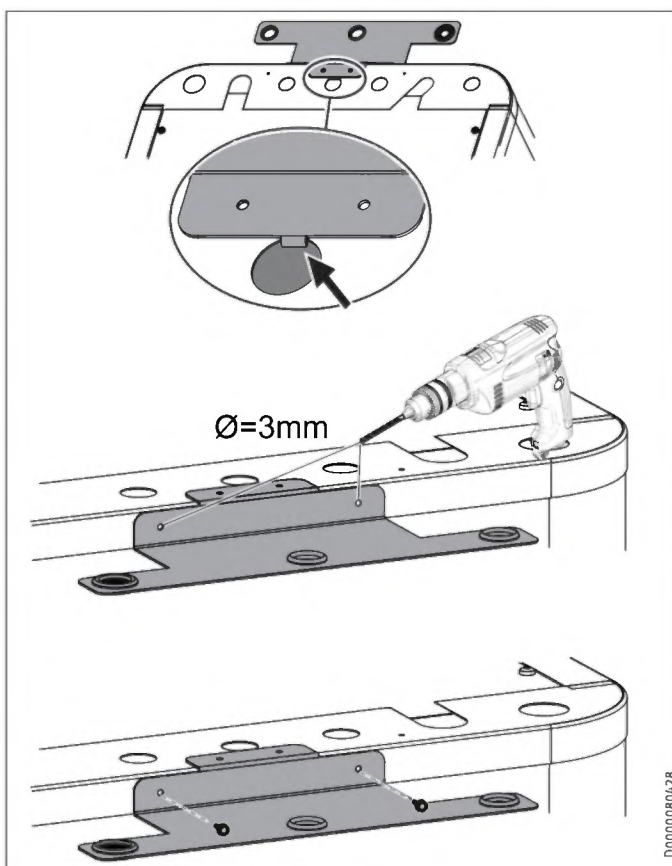
#### 10.3.1 DHW connection and safety assembly

- ▶ Flush the pipes thoroughly.
- ▶ Install the DHW outlet line and the cold water inlet line (see chapter "Specification / Dimensions and connections"). Connect the hydraulic connections with flat gaskets.
- ▶ Install a type-tested safety valve in the cold water supply line. Please note that, depending on the supply pressure, you may also need a pressure reducing valve.
- ▶ Size the drain pipe so that water can drain off unimpeded when the safety valve is fully opened.
- ▶ The safety valve drain aperture must remain open to atmosphere.
- ▶ Install the safety valve drain pipe with a constant fall to the drain.

#### 10.3.2 RBS-SBC (optional)

**⚡ WARNING Electrocutation**  
Before starting work on the appliance, disconnect all poles from the power supply and drain the DHW cylinder.

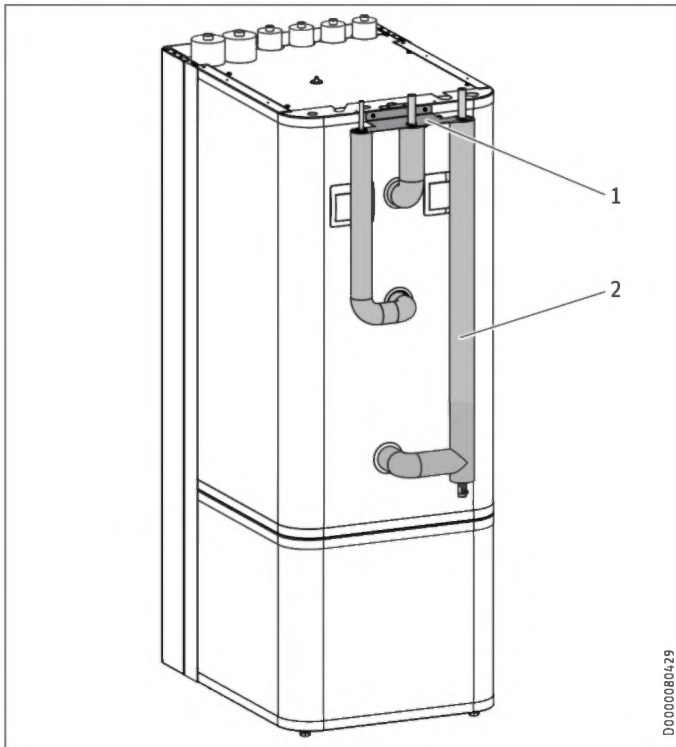
**📖 Note**  
The following diagrams show pipe assembly RBS-SBC (see chapter "Specification / Dimensions and connections").



- ▶ Hook the retainer for the connection pipes into the top centre of the appliance.
- ▶ Use the retainer as a drilling template and pre-drill the fixing holes.
- ▶ Secure the retainer with the screws.

# INSTALLATION

## Installation



- 1 Retainer
  - 2 Insulated connection pipes
- ▶ Install the connection pipes in sequence, starting on the left or right depending on the positioning of the appliance.
  - ▶ Insert the connection pipes through the retainer from below.
  - ▶ Secure the connections to the appliance using the union nuts.
  - ▶ Connect the pipes of the pipe assembly to the domestic pipe-work system.

### 10.3.3 DHW circulation line (optional)

A DHW circulation line with external DHW circulation pump can be fitted to the DHW circulation connection (see chapter "Specification / Dimensions and connections").

- ▶ Remove the sealing cap from the DHW circulation connection (see chapter "Specification / Dimensions and connections").
- ▶ Connect the DHW circulation line.

## 10.4 Filling the system

### Heating circuit water quality

Carry out a fill water analysis before filling the system. This analysis 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 during the annual system service.



#### Note

With a conductivity >1000  $\mu\text{S}/\text{cm}$ , desalination treatment is recommended in order to avoid corrosion.



#### Note

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



#### Note

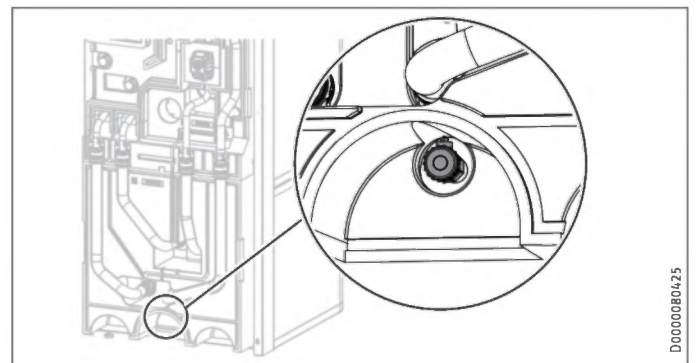
Suitable appliances for water softening, as well as for filling and flushing heating systems, can be obtained via trade suppliers.



#### Material losses

Never switch on the power before filling the system.

### 10.4.1 Filling the heating system

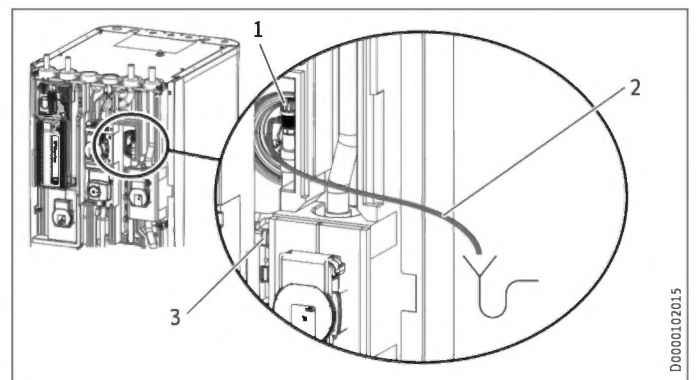


- ▶ Fill the heating system via the drain valve.
- ▶ Vent the pipework.

### 10.4.2 DHW cylinder filling

- ▶ Filling the DHW cylinder via the cold water inlet connection.
- ▶ Open all downstream draw-off valves until the appliance is full and the pipework is free of air.
- ▶ Adjust the flow rate. For this, observe the maximum permissible flow rate with a fully opened tap (see chapter "Specification / Data table"). If necessary reduce the flow rate at the butterfly valve of the safety assembly.
- ▶ Carry out a tightness check.
- ▶ Check the safety valve.

## 10.5 Venting the appliance



- 1 Air vent valve
- 2 Vent hose
- 3 Hose attachment

- ▶ Detach the vent hose from the hose attachment.

## Electrical connection

- ▶ Hang the free end of the vent hose in a container.
- ▶ To ventilate, open the air vent valve.
- ▶ After ventilation, close the air vent valve.
- ▶ Secure the vent hose.

### 11. Electrical connection



**WARNING Electrocutation**

Carry out all electrical connection and installation work in accordance with relevant regulations. Before any work on the appliance, disconnect all poles from the power supply.



**WARNING Electrocutation**

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



**Material losses**

Provide separate fuses for the two power circuits of the appliance and the control unit.



**Material losses**

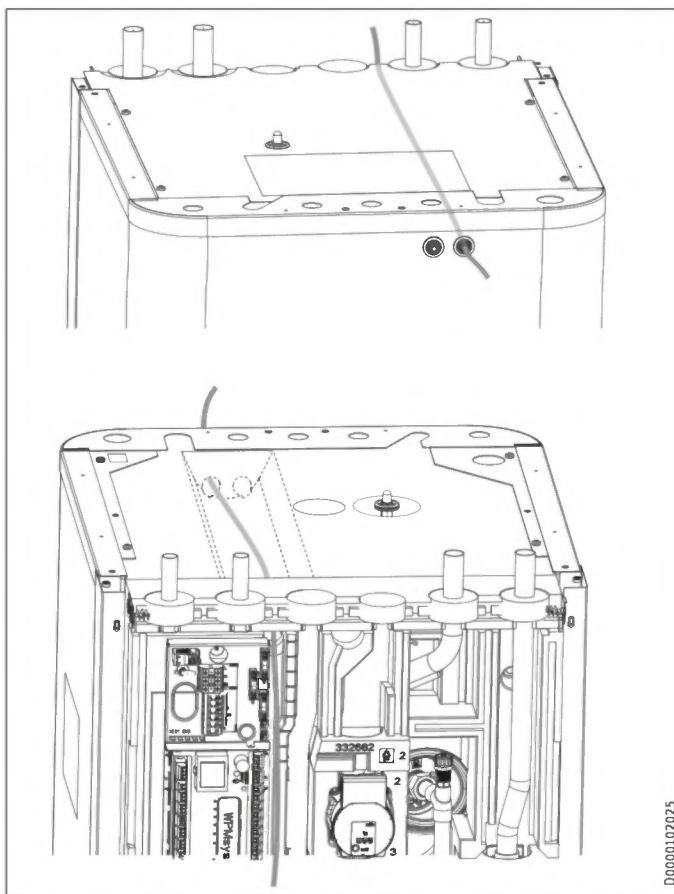
Observe the type plate. The specified voltage must match the mains power supply.



**Note**

Leakage currents of up to 5 mA may occur.

The terminal box of the appliance is located behind the front casing (see chapter "Preparations / Transport and handling / Removing/ fitting the front casing").



- ▶ Route all power cables and sensor leads into the appliance through the cable entry.
- ▶ Connect the power cables and sensor leads as detailed below.

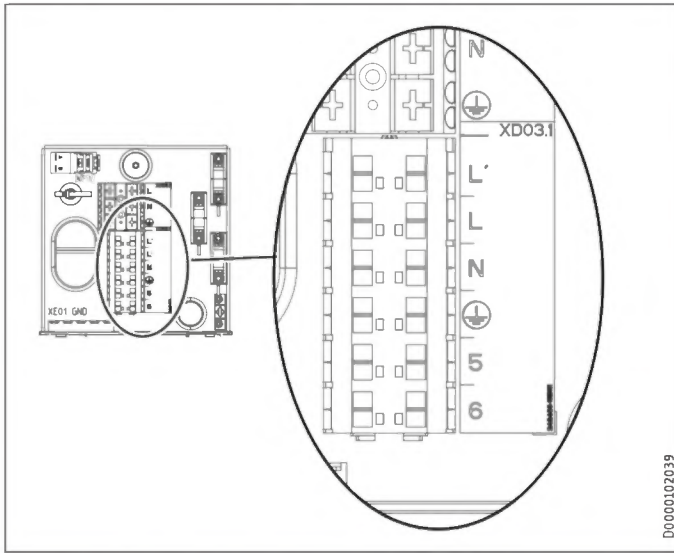
Install cables with the following cross-sections in accordance with the respective fuse protection:

Fuse protection	Assignment	Cable cross-section
B 16 A	Control unit	1.5 mm <sup>2</sup>

# INSTALLATION

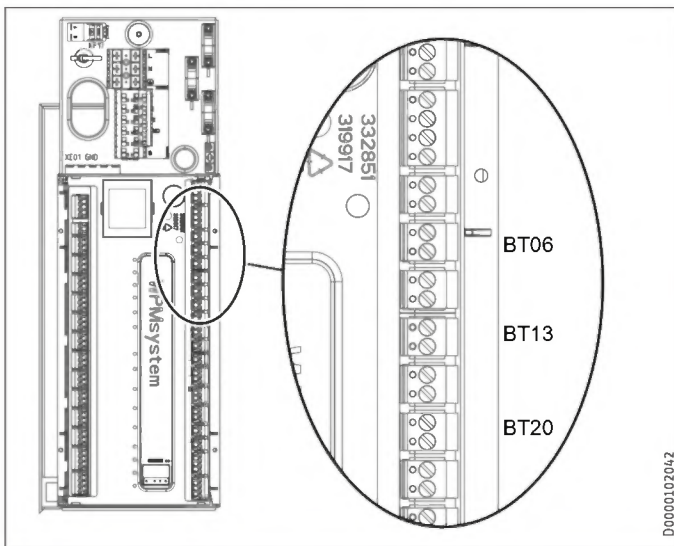
## Electrical connection

### 11.1 Control voltage



Terminal	Control voltage
XD03.1	Power supply L, N, PE

### 11.2 Safety extra low voltage



Terminal	Safety extra low voltage
AA01-X1.1	Heat pump
AA01-X1.3	Outside sensor
AA01-X1.4 BT06	Temperature sensor, heat pump, buffer cylinder
AA01-X1.6 BT13	Temperature sensor, heat pump, flow, heating circuit 2 (HSBC 3-HKM accessory)
AA01-X1.8 BT20	DHW cylinder temperature sensor

#### Control by WPM via PWM signal

- Observe the information in the commissioning instructions for the WPM heat pump manager.

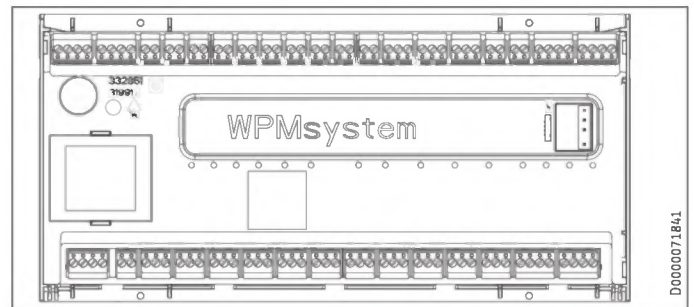
### 11.3 Heat pump manager terminal assignment



#### WARNING Electrocutation

Only components that operate with safety extra low voltage (SELV) and that ensure secure separation from the mains voltage supply may be connected to the low voltage terminals of the appliance. Connecting other components can make parts of the appliance and connected components live.

- Only use components which have been approved by us.



#### Safety extra low voltage

X1.1	+	+	CAN (connection for heat pump and WPE heat pump extension)
CAN A	-	-	
	L	L	
	H	H	
X1.2	+	+	CAN (connection for FET remote control and ISG Internet Service Gateway)
CAN B	-	-	
	L	L	
	H	H	
X1.3	Signal	1	Outside sensor
	Earth	2	
X1.4	Signal	1	Buffer sensor (heating circuit sensor 1)
	Earth	2	
X1.5	Signal	1	Flow sensor
	Earth	2	
X1.6	Signal	1	Heating circuit sensor 2
	Earth	2	
X1.7	Signal	1	Heating circuit sensor 3
	Earth	2	
X1.8	Signal	1	DHW cylinder sensor
	Earth	2	
X1.9	Signal	1	Source sensor
	Earth	2	
X1.10	Signal	1	2nd heat generator (2.WE)
	Earth	2	
X1.11	Signal	1	Cooling flow
	Earth	2	
X1.12	Signal	1	DHW circulation sensor
	Earth	2	
X1.13	Signal	1	FE7 remote control / telephone remote switch / heating curve optimisation / SG Ready
	Earth	2	
	Signal	3	
X1.14	Constant 12 V	+	Analogue input 0-10 V
	Input	IN	
	GND	↓	
X1.15	Constant 12 V	+	Analogue input 0-10 V
	Input	IN	
	GND	↓	
X1.16	Signal	1	PWM output 1
	Earth	2	
X1.17	Signal	1	PWM output 2
	Earth	2	

# INSTALLATION

## Electrical connection

### Safety extra low voltage

X1.18	+	+	CAN (FES)
CAN B	-	-	
	L	L	
	H	H	
X1.19	+	+	CAN (connection for heat pump and WPE heat pump extension)
CAN A	-	-	
	L	L	
	H	H	

### Mains power supply

X2.1	L	L	Power supply
	L	L	
	N	N	
	PE	⊕ PE	
X2.2	L' (power supply utility input)	L' (power supply utility input)	L' (power supply utility input)
	L* (pumps L)	L* (pumps L)	L* (pumps L)
X2.3	L	L	Heating circuit pump 1
	N	N	
	PE	⊕ PE	
X2.4	L	L	Heating circuit pump 2
	N	N	
	PE	⊕ PE	
X2.5	L	L	Heating circuit pump 3
	N	N	
	PE	⊕ PE	
X2.6	L	L	Buffer charging pump 1
	N	N	
	PE	⊕ PE	
X2.7	L	L	Buffer charging pump 2
	N	N	
	PE	⊕ PE	
X2.8	L	L	DHW charging pump
	N	N	
	PE	⊕ PE	
X2.9	L	L	Source pump / defrost
	N	N	
	PE	⊕ PE	
X2.10	L	L	Fault output
	N	N	
	PE	⊕ PE	
X2.11	L	L	DHW circulation pump / 2nd heat source DHW
	N	N	
	PE	⊕ PE	
X2.12	L	L	2nd heat source heating
	N	N	
	PE	⊕ PE	
X2.13	L	L	Cooling
	N	N	
	PE	⊕ PE	
X2.14	Mixer OPEN	▲	Mixer, heating circuit 2 (X2.14.1 Mixer OPEN X2.14.2 Mixer CLOSE)
	N	N	
	PE	⊕ PE	
	Mixer CLOSE	▼	
X2.15	Mixer OPEN	▲	Mixer heating circuit 3 (X2.15.1 Mixer OPEN X2.15.2 Mixer CLOSE)
	N	N	
	PE	⊕ PE	
	Mixer CLOSE	▼	

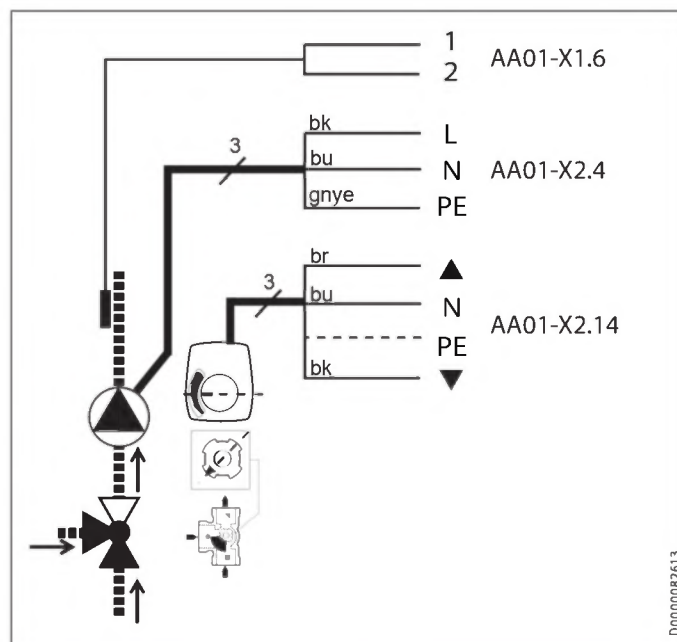


### Note

For every appliance fault, output X2.10 issues a 230 V signal.  
In the case of temporary faults, the output switches the signal through for a specific time.  
In the case of faults that result in a permanent appliance shutdown, the output switches through permanently.

## 11.4 Accessories

### 11.4.1 HSBC 3-HKM (optional)



#### Terminal Safety extra Low voltage

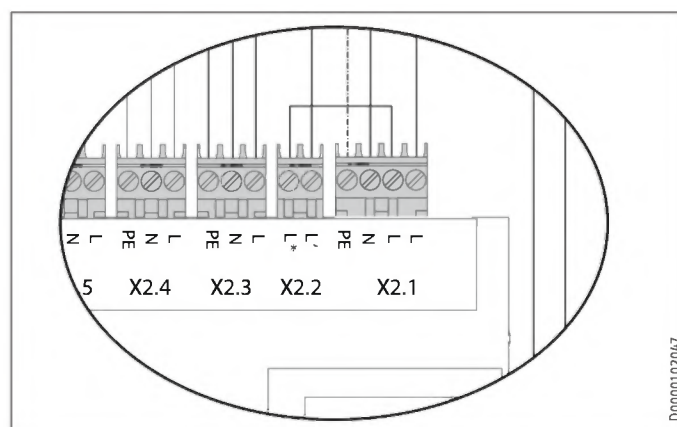
AA01-X1.6 BT13 Temperature sensor, heat pump flow, heating circuit 2

#### Terminal Mains power supply

AA01-X2.4 L, N, PE MA11 Motor, pump, heating circuit  
AA01-X2.14 L, L, N MA19 Motor, mixing valve heating circuit 2

► Make the electrical connection for the components.

### 11.4.2 STB-FB high limit safety cut-out for underfloor heating systems (optional)



- X2.1 (L), X2.2 (L\*): Remove the jumper.
- X2.1 (L), X2.2 (L\*): Connect the high limit safety cut-out to the terminals.

# INSTALLATION

## Commissioning

### 11.5 Sensor installation

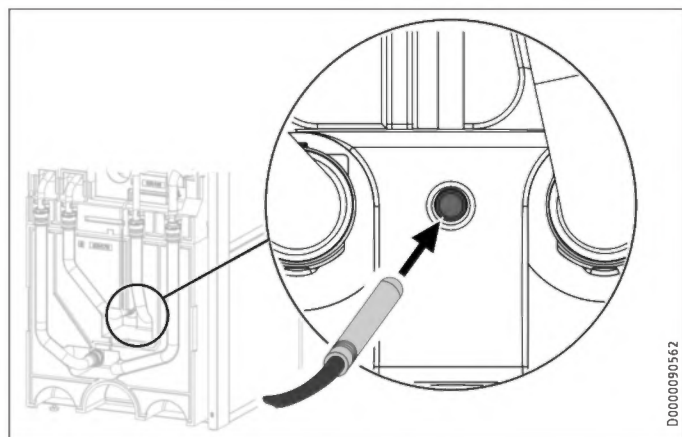
#### 11.5.1 AF PT outside temperature sensor

- ▶ When installing the outside temperature sensor, observe the commissioning instructions for the heat pump manager (see chapter "Connecting external components").

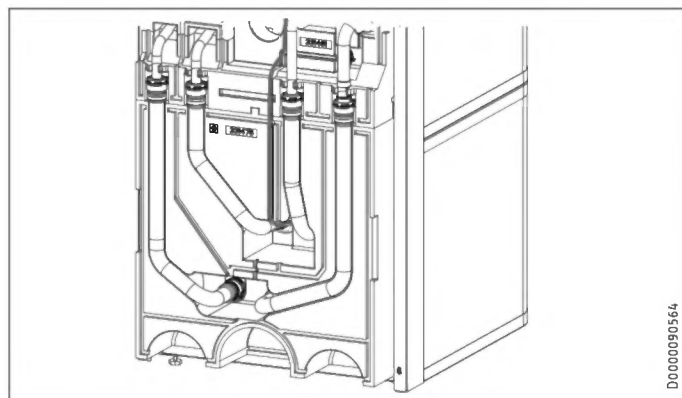
#### 11.5.2 Temperature sensor for area cooling (optional)

Area cooling requires the fitting of a temperature sensor, available as an accessory.

- ▶ Remove the front casing (see chapter "Preparations / Transport and handling / Removing/fitting the front casing").



- ▶ Insert the temperature sensor into the sensor well "Sensor heat pump cooling, optional".



- ▶ Lay the sensor lead in the guide groove provided for this purpose in the insulation segment.
- ▶ Connect the temperature sensor to the corresponding terminal on the WPM (see chapter "Electrical connection / Heat pump manager terminal assignment").

### 11.6 Remote control

- ▶ When installing the remote control unit, observe the commissioning instructions for the heat pump manager (see chapter "Connecting external components").

## 12. Commissioning

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

If the 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 (in Germany, for example, this is the TÜV).

### 12.1 Checks before commissioning the heat pump manager



#### Material losses

Observe the maximum system temperature in underfloor heating systems.

- ▶ Check that the heating system is filled to the correct pressure and the quick-action air vent valve is closed.
- ▶ Check whether the outside temperature sensor is correctly placed and connected.
- ▶ Check whether the power supply is connected correctly.
- ▶ Check whether the signal cable to the heat pump (bus cable) is correctly connected.

### 12.2 Commissioning the heat pump manager

Commission the heat pump manager and make all settings in accordance with the heat pump manager commissioning instructions.



#### Note

The required settings on the heat pump manager are preset using an SD card.

- ▶ If the heat pump manager has had to be replaced, perform the following settings.

Requirement: The heat pump manager has recognised the heat pump.

- ▶ Open the menu and enter the code.

Parameter	Code
VIEW (SETTINGS)	1 0 0 0

- ▶ Adjust the parameters.

Parameter	Setting
DHW MODE (SETTINGS / DHW / STANDARD SETTING)	PARALLEL OPERATION
FUNCTION (COMMISSIONING / I/O CONFIGURATION / OUTPUT X1.16)	PWM 100%...0%
PUMP (COMMISSIONING / I/O CONFIGURATION / OUTPUT X1.16)	CHARGING PUMP CONTROL HEATING

# INSTALLATION

## Settings

### Setting for single-phase operation



#### Note

On appliances with a single phase connection, set the heat pump manager as follows for calculating the amount of heat.

- ▶ Adjust the parameters.

Parameter	Setting
NUMBER OF STAGES (SETTINGS / HEATING / ELECTRIC BOOSTER HEATER)	2

### Area cooling setting



#### Material losses

Condensation caused by the temperature falling below the dew point can lead to material losses. The appliance is therefore approved exclusively for area cooling.

- ▶ When making the area cooling settings, observe the information in the commissioning instructions for the heat pump manager.

## 13. Settings

### 13.1 Wilo-Para .../Sc circulation pumps

- ▶ Set the operating mode of the pump depending on the heat distribution system.

#### LED indicators



Operation indicator:  
LED illuminates green in normal operation  
LED illuminates/flashes when there is a fault



Display of selected control mode  
 $\Delta p-v$ ,  $\Delta p-c$  and constant speed



Display of selected curve (I, II, III) within the control mode



Combinations of LED displays for venting function, manual re-start and key lock

#### Operating button



#### Press

Selecting the control mode  
To select the curve (I, II, III) within the control mode  
**Press and hold**

To activate the venting function (press for 3 seconds)  
Manual restart (press for 5 seconds)  
To lock/unlock the buttons (press for 8 seconds)

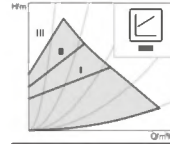


### Control modes and functions

#### Variable differential pressure $\Delta p-v$ (I, II, III)

Recommended for two-pipe heating systems with radiators to reduce flow noise at thermostatic valves

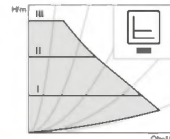
The pump reduces the delivery head by half when the flow rate in the pipework decreases.  
Saves energy by matching the delivery head to the flow rate demand and the lower flow velocities.  
Choice of three pre-defined curves (I, II, III).



#### Constant pressure differential $\Delta p-c$ (I, II, III)

Recommended for underfloor heating systems, large pipework or any application with a non-varying pipe-work curve (e.g. cylinder charging pumps), as well as single-pipe heating systems with radiators

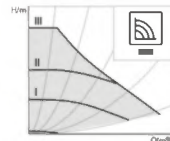
The control system keeps the set delivery head constant, irrespective of delivered flow rate.  
Choice of three pre-defined curves (I, II, III).



#### Constant speed (I, II, III)

Recommended for systems with unchanging system resistance which require a constant throughput.

The pump runs at three preset fixed speed levels (I, II, III).



#### Note

Factory setting: Constant speed, curve III

### Venting



Filling and venting the system correctly  
If the pump does not vent automatically:

Activate the venting function via the operating button, press button for 3 seconds, then release it.  
Venting function starts (duration 10 minutes).  
The top and bottom rows of LEDs flash alternately every second.

To cancel, press the operating button for 3 seconds.



#### Note

After venting, the LED indicator displays the previously set pump values.

### Setting control modes

#### Selecting the control mode

The LEDs for the control modes and associated curves illuminate one after the other.

Briefly press the operating button (for approx. 1 second).

LEDs indicate the current selected control mode and curve (see following table).

Operating button	LED indicator	Control mode	Curve
1x		Constant speed	II
2x		Constant speed	I

Operating button	LED indicator	Control mode	Curve
3x		Variable differential pressure $\Delta p-v$	III
4x		Variable differential pressure $\Delta p-v$	II
5x		Variable differential pressure $\Delta p-v$	I
6x		Constant differential pressure $\Delta p-c$	III
7x		Constant differential pressure $\Delta p-c$	II
8x		Constant differential pressure $\Delta p-c$	I
*9x		Constant speed	III

(\*) Pressing the button for the 9th time in succession returns the system to the factory setting (constant speed, curve III).

### 14. Appliance handover

- ▶ Explain the appliance function to users and familiarise them with how it works.
- ▶ Make users aware of potential dangers.
- ▶ Hand over these instructions.

### 15. Shutting down the system

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

**Material losses**  
Drain the system when there is a risk of frost and the heat pump is completely switched off (see chapter "Maintenance / Draining the DHW cylinder").

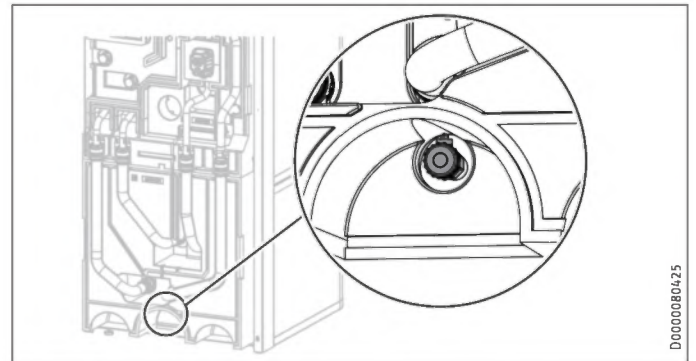
- ▶ If you take the system out of use, set the heat pump manager to standby so that the safety functions that protect the appliance (e.g. frost protection) remain active.

### 16. Maintenance

**WARNING Electrocutation**  
Carry out all electrical connection and installation work in accordance with relevant regulations.

**WARNING Electrocutation**  
Before any work on the appliance, disconnect all poles of the appliance from the power supply.

#### Draining the buffer cylinder



- ▶ Drain the buffer cylinder via the drain valve.

#### Draining the DHW cylinder

**CAUTION Burns**  
Hot water may escape during draining.

- ▶ Close the shut-off valve in the cold water supply line.
- ▶ Open the hot water taps on all draw-off points.
- ▶ Empty the DHW cylinder via the cold water inlet connection.

#### Cleaning and descaling the DHW cylinder

**Material losses**  
Never use descaling pumps or descaling agents to clean the cylinder.

- ▶ Clean the appliance through the inspection flange.

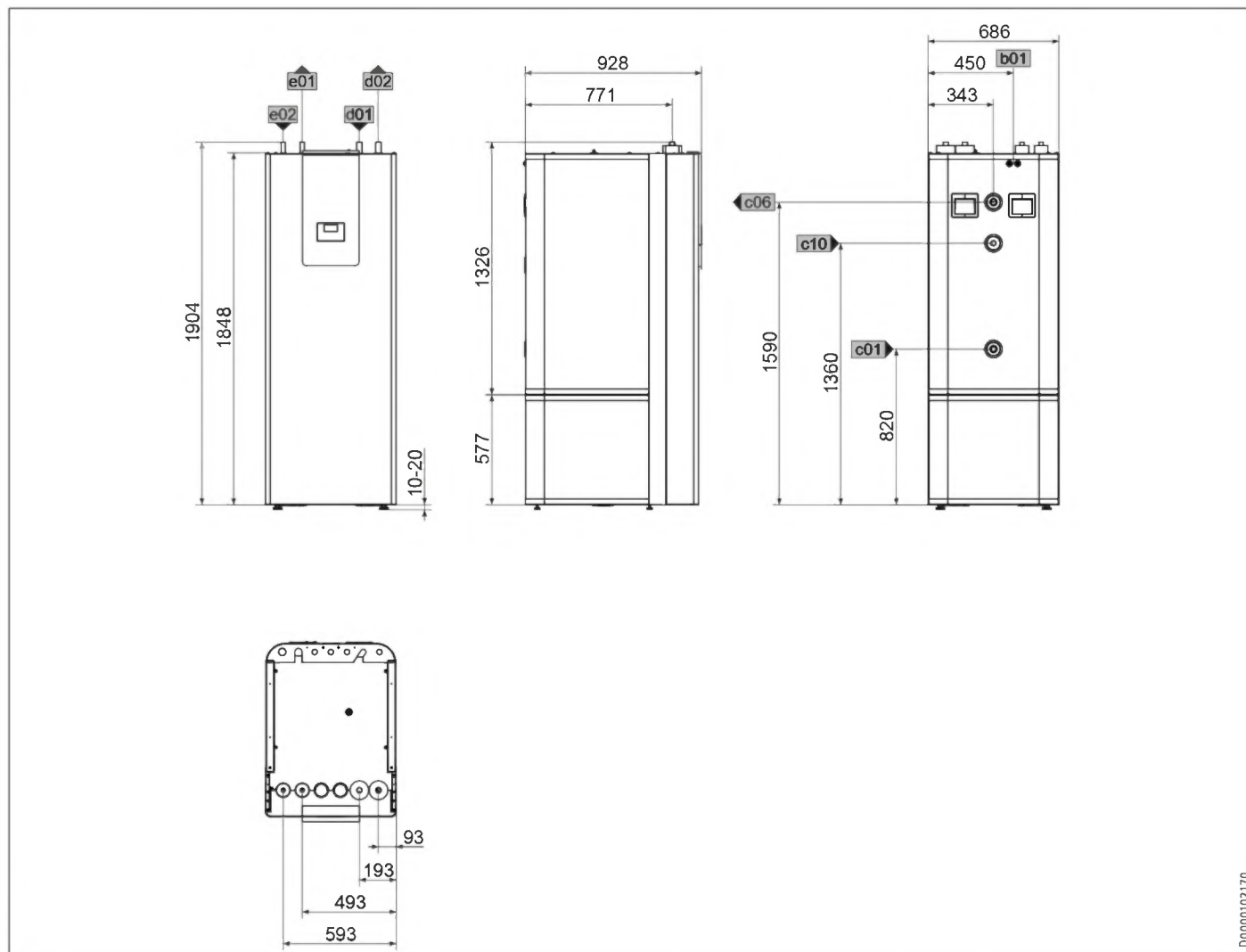
For the torque of the flange screws, see chapter "Specification / Dimensions and connections".

#### Replacing the signal anode

- ▶ Replace the signal anode if it becomes depleted.

## 17. Specification

### 17.1 Dimensions and connections

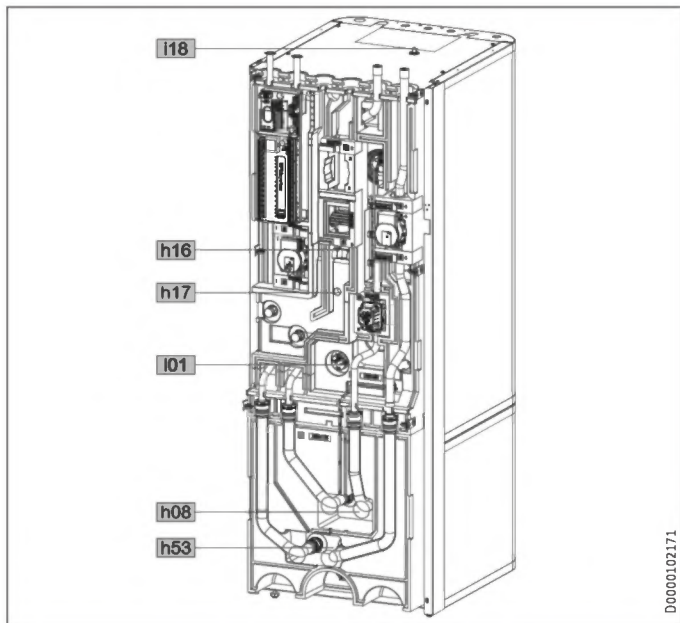


DC000102170

				HSBC 300 cool
b01	Entry electrical cables			
c01	Cold water inlet	Male thread		G 1
c06	DHW outlet	Male thread		G 1
c10	DHW circulation	Male thread		G 1/2
d01	Heat pump flow	Diameter	mm	28
d02	Heat pump return	Diameter	mm	28
e01	Heating flow	Diameter	mm	22
e02	Heating return	Diameter	mm	22

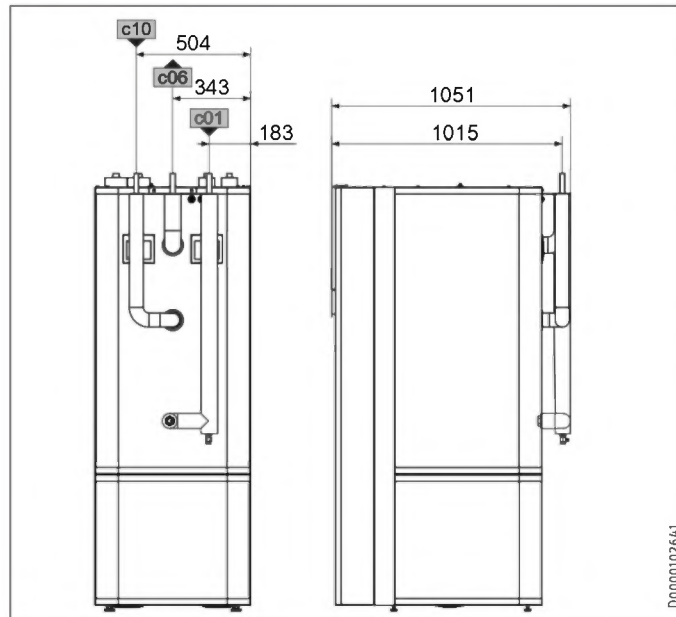
# INSTALLATION Specification

## Other dimensions and connections



		HSBC 300 cool		
h08	Sensor heat pump cooling, optional	Diameter	mm	9.5
h16	Sensor DHW	Diameter	mm	9.5
h17	Sensor, DHW, optional	Diameter	mm	9.5
h53	Sensor heating	Diameter	mm	9.5
i01	Flange	External diameter	mm	140
		Torque	Nm	45
i18	Protective anode	Female thread		G 1 1/4

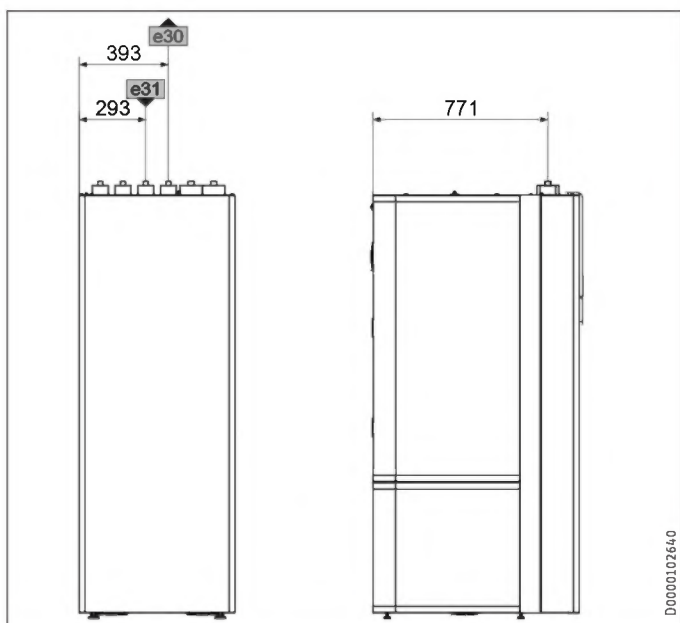
## RBS-SBC



			RBS-SBC	
c01	Cold water inlet	Diameter	mm	22
c06	DHW outlet	Diameter	mm	22
c10	DHW circulation	Diameter	mm	12

## 17.1.1 Accessories

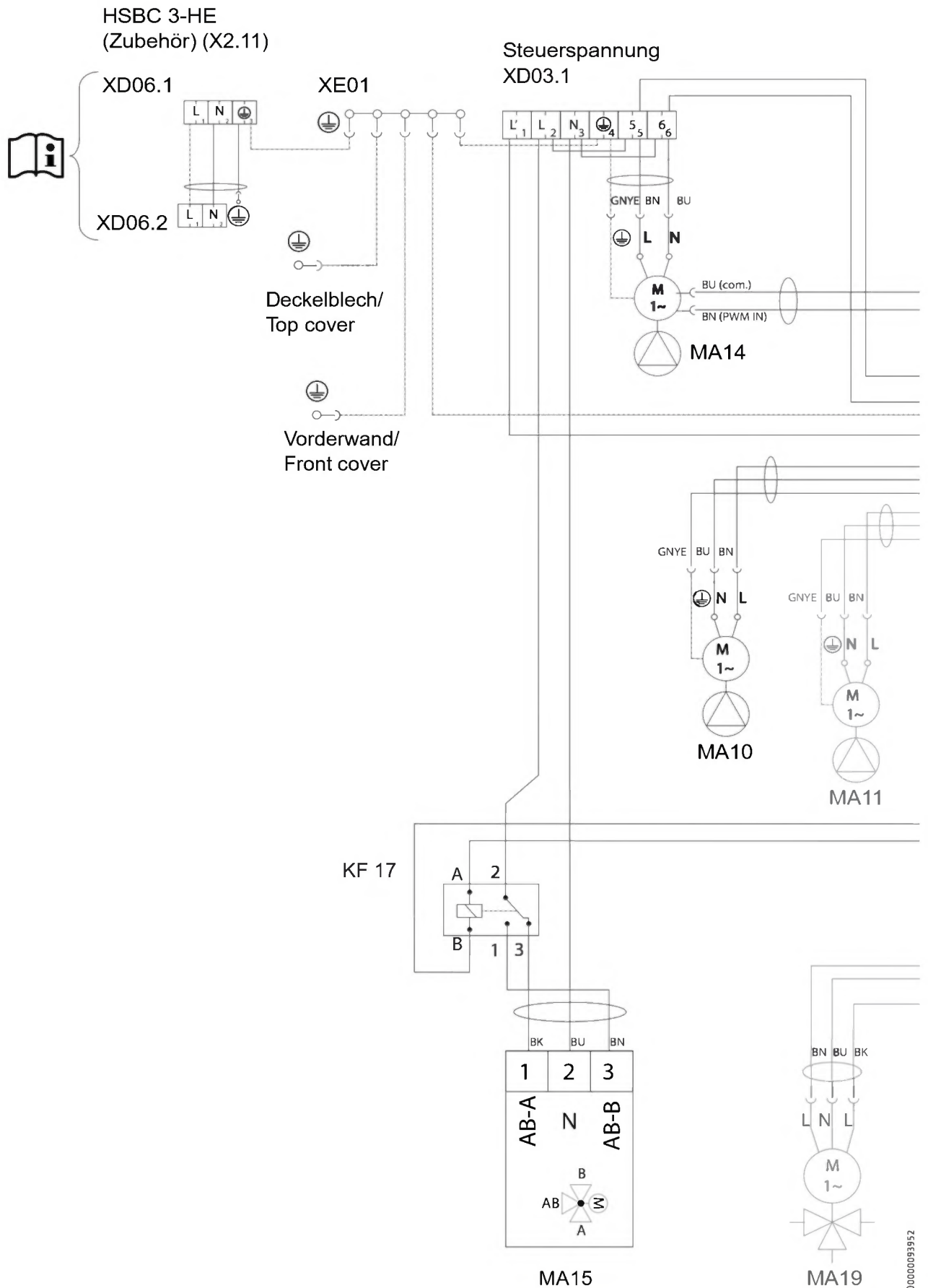
### HSBC 3-HKM



		HSBC 3-HKM		
e30	Heating flow, mixed	Diameter	mm	22
e31	Heating return, mixed	Diameter	mm	22

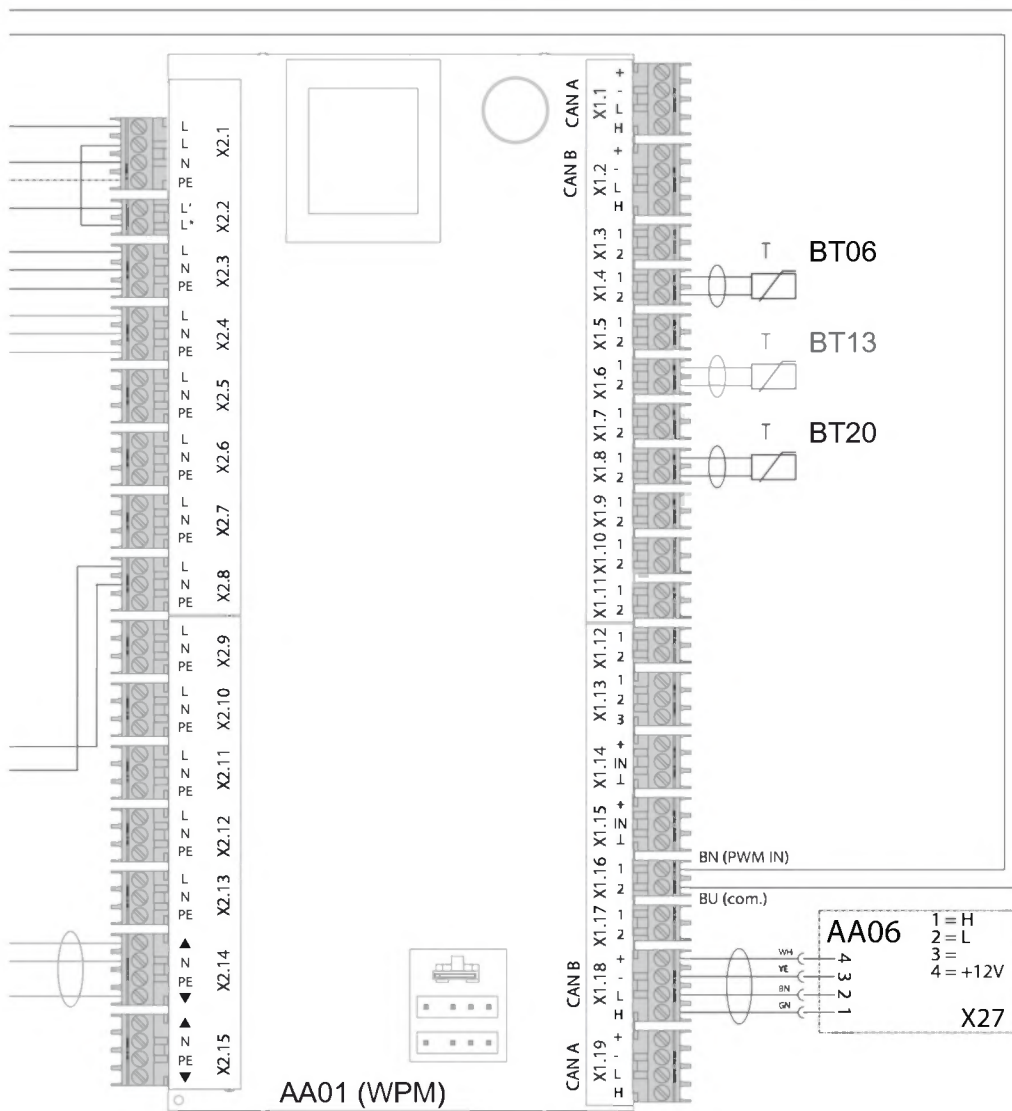
# INSTALLATION Specification

## 17.2 Wiring diagram



D0000093952

# INSTALLATION Specification



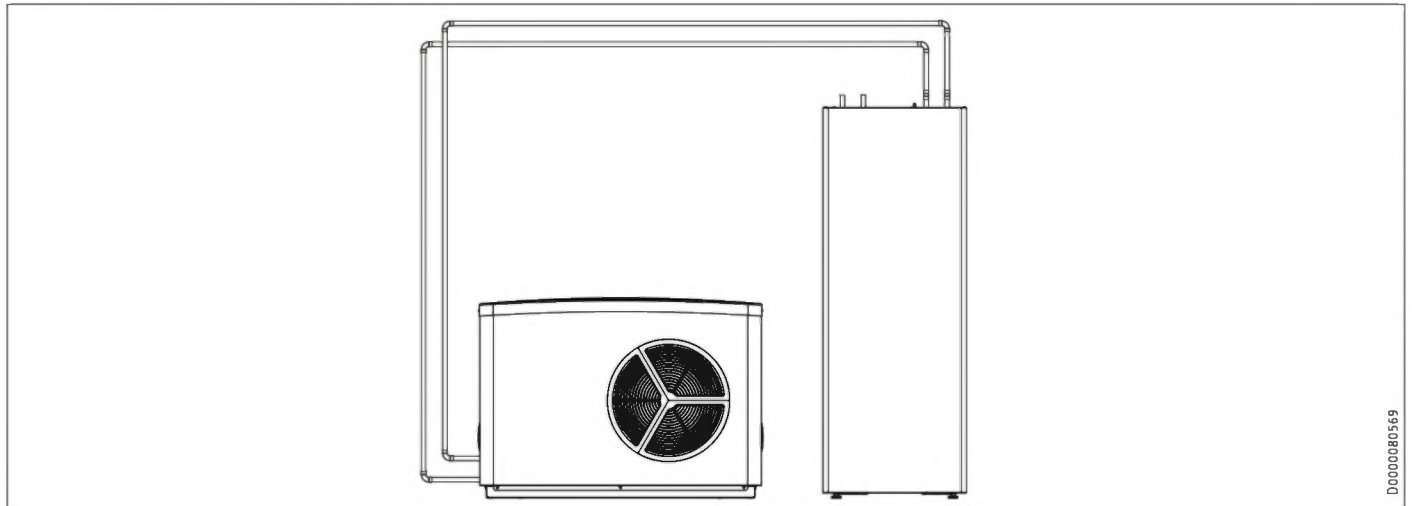
# INSTALLATION

## Specification

AA01		WPM heat pump manager	AA01	X2.15	Connector, mixer, heating circuit 3 (X2.15.1 Mixer OPEN/X2.15.2 Mixer CLOSE)
AA06		Programming unit	AA06	X27	Terminal, programming unit
BT06		Temperature sensor, heat pump buffer cylinder	AA07	X60	Connector, temperature sensor, heat pump flow BT01
BT13		Temperature sensor HP flow HC2 (accessories HSBC 3-HKM)	AA07	X61	Connector, temperature sensor, heat pump return BT02
BT20		DHW cylinder temperature sensor	AA07	X62	Not assigned – connector, temperature sensor, heat pump return
MA10		Motor, pump, heating circuit	AA07	X63	Not assigned – connector, temperature sensor, DHW cylinder, internal
MA11		Motor, pump, heating circuit 2 (HSBC 3-HKM accessory)	AA07	X64	Connector, temperature and flow rate, heating circuit, BF01
MA14		Buffer charging pump motor	AA07	X65	Not assigned
MA15		Motor, diverter valve, heating/DHW	AA07	X66	Rast 2.5 connector (heating system pressure) BP01
MA19		Motor, mixing valve, heating circuit 2 (HSBC 3-HKM accessory)	AA07	X67	Not assigned
KF17		Relay, diverter valve, heat source	AA07	X68	Connector, switching, motor, diverter valve – heating / DHW
XD03.1		Control voltage terminal	AA07	X69	Not assigned
XD06.1		Heater terminal (accessories HSBC 3-HE)	AA07	X70	Connector, switching, pump, heating circuit PWM/1-10 V
XD06.2		Heater terminal (accessories HSBC 3-HE)	AA07	X71	Not assigned
XE01		Power supply earth terminal	AA07	X72	Connector, CAN bus
AA01		Safety extra low voltage			
AA01	X1.1	Connector, CAN A (heat pump connection)			
AA01	X1.2	Connector, CAN B (FET/ISG connection)			
AA01	X1.3	Connector, outside temperature sensor			
AA01	X1.4	Connector, buffer temperature sensor BT06			
AA01	X1.5	Connector, flow temperature sensor			
AA01	X1.6	Connector, heating circuit temperature sensor 2			
AA01	X1.7	Connector, heating circuit temperature sensor 3			
AA01	X1.8	Connector, DHW cylinder sensor BT20			
AA01	X1.9	Connector, source sensor			
AA01	X1.10	Connector, 2nd heat generator			
AA01	X1.11	Connector, flow, cooling			
AA01	X1.12	Connector, DHW circulation sensor			
AA01	X1.13	Connector, remote control FE7			
AA01	X1.14	Connector, analogue input 0-10 V			
AA01	X1.15	Connector, analogue input 0-10 V			
AA01	X1.16	Connector, PWM output 1			
AA01	X1.17	Connector, PWM output 2			
AA01	X1.18	Connector, CAN B (FET/ISG connection)			
AA01	X1.19	Connector, CAN A (MFG)			
AA01		Control voltage			
AA01	X2.1	Connector, power supply			
AA01	X2.2	Connector, power-OFF contact			
AA01	X2.3	Connector, heating circuit pump 1			
AA01	X2.4	Connector, heating circuit pump 2			
AA01	X2.5	Connector, heating circuit pump 3			
AA01	X2.6	Connector, buffer charging pump 1			
AA01	X2.7	Connector, buffer charging pump 2			
AA01	X2.8	Connector, DHW charging pump			
AA01	X2.9	Connector, source pump/defrost			
AA01	X2.10	Connector, fault output			
AA01	X2.11	Connector, DHW circulation pump / 2nd heat generator – DHW			
AA01	X2.12	Connector, 2nd heat generator – heating			
AA01	X2.13	Connector, cooling			
AA01	X2.14	Connector, mixer, heating circuit 2 (X2.14.1 Mixer OPEN/X2.14.2 Mixer CLOSE)			

# INSTALLATION Specification

## 17.3 Sample installation



ENGLISH

D0000080569

## 17.4 Energy consumption data

Product datasheet: DHW cylinder to Regulation (EU) No 812/2013 (S.I. 2019 No. 539 / Programme 2)

		HSBC 300 cool
		203801
Manufacturer		STIEBEL ELTRON
Supplier's model identifier		HSBC 300 cool
Energy efficiency class		B
Standby losses S	W	61
Cylinder capacity V	l	291

## 17.5 Data table

		HSBC 300 cool
		203801
<b>Hydraulic data</b>		
Nominal capacity, DHW cylinder	l	270
Nominal capacity, buffer cylinder	l	100
Surface area, heat exchanger	m <sup>2</sup>	3.20
Capacity, heat exchanger	l	21
External available pressure differential, circulation pump, heat pump at 1.0 m <sup>3</sup> /h	hPa	656
External available pressure differential, circulation pump, heat pump at 1.5 m <sup>3</sup> /h	hPa	527
External available pressure differential, circulation pump, heat pump at 2.0 m <sup>3</sup> /h	hPa	210
External available pressure differential, circulation pump, heating circuit 1 at 1.0 m <sup>3</sup> /h	hPa	725
External available pressure differential, circulation pump, heating circuit 1 at 1.5 m <sup>3</sup> /h	hPa	663
External available pressure differential, circulation pump, heating circuit 1 at 2.0 m <sup>3</sup> /h	hPa	444
External available pressure differential, circulation pump, heating circuit 2 (optional) at 1.0 m <sup>3</sup> /h	hPa	665
External available pressure differential, circulation pump, heating circuit 2 (optional) at 1.5 m <sup>3</sup> /h	hPa	518
External available pressure differential, circulation pump, heating circuit 2 (optional) at 2.0 m <sup>3</sup> /h	hPa	189

		HSBC 300 cool
<b>Application limits</b>		
Max. permissible pressure, DHW cylinder	MPa	1.00
Test pressure, DHW cylinder	MPa	1.50
Max. flow rate	l/min	25
Max. permissible pressure, buffer cylinder	MPa	0.30
Test pressure, buffer cylinder	MPa	0.45
Max. permissible temperature	°C	85
Max. permissible temperature, primary side	°C	75
<b>Heating water quality requirements</b>		
Water hardness	°dH	≤3
pH value (with aluminium fittings)		8.0-8.5
pH value (without aluminium fittings)		8.0-10.0
Conductivity (softening)	µS/cm	<1000
Conductivity (desalination)	µS/cm	20-100
Chloride	mg/l	<30
Oxygen 8-12 weeks after filling (softening)	mg/l	<0.02
Oxygen 8-12 weeks after filling (desalination)	mg/l	<0.1
<b>Power consumption</b>		
Max. power consumption, charging pump	W	60
Max. power consumption, circulation pump, heating side	W	60
<b>Energy data</b>		
Standby energy consumption/ 24 h at 65 °C	kWh	1.45
Energy efficiency class		B
<b>Electrical data</b>		
Rated voltage, control unit	V	230
Phases, control unit		1/N/PE
Control unit fuse protection	A	1 x B 16
Frequency	Hz	50
<b>Versions</b>		
IP rating		IP20
<b>Dimensions</b>		
Height	mm	1918
Width	mm	680
Depth	mm	910
Height when tilted	mm	2123
<b>Weights</b>		
Weight, full	kg	641
Weight, empty	kg	250

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# INSTALLATION Specification

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## Further details

		HSBC 300 cool
		203801
Maximum height for installation	m	2000

## 17.6 Accessories

### Pipe assembly RBS-SBC

		RBS-SBC
		238827
Connections		
Cold water connection	mm	22
DHW connection	mm	22
Connection, DHW circulation	mm	12
Versions		
Suitable for	...SBC 300 cool / plus and 300 L cool / L plus	

### Pump assembly HSBC 3-HKM

		HSBC 3-HKM
		238825
Connections		
Connection, heating circuit	mm	22

## 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.