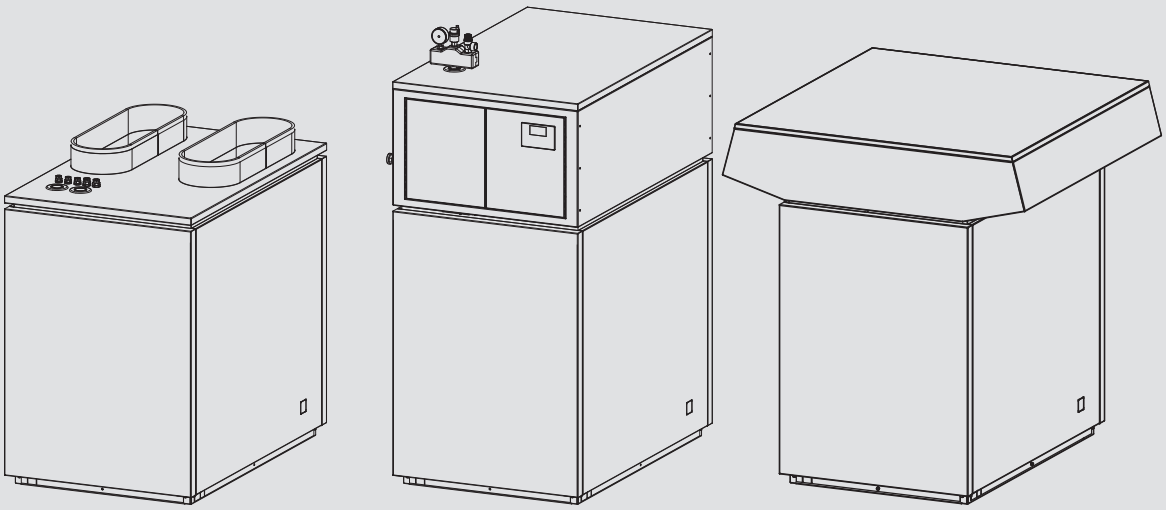
OPERATION AND INSTALLATION

Air-water heat pump

- » WPL 19 I
- » WPL 19 IK
- » WPL 19 A
- » WPL 24 I
- » WPL 24 IK
- » WPL 24 A



STIEBEL ELTRON

CONTENTS

SPECIAL INFORMATION

- The appliance may be used by children aged 8 and older 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 potential risks. Children must never play with the appliance. Children must never clean the appliance or perform user maintenance unless they are supervised.
- The connection to the power supply must be in the form of a permanent connection. Ensure the appliance can be separated from the power supply by an isolator that disconnects all poles with at least 3 mm contact separation.
- Maintain the minimum clearances to ensure trouble-free operation of the appliance and facilitate maintenance work.
- 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 current condition of the system), and maintenance by a qualified contractor if required (to return the system to its original condition).
- Following isolation from the mains supply, parts of the appliance may remain live for up to 20 minutes. This is because the capacitors on the inverter still have to discharge.
- Never interrupt the heat pump power supply, even outside of the heating season. Otherwise, system frost protection is not guaranteed.
- The heat pump manager automatically switches the heat pump to summer or winter mode.
- If the heat pump is completely switched off and there is a risk of frost, drain the system on the water side.

OPERATION

1. General information

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

1.1 Relevant documents

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

1.2 Safety instructions

1.2.1 Structure of safety instructions

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

1.2.2 Symbols, type of risk

Symbol	Type of risk
	Injury
	Electrocution

1.2.3 Keywords

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

1.3 Other symbols in this documentation

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

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

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

1.4 Information on the appliance

Symbol	Meaning
	Inlet / intake
	Drain / outlet
	Central heating

1.5 Units of measurement

Note
All measurements are given in mm unless stated otherwise.

1.6 Standardised output data

Information on determining and interpreting the specified standardised output data.

1.6.1 EN 14511

The output data specifically mentioned in texts, 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 match 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.

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

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

The appliance is designed for central heating within the application limits listed in the specification.

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

Any other use beyond that described shall be deemed inappropriate. Observation of these instructions and of the 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 are permitted to carry out electrical work and the installation of the heating circuit.
- The qualified contractor is responsible for adherence to all applicable regulations during installation and commissioning.
- The appliance should only be operated once it is fully installed and all safety equipment has been fitted.
- Protect the appliance from dust and dirt during building work.

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. Children must never clean the appliance or perform user maintenance unless they are supervised.

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

2.3 Test symbols

See type plate on the appliance.

3. Appliance description

3.1 Minimum software versions

The following minimum software versions are necessary for operation of the heat pump:

- WPM 3: 390.10
- FES: 417.04
- IWS: 3 9307A

3.2 Properties

The appliance is an air-water heat pump that operates as a heating heat pump. The appliance extracts heat from the outdoor air at a low temperature level and transfers it to the heating water at a higher temperature level. The heating water can be heated up to a flow temperature of 65 °C.

The appliance is suitable for indoor or outdoor installation, depending on the heat pump series.

The appliance is equipped with an electric emergency/booster heater (DHC). If the dual mode point is undershot in mono mode operation, the electric emergency/booster heater is activated to safeguard heating operation and the provision of high DHW temperatures. If the same thing happens in mono energetic operation, the electric emergency/booster heater is activated as a booster heater.

Additional features

- Suitable for underfloor and radiator heating systems
- Low temperature heating systems are preferred
- Still extracts heat from the outdoor air at –20 °C outside temperature
- Corrosion-protected, external casing parts made from galvanised sheet steel plus stove-enamelled finish
- Comprises all components and safety equipment required for operation
- Filled with non-combustible safety refrigerant

Note
To control the heating system, you will need the WPM heat pump manager.

WPL 19 IK | WPL 24 IK

The heating circuit pump and a 3-way valve for changeover between the heating circuit and the DHW circuit are part of the function module. To heat DHW, the heating water that has been heated by the heat pump is pumped through an indirect coil in the DHW cylinder, where it transfers its energy to the DHW.

The function module and heat pump are regulated by an integral, weather-compensated return temperature controller (WPM heat pump manager).

3.3 Function

Heat is extracted from the outdoor air via the heat exchanger (evaporator) on the air side. The refrigerant evaporates and is compressed by a compressor. This process requires electrical energy.

The refrigerant is then at a higher temperature level and transfers the heat extracted from the air to the heating system via an additional heat exchanger (condenser). The refrigerant then expands and the cycle begins again.

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

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

Material losses
In dual mode operation, return water from the second heat generator may flow through the heat pump. Please note that the return temperature must be no higher than 65 °C.

4. Settings

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

▶ Observe the instructions for the heat pump manager.

5. Maintenance and care

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

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

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

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

▶ Every month, check that the condensate drain is working correctly (visual inspection). When doing so, check for water collecting below or next to the appliance. See chapter "Troubleshooting".

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

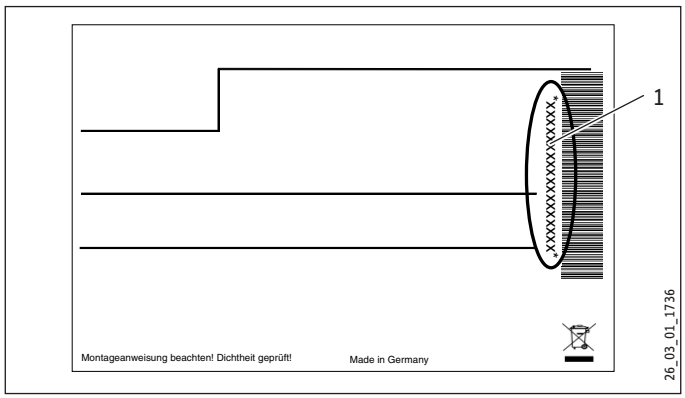
6. Troubleshooting

Fault	Cause	Remedy
There is no hot water or the heating system remains cold.	No power at the appliance.	Check the fuses/MCBs in your distribution board. Replace the fuses/reset the MCBs if required. Notify your qualified contractor if the fuses/MCBs blow/trip again.
Water is leaking from the appliance.	The condensate drain may be blocked.	Call your qualified contractor to have the condensate drain cleaned out.
Indoor installation: Condensate is collecting on the outside of the appliance or on the air hoses.	The drying out phase of the building is not yet complete.	This condensate should no longer form on the appliance after the house is approx. two years old, providing the room is sufficiently well ventilated and dehumidified.
	The relative humidity in the air is high (≥60 %).	A change in weather conditions should no longer cause condensation to form on the appliance.
	The appliance is sited in a damp room. Damp rooms are those where humidity in the air is high. They may, for example, be used for drying laundry.	Ensure that the room is adequately ventilated and dehumidified. If necessary, hang your laundry in a different room. Use a vented tumble dryer. Please note that condenser tumble dryers do not reduce the level of humidity in the air.
	The air hoses are incorrectly fitted or poorly sealed. Cold air is escaping.	Check that the air hoses are correctly fitted and sealed. If necessary, contact your qualified contractor.
Outdoor installation: Condensate is collecting on the outside of the appliance.	The heat pump is extracting 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, it is not unusual for water to drip from the appliance onto the floor.

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

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 provides additional frost protection for the heating water pipes. The integral frost protection circuit starts the heating circulation pump in the heat pump circuit automatically at +8 °C condenser temperature, and in doing so ensures circulation in all water-filled sections.

The heat pump starts automatically when the temperature in the heat pump circuit drops below +5 °C.

8.1 Standard delivery

The casing parts for the appliance are delivered in a separate packing unit.

8.1.1 WPL 19 I | WPL 24 I

- Type plate

Casing parts for indoor installation

- Front panel
- Back panel
- Side casing
- Cover - indoor installation

Connection accessories

- Connecting hoses

8.1.2 WPL 19 IK | WPL 24 IK

- Type plate
- Compact function module WPIC

Casing parts for indoor installation

- Front panel
- Back panel
- Side casing

Connection accessories

- Connecting hoses

8.1.3 WPL 19 A | WPL 24 A

- Type plate

Casing parts for outdoor installation

- Front panel
- Back panel
- Side casing
- Cover - outdoor installation
- Duct silencer KSD 1 (WPL 19 A dB, WPL 24 A dB only)

Connection accessories

- Connecting hoses

8.2 Required accessories

8.2.1 WPL 19 I | WPL 24 I | WPL 19 A | WPL 24 A

- Heat pump manager WPM

8.3 Additional accessories

8.3.1 WPL 19 I | WPL 24 I | WPL 19 IK | WPL 24 IK

- Air hose LSWP 560-4 S
- Hose connection panel 560
- Wall outlet AWG 560 H-SR
- Wall outlet AWG 560 H-GL
- Wall outlet AWG 560 V-SR
- Wall outlet AWG 560 V-GL
- Wall outlet AWG 560 L
- Wall outlet AWG 600 L
- Remote control for FE7 heating systems
- Condensate pump PK 10
- Water softening fitting HZEA
- Internet Service Gateway ISG
- Mixer module MSMW

8.3.2 WPL 19 A | WPL 24 A

- Remote control for FE7 heating systems
- Water softening fitting HZEA
- Internet Service Gateway ISG
- Mixer module MSMW
- Duct silencer KSD 1
- Ribbon heater HZB-1
- Ribbon heater HZB-2

9. Information on operating and installation instructions

Note
For clarity, the various heat pumps are covered in separate chapters. The chapters are named after the heat pumps to which they refer.
The following chapters apply to all heat pumps.
▶ Go to the relevant chapter for details of how to install the relevant heat pump.

10. WPL 19 I | WPL 24 I

10.1 Safety

Operation of the appliance in buildings with combustion equipment

As the appliance can produce negative pressure in the installation room, we recommend using a tightly sealing door between the installation room and the living space for operation with combustion equipment.

If, due to its use, the installation room is connected to the extract air system, you must also allow for a supply air valve in the installation room in this particular case to prevent any further increase in the negative pressure in the installation room. The negative pressure created by the appliance in the installation room is heavily influenced by the pressure drop in the outdoor air line. For this reason, the outdoor air line in particular should be as short as possible.

10.2 Preparations

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

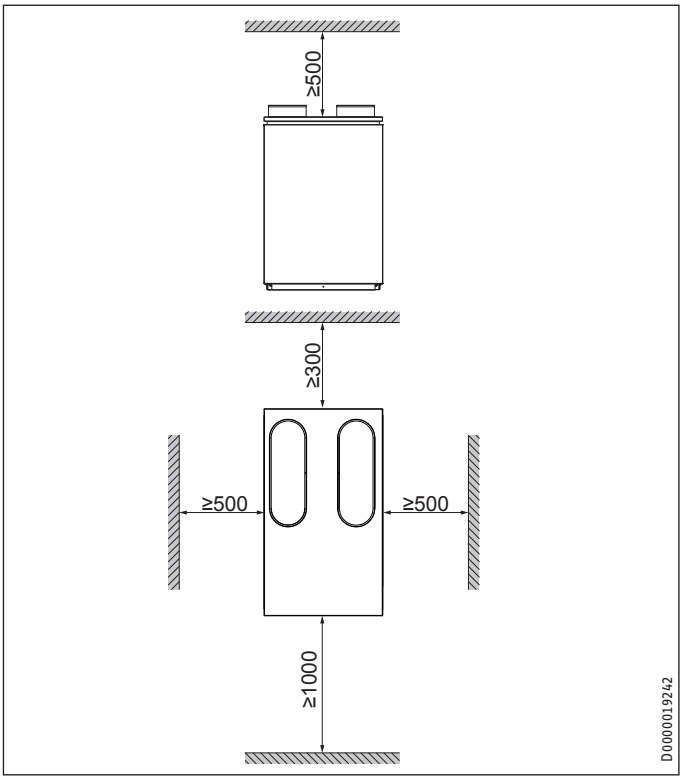
10.2.1 Sound emissions

Take the following information into account when selecting the installation location.

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

- Never install on joists.
▶ Ensure that the entire appliance frame is in full contact with the substrate. Uneven substrates can increase sound emissions.
▶ Never install the appliance directly below or next to a living room or bedroom.
▶ Never direct the air intake and discharge apertures in external walls towards neighbouring windows or living rooms/ bedrooms.
▶ Protect pipe outlets through walls and ceilings with anti-vibration insulation.

10.2.2 Minimum clearances



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

10.2.3 Preparing the installation location

▶ See chapter "Sound emissions".

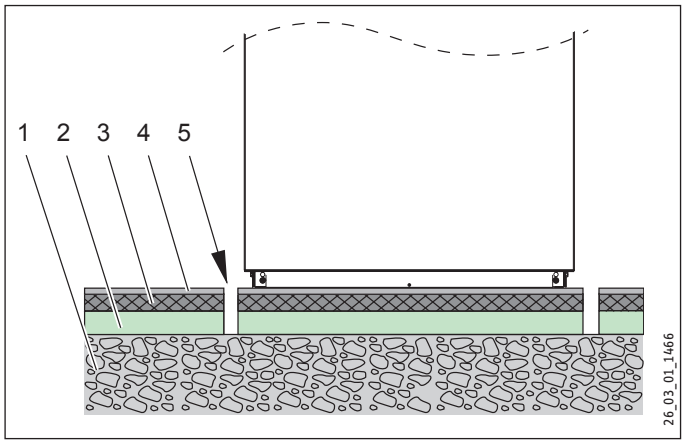
Material losses
The installation room floor must be water resistant. During appliance operation, the outdoor air releases up to 50 l of condensate per day. If humidity levels in the installation room are high, condensate may form on the appliance and air hoses. If the condensate drain is not installed correctly or if maintenance is not carried out properly, water may escape. We recommend installing a drain in the installation room floor.

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

- Free from the risk of frost
- The room must not be subject to a risk of explosions arising from dust, gases or vapours.
- If installing the appliance in a plant room together with other heating equipment, ensure that the operation of other heating equipment will not be compromised.
- Minimum volume of the installation room. The minimum volume of the installation room is assured if the minimum clearances are observed.
- Load bearing floor (for the weight of the appliance, see chapter "Specification / Data table").

▶ Ensure that the appliance is accessible from all sides.
▶ Ensure that the substrate is level, even, solid and permanent.

- For installation on floating screeds, make provisions for quiet heat pump operation.
- Isolate the installation surface around the heat pump by means of a recess. After completing the installation, seal the recess with a waterproof, sound insulating material, such as silicone.



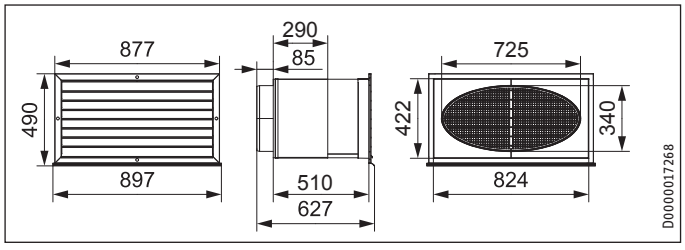
1 Concrete base
2 Impact sound insulation
3 Floating screed
4 Floor covering
5 Recess

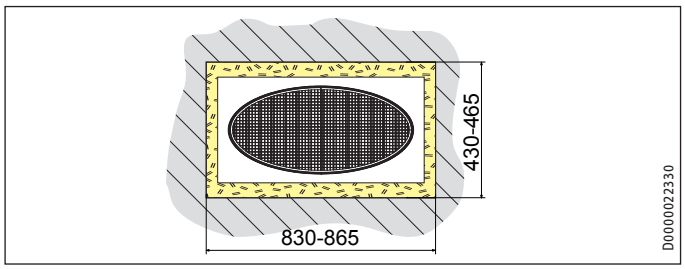
Note
For details of the dimensions and positions of the air intake and discharge apertures, as well as the outlets for hydraulic lines and power cables, see chapter "Specification / Dimensions and connections".

10.2.4 Wall outlet

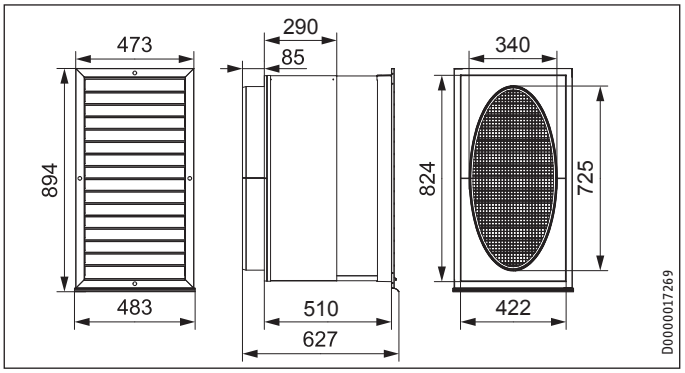
- To route through the wall, use our wall outlet (see the chapter "Appliance description / Other accessories").

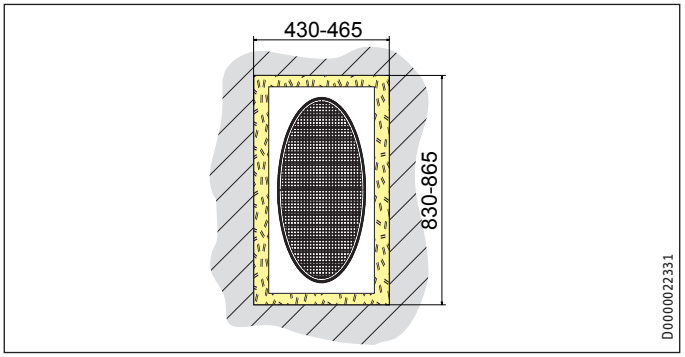
AWG 560 H
Through an exterior wall to the outdoors with a horizontal wall outlet



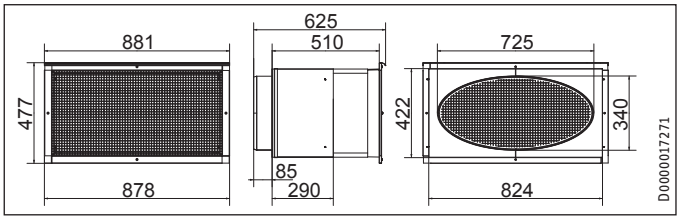


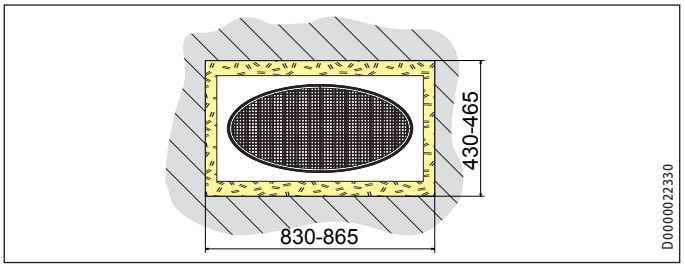
AWG 560 V
Through an exterior wall to the outdoors with a vertical wall outlet



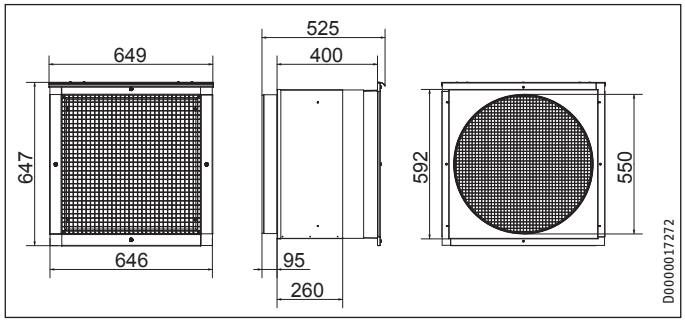


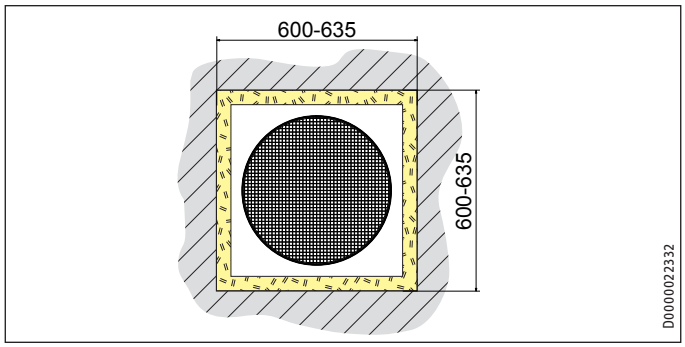
AWG 560 L
Through a cellar wall into a shaft with a horizontal wall outlet



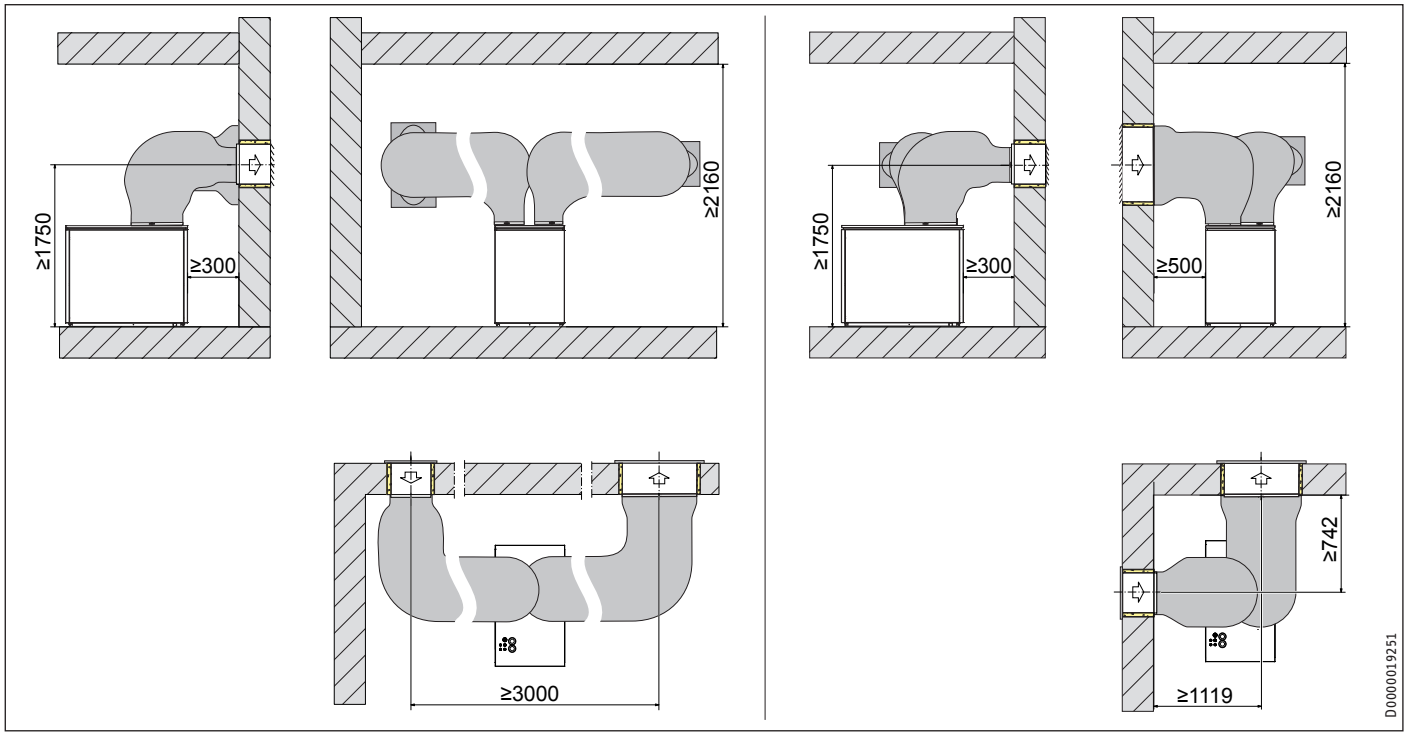


AWG 600 L
Through a cellar wall into a shaft with a wall outlet

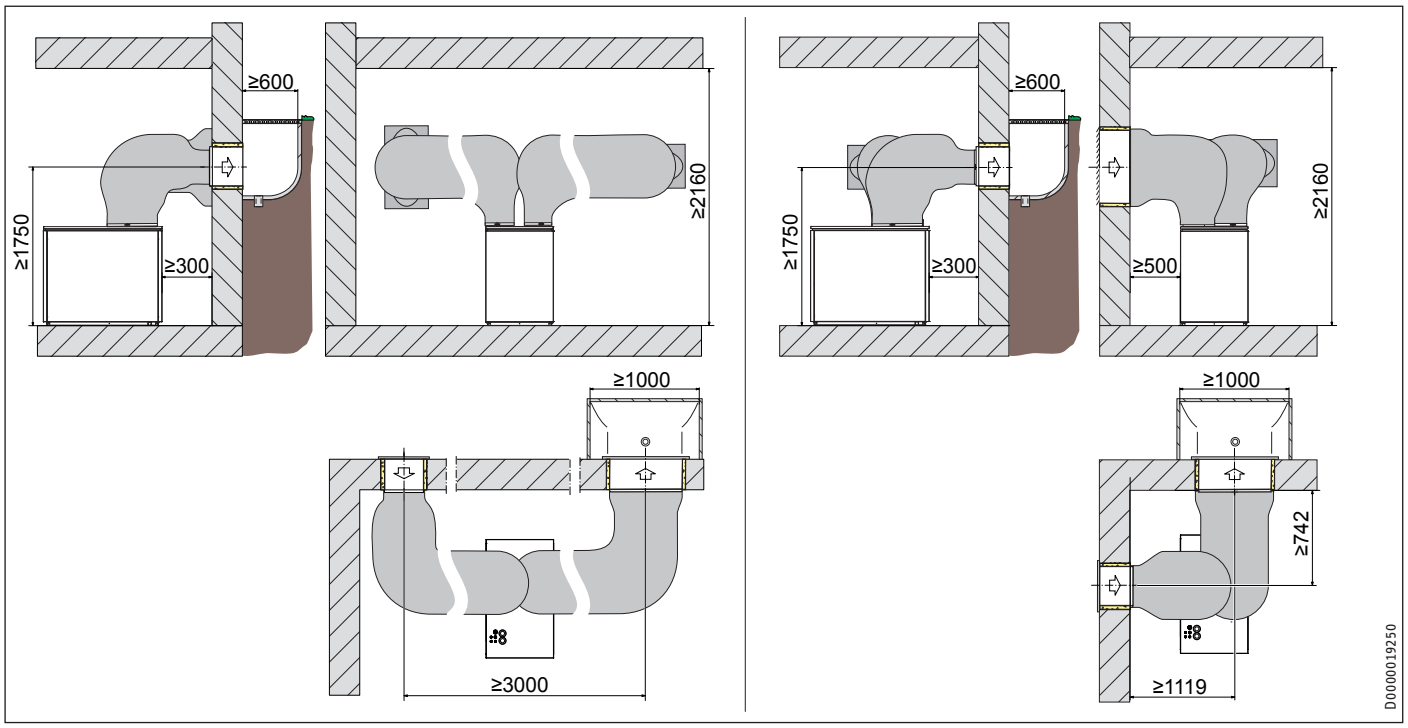




Air routing without a duct: Through an outside wall | Through two outside walls around a corner



Air routing with a duct: Through an outside wall | Through two outside walls around a corner



Insulating the brickwork

Ensure that no cold bridges form between the brickwork and the hose connection panels or wall outlets. Cold bridges can result in condensation forming in the brickwork.

► If necessary, fit suitable insulation between the brickwork and the hose connection panels or wall outlets.

10.2.5 Electrical installation

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

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

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

► For wiring, use cable with the relevant cross-sections. Observe the applicable national and regional regulations.

MCB/fuse rating	Assignment	Cable cross-section
16 A		2.5 mm² 1.5 mm² for only two live wires and routing on a wall or in an electrical conduit on a wall.
3x B 16 A	Compressor (3-phase)	2.5 mm²
3x B 16 A	Electric emergency/booster heater	2.5 mm²
1x B 16 A	Control unit	1.5 mm²

The electrical data can be found in the chapter "Specification". The bus requires a J-Y (St) 2x2x0.8 mm² cable.

Material losses
Provide separate fuses/MCBs for the three power circuits, i.e. those of the appliance, the control unit and the electric emergency/booster heater.

Material losses
Provide common fuses/MCBs for the appliance control cable and the heat pump manager.

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

10.2.6 Buffer cylinder

The installation of a buffer cylinder is essential to ensure trouble-free operation of the appliance.

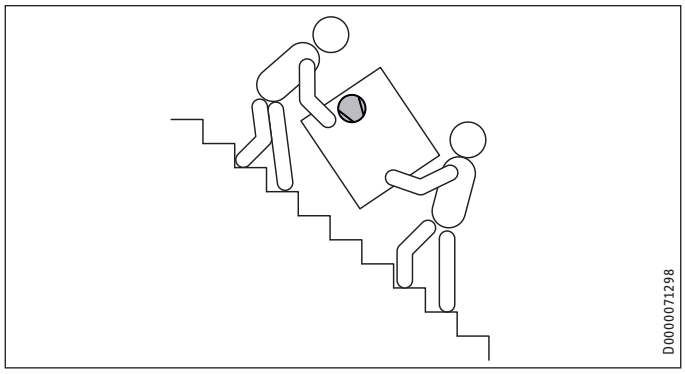
The buffer cylinder provides hydraulic separation of the volume flows in the heat pump circuit and heating circuit, and also serves as an energy source for defrosting.

10.3 Installation

10.3.1 Transport

▶ When transporting the appliance, be aware of its centre of gravity.
- The centre of gravity is in the area where the compressor is located.
- Lifting slings for handling the standard appliance can be hooked in anywhere on the bottom of the frame.

▶ Protect the appliance against heavy impact during transport.



- If the appliance needs to be tilted during transport, this must only be for a short time and it must only be titled on one of its longitudinal sides. When transporting the appliance, ensure the compressor is on the upper appliance side.
- The longer the appliance is tilted, the greater the distribution of refrigerant oil inside the system.

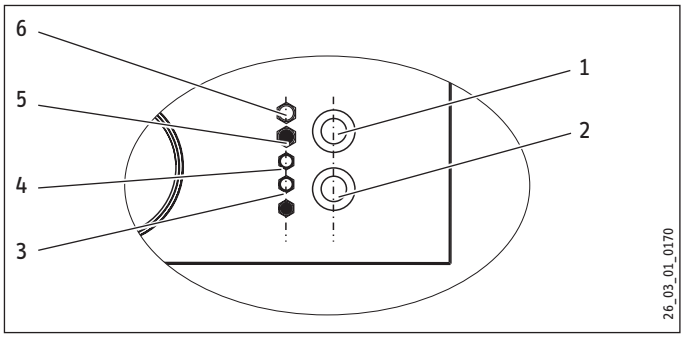
▶ Wait approximately 30 minutes before starting the appliance after it has been tilted.

10.3.2 Siting

Note
Two screws are available at the top of the appliance frame to secure the cover.
At the bottom of the frame, one screw is available on each side to secure the side panels.

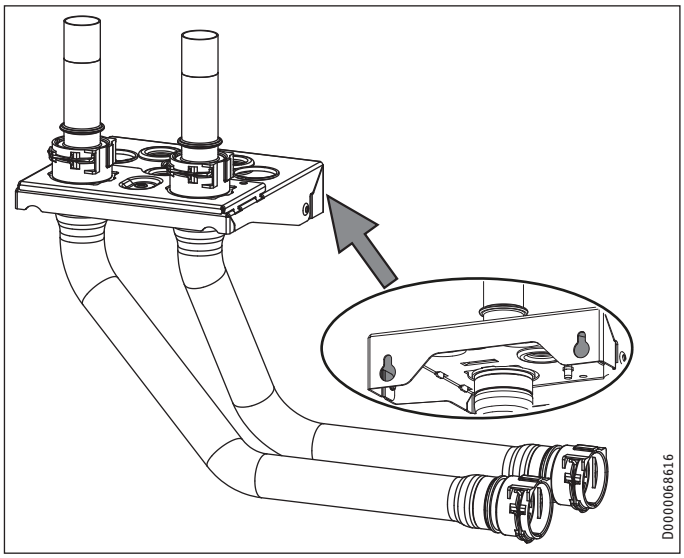
▶ Undo the six screws from the appliance frame and keep them safe.
▶ Position the standard appliance on the prepared substrate.
▶ Observe minimum clearances (see chapter "Preparations / Minimum clearances").
▶ Place the cover on the appliance and secure with two screws.

10.3.3 Flow and return connection

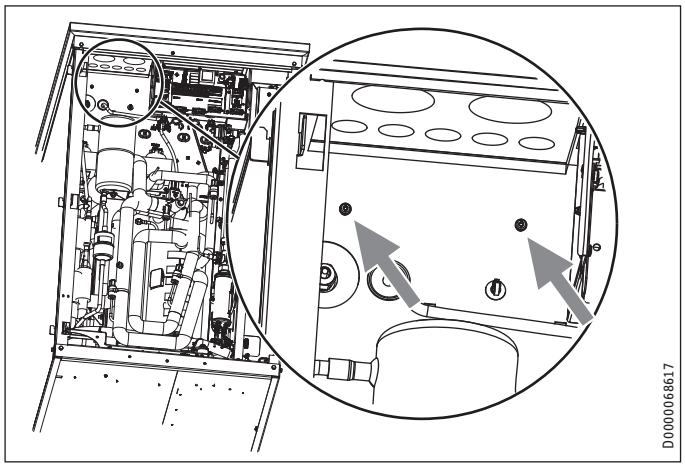


1 "Heating flow" connection
2 "Heating return" connection
3 Bus cable
4 Control cable
5 Electric emergency/booster heater power cable
6 Appliance power cable

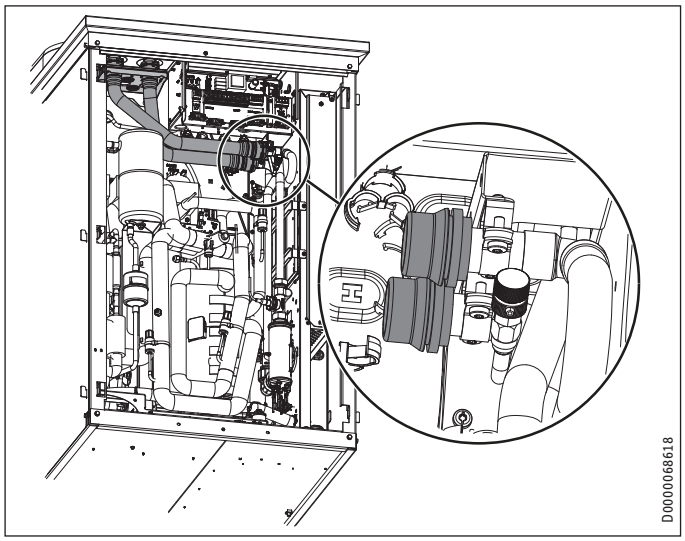
▶ In the cover, cut out the pipe outlets to precisely fit the "heating flow" and "heating return" connections. Ensure that the heat pump seal remains intact and that no splashing water can enter the machine.



▶ Guide the assembly connections through the aperture.



- ▶ Hook the assembly onto the existing screws.
- ▶ Tighten the screws.



- ▶ Fit the pressure hoses in the appliance to the "heating circuit flow" and "heating circuit return" connections.
- ▶ Check for leaks.

10.4 Fitting the push-fit connectors

Note
Never install the push-fit connectors in the DHW line. Only install the push-fit connectors in the heating circuit.

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

Material losses
To ensure the push-fit connector is held securely, pipes with a surface hardness > 225 HV (e.g. stainless steel) must have a groove.

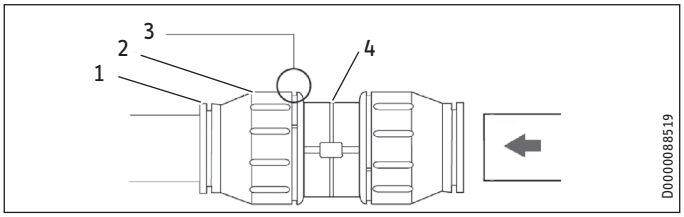
- ▶ Using a pipe cutter, cut a groove (depth approx. 0.1 mm) at a defined distance from the end of the pipe.
  - Pipe diameter 22 mm: 17±0.5 mm
  - Pipe diameter 28 mm: 27.5±0.5 mm

How the push-fit connectors work

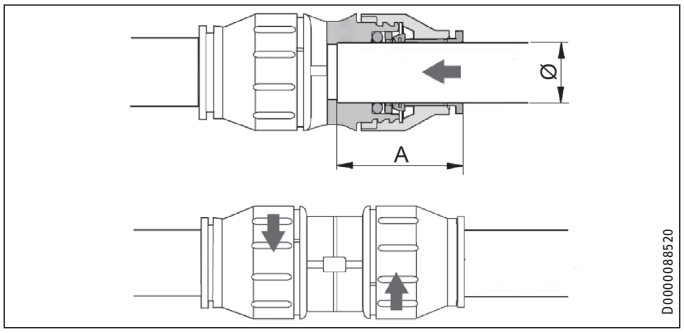
The push-fit connectors are equipped with a retainer with stainless steel serrations and an O-ring for sealing. In addition, the push-fit connectors are equipped with the "twist and lock" function. Simply turning the screw cap by hand will secure the pipe in the connector and push the O-ring against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

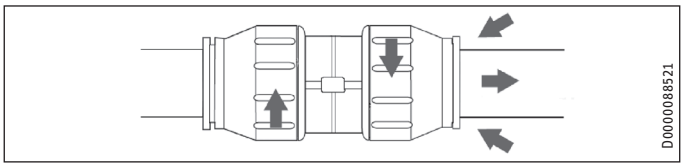
- ▶ Always use a pipe cutter to trim pipes.

- ▶ 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 a 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.



10.4.1 Heating water connection

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

- ▶ Before connecting the heat pump, flush the pipework thoroughly with suitable water. Foreign bodies, such as welding pearls, rust, sand or sealant can impair the operational reliability of the heat pump.
- ▶ Connect the heat pump on the heating water side. Check for tightness.
- ▶ Ensure that the heating flow and return are connected correctly.
- ▶ Provide thermal insulation in accordance with applicable regulations.
- ▶ When sizing the heating circuit, observe the internal pressure differential (see chapter "Specification / Data table").

The pressure hoses acting as anti-vibration insulation for direct connection of the on-site pipework are integrated inside the appliance.

10.4.2 Oxygen diffusion

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

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

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

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

10.4.3 Second heat generator

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

10.4.4 Filling the heating system

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

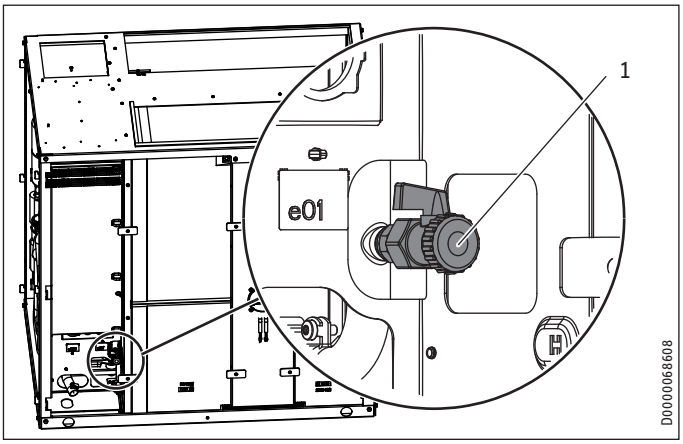
Material losses
To avoid damage as a result of scaling, it may be necessary to soften or desalinate the fill water. The fill water limits specified in chapter "Specification / Data table" must always be observed.

- ▶ Recheck these limits 8-12 weeks after commissioning, every time the system is topped up and during the annual service.

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

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

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

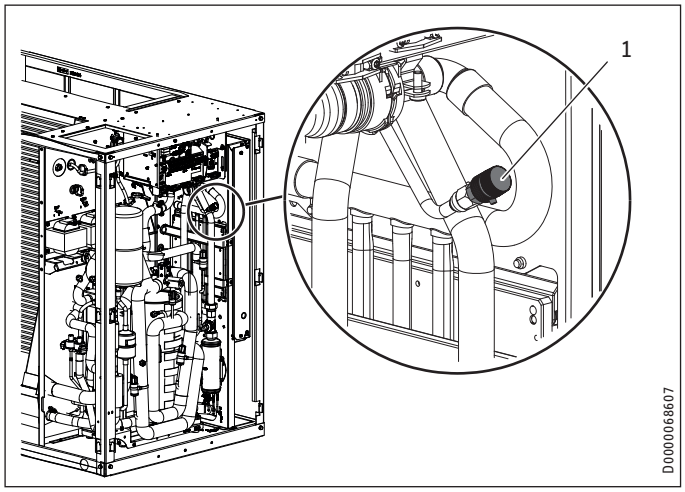


1 Drain

- ▶ Fill the heating system via the drain.
- ▶ After filling the heating system, check the connections for leaks.

10.4.5 Venting the heating system

▶ Vent the pipework carefully.



1 Air vent valve

▶ Vent the heat pump via the air vent valve.

10.4.6 Minimum flow rate

Note
The table applies if individual room control is installed.

Sizing recommendation for the underfloor heating system in the lead room:

	Minimum flow rate	Minimum water content of the buffer cylinder or the open circuits	Composite pipework 16 x 2 mm / clearance 10 cm		Composite pipework 20 x 2.25 mm / clearance 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 19 I	1000	46	-	-	-	-
WPL 24 I	1000	57	-	-	-	-

	Buffer cylinder always required	Recommended buffer cylinder volume, underfloor heating system	Recommended buffer cylinder volume, radiators	Activate the integral emergency/booster heater
WPL 19 I	yes	100	100	yes
WPL 24 I	yes	100	100	yes

The minimum flow rate and the defrost energy must always be assured (see chapter “Specification / Data table”).

You can set the flow rate in heat pump mode. In order to do this, firstly make the following settings:

▶ 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.

Minimum flow rate for systems with a buffer cylinder

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

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”.

In combination with the HM hydraulic module

Note
You can enable spread control in combination with the HM hydraulic module (see menu “COMMISSIONING / HEATING / SPREAD CONTROL).
When spread control is disabled, the heat pump regulates to the set pump rate and a fixed flow rate.

The flow rate is set automatically via the self-regulating system (see menu “COMMISSIONING / HEATING / SPREAD CONTROL / STANDBY PUMP RATE” in the heat pump manager).

In heat pump mode a fixed spread between the heat pump flow and return is set (see menu “COMMISSIONING / HEATING / SPREAD CONTROL” in the heat pump manager).

Checking the flow rate

▶ Set parameter STANDBY PUMP RATE to 100 %.

▶ Set buffer operation to OFF.

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

▶ Compare the value with the specification (see chapter “Specification / Data table”).

- ▶ If the specified flow rate is not met, take suitable measures to achieve the flow rate.
- ▶ Reset the parameters to their original values.

10.4.7 Circulation pump

When configuring the heat pump system, follow the stated maximum available external pressure differentials (see the chapter "Specification / Data table").

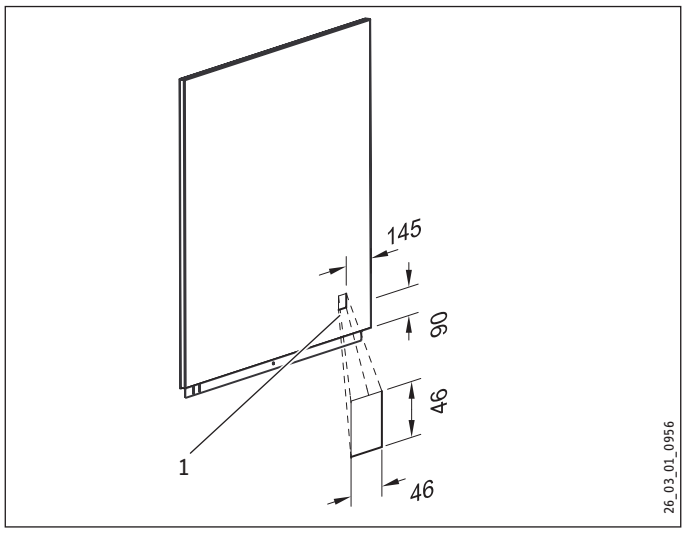
Material losses
When adjusting the circulation pump, you must ensure that the minimum flow rate is guaranteed in all operating points (see the chapter "Specification / Data table" in the heat pump operating and installation instructions).

10.4.8 Condensate drain

A condensate drain hose is fitted to the defrost pan to enable the condensate to drain off. The condensate drain hose is delivered inside the refrigeration unit. You can route the condensate drain hose to the left through the knock-out "condensate drain outlet" (see chapter "Specification / Dimensions and connections") or to the bottom right through the floor plate and out of the appliance.

- ▶ Ensure the condensate drain hose is not kinked.
- ▶ Ensure the condensate drain hose is not inserted airtight into a drain. Unhindered drainage requires an ingress of air.
- ▶ Route the hose with a continuous fall.
- ▶ Use a suitable condensate pump if there is insufficient fall. Take the building characteristics into account.
- ▶ If using a condensate pump, ensure that it delivers at least 6 l/min.

Condensate drain towards the left

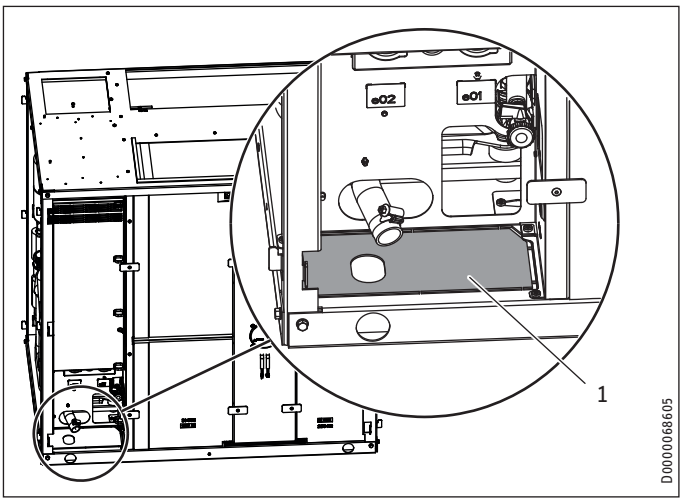


1 Knock-out "condensate drain outlet"

- ▶ Use pliers to remove the knock-out "condensate drain outlet" from the left-hand side panel.
- ▶ Route the condensate drain hose to the left and out of the appliance.
- ▶ Route the condensate into a drain.

Condensate drain towards the right

If a bottom drain is provided, you can drain the condensate downwards through the "supply line entry" in the bottom of the appliance.



1 Knock-out "supply line entry"

- ▶ Remove the knock-out "supply line entry" in the bottom of the appliance.
- ▶ Route the condensate drain hose diagonally through the knock-out aperture "supply line entry".
- ▶ Secure the condensate drain hose to ensure it does not slip out of place.
- ▶ Route the condensate into the drain in the floor.

10.4.9 Checking the draining of condensate

After routing the condensate drain hose, check that the condensate can drain correctly. Proceed as follows:

- ▶ Pour water onto the evaporator, which will then flow into the defrost pan. Observe the maximum condensate drain capacity of 6 l/min.
- ▶ Check whether the water is draining off through the condensate drain hose.

10.4.10 High limit safety cut-out for underfloor heating systems

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

10.5 Power supply

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

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

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

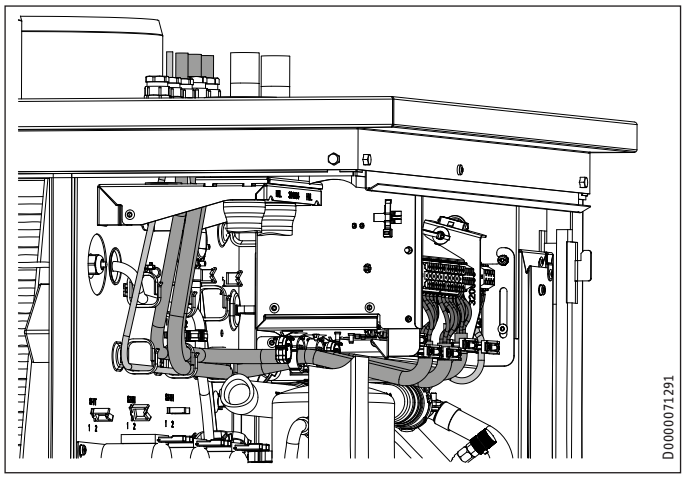
Note
Observe the instructions for the heat pump manager.

The terminals are located in the appliance control panel.

- ▶ See chapter "Preparations / Electrical installation".
- ▶ Use appropriate electrical cables in accordance with local regulations.
- ▶ Check that the strain relief fittings are working as intended.
- ▶ Connect the heating circulation pump to the heat pump manager in accordance with the technical guides.

10.5.1 Connecting electrical cables

Note
In the appliance there are cable clamps that you can use for routing the electric cables.

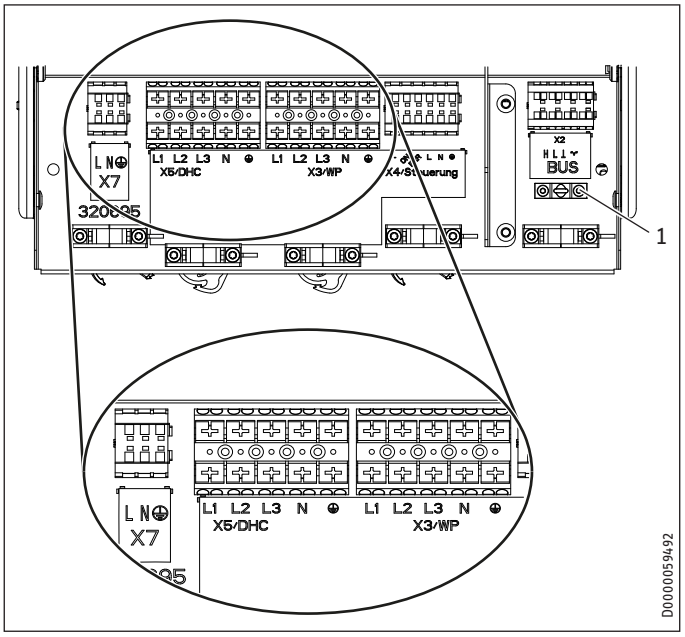


- ▶ Route the electric cables as shown in the illustration.

10.5.2 Heat pump connection

Terminal assignment

- ▶ Connect the cables in line with the following diagrams.
- ▶ Then check that the strain relief fittings are working as intended.
- ▶ Put the sheath on the earth clip.



1 Earth clip

X2	Safety extra low voltage (BUS)	
	H	Bus high
	L	BUS Low
	⊥	Bus earth
	" + "	bus " + "
X3	Heat pump power supply (WP)	
	L1, L2, L3, N, PE	
X4	Control unit ("Steuerung")	
	ON	Compressor output signal
	ERR	Output signal fault
	L, N, PE	Power supply
X5	Electric emergency/booster heater power supply (DHC)	
	L1, L2, L3, N, PE	
X7	Connection for ribbon heater	
	L, N, PE	

Note
As soon as the compressor is running, the "ON" output issues a 230 V signal.

Note
The "ERR" output issues a 230 V signal for every appliance fault. The output passes the signal on to the external controller.
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.

10.5.3 Emergency/booster heater power supply

Terminal X5: Appliance and electric emergency/booster heater (DHC)

▶ Connect the electric emergency/booster heater to terminal X5 if you want to utilise the following appliance functions:

Appliance function	Effect of the electric emergency/booster heater
Mono energetic operation	If the dual mode point is undershot, the electric emergency/booster heater safeguards 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. 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. When the heat-up program has ended, the electric emergency/booster heater can be disconnected if it is not required for the appliance operation. Please note that during the heat-up program, emergency mode is not available.
Pasteurisation control	The electric emergency/booster heater starts automatically when pasteurisation control is active, in order to regularly heat the DHW to 60 °C to protect it against the growth of legionella bacteria.

10.5.4 Internet Service Gateway ISG

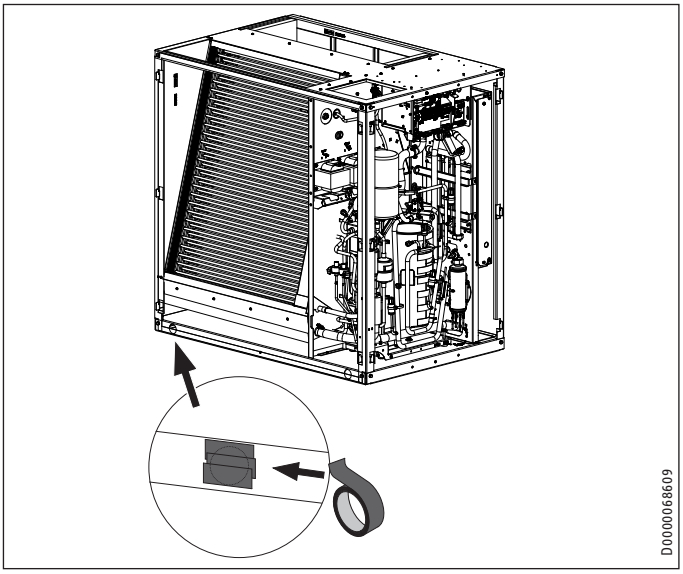
The Internet Service Gateway ISG enables you to operate the heat pump in your local home network and via the internet whilst you are away from home. Connect the Internet Service Gateway to terminals H, L, and ⊥ to terminal strip X2 of the appliance.

The ISG is not supplied with power by the heat pump.

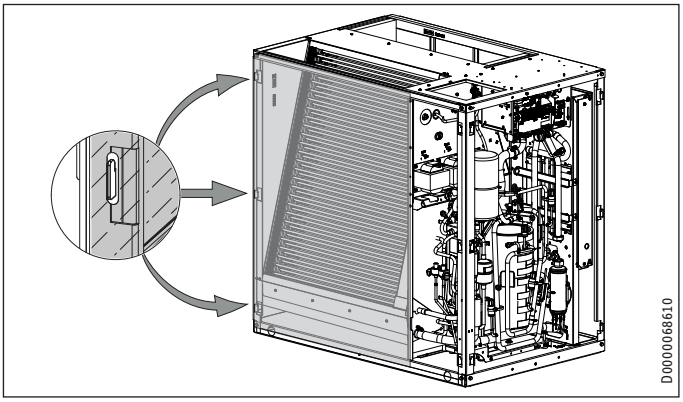
▶ Also observe the ISG operating instructions.

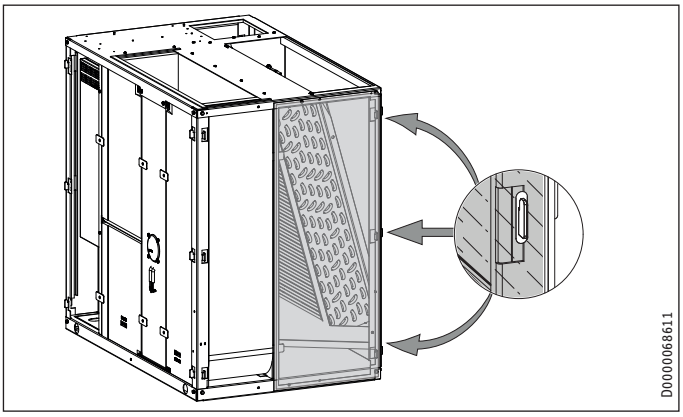
10.6 Sealing the appliance

Note
If you want to prevent negative pressure in the installation room, you can seal the appliance by affixing the plastic screen provided.

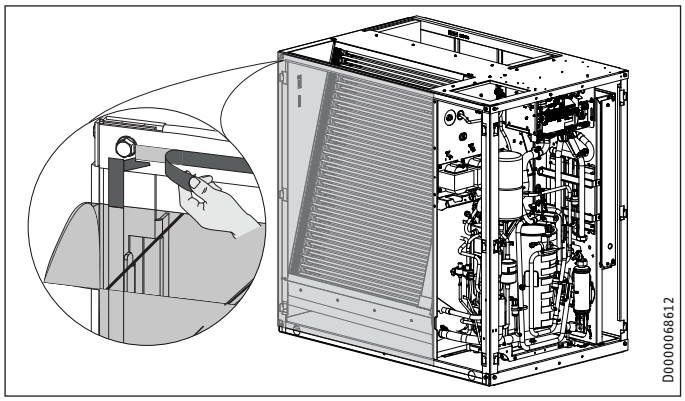


▶ Apply fabric tape to seal the hole at the bottom of the frame on the left-hand side. The fabric tape is supplied with the air hose.



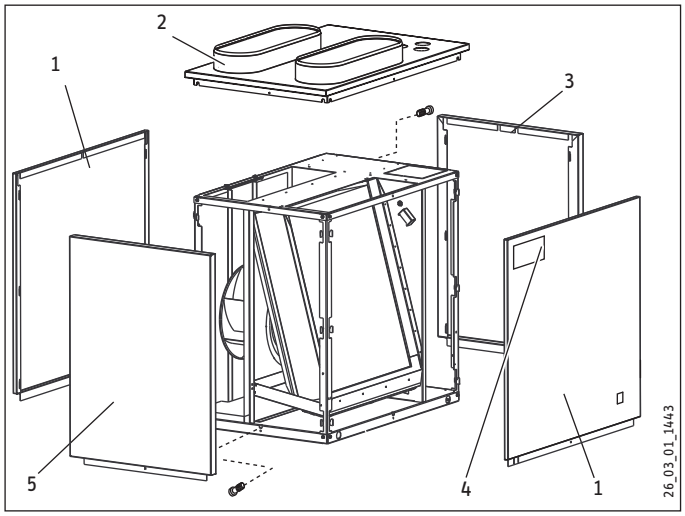


▶ Hang the plastic screen with the pre-cut holes onto the hooks on the appliance.



- ▶ Remove the backing from the adhesive strips on the frame and on the plastic screen.
- ▶ Secure the plastic screen by pressing it onto the standard appliance.
- ▶ Seal the gaps around the hooks with fabric tape.

10.7 Fitting casing parts



1 Side panel
2 Cover
3 Front panel
4 Type plate
5 Back panel

- ▶ Hook the side panels, front panel and back panel into the hooks on the standard appliance. Secure the casing parts with one screw each.
- ▶ Affix the type plate supplied in a highly visible position on one of the appliance casing panels.

10.8 Fitting the air hoses

Note
In the case of heat pumps installed indoors, if a blower door test to EN 13829 is to be carried out, apply Procedure B (checking the building envelope). This involves closing or sealing off all apertures which are purposely provided in the building envelope before the air hoses are installed.

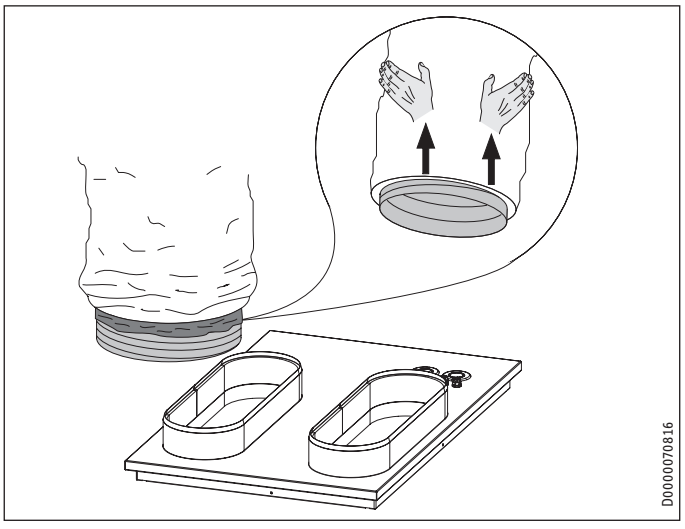
- ▶ Seal off the wall outlets for the blower door test.

Note
Air hoses guide the intake air to the appliance and route the discharge air from the appliance outdoors. They are highly flexible, thermally insulated and self-extinguishing in case of fire.

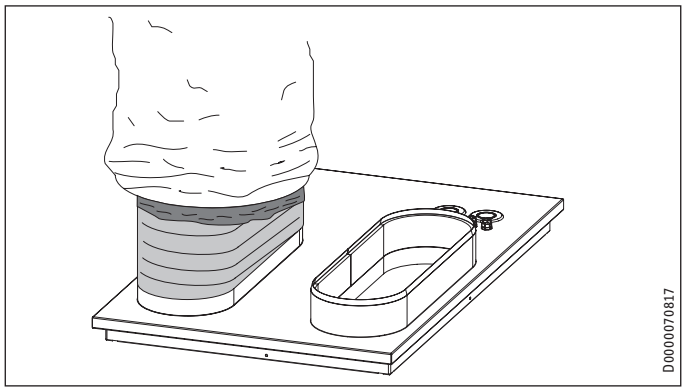
Note
If the air hoses are shortened, the sound power level at the air inlet / outlet rises.

The air hose can be extended by turning the hose spirals into each other. There must be an overlap of approx. 30 cm. The total length of hoses on the air intake and discharge sides must not exceed 8 m.

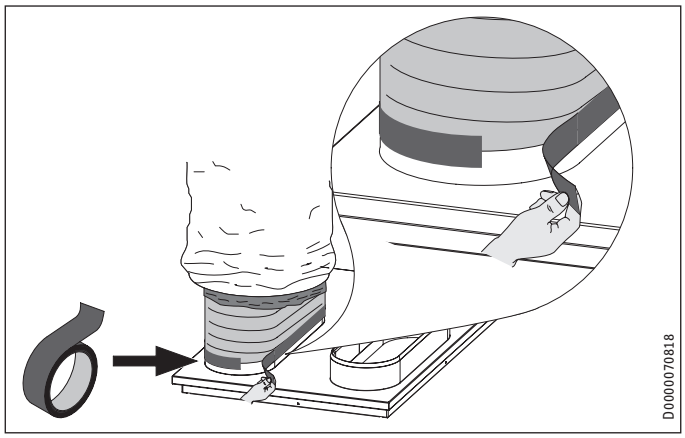
- ▶ Never incorporate more than four 90° bends. The radius of the bends must be at least 600 mm, relative to the centre of the hose.
- ▶ Cut to size using a sharp knife. The wire spirals can be cut using wire cutters.
- ▶ Secure the air hose at intervals of approx. every 1 m to prevent it from sagging.
- ▶ Manipulate the ends of the air hoses to fit the oval shape of the connectors on the cover and the hose connection panels or wall outlets.



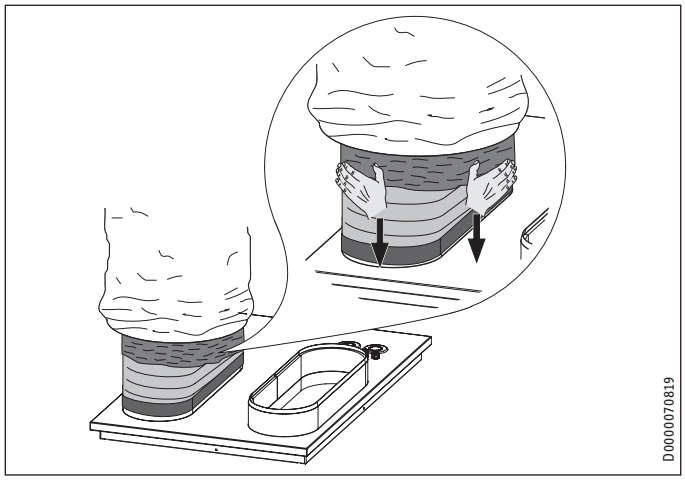
- ▶ Firstly, push the outer hose slightly upwards.



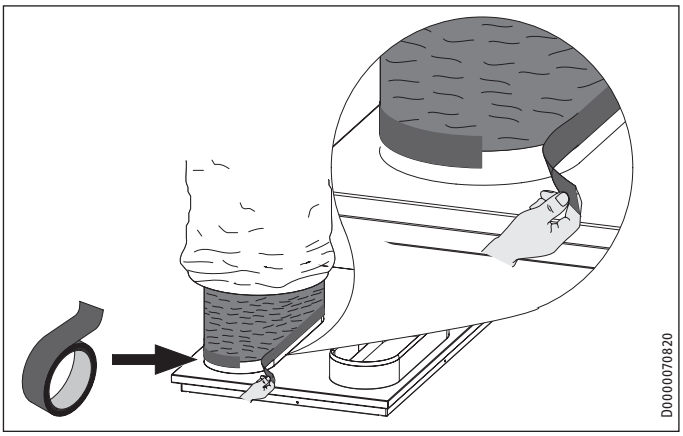
▶ Push the inner hose halfway down the connector.



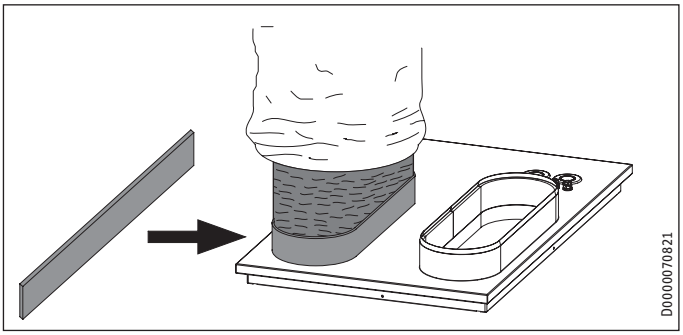
▶ Seal the inner hose by affixing it to the connector using the fabric tape provided.



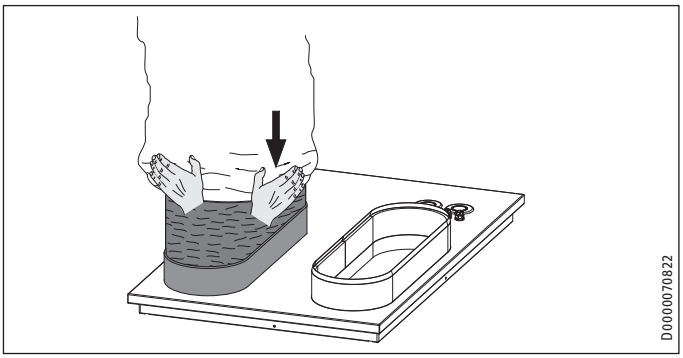
▶ With the sound-optimised hoses (LSWP 560-4 S), pull the sheet over the connector.



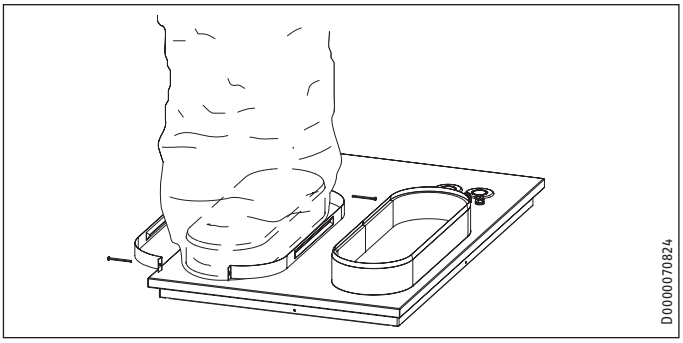
▶ With the sound-optimised hoses (LSWP 560-4 S), seal the sheet to the connector using the fabric tape provided.



▶ Place the sealing strip provided around the connector.



▶ Pull the outer hose over the connector.



▶ Secure the hose using the oval hose clip provided and seal it.

11. WPL 19 IK | WPL 24 IK

11.1 Safety

Operation of the appliance in buildings with combustion equipment

As the appliance can produce negative pressure in the installation room, we recommend using a tightly sealing door between the installation room and the living space for operation with combustion equipment.

If, due to its use, the installation room is connected to the extract air system, you must also allow for a supply air valve in the installation room in this particular case to prevent any further increase in the negative pressure in the installation room. The negative pressure created by the appliance in the installation room is heavily influenced by the pressure drop in the outdoor air line. For this reason, the outdoor air line in particular should be as short as possible.

11.2 Preparations

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

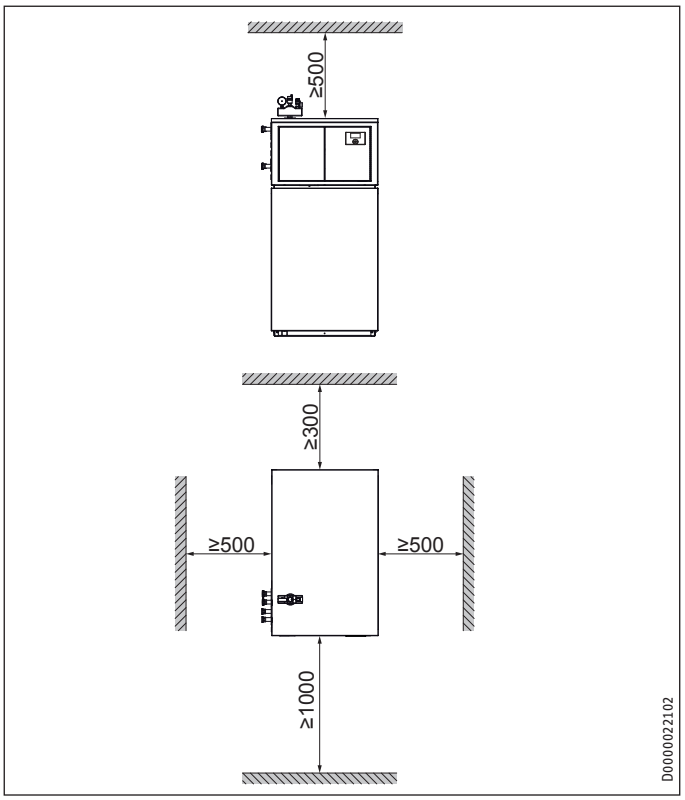
11.2.1 Sound emissions

Take the following information into account when selecting the installation location.

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

- Never install on joists.
- ▶ Ensure that the entire appliance frame is in full contact with the substrate. Uneven substrates can increase sound emissions.
- ▶ Never install the appliance directly below or next to a living room or bedroom.
- ▶ Never direct the air intake and discharge apertures in external walls towards neighbouring windows or living rooms/ bedrooms.
- ▶ Protect pipe outlets through walls and ceilings with anti-vibration insulation.

11.2.2 Minimum clearances



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

11.2.3 Preparing the installation location

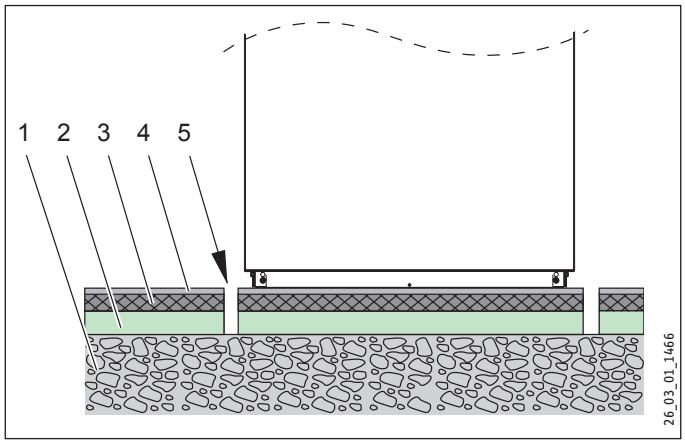
- ▶ See chapter "Sound emissions".

Material losses
The installation room floor must be water resistant. During appliance operation, the outdoor air releases up to 50 l of condensate per day. If humidity levels in the installation room are high, condensate may form on the appliance and air hoses. If the condensate drain is not installed correctly or if maintenance is not carried out properly, water may escape. We recommend installing a drain in the installation room floor.

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

- Free from the risk of frost
- The room must not be subject to a risk of explosions arising from dust, gases or vapours.
- If installing the appliance in a plant room together with other heating equipment, ensure that the operation of other heating equipment will not be compromised.
- Minimum volume of the installation room. The minimum volume of the installation room is assured if the minimum clearances are observed.
- Load bearing floor (for the weight of the appliance, see chapter "Specification / Data table").
- ▶ Ensure that the appliance is accessible from all sides.
- ▶ Ensure that the substrate is level, even, solid and permanent.

- ▶ For installation on floating screeds, make provisions for quiet heat pump operation.
- ▶ Isolate the installation surface around the heat pump by means of a recess. After completing the installation, seal the recess with a waterproof, sound insulating material, such as silicone.



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

Note
For details of the dimensions and positions of the air intake and discharge apertures, as well as the outlets for hydraulic lines and power cables, see chapter "Specification / Dimensions and connections".

11.2.4 Wall outlet

- ▶ See chapter "Wall outlet" in function module WPIC operating and installation instructions.

11.2.5 Electrical installation

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

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

Note
The specified voltage must match the mains voltage.
- ▶ Observe the type plate.

- ▶ For wiring, use cable with the relevant cross-sections. Observe the applicable national and regional regulations.

MCB/fuse rating	Assignment	Cable cross-section
16 A		2.5 mm² 1.5 mm² for only two live wires and routing on a wall or in an electrical conduit on a wall.
3x B 16 A	Compressor (3-phase)	2.5 mm²
3x B 16 A	Electric emergency/booster heater	2.5 mm²
1x B 16 A	Control unit	1.5 mm²

The electrical data can be found in the chapter "Specification". The bus requires a J-Y (St) 2x2x0.8 mm² cable.

Material losses
Provide separate fuses/MCBs for the three power circuits, i.e. those of the appliance, the control unit and the electric emergency/booster heater.

Material losses
Provide common fuses/MCBs for the appliance control cable and the heat pump manager.

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

11.2.6 Buffer cylinder

The installation of a buffer cylinder is essential to ensure trouble-free operation of the appliance.

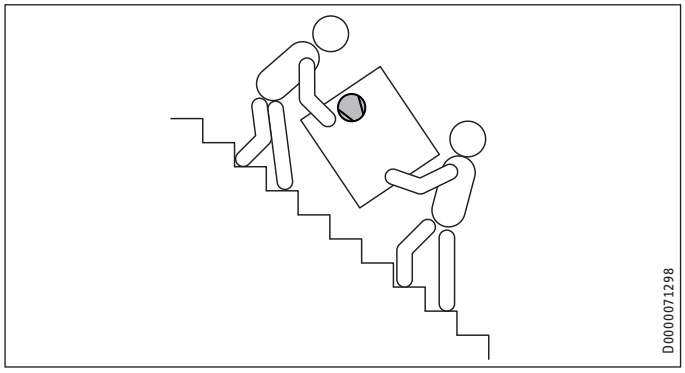
The buffer cylinder provides hydraulic separation of the volume flows in the heat pump circuit and heating circuit, and also serves as an energy source for defrosting.

11.3 Installation

11.3.1 Transport

▶ When transporting the appliance, be aware of its centre of gravity.
- The centre of gravity is in the area where the compressor is located.
- Lifting slings for handling the standard appliance can be hooked in anywhere on the bottom of the frame.

▶ Protect the appliance against heavy impact during transport.



- If the appliance needs to be tilted during transport, this must only be for a short time and it must only be titled on one of its longitudinal sides. When transporting the appliance, ensure the compressor is on the upper appliance side.
- The longer the appliance is tilted, the greater the distribution of refrigerant oil inside the system.

▶ Wait approximately 30 minutes before starting the appliance after it has been tilted.

11.3.2 Siting

Note
Two screws are available at the top of the appliance frame to secure the cover.
At the bottom of the frame, one screw is available on each side to secure the side panels.

▶ Undo the six screws from the appliance frame and keep them safe.

▶ Position the standard appliance on the prepared substrate.

▶ Observe minimum clearances (see chapter "Preparations / Minimum clearances").

▶ Install the function module on the standard appliance (see chapter "WPL IK / Installation" in function module WPIC operating and installation instructions).

11.3.3 Flow and return connection

▶ Make the hydraulic connections for the appliance (see chapter "WPL IK / Hydraulic connection" and "WPL IK / Safety valve" in function module WPIC operating and installation instructions).

11.3.4 Heating water connection

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

▶ Before connecting the heat pump, flush the pipework thoroughly with suitable water. Foreign bodies, such as welding pearls, rust, sand or sealant can impair the operational reliability of the heat pump.

▶ Connect the heat pump on the heating water side. Check for tightness.

▶ Ensure that the heating flow and return are connected correctly.

▶ Provide thermal insulation in accordance with applicable regulations.

▶ When sizing the heating circuit, observe the internal pressure differential (see chapter "Specification / Data table").

The pressure hoses acting as anti-vibration insulation for direct connection of the on-site pipework are integrated inside the appliance.

11.3.5 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.

11.3.6 Second heat generator

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

11.3.7 Filling the heating system

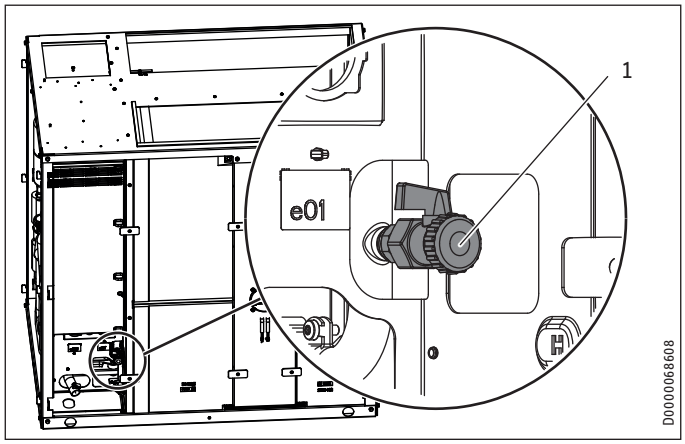
Carry out a fill water analysis before filling the system. This analysis may, for example, be requested by the relevant water supply utility.

Material losses
To avoid damage as a result of scaling, it may be necessary to soften or desalinate the fill water. The fill water limits specified in chapter "Specification / Data table" must always be observed.
- ▶ Recheck these limits 8-12 weeks after commissioning, every time the system is topped up and during the annual service.

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

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

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

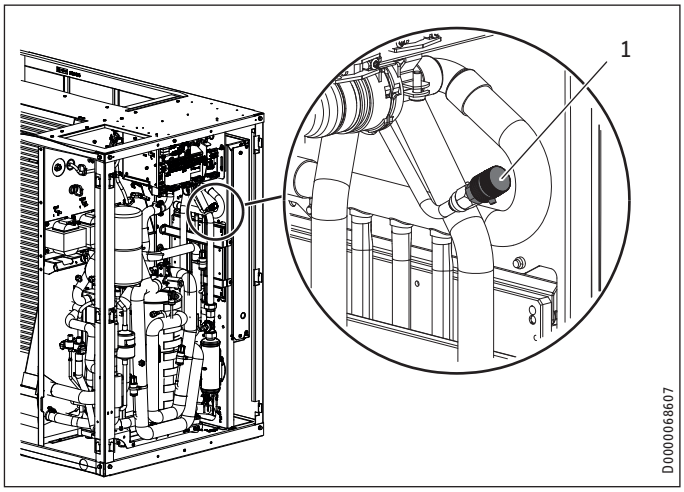


1 Drain

- ▶ Fill the heating system via the drain.
- ▶ After filling the heating system, check the connections for leaks.

11.3.8 Venting the heating system

- ▶ Vent the pipework carefully.



1 Air vent valve

- ▶ Vent the heat pump via the air vent valve.

11.3.9 Minimum flow rate

Note
The table applies if individual room control is installed.

Sizing recommendation for the underfloor heating system in the lead room:

	Minimum flow rate	Minimum water content of the buffer cylinder or the open circuits	Composite pipework 16 x 2 mm / clearance 10 cm		Composite pipework 20 x 2.25 mm / clearance 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 19 IK	1000	46	-	-	-	-
WPL 24 IK	1000	57	-	-	-	-

	Buffer cylinder always required	Recommended buffer cylinder volume, underfloor heating system	Recommended buffer cylinder volume, radiators	Activate the integral emergency/booster heater
WPL 19 IK	yes	100	100	yes
WPL 24 IK	yes	100	100	yes

The minimum flow rate and the defrost energy must always be assured (see chapter “Specification / Data table”).

You can set the flow rate in heat pump mode. In order to do this, firstly make the following settings:

- ▶ 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.

Minimum flow rate for systems with a buffer cylinder

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

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”.

In combination with the HM hydraulic module

Note
You can enable spread control in combination with the HM hydraulic module (see menu “COMMISSIONING / HEATING / SPREAD CONTROL).
When spread control is disabled, the heat pump regulates to the set pump rate and a fixed flow rate.

The flow rate is set automatically via the self-regulating system (see menu “COMMISSIONING / HEATING / SPREAD CONTROL / STANDBY PUMP RATE” in the heat pump manager).

In heat pump mode a fixed spread between the heat pump flow and return is set (see menu “COMMISSIONING / HEATING / SPREAD CONTROL” in the heat pump manager).

Checking the flow rate

- ▶ Set parameter STANDBY PUMP RATE to 100 %.
- ▶ Set buffer operation to OFF.
- ▶ The current flow rate can be called up in the menu “INFO / INFO HEAT PUMP / PROCESS DATA” under “WP WATER FLOW RATE”.
- ▶ Compare the value with the specification (see chapter “Specification / Data table”).
- ▶ If the specified flow rate is not met, take suitable measures to achieve the flow rate.
- ▶ Reset the parameters to their original values.

11.3.10 Circulation pump

When configuring the heat pump system, follow the stated maximum available external pressure differentials (see the chapter "Specification / Data table").

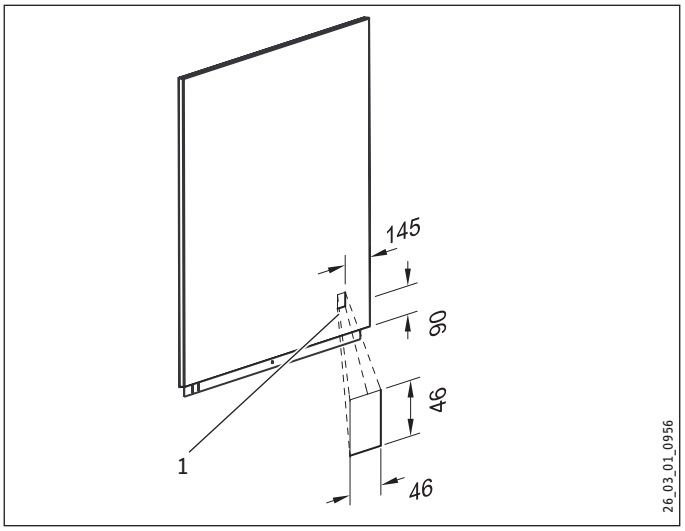
Material losses
When adjusting the circulation pump, you must ensure that the minimum flow rate is guaranteed in all operating points (see the chapter "Specification / Data table" in the heat pump operating and installation instructions).

11.3.11 Condensate drain

A condensate drain hose is fitted to the defrost pan to enable the condensate to drain off. The condensate drain hose is delivered inside the refrigeration unit. You can route the condensate drain hose to the left through the knock-out "condensate drain outlet" (see chapter "Specification / Dimensions and connections") or to the bottom right through the floor plate and out of the appliance.

- ▶ Ensure the condensate drain hose is not kinked.
- ▶ Ensure the condensate drain hose is not inserted airtight into a drain. Unhindered drainage requires an ingress of air.
- ▶ Route the hose with a continuous fall.
- ▶ Use a suitable condensate pump if there is insufficient fall. Take the building characteristics into account.
- ▶ If using a condensate pump, ensure that it delivers at least 6 l/min.

Condensate drain towards the left

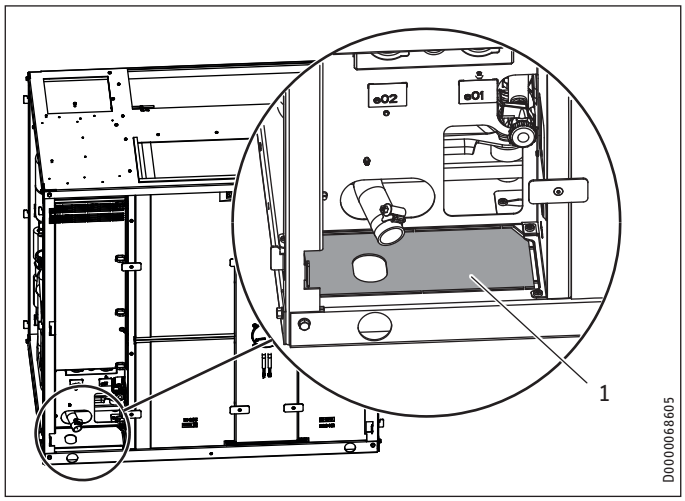


1 Knock-out "condensate drain outlet"

- ▶ Use pliers to remove the knock-out "condensate drain outlet" from the left-hand side panel.
- ▶ Route the condensate drain hose to the left and out of the appliance.
- ▶ Route the condensate into a drain.

Condensate drain towards the right

If a bottom drain is provided, you can drain the condensate downwards through the "supply line entry" in the bottom of the appliance.



1 Knock-out "supply line entry"

- ▶ Remove the knock-out "supply line entry" in the bottom of the appliance.
- ▶ Route the condensate drain hose diagonally through the knock-out aperture "supply line entry".
- ▶ Secure the condensate drain hose to ensure it does not slip out of place.
- ▶ Route the condensate into the drain in the floor.

11.3.12 Checking the draining of condensate

After routing the condensate drain hose, check that the condensate can drain correctly. Proceed as follows:

- ▶ Pour water onto the evaporator, which will then flow into the defrost pan. Observe the maximum condensate drain capacity of 6 l/min.
- ▶ Check whether the water is draining off through the condensate drain hose.

11.3.13 High limit safety cut-out for underfloor heating systems

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

11.3.14 Fitting the thermal insulation

- ▶ Follow the operating and installation instructions of function module WPM 3.

11.4 Power supply

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

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

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

Note
Observe the instructions for the heat pump manager.

The terminals are located in the appliance control panel.

- ▶ See chapter "Preparations / Electrical installation".
- ▶ Use appropriate electrical cables in accordance with local regulations.
- ▶ Check that the strain relief fittings are working as intended.
- ▶ Connect the heating circulation pump to the heat pump manager in accordance with the technical guides.

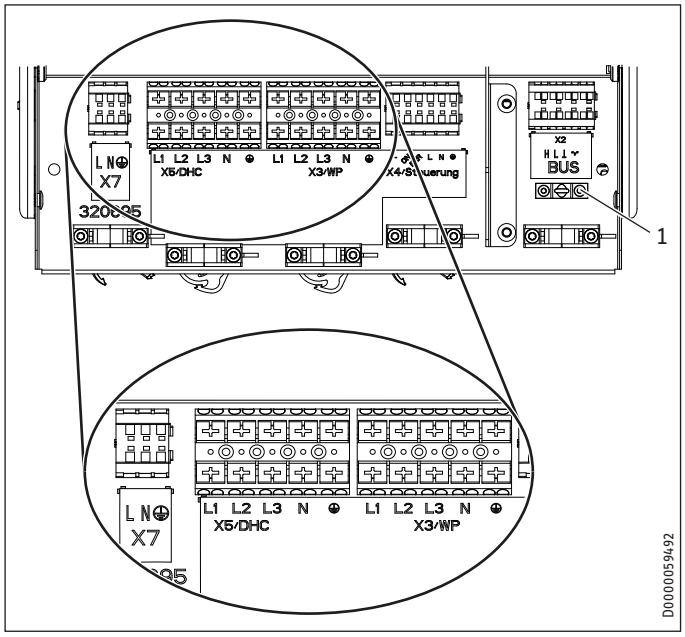
11.4.1 Connecting function module WPIC

- ▶ Make the electrical connection for the function module (see chapter "WPL IK / Electrical connection" in function module WPIC operating and installation instructions).

11.4.2 Heat pump connection

Terminal assignment

- ▶ Connect the cables in line with the following diagrams.
- ▶ Then check that the strain relief fittings are working as intended.
- ▶ Put the sheath on the earth clip.



1 Earth clip

X2	Safety extra low voltage (BUS)	
	H	Bus high
	L	BUS Low
	⊥	Bus earth
	" + "	bus " + "
X3	Heat pump power supply (WP)	
	L1, L2, L3, N, PE	
X4	Control unit ("Steuerung")	
	ON	Compressor output signal
	ERR	Output signal fault
	L, N, PE	Power supply
X5	Electric emergency/booster heater power supply (DHC)	
	L1, L2, L3, N, PE	
X7	Connection for ribbon heater	
	L, N, PE	

Note
As soon as the compressor is running, the "ON" output issues a 230 V signal.

Note
The "ERR" output issues a 230 V signal for every appliance fault. The output passes the signal on to the external controller.
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.

11.4.3 Emergency/booster heater power supply

Terminal X5: Appliance and electric emergency/booster heater (DHC)

- ▶ Connect the electric emergency/booster heater to terminal X5 if you want to utilise the following appliance functions:

Appliance function	Effect of the electric emergency/booster heater
Mono energetic operation	If the dual mode point is undershot, the electric emergency/booster heater safeguards 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. 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. When the heat-up program has ended, the electric emergency/booster heater can be disconnected if it is not required for the appliance operation. Please note that during the heat-up program, emergency mode is not available.
Pasteurisation control	The electric emergency/booster heater starts automatically when pasteurisation control is active, in order to regularly heat the DHW to 60 °C to protect it against the growth of legionella bacteria.

11.4.4 Internet Service Gateway ISG

The Internet Service Gateway ISG enables you to operate the heat pump in your local home network and via the internet whilst you are away from home. Connect the Internet Service Gateway to terminals H, L, and ⊥ to terminal strip X2 of the appliance.

The ISG is not supplied with power by the heat pump.

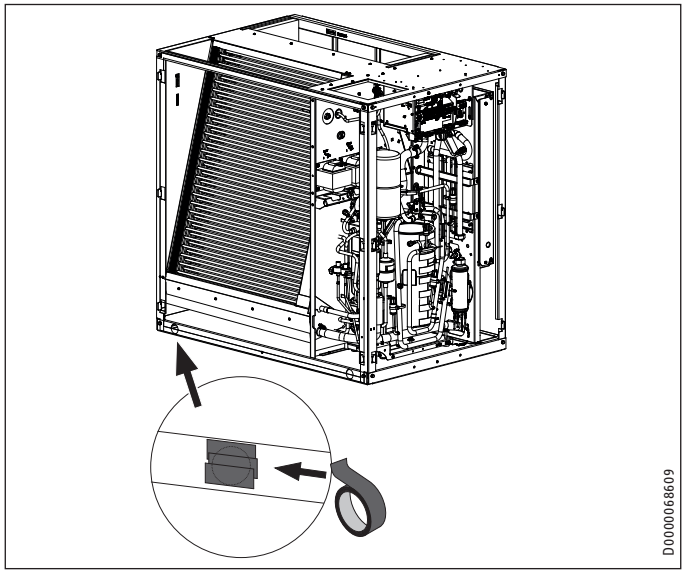
- ▶ Also observe the ISG operating instructions.

11.5 Closing the function module

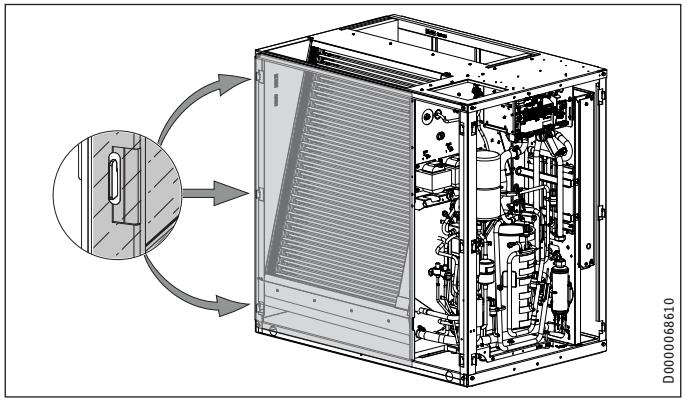
- ▶ Follow the operating and installation instructions of function module WPM 3.

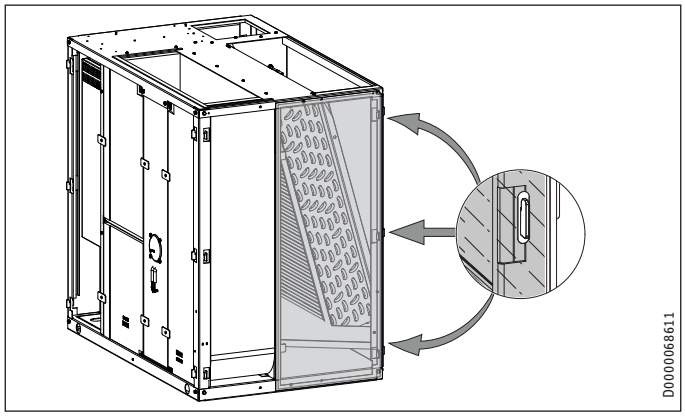
11.6 Sealing the appliance

Note
If you want to prevent negative pressure in the installation room, you can seal the appliance by affixing the plastic screen provided.

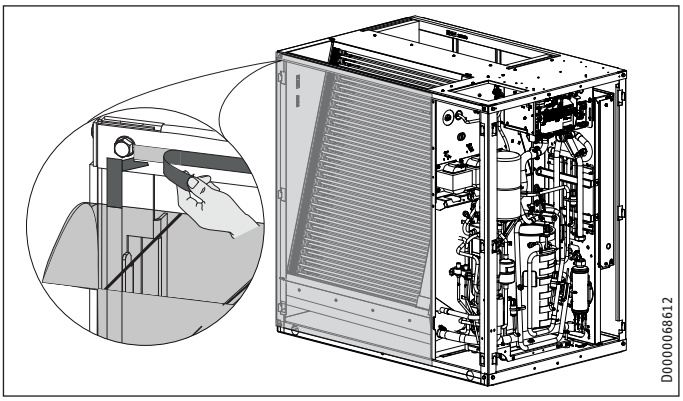


▶ Apply fabric tape to seal the hole at the bottom of the frame on the left-hand side. The fabric tape is supplied with the air hose.





▶ Hang the plastic screen with the pre-cut holes onto the hooks on the appliance.

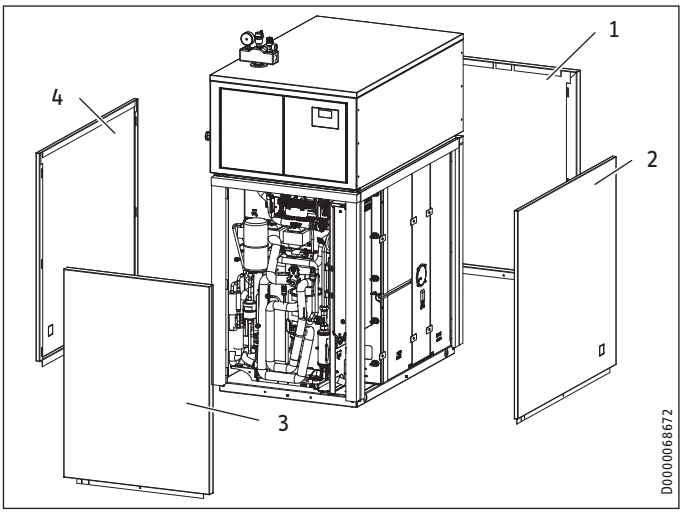


▶ Remove the backing from the adhesive strips on the frame and on the plastic screen.

▶ Secure the plastic screen by pressing it onto the standard appliance.

▶ Seal the gaps around the hooks with fabric tape.

11.7 Fitting casing parts



1 Back panel
2 Side panel
3 Front panel
4 Side panel

▶ Hook the side panels, front panel and back panel into the hooks on the standard appliance. Secure the casing parts with one screw each.

▶ Affix the type plate supplied in a highly visible position on one of the appliance casing panels.

11.8 Connecting the air hoses

▶ Follow the operating and installation instructions of function module WPM 3.

12. WPL 19 A | WPL 24 A

Note
The following heat pumps are installed in the same way.
- WPL 19 A SR, WPL 24 A SR
- WPL 19 A dB, WPL 24 A dB

12.1 Preparations

12.1.1 Sound emissions

The appliance is louder on the air intake and air discharge sides than on the two enclosed sides. Take the following information into account 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.
- Noise propagation can also be reduced through dense palisades or similar.

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

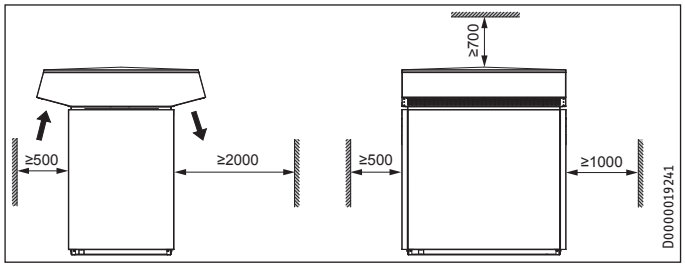
▶ Ensure that the air intake direction is the same as the dominant wind direction. Air should not be drawn in against the wind.

▶ Ensure that the air intake and air discharge are never directed towards noise-sensitive rooms of the house, e.g. bedrooms, or neighbouring houses.

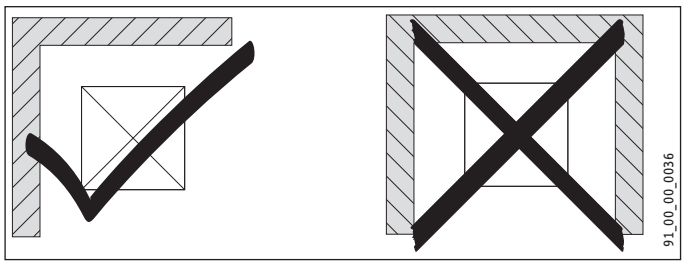
▶ Avoid installation on large, echoing floor areas, e.g. tiled floors.

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

12.1.2 Minimum clearances



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



▶ Never install the appliance in a recess. Two sides of the appliance must remain exposed.

▶ In order to prevent air "short circuits", maintain the minimum clearances in the case of surrounding structures and in particular in the case of cascades. Maintain the flow rate on the heat source side (see chapter "Specification / data table").

Material losses
Please note that both the flow of outdoor air into the appliance, and the flow of exhaust air from the appliance must be unimpeded.
If the air intake and discharge of the appliance are obstructed by surrounding objects, this may cause a thermal short circuit.

Material losses
The air flow rate through the appliance must not fall below the minimum level. If the air flow rate falls below the minimum level, trouble-free operation of the appliance is not guaranteed.
▶ Ensure that the minimum air flow rate is maintained (see chapter "Specification / Data table").

If the air discharge side of the appliance faces the wall of a house, the cool air from the air discharge may cause condensate to form on this wall.

12.1.3 Preparation of the installation site

WARNING Injury
The discharged cold air can cause condensation to be formed in the vicinity of the air discharge.
▶ Ensure that no risk of slipping due to wet conditions or ice formation occurs on adjacent footpaths and driveways at low temperatures.

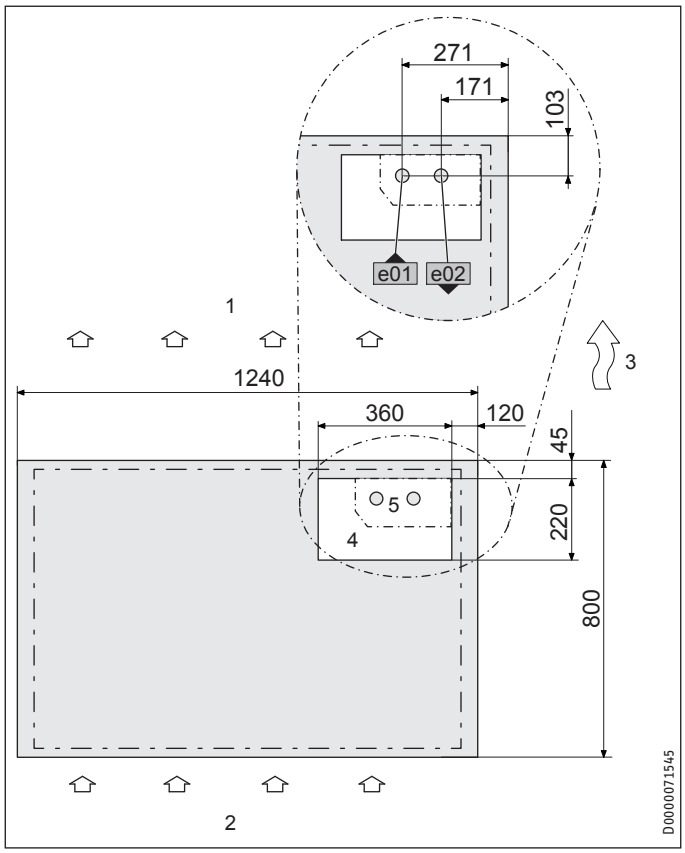
▶ See chapter "Sound emissions".

▶ Ensure that the appliance is accessible from all sides.

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

▶ Provide a recess (space) in the base to enable supply pipes/ cables to be routed into the appliance from below.

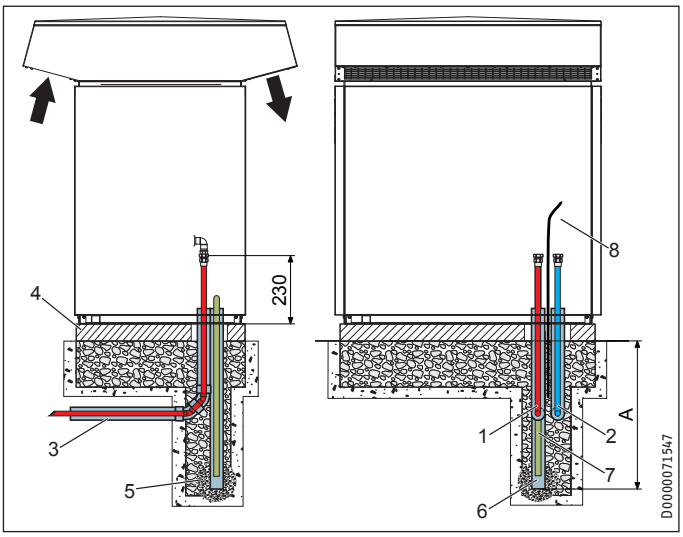
Foundations with recess



1 Air discharge side
2 Air intake side
3 Main wind direction
4 Recess for supply lines
5 Recess in the appliance base
e01 "Heating flow" connection
e02 "Heating return" connection

▶ Ensure that the foundations offer an adequate recess. The recess can be enlarged towards the centre of the appliance if necessary.

Example: Routing pipes in the base



A Depth of frost line
1 Heating circuit flow
2 Heating circuit return
3 Conduit for supply lines/cables
4 Foundation
5 Gravel bed
6 Drainage pipe
7 Condensate drain hose
8 Electrical cables/leads

Observe the following information:

- Also protect all supply lines/cables against humidity, damage and UV radiation by means of a conduit.
- Allow the conduits for the supply lines to protrude slightly above the foundations. Ensure that no water can enter the conduits.
- To facilitate connection to the appliance, we recommend using flexible supply pipes/cables in the case of outdoor installation.
- The electric cables must be at least 2 m long.
- Only use weather-resistant cables.
- Protect the heating circuit flow and return lines against frost with sufficient thermal insulation. Provide thermal insulation in accordance with applicable regulations.

▶ Protect all pipe fixings and external wall ducts with anti-vibration insulation.

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

12.1.4 Electrical installation

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

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

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

▶ For wiring, use cable with the relevant cross-sections. Observe the applicable national and regional regulations.

MCB/fuse rating	Assignment	Cable cross-section
16 A		2.5 mm² 1.5 mm² for only two live wires and routing on a wall or in an electrical conduit on a wall.
3x B 16 A	Compressor (3-phase)	2.5 mm²
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The electrical data can be found in the chapter "Specification". The bus requires a J-Y (St) 2x2x0.8 mm² cable.

Material losses
Provide separate fuses/MCBs for the three power circuits, i.e. those of the appliance, the control unit and the electric emergency/booster heater.

Material losses
Provide common fuses/MCBs for the appliance control cable and the heat pump manager.

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

12.1.5 Buffer cylinder

The installation of a buffer cylinder is essential to ensure trouble-free operation of the appliance.

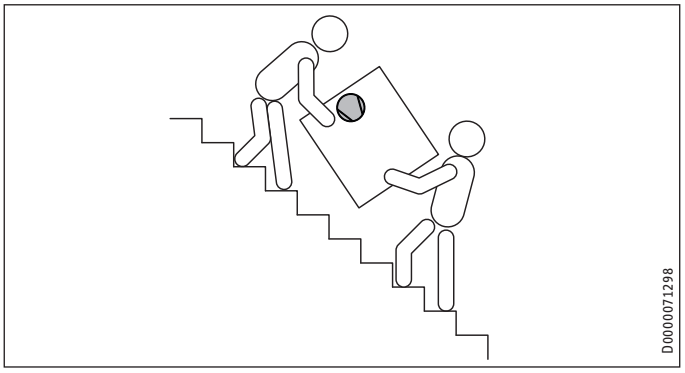
The buffer cylinder provides hydraulic separation of the volume flows in the heat pump circuit and heating circuit, and also serves as an energy source for defrosting.

12.2 Installation

12.2.1 Transport

▶ When transporting the appliance, be aware of its centre of gravity.
- The centre of gravity is in the area where the compressor is located.
- Lifting slings for handling the standard appliance can be hooked in anywhere on the bottom of the frame.

▶ Protect the appliance against heavy impact during transport.



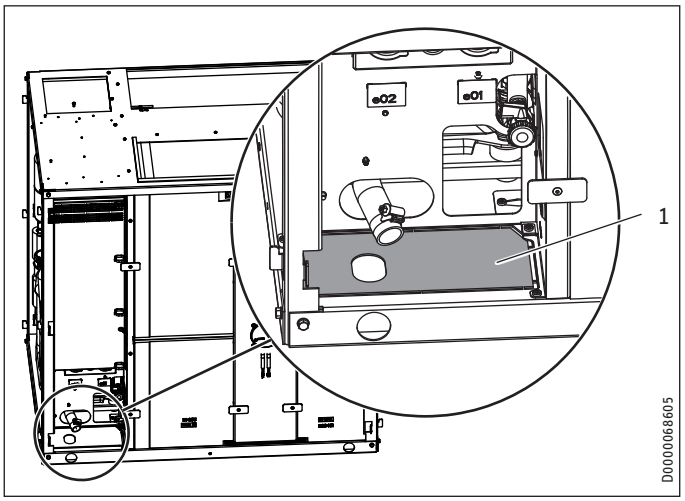
- If the appliance needs to be tilted during transport, this must only be for a short time and it must only be titled on one of its longitudinal sides. When transporting the appliance, ensure the compressor is on the upper appliance side.
- The longer the appliance is tilted, the greater the distribution of refrigerant oil inside the system.

▶ Wait approximately 30 minutes before starting the appliance after it has been tilted.

12.2.2 Siting

Note
Two screws are available at the top of the appliance frame to secure the cover.
At the bottom of the frame, one screw is available on each side to secure the side panels.

▶ Undo the six screws from the appliance frame and keep them safe.

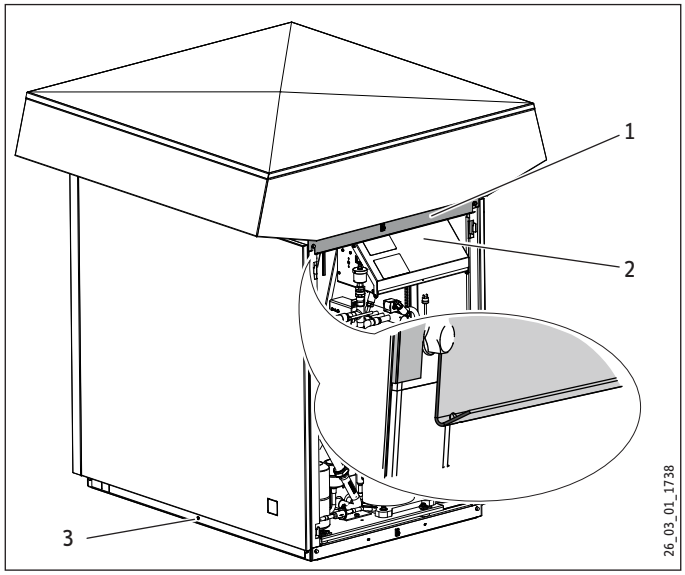


1 Knock-out "supply line entry"

- ▶ Remove the knock-out "supply line entry" in the bottom of the appliance.
- ▶ Position the standard appliance on the prepared substrate.
- ▶ Observe minimum clearances (see chapter "Preparations / Minimum clearances").
- ▶ Route the supply pipes/cables from below through the knock-out in the bottom and into the appliance.

Material losses
Rodents may get into the appliance through the knock-out aperture.
- ▶ Close off the knock-out aperture.

12.2.3 Fitting the cover

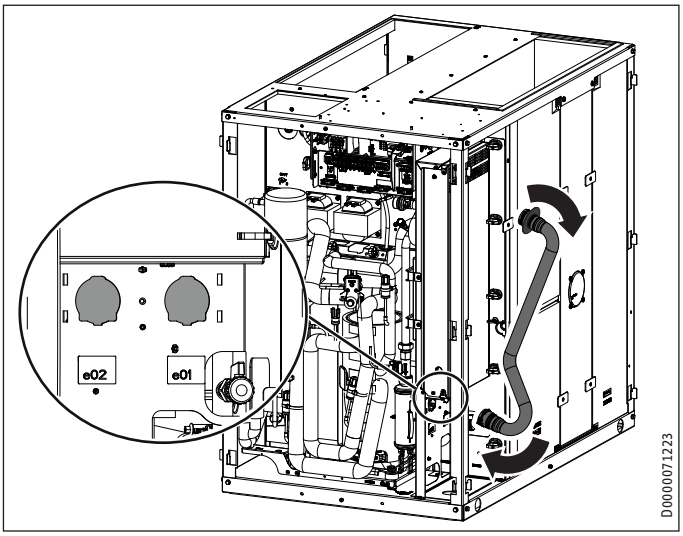


1 Bevelled edge
2 Control panel
3 Screw

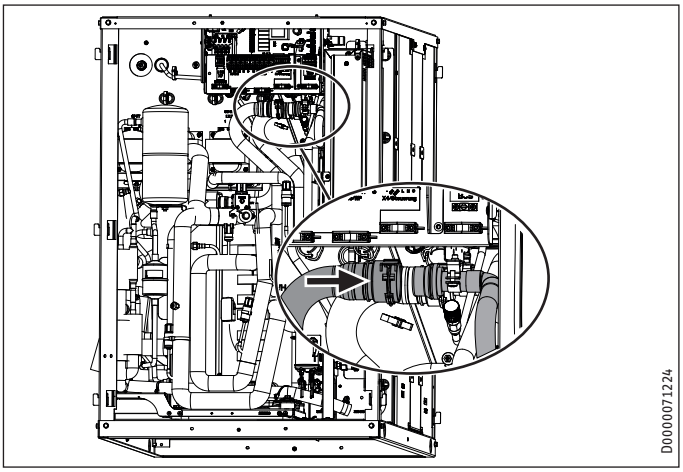
Material losses
The cover protects the PCB from water ingress.
- ▶ Install the cover with the drip edge above the PCB.

- ▶ Place the cover on the appliance and secure with two screws.

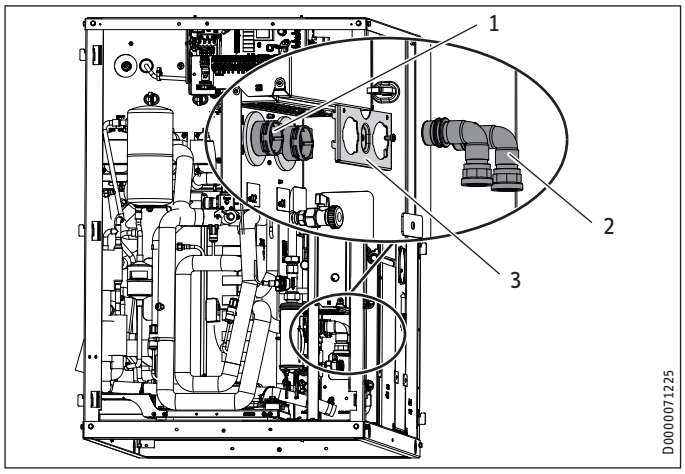
12.2.4 Flow and return connection



- ▶ Route the pressure hoses, elbow first, through the "Heating flow" and Heating return" openings.
- ▶ Guide the pressure hoses upwards inside the appliance. Make sure that the rubber shims at the other end of the pressure hoses are lying on the metal plate at the bottom.



- ▶ Push the pressure hoses onto the adaptors. Make sure that the pressure hoses engage audibly on the adapters.



1 Pressure hose
2 Pipe assembly
3 Mounting plate

- ▶ Guide the mounting plate over the pressure hoses. Make sure that the four locking hooks on the back of the mounting plate hook into the recesses on the appliance.
- ▶ Push the mounting plate upwards.
- ▶ Screw the mounting plate securely into place in the middle with a screw.
- ▶ Insert the pipe assemblies into the pressure hoses.
- ▶ Check for leaks.

12.2.5 Heating water connection

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

- ▶ Before connecting the heat pump, flush the pipework thoroughly with suitable water. Foreign bodies, such as welding pearls, rust, sand or sealant can impair the operational reliability of the heat pump.
- ▶ Connect the heat pump on the heating water side. Check for tightness.
- ▶ Ensure that the heating flow and return are connected correctly.
- ▶ Provide thermal insulation in accordance with applicable regulations.
- ▶ When sizing the heating circuit, observe the internal pressure differential (see chapter "Specification / Data table").

The pressure hoses acting as anti-vibration insulation for direct connection of the on-site pipework are integrated inside the appliance.

12.2.6 Oxygen diffusion

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

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

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

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

12.2.7 Second heat generator

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

12.2.8 Filling the heating system

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

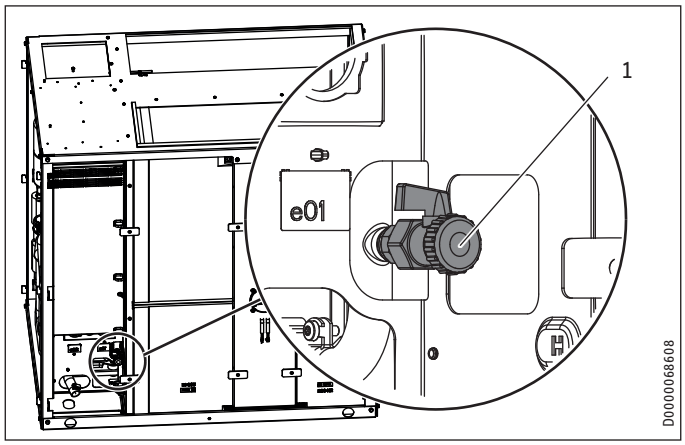
Material losses
To avoid damage as a result of scaling, it may be necessary to soften or desalinate the fill water. The fill water limits specified in chapter "Specification / Data table" must always be observed.

- ▶ Recheck these limits 8-12 weeks after commissioning, every time the system is topped up and during the annual service.

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

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

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

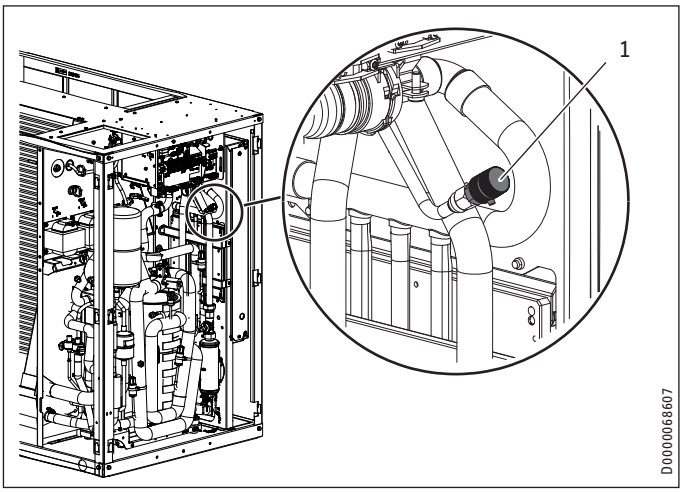


1 Drain

- ▶ Fill the heating system via the drain.
- ▶ After filling the heating system, check the connections for leaks.

12.2.9 Venting the heating system

- ▶ Vent the pipework carefully.



1 Air vent valve

- ▶ Vent the heat pump via the air vent valve.

12.2.10 Minimum flow rate

Note
The table applies if individual room control is installed.

Sizing recommendation for the underfloor heating system in the lead room:

	Minimum flow rate	Minimum water content of the buffer cylinder or the open circuits	Composite pipework 16 x 2 mm / clearance 10 cm		Composite pipework 20 x 2.25 mm / clearance 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 19 A	1000	46	-	-	-	-
WPL 24 A	1000	57	-	-	-	-

	Buffer cylinder always required	Recommended buffer cylinder volume, underfloor heating system	Recommended buffer cylinder volume, radiators	Activate the integral emergency/booster heater
WPL 19 A	yes	100	100	yes
WPL 24 A	yes	100	100	yes

The minimum flow rate and the defrost energy must always be assured (see chapter “Specification / Data table”).

You can set the flow rate in heat pump mode. In order to do this, firstly make the following settings:

- ▶ 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.

Minimum flow rate for systems with a buffer cylinder

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

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”.

In combination with the HM hydraulic module

Note
You can enable spread control in combination with the HM hydraulic module (see menu “COMMISSIONING / HEATING / SPREAD CONTROL).
When spread control is disabled, the heat pump regulates to the set pump rate and a fixed flow rate.

The flow rate is set automatically via the self-regulating system (see menu “COMMISSIONING / HEATING / SPREAD CONTROL / STANDBY PUMP RATE” in the heat pump manager).

In heat pump mode a fixed spread between the heat pump flow and return is set (see menu “COMMISSIONING / HEATING / SPREAD CONTROL” in the heat pump manager).

Checking the flow rate

- ▶ Set parameter STANDBY PUMP RATE to 100 %.
- ▶ Set buffer operation to OFF.

- ▶ The current flow rate can be called up in the menu “INFO / INFO HEAT PUMP / PROCESS DATA” under “WP WATER FLOW RATE”.
- ▶ Compare the value with the specification (see chapter “Specification / Data table”).
- ▶ If the specified flow rate is not met, take suitable measures to achieve the flow rate.
- ▶ Reset the parameters to their original values.

12.2.11Circulation pump

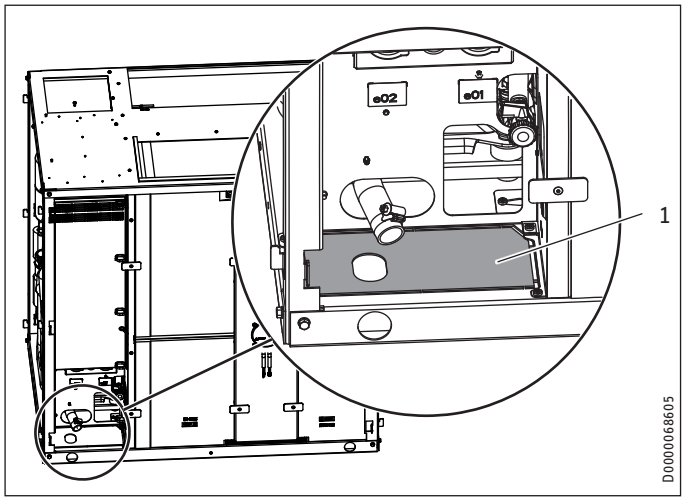
When configuring the heat pump system, follow the stated maximum available external pressure differentials (see the chapter "Specification / Data table").

Material losses
When adjusting the circulation pump, you must ensure that the minimum flow rate is guaranteed in all operating points (see the chapter "Specification / Data table" in the heat pump operating and installation instructions).

12.2.12Condensate drain

A condensate drain hose is fitted to the defrost pan to enable the condensate to drain off. The condensate drain hose is delivered inside the refrigeration unit.

- ▶ Ensure the condensate drain hose is not kinked.
- ▶ Ensure the condensate drain hose is not inserted airtight into a drain. Unhindered drainage requires an ingress of air.
- ▶ Route the hose with a continuous fall.



1 Knock-out "supply line entry"

- ▶ Route the condensate drain hose downwards through the knock-out "outlet for supply pipe/cable" and out of the appliance.
- ▶ Channel the condensate into a drain or allow it to drain into a coarse gravel soakaway. Ensure the pipework is free from the risk of frost.

12.2.13Checking the draining of condensate

After routing the condensate drain hose, check that the condensate can drain correctly. Proceed as follows:

- ▶ Pour water onto the evaporator, which will then flow into the defrost pan. Observe the maximum condensate drain capacity of 6 l/min.
- ▶ Check whether the water is draining off through the condensate drain hose.

12.2.14High limit safety cut-out for underfloor heating systems

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

12.3 Power supply

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

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

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

Note
Observe the instructions for the heat pump manager.

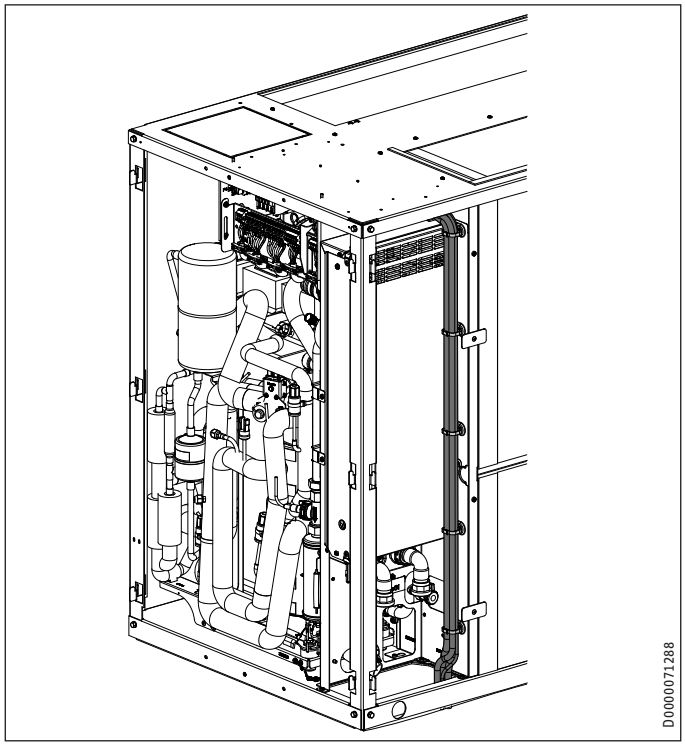
Note
The electric cables must be at least 2 m long.
- ▶ Do not shorten the electric cables to less than this minimum length.

The terminals are located in the appliance control panel.

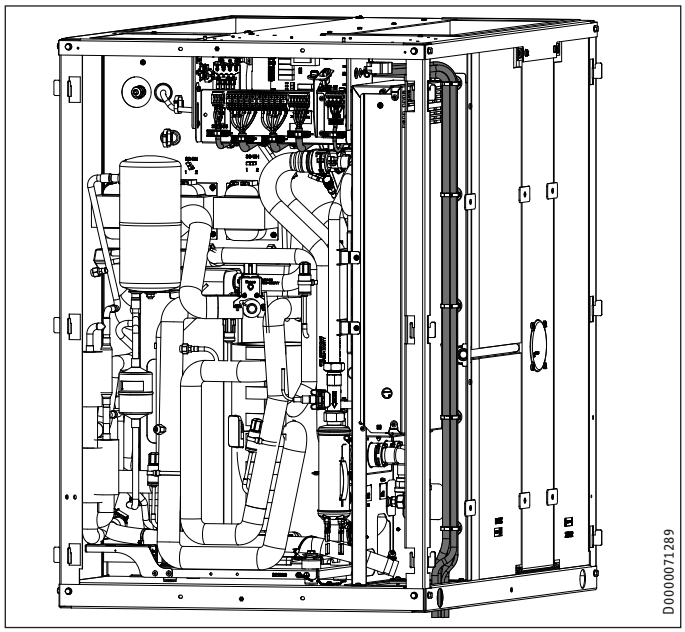
- ▶ See chapter "Preparations / Electrical installation".
- ▶ Use appropriate electrical cables in accordance with local regulations.
- ▶ Check that the strain relief fittings are working as intended.
- ▶ Connect the heating circulation pump to the heat pump manager in accordance with the technical guides.

12.3.1 Connecting electrical cables

Note
In the appliance there are cable clamps that you can use for routing the electric cables.



▶ Route the electric cables as shown in the illustration.

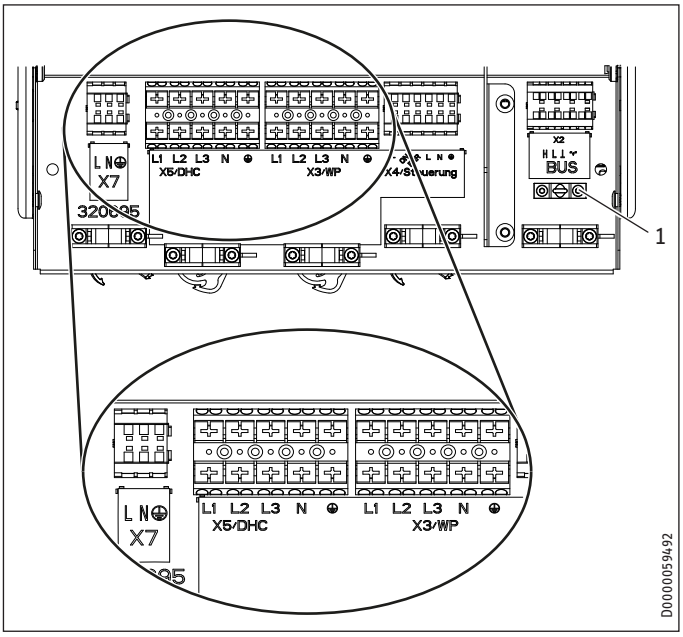


▶ Route the electric cables as shown in the illustration.

12.3.2 Heat pump connection

Terminal assignment

▶ Connect the cables in line with the following diagrams.
▶ Then check that the strain relief fittings are working as intended.
▶ Put the sheath on the earth clip.



1 Earth clip

X2	Safety extra low voltage (BUS)	
	H	Bus high
	L	BUS Low
	⊥	Bus earth
	" + "	bus " + "
X3	Heat pump power supply (WP)	
	L1, L2, L3, N, PE	
X4	Control unit ("Steuerung")	
	ON	Compressor output signal
	ERR	Output signal fault
	L, N, PE	Power supply
X5	Electric emergency/booster heater power supply (DHC)	
	L1, L2, L3, N, PE	
X7	Connection for ribbon heater	
	L, N, PE	

Note
As soon as the compressor is running, the "ON" output issues a 230 V signal.

Note
The "ERR" output issues a 230 V signal for every appliance fault. The output passes the signal on to the external controller.
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.

12.3.3 Emergency/booster heater power supply

Terminal X5: Appliance and electric emergency/booster heater (DHC)

▶ Connect the electric emergency/booster heater to terminal X5 if you want to utilise the following appliance functions:

Appliance function	Effect of the electric emergency/booster heater
Mono energetic operation	If the dual mode point is undershot, the electric emergency/booster heater safeguards 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. 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. When the heat-up program has ended, the electric emergency/booster heater can be disconnected if it is not required for the appliance operation. Please note that during the heat-up program, emergency mode is not available.
Pasteurisation control	The electric emergency/booster heater starts automatically when pasteurisation control is active, in order to regularly heat the DHW to 60 °C to protect it against the growth of legionella bacteria.

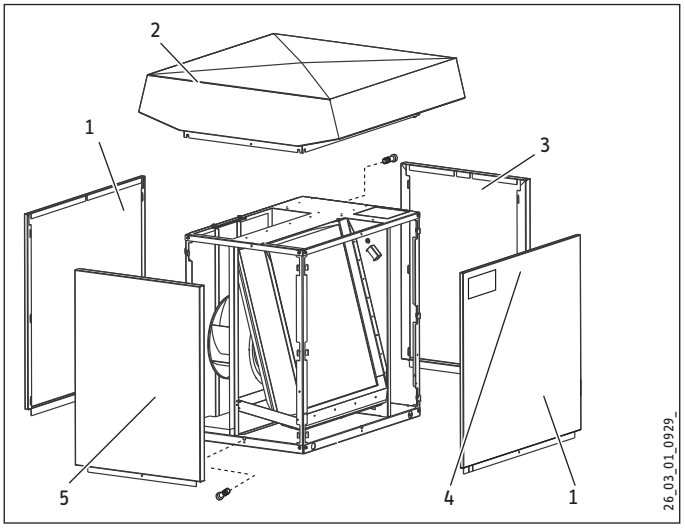
12.3.4 Internet Service Gateway ISG

The Internet Service Gateway ISG enables you to operate the heat pump in your local home network and via the internet whilst you are away from home. Connect the Internet Service Gateway to terminals H, L, and ⊥ to terminal strip X2 of the appliance.

The ISG is not supplied with power by the heat pump.

▶ Also observe the ISG operating instructions.

12.4 Fitting casing parts



1 Side panel
2 Cover
3 Front panel
4 Type plate
5 Back panel

▶ Hook the side panels, front panel and back panel into the hooks on the standard appliance. Secure the casing parts at the bottom with one screw each.

▶ Affix the type plate supplied in a highly visible position on one of the appliance casing panels.

WPL 19 A dB | WPL 24 A dB

▶ Please see the relevant supplement for installation of the duct silencer.

13. 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.

A contractor must commission the appliance, make all the settings at the commissioning level of the heat pump manager, and instruct the user.

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

Where this appliance is intended for commercial use, the regulations of the relevant Health & Safety at Work Act may apply during commissioning. For further details, check with your local authorising body (in Germany for example, this is the TÜV).

13.1 Carrying out checks before commissioning the heat pump manager

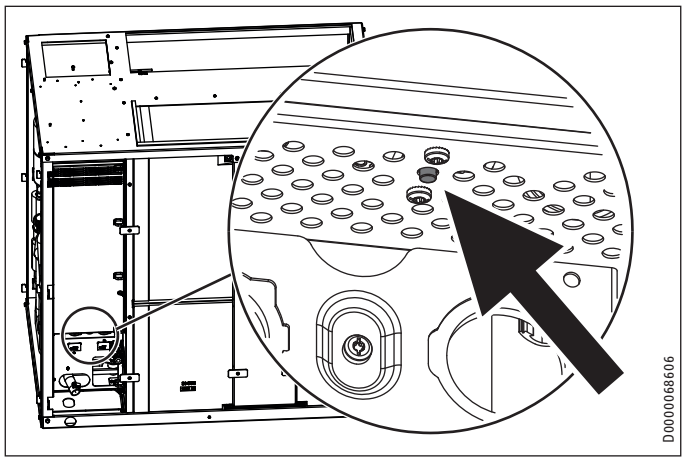
Material losses
Observe the maximum system temperature for underfloor heating systems.

- ▶ Check whether the heating system is charged to the correct pressure and whether the quick-action air vent valve in the heat pump is open.
- ▶ Check whether the outside temperature sensor and the return sensor are correctly placed and connected.
- ▶ Check whether additional sensors are correctly positioned and connected.
- ▶ Check whether the power supply is connected correctly.

13.1.1 High limit safety cut-out

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

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



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

13.2 Commissioning the heat pump manager

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

13.3 Settings

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

- ▶ Observe the instructions for the heat pump manager.

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 that the required temperature is set in the lead room.

Standard values to begin with:

Parameters	Underfloor heating system	Radiator heating system
Heating curve	0.4	0.8
Control response time	100	100
Comfort temperature	20 °C	20 °C

If the room temperature is too low in spring and autumn (approx. 10 °C outside temperature), go to the heat pump manager menu under "SETTINGS / HEATING / HEATING CIRCUIT" and raise the "COMFORT TEMPERATURE" parameter.

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

If the room temperature is too low when outside temperatures are also low, increase the "HEATING CURVE" parameter.

If the "HEATING CURVE" parameter has been raised, in the case of high outside temperatures, adjust the zone valve or thermostatic valve in the lead room to the required temperature.

Material losses
Never reduce the temperature in the entire building by closing all zone valves or thermostatic valves, but instead do this by using the setback programs.

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

Material losses
For underfloor heating systems, observe the maximum permissible system temperature.

13.3.1 Other settings

- For operation with a buffer cylinder, observe chapter “Operation / Menu structure / Menu SETTINGS / STANDARD SETTING / BUFFER OPERATION” in the WPM instructions.

Using the heat-up program

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

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

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

14. Appliance shutdown

Material losses
Never interrupt the heat pump power supply, even outside of the heating season. Otherwise, system frost protection is not guaranteed.
The heat pump manager automatically switches the heat pump to summer or winter mode.

14.1 Standby mode

To shut the system down, simply set the heat pump manager to "Standby mode". This way, the safety functions that protect the system remain enabled, e.g. frost protection.

14.2 Power interruption

If the system is to be isolated from the power supply permanently, please observe the following:

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

15. Appliance handover

Explain the appliance function to users and familiarise them with its operation.

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

16. Troubleshooting

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

Following isolation from the mains supply, parts of the appliance may remain live for up to 20 minutes. This is because the capacitors on the inverter still have to discharge.

Note
Observe the instructions for the heat pump manager.

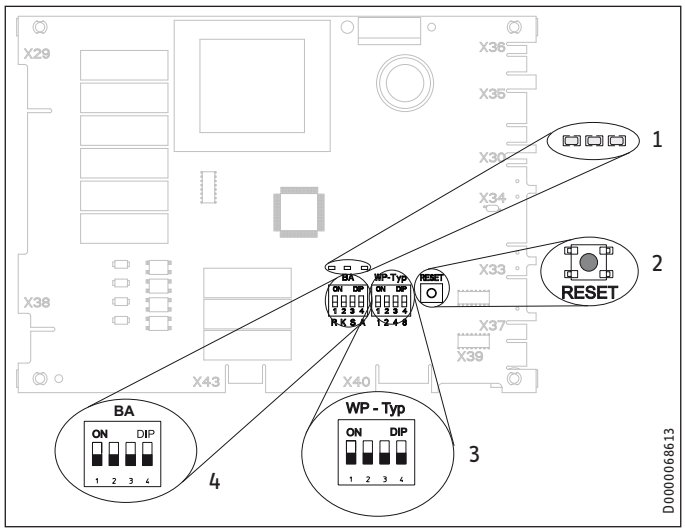
Note
The following inspection instructions may only be carried out by a qualified contractor.

If you cannot locate the fault using the heat pump manager, use the controls on the IWS.

- Open the control panel.
- The IWS is located at the back.
- Read the following sections on troubleshooting and follow the instructions.

16.1 Controls on the IWS

The IWS helps you to troubleshoot if the fault cannot be identified using the WPM.

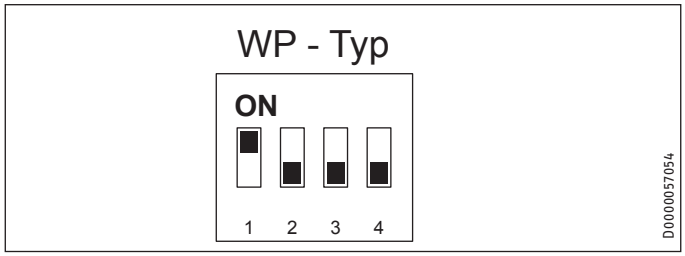


1 LEDs
2 Reset button
3 DIP switch (WP-Typ)
4 DIP switch (BA)

DIP switch (WP-Typ)

With the DIP switch (WP-Typ), you can set the IWS to suit the relevant heat pump type.

Factory setting
Compressor mode with electric emergency/booster heater

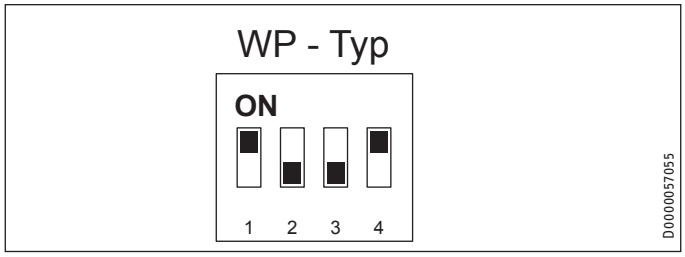


► Check whether the DIP switch is set correctly.

Compressor mode with an external second heat generator

Material losses
The electric emergency/booster heater must not be connected if a second heat generator is also used.

If the appliance is operated in dual mode with a second external heat generator, set the DIP switches as follows.

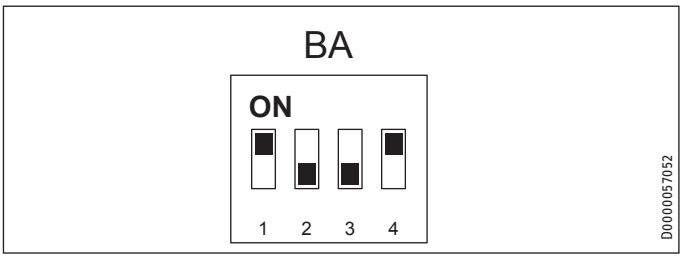


► Check whether the DIP switch is set correctly.

DIP switch (BA)

The heat pump operating mode is set using the DIP switch (BA).

► Check whether the DIP switch is set correctly.



16.2 Light emitting diodes (LEDs)

Red LED (left)

Faults indicated by the LED:

- High pressure fault
- Low pressure fault
- Central fault
- Hardware fault on the IWS (see fault list, heat pump manager instructions)

Fault	Cause	Remedy
The appliance stops and restarts after the idle time has expired. The red LED flashes.	There is a heat pump fault.	Check the fault message on the WPM. Find the solution in the WPM instructions (fault list). Reset the IWS.
The appliance shuts down permanently. The red LED is constantly illuminated.	Five faults have occurred within two hours of compressor runtime.	Check the fault message on the WPM. Find the solution in the WPM instructions (fault list). Reset the IWS.

Green LED (centre)

The LED flashes during initialisation, and illuminates constantly after the bus address has been assigned successfully. Connection to the WPM has been established.

Green LED (right)

No function.

16.2.1 Reset button

If the IWS was not initialised successfully, you can reset it with the reset button. See chapter "Reinitialising IWS" in the heat pump manager operating and installation instructions.

16.3 Resetting the high limit safety cut-out

If the heating water temperature exceeds 85 °C, the electric emergency/booster heater shuts down.

- ▶ Remove the cause of the fault.
- ▶ Reset the high limit safety cut-out by pressing the reset button. If necessary, use a pointed object to do this.
- ▶ Check whether the heating water is being circulated at a sufficiently high flow rate.

16.4 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 airways. If the fan comes into contact with this ice, this creates noise.

How to remedy rhythmic scratching or grinding noises:

- ▶ Check whether the condensate drain is clear of obstructions.
- ▶ Check whether the design output and temperature are set correctly. Ice formation is particularly pronounced when a high heating output is called for at moderate outside temperatures.
- ▶ Carry out a manual defrost, as many times as necessary, until the fan runs freely again. Observe the information in the WPM instructions and parameter “START DEFROST” in menu “COMMISSIONING / COMPRESSOR”.
- ▶ At outside temperatures above +1 °C, shut down the appliance or switch it over to emergency mode for approx. 1 hour. After this, the ice should have melted.
- ▶ Check that the appliance is installed in line with installation conditions.
- ▶ If the noises occur frequently, notify customer support.

17. Maintenance

WARNING Electrocution
Before removing the casing parts, disconnect all poles of the appliance from the power supply.

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

If heat meters are installed, their sieves should be cleaned regularly.

- ▶ Regularly remove all leaves and accumulated dirt from the evaporator fins, which can be accessed by removing the side panel on the air intake side.
- ▶ Check the condensate drain is working correctly. Remove accumulated dirt if necessary (see chapter "Clean condensate pan and drain").

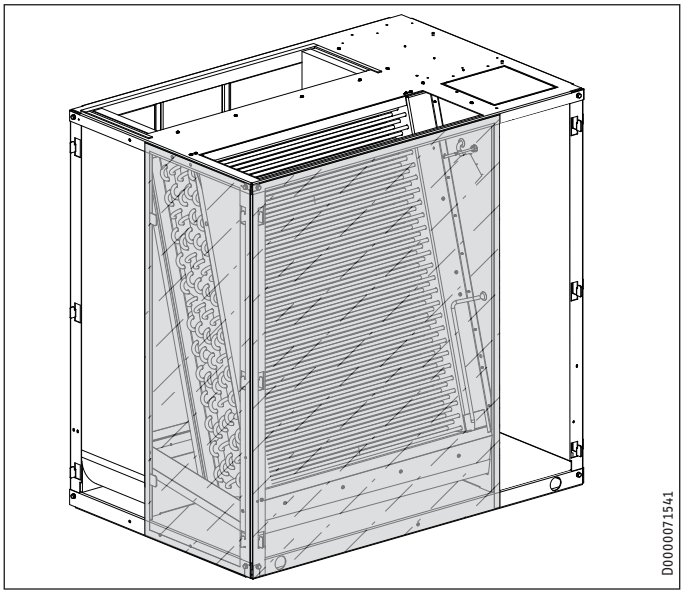
Material losses
Keep the air discharge and intake apertures free from snow and ice.

17.1 Clean condensate pan and drain

WARNING Electrocution
Before removing the casing parts, disconnect all poles of the appliance from the power supply.

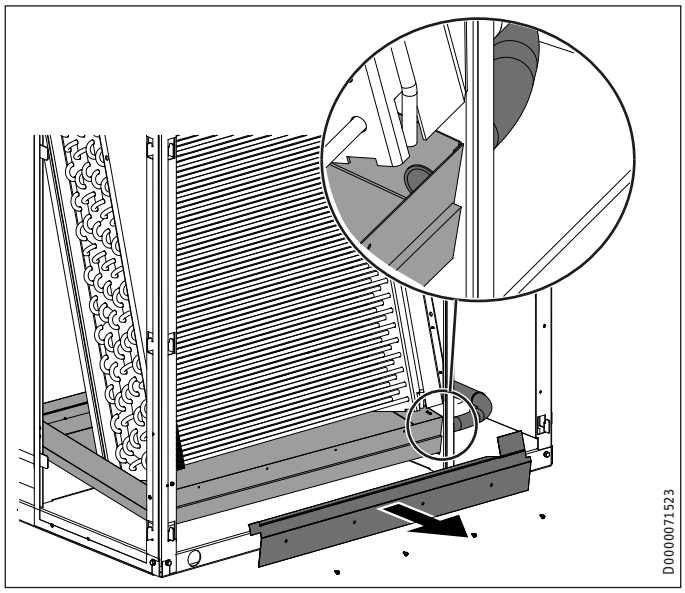
Environmental influences can lead to the condensate pan and drain becoming contaminated or blocked. To clean, proceed as follows:

- ▶ Remove the casing parts (see chapter "Fitting casing parts" in the section for the respective heat pump).



- ▶ When installed indoors, also carefully remove the foil from the appliance frame.

Maintenance

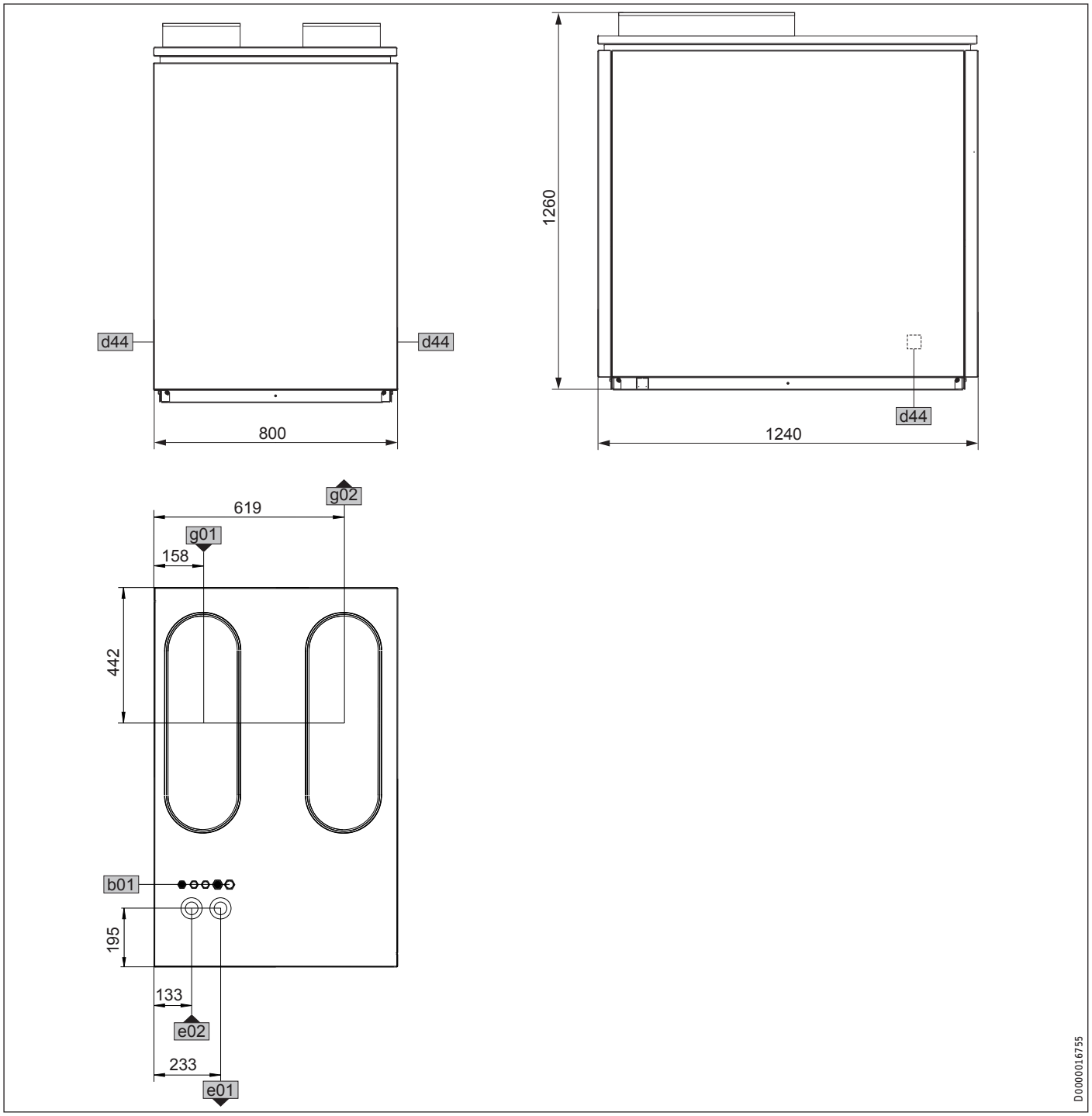


- ▶ Remove the bottom cover.
- ▶ Clean out the rear section of the condensate pan.
- ▶ Clean out the front section of the condensate pan.
- ▶ Check the hose and the condensate drain pipe, and remove all contaminants and blockages.
- ▶ When installed indoors, carefully re-affix the foil to the appliance frame.
- ▶ Put the casing parts back on the appliance (see chapter "Fitting casing parts" in the section for the respective heat pump).

18. Specification

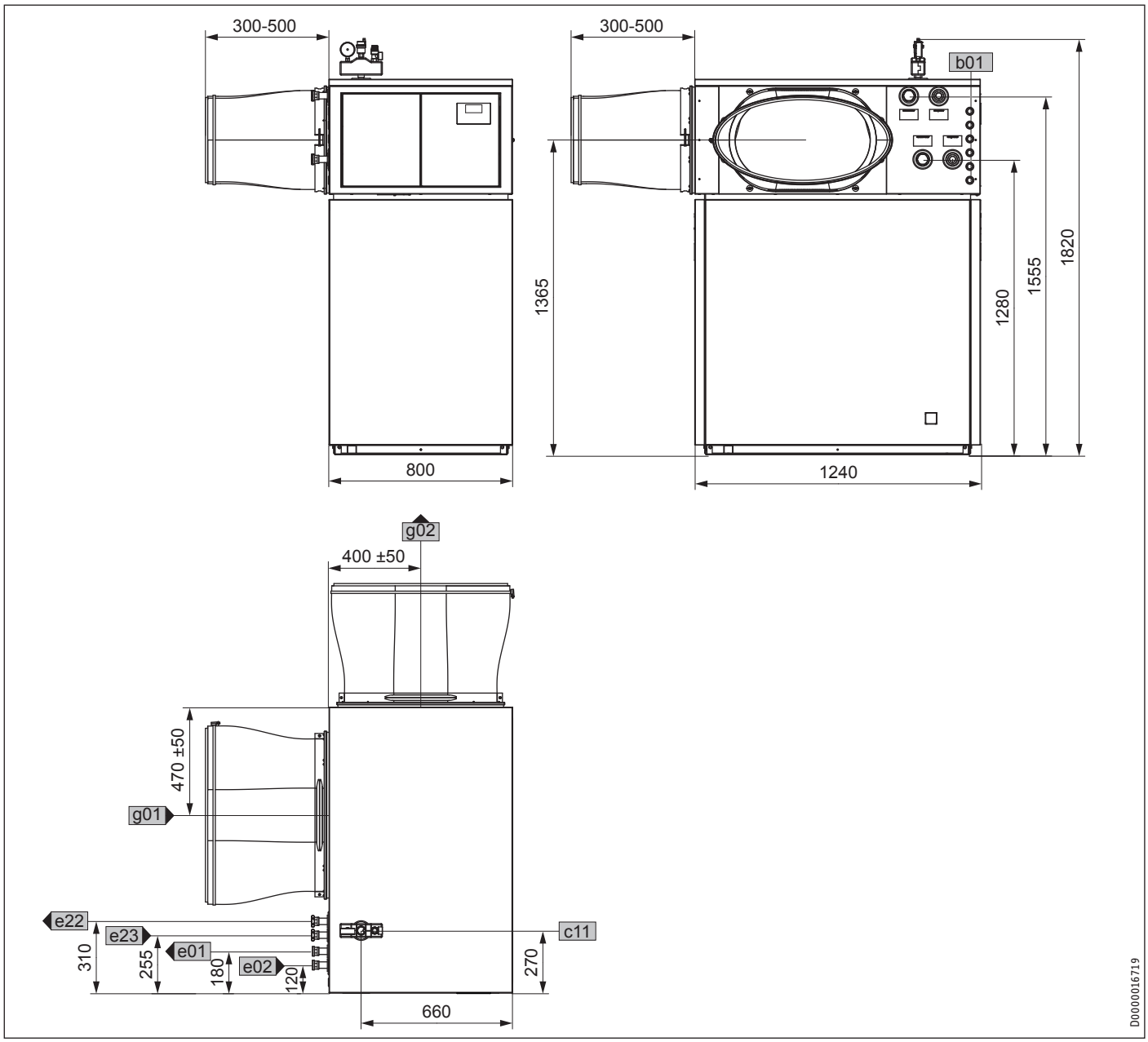
18.1 Dimensions and connections

WPL 19 I | WPL 24 I



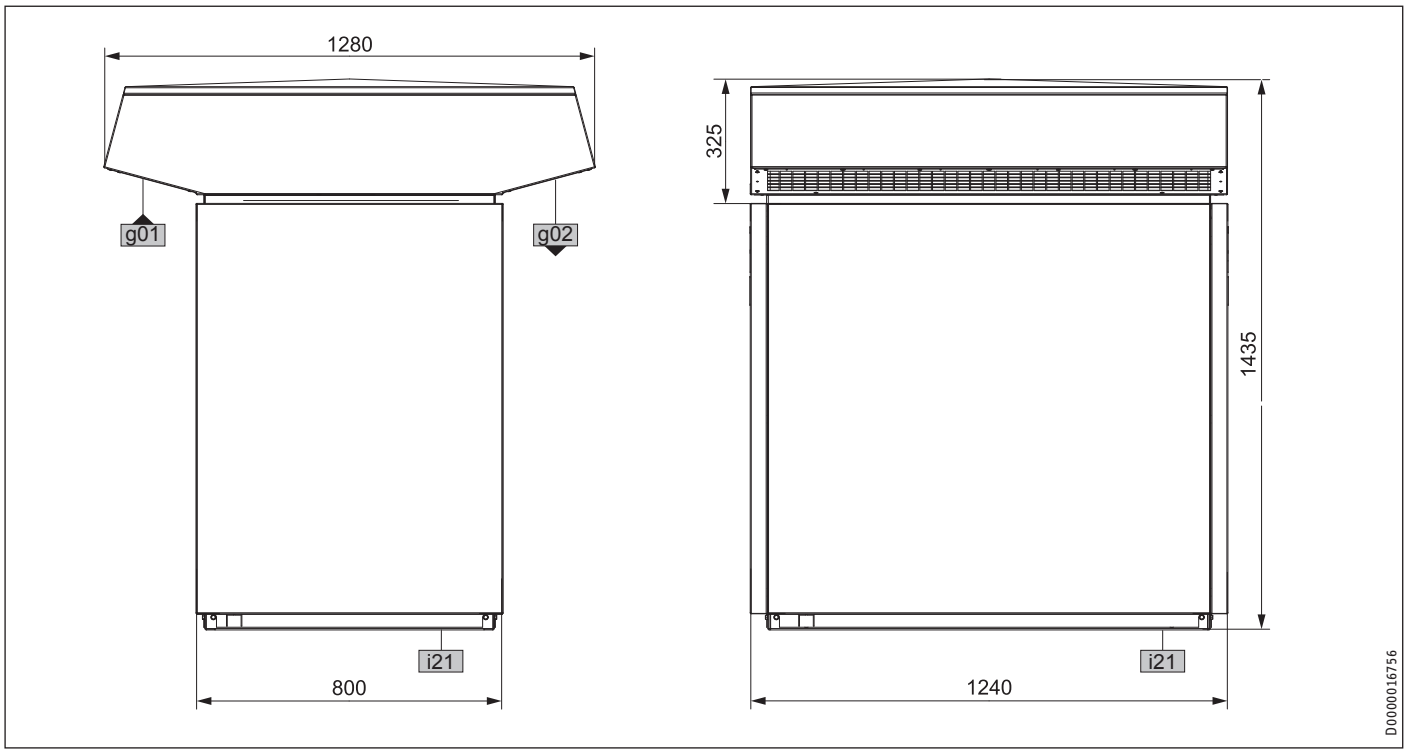
b01	Cable entry			
d44	Condensate drain outlet			
e01	Heating flow	Diameter	mm	28
e02	Heating return	Diameter	mm	28
g01	Air intake			
g02	Air discharge			

WPL 19 IK | WPL 24 IK



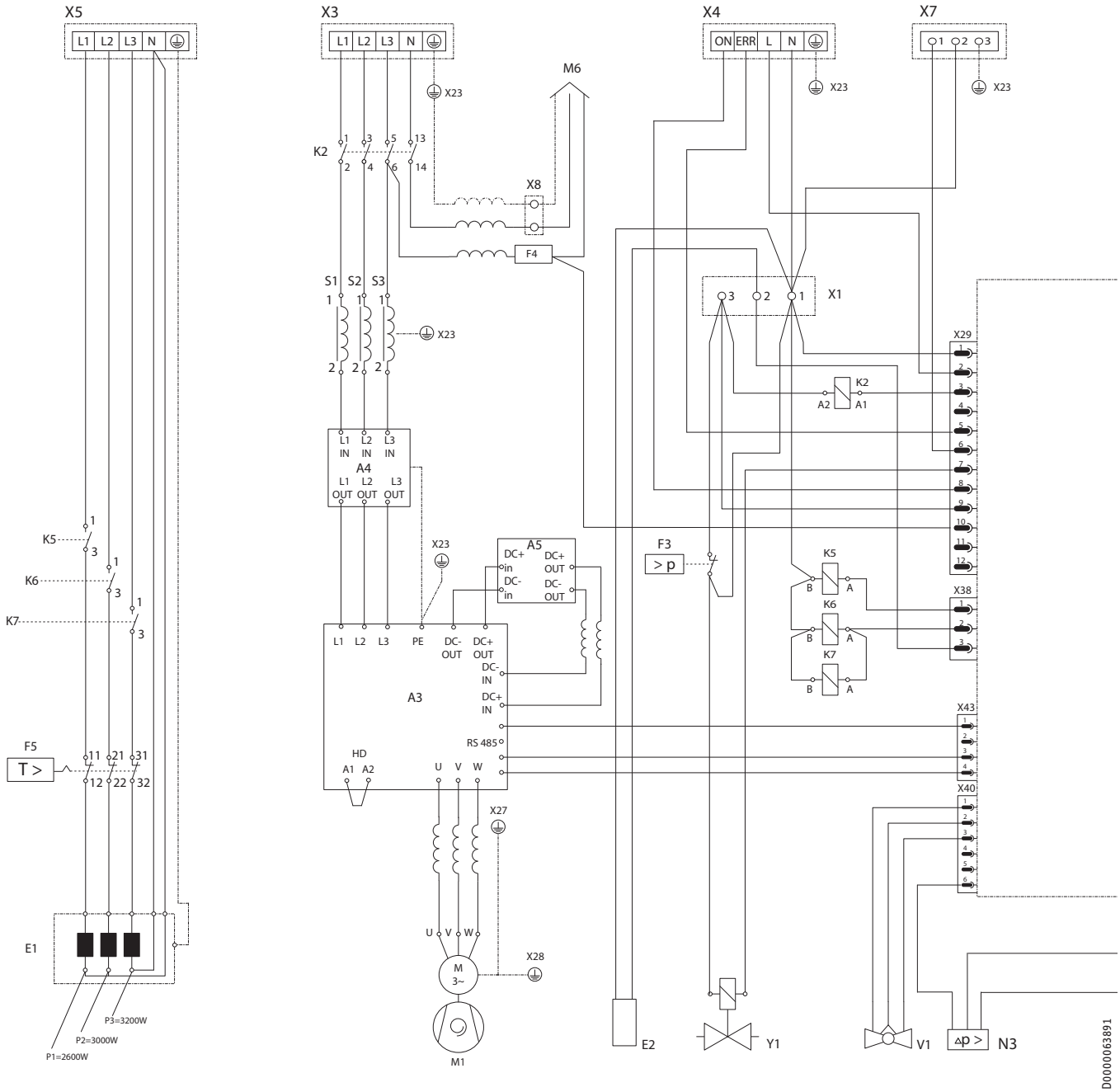
b01	Cable entry		
c11	Safety assembly		
e01	Heating flow	Male thread	G 1 1/4
e02	Heating return	Male thread	G 1 1/4
e22	Cylinder flow	Male thread	G 1 1/4
e23	Cylinder return	Male thread	G 1 1/4
g01	Air intake		
g02	Air discharge		

WPL 19 A | WPL 24 A

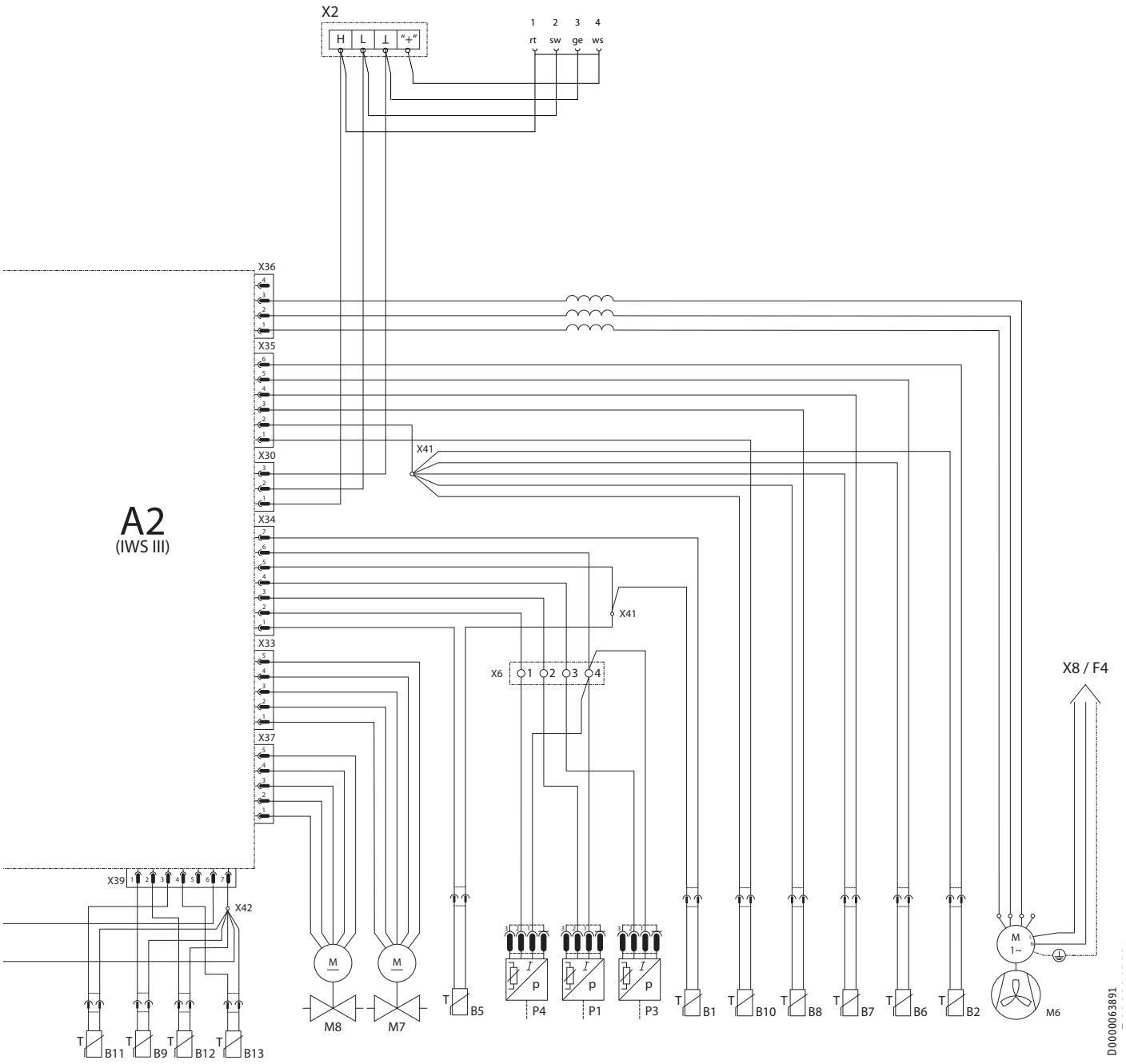


g01	Air intake
g02	Air discharge
i21	Entry supply line

18.2 Wiring diagram WPL 19 I | WPL 24 I | WPL 19 A | WPL 24 A

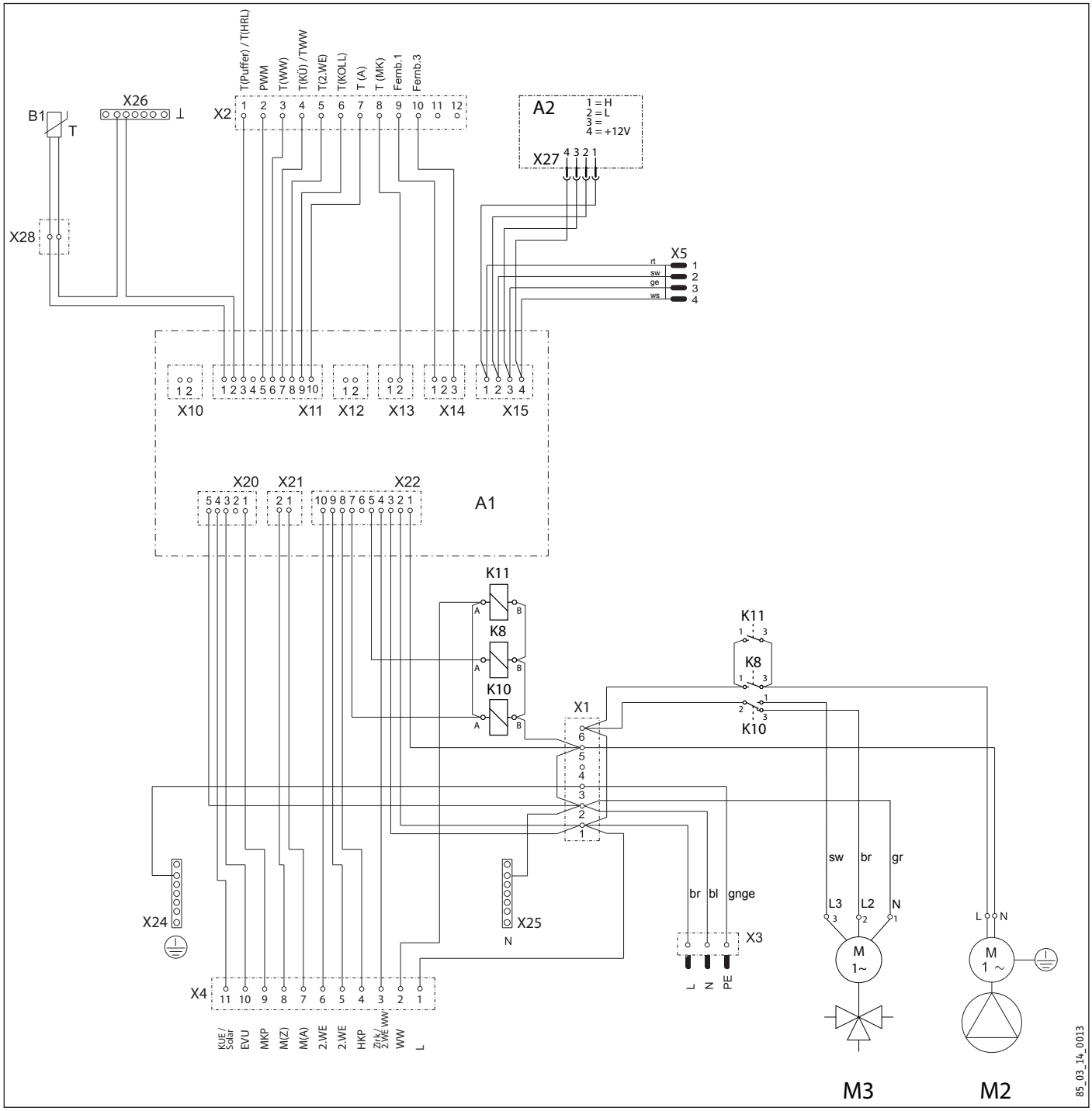


A2 Integral heat pump control unit (IWS)
A3 Inverter compressor
A4 Filter assembly
A5 DC assembly
B1 Heating flow temperature sensor - KTY
B2 Heating return temperature sensor - KTY
B5 Hot gas temperature sensor - PT1000
B6 Outdoor air temperature sensor - PT1000
B7 Compressor intake temperature sensor - 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
K5 DHC relay
K6 DHC relay
K7 DHC relay
M1 Compressor motor
M6 Fan motor
M7 Stepper motor el. Expansion valve
M8 Stepper motor el. Injection valve
N3 Differential pressure sensor
P1 High pressure sensor (45 bar)
P3 Low pressure sensor (16 bar)
P4 Mean pressure sensor (30 bar)



S1 Sinus filter coil
S2 Sinus filter coil
S3 Sinus filter coil
V1 Flow sensor
X1 Internal distribution terminal
X2 External bus terminal
X3 External mains terminal
X4 External control unit terminal
X5 External DHC terminal
X6 4-pole terminal
X7 3-pole terminal
X8 2-pole terminal
X23 Earth terminal 6-pole
X27 Earthing screw, compressor cable
X28 Earth clip, compressor cable screen
X29 12-pole IWS connector - control unit
X30 3-pole IWS connector - bus
X33 5-pole IWS connector - el. Expansion valve
X34 7-pole IWS connector - sensors
X35 6-pole IWS connector - temperature sensors
X36 3-pole IWS connector - fan
X37 5-pole IWS connector - el. Injection valve
X38 3-pole IWS connector - oil sump
X39 7-pole IWS connector - temperature sensors
X40 6-pole IWS connector - sensors
X41 Ground PCB
X42 Ground PCB
X43 3-pole IWS connector - Modbus
Y1 Diverter valve, defrost

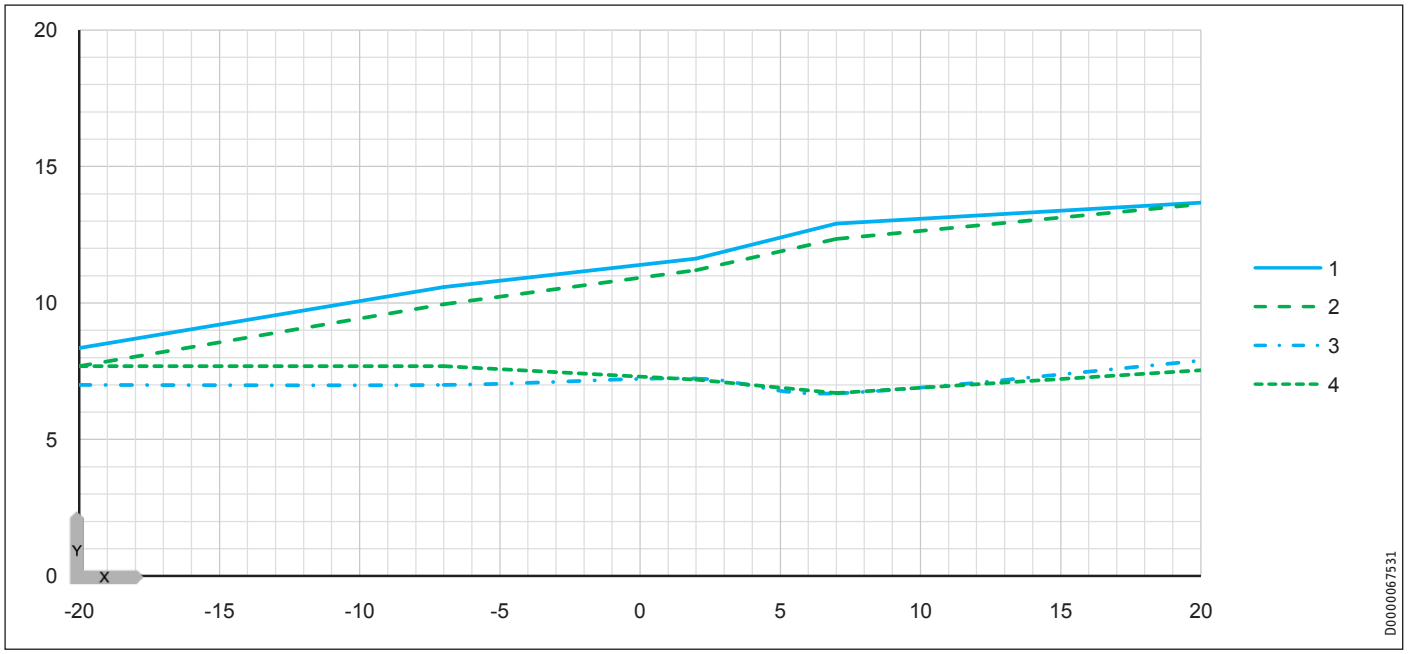
18.3 Wiring diagram WPL 19 IK | WPL 24 IK



A1 Heat pump manager WPM
A2 Programming unit
B1 Temperature sensor, heat pump flow
K8 Pump motor relay
K10 Motorised diverter valve relay
K11 Relay for constant pump operation
M2 Pump motor
M3 Motorised diverter valve
X1 6-pole screw-type plug-in terminal strip
X2 LV terminal
X3 Heat pump control unit connector
X4 Control unit terminals
X5 Heat pump bus connector
X10 DCF female connector
X11 Temperature sensor female connector
X12 Heat source temperature female connector
X13 Mixer circuit temperature female connector
X14 Remote control female connector
X15 Bus female connector
X20 Pumps and power supply utility female connector
X21 Mixer control unit female connector
X22 External pumps female connector
X24 Earth block terminals
X25 N block terminals
X26 LV earth terminal strip
X27 Programming unit terminals
X28 Socket terminal strip 2-pole

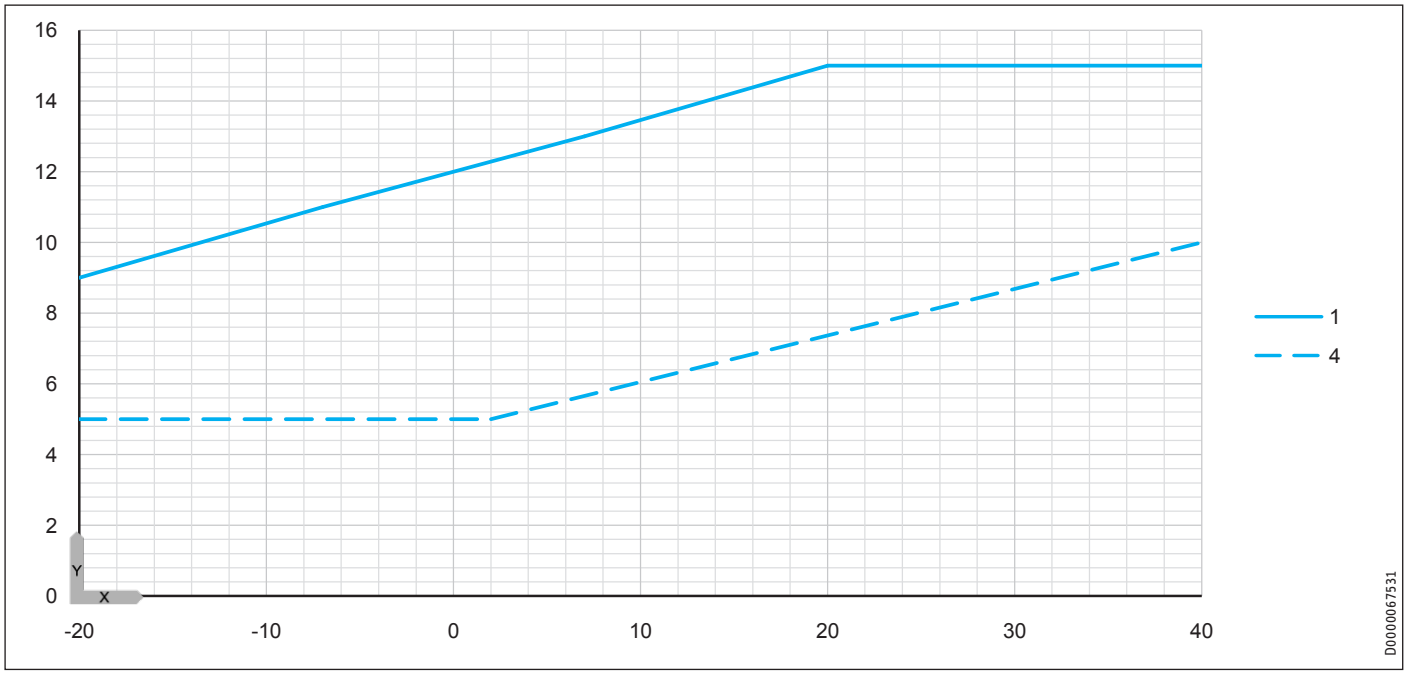
18.4 Output diagrams WPL 19 I | WPL 19 IK | WPL 19 A

Heating output



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

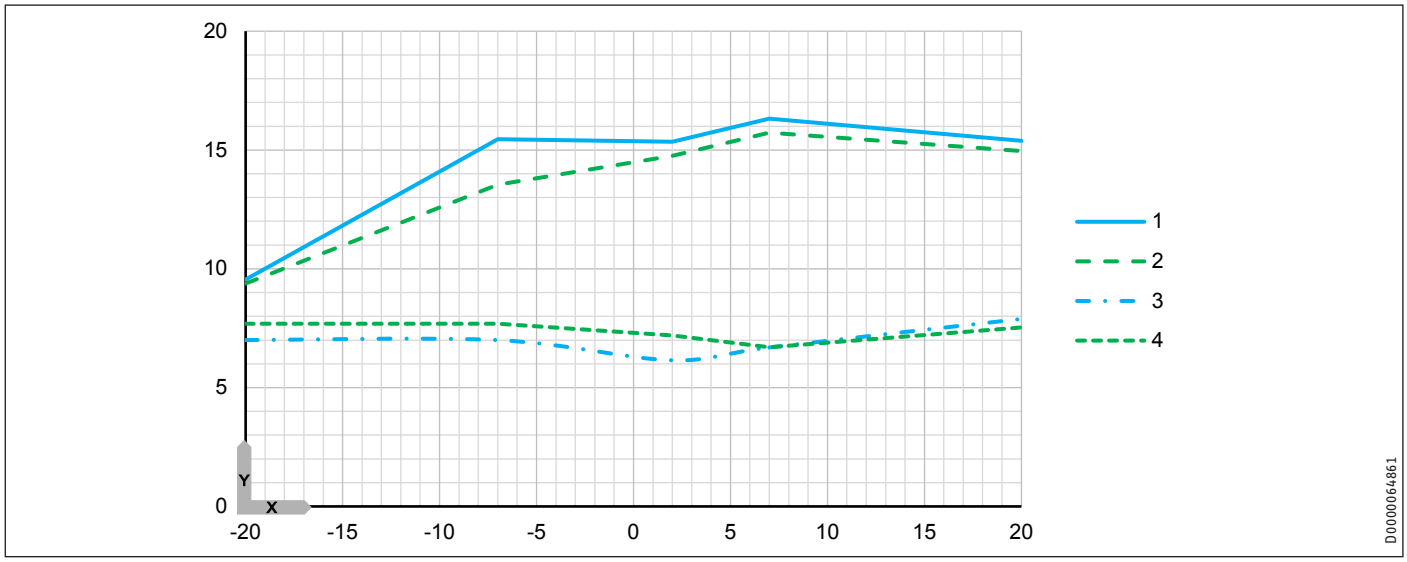
DHW output



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

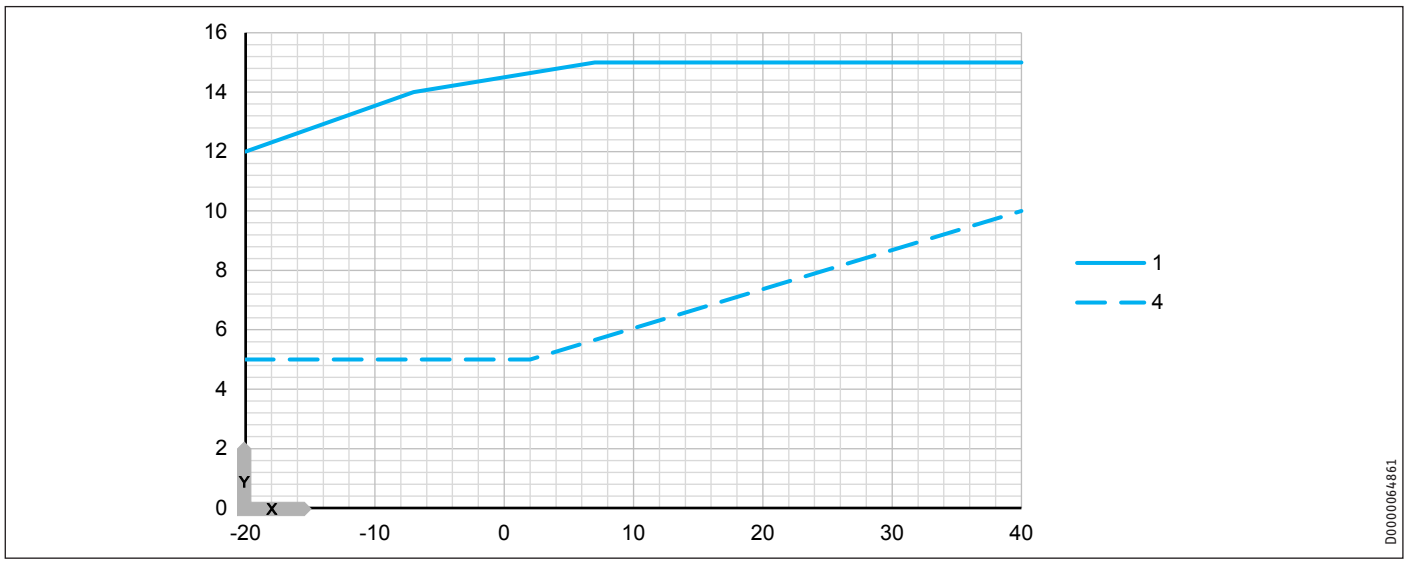
18.5 Output diagrams WPL 24 I | WPL 24 IK | WPL 24 A

Heating output



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

DHW output



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

18.6 Data table

The output data refers to new appliances with clean heat exchangers.

The power consumption of the integral auxiliary drives represents the maximum value and may vary subject to operating point.

The power consumption of the integral auxiliary drives is included in the output data for the appliance (to EN 14511).

		WPL 19 I	WPL 19 IK	WPL 19 A	WPL 19 A SR	WPL 19 A dB	WPL 24 I	WPL 24 IK	WPL 24 A	WPL 24 A SR	WPL 24 A dB
		235193	235878	236412	236414	238962	235194	235879	236413	236415	238963
Heating output											
Heating output at A7/W35 (min./max.)	kW	6.7/12.35	6.7/12.35	6.7/12.35	6.7/12.35	6.7/12.35	6.70/15.73	6.7/15.73	6.70/15.73	6.70/15.73	6.70/15.73
Heating output at A2/W35 (min./max.)	kW	7.19/11.2	7.19/11.2	7.19/11.2	7.19/11.2	7.19/11.2	7.19/14.75	7.19/14.75	7.19/14.75	7.19/14.75	7.19/14.75
Heating output at A-7/W35 (min./max.)	kW	7.69/9.95	7.69/9.95	7.69/9.95	7.69/9.95	7.69/9.95	7.69/13.54	7.69/13.54	7.69/13.54	7.69/13.54	7.69/13.54
Heating output at A20/W35 (EN 14511)	kW	7.54	7.54	7.54	7.54	7.54	7.54	7.54	7.54	7.54	7.54
Heating output at A20/W55 (EN 14511)	kW	7.89	7.89	7.89	7.89	7.89	7.89	7.89	7.89	7.89	7.89
Heating output at A10/W35 (EN 14511)	kW	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14
Heating output at A7/W35 (EN 14511)	kW	6.70	6.70	6.70	6.70	6.70	7.41	7.41	7.41	7.41	7.41
Heating output at A7/W55 (EN 14511)	kW	8.59	8.59	8.59	8.59	8.59	10.42	10.42	10.42	10.42	10.42
Heating output at A2/W35 (EN 14511)	kW	7.41	7.41	7.41	7.41	7.41	9.04	9.04	9.04	9.04	9.04
Heating output at A2/W55 (EN 14511)	kW	7.25	7.25	7.25	7.25	7.25	10.38	10.38	10.38	10.38	10.38
Heating output at A-7/W35 (EN 14511)	kW	9.91	9.91	9.91	9.91	9.91	13.45	13.45	13.45	13.45	13.45
Heating output at A-7/W55 (EN 14511)	kW	10.58	10.58	10.58	10.58	10.58	15.46	15.46	15.46	15.46	15.46
Heating output at A-15/W35 (EN 14511)	kW	8.53	8.53	8.53	8.53	8.53	12.98	12.98	12.98	12.98	12.98
Heating output at A-15/W55 (EN 14511)	kW	9.21	9.21	9.21	9.21	9.21	12.55	12.55	12.55	12.55	12.55
Heating output at A-20/W35 (EN 14511)	kW	7.67	7.67	7.67	7.67	7.67	9.38	9.38	9.38	9.38	9.38
Heating output at A-20/W55 (EN 14511)	kW	8.35	8.35	8.35	8.35	8.35	11.40	11.40	11.40	11.40	11.40
Max. heating output in silent mode at A-7/W35	kW	8.29	8.29	8.29	8.29	8.29	8.38	8.38	8.38	8.38	8.38
Max. heating output in silent mode at A-7/W55	kW	8.79	8.79	8.79	8.79	8.79	8.88	8.88	8.88	8.88	8.88
Power consumption											
Power consumption at A20/W35 (EN 14511)	kW	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
Power consumption at A20/W55 (EN 14511)	kW	2.22	2.22	2.22	2.22	2.22	2.21	2.21	2.21	2.21	2.21
Power consumption at A10/W35 (EN 14511)	kW	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Power consumption at A7/W35 (EN 14511)	kW	1.34	1.34	1.34	1.34	1.34	1.57	1.57	1.57	1.57	1.57
Power consumption at A7/W55 (EN 14511)	kW	2.60	2.60	2.60	2.60	2.60	3.17	3.17	3.17	3.17	3.17
Power consumption at A2/W35 (EN 14511)	kW	1.80	1.80	1.80	1.80	1.80	2.24	2.24	2.24	2.24	2.24
Power consumption at A2/W55 (EN 14511)	kW	2.56	2.56	2.56	2.56	2.56	3.57	3.57	3.57	3.57	3.57
Power consumption at A-7/W35 (EN 14511)	kW	2.98	2.98	2.98	2.98	2.98	4.49	4.49	4.49	4.49	4.49
Power consumption at A-7/W55 (EN 14511)	kW	4.24	4.24	4.24	4.24	4.24	6.59	6.59	6.59	6.59	6.59
Power consumption at A-15/W35 (EN 14511)	kW	2.91	2.91	2.91	2.91	2.91	4.83	4.83	4.83	4.83	4.83
Power consumption at A-15/W55 (EN 14511)	kW	4.17	4.17	4.17	4.17	4.17	6.07	6.07	6.07	6.07	6.07
Power consumption at A-20/W35 (EN 14511)	kW	2.86	2.86	2.86	2.86	2.86	3.56	3.56	3.56	3.56	3.56
Power consumption at A-20/W55 (EN 14511)	kW	4.12	4.12	4.12	4.12	4.12	5.88	5.88	5.88	5.88	5.88
Coefficient of performance											
COP at A20/W35 (EN 14511)		6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21	6.21
COP at A20/W55 (EN 14511)		3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56
COP at A10/W35 (EN 14511)		5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48
COP at A7/W35 (EN 14511)		4.99	4.99	4.99	4.99	4.99	4.72	4.72	4.72	4.72	4.72
COP at A7/W55 (EN 14511)		3.30	3.30	3.30	3.30	3.30	3.19	3.19	3.19	3.19	3.19
COP at A2/W35 (EN 14511)		4.12	4.12	4.12	4.12	4.12	4.00	4.00	4.00	4.00	4.00
COP at A2/W55 (EN 14511)		2.84	2.84	2.84	2.84	2.84	2.91	2.91	2.91	2.91	2.91
COP at A-7/W35 (EN 14511)		3.32	3.32	3.32	3.32	3.32	3.00	3.00	3.00	3.00	3.00
COP at A-7/W55 (EN 14511)		2.49	2.49	2.49	2.49	2.49	2.34	2.34	2.34	2.34	2.34
COP at A-15/W35 (EN 14511)		2.93	2.93	2.93	2.93	2.93	2.69	2.69	2.69	2.69	2.69
COP at A-15/W55 (EN 14511)		2.21	2.21	2.21	2.21	2.21	2.07	2.07	2.07	2.07	2.07
COP at A-20/W35 (EN 14511)		2.68	2.68	2.68	2.68	2.68	2.63	2.63	2.63	2.63	2.63
COP at A-20/W55 (EN 14511)		2.03	2.03	2.03	2.03	2.03	1.94	1.94	1.94	1.94	1.94
SCOP (EN 14825)		4.60	4.60	4.60	4.60	4.60	4.58	4.58	4.58	4.58	4.58

Specification

		WPL 19 I	WPL 19 IK	WPL 19 A	WPL 19 A SR	WPL 19 A dB	WPL 24 I	WPL 24 IK	WPL 24 A	WPL 24 A SR	WPL 24 A dB
Sound emissions											
Sound power level for indoor installation (EN 12102)	dB(A)	54	52				54	54			
Max. sound power level for indoor installation	dB(A)	58	57				63	61			
Sound power level for indoor installation, air intake/discharge (EN 12102)	dB(A)	46/48	50/52				47/49	49/51			
Max. sound power level for indoor installation, air intake/discharge	dB(A)	50/51	55/56				54/55	57/58			
Max. sound power level at air intake/discharge in silent mode	dB(A)	39/42	45/46				40/43	47/48			
Sound power level for outdoor installation (EN 12102)	dB(A)			59	59	59			59	59	59
Max. sound power level for outdoor installation	dB(A)			63	63	61			67	67	64
Max. sound power level for outdoor installation, silent mode	dB(A)			56	56	54			56	56	53
Application limits											
Min. application limit, heat source	°C	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20
Max. application limit, heat source	°C	40	40	40	40	40	40	40	40	40	40
Min. application limit on the heating side	°C	15	15	15	15	15	15	15	15	15	15
Max. application limit on the heating side	°C	65	65	65	65	65	65	65	65	65	65
Energy data											
Energy efficiency class		A++/A++	A++/A++	A++/A++	A++/A++	A++/A++	A++/A++	A++/A++	A++/A++	A++/A++	A++/A++
Electrical data											
Max. power consumption without emergency/booster heater	kW	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Frequency	Hz	50	50	50	50	50	50	50	50	50	50
Starting current (with/without starting current limiter)	A	5/-	5/-	5/-	5/-	5/-	5/-	5/-	5/-	5/-	5/-
Compressor fuse/MCB	A	3 x B 16	3 x B 16	3 x B 16	3 x B 16	3 x B 16	3 x B 16	3 x B 16	3 x B 16	3 x B 16	3 x B 16
Control unit fuse/MCB	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	1 x B 16	1 x B 16
Control unit phases		1/N/PE	1/N/PE	1/N/PE	1/N/PE	1/N/PE	1/N/PE	1/N/PE	1/N/PE	1/N/PE	1/N/PE
Emergency/booster heater phases		3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE
Compressor phases		3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE	3/N/PE
Rated voltage, compressor	V	400	400	400	400	400	400	400	400	400	400
Rated voltage, emergency/booster heater	V	400	400	400	400	400	400	400	400	400	400
Rated voltage, control unit	V	230	230	230	230	230	230	230	230	230	230
Max. operating current	A	12	12	12	12	12	12	12	12	12	12
Max. phase angle cos(phi)		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Versions											
IP rating		IP14B	IP14B	IP14B	IP14B	IP14B	IP14B	IP14B	IP14B	IP14B	IP14B
Refrigerant		R410 A	R410 A	R410 A	R410 A	R410 A	R410 A	R410 A	R410 A	R410 A	R410 A
Refrigerant charge	kg	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75
Global warming potential of the refrigerant (GWP100)		2088	2088	2088	2088	2088	2088	2088	2088	2088	2088
CO_2 equivalent (CO_2e)	t	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92	9.92
Frost protection		X	X	X	X	X	X	X	X	X	X
Defrost type		Circuit reversal	Circuit reversal	Circuit reversal	Circuit reversal	Circuit reversal	Circuit reversal	Circuit reversal	Circuit reversal	Circuit reversal	Circuit reversal
Casing panels in standard delivery		X	X	X	X	X	X	X	X	X	X
Compact air routing module in standard delivery		-	X	-	-	-	-	X	-	-	-
Integral circulation pump		-	X	-	-	-	-	X	-	-	-
Integral heat pump manager		-	X	-	-	-	-	X	-	-	-
Safety assembly in standard delivery		-	X	-	-	-	-	X	-	-	-
Dimensions											
Height (standard appliance)	mm	1116	1116	1116	1116	1116	1116	1116	1116	1116	1116
Width (standard appliance)	mm	784	784	784	784	784	784	784	784	784	784
Depth (standard appliance)	mm	1182	1182	1182	1182	1182	1182	1182	1182	1182	1182
Height (indoor installation)	mm	1182	1820				1182	1820			
Width (indoor installation)	mm	800	800				800	800			
Depth (indoor installation)	mm	1240	1240				1240	1240			
Height (outdoor installation)	mm			1435	1435	1435			1435	1435	1435
Width (outdoor installation)	mm			1240	1240	1240			1240	1240	1240
Depth (outdoor installation)	mm			1280	1280	1280			1280	1280	1280

Specification

		WPL 19 I	WPL 19 IK	WPL 19 A	WPL 19 A SR	WPL 19 A dB	WPL 24 I	WPL 24 IK	WPL 24 A	WPL 24 A SR	WPL 24 A dB
Weights											
Weight (standard appliance)	kg	201	201	201	201	201	201	201	201	201	201
Weight (compact air routing module)	kg		80					80			
Weight	kg	289	373	279	279	279	289	373	279	279	279
Total weight, indoor installation	kg	289	373				289	373			
Total weight, outdoor installation	kg			279	279	279			279	279	279
Connections											
Air hose intake and discharge connectors		DN 560	DN 560				DN 560	DN 560			
Water quality requirements											
Water hardness	°dH	≤3	≤3	≤3	≤3	≤3	≤3	≤3	≤3	≤3	≤3
pH value (with aluminium fittings)		8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5	8.0-8.5
pH value (without aluminium fittings)		8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0	8.0-10.0
Chloride	mg/l	≤30	<30	≤30	≤30	≤30	<30	<30	<30	<30	<30
Conductivity (softening)	µS/cm	<1000	<1000	<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	20-100	20-100
Oxygen 8-12 weeks after filling (softening)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<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	<0.1	<0.1
Values											
Heating flow rate (EN 14511) at A7/W35, B0/W35 and 5 K	m³/h	1.17	1.17	1.17	1.17	1.17	1.25	1.25	1.25	1.25	1.25
Nominal heating flow rate at A-7/W35 and 7 K	m³/h	1.21	1.21	1.21	1.21	1.21	1.65	1.65	1.65	1.65	1.65
Nominal internal pressure drop, heating	hPa	212		212	212	212	270		270	270	270
Min. heating flow rate	m³/h	1	1	1	1	1	1	1	1	1	1
Flow rate on heat source side	m³/h	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Total available external pressure differential on heat source side	hPa	1.15	1.15				1.2	1.2			

Further details

		WPL 19 I	WPL 19 IK	WPL 19 A	WPL 19 A SR	WPL 19 A dB	WPL 24 I	WPL 24 IK	WPL 24 A	WPL 24 A SR	WPL 24 A dB
		235193	235878	236412	236414	238962	235194	235879	236413	236415	238963
Maximum altitude for installation	m	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000

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.

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