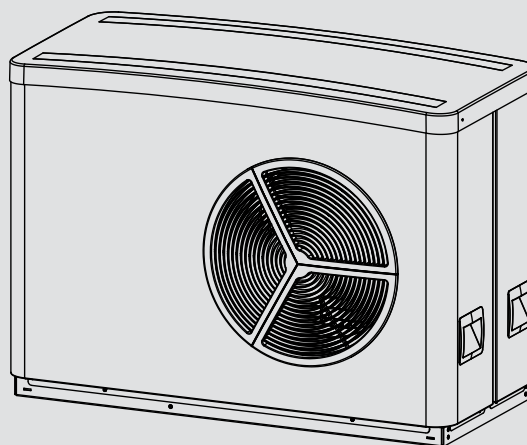


OPERATION AND INSTALLATION

Air source heat pump

- » WPL 15 A2W Premium
- » WPL 25 A2W Premium



Certified to ANSI/UL Std. 60335-1, 60335-2-40

Conforms to CAN/CSA Std. C22.2 No. 60335-1, 60335-2-40

Certificación con ANSI/UL Std. 60335-1, 60335-2-40

Conforme a CAN/CSA Std. C22.2 No. 60335-1, 60335-2-40

Certifié à la norme ANSI/UL Std. 60335-1, 60335-2-40

Conforme à la norme CAN/CSA Std. C22.2 No. 60335-1, 60335-2-40

STIEBEL ELTRON

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SPECIAL INFORMATION OPERATION

- 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 1/8" (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 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).
- Following disconnection from the power supply, parts of the appliance may remain energized for 2 minutes until the inverter capacitors have discharged.
- Never interrupt the power supply, even outside the heating season. The system's active frost protection is not guaranteed if the power supply is interrupted.
- If the heat pump is completely switched off and there is a risk of frost, drain the system on the heat fluid side.

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
- Commissioning checklist for heat pump

1.2 Safety instructions

1.2.1 Structure of safety instructions



KEYWORD Type of risk

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

► Steps to prevent the risk are listed.

1.2.2 Symbols, type of risk

Symbol	Type of risk
	Injury
	Electrocution

1.2.3 Keywords

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

1.3 Other symbols in this documentation



Note

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

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

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

1.4 Units of measurement



Note

All measurements are given in inches and (mm) unless stated otherwise.

1.5 Standardized output data

Information on determining and interpreting the specified standardized output data.

1.5.1 AHRI 550/590

The output data specifically mentioned in texts, diagrams and technical data sheets has been calculated according to the test conditions of the standard shown in the heading of this section. Test results are based on 100% water without any glycol.

Generally, the test conditions stated above will not fully match the conditions found at the installation site of the system user.

The usage of antifreeze glycol is required. It has an influence on the efficiency and heat capacity, depending on the concentration of glycol.

Depending on the chosen test method and the extent to which this method differs from the test conditions defined in the first paragraph of this section, any deviations can be considerable.

Confirmation of the specified output data can only be obtained if the test conducted for this purpose is also performed in accordance with the test conditions defined in the first paragraph of this section.

2. Safety

2.1 Intended use

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

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

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

2.2 Safety instructions

Observe the following safety instructions and regulations.

- Only qualified contractors may carry out the electrical work and installation of this appliance.
- 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.



WARNING Electrocutation

Contact with live components presents a threat to life. Damage to the electric insulation or to individual components may result in a threat to life.
 ▶ If there is damage to the insulation, disconnect the power supply and arrange a repair.
 All work on the electrical installation must be carried out by a qualified contractor.



WARNING Scalding

The water in the DHW tank can be heated to temperatures in excess of 149°F (65°C). There is a risk of scalding at outlet temperatures in excess of 110°F (43°C).
 ▶ Ensure you do not come into contact with the water when discharged.



WARNING Burns

Touching hot components can lead to burns. When working on hot components, always wear protective working clothing and safety gloves. The pipework connected to the DHW outlet of the appliance can reach temperatures in excess of 149°F (65°C).



WARNING Burns

In the case of a fault, temperatures up to the high limit safety cut-out temperature limit can occur (See 18.6, "Data table", pg. 37).

Register your product



WARNING Scalding
The appliance is filled with refrigerant at the factory. In case of leaking refrigerant, avoid coming into contact with the refrigerant or inhaling the released vapors. Ventilate the affected spaces.



CAUTION Injury
Never place any objects on top of the appliance. If objects are left on the appliance, noise emissions may increase due to resulting vibrations, and the objects could fall and cause injury.



CAUTION
To reduce the risk of excessive pressures and temperatures in this water heater, install temperature and pressure protective equipment required by local codes and no less than a combination temperature and pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials, as meeting the requirements for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, ANSI Z21.22. This valve must be marked with a maximum set pressure not to exceed the marked maximum working pressure of the water heater. Install the valve into an opening provided and marked for this purpose in the water heater, and orient it or provide tubing so that any discharge from the valve exits only within 6 inches above, or at any distance below, the structural floor, and does not contact any live electrical part. The discharge opening must not be blocked or reduced in size under any circumstances.



Material losses
Only operate the appliance when the DHW tank has been filled with water.



Material losses
If you disconnect the appliance from the power supply, it is no longer protected against frost.
▶ Do not interrupt the power supply to the appliance.



Material losses
Never cover this appliance. Covering the air intake or air discharge leads to a reduced air supply. If the air supply is restricted, the operational reliability of the appliance cannot be guaranteed.



Material losses
Heating liquids other than potable water or a water/propylene glycol mixture is not permitted.

3. Register your product



Note:
You must register this product within 90 days of purchase on our web site in order to activate the standard warranty or to be eligible for the extended warranty. Go to our web site at www.stiebel-eltron-usa.com and click on register your product.

Before beginning the registration process, we suggest that you gather the necessary information which will be as follows:

- 1 Serial number on the type plate (the type plate label is located at the top left of the unit when facing the air outlet)

Type, Example: WPL A2W 15 Premium

Number listed after "Nr."

Place of Purchase

Purchase Date

First & Last Name

Email address

Physical Address

Phone Number

Installation Date

If you have any questions concerning the registration process or warranty options, please contact Stiebel Eltron USA directly at (800)-582-8423.

4. Appliance description

4.1 Properties

The appliance is an air source heat pump that operates as a heating or cooling heat pump for outdoor installation. Heat is extracted from the outdoor air at a low temperature level, and is then transferred to the heating water at a higher temperature. The heating water can be heated up to a flow temperature of 149°F (65°C).

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

This appliance has further operational characteristics:

- Suitable for underfloor and radiator heating systems.
- Preferred for low temperature heating systems.
- Extracts heat from the outdoor air even at outside temperatures of -4°F (-20°C).
- Corrosion-protected, external casing made from hot-dipped galvanized sheet steel plus powder coated finish.
- Comprises all components and safety equipment required for operation.
- Filled with non-combustible safety refrigerant.
- The product is delivered without a cord.

OPERATION

Settings



Note

For centralized control of the heating system, you would need either the standalone WPM heat pump manager or the WPM integrated into the HSBC 300 Integral.

4.2 Function

4.2.1 Heating

Heat is extracted from the outdoor air via the heat exchanger (evaporator) on the air side. The evaporated refrigerant is compressed by a compressor. This process requires electrical energy. At this point, the refrigerant is at a higher temperature and pressure level. A further heat exchanger (condenser) transfers the heat to the heating circuit. The refrigerant then passes an electronically controlled expansion valve, expands again, and the cycle restarts from the beginning.

If the ambient air temperature drops below 45°F (7°C), the moisture of the air freezes on the evaporator fins and hoarfrost builds up.

The amount of hoarfrost build up depends on the relative humidity of the air, and is automatically defrosted from time to time. Water created by this defrosting process collects in the heated defrost pan and is drained off.



Material losses

It is strongly recommended to install a buffer tank. The buffer tank acts like an air separator, and a proper flow rate is provided to avoid high pressure failure. 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 tank.

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 140°F (60°C).

4.2.2 Cooling



Material losses

The heat pump is not suitable for continuous, year-round cooling.

- Observe the application limits (see chapter "Specification / Data table").



Material losses

In cooling mode, condensate can form when the dew point temperature is undershot.

- Take suitable measures to prevent the formation of condensate.

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

Area cooling and fan cooling require the installation of a remote control unit (FET) in a reference room to capture the relative humidity and the room temperature as part of dew point monitoring.

With fan cooling, it is also necessary to install a buffer tank.

Heat pump application limit

The heat pump is switched off if the ambient temperature is below -4°F (-20°C) in heating mode, or the selected lower application limit for cooling (COOLING LIMIT parameter). The appliance is intended to be used at an altitude of up to 6,561 ft (2000 m).

5. Settings

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

If the Heat pump is delivered with a system tank HSBC Integral, the WPM is integrated in the indoor system tank assembly, and the WPM is configured with default parameter setting for the complete system. If the heat pump is delivered without a HSBC Integral system tank an SD card is delivered with the WPM for initial setup.

SD card default Parameter setting:

The heating curve default value is set for low energy applications: 0.6 (10°F [-12.2°C] ambient temperature means 113°F [45°C] leaving water temperature)

The DHW temperature setting default value is 140°F (60°C).

Summer mode for cooling is activated at 78°F (26°C) ambient air temperature.

Adjust the heating curve for buildings built to a lower insulation-standard to 1.0. An ambient temperature of -4°F (-20°C) results in a 149°F (45°C) leaving water temperature.

In cooling applications, an FET (remote control) is required.

The FET needs to be installed in a reference room of the building to detect the room temperature and relative humidity.

If an FET is installed, the set point value for the leaving water temperature of the heat pump is controlled using the room temperature sensor information. The room temperature sensor is integrated inside the FET.

- To adjust the default settings of the WPM, please observe the instructions for the WPM unit.

6. Maintenance and care



Material losses

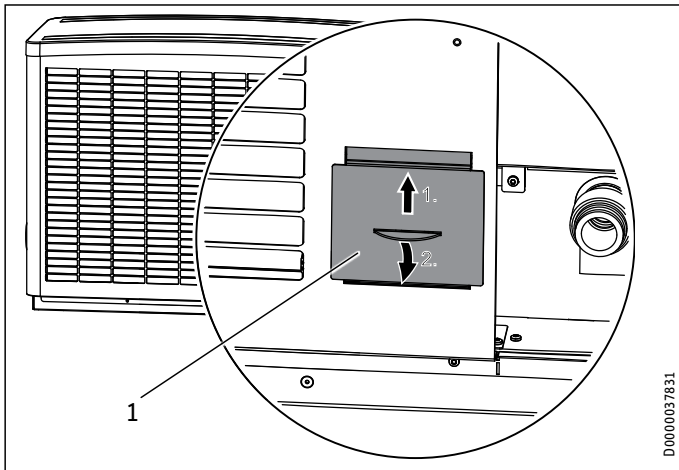
Maintenance work, such as checking the electrical safety, may only be carried out by a qualified contractor.

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

Regularly check the condensate drain (visual inspection). Remove any contaminants and blockages immediately.

OPERATION

Troubleshooting



1 Inspection port



Material losses

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

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

We recommend a regular inspection (to establish the current condition of the system), and maintenance by a qualified contractor as required (to restore the system to the ideal condition).

7. Troubleshooting

Problem	Cause	Solution
The heat pump is not operating.	The WPM is not installed and/ or the ambient air temperature sensor is not installed.	Activate the WPM and check the installation of the ambient air temperature sensor. It need to be placed on the northern side of the building not affected by solar radiation.
Water is leaking from the appliance.	The condensate drain may be blocked.	Clean the condensate drain as described in "Maintenance and care".
The heater gets warm, but the rooms are not heated to the required temperature.	The dual mode temperature is set too low.	Increase the dual mode temperature to e.g. 32°F (0°C).
The heater gets warm, but the rooms are not heated to the required temperature.	The building is new construction, and is in the screed drying phase.	Increase the dual mode temperature to 41°F (+5°C). After 1 to 2 years the dual mode temperature can be reset to e.g. 27°F (-3°C).
Condensate is collecting on the outside of the appliance.	The heat pump extracts heat from the outdoor air in order 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.	

Problem	Cause	Solution
The fan runs when the compressor is switched off.	At outside temperatures below 50°F (10°C), the fan is regularly started at the lowest speed when the compressor is idle. This prevents the evaporator and fan from freezing or icing up due to water draining off. At temperatures above the freezing point, the time between two defrost cycles is increased, thereby improving overall efficiency.	
The appliance produces rhythmic scraping or grinding noises.	Ice has formed on the air grill, on the fan blades or in the air routing.	Call your qualified contractor (see chapter "Installation / Troubleshooting / Fan noise").

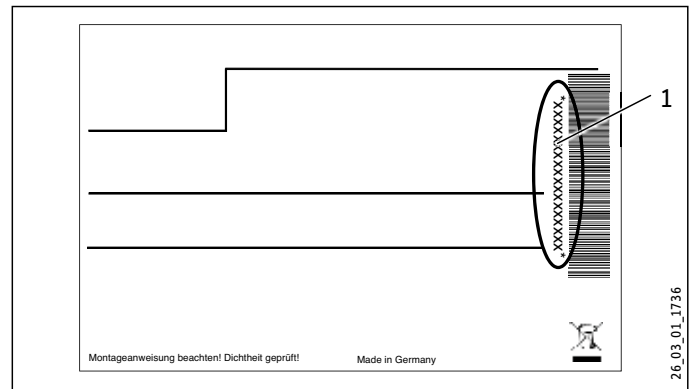


Note

Even when the condensate has been drained correctly, it is not unusual for water to drip from the appliance onto the ground.

If you cannot solve the problem, contact your qualified contractor. To facilitate and speed up your request, provide the number from the type plate. The type plate is located at the top left-hand side of the casing, when facing the air outlet. Please contact Stiebel Eltron technical support at (800)-582-8423 or (413)-247-3380.

Sample type plate



1 Number on the type plate

INSTALLATION

8. Safety

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

8.1 General safety instructions

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

8.2 Instructions, standards and regulations



Note

Observe all applicable national and regional regulations and instructions.

The appliance is tested according to:

- IEC 61000-3-11
- UL 60335-2-40:2017 Ed.2
- UL 60335-1:2016 Ed.6
- CSA C 22.2 60335-2-40 : 2012 Ed.1+U1
- CAN/CSA E 60335-1/4E issued 2003/04/01 Ed.4
- AHRI Standard 550/590 (I-P)-201
- Energy star tested according to AHRI 550/590 2018

9. Appliance description

The appliance offers frost protection for the water driven pipe connection tubing. The integral frost protection circuit starts the circulation pump in the heat pump circuit automatically at a condenser temperature of 46°F (8°C), and thereby ensures circulation in all water-carrying sections. If the temperature inside the buffer tank drops, the heat pump starts automatically no later than when the temperature falls below 41°F (+5°C).

A mixture of at least 30% polypropylene glycol/water is required to protect against frost damage during a power outage and to avoid system corrosion issues. The concentration should be not less than 30%.

9.1 Accessories

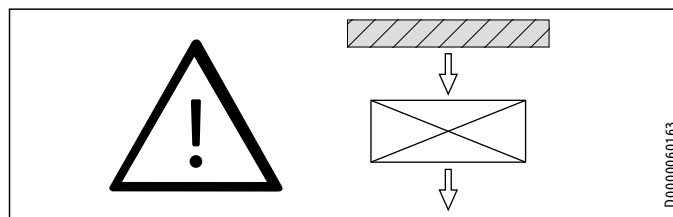
9.1.1 Required accessories

- WPM heat pump manager

9.1.2 Additional accessories

- FET remote control
- HZB 2 ribbon heater
- SK 1 T-support
- WK 2 Wall-mount
- AS-WP connection set, item no. 203247

10. Preparation



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

10.1 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

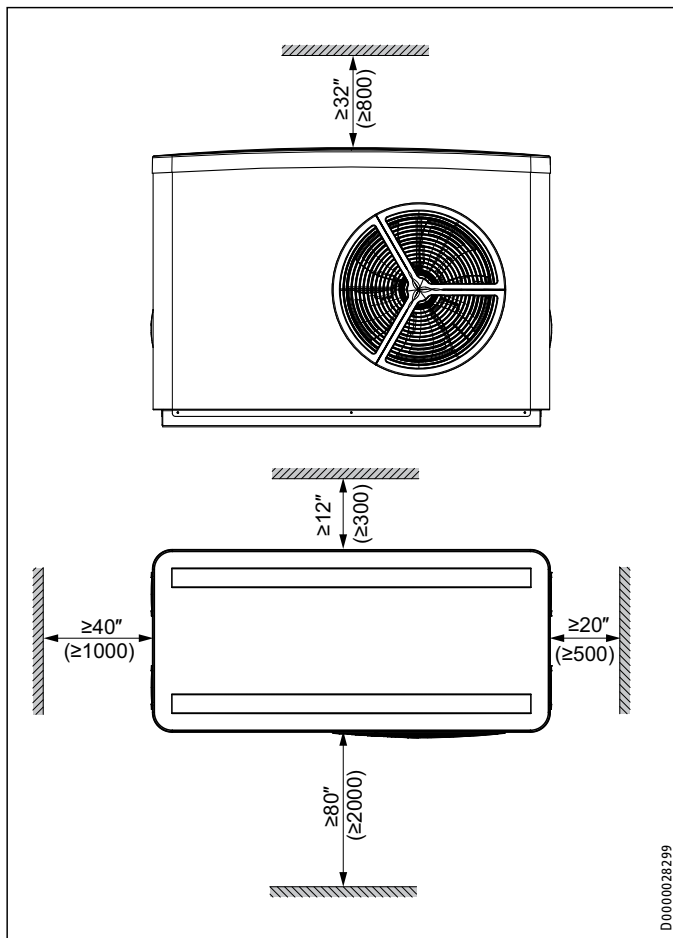
For details regarding the sound power level, see chapter "Specification / Data table".

- Lawn areas and shrubs help reduce the spread of noise.
- Noise propagation can also be reduced through dense palisades or similar objects.
- ▶ 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 neighboring 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.

INSTALLATION

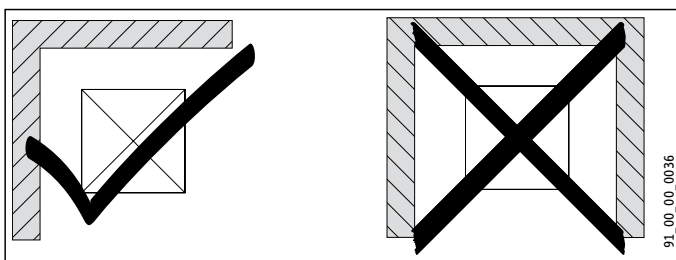
Preparation

10.2 Minimum clearances



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



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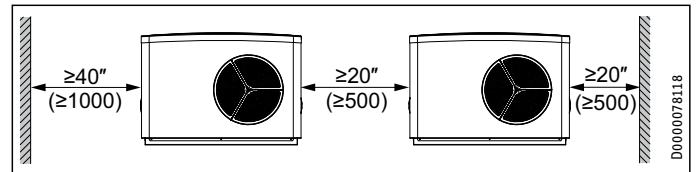
► Never install the appliance in a recess. Two sides of the appliance must remain exposed.



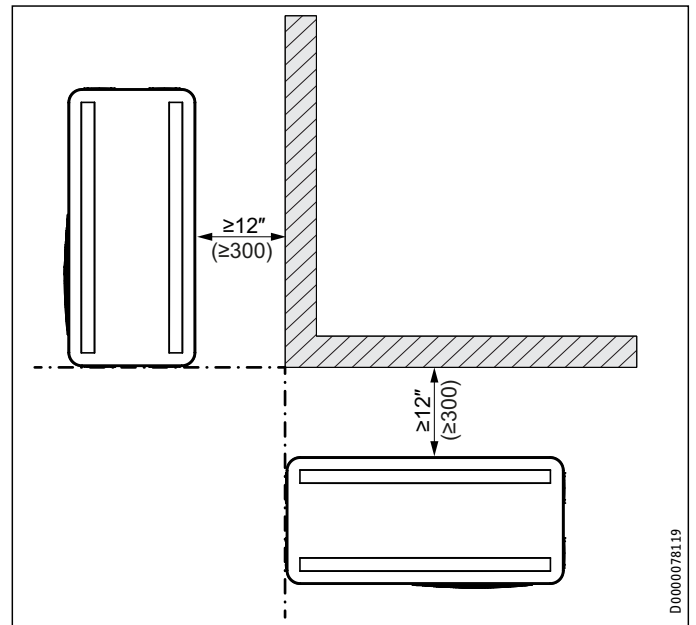
Material losses

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.

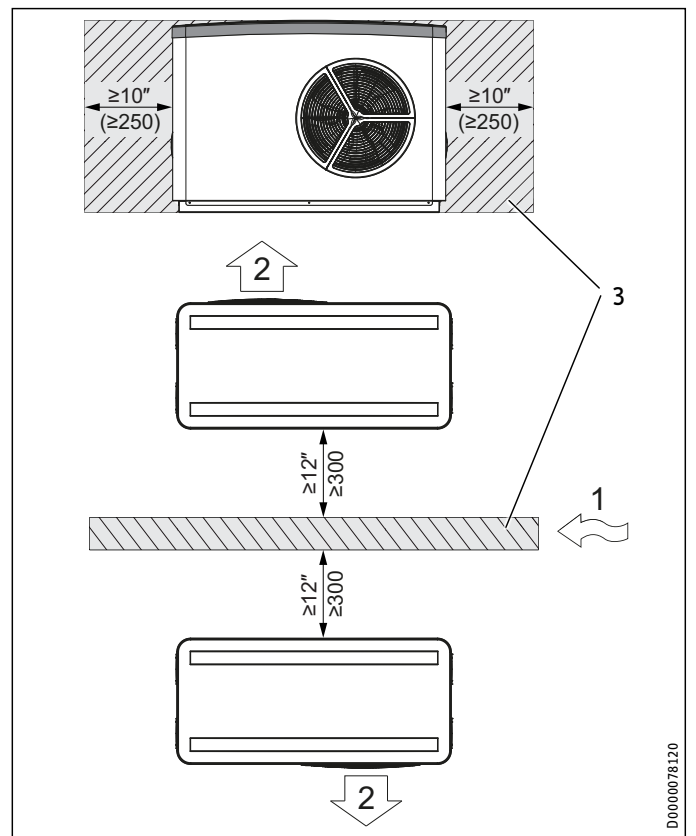
10.2.1 Minimum clearances with cascades



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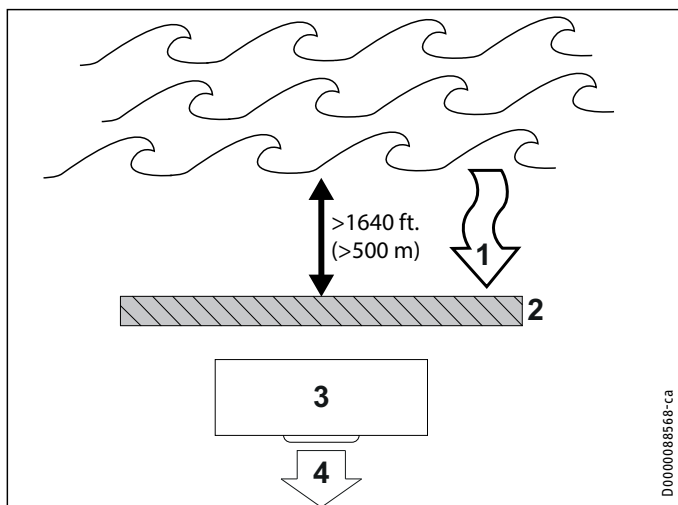
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- 1 Main wind direction
- 2 Air discharge
- 3 Wall or wind protection

INSTALLATION

Preparation

10.3 Installation near ocean/salt water



- 1 Main wind direction
- 2 Building, wall or windbreak
- 3 WPL unit
- 4 Air outlet

- ▶ Make sure that the air inlet direction is the same as the main wind direction. If the main wind direction is from the sea (salinity >2%), keep a minimum distance of at least 1640 ft. (500 m) from the ocean.

10.4 Preparing the installation location



WARNING Injury

The discharged cold air can cause condensation to be formed in the vicinity of the air outlet.

- ▶ Ensure that no risk of slipping due to wet conditions or ice formation occurs on adjacent footpaths and driveways at low temperatures.

- ▶ Observe chapter "Sound emissions".
- ▶ Ensure that the appliance is accessible from all sides.
- ▶ Ensure that the mounting surface is level, even, solid and permanent.
- ▶ Provide a recess (space) in the base to enable supply lines to be routed into the appliance from below.



Material losses

- ▶ Ensure that all electric cables, connections, and conduit are placed and secured in such a way to keep them free of damage during lawn cutting or landscaping operations.

10.5 Installing the supply lines

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

- To facilitate connection to the appliance, we recommend using flexible supply lines in the case of outdoor installation.
- ▶ Also protect all supply lines against humidity, damage and UV radiation by means of a conduit.
- ▶ Use only weatherproof cables, e.g. NYF.

- ▶ Protect the flow and return lines against frost with sufficient thermal insulation. The thermal insulation must be at least twice as thick as the diameter of the pipe. 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 hose, observe chapter "Installation / Condensate drain".

10.6 Siting

- ▶ When siting the appliance, observe the air discharge direction.
- ▶ To avoid mold buildup, make sure that the appliance does not blow cold air directly towards building structures.
- ▶ Position the appliance on the prepared mounting surface or on a suitable support.

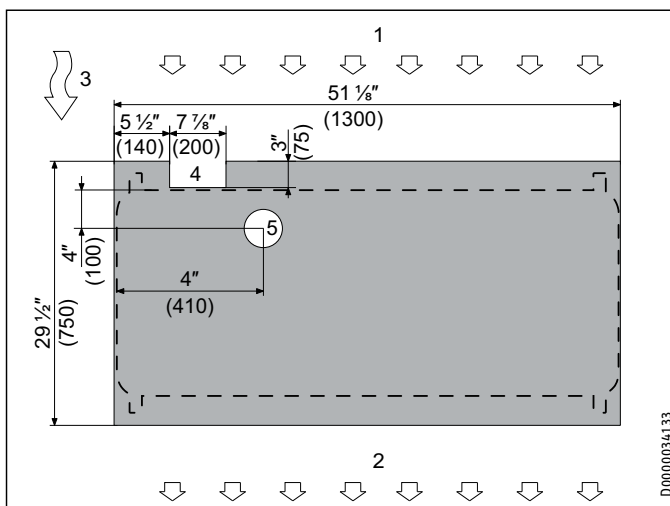
10.6.1 Siting on a slab foundation



Note

Allow the conduits for the supply lines to protrude slightly above the slab. Ensure that no water can enter the conduit.

Foundations with recess (WPL 15 A2W Premium)

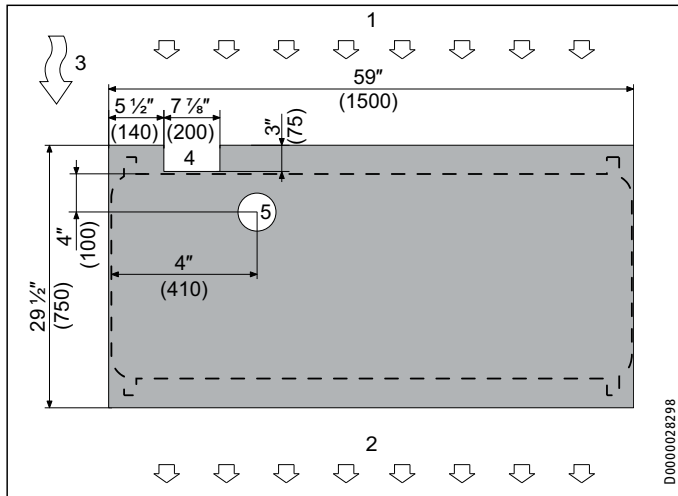


- 1 Air intake
 - 2 Air discharge
 - 3 Main wind direction
 - 4 Supply line recess
 - 5 Condensate drain hole, minimum diameter 2³/₄" (70 mm)
- ▶ Ensure that the slab includes the necessary recesses.

INSTALLATION

Preparation

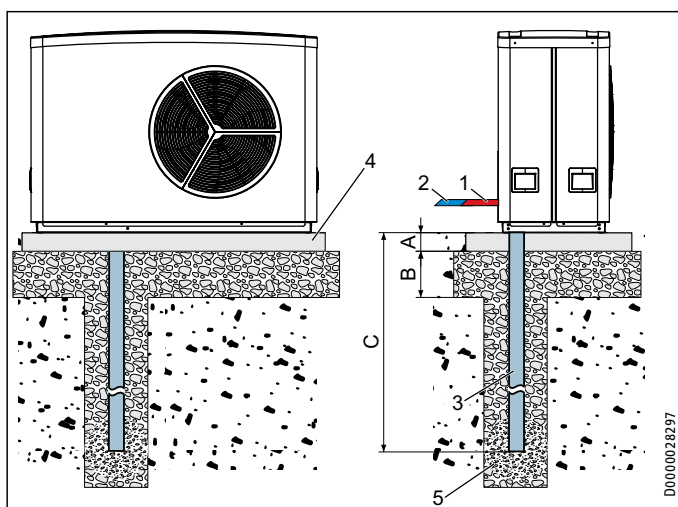
Foundations with recess (WPL 25 A2W Premium)



- 1 Air intake
 - 2 Air discharge
 - 3 Main wind direction
 - 4 Supply line recess
 - 5 Condensate drain recess, minimum diameter 2 3/4" (70 mm)
- Ensure that the slab includes the necessary recesses.

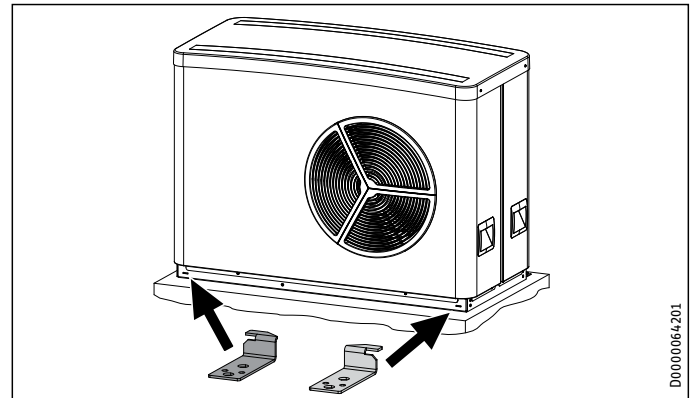
Installation on foundations

Note Installation directly on foundations is not recommended in climates where snow buildup is a concern. Excessive snow buildup may block the air intake of the WPL and interrupt normal operation. If installing in such a climate, consider one of the alternative installation options presented in this manual.



- A 4" (100 mm)
- B 12" (300 mm)
- C Depth of frost line
- 1 Heating flow
- 2 Heating return
- 3 Condensate drain conduit
- 4 Slab
- 5 Gravel bed

Note To secure the appliance against toppling over, it can also be fixed to the slab with screws.
► Use the accessories with which the appliance was secured to the transport pallet.



- Hook brackets into the four lateral slots on the front and back. Ensure you are using the correct brackets for the left and right hand slots.
- Position the brackets so that the groove on the bracket is hooked into the appliance.
- Secure the appliance to the foundations using the brackets and suitable rawl plugs and screws. Do not use the screws with which the appliance was secured to the transport pallet.

INSTALLATION

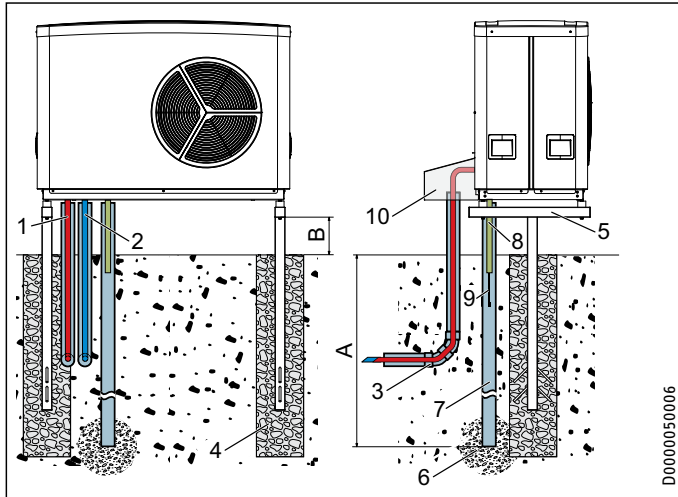
Preparation

T-support SK 1



Note

- ▶ Install a ribbon heater when mounting on the wall bracket or T-support (see chapter "Electrical connection / Ribbon heater").



A Depth of frost line

B 12" (300 mm)

1 Heating flow

2 Heating return

3 Conduit for supply lines

4 Foundation

5 T-support

6 Gravel bed

7 Condensate drain conduit

8 Condensate drain

9 Ribbon heater

10 Cover

- ▶ Observe the structural limits of the T-support used.
- ▶ See the dimensioned connection drawing for the correct spacing between holes (see chapter "Specification / Dimensions and connections").

10.7 WPM heat pump manager

A WPM heat pump manager is required to operate the appliance. This controls the entire heating system. If the heat pump is installed with the indoor HSBC Integral system tank, a WPM is included with preset parameters for easy initial setup.

- ▶ Observe the WPM installation instructions during installation.

10.8 Buffer tank



Material losses

A buffer tank with diffusion-proof insulation is essential to enable cooling by means of fan convectors. The emergency/booster heater must be connected.

We recommend the use of a buffer tank to ensure trouble-free appliance operation.

The buffer tank provides hydraulic separation of the volume flows in the heat pump circuit and heating circuit, and also serves as an energy source for defrosting. A buffer volume of at least 25 gal

(94.6 l) per heat pump is required to provide adequate defrost energy.

10.9 Preparing the electrical installation



WARNING Electrocutation

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



WARNING Electrocutation

The connection to the power supply must be in the form of a permanent connection. Ensure the appliance can be separated from the power supply by an isolator that disconnects all poles with at least 1/8" (3 mm) contact separation. This requirement can be met by contactors, isolators, fuses, etc.



Material losses

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



Material losses

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

- ▶ Use cables with the relevant cross-sections. Carry out the field wiring according to NEC. Use SJT type cable for outdoor applications. The cable needs to be UV and oil resistant.

MCB/fuse rating	Assignment	Cable cross-section
1x B 20 A	Compressor WPL 15 A2W Premium	AWG 10
1x B 35 A	Compressor WPL 25 A2W Premium	AWG 8
1x B 30 A	Electric emergency/ booster heater WPL 15 A2W Premium WPL 25 A2W Premium	AWG 10
1x B 15 A	Control unit	AWG 16

The electrical data can be found in the chapter "Specification". A shielded 4-wire 18 AWG cable is required for the data bus connection.



Note

The appliance includes an inverter for the variable speed compressor. In the event of a fault, inverters can cause DC residual currents. If RCDs are provided, they must be type B AC/DC-sensitive.

A DC residual current can block type A RCDs.

- ▶ Ensure that the appliance power supply is disconnected from the distribution board.

INSTALLATION

Installation

11. Installation

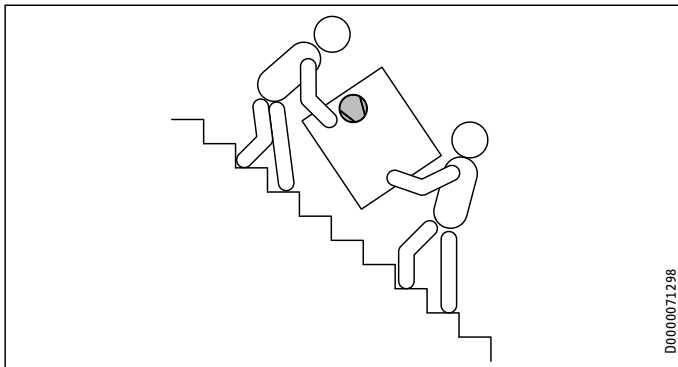


Note

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

11.1 Transport

- ▶ When transporting the appliance, be aware of its center of gravity. The center of gravity is in the area where the compressor is located.
- ▶ Protect the appliance against heavy impact during transport.
- ▶ Use the recessed grips provided on the sides of the appliance.



- If the appliance needs to be tilted during transport, this must only be for a short time and it must only be tilted on one of its longitudinal sides. When transporting the appliance, ensure the compressor is on the upper appliance side.
- The longer the appliance is tilted, the greater the amount of redistribution of the refrigerant oil inside the system.
- ▶ Wait approximately 30 minutes before starting the appliance after it has been tilted.

11.2 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 guide.

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

Use the 1 inch copper tubes delivered with the heat pump. They are expanded on the installation side for soldering.

The non-expanded end of the tube needs to fit in the push-fit connector.

For soldering, remove the copper tubes from the push fit connector.

- ▶ 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 side. Check for tightness.
- ▶ Make sure that the tube connections are correct: the leaving water tube (hot) is on the right-hand side, and the incoming (cold) is on the left-hand side.
- ▶ Provide thermal insulation for the pipes in accordance with applicable regulations.
- ▶ When sizing the heating circuit, observe the internal pressure differential (see chapter "Specification / Data table").

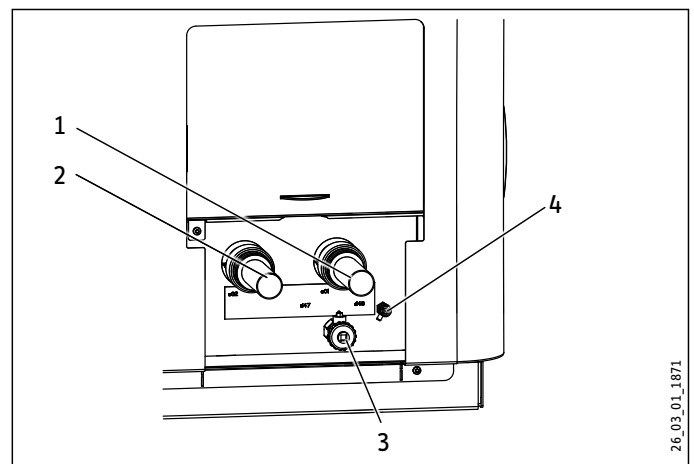
11.3 Flow and return connection



Material losses

In cooling mode, condensate can form when the dew point temperature is undershot.

- ▶ Take suitable measures to prevent the formation of condensate.



- 1 Leaving water port (hot)
- 2 Heating return (cold)
- 3 Drain
- 4 Purge valve

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

11.4 Fitting the push-fit connectors



Note

The plastic push-fit connectors are not suitable for installation in the DHW line or the solar circuit.

- ▶ Install the push-fit connectors only in the heating circuit.



Material losses

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

INSTALLATION

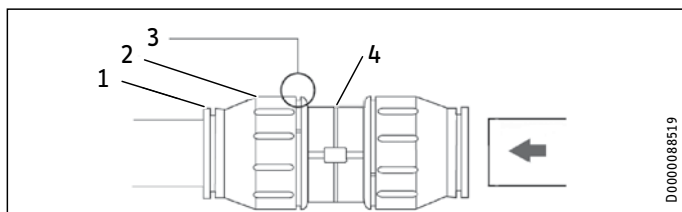
Installation

How the push-fit connectors work

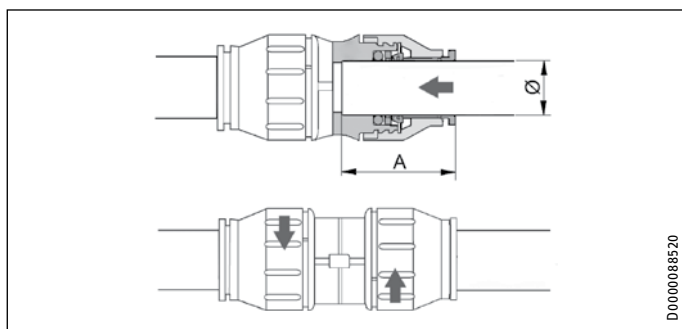
The push-fit connectors are equipped with a retainer with stainless steel serrations and an O-ring for sealing. The push-fit connectors also have a "twist and secure" function. Simply turning the screw cap by hand will secure the pipe in the connector and push the O-ring against the pipe to seal it.

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	1 1/8" (28 mm)
Depth of insertion A	max. 1 3/4" (44 mm)



Material losses

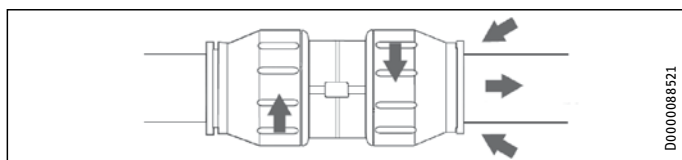
- Pipe ends must be de-burred.
- ▶ Always use a pipe cutter to trim pipes.

- ▶ Push the pipe past 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 secures the push-fit connection.

Undoing the push-fit connection

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

- ▶ Turn the screw cap anti-clockwise until there is a narrow gap of approx. 1/16" (2 mm). Press the retainer back with your fingers and hold on to it.
- ▶ Pull out the inserted pipe.



11.5 Oxygen diffusion



Material losses

Do not use this device in open vented heating systems. Use oxygen diffusion-proof pipes in heating systems with plastic pipework.

In 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 tank, on buffer tanks, steel radiators or steel pipes).

- ▶ With heating systems that are permeable to oxygen, separate the heating system between the heating circuit and the buffer tank using an indirect heating coil or plate heat exchanger.



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.

11.6 Filling the heating system

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

Use propylene glycol for boiler applications with a minimum concentration of 30% for frost protection.

Do not use automotive glycol. Automotive glycol causes deposits in the heat exchanger and may destroy the heat exchanger.

The glycol concentration depends on the coldest ambient temperatures experienced locally.

Glycol concentration	Frost protection temperature
30% concentration	8°F (-13.3°C)
40% concentration	-7°F (-21.7°C)
50% concentration	-29°F (-33.9°C)

The water system must contain a mixture of inhibited glycol and water with thermal protection sufficient for the coldest expected temperature for the installation. The inhibitor level can degrade over time, and may need to be adjusted periodically. The inhibitor is essential to prevent the glycol from accelerating corrosion of metal components in the system. The glycol and inhibitor levels must be checked regularly (no less than once annually).



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 annual service.

INSTALLATION

Installation



Note

If water with a conductivity greater than 1000 $\mu\text{S}/\text{cm}$ is used, desalination treatment is recommended in order to avoid corrosion.



Note

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



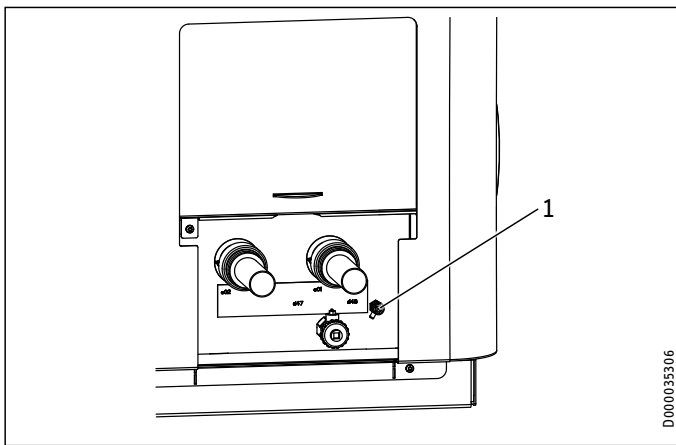
Note

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

- ▶ Fill the heating system via the drain (see chapter "Specification / Dimensions and connections").
- ▶ Add water to the system as needed to raise the pressure to 29 PSIG (verify that all system components are suitable for this pressure). Verify that the pressure remains constant for at least one hour. Locate and correct any leaks.

11.6.1 Venting the heating system

- ▶ Before you fill the system, open the high point purge valve to vent the air during filling.
- ▶ Also open the purge valve on the heat pump.



1 Purge valve

- ▶ Vent the pipework by activating the purge valve.

11.7 Minimum flow rate

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

	Minimum flow rate	Minimum water content of the buffer tank or the open circuits	Composite pipework 5/8" / installation spacing 6"		Composite pipework 3/4" / installation spacing 8"	
			Primary room floor area	Number of circuits	Primary room floor area	Number of circuits
	gpm (L/h)	gal (L)	ft ² (m ²)	# x ft	ft ² (m ²)	# x ft
WPL 15 A2W	3.1 gpm (11.7 l/m)	4.2 gal (16 l)	226 ft ² (21 m ²)	3 x 230	226 ft ² (21 m ²)	2 x 230
WPL 25 A2W	4.4 gpm (16.7 l/m)	7.7 gal (29 l)	301 ft ² (28 m ²)	4 x 230	344 ft ² (32 m ²)	3 x 230

	Buffer tank always required	Recommended buffer tank volume for heating system	Activate the integral emergency/booster heater
WPL 15 A2W	Yes	25 gal (94.6 l)	Yes
WPL 25 A2W	Yes	25 gal (94.6 l)	Yes

11.8 Setting the flow rate on the heating side



Material losses

Never operate the system without a buffer tank so as to ensure proper flow rate for the heating system. The buffer tank ensures there is always enough thermal energy to defrost the evaporator when called for. If a buffer tank is not used, the condenser may freeze under defrost mode and lead to a complete loss of refrigerant. Repair costs for such a failure are not covered under the product warranty.

The setting must be made when only the heat pump is operating. In order to do this, first make the following changes:

- ▶ 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 source.
- ▶ Operate the appliance in heating mode.

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 temperature rise 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 increase the flow rate up to the minimum required value.
- ▶ Reset the parameters to their original values



Material losses

A buffer tank with diffusion-proof insulation is essential to enable cooling by means of fan convectors.

INSTALLATION

Installation

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

In combination with a hydraulic module, tank and hydraulic module or integral tank:

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

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

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

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

11.8.2 Minimum flow rate for systems with a buffer tank

When using a buffer tank, in menu "SETTINGS / HEATING / STANDARD SETTINGS", set parameter "BUFFER OPERATION" to "ON".

In combination with a hydraulic module, tank and hydraulic module or integral tank, and with spread control disabled:

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

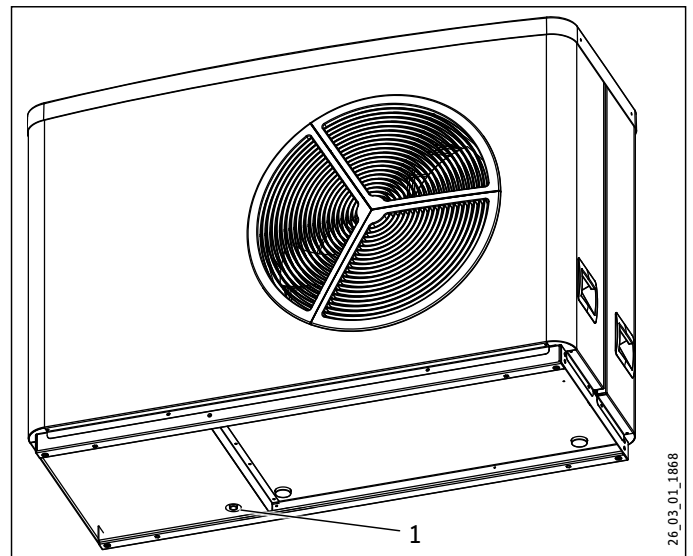
If the appliance is operated on its own with a WPM:

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

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

11.9 Condensate drain

A condensate drain connector is factory-fitted to the defrost pan to enable the connection to a 1½" (28.5 mm) ID condensate drain line.



1 Condensate drain

- ▶ Observe chapter "Electrical connection / Ribbon heater".
- ▶ If the appliance is sited on a slab, the condensate drips freely into the condensate drain pipe.
- ▶ If the appliance is mounted on a bracket or T-support, attach a condensate hose to the condensate drain.
- ▶ Protect the condensate hose against frost with sufficient thermal insulation.



Material losses

Ensure the condensate hose is not kinked.

- ▶ After routing the condensate hose, check that the condensate can drain correctly.

11.10 External second heat generator

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

11.11 High limit safety cut-out for space heating system



Material losses

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

12. Electrical connection



WARNING Electrocutation

► Before working on the appliance, isolate it from the power supply at the main circuit breaker.



Note

The leakage current of this appliance can be more than 3.5 mA.

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



Note

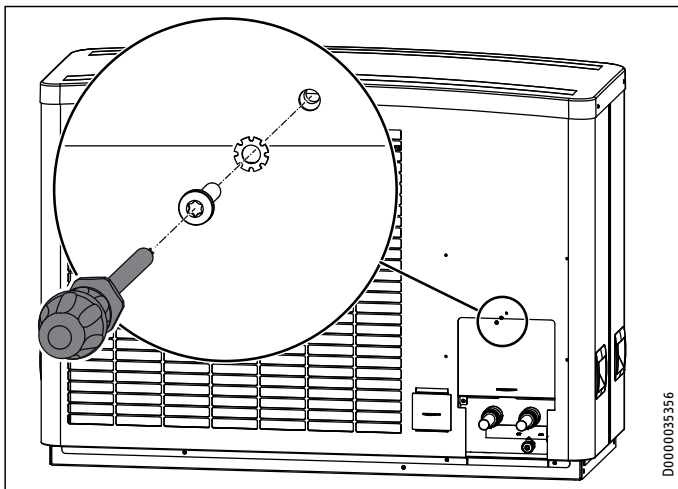
Please observe the instructions for the WPM heat pump manager.

The connection terminals are located in the terminal area of the appliance.

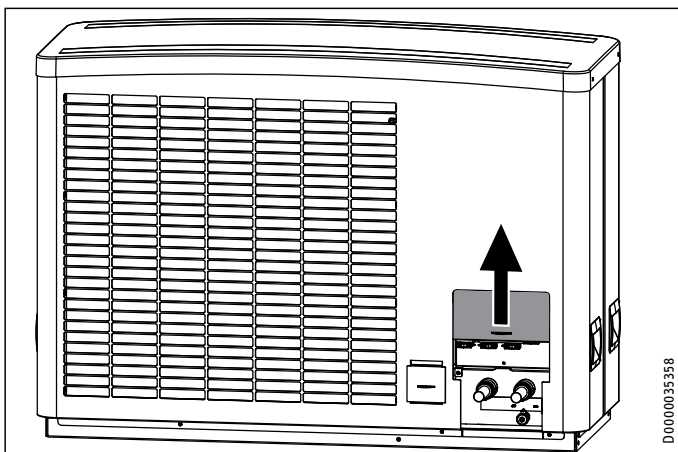
Follow the instructions in the chapter "Preparation / Preparing the electrical installation".

► For all connections, use appropriate cables in accordance with National Electric Code (NEC).

12.1 Access to the terminal area

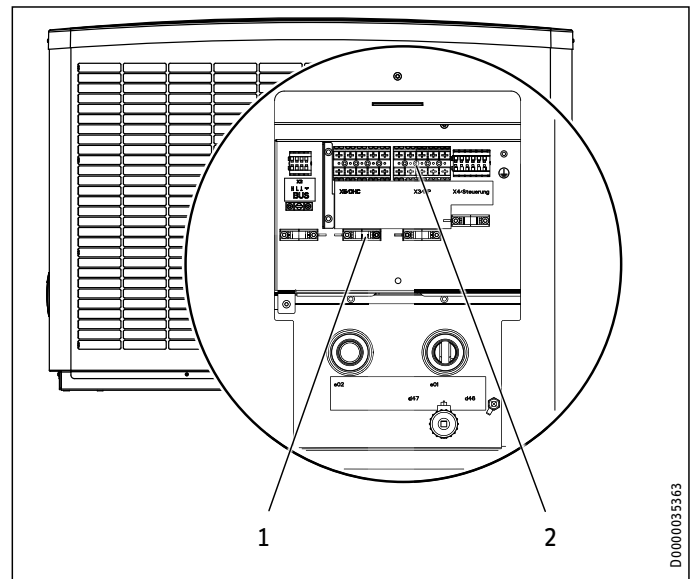


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D0000035358

► Push the cover upwards.

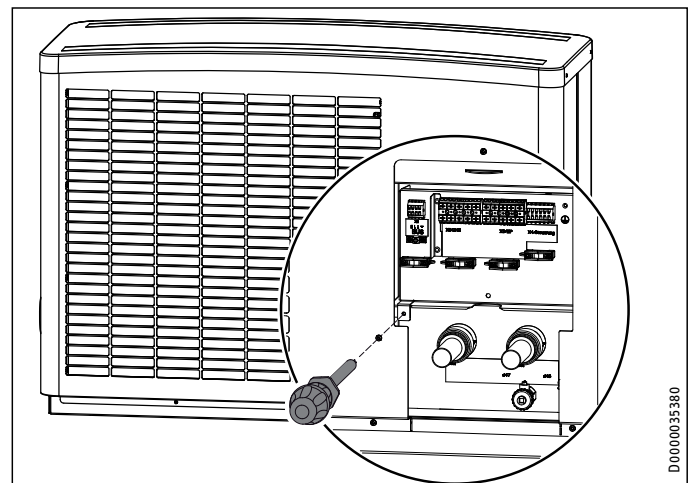


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- 1 Strain relief
- 2 Terminal area

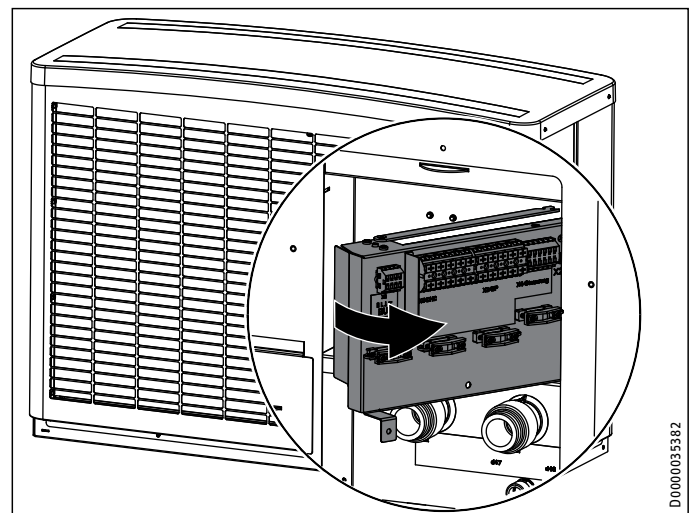
► Route cables and leads through the strain relief fittings.

If space behind the appliance is limited, the terminal area can pivot outward for easier access.



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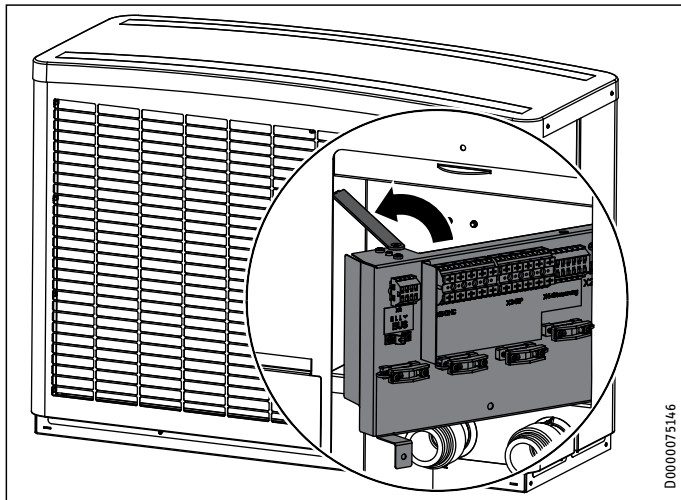
► Undo the screw on the terminal area.



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Electrical connection

- ▶ Pivot the terminal area to the side.

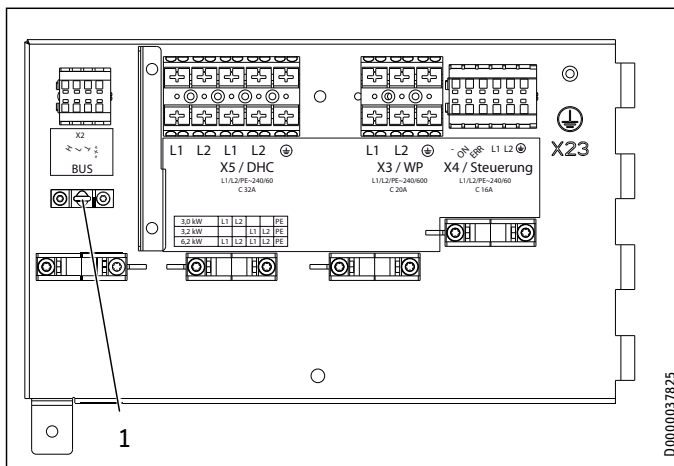


- ▶ Fix the terminal area in place with the locking mechanism.
- ▶ Connect the electric emergency/booster heater if you want to utilize the following appliance functions:

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	If the heat pump shuts down due to a fault, the heating output is covered by the electric emergency/booster heater.
Heat-up program (only for underfloor heating systems)	Where return temperatures are less than 77°F (25°C), the electric emergency/booster heater must provide the necessary heat for screed drying. With such low system temperatures, the heat for screed drying 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 appliance operation. Please note that during the heat-up program, emergency mode is not available.
Disinfection mode	The electric emergency/booster heater starts automatically when disinfection mode is active. The DHW is then regularly heated to 140°F (60°C) to protect it against the growth of legionella bacteria.

12.2 WPL 15/25 A2W Premium

- ▶ Connect the cables according to the following diagram.

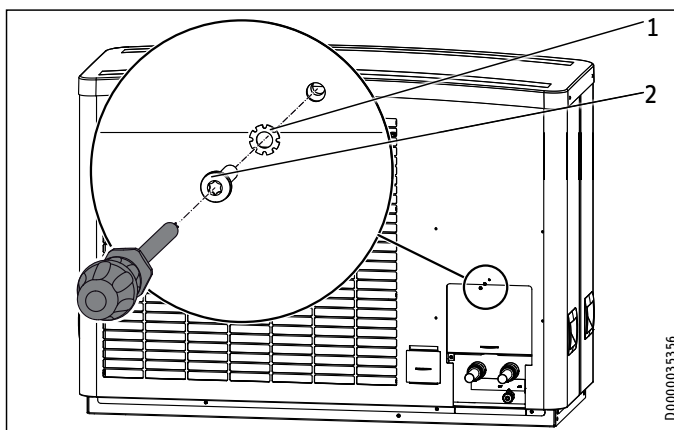


- 1 Ground terminal for screening the low voltage lead

X2	Safety extra low voltage (BUS)	
	BUS High H	
	BUS Low L	
	BUS earth —	
	BUS "+" (is not connected)	
X3	Compressor (inverter)	
	L1, L2, GND	
X4	Control voltage	
	-	
	ON	
	ERR	
	Power supply: L1, L2, GND	
X5	Electric emergency/booster heater (NHZ)	
	L1, L2, GND	
	Connected load	Terminal assignment
	3.0 kW	L1 L2 GND
	3.2 kW	L1 L2 GND
	6.2 kW	L1 L2 L1 L2 GND

- ▶ Ground the LV lead by inverting the braided shield over the cable sheath and clamping it under the ground terminal.
- ▶ Then check that the strain relief fittings are working as intended.

12.3 Closing the terminal area



- 1 Serrated washer
- 2 Screw

INSTALLATION

Electrical connection

- ▶ Secure the cover with the screw and serrated washer.
- ▶ Connect the following components to the heat pump manager in accordance with the technical guides:
 - Circulation pump for the heat consumer side
 - Outside temperature sensor
 - Return sensor (only for operation with buffer tank)

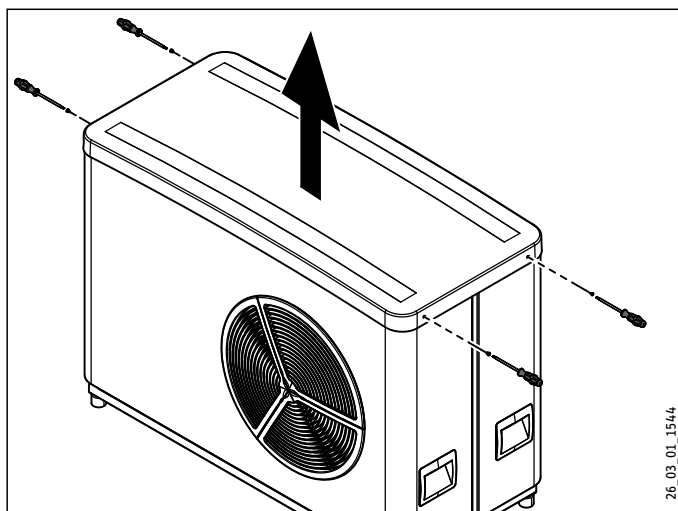
12.4 Ribbon heater

A ribbon heater (see chapter "Installation / Appliance description / Accessories / Further accessories") can be fitted to the condensate pan and the condensate hose.

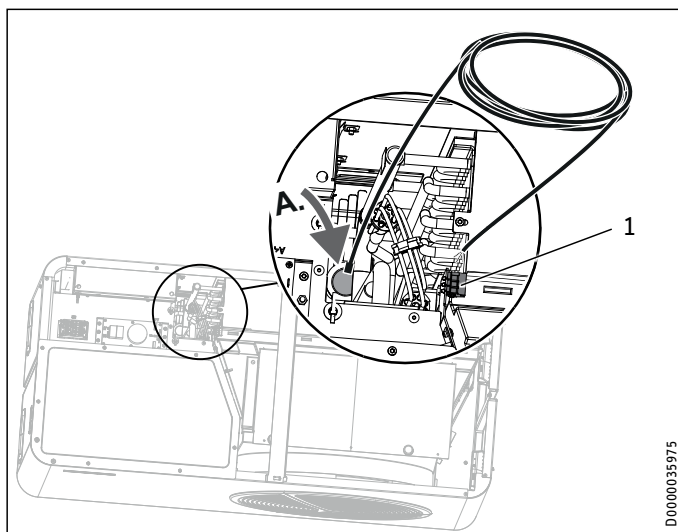
- ▶ Install a ribbon heater when mounting on the wall bracket or T-support.

When installing on a concrete slab or the mounting bracket, we recommend installing a ribbon heater if the routing of the condensate hose means it is at risk of frost or is fully exposed to the elements.

Access to the ribbon heater terminal area

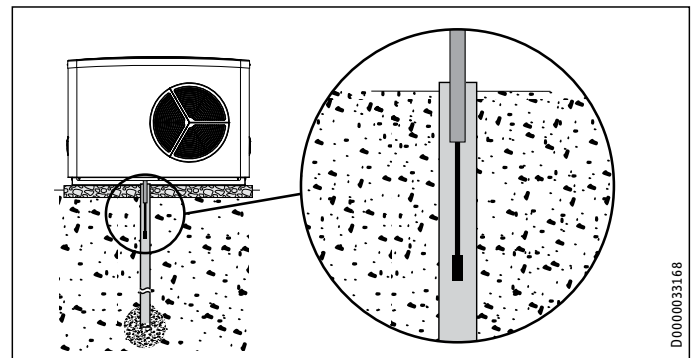


- ▶ Remove the cover.

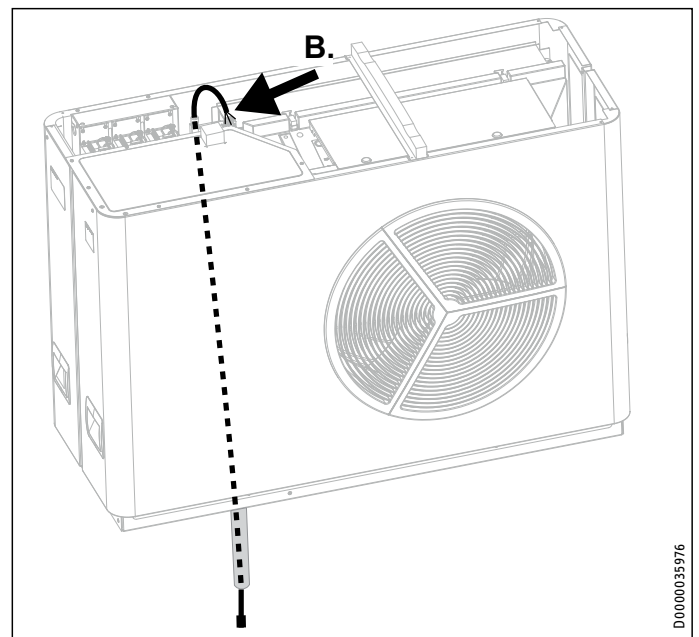


1 Electrical connection for ribbon heater

- ▶ Guide the ribbon heater through the appliance.



- ▶ Guide the ribbon heater into the condensate drain pipe.



- ▶ Make the electrical connection for the ribbon heater.

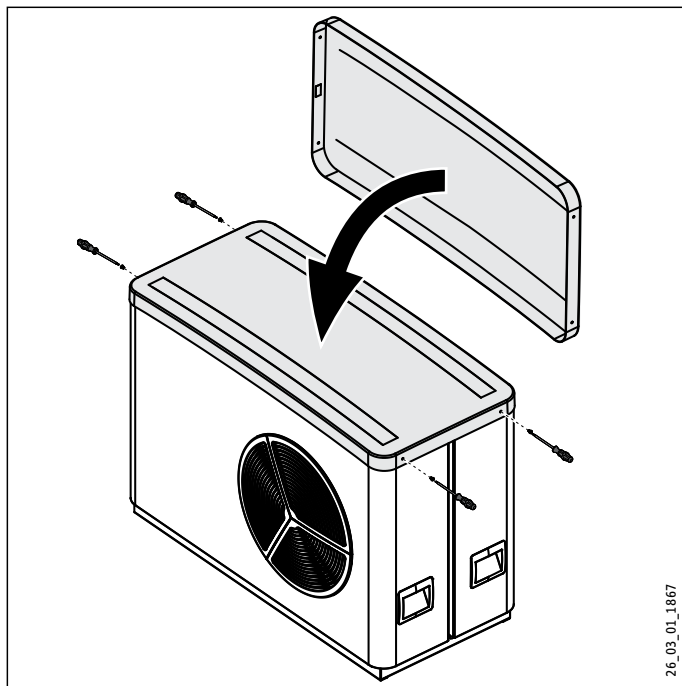
Electrical connection for ribbon heater

Power supply: L1, L2, GND

INSTALLATION

Commissioning

Closing the terminal area



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

13. Commissioning

If the heat pump is installed without a HSBC system tank, a WPM heat pump manager is required to operate the appliance. All necessary adjustments prior to and during operation are made on this device.

Only qualified contractors may make the settings in the heat pump manager commissioning report, commission the appliance and instruct the owner in its use.

If an HSBC system tank is installed, the WPM heat pump controller is integrated into the HSBC system, and the parameters are preset for a quick start. If the installation is carried out without an HSBC tank, a WPM controller needs to be installed. The WPM controller is delivered with an SD card for initial parameter settings.

Carry out commissioning in accordance with these operating and installation instructions, and the instructions for the heat pump manager. Our customer support can assist with commissioning.

Where this appliance is intended for commercial use, the rules of the relevant Operational Safety Ordinance must be observed at commissioning. For further details, check with your local authorizing body.

13.1 Checks before commissioning

Before commissioning, check the following:

13.1.1 Heating system

- Have you filled the heating system to the correct pressure and opened the quick-action air vent valve?
- Is the flow rate on the heating side more than the minimum required flow rate?

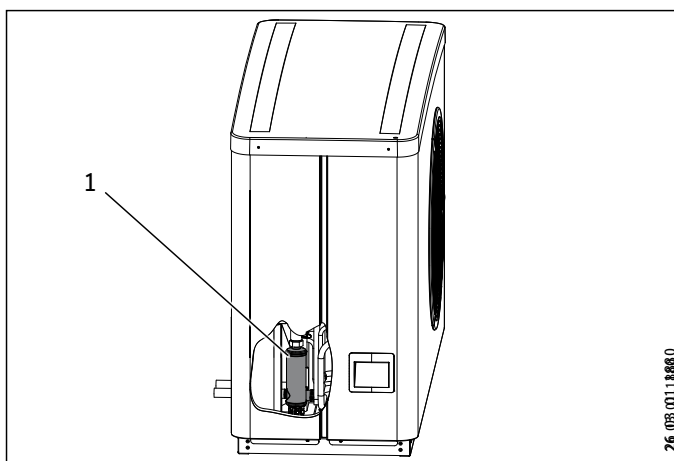
13.1.2 Temperature sensors

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

13.1.3 High limit safety cut-out

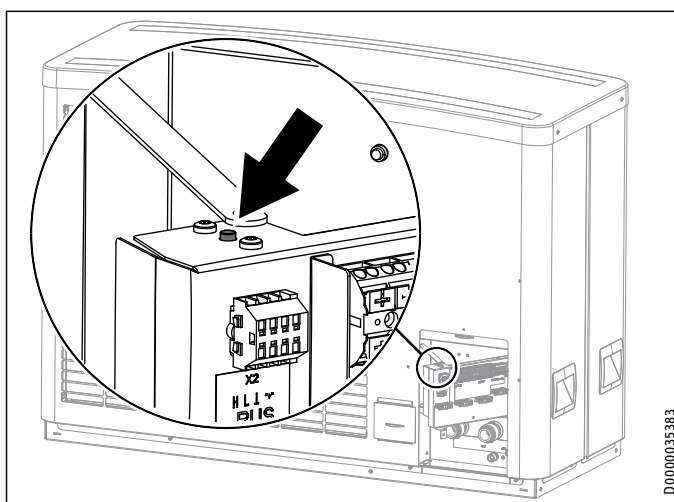
At ambient temperatures below +5°F (-15°C) it is possible that the high limit safety cut-out of the electric emergency/booster heater may trip.

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



1 Electric emergency/booster heater

- ▶ Remove the cause of the fault.



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

13.1.4 Power supply

- Have you correctly connected the power supply?

13.2 Using the appliance with an external second heat generator

The appliance is factory set for compressor operation with an electric emergency/booster heater. If the appliance is operated in dual mode with an external second heat generator, set the DIP switch to compressor mode with an external second heat generator (see chapter "Troubleshooting / Checking the IWS DIP switch settings").

INSTALLATION

Settings

13.3 Initial start-up

13.3.1 Heating curve adjustment

The efficiency of a heat pump decreases as the flow temperature rises. The heating curve should therefore be adjusted with care. Heating curves that are set too high cause the zone valves 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 WPM.

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

- Fully open thermostatic or zone valves in the primary room (e.g. living room and bathroom).
We do not recommend installing thermostatic or zone valves in the primary room. Control the temperature for these rooms via a remote control.
- At different outside temperatures, e.g. 14°F and 50°F (-10°C and +10°C), adjust the heating curve so that the required temperature is set in the primary room.

Standard values to begin with:

Parameter	Underfloor heating system	Radiator heating system
Heating curve	0.4	0.8
Control response time	25	50
Comfort temperature	70°F (21°C)	73°F (23°C)

If the room temperature is too low in spring and autumn (approx. 50°F (10°C) outside temperature), go to heat pump manager menu SETTINGS / HEATING / HEATING CIRCUIT and raise the parameter COMFORT TEMPERATURE".



Note

If no FET 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 at low outside temperatures, increase parameter "HEATING CURVE".

If the "HEATING CURVE" parameter has been raised and outside temperatures remain relatively high, adjust the zone valve or thermostatic valve in the primary room to the required temperature.



Material losses

Never reduce the temperature in the entire building by closing all zone or thermostatic valves; instead use the setback programs.

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



Material losses

For underfloor heating systems, observe the maximum permissible system temperature for that particular underfloor heating.

13.3.2 Other settings

- For operation with or without a buffer tank, observe the information in the instructions for the WPM and parameter BUFFER OPERATION in menu SETTINGS / STANDARD SETTING.

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 86°F (30°C).
- Then set the "LOWER APP LIMIT HZG" parameter to 86°F (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.

13.4 Appliance handover

Explain the appliance function to users and familiarize 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.

14. Settings

14.1 Silent mode

SILENT MODE is an operating mode for air source heat pumps with reduced sound level.

- See the data table (see chapter "Specification / Data table") for the sound power level when silent mode is deactivated.

You can reduce the fan speed and compressor output for a certain time in the "COMMISSIONING / SILENT MODE / OUTPUT REDUCTION" menu.



Note

If you activate SILENT MODE, the maximum output is reduced to 70% as standard. This value can be increased further or reduced to the specified minimum value as required.



Note

When silent mode is active, operating costs will be higher. In silent mode 2, heating and DHW heating are provided solely via the emergency/booster heater.

INSTALLATION

Appliance shutdown

- ▶ See the table for the maximum appliance sound levels according to the settings made in the “COMMISSIONING / SILENT MODE / OUTPUT REDUCTION / OUTPUT” menu.

	WPM output restriction setting	Sound power level Maximum value due to output restriction	Heating output Maximum at A19/LWT 95
WPL 15 A2W	70%	52 dB(A)	16.4 kBtu/h
Premium	63%	50 dB(A)	14.67 kBtu/h
WPL 25 A2W	70%	57 dB(A)	30.71 kBtu/h
Premium	61%	54 dB(A)	26.78 kBtu/h

- ▶ In the “PROGRAMS / SILENT PROGRAM 1” menu, set the times when the heat pump should switch to a quieter operating mode.

15. 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.

It is necessary to allow the power supply to be disconnected after installation. An appropriate external switch that disconnects the WPL from the power grid should be installed, located in close proximity to the WPL unit.

15.1 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.

15.2 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.

16. Maintenance



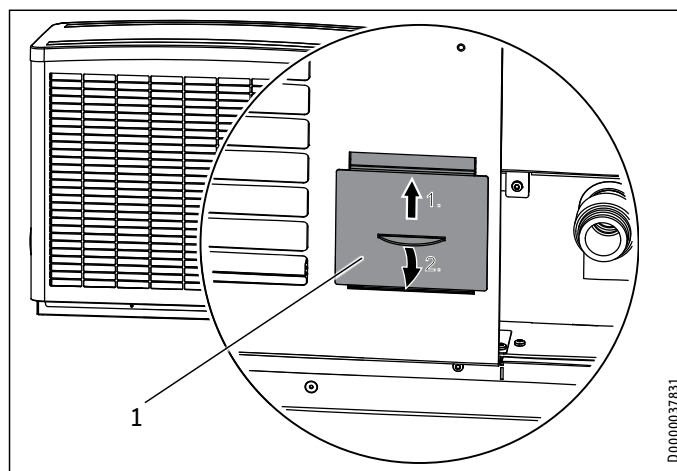
WARNING Electrocutation

▶ Prior to commencing any service or cleaning work, isolate the appliance across all poles from the power supply.

Following disconnection from the power supply, parts of the appliance may remain energized for 2 minutes until the inverter capacitors have discharged.

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

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



1 Inspection port



Material losses

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

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

17. Troubleshooting



WARNING Electrocutation

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

Following disconnection from the power supply, parts of the appliance may remain energized for 2 minutes until the inverter capacitors have discharged. Make sure that nobody can activate the power supply during service.



Note

Please observe the instructions for the heat pump manager.

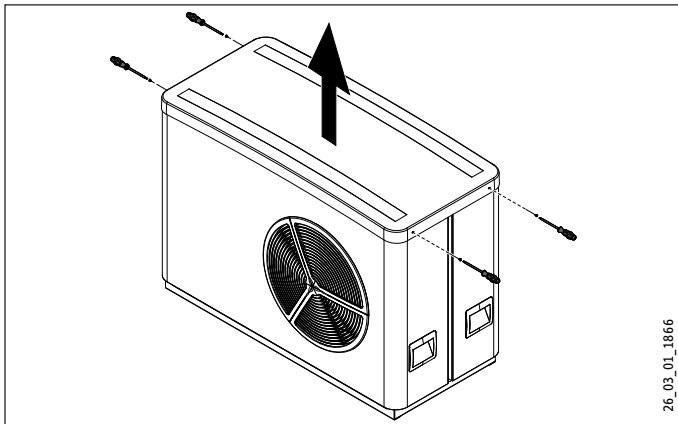
If the fault cannot be located during a service using the heat pump manager, open the control panel in emergencies and check the IWS settings.

INSTALLATION

Troubleshooting

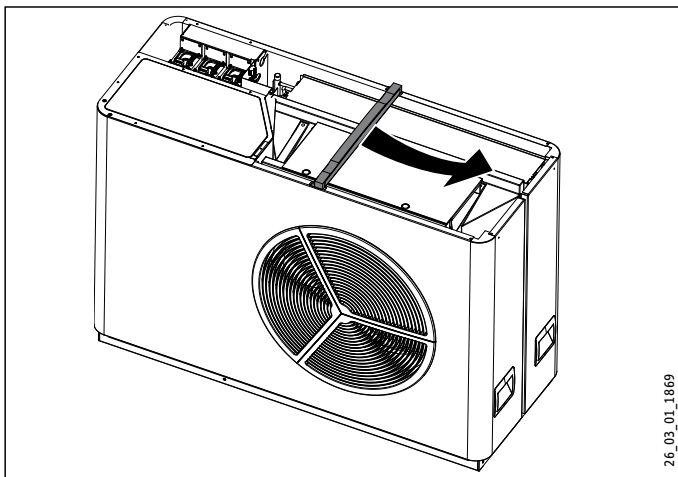
17.1 Checking the IWS DIP switch settings

Carry out the following steps to make the IWS accessible.



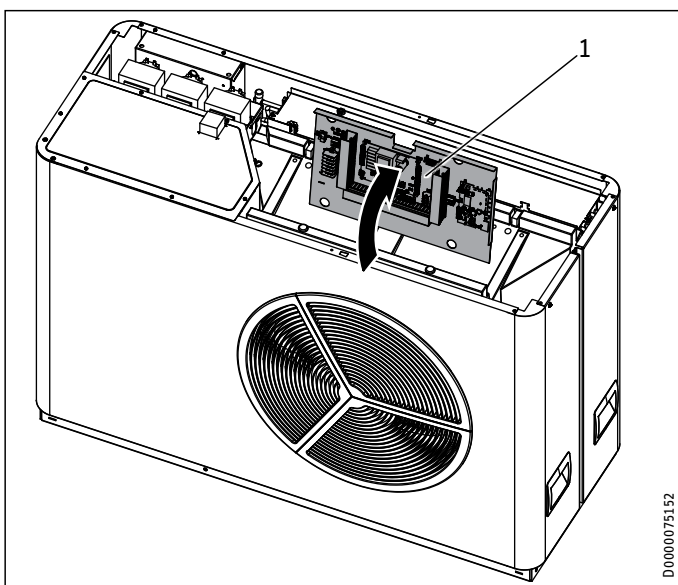
26_03_01_1866

► Remove the cover.



26_03_01_1869

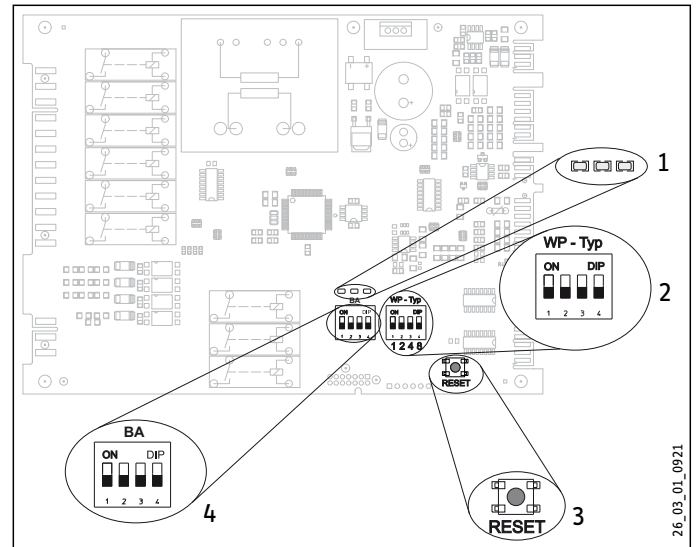
► Remove the bracket highlighted in grey.



D0000075152

- 1 IWS
- Lift the control panel.
 - Turn the control panel around.

IWS



26_03_01_0921

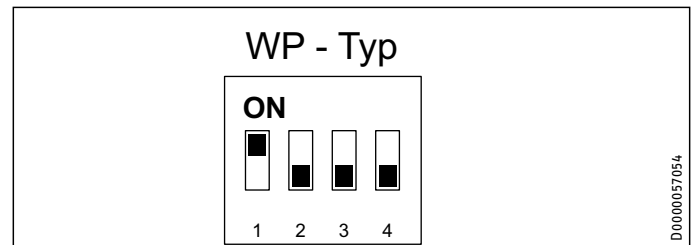
- 1 LEDs
- 2 DIP switch (WP-Typ)
- 3 Reset button
- 4 DIP switch (BA)

DIP switch (WP-Typ)

The DIP switch (WP-Typ) on the IWS serves to set the relevant heat pump type.

Factory setting

Compressor mode with electric emergency/booster heater



D0000057054

► Check whether the DIP switch is set correctly.

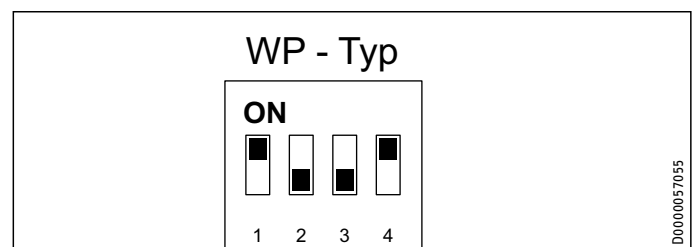
Compressor mode with an external second heat generator



Material losses

In this case, do not connect the electric emergency/booster heater.

If the appliance is operated in dual mode operation with an external second heat generator or in a group with additional heat pumps, set the DIP switch as shown.



D0000057055

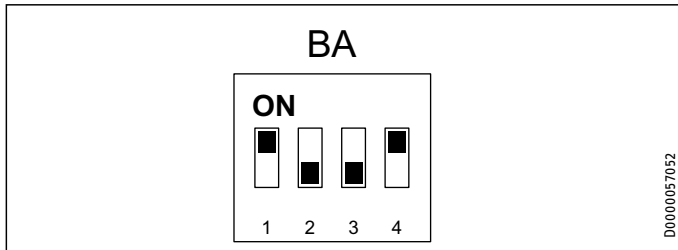
INSTALLATION

Troubleshooting

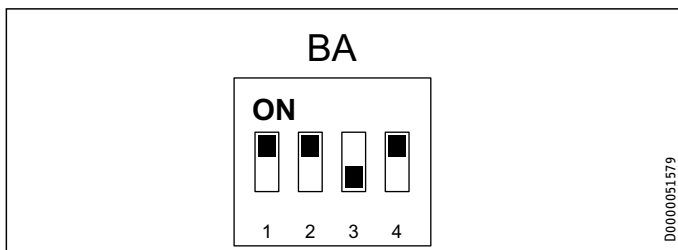
DIP switch (BA)

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

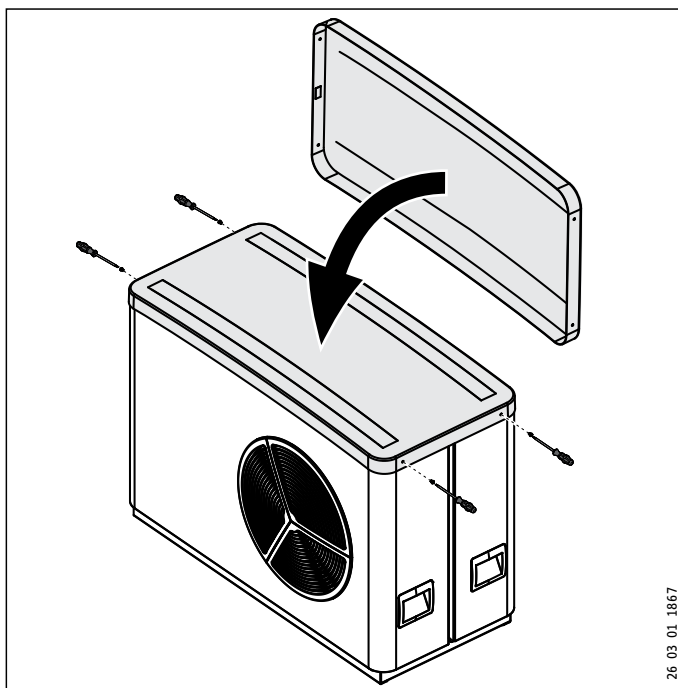
Heating mode only



Heating and cooling mode

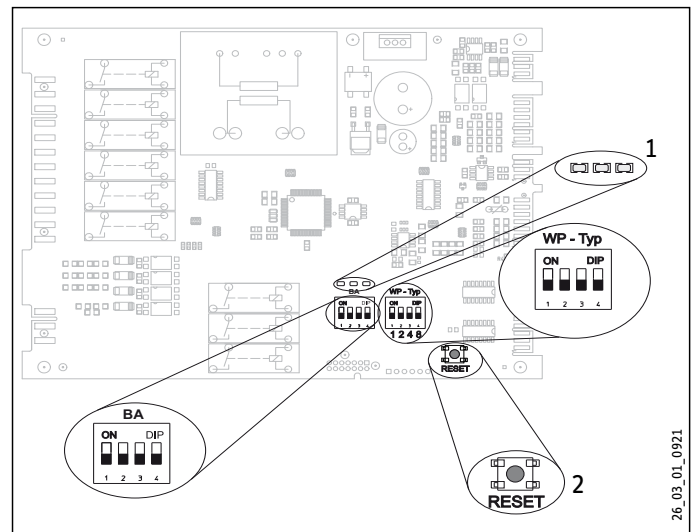


17.1.1 Closing the terminal area



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

17.2 Light emitting diodes (LEDs)



- 1 LEDs
- 2 Reset button

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

LED indicator	Meaning
Red LED flashes	Single fault. The appliance is shut down and re-starts after 10 minutes. The LED extinguishes.
Red LED illuminates	More than 5 faults within a 2 hour span. The appliance is shut down permanently and only restarts following a reset on the IWS. This also resets the internal fault counter. The appliance can be restarted after 10 minutes. The LED extinguishes.
Green LED (center) flashes	The heat pump is initializing.
Green LED (center) illuminates	The heat pump was initialized successfully and the connection with the WPM is active.

Faults indicated by the red LED:

- High pressure fault
- Low pressure fault
- Central fault
- Hardware fault on the IWS (see fault list or message list for the WPM heat pump manager)

17.3 Reset button

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

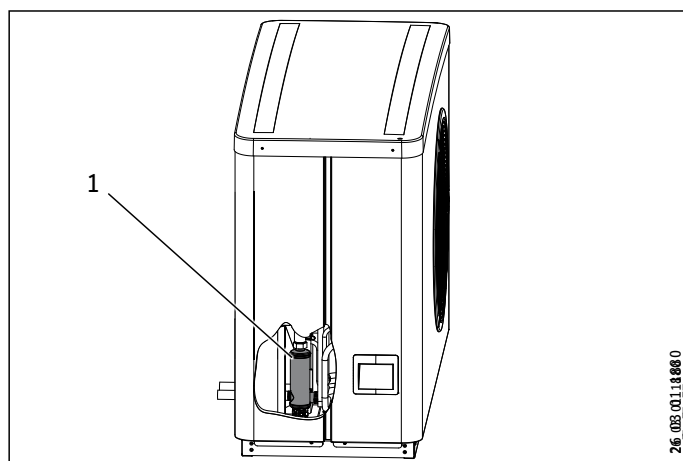
- ▶ For this, also observe chapter "Reinitializing the IWS" in the heat pump manager instructions.

17.4 Resetting the high limit safety cut-out

The electric emergency/booster heater stops if the heating water temperature exceeds 185°F (85°C), for example if the flow rate is too low.

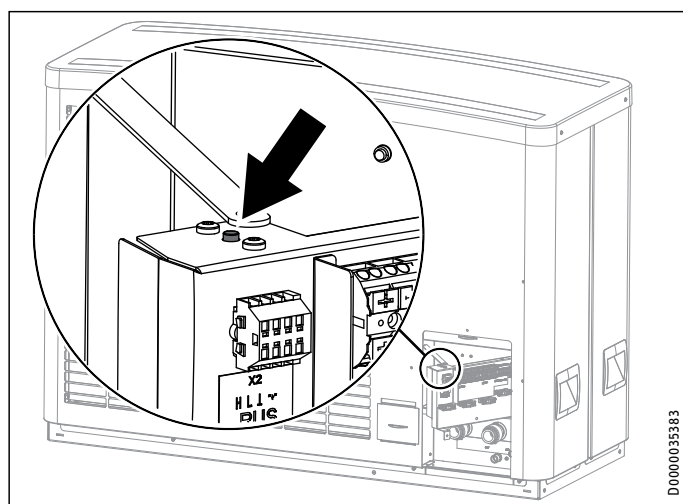
INSTALLATION

Troubleshooting



1 Electric emergency/booster heater

- ▶ Remove the cause of the fault.



- ▶ Reset the high limit safety cut-out by pressing the reset button.
- ▶ Check whether the heating water is being circulated at a sufficiently high flow rate.

17.5 Fan noise

The heat pump draws heat from the outdoor air. This causes the outdoor air to cool down. At outside temperatures of 32–46°F (0–8°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 grill, the fan blades or the air routing pipes. If the fan comes into contact with this ice, this creates noise.

How to remedy rhythmic scratching or grinding noises:

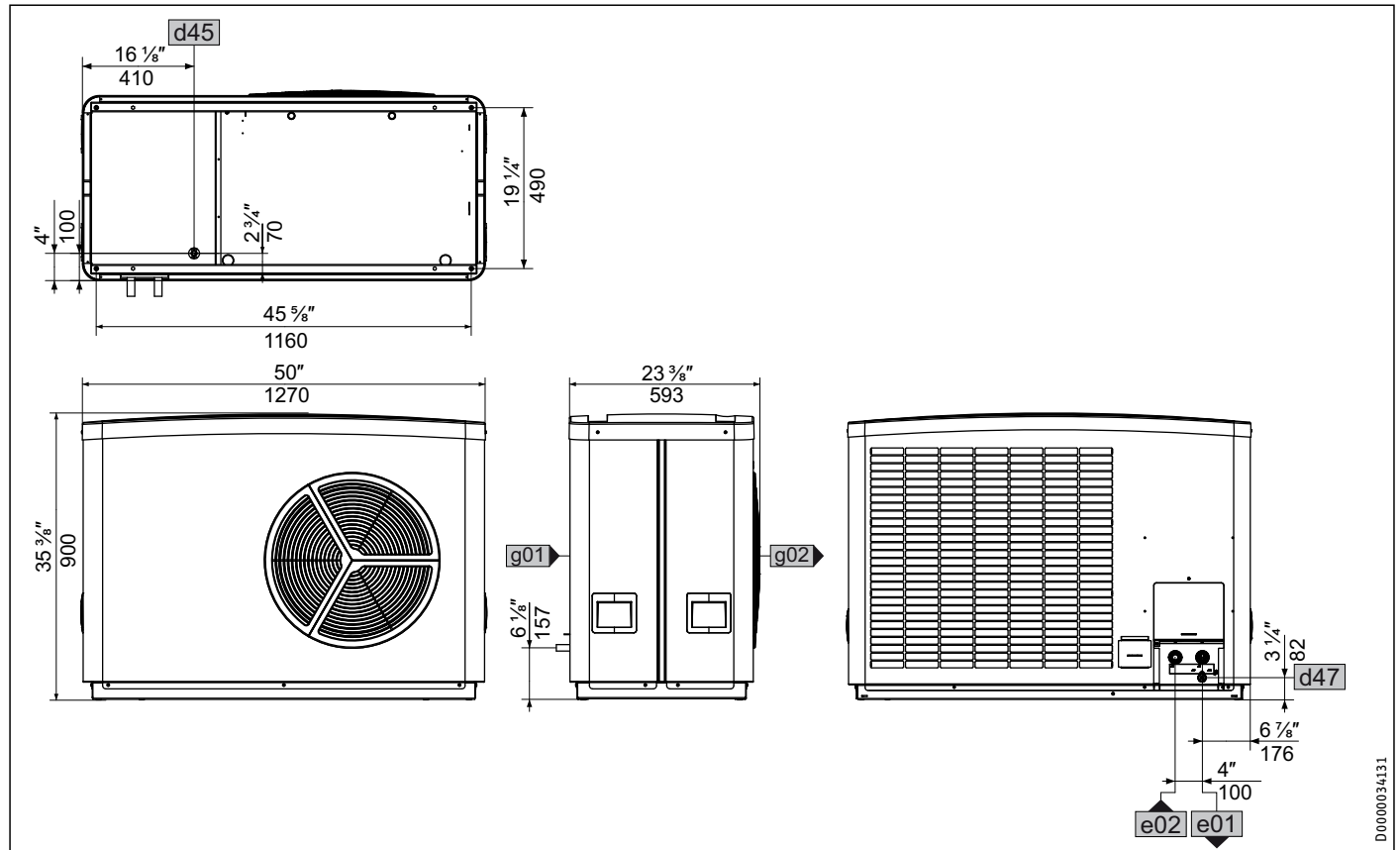
- ▶ Check whether the condensate drain is clear of obstructions.
- ▶ Check whether the design output and temperature are set correctly. Ice formation is particularly pronounced when a high heating output is demanded at moderate outside temperatures.
- ▶ Carry out a manual defrost, as many times as necessary, 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 34°F (+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 the installation requirements.
- ▶ If noise occurs frequently, activate defrost manually. Observe the information in the WPM instructions and parameter "POWERDEFROST" in menu "COMMISSIONING / COMPRESSOR".
- ▶ If noise persists, notify the customer service department.

18. Specification

18.1 Dimensions and connections

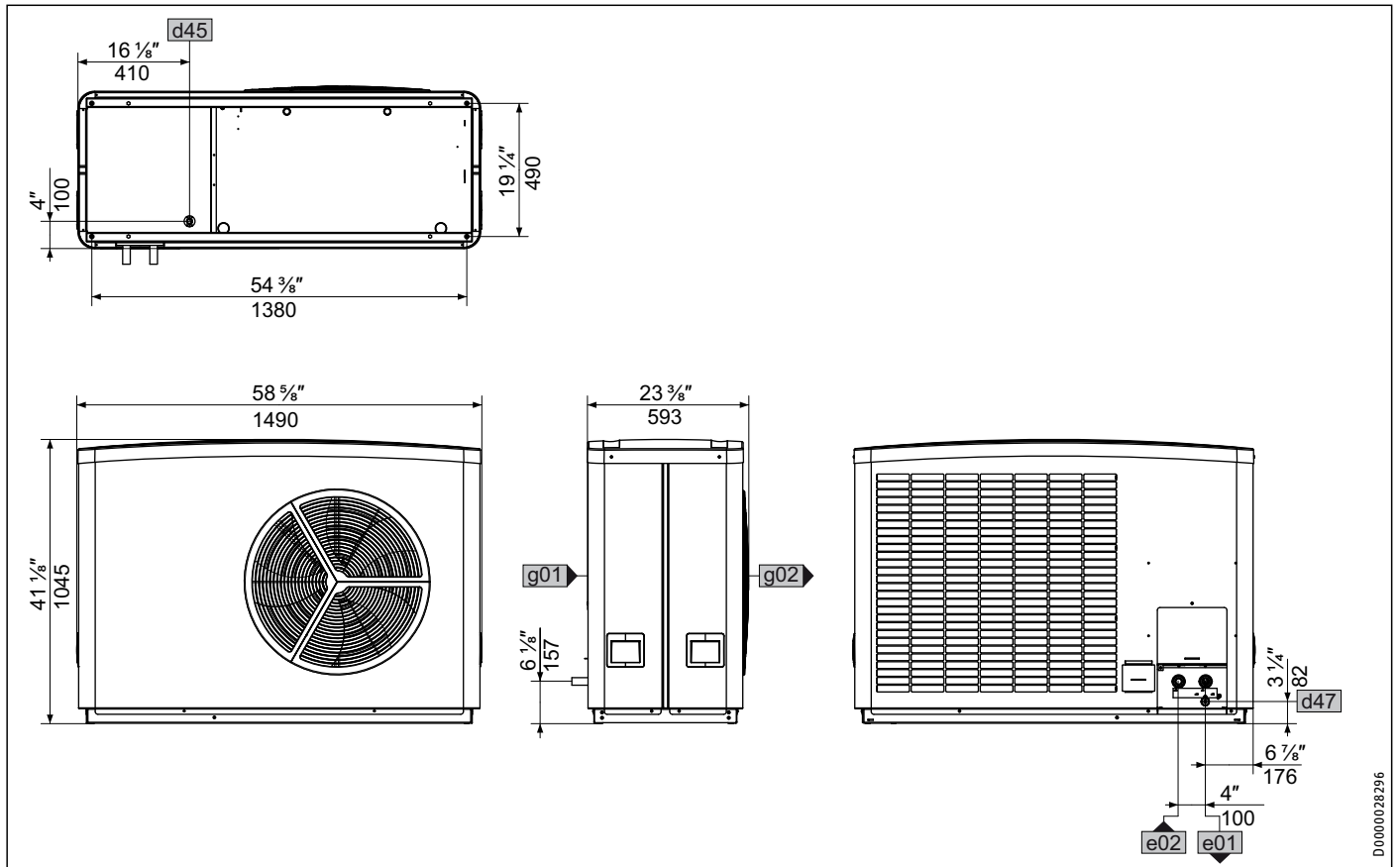
18.1.1 WPL 15 A2W Premium



		WPL 15 A2W Premium
e01	Heating flow	Type of connection Push-fit connection
		Diameter 1 1/8" (28 mm) - (adapter for 1" copper pipe)
e02	Heating return	Type of connection Push-fit connection
		Diameter 1 1/8" (28 mm) - (adapter for 1" copper pipe)
d45	Condensate drain	Diameter 1 3/16" (29.6 mm)
d47	Drain	
g01	Air intake	
g02	Air discharge	

INSTALLATION Specification

18.1.2 WPL 25 A2W Premium



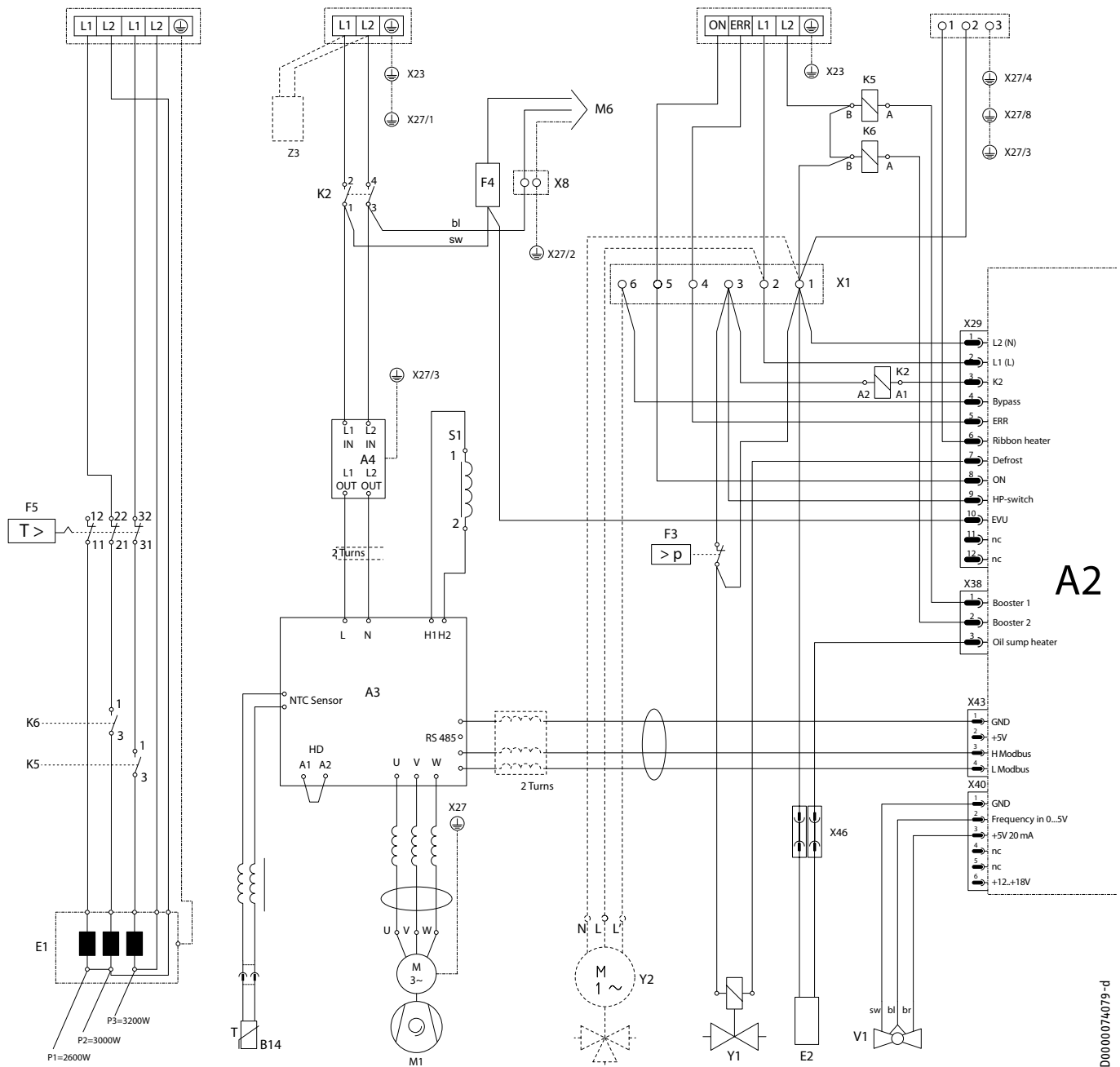
D0000028296

WPL 25 A2W Premium		
e01 Heating flow	Type of connection	Push-fit connection
	Diameter	1 1/8" (28 mm) - (adapter for 1" copper pipe)
e02 Heating return	Type of connection	Push-fit connection
	Diameter	1 1/8" (28 mm) - (adapter for 1" copper pipe)
d45 Condensate drain	Diameter	1 3/16" (29.6 mm)
d47 Drain		
g01 Air intake		
g02 Air discharge		

INSTALLATION Specification

18.2 Wiring diagram

WPL 15 A2W Premium | WPL 25 A2W Premium (single phase)

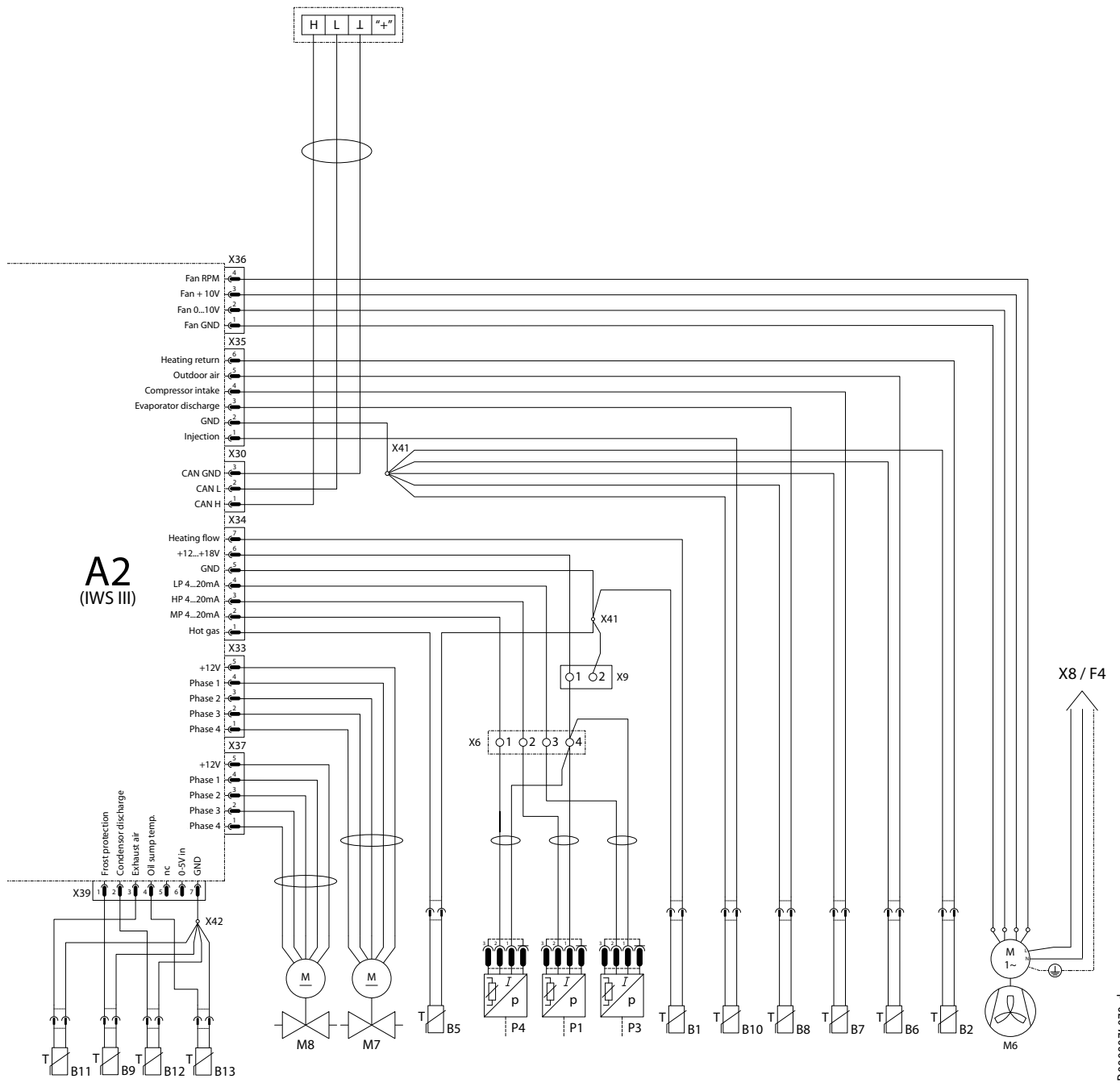


- A2 Integral heat pump control unit (IWS)
- A3 Inverter, compressor
- A4 Filter assembly
- E1 Emergency/booster heater NHZ
- E2 Oil sump heater
- F3 High pressure switch 42 bar
- F4 Fuse 10 A (fan)
- F5 High limit safety cut-out for NHZ
- K2 Compressor start contactor L
- K5 NHZ relay
- K6 NHZ relay

- M1 Compressor motor
- S1 Sine filter coil
- V1 Flow rate sensor
- X1 Internal distribution terminal
- X3 External power supply terminal
- X4 External control unit terminal
- X5 External NHZ terminal
- X7 Ribbon heater terminal
- X8 2-pole terminal
- X23 Ground power supply
- X27 Ground stud

- X29 IWS plug 12-pin - control unit
- X38 IWS plug 3-pin - oil sump
- X40 IWS plug 6-pin - HT special
- X43 IWS plug 3-pin - Modbus
- X46 Plug-in connector
- Y1 Diverter valve, defrost
- Y2 Bypass diverter valve
- Z3 Interference suppression filter

INSTALLATION Specification



- | | | | | | |
|-----|--|-----|--|-----|---|
| A2 | Integral heat pump control unit (IWS) | B11 | Exhaust air temperature sensor - KTY | X6 | 4-pole terminal |
| B1 | Heating flow temperature sensor - KTY | B12 | Condenser discharge temperature sensor - KTY | X30 | IWS plug 3-pin - BUS |
| B2 | Heating return temperature sensor - KTY | B13 | Oil sump temperature sensor - KTY | X33 | IWS plug 5-pin - electrical expansion valve |
| B5 | Hot gas temperature sensor - PT1000 | M6 | Fan motor | X34 | IWS plug 7-pin - sensors |
| B6 | Outdoor air temperature sensor - PT1000 | M7 | Electrical expansion valve stepper motor | X35 | IWS plug 6-pin - temperature sensors |
| B7 | Compressor intake temperature sensor - PT1000 | M8 | Electrical injection valve stepper motor | X36 | IWS plug 3-pin - fan |
| B8 | Evaporator discharge temperature sensor - PT1000 | P1 | High pressure sensor (42 bar) | X37 | IWS plug 5-pin - electrical injection valve |
| B9 | Frost protection temperature sensor - KTY | P3 | Low pressure sensor (16 bar) | X39 | IWS plug 7-pin - temperature |
| B10 | Injection temperature sensor - PT1000 | P4 | Mean pressure sensor (30 bar) | X41 | Link PCB ground |
| | | X2 | External bus terminal | X42 | Link PCB ground |

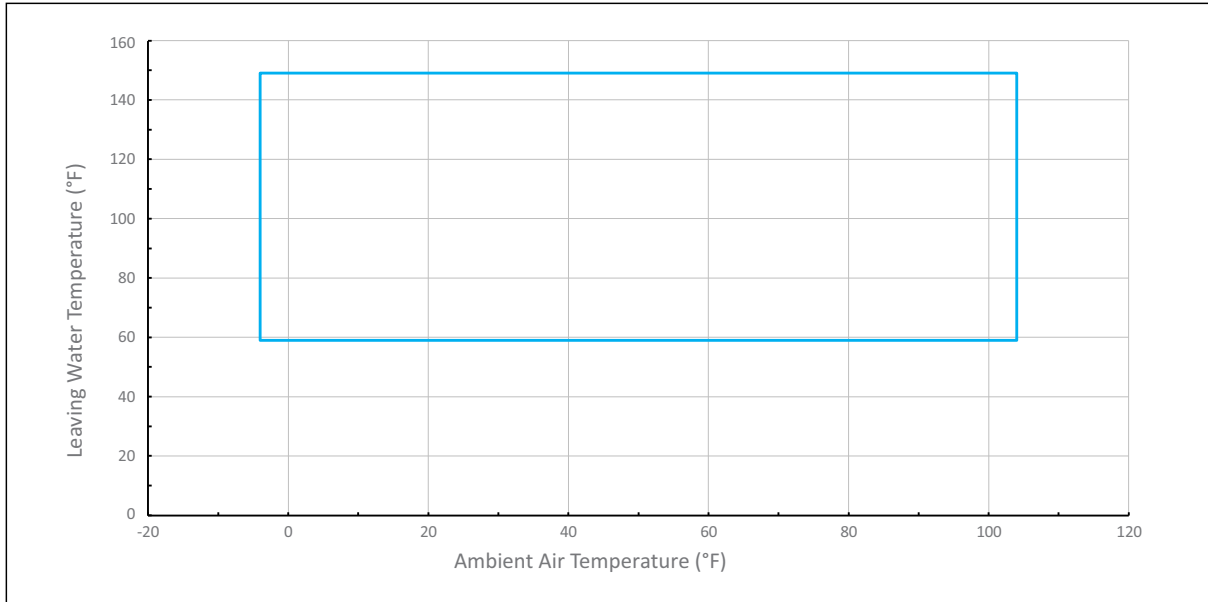
INSTALLATION

Specification

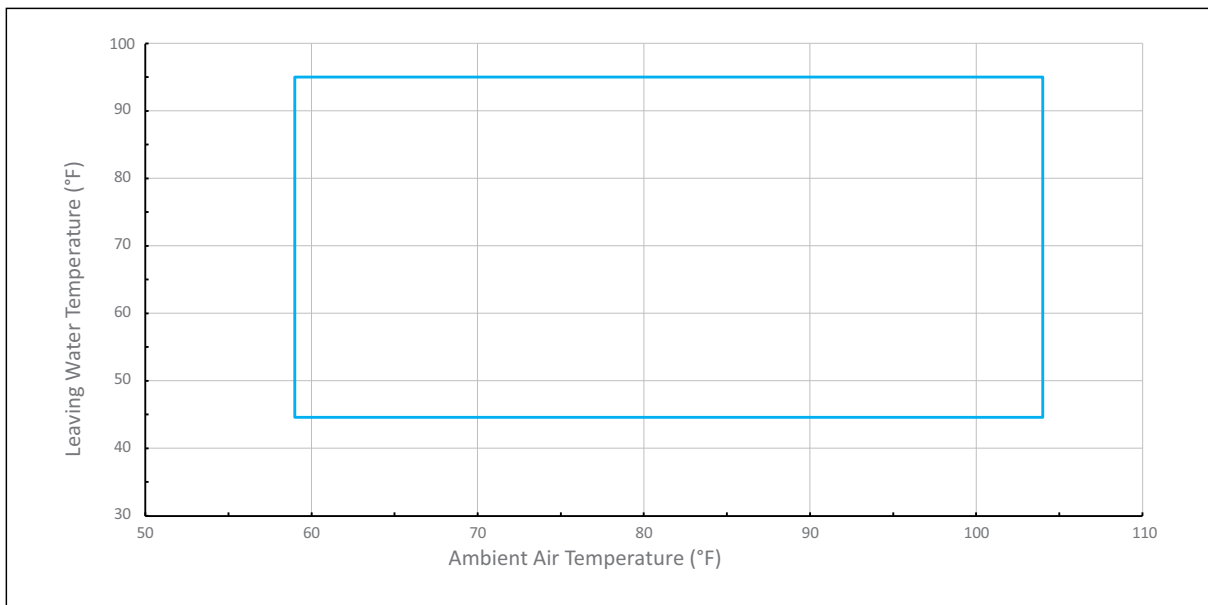
18.3 Application limit

In critical operating conditions such as low or high ambient air and/or low or high supply water temperatures, the WPL's internal control software envelope, Safe Operating Area (SOA), takes over and temporarily overwrites the operating commands from the WPM controller. This ensures the longevity of the compressor and all other refrigerant circuit parts.

18.3.1 Heating field of operation



18.3.2 Cooling field of operation



INSTALLATION Specification

18.4 Output diagrams, WPL 15 A2W Premium

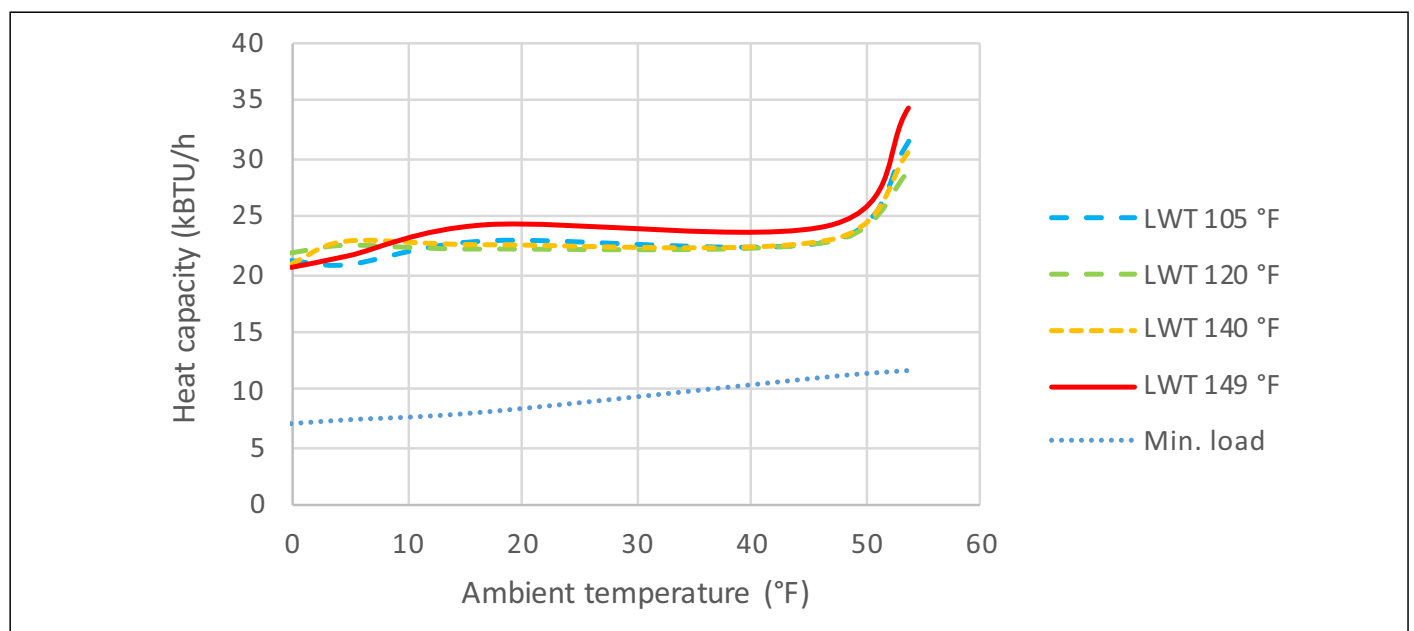
Test results are based on 100% water without any glycol.

18.4.1 Glycol correction factors for WPL 15 & 25 A2W Premium

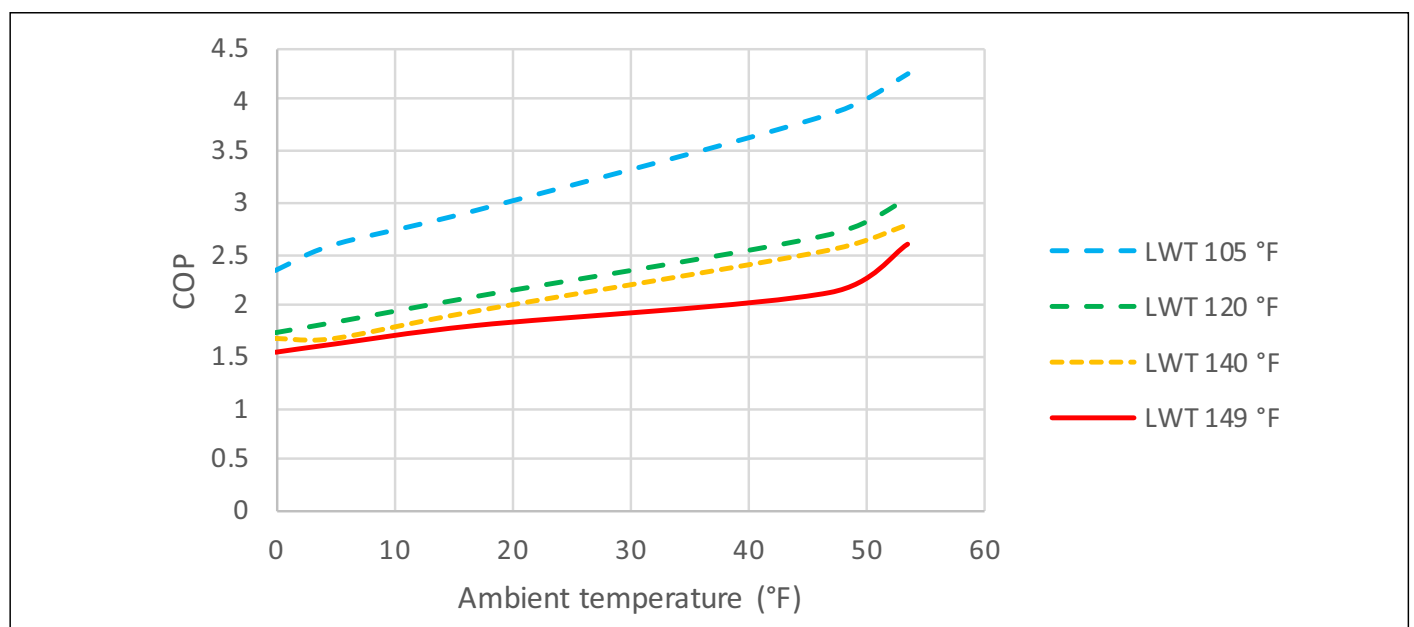
Propylene Glycol Capacity Correction Factor (Heating) ¹						
Glycol Concentration by Volume	0%	10%	20%	30%	40%	50%
Heat Capacity Correction Factor ²	1.00	0.98	0.95	0.92	0.88	0.83
Pressure Drop Correction Factor ²	1.00	1.04	1.08	1.14	1.21	1.28
Propylene Glycol Capacity Correction Factor (Cooling) ¹						
Glycol Concentration by Volume	0%	10%	20%	30%	40%	50%
Heat Capacity Correction Factor ³	1.00	0.97	0.94	0.90	0.85	0.80
Pressure Drop Correction Factor ³	1.00	1.06	1.14	1.26	1.4	1.54

¹ Source: Dow Heat Transfer Fluids Calculator ² Fluid at 100 °F (38 °C) ³ Fluid at 50 °F (10 °C)

18.4.2 Heating capacity

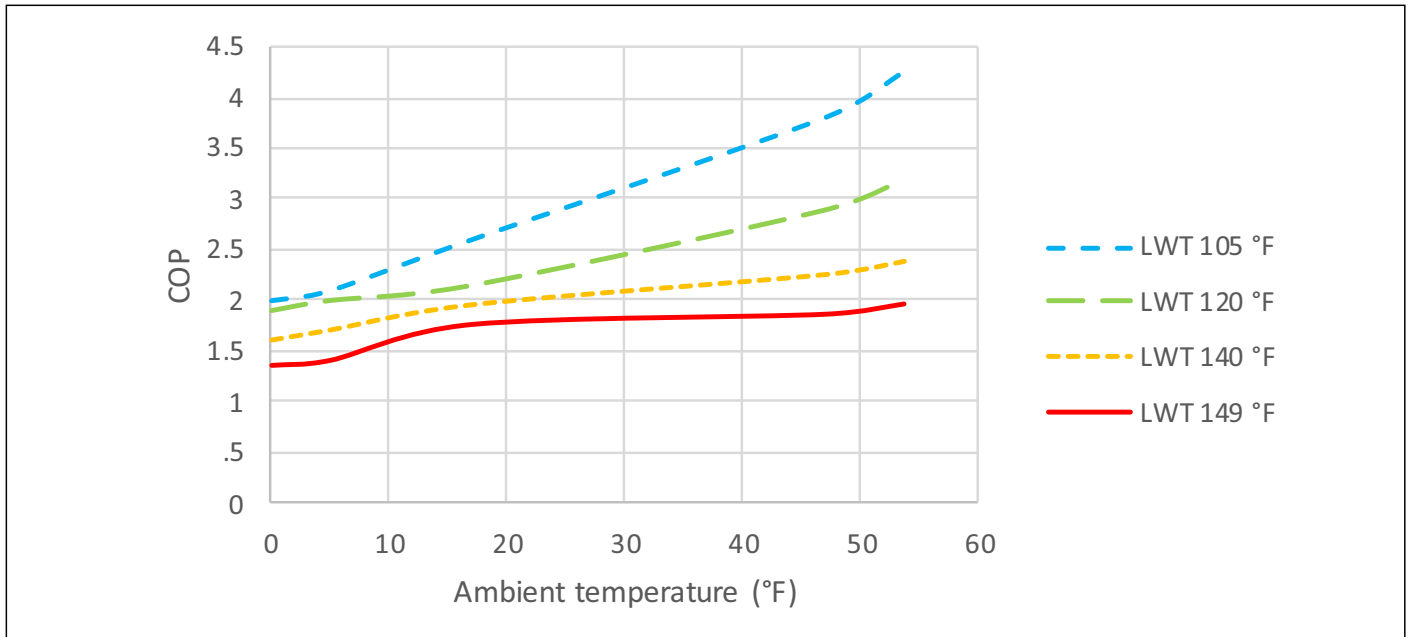


18.4.3 COP at full heating load

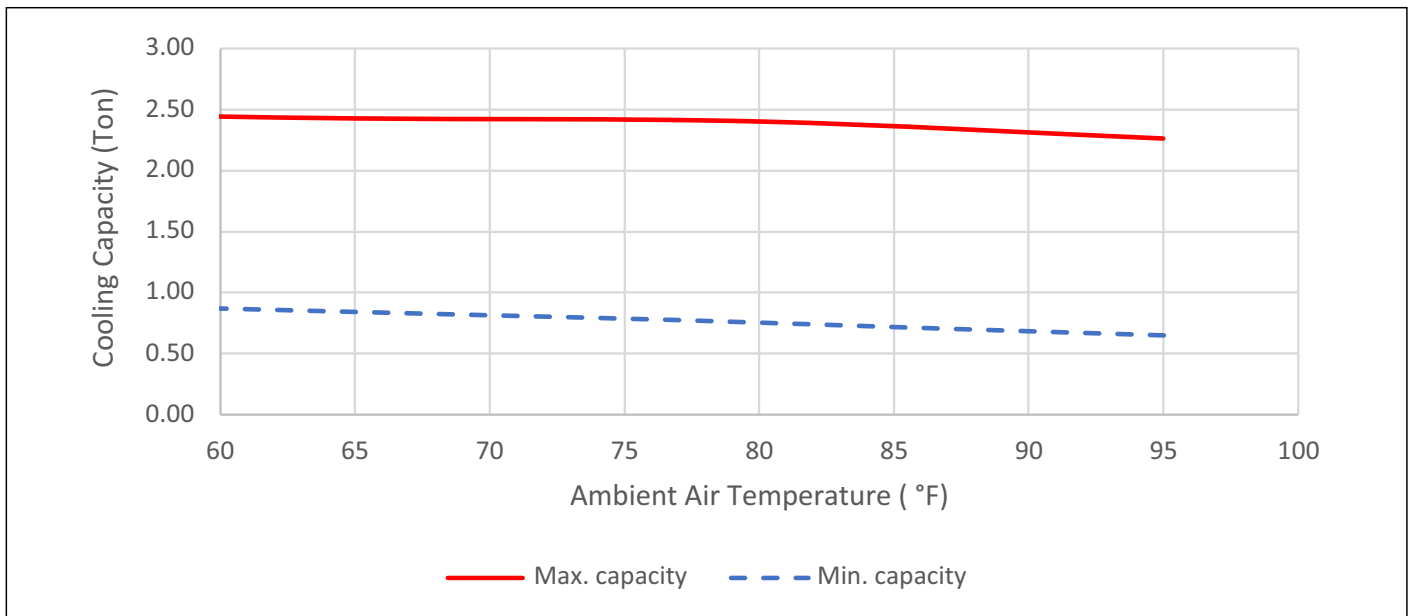


INSTALLATION Specification

18.4.4 COP at minimum heating load

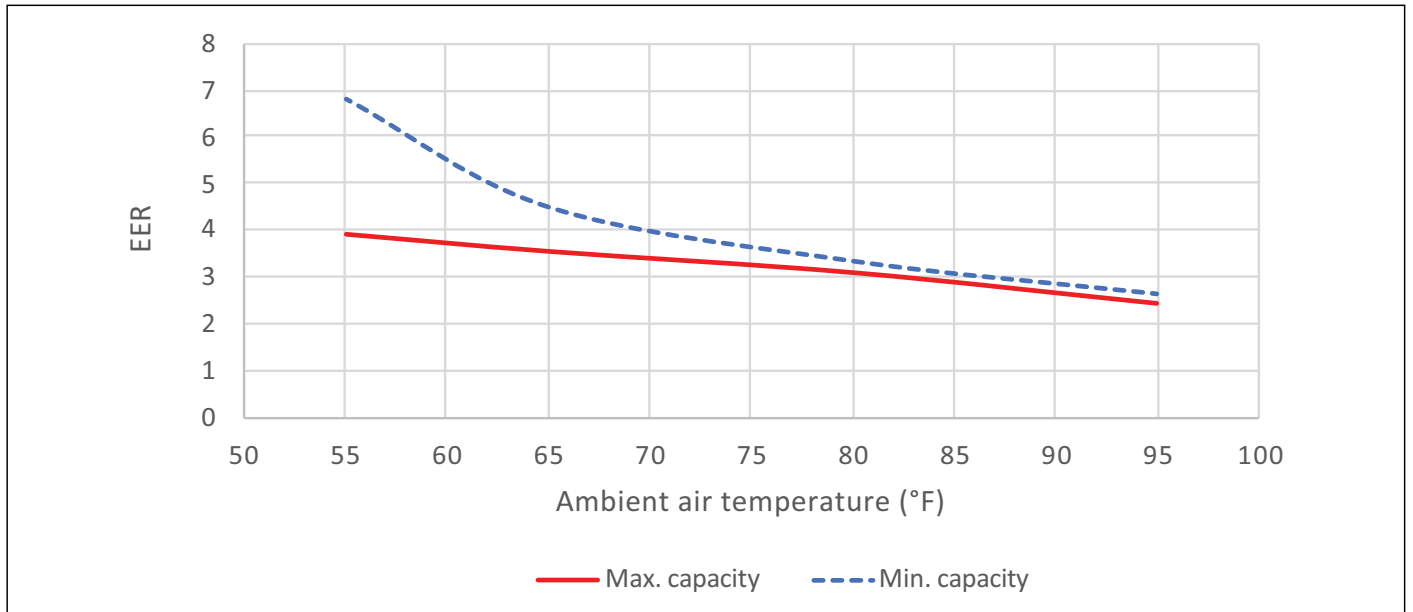


18.4.5 Cooling capacity at 47°F leaving water temperature*

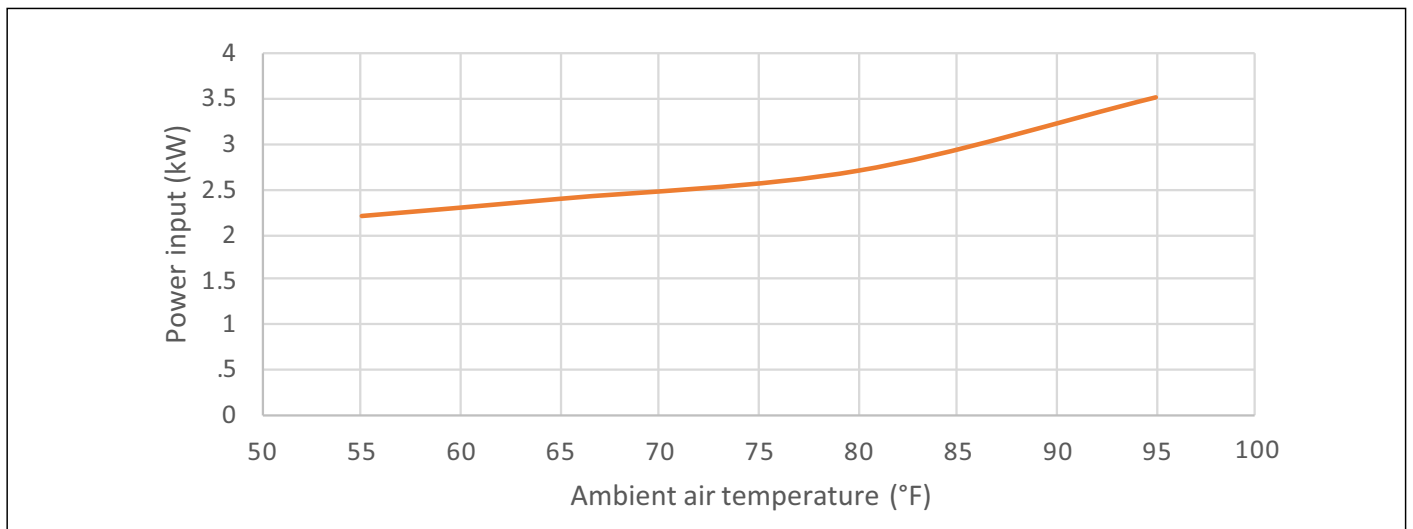


INSTALLATION Specification

18.4.6 Cooling EER at 47°F leaving water temperature



18.4.7 Cooling power consumption at 47°F leaving water temperature

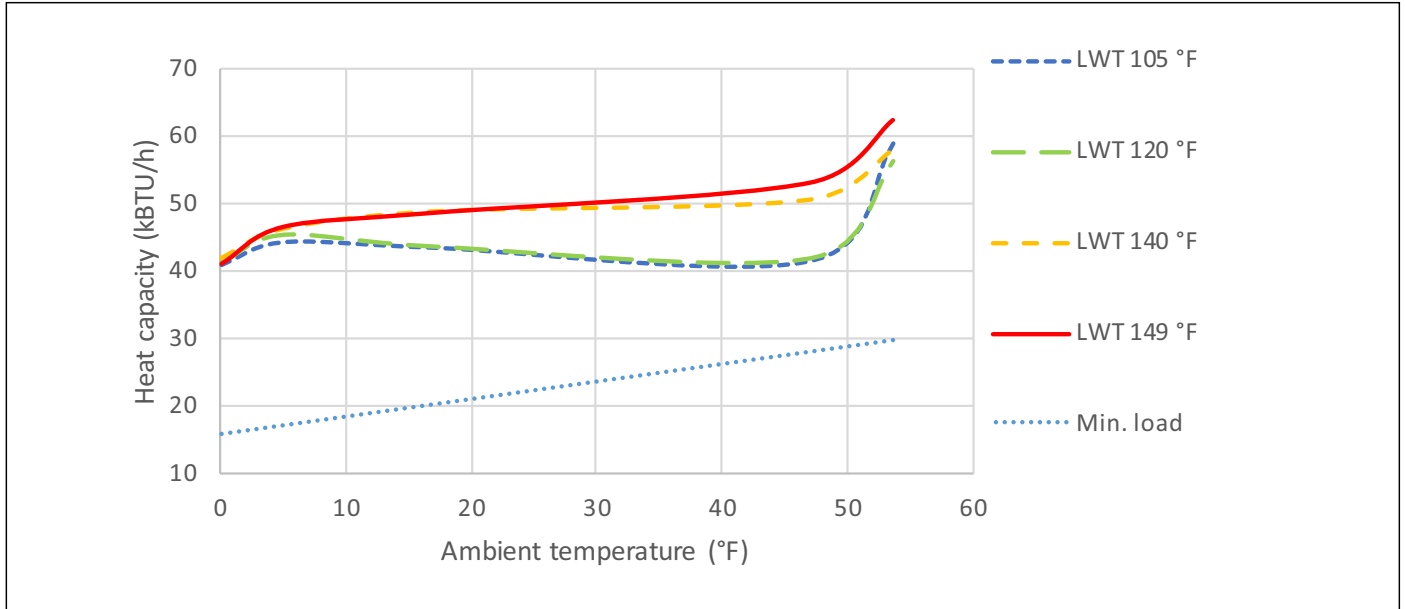


INSTALLATION Specification

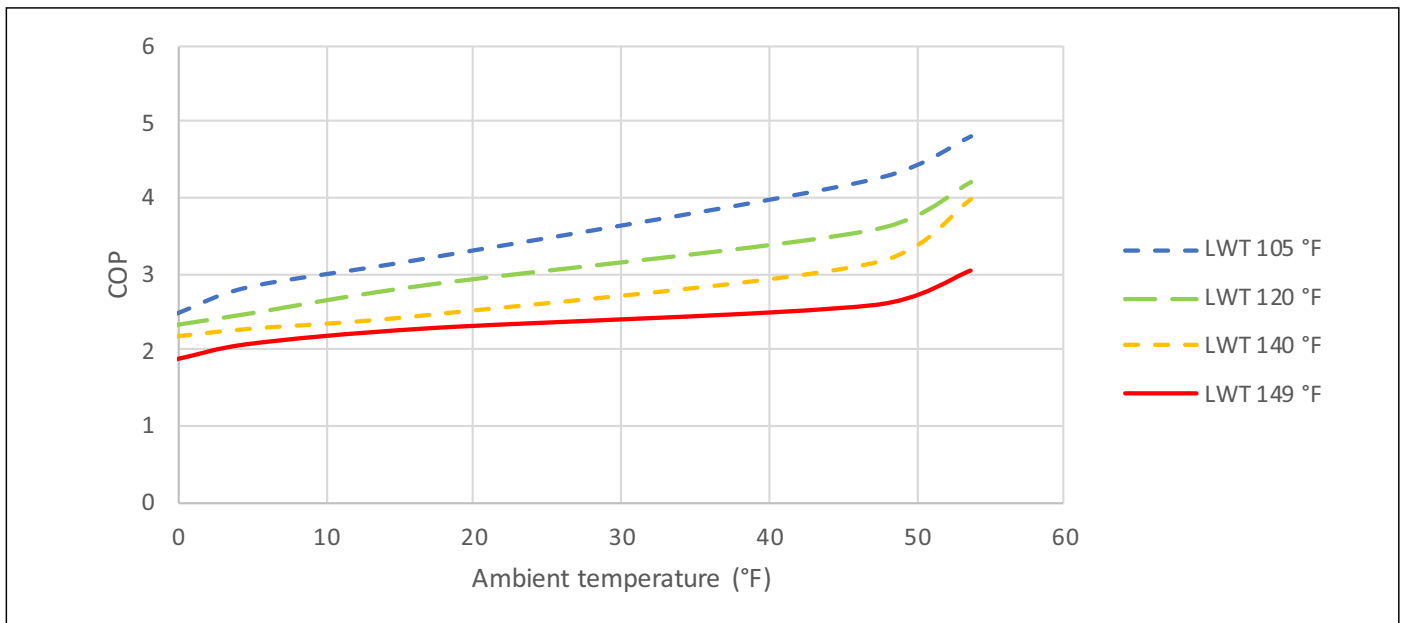
18.5 Output diagrams, WPL 25 A2W Premium

Test results are based on 100% water without any glycol.

18.5.1 Heating capacity

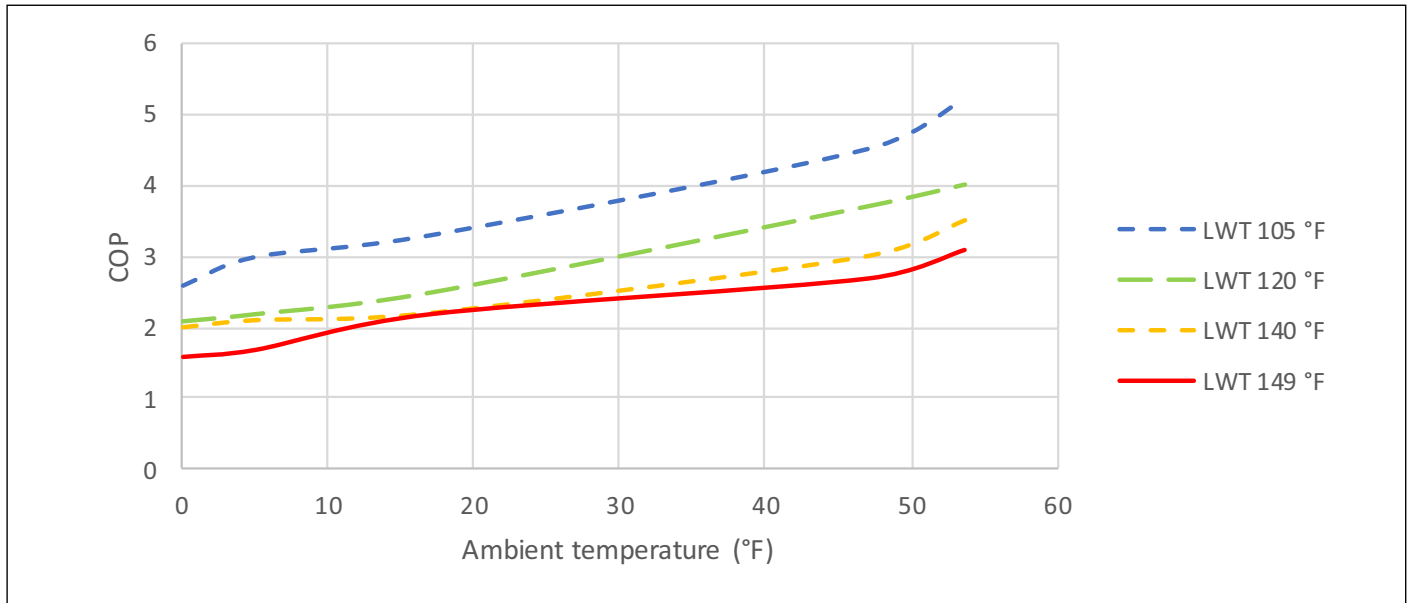


18.5.2 COP at full heating load

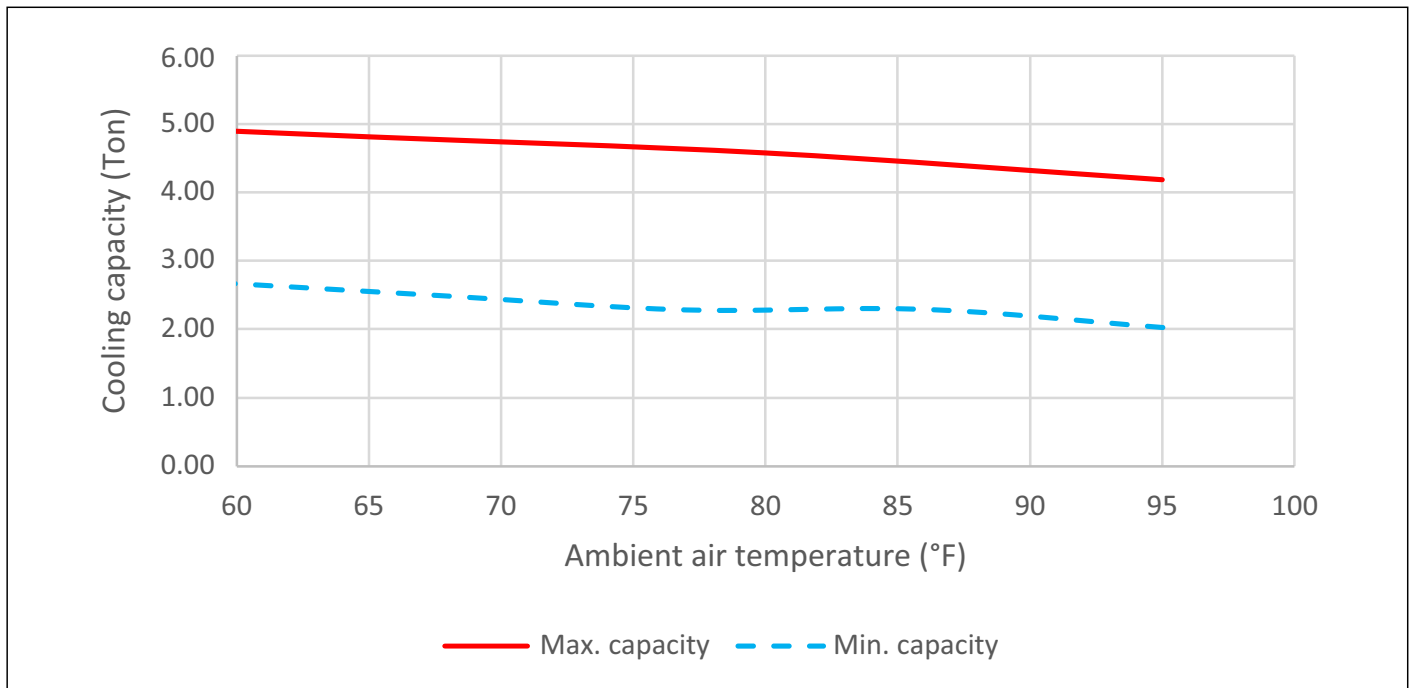


INSTALLATION Specification

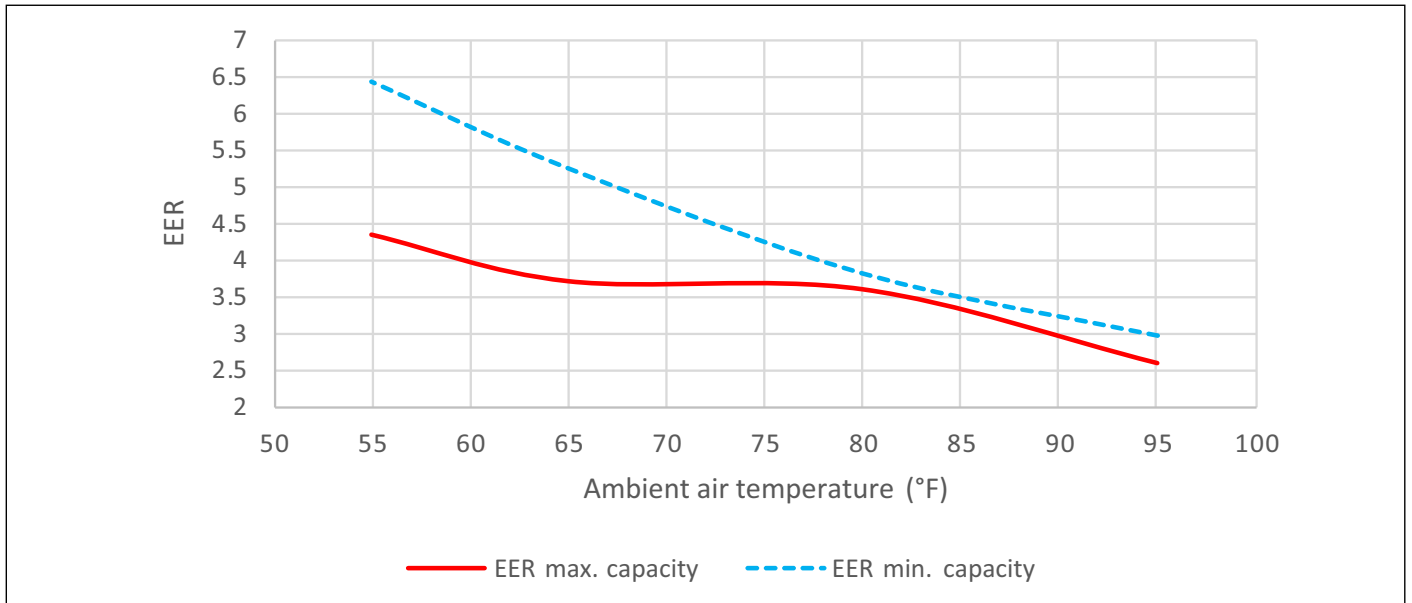
18.5.3 COP at minimum heating load



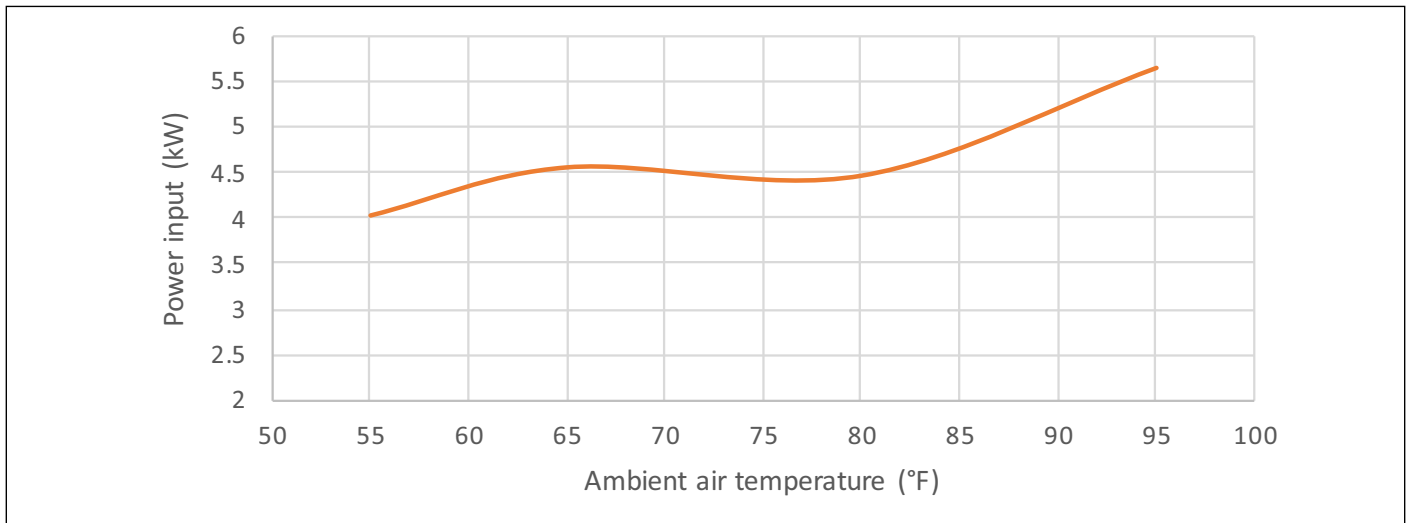
18.5.4 Cooling capacity at 47°F leaving water temperature*



18.5.5 Cooling EER at 47°F leaving water temperature



18.5.6 Cooling power consumption at 47°F leaving water temperature



INSTALLATION Specification

18.6 Data table

The performance data apply for new appliances with no fouling (dirt) on the heat exchanger. The power consumption data are maximum values and may vary due to the operation condition, auxiliary consumption for components like circulation pump are not included. The performance data are based on 100% water for heat transfer. The usage of polypropylene glycol with a minimum concentration of 30% is required. Depending on the glycol concentration the performance values may vary.

	WPL 15 A2W Premium	WPL 25 A2W Premium
	203252	203253
Heating output		
Full load capacity	23.04 kBtu/hr	50.4 kBtu/hr
A47/LWT 105 (min/max)	11.26 kBtu/hr / 22.86 kBtu/hr	26.95 kBtu/hr / 41.18 kBtu/hr
A17/LWT 105 (min/max)	8.19 kBtu/hr / 22.86 kBtu/hr	20.13 kBtu/hr / 43.16 kBtu/hr
A 5/LWT 110 (min/max)	7.51 kBtu/hr / 21.38 kBtu/hr	17.63 kBtu/hr / 45.34 kBtu/hr
A-4/LWT 149 (min/max)	15.28 kBtu/hr / 18.80 kBtu/hr	29.37 kBtu/hr / 36.17 kBtu/hr
Cooling output		
Full load capacity	2.13 ton	4.09 ton
Full load efficiency	1.65 kW/ton	1.51 kW/ton
A95/LWT 44.6 (min/max)	0.61 ton / 2.13 ton	1.92 ton / 4.1 ton
A80/LWT 44.6 (min/max)	0.72 ton / 2.38 ton	2.09 ton / 4.51 ton
Power consumption, heating		
A47/LWT 105 (min/max)	0.87 kW / 1.73 kW	1.76 kW / 2.85 kW
A17/LWT 105 (min/max)	0.92 kW / 2.29 kW	1.79 kW / 3.92 kW
A 5/LWT 110 (min/max)	1.07 kW / 2.50 kW	1.83 kW / 4.80 kW
A-4/LWT 149 (min/max)	2.97 kW / 3.65 kW	5.25 kW / 7.53 kW
Power consumption, emergency/booster heater	6.75 kW @ 240 V	6.75 kW @ 240 V
Power consumption, cooling		
A95/LWT 44.6 (min/max)	0.9 kW / 3.52 kW	2.31 kW / 6.21 kW
A80/LWT 44.6 (min/max)	0.73 kW / 2.71 kW	1.98 kW / 4.96 kW
COP heating (maximum capacity)		
A47/LWT 105	3.86	4.24
A17/LWT 105	2.93	3.22
A 5/LWT 110	2.51	2.77
A-4/LWT 149	1.51	1.79
IPLV cooling*		
IPLV	15.68	16.83
IPLV kW/ton	0.76	0.71
Sound power level		
Outdoor installation, max capacity	61 dB(A)	66 dB(A)
Outdoor installation, silent mode	50 dB(A)	54 dB(A)
Application limits		
Min. application limit, heat source	-4 °F (-20 °C)	-4 °F (-20 °C)
Max. application limit, heat source	104 °F (40 °C)	104 °F (40 °C)
Min. application limit on the heating side	59 °F (15 °C)	59 °F (15 °C)
Max. application limit on the heating side	149 °F (65 °C)	149 °F (65 °C)
Application limit, heat source at W65	-4 °F (-20 °C)	-4 °F (-20 °C)
Min. cooling mode application limit for outside temperature	59 °F (15 °C)	59 °F (15 °C)
Max. cooling mode application limit for outside temperature	104 °F (40 °C)	104 °F (40 °C)
LWT min in cooling mode	44.6 °F (7 °C)	44.6 °F (7 °C)
Water hardness	143-152 ppm	143-152 ppm
Conductivity (softening water)	< 1000 µS/cm	< 1000 µS/cm
Conductivity (desalination)	20-100 µS/cm	20-100 µS/cm
Chloride	< 30 mg/l	< 30 mg/l
Oxygen 8-12 weeks after filling (softening)	< 0.02 mg/l	< 0.02 mg/l
Oxygen 8-12 weeks after filling (desalination)	< 0.1 mg/l	< 0.1 mg/l

INSTALLATION Specification

	WPL 15 A2W Premium	WPL 25 A2W Premium
Electrical data		
Rated voltage	220-240 V	220-240 V
Breaker size, compressor (DP)	20 A	35 A
Breaker size, controller (DP)	15 A	15 A
Breaker size, backup element (DP)	30 A	30 A
Starting current	7 A	10 A
Locked rotor current	17 A	35 A
Max operating current	19.5 A	30 A
Refrigerant data		
Type	R410A	R410A
Charge	9.26 lb (4.2 kg)	12.13 lb (5.5 kg)
IP rating	IP 14B	IP 14B
Condenser material	1.4401 Cu	1.4401 Cu
Evaporator material	Aluminum/copper	Aluminum/copper
Dimensions		
Height	35 ³ / ₈ " (900 mm)	41 ¹ / ₈ " (1045 mm)
Width	50" (1270 mm)	58 ¹¹ / ₁₆ " (1490 mm)
Depth	23 ³ / ₈ " (593 mm)	23 ³ / ₈ " (593 mm)
Weight	309 lb (140 kg)	386 lb (175 kg)
Connection size tube expanded to 29.1 mm diam.	1" (28 mm)	1" (28 mm)
Miscellaneous		
Min heating flow rate at A45 LWT 95 and 9°F (5°C) rise	3.1 gpm (11.7 l/min)	4.4 gpm (16.7 l/min)
Max operating pressure, heating circuit	43.5 psi (0.3 MPa)	43.5 psi (0.3 MPa)
Circulation rate, heat source side	1354 cfm (2300 m ³ /hr)	2354 cfm (4000 m ³ /hr)
Internal pressure difference	0.87 psi (60 hPa)	1.6 psi (110 hPa)
Installation location		
Maximum altitude for installation	6,562 ft (2000 m)	6,562 ft (2000 m)
Minimum distance to salt water body	> 1640 ft (> 500 m)	> 1640 ft (> 500 m)

* According to AHRI Standard 550/590 Energy Star performance test

[A45: Ambient air temperature = 45°F (7.2°C)]

[LWT35: Leaving water temperature = 35°F (1.7°C)]

19. Warranty

LIMITED WARRANTY

Subject to the terms and conditions set forth in this limited warranty, Stiebel Eltron, Inc. (the “Manufacturer”) hereby warrants to the original purchaser (the “Owner”) that each WPL A2W Premium (the “Product”) shall not fail due to defects in the Manufacturer’s materials or workmanship for the following periods: seven (7) years for the compressor and two (2) years for all other parts from the date of purchase.

As Owner’s sole and exclusive remedy for breach of the above warranty, Manufacturer shall, at the Manufacturer’s discretion, send replacement parts for local repair; retrieve the Product for factory repair, or replace the defective Product with a replacement unit with comparable operating features. Manufacturer’s maximum liability under all circumstances shall be limited to the Owner’s purchase price for the Product. All replacement compressors or parts shall be warranted for the remainder of the original warranty period.

This limited warranty shall be the exclusive warranty made by the Manufacturer and is made in lieu of all other warranties, express or implied, whether written or oral, including, but not limited to warranties of merchantability and fitness for a particular purpose. Manufacturer shall not be liable for incidental, consequential or contingent damages or expenses arising directly or indirectly from any defect in the Product or the use of the Product. Manufacturer alone is authorized to make all warranties on Manufacturer’s behalf and no statement, warranty or guarantee made by any other party shall be binding on Manufacturer.

1. All labor costs for diagnostics, repair, replacement of a failed compressor, replacement of parts, and removal of the product for any reason;
2. The product must be installed by a licensed HVAC Contractor;
3. Installation of the Product other than as directed by Manufacturer and other than in accordance with all applicable local and state building codes;
4. Failure to maintain the Product or to operate the Product in accordance with the Manufacturer’s specifications;

5. Improper installation of the Product and/or improper materials used by any installer and not relating to defects in parts or workmanship of Manufacturer;
6. Moving the Product from its original place of installation;
7. Damage to the Product by acts of God and circumstances over which Manufacturer has no control including vandalism
8. Connecting the Product to any incompatible third party component or system;
9. Installing the Product in an environment where it will be exposed to corrosive and caustic substances;
10. Installing the Product less than 1640 ft (500 m) from any waterbody containing salt, such as seawater;
11. The Product must be charged with glycol to prevent frost damage during a power outage;

Should owner wish to return the Product to manufacturer for repair or replacement under this warranty, Owner must first secure written authorization from Manufacturer. Owner shall demonstrate proof of purchase, including a purchase date, and shall be responsible for all removal and transportation costs. If Owner cannot demonstrate a purchase date this warranty shall be limited to the period beginning from the date of manufacture stamped on the Product. Manufacturer reserves the right to deny warranty coverage upon Manufacturer’s examination of Product. This warranty is restricted to the Owner and cannot be assigned. Any defective compressor or part replaced under this warranty shall become the property of Manufacturer and returned for inspection.

Some States and Provinces do not allow the exclusion or limitation of certain warranties. In such cases, the limitations set forth herein may not apply to the Owner. In such cases this warranty shall be limited to the shortest period and lowest damage amounts allowed by law. This warranty gives you specific legal rights and you may also have other rights which vary from State to State or Province to Province.

This Warranty is valid for U.S.A. & Canada only. Warranties may vary by country. Please consult your local Stiebel Eltron Representative for the Warranty for your country.

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