

For the competent person

Installation and maintenance instructions



aroCOLLECT

VWL 11/4 SA

GB

Publisher/manufacture

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1 Safety

1.1 Action-related warnings

Classification of action-related warnings

The action-related warnings are classified in accordance with the severity of the possible danger using the following warning signs and signal words:

Warning symbols and signal words



Danger!

Imminent danger to life or risk of severe personal injury



Danger!

Risk of death from electric shock



Warning.

Risk of minor personal injury



Caution.

Risk of material or environmental damage

1.2 Intended use

There is a risk of injury or death to the user or others, or of damage to the product and other property in the event of improper use or use for which it is not intended.

The product is intended exclusively for domestic use as an air/brine collector to be connected to the **VWF xx1/4**, **VWF xx2/4**, **VWF xx7/4**, **VWF xx7/4 S1** or **VWF xx8/4** heat pumps. Operating the heat pump in conjunction with the air/brine collector and outside the application limits results in the heat pump being switched off by the internal control and safety devices.

Intended use includes the following:

- observance of accompanying operating, installation and servicing instructions for the product and any other system components
- installing and fitting the product in accordance with the product and system approval
- compliance with all inspection and maintenance conditions listed in the instructions.

Intended use also covers installation in accordance with the IP class.

Any other use that is not specified in these instructions, or use beyond that specified in

this document shall be considered improper use. Any direct commercial or industrial use is also deemed to be improper.

Caution.

Improper use of any kind is prohibited.

1.3 General safety information

1.3.1 Risk caused by inadequate qualifications

The following work must only be carried out by competent persons who are sufficiently qualified to do so:

- Installation
- Disassembly
- Installation
- Start-up
- Maintenance
- Repair
- Decommissioning
- ▶ Observe all instructions that are included with the product.
- ▶ Proceed in accordance with the current state of technology.
- ▶ Observe all applicable directives, standards, laws and other regulations.

1.3.2 Danger caused by improper operation

Improper operation may present a danger to you and others, and cause material damage.

- ▶ Carefully read the enclosed instructions and all other applicable documents, particularly the "Safety" section and the warnings.
- ▶ Only carry out the activities for which instructions are provided in these operating instructions.

1.3.3 Risk of death due to lack of safety devices

The schematic drawings included in this document do not show all safety devices required for correct installation.

- ▶ Install the necessary safety devices in the system.
- ▶ Observe the applicable national and international laws, standards and guidelines.



1 Safety



1.3.4 Risk of death from electric shock

There is a risk of death from electric shock if you touch live components.

Before commencing work on the product:

- ▶ Disconnect the product from the power supply by switching off all power supplies (electrical partition with a contact opening of at least 3 mm, e.g. fuse or line protection switch).
- ▶ Secure against being switched back on again.
- ▶ Wait for at least 3 minutes until the capacitors have discharged.
- ▶ Check that there is no voltage.

1.3.5 Risk of injury due to chemical burns caused by brine fluid

The brine fluid ethylene glycol is harmful to health.

- ▶ Avoid contact with the skin and eyes.
- ▶ Always wear gloves and protective goggles.
- ▶ Do not inhale or swallow.
- ▶ Observe the safety data sheet that accompanies the brine fluid.

1.3.6 Risk of burns due to hot and cold components

There is a risk of burns and frostbite from any uninsulated pipelines and from the auxiliary electric heating.

- ▶ Only carry out work on the components once they have reached ambient temperature.

1.3.7 Risk of death due to changes to the product or the product environment

- ▶ Never remove, bridge or block the safety devices.
- ▶ Do not alter the safety devices in any way.
- ▶ Do not damage or remove any seals on components. Only authorised competent persons or customer services may modify sealed components.
- ▶ Do not make any changes to:
 - The product itself
 - The product environment
 - The brine fluid, air and current supply lines

- The drain line and expansion relief valve for the heat source circuit
- to constructional conditions that may affect the operational reliability of the product

1.3.8 Material damage due to unsuitable installation surface

The installation surface must be even and have sufficient load-bearing capacity to support the operating weight of the product. An uneven installation surface may cause leaks in the product.

If the installation surface does not have sufficient load-bearing capacity, the product may topple.

There is a risk of death if the connections are subject to leaks.

- ▶ Make sure that the product is positioned flush against the installation surface.
- ▶ Ensure that the installation surface has sufficient load-bearing capacity to bear the operating weight of the product.

1.3.9 Risk of injury during transport due to a high product weight

- ▶ Make sure that the product is transported by at least two people.

1.3.10 Risk of material damage caused by using an unsuitable tool

- ▶ Use the correct tool to tighten or loosen screw connections.

1.4 Regulations (directives, laws, standards)

When setting up, installing and operating the heat pump and the domestic hot water cylinder, you must observe the following points in particular:

- Local specifications, regulations, rules and directives regarding electrical connections
- Local specifications, regulations, rules and directives for the power company
- Local specifications, regulations, rules and directives for the water supply company
- Local specifications, regulations, rules and directives regarding the use of geothermal energy





- Local specifications, regulations, rules and directives regarding the integration of heat source systems and heating installations
- Local specifications, regulations, rules and directives regarding saving energy
- Local specifications, regulations, rules and directives regarding hygiene



2 Notes on the documentation

2 Notes on the documentation

2.1 Observing other applicable documents

- ▶ You must observe all the operating and installation instructions included with the system components.

2.2 Storing documents

- ▶ Pass these instructions and all other applicable documents on to the system operator.

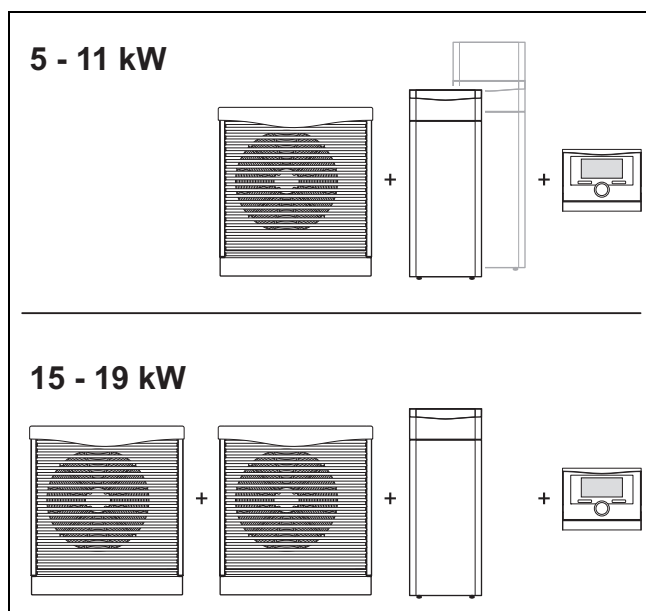
2.3 Applicability of the instructions

These instructions apply only to:

Product
VWL 11/4 SA

3 System overview

3.1 Heat pump system design



The heat pump system consists of the following components, as a minimum:

- Air/brine collector(s)
- Heat pump
- System controller

The heat pump system generates heat in heating installations and in hot water generation by extracting the thermal energy from a heat source circuit and releasing this into the heating circuit via the internal refrigeration circuit. At the same time, there is an opportunity for active cooling to take place via circulation reversal. For this, the heat pump is connected to the air/brine collector(s). The air/brine collector is used to exchange heat between the brine circuit and the outside air.

4 Product description

4.1 Information on the identification plate

The identification plate is attached at the factory to the underside of the electronics box.

Information on the identification plate	Meaning
	Rated voltage and frequency of the fan, controller and de-icer
P max	Maximum rated power
P	Rated power of the fan and controller
P	De-icer rated power
	Rated power and pressure of the air/brine collector at an air inlet temperature of 2 °C and a heating flow temperature of 35 °C
IP	Level of protection
	Verband deutscher Elektrotechniker (German Association for Electrical, Electronic & Information Technologies)
	Electromagnetic Compatibility in accordance with the Verband deutscher Elektrotechniker
	Read the instructions.
	Bar code with serial number, 7th to 16th digit = product article number

4.2 CE label

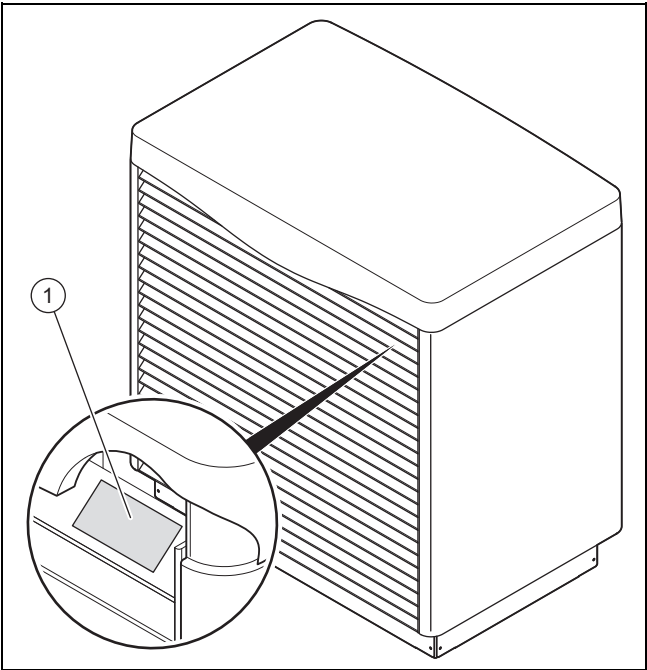


The CE label shows that the products comply with the basic requirements of the applicable directives as stated on the identification plate.

The declaration of conformity can be viewed at the manufacturer's site.

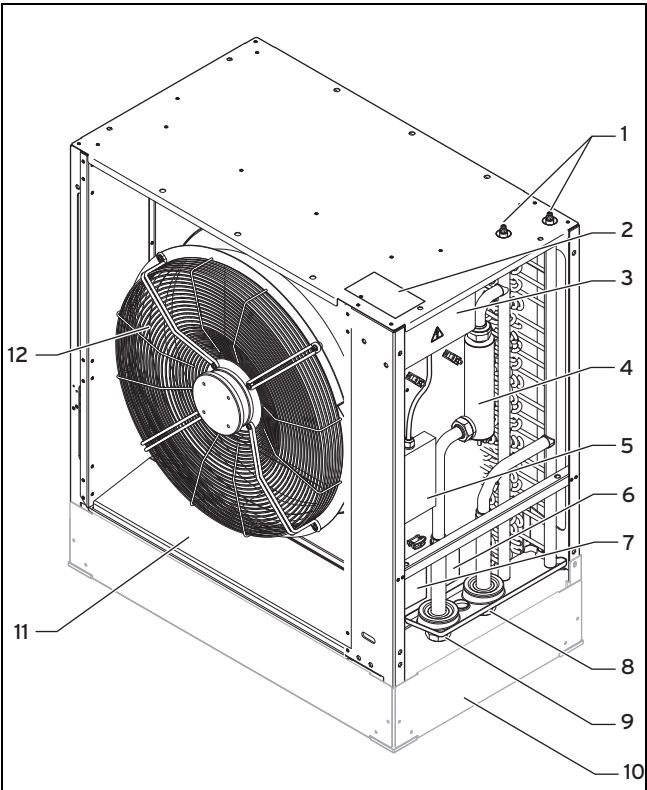
4.3 Product design

4.3.1 Front view, closed



1 Type designation with serial number

4.3.2 Front view, open



- | | | | |
|---|-----------------------------|---|--|
| 1 | Purging valves | 6 | Identification plate with service sticker |
| 2 | Simple identification plate | 7 | Warning sticker |
| 3 | Electronics box | 8 | Connecting the brine line to the heat pump (hot brine) |
| 4 | De-icer | | |
| 5 | Connection box | | |

- | | | | |
|---|---|----|------------------|
| 9 | Connecting the brine line from the heat pump (cold brine) | 10 | Base (accessory) |
| | | 11 | Condensate tray |
| | | 12 | Ventilator |

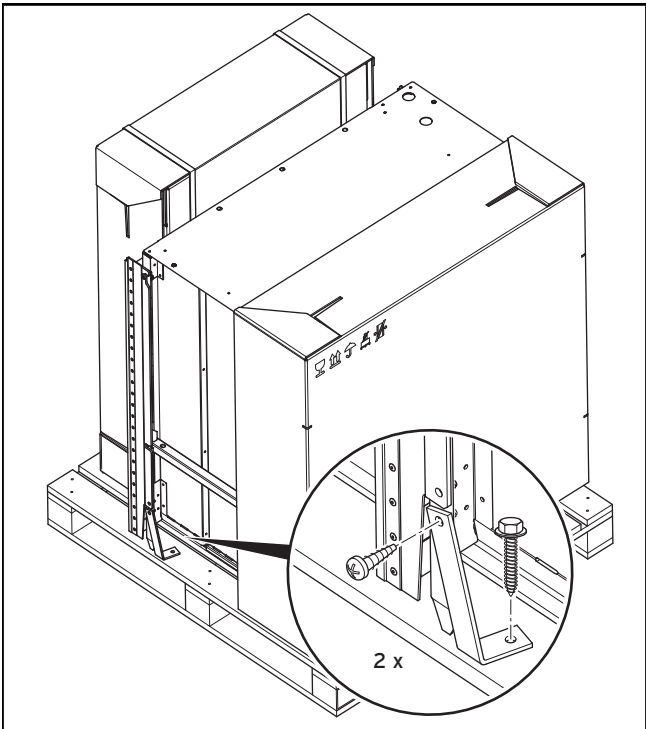
5 Installation

5.1 Checking the scope of delivery

- Carefully remove the packaging and padding without damaging the parts of the product.
- Check that the scope of delivery is complete.

Quantity	Description
1	Box: Cover and side sections of the casing
2	Louvred grill (pre-installed)
1	Air/brine collector
1	Installation material: <ul style="list-style-type: none">– 2 x O-ring seals– 10 x M8x20 screws (to secure the cover, the side casing and the air/brine collector to the base (accessories))
1	Enclosed documentation

5.2 Removing the transport locks



- Remove the transport locks as shown in the illustration.

5 Installation

5.3 Selecting the installation site



Caution.

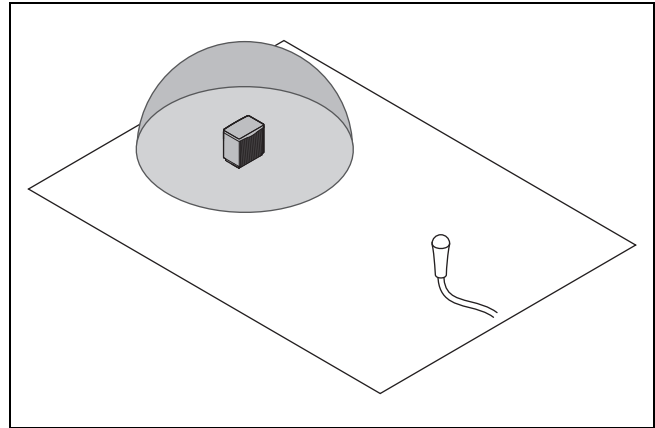
Risk of material damage caused by corrosion.

Caustic vapours may cause corrosion damage on the product. The extracted air must be free from ammonia, methane gas and other corrosive elements.

- ▶ Do not install the product close to stables and manure pits.

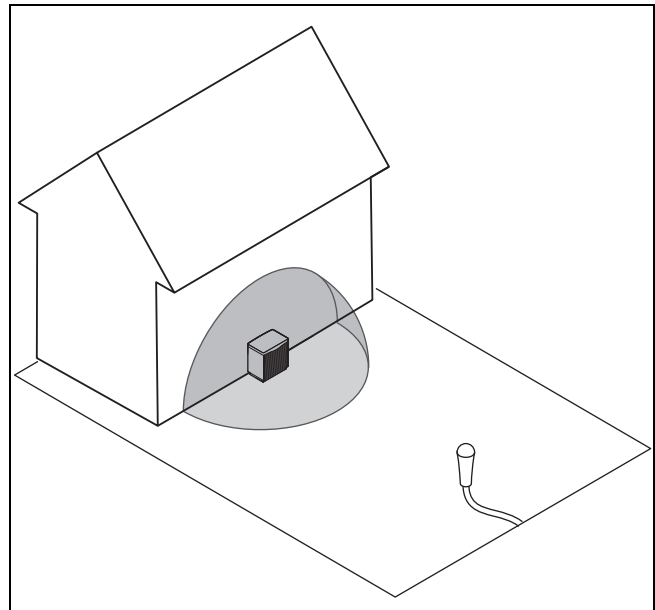
- ▶ Set up the product outdoors away from rooms. Depending on the weather, condensate may form and appear under the collector.
 - Maximum installation height: 2000 m above normal sea level
- ▶ Ensure that there is a sufficiently stable, frost-proof, horizontal foundation that meets local requirements and complies with the rules of structural engineering.
- ▶ For efficiency reasons, the clearance between the heat pump and the air/brine collector should be kept as small as possible.
 - Total length of the connection line, cold brine and hot brine: 2 x 30 m
- ▶ If the clearance between the product and the building falls below 3 m, position the product in such a way that the outlet side does not point towards the building.
- ▶ Assess the installation site to ensure that no persons can be at risk at the outlet side. No public roads/pathways should run through the area of the outlet side.
- ▶ Install the product with the intake side towards the wall (recommended installation).
- ▶ Comply with the local and statutory minimum clearances with regards to:
 - Vegetation
 - Walls
 - Awnings
 - Open fire or embers
 - Children's toys
- ▶ When selecting the installation site, take into consideration the fact that, during full load mode in winter, noise (depending on the current output requirement, up to approx. 66 dB(A) sound power level) is emitted from the product, and this noise may be amplified by reverberative surfaces.
- ▶ Observe the national regulations regarding noise.

Sound propagation form: Hemisphere



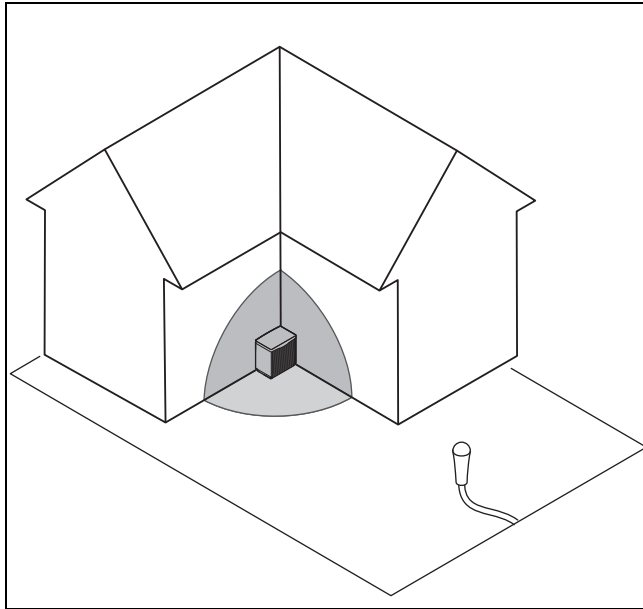
Sound propagation with a free-standing air/brine collector.

Sound propagation form: Quarter-sphere



Sound propagation for the adjacent building: On just one side.

Sound propagation form: An eighth of a sphere



Sound propagation for the adjacent building: On two sides and at a right-angle.

$$L_{WA} = L_{PFA} - 10 \lg S$$

L_{WA} = Sound pressure level (dB(A))

L_{PFA} = Sound power level (dB(A))

S = Sound propagation form* (clearance from the product in m)²

Sound propagation form: Hemisphere = 6.28

Sound propagation form: Quarter-sphere = 3.14

Sound propagation form: Eighth of a sphere = 1.57

Example

$L_{PFA} = 54$ dB(A), max. sound power level without noise reduction

Sound propagation form = Hemisphere = 6.28

Distance to the product = 10 m

$$L_{WA} = 54 \text{ dB(A)} - 10 \lg (6.28 * 100)$$

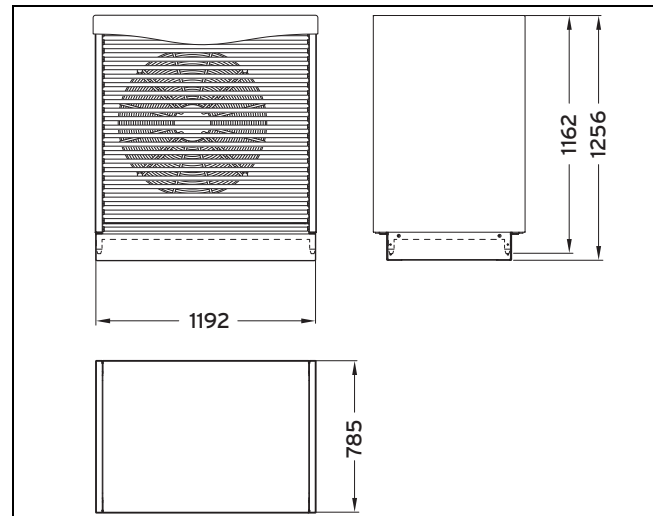
$$L_{WA} = 54 \text{ dB(A)} - 10 \lg (628)$$

$$L_{WA} = 54 \text{ dB(A)} - 28$$

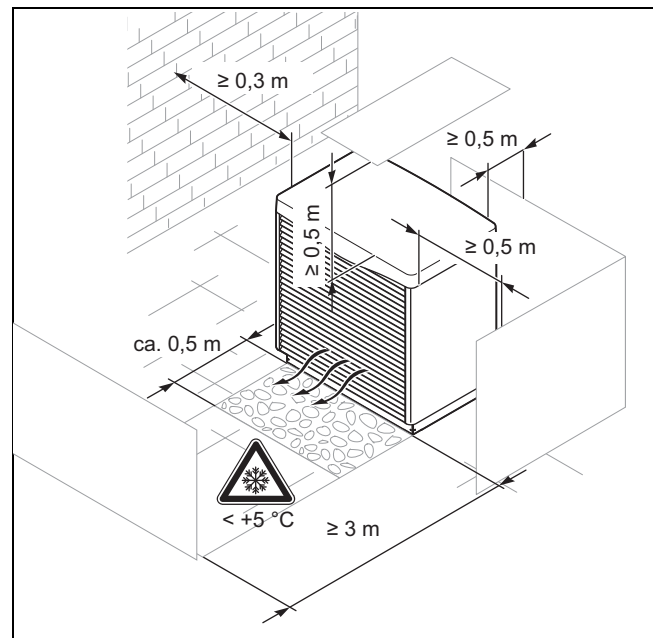
$$L_{WA} = 26 \text{ dB(A)}$$

- Choose the installation site so that the legally required emissions values for noise outside of buildings can be complied with, without having to use the heat pump system's noise reduction function, if possible.
- In certain weather conditions, take into consideration the possibility of black ice forming directly in front of the product's outlet side; if condensate escapes, the black ice may form all around the product.

5.4 Dimensions

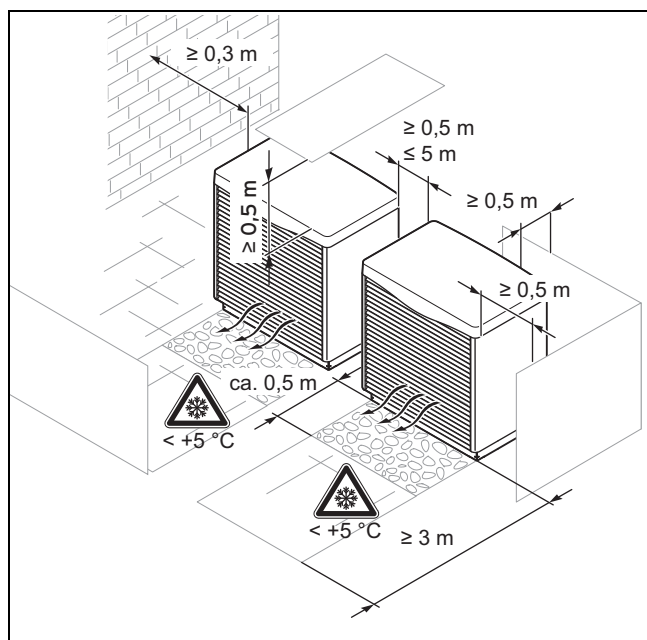


5.5 Minimum clearances

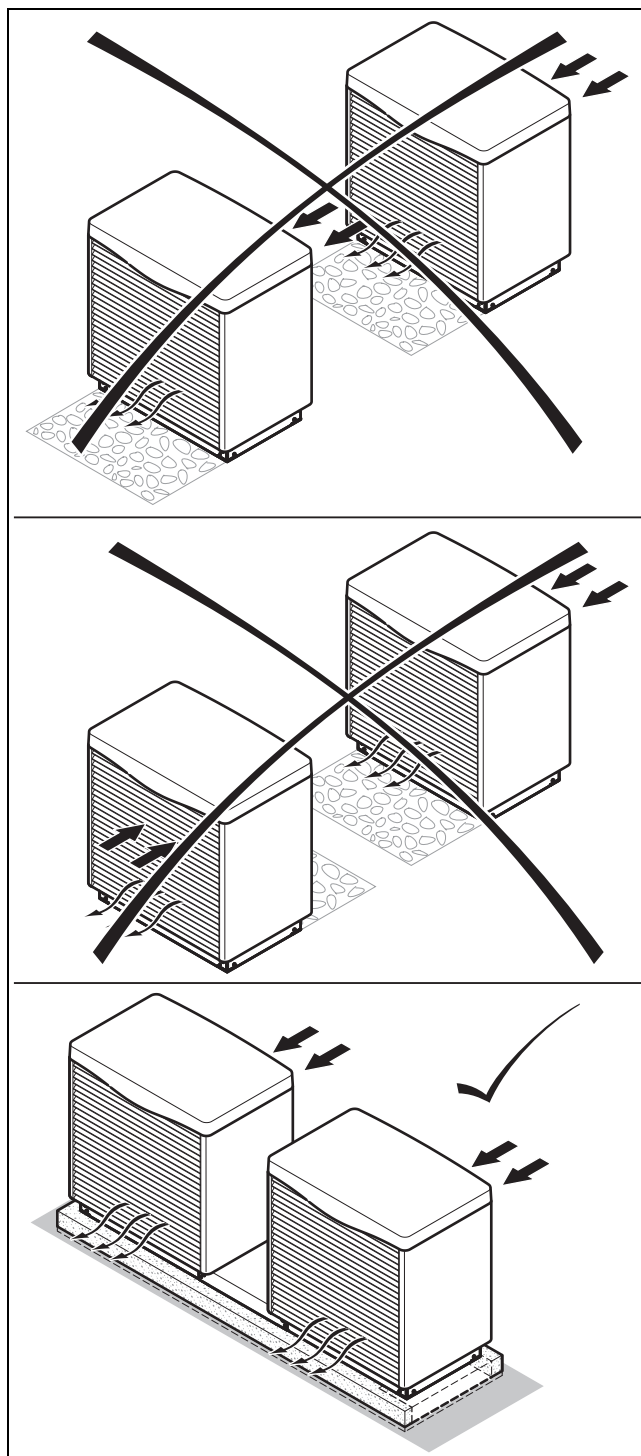


Clearances that must be complied with for an air/brine collector

5 Installation



Clearances that must be complied with for two air/brine collectors

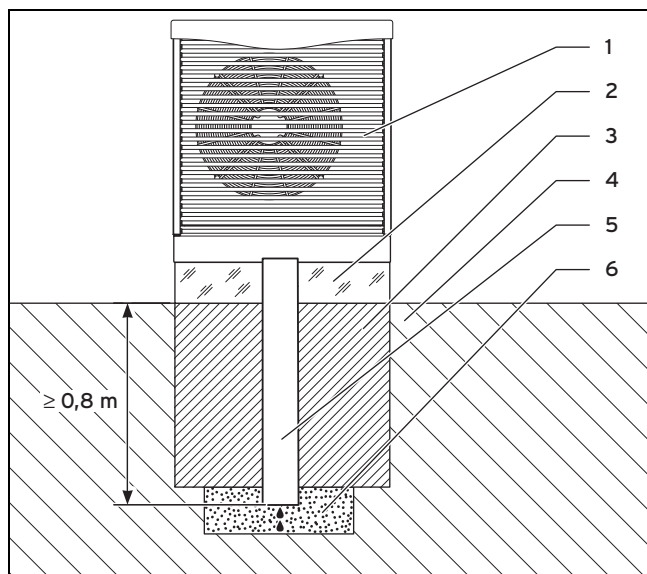


Positioning of the collectors

- ▶ Use the mounting base, which is available as an accessory, for the installation.
- ▶ To guarantee sufficient air flow and to facilitate maintenance work, observe the minimum clearances that are specified above.
- ▶ Ensure that there is sufficient room to install the hydraulic lines.
- ▶ If the product is to be installed in areas where heavy snow falls, ensure that the snow does not accumulate around the product and that the minimum clearances specified above are observed. If you cannot ensure this, install an additional heat generator in the heating circuit. An elevating base and condensate tray heating are available as accessories.

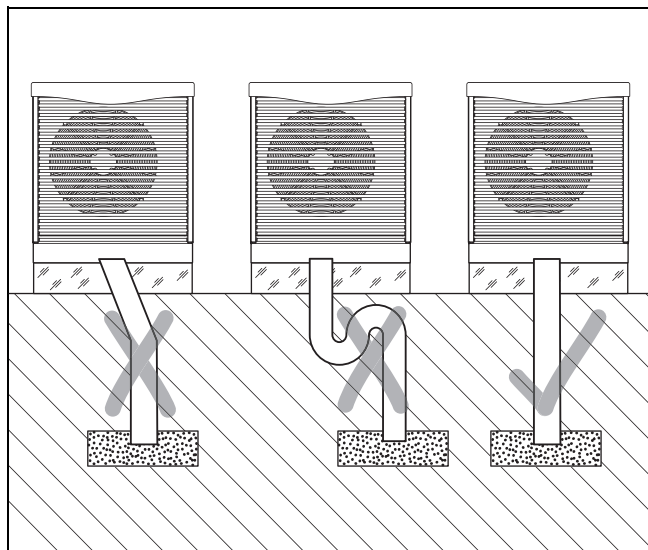
- If you install two air/brine collectors, you must create a concrete foundation and use the connection pipe set that is available as an accessory.

5.6 Creating the foundation

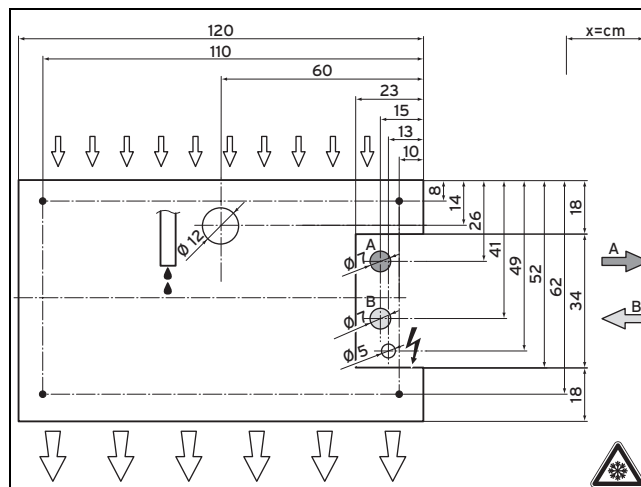


- | | |
|-----------------------|-----------------------------------|
| 1 Air/brine collector | 4 Ground |
| 2 Foundation | 5 Condensate drain pipe |
| 3 Compacted gravel | 6 Gravel bed in a frost-free area |

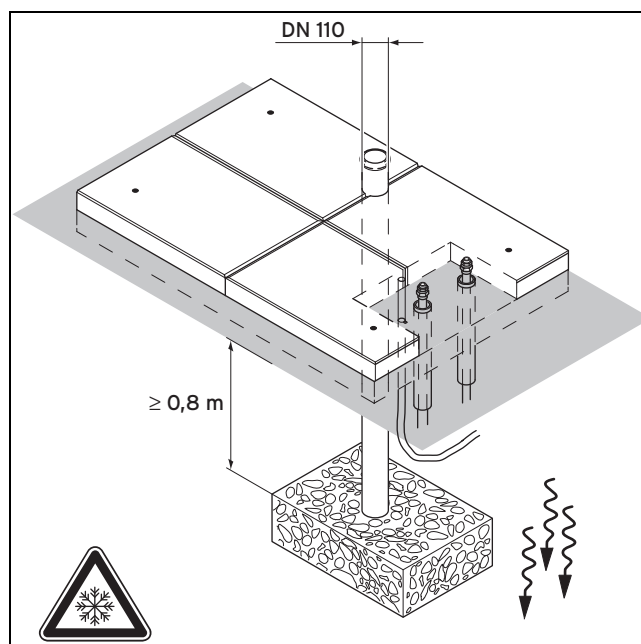
1. Prepare the ground for the foundation in accordance with the illustration.



2. As a condensate drain pipe, route a pipe that drops vertically and that is \geq DN 110. Route this pipe as far as the frost-free ground. To lay the pipe at ground level and so that it comes out of the mounting base at the side, use the accessory that is available for this.

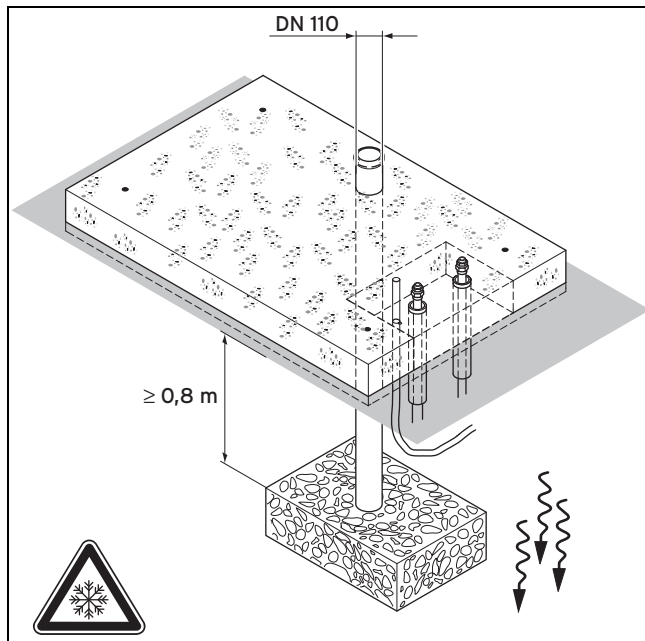


- A Connecting the air/brine collector to the heat pump (hot brine)
 - B Connecting the heat pump to the air/brine collector (cold brine)
3. Create a frost-free and stable foundation or set the product on paving slabs. When doing so, observe the rules of structural engineering and the instructions that are enclosed with the recommended VWL S installation set for PE pipes.

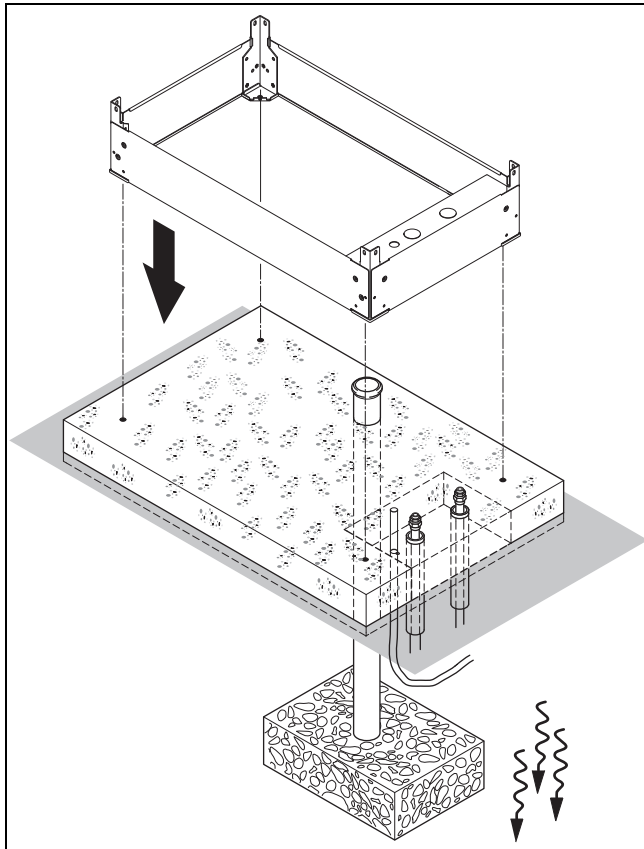


4. Establish the connections for a foundation made of paving slabs in accordance with the illustration.

5 Installation



5. Establish the connections for a concrete foundation in accordance with the illustration.



6. Install the base that is available as an accessory.

5.7 Hydraulics installation

5.7.1 Routing the connection lines



Caution.

Risk of material damage caused by ground lifting up as a result of frozen ground.

At operating temperatures close to freezing level, the ground in the area of the PE pipes may freeze and therefore damage the structure as a result of the ground lifting up.

- Insulate all of the PE lines that are to be routed under buildings, terraces, pathways, etc. so that they are vapour-diffusion-tight.
- If possible, route PE pipes in the ground with a clearance of 70 cm from each other and from adjacent supply lines (except for electrical lines).

The total length (connection lines from the heat pump to the product and from the product to the heat pump) must be no greater than 60 m.

- Keep the clearance between the product and the heat pump as short as possible and minimise the use of elbows and angles. This is because each additional pressure loss that is caused by the use of these reduces efficiency.
- Route the PE pipes in accordance with the applicable technical directives.
- For a total line length of between ≥ 20 m and 60 m, use a PE pipe with DN 50 (e.g. PE 80/100, outer diameter 50 mm, wall thickness 4.6 mm). Up to a total line length of ≤ 20 m, you can also use a PE pipe with DN 40 (e.g. PE 80/100, outer diameter 40 mm, wall thickness 3.7 mm).
- When using more than eight PE elbows, use an extra 2 m of pipeline for each elbow.
- When using copper pipes, use only copper pipes that have a cross-section of ≥ 35 mm. If you use a smaller cross-section (e.g. copper 28 mm), this will result in pressure losses (2 m copper 28 = 8 m copper 35).

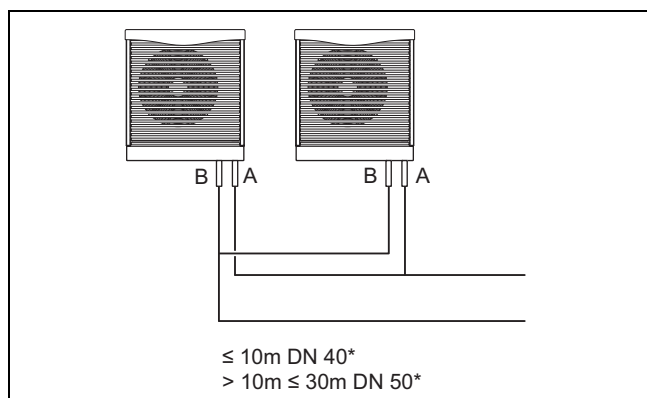


Note

If the prescribed line cross-sections are not complied with, this results in efficiency losses and reduced annual operating figures.

- If required, when routing the PE pipes above-ground, ensure that they are protected against UV radiation.

Conditions: Installing two air/brine collectors



* = one way

- Connect the air/brine collector in accordance with the Tichelmann principle. This means that the air/brine collector with the shorter flow has the longest return.



Caution.

Risk of material damage caused by a leak.

When tightening screwed connections, ensure that O-rings are inserted correctly as, otherwise, they may pop out or become jammed, become damaged, or cause leaks.

- Insert the O-rings properly and untwisted into the cap nuts for the air/brine collector's brine connections.

- Screw the cap nuts to the connection adaptors on the "hot brine" and "cold brine" brine lines in the brine circuit (cross-reference) on the mounting base.
- To purge each individual air/brine collector, install two shut-off units.

5.7.2 Transporting the product



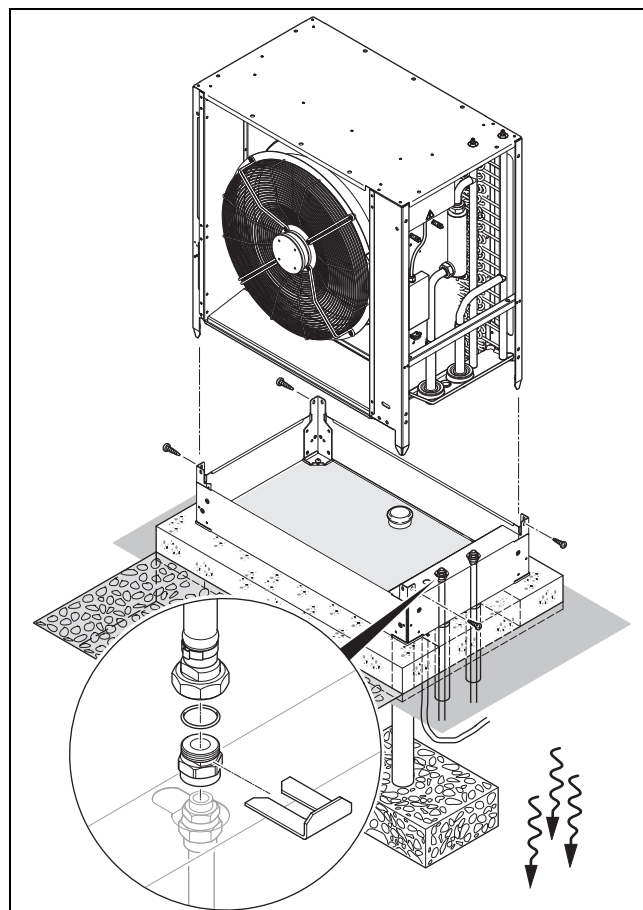
Caution.

Risk of material damage caused by incorrect transport.

- Do not transport the product using a hand truck.

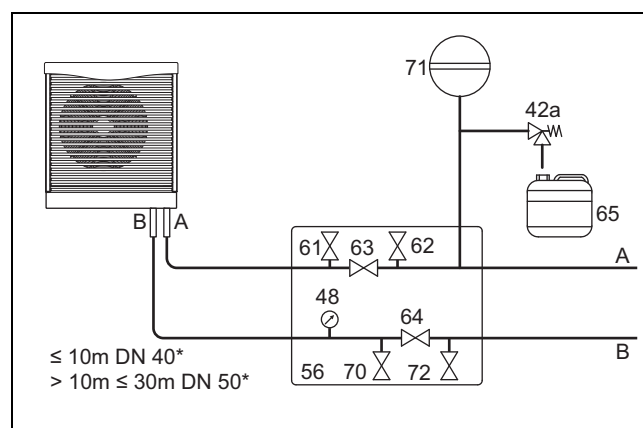
- If required, remove the louvred grill to prevent damage.

5.7.3 Installing the product



1. Place the product on the base that is available as an accessory.
2. Connect the brine lines to the product as shown.
3. Screw the product to the base.

5.7.4 Installing brine lines in the building



42a	Expansion relief valve	64	Stop valve
48	Pressure gauge	65	Brine collecting container
56	Heat pumps for brine filling unit (accessory)	70	Stop valve
61	Stop valve	71	Brine diaphragm expansion tank
62	Stop valve	72	Stop valve
63	Stop valve		

5 Installation

- A From the heat source to the heat pump (hot brine) * One way
- B From the heat pump to the heat source (cold brine)

1. Install the brine lines between the product and the heat pump within the building and using all of the associated components in accordance with the applicable technical directives.



Note

Do not install dirt filters in the brine circuit for a prolonged period of time. The brine fluid is cleaned during the filling process.

2. Reduce the pre-charge pressure of the brine diaphragm expansion tank (which is available as an accessory) from 0.25 MPa (2.5 bar) to 0.10 MPa (1.0 bar).
3. Insulate all of the brine lines and the connections for the heat pump and product so that they are vapour-diffusion-tight.



Note

Vaillant recommends that you install the Vaillant heat pump brine filling unit. By doing this, it is then possible to carry out a preparatory partial bleed of the brine circuit, e. g. the flow and return of the brine circuit to the product.

Pipe type	Brine fluid volume per running metre in litres
DN 40	0,8
DN 50	1,26

Example

VWF 197/4 with **VWL 11/4 SA** and 60 m DN 50 PE pipe provides the following total content in litres:

$$5.3 + 2 \times 19 + 60 \times 1.26 + 10 \text{ (reserve)} = 129 \text{ l.}$$

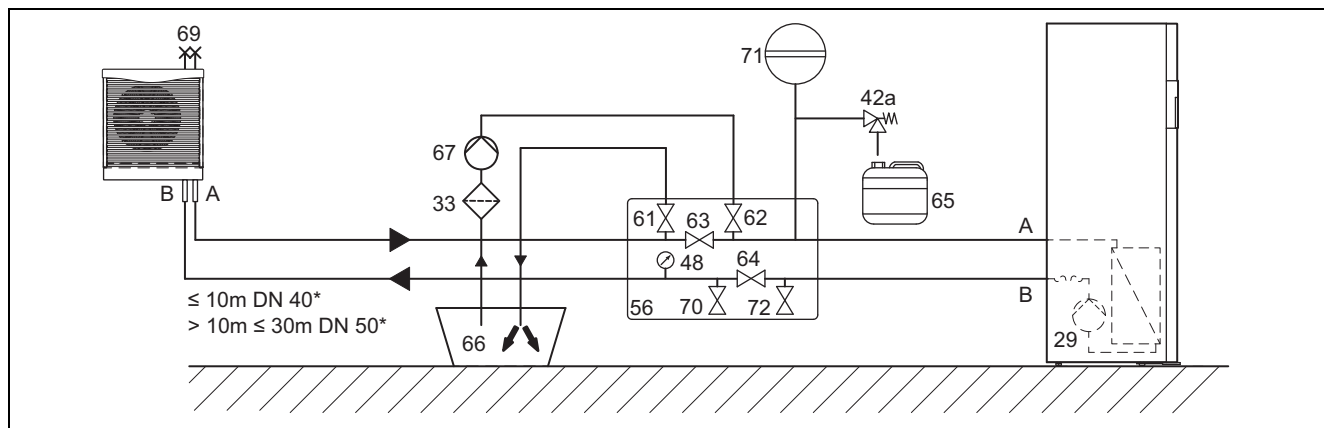
5.8 Filling and purging the brine circuit

5.8.1 Calculating the required volume of brine fluid

- Use the information in the following table to calculate the required volume of brine fluid.
- Plan an allowance of 10 l for the calculated volume in order to facilitate the rinsing process.
- Label the vessel for the remaining volume with information about the type and concentration of brine fluid and, after start-up, pass the vessel on to the operator so that they have brine fluid available for when the tank needs to be topped up.

Brine fluid volume in the product in litres (± 1 litre)		Total
VWF 5x/4 + VWL 11/4 SA	2.5 + 19	21.5
VWF 57/4 S1 + VWL 11/4 SA	2.5 + 19	21.5
VWF 8x/4 + VWL 11/4 SA	3.1 + 19	22.1
VWF 87/4 S1 + VWL 11/4 SA	3.1 + 19	22.1
VWF 11x/4 + VWL 11/4 SA	3.6 + 19	22.6
VWF 117/4 S1 + VWL 11/4 SA	3.6 + 19	22.6
VWF 157/4 + 2x VWL 11/4 SA	4.5 + 38	42.5
VWF 157/4 S1 + 2x VWL 11/4 SA	4.5 + 38	42.5
VWF 197/4 + 2x VWL 11/4 SA	5.3 + 38	43.3
VWF 197/4 S1 + 2x VWL 11/4 SA	5.3 + 38	43.3

5.8.2 Filling the brine circuit (1 air/brine collector)



29	Brine pump	66	Brine container
33	Dirt filter	67	Filling pump
42a	Expansion relief valve	69	Purging valves
48	Pressure gauge	70	Stop valve
56	Heat pumps for brine filling unit	71	Brine diaphragm expansion tank
61	Stop valve	72	Stop valve
62	Stop valve	A	From the heat source to the heat pump (hot brine)
63	Stop valve	B	From the heat pump to the heat source (cold brine)
64	Stop valve	*	One way
65	Brine collecting container		

1. Connect the filling pump's pressure line to the stop valve (62).
2. Close stop valves (63), (70) and (72).
3. Open stop valves (62) and (64).
4. Connect a hose, which leads to the brine fluid, to the stop valve (61).
5. Open the stop valve (61).



Caution.

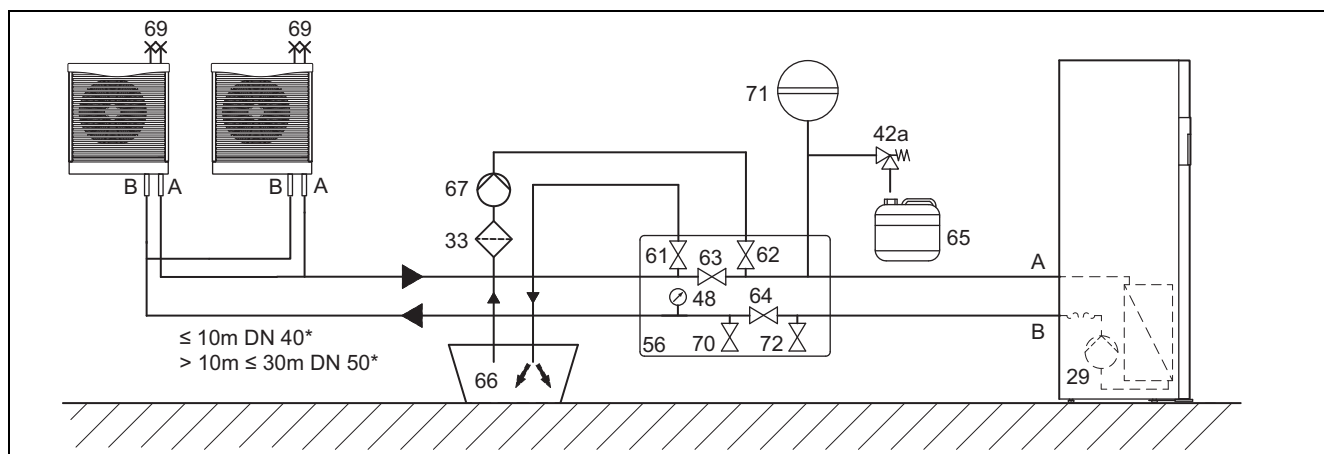
Risk of material damage caused by an incorrect filling direction.

If you fill the brine pump against the direction of flow, this may lead to a turbine effect which can damage the pump's electronics.

- Ensure that the brine pump is filled in the direction of flow.

6. Use the filling pump (67) to pour the brine fluid from the brine container (66) into the brine circuit.

5.8.3 Filling the brine circuit (two air/brine collectors)



29 Brine pump

33 Dirt filter

5 Installation

42a	Expansion relief valve	67	Filling pump
48	Pressure gauge	69	Purging valves
56	Heat pumps for brine filling unit	70	Stop valve
61	Stop valve	71	Brine diaphragm expansion tank
62	Stop valve	72	Stop valve
63	Stop valve	A	From the heat source to the heat pump (hot brine)
64	Stop valve	B	From the heat pump to the heat source (cold brine)
65	Brine collecting container	*	One way
66	Brine container		

1. Connect the filling pump's pressure line to the stop valve **(62)**.
2. Close stop valves **(63)**, **(70)** and **(72)**.
3. Open stop valves **(62)** and **(64)**.
4. Connect a hose, which leads to the brine fluid, to the stop valve **(61)**.
5. Open the stop valve **(61)**.



Caution.

Risk of material damage caused by an incorrect filling direction.

If you fill the brine pump against the direction of flow, this may lead to a turbine effect which can damage the pump's electronics.

- Ensure that the brine pump is filled in the direction of flow.
-

6. Use the filling pump **(67)** to pour the brine fluid from the brine container **(66)** into the brine circuit.

5.8.4 Purge the brine circuit

1. Position a second person at the air/brine collector(s).

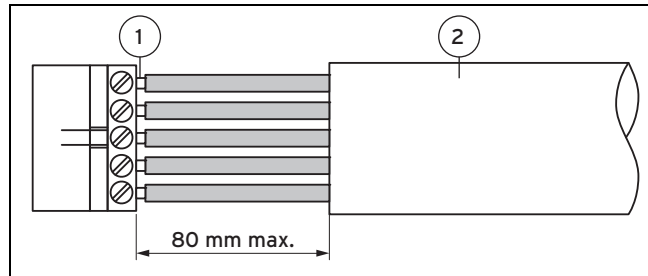


Note

The entire purging/filling process should last at least 30 minutes. During this time, the purging valves for the air/brine collector(s) must be opened and closed every five minutes. We recommend the brine purging support set for the air/brine collector as this makes the purging process significantly easier if it is to be carried out by one person.

2. Remove the protective caps, which are attached and transparent in their as-delivered condition, from the purging valves on the air/brine collector and dispose of these. These are no longer required.
3. Open the purging valves (69) on the air/brine collector(s).
4. Start up the filling pump (67) in order to fill and rinse the brine circuit.
5. Allow the filling pump (67) to run.
6. Close the purging valves on the air/brine collector(s) as soon as brine fluid escapes from the purging valves (69).
7. If required, open all of the other stop valves that are not shown in the illustrations.
8. Open and close the purging valves (69) on the air/brine collector(s) every five minutes consistently until air is no longer escaping.
9. Open the stop valve (63) so that air in the pipeline between the stop valves (61) and (62) can escape.
10. Close the stop valve (61).
11. Build up pressure in the system, as described in the installation instructions for the heat pump.

- Connect the product using a fixed connection and a partition with a contact opening of at least 3 mm (e.g. fuses or power switches).
- For the electricity supply, connect the product to a three-phase 400 V AC network with a neutral line and an earth line.
- Fuse this connection using the exact values that are specified in the technical data.
- At lengths of 10 m or more, supply lines must be laid separately from sensor or bus lines. Minimum clearance for the extra-low voltage and mains voltage line at a line length of > 10 m: 25 cm. If this is not possible, use shielded lines. Lay the shielding on one side of the sheet for the product's electronics box.



1 Connecting wires

2 Insulation

- Strip the outer sheathing on the line to the connection box by approximately 80 mm. Shorten all of the conductors, except for PE, to 60 mm.
- Secure the conductors in the connection terminals.
 - Max. torque of the connection terminals: 0.5 Nm

5.9 Electrical installation



Danger!

Risk of death from electric shock caused by a residual-current circuit breaker.

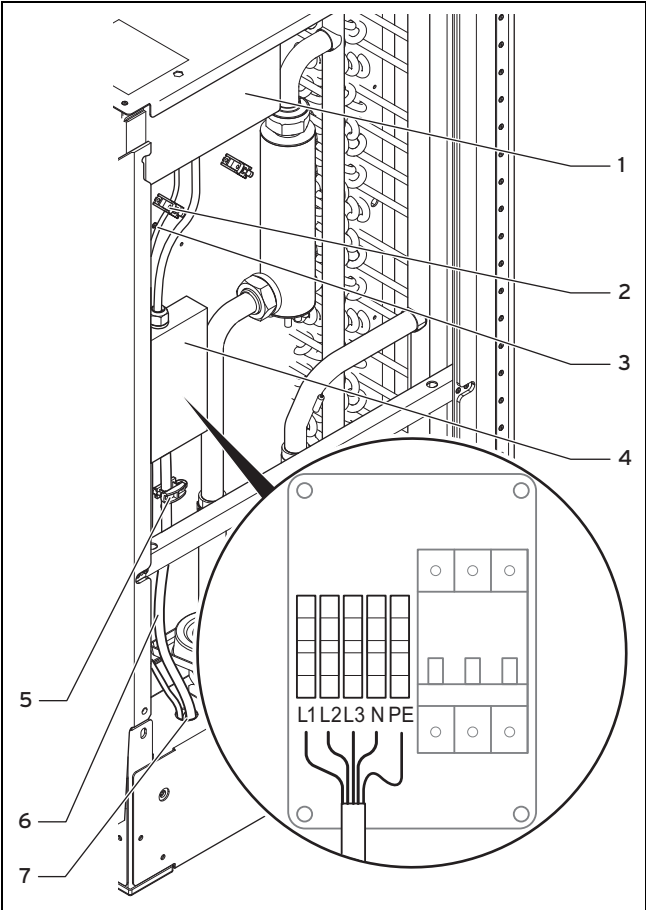
In certain cases, residual-current circuit breakers may not work.

- If, to ensure that people are protected properly and fire is prevented, residual-current circuit breakers are required, use type A pulse-current-sensitive residual-current circuit breakers or type B universal-current-sensitive residual-current circuit breakers.

- Observe the technical connection conditions for connecting to the power supply network operator's low-voltage network.
- Use the values for the maximum rated power that are specified in the technical data to determine the required line cross-sections.
- In each case, take into consideration the on-site installation conditions.

5 Installation

5.9.1 Switch box



- 1

Switch box
- 2

Strain relief
- 3

eBUS line
- 4

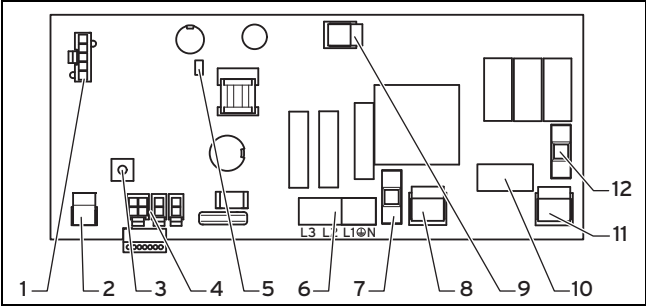
Connection box
- 5

Strain relief
- 6

Voltage supply line
- 7

Cable duct

5.9.2 Air/brine collector controller PCB



- 1

Fan control signal connection
- 2

eBUS connection
- 3

eBUS address switch (default setting 1)
- 4

TT40 sensor connection (pink); TT34 sensor connection (white)
- 5

Operating LED
- 6

Controller PCB power supply
- 7

F1 T2 230 V fuse for fan and safety cut-out
- 8

Fan voltage supply
- 9

Safety cut-out connection
- 10

De-icer connection
- 11

Optional 200 W connection accessory
- 12

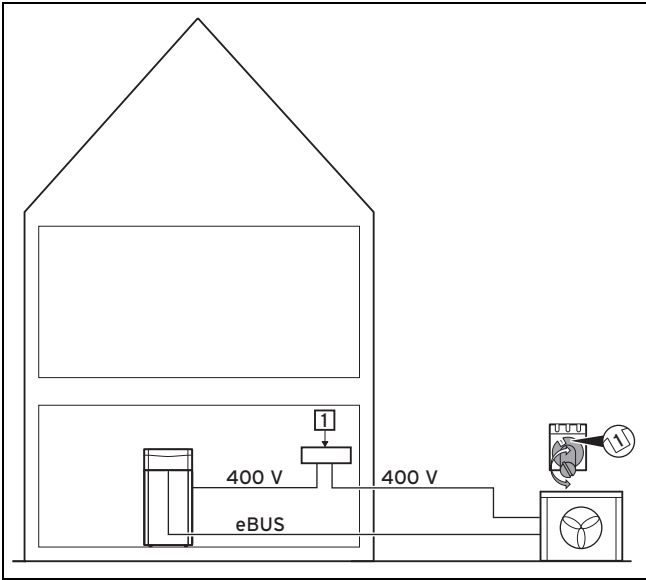
F3 T2 230 V fuse for optional connection accessory

Display	Meaning
Flashing slowly	OK

Display	Meaning
1 x brief flash	Fan fault
2 x brief flash	Fault TT40 (air inlet)
3 x brief flash	Fault TT34 (hot brine)
4 x brief flash	The safety cut-out has been triggered. Fuse F1 is defective.
5 x brief flash	No eBUS connection to the heat pump's controller PCB
6 x brief flash	Power supply not OK (1-2 phases are missing) or safety relay (OMU) is defective

The flashing period lasts for approx. 3-4 seconds.

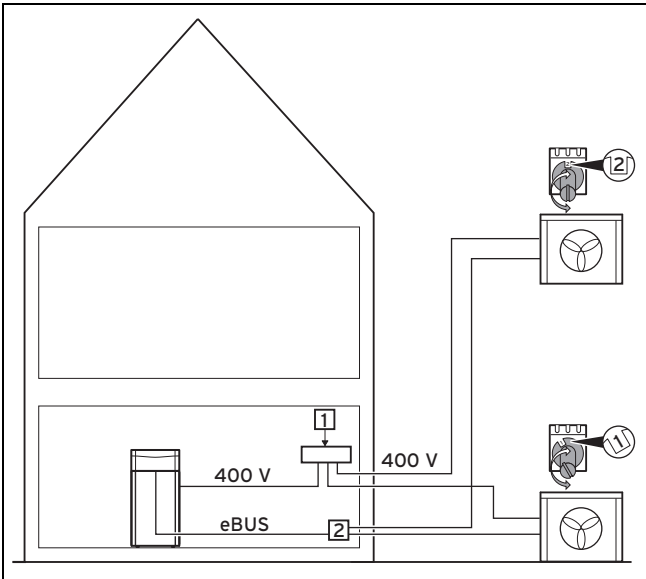
5.9.3 Establishing the power supply



- 1

400 V power supply network (on-site)

Electrical wiring of **one** air/brine collector



- 1

400 V power supply network (on-site)
- 2

eBUS distributor (on-site)

Electrical wiring of **two** collectors

- ▶ Connect each air/brine collector to a three-phase 400 V AC network with a neutral line and an earth line.
- ▶ Strip the voltage supply line by approximately 80 mm. Shorten all of the conductors, except for PE, to 60 mm. Remove the insulation by a maximum of 8 mm. If these lengths are exceeded, there is a risk of a short circuit.
- ▶ If the energy supply company requires that the heat pump is controlled using a blocking signal, also connect the air/brine collector to the heat pump via the electricity meter so that a block by the energy supply company can be switched off for both products at the same time.
- ▶ Connect the eBUS connection **X3** to the eBUS connection on the heat pump. Use a ground connection that is suitable for laying cables underground and that has a cross-section of at least 2 x 1.5 mm².

Conditions: Installing two air/brine collectors

- ▶ Place a junction box close to the heat pump and connect the eBUS lines to this.
- ▶ Set the eBUS address switch for the first air/brine collector to 1 and the eBUS address switch for the second air/brine collector to 2.

5.9.4 Circuit breaker for the air/brine collector

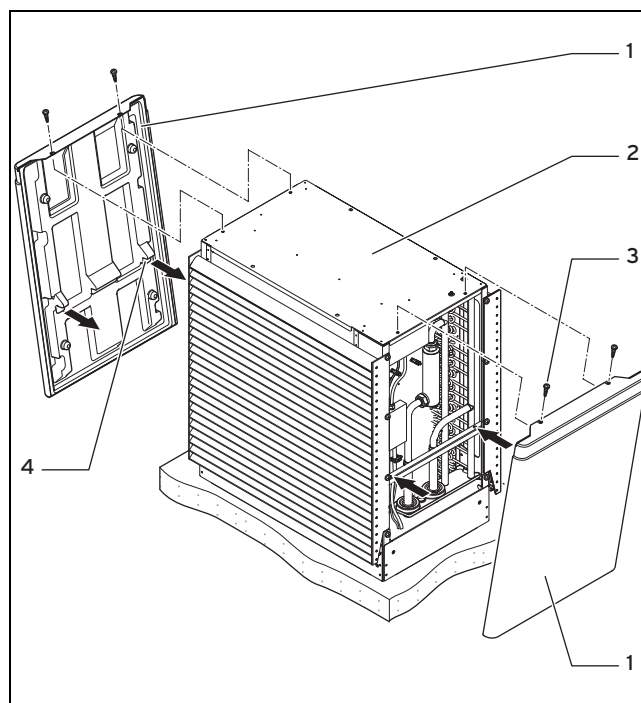
A circuit breaker is used to secure the air/brine collector against short circuits. If the circuit breaker has been triggered, the air/brine collector remains switched off until the short circuit has been rectified and the circuit breaker in the connection box has been manually reset.

The fault message **F.708** or **F.782** is shown in the heat pump display.

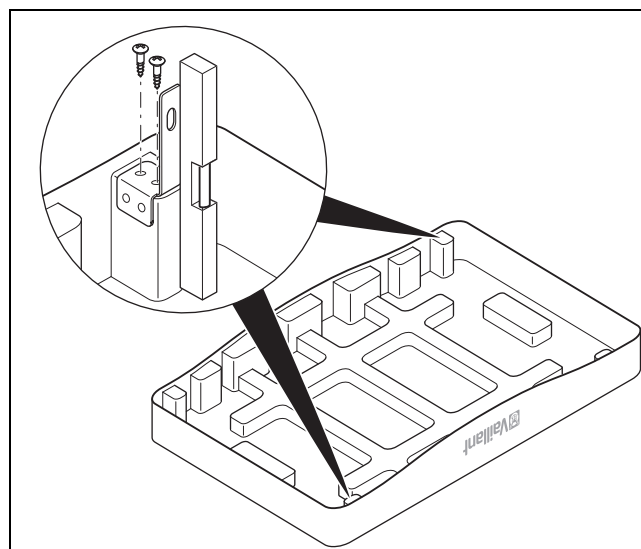
5.9.5 Resetting the circuit breaker for the air/brine collector

1. Check the supply line to the mains connection PCB in the air/brine collector's electronics box.
2. Check that the air/brine collector's mains connection PCB is working correctly.
3. Check the supply lines for the air/brine collector.
4. Check that the de-icer is working correctly.
5. Rectify the short circuit.
6. Reset the circuit breaker in the connection box.

5.9.6 Installing the side casing and cover

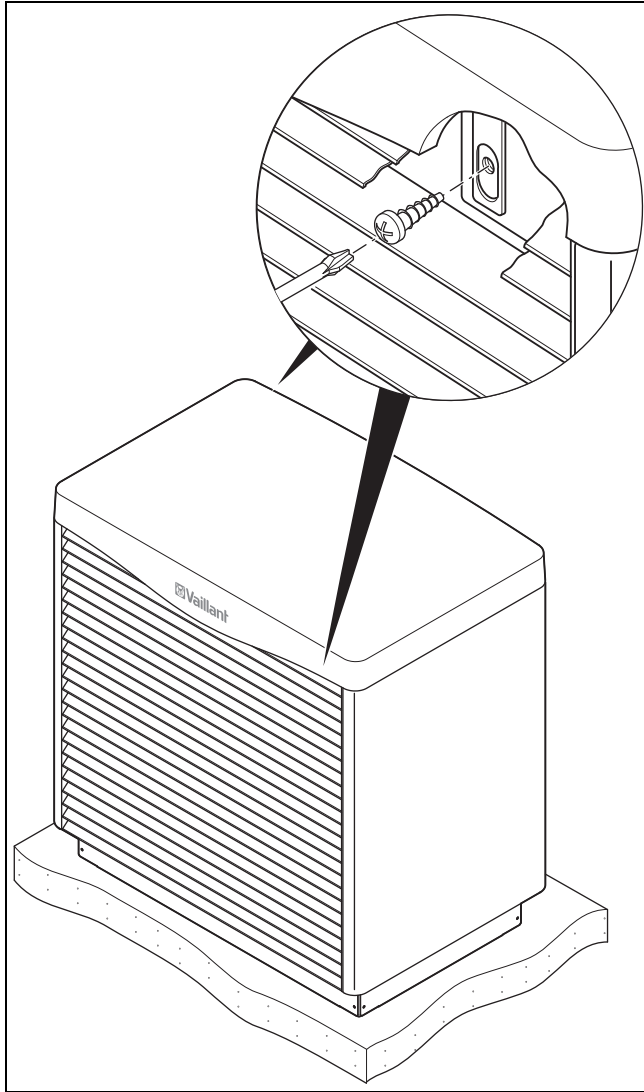


1. Arrange each of the side casing sections **(1)** and **(4)** tilted downwards on the product's frame **(2)** and, in doing so, let the nipples clip into place in the cut-outs that are provided for this.
2. Move the side casing sections to the correct, vertical position.
3. Screw each of the side casing sections tightly to the frame using two screws **(3)**.



4. When installing the retaining bracket, you must observe the installation location as shown in the illustration.
5. Secure each of the retaining brackets to the cover using two self-cutting screws.
6. Place the cover on the product.

6 Start-up



7. Anchor the cover to the product by turning each screw through the slot in the retaining bracket in the frame.

6 Start-up

6.1 Start-up

1. Ensure that the heat pump and system controller are installed correctly.
2. Switch the fuses on so that the heat pump and air/brine collector(s) are supplied with power.
 - ◁ As soon as the heat pump is supplied with power during the initial start-up, the software initialisation starts in the heat pump and in the system controller.
3. Implement the other settings with the help of the installation instructions for the heat pump and for the system controller.

6.2 Handing the product over to the operator

- ▶ When you have finished the installation, affix the enclosed sticker (which requests that the user reads the instructions) to the front of the product in the operator's language.
- ▶ Explain to the operator how the safety devices work and where they are located.
- ▶ Inform the operator how to handle the product.
- ▶ In particular, draw attention to the safety information which the operator must follow.
- ▶ Inform the operator of the necessity to have the product maintained according to the specified intervals.
- ▶ Pass all of the instructions and documentation for the product to the operator for safe-keeping.

7 Inspection and maintenance

7.1 Inspection and maintenance interval

Annual inspection/maintenance of the product by a competent person is a prerequisite for ensuring that the system is constantly ready for operation, reliable and has a long service life.

The inspection is intended to determine the actual condition of the product and compare it with the target condition. This is done by measuring, checking and observing.

Maintenance is required in order to eliminate any deviations between the actual condition and the target condition. This is normally done by cleaning, setting and, if necessary, replacing individual components that are subject to wear.



Danger!

Risk of death from electric shock!

The air/brine collector has its own, separate power supply and is not automatically de-energised when the heat pump is disconnected from the power source.

- ▶ Always switch off the power supply for each air/brine collector before carrying out any inspection or maintenance work.
- ▶ Secure the power supply against being switched on again.



Danger!

Risk of death from electric shock!

Due to electrical discharge processes, contact with components inside the product may cause an electric shock.

- ▶ Do not open the cover for the electronics box in the product until three minutes after the all-pole disconnection of the supply voltage.
- ▶ Do not remove the louvred grill until at least three minutes after the all-pole disconnection of the power supply. Never try to take hold of the ventilator before the three minutes have elapsed.

7.2 Carrying out inspection and maintenance work



Note

Due to the fluctuating outside temperature and air humidity, it is normal for frost to form or for the heat exchanger to freeze in the product. In normal mode, the product automatically starts up a thawing procedure.

- ▶ Check the product for dirt and, if required, clean it.
- ▶ Check the condensate discharge for blockages and, if required, remove any dirt/blockages.
- ▶ Check the air inlet and outlet to ensure that the supply and exhaust air is unobstructed and, if required, request that the operator removes any vegetation or similar (minimum clearances). (→ Page 9)
- ▶ Request that, in winter, the operator regularly ensures that the product is free of snow on the intake and outlet side.

7.3 Procuring spare parts

The original components of the product were also certified by the manufacturer as part of the declaration of conformity. If you use other, non-certified or unauthorised parts during maintenance or repair work, this may void the conformity of the product and it will therefore no longer comply with the applicable standards.

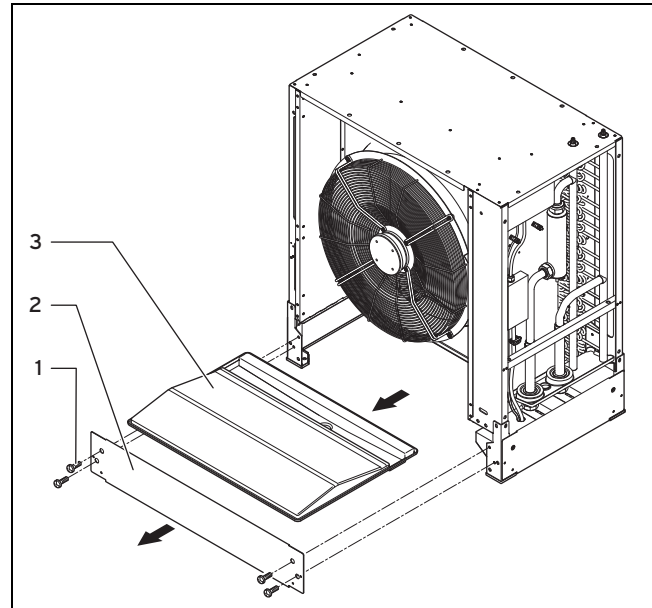
We strongly recommend that you use original spare parts from the manufacturer as this guarantees fault-free and safe operation of the product. To receive information about the available original spare parts, contact the contact address provided on the reverse of these instructions.

- ▶ If you require spare parts for maintenance or repair work, use only the spare parts that are permitted for the product.

7.4 Cleaning the product

- ▶ When the casing is completely installed, clean the product using a sponge and hot water (max. 70 °C) along with commercially available household cleaners that do not contain any abrasive elements in an aqueous solution up to max. 2%. Do not use any sanitary cleaners that contain chlorine or ammonia.

7.5 Cleaning the condensate discharge



- | | | | |
|---|---------------------------|---|-----------------|
| 1 | Screws for the base panel | 2 | Base panel |
| | | 3 | Condensate tray |

1. Remove the side sections of the casing (→ Page 19) and the front louvred grill (outlet side).
2. Unscrew the screws (1) in the front base panel (2) and remove the base panel.
3. Carefully pull the condensate tray (3) forwards and out from below the fan.
4. Clean the connectors.
5. Check that the outflow is free of obstructions. If required, clean or replace this.
6. Insert the condensate tray.
7. Install the side casing and the cover. (→ Page 19)

8 Decommissioning

8.1 Temporary decommissioning

- ▶ Disconnect the product from the power supply.

8.2 Permanently decommissioning

1. Disconnect the product from the power supply.
2. Drain the product. For this, use suitable collecting containers and only dispose of heat transfer media, such as brine, at appropriate collection points.
3. Dispose of or recycle the product and its components.

9 Customer service

10 Recycling and disposal

Disposing of the packaging

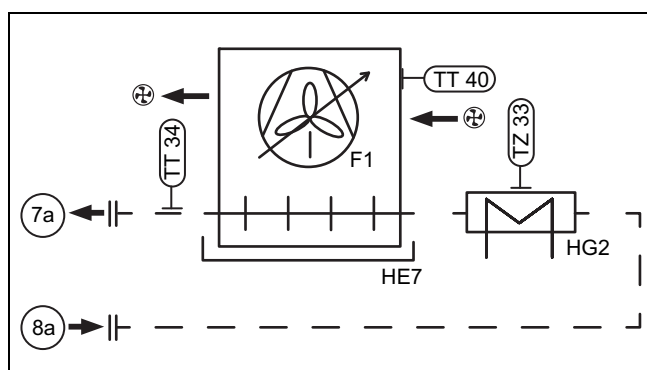
- ▶ Dispose of the packaging correctly.
- ▶ Observe all relevant regulations.

Appendix

Appendix

A Product diagram

A.1 Product diagram



7a Hot brine to the heat pump (A)

8a Cold brine from the heat pump (B)

TT40 Air inlet temperature sensor

TT34 Hot brine temperature sensor

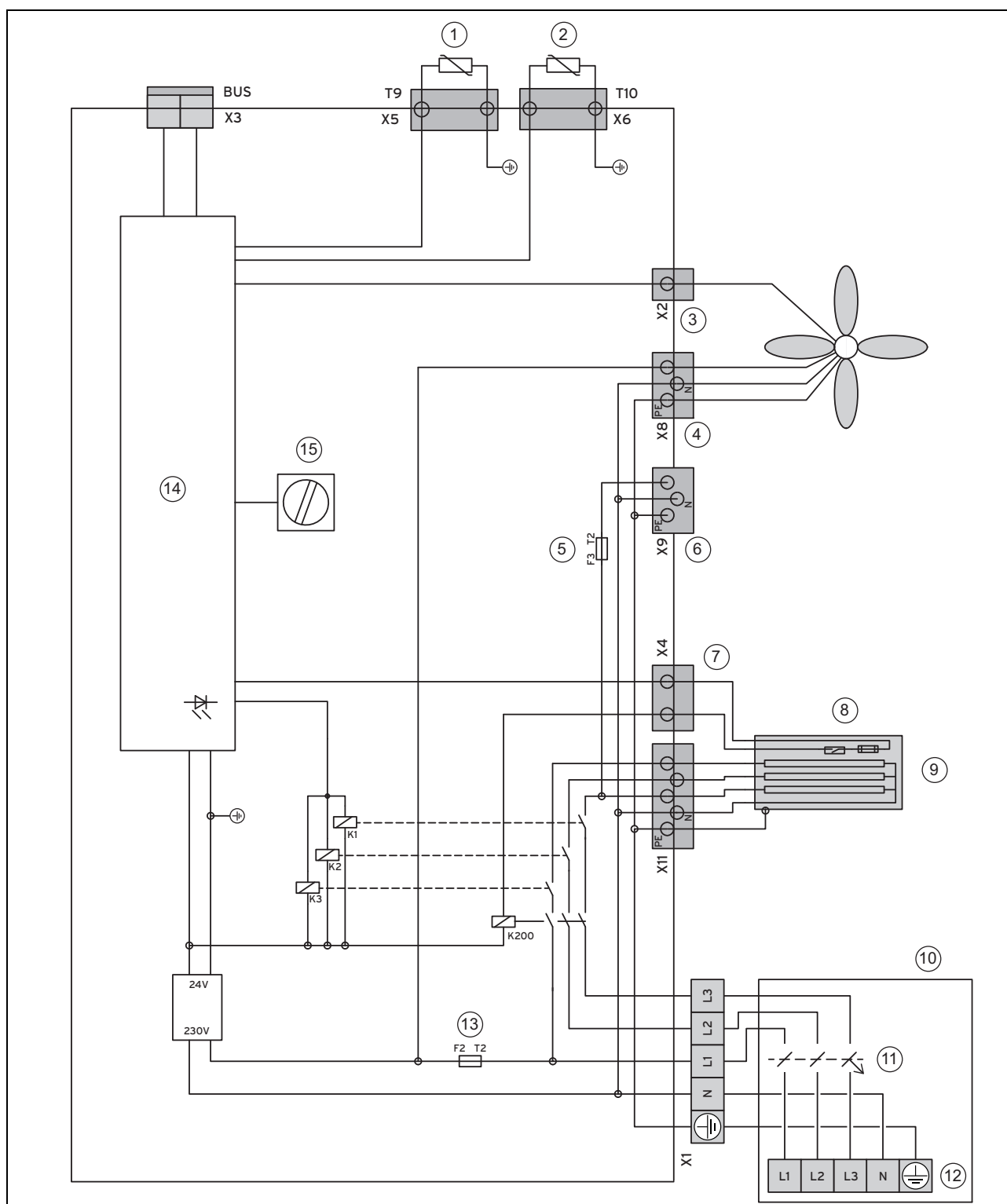
TZ33 De-icer safety cut-out

F1 Ventilator

HG2 De-icer

HE7 Air/brine heat exchanger

B Connection diagram



- | | | | |
|---|---|----|---|
| 1 | Air inlet temperature sensor | 9 | Heating element de-icer |
| 2 | Hot brine temperature sensor | 10 | Connection box |
| 3 | Fan control line | 11 | Line protection switch |
| 4 | Fan voltage supply | 12 | Mains connection |
| 5 | F3 T2 fuse | 13 | F2 T2 fuse |
| 6 | Connection option: Condensate tray heating | 14 | Control unit |
| 7 | Connection option: Safety cut-out | 15 | Address switch: Address 1 (≤ 10 kW), address 1/2 (> 10 kW) |
| 8 | Safety cut-out with temperature switch and thermal fuse | | |

Appendix

C Technical data

C.1 General

Dimensions

	VWL 11/4 SA
Product dimensions, height with base	1,260 mm
Product dimensions, width	1,200 mm
Product dimensions, depth	785 mm
Weight with packaging	160 kg
Weight without packaging and base	95 kg
Weight without packaging	140 kg
Weight when ready for operation	185 kg

Electrics

	VWL 11/4 SA
Measuring voltage	3~N/PE 400 V / 50 Hz
Fuse type, characteristic B, three-pole switching (disconnection of the three mains connection lines by a switching operation)	10 A
Optional on-site residual-current circuit breaker	RCCB type A (type A pulse-current-sensitive residual-current circuit breakers) or RCCB type B (type B universal-current-sensitive residual-current circuit breakers)
Electrical power consumption, max. total	6.5 kW
Electrical power consumption, de-icer	6.0 kW
Electrical power consumption, fan	0 ... 0.25 kW
Electrical power consumption, control system	0.01 kW
Electrical power consumption, optional accessory	0.2 kW
Level of protection EN 60529	IP 25

Hydraulics

	VWL 11/4 SA
Flow/return heat source connections	Rp 1 1/4"
Diameter of the condensate discharge	70 mm

Installation site

	VWL 11/4 SA
Installation site	Outside
Permissible ambient temperature at the installation site	-30 ... 70 °C
Permissible ambient temperature during operation	-22 ... 40 °C

Brine circuit

	VWL 11/4 SA
Brine fluid	Ethylene glycol 44% vol. / 56% water
Max. operating pressure	0.3 MPa (3.0 bar)
Min. inlet temperature, cold brine	-28 °C
Max. inlet temperature, hot brine	60 °C

	VWL 11/4 SA
Brine content of the brine circuit in the air/brine collector	19.8 l
Materials	Cu, CuZn alloy, stainless steel, EPDM
Total length of the connection line, cold brine and hot brine	2 x 30 m
Diameter of the connection line's cross-section up to a total length of ≤ 10 m	DN 40 (40 x 3.8 mm)
Diameter of the connection line's cross-section up to a total length of > 10 and ≤ 30 m	DN 50 (50 x 4.6 mm)
Connection line installation depth	0.2 ... 1.5 m
Connection line material	PE pipe, PE 100 or PE 80

Sound power level

	VWL 11/4 SA
Sound power level A7/W35, A7/W45, A7/W55 in accordance with EN 12102/EN 14511 L _{WA} in heating mode	VWF 57/4
	≤ 42.7 dB(A)
	VWF 58/4
	≤ 42.7 dB(A)
	VWF 87/4
	≤ 50.6 dB(A)
	VWF 88/4
	≤ 50.6 dB(A)
Sound power level A35/W18 in accordance with EN 12102/EN 14511 L _{WA} in cooling mode	VWF 117/4
	≤ 56.0 dB(A)
	VWF 118/4
	≤ 56.0 dB(A)
	VWF 157/4
	≤ 49.5 dB(A)
	Note When two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
	VWF 197/4
	≤ 53.0 dB(A)
	Note When two air/brine collectors (with VWF 157/4 and VWF 197/4) are running with the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
	VWF 57/4
	≤ 53.5 dB(A)
	VWF 58/4
	≤ 53.5 dB(A)
	VWF 87/4
	≤ 60.5 dB(A)
	VWF 88/4
	≤ 60.5 dB(A)
	VWF 117/4
	≤ 66.3 dB(A)
	VWF 118/4
	≤ 66.3 dB(A)

Appendix

		VWL 11/4 SA
Sound power level A35/W18 in accordance with EN 12102/EN 14511 L_{WA} in cooling mode	VWF 157/4	≤ 59.2 dB(A) Note When two air/brine collectors (on VWF 157/4, VWF 157/4 S1 and VWF 197/4) are running at the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.
	VWF 197/4	≤ 63.7 dB(A) Note When two air/brine collectors (on VWF 157/4, VWF 157/4 S1 and VWF 197/4) are running at the same sound power level at the same time, the total sound power level result is 3 dB(A) higher.

Fan rotational speed

		VWL 11/4 SA
Fan rotational speed A7/W35, A7/W45, A7/W55 EN 14511 in heating mode	VWF 57/4	300 rpm
	VWF 58/4	300 rpm
	VWF 87/4	400 rpm
	VWF 88/4	400 rpm
	VWF 117/4	490 rpm
	VWF 118/4	490 rpm
	VWF 157/4	390 rpm
	VWF 197/4	440 rpm
Fan rotational speed A35/W18 EN 14511 in cooling mode	VWF 57/4	450 rpm
	VWF 58/4	450 rpm
	VWF 87/4	580 rpm
	VWF 88/4	580 rpm
	VWF 117/4	710 rpm
	VWF 118/4	710 rpm
	VWF 157/4	550 rpm
	VWF 197/4	650 rpm

C.2 Air heat source

Heat source circuit/brine circuit

	VWF 58/4	VWF 88/4	VWF 118/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA
Brine fluid type	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.

Heat source circuit/brine circuit

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA	2 x VWL 11/4 SA	2 x VWL 11/4 SA
Brine fluid type	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.	Ethylene glycol 44% vol.

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 58/4	VWF 88/4	VWF 118/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA
A2/W35 heating output	5.70 kW	7.80 kW	10.30 kW
A2/W35 power consumption	1.40 kW	2.10 kW	2.70 kW
A2/W35 output figure/EN 14511 coefficient of performance	4.20	4.00	3.90
Heating output A7/W35 ΔT 5 K	6.20 kW	8.80 kW	11.50 kW
Power consumption A7/W35 ΔT 5 K	1.40 kW	2.00 kW	2.60 kW
Output figure A7/W35 ΔT 5 K/coefficient of performance EN 14511	4.80	4.60	4.60
Heating output A7/W45 ΔT 5 K	6.10 kW	9.00 kW	12.00 kW
Power consumption A7/W45 ΔT 5 K	1.70 kW	2.50 kW	3.20 kW
Output figure A7/W45 ΔT 5 K/coefficient of performance EN 14511	3.70	3.70	3.80
Heating output A7/W55 ΔT 8 K	6.10 kW	9.50 kW	12.20 kW
Power consumption A7/W55 ΔT 8 K	2.00 kW	3.00 kW	3.90 kW
Output figure A7/W55 ΔT 8 K/coefficient of performance EN 14511	3.10	3.20	3.20
Cooling output A35/W18 ΔT 5 K, active	6.60 kW	8.60 kW	12.10 kW
Power consumption A35/W18 ΔT 5 K, active	1.60 kW	2.80 kW	3.70 kW
Energy efficiency ratio A35/W18 EN 14511	4,30	3,20	3,40
Hot water output figure/coefficient of performance A7/Wxx DIN EN 16147 at target cylinder temperature of 50 °C and 6 K hysteresis	2,80	2,60	2,50
Hot water draw-off profile A7/Wxx DIN EN 16147	XL	XL	XL
Hot water mixed water volume 40 °C (V40) A7/Wxx at target cylinder temperature of 50 °C	229 l	233 l	231 l
Sound power level A7/W35 EN 12102/EN 14511 L_{w1} in heating mode	41.3 dB(A)	43.2 dB(A)	42.5 dB(A)
Sound power level A7/W45 EN 12102/EN 14511 L_{w1} in heating mode	41.6 dB(A)	45.7 dB(A)	44.2 dB(A)
Sound power level A7/W55 EN 12102/EN 14511 L_{w1} in heating mode	44.1 dB(A)	47.4 dB(A)	46.6 dB(A)
Sound power level A35/W18 EN 12102/EN 14511 L_{w1} in cooling mode	51.8 dB(A)	52.6 dB(A)	50.0 dB(A)

Performance data

The following performance data is applicable to new products with clean heat exchangers.

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Heat source module	1 x VWL 11/4 SA	1 x VWL 11/4 SA	1 x VWL 11/4 SA	2 x VWL 11/4 SA	2 x VWL 11/4 SA
A2/W35 heating output	5.70 kW	7.80 kW	10.30 kW	13.90 kW	17.40 kW
A2/W35 power consumption	1.40 kW	2.10 kW	2.70 kW	3.50 kW	4.80 kW
A2/W35 output figure/EN 14511 coefficient of performance	4.20	4.00	3.90	4.10	3.70
Heating output A7/W35 ΔT 5 K	6.20 kW	8.80 kW	11.50 kW	15.30 kW	19.80 kW
Power consumption A7/W35 ΔT 5 K	1.40 kW	2.00 kW	2.60 kW	3.30 kW	4.60 kW
Output figure A7/W35 ΔT 5 K/coefficient of performance EN 14511	4.80	4.60	4.60	4.80	4.40
Heating output A7/W45 ΔT 5 K	6.10 kW	9.00 kW	12.00 kW	15.60 kW	20.60 kW
Power consumption A7/W45 ΔT 5 K	1.70 kW	2.50 kW	3.20 kW	4.20 kW	5.70 kW
Output figure A7/W45 ΔT 5 K/coefficient of performance EN 14511	3.70	3.70	3.80	3.90	3.70
Heating output A7/W55 ΔT 8 K	6.10 kW	9.50 kW	12.20 kW	16.00 kW	20.90 kW

Appendix

	VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
Power consumption A7/W55 ΔT 8 K	2.00 kW	3.00 kW	3.90 kW	5.00 kW	6.70 kW
Output figure A7/W55 ΔT 8 K/coefficient of performance EN 14511	3.10	3.20	3.20	3.30	3.20
Cooling output A35/W18 ΔT 5 K, active	6.60 kW	8.60 kW	12.10 kW	15.80 kW	22.30 kW
Power consumption A35/W18 ΔT 5 K, active	1.60 kW	2.80 kW	3.70 kW	4.40 kW	6.20 kW
Energy efficiency ratio A35/W18 EN 14511	4,30	3,20	3,40	3,90	3,40
Sound power level A7/W35 EN 12102/EN 14511 L_{wH} in heating mode	40.3 dB(A)	45.8 dB(A)	44.4 dB(A)	48.7 dB(A)	48.1 dB(A)
Sound power level A7/W45 EN 12102/EN 14511 L_{wH} in heating mode	41.0 dB(A)	50.1 dB(A)	46.4 dB(A)	49.4 dB(A)	46.1 dB(A)
Sound power level A7/W55 EN 12102/EN 14511 L_{wH} in heating mode	40.9 dB(A)	52.7 dB(A)	46.1 dB(A)	48.0 dB(A)	46.4 dB(A)
Sound power level A35/W18 EN 12102/EN 14511 L_{wH} in cooling mode	48.3 dB(A)	54.7 dB(A)	49.7 dB(A)	46.8 dB(A)	47.2 dB(A)

Application limits for the heat pump: Heating and cooling (heat source = air)

At the same volume flow rates in the heating circuit (ΔT 5K or ΔT 8 K) as for the nominal heat output test under standard nominal conditions.

Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

	VWF 58/4	VWF 88/4	VWF 118/4
Application limits for the heat pump: Heating (Air heat source)	– A40/W65 – A40/W25 – A-22/W25 – A-22/W50 – A-2/W65 – A15/W65	– A40/W65 – A40/W25 – A-22/W25 – A-22/W50 – A-2/W65 – A15/W65	– A40/W65 – A40/W25 – A-22/W25 – A-22/W50 – A-2/W65 – A15/W65
Application limits for the heat pump: Cooling (Air heat source)	– A20/W20 – A40/W20 – A40/W5 – A20/W5	– A20/W20 – A40/W20 – A40/W5 – A20/W5	– A20/W20 – A40/W20 – A40/W5 – A20/W5

Application limits for the heat pump: Heating (heat source = air)

At the same volume flow rates in the heating circuit (ΔT 5K or ΔT 8 K) as for the nominal heat output test under standard nominal conditions.

Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
– A40/W65	– A40/W65	– A40/W65	– A40/W65	– A40/W65
– A40/W25	– A40/W25	– A40/W25	– A40/W25	– A40/W25
– A-22/W25	– A-22/W25	– A-22/W25	– A-22/W25	– A-22/W25
– A-22/W50	– A-22/W50	– A-22/W50	– A-22/W50	– A-22/W50
– A-2/W65	– A-2/W65	– A-2/W65	– A-2/W65	– A-2/W65
– A15/W65	– A15/W65	– A15/W65	– A15/W65	– A15/W65

Application limits for the heat pump: Cooling (heat source = air)

At the same volume flow rates in the heating circuit (ΔT 5K or ΔT 8 K) as for the nominal heat output test under standard nominal conditions.

Operation of the pump outside the application limits results in the heat pump being switched off by the internal control and safety devices.

VWF 57/4	VWF 87/4	VWF 117/4	VWF 157/4	VWF 197/4
– A20/W20	– A20/W20	– A20/W20	– A20/W20	– A20/W20
– A40/W20	– A40/W20	– A40/W20	– A40/W20	– A40/W20
– A40/W5	– A40/W5	– A40/W5	– A40/W5	– A40/W5
– A20/W5	– A20/W5	– A20/W5	– A20/W5	– A20/W5

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