

Vitocal 222-A

Type AWOT(-M)-E 221.A

Compact heat pump, monoblock version for heating operation

Type AWOT(-M)-E-AC 221.A


Compact heat pump, monoblock version for heating and cooling operation




VITOCAL 222-A




Safety instructions

 Please follow these safety instructions closely to prevent accidents and material losses.

Safety instructions explained

 **Danger**
This symbol warns against the risk of injury.

 **Please note**
This symbol warns against the risk of material losses and environmental pollution.

Note
Details identified by the word "Note" contain additional information.

Target group

These instructions are exclusively intended for authorised contractors.

- Work on the refrigerant circuit may only be carried out by authorised refrigeration engineers.
- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations to be observed

- National installation regulations
- Statutory regulations for the prevention of accidents
- Statutory regulations for environmental protection
- Codes of practice of the relevant trade associations
- Relevant country-specific safety regulations

Safety instructions (cont.)**Safety instructions for working on the system****Working on the system**

- Isolate the system from the power supply, e.g. by removing the separate fuse or by means of a mains isolator, and check that it is no longer live.

Note

In addition to the control circuit there may be several power circuits.

 **Danger**

Contact with live components can result in severe injuries. Some components on PCBs remain live even after the power supply has been switched off.

Prior to removing covers from the appliances, wait at least 4 minutes until the voltage has completely dropped out.

- Safeguard the system against reconnection.
- Wear suitable personal protective equipment when carrying out any work.

 **Danger**

Hot surfaces and fluids can lead to burns or scalding.

- Before maintenance and service work, switch OFF the appliance and let it cool down.
- Never touch hot surfaces on the appliance, fittings or pipework.

 **Danger**

Risk of fire: Electrostatic discharge can cause sparks which may be ignited by escaping, flammable refrigerant (R32).

Before beginning work, touch earthed objects, such as heating or water pipes, to discharge any static.

 **Please note**

Electronic assemblies can be damaged by electrostatic discharge. Prior to commencing work, touch earthed objects such as heating or water pipes to discharge static loads.

Work on the refrigerant circuit

Refrigerants are air displacing, colourless, odourless gases.

- R32 forms flammable mixtures with air.
- R410A is not flammable.

 **Danger**

Direct contact with liquid and gaseous refrigerant can cause serious damage to health.

- Avoid direct contact with liquid and gaseous refrigerant.
- Wear personal protective equipment when handling liquid and gaseous refrigerant.

 **Danger**

Unregulated escape of refrigerant in enclosed spaces can lead to breathing difficulties and suffocation.

- Never breathe in refrigerant vapours.
- Ensure adequate ventilation in enclosed spaces.

Perform the following measures before beginning work on the refrigerant circuit:

- Check the refrigerant circuit for leaks.
- Ensure very good ventilation especially in the floor area and sustain this for the duration of the work.

Safety instructions (cont.)

- Inform all persons in the vicinity of the system about the type of work to be carried out.
- Secure the area surrounding the work area.

Further measures before starting work on the refrigerant circuit with flammable refrigerants (R32):

- Remove all flammable materials and ignition sources from the immediate vicinity of the heat pump.
- Before, during and after the work, check the surrounding area for escaping refrigerant using a suitable refrigerant detector.
This refrigerant detector must not generate any sparks and must be suitably sealed.
- A CO₂ or powder extinguisher must be to hand in the following cases:
 - Refrigerant is being topped up.
 - Soldering or welding work is being carried out.
- Display signs prohibiting smoking.



Danger

Damage to the refrigerant circuit can cause refrigerant to enter the hydraulic system. This can cause serious damage to health.

After completion of the work, professionally vent the hydraulic system on the primary and secondary sides.

Repair work



Please note

Repairing components that fulfil a safety function can compromise the safe operation of the system. Replace faulty components only with genuine Viessmann spare parts.

Auxiliary components, spare and wearing parts



Please note

Spare and wearing parts that have not been tested together with the system can compromise its function. Installing non-authorised components and making non-approved modifications or conversions can compromise safety and may invalidate our warranty. For replacements, use only original spare parts supplied or approved by Viessmann.

Safety instructions for operating the system

What to do if water escapes from the appliance



Danger

If water escapes from the appliance there is a risk of electrocution. Switch OFF the heating system at the external isolator (e.g. fuse box, domestic distribution board).



Danger

If water escapes from the appliance there is a risk of scalding. Never touch hot heating water.

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Disposal of packaging

Please dispose of packaging waste in line with statutory regulations.

Symbols

Symbol	Meaning
	Reference to other document containing further information
	Step in a diagram: The numbers correspond to the order in which the steps are carried out.
	Warning of material losses and environmental pollution
	Live electrical area
	Pay particular attention.
	<ul style="list-style-type: none"> ▪ Component must audibly click into place. or ▪ Acoustic signal
	<ul style="list-style-type: none"> ▪ Fit new component. or ▪ In conjunction with a tool: Clean the surface.
	Dispose of component correctly.
	Dispose of component at a suitable collection point. Do not dispose of component in domestic waste.

The steps in connection with commissioning, inspection and maintenance are found in the "Commissioning, inspection and maintenance" section and identified as follows:

Symbol	Meaning
	Steps required during commissioning
	Not required during commissioning
	Steps required during inspection
	Not required during inspection
	Steps required during maintenance
	Not required during maintenance

Intended use

The appliance is only intended to be installed and operated in sealed unvented heating systems that comply with EN 12828, with due attention paid to the associated installation, service and operating instructions.

Depending on the version, the appliance can only be used for the following purposes:

- Central heating
- Central cooling
- DHW heating

The range of functions can be extended with additional components and accessories.

Intended use presupposes that a fixed installation in conjunction with permissible, system-specific components has been carried out.

Commercial or industrial usage for a purpose other than central heating/cooling or DHW heating shall be deemed inappropriate.

Intended use (cont.)

Incorrect usage or operation of the appliance (e.g. the appliance being opened by the system user) is prohibited and will result in an exclusion of liability. Incorrect usage also occurs if the components in the heating system are modified from their intended function.

Note

The appliance is intended exclusively for domestic or semi-domestic use, i.e. even users who have not had any instruction are able to operate the appliance safely.

Product information**Layout**

The Vitocal 222-A is a monoblock compact heat pump appliance, comprising 1 indoor unit with integral DHW cylinder and 1 outdoor unit.

Required accessories

A "hydraulic connection set, heating circuit for installation on finished walls" is required to install the appliance.

Refrigerant circuit

All components of the refrigerant circuit are located in the outdoor unit, including the refrigerant circuit controller with electronic expansion valve. Subject to operating conditions, compressor output is matched via inverter control.

For central cooling, the refrigerant circuit is reversed (only types with designation "-AC").

Hydraulics

The indoor and outdoor units are connected to each other hydraulically on the secondary side.

The hydraulic components for the secondary circuit are located in the indoor unit. The heated heating water is pumped into the secondary circuit by the integral high efficiency circulation pump (secondary pump). The integral 3-way diverter valve for "central heating/DHW heating" changes over between central heating and DHW heating.

System without buffer cylinder

- **Central heating**

The heat pump heats 1 heating/cooling circuit without mixer.

- **Central cooling**

The heat pump cools through 1 heating/cooling circuit without mixer or through a separate cooling circuit.

In conjunction with installation kit with mixer (accessories)

- **Central heating**

The heat pump heats 1 heating/cooling circuit without mixer and 1 heating circuit with mixer.

To heat the heating circuit with mixer, the heating/cooling circuit without mixer must be connected.

- **Central cooling**

The heat pump can only cool through the heating/cooling circuit without mixer.

System with heating water buffer cylinder

- **Central heating**

The heat pump heats up to 3 heating/cooling circuits: 1 heating/cooling circuit without mixer and 2 heating/cooling circuits with mixer

- **Central cooling**

The heat pump can only cool either through one of the max. 3 heating/cooling circuits or through a separate cooling circuit.

The heating water buffer cylinder is bypassed hydraulically by a bypass circuit.

System with heating water/coolant buffer cylinder

- **Central heating**

The heat pump can heat up to 3 heating/cooling circuits: 1 heating/cooling circuit without mixer and 2 heating/cooling circuits with mixer

- **Central cooling**

The heat pump can cool through up to 3 heating/cooling circuits. Central cooling via a separate cooling circuit is not possible.

Heat pump control unit

The entire heating system is monitored and controlled by heat pump control unit Vitotronic 200, type WO1C. The heat pump control unit is integrated into the indoor unit. The indoor and outdoor units communicate via Modbus.

Product information (cont.)

Type overview

Type	Instantaneous heating water heater	Room cooling	Rated voltage	
			Indoor unit	Outdoor unit
AWOT-E 221.A	X	–	230 V~	400 V~
AWOT-M-E 221.A	X	–	230 V~	230 V~
AWOT-E-AC 221.A	X	X	230 V~	400 V~
AWOT-M-E-AC 221.A	X	X	230 V~	230 V~

System examples

Available system examples: See www.viessmann-schemes.com.

Spare parts lists

Information about spare parts can be found at www.viessmann.com/etapp or in the Viessmann spare part app.



Indoor unit

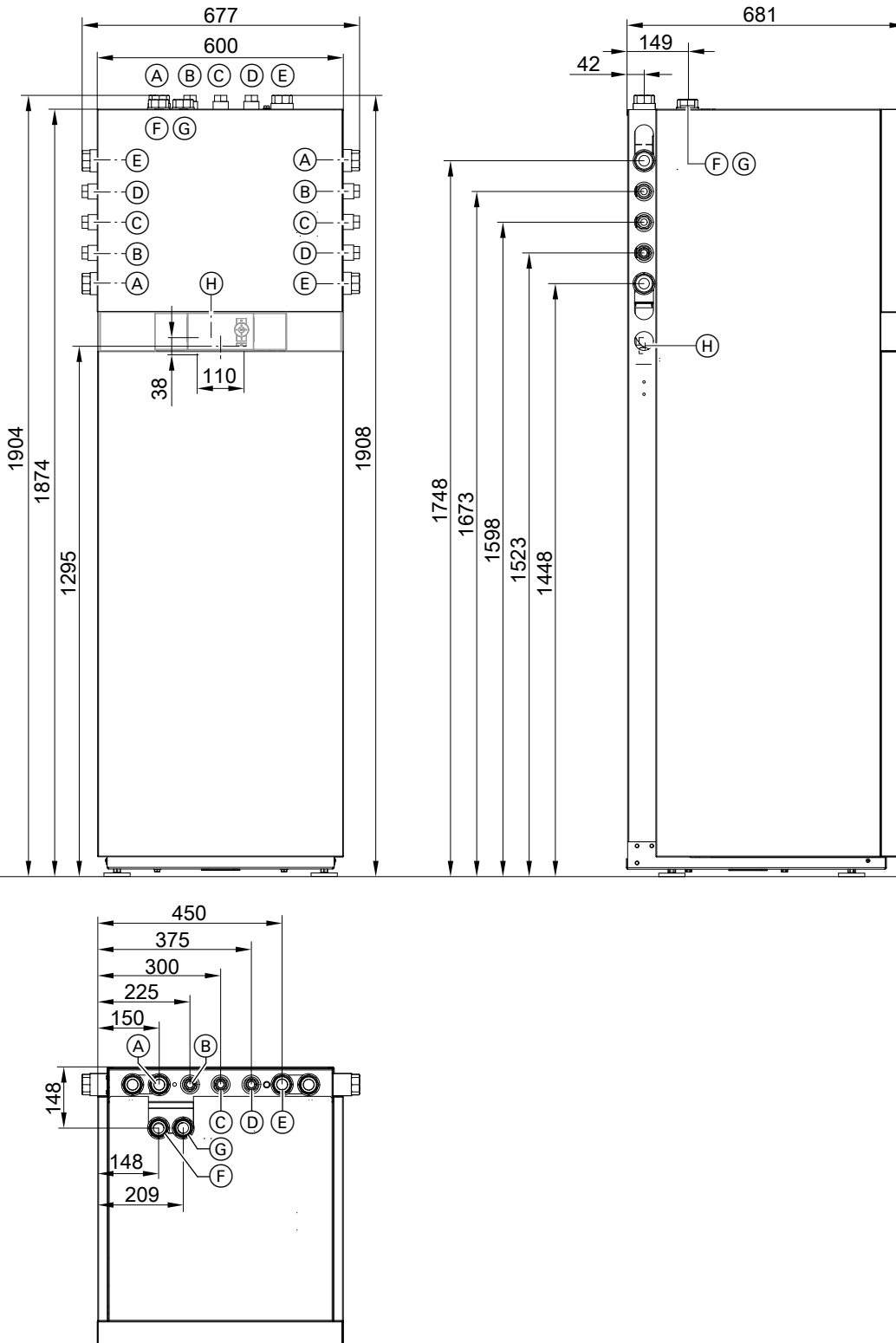


Fig. 1

- Ⓐ Heating water return G 1¼ (union nut DN 32, female thread)
- Ⓑ Cold water G ¾ (female thread)
- Ⓒ DHW circulation G ¾ (female thread)
- Ⓓ DHW G ¾ (female thread)
- Ⓔ Heating water flow G 1¼ (union nut DN 32, female thread)
- Ⓕ Outdoor unit return (heating water outlet) G 1¼ (union nut DN 32, female thread)

Requirements for on-site connections (cont.)

- Ⓒ Flow, outdoor unit (heating water outlet) G 1¼
(union nut DN 32, female thread)
- Ⓓ Cable entry for electrical cables on the back of the appliance:
 - LV leads < 42 V
 - Power cables 400 V~/230 V~

Outdoor unit

Outdoor unit with 1 fan

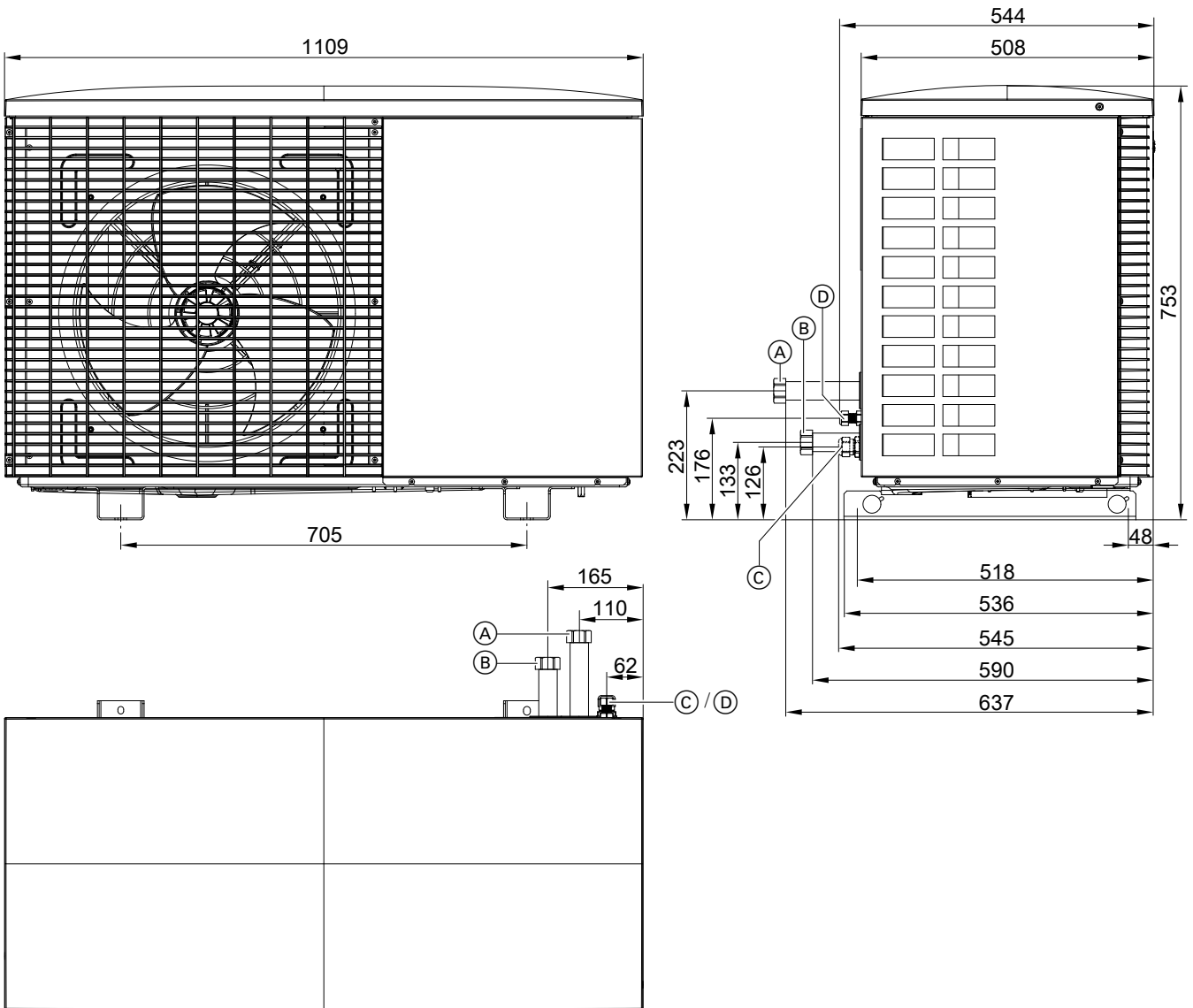


Fig. 2

- Ⓐ Outdoor unit flow (heating water outlet) G 1¼
(union nut supplied, female thread)
- Ⓑ Outdoor unit return (heating water outlet) G 1¼
(union nut supplied, female thread)
- Ⓒ Power cable inlet
- Ⓓ Modbus cable inlet for indoor/outdoor unit

Outdoor unit with 2 fans

Installation

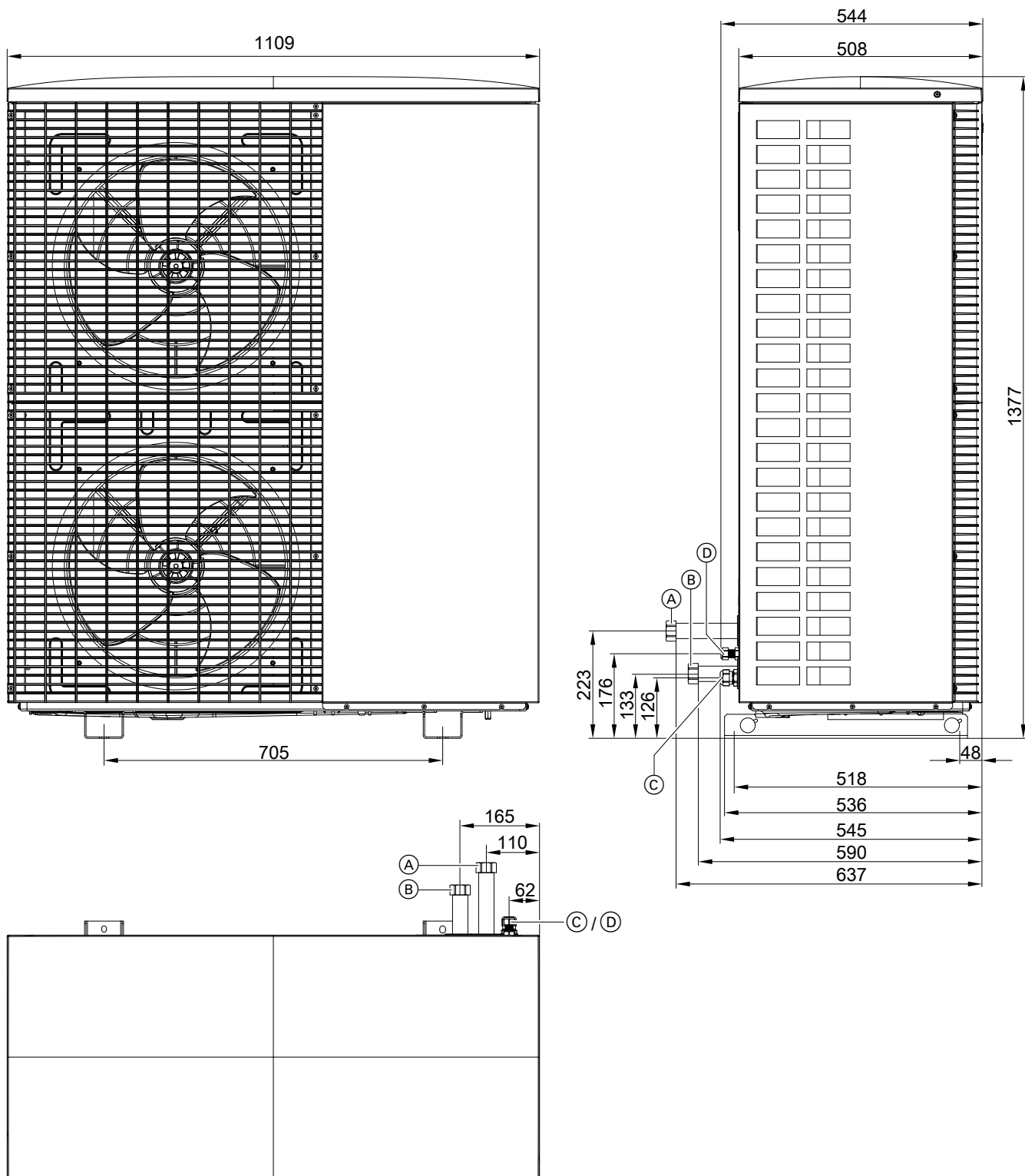


Fig. 3

- (A) Outdoor unit flow (heating water outlet) G 1¼ (union nut supplied, female thread)
- (B) Outdoor unit return (heating water outlet) G 1¼ (union nut supplied, female thread)
- (C) Power cable inlet
- (D) Modbus cable inlet for indoor/outdoor unit

Installing the outdoor unit

Transport

- !** **Please note**
Impacts, compression and tensile loads can cause damage to the outside panels of the appliance.
Never apply loads/weight to the top, front or side panels of the appliance.

- !** **Please note**
If the compressor in the outdoor unit is tilted too far, lubricant will enter the refrigerant circuit and damage the appliance.
Max. tilting angle: 45° for approx. 4 min, otherwise 30°

Installation information

Floorstanding installation

- Use supports for floorstanding installation (accessories).
Use ground anchors with a tensile force of at least 2.5 kN to secure the support.
- Where such supports cannot be used, install the outdoor unit freestanding on a solid base (provided on site) with a height of at least 100 mm.
- In difficult climatic circumstances (temperatures below zero, snow, humidity), we recommend installing the appliance on a plinth of approx. 300 mm height.
- Take account of the weight of the outdoor unit: See "Specification".

Wall mounting

- Use the wall mounting bracket set (accessories).
- The wall must meet the structural requirements.
Use suitable fixing materials, depending on the wall structure.

Flat roof installation

When installing on a flat roof, the following additional engineering measures, amongst others, must be taken into account:

Note

Due to the higher static loads (roof/wind load) and the higher acoustic requirements for flat roof installation, the structural calculations and sound concept require input from specialist design engineers.

Installation location:

- Never install the outdoor unit on a flat roof immediately next to or above living rooms or bedrooms. Avoid siting in front of windows.
- As the outdoor unit is located higher up when installed on a flat roof, operating noise propagation is more intense than when the unit is installed on the ground. Roof surfaces are normally more reverberant than areas on the ground.
To prevent noise nuisance, install the outdoor unit at a sufficient distance from neighbouring buildings. If required, provide suitable noise reduction measures. Take into account sound reflection from the surfaces of buildings when analysing sound propagation: See technical guide.
- Check to ensure that the installed height of the outdoor unit does not exceed the permissible building height, e.g. as specified in outline planning restrictions.
- Provide easy, year-round access to the outdoor unit for service and maintenance. Provide sufficient maintenance areas.
Install suitable protection equipment, e.g. anchorage points.

Substructure:

- We recommend installing the heat pump on a steel-reinforced concrete ceiling.
- Installation on flat roofs with a low weight per unit area (e.g. roofs made from timber rafters or trapezoidal sheet metal) is **not permissible**.
- The higher roof and wind loads must be taken into account in the structural calculations and the fixture system.
- Where heat pumps are installed on a flat roof, considerable wind loads may occur, depending on the relevant wind zone and the height of the building. We recommend having the substructure designed to DIN 1991-1-4 by a specialist design engineer.

Installing the outdoor unit (cont.)

Siting

- Do not install with the discharge side facing the main wind direction.
- Do not mount the outdoor unit above cellar shafts or floor troughs.
- Provide wall outlets and protective conduits for the hydraulic connection lines and electrical connecting cables without moulded parts or changes of direction.

Weather influences

- Observe wind loads when installing the unit on sites exposed to the wind.
Where outdoor units are installed on a flat roof, considerable wind loads may occur, depending on the relevant wind load zone and height of the building. For such installation situations we recommend having the substructure sized by a design engineer in accordance with DIN 1991-1-4.
- Provide thermal insulation of sufficient thickness on the pipework to the outdoor air: See following table.

Pipework internal \varnothing	Min. thickness of thermal insulation layer with $\lambda = 0.035 \text{ W/(m}\cdot\text{K)}$
$\leq 22 \text{ mm}$	40 mm
$> 22 \text{ mm}$	60 mm

λ Thermal conductivity

- Incorporate the outdoor unit into the lightning protection system.
- Consider the heat absorbed (heating mode) and heat emitted (cooling mode) by the appliance when designing weatherproofing measures or an enclosure.

Condensate

Floorstanding and wall installation:

- Ensure that condensate can drain freely.
Create a permanent gravel bed under the outdoor unit as a soakaway.
- In regions where the outside temperature regularly falls below $0 \text{ }^\circ\text{C}$ we recommend fitting an electric ribbon heater (accessories) for the condensate pan of the outdoor unit.

Flat roof installation:

- Allowing the condensate to drain freely onto the roof surface is not permissible, as this may result in the formation of layers of ice. Layers of ice on the roof may prevent further condensate from draining freely, resulting in increased roof loads.
- Use an electric ribbon heater for the condensate pipe (accessories).
- To drain the condensate, connect the condensate hose on the outdoor unit to an insulated condensate pipe. The condensate hose is included in the standard delivery of the electric ribbon heater.
If necessary, insert the condensate hose via a trap insert.

Structure-borne noise insulation and vibration isolation between the building and outdoor unit

- Route cables/leads between the indoor and outdoor units so they are not stressed.
- Installation only on walls with a high weight per unit area ($> 250 \text{ kg/m}^2$); in other words not on lightweight walls, roof structures, etc.
- Vibration isolation components are included in the standard delivery of the wall mounting bracket.
For floorstanding installation, only use the rubber mounts supplied.
Do not use additional anti-vibration mounts, springs, rubber mounts, etc.
- When installing the outdoor unit on roof surfaces, there is a risk that structure-borne noise and vibrations will be transmitted into the building.
If the outdoor unit is installed on freestanding garages, insufficient structure-borne noise insulation and vibration isolation can cause excessive noise due to resonance amplification: See technical guide.

Weight of outdoor units

Heat pumps with outdoor unit 230 V

Types	Weight in kg
221.A04	102
221.A06	102
221.A08	103
221.A10	145
221.A13	145
221.A16	145

Heat pumps with outdoor unit 400 V


Types	Weight in kg
221.A10	153
221.A13	153
221.A16	153

Installing the outdoor unit (cont.)

Installation location

- Select a site with good air circulation, so that the cooled air can dissipate and be replaced by warm air.
- Never install in the corners of rooms, in recesses or between walls. This could result in an "air short circuit" between the air being discharged and the air being drawn in.
- ! **Please note**
An "air short circuit" during **heating mode** will result in the cooled, discharged air re-entering the unit. This can result in reduced heat pump efficiency and defrosting problems. Avoid "air short circuits".
- ! **Please note**
An "air short circuit" during **cooling mode** will result in the heated, discharged air re-entering the unit. This can lead to high pressure faults. Avoid "air short circuits".
- If siting the appliance in a location that is exposed to wind, ensure that the wind cannot influence the fan area. Strong wind can have a negative influence on the air flow through the evaporator.

- For flat roof installation, provide on-site measures for wind protection if necessary, e.g. panels, walls, etc.
- Select an installation location where the evaporator cannot be blocked by leaves, snow, etc.
- Select the installation location giving due consideration to the physical laws concerning the propagation and reflection of sound.

 Technical guide

- Never install next to or below bedroom windows.
- Maintain a clearance of at least 3 m to pathways, downpipes or sealed surfaces. The cooled air in the discharge area creates a risk of ice forming when outside temperatures are below 10 °C.
- The installation location must be easily accessible, for example for maintenance work: See "minimum clearances".

Outdoor unit minimum clearances

Outdoor unit with 1 fan

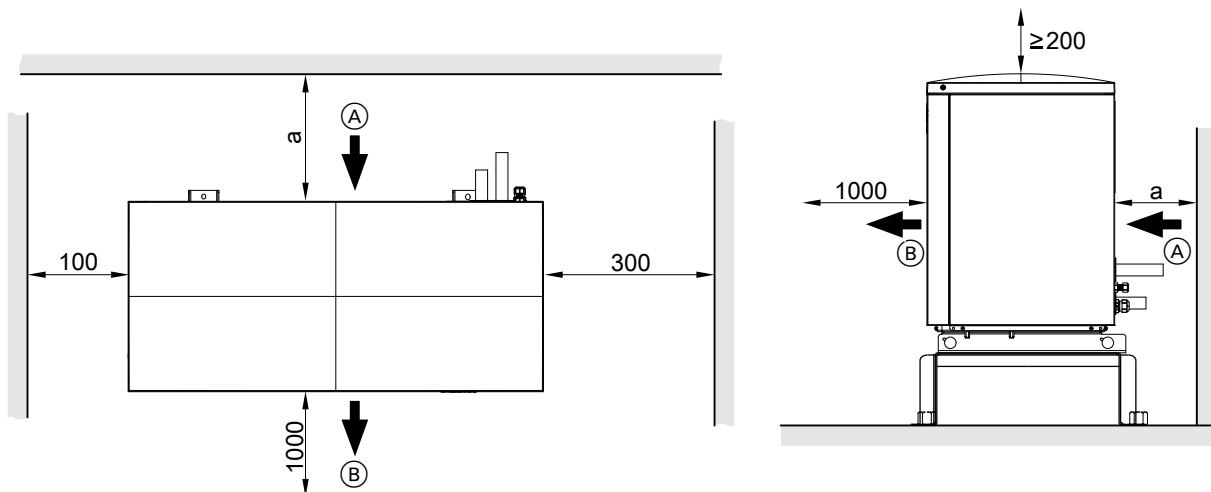


Fig. 4

- (A) Air intake
- (B) Air discharge

- a ■ Line entry above ground level: ≥ 200 mm
- Line entry below ground level: ≥ 900 mm

Outdoor unit with 2 fans

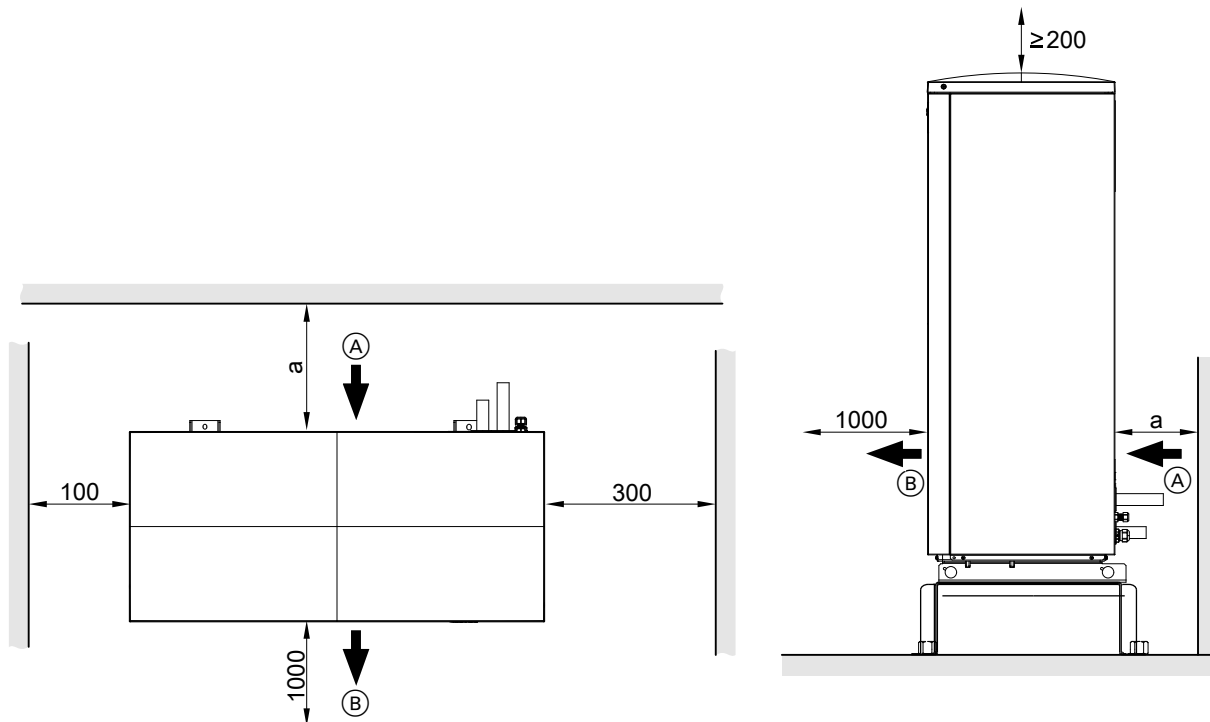


Fig. 5

- Ⓐ Air intake
- Ⓑ Air discharge

- a ■ Line entry above ground level: ≥ 200 mm
- Line entry below ground level: ≥ 900 mm

Floorstanding installation

Foundations

Fit the floor brackets on 2 horizontal foundation strips. We recommend the construction of concrete foundations in accordance with the following diagram. The stated thickness of the layers represents an average value. These values should be adjusted to suit the local conditions. Follow the standard rules of building engineering.

Installing the outdoor unit (cont.)

For support for floorstanding installation

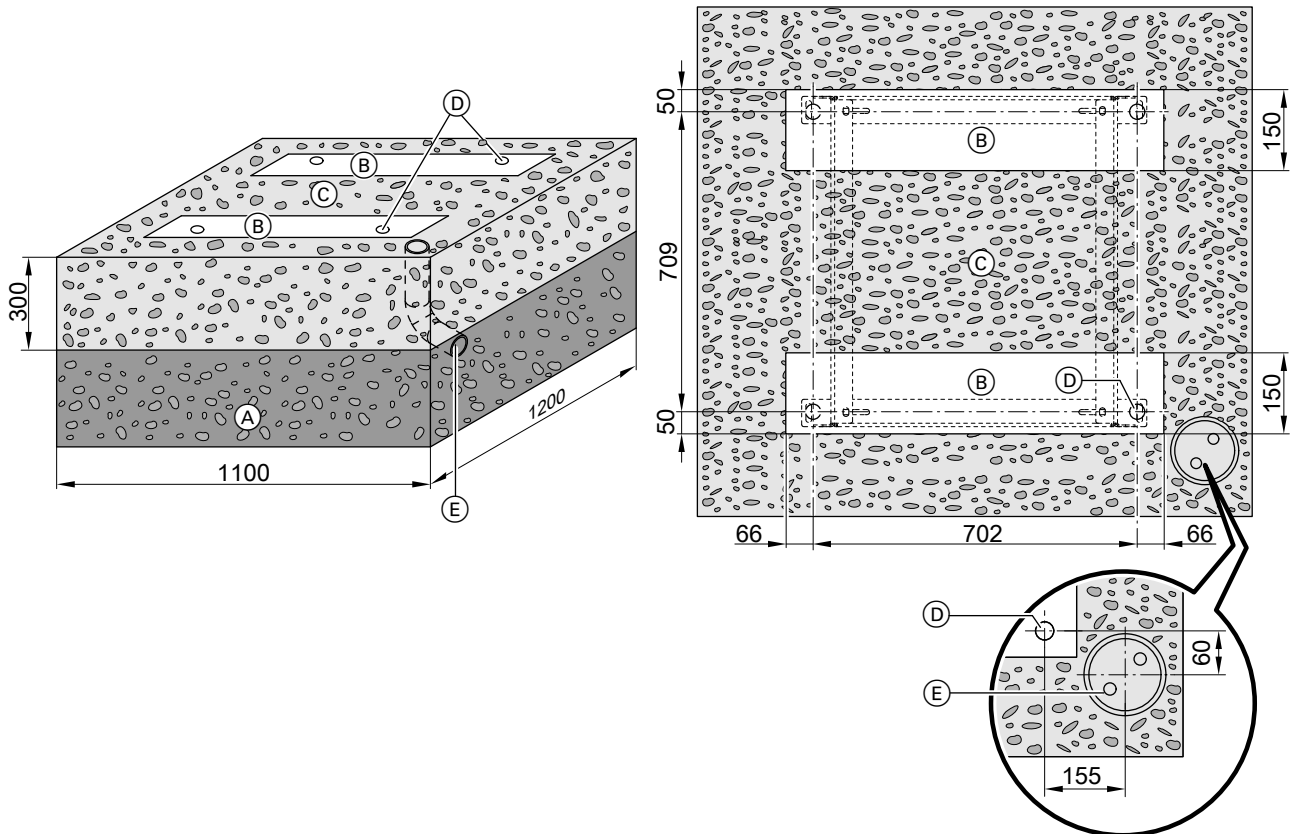


Fig. 6

- (A) Frost protection for foundations (compacted crushed stone, e.g. 0 to 32/56 mm); thickness of layer subject to local requirements and building regulations
- (B) Foundation strip
- (C) Gravel bed as condensate soakaway
- (D) Fixing points for support
Use ground anchors with a tensile force of at least 2.5 kN.
- (E) Only for line entry below ground level: Hydraulic connection set (accessories)

For design casing with support

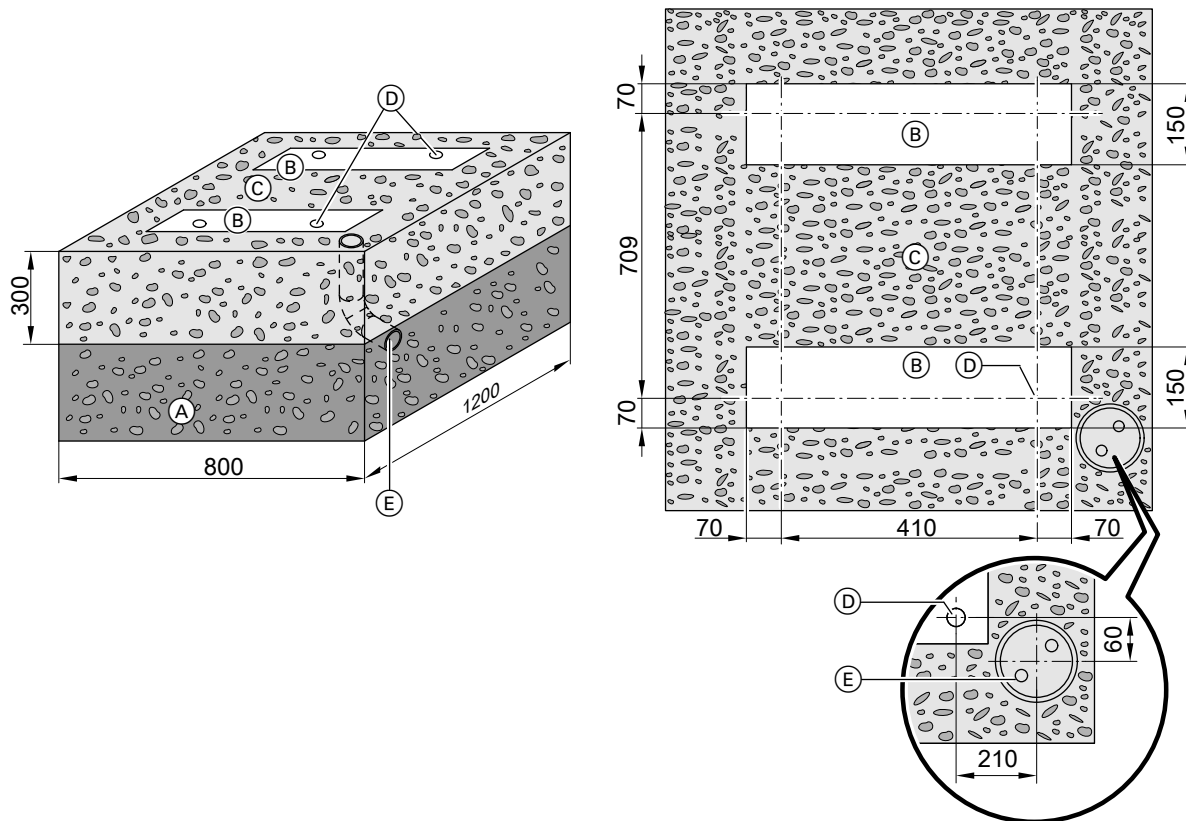


Fig. 7

- Ⓐ Frost protection for foundations (compacted crushed stone, e.g. 0 to 32/56 mm); thickness of layer subject to local requirements and building regulations
- Ⓑ Foundation strip
- Ⓒ Gravel bed as condensate soakaway
- Ⓓ Fixing points for support
Use ground anchors with a tensile force of at least 2.5 kN.
- Ⓔ Only for line entry below ground level: Hydraulic connection set (accessories)

Installing the outdoor unit (cont.)

Floorstanding installation with support, line entry below ground level

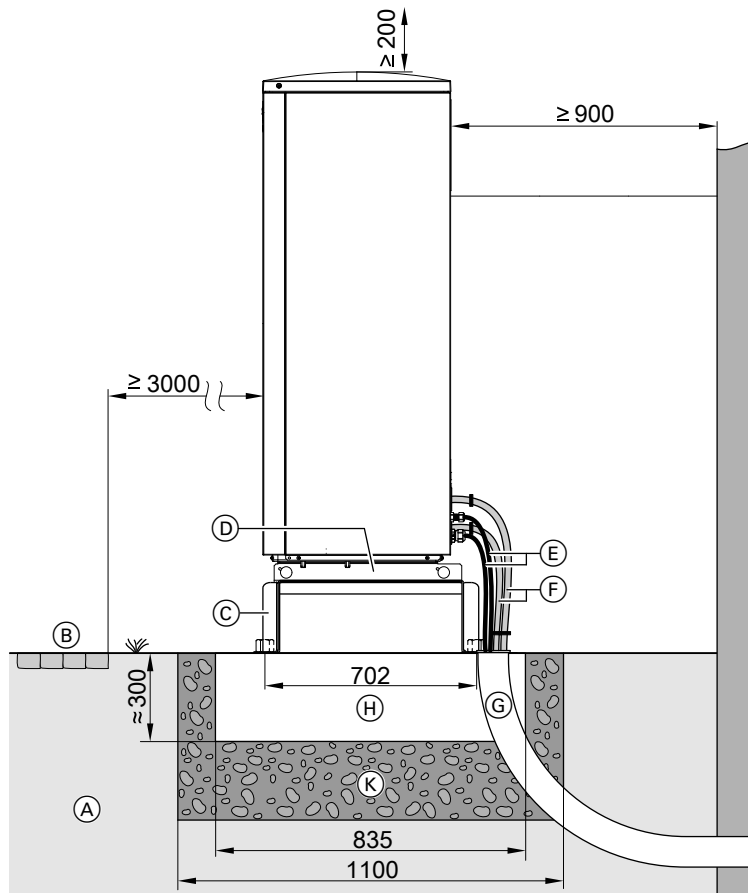


Fig. 10

- (A) Ground
- (B) Pathway, patio
- (C) Support for floorstanding installation (accessories)
- (D) Openings in the base plate for free drainage of condensate:
Never seal the openings.
- (E) Indoor/outdoor unit Modbus cable and outdoor unit power cable:
Route the cables so they are not stressed.
- (F) Floorstanding installation connection set (accessories)
- (G) Hydraulic connection set (accessories)
- (H) Foundation strip
- (K) Frost protection for foundations (compacted crushed stone, e.g. 0 to 32/56 mm); thickness of layer subject to local requirements and building regulations

Note

Provide thermal insulation of sufficient thickness on the pipework to the outdoor air: See table on page 14.

Installing the outdoor unit (cont.)

Floorstanding installation with support and design casing: Line entry below ground level

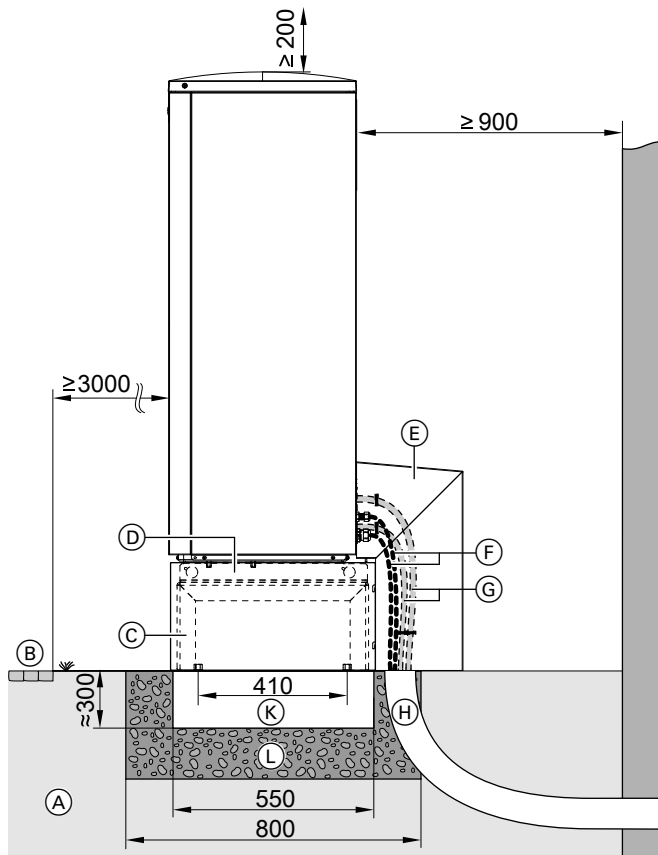


Fig. 11

- (A) Ground
- (B) Pathway, patio
- (C) Design casing with support (accessories)
- (D) Openings in the base plate for free drainage of condensate:
Never seal the openings.
- (E) Design casing floor connection (accessories)
- (F) Indoor/outdoor unit Modbus cable and outdoor unit power cable:
Route the cables free of stress.
- (G) Connection set, floorstanding installation (accessories)
- (H) Hydraulic connection set (accessories)
- (K) Foundation strip
- (L) Frost protection for foundations (compacted crushed stone, e.g. 0 to 32/56 mm); thickness of layer subject to local requirements and building regulations

Note

Provide thermal insulation of sufficient thickness on the pipework to the outdoor air: See table on page 14.

Installation sequence

Installing the outdoor unit (cont.)

Installing an outdoor unit on foundations

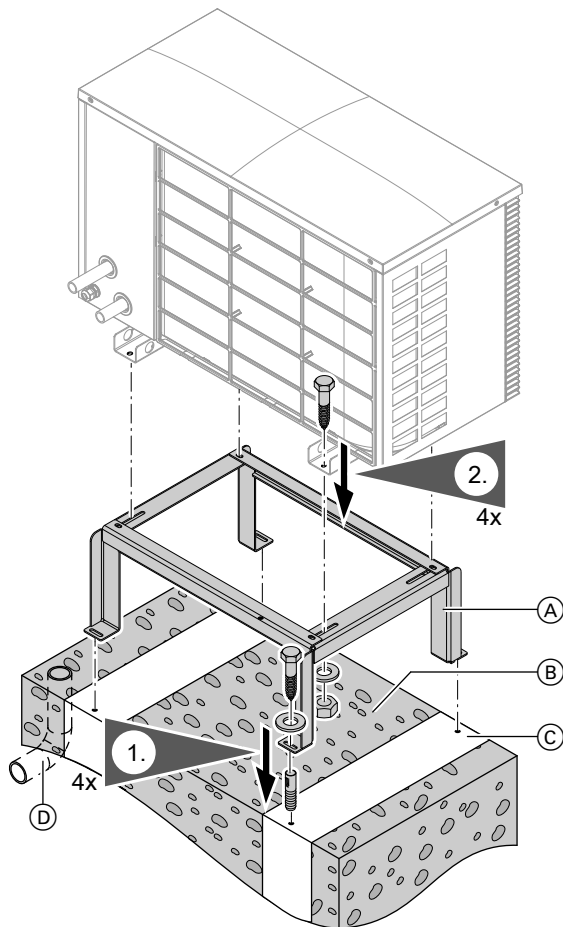


Fig. 12

- (A) Support for floorstanding installation (accessories)
- (B) Gravel bed as condensate soakaway


- (C) Concrete foundations (see technical guide)
- (D) Only for line entry below ground level: Hydraulic connection set (accessories)

Note

We recommend letting condensate drain away **freely** (no condensate pipe).

Wall mounting

Installation should **only** be performed with the bracket sets for wall mounting (accessories).

 Separate installation instructions

Installing the outdoor unit (cont.)

Wall mounting with bracket set for wall mounting

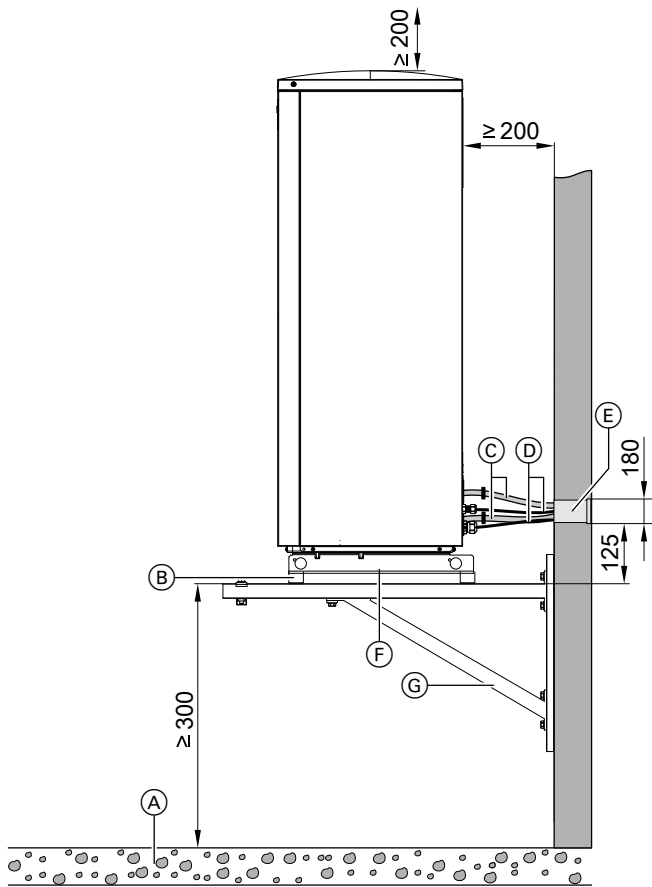


Fig. 13

- (A) Gravel bed as condensate soakaway
- (B) Vibration isolation (standard delivery of the support)
- (C) Hydraulic connection lines, indoor/outdoor unit
- (D) Indoor/outdoor unit Modbus cable and outdoor unit power cable:
Route the cables free of stress.
- (E) Connection set, wall mounting (accessories)
- (F) Openings in the base plate for free drainage of condensate:
Do not seal the openings.
- (G) Bracket for wall mounting (accessories)

Note

Provide thermal insulation of sufficient thickness on the pipework to the outdoor air: See table on page 14.

Wall mounting with bracket set for wall mounting and design casing

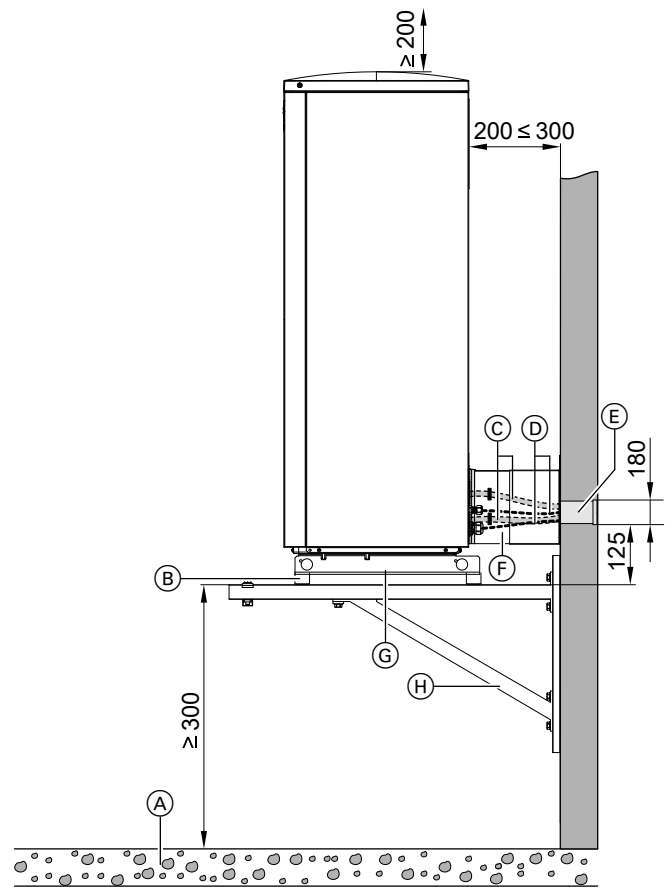


Fig. 14

- (A) Gravel bed as condensate soakaway
- (B) Vibration isolation (standard delivery of the support)
- (C) Hydraulic connection lines, indoor/outdoor unit
- (D) Indoor/outdoor unit Modbus cable and outdoor unit power cable:
Route the cables free of stress.
- (E) Connection set, wall mounting (accessories)
- (F) Design casing wall connection (accessories)
- (G) Openings in the base plate for free drainage of condensate:
Never seal the openings.
- (H) Bracket for wall mounting (accessories)

Note

Provide thermal insulation of sufficient thickness on the pipework to the outdoor air: See table on page 14.

Opening the wiring chamber

Outdoor unit with 1 fan

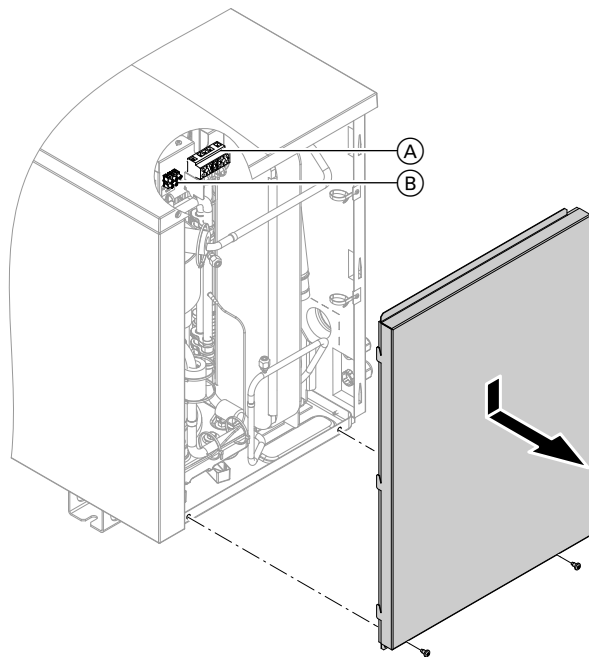


Fig. 15

- Ⓐ Compressor power supply
- Ⓑ Modbus connection (connection to the indoor unit)

Outdoor unit with 2 fans

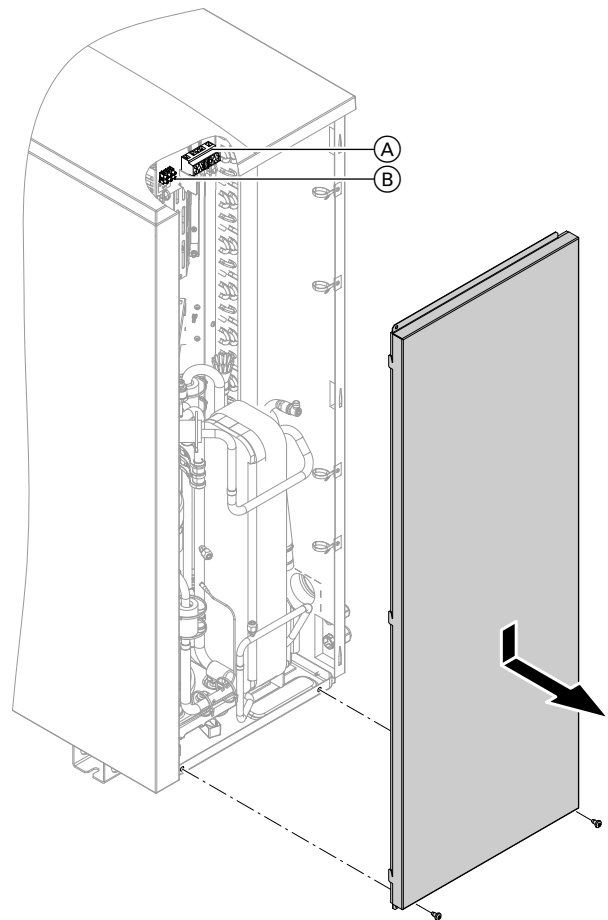


Fig. 16

- Ⓐ Compressor power supply
- Ⓑ Modbus connection (connection to the indoor unit)

Installing the outdoor unit (cont.)

Removing the transport brackets

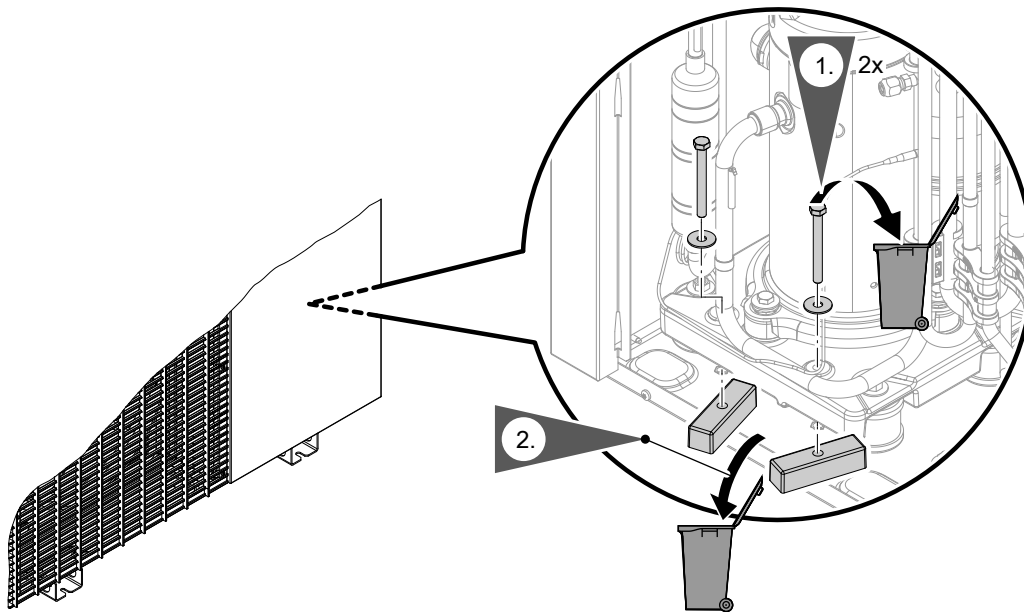


Fig. 17

Connecting the supplied hoses

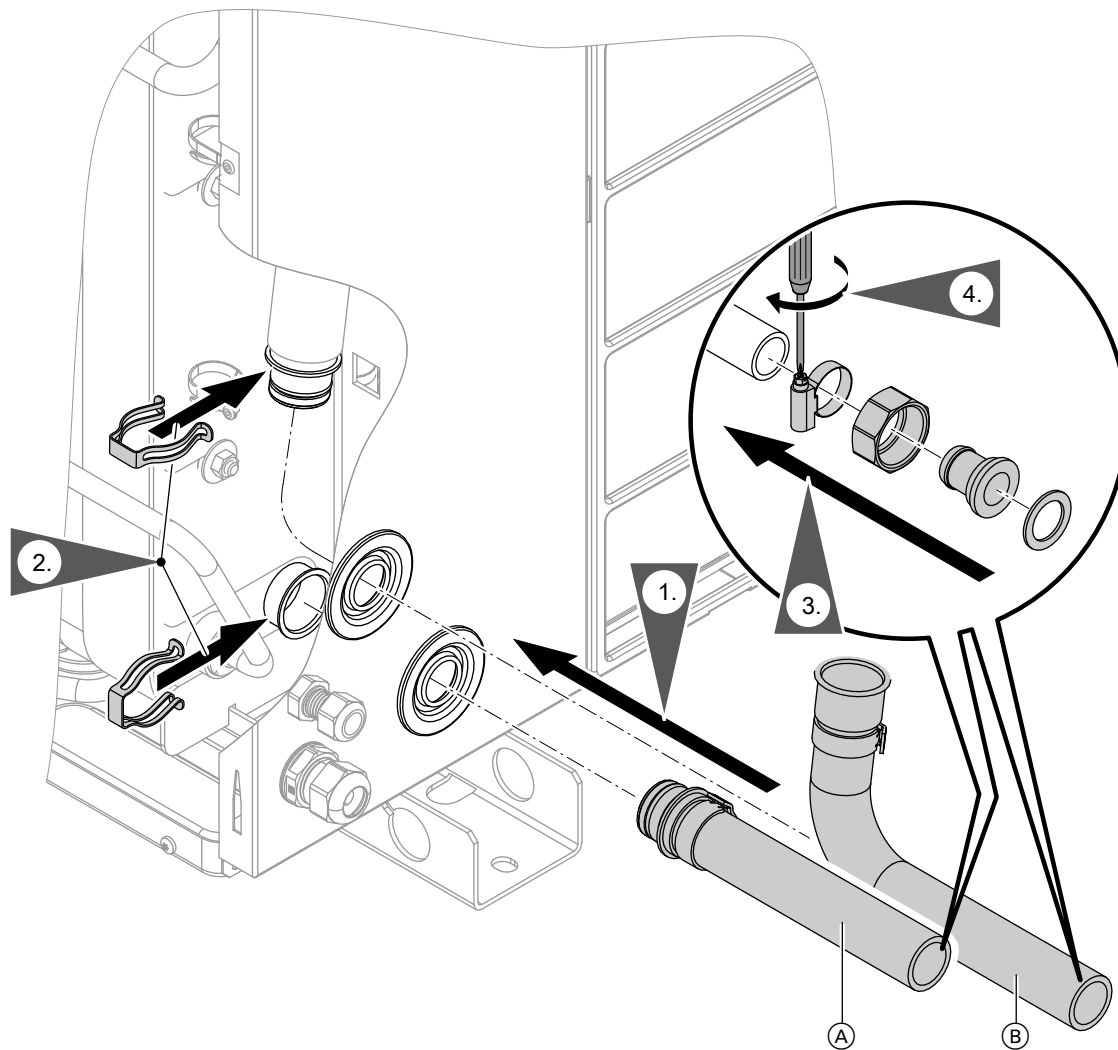


Fig. 18

Installation sequence

Installing the outdoor unit (cont.)

- Ⓐ Outdoor unit return (heating water inlet)
- Ⓑ Outdoor unit flow (heating water outlet)

Installing the indoor unit

Transport

- !** **Please note**
Impacts, compression and tensile loads can cause damage to the outside panels of the appliance.
Never apply loads/weight to the top, front or side panels of the appliance.

Requirements for the installation room

- !** **Please note**
Unfavourable ambient conditions can lead to malfunctions and appliance damage.
- The installation room must be dry and free from the risk of frost.
 - Ensure ambient temperatures between 0 and 35 °C.
 - Max. 70 % relative humidity (corresponds to an absolute humidity of approx. 25 g water vapour/kg dry air)

- !** **Danger**
Dust, gases and vapours can be damaging to health and trigger explosions.
Avoid dust, gases and vapours in the installation room.

- !** **Please note**
Overloading the floor can result in damage to the building structure.
Observe the permissible floor load. Take account of the total weight of the appliance: See chapter "Pressure points".

Minimum clearances

Secondary circuit connections, left/top

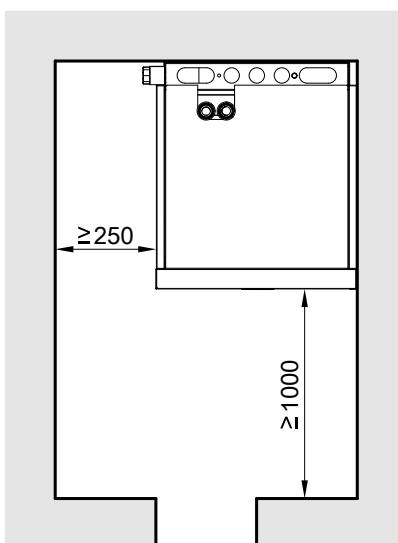


Fig. 19

Secondary circuit connections, right/top

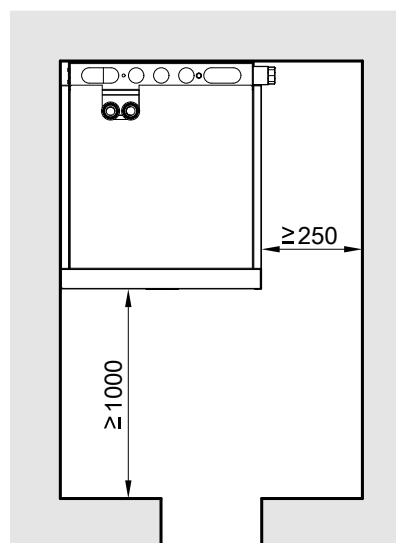


Fig. 20

Installing the indoor unit (cont.)

Minimum room height

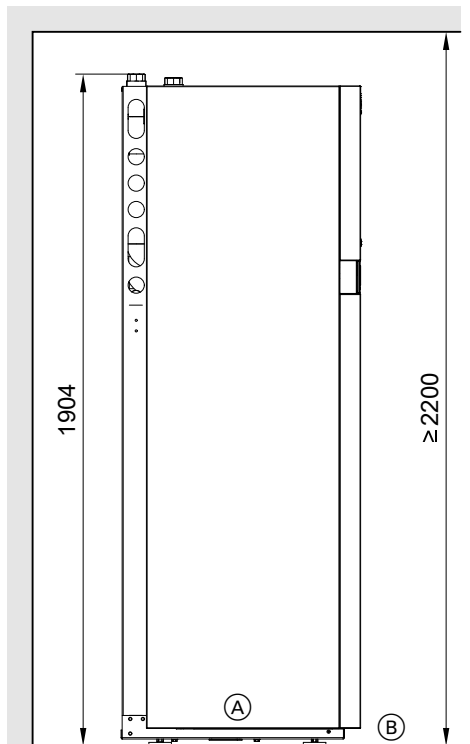


Fig. 21

- Ⓐ Indoor unit
- Ⓑ Finished floor level or top edge of platform for unfinished floors

Note

If applicable, remove the packaging box upwards before installation.

Pressure points

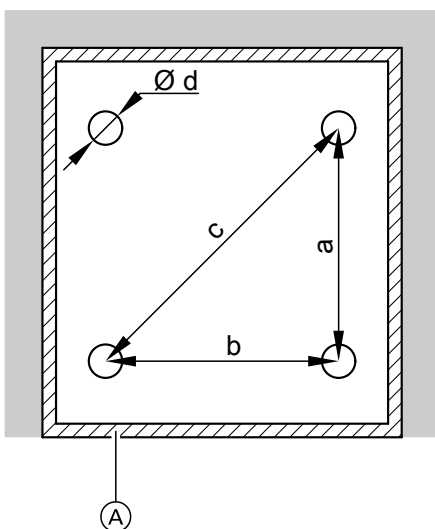


Fig. 22

- Ⓐ Partition joint with edge insulation strip as part of the floor construction
- a 439 mm

- b 506 mm
- c 670 mm
- d 64 mm

Note

- Observe the permissible floor load.
- Level the appliance horizontally.
- If the adjustable feet are used to compensate for an uneven floor (max. 10 mm), distribute the pressure load on the individual feet evenly.

The total weight of the indoor unit with filled DHW cylinder is 384 kg.

Each pressure point (each with an area of 3217 mm²) is subject to a load of up to 96 kg.

Connecting the secondary circuit

Preparing connections on the heating water side

Equip the heating system on site with an expansion vessel in the heating return.
The expansion vessel must be approved to EN 13831.

Note

- With underfloor heating circuits, install a temperature limiter to restrict the maximum temperature of under-floor heating systems.
- Ensure the minimum flow rate, e.g. by means of an overflow valve: See "Specification".

Preparing the connections on the DHW side

For connecting the DHW side, observe EN 806, DIN 1988 and DIN 4753 (CH: SVGW regulations). Observe other country-specific standards as applicable.

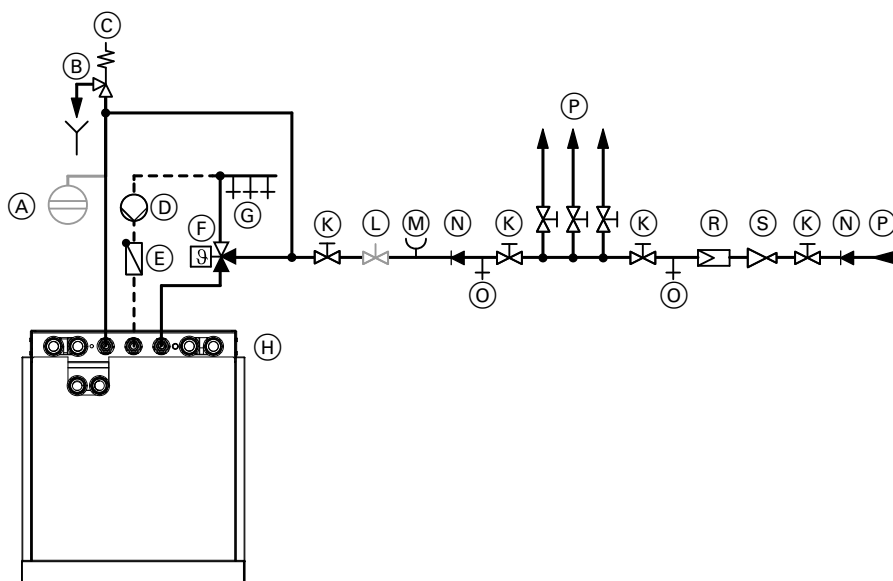


Fig. 23

- | | |
|---|--|
| (A) Expansion vessel, suitable for drinking water | (K) Shut-off valve |
| (B) Visible discharge pipe outlet point (tundish) | (L) Flow regulating valve |
| (C) Safety valve | (M) Pressure gauge connection |
| (D) DHW circulation pump | (N) Non-return valve/pipe separator |
| (E) Spring-loaded check valve | (O) Drain valve |
| (F) Automatic thermostatic mixing valve | (P) Cold water |
| (G) DHW | (R) Drinking water filter |
| (H) Heat pump terminal area (plan view) | (S) Pressure reducer to DIN 1988-200:2012-05 |

Safety valve

The DHW cylinder **must** have a safety valve to protect against unduly high pressure.

Recommendation: Install safety valve above top edge of cylinder. This means the DHW cylinder will not need to be drained when working on the safety valve.

CH: According to W3 "Principles for creating potable water installations", safety valves must be drained directly via a visible unrestricted drain or via a short outlet line to the drain network.

Drinking water filter

According to DIN 1988-2, a drinking water filter must be installed in systems with metal pipework. Viessmann also recommends the installation of a drinking water filter when using plastic pipes to DIN 1988 to prevent contaminants entering the DHW system.

Automatic thermostatic mixing valve

With appliances that heat DHW to temperatures above 60 °C, an automatic thermostatic mixing valve must be installed in the DHW line as protection against scalding.

Connecting the secondary circuit (cont.)

This also particularly applies when connecting solar thermal systems.

Connecting the secondary side

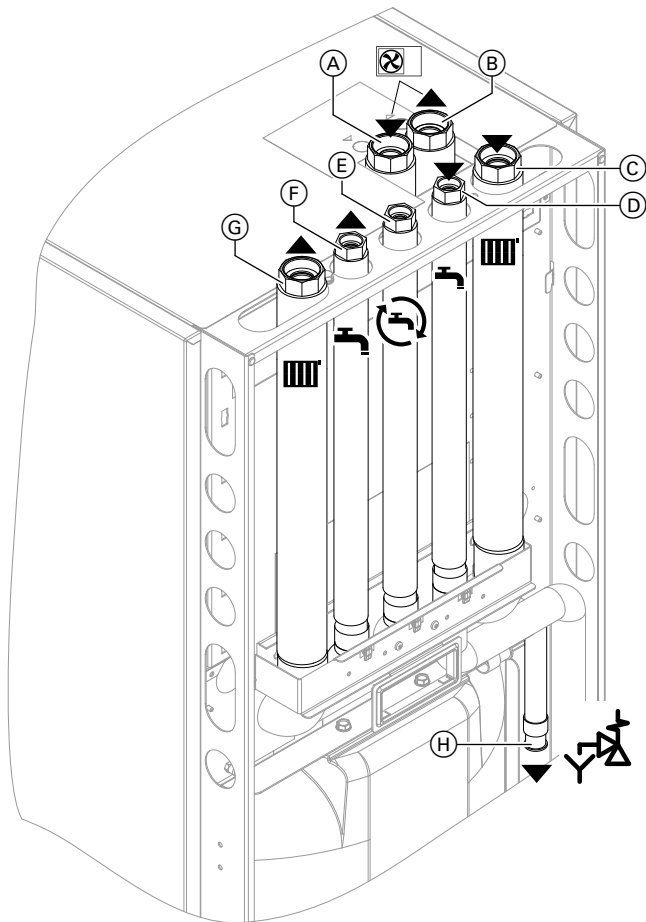


Fig. 24

- (A) Outdoor unit flow (heating water inlet): G 1¼ (female thread)
- (B) Outdoor unit return (heating water outlet): G 1¼ (female thread)
- (C) Heating water return: G 1¼ (female thread)
- (D) Cold water: G ¾ (female thread)
- (E) DHW circulation: G ¾ (female thread)
- (F) DHW: G ¾ (female thread)
- (G) Heating water flow: G 1¼ (female thread)
- (H) Safety valve drain hose

1. Connect the "hydraulic connection set, heating circuit for installation on finished walls" (required accessories) to the heat pump.

Note

If the DHW circulation pipe is not required, tightly seal the connection to the heat pump.

2. Only for systems with 2 heating circuits and without heating water buffer cylinder:
For the heating circuit with mixer, fit the installation kit with mixer (accessories) in the heat pump.

3. Connect all hydraulic lines to the heat pump.

Connections to the outdoor unit

- Max. torque for flow and return to the outdoor unit: 50 Nm
- Connection sets (accessories) are available for hydraulic connection to the outdoor unit.



Please note

Mechanically loaded hydraulic connections lead to leaks, vibrations and appliance damage.
Connect on-site lines so that they are free of load and torque stress.

4. Thoroughly flush the heating system.
5. Check the internal and on-site hydraulic connections for leaks.



Please note

Leaking hydraulic connections lead to appliance damage.
In the event of leaks, drain off liquid via the drain valve. Check the seating of seal rings.
Always replace displaced seal rings.

Note

The secondary circuit air vent valve is located in the indoor unit. To vent, connect the hose to the secondary circuit air vent valve. Route the hose outwards.

Observe additional information regarding filling and venting: See "Filling and venting on the secondary side".

6. Thermally insulate lines inside the building. For heat pumps with a cooling function, use thermal and vapour diffusion-proof insulation.

Pipework internal Ø	Min. thickness of thermal insulation layer with $\lambda = 0.035 \text{ W/(m}\cdot\text{K)}$
≤ 22 mm	40 mm
> 22 mm	60 mm

λ Thermal conductivity

7. Connect the drain hose of the safety valve to the drain network with a fall and a pipe vent.

Installation sequence

Connecting the secondary circuit (cont.)

Note

- In underfloor heating circuits, install a temperature limiter to restrict the maximum temperature for underfloor heating systems: See page 40.
- Ensure the minimum flow rate, e.g. by means of an overflow valve: See "Specification" on page 103.

Aligning the indoor unit

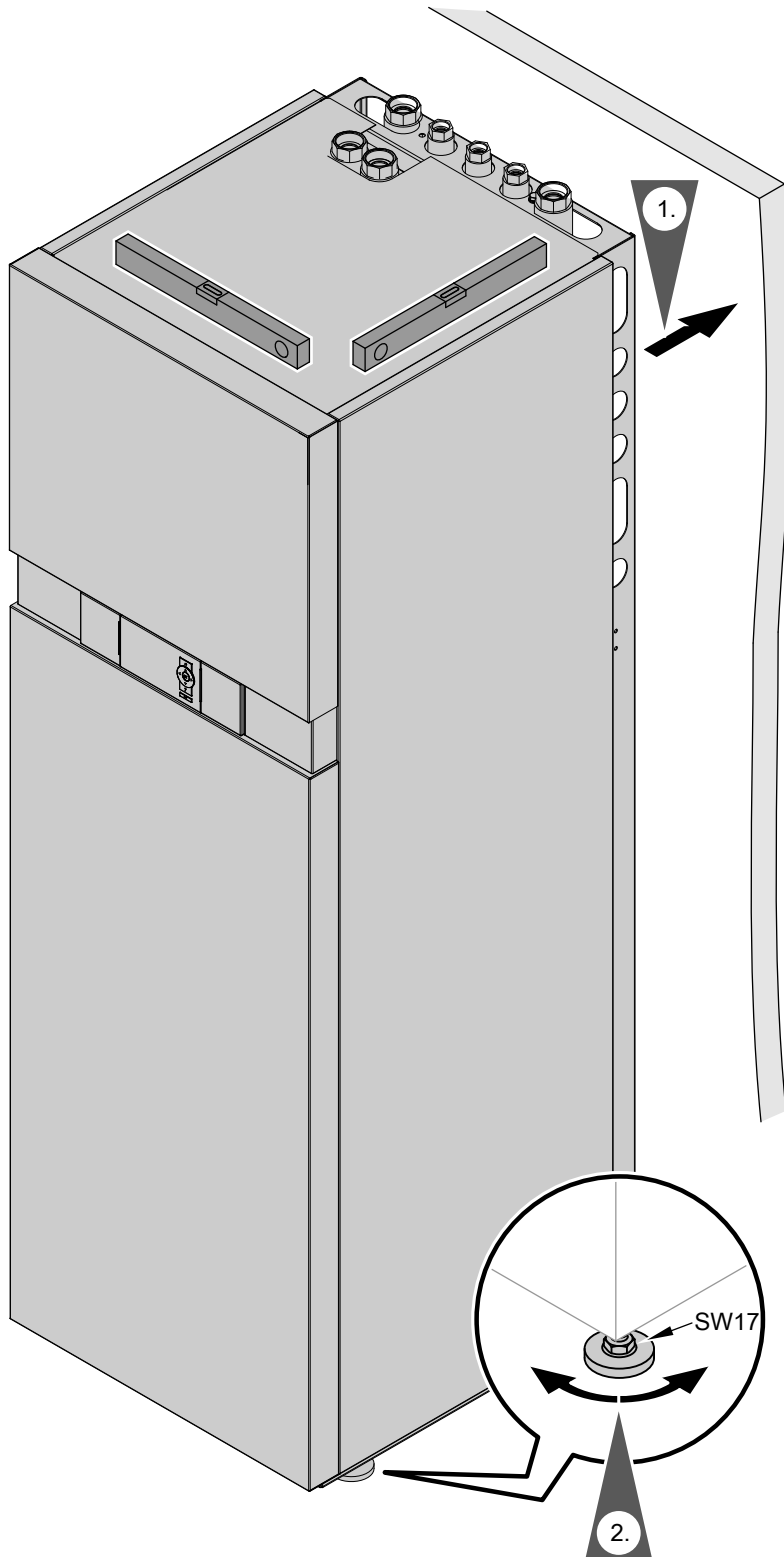


Fig. 25

Only type AWOT(-M)-E-AC 221.A: Connecting the cooling circuit**Contact humidistat**

For area cooling systems (e.g. underfloor heating circuit, chilled ceiling), a contact humidistat (accessories) is required.

Requirements for the contact humidistat:

- Electrical connection, subject to the type of contact humidistat:
 - 24 V $\overline{\text{=}}$ (recommendation):
Connection to F11 on the controller and sensor PCB
 - 230 V \sim , 0.5 A:
Connection to X3.8/3.9 on the luster terminals
- Installation inside the room to be cooled at the cooling water flow (remove thermal insulation if required)
- If several rooms with different relative humidity levels are part of the cooling circuit, fit and connect several contact humidistats in series:
Design the switching contacts as N/C contacts.

Removing the front panels

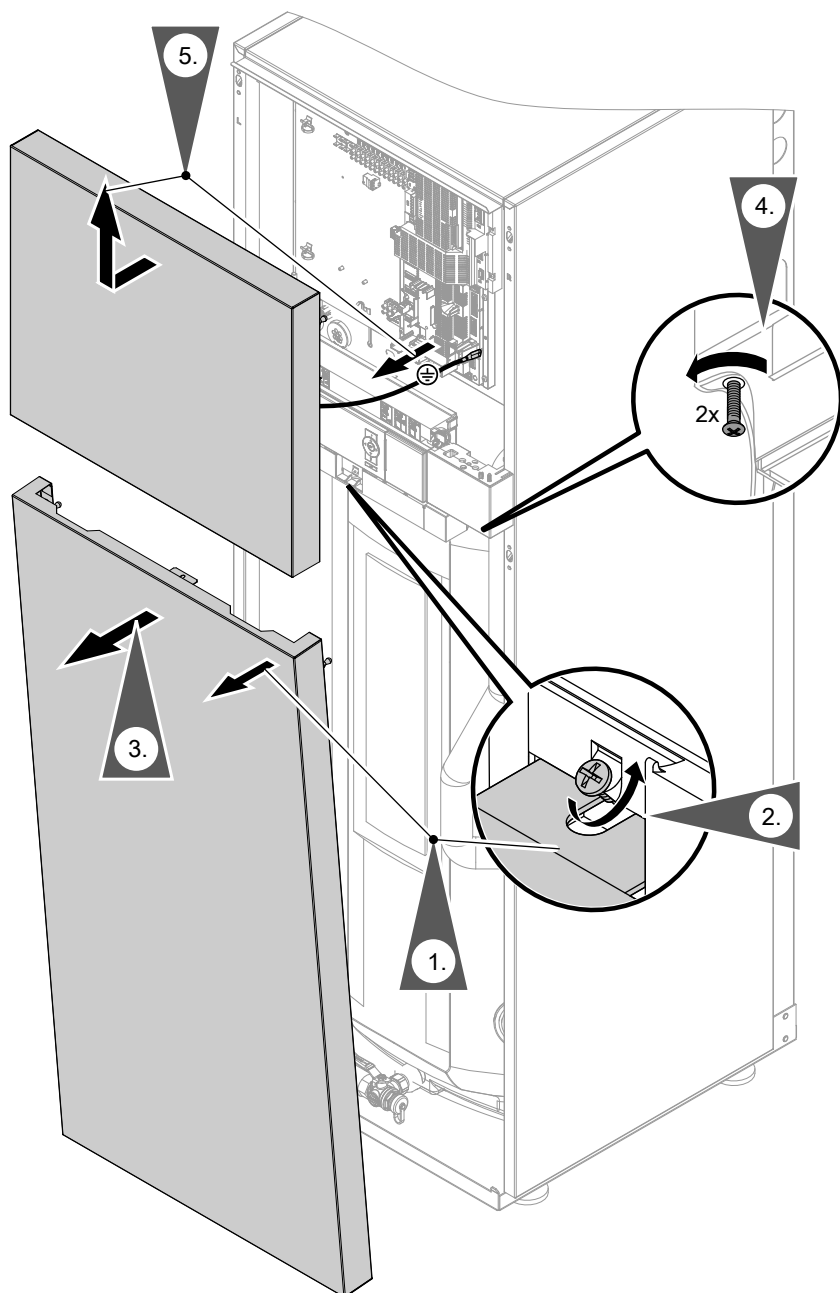


Fig. 26

Electrical connection

Preparing the electrical connections

Cables

- For cable lengths and cable cross-sections, see the following tables.
- For accessories:
Cables with the required number of cores for external connections.
Prepare an on-site distribution box.

Note

Make all connections on the control unit panel (see page 38) with **flexible** cables to ensure that it can be placed in the service position (see page 82).



Danger

Damaged wiring insulation can lead to serious injury from electrical current and result in appliance damage.
Route cables so that they cannot touch very hot, vibrating or sharp-edged components.

Electrical connection (cont.)**Danger**

Incorrect wiring can lead to serious injury from electrical current and result in appliance damage.

Take the following measures to prevent wires drifting into the adjacent voltage area:

- Route extra low voltage (ELV) leads < 42 V separately from cables > 42 V/230 V~/400 V~ and secure with cable ties.
- Strip as little of the insulation as possible, directly before the terminals. Bundle the cables close to the corresponding terminals.
- If 2 components are connected to the same terminal, press both cores together in a **single** wire ferrule.

Cable lengths in the indoor/outdoor unit

Cables	Indoor unit	Outdoor unit with	
		1 fan	2 fans
Power cables	▪ Heat pump control unit, 230 V~	1.2 m	—
	▪ Compressor, 230 V~/400 V~	—	1.2 m
Other connecting cables	▪ 230 V~, e.g. for circulation pumps	1.2 m	—
	▪ < 42 V, e.g. for sensors	0.8 m	—
Connecting cable for indoor/outdoor unit (accessories, 15 m or 30 m long)	▪ Modbus	0.8 m	1.2 m

Recommended flexible power cables**Indoor unit**

Power supply	Cable	Max. cable length
Heat pump control unit 230 V~	▪ Without power-OFF	3 x 1.5 mm ²
	▪ With power-OFF	5 x 1.5 mm ²
Instantaneous heating water heater	▪ 400 V~	5 x 2.5 mm ²
	▪ 230 V~	7 x 2.5 mm ²

Electrical connection (cont.)**Outdoor units****Heat pumps with outdoor unit 230 V**

Types	Cable	Max. cable length	Max. fuse rating
221.A04	3 x 2.5 mm ²	29 m	B16A
221.A06	3 x 2.5 mm ²	29 m	B16A
221.A08	3 x 2.5 mm ²	29 m	B16A
221.A10	3 x 2.5 mm ²	20 m	B25A
	Or 3 x 4.0 mm ²	32 m	
221.A13	3 x 2.5 mm ²	20 m	B25A
	Or 3 x 4.0 mm ²	32 m	
221.A16	3 x 2.5 mm ²	20 m	B25A
	Or 3 x 4.0 mm ²	32 m	

Heat pumps with outdoor unit 400 V

Types	Cable	Max. cable length	Max. fuse rating
221.A10	5 x 2.5 mm ²	30 m	B16A
221.A13	5 x 2.5 mm ²	30 m	B16A
221.A16	5 x 2.5 mm ²	30 m	B16A

Electrical connection (cont.)

Indoor unit: Routing cables to the wiring chamber

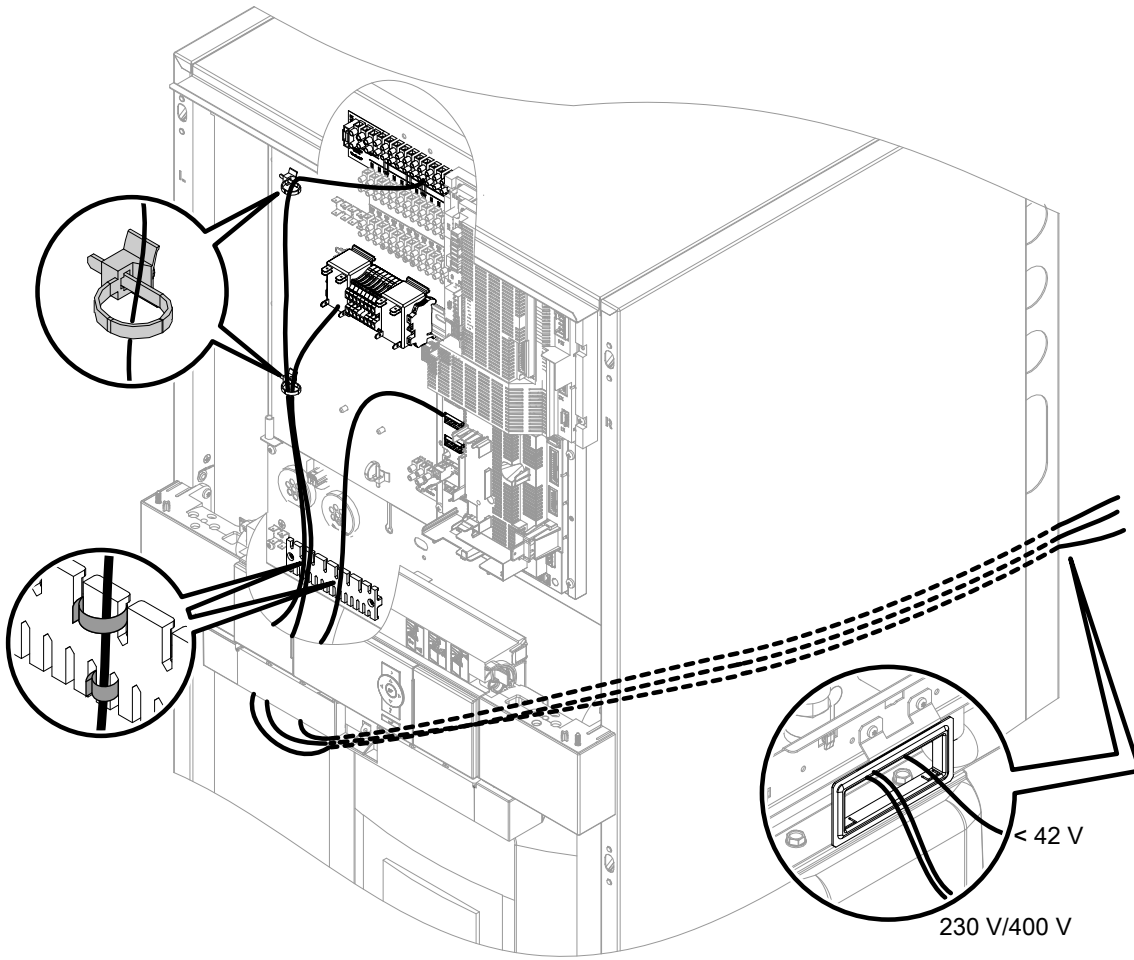


Fig. 27

Connecting the Vitoconnect (accessories)

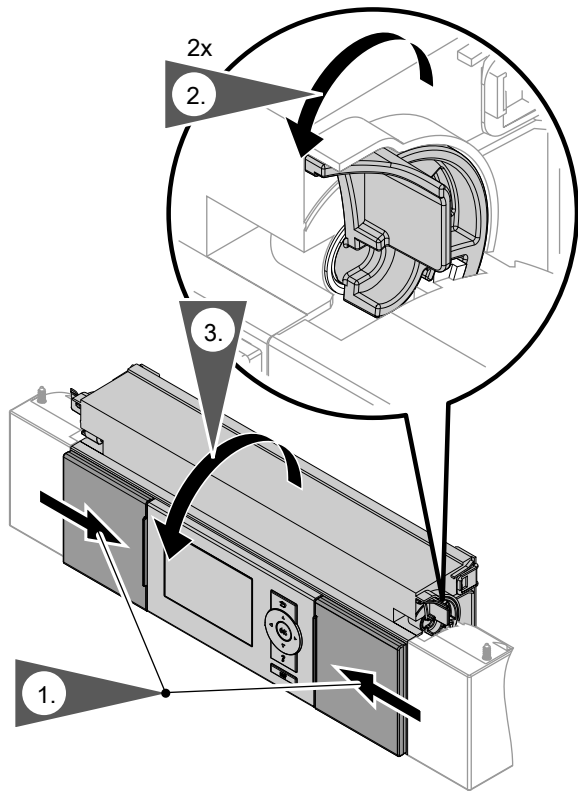


Fig. 28

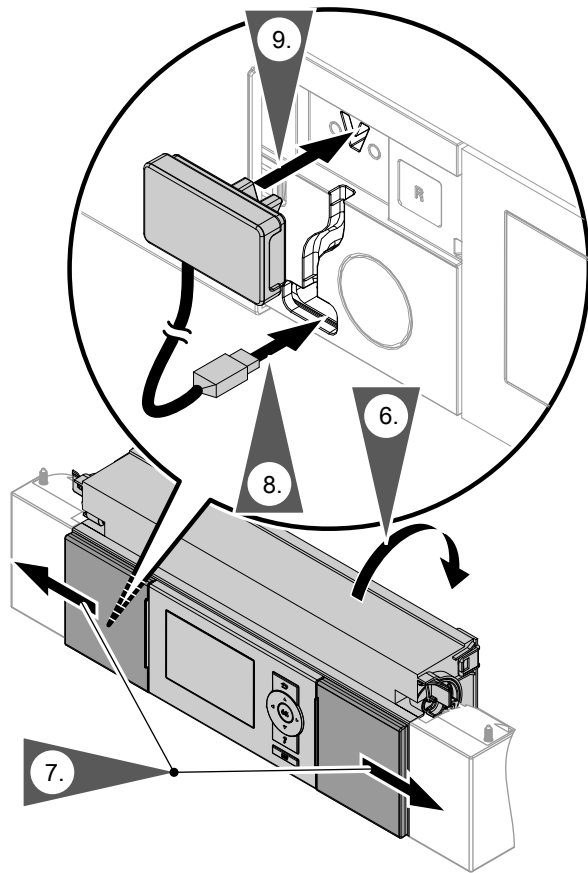


Fig. 30

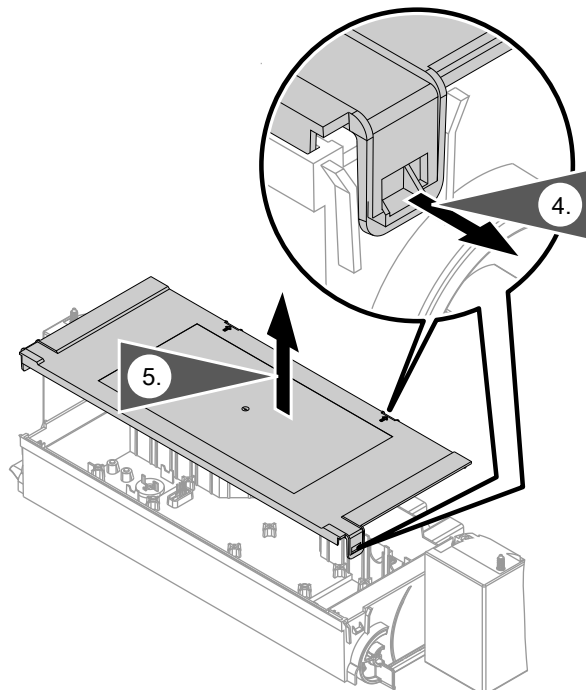


Fig. 29

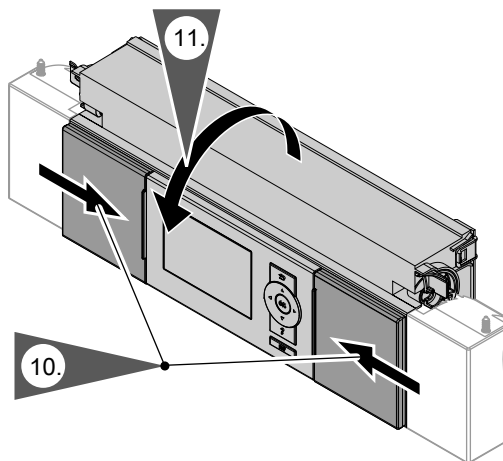


Fig. 31

Electrical connection (cont.)

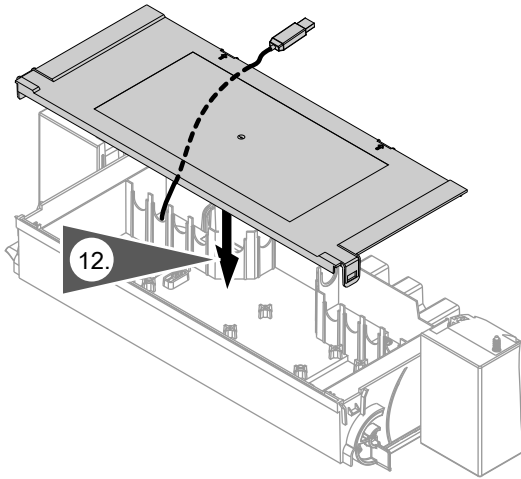


Fig. 32

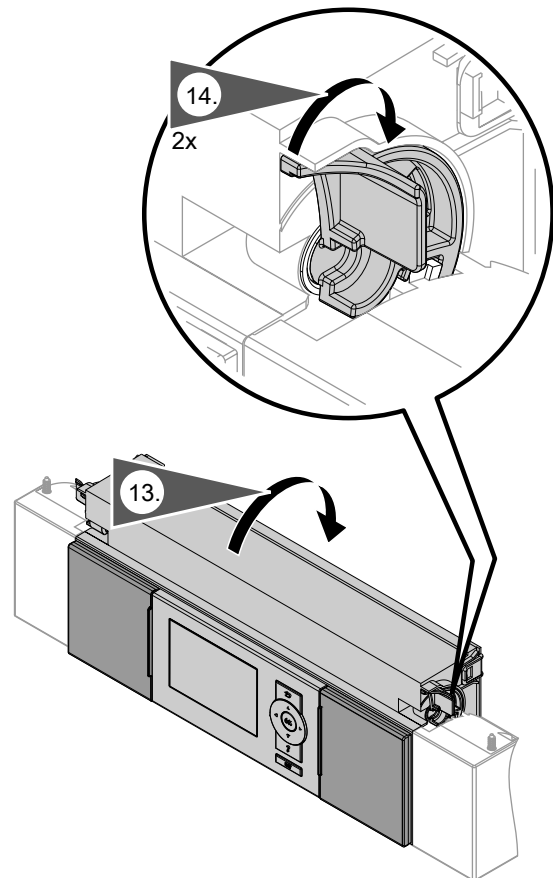


Fig. 33

Indoor unit: Overview of connections

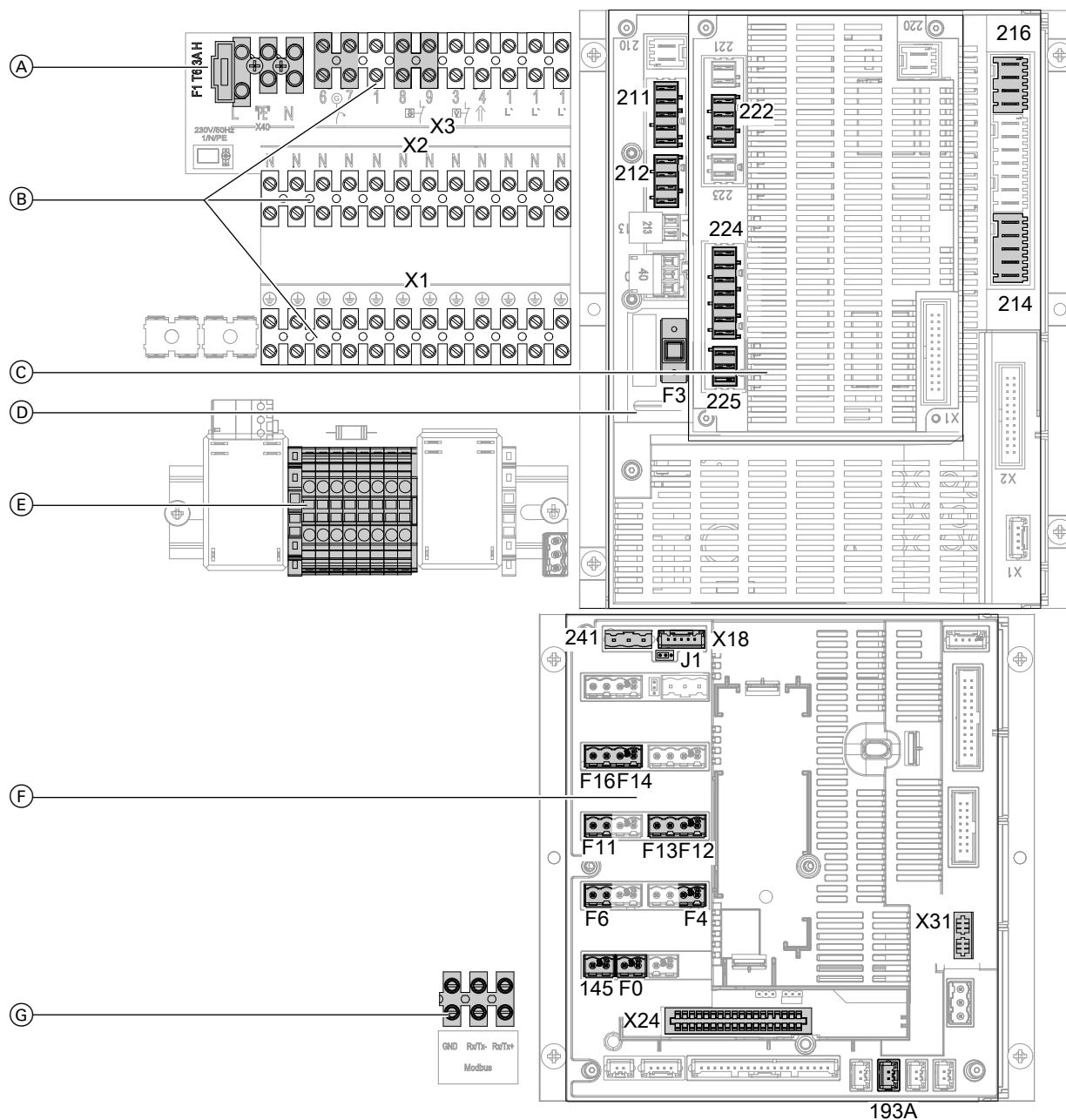


Fig. 34

- (A) Power supply 230 V~: See page 50.
F1 Fuse 6.3 A (slow)
- (B) Luster terminals: See page 43.
X1 Terminals for earth conductors of **all** associated system components
X2 Terminals for neutral conductors of **all** associated system components
- (C) Expansion PCB on main PCB: See page 42.
- (D) Main PCB: See page 39.
F3 Fuse 2.0 A (slow)
- (E) Control module and power supply for instantaneous heating water heater: See page 51 onwards.
- (F) Controller and sensor PCB: See page 43.
- (G) Connection for Modbus cable to the outdoor unit

Electrical connection (cont.)


Indoor unit: Main PCB (230 V~ components)

Information regarding the connection values



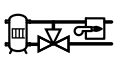
- The specified output is the recommended connected load.
- Total output of all components connected directly to the heat pump control unit (e.g. pumps, valves, message facilities, contactors): **Max. 1000 W**
If the total output is < 1000 W, the individual rating of a component (e.g. pump, valve, message facility, contactor) can be greater than specified. However, the breaking capacity of the relevant relay must not be exceeded.
- The specified current indicates the max. switching current of the switching contact. Observe total current of 5 A.

Set the required parameters during commissioning:
See page 68 onwards.

Plug 211

Terminals	Function	Explanation
211.2  1.	Secondary pump	<ul style="list-style-type: none"> ▪ In systems without a heating water buffer cylinder, no other heating circuit pump is required: See terminal 212.2. ▪ Connect a temperature limiter in series to restrict the maximum temperature of underfloor heating circuit (if installed). <p>Supply values</p> <ul style="list-style-type: none"> ▪ Output: 140 W ▪ Voltage: 230 V~ ▪ Max. switching current: 4(2) A
211.5 ⚡ AC	Only for heat pumps with a cooling function: 3-way diverter valves for heating water buffer cylinder bypass in cooling mode	<p>Connect the 3-way diverter valves in parallel.</p> <p>Supply values</p> <ul style="list-style-type: none"> ▪ Output: 10 W ▪ Voltage: 230 V~ ▪ Max. switching current: 4(2) A

Plug 212

Clamps	Function	Explanation
212.2  A1	Heating circuit pump for heating circuit without mixer A1/HC1	<ul style="list-style-type: none"> ▪ This pump is connected in addition to the secondary pump if a heating water buffer cylinder is installed. ▪ Connect the temperature limiter to restrict the maximum temperature for underfloor heating systems (if installed) in series. <p>Connection values</p> <ul style="list-style-type: none"> ▪ Output: 100 W ▪ Voltage: 230 V~ ▪ Max. switching current: 4(2) A
212.3 	DHW circulation pump	<p>Connection values</p> <ul style="list-style-type: none"> ▪ Output: 50 W ▪ Voltage: 230 V~ ▪ Max. switching current: 4(2) A
212.4 	3-way diverter valve for heating water buffer cylinder bypass or heat pump in the case of dual alternative mode	<p>Connection values</p> <ul style="list-style-type: none"> ▪ Output: 130 W ▪ Voltage: 230 V~ ▪ Max. switching current: 4(2) A

Electrical connection (cont.)

Connecting a temperature limiter as a maximum temperature limiter for underfloor heating

Connecting a general temperature limiter (B)

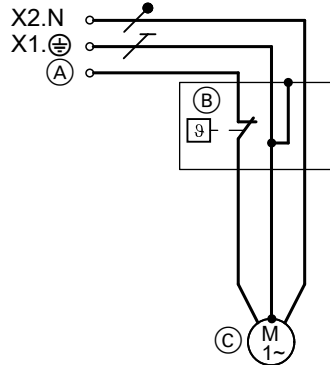


Fig. 35

Connecting the temperature limiter, part no. 7151728, 7151729 (B)

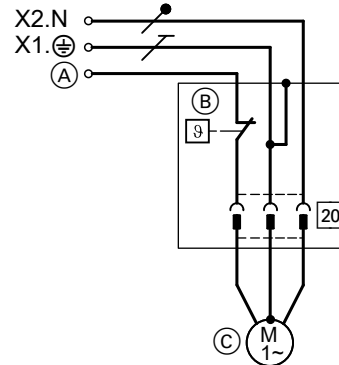


Fig. 36

	Connection (A) to control unit	Circulation pump (C)
Heating circuit without mixer A1/HC1		
▪ Without heating water buffer cylinder	211.2	Secondary pump
▪ With heating water buffer cylinder	212.2	Heating circuit pump A1/HC1
Heating circuit with mixer M2/HC2	225.1	Heating circuit pump M2/HC2

Connecting the temperature limiter, part no. 7151728, 7151729 (B) to the mixer extension kit

(C) Heating circuit pump M3/HC3

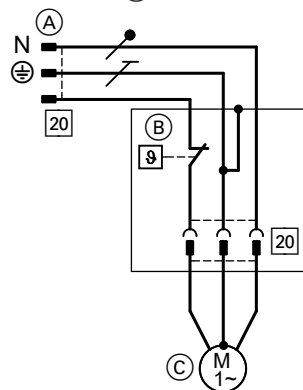


Fig. 37



- (A) Connect plug 20 to the extension kit.
- (B) Temperature limiter

Plug 214





Terminals	Function	Explanation
214.1 	External hook-up, heating/cooling circuits: Central heating demand, heating circuit M2/HC2	230 V~ digital input: ▪ 230 V~: Central heating demand for heating circuit M2/HC2 active ▪ 0 V: No demand ▪ Breaking capacity 230 V, 0.15 A
214.2 	External hook-up, heating/cooling circuits: Central cooling demand, heating circuit M2/HC2	230 V~ digital input: ▪ 230 V~: Room cooling demand for heating circuit M2/HC2 active ▪ 0 V: No demand ▪ Breaking capacity 230 V, 0.15 A

Electrical connection (cont.)

Plug 214

Terminals	Function	Explanation
214.3  M3	External hook-up, heating/cooling circuits: Central heating demand, heating circuit M3/HC3	230 V~ digital input: <ul style="list-style-type: none"> 230 V~: Room heating demand for heating circuit M3/HC3 active 0 V: No demand Breaking capacity 230 V, 0.15 A
214.4  M3	External hook-up, heating/cooling circuits: Central cooling demand, heating circuit M3/HC3	230 V~ digital input: <ul style="list-style-type: none"> 230 V~: Room cooling demand for heating circuit M3/HC3 active 0 V: No demand Breaking capacity 230 V, 0.15 A

Plug 216

Terminals	Function	Explanation
216.1  A1 SG 	External hook-up, heating/cooling circuits: Central heating demand, heating circuit A1/HC1 Or Smart Grid: Floating contact 1	230 V~ digital input: <ul style="list-style-type: none"> 230 V~: Central heating demand for heating circuit A1/HC1 active 0 V: No demand Breaking capacity 230 V, 2 mA 230 V~ digital input: <ul style="list-style-type: none"> 230 V~: Contact active 0 V: Contact not active Breaking capacity 230 V, 2 mA
216.2  A1	External hook-up, heating/cooling circuits: Room cooling demand, heating circuit A1/HC1	230 V~ digital input: <ul style="list-style-type: none"> 230 V~: Room cooling demand for heating circuit A1/HC1 active 0 V: No demand Breaking capacity 230 V, 0.15 A
216.4 SG 	Smart Grid: Floating contact 2	230 V~ digital input: <ul style="list-style-type: none"> 230 V~: Contact active 0 V: Contact not active Breaking capacity 230 V, 2 mA

Note

If external hook-up for heating/cooling circuits is connected and selected, Smart Grid can be connected to the EA1 extension (accessories) ("**Enable Smart Grid 7E80**" on "1").

Electrical connection (cont.)

Indoor unit: Expansion PCB on main PCB (230 V~ components)

Information regarding the connection values

- The specified output is the recommended connected load.
- Total output of all components connected directly to the heat pump control unit (e.g. pumps, valves, message facilities, contactors): **Max. 1000 W**
If the total output is < 1000 W, the individual rating of a component (e.g. pump, valve, message facility, contactor) can be greater than specified. However, the breaking capacity of the relevant relay must not be exceeded.
- The specified current indicates the max. switching current of the switching contact. Observe total current of 5 A.


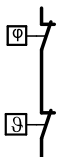
Set the required parameters during commissioning:
See page 68 onwards.

Plug 225

Terminals	Function	Explanation
225.1 M2 III	Heating circuit pump of the heating circuit with mixer M2/HC2	Connect a temperature limiter to restrict the maximum temperature for underfloor heating circuits (if installed) in series. Connection values: ▪ Output: 100 W ▪ Voltage: 230 V~ ▪ Max. control current: 4(2) A
225.2 M2 X ▼ I	Mixer motor control, heating circuit M2/HC2 Mixer CLOSE signal ▼	Connection values: ▪ Output: 10 W ▪ Voltage: 230 V~ ▪ Max. control current: 0.2(0.1) A
225.3 M2 X ▲ I	Mixer motor control, heating circuit M2/HC2 Mixer OPEN signal ▲	Connection values: ▪ Output: 10 W ▪ Voltage: 230 V~ ▪ Max. control current: 0.2(0.1) A

Electrical connection (cont.)**Indoor unit: Luster terminals (message and safety connections)**

Set the required parameters during commissioning:
See page 68 onwards.

Terminals	Function	Explanation
X3.1	Switched phase	Via control unit ON/OFF switch Note <i>Observe the total load 1000 W of all connected components.</i>
X3.6 X3.7 	Power-OFF (jumper fitted at the factory)	Floating contact (N/C) required: <ul style="list-style-type: none"> ▪ Closed: Heat pump operational ▪ Open: Heat pump shut down ▪ Breaking capacity 230 V~, 0.15 A Remove jumper when connecting. Note <ul style="list-style-type: none"> ▪ No parameters need to be set ▪ The compressor is "forced" off as soon as the contact opens. ▪ The power-OFF signal switches off the power supply to the relevant component, subject to the power supply utility. ▪ For the instantaneous heating water heater, the stages to be switched off can be selected (parameter "Output for instant. heating water heater at power-OFF 790A"). ▪ The power supply for the heat pump control unit (3 x 1.5 mm²) and the cable for the power-OFF signal can be combined in a single 5-core cable. In connection with Smart Grid: Do not connect the power-OFF signal. Do not remove jumper.
X3.8 X3.9 	Only for heat pumps with a cooling function: <ul style="list-style-type: none"> ▪ Frost stat and/or Contact humidistat 230 V~ ▪ Or jumper For heat pumps without a cooling function: <ul style="list-style-type: none"> ▪ Jumper 	Floating contact (N/C) required: <ul style="list-style-type: none"> ▪ Closed: Safety chain has continuity ▪ Open: Safety chain interrupted; heat pump shut down ▪ Breaking capacity 230 V~, 0.15 A Connection: <ul style="list-style-type: none"> ▪ Connected in series if both safety components are installed ▪ Insert jumper if no safety components are installed.
X40.L1	Heat pump control unit power supply: Phase L1 X40.⊕ Earth conductor terminal X40.N Neutral conductor terminal	Power supply 230 V~

Indoor unit: Controller and sensor PCB (LV connections)

Set the required parameters during commissioning:
See page 68 onwards.

Electrical connection (cont.)

Sensors

Plug	Sensor	Type
F0	Outside temperature sensor	NTC 10 kΩ
F4	Buffer temperature sensor	NTC 10 kΩ
F11	Contact humidistat 24 V _~ Or jumper Note <ul style="list-style-type: none"> ▪ <i>System with heating water/coolant buffer cylinder:</i> <i>If cooling is performed via several heating/cooling circuits, provide a contact humidistat for each heating/cooling circuit.</i> <i>Connect several contact humidistats in series.</i> ▪ <i>If using just one 230 V_~ contact humidistat (connection to X3.8/X3.9) for cooling, or if using none at all, insert a jumper, otherwise the heat pump will not start (message "CA Protectn device primry").</i> 	—
F12	Flow temperature sensor, heating circuit with mixer M2/HC2	NTC 10 kΩ
F14	Flow temperature sensor, cooling circuit (without buffer cylinder, heating circuit without mixer A1/HC1 or separate cooling circuit SKK)	NTC 10 kΩ
F16	Room temperature sensor, cooling circuit <ul style="list-style-type: none"> ▪ Required for separate cooling circuit SKK ▪ Recommended for heating/cooling circuit without mixer A1/HC1 	NTC 10 kΩ
145	KM-BUS (wires interchangeable) Use the KM-BUS distributor (accessories) if several devices are connected. KM-BUS subscribers (examples): <ul style="list-style-type: none"> ▪ Mixer extension kit for heating circuit M3/HC3 ▪ Remote control (set heating circuit allocation on the remote control) ▪ EA1 extension, AM1 extension 	—
241	Modbus (do not interchange the wires) Connection for energy meter of photovoltaic system	—
J1	Jumper for Modbus terminator <ul style="list-style-type: none"> ☐ Terminator active (delivered condition) ☐ Terminator not active 	—
X18	Modbus (do not interchange the wires) <ul style="list-style-type: none"> ▪ Connected at the factory: Modbus connecting cable to the outdoor unit Or ▪ Modbus distributor (accessories) if additional devices are to be connected, e.g. Vitovent 300-F: See "Modbus distributor" installation instructions. 	—
X24	Connection for LON communication module: See "LON communication module" installation instructions	—
X31	Coding card slot	—
193 A	Only in conjunction with installation kit with mixer (accessories): PWM signal connection for heating circuit pump M2/HC2	—

Swimming pool heating

Note

- *Swimming pool heating is controlled via EA1 extension with KM-BUS.*
- *Make connections to EA1 extension **only** in accordance with Fig. 38.*
- *A filter circuit pump **cannot** be controlled via the heat pump control unit.*

Electrical connection (cont.)

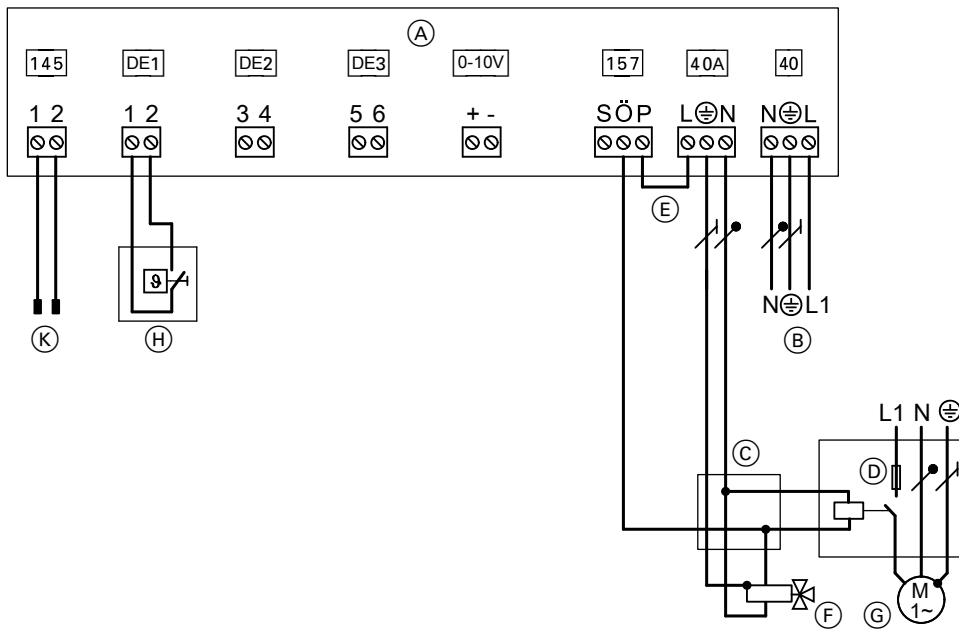


Fig. 38

- Ⓐ EA1 extension
- Ⓑ Power supply 1/N/PE 230 V/50 Hz
- Ⓒ Junction box (on site)
- Ⓓ Fuses and contactor for circulation pump for swimming pool heating (accessories)
- Ⓔ Jumper
- Ⓕ 3-way diverter valve for "Swimming pool" (zero volt: heating the heating water buffer cylinder)
- Ⓖ Circulation pump for swimming pool heating (accessories)
- Ⓗ Temperature controller for swimming pool temperature control (floating contact: 230 V~, 0.1 A, accessories)
- Ⓚ KM-BUS connection to the controller and sensor PCB

Outdoor unit: Routing cables to the wiring chamber

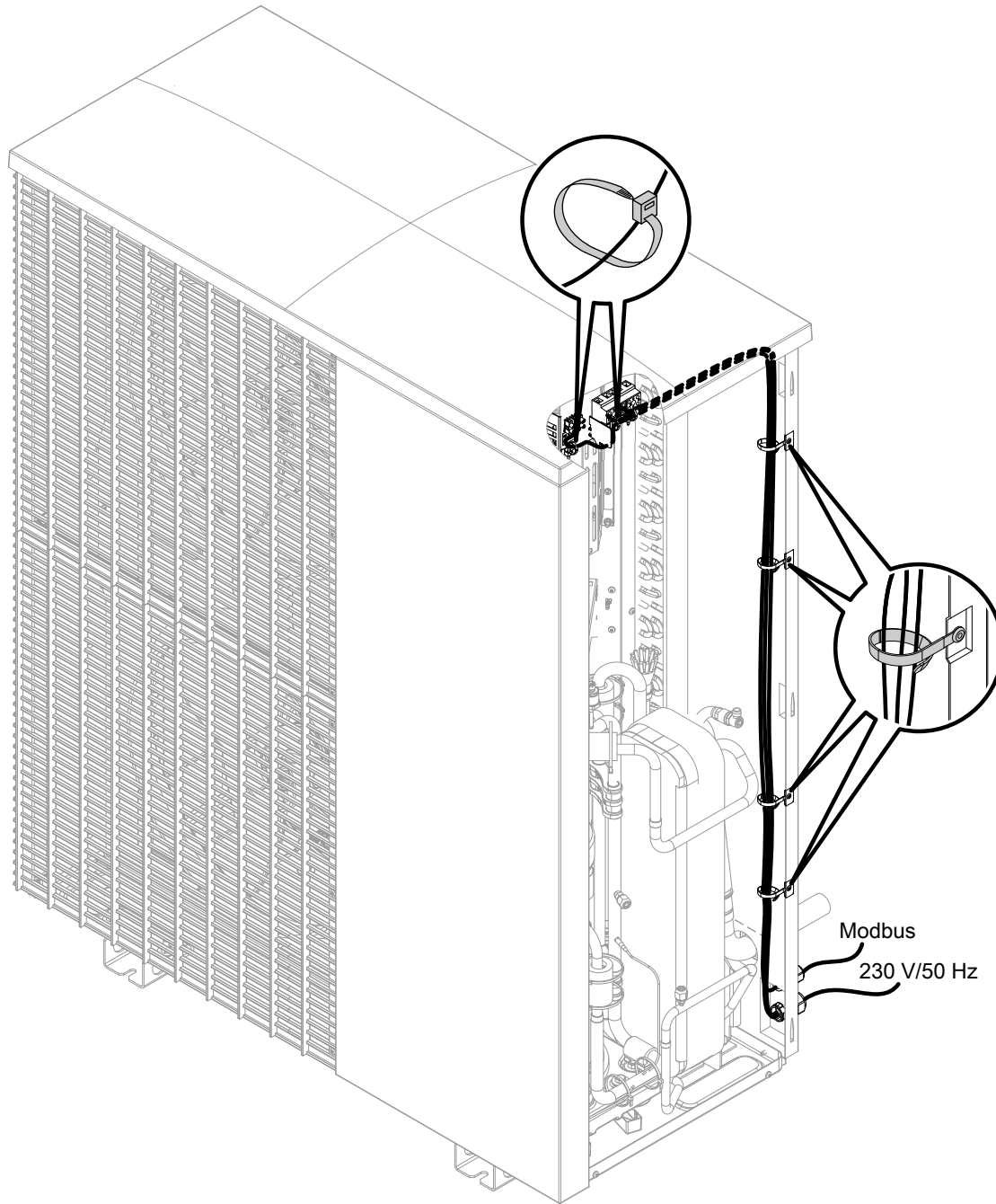


Fig. 39 Example: Type AWOT-M-E-AC 221.A10

Electrical connection (cont.)

Outdoor unit: Overview of electrical connections

Outdoor unit with 1 fan

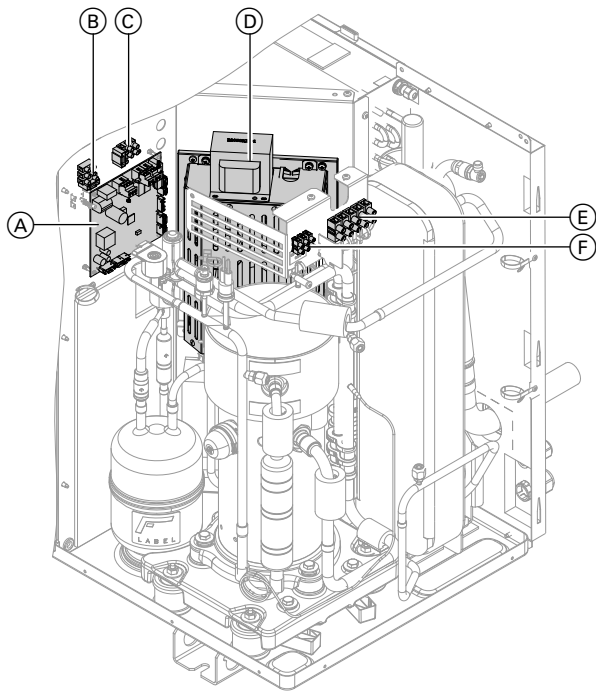


Fig. 40

- (A) EEV PCB (refrigerant circuit controller)
- (B) Fan fuse 6.3 A (slow)
- (C) Refrigerant circuit controller fuse 6.3 A (slow)
- (D) Inverter
- (E) Mains terminals 230 V/50 Hz:
See page 52.
- (F) Terminal for Modbus cable between indoor/outdoor unit: See next chapter.

Outdoor unit with 2 fans, 230 V~

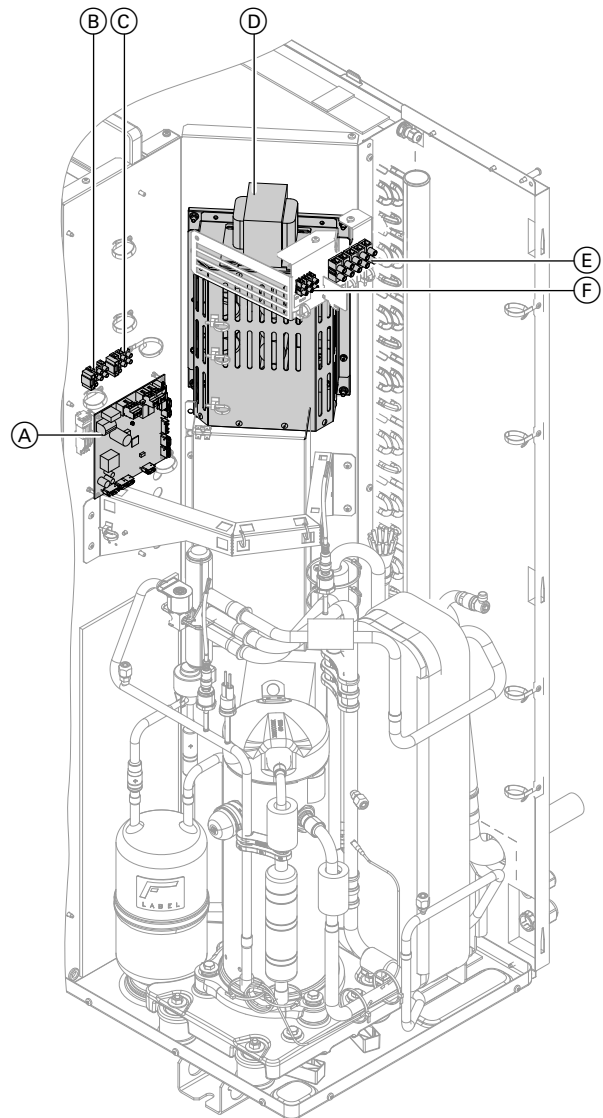
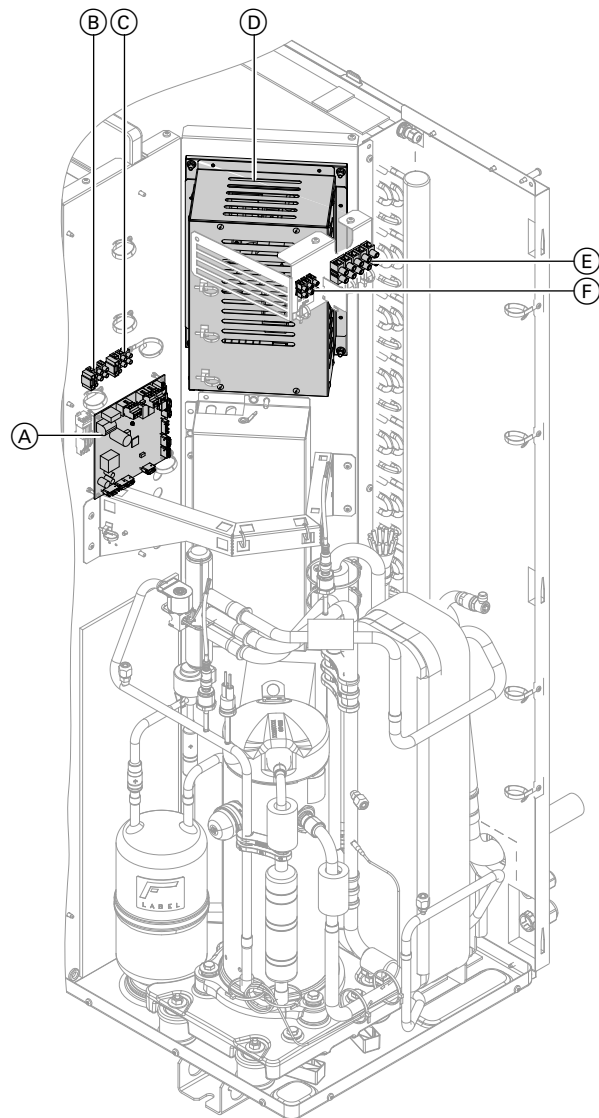


Fig. 41

- (A) EEV PCB (refrigerant circuit controller)
- (B) Fan fuse 6.3 A (slow)
- (C) Refrigerant circuit controller fuse 6.3 A (slow)
- (D) Inverter
- (E) Mains terminals 400 V/50 Hz:
See page 53.
- (F) Terminal for Modbus cable between indoor/outdoor unit: See next chapter.

Electrical connection (cont.)

Outdoor unit with 2 fans, 400 V~



- Ⓒ Refrigerant circuit controller fuse 6.3 A (slow)
- Ⓓ Inverter
- Ⓔ Mains terminals 230 V/50 Hz:
See page 52.
- Ⓕ Terminal for Modbus cable between indoor/outdoor unit: See next chapter.

Fig. 42

- Ⓐ EEV PCB (refrigerant circuit controller)
- Ⓑ Fan fuse 6.3 A (slow)

Connecting the Modbus cable between the indoor and outdoor unit

Use a flexible data cable with a minimum cross-section of 0.14 mm², e.g. LiYCY. No screen is required.

Electrical connection (cont.)

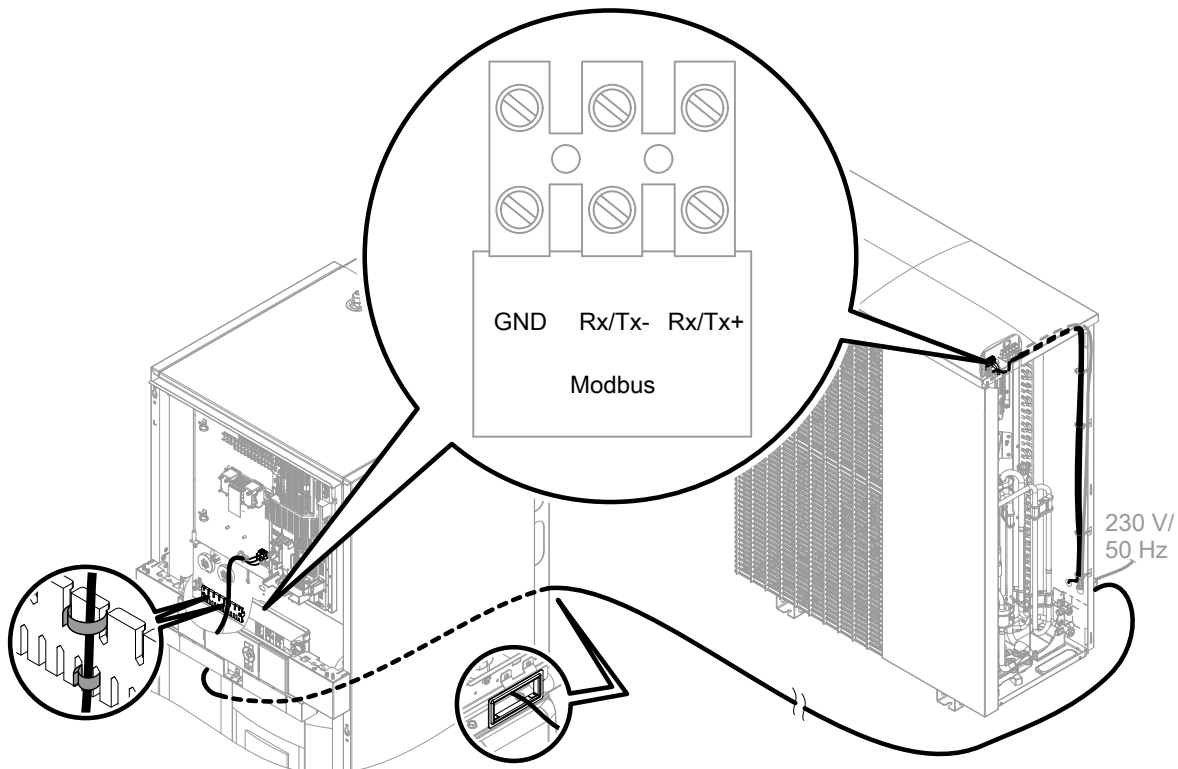



Fig. 43

Power supply

Isolators for non-earthed conductors

- Install an isolator in the power cable to provide omnipolar separation from the mains for all active conductors, corresponding to overvoltage category III (3 mm) for full isolation. This isolator must be fitted in the permanent electrical installation in line with installation requirements, e.g. mains isolator or upstream circuit breaker.
- We additionally recommend installing an AC/DC-sensitive RCD (RCD class B ) for DC (fault) currents that can occur with energy efficient equipment.
- Residual current devices to DIN VDE 0100-530 selecting and sizing.

**Danger**

Incorrect electrical installations can lead to serious injury from electrical current and result in appliance damage.

Connect the power supply and implement all safety measures (e.g. RCD circuit) in accordance with the following regulations:

- IEC 60364-4-41
- VDE regulations
- TAR low voltage VDE-AR-N-4100

**Danger**

The absence of system component earthing can lead to serious injury from electrical current and component damage in the event of an electrical fault.

The appliance and pipework must be connected to the equipotential bonding of the building.

**Danger**

Incorrect core assignment can lead to serious injury from electrical current and result in appliance damage.

Never interchange cores "L" and "N".

- In negotiations with your power supply utility, different supply tariffs for the main power circuits may be offered. Observe the technical connection conditions of the power supply utility.
- If the compressor and/or instantaneous heating water heater are operated at an economy tariff (power-OFF), either provide an additional cable (e.g. 3 x 1.5 mm²) for the power-OFF signal from the distribution board (meter box) to the heat pump control unit.
or
Combine the cables for the power-OFF signal and for the heat pump control unit power supply (3 x 1.5 mm²) in a 5-core cable.

Power supply (cont.)

- The assignment of the power-OFF (for compressor and/or instantaneous heating water heater) is made via the type of connection and by setting parameters in the heat pump control unit.
In Germany, the power supply can be cut for a maximum of 3 x 2 hours per day (24 h).
- The **heat pump control unit/PCB** must be supplied **without** power-OFF. Tariffs subject to possible shut-down must not be used here.
- When using power generated on site (use of power generated by the PV system to meet own requirements):
During the power-OFF period, it is **not** possible to operate the compressor utilising power generated on site.
- Protect the power cable to the heat pump control unit with an MCB/fuse of max. 16 A.
- For accessories and external components that will not be connected to the heat pump control unit, provide the power supply via the same MCB/fuse, or at least on the same phase, as the heat pump control unit.
Connection to the same MCB/fuse provides additional safety when the power is switched off. Observe the power consumption of the connected consumers.
- If the mains connection is made with a flexible power cable, it must be ensured that the live conductors are pulled taut before the earth conductor in the event of strain relief failure. The length of the earth conductor wire will depend on the design.

Heat pump control unit power supply 230 V~

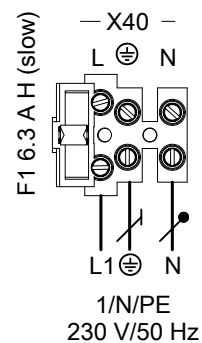


Fig. 44

Note

- *This connection must be made with a flexible power cable.*
- *This supply must **never** be blocked.*
- Max. fuse rating 16 A
- Standard tariff: No economy tariff with power-OFF facility possible
- Recommended flexible power cable: 3 x 1.5 mm²
- Recommended flexible power cable with power-OFF facility: 5 x 1.5 mm²

Power supply (cont.)

Instantaneous heating water heater power supply

1/N/PE 230 V/50 Hz

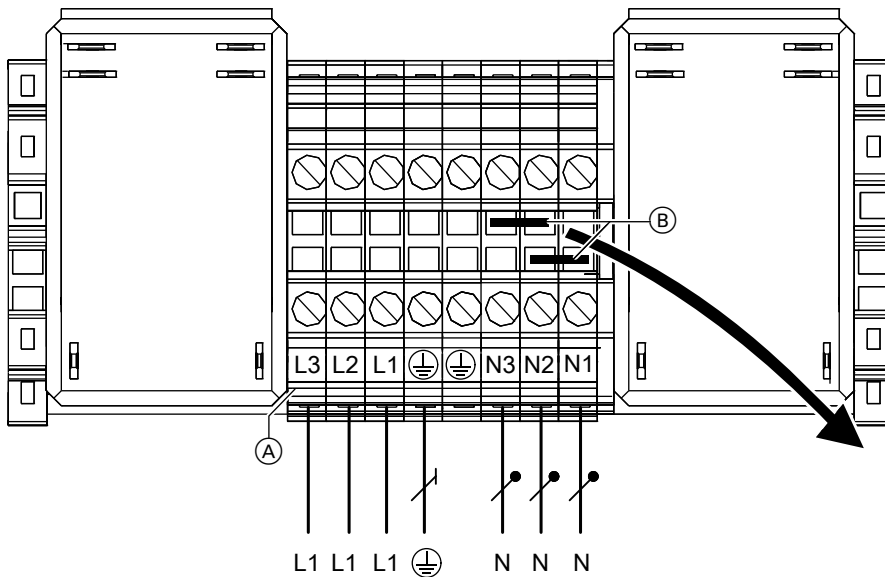


Fig. 45

- (A) Mains terminals, switching module, instantaneous heating water heater
- (B) Jumpers

Remove **both** jumpers (B) in the case of a 1/N/PE 230 V/50 Hz power supply.

- Recommended power cable:
7 x 2.5 mm²
- Max. fuse rating 16 A
- Economy tariff and power-OFF can be applied

3/N/PE 400 V/50 Hz

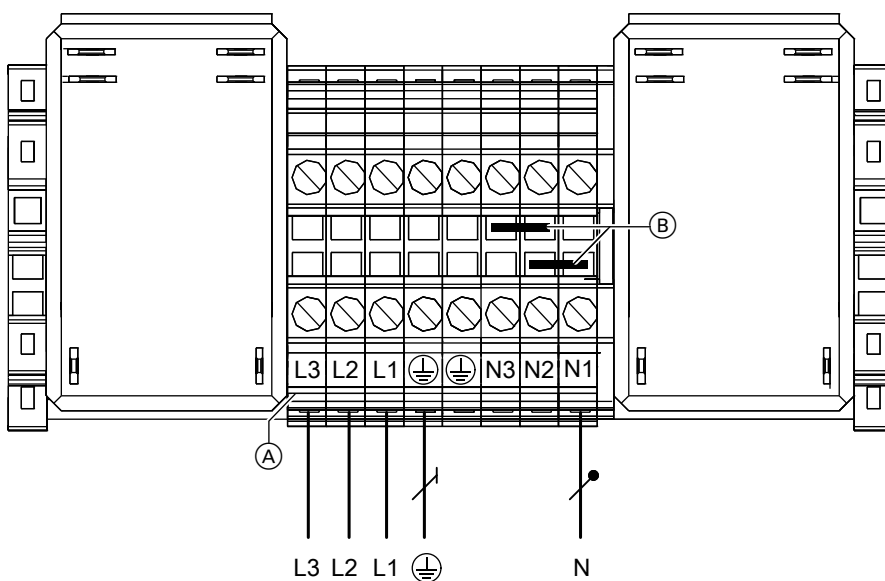


Fig. 46

- (A) Mains terminals, switching module, instantaneous heating water heater
- (B) Jumpers

Installation sequence

Power supply (cont.)

Do **not** remove jumpers (B) in the case of a 3/N/PE 400 V/50 Hz power supply.

- Recommended power cable:
5 x 2.5 mm²
- Max. fuse rating 16 A
- Economy tariff and power-OFF can be applied

Outdoor unit: Power supply

- Economy tariff and power-OFF can be used.
- No parameters need to be set when using economy tariff with power-OFF. The compressor is shut down during the power-OFF time.
- During power-OFF, the diagnostic functions for the outdoor unit are not supported.

Note

Free terminals for internal use.

Outdoor unit power supply 230 V~

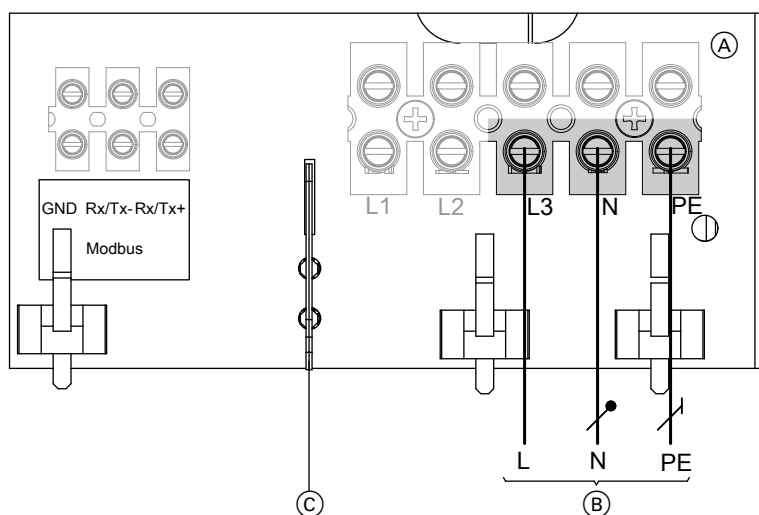


Fig. 47

- (A) Outdoor unit wiring chamber: See "Opening the outdoor unit wiring chamber".
- (B) Power supply 230 V/50 Hz

- (C) Separator (supplied)

Note

Nothing must be connected to L1 or L2.



Danger

Serious injury can be caused by electric current and appliance damage can result if wires drift into the adjacent voltage area. It is essential to insert the separator supplied.

Power supply (cont.)

Types	Cable	Max. cable length	Max. fuse rating
221.A04	3 x 2.5 mm ²	29 m	B16A
221.A06	3 x 2.5 mm ²	29 m	B16A
221.A08	3 x 2.5 mm ²	29 m	B16A
221.A10	3 x 2.5 mm ² Or 3 x 4.0 mm ²	20 m 32 m	B25A
221.A13	3 x 2.5 mm ² Or 3 x 4.0 mm ²	20 m 32 m	B25A
221.A16	3 x 2.5 mm ² Or 3 x 4.0 mm ²	20 m 32 m	B25A

Outdoor unit power supply 400 V~

- ! Please note**
 Incorrect phase sequence can cause damage to the appliance.
 Make the compressor power supply **only** in the phase sequence specified (see terminals) with a **clockwise** rotating field.

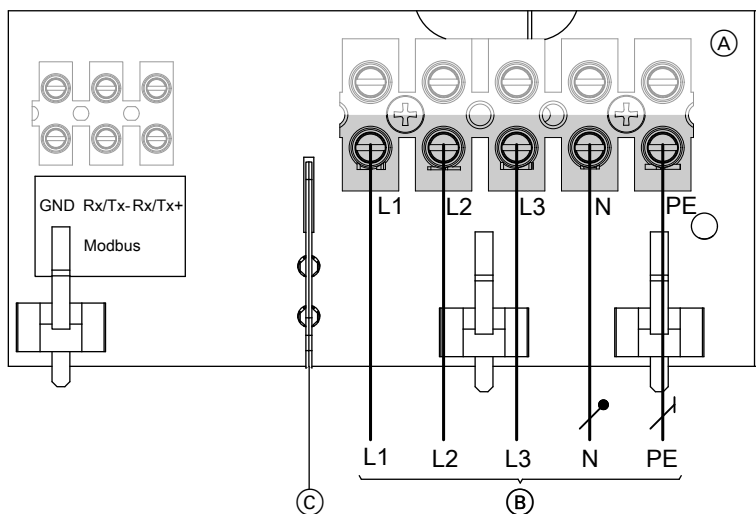


Fig. 48

- (A) Outdoor unit wiring chamber: See "Opening the outdoor unit wiring chamber".
 (B) Power supply 400 V/50 Hz
 (C) Separator (supplied)

! Danger
 Serious injury can be caused by electric current and appliance damage can result if wires drift into the adjacent voltage area.
 It is essential to insert the separator supplied.

Types	Cable	Max. cable length	Max. fuse rating
221.A10	5 x 2.5 mm ²	30 m	B16A
221.A13	5 x 2.5 mm ²	30 m	B16A
221.A16	5 x 2.5 mm ²	30 m	B16A

Power supply with power-OFF: Without on-site load disconnection

The power-OFF signal is connected directly to the heat pump control unit. The compressor is "forced" off when power-OFF is enabled.

Parameter "**Output for instant. heating water heater at power-OFF 790A**" determines whether and at what stage an instantaneous heating water heater remains operational during the power-OFF period.

Note

Observe the technical connection conditions of the relevant power supply utility.

- Ⓒ Heat pump compressor (outdoor unit)
- Ⓓ Heat pump control unit power supply: See chapter "Heat pump control unit power supply 230 V~"
- Ⓔ Premium tariff meter
- Ⓕ Ripple control receiver backup fuse
- Ⓖ Ripple control receiver (contact open: Power-OFF enabled); feed: TNC system
- Ⓗ Economy tariff meter
- Ⓚ Feed: TNC system

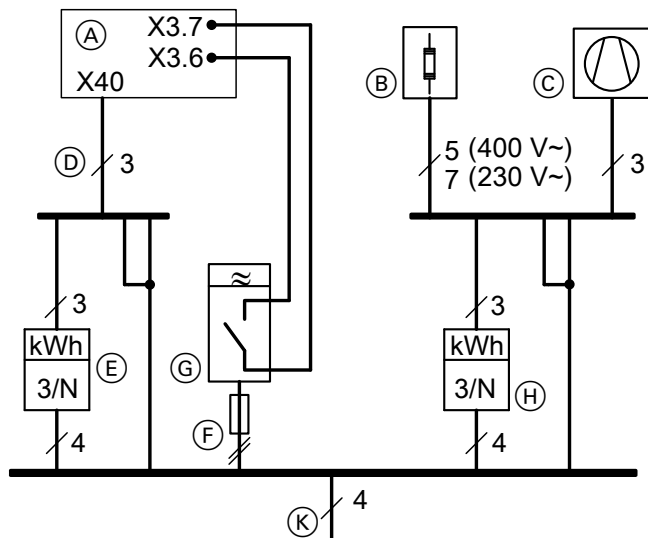


Fig. 49 Diagram excluding fuses and RCD

- Ⓐ Heat pump control unit (indoor unit, luster terminals: See chapter "Indoor unit: Overview of connections")
- Ⓑ Instantaneous heating water heater (if installed)

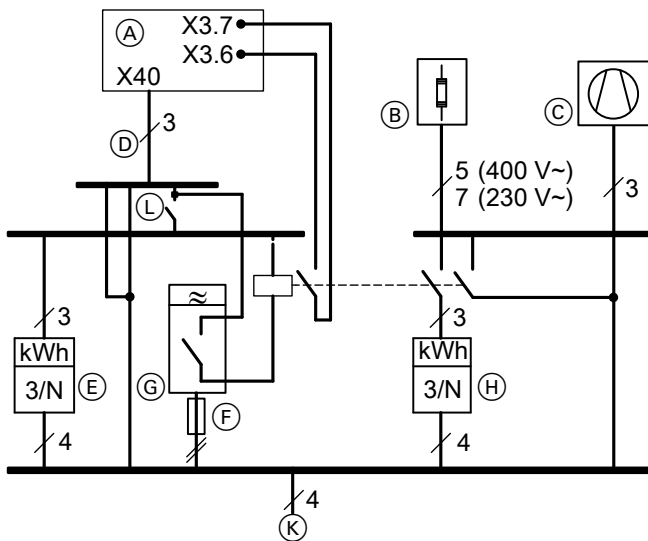
Power supply with power-OFF: With on-site load disconnection

The power-OFF signal is connected to the on-site contactor of the economy tariff power supply and to the heat pump control unit. The compressor **and** instantaneous heating water heater are "forced" off when power-OFF is enabled.

Note

Observe the technical connection conditions of the relevant power supply utility.

Power supply (cont.)



- Ⓒ Heat pump compressor (outdoor unit)
- Ⓓ Heat pump control unit power supply: See chapter "Heat pump control unit power supply 230 V~"
- Ⓔ Premium tariff meter
- Ⓕ Ripple control receiver backup fuse
- Ⓖ Ripple control receiver (contact open: Power-OFF enabled) with backup fuse
- Ⓗ Economy tariff meter
- Ⓚ Feed: TNC system
- Ⓛ Mains isolator

Fig. 50 Diagram excluding fuses and RCD

- Ⓐ Heat pump control unit (indoor unit, luster terminals: See chapter "Indoor unit: Overview of connections")
- Ⓑ Instantaneous heating water heater (if installed)

Mains power supply in conjunction with on-site power consumption

Without power-OFF

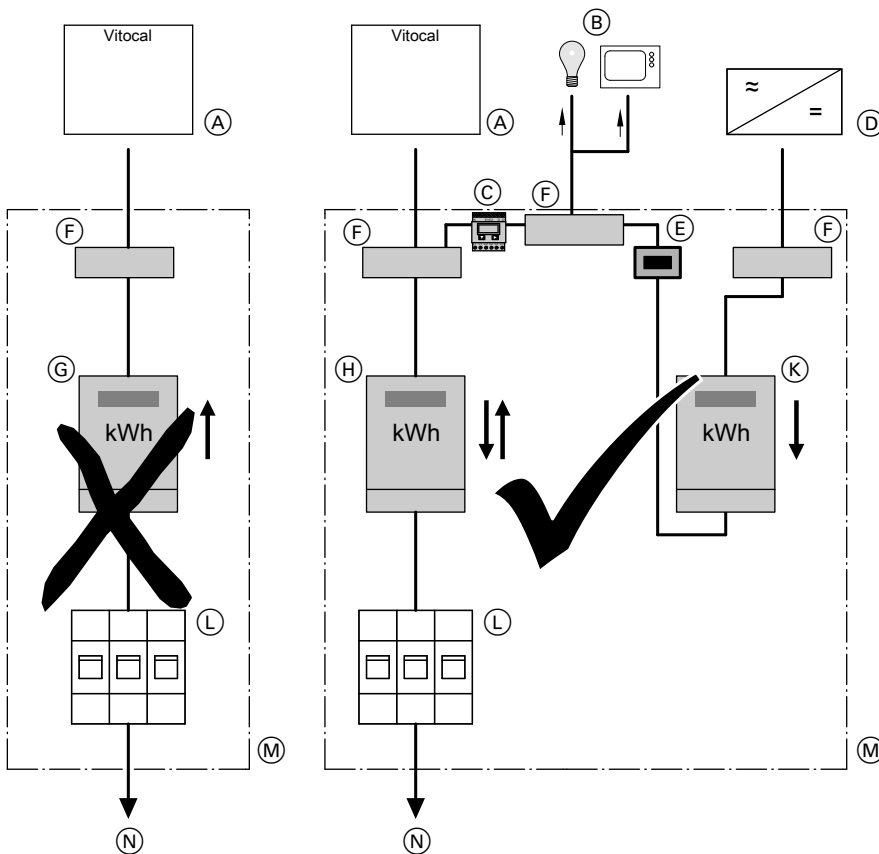


Fig. 51

- Ⓐ Heat pump
- Ⓑ Additional consumers (of power generated on site) in the household
- Ⓒ Electricity meter
- Ⓓ Inverter
- Ⓔ Isolator for the PV system

Installation sequence

Power supply (cont.)

- (F) Terminal
- (G) Double-tariff meter (for special tariff for heat pump)
Not permissible in conjunction with PV systems for on-site power consumption
- (H) Bi-directional meter (for PV systems to consume power on site):
Energy taken from power supply utility and energy fed into power supply utility
- (K) Meter with reverse block:
For energy generated by PV system
- (L) Isolator for the domestic power supply connection (distribution panel)
- (M) Distribution panel
- (N) Domestic distribution box

Smart Grid

The Smart Grid functions are switched via the two PSU floating contacts.

Connection options for the two floating contacts:

- To EA1 extension as shown in Fig. 52
- To the heat pump control unit as shown in Fig. 53

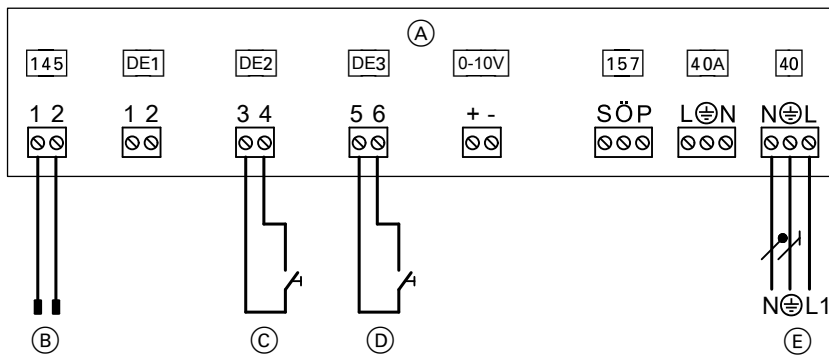


Fig. 52

- (A) EA1 extension
- (B) Connection to controller and sensor PCB
- (C) Floating N/O contact 1: The agreement of the power supply utility may be required
- (D) Floating N/O contact 2: The agreement of the power supply utility may be required
- (E) Power supply 1/N/PE 230 V/50 Hz

Note

- If Smart Grid is enabled ("**Enable Smart Grid 7E80**" set to "**1**"), both inputs DE2 and DE3 **cannot** be used for signals "External demand" or "External blocking".
- The power-OFF function is integral to Smart Grid. Therefore do **not** connect the power-OFF signal to terminals X3.6 and X3.7. Do **not** remove jumper.

Connection to EA1 extension

Condition: "**Enable Smart Grid 7E80**" must be at "**1**".

Connection to heat pump control unit

Condition: "**Enable Smart Grid 7E80**" must be at "**4**".

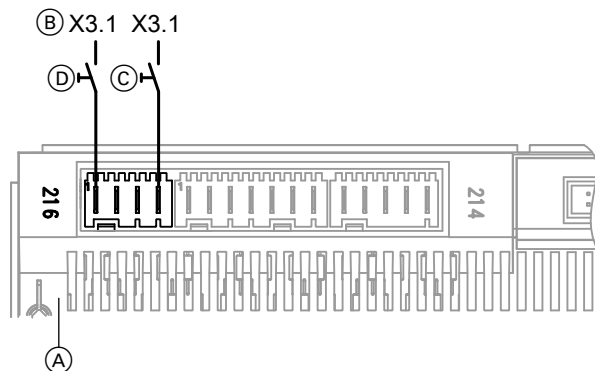


Fig. 53

- (A) Main PCB
- (B) Connection X3.1 (L') on the luster terminals

Power supply (cont.)

- Ⓒ Floating contact 1: The agreement of the power supply utility may be required
- Ⓓ Floating contact 2: The agreement of the power supply utility may be required

Note

- *If Smart Grid is connected to the two digital inputs on main PCB ("**Enable Smart Grid 7E80**" set to "4"), the external hook-up for the heating/cooling circuits must not be switched on ("**Remote control 2003**" set to "2"). Otherwise the Smart Grid will not be active.*
- *The power-OFF function is integral to Smart Grid. In this case, therefore, the power-OFF signal must **not** be connected to connections X3.6 and X3.7.*

Closing the heat pump**Please note**

If a casing door is not securely closed this can lead to damage from condensation, vibrations and excessive noise.

- Seal the appliance so it is soundproof and diffusion-proof.
- On pipe and hose outlets, ensure the thermal insulation is seated correctly.

**Danger**

The absence of system component earthing can lead to serious injury from electrical current and component damage in the event of an electrical fault.

Attach earth conductor to front panel and side panel.

Indoor unit: Fitting the front panels

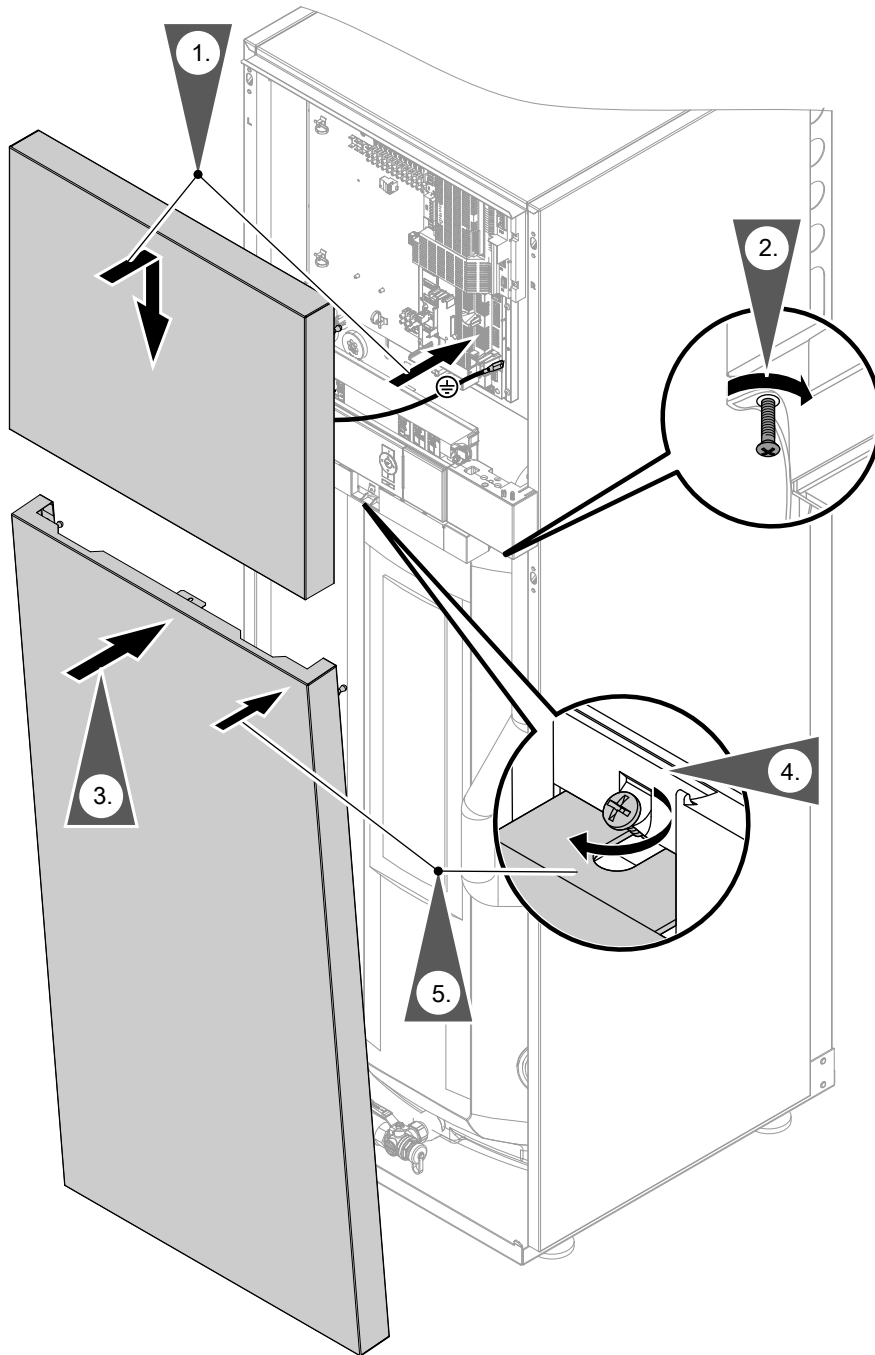


Fig. 54

- 4. Ensure that the locking screw is tightened before operating.

Outdoor unit: Fitting the side cover

In reverse order to "Opening the outdoor unit wiring chamber": See page 24.



Steps - commissioning, inspection and maintenance

			Page
•	•	•	1. Opening the heat pump 60
•	•	•	2. Compiling reports 60
•	•	•	3. Checking the refrigerant circuit for leaks 60
•	•	•	4. Filling and venting on the secondary side 60
•	•	•	5. Filling and venting the DHW cylinder on the DHW side 62
•	•	•	6. Shifting the cylinder temperature sensor for increased DHW convenience 62
•	•	•	7. Checking the expansion vessel and heating circuit pressure 62
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•	•	•	10. Checking the protective magnesium anode 63
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•	•	•	12. Draining the appliance on the DHW side 64
•	•	•	13. Cleaning the DHW cylinder 64
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Opening the heat pump



Danger

Contact with live components can lead to serious injury from electric current. Some components on PCBs remain live even after the power supply has been switched off.

- **Never touch** the wiring chambers: See chapter "Indoor unit: Overview of connections" and "Outdoor unit: Overview of connections".
- When working on the appliances (indoor/outdoor units), isolate the system from the power supply, e.g. at the separate MCB/fuse or a mains isolator. Check that it is no longer live. Safeguard against unauthorised reconnection.
- Prior to working on the appliance, wait at least 4 min until the voltage has completely dropped out.



Danger

The absence of system component earthing can lead to serious injury from electrical current and component damage in the event of an electrical fault.

All earth connectors **must** be reconnected. The appliance and pipework must be connected to the equipotential bonding of the building.



Please note

Commissioning immediately after siting the appliance can lead to appliance damage. Wait **at least 30 min** between siting and commissioning the appliance.



Please note

Refrigerant can escape when working on the refrigerant circuit. Work on the refrigerant circuit must **only** be carried out by a certified contractor (in accordance with Regulation (EU) No 517/2014 and 2015/2067).

1. Remove front panel: See page 32.
2. When work is complete, close the heat pump: See page 57.



For commissioning the appliance, see also the "Vitotronic 200" operating instructions.



Compiling reports

Enter the readings taken during commissioning in the reports on page 92 onwards and the operator's log (if available).



Checking the refrigerant circuit for leaks

Check the connections for refrigerant leaks.



Danger

Direct contact with refrigerant can be harmful to the skin.

Wear safety goggles and protective gloves when working on the refrigerant circuit.



Please note

Refrigerant can escape when working on the refrigerant circuit.

- Always observe regulations and guidelines on handling this type of refrigerant.
- Work on the refrigerant circuit must **only** be carried out by a certified contractor (in accordance with Regulation (EU) No 517/2014 and 2015/2067).



Filling and venting on the secondary side

Unsuitable fill and top-up water increases the level of deposits and corrosion. This can lead to system damage.

Hard water can also cause damage to the instantaneous heating water heater in particular.

Observe VDI 2035 regarding quality and amount of heating water, including fill and top-up water.

- Flush the heating system thoroughly before filling.
 - Only fill with water of potable quality.
 - Only fill and operate appliances that have an instantaneous heating water heater with softened water.
- For further information about fill and top-up water: See technical guide "Heat pump principles".



Filling and venting on the secondary side (cont.)

- Move the control unit panel into the service position:
See page 82.
- Open the programming unit:
See page 81.

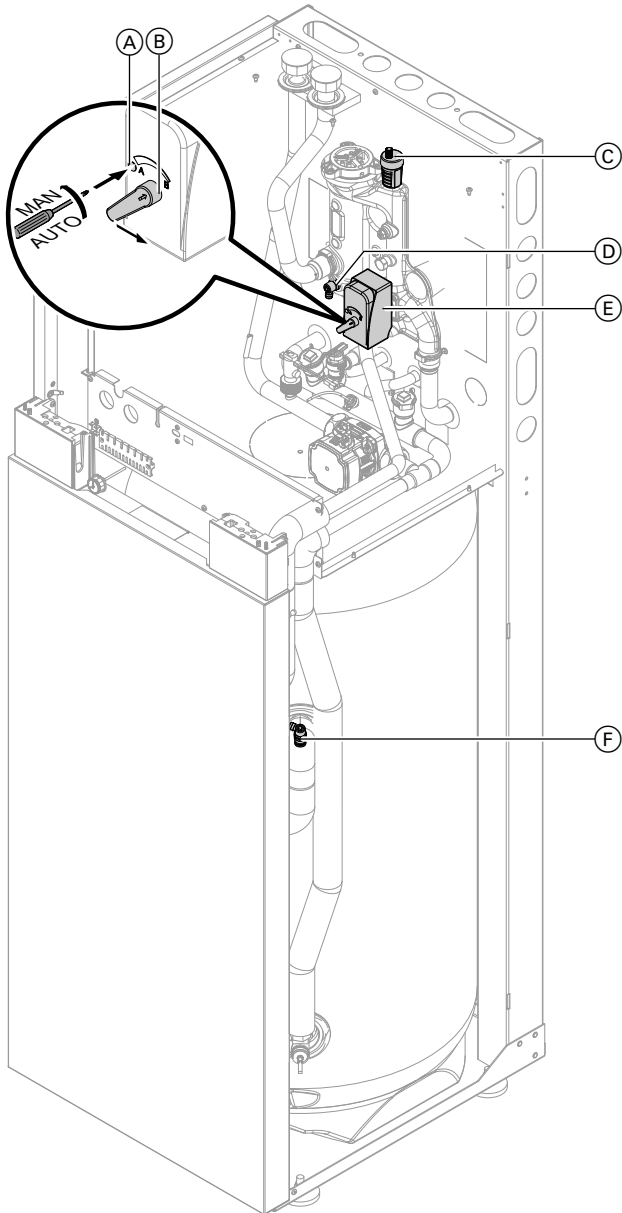


Fig. 55

1. Open any non-return valves installed on site.
2. Check the pre-charge pressure of the expansion vessel. Adjust the pre-charge pressure to match the system conditions if necessary.
3. Fill (flush) and vent the secondary circuit via an on-site connection.
 - ! **Please note**
 - Leaking hydraulic connections lead to appliance damage.
 - Check the internal and on-site hydraulic connections for leaks.
 - In the event of leaks, switch off the appliance immediately. Drain off liquid via the drain valve. Check the seating of seal rings. **Always** replace displaced seal rings.
4. Check the system pressure at the pressure gauge. Top up with water if required.
 - Minimum system pressure: 0.8 bar (80 kPa)
 - Permissible operating pressure: 3.0 bar (0.3 MPa)
5. Move the control unit panel into the service position.
6. Open the programming unit.
7. Slightly open quick-action air vent valve (C); it remains open. Connect the on-site hose to secondary circuit air vent valve (D).
- ! **Please note**
- Escaping liquids can lead to electrical faults. Protect electrical components from escaping liquids.
8. Open secondary circuit air vent valve (D).
- ! **Danger**
- Escaping hot water and hot steam can cause serious injury and damage the heating system. Only open drain and fill valves when the heating system is cold.
9. Move 3-way diverter valve (E) to its centre position: Press (A) and turn anti-clockwise to lock in the "MAN" position. Move lever (B) to a vertical position.
10. If necessary, vent the indirect coil in the DHW cylinder using air vent valve (F) for the DHW cylinder.
11. Close secondary circuit air vent valve (D).
12. Set 3-way diverter valve to the "AUTO" position: Turn (A) clockwise.



Filling and venting the DHW cylinder on the DHW side

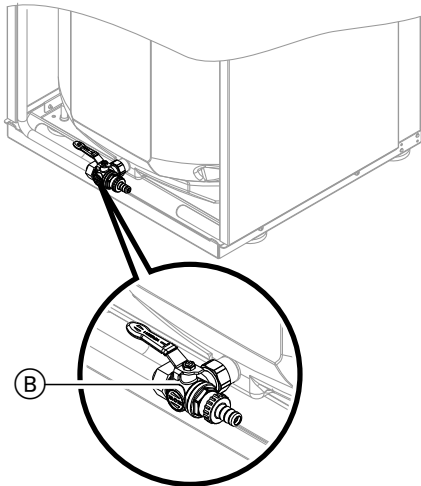


Fig. 56

1. The lever on valve (B) must be in the "left" position.
2. Open the on-site DHW supply and a DHW draw-off point.
3. Once air stops coming out of the DHW draw-off point, the loading cylinder is completely filled.



Shifting the cylinder temperature sensor for increased DHW convenience

For greater DHW convenience, the cylinder temperature sensor can be pushed into the sensor well as far as max. 50 mm beyond the marking. Tighten the plastic screw again by hand to secure it in place.

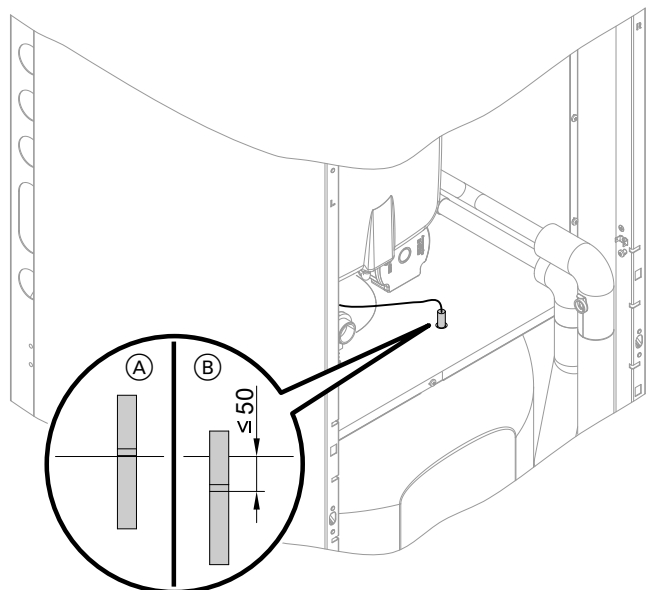


Fig. 57

- (A) Normal DHW convenience
- (B) Increased DHW convenience



Checking the expansion vessel and heating circuit pressure

Observe engineering information.
Heat pump technical guide

   **Testing the anode connection**

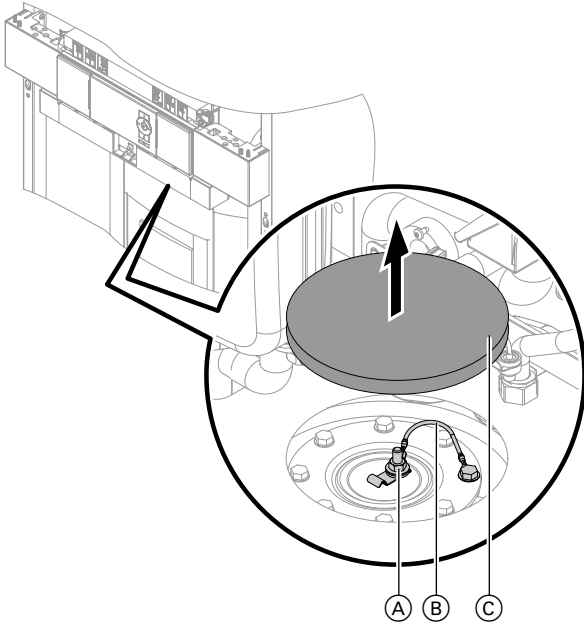





Fig. 58

1. Remove thermal insulation (C).
2. Check that earth cable (B) is connected to protective magnesium anode (A).
3. Insert thermal insulation (C), ensuring it is impermeable.

   **Measuring the anode earth current with an anode tester**

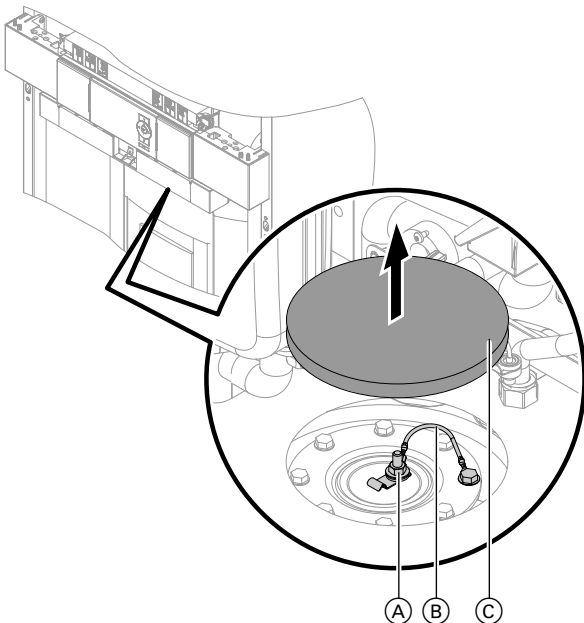


Fig. 59

1. Remove thermal insulation (C).
2. Remove earth cable (B) from protective magnesium anode (A).
3. Connect the tester (measuring range up to 5 mA) in series across tab (A) of protective magnesium anode and earth cable (B).

Anode earth current	Protective magnesium anode
> 0.3 mA	Function OK
< 0.3 mA	Visual inspection required: See chapter "Testing the protective magnesium anode".

4. Insert thermal insulation (C), ensuring it is impermeable.

   **Checking the protective magnesium anode**

We recommend replacing the protective magnesium anode once it has been reduced to a diameter of 10 to 15 mm.



Replacing the protective magnesium anode

Note

If the protective magnesium anode needs to be replaced, a maintenance-free impressed current anode (accessories) can be used.

For removal of the protective magnesium anode: See diagram in chapter "Cleaning the DHW cylinder".

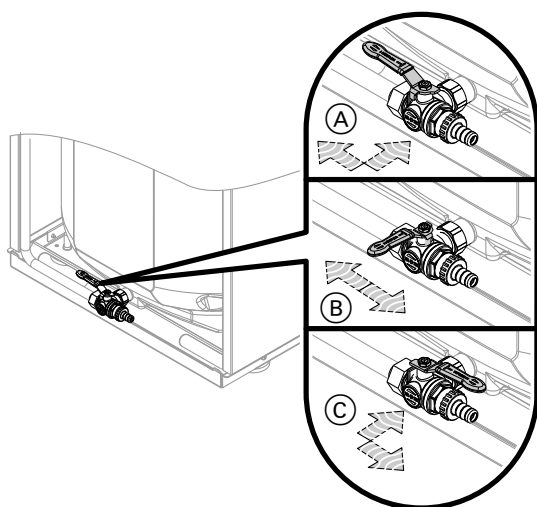


Please note

A short circuit between the protective magnesium anode and the indirect coil negates the protective effect of the magnesium anode. This leads to corrosion damage on the DHW cylinder. Before connecting the electrical cables, check the resistance across terminals (A) and (B) (see diagram in chapter "Cleaning the DHW cylinder"). If the resistance is significantly less than infinity, check whether the protective magnesium anode is touching the indirect coil.



Draining the appliance on the DHW side



- (C) Drain the drinking water circuit in the appliance **and** the DHW cylinder via the DHW connection. The cold water connection remains filled.

1. Connect the hose to the drain valve and route it into a suitable container or drain outlet.

Note

Ensure adequate ventilation in the DHW pipework.

2. Turn drain valve from lever position (A) to lever position (B) or (C) as required.

Fig. 60

- (A) Operation
- (B) Drain the drinking water circuit in the appliance **excluding** the DHW cylinder via the cold water connection



Cleaning the DHW cylinder

According to EN 806, a visual inspection and (if necessary) cleaning must be carried out no later than 2 years after commissioning, and as required thereafter.



Cleaning the DHW cylinder (cont.)

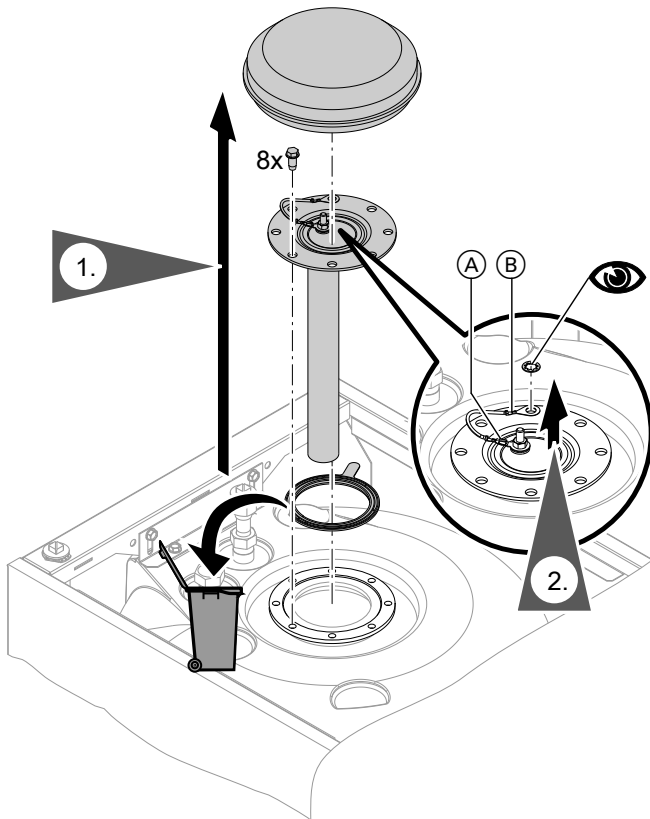


Fig. 61

1. Remove the protective magnesium anode.



Danger

The uncontrolled escape of DHW can cause scalding and building damage. Only open DHW and heating water connections with a depressurised DHW cylinder.



Please note

Negative pressure in the DHW cylinder can cause material damage. The air vent valve must always be open when draining the DHW cylinder with a suction pump.

3. To prevent contaminants entering the pipework, separate the DHW cylinder from the pipework.

4. Remove loose deposits with a pressure cleaner.



Please note

Pointed or sharp cleaning tools will damage the cylinder interior. Only use plastic tools to clean the inside.

5. Use a chemical cleaning agent to remove hard deposits that cannot be removed with a pressure cleaner.



Please note

Cleaning agents containing hydrochloric acid will attack the DHW cylinder material. Only use pH-neutral cleaning agents.



Danger

Cleaning agent residues can result in poisoning.

Fully drain all cleaning agent. Always observe the information provided by the cleaning agent manufacturer.

6. Flush the DHW cylinder thoroughly after cleaning.

7. Fit the protective magnesium anode.



Please note

A short circuit between the protective magnesium anode and the indirect coil negates the protective effect of the magnesium anode. This leads to corrosion damage on the DHW cylinder.

Before connecting the cables, check the resistance across terminals (A) and (B). If the resistance is significantly less than infinity, check whether the protective magnesium anode is touching the indirect coil.



Checking the indoor unit electrical connections for firm seating



Checking that the fan in the outdoor unit can run freely



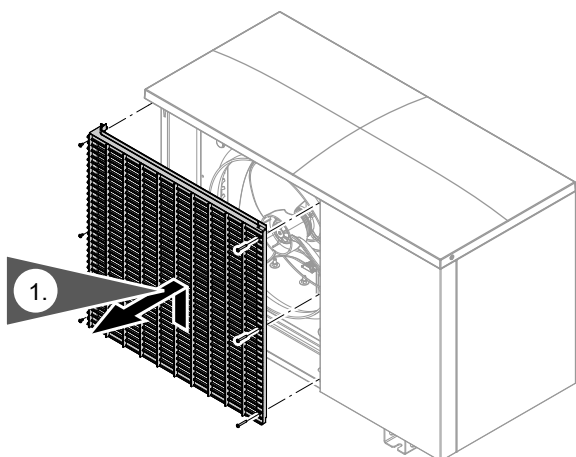
Danger

Contact with the fans while they are operating can result in serious cutting injuries.

- Isolate the outdoor unit from the power supply. Safeguard against unauthorised reconnection.
- Do not open the appliance until the fan has come to a stop.



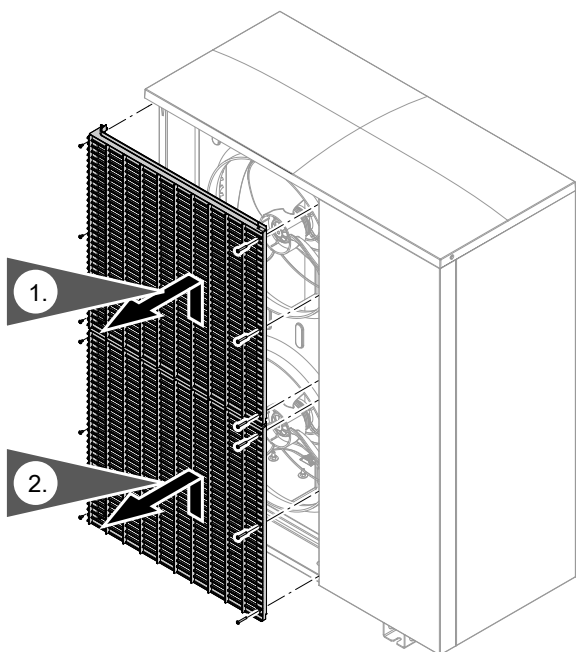
Outdoor unit with 1 fan



2. Turn the fan by hand.

Fig. 62

Outdoor unit with 2 fans



3. Turn the fans by hand.

Fig. 63



Cleaning the outdoor unit heat exchanger (evaporator)



Danger

If you touch live components or they come into contact with water, this can result in serious injury due to electric shock.

- Isolate the outdoor unit from the power supply and safeguard against reconnection.
- Protect the outdoor unit against moisture.



Danger

Contact with the fans while they are operating can result in serious cutting injuries.

- Isolate the outdoor unit from the power supply and safeguard against reconnection.
- Do not open the appliance until the fan has come to a stop.



Cleaning the outdoor unit heat exchanger... (cont.)

Cleaning with compressed air

1. Open the outdoor unit casing.



Danger

The sharp edges of the heat exchanger (evaporator) can cause injuries. Avoid contact.

2. Clean the heat exchanger **from the inside out** with compressed air.



Please note

Excessive air pressure from the front and sides can result in the deformation of the aluminium fins of the heat exchanger. Only point the compressed air gun at the heat exchanger from the front and from an adequate distance.

3. Check the aluminium fins of the heat exchanger for deformation and scratches. If necessary, repair with a suitable tool.
4. Close the outdoor unit casing.



Checking the outdoor unit electrical connections for firm seating



Danger

Contact with live components can lead to serious injury from electric current. Some components on PCBs remain live even after the power supply has been switched off.

- When working on the outdoor unit, isolate the system from the power supply, e.g. at a separate MCB/fuse or a mains isolator. Check the system is no longer live and safeguard against reconnection.
- Prior to working on the appliance, wait at least 4 min until the voltage on the charged capacitors has completely dropped out.



Closing the heat pump

See page 57.



Switching on the power supply

Switch on the power supply at the main MCB/fuse.



Starting the heat pump

Observe the following sequence:

1. Switch ON outdoor unit voltage.
2. Switch ON indoor unit voltage.
3. Start indoor unit at the ON/OFF switch.



Commissioning the system

Commissioning (configuration, parameter settings and function check) can be carried out with or without the commissioning wizard (see following chapter and service instructions for the heat pump control unit).

Note

The type and extent of the parameters depend on the appliance type, on the selected system scheme and the accessories employed.

Commissioning with the commissioning assistant

The commissioning assistant automatically guides you through all the menus where settings have to be made. For this, "Coding level 1" is automatically active.

! Please note

- Incorrect operation at "Coding level 1" may result in damage to the appliance and the heating system. Observe the service instructions for the "Vito-tronic 200", otherwise the appliance warranty will be void.

Switch ON the ON/OFF switch on the control unit.

- The prompt "**Start commissioning?**" appears **auto-matically** on commissioning.

Note

The commissioning assistant can also be started manually:

To do this, press and hold when switching on the control unit (progress bar visible).

- When the unit is first commissioned, the display is in German.

Sprache	
Deutsch	DE <input checked="" type="checkbox"/>
Bulgarski	BG <input type="checkbox"/>
Cesky	CZ <input type="checkbox"/>
Dansk	DK <input type="checkbox"/>
Wählen mit	

Fig. 64

- Manually switching some appliance components during commissioning enables the control unit to display messages. These messages are not appliance faults.





Commissioning the system (cont.)

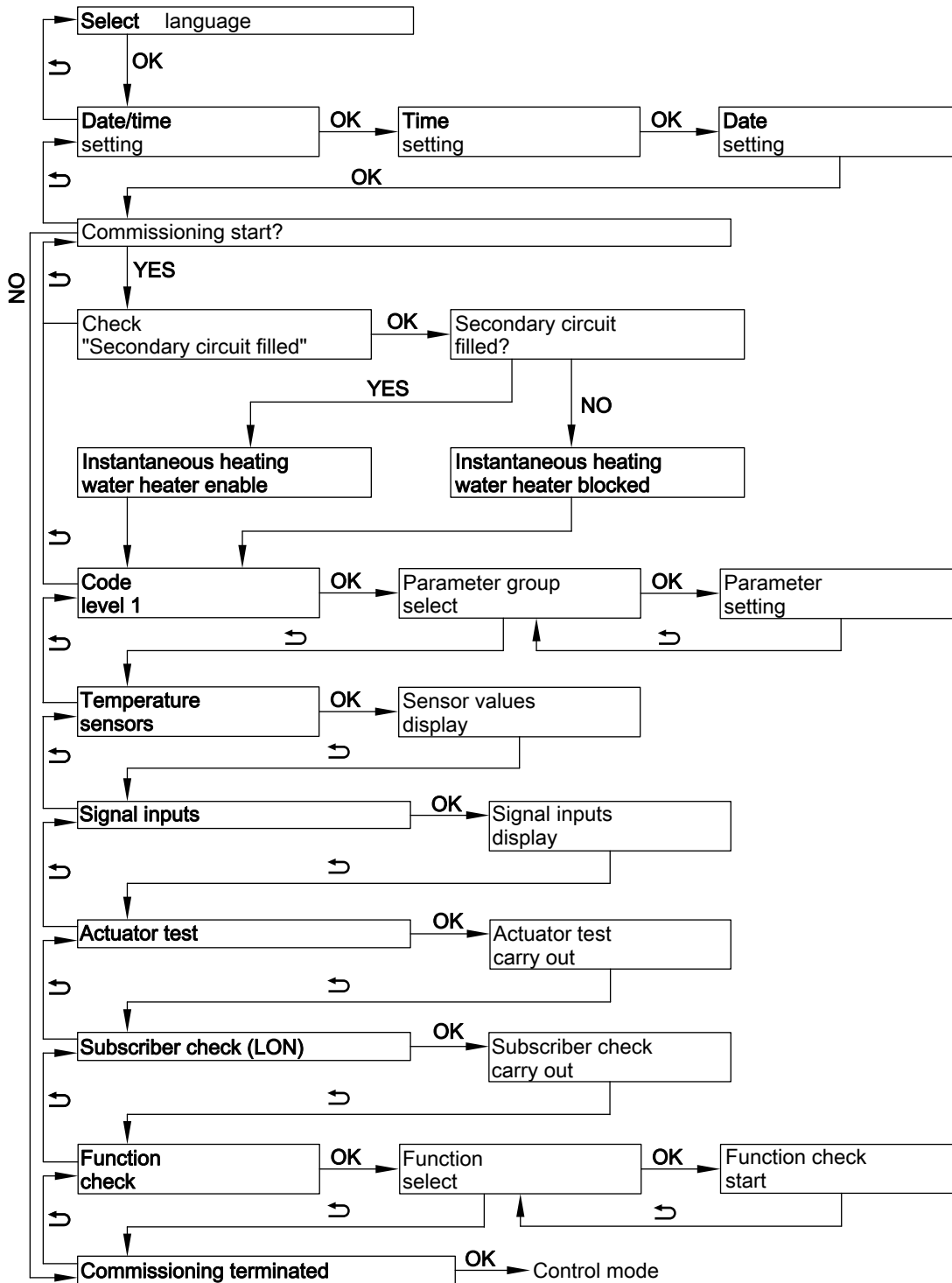


Fig. 65

Commissioning without the commissioning assistant

Activating the service menu

The service menu can be activated from any other menu.
 Press and hold **OK** + **≡** simultaneously for approx. 4 s.

Deactivating the service menu

The service menu remains active until it is disabled with **"Terminate service?"**, or if no key is pressed for 30 min.



Setting parameters using "System scheme 7000" as an example

To set a parameter, first select the parameter group and then the parameter.

Service menu:

1. Press and hold **OK** + simultaneously for approx. 4 s.
2. Select **"Coding level 1"**.
3. Select parameter group: **"System definition"**
4. Select parameter: **"System scheme 7000"**
5. Set a system scheme: e.g. **"6"**

Alternatively, if the service menu was already active:

Extended menu:

- 1.
2. **"Service"**
3. Select **"Coding level 1"**.
4. Select parameter group: **"System definition"**
5. Select parameter: **"System scheme 7000"**
6. Set a system scheme: e.g. **"6"**

Required parameters for components connected on site

Parameters may need to be set subject to the appliance type, the selected system scheme and the accessories used.



Detailed explanations of parameters
"Vitotronic 200" service instructions

Overview of required parameters: See the following chapter.

System scheme

Notes regarding the installation kit with mixer ("Type of assembly kit 7044" set to "1")

The following system components are not monitored, even if this is shown in the system scheme:

- Heating water buffer cylinder in the secondary circuit flow
- Heating circuit M3/HC3 (central heating and cooling)
- Separate cooling circuit

Overview of all available system schemes

Component	System scheme											
	0	1	2	3	4	5	6	7	8	9	10	11
Heating circuit												
A1/HC1	—	X	X	—	—	X	X	—	—	X	X	—
M2/HC2	—	—	—	X	X	X	X	X	X	X	X	—
M3/HC3	—	—	—	—	—	—	—	X	X	X	X	—
DHW cylinder	X	—	X	—	X	—	X	—	X	—	X	—
Heating water buffer cylinder	—	○	○	X	X	X	X	X	X	X	X	—
Heating water/coolant buffer cylinder	—	○	○	○	○	○	○	○	○	○	○	—
Swimming pool	—	○	○	○	○	○	○	○	○	○	○	—
Solar thermal system (only in conjunction with solar indirect coil set)	○	—	○	—	○	—	○	—	○	—	○	—



Commissioning the system (cont.)

Component	System scheme											
	0	1	2	3	4	5	6	7	8	9	10	11
Cooling												
A1/HC1	—	○	○	—	—	○	○	—	—	○	○	—
M2/HC2	—	—	—	○	○	○	○	○	○	○	○	—
M3/HC3	—	—	—	—	—	—	—	○	○	○	○	—
Sep. cooling circuit SKK	○	○	○	○	○	○	○	○	○	○	○	—
Energy meter	○	○	○	○	○	○	○	○	○	○	○	—
Ventilation unit	○	○	○	○	○	○	○	○	○	○	○	—

X Component is selected.

○ Component may be added.

For detailed information on system examples: See www.viessmann-schemes.com.

Parameters for circulation pumps and other components

Heating circuit pump

Parameter	Setting
"System definition" →	
"System scheme 7000"	<ul style="list-style-type: none"> ▪ With heating circuit HC1 without mixer or ▪ With heating circuit HC2 with mixer or ▪ With heating circuit HC3 with mixer

DHW circulation pump

Parameter	Setting
Extended menu →	
"Time program DHW circulation"	Set a time program.

Installation kit with mixer for heating circuit M2/HC2

Parameter	Setting
"System definition" →	
"Type of assembly kit 7044"	"1"
"Internal hydraulics" →	
"Rated output heating circuit pump HC2 734A"	Set the required rated output in %.

Mixer extension kit for heating circuit M3/HC3

Parameter	Setting
"System definition" →	
"System scheme 7000"	With heating circuit HC3 Note Set rotary switch S1 in the extension kit to "2": See "Mixer extension kit" installation instructions.


Remote control for heating/cooling circuit or Vitocomfort 200

Parameter	Setting
"Heating circuit 1"/"Heating circuit 2"/"Heating circuit 3" →	
"Remote control 2003" or "Remote control 3003" or "Remote control 4003"	"1" Note <i>To assign a heating circuit, set the code at the remote control: See "Vitolrol" installation instructions.</i>

External extension

Parameter	Setting
"System definition" →	
"External extension 7010"	"1" EA1 extension "2" AM1 extension "3" EA1 and AM1 extensions Note <i>For parameters for external functions, see the following table.</i>

Parameters for external functions
External demand

Parameter	Setting
"Internal hydraulics" → if necessary	
"Flow temperature external demand 730C"	Set flow temperature for external demand

External starting of the compressor; mixer in control mode or OPEN

Parameter	Setting
"System definition" →	
"Effect of external demand on heat pump/heating circuits 7014"	"0" to "7" (Observe parameter "Flow temperature external demand 730C")

External changeover of the operating status of various system components

Parameter	Setting
"System definition" →	
"System components for external changeover 7011"	"0" to "127"
"Operating status for external changeover 7012"	"0" to "3"
"Duration of external changeover 7013"	"0" to "12"

External blocking of compressor and pumps

Parameter	Setting
"System definition" →	
"Effect of external blocking on pumps/compressor 701A"	"0" to "31"



Commissioning the system (cont.)

External blocking of the compressor; mixer in control mode or CLOSED

Parameter	Setting
"System definition" →	
"Effect of ext. blocking on heat pump/heating circuits 7015"	"0" to "8"
"Effect of external blocking on pumps/compressor 701A"	"0" to "31"

External hook-up for heating/cooling circuits

Parameter	Setting
"Heating circuit 1"/"Heating circuit 2"/"Heating circuit 3" →	
"Remote control 2003" or "Remote control 3003" or "Remote control 4003"	"2"

Type AWOT(-M)-E-AC 221.A: Parameters for cooling function

Cooling function on systems without buffer cylinder

Parameter	Setting
"Cooling" →	
"Cooling function 7100"	"3"
"Cooling circuit 7101"	"1" Heating circuit HC1 "2" Heating circuit HC2 "3" Heating circuit HC3 "4" Separate cooling circuit SKK

Room temperature sensor for separate cooling circuit

Parameter	Setting
"Cooling" →	
"Ranking room temp sensor separate cooling circuit 7106"	"0" Connection F16 "1" Heating circuit HC1 "2" Heating circuit HC2 "3" Heating circuit HC3 "4" Do not adjust.


Cooling function on systems with heating water buffer cylinder

Parameter	Setting
"Cooling" →	
"Cooling function 7100"	"3"
"Cooling circuit 7101"	"1" Heating circuit HC1 "2" Heating circuit HC2 "3" Heating circuit HC3 "4" Separate cooling circuit SKK
"Buffer cylinder" →	
"Enable buffer cylinder/low loss header 7200"	"1" Note <i>Set only in conjunction with the system schemes 1 and 2. System schemes 3 to 10 require a buffer cylinder, which is preset. Do not set with system scheme 11.</i>

Room temperature sensor for separate cooling circuit

Parameter	Setting
"Cooling" →	
"Ranking room temp sensor separate cooling circuit 7106"	"0" Connection F16 "1" Heating circuit HC1 "2" Heating circuit HC2 "3" Heating circuit HC3 "4" Do not adjust.

Cooling function in systems with a heating water/coolant buffer cylinder

Parameter	Setting
"Cooling" →	
"Cooling function 7100"	"3"
"Buffer cylinder" →	
"Enable buffer cylinder/low loss header 7200"	"2"
"Heating circuit 1"/"Heating circuit 2"/"Heating circuit 3" →	
"Cooling 2030" and/or "Cooling 3030" and/or "Cooling 4030"	"2"

Parameters for solar DHW heating

Parameters in conjunction with solar control module type SM1	Setting
"Solar" →	
"Type solar control unit 7A00"	"3"
Parameter C0xx	See installation and service instructions for "Solar control module, type SM1".



Commissioning the system (cont.)

Parameters for instantaneous heating water heater

Parameter	Setting
"Electr booster heater" →	
"Enable instantaneous heating water heater 7900"	"1"
"Output for instant. heating water heater at power-OFF 790A"	"1" 3 kW "2" 6 kW "3" 9 kW



Please note

After the value "1" has been set for **"Enable instantaneous heating water heater 7900"**, the prompt **"Secondary circuit filled?"** automatically appears. If this prompt is responded to with **"No"**, the instantaneous heating water heater will not be enabled. Set **"Enable instantaneous heating water heater 7900"** to **"2"**. Fill the secondary circuit. Confirm prompt **"Secondary circuit filled?"** with **"Yes"**.

Enable instantaneous heating water heater for DHW heating

Parameter	Setting
"DHW" →	
"Enable electric heaters for DHW heating 6015"	"1"

Parameters for swimming pool water heating

Parameter	Setting
"System definition" →	
"External extension 7010"	"1" or "3"
"Swimming pool 7008"	"1"

Parameters for ventilation with Vitovent 200-C

Parameter	Setting
"Ventilation" →	
"Vitovent enable 7D00"	"2" Vitovent 200-C



Further enabling for Vitovent 200-C if necessary

Parameter	Setting
"Ventilation" →	
"Enable preheater bank electric 7D01"	"0" Defrosting without preheating coil ("Strategy, passive frost protection 7D2C") "1" Frost protection with preheating coil; defrosting via bypass "2" Frost protection with preheating coil; comfort function
"Strategy, passive frost protection 7D2C"	"0" Fans OFF "1" Defrosting via bypass "2" Supply air fan OFF
"Type of heat exchanger 7D2E"	"0" Countercurrent heat exchanger "1" Enthalpy heat exchanger
"Installation position 7D2F"	"0" Ceiling mounting "1" Wall mounting
"Function, external 230 V input, ventilation 7D3A"	"1" External switch (bathroom switch) enabled

Adjust values for Vitovent 200-C if necessary

Parameter	Setting
"Ventilation" →	
"Set room temperature 7D08"	"100" to "300" (± 10 to 30 °C)
"Flow rate reduced ventilation 7D0A"	Subject to sizing Ventilation unit service instructions
"Flow rate nominal ventilation 7D0B"	
"Flow rate intensive ventilation 7D0C"	


Parameters for ventilation with Vitovent 200-W/300-C/300-W

Parameter	Setting
"Ventilation" →	
"Vitovent enable 7D00"	"3" Vitovent 200-W or Vitovent 300-C or Vitovent 300-W



Commissioning the system (cont.)

Adjust values for Vitovent 200-W/300-C/300-W if necessary

Parameter	Setting
"Ventilation" →	
"Set room temperature C108"	Max. 4 K higher or lower than "Standard room temperature 2000" (adjustment value: 1 ± 0.1 °C)
"Background ventilation C109"	Subject to sizing
"Reduced ventilation C10A"	 Ventilation unit service instructions
"Standard ventilation C10B"	
"Intensive ventilation C10C"	
"Background ventilation, second fan duct C189" (Vitovent 200-W only)	
"Reduced ventilation, second fan duct C18A" (Vitovent 200-W only)	
"Standard ventilation, second fan duct C18B" (Vitovent 200-W only)	
"Intensive ventilation, second fan duct C18C" (Vitovent 200-W only)	


Parameters for ventilation with Vitovent 300-F

Parameter	Setting
"Ventilation" →	
"Vitovent enable 7D00"	"1" Vitovent 300-F

Further enabling for Vitovent 300-F if necessary

Parameter	Setting
"Ventilation" →	
"Enable preheater bank electric 7D01"	"1"
"Enable reheater bank hydraulic 7D02"	"1"
"Enable humidity sensor 7D05"	"1"
"Enable CO2 sensor 7D06"	"1"
"Type of heat exchanger 7D2E"	"0" Countercurrent heat exchanger "1" Enthalpy heat exchanger

Adjust values for Vitovent 300-F if necessary

Parameter	Setting
"Ventilation" →	
"Set room temperature 7D08"	"100" to "300" (± 10 to 30 °C)
"Flow rate reduced ventilation 7D0A"	 Ventilation unit service instructions
"Flow rate nominal ventilation 7D0B"	
"Flow rate intensive ventilation 7D0C"	



Parameters for utilisation of power generated on site

Parameter	Setting
"Photovoltaics" →	
"Enable own energy consumption PV 7E00"	"1"
"Threshold for electrical power 7E04"	"0" to "300" ($\hat{=}$ 0 to 30 kW)

Enable required functions for utilisation of power generated on site

Parameter	Setting
"Photovoltaics" →	
"Enable own energy consumption for set DHW temperature 2 7E10"	"1"
"Enable own energy consumption for DHW heating 7E11"	"1"
"Enable own energy consumption for heating water buffer cyl. 7E12"	"1"
"Enable own energy consumption for heating 7E13"	"1"
"Enable own energy consumption for cooling 7E15"	"1"
"Enable own energy consumption for coolant buffer cylinder 7E16"	"1"

Specify the temperature differential to the selected set value for the chosen function

Parameter	Setting
"Photovoltaics" →	
"Raise set DHW cylinder temperature PV 7E21"	"0" to "500" ($\hat{=}$ 0 to 50 K)
"Raise set heating water buffer cylinder temp PV 7E22"	"0" to "400" ($\hat{=}$ 0 to 40 K)
"Raise set room temperature PV 7E23"	"0" to "100" ($\hat{=}$ 0 to 10 K)
"Reduce set room temperature PV 7E25"	"0" to "100" ($\hat{=}$ 0 to 10 K)
"Reduce set coolant buffer cylinder temperature PV 7E26"	"0" to "100" ($\hat{=}$ 0 to 10 K)

Parameters for Smart Grid

Parameter	Setting
"Smart Grid" →	
"Enable Smart Grid 7E80"	"1" Connection to EA1 extension "4" Connection to heat pump control unit
"Smart Grid Enable elec heat 7E82"	"1" Stage 1 "2" Stage 2 "3" Stage 3

Specify the temperature differential to the selected set value for the chosen function

Parameter	Setting
"Smart Grid" →	
"Smart Grid set value increase for DHW heating 7E91"	"0" to "500" ($\hat{=}$ 0 to 50 K)
"Smart Grid set value increase for htg wtr buff 7E92"	"0" to "400" ($\hat{=}$ 0 to 40 K)
"Smart Grid set value increase for centr htg 7E93"	"0" to "100" ($\hat{=}$ 0 to 10 K)
"Smart Grid set value decrease for room t cool 7E95"	"0" to "100" ($\hat{=}$ 0 to 10 K)



Checking the heat pump for noise

Checking the appliance for unusual noises, e.g. operating noise of fan, compressor and pumps. Venting again if required.



Checking the system function

Displaying the system overview

The system overview displays the status of the heat pump and system components as well as the temperatures.

Service menu:

1. Press **OK** + simultaneously and hold for approx. 4 s.

2. **"Diagnosis"**

3. **"System overview"**

4. to toggle between "System overview, generation side" and "System overview, consumption side"



"Vitotronic 200" service instructions

Carrying out a function check

The function test serves to check the proper functioning of the different system components.

Service menu:

1. Press **OK** + simultaneously and hold for approx. 4 s.
2. **"Service functions"**
3. **"Function check"**
4. Start the required function, e.g. **"DHW"**. Only those functions are shown that correspond to the actual system equipment level.
During the function check, the system overview is displayed.

5. Terminate function with .



"Vitotronic 200" service instructions

Notes on the "Cooling circuit SKK" function

- The 4-way diverter valve in the outdoor unit is at zero volt in heating mode.
- In cooling mode, the 4-way diverter valve is live. The heat pump is operated in reverse (refrigerant circuit reversal).

Resetting the high limit safety cut-out

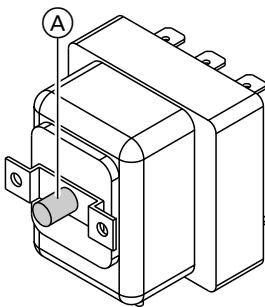


Fig. 66

- (A) High limit safety cut-out reset button



Please note

If the heat pump is exposed to temperatures below $-15\text{ }^{\circ}\text{C}$, e.g. during storage or transport, the high limit safety cut-out of the instantaneous heating water heater may respond. In this case, the instantaneous heating water heater will not heat up.

Heat up the high limit safety cut-out to above $20\text{ }^{\circ}\text{C}$. Press the reset button of the high limit safety cut-out.

Note

The high limit safety cut-out can only be reset if the temperature at the sensor is below $85\text{--}8\text{ }^{\circ}\text{C}$.



Instructing the system user

The system installer should hand the operating instructions to the system user and instruct the user in operating the system. This also includes all components added as accessories, such as remote controls.

Equipment and functions of the heating system must be entered in the form in the appendix to the operating instructions.

The system installer should also provide information on the required maintenance.



Overview of electrical components

- **Indoor unit:**
See page 38 onwards.
- **Outdoor unit:**
See page 47 onwards.

Indoor unit: Opening the programming unit

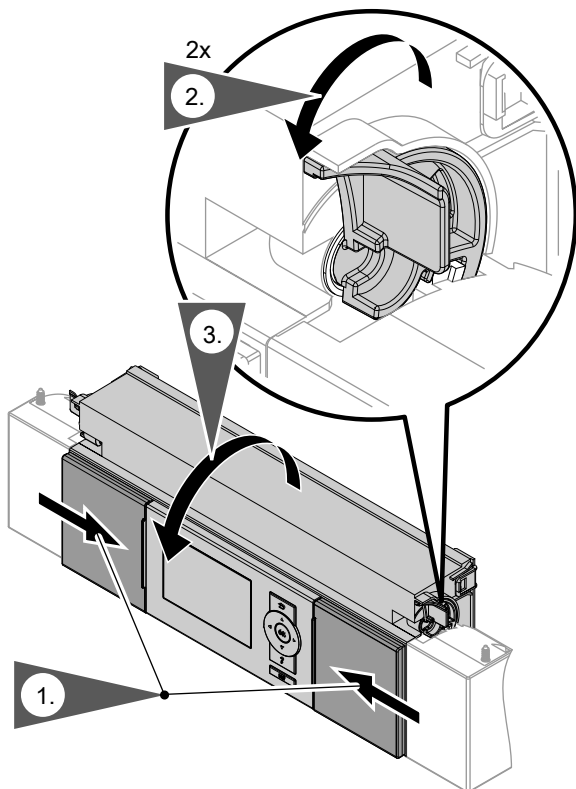


Fig. 67

Removing the cover from the programming unit if necessary

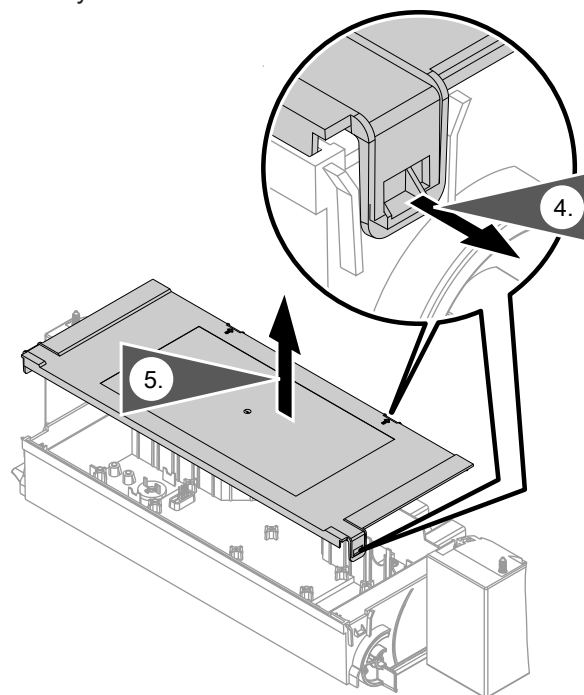


Fig. 68

Indoor unit: Placing the control unit panel in its service position

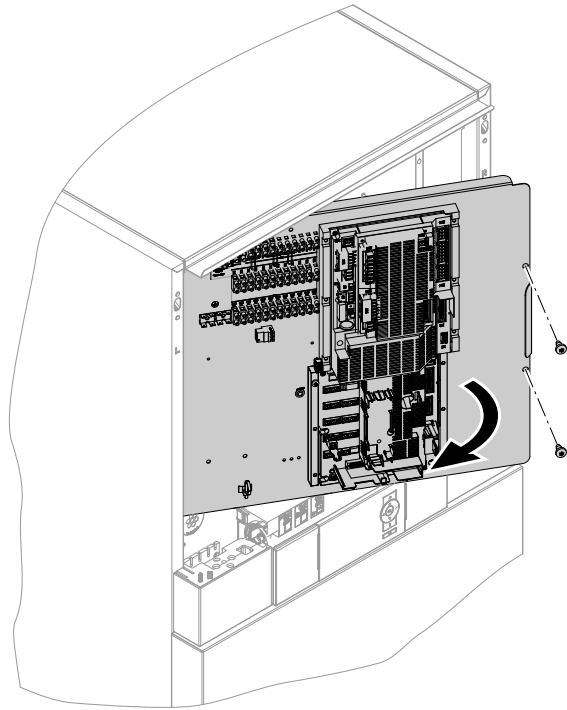
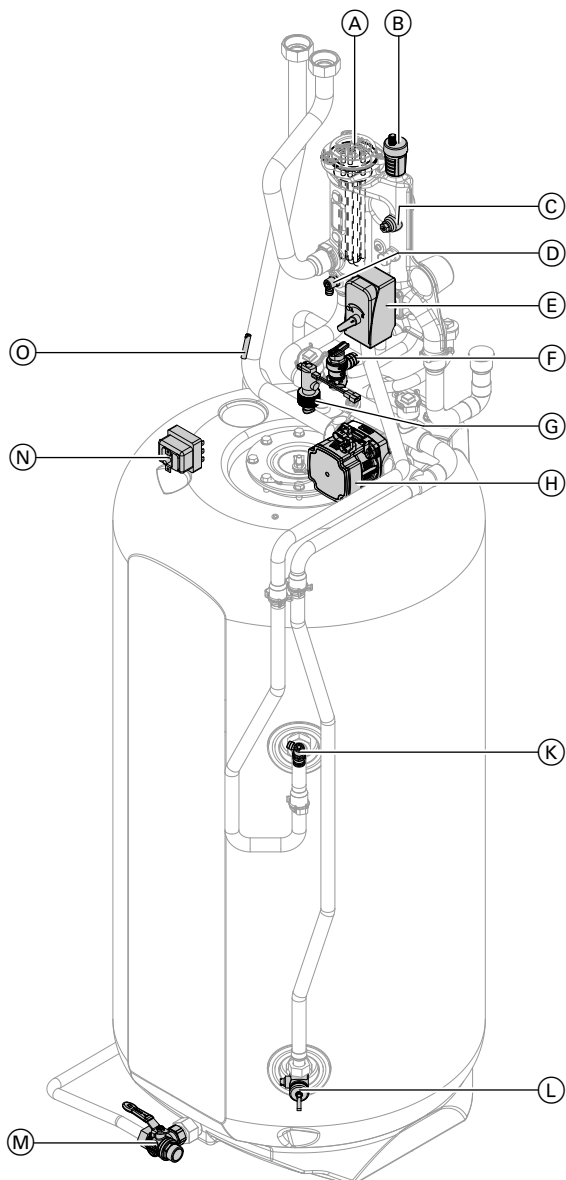


Fig. 69

Indoor unit: Overview of internal components



- Ⓒ Secondary circuit flow temperature sensor (F8)
- Ⓓ Air vent valve, secondary circuit
- Ⓔ 3-way diverter valve "Central heating/DHW heating"
- Ⓕ Safety valve
- Ⓖ Flow switch
- Ⓗ Secondary pump
- Ⓚ DHW cylinder air vent valve
- Ⓛ Secondary circuit drain and fill valve
Additionally, in conjunction with solar indirect coil set: Cylinder temperature sensor
- Ⓜ Drain and fill valve, DHW side
- Ⓝ High limit safety cut-out (STB), instantaneous heating water heater
- Ⓞ Secondary circuit return temperature sensor (F9)

Fig. 70

- Ⓐ Instantaneous heating water heater
- Ⓑ Quick-action air vent valve G $\frac{3}{8}$

Outdoor unit: Overview of internal components



Danger

Contact with live components can lead to serious injury from electric current. Some components on PCBs remain live even after the power supply has been switched off.

- When working on the outdoor unit, isolate the system from the power supply, e.g. at a separate MCB/fuse or a mains isolator. Check the system is no longer live and safeguard against reconnection.
- Prior to working on the appliance, wait at least 4 min until the voltage on the charged capacitors has completely dropped out.

Outdoor unit: Overview of internal components (cont.)

Outdoor unit with 1 fan

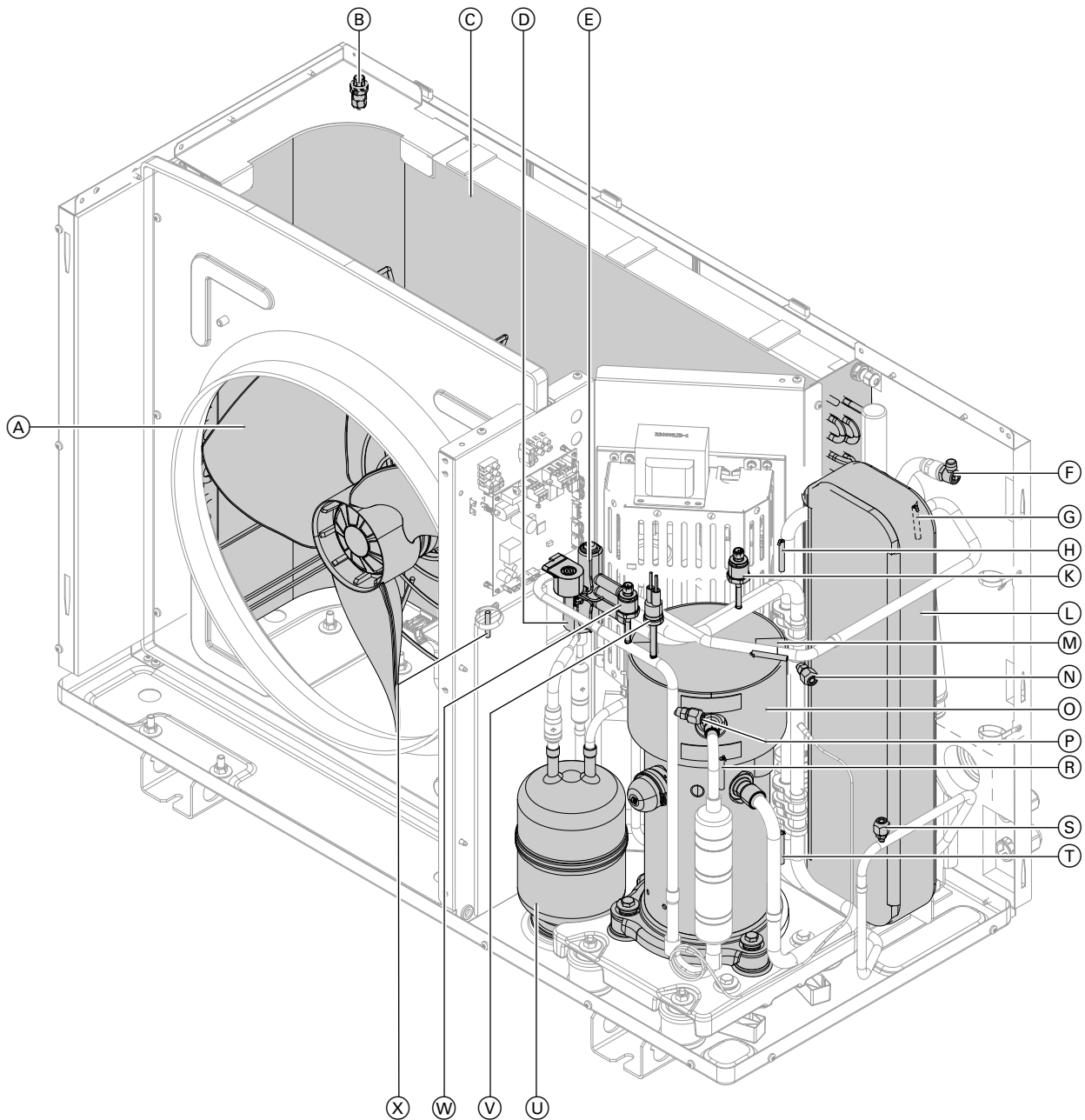


Fig. 71

- | | |
|---|---|
| <ul style="list-style-type: none"> (A) Fan (B) Air intake temperature sensor (T5) (C) Heat exchanger (evaporator) (D) Electronic expansion valve (E) 4-way diverter valve (F) Secondary circuit air vent valve (G) Secondary circuit flow temperature sensor upstream of instantaneous heating water heater (T1) (H) Evaporator suction gas temperature sensor (T7) (K) Low pressure sensor (L) Condenser | <ul style="list-style-type: none"> (M) Reversible suction gas temperature sensor (T3) (N) Schrader valve, low pressure side (O) Compressor (P) Schrader valve, high pressure side (R) Hot gas temperature sensor (T6) (S) Schrader valve, high pressure side (T) Compressor suction gas temperature sensor (T4) (U) Refrigerant receiver (V) Safety high pressure switch (W) High pressure sensor (X) Refrigerant circuit controller temperature sensor (T2) |
|---|---|

Outdoor unit: Overview of internal components (cont.)

Outdoor unit with 2 fans

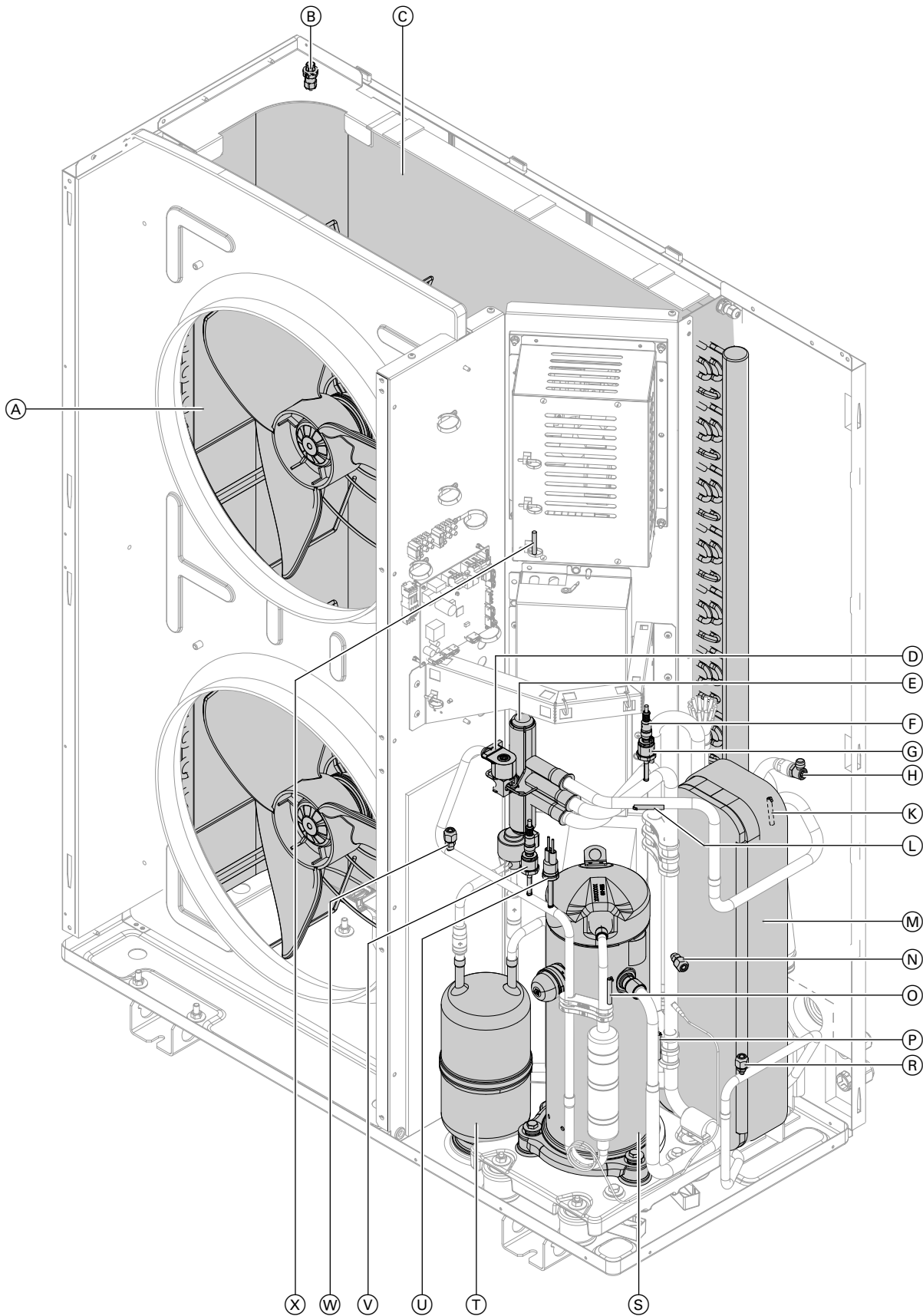


Fig. 72

- (A) Fan
- (B) Air intake temperature sensor (T5)
- (C) Heat exchanger (evaporator)
- (D) Electronic expansion valve

Outdoor unit: Overview of internal components (cont.)

- Ⓔ 4-way diverter valve
- Ⓕ Secondary circuit flow temperature sensor upstream of instantaneous heating water heater (T1)
- Ⓖ Low pressure sensor
- Ⓗ Secondary circuit air vent valve
- Ⓚ Evaporator suction gas temperature sensor (T7)
- Ⓛ Reversible suction gas temperature sensor (T3)
- Ⓜ Condenser
- Ⓝ Schrader valve, low pressure side
- Ⓞ Hot gas temperature sensor (T6)
- Ⓟ Compressor suction gas temperature sensor (T4)
- Ⓡ Schrader valve, high pressure side
- Ⓢ Compressor
- Ⓣ Refrigerant receiver
- Ⓤ Safety high pressure switch
- Ⓥ High pressure sensor
- Ⓦ Schrader valve, high pressure side
- Ⓧ Refrigerant circuit controller temperature sensor (T2)

Draining heat pump on the secondary side

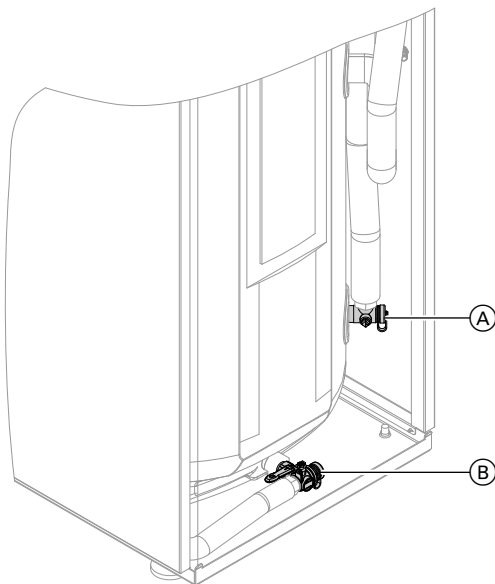


Fig. 73

- Ⓐ Drain and fill valve, secondary side
- Ⓑ Drain and fill valve, DHW side

1. Close the on-site boiler drain and fill valve.
2. **Draining the heating water side**
Connect the hose to the drain and fill valve of the secondary circuit.
Open the secondary circuit drain and fill valve.
3. **Draining the DHW side**
See chapter "Draining the appliance on the DHW side", page 64.

Checking the temperature sensors

Connection to the indoor unit

Temperature sensors are connected to the controller and sensor PCB: See page 43.

Temperature sensor	Test element
<ul style="list-style-type: none"> ▪ Outside temperature sensor (F0) ▪ Buffer temperature sensor (F4) ▪ Cylinder temperature sensor (F6 or X25.5/X25.6, see service instructions for "Vitotronic 200, type WO1C") ▪ Flow temperature sensor, heating circuit with mixer M2/HC2 (F12) ▪ Cooling circuit flow temperature sensor (direct heating circuit A1/HC1 or separate cooling circuit SKK) (F14) ▪ Room temperature sensors 	NTC 10 kΩ
<ul style="list-style-type: none"> ▪ Secondary circuit flow temperature sensor (F8) ▪ Secondary circuit return temperature sensor (F9) 	Pt500A (PTC)

Checking the temperature sensors (cont.)

Connection to the outdoor unit

Temperature sensors are connected to the refrigerant circuit controller in the outdoor unit (see label in the outdoor unit): See page 84.

Temperature sensor	Test element
<ul style="list-style-type: none"> ▪ Refrigerant circuit controller temperature sensor (T2) ▪ Compressor suction gas temperature sensor (T4) ▪ Air intake temperature sensor (T5) ▪ Hot gas temperature sensor (T6) ▪ Evaporator suction gas temperature sensor (T7) ▪ Secondary circuit flow temperature sensor (T1) ▪ Reversible suction gas temperature sensor (T3) 	NTC 10 k Ω

Checking the temperature sensors (cont.)

Indoor unit: Viessmann NTC 10 k Ω (blue marking)

$\vartheta / ^\circ\text{C}$	R / k Ω	$\vartheta / ^\circ\text{C}$	R / k Ω	$\vartheta / ^\circ\text{C}$	R / k Ω	$\vartheta / ^\circ\text{C}$	R / k Ω	$\vartheta / ^\circ\text{C}$	R / k Ω	$\vartheta / ^\circ\text{C}$	R / k Ω
-40	336.500	-8	49.647	24	10.449	56	2.878	88	0.976	120	0.389
-39	314.870	-7	47.055	25	10.000	57	2.774	89	0.946	121	0.379
-38	294.780	-6	44.614	26	9.572	58	2.675	90	0.918	122	0.369
-37	276.100	-5	42.315	27	9.165	59	2.579	91	0.890	123	0.360
-36	258.740	-4	40.149	28	8.777	60	2.488	92	0.863	124	0.351
-35	242.590	-3	38.107	29	8.408	61	2.400	93	0.838	125	0.342
-34	227.550	-2	36.181	30	8.057	62	2.316	94	0.813	126	0.333
-33	213.550	-1	34.364	31	7.722	63	2.235	95	0.789	127	0.325
-32	200.510	0	32.650	32	7.402	64	2.158	96	0.765	128	0.317
-31	188.340	1	31.027	33	7.098	65	2.083	97	0.743	129	0.309
-30	177.000	2	29.495	34	6.808	66	2.011	98	0.721	130	0.301
-29	166.350	3	28.048	35	6.531	67	1.943	99	0.700	131	0.293
-28	156.410	4	26.680	36	6.267	68	1.877	100	0.680	132	0.286
-27	147.140	5	25.388	37	6.016	69	1.813	101	0.661	133	0.279
-26	138.470	6	24.165	38	5.775	70	1.752	102	0.642	134	0.272
-25	130.370	7	23.009	39	5.546	71	1.694	103	0.623	135	0.265
-24	122.800	8	21.916	40	5.327	72	1.637	104	0.606	136	0.259
-23	115.720	9	20.880	41	5.117	73	1.583	105	0.589	137	0.253
-22	109.090	10	19.900	42	4.917	74	1.531	106	0.572	138	0.247
-21	102.880	11	18.969	43	4.726	75	1.481	107	0.556	139	0.241
-20	97.070	12	18.087	44	4.543	76	1.433	108	0.541	140	0.235
-19	91.600	13	17.251	45	4.369	77	1.387	109	0.526	141	0.229
-18	86.474	14	16.459	46	4.202	78	1.342	110	0.511	142	0.224
-17	81.668	15	15.708	47	4.042	79	1.299	111	0.497	143	0.219
-16	77.160	16	14.995	48	3.889	80	1.258	112	0.484	144	0.213
-15	72.929	17	14.319	49	3.743	81	1.218	113	0.471	145	0.208
-14	68.958	18	13.678	50	3.603	82	1.180	114	0.458	146	0.204
-13	65.227	19	13.069	51	3.469	83	1.143	115	0.445	147	0.199
-12	61.722	20	12.490	52	3.340	84	1.107	116	0.434	148	0.194
-11	58.428	21	11.940	53	3.217	85	1.072	117	0.422	149	0.190
-10	55.330	22	11.418	54	3.099	86	1.039	118	0.411	150	0.185
-9	52.402	23	10.921	55	2.986	87	1.007	119	0.400		

Checking the temperature sensors (cont.)

Indoor unit: Viessmann Pt500A (green marking)

$\vartheta / ^\circ\text{C}$	R / Ω	$\vartheta / ^\circ\text{C}$	R / Ω	$\vartheta / ^\circ\text{C}$	R / Ω	$\vartheta / ^\circ\text{C}$	R / Ω	$\vartheta / ^\circ\text{C}$	R / Ω	$\vartheta / ^\circ\text{C}$	R / Ω
-30	441.1	1	502.0	32	562.3	63	623.9	94	681.2	125	739.8
-29	443.1	2	503.9	33	564.2	64	622.0	95	683.1	126	741.7
-28	445.1	3	505.9	34	566.1	65	625.8	96	685.0	127	743.5
-27	447.0	4	507.8	35	568.1	66	627.7	97	686.9	128	745.4
-26	449.0	5	509.8	36	570.0	67	629.7	98	688.8	129	747.3
-25	451.0	6	511.7	37	571.9	68	631.6	99	690.7	130	749.2
-24	453.0	7	513.7	38	573.9	69	633.5	100	692.6	131	751.1
-23	454.9	8	515.6	39	575.8	70	635.4	101	694.4	132	752.9
-22	456.9	9	517.6	40	577.7	71	637.3	102	696.3	133	754.8
-21	458.9	10	519.5	41	579.7	72	639.2	103	698.2	134	756.7
-20	460.8	11	521.5	42	581.6	73	641.1	104	700.1	135	758.6
-19	462.8	12	523.4	43	583.5	74	643.1	105	702.0	136	760.4
-18	464.8	13	525.4	44	585.4	75	645.0	106	703.9	137	762.3
-17	466.7	14	527.3	45	587.4	76	646.9	107	705.8	138	764.2
-16	468.7	15	529.3	46	589.3	77	648.8	108	707.7	139	766.1
-15	470.6	16	531.2	47	591.2	78	650.7	109	709.6	140	767.9
-14	472.6	17	533.2	48	593.2	79	652.6	110	711.5	141	769.8
-13	474.6	18	535.1	49	595.1	80	654.5	111	713.4	142	771.7
-12	476.5	19	537.0	50	597.0	81	656.4	112	715.3	143	773.6
-11	478.5	20	539.0	51	598.9	82	658.3	113	717.2	144	775.4
-10	480.5	21	540.9	52	600.9	83	660.2	114	719.0	145	777.3
-9	482.4	22	542.9	53	602.8	84	662.1	115	720.9	146	779.2
-8	484.4	23	544.8	54	604.7	85	664.0	116	722.8	147	781.0
-7	486.3	24	546.8	55	606.6	86	665.9	117	724.7	148	782.9
-6	488.3	25	548.7	56	608.6	87	667.9	118	726.6	149	784.8
-5	490.2	26	550.6	57	610.5	88	669.8	119	728.5	150	786.7
-4	492.2	27	552.6	58	612.4	89	671.7	120	730.4	151	788.5
-3	494.2	28	554.5	59	614.0	90	673.6	121	732.2	152	790.4
-2	496.1	29	556.5	60	616.2	91	675.5	122	734.1	153	792.3
-1	498.1	30	558.4	61	618.2	92	677.4	123	736.0	154	794.1
0	500.0	31	560.3	62	620.1	93	679.3	124	737.9	155	796.0

Checking the temperature sensors (cont.)

Outdoor unit: Viessmann NTC 10 k Ω (no marking)

ϑ / °C	R / k Ω	ϑ / °C	R / k Ω	ϑ / °C	R / k Ω	ϑ / °C	R / k Ω	ϑ / °C	R / k Ω	ϑ / °C	R / k Ω
-40	325.700	-8	49.530	24	10.450	56	2.874	88	0.975	120	0.391
-39	305.400	-7	46.960	25	10.000	57	2.770	89	0.946	121	0.381
-38	286.500	-6	44.540	26	9.572	58	2.671	90	0.917	122	0.371
-37	268.800	-5	42.250	27	9.164	59	2.576	91	0.889	123	0.362
-36	252.300	-4	40.100	28	8.776	60	2.484	92	0.863	124	0.352
-35	236.900	-3	38.070	29	8.406	61	2.397	93	0.837	125	0.343
-34	222.600	-2	36.150	30	8.054	62	2.313	94	0.812	126	0.335
-33	209.100	-1	34.340	31	7.719	63	2.232	95	0.788	127	0.326
-32	196.600	0	32.630	32	7.399	64	2.155	96	0.765	128	0.318
-31	184.900	1	31.020	33	7.095	65	2.080	97	0.743	129	0.310
-30	173.900	2	29.490	34	6.804	66	2.009	98	0.721	130	0.302
-29	163.700	3	28.050	35	6.527	67	1.940	99	0.700	131	0.295
-28	154.100	4	26.680	36	6.263	68	1.874	100	0.680	132	0.288
-27	145.100	5	25.390	37	6.011	69	1.811	101	0.661	133	0.281
-26	136.700	6	24.170	38	5.770	70	1.750	102	0.642	134	0.274
-25	128.800	7	23.020	39	5.541	71	1.692	103	0.624	135	0.267
-24	121.400	8	21.920	40	5.321	72	1.636	104	0.606	136	0.261
-23	114.500	9	20.890	41	5.112	73	1.581	105	0.589	137	0.254
-22	108.000	10	19.910	42	4.912	74	1.529	106	0.573	138	0.248
-21	102.000	11	18.980	43	4.720	75	1.479	107	0.557	139	0.242
-20	96.260	12	18.100	44	4.538	76	1.431	108	0.541	140	0.237
-19	90.910	13	17.260	45	4.363	77	1.385	109	0.527	141	0.231
-18	85.880	14	16.470	46	4.196	78	1.340	110	0.512	142	0.226
-17	81.160	15	15.720	47	4.036	79	1.297	111	0.498	143	0.220
-16	76.720	16	15.000	48	3.884	80	1.256	112	0.485	144	0.215
-15	72.560	17	14.330	49	3.737	81	1.216	113	0.472	145	0.210
-14	68.640	18	13.690	50	3.597	82	1.178	114	0.459	146	0.206
-13	64.950	19	13.080	51	3.463	83	1.141	115	0.447	147	0.201
-12	61.480	20	12.500	52	3.335	84	1.105	116	0.435	148	0.196
-11	58.220	21	11.940	53	3.212	85	1.071	117	0.423	149	0.192
-10	55.150	22	11.420	54	3.095	86	1.038	118	0.412	150	0.187
-9	52.250	23	10.920	55	2.982	87	1.006	119	0.401		

Checking the fuses

Fuse locations:

- Indoor unit:
See page 38 onwards.
- Outdoor unit:
See page 47 onwards.

Checking the fuses (cont.)

- Fuse F1 is located on the mains terminal of the heat pump control unit.
Fuse type:
 - 6.3 A H (slow), 250 V~
 - Max. power loss ≤ 2.5 W
- Fuse F3 is located on the main PCB.
Fuse type:
 - 2.0 A H (slow), 250 V~
 - Max. power loss ≤ 2.5 W
- The fuses for the fan and the refrigerant circuit controller are located in the outdoor unit above the EEV PCB.

1. Switch OFF the power supply.
2. Opening the wiring chamber.
3. Check fuses. Replace if necessary.



Danger

Incorrect or improperly fitted fuses can lead to an increased risk of fire.

- Insert fuses without using any force. Position fuses correctly.
- Only use structurally identical types with the same response characteristics.



Danger

Removing the fuse does **not switch the power circuit to zero volt**. Contact with 'live' components can lead to serious injury from electric current.

Before working on the equipment, always ensure that **the power circuit is also at zero volt**.

Hydraulic parameter report

Settings and test values	Set value	Commissioning	Maintenance/ service
Checking external heating circuit pumps			
Circulation pump type			
Circulation pump stage			
Overflow valve setting			
Commissioning, primary circuit			
Air intake temperature ("Diagnosis" → "System overview")	°C		
Air discharge temperature ("Diagnosis" → "System overview")	°C		
Temperature differential (air intake/ discharge) ΔT :			
▪ At secondary circuit flow temperature = 35 °C and air intake temperature ≤ 15 °C	K	4 to 8	
▪ At secondary circuit flow temperature = 35 °C and air intake temperature > 15 °C	K	4 to 13	
Checking mixer, heat pump and cylinder heating			
Checked under the following conditions:			
Room temperature	°C		
Outside temperature	°C		
Temperature "Cylinder temp. top" con- stant?		Yes (± 1 K)	
Secondary circuit flow temperature	°C	Rising	From To From To
Temperature differential ΔT "Flow temp. secondary" / "Return temp. sec."	K	6 to 8	

Control parameter report



Parameter description

"Vitotronic 200" service instructions

System definition

Parameter	Code	Delivered condition	Commission- ing	Maintenance/ service
System scheme: See chapter "System scheme"	7000	2		
Interval for long term average outside tem- perature	7002	180 min		
Temperature differential for calculating the heating limit	7003	40 (± 4 K)		
Temperature differential for calculating the cooling limit	7004	40 (± 4 K)		
Swimming pool	7008	0		
External extension	7010	0		
System components for external change- over	7011	0		

Control parameter report (cont.)

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Operating status for external changeover	7012	2		
Duration of external changeover	7013	8 h		
Effect of external demand on heat pump/heating circuits	7014	4		
Effect of ext. blocking on heat pump/heating circuits	7015	4		
Vitocom 100 (type GSM/GSM2 only)	7017	0		
Temperature range input 0..10V	7018	1000 (\pm 10 V)		
Priority external demand	7019	0		
Effect of external blocking on pumps/compressor	701A	0		
Common flow temperature sensor system	701B	0		
Operating status after message A9, C9	701C	0		
Effect of OM changeover to ventilation	701F	3		
Type of assembly kit	7044	0		
Holiday program effect	7050	384		

Compressor

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Enable compressor	5000	1		
Evaporator temperature for defrost end	5010	Automatically preset		
Enable use of compressor stage	5012	15		
Output compressor stage	5030	Rated heating output according to type plate		

Control parameter report (cont.)**DHW**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Set DHW temperature	6000	500 (\pm 50 °C)		
Min. DHW temperature	6005	100 (\pm 10 °C)		
Max. DHW temperature	6006	600 (\pm 60 °C)		
Hysteresis DHW temperature heat pump	6007	50 (\pm 5 K)		
Hysteresis DHW temperature booster heater	6008	100 (\pm 10 K)		
Start optimisation for DHW heating	6009	0		
Stop optimisation for DHW heating	600A	0		
Set DHW temperature 2	600C	600 (\pm 60 °C)		
Temperature rise per hour for DHW heating	600D	30 K/h		
Max. runtime DHW heating in heating mode	6011	240 (\pm 24 min)		
Max. interruption of DHW heating for central heating	6012	90 (\pm 9 min)		
Enable electric heaters for DHW heating	6015	0		
Start attempts for DHW after high pressure shutdown	6017	0		
Shutdown hysteresis inst. heating water heater	601E	10 (\pm 1 K)		
Enable elec. heating/ext. HS for reheating only	6040	0		
DHW heating blocking time	6060	0 min		
Max. interruption, DHW heating	6061	0 min		

Solar

Parameter	Code	Delivered condition	Commissioning	Maintenance/Service
"Type solar control unit"	7A00	0		
Parameters for solar control module, type SM1	C0xx	These parameters will only be displayed if the solar control module, type SM1, is connected to the heat pump and "Type solar control unit" is set to "3" . For a description of the parameters, see installation and service instructions for "solar control module, type SM1".		

Control parameter report (cont.)**Electric booster heater**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
"Enable instantaneous heating water heater"	7900	1		
"Enable electric heaters for DHW heating"	7901	0		
"Enable instant. heating water heater for central heating"	7902	0		
"Start delay instantaneous heating water heater"	7905	30 min		
"Max. output instantaneous heating water heater"	7907	3		
"Output for instant. heating water heater at power-OFF"	790A	0		
"Dual mode temp. instant. heating water heater"	790B	500 (\pm 50 °C)		

Internal hydraulics

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Heat pump for drying a building	7300	0		
Time program for screed drying	7303	0		
Set flow temperature external demand	730C	500 (\pm 50 °C)		
Start threshold	730E	300 (\pm 30 K·min)		
Compressor performance at min. outside temperature	730F	50 %		
Compressor performance at max. outside temperature	7310	20 %		
Cooling start threshold	7311	100 (\pm 10 K·min)		
Elec. heater start threshold	7312	300 (\pm 30 K·min)		
Cycle rate heating circuit pumps	7319	0		
Rated output secondary pump (PWM)	7343	100 %		
Rated output heating circuit pump HC2	734A	60 %		
Secondary circuit pump type	735A	0		
Starting time high efficiency circulation pump	7365	Do not adjust.		
Screed program start day	7378	1		
Screed program end day	7379	31		

Primary source

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
"Primary source ctrl strategy"	7401	Never adjust		

Control parameter report (cont.)**Buffer cylinder**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Enable buffer cylinder/low loss header	7200	0		
Temp in operating status fixed value for buffer cyl	7202	500 (\pm 50 °C)		
Hysteresis temperature heating buffer cylinder	7203	50 (\pm 5 K)		
Max. temperature buffer cylinder	7204	600 (\pm 60 °C)		
Stop optimisation heating buffer cylinder	7205	0		
Temp limit op. status fixed value for buffer cylinder	7208	500 (\pm 50 °C)		
Stop hysteresis, heating water buffer cylinder	7209	0 (\pm 0 K)		
Operating mode, fixed value only for heat demand	720A	0		
Temp in op. status. fixed value for coolant buff cyl.	7220	200 (\pm 20 °C)		
Stop hysteresis coolant buffer cylinder	7223	20 (\pm 2 K)		
Min. temperature coolant buffer cylinder	722A	40 (\pm 4 °C)		
Start hysteresis coolant buffer cylinder	722B	50 (\pm 5 °C)		

Heating circuit 1

Parameter	Code	Factory setting	Commissioning	Maintenance/service
Standard room temperature	2000	200 (\pm 20 °C)		
Reduced room temperature	2001	160 (\pm 16 °C)		
Remote control	2003	0		
Room temperature control	2005	0		
Heating curve level	2006	0 (\pm 0 K)		
Heating curve slope	2007	6 (\pm 0.6)		
Influence room temperature hook-up	200A	10		
Room temperature hook-up	200B	0		
Max. flow temperature heating circuit	200E	400 (\pm 40 °C)		
Room temperature in party mode	2022	200 (\pm 20 °C)		
Cooling	2030	0		
Dew point monitor	2031	1		
Min. flow temperature cooling	2033	200 (\pm 20 °C)		
Influence room temperature hook-up cooling circuit	2034	0		
Hysteresis room temp cooling circuit	2037	10		
Cooling curve level	2040	0		
Cooling curve slope	2041	12		

Control parameter report (cont.)**Heating circuit 2**

Parameter	Code	Factory setting	Commissioning	Maintenance/service
Standard room temperature	3000	200 (\pm 20 °C)		
Reduced room temperature	3001	160 (\pm 16 °C)		
Remote control	3003	0		
Room temperature control	3005	0		
Heating curve level	3006	0 (\pm 0 K)		
Heating curve slope	3007	6 (\pm 0.6)		
Influence room temperature hook-up	300A	10		
Room temperature hook-up	300B	0		
Max. flow temperature heating circuit	300E	400 (\pm 40 °C)		
Runtime mixer heating circ	3015	Do not adjust.		
Room temperature in party mode	3022	200 (\pm 20 °C)		
Cooling	3030	0		
Dew point monitor	3031	1		
Min. flow temperature cooling	3033	200 (\pm 20 °C)		
Influence room temperature hook-up cooling circuit	3034	0		
Hysteresis room temp cooling circuit	3037	10		
Cooling curve level	3040	0		
Cooling curve slope	3041	12		

Heating circuit 3

Parameter	Code	Factory setting	Commissioning	Maintenance/service
Standard room temperature	4000	200 (\pm 20 °C)		
Reduced room temperature	4001	160 (\pm 16 °C)		
Remote control	4003	0		
Room temperature control	4005	0		
Heating curve level	4006	0 (\pm 0 K)		
Heating curve slope	4007	6 (\pm 0.6)		
Influence room temperature hook-up	400A	10		
Room temperature hook-up	400B	0		
Max. flow temperature heating circuit	400E	400 (\pm 40 °C)		
Runtime mixer heating circ	4015	Do not adjust.		
Room temperature in party mode	4022	200 (\pm 20 °C)		
Cooling	4030	0		
Dew point monitor	4031	1		
Min. flow temperature cooling	4033	200 (\pm 20 °C)		
Influence room temperature hook-up cooling circuit	4034	0		
Hysteresis room temp cooling circuit	4037	10		
Cooling curve level	4040	0		
Cooling curve slope	4041	12		

Control parameter report (cont.)**Cooling**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Cooling function	7100	0		
Cooling circuit	7101	1		
Set room temperature separate cooling circuit	7102	200 (\pm 20 °C)		
Min. flow temperature cooling	7103	200 (\pm 20 °C)		
Influence room temperature hook-up cooling circuit	7104	0		
Room temperature control cooling circuit	7105	1		
Ranking room temp sensor separate cooling circuit	7106	0		
Hysteresis room temp cooling circuit	7107	10 (\pm 1 K)		
Enable flow temperature sensor cooling circuit	7109	1		
Cooling curve level	7110	0 (\pm 0 K)		
Cooling curve slope	7111	12 (\pm 1.2)		
Remote control cooling circ	7116	Do not adjust.		
Dew point monitor	7117	1		
Enable active cooling	71FE	0		

Ventilation: Vitovent 200-C and Vitovent 300-F

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Vitovent enable	7D00	0		
Enable preheater bank electric	7D01	0		
Enable reheater bank hydraulic	7D02	0		
Enable humidity sensor	7D05	0		
Enable CO2 sensor	7D06	0		
Set room temperature	7D08	200 (\pm 20 °C)		
Flow rate reduced ventilation	7D0A	<ul style="list-style-type: none"> ▪ Vitovent 200-C: 75 m³/h ▪ Vitovent 300-F: 120 m³/h 		
Flow rate nominal ventilation	7D0B	<ul style="list-style-type: none"> ▪ Vitovent 200-C: 115 m³/h ▪ Vitovent 300-F: 170 m³/h 		
Flow rate intensive ventilation	7D0C	<ul style="list-style-type: none"> ▪ Vitovent 200-C: 155 m³/h ▪ Vitovent 300-F: 215 m³/h 		
Min. supply air temperature for bypass	7D0F	160 (\pm 16 °C)		
CO2 value for raising the flow rate	7D18	800 ppm		
Humidity value for raising the flow rate	7D19	65 %		
Interval time frost protection ventilation	7D1A	15 min		
Intensive ventilation duration	7D1B	120 min		
Actual source room temperature	7D1D	1		
Heating circuit for blocking bypass damper	7D21	7		

Control parameter report (cont.)

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Control voltage matching	7D27	0 (\pm 0 V)		
Fan for control voltage matching	7D28	0		
Strategy, passive frost protection	7D2C	0		
Type of heat exchanger	7D2E	0		
Installation position	7D2F	0		
Function, external 230 V input, ventilation	7D3A	0		
Duration, bathroom vent.	7D3B	30 min		
Starting block, ventilation periods part 1	7D5E	0		
Starting block, ventilation periods part 2	7D5F	0		
Control voltage matching, supply air fan	7D71	0 V		
Control voltage matching, exhaust air fan	7D72	0 V		
Sensor matching, outdoor air temperature	7D75	0 K		
Sensor matching, outdoor air temp after pre-heating coil	7D76	0 K		
Sensor matching, supply air temperature	7D77	0 K		
Sensor matching, extract air temperature	7D79	0 K		
Delay, subs. failure ventilation	7D90	0 min		

Ventilation: Vitovent 200-W, Vitovent 300-C and Vitovent 300-W

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Vitovent enable	7D00	0		
Heating circuit for blocking bypass damper	7D21	7		
Delay, subs. failure ventilation	7D90	0 min		
Preheating coil	C101	1		
Reheater	C102	0		
Humidity sensor	C105	0		
Set CO2 value	C106	0		
Set room temperature	C108	220 (\pm 22 °C)		
Background ventilation	C109	<ul style="list-style-type: none"> ▪ Vitovent 200-W: 15 % ▪ Vitovent 300-C: 30 m³/h ▪ Vitovent 300-W: 50 m³/h 		
Reduced ventilation	C10A	<ul style="list-style-type: none"> ▪ Vitovent 200-W: 25 % ▪ Vitovent 300-C: 75 m³/h ▪ Vitovent 300-W: 100 m³/h 		
Standard ventilation	C10B	<ul style="list-style-type: none"> ▪ Vitovent 200-W: 50 % ▪ Vitovent 300-C: 100 m³/h ▪ Vitovent 300-W: 150 m³/h 		

Control parameter report (cont.)

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
Intensive ventilation	C10C	<ul style="list-style-type: none"> ▪ Vitovent 200-W: 75 % ▪ Vitovent 300-C: 125 m³/h ▪ Vitovent 300-W: 225 m³/h 		
Background ventilation, second fan duct	C189	15 %		
Reduced ventilation, second fan duct	C18A	25 %		
Standard ventilation, second fan duct	C18B	50 %		
Intensive ventilation, second fan duct	C18C	75 %		
Bypass mode	C1A0	0		
Central heating and heat recovery	C1A1	0		
Imbalance permitted	C1A2	1		
Specified imbalance	C1A3	0		
Set reheater coil temperature	C1A4	210 (\pm 21 °C)		
Humidity sensor sensitivity	C1A6	0		
Min. temperature, geothermal heat exchanger	C1AA	50 (\pm 5 °C)		
Max. temperature, geothermal heat exchanger	C1AB	250 (\pm 25 °C)		
Function, input 1	C1B0	0		
Min. voltage, input 1	C1B1	0 (10 \pm 1 V)		
Min. voltage, input 2	C1C1	0 (10 \pm 1 V)		
Flow rate correction	C1C7	100		

Note

The factory settings of parameters C101 to C1C7 depend on the ventilation unit and may differ from the values specified here. The factory setting is displayed in the service menu for each parameter with "**Del con ...**": "▼" See "Vitotronic 200 service instructions".

Control parameter report (cont.)**Photovoltaics**

Parameter	Code	Delivered condition	Commissioning	Maintenance/ service
Enable own energy consumption PV	7E00	0		
Prop. of external current	7E02	10 (\pm 10 %)		
Threshold for electrical power	7E04	Depending on type		
Stop threshold (relative)	7E07	0 (\pm 0 kW)		
Enable own energy consumptn for set DHW temperature 2	7E10	0		
Enable own energy consumption for DHW heating	7E11	0		
Enable own energy consumptn for heating water buffer cyl.	7E12	0		
Enable own energy consumption for heating	7E13	0		
Enable own energy consumption for cooling	7E15	0		
Enable own energy consumptn for coolant buffer cylinder	7E16	0		
Raise set DHW cylinder temperature PV	7E21	0 (\pm 0 K)		
Raise set heating water buffer cylinder temp PV	7E22	0 (\pm 0 K)		
Raise set room temperature PV	7E23	0 (\pm 0 K)		
Reduce set room temperature PV	7E25	0 (\pm 0 K)		
Reduce set coolant buffer cylinder temperature PV	7E26	0 (\pm 0 K)		

Smart Grid

Parameter	Code	Delivered condition	Commissioning	Maintenance/ Service
"Enable Smart Grid"	7E80	0		
"Smart Grid Enable elec heat"	7E82	0		
"Smart Grid set value increase for DHW heating"	7E91	0 (\pm 0 K)		
"Smart Grid set value increase for htg wtr buff"	7E92	0 (\pm 0 K)		
"Smart Grid set value increase for centr htg"	7E93	0 (\pm 0 K)		
"Smart Grid set value decrease for room t cool"	7E95	0 (\pm 0 K)		

Time

Parameter	Code	Delivered condition	Commissioning	Maintenance/ Service
"Automatic changeover summertime - wintertime"	7C00	1		
"Start summertime - month"	7C01	3		
"Start summertime - week"	7C02	5		
"Start summertime - day"	7C03	7		
"Start wintertime - month"	7C04	10		
"Start wintertime - week"	7C05	5		
"Start wintertime - day"	7C06	7		

Control parameter report (cont.)**Control**

Parameter	Code	Delivered condition	Commissioning	Maintenance/service
"Lock out controls"	8800	0		
"Level enable, time program quieter operation"	8801	0		
"User level for display, energy stmt"	8811	1		

Specification

Heat pumps with outdoor unit 230 V

Type AWOT-M-E/AWOT-M-E-AC		221.A04	221.A06	221.A08	221.A10	221.A13	221.A16
Heating performance data to EN 14511 (A2/W35)							
Rated heating output	kW	2.61	3.11	4.04	5.01	5.92	6.47
Fan speed	rpm	600	600	650	600	600	600
Power consumption	kW	0.73	0.82	1.02	1.27	1.48	1.79
Coefficient of performance ϵ (COP) in heating mode		3.57	3.78	3.96	3.96	4.01	3.61
Output control	kW	2.0 to 4.1	2.4 to 5.5	2.8 to 7.0	4.4 to 9.6	4.8 to 10.2	5.2 to 10.7
Heating performance data to EN 14511 (A7/W35, 5 K spread)							
Rated heating output	kW	3.96	4.83	5.62	7.01	7.85	8.64
Fan speed	rpm	600	600	650	600	600	600
Air flow rate	m ³ /h	2250	2250	2600	4500	4500	4500
Power consumption	kW	0.87	1.02	1.19	1.49	1.66	1.90
Coefficient of performance ϵ (COP) in heating mode		4.56	4.72	4.71	4.69	4.72	4.54
Output control	kW	2.4 to 4.2	3.0 to 6.0	3.5 to 7.5	5.5 to 12.6	6.0 to 13.7	6.4 to 14.3
Heating performance data to EN 14511 (A-7/W35)							
Rated heating output	kW	3.81	5.70	6.67	8.69	9.50	11.03
Power consumption	kW	1.31	1.96	2.31	2.77	3.09	3.90
Coefficient of performance ϵ (COP) in heating mode		2.91	2.91	2.89	3.14	3.07	2.83
Heating performance data to EN 14511 (A35/W7)							
Rated cooling capacity	kW	2.00	3.00	4.00	5.00	6.00	7.00
Fan speed	rpm	600	600	650	900	900	900
Power consumption	kW	0.83	1.15	1.38	1.85	2.26	2.69
Energy efficiency ratio EER in cooling mode		2.40	2.60	2.90	2.70	2.65	2.60
Output control	kW	Up to 3.9	Up to 4.9	Up to 6.2	Up to 8.0	Up to 9.0	Up to 10.3
Heating performance data to EN 14511 (A35/W18)							
Rated cooling capacity	kW	4.00	5.00	6.00	7.00	8.20	9.20
Fan speed	rpm	600	600	650	900	900	900
Power consumption	kW	0.95	1.19	1.40	1.71	2.08	2.42
Energy efficiency ratio EER in cooling mode		4.20	4.20	4.30	4.10	3.95	3.80
Output control	kW	Up to 5.0	Up to 6.0	Up to 7.0	Up to 11.0	Up to 12.5	Up to 13.9

Specification

Specification (cont.)

Type AWOT-M-E/AWOT-M-E-AC	221.A04	221.A06	221.A08	221.A10	221.A13	221.A16
Air intake temperature						
Cooling mode (type AWOT-M-E-AC only)						
▪ Min.	°C	10	10	10	10	10
▪ Max.	°C	45	45	45	45	45
Heating mode						
▪ Min.	°C	-20	-20	-20	-20	-20
▪ Max.	°C	35	35	35	35	35
Heating water (secondary circuit)						
Minimum flow rate	l/h	700	700	700	1400	1400
Minimum volume in the heating system, cannot be fitted with shut-off devices	l	50/40 ^{*1}	50/40 ^{*1}	50/40 ^{*1}	50/40 ^{*1}	50/40 ^{*1}
Max. external pressure drop (RFH) at minimum flow rate	mbar	700	700	700	400	400
	kPa	70	70	70	40	40
Max. flow temperature	°C	60	60	60	60	60
Outdoor unit electrical values						
Rated voltage, compressor		1/N/PE 230 V/50 Hz				
Max. operating current, compressor	A	13.0	14.6	14.6	19.9	23.3
Cos φ		0.99	0.99	0.99	0.99	0.99
Starting current, compressor	A	5	5	5	5	5
Fuse rating		B16A	B16A	B16A	B25A	B25A
IP rating		IPX4	IPX4	IPX4	IPX4	IPX4
Indoor unit electrical values						
Heat pump control unit/PCB						
▪ Rated voltage		1/N/PE 230 V/50 Hz				
▪ Power supply fuse rating		1 x B16A	1 x B16A	1 x B16A	1 x B16A	1 x B16A
▪ Internal fuse		6.3 A (slow)/250 V				
Instantaneous heating water heater						
▪ Rated voltage		1/N/PE 230 V/50 Hz or 3/N/PE 400 V/50 Hz				
▪ Heating output	kW	9	9	9	9	9
▪ Power supply fuse rating		3 x B16A	3 x B16A	3 x B16A	3 x B16A	3 x B16A
Max. power consumption						
Fan	W	45	45	115	2 x 115	2 x 115
Outdoor unit	kW	2.85	3.20	3.30	4.55	5.08
Secondary pump (PWM)	W	60	60	60	60	60
▪ Energy efficiency index EEI		≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2	≤ 0.2
Control unit/PCB, outdoor unit	W	15	15	15	15	15
Control unit/PCB, indoor unit	W	10	10	10	10	10
Control unit/PCB power, indoor unit	W	1000	1000	1000	1000	1000

^{*1} When using the heating water buffer cylinder Vitocell 100-E, type SVPA, part no. ZK03801 in the secondary circuit return

Specification (cont.)

Type AWOT-M-E/AWOT-M-E-AC		221.A04	221.A06	221.A08	221.A10	221.A13	221.A16
Refrigerant circuit							
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A
▪ Safety assembly		A1	A1	A1	A1	A1	A1
▪ Refrigerant charge	kg	1.40	1.40	1.40	2.40	2.40	2.40
▪ Global warming potential (GWP) ²		1924	1924	1924	1924	1924	1924
▪ CO ₂ equivalent	t	2.7	2.7	2.7	4.6	4.6	4.6
Compressor (hermetically sealed)	Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
▪ Oil in compressor	Type	3 MAF POE	3 MAF POE	3 MAF POE	3 MAF POE	3 MAF POE	3 MAF POE
▪ Quantity of oil in compressor	l	0.76	0.76	0.76	1.17	1.17	1.17
Permissible operating pressure							
▪ High pressure side	bar	43	43	43	43	43	43
	MPa	4.3	4.3	4.3	4.3	4.3	4.3
▪ Low pressure side	bar	28	28	28	28	28	28
	MPa	2.8	2.8	2.8	2.8	2.8	2.8
Integral DHW cylinder							
Capacity	l	220	220	220	220	220	220
Max. draw-off volume at draw-off temperature of 40 °C, storage temperature of 53 °C and draw-off rate of 10 l/min	l	290	290	290	290	290	290
Performance factor N _L to DIN 4708		1.6	1.6	1.6	1.6	1.6	1.6
Max. draw-off rate at the specified performance factor N _L and DHW heating from 10 to 45 °C	l/min	17.3	17.3	17.3	17.3	17.3	17.3
Max. permissible DHW temperature	°C	70	70	70	70	70	70
Outdoor unit dimensions							
Total length	mm	546	546	546	546	546	546
Total width	mm	1109	1109	1109	1109	1109	1109
Total height	mm	753	753	753	1377	1377	1377
Indoor unit dimensions							
Total length	mm	681	681	681	681	681	681
Total width	mm	600	600	600	600	600	600
Total height	mm	1874	1874	1874	1874	1874	1874
Total weight							
Outdoor unit	kg	102	102	103	145	145	145
Indoor unit	kg	164	164	164	164	164	164
Indoor unit with filled DHW cylinder	kg	384	384	384	384	384	384
Permissible operating pressure, secondary side							
	bar	3	3	3	3	3	3
	MPa	0.3	0.3	0.3	0.3	0.3	0.3

Specification

Specification (cont.)

Type AWOT-M-E/AWOT-M-E-AC		221.A04	221.A06	221.A08	221.A10	221.A13	221.A16
Secondary circuit connections (with connection accessories, female thread)							
Heating water flow	G	1¼	1¼	1¼	1¼	1¼	1¼
Heating water return	G	1¼	1¼	1¼	1¼	1¼	1¼
DHW	G	¾	¾	¾	¾	¾	¾
Cold water	G	¾	¾	¾	¾	¾	¾
DHW circulation	G	¾	¾	¾	¾	¾	¾
Outdoor unit flow (heating water outlet)	G	1¼	1¼	1¼	1¼	1¼	1¼
Outdoor unit return (heating water inlet)	G	1¼	1¼	1¼	1¼	1¼	1¼
Length of connection line between indoor — outdoor units (hydraulic connection set)	m	1 to 20	1 to 20	1 to 20	1 to 20	1 to 20	1 to 20
Sound power of outdoor unit at rated heating output (Measurements with reference to EN 12102/EN ISO 9614-2) Weighted total sound power level							
▪ At A7±3 K/W55±5 K (max.)	dB(A)	56	56	58	60	61	61
▪ At A7±3 K/W55±5 K in night mode	dB(A)	50	50	50	55	55	55
Energy efficiency class to EU Regulation no. 813/2013 Heating, average climatic conditions							
▪ Low temperature applications (W35)		A ⁺⁺	A ⁺⁺	A ⁺⁺⁺	A ⁺⁺⁺	A ⁺⁺⁺	A ⁺⁺⁺
▪ Medium temperature applications (W55)		A ⁺	A ⁺⁺	A ⁺⁺	A ⁺⁺	A ⁺⁺	A ⁺⁺
DHW heating, draw-off profile (L)		A	A	A	A	A	A
Performance data as per EU Regulation no. 813/2013 (average climatic conditions)							
Low temperature applications (W35)							
▪ Energy efficiency η_S	%	173	172	175	176	175	175
▪ Rated heating output P_{rated}	kW	5.38	5.59	6.82	9.32	9.99	10.61
▪ Seasonal coefficient of performance (SCOP)		4.40	4.38	4.46	4.47	4.46	4.46
Medium temperature applications (W55)							
▪ Energy efficiency η_S	%	124	125	127	129	130	130
▪ Rated heating output P_{rated}	kW	5.23	5.59	6.41	9.35	10.07	10.72
▪ Seasonal coefficient of performance (SCOP)		3.18	3.21	3.25	3.29	3.32	3.34
▪ DHW heating energy efficiency η_{wh}	%	119	119	119	117	117	117

Specification (cont.)

Type AWOT-M-E/AWOT-M-E-AC	221.A04	221.A06	221.A08	221.A10	221.A13	221.A16
Sound power level to ErP						
Sound power level, outdoor unit dB(A)	53	54	55	56	56	56

Heat pumps with outdoor unit 400 V

Type AWOT-E/AWOT-E-AC		221.A10	221.A13	221.A16
Heating performance data to EN 14511 (A2/W35)				
Rated heating output	kW	6.10	6.67	7.02
Fan speed	rpm	600	600	600
Power consumption	kW	1.49	1.64	1.78
Coefficient of performance ϵ (COP) in heating mode		4.10	4.06	3.94
Output control	kW	4.4 to 10.1	4.8 to 10.6	5.2 to 11.2
Heating performance data to EN 14511 (A7/W35, 5 K spread)				
Rated heating output	kW	7.58	8.88	10.11
Fan speed	rpm	600	600	600
Air flow rate	m ³ /h	4500	4500	4500
Power consumption	kW	1.51	1.78	2.04
Coefficient of performance ϵ (COP) in heating mode		5.01	4.99	4.95
Output control	kW	5.5 to 13.6	5.9 to 14.2	6.4 to 14.7
Heating performance data to EN 14511 (A-7/W35)				
Rated heating output	kW	10.09	11.06	11.60
Power consumption	kW	3.17	3.60	3.87
Coefficient of performance ϵ (COP) in heating mode		3.18	3.07	3.00
Cooling performance data to EN 14511 (A35/W7)				
Rated cooling capacity	kW	5.00	6.00	7.00
Fan speed	rpm	600	600	600
Power consumption	kW	1.85	2.31	2.80
Energy efficiency ratio EER in cooling mode		2.70	2.60	2.50
Output control	kW	Up to 8.0	Up to 9.0	Up to 10.0
Cooling performance data to EN 14511 (A35/W18)				
Rated cooling capacity	kW	7.00	8.20	9.20
Fan speed	rpm	600	600	600
Power consumption	kW	1.71	2.00	2.30
Energy efficiency ratio EER in cooling mode		4.10	4.10	4.00
Output control	kW	Up to 8.0	Up to 9.0	Up to 10.0
Air intake temperature				
Cooling mode (type AWOT-E-AC only)				
▪ Min.	°C	10	10	10
▪ Max.	°C	45	45	45
Heating mode				
▪ Min.	°C	-20	-20	-20
▪ Max.	°C	35	35	35

Specification

Specification (cont.)

Type AWOT-E/AWOT-E-AC		221.A10	221.A13	221.A16
Heating water (secondary circuit)				
Minimum flow rate	l/h	1400	1400	1400
Minimum volume in the heating system, cannot be fitted with shut-off devices	l	50/40 ^{*3}	50/40 ^{*3}	50/40 ^{*3}
Max. external pressure drop (RFH) at minimum flow rate	mbar	400	400	400
	kPa	40	40	40
Max. flow temperature	°C	60	60	60
Outdoor unit electrical values				
Rated voltage, compressor		3/N/PE 400 V/50 Hz		
Max. operating current, compressor	A	8.7	8.7	8.7
Cos φ		0.96	0.96	0.96
Starting current, compressor	A	5	5	5
Fuse rating		B16A	B16A	B16A
IP rating		IPX4	IPX4	IPX4
Indoor unit electrical values				
Heat pump control unit/PCB				
<ul style="list-style-type: none"> ▪ Rated voltage ▪ Power supply fuse rating ▪ Internal fuse 				
Instantaneous heating water heater				
<ul style="list-style-type: none"> ▪ Rated voltage 				
<ul style="list-style-type: none"> ▪ Heating output ▪ Power supply fuse rating 				
		1 x B16 A	1 x B16 A	1 x B16 A
		1/N/PE 230 V/50 Hz 6.3 A (slow)/250 V		
		1/N/PE 230 V/50 Hz or 3/N/PE 400 V/50 Hz		
		9	9	9
		3 x B16 A	3 x B16 A	3 x B16 A
Max. power consumption				
Fan	W	2 x 45	2 x 45	2 x 45
Outdoor unit	kW	5.13	5.13	5.15
Secondary pump (PWM)	W	60	60	60
<ul style="list-style-type: none"> ▪ Energy efficiency index EEI 				
		≤ 0.2	≤ 0.2	≤ 0.2
Control unit/PCB, outdoor unit	W	15	15	15
Control unit/PCB, indoor unit	W	10	10	10
Control unit/PCB power, indoor unit	W	1000	1000	1000

^{*3} When using the heating water buffer cylinder Vitocell 100-E, type SVPA, part no. ZK03801 in the secondary circuit return

Specification (cont.)

Type AWOT-E/AWOT-E-AC		221.A10	221.A13	221.A16
Refrigerant circuit				
Refrigerant		R410A	R410A	R410A
▪ Safety assembly		A1	A1	A1
▪ Refrigerant charge	kg	2.40	2.40	2.40
▪ Global warming potential (GWP) ^{*4}		1924	1924	1924
▪ CO ₂ equivalent	t	4.6	4.6	4.6
Compressor (hermetically sealed)	Type	Scroll	Scroll	Scroll
▪ Oil in compressor	Type	3 MAF POE	3 MAF POE	3 MAF POE
▪ Oil volume in compressor	l	1.17	1.17	1.17
Permissible operating pressure				
▪ High pressure side	bar	43	43	43
	MPa	4.3	4.3	4.3
▪ Low pressure side	bar	28	28	28
	MPa	2.8	2.8	2.8
Integral DHW cylinder				
Capacity	l	220	220	220
Max. draw-off volume at DHW temperature 40 °C, storage temperature 53 °C and draw-off rate 10 l/min	l	290	290	290
Performance factor N _L to DIN 4708		1.6	1.6	1.6
Max. draw-off rate at the specified performance factor N _L and DHW heating from 10 to 45 °C	l/min	17.3	17.3	17.3
Max. permissible DHW temperature	°C	70	70	70
Outdoor unit dimensions				
Total length	mm	546	546	546
Total width	mm	1109	1109	1109
Total height	mm	1377	1377	1377
Indoor unit dimensions				
Total length	mm	681	681	681
Total width	mm	600	600	600
Total height	mm	1874	1874	1874
Total weight				
Outdoor unit	kg	153	153	153
Indoor unit	kg	164	164	164
Indoor unit with filled DHW cylinder	kg	384	384	384
Permissible operating pressure, secondary side				
	bar	3	3	3
	MPa	0.3	0.3	0.3
Secondary circuit connections (with connection accessories, female thread)				
Heating water flow	G	1¼	1¼	1¼
Heating water return	G	1¼	1¼	1¼
DHW	G	¾	¾	¾
Cold water	G	¾	¾	¾
DHW circulation	G	¾	¾	¾
Secondary circuit flow	G	1¼	1¼	1¼
Secondary circuit return	G	1¼	1¼	1¼

^{*4} Based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)



Specification

Specification (cont.)

Type AWOT-E/AWOT-E-AC		221.A10	221.A13	221.A16
Length of connection line between indoor — outdoor units (Hydraulic connection set)	m	1 to 20	1 to 20	1 to 20
Sound power of outdoor unit at rated heating output (Measurements with reference to EN 12102/ EN ISO 9614-2) Weighted total sound power level				
▪ At $A7^{\pm 3} K/W55^{\pm 5} K$ (max.)	dB(A)	61	61	61
▪ At $A7^{\pm 3} K/W55^{\pm 5} K$ in night mode	dB(A)	55	55	55
Energy efficiency class to Commission Regulation (EU) No 813/2013 Heating, average climatic conditions				
▪ Low temperature application (W35)		A+++	A+++	A+++
▪ Medium temperature application (W55)		A++	A++	A++
DHW heating, draw-off profile (L)		A	A	A
Heating performance data as per Commission Regulation (EU) No 813/2013 (average climatic conditions)				
Low temperature application (W35)				
▪ Energy efficiency η_S	%	180	182	182
▪ Rated heating output P_{rated}	kW	9.75	10.99	11.65
▪ Seasonal coefficient of performance (SCOP)		4.58	4.64	4.62
Medium temperature application (W55)				
▪ Energy efficiency η_S	%	132	134	134
▪ Rated heating output P_{rated}	kW	9.67	11.00	11.98
▪ Seasonal coefficient of performance (SCOP)		3.37	3.42	3.42
▪ DHW heating energy efficiency η_{wh}	%	117	117	117
Sound power level to ErP				
Sound power level, outdoor unit	dB(A)	56	56	56

Commissioning order

Fax the following request, together with the enclosed system scheme, to your local Viessmann sales office. A competent employee must be present when the system is commissioned.

System details:

Requester _____

System location _____

Tick check list boxes:

- Hydraulic scheme for heating system included
- Heating circuits fully installed and filled
- Electrical installation completed
- Hydraulic lines fully thermally insulated
- Installation completed in full up to refrigerant circuit
- All windows and external doors sealed
- Components for cooling mode fully installed (optional)
- Components for ventilation fully installed (optional)
- Components for PV system fully installed (optional)

Preferred appointment:

1. Date _____
 Time _____

2. Date _____
 Time _____

The work that is requested to be carried out by Viessmann will be billed in accordance with the latest Viessmann pricelist.

Place / Date _____

Signature _____

Final decommissioning and disposal

Viessmann products can be recycled. Components and substances from the system are not part of ordinary domestic waste.

For decommissioning, isolate the system from the power supply and allow components to cool down where appropriate.

All components must be disposed of correctly.

Declaration of conformity

We, Viessmann Werke GmbH & Co. KG, D-35107 Allendorf, declare as sole responsible body that the named product complies with the European directives and supplementary national requirements in terms of its design and operational characteristics.

Using the serial number, the full Declaration of Conformity can be found on the following website:
www.viessmann.co.uk/eu-conformity

The **product characteristics** determined as system values for the product **Vitocal 222-A** (see technical guide) can be utilised to assess the energy consumption of heating and ventilation systems to DIN V 4701-10 specified by the EnEV [Germany].

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