

IDU Modular and IDU Comfort

Indoor unit (IDU) for air/water heat pump in monoblock design for room heating, room cooling and DHW heating in heating systems

- IDU Modular: Type WWMIW.B1.19-V057
Designed for applications with multiple heating/cooling circuits and an external buffer cylinder
- IDU Comfort: Type WWMIW.B1.19-V058
With integral buffer cylinder, designed for applications with 1 directly connected heating/cooling circuit



IDU Modular and IDU Comfort



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.

Note

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



Please note

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

Target group

These instructions are exclusively intended for authorised contractors.

- Work on electrical equipment may only be carried out by qualified electricians.
- All safety-relevant points must be checked regularly by the relevant certified contractors, especially before initial commissioning and during maintenance, inspection and decommissioning.
- 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
- Applicable regulations and guidelines for operation, service, maintenance, repair and safety of cooling, air conditioning and heat pump systems containing flammable and explosive refrigerant.

Safety instructions for working on the system

When working on the system, follow the safety instructions for all connected appliances.



Separate installation and service instructions

Safety instructions (cont.)**Working on the indoor unit**

- Switch off the power supply to the indoor unit, e.g. at separate fuses or a main switch. Check that the system is no longer live.
- Safeguard the system against reconnection.
- Wear suitable personal protective equipment when carrying out any work.

**Danger**

Hot surfaces and fluids can result in burns or scalding. Cold surfaces may cause frostbite.

- Before maintenance and service work, switch off the appliance and let it cool down or warm up.
- Do not touch hot or cold surfaces on the appliance, fittings or pipe-work.

**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

Before removing covers from the appliances, wait at least 5 min until the voltage has dropped out.

**Please note**

Electronic assemblies can be damaged by electrostatic discharge. Before beginning work, touch earthed objects, such as heating or water pipes, to discharge any static.

Installation**Frost protection for air/water heat pump****Please note**

Frost can cause damage to the heat pump.

- Thermally insulate all the hydraulic lines.
- In order to activate the frost protection function, electrically connect the heat pump before filling the secondary circuit. Switch on the power supply. Turn on the ON/OFF switch on the indoor unit.
- Only fill the secondary circuit with suitable fill water in accordance with VDI 2035, not with media containing antifreeze.

Electrical connecting cable for air/water heat pump**Danger**

With short electrical cables, if the refrigerant circuit leaks, gaseous refrigerant may reach the inside of the building.

- Seal the building entry points using the most suitable current technology. Route the lines into the building through, for example, a suitable pipe liner with wall seal flanges.
- Min. length of the electrical connecting cables between the indoor and outdoor unit: 3 m

Safety instructions (cont.)

Repair work



Please note

Repairing components that fulfil a safety function can compromise the safe operation of the indoor unit. Faulty components must be replaced with original spare parts from the manufacturer.

Auxiliary components, spare and wearing parts



Please note

Auxiliary components, spare parts and wearing parts that have not been tested together with the indoor unit can compromise its function. Installing non-authorised components and making non-approved modifications or conversions can compromise safety and may limit the warranty. For installation and replacement, use only original parts from the manufacturer or spare parts approved by the manufacturer.

Safety instructions for operating the system

If water escapes from the indoor unit



Danger

If water escapes from the indoor unit there is a risk of electric shock. Switch off the heating system at the external isolator (e.g. fuse box, domestic distribution board).



Danger

If water escapes from the indoor unit 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

Symbols in these instructions

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 personal injury
	Warning of material losses and environmental pollution
	Live electrical area
	Pay particular attention.
	- Component must audibly click into place. - or - Acoustic signal
	- 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

Symbols on the heat pump

Symbol	Meaning
	Warning of flammable materials (ISO 7010 - W021)
	Observe the operating manual (ISO 7000 - 0790)
	Observe the instructions for use/operating instructions (ISO 7000 - 1641)
	Service indicator: Refer to the operating manual (ISO 7000 - 1659)
	Warning of hot surface (ISO 7010 - W017)

Intended use

The appliance is intended solely for installation and operation in sealed unvented heating systems that comply with EN 12828, with due attention paid to the associated installation, service and operating instructions.

Intended use (cont.)

Depending on the version, the appliance may only be operated in conjunction with the designated outdoor unit and may be used exclusively for the following purposes:

- Room heating
- Room 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 room heating/cooling or DHW heating shall be deemed inappropriate.

Incorrect use 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 of 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

The IDU Modular and IDU Comfort indoor units serve as the hydraulic interface between the outdoor unit and the system's hydraulic circuit (heating/cooling circuit distribution, DHW heating):

- The indoor units can be combined with various outdoor units, e.g. with Vitocal 200-A. The heat pump consists of a combination of an indoor unit with an outdoor unit, e.g. the Vitocal 200-A ie Comfort.
- The indoor units are equipped with standardised connections for efficient connection of the outdoor unit and system hydraulics to the indoor unit.
- The heat pump control unit/system control unit One Base Unit ie, integrated into the indoor units, is the central control unit for an energy generation system based on the One Base Intelligence control platform.

Application:

- The IDU Modular indoor unit is suitable for systems with multiple heating/cooling circuits, an external (on-site) buffer cylinder and DHW heating.
- The IDU Comfort indoor unit is suitable for systems with 1 directly connected heating/cooling circuit and DHW heating.

Layout and functions

The IDU Modular and IDU Comfort indoor units are available in various configurations. The configuration can be selected to match the outdoor unit being used. IDU Comfort differs from IDU Modular in that it has an integral buffer cylinder.

Hydraulics

The indoor and outdoor units are connected to each other hydraulically. The features of the indoor unit vary depending on the outdoor unit. Depending on the system configuration, the highly efficient central circulation pump (secondary pump) supplies either the secondary circuit or heating/cooling circuit 1.

Switching between room heating/room cooling, DHW heating and defrosting is achieved via the indoor unit's integral 4/3-way valve. The required flow rates for room heating/room cooling, DHW heating or defrosting are controlled via this 4/3-way valve. In addition, the 4/3-way valve acts as an overflow valve to guarantee the minimum system flow rate.

Depending on the system configuration, the heat required to defrost the evaporator is provided either by the integral buffer cylinder in the indoor unit (e.g. in the IDU-Comfort), an external heating water buffer cylinder (e.g. in the IDU-Modular), or heating/cooling circuit 1.

Heating/cooling circuits

The max. number of heating/cooling circuits that can be connected depends on whether an external buffer cylinder is connected.

Product information (cont.)

System without external buffer cylinder

1 heating/cooling circuit without mixer can be connected to the heat pump.

The flow temperature is controlled by modulating the heat pump.

System with external buffer cylinder

- Up to 4 heating/cooling circuits can be connected to the heat pump:
 - 1 heating/cooling circuit without mixer and up to 3 heating/cooling circuits with mixer
- An external cooling water buffer cylinder or external heating/cooling water buffer cylinder is required to use the cooling function.
- The cooling function cannot be used for systems with a heating water buffer cylinder with integral DHW heating.

External heat generator (on site)

Systems with an external heat generator always require an external buffer cylinder.

The external heat generator is hydraulically integrated into the system downstream of the external buffer cylinder. The EM-HB1 extension (accessories) is required for control via the heat pump.

The external heat generator supports the heat pump with room heating and DHW heating if the heating output of the heat pump is insufficient under certain conditions. During a power-OFF period or if the heat pump develops a fault, the external heat generator can also be switched on as the sole heat source, e.g. for frost protection of the system.

Heat pump/system control unit

The heat pump control unit/system control unit

One Base Unit ie, integrated into the indoor unit, enables central control and monitoring of the entire energy generation system. This simplifies diagnostics, maintenance and servicing of the system.

- The unit is operated via a 7-inch colour touchscreen.



Operating instructions for the heat pump

- Integrated communication modules for LAN, WiFi and wireless connections enable operation, remote diagnostics and remote control of the entire energy generation system via ViGuide and apps.
- Wireless components, such as a remote control unit, can be integrated for remote control.



Operating instructions and installation & service instructions for the remote control

The indoor and outdoor units communicate via CAN bus.

One Base Intelligence

The One Base Unit ie includes the One Base Intelligence control platform. Products with the One Base Intelligence control platform can be networked with each other in a **system network** and operated in an energy-optimised manner. This increases the efficiency of the system.

Examples of a system network with One Base Intelligence:

- In conjunction with a photovoltaic system: Heat pump and inverter with battery storage unit, e.g. Vitocharge VX3
- In conjunction with one or more external heat generators in hybrid mode: Heat pump and wall mounted gas condensing boiler, e.g. one or more Vitodens 200-W, type B2HH

Viessmann Energy Management

One Base Intelligence includes Viessmann Energy Management. Viessmann Energy Management allows balancing operation of components in the energy generation system that generate, consume or store electricity.

When used in conjunction with a photovoltaic system, Viessmann Energy Management can help optimise self-consumption.

Examples of supported energy management functions:

- Surplus photovoltaic power to the heat pump
- Forecast-based battery charging
- Grid consumption limit
- Grid feed-in limit
- Time-based/dynamic tariffs
- Smart EV charging (various charging modes via the wallbox)

Type plates

- The type plate is located on the top of the appliance.
- **QR code marked with "i":**
This QR code contains the credentials for the registration and product information portal. The position of the QR code is either next to or on the type plate, depending on the appliance.

Note

The 16-digit serial number, for example, can be checked using the QR code with the "i" marking.

Product information (cont.)

Product identification according to type plate

Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓢ

Indoor unit

IDU Modular	W	W	M	I	W	.	B1	.	19	-	V057
IDU Comfort	W	W	M	I	W	.	B1	.	19	-	V058

Pos.	Value	Meaning
Ⓐ	Name	
	IDU Modular	InDoor Unit for Modular design
	IDU Comfort	InDoor Unit for greater Com- fort with integral buffer cylinder
Ⓑ	Medium, primary side	
	W	Water
Ⓒ	Medium, secondary circuit	
	W	Water
Ⓓ	Refrigerant circuit design	
	M	Monoblock design

Pos.	Value	Meaning
Ⓔ	Siting	
	I	Indoor installation
Ⓕ	Type	
	W	Wall mounted indoor unit
Ⓖ	B1	Product generation
Ⓢ	19	Max. compatible size of the outdoor unit
Ⓢ	Indoor unit product version	
	V050 to V099	Depending on the equipment level of the indoor unit

Indoor unit product version

Indoor unit for Vitocal 200-A ie

Indoor unit			Buffer	
▪ V057	1	1 ... 4	—	230 V~
▪ V058	1	1 ... 4	■	230 V~

 Integral heating/cooling circuits
 Heating/cooling circuits via external buffer cylinder
Buffer Buffer cylinder 16 l

 Rated voltage, control unit/PCB, indoor unit
■ Integrated
□ Accessories
○ Possible

System examples

Available system examples:

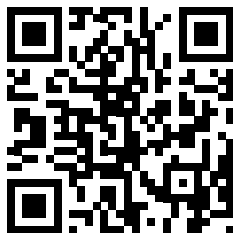
schematics.viessmann-climatesolutions.com

Maintenance parts and spare parts

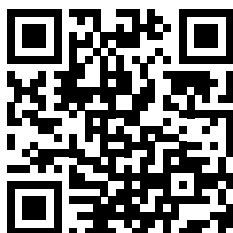
You can identify and order maintenance parts and spare parts directly online.

Product information (cont.)**PartnerShop**

shop.viessmann-climatesolutions.com

**ViParts web application**

viparts.viessmann-climatesolutions.com

**ViParts spare part app**

Requirements for on-site connections

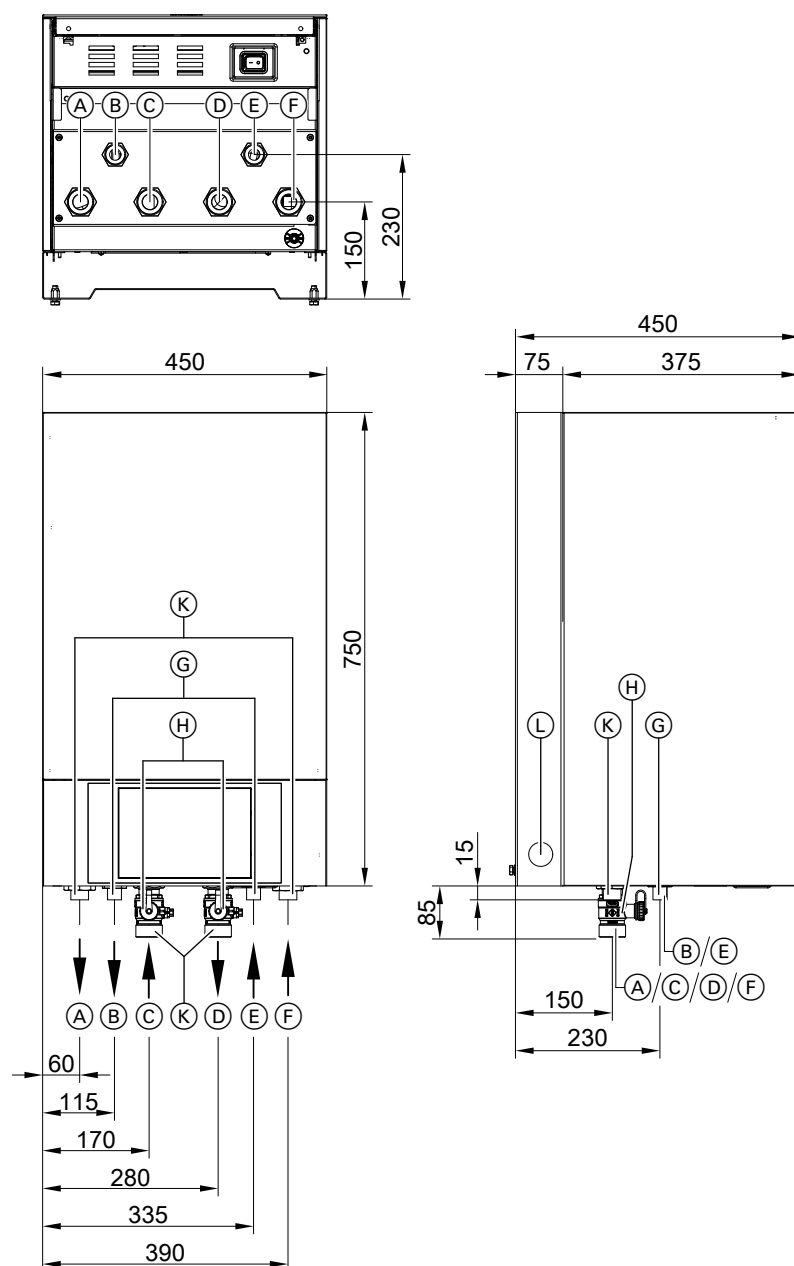


Fig. 1

- | | |
|--|---|
| (A) Secondary circuit flow (heating/cooling circuit 1/ external buffer cylinder), G 1¼ | (G) Copper pipe adaptors G 1 to Ø 22 mm (accessories) |
| (B) DHW cylinder flow (heating water side), G 1 | (H) Ball valves (standard delivery) |
| (C) Heating water from the outdoor unit (flow, outdoor unit), G 1¼ | (K) Copper pipe adaptors G 1¼ to Ø 28 mm (accessories) |
| (D) Heating water to the outdoor unit (return, outdoor unit), G 1¼ | (L) Opening for condensate drain hose (can be on the left or right) |
| (E) DHW cylinder return (heating water side), G 1 | |
| (F) Secondary circuit return (heating/cooling circuit 1/ external buffer cylinder), G 1¼ | |

Note

Minimum installation height: See page 45.

Transporting the indoor unit



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



Danger

Dust, gases and vapours can be damaging to health and trigger explosions.
Prevent dust, gases and vapours in the installation room.



Please note

An unfavourable indoor environment 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 (corresponding to an absolute humidity of approx. 25 g water vapour/kg of dry air at 35 °C)

WiFi operational reliability and system requirements

The appliance is equipped with a LAN and WiFi communication module. This integrated communication module supports maintenance and servicing via ViG-uide as well as operation via app.

WiFi router system requirement

- WiFi router with activated 2.4 GHz WiFi:

The WiFi router must be protected by a sufficiently secure WPA2 or WPA3 password.

Note

- The password is a sequence of 8 to 63 characters.
- Upper and lower case letters, numbers and special characters in ASCII are permitted.

The WiFi router must always have the latest firmware version via updates.

Unencrypted connections between the WiFi router and the heat generator are not permitted.

- Internet connection with high availability: "Flat rate" (flat rate tariff without restriction on time or data volume)

- Dynamic IP addressing (DHCP, delivered condition) in the network (WiFi):
Have this checked on site by an IT expert **prior** to commissioning. Arrange for setup if necessary.
- Set routing and security parameters in the IP network (LAN).

Note

Length of password and permitted special characters depend on the respective router.

Enable the following ports for direct outgoing connections:

- Port 80
- Port 123
- Port 443
- Port 8883

Have this checked on site by an IT expert **prior** to commissioning. Arrange for enabling if required.

Note

Alternatively, the connection from the heat pump control unit to the router can be established via LAN.

Wireless signal range of WiFi connection

The range of wireless signals may be reduced by walls, ceilings and interior fixtures. The following circumstances will reduce the strength of the wireless signal and can disrupt reception:

- On their way between transmitter and receiver, wireless signals are **damped**, e.g. by air or when penetrating walls.
- Wireless signals are **reflected** by metallic objects, e.g. reinforcements embedded in walls, the metal foil in thermal insulation, and thermal glazing with metalised thermal vapour deposit.

Requirements for the installation room (cont.)

- Wireless signals are **isolated** by service ducts and lift shafts.
- Wireless signals are **disrupted** by devices that also operate with high frequency signals. Distance to such appliances **min. 2 m**.
Examples of devices with high frequency signals:
 - Computers
 - Audio and video systems
 - Devices with active WiFi connection
 - Electronic transformers
 - Time & temperature controllers

Install the heat generator as close as possible to the WiFi router to ensure a good WiFi connection. The signal strength can be displayed on the programming unit: See operating instructions.

Note

The WiFi signal strength can be increased with WiFi repeaters.

Angle of penetration

The reception quality remains best if wireless signals hit the walls vertically.

Depending on the angle of penetration, the effective wall thickness changes and so does the extent to which the electromagnetic waves are damped.

Flat (unfavourable) angle of penetration

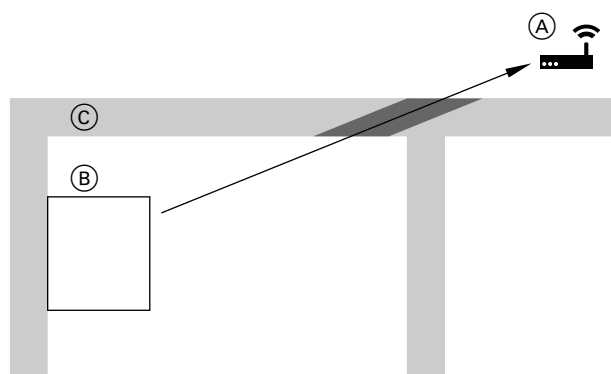


Fig. 2

- Ⓐ WiFi router
- Ⓑ Heat generator
- Ⓒ Wall

Ideal angle of penetration

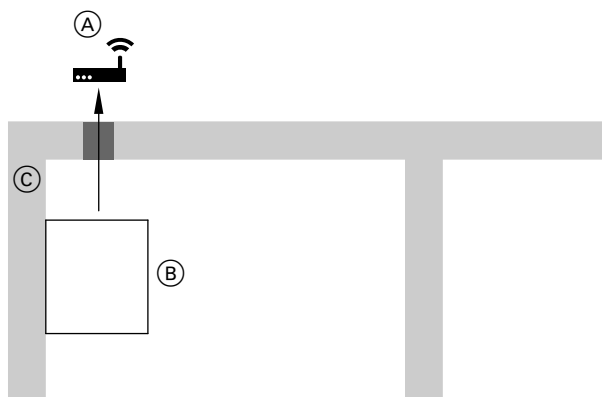


Fig. 3

- Ⓐ WiFi router
- Ⓑ Heat generator
- Ⓒ Wall

Minimum clearances

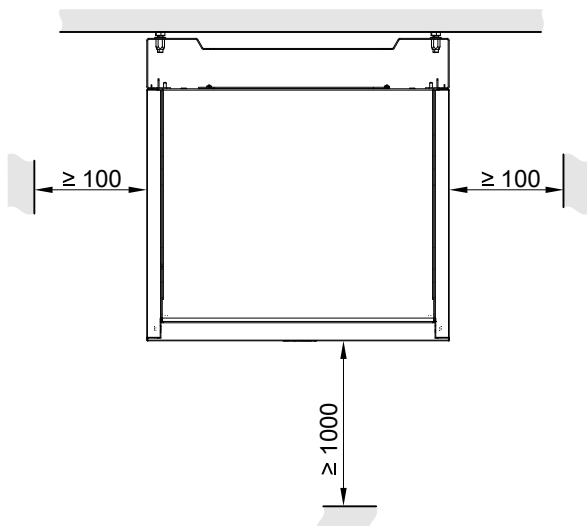


Fig. 4 Recommended minimum distances for service purposes

Note

Do not install the indoor unit in a cupboard.

Minimum installation heights

In the delivered condition, the programming unit is located at the bottom. For easier access, the programming unit can be fitted at the top, e.g. when installation heights are low.

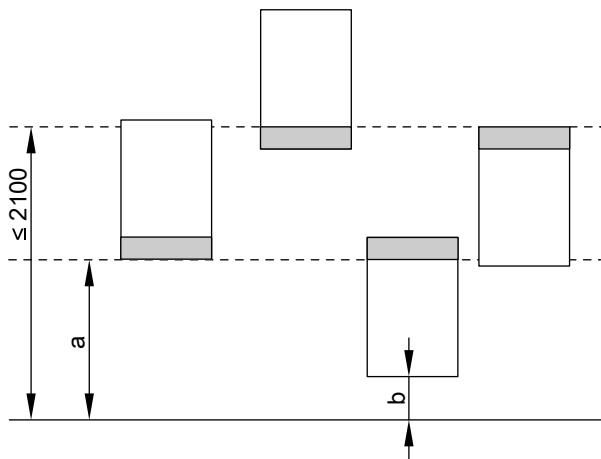


Fig. 5

Recommended dimensions

		a	b
Without Comfort ball valve set 450 mm (accessories)	mm	≥ 600	≥ 500
With Comfort ball valve set 450 mm (accessories)	mm	≥ 680	≥ 680

Fitting the indoor unit to the wall

- Take into account the weight and centre of gravity of the appliance. Weight: See "Specification".
- The wall must meet the structural requirements. Use suitable fixing materials, depending on the wall structure.
- Wall installation in conjunction with installation aid (standard delivery)



Please note

An incorrectly mounted appliance can become detached from the wall and fall down. Make sure it is securely fastened.

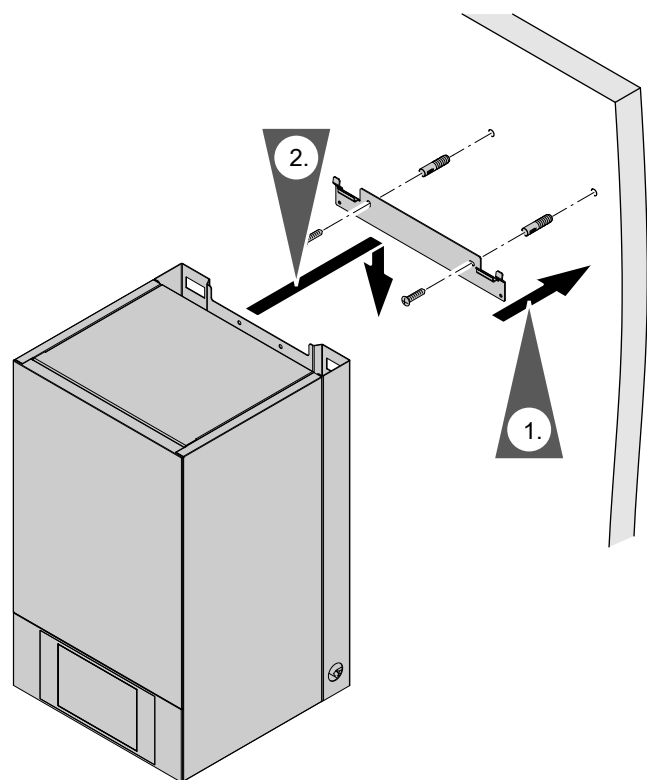


Fig. 6

Connecting the secondary circuit

Comply with the following requirements on site:

- Components reflect current technology.
- Components are approved in sealed unvented heating systems with operating pressures up to 3 bar.
- Manufacturer's instructions for installation

Making the hydraulic connections

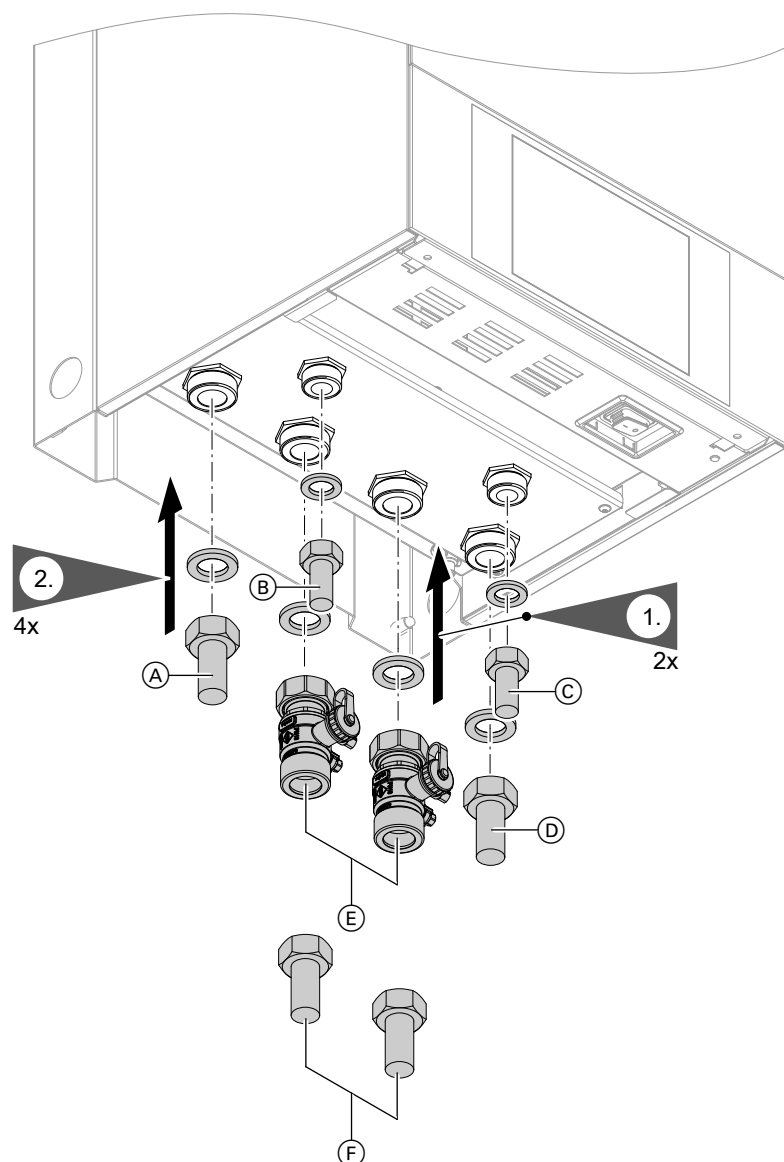


Fig. 7

- | | |
|---|---|
| <p>(A) Copper pipe adaptor G 1 1/4 to Ø 28 mm (accessories) for the secondary circuit flow (heating/cooling circuit 1/external buffer cylinder)</p> <p>(B) Copper pipe adaptor G 1 to Ø 22 mm (accessories) for the DHW cylinder flow (heating water side)</p> <p>(C) Copper pipe adaptor G 1 to Ø 22 mm (accessories) for the DHW cylinder return (heating water side)</p> | <p>(D) Copper pipe adaptor G 1 1/4 to Ø 28 mm (accessories) for the secondary circuit return (heating/cooling circuit 1/external buffer cylinder)</p> <p>(E) Ball valves for heating water (indoor unit standard delivery) to and from the outdoor unit</p> <p>(F) Copper pipe adaptors G 1 1/4 to Ø 28 mm (accessories) for heating water to and from the outdoor unit</p> |
|---|---|

1. Expansion vessel

Equip the secondary circuit return on site with an expansion vessel.

Connecting the secondary circuit (cont.)

2. Hydraulic lines for heat/cooling distribution

Connect all on-site hydraulic lines for heat/cooling distribution (heating/cooling circuits, DHW cylinder).

**Please note**

Hydraulic connections subjected to mechanical stresses lead to leaks, vibrations and appliance damage.

Connect on-site lines so that they are free of load and torque stress.

Note

Recommendation: Install a suitable dirt separator, e.g. the Protect package with dirt separator and air separator (accessories).

**Please note**

Contaminants in the heating/cooling circuits cause the heating filter to become clogged, which affects heat/cooling distribution.

Before connecting the indoor and outdoor units hydraulically, thoroughly flush the heating/cooling circuits.

3. Hydraulic lines to the outdoor unit

Connect the hydraulic lines from the indoor unit to the outdoor unit.

**Please note**

Contaminants in the connection line cause the required heating filter in the return to the outdoor unit to become clogged.

After connecting the indoor and outdoor units hydraulically, thoroughly flush the connection line.

4. Leak tightness

Check the internal and on-site hydraulic connections for leaks.

Recommended test pressure: 2 to 2.5 bar (0.2 to 0.25 MPa)

**Danger**

There is a risk of electric shock from escaping heating water or DHW.

Check all water side connections for leaks.

**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 the heating water. Check the seal rings for correct fit. **Always** replace displaced seal rings.

5. Thermal insulation**Please note**

Leaking hydraulic lines and joints will cause damage to the system or to the building. Do not thermally insulate joints until after completion of the leak test following filling: See chapter "Building up the system pressure".

Ensure pipework inside the building is fitted with sufficiently thick thermal insulation in accordance with the Buildings Energy Act (GEG). If room cooling is planned for the building, use thermal and vapour diffusion-proof insulation.

Pipework internal Ø	Min. thickness of thermal insulation layer with $\lambda = 0.035 \text{ W/(m·K)}$
≤ 22 mm	20 mm
> 22 mm	30 mm

λ Thermal conductivity

6. Condensate connection

Connect the drain hose for overflow protection with a fall and an atmospheric pipe vent in accordance with EN 12828, e.g. via a drain outlet or waste water inlet.

- Terminate the drain hose outlet point 20 to 40 mm above the waste water inlet.
- Ensure there are no more than 2 bends in the drain hose.
- Do not reduce the hose cross-section.
- Min. waste water pipe cross-section: Twice the drain hose cross-section

Connect the drain hose for the overflow vent valve to the waste water system.

Position of the air vent valve and overflow protection: See chapter "Overview of internal components".

Connecting the secondary circuit (cont.)

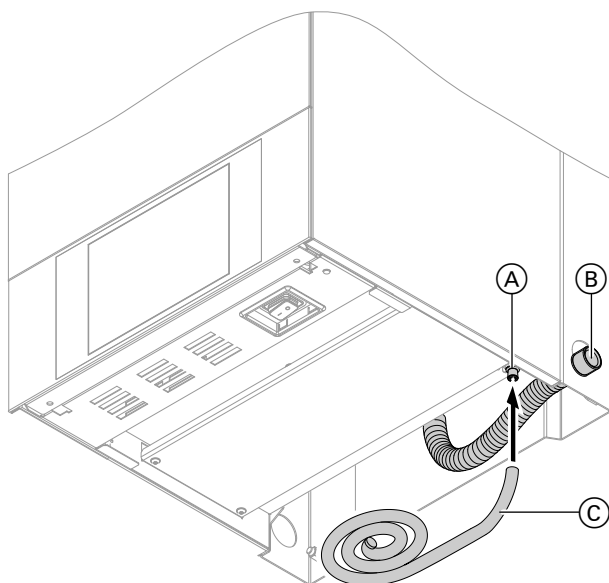


Fig. 8

- (A) Connector for condensate
- (B) Overfill protection drain hose
- (C) Supplied condensate drain hose

Temperature limiter

With underfloor heating circuits, install a temperature limiter to restrict the maximum temperature in the flow of underfloor heating systems.

This temperature limiter is triggered as soon as the flow temperature exceeds the set value. Once the temperature limiter has been triggered, room heating via the relevant heating/cooling circuit stops.

As soon as the flow temperature drops below the set value again, room heating resumes as required.

Contact humidistat

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

- Installation inside the room to be cooled in the cooling water flow: Remove thermal insulation if necessary.
- 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.

Systems with external buffer cylinder

For each of the heating/cooling circuits 1 to 4, connect 1 230 V~ contact humidistat.

The connection is established in series with the heating circuit pump of the heating/cooling circuit.

Note

Cooling is not possible in systems with a heating water buffer cylinder with integral DHW heating.

Systems without external buffer cylinder

Connect the 24 V $\overline{\text{=}}$ contact humidistat for heating/cooling circuit 1: See "Electrical connection of the indoor unit".

Connecting the secondary circuit (cont.)

Connection on the DHW side

For connecting the DHW side, observe EN 806, DIN 1988, DIN 4753, TrinkwV Drinking Water Ordinance [Germany] and DVGW (CH: SVGW regulations). Observe other country-specific standards as applicable.

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.

This also particularly applies when connecting solar thermal systems.

Operation without outdoor unit

Operation of the indoor unit without the outdoor unit is **not** possible and **not** permissible.

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.

Cable lengths in the indoor unit

All connections are made in the electrical terminal area of the indoor unit. Required cable length in the indoor unit: 0.5 m

Recommended power cables

	
Mains connection	1/N/PE 230 V~/50 Hz
Output	1000 W
Max. switching current	6.3 A
Recommended power cable	
Cable type	H05VV-F 3G1.5
Cable cross-section	
■  Heat pump control unit/electronics 230 V~	3 x 1.5 mm ²
■ Power-OFF	3 x 1.5 mm ²
Max. cable length	50 m
Max. fuse rating	16 A
Tariff	Standard tariff ■ No economy tariff with power-OFF facility possible ■ This supply must never be blocked.

Opening the indoor unit

Remove the front panel and set the programming unit to the service position

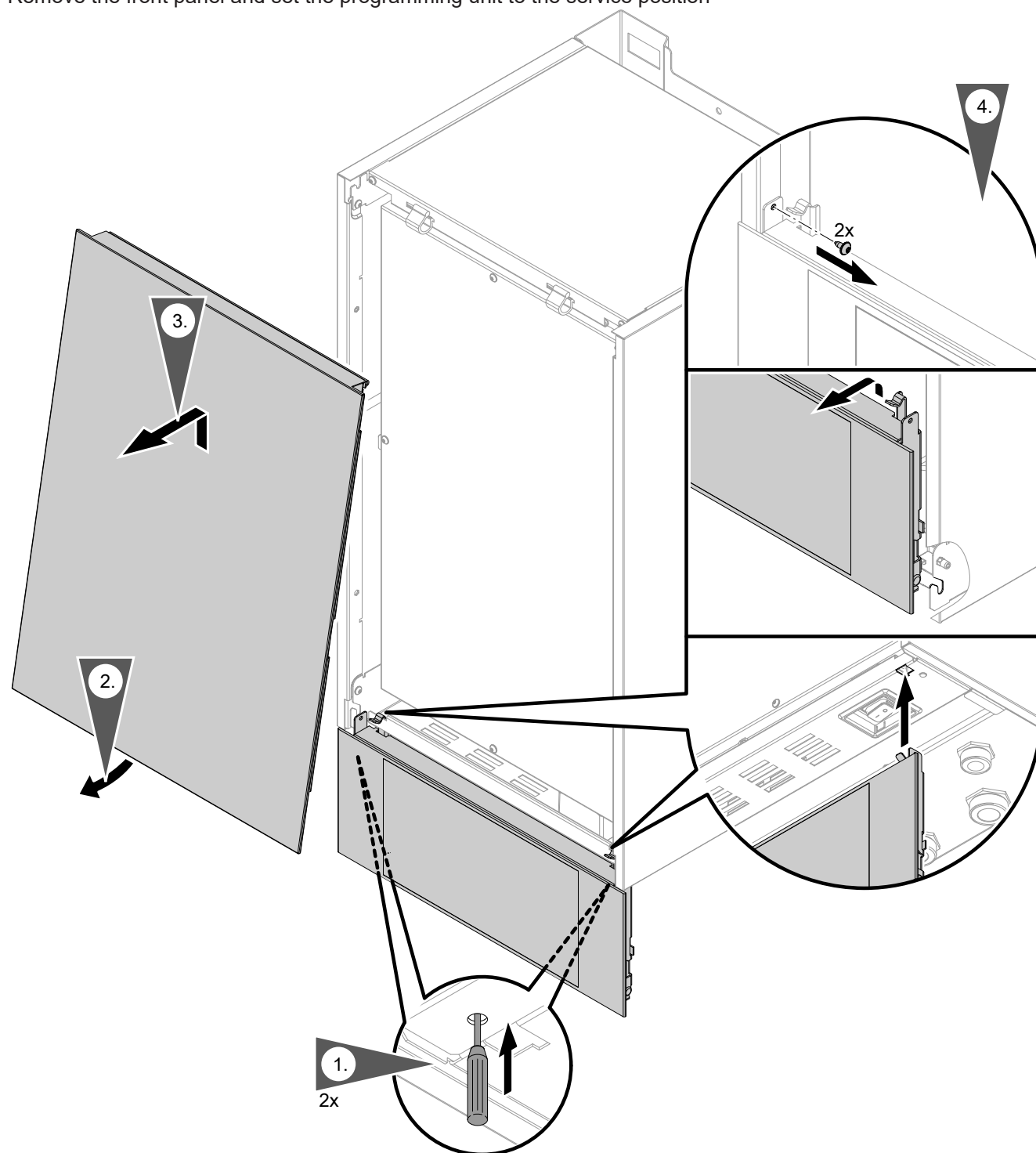
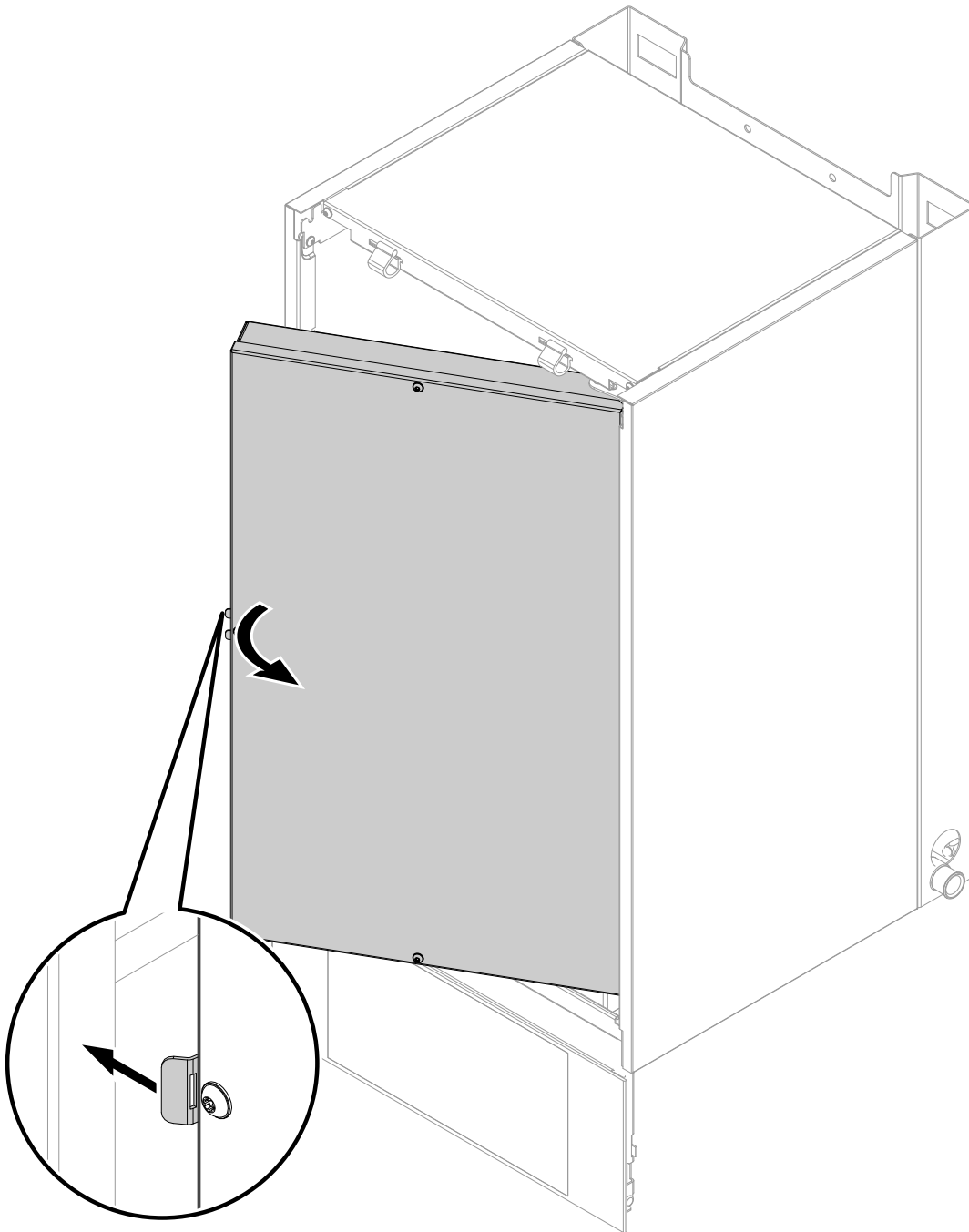


Fig. 9

3. Disconnect the earthing cable from the front panel.

Opening the electrical terminal area

- !** **Please note**
Electronic assemblies can be damaged by electrostatic discharge.
Before beginning work, touch earthed objects, e.g. heating or water pipes, to discharge any static.

*Fig. 10*

Routing cables to the terminal area



Danger

Damaged cable insulation can lead to serious injury from electric shock and result in appliance damage.

Route cables so that they cannot touch very hot, vibrating or sharp-edged components.



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) cables $< 42\text{ V}$ separately from cables $> 42\text{ V}/230\text{ V}\sim/400\text{ V}\sim$. 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.
- Relieve the strain on all cables with cable ties.

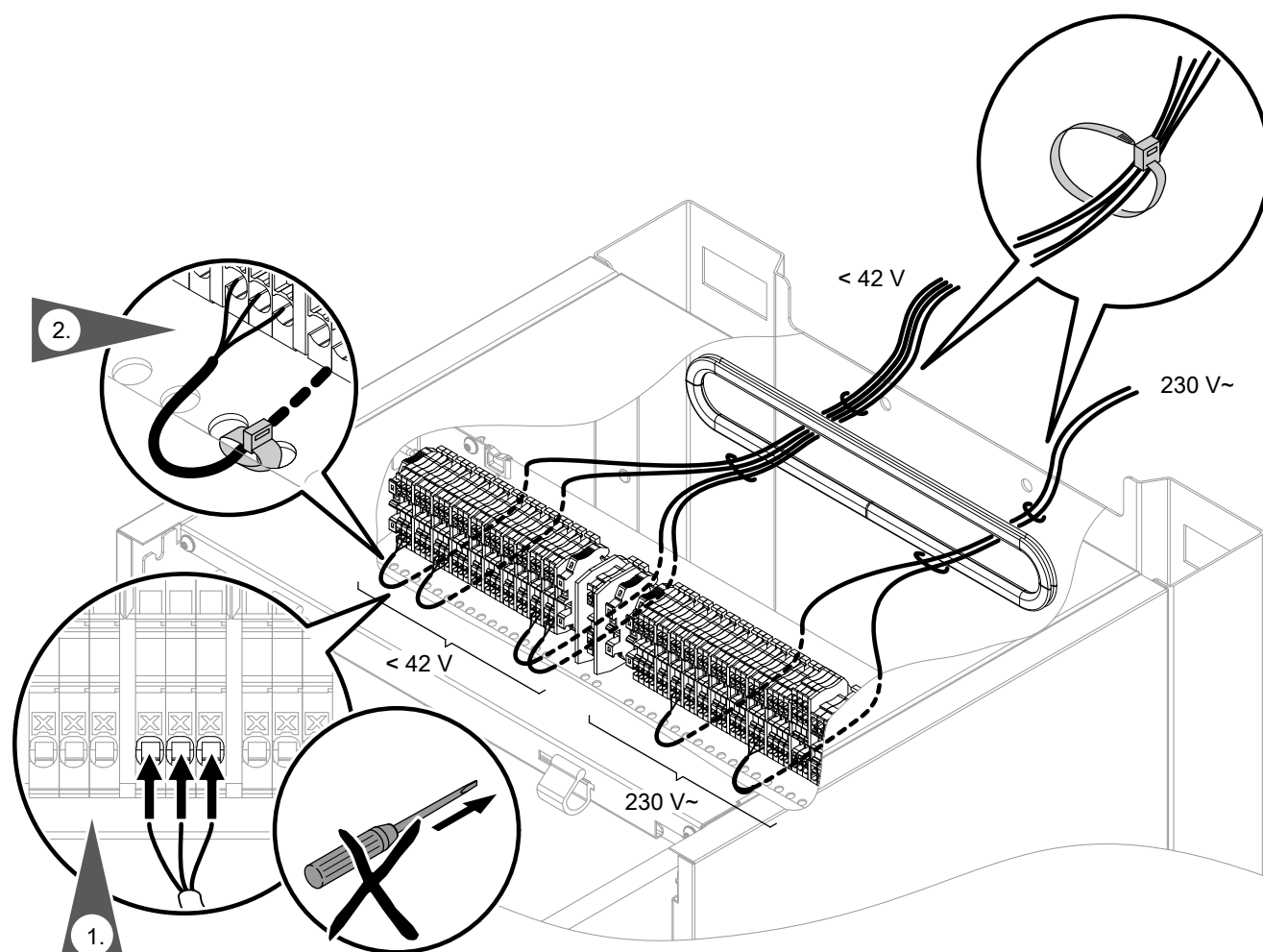


Fig. 11

Notes on supply values

- The specified output is the recommended connected load.
- The total output of all components connected directly to the electronics control module (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.

Overview of electrical connections

Depending on appliance version, not all terminals will be installed.

Overview of the terminal area

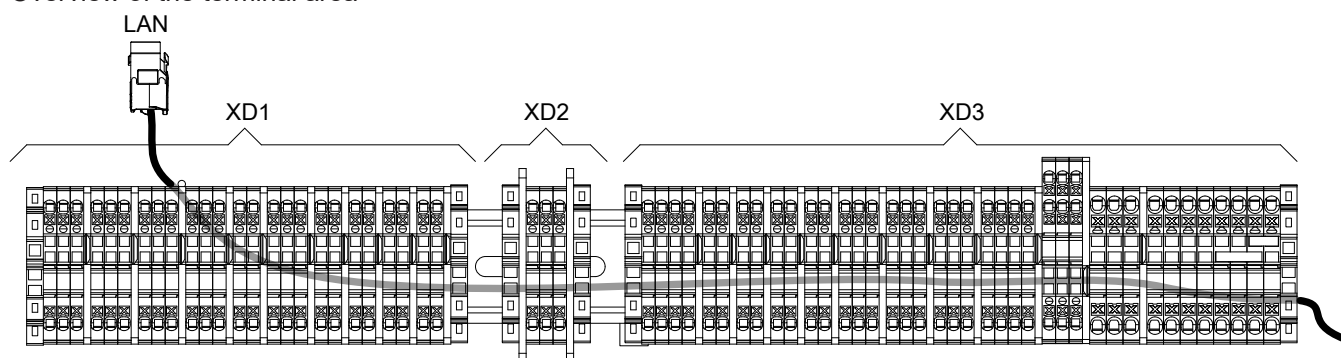


Fig. 12 Explanation of the connections: See the following tables.

LAN LAN connection:

See chapter "Establishing a LAN connection".

XD1 Terminal area < 42 V

XD2 Terminal area < 42 V/230 V~

XD3 Terminal area 230 V~ and mains connection area

Overview of electrical connections (cont.)

Terminal area XD1, < 42 V: bus connections and sensors

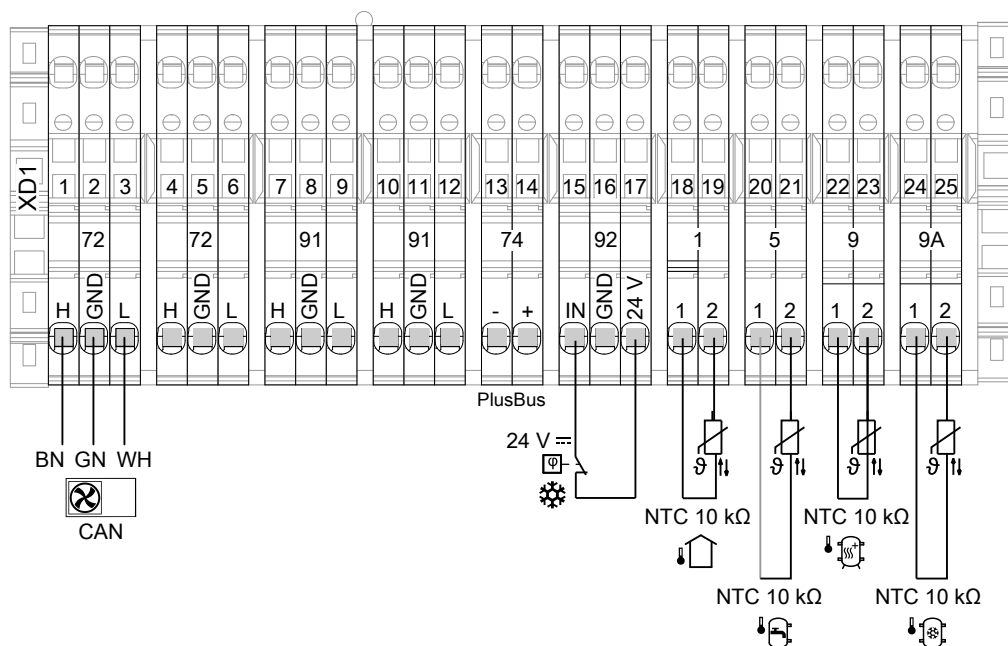


Fig. 13

Terminals	Component	Explanation
1.1 1.2 	Outside temperature sensor	Sensor type: NTC 10 kΩ Cores are interchangeable Recommended connecting cable: 2 x 1.5 mm² - Max. cable length: 35 m
5.1 5.2 	Cylinder temperature sensor	Sensor type: NTC 10 kΩ Cores are interchangeable Recommended connecting cable: 2 x 1.5 mm² - Max. cable length: 35 m
9.1 9.2 	Buffer temperature sensor, external heating/cooling water buffer cylinder	Sensor type: NTC 10 kΩ Cores are interchangeable Recommended connecting cable: 2 x 1.5 mm² - Max. cable length: 35 m
9A.1 9A.2 	Buffer temperature sensor, external cooling water buffer cylinder	Sensor type: NTC 10 kΩ Cores are interchangeable Recommended connecting cable: 2 x 1.5 mm² - Max. cable length: 35 m

Overview of electrical connections (cont.)

Terminals	Component	Explanation
72.L 72.GND 72.H CAN 	Connection, CAN bus communication cable to indoor/outdoor unit	Connection for integration into the internal CAN bus system If plug 72 is wired up on site: - Connect additional shielding to 72.GND. Recommended connecting cable: - Pre-assembled bus communication cable (accessories) Further information: See chapter "Establishing CAN bus connections".
74.+ 74.-	Connection of PlusBus subscribers, e.g. mixer extension kit	Cores are interchangeable Recommended connecting cable: - Unshielded data cable: 2 x 0.34 mm² - Max. cable length: 50 m
91.L 91.H CAN	Connection of an additional CAN bus subscriber, e.g. Vito-charge VX3	To integrate the heat pump into an external CAN bus system: Do not connect CAN Ground (GND)! Recommended connecting cable: Pre-assembled bus cable (accessories) Further information: See chapter "Establishing CAN bus connections". Note The CAN bus communication cable of the indoor/outdoor unit must only be connected to terminals "72".
92.IN 92.24 V 	24 V _~ contact humidistat for heating/cooling circuit 1	Recommended connecting cable: 2 x 0.75 mm² Max. cable length: 25 m - Or 2 x 1.5 mm² Max. cable length: 50 m

Terminal area XD2



Do not connect anything here!

Fig. 14

Terminal area XD3, 230 V~: Switch contacts and circulation pumps

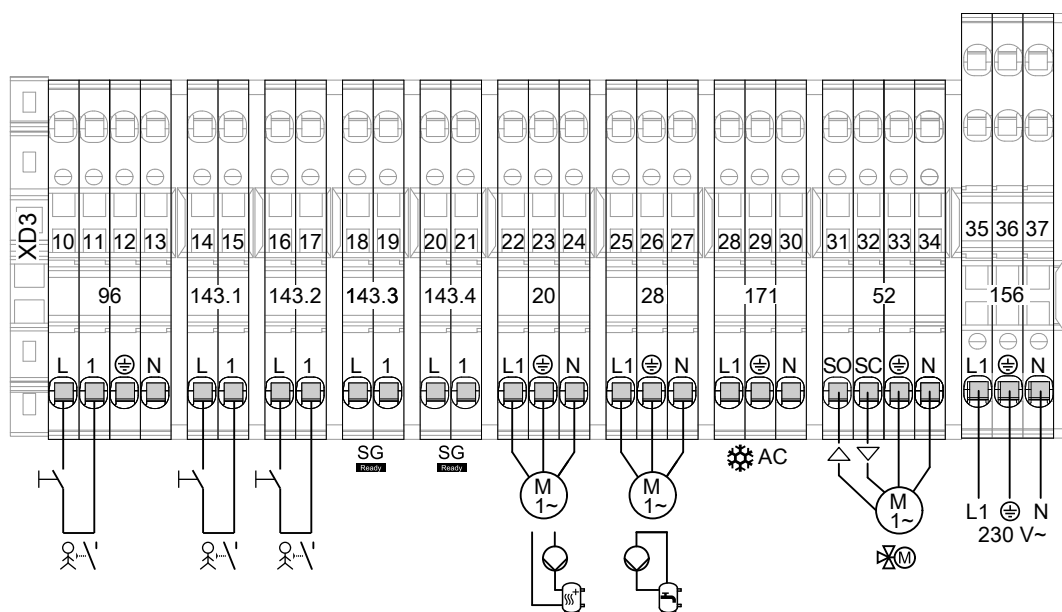


Fig. 15

Terminals	Component	Explanation
20.L1 20.⊕ 20.N 	Heating/cooling circuit pump 1 for buffer discharge	Configurable connection - Output: 230 W - Voltage: 230 V~ - Max. switching current: 1 A Recommended flexible connecting cable: 3 x 1.5 mm² - Max. cable length: 50 m - Cable type: H05VV-F 3G1.5
28.L1 28.⊕ 28.N 	For example, DHW circulation pump	- Output: 230 W - Voltage: 230 V~ - Max. switching current: 1 A Recommended connecting cable: 3 x 1.5 mm² - Max. cable length: 50 m - Cable type: H05VV-F 3G1.5
52.L ← 52.A → 52.⊕ 52.N 	3/2-way diverter valve, return	- Output: 230 W - Voltage: 230 V~ - Max. switching current: 1 A Recommended flexible connecting cable: 3 x 1.5 mm² - Max. cable length: 50 m - Cable type: H05VV-F 3G1.5

Overview of electrical connections (cont.)

Terminals	Component	Explanation
96.L1 96.⊕ 96.N ↓	Configurable digital input 1 Possible function: ▪  External demand, flow temperature, heating or ▪  External demand, DHW circulation pump or ▪  External room temperature hook-up (connection for room thermostat)	Voltage: 230 V~ Set the required parameters during commissioning: See chapter "Commissioning menu". For further information on the digital inputs: See chapter "Functions of the digital inputs". Breaking capacity: 230 V~, 0.15 A Recommended connecting cable: ▪ 2 x 0.75 mm ² ▪ Max. cable length: 50 m ▪ Cable type: H05VV-F 4G1.5
143.1 Terminals L, 1 ↓	Configurable digital input 2 Possible function: ▪  External blocking or ▪  Blocking the heating/cooling circuit (temperature limiter heating/cooling circuit 1)	Voltage: 230 V~ Set the required parameters during commissioning: See chapter "Commissioning menu". For further information on the digital inputs: See chapter "Functions of the digital inputs". Breaking capacity: 230 V~, 0.15 A Recommended connecting cable: ▪ 2 x 0.75 mm ²
143.2 Terminals L, 1 ↓	Configurable digital input 3 Possible function: ▪  Fault message input or ▪  External switch, heating/cooling (external operating program changeover between heating/cooling)	▪ Max. cable length: 50 m ▪ Cable type: H05VV-F 2X1.5
143.3 Terminals L, 1 ↓	Configurable digital input 4 Possible function: ▪  Power-OFF	
143.3 143.4 Terminals L, 1 ↓	Configurable digital inputs 4 and 5 Possible function: ▪  Smart Grid	

Overview of electrical connections (cont.)

Terminals	Component	Explanation
156.L1 156.⊕ 156.N	Switched mains output for mains connection, accessories, e.g. mixer extension kit	See chapter "Mains connection accessories 230 V ~". ▪ Output: 230 W ▪ Voltage: 230 V~ ▪ Max. switching current: 6.3 A Recommended flexible connecting cable: ▪ 3 x 1.5 mm² ▪ Max. cable length: 50 m ▪ Cable type: H05VV-F 3G1.5
171.L1 171.⊕ 171.N ⚡ AC	For example, cooling control Active cooling function	▪ Output: 230 W ▪ Voltage: 230 V~ ▪ Max. switching current: 1 A Recommended connecting cable: ▪ 3 x 1.5 mm² ▪ Max. cable length: 50 m ▪ Cable type: H05VV-F 3G1.5

Power supply, accessories 230 V ~

Power supply for all accessories to terminals 156 (230 V ~)

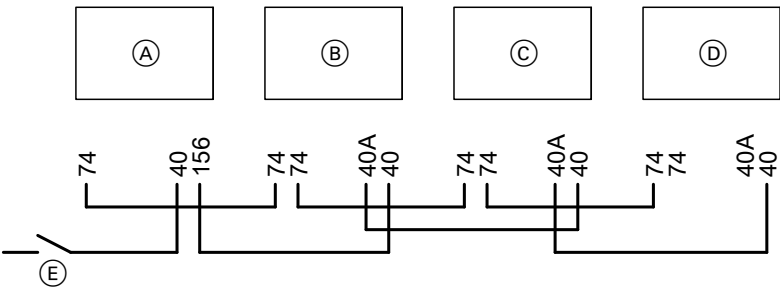


Fig. 16

- Ⓐ Indoor unit terminal areas

40 Mains connection, control unit/PCB 230 V~

74 PlusBus connection

156 Power supply, PlusBus subscriber

Ⓑ Mixer extension kit
- Ⓒ Mixer extension kit

Ⓓ Mixer extension kit

Ⓔ ON/OFF switch

Some accessories with direct power supply

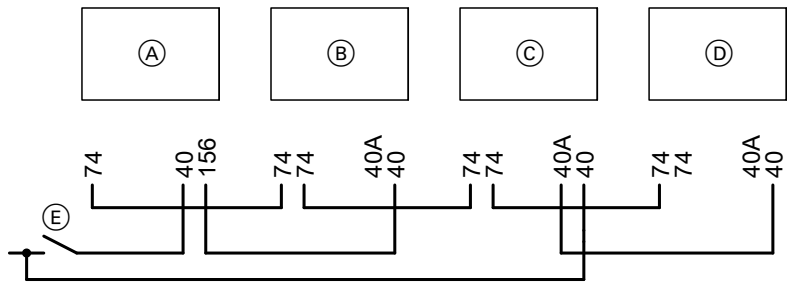


Fig. 17

- Ⓐ Indoor unit terminal areas

40 Mains connection, control unit/PCB 230 V~

74 PlusBus connection

156 Power supply, PlusBus subscriber

Ⓑ Mixer extension kit
- Ⓒ Mixer extension kit

Ⓓ Mixer extension kit

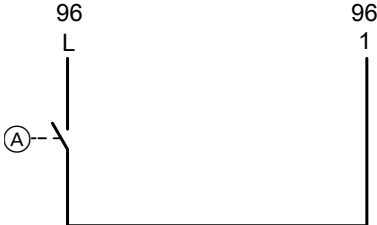
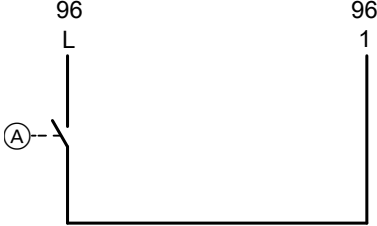
Ⓔ ON/OFF switch

Overview of electrical connections (cont.)

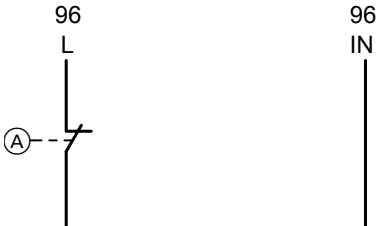
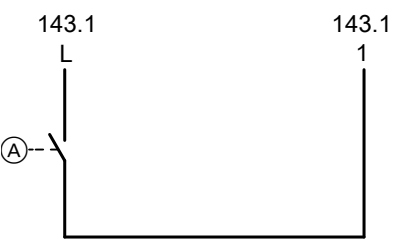
Digital input functions

- The simultaneous connection of several functions to 1 digital input is **not** possible.
- The 230 V~ power supply is connected via terminal "L".
- Set the required parameters during commissioning:
See chapter "Commissioning menu".

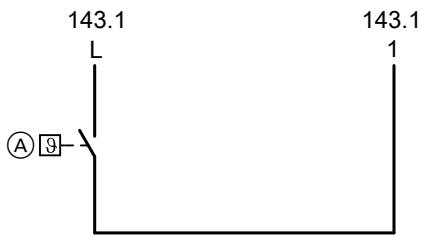
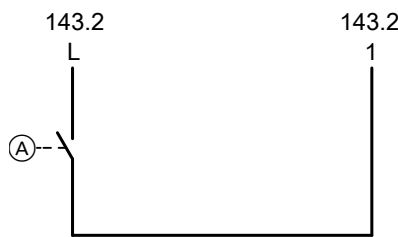
The following functions are available via the 5 digital inputs:

Functions	Digital inputs					Explanation
	96	143.1	143.2	143.3	143.4	
External demand, flow temperature, heating 	X	—	—	—	—	Only in conjunction with an external heating/cooling water buffer cylinder: External demand for room heating from an additional consumer circuit, e.g. swimming pool. The external demand is configured during commissioning. The flow temperature parameter for the consumer circuit is set to a fixed value.  ① Potential-free contact (on site) ■ Closed: Heating/cooling water buffer cylinder is heated to the set temperature: – Room heating operates independently of the time program. – The fixed flow temperature for the consumer circuit can be set. ■ Open: No heating mode additional consumer circuit Note This function cannot be combined with the "External flow temperature setpoint 0-10V" function via the EM-EA1 extension (connection 0 to 10 V).
External demand, DHW circulation pump 	X	—	—	—	—	External demand, DHW circulation pump  ① Potential-free contact (on site) If the connected button is pressed, the DHW circulation pump runs for 5 min.

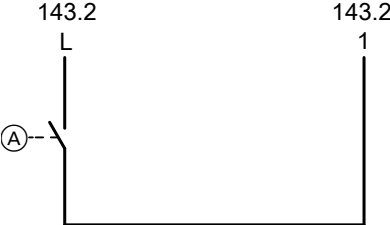
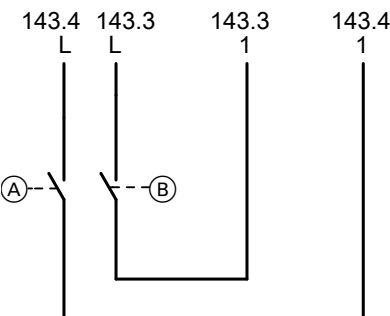
Overview of electrical connections (cont.)

Functions	Digital inputs					Explanation
	96	143.1	143.2	143.3	143.4	
External room temperature hook-up 	X	—	—	—	—	Demand for room heating via a room thermostat  (A) Potential-free contact (on site) ▪ Closed: Room heating ▪ Open: No room heating No frost protection for heating/cooling circuit 1 Note ▪ If the external room temperature demand is only connected for 1 of the max. 4 heating/cooling circuits, the room thermostat of this heating/cooling circuit is connected directly to digital input 96 of the system control unit/heat pump control unit. ▪ If the external room temperature demand for 2, 3 or 4 heating/cooling circuits is connected, connections to the EM-EA1 extension are required. Regardless of how many room thermostats are connected, the following assignment applies: Heating/cooling circuit 1: DI1 of the EM-EA1 extension Heating/cooling circuit 2: DI2 of the EM-EA1 extension Heating/cooling circuit 3: DI3 of the EM-EA1 extension Heating/cooling circuit 4: Digital input 96 of the system control unit/heat pump control unit If room thermostats are only connected for e.g. heating/cooling circuits 1 and 3, both room thermostats are connected to the EM-EA1 extension and contacts DI1 and DI3.
External blocking 	—	X	—	—	—	Refrigerant circuit and instantaneous heating water heater are blocked.  (A) Potential-free contact (on site) ▪ Closed: No room heating, no DHW heating ▪ Open: Normal operation

Overview of electrical connections (cont.)

Functions	Digital inputs					Explanation
	96	143.1	143.2	143.3	143.4	
Blocking the heating/cooling circuit 	—	X	—	—	—	If the temperature limiter to restrict the maximum temperature for underfloor heating circuit 1 responds, the room heating for this heating/cooling circuit is switched off.  Ⓐ Temperature limiter, heating/cooling circuit 1 Note Systems with external buffer cylinder: For heating/cooling circuit 1, the temperature sensor is connected in series with the heating circuit pump for heating/cooling circuit 1 at connection 20 in the 230 V~ terminal area. For all other heating/cooling circuits 2 to 4 (if installed), the temperature limiters are each connected to the mixer extension kit.
External switch, heating/cooling (External operating program changeover between heating/cooling) 	—	—	X	—	—	Only in conjunction with an external heating/cooling water buffer cylinder: Switching between heating mode and cooling mode via an external switch as an alternative option to setting via the "Buffer cylinder" menu.  Set the "Buffer cylinder": Operating instructions for the heat pump  Ⓐ Potential-free contact (on site) ▪ Closed: Cooling mode ▪ Open: Heating mode Note Function not available with external demand for a set flow temperature via a 0 to 10 V signal from the EM-EA1 extension (DIO electronics module)

Overview of electrical connections (cont.)

Functions	Digital inputs					Explanation
	96	143.1	143.2	143.3	143.4	
Fault message input 	—	—	X	—	—	Fault message from an additional appliance in the system network, e.g. inverter  Ⓐ Potential-free contact (on site)
Power-OFF 	—	—	—	X	—	The heat pump can be switched off by the power supply utility or the power consumption can be limited. The output restriction is set during commissioning. - With power-OFF, it is possible to select the stages to be switched off for the instantaneous heating water heater. - To avoid malfunctions, route the mains connection of the system control unit/heat pump control unit (3 x 1.5 mm²) and the cable for the power-OFF signal (lock or output restriction) separately. - For further information regarding the power-OFF signal: See chapter "Mains connection". Potential-free contact (on site) for power-OFF: - Closed: Heat pump in operation - Open: Heat pump not operational Potential-free contact (on site) for output restriction: - Closed: Heat pump with restricted output in operation - Open: Heat pump running Possible operating states: See chapter "Explanation of the operating states for power-OFF, output restriction, Smart Grid".
Smart Grid 	—	—	—	X	X	The output restriction is part of Smart Grid and is set during commissioning. Possible operating states: See chapter "Explanation of the operating states for power-OFF, output restriction, Smart Grid".  Ⓐ Potential-free contact (on site) Ⓑ Potential-free contact (on site)

Overview of electrical connections (cont.)

Explanation of the operating states for power-OFF, output restriction, Smart Grid

The operating state of the heat pump depends on the signal and the current switching state of contacts 143.3 and 143.4.

Operating state "Power-OFF active":

- Heat pump not operational
- Room heating via external buffer cylinder (if installed)
- Room heating backup by booster heaters: Instantaneous heating water heater (must be enabled separately), external heat generator (if installed)
- No room cooling

Operating state "Output restriction active":

- Limited power consumption of the heat pump and instantaneous heating water heater, therefore possibly lower heating output
- Room heating/room cooling using limited heat pump output or via an external buffer cylinder (if installed)
- If required, room heating backup by the external heat generator (if installed)

Operating state "Heat pump operation with adjusted set temperatures":

- Higher set temperatures for room heating, buffer heating, DHW heating
- Lower set temperatures for room cooling
- The heat pump is switched on if a time phase is active in the respective time program.
- The increased temperature values have no influence on the instantaneous heating water heater. The instantaneous heating water heater is only switched on when required.

Contact switching state		Heat pump operating state	Required commissioning menu settings
143.3	143.4		
Only power-OFF			
Closed	—	Heat pump operating normally	1. "System scheme 2"
Open	—	Power-OFF active: Heat pump not operational	2. "Smart Grid" 3. "Gridlock (power-OFF)"
Smart Grid and output restriction			
Open	Open	Heat pump operating normally (Smart Grid mode 2)	1. "System scheme 2"
Open	Closed	Heat pump operation with adjusted set temperatures (recommended mode, Smart Grid mode 3)	2. "Smart Grid"
Closed	Open Or Closed	Output restriction active (Smart Grid mode 1)	3. "SG Ready via potential-free contacts" And 1. "Additional settings"
			2. "SG Ready via pot.-free contacts"
			3. "Limiting the electrical active power consumption"

Establishing a CAN bus connection

The heat pump control units have internal and external CAN bus connections:

- The heat pump control unit and outdoor unit are integrated into the **internal** CAN bus system via the CAN bus connection.
- The heat pump can form a system network with other compatible appliances via the **external** CAN bus. Combining appliances with the same control platform brings benefits such as shared use of a connectivity module or even joint commissioning and operation via an app.

The following wall mounted gas condensing boilers are suitable for a system network with the heat pump:

- Vitodens 200-W, type B2HH
And
Vitodens 300-W, type B3HH
- With hybrid extension set (accessories):
Vitodens 200-W, types B2HE and B2HF
And
Vitodens 300-W, types B3HF and B3HG

- The CAN bus of the appliances is designed for "line" bus topology with a terminator at both ends: See chapter "Terminator for CAN bus system".
- With CAN bus, the transmission quality and the cable lengths depend on the electrical properties of the cable.
- Only use **one** cable type within a CAN bus.

Recommended cable:

- Connection between the heat pump control unit and the outdoor unit:
Indoor/outdoor unit bus communication cable (accessories), length 5, 15 or 30 m
- System network (connecting additional compatible appliances):
Bus cable (accessories), length: 5, 15 or 30 m
- Length of 1 connecting cable/communication cable:
 - Min. 3 m
 - Max. 30 m

Terminator for CAN bus system

When integrating into a CAN bus system, a distinction is made as to whether a CAN bus subscriber is the first, last or an intermediate subscriber.

In order to avoid communication faults, only 1 terminator with 120 Ω may be present at the first and last subscriber for termination of the CAN bus system. The two terminators required are connected at the factory.

If a CAN bus subscriber is an intermediate subscriber, the factory-fitted terminator must be removed: See the following chapter.

If CAN bus subscribers are subsequently added or removed, the terminators are removed from all intermediate subscribers. The removed terminators are connected to the new first and new last CAN bus subscribers.

To check this, the resistance at one of the CAN bus connections between CAN L and CAN H can be measured after all CAN bus connections have been completed. For correct measurement of the resistance, the power supply to all appliances in the CAN bus system must be interrupted.

Measured resistance:

- Set value:
60 Ω ±10 %.
- Measured value < 60 Ω:
More than 2 terminators installed
- Measured value > 60 Ω:
Only 1 terminator installed
or
Terminator not equal to 120 Ω

CAN bus connection via an on-site cable

- Only use the cable types listed in the following two tables.
- Connection between the system control unit/heat pump control unit and the outdoor unit(s) (internal CAN bus system):
 - Only use cables with shielding.
 - Also connect shielding to the "GND" terminal in each case.
 - If necessary, remove the terminator.
- System network (external CAN bus system):
 - Do **not** connect anything to the "GND" terminal (no shielding).
 - If necessary, remove the terminator.

Establishing a CAN bus connection (cont.)

CAN bus system	Recommended cable type (on site)	Alternative cable type (on site)
CAN bus cable	In line with ISO 11898-2, twisted pair cable, shielded	2-core, CAT7, shielded Or 2-core, CAT5, shielded
▪ Cable cross-section	0.34 to 0.6 mm ²	0.34 to 0.6 mm ²
▪ Characteristic impedance	95 to 140 Ω	95 to 140 Ω
▪ Max. length of entire internal CAN bus system	120 m	120 m
▪ Max. length of entire external CAN bus system	200 m	200 m

CAN bus connections in the system network (external CAN bus)

The system control unit/heat pump control unit is the first or last subscriber

Note

Do **not** connect CAN Ground (GND)!

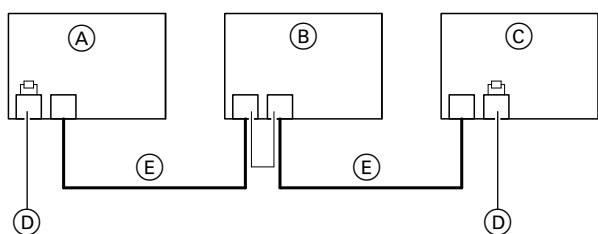


Fig. 18

System control unit/heat pump control unit is an intermediate subscriber

Note

Do **not** connect CAN Ground (GND)!

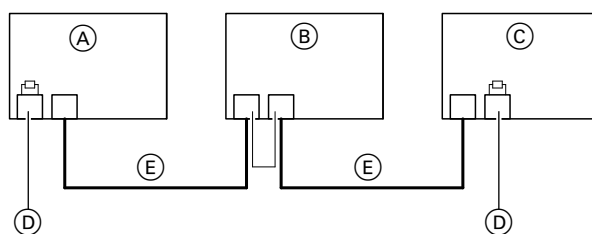


Fig. 19

- (A) **System/heat pump control unit** is connected as the first or last CAN bus subscriber.
Do **not** remove the terminator on terminal 91 for external CAN bus.
- (B) **Further appliance** is connected as an intermediate CAN bus subscriber.
Remove the terminator from the further appliance.
- (C) **Further appliance** is connected as the first or last CAN bus subscriber.
Do **not** remove the terminator from the further appliance.
- (D) Terminal with terminator
- (E) Bus communication cable (accessories), length 5, 15 or 30 m

- (A) **Further appliance** is connected as the first or last CAN bus subscriber.
Do **not** remove the terminator from the further appliance.
- (B) **System control unit/heat pump control unit** is connected as an intermediate CAN bus subscriber.
Remove the terminator on terminal 91 for external CAN bus.
- (C) **Further appliance** is connected as the first or last CAN bus subscriber.
Do **not** remove the terminator from the further appliance.
- (D) Terminal with terminator
- (E) Bus communication cable (accessories), length 5, 15 or 30 m

Routing the CAN bus cable

**Please note**

- Incorrectly executed electrical installations can cause appliance damage.
 - Protect the CAN bus cable from damage.
 - Do not crush or cut the wires when securing the cable.

Establishing a CAN bus connection (cont.)

- ! Please note**
A bending radius that is too small can cause damage to the CAN bus cable and impair data transmission.
- Do not kink the CAN bus cable.
 - Do not twist the CAN bus cable.
 - Observe and adhere to the required bending radius:
 - Fixed installation
Bending radius ≥ 10 times the cable cross-section
 - Movable installation
Bending radius ≥ 15 times the cable cross-section

- ! Please note**
Voltages ≥ 230 V~ in the direct vicinity of the CAN bus cable can interfere with data transmission.
- Do not route the CAN bus cable alongside 230 V~/400 V~ power cables.
 - Do not route the CAN bus cable in the vicinity of motors or motor drives.
 - Strip as little of the insulation as possible, directly before the terminals.

Connecting the CAN bus communication cable

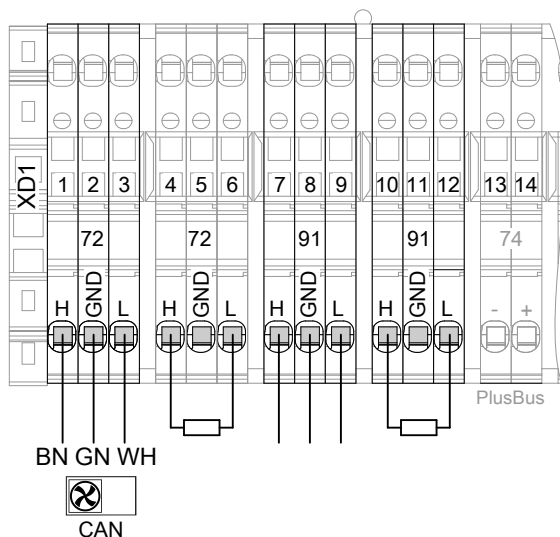


Fig. 20

Colour coding to IEC 60757:

BN Brown
GN Green
WH White

Connecting the energy meter

The energy meter is installed on the main distribution board. It is connected to the building's power supply and to the external CAN bus system according to the connection diagrams in the system schemes. Recommended cable type: See chapter "Connecting with other appliances via the CAN bus".

- ! Please note**
Incorrect core assignment can result in appliance faults.
Never interchange wires.

CAN bus subscriber number

The CAN bus subscriber number "97" is preset.
If more than 1 energy meter is used within a CAN bus system, the energy meters must each have their own CAN bus subscriber number; if necessary, change to "98", "111" or "112".



Installation and service instructions for the "Energy meter"

Establishing the LAN connection

The internet connection for communicating with the apps can be established via WiFi or LAN.

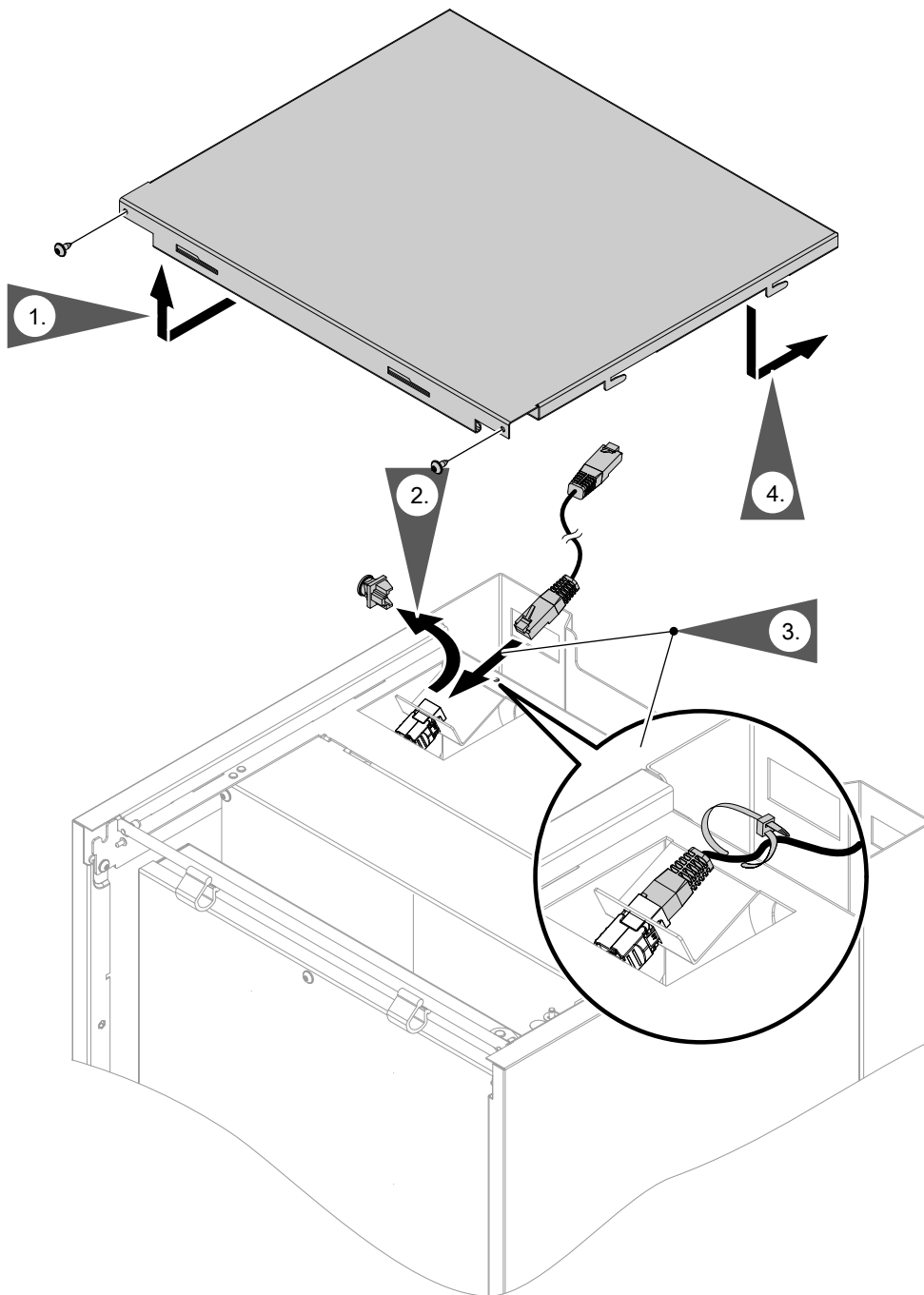


Fig. 21

1. Disconnect the earthing cable from the top panel.
4. Connect the earthing cable to the top panel.

Mains connection

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. main switch or upstream circuit breaker.
- Additionally install an AC/DC-sensitive RCD with a nominal residual current of maximum 30 mA (RCD class B ) for current that can occur with energy efficient equipment.
- Select and size RCDs to DIN VDE 0100-530.



Danger

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

Implement the mains connection and 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

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

Protect the power cable against damage.



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 electric shock and result in appliance damage.

Do not interchange wires "L" and "N".

Note

Incorrectly executed electrical installations may cause undesirable electromagnetic interaction with other electronic devices.

- Consult your power supply utility, which may offer different supply tariffs for the power circuits. Observe the technical connection conditions of the power supply utility.
- If the instantaneous heating water heater (if installed) is operated on an economy tariff (power-OFF), provide an additional cable (e.g. 3 x 1.5 mm²) for the power-OFF signal from the meter box to the heat pump control unit.
- Settings for power-OFF are configured via the heat pump control unit. In Germany, the power supply can be switched off for a maximum of 3 x 2 hours per day (24 h).

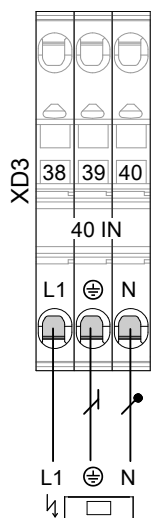
Output restriction

Instead of being switched off completely (power-OFF), the heat pump output is restricted to a maximum of 4.2 kW. The calculated or specified output restriction for the system is set during commissioning.

- The feed to the **heat pump control unit/system control unit/electronics** must be **without** power-OFF. Tariffs subject to possible shutdown must not be used here.
- Fuse the power cable for the heat pump control unit to max. 16 A for sizes 06 to 10, and to 20 A for size 12.
- Recommendation: For accessories and external components that will not be connected to the heat pump control unit, provide the power supply via the same fuse, or at least on the same phase, as the heat pump control unit. Connection to the same fuse provides additional safety in the event of the power being switched off. Observe the power consumption of the connected consumers.
- If the power supply to the appliance is connected with a flexible power cable, ensure 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.

Mains connection (cont.)

Terminal area XD3, 230 V~: Indoor unit mains connection



Mains connection	1/N/PE 230 V~/50 Hz
Output	1000 W
Max. switching current	6.3 A
Recommended power cable	
Cable type	H05VV-F 3G1.5
Cable cross-section	
▪ Heat pump control unit/electronics 230 V~	3 x 1.5 mm ²
▪ Power-OFF	3 x 1.5 mm ²
Max. cable length	50 m
Max. fuse rating	16 A
Tariff	Standard tariff ▪ No economy tariff with power-OFF facility possible ▪ This supply must never be blocked.

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

Electrical connections of the power supply:

- Heat pump control unit
See chapter "Indoor unit mains connection".
- Outdoor unit with instantaneous heating water heater:



Separate installation and service instructions

Note

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

Mains connection (cont.)

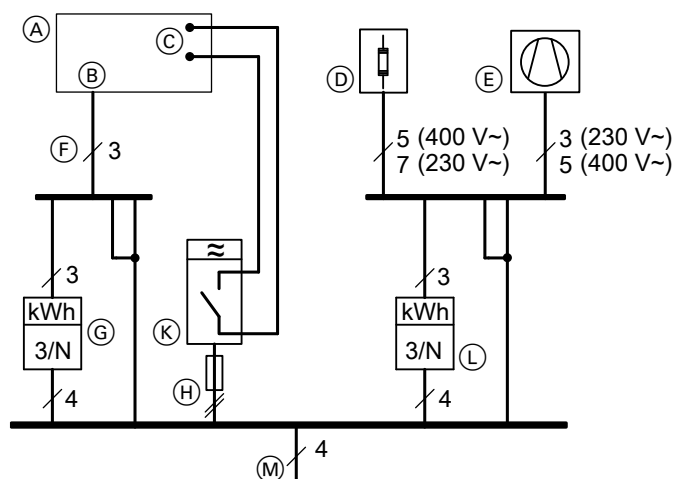


Fig. 23 Diagram excluding fuses and RCD

- | | |
|--|--|
| <p>Ⓐ Heat pump control unit/system control unit</p> <p>Ⓑ Terminals for power supply to heat pump control unit/system control unit</p> <p>Ⓒ Connection for power supply utility switching signal</p> <p>Ⓓ Instantaneous heating water heater</p> <p>Ⓔ Compressor</p> <p>Ⓕ Mains connection for heat pump control unit/system control unit</p> | <p>Ⓖ Premium tariff meter</p> <p>Ⓗ Ripple control receiver backup fuse</p> <p>Ⓚ Ripple control receiver (contact open: Power-OFF active); feed: TNC system</p> <p>Ⓛ Economy tariff meter</p> <p>Ⓜ Feed: TNC system</p> |
|--|--|

Mains power supply in conjunction with self-consumption

For available connection diagrams for self-consumption as well as further information: See climate-solutions.com/energymanagement.

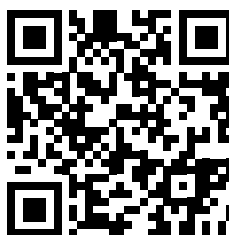


Fig. 24

Closing the indoor unit



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.

- Before closing the indoor unit, restore all protective conductor connections.
- Check whether equipment and pipe connections are connected to the equipotential bonding of the building. Restore the connections if required.



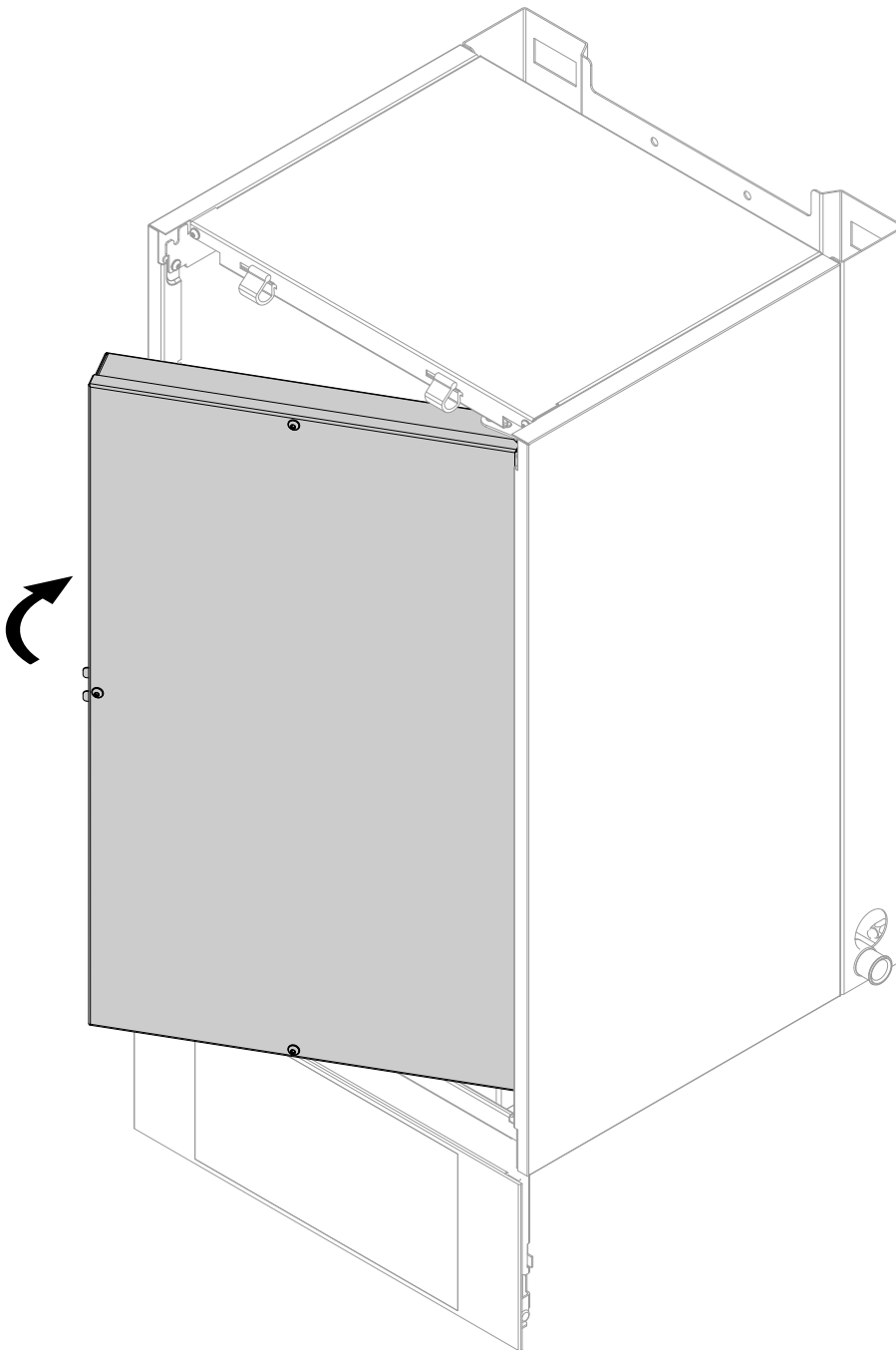
Please note

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

- Check all-round seal of front panel for damage.
- Close appliance correctly.
- On pipe and hose outlets, ensure the thermal insulation is seated correctly.

Closing the electrical terminal area

After completing all electrical connections, seal the junction box tightly.

Closing the indoor unit (cont.)*Fig. 25***Fitting the programming unit**

In the delivered condition, the programming unit bracket is located at the bottom. For easier access, the programming unit can be fitted at the top, e.g. when installation heights are low.

In this case, fit the programming unit bracket at the top.

Closing the indoor unit (cont.)

Fitting the programming unit at the bottom

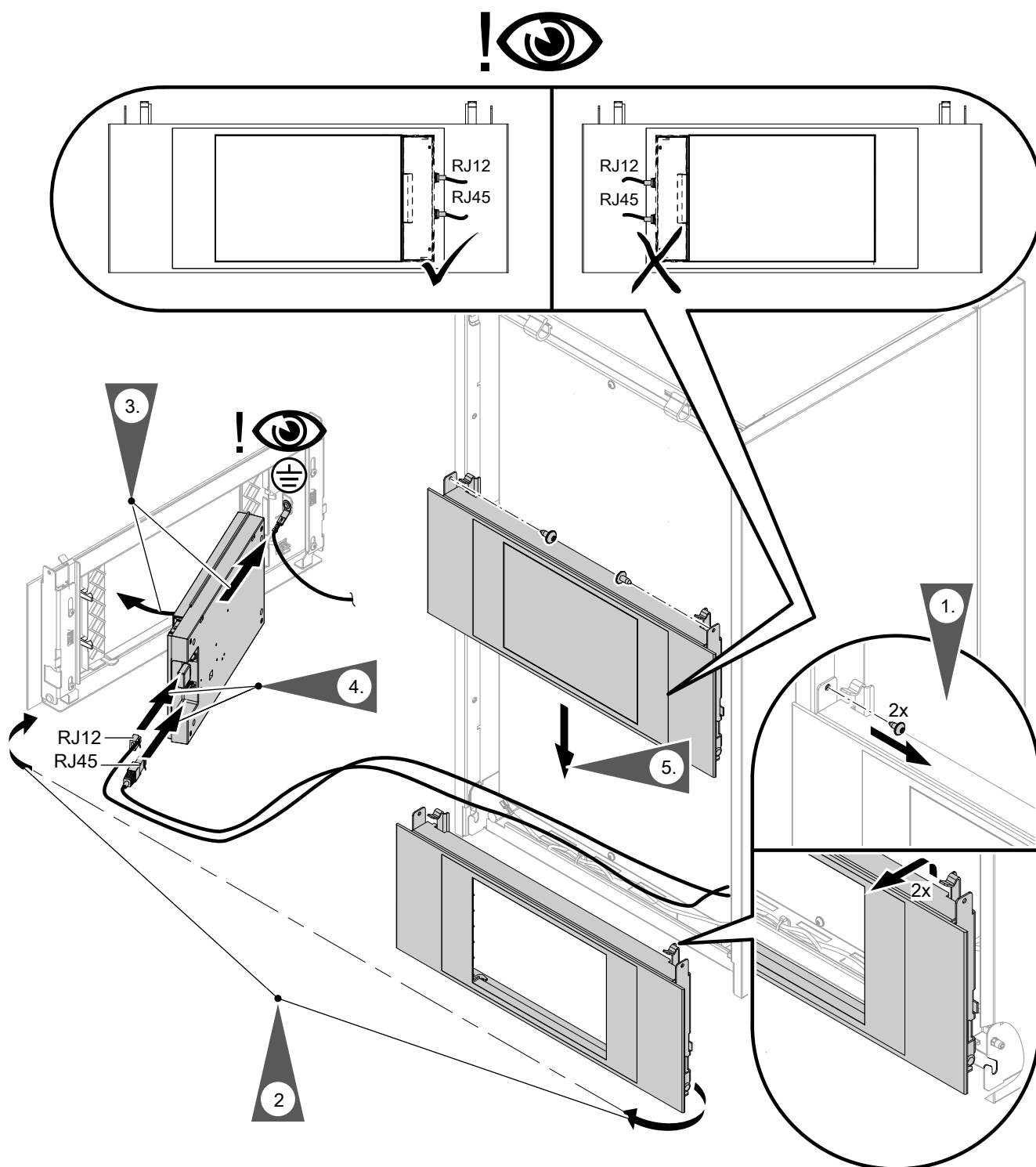


Fig. 26

RJ12 Connection to the programming unit
RJ45 LAN connection

Note

To make installation of the programming unit easier, the earthing cable can be temporarily disconnected from the programming unit bracket. Be sure to reconnect the earthing cable to the programming unit bracket.

Closing the indoor unit (cont.)

Fitting the programming unit bracket at the top

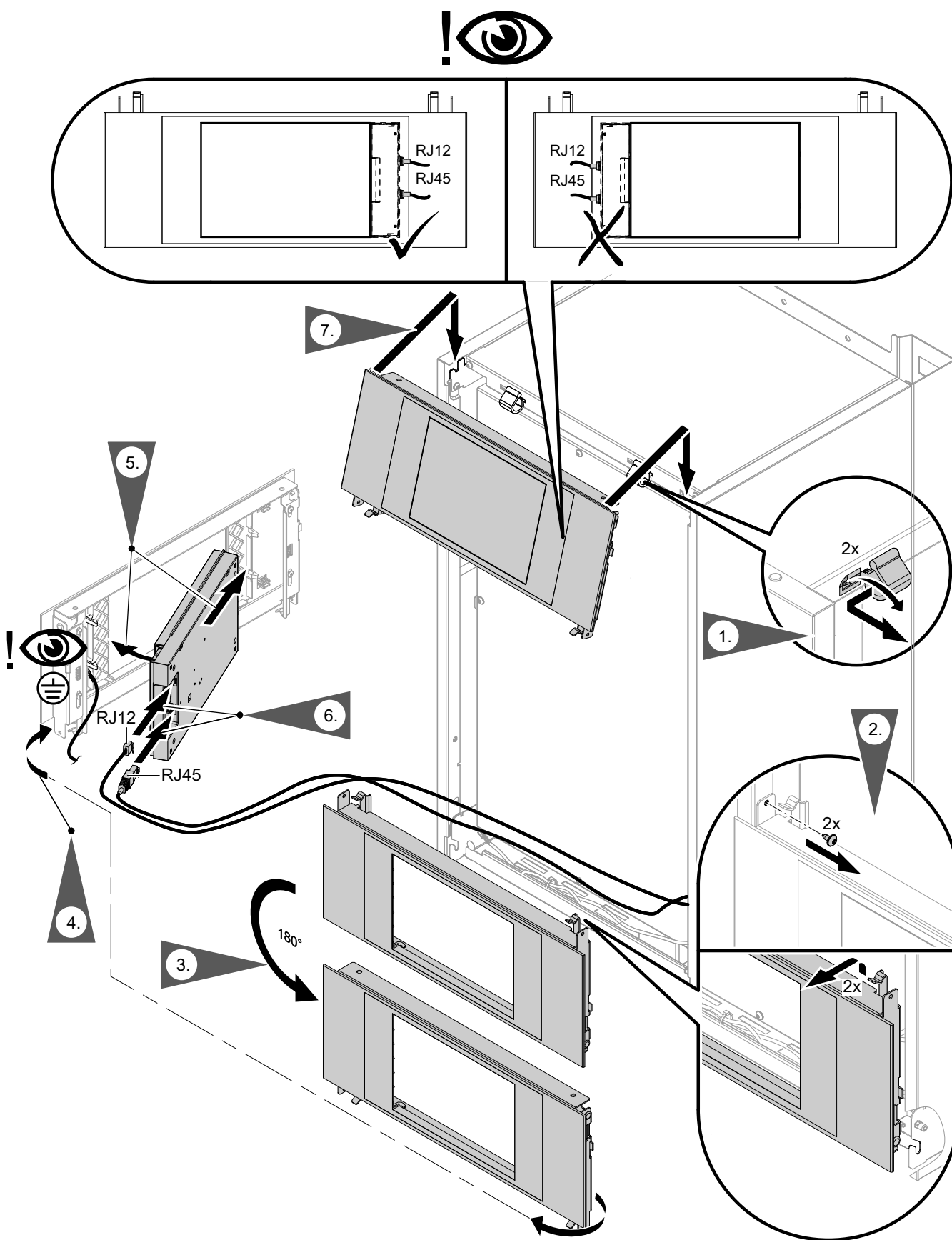


Fig. 27

RJ12 Connection to the programming unit
RJ45 LAN connection

Closing the indoor unit (cont.)

Note

To make installation of the programming unit easier, the earthing cable can be temporarily disconnected from the programming unit bracket. Be sure to reconnect the earthing cable to the programming unit bracket.

Fitting the front panel

Version with programming unit from the service position mounted at the bottom

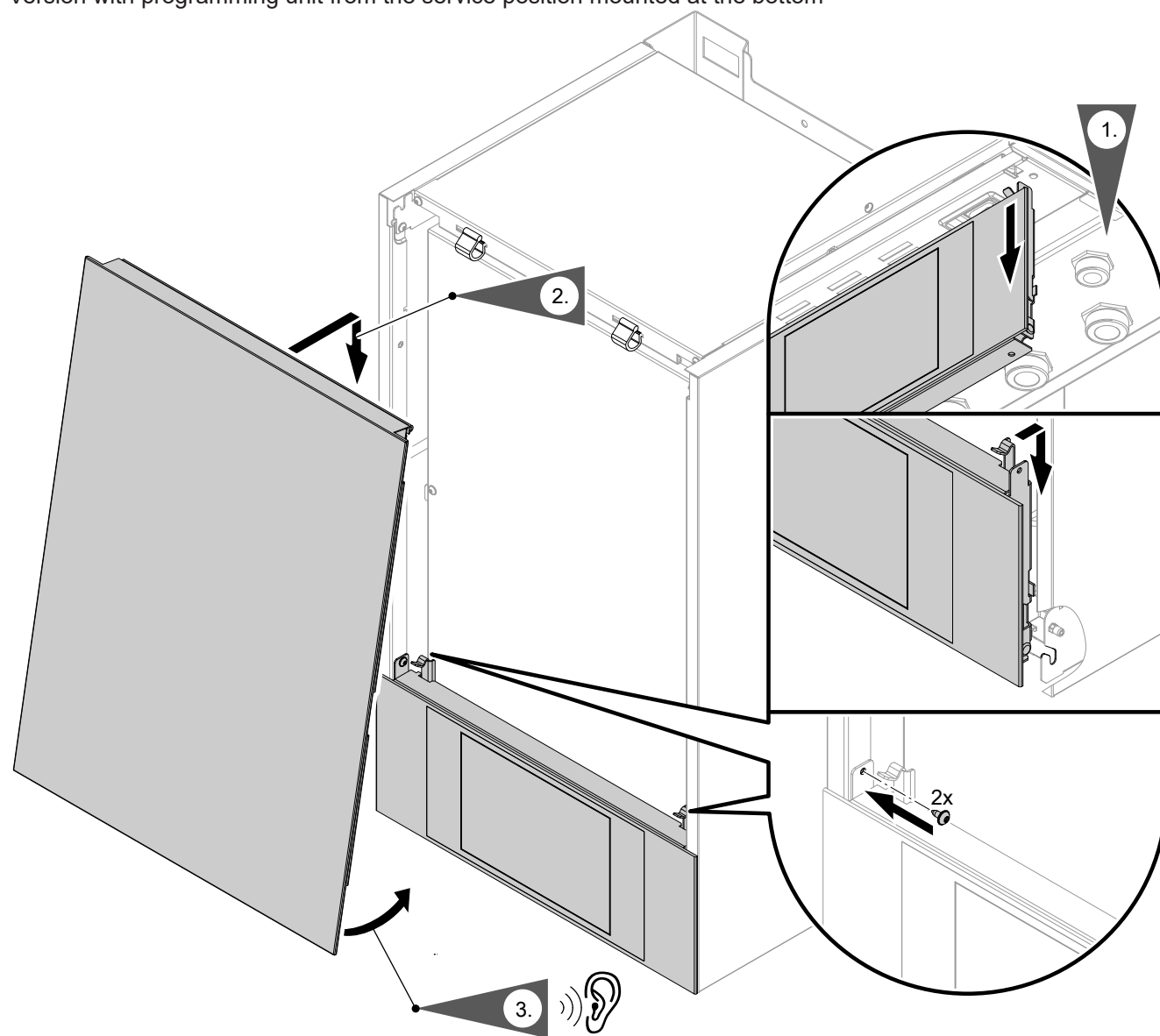


Fig. 28

2. Connect the earthing cable to the front panel.

Closing the indoor unit (cont.)

Version with programming unit mounted on top

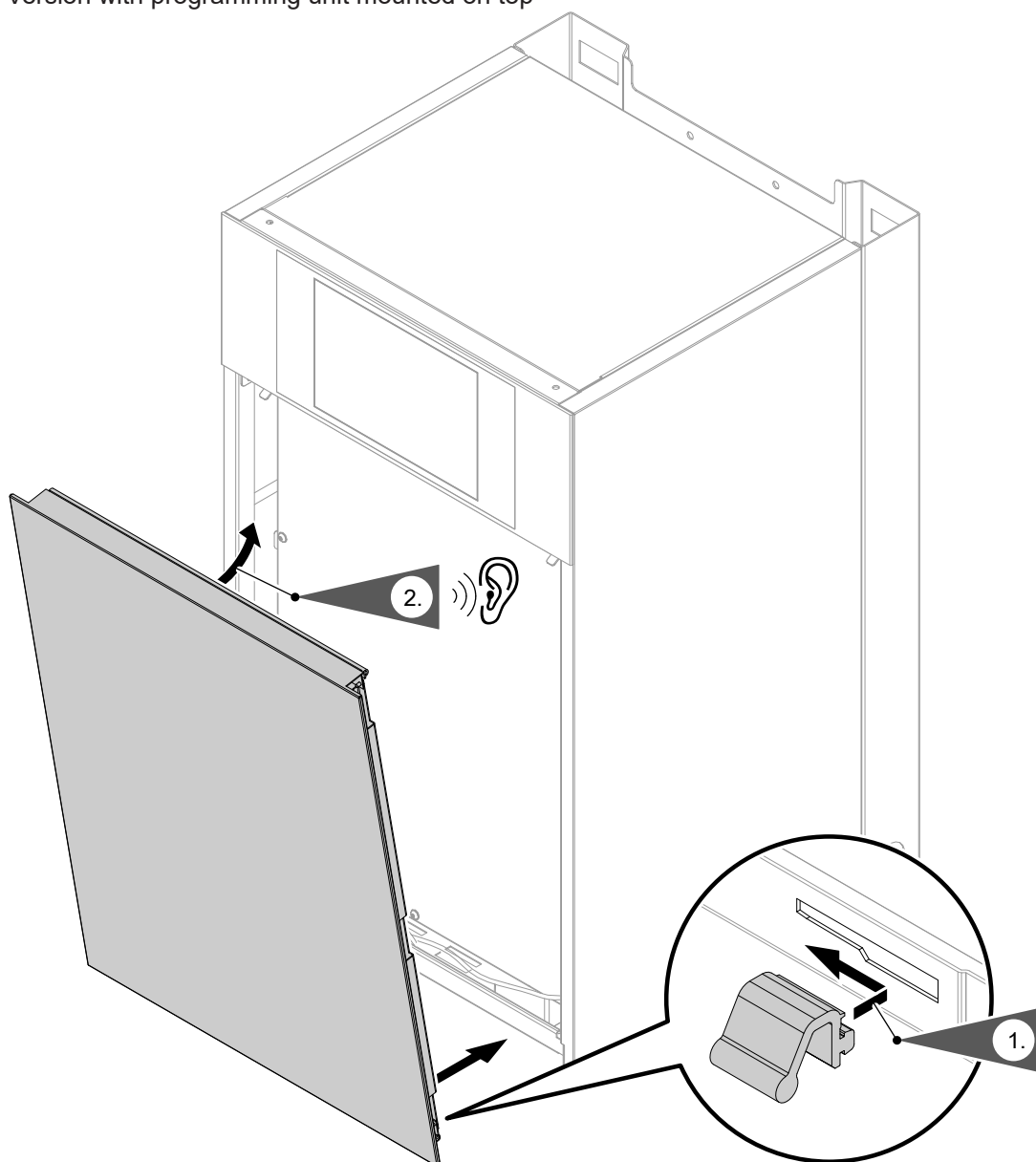


Fig. 29

1. Install the hinges included in the standard delivery.
2. Connect the earthing cable to the front panel.

Steps - commissioning, inspection and maintenance

			Commissioning steps	
			Inspection steps	
			Maintenance steps	
				Page
				
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•			3. Commissioning the system.....	49
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Opening the indoor unit



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.

- **Do not touch** electrical terminal areas.
- When working on the indoor unit, isolate the system from the power supply, e.g. at a separate fuse or a main switch. Check that all installed power circuits of the indoor unit are no longer live. Safeguard against unauthorised reconnection.
- Before working on the appliance, wait at least 5 min until the voltage has 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 conductor connections **must** be reconnected.

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

See pages 22 and 23.



Checking the indoor unit electrical connections for firm seating



Danger

Contact with live components can lead to serious injury from electric current.

When working on the indoor unit, isolate the system from the power supply, e.g. at a separate fuse or a main switch. Wait at least 4 min until the voltage has dropped out. Check that it is no longer live. Safeguard against reconnection.



Commissioning the system

Commissioning requirements

- All hydraulic lines are connected to the indoor unit.
- The indoor unit is hydraulically connected to an outdoor unit.
 - Only with modernisation projects:
 - The heating/cooling circuits have been thoroughly flushed.
 - A heating water filter (accessories) is installed between the indoor and outdoor units, in the return to the outdoor unit.
- All hydraulic lines have been checked for leaks.
- The system is **not** yet filled with heating water.
- All electrical components of the system are connected.
- All CAN bus connections have been made:
 - See "Establishing a CAN bus connection".
- The indoor unit and instantaneous heating water heater (if installed) are connected to the mains power system.
- The outdoor unit is connected to the mains power system.
 -  Installation and service instructions for the outdoor unit
- The non-return valve in the outdoor unit must be in the filling position (open), i.e. the key must be inserted in the non-return valve.
 -  Installation and service instructions for the outdoor unit

Credentials for the access point (WiFi connection)

For commissioning via the ViGuide app, a WiFi connection is established via the access point of the heat pump.

The credentials required to establish a connection are retrieved via a QR code during commissioning. This QR code is displayed on the heat pump control unit/system control unit during commissioning.



Start sequence for indoor/outdoor unit

If this start sequence is not observed, communication errors are displayed and the system does not start.

1. Switch on the power supply at the main fuse.
2. Switch on the power supply to the indoor unit. Wait until the default display is shown on the programming unit.



Please note

Frost can cause damage to the heat pump and to the system. Leave the power supply and ON/OFF switch at the indoor unit permanently switched on. Only switch off the power supply and ON/OFF switch for short periods, e.g. for work on the heat pump.

3. Switch on the power supply to the outdoor unit.



Installation and service instructions for the outdoor unit

Compressor start-up in the outdoor unit when outside temperatures are below $-10\text{ }^{\circ}\text{C}$

For technical reasons, compressor start-up is delayed by several minutes in the following cases:

- When carrying out initial commissioning
- After long downtimes

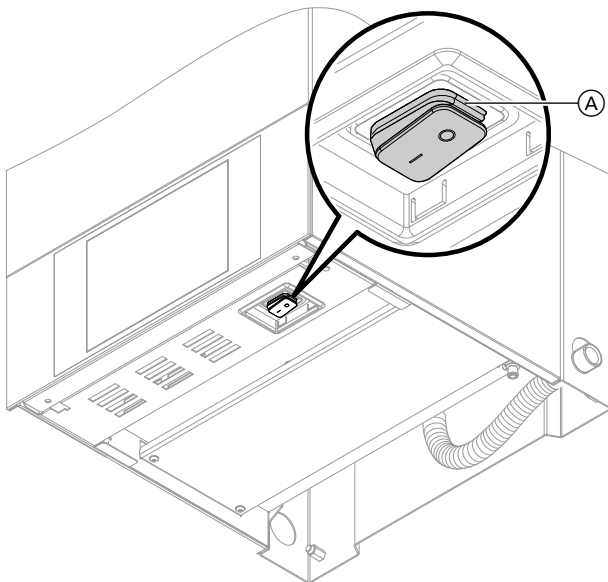


Fig. 30

Ⓐ ON/OFF switch

Commissioning the heat pump as a single appliance

Commissioning of the heat pump as a single appliance is carried out via the commissioning menu. The commissioning menu can be accessed either via the programming unit or the ViGuide app.

Note

A heat pump with multiple outdoor units is controlled by a heat pump control unit. Commissioning is performed in the same way as for the single appliance described here, using the ViGuide app.

1. **Start the heat pump:**

It is **essential** to observe the start sequence: See chapter "Start sequence for indoor/outdoor unit".



Commissioning the system (cont.)

2. Start commissioning:

Launch the commissioning process on the heat pump via the commissioning menu:

- If the heat pump hasn't been switched on yet, the commissioning menu starts automatically.
- If the heat pump has already been switched on: See chapter "Calling up the commissioning menu at a later point".

For commissioning via the **programming unit**:
Select "**Commissioning**".

Or

For commissioning via the **ViGuide app**:

- On the programming unit, select "**Connect**" from the service menu. The heat pump automatically activates the access point.
- A direct WiFi connection to a mobile device is established via the access point. This WiFi connection is independent of the home WiFi network.

3. Commission and set up the system:

When commissioning via the **programming unit**:
See chapter "Commissioning: Sequence".

Or

When commissioning via the **ViGuide app**:

- Start the ViGuide app on the mobile device. Follow the instructions.
- Retrieve the credentials using the QR code displayed.
- Perform all necessary settings in the ViGuide app.

Note

Depending on the outdoor unit type, the accessories connected and other settings, not all menu points are displayed.

4. Further settings via the ViCare app:

The heat pump control unit must be connected to the server via the internet in order to perform settings via the ViCare app. This internet connection is established via the home LAN or WiFi. To set up the internet connection:



Operating instructions

Commissioning the heat pump in a system network

In a system network, all appliances with the same control platform can be commissioned using the **ViGuide app** via the access point of the heat pump (main appliance).

Note

The ViGuide app for commissioning and servicing is available for iOS and Android devices.



Alternatively, the heat pump can be commissioned via the **programming unit** of the heat pump. The other appliances in the system network can then be commissioned using the ViGuide app or, in the case of the following external heat generators, also via the programming unit:

- Vitodens 200-W, type B2HH
And
Vitodens 300-W, type B3HH
- With hybrid extension set (accessories):
Vitodens 200-W, types B2HE and B2HF
And
Vitodens 300-W, types B3HF and B3HG

In conjunction with a photovoltaic system

Vitocharge VX3 can only be commissioned with the ViGuide app.

1. Where one or more of the additional appliances have already been operational as a single appliance, **first** restore the factory settings on these appliances.



Installation and service instructions of the additional appliance

2. Switch the appliance on:

- Switch on all appliances in the system network.
- It is **essential** to observe the start sequence for the heat pump: See chapter "Start sequence for indoor/outdoor units".

**3. Start commissioning on the heat pump (main appliance):**

Launch the commissioning process on the heat pump via the commissioning menu:

- If the heat pump hasn't been switched on yet, the commissioning menu starts automatically.
- If the heat pump has already been switched on: See chapter "Calling up the commissioning menu at a later point".

For commissioning via the **programming unit**:
Select **"Commissioning"**.

Or

For commissioning via the **ViGuide app**:

- On the programming unit, select **"Connect"** from the service menu. The heat pump automatically activates the access point.
- A direct WiFi connection to a mobile device is established via the access point. This WiFi connection is independent of the home WiFi network.

The connected additional appliances detect the connection to the heat pump (main appliance). Some appliances indicate on the programming unit that connection was successful.

4. Carry out commissioning of the heat pump (main appliance):

When commissioning via the **programming unit**:
See chapter "Commissioning: Sequence".

Or

When commissioning via the **ViGuide app**:

- Start the ViGuide app on the mobile device. Follow the instructions.
- Retrieve the credentials using the QR code displayed.
- Perform all necessary settings in the ViGuide app.

5. Commission and set up additional appliances in the system network:

When commissioning using the **programming unit of the above-mentioned Vitodens**:

- The commissioning menu on the Vitodens starts automatically.
 - Follow the commissioning menu.
-  Installation and service instructions for the Vitodens

Or

When commissioning via the **ViGuide app**:

- Commission all additional appliances via the heat pump's access point using the ViGuide app.
 - Start the ViGuide app on the mobile device. Follow the instructions.
- Perform all necessary settings in the ViGuide app.

6. Further settings via the ViCare app:

The heat pump must be connected to the server via the internet in order to perform settings via the ViCare app. This internet connection is established via the home LAN or WiFi.

To set up the internet connection:



Operating instructions

Setting up the internet connection

For maintenance and service via ViGuide and for operation via the app, an internet connection between the heat pump and the server is required.



To set up the internet connection:
Operating instructions

Calling up the commissioning menu at a later point

If you need to continue commissioning later, the commissioning menu can be restarted at any time.

Tap the following buttons:

1.  and then tap  **"Service"**
or

 and hold, then select **"Service"**.

2. **"Next"** to acknowledge the information
3. Enter password **"ServiceAccess"**.
4. Tap **"Next"** to confirm
5.  for  **"Commissioning"**



Commissioning the system (cont.)

Commissioning: Procedure

During commissioning, the components in the system and the required functions are configured. To this end, the commissioning process is divided into several sections:

- The sequence of the sections is predetermined.
- Each section ends with **"Next"** and **"Close"**. A message may appear.

- Commissioning can be aborted.
- Depending on the configuration unit, not all settings will be displayed. For example, if a component is configured as **"Not available"**, the other settings for that component are not displayed.

"General" section

"Standard settings"

Setting	Explanation
Location	
Language	Select the required menu language for the programming unit.
Altitude	Set the geographical height of the installation location.
Building type	
▪ Single family house	The settings in holiday mode and holiday at home apply to all heating/cooling circuits.
▪ Multi family house	The settings in holiday mode and holiday at home apply to the selected heating/cooling circuits.
Device specifications	
Date and time	
▪ Date format	Set the date format, for example DD.MM.YYYY, MM/DD/YYYY or YYYY/MM/DD.
▪ Time format	Set the time format, for example 24 hour or 12 hour.
▪ Date	Set the date.
▪ Time	Set the time.
▪ Time changeover	Turn automatic changeover from summertime to wintertime on/off.
Units	
▪ Units of measurement	Set the units of measure, e.g. Metric, Imperial US or Imperial UK.
▪ Temperature	Set the unit for temperature readings, e.g. Celsius or Fahrenheit.
▪ Length	Set the unit for length measurements, e.g. metres (m) or feet (ft).
▪ Pressure	Set the unit for pressure readings, e.g. bar or Psi.
▪ Mass	Set the unit for weight measurements, e.g. kilos (kg) or pounds (lb).
▪ Volume	Set the unit for volume measurements, e.g. litres (L) or US liquid gallons (gal).
Finish configuring the General section.	Confirm the prompts with "Next" and "Close" .

**"Heat generator" section****"Necessary conditions"**

Setting	Explanation
Are the necessary conditions for the outdoor units met? ▪ Confirm to continue commissioning. ▪ Otherwise, commissioning will be aborted.	Check the installation conditions for the outdoor unit:  Installation and service instructions for the outdoor unit, chapter "Installation instructions", "Minimum clearances", "Safety zone", etc. If all requirements are met, continue with commissioning. If all requirements are not yet met, abort commissioning.
Are the necessary conditions for the indoor unit units met? ▪ Confirm to continue commissioning. ▪ Otherwise, commissioning will be aborted.	Installation conditions for the indoor unit: See chapter "Requirements for the installation room", "Minimum clearances", etc. If all requirements are met, continue with commissioning. If all requirements are not yet met, abort commissioning.
Is the heat pump module ready for operation? ▪ Confirm to continue commissioning. ▪ If commissioning aborted, the system continues with the refrigerant circuit blocked.	 Installation and service instructions for the outdoor unit The outdoor unit is fully connected and ready for operation; continue with commissioning. The outdoor unit is not ready for operation; the refrigerant circuit is blocked; commissioning continues: ▪ Room heating by means of the integral instantaneous heating water heater or external heat generator, if installed ▪ No room cooling ▪ DHW heating by means of the instantaneous heating water heater or external heat generator, if installed



Commissioning the system (cont.)

"System scheme 1": Configuring the system equipment level

Setting	Explanations and references
Low loss header/buffer cylinder	
Low loss header/buffer cylinder ▪ Not installed ▪ Heating only ▪ DHW cylinder upstream of low loss header ▪ DHW cylinder downstream of low loss header ▪ Buffer cylinder heating only ▪ DHW heating upstream of buffer cylinder ▪ Heating/cooling water buffer cylinder ▪ Cooling water buffer cylinder ▪ Buffer cylinder with DHW heating	No low loss header or external buffer cylinder installed System with external heating water buffer cylinder System with low loss header and DHW cylinder upstream of low loss header included System with low loss header and DHW cylinder downstream of low loss header included System with external buffer cylinder System with external buffer cylinder and DHW cylinder upstream of the buffer cylinder System with external heating/cooling water buffer cylinder System with external cooling water buffer cylinder System with heating water buffer cylinder with integrated DHW heating ▪ With buffer temperature sensor ▪ With cylinder temperature sensor ▪ With return changeover Note <i>Cooling is not possible in systems with a heating water buffer cylinder with integral DHW heating.</i>





Setting	Explanations and references
Heating/cooling circuits	
Heating/cooling circuit type ▪ Not installed ▪ Heating/cooling circuit without mixer (direct) ▪ Heating/cooling circuit with mixer	Only for directly connected heating/cooling circuit 1 Not possible for heating/cooling circuit 1
Function ▪ Heating ▪ Cooling ▪ Heating and cooling	Only heating mode possible Only cooling mode possible An external buffer cylinder (if installed) must be configured for "Heating and cooling". An external buffer cylinder (if installed) must be configured for "Heating and cooling".
Heat transfer medium ▪ Radiators ▪ Underfloor heating ▪ Fan coil	Type of energy distribution Note <i>If the Function selected is "Cooling" or "Heating and cooling", the Heat transfer medium Radiators cannot be selected.</i>
Control variable ▪ Weather-compensated with outside temperature sensor ▪ Weather-compensated with room temperature hook-up ▪ Weather-compensated with external room temperature hook-up	Weather-compensated control method without room temperature hook-up Weather-compensated control method with room temperature hook-up ▪ Only in conjunction with wireless remote control ▪ This room temperature hook-up is enabled and set via additional parameters for the "room temperature influence". The higher the room temperature influence is set, the greater the adjustment of the set flow temperature will be. Weather-compensated control method with external room temperature hook-up A room thermostat must be connected to switch contact 96 in the terminal area 230 V~, switching contacts and circulation pumps. ▪ Contact closed: Room heating ▪ Contact open: No room heating No frost protection for the heating/cooling circuit Further required setting: "Digital input 1" > "External room temperature hook-up" Note <i>If only 1 of the max. 4 heating/cooling circuits is connected, it is connected directly to digital input 96 of the heat pump control unit/system control unit. If 2, 3 or 4 heating/cooling circuits are connected, connections to the EM-EA1 extension are required: See chapter "Functions of the digital inputs"</i>



Commissioning the system (cont.)

Setting	Explanations and references
DHW	
Configuration of system type DHW cylinder with 1 cylinder temperature sensor	DHW cylinder with 1 cylinder temperature sensor at the top
DHW circulation pump - Without DHW circulation pump - With DHW circulation pump	No DHW circulation DHW circulation and associated time program available
Electric booster heater - Without electric immersion heater EHE - With electric immersion heater EHE	DHW cylinder without electric immersion heater EHE DHW reheating is possible using an integral instantaneous heating water heater. DHW cylinder with electric immersion heater EHE DHW reheating is possible using an electric immersion heater EHE and an integral instantaneous heating water heater.
If necessary, add additional system components, e.g. an additional heating/cooling circuit.	Select " + Add component " . Note <i>This requires additional accessories, such as the EM-M1 extension.</i>
Continue with configuration.	Click "Next" to go to "System scheme 2"

"System scheme 2": Configuring the system equipment level

Setting	Explanations and references
Heat pump	
Operating mode for electric booster heater - Not configured - Heating and DHW - Heating - DHW	The integral instantaneous heating water heater is not enabled for room heating or DHW heating: Instantaneous heating water heater only is switched on only for frost protection of the heat pump and the system. The integrated instantaneous heating water heater only is switched on for room heating and DHW reheating, e.g. if the heat pump output is insufficient. The integrated instantaneous heating water heater only is switched on for room heating, e.g. if the heat pump output is insufficient. The integrated instantaneous heating water heater only is switched on for DHW reheating, e.g. if the set DHW temperature value is not reached with the heat pump alone.
Max. output	Output restriction for the instantaneous heating water heater Depending on the mains connection to the instantaneous heating water heater, the max. output must be limited as follows: 1-phase: 3 kW 2-phase: 6 kW
Switch-off limit - On - Off	Function activated Function deactivated.
Max. switch-off limit	Switch-off limit: If the outside temperature exceeds the temperature limit set here, the instantaneous heating water heater is not switched on. The temperature limit can only be adjusted if the function is enabled.





Setting	Explanations and references
Heat generator without bus connection	
Hydraulic connection ▪ Not configured ▪ With direct connection ▪ With low loss header	System without external heat generator ▪ Without on site 3/2-way mixing valve for dual mode ▪ The heating/cooling water buffer cylinder is hydraulically connected to the external heat generator and heat pump. ▪ The DHW cylinder is hydraulically connected to the external heat generator and heat pump. ▪ With 3/2-way mixing valve for dual mode (on site) ▪ The heating/cooling water buffer cylinder is hydraulically connected to the external heat generator and heat pump. ▪ The DHW cylinder is hydraulically connected to the external heat generator and heat pump.
Hybrid Pro Control	
Operating mode ▪ Monovalent ▪ Bivalent parallel ▪ Bivalent alternative	Heat generation only via the heat pump Demands can be sent to both heat generators (heat pump and external heat generator) in parallel. Demands can be sent to both heat generators (heat pump and external heat generator), but they never both run at the same time.
Bivalent operation ▪ Dual mode temperature	Temperature limit between heat pump-only mode and parallel operation of the heat pump and external heat generator
Alternative operation ▪ Alternative mode temperature limit	Temperature limit between operation with the heat pump and operation with the external heat generator
Control strategy ▪ Constant temperature limits ▪ Economical control strategy for minimum running costs ▪ Ecological control strategy for minimum CO₂ emissions	Depending on the lower and upper outside temperature limits, the external heat generator operates in bivalent parallel or bivalent alternate mode. Here, the start characteristics of the external heat generator are calculated based on the energy prices for the generation of heat from electrical or fossil energy. Here, the start characteristics of the external heat generator are calculated based on the primary energy factors for the generation of heat from electrical or fossil energy.
Operating mode, external heat generator ▪ Not active ▪ Heating only ▪ DHW only ▪ Heating and DHW	Demands cannot be sent to the external heat generator. Room heating via the external heat generator; no room cooling Only DHW heating via the external heat generator Room heating and DHW heating via the external heat generator
Temperature offset, external heat generator ▪ Offset for boiler temperature sensor	Boost to flow temperature of external heat generators compared to the required set flow temperature for the system ▪ To compensate for heat losses in the system ▪ For sufficient heat supply in heating circuits without mixer



Commissioning the system (cont.)

"Filling" and "venting"

Setting	Explanations and references
System pressure	
Aim	
▪ Setpoint	Set value of the heating water side system pressure in bar
Range	
▪ Range	Tolerance range of the system pressure in bar: If this value deviates for a certain period by more than the given range, message A.11 is displayed.
Filling	Selecting "Start filling" begins the filling of the system: See chapters "Filling the consumer circuits" and "Building the system pressure". - Follow the instructions on the screen. - Before filling, open the non-return valve in the outdoor unit:  Installation and service instructions for the outdoor unit - The system pressure is established. - Selecting "Close" completes the filling process, and the system pressure is displayed. - Selecting "Start" repeats the filling process. Click "Next" to start the venting process.
Venting	Selecting "Start venting" starts the venting function: See chapter "Venting the system". The system is vented via automatic air vent valves in the indoor and outdoor unit: See chapter "Overview of internal components". Note - The venting process can take up to 10 min (display via progress bar). - Click "Close" to complete the venting process. - Click "Start" to repeat the venting process. Click "Next" to continue to the next commissioning section - After successful venting, close the non-return valve in the outdoor unit:  Installation and service instructions for the outdoor unit



**"Smart Grid", "Extensions"**

Setting	Explanations and references
Smart Grid	
Smart Grid	Activation of power-OFF or Smart Grid: Connection of potential-free contacts of the power supply utility, connections 143.3 and 143.4 in the terminal area 230 V~, switching contacts and circulation pumps Overview of the settings depending on the connection: See chapter "Explanation of the operating states for power-OFF, output restriction, Smart Grid" Smart Grid, power-OFF and output restriction can be combined. Smart Grid in conjunction with Energy Management (EMS) <i>As an alternative to connecting Smart Grid via switching contacts, Smart Grid can be activated via Energy Management (EMS). The system is integrated into Energy Management (EMS) via EEBUS. The output restriction is set during commissioning via the ViGuide app. Changes to the output restriction via the programming unit terminate communication via EEBUS with Energy Management (EMS). To restore communication via EEBUS, commissioning must be carried out again via the ViGuide app.</i>
- No function - Gridlock (power-OFF) - SG Ready via potential-free contacts	Neither power-OFF nor Smart Grid is connected. Power-OFF via potential-free contact 143.3 Smart Grid and power-OFF or Smart Grid and output restriction via potential-free contacts 143.3 and 143.4

Extensions > Digital inputs

Digital input 1 - No function - External demand, flow temperature, heating	Function of the potential-free contact at connection 96 in the terminal area 230 V~, switching contacts and circulation pumps No potential-free contact connected Only in conjunction with a heating/cooling water buffer cylinder: External demand for room heating from an additional consumer circuit, e.g. swimming pool When the contact is closed, the heating/cooling water buffer cylinder is heated to the temperature set value. - Room heating independent of the time program - The fixed flow temperature for the consumer circuit can be set. Note "External demand, flow temperature, heating" via digital input 96 cannot be combined with "External flow temperature setpoint of the heat generator 0-10V" via the EM-EA1 extension (connection 0 to 10 V). Only one of the two connections is possible.
- External demand, DHW circulation pump - External room temperature hook-up	If the connected button is pressed, the DHW circulation pump runs for 5 min. Weather-compensated control with external room temperature hook-up A room thermostat must be connected to switching contact 96. Further required setting: "Regulation type" > "Weather-compensated with room temperature hook-up" Note <i>If the external room temperature demand is only connected for 1 of the max. 4 heating/cooling circuits, the room thermostat of this heating/cooling circuit is connected directly to the digital input of the heat pump control unit. If the external room temperature demand for 2, 3 or 4 heating/cooling circuits is connected, connections to the EM-EA1 extension are required: See chapter "Functions of the digital inputs"</i>



Commissioning the system (cont.)

Setting	Explanations and references
Digital input 2 - No function - External blocking - Blocking the heating/cooling circuit	Function of the potential-free contact at connection 143.1 in the terminal area 230 V~, switching contacts and circulation pumps No potential-free contact connected Refrigerant circuit and instantaneous heating water heater are blocked. If the temperature limiter to restrict the maximum temperature for underfloor heating circuit 1 responds, the room heating for this heating/cooling circuit is switched off.
Digital input 3 - No function - External switch, heating/cooling	Function of the potential-free contact at connection 143.2 in the terminal area 230 V~, switching contacts and circulation pumps No potential-free contact connected Only in conjunction with a heating/cooling water buffer cylinder: External operating program changeover for switching between heating mode and cooling mode via an external switch as an alternative option to setting via the "Buffer cylinder" menu. A switch must be connected to switching contact 143.2.
Fault message input	Fault message from an additional appliance in the system network, e.g. inverter

Extensions > EM-EA1 extension (DIO)

EM-EA1 (DIO): Function selection - Not installed - External set flow temperature of the heat generator 0-10V	Enabling the function connected to the EM-EA1 extension No EM-EA1 extension connected External demand for a set flow temperature via a 0 to 10 V signal  Installation and service instructions for the "EM-EA1 extension"
External room temperature hook-up, heating/cooling circuits 1-4	Weather-compensated mode with external room temperature hook-up Assignment of the connected room thermostats of the heating/cooling circuits to contacts DI1 to DI3 of the EM-EA1 extension.

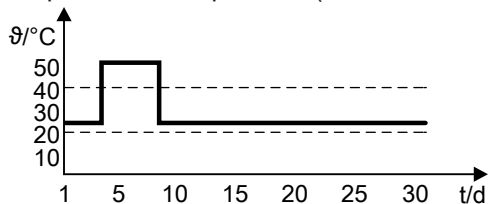
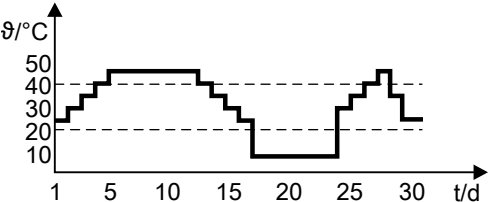
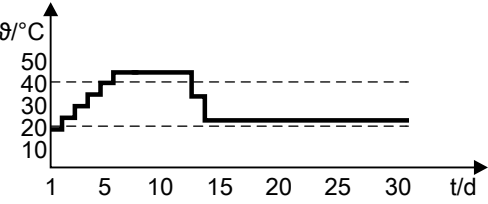
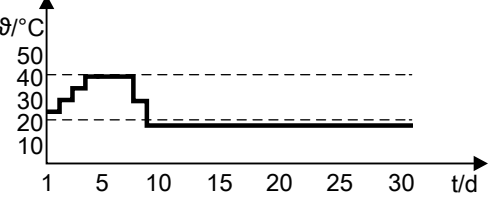
Note

"External flow temperature setpoint of the heat generator 0-10V" via the EM-EA1 extension (connection 0 to 10 V) **cannot** be combined with **"External demand, flow temperature, heating"** via digital input 96. Only one of the two connections is possible.

Note

- If only 1 of the max. 4 heating/cooling circuits is connected, it is connected directly to digital input 96 of the heat pump control unit.
- If 2, 3 or 4 heating/cooling circuits are connected, connections to the EM-EA1 extension are required. Regardless of how many heating/cooling circuits are connected, the assignment to the contacts is as follows:
 Heating/cooling circuit 1: DI1 of the EM-EA1 extension
 Heating/cooling circuit 2: DI2 of the EM-EA1 extension
 Heating/cooling circuit 3: DI3 of the EM-EA1 extension
 Heating/cooling circuit 4: Digital input 96 of the heat pump control unit
 If, for example, only heating/cooling circuits 1 and 3 are connected, the connection for both heating/cooling circuits is made to the EM-EA1 extension and contacts DI1 and DI3.

**"Additional settings"**

Setting	Explanations and references
Low-noise mode	
Low-noise mode - On - Off	Outdoor unit low-noise mode: During low-noise mode, the compressor and fan are operated at reduced speed. Enable low-noise mode. Do not enable low-noise mode.
Configuration by the customer - Can be configured by the customer - Cannot be configured by the customer	System users can configure the settings for low-noise mode: See the operating instructions. Settings for low-noise mode cannot be configured by the system user.
Time program - Time program - Time program not configured	Set the time program for low-noise mode: See operating instructions. Enable setting of the time program for low-noise mode by the system user.
Screed drying - Not active - Profile A - Profile B - Profile C - Profile D	If a profile is selected, screed drying begins with the respective temperature/time profile, after the commissioning menu is closed. Screed drying is not switched on. Temperature/time profile 1 (in acc. with EN 1264-4)  Temperature/time profile 2 (in acc. with ZV parquet and flooring technology)  Temperature/time profile 3 (in acc. with ÖNORM)  Temperature/time profile 4 



Commissioning the system (cont.)

Setting	Explanations and references
Profile E	Temperature/time profile 5 1 5 10 15 20 25 30 t/d
Profile F	Note This profile ends after 21 days. Temperature/time profile 6 1 5 10 15 20 25 30 t/d
Profile G	Profile optimised for use in prefabricated houses 1 5 10 15 20 25 30 t/d
SG Ready via pot.-free contacts - Limiting the electrical active power consumption - DHW temperature offset - operating mode 3 - Cooling room temperature offset - operating mode 3 - Heating room temperature offset - operating mode 3 - Heating buffer temperature offset - operating mode 3 - Cooling buffer temperature offset - operating mode 3	The calculated or specified output restriction for the system is set here, in the setting "Smart-Grid" > "SG Ready via potential-free contacts". Temperature differential used to increase the set cylinder temperature during heat pump operation with adjusted set temperatures (recommended operation, Smart Grid mode 3) Temperature differential used to reduce the set room temperature for cooling during heat pump operation with adjusted set temperatures (recommended operation, Smart Grid mode 3) Temperature differential used to increase the set room temperature for heating during heat pump operation with adjusted set temperatures (recommended operation, Smart Grid mode 3) Temperature differential used to increase the set buffer temperature for heating during heat pump operation with adjusted set temperatures (recommended operation, Smart Grid mode 3) Temperature differential used to reduce the set buffer temperature for cooling during heat pump operation with adjusted set temperatures (recommended operation, Smart Grid mode 3)
Finish configuring the Heat generator section.	Confirm the prompt with "Next" and "Close" .
Finish commissioning.	- Confirm the configuration with "Complete". - Use "Close" to restart the system.



Commissioning the system (cont.)

Installing and connecting the wireless remote control (accessories)



Installation and service instructions for the wireless remote control

The appliance, e.g. heat generator or ventilation unit, is connected to the wireless remote control via low power radio.

Note

The wireless remote control is commissioned via the ViGuide app.



Filling the system

Filling the system (indoor/outdoor units and consumer circuits) is menu-guided with the commissioning menu.

Note

The non-return valve in the outdoor unit must be in the filling position (open), i.e. the key must be inserted in the non-return valve: See the following diagram.

Open the non-return valve in the outdoor unit

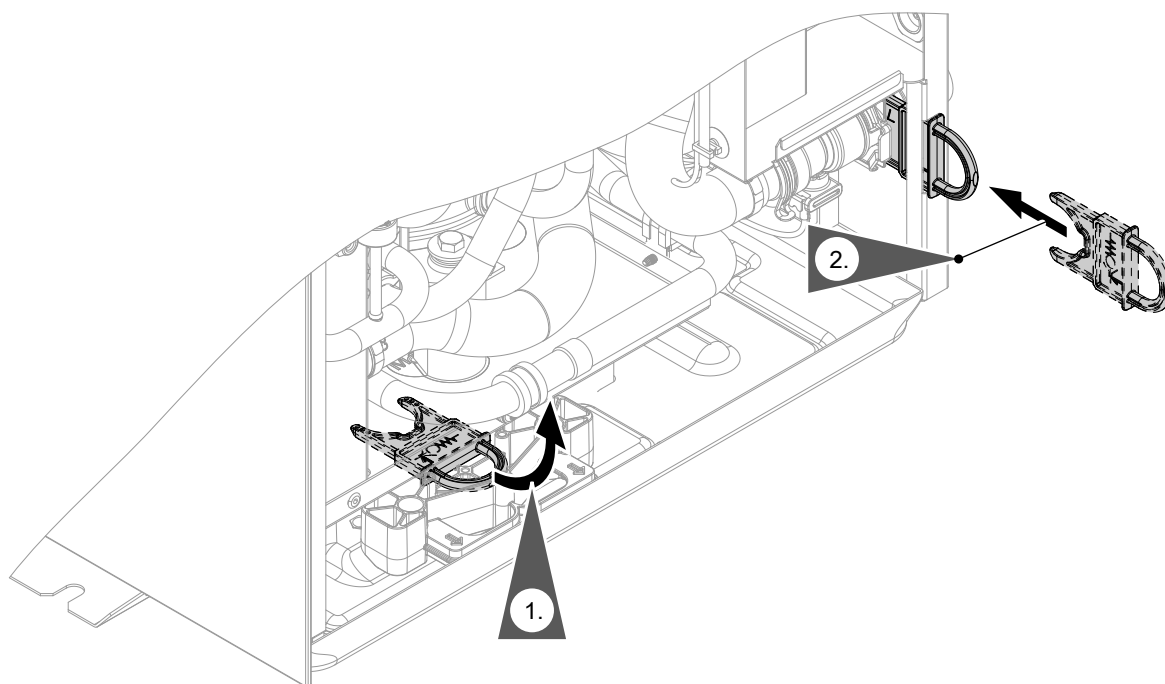
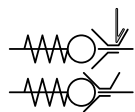


Fig. 31



Key inserted in the non-return valve: Non-return valve open (filling position)

Key removed from the non-return valve: Non-return valve closed (operating position)



Filling the system (cont.)

Fill and top-up water

Do not use antifreeze (e.g. water/glycol mixture) in the heating water.



Please note

Ungeeignetes Füll- und Ergänzungswasser fördert Ablagerungen und Korrosionsbildung. Dadurch können sich die Leistungswerte der Wärmepumpe vermindern oder Schäden an der Anlage entstehen, insbesondere am gegebenenfalls eingebauten Heizwasser-Durchlauferhitzer.

- Flush the heating system thoroughly before filling.
- Only fill with water of potable quality.
- Use only softened fill and top-up water complying with VDI 2035.

For further information about fill and top-up water: See technical guide "Heat pump principles".

Recommendation: First, fill the entire system with water of potable water quality.

Treat the heating water with one of the following options:

- Direct filling via descaling system while maintaining the minimum flow rate
- Filling with purge pump and treated water
- Descaling with circulation process between flow and return

Filling the consumer circuits on the heating water side

The DHW cylinder ("Filling DHW"), integral buffer cylinder ("Filling defrost buffer") and heating/cooling circuits ("Filling heating/cooling circuit") are filled in turn.

Filling starts automatically once "Filling assistant" has been called up in the commissioning menu.

Note

During installation, shavings and debris can get into the pipework. To remove these contaminants, the connection lines between the indoor and outdoor units can be flushed and refilled beforehand:



Outdoor unit installation and service instructions, chapter "Components required for flushing the connection lines between outdoor unit — secondary circuit"

Fill from the heating water side in the direction of the consumer circuits

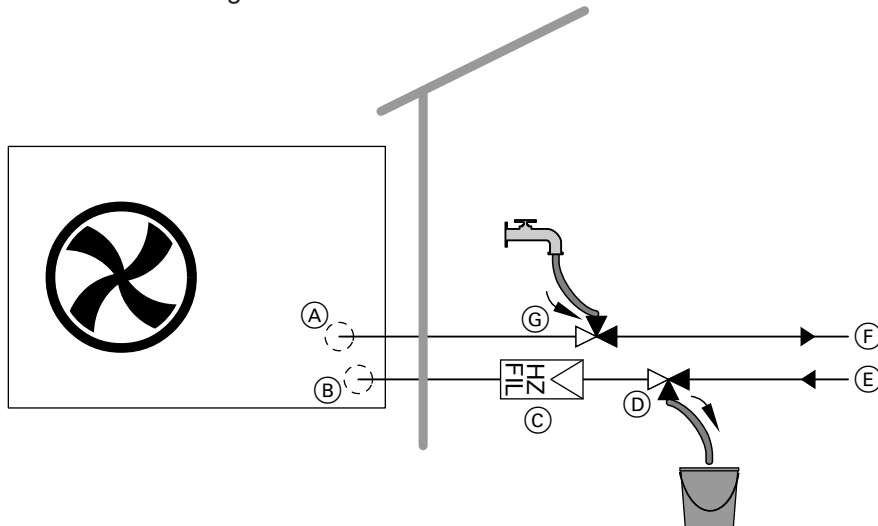


Fig. 32

- | | |
|--|--|
| <p>(A) Heating water flow from the outdoor unit</p> <p>(B) Heating water return to the outdoor unit</p> <p>(C) Heating filter (on site or part of standard delivery for outdoor unit)</p> <p>(D) 3/2-way ball valve in the heating water return of the outdoor unit (on site or standard delivery): Open in the direction of the consumer circuits</p> | <p>(E) From the secondary circuit</p> <p>(F) To the secondary circuit</p> <p>(G) 3/2-way ball valve in the heating water flow of the outdoor unit (on site or standard delivery): Open in the direction of the consumer circuits</p> |
|--|--|



Fill from the heating water side in the direction of the outdoor unit

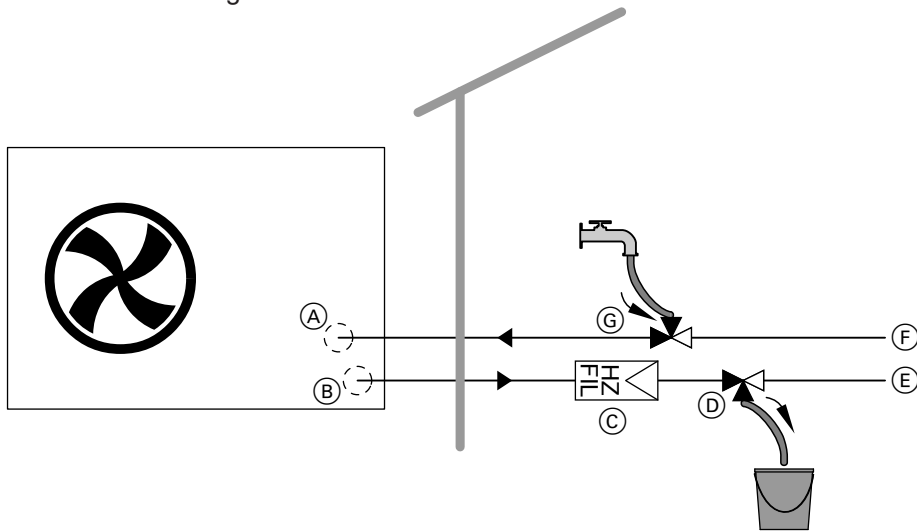


Fig. 33

- (A) Heating water flow from the outdoor unit
- (B) Heating water return to the outdoor unit
- (C) Heating filter (on site or part of standard delivery for outdoor unit)
- (D) 3/2-way ball valve in the heating water return of the outdoor unit (on site or standard delivery): Open in the direction of the outdoor unit

- (E) From the secondary circuit
- (F) To the secondary circuit
- (G) 3/2-way ball valve in the heating water flow of the outdoor unit (on site or standard delivery): Open in the direction of the outdoor unit

1. Connect the fill hose to the 3/2-way ball valve (G) in the heating water flow of the outdoor unit.
2. Connect the drain hose to the 3/2-way ball valve (D) in the heating water return of the outdoor unit. Route the hose into a suitable container or drain outlet.
3. Open both 3/2-way ball valves in the direction of the consumer circuits: See Fig. 32
Allow the heating water to flow in via the fill hose.

Required flow rate for filling with heating water:

- Min. 300 l/h
- Max. 1500 l/h

4. Start the filling process in the commissioning menu.
The filling of the 1st consumer circuit begins.
5. As soon as water begins to flow out of the drain hose, proceed with filling the other consumer circuits.
6. Open both 3/2-way ball valves in the direction of the outdoor unit: See Fig. 33
Continue to let heating water flow in through the fill hose until water comes out of the valve (D).

Required flow rate for filling with heating water:

- Min. 300 l/h
- Max. 1500 l/h

7. Open both 3/2-way ball valves in all directions.
8. After filling all consumer circuits, end the filling process.
The commissioning menu switches to building up the system pressure.
9. Close both 3/2-way ball valves.
10. Remove the fill and drain hoses.
11. Clean the heating filter (on site or outdoor unit standard delivery).
12. Close the non-return valve in the outdoor unit.



Installation and service instructions for the outdoor unit



Filling the system (cont.)

Calling up the filling function

To activate this function, start the commissioning menu.

See page 52.



Building up the system pressure

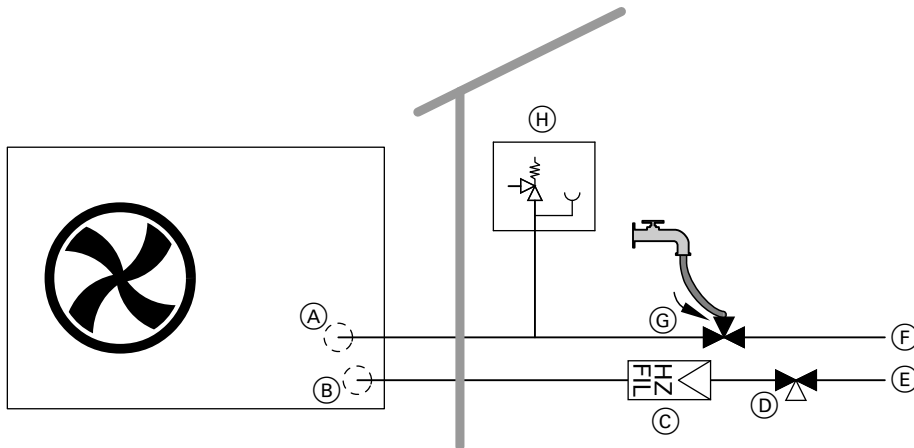


Fig. 34

- | | |
|--|---|
| <p>(A) Heating water flow from the outdoor unit</p> <p>(B) Heating water return to the outdoor unit</p> <p>(C) Heating filter (on site or part of standard delivery for outdoor unit)</p> <p>(D) 3/2-way ball valve in the heating water return of the outdoor unit (on site or standard delivery):
Open in the flow direction</p> <p>(E) From the secondary circuit</p> | <p>(F) To the secondary circuit</p> <p>(G) 3/2-way ball valve in the heating water flow of the outdoor unit (on site or standard delivery):
Open in all directions</p> <p>(H) Required if the system pressure is established without power:
Safety assembly (accessories)</p> |
|--|---|
1. Connect the fill hose to the 3/2-way ball valve in the heating water flow of the outdoor unit.
 2. Open the 3/2-way ball valve in all directions.
 3. Allow the heating water to flow in slowly via the fill hose.
Check the system pressure on the display.
- Note**
If the system pressure is established without power: Check the system pressure on the pressure gauge of the safety assembly (accessories).
4. As soon as the required system pressure has been reached, end the process.
Filling pressure: 0.3 to 0.5 bar (30 to 50 kPa) higher than the pre-charge pressure of the on-site diaphragm expansion vessel.
 5. Close the 3/2-way ball valve in the direction of the fill hose. The flow direction from the outdoor unit to the secondary circuit remains open.
Remove the fill hose.
 6. Check the internal and on-site hydraulic connections for leaks.
Recommended test pressure: 2 to 2.5 bar (0.2 to 0.25 MPa)
 7. Thermally insulate the hydraulic connections.



Danger

There is a risk of electric shock from escaping heating water or DHW.
Check all water side connections for leaks.



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 the heating water. Check the seal rings for correct fit. **Always** replace displaced seal rings.

Refilling device (on site)

In conjunction with a refilling device, the filling pressure must be limited to 2.5 bar (0.25 MPa). The integral safety valve responds at a higher filling pressure.



Building up the system pressure (cont.)

Activating the system pressure function

To activate this function, start the commissioning menu.

See page 52.



Commissioning steps for the outdoor unit

For commissioning the outdoor unit, perform all steps marked with  in the section "Commissioning, inspection, maintenance".



Installation and service instructions for the outdoor unit



Venting the system

1. In the commissioning menu, the **"Venting"** function can be started directly after filling:
To do this, confirm the prompt by selecting **"Next"**.
2. After the **"Venting"** function is started, the entire system is automatically vented via air vent valves in the indoor and outdoor unit:
 - Automatic air vent valve on the central circulation pump (secondary pump)
 - Automatic quick-action air vent valve in the outdoor unit on the float air vent valve
 - Manual air vent valve on the integral buffer cylinder (if installed)

For this, the 4/3-way valve (if installed) moves through different positions in turn.
3. The **"Venting"** function ends automatically.
The display shows the system pressure.
The venting process can take up to 10 min.

If required, the manual air vent valve on the internal buffer cylinder can also be used for venting: For the position, see chapter "Indoor unit maintenance", "Overview of internal components".



Please note

Water splashes can cause electrical faults. Protect the electrical components of the heat pump from water splashes. To vent, connect the hose to the manual air vent valve.

Note

If the system pressure drops significantly, top up with water immediately. Restoring the system pressure: See chapter "Building the system pressure". Maintain a minimum system pressure of 0.8 bar (80 kPa) even during venting.

Activating the venting function

To activate this function, start the commissioning menu.
See page 52.

Note

After filling, establishing the system pressure and venting, the flow rate can be set: See chapter "Setting the max. flow rate manually" on page 69.



Checking the expansion vessel and system pressure

Note

The IDU-A Modular does not have an integral expansion vessel.



Checking the expansion vessel and system... (cont.)

- Use the calculation to EN 12828 to check whether the installed expansion vessel is adequate for the system water volume.
If the expansion vessel fitted is insufficient, equip the secondary circuit on site with an additional expansion vessel.
 - Check the pre-charge pressure of the expansion vessel once a year.
Carry out this test on a cold system.
1. Drain the system until "0" is shown on the pressure indicator.
 3. Top up with water until the charge pressure of the cooled system is at least 1.0 bar (0.1 MPa), and is 0.3 to 0.5 bar (30 to 50 kPa) higher than the pre-charge pressure of the expansion vessel: See chapter "Filling the system".
Permiss. operating pressure: 3 bar (0.3 MPa)

Refilling device (on site)

In conjunction with a refilling device, the filling pressure must be limited to 2.5 bar (0.25 MPa). The integral safety valve may respond at a higher filling pressure.



Checking the system pressure

Operating instructions

2. If the pre-charge pressure of the expansion vessel is lower than the static system pressure: Top up with nitrogen at the valve of the diaphragm expansion vessel until the pre-charge pressure is 0.1 to 0.2 bar (10 to 20 kPa) higher than the static system pressure.

Note

- Do not allow the pre-charge pressure to fall below 0.7 bar (70 kPa) (boiling noises).
- Factory-set pre-charge pressure: 0.75 to 0.95 bar (75 to 95 kPa)



Checking all connections on the heating water and DHW sides for leaks



Danger

There is a risk of electric shock from escaping heating water or DHW.
When commissioning and after carrying out maintenance work, check all water side connections for leaks.



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 the heating water. Check the seating of seal rings. **Always** replace displaced seal rings.



Setting the max. flow rate manually

The max. flow rate can be restricted manually, e.g. for hydronic balancing.

The setting is only possible for systems without an external heating/cooling water buffer cylinder.

Tap the following buttons:

1. and then tap "Service"
or
 and hold, then select "Service"
2. Enter password "ServiceAccess".

3. Tap "Next" to confirm
4. for "Actuator tests and function tests"
5. for "Actuator tests"
6. Confirm the prompt.

Note

If an actuator test or function check is not possible because another process is running, a message is displayed.





Setting the max. flow rate manually (cont.)

7. > for the **"indoor unit"**
8. > for **"4/3-way valve position"**
9. Use **+/-** to set **"Heating"**.
Confirmation is not required.
10. < to go back one step.
11. > for the **"outdoor unit"**
12. > for **"Central circulation pump speed"**
13. **+** Use **-** to set the max. flow rate via the speed of the central circulation pump (secondary pump).
During the adjustment procedure, the flow rate can be checked as follows:
Use **ⓘ** to switch to Diagnostics. Select **"Refrigerant circuit overview"**. Flow rate display: See chapter "Refrigerant circuit". Use < to return to the actuator.
14. Press **"Stop"** to finish all actuator tests.
15. Set the calculated values in the parameters for the max. speed of the heating/cooling circuit pumps:



Separate service instructions for heat pumps: "System configuration and diagnostics"



Closing the indoor unit



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.

- Before closing the indoor unit, restore all protective conductor connections.
- Check whether the appliance and pipework are connected to the equipotential bonding of the building. Restore the connections if necessary.



Please note

If the casing is not carefully closed, this can lead to damage from condensate, vibrations and excessive noise.

- Check the gasket on the panels for damage.
- Close the appliance correctly.
- On pipe and hose outlets, ensure the thermal insulation is seated correctly.



Please note

Leaking hydraulic connections cause appliance damage.

- Check the internal and on-site hydraulic connections for leaks.
- In the event of leaks, switch off the appliance immediately. Drain the heating water. Check the seal rings for correct fit. Replace any seal rings that may have become dislodged.

See page 42.



Checking the indoor and outdoor units for noise

Check indoor and outdoor units for unusual noise.

Examples:

- Operating noise from the fan
- Operating noise from the compressor
- Operating noise from circulation pumps
- Vibration in the refrigerant circuit

Vent hydraulic circuits again if necessary.



In the event of noise problems due to sound transmission:

Installation and service instructions for the outdoor unit
Chapter "Sound transmission checklist"



Resetting the high limit safety cut-out

If the secondary circuit flow temperature (BT17) is $\geq 85\text{ }^{\circ}\text{C}$, the electronic high limit safety cut-out of the instantaneous heating water heater locks the heat pump. The message **"High limit safety cut-out locked"** is displayed.

As soon as the secondary circuit flow temperature (BT17) falls below $85\text{ }^{\circ}\text{C}$, the high limit safety cut-out can be unlocked using **"Unlock"**. The heat pump will resume operation.



Adjusting the heating curve

Tap the following buttons:

1. Open the expanded view for the required heating/cooling circuit:
On the home screen, select the required tile and then **"All settings"**
or

In the menu , select **"Heating/Cooling"**.
Select the required heating/cooling circuit.

2. **"Heating curve"**

3. **+** or **–** for the required value for **"Slope"** and **"Level"** respectively
The graph that appears clearly shows how the **"Heating curve"** changes.

4. **"Apply"**



Naming the heating/cooling circuits

In the delivered condition, the heating/cooling circuits are designated **"Heating/cooling circuit 1"**, **"Heating/cooling circuit 2"**, etc.
To make them clearer to the system user, the heating/cooling circuits can be renamed to suit the specific system.

Tap the following buttons in the menu :

1.  **"General settings"**

2. **"Rename heating/cooling circuits"**

3. Select the required heating/cooling circuit.
4. Enter the required name using the on-screen keyboard, for example "Ground floor".

5. **"Apply"**



Compiling reports

Enter the readings taken during commissioning in the reports on page 87 onwards and the operator's log (if available).



Instructing the system user

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

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

Service menu

Calling up the service menu

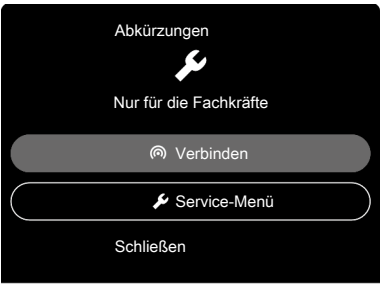


Fig. 35

Tap the following buttons:

- 1. and then tap "Service" or

and hold, then select **"Service"**

- 2. Tap **"Next"** to acknowledge the warning.
- 3. Enter password **"ServiceAccess"**.
- 4. Tap **"Next"** to confirm
- 5. for the required menu

Note
Depending on the system specification, not all menus may be available.

Service menu overview

Service	
Message list	
Commissioning	
Control units detected	
Actuator tests and function checks	
System configuration	
Diagnostics	
	Refrigerant circuit
	General
	Heat pump
	Heating/cooling circuit 1
	Heating/cooling circuit 2
	Heating/cooling circuit 3
	Heating/cooling circuit 4
	DHW
Internet	
Passwords	
Factory reset	

Changing the service password

In the delivered condition, **"ServiceAccess"** is preset as the password for accessing the **"Service menu"**.

In the service menu, tap the following buttons:

- 1. **"Passwords"**.
- 2. **"Change passwords"**.
- 3. **"Service menu"**
- 4. Enter current password.
- 5. Tap **"Next"** to confirm
- 6. Enter new password.
- 7. Tap **"Next"** to confirm

Service menu (cont.)

8.  return to the service menu

Resetting all passwords to delivered condition

1. Request the master password from the manufacturer's technical support.

In the service menu, tap the following buttons:

2.  under  **"Passwords"**
3. **"Change passwords"**.

4. **"Reset all passwords"**

5. Enter master password.

6. Use **"Next"** to confirm.

7.  return to the service menu

Switching the access point on/off

The WiFi connection is used for service purposes.

In the service menu, tap the following buttons:

1.  **"Connect"**
2. Scan the displayed QR code. Connect the system. Alternatively, you can access the **"Connection data"**.

3.  and **"Close access point"** to end the connection.

System configuration

The parameters can be adjusted via 3 user interfaces:

- Programming unit for the heat pump control unit
- ViGuide app
- All ViGuide Web applications: ViGuide Plus, ViGuide Pro, ViGuide Business

For further information on ViGuide: www.viguide.info

- Depending on the system equipment and which user interface is selected, not all parameters may be available.
- Some parameters are set during commissioning with the help of the commissioning menu.

- The factory settings and setting ranges for the parameters may vary for different heat pumps and system configurations.
- The names of the parameters in the instructions may differ from the names on the user interfaces.

Setting parameters at the programming unit

In the service menu, tap the following buttons:

1.  under  **"System configuration"**
2.  for the required parameter group, e.g. **"DHW"**
3.  for the required value, e.g. **"cylinder temperature"**

4.  for the required value, e.g. **"50 °C"**

5.  to go back one step
or

Tap **"Next"** to confirm

6.  return to the service menu

System configuration (cont.)

Parameters

Descriptions of the parameters are available online:
<https://climate-solutions.com/documents/6257744>



Fig. 36

Diagnostics

Checking operating data

Only the operating data that correspond to the actual system equipment level is shown.

Note
If a checked sensor is faulty, "- - -" appears on the display.

Calling up operating data

In the service menu, tap the following buttons:

- 1. > under "Diagnostics"
- 2. > for the required group, e.g. "General"

Refrigerant circuit

In the service menu, tap the following buttons:

- 1. Use > to select "Diagnostics".
- 2. Use > to select "Refrigerant circuit".

- Notes**
- The symbols on the display are animated if the components (e.g. compressor) are operational.
 - The values shown are examples.
 - Depending on the features of the system, not all of the displays may be available.

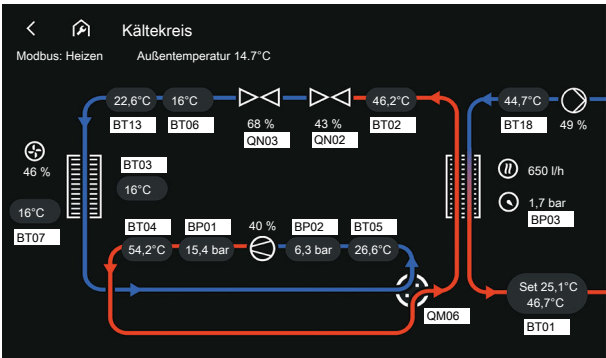
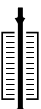
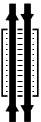


Fig. 37

Diagnostics (cont.)

Pos.	Meaning
<	Back to the "Diagnostics" menu
🏠	Back to the "Service" menu
⊕	Fan Animated symbol: Fan is running. Speed of fan 1 in %
⊙	Central circulation pump (secondary pump) Animated icon: Central circulation pump (secondary pump) is running. Central circulation pump (secondary pump) speed in %
⊗	Flow rate in l/h
⌚	System pressure in bar
⊖	Compressor Animated symbol: Compressor is running. Compressor speed in %
Modbus	▪ Heating ▪ Cooling ▪ Defrost ▪ Power-OFF
BP01	High pressure sensor
BP02	Low pressure sensor
BP03	Heating water pressure sensor
BT01	Flow temperature sensor, secondary circuit downstream of condenser
BT02	Liquid gas temperature sensor, condenser
BT03	Suction gas temperature sensor, evaporator
BT04	Hot gas temperature sensor, compressor
BT05	Suction gas temperature sensor, compressor
BT06	Liquid gas temperature sensor, cooling
BT07	Primary circuit inlet temperature sensor
BT13	Evaporator inlet temperature sensor
BT18	Return temperature sensor, secondary circuit
 QM06	4/3-way diverter valve Heating mode  Cooling mode 
 QN02	Electronic expansion valve 1: Opening width
 QN03	Electronic expansion valve 2: Opening width
	Plate heat exchanger:  Evaporator  Condenser

Testing actuators and functions (Actuator test and function check)

Actuator tests can be performed individually or as a group, for example all actuator tests for the indoor unit. Function checks can only be performed one after another. It is also not possible to perform a function check at the same time as an actuator test.

In the **"Diagnostics"** menu, you can check the progress of the actuator tests and function checks. Some processes trigger information messages.

- If not all actuator tests and function checks are displayed, update the software of the programming unit and all electronics modules via ViGuide.
- The system must have been commissioned, filled and vented.

- When an actuator test or function check starts, all actuators are initially switched off. Valves are moved to a defined position.
Any available mixers in the heating circuits remain in their most recent position.
- Preparing for an actuator test or function check takes up to 15 min, usually 1 to 5 min.
Depending on the features of the system, not all of the actuator tests and function checks may be available.

Calling up an actuator test

In the service menu, tap the following buttons:

1. > for  **"Actuator test and function check"**
2. > for **"Actuator tests"**
3. > for the required actuator: See the following tables.

Note

If an actuator test is not possible because another process is running, a message is displayed.

4. Select or set the required value. Confirmation is not required.
As soon as the actuator test is active, this is indicated via a progress bar.

Note

- For actuators with a connected feedback signal, the current value is displayed.
- Use  to switch to **"Diagnostics"**, e.g. to display the **"Refrigerant circuit overview"**. Use < to go back to the actuator test.
- **"Stop"** to end the actuator test, e.g. for circulation pumps.
Or
"Stop" to pause the actuator test and **"Close"** to end the actuator test, e.g. for valves.

5. < to return to the overview to check other actuators if applicable.

Note

This does not stop actuator tests that have already been started.

6. Use **"Active tests"** to switch to the overview of all active actuator tests.
7. Press **"Stop"** to finish all actuator tests.

Note

Once started, an actuator test ends automatically after a maximum of 45 min.

Testing actuators and functions (Actuator test... (cont.)

Overview of actuator tests

Actuator tests for the Indoor unit

Display		Meaning
4/3-way valve position	Defrost	Position of 4/3-way valve: 0 %
	Heating/ cooling circuit or Buffer cyl- inder	Position of 4/3-way valve: ≥ 0 % to ≤ 50 % Mixed operation: ▪ Integral buffer cylinder and ▪ Secondary circuit (heating/cooling circuit 1 or external buffer cylinder) 50 % Secondary circuit (heating/cooling circuit 1 or external buffer cylinder)
	DHW heating	Position of 4/3-way valve: 100 %
Heating circuit pump, heating/cooling circuit 1	On/Off	Only in conjunction with an external buffer cylinder: Switches the external heating circuit pump, heating/cooling circuit 1, on and off.
Heating circuit pump, heating/cooling circuit 2	On/Off	Only in conjunction with an external buffer cylinder: Switches the external heating circuit pump, heating/cooling circuit 2, on and off.
Mixer for heating/cooling circuit 2	Open	Only in conjunction with an external buffer cylinder: Mixer for heating/cooling circuit 2 opens. Note <i>You can only switch from Open to Close by pressing Stop.</i>
	Stop	Current position is maintained.
	Close	Mixer closes. Note <i>Switching from Open to Close is only possible by pressing Stop.</i>
Heating circuit pump, heating/cooling circuit 3	On/Off	Only in conjunction with an external buffer cylinder: Switches the heating circuit pump, heating/cooling circuit 3, on and off.
Mixer for heating/cooling circuit 3	Open	Only in conjunction with an external buffer cylinder: Mixer for heating/cooling circuit 3 opens. Note <i>You can only switch from Open to Close by pressing Stop.</i>
	Stop	Current position is maintained.
	Close	Mixer closes. Note <i>Switching from Open to Close is only possible by pressing Stop.</i>

Testing actuators and functions (Actuator test... (cont.))

Display		Meaning
Heating circuit pump, heating/cooling circuit 4	On/Off	Only in conjunction with an external buffer cylinder: Switches the heating circuit pump, heating/cooling circuit 4, on and off.
Mixer for heating/cooling circuit 4	Open	Only in conjunction with an external buffer cylinder: Mixer for heating/cooling circuit 4 opens. Note <i>You can only switch from Open to Close by pressing Stop.</i>
	Stop Close	Current position is maintained. Mixer closes. Note <i>Switching from Open to Close is only possible by pressing Stop.</i>
Signal-cooling	On Off	Cooling mode active Cooling mode off
Circulation pump	On/Off	Switch the Circulation pump on and off.
Actuator for DHW heating		Diverter valve for switching on and off the return flow of the heating water buffer cylinder with integral DHW heating.
	On Off	Open in the direction of DHW heating Open in the direction of room heating
External heat generator	On/Off	Switch the demand for the external heat generator on and off.
External heat generator set temperature	Setpoint	Set flow temperature of external heat generator in °C
3/2-way mixing valve external heat generator	Open	3/2-way mixing valve for dual mode: 3/2-way mixing valve opens. Note <i>You can only switch from Open to Close by pressing Stop.</i>
	Stop Close	Current position is maintained. 3/2-way mixing valve closes. Note <i>Switching from Open to Close is only possible by pressing Stop.</i>

Actuator tests Outdoor unit

Display		Meaning
Central heating circuit pump	Setpoint	Central circulation pump (secondary pump) speed in %
Fan outdoor unit, bottom	Setpoint	Fan speed 1 in %
Fan outdoor unit, top	Setpoint	Only outdoor units with 2 fans: Fan speed 2 in %
Electronic expansion valve 1	Setpoint	Position of the electronic expansion valve in %
		Note <i>Opening from 0 to 100 % can take approx. 20 s.</i>

Testing actuators and functions (Actuator test... (cont.))

Display		Meaning
Electronic expansion valve 2	Setpoint	Position of the electronic expansion valve in % Note <i>Opening from 0 to 100 % can take approx. 20 s.</i>
Oil sump heater	On/Off	Switch the oil sump heater on and off.
Fan ring heater	On/Off	Switch the fan ring heater on and off.
Ribbon heater for condensate pan	On/Off	Switch the electric ribbon heater for condensate pan on and off.

Checking the subscribers and software version

In the service menu, tap the following buttons:

1. > for  **"Control units detected"**
All detected controllers and electronics modules, e.g. CAN bus subscribers, are displayed.
Possible subscribers: See chapter "Subscriber numbers".

2. > for the required subscriber with further checks

3. < to go back one step.
Or
 return to the service menu

Restoring factory settings

The configuration, settings and parameters will be reset to the factory settings. After this, the heat pump will have to be commissioned again.
We recommend creating an acceptance log via ViGuide beforehand to save all existing settings.

2. Confirm information with **"Reset"**.
The heat pump is restarted.
The commissioning menu opens.

In the service menu, tap the following buttons:

1. > for  **"Factory reset"**

Messages

The procedures for handling messages and the actions required are available online:
<https://climate-solutions.com/documents/6257744>



Fig. 38

Note

The possible faults vary according to the system equipment. Therefore, not all fault messages will come up for every system.



Please note

Repairing components that fulfil a safety function can compromise the safe operation of the system.
Faulty components must be replaced with original spare parts from the manufacturer.

Overview of electrical components

All on-site connections are made in the electrical terminal area: See page 23.

Overview of internal components

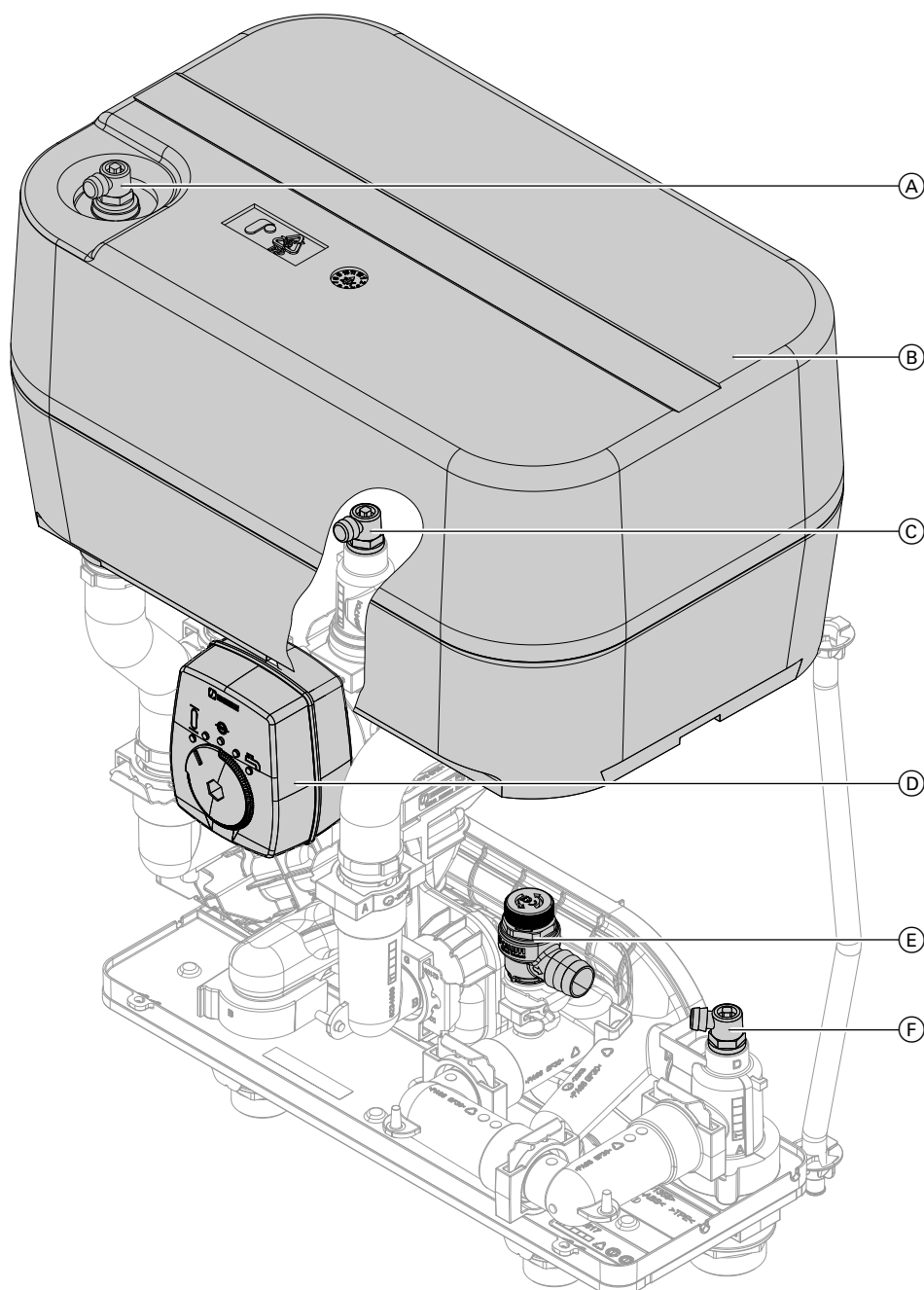


Fig. 39

- | | |
|---|---------------------------|
| (A) Only with IDU Comfort:
Vented integral buffer cylinder | (D) 4/3-way valve |
| (B) Only with IDU Comfort:
Integral buffer cylinder | (E) Overfill protection |
| (C) Manual air vent valve | (F) Manual air vent valve |

Note

The overfill protection is **not** a safety valve as defined by EN 12828.

Draining the indoor unit on the secondary side



Danger

Heating water escaping uncontrolled may cause scalding.
Allow the heating system to cool down before draining.

1. Connect hoses to all drain valves. Open drain valves.

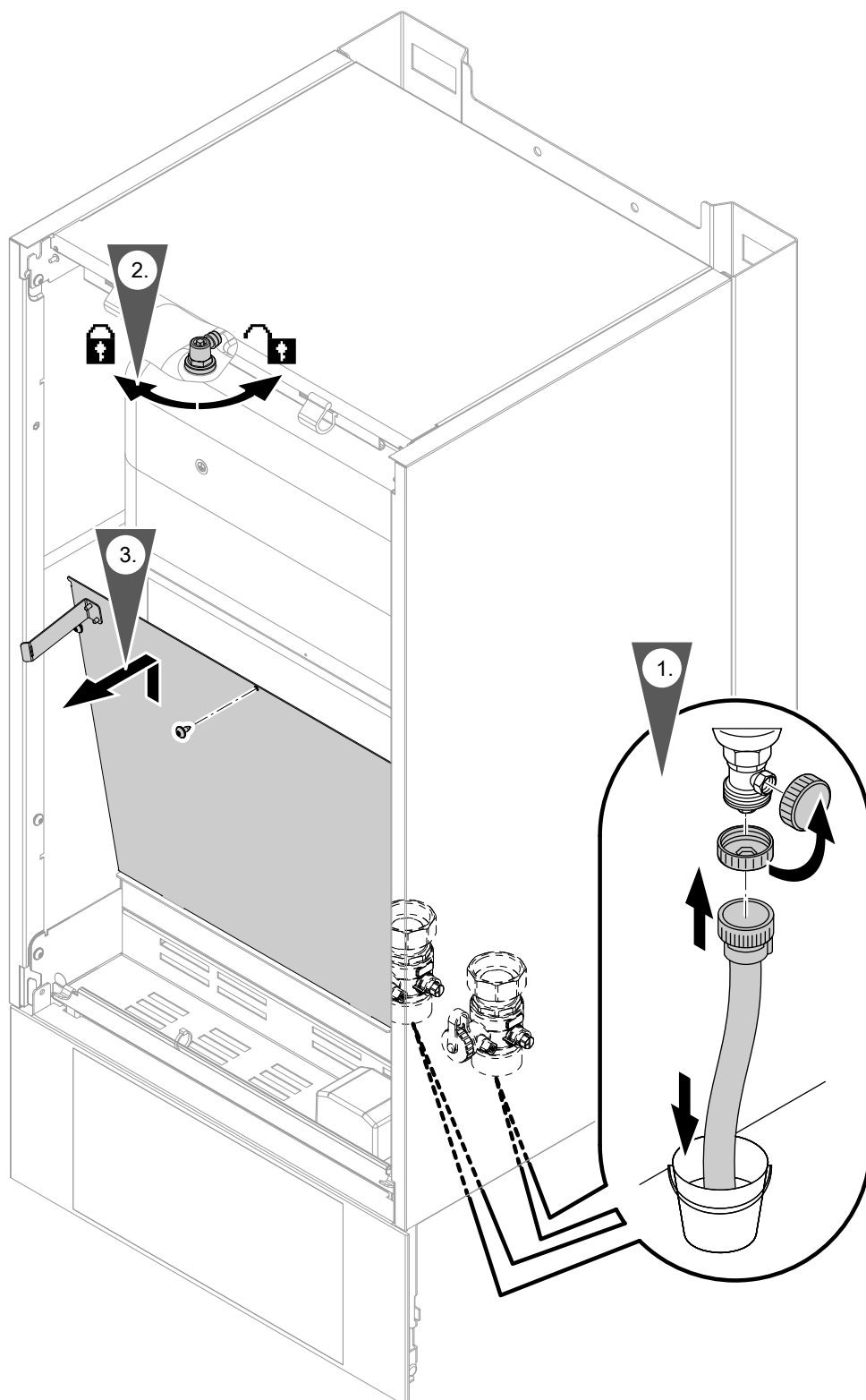


Fig. 40

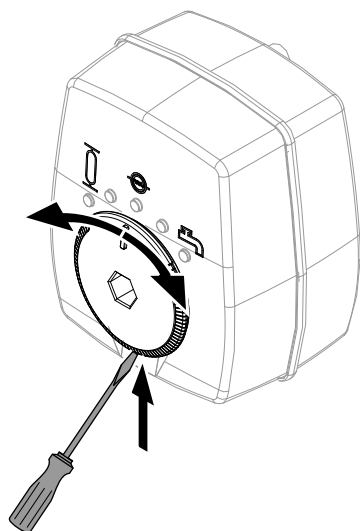
Draining the indoor unit on the secondary side (cont.)

Fig. 41

4. Set the 4/3-way valve in turn to , and until water no longer comes out.

Checking the temperature sensors

- All temperature sensors are NTC type 10 k Ω .
- Position of the factory-fitted temperature sensors:
See chapter "Overview of internal components".

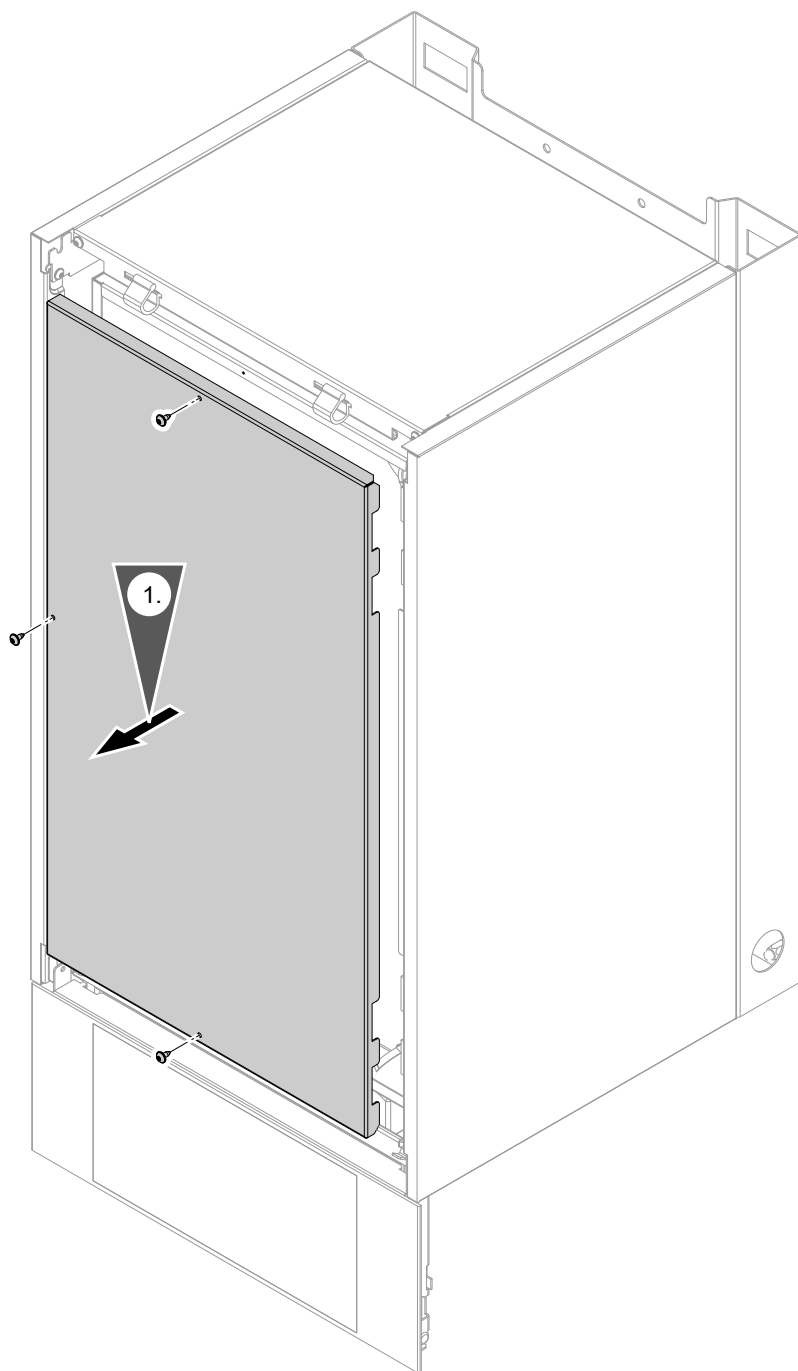
Temperature sensor NTC 10 k Ω	Connection
▪ Outside temperature sensor (BT21)	▪ Terminal area XD1, < 42 V: bus connections and sensors: Connection 1.1/1.2 ▪ HIOU electronics module: Terminals X6.3/X6.4
▪ Cylinder temperature sensor (BT22)	▪ Terminal area XD1, < 42 V: bus connections and sensors: Connection 5.1/5.2 ▪ HIOU electronics module: Terminals X6.1/X6.2
▪ Buffer temperature sensor, external buffer cylinder (BT24)	▪ Terminal area XD1, < 42 V: bus connections and sensors: Connection 9.1/9.2 ▪ HIOU electronics module: Terminals X5.3/X5.4

1. Check the lead and plug of the temperature sensor.
2. Disconnect the wires from the plug.
3. Measure the temperature sensor resistance. Compare the resistance with the value for the current temperature from the following table.
4. If the deviation is > 10 %, disconnect the wires on the temperature sensor. Repeat the test directly on the sensor.
If required, check the on-site cable (2-core cable, max. length 35 m with a cross-section of 1.5 mm²). Depending on the result, replace the cable or temperature sensor.

Checking the temperature sensors (cont.)

NTC 10 k Ω (blue 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	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 fuses*Fig. 42*

Checking the fuses (cont.)

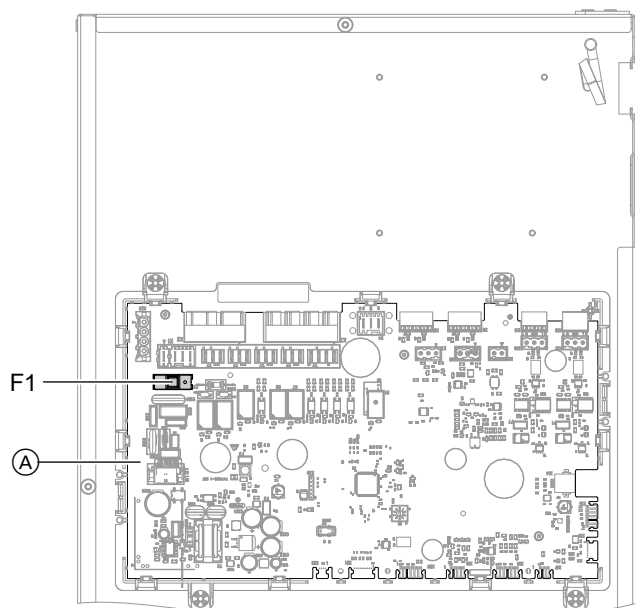


Fig. 43

Ⓐ HIOU electronics module

F1 Fuse type:

- 6.3 A H (slow), 250 V~
- Max. power loss ≤ 2.5 W

1. Switch off the power supply.
2. Open the electronics module cover.
3. Check the fuse. 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.

Commissioning/service reports

Hydraulic parameter report

Settings and test values	Set value	Commissioning	Maintenance/service
Check external heating/cooling circuit pumps			
Circulation pump type			
Circulation pump stage			
Primary circuit commissioning			
Air intake temperature °C			
Air discharge temperature °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		
Check of mixers, heat pump and cylinder heating			
Checked under the following conditions:			
Room temperature °C			
Outside temperature °C			
Cylinder temperature constant?	Yes (± 1 K)		
Secondary circuit flow temperature °C	Rising	From To	From To
Temperature differential ΔT (Secondary circuit temperature spread) K	6 to 8		

Specification

Indoor unit Type		IDU Modular WWMIW.B1.19- V057	IDU Comfort WWMIW.B1.19-V058
Heating water (secondary circuit)			
Capacity	l	3	19
Max. flow temperature	°C	75	75
Electrical values			
PCB			
▪ Rated voltage		1/N/PE 230 V~/50 Hz	1/N/PE 230 V~/50 Hz
▪ Mains connection fuse protection		1 x B16A	1 x B16A
▪ Internal fuse protection		6.3 A H (slow)/ 250 V~	6.3 A H (slow)/ 250 V~
Max. power consumption			
▪ Control unit/PCB	W	5	5
▪ Max. connected load, 230 V~ function components	W	1000	1000
Mobile data transfer			
WiFi			
▪ Transmission standard		IEEE 802.11 b/g/n	IEEE 802.11 b/g/n
▪ Frequency band	MHz	2400 to 2483.5	2400 to 2483.5
▪ Max. transmission power	dBm	+15	+15
Low power radio			
▪ Transmission standard		IEEE 802.15.4	IEEE 802.15.4
▪ Frequency band	MHz	2400 to 2483.5	2400 to 2483.5
▪ Max. transmission power	dBm	+6	+6
Dimensions			
Total length	mm	450	450
Total width	mm	450	450
Total height	mm	750	750
Total weight			
▪ Empty	kg	41	46
▪ Filled (max.)	kg	44	65
Permissible operating pressure on the secondary side			
	bar	3 0.3	3 0.3
Connections to indoor unit without installation aid			
Heating water flow/return, heating/cooling circuit or external buffer cylinder		G 1¼	G 1¼
Heating water flow/return, DHW cylinder	mm	G 1	G 1
Heating water flow/return, outdoor unit	mm	G 1¼	G 1¼

Commissioning order

- Email this request form, together with the system scheme, to your local sales office.
Or
 - Complete the order online at partnerportal.viessmann-climatesolutions.com.
- A competent employee must be present when the system is commissioned.

System details:

Requester _____

System location _____

Checklist:

- ☐ 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 airtight
- ☐ Components for cooling mode fully installed (optional)
- ☐ Components for ventilation fully installed (optional)
- ☐ Components for photovoltaic system fully installed (optional)

Preferred appointment:

1. Date _____

Time _____

2. Date _____

Time _____

The work requested from the manufacturer will be billed to me/us in accordance with the latest 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.

Isolate the system from the power supply for decommissioning. Allow any hot components to cool down. All components must be disposed of correctly.

Ordering individual parts

Ordering individual parts for accessories

Please affix accessory labels with part numbers here.
Please specify the relevant part no. when ordering individual parts.

					
---	---	---	---	---	---

					
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Declaration of conformity

We, Viessmann Climate Solutions GmbH & Co. KG, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, 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. Viessmann Climate Solutions GmbH & Co. KG, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, hereby declares that the radio equipment type of the named product is in compliance with Directive 2014/53/EU.

Using the serial number, the full Declaration of Conformity can be found on the following website:

www.viessmann.co.uk/eu-conformity

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